ROCKFORD BOARD OF EDUCATION
INVITATION FOR BID ON SUPPLIES, MATERIALS, EQUIPMENT OR SERVICES FOR SCHOOL DISTRICT NO. 205 ROCKFORD, ILLINOIS

IFB No. **25-11 CCEC Building Renovations**

DATE: **November 6, 2024**

RE: **ADDENDUM NO. 3**

To All Bidders:

Included are modifications, clarifications and/or corrections for the Project Manual and are hereby made a part of the contract documents. Please attach this addendum to the Project Manual(s) in your possession. Please note the receipt of this addendum on the bid form. Bidders shall review changes to all portions of this work as changes to one portion may affect the work of another.

If you plan to hand deliver your IFB submission on the due date, please note you must check in on the 1st floor prior to coming to the bid opening. Please allow time for this as late submission will not be accepted.

Refer all questions relative to the business aspect, Instructions to Bidders, Special Conditions, and questions concerning the technical aspect of the documents to the Director of Purchasing by email at purchasingdeptstaff@rps205.com.

ROCKFORD BOARD OF EDUCATION

By: Dane Youngblood
Director of Purchasing

DLRGROUP
ARCHITECTURE ENGINEERING PLANNING INTERIORS

ADDENDUM NO. 03

DLR Group inc.
an Illinois corporation

333 W Wacker Drive, Suite 850
Chicago, IL 60606

Rockford CCEC Renovations
Rockford Public School District 205
Rockford, IL

DLR GROUP PROJECT NO. 22-24119-00

NOVEMBER 6, 2024

The Drawings and Project Manual for the above-named Project, dated **September 30, 2024**, are modified, amended, and supplemented as set forth in this Addendum and shall be taken into account in preparing Bids. This Addendum shall become part of the Contract Documents.

Wherein this Addendum is in conflict with the Specifications and Drawings, the requirements of this Addendum shall govern.

CLARIFICATIONS

- For abatement-related coordination items, please see bid package #25-13 at the following link: https://www.rps205.com/page/vendors
- For food service procurement and installation coordination, please see bid package #25-14 at the following link: https://www.rps205.com/page/vendors

DOCUMENTS

ITEM NO. 1. BIDDING RFI LOG

PROJECT MANUAL

Project manual sections have been updated as follows:

ITEM NO. 2. 000110 – TABLE OF CONTENTS
- **A.** **ADD** section 064113 WOOD VENEER-FACED ARCHITECTURAL CABINETS.
- **B.** **ADD** section 11700 TELLER AND SERVICE EQUIPMENT.
- **C.** **ADD** section 134715 BULLET RESISTANT PRODUCTS.
- **D.** **ADD** section 232500 CHEMICAL (WATER) TREATMENT.
- **E.** **DELETE** section 123553.13 METAL LABORATORY CASEWORK.

ITEM NO. 3. SPECIFICATION 004113 – BID OFFER FORM
- **A.** **ADD** cabling allowance to bid form.

ITEM NO. 4. SPECIFICATION 012100 – ALLOWANCES
- **A.** **ADD** Allowance No. 2, cabling allowance to section 3.3.

ITEM NO. 5. SPECIFICATION 034500 – PRECAST ARCHITECTURAL CONCRETE
- **A.** **ADD** Mid States Concrete to list of acceptable suppliers.

ITEM NO. 6. SPECIFICATION 064113 – WOOD VENEER-FACED ARCHITECTURAL CABINETS

A. **ADD** entire spec section to project manual.

ITEM NO. 7. SPECIFICATION 075423 – TPO ROOFING
- A. **MODIFY** section 3.6-C.h.
- B. **DELETE** section 3.12-B.1, requirement for flood testing.

ITEM NO. 8. SPECIFICATION 084113 – ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS
- A. **ADD** Tubelite to list of acceptable suppliers.

ITEM NO. 9. SPECIFICATION 087100 – DOOR HARDWARE
- A. **UPDATE** door hardware sets.

ITEM NO. 10. SPECIFICATION 088000 – GLAZING
- A. **ADD** laminated glazing to section 1.5-B.5.
- B. **ADD** glazing type IGU-03 to section 3.11-A.

ITEM NO. 11. SPECIFICATION 101100 – VISUAL DISPLAY UNITS
- A. **ADD** Educational Equipment to list of acceptable suppliers.

ITEM NO. 12. SPECIFICATION 111700 – TELLER AND SERVICE EQUIPMENT
- A. **ADD** entire spec section to project manual.

ITEM NO. 13. SPECIFICATION 123216 – MANUFACTURED PLASTIC LAMINATE-CLAD CASEWORK
- A. **ADD** KBI Custom Case Inc. and Pierce Laminated Products to list of acceptable suppliers.

ITEM NO. 14. SPECIFICATION 123553.13 – METAL LABORATORY CASEWORK
- A. **DELETE** entire section from project manual.

ITEM NO. 15. SPECIFICATION 134715 – BULLET RESISTANT PRODUCTS
- A. **ADD** entire spec section to project manual.

ITEM NO. 16. Section 22 10 00 PLUMBING PIPING
- A. **ADD** paragraph 2.3 A-C for galvanized steel pipe to be allowed.
- B. **ADD** paragraph 3.2 C Welding Gases.

ITEM NO. 17. Section 23 09 00 – CONTROLS
- A. **ADD** Johnson Controls as acceptable manufacturer.

ITEM NO. 18. Section 23 22 18 STEAM AND STEAM CONDENSATE SPECIALTIES
- A. **REMOVE** paragraph 2.3 C.6 automatic modulating makeup water valve.
- B. **REMOVE** paragraph 2.3 C.8 visual liquid indicating gauge and integral 4-20mA level transmitter.

ITEM NO. 19. Section 23 25 00 CHEMICAL (WATER) TREATMENT
- A. **ADD** specification section to contract documents.

ITEM NO. 20. Section 23 52 39 FIRE TUBE BOILERS
- A. **REVISE** paragraph 3.2 B to use boiler chemicals furnished by chemical treatment vendor for steam boiler boil-out process.
- B. **REVISE** paragraph 3.2 C for authorized boiler burner start-up personnel to be involved in starting-up boiler.
- C. **REMOVE** paragraph 3.2 D

ITEM NO. 21. Section: 26 27 26 – WIRING DEVICES
- A. **REVISE** – 2.4D
- B. **REVISE** – 2.7A
- C. **ADD** – 1.7B

DRAWINGS

Replace the sheets below in their entirety.

ITEM NO. 8. CP1.1A – CODE PLAN – AREA A
- A. **ADD** door fire rating tag at Storage A026.1
- B. **MODIFY** location of Wellness A050.4.

ITEM NO. 9. CP1.1C – CODE PLAN – AREA C

A. **ADD** 1 hour fire rating to west and south walls of Engineering Lab C212.
B. **ADD** door fire rating tag to existing door between C228 and C226.

ITEM NO. 10. AS1.1
A. **ADD** basis of design product for LED message board at the monument sign.

ITEM NO. 11. AD1.1A – AREA A – DEMOLITION PLAN
A. **ADD** keynotes D55 and D56 to Demo Sheet Notes legend.
B. **ADD** keynote D55 at cross corridor doors.
C. **DELETE** keynotes associated with door to Office 127.
D. **ADD** clarifying dimensions.

ITEM NO. 12. AD1.1B – AREA B – DEMOLITION PLAN
A. **ADD** keynote D14 in IT rack locations called out in RFI 38.
B. **ADD** keynote 35.1 to door to Classroom 267.
C. **DELETE** keynote from doors to Office 305 and Office 303.
D. **ADD** clarifying dimensions.

ITEM NO. 13. AD1.1C – AREA C – DEMOLITION PLAN
A. **ADD** keynotes D55 and D56 to Demo Sheet Notes legend.
B. **ADD** keynote D55 at cross corridor doors.
C. **ADD** keynote D35.2 to cross corridor door adjacent to Women 413. The existing hollow metal doors are to be replaced.
D. **ADD** keynote D14 in IT rack locations called out in RFI 38.
E. **ADD** clarifying dimensions.
F. **DELETE** keynote D11 from plan and Demo Sheet Notes Legend.
G. **ADD** keynote D56 to Welding Lab booths.

ITEM NO. 14. AD1.3 – DEMO ROOF PLAN
A. **ADD** keynote 1 to precast panel demolition locations.

ITEM NO. 15. AD3.1A – DEMO RCP – AREA A
A. **MODIFY** ceiling removal scope in Area A corridors based on asbestos abatement scope coordination. See bid package #25-1, addendum 1, for containment drawings.
B. **ADD** keynotes 4A and 13.3 to Demo Sheet Notes legend and RCP.
C. **MODIFY** keynote 5.0A in Demo Sheet Notes legend.

ITEM NO. 16. AD3.1B – DEMO RCP – AREA B
A. **ADD** keynotes 4A and 13.3 to Demo Sheet Notes legend and RCP.
B. **MODIFY** keynote 5.0A in Demo Sheet Notes legend.

ITEM NO. 17. AD3.1C – DEMO RCP – AREA C
A. **ADD** keynotes 4A and 13.3 to Demo Sheet Notes legend and RCP.
B. **MODIFY** keynote 5.0A in Demo Sheet Notes legend.
C. **MODIFY** ceiling removal scope in corridor south of Classroom 411 and east of Office 410 due to additional coordination with asbestos containment drawings. See bid package #25-13, addendum 1.

ITEM NO. 18. A1.0 – OVERALL PLAN
A. **ADD** door tags to patio gates.
B. **MODIFY** layout and room tags of rooms within Faculty Lounge A050.

ITEM NO. 19. A1.1A – FLOOR PLAN – AREA A
A. **ADD** clarifying dimensions throughout floor plan.
B. **ADD** wall tags in new wall locations where tags were previously missing.
C. **ADD** keynotes 55, 56A, and 57 to Interior Sheet Notes legend and floor plan where they apply.
D. **DELETE** keynote 8.1 from doors A052B, A014, A016, A018, and ADD to door A038.
E. **ADD** dashed lines to indicate existing lab casework in Science Labs A029 and A027.

ITEM NO. 20. A1.1B – FLOOR PLAN – AREA B
A. **ADD** clarifying dimensions throughout floor plan.

B. **ADD** wall tags in new wall locations where tags were previously missing.
C. **ADD** keynotes 55, 56A, and 57 to Interior Sheet Notes legend and floor plan where they apply.
D. **ADD** keynote 53 to doors B118, B120, B166B.
E. **ADD** keynote 49 to door B166A.
F. **ADD** note to demo abandoned emergency call box from Vestibule B102.

ITEM NO. 21. A1.1C – FLOOR PLAN – AREA C
A. **ADD** clarifying dimensions throughout floor plan.
B. **ADD** wall tags in new wall locations where tags were previously missing.
C. **ADD** keynotes 55, 56A, and 57 to Interior Sheet Notes legend and floor plan where they apply.
D. **ADD** keynote 49 to door ST-2, C213D.
E. **ADD** replacement of door C201 in existing HM frame based on Owner's direction.

ITEM NO. 22. A1.2
A. **ADD** notes and elevation tags related to the door opening alteration scope needed to install the new switchgear and transformer in the North Penthouse.

ITEM NO. 23. A1.3 – OVERALL ROOF PLAN
A. **ADD** walking pads between roof top equipment in response to RFI 44.2.

ITEM NO. 24. A2.1 – ENLARGED GROUP TOILET ROOM PLANS
A. **ADD** clarifying dimensions to drawings 1A, 2A, 2C, 3B, 4B, 4D, 5C.
B. **ADD** PTD/R to drawings 5C and 4D.
C. **MODIFY** type of SNV in Women B118 and A024.

ITEM NO. 25. A2.2 – ENLARGED TOILET ROOM PLANS
A. **ADD** toilet accessories to drawings 3B, 4B.
B. **ADD** General Note "H."

ITEM NO. 26. A2.3 – ENLARGED FLOOR PLANS – CULINARY LABS + GRAB & GO
A. **MODIFY** food service layout in drawing 5E.

ITEM NO. 27. A2.4 – ENLARGED FLOOR PLAN – MAIN OFFICE
A. **ADD** clarifying details, wall tags, notes, and detail callouts to Enlarged Main Office Plan.

ITEM NO. 28. A3.1A – AREA A – REFLECTED CEILING PLAN
A. **ADD** clarifying dimensions throughout RCP.
B. **MODIFY** ceiling replacement scope in Area A corridors based on asbestos abatement scope coordination. See bid package #25-1, addendum 1, for containment drawings.
C. **ADD** "2LA" and "4LA" to Specialty Lighting and Acoustics legend.

ITEM NO. 29. A3.1B – AREA B – REFLECTED CEILING PLAN
A. **ADD** clarifying dimensions throughout RCP.
B. **ADD** "2LA" and "4LA" to Specialty Lighting and Acoustics legend.

ITEM NO. 30. A3.1C – AREA C – REFLECTED CEILING PLAN
A. **MODIFY** extents and scope of ACT ceiling replacement following drywall and pipe fitting abatement. See bid package #25-13, addendum 1.
B. **MODIFY** Unistrut grid size and cord reel locations in Engineering C212.
C. **MODIFY** cord reel quantity and locations in Manufacturing C228, Industrial Tech C226, and Maker Space C222.
D. **ADD** grinding booth ceiling replacement in Welding C231 based on direction from Owner.
E. **ADD** clarifying dimensions throughout RCP.
F. **ADD** "2LA" and "4LA" to Specialty Lighting and Acoustics legend.

ITEM NO. 31. A3.3 – ENLARGED RCPS

A. **MODIFY** note about exposed deck paint color in drawing 5E to read, "Paint all exposed structure, mechanical, and deck area white dryfall (P-11) above metal ceiling."

ITEM NO. 32. A4.1 – EXTERIOR ELEVATIONS
- A. **ADD** keynote E12 at base of curtainwall where previously omitted.
- B. **ADD** keynote E10 at door E in drawing 2A.

ITEM NO. 33. A4.2 – EXTERIOR ELEVATIONS
- A. **ADD** keynote E10 at door O in drawing 2A.

ITEM NO. 34. A5.1 – BUILDING SECTIONS
- A. **MODIFY** tile pattern at Grab & Go Market and drinking fountain alcove in drawing 2A.

ITEM NO. 35. A5.2 – BUILDING SECTIONS
- A. **MODIFY** tile pattern at Grab & Go Market in drawing 1A.
- B. **MODIFY** accent wall layout in drawing 2A.

ITEM NO. 36. A6.1 – SYSTEMS SHEET – CURTAINWALL & EXT. WINDOWS
- A. **MODIFY** detail 3E.

ITEM NO. 37. A6.2 – SYSTEMS SHEET – CANOPY
- A. **DELETE** "MTL-01" tag from drawing 3E/A6.2.
- B. **ADD** basis of design note for MTL-03 to drawing 3E/A6.2.

ITEM NO. 38. A8.1 – PARTITION TYPES
- A. **UPDATE** all schedules on sheet.

ITEM NO. 39. A8.2 – DOOR SCHEDULES
- A. **MODIFY** information in all schedules on sheet.
- B. **ADD** door schedule "Existing Door in New Frame."
- C. **MODIFY** and **ADD** dimensions to door type elevations.

ITEM NO. 40. A8.3 – DOOR & FRAME ELEVATIONS & DETAILS
- A. **ADD** detail callouts, dimensions, and clarifying notes to frame type elevations.
- B. **ADD** detail 5A/A8.3.
- C. **DELETE** detail 5C/A8.3.

ITEM NO. 41. A8.4 – WINDOW TYPES, SCHEDULES & DETAILS
- A. **ADD** details 1E and 2E/A8.4.

ITEM NO. 42. A9.1 – EXTERIOR DETAILS
- A. DELETE detail 1E/A9.1.
- B. MODIFY detail 1F/A9.1.

ITEM NO. 43. A10.2 – INTERIOR & MILLWORK ELEVATIONS
- A. **MODIFY** tile pattern in drawings 1C, 1D, 3E, 3F.
- B. **ADD** detail 3D.
- C. **MODIFY** casework layout in drawings 1C, 1D, 1F.
- D. **ADD** drawings 4D and 4E to illustrate demo and new door/wall scope related to the transformer and switchgear installation.

ITEM NO. 44. A10.3 – INTERIOR ELEVATIONS – COMMONS
- A. **MODIFY** tile install pattern, **ADD** clarifying note about ceiling projector in drawing 2A.
- B. **MODIFY** door type elevation in drawings 1A and 3A.
- C. **ADD** clarifying notes about AV equipment in drawing 4A.

ITEM NO. 45. A11.2 – INTERIOR DETAILS
- A. **ADD** detail 5C/A11.2.

ITEM NO. 46. A12.0 – FINISH SCHEDULE
- A. **MODIFY** finish information for accent wall tile.

ITEM NO. 47. A12.1C – AREA C – FINISH PLAN
- A. **ADD** keynote 18 to welding booths in Welding C231.

ITEM NO. 48. A14.01 – RPS 205 SIGNAGE STANDARDS

A. **ADD** RPS sign type 7 (drawing 3E).

ITEM NO. 49. A14.1A – LEVEL 01 – AREA A – SIGNAGE PLAN
A. **ADD** sign type 7 locations at various locations.

ITEM NO. 50. A14.1B – LEVEL 01 – AREA B – SIGNAGE PLAN
A. **ADD** sign type 7 locations at various locations.

ITEM NO. 51. A14.1C – LEVEL 01 – AREA C – SIGNAGE PLAN
A. **ADD** sign type 7 locations at various locations.

STRUCTURAL

ITEM NO. 52. S1.02 – ROOF FRAMING PLAN – OVERALL
A. **ADD** angle frame around new exhaust fan.

ITEM NO. 53. S1.06 – ENLARGED PLAN
A. **MODIFY** notes regarding angle kickers.
B. **ADD** detail 2 showing angle kickers.

FIRE PROTECTION

ITEM NO. 54. F2.01C
A. **ADD** note for fire powder coating booth scope clarification.

PLUMBING

ITEM NO. 55. P0.00
A. **ADD** plumbing piping insulation schedule.

ITEM NO. 56. P1.11C
A. **ADD** pipe removal scope in welding lab
B. **ADD** note for existing to remain compressed air lines in manufacturing lab.

ITEM NO. 57. P2.11C
A. **ADD** new welding gas pipe lines in welding lab.
B. **ADD** new Oxygen, Acetylene, Mixed gas, and Argon drops for welding booths and teacher's station.
C. **REVISE** oxygen manifold location
D. **ADD** keynote 1 to keynotes list.

ITEM NO. 58. P4.01
A. **ADD** welding gas manifold detail

MECHANICAL

ITEM NO. 59. M0.00
A. **REVISE** HVAC coversheet

ITEM NO. 60. M1.01A
A. **ADD** exhaust grille removal scope in men/women's bathrooms

ITEM NO. 61. M2.01A
A. **ADD** exhaust grilles in men/women's bathrooms.
B. **REMOVE** motor operated damper serving EF-1.

ITEM NO. 62. M2.01B
A. **REMOVE** motor operated damper serving EF-2.

B. **REVISE** damper tag serving EF-C-6.

ITEM NO. 63. M2.01C
- A. **REVISE** exhaust duct sizing serving manufacturing and industrial technology space
- B. **ADD** clarifying note for scope of ventilation in powder coating booth.
- C. **ADD** two new exhaust grilles in industrial technology and two new exhaust grilles in manufacturing.
- D. **ADD** source capture hood and ductwork serving laguna plasma cutter.
- E. **ADD** keynote 2 to keynotes list.

ITEM NO. 64. M2.03C
- A. **ADD** EF-4 on roof serving source capture hood.

ITEM NO. 65. M3.01
- A. **REVISE** motor operated damper tags.

ITEM NO. 66. M5.05
- A. **ADD** details 5, 6, and 7.

ITEM NO. 67. M6.01
- A. **REVISE** motor operated damper schedule
- B. **REVISE** Fan schedule.

ELECTRICAL

ITEM NO. 68. Drawing E1.01A:
- A. **ADD** the demolition of downlights in southern corridor.

ITEM NO. 69. Drawing E1.01C:
- A. **REVISE** the demolition of the main switchboard to include the entire switchboard.

ITEM NO. 70. Drawing E2.11A:
- A. **ADD** new fixtures and controls to Corridor B101.
- B. **ADD** callout for Podcast A054.

ITEM NO. 71. Drawing E2.11B:
- A. **ADD** callout for Breakout B110, B112, & B114.
- B. **REVISE** the layout of the fixtures in Student Commons B151.
- C. **REVISE** the fixtures in Grab & Go Market B155 to F10A.
- D. **REVISE** the fixtures in Student Cyber Lounge B153 to F10A.
- E. **ADD** callout for Breakout B150, B152, and B154.
- F. **REVISE** Keynote #3.

ITEM NO. 72. Drawing E2.11C:
- A. **ADD** Keynote #5.
- B. **ADD** Keynote #5 to fixtures in Welding C231.

ITEM NO. 73. Drawing E2.21A:
- A. **ADD** Keynote #7.
- B. **REVISE** the metal detector connection to a tamper-proof duplex receptacle.
- C. **ADD** a tamper-proof duplex receptacle in Vestibule A001.
- D. **ADD** Keynote #7 to SS-1 & SS-2.
- E. **REVISE** the layout of IDF A060.
- F. **REMOVE** all devices in Storage.
- G. **REVISE** layouts of Men A050.2 and Women A050.3.
- H. **ADD** receptacles for Microwave, Undercounter Refrigerator, and general purpose to new Wellness.

ITEM NO. 74. Drawing E2.21B:
- A. **ADD** Keynote #6.
- B. **ADD** Keynote #6 to SS-3 & SS-4.

C. **REVISE** layout of IDF B164.
D. **ADD** duplex receptacle in Vestibule B102 for metal detector.

ITEM NO. 75. Drawing E2.21C:
A. **ADD** Keynotes #10 and #11.
B. **REVISE** Keynote #7.
C. **ADD** circuit to Door Control Power.
D. **ADD** Keynote #10 to SS-5 & SS-6.
E. **REVISE** layout of IDF C245.
F. **REVISE** layout of IDF C228.1.
G. **REVISE** layout and quantities of Cord Reels in Engineering Lab C212.
H. **REVISE** layout and quantities of Cord Reels in Maker Space C222.
I. **REVISE** layout and quantities of Cord Reels in Industrial Technology C226.
J. **REVISE** the welder connections in Industrial Technology C226 to Cord Reels.
K. **ADD** MS-EF-4 in Industrial Technology C226 for exhaust fan.
L. **ADD** duplex receptacle for TV in Welding C231.
M. **ADD** circuit to duplex receptacle at teacher station.
N. **ADD** disconnect for welder connection.
O. **ADD** section to MAIN-SWBD.
P. **ADD** new switchboard PDP-M.

ITEM NO. 76. Drawing E2.22N:
A. **ADD** Variable Frequence Drives for SF-1 & SF-2

ITEM NO. 77. Drawing E2.43C:
A. **ADD** electrical connection for EF-4.

ITEM NO. 78. Drawing E3.01:
A. **REVISE** layout of Cord Reels in Manufacturing C228.

ITEM NO. 79. Drawing E3.02:
A. **ADD** sheet in its entirety.

ITEM NO. 80. Drawing E5.00:
A. **ADD** demolition of rest of MAIN-SWBD.
B. **ADD** new section of MAIN-SWBD.
C. **ADD** new switchboard PDP-M.

ITEM NO. 81. Drawing E6.00:
A. **ADD** Evenlite CCDS to fixtures EX1 & EX2 in Luminaire Schedule.
B. **REVISE** EvoGrid EVG to FGX for fixtures F1 & F2 in Luminaire Schedule.
C. **ADD** Lightolier P4R to fixture F4 in the Luminaire Schedule.
D. **ADD** Finelite HP-2 to fixture F5 in the Luminaire Schedule.
E. **ADD** Lightolier C6 to fixture F6 in the Luminaire Schedule.
F. **ADD** Lightolier P6R to fixture F8 in the Luminaire Schedule.
G. **REVISE** the output of fixture F10 to 1000 lumens/foot.
H. **ADD** fixture F10A to the Luminaire Schedule.
I. **ADD** Lumenwerx VIA2R to fixtures F15H, F15V, & F15VA in the Luminaire Schedule.
J. **ADD** Signify Lightolier LWW to fixture F16 in the Luminaire Schedule.
K. **ADD** Signify Lightolier 6000 Series to fixture F16T in the Luminaire Schedule.
L. **REVISE** fixture F18 to have 2” drop lens.
M. **ADD** fixture F18A to the Luminaire Schedule.
N. **REVISE** Signify Daybrite to Signify Daybrite FGX for fixture F20 in the Luminaire Schedule.
O. **ADD** Lightolier P4S to fixture F21 in the Luminaire Schedule.
P. **ADD** Genled Acolyte AS3 to fixture F25 in the Luminaire Schedule.
Q. **ADD** Gardco GWS to fixture S1 in the Luminaire Schedule.
R. **ADD** KKDC MG to fixture S4 in the Luminaire Schedule.

ITEM NO. 82. Drawing E6.01:
- **A.** **ADD** VFD-SF-1 & VFD-SF-2 to Variable Frequency Drive Schedule.

ITEM NO. 83. Drawing E6.02:
- **A.** **ADD** MS-EF-4 to Disconnect and Starter Schedule.
- **B.** **ADD** DS-Welder to Disconnect and Starter Schedule.

ITEM NO. 84. Drawing E7.00:
- **A.** **ADD** schedule for PDP-M.
- **B.** **REVISE** schedule for MAIN-SWBD.

ITEM NO. 85. Drawing E7.01:
- **A.** **REVISE** spare 20A/1P breaker in panel LP-A5 to feed receptacle Vestibule B102.

ITEM NO. 86. Drawing E7.03:
- **A.** **ADD** 25A/1P breaker to panel TC1L for EF-4.
- **B.** **REVISE** three (3) spare 20A/1P breakers to feed Cord Reels.

ITEM NO. 87. Drawing E7.05:
- **A.** **REPLACE** schedule for panel LP-C1A with schedule for panel WPC2.
- **B.** **REVISE** eight (8) spare 20A/1P breakers to feed new loads.
- **C.** **REVISE** existing 3P breaker to 20/1P breaker to feed new load.

TECHNOLOGY

ITEM NO. 88. T1.01A – LEVEL 01 DEMOLITION PLAN – TECHNOLOGY – AREA A
- **A.** **ADD** Keynotes 2.
- **B.** **ADD** (1) Demoed CATV equipment and Keynote Symbol 2 in Media Production classroom A058.
- **C.** **ADD** (1) existing IDF equipment Cabinet and its Text notes in Media Production classroom A058.

ITEM NO. 89. T1.01B – LEVEL 01 DEMOLITION PLAN – TECHNOLOGY – AREA B
- **A.** **ADD** (1) existing IDF equipment Cabinet and its Text Notes in Culinary Classroom B106.

ITEM NO. 90. T1.01C – LEVEL 01 DEMOLITION PLAN – TECHNOLOGY – AREA C
- **A.** **ADD** (1) existing IDF equipment Cabinet and its Text Notes in Janitor C218.1, Cad Lab C224 and Manufacturing C228.

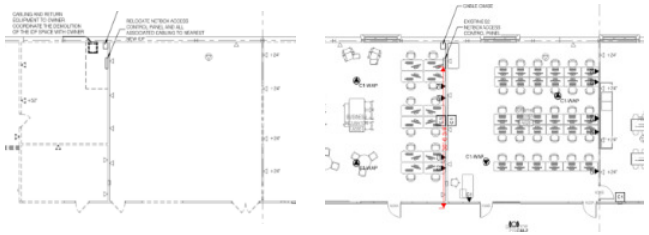
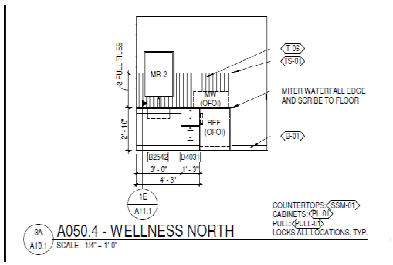
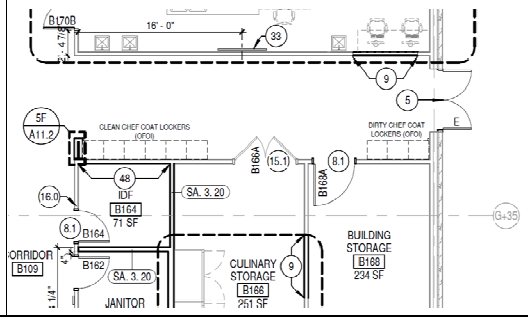
END OF ADDENDUM

BIDDING RFI LOG			
Rockford CCEC Renovations			
22-24119-00			
9/30/2024	Issued for Bid		
10/15/2024	Addendum 1		
10/24/2024	Addendum 2		
11/6/2024	Addendum 3		

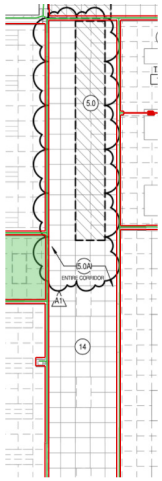
Rockford CCEC Renovations - Bidding RFIs

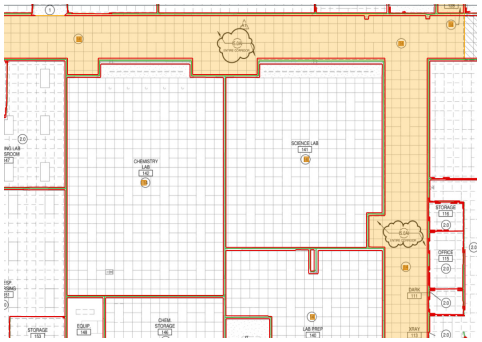
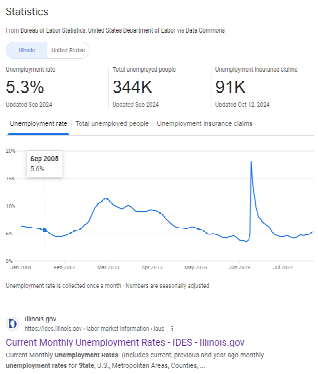
Number	Date	Question	Response
Addendum 1			
001	10/10/2024	Item #1 (Secure Shelving Unit): The 114000's call for model number SEC55EC, which does not match the sizing on the FS drawing. Please confirm model number.	Food service drawings included in this bid package are for reference only. RFI questions will be addressed in forthcoming separate bid package #25-14 for food service equipment procurement and installation.
		Item #8 (Worktables): The 114000's call for a quantity of 8, but there are only 6 on the FS drawing. Please confirm quantity.	
		Item #9 (Reach-in Freezer): The 114000's say this item is existing/relocate, but the FS equipment schedule shows this item as new. Please clarify if the item is existing or not.	
		Item #10 (Reach-in Refrigerator): The 114000's say this item is existing/relocated, but the FS equipment schedule shows this item as new. Please clarify if the item is existing or not.	
		Item #20 (Secure Shelving Unit): The 114000's call for model number SEC55EC, which does not match the sizing on the FS drawing. Please confirm model number. There are two different sizes and only one model number.	
		Item #22 (Mobile Shelving Units): The 114000's call for a quantity of 11, but there are only 2 on the FS drawing. Please confirm quantity.	
		Item #26 (Worktable with sink): The 114000's show accessory G as "ALT BID." Is this actually an alternate or does this need to be included in our standard bid submission?	
		Item #50 (Secure Shelving Units): The 114000's call for a quantity of two, but there are none shown on the FS drawing. Please confirm quantity.	
		Item #52 (Worktables): The 114000's call for a quantity of 8, but there are only 6 on the FS drawing. Please confirm quantity.	
		Item #53 (Exhaust Hoods): The 114000's call for a quantity of 1, but there looks to be a quantity of 2 on the drawing. Please confirm quantity.	
		Item #56 (Half Size Combination Ovens): What accessories are needed for this item? The 114000's say, "as further specified for item #33." Item #33 is a microwave oven cart, so it will not pertain to this item.	
		Item #57 (Range with Griddle and Char broiler/Oven): The 114000's call for a quantity of 8, but there are only 6 on the FS drawing. Please confirm quantity.	
		Item #59 (Secured Shelving Units): What model number is needed for this item? The 114000's say, "Specified as part of item #57." Item #57 is a range, so please provide accurate model number.	
		Item #60 (Mobile Shelving Units): The 114000's call for a quantity of 7, but there are only 5 on the FS drawing. Please confirm quantity.	
		Item #64 (Hand Sinks): The 114000's call for a quantity of 4, but there are only 3 on the FS drawing. Please confirm quantity.	
		Item #70 (Half-Sized Combi Oven with Stand): Please provide the accessories needed. The 114000's are not showing what is needed.	
		Item #77 ((Half Size Combination Ovens): What accessories are needed for this item? The 114000's say, "as further specified for item #33." Item #33 is a microwave oven cart, so it will not pertain to this item.	
		Item #81 (Utility Carts): This item is not shown on the equipment schedule or FS drawings. Please verify quantity needed.	
		Item #82-85: Are these items spare? These item numbers are not shown in the 114000's or the FS drawings.	
		Item #86 (Vending Machine): This item is not in the 114000's. Please verify that this item is by the owner, according to equipment schedule.	
		Item #87 (Vending Machine): This item is not in the 114000's. Please verify that this item is by the owner, according to equipment schedule.	
		Item #88 (Work Counter with Waste Below): This item is not in the 114000's. Please verify that this item is by the owner, according to equipment schedule.	

		Item #89 (Wall Shelves): This item is not in the 114000's. Please verify that this item is by the owner, according to equipment schedule.	
		Item #90 (Microwave ovens): The 114000's show this item as provided by owner, but the equipment schedule shows this item as new. Please clarify who is proving this item.	
		Item #91 (Retail Shelving): This item is not in the 114000's. Please verify that this item is by the owner, according to equipment schedule.	
		Item #95 (Under Counter Refrigerator): The 114000's show this item as provided by owner, but the equipment schedule shows this item as new. Please clarify who is proving this item.	
		Item #98 (Air Curtain Refrigerator): The 114000's show this item by owner, but the equipment schedule shows this item as future. Please verify which is correct.	
002	10/11/2024	**Line 31**: It mentions two ovens, but the model number listed corresponds to a cabinet with an oven. I found a range that includes two ovens (attached spec sheet for model S48EE-2TL, two ovens). Which configuration would you prefer for the quote: two ovens or the cabinet and oven?	
		Lines 57 and 76: I noticed the same issue as above but with a 12" charbroiler and 12" griddle. I'm looking into it, but it seems our factories may not be able to configure these as specified. Please review and advise.	
003	10/11/2024	The specs for the lockers title is 10 51 16 Solid Plastic lockers and you list NFPA 286 as fire rating. But the manufacture you list as the Basic Of Design, Hollman, does not manufacture Solid Plastic Lockers. The point A of the specs calls for Solid Plastic but the point C 1 is for a Phenolic Lockers with the Model Z1. This can be a confusion point for bidders or for the CG. A written clarification would be helpful to make sure you have the right product that is specs.	Phenolic lockers (and all other lockers) have been removed from the scope of the project and will be procured by the owner as part of their FFE package. This specification section will be removed from the project manual.
004	10/14/2024	During the prebid walkthrough it was noted by the AE team that prospective bidders would need to do some of their takeoff from the asbestos abatement drawings. (For example amount of asbestos containing plaster removed would equal amount of new drywall partitions needed). We ask that the school district consider adding all work related to the CCEC Building Renovations to a single drawing set that prospective contractors can bid from or confirm that all required work is already on the plans.	All relevant information required to bid the scope of work for this project has been included to the greatest extent possible in the bidding documents. This does not alleviate the requirement of the General Contractor to coordinate with the asbestos abatement being done under a separate bid.
005	10/14/2024	Can you clarify what is included in Alternate #1? The bid form notes "Student commons B151 audiovisual" The A/V drawing does not state what is part of the alternate and what is not. Is the alternate for everything on page T2.11B?	Refer to specification section 012300 3.1 Schedule of Alternates for a description of the alternate. Provide a deductive alternate bid to remove the scope indicated.
006	10/14/2024	P2.01B shows a new grease interceptor on the exterior of the building. I do not see any information on where the outflow of the grease interceptor runs to. The plumbing drawings do not show where the piping coming out of grease interceptor tie in to any other piping, and it is not shown on the civil drawings.	The grease interceptor will be connected to an existing 6" sanitary pipe underneath the building, just north of where the new grease interceptor is located. This will be reflected on sheet P2.01B in Addendum 01.
007	10/14/2024	This is an RFI regarding the roof replacement specification provided for Rockford College & Career Education Center; Division 07-54-23, Section 2.2 A. The specification calls for TPO from all major manufacturers but then lists the membrane color to be Black. I wanted to clarify whether this is a typo. Typically TPO is manufactured in either White, Tan, or Gray. Some manufacturers, including GAF, offer an array of custom or pre-formulated colors but Black is not offered by most if any manufacturers. Can you please clarify what color the TPO should be and relay that information? I have sub-contractors reaching out to me for material pricing so I just want to make sure that I am quoting the correct product.	Provide gray TPO roofing where roof membrane is being replaced or patched.
008	10/10/2024	Attendee during the Pre-bid meeting requested clarification on the requirement listed within the Supplementary Instructions to Bidders 15. Employment of Illinois Workers on Public Works Act.	Per RPS 205, the requirement for 90% Illinois laber would not apply due to unemployment rates being under 5% for the last 2 months.
Addendum 2			
009	10/15/2024	Will there be a responsibility matrix issued in the addendum for the Card access and Camera work? In past projects this scope has varied between schools and with a project of this size it may be beneficial to all parties to have that scope clearly defined, between where the installer starts and the School districts vendors takes over.	The suggested Matrix of Responsibility on Sheet T0.00 has been updated via Addendum 2.
010	10/15/2024	How many data racks per IT closet does the School district want. a. Is there preference 2 post or 4 post. b. What is the preferred layout of patch panels. c. Do they want horizontal managers. d. How large of vertical managers do they want.	The owner will be providing and installing their patch panels, and vertical and horizontal wire managers. No equipment referenced in this RFI should be provided by the contractor as part of this project scope work.
		On page T5.00 Note 1 Fiber and copper Riser Diagram Keynote 6 says that the fiber is typical of 7 IDF, there are only 6 IDF's ?	There are 6 IDF rooms in the scope of work. This note will be updated as part of Addendum 2 for clarification.

		On the demo prints it shows leaving data in walls but shows to demo the associate IDF that services those data locations. Does new cable need to be pulled to those locations or is the rough in to just remain and just receive a blank plate after the cable has been demo as described in spec section 27505? Picture for example. There are multiple areas like this. 	Information outlets that are shown as existing remain (see line type key on coversheet) are the responsibility of the owner to demo and install new cable as needed. Information outlets that ate shown as demolition (see line type key on coversheet) are the responsibility of the Contractor to democable from outlet to rack. Information outlets shown on the new floor plans with a C# configuration identifier are the responsibility of the contractor to provide and install new cabling.
		Spec page 271100-4 3.4 D states "A maximum of 12 strands shall be spliced in any tray" I assume this doesn't include the MDF where a larger density tray will be used and multiple 12 strand adapter plates can be installed? Please clarify.	This spec section has been updated as part of Addendum 2.
011	10/15/2024	Wellness room A050.4 shows casework with a new sink. The plumbing drawings do not show any new water lines or sanitary piping to serve this sink. Please advise what is required for plumbing work at this location. 	Plumbing drawings have been updated via Addendum 2 to indicate plumbing to sink.
012	10/15/2024	A1.1A keynote 36 states weapons detections system is owner furnished contractor installed. A2.4 notes single lane evolv system is owner furnished owner installed. Which is correct?	The weapons detection system will be owner furnished, owner installed. The drawings have been updated via Addendum 2.
013	10/16/2024	Specification section 123216 notes three accepted manufacturers for plastic laminate clad casework. All three of the listed suppliers have responded that they will not be bidding on the project. Due to none of the listed suppliers providing pricing will you accept casework from alternate manufacturers?	Alternate manufacturers are acceptable pending review of requirements listed in the specifications. Submit substitution request to illustrate compliance with specified requirements for each alternate manufacturer.
014	10/16/2024	A1.1B notes clean chef coat lockers and dirty chef coat lockers are owner furnished, owner installed. Specification section 105113 for metal lockers provides information for the culinary lockers for garments and towels, and does not indicate that these are owner furnished and installed. Please confirm these metal lockers are owner furnished and installed 	The chef coat lockers will be owner furnished, owner installed. Specification section 105113 has been removed as part of Addendum 01 as this scope no longer exists in the construction project.

015	10/17/2024	1. It is understood from the pre-bid meeting that the Owner will be purchasing the food service equipment and the installation for this project. Per specification 011000-4-1.8-B-3, Owner is furnishing equipment for Contractor installation. Please confirm who is installing the equipment.	The food service contractor will be providing and installing the food service equipment. The general contractor's team will be connecting the equipment to the utilities.
		2. (Sheet FS2.1) Please advise if the electrical contractor is to provide all J-boxes referenced in the schedule or if certain ones will be supplied by the food service supplier.	The J-boxes referenced in the schedules on sheet FS2.1 are to be provided under the general construction package.
		3. Reference Note 47 (sheet FS2.1): Please advise if the electrical contractor is to provide the condensate hood fan switch.	The switch for the condensate hood fan shall be provided by the hood manufacturer. The referenced switch shall not be the responsibility of the general construction package.
		4. (Sheet FS6.6) Are the cord and plug sets and quic connect gas valves already connected to the UDI or will the electrical and plumbing/HVAC contractors to install them in the field?	All cordsets and flexible gas hoses shall be provided by the food service contractor through the equipment manufacturer. The referenced cordsets and gas hoses shall not be the responsbility of the general construction package.
		5. (Sheet FS7.1) Please advise if the weld on drain brackets are welded by the food service contractor.	The weld on drain brackets are intended to be provided by the equipment fabricator under the food service contract.
		6. (Sheet M6.00) Please advise if MAU-1 and MAU-2 are furnished by the food service equipment vendor or the HVAC contractor? If furnished by the equipment vendor, will installation be by the HVAC contractor?	MAU-1 and MAU-2 will be furnished by general contractor.
		7. (Sheet M6.01) Please advise if EF-C-1, 2 & 3 are furnished by the food service equipment vendor or the HVAC contractor? If furnished by the equipment vendor, will installation be by the HVAC contractor?	EFs will be furnished by general contractor.
		8. (Spec 233100) What material is to be provided for the dishwasher exhaust ductwork?	Dishwasher exhaust ductwork shall be Type 316L stainless steel as stated in the specifications.
		9. (Sheets L1.1, L1.2) At locations where new trees are being provided within parking lot islands, are we to provide grass seed, sod or mulch as the groundcover?	The trees in the landscape islands are being planted in the existing landscape islands that are turf grass. Any areas that are disturbed should be restored to pre construction conditions: turf grass. All the new turf grass proposed on the project is shown as sod.
		10. (Sheet P2.01B) Civil and Plumbing drawings do not indicate the location of the sanitary line at the exterior of the building that the grease interceptor is tying into. Please provide an existing utility plan for reference.	See sheet P2.01B in Addendum 01 for the response to this question.
016	10/18/2024	Is a 10mm electronic display acceptable for the monument sign?	A 10mm electronic display is not acceptable. We recommend a 8mm pixel pitch electronic display.
017	10/21/2024	1. RM 439 Please confirm Demo scope in SW corner as it is not defined.	Keynotes D7 and D14 has been added to existing room 439 to indicate demolition existing IT cage and IT racks.
018	10/21/2024	2. All Demo plans, doors are dashed, but there is no tag saying what is to be done with them. Please clarify.	A demolition key was added to sheet A0.1 to clarify demolition plan graphics. See Demolition General Notes on A0.1 and keynotes on the demolition sheets for additional scope.
		3. RM's 113, 281, 111 call for demo (D29.1) and also demo and return to owner (D31) please confirm which is correct.	Keynote D29.1 pertains to the demolition of the casework. Keynote D31 pertains to the demolition of the sink, plumbing, and wall-mounted accessories are to be returned to owner, per the keynotes.
		4. AISC is required for steel material and steel fabrication. Can this be waived as there is 0 fabricators and 1 erector that meet this criteria in the Rockford area.	Both of these certifications can be waived for this project due to the size and nature of the scope.
		5. AWI QCP: Can this be waived there are no contractors in Rockford that have these certifications for manufacturing or installation.	Yes, this can be waived.
		6. NO scope of work is defined for Office 225 or the adjacent offices on the RCP plan, please clarify.	The ceiling in Office 225 has already been demolished. The rooms adjacent to Office 225 are not part of the CCEC renovations scope.
		7. Door A050.1 is on existing door schedule, please advise on what material door/frame is.	Door A050.1 is a wood door in a hollow metal frame.
		• Door A012 is present in hardware set #2, but not present on sheet A8.2. Please clarify. • Door A024.1 is present in hardware set #4, but not present on sheet A8.2. Please clarify. • Door A021.1 is present in hardware set #9, but not present on sheet A8.2. Please clarify. • Door B158 is present in hardware set #9, but not present on sheet A8.2. Please clarify. • Door C226.1 is present in hardware set #16, but not present on sheet A8.2. Please clarify. • Door B168B is present in hardware set #21, but not present on sheet A8.2. Please clarify. • Door B105 is present in hardware set #29, but not present on sheet A8.2. Please clarify. • Door B102C is present in hardware set #30, but not present on sheet A8.2. Please clarify. • Door Q1 is present in hardware set #39, but not present on sheet A8.2. Please clarify. • Door A013.2 is present in hardware set #42, but not present on sheet A8.2. Please clarify. • Door A013.3 is present in hardware set #42, but not present on sheet A8.2. Please clarify. • Door C211A is present in hardware set #42, but not present on sheet A8.2. Please clarify.	Door hardware set revisions will be issued as part of a forthcoming addendum.

		• Door B164A is present in hardware set #43, but not present on sheet A8.2. Please clarify. • Door A013.1 is present in hardware set #44, but not present on sheet A8.2. Please clarify. • Door A013.4 is present in hardware set #44, but not present on sheet A8.2. Please clarify. • Door A023B is present in hardware set #48, but not present on sheet A8.2. Please clarify. • Door A023C is present in hardware set #48, but not present on sheet A8.2. Please clarify. • Door C212C is present in hardware set #48, but not present on sheet A8.2. Please clarify. • Door A003 is present in hardware set #49, but not present on sheet A8.2. Please clarify. • Door A015A is present in hardware set #51, but not present on sheet A8.2. Please clarify. • Door A040 is present in hardware set #51 twice, but not present on sheet A8.2. Please clarify. • Door A015A is present in hardware set #51, but not present on sheet A8.2. Please clarify. • Door A048 is present in hardware set #51, but not present on sheet A8.2. Please clarify. • Door R2 is present in hardware set #52, but not present on sheet A8.2. Please clarify. • Door R1 is present in hardware set #54, but not present on sheet A8.2. Please clarify. • Door C241B is present in hardware set #58, but not present on sheet A8.2. Please clarify. • Door C241A is present in hardware set #59, but not present on sheet A8.2. Please clarify. • Door B164B is present in hardware set #66, but not present on sheet A8.2. Please clarify. • Door C205 is present in hardware set #72, but not present on sheet A8.2. Please clarify. • Door C240 is present In hardware set #80, but nor present on sheet A8.2. Please clarify.	
019	10/21/2024	Drawing AD1.1A Note D54 calls for removal of decorative wood rail, Drawing ASB-03 note 3 calls for the drywall to be removed in this due to asbestos containing drywall mud, if the mud is hot the GC's can not remove the wood rail as it may disturb the asbestos containing drywall mud.	**Keynote D54 has been removed from the southeast wall in Area A as part of Addendum 2. See abatement drawings for coordination.**
		Drawing ADA1.1A Rooms 243, 241, 233, 239, 231, 237, 235, 234, all have a note (either 41A or 42A) which refer to coordinating with abatement contractor, but the provided abatement drawings do not show any work to be accomplished in these areas please advise.	**Per the owner's consultant under separate contract, the work for the areas listed is shown on ASB-02. Contractor to coordinate with the documents and addenda issued under separate bid package.**
		See photo provided. Does 5.0A apply to just the clouded area? The entire hallway? If the ACP ceiling is getting abated what is to be salvageable in this area? Please advise. 	**Keynote 5.0A applies to the entire corridor, as noted in the drawings. Refer to keynote 5.0A for items to be salvaged. Abatement scope is not part of general construction package. Contractor to coordinate with the documents and addenda issued under separate bid package.**
		Note 4A on abatement drawings please clarify if the drywall is getting removed up to 8" over the acoustical ceiling, the acoustical ceiling is being removed by the abatement contractor so they can complete their scope of work.	**Contractor to coordinate ceiling removal scope with the documents and addenda issued under separate abatement bid package.**

		See photo. Highlighted hallway calls out existing ceiling to remain, However the abatement drawings callout the drywall being removed to 8" above the acoustical ceiling, Ceiling cannot be protected if the drywall is getting removed to above the acoustical ceiling. Please advise. 	Keynote 14 has been removed from Area A corridors where keynote 5.0A is present as part of Addendum 2. See updated drawings.
020	10/22/2024	There appears to be new sections of precast concrete at the bottom of the new curtain walls being added to the building exterior. There is no precast concrete specification section. Can you provide a spec for the precast?	Specification section 034500 "Precast Architectural Concrete" has been added to the project manual via Addendum 2.
Addendum 3			
021	10/23/2024	Plastic Paneling (FRP 66400) is shown in the spec, but not shown anywhere on the plans.	**FRP is needed at the ADA welding booth and at the teaching station in the Welding Lab. This finish has been added to the finish schedule and the finish plan in Area C.**
		Bathroom B118 and B120 do not have paper towel dispensers shown.	**Paper towel dispensers have been added to toilet rooms B118 and B120 via Addendum 3. See sheet A2.1.**
		Per the Illinois.gov website Unemployment in the state of Illinois has been 5% or over since June and is currently at 5.3% so the Illinois labor requirement should be enforced. 	**Pursuant to the Employment of Illinois Workers on Public Works Act, if the Illinois unemployment rate exceeds 5% for both September and October, prior to the anticipated bid award in November, the District will follow the requirement that 90% of the workers on this project shall be Illinois laborers. This requirement will be followed throughout the duration of the project. Please include a document or narrative in your bid submission that details how you intend to ensure you will have enough workers available to complete this project within the required timeline.**
022	10/23/2024	**"Rockford Schools" Attachment** Per the specials you want a IL 9.5 for the binder. Per the specials you want a IL 12.5 for the surface. The only mix that is a IL12.5 in the state of Illinois is a SMA. The plans clean it up and state IL19.0 N50 binder/ IL9.5 N50 Surface.	**The IL-9.5 for the surface and IL-19.0 for the binder called out in the paving & surface legend are correct. The asphalt paving specification will be revised via forthcoming addendum to reflect this.**
		"Rockford Schools#2" Attachment The density in the specials. IDOT does not conform to any of that. IDOT Spec's are below. The contractor conforms to page 890, 1030.09_"density Control limits" in the orange spec book. The owner's rep or QA conforms to page 894, 1030.09_"Acceptance by the engineer" in the orange spec book.	**The 92-96% density falls within the IDOT specifications.**

023	10/23/2024	We JCI/Simplex are looking to get added as an equal to provide a fire alarm system bid for section 283100 Fire Alarm & Detection Systems. We a s a vendor do not provide quotes directly to general contractors, we submit our quotes to the electrical contractors who submit to the general contractors.	**JCI/Simplex has been added to the 283100 specification section via Addendum 2 as an acceptable equal provider.**
024	10/23/2024	1. Which elevations receive “plam clad cabinets”, (64116), and which elevations receive “manufactured plam clad casework” (123216). Per note General Note G: *Catalog Numbers shown on the elevations for casework are TMI manufacturer, unless noted otherwise* . Numbers shown on elevations are TMI manufacturer i.e. Section (123216) not (64116) which is the PL-01 and PL-02 designation on A12.0.	**All cabinetry elevations with plastic lamiate PL-01, PL-02 to be casework with TMI as BOD in section 123216.**
		2. Which Elevations receive the metal laboratory casework. None of the elevations distinguish between manufactured plam casework, (section123216) and metal lab casework (section 123553)?	**There is no metal laboratory casework scope in this project. Spec section 123553 has been removed from the project manual via Addendum 3.**
		3. WD-02 is called out in an elevation on A10.1 and WD-01 is called out on an elevation on A10.2, on A12.0 WD-02 and WD-01 are referenced to spec section (64000) which has not been provided.	**Spec section 064000 has been added to the project manual via Addendum 3.**
		4. In essence which elevations are specified in 64116, which elevations are specified in (123216), which elevations are specified in (123553)?	**PL-01 and PL-02 to be in section 123216. Section 64116 millwork not used ILO of casework throughout project with TMI as BOD**
025	10/24/2024	In reviewing the civil drawings it appears that there is rather limited access for the work along the West side of the building. Furthermore, it appears that the restoration limits would not cover the path of travel if we were to come from the Back (South) side of the project to gain access. It also appears that the fence removal limits would need to be extended if this was the point of access. The other point of access is the front between CCEC and Jefferson High School. This is possible but there would be a fair amount of existing to remain concrete sidewalk that would be consistently traveled upon and the added generator pad on that side would “bottleneck” the area close to the existing CCEC building . Please consider updating the drawing set to make sure costs associated with the items above are gathered in the initial bid.	**Contractor to include restoration costs associated with how they are planning to access the area of work.**
026	10/24/2024	Specification section 123553.13 is for metal laboratory casework. Does this only apply to casework and work table in the culinary labs which will be contracted separately by the owner?	**Specification section 123553.13 has been removed from the project manual via Addendum 3.**
027	10/28/2024	The 4 larger restrooms that call out SSM vanities with integrated sinks. Looking by the drawings, they look like a trough style sink but no specs can be found in the prints. Please advise	**See spec section 123661.16 "Solid Surfacing Countertops" issued in Addendum 2 for information about the SSM integral trough sinks.**
028	10/28/2024	Specification 230900-10 section 2.1 flat specs Distech Controls (Technical Solutions) however, all existing network and field controls are Johnson Controls. The controls scope of work includes modifying existing Dual Duct Box control CFM setpoints, replacing the thermostat with new, both require programming changes to the existing field controllers. Additional commission of JCI control equipment is expected as part of this project. Can Johnson Control Rockford office be added to the acceptable TC bidder’s list?	**Johnson Controls has been added to spec section 230900 via Addendum 3.**
029	10/29/2024	What is required for installing wood backing behind marker boards and casework that are being installed on existing walls? There are areas where items are being installed on existing walls that are not scheduled to be abated or have drywall removed. For example, the marker board in Graphic design classroom A028. Many of the walls have asbestos in the joint compound so we would not be able to cut open the wall to install backing support.	**Wood backing is required in existing walls. Coordinate removal of existing GWB with asbestos containment drawings issued in bid package #25-13 for RFI response by abatement consultant.**
030	10/29/2024	1. Please define what work can and cannot be done in Area “C” over Christmas Break.	**See spec section 011000-3.1.A for construction schedule updated via Addendum 2. See bid package #25-13 for phasing of work related to abatement as noted by the Owner's consultant.**
		2. Please confirm all loose equipment, shelving, tables etc. in Area “C” where detail D1.4 and other painting scope is going to be removed prior to the GC’s scope of work needing to be completed.	**The owner will remove loose equipment from the Area C. Removal will be based upon the contractor's anticipated schedule for partial completion of Area C for Winter Break after Asbestos Abatement and Summer Break.**
		3. Please define where and when GC is supposed to have demo completed prior to abatement contractor performing their scope of work.	**Refer to abatement containment bid package #25-13 for coordination sequencing between general and abatement contractors.**
		4. Please define the expectations of the FRP to be “cleaned” in the welding lab, FRP is damaged from welding and looks to be burned, and unable to clean. Please define scope of cleaning of if it is to be replaced or covered, please define limits of work.	**The FRP scope via Addendum 3 in the Welding Lab has been updated to include removal and replacement of FRP at walls that are existing to remain.**
		5. Please have the hydraulic press (room 435) and x-ray machine (room 113) to be removed by owner. There is no way to know if the equipment is currently working properly, no way to confirm who and how it was damaged upon reinstallation in the future. This is a liability that the contractor can’t take.	**The X-ray machine and the hydraulic press will be removed by the Owner prior to the start of construction.**
031	10/30/2024	1. Is it ok for us to provide quote to spec on dimensional letters for monument sign, and in addition an alternate quote that would save cost and maintain appearance?	**Substitution requests should be submitted as outlined in the project manual.**
		2. I cannot locate a spec for the LED displays in the monument. I checked drawings and spec documents. Is there a manufacturer spec you are aware of? Or is there a pixel pitch spec you are aware of? Manufacturer and pixel pitch have tremendous effect on cost.	**Per RFI response #16 in Addendum 2, please provide a minumum 8mm pixel pitch LED message board. Our basis of design is Daktronics GT6x Series - 8mm RGB.**
032	10/30/2024	Sheet C4.1 expansion joint detail shows a “poured sealant”. Can this material please be specified or if it is specified somewhere can it be pointed point. Thank you	**A polyurethane joint sealant meeting ASTM C-920 should be used.**

033	10/30/2024	1. S106: The L3x3x1/4 kickers are called out but there is nothing calling out the frequency of the kickers. The dashed lines and dots make sense, however the arrowed lines don't seem to be called out. Please Clarify and provide a section view.	**Provide 3 kickers per the latest plan. The arrow represents the kicker direction and location. Detail is provided in Addendum 3.**
034	11/1/2024	Doors C206A and C206B – Confirm this is an aluminum entrance. Confirm that a 45-minute fire rating is required. If fire rating is required, provide a basis of design for an aluminum fire rated assembly.	**Per door schedule "Interior New Door & Frame Schedule," doors C206A and C206B are part of an aluminum storefront. A 45 minute rating is not required at these doors . The door schedule on sheet A8.2 has been updated as part of Addendum 3.**
		Confirm the aluminum door thickness. Specifications and door schedule call for 1-3/4" doors. Basis of design, Heavy Wall is 2" and Thermal is 2-1/4".	**Provide aluminum doors with a 1-3/4" thickness at all aluminum door locations per the contract documents.**
		Provide missing hardware sets B103, B110, B112A, B112B, B114, B150, B152A, B152B, B154	**See Addendum 3 for updated hardware sets at all door locations.**
		Confirm Doors A030.1, A030.2, and A030.3 are associated with elevation 13. The floorplan appears to resemble elevation 16.	**Doors A030.1, A030.2, and A030.3 are associated with frame type 16 on sheet A8.3. The elevation tag in plan has been updated to correspond with the correct frame type elevation.**
035	10/31/2024	1. Spec Section 72726 Fluid Applied Membrane Air Barriers is called out in the specification book, but we cannot locate this on the plans anywhere. Please Advise	**Note delineating fluid-applied air and water barrier has been added to the detail.**
		2. Section 3E on A6.1, framing below the curtain wall, there is a dashed line shown on the face of the sub wall, but it is not identified as anything. Please Advise	**The dashed line indicating foundation wall waterproofing has been removed.**
036	10/31/2024	There does not appear to be any notes on wall demolition but there is multiple areas where it appears walls are being removed. Please advise	**See the Demolition Floor Plan Key on sheet A0.1 for clarification on demolition graphic standards.**
037	10/31/2024	Are there as builts available or core data available in regards to the thickness of the asphalt in the parking lot that is getting removed and replaced?	**Bids should reflect what is shown in the Civil and Landscape documents that are part of this bid package.**
038	10/31/2024	We have discovered a number of IDF closets, fiber and data cables that are not on the demo drawings. Marked up drawings attached showing locations of IDFs and cabling. Please advise if removal of these items should be included in the bid, or if they are to remain in place.	**Scope clarifications are addressed in Addendum 3 documents.**
039	10/31/2024	Demo drawings have keynotes that have an "A" following them noted to coordinate with abatement drawings. For consistency and ease of estimating can these notes be assumed completed by the abatement contractor prior to GC starting their work.	**Refer to abatement containment bid package #25-13 for coordination sequencing between general and abatement contractors.**
040	10/31/2024	I am working on an estimate for this project and was wondering if you have any more information on the openings that are getting new doors and/or frames but using existing hardware? It makes it impossible to price the new doors and/or frames without knowing what existing hardware they need prepped for. Please advise at your earliest convenience.	**The only existing hardware to be reused at new door openings are the continuous hinges associated with specific doors being salvaged and reinstalled in a new frame. These doors are indicated in the "Salvaged Doors in New Frames" schedule on sheet A8.2 of Addendum 3. All other hardware at new door openings to be provided per the door hardware specifications.**
041	10/31/2024	Wall Types are missing for the Small Group rooms (A030.1, A030.2 & A030.3) on A1.1A. What are the Wall Types?	**Wall type designations have been added to Small Group Rooms A030.1, A030.2, and A030.3 on sheet A1.1A via Addendum 3.**
		Wall Types are missing for the Wellness room (A050.4) on A1.1A. What are the Wall Types?	**Wall type designations have been added to Wellness Room A050.4 on sheet A1.1A via Addendum 3.**
		Impact resistant drywall is called out on details 3E & 5F on sheet A11.2. Are these the only walls that require impact resistant drywall?	**Provide impact-resistant drywall up to 8'-0" A.F.F. at all corridor locations receiving new GWB, and at all new GWB in Area C. Sheets A8.1, A1.1A, A1.1B, and A1.1C have been updated via Addendum 3 to reflect this scope clarification.**
		Bullet board is called out at the transaction window per detail 4F/A11.2 at the Vestibule. What level of bullet board is required?	**Provide Level 3 bullet-resistant board at Main Office walls where indicated on the floor plans.**
		Keynote 9 on the floor plans calls to infill existing openings. Is in-wall insulation required at these infills?	**Provide in-wall insulation where door openings are being infilled.**
		Keynote 29 on the floor plans calls to extend existing wall to deck with Wall Type SA.3.20. The detail for this is 3F on sheet A11.2. This detail calls out for insulation, but the Wall Type (SA.3.20) does not call out for insulation. Is insulation required per detail 3F/A11.2?	**Insulation is required as shown in detail 3F/A11.2.**
		Wall Types SA.3.12 & SA.3.22 call out for in-wall insulation. Is in-wall insulation required at any other walls?	**Provide in-wall insulation as indicated in the updated wall types schedules on sheet A8.1 in Addendum 3.**
		After walking the site, the existing walls have a textured finish. Is a textured finish required on all new walls?	**New or infilled walls are to match existing adjacent in all aspects.**
		Keynote D40A/D41A/D42A on the demo plans calls for wood rail and drywall removal. Is this the wood rail that is at the top of the existing walls?	**Yes, the "wood rail" referenced in these keynotes is the decorative wood rail located at 8'-2" above finished floor on existing walls.**
		The demo/new plans reference containment drawings attached for coordination. I don't see these drawings. Can these containment drawings get sent out?	**Containment drawings can be found under bid package #25-13 at this link: https://www.rps205.com/page/vendors**
		There are some existing hallways that have full height wood paneling. Is all the wood paneling coming out?	**All full-height wood paneling is being completely removed per keynote D42A in Area A corridors. Wood paneling in Corridor C201 is being selectively removed to abate the drywall around select door openings. Wood paneling in these locations would need to be reinstalled or patched with demolished wood paneling from Area A. This scope has been clarified in Addendum 3.**
042	10/31/2024	Per FS1.2 the plan schedule indicated item# 98 is (FUTURE). On 114000-47 item# 98 is listed as (ONE REQURIED). Can you please confirm if this item needs to be included in our scope?	**Food service drawings included in this bid package are for reference only. RFI questions will be addressed via separate bid package #25-14 for food service equipment procurement and installation.**

043	11/4/2024	With the hallways being 10 feet wide or less, removal of a small section of grid while keeping the rest in place, will still make it difficult to remove drywall and prep the containment. Is it possible to have the GC come in before abatement to salvage the ceiling tiles, remove the grid except for the wall angles and replace everything once abatement is complete? Also, salvaging those wall angles would be difficult and hard to put back since they are already custom cut for a certain part of the hallways.	**Ceiling removal scope per keynote 5.0A has been updated via Addendum 3. Refer to abatement containment bid package #25-13 for further coordination.**
044	11/4/2024	1. Roofing Spec is asking for FLOOD TEST of roofing. This is completely unadvisable and we would not provide or bid project. The system has a vapor barrier on substrate board over the deck, even if the membrane were to leak, the water would then be trapped between the membrane and the vapor barrier saturating the insulation. It could take weeks before it actually leaks in the building. At this point the roof would need to be removed because of the wet insulation. It also calls for a thermal scan, this would be completely sufficient to know if the membrane is leaking without destroying the system in case of a failure.	**This requirement has been removed from the roofing spec section via Addendum 3.**
		2. There is not a walkpad layout and the spec is very generic. If I were to bid by spec there could be a 1000' of walkpad. Please provide walkpad layout. Please advise.	**A walkpad layout has been provided via Addendum 3.**
		3. Switchgear is by owner. Electricians are saying switchgear is 48-52 weeks out. If these aren't available within the current job schedule how are these to be coordinated for installation?	**Delivery and installation of switch gear to be coordinated with Owner's schedule if the switch gear arrives outside of the construction schedule. The Owner is anticipating the delivery of the switch gears in May 2025.**
		4. If the last addendum is coming out 11/6 will there be anytime for questions or clarifications based on review of the final addendum?	**Per the Owner's bidding schedule, the RFI period concluded on 11/4/2024.**
		5. When ordering the new switch gear: a. It is essential that the bus bar lines up with the existing. We will need to be sure that when the owner is ordering that, its ordered correctly. If the bus bar does not line up and we demo the old one out, the school could be in a serious bind. Especially if they want the downtime to be limited to just a short window. b. Additionally the ComEd incoming lugs need to be at the same height as the existing. We cannot be certain that there is any slack in the existing secondary lines from the ComEd transformer. They may want to add an alternate for pulling a new secondary feeds. c. We want to make sure we were all covered and not at risk for exposure if something the owner provides, does not come out correctly.	**5a. Switch gear is being replaced in its entirety. This scope has been updated via Addendum 3.** **5b. Contractor to include an allowance of $80,000 to cover the cost of replacing existing cabling from the ComEd transformer to the new switchgear(s) if necessary.**
		6. Penthouse Gear: a. Kelso-Burnetts suggestion would be to leave everything in place until the new gear arrives. We can run the new home runs from the panels and, if space allows in the existing gear, we can do a final connection into that so everything is energized until the new gear arrives. b. Additionally, we think the best course of action will be to crane the new gear up to the roof and walk it in that way. i. The doors going from the penthouse to the roof will need to be cut open wider. Probably at least 1 CMU blocks worth. Otherwise we won't be able to get the new equipment in and out. ii. Please have the EOR approve this method. I wouldn't want the gear to be set down, roof collapse, and then be on the hook for all the repairs.	**6a. Design team is in accordance with Kelso-Burnetts' suggestion.** **6b. For the switch gear located in the South Penthouse, utilize the roof opening created for the boiler installation. For the switch gear located in the North Penthouse, the door opening from the Cooling Tower enclosure into the Boiler Room will be widened to allow the transformer to fit through. This scope has been added to the documents via Addendum 3.** **6c. The lower roof, where the cooling tower is located, can handle the weight as long as no snow load is present. A note will be added to the drawings indicating no snow load can be present while equipment is delivered on the electrical plans so EC is aware.**
046		1. Spec Section 72726 Fluid Applied Membrane Air Barriers is called out in the specification book, but we cannot locate this on the plans anywhere. Please Advise	**Refer to RFI response above.**
		2. Section 3E, 2E, 4C, and 4E on A6.1, framing below and above the curtain wall, and other areas, there is a dashed line shown on the face of the sub wall, but it is not identified as anything. Please Advise	**Refer to RFI response above.**
047	11/4/2024	010000: Please advise on working hour restrictions.	**Per spec section 011000-1.12.B, work hours are to be limited to 6am-6pm Monday through Friday.**
		010000: Please verify where contractors can park.	
		072715 - Air Barriers: Details 2E and 3E on A6.1 shows a dashed line between rigid insulation and metal stud framing. Are we to assume this is an air barrier. There is nothing special calling that out. Please clarify the location of the air barrier(s) on this project.	**Note delineating fluid-applied air and water barrier has been added to the detail.**
		075000 - Roofing: Please confirm any existing roof information as far as warranties, original installer, material.	**The majority of the existing roof is a fully adhered EPDM system over polyiso. The penthouse roofs are ballasted TPO systems over polyiso.**
		090000 - Flooring: Please confirm floor finish in Mock Toilet A033.1.	**Floor finish to be RF-03 in Mock Toilet A033.1 per finish plan A12.1A.**
		092100 - Drywall: wall types are missing for the Small Group rooms (A030.1, A030.2 & A030.3) on A1.1A. What are the Wall Types?	**Duplicate question - see response in RFI #41.**
		Wall types are missing for the Wellness room (A050.4) on A1.1A. What are the wall types?	**Duplicate question - see response in RFI #41.**
		Impact resistant drywall is called on out details 3E & 5F on sheet A11.2. Are these the only walls that require impact resistant drywall?	**Duplicate question - see response in RFI #41.**
		Bullet board is called out at the transaction window per detail 4F/A11.2 at the Vestibule. What level of bullet board is required?	**Duplicate question - see response in RFI #41.**

		Keynote 9 on the floor plans calls to infill existing openings. Is in-wall insulation required at these infills?	**Duplicate question - see response in RFI #41.**
		Keynote 29 on the floor plans calls to extend existing wall to deck with Wall Type SA.3.20. The detail for this is 3F on sheet A11.2. This detail calls out for insulation, but the Wall Type (SA.3.20) does not call out for insulation. Is insulation require	**Duplicate question - see response in RFI #41.**
		Wall Types SA.3.12 & SA.3.22 call out for in-wall insulation. Is in-wall insulation required at any other walls?	**Duplicate question - see response in RFI #41.**
		After walking the site, the existing walls have a textured finish. Is a textured finish required on all new walls?	**Duplicate question - see response in RFI #41.**
		Keynote D40A/D41A/D42A on the demo plans calls for wood rail and drywall removal. Is this the wood rail that is at the top of the existing walls?	**Duplicate question - see response in RFI #41.**
		The demo/new plans reference containment drawings attached for coordination. I don't see these drawings. Can these containment drawings get sent out?	**Duplicate question - see response in RFI #41.**
		There are some existing hallways that have full height wood paneling. Is all the wood paneling coming out?	**Duplicate question - see response in RFI #41.**
		093000 - Tile: please confirm if there is to be any wall tile installed in Mock Toilet A033.1.	**No tile is to be installed in Mock Toilet A033.1.**
		095100 - Ceilings: the finish schedule shows "APC-05" in the control room. A3.1A shows "APC-02". Please clarify.	**APC-05 is the Kinetics Quiet Tile (or similar) product that is adhered to the above-ceiling surface of acoustic ceiling tile for increased acoustic separation. This product should be used in spaces below the (2) penthouses. See sheet A12.0 for updated scope note via Addendum 3.**
		101400 - Signage: on sheet AS1.1 it indicates that a new partial recessed LED display screen is to be installed in the monument. Please provide the specifications for this item.	**The basis of design product for the electronic display is Daktronics GT6x Series - 8mm RGB.**
		Please provide the sizing of the two different types of letters on the monument sign.	**See detail 2D/AS1.1 for dimensional lettering signage. Clarifying dimensions were added via Addendum 3.**
		On Sheet C4.1 it provides information for Sign Type A but does not provide quantity nor location(s). Please provide.	**Provide (2) Type A signs as shown on sheet C4.1. The locations are indicated on sheet C2.1 by the "RIGHT TURN BUS SIGN" and "LEFT TURN BUS SIGN" notes.**
		114000 - Equipment: please advise if alternate rigging installers can be used on this project.	**Substitution requests should be submitted as outlined in the project manual.**
		122413 - Window Treatments: please advise if window treatments are needed in the B section of the building.	**Exterior window treatment locations in Area B are indicated on sheet A3.1B, updated via Addendum 3. Interior window treatment locations are indicated on sheet A12.1B.**
		220000 - Plumbing: please confirm if we are furnishing and installing a new floor drain in the Engineering Lab C212 near the wall shared with Breakout C210.	**No new floor drain is being furnished or installed in the location referenced in this RFI question.**
		260000 - Electrical: please confirm if there is a preferred security contractor.	**Montel is the Owner's preferred security contractor.**
		Please confirm if the structured cabling is in conduit or cable tray.	**Conduit from backbox to above accessible ceiling and than open air pathway using cable hooks and hangers. No cable tray is designed in the project.**
048	11/6/2024	Good afternoon Dane I see no air barrier or waterproofing on this job is that correct??	**See revised detail 3E/A6.1 for location of fluid applied air vapor barrier.**
049	11/6/2024	There is no spec for the electronic display sign for the sign out front. Please provide spec for the electronic display.	**The basis of design product for the electronic display is Daktronics GT6x Series - 8mm RGB.**
050	11/6/2024	1. Detail 3E on A6.2. top of Detail points to the ceiling and references MTL-1 @ 11'-6". If you go to detail 1D on A6.3, than 3D on A6.3, it details that ACM-01 is supposed to wrap to the underside of the soffit. If the ACM wraps to the underside of the soffit where is MTL-01 supposed to go? Please Advise.	**The MTL-01 tag has been removed from 3E/A6.2 via Addendum 3.**
		Detail 3E on A6.2 references an MTL-03, MTL-03 is not called out on A12.0 the Finish schedule, and is also not found in the specifications. Please advise what product is supposed to be used here.	**MTL-03 is the "exterior linear metal plank ceiling" noted in the enlarged section details. Basis of design product: Armstrong Metalworks Linear - Synchro Ceiling Planks.**
Substitution Requests			
Door hardware substitution request	10/11/24	We are contacting you regarding the Rockford College & Career Education Center in Rockford, IL . We have reviewed the Division 1 requirements and are submitting product substitution requests within the guidelines stated. We are requesting approval for the below-described manufacturers and products. (These requests have also been submitted to the architect.) The following products contained in the attached substitution requests are equal or superior to the basis of design and will provide more value to the client by providing competition in product materials. Please Note: The supplemental product information, including "Red List" information and Environmental Product Information Declarations may be obtained from the URL link which is included on the CSI Substitution Request Form.	
		Hinges: McKinney	**Acceptable substitution**
		Geared Hinges: Pemko	**Acceptable substitution**
		Locksets: Sargent 10X Line Bored Lock	**Not accepted - locksets provided by owner**
		Cylinders and Keying: Sargent Degree	**Not accepted - cylinders and keying provided by owner**
		Exit Device: Sargent 80 Series	**Not accepted - exit devices to coordinate with locking hardware components, which are part of the Allegion family of products.**

		Closers: Norton Door Controls 9500 Series	**Acceptable substitution**
		Auto Operators: Norton 6300	**Acceptable substitution**
		Accessories & Flat goods: Rockwood Manufacturing	**Acceptable substitution**
		Magnetic Hold Opens: Rixson 900 Series	**Acceptable substitution**
		Overhead Stops: Rixson	**Acceptable substitution**
		Weatherstripping: Pemko	**Acceptable substitution**
		Power Supplies & Transfers: Securitron	**Acceptable substitution**
		Electric Strikes: HES	**Acceptable substitution**

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233300 - DUCTWORK ACCESSORIES
233413 - AXIAL FANS
233423 - POWER VENTILATORS
233600 - AIR TERMINAL UNITS
233700 - AIR INLETS AND OUTLETS
234000 - AIR CLEANING
235100 - BREECHINGS, CHIMNEYS, AND STACKS
235239 - FIRE TUBE BOILERS
236513.13 - INDUCED DRAFT COOLING TOWER

237416.12 - PACKAGED ROOFTOP AIR CONDITIONING UNITS 25 TON AND BELOW
237416.15 - PACKAGED ROOFTOP AIR CONDITIONING UNITS FOR DEDICATED OUTSIDE AIR
237423.13 - GAS FIRED MAKE-UP AIR UNITS
238126 - SPLIT SYSTEM AIR CONDITIONING UNITS

DIVISION 25 — INTEGRATED AUTOMATION
NOT USED

DIVISION 26 — ELECTRICAL
260500 - BASIC ELECTRICAL REQUIREMENTS
260503 - THROUGH PENETRATION FIRESTOPPING
260505 - ELECTRICAL DEMOLITION FOR REMODELING
260513 - WIRE AND CABLE
260526 - GROUNDING AND BONDING
260527 - SUPPORTING DEVICES
260533 - CONDUIT AND BOXES
260535 - SURFACE RACEWAYS
260542 - EQUIPMENT WIRING SYSTEMS
260553 - ELECTRICAL IDENTIFICATION
260573 - POWER SYSTEM STUDY
260913 - ENERGY METERING AND MANAGEMENT SYSTEM
260933 - LIGHTING CONTROL SYSTEMS
262200 - DRY TYPE TRANSFORMERS
262300 - LOW-VOLTAGE SWITCHGEAR
262413 - SWITCHBOARDS
262416 - PANELBOARDS
262419 - MOTOR CONTROL
262500 - BUSWAY
262726 - WIRING DEVICES
262813 - FUSES
262816 - DISCONNECT SWITCHES
262923 - VARIABLE FREQUENCY DRIVES
264300 - SURGE PROTECTION DEVICES
265119 - LED LIGHTING

DIVISION 27 — COMMUNICATIONS
270500 - BASIC COMMUNICATIONS SYSTEMS REQUIREMENTS
270503 - THROUGH PENETRATION FIRESTOPPING
270505 - TECHNOLOGY DEMOLITION FOR REMODELING
270526 - COMMUNICATIONS BONDING
270528 - INTERIOR COMMUNICATION PATHWAYS
270543 - EXTERIOR COMMUNICATION PATHWAYS
270553 - IDENTIFICATION FOR COMMUNICATION SYSTEMS
271100 - COMMUNICATION EQUIPMENT ROOMS (CER)
271300 - BACKBONE CABLING REQUIREMENTS
271500 - HORIZONTAL CABLING REQUIREMENTS
271710 - TESTING
271720 - STRUCTURED CABLING SYSTEM WARRANTY
274100 - PROFESSIONAL AUDIO VIDEO SYSTEM

DIVISION 28 — ELECTRONIC SAFETY AND SECURITY
280500 - BASIC ELECTRONIC SAFETY AND SECURITY SYSTEM REQUIREMENTS
280503 - THROUGH PENETRATION FIRESTOPPING
281300 - ELECTRONIC ACCESS CONTROL
282300 - VIDEO SURVEILLANCE
283100 - FIRE ALARM AND DETECTION SYSTEMS

DIVISION 31 — EARTHWORK
311000 - SITE CLEARNING
312000 - EARTH MOVING

DIVISION 32 — EXTERIOR IMPROVEMENTS
321216 - ASPHALT PAVING
321313 - CONCRETE PAVING
329100 - SOIL PREPARATION
329200 - TURF GRASSES
329300 - PLANTING

DIVISION 33 — UTILITIES
NOT USED

DIVISION 34 — TRANSPORTATION
NOT USED

DIVISION 35 — WATERWAYS AND MARINE CONSTRUCTION
NOT USED

DIVISION 40 — PROCESS INTERCONNECTIONS
NOT USED

DIVISION 41 — MATERIAL PROCESSING AND HANDLING EQUIPMENT
NOT USED

DIVISION 42 — PROCESS HEATING, COOLING, AND DRYING EQUIPMENT
NOT USED

DIVISION 43 — PROCESS GAS AND LIQUID HANDLING, PURIFICATION AND STORAGE EQUIPMENT
NOT USED

DIVISION 44 — POLLUTION CONTROL EQUIPMENT
NOT USED

DIVISION 45 — INDUSTRY-SPECIFIC MANUFACTURING EQUIPMENT
NOT USED

DIVISION 46 — WATER AND WASTEWATER EQUIPMENT
NOT USED

DIVISION 48 — ELECTRICAL POWER GENERATION
NOT USED

Bid # 25-11

Project at College & Career Education Center (CCEC); 4151 Samuelson Rd, Rockford, IL 61109.

BID SUBMITTED BY:_____

Date _____

The undersigned, having become familiar with the local conditions affecting cost of work and with the Bidding Documents, including the advertisement of the Invitation for Bid, the Instructions and Supplementary Instructions to Bidders, this Bid Offer Form, the General and Supplementary Conditions, the Drawings and Specifications, and Addenda issued thereto, as prepared and issued by the Board of Education of Rockford School District No. 205, Winnebago and Boone Counties, Illinois hereby agrees to furnish all labor, material and equipment necessary to do the Work required for the project and IFB identified above, for the amount shown below:

Note: Contractor to write "No Bid" in the dollar amount section for any line items not bid.

BASE BID:

TOTAL: _____ DOLLARS ($_____)

ALTERNATE BIDS:

ALTERNATE BID NO. 1: Student Commons B151 Audiovisual (A/V).

TOTAL: _____ DOLLARS ($_____)

UNIT PRICES:
Should the net result of change for any of the following categories of work require more or less quantity of work than originally indicated in the Drawings and/or Specifications, the price for such added or deducted work will be as follows:

No. 1: Undercut – Remove & Dispose of Unsatisfactory Material, CCDD	$_____PER_____
No. 2: Undercut – Remove & Dispose of Unsatisfactory Material, Non-CCDD	$_____PER_____
No. 3: Compacted CA-7 Crushed Aggregate Material	$_____PER_____
No. 4: Compacted CA-6 Crushed Aggregate Material	$_____PER_____
No. 5: Concrete Curb and Gutter Removal and Replacement	$_____PER_____
No. 6: Concrete Sidewalk Removal and Replacement	$_____PER_____
No. 7: Compacted CA-1 Crushed Aggregate Material	$_____PER_____

ALLOWANCES:
Under Base Bid, the Contractor shall include a contingency allowance in the amount of $50,000 for unsatisfactory soil excavation and disposal off-site and replacement with satisfactory soil material from off-site.

Under Base Bid, the Contractor shall include a contingency allowance in the amount $80,000 for pulling new cables from the ComEd transformer to the new switchgears in the case that the existing cabling is not long enough to reach the new switchgear location/height.

The unit price(s) will be used at the end of the project, to adjust the contract price up or down.

ADDENDA RECEIVED

The undersigned acknowledges receipt of Addenda ____ to ____ inclusive.

PRE-BID MEETING ATTENDANCE

A Bidder representative attended the Pre-Bid Meeting? YES_____ OR No_____.

SITE VISIT

Existing premises and conditions were checked by an on-site inspection on _____.

CONTRACTOR'S QUALIFICATION STATEMENT

A fully completed AIA Document A305-1986 Contractor's Qualification Statement is **required** AND MUST BE SUBMITTED WITH THE BID. Include at least three references from projects completed in the past five (5) years with phone number, date of completion, description of work, and project architect (or engineer) contact name with phone number. Projects must be similar to the scope of this bid, and the bidder must have acted in the capacity of prime or general contractor.

Contractor has adequate equipment to perform the work properly and expeditiously: ___Yes ___No.

COMMENCEMENT AND COMPLETION OF CONTRACT

The undersigned agrees, if awarded the Contract, to commence the contract work within five (5) days of receipt of Order to Proceed or if required, upon execution of a formal written contract and to complete said Work within the specified completion time. The undersigned further agrees to execute the Contract, furnish satisfactory performance and payment bond as well as insurance coverage, as specified in strict accordance with the Contract Documents.

1. Anticipated award of contract: November 19, 2024.
2. Procurement of long-lead time materials: Immediately following Notice to Proceed.
3. Construction start date by area, following abatement work under Owner's separate contract:

    a. Asbestos abatement Area C: December 10, 2024 – December 18, 2024.
    b. Asbestos abatement Area B: December 13, 2024 – December 31, 2024.
    c. Contractor construction Area C: December 19, 2024 – January 9, 2025.
    d. Asbestos abatement Area A: January 2, 2025 – January 15, 2025.
    e. Construction Area C West of Automotive Classroom: May 1, 2025 – August 1, 2025.
    f. Culinary equipment installation by Food Service Contractor: May 12, 2025 – June 13, 2025.
    g. Culinary equipment connections by General Contractor: June 16, 2025 – June 30, 2025.
    h. Culinary equipment start-up and substantial completion: July 1, 2025 – July 7, 2025.
    i. Construction Area C remainder of space: June 17, 2025 – August 1, 2025.

4. Substantial Completion Areas A and B: July 1, 2025.
5. Substantial Completion Area C: August 1, 2025.
6. Owner commencement of FFE installation for uninterrupted use: July 7, 2025.

7. Final Completion for Areas A & B (all punch list items complete): August 1, 2025.
8. Final Completion for Area C (all punch list items complete): August 8, 2025.
9. Regional Office of Education walk-throughs and occupancy permit: week of August 4, 2025.

BIDDER:_____
(Corporation) (Partnership) (Individual) Circle One

Address _____
Street

_____
City State Zip Code

_____
Phone No. Email address

BIDDER FEIN/SSN NO. _____

By: _____ _____
Bidder or Authorized Agent Signature Print name

Title: _____

Subscribed and sworn to before be this ____ day of _____, _____.

_____
Notary Public

My commission expires:_____

BID DEPOSIT CERTIFICATION

A Bid Deposit is required in the amount of 5% of the total Bid including Alternate Bids. This Bid Deposit is to be a Bid Bond, Bank Draft or Certified Check made payable to the "Rockford School District No. 205", as a guarantee that if awarded all or part of the Bid, the firm will enter into a contract to perform with the Board of Education.

Amount of Total Bid $_____

Amount of Bank draft or Certified Check $_____

BIDDER: _____

_____
Signature of Bidder or Authorized Agent

SUBCONTRACTOR LISTING

1. Pursuant to bidding requirements for the Work:

   The Bidder, for portions of the Work equaling or exceeding ½ of 1% of the total Contract Sum, proposes to use the following Subcontractors. The Bidder proposes to perform all other portions of the Work with its own forces. The District reserves the right to qualify all Subcontractors. COPY AND ATTACH ADDITIONAL SHEETS AS NECESSARY.

2.

Portion of the Work	Subcontractor Name and Address

BIDDER: _____

By: _____
Bidder or Authorized Agent Signature

-END OF BID OFFER FORM-

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Types of allowances include the following:

1. Contingency allowances.

C. Related Requirements:

1. Section 012200 "Unit Prices" for procedures for using unit prices, including adjustment of quantity allowances when applicable.
2. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
3. Section 014000 "Quality Requirements" for procedures governing the use of allowances for field testing by an independent testing agency.

1.3 DEFINITIONS

A. Allowance: A quantity of work or dollar amount included in the Contract, established in lieu of additional requirements, used to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

1.4 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Architect from the designated supplier.

1.5 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.6 INFORMATIONAL SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.7 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.

C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit.

D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.8 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, required maintenance materials, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.

2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other markups.
3. Submit substantiation of a change in scope of Work, if any, claimed in Change Orders related to unit-cost allowances.

4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs due to a change in the scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of Work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Allowance No. 1: Contingency Allowance: Include the sum of $50,000 for unsatisfactory soil excavation and disposal off-site and replacement with satisfactory soil material from off-site, as specified in Section 312000 "Earth Moving" and approved by Owner.

1. Coordinate quantity allowance adjustment with unit-price requirements in Section 012200 "Unit Prices."

B. Allowance No. 2: Contingency Allowance: Include the sum of $80,000 for pulling new cables from the ComEd transformer to the new switchgears in the case that the existing cabling is not long enough to reach the new switchgear location/height.

END OF SECTION 012100

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SECTION 034500 - PRECAST ARCHITECTURAL CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Precast architectural concrete units.
2. Mold materials.
3. Reinforcing materials.
4. Concrete materials.
5. Stainless steel connection materials.
6. Accessories.
7. Grout materials.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" site-cast concrete requirements and for installing connection anchors in concrete.
2. Section 051200 "Structural Steel Framing" for furnishing and installing connections attached to structural-steel framing.
3. Section 055000 "Metal Fabrications" for kickers and other miscellaneous steel shapes.

1.2 DEFINITIONS

A. Design Reference Sample: Sample of approved architectural precast concrete color, finish, and texture, preapproved by Architect.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data:

1. Precast architectural concrete unit design mixtures: Include compressive strength and water-absorption tests for each precast concrete mixture.
2. Mold materials.
3. Reinforcing materials.
4. Concrete materials.
5. Stainless steel connection materials.
6. Accessories.
7. Grout materials.

B. Shop Drawings:

1. Detail fabrication and installation of architectural precast concrete units.
2. Indicate locations, plans, elevations, dimensions, shapes, and cross sections of each unit.
3. Indicate joints, reveals, drips, chamfers, and extent and location of each surface finish.
4. Indicate separate face and backup mixture locations and thicknesses.
5. Indicate type, size, and length of welded connections by AWS standard symbols. Detail loose and cast-in hardware and connections.
6. Indicate locations, tolerances, and details of anchorage devices to be embedded in or attached to structure or other construction.
7. Include plans and elevations showing unit locations, dimensions, erection sequences, and bracing plans for special conditions.
8. Indicate location of each architectural precast concrete unit by same identification mark placed on panel.
9. Indicate relationship of architectural precast concrete units to adjacent materials.
10. Indicate locations, type, dimensions, and details of facing units, including corner units, special shapes, joint treatment, and anchors.
11. Coordinate and indicate openings and inserts required by other trades.
12. If design modifications are proposed to meet performance requirements and field conditions, submit design calculations and indicate modified areas on Shop Drawings. Do not adversely affect the appearance, durability, or strength of units.

C. Samples: Design reference samples for initial verification of design intent, for each type of finish indicated on exposed surfaces of architectural precast concrete units, in sets of three, representative of finish, color, and texture variations expected; approximately 12 by 12 by 2 inches (300 by 300 by 50 mm).

D. Delegated Design Submittals: For architectural precast concrete indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the Illinois qualified professional engineer responsible for their preparation.

1. Show governing panel types, connections, types of reinforcement, including special reinforcement, and concrete cover on reinforcement. Indicate location, type, magnitude, and direction of loads imposed on the building structural frame from architectural precast concrete.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Provide locations, setting diagrams, templates, instructions, and directions, as required, for furnishing and installation of loose connection hardware and anchorage items to be embedded in or attached to other construction.

B. Welding certificates.

C. Material Test Reports: For each of the following items, for tests performed by manufacturer.

1. Aggregates.
2. Cementitious materials.
3. Reinforcing materials and prestressing tendons.

4. Admixtures.

D. Source Quality-Control Reports: For aggregate and cementitious materials.

E. Qualification Statements: For fabricator and [Installer.

F. Delegated Design Engineer Qualifications: For anchors.

1.6 CLOSEOUT SUBMITTALS

A. General Contractor/Construction Manager Project Survey: Complete the survey form, providing feedback of the certified precast producer's performance in accordance with PCI's Architectural Certification Program. Submit to PCI as directed on form; provide a copy to Architect.

1.7 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm that assumes responsibility for engineering architectural precast concrete units to comply with performance requirements. This responsibility includes preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.

1. Designated at time of bidding as a PCI-certified plant for Category AD.

B. Delegated Design Engineer Qualifications: A professional engineer who is legally qualified to practice in Illinois where Project is located and who is experienced in providing engineering services of the type indicated.

C. Welding Qualifications: Qualify procedures and personnel in accordance with the following welding codes:

1. AWS D1.6/D1.6M.

1.8 MOCKUPS

A. Build mockups to set quality standards for materials and execution.

1. After sample panel approval, build mockup as indicated on Drawings, complete with anchors, connections, flashings, and joint fillers.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Owner specifically approves such deviations by Change Order.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver architectural precast concrete units in such quantities and at such times to limit unloading units temporarily on the ground or other rehandling.

B. Support units during shipment on nonstaining shock-absorbing material.

C. Store units with adequate dunnage and bracing, and protect units to prevent contact with soil, prevent staining, and prevent cracking, distortion, warping, or other physical damage.

D. Place stored units so identification marks are clearly visible, and units can be inspected.

E. Handle and transport units in a manner that avoids excessive stresses that cause cracking or damage.

F. Lift and support units only at designated points indicated on Shop Drawings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design architectural precast concrete units.

B. Design Standards: Comply with ACI 318 and design recommendations of PCI MNL 120 applicable to types of architectural precast concrete units indicated.

C. Structural Performance: Provide architectural precast concrete units and connections capable of withstanding the following design loads within limits and under conditions indicated:

1. Loads: As indicated.
2. Design precast concrete units and connections to maintain clearances at openings, to allow for fabrication and construction tolerances, to accommodate live-load deflection, shrinkage and creep of primary building structure, and other building movements as follows:

    a. Upward and downward movement of 1/2 inch (13 mm).

3. Thermal Movements: Provide for in-plane thermal movements resulting from annual ambient temperature changes of 80 deg F (26 deg C).

2.2 PRECAST ARCHITECTURAL CONCRETE UNITS

A. Provide unit types as indicated on Drawings, including wall panels.

B. Fabricators: Subject to compliance with requirements, available fabricators offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Architectural Cast Stone, Inc.
2. Edwards Cast Stone Company.
3. Harvey Cement Products.
4. **Mid States Concrete.**

C. Source Limitations: Obtain precast architectural concrete units from single fabricator.

2.3 MOLD MATERIALS

A. Molds: Rigid, dimensionally stable, nonabsorptive material, warp and buckle free, that provides continuous and true precast concrete surfaces within fabrication tolerances indicated; nonreactive with concrete and suitable for producing required finishes.

B. Form-Release Agent: Commercially produced form-release agent that does not bond with, stain, or adversely affect precast concrete surfaces and does not impair subsequent surface or joint treatments of precast concrete.

C. Surface Retarder: Chemical-set retarder, capable of temporarily delaying final hardening of newly placed concrete mixture to depth of reveal specified.

2.4 REINFORCING MATERIALS

A. Epoxy-Coated Reinforcing Bars: ASTM A615/A615M, Grade 60 (Grade 420), deformed bars, ASTM A775/A775M epoxy coated.

B. Epoxy-Coated-Steel Wire: ASTM A884/A884M, Class A coated, plain, flat sheet, Type 2 nonbendable coating.

C. Supports: Suspend reinforcement from back of mold. Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcement in place may only be used if they are not visible in the finished face.

2.5 CONCRETE MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or Type III.

1. For surfaces exposed to view in finished structure, use white cement, of same type, brand, and mill source.

    a. Standard gray cement is acceptable for use where not exposed to view.

B. Normal-Weight Aggregates: Except as modified by PCI MNL 117, ASTM C33/C33M, with coarse aggregates complying with Class 5S. Stockpile fine and coarse aggregates for each type of exposed finish from a single source (pit or quarry) for Project.

1. Face-Mixture-Fine Aggregates: Selected, natural or manufactured sand compatible with coarse aggregate; to match approved finish sample.

C. Water: Potable; free from deleterious material that may affect color stability, setting, or strength of concrete and complying with chemical limits of PCI MNL 117.

D. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and to not contain calcium chloride, or more than 0.15 percent chloride ions or other salts by weight of admixture.

1. Water-Reducing Admixtures: ASTM C494/C494M, Type A.
2. Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type D.
3. Water-Reducing and -Accelerating Admixture: ASTM C494/C494M, Type E.
4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.

2.6 STAINLESS STEEL CONNECTION MATERIALS

A. Stainless Steel Plate: ASTM A240/A240M or ASTM A666, Type 304, Type 316, or Type 201.

B. Stainless Steel Bolts and Studs: ASTM F593, Alloy Group 1 or 2) hex-head bolts and studs; ASTM F594, Alloy Group 1 or 2 (ASTM F836M, Grade A1 or A4) stainless steel nuts; and flat, stainless steel washers.

1. Lubricate threaded parts of stainless steel bolts with an antiseize thread lubricant during assembly.

C. Stainless Steel-Headed Studs: ASTM A276/A276M, Alloy 304 or Alloy 316, with minimum mechanical properties of PCI MNL 117, Table 3.2.3.

2.7 GROUT MATERIALS

A. Sand-Cement Grout: Portland cement, ASTM C150/C150M, Type I, and clean, natural sand, ASTM C144 or ASTM C404. Mix at ratio of 1 part cement to 2-1/2 to 3 parts sand, by volume, with minimum water required for placement and hydration. Water-soluble chloride ion content is to be less than 0.06 percent by weight of cement when tested in accordance with ASTM C1218/C1218M.

B. Nonmetallic, Nonshrink Grout: Packaged, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, plasticizing and water-reducing agents, complying with ASTM C1107/C1107M, Grade A for dry pack and Grades B and C for flowable grout, and of consistency suitable for application within a 30-minute working time. Water-soluble chloride ion content is to be less than 0.06 percent by weight of cement when tested in accordance with ASTM C1218/C1218M.

C. Epoxy-Resin Grout: Two-component, mineral-filled epoxy resin; ASTM C881/C881M, of type, grade, and class to suit requirements.

2.8 CONCRETE MIXTURES

A. Prepare design mixtures for each type of precast concrete required.

1. Use a single design mixture for units with more than one major face or edge exposed.
2. Where only one face of unit is exposed, use either a single design mixture or separate mixtures for face and backup.

B. Limit use of fly ash and ground granulated blast-furnace slag to 20 percent of portland cement by weight; limit metakaolin and silica fume to 10 percent of portland cement by weight.

C. Design mixtures may be prepared by a qualified independent testing agency or by qualified precast plant personnel at architectural precast concrete fabricator's option.

D. Limit water-soluble chloride ions to maximum percentage by weight of cement permitted by ACI 318 or PCI MNL 117 when tested in accordance with ASTM C1218/C1218M.

E. Normal-Weight Concrete Mixtures: Proportion face and backup mixtures by either laboratory trial batch or field test data methods in accordance with ACI 211.1, with materials to be used on Project, to provide normal-weight concrete with the following properties:

1. Compressive Strength (28 Days): 3500 psi minimum.
2. Maximum Water-Cementitious Materials Ratio: 0.45.

F. Water Absorption: Six percent by weight or 14 percent by volume, tested in accordance with ASTM C642, except for boiling requirement.

G. When included in design mixtures, add other admixtures to concrete mixtures in accordance with manufacturer's written instructions.

2.9 FABRICATION OF MOLDS

A. Molds: Accurately construct molds, mortar tight, of sufficient strength to withstand pressures due to concrete-placement operations and temperature changes and for prestressing and detensioning operations. Coat contact surfaces of molds with release agent before reinforcement is placed. Avoid contamination of reinforcement and prestressing tendons by release agent.

B. Maintain molds to provide completed architectural precast concrete units of shapes, lines, and dimensions indicated, within fabrication tolerances specified.

1. Form joints are not permitted on faces exposed to view in the finished Project.
2. Edge and Corner Treatment: Uniformly and finely chamfered at 1/8” .

2.10 FABRICATION OF PRECAST ARCHITECTURAL CONCRETE

A. Cast-in Anchors, Inserts, Plates, Angles, and Other Anchorage Hardware: Fabricate anchorage hardware with sufficient anchorage and embedment to comply with design requirements. Accurately position for attachment of loose hardware, and secure in place during precasting operations. Locate anchorage hardware where it does not affect position of main reinforcement or concrete placement.

1. Weld-headed studs and deformed bar anchors used for anchorage in accordance with AWS D1.1/D1.1M and AWS C5.4.

B. Furnish loose hardware items, including steel plates, clip angles, seat angles, anchors, dowels, cramps, hangers, and other hardware shapes for securing architectural precast concrete units to supporting and adjacent construction.

C. Cast-in reglets, slots, holes, and other accessories in architectural precast concrete units, as indicated on the Drawings.

D. Cast-in openings larger than 10 inches (250 mm) in any dimension. Do not drill or cut openings or prestressing strand without Architect's approval.

E. Reinforcement: Comply with recommendations in PCI MNL 117 for fabricating, placing, and supporting reinforcement.

1. Clean reinforcement of loose rust and mill scale, earth, and other materials that reduce or destroy the bond with concrete. When damage to epoxy-coated reinforcing exceeds limits specified in ASTM A775/A775M, repair with patching material compatible with coating material and epoxy coat bar ends after cutting.
2. Accurately position, support, and secure reinforcement against displacement during concrete-placement and consolidation operations. Completely conceal support devices to prevent exposure on finished surfaces.
3. Place reinforcing steel and prestressing strands to maintain at least 3/4-inch (19-mm) minimum concrete cover. Increase cover requirements for reinforcing steel to 1-1/2 inches (38 mm) when units are exposed to corrosive environment or severe exposure conditions. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position while placing concrete. Direct wire tie ends away from finished, exposed concrete surfaces.
4. Install welded-wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh spacing and wire tie laps, where required by design. Offset laps of adjoining widths to prevent continuous laps in either direction.

F. Reinforce architectural precast concrete units to resist handling, transportation, and erection stresses and specified in-place loads.

G. Comply with requirements in PCI MNL 117 and requirements in this Section for measuring, mixing, transporting, and placing concrete. After concrete batching, no additional water may be added.

H. Place concrete in a continuous operation to prevent cold joints or planes of weakness from forming in precast concrete units.

I. Thoroughly consolidate placed concrete by internal and external vibration without dislocating or damaging reinforcement and built-in items, and minimize pour lines, honeycombing, or entrapped air voids on surfaces. Use equipment and procedures complying with PCI MNL 117.

1. Place self-consolidating concrete without vibration in accordance with PCI TR-6. Ensure adequate bond between face and backup concrete, if used.

J. Comply with PCI MNL 117 for hot- and cold-weather concrete placement.

K. Identify pickup points of architectural precast concrete units and orientation in structure with permanent markings, complying with markings indicated on Shop Drawings. Imprint or permanently mark casting date on each architectural precast concrete unit on a surface that does not show in finished structure.

L. Cure concrete, in accordance with PCI MNL 117, by moisture retention without heat or by accelerated heat curing using low-pressure live steam or radiant heat and moisture. Cure units until compressive strength is high enough to ensure that stripping does not have an effect on performance or appearance of final product.

M. Discard and replace architectural precast concrete units that do not comply with requirements, including structural, manufacturing tolerance, and appearance, unless repairs comply with requirements in PCI MNL 117 and Architect's approval.

2.11 FABRICATION TOLERANCES

A. Fabricate architectural precast concrete units to shapes, lines, and dimensions indicated so each finished unit complies with PCI MNL 116 product tolerances as well as position tolerances for cast-in items.

B. Fabricate architectural precast concrete units to shapes, lines, and dimensions indicated so each finished unit complies with the following product tolerances:

1. Overall Height and Width of Units, Measured at the Face Exposed to View: As follows:

    a. 10 ft. (3 m) or under, plus or minus 1/8 inch (3 mm).
    b. 10 to 20 ft. (3 to 6 m), plus 1/8 inch (3 mm), minus 3/16 inch (5 mm).

2. Variation from Square or Designated Skew (Difference in Length of the Two Diagonal Measurements): Plus or minus 1/8 inch/72 inches (3 mm/1830 mm) or 1/2 inch (13 mm) total, whichever is greater.
3. Length and Width of Block-outs and Openings within One Unit: Plus or minus 1/4 inch (6 mm).
4. Location and Dimension of Block-outs Hidden from View and Used for HVAC and Utility Penetrations: Plus or minus 3/4 inch (19 mm).
5. Dimensions of Haunches: Plus or minus 1/4 inch (6 mm).
6. Haunch Bearing Surface Deviation from Specified Plane: Plus or minus 1/8 inch (3 mm).
7. Difference in Relative Position of Adjacent Haunch Bearing Surfaces from Specified Relative Position: Plus or minus 1/4 inch (6 mm).
8. Bowing: Plus or minus L/360, maximum 1 inch (25 mm).
9. Local Smoothness: 1/4 inch/10 ft. (6 mm/3 m).
10. Warping: 1/16 inch/12 inches (1.6 mm/300 mm) from nearest adjacent corner.

C. Position Tolerances: For cast-in items measured from datum line location, as indicated on Shop Drawings.

1. Weld Plates: Plus or minus 1 inch (25 mm).

2. Tipping and Flushness of Plates: Plus or minus 1/4 inch (6 mm).
3. Dimensions of Architectural Features and Rustications: Plus or minus 1/8 inch (3 mm).
4. Inserts: Plus or minus 1/2 inch (13 mm).
5. Handling Devices: Plus or minus 3 inches (75 mm).
6. Reinforcing Steel and Welded-Wire Reinforcement: Plus or minus 1/4 inch (6 mm) where position has structural implications or affects concrete cover; otherwise, plus or minus 1/2 inch (13 mm).
7. Reinforcing Steel Extending out of Member: Plus or minus 1/2 inch (13 mm).
8. Location of Opening within Panel: Plus or minus 1/4 inch (6 mm).
9. Electrical Outlets, Hose Bibs: Plus or minus 1/2 inch (13 mm).
10. Location of Bearing Surface from End of Member: Plus or minus 1/4 inch (6 mm).
11. Allowable Rotation of Plate, Channel Inserts, and Electrical Boxes: Two-degree rotation or 1/4 inch (6 mm) maximum, measured at perimeter of insert.

2.12 FINISHES

A. Exposed faces to be free of joint marks, grain, and other obvious defects. Corners, including false joints to be uniform, straight, and sharp. Finish exposed-face surfaces of architectural precast concrete units to match approved design reference sample and as follows:

1. PCI's "Architectural Precast Concrete - Color and Texture Selection Guide," of plate numbers indicated.
2. Honed Finish: Use continuous mechanical abrasion with fine grit, followed by filling and rubbing procedures.

B. Finish unexposed surfaces of architectural precast concrete units with as-cast finish.

2.13 SOURCE QUALITY CONTROL

A. Quality-Control Testing: Test and inspect precast concrete in accordance with PCI MNL 117 requirements. If using self-consolidating concrete, also test and inspect in accordance with PCI TR-6, ASTM C1610/C1610M, ASTM C1611/C1611M, ASTM C1621/C1621M, and ASTM C1712.

B. Strength of precast concrete units is considered deficient if units fail to comply with ACI 318 requirements for concrete strength.

C. Patching: If core test results are satisfactory and precast concrete units comply with requirements, clean and dampen core holes and solidly fill with precast concrete mixture that has no coarse aggregate, and finish to match adjacent precast concrete surfaces.

D. Defective Units: Discard and replace recast architectural concrete units that do not comply with acceptability requirements in PCI MNL 117, including concrete strength, manufacturing tolerances, and color and texture range. Chipped, spalled, or cracked units may be repaired, subject to Architect's approval. Architect reserves the right to reject precast units that do not match approved samples, sample panels, and mockups. Replace unacceptable units with precast concrete units that comply with requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting structural frame or foundation and conditions for compliance with requirements for installation tolerances, bearing surface tolerances, and other conditions affecting performance of the Work.

B. Do not install precast concrete units until supporting cast-in-place concrete has attained minimum allowable design compressive strength and supporting steel or other structure is structurally ready to receive loads from precast concrete units.

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

3.2 INSTALLATION OF PRECAST ARCHITECTURAL CONCRETE UNITS

A. Install clips, hangers, bearing pads, and other accessories required for connecting architectural precast concrete units to supporting members and backup materials.

B. Erect architectural precast concrete level, plumb, and square within specified allowable tolerances. Provide temporary supports and bracing as required to maintain position, stability, and alignment of units until permanent connections are completed.

1. Install temporary steel or plastic spacing shims as precast concrete units are being erected. Tack weld steel shims to each other to prevent shims from separating.
2. Maintain horizontal and vertical joint alignment and uniform joint width as erection progresses.
3. Remove projecting lifting devices and grout fill voids within recessed lifting devices flush with surface of adjacent precast surfaces when recess is exposed.
4. Unless otherwise indicated, maintain uniform joint widths of 3/8 inch (10 mm).

C. Connect architectural precast concrete units in position by bolting, welding, grouting, or as otherwise indicated on Shop Drawings. Remove temporary shims, wedges, and spacers as soon as practical after connecting and grouting are completed.

1. Do not permit connections to disrupt continuity of roof flashing.

D. Welding: Comply with applicable requirements in AWS D1.1/D1.1M and AWS D1.4/D1.4M for welding, welding electrodes, appearance, quality of welds, and methods used in correcting welding work.

1. Protect architectural precast concrete units and bearing pads from damage by field welding or cutting operations, and provide noncombustible shields as required.
2. Welds not specified to be continuous fillet welds use no less than the minimum fillet as specified by AWS.
3. Clean weld-affected metal surfaces with chipping hammer followed by brushing, and apply a minimum 4.0-mil- (0.1-mm-) thick coat of galvanized repair paint to galvanized surfaces in accordance with ASTM A780/A780M.

4. Visually inspect welds and remove, reweld, or repair incomplete and defective welds.

E. At bolted connections, use lock washers, tack welding, or other approved means to prevent loosening of nuts after final adjustment.

1. Where slotted connections are used, verify bolt position and tightness. For sliding connections, properly secure bolt but allow bolt to move within connection slot.
2. For slip-critical connections, use one of the following methods to assure proper bolt pretension:

a. Turn-of-Nut: In accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
b. Calibrated Wrench: In accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
c. Twist-off Tension Control Bolt: ASTM F3125/F3125M, Grade 1852.
d. Direct-Tension Control Bolt: ASTM F3125/F3125M, Grade 1852.

3. For slip-critical connections, use method and inspection procedure approved by Architect and coordinated with inspection agency.

3.3 ERECTION TOLERANCES

A. Erect architectural precast concrete units level, plumb, square, and in alignment without exceeding the noncumulative erection tolerances of PCI MNL 135.

3.4 REPAIR

A. Repair architectural precast concrete units if permitted by Architect. Architect reserves the right to reject repaired units that do not comply with requirements.

B. Mix patching materials and repair units so cured patches blend with color, texture, and uniformity of adjacent exposed surfaces and show no apparent line of demarcation between original and repaired work, when viewed in typical daylight illumination from a distance of 20 ft. (6 m).

C. Prepare and repair damaged galvanized coatings with galvanizing repair paint in accordance with ASTM A780/A780M.

D. Wire brush, clean, and paint damaged prime-painted components with same type of shop primer.

E. Remove and replace damaged architectural precast concrete units when repairs do not comply with requirements.

3.5 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Erection of loadbearing precast concrete members.
2. Visually inspect field welds and test in accordance with ASTM E165/E165M or to ASTM E709 and ASTM E1444/E1444M.
3. High-strength bolted connections are subject to inspections.

B. Prepare test and inspection reports.

C. Repair or remove and replace work where tests and inspections indicate that it does not comply with specified requirements.

D. Additional testing and inspecting, at Contractor's expense, to be performed to determine compliance of replaced or additional work with specified requirements.

3.6 CLEANING

A. Clean surfaces of precast concrete units exposed to view.

B. Clean mortar, plaster, fireproofing, weld slag, and other deleterious material from concrete surfaces and adjacent materials immediately.

C. Clean exposed surfaces of precast concrete units after erection and completion of joint treatment to remove weld marks, other markings, dirt, and stains.

1. Perform cleaning procedures, if necessary, in accordance with precast concrete fabricator's recommendations. Protect other work from staining or damage due to cleaning operations.
2. Do not use cleaning materials or processes that could change the appearance of exposed concrete finishes or damage adjacent materials.

END OF SECTION 034500

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SECTION 064113 - WOOD-VENEER-FACED ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood cabinets for transparent finish.
2. Wood materials.
3. Cabinet hardware and accessories.
4. Miscellaneous materials.
5. Shop finishing.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing cabinets that are concealed within other construction before cabinet installation.

1.2 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to support loads imposed by installed and fully loaded cabinets.

B. Hardware Coordination: Distribute copies of approved hardware schedule specified in Section 087100 "Door Hardware" to manufacturer of architectural cabinets; coordinate Shop Drawings and fabrication with hardware requirements.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data:

1. Wood cabinets for transparent finish.
2. Wood materials.
3. Cabinet hardware and accessories.
4. Miscellaneous materials.
5. Shop finishing.

B. Product Data Submittals: For each product.

1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

C. Shop Drawings: For architectural cabinets.

1. Include plans, elevations, sections, and attachment details.
2. Show large-scale details.
3. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
4. Show locations and sizes of cutouts and holes for items installed in architectural cabinets.
5. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.

D. Samples: For each exposed product and for each color and finish specified, in manufacturer's standard size.

E. Samples for Initial Selection: For each type of exposed finish.

F. Samples for Verification: For the following:

1. Veneer Leaves: Representative of and selected from flitches to be used for transparent-finished cabinets.
2. Corner Pieces:

a. Cabinet-front frame joints between stiles and rails and at exposed end pieces, 18 inches (450 mm) high by 18 inches (450 mm) wide by 6 inches (150 mm) deep.
b. Miter joints for standing trim.

3. Exposed Cabinet Hardware and Accessories: One full-size unit for each type and finish.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer and Installer.

B. Product Certificates: For each type of product.

C. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Build mockups of typical architectural cabinets as shown on Drawings.

2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.8 FIELD CONDITIONS

A. Environmental Limitations without Humidity Control: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

B. Environmental Limitations with Humidity Control: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F (16 and 32 deg C) and relative humidity between 25 and 55 percent during the remainder of the construction period.

C. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed/concealed by construction, and indicate measurements on Shop Drawings.

D. Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 ARCHITECTURAL CABINETS

A. Source Limitations: Engage a qualified woodworking firm to assume responsibility for production of architectural cabinets with sequence-matched wood veneers.

2.2 CABINETS, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of architectural cabinets indicated for construction, finishes, installation, and other requirements.

1. The Contract Documents contain requirements that are more stringent than the referenced woodwork quality standard. Comply with requirements of Contract Documents in addition to those of the referenced quality standard.

2.3 WOOD CABINETS FOR TRANSPARENT FINISH

A. Architectural Woodwork Standards Grade: Custom.

B. Type of Construction: Frameless.

C. Door and Drawer-Front Style: Flush overlay.

1. Reveal Dimension: As indicated on Drawings.

D. Wood for Exposed Surfaces: As indicated on Drawings.

1. Species: As indicated on Finish Schedule.
2. Blueprint Matching: Comply with veneer and other matching requirements indicated for blueprint-matched paneling.
3. Cut: Rift cut/rift sawn.
4. Grain Direction: Vertically for drawer fronts, doors, and fixed panels.
5. Matching of Veneer Leaves: Book match.
6. Veneer Matching within Panel Face: Running match.
7. Veneer Matching within Room: Provide cabinet veneers in each room or other space from a single flitch with doors, drawer fronts, and other surfaces matched in a sequenced set with continuous match where veneers are interrupted perpendicular to the grain.

E. Semiexposed Surfaces:

1. Surfaces Other Than Drawer Bodies: Same species and cut indicated for exposed surfaces.

a. Edges of Thermally Fused Laminate Panel Shelves: PVC or polyester edge banding.

2. Drawer Subfronts, Backs, and Sides: Solid-hardwood lumber, same species indicated for exposed surfaces.
3. Drawer Bottoms: Hardwood plywood.

F. Dust Panels: 1/4-inch (6.4-mm) plywood or tempered hardboard above compartments and drawers unless located directly under tops.

G. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.

1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners.

2.4 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.

1. Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches (75 mm) wide.
2. Wood Moisture Content: 5 to 10 percent.

B. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.

1. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130.
2. Particleboard (Medium Density): ANSI A208.1, Grade M-2.
3. Softwood Plywood: DOC PS 1, medium-density overlay.
4. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.

2.5 CABINET HARDWARE AND ACCESSORIES

A. Cabinet Hardware: Provide cabinet hardware and accessory materials associated with architectural cabinets in Section 064116, except for items specified in Section 087100 "Door Hardware."

B. Butt Hinges: 2-3/4-inch (70-mm), five-knuckle steel hinges made from 0.095-inch- (2.4-mm-) thick metal, and as follows:

1. Semiconcealed Hinges for Flush Doors: ANSI/BHMA A156.9, B01361.

C. Frameless Concealed Hinges (European Type): ANSI/BHMA A156.9, B01602, 170 degrees of opening, self-closing.

D. Back-Mounted Pulls: ANSI/BHMA A156.9, B02011.

E. Wire Pulls: Back mounted, solid metal, per hardware in Section 064116.

F. Catches: per hardware in Section 064116.

G. Adjustable Shelf Standards and Supports: per hardware in Section 064116.

H. Shelf Rests: ANSI/BHMA A156.9, B04013; per hardware in Section 064116.

I. Drawer Slides: ANSI/BHMA A156.9.

1. All per hardware in Section 064116.

J. Door Locks: ANSI/BHMA A156.11, E07121.

K. Drawer Locks: ANSI/BHMA A156.11, E07041.

L. Door and Drawer Silencers: ANSI/BHMA A156.16, L03011.

M. Grommets for Cable Passage: 1-1/4-inch (32-mm) OD, molded-plastic grommets and matching plastic caps with slot for wire passage.

1. Color: Selected by architect from manufacturer’s full range..

N. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with ANSI/BHMA A156.18 for BHMA finish number indicated.

1. Dark, Oxidized, Satin Bronze, Oil Rubbed: ANSI/BHMA 613 for bronze base; ANSI/BHMA 640 for steel base; match Architect's sample.
2. Bright Brass, Clear Coated: ANSI/BHMA 605 for brass base; ANSI/BHMA 632 for steel base.
3. Bright Brass, Vacuum Coated: ANSI/BHMA 723 for brass base; ANSI/BHMA 729 for zinc-coated-steel base.
4. Satin Brass, Blackened, Bright Relieved, Clear Coated: ANSI/BHMA 610 for brass base; ANSI/BHMA 636 for steel base.
5. Satin Chromium Plated: ANSI/BHMA 626 for brass or bronze base; ANSI/BHMA 652 for steel base.
6. Bright Chromium Plated: ANSI/BHMA 625 for brass or bronze base; ANSI/BHMA 651 for steel base.
7. Satin Stainless Steel: ANSI/BHMA 630.

O. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.

2.6 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

2.7 FABRICATION

A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.

B. Fabricate architectural cabinets to dimensions, profiles, and details indicated. Ease edges and corners to 1/16-inch (1.5-mm) radius unless otherwise indicated.

C. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

1. Notify Architect seven days in advance of the dates and times architectural cabinet fabrication will be complete.
2. Trial fit assemblies at manufacturer's shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.

D. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

E. Install glass to comply with applicable requirements in Section 088000 "Glazing" and in GANA's "Glazing Manual."

1. For glass in wood frames, secure glass with removable stops.
2. For exposed glass edges, polish and grind smooth.

2.8 SHOP FINISHING

A. Finish architectural cabinets at manufacturer's shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.

B. Shop-finish transparent-finished architectural cabinets at manufacturer's shop as specified in this Section. See Section 099123 "Interior Painting" for field finishing of opaque-finished architectural cabinets.

C. Drawings indicate items that are required to be shop finished. Finish these items at manufacturer's shop as specified in this Section.

D. Shop Priming: Shop apply the prime coat including backpriming, if any, for transparent-finished items specified to be field finished.

E. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural cabinets, as applicable to each unit of work.

1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of cabinets.

F. Transparent Finish:

1. Architectural Woodwork Standards Grade: Custom.
2. Finish: System - 5, conversion varnish.
3. Wash Coat for Closed-Grain Woods: Apply wash-coat sealer to cabinets made from closed-grain wood before staining and finishing.
4. Staining: None required.
5. Open Finish for Open-Grain Woods: Do not apply filler to open-grain woods.
6. Filled Finish for Open-Grain Woods: Apply paste wood filler and wipe off excess. Tint filler to match stained wood.
7. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter per ASTM D523.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

3.2 INSTALLATION

A. Architectural Woodwork Standards Grade: Install cabinets to comply with quality standard grade of item to be installed.

B. Assemble cabinets and complete fabrication at Project site to extent that it was not completed in the shop.

C. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails[**or finishing screws**] for exposed fastening, countersunk and filled flush with cabinet surface.

1. For shop-finished items, use filler matching finish of items being installed.

D. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm) using concealed shims.

1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
3. Maintain veneer sequence matching of cabinets with transparent finish.
4. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches (400 mm) o.c. with No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.

E. Shop Finishes: Touch up finishing after installation of architectural cabinets. Fill nail holes with matching filler.

1. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are shop applied.

3.3 FIELD QUALITY CONTROL

A. Inspections: Provide inspection of installed Work.

1. Inspection entity is to prepare and submit report of inspection.

3.4 ADJUSTING AND CLEANING

A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects. Where not possible to repair, replace architectural cabinets. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean cabinets on exposed and semiexposed surfaces. Touch up finishes to restore damaged or soiled areas.

END OF SECTION 064113

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SECTION 075423 - THERMOPLASTIC-POLYOLEFIN (TPO) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Thermoplastic polyolefin (TPO) roofing system.
2. Accessory roofing materials.
3. Substrate board.
4. Vapor retarder.
5. Roof insulation.
6. Insulation accessories and cover board.
7. Asphalt materials.
8. Walkways.

B. Section includes installation of sound-absorbing insulation strips in ribs of roof deck. Sound-absorbing insulation strips are furnished under Section 053100 "Steel Decking."

C. Related Requirements:

1. Section 061000 "Rough Carpentry" for wood nailers, curbs, and blocking; and for wood-based, structural-use roof deck panels.
2. Section 072100 "Thermal Insulation" for insulation beneath the roof deck.
3. Section 076200 "Sheet Metal Flashing and Trim" for metal roof flashings and counterflashings.
4. Section 077100 "Roof Specialties" for manufactured copings and roof edge flashings.
5. Section 077129 "Manufactured Roof Expansion Joints" for manufactured roof expansion-joint assemblies.
6. Section 079200 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

1.2 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D1079 and glossary in NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" apply to Work of this Section.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, air barrier Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.

2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.4 ACTION SUBMITTALS

A. Product Data:

1. Thermoplastic polyolefin (TPO) roofing system.
2. Accessory roofing materials.
3. Substrate board.
4. Vapor retarder.
5. Roof insulation.
6. Insulation accessories and cover board.
7. Asphalt materials.
8. Walkways.
9. For insulation and roof system component fasteners, include copy of FM Approvals' RoofNav listing.

B. Shop Drawings: Include roof plans, sections, details, and attachments to other work, including the following:

1. Layout and thickness of insulation.
2. Base flashings and membrane termination details.
3. Flashing details at penetrations.
4. Tapered insulation layout, thickness, and slopes.
5. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
6. Tie-in with adjoining air barrier.

C. Samples for Verification: For the following products:

1. Roof membrane and flashings, of color required.
2. Walkway pads or rolls, of color required.

D. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer manufacturer.

B. Manufacturer Certificates:

1. Performance Requirement Certificate: Signed by roof membrane manufacturer, certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

a. Submit evidence of compliance with performance requirements.

2. Special Warranty Certificate: Signed by roof membrane manufacturer, certifying that all materials supplied under this Section are acceptable for special warranty.

C. Product Test Reports: For roof membrane and insulation, for tests performed by a qualified testing agency, indicating compliance with specified requirements.

D. Evaluation Reports: For components of roofing system, from ICC-ES.

E. Field Test Reports:

1. Fastener-pullout test results and manufacturer's revised requirements for fastener patterns.

F. Field quality-control reports.

G. Sample Warranties: For manufacturer's special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is listed in FM Approvals' RoofNav for roofing system identical to that used for this Project.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 20 years from date of Substantial Completion.

B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of roofing system such as roof membrane, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, and walkway products, for the following warranty period:

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Installed roofing system and flashings to withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roof system and flashings to remain watertight.

1. Accelerated Weathering: Roof to withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.

2. Impact Resistance: Roof membrane to resist impact damage when tested according to ASTM D3746, ASTM D4272, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.

B. Material Compatibility: Roofing materials to be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.

C. FM Approvals' RoofNav Listing: Roof membrane, base flashings, and component materials comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system, and are listed in FM Approvals' RoofNav for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals Certification markings.

1. Fire/Windstorm Classification: Class 1A-120.
2. Hail-Resistance Rating: FM Global Property Loss Prevention Data Sheet 1-34 SH.

D. SPRI's Directory of Roof Assemblies Listing: Roof membrane, base flashings, and component materials comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system, and are listed in SPRI's Directory of Roof Assemblies for roof assembly identical for that specified for this Project.

1. Wind Uplift Load Capacity: 120 psf and refer to ST-Series documents.

E. Energy Star Listing: Roofing system to be listed on the DOE's Energy Star "Roof Products Qualified Product List" for low -slope roof products.

2.2 THERMOPLASTIC POLYOLEFIN (TPO) ROOFING SYSTEM

A. TPO Sheet: ASTM D6878/D6878M, internally fabric- or scrim-reinforced, self-adhering TPO sheet.

1. Carlisle SureWeld TPO.
2. Versico VersiWeld TPO.
3. GAF EverGuard Extreme.
4. Elevate UltraPly TPO.
5. Source Limitations: Obtain components for roofing system from roof membrane manufacturer.
6. Thickness: 60 mils (1.5 mm), nominal.
7. Exposed Face Color: Black.

2.3 ACCESSORY ROOFING MATERIALS

A. General: Accessory materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.

1. Adhesive and Sealants: Comply with VOC limits of authorities having jurisdiction.

B. Sheet Flashing: Manufacturer's standard unreinforced TPO sheet flashing, 55 mils (1.4 mm) thick, minimum, of same color as TPO sheet.

C. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.

D. Roof Vents: As recommended by roof membrane manufacturer.

1. Size: Not less than 4-inch (100-mm) diameter.

E. Bonding Adhesive: Manufacturer's standard, water based.

F. Slip Sheet: Manufacturer's standard, of thickness required for application.

G. Asphalt-Coated, Glass-Fiber-Mat, Venting Base Sheet: ASTM D4897/D4897M, Type II; nonperforated, asphalt-impregnated fiberglass reinforced, with mineral granular patterned surfacing on bottom surface.

H. Metal Termination Bars: Manufacturer's standard, predrilled stainless steel or aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick; with anchors.

I. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch thick (25 mm wide by 1.3 mm thick), prepunched.

J. Ballast Retaining Bar: Perimeter securement system consisting of a slotted extruded-aluminum retention bar with an integrated compression fastening strip.

1. Fasteners: 1-1/2-inch (38-mm) stainless steel fasteners with neoprene washers.

K. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roofing components to substrate, and acceptable to roofing system manufacturer.

L. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.4 SUBSTRATE BOARD

A. Fiber-Reinforced Gypsum Roof Board: ASTM C1278/C1278M, cellulosic-fiber reinforced, water-resistant gypsum board.

1. Thickness: 5/8 inch (16 mm).

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate board to roof deck.

2.5 VAPOR RETARDER

A. Rubberized-Asphalt-Sheet Vapor Retarder, Self-Adhering: ASTM D1970/D1970M, polyethylene film laminated to layer of rubberized asphalt adhesive, minimum 40-mil (1.0-mm) total thickness; maximum permeance rating of 0.1 perm (6 ng/Pa x s x sq. m); cold applied, with slip-resisting surface and release paper backing. Provide primer when recommended by vapor retarder manufacturer.

2.6 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by TPO roof membrane manufacturer, approved for use in FM Approvals' RoofNav listed roof assemblies.

B. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 2, Grade 2, felt or glass-fiber mat facer on both major surfaces.

1.
2. Compressive Strength: **20 psi (138 kPa)**.
3. Size: 48 by 48 inches (1219 by 1219 mm).
4. Thickness:

    a. Base Layer: 1-1/2 inches (38 mm).
    b. Upper Layer: 2”.

C. Composite Polyisocyanurate Board Insulation: ASTM C1289, with factory-applied facing board on one major surface, as indicated below by type, and felt or glass-fiber mat facer on the other.

1. Facer: Type V, oriented strand board facer, 7/16 inch (11 mm) thick.
2. Size: 48 by 48 inches (1219 by 1219 mm).
3. Thickness: 2” min..

D. Tapered Insulation: Provide factory-tapered insulation boards.

1. Material: Match roof insulation.
2. Minimum Thickness: 1/4 inch (6.35 mm).
3. Slope:

    a. Roof Field: 1/4 inch per foot (1:48) unless otherwise indicated on Drawings.
    b. Saddles and Crickets: 1/4 inch per foot unless otherwise indicated on Drawings.

2.7 INSULATION ACCESSORIES AND COVER BOARD

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with other roofing system components.

B. Fasteners: Factory-coated steel fasteners with metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.

C. Induction-Welding Plates: Minimum 3-inch (76-mm) diameter with recessed center, 0.034-inch (0.86-mm) thick, aluminum-zinc-alloy-coated steel plates, factory-coated with adhesive formulated for roof membrane, with corresponding corrosion-resistant fasteners and thermal isolation spacers below plates.

D. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:

1. Modified asphaltic, asbestos-free, cold-applied adhesive.
2. Bead-applied, low-rise, one-component or multicomponent urethane adhesive.
3. Full-spread, spray-applied, low-rise, two-component urethane adhesive.

E. Fiber-Reinforced Gypsum Roof Board: ASTM C1278/C1278M, cellulosic-fiber reinforced, water-resistant gypsum board.

1. Thickness: 5/8 inch (16 mm).

F. Polyisocyanurate Insulation Cover Board: ASTM C1289 Type II, Class 4, Grade 1, 1/2 inch (13 mm) thick, with a minimum compressive strength of 80 psi (551 kPa).

G. Protection Mat: Woven or nonwoven polypropylene, polyolefin, or polyester fabric; water permeable and resistant to UV degradation; type and weight as recommended by roofing system manufacturer for application.

2.8 ASPHALT MATERIALS

A. Roofing Asphalt: ASTM D312/D312M, Type III or Type IV.

2.9 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads, approximately 3/16 inch (5 mm) thick and acceptable to roofing system manufacturer.

1. Size: Approximately36 by 60 inches (914 by 1524 mm).
2. Color: Contrasting with roof membrane.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.

2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 053100 "Steel Decking."

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

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing system installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.3 INSTALLATION OF ROOFING, GENERAL

A. Install roof membrane and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition and to not void warranty for existing roofing system.

B. Coordinate installation and transition of roofing system component serving as an air barrier with air barrier specified under Section 072715 "Nonbituminous Self-Adhering Sheet Air Barriers."

3.4 INSTALLATION OF SUBSTRATE BOARD

A. Install substrate board with long joints in continuous straight lines, with end joints staggered not less than 24 inches (610 mm) in adjacent rows.

1. At steel roof decks, install substrate board at right angle to flutes of deck.

    a. Locate end joints over crests of steel roof deck.

2. Tightly butt substrate boards together.
3. Cut substrate board to fit tight around penetrations and projections, and to fit tight to intersecting sloping roof decks.
4. Fasten substrate board to top flanges of steel deck according to recommendations in FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29.

3.5 INSTALLATION OF VAPOR RETARDER

A. Self-Adhering-Sheet Vapor Retarder: Prime substrate if required by manufacturer. Install self-adhering-sheet vapor retarder over area to receive vapor retarder, side and end lapping each sheet a minimum of 3-1/2 and 6 inches (90 and 150 mm), respectively.

1. Extend vertically up parapet walls and projections to a minimum height equal to height of insulation and cover board.
2. Seal laps by rolling.

B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into roofing system.

3.6 INSTALLATION OF INSULATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at end of workday.

B. Comply with roofing system and roof insulation manufacturer's written instructions for installing roof insulation.

C. Installation Over Metal Decking:

1. Install base layer of insulation with end joints staggered not less than 12 inches (305 mm) in adjacent rows.

    a. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.
    b. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    c. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
    d. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches (610 mm).

        1) Trim insulation so that water flow is unrestricted.

    e. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
    f. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
    g. Loosely lay base layer of insulation units over substrate.
    h. Mechanically attach base layer of insulation **and substrate board** using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to metal decks.

        1) Fasten insulation according to requirements in FM Approvals' RoofNav for specified Windstorm Resistance Classification.
        2) Fasten insulation to resist specified uplift pressure at corners, perimeter, and field of roof.

2. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches (305 mm) from previous layer of insulation.

a. Staggered end joints within each layer not less than 24 inches (610 mm) in adjacent rows.
b. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
c. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
d. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches (610 mm).

    1) Trim insulation so that water flow is unrestricted.

e. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
f. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
g. Adhere each layer of insulation to substrate using adhesive according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:

    1) Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
    2) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

3.7 INSTALLATION OF COVER BOARDS

A. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction.

1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
2. At internal roof drains, conform to slope of drain sump.

    a. Trim cover board so that water flow is unrestricted.

3. Cut and fit cover board tight to nailers, projections, and penetrations.
4. Adhere cover board to substrate using adhesive according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:

    a. Set cover board in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
    b. Set cover board in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

B. Place plates on insulation in required fastening patterns to achieve FM rating and secure in accordance with manufacturer’s instructions.

1. Install plates and fasteners tight and flat to substrate with no dimpling, and with fastener extending 1 inch (25 mm) minimum into roof deck; do not overdrive fasteners.

3.8 INSTALLATION OF ADHERED ROOF MEMBRANE

A. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.

B. Unroll roof membrane and allow to relax before installing.

C. Start installation of roofing in presence of roofing system manufacturer's technical personnel.

D. Accurately align roof membrane, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

E. Bonding Adhesive: Apply to substrate and underside of roof membrane at rate required by manufacturer, and allow to partially dry before installing roof membrane. Do not apply to splice area of roof membrane.

F. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeter of roofing.

G. Apply roof membrane with side laps shingled with slope of roof deck where possible.

H. Seams: Clean seam areas, overlap roof membrane, and hot-air weld side and end laps of roof membrane and sheet flashings, to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roof membrane and sheet flashings.
2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.

I. Spread sealant bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

3.9 INSTALLATION OF SELF-ADHERING ROOF MEMBRANE

A. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.

B. Unroll roof membrane and allow to relax before installing.

C. Start installation of roofing in presence of roofing system manufacturer's technical personnel.

D. Accurately align roof membrane, and maintain uniform side and end laps of minimum dimensions required by manufacturer.

1. Stagger end laps.

E. Fold roof membrane to expose half of sheet width's bottom surface.

1. Remove release liner on exposed half of sheet.
2. Roll roof membrane over substrate while avoiding wrinkles.

F. Fold remaining half of roof membrane to expose bottom surface.

1. Remove release liner on exposed half of sheet.
2. Roll roof membrane over substrate while avoiding wrinkles.

G. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeter of roofing.

H. Apply roof membrane with side laps shingled with slope of roof deck where possible.

I. Seams: Clean seam areas, overlap roof membrane, and hot-air weld side and end laps of roof membrane and sheet flashings, to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity.
2. Apply lap sealant to seal cut edges of roof membrane and flashing sheet.
3. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
4. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.

J. Spread sealant bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

3.10 INSTALLATION OF BASE FLASHING

A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.11 INSTALLATION OF WALKWAYS

A. Flexible Walkways:

1. Install flexible walkways at the following locations:

a. Retain one or more subparagraphs below. Revise to suit Project.
b. Perimeter of each rooftop unit.
c. Between each rooftop unit location, creating a continuous path connecting rooftop unit locations.
d. Between each roof hatch and each rooftop unit location or path connecting rooftop unit locations.
e. Top and bottom of each roof access ladder.
f. Between each roof access ladder and each rooftop unit location or path connecting rooftop unit locations.
g. Locations indicated on Drawings.
h. As required by roof membrane manufacturer's warranty requirements.

2. Provide 6-inch (76-mm) clearance between adjoining pads.
3. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.12 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and to inspect substrate conditions, surface preparation, roof membrane application, sheet flashings, protection, and drainage components, and to furnish reports to Architect.

B. Perform the following tests:

~~**1. Flood Testing: Flood test each roof area for leaks, according to recommendations in ASTM D5957, after completing roofing and flashing but before overlying construction is placed. Install temporary containment assemblies, plug or dam drains, and flood with potable water.**~~

~~**a. Perform tests before overlying construction is placed.**~~
~~**b. Flood to an average depth of 2-1/2 inches (65 mm) with a minimum depth of 1 inch (25 mm) and not exceeding a depth of 4 inches (100 mm). Maintain 2 inches (50 mm) of clearance from top of base flashing.**~~
~~**c. Flood each area for 24 hours.**~~
~~**d. After flood testing, repair leaks, repeat flood tests, and make further repairs until roofing and flashing installations are watertight.**~~

~~**1) Cost of retesting is Contractor's responsibility.**~~

~~**e. Testing agency to prepare survey report indicating locations of initial leaks, if any, and final survey report.**~~

2. Infrared Thermography: Testing agency surveys entire roof area using infrared color thermography according to ASTM C1153.

a. Perform tests before overlying construction is placed.
b. After infrared scan, locate specific areas of leaks by electrical capacitance/impedance testing or nuclear hydrogen detection tests.

c. After testing, repair leaks, repeat tests, and make further repairs until roofing and flashing installations are watertight.

1) Cost of retesting is Contractor's responsibility.

d. Testing agency to prepare survey report of initial scan indicating locations of entrapped moisture, if any.

C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion, in presence of Architect, and to prepare inspection report.

D. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.13 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing system, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.14 ROOFING INSTALLER'S WARRANTY

A. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

1. Owner: <**Insert name of Owner**>.
2. Owner Address: <**Insert address**>.
3. Building Name/Type: <**Insert information**>.
4. Building Address: <**Insert address**>.
5. Area of Work: <**Insert information**>.
6. Acceptance Date: _____.
7. Warranty Period: <**Insert time**>.
8. Expiration Date: _____.

B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period Roofing Installer will, at Roofing Installer's own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

D. This Warranty is made subject to the following terms and conditions:

1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:

    a. lightning;
    b. peak gust wind speed exceeding <**Insert mph (m/sec)**>;
    c. fire;
    d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
    e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
    f. vapor condensation on bottom of roofing; and
    g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.

2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.

7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, _____.

1. Authorized Signature: _____.
2. Name: _____.
3. Title: _____.

END OF SECTION 075423

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SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Aluminum-framed entrance and storefront systems.
2. Interior entrance doors and door-frame units.

B. Related Requirements:

1. Section 087100 “Door Hardware” for hardware to the extent not specified in this Section.
2. Section 087113 “Power Door Operator” for hardware to the extent not specified in this Section.
3. Section 088000 “Glazing” for glazing requirements to the extent not specified in this Section.
4. Section 088700 “Decorative Glass Film” for glass screening.
5. Division 26 and 28 and Electrical Drawings for frames requiring factory preparations for door control system and card access power.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Joinery, including concealed welds.
2. Anchorage.
3. Expansion provisions.
4. Glazing.
5. Flashing and drainage.

B. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, details, and attachments to other work.

1. Include details of provisions for system expansion and contraction and for drainage of moisture in the system to the exterior.
2. Include full-size isometric details of each type of vertical-to-horizontal intersection of aluminum-framed entrances and storefronts, showing the following:

a. Joinery, including concealed welds.
b. Anchorage.
c. Expansion provisions.
d. Glazing.
e. Flashing and drainage.

3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.

C. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

D. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

E. Delegated Design Submittals: For aluminum-framed entrances and storefront systems, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Statements:

1. For Installer.

B. Delegated Design Engineer Qualifications: For aluminum-framed entrance and storefront systems.

C. Sample Warranties: For aluminum-framed entrance and storefront systems.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For aluminum-framed entrance and storefront systems to include in maintenance manuals.

B. Maintenance Data for Structural Sealant: For structural-sealant-glazed storefront. Include ASTM C1401 recommendations for post-installation-phase quality-control program.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:

1. Entity that is certified under the North American Contractor Certification Program (NACC) and that employs installers and supervisors who are trained and approved by

manufacturer and who are certified under the Architectural Glass and Metal Technician (AGMT) certification program.

B. Delegated Design Engineer Qualifications: A professional engineer who is legally qualified to practice in state Illinois where Project is located and who is experienced in providing engineering services of the type indicated.

C. Testing Agency Qualifications: Qualified in accordance with ASTM E699 for testing indicated and acceptable to Owner and Architect.

D. Product Options: Information on Drawings and Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.

1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

E. Structural-Sealant Glazing: Comply with ASTM C1401 for design and installation of storefront systems that include structural glazing.

1.7 MOCKUPS

A. Build mockups to set quality standards for fabrication, execution and installation.

1. Build mockup as indicated on Drawings.
2. Testing to be performed on mockups in accordance with requirements in "Field Quality Control" Article.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Owner specifically approves such deviations by Change Order.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 PRECONSTRUCTION TESTING

A. Preconstruction Field Mockup Testing: Engage a qualified testing agency to perform field tests on manufacturer's standard assemblies of windows and curtainwall systems and their interface with adjacent exterior wall opening assemblies.

1. Test preconstruction mockups in accordance with requirements in "Performance Requirements" Article. Perform the following field tests in the following order:

a. Air Leakage: ASTM E283.
b. Water Penetration under Static Pressure: ASTM E331.
c. Water Penetration under Dynamic Pressure: AAMA 501.1.
d. Thermal Cycling: AAMA 501.5. Repeat the following:

1) Air Leakage: ASTM E283.
2) Water Penetration under Static Pressure: ASTM E331.

e. Structural, 100 Percent: ASTM E330/E330M at 100 percent of positive and negative test loads. Repeat the following:

1) Air Leakage: ASTM E283.
2) Water Penetration under Static Pressure: ASTM E331.
3) Water Penetration under Dynamic Pressure: AAMA 501.1.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrance and storefront systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures, including excessive deflection.
b. Deterioration of metals, metal finishes, and other materials beyond normal use.

c. Failure in material or factory workmanship

2. Warranty Period: 10 years from date of Substantial Completion.

B. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D 4214.
c. Cracking, peeling, or chipping.

2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain all components of aluminum-framed entrance and storefront system, including framing and accessories, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design aluminum-framed entrance and storefront systems.

B. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrance and storefront systems representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Aluminum-framed entrance and storefront systems to withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:

    a. Thermal stresses transferring to building structure.
    b. Glass breakage.
    c. Noise or vibration created by wind and thermal and structural movements.
    d. Loosening or weakening of fasteners, attachments, and other components.
    e. Failure of operating units.

C. Structural Loads:

1. Design Loads: As indicated on Drawings.

D. Structural-Sealant Joints:

1. Designed to carry gravity loads of glazing.

E. Structural Sealant: ASTM C1184. Capable of withstanding tensile and shear stresses imposed by structural-sealant-glazed, aluminum-framed entrance and storefront systems without failing adhesively or cohesively. When tested for preconstruction adhesion and compatibility, cohesive failure of sealant to occur before adhesive failure.

1. Adhesive failure occurs when sealant pulls away from substrate cleanly, leaving no sealant material behind.
2. Cohesive failure occurs when sealant breaks or tears within itself but does not separate from each substrate, because sealant-to-substrate bond strength exceeds sealant's internal strength.

2.3 ALUMINUM-FRAMED ENTRANCE AND STOREFRONT SYSTEMS

A. Basis-of-Design Product: The design for aluminum-framed entrances and storefronts is based on the following:

1. Kawneer Trifab 450 / 451T Framing System, 2” Sightline, Front Glazed with SSG. Thermal break not required for interior doors and windows.

B. Manufacturers: Subject to compliance with requirements, provide named product above or comparable product by one of the following:

1. Kawneer North America; an Alcoa company
2. Oldcastle Building Envelope
3. Cronstroms (CMI)
4. EFCO
5. **Tubelite**.

C. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Exterior Framing Construction: Thermally broken.
2. Interior Framing Construction: Nonthermal.
3. Glazing System: Retained mechanically with gaskets on two sides and structural sealant on two sides.
4. Glazing Plane: Front.
5. Finish: Clear anodic finish and Color anodic finish. See Drawings for locations. .
6. Fabrication Method: Field-fabricated stick system.
7. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
8. Steel Reinforcement: As required by manufacturer.

D. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.

E. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

F. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation. Basis of Design: Kawneer’s 500 Heavy Wall Entrances

1. Door Construction: 1-3/4-inch (44.5-mm) overall thickness, with minimum 0.125-inch-(3.2-mm-) thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
2. Heavy Duty Interior Door Design: Wide stile; 5-inch (127-mm) nominal width.
3. Top Rail: 8-inch minimum
4. Mid-Rail: 5-inch, where indicated, confirm hardware does not overlap Mid-Rail.
5. Bottom Rail: Smooth surfaced for width of door in area within 12 inches above floor or ground plane in accordance with ADA Standard. No snap or applied stops allowed.

    a. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.

6. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.

    a. Provide nonremovable glazing stops on outside (non-secure) face of door.

7. Door Closer Reinforcement:
8. Provide 3/16 inch steel reinforcement plates of angle, within framing members at door heads, to run continuous full width of frame opening for door and which is full internal depth of frame.
9. Reinforcement to be used for anchorage of door closer or automatic operator and/or overhead stop/hold open device.
10. Mullion reinforcement: provide 3/16 inch thick steel reinforcement for mullions with double doors. Reinforcement plate to be centered and anchored within frame top jamb.
11. Protection at dissimilar materials: factory-apply an asphaltic type coating to steel reinforcing.

G. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with non-staining, nonferrous shims for aligning system components.

1. Finish: Match adjacent storefront framing finish.

2.4 ENTRANCE DOOR HARDWARE

A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 "Door Hardware."

B. General: Provide entrance door hardware and entrance door hardware sets indicated in door and frame schedule for each entrance door, to comply with requirements in this Section.

1. Entrance Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products.
2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
3. Opening-Force Requirements:

    a. Egress Doors: Not more than 15 lbf (67 N) to release the latch and not more than 30 lbf (133 N) to set the door in motion and not more than 15 lbf (67 N) to open the door to its minimum required width.
    b. Accessible Interior Doors: Not more than 5 lbf (22.2 N) to fully open door.

C. Cylinders:

1. As specified in Section 087100 "Door Hardware."

2.5 GLAZING

A. Glazing: Comply with Section 088000 "Glazing."

B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.

C. Glazing Sealants: As recommended by manufacturer.

D. Structural Glazing Sealants: ASTM C1184 chemically curing silicone formulation that is compatible with system components with which it comes in contact; specifically formulated and tested for use as structural sealant and approved by structural-sealant manufacturer for use in storefront system indicated.

1. Color: As selected by Architect from manufacturer's full range of colors.

2.6 MATERIALS

A. Sheet and Plate: ASTM B209 (ASTM B209M).

B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221 (ASTM B221M).

C. Structural Profiles: ASTM B308/B308M.

D. Steel Reinforcement:

1. Structural Shapes, Plates, and Bars: ASTM A36/A36M.
2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.
3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.

E. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods in accordance with recommendations in SSPC-SP COM, and prepare surfaces in accordance with applicable SSPC standard.

2.7 ACCESSORIES

A. Automatic Door Operators: Section 087100 “Door Hardware.”

B. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.
3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.

C. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch (25.4 mm) that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.

D. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil (0.762-mm) thickness per coat.

2.8 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Physical and thermal isolation of glazing from framing members.
4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
5. Provisions for field replacement of glazing from interior.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Structural-Sealant-Glazed Framing Members: Include accommodations for using temporary support device to retain glazing in place while structural sealant cures.

F. Storefront Framing: Fabricate components for assembly using shear-block system.

G. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

1. At interior doors, provide compression weather stripping at fixed stops.
2. At interior doors, provide silencers at stops to prevent metal-to-metal contact. Install three silencers on strike jamb of single-door frames and two silencers on head of frames for pairs of doors.

H. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

I. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

J. After fabrication, clearly mark components to identify their locations in Project in accordance with Shop Drawings.

2.9 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

B. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.

1. Color: Match Architect's sample.

2.10 SOURCE QUALITY CONTROL

A. Structural Sealant: Perform quality-control procedures complying with ASTM C1401 recommendations, including, but not limited to, assembly material qualification procedures, sealant testing, and assembly fabrication reviews and checks.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

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

3.2 INSTALLATION OF ALUMINUM-FRAMED ENTRANCE AND STOREFRONT SYSTEMS

A. Comply with manufacturer's written instructions.

B. Do not install damaged components.

C. Fit joints to produce hairline joints free of burrs and distortion.

D. Rigidly secure nonmovement joints.

E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.

F. Seal perimeter and other joints watertight unless otherwise indicated.

G. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

H. Set continuous sill members and flashing in full sealant bed, as specified in Section 079200 "Joint Sealants," to produce weathertight installation.

I. Install joint filler behind sealant as recommended by sealant manufacturer.

J. Install components plumb and true in alignment with established lines and grades.

K. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

L. Install entrance doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware in accordance with entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

M. Install glazing as specified in Section 088000 "Glazing."

N. Install structural glazing as follows:

1. Prepare surfaces that will contact structural sealant in accordance with sealant manufacturer's written instructions, to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.
2. Set glazing into framing in accordance with sealant manufacturer and framing manufacturer's written instructions and standard practice. Use a spacer or backer as recommended by manufacturer.
3. Set glazing with proper orientation so that coatings face exterior or interior as specified.
4. Hold glazing in place using temporary retainers of type and spacing recommended by manufacturer, until structural sealant joint has cured.
5. Apply structural sealant to completely fill cavity, in accordance with sealant manufacturer and framing manufacturer's written instructions and in compliance with local codes.
6. Apply structural sealant at temperatures indicated by sealant manufacturer for type of sealant.
7. Allow structural sealant to cure in accordance with manufacturer's written instructions.
8. Clean and protect glass as indicated in Section 088000 "Glazing."
9. After structural sealant has completely cured, remove temporary retainers and insert backer rod between lites of glass as recommended by sealant manufacturer.
10. Install weatherseal sealant to completely fill cavity, in accordance with sealant manufacturer's written instructions, to produce weatherproof joints.

3.3 ERECTION TOLERANCES

A. Install aluminum-framed entrance and storefront systems to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet (3.2 mm in 3 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
2. Level: 1/8 inch in 20 feet (3.2 mm in 6 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
3. Alignment:

a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch (12.7 mm) wide, limit offset from true alignment to 1/16 inch (1.6 mm).
b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch (12.7 to 25.4 mm) wide, limit offset from true alignment to 1/8 inch (3.2 mm).

c. Where surfaces are separated by reveal or protruding element of 1 inch (25.4 mm) wide or more, limit offset from true alignment to 1/4 inch (6 mm).

4. Location: Limit variation from plane to 1/8 inch in 12 feet (3.2 mm in 3.6 m); 1/2 inch (12.7 mm) over total length.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests.

B. Tests: Perform the following tests on representative areas of aluminum-framed entrance and storefront systems.

1. Structural-Sealant Adhesion: Test structural sealant in accordance with recommendations in ASTM C1401, Destructive Test Method A, "Hand Pull Tab (Destructive)," Appendix X2.

a. Test a minimum of two areas on each building facade.
b. Repair installation areas damaged by testing.

C. Inspection Agency: Engage a qualified inspector to perform inspections.

D. Inspections:

1. Egress Door Inspections: Inspect each aluminum-framed entrance door equipped with panic hardware, located in an exit enclosure, electrically controlled, and equipped with special locking arrangements, in accordance with NFPA 101, Ch. 7 "Means of Egress," Section "Means of Egress Components," Article "Inspection of Door Openings."

E. Aluminum-framed entrance and storefront systems will be considered defective if they do not pass tests and inspections.

F. Prepare test and inspection reports.

3.5 MAINTENANCE SERVICE

A. Entrance Door Hardware Maintenance:

1. 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 entrance door hardware.
2. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of entrance door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper entrance door hardware operation at rated speed and capacity. Use parts and supplies that are the same as those used in the manufacture and installation of original equipment.

END OF SECTION 084113

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SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Mechanical and electrified door hardware
2. Electronic access control system components
3. Field verification, preparation and modification of existing doors and frames to receive new door hardware.

B. Section excludes:

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

C. Related Sections:

1. Division 01 "General Requirements" sections for Allowances, Alternates, Owner Furnished Contractor Installed, Project Management and Coordination.
2. Division 06 Section "Rough Carpentry"
3. Division 06 Section "Finish Carpentry"
4. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
5. Division 08 Sections:

    a. "Metal Doors and Frames"
    b. "Flush Wood Doors"
    c. "Stile and Rail Wood Doors"
    d. "Interior Aluminum Doors and Frames"
    e. "Aluminum-Framed Entrances and Storefronts"
    f. "Stainless Steel Doors and Frames"
    g. "Special Function Doors"
    h. "Entrances"

6. Division 09 sections for touchup, finishing or refinishing of existing openings modified by this section.
7. Division 26 "Electrical" sections for connections to electrical power system and for low-voltage wiring.
8. Division 28 "Electronic Safety and Security" sections for coordination with other components of electronic access control system and fire alarm system.

1.2 REFERENCES

A. UL LLC

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

B. DHI - Door and Hardware Institute

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

C. NFPA – National Fire Protection Association

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

D. ANSI - American National Standards Institute

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

1.3 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
2. Prior to forwarding submittal:

a. Comply with procedures for verifying existing door and frame compatibility for new hardware, as specified in PART 3, "EXAMINATION" article, herein.
b. Review drawings and Sections from related trades to verify compatibility with specified hardware.
c. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.

B. Action Submittals:

1. Product Data: Submit technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Riser and Wiring Diagrams: After final approval of hardware schedule, submit details of electrified door hardware, indicating:

    a. Wiring Diagrams: For power, signal, and control wiring and including:

        1) Details of interface of electrified door hardware and building safety and security systems.
        2) Schematic diagram of systems that interface with electrified door hardware.
        3) Point-to-point wiring.
        4) Risers.

3. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated and tagged with full description for coordination with schedule.

    a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.

4. Door Hardware Schedule:

    a. Submit concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work critical in Project construction schedule.
    b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
    c. Indicate complete designations of each item required for each opening, include:

        1) Door Index: door number, heading number, and Architect's hardware set number.
        2) Quantity, type, style, function, size, and finish of each hardware item.
        3) Name and manufacturer of each item.
        4) Fastenings and other pertinent information.
        5) Location of each hardware set cross-referenced to indications on Drawings.
        6) Explanation of all abbreviations, symbols, and codes contained in schedule.
        7) Mounting locations for hardware.
        8) Door and frame sizes and materials.
        9) Degree of door swing and handing.
        10) Operational Description of openings with electrified hardware covering egress, ingress (access), and fire/smoke alarm connections.

5. Key Schedule:

a. After Keying Conference, provide keying schedule that includes levels of keying, explanations of key system's function, key symbols used, and door numbers controlled.
b. Use ANSI/BHMA A156.28 "Recommended Practices for Keying Systems" as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
f. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks.

C. Informational Submittals:

1. Provide Qualification Data for Supplier, Installer and Architectural Hardware Consultant.
2. Provide Product Data:

a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
b. Include warranties for specified door hardware.

D. Closeout Submittals:

1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:

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

E. Inspection and Testing:

1. Submit written reports to the Owner and Authority Having Jurisdiction (AHJ) of the results of functional testing and inspection for:

a. Fire door assemblies, in compliance with NFPA 80.
b. Required egress door assemblies, in compliance with NFPA 101.

1.4 QUALITY ASSURANCE

A. If discrepancy between drawings and scheduled material in this section, bid the more expensive of the two choices, note the discrepancy and request direction from Architect for resolution.

B. Qualifications and Responsibilities:

1. Supplier: Recognized architectural hardware supplier with a minimum of 5 years documented experience supplying both mechanical and electromechanical door hardware similar in quantity, type, and quality to that indicated for this Project. Supplier to be recognized as a factory direct distributor by the manufacturer of the primary materials with a warehousing facility in the Project's vicinity. Supplier to have on staff, a certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
3. Architectural Hardware Consultant: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:

    a. For door hardware: DHI certified AHC or DHC.
    b. Can provide installation and technical data to Architect and other related subcontractors.
    c. Can inspect and verify components are in working order upon completion of installation.
    d. Capable of producing wiring diagram and coordinating installation of electrified hardware with Architect and electrical engineers.

4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

C. Certifications:

1. Fire-Rated Door Openings:

    a. Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction.
    b. Provide only items of door hardware that are listed products tested by UL LLC, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.

2. Smoke and Draft Control Door Assemblies:

    a. Provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105
    b. Comply with the maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.

3. Electrified Door Hardware

a. Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.

4. Accessibility Requirements:

a. Comply with governing accessibility regulations cited in "REFERENCES" article 087100, 1.02.D3 herein for door hardware on doors in an accessible route. This project must comply with all Federal Americans with Disability Act regulations and all Local Accessibility Regulations.

D. Pre-Installation Meetings

1. Keying Conference

a. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:

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

2. Pre-installation Conference

a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
b. Inspect and discuss preparatory work performed by other trades.
c. Inspect and discuss electrical roughing-in for electrified door hardware.
d. Review sequence of operation for each type of electrified door hardware.
e. Review required testing, inspecting, and certifying procedures.
f. Review questions or concerns related to proper installation and adjustment of door hardware.

3. Electrified Hardware Coordination Conference:

a. Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping.

B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package. Deliver each article of hardware in manufacturer's original packaging.

C. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.

D. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

E. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

F. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.6 COORDINATION

A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.

D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

E. Existing Openings: Where existing doors, frames and/or hardware are to remain, field verify existing functions, conditions and preparations and coordinate to suit opening conditions and to provide proper door operation.

1.7 WARRANTY

A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warranty period.

1. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.
2. Warranty Period: Beginning from date of Substantial Completion, for durations indicated in manufacturer's published listings.

a. Mechanical Warranty

1) Locks

a) Schlage ND Series: 10 years

2) Exit Devices

a) Von Duprin: 10 years

3) Closers

a) LCN 4000 Series: 30 years

4) Automatic Operators

a) LCN: 2 years

b. Electrical Warranty

1) Locks

a) Schlage: 3 years

2) Exit Devices

a) Von Duprin: 3 years

1.8 MAINTENANCE

A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

B. Turn over unused materials to Owner for maintenance purposes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. The Owner requires use of certain products for their unique characteristics and project suitability to ensure continuity of existing and future performance and maintenance standards. After investigating available product offerings, the Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: “No Substitute.”

1. Where “No Substitute” is noted, submittals and substitution requests for other products will not be considered.

B. Approval of manufacturers and/or products other than those listed as “Scheduled Manufacturer” or “Basis of Design” shall be in accordance with substitution procedure in division 01 25 00. In

the individual article for the product category, shall be in accordance with QUALITY ASSURANCE article, herein.

C. Approval of products is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.

D. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval in accordance with substitution procedure in division 01 25 00.

2.2 MATERIALS

A. Fabrication

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

B. Modification and Preparation of Existing Doors: Where existing door hardware is indicated to be removed and reinstalled.

1. Provide necessary fillers, Dutchmen, reinforcements, and fasteners, compatible with existing materials, as required for mounting new opening hardware and to cover existing door and frame preparations.
2. Use materials which match materials of adjacent modified areas.
3. When modifying existing fire-rated openings, provide materials permitted by NFPA 80 as required to maintain fire-rating.

C. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.

1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

D. Cable and Connectors:

1. Where scheduled in the hardware sets, provide each item of electrified hardware and wire harnesses with number and gage of wires enough to accommodate electric function of specified hardware.
2. Provide Molex connectors that plug directly into connectors from harnesses, electric locking and power transfer devices.

3. Provide through-door wire harness for each electrified locking device installed in a door and wire harness for each electrified hinge, electrified continuous hinge, electrified pivot, and electric power transfer for connection to power supplies.

2.3 HINGES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Ives 5BB series, no substitute.

B. Requirements:

1. Provide hinges conforming to ANSI/BHMA A156.1.
2. Provide five knuckle, ball bearing hinges.
3. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:

a. Exterior: Standard weight, bronze or stainless steel, 4-1/2 inches (114 mm) high
b. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high

4. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:

a. Exterior: Heavy weight, bronze/stainless steel, 5 inches (127 mm) high
b. Interior: Heavy weight, steel, 5 inches (127 mm) high

5. 2 inches or thicker doors:

a. Exterior: Heavy weight, bronze or stainless steel, 5 inches (127 mm) high
b. Interior: Heavy weight, steel, 5 inches (127 mm) high

6. Adjust hinge width for door, frame, and wall conditions to allow proper degree of opening.
7. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.
8. Where new hinges are specified for existing doors or existing frames, provide new hinges of identical size to hinge preparation present in existing door or existing frame.
9. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:

a. Steel Hinges: Steel pins
b. Non-Ferrous Hinges: Stainless steel pins
c. Out-Swinging Exterior Doors: Non-removable pins
d. Out-Swinging Interior Lockable Doors: Non-removable pins
e. Interior Non-lockable Doors: Non-rising pins

2.4 CONTINUOUS HINGES

A. Manufacturers:

1. Scheduled Manufacturer:

    a. Ives, no substitute.

B. Requirements:

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

2.5 ELECTRIC POWER TRANSFER

A. Manufacturers:

1. Scheduled Manufacturer and Product:

    a. Von Duprin EPT-10, no substitute.

B. Requirements:

1. Provide power transfer with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
2. Locate electric power transfer per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.

2.6 DOOR CORDS

A. Manufacturers:

1. Scheduled Manufacturer and Product:

    a. Schlage 788/798 Series, no substitute.

B. Requirements:

1. Provide door cords with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
2. Locate electric power transfer per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.

2.7 FLUSH BOLTS

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives, no substitute.

B. Requirements:

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

2.8 COORDINATORS

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives, no substitute.

B. Requirements:

1. Where pairs of doors are equipped with automatic flush bolts, an astragal, or other hardware that requires synchronized closing of the doors, provide bar-type coordinating device, surface applied to underside of stop at frame head.
2. Provide filler bar of correct length for unit to span entire width of opening, and appropriate brackets for parallel arm door closers, surface vertical rod exit device strikes, or other stop mounted hardware. Factory-prepared coordinators for vertical rod devices as specified.

2.9 CYLINDRICAL LOCKS

A. By Owner.

2.10 EXIT DEVICES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

    a. Von Duprin 99 series, no substitute.

B. Requirements:

1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide grooved touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
6. Provide exit devices with weather resistant components that can withstand harsh conditions of various climates and corrosive cleaners used in outdoor pool environments.
7. Provide flush end caps for exit devices.
8. Provide exit devices with manufacturer's approved strikes.
9. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
10. Mount mechanism case flush on face of doors or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
11. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
12. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion, provide type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.
13. Provide electrified options as scheduled.
14. Top latch mounting: double- or single-tab mount for steel doors, face mount for aluminum doors eliminating requirement of tabs, and double tab mount for wood doors.
15. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.

2.11 ELECTRIC STRIKES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

    a. Von Duprin 6000 Series, no substitute.

B. Requirements:

1. Provide electric strikes designed for use with type of locks shown at each opening.
2. Provide electric strikes UL Listed as burglary resistant that are tested to a minimum endurance test of 1,000,000 cycles.
3. Where required, provide electric strikes UL Listed for fire doors and frames.

4. Provide transformers and rectifiers for each strike as required. Verify voltage with electrical contractor.

2.12 POWER SUPPLIES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Schlage/Von Duprin PS900 Series, no substitute.

B. Requirements:

1. Provide power supplies approved by manufacturer of supplied electrified hardware.
2. Provide appropriate quantity of power supplies necessary for proper operation of electrified locking components as recommended by manufacturer of electrified locking components with consideration for each electrified component using power supply, location of power supply, and approved wiring diagrams. Locate power supplies as directed by Architect.
3. Provide regulated and filtered 24 VDC power supply, and UL class 2 listed.
4. Provide power supplies with the following features:

a. 12/24 VDC Output, field selectable.
b. Class 2 Rated power limited output.
c. Universal 120-240 VAC input.
d. Low voltage DC, regulated and filtered.
e. Polarized connector for distribution boards.
f. Fused primary input.
g. AC input and DC output monitoring circuit w/LED indicators.
h. Cover mounted AC Input indication.
i. Tested and certified to meet UL294.
j. NEMA 1 enclosure.
k. Hinged cover w/lock down screws.
l. High voltage protective cover.

2.13 CYLINDERS

A. Manufacturers:

1. Scheduled Manufacturer and Product:

a. By Owner.

B. Requirements:

1. Provide cylinders/cores to match Owner’s existing key system, compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset, manufacturer’s series as indicated. Refer to “KEYING” article, herein.

2.14 DOOR CLOSERS

A. By Owner.

2.15 ELECTRO-MECHANICAL CLOSER/HOLDERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: LCN 4040SE series, no substitute.

B. Requirements:

1. Provide single-point or multi-point hold-open electro-mechanical closer/holders as specified. Coordinate voltage requirements and provide transformer if necessary.
2. Provide multi-point electro-mechanical closer/holders with swing free arms.
3. Provide closer/holders that function as full rack and pinion door closer when current is interrupted or continuous hold-open is not engaged.
4. Provide door closers with fully hydraulic, full rack and pinion action with high strength cast iron cylinder and full complement bearings at shaft.
5. Cylinder Body: 1-1/2 inch (38 mm) diameter with 5/8 inch (16 mm) diameter double heat-treated pinion journal.
6. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
7. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
8. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.
9. Pressure Relief Valve (PRV) Technology: Not permitted.
10. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.16 ELECTROMECHANICAL AUTOMATIC OPERATORS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. LCN Senior Swing, no substitute.

B. Requirements:

1. Provide low energy automatic operator units that are electromechanical design complying with ANSI/BHMA A156.19.

a. Opening: Powered by DC motor working through reduction gears.
b. Closing: Spring force.
c. Manual, hydraulic, or chain drive closers: Not permitted.

d. Operation: Motor is off when door is in closing mode. Door can be manually operated with power on or off without damage to operator. Provide variable adjustments, including opening and closing speed adjustment.
e. Cover: Aluminum.

2. Provide units with manual off/auto/hold-open switch, push and go function to activate power operator, vestibule interface delay, electric lock delay, hold-open delay adjustable from 1 to 32 seconds, and logic terminal to interface with accessories, mats, and sensors.
3. Provide drop plates, brackets, and adapters for arms as required to suit details.
4. Provide motion sensors and/or actuator switches, and receivers for operation as specified. Provide weather-resistant actuators at exterior applications.
5. Provide key switches, with LED's, recommended and approved by manufacturer of automatic operator as required for function as described in operation description of hardware sets. Cylinders: Refer to "KEYING" article, herein.
6. Provide complete assemblies of controls, switches, power supplies, relays, and parts/material recommended and approved by manufacturer of automatic operator for each individual leaf. Actuators control both doors simultaneously at pairs. Sequence operation of exterior and vestibule doors with automatic operators to allow ingress or egress through both sets of openings as directed by Architect. Locate actuators, key switches, and other controls as directed by Architect.

2.17 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives, no substitute.

B. Requirements:

1. Provide push plates, push bars, pull plates, pulls, and hands-free reversible door pulls with diameter and length as scheduled.

2.18 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives, no substitute.

B. Requirements:

1. Provide protection plates with a minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.

2. Sizes plates 2 inches (51 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards.
3. At fire rated doors, provide protection plates over 16 inches high with UL label.

2.19 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

A. Manufacturers:

1. Scheduled Manufacturers:

a. Glynn-Johnson, no substitute.

B. Requirements:

1. Provide overhead stop at any door where conditions do not allow for a wall stop or floor stop presents tripping hazard.

2.20 DOOR STOPS AND HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives, no substitute.

B. Provide door stops at each door leaf:

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

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

A. Manufacturers:

1. Scheduled Manufacturer:

a. Zero International, no substitute.

B. Requirements:

1. Provide thresholds, weather-stripping, and gasketing systems as specified and per architectural details. Match finish of other items.

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

2.22 DOOR POSITION SWITCHES

A. Manufacturers:

1. Scheduled Manufacturer:

a. Schlage, no substitute.

B. Requirements:

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

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation.

B. Field verify existing doors and frames receiving new hardware and existing conditions receiving new openings. Verify that new hardware is compatible with existing door and frame preparation and existing conditions.

C. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

D. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Where on-site modification of doors and frames is required:

1. Carefully remove existing door hardware and components being reused. Clean, protect, tag, and store in accordance with storage and handling requirements specified herein.
2. Field modify and prepare existing doors and frames for new hardware being installed.
3. When modifications are exposed to view, use concealed fasteners, when possible.
4. Prepare hardware locations and reinstall in accordance with installation requirements for new door hardware and with:

    a. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.
    b. Wood Doors: DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."
    c. Doors in rated assemblies: NFPA 80 for restrictions on on-site door hardware preparation.

3.3 INSTALLATION

A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.
3. Interior Architectural Wood Flush Doors: ANSI/WDMA I.S. 1A
4. Installation Guide for Doors and Hardware: DHI TDH-007-20

B. Install door hardware in accordance with NFPA 80, NFPA 101 and provide post-install inspection, testing as specified in section 1.03.E unless otherwise required to comply with governing regulations.

C. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.

D. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.

E. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

F. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

G. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.

H. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated.

I. Wiring: Coordinate with Division 26, ELECTRICAL and Division 28 ELECTRONIC SAFETY AND SECURITY sections for:

1. Conduit, junction boxes and wire pulls.
2. Connections to and from power supplies to electrified hardware.
3. Connections to fire/smoke alarm system and smoke evacuation system.
4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
5. Connections to panel interface modules, controllers, and gateways.
6. Testing and labeling wires with Architect's opening number.

J. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

K. Continuous Hinges: Re-locate the door and frame fire rating labels where they will remain visible so that the hinge does not cover the label once installed.

L. Door Closers & Auto Operators: Mount closers/operators on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers/operators so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.

M. Overhead Stops/Holders: Mount overhead stops/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.

N. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.

O. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

P. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.

Q. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

R. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

S. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.4 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
2. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.5 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items per manufacturer's instructions to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.6 DOOR HARDWARE SCHEDULE

A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.

B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.

C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.

D. Hardware Sets:

Hardware Group No. 01

A021

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	ENTRANCE/OFFICE LOCK W/ INSIDE INDICATOR	BY OWNER	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	695	IVE
1	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER

- INSTALL SALVAGED DOOR 273 AND EXISTING CONTINUOUS HINGE.

Hardware Group No. 02

A018 A016 A014

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	ENTRANCE/OFFICE LOCK W/ INSIDE INDICATOR	BY OWNER	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

Hardware Group No. 03

B168A

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	STOREROOM LOCK	BY OWNER	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	695	IVE
1	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER

- AT OPENING INSTALL SALVAGED DOOR 144 AND EXISTING CONTINUOUS HINGE.

Hardware Group No. 04

A026.1

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	STOREROOM LOCK	BY OWNER	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	OH STOP	100S	695	GLY
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	695	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

Hardware Group No. 05

C230B

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	CONST LATCHING BOLT	FB51P/FB61P AS REQ	613	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQ	643E/716	IVE
1	EA	STOREROOM LOCK	BY OWNER	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	COORDINATOR	COR X FL X MB - AS REQUIRED	711	IVE
2	EA	SURFACE CLOSER	BY OWNER	695	LCN
2	EA	ARMOR PLATE	8400 34" X 1" LDW B-CS	613	IVE
2	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

Hardware Group No. 07

A052.2

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	CONST LATCHING BOLT	FB51P/FB61P AS REQ	613	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQ	643E/716	IVE
1	EA	STOREROOM LOCK	BY OWNER	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	OH STOP	100S	695	GLY
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

Hardware Group No. 08

B144

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	CONST LATCHING BOLT	FB51P/FB61P AS REQ	613	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQ	643E/716	IVE
1	EA	STOREROOM LOCK	BY OWNER	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	COORDINATOR	COR X FL X MB - AS REQUIRED	711	IVE
2	EA	OH STOP	100S	695	GLY
2	EA	SURFACE CLOSER	BY OWNER	695	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	695	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

- AT OPENING INSTALL SALVAGED DOOR 439A. PROVIDE NEW BUTT HINGES.

Hardware Group No. 09

A015.1 A017 A019 A050.5 B156 B161 B163

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	PRIVACY LOCK	ND40S RHO OS-OCC BY OWNER	643e	SCH
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	695	IVE
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS	695	IVE
1	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

- AT OPENING A017 REUSE CONTINUOUS HINGE AND EXISTING DOOR 143.
- AT OPENING A019 REUSE CONTINUOUS HINGE AND EXISTING DOOR 122.

Hardware Group No. 10

A050.2 A050.3

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	PRIVACY LOCK	ND40S RHO OS-OCC BY OWNER	643e	SCH
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	695	IVE
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS	695	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

- AT OPENING A050.2 INSTALL SALVAGED DOOR 116 AND ASSOCIATED HINGE.
- AT OPENING A050.3 INSTALL SALVAGED DOOR 114 AND ASSOCIATED HINGE.

Hardware Group No. 11

B134.1

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	PRIVACY LOCK	ND40S RHO OS-OCC BY OWNER	643e	SCH
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS	695	IVE
1	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

- AT OPENING B134.1 INSTALL SALVAGED DOOR 281. PROVIDE NEW BUTT HINGES.

Hardware Group No. 12

A062 C210

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	PASSAGE SET	BY OWNER	643e	SCH
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

Hardware Group No. 14

A056B

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	PASSAGE SET	BY OWNER	643e	SCH
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	695	IVE
1	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	SET	GASKETING	770FSD-S	D	ZER
1	EA	DOOR BOTTOM	355AA/360AA-LS-Z49 AS REQ	AA	ZER

- INSTALL SALVAGED DOOR 137 AND ASSOCIATED CONTINUOUS HINGE.

Hardware Group No. 15

A026B

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	PASSAGE SET	BY OWNER	643e	SCH
1	EA	OH STOP	100S	695	GLY
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	695	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER

- INSTALL EXISTING DOOR 115 AND ASSOCIATED HINGE.

Hardware Group No. 16

A052.1

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	BY OWNER	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

Hardware Group No. 17

B170A B172B

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	CONST LATCHING BOLT	FB51P/FB61P AS REQ	613	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQ	643E/716	IVE
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	BY OWNER	643e	SCH
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	COORDINATOR	COR X FL X MB - AS REQUIRED	711	IVE
2	EA	SURFACE CLOSER	BY OWNER	695	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	695	IVE
2	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

Hardware Group No. 18

C212A

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	027XY/112XY HEIGHT AS REQ	710	IVE
1	EA	CONST LATCHING BOLT	FB51P/FB61P AS REQ	613	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQ	643E/716	IVE
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	BY OWNER	643e	SCH
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	COORDINATOR	COR X FL X MB - AS REQUIRED	711	IVE
2	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	SET	SEAL	PERIMETER SEAL BY FRAME MANUFACTURER		

Hardware Group No. 19

A052A

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	027XY/112XY HEIGHT AS REQ	710	IVE
1	EA	CONST LATCHING BOLT	FB51P/FB61P AS REQ	613	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQ	643E/716	IVE
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	BY OWNER	643e	SCH
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	COORDINATOR	COR X FL X MB - AS REQUIRED	711	IVE
2	EA	SURFACE CLOSER	BY OWNER	695	LCN
2	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	EA	SOUND SEAL	SOUND SEAL BY ALUMINUM FRAME MANUFACTURER		

Hardware Group No. 20

B160A

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	BY OWNER	643e	SCH
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	695	IVE
1	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER

- AT OPENING B160A INSTALL SALVAGED DOOR 135 AND ASSOCIATED CONTINUOUS HINGE.

Hardware Group No. 21

B170B C213E C231A

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	BY OWNER	643e	SCH
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	695	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

Hardware Group No. 22

A052B A054 A056A

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	BY OWNER	643e	SCH
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	695	IVE
1	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	SET	GASKETING	770FSD-S	D	ZER
1	EA	DOOR BOTTOM	355AA/360AA-LS-Z49 AS REQ	AA	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

Hardware Group No. 23

A025	A026A	A028A	A028B	A030.1	A030.2
A030.3	A030A	A030B	A031	A032	A033B
A036A	A036B	A038	A051	A053	B138
B140	C213B	C222A	C222B	C226A	C226B
C228A					

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	BY OWNER	643e	SCH
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

- AT OPENING A030B INSTALL SALVAGED DOOR 147C AND ASSOCIATED CONTINUOUS HINGE.
- AT OPENING A036B INSTALL SALVAGED DOOR 126 AND ASSOCIATED CONTINUOUS HINGE.

Hardware Group No. 24

A058

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	027XY/112XY HEIGHT AS REQ	710	IVE
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	BY OWNER	643e	SCH
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	OH STOP	100S	695	GLY
1	SET	SEAL	PERIMETER SEAL BY FRAME MANUFACTURER		

Hardware Group No. 25

A033A

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/ 716	IVE
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	BY OWNER	643e	SCH
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	OH STOP	100S	695	GLY
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

Hardware Group No. 26

C212B

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/ 716	IVE
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	BY OWNER	643e	SCH
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	OH STOP	100S	695	GLY
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	SET	SEAL	PERIMETER SEAL BY FRAME MANUFACTURER		

Hardware Group No. 30

B103 C213A

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	REMOVABLE MULLION	KR4954 STAB	695	VON
1	EA	PANIC HARDWARE	99-L-DT-06	710	VON
1	EA	PANIC HARDWARE	99-L-NL-06	710	VON
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
2	EA	SURFACE CLOSER	BY OWNER	695	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	695	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

Hardware Group No. 31

A020 A024

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	PUSH PLATE	8200 4" X 16"	695	IVE
1	EA	PULL PLATE	8303 10" 4" X 16"	643E/716	IVE
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	695	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

Hardware Group No. 32

A033C

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	027XY/112XY HEIGHT AS REQ	710	IVE
2	EA	PANIC HARDWARE	9947-L-BE-LBR-06	710	VON
2	EA	SURFACE CLOSER	BY OWNER	695	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	695	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER

Hardware Group No. 33

C228.1

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	POWER TRANSFER	EPT10 CON	695	VON
1	EA	EU STOREROOM LOCK	BY DIVISION 28 (BY OWNER)	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	695	IVE
1	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
1	EA	WIRE HARNESS	CON-XXP (IN DOOR)		SCH
1	EA	WIRE HARNESS	CON-6W		SCH
1	EA	CREDENTIAL READER	FURNISHED, INSTALLED AND COMMISSIONED BY OWNER		B/O
1	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE
1	EA	POWER SUPPLY	BY DIVISION 28		VON
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

- INGRESS BY VALID CREDENTIAL OR KEY OVERRIDE.
- ALWAYS FREE EGRESS.
- FAIL SECURE.

Hardware Group No. 34

K L N

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	027XY/112XY EPT HEIGHT AS REQ	710	IVE
1	EA	POWER TRANSFER	EPT10 CON	695	VON
1	EA	EU STOREROOM LOCK	BY DIVISION 28 (BY OWNER)	643e	SCH
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	695	IVE
1	EA	RAIN DRIP	142D DW + 4" - AS REQ	D	ZER
1	SET	GASKETING	328D-S H & J	D	ZER
1	EA	DOOR SWEEP	39D	D	ZER
1	EA	THRESHOLD	566D-V3-226	D	ZER
1	EA	WIRE HARNESS	CON-XXP (IN DOOR)		SCH
1	EA	WIRE HARNESS	CON-6W		SCH
1	EA	CREDENTIAL READER	FURNISHED, INSTALLED AND COMMISSIONED BY OWNER		B/O
1	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE
1	EA	POWER SUPPLY	BY DIVISION 28		VON

- INGRESS BY VALID CREDENTIAL OR KEY OVERRIDE.
- ALWAYS FREE EGRESS.
- FAIL SECURE.

Hardware Group No. 35

E

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	027XY/112XY EPT HEIGHT AS REQ	628	IVE
2	EA	POWER TRANSFER	EPT10 CON	689	VON
1	EA	REMOVABLE MULLION	KR4954 STAB	689	VON
1	EA	ELEC PANIC HARDWARE	QEL-99-EO-CON 24 VDC	626	VON
1	EA	ELEC PANIC HARDWARE	QEL-99-NL-OP-110MD-CON 24 VDC	626	VON
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	626	B/O
2	EA	90 DEG OFFSET PULL	8190EZHD 10" STD	630-316	IVE
2	EA	SURFACE CLOSER	4040XP SCUSH TBSRT	689	LCN
1	SET	SEAL	PERIMETER SEAL BY FRAME MANUFACTURER		
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	566A-V3-226	A	ZER
2	EA	WIRE HARNESS	CON-XXP (IN DOOR)		SCH
2	EA	WIRE HARNESS	CON-6W		SCH
1	EA	CREDENTIAL READER	REUSE EXISTING		B/O
2	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE
1	EA	POWER SUPPLY	BY DIVISION 28		VON

THE EXISTING ALUMINUM DOORS, WHICH ARE THE MEDIUM BRONZE COLOR, SHOULD HAVE THE BRONZE FINISH. ANY NEW ANODIZED ALUMINUM DOORS SHOULD HAVE HARDWARE THAT MATCHES THE DOOR FINISH. BASICALLY, THE HARDWARE COLOR SHOULD COORDINATE WITH THE DOOR COLOR. WHEREVER WE'RE REPLACING HARDWARE ON EXISTING DOORS, THE HARDWARE SHOULD BE THE BRONZE FINISH WE'VE DISCUSSED.

- INGRESS BY VALID CREDENTIAL, ACCESS CONTROL SCHEDULE OR KEY OVERRIDE.
- ALWAYS FREE EGRESS.
- FAIL SECURE.

Hardware Group No. 36

A010A

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	027XY/112XY EPT HEIGHT AS REQ	710	IVE
1	EA	POWER TRANSFER	EPT10 CON	695	VON
1	EA	ELEC PANIC HARDWARE	QEL-99-NL-OP-110MD-CON 24 VDC	710	VON
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	90 DEG OFFSET PULL	8190EZHD 10" STD	643E/716	IVE
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	SET	SEAL	PERIMETER SEAL BY FRAME MANUFACTURER		
1	EA	WIRE HARNESS	CON-XXP (IN DOOR)		SCH
1	EA	WIRE HARNESS	CON-6W		SCH
1	EA	CREDENTIAL READER	FURNISHED, INSTALLED AND COMMISSIONED BY OWNER		B/O
1	EA	DESK MOUNT BUTTON	BY DIVISION 28	628	SCE
1	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE
1	EA	POWER SUPPLY	BY DIVISION 28		VON

- INGRESS BY VALID CREDENTIAL. REMOTE RELEASE OR KEY OVERRIDE.
- ALWAYS FREE EGRESS.
- FAIL SECURE.

Hardware Group No. 37

A010B

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	027XY/112XY HEIGHT AS REQ	710	IVE
1	EA	INSTITUTION LOCK	BY OWNER	643e	SCH
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	ELECTRIC STRIKE	6211AL FSE DSLC CON 12/16/24/28 VAC/VDC	613	VON
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	SET	SEAL	PERIMETER SEAL BY FRAME MANUFACTURER		
1	EA	WIRE HARNESS	CON-6W		SCH
2	EA	CREDENTIAL READER	FURNISHED, INSTALLED AND COMMISSIONED BY OWNER		B/O
1	EA	DESK MOUNT BUTTON	BY DIVISION 28	628	SCE
1	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE
1	EA	POWER SUPPLY	BY DIVISION 28		VON

- INGRESS AND EGRESS BY VALID CREDENTIAL. REMOTE RELEASE OR KEY OVERRIDE.
- FAIL SECURE.

Hardware Group No. 38

A

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	027XY/112XY EPT HEIGHT AS REQ	628	IVE
2	EA	POWER TRANSFER	EPT10 CON	689	VON
1	EA	REMOVABLE MULLION	KR4954 STAB	689	VON
1	EA	ELEC PANIC HARDWARE	QEL-99-EO-CON-SNB 24 VDC	626	VON
1	EA	ELEC PANIC HARDWARE	QEL-99-NL-OP-110MD-CON 24 VDC	626	VON
1	EA	MULLION STORAGE KIT	MT54	689	VON
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	626	B/O
2	EA	90 DEG OFFSET PULL	8190EZHD 10" STD	630-316	IVE
2	EA	OH STOP	100S	630	GLY
1	EA	SURF. AUTO OPERATOR	9553 REG2 LESS TRACK AS REQ (120/240 VAC)	ANCLR	LCN
1	EA	ACTUATOR, TOUCHLESS	8310-810D	630	LCN
1	EA	ACTUATOR, TOUCHLESS	8310-813	BLK	LCN
1	EA	MULLION SEAL	139N		ZER
1	SET	SEAL	PERIMETER SEAL BY FRAME MANUFACTURER		
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	566A-V3-226	A	ZER
2	EA	WIRE HARNESS	CON-XXP (IN DOOR)		SCH
2	EA	WIRE HARNESS	CON-6W		SCH
1	EA	CREDENTIAL READER	FURNISHED, INSTALLED AND COMMISSIONED BY OWNER		B/O
1	EA	DESK MOUNT BUTTON	BY DIVISION 28	628	SCE
2	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE
1	EA	POWER SUPPLY	BY DIVISION 28		VON

THE EXISTING ALUMINUM DOORS, WHICH ARE THE MEDIUM BRONZE COLOR, SHOULD HAVE THE BRONZE FINISH. ANY NEW ANODIZED ALUMINUM DOORS SHOULD HAVE HARDWARE THAT MATCHES THE DOOR FINISH. BASICALLY, THE HARDWARE COLOR SHOULD COORDINATE WITH THE DOOR COLOR. WHEREVER WE'RE REPLACING HARDWARE ON EXISTING DOORS, THE HARDWARE SHOULD BE THE BRONZE FINISH WE'VE DISCUSSED.

- INGRESS BY VALID CREDENTIAL, ACCESS CONTROL SCHEDULE, REMOTE RELEASE OR KEY OVERRIDE.
- ALWAYS FREE EGRESS.
- EXTERIOR ACTUATOR ENERGIZED BY VALID CREDENTIAL OR ACCESS CONTROL SCHEDULE.
- INTERIOR ACTUATOR ALWAYS ENERGIZED.
- ACTIVATING THE ACTUATOR WILL BEGIN A SEQUENCE, FIRST THE LATCHES WILL RETRACT, THEN THE OPERATOR WILL OPEN THE DOORS.
- FAIL SECURE.

Hardware Group No. 39

Q1 Q R

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	027XY/112XY EPT HEIGHT AS REQ	710	IVE
1	EA	POWER TRANSFER	EPT10 CON	695	VON
1	EA	PANIC HARDWARE	LD-99-EO	710	VON
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	695	IVE
1	SET	SEAL	PERIMETER SEAL BY FRAME MANUFACTURER		
1	EA	DOOR SWEEP	39D	D	ZER
1	EA	THRESHOLD	566D-V3-226	D	ZER
1	EA	WIRE HARNESS	CON-XXP (IN DOOR)		SCH
1	EA	WIRE HARNESS	CON-6W		SCH
1	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE

THE EXISTING ALUMINUM DOORS, WHICH ARE THE MEDIUM BRONZE COLOR, SHOULD HAVE THE BRONZE FINISH. ANY NEW ANODIZED ALUMINUM DOORS SHOULD HAVE HARDWARE THAT MATCHES THE DOOR FINISH. BASICALLY, THE HARDWARE COLOR SHOULD COORDINATE WITH THE DOOR COLOR. WHEREVER WE'RE REPLACING HARDWARE ON EXISTING DOORS, THE HARDWARE SHOULD BE THE BRONZE FINISH WE'VE DISCUSSED.

- DOOR MONITORED ONLY.

Hardware Group No. 40

B C G

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	027XY/112XY EPT HEIGHT AS REQ	628	IVE
1	EA	REMOVABLE MULLION	KR4954 STAB	689	VON
2	EA	PANIC HARDWARE	LD-99-EO	626	VON
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	626	B/O
2	EA	SURFACE CLOSER	4040XP SCUSH TBSRT	689	LCN
1	EA	MULLION SEAL	139N		ZER
1	SET	SEAL	PERIMETER SEAL BY FRAME MANUFACTURER		
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	566A-V3-226	A	ZER
2	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE

THE EXISTING ALUMINUM DOORS, WHICH ARE THE MEDIUM BRONZE COLOR, SHOULD HAVE THE BRONZE FINISH. ANY NEW ANODIZED ALUMINUM DOORS SHOULD HAVE HARDWARE THAT MATCHES THE DOOR FINISH. BASICALLY, THE HARDWARE COLOR SHOULD COORDINATE WITH THE DOOR COLOR. WHEREVER WE'RE REPLACING HARDWARE ON EXISTING DOORS, THE HARDWARE SHOULD BE THE BRONZE FINISH WE'VE DISCUSSED.

- DOOR MONITORED ONLY.

Hardware Group No. 42

A013.2 B124 B134 C211A

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	ENTRANCE/OFFICE LOCK W/ INSIDE INDICATOR	BY OWNER	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
			BALANCE OF HARDWARE EXISTING		

- AT OPENING B134 INSTALL SALVAGED DOOR 307 AND ASSOCIATED HINGE.

Hardware Group No. 43

B166A C218 C239A

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	STOREROOM LOCK	BY OWNER	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
2	EA	SURFACE CLOSER	BY OWNER	695	LCN
			BALANCE OF HARDWARE EXISTING		

Hardware Group No. 44

A013.1 A013.3 A013.4 A015B A022 A023.2
A023.3 A050.1 C218.1

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	STOREROOM LOCK	BY OWNER	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
			BALANCE OF HARDWARE EXISTING		

- AT OPENING A015B INSTALL DOOR AND CONTINUOUS HINGE FROM EXISTING DOOR 123.

Hardware Group No. 46

C204

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	PASSAGE SET	BY OWNER	643e	SCH
			BALANCE OF HARDWARE EXISTING		

Hardware Group No. 47

C224A C231B

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	BY OWNER	643e	SCH
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
			BALANCE OF HARDWARE EXISTING		

Hardware Group No. 48

A023	A027C	A029C	A027A	A027B	A029A
A029B	A034	B116	B135	B136	B137
B139	B141	B146	B172A	C213D	

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	BY OWNER	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
			BALANCE OF HARDWARE EXISTING		

- AT OPENING B172A INSTALL SALVAGED DOOR 157 AND EXISTING CONTINUOUS HINGE.

Hardware Group No. 49

A003

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	PANIC HARDWARE	LD-99-EO	710	VON
2	EA	90 DEG OFFSET PULL	8190EZHD 10" STD	643E/716	IVE
2	EA	DOOR SWEEP	39D	D	ZER
1	EA	THRESHOLD	566D-V3-226	D	ZER
			BALANCE OF HARDWARE EXISTING		

Hardware Group No. 50

C237A C237C

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
		REMOVE THUMBTURN LOCK - NO OTHER WORK		

Hardware Group No. 51

A011 A013A A013B A013C A023.1 A050
B142

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	DOOR CORD	788-12/788-18 LESS WIRES	626	SCE
1	EA	EU STOREROOM LOCK	BY DIVISION 28 (BY OWNER)	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	CREDENTIAL READER	FURNISHED, INSTALLED AND COMMISSIONED BY OWNER		B/O
1	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE
1	EA	POWER SUPPLY	BY DIVISION 28		VON
1			BALANCE OF HARDWARE EXISTING		

- INGRESS BY VALID CREDENTIAL OR KEY OVERRIDE.
- ALWAYS FREE EGRESS.
- FAIL SECURE.

Hardware Group No. 52

S2 T2

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	DOOR CORD	788-12/788-18 LESS WIRES	626	SCE
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
2	EA	WIRE HARNESS	CON-XXP (IN DOOR)		SCH
2	EA	WIRE HARNESS	CON-6W		SCH
1	EA	CREDENTIAL READER	FURNISHED, INSTALLED AND COMMISSIONED BY OWNER		B/O
2	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE
1	EA	POWER SUPPLY	BY DIVISION 28		VON
1			BALANCE OF HARDWARE EXISTING		

THE EXISTING ALUMINUM DOORS, WHICH ARE THE MEDIUM BRONZE COLOR, SHOULD HAVE THE BRONZE FINISH. ANY NEW ANODIZED ALUMINUM DOORS SHOULD HAVE HARDWARE THAT MATCHES THE DOOR FINISH. BASICALLY, THE HARDWARE COLOR SHOULD COORDINATE WITH THE DOOR COLOR. WHEREVER WE'RE REPLACING HARDWARE ON EXISTING DOORS, THE HARDWARE SHOULD BE THE BRONZE FINISH WE'VE DISCUSSED.

- INGRESS BY VALID CREDENTIAL, ACCESS CONTROL SCHEDULE OR KEY OVERRIDE.
- ALWAYS FREE EGRESS.
- FAIL SECURE.

Hardware Group No. 53

J M

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	DOOR CONTACT	BY DIVISION 28	628	SCE

Hardware Group No. 54

S1

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CREDENTIAL READER	FURNISHED, INSTALLED AND COMMISSIONED BY OWNER		B/O
2	EA	DOOR CONTACT	BY DIVISION 28 BALANCE OF HARDWARE EXISTING	WHT	SCE

Hardware Group No. 55

P

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	DOOR CONTACT	BY DIVISION 28 BALANCE OF HARDWARE EXISTING	WHT	SCE

Hardware Group No. 56

T1

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	DOOR CORD	788-12/788-18 LESS WIRES	626	SCE
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
2	EA	WIRE HARNESS	CON-XXP (IN DOOR)		SCH
2	EA	WIRE HARNESS	CON-6W		SCH
2	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE
1	EA	POWER SUPPLY	BY DIVISION 28		VON
1			BALANCE OF HARDWARE EXISTING		

THE EXISTING ALUMINUM DOORS, WHICH ARE THE MEDIUM BRONZE COLOR, SHOULD HAVE THE BRONZE FINISH. ANY NEW ANODIZED ALUMINUM DOORS SHOULD HAVE HARDWARE THAT MATCHES THE DOOR FINISH. BASICALLY, THE HARDWARE COLOR SHOULD COORDINATE WITH THE DOOR COLOR. WHEREVER WE'RE REPLACING HARDWARE ON EXISTING DOORS, THE HARDWARE SHOULD BE THE BRONZE FINISH WE'VE DISCUSSED.

- INGRESS BY ACCESS CONTROL SCHEDULE.
- ALWAYS FREE EGRESS.
- FAIL SECURE.

Hardware Group No. 57

D F O

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	SURFACE CLOSER	BY OWNER	695	LCN
2	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE
			BALANCE OF HARDWARE EXISTING		

Hardware Group No. 58

C226C C228 C228B C243B

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
		HARDWARE BY OVERHEAD DOOR MANUFACTURER		

Hardware Group No. 59

A020.1 C243A

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	STOREROOM LOCK	BY OWNER	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	695	IVE
1	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER

Hardware Group No. 63

A060 C245

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	027XY/112XY EPT HEIGHT AS REQ	710	IVE
1	EA	POWER TRANSFER	EPT10 CON	695	VON
1	EA	EU STOREROOM LOCK	BY DIVISION 28 (BY OWNER)	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	695	IVE
1	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
1	EA	WIRE HARNESS	CON-XXP (IN DOOR)		SCH
1	EA	WIRE HARNESS	CON-6W		SCH
1	EA	CREDENTIAL READER	FURNISHED, INSTALLED AND COMMISSIONED BY OWNER		B/O
1	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE
1	EA	POWER SUPPLY	BY DIVISION 28		VON

- AT OPENING A060 INSTALL SALVAGED DOOR 136 AND ASSOCIATED HINGE.

- INGRESS BY VALID CREDENTIAL OR KEY OVERRIDE.
- ALWAYS FREE EGRESS.
- FAIL SECURE.

Hardware Group No. 66

B166B

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	FILLER PLATE	PROVIDE FILLER PLATES FOR DEADBOLT, LATCH AND STRIKE		DON
1	EA	STOREROOM LOCK	BY OWNER	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
			BALANCE OF HARDWARE EXISTING		

Hardware Group No. 70

V

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	REMOVABLE MULLION	KR4954 STAB	689	VON
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	626	B/O
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	566A-V3-226	A	ZER
2	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE
			BALANCE OF HARDWARE EXISTING		

Hardware Group No. 71

B160B

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	FILLER PLATE	PROVIDE FILLER PLATES FOR DEADBOLT, LATCH AND STRIKE		DON
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	BY OWNER	643e	SCH
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
			BALANCE OF HARDWARE EXISTING		

Hardware Group No. 73

B164 C211.1

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1/5BB1HW 4.5 X 4.5 (NRP AT OUTSWING LOCKING DOORS)	F643E/716	IVE
1	EA	STOREROOM LOCK	BY OWNER	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
		NOTE	FURNISH 5BB1HW 5" X 4.5" HINGES @ DOORS OVER 3'0" WIDE		
		NOTE	FURNISH ADDITIONAL HINGES AS REQUIRED FOR DOORS 7'6" AND OVER		

- AT OPENING B164 INSTALL SALVAGED DOOR 134 AND EXISTING CONTINUOUS HINGE.

Hardware Group No. 74

C220

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	BY OWNER	643e	SCH
2	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	OH STOP	100S	695	GLY
1	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	695	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER

- AT OPENING C220 INSTALL SALVAGED DOOR 124 AND EXISTING CONTINUOUS HINGE.

Hardware Group No. 78

C232 C239B

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	DOOR CORD	788-12/788-18 LESS WIRES	626	SCE
1	EA	EU STOREROOM LOCK	BY DIVISION 28 (BY OWNER)	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	CREDENTIAL READER	FURNISHED, INSTALLED AND COMMISSIONED BY OWNER		B/O
1	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE
1	EA	POWER SUPPLY	BY DIVISION 28		VON
1			BALANCE OF HARDWARE EXISTING		

- INGRESS BY VALID CREDENTIAL OR KEY OVERRIDE.
- ALWAYS FREE EGRESS.
- FAIL SECURE.

Hardware Group No. 80

C241

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
		HARDWARE SALVAGED FROM ANOTHER DOOR - NO NEW HARDWARE		

- EXISTING DOOR 441A.

Hardware Group No. 82

U

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	REMOVABLE MULLION	KR4954 STAB	689	VON
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	626	B/O
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	566A-V3-226	A	ZER
			EXISTING DOOR, FRAME AND HARDWARE TO REMAIN		

Hardware Group No. 83

ST-1 ST-2

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	DOOR CORD	788-12/788-18 LESS WIRES	626	SCE
1	EA	CONST LATCHING BOLT	FB51P/FB61P AS REQ	613	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQ	643E/716	IVE
1	EA	EU STOREROOM LOCK	BY DIVISION 28 (BY OWNER)	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
2	EA	SURFACE CLOSER	BY OWNER	695	LCN
1	SET	GASKETING	770FSD-S	D	ZER
2	EA	DOOR BOTTOM	355AA/360AA-LS-Z49 AS REQ	AA	ZER
1	EA	ASTRAGAL - LENGTH AS REQUIRED	40/41D	D	ZER
1	EA	CREDENTIAL READER	FURNISHED, INSTALLED AND COMMISSIONED BY OWNER		B/O
1	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE
1	EA	POWER SUPPLY	BY DIVISION 28		VON
1			BALANCE OF HARDWARE EXISTING		

- INGRESS BY VALID CREDENTIAL OR KEY OVERRIDE.
- ALWAYS FREE EGRESS.
- FAIL SECURE.

Hardware Group No. 84

H2

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	566A-V3-226	A	ZER
1	EA	CREDENTIAL READER	FURNISHED, INSTALLED AND COMMISSIONED BY OWNER		B/O
2	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE
			BALANCE OF HARDWARE EXISTING		

Hardware Group No. 85

H1

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	566A-V3-226	A	ZER
2	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE
			BALANCE OF HARDWARE EXISTING		

Hardware Group No. 86

I

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	PANIC HARDWARE	99-EO	710	VON
1	SET	GASKETING	328D-S H & J	D	ZER
1	EA	DOOR SWEEP	39D	D	ZER
1	EA	DOOR CONTACT	BY DIVISION 28	WHT	SCE
1			BALANCE OF HARDWARE EXISTING		

Hardware Group No. 88

B110 B112A B112B B114 B150 B152A
B152B B154

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	027XY/112XY HEIGHT AS REQ	628	IVE
1	EA	PUSH/PULL BAR	9190HD-10"-NO	630	IVE
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	BY OWNER	689	LCN
1	SET	SEAL	PERIMETER SEAL BY FRAME MANUFACTURER		

Hardware Group No. 89

C211B

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	ENTRANCE/OFFICE LOCK W/ INSIDE INDICATOR	BY OWNER	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	WALL STOP	WS406/407CCV	643E/716	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER

AT OPENING C211B INSTALL SALVAGED DOOR 102B AND EXISTING CONTINUOUS HINGE.

Hardware Group No. 90

B132

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	ENTRANCE/OFFICE LOCK W/ INSIDE INDICATOR	BY OWNER	643e	SCH
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
1	EA	COVER PLATE	BY OWNER		

Hardware Group No. 91

A002 A006A A006B A007A A007B C201A
C206A C206B

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	027XY/112XY HEIGHT AS REQ	710	IVE
1	EA	PANIC HARDWARE	9947-L-DT-LBR-06	710	VON
1	EA	PANIC HARDWARE	9947-L-NL-LBR-06	710	VON
1	EA	CYLINDER/CORE	MATCH EXISTING CORE TYPE AND KEY SYSTEM (BY OWNER)	613	B/O
2	EA	OH STOP	100SE	695	GLY
2	EA	FIRE/LIFE CLOSER	4040SE TBWMS 24V/120V AC/DC AS REQ	695	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	695	IVE
1	EA	GASKETING	488S-BK (OMIT @ NON RATED OPENINGS USE SILENCERS)	BK	ZER
2	EA	MEETING STILE	8193D	D	ZER

- DOOR PART OF LOCKDOWN SYSTEM.

Hardware Group No. 92

A015A

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
		NEED DIRECTION ON HARDWARE		

END OF SECTION

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Glass products.
2. Laminated glass.
3. Fire-protection-rated glazing.
4. Insulating glass.
5. Glazing sealants.
6. Glazing tapes.
7. Miscellaneous glazing materials.

B. Related Requirements:

1. Section 088300 "Mirrors."
2. Section 088700 “Decorative Glazing Film.”

1.2 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.

C. IBC: International Building Code.

D. Interspace: Space between lites of an insulating-glass unit.

1.3 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances to achieve proper safety margins for glazing retention under each design load case, load case combination, and service condition.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review temporary protection requirements for glazing during and after installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches (300 mm) square.

1. Coated glass.
2. Insulating glass.
3. Spandrel glass.
4. Decorative film for glass.
5. **Laminated glass.**

C. Glazing Accessory Samples: For sealants and spacers, in 12-inch (300-mm) lengths.

D. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, manufacturers of fabricated glass units, glass testing agency and sealant testing agency.

B. Product Certificates: For glass.

C. Product Test Reports: For fabricated glass and glazing sealants, for tests performed by a qualified testing agency.

1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.

D. Preconstruction adhesion and compatibility test report.

E. Sample Warranties: For special warranties.

1.7 QUALITY ASSURANCE

A. Fabricated-Glass Manufacturer Qualifications: A qualified manufacturer of fabricated glass units who is approved and certified by primary glass manufacturer.

B. Installer Qualifications: A qualified glazing contractor for this Project who is certified under the North American Contractor Certification Program (NACC) for Architectural Glass & Metal (AG&M) contractors.

C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.

D. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021 to conduct the testing indicated.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials in accordance with manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F (4.4 deg C).

1.10 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.

1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

1. Warranty Period: 10 years from date of Substantial Completion.

C. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Glass: Obtain each type of glass from single source from single manufacturer.

B. Source Limitations for Glazing Accessories: For each product and installation method, obtain from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined in accordance with the IBC and ASTM E1300:

1. Design Wind Pressures: As indicated on Drawings.

a. Wind Design Data: As indicated on Drawings.

2. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch (25 mm), whichever is less.
3. Thermal Loads: Design glazing to resist thermal stress breakage induced by differential temperature conditions and limited air circulation within individual glass lites and insulated glazing units.

C. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

D. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites of thickness indicated.
2. For laminated-glass lites, properties are based on products of construction indicated.
3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
4. U-Factors: Center-of-glazing values, in accordance with NFRC 100 and based on most current non-beta version of LBL's WINDOW computer program, expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).
5. SHGC and Visible Transmittance: Center-of-glazing values, in accordance with NFRC 200 and based on most current non-beta version of LBL's WINDOW computer program.
6. Visible Reflectance: Center-of-glazing values, in accordance with NFRC 300.

2.3 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. NGA Publications: "Laminated Glazing Reference Manual" and "Glazing Manual."
2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the IGCC.

D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than thickness indicated.

1. Minimum Glass Thickness for Exterior Lites: 6 mm.

E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

A. Clear Annealed Float Glass: ASTM C1036, Type I, Class 1 (clear), Quality-Q3.

B. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

C. Heat-Strengthened Float Glass: ASTM C1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

D. Glazing Film GF-01:

1. Products: 3M; Simple Frosted Window Films, or equal.
2. Film Type: Vinyl.
3. Adhesive: Acrylic pressure sensitive.
4. Application: Locations as indicated on Drawings over existing glazing.
5. Finish/Texture/Color: As indicated in Finish Schedule on Drawings.

2.5 LAMINATED GLASS

A. Laminated Glass: ASTM C1172. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.

1. Construction: Laminate glass with polyvinyl butyral interlayer to comply with interlayer manufacturer's written instructions.
2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
3. Interlayer Color: Clear unless otherwise indicated.

2.6 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified in accordance with ASTM E2190.

1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
2. Perimeter Spacer: Aluminum with black, color anodic finish.
3. Desiccant: Molecular sieve or silica gel, or a blend of both.

2.7 GLAZING SEALANTS

A. General:

1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range of industry colors.

B. Neutral-Curing Silicone Glazing Sealant, Class 50: Complying with ASTM C920, Type S, Grade NS, Use NT.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. GE Construction Sealants; Momentive Performance Materials Inc.
b. May National Associates, Inc.; a subsidiary of Sika Corporation.
c. Pecora Corporation.
d. Sika Corporation.
e. The Dow Chemical Company.
f. Tremco Incorporated.

C. Glazing Sealants for Fire-Rated Glazing Products: Neutral-curing silicone glazing sealant complying with ASTM C920, Type S, Grade NS, Class 50, Use NT. Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated.

2.8 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:

1. AAMA 804.3 tape, where indicated.
2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:

1. AAMA 810.1, Type 1, for glazing applications in which tape acts as primary sealant.
2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.9 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, recommended in writing by manufacturers of glass and other glazing materials for

application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks:

1. EPDM or Silicone with Shore A durometer hardness of 85, plus or minus 5.
2. Type recommended in writing by sealant or glass manufacturer.

D. Spacers:

1. Neoprene blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
2. Type recommended in writing by sealant or glass manufacturer.

E. Edge Blocks:

1. EPDM or Silicone with Shore A durometer hardness per manufacturer's written instructions.
2. Type recommended in writing by sealant or glass manufacturer.

F. Cylindrical Glazing Sealant Backing: ASTM C1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.10 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

a. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.

2. Presence and functioning of weep systems.
3. Minimum required face and edge clearances.
4. Effective sealing between joints of glass-framing members.

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

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
2. Provide 1/8-inch- (3-mm-) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and in accordance with requirements in referenced glazing publications.

H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended in writing by gasket manufacturer.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant.

G. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.

D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.

E. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 CLEANING AND PROTECTION

A. Immediately after installation, remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is damaged during construction period.

D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.8 MONOLITHIC GLASS SCHEDULE

A. Clear Glass Type GL-01: Fully tempered float glass.
   1. Minimum Thickness: 6 mm.
   2. Safety glazing required.

3.9 LAMINATED GLASS SCHEDULE

A. Clear Laminated Glass Type GL-02: Two plies of heat-strengthened float glass.
   1. Minimum Thickness of Each Glass Ply: 6 mm.
   2. Interlayer Thickness: 0.030 inch (0.76 mm).
   3. Safety glazing required.

B. Clear Laminated Glass Type GL-03: Two plies of heat-strengthened float glass.
   1. Minimum Thickness of Each Glass Ply: 6 mm.
   2. Interlayer Thickness: 0.090 inch (0.76 mm).
   3. Safety glazing (attack-resistant, not ballistic-resistant) required.

3.10 INSULATING GLASS SCHEDULE

A. Low-E-Coated, Clear Insulating Glass Type I: IGU-01:

   1. Basis-of-Design Product: Vitro Architectural Glass - Solarban 70 Solar Control.
   2. Overall Unit Thickness: 1 inch (25 mm).
   3. Minimum Thickness of Each Glass Lite: 6 mm.
   4. Outdoor Lite: Fully tempered float glass.
   5. Interspace Content: Argon.
   6. Indoor Lite: Fully tempered float glass.
   7. Low-E Coating: Sputtered on second surface.
   8. Winter Nighttime U-Factor: 0.25 maximum.
   9. Visible Light Transmittance: 70 percent minimum.
   10. SGHC: 0.37 maximum.
   11. Safety glazing required.

B. Low-E-Coated, Insulating Spandrel Glass Type I: IGU-02:

   1. Basis-of-Design Product: Vitro Architectural Glass - Solarban 70 Solar Control.
   2. Overall Unit Thickness: 1 inch (25 mm).
   3. Minimum Thickness of Each Glass Lite: 6 mm.
   4. Outdoor Lite: Fully tempered float glass.
   5. Interspace Content: Argon.
   6. Indoor Lite: Fully tempered fine-fritted spandrel glass.
   7. Low-E Coating: Sputtered on second surface.
   8. Winter Nighttime U-Factor: 0.25 maximum.
   9. Visible Light Transmittance: 70 percent minimum.
   10. SGHC: 0.37 maximum.

11. Safety glazing required.

3.11 INSULATING-LAMINATED-GLASS SCHEDULE

A. **Low-E-Coated, Clear Insulating Laminated Glass Type IGU-03**:

1. **Basis-of-Design Product: Vitro Architectural Glass - Solarban 70 Solar Control**..
2. **Overall Unit Thickness: 1-3/16 inch (30 mm)**.
3. **Minimum Thickness of Indoor Lite: 6 mm**.
4. **Indoor Lite: Clear fully tempered float glass**.
5. **Interspace Content: Argon**.
6. **Outdoor Lite: Clear laminated glass with two plies of fully tempered float glass**.
    a. **Minimum Thickness of Each Glass Ply**: **4 mm**.
    b. **Interlayer Thickness: 0.090 inch (2.29 mm)**.
7. **Low-E Coating: Sputtered on second surface**.
8. **Winter Nighttime U-Factor: 0.25 maximum**.
9. **Visible Light Transmittance:** <**67**> **percent minimum**.
10. **SGHC: 0.37 maximum**.
11. **Safety glazing required**.

END OF SECTION 088000

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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.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, finishes, and accessories for visual display units.

B. 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. Show locations and layout of special-purpose graphics.
4. Include sections of typical trim members.

C. Samples: For each type of visual display unit indicated.

1. Visual Display Panel: Not less than 8-1/2 by 11 inches (215 by 280 mm), with facing, core, and backing indicated for final Work. Include one panel for each type, color, and texture required.

D. Product Schedule: For visual display units. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

A. Sample Warranties: For manufacturer's special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For visual display units to include in maintenance manuals.

1.6 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.

1.7 FIELD 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.

1.8 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 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E84; 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: 450 or less.

2.2 VISUAL DISPLAY BOARD ASSEMBLY (MBD)

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following: Refer to Finish Schedule and as Indicated on Drawings,

1. ADP Lemco.
2. AJW Architectural Products.
3. ASI Visual Display Products.
4. Claridge Products and Equipment, Inc.
5. Platinum Visual Systems.
6. PolyVision Corporation.
7. **Educational Equipment.**

B. Visual Display Board Assembly: Factory fabricated

1. Assembly: Markerboard.
2. Corners: Square.
3. Width: As indicated on Drawings.
4. Height: 4 feet, unless otherwise indicated on Drawings.
5. Mounting Method: Direct to wall.

C. Markerboard Panel (MB-01): Magnetic porcelain-enamel-faced markerboard panel on core indicated.

1. Color: White.

D. Tackboard Panel (TB-01): Natural-cork tackboard panel on core indicated.

E. Aluminum Frames[and Trim]: Fabricated from not less than 0.062-inch- (1.57-mm-) thick, extruded aluminum; slim size and standard shape.

1. Field-Applied Trim: Manufacturer's standard, snap-on trim with no visible screws or exposed joints.
2. Aluminum Finish: Clear anodic finish.

F. Joints: Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, balanced around center of board, as acceptable to Architect.

G. Combination Assemblies: Provide manufacturer's standard exposed trim between abutting sections of visual display panels.

H. Chalktray: Manufacturer's standard; continuous.

1. Box Type: Extruded aluminum with slanted front, grooved tray, and cast-aluminum end closures.

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: 2 inches (50 mm) high by full length of visual display unit.

2. Map Hooks: Two map hooks for every 24 inches (mm) of display rail or fraction thereof.
3. Map Hooks and Clips: Two map hooks with flexible metal clips for every 24 inches (mm) of display rail or fraction thereof.
4. Flag Holder: One for each room.
5. Aluminum Color: Match finish of visual display assembly trim.

J. Paper Holder Display Rail: Extruded aluminum; designed to hold paper by clamping action.

K. Special-Purpose Graphics: Fuse or paint semivisible writing guidelines graphic onto surface of visual display unit, in locations indicated.

2.3 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 high and low-gloss finish. Laminate panels under heat and pressure with manufacturer's standard, flexible waterproof adhesive.

1. Finish: High gloss, unless indicated otherwise.
2. Face Sheet Thickness: 0.021 inch (0.53 mm) uncoated base metal thickness.
3. Particleboard Core: 3/8 inch (9.5 mm) thick; with 0.015-inch- (0.38-mm-) thick, aluminum sheet backing.
4. Laminating Adhesive: Manufacturer's standard moisture-resistant thermoplastic type.

2.4 TACKBOARD PANELS

A. Tackboard Panels (Abbreviation is “TBD” on drawings, where applicable):

1. Facing: 1/4-inch- (6-mm-) thick, natural cork.
2. Core: 3/8-inch- (9.5-mm-) thick fiberboard.

2.5 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. Particleboard: ANSI A208.1, Grade M-1.

E. Extruded Aluminum: ASTM B221 (ASTM B221M), 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.

2.6 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM/NOMMA 500 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.

2.7 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 walls and partitions for proper preparation and backing for visual display units.

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, 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.

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.

3.4 CLEANING AND PROTECTION

A. Clean visual display units in accordance with 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.

END OF SECTION 101100

SECTION 111700 - TELLER AND SERVICE EQUIPMENT

PART 1 - GENERAL

1.1. SUMMARY

A. Section Includes:
1. Deal trays.
2. Intercom.

B. Related Sections:
1. Section 054000 - Cold Formed Metal Framing.
2. Section 092900 - Gypsum Board.

1.2. REFERENCES

A. American Architectural Manufacturers Association:
1. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
2. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.

B. American Society Mechanical Engineers Standards:
1. ASME SA-240/SA-240M - Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

C. ASTM International:
1. ASTM A27/A27M - Standard Specification for Steel Castings, Carbon, for General Application.
2. ASTM A 36/A 36M. - Standard Specification for Carbon Structural Steel.
3. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings.
4. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
5. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
6. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
7. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
8. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
9. ASTM B221/B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
10. ASTM C1048 - Standard Specification for Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass.

11. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
12. ASTM D1929 - Standard Test Method for Determining Ignition Temperature of Plastics.
13. ASTM E488 - Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements.
14. ASTM E699 - Standard Practice for Evaluation of Agencies Involved in Testing, Quality Assurance, and Evaluating of Building Components.
15. ASTM F2329 - Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.

D. Consumer Products Safety Commission:
1. CPSC 16 CFR 1201 - Safety Standard for Architectural Glazing.

E. DuPont Powder Coating Test Method:
1. DPC TM 10.219 - PCI Powder Smoothness.

F. National Association of Architectural Metal Manufacturers.
1. NAAMM No. 3 Finish: Ground unidirectional uniform finish obtained with 80 - 100 grit abrasive.

G. SAE International:
1. AMS5511 - Steel, Corrosion-Resistant, Sheet, Strip, and Plate, 19Cr - 9.5Ni (304L), Solution Heat Treated.
2. AMS5513 - Steel, Corrosion-Resistant, Sheet, Strip, and Plate 19cr 9.2Ni (SAE 30304) Solution Heat Treated.

1.3. PERFORMANCE REQUIREMENTS

A. System Design:
1. Design and size components to withstand dead loads and live loads caused by pressure and negative wind loads acting normal to plane of window as calculated in accordance with applicable code.

B. Forced-Entry-Resistance Performance: Provide units identical to those tested for compliance with requirements indicated, and as follows:
1. Tested for forced-entry resistance according to ASTM F588for manual attack by a testing agency acceptable to authorities having jurisdiction.

1.4. SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Shop Drawings:
1. Indicate configuration, sizes, rough-in, mounting, construction and glazing details as well as installation clearances and finishes.

C. Product Data:

1. Submit manufacturer's product data for specified Products indicating materials, operation characteristics, and finishes.

D. Samples:
1. Submit two samples, 4 x 4 inches (100 x 100 mm) in size illustrating metal finishes for each finish specified.

E. Test Reports:
1. Indicate compliance with specified bullet resistance performance.

F. Manufacturer's Installation Instructions:
1. Submit installation instructions with requirements to accommodate specific site conditions.

1.5 QUALITY ASSURANCE

A. Products Requiring Electrical Connection: Listed and classified by UL or testing firm acceptable to authority having jurisdiction.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum 10 years documented experience.
1. Participates in a Quality Assurance validation Program.
a. Facility Audit.

B. Installer: Company specializing in installation of window systems specified with minimum three years documented experience.

C. Testing Agency Qualifications:
1. Qualified according to ASTM E699 and experienced in forced-entry- resistance testing.

1.7 DELIVERY, STORAGE, AND PROTECTION

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Ordering: To avoid construction delays comply with ordering instructions and lead time requirements as set by window system manufacturer.

C. Pack units in manufacturer's standard shipping containers and protective packaging. Deliver units in manufacturer's original packaging and unopened containers with identification labels intact.

D. Store units and accessories on raised blocks to prevent moisture damage protected from exposure to weather and vandalism.

1.8 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication and record on shop drawings.

1.9 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate work with adjacent materials specified in other Sections and as indicated on Drawings and approved shop drawings.

1.10 WARRANTY

A. Furnish manufacturer's standard warranty document, executed by an authorized Quikserv Corp. officer in which manufacturer agrees to repair or replace windows, drawers and air curtains that fail in materials or workmanship within specified warranty period. This warranty is in addition to, and not a limitation of other rights Owner has under the contract.
   1. Warranty Period:
      a. One year parts and labor from date of installation.
   2. Failures include, but are not limited to, the following:
      a. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
      b. Structural failures including deflections exceeding 1/4 inch.
      c. Failure of welds.
      d. Excessive air leakage.
      e. Faulty operation of transaction drawers.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum Extrusions: ASTM B221/B221M. Provide alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish, but not less than 22,000-psi (150-MPa) ultimate tensile strength and not less than 0.125 inch (3.2 mm) thick at any location for main frame and sash members.

B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

C. Metallic-Coated Steel Sheet:
   1. ASTM A653/A653M, CS (Commercial Steel), Type B; with G90 (Z275) zinc (galvanized) coating designation.
   2. AMS5511, steel, corrosion-resistant, sheet, strip, and plate, 19Cr - 9.5Ni (304L), solution heat treated.
   3. AMS5513, steel, corrosion-resistant, sheet, strip, and plate 19cr 9.2Ni (SAE 30304) solution heat treated.

E. Stainless-Steel Sheet, Strip, Plate, and Flat Bars:
1. ASTM A666, austenitic stainless steel, Type 304, stretcher-leveled standard of flatness.
2. ASME SA-240/SA-240M, chromium and chromium-nickel stainless steel plate, sheet, and strip for general applications.

F. Concealed Bolts: ASTM A307, Grade A unless otherwise indicated.

G. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

H. Sealants: For sealants required within fabricated security windows, provide type recommended by manufacturer for joint size and movement. Sealant shall remain permanently elastic, nonshrinking, and nonmigrating.

I. Gaskets: For gaskets required within fabricated Pizza Drawer Window units, provide type recommended by manufacturer for joint size and movement. Gaskets shall remain permanently elastic, nonshrinking, and nonmigrating.

J. Track/Slides: Stainless steel ball bearing slides all windows and drawers.

K. Miscellaneous Glazing Materials: Provide material, size, and shape complying with requirements of glass manufacturers, and with a proven record of compatibility with surfaces contacted in installation:
1. Cleaners, Primers, and Sealers: Type recommended by sealant or gasket manufacturer.
2. Setting Blocks: Elastomeric material with a Type A Shore durometer hardness of 85, plus or minus 5.
3. Spacers: Elastomeric blocks or continuous extrusions with a Type A Shore durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
4. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

L. Flashing.

M. Welding Materials.

N. Anchors, Clips, and Window Accessories: Stainless steel; hot-dip, zinc-coated steel or iron, of sufficient strength to withstand design pressure indicated.

2.2 DEAL TRAY

Manufacturers - Deal Trays:
1. Quikserv Corp.

a. Model QS-9128:
1) Transfer Area: 11 inches (w) x 10 inches (l).

2) Finish: 304 Stainless Steel with number 3 finish.

2. Substitutions: In accordance with Contract Documents.

2.3 INTERCOM (OFOI Item)

A. Manufacturers - Intercom: As selected by Owner, or the following if no Owner selection made:

a. Model: Audio Authority Model 1580S /1580HS Series.

2.4 ELECTRICAL REQUIREMENTS

A. Electric Drawers: 120V / 60 Hz, 15 amp branch circuit, single phase. Conforms to UL Standard 73 - Certified to CAN/CSA C22.2.

2.5 FABRICATION

A. Fabricate drawers and accessories to provide a complete system for assembly of components and anchorage of drawers and accessories.
2. Provide units that are reglazable from the secure side without dismantling the nonsecure side of framing.
3. Prepare security windows for glazing unless preglazing at the factory is indicated.

B. Rigidly fit and secure joints and corners with internal reinforcement. Make joints and connections flush, hairline, and weatherproof. Fully weld corners.
1. Fabricate framing with manufacturer's standard, internal opaque armoring in thicknesses required for security windows to comply with ballistics-resistance performance indicated.

C. Prepare components with reinforcement required for hardware.

D. Welding: To greatest extent possible, weld before finishing and in concealed locations to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

E. Metal Protection: Separate dissimilar metals to protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.

F. Factory-cut openings in glazing for speaking apertures.

G. Preglazed Fabrication: Preglaze window units at factory, where required for applications indicated.

H. Weather Stripping: Factory applied.

I. Bottom Sills: Stainless steel construction, no bottom tracks and no pop rivets.

J. Handles: Stainless steel, manufacturer's standard profile and finish.

2.6 SHOP FINISHING

K. Aluminum Finishes:
1. Mill Finished Aluminum Surfaces: manufacturer's standard finish.
2. Clear Anodized Aluminum Surfaces: AA-M10C22A31 non-specular as fabricated mechanical finish, medium matte chemical finish, and Architectural Class II 0.7 mils (0.018 mm) clear anodized coating.
   a. Conform to AAMA 611.
3. Painted Finish:
   a. AA-M12C12R1x non-specular as fabricated mechanical finish, chemically cleaned, and prepared for applied coating; with organic coating.
      1) Organic Coating: Manufacturer’s standard powder coat finish.
         a) Conform to AAMA 2603.
   b. DPC TM 10.219 - PCI Powder Smoothness.
      1) DuPont Powder Coating Test Method.

L. Concealed Steel Items: [Galvanized in accordance with ASTM A123 to thickness Grade 85, 2.0 oz/sq ft (610 gm/sq m).

M. Stainless Steel: 304 Stainless Steel with NAAMM No. 3 finish.

N. Apply bituminous paint to concealed metal surfaces in contact with cementitious or dissimilar materials.

O. Touch-Up Primer for Galvanized Steel Surfaces: SSPC Paint 20 zinc rich.

P. Extent of Finish:
1. Apply factory coating to all surfaces exposed at completed assemblies.
2. Apply finish to surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
3. Apply touch-up materials recommended by coating manufacturer for field application to cut ends and minor damage to factory applied finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 013000 - Administrative Requirements {01300 - Administrative Requirements}: Verification of existing conditions before starting work.

B. Verify construction is ready to receive Products specified in this section.

C. Verify rough openings are correct size and in correct location.

D. Examine roughing-in for embedded and built-in anchors to verify actual locations of security window connections before security window installation.

E. Inspect built-in and cast-in anchor installations, before installing security windows, to verify that anchor installations comply with requirements. Prepare inspection reports.

F. Remove and replace anchors where inspections indicate that they do not comply with specified requirements. Reinspect after repairs or replacements are made.

G. Perform additional inspections to determine compliance of replaced or additional work. Prepare anchor inspection reports.

H. For glazing materials whose orientation is critical for performance, verify installation orientation.

I. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Furnish frames and anchors to other sections as required for installation in surrounding partition and casework construction.

3.3 INSTALLATION

A. Install Products in accordance with manufacturer's instructions.

B. Align Products plumb, level and square.

C. Rigidly secure Products to adjacent supporting construction.

D. Seal perimeter joints in accordance with Section 079200.

E. Connect electrical components to power source.

F. Protection: Where dissimilar metals will contact each other, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended in writing by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

3.4 ADJUSTING

A. Section 017000 - Execution and Closeout Requirements: Requirements for adjusting.

B. Adjust transaction drawers to provide a tight fit at contact points for smooth operation and weathertight and secure enclosure.

C. Remove and replace defective work, including security windows that are warped, bowed, or otherwise unacceptable.

3.5 CLEANING AND PROTECTION

A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.

B. Remove protective material from factory finished surfaces.

C. Wash surfaces by method recommended and acceptable to sealant and window manufacturer; rinse and wipe surfaces clean.

D. Clean metal and glass surfaces to polished condition.
4. Lubricate transaction drawer hardware.

E. Provide temporary protection to ensure that equipment is without damage at time of Substantial Completion.

3.5 DEMONSTRATION

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

END OF SECTION 111700

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SECTION 123216 - MANUFACTURED PLASTIC-LAMINATE-CLAD CASEWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plastic-laminate-clad casework.
2. Hardware and accessories.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for wood blocking for anchoring casework.
2. Section 064116 "Plastic-Laminate-Clad Architectural Cabinets" for custom made cabinets and millwork unless specified herein so as noted on the Drawings as included in this Section.
3. Section 079200 "Joint Sealants" for caulking of casework abutting walls.
4. Section 092216 "Non-Structural Metal Framing" for reinforcements in metal-framed partitions for anchoring casework.
5. Section 096513 "Resilient Base and Accessories" for resilient base applied to plastic-laminate-clad casework.
6. Section 123623.13 "Plastic-Laminate-Clad Countertops."
7. Section 123661.16 “Solid Surfacing Countertops.”
8. Divisions 22 for installation, and connection of sinks, fixtures, outlets, strainers, tailpieces, traps, vacuum breakers, stops, etc. Sink cutouts shall be by the Casework contractor.
9. Divisions 26 and 27 for installation and final connection of wiring, conduit and/or electrical items within casework.

1.2 DEFINITIONS

A. Definitions in the AWI/AWMAC/WI's "Architectural Woodwork Standards" apply to the Work of this Section and as follows:

1. Open Interiors: Any open storage unit without solid door or drawer fronts, units with full glass insert doors and/or acrylic doors, and units with sliding solid doors.
2. Closed Interiors: Any closed storage unit behind solid door or drawer fronts.
3. Exposed Ends: Any storage unit exterior side surface that is visible after installation.
4. Other Exposed Surfaces: Faces of doors and drawers when closed, and tops of cabinets less than 72 inches above furnished floor.
5. Semi-Exposed Surfaces: Interior surfaces which are visible, bottoms of wall cabinets and tops of cabinets 72 inches or more above finished floor.
6. Concealed Surfaces: Any surface not visible after installation

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that casework can be supported and installed as indicated.

1.5 ACTION SUBMITTALS

A. Product Data:

1. Plastic-laminate-clad casework.
2. Hardware and accessories.

B. Shop Drawings: For plastic-laminate-clad casework.

1. Include plans, elevations, sections, and attachments to other work including blocking and reinforcements required for installation.
2. Indicate types and sizes of casework.
3. Indicate manufacturer's catalog numbers for casework.
4. Show fabrication details, including types and locations of hardware.
5. Indicate locations of and clearances from adjacent walls, doors, windows, other building components, and equipment.

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 Initial Selection: For casework, edge banding not matching plastic laminates indicated, and hardware finishes.

E. Samples for Verification: For the following:

1. Laminate Sample: 2-inch x 3-inch sample chips.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Quality Standard Compliance Certificates: AWI's Quality Certification Program certificates.

1.8 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Shop must employ skilled woodworkers who custom fabricate products similar to those required for this project and whose products have a record of successful performance.
2. Manufacturer shall be a QCP Certified Woodworking Firm under the Architectural Woodwork Institute (AWI) Quality Certification Program.

B. AWI Quality Standard:

1. Comply with AWI Quality Standards for construction, finishes, installation, and other requirements for indicated grades of interior architectural woodwork
2. Manufacturer shall provide AWI Quality Certification Program CERTIFICATE indicating that the woodwork complies with the requirements of the grade specified.

C. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

D. ADA (Americans with Disabilities Act, 2010 ADA Standards for Accessible Design) Requirements: The following special requirements shall be met typically, unless noted otherwise. Casework shall be in compliance with the 2010 ADA Standards:

1. Countertop Height: With or without cabinet below, not to exceed a height of 34 inches (863.6 mm) above finished floor, at a surface depth of 24 inches (609.6 mm), unless noted otherwise.
2. Kneespace Clearance: Shall be minimum 27 inches (685.8 mm) above finished floor at apron, and 30 inches (762 mm) minimum clear span width.
3. 10-Inch (254 mm) Deep Shelving, Adjustable or Fixed: Not to exceed a range from 15 inches (381 mm) above finished floor to 48 inches (1219.2 mm) above finished floor.
4. Wardrobe Cabinets: Shall be furnished with rod/shelf adjustable to 48 inches (1219 mm) maximum above finished floor at a maximum 10-inch (254-mm) obstructed high side reach.

    a. All accessories in wardrobe cabinets, mirrors, pin trays, etc. shall be within the wheelchair accessible reach ranges specified in ADA Section 308.
    b. Bottom edge of mirror reflecting surface shall be 35 inches (889 mm) maximum above finish floor.

5. Sink Cabinet Clearances: In addition to above, upper kneespace frontal depth shall be no less than 8 inches (203.2 mm), and lower toe frontal depth shall be no less than 11 inches (279.4 mm), at a point 9 inches (228.6 mm) above finished floor, and as further described in ADA Section 306.3
6. Wall Cabinets: One of each type in each room shall have the top of the lowest shelf no more than 46 inches (1168.4 mm) above finished floor with a 24 inches (609.6 mm) maximum obstructed high side reach.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver casework only after painting, utility roughing-in, wet operations and similar operations that could damage, soil, or deteriorate casework have been completed in installation areas.

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

1.10 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install casework until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during remainder of construction period.

1. If casework must be temporarily stored in any area other than it's intended installed location, store only in areas where environmental conditions comply with the above requirements. Such areas shall be pre-approved by Owner.

B. Established Dimensions: Where casework is indicated to fit to other construction, establish dimensions for areas where casework is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

C. Field Measurements: Where casework is indicated to fit to existing construction, verify dimensions of existing construction by field measurements before fabrication and indicate measurements on Shop Drawings. Provide fillers and scribes to allow for trimming and fitting.

D. Locate concealed framing, blocking, and reinforcements that support casework by field measurements before enclosing them, and indicate measurements on Shop Drawings.

1.11 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of casework that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Delamination of components or other failures of glue bond.
b. Warping of components.
c. Failure of operating hardware.

2. Warranty Period: Five years from date of Substantial Completion.

B. Structural Failure Warranty: The casework manufacturer shall warranty against structural failure of the cabinet body for a period of ten years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide TMI Systems Design Corporation or comparable product by one of the following:

1. Case Systems Inc.
2. Stevens Industries, Inc.
3. **KBI Custom Case, Inc.**
4. **Pierce Laminated Products.**

B. Source Limitations: Obtain from single source from single manufacturer.

2.2 GENERAL REQUIREMENTS FOR CASEWORK

A. Quality Standard: Unless otherwise indicated, comply with the AWI/AWMAC/WI's "Architectural Woodwork Standards" for grades of casework indicated for construction, finishes, installation, and other requirements.

1. Grade: Custom.
2. Provide certificates from AWI certification program indicating that casework complies with requirements of grades specified.

B. Product Designations:

1. Drawings indicate sizes, configurations, and finish materials of manufactured plastic-laminate-clad casework by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes and door and drawer configurations, of same finish materials, and complying with the Specifications may be considered. See Section 016000 "Product Requirements."

2.3 PLASTIC-LAMINATE-CLAD CASEWORK

A. Design: Frameless cabinet construction with the following door and drawer-front style:

1. Flush overlay.

B. Grain Direction for Wood-Grain Plastic Laminate:

1. Doors: Vertical with continuous vertical matching.
2. Drawer Fronts: Vertical with continuous vertical matching.
3. Face Frame Members: Lengthwise.
4. End Panels: Vertical.
5. Bottoms and Tops of Units: Side to side.
6. Knee Space Panels: Vertical.

7. Aprons: Vertical.

C. Exposed Materials:

1. Plastic-Laminate Grade: VGS, 0.7 mm (0.028-inch)..

a. Manufacturer, Colors and Patterns,: See Finish Schedule on Drawings.

2. Edgebanding: Plastic laminate matching adjacent surfaces.

a. Edgebanding Color: Matching plastic laminate where available. If no match available, as selected by Architect from manufacturer’s full range.

D. Semiexposed Materials:

1. Plastic Laminate: Grade CLS for balancing door and drawer fronts (interior faces) unless otherwise indicated.

a. Colors and Patterns: As selected by Architect from manufacturer's full range.

2. Thermally Fused Laminate (TFL) Panels: Provide thermally fused laminate panels for all other semiexposed surfaces unless otherwise indicated.

a. Interior finish, units with closed interiors including adjustable shelving.
b. Wall unit bottom.
c. Colors and Patterns: As selected by Architect from manufacturer's full range.

3. Unless otherwise indicated, provide specified edgebanding on all semiexposed edges.

E. Concealed Materials:

1. Plywood: Hardwood plywood.
2. Particleboard.
3. MDF.

2.4 HARDWARE AND ACCESSORIES

A. Hardware: Unless otherwise indicated, provide manufacturer's standard, commercial-quality, heavy-duty hardware.

1. Use threaded metal or plastic inserts with machine screws for fastening to particleboard except where hardware is through-bolted from back side.

B. Butt Hinges: Heavy Duty, five-knuckle hinges with “hospital tips” complying with ANSI/BHMA A156.9, Grade 1, with antifriction bearings and rounded tips. Provide two hinges

for doors less than 48 inches (1220 mm) high, and provide three hinges for doors more than 48 inches (1220 mm) high.

C. Wire Pulls: Solid stainless steel wire pulls, fastened from back with two screws.

1. Provide two pulls for drawers more than 24 inches (600 mm) wide.

D. Door Catches: Zinc-plated, or dual, self-aligning, permanent magnet catch. Provide two catches on doors more than 48 inches (1220 mm) high.

E. Door and Drawer Bumpers: Self-adhering, clear silicone rubber.

1. Doors: Provide one bumper at top and bottom of closing edge of each swinging door.
2. Drawers: Provide one bumper on back side of drawer front at each corner.

F. Chain Stops: Transom chain attached to top of cabinet and door shall be provided on all hinged doors adjacent to cabinets or countertops of greater depth, or adjacent to walls and shall not allow contact between the door or door pull and any adjacent surfaces.

G. Drawer Slides: ANSI/BHMA A156.9.

1. Regular, Kneespace, and Pencil: 100-pound load rated epoxy coated steel, bottom corner mounted with smooth and quiet nylon rollers. Positive stop both directions with self-closing feature.
2. Paper Storage: 150-pound load rated epoxy coated steel slides.
3. File: Full extension, 150-pound load rated epoxy coated steel, bottom corner mounted with smooth and quiet nylon rollers. Positive stop both directions with self-closing feature.
4. Trash Bin Slides: Grade 1HD-100, for trash bins not more than 20 inches (500 mm) high and 16 inches (400 mm) wide.

H. Label Holders: Stainless steel or chrome plated, sized to receive standard label cards approximately 1 by 2 inches (25 by 51 mm), and attached with screws or brads.

1. Provide label holders for mail slots and where indicated.

I. Drawer and Hinged-Door Locks:.

1. For typical drawer/cabinet locks: Olympus lock #100DR or 100DW, equivalent to National D4291 keyway; provide where shown.
2. Keying: Key locks alike within each room, key each room separately.
3. Provide a minimum of two keys per lock and six master keys.

J. Adjustable Shelf Supports: Two-pin-locking plastic shelf rests complying with BHMA A156.9, Type B04013.

1. Injection molded transparent polycarbonate friction fit into cabinet end panels and vertical dividers, adjustable on 32mm centers. Each shelf support has 2 integral support pins, 5mm diameter, to interface pre-drilled holes, and to prevent accidental rotation of support. The support automatically adapts to 3/4 inch or 1 inch thick shelving and

provides non-tip feature for shelving. Supports may be field fixed if desired. Structural load to 1200 pounds (300 pounds per support) without failure.

K. Coat Rods for Wardrobe Cabinets: 1 inch diameter, 14-gauge chrome plated steel installed in captive mounting hardware.

L. File Suspension System: Extruded molding integral with top of drawer box sides to accept standard hanging file folders.

M. Mirrors: 1/8 inch thick mirrored acrylic, break and impact resistant.

N. Support Members:

1. Countertop support brackets: Epoxy powder coated, 11 gauge steel with integral cleat mount opening and wire management opening.
2. Undercounter support frames: Epoxy powder coated.
3. Legs: Epoxy powder coated.

O. Tote Trays:

1. Heavy-duty vacuum-formed polypropylene plastic with full top rim and pull. Trays are ivory color, equipped with label holder.
2. Tote tray/supply cabinets equipped with injection molded polycarbonate; continuous side rail support glide. Each side rail support glide is adjustable with integral support pins to interface 32mm pre-drilled holes.

P. Molded Pin Tray: Manufacturer's standard for wardrobe cabinet.

2.5 MATERIALS

A. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood.

B. Softwood Plywood: DOC PS 1.

C. Particleboard: ANSI A208.1, Grade M-2, Industrial Grade average 45-pound density.

1. MR Moisture Resistant Particleboard where indicated.

D. MDF: Medium-density fiberboard, ANSI A208.2, minimum average density 45-50 pounds.

E. Hardboard: ANSI A135.4, Class 1 tempered.

F. Plastic Laminate: High-pressure decorative laminate complying with ISO 4586-3.

G. Adhesives: Do not use adhesives that contain urea formaldehyde.

2.6 FABRICATION

A. Plastic-Laminate-Clad Cabinet Construction: As required by referenced quality standard, but not less than the following:

1. Tops and bottoms are glued and doweled to cabinet sides and internal cabinet components such as fixed horizontals, rails and verticals. Minimum 6 dowels each joint for 24 inch deep cabinets and a minimum of 4 dowels each joint for 12 inch deep cabinets. (Mechanical or metal hardware fasteners joining cabinet top and bottom panels to the sides will not be accepted.)
2. Bottoms and Ends of Cabinets, and Tops of Wall Cabinets and Tall Cabinets: 3/4-inch (19-mm) particleboard.

    a. Exposed Ends: VGS laminate.
    b. Bottoms and Tops of Wall and Tall Cabinets: Thermoset decorative panels.

3. Shelves: 3/4-inch- (19-mm-) thick particleboard up to 30 inches wide and 1-inch- (25-mm-) thick particleboard over 30 inches wide. Laminate material, per Finish Schedule, edge on front edge only.

    a. Shelves in Closed Cabinets: Thermoset decorative panels.
    b. Shelves in Open Cabinets: VGS laminate both faces.

4. Fixed Shelves: All tall cabinets shall be constructed with a fixed shelf located near mid-point between top and bottom of cabinet, unless specifically noted otherwise.
5. Backs of Casework: 1/2-inch minimum thick particleboard panel fully captured by the cabinet top, bottom and side panels. Finish to match cabinet interior. 3/4 inch x 4 inch particleboard rails will be placed behind the back panel at the top and bottom, and doweled to the sides utilizing 10mm hardwood fluted dowels. A third intermediate rail will be included on all cabinets taller than 56 inches. Utilize hot melt glue to further secure back and increase overall strength.

    a. Exposed back on fixed or movable cabinets: 3/4 inch thick particleboard with the exterior surface finished in VGS laminate as selected.

6. Fixed base and tall units have an individual factory-applied base, constructed of 3/4 inch thick plywood. Base is 102mm (nominal 4 inch) high unless otherwise indicated on the Drawings. No cabinet body sides to floor.

    a. Acceptable Alternative Product for Plywood Bases: Floor Isolation Supports consisting of 1-3/8 by 3-inch (35 by 76-mm) footprint solid polypropylene clip. Isolates cabinet base for no contact with floor and highly chemical resistant for use in laboratory settings. Screw attached to concealed side of base. Floor Isolation Support concealed with resilient base by Division 09 Sections.

        1) Basis-of-Design Product: Stevens Industries, Inc.; Floor Isolation Support.

7. Base units, except sink base units: Full sub-top glued and doweled to cabinet sides. (Mechanical or metal hardware fasteners joining cabinet sub-top panel to the sides will not be accepted.)

    a. Sink base units are provided with open top and a stretcher at the front, attached to the sides. Back to be split removable access panel. Construct bases using MR Moisture Resistant Particle board.

8. Side panels and vertical dividers shall receive adjustable shelf hardware at 32mm line boring centers. Mount door hinges, drawer slides and pull-out shelves in the line boring for consistent alignment.
9. Drawer Fronts: 3/4-inch (19-mm) particleboard with VGS laminate exterior, balanced with high pressure cabinet liner CLS. 3 mm PVC edges, external edges and outside corners machine profiled to 1/8 inch radius.
10. Drawer Sides, Backs, and Sub-Front: 1/2-inch- (13-mm-) or 3/4-inch (19-mm) thick particleboard thermoset decorative panels, with glued dovetail or multiple-dowel joints. Top edge banded with 1 mm PVC.
11. Drawer Bottoms: 1/2-inch- (12.7-mm-) thick particleboard thermoset decorative panels glued and dadoed into sub-front, back, and sides of drawers or screwed directly to bottom edges of drawer box. Also acceptable construction is 1/4-inch (6-mm) thick medium density fiberboard thermoset decorative panels for drawers less than 24 inches (610 mm) wide or 1/2-inch (13-mm) thick material for drawers wider than 24 inches with drawer bottoms fully captured in dados on all four sides and sealed with hot melt adhesive.
12. Paper Storage Drawers: Minimum 3/4 inch thick particleboard sides, back, and sub front thermoset decorative panels. Minimum 1/2 inch thick particleboard drawer bottoms screwed directly to the bottom edges of the drawer box. Provide PVC angle retaining bar at the rear of the drawer.
13. Doors: 3/4 inch (19 mm) thick, with particleboard cores with VGS laminate exterior, balanced with high pressure cabinet liner CLS. 3 mm PVC edges, external edges and outside corners machine profiled to 1/8 inch radius.

    a. Provided double doors in openings in excess of 24 inches wide.

14. Balanced construction of all laminated panels is mandatory. Unfinished core stock surfaces, even on concealed surfaces (excluding edges), are not permitted.

B. Filler Strips: Provide as needed to close spaces between casework and walls, ceilings, and equipment. Fabricate from same material and with same finish as casework.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of framing and reinforcements, and other conditions affecting performance of the Work.

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

3.2 INSTALLATION

A. Grade: Install casework to comply with same quality standard grade as item to be installed.

B. Install casework level, plumb, and true in line; shim as required using concealed shims. Where casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.

C. Base Cabinets: Set cabinets straight, level, and plumb. Adjust subtops within 1/16 inch (1.5 mm) of a single plane. Align similar adjoining doors and drawers to a tolerance of 1/16 inch (1.5 mm). Bolt adjacent cabinets together with joints flush, tight, and uniform.

D. Wall Cabinets: Hang cabinets straight, level, and plumb. Adjust fronts and bottoms within 1/16 inch (1.5 mm) of a single plane. Fasten cabinets to hanging strips, masonry, framing, wood blocking, or reinforcements in walls and partitions. Align similar adjoining doors to a tolerance of 1/16 inch (1.5 mm).

E. Fasten casework to adjacent units and to masonry, framing, wood blocking, or reinforcements in walls and partitions to comply with the AWI/AWMAC/WI's "Architectural Woodwork Standards."

F. Install hardware uniformly and precisely. Set hinges snug and flat in mortises unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.

G. Adjust operating hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.3 CLEANING

A. Repair or remove and replace defective work as directed on completion of installation.

B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.

END OF SECTION 123216

SECTION 134715 – BULLET RESISTANT PRODUCTS

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 Bullet resistant products of the following types:

1. Bullet resistant accessories.,
2. Bullet resistant composite panels.

1.3 REFERENCES

A. American National Standards Institute (ANSI): 1. ANSI Z97.1 - Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.

B. ASTM International (ASTM):

1. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
2. ASTM C1036 - Standard Specification for Flat Glass.
3. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass.
4. ASTM C1349 - Standard Specification for Architectural Flat Glass Clad Polycarbonate.
5. ASTM D2000 - Standard Classification System for Rubber Products in Automotive Applications.
6. ASTM E84 - Test method for the Surface Burning Characteristics of Building Materials.
7. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

C. American Welding Society (AWS): AWS D1.1 - Structural Welding Code - Steel.

D. National Institute of Justice (NIJ): NIJ Standard 0108.01 - Standard for Ballistic Resistant Protective Materials.

E. Underwriters Laboratories (UL):

1. UL 752 - Standard for Bullet Resisting Equipment. (September 5th, 2005)
2. UL 972 - Standard for Burglary Resisting Glazing Material.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Manufacturer's data sheets on each product to be used.
2. Preparation instructions and recommendations.
3. Storage and handling requirements and recommendations.
4. Installation methods.

B. Shop Drawings: For each type of wall and door protection showing locations and extent.

1. Include plans, sections, elevations, layouts, profiles and product component locations, including anchorage, bracing, fasteners, accessories and finishes.
2. Include dimensioned elevation of each type opening assembly in project; indicate sizes and locations of hardware, and lites if specified.
3. Schedule: Indicate each opening assembly in project; cross-referenced to plans, elevations, and details.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Manufacturer and Installer.

B. Design Data: Bullet resistance analysis design calculations for specific project conditions, certifying system conformance to specified performance requirements.

C. Product Test Reports: For each type of security window and accessory indicated as ballistics resistant, for tests performed by a qualified testing agency.

D. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For bullet resistant products to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer capable of fabricating products that meet or exceed performance requirements indicated and of documenting this performance by inclusion in lists and by labels, test reports, and calculations.

B. Installer Qualifications: An installer acceptable to product manufacturer for installation of units required for this Project.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's unopened, undamaged packaging, with manufacturer's labels including UL Test labels intact.

B. Store materials inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

C. Store products in manufacturer's unopened packaging until ready for installation. Store assemblies, off the ground and on end, to prevent damage to face corners and edges. Store assemblies covered to protect them from damage but permitting air circulation.

1.9 SEQUENCING

A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace bullet resistant products that fail due to defects in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of bullet resistant product from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Attack Resistance: Provide units identical to those tested for compliance with requirements indicated, and as follows:

1. Ballistics Resistance: Listed and labeled as Level 3 in accordance with UL 752.

2.3 BULLET RESISTANT COMPOSITE PANELS

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. Basis of Design Product:

a. Total Security Solutions, Inc., 935 Garden Lane, Fowlerville, MI 48836, 866 734-6277. Attn: Sales Department, sales@tssbulletproof.com. Web: www.tssbulletproof.com.
b. Product: Fiberglass BR Opaque Armor BB-3.

1) Ballistic Rating:

a) UL 752 / Level 3.
b) N.I.J. 0108.1 / Level IIIA.

2. Alternate products: Provide equivalent material, and performance, and tested products, by one of the following

a. Armortex.
b. Insulgard Security Products.
c. Waco Composites.

B. Fiberglass reinforced plastic composite panel manufactured using multiple layers of ballistic grade fiberglass cloth impregnated with a thermoset polyester resin and compressed into flat rigid sheets

1. Composite Panels shall be “non ricochet type” to permit the encapture and retention of an attacking projectile lessening the potential of a random injury or lateral penetration.
2. Where indicated, the material will meet ASTM E119 one hour fire resistance when installed in a non-bearing steel stud wall with 5/8 inch firecode gypsum on the exterior and with 5/8 inch (16 mm) firecode gypsum over the FRP panel on the inside.
3. Panel Rating: UL752 Level 3 Bullet Resistant Performance Level.
4. Sheet Thickness: Manufacturer’s standard thickness as required to provide bullet resistance performance Level 3 per UL 752.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to starting installation, verify work of related trades required in contract documents and architectural drawings is complete to the point where work of this Section may properly commence.

3.2 INSTALLATION

A. Installation Quality: Install bullet resistant products according to manufacturer's written instructions, level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, or other defects.

B. Install products in accordance with approved submittals, manufacturer's instructions and requirements of UL 752.

1. Install equipment plumb, level, rigid and in true alignment.
2. Use proper anchoring devices. Exposed anchor holes shall be used for anchors.
3. Where applicable, install fire-rated assemblies in accordance with NFPA 80.

C. Bullet Resistant Fiberglass Panels: Install using an industrial adhesive, mastic, screws or bolts. Method of application shall maintain the bullet resistive rating at junctures with the concrete floor slab, roof assembly, bullet resistive door frames, bullet resistive window frames, and required penetrations.

1. Joints shall be reinforced by a back-up layer of bullet resistive material.
2. Bullet resistance of the joint, as reinforced, shall be at least equal to that of the panel.
3. Minimum width of reinforcing layer at joint shall be 4 inches (2 inches on each panel or a 2 inch minimum overlap).

D. Installation Tolerances: Do not exceed the following installation tolerances:

1. Squareness: Plus or minus 1/16 inch (1.6 mm) measured on a line, 90 degrees from one jamb, at the upper corner of the frame at the other jamb.
2. Alignment: Plus or minus 1/16 inch (1.6 mm) measured on jambs on a horizontal line parallel to the plane of the wall.
3. Twist: Plus or minus 1/16 inch (1.6 mm) measured at face corners of jambs on parallel lines perpendicular to the plane of the wall.
4. Plumb: Plus or minus 1/16 inch (1.6 mm) measured on the jamb at the floor.

3.3 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 134715

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SECTION 221000 - PLUMBING PIPING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Pipe and Pipe Fittings.

B. Valves.

C. Check Valves.

1.2 QUALITY ASSURANCE

A. Valves: Manufacturer's name and pressure rating marked on valve body. Remanufactured valves are not acceptable.

B. Welding Materials and Procedures: Conform to ASME Code and applicable state labor regulations.

C. Welders Certification: In accordance with ANSI/ASME Sec 9 or ANSI/AWS D1.1.

D. All grooved couplings, fittings, valves, and specialties shall be the products of a single manufacturer. Grooving tools shall be of the same manufacturer as the grooved components.

1. All castings used for couplings housings, fittings, or valve and specialty bodies shall be date stamped for quality assurance and traceability.

E. Piping, Fittings, Valves, and Flux for Potable Water Systems: All components shall be lead free per Federal Act S.3874, Reduction of Lead in Drinking Water Act.

1.3 SUBMITTALS

A. Submit shop drawings per Section 220500.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store valves in shipping containers with labeling in place.

1.5 COORDINATION DRAWINGS

A. Reference Coordination Drawings article in Section 220500 for required plumbing systems electronic CAD drawings to be provided to Coordinating Contractor for inclusion into composite coordination drawings.

PART 2 - PRODUCTS

2.1 CAST IRON PIPE

A. Cast Iron; Standard Weight; Hub and Spigot Joints:

1. Pipe: Standard weight hub and spigot cast iron soil pipe, bituminous corrosion protective coating inside and outside, CISPI 301 or ASTM A74.
2. Design Pressure: Gravity Maximum Design Temperature: 180°F
3. Joints: Compression gasket, ASTM C564.
4. Restraints: Install pipe and fittings per the Cast Iron Soil Pipe Institute's Designation 301. Restrain pipe and fittings using an engineered and tested product manufactured for restraining no-hub cast iron soil pipe. Install per manufacturer's recommendations.
5. Adapters: Heavy duty no-hub transition for joining cast iron and PVC pipe. Adapters shall be tested and certified to ASTM C 1460 and be constructed with Type 304 stainless steel shield, thickness 0.015" shield, gasket material to meet ASTM C564, 1-1/2" to 4" will be 3" wide with four 304 stainless steel bands, and 6" to 10" will be 4" wide with six 304 stainless steel bands and 3/8" 305 stainless steel hex head screws torqued to 80 inch pounds.

B. Cast Iron; Standard Weight; No-Hub Sleeve Gaskets:

1. Pipe: Standard weight no-hub cast iron soil pipe, bituminous corrosion protective coating inside and outside, CISPI 301 or ASTM A888.
2. Design Pressure: Gravity Maximum Design Temperature: 180°F
3. Joints: ASTM C1540, FM 1680, and ASTM C-564.

    a. Super Duty, Shielded Stainless Steel Couplings: Neoprene sleeve gasket, 0.015" thick 304 stainless steel shield , stainless steel 3/8" screw type clamps, minimum of four clamps for 1-1/2" to 4" and six clamps for 5" and larger pipe sizes. Clamps shall be tightened to minimum 80 inch pounds or as manufacturer requires. Husky SD-4000 or equal.
    b. Heavy Duty, Shielded Stainless Steel Couplings: Neoprene sleeve gasket, 0.010" thick 304 stainless steel shield , stainless steel 5/16" screw type clamps, minimum of four clamps for 1-1/2" to 4" and six clamps for 5" and larger pipe sizes. Clamps shall be tightened to minimum 80 inch pounds or as manufacturer requires. Husky HD-2000 or equal.

4. Restraints: Install pipe and fittings per the Cast Iron Soil Pipe Institute's Designation 310. Restrain pipe and fittings using an engineered and tested product manufactured for restraining no-hub cast iron soil pipe. Install per manufacturer's recommendations.
5. Adapters: Transitions from cast iron soil pipe to other pipe materials with manufactured adapters specifically for the application. Adapter must meet the same requirements as the joints listed above. ASTM C1460. Sticker identifying transition fitting application must be visible to view.

C. Cast Iron; Standard Weight Epoxy Coated; No-Hub Sleeve Gaskets:

1. Pipe and Fittings: Standard weight no-hub cast iron soil pipe, epoxy paint corrosion protective coating inside and outside, CISPI 301 or ASTM A888.
2. Joints: ASTM C1540 and FM 1680.

    a. Super Duty, Shielded Stainless Steel Couplings: Neoprene sleeve gasket, 0.015" thick 304 stainless steel shield , stainless steel 3/8" screw type clamps, minimum of four clamps for 1-1/2" to 4" and six clamps for 5" and larger pipe sizes. Clamps shall be tightened to minimum 80 inch pounds or as manufacturer requires. Husky SD-4000 or equal.
    b. Corrosion Resistant, Shielded Stainless Steel Couplings: Neoprene sleeve gasket, 0.015" thick 316 stainless steel shield , 316 stainless steel 3/8" screw type clamps, minimum of four clamps for 1-1/2" to 4" and six clamps for 5" and larger pipe sizes. Clamps shall be tightened to minimum 80 inch pounds or as manufacturer requires. Husky CR-7000 or equal.

3. Restraints: Install pipe and fittings per the Cast Iron Soil Pipe Institute's Designation 301. Restrain pipe and fittings using an engineered and tested product manufactured for restraining no-hub cast iron soil pipe. Install per manufacturer's recommendations.
4. Adapters: Transitions from cast iron soil pipe to other pipe materials with manufactured adapters specifically for the application. Adapter must meet the same requirements as the joints listed above. ASTM C1460. Sticker identifying transition fitting application must be visible to view.

2.2 COPPER PIPE

A. Copper Pipe; Type L; Solder Joints:

1. Pipe: Type L hard drawn seamless copper tube, ASTM B88.
2. Design Pressure: 175 psi; Maximum Design Temperature: 200°F.
3. Joints: Solder with 100% lead-free solder and flux, ASTM B32.
4. Fittings: Wrought copper solder joint, ANSI B16.22.

B. Copper Pipe; Type L; Mechanical Press Connection:

1. Pipe: Type L hard drawn seamless copper tube, ASTM B88.
2. Design Pressure: 175 psi; Maximum Design Temperature: 200°F.
3. Joints: Mechanical press connection.
4. Fittings: Copper, ANSI B-16.22, with embedded EPDM O-ring / sealing element engineered for this application, NSF-61.
5. Fitting Identification: Press ends shall provide the ability to identify an unpressed fitting from the floor prior to testing. The function of this feature is to provide the installer quick and easy identification of connections that have not been pressed prior to putting the system into operation.
6. Special Requirements: Mechanical press fitting manufacturer shall provide Contractor training prior to installation.
7. Manufacturers:

    a. Viega ProPress
    b. Apollo Press, a division of Aalberts - IPS

c. Nibco Press System Fittings and Valves
d. Merit Brass
e. Mueller Streamline PRS

C. Copper Pipe; Type L; Mechanically Coupled Grooved Joints:

1. Pipe: Type L hard drawn seamless copper tube, ASTM B88, roll grooved per AWWA-C606 standard and mechanical coupling manufacturers specifications.
2. Design Pressure: 300 psi; Maximum Design Temperature: 180°F.
3. Joints: Mechanically coupled grooved type.
4. Mechanical Couplings: Ductile iron, ASTM A-536, (Grade 65-45-12), rigid grooved type cast with offsetting angle-pattern bolt pads, coated with non-toxic, no-lead paint, ASTM A449 compliant bolts and hex nuts zinc electroplated plated, ASTM B-633. Installation ready, for direct stab installation without field disassembly. Design Basis: Victaulic Style 607.
5. Gaskets: Molded pressure responsive design, center-leg gasket with pipe stop to ensure proper groove engagement, alignment, and pipe insertion depth. Fluoroelastomer Grade P or EPDM Grade E, ASTM D-2000, suitable for domestic water with temperatures ranging from 32°F to 180°F.
6. Fittings: Copper, ASTM B-75 and ANSI B-16.22, full flow wrought copper or cast bronze ANSI B16.18, manufactured by mechanical coupling manufacturer to copper tube dimensions. (Flaring of tube or fitting ends to accommodate alternate sized couplings is not permitted).
7. Flanges: Grooved end type, Ductile iron, ASTM A-536, (Grade 65-45-12), Flange shall conform to ANSI Class 125 cast iron and Class 150 steel flange bolt hole pattern, coated with non-toxic, no-lead paint, bolts and hex nuts zinc electroplated plated, ASTM B-633.

    a. Flange adapters to be used for connecting grooved piping to equipment flanges only. Grooved flange adapters shall not be used to connect lug style valves to grooved piping. Design Basis: Victaulic Style 641.

8. System shall be UL classified in accordance with NSF-61 for potable water service, and meet the lead content requirements of NSF-372.
9. Manufacturers:

    a. Gruvlok
    b. Victaulic
    c. Grinnell
    d. Shurjoint, a division of Aalberts - IPS

D. Copper Pipe; Type K; Solder Joints:

1. Pipe: Type K annealed copper tube, ASTM B88.
2. Design Pressure: 150 psi. Maximum Design Temperature: 200°F.
3. Joints: Solder with 100% lead-free solder and flux ASTM B32.
4. Fittings: Wrought copper solder joint, ANSI B16.22.

E. Copper Pipe; Type K; Mechanical Press Connection:

1. Pipe: Type K annealed copper tube, ASTM B88.

2. Design Pressure: 150 psi. Maximum Design Temperature: 200°F.
3. Joints: Mechanical press connection.
4. Fittings: Copper, ANSI B-16.22, with embedded EPDM O-ring, NSF-61 / sealing element engineered for this application.
5. Fitting Identification: Press ends shall provide the ability to identify an unpressed fitting from the floor prior to testing. The function of this feature is to provide the installer quick and easy identification of connections that have not been pressed prior to putting the system into operation.
6. Special Requirements: Mechanical press fitting manufacturer shall provide contractor training prior to installation.
7. Manufacturers:

    a. Viega ProPress
    b. Apollo Press, a division of Aalberts - IPS
    c. Nibco Press System Fittings and Valves
    d. Merit Brass
    e. Mueller Streamline PRS.

2.3 GALVANIZED STEEL PIPE (TO BE USED FOR GASES SERVING WELDING LAB) (Addendum 3)

A. Galvanized Steel; Standard Weight; Mechanically Coupled Grooved Joints

1. Pipe: Galvanized; standard weight galvanized steel, ASTM A53, grooved ends or threaded and coupled.
2. Design Pressure: 175 psi; Maximum Design Temperature: 200°F.
3. Joints: Mechanically coupled grooved type or screwed.
4. Mechanical Couplings: Malleable iron, ASTM A97, Grade 32510, grooved type.
5. Fittings: Malleable iron, ASTM A47, Grade 32510, galvanized with grooved ends or 125 psi steam - 175 psi CWP, galvanized cast iron, ASTM A126, ANSI B16.4.
6. Flanges: Grooved end, galvanized flanged adapter nipples, Gustin Bacon No. 54, Victaulic No. 54 or 125 psi steam - 175 psi CWP, galvanized cast iron, screwed, ASTM A126, Grade B, ANSI B16.1, with galvanized or cadmium plated bolting.
7. Manufacturers:

    a. Gruvlok
    b. Victaulic
    c. Grinnell
    d. Shurjoint, a division of Aalberts - IPS

B. Galvanized Steel; Standard Weight; Threaded Joints:

1. Pipe: Galvanized; standard weight galvanized steel, ASTM A53, threaded and coupled.
2. Design Pressure: 175 psi; Maximum Design Temperature: 200°F.
3. Joints: screwed.
4. Fittings: Malleable iron, ASTM A47, Grade 32510, galvanized with grooved ends or 125 psi steam - 175 psi CWP, galvanized cast iron, ASTM A126, ANSI B16.4.

5. Flanges: Grooved end, galvanized flanged adapter nipples, Gustin Bacon No. 54, Victaulic No. 54 or 125 psi steam - 175 psi CWP, galvanized cast iron, screwed, ASTM A126, Grade B, ANSI B16.1, with galvanized or cadmium plated bolting.

C. Galvanized Steel; Standard Weight; Welded Joints:

1. Pipe: Standard weight galvanized steel, beveled ends, ASTM A53.
2. Design Pressure: 125 psi Maximum Design Temperature: 350°F
3. Joints: Butt welded and flanged. (All welded joints shall be ground, primed, and painted.)
4. Fittings: Standard weight seamless galvanized steel, butt weld type, ASTM A234, Grade WPB, ANSI B16.9.
5. Flanges: 150 psi forged steel, weld neck or slip-on, ASTM A181, Grade I, ANSI B16.5.
6. Other: Grind galvanizing off areas to be welded before welding, perform welding, and then clean surfaces and paint with one coat of rust-inhibiting metal primer and when dry one coat of oil base aluminum enamel.

2.4 PLASTIC PIPE

A. PVC-DWV or ABS-DWV; Schedule 40; Solvent Weld Joints:

1. Pipe: Schedule 40 rigid, PVC-DWV, or ABS-DWV, normal impact Type l, with plain ends, conforming to ASTM Standards D2665 or D2661. Cellular core piping is not acceptable.
2. Joints: Solvent-weld socket type with solvent recommended by pipe manufacturer.
3. Fittings: PVC-DWV, or ABS-DWV, normal impact Type l, with solvent-weld socket type ends for Schedule 40 pipe.
4. Limits: Schedule 40 PVC-DWV, or ABS-DWV pipe must not be threaded. Do not use where exposed or in return air plenums.
5. Use: Use PVC or ABS only where allowed by local jurisdiction. Comply with all special requirements or limitations.
6. Special Requirements: Provide expansion loop(s) and/or expansion joints in the piping system per the manufacturer's guidelines and as shown on the drawings. Refer to Section 220516 for expansion joint requirements.

2.5 STAINLESS STEEL PIPE

A. Stainless Steel; Schedule 5; Type 304; Mechanical Press Connection:

1. Pipe: Schedule 5 Type 304 stainless steel, ASTM A312 and ASTM A554 in copper tube size conforming to ASTM B88.
2. Joints: Mechanical press connections.
3. Fittings: Type 304 stainless steel, ASTM B88 and ANSI B16.22 with embedded O-ring. NSF-61 stainless steel grip ring for 2 1/2" to 4" diameter sizes.
4. Transitions to other materials: Provide dielectric connection as required in this section. Refer to article "CONNECTIONS BETWEEN DISSIMILAR METALS."
5. Fitting Identification: Press ends shall provide the ability to identify an unpressed fitting from the floor prior to testing. The function of this feature is to provide the installer quick

and easy identification of connections that have not been pressed prior to putting the system into operation.

6. Special Requirements: Mechanical press fitting manufacturer shall provide contractor training prior to installation.
7. Manufacturers:

    a. Merit Brass
    b. Viega ProPress
    c. Apollo SmartPress, a division of Aalberts - IPS

B. Stainless Steel; 304; Mechanically Coupled Grooved Joints:

1. Design Pressure: Varies with size and schedule of pipe; consult coupling manufacturer's most recent submittals.
2. Pipe: 304 stainless steel, ASTM A312, Schedule 10S, grooved in accordance with coupling manufacturer¢¢s standards.
3. Couplings Potable Water: Two ASTM A536 ductile iron housing segments, pressure responsive elastomer gasket Grade P fluoroelastomer blend and required standard bolts and nuts. Design Basis Potable Water: Victaulic Style 807N.
4. Couplings Non-Potable Water: Two ASTM A536 ductile iron housing segments, pressure responsive elastomer gasket blend Grade E EPDM and required standard bolts and nuts. Design Basis Non-Potable Water: Victaulic Style 107V.
5. Fittings: ASTM A403 wrought stainless steel or factory manufactured from ASTM A312 stainless steel pipe.

    a. Stainless Steel; Type 304; Hub and Spigot Joint:

6. Pipe: Stainless Steel Type 304, ASME A112.3.1
7. Fittings: Stainless Steel Type 304, ASME A112.3.1, push-on joints.
8. Joints: Push-on joint with integral rubber gaskets suitable for use with acid waste piping.
9. Adapters: Transition from stainless steel pipe to other pipe materials with manufactured adapters. Heavy duty neoprene sleeve gasket, ASTM C564, 300 Series stainless steel shield, clamp and screws with not less than four screw type clamps, FM 1680 or ASTM C1540.
10. Manufacturers:

    a. ACO
    b. Blucher
    c. Watts
    d. Josam
    e. Approved equivalent

2.6 VALVES

A. Shutoff Valves:

1. For pipe systems where mechanical press connections are allowed, shutoff valves with mechanical press connections are acceptable subject to the requirements in the paragraphs below.

2. Gate Valves:

   a. GA-1: 2" and under, 150 psi steam @ 406°F, 300 psi CWP @ 150°F, screwed, bronze, rising stem, screwed bonnet, lead free NSF-372. Hammond UP640, Milwaukee UP1150, Watts B-3210, Nibco T-131, Jomar T-351G, Apollo Valves; a division of Aalberts- IPS 107T.
   b. GA-2: 2-1/2" thru 12", 125 psi S @ 353°F, 200 psi CWP @ 150°F, flanged, iron body, bronze mounted, OS&Y, lead free NSF-372. Hammond IR1146-HI, Milwaukee F-2885-MRW, Watts #F-503, Nibco F-617-0, Apollo Valves; a division of Aalberts- IPS 611F.
   c. GA-7: 2-1/2" thru 12", 200 psi CWP @ 150°F, flanged, iron body, bronze trim, OS&Y, not intended for potable water. Crane #475-1/2, Hammond #IR1146, Stockham #G624, Walworth #8727F, Milwaukee #F2885A, Nibco F-617-0.
   d. GA-12: 2-1/2" thru 12", 200 psi CWP, flanged ends, iron body, resilient wedge, "O" ring stem seals, non-rising stem with mounting flange for indicator post or valve box and 2" square nut, counter-clockwise to open, AWWA, lead free NSF-372. Mueller A-2361 Series, Kennedy #C509 Series 8401A.
   e. GA-13: 2" thru 12", 200 psi CWP, mechanical joint ends, iron body, resilient wedge, "O" ring stem seals, non-rising stem with mounting flange for indicator post or valve box and 2" square nut, counter-clockwise to open, AWWA, lead free NSF-372. Mueller #A-2361 Series with HYMAX Grip Restraint, Kennedy C509 Series 8701.

3. Butterfly Valves:

   a. BF-1:

      1) 2-1/2" thru 6", 175 psi CWP, elastomers rated for 20°F to 250°F at 125 psig, fully lugged end, ductile or cast iron body (not in contact with fluid); bronze, aluminum-bronze or stainless steel disc; EPDM seat, stainless steel stem, lead free NSF-372, extended neck, 175 psi bubble-tight, bi-directional dead-end shutoff without backing flange or nuts and with cap screws extending to centerline of valve body (for pipe extension without draining system), 10 position locking operator up to 6" size. Cv of at least 1580 in 6" size.
      2) Manufacturers:

         a) Victaulic #300
         b) Apollo Valves; a division of Aalberts-IPS LD141
         c) Center Line Series 200
         d) Keystone #222
         e) Watts #DBF-03-121-1P
         f) Nibco N200 Series or LD2000 Series
         g) Milwaukee CL series
         h) Hammond 5200 series
         i) Jomar 600-__DSEL series
         j) Metraflex #Butterfly Valve, DINC DISK

      3) 8" thru 12", 175 psi CWP, elastomers for 20°F to 225°F at 130 psi, fully lugged end, ductile or cast iron body (not in contact with fluid), bronze,

stainless steel, electroless coated ductile iron or aluminum-bronze disc, EPDM seat, stainless steel stem, lead free NSF-372, extended neck, 175 psi bubble-tight, bi-directional dead-end shutoff without backing flange or nuts and with cap screws extending to the centerline of the valve body (to permit pipe extension without draining system), weatherproof gear operator.

4) Manufacturers:

a) Victaulic #3
b) Apollo Valves; a division of Aalberts-IPS LD141
c) Center Line Series 200
d) Keystone #222
e) Watts #DBF-03-121-1G
f) Nibco N200 Series or LD2000 Series
g) Milwaukee CL series
h) Hammond 5200 series
i) Jomar 600-__DSEG series
j) Metraflex #Butterfly Valve, DINC DISK

5) Mechanically coupled grooved end valves are acceptable if they have the features listed above.

a) Cast brass body to UNS C87850. (Alloy code shall be cast or stamped into the valve body.) Aluminum bronze disc to UNS C95500, with pressure responsive elastomer seat. Stem shall be offset from the disc centerline to provide complete 360-degree circumferential seating. Victaulic #608, Shurjoint; a division of Aalberts-IPS #SJ-C300.
b) Grooved end stainless steel body and disc, Grade CF8M, conforming to ASTM A351, with blow-out proof 17-4PH stainless steel stems to ASTM A564. Disc shall be connected to the stem without the use of fasteners or pins, and be offset from the stem centerline to provide a full 360-degree continuous contact with the seating surface when closed. Seat shall be pressure responsive, Grade P fluoroelastomer. Victaulic Series 861 Vic-300 MasterSeal Valve.

4. Ball Valves:

a. BA-1: 3" and under, 150 psi saturated steam, 600 psi CWP, full port, threaded or solder ends (acceptable only if rated for soldering in line with 470°F melting point of lead-free solder), stainless steel ball and trim, Teflon seats and seals.

1) Body: Lead free NSF-372, bronze of a copper alloy containing less than 15% zinc. Apollo Valves; a division of AalbertsœœIPS #77CLF140/240 Series, Milwaukee #UPBA450S, Watts #LFB6080G2-SS, Nibco #T-585-70-66 (lead free option), Jomar T-200CSSG.
2) Body: Dezincification resistant brass alloy, lead free NSF-372. Jomar T-100CSSG.
3) Provide solid extended shaft for all insulated piping. (For example, Apollo adds option -04 Stem Extension, and Jomar modifies valve part number with -IH for insulated handle.)

4) Provide lock out trim for all valves opening to atmosphere installed in domestic water piping over 120°F, heating water piping over 120°F, steam, condensate, boiler feed water piping, and gasoline/kerosene piping, and as indicated on the drawings. Solid extended shaft is not required on valves with lockout trim. (For example, Jomar modifies valve part number with -LH for locking handle.)

B. Throttling Valves

1. Globe Valves:

a. GL-1: 2" and under, 150 psi saturated steam, 300 psi CWP, screwed, bronze, lead free NSF-372. Milwaukee #UP502, Hammond #UP440.

2. Plug Valves:

a. PL-1: 2" and under, 125 psi steam @ 450°F, 175 psi CWP @ 180°F, cast iron body, screwed, full port. Walworth #1700, DeZurik #425, S-RS49.
b. PL-2: 2-1/2" thru 4", 125 psi steam @ 450°F, 175 psi CWP @ 180°F, flanged, cast iron body, full port. Walworth #1700F, DeZurik #425, F-RS49.
c. PL-3: 6" and larger, 125 psi steam @ 450°F, 175 psi CWP, cast iron body, flanged, resilient faced plug, gear and handwheel operator, full port. Walworth #1700F, DeZurik #118, F-RS24.
d. PL-13: 2" and under, 175 psi CWP, 250°F elastomer, screwed, bronze body, resilient plug facing (RS-55), adjustable memory stop, non-removable lever handle. DeZurik #120-S.
e. PL-15: 2-1/2" thru 8", 150 psi CWP, 250°F elastomer, flanged, bronze body, resilient plug facing (RS-55 or RS-56), adjustable memory stop. DeZurik #120-F.

2.7 STRAINERS

A. For pipe systems where mechanical press connections are allowed, strainers with mechanical press connections are acceptable subject to the requirements in the paragraphs below.

B. ST-1: Threaded Ends, 4" and under, lead free bronze or 304 stainless steel body, threaded connections, threaded removable cover, 0.045• • 304 stainless steel perforated screen, 125 psi S @ 350°F, 200 psi CWP @ 150°F. Apollo Valves, a division of Aalberts-IPS YB-LF (59LF), Metraflex SSFT, Mueller / Watts LF351, Watts LF777, Jomar T-651G, Zurn SXL.

C. ST-2: Flanged Ends, 2-1/2" thru 12", Lead free cast iron with FDA/NSF approved electrostatically applied fusion bonded epoxy coating body, flanged connections, bolted or flanged cover, 304 stainless steel perforated screen, 125 psi steam, 200 psi CWP. Watts 77F-DI-FDA-125, Victaulic Series 969-F, Apollo Valves, a division of Aalberts-IPS YCF0XM40E, Zurn FSC.

D. ST-3: Grooved Ends, 2-1/2" thru 8", Ductile iron to ASTM A536 with electrostatically applied fusion bonded epoxy coating or stainless steel body, grooved connections, bolted or grooved removable cover, 304 stainless steel perforated screen, 400 psi S @ 180°F, 175 psi. Victaulic Series 968-F or 968-F-SS, Watts 77F-SS.

2.8 CHECK VALVES

A. For pipe systems where mechanical press connections are allowed, check valves with mechanical press connections are acceptable subject to the requirements in the paragraphs below.

B. CK-1: Threaded Ends, 2" and under, 125 psi steam @ 406°F, 200 psi CWP @ 150°F, threaded connection, lead free bronze body with brass or bronze disc, horizontal swing. Hammond #UP904, Milwaukee #UP509, Nibco T-413-Y-LF, Jomar T-511G, Apollo Valves, a division of Aalberts-IPS #161T-LF.

C. CK-2 :Wafer Style, 2-1/2" thru 12", 200 psi CWP, double disc wafer type, lead free bronze or iron body, bronze trim, metal-to-metal or EPDM seat, 316 SS shaft. Nibco W-920-W-LF, Apollo Valves, a division of Aalberts-IPS 910WE-LF, Milwaukee UP1400, Watts ICV-125-2-2-T.

D. CK-3: Grooved Ends, 2-1/2" thru 12", 300 psi, grooved end, Grade CF8M stainless steel body and disc, 17-4PH stainless steel shaft, with 17-4PH or 316 stainless steel spring, and Grade P fluoroelastomer seat. Suitable for vertical or horizontal installation. Victaulic Series 816.

E. CK-4: Wafer Style (non-potable) 2-1/2" thru 12", 200 psi CWP, double disc wafer type, iron body, bronze or aluminum-bronze discs, 316SS shaft and spring, Viton, EPDM or BUNA-N, Cv of at least 700 in 6" size. Watts / Mueller Steam Specialty Co. 71, Stockham #WG-961 EPDM or #WG-970 BUNA, NIBCO W-920-W-LF.

F. CK-5: Flanged Style for Vacuum, 2" and larger, 125 psi CWP, flanged, iron body, cast iron or carbon steel body with stainless steel internals. Hoerbiger Design "CT". Note: Use only for compressor discharge.

2.9 LOCK OUT TRIM

A. Provide lock out trim for all quarter turn shutoff valves opening to atmosphere and installed in domestic water piping over 120°F and as indicated on the drawings.

2.10 VALVE OPERATORS

A. Provide handwheels for gate valves and gear operators for butterfly valves.

2.11 VALVE CONNECTIONS

A. Provide all connections to match pipe joints. Valves shall be same size as pipe unless noted otherwise.

2.12 CONNECTIONS BETWEEN DISSIMILAR METALS

A. Connections between dissimilar metals shall be insulating dielectric types that provide a water gap between the connected metals, and that either allow no metal path for electron transfer or that provide a wide water gap lined with a non-conductive material to impede electron transfer through the water path.

B. Joints shall be rated for the temperature, pressure, and other characteristics of the service in which they are used, including testing procedure.

C. Aluminum, iron, steel, brass, copper, bronze, galvanized steel and stainless steel are commonly used and require isolation from each other with the following exceptions:

1. Iron and steel connected to each other.
2. Brass, copper, and bronze connected to each other.
3. Brass or bronze valves and specialties connected in closed systems with steel, iron, or stainless steel on both sides of the brass or bronze valves and specialties. Where two or more brass or bronze items occur together, they shall be connected with brass nipples. Brass or bronze valves and specialties cannot be used as a dielectric separation between pipe materials.

D. Dielectric protection is required at connections to equipment of a material different than the piping.

E. Screwed and/or Grooved Joints (acceptable up to 4" size):

1. Dielectric waterway rated for 300 psi CWP and 225°F.
2. Optional: Copper-silicon casting conforming to UNS C87850 with grooved and/or threaded ends.
3. UL classified in accordance with ANSI / NSF-61 for potable water service.
4. Manufacturers:

a. Elster Group ClearFlow fittings
b. Victaulic Series 647
c. Grinnell Series 407
d. Matco-Norca

F. Flanged Joints (any size):

1. Use 1/8" minimum thickness, non-conductive, full-face gaskets.
2. Employ one-piece molded sleeve-washer combinations to break the electrical path through the bolts.
3. Sleeve-washers are required on one side only, with sleeves minimum 1/32" thick and washers minimum 1/8" thick.
4. Install steel washers on both sides of flanges to prevent damage to the sleeve-washer.
5. Separate sleeves and washers may be used only if the sleeves are manufactured to exact lengths and installed carefully so the sleeves must extend partially past each steel washer when tightened.
6. Manufacturers:

a. EPCO
b. Central Plastics
c. Pipeline Seal and Insulator
d. F. H. Maloney
e. Calpico

G. Grooved Mechanical Transition Couplings (2" thru 6"):

1. Grooved mechanical coupling rated for 300 psi CWP and 180°F. Consisting of two ductile iron housings, Grade P flouroelastomer gasket, and bolts and hex nuts zinc electroplated plated, ASTM B-633.
2. Provides a single coupling connection for grooved end stainless steel pipe to grooved end copper tubing of the same nominal size.
3. UL classified in accordance with ANSI / NSF-61 for potable water service.
4. For use only on Types 304 or 316 Schedules 10S and 40S stainless steel pipe, and ASTM B88 Types K, L and M and ASTM B306 Type DWV copper tubing. Victaulic Style 644.

PART 3 - EXECUTION

3.1 PREPARATION

A. Install all products per manufacturer's recommendations.

B. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

C. Remove scale and dirt, on inside and outside, before assembly.

D. Remove all scale, rust, dirt, oils, stickers and thoroughly clean exterior of all bare metal exposed piping, hangers, and accessories in preparation to be painted.

E. Connect to equipment with flanges or unions. Unions or flanges for servicing and disconnect are not required in installations using grooved joint couplings.

F. Use only piping materials rated for the maximum temperature of the application, e.g., do not use PVC for dishwasher drainage or piping that receives boiler blowdown.

G. Roof Penetration (Vent) Flashing:

1. Membrane, Metal or Shingled Roofs: Flash vents with premolded pipe flashing cones for single-ply membrane roofs, metal roofs, or shingled roofs.

H. Existing building sewers or building drains which are shown on the documents to be reused shall be inspected and recorded by closed circuit television for their condition. Report findings back to the Architect, Engineer, and Owner before proceeding with work so any necessary rework can take place if needed.

3.2 SYSTEM, PIPING AND VALVE SCHEDULE

A. Cold Water, Hot Water, Tempered Water - Potable and Non-Potable (Above Ground):

1. Copper Pipe; Type L; Solder Joints: All Sizes
2. Copper Pipe; Type L; Mechanical Press Connection: 4" and Under
3. Copper Pipe; Type L; Mechanically Coupled Grooved Joints: 2-1/2" to 8"
4. Stainless Steel; Schedule 5; Type 304; Mechanical Press Connection: 4" and Under
5. Stainless Steel; 304; Grooved Joints: 2" through 12"
6. Shutoff Valves: BF-1, BA-1
7. Throttling Valves: GL-1, GA-2
8. Check Valves: CK-1, CK-2, CK-3
9. Strainers: ST-1, ST-2, ST-3

B. Cold Water, Hot Water, Tempered Water - Potable and Non-Potable (Underground):

1. Copper Pipe; Type K; Solder Joints: All Sizes
2. Copper Pipe; Type K; Mechanical Press Connection: 4" and Under

C. Welding Gases (Argon, Acetylene, Oxygen, Mixed Gas) (Addendum 3)

1. Galvanized Steel; Standard Weight; Threaded Joints
2. Galvanized Steel; Standard Weight; Mechanically Coupled Grooved Joints
3. Galvanized Steel; Standard Weight; Welded Joints

D. Sanitary Waste and Vent, Gravity (above Ground):

1. Cast Iron; Standard Weight; Hub and Spigot Joints: All Sizes
2. Cast Iron; Standard Weight; No-Hub Sleeve Gaskets: 1-1/2" to 15"
3. Copper Pipe: Type DWV; Solder Joints: 1-1/4" to 4"
4. PVC-DWV or ABS-DWV; Schedule 40; Solvent Weld Joints: All Sizes
5. Stainless Steel; Type 304; Hub and Spigot Joint: All Sizes

E. Sanitary Indirect Drainage (Above Ground):

1. Cast Iron; Standard Weight; Hub and Spigot Joints: All Sizes
2. Cast Iron; Standard Weight; No-Hub Sleeve Gaskets: 1-1/2" to 15"
3. Copper Pipe: Type DWV; Solder Joints: 1-1/4" to 4"
4. Copper Pipe: Type M; Solder Joints: 1-1/4" to 4"
5. Stainless Steel; Type 304; Hub and Spigot Joint: All Sizes

F. Storm Drainage, Gravity (Above Ground):

1. Cast Iron; Standard Weight; Hub and Spigot Joints: All Sizes
2. Cast Iron; Standard Weight; No-Hub Sleeve Gaskets: 1-1/2" to 15"
3. Copper Pipe: Type DWV; Solder Joints: 1-1/4" to 4"
4. PVC-DWV or ABS-DWV; Schedule 40; Solvent Weld Joints: All Sizes
5. Galvanized Steel; Standard Weight; Threaded Joints: 4" and under
6. Stainless Steel; Type 304; Hub and Spigot Joint: All Sizes

G. Sanitary Waste and Vent, Gravity (Underground - Inside Building):

1. Cast Iron; Standard Weight; Hub and Spigot Joints: All Sizes
2. Cast Iron; Standard Weight; No-Hub Sleeve Gaskets: 1-1/2" to 15"
3. PVC-DWV or ABS-DWV; Schedule 40; Solvent Weld Joints: All Sizes

H. Storm Drainage, Gravity (Underground - Inside Building):

1. Cast Iron; Standard Weight; Hub and Spigot Joints: All Sizes
2. Cast Iron; Standard Weight; No-Hub Sleeve Gaskets: 1-1/2" to 15"
3. PVC-DWV or ABS-DWV; Schedule 40; Solvent Weld Joints: All Sizes

I. Sanitary Waste and Vent, Gravity (Underground - Outside Building):

1. Cast Iron; Standard Weight; Hub and Spigot Joints: All Sizes
2. Cast Iron; Standard Weight; No-Hub Sleeve Gaskets: 1-1/2" to 15"
3. Concrete; Reinforced Class III; Tongue and Groove Pipe: 12" and over
4. Concrete; Reinforced Class III; Modified Bell and Spigot or Tongue and Groove Pipe - Flat Gasket: 12" to 18"
5. Concrete; Reinforced Class III; Tongue and Groove Pipe - Mastic with Geotextile Wrap: 21" and over
6. Ductile Iron Pipe; Pressure Water Pipe; Push-On Joints - Pressure Pipe: 4" and larger
7. PVC Pressure Pipe; Schedule 40/SDR26; Push-On Joints - Pressure Pipe: All sizes

J. Storm Drainage, Gravity (Underground - Outside Building):

1. Cast Iron; Standard Weight; Hub and Spigot Joints: All Sizes
2. Cast Iron; Standard Weight; No-Hub Sleeve Gaskets: 1-1/2" to 15"
3. Concrete; Reinforced Class III; Tongue and Groove Pipe: 12" and over
4. Concrete; Reinforced Class III; Modified Bell and Spigot or Tongue and Groove Pipe - Flat Gasket: 12" to 18"
5. Concrete; Reinforced Class III; Tongue and Groove Pipe - Mastic with Geotextile Wrap: 21" and over
6. Ductile Iron Pipe; Pressure Water Pipe; Push-On Joints - Pressure Pipe: 4" and larger
7. PVC Pressure Pipe; Schedule 40/SDR26; Push-On Joints - Pressure Pipe: All sizes

K. Kitchen Grease Drainage and Vent (Above Ground):

1. Stainless Steel; Type 316; Hub and Spigot Joint: 2" to 8"
2. Cast Iron; Standard Weight Epoxy Coated; No-Hub Sleeve Gaskets: 1-1/2" to 15"

L. Kitchen Grease Drainage and Vent (Underground):

1. Stainless Steel; Type 316; Hub and Spigot Joint: 2" to 8"
2. Cast Iron; Standard Weight Epoxy Coated; No-Hub Sleeve Gaskets: 1-1/2" to 15"

M. Condensate/Equipment Drainage:

1. Cast Iron; Standard Weight; Hub and Spigot Joints: All Sizes
2. Cast Iron; Standard Weight; No-Hub Sleeve Gaskets: 1-1/2" to 15"

3. Copper Pipe: Type DWV; Solder Joints: 1-1/4" to 4"
4. Copper Pipe: Type M; Solder Joints: 1-1/4" to 4"
5. PVC-DWV or ABS-DWV; Schedule 40; Solvent Weld Joints: All Sizes

3.3 TESTING PIPING

A. Sanitary Drainage, Sanitary Vent, Storm Drainage:

1. Test all piping with water to prove tight.
2. Test piping before insulation is applied.
3. Hydrostatically test all soil, waste, and vent piping inside of building with 10 feet head of water for 15 minutes. Inspect before fixtures are connected. If leaks appear, repair them and repeat the test.
4. Hydrostatically test interior downspouts with 10 feet head of water for 15 minutes with no leaks.
5. A smoke/air test at the same pressure may be used in lieu of the hydrostatic water test. Exception: Smoke/air test shall not be performed on plastic piping.
6. Test force mains with water at 105% of the operating pump discharge pressure for 15 minutes.
7. Test pressures stated above shall be as listed or as required by the Authority Having Jurisdiction, whichever is most stringent.

B. Hot Water - Potable and Non-Potable, Cold Water - Potable and Non-Potable, Tempered Water - Potable and Non-Potable:

1. Test pipes underground or in chases and walls before piping is concealed.
2. Test all pipes before the insulation is applied. If insulation is applied before the pipe is tested and a leak develops which ruins the insulation, replace damaged insulation.
3. Test the pipe with 100 psig water pressure or equal inert gas such as nitrogen. Exception: Inert gas test shall not be used to test plastic piping.
4. Hold test pressure for at least 2 hours.
5. Test to be witnessed by the Architect/Engineer's representative, if requested by the Architect/Engineer.

C. Fire Service:

1. Hydrostatically test the entire system for two hours at 200 psig. Maximum leakage shall be:

    a. Interior Piping: 0 quarts per hour.
    b. Underground Piping: 2 quarts per 100 joints per hour.

D. Vacuum Piping:

1. Testing pipes in chases, walls, or above non-accessible ceilings before piping is concealed.
2. Test with 100 psig compressed air or nitrogen.
3. During the test, strike all soldered joints sharply with a rubber or rawhide mallet to cause failure of any weak joints. After striking, soap test each joint.

4. Repair and retest all leaking joints.
5. After all joints pass the soap test, the system must maintain test pressure for 24 hours. If system fails the 24-hour, retest ALL joints by resoaping and repair all faulty joints. Repeat this procedure until the test pressure can be maintained for 24 hours.
6. After passing the above test, operate the vacuum pump. With all vacuum valves closed, the pump and piping system shall be able to maintain a vacuum of 25" Hg for at least one hour.
7. All materials, labor and equipment for testing shall be provided by the installing Contractor.
8. Tests to be witnessed by the Architect/Engineer's representative, if requested by the Architect/Engineer.
9. After testing, seal the complete system against entry of foreign material until it is turned over to the Owner.

E. All Other Piping:

1. Test piping at 150% of normal operating pressure.
2. Piping shall hold this pressure for one hour with no drop in pressure.
3. Test piping using water, nitrogen, or air as compatible with the final service of the pipe. Do not use combustible fluids.
4. Drain and clean all piping after testing is complete.

3.4 CLEANING PIPING

A. Assembly:

1. Before assembling pipe systems, remove all loose dirt, scale, oil and other foreign matter on internal or external surfaces by means consistent with good piping practice subject to approval of the Architect/Engineer's representative. Blow chips and burrs from machinery or thread cutting operation out of pipe before assembly. Wipe cutting oil from internal and external surfaces.
2. During fabrication and assembly, remove slag and weld spatter from both internal and external joints by peening, chipping and wire brushing.
3. Notify the Architect/Engineer's representative before starting any post erection cleaning in sufficient time to allow witnessing the operation. Consult with and obtain approval from the Architect/Engineer's representative regarding specific procedures and scheduling. Dispose of cleaning and flushing fluids properly.
4. Prior to blowing or flushing erected piping systems, disconnect all instrumentation and equipment, open wide all valves, and be certain all strainer screens are in place.

B. Air Blow:

1. Blow out pipe and components with clean compressed air. Instrument air, argon, nitrogen and sulfuric acid lines shall be blown out with dry, oil free air or nitrogen gas. "Oil Free" is defined as air compressed in a centrifugal, Teflon ring, carbon ring or water pumped air compressor. Where air supply is judged to be inadequate to continually attain cleaning velocity, alternate pressurization and sudden relief procedure may be used until discharge at all blow out points is clean. Use 80-90 psig pressure unless otherwise indicated.
2. Air blow applies to the following systems:

a. Acetylene
b. Carbon Dioxide
c. Nitrogen (use oil free air or nitrogen gas)
d. Argon (use oil free air or nitrogen gas)
e. Instrument Air (use oil free air or nitrogen gas)
f. Distilled Water (use maximum of 50 psig pressure)
g. Chemical Feed
h. Air Compressor Intakes
i. Sulfuric Acid (use oil free air or nitrogen gas)

C. All Water Piping:

1. Flush all piping using faucets, flush valves, etc. until the flow is clean.
2. After flushing, thoroughly clean all inlet strainers, aerators, and other such devices.
3. If necessary, remove valves to clean out all foreign material.

3.5 INSTALLATION

A. General Installation Requirements:

1. Provide dielectric connections between dissimilar metals.
2. Route piping in orderly manner and maintain gradient. Install to conserve building space.
3. Group piping whenever practical at common elevations.
4. Install piping to allow for expansion and contraction without stressing pipe, joints, or equipment.
5. Slope water piping and arrange to drain at low points.
6. Install bell and spigot piping with bells upstream.
7. Where pipe supports are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welds.
8. Seal pipes passing through exterior walls with a wall seal per Section 220529. Provide Schedule 40 galvanized sleeve at least 2 pipe sizes larger than the pipe.
9. All non-potable outlets shall be clearly marked with a permanently affixed laminated sign with 3/8" high lettering saying "Non-Potable Water Not for Human Consumption." Sign shall have black lettering on a yellow background.
10. All vertical pipe drops to sinks or other equipment installed below the ceiling shall be routed within a wall cavity, unless specifically noted otherwise to be surface mounted. For renovation projects, this Contractor is responsible for opening and patching existing walls for installation of piping. Wall patching shall match existing condition.

B. Valves/Fittings and Accessories:

1. Install shutoff valves that permit the isolation of equipment/fixtures in each room without isolating any other room or portion of the building. Individual fixture angle stops do not meet this requirement. Exception: Back-to-back rooms in no more than two adjacent rooms.
2. Provide clearance for installation of insulation and access to valves and fittings.
3. Provide access doors for concealed valves and fittings.
4. Install valve stems upright or horizontal, not inverted.

5. Provide one plug valve wrench for every ten plug valves 2" and smaller, minimum of one. Provide each plug valve 2-1/2" and larger with a wrench with set screw.
6. Install corrugated, stainless steel tubing system according to manufacturer's written instructions. Include striker plates to protect tubing from puncture where tubing is restrained and cannot move.

C. Underground Piping:

1. Install buried water piping outside the building with at least 5 feet of cover.Refer to Section 220500 for Excavation, Fill, Backfill and Compaction requirements
2. Install underground, sleeved, corrugated, stainless steel tubing system according to manufacturer's written instructions. Extend vent from sleeve to exterior of building and terminate with screened elbow.
3. Direct buried, uninsulated steel pipe shall have a factory applied external protective coating consisting of two coats with an intermediate layer of 18 mil fibrous glass mat. Coating thickness shall total not less than 3/32". The outer coating shall be further protected by a wrapping of heavy Kraft paper. This external protection shall extend and be exposed for a minimum of 1 foot beyond the buried or concealed portion of the pipe.

    a. Manufacturers:

        1) Pipe Line Service Co., Franklin Park, Illinois
        2) Lithcote Corp., Melrose Park, Illinois

4. As an option, the Contractor may provide factory applied protective coatings consisting of a polyethylene plastic film bonded to the pipe surface by a hot applied thermo-plastic adhesive.

    a. Manufacturers:

        1) Republic Steel Corp. "X-Tru-Coat"

5. Exercise care in handling, storing and laying pipe to avoid damaging factory applied coatings. If any damage occurs, repair the coating to a condition equal to the original.
6. Field application of protective coatings to joints, fittings and to any damaged factory applied coatings shall be similar to factory applied coatings specified above and shall be done in strict accordance with recommendations of the supplier of pipe coatings.
7. After completion of the fabrication, laying and field coating of the joints and fittings, but prior to backfilling, inspect the entire line in the presence of the Architect/Engineer's representative with an electronic holiday detector. Any defects in the protective coatings shall be repaired in accordance with requirements for original coatings.
8. Coat flange bolts and nuts in pits and below ground at the time of installation with a corrosion protective coating.

D. Sanitary and Storm Piping:

1. Install all sanitary and storm piping inside the building with a slope as shown on the drawings.
2. Install horizontal offset at all connections to roof drains to allow for pipe expansion.

3. Slope sanitary and storm piping outside the building to meet invert elevations shown on drawings and to maintain a minimum velocity of 2 feet per second.
4. Sway Bracing: Where horizontal sanitary and/or storm pipes 4 inches and larger change flow direction greater than 45°, rigid bracing or thrust restraints shall be installed to resist movement of the upstream pipe in the direction of pipe flow. The rigid bracing or thrust restraint shall be connected to structure. A change of flow direction from horizontal into a vertical pipe does not require the upstream pipe to be braced.
5. All sanitary and storm piping shall have at least 42" of cover when leaving the building.
6. Starter fittings with internal baffles are not permitted.

3.6 PIPE ERECTION AND LAYING

A. Carefully inspect all pipe, fittings, valves, equipment and accessories before installation. Any items that are unsuitable, cracked or otherwise defective shall be removed from the job immediately.

B. All pipe, fittings, valves, equipment and accessories shall have factory applied markings, stampings, or nameplates with sufficient data to determine their conformance with specified requirements.

C. Exercise care at every stage of storage, handling, laying and erecting to prevent entry of foreign matter into piping, fittings, valves, equipment and accessories. Do not install any item that is not clean.

D. Until system is fully operational, all openings in piping and equipment shall be kept closed except when actual work is being performed on that item or system. Closures shall be plugs, caps, blind flanges or other items specifically designed and intended for this purpose.

E. Run pipes straight and true, parallel to building lines with minimum use of offsets and couplings. Provide only offsets required to provide needed headroom or clearance and to provide needed flexibility in pipe lines.

F. Make changes in direction of pipes only with fittings or pipe bends. Changes in size only with fittings. Do not use miter fittings, face or flush bushings, or street elbows. All fittings shall be of the long radius type, unless otherwise shown on the drawings or specified.

G. Provide flanges or unions at all final connections to equipment, traps and valves.

H. Arrange piping and connections so equipment served may be totally removed without disturbing piping beyond final connections and associated shutoff valves.

I. Use full and double lengths of pipe wherever possible.

J. Unless otherwise indicated, install all piping, including shutoff valves and strainers, to coils, pumps and other equipment at line size with reduction in size being made only at control valve or equipment.

K. Cut all pipe to exact measurement and install without springing or forcing except in the case of expansion loops where cold springing is indicated on the drawings.

L. Underground pipe shall be laid in dry trenches maintained free of accumulated water. Refer to Section 220500 for Excavation, Fill, Backfill and Compaction requirements.

M. Unless otherwise indicated, branch take-offs shall be from top of mains or headers at either a 45° or 90° angle from the horizontal plane for air lines, and from top, bottom or side for liquids.

N. Do not use geotextile fabric with footing tile if silt content of soil exceeds 40% or if clay content exceeds 50%. The fabric shall be installed around 1" river rock or 2" limestone.

3.7 DRAINING AND VENTING

A. Unless otherwise indicated on the drawings, all horizontal water lines, including branches, shall pitch 1" in 40 feet to low points for complete drainage, removal of condensate and venting.

B. Maintain accurate grade where pipes pitch or slope for venting and drainage. No pipes shall have pockets due to changes in elevation.

C. Provide drain valves at all low points of water piping systems for complete or sectionalized draining.

D. Use eccentric reducing fittings on horizontal runs when changing size of pipes for proper drainage and venting. Install gravity drain pipes with bottom of pipe and eccentric reducers in a continuous line; all other liquid lines with top of pipe and eccentric reducers in a continuous line.

E. Provide air vents at high points and wherever else required to eliminate air in all water piping systems.

F. Install air vents in accessible locations. If necessary to trap and vent air in a remote location, install an 1/8" pipe from the tapping location to an accessible location and terminate with a venting device.

G. All vent and drain piping shall be of same materials and construction for the service involved.

3.8 PLUMBING VENTS

A. Vent as shown on the drawings and in accordance with all codes having jurisdiction.

B. Extend the high side of the soil and waste stacks at least 12" above roof.

C. Flash pipes at the roof with 3# lead sheet. Extend flashing under roofing 15" in all directions from pipe to be flashed. Extend a lead collar up on the outside of pipe to be flashed and extend 1" beyond the top of the pipe. The 1" excess length of collar shall be turned down into the top of the pipe where it shall fit tight to the inside of the pipe.

D. Flash pipes at roof with premolded EPDM pipe flashing cones adhered to roof membrane by General Contractor. Secure top of cone with stainless steel clamp and seal watertight.

E. Increase vent pipes through the roof two pipe sizes with long increasers located at least 12" below the roof.

F. In no case shall the vent through the roof be less than 4" in diameter.

G. Vent pipes through the roof shall be located a minimum of from any air intake opening on the roof.

3.9 BRANCH CONNECTIONS

A. For domestic water and vent systems only, make branch connections with standard tee or cross fittings of the type required for the service.

B. Reducers are generally not shown. Where pipe sizes change at tee, the tee shall be the size of the largest pipe shown connecting to it.

C. Do not use double wye or double combination wye and eighth bend DWV fittings in horizontal piping.

D. Branch connections from the headers and mains may be mechanically formed using an extraction device. The branch piping connection shall be brazed connection for the following services only:

1. Domestic water piping above ground.

E. Further limit use of mechanically formed fittings as follows:

1. Must have at least same pressure rating as the main.
2. Main must be Type K or L copper tubing.
3. Permanent marking shall indicate insertion depth and orientation.
4. Branch pipe shall conform to the inner curve of the piping main.
5. Main must be 1" or larger.
6. Branch must be 3/4" or larger.

F. Forged weld-on fittings are limited as follows:

1. Must have at least same pressure rating as the main.
2. Main must be 2-1/2" or larger.
3. Branch line is at least two pipe sizes under main size.

3.10 JOINING OF PIPE

A. Solder Joints (Copper Pipe):

1. Make up joints with 100% lead-free solder, ASTM B32. Cut tubing so ends are perfectly square and remove all burrs inside and outside. Thoroughly clean sockets of fittings and ends of tubing to remove all oxide, dirt and grease just prior to soldering. Apply flux evenly, but sparingly, over all surfaces to be joined. Heat joints uniformly so solder will

flow to all mated surfaces. Wipe excess solder, leaving a uniform fillet around cup of fitting.

2. Flux shall be non-acid type.
3. Solder end valves may be installed directly in the piping system if the entire valve is suitable for use with 470°F melting point solder. Remove discs and seals during soldering if they are not suitable for 470°F.

B. Brazed Joints (Copper Pipe):

1. Make up joints with silver alloy brazing filler metal conforming to ASTM B260 "Brazing Filler Metal" BAg-1 or BAg-2. Cut copper tubing so ends are perfectly square and remove all burrs inside and outside. Thoroughly clean sockets of fittings and ends of tubing to remove all oxide, dirt and grease just prior to brazing. Apply non-corrosive flux of the type recommended by filler alloy manufacturer, evenly, but sparingly, over all surfaces to be joined. Heat joints uniformly using oxygen-acetylene torch with tip size recommended by fitting manufacturer. Wipe and brush joint clean after alloy has set.
2. Remove discs from solder end valves during brazing.

C. Mechanically Coupled Grooved Joints (Copper and Stainless Steel Pipe):

1. Grooved connections shall mechanically engage, lock, and seal the grooved pipe ends in a positive couple. Each coupling shall have malleable iron housing clamps, steel bolts and nuts, and sealing gasket designed so internal pressure increases the tightness of the seal. Couplings must be installation-ready style for quick installation and no more than two-piece housings.
2. All work, including pipe grooving, shall be accomplished in accordance with manufacturer's published instructions.
3. All fittings shall be provided by one manufacturer. Mixing grooved components are not acceptable.
4. Product Warranty:

    a. Standard: One-year product warranty. A factory-trained manufacturer's representative shall visit the site for contractor training and installation observation.

        1) On-site Training: Manufacturer's factory trained representative shall provide training of contractor¢¢s field personnel in use of grooving tools and installation of product. Documentation of installing contractor training with manufacturer¢¢s representative shall be submitted to the Architect/Engineer.
        2) Job Site Visitation: Manufacturer's representative shall periodically visit job site to ensure manufacturer¢¢s installation practices are being followed.

    b. Extended 5-Year Product Warranty: Manufacturer shall provide extended 5-year warranty to replace product. Warranty shall include onsite training and inspection of all fittings by manufacturer. Manufacturer inspection report shall be provided to the Owner upon completion.
    c. Extended 5-Year Product and Installation Warranty: Manufacturer shall provide extended 5-year warranty to replace product and any part of the system damaged as a direct result of a failure of the product. Warranty shall include onsite training

and inspection of all fittings by manufacturer. Manufacturer inspection report shall be provided to the Owner upon completion.

D. Mechanical Press Connection (Copper and Stainless Steel Pipe):

1. Copper press fitting shall be made in accordance with the manufacturer's installation instructions.
2. Fully insert tubing into the fitting and mark tubing.
3. Prior to making connection, the fitting alignment shall be checked against the mark made on the tube to ensure the tubing is fully engaged in the fitting.
4. Joint shall be pressed with a tool approved by the manufacturer.
5. Installers shall be trained by manufacturer personnel or representative. Provide documentation upon request.

E. Hub and Spigot Joints - Sanitary Pipe and Storm Pipe (Cast Iron and Stainless Steel Pipe):

1. Lead and Oakum Joints: Pack joint with oakum made of vegetable fiber, cotton, or hemp. Pour joint with molten lead up to top of hub. Ensure leak-free joints by working joint with inside and outside caulking irons.
2. Compression Gasket Joints: Joint shall be one-piece double seal compression type gasket made specifically for joining cast iron soil pipe. Gasket shall be neoprene, permitting joint to flex as much as 5 degrees without loss of seal. Gasket shall be extra heavy weight class, conforming to ASTM C-564.

F. No-Hub Sleeve Gaskets (No-Hub) (Cast Iron Pipe):

1. Gasket shall be heavy weight class, conforming to ASTM C564.
2. The gasket shall have an internal center stop.
3. The gasket shall be covered by a stainless steel band secured with a minimum of four stainless steel bands per fitting/joint.
4. Sleeve gaskets shall be installed in accordance with the manufacturer's installation instructions.

3.11 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. Disinfection of the domestic water piping shall be completed within three (3) weeks prior to building occupancy. Contractor is responsible for disinfecting water piping if used by workers during construction; disinfection during construction does not eliminate the requirement for final disinfection prior to occupancy. Flushing of piping shall be completed within two (2) weeks prior to building occupancy.

B. Provide necessary connections at the start of individual sections of mains for adding chlorine.

C. Before starting work, verify system is complete, flushed and clean.

D. Follow the disinfection of potable water procedure outlined in this project’s applicable plumbing code. For example: IPC 610.1, UPC 609.10, CPC 609.9, and Illinois 890.1180. Where local codes do not outline a disinfection procedure, follow the International Plumbing Code procedure 610.1.

E. Bleed water from all outlets to ensure chlorine distribution throughout the entire domestic water system.

F. Take water samples, no sooner than 24 hours after flushing, from 2% of outlets and from water entry. Obtain, analyze, and test samples in accordance with AWWA C651, Section 5 - Verification.

3.12 SERVICE CONNECTIONS

A. Provide new water service with water meter with bypass valves. Provide sleeve in wall for service main per Section 220529.

END OF SECTION 221000

SECTION 230900 - CONTROLS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Complete System of Automatic Controls.

B. Control Devices, Components, Wiring and Material.

C. Instructions for Owners.

D. Remodeling.

1.2 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum five years' experience.

B. TCC: Company specializing in the work of this section with minimum five years temperature control experience.

C. Technician: Minimum five years' experience installing commercial temperature control systems.

D. TCCs are limited to firms regularly employing a minimum of five full-time temperature control technicians within 100 miles of the job site.

1.3 REFERENCES

A. AMCA 500 - Test Methods for Louvers, Dampers and Shutters.

B. ANSI/ASHRAE/IES Standard 90.1 (latest published edition) - Energy Standard for Buildings Except Low-Rise Residential Buildings.

C. ANSI/ASHRAE Standard 135-2001: BACnet® - A Data Communication Protocol for Building Automation and Control Networks, including all amendments.

D. ANSI/NEMA 250 - Enclosures for Electrical Equipment (1000 volts Maximum).

E. ANSI/NFPA 70 - National Electrical Code.

F. ANSI/NFPA 90A - Installation of Air-Conditioning and Ventilation Systems.

G. ASHRAE 62.1 - Ventilation for Acceptable Indoor Air Quality.

H. ASHRAE 85 - Automatic Control Terminology for Heating, Ventilating, Air Conditioning.

I. ANSI/ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.

J. ANSI/ASTM B32 - Solder Metal.

K. ASTM B280 - Seamless Copper Tube for Air Conditioning & Refrigeration Field Service.

L. ASTM D1693 - Environmental Stress - Cracking of Ethylene Plastics.

1.4 SUBMITTALS

A. Equipment Coordination:

1. The Controls Contractor shall obtain approved equipment submittals from other contractors to determine equipment wiring connections, to choose appropriate controllers, and to provide programming.
2. Control valve selections shall be based on flow rates shown in approved shop drawings.
3. Coordinate the control interface of all equipment with the equipment manufacturers prior to submittal submission.

B. Shop Drawings:

1. Submit shop drawings per Section 230500. In addition, submit an electronic copy of the shop drawings in Adobe Acrobat (.pdf) format to the Owner for review.
2. Cross-reference all control components and point names in a single table located at the beginning of the submittal with the identical nomenclature used in this section.
3. Submittal shall also include a trunk cable schematic diagram depicting operator workstations, control panel locations and a description of the communication type, media and protocol.
4. System Architecture: Provide riser diagrams of wiring between central control unit and all control panels. This shall include specific protocols associated with each level within the architecture. Identify all interface equipment between CPU and control panels. The architecture shall include interface requirements with other systems including, but not limited to, security systems, lighting control, fire alarm, elevator status, and power monitoring system.
5. Diagrams shall include:

a. Wiring diagrams and layouts for each control panel showing all termination numbers.
b. Schematic diagrams for all control, communication, and power wiring. Provide a schematic drawing of the central system installation. Label all cables and ports with computer manufacturers' model numbers and functions. Show all interface wiring to the control system.
c. Identification of all control components connected to emergency power.
d. Schematic diagrams for all field sensors and controllers.
e. A schematic diagram of each controlled system. The schematics shall have all control points labeled. The schematics shall graphically show the location of all control elements in the system.

f. A schematic wiring diagram for each controlled system. Each schematic shall have all elements labeled. Where a control element is the same as that shown on the control system schematic, label it with the same name. Label all terminals.
g. A tabular instrumentation list for each controlled system. The table shall show element name, type of device, manufacturer, model number and product data sheet number.
h. All installation details and any other details required to demonstrate that the system will function properly.
i. All interface requirements with other systems.

6. The network infrastructure shall conform to the published guidelines for wire type, length, number of nodes per channel, termination, and other relevant wiring and infrastructure criteria as published. The number of nodes per channel shall be no more than 80% of the defined segment (logical or physical) limit in order to provide future system enhancement with minimal infrastructure modifications.
7. Sequences: Submit a complete description of the operation of the control system, including sequences of operation. The description shall include and reference a schematic diagram of the controlled system. The wording of the control sequences in the submittal shall match verbatim that included in the construction documents to ensure there are no sequence deviations from that intended by the Architect/Engineer. Clearly highlight any deviations from the specified sequences on the submittals.
8. Points List Schedule: Submit a complete points list of all points to be connected to the TCS and FMCS. The points list for each system controller shall include both inputs and outputs (I/O), point number, the controlled device associated with the I/O point, the location of the I/O device, and reference drawings. Where a control point is the same as that shown on the control system schematic, label it with the same name. Points list shall specifically identify alarms, trends, event history, archive, totalization, graphic points, and all mapped points from other systems (security systems, lighting control, fire alarm, etc.). Provide points lists, point naming convention, and factory support information for systems provided and integrated into the FMCS.
9. Damper Schedule: Schedule shall include a separate line for each damper and a column for each of the damper attributes:

a. Damper Identification Tag.
b. Location.
c. Damper Type.
d. Damper Size.
e. Duct Size.
f. Arrangement.
g. Blade Type.
h. Velocity.
i. Pressure Drop.
j. Fail Position.
k. Actuator Identification Tag.
l. Actuator Type.
m. Mounting.

10. Valve Schedule: Valve manufacturer shall size valves and create a valve schedule. Schedule shall include a separate line for each valve and a column for each of the valve attributes:

a. Valve Identification Tag.
b. Location.
c. Valve Type.
d. Valve Size.
e. Pipe Size.
f. Configuration.
g. Flow Characteristics.
h. Capacity.
i. Valve CV.
j. Design Pressure Drop.
k. Pressure Drop at Design Flow.
l. Fail Position.
m. Close-off Pressure.
n. Valve and Actuator Model Number and Type.

11. Product Data Sheets: Required for each component that includes: unique identification tag that is consistent throughout the submittal, manufacturer's description, technical data, performance curves, installation/maintenance instructions, and other relevant items. When manufacturer's literature applies to a product series rather than a specific product, the data specifically applicable to the project shall be highlighted or clearly indicated by other means. Each submitted piece of literature and drawings shall clearly reference the specification and/or drawing that the submittal is to cover. General catalogs shall not be accepted as cutsheets to fulfill submittal requirements.
12. Provide PICS files indicating the BACnet functionality and configuration of each device.
13. Provide documentation of submitted products that have been tested and listed by the BACnet Testing Laboratory (BTL), or provide a letter on the manufacturer's company letterhead indicating the anticipated date by which testing is expected to be completed. If, for any reason, BTL testing and listing has not been completed, a written commitment to upgrade installed controls to a version that meets BTL testing and listing requirements if problems are found during BTL testing is required.
14. Graphic Display: Include a sample graphic of each system and component identified in the points list with a flowchart (site map) indicating how the graphics are to be linked to each other for system navigation.
15. Software: A list of operating system software, operator interface software, color graphic software, and third-party software.
16. Control System Demonstration and Acceptance: Provide a description of the proposed process, along with all reports and checklists to be used.
17. Clearly identify work by others in the submittal.
18. Quantities of items submitted may be reviewed but are the responsibility of the Contractor to verify.

C. Operation and Maintenance Manual:

1. In addition to the requirements of Section 230500, submit an electronic copy of the O&M manuals in PDF format.
2. Provide three complete sets of manuals.
3. Each O&M manual shall include:

a. Table of contents with indexed tabs dividing information as outlined below.
b. Definitions: List of all abbreviations and technical terms with definitions.

c. Warranty Contacts: Names, addresses, and 24-hour telephone numbers of contractors installing equipment and controls and service representatives of each.
d. Licenses, Guarantees, and Warranties: Provide documentation for all equipment and systems.
e. System Components: Alphabetical list of all system components, with the name, address, and telephone number of the vendor.
f. Operating Procedures: Include procedures for operating the control systems; logging on/off; enabling, assigning, and reporting alarms; generating reports; collection, displaying, and archiving of trended data; overriding computer control; event scheduling; backing up software and data files; and changing setpoints and other variables.
g. Programming: Description of the programming language (including syntax), statement descriptions (including algorithms and calculations used), point database creation and modification, program creation and modification, and use of the editor.
h. Engineering, Installation, and Maintenance: Explain how to design and install new points, panels, and other hardware; recommended preventive maintenance procedures for all system components, including a schedule of tasks (inspection, cleaning, calibration, etc.), time between tasks, and task descriptions; how to debug hardware problems; and how to repair or replace hardware. A list of recommended spare parts.
i. Original Software: Complete original issue CDs for all software provided, including operating systems, programming language, operator workstation software, and graphics software.
j. Software: One set of CDs containing an executable copy of all custom software created using the programming language, including the setpoints, tuning parameters, and object database.
k. Graphics: A glossary or icon symbol library detailing the function of each graphic icon and graphics creation and modification. One set of CDs containing files of all color graphic screens created for the project.

D. Training Manual:

1. Provide a course outline and training manuals for each training class.

E. Record Documents:

1. Submit record documentation per Section 230500.
2. Provide a complete set of "as-built" drawings and application software on CDs. Provide drawings as AutoCAD¢¢ or Visio¢¢ compatible files. Provide two copies of the "as-built" drawings with revisions clearly indicated in addition to the documents on compact disk. All as-built drawings shall also be installed on the FMCS server in a dedicated directory. Provide all product data sheets in PDF format.
3. Submit two hard copies and one electronic copy of as-built versions of the shop drawings, including product data and record drawings with revisions clearly indicated. Provide floor plans showing actual locations of control components including panels, thermostats, sensors, and hardware.
4. Provide all completed testing and commissioning reports and checklists, along with all trend logs for each system identified in the points lists.

5. Submit printouts of all graphic screens with current values (temperatures, pressures, etc.) to the Architect/Engineer verifying completion and proper operation of all points.

1.5 DELIVERY, STORAGE AND HANDLING

A. Provide factory-shipping cartons for each piece of equipment and control device. Maintain cartons through shipping, storage, and handling as required to prevent equipment damage. Store equipment and materials inside and protected from weather.

B. Factory-Mounted Components: Where control devices specified in this section are indicated to be factory mounted on equipment, arrange for shipping control devices to unit manufacturer.

1.6 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

A. Control Valves.

B. Flow Switches.

C. Temperature Sensor Sockets.

D. Gauge Taps.

E. Automatic Dampers.

F. Flow Meters.

1.7 AGENCY AND CODE APPROVALS

A. All products shall have the following agency approvals. Provide verification that the approvals exist for all submitted products with the submittal package.

1. UL-916; Energy Management Systems.
2. C-UL listed to Canadian Standards Association C22.2 No. 205-M1983 "Signal Equipment."
3. EMC Directive 89/336/EEC (European CE Mark).
4. FCC, Part 15, Subpart J, Class A Computing Devices.

1.8 ACRONYMS

A. Acronyms used in this specification are as follows:

1. B-AAC BACnet Advanced Application Controller
2. B-ASC BACnet Application Specific Controller
3. BTL BACnet Testing Laboratories
4. DDC Direct Digital Controls
5. FMCS Facility Management and Control System
6. GUI Graphic User Interface

7. IBC Interoperable BACnet Controller
8. IDC Interoperable Digital Controller
9. LAN Local Area Network
10. NAC Network Area Controller
11. ODBC Open DataBase Connectivity
12. OOT Object Oriented Technology
13. OPC Open Connectivity via Open Standards
14. PICS Product Interoperability Compliance Statement
15. PMI Power Measurement Interface
16. POT Portable Operator's Terminal
17. TCC Temperature Control Contractor
18. TCS Temperature Control System
19. WAN Wide Area Network
20. WBI Web Browser Interface

1.9 SUMMARY

A. Extend Existing System:

1. Extend the existing Control System (compatible with owner's existing control system)

a. Extend existing Niagra system for this project as required per building with JACE communicating to the district-wide system. Existing control components connected to the existing DDC control system that remain outside the scope of this project within the buildings shall be integrated into the new system. Contractor shall coordinate the integration of the JACE with the owner for connection to the district system, as this will be performed by the owner.

b. All controllers and accessories shall interface with the existing FMCS.

B. TCC shall furnish all labor, materials, equipment, and service necessary for a complete and operating Temperature Control System (TCS) and Facility Management and Control System (FMCS) using Direct Digital Controls as shown on the drawings and as described herein.

C. All labor, material, equipment and software not specifically referred to herein or on the plans that is required to meet the intent of this specification shall be provided without additional cost to the Owner.

D. The Owner shall be the named license holder of all software associated with any and all incremental work on the project.

1.10 SYSTEM DESCRIPTION

A. The entire TCS shall be comprised of a network of interoperable, standalone digital controllers communicating via the following protocol to an NAC. Temperature Control System products shall be as specified below.

B. The FMCS shall include Network Area Controller or Controllers (NAC) within each facility. The NAC shall connect to the Owner's local or wide area network, depending on configuration.

Provide access to the system, either locally in each building or remotely from a central site or sites, through standard Web browsers, via the Internet, and/or via local area network.

C. Provide materials and labor necessary to connect factory supplied control components.

D. Provide central and remote hardware, software, and interconnecting wire and conduit.

E. The FMCS shall include automated alarming software capable of calling e-mail compatible cellular telephones and pagers. The e-mail alarm paging system shall be able to segregate users, time schedules, and equipment and be capable of being programmed by the Owner.

F. For the dedicated configuration tool provided, it is preferable that it be launched from within the applicable Network Management Software. If not, include any software required for controller configuration as a leave-behind tool with enough license capability to support the installation.

G. For each operator workstation provided, furnish one legal copy of all software tools, configuration tools, management tools, and utilities used during system commissioning and installation. All tools shall be readily available in the market. Contractor shall convey to the Owner all software tools and their legal licenses at project closeout.

H. Niagara Framework (Definition):

1. Niagara Framework: A set of hardware and software specifications for building and utility control owned by Tridium Inc. and licensed to multiple vendors. The framework consists of front end (M&C) software, web-based clients, field level control hardware, and engineering tools.
2. Niagara Framework Supervisory Gateway: DDC hardware component of the Niagara Framework. A typical Niagara architecture has Niagara-specific supervisory gateways at the IP level and other (non-Niagara specific) controllers on field networks (TP/FT-10, MS/TP, etc.) beneath the Niagara supervisory gateways. The Niagara specific controllers function as a gateway between the Niagara framework protocol (Fox protocol) and the field network beneath. These supervisory gateways may also be used as general-purpose controllers and also have the capability to provide a web-based user interface. Note that different vendors refer to this component by different names. The most common name is "JACE", which is used in this specification generically; other names include (but are not limited to)"EC-BOS", "FX-40", "TMN", "SLX" and "UNC".

I. Connection:

1. System shall be a complete hard-wired system. Wireless control systems/functions are NOT acceptable.

1.11 SOFTWARE LICENSE AGREEMENT

A. The Owner shall be the named license holder of all software associated with any and all incremental work on the project(s). In addition, the Owner shall receive ownership of all job-specific configuration documentation, data files, configuration tools, and application-level software developed for the project. This shall include, but is not limited to, all custom, job-specific software code and documentation for all configuration and programming that is

generated for a given project and/or configured for use with the NAC, FMCS Server(s), and any related LAN/WAN/intranet and/or Internet connected routers and devices. Provide the Owner with all required IDs and passwords for access to any component or software program. The Owner shall determine which organizations shall be named in the SI organization ID ("orgid") of all software licenses. Owner shall be free to direct the modification of the "orgid" in any software license, regardless of supplier.

B. For Niagara based systems, it is the express goal of this specification to implement an open system that will allow products from various suppliers to be integrated into a unified system in order to provide flexibility for expansion, maintenance, and service of the system. The Owner shall be the named license holder of all software associated with any and all incremental work on the project(s).

1. All Niagara Framework components have an unrestricted interoperability license with a Niagara Compatibility Statement (NiCS) following the Tridium Open NiCS Specification and have a value of "ALL" for "Station Compatibility In", "Station Compatibility Out", "Tool Compatibility In", and "Tool Compatibility Out". Note that this will result in the following entries in the license file:

    a. accept.station.in="*"
    b. accept.station.out="*"
    c. accept.wb.in="*"
    d. accept.wb.out="*"

2. The Owner shall be free to direct the modification of the any software license, regardless of supplier. In addition, the Owner shall receive ownership of all job specific software configuration documentation, data files, and application-level software developed for the project. This shall include all custom, job-specific software code and documentation for all configuration and programming that is generated for a given project and/or configured for use within Niagara Framework (Niagara)-based controllers and/or servers and any related LAN/WAN / intranet and internet connected routers and devices. Any and all required IDs and passwords for access to any component or software program shall be provided to the Owner. Provide all software necessary for developing software algorithms in all supervisory, programmable, and application specific direct digital controllers that are licensed to the Owner.
3. Programming tools for programmable and application specific controllers that use the Niagara Framework shall not be restricted to any specific brand of JACE. Tools and controllers shall be able to connect to any brand of JACE that are provided under this specification section.

    a. For each application generic controller with a Niagara Framework Wizard and for each application specific controller, provide Niagara Framework Wizards.
    b. For each Niagara Framework Supervisory Gateway, provide a backup of all software within the Niagara Framework Supervisory Gateway, including configuration settings. This backup must be sufficient to allow restoration of the Niagara Framework Supervisory Gateway or the replacement of the Niagara Framework Supervisory Gateway.
    c. Provide a Niagara Framework Engineering Tool. Submit software user manuals with the Niagara Framework Engineering Tool submittal.
    d. Provide the Niagara Station ID for each Niagara Framework Supervisory Gateway.

1.12 JOB CONDITIONS

A. Cooperation with Other Trades: Coordinate the Work of this section with that of other sections to ensure that the Work will be carried out in an orderly fashion. It is this Contractor's responsibility to check the Contract Documents for possible conflicts between the Work of this section and that of other crafts in equipment location; pipe, duct and conduit runs; electrical outlets and fixtures; air diffusers; and structural and architectural features.

1.13 WARRANTY

A. Refer to Section 230500 for warranty requirements.

B. Within the warranty period, any defects in the work provided under this section due to faulty materials, methods of installation or workmanship shall be promptly (within 48 hours after receipt of notice) repaired or replaced by this Contractor at no expense to the Owner.

C. Warranty requirements include furnishing and installing all FMCS software upgrades issued by the manufacturer during the one-year warranty period.

D. Update all software and back-ups during warranty period and all user documentation on the Owner's archived software disks.

1.14 WARRANTY ACCESS

A. The Owner shall grant to this Contractor reasonable access to the TCS and FMCS during the warranty period.

1.15 PREINSTALLATION AND CONTROLS TURNOVER MEETINGS

A. Contractor shall have a preinstallation meeting per building with the Owner and other contractors prior to the installation of controls. Contractor shall coordinate agenda with the Owner 14 days in advance of the meeting.

B. Contractor shall have a controls turnover meeting per building with the Owner and other contractors after controls installation and programming to verify point names, point actions and sequence of operations. Contractor to coordinate agenda with the Owner 14 days in advance of the meeting. The meeting shall include schedule of the turnover and any owner action items needed for the turnover at a minimum. This is in addition to training and other requirements within the spec.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. BACnet Protocol with Tridium Niagara Platform:

1. Distech Controls (by Technical Solutions) Tridium
2. Johnson Controls (Addendum 3)

2.2 SYSTEM ARCHITECTURE

A. General:

1. The Temperature Control System (TCS) and Facility Management Control System (FMCS) shall consist of a network of interoperable, standalone digital controllers, a computer system, graphic user interface software, printers, network devices, valves, dampers, sensors, and other devices as specified herein.
2. The installed system shall provide secure password access to all features, functions and data contained in the overall FMCS.

B. Open, Interoperable, Integrated Architectures:

1. All components and controllers supplied under this Division shall be true "peer-to-peer" communicating devices. Components or controllers requiring "polling" by a host to pass data are not acceptable.
2. The supplied system must be able to access all data using standard Web browsers without requiring proprietary operator interface and configuration programs. An Open DataBase Connectivity (ODBC) or Structured Query Language (SQL) compliant server database is required for all system database parameter storage. This data shall reside on a supplier-installed server for all database access. Systems requiring proprietary database and user interface programs are not acceptable.
3. Hierarchical or "flat" topologies are required to have system response times as indicated below and to manage the flow and sharing of data without unduly burdening the customer's internal intranet network.

    a. Maximum acceptable response time from any alarm occurrence (at the point of origin) to the point of annunciation shall not exceed 5 seconds for network connected user interfaces.
    b. Maximum acceptable response time from any alarm occurrence (at the point of origin) to the point of annunciation shall not exceed 60 seconds for remote or dial-up connected user interfaces.

2.3 NETWORKS

A. The Local Area Network (LAN) shall be a 100 megabits/sec Ethernet network supporting BACnet, Java, XML, HTTP, and SOAP. Provide support for multiple Network Area Controllers (NACs), user workstations and, if specified, a local server.

B. Local area network minimum physical and media access requirements:

1. Ethernet; IEEE Standard 802.3.
2. Cable; 100 Base-T, UTP-8 wire, Category 6.
3. Minimum throughput; 100 Mbps.

C. Communication conduits shall not be installed closer than six feet from 110VAC or higher transformers or run parallel within six feet of electrical high-power cables. Route the cable as far from interference generating devices as possible. Where communication wire must cross 110VAC or higher wire, it must do so at right angles.

D. Ground all shields (earth ground) at one point only to eliminate ground loops. Provide all shield grounding at the controller location, with the shield at the sensor/device end of the applicable wire being left long and "safed" off in an appropriate manner.

E. There shall be no power wiring more than 30 VAC rms run in conduit with communications wiring. In cases where signal wiring is run in conduit with communication wiring, run all communication wiring and signal wiring using separate twisted pairs (24awg) in accordance with the manufacturer's wiring practices.

2.4 NETWORK AREA CONTROLLER (NAC)

A. The TCC shall supply one or more Network Area Controllers (NAC) as part of this contract. Number of NACs required depends on the type and quantity of devices provided under Divisions 23 and 26. The TCC shall determine the quantity and type of devices.

B. Each NAC shall provide the interface between the LAN or WAN and the field control devices and shall provide global supervisory control functions over the control devices connected to the NAC. It shall execute application control programs to provide:

1. Calendar functions.
2. Scheduling.
3. Trending.
4. Alarm monitoring and routing.
5. Time synchronization.
6. Integration of all controller data.
7. Network Management functions.

C. The Network Area Controller shall provide the following hardware features as a minimum:

1. One Ethernet Port - 10/100 Mbps.
2. One RS-232 port.
3. One RS-485 port.
4. Battery backup.
5. Flash memory for long-term data backup. (If battery backup or flash memory is not supplied, the controller shall contain a hard disk with at least 1 gigabyte storage capacity.)
6. The NAC must be capable of operation over a temperature range of 32°F to 122°F.
7. The NAC must be capable of withstanding storage temperatures of between 0°F and 158°F.
8. The NAC must be capable of operation over a humidity range of 5% RH to 95% RH, non-condensing.

D. The NAC shall provide multiple user access to the system and support for ODBC or SQL. Databases resident on the NAC shall be ODBC-compliant or must provide an ODBC data access mechanism to read and write data stored within it.

E. The NAC shall support standard Web browser access via the Internet or an intranet and a minimum of five (5) simultaneous users.

F. Event Alarm Notification and Actions:

1. The NAC shall provide alarm recognition, storage; routing, management, and analysis to supplement distributed capabilities of equipment or application specific controllers.
2. The NAC shall be able to route any alarm condition to any defined user location whether connected to a LAN, remote via dial-up telephone connection, or WAN.
3. Alarm generation shall be selectable for annunciation type and acknowledgement requirements including, but not limited to:

    a. Alarm
    b. Normal

4. Provide for the creation of a minimum of eight alarm classes with different routing and acknowledgement properties, e.g. security, HVAC, Fire, etc.
5. Provide timed (scheduled) routing of alarms by class, object, group, or node.
6. Provide alarm generation from binary object "runtime" and/or event counts for equipment maintenance. The user shall be able to reset runtime or event count values with appropriate password control.

G. Treat control equipment and network failures as alarms and annunciated.

H. Annunciate alarms in any of the following manners as defined by the user:

1. Screen message text.
2. E-mail of the complete alarm message to multiple recipients. Provide the ability to route and e-mail alarms based on:

    a. Day of week.
    b. Time of day.
    c. Recipient.

3. Pagers via paging services that initiate a page on receipt of e-mail message.
4. Graphic with flashing alarm object(s).
5. Printed message, routed directly to a dedicated alarm printer.

I. The FMCS shall record the following for each alarm:

1. Time and date.
2. Location (building, floor, zone, office number, etc.).
3. Equipment tag.
4. Acknowledge time, date, and user who issued acknowledgement.
5. Number of occurrences since last acknowledgement.

J. Give defined users proper access to acknowledge any alarm.

K. A log of all alarms shall be maintained by the NAC and/or a server (if configured in the system) and shall be available for review by the user.

L. Provide a "query" feature to allow review of specific alarms by user-defined parameters.

M. A separate log for system alerts (controller failures, network failures, etc.) shall be provided and available for review by the user.

N. An error log to record invalid property changes or commands shall be provided and available for review by the user.

2.5 BACNET FMCS

A. The intent of this specification is to provide a peer-to-peer networked, standalone, distributed control system with the capability to integrate ANSI/ASHRAE Standard 135-2001 BACnet, MODBUS, OPC, and other open and proprietary communication protocols in one open, interoperable system.

B. The supplied computer software shall employ object-oriented technology (OOT) for representation of all data and control devices in the system. Adherence to industry standards including the latest ANSI/ASHRAE Standard 135 (BACnet) to assure interoperability between all system components is required. For each BACnet device, the device supplier must provide a PICS document showing the installed device's compliance level. Minimum compliance is Level 3; with the ability to support data read and write functionality. Physical connection of BACnet devices shall be via Ethernet (BACnet Ethernet/IP) and/or RS-485 (BACnet MSTP).

C. Interoperable BACnet Controller (IBC):

1. Controls shall be microprocessor based Interoperable BACnet Controllers (IBC) in accordance with the latest ANSI/ASHRAE Standard 135. Provide IBCs for unit ventilators, fan coils, heat pumps, terminal air boxes (TAB) and other applications. The application control program shall reside in the same enclosure as the input/output circuitry that translates the sensor signals. Provide a PICS document showing the installed system's compliance level to ANSI/ASHRAE Standard 135. Minimum compliance is Level 3.
2. The IBCs shall be listed by the BACnet Testing Laboratory (BTL) as follows:

    a. BACnet Building Controller(s) (B-BC).
    b. BACnet Advanced Application Controller(s) (B-AAC).
    c. BACnet Application Specific Controller(s) (B-ASC).

3. The IBCs shall communicate with the NAC via an Ethernet connection at a baud rate of not less than 10 Mbps.
4. Each IBC sensor shall connect directly to the IBC and shall not use any of the I/O points of the controller. The IBC Sensor shall provide a two-wire connection to the controller that is polarity and wire type insensitive. The IBC sensor shall provide a communications jack for connection to the BACnet communication trunk to which the IBC controller is

connected. The IBC sensor, the connected controller, and all other devices on the BACnet bus shall be accessible by the POT.

5. All IBCs shall be fully application programmable and shall at all times maintain their BACnet Level 3 compliance. Controllers offering application selection only (non-programmable) require a 10% spare point capacity to be provided for all applications. Store all control sequences within or programmed into the IBC in non-volatile memory that does not depend on a battery to be retained.
6. The Contractor supplying the IBCs shall provide documentation for each device, with the following information at a minimum:

    a. BACnet Device; MAC address, name, type and instance number.
    b. BACnet Objects; name, type and instance number.

7. It is the responsibility of the Contractor to ensure that the proper BACnet objects are provided in each IBC.

D. Object Libraries:

1. A standard library of objects shall be included for development and setup of application logic, user interface displays, system services, and communication networks.
2. The objects in this library shall be capable of being copied and pasted into the user's database and shall be organized according to their function. In addition, the user shall have the capability to group objects created in their application and store the new instances of these objects in a user-defined library.
3. In addition to the standard libraries specified here, the system supplier shall maintain an on-line accessible (over the Internet) library, available to all registered users, to provide new or updated objects and applications as they are developed.
4. All control objects shall conform to the control objects specified in the BACnet specification.
5. The library shall include applications or objects for the following functions, at a minimum:

    a. Scheduling Object: The schedule must conform to the schedule object as defined in the BACnet specification, providing seven-day plus holiday and temporary scheduling features and a minimum of 10 on/off events per day. Data entry to be by graphic sliders to speed creation and selection of on-off events.
    b. Calendar Object: The calendar must conform to the calendar object as defined in the BACnet specification, providing 12-month calendar features to allow for holiday or special event data entry. Data entry to be by graphic "point-and-click" selection. This object must be "linkable" to any or all scheduling objects for effective event control.
    c. Override Object: Provide override object that is capable of restarting equipment turned off by other energy saving programs to maintain occupant comfort or for equipment protection.
    d. Start-Stop Time Optimization Object: Provide a start-stop time optimization object to start equipment just early enough to bring space conditions to desired conditions by the scheduled occupancy time. Also, allow equipment to be stopped before the scheduled unoccupied time just far enough ahead to take advantage of the building's "flywheel" effect for energy savings. Provide automatic tuning of all start-stop time object properties based on historical performance.

e. Demand Limiting Object: Provide a demand-limiting object that is capable of controlling demand for any selected energy utility (electric, oil, gas, etc.). The object shall be able to monitor a demand value and predict (using a sliding window prediction algorithm) the demand at the end of the user-defined interval period (1 to 60 minutes). This object shall also accommodate a utility meter time sync pulse for fixed interval demand control. Upon a prediction that will exceed the user-defined demand limit (supply a minimum of 6 per day), the demand limiting object shall issue shed commands to either turn off user specified loads or modify equipment setpoints to provide the desired energy reduction. If the list of sheddable equipment is not enough to reduce the demand to below the setpoint, display a message on the user's screen (as an alarm) instructing the user to take manual actions to maintain the desired demand. The shed lists are specified by the user and shall be selectable to be shed in either a fixed or rotating order to control which equipment is shed the most often. Upon suitable reductions in demand, the demand-limiting object shall restore the equipment that was shed in the reverse order in which it was shed. Each sheddable object shall have a minimum and maximum shed time property to provide both equipment protection and occupant comfort.

6. The library shall include control objects for the following functions:

a. Analog Input Object: Minimum requirement is to comply with the BACnet standard for data sharing. Allow high, low and failure limits to be assigned for alarming. Also, provide a time delay filter property to prevent nuisance alarms caused by temporary excursions above or below the user defined alarm limits.
b. Analog Output Object: Minimum requirement is to comply with the BACnet standard for data sharing.
c. Binary Input Object: Minimum requirement is to comply with the BACnet standard for data sharing. The user must be able to specify either input condition for alarming. This object must also include the capability to record equipment runtime by counting the amount of time the hardware input is in an "on" condition. The user must be able to specify either input condition as the "on" condition.
d. Binary Output Object: Minimum requirement is to comply with the BACnet standard for data sharing. Properties to enable minimum on and off times for equipment protection as well as start-to-start delay must be provided. Incorporate the BACnet Command Prioritization priority scheme to allow multiple control applications to execute commands on this object with the highest priority command being invoked. Provide 16 levels of priority as a minimum. Systems not employing the BACnet method of contention resolution are not acceptable.
e. PID Control Loop Object: Minimum requirement is to comply with the BACnet standard for data sharing. Each individual property must be adjustable to allow proportional control only, or proportional with integral control, or proportional, integral and derivative control.
f. Comparison Object: Allow a minimum of two analog objects to be compared to select either the highest, lowest, or equality between the two linked inputs. Also, allow limits to be applied to the output value for alarm generation.
g. Math Object: Allow a minimum of four analog objects to be tested for the minimum or maximum, or the sum, difference, or average of linked objects. Also, allow limits to be applied to the output value for alarm generation.

h. Custom Programming Objects: Provide a blank object template for the creation of new custom objects to meet specific user application requirements. This object must provide a simple BASIC-like programming language that is used to define object behavior. Provide a library of functions including, but not limited to, math and logic functions and string manipulation. Also, provide a comprehensive on-line debug tool to allow complete testing of the new object. Allow new objects to be stored in the library for reuse.

i. Interlock Object: Provide an interlock object that provides a means of coordination of objects within a piece of equipment, such as an air handler or other similar types of equipment. An example is to link the return fan to the supply fan such that, when the supply fan is started, the return fan object is also started automatically without the user having to issue separate commands or to link each object to a schedule object. In addition, the control loops, damper objects, and alarm monitoring (such as return air, supply air, and mixed air temperature objects) will be inhibited from alarming during a user-defined period after startup to allow for stabilization. When the air handler is stopped, the interlocked return fan is also stopped, the outside air damper is closed, and other related objects within the air handler unit are inhibited from alarming, thereby eliminating nuisance alarms during the off period.

j. Temperature Override Object: Provide an object whose purpose is to override a binary output to an "on" state in the event a user-specified high or low limit value is exceeded. Link this object to the desired binary output object as well as to an analog object for temperature monitoring to cause the override to be enabled. This object will execute a start command at the Temperature Override level of start/stop command priority, unless changed by the user.

k. Composite Object: Provide a container object that allows a collection of objects representing an application to be encapsulated to protect the application from tampering or to more easily represent large applications. This object must have the ability to allow the user to select the appropriate parameters of the "contained" application that are represented on the graphic shell of this container.

7. The object library shall include objects to support the integration of devices connected to the Network Area Controller (NAC). Provide the following as part of the standard library included with the programming software:

a. LonMark/LonWorks Devices: These devices shall include, but not be limited to, devices for control of HVAC, lighting, access, and metering. Provide LonMark manufacturer-specific objects to facilitate simple integration of these devices. Support all network variables defined in the LonMark profile. The device manufacturer shall provide information (type and function) regarding network variables not defined in the LonMark profile.

b. For devices not conforming to the LonMark standard, provide a dynamic object that can be assigned to the device based on network variable information provided by the device manufacturer. Device manufacturer shall provide an XIF file, resource file, and documentation for the device to facilitate device integration.

c. For BACnet devices, provide the following objects:

1) Analog In.
2) Analog Out.
3) Analog Value.

4) Binary.
5) Binary In.
6) Binary Out.
7) Binary Value.
8) Multi-State In.
9) Multi-State Out.
10) Multi-State Value.
11) Schedule Export.
12) Calendar Export.
13) Trend Export.
14) Device.

d. For each BACnet object, provide the ability to assign the object a BACnet device and object instance number.

e. For BACnet devices, provide the following support at a minimum:

1) Segmentation.
2) Segmented Request.
3) Segmented Response.
4) Application Services.
5) Read Property.
6) Read Property Multiple.
7) Write Property.
8) Write Property Multiple.
9) Confirmed Event Notification.
10) Unconfirmed Event Notification.
11) Acknowledge Alarm.
12) Get Alarm Summary.
13) Who-has.
14) I-have.
15) Who-is.
16) I-am.
17) Subscribe COV.
18) Confirmed COV notification.
19) Unconfirmed COV notification.
20) Media Types.
21) Ethernet.
22) BACnet IP Annex J.
23) MSTP.
24) BACnet Broadcast Management Device (BBMD) function.
25) Routing.

2.6 TERMINAL AIR BOX (TAB) CONTROLLERS

A. FMCS Volume Controller: Electronic, furnished and installed by TCC. Boxes shall have pressure independent control to maintain constant air volume regardless of duct pressure changes up to 6 inches w.c. and shall be accurate down to 0.004" velocity pressure. Provide velocity and static sensor at box inlet for use by unit controller. Set boxes for maximum and minimum settings shown on the drawings. Refer to Section 233600 for additional information.

B. The controller shall support various digital and analog inputs and outputs as needed for damper control, control valves, electric coils, airflow sensors, remote heating, occupancy sensors, etc. and shall be capable of independent occupancy scheduling.

C. Controller shall provide continuous zone temperature histories internal to device for up to 24 hours and perform its own limit and status monitoring and alarms to limit unnecessary communications.

D. Operator interface to any ASC point data or programs shall be through network resident programs or portable operator's terminal connected to the specific controller.

E. Store all system setpoints, proportional bands, control algorithms, and other programmable parameters such that a power failure of any duration does not necessitate reprogramming of the controller.

F. BACnet TAB controllers shall either be B-AAC devices or B-ASC devices as required to meet the performance and BTL listing.

2.7 DATA COLLECTION AND STORAGE (TRENDING REQUIREMENTS)

A. The NAC shall be able to collect data for any property of any object and store resident in the NAC that shall have, at a minimum, the following configurable properties:

1. Designating the log as interval or deviation.
2. For interval logs, configure the object for time of day, day of week and the sample collection interval.
3. For deviation logs, configure the object for the deviation of a variable to a fixed value. This value, when reached, will initiate logging of the object.
4. For all logs, provide the ability to set the maximum number of data stores for the log and to set whether the log will stop collecting when full or rollover the data on a first-in, first-out basis.
5. Each log shall have the ability to have its data cleared on a time-based event or by a user-defined event or action.

B. Store all log data in a relational database in the NAC that is accessible from a server (if the system is so configured) or a standard Web browser.

C. All log data, when accessed from a server, shall be capable of being manipulated using standard SQL statements.

D. All log data shall be available to the user in ALL the following data formats:

1. HTML.
2. XML.
3. Plain text.
4. Comma or tab separated values.

E. The NAC shall archive its log data either locally (to itself) or remotely to a server or other NAC on the network. Provide the ability to configure the following archiving properties:

1. Archive on time of day.
2. Archive on user-defined number of data stores in the log (buffer size).
3. Archive when log has reached its user-defined capacity of data stores.
4. Provide ability to clear logs once archived.

2.8 AUDIT LOG

A. Provide and maintain an audit log that tracks all activities performed on the NAC. Provide the ability to specify a buffer size for the log and the ability to archive log based on time or when the log has reached its user-defined buffer size. Provide the ability to archive the log locally (to the NAC), to another NAC on the network, or to a server. For each log entry, provide the following data:

1. Time and date.
2. User ID.
3. Change or activity: i.e., change setpoint, add or delete objects, commands, etc.

2.9 DATABASE BACKUP AND STORAGE

A. The NAC shall automatically backup its database on a user-defined time interval.

B. Store copies of the current database and, at the most, the recently saved database in the NAC. The age of the most recently saved database shall depend on the user-defined database save interval.

C. Store the NAC database in XML format to allow viewing and editing. Other formats are acceptable as long as XML format is supported.

2.10 GRAPHIC USER INTERFACE SOFTWARE

A. Modify existing graphics system to incoporate all new equipment added on this project.

2.11 SYSTEM PROGRAMMING

A. The GUI software shall perform system programming and graphic display engineering. Access to the GUI software shall be through password access as assigned by the system administrator.

B. Provide a library of control, application, and graphic objects to enable creation of all applications and user interface screens. Applications shall be created by selecting the control objects from the library, dragging or pasting them on the screen, and linking them together using a built-in graphic connection tool. Completed applications may be stored in the library for future use. GUI screens shall be created in the same fashion. Data for the user displays shall be obtained by graphically linking the user display objects to the application objects to provide "real-time" data updates. Any real-time data value or object property may be connected to display its current value on a user display. Provide all software tools or processes to create applications and user interface displays.

C. Programming Methods:

1. Provide the capability to copy objects from the supplied libraries or from a user-defined library to the user's application. Link objects with a graphic linking scheme by dragging a link from one object to another. Object links will support one-to-one, many-to-one, or one-to-many relationships. Linked objects shall maintain their connections to other objects regardless of where they are positioned on the page and shall show link identification for links to objects on other pages for easy identification. Links will vary in color depending on the type of link; e.g., internal, external, hardware, etc.
2. Configuration of each object shall be done through the object's property sheet using fill-in-the-blank fields, list boxes, and selection buttons. Use of custom programming, scripting language, or a manufacturer-specific procedural language for configuration is not acceptable.
3. The software shall provide the ability to view the logic in a monitor mode. When on-line, the monitor mode shall provide the ability to view the logic in real time for easy diagnosis of the logic execution. When off-line (debug), the monitor mode shall allow the user to set values to inputs and monitor the logic for diagnosing execution before it is applied to the system.
4. All programming shall be done in real time. Systems requiring the uploading, editing, and downloading of database objects are not allowed.
5. The system shall support object duplication in a customer's database. An application, once configured, can be copied and pasted for easy reuse and duplication. All links, other than to the hardware, shall be maintained during duplication.

2.12 DDE DEVICE INTEGRATION

A. The NAC shall support the integration of device data via Dynamic Data Exchange (DDE) over the Ethernet network. The NAC shall act as a DDE client to another software application that functions as a DDE server.

B. Provide the required objects in the library included with the Graphic User Interface programming software to support the integration of these devices into the FMCS. Objects provided shall include, at a minimum:

1. DDE Generic AI Object.
2. DDE Generic AO Object.
3. DDE Generic BO Object.
4. DDE Generic BI Object.

2.13 MODBUS SYSTEM INTEGRATION

A. The NAC shall support integration of device data from Modbus RTU, ASCII, and TCP control system devices. Connect to the Modbus system via an RS-232, RS485, or Ethernet IP as required by the device.

B. Provide the required objects in the library included with the GUI programming software to support the integration of the Modbus system data into the FMCS. Objects provided shall include, at a minimum:

1. Read/Write Modbus AI Registers.
2. Read/Write Modbus AO Registers.
3. Read/Write Modbus BI Registers.
4. Read/Write Modbus BO Registers.

C. The NAC shall perform all scheduling, alarming, logging and global supervisory control functions of the Modbus system devices.

D. The FMCS supplier shall provide a Modbus system communications driver. The equipment system vendor that provided the equipment using Modbus shall provide documentation of the system's Modbus interface and shall provide factory support at no charge during system commissioning.

2.14 CONTROL DAMPERS

A. Rectangular Control Dampers - Standard Construction:

1. Shall be licensed to bear the AMCA Certified Rating Seal.
2. Test leakage and pressure drop per AMCA 500.
3. Frame: Hat-shaped channel, minimum 12 gauge extruded aluminum, and minimum 4" deep. Caulk or weld seams to prevent leakage.
4. Blades: Minimum 12 gauge extruded aluminum airfoil design, minimum 6" wide, and overlapping blades and blade seals (overlapping blade seals only is unacceptable).
5. Shaft: Non-cylindrical, solid aluminum or zinc plated steel with opening in blade to match profile of shaft. Shaft shall be securely fastened to the blade and of sufficient length to mount direct-coupled actuator. Damper manufacturer shall provide drive pin extensions and outboard bearing support brackets as required.
6. Bearings: Acetal (Delrin/Celcon) inner bearing fixed to an aluminum shaft, rotating within a polycarbonate outer bearing inserted in the frame. Provide thrust bearings for vertical damper applications.
7. Blade Seals: Extruded silicone gaskets secured in an integral slot within the blade.
8. Side Seals: Stainless steel compression type or extruded silicone gasket secured in an integral slot within the frame.
9. Linkage: Shall be concealed in the frame, constructed of aluminum or corrosion-resistant zinc plated steel, and securely fastened to shaft. Blades linked for opposed operation, unless noted otherwise on the drawings. Blades shall close evenly. Use one direct-coupled actuator per damper section. Jack-shafting is not acceptable.
10. Size Limits: 48" maximum horizontal blade length, 24 square foot maximum area per damper. Total cross-sectional area of dampers in ducts shall be at least as large as the duct without the use of blank-off sections.
11. Maximum Leakage: Class 1A at 1" w.c. pressure differential for a 24" x 24" damper.
12. Maximum Pressure Drop for Opposed Blade Damper: 0.15" for 8,000 CFM through a 24" x 24" damper (2000 fpm).
13. Maximum Pressure Drop for Parallel Blade Damper: 0.08" for 8,000 CFM through a 24" x 24" damper (2000 fpm).

B. Thermally Insulated Control Damper:

1. Shall be licensed to bear the AMCA Certified Rating Seal.

2. Test leakage and pressure drop per AMCA 500.
3. Frame: Extruded aluminum, minimum 4" deep, 0.080" minimum thickness.
4. Blades: Minimum 12 gauge extruded aluminum airfoil design, minimum 6" wide, internally insulated with expanded polyurethane foam and thermally broken, with overlapping blades and blade seals (overlapping blade seals only is unacceptable).
5. Shaft: Non-cylindrical, solid aluminum or zinc plated steel shaft with opening in blade to match profile of shaft. Shaft shall be securely fastened to the blade and of sufficient length to mount direct-coupled actuator. Damper manufacturer shall provide drive pin extensions and outboard bearing support brackets as required.
6. Bearings: Acetal (Delrin/Celcon) inner bearing fixed to an aluminum shaft, rotating within a polycarbonate outer bearing inserted in the frame. Provide thrust bearings for vertical damper applications.
7. Side Seals: Stainless steel compression type or extruded silicone gasket secured in an integral slot within the frame.
8. Linkage: Shall be concealed in the frame, constructed of aluminum or corrosion-resistant zinc plated steel, and securely fastened to shaft. Blades linked for opposed operation, unless noted otherwise on the drawings. Blades shall close evenly. Use one direct-coupled actuator per damper section. Jack-shafting is not acceptable.
9. Size Limits: 48" maximum horizontal blade length, 24 square foot maximum area per damper. Total cross-sectional area of dampers in ducts shall be at least as large as the duct without the use of blank-off sections.
10. Maximum Leakage: Class 1A at 1" w.c. pressure differential for a 24" x 24" damper.
11. Maximum Pressure Drop: 0.21" for 8,000 CFM through a 24" x 24" damper (2000 fpm).
12. Dampers specified for moisture-laden airflows shall be fully constructed of aluminum and stainless steel parts.

2.15 DAMPER ACTUATORS

A. Damper Actuators - Electronic:

1. Actuator shall be UL 873 or 60730 listed and provided with NEMA housing for applicable environment, electronic overload protection to prevent actuator damage due to over-rotation. Mount actuator by means of a V-bolt dual nut clamp with a V-shaped toothed cradle, directly couple and mount to the valve bonnet stem, or ISO-style direct-coupled mounting pad. Actuators shall be capable of being mechanically and electrically paralleled to increase torque, if required.
2. Actuators shall be warranted for a period of five (5) years from the date of production, with the first two (2) years unconditional.
3. Proportional actuator position shall be proportional to analog or pulse width modulating signal from electronic control system.
4. Fail-Safe Dampers: Where shown on the drawings or sequences, fail-safe mechanism shall operate the damper to the fail position following power interruption.

    a. Mechanical/Spring: Mechanical spring return mechanism to drive controlled drive to an end position (open or close) on loss of power.
    b. Electronic: Electronic fail-safe shall incorporate an active balancing circuit to maintain equal charging rates among the capacitors. The power fail position shall be proportionally adjustable between 0 to 100% in 10 percent increments with a 10 second operational delay.

5. Feedback: Where shown on drawings or sequences, provide analog feedback signal for positive position indication.
6. Damper End Switches: Where shown on the drawings or sequences, provide end switches to prove damper reaches open/closed position.

2.16 HYDRONIC CONTROL VALVES

A. General:

1. Two-position valves shall be a minimum of line size with a maximum allowable pressure drop of 1 psi.
2. Size two-way and three-way modulating valves to provide a pressure drop at full flow of 4 to 5 psi, except boiler three-way and cooling tower bypass valves shall not have a pressure drop over 4 psi.
3. Modulating two-way valves shall have equal percentage flow characteristics.
4. Modulating three-way valves shall have linear flow characteristics.
5. Piping geometry correction factors for Cv ratings shall be used and stated for ball valves, butterfly valves, or non-characterized valves.

B. Two-position:

1. Ball 2" and under:

a. Design Pressure: 400 psi

1) Design Temperature: 212°F
2) Design Flow Differential Pressure Rating: 150 psi

b. Bronze or brass body, stainless steel stem, chrome plated brass or stainless steel full port ball, EPDM, PTFE or RTFE seats and seals, screwed ends (solder ends are acceptable only if rated for soldering in line with 470°F melting point of 95-5 solder).

2. Butterfly 2-1/2" to 12":

a. Design Pressure: 125 psi

1) Design Temperature: -20 to 212°F
2) Design Flow Differential Pressure Rating: 50 psi

b. Cast iron body, stainless steel stem with extended neck, aluminum-bronze or nickel-plated iron disc, EPDM seats and seals, fully lugged ends.

C. Modulating:

1. Ball 2" and under:

a. Design Pressure: 400 psi

1) Design Temperature: 250°F
2) Design Flow Differential Pressure Rating: 35 psi
3) Leakage: 0%

b. Bronze or brass body, nickel plated brass or stainless steel stem, chrome plated brass or stainless steel ball, EPDM, PTFE or RTFE seats and seals, PTFE characterizing disc, screwed ends.

2. Butterfly 2-1/2" to 12":

a. Design Pressure: 125 psi

1) Design Temperature: -20°F to 212°F
2) Design Flow Differential Pressure Rating: 50 psi

b. Cast iron body, stainless steel stem with extended neck, aluminum-bronze or nickel-plated iron disc, EPDM seats and seals, fully lugged ends.

2.17 VALVE ACTUATORS

A. General:

1. Actuators shall be sized to operate the valve through its full range of motion and shall close against pump shutoff pressure without producing audible noise at any valve position.
2. Provide visual position indication.
3. Mount actuator directly on valve or provide linear motion assembly as required for valve type.

B. Valve Actuators - Electronic:

1. Actuator shall be UL 873 or 60730 listed and provided with NEMA housing for applicable environment, electronic overload protection to prevent actuator damage due to over-rotation. Mount actuator by means of a V-bolt dual nut clamp with a V-shaped toothed cradle, directly couple and mount to the valve bonnet stem, or ISO-style direct-coupled mounting pad. Actuators shall be capable of being mechanically and electrically paralleled to increase torque, if required.
2. Actuators shall be warranted for a period of five (5) years from the date of production, with the first two (2) years unconditional.
3. Proportional actuator position shall be proportional to analog or pulse width modulating signal from electronic control system.
4. Fail-Safe Valves: Where shown on the drawings or sequences, fail-safe mechanism shall operate the valve to the fail position following power interruption.

a. Mechanical/Spring: Mechanical spring return mechanism to drive controlled drive to an end position (open or close) on loss of power.
b. Electronic: Electronic fail-safe shall incorporate an active balancing circuit to maintain equal charging rates among the capacitors. The power fail position shall

be proportionally adjustable between 0 to 100% in 10 percent increments with a 2 second operational delay.

5. Feedback: Where shown on drawings or sequences, provide analog feedback signal for positive position indication.

2.18 CONTROL INSTRUMENTATION

A. Temperature Measuring Devices:

1. Electric Thermostats:

a. Single Temperature - Line Voltage Electric: Integral manual ON/OFF/AUTO selector switch, minimum dead band of 5°F, concealed temperature adjustment, locking cover, rated for load, single or double pole as required.
b. Single Temperature - Low Voltage Electric: Integral manual ON/OFF/AUTO selector switch, minimum dead band of 5°F, anticipator circuits, concealed temperature adjustment, locking cover, 24 V control transformer (if not included with unit under control), single or double pole as required.

2. Low Limit Switch:

a. Provide one foot of sensing element for each one square foot of coil area, maximum element length 25 feet, of the vapor tension type, so that any point along the entire length of measuring element can trigger the switch.
b. Provide 3" minimum radius capillary support clips at each turn.
c. Furnish each thermostat with one single pole, single throw normally-opened switch and one single pole, single throw normally-closed auxiliary switch.
d. Setpoint range shall be 15°F to 55°F with a permanent stop at 35°F.
e. Differential shall be fixed at approximately 5°F and supplied with manual reset.

B. Temperature Sensors:

1. Room Temperature Sensor:

a. Sensor Only: Two-piece construction, ventilated plastic enclosure, off-white color, thermistor sensing element or resistance temperature device (RTD), 45°F to 90°F operating range, ± 0.50°F accuracy, no setpoint adjustment or override button.
b. Sensor with Setpoint Adjustment: Two-piece construction, ventilated plastic enclosure, off-white color, thermistor sensing element or resistance temperature device (RTD), 45°F to 90°F operating range, ± 0.50°F accuracy, with exposed single setpoint adjustment (no numeric temperature scale - provide with a single warmer/cooler or red/blue visual scale), no override button.
c. Sensor with Override: Two-piece construction, ventilated plastic enclosure, off-white color, thermistor sensing element or resistance temperature device (RTD), 45°F to 90°F operating range, ± 0.50°F accuracy, occupied/unoccupied override button with LED, no setpoint adjustment.
d. Sensor with Setpoint Adjustment and Override: Two-piece construction, ventilated plastic enclosure, off-white color, thermistor sensing element or resistance

temperature device (RTD), 45°F to 90°F operating range, ± 0.50°F accuracy, with exposed single setpoint adjustment (no numeric temperature scale - provide with a warmer/cooler or red/blue visual scale), occupied/unoccupied override button with LED.

2. Duct Temperature Sensor:

   a. RTD type averaging sensor. 1000 ohm platinum RTD; accuracy: minimum +/- 1.2°F; range -40°F-220°F.
   b. Sensing element shall have a minimum of 1 foot of sensor length for each 2 square feet of duct or coil area. Sensor shall be arranged evenly across the duct or coil such that no point in the duct or coil is more than 1 foot away from the sensor.

3. Water Temperature Sensor:

   a. RTD type. 1000 ohm platinum RTD; accuracy: minimum +/- 0.65°F; range -40°F-220°F.
   b. Thermowell: RTD must be installed within a 316 stainless steel thermowell using a non-hardening heat conducting paste. Thermowell shall be rated for a minimum static pressure of 500 psig at the maximum operating temperature and be capable of withstanding water velocities of up to 27 fps. The sensor shall be mounted so that it extends into the flow stream to a minimum of 1/3 of the diameter of the pipe. For pipes greater than 10 inch diameter, thermowell shall be installed in a position 45 degrees from the bottom of the pipe. Separate thermometers, as specified elsewhere, shall be installed within 2 feet of each temperature sensor.

C. Flow Measuring Devices:

1. Ultrasonic Flow Meters:

   a. General:

      1) Inline ultrasonic flow meter. The meter shall have the ability to measure bidirectional flows.
      2) Provide line-size ultrasonic flow meters as shown on drawings. Flow meter shall provide a scaled binary dry contact output signal where each pulse equals a specific unit volume.

   b. Rated for 32°F through 250°F service.
   c. Local backlit liquid crystal display.
   d. Refer to project schedules for additional requirements.
   e. Manufacturers:

      1) Onicon F-4600
      2) ABB
      3) Yokogawa
      4) Rosemount
      5) Badger
      6) Siemens Sitrans

D. Current Measuring Devices:

1. Current Switches for Constant Speed Motors:

a. Digital device rated for amperage load of motor or device with split core design, adjustable high and low trip points, 600 VAC rms isolation, induced power from the monitored load, LED indicator lamps for output status and sensor power. The device shall sense overloading, belt-loss, and power failure with a single signal.

2. Current Switches for Motors Controlled by VFD:

a. Digital device rated for amperage load of motor or device with split core design, factory programmed to detect motor undercurrent conditions on variable or constant volume loads, self-calibrating, positive status indication, LED indicator lamps, 600 VAC rms isolation, induced power from the monitored load with NO output. The current sensor shall store the motor current operating parameters in non-volatile memory and have a pushbutton reset to clear the memory if the operating parameters change or the sensor is moved to another load. The device shall sense overloading, belt-loss, and power failure with a single signal. The sensor shall be mounted on the load side of variable frequency drives.

E. Occupancy Sensors:

1. Use auxiliary contacts on sensor provided and installed by the Electrical Contractor. Refer to electrical drawings for sensor location and specifications. Coordinate with Electrical Contractor.
2. Space Occupancy Initial Setting Schedule
3. Initial Time
4. Space Delay Setting
5. Classroom 5 minutes
6. Reception 5 minutes

F. Miscellaneous Devices:

1. Control Relays:

a. Form "C" contacts rated for the application with "push-to-test" contact transfer feature and an integral LED to indicate coil energization.
b. Mount all relays and power supplies in a NEMA 1 enclosure beside the FMCS panel or controlled device and clearly label their functions.

G. Outdoor Weather Station:

1. Measured Parameters:

a. Humidity Sensors: Fully electronic with no moving parts or parts requiring periodic service.

2.19 CONDUIT AND BOXES

A. Conduit and Boxes: Refer to Electrical Section 260533 for materials, sizing, and other requirements

B. Conduit and Box Identification (Color and Labeling):

1. Refer to the Temperature Control Contractor notes located on the mechanical cover sheet for raceway and box color requirements.
2. Refer to Electrical Section 260553 for raceway and box labeling requirements.

2.20 WIRE AND CABLE

A. Wire and Cable: Refer to Electrical Section 260513 for wire and cable materials.

1. Wire and Cable Color: Refer to the Temperature Control Contractor notes located on the mechanical cover sheet for wire and cable color requirements.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION

A. Verify that systems are ready to receive work. Beginning of installation means installer accepts existing conditions.

B. Install system and materials in accordance with manufacturer's instructions.

C. Drawings of the TCS and FMCS network are diagrammatic only. Any apparatus not shown but required to meet the intent of the project documents shall be furnished and installed without additional cost.

D. Install all operators, sensors, and control devices where accessible for service, adjustment, calibration, and repair. Do not install devices where blocked by piping or ductwork. Devices with manual reset or limit adjustments shall be installed below 6'-0" if practical to allow inspection without using a ladder.

E. Verify locations of wall-mounted devices (such as thermostats, temperature and humidity sensors, and other exposed sensors) with drawings and room details before installation. Coordinate mounting heights to be consistent with other wall-mounted devices. Maximum height above finished floor shall not exceed ADA mounting requirements.

F. Provide valves over 3/4" size with position indicators and pilot positioners where sequenced with other controls.

G. Mount control panels adjacent to associated equipment on vibration-free walls or freestanding angle iron supports. One cabinet may accommodate more than one system in same equipment room.

H. After completion of installation, test and adjust control equipment.

I. Check calibration of instruments. Recalibrate or replace.

J. Furnish and install conduit, wire, and cable per the National Electric Code, unless noted otherwise in this section.

K. All controls associated with the proper operation of air handling units, pumps, or other mechanical equipment served by emergency power shall be connected to the emergency power system. Control components shall be powered from the equipment branch. In no instance shall panel be connected to the life safety branch of the emergency power system. Panels may be connected to a common 20 amp, 120 volt circuit provided the total load on the circuit does not exceed 16 amps. Circuit conductors shall be sized per the table below. All power connections to the control panels shall be performed by a licensed electrician at the cost of this Contractor. Submit circuit information (total amperage on circuit, conductors length, and panel) for control panels to the Architect/Engineer for approval.

Circuit Load (Amps)	Circuit Max Length	Feeder Size
≤ 5	≤ 200ft	2#12 & 1#12 ground in 3/4" conduit.
≤ 10	≤ 100ft	2#12 & 1#12 ground in 3/4" conduit.
≤ 16	≤ 75ft	2#12 & 1#12 ground in 3/4" conduit.
≤ 200	≤ 325ft	2#10 & 1#10 ground in 3/4" conduit.
≤ 100	≤ 160ft	2#10 & 1#10 ground in 3/4" conduit.
≤ 75	≤ 100ft	2#10 & 1#10 ground in 3/4" conduit.

L. All hardware, software, equipment, accessories, wiring (power and sensor), piping, relays, sensors, power supplies, transformers, and instrumentation required for a complete and operational FMCS system, but not shown on the electrical drawings, are the responsibility of the TCC.

M. Remodeling:

1. All room devices as indicated on the drawings shall be removed by this Contractor. The Contractor shall also prepare the wall for finishes. Preparing the wall shall include patching old anchor holes (after the anchoring device has been removed) and sanding the wall to remove old paint outlines remaining from original devices. The wall shall be painted to match the existing wall prior to the installation of the new room device. If wall covering requires patching, the Contractor shall furnish new wall covering to match existing. If new wall covering is not available to match existing, the Contractor shall furnish a white acrylic or Plexiglas plate, 1/4" thick and sized to cover the void.

N. Labels For Control Devices:

1. Provide labels indicating service of all control devices in panels and other locations.
2. Labels may be made with permanent marking pen in the control panels if clearly legible.
3. Use engraved labels for items outside panel such as outside air thermostats.

4. Labels are not required for room thermostats, damper actuators and other items where their function is obvious.

O. VFDs:

1. This project includes several variable frequency drives to control the flow of fans and/or pumps based on a control variable.
2. Verify output signal required, 4-20 mA or 0-10V dc, with the EC.
3. If VFD has a bypass feature, auxiliary contacts on the drive may not be used for motor status. A separate relay must be used to indicate motor rotation in either hand or auto positions.
4. If a separate current transmitter or switch is indicated for status, install this device between the VFD and the motor. In this case, the drive status may be connected to the auxiliary contacts in the VFD.
5. Some devices, such as low limits and fire alarm shutdown relays, must be hardwired to the fan motor. Make connections such that fan will shut down whether in hand or auto position if the unit has a bypass feature.

3.2 CONDUIT AND BOXES INSTALLATION

A. Conduit and Box Installation: Refer to Electrical Section 260533 for execution and installation.

B. Conduit and Box Identification (color and labeling) installation. Refer to Electrical Section 260553 for raceway and box identification installation.

C. Outlet Box Schedule: Thermostat/temperature sensor:

1. Dry Interior Locations: Provide 4" square galvanized steel with raised cover to fit flush with finished wall line. When located in concrete block walls, provide square edge title cover of sufficient depth to extend out to face of block or masonry boxes.
2. Other Conditions: Refer to Electrical Section 260533 for requirements.

3.3 WIRE AND CABLE INSTALLATION

A. Wire and Cable Installation: Refer to Electrical Section 260513 for execution and installation.

B. Field Quality Control:

1. Inspect wire and cable for physical damage and proper connection.
2. Torque test conductor connections and terminations to manufacturer's recommended values.
3. Perform continuity test on all conductors.
4. Protection of cable from foreign materials:

a. It is the Contractor's responsibility to provide adequate physical protection to prevent foreign material application or contact with any cable type. Foreign material is defined as any material that would negatively impact the validity of the manufacturer's performance warranty. This includes, but is not limited, to

overspray of paint (accidental or otherwise), drywall compound, or any other surface chemical, liquid or compound that could come in contact with the cable, cable jacket or cable termination components.

b. Overspray of paint on any cable, cable jacket or cable termination component will not be accepted. It shall be the Contractor's responsibility to replace any component containing overspray, in its entirety, at no additional cost to the project. Cleaning of the cables with harsh chemicals is not allowed. This requirement is regardless of the PASS/FAIL test results of the cable containing overspray. Should the manufacturer and warrantor of the structured cabling system desire to physically inspect the installed condition and certify the validity of the structured cabling system (via a signed and dated statement by an authorized representative of the structured cabling manufacturer), the Owner may, at their sole discretion, agree to accept said warranty in lieu of having the affected cables replaced. In the case of plenum cabling, in addition to the statement from the manufacturer, the Contractor shall also present to the Owner a letter from the local Authority Having Jurisdiction stating that they consider the plenum rating of the cable to be intact and acceptable.

C. Installation Schedule:

1. Conduit terminations to all devices installed in applications with rotating equipment, expansion/contraction or vibration shall be made with flexible metallic conduit, unless noted otherwise. Final terminations to exterior devices installed in damp or wet locations shall be made with liquidtight flexible metallic conduit. Terminations in hazardous areas, as defined in the National Electrical Code, shall be made with flexible conduit rated for the environment.

3.4 FMCS INSTALLATION

A. Coordinate voltage and ampacity of all contacts, relays, and terminal connections of equipment being monitored or controlled. Voltage and ampacity shall be compatible with equipment voltage and be rated for full ampacity of wiring or overcurrent protection of circuit controlled.

B. Naming Conventions: Coordinate all point naming conventions with Owner standards. In the absence of Owner standards, naming conventions shall use equipment designations shown on plans.

3.5 COMMISSIONING

A. Upon completion of the installation, this Contractor shall load all system software and start up the system. This Contractor shall perform all necessary calibration, testing and de-bugging and perform all required operational checks to ensure that the system is functioning in full accordance with these specifications.

B. This Contractor shall perform tests to verify proper performance of components, routines, and points. Repeat tests until proper performance results. This testing shall include a point-by-point log to validate 100% of the input and output points of the FMCS system operation.

C. This Contractor shall prove that the controls network is functioning correctly and within acceptable bandwidth criteria and shall test the system with an approved protocol analysis tool. Provide a log and statistics summary showing that each channel is within acceptable parameters. Each channel shall be shown to have at least 25% spare capacity for future expansion.

D. Upon completion of the performance tests described above, repeat these tests, point by point, as described in the validation log above in the presence of Owner's Representative, as required. Properly schedule these tests so testing is complete at a time directed by the Owner's Representative. Do not delay tests so as to prevent delay of occupancy permits or building occupancy.

E. System Acceptance: Satisfactory completion is when this Contractor has performed successfully all the required testing to show performance compliance with the requirements of the Contract Documents to the satisfaction of the Owner's Representative. System acceptance shall be contingent upon completion and review of all corrected deficiencies.

3.6 PREPARATION FOR BALANCING

A. Verify that all dampers are in the position indicated by the controller (e.g., open, closed or modulating).

B. Check the calibration and setpoints of all controllers.

C. Check the locations of all thermostats and humidistats for potential erratic operation from outside influences such as sunlight, drafts, or cold walls.

D. Check that all sequences operate as specified. Verify that no simultaneous heating and cooling occurs, unless specified. Observe that heating cannot begin at TAB reheat terminals until the unit is at the minimum CFM.

E. Verify the operation of all interlock systems.

3.7 TEST AND BALANCE COORDINATION

A. The Contractor shall furnish a single set of all tools necessary to interface to the control system for test and balance purposes.

B. The Contractor shall provide a minimum of four (4) hours training for the Balancing Contractor in the use of these tools.

C. In addition, the Contractor shall provide a qualified technician to assist in the test and balance process until the first 20 terminal units are balanced.

D. The tools used during the test and balance process shall be returned at the completion of the testing and balancing.

3.8 DEMONSTRATION AND ACCEPTANCE

A. At completion of installation, provide two days minimum instruction for operators. Demonstrate operation of all controls and systems. Describe the normal operation of all equipment.

3.9 TRAINING

A. On-Site:

1. After completion of commissioning, the manufacturer shall provide 16 hours of training on consecutive days for 4 Owner's representatives. The training course shall enable the Owner's representatives to perform Day-to-Day Operations as defined herein. A factory-trained instructor with experience in presenting the training material and the system programmer for this project shall perform the training.

B. Provide course outline and materials in accordance with the "SUBMITTALS" article in Part 1 of this section. The instructor(s) shall provide one copy of training material per student.

3.10 INSTALLATION OF SENSORS

A. Install sensors in accordance with the manufacturer's recommendations.

B. Mount sensors rigidly and adequately for the environment within which the sensor operates.

C. Room temperature sensors shall be installed on concealed junction boxes properly supported by the wall framing.

D. All wires attached to sensors shall be air sealed in their raceways or in the wall to stop air transmitted from other areas affecting sensor readings.

E. Averaging sensors and low limits shall be installed at the top of the assembly with the element on a slight downward incline away from the sensor making a serpentine pattern over the cross-sectional area with elements spaced not over 12" apart and within 6" of the top and bottom of the area.

F. All pipe-mounted temperature sensors shall be installed in immersion wells. Install all liquid temperature sensors with heat-conducting fluid in thermal wells.

G. Install outdoor air temperature sensors on exterior of north wall, complete with sun shield at designated location approved by Architect/Engineer. TCC shall prime and paint the device enclosure. Color selection by Architect.

END OF SECTION 230900

SECTION 232218 - STEAM AND STEAM CONDENSATE SPECIALTIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Steam Traps

B. Sample Coolers

C. Boiler Feed Units

D. Condensate Return Units

E. Safety Valves

1.2 REFERENCES

A. ANSI/ASTM - Boilers and Pressure Vessels Code.

B. ANSI/NFPA 70 - National Electrical Code.

C. ASTM A105 - Forgings, Carbon Steel, for Piping Components.

D. ASTM A126 - Gray Iron Castings for Valves, Flanges, and Pipe Fittings.

1.3 SUBMITTALS

A. Submit product data under provisions of Section 230500. Include product description, model, dimensions, component sizes, rough-in requirements, service sizes, and finishes.

B. Submit schedule indicating manufacturer, model number, size, location, rated capacity, and features for each specialty.

C. Submit electrical power/controls wiring diagrams and product data indicating general assembly, components, safety controls, and service connections.

D. Submit manufacturer's installation instructions.

E. Submit operation and maintenance data.

PART 2 - PRODUCTS

2.1 STEAM TRAPS

A. Furnish traps as scheduled on the drawings.

2.2 SAMPLE COOLERS

A. 316 stainless steel tube to convey steam and condensate through 316 stainless steel heat exchanger housing. All components to be stainless steel.

B. Cooler shall be rated for 215 psig (tube side) and 145 psig (cooling water side).

C. Cooler shall be capable of cooling 100 ml/min. of 295°F steam or 330 ml/min. of 185°F condensate with 6 l/min. of 68°F water.

D. Route cooling water outlet piping to nearest floor drain and provide vacuum breaker at highest point of cooling water supply piping.

E. Manufacturers:

1. Carltex, Inc. SQ2
2. Sentry DTC-4
3. Waters Equipment Co. Series 9000

2.3 BOILER FEED UNITS

A. Units: Consist of factory assembled packaged receiver, strainers, pumps, water make-up assembly, control panel, automatic steam control valve and sparge tube, and accessories for duplex pump operation. Size, capacity, and performance of boiler feed unit shall meet schedule requirements (refer to drawings). Boiler feed unit shall be configured with pipe connections, pump discharges, control panel locations and orientation arranged to fit within existing mechanical room.

B. Receiver: Atmospheric, vented horizontal tank fabricated from minimum 3/16" (5 mm) thick welded 304L stainless steel construction. Receiver shall be supported with structural steel support legs with a minimum height as required for the NPSHR of the pumps selected. Receiver shall be factory insulated on all sides with minimum 2-inch thick fiberglass insulation and covered with sheet metal jacketing as follows:

1. Minimum 22-gauge sheet metal jacket around circumference.
2. Minimum 12-gauge sheet metal jacket on tank heads.

C. Receiver shall include the following openings and connections:

1. One (1) minimum 3-inch pumped condensate return connection.
2. One (1) minimum 3-inch vent connection.

3. One (1) minimum 2-inch low pressure condensate return connection.
4. One (1) minimum 2-inch overflow connection.
5. One (1) minimum 1-inch drain connection.
6. Two (2) pump suction connections appropriately sized for scheduled pump performance.
7. One bi-metal thermometer with 20-240°F range and 4-inch dial.
8. One connection for automatic steam heater for pre-heating boiler feedwater.
9. One stainless steel chemical injection quill.
10. One manhole access opening for inspection and servicing.

D. Water Make-up Assembly: Consists of mechanical float valve mounted on receiver. Valve shall be bronze body with inlet strainer.

E. Steam pre-heater assembly shall include a steam inlet strainer and self-contained temperature regulator with steam sparge tube to maintain water at 190°F.

F. Pumps: Equipped with 250°F rated seals and configured to pump 200°F, condensate with low NPSH, with grease lubricated, sealed ball bearings, bronze impeller, stainless steel shaft, mechanical shaft seal, renewable case rings, coupled to motor, RPM as specified on the drawings, and mounted on common steel base plate supports. Refer to Section 230513 for additional motor information.

G. Control Cabinet: NEMA 12 enclosure, UL listed components, hinged door, combination non-fused disconnect magnetic starters with overload relays, terminal strip, low water cut-off, 'Hand-Off-Auto' switch for each pump, fused control circuit transformer, factory wired for each pump to be dedicated to a single boiler. Low and high water alarm lights, dry contacts for separately monitoring low and high level alarm dry contacts for monitoring by building automation system (by others), alarm horn, horn silence button, and test button for alarm light testing.

H. Control Sequence: Each pump control circuit shall be completely independent of the other. Pumps to be started/stopped by dedicated boiler water level on/off controls.

I. Accessories: Isolation valves and suction strainer between pumps and receiver, double pole float switches for high and low water alarms.

J. Manufacturers:

1. BFS Industries
2. Bryan Boiler
3. Cleaver Brooks
4. Hurst Boiler
5. Industrial Steam

2.4 LOW PRESSURE CONDENSATE RETURN UNITS (200°F, Atmospheric vented, Floor mounted tank)

A. Units: Consist of factory assembled packaged receiver, pumps, float switches, controls and accessories for duplex operation.

B. Receiver: Cast iron or steel with inlets, vent, and drain connections with minimum 20-year warranty against failure due to corrosion. Receiver shall be equipped with the following:

1. Water glass gauge with bronze shutoff and drain valves.
2. Dial thermometer
3. Lifting eyes.

C. Pumps: Mounted exterior to tank, rated for up to 200°F condensate, bronze impeller, stainless steel shaft, renewable case rings, close coupled to motor, RPM as specified on the drawings. Mechanical seals rated for 250°F fluid temperature. Each condensate return unit shall be equipped with two (2) pumps with each pump having a dedicated pump suction isolation valve.

D. Control Cabinet: Single point electrical connection, NEMA 1 or 2 enclosure, UL listed components, with hinged door, combination fused disconnect magnetic starters with overload relays, terminal strip, fusible control circuit transformer, and mechanical alternator. 'Hand-Off-Auto' switch, selector 'lead-off-lag' switches, test buttons, high level alarm light, motor running pilot lights, dry contacts for high level alarm, acknowledge button and alarm horn.

E. Control Sequence: Each pump control circuit shall be completely independent of the other. Operate pumps on high level, alternating after each cycle. Operate second pump upon failure of first pump and alarm.

F. Capacity as scheduled on the drawings.

G. Manufacturers:

1. Roth Pump - Bulletin 1H99 Pg. 4&5
2. Domestic Pump - CC or CB inducer impeller
3. Hoffman - HC
4. Weil Pump - 4000
5. Weinman - 900/910
6. Shipco ECC

2.5 LOW PRESSURE CONDENSATE RETURN UNITS (212°F, ATMOSPHERIC VENTED, HORIZONTAL ELEVATED TANK)

A. Units: Consist of factory assembled packaged receiver, strainers, pumps, float switches, control panel and accessories, for duplex operation.

B. Receiver: Horizontal, elevated above pumps, low profile, 3/16" welded steel, flat or semi-hemispherical ends, suitable for 212°F condensate, with inlets, outlets, vent, overflow, and drain connections, and lifting eye bolts. Receiver shall be equipped with the following:

1. Water glass gauge with bronze shutoff and drain valves.
2. Dial thermometer.

C. Pumps: Rated to pump 212°F condensate with two (2)-foot NPSHR, with grease lubricated, sealed ball bearings, bronze impeller, stainless steel shaft, mechanical shaft seal, renewable case rings, coupled to motor, RPM as specified on the drawings, and mounted on common base

plate. Refer to Section 230513 for additional motor information. Mechanical seals rated for 250°F fluid temperature. Each condensate return unit shall be equipped with two (2) pumps with each pump having a dedicated pump suction isolation valve.

D. Control Cabinet: Single point electrical connection, NEMA 1 or 2 enclosure, UL listed components, with hinged door, combination fused disconnect magnetic starters with overload relays, terminal strip, fusible control circuit transformer, and mechanical alternator. 'Hand-Off-Auto' switch, selector 'lead-off-lag' switches, test buttons, high level alarm light, motor running pilot lights, dry contacts for high level alarm, acknowledge button and alarm horn].

E. Control Sequence: Each pump control circuit shall be completely independent of the other. Operate pumps on high level, alternating after each cycle; operate second pump upon failure of first pump and alarm.

F. Accessories: Gauge glass with isolation valves pressure gauge on each pump discharge, isolation valves and suction strainer between pumps and receiver, double pole float switches, corrosion inhibitor anode, drain valve. Provide safety vapor release on receiver.

G. Capacity as scheduled on the drawings.

H. Manufacturer:

1. Roth Pump - Bulletin C204
2. Industrial Steam - Domestic CED with "B" pumps (large elevated)
3. Domestic CB with inducer impeller (small elevated)
4. Shipco HT

PART 3 - EXECUTION

3.1 INSTALLATION AND APPLICATION

A. General Installation Requirements:

1. Install specialties in accordance with manufacturer's instructions.
2. Size traps to handle minimum of two and one-half times maximum condensate load of apparatus served, unless noted otherwise.
3. All traps shall be minimum 3/4" size.
4. Install traps with unions or flanges at both ends.
5. Provide shutoff valve and strainer at inlet, and check valve and shutoff valve at discharge of traps.
6. Provide minimum 28" long dirt pocket of same size as apparatus return connection between apparatus and trap, unless noted otherwise on drawings.
7. Remove thermostatic elements from traps during temporary and trial usage, and until system has been operated and dirt pockets cleaned of sediment and scale.

B. Insulate steam and steam condensate specialties in accordance with Section 230716 - HVAC Equipment Insulation and Section 230719 - HVAC Piping Insulation.

a. Install full-sized P-traps in the overflow drain piping from condensate return units and extend piping to nearest floor drain.

END OF SECTION 232218

SECTION 232500 - CHEMICAL (WATER) TREATMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Treatment for Boiling-Out Steam Boilers.

B. Treatment for Cleaning and Passivating Open Cooling Tower Systems.

1.2 SUBMITTALS

A. Submit shop drawings under provisions of Section 230500.

B. Submit product data (including MSDS) indicating chemicals used for:

1. Boiling-out boilers.
2. Steam system chemical treatment.
3. Cleaning and passivating open cooling tower systems.
4. Open condenser water system chemical treatment.

C. Submit instructions for:

1. Boiling-out boilers.
2. Cleaning and passivating open cooling tower systems.

1.3 REGULATORY REQUIREMENTS

A. Conform to all applicable codes and regulations for addition of non-potable chemicals to building mechanical systems, and for discharge to public sewage systems.

B. Provide only chemicals approved for use and disposal by local authorities. Contact the Architect/Engineer if any specified chemicals are prohibited.

1.4 SERVICE FOR ASSISTING CONTRACTOR IN CLEANING EQUIPMENT & PIPING

A. Provide the following services to assist contractor in cleaning and passivating equipment and piping when first made operational and placed into service:

1. Provide chemicals and detailed instructions on:

a. How chemicals are to be mixed and added to equipment and piping when they are filled.
b. What temperature the cleaning/passivating chemicals are to be circulated at.
c. How long the cleaning/passivating chemicals are to be circulated for full effect.

d. Proper procedure for draining and flushing cleaning/passivating chemicals from equipment and piping for their complete removal.

2. Once equipment and piping has been cleaned, passivated, and flushed clean, the systems shall immediately be filled with specified solution with proper chemical treatment to prevent biological growth.
3. Include 4-hour training course for operating personnel, instructing them on installation, care, maintenance, testing, and operation of water treatment systems. Arrange course at start-up of systems.
4. Provide on-site inspections of equipment during scheduled or emergency shutdown to properly evaluate success of water treatment program, and make recommendations in writing based upon these inspections.
5. Provide sufficient chemicals for treatment and testing during warranty period.

B. The Chemical Treatment Subcontractor shall be responsible for assisting the Mechanical Contractor by adding the chemical solutions required for cleaning each steam boiler, cooling tower, and piping system. During the remainder of the warranty period, the Chemical Treatment Subcontractor will be responsible for adding chemicals and doing other work related to the operation of system such as boiler blowdown. The Chemical Treatment Contractor shall make periodic tests of the chemical treatment program as called for above and recommend changes to Owner when needed.

1.5 WATER ANALYSIS

A. Sample feedwater to determine appropriate chemical treatment. Contact the Architect/Engineer if test indicates treatment required is different than that specified.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. H-O-H Chemicals (existing chemical treatment provider).

2.2 MATERIALS

A. Steam Boiler Boil-Out Chemicals.

1. Submit chemicals to be used for boiler out boilers along with their MSDS and instructions for use.
2. Submit instructions to be followed for draining and flushing equipment and systems clean.

B. Cleaning of Steam Systems

1. Submit procedures to be followed for cleaning newly installed steam piping and piping components.

C. Steam System Chemicals

1. Submit chemicals to be used for steam system treatment along with their MSDS.

D. Open Cooling Tower System Cleaning and Passivating Chemicals

1. Submit chemicals to be used for cleaning and passivating open cooling tower systems along with their MSDS and instructions for use.
2. Submit instructions to be followed for draining and flushing equipment and systems clean.

E. Open Cooling Tower System Chemicals

1. Submit chemicals to be used for condenser water systems along with their MSDS.

F. Steam System Treatment (Up to 15 psig Closed System):

1. Proprietary blends containing the following items:

a. Boiler Corrosion Inhibitor: Sodium nitrite-borax blend to maintain 3,000 ppm nitrite and a pH of 7.0 to 10.0 in the boiler.
b. Piping Corrosion Inhibitor: Neutralizing amine such as cyclohexylamine, morpholine, or diethyl-aminoethanol to keep condensate pH of 7.5 to 8.5.

G. Open (Open Cooling Tower and Evaporative Closed Circuit Cooling Tower) System Treatment:

1. After cooling tower and condenser water piping has been cleaned and flushed, provide chemical treatment program for long-term service of system:

a. Corrosion Inhibitor: Molybdate-based inhibitor.
b. Scale Inhibitor: Organic phosphonates such as aminiomethylene-phosphonate; phosphonates such as hydroxyethylidene diphosphonicacid or polyamino-substituted phosphonates; or synthetic polymers such as low-molecular-weight polyacrylates, polymeth-acrylates and polyacrylanides. Inorganic poly-phosphates are not acceptable.
c. Biocide: The primary biocide shall be an oxidizing biocide such as chlorine or bromine. The second biocide shall be a dispersing (non-oxidizing) type such as a quaternary amine compound.
d. Dispersant: Polymer to maintain mud and dirt particles in suspension.
e. Passivation: Provide to the Owner a passivation plan for all cooling towers and evaporative coolers that have wetted galvanized steel components, e.g. basins, coils, water distributing sections. Include initial passivation and recommendations for future "re-passivation" (if needed). Customize plan based on the feed water properties.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.2 CLOSED-LOOP HYDRONIC SYSTEM WATER QUALITY STANDARDS

A. Review equipment manufacturer's water quality standard to ensure water quality is sufficient to meet their warranty requirements as well as to ensure peak heat transfer efficiency. Contractor shall maintain hydronic systems within the more stringent of either the equipment manufacturer's requirements or those listed below:

Measured Value	Multi-Metal Systems with Aluminum	Multi-Metal Systems with Stainless Steel	Multi-Metal Systems with Copper
pH Range	8.5	8.5	9.0
Alkalinity as $CaCO_3$	100 - 500 mg/l	100 - 500 mg/l	100 - 500 mg/l
Hardness as $CaCO_3$*	100 - 500 mg/l	100 - 500 mg/l	100 - 500 mg/l
Suspended Solids	less than 10 mg/l	less than 10 mg/l	less than 10 mg/l
Dissolved Solids	less than 1,000 mg/l	less than 1,000 mg/l	less than 1,000 mg/l
Chlorides	less than 150 mg/l	less than 150 mg/l	less than 150 mg/l
Iron	less than 5.0 mg/l	less than 5.0 mg/l	less than 5.0 mg/l
Manganese	less than 0.4 mg/l	less than 0.4 mg/l	less than 0.4 mg/l
Nitrate	less than 100 mg/l	less than 100 mg/l	less than 100 mg/l
Sulfate	less than 200 mg/l	less than 200 mg/l	less than 200 mg/l
Ammonia	less than 5.0 mg/l	less than 5.0 mg/l	less than 5.0 mg/l
Free Copper	less than 0.10 mg/l	less than 0.10 mg/l	less than 0.10 mg/l
	less than 3.0 mg/l		

B. Submit an independent third-party test report for each chemically treated closed-loop system showing compliance with all measured values shown in the above table as part of project closeout documentation.

3.3 COOLING TOWER STARTUP

A. Circulate water and verify proper chemical and especially biocide levels for six (6) hours prior to starting fans if system has been out of service.

B. Lockout all feed and bleed operations when there is no flow to cooling towers.

END OF SECTION 232500

SECTION 235239 - FIRE TUBE BOILERS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Boilers.

B. Boiler Trim.

C. Fuel Burning System.

D. Controls.

E. Connections.

1.2 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Provide authorized factory representatives to conduct initial boiler installation review and start-up. Manufacturer is responsible for burner adjustment and testing.

C. Boiler& Burner Units: AGA certified and UL labeled.

D. Conform to ANSI/NFPA 70 code for internal wiring of factory wired equipment.

E. Installation shall meet the requirements of ASME CSD-1, including remote emergency shutdown switches for boilers, applicable gas train, individual venting of gas regulators, and repackable shutoff valves at all boilers.

1.3 REFERENCES

A. AGA - Directory of Certified Appliances and Accessories.

B. ANSI/AGA Z21.13 - Gas-Fired Low-Pressure Steam and Hot Water Boilers.

C. ANSI/AGA Z223.1 - National Fuel Gas Code.

D. ANSI/ASHRAE/IES Standard 90.1 (latest published edition) - Energy Standard for Buildings Except Low-Rise Residential Buildings.

E. ANSI/ASME SEC 4 - Boiler and Pressure Vessels Code - Rules for Construction of Heating Boilers.

F. ANSI/ASME SEC 8D - Boilers and Pressure Vessels Code - Rules for Construction of Pressure Vessels.

G. ANSI/NFPA 70 - National Electrical Code.

H. ASME CSD-1 - Controls and Safety Devices for Automatically Fired Boilers.

I. HI (Hydronics Institute) - Testing and Rating Standard for Cast Iron and Steel Heating Boilers.

1.4 SUBMITTALS

A. Submit product data per Section 230500. Include general assembly, components, controls, safety controls, electrical power/controls wiring diagrams, and service connections.

B. Submit manufacturer's installation instructions.

C. Submit reports to the Owner indicating condition and operation at start-up.

D. Submit reports to the Owner indicating specified performance and efficiency is met or exceeded.

E. Submit operation and maintenance data to the Owner. Include manufacturer's literature, operating instructions, cleaning procedures, replacement parts list, and maintenance and repair data.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect boilers by leaving inspection openings and shipping packaging in place until final installation.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Basis of Design: The scheduled manufacturer is the Basis of Design. The Contractor is responsible for all costs, schedule impacts, and construction coordination, including design costs and regulatory agency approvals, related to using a specified alternate product other than the Basis of Design. Refer to Section 230500 for additional information.

B. Cleaver Brooks model ICB

C. Burnham series 3

D. Johnston model PFTA

E. Hurst model S400

F. Superior Boilers either Mohawk or Seminole models

2.2 BOILERS

A. Boiler shall be designed for 15 psig steam. The maximum operating pressure shall be 10 psig.

B. Boiler shall be three-pass wetback horizontal firetube updraft boiler with a minimum of 5 square feet of heating surface per rated boiler horsepower. Boiler shall be mounted and shipped on a heavy steel frame with integral forced draft burner equipped with variable frequency drive (VFD) blower, burner controls, boiler trim, refractory, insulation and jacket factory mounted.

C. Burner shall be approved and listed by Underwriters Laboratories Inc. (UL).

D. Boiler shall be completely preassembled and fire tested at the factory. The unit shall be ready for immediate setting into place and ready for attachment of steam, feedwater, fuel, electrical, vent, and blowdown connections.

E. Boiler shell shall be constructed in accordance with ASME Boiler Code and shall receive authorized boiler inspection prior to shipment. A copy of the inspection report shall accompany the boiler to the site.

F. Provide two lifting eyes on top of boiler, hinged front and rear doors shall be davited, gas tight, and rear door shall be insulated with blanket material and a steel covering.

G. Front and rear tube sheets and flue fully accessible for inspection and cleaning. Boiler tubes shall not include turbulators, swirlers, or other add-on appurtenances.

H. Provide observation ports at each end of boiler.

I. Provide hand holes and manholes for boiler inspection and cleaning.

J. Insulate casing with readily removable, 2" thick glass fiber blanket insulation covered by sectional preformed sheet metal jacket. Boiler casing temperature not to exceed ambient temperature by over 18°F with surface air velocity of one foot per second.

K. Factory paint boiler, base, and other components with enamel finish.

L. Provide stack thermometer, minimum 5" diameter, black letters on white background, bi-metal type.

M. Efficiency, verified by factory and site tests, shall be minimum 80% from 30 to 100% of maximum firing rate.

N. Provide feedwater connections on each side of boiler.

2.3 STEAM BOILER TRIM

A. Provide pressure gauge with coil syphon having minimum 6-inch dial, 0-30 psig scale, and with minimum ±1% full scale accuracy

B. Provide at least three ASME rated safety valves, sized for full boiler capacity.

C. Provide water column with cocks, gauge glass set and blowdown valves for gauge glass and column.

D. Provide low water cut-off with manual reset integral with water column.

E. Provide modulating type firing rate controller as required for burner control.

F. Provide operator pressure switch for enabling / disabling burner.

G. Provide manual-reset high limit pressure switch to prevent boiler over-pressure condition.

H. Provide boiler feed pump control and primary low-water cut-off, integral with water column to automatically maintain water level. Provide high-water alarm contact point.

I. Manufacturer:

1. McDonnell & Miller; Model #157 (on/off boiler feed pump control)

J. Provide secondary low water cut-off with manual reset. Acceptable Manufacturer: McDonnell & Miller Model #63M (max. 50 psi).

K. Provide all trim required to meet ASME CSD-1. This includes, but is not limited to, gas train and all terminals and necessary relays for connection to remote shutdown switch(es) to disconnect all power to the burner controls.

L. Provide aqua stat below waterline of boiler to limit burner to low fire until water reaches 180°F.

M. Provide two (2) slow opening bottom blow down globe-type valves piped and mounted. Provide one (1) quick opening blow down ball-type valve piped and mounted. Both slow and quick opening blow down valves shall be factory mounted and piped to a common discharge point for a single point discharge connection point. Blowdown piping and valves shall be installed on right side of boiler when looking at boiler from the burner side. Globe valves shall be equivalent to Davis Valve forged steel model 8GLTFS1. Ball valves shall be equivalent to Apollo 72-140 series carbon steel with 316 SS ball and stem.

N. Provide surface blow down skimmer tube and bushing complete with isolation ball valve and metering valve (equivalent to Velan model SP-214-BOTDY).

2.4 FUEL BURNING SYSTEM

A. General: Forced draft automatic burner integral with front head of boiler designed to burn natural gas. Burner operation modulating with low fire ignition position. Maintain fuel-air ratios automatically with flue gas temperature minimum 68°F above dew point temperature of flue gases at boiler outlet.

B. Blower: Statically and dynamically balanced to supply combustion air. Direct connect to motor and equip with inlet silencer and outlet air dampers.

C. Gas Burner:

1. Forced draft, high radiant annular entry, premix, power burner with gas-electric ignition and gas pressure regulator.
2. Natural Gas Burner Piping: Provide on unit complete gas train including pressure regulators, safety and operating valves, high and low-pressure switches, main shutoff valve, gas pressure gauge, and airflow safety switch. Gas train to conform to ASME CSD-1 requirements. Vent all gas valves outdoors separately.
3. Gas Valves: Provide at least 2 motorized gas valves. Provide additional valves as required by local codes or Owner's Insurance Company. Gas control valves, pressure switches, and regulators shall be UL motorized type.

2.5 CONTROL PANEL

A. Mount on boiler skid. Hinged metal cabinet with key lock containing electronic flame safeguard and programming control, control circuit fusing, control circuit transformer, control circuit switch, manual potentiometer, indicating lights, numbered terminal strip, engraved name plates, relays, magnetic motor starters with thermal overload protection.

B. Boiler controls shall be listed by Underwriters Laboratories (UL) in accordance with US standards and Factory Mutual for its intended purpose. Boiler controls shall meet ASME/CSD-1 requirements.

C. Boiler control panel face shall include an alarm indicating lamp that illuminates when an alarm condition is detected by burner flameguard and safety controls. Provide "Flameguard Alarm" label adjacent to alarm light. Alarm LED light shall be equivalent to Allen Bradley model 800T-Q24R.

D. Boiler control panel face shall include an alarm indicating lamp that illuminates when either a high- or low-water level alarm condition is detected by boiler water level controls. Provide "Water Level Control" label adjacent to alarm light. Alarm LED light shall be equivalent to Allen Bradley model 800T-Q24R.

E. Boiler control panel face shall include a horn that sounds when an alarm condition occurs at either burner flameguard and safety controls or boiler water level controls. Provide momentary contact switch on panel face for silencing horn while leaving the alarm light illuminated until alarm condition is cleared. Panel-mounted signaling horn shall be equivalent to Allen Bradley Bulletin 855P with minimum 80dB output.

F. Boiler control panel shall include a dry contact that indicates a summary alarm condition for monitoring by third party building automation system (BAS). The summary alarm contact shall change state when an alarm condition occurs at either burner flameguard and safety controls or boiler water level controls.

G. Acceptable Manufacturer: Siemens AG LMV52 & AZL service display or Fireye NX6100 Integrated Parallel Position System with Flame Safeguard Burner Management. Burner motor voltage shall be as scheduled on the drawings. Provide step down transformer for control power.

H. Control panel shall provide an integrated microprocessor based linkage-less parallel positioning control with oxygen trim and burner management for each burner. Burner controller shall interface with external Facility Management and Control System (FMCS) via a BACnet MS/TP gateway. Boiler control package shall include the following:

1. Provide boiler control system with minimum 10" touchscreen graphical interface capable of displaying the following minimum information:

   a. Steam pressure psig
   b. Boiler firing rate %
   c. Boiler efficiency %.
   d. Boiler set point psi.
   e. Fuel valve position % open.
   f. Air damper position % open.
   g. Blower VFD speed Hertz.
   h. Hours run/profile.
   i. Modulation status manual/automatic.
   j. Flue gas oxygen level %.
   k. Net stack temperature °F.
   l. Combustion efficiency %.
   m. Ambient air temperature °F.
   n. Calculated CO2 levels %.
   o. Amount of trim applied.
   p. Faults.

2. Automatic sequencing of the boiler system (through pre-purge, pilot trial for ignition (PTFI), main trial for ignition (MTFI), run (AUTO), and post purge.
3. Flame proving and lockout on flame failure during PTFI, MTFI, and AUTO.
4. Each parallel positioning control shall have up to four independent fuel profiles that have the ability to utilize the same servomotors for various operating conditions or fuel availability. Each profile shall have up to a minimum twenty four (24) points.
5. Two independent PID control loops shall be available to optimize the response of the combustion control to various load conditions.

I. Combustion control system shall incorporate an in situ Zirconia Oxide heated exhaust gas probe. Probe design shall prevent flue gas steam particulates from impacting the probe filter and shall not require any pumps or gas preparation equipment such as solid state coolers.

J. On modulating burners provide manual-automatic selector switch and damper motor positioning switch to permit automatic firing in accordance with load demand, or manual control of firing rate at any desired point between low fire and maximum rating.

K. Provide controls for combustion air damper. On a call for heat, the combustion air damper shall open. When the damper proves open, the burner shall be allowed to fire. Provide numbered terminal blocks for remote wiring.

L. Provide automatic flue draft controller for each boiler as required to have flue damper open to burner light-off position prior to igniting pilot/burner.

M. Burner control and safety functions shall be performed by microprocessor based burner management system with self-diagnostics, non-volatile memory, message center, and flame monitor. Program shall control ignition, flame protection, limit controls, burner activation, blower activation, pre-combustion purge and post combustion purge, fuel valve activation, recycling interlocks, and pilot confirmation.

1. Program shall be self-monitoring and indicate any faults on LED message center. Provide all required accessories for a complete and fully operational system.
2. Manufacturers:

a. Fireye Flame-Monitor Electronic Controller (Bulletin E100)
b. Or equal Honeywell

N. Panel to include indicating lights to show operating conditions of primary and secondary low water level alarms, flame failure and fuel valve open. Mount indicating lights and switches in hinged drop-panel for access to wiring.

O. The boiler system control panel shall include contacts for manual CSD-1 emergency shutdown switch.

P. Manufacturer shall provide a BACnet interface with the building automation system in accordance with ASHRAE/ANSI Standard 135. This may be accomplished through a system integration panel or "gateway". Integration panels shall be provided as part of the boiler package. Wiring between the boiler control panel(s) and the integration panel shall be the responsibility of the manufacturer.

2.6 FLUE DRAFT CONTROLLER AND DAMPER

A. Modulating Draft Control:

1. Provide packaged controller and actuator system to provide automatic modulation of boiler outlet damper for constant boiler draft/pressure for all boilers installed under this project.
2. Draft Controller:

a. Sequencing type with pre-purge and adjustable “start” positions.
b. Interface with U.L. listed burner management systems.
c. Adjustable set point range of -2.0” w.c. to +2.0” w.c.
d. Three-way toggle switch for “Automatic Control”, “Closed Damper”, or “Off” control. “Open Damper” switch for manual positioning of the damper.
e. Operator adjustments of Range and Response.
f. Sequencing operation shall close outlet damper when boiler is not in operation.
g. On a call for boiler fire, draft controller shall open damper to an adjustable “start” position and provide a “proven-open” signal to the burner manager for flame operation.
h. Provide 120-volt output signal for operation of damper actuator.

3. Damper Actuator:

a. 120-volt electric linear actuator with end switches and “safe-start” position switches and feedback potentiometer.
b. Capable of 75 pounds of linear force and 0.5% resolution of full range at 30-second stroke speed.

4. Acceptable Manufacturer: Cleveland Controls Series 7720 controller with Series 9140 actuator or equivalent modulating draft controller system provided by burner manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Provide for connection to electrical service.

C. Provide connection of gas service in accordance with ANSI/AGA Z223.1.

D. Pipe drains from all safety valve drip pan elbows to nearest floor drain.

E. Mount stack thermometer in breeching within 12" of flue nozzle.

3.2 CLEANING THE BOILER (STEAM BOILER)

A. Close the valves in the building steam supply main and the condensate return pipe to boiler.

B. Using chemicals provided by the chemical treatment vendor (refer to section 232500) and following their instructions, proceed to boil-out the boilers prior to placing the system into service.

C. Manufacturer’s authorized boiler burner start-up personnel shall provide oversight and training when firing boiler as needed for proper boiler boil-out process.

D. Refill boiler with water and allow system to operate normally with heat exchanger and condensate return pump in operation for approximately 12 hours.

E. Drain all water and suspended particles from the boiler. Open the hand hole fittings at the top and rear of the boiler and hose down the inside of the boiler as thoroughly as possible. Continue washing out and draining until drain water is clear.

F. Fill boiler and put in normal operation.

G. Add chemical treatment to boiler water immediately after boiler cleaning is completed. Delay in adding chemical treatment can damage the boiler.

3.3 MANUFACTURER'S FIELD SERVICES

A. Prepare and start systems under factory authorized supervision.

B. Provide field representative for starting unit and training operator.

C. Provide combustion test and submit report. Test shall include boiler firing rate, overfire draft, gas flow rate, heat input, burner manifold gas pressure, % carbon monoxide (CO), % oxygen (O2), % excess air, flue gas temperature at outlet, ambient temperature, net stack temperature, % stack loss, % combustion efficiency, and heat output.

D. Adjust controls to operate burner and maintain 10 psig steam pressure.

END OF SECTION 235239

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SECTION 262726 - WIRING DEVICES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Device plates and box covers

B. Receptacles (REC-#)

C. Floor boxes and floor box with service fitting (FB-#)

D. Pendant cord/connector devices

E. Cord and plug sets

F. Cord reel (CR-#)

1.2 QUALITY ASSURANCE

A. Provide similar devices from a single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in the Electrical Code, by a testing agency to Authorities Having Jurisdiction and marked for intended use.

C. Comply with the Electrical Code.

1.3 REFERENCES

A. DSCC W-C-896F - General Specification for Electrical Power Connector

B. FS W-C-596 - Electrical Power Connector, Plug, Receptacle, and Cable Outlet

C. NEMA WD 1 - General Color Requirements for Wiring Devices

D. NEMA WD 6 - Wiring Devices - Dimensional Requirements

E. NFPA 70 - National Electrical Code (NEC)

F. UL 498 - Standard for Attachment Plugs and Receptacles

G. UL 943 - Standard for Ground Fault Circuit Interrupters

1.4 SUBMITTALS

A. Submit product data under provisions of Section 260500.

B. Provide product data showing configurations, finishes, dimensions, and manufacturer's instructions.

1.5 COORDINATION

A. Receptacles for Owner Furnished Equipment: Match plug configurations.

B. Cord and Plug Sets: Match equipment requirements.

PART 2 - PRODUCTS

2.1 DEVICE COLOR

A. All switch, receptacle, and outlet colors shall be verified with Architect, unless indicated otherwise.

2.2 COVERPLATES

A. All switches, receptacles, and outlets shall be complete with the following:

1. Unbreakable thermoplastic/thermoset plastic and match device color coverplates in finished spaces where walls are finished.
2. #302 stainless steel coverplates in unfinished spaces for flush boxes.
3. Galvanized steel coverplates in unfinished spaces for surface mounted boxes.

B. Where several devices are ganged together, the coverplate shall be of the ganged style for the number of devices used.

C. Install nameplate identification as indicated in Section 260553.

D. Plate securing screws shall be metal with head color matching the wall plate finish.

2.3 RECEPTACLES

A. Refer to Electrical Symbols List for device type.

B. REC-DUP: NEMA 5-20R Duplex Receptacle:

1. Heavy Duty: 125-volt, 20 amp, 3-wire grounding type heavy duty industrial grade with impact resistant thermoplastic face and one-piece brass back strap with integral ground contacts.

a. Manufacturers:

1) Hubbell 5362
2) Leviton 5362
3) Pass & Seymour 5362A
4) Cooper AH5362

C. REC-DUP-GFI: NEMA 5-20R Ground Fault Duplex Receptacle:

1. Standard Grade: 125-volt, 20 amp, 3-wire grounding type with test and reset buttons in impact resistant thermoplastic face, listed.

a. Device shall perform self-test of GFCI circuitry in accordance with UL 943.
b. Manufacturers:

1) Hubbell GF20L
2) Leviton GFNT2
3) Pass & Seymour 2097
4) Cooper SGF20

D. REC-DUP-WP: NEMA 5-20R Weatherproof Ground Fault Duplex Receptacle:

1. 125-volt, 20 amp, 3-wire grounding type with test and reset buttons in impact resistant thermoplastic face, weather resistant WR listed. Provide extra-duty NEMA 3R rated while-in-use cast aluminum cover.
2. Device shall perform self-test of GFCI circuitry in accordance with UL 943.

a. Manufacturers:

1) Hubbell:

a) GFTWRST20 with aluminum housing WP826

2) Leviton GFWT2 with aluminum housing M5979
3) Pass & Seymour 2097TRWR with aluminum housing WIUCAST1
4) Cooper WRSGF20 with aluminum housing WIUMV-1

E. REC-SIM-520R: NEMA 5-20R Simplex Receptacle:

1. 125-volt, 20 amp, 3-wire grounding type with impact resistant thermoplastic face.

a. Manufacturers:

1) Hubbell HBL5361
2) Leviton 5361
3) Pass & Seymour 5361
4) Cooper 5361

F. REC-SIM-620R: NEMA 6-20R Simplex Receptacle:

1. 250-volt, 20 amp, 2-pole, 3-wire grounding type with thermoplastic face.

    a. Manufacturers:

        1) Hubbell HBL5461
        2) Leviton 5461
        3) Pass & Seymour 5871
        4) Cooper 5461

G. REC-SIM-650R: NEMA 6-50R Simplex Receptacle:

1. 250-volt, 50 amp, 2-pole, 3-wire grounding type with thermoplastic face.

    a. Manufacturers:

        1) Hubbell HBL9367
        2) Leviton 5374
        3) Pass & Seymour 3804
        4) Cooper 5709N

H. REC-SIM-1520R: NEMA 15-20R Simplex Receptacle:

1. 250-volt, 20 amp, 3-phase, 3-pole, 4-wire grounding type with thermoplastic face.

    a. Manufacturers:

        1) Hubbell HBL8420
        2) Leviton
        3) Pass & Seymour
        4) Cooper

I. REC-SIM-L630R: NEMA L6-30R Locking Type Simplex Receptacle:

1. 250-volt, 30 amp, 2-pole, 3-wire grounding type with thermoplastic face.

    a. Manufacturers:

        1) Hubbell HBL2620
        2) Leviton 2620
        3) Pass & Seymour L630R
        4) Cooper CWL630R

J. REC-TAMP: NEMA 5-20R Tamper Resistant Duplex Receptacle:

1. Standard Grade: 125-volt, 20 amp, 3-wire grounding type with impact resistant thermoplastic face.

    a. Manufacturers:

        1) Hubbell BR20TR

2) Leviton TBR20
3) Pass & Seymour TR5362
4) Cooper TRBR20

K. REC-TAMP-GFI: NEMA 5-20R GFI Tamper Resistant Receptacle:

1. Standard Grade: 125-volt, 20 amp, 3-wire grounding type tamper-resistant with test and reset buttons in impact resistant thermoplastic face, listed.

a. Device shall perform self-test of GFCI circuitry in accordance with UL 943.
b. Manufacturers:

1) Hubbell GFTR20
2) Cooper TRSGF20
3) Pass & Seymour 2097TR
4) Leviton GFTR2

L. REC-TAMP-QUAD: NEMA 5-20R Double Duplex Tamper Resistant Receptacle:

1. Consists of two duplex tamper resistant receptacles, double gang box, plaster ring and faceplate.

a. Manufacturers:

1) Refer to Tamper Resistant Receptacle above.

M. REC-QUAD: NEMA 5-20R Double Duplex Receptacle:

1. Consists of two duplex receptacles, double gang box, plaster ring and faceplate.

a. Manufacturers:

1) Refer to Duplex Receptacle above.

N. Back wired devices shall be complete with eight holes that are screw activated with metal clamps for connection to #12 or #10 copper conductors.

O. Side wired devices shall have four binding screws that are undercut for positive wire retention.

P. Ground fault circuit interrupter (GFCI) receptacles shall be listed and comply with UL 943 requiring increased surge immunity, improved corrosion resistance, improved resistance to false tripping and diagnostic indication for miswiring if the line and load conductors are reversed during installation.

2.4 FLOOR BOXES

A. Cover Color and Style: Verify with Architect from manufacturer standard options.

B. Refer to Technology drawings for voice/data, Audio/Video outlet, and coordination requirements.

C. Floor Boxes Housing Material Based on Cast-in-Place Floor Type:

1. Slab on Grade: Cast Iron or listed for slab on grade with special kit, coating; corrosion resistant.

D. FB-1: Concealed Center Compartment:

1. Floor Box, flush-mounted hinged cover, square/rectangular center service area with closed while-in-use cover and cable egress doors in cover, provide complete with appropriate outlet cover plates and hardware. For use with 4-inch minimum concrete pour floors, fully adjustable, UL 514 scrub water listed.
2. Gang / Outlet Descriptions:

a. 125 Volt, 20 amp, NEMA 5-20R duplex receptacle with 3/4-inch conduit.
b. Voice/Data outlet with 1-1/4-inch conduit. Refer to Technology drawings for additional information.
c. Spare with 1-1/4-inch conduit.

3. Manufacturers:

a. Hubbell CFB Series
b. Legrand Wiremold RFB Series
c. ABB Steel City 664/665/667 Series

4. Installation: Group route raceway conduits under slab on grade or in ceiling space below to nearest wall or as shown on plans. Provide provisions to core drill elevated floors and route conduits to ceiling space of associated floor box. Provide hub reducers when applicable.

2.5 PENDANT CORD/CONNECTOR DEVICES

A. Description: Matching, locking type plug and receptacle body connector, NEMA WD 6, Configurations L5-20P and L5-20R, heavy-duty grade or refer to Details as shown on drawings.

1. Body: Nylon with screw-open cable gripping jaws and provisions for attaching external cable grip.

B. External Cable Grip: Woven wire mesh type made of high strength galvanized steel wire stand, matched to cable diameter, and with attachment provision designed for corresponding connector.

2.6 CORD AND PLUG SETS

A. Description: Match voltage and current ratings and number of conductors to requirements of equipment being connected.

1. Cord: Rubber-insulated, stranded copper conductors, with Type SOW-A jacket; with green insulated grounding conductor and equipment rating ampacity plus a minimum of 30 percent.
2. Plug: Nylon body and integral cable-clamping jaws. Match cord and receptacle type for connection, FS/UL listed.

2.7 CORD REELS

A. CR-1: 25' 3#12 AWG type 'SOW-A' cord with adjustable ball stop. 120 volt, NEMA 5-20R, duplex receptacle, rated 16 amps continuous.

1. Manufacturers:

a. Daniel Woodhead 92433
b. 9521 w/ Hubbell 5369CY
c. Appleton RL153L
d. Hubbell HBL HBL45123C20

B. CR-2: 25' 3#6 AWG type 'SOW-A' cord with adjustable ball stop. 120 volt, NEMA 6-50R, simplex receptacle connector.

1. Manufacturers:

a. KH Industries

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install convenience receptacles at elevations indicated in the General Installation Notes on the contract drawings.

B. Install specific-use receptacles at heights shown on the contract drawings. Install devices level, plumb, and square with building lines. Coordinate installation of adjacent devices of separate systems with common mounting heights, including lighting, power, systems, technology, and temperature control device rough-ins.

C. Ground Fault Protection: Provide ground fault protection for all branch circuit breakers serving 120/208 receptacles and electrical outlets rated 50 amps or less single-phase and 100 amps or less three-phase in the following locations, as shown on drawings, or required by adopted code:

1. Bathrooms, locker rooms, shower rooms
2. Kitchens' all 120-volt through 250-volt receptacles
3. Buffet, serving, food preparation areas; all 120-volt through 250-volt receptacles
4. Rooftops
5. Interior/Exterior locations subject to damp/wet conditions
6. When located within 6 feet of sinks, bathtubs, and shower stalls

7. Plug-and-cord receptacles when the utilization appliance is located within 6 feet of a sink edge.
8. Garages, accessory buildings, service bays
9. Specific Appliances: Auto vacuum machines, water drink/bottle fill coolers, pressure staying machines, tire inflation machines, vending machines, sump pumps, dishwashers, electric ranges, ovens, clothes dryers, microwave ovens

D. Tamper Resistant Protection: Provide tamper resistant protection for all 15 / 20-amp 120/208 straight blade wiring devices in the following locations, as shown on the drawings, or required by adopted code.

1. Childcare, preschool, elementary, middle, high school, educational facilities

E. Install receptacles vertically with ground slot up or where indicated on the drawings, horizontally with ground slot to the left.

F. Install decorative plates on switch, receptacle, and blank outlets in finished areas, using jumbo size plates for outlets installed in masonry walls.

G. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface-mounted outlets.

H. Install devices and wall plates flush and level.

I. Install nameplate identification to receptacle cover plates indicated. Identification shall identify panel name and circuit number. Refer to Specification Section 260553 - Electrical Identification.

J. Test receptacles for proper polarity, ground continuity and compliance with requirements.

K. Floor Box Installation:

1. Set boxes level and flush with finish flooring material.
2. Use cast iron floor boxes for installations in slab on grade. Trim shall match floor covering to be used.
3. Provide a minimum horizontal offset of 24 inches between boxes.
4. Provide saw-cutting and patching of existing concrete floors as necessary for floor box installations within existing floors.

END OF SECTION 262726



CODE PLAN - AREA A

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

LEGEND - CODE FLOOR PLANS

- ROOM NUMBER / AREA (SF) / OCCUPANT LOAD
- OCCUPANT LOAD TAG (NET) - THIS LOAD DOES NOT EXTEND BEYOND THIS SPACE
- EXIT TAG - CUMULATIVE OCCUPANT LOAD - EGRESS CAPACITY
- REQUIRED OCCUPANT LOAD
- REQUIRED WIDTH FOR OCCUPANT LOAD (INCHES)
- CAPACITY OF EGRESS COMPONENT (WIDTH IN INCHES)
- CAPACITY OF EGRESS COMPONENT (OCCUPANTS)
- LOAD FACTOR (INCHES/OCCUPANT) - WHEN CAPACITY FACTOR TRIANGLE IS FILLED - THIS IS TOTAL OCCUPANT LOAD AT THIS EXIT FROM THIS STORY
- DOOR TAG - PANIC DEVICE - DOOR FIRE RATING
- EXIT SIGN
- MAX TRAVEL = Length — EXIT ACCESS TRAVEL DISTANCE
- MAX CP = Length — COMMON PATH OF EGRESS TRAVEL DISTANCE
- MAX DIAG DIM = X'-X" / 1/3 DIAG = X'-X" — MAX OVERALL DIAGONAL DIM OF AREA SERVED
- MIN SEPARATION DISTANCE = X'-X" — MIN EXIT SEPARATION

SEPARATION LEGEND

HOURLY RATING
1 = 1 HOUR
2 = 2 HOUR
SP = SMOKE PARTITION

KEY PLAN

A
B
C

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09/30/2024
REVISIONS

IFB	9/30/2024	ISSUED FOR BID
A3	11/5/2024	ADDENDUM 3

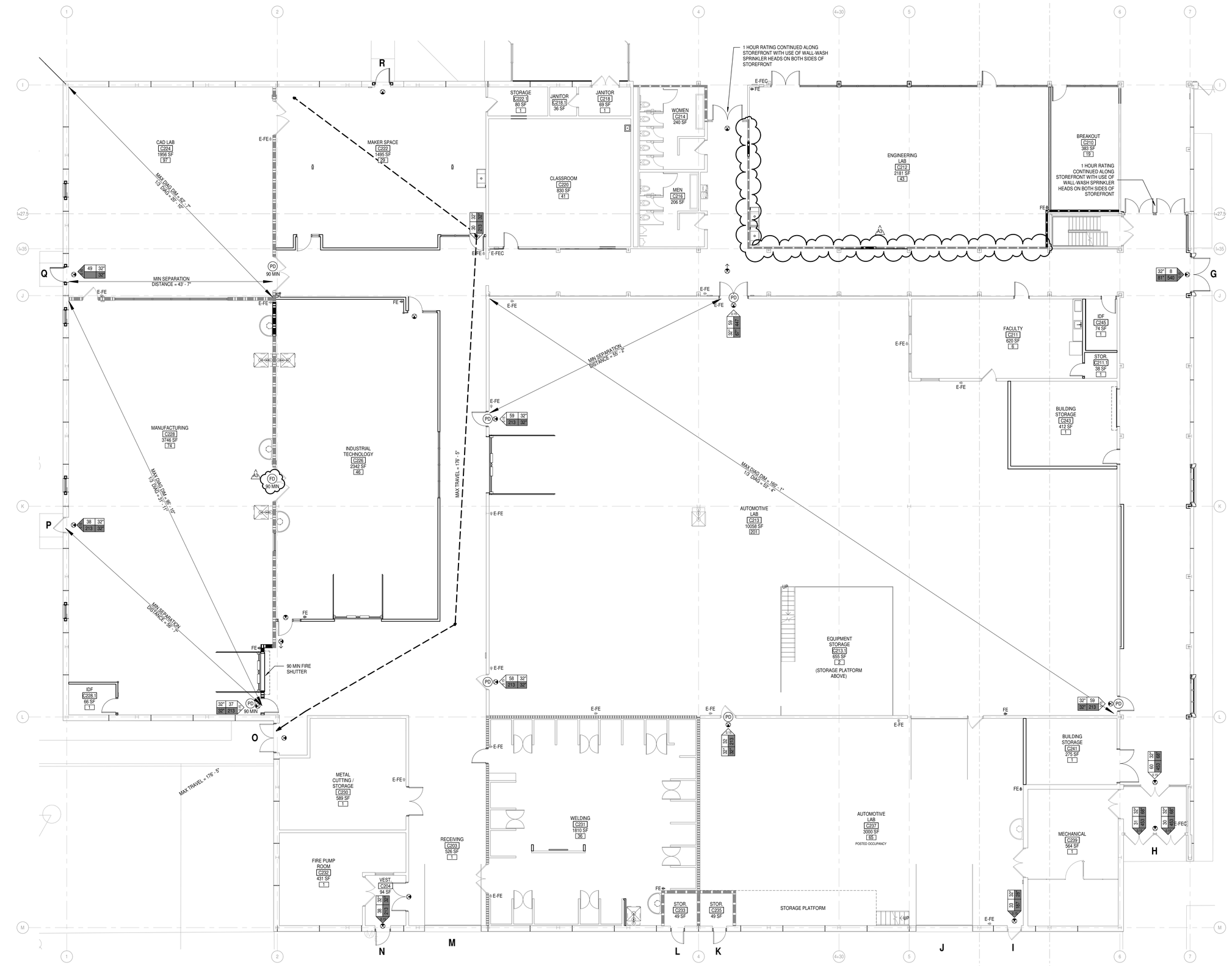
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CODE PLAN - AREA A

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Transformer

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LEGEND - CODE FLOOR PLANS

ROOM NUMBER
AREA (SF)
OCCUPANT LOAD
OCCUPANT LOAD TAG (NET) - THIS LOAD DOES NOT EXTEND BEYOND THIS SPACE

EXIT TAG
- CUMULATIVE OCCUPANT LOAD
- EGRESS CAPACITY

REQUIRED OCCUPANT LOAD
REQUIRED WIDTH FOR OCCUPANT LOAD (INCHES)
CAPACITY OF EGRESS COMPONENT (WIDTH IN INCHES)
CAPACITY OF EGRESS COMPONENT (OCCUPANTS)
LOAD FACTOR (INCHES/OCCUPANT)
- WHEN CAPACITY FACTOR TRIANGLE IS FILLED - THIS IS TOTAL OCCUPANT LOAD AT THIS EXIT FROM THIS STORY

DOOR TAG
- PANIC DEVICE
- DOOR FIRE RATING

EXIT SIGN

MAX TRAVEL = Length — EXIT ACCESS TRAVEL DISTANCE
MAX CP = Length — COMMON PATH OF EGRESS TRAVEL DISTANCE
MAX DIAG DIM = X'-X" (1/3 DIAG = X'-X") — MAX OVERALL DIAGONAL DIM OF AREA SERVED
MIN SEPARATION DISTANCE = X'-X" — MIN EXIT SEPARATION

SEPARATION LEGEND

HOURLY RATING
1 = 1 HOUR
2 = 2 HOUR
SP = SMOKE PARTITION

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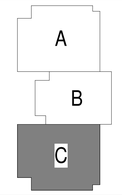
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KEY PLAN



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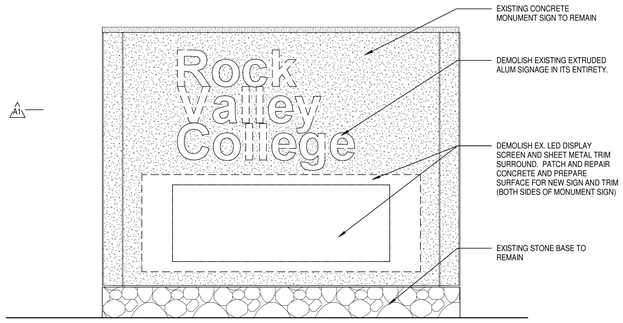
CODE PLAN - AREA C

CP1.1C

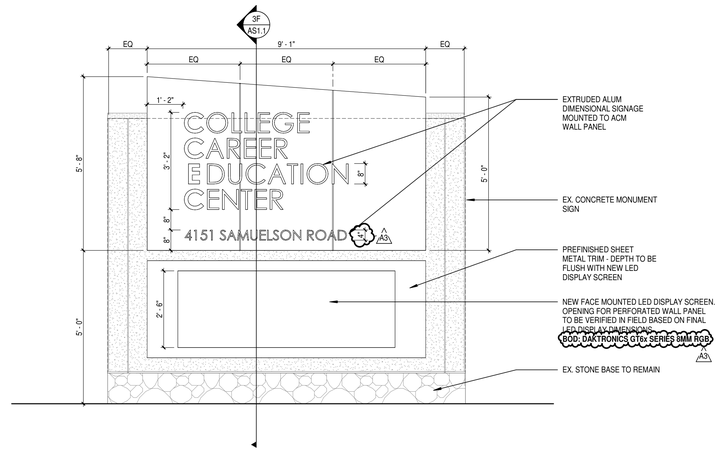
CODE PLAN - AREA C

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

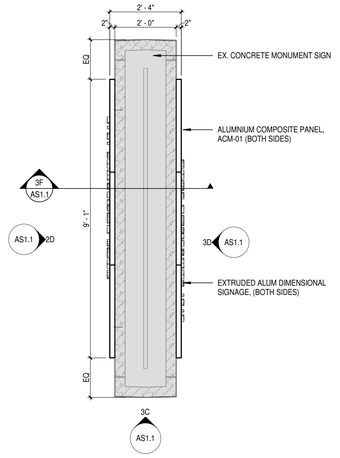
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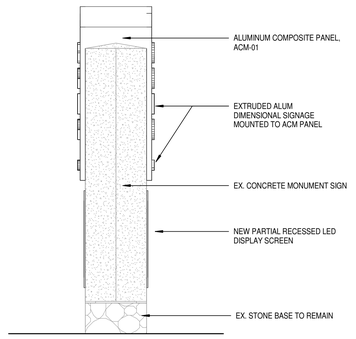
2C AS1.1 MONUMENT SIGN - DEMOLITION ELEVATION
SCALE: 1/2" = 1'-0"



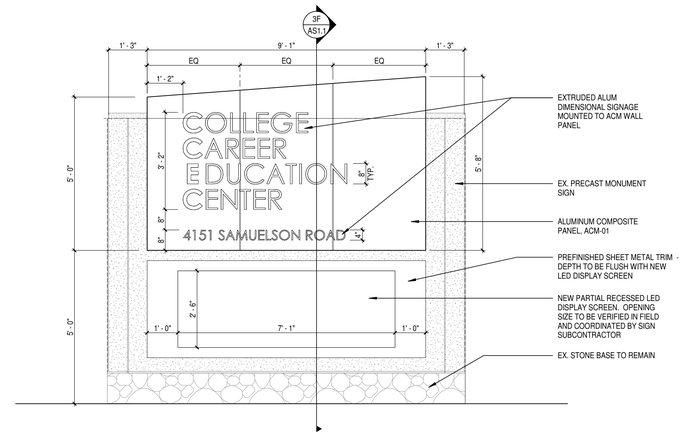
2D AS1.1 MONUMENT SIGN - WEST ELEVATION
SCALE: 1/2" = 1'-0"



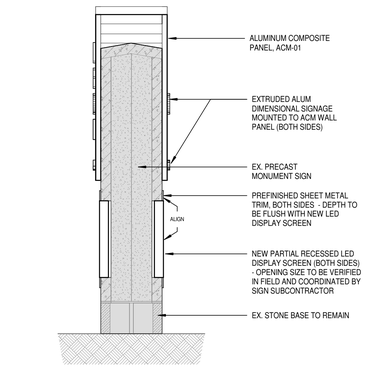
2F AS1.1 MONUMENT SIGN - ENLARAGED PLAN
SCALE: 1/2" = 1'-0"



3C AS1.1 MONUMENT SIGN - SOUTH ELEVATION
SCALE: 1/2" = 1'-0"



3D AS1.1 MONUMENT SIGN - EAST ELEVATION
SCALE: 1/2" = 1'-0"



3F AS1.1 MONUMENT SIGN - SECTION
SCALE: 1/2" = 1'-0"



4D AS1.1 MONUMENT SIGN - PERSPECTIVE (FOR REFERENCE)
SCALE:

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A1	10/15/2024	ADDENDUM 1
A3	11/6/2024	ADDENDUM 3

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ARCHITECTURAL SITE DETAILS

AS1.1

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DEMO SHEET NOTES

D1.1	DEMOLISH FLOORING, ADHESIVE, AND ASSOCIATED WALL BASE AND PREP SLAB FOR NEW FLOOR FINISH. PATCH AND/OR REPLACE GWB AS NECESSARY FOLLOWING WALL BASE REMOVAL.
D1.1A	COORDINATE FLOORING DEMOLITION WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE.
D1.3	GRIND SEALED CONCRETE FINISH DOWN TO FLOOR SLAB. DEMOLISH ASSOCIATED WALL BASE, WHERE OCCURS, AND PREP SLAB FOR NEW FLOOR FINISH. PATCH AND/OR REPLACE GWB WHERE DAMAGED.
D1.4	GRIND AND REMOVE POURED EPOXY FLOOR FINISH IN ITS ENTIRETY. DEMOLISH ASSOCIATED WALL BASE, WHERE OCCURS, AND PREPARE SLAB FOR NEW FLOOR FINISH. PATCH AND/OR REPLACE GWB WHERE DAMAGED.
D1.5	EXISTING FLOORING TO REMAIN. PROTECT DURING CONSTRUCTION.
D2	DEMOLISH STAINLESS STEEL HAND SINK AND ASSOCIATED PLUMBING. SALVAGE SINK AND FAUCET FOR REINSTALLATION.
D3	REMOVE WALL-HUNG MIRROR AND RETURN TO OWNER.
D4	DEMOLISH OVERHEAD SECTIONAL DOOR, FRAME, AND TRACK.
D5	DEMOLISH FLOOR DRAIN GRATE AND CAP DRAIN. SEE PLUMBING.
D6	DEMOLISH AND CAP PIPING FOR ABANDONED OXYGEN AND NITROUS OXIDE TANKS. SEE PLUMBING.
D7	DEMOLISH WIRE MESH PARTITION AND GATE IN ITS ENTIRETY. PATCH CONCRETE FLOOR WHERE PARTITIONS WERE ATTACHED TO FLOOR.
D8	REMOVE 3/4" WOOD PANEL WALL SURFACE IN ITS ENTIRETY AND PREP WALL TO RECEIVE NEW FINISH.
D9 A1	DEMOLISH TRENCH DRAIN GRATE. SAW CUT EXISTING CONCRETE SLAB AROUND ALL SIDES OF TRENCH DRAIN. REMOVE SAW CUT CONCRETE SLAB, TRENCH DRAIN, AND METAL GRATE SUPPORTS.
D10.1	REMOVE PARTIALLY RECESSED FIRE EXTINGUISHER CABINET FROM WALL. SALVAGE FOR REINSTALLATION.
D10.2	REMOVE FIRE EXTINGUISHER FROM WALL. SALVAGE FOR REINSTALLATION.
D12A	COORDINATE DEMOLITION OF CHASE WALL WITH ABATEMENT CONTRACTOR TO COMPLETE ABATEMENT OF PLUMBING PIPING. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE.
D13	AUTOMOTIVE LIFT - PROTECT DURING DEMO AND CONSTRUCTION.
D14	REMOVE IT RACK(S) AND RETURN TO OWNER.
D15	DEMOLISH WALL-MOUNTED SOUND SYSTEM AND CABINET
D16	DEMOLISH STUDENT WORK STATIONS AND TEACHER DEMONSTRATION STATION AND ASSOCIATED RACEWAYS.
D17	REMOVE WALL-MOUNTED MARKERBOARD, TACKBOARD, AND/OR OTHER TEACHING SURFACE FROM WALL AND RETURN TO OWNER.
D18	DEMOLISH UTILITY SINK AND ASSOCIATED PLUMBING.
D19	REMOVE RETRACTABLE PROJECTION SCREEN AND CEILING-MOUNTED PROJECTOR.
D20	REMOVE MAGNETIC LOCK FROM PUSH SIDE OF DOOR. ALL OTHER DOOR HARDWARE TO REMAIN.
D21	DEMOLISH GWB WALL FOR STOREFRONT OR DOOR AND FRAME. INSTALL REMOVE, SALVAGE, AND REINSTALL DECORATIVE WOOD RAIL AS NECESSARY, OR PROTECT IN PLACE DURING CONSTRUCTION.
D22	REMOVE AND SALVAGE FOR REINSTALLATION STAINLESS STEEL DOUBLE BASIN SINK.
D23	DEMOLISH EYEWASH STATION AND ASSOCIATED PLUMBING. RETURN EYEWASH STATION TO OWNER.
D24	REMOVE AND RETURN PAPER TOWEL DISPENSER AND OTHER WALL-MOUNTED ACCESSORIES TO OWNER.
D26	DEMOLISH METAL STAIR, RAILING, AND STORAGE PLATFORM IN THEIR ENTIRETY. PATCH CONCRETE FLOOR WHERE PREVIOUSLY ATTACHED TO FLOOR AND PREP SLAB FOR NEW FLOOR FINISH.
D27	REMOVE AND RE-ROUTE EXISTING WALL-MOUNTED EQUIPMENT, INCLUDING PRESSURIZED AIR STATIONS AND PIPING AS REQUIRED. SEE MECHANICAL AND ELECTRICAL.
D29.1	DEMOLISH COUNTERTOP, BACKSPLASH, SIDESPLASH, AND PLASTIC LAMINATE BASE CABINETS.
D29.2	DEMOLISH PLASTIC LAMINATE COUNTERTOP AND WALL SUPPORTS.
D30	DEMOLISH PLASTIC LAMINATE UPPER CABINETS.
D31	DEMOLISH COUNTERTOP SINK, FAUCET, AND WALL-MOUNTED ACCESSORIES. CAP ASSOCIATED PLUMBING AND RETURN ACCESSORIES TO OWNER. SEE PLUMBING.
D31A	COORDINATE REMOVAL OF STAINLESS STEEL SINK AND ASSOCIATED PLUMBING WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS INCLUDED FOR REFERENCE. A1
D32	DEMOLISH WALL-MOUNTED MAILBOXES/SHELVING UNITS.
D33	DEMOLISH PLASTIC LAMINATE LOCKERS.
D35.1	DEMOLISH DOOR AND HOLLOW METAL FRAME. SALVAGE DOOR FOR REFINISHING AND REINSTALLATION IN NEW FRAME. SALVAGE CONTINUOUS HINGE FOR REINSTALLATION WITH ASSOCIATED DOOR. REMOVE ALL OTHER DOOR HARDWARE. PATCH DOOR WHERE HARDWARE WAS REMOVED AND PREP TO RECEIVE NEW HARDWARE.
D35.2	EXISTING FRAME TO REMAIN IN PLACE. DEMOLISH DOOR AND HARDWARE. PREP FRAME TO RECEIVE NEW DOOR.
D35.4	DEMOLISH HOLLOW METAL DOOR FRAME.
D38.1	REMOVE ALL HARDWARE FROM DOOR. PATCH DOOR AND PREP TO RECEIVE NEW HARDWARE.
D38.2	REMOVE THUMBTURN DEADBOLT LOCK FROM DOOR (HLS REPORT ITEM)
D39	REMOVE WIRED GLAZING FROM ALUMINUM STOREFRONT FRAME. FRAME TO REMAIN IN PLACE. PREP TO RECEIVE NEW TEMPERED GLAZING. PROTECT DURING DEMOLITION AND CONSTRUCTION.
D39.1	REMOVE WIRED GLAZING FROM DOOR LITE(S). PREP TO RECEIVE TEMPERED GLAZING.
D40A	COORDINATE SCOPE OF DECORATIVE WOOD RAIL AND DRYWALL REMOVAL WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE. A2
A1 D41A	COORDINATE SCOPE OF DECORATIVE WOOD RAIL (WHERE OCCURS) AND DRYWALL REMOVAL UP TO ROOF DECK WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE. A2
D42A	COORDINATE SCOPE OF DECORATIVE WOOD RAIL, VERTICAL WOOD SLAT, AND DRYWALL REMOVAL WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE.
D46	DEMOLISH CASEWORK INFILL PANEL AND WALL BASE AT EXISTING BASE CABINETS.
D47	DEMOLISH ABANDONED AND CAPPED PLUMBING. SEE PLUMBING.
D48	DEMO WELDING STATION. DISCONNECT ANY POWER, GAS, AND WATER LINES. SEE MECHANICAL, ELECTRIAL, AND PLUMBING. REMOVE EXST. FRP FROM WALLS TO REMAIN. A3
D49	DEMOLISH WALL-MOUNTED CLOCK AND SPEAKER SYSTEM.
D50	REMOVE PORTION OF WALL FOR WINDOW INSTALLATION. SEE ELEVATIONS.
D51	REMOVE X-RAY MACHINE AND RETURN TO OWNER.
D54	REMOVE DECORATIVE WOOD RAIL (LOCATED AT 42" A.F.F.)
D55	DEMOLISH FLOOR-MOUNTED MAGNETIC DOOR HOLD OPENER
D56	DEMO EXST. FRP FROM EXISTING TO REMAIN WALLS. A3

EXTERIOR DEMO SHEET NOTES

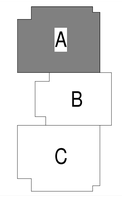
D35.5	DEMOLISH EXTERIOR HOLLOW METAL DOOR AND FRAME, ASSOCIATED HARDWARE, AND FLASHING.
D41.0	SAW CUT SEALANT JOINT AND REMOVE ENTIRE PRECAST PANEL. SALVAGE WALL-MOUNTED LIGHT FIXTURE WHERE OCCURS AND RETURN TO OWNER.
D41.1	SAWCUT OPENING IN PRECAST PANEL. SMOOTH EDGE OF CUT AND PREP FOR INSTALLATION OF FRAME.
D43	CUT OUT EXISTING EXTERIOR SEALANT JOINT AND REMOVE OLD SEALANT AND BACKER ROD IN THEIR ENTIRETY. CLEAN JOINT AND PREP TO RECEIVE NEW BACKER ROD AND SEALANT. TYPICAL AT ALL EXTERIOR SEALANT JOINTS, INCLUDING AT CORNERS. CONTRACTOR TO VERIFY QUANTITY AND EXISTING CONDITIONS IN FIELD.
D43A	COORDINATE REMOVAL OF EXISTING EXTERIOR PRECAST SEALANT JOINT WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE.
D44	DEMOLISH DAMAGED DOOR THRESHOLD AND PREP SURFACE TO RECEIVE NEW.
D45.1	DEMOLISH TUBE STEEL SUPPORTS AT DEMOLISHED STOREFRONT JAMBS AND HEAD.
D53	DEMOLISH REMOVABLE MULLION.

MATCHLINE - AREA_A
MATCHLINE - AREA_B

DEMOLITION PLAN - AREA A

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

KEY PLAN



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RPS 205 PROJECT #2444
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Rockford, IL 61109

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REVISIONS

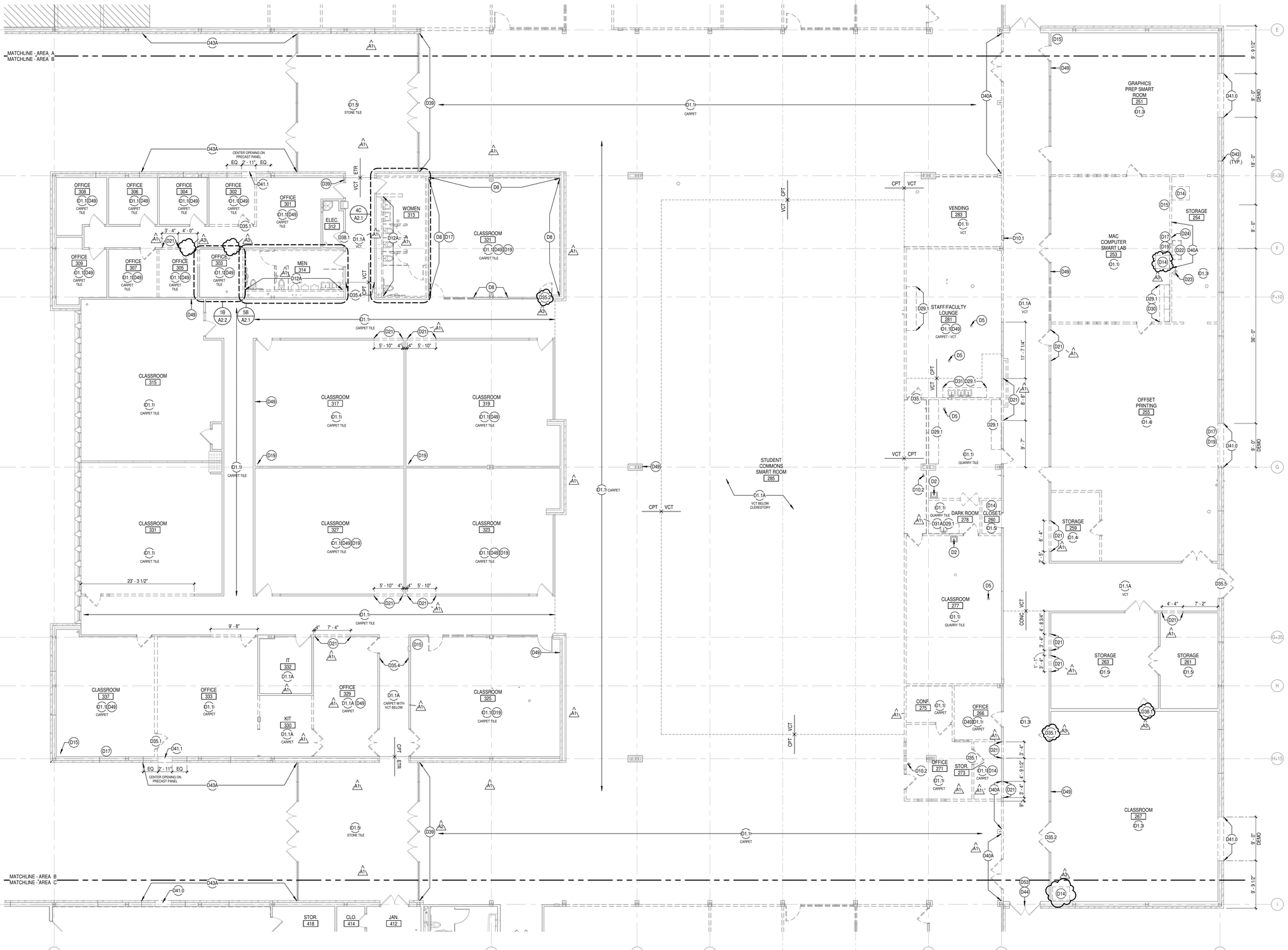
IFB	9/30/2024	ISSUED FOR BID
A1	10/15/2024	ADDENDUM 1
A2	10/24/2024	ADDENDUM 2
A3	11/6/2024	ADDENDUM 3

22-24119-00

AREA A - DEMOLITION PLAN

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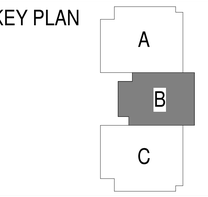
DEMO SHEET NOTES

- D1.1 DEMOLISH FLOORING, ADHESIVE, AND ASSOCIATED WALL BASE AND PREP SLAB FOR NEW FLOOR FINISH. PATCH AND/OR REPLACE GWB AS NECESSARY FOLLOWING WALL BASE REMOVAL.
- D1.1A COORDINATE FLOORING DEMOLITION WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE.
- D1.3 GRIND SEALED CONCRETE FINISH DOWN TO FLOOR SLAB. DEMOLISH ASSOCIATED WALL BASE, WHERE OCCURS, AND PREP SLAB FOR NEW FLOOR FINISH. PATCH AND/OR REPLACE GWB WHERE DAMAGED.
- D1.4 GRIND AND REMOVE POURED EPOXY FLOOR FINISH IN ITS ENTIRETY. DEMOLISH ASSOCIATED WALL BASE, WHERE OCCURS, AND PREPARE SLAB FOR NEW FLOOR FINISH. PATCH AND/OR REPLACE GWB WHERE DAMAGED.
- D1.5 EXISTING FLOORING TO REMAIN. PROTECT DURING CONSTRUCTION.
- D2 DEMOLISH STAINLESS STEEL HAND SINK AND ASSOCIATED PLUMBING. SALVAGE SINK AND FAUCET FOR REINSTALLATION.
- D3 REMOVE WALL-HUNG MIRROR AND RETURN TO OWNER.
- D4 DEMOLISH OVERHEAD SECTIONAL DOOR, FRAME, AND TRACK.
- D5 DEMOLISH FLOOR DRAIN GRATE AND CAP DRAIN. SEE PLUMBING.
- D6 DEMOLISH AND CAP PIPING FOR ABANDONED OXYGEN AND NITROUS OXIDE TANKS. SEE PLUMBING.
- D7 DEMOLISH WIRE MESH PARTITION AND GATE IN ITS ENTIRETY. PATCH CONCRETE FLOOR WHERE PARTITIONS WERE ATTACHED TO FLOOR.
- D8 REMOVE 3/4" WOOD PANEL WALL SURFACE IN ITS ENTIRETY AND PREP WALL TO RECEIVE NEW FINISH.
- D9 A1 DEMOLISH TRENCH DRAIN GRATE. SAW CUT EXISTING CONCRETE SLAB AROUND ALL SIDES OF TRENCH DRAIN. REMOVE SAW CUT CONCRETE SLAB, TRENCH DRAIN, AND METAL GRATE SUPPORTS.
- D10.1 REMOVE PARTIALLY RECESSED FIRE EXTINGUISHER CABINET FROM WALL. SALVAGE FOR REINSTALLATION.
- D10.2 REMOVE FIRE EXTINGUISHER FROM WALL. SALVAGE FOR REINSTALLATION.
- D12A COORDINATE DEMOLITION OF CHASE WALL WITH ABATEMENT CONTRACTOR TO COMPLETE ABATEMENT OF PLUMBING PIPING. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE.
- D13 AUTOMOTIVE LIFT - PROTECT DURING DEMO AND CONSTRUCTION.
- D14 REMOVE IT RACK(S) AND RETURN TO OWNER.
- D15 DEMOLISH WALL-MOUNTED SOUND SYSTEM AND CABINET
- D16 DEMOLISH STUDENT WORK STATIONS AND TEACHER DEMONSTRATION STATION AND ASSOCIATED RACEWAYS.
- D17 REMOVE WALL-MOUNTED MARKERBOARD, TACKBOARD, AND/OR OTHER TEACHING SURFACE FROM WALL AND RETURN TO OWNER.
- D18 DEMOLISH UTILITY SINK AND ASSOCIATED PLUMBING.
- D19 REMOVE RETRACTABLE PROJECTION SCREEN AND CEILING-MOUNTED PROJECTOR.
- D20 REMOVE MAGNETIC LOCK FROM PUSH SIDE OF DOOR. ALL OTHER DOOR HARDWARE TO REMAIN.
- D21 DEMOLISH GWB WALL FOR STOREFRONT OR DOOR AND FRAME. INSTALL REMOVE, SALVAGE, AND REINSTALL DECORATIVE WOOD RAIL AS NECESSARY, OR PROTECT IN PLACE DURING CONSTRUCTION. A1
- D22 REMOVE AND SALVAGE FOR REINSTALLATION STAINLESS STEEL DOUBLE BASIN SINK.
- D23 DEMOLISH EYEWASH STATION AND ASSOCIATED PLUMBING. RETURN EYEWASH STATION TO OWNER.
- D24 REMOVE AND RETURN PAPER TOWEL DISPENSER AND OTHER WALL-MOUNTED ACCESSORIES TO OWNER.
- D26 DEMOLISH METAL STAIR, RAILING, AND STORAGE PLATFORM IN THEIR ENTIRETY. PATCH CONCRETE FLOOR WHERE PREVIOUSLY ATTACHED TO FLOOR AND PREP SLAB FOR NEW FLOOR FINISH.
- D27 REMOVE AND RE-ROUTE EXISTING WALL-MOUNTED EQUIPMENT, INCLUDING PRESSURIZED AIR STATIONS AND PIPING AS REQUIRED. SEE MECHANICAL AND ELECTRICAL.
- D29.1 DEMOLISH COUNTERTOP, BACKSPLASH, SIDESPLASH, AND PLASTIC LAMINATE BASE CABINETS.
- D29.2 DEMOLISH PLASTIC LAMINATE COUNTERTOP AND WALL SUPPORTS.
- D30 DEMOLISH PLASTIC LAMINATE UPPER CABINETS.
- D31 DEMOLISH COUNTERTOP SINK, FAUCET, AND WALL-MOUNTED ACCESSORIES. CAP ASSOCIATED PLUMBING AND RETURN ACCESSORIES TO OWNER. SEE PLUMBING.
- D31A A1 COORDINATE REMOVAL OF STAINLESS STEEL SINK AND ASSOCIATED PLUMBING WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS INCLUDED FOR REFERENCE.
- D32 DEMOLISH WALL-MOUNTED MAILBOXES/SHELVING UNITS.
- D33 DEMOLISH PLASTIC LAMINATE LOCKERS.
- D35.1 DEMOLISH DOOR AND HOLLOW METAL FRAME. SALVAGE DOOR FOR REFINISHING AND REINSTALLATION IN NEW FRAME. SALVAGE CONTINUOUS HINGE FOR REINSTALLATION WITH ASSOCIATED DOOR. REMOVE ALL OTHER DOOR HARDWARE. PATCH DOOR WHERE HARDWARE WAS REMOVED AND PREP TO RECEIVE NEW HARDWARE.
- D35.2 EXISTING FRAME TO REMAIN IN PLACE. DEMOLISH DOOR AND HARDWARE. PREP FRAME TO RECEIVE NEW DOOR.
- D35.4 DEMOLISH HOLLOW METAL DOOR FRAME.
- D38.1 REMOVE ALL HARDWARE FROM DOOR. PATCH DOOR AND PREP TO RECEIVE NEW HARDWARE.
- D38.2 REMOVE THUMBTURN DEADBOLT LOCK FROM DOOR (HLS REPORT ITEM)
- D39 REMOVE WIRED GLAZING FROM ALUMINUM STOREFRONT FRAME. FRAME TO REMAIN IN PLACE, PREP TO RECEIVE NEW TEMPERED GLAZING. PROTECT DURING DEMOLITION AND CONSTRUCTION.
- D39.1 REMOVE WIRED GLAZING FROM DOOR LITE(S). PREP TO RECEIVE TEMPERED GLAZING.
- D40A COORDINATE SCOPE OF DECORATIVE WOOD RAIL AND DRYWALL REMOVAL WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE. A2
- D41A A1 COORDINATE SCOPE OF DECORATIVE WOOD RAIL (WHERE OCCURS) AND DRYWALL REMOVAL UP TO ROOF DECK WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE. A2
- D42A COORDINATE SCOPE OF DECORATIVE WOOD RAIL, VERTICAL WOOD SLAT, AND DRYWALL REMOVAL WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE.
- D46 DEMOLISH CASEWORK INFILL PANEL AND WALL BASE AT EXISTING BASE CABINETS.
- D47 DEMOLISH ABANDONED AND CAPPED PLUMBING. SEE PLUMBING.
- D48 DEMO WELDING STATION. DISCONNECT ANY POWER, GAS, AND WATER LINES, SEE MECHANICAL, ELECTRIAL, AND PLUMBING. REMOVE EXIST. FRP FROM WALLS TO REMAIN.
- D49 A2 DEMOLISH WALL-MOUNTED CLOCK AND SPEAKER SYSTEM.
- D50 REMOVE PORTION OF WALL FOR WINDOW INSTALLATION. SEE ELEVATIONS.
- D51 REMOVE X-RAY MACHINE AND RETURN TO OWNER.
- D54 REMOVE DECORATIVE WOOD RAIL (LOCATED 4'-0" A.F.F.) AND SALVAGE FOR REINSTALLATION. A2
- D52 DEMOLISH FLOOR-MOUNTED MAGNETIC DOOR HOLD OPENER. A3
- D56 DEMO EXIST. FRP FROM EXISTING TO REMAIN WALLS. A3

EXTERIOR DEMO SHEET NOTES

- D35.5 DEMOLISH EXTERIOR HOLLOW METAL DOOR AND FRAME, ASSOCIATED HARDWARE, AND FLASHING.
- D41.0 SAW CUT SEALANT JOINT AND REMOVE ENTIRE PRECAST PANEL. SALVAGE WALL-MOUNTED LIGHT FIXTURE WHERE OCCURS AND RETURN TO OWNER.
- D41.1 SAWCUT OPENING IN PRECAST PANEL. SMOOTH EDGE OF CUT AND PREP FOR INSTALLATION OF FRAME.
- D43 CUT OUT EXISTING EXTERIOR SEALANT JOINT AND REMOVE OLD SEALANT AND BACKER ROD IN THEIR ENTIRETY. CLEAN JOINT AND PREP TO RECEIVE NEW BACKER ROD AND SEALANT. TYPICAL AT ALL EXTERIOR SEALANT JOINTS, INCLUDING AT CORNERS. CONTRACTOR TO VERIFY QUANTITY AND EXISTING CONDITIONS IN FIELD.
- D43A COORDINATE REMOVAL OF EXISTING EXTERIOR PRECAST SEALANT JOINT WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE.
- D44 DEMOLISH DAMAGED DOOR THRESHOLD AND PREP SURFACE TO RECEIVE NEW.
- D45.1 DEMOLISH TUBE-STEEL SUPPORTS AT DEMOLISHED STOREFRONT JAMBS AND HEAD.
- D53 DEMOLISH REMOVABLE MULLION.

KEY PLAN



DEMOLITION PLAN - AREA B

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

5.3 5.6

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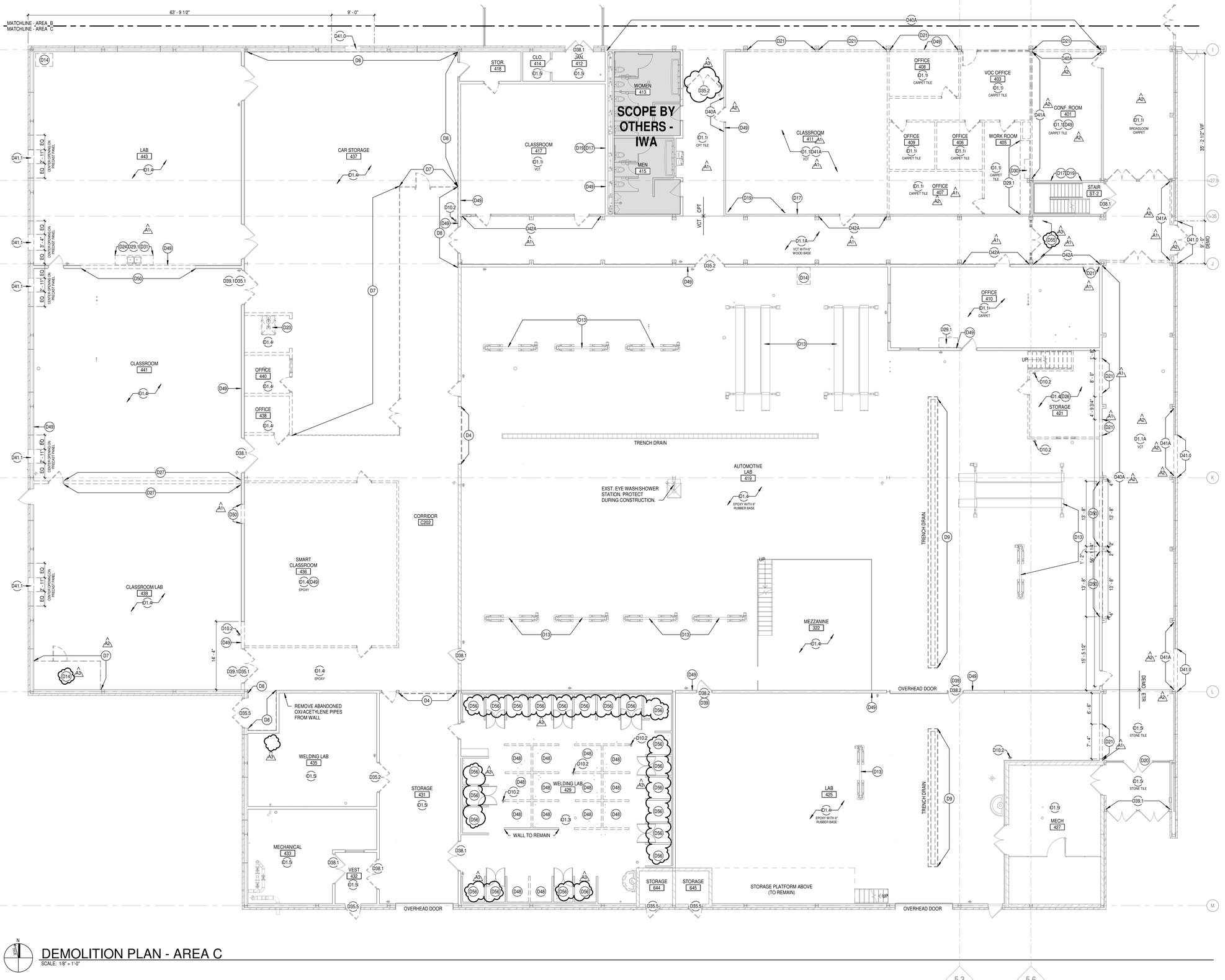
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IFP-HD	10/8/2024	ISSUED FOR PERMIT - HEALTH DEPARTMENT
A1	10/15/2024	ADDENDUM 1
A2	10/24/2024	ADDENDUM 2
A3	11/6/2024	ADDENDUM 3

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AREA B - DEMOLITION PLAN

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DEMOLITION PLAN - AREA C

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

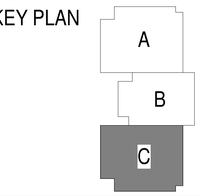
DEMO SHEET NOTES

- D1.1 DEMOLISH FLOORING, ADHESIVE, AND ASSOCIATED WALL BASE AND PREP SLAB FOR NEW FLOOR FINISH. PATCH AND/OR REPLACE GWB AS NECESSARY FOLLOWING WALL BASE REMOVAL.
- D1.1A COORDINATE FLOORING DEMOLITION WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE.
- D1.3 GRIND SEALED CONCRETE FINISH DOWN TO FLOOR SLAB. DEMOLISH ASSOCIATED WALL BASE, WHERE OCCURS, AND PREP SLAB FOR NEW FLOOR FINISH. PATCH AND/OR REPLACE GWB WHERE DAMAGED.
- D1.4 GRIND AND REMOVE POURED EPOXY FLOOR FINISH IN ITS ENTIRETY. DEMOLISH ASSOCIATED WALL BASE, WHERE OCCURS, AND PREPARE SLAB FOR NEW FLOOR FINISH. PATCH AND/OR REPLACE GWB WHERE DAMAGED.
- D1.5 EXISTING FLOORING TO REMAIN. PROTECT DURING CONSTRUCTION.
- D2 DEMOLISH STAINLESS STEEL HAND SINK AND ASSOCIATED PLUMBING. SALVAGE SINK AND FAUCET FOR REINSTALLATION.
- D3 REMOVE WALL-HUNG MIRROR AND RETURN TO OWNER.
- D4 DEMOLISH OVERHEAD SECTIONAL DOOR, FRAME, AND TRACK.
- D5 DEMOLISH FLOOR DRAIN GRATE AND CAP DRAIN. SEE PLUMBING.
- D6 DEMOLISH AND CAP PIPING FOR ABANDONED OXYGEN AND NITROUS OXIDE TANKS. SEE PLUMBING.
- D7 DEMOLISH WIRE MESH PARTITION AND GATE IN ITS ENTIRETY. PATCH CONCRETE FLOOR WHERE PARTITIONS WERE ATTACHED TO FLOOR.
- D8 REMOVE 3/4" WOOD PANEL WALL SURFACE IN ITS ENTIRETY AND PREP WALL TO RECEIVE NEW FINISH.
- D9 A1 DEMOLISH TRENCH DRAIN GRATE. SAW CUT EXISTING CONCRETE SLAB AROUND ALL SIDES OF TRENCH DRAIN. REMOVE SAW CUT CONCRETE SLAB, TRENCH DRAIN, AND METAL GRATE SUPPORTS.
- D10.1 REMOVE PARTIALLY RECESSED FIRE EXTINGUISHER CABINET FROM WALL. SALVAGE FOR REINSTALLATION.
- D10.2 REMOVE FIRE EXTINGUISHER FROM WALL. SALVAGE FOR REINSTALLATION.
- D12A COORDINATE DEMOLITION OF CHASE WALL WITH ABATEMENT CONTRACTOR TO COMPLETE ABATEMENT OF PLUMBING PIPING. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE.
- D13 AUTOMOTIVE LIFT - PROTECT DURING DEMO AND CONSTRUCTION.
- D14 REMOVE IT RACK(S) AND RETURN TO OWNER.
- D15 DEMOLISH WALL-MOUNTED SOUND SYSTEM AND CABINET
- D16 DEMOLISH STUDENT WORK STATIONS AND TEACHER DEMONSTRATION STATION AND ASSOCIATED RACEWAYS.
- D17 REMOVE WALL-MOUNTED MARKERBOARD, TACKBOARD, AND/OR OTHER TEACHING SURFACE FROM WALL AND RETURN TO OWNER.
- D18 DEMOLISH UTILITY SINK AND ASSOCIATED PLUMBING.
- D19 REMOVE RETRACTABLE PROJECTION SCREEN AND CEILING MOUNTED PROJECTOR.
- D20 REMOVE MAGNETIC LOCK FROM PUSH SIDE OF DOOR. ALL OTHER DOOR HARDWARE TO REMAIN.
- D21 A1 DEMOLISH GWB WALL FOR STOREFRONT OR DOOR AND FRAME. INSTALL. REMOVE, SALVAGE, AND REINSTALL DECORATIVE WOOD RAIL AS NECESSARY, OR PROTECT IN PLACE DURING CONSTRUCTION.
- D22 REMOVE AND SALVAGE FOR REINSTALLATION STAINLESS STEEL DOUBLE BASIN SINK.
- D23 DEMOLISH EYEWASH STATION AND ASSOCIATED PLUMBING. RETURN EYEWASH STATION TO OWNER.
- D24 REMOVE AND RETURN PAPER TOWEL DISPENSER AND OTHER WALL-MOUNTED ACCESSORIES TO OWNER.
- D26 DEMOLISH METAL STAIR, RAILING, AND STORAGE PLATFORM IN THEIR ENTIRETY. PATCH CONCRETE FLOOR WHERE PREVIOUSLY ATTACHED TO FLOOR AND PREP SLAB FOR NEW FLOOR FINISH.
- D27 REMOVE AND RE-ROUTE EXISTING WALL-MOUNTED EQUIPMENT, INCLUDING PRESSURIZED AIR STATIONS AND PIPING AS REQUIRED. SEE MECHANICAL AND ELECTRICAL.
- D29.1 DEMOLISH COUNTERTOP, BACKSPLASH, SIDESPLASH, AND PLASTIC LAMINATE BASE CABINETS.
- D29.2 DEMOLISH PLASTIC LAMINATE COUNTERTOP AND WALL SUPPORTS.
- D30 DEMOLISH PLASTIC LAMINATE UPPER CABINETS.
- D31 DEMOLISH COUNTERTOP SINK, FAUCET, AND WALL-MOUNTED ACCESSORIES. CAP ASSOCIATED PLUMBING AND RETURN ACCESSORIES TO OWNER. SEE PLUMBING.
- A1 D31A COORDINATE REMOVAL OF STAINLESS STEEL SINK AND ASSOCIATED PLUMBING WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS INCLUDED FOR REFERENCE.
- D32 DEMOLISH WALL-MOUNTED MAILBOXES/SHELVING UNITS.
- D33 DEMOLISH PLASTIC LAMINATE LOCKERS.
- D35.1 DEMOLISH DOOR AND HOLLOW METAL FRAME. SALVAGE DOOR FOR REFINISHING AND REINSTALLATION IN NEW FRAME. SALVAGE CONTINUOUS HINGE FOR REINSTALLATION WITH ASSOCIATED DOOR. REMOVE ALL OTHER DOOR HARDWARE. PATCH DOOR WHERE HARDWARE WAS REMOVED AND PREP TO RECEIVE NEW HARDWARE.
- D35.2 EXISTING FRAME TO REMAIN IN PLACE. DEMOLISH DOOR AND HARDWARE. PREP FRAME TO RECEIVE NEW DOOR.
- D35.4 DEMOLISH HOLLOW METAL DOOR FRAME.
- D38.1 REMOVE ALL HARDWARE FROM DOOR. PATCH DOOR AND PREP TO RECEIVE NEW HARDWARE.
- D38.2 REMOVE THUMBTURN DEADBOLT LOCK FROM DOOR (HLS REPORT ITEM)
- D39 REMOVE WIRED GLAZING FROM ALUMINUM STOREFRONT FRAME. FRAME TO REMAIN IN PLACE. PREP TO RECEIVE NEW TEMPERED GLAZING. PROTECT DURING DEMOLITION AND CONSTRUCTION.
- D39.1 REMOVE WIRED GLAZING FROM DOOR LITE(S). PREP TO RECEIVE TEMPERED GLAZING.
- D40A COORDINATE SCOPE OF DECORATIVE WOOD RAIL AND DRYWALL REMOVAL WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE.
- A1 D41A COORDINATE SCOPE OF DECORATIVE WOOD RAIL (WHERE OCCURS) AND DRYWALL REMOVAL UP TO ROOF DECK WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE.
- D42A COORDINATE SCOPE OF DECORATIVE WOOD RAIL, VERTICAL WOOD SLAT, AND DRYWALL REMOVAL WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE.
- D46 DEMOLISH CASEWORK INFILL PANEL AND WALL BASE AT EXISTING BASE CABINETS.
- D47 DEMOLISH ABANDONED AND CAPPED PLUMBING. SEE PLUMBING.
- D48 DEMO WELDING STATION. DISCONNECT ANY POWER, GAS, AND WATER LINES, SEE MECHANICAL, ELECTRIAL, AND PLUMBING. REMOVE EXST. FRP FROM WALLS TO REMAIN.
- D49 DEMOLISH WALL-MOUNTED CLOCK AND SPEAKER SYSTEM.
- D50 REMOVE PORTION OF WALL FOR WINDOW INSTALLATION. SEE ELEVATIONS.
- D51 REMOVE X-RAY MACHINE AND RETURN TO OWNER.
- D54 REMOVE DECORATIVE WOOD RAILING (CATEGORY F.F.E.)
- D55 DEMOLISH FLOOR MOUNTED MAGNETIC DOOR HOLD OPENER.
- D56 DEMO EXST. FRP FROM EXISTING TO REMAIN WALLS.

EXTERIOR DEMO SHEET NOTES

- D35.5 DEMOLISH EXTERIOR HOLLOW METAL DOOR AND FRAME, ASSOCIATED HARDWARE, AND FLASHING.
- D41.0 SAW CUT SEALANT JOINT AND REMOVE ENTIRE PRECAST PANEL. SALVAGE WALL-MOUNTED LIGHT FIXTURE WHERE OCCURS AND RETURN TO OWNER.
- D41.1 SAWCUT OPENING IN PRECAST PANEL. SMOOTH EDGE OF CUT AND PREP FOR INSTALLATION OF FRAME.
- D43 CUT OUT EXISTING EXTERIOR SEALANT JOINT AND REMOVE OLD SEALANT AND BACKER ROD IN THEIR ENTIRETY. CLEAN JOINT AND PREP TO RECEIVE NEW BACKER ROD AND SEALANT. TYPICAL AT ALL EXTERIOR SEALANT JOINTS, INCLUDING AT CORNERS. CONTRACTOR TO VERIFY QUANTITY AND EXISTING CONDITIONS IN FIELD.
- D43A COORDINATE REMOVAL OF EXISTING EXTERIOR PRECAST SEALANT JOINT WITH ABATEMENT CONTRACTOR. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE.
- D44 DEMOLISH DAMAGED DOOR THRESHOLD AND PREP SURFACE TO RECEIVE NEW.
- D45.1 DEMOLISH TUBE STEEL SUPPORTS AT DEMOLISHED STOREFRONT JAMBS AND HEAD.
- D53 DEMOLISH REMOVABLE MULLION.

KEY PLAN



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RPS 205 PROJECT #2444
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Rockford, IL 61109

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09/30/2024

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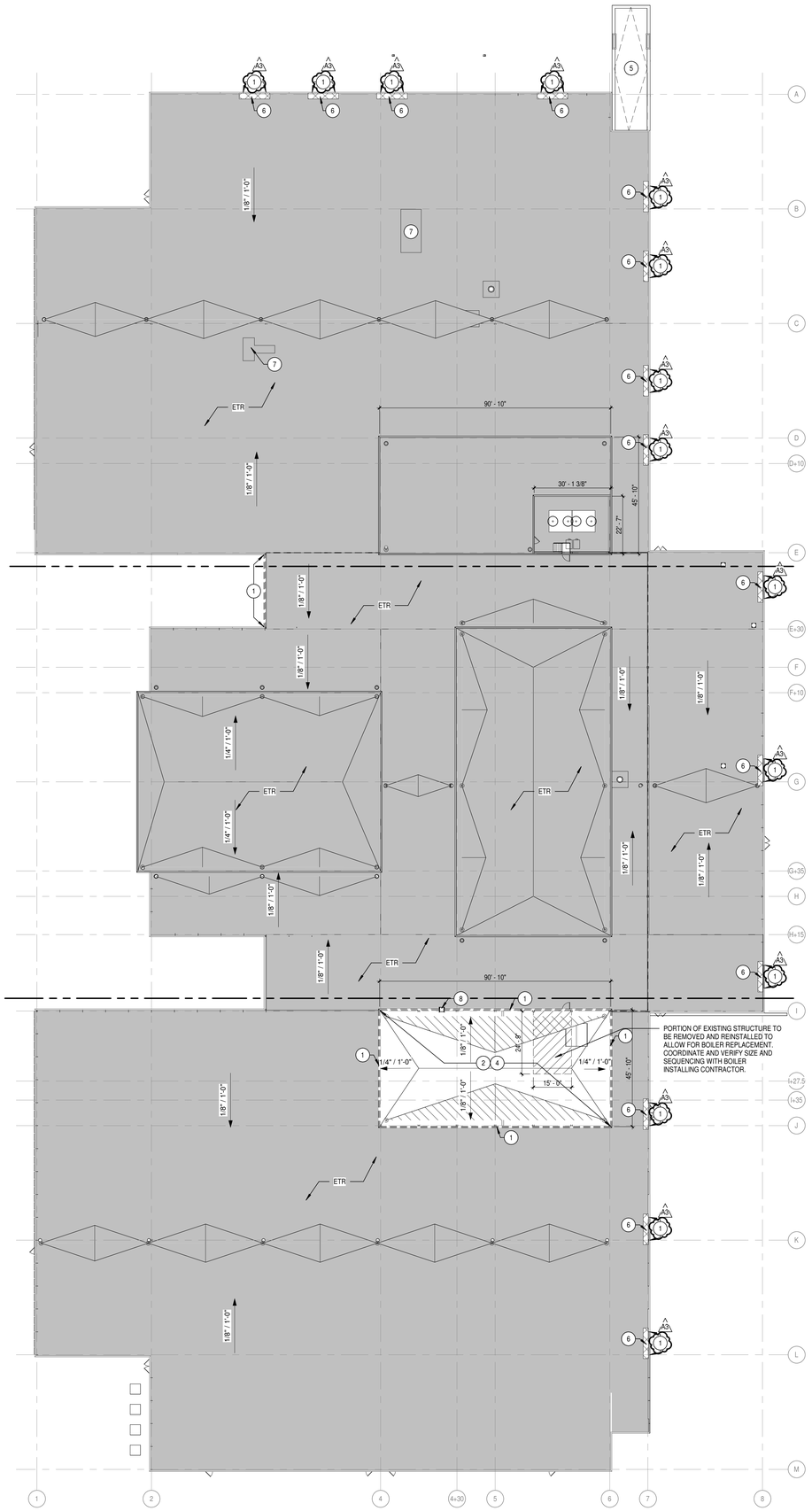
IFB	9/30/2024	ISSUED FOR BID
A1	10/15/2024	ADDENDUM 1
A2	10/24/2024	ADDENDUM 2
A3	11/6/2024	ADDENDUM 3

22-24119-00

AREA C - DEMOLITION PLAN

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ROOF DEMOLITION PLAN

SCALE: 3/64" = 1'-0"

ROOF DEMO SHEET NOTES

1 DEMOLISH EXISTING METAL COPING CAP.
2 DEMOLISH BALLASTED ROOF ASSEMBLY DOWN METAL DECK. DEMOLITION INCLUDES: ALL INSULATION, FLASHING, ETC. STRUCTURAL METAL DECK TO REMAIN.
4 DEMOLISH EXISTING ROOF DRAINS AND SALVAGE FOR REINSTALLATION. PREPARE PIPING TO BE EXTENDED AS REQUIRED TO ACCOMMODATE NEW ROOFING ASSEMBLY THICKNESS.
5 DEMOLISH ROOFING ASSEMBLY INCLUDING FLASHING, GUTTERS, DOWNSPOUTS, MEMBRANE, INSULATION ET AL.
6 REMOVE PORTION OF COPING CAP AND ROOFING ASSEMBLY TO ACCOMMODATE DEMOLITION OF PRECAST PANEL AND INSTALL OF NEW CURTAINWALL SYSTEM.
7 EXISTING ROOF TOP EQUIPMENT TO REMAIN.
8 REMOVE EXISTING LADDER TO INSTALL NEW COPING CAP AND SALVAGE FOR REINSTALLATION IN THE SAME LOCATION.

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COLLEGE & CAREER EDUCATION CENTER

ROCKFORD PUBLIC SCHOOLS - DISTRICT 205
RPS 205 IFB #25-11
RPS 205 PROJECT #2444
4151 Samuelson Road
Rockford, IL 61109

ISSUED FOR BID
09/30/2024
REVISIONS

IFB	9/30/2024	ISSUED FOR BID
IFP-HD	10/08/2024	ISSUED FOR PERMIT - HEALTH DEPARTMENT
A3	11/6/2024	ADDENDUM 3

22-24119-00

DEMO ROOF PLAN

AD1.3

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AREA A - DEMO RCP

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

DEMOLITION GENERAL NOTES

DEMOLITION NOTES APPLY TO ALL DEMOLITION SHEETS.

THE CONTRACTOR SHALL:

A. COORDINATE ALL DEMOLITION AND PHASING WITH THE ARCHITECT AND OWNER'S REPRESENTATIVE. MINIMIZE DISRUPTION OF OWNER'S OPERATIONS. EXCESSIVE NOISE OR VIBRATION SHALL BE PRE-APPROVED AND COORDINATED WITH THE OWNER'S REPRESENTATIVE. IN ALL CASES, PROVISIONS SHALL BE MADE FOR USER'S SAFETY.
B. COORDINATE ANY DISRUPTION OF UTILITY SERVICES WITH THE OWNER AND AS SPECIFIED.
C. CONSTRUCT TEMPORARY CONSTRUCTION PARTITIONS WITHIN THE EXISTING BUILDING WHICH OFFER A ONE HOUR ENCLOSURE TO ISOLATE ANY DEMOLITION/CONSTRUCTION WORK FROM THE GENERAL PUBLIC AND AS DEEMED NECESSARY BY THE OWNER AND CODE OFFICIAL HAVING JURISDICTION. COORDINATE LOCATIONS WITH THE OWNER AND MAINTAIN MEANS OF EGRESS THROUGHOUT THE WORK.
D. MAINTAIN A SECURE, WEATHER-TIGHT ENCLOSURE AT ALL TIMES.
E. VERIFY ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
F. REMOVE EXISTING CONSTRUCTION INCLUDING BUT NOT LIMITED TO WALLS, DOORS, MILLWORK, PLUMBING FIXTURES, CEILINGS, SOFFITS, MARKERBOARDS, AND OTHER ITEMS, AS REQUIRED TO EXECUTE THE DEMOLITION/CONSTRUCTION WORK DESCRIBED BY THE DOCUMENTS.
G. THE OWNER SHALL RESERVE THE RIGHT TO SALVAGE ANY MATERIALS.
H. PROVIDE PROTECTION FOR ALL EXISTING BUILDING MATERIALS AND EQUIPMENT FROM DAMAGE DUE TO ANY DEMOLITION OR CONSTRUCTION-RELATED INCIDENT PERFORMED UNDER THIS CONTRACT.
I. REPAIR OR REPLACE ITEMS THAT ARE DAMAGED AS A RESULT OF DEMOLITION OR CONSTRUCTION TO MATCH EXISTING FINISH AND/OR CONDITION.
J. EXISTING MATERIALS SHALL NOT BE REUSED UNLESS NOTED OTHERWISE OR AS AUTHORIZED BY ARCHITECT.
K. VERIFY AND MAINTAIN THE LOCATION OF EXISTING POWER, COMMUNICATION AND DATA CABLES TO PREVENT INTERRUPTION OF THEIR SERVICE.
L. PATCH FLOOR, WALL AND CEILING PENETRATIONS RESULTING FROM REMOVAL OR RE-ROUTING OF NEW OR EXISTING PIPING, DUCTWORK, CONDUIT, AND OTHER ITEMS, AS REQUIRED TO MAINTAIN FIRE-RESISTANCE-RATED SEPARATIONS. FINISH AS REQUIRED FOR NEW OR EXISTING ADJACENT SURFACES.
M. CAP ALL DISCONNECTED MECHANICAL PIPING LINES WITHIN THE WALL OR FLOOR. PATCH AND FINISH AS REQUIRED TO MATCH NEW OR EXISTING ADJACENT SURFACES.
N. WHERE PARTITIONS INDICATED TO BE REMOVED ARE CONSTRUCTED OF CMU, PREPARE ADJACENT WALLS TO RECEIVE NEW PATCH/FINISH BY REMOVING CMU IN TOOTH-IN PATTERN BOTH SIDES OF DEMOLITION FOR CONTRACTOR TO TOOTH-IN NEW CMU PATCHES.
O. WHERE PARTITIONS INDICATED TO BE REMOVED ARE CONSTRUCTED OF STUDS AND PLASTER, PREPARE ADJACENT WALLS TO RECEIVE NEW PATCH FINISH BY REMOVING ADJACENT PLASTER FINISH A MINIMUM OF 1'-0" BEYOND DEMOLITION.
P. DEMOLISH ALL EXISTING ROOM SIGNAGE. REMOVE ASSOCIATED SIGNAGE ADHESIVES ON EXISTING TO REMAIN SURFACES. PATCH AS NECESSARY FOLLOWING REMOVAL. COORDINATE LOCATIONS WITH ASBESTOS ABATEMENT CONTRACTOR. ANY SIGNAGE ADHERED TO PARTITIONS CONTAINING ASBESTOS CONTAINING MATERIALS TO BE REMOVED BY ABATEMENT CONTRACTOR.
Q. DEMOLISH ALL EXISTING WAYFINDING SIGNAGE THROUGHOUT THE BUILDING.
R. ALL WALLS SHOWN AS DEMOLISHED ARE STUD WALLS UNLESS NOTED OTHERWISE.
S. REMOVE, SALVAGE, AND RETURN TO OWNER ALL 8'-0" TALL WOOD DOORS AND ASSOCIATED CONTINUOUS HINGE (WHERE OCCURS). SEE DOOR SCHEDULE FOR SPECIFIC DOORS THAT ARE TO BE REUSED IN SCOPE OF NEW WORK.
T. REMOVE, SALVAGE, AND RETURN TO OWNER ALL MARKERBOARDS AROUND THE BUILDING.

SHEET NOTES

1 DEMOLISH EXISTING GWB CEILING AND FRAMING, LIGHT FIXTURES, AND ACCESSORIES.
1A DEMOLISH EXISTING GWB CEILING, LIGHT FIXTURES, AND ACCESSORIES IN ITS ENTIRETY. COORDINATE SCOPE OF GWB REMOVAL WITH ABATEMENT CONTAINMENT DRAWINGS.
2.0 DEMOLISH ACP CEILING SYSTEM, INCLUDING LIGHT FIXTURES, DIFFUSERS, AND OTHER CEILING-MOUNTED EQUIPMENT.
2.0A SCOPE TO BE COORDINATED WITH ABATEMENT CONTRACTOR: DEMOLISH ACP CEILING SYSTEM, INCLUDING LIGHT FIXTURES, DIFFUSERS, AND OTHER CEILING-MOUNTED EQUIPMENT. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE AND COORDINATION.
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4A COORDINATE ACT GRID DEMOLITION WITH ABATEMENT CONTRACTOR. CEILING TILES REMOVED BY OWNER PRIOR TO CONSTRUCTION.
5.0 CAREFULLY REMOVE AND SALVAGE (FOR MODIFICATION AND REINSTALLATION) PORTION OF EXISTING 2X2 ACP CEILING SYSTEM FOR ABOVE CEILING WORK. REMOVE ANY CEILING-MOUNTED EQUIPMENT THAT NEEDS TO BE SALVAGED FOR REINSTALLATION. EXTENTS OF DEMOLITION NEEDED TO COMPLETE ABOVE-CEILING WORK. DIAGONAL HATCH PATTERN SHOWN FOR REFERENCE.
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6 REMOVE EXISTING CEILING GRID AND TILE ADJACENT TO DEMOLISHED WALL TO NEAREST FULL TILE.
7.1 REMOVE LENS AND EXISTING STRIP FIXTURES IN EXISTING TO REMAIN COVE. SEE ELECTRICAL.
7.2A COORDINATION SCOPE WITH ABATEMENT CONTRACTOR: DEMOLISH LINEAR COVE LIGHT FIXTURE IN ITS ENTIRETY. CONTAINMENT DRAWINGS ATTACHED FOR REFERENCE AND COORDINATION.
8.1 NOT IN CONTRACT - RECESSED CAN LIGHT REPLACEMENT SCOPE TO BE COMPLETED BY OWNER, UNLESS NOTED OTHERWISE.
8.2 DEMOLISH RECESSED CAN LIGHT FIXTURE IN ITS ENTIRETY.
9 REMOVE 2X4 LED TROFFERS FROM CEILING GRID AS REQUIRED FOR NEW WORK, AND SALVAGE FOR REINSTALLATION.
10 DEMOLISH PLYWOOD ON METAL GRATE CEILING/PLATFORM, ASSOCIATED LIGHT FIXTURES, AND OTHER CEILING-MOUNTED ITEMS.
13 EXISTING CEILING AND LIGHTING TO REMAIN. PROTECT DURING CONSTRUCTION.
13.1 EXISTING CEILING GRID AND LIGHTING TO REMAIN. PROTECT DURING CONSTRUCTION. EXISTING CEILING TILES REMOVED BY OWNER PRIOR TO THE START OF CONSTRUCTION.
13.2 EXISTING CEILING GRID TO REMAIN. PROTECT DURING CONSTRUCTION. EXISTING CEILING TILES REMOVED BY OWNER PRIOR TO THIS STAGE OF CONSTRUCTION.
13.3 DEMOLISH EXISTING CEILING TILES AND LIGHT FIXTURES. EXISTING CEILING GRID TO REMAIN. PROTECT DURING CONSTRUCTION.
14 EXISTING CEILING TO REMAIN. PROTECT DURING CONSTRUCTION.
15 DEMO 1'X1' PORCELAIN TILE CEILING AND ASSOCIATED LIGHTING. EXISTING CEILING FRAMING TO REMAIN.

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Rockford, IL 61109

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REVISIONS

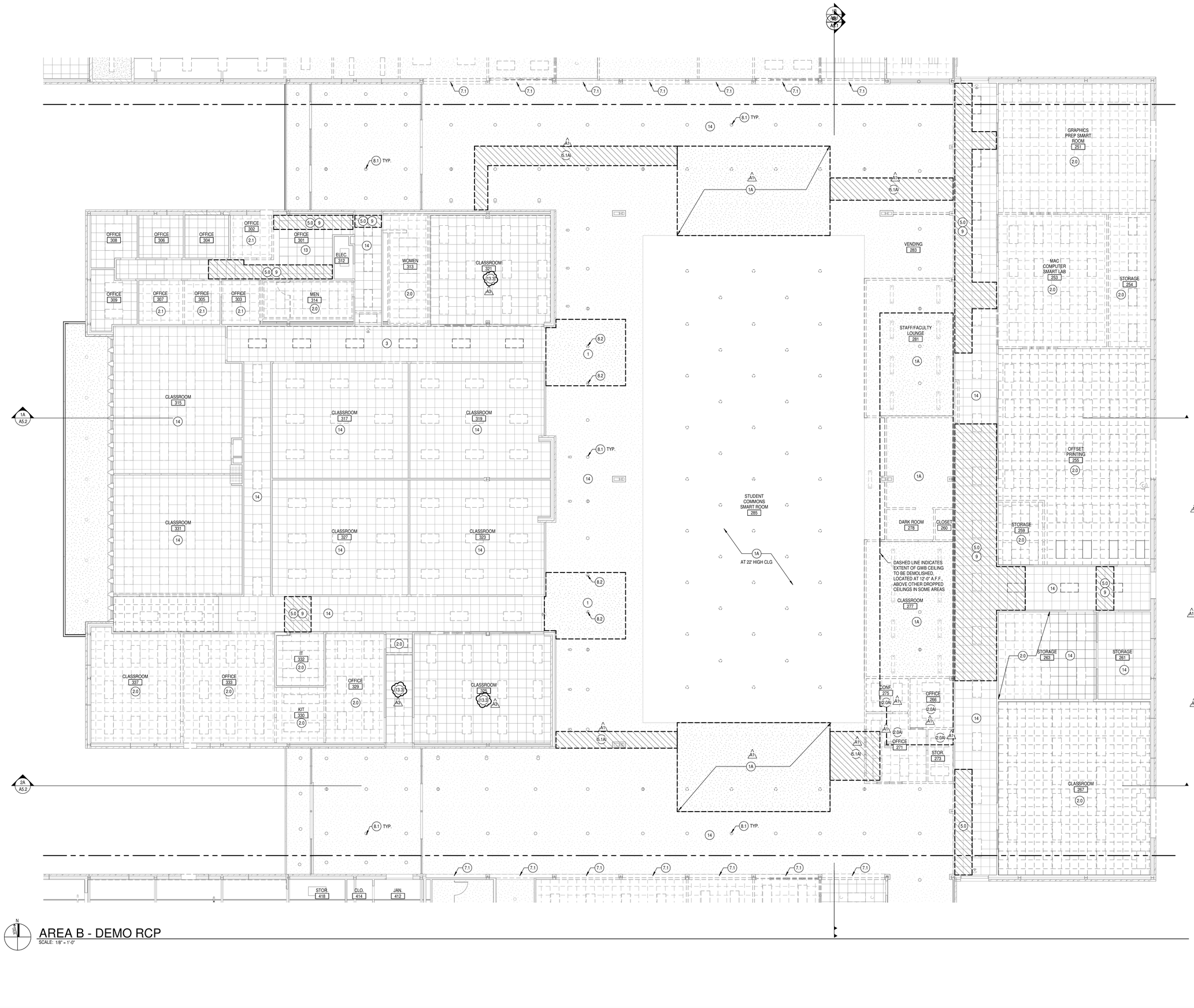
IFB	9/30/2024	ISSUED FOR BID
A1	10/15/2024	ADDENDUM 1
A2	10/24/2024	ADDENDUM 2
A3	11/6/2024	ADDENDUM 3

22-24119-00

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AREA B - DEMO RCP

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

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RPS 205 IFB #25-11
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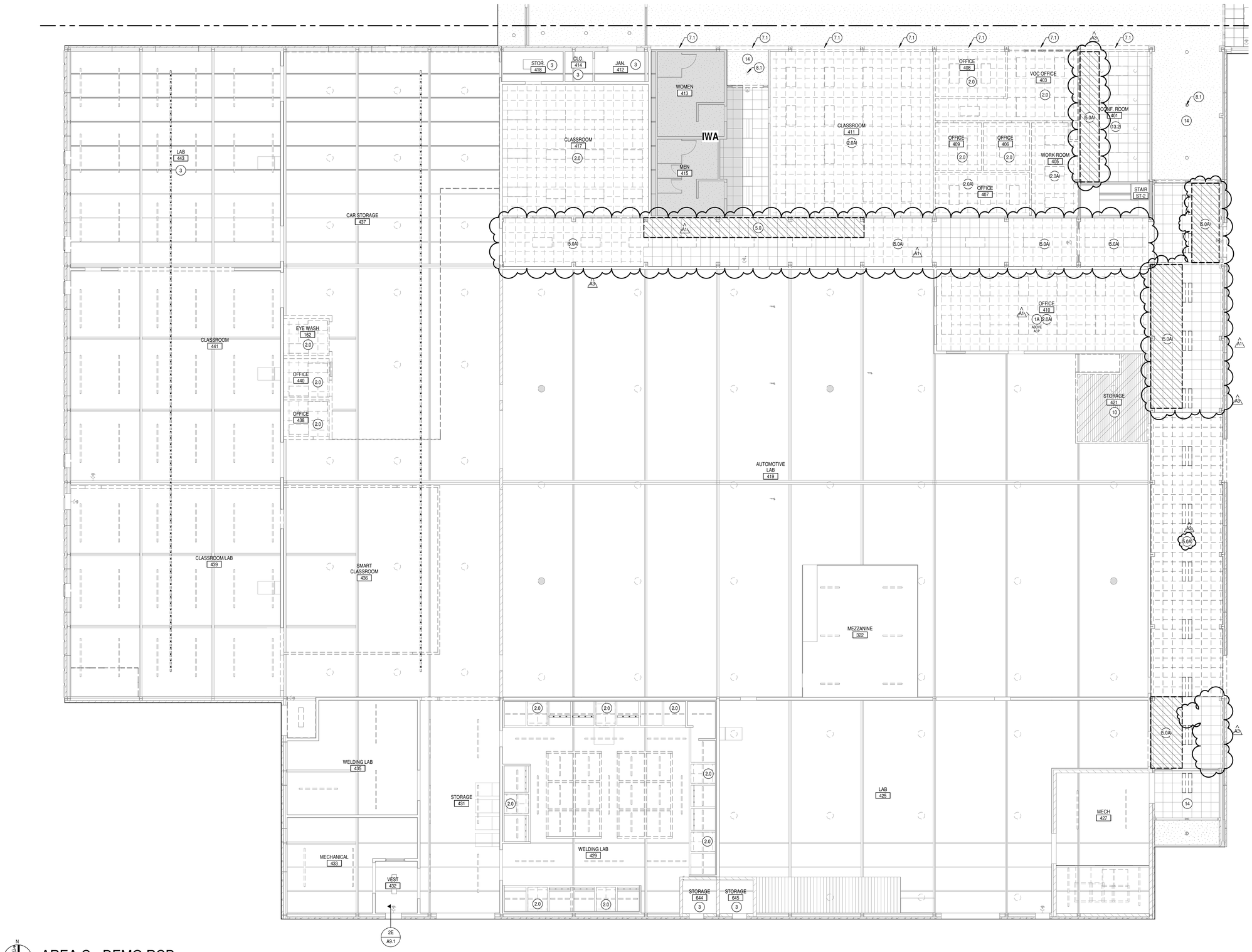
IFB	9/30/2024	ISSUED FOR BID
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22-24119-00

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AREA C - DEMO RCP

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

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9 REMOVE 2X4 LED TROFFERS FROM CEILING GRID AS REQUIRED FOR NEW WORK, AND SALVAGE FOR REINSTALLATION.
10 DEMOLISH PLYWOOD ON METAL GRATE CEILING/PLATFORM, ASSOCIATED LIGHT FIXTURES, AND OTHER CEILING-MOUNTED ITEMS.
13 EXISTING CEILING AND LIGHTING TO REMAIN. PROTECT DURING CONSTRUCTION.
13.1 EXISTING CEILING GRID AND LIGHTING TO REMAIN. PROTECT DURING CONSTRUCTION. EXISTING CEILING TILES REMOVED BY OWNER PRIOR TO THE START OF CONSTRUCTION.
A3 13.2 EXISTING CEILING GRID TO REMAIN. PROTECT DURING CONSTRUCTION. EXISTING CEILING TILES REMOVED BY OWNER PRIOR TO THE START OF CONSTRUCTION.
13.3 DEMOLISH EXISTING CEILING TILES AND LIGHT FIXTURES. EXISTING CEILING GRID TO REMAIN. PROTECT DURING CONSTRUCTION.
14 EXISTING CEILING TO REMAIN. PROTECT DURING CONSTRUCTION.
15 DEMO 1"X1" PORCELAIN TILE CEILING AND ASSOCIATED LIGHTING. EXISTING CEILING FRAMING TO REMAIN.

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RPS 205 IFB #25-11
RPS 205 PROJECT #2444
4151 Samuelson Road
Rockford, IL 61109

ISSUED FOR BID
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REVISIONS

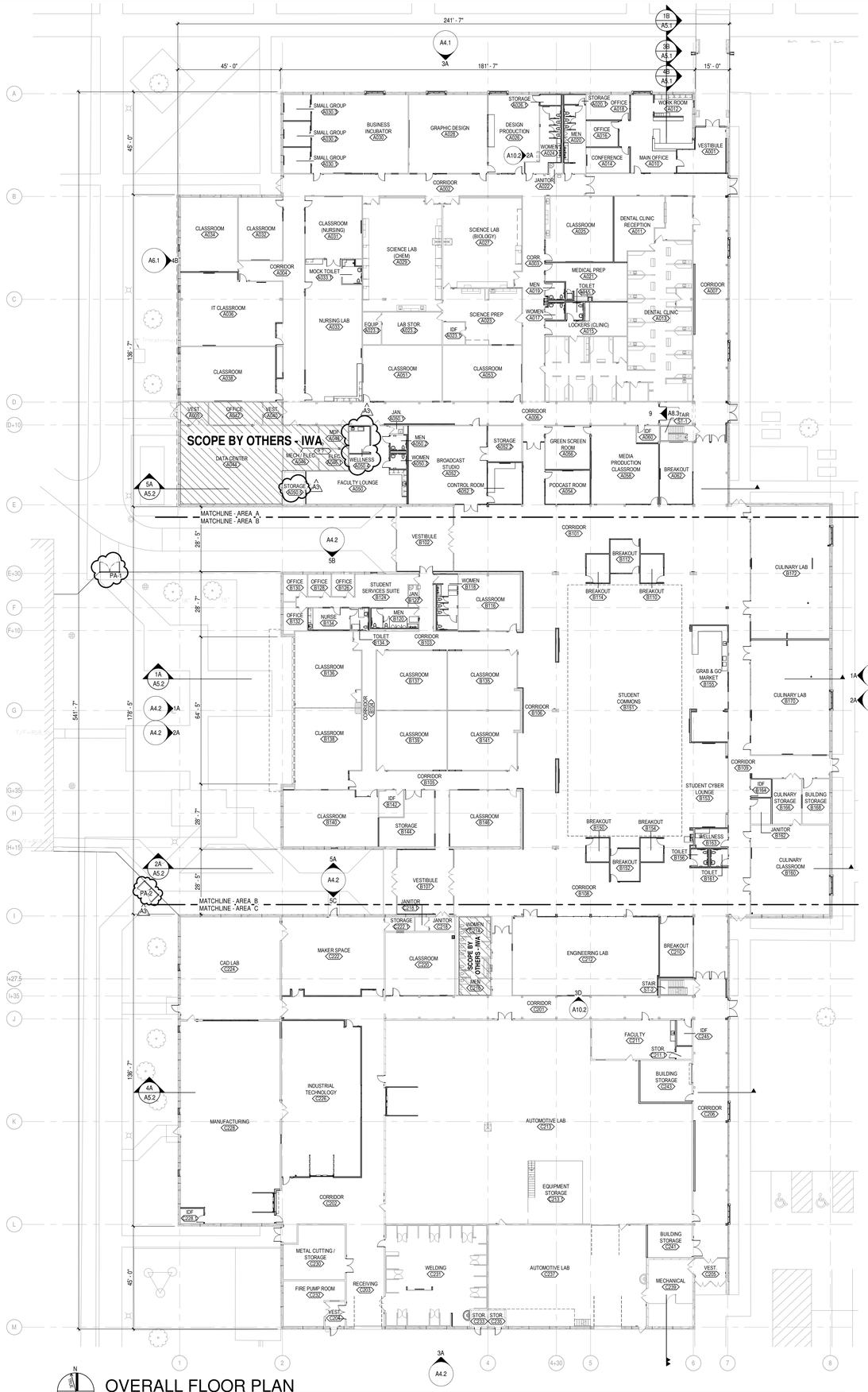
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A1	10/15/2024	ADDENDUM 1
A3	11/6/2024	ADDENDUM 3

22-24119-00

DEMO RCP - AREA C

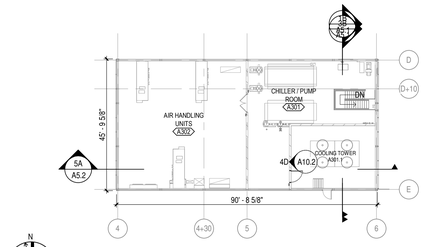
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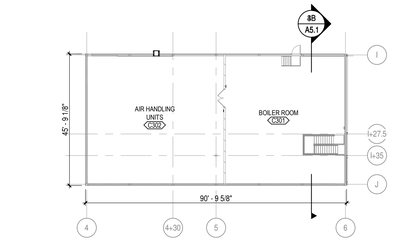
OVERALL FLOOR PLAN

SCALE: 3/64" = 1'-0"



NORTH PENTHOUSE

SCALE: 3/64" = 1'-0"



SOUTH PENTHOUSE

SCALE: 3/64" = 1'-0"

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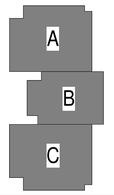
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Rockford, IL 61109

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09/30/2024
REVISIONS

IFB	9/30/2024	ISSUED FOR BID
IFP-HD	10/08/2024	ISSUED FOR PERMIT - HEALTH DEPARTMENT
A3	11/6/2024	ADDENDUM 3

KEY PLAN

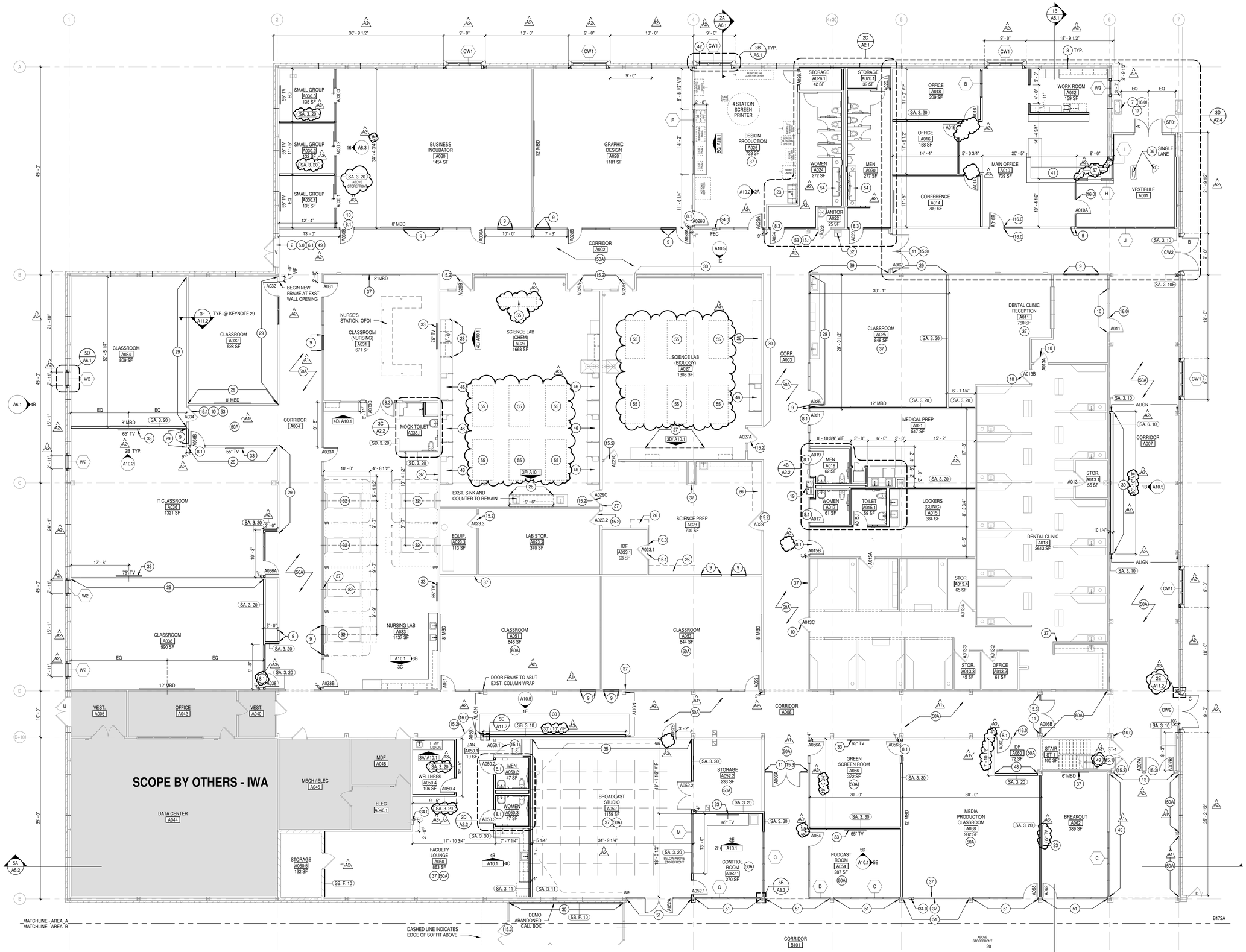


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OVERALL PLAN

A1.0

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FLOOR PLAN - AREA A

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

EXTERIOR SHEET NOTES

2 NEW INDOOR/OUTDOOR THRESHOLD AT EXISTING DOOR.
3 SEAL FULL HEIGHT OF VERTICAL PRECAST PANEL JOINT WITH EXTERIOR JOINT SEALANT. TYPICAL AT ALL EXTERIOR PRECAST JOINTS.
4 PATCH AND REPAIR SPALLING PRECAST PANEL CORNERS AND EXPOSED REBAR AT BASE OF PANELS. SEE EXTERIOR ELEVATIONS AND PLANS FOR LOCATIONS (HLS SURVEY ITEM).
5 EXTERIOR HOLLOW METAL DOOR AND FRAME IN EXISTING DOOR OPENING. FLASHING ABOVE FRAME TO ENSURE PROPER DRAINAGE AROUND DOOR.
6.0 NEW DOOR SWEEPS ON BOTH EXISTING DOORS.
6.1 NEW HOLLOW METAL REMOVABLE MULLION. PAINT TO MATCH EXISTING TO REMAIN DOOR FRAME.
7 VIDEO INTERCOM MOUNTED ON CANOPY PILLAR.

INTERIOR SHEET NOTES

8.1 SALVAGED, REFINISHED DOOR AND SALVAGED CONTINUOUS HINGE IN NEW DOOR FRAME. PATCH DOOR WHERE PREVIOUS HARDWARE WAS INSTALLED AND PROVIDE NEW HARDWARE. EXISTING DOOR SIZE TO BE VERIFIED IN FIELD PRIOR TO INSTALLATION.
8.3 NEW DOOR, HARDWARE, AND FRAME IN EXISTING WALL OPENING. VERIFY ROUGH WALL OPENING IN FIELD.
8.4 NEW DOOR AND HARDWARE IN EXISTING FRAME. VERIFY EXISTING FRAME WIDTH IN FIELD TO DETERMINE DOOR DIMENSIONS.
9 INFILL EXISTING OPENING TO MATCH ADJACENT WALLS IN ALL ASPECTS. REPAINT ENTIRE EXTENT OF WALL WHERE OPENINGS ARE PATCHED. VERIFY WALL ASSEMBLY IN FIELD.
10 INSTALL CLEAR TEMPERED GLAZING IN EXISTING DOOR AND/OR STOREFRONT. PROTECT FRAME AND/OR DOOR DURING INSTALLATION OF NEW GLAZING.
11 ALUMINUM STOREFRONT SYSTEM IN EXISTING WALL OPENING. VERIFY ROUGH WALL OPENING DIMENSIONS IN FIELD.
12 HIGH LIFT OVERHEAD GLASS SECTIONAL DOOR.
A2 13 GRIND RUST ON INTEGRAL METAL THRESHOLD AND REFINISH TO MATCH STOREFRONT FINISH.
14 MOTORIZED OVERHEAD COILING DOOR.
15.1 EXISTING DOOR TO RECEIVE NEW HARDWARE.
15.2 INSTALL OWNER-FURNISHED COVER PLATE WHERE KEYPAD LOCK SYSTEM WAS PREVIOUSLY INSTALLED. DOOR TO RECEIVE NEW HARDWARE.
15.3 LOCKDOWN SECURITY DOOR TO RECEIVE ELECTRIFIED HARDWARE SET.
A1 15.4 INSTALL OWNER-FURNISHED COVER PLATE WHERE THUMBTURN LOCKSET WAS REMOVED.
16.0 CARD READER PROVIDED AND INSTALLED BY OWNER. A1
16.1 VIDEO INTERCOM MOUNTED ON CANOPY PILLAR.
16.2 EXISTING CARD READER LOCATION. PROVIDE CABLING FOR FUTURE NEW CARD READER. NEW CARD READER FURNISHED AND INSTALLED BY OWNER.
17 ADA PUSH BUTTON.
18 LAVATORY AND FAUCET.
19 DRINKING FOUNTAIN WITH BOTTLE FILLER.
20 COMBINATION EMERGENCY SHOWER AND EYE WASH STATION.
21 HALF-MOON WASH FOUNTAIN.
22 NEW CONCRETE TRENCH DRAIN AND DRAIN GRATE IN EXISTING LOCATION. COORDINATE DRAIN INSTALL WITH PLUMBING AND STRUCTURAL.
23 INDUSTRIAL SINK AND ASSOCIATED ACCESSORIES.
24.0 INSTALL SALVAGED STAINLESS STEEL HAND SINK AND FAUCET.
24.1 STAINLESS STEEL HAND SINK AND FAUCET.
25 NEW FLOOR DRAIN AT EXISTING EMERGENCY SHOWER AND EYEWASH STATION.
26 PATCH REMOVED PORTION OF FLOORING TO MATCH EXISTING ADJACENT IN ALL ASPECTS.
27 4" APRON AND SUPPORT BRACKETS BELOW EXISTING COUNTERTOP. VERIFY EXTENTS IN FIELD.
28 NEW BASE CABINETS BELOW EXISTING COUNTERTOP. CABINETS TO MATCH EXISTING ADJACENT IN ALL ASPECTS.
29 EXTEND DEMISING PARTITION TO DECK WITH WALL TYPE SA.3.20 FOR INCREASED ACOUSTIC SEPARATION BETWEEN SPACES.
30 PROVIDE LEVEL 5 WALL FINISH AT LARGE-SCALE CUSTOM PRINTED VINYL WALL GRAPHIC/ACCENT PAINT LOCATION.
31 EXISTING FLOOR FINISH TO REMAIN. PROTECT DURING CONSTRUCTION.
32 EXISTING PATIENT BED WITH NEW HEAD WALL. SEE ELECTRICAL
33 PROVIDE BACK BOX AND BRACKET FOR OFOI TV MONITOR.
34.0 SALVAGED SEMI-RECESSED FIRE EXTINGUISHER CABINET.
34.1 SALVAGED FIRE EXTINGUISHER.
35 PROVIDE PENETRATION FIRESTOPPING ALONG TOP OF 2-HR FIRE BARRIER AND AT ALL EXISTING AND NEW PIPE AND DUCT PENETRATIONS.
36 WEAPONS DETECTION SYSTEM, OFOI. A1
37 PATCH EXISTING WALL WHERE CLOCK AND/OR SPEAKER SYSTEM WAS REMOVED. MATCH EXISTING ADJACENT WALL FINISHES IN ALL ASPECTS.
40 WELDING CURTAIN AT ADA WELDING BOOTH. MATCH EXISTING CURTAINS IN STYLE AND COLOR.
41 PROVIDE LOCK DOWN BUTTON WITH SECURITY COVER. EXACT LOCATION TO BE COORDINATED WITH OWNER.
42 RELOCATED HOSE BIB.
43 PATCH WALL FINISH TO MATCH EXISTING ADJACENT FINISH WHERE WOOD PANELING WAS REMOVED.
45 PROVIDE 1 LAYER TYPE X 5/8" GWB ON EXISTING METAL STUD WALL.
A1 45.1 2 LAYERS OF 5/8" TYPE X GWB TO EXISTING STUDS. CONTINUE GWB TO UNDERSIDE OF METAL DECK OR CONCRETE SLAB ABOVE. SEAL ALL PENETRATIONS WITH FIRESTOPPING MATERIAL. UL WALL ASSEMBLY #V497.
46 EXISTING FUME HOOD TO REMAIN.
48 3/4" FIRE-TREATED PLYWOOD FINISH OVER GWB WALL ASSEMBLY UP TO 6'-0" A.F.F.
49 PAINT EXISTING HOLLOW METAL DOOR AND FRAME. COLOR TO BE SELECTED BY ARCHITECT.
50A 5/8" GWB INSTALLED PER SPECIFICATION 092900 AT LOCATIONS WHERE EXISTING GWB WAS ABATED. CONTAINMENT DRAWINGS ATTACHED FOR COORDINATION. A1
51 PATCH AND PREP EXISTING WOOD ACCENT RAIL FOR NEW PAINT. PAINT WOOD RAIL TO MATCH ADJACENT SURFACE.
52 PROVIDE CANE DETECTION APRON TO EXISTING DRINKING FOUNTAIN.
A1 53 EXISTING DOOR TO BE RESTAINED TO MATCH NEW DOORS.
A2 54 CUSTOM SOLID SURFACE INTEGRAL TROUGH-STYLE SINK BY PIERCE LAMINATED PRODUCTS (PHONE: 815-968-9651), BOD.
55 EXISTING SCIENCE LAB STATION TO REMAIN.
56A REINSTALL SALVAGED VERTICAL WOOD PANELING (4" AFF) AND HORIZONTAL WOOD TRIM (8'-2 1/2" AFF) FOLLOWING ASBESTOS ABATEMENT. PREP AND PAINT P-01.
57 PROVIDE 3/8" BULLET-RESISTANT FIBERGLASS BOARD. SEE SPEC SECTION 134715.

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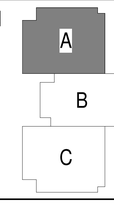
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RPS 205 IFB #25-11
RPS 205 PROJECT #2444
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Rockford, IL 61109

ISSUED FOR BID
09/30/2024

REVISIONS

IFB	9/30/2024	ISSUED FOR BID
A1	10/15/2024	ADDENDUM 1
A2	10/24/2024	ADDENDUM 2
A3	11/6/2024	ADDENDUM 3

KEY PLAN

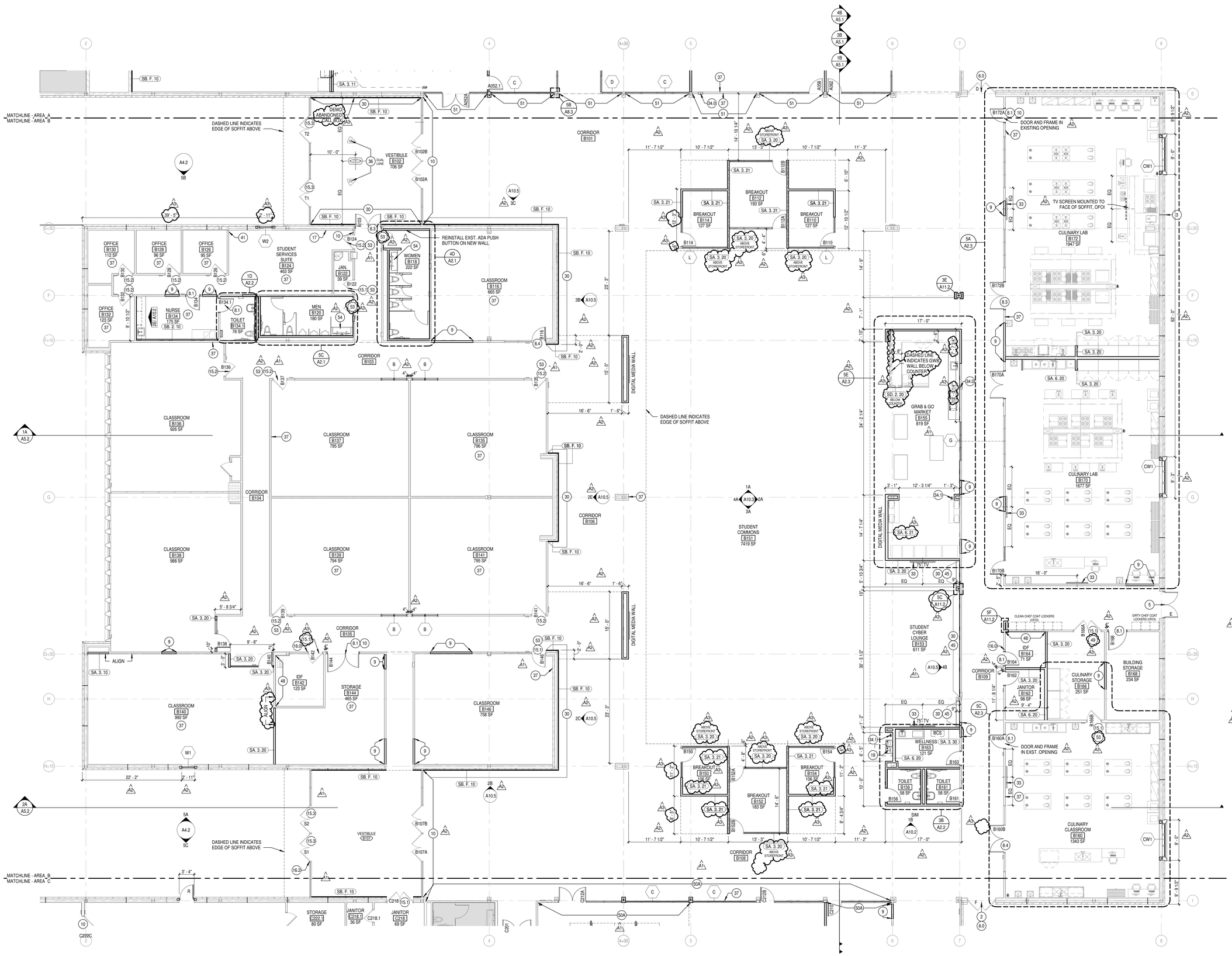


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FLOOR PLAN - AREA A

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FLOOR PLAN - AREA B

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

EXTERIOR SHEET NOTES

#	
2	NEW INDOOR/OUTDOOR THRESHOLD AT EXISTING DOOR.
3	SEAL FULL HEIGHT OF VERTICAL PRECAST PANEL JOINT WITH EXTERIOR JOINT SEALANT. TYPICAL AT ALL EXTERIOR PRECAST JOINTS.
4	PATCH AND REPAIR SPALLING PRECAST PANEL CORNERS AND EXPOSED REBAR AT BASE OF PANELS. SEE EXTERIOR ELEVATIONS AND PLANS FOR LOCATIONS (HLS SURVEY ITEM).
5	EXTERIOR HOLLOW METAL DOOR AND FRAME IN EXISTING DOOR OPENING. FLASHING ABOVE FRAME TO ENSURE PROPER DRAINAGE AROUND DOOR.
6.0	NEW DOOR SWEEPS ON BOTH EXISTING DOORS.
6.1	NEW HOLLOW METAL REMOVABLE MULLION. PAINT TO MATCH EXISTING TO REMAIN DOOR FRAME.
7	VIDEO INTERCOM MOUNTED ON CANOPY PILLAR.

INTERIOR SHEET NOTES

#	
8.1	SALVAGED, REFINISHED DOOR AND SALVAGED CONTINUOUS HINGE IN NEW DOOR FRAME. PATCH DOOR WHERE PREVIOUS HARDWARE WAS INSTALLED AND PROVIDE NEW HARDWARE. EXISTING DOOR SIZE TO BE VERIFIED IN FIELD PRIOR TO INSTALLATION.
8.3	NEW DOOR, HARDWARE, AND FRAME IN EXISTING WALL OPENING. VERIFY ROUGH WALL OPENING IN FIELD.
8.4	NEW DOOR AND HARDWARE IN EXISTING FRAME. VERIFY EXISTING FRAME WIDTH IN FIELD TO DETERMINE DOOR DIMENSIONS.
9	INFILL EXISTING OPENING TO MATCH ADJACENT WALLS IN ALL ASPECTS. REPAINT ENTIRE EXTENT OF WALL WHERE OPENINGS ARE PATCHED. VERIFY WALL ASSEMBLY IN FIELD.
10	INSTALL CLEAR TEMPERED GLAZING IN EXISTING DOOR AND/OR STOREFRONT. PROTECT FRAME AND/OR DOOR DURING INSTALLATION OF NEW GLAZING.
11	ALUMINUM STOREFRONT SYSTEM IN EXISTING WALL OPENING. VERIFY ROUGH WALL OPENING DIMENSIONS IN FIELD.
12	HIGH LIFT OVERHEAD GLASS SECTIONAL DOOR.
13	GRIND RUST ON INTEGRAL METAL THRESHOLD AND REFINISH TO MATCH STOREFRONT FINISH.
14	MOTORIZED OVERHEAD COILING DOOR.
15.1	EXISTING DOOR TO RECEIVE NEW HARDWARE.
15.2	INSTALL OWNER-FURNISHED COVER PLATE WHERE KEYPAD LOCK SYSTEM WAS PREVIOUSLY INSTALLED. DOOR TO RECEIVE NEW HARDWARE.
15.3	LOCKDOWN SECURITY DOOR TO RECEIVE ELECTRIFIED HARDWARE SET.
15.4	INSTALL OWNER-FURNISHED COVER PLATE WHERE THUMBTURN LOCKSET WAS REMOVED.
16.0	CARD READER PROVIDED AND INSTALLED BY OWNER.
16.1	VIDEO INTERCOM MOUNTED ON CANOPY PILLAR.
16.2	EXISTING CARD READER LOCATION. PROVIDE CABLING FOR FUTURE NEW CARD READER. NEW CARD READER FURNISHED AND INSTALLED BY OWNER.
17	ADA PUSH BUTTON.
18	LAVATORY AND FAUCET.
19	DRINKING FOUNTAIN WITH BOTTLE FILLER.
20	COMBINATION EMERGENCY SHOWER AND EYE WASH STATION.
21	HALF-MOON WASH FOUNTAIN.
22	NEW CONCRETE TRENCH DRAIN AND DRAIN GRATE IN EXISTING LOCATION. COORDINATE DRAIN INSTALL WITH PLUMBING AND STRUCTURAL.
23	INDUSTRIAL SINK AND ASSOCIATED ACCESSORIES.
24.0	INSTALL SALVAGED STAINLESS STEEL HAND SINK AND FAUCET.
24.1	STAINLESS STEEL HAND SINK AND FAUCET.
25	NEW FLOOR DRAIN AT EXISTING EMERGENCY SHOWER AND EYEWASH STATION.
26	PATCH REMOVED PORTION OF FLOORING TO MATCH EXISTING ADJACENT IN ALL ASPECTS.
27	4" APRON AND SUPPORT BRACKETS BELOW EXISTING COUNTERTOP. VERIFY EXTENTS IN FIELD.
28	NEW BASE CABINETS BELOW EXISTING COUNTERTOP. CABINETS TO MATCH EXISTING ADJACENT IN ALL ASPECTS.
29	EXTEND DEMISING PARTITION TO DECK WITH WALL TYPE SA.3.20 FOR INCREASED ACOUSTIC SEPARATION BETWEEN SPACES.
30	PROVIDE LEVEL 5 WALL FINISH AT LARGE-SCALE CUSTOM PRINTED VINYL WALL GRAPHIC/ACCENT PAINT LOCATION.
31	EXISTING FLOOR FINISH TO REMAIN. PROTECT DURING CONSTRUCTION.
32	EXISTING PATIENT BED WITH NEW HEAD WALL. SEE ELECTRICAL
33	PROVIDE BACK BOX AND BRACKET FOR OFOI TV MONITOR.
34.0	SALVAGED SEMI-RECESSED FIRE EXTINGUISHER CABINET.
34.1	SALVAGED FIRE EXTINGUISHER.
35	PROVIDE PENETRATION FIRESTOPPING ALONG TOP OF 2-HR FIRE BARRIER AND AT ALL EXISTING AND NEW PIPE AND DUCT PENETRATIONS.
36	WEAPONS DETECTION SYSTEM, OFOI.
37	PATCH EXISTING WALL WHERE CLOCK AND/OR SPEAKER SYSTEM WAS REMOVED. MATCH EXISTING ADJACENT WALL FINISHES IN ALL ASPECTS.
40	WELDING CURTAIN AT ADA WELDING BOOTH. MATCH EXISTING CURTAINS IN STYLE AND COLOR.
41	PROVIDE LOCK DOWN BUTTON WITH SECURITY COVER. EXACT LOCATION TO BE COORDINATED WITH OWNER.
42	RELOCATED HOSE BIB.
43	PATCH WALL FINISH TO MATCH EXISTING ADJACENT FINISH WHERE WOOD PANELING WAS REMOVED.
45	PROVIDE 1 LAYER TYPE X 5/8" GWB ON EXISTING METAL STUD WALL.
45.1	2 LAYERS OF 5/8" TYPE X GWB TO EXISTING STUDS. CONTINUE GWB TO UNDERSIDE OF METAL DECK OR CONCRETE SLAB ABOVE. SEAL ALL PENETRATIONS WITH FIRESTOPPING MATERIAL UL WALL ASSEMBLY #W497.
46	EXISTING FUME HOOD TO REMAIN.
48	3/4" FIRE-TREATED PLYWOOD FINISH OVER GWB WALL ASSEMBLY UP TO 6'-0" A.F.F.
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52	PROVIDE CANE DETECTION APRON TO EXISTING DRINKING FOUNTAIN.
53	EXISTING DOOR TO BE RESTAINED TO MATCH NEW DOORS.
54	CUSTOM SOLID SURFACE INTEGRAL TROUGH-STYLE SINK BY PIERCE LAMINATED PRODUCTS (PHONE 314-968-9651). BOD.
55	EXISTING SCIENCE LAB STATION TO REMAIN.
56A	REINSTALL SALVAGED VERTICAL WOOD PANELING (4" AFF) AND HORIZONTAL WOOD TRIM (8'-2 1/2" AFF) FOLLOWING ASBESTOS ABATEMENT. PREP AND PAINT P-01.
57	PROVIDE 3/8" BULLET-RESISTANT FIBERGLASS BOARD. SEE SPEC SECTION 134715.

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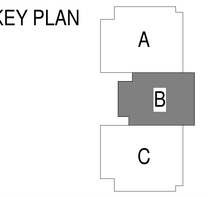
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RPS 205 IFB #25-11
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A2	10/24/2024	ADDENDUM 2
A3	11/6/2024	ADDENDUM 3

KEY PLAN

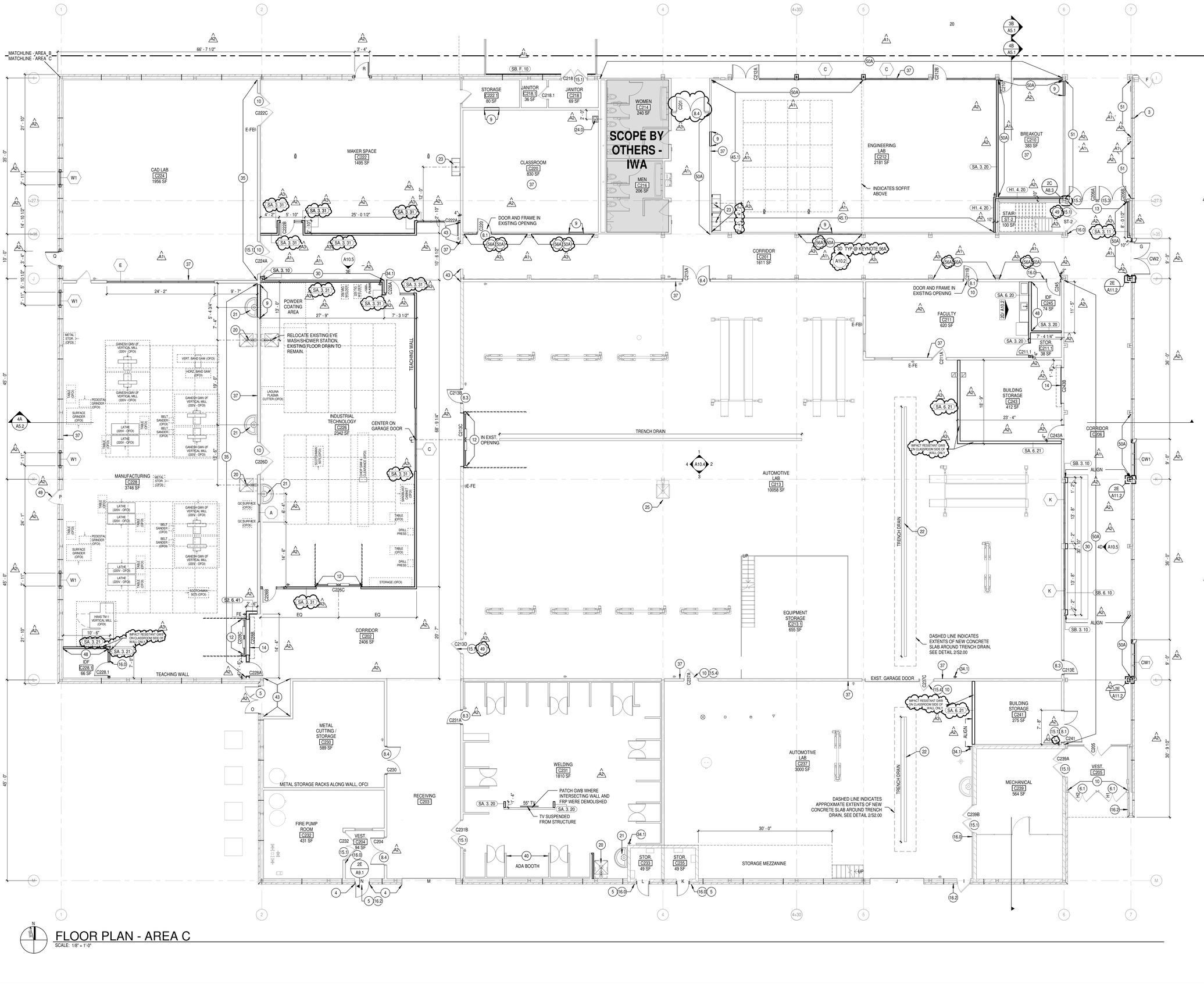


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FLOOR PLAN - AREA B

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FLOOR PLAN - AREA C

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

EXTERIOR SHEET NOTES

2 NEW INDOOR/OUTDOOR THRESHOLD AT EXISTING DOOR.
3 SEAL FULL HEIGHT OF VERTICAL PRECAST PANEL JOINT WITH EXTERIOR JOINT SEALANT. TYPICAL AT ALL EXTERIOR PRECAST JOINTS.
4 PATCH AND REPAIR SPALLING PRECAST PANEL CORNERS AND EXPOSED REBAR AT BASE OF PANELS. SEE EXTERIOR ELEVATIONS AND PLANS FOR LOCATIONS (HLS SURVEY ITEM).
5 EXTERIOR HOLLOW METAL DOOR AND FRAME IN EXISTING DOOR OPENING. FLASHING ABOVE FRAME TO ENSURE PROPER DRAINAGE AROUND DOOR.
6.0 NEW DOOR SWEEPS ON BOTH EXISTING DOORS.
6.1 HOLLOW METAL REMOVABLE MULLION. PAINT TO MATCH EXISTING TO REMAIN DOOR FRAME.
7 VIDEO INTERCOM MOUNTED ON CANOPY PILLAR.

INTERIOR SHEET NOTES

8.1 SALVAGED, REFINISHED DOOR AND SALVAGED CONTINUOUS HINGE IN NEW DOOR FRAME. PATCH DOOR WHERE PREVIOUS HARDWARE WAS INSTALLED AND PROVIDE NEW HARDWARE. EXISTING DOOR SIZE TO BE VERIFIED IN FIELD PRIOR TO INSTALLATION.
8.3 NEW DOOR, HARDWARE, AND FRAME IN EXISTING WALL OPENING. VERIFY ROUGH WALL OPENING IN FIELD.
8.4 NEW DOOR AND HARDWARE IN EXISTING FRAME. VERIFY EXISTING FRAME WIDTH IN FIELD TO DETERMINE DOOR DIMENSIONS.
9 INFILL EXISTING OPENING TO MATCH ADJACENT WALLS IN ALL ASPECTS. REPAINT ENTIRE EXTENT OF WALL WHERE OPENINGS ARE PATCHED. VERIFY WALL ASSEMBLY IN FIELD.
10 INSTALL CLEAR TEMPERED GLAZING IN EXISTING DOOR AND/OR STOREFRONT. PROTECT FRAME AND/OR DOOR DURING INSTALLATION OF NEW GLAZING.
11 ALUMINUM STOREFRONT SYSTEM IN EXISTING WALL OPENING. VERIFY ROUGH WALL OPENING DIMENSIONS IN FIELD.
12 HIGH LIFT OVERHEAD GLASS SECTIONAL DOOR.
13 GRIND RUST ON INTEGRAL METAL THRESHOLD AND REFINISH TO MATCH STOREFRONT FINISH.
14 MOTORIZED OVERHEAD COILING DOOR.
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15.2 INSTALL OWNER-FURNISHED COVER PLATE WHERE KEYPAD LOCK SYSTEM WAS PREVIOUSLY INSTALLED. DOOR TO RECEIVE NEW HARDWARE.
15.3 LOCKDOWN SECURITY DOOR TO RECEIVE ELECTRIFIED HARDWARE SET.
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18 LAVATORY AND FAUCET.
19 DRINKING FOUNTAIN WITH BOTTLE FILLER.
20 COMBINATION EMERGENCY SHOWER AND EYE WASH STATION.
21 HALF-MOON WASH FOUNTAIN.
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23 INDUSTRIAL SINK AND ASSOCIATED ACCESSORIES.
24.0 INSTALL SALVAGED STAINLESS STEEL HAND SINK AND FAUCET.
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25 NEW FLOOR DRAIN AT EXISTING EMERGENCY SHOWER AND EYEWASH STATION.
26 PATCH REMOVED PORTION OF FLOORING TO MATCH EXISTING ADJACENT IN ALL ASPECTS.
27 4" APRON AND SUPPORT BRACKETS BELOW EXISTING COUNTERTOP. VERIFY EXTENTS IN FIELD.
28 NEW BASE CABINETS BELOW EXISTING COUNTERTOP. CABINETS TO MATCH EXISTING ADJACENT IN ALL ASPECTS.
29 EXTEND DEMISING PARTITION TO DECK WITH WALL TYPE SA.3.20 FOR INCREASED ACOUSTIC SEPARATION BETWEEN SPACES.
30 PROVIDE LEVEL 5 WALL FINISH AT LARGE-SCALE CUSTOM PRINTED VINYL WALL GRAPHIC/ACCENT PAINT LOCATION.
31 EXISTING FLOOR FINISH TO REMAIN. PROTECT DURING CONSTRUCTION.
32 EXISTING PATIENT BED WITH NEW HEAD WALL. SEE ELECTRICAL
33 PROVIDE BACK BOX AND BRACKET FOR OFOI TV MONITOR.
34.0 SALVAGED SEMI-RECESSED FIRE EXTINGUISHER CABINET.
34.1 SALVAGED FIRE EXTINGUISHER.
35 PROVIDE PENETRATION FIRESTOPPING ALONG TOP OF 2-HR FIRE BARRIER AND AT ALL EXISTING AND NEW PIPE AND DUCT PENETRATIONS.
36 WEAPONS DETECTION SYSTEM, OFOI.
37 PATCH EXISTING WALL WHERE CLOCK AND/OR SPEAKER SYSTEM WAS REMOVED. MATCH EXISTING ADJACENT WALL FINISHES IN ALL ASPECTS.
40 WELDING CURTAIN AT ADA WELDING BOOTH. MATCH EXISTING CURTAINS IN STYLE AND COLOR.
41 PROVIDE LOCK DOWN BUTTON WITH SECURITY COVER. EXACT LOCATION TO BE COORDINATED WITH OWNER.
42 RELOCATED HOSE BIB.
43 PATCH WALL FINISH TO MATCH EXISTING ADJACENT FINISH WHERE WOOD PANELING WAS REMOVED.
45 PROVIDE 1 LAYER TYPE X 5/8" GWB ON EXISTING METAL STUD WALL.
45.1 2 LAYERS OF 5/8" TYPE X GWB TO EXISTING STUDS. CONTINUE GWB TO UNDERSIDE OF METAL DECK OR CONCRETE SLAB ABOVE. SEAL ALL PENETRATIONS WITH FIRESTOPPING MATERIAL. UL WALL ASSEMBLY #V497.
46 EXISTING FUME HOOD TO REMAIN.
48 3/4" FIRE-TREATED PLYWOOD FINISH OVER GWB WALL ASSEMBLY UP TO 6'-0" A.F.F.
49 PAINT EXISTING HOLLOW METAL DOOR AND FRAME. COLOR TO BE SELECTED BY ARCHITECT.
50A 5/8" GWB INSTALLED PER SPECIFICATION 092900 AT LOCATIONS WHERE EXISTING GWB WAS ABATED. CONTAINMENT DRAWINGS ATTACHED FOR COORDINATION.
51 PROVIDE NEW PAINT GRADE WOOD ACCENT RAIL FOR NEW PAINT. PAINT WOOD RAIL TO MATCH ADJACENT SURFACE.
52 PROVIDE CANE DETECTION APRON TO EXISTING DRINKING FOUNTAIN.
53 EXISTING DOOR TO BE RESTAINED TO MATCH NEW DOORS.
54 CUSTOM SOLID SURFACE INTEGRAL TROUGH-STYLE SINK BY PIERCE LAMINATED PRODUCTS (PHONE: 815-968-9651), BOD.
55 EXISTING SCIENCE LAB STATION TO REMAIN.
56A REINSTALL SALVAGED VERTICAL WOOD PANELING (4" AFF) AND HORIZONTAL WOOD TRIM (8'-2 1/2" AFF) FOLLOWING ASBESTOS ABATEMENT. PREP AND PAINT P-01.
57 PROVIDE 5/8" BULLET-RESISTANT FIBERGLASS BOARD. SEE SPEC SECTION 134715.

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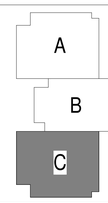
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RPS 205 IFB #25-11
RPS 205 PROJECT #2444
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IFB	9/30/2024	ISSUED FOR BID
A1	10/15/2024	ADDENDUM 1
A2	10/24/2024	ADDENDUM 2
A3	11/6/2024	ADDENDUM 3

KEY PLAN

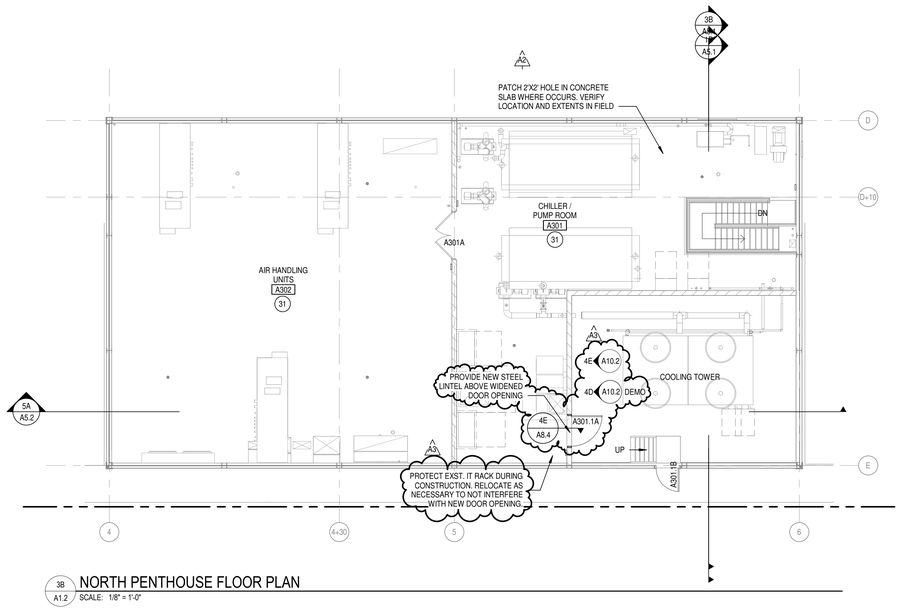


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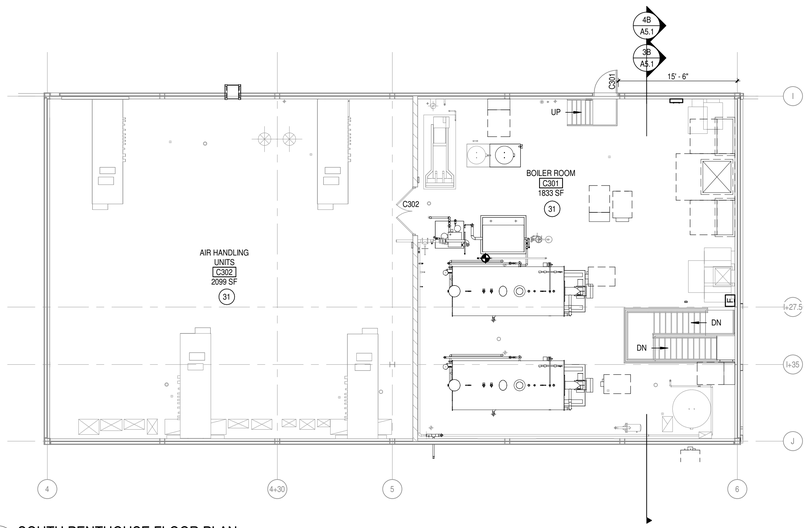
FLOOR PLAN - AREA C

A1.1C

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3B A1.2 NORTH PENTHOUSE FLOOR PLAN
SCALE: 1/8" = 1'-0"



5B A1.2 SOUTH PENTHOUSE FLOOR PLAN
SCALE: 1/8" = 1'-0"

SHEET NOTES

8.1 SALVAGED, REFINISHED DOOR AND SALVAGED CONTINUOUS HINGE IN NEW DOOR FRAME. PATCH DOOR WHERE PREVIOUS HARDWARE WAS INSTALLED AND PROVIDE NEW HARDWARE. EXISTING DOOR SIZE TO BE VERIFIED IN FIELD PRIOR TO INSTALLATION.
8.3 NEW DOOR, HARDWARE, AND FRAME IN EXISTING WALL OPENING. VERIFY ROUGH WALL OPENING IN FIELD.
8.4 NEW DOOR AND HARDWARE IN EXISTING FRAME. VERIFY EXISTING FRAME WIDTH IN FIELD TO DETERMINE DOOR DIMENSIONS.
9 INFILL EXISTING OPENING TO MATCH ADJACENT WALLS IN ALL ASPECTS. REPAINT ENTIRE EXTENT OF WALL WHERE OPENINGS ARE PATCHED. VERIFY WALL ASSEMBLY IN FIELD.
10 INSTALL CLEAR TEMPERED GLAZING IN EXISTING DOOR AND/OR STOREFRONT. PROTECT FRAME AND/OR DOOR DURING INSTALLATION OF NEW GLAZING.
11 ALUMINUM STOREFRONT SYSTEM IN EXISTING WALL OPENING. VERIFY ROUGH WALL OPENING DIMENSIONS IN FIELD.
12 HIGH LIFT OVERHEAD GLASS SECTIONAL DOOR.
13 GRIND RUST ON INTEGRAL METAL THRESHOLD AND REFINISH TO MATCH STOREFRONT FINISH.
14 MOTORIZED OVERHEAD COILING DOOR.
15.1 EXISTING DOOR TO RECEIVE NEW HARDWARE.
15.2 INSTALL OWNER-FURNISHED COVER PLATE WHERE KEYPAD LOCK SYSTEM WAS PREVIOUSLY INSTALLED. DOOR TO RECEIVE NEW HARDWARE.
15.3 LOCKDOWN SECURITY DOOR TO RECEIVE ELECTRIFIED HARDWARE SET.
15.4 INSTALL OWNER-FURNISHED COVER PLATE WHERE THUMBTURN LOCKSET WAS REMOVED.
16.0 CARD READER PROVIDED AND INSTALLED BY OWNER.
16.1 VIDEO INTERCOM MOUNTED ON CANOPY PILLAR.
16.2 EXISTING CARD READER LOCATION. PROVIDE CABLING FOR FUTURE NEW CARD READER. NEW CARD READER FURNISHED AND INSTALLED BY OWNER.
17 ADA PUSH BUTTON.
18 LAVATORY AND FAUCET.
19 DRINKING FOUNTAIN WITH BOTTLE FILLER.
20 COMBINATION EMERGENCY SHOWER AND EYE WASH STATION.
21 HALF-MOON WASH FOUNTAIN.
22 NEW CONCRETE TRENCH DRAIN AND DRAIN GRATE IN EXISTING LOCATION. COORDINATE DRAIN INSTALL WITH PLUMBING AND STRUCTURAL.
23 INDUSTRIAL SINK AND ASSOCIATED ACCESSORIES.
24.0 INSTALL SALVAGED STAINLESS STEEL HAND SINK AND FAUCET.
24.1 STAINLESS STEEL HAND SINK AND FAUCET.
25 NEW FLOOR DRAIN AT EXISTING EMERGENCY SHOWER AND EYEWASH STATION.
26 PATCH REMOVED PORTION OF FLOORING TO MATCH EXISTING ADJACENT IN ALL ASPECTS.
27 4" APRON AND SUPPORT BRACKETS BELOW EXISTING COUNTERTOP. VERIFY EXTENTS IN FIELD.
28 NEW BASE CABINETS BELOW EXISTING COUNTERTOP. CABINETS TO MATCH EXISTING ADJACENT IN ALL ASPECTS.
29 EXTEND DEMISING PARTITION TO DECK WITH WALL TYPE SA.9.2D FOR INCREASED ACOUSTIC SEPARATION BETWEEN SPACES.
30 PROVIDE LEVEL 5 WALL FINISH AT LARGE-SCALE CUSTOM PRINTED VINYL WALL GRAPHIC/ACCENT PAINT LOCATION.
31 EXISTING FLOOR FINISH TO REMAIN. PROTECT DURING CONSTRUCTION.
32 EXISTING PATIENT BED WITH NEW HEAD WALL. SEE ELECTRICAL.
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57 PROVIDE 3/8" BULLET-RESISTANT FIBERGLASS BOARD. SEE SPEC SECTION 134715.

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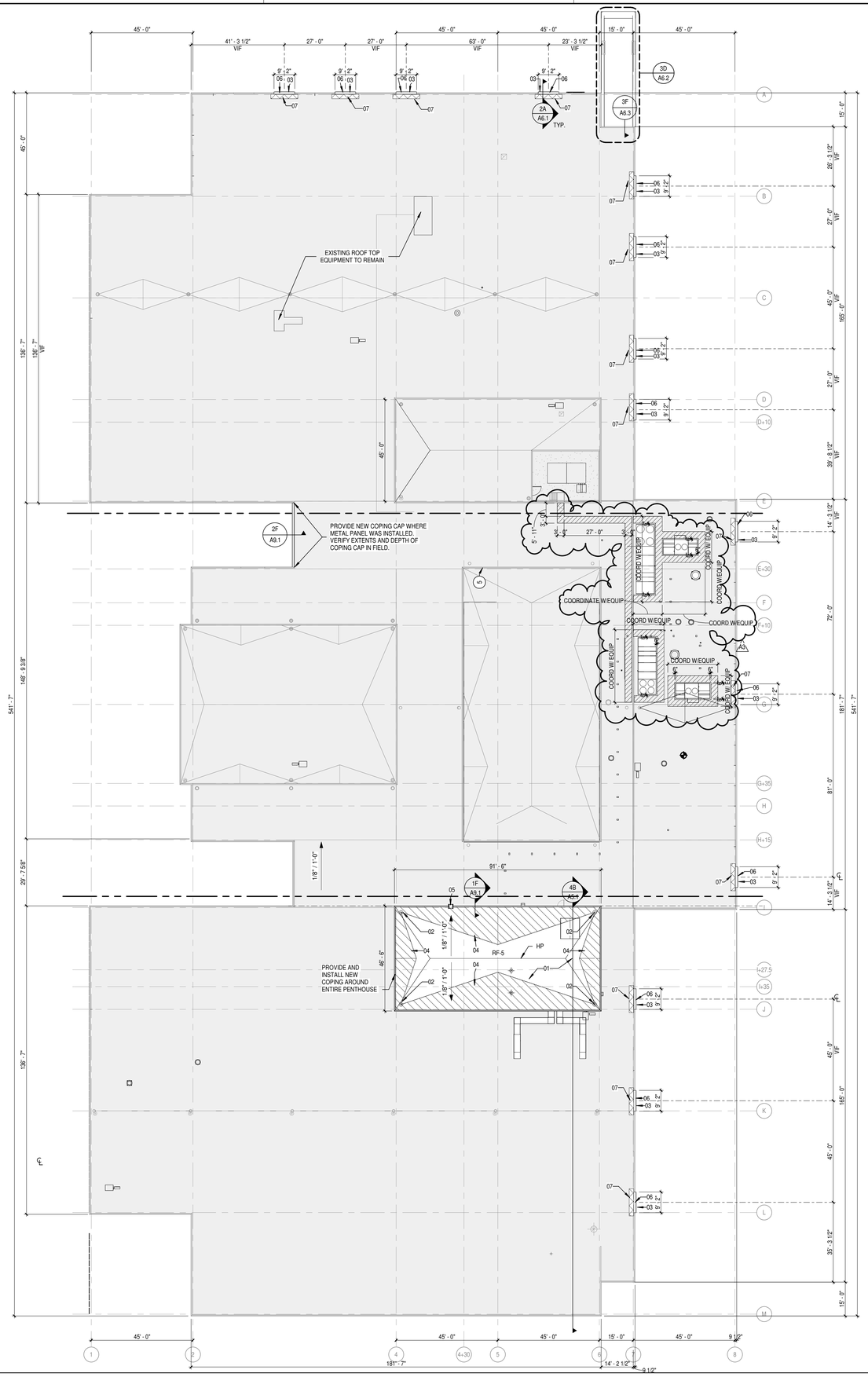
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A2	10/24/2024	ADDENDUM 2
A3	11/6/2024	ADDENDUM 3

22-24119-00

FLOOR PLAN - PENTHOUSES

A1.2

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OVERALL ROOF PLAN
SCALE: 3/64" = 1'-0"

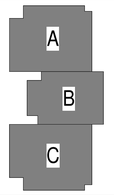
ROOF PLAN GENERAL NOTES

A. ROOF PLAN GENERAL NOTES APPLY TO ALL ROOF PLAN SHEETS.
B. ROOF SLOPES ARE CREATED BY SLOPING THE ROOF STRUCTURE UNLESS NOTED OTHERWISE. SEE STRUCTURAL DRAWINGS FOR ELEVATIONS OF THE HIGH AND LOW POINTS TO DETERMINE PROPER TAPER IN INSULATION.
C. TAPERED INSULATION SHALL PROVIDE A MINIMUM OF 1/4-INCH PER FOOT OF SLOPE TO ROOF DRAINS, UNLESS NOTED OTHERWISE.
D. AREAS MARKED WITH A HATCHED PATTERN INDICATE TAPERED INSULATION.
E. ALL ROOF CURBS TO BE A MINIMUM OF 8 INCHES ABOVE ROOFING LEVELS. PROVIDE TAPERED INSULATION ROOF SADDLES AT ROOF CURBS TO PROVIDE DRAINAGE AROUND CURB.
F. SEE STRUCTURAL DRAWINGS FOR FRAMING AROUND ROOF PENETRATIONS.
G. COORDINATE THE SIZE AND LOCATION OF ROOF PENETRATIONS FOR MECHANICAL AND ELECTRICAL EQUIPMENT. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR PENETRATIONS NOT SHOWN ON THIS DRAWING.
H. FLASH DRAINS, CURBS, VENTS AND STACKS PER MANUFACTURER'S RECOMMENDATIONS IF DETAIL NOT SHOWN ON DRAWINGS.
I. NO ROOF PENETRATIONS ALLOWED WITHIN 4'-0" EACH SIDE OF FIREWALL. SEE CODE PLAN FOR FIRE WALL LOCATIONS.

SHEET NOTES

01	INSTALL NEW ROOFING ASSEMBLY, MINIMUM R30.
02	REPLACE ROOF DRAIN HEAD. MODIFY AS REQUIRED TO ADJUST TO INSULATION THICKNESS.
03	PROVIDE NEW CURTAINWALL AND SURROUND AT LOCATIONS OF REMOVED PRECAST PANEL. REFER TO DETAILS FOR FLASHING AND COPING DETAILS.
04	TAPERED INSULATION CRICKET, TYP. MINIMUM SLOPE OF 1/2"/1'-0".
05	REINSTALL EXISTING ROOF ACCESS LADDER. ADJUST MOUNTING HEIGHT AS NECESSARY TO ACCOMMODATE NEW COPING CAP.
06	METAL COMPOSITE MATERIAL AT LOCATIONS OF REMOVED PRECAST PANELS.
07	PATCH ROOF PER MANUFACTURER STANDARD TIE-IN DETAILS. COORDINATE EXTENT OF REMOVAL AND PATCH WITH REMOVAL OF PRECAST PANEL AND INSTALLATION OF NEW PARAPET WITH MCM PANELS.
RF-5	TPO ROOFING

KEY PLAN



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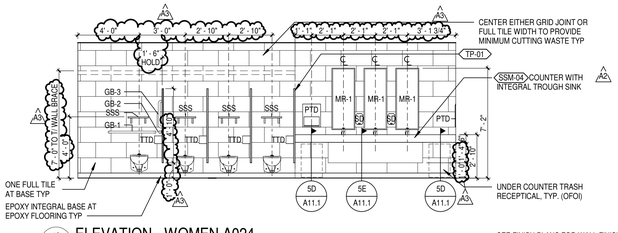
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IFP-HD	10/08/2024	ISSUED FOR PERMIT - HEALTH DEPARTMENT
A3	11/6/2024	ADDENDUM 3

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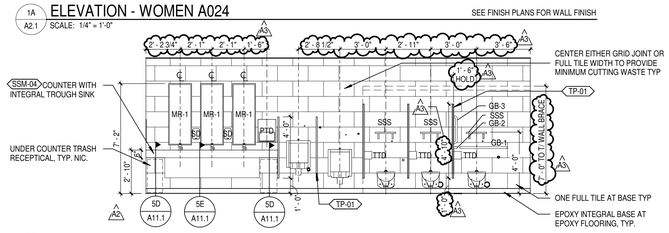
OVERALL ROOF PLAN

A1.3

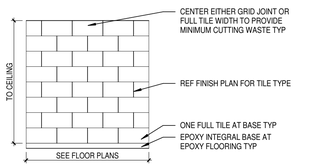
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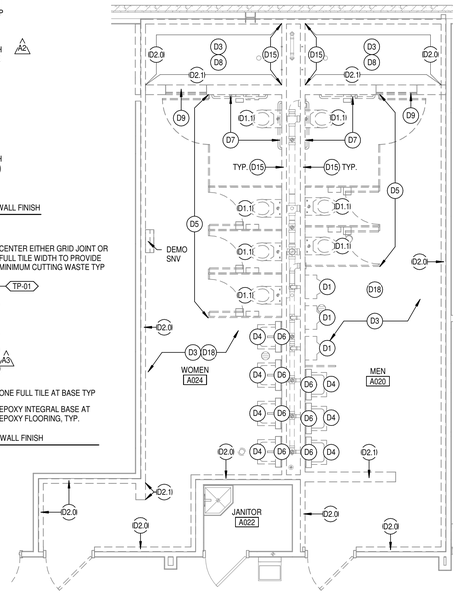
1A A2.1 ELEVATION - WOMEN A024
SCALE: 1/4" = 1'-0"



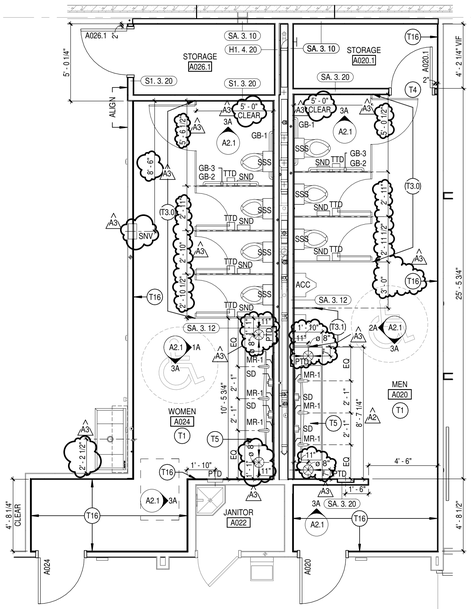
2A A2.1 ELEVATION - MEN A020
SCALE: 1/4" = 1'-0"



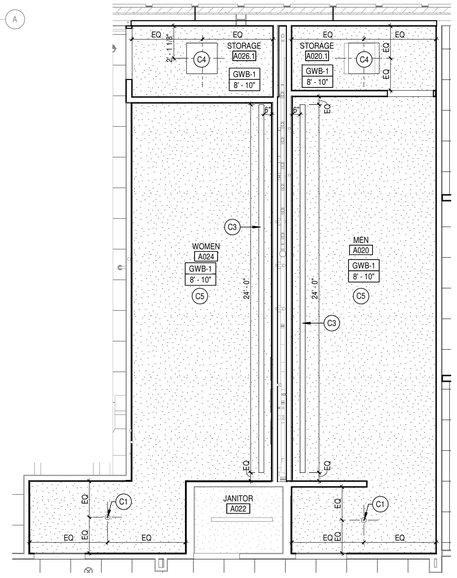
3A A2.1 TYPICAL GROUP TOILET ROOM TILED WALL
SCALE: 1/4" = 1'-0"



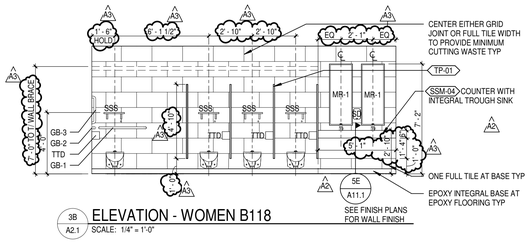
2B A2.1 ENLARGED DEMO PLAN - TOILETS A020/A024
SCALE: 1/4" = 1'-0"



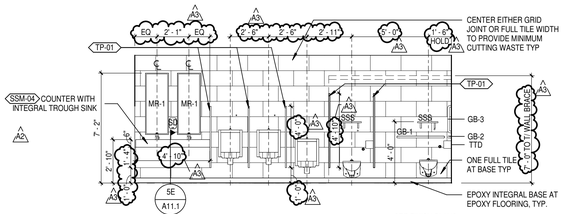
2C A2.1 ENLARGED TOILET ROOMS A020/A024
SCALE: 1/4" = 1'-0"



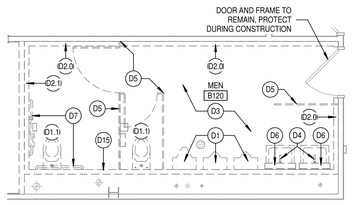
2E A2.1 ENLARGED RCP - TOILETS A020/A024
SCALE: 1/4" = 1'-0"



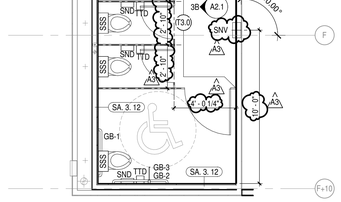
3B A2.1 ELEVATION - WOMEN B118
SCALE: 1/4" = 1'-0"



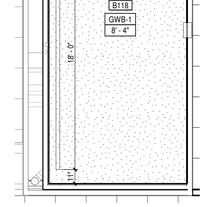
4B A2.1 ELEVATION - MEN B120
SCALE: 1/4" = 1'-0"



4C A2.1 ENLARGED DEMO PLAN - WOMEN B118
SCALE: 1/4" = 1'-0"

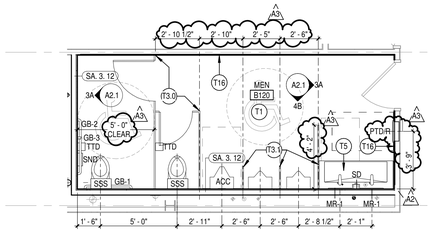


4D A2.1 ENLARGED PLAN - WOMEN B118
SCALE: 1/4" = 1'-0"

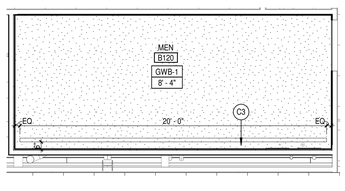


4F A2.1 ENLARGED RCP - WOMEN B118
SCALE: 1/4" = 1'-0"

5B A2.1 ENLARGED DEMO PLAN - MEN B120
SCALE: 1/4" = 1'-0"



5C A2.1 ENLARGED PLAN - MEN B120
SCALE: 1/4" = 1'-0"



5D A2.1 ENLARGED RCP - MEN B120
SCALE: 1/4" = 1'-0"

GENERAL NOTES FOR ACCESSIBILITY

A. ACCESSIBLE URINAL SHALL PROVIDE CLEAR FLOOR SPACE PER ADA SAD 2010 - 605.3
B. ACCESSIBLE WATER CLOSETS SHALL PROVIDE CLEAR SPACE PER ADA SAD 2010 - 604.3.1
C. ACCESSIBLE LAVATORIES AND SINKS SHALL PROVIDE CLEAR SPACE PER ADA SAD 2010 - 606.2
D. ACCESSIBLE TOILET ROOMS SHALL PROVIDE A TURNING SPACE OF 60 INCHES IN DIAMETER PER ADA SAD 2010 - 304.3.1
E. ACCESSIBLE WATER FOUNTAINS SHALL PROVIDE CLEAR FLOOR SPACE PER ADA SAD 2010 - 602.2
F. ACCESSIBLE TOILET PARTITIONS SHALL COMPLY WITH ADA SAD 2010 - 604.8.1
G. EXPOSED PIPES AND SURFACES UNDER LAVATORIES AND SINKS SHALL BE INSULATED PER ADA SAD 2010 - 606.5
H. ALL SINGLE USER TOILET ROOMS IN THIS SCOPE OF WORK TO FOLLOW ADA MOUNTING HEIGHTS AND GUIDELINES. SEE SHEET G1.1.

TOILET ROOM DEMO NOTES

D1 DEMOLISH URINAL AND ASSOCIATED PLUMBING.
D1.1 DEMOLISH WATER CLOSET, CARRIER, AND ASSOCIATED PLUMBING.
D2.0 DEMOLISH GLAZED CMU WALL IN ITS ENTIRETY. STUD BACKUP WALL TO REMAIN.
D2.1 DEMOLISH GLAZED CMU WALL IN ITS ENTIRETY.
D3 DEMOLISH PORCELAIN TILE FLOORING, ADHESIVE, AND INTEGRAL WALL BASE. DEMOLISH FLOOR DRAIN COVER. PREP SLAB FOR NEW FLOOR FINISH.
D4 DEMOLISH PORCELAIN HAND SINK AND ASSOCIATED PLUMBING.
D5 DEMOLISH TOILET PARTITIONS, URINAL SCREENS, AND PARTITION-MOUNTED ACCESSORIES.
D6 DEMOLISH MIRROR WITH ATTACHED TRAY.
D7 DEMOLISH ALL GRAB BARS.
D8 DEMOLISH ANY REMAINING ABANDONED SHOWER FIXTURE(S), ACCESSORIES, AND ASSOCIATED PLUMBING.
D9 DEMOLISH PLYWOOD INFILL PANEL.
D14 REMOVE EXISTING CEILING IN ITS ENTIRETY, INCLUDING LIGHTING AND DIFFUSERS.
D15 DEMOLISH CMU CHASE WALL IN ITS ENTIRETY.
D16 DEMOLISH EXISTING LINEAR FLUORESCENT LIGHTS FIXTURE ABOVE MIRRORS.
D17 DEMO AND SALVAGE FOR REINSTALLATION EXISTING ADA PUSH BUTTON.
D18 SALVAGE EXISTING SOAP AND PAPER TOWEL DISPENSERS FOR REINSTALLATION.

TOILET ROOM NOTES

T1 EPOXY CHIP FLOORING WITH 4" INTEGRAL COVE BASE. SEE FINISH SCHEDULE.
T3.0 PROVIDE PHENOLIC-CORE TOILET PARTITIONS AND ASSOCIATED ACCESSORIES.
T3.1 PROVIDE PHENOLIC-CORE URINAL SCREEN MOUNTED ACCORDING TO ADAAG 2010 STANDARDS.
T4 PROVIDE FLOOR TRANSITION THRESHOLD BETWEEN TOILET AND STORAGE ROOM.
T5 PROVIDE SOLID SURFACE COUNTERTOP WITH INTEGRAL TROUGH SINK AND FAUCETS. COORDINATE WITH PLUMBING.
T13 INSTALL SALVAGED ADA PUSH BUTTON IN NEW WALL. COORDINATE WITH ELECTRICAL.
T15 INFILL EXISTING WALL WHERE DOOR WAS DEMOLISHED. FINISH TO MATCH EXISTING ADJACENT.
T16 PROVIDE 1 LAYER TYPE X 5/8" GWB ON EXISTING METAL STUD WALL.

TOILET ROOM RCP NOTES

C1 PROVIDE RECESSED LED CAN LIGHT. SEE ELECTRICAL FOR FIXTURE TYPE.
C3 PROVIDE RECESSED LINEAR LED LIGHT FIXTURES, SEE ELECTRICAL
C4 PROVIDE NEW SURFACE MOUNTED LED TROFFER. SEE ELECTRICAL FOR FIXTURE TYPE.
C5 PROVIDE NEW GWB CEILING. PAINT P-01.

TOILET ACCESSORIES ABBREVIATIONS

ABBREVIATION	DESCRIPTION
ACC	ADA ACCESSIBLE
BCS	BABY CHANGING STATION
EWC	ELECTRIC WATER COOLER
GB-1	GRAB BAR (BACK WALL)
GB-2	GRAB BAR (SIDE WALL)
GB-3	GRAB BAR (VERTICAL)
GB-5	GRAB BAR (SHOWER)
HD	HAND DRYER
LAV	LAVATORY
MBH	MOP/BROOM HOLDER
MR	MIRROR
PTD	PAPER TOWEL DISPENSER (OFCI)
PTD/R	COMBINATION TOWEL DISPENSER/RECEPTACLE
SD	SOAP DISPENSER (OFCI)
SND	SANITARY NAPKIN DISPOSAL
SNV	SANITARY NAPKIN VENDOR
SSS	STAINLESS STEEL SHELF
TTD	TOILET TISSUE DISPENSER (OFCI)
WC	WATER CLOSET
WR	WASTE RECEPTACLE

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RPS 205 PROJECT #2444
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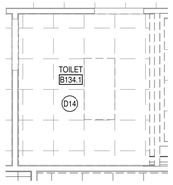
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A2	10/24/2024	ADDENDUM 2
A3	11/6/2024	ADDENDUM 3

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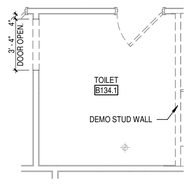
ENLARGED GROUP TOILET ROOM PLANS

A2.1

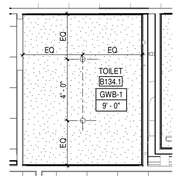
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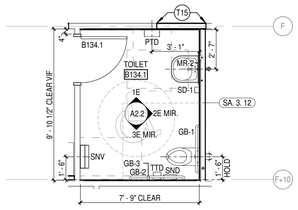
1A A2.2 DEMO RCP - NURSE TOILET B134.1
SCALE: 1/4" = 1'-0"



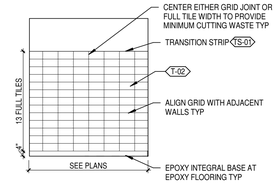
1B A2.2 DEMO PLAN - NURSE TOILET B134.1
SCALE: 1/4" = 1'-0"



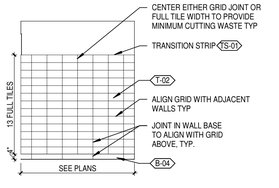
1C A2.2 RCP - NURSE TOILET B134.1
SCALE: 1/4" = 1'-0"



1D A2.2 FLOOR PLAN - NURSE TOILET
SCALE: 1/4" = 1'-0"



1E A2.2 TYP. SINGLE TOILET TILE INSTALL W/ ERF BASE
SCALE: 1/4" = 1'-0"



1F A2.2 TYP. SINGLE TOILET TILE INSTALL W/ TILE BASE
SCALE: 1/4" = 1'-0"

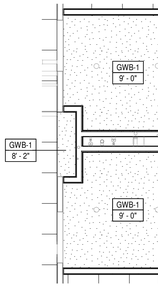
GENERAL NOTES FOR ACCESSIBILITY

A. ACCESSIBLE URINAL SHALL PROVIDE CLEAR FLOOR SPACE PER ADA SAD 2010 - 605.3
B. ACCESSIBLE WATER CLOSETS SHALL PROVIDE CLEAR SPACE PER ADA SAD 2010 - 604.3.1
C. ACCESSIBLE LAVATORIES AND SINKS SHALL PROVIDE CLEAR SPACE PER ADA SAD 2010 - 606.2
D. ACCESSIBLE TOILET ROOMS SHALL PROVIDE A TURNING SPACE OF 60 INCHES IN DIAMETER PER ADA SAD 2010 - 304.3.1
E. ACCESSIBLE WATER FOUNTAINS SHALL PROVIDE CLEAR FLOOR SPACE PER ADA SAD 2010 - 602.2
F. ACCESSIBLE TOILET PARTITIONS SHALL COMPLY WITH ADA SAD 2010 - 604.8.1
G. EXPOSED PIPES AND SURFACES UNDER LAVATORIES AND SINKS SHALL BE INSULATED PER ADA SAD 2010 - 606.5
H. ALL SINGLE USER TOILET ROOMS IN THIS SCOPE OF WORK TO FOLLOW ADA MOUNTING HEIGHTS AND GUIDELINES. SEE SHEET G1.1

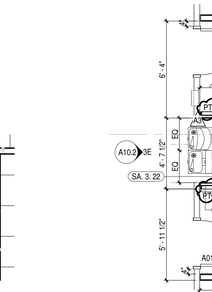
A3

TOILET ROOM NOTES

T1 EPOXY CHIP FLOORING WITH 4" INTEGRAL COVE BASE. SEE FINISH SCHEDULE.
T3.0 PROVIDE PHENOLIC-CORE TOILET PARTITIONS AND ASSOCIATED ACCESSORIES.
T3.1 PROVIDE PHENOLIC-CORE URINAL SCREEN MOUNTED ACCORDING TO ADAAG 2010 STANDARDS.
T4 PROVIDE FLOOR TRANSITION THRESHOLD BETWEEN TOILET AND STORAGE ROOM.
T5 PROVIDE SOLID SURFACE COUNTERTOP WITH INTEGRAL TROUGH SINK AND FAUCETS. COORDINATE WITH PLUMBING.
T13 INSTALL SALVAGED ADA PUSH BUTTON IN NEW WALL. COORDINATE WITH ELECTRICAL.
T15 INFILL EXISTING WALL WHERE DOOR WAS DEMOLISHED. FINISH TO MATCH EXISTING ADJACENT.
T16 PROVIDE 1 LAYER TYPE X 5/8" GWB ON EXISTING METAL STUD WALL.



2A A2.2 FACULTY LOUNGE TOILETS - DEMO RCP
SCALE: 1/4" = 1'-0"

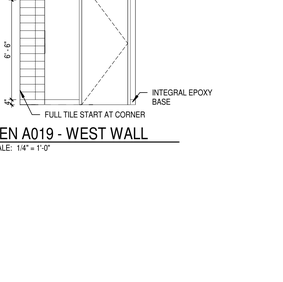


2B A2.2 FACULTY LOUNGE TOILETS - DEMO
SCALE: 1/4" = 1'-0"

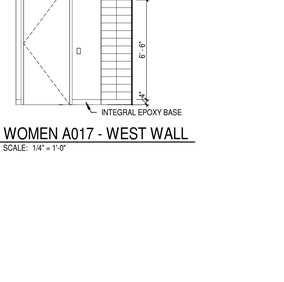


2C A2.2 FACULTY LOUNGE TOILETS - RCP
SCALE: 1/4" = 1'-0"

2D A2.2 FACULTY LOUNGE TOILETS
SCALE: 1/4" = 1'-0"



2E A2.2 TYP. SINGLE TOILET - WET WALL
SCALE: 1/4" = 1'-0"



2F A2.2 TYP. COMMONS SINGLE TOILET WET WALL
SCALE: 1/4" = 1'-0"

3E A2.2 TYP. SINGLE TOILET GRAB BAR WALL
SCALE: 1/4" = 1'-0"

3F A2.2 TYP. COMMONS SINGLE TOILET GRAB BAR WALL
SCALE: 1/4" = 1'-0"

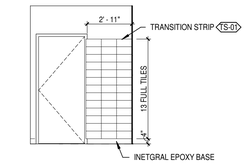
TOILET ROOM DEMO NOTES

D1 DEMOLISH URINAL AND ASSOCIATED PLUMBING.
D1.1 DEMOLISH WATER CLOSET, CARRIER, AND ASSOCIATED PLUMBING.
D2.0 DEMOLISH GLAZED CMU WALL IN ITS ENTIRETY. STUD BACKUP WALL TO REMAIN.
D2.1 DEMOLISH GLAZED CMU WALL IN ITS ENTIRETY.
D3 DEMOLISH PORCELAIN TILE FLOORING, ADHESIVE, AND INTEGRAL WALL BASE. DEMOLISH FLOOR DRAIN COVER. PREP SLAB FOR NEW FLOOR FINISH.
D4 DEMOLISH PORCELAIN HAND SINK AND ASSOCIATED PLUMBING.
D5 DEMOLISH TOILET PARTITIONS, URINAL SCREENS, AND PARTITION-MOUNTED ACCESSORIES.
D6 DEMOLISH MIRROR WITH ATTACHED TRAY.
D7 DEMOLISH ALL GRAB BARS.
D8 DEMOLISH ANY REMAINING ABANDONED SHOWER FIXTURE(S), ACCESSORIES, AND ASSOCIATED PLUMBING.
D9 DEMOLISH PLYWOOD INFILL PANEL.
D14 REMOVE EXISTING CEILING IN ITS ENTIRETY, INCLUDING LIGHTING AND DIFFUSERS.
D15 DEMOLISH CMU CHASE WALL IN ITS ENTIRETY.
D16 DEMOLISH EXISTING LINEAR FLUORESCENT LIGHTS FIXTURE ABOVE MIRRORS.
D17 DEMO AND SALVAGE FOR REINSTALLATION EXISTING ADA PUSH BUTTON.
D18 SALVAGE EXISTING SOAP AND PAPER TOWEL DISPENSERS FOR REINSTALLATION.

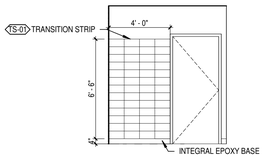
3A A2.2 RCP - COMMONS SINGLE USER TOILETS
SCALE: 1/4" = 1'-0"

3B A2.2 FLOOR PLAN - COMMONS TOILETS & WELLNESS ROOM
SCALE: 1/4" = 1'-0"

3C A2.2 NURSING LAB MOCK BATHROOM
SCALE: 1/4" = 1'-0"



4E A2.2 TYP. FACULTY TOILET - WEST WALL
SCALE: 1/4" = 1'-0"



4F A2.2 TOILET A015 - SOUTH WALL
SCALE: 1/4" = 1'-0"

TOILET ROOM RCP NOTES

C1 PROVIDE RECESSED LED CAN LIGHT. SEE ELECTRICAL FOR FIXTURE TYPE.
C3 PROVIDE RECESSED LINEAR LED LIGHT FIXTURES, SEE ELECTRICAL.
C4 PROVIDE NEW SURFACE MOUNTED LED TROFFER. SEE ELECTRICAL FOR FIXTURE TYPE.
C5 PROVIDE NEW GWB CEILING. PAINT P-01.

4A A2.2 RCP - AREA A SINGLE USER TOILETS
SCALE: 1/4" = 1'-0"

4B A2.2 FLOOR PLAN - AREA A SINGLE USER TOILETS
SCALE: 1/4" = 1'-0"

5E A2.2 MEN A019 - WEST WALL
SCALE: 1/4" = 1'-0"

5F A2.2 WOMEN A017 - WEST WALL
SCALE: 1/4" = 1'-0"

TOILET ACCESSORIES ABBREVIATIONS

ABBREVIATION	DESCRIPTION
ACC	ADA ACCESSIBLE
BCS	BABY CHANGING STATION
EWC	ELECTRIC WATER COOLER
GB-1	GRAB BAR (BACK WALL)
GB-2	GRAB BAR (SIDE WALL)
GB-3	GRAB BAR (VERTICAL)
GB-5	GRAB BAR (SHOWER)
HD	HAND DRYER
LAV	LAVATORY
MBH	MOP/BROOM HOLDER
MR	MIRROR
PTD	PAPER TOWEL DISPENSER (OFCI)
PTD/R	COMBINATION TOWEL DISPENSER/RECEPTACLE
SD	SOAP DISPENSER (OFCI)
SND	SANITARY NAPKIN DISPOSAL
SNV	SANITARY NAPKIN VENDOR
SSS	STAINLESS STEEL SHELF
TTD	TOILET TISSUE DISPENSER (OFCI)
WC	WATER CLOSET
WR	WASTE RECEPTACLE

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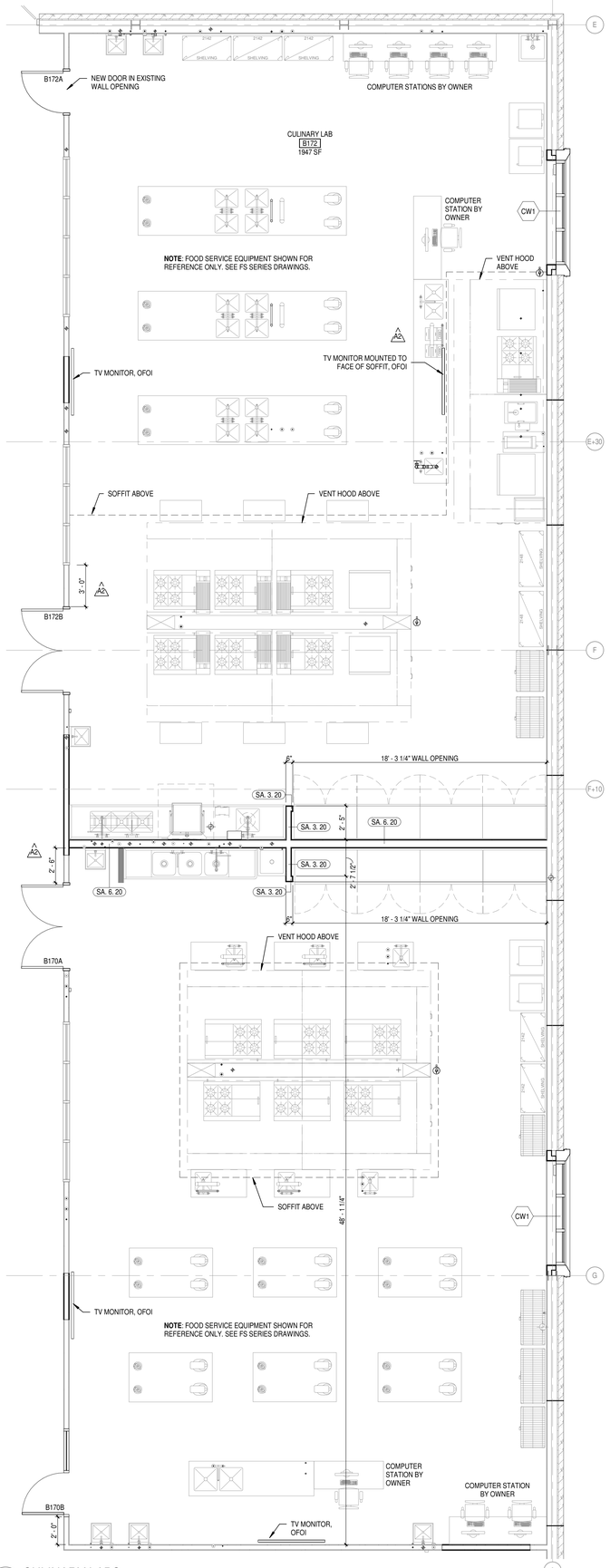
IFB	9/30/2024	ISSUED FOR BID
A3	11/6/2024	ADDENDUM 3

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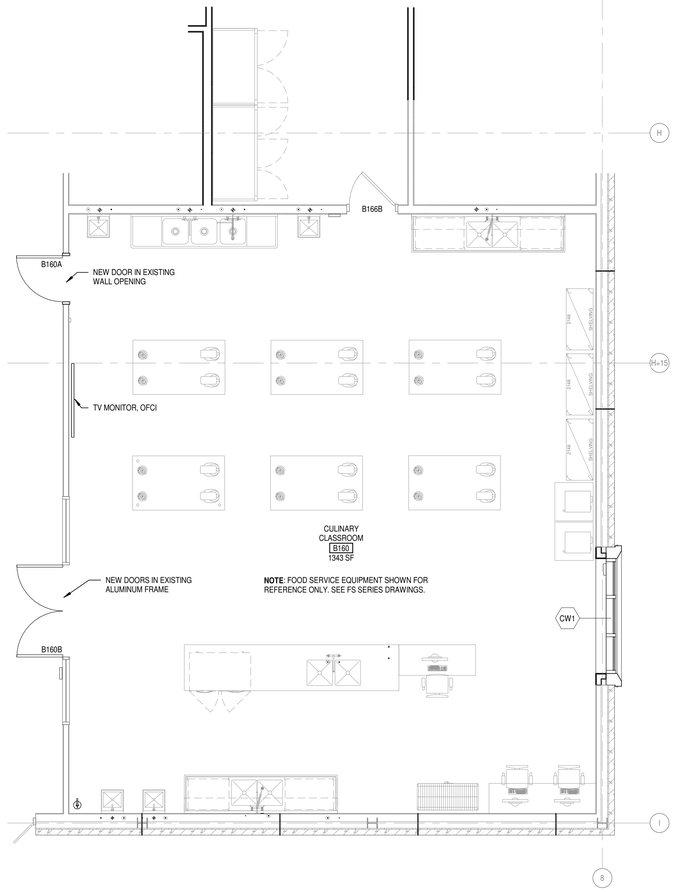
ENLARGED TOILET ROOM PLANS

A2.2

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5A A2.3 CULINARY LABS
SCALE: 1/4" = 1'-0"



5C A2.3 CULINARY CLASSROOM
SCALE: 1/4" = 1'-0"

5E A2.3 ENLARGED PLAN GRAB-N-GO MARKET
SCALE: 1/4" = 1'-0"

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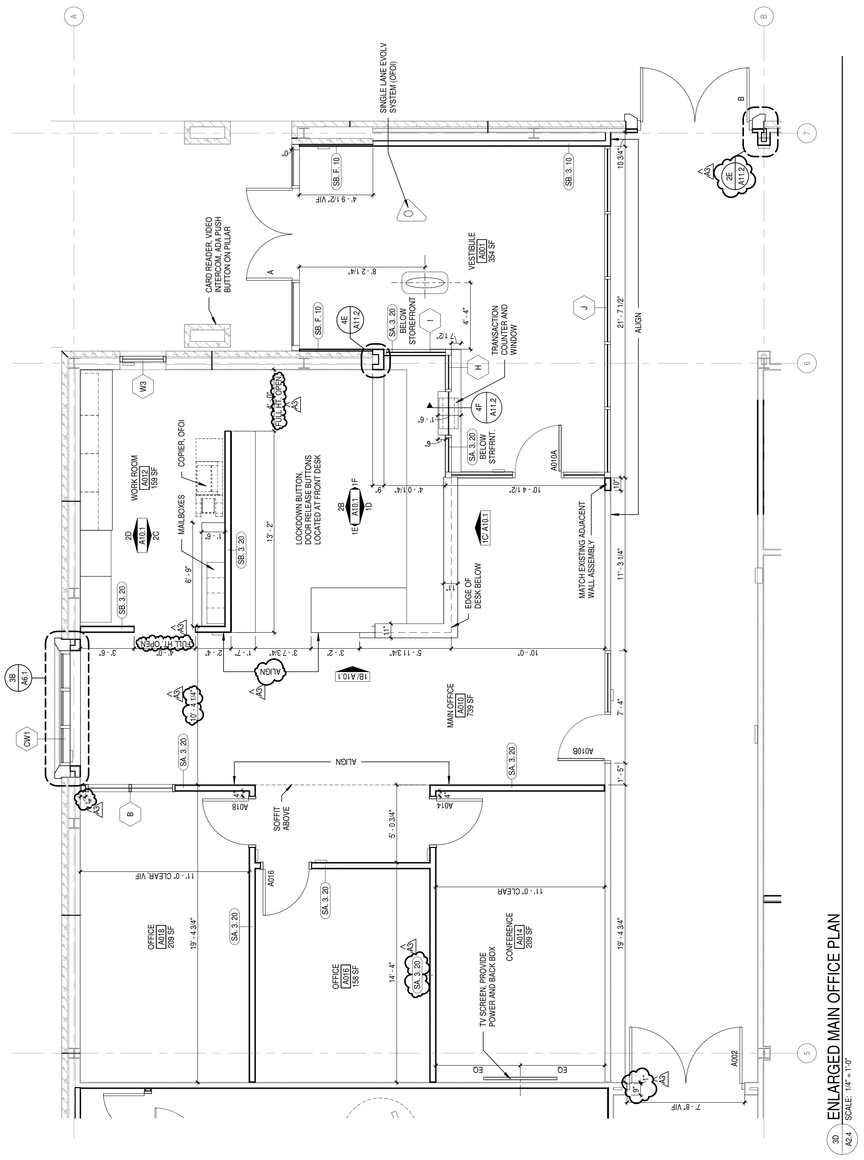
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IFP-HD	10/08/2024	ISSUED FOR PERMIT - HEALTH DEPARTMENT
A2	10/24/2024	ADDENDUM 2
A3	11/6/2024	ADDENDUM 3

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ENLARGED FLOOR PLANS - CULINARY LABS + GRAB & GO MARKET

A2.3

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30 A2.4 SCALE: 1/4" = 1'-0"

ENLARGED MAIN OFFICE PLAN

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ENLARGED FLOOR PLAN - MAIN OFFICE SUITE

A2.4

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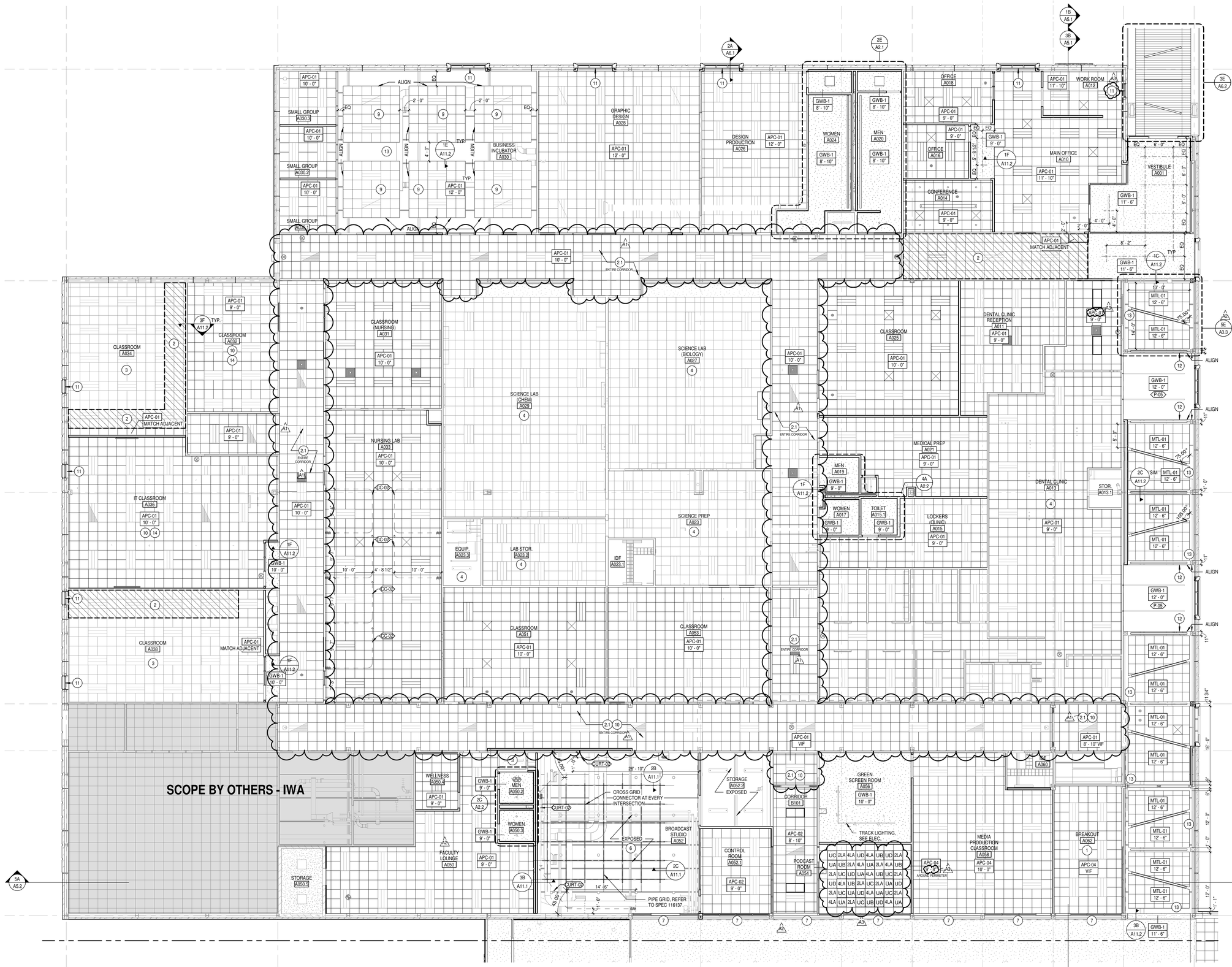
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REFLECTED CEILING PLAN - AREA A

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

REFLECTED CEILING PLAN GENERAL NOTES

A. REFLECTED CEILING PLAN GENERAL NOTES APPLY TO ALL REFLECTED CEILING PLAN SHEETS.
B. ALL CEILING GRIDS/PANELS SHALL BE CENTERED IN EACH ROOM UNLESS NOTED OTHERWISE.
C. CEILING HEIGHTS ARE NOTED ON THE REFLECTED CEILING PLANS ARE MEASURED FROM THE FINISH FLOOR OF THE ROOM.
D. ALL ELECTRICAL FIXTURES, SPEAKERS, SMOKE AND THERMAL DETECTORS, MECHANICAL GRILLES, SPRINKLER HEADS, AND OTHER CEILING MOUNTED DEVICES, SHALL BE CENTERED BETWEEN CEILING GRIDS UNLESS NOTED OTHERWISE. SPRINKLER HEADS SHALL BE WITHIN A 3-INCH RADIUS CENTERED BETWEEN CEILING GRIDS.
E. IN ACOUSTICAL CEILING PANELS WITH SCORE IN THE CENTER, CENTER DEVICES REFERENCE IN NOTE D IN ONE HALF OF THE TILE. DO NOT LOCATE ON THE SCORE. FOR ACP WITH MULTIPLE SCORED PATTERNS, COORDINATE LOCATION WITH THE ARCHITECT.
F. PROVIDE SUSPENSION SYSTEM AROUND ELECTRICAL FIXTURES, MECHANICAL GRILLES, DIFFUSERS, AND OTHER CEILING MOUNTED DEVICES. AT ACOUSTICAL PANEL CEILINGS.
G. ALL DIMENSIONS ON REFLECTED CEILING PLANS ARE ACTUAL AND ARE TO THE FOLLOWING UNLESS NOTED OTHERWISE:
   a. FACE OF FINISHED WALL
   b. FACE OF FINISHED BULKHEADS
   c. CENTERLINE OF COLUMNS
   d. CENTERLINE OF TEES
H. IN AREAS WITH EXPOSED STRUCTURE CEILINGS, COORDINATE EXACT LOCATIONS OF MECHANICAL GRILLES, DIFFUSERS, DUCTWORK AND ELECTRICAL FIXTURES WITH EACH REPRESENTATIVE SUBCONTRACTOR.
I. ALL WALLS EXTEND TO UNDERSIDE OF DECK EXCEPT THOSE SHOWN SHADED IN WHICH GYPSUM BOARD OR MASONRY EXTENDS MIN 4 INCHES ABOVE FINISHED CEILING. ALL METAL STUDS EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK.

SHEET NOTES

1 INSTALL NEW APC TILES IN EXISTING TO REMAIN CEILING GRID.
2 INSTALL CEILING TILES AND CEILING GRID THAT WERE REMOVED TO COMPLETE ABOVE CEILING WORK. REPLACE ANY TILES AND/OR GRID ELEMENTS THAT WERE INCIDENTALLY DAMAGED.
2.1 NEW CEILING GRID WITH REINSTALLED SALVAGED CEILING TILES THAT WERE REMOVED TO COMPLETE ABOVE CEILING WORK. REPLACE ANY TILES THAT WERE INCIDENTALLY DAMAGED.
3 EXISTING CEILING AND LIGHTING TO REMAIN
4 EXISTING CEILING TO REMAIN.
5 PROVIDE UNISTRUT GRID PAINTED WITH HPC TO MATCH P-07 WITH LINEAR LIGHTING AND RETRACTABLE CORD REELS MOUNTED TO GRID.
6 PAINT EXPOSED ROOF DECK, DUCT WORK, AND CONDUIT MATTE BLACK PAINT, P-04.
7 REPLACE EXISTING COVE LIGHT FIXTURES WITH LED EQUIVALENT. SEE ELECTRICAL.
8 SUSPEND PENDANT CAN LIGHTS FROM DECK. LENS LOCATED 11'-0" A.F.F.
9 SUSPEND 2X2 ACP CLOUD FROM EXISTING TRUSSES.
10 REINSTALL SALVAGED 2X4 LED LIGHT FIXTURES IN NEW LAYOUT, SEE ELECTRICAL.
11 WT-01, MANUAL SHADES LOCATED AT FULL EXTENT OF EXTERIOR GLAZING, UP TO 12'-0" A.F.F.
12 PAINT EDGE OF GWB SOFFIT TO MATCH NEW GWB CEILING FINISH
13 PAINT ALL EXPOSED SURFACES P-11 INCLUDING BUT NOT LIMITED TO, WALL, STRUCTURE, MECHANICAL, PIPING, CONDUIT, ETC.
14 PAINT ALL MAJOR DUCTWORK P-07.
15 CORD REEL MOUNTED TO UNISTRUT GRID, SEE ELECTRICAL.
16 INSTALL GWB CEILING WHERE PREVIOUSLY REMOVED FOR ABOVE CEILING WORK. MATCH EXISTING ADJACENT IN ALL ASPECTS.

SPECIALTY LIGHTING AND ACOUSTICS

2LA FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 LIGHT - 2" DEPTH
4LA FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 LIGHT - 4" DEPTH
UA FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 - 8" DEPTH
UB FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 - 6" DEPTH
UC FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 - 4" DEPTH
UD FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 - 2" DEPTH

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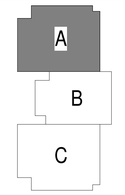
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09/30/2024

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IFB	9/30/2024	ISSUED FOR BID
A1	10/15/2024	ADDENDUM 1
A2	10/24/2024	ADDENDUM 2
A3	11/6/2024	ADDENDUM 3

KEY PLAN

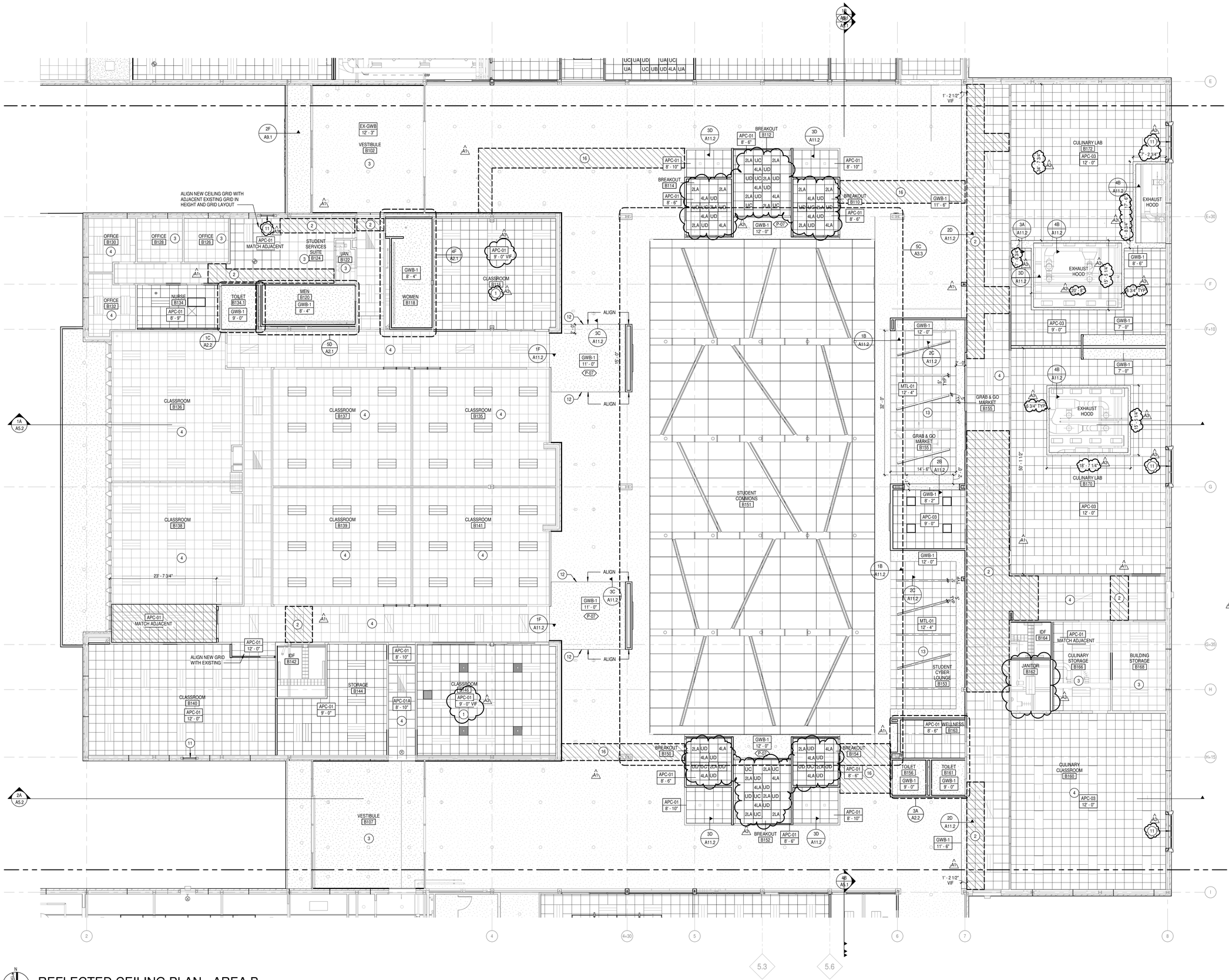


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AREA A - REFLECTED CEILING PLAN

A3.1A

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REFLECTED CEILING PLAN GENERAL NOTES

A. REFLECTED CEILING PLAN GENERAL NOTES APPLY TO ALL REFLECTED CEILING PLAN SHEETS.
B. ALL CEILING GRIDS/PANELS SHALL BE CENTERED IN EACH ROOM UNLESS NOTED OTHERWISE.
C. CEILING HEIGHTS ARE NOTED ON THE REFLECTED CEILING PLANS ARE MEASURED FROM THE FINISH FLOOR OF THE ROOM.
D. ALL ELECTRICAL FIXTURES, SPEAKERS, SMOKE AND THERMAL DETECTORS, MECHANICAL GRILLES, SPRINKLER HEADS, AND OTHER CEILING MOUNTED DEVICES, SHALL BE CENTERED BETWEEN CEILING GRIDS UNLESS NOTED OTHERWISE. SPRINKLER HEADS SHALL BE WITHIN A 3-INCH RADIUS CENTERED BETWEEN CEILING GRIDS.
E. IN ACOUSTICAL CEILING PANELS WITH SCORE IN THE CENTER, CENTER DEVICES REFERENCE IN NOTE D IN ONE HALF OF THE TILE. DO NOT LOCATE ON THE SCORE. FOR ACP WITH MULTIPLE SCORED PATTERNS, COORDINATE LOCATION WITH THE ARCHITECT.
F. PROVIDE SUSPENSION SYSTEM AROUND ELECTRICAL FIXTURES, MECHANICAL GRILLES, DIFFUSERS, AND OTHER CEILING MOUNTED DEVICES. AT ACOUSTICAL PANEL CEILINGS.
G. ALL DIMENSIONS ON REFLECTED CEILING PLANS ARE ACTUAL AND ARE TO THE FOLLOWING UNLESS NOTED OTHERWISE:
   a. FACE OF FINISHED WALL
   b. FACE OF FINISHED BULKHEADS
   c. CENTERLINE OF COLUMNS
   d. CENTERLINE OF TEES
H. IN AREAS WITH EXPOSED STRUCTURE CEILINGS, COORDINATE EXACT LOCATIONS OF MECHANICAL GRILLES, DIFFUSERS, DUCTWORK AND ELECTRICAL FIXTURES WITH EACH REPRESENTATIVE SUBCONTRACTOR.
I. ALL WALLS EXTEND TO UNDERSIDE OF DECK EXCEPT THOSE SHOWN SHADED IN WHICH GYPSUM BOARD OR MASONRY EXTENDS MIN 4 INCHES ABOVE FINISHED CEILING. ALL METAL STUDS EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK.

SHEET NOTES

1 INSTALL NEW APC TILES IN EXISTING TO REMAIN CEILING GRID.
2 INSTALL CEILING TILES AND CEILING GRID THAT WERE REMOVED TO COMPLETE ABOVE CEILING WORK. REPLACE ANY TILES AND/OR GRID ELEMENTS THAT WERE INCIDENTALLY DAMAGED.
2.1 NEW CEILING GRID WITH REINSTALLED SALVAGED CEILING TILES THAT WERE REMOVED TO COMPLETE ABOVE CEILING WORK. REPLACE ANY TILES THAT WERE INCIDENTALLY DAMAGED.
3 EXISTING CEILING AND LIGHTING TO REMAIN
4 EXISTING CEILING TO REMAIN.
5 PROVIDE UNISTRUT GRID PAINTED WITH HPC TO MATCH P-07 WITH LINEAR LIGHTING AND RETRACTABLE CORD REELS MOUNTED TO GRID.
6 PAINT EXPOSED ROOF DECK, DUCT WORK, AND CONDUIT MATTE BLACK PAINT, P-04.
7 REPLACE EXISTING COVE LIGHT FIXTURES WITH LED EQUIVALENT. SEE ELECTRICAL.
8 SUSPEND PENDANT CAN LIGHTS FROM DECK. LENS LOCATED 11'-0" A.F.F.
9 SUSPEND 2X2 ACP CLOUD FROM EXISTING TRUSSES.
10 REINSTALL SALVAGED 2X4 LED LIGHT FIXTURES IN NEW LAYOUT, SEE ELECTRICAL.
11 WT-01, MANUAL SHADES LOCATED AT FULL EXTENT OF EXTERIOR GLAZING, UP TO 12'-0" A.F.F.
12 PAINT EDGE OF GWB SOFFIT TO MATCH NEW GWB CEILING FINISH
13 PAINT ALL EXPOSED SURFACES P-11 INCLUDING BUT NOT LIMITED TO, WALL, STRUCTURE, MECHANICAL, PIPING, CONDUIT, ETC.
14 PAINT ALL MAJOR DUCTWORK P-07.
15 CORD REEL MOUNTED TO UNISTRUT GRID, SEE ELECTRICAL.
16 INSTALL GWB CEILING WHERE PREVIOUSLY REMOVED FOR ABOVE CEILING WORK. MATCH EXISTING ADJACENT IN ALL ASPECTS.

A1 A1

SPECIALTY LIGHTING AND ACOUSTICS

A3
2LA FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 LIGHT - 2" DEPTH
4LA FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 LIGHT - 4" DEPTH
UA FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 - 8" DEPTH
UB FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 - 6" DEPTH
UC FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 - 4" DEPTH
UD FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 - 2" DEPTH

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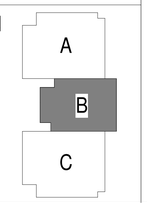
ROCKFORD PUBLIC SCHOOLS - DISTRICT 205
RPS 205 IFB #25-11
RPS 205 PROJECT #2444
4151 Samuelson Road
Rockford, IL 61109

ISSUED FOR BID
09/30/2024

REVISIONS

IFB	9/30/2024	ISSUED FOR BID
IFP-HD	10/08/2024	ISSUED FOR PERMIT - HEALTH DEPARTMENT
A1	10/15/2024	ADDENDUM 1
A3	11/6/2024	ADDENDUM 3

KEY PLAN



22-24119-00

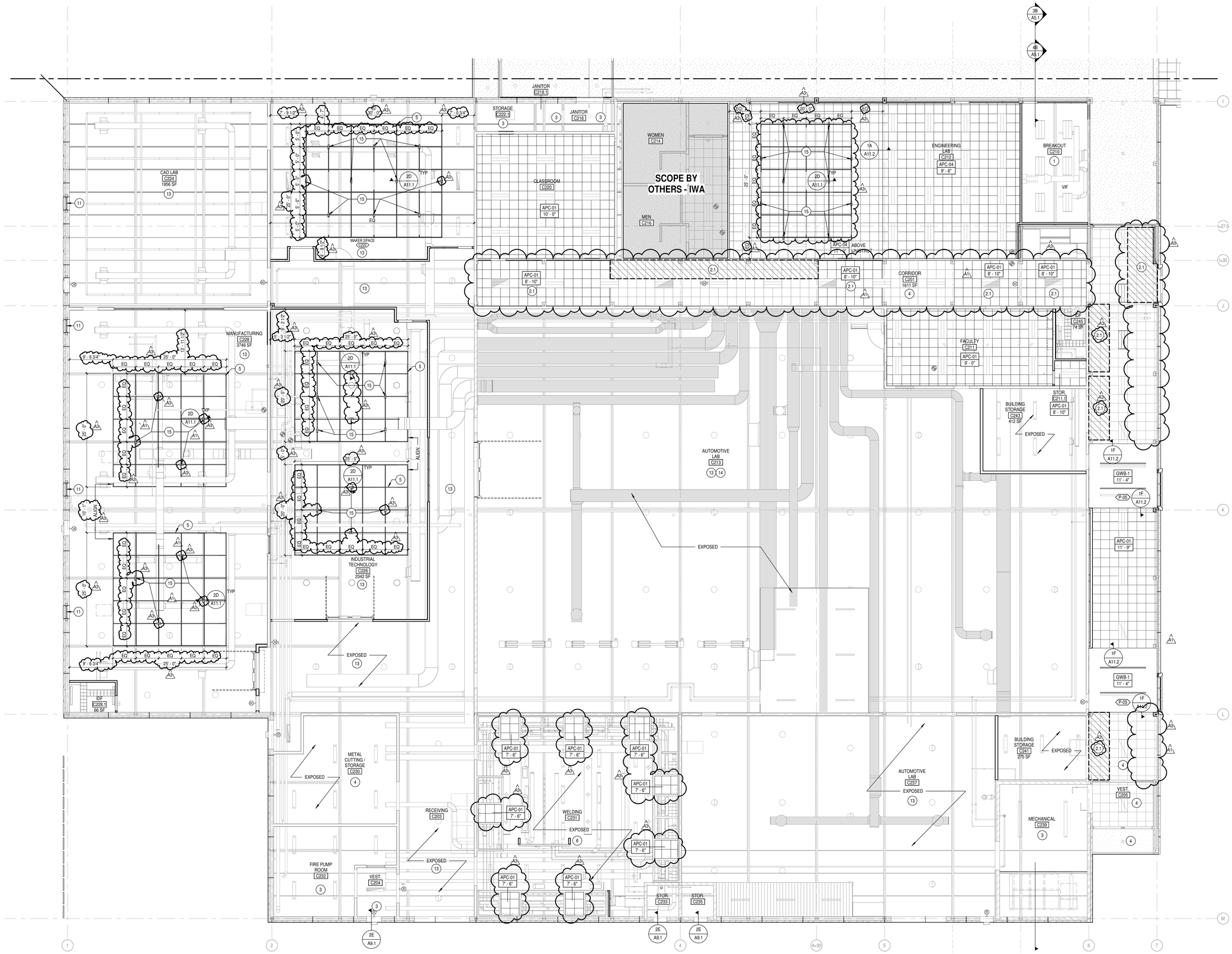
AREA B - REFLECTED CEILING PLAN

A3.1B

REFLECTED CEILING PLAN - AREA B

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

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REFLECTED CEILING PLAN - AREA C

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

REFLECTED CEILING PLAN GENERAL NOTES

A. REFLECTED CEILING PLAN GENERAL NOTES APPLY TO ALL REFLECTED CEILING PLAN SHEETS.
B. ALL CEILING GRIDS/PANELS SHALL BE CENTERED IN EACH ROOM UNLESS NOTED OTHERWISE.
C. CEILING HEIGHTS ARE NOTED ON THE REFLECTED CEILING PLANS ARE MEASURED FROM THE FINISH FLOOR OF THE ROOM.
D. ALL ELECTRICAL FIXTURES, SPEAKERS, SMOKE AND THERMAL DETECTORS, MECHANICAL GRILLES, SPRINKLER HEADS, AND OTHER CEILING MOUNTED DEVICES, SHALL BE CENTERED BETWEEN CEILING GRIDS UNLESS NOTED OTHERWISE. SPRINKLER HEADS SHALL BE WITHIN A 3-INCH RADIUS CENTERED BETWEEN CEILING GRIDS.
E. IN ACOUSTICAL CEILING PANELS WITH SCORE IN THE CENTER, CENTER DEVICES REFERENCE IN NOTE D IN ONE HALF OF THE TILE. DO NOT LOCATE ON THE SCORE. FOR ACP WITH MULTIPLE SCORED PATTERNS, COORDINATE LOCATION WITH THE ARCHITECT.
F. PROVIDE SUSPENSION SYSTEM AROUND ELECTRICAL FIXTURES, MECHANICAL GRILLES, DIFFUSERS, AND OTHER CEILING MOUNTED DEVICES. AT ACOUSTICAL PANEL CEILINGS.
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15 CORD REEL MOUNTED TO UNISTRUT GRID, SEE ELECTRICAL.
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SPECIALTY LIGHTING AND ACOUSTICS

2LA FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 LIGHT - 2" DEPTH
4LA FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 LIGHT - 4" DEPTH
UA FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 - 8" DEPTH
UB FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 - 6" DEPTH
UC FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 - 4" DEPTH
UD FOCAL POINT LIGHTS - NIVO ACOUSTIC 2X2 - 2" DEPTH

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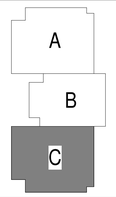
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REVISIONS

IFB	9/30/2024	ISSUED FOR BID
A1	10/15/2024	ADDENDUM 1
A3	11/6/2024	ADDENDUM 3

KEY PLAN

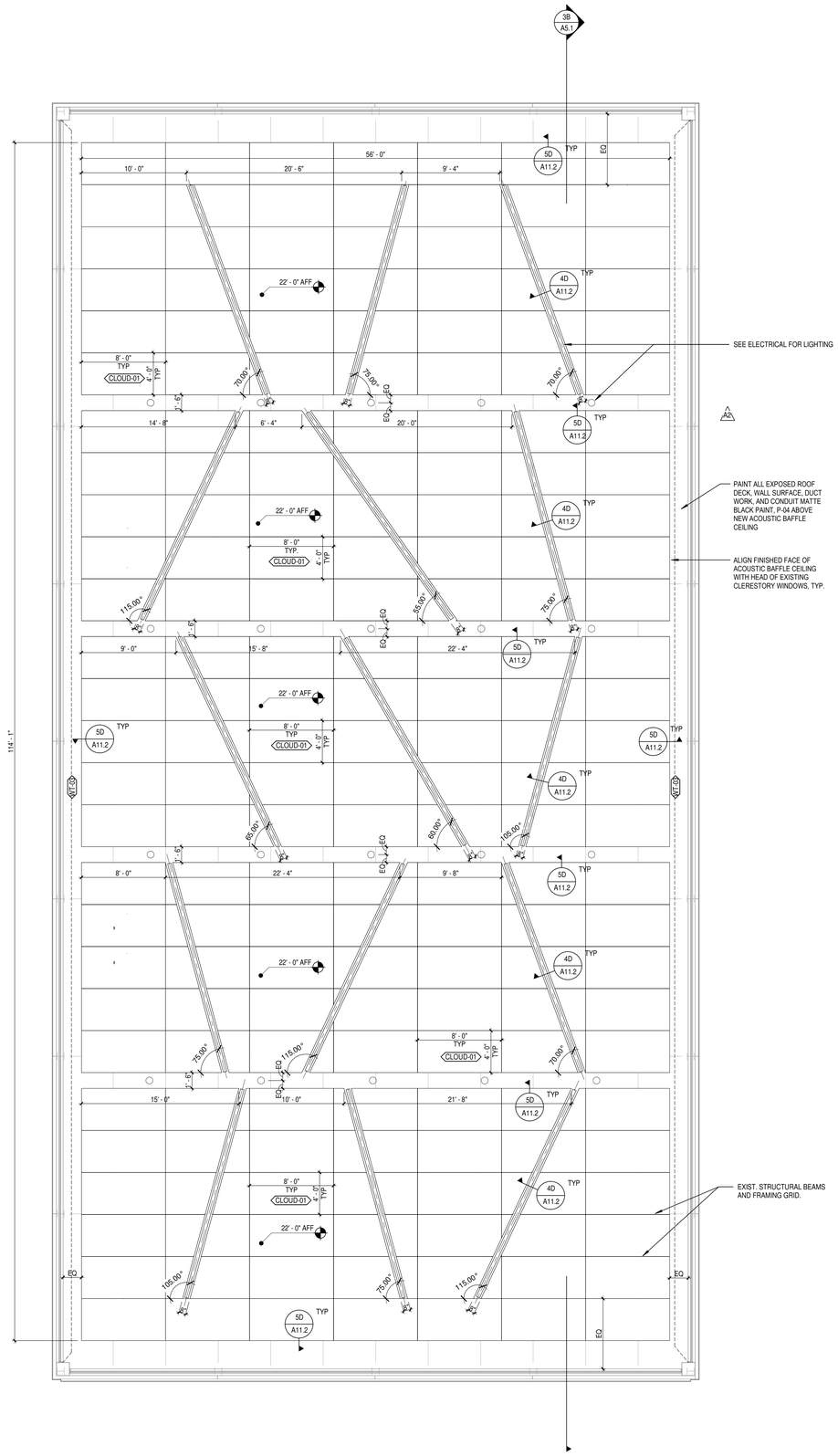


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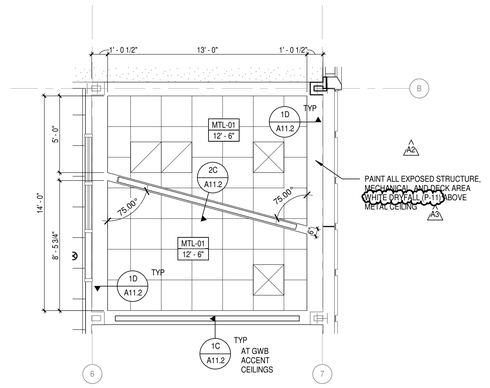
AREA C - REFLECTED CEILING PLAN

A3.1C

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5C A3.3 AREA B - COMMONS CLERESTORY RCP
SCALE: 3/16" = 1'-0"



A2 5E A3.3 ENLARGED RCP - TYP. MAIN HALLWAY METAL CLG BAY
SCALE: 1/4" = 1'-0"

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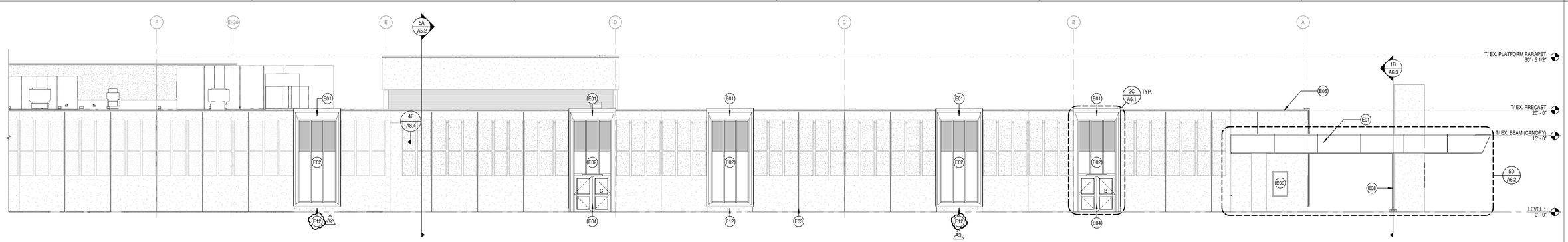
IFB	9/30/2024	ISSUED FOR BID
A2	10/24/2024	ADDENDUM 2
A3	11/6/2024	ADDENDUM 3

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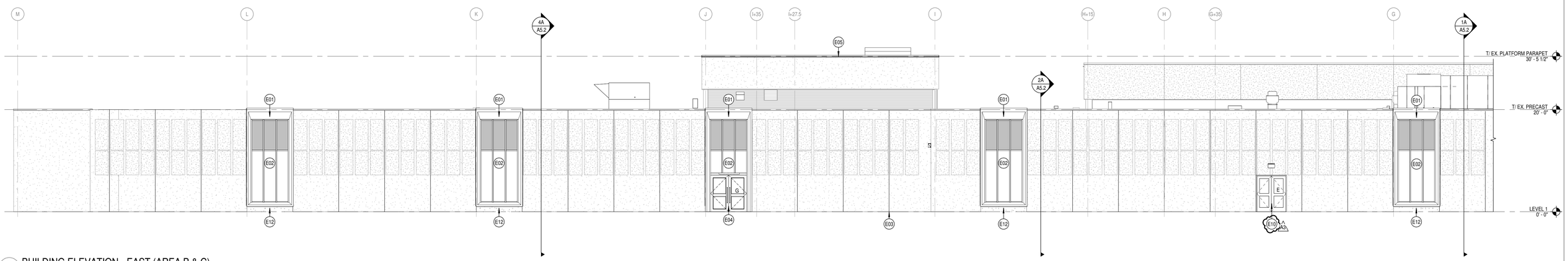
A3.3

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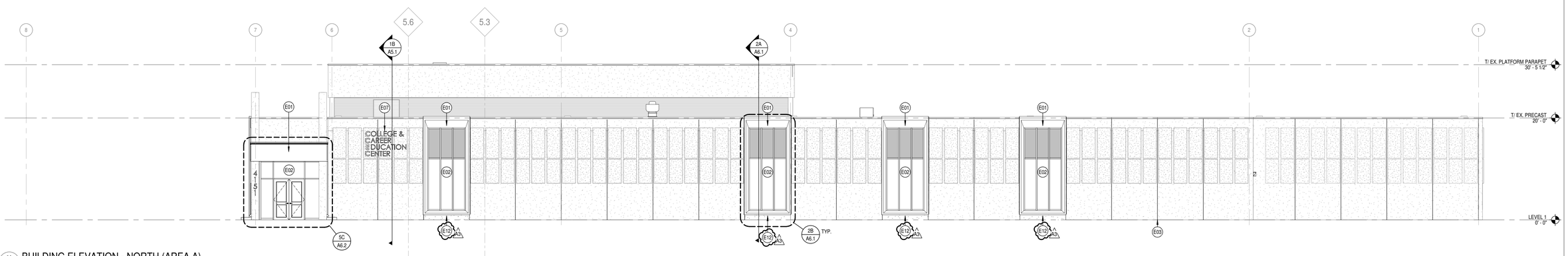
1A A4.1 BUILDING ELEVATION - EAST (AREA A & B)

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



2A A4.1 BUILDING ELEVATION - EAST (AREA B & C)

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



3A A4.1 BUILDING ELEVATION - NORTH (AREA A)

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

SHEET NOTES

E01	ACM-01 - ALUMINUM COMPOSITE PANEL
E02	ALUM CURTAINWALL SYSTEM
E03	NEW EXTERIOR JOINT SELANT, TYP.
E04	DUAL LITE ALUMINUM DOORS (EXIT ONLY)
E05	PREFINISHED METAL COPING
E07	DIMENSIONAL ALUMINUM SIGNAGE (1'-0")
E08	PREFINISHED METAL DOWNSPOUT
E09	ALUM STOREFRONT SYSTEM
E10	EXTERIOR HM DOOR & FRAME
E11	EXTERIOR ALUM DOOR & FRAME
E12	ARCHITECTURAL PRECAST CONCRETE

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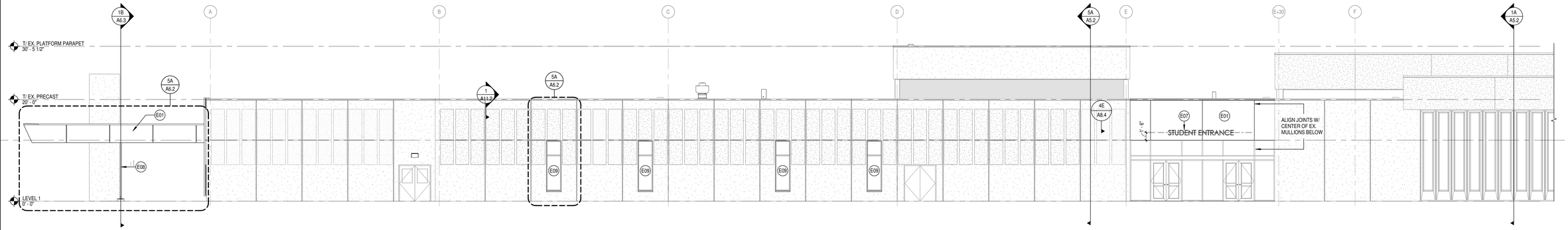
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A3	11/6/2024	ADDENDUM 3

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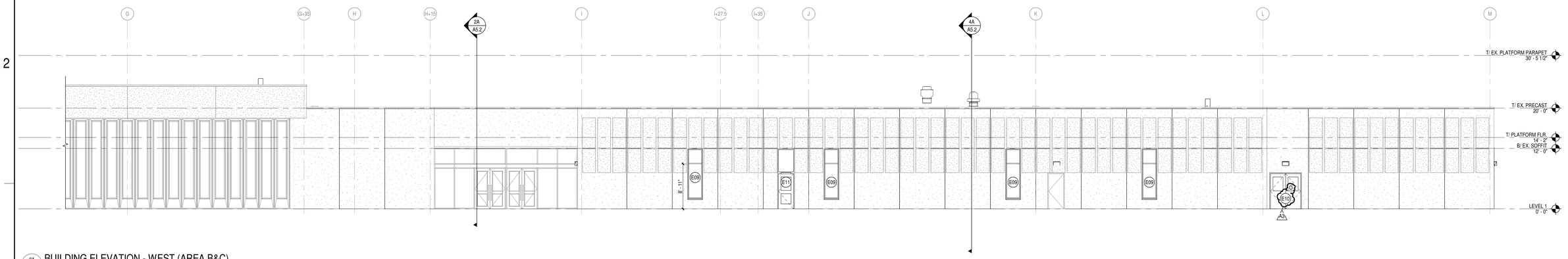
EXTERIOR ELEVATIONS

A4.1

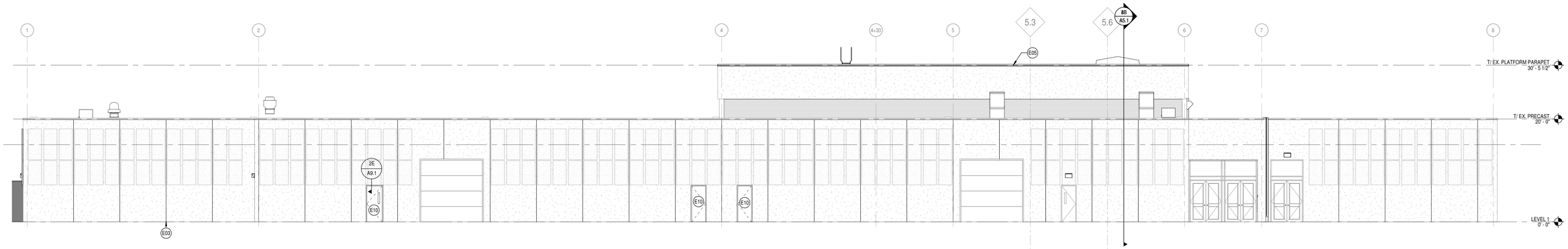
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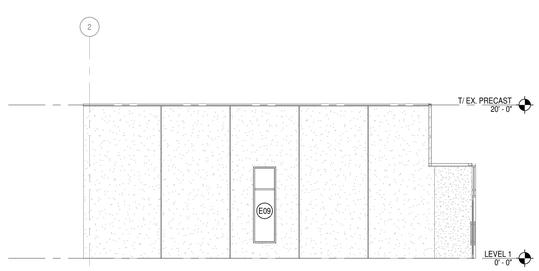
1A A4.2 BUILDING ELEVATION - WEST (AREA A&B)
SCALE: 1/8" = 1'-0"



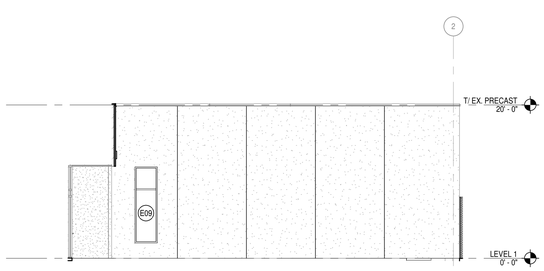
2A A4.2 BUILDING ELEVATION - WEST (AREA B&C)
SCALE: 1/8" = 1'-0"



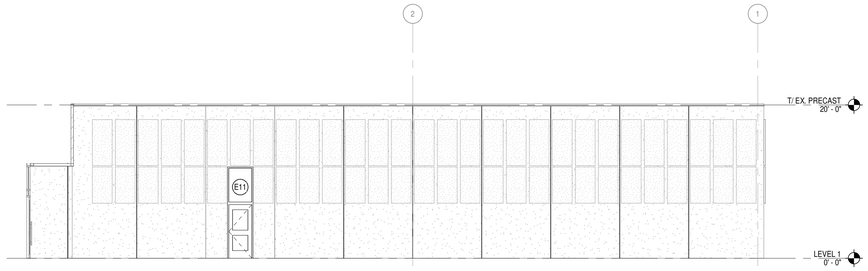
3A A4.2 BUILDING ELEVATION - SOUTH
SCALE: 1/8" = 1'-0"



5A A4.2 BUILDING ELEVATION - SOUTH PATIO ENTRY (NORTH WALL)
SCALE: 1/8" = 1'-0"



5B A4.2 BUILDING ELEVATION - NORTH PATIO ENTRY (SOUTH WALL)
SCALE: 1/8" = 1'-0"



5C A4.2 BUILDING ELEVATION - SOUTH PATIO ENTRY (SOUTH WALL)
SCALE: 1/8" = 1'-0"

SHEET NOTES

E01	ACM-01 - ALUMINUM COMPOSITE PANEL
E02	ALUM CURTAINWALL SYSTEM
E03	NEW EXTERIOR JOINT SELANT, TYP.
E04	DUAL LITE ALUMINUM DOORS (EXIT ONLY)
E05	PREFINISHED METAL COPING
E07	DIMENSIONAL ALUMINUM SIGNAGE (1'-0")
E08	PREFINISHED METAL DOWNSPOUT
E09	ALUM STOREFRONT SYSTEM
E10	EXTERIOR HM DOOR & FRAME
E11	EXTERIOR ALUM DOOR & FRAME
E12	ARCHITECTURAL PRECAST CONCRETE

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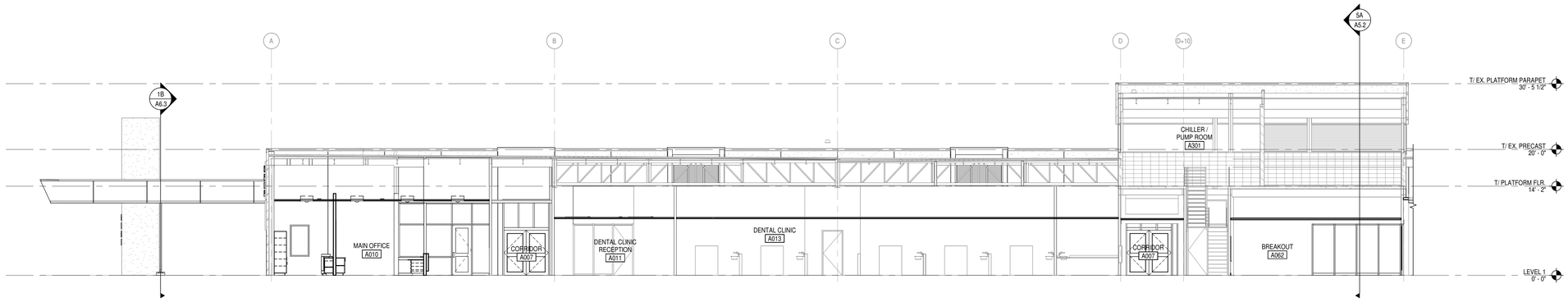
IFB	9/30/2024	ISSUED FOR BID
A3	11/6/2024	ADDENDUM 3

22-24119-00

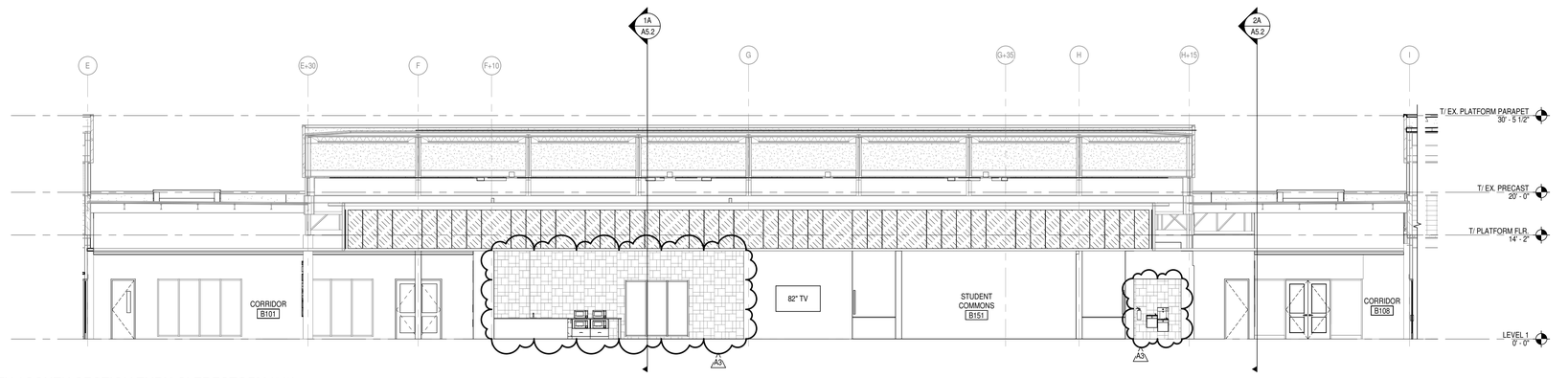
EXTERIOR ELEVATIONS

A4.2

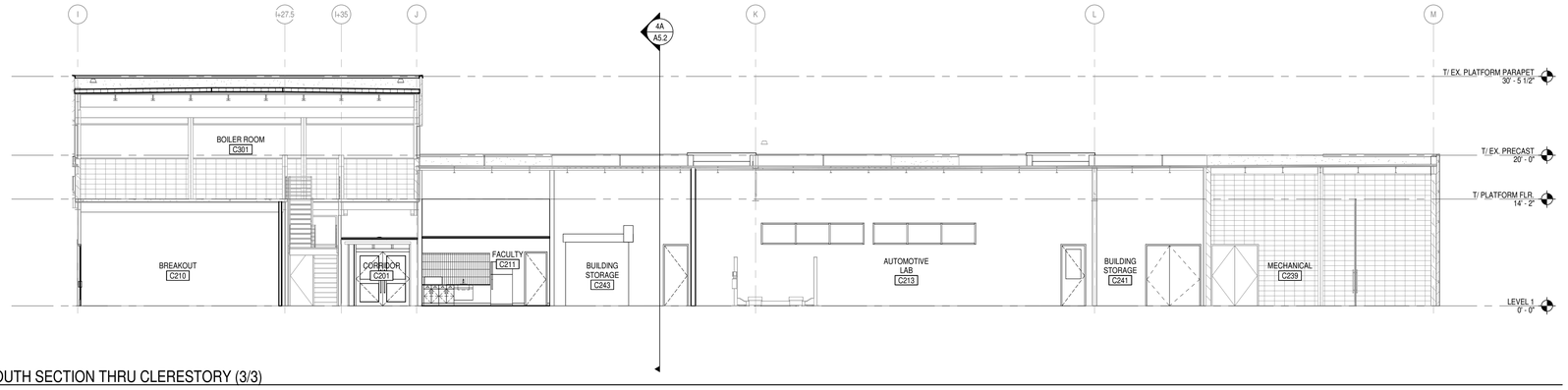
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1B A5.1 NORTH / SOUTH SECTION THRU CLERESTORY (1/3)
SCALE: 1/8" = 1'-0"



3B A5.1 NORTH / SOUTH SECTION THRU CLERESTORY (2/3)
SCALE: 1/8" = 1'-0"



4B A5.1 NORTH / SOUTH SECTION THRU CLERESTORY (3/3)
SCALE: 1/8" = 1'-0"

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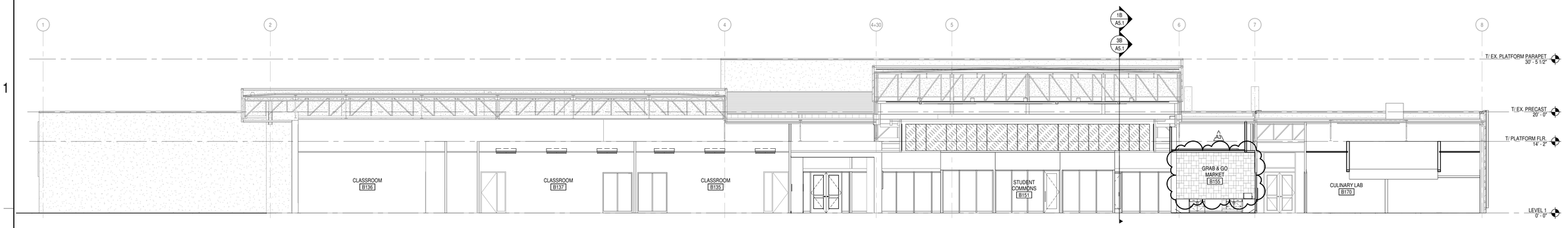
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A3	11/6/2024	ADDENDUM 3

22-24119-00

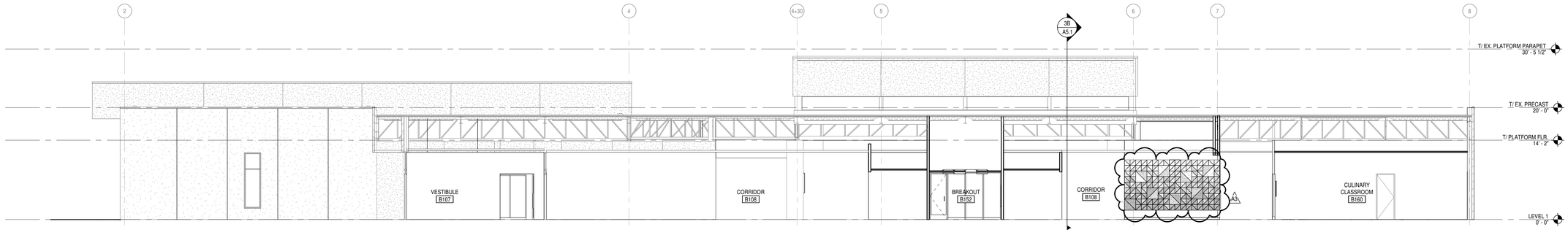
BUILDING SECTIONS

A5.1

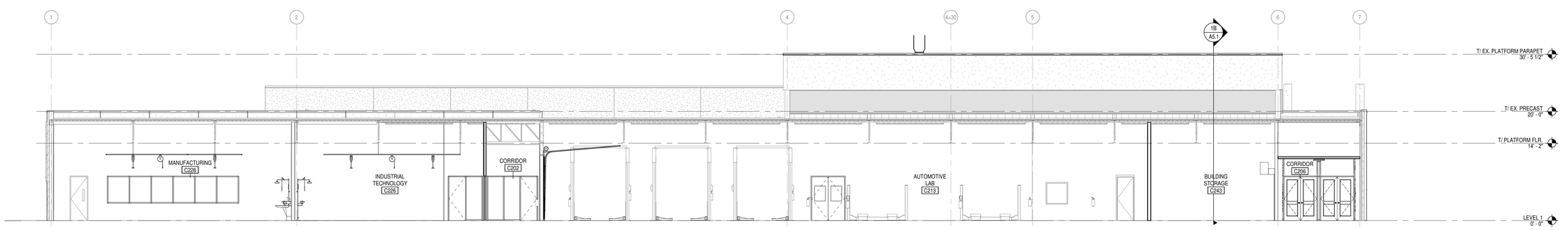
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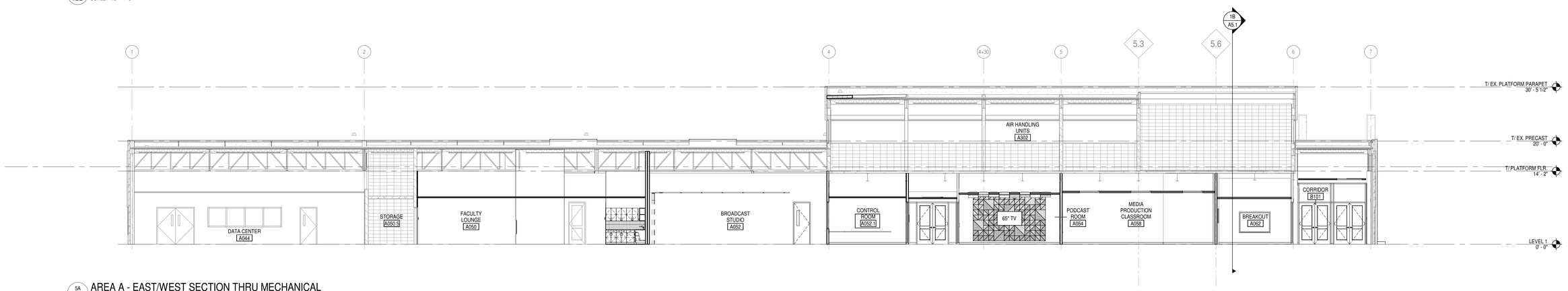
1A / A5.2 AREA B - EAST/WEST SECTION THROUGH CLERESTORY
SCALE: 1/8" = 1'-0"



2A / A5.2 AREA B - EAST/WEST SECTION
SCALE: 1/8" = 1'-0"



4A / A5.2 AREA C - EAST/WEST SECTION
SCALE: 1/8" = 1'-0"



5A / A5.2 AREA A - EAST/WEST SECTION THRU MECHANICAL
SCALE: 1/8" = 1'-0"

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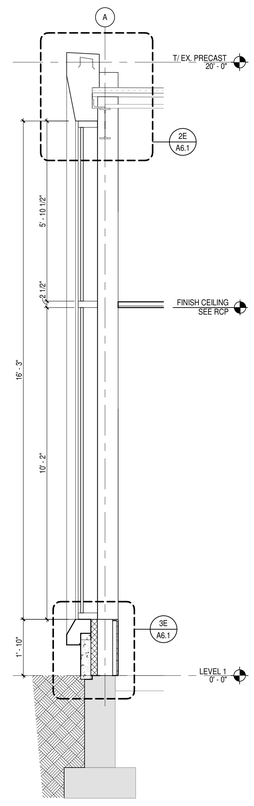
IFB	9/30/2024	ISSUED FOR BID
A3	11/6/2024	ADDENDUM 3

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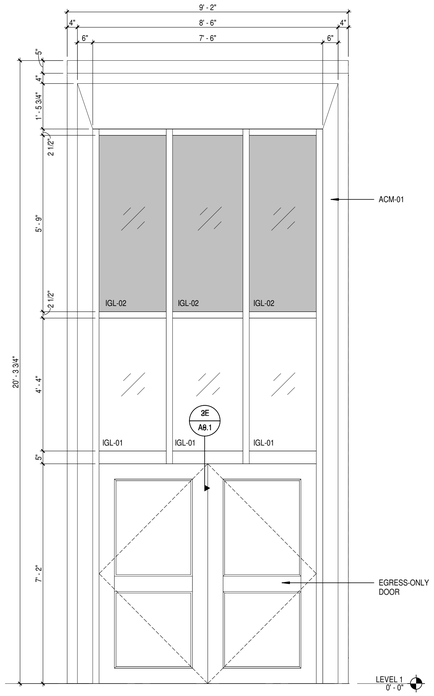
BUILDING SECTIONS

A5.2

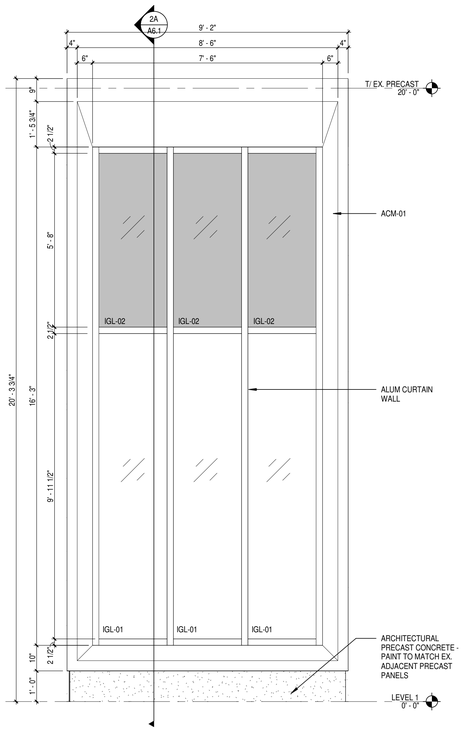
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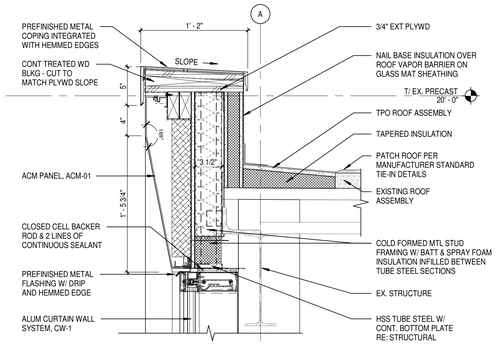
2A A6.1 SECTION - TYP. CW SECTION (CW1)
SCALE: 1/2" = 1'-0"



2C A6.1 ELEVATION - CURTAIN WALL (CW2)
SCALE: 1/2" = 1'-0"



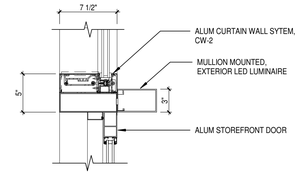
2B A6.1 ELEVATION - CURTAIN WALL (CW1)
SCALE: 1/2" = 1'-0"



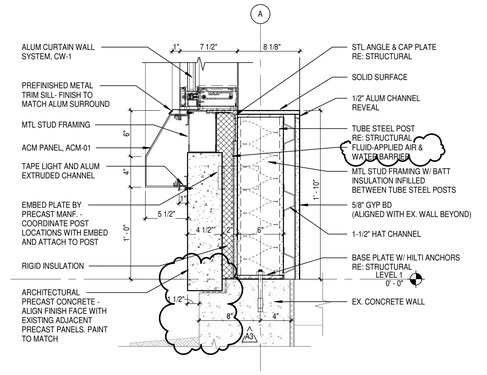
2E A6.1 HEAD ALUM CW - SLOPED ACM PANEL SURROUND
SCALE: 1 1/2" = 1'-0"

GLAZING TYPE DESCRIPTIONS

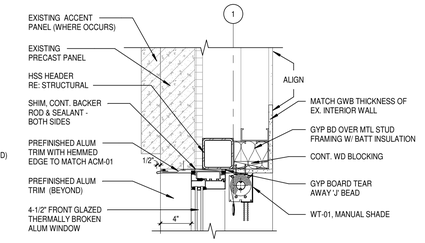
GL-01	CLEAR TEMPERED FLOAT GLASS
GL-02	CLEAR LAMINATED GLASS
GL-03	CLEAR LAMINATED GLASS (ATTACK-RESISTANT)
IGL-01	CLEAR INSULATING GLASS
IGL-02	CLEAR INSULATING GLASS (TRANSLUCENT FRIT ON SURFACE 3)
IGL-03	ATTACK-RESISTANT CLEAR INSULATED GLASS



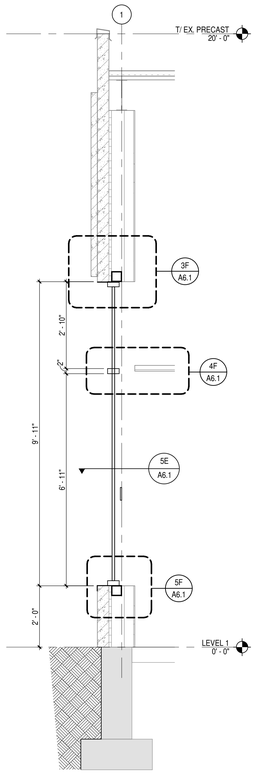
2F A6.1 ALUM CW - INTERMEDIATE MULLION
SCALE: 1 1/2" = 1'-0"

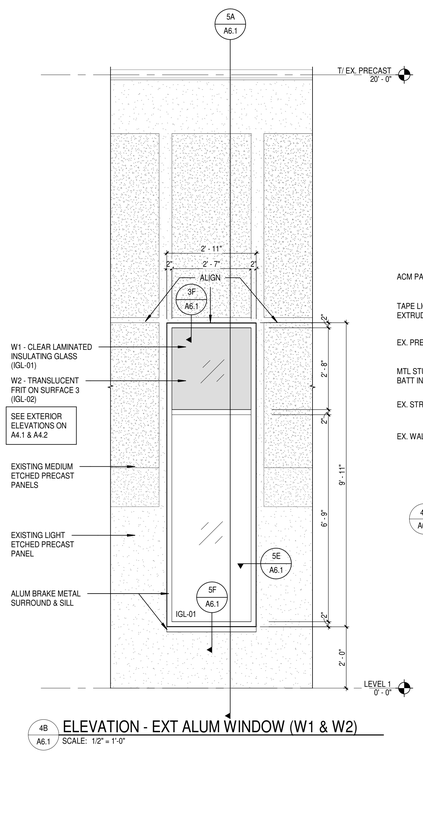


3E A6.1 SILL ALUM CW - SLOPED ACM PANEL SURROUND
SCALE: 1 1/2" = 1'-0"

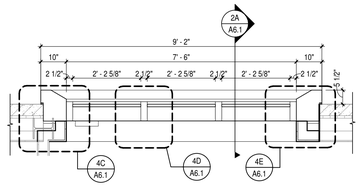


3F A6.1 ALUM SF - HEAD @ NEW PRECAST OPENING
SCALE: 1 1/2" = 1'-0"

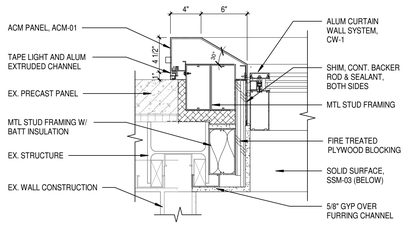




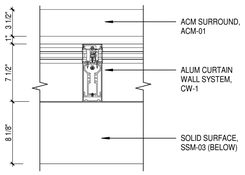
4B A6.1 ELEVATION - EXT ALUM WINDOW (W1 & W2)
SCALE: 1/2" = 1'-0"



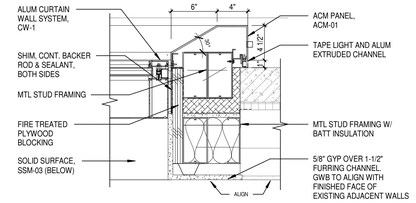
3B A6.1 FLOOR PLAN - CURTAIN WALL (CW1)
SCALE: 1/2" = 1'-0"



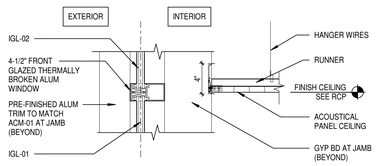
4C A6.1 ALUM CW - JAMB @ COLUMN
SCALE: 1 1/2" = 1'-0"



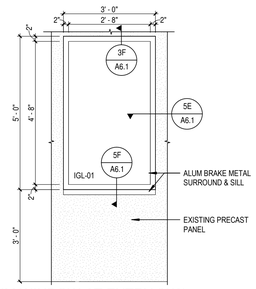
4D A6.1 ALUM CW - HORIZONTAL MULLION
SCALE: 1 1/2" = 1'-0"



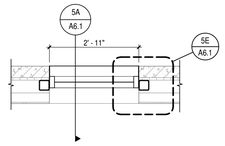
4E A6.1 ALUM CW - JAMB, TYP.
SCALE: 1 1/2" = 1'-0"



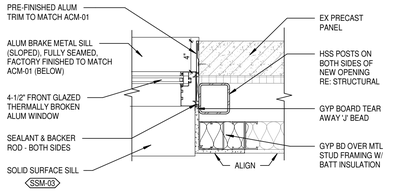
4F A6.1 ALUM SF - HORIZONTAL MULLION
SCALE: 1 1/2" = 1'-0"



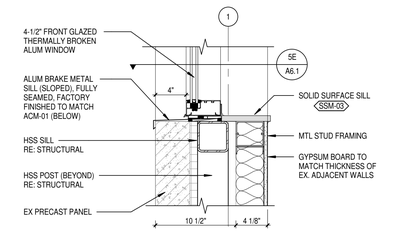
5C A6.1 ALUM WINDOW AT ENTRY (W3)
SCALE: 1/2" = 1'-0"



5D A6.1 FLOOR PLAN - EXT ALUM WINDOW (W1 & W2)
SCALE: 1/2" = 1'-0"



5E A6.1 ALUM SF - JAMB @ NEW PRECAST OPENING
SCALE: 1 1/2" = 1'-0"



5F A6.1 ALUM SF - SILL @ NEW PRECAST OPENING
SCALE: 1 1/2" = 1'-0"

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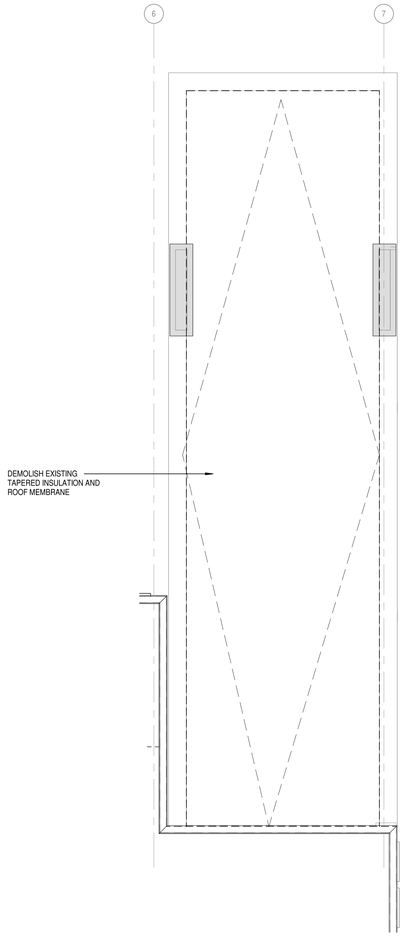
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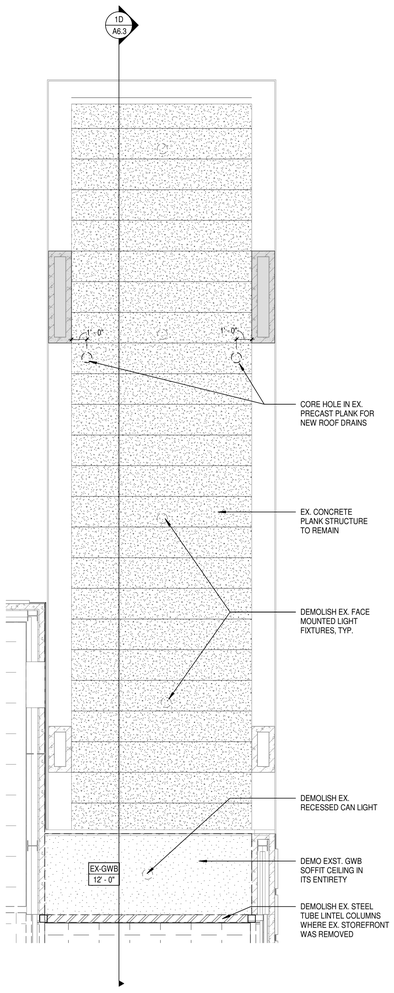
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SYSTEMS SHEET - CURTAINWALL & EXT WINDOWS

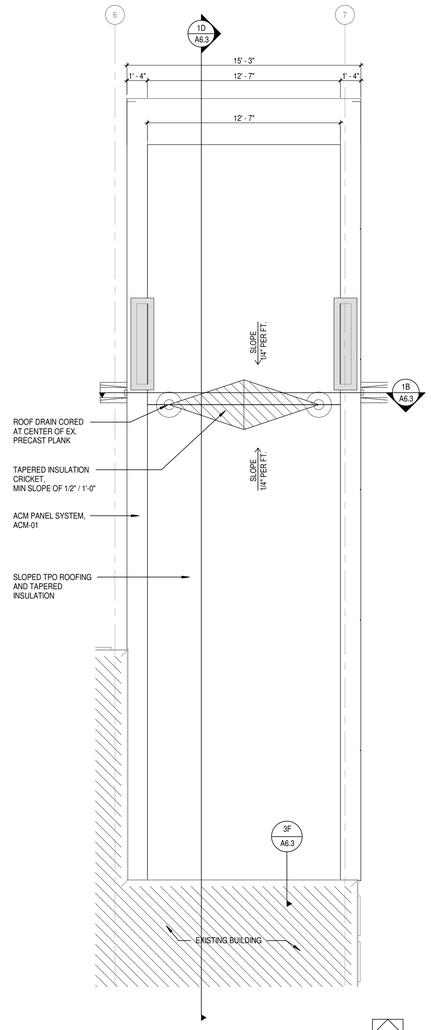
A6.1



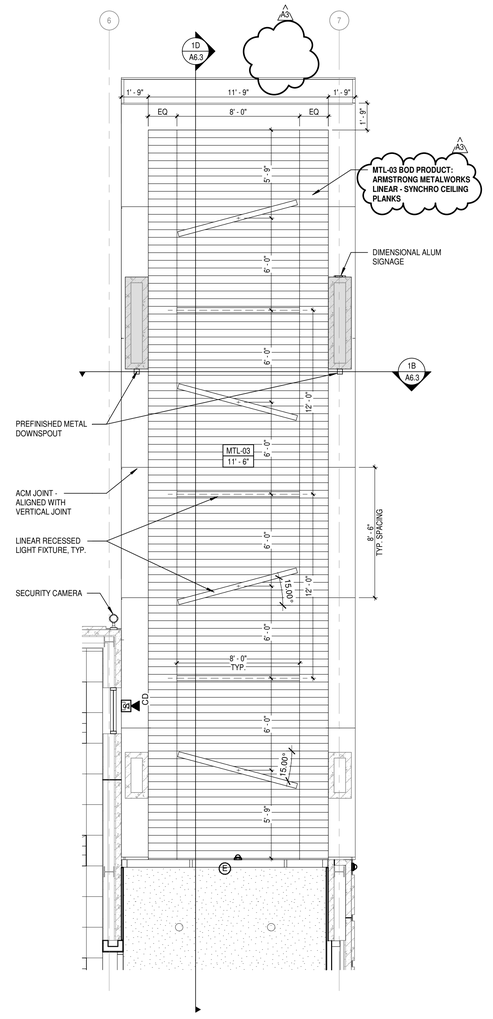
3B A6.2 CANOPY ROOF DEMO PLAN
SCALE: 1/4" = 1'-0"



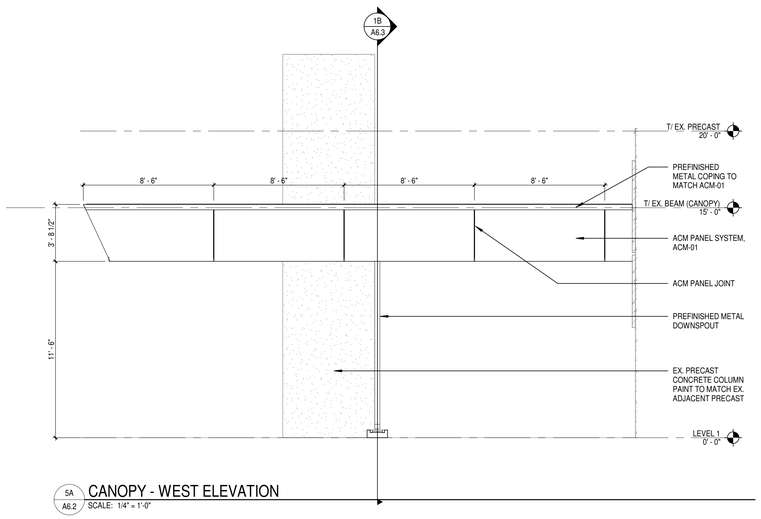
3C A6.2 CANOPY DEMO RCP
SCALE: 1/4" = 1'-0"



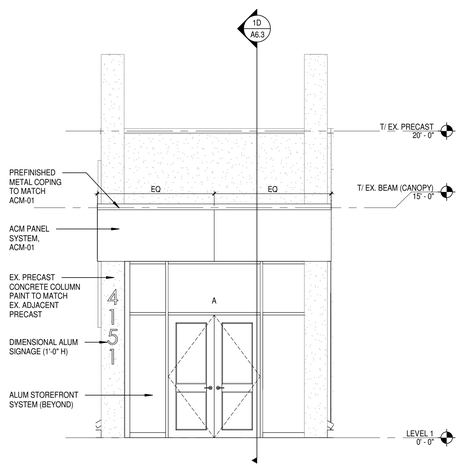
3D A6.2 CANOPY ROOF PLAN
SCALE: 1/4" = 1'-0"



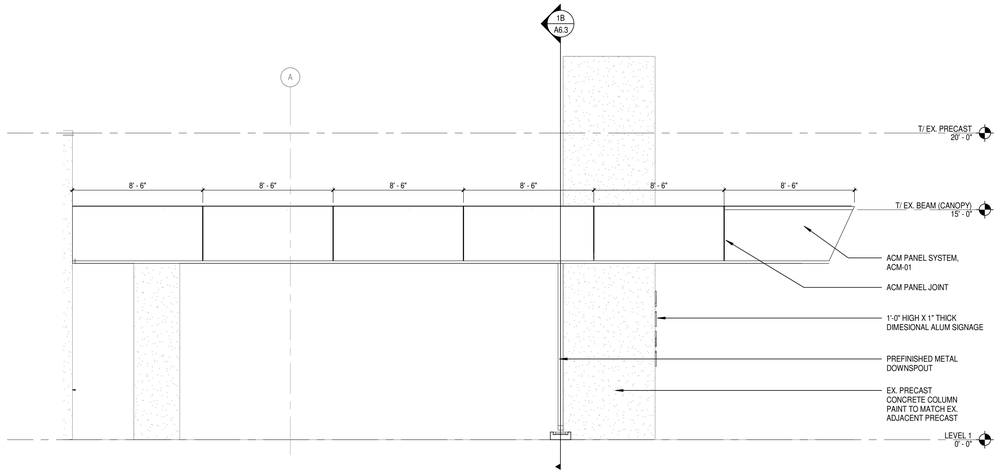
3E A6.2 CANOPY NEW RCP
SCALE: 1/4" = 1'-0"



5A A6.2 CANOPY - WEST ELEVATION
SCALE: 1/4" = 1'-0"



5C A6.2 CANOPY - NORTH ELEVATION
SCALE: 1/4" = 1'-0"



5D A6.2 CANOPY - EAST ELEVATION
SCALE: 1/4" = 1'-0"

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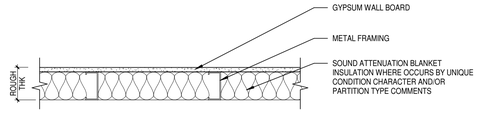
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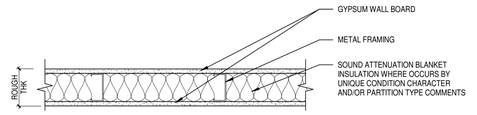
SYSTEMS SHEET - CANOPY

A6.2



S_-_-1_ NON-RATED STUD PARTITION

MARK			ROUGH THICKNESS	FIRE/SMOKE		SOUND		T.O. WALL DETAIL	B.O. WALL DETAIL	COMMENTS
				RATING	TESTED ASSEMBLIES	STC RATING	TESTED ASSEMBLIES			
SA	3	10	<varies>	NR	NA					PROVIDE IN-WALL SOUND ATTENUATING INSULATION
SA	3	11	4 1/4"	NR	NA					PROVIDE IN-WALL SOUND ATTENUATING INSULATION. PROVIDE IMPACT-RESISTANT DRYWALL UP TO 8'-0" A.F.F. AT ALL CORRIDOR LOCATIONS RECEIVING NEW GWB.
SA	3	12	4 3/4"	NR	NA					TILE UP TO 6'-10" A.F.F., ONE SIDE. PROVIDE IN-WALL SOUND ATTENUATING INSULATION
SA	6	10	6 5/8"	NR	NA					
SB	2	10	3 1/8"	NR	NA					
SB	3	10	4 1/4"	NR	NA					FURRING WALL
SB	3	11	4 1/4"	NR	NA					FURRING WALL
SB	6	10	6 5/8"	NR	NA					FURRING WALL
SB	F	10	1 1/2"	NR	NA					FURRING CHANNEL
SD	1	10	2 1/4"	NR	NA					LOCATED AT BASE OF CURTAINWALLS, SEE SHEET A6.1

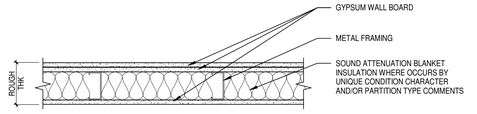


S_-_-2_ NON-RATED STUD PARTITION

MARK			ROUGH THICKNESS	FIRE/SMOKE		SOUND		T.O. WALL DETAIL	B.O. WALL DETAIL	COMMENTS
				RATING	TESTED ASSEMBLIES	STC RATING	TESTED ASSEMBLIES			
SA	3	20	<varies>	NR	NA					PROVIDE IN-WALL SOUND ATTENUATING INSULATION.
SA	3	21	4 7/8"	NR	NA					PROVIDE IN-WALL SOUND ATTENUATING INSULATION. PROVIDE IMPACT-RESISTANT DRYWALL UP TO 8'-0" A.F.F. ON CORRIDOR SIDE OF WALL.
SA	3	22	5 3/8"	NR	NA					TILE UP TO 6'-10" A.F.F., ONE SIDE. PROVIDE IN-WALL SOUND ATTENUATING INSULATION
SA	6	20	7 1/4"	NR	NA					PROVIDE IN-WALL SOUND ATTENUATING INSULATION.
SA	6	21	7 1/4"	NR	NA					PROVIDE IN-WALL SOUND ATTENUATING INSULATION. PROVIDE IMPACT-RESISTANT DRYWALL UP TO 8'-0" A.F.F. ON ONE SIDE OF WALL, SEE FLOOR PLANS.
SB	3	20	4 7/8"	NR	NA					
SD	2	20	3 3/4"	NR	NA					PARTIAL HEIGHT, 2'-9" HIGH
SD	3	20	4 7/8"	NR	NA					PARTIAL HEIGHT, 4' HIGH

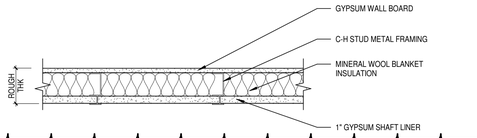
S1-_-2_ 1-HOUR RATED STUD PARTITION

MARK			ROUGH THICKNESS	FIRE/SMOKE		SOUND		T.O. WALL DETAIL	B.O. WALL DETAIL	COMMENTS
				RATING	TESTED ASSEMBLIES	STC RATING	TESTED ASSEMBLIES			
S1	3	20	4 7/8"	1	UL ###					PROVIDE IN-WALL SOUND ATTENUATING INSULATION



S_-_-3_ NON-RATED STUD PARTITION

MARK			ROUGH THICKNESS	FIRE/SMOKE		SOUND		T.O. WALL DETAIL	B.O. WALL DETAIL	COMMENTS
				RATING	TESTED ASSEMBLIES	STC RATING	TESTED ASSEMBLIES			
SA	3	30	5 1/2"	NR	NA					PROVIDE IN-WALL SOUND ATTENUATING INSULATION
SA	3	31	5 1/2"	NR	NA					PROVIDE IN-WALL SOUND ATTENUATING INSULATION
SA	6	30	7 7/8"	NR	NA					
SA	6	30	9 7/8"	NR	NA					



H1-_-2_ 1-HOUR RATED SHAFT PARTITION

A3

MARK			ROUGH THICKNESS	FIRE/SMOKE		SOUND		T.O. WALL DETAIL	B.O. WALL DETAIL	COMMENTS
				RATING	TESTED ASSEMBLIES	STC RATING	TESTED ASSEMBLIES			
H1	4	20	4 5/8"	1						

PARTITION TYPES DESCRIPTIONS

MATERIAL DESCRIPTION
- S = STEEL (METAL STUDS)
- W = WOOD STUDS
- H = SHAFT WALLS
- M = MASONRY
- C = CONCRETE

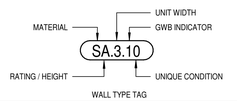
RATING / HEIGHT
- A = FULL HEIGHT / UNDERSIDE OF STRUCT (NOT RATED)
- B = 6" ABOVE CEILING (NOT RATED)
- C = UNDERSIDE OF CEILING (NOT RATED)
- D = PARTIAL HEIGHT (NOT RATED)
- X = VARIABLE HEIGHT (NOT RATED)
- S = SMOKE PARTITON (NOT RATED)
- 0 = 0 HOUR RATED (CORRIDOR)
- 5 = 0.5 HOUR RATED
- 1 = 1 HOUR RATED
- 2 = 2 HOUR RATED
- 3 = 3 HOUR RATED
- 4 = 4 HOUR RATED

UNIT WIDTH / CONFIGURATION
- F = FURRING STRIPS / CHANNELS
- 1 = 1 5/8" METAL
- 2 = 2 1/2" METAL / 1 1/2" WOOD
- 3 = 3 5/8" METAL
- 4 = 4" METAL / 3 1/2 WOOD / 3 5/8" CMU
- 6 = 6" METAL / 5 1/2" WOOD / 5 5/8" CMU / 6" CONC
- 8 = 8" METAL / 7 1/4" WOOD / 7 5/8" CMU / 8" CONC
- 10 = 10" CONC
- 12 = 11 5/8" CMU / 12" CONC
- X = NON-STANDARD WIDTH, SEE DETAILS
- D = DOUBLE STUD FRAMING
- S = STAGGERED STUD FRAMING

GYPSUM WALLBOARD INDICATOR
(NOT INCLUDING SHAFT LINER)
- 0 = NO GWB
- 1 = ONE LAYER, TAG SIDE
- 2 = ONE LAYER, EACH SIDE
- 3 = TWO LAYERS TAG SIDE, ONE LAYER OTHER
- 4 = TWO LAYERS, EACH SIDE
- 5 = TWO LAYERS TAG SIDE, NO GWB OTHER
- 6 = THREE LAYERS, EACH SIDE

UNIQUE CONDITION (SEE SCHEDULE)
EACH WALL TYPE HAS 10 POSSIBLE SUB-TYPES, SUCH AS:
- TILE BACKER BOARD
- PLYWOOD
- FURRING
- SOUND ATTENUATION BLANKET
- ABUSE RESISTANCE

- 0 = NO UNIQUE CONDITION
- 1 = ABUSE RESISTANT DRYWALL UP TO 8'-0" A.F.F. WITH SOUND ATTENUATION BLANKET
- 2 = TILE BACKER BOARD TO 6'-10" A.F.F., TOILET ROOM SIDE, WITH SOUND ATTENUATION BLANKET. (C.10.1) A3



WALL TYPE TAG

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PARTITION TYPES

A8.1

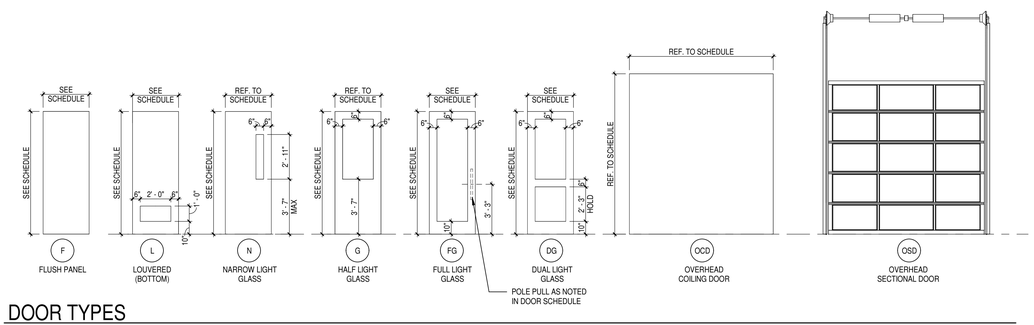
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EXISTING DOOR & FRAME SCHEDULE

NUMBER	PANEL QTY.	PANEL EXST. WIDTH	PANEL EXST. HEIGHT	PANEL EXST. THICKNESS	PANEL EXST. MATERIAL	PANEL TYPE	FRAME EXST. MATERIAL	FRAME EXST. FIRE RATING	NEW HARDWARE SET	DETAILS HEAD	DETAILS JAMB LEFT	DETAILS JAMB RIGHT	COMMENTS
A011	1	3' - 0"	8' - 0"	1 3/4"	WD	N	ALUM 2		51	5A/A8.3	5A/A8.3	5A/A8.3	ADD CARD READER, REPLACE WIRE GLASS IN ENTIRE STOREFRONT SYSTEM WITH GL-01
A013.1	1	3' - 0"	7' - 0"	1 3/4"	WD	F	HM		44	-	-	-	
A013.2	1	3' - 0"	7' - 0"	1 3/4"	WD	N	HM		42	-	-	-	
A013.3	1	3' - 0"	7' - 0"	1 3/4"	WD	F	HM		44	-	-	-	
A013.4	1	3' - 0"	7' - 0"	1 3/4"	WD	F	HM		44	-	-	-	
A013A	1	3' - 0"	7' - 0"	1 3/4"	WD	N	HM		51	-	-	-	REPLACE WIRE GLASS IN DOOR LITE WITH GL-01
A013B	1	3' - 0"	7' - 0"	1 3/4"	WD	N	HM		51	-	-	-	REPLACE WIRE GLASS IN DOOR LITE WITH GL-01
A013C	1	3' - 0"	8' - 0"	1 3/4"	WD	N	HM		51	5A/A8.3	5A/A8.3	5A/A8.3	ALWAYS LOCKED IN PULL DIRECTION. ACCESS BY MANUAL KEY; REPLACE WIRE GLASS IN DOOR LITE WITH GL-01
A022	1	2' - 8"	8' - 0"	1 3/4"	WD	F	HM		44	5A/A8.3	5A/A8.3	5A/A8.3	PATCH AND REFINISH DOOR TO MATCH NEW WOOD DOORS
A023	1	4' - 0"	8' - 0"	1 3/4"	WD	F	HM		48	-	-	-	
A023.1	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM		51	-	-	-	ADD CARD READER
A023.2	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM		44	-	-	-	
A023.3	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM		44	5A/A8.3	5A/A8.3	5A/A8.3	
A027A	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM		48	5A/A8.3	5A/A8.3	5A/A8.3	
A027B	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM		48	5A/A8.3	5A/A8.3	5A/A8.3	
A027C	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM		48	-	-	-	
A029A	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM		48	5A/A8.3	5A/A8.3	5A/A8.3	
A029B	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM		48	5A/A8.3	5A/A8.3	5A/A8.3	
A029C	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM		48	-	-	-	
A034	1	3' - 0"	8' - 0"	1 3/4"	WD	N	HM		48	5A/A8.3	5A/A8.3	5A/A8.3	REPLACE WIRE GLASS IN DOOR LITE WITH GL-01, PATCH AND REFINISH DOOR TO MATCH NEW WOOD DOORS
A050	1	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2		51	5A/A8.3	5A/A8.3	5A/A8.3	ADD CARD READER, REPLACE WIRE GLASS IN DOOR LITE WITH GL-01
A050.1	1	2' - 8"	8' - 0"	1 3/4"	WD	F	HM		44	-	-	-	
B102A	2	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2		-	-	-	-	ADJUST/LUBRICATE HOLD OPEN/CLOSERS; REPLACE WIRE GLASS IN ENTIRE STOREFRONT SYSTEM WITH GL-01
B102B	2	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2		-	-	-	-	ADJUST/LUBRICATE HOLD OPEN/CLOSERS; REPLACE WIRE GLASS IN ENTIRE STOREFRONT SYSTEM WITH GL-01
B107A	2	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2		-	-	-	-	REPLACE WIRE GLASS IN ENTIRE STOREFRONT SYSTEM
B107B	2	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2		-	-	-	-	REPLACE WIRE GLASS IN ENTIRE STOREFRONT SYSTEM
B122	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM		44	-	-	-	
B124	1	3' - 0"	8' - 0"	1 3/4"	WD	F	ALUM 2		42	-	-	-	PROVIDE ADA PUSH BUTTON ON PULL SIDE OF DOOR, REFINISH DOOR TO MATCH NEW DOORS
B126	1	3' - 0"	8' - 0"	1 3/4"	WD	N	HM		90	-	-	-	
B128	1	3' - 0"	8' - 0"	1 3/4"	WD	N	HM		90	-	-	-	
B130	1	3' - 0"	8' - 0"	1 3/4"	WD	N	HM		90	-	-	-	
B132	1	3' - 0"	8' - 0"	1 3/4"	WD	N	HM		90	-	-	-	
B135	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM		48	-	-	-	PATCH AND REFINISH DOOR TO MATCH NEW WOOD DOORS
B136	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM		48	-	-	-	
B137	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM		48	-	-	-	PATCH AND REFINISH DOOR TO MATCH NEW WOOD DOORS
B139	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM		48	-	-	-	PATCH AND REFINISH DOOR TO MATCH NEW WOOD DOORS
B141	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM		48	-	-	-	
B142	1	3' - 0"	8' - 0"	1 3/4"	WD	N	HM		51	-	-	-	ADD CARD READER
B146	1	3' - 0"	8' - 0"	1 3/4"	WD	F	ALUM 2		48	-	-	-	RESTAN TO MATCH NEW DOORS
B166A	2	3' - 0"	8' - 0"	1 3/4"	HM	F	HM		43	-	-	-	REPAINT HOLLOW METAL DOOR AND FRAME (P-03)
B166B	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM		66	-	-	-	PATCH AND REFINISH DOOR TO MATCH NEW WOOD DOORS
C213D	1	3' - 0"	8' - 0"	1 3/4"	HM	G	HM		48	-	-	-	REPAINT HOLLOW METAL DOOR AND FRAME (P-03)
C218	2	2' - 10"	8' - 0"	1 3/4"	HM	F	HM		43	-	-	-	
C218.1	1	2' - 8"	7' - 0"	1 3/4"	HM	F	HM		44	-	-	-	
C222C	2	3' - 0"(4' - 0")	8' - 0"	1 3/4"	HM	N	HM	90 MIN	-	-	-	-	REPLACE WIRE GLASS IN DOOR LITES
C224A	2	3' - 0"(4' - 0")	8' - 0"	1 3/4"	HM	N	HM	90 MIN	47	-	-	-	REPLACE WIRE GLASS IN DOOR LITES
C226D	2	3' - 0"(4' - 0")	8' - 0"	1 3/4"	HM	N	HM	90 MIN	-	-	-	-	REPLACE WIRE GLASS IN DOOR LITES
C231B	2	3' - 0"	8' - 0"	1 3/4"	HM	G	HM		47				REPAINT HOLLOW METAL DOOR AND FRAME (P-03)
C232	2	3' - 0"	7' - 0"	1 3/4"	HM	N	HM		78				ADD CARD READER
C237A	1	3' - 0"	8' - 0"	1 3/4"	HM	G	HM		50				REMOVE THUMBTURN LOCK AND PROVIDE COVER PLATE, REPLACE WIRE GLASS IN DOOR LITE WITH GL-01
C237C	1	3' - 0"	8' - 0"	1 3/4"	HM	G	HM		50				REMOVE THUMBTURN LOCK AND PROVIDE COVER PLATE, REPLACE WIRE GLASS IN DOOR LITE WITH GL-01
C239A	2	3' - 0"	8' - 0"	1 3/4"	HM	L	HM		43				EXISTING LOUVER ON ACTIVE LEAF
C239B	2	3' - 0"	8' - 0"	1 3/4"	HM	L	HM		78				EXISTING LOUVER ON ACTIVE LEAF, ADD CARD READER
ST-1	2	3' - 0"	8' - 0"	1 3/4"	HM	F	HM		83	-	-	-	ADD CARD READER, PROVIDE NEW SOUND SEALS (BY ZERO OR APPROVED EQUAL), REPAINT HM DOOR, FRAME, AND TRANSOM P-03
ST-2	2	3' - 0"	8' - 0"	1 3/4"	HM	F	HM		83	-	-	2C/A8.3	ADD CARD READER, PROVIDE NEW CLOSERS, PROVIDE SOUND SEALS (BY ZERO OR APPROVED EQUAL), REPAINT HM DOOR, FRAME, AND TRANSOM P-03

EXTERIOR EXISTING DOOR & FRAME SCHEDULE

NUMBER	PANEL QTY.	PANEL EXST. WIDTH	PANEL EXST. HEIGHT	PANEL EXST. MATERIAL	PANEL TYPE	FRAME EXST. MATERIAL	FRAME NEW FINISH	NEW HARDWARE SET	COMMENTS
D	2	3' - 0"	8' - 0"	ALUM 2	DG	ALUM 2		57	EXISTING CARD READER TO REMAIN, ADD DOOR CONTACT TO EACH LEAF, ADD MULLION SEAL AND ADJUST CLOSERS, NEW DOOR SWEEP ON EACH LEAF
F	2	3' - 0"	8' - 0"	ALUM 2	DG	ALUM 2		57	EXISTING CARD READER TO REMAIN, ADD DOOR CONTACT ON EACH LEAF, ADD MULLION SEAL, NEW DOOR SWEEP ON EACH LEAF, THRESHOLD, ADJUST CLOSERS
H1	2	3' - 0"	8' - 0"	ALUM 2	DG	ALUM 2		85	ADD DOOR CONTACT ON EACH LEAF. PROVIDE CABLING FOR FUTURE CARD READER
H2	2	3' - 0"	8' - 0"	ALUM 2	DG	ALUM 2		84	ADD DOOR CONTACT ON EACH LEAF
I	1	2' - 8"	7' - 0"	HM	N	HM		86	ADD DOOR CONTACT, PROVIDE CABLING FOR FUTURE CARD READER
J		(12' - 0")						53	OVERHEAD SECTIONAL DOOR; ADD DOOR CONTACT
M		(12' - 0")						53	OVERHEAD SECTIONAL DOOR; ADD DOOR CONTACT
P	1	3' - 0"	7' - 0"	HM	F	HM		55	EGRESS ONLY, ADD DOOR CONTACT; PAINT DOOR AND FRAME TO MATCH ADJACENT EXTERIOR WALL COLOR
S1	2	3' - 0"	8' - 0"	ALUM 2	DG	ALUM 2		54	DOOR TO SECURED PATIO - UNLOCKED DURING SCHOOL HOURS, LOCKED AT ALL OTHER TIMES. TIE INTO LOCKDOWN SYSTEM. PROVIDE CABLING TO CARD READER LOCATION, ADD DOOR CONTACT ON EACH LEAF
S2	2	3' - 0"	8' - 0"	ALUM 2	DG	ALUM 2		52	DOOR TO SECURED PATIO - UNLOCKED DURING SCHOOL HOURS, LOCKED AT ALL OTHER TIMES. TIE INTO LOCKDOWN SYSTEM. ADD DOOR CONTACT ON EACH LEAF
T1	2	3' - 0"	8' - 0"	ALUM 2	DG	ALUM 2		56	STUDENT ENTRANCE - UNLOCKED DURING STUDENT ARRIVAL TIMES, LOCKED AT ALL OTHER TIMES. ADD DOOR CONTACT ON EACH LEAF, EXISTING CARD READER TO REMAIN.
T2	2	3' - 0"	8' - 0"	ALUM 2	DG	ALUM 2		52	STUDENT ENTRANCE - UNLOCKED DURING SUTDENT ARRIVAL TIMES, LOCKED AT ALL OTHER TIMES. ADD DOOR CONTACT ON EACH LEAF
U	2	3' - 0"	7' - 0"	HM	F	HM		82	DOOR TO DATA CENTER BY OTHERS
V	2	3' - 0"	7' - 0"	HM	H	HM		70	EXISTING CARD READER TO REMAIN, ADD DOOR CONTACT ON EACH LEAF, PROVIDE NEW REMOVABLE MULLION AND THRESHOLD; REPAINT DOOR AND FRAME



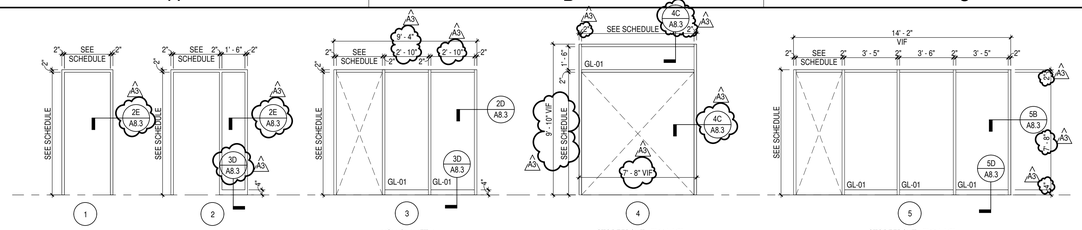
DOOR TYPES

INTERIOR NEW DOOR & FRAME SCHEDULE

NUMBER	PANEL QTY.	PANEL WIDTH	PANEL HEIGHT	PANEL THICKNESS	PANEL MATERIAL	PANEL TYPE	FRAME MATERIAL	FRAME TYPE	FIRE RATING	HARDWARE SET	DETAILS HEAD	DETAILS JAMB LEFT	DETAILS JAMB RIGHT	DETAILS SILL	COMMENTS
A002	2	3' - 8"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2	4		91	4C/A8.3	4C/A8.3	4C/A8.3	5E/A8.3	TIE INTO LOCKDOWN SYSTEM, VERIFY EXISTING WALL OPENING IN FIELD
A006A	2	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2	19		91	4D/A8.3	4C/A8.3	4C/A8.3	5E/A8.3	TIE INTO LOCKDOWN SYSTEM, VERIFY EXISTING WALL OPENING IN FIELD
A006B	2	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2	18		91	4D/A8.3	4C/A8.3	4C/A8.3	5E/A8.3	TIE INTO LOCKDOWN SYSTEM
A007A	2	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2	17		91	4E/A8.3	4D/A8.3	4D/A8.3	5E/A8.3	TIE INTO LOCKDOWN SYSTEM
A007B	2	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2	17		91	4E/A8.3	4D/A8.3	4D/A8.3	5E/A8.3	TIE INTO LOCKDOWN SYSTEM
A010A	1	3' - 0"	8' - 0"	1 3/4"	ALUM	DG	ALUM	9		36	4E/A8.3	4D/A8.3	4D/A8.3	5E/A8.3	CARD READER ON PULL SIDE OF DOOR
A010B	1	3' - 0"	8' - 0"	1 3/4"	ALUM	DG	ALUM	10		37	4D/A8.3	4D/A8.3	4D/A8.3	5E/A8.3	CARD READER ON BOTH SIDES OF DOOR
A014	1	3' - 0"	8' - 0"	1 3/4"	WD	N	HM	1		02	2E/A8.3	2E/A8.3	2E/A8.3	-	
A015.1	1	3' - 0"	7' - 0"	1 3/4"	WD	F	HM	1		09	2E/A8.3	2E/A8.3	2E/A8.3	-	OCCUPANCY INDICATOR
A016	1	3' - 0"	8' - 0"	1 3/4"	WD	N	HM	1		02	2E/A8.3	2E/A8.3	2E/A8.3	-	
A018	1	3' - 0"	8' - 0"	1 3/4"	WD	N	HM	1		02	2E/A8.3	2E/A8.3	2E/A8.3	-	
A020	1	3' - 0"	8' - 0"	1 3/4"	WD	L	HM	1		31	2E/A8.3	2E/A8.3	2E/A8.3	-	NEW DOOR AND FRAME IN EXISTING OPENING
A020.1	1	2' - 8"	7' - 0"	1 3/4"	WD	F	HM	1		59	2E/A8.3	2E/A8.3	2E/A8.3	-	
A024	1	3' - 0"	8' - 0"	1 3/4"	WD	L	HM	1		31	2E/A8.3	2E/A8.3	2E/A8.3	-	NEW DOOR AND FRAME IN EXISTING OPENING
A025	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	3		23	2E/A8.3	2D/A8.3	2E/A8.3	3D/A8.3	
A026.1	1	3' - 0"	7' - 0"	1 3/4"	WD	F	HM	1	45 MIN	04	2E/A8.3	2E/A8.3	2E/A8.3	-	
A026A	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	3		23	2E/A8.3	2D/A8.3	2E/A8.3	3D/A8.3	
A028A	1	3' - 0"	8' - 0"	1 3/4"	WD	N	HM	1		23	2E/A8.3	2E/A8.3	2E/A8.3	-	180 DEGREE HINGE, PANIC DEVICE
A028B	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	3		23	2E/A8.3	2E/A8.3	2D/A8.3	3D/A8.3	180 DEGREE HINGE, PANIC DEVICE
A030.1	1	3' - 4"	7' - 0"	1 3/4"	ALUM	FG	ALUM	16			1E/A8.4	2E/A8.4	2E/A8.4	5E/A8.3	SLIDING GLASS DOOR WITH POLE PULLS
A030.2	1	3' - 4"	7' - 0"	1 3/4"	ALUM	FG	ALUM	16			1E/A8.4	2E/A8.4	2E/A8.4	5E/A8.3	SLIDING GLASS DOOR WITH POLE PULLS
A030.3	1	3' - 4"	7' - 0"	1 3/4"	ALUM	FG	ALUM	16			1E/A8.4	2E/A8.4	2E/A8.4	5E/A8.3	SLIDING GLASS DOOR WITH POLE PULLS
A030A	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	3		23	2E/A8.3	2D/A8.3	2E/A8.3	3D/A8.3	180 DEGREE HINGE, PANIC DEVICE
A031	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	3		23	2E/A8.3	2D/A8.3	2D/A8.3	3D/A8.3	
A032	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	3		23	2E/A8.3	2D/A8.3	2E/A8.3	3D/A8.3	
A033A	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	11		25	2E/A8.3	2E/A8.3	2D/A8.3	3D/A8.3	
A033B	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	11		23	2E/A8.3	2D/A8.3	2E/A8.3	3D/A8.3	
A033C	2	3' - 0"	8' - 0"	1 3/4"	WD	G	HM	1		32	2E/A8.3	2E/A8.3	2E/A8.3	-	NEW DOOR AND FRAME IN EXST. OPENING, VERIFY OPENING IN FIELD
A036A	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	3		23	2E/A8.3	2E/A8.3	2D/A8.3	-	
A050.4	1	3' - 0"	7' - 0"	1 3/4"	WD	F	HM	1		09	2E/A8.3	2E/A8.3	2E/A8.3	3D/A8.3	OCCUPANCY INDICATOR
A051	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	3		23	2E/A8.3	2E/A8.3	2E/A8.3	3D/A8.3	
A052.1	1	3' - 0"	8' - 0"	1 3/4"	WD	DG	HM	1		16	2E/A8.3	2E/A8.3	2E/A8.3	-	
A052.2	2	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	1		07	2E/A8.3	2E/A8.3	2E/A8.3	-	
A052A	2	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2	6		19	4D/A8.3	4D/A8.3	5B/A8.3	5D/A8.3	PROVIDE SOUND SEALS
A052B	1	3' - 0"	8' - 0"	1 3/4"	WD	N	HM	1		22	2E/A8.3	2E/A8.3	2D/A8.3	5D/A8.3	PROVIDE SOUND SEAL
A053	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	3		23	2E/A8.3	2D/A8.3	2E/A8.3	3D/A8.3	FRAME O.H.
A054	1	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2	7		22	4D/A8.3	4D/A8.3	3C/A8.3	5D/A8.3	SOUND SEAL AROUND DOOR
A056A	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	2		22	2E/A8.3	2E/A8.3	2D/A8.3	3D/A8.3	
A058	1	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2	5		24	4D/A8.3	5B/A8.3	5B/A8.3	5D/A8.3	FRAME O.H.
A062	1	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2	5		12	4D/A8.3	5B/A8.3	5B/A8.3		
B103	2	2' - 10"	8' - 0"	1 3/4"	ALUM 2	DL	ALUM 2	1		30	4C/A8.3	4C/A8.3	4C/A8.3	5E/A8.3	NEW DOOR AND FRAME IN EXISTING PRECAST OPENING, VERIFY DIMENSIONS IN FIELD
B110	1	3' - 0"	8' - 4"	1 3/4"	ALUM	FG	ALUM	13		88	4D/A8.3	3C/A8.3	4D/A8.3	5D/A8.3	
B112A	1	3' - 0"	8' - 4"	1 3/4"	ALUM	FG	ALUM	15		88	4D/A8.3	4C/A8.3	4C/A8.3	5D/A8.3	
B112B	1	3' - 0"	8' - 4"	1 3/4"	ALUM	FG	ALUM	15		88	4D/A8.3	4C/A8.3	4C/A8.3	5D/A8.3	FRAME O.H.
B114	1	3' - 0"	8' - 4"	1 3/4"	ALUM	FG	ALUM	14		88	4D/A8.3	4D/A8.3	3C/A8.3	5D/A8.3	
B116	1	3' - 0"	8' - 0"	1 3/4"	WD	F	EX. ALUM			48	-	-	-	-	NEW DOOR IN EXISTING ALUMINUM FRAME, VERIFY DOOR OPENING DIMENSIONS IN FIELD
B138	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	11		23	2E/A8.3	2D/A8.3	2E/A8.3	3D/A8.3	
B140	1	3' - 0"	8' - 0"	1 3/4"	WD	F	ALUM 2	3		23	2E/A8.3	2E/A8.3	2D/A8.3	3D/A8.3	
B150	1	3' - 0"	8' - 4"	1 3/4"	ALUM	FG	ALUM	13		88	4D/A8.3	3C/A8.3	4D/A8.3	5D/A8.3	
B152A	1	3' - 0"	8' - 4"	1 3/4"	ALUM	FG	ALUM	15		88	4D/A8.3	4C/A8.3	4C/A8.3	5D/A8.3	
B152B	1	3' - 0"	8' - 4"	1 3/4"	ALUM	FG	ALUM	15		88	4D/A8.3	4C/A8.3	4C/A8.3	5D/A8.3	
B154	1	3' - 0"	8' - 4"	1 3/4"	ALUM	FG	ALUM	14		88	4D/A8.3	4D/A8.3	3C/A8.3	5D/A8.3	
B156	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	1		09	2E/A8.3	2E/A8.3	2E/A8.3	-	OCCUPANCY INDICATOR
B160B	2	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	EX. ALUM	-		71	-	-	-	-	VERIFY EXISTING HINGE TYPE IN FIELD. PROVIDE PANIC HARDWARE AND LATCHING CAPABILITIES, VERIFY DOOR OPENING DIMENSIONS IN FIELD
B161	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	1		09	2E/A8.3	2E/A8.3	2E/A8.3	-	OCCUPANCY INDICATOR
B162	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	1		63	2E/A8.3	2E/A8.3	2E/A8.3	-	
B163	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	1		09	2E/A8.3	2E/A8.3	2E/A8.3	-	OCCUPANCY INDICATOR
B170A	2	3' - 0"	8' - 0"	1 3/4"	WD	DG	HM	1		17	2E/A8.3	2E/A8.3	2E/A8.3	-	
B170B	1	3' - 0"	8' - 0"	1 3/4"	WD	F	HM	11		21	2E/A8.3	2E/A8.3	2E/A8.3	-	180 HINGE, FRAME O.H.
B172B	2	3' - 0"	8' - 0"	1 3/4"	WD	DG	HM	1		17	2E/A8.3	2E/A8.3	2E/A8.3	-	
C201	2	3' - 2"	8' - 0"	1 3/4"	HM	DG	EX. HM			91	-	-	-	-	REPAINT EXISTING FRAME P-03
C204	2	3' - 0"	7' - 0"	1 3/4"	HM	N	HM	1		46					NEW DOOR AND FRAME IN EXST. OPENING, VERIFY OPENING IN FIELD
C206A	2	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2	17		91					PART OF LOCKDOWN SYSTEM
C206B	2	3' - 0 1/4"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2	17		91					PART OF LOCKDOWN SYSTEM
C210	1	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2	5		12					
C211.1	1	2' - 8"	7' - 0"	1 3/4"	HM	N	HM	1		73					
C212A	2	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2	6		18					
C212B	1	3' - 0"	8' - 0"	1 3/4"	ALUM 2	DG	ALUM 2	5		26					
C213A	2	3' - 0"	8' - 0"	1 3/4"	HM	G	HM	-		30	5A/A8.3	5A/A8.3	5A/A8.3		INSTALL NEW DOORS IN EXISTING TO REMAIN FRAME, VERIFY DIMENSIONS IN FIELD
C213B	1	3' - 0"	8' - 0"	1 3/4"	HM	G	HM	1		23					HALF LITE GLAZING (GL-02)
C213C	0	12' - 2"	12' - 0"	2 1/8"	ALUM	OSD	ALUM	-							OVERHEAD SECTIONAL DOOR
C213E	1	3' - 0"	8' - 0"	1 3/4"	HM	G	HM	1		21					HALF LITE GLAZING (GL-02)
C222A	1	3' - 0"	8' - 0"	1 3/4"	HM	F	HM	3		23					
C222B	1	3' - 0"	8' - 0"	1 3/4"	HM	F	HM	2		23					
C226A	1	3' - 0"	8' - 0"	1 3/4"	HM	F	HM	11		23	2E/A8.3	2D/A8.3	2E/A8.3	3D/A8.3	SIDE LITE GLAZING (GL-02)
C226B	1	3' - 0"	8' - 0"	1 3/4"	HM	F	HM	2		23					SIDE LITE GLAZING, (GL-02)
C226C	0	10' - 2"	10' - 0"	2 1/8"	ALUM	OSD	ALUM	-		58					OVERHEAD SECTIONAL DOOR WITH KEYED SWITCH
C228.1	1	3' - 0"	7' - 0"	1 3/4"	HM	F	HM	1		33					ADD CARD READER
C228A	1	3' - 0"	8' - 0"	1 3/4"	HM	N	HM	1	90 MIN	23					
C228B	1	8' - 0"	10' - 0"	0"	STL	OCD	STL	-	90 MIN	58					OVERHEAD COILING DOOR
C228C	0	8' - 2"	10' - 0"	2 1/8"	ALUM	OSD	ALUM	-							OVERHEAD SECTIONAL DOOR WITH KEYED SWITCH
C230	2	3' - 0"	8' - 0"	1 3/4"	HM	N	EX. HM	-		05					180 DEGREE HINGES; NEW DOORS IN EXISTING FRAME, VERIFY DIMENSIONS IN FIELD
C231A	1	3' - 0"	8' - 0"	1 3/4"	HM	G	HM	1		21					HALF LITE GLAZING (GL-02)
C243A	1	3' - 0"	8' - 0"	1 3/4"	HM	F	HM	1		59					
C243B	1	8' - 0"	8' - 0"	0"	STL	OCD	STL	-		58					OVERHEAD COILING DOOR
C245	1	3' - 0"	8' - 0"	1 3/4"	HM	F	HM	1		63					ADD CARD READER

SALVAGED DOORS IN NEW FRAMES SCHEDULE

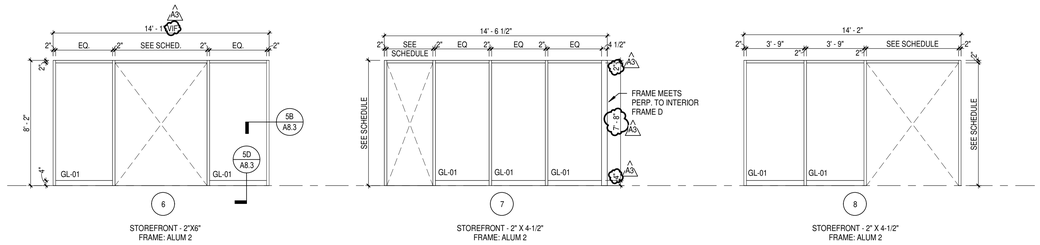
NUMBER	PANEL QTY	PANEL EXST. WIDTH	PANEL EXST. HEIGHT	PANEL EXST THICKNESS	PANEL EXST. MATERIAL	PANEL GLASS	PANEL TYPE	FRAME MATERIAL	FRAME TYPE	FIRE RATING	HARDWARE SET	DETAILS HEAD	DETAILS JAMB LEFT	DETAILS JAMB RIGHT	DETAILS SILL	COMMENTS
A015B	1	3' - 0"	8' - 0"	1 3/4"	WD		N	HM	1		44	2E/A8.3	2E/A8.3	2E/A8.3	-	INSTALL REFINISHED DOOR FROM ROOM 123
A017	1	3' - 0"	8' - 0"	1 3/4"	WD		F	HM	1		09	2E/A8.3	2E/A8.3	2E/A8.3	-	INSTALL REFINISHED DOOR FROM ROOM 143, ADD OCCUPANCY INDICATOR
A019	1	3' - 0"	8' - 0"	1 3/4"	WD		F	HM	1		09	2E/A8.3	2E/A8.3	2E/A8.3	-	INSTALL REFINISHED DOOR FROM ROOM 122, ADD OCCUPANCY INDICATOR
A021	1	3' - 0"	8' - 0"	1 3/4"	WD		F	HM	2		01	2E/A8.3	2E/A8.3	2D/A8.3	3D/A8.3	INSTALL REFINISHED DOOR FROM ROOM 273
A026B	1	3' - 0"	7' - 0"	1 3/4"	WD		N



HOLLOW METAL FRAME: HM

STOREFRONT - 2" X 4-1/2" FRAME: ALUM 2

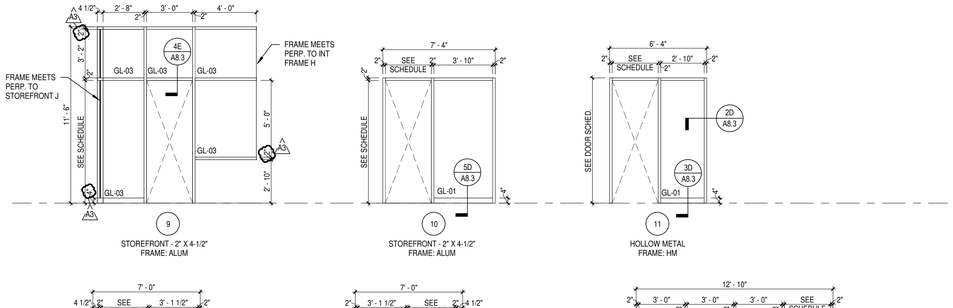
STOREFRONT - 2" X 4-1/2" FRAME: ALUM 2



STOREFRONT - 2"X6" FRAME: ALUM 2

STOREFRONT - 2" X 4-1/2" FRAME: ALUM 2

STOREFRONT - 2" X 4-1/2" FRAME: ALUM 2



STOREFRONT - 2" X 4-1/2" FRAME: ALUM

STOREFRONT - 2" X 4-1/2" FRAME: ALUM

HOLLOW METAL FRAME: HM

STOREFRONT - 2" X 4-1/2" FRAME: ALUM

STOREFRONT - 2" X 4-1/2" FRAME: ALUM

STOREFRONT - 2" X 4-1/2" FRAME: ALUM 2

STOREFRONT - 2" X 4-1/2" FRAME: ALUM 2

STOREFRONT - 2" X 6" FRAME: ALUM 2

STOREFRONT - 2" X 4-1/2" FRAME: ALUM 2

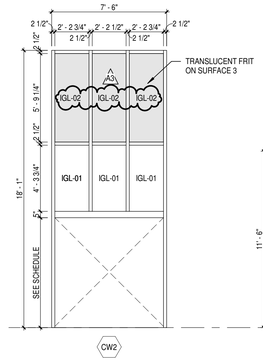
STOREFRONT - 2" X 4-1/2" FRAME: ALUM 2

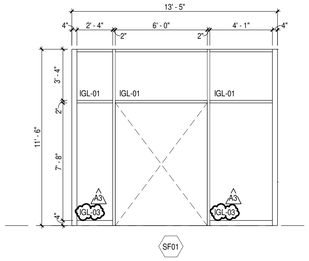
INTERIOR FRAME TYPES

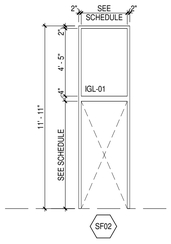
5A A8.3 HEAD/JAMB DETAIL @ ETR FRAME
SCALE: 1 1/2" = 1'-0"

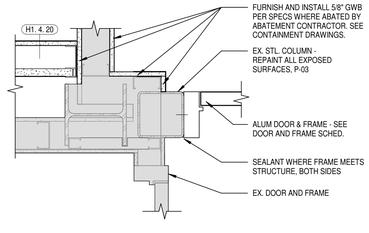
5B A8.3 JAMB - SF @ INT. COLUMNS
SCALE: 1 1/2" = 1'-0"

EXTERIOR FRAME ELEVATIONS

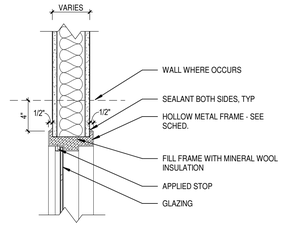




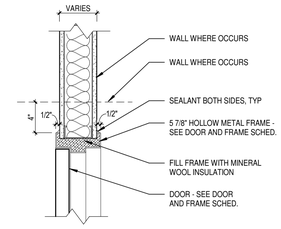




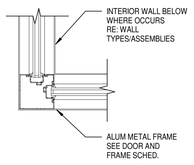
2C A8.3 JAMB - SF @ EX. COLUMNS
SCALE: 1 1/2" = 1'-0"



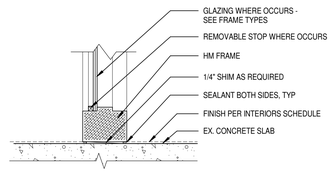
2D A8.3 HEAD / JAMB WINDOW / TRANSOM
SCALE: 1 1/2" = 1'-0"



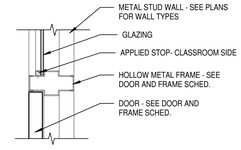
2E A8.3 HEAD / JAMB @ HM DOOR FRAME
SCALE: 1 1/2" = 1'-0"



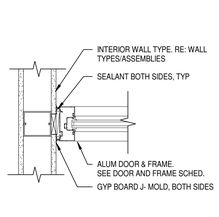
3C A8.3 JAMB - SF AT CORNER MULLION
SCALE: 1 1/2" = 1'-0"



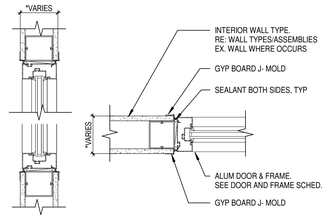
3D A8.3 HM SILL @ FLOOR
SCALE: 1 1/2" = 1'-0"



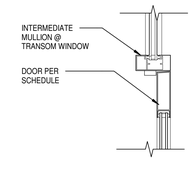
3E A8.3 HM TRANSOM HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



4C A8.3 HEAD / JAMB ALUM FRAME @ PERP. WALL
SCALE: 1 1/2" = 1'-0"



4D A8.3 HEAD / JAMB / SILL INTERIOR ALUM WINDOWS
SCALE: 1 1/2" = 1'-0"



4E A8.3 INT ALUM SF TRANSOM HEAD DETAIL
SCALE: 1 1/2" = 1'-0"

5D A8.3 SILL - SF AT INTERIOR FIXED GLAZING
SCALE: 1 1/2" = 1'-0"

5E A8.3 SILL - INT ALUM SF DOOR
SCALE: 1 1/2" = 1'-0"

DOOR AND FRAME SCHEDULE GENERAL NOTES

A. ALL EXTERIOR HOLLOW METAL FRAMES SHALL BE FILLED WITH INSULATION.
B. ALL INTERIOR HOLLOW METAL FRAMES SET IN MASONRY AND CONCRETE WALLS SHALL BE GROUTED SOLID.
C. ALL HOLLOW METAL FRAMES SET IN METAL STUD WALLS SHALL BE FILLED WITH MINERAL WOOL BLANKET INSULATION.
D. ALL EXTERIOR FRAMES SHALL BE INSTALLED WITH 1/4" SHIM AND SEALANT AROUND PERIMETER OF FRAME.
E. MASONRY LINTELS AND STEEL LINTELS ARE SHOWN ON STRUCTURAL DRAWINGS.
F. GLASS TYPES FOR DOORS ARE INDICATED IN THE DOOR GLAZING COLUMN OF THE DOOR AND FRAME SCHEDULE. GLASS TYPES FOR FRAMES ARE INDICATED ON THE FRAME ELEVATIONS.
G. FOR COILING DOORS, GRILLES AND SECTIONAL DOORS, WIDTH AND HEIGHT DIMENSIONS SHOWN IN DOOR AND FRAME SCHEDULE REPRESENT FINISHED OPENING SIZE. CONTRACTOR TO COORDINATE EXACT SIZE OF DOOR WITH MANUFACTURER.
H. FRAME MANUFACTURER SHALL COORDINATE LOCATIONS OF ALL CONCEALED CONDUIT AND J-BOXES REQUIRED FOR SECURITY SYSTEM HARDWARE PRIOR TO MANUFACTURING OF HOLLOW METAL FRAMES AND COORDINATE WITH SECURITY HARDWARE AND DEVICES.
I. PROVIDE HEAD RECEIVERS AT ALUMINUM STOREFRONTS AND CURTAIN WALLS AS REQUIRED FOR STRUCTURAL DEFLECTION ALLOWANCE.
J. SEE SPECIFICATIONS HARDWARE SECTION FOR HARDWARE SETS NOTED IN DOOR AND FRAME SCHEDULE.

GLAZING TYPE DESCRIPTIONS

GL-01	CLEAR TEMPERED FLOAT GLASS
GL-02	CLEAR LAMINATED GLASS
GL-03	CLEAR LAMINATED GLASS (ATTACK-RESISTANT)
IGL-01	CLEAR INSULATING GLASS
IGL-02	CLEAR INSULATING GLASS (TRANSLUCENT FRIT ON SURFACE 3)
IGL-03	ATTACK-RESISTANT CLEAR INSULATED GLASS

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COLLEGE & CAREER EDUCATION CENTER

ROCKFORD PUBLIC SCHOOLS - DISTRICT 205
RPS 205 IFB #25-11
RPS 205 PROJECT #2444
4151 Samuelson Road
Rockford, IL 61109

ISSUED FOR BID
09/30/2024

REVISIONS

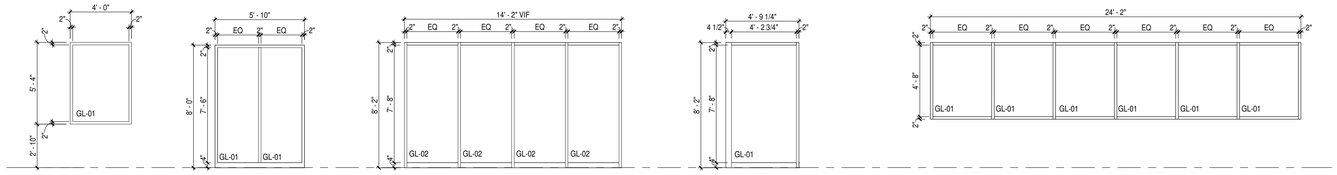
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A3	11/6/2024	ADDENDUM 3

22-24119-00

DOOR & FRAME ELEVATIONS & DETAILS

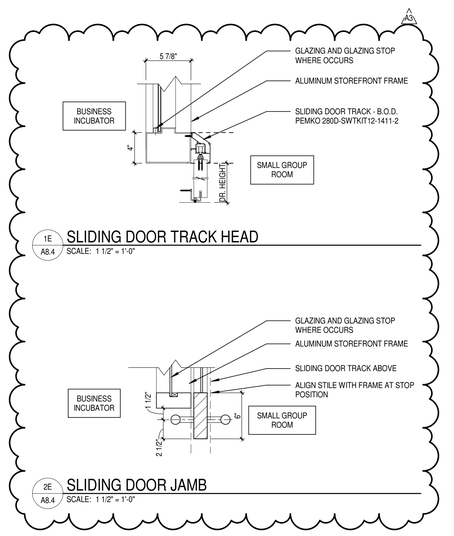
A8.3

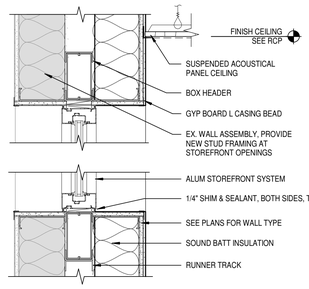
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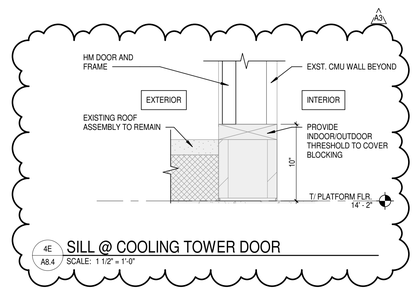


INTERIOR FRAME TYPES

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







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I. PROVIDE HEAD RECEIVERS AT ALUMINUM STOREFRONTS AND CURTAIN WALLS AS REQUIRED FOR STRUCTURAL DEFLECTION ALLOWANCE.
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IGL-03	ATTACK-RESISTANT CLEAR INSULATED GLASS

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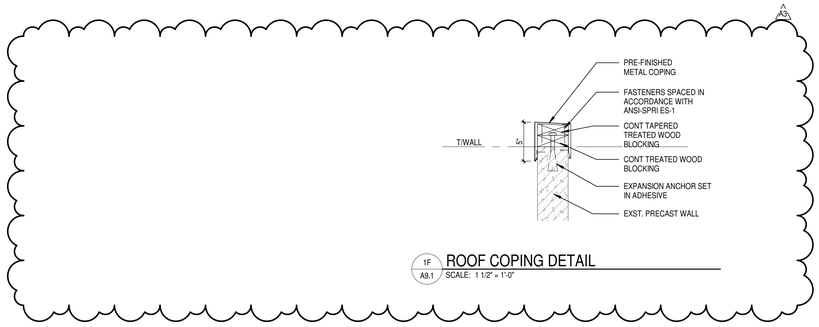
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A3	11/6/2024	ADDENDUM 3

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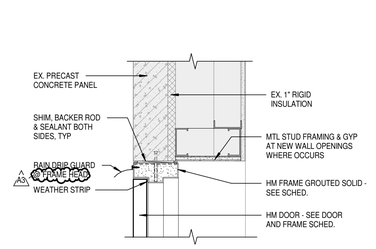
WINDOW TYPES, SCHEDULES, & DETAILS

A8.4

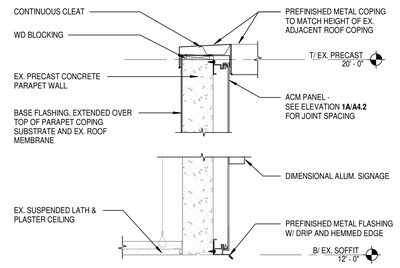
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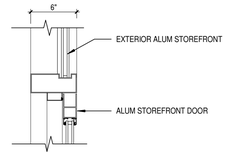
1F / A9.1 ROOF COPING DETAIL
SCALE: 1 1/2" = 1'-0"



2E / A9.1 HM DOOR HEAD/JAMB @ EXTERIOR WALL
SCALE: 1 1/2" = 1'-0"



2F / A9.1 COPING DETAIL @ STUDENT ENTRANCE
SCALE: 1 1/2" = 1'-0"



3E / A9.1 ALUM DOOR HEAD/JAMB @ MAIN ENTRY
SCALE: 1 1/2" = 1'-0"

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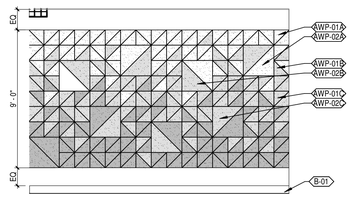
IFB	9/30/2024	ISSUED FOR BID
A3	11/6/2024	ADDENDUM 3

22-24119-00

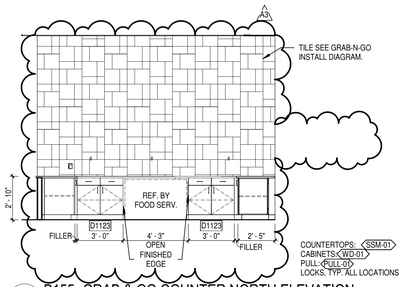
EXTERIOR DETAILS

A9.1

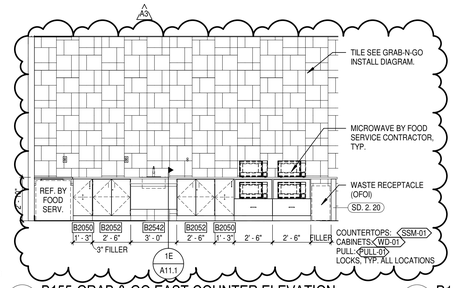
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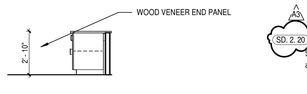
1B A10.2 COMMONS FEATURE WALL TYP
SCALE: 1/4" = 1'-0"



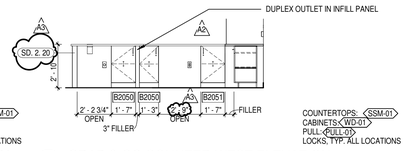
1C A10.2 B155 -GRAB & GO COUNTER NORTH ELEVATION
SCALE: 1/4" = 1'-0"



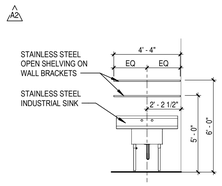
1D A10.2 B155-GRAB & GO EAST COUNTER ELEVATION
SCALE: 1/4" = 1'-0"



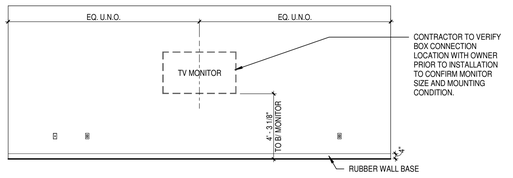
1E A10.2 B145.1 - GRAB & GO COUNTER SOUTH ELEVATION
SCALE: 1/4" = 1'-0"



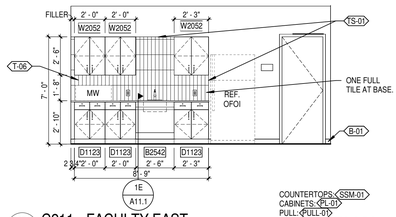
1F A10.2 GRAB & GO COUNTER WEST ELEVATION
SCALE: 1/4" = 1'-0"



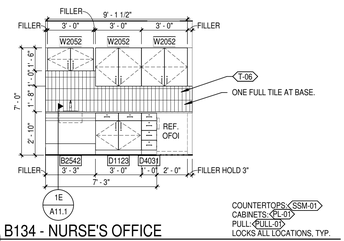
2A A10.2 DESIGN PRODUCTION SINK ELEVATION
SCALE: 1/4" = 1'-0"



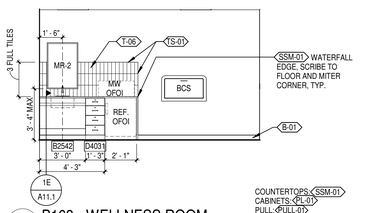
2B A10.2 ELEVATION @ TV MONITOR, TYP.
SCALE: 1/4" = 1'-0"



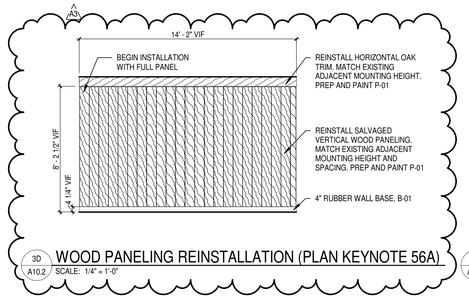
2D A10.2 C211 - FACULTY EAST
SCALE: 1/4" = 1'-0"



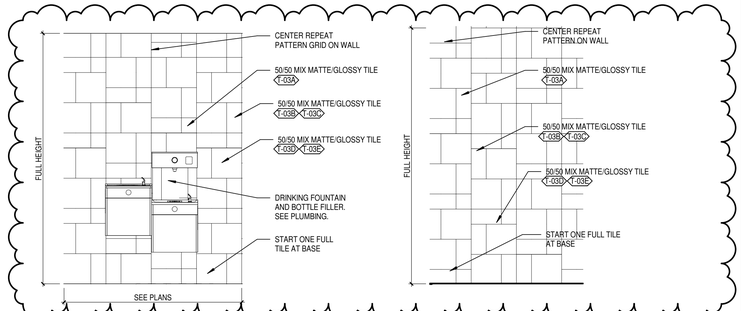
2E A10.2 B134 - NURSE'S OFFICE
SCALE: 1/4" = 1'-0"



2F A10.2 B163 - WELLNESS ROOM
SCALE: 1/4" = 1'-0"

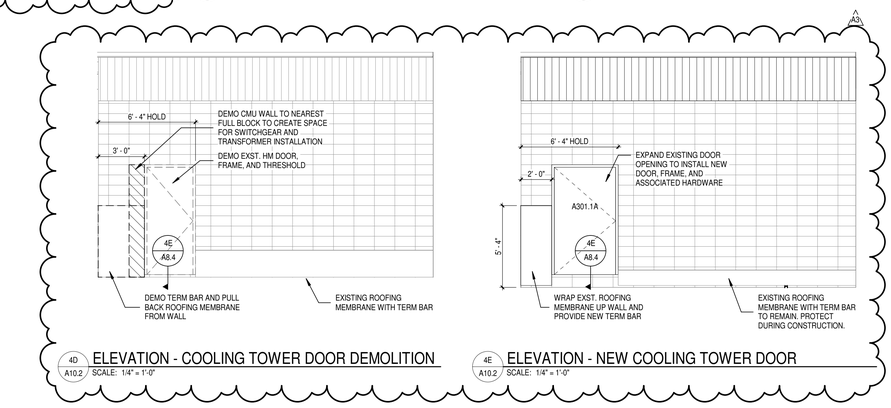


3D A10.2 WOOD PANELING REINSTALLATION (PLAN KEYNOTE 56A)
SCALE: 1/4" = 1'-0"



3E A10.2 TILE INSTALL DIAGRAM AT DRINKING FOUNTAIN
SCALE: 1/2" = 1'-0"

3F A10.2 TILE INSTALL DIAGRAM AT GRAB-N-GO
SCALE: 1/2" = 1'-0"



4D A10.2 ELEVATION - COOLING TOWER DOOR DEMOLITION
SCALE: 1/4" = 1'-0"

4E A10.2 ELEVATION - NEW COOLING TOWER DOOR
SCALE: 1/4" = 1'-0"

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RPS 205 IFB #25-11
RPS 205 PROJECT #2444
4151 Samuelson Road
Rockford, IL 61109

ISSUED FOR BID
09/30/2024

REVISIONS

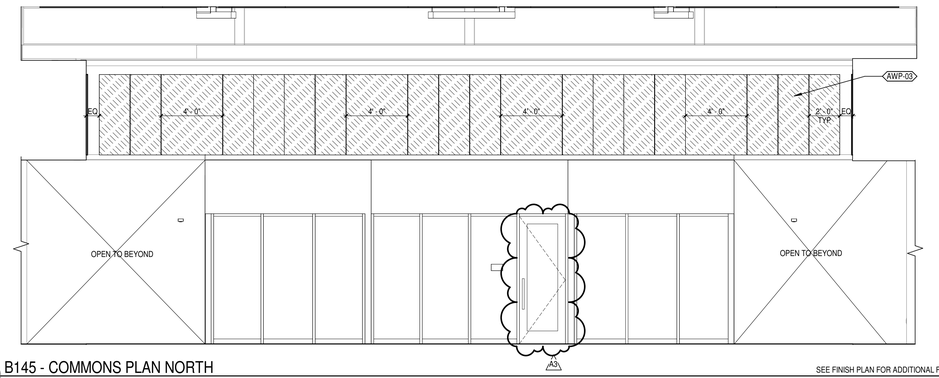
IFB	9/30/2024	ISSUED FOR BID
A2	10/24/2024	ADDENDUM 2
A3	11/6/2024	ADDENDUM 3

22-24119-00

INTERIOR & MILLWORK ELEVATIONS

A10.2

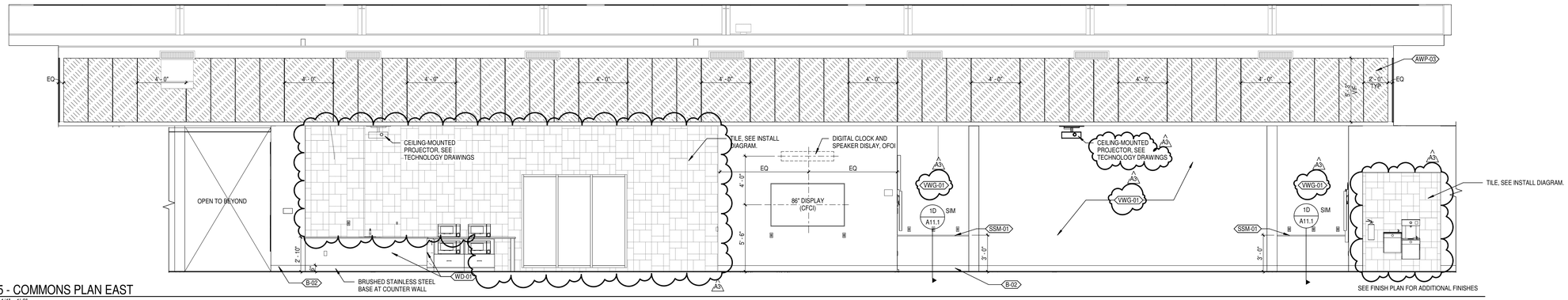
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1A A10.3 B145 - COMMONS PLAN NORTH

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

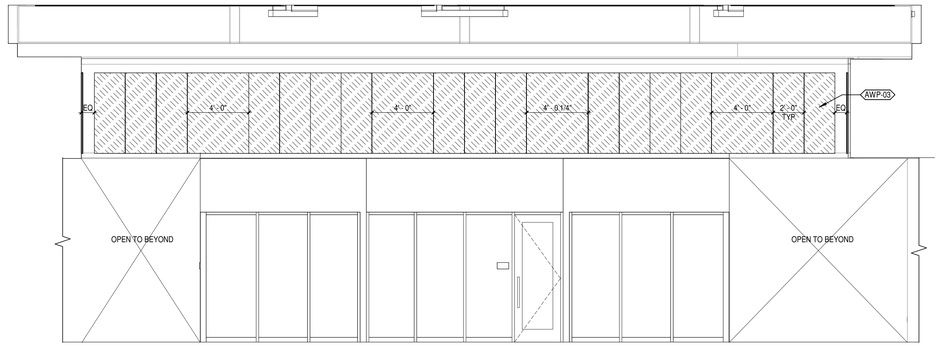
SEE FINISH PLAN FOR ADDITIONAL FINISHES



2A A10.3 B145 - COMMONS PLAN EAST

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

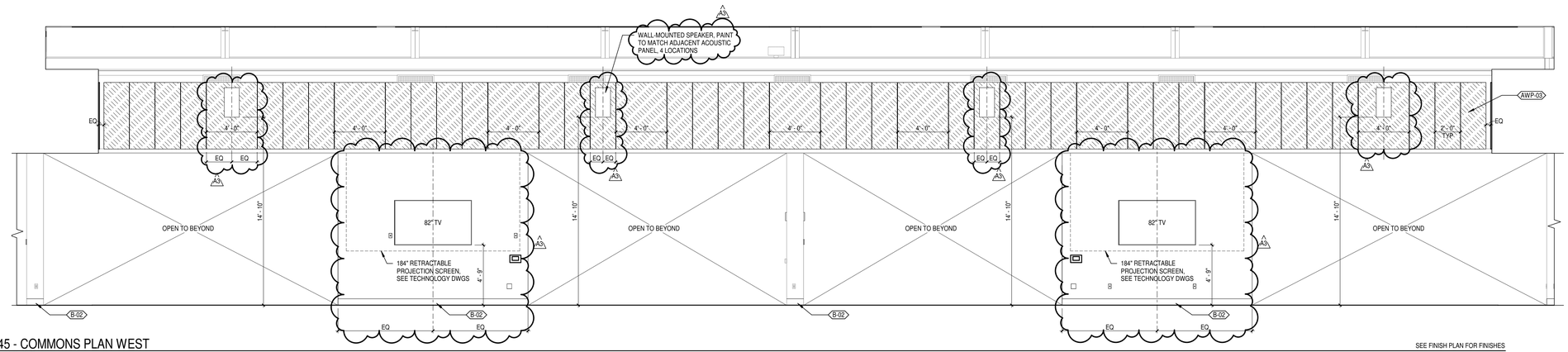
SEE FINISH PLAN FOR ADDITIONAL FINISHES



3A A10.3 B145 - COMMONS PLAN SOUTH

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

SEE FINISH PLAN FOR ADDITIONAL FINISHES



4A A10.3 B145 - COMMONS PLAN WEST

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

SEE FINISH PLAN FOR FINISHES

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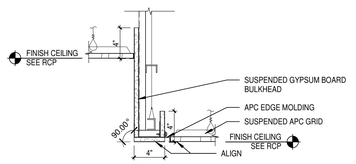
IFB	9/30/2024	ISSUED FOR BID
A3	11/6/2024	ADDENDUM 3

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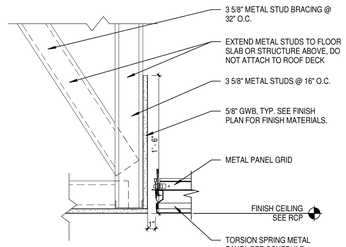
INTERIOR ELEVATIONS - COMMONS

A10.3

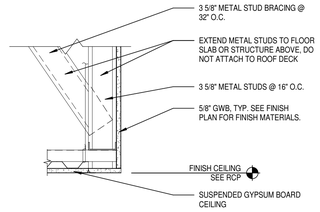
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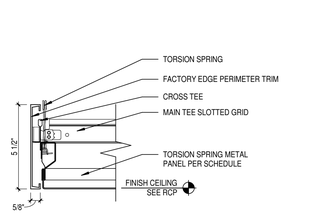
1A A11.2 APC TO APC AT SUSPENDED BULKHEAD
SCALE: 1 1/2" = 1'-0"



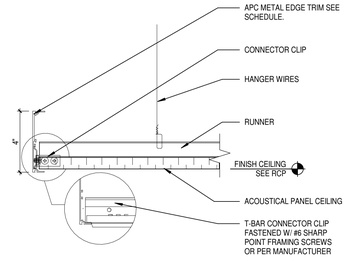
1B A11.2 GYP TO METAL PANEL CEILING
SCALE: 1 1/2" = 1'-0"



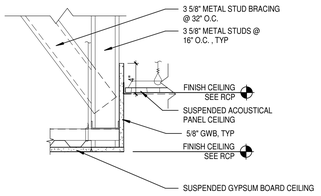
1C A11.2 GYP BULKHEAD TO EXPOSED STRUCTURE
SCALE: 1 1/2" = 1'-0"



1D A11.2 METAL CEILING PANEL TO EXPOSED STRUCTURE
SCALE: 3" = 1'-0"



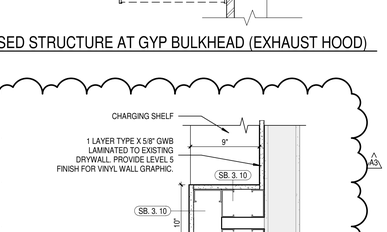
1E A11.2 SUSPENDED APC TO EXPOSED STRUCTURE
SCALE: 3" = 1'-0"



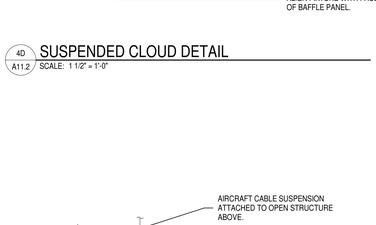
1F A11.2 GYP CEILING TO NEW/EXIST APC
SCALE: 1 1/2" = 1'-0"



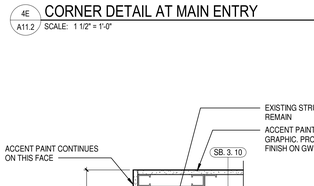
2B A11.2 GYP TO APC AT GYP BULKHEAD
SCALE: 1 1/2" = 1'-0"



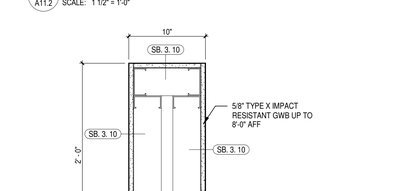
2C A11.2 METAL CEILING PANEL TO EXPOSED STRUCTURE
SCALE: 3" = 1'-0"



2D A11.2 BULKHEAD DETAIL
SCALE: 1 1/2" = 1'-0"



2E A11.2 COLUMN WRAP ALONG WALL
SCALE: 1 1/2" = 1'-0"



3A A11.2 APC TO APC AT GYP BULKHEAD
SCALE: 1 1/2" = 1'-0"

3B A11.2 EXP STRC TO EXIST GYP AT GYP BULKHEAD
SCALE: 1 1/2" = 1'-0"

3C A11.2 GYP BULKHEAD TO EXIST GYP
SCALE: 1 1/2" = 1'-0"

3D A11.2 GYP BULKHEAD TO APC
SCALE: 1 1/2" = 1'-0"

3E A11.2 STAND-ALONE COLUMN WRAP DETAIL
SCALE: 1 1/2" = 1'-0"

3F A11.2 WALL TO DECK DETAIL
SCALE: 1 1/2" = 1'-0"

4B A11.2 APC TO EXPOSED STRUCTURE AT GYP BULKHEAD (EXHAUST HOOD)
SCALE: 1 1/2" = 1'-0"

4D A11.2 SUSPENDED CLOUD DETAIL
SCALE: 1 1/2" = 1'-0"

4E A11.2 CORNER DETAIL AT MAIN ENTRY
SCALE: 1 1/2" = 1'-0"

4F A11.2 TRANSACTION COUNTER SECTION
SCALE: 1 1/2" = 1'-0"

5C A11.2 EMPTY COLUMN WRAP @ CYBER LOUNGE
SCALE: 1 1/2" = 1'-0"

5D A11.2 COMMONS SUSPENDED BAFFLE CEILING EDGE
SCALE: 1 1/2" = 1'-0"

5E A11.2 CORNER DETAIL @ CORRIDOR BY A052, TYP.
SCALE: 1 1/2" = 1'-0"

5F A11.2 CULINARY LOCKER WING WALL
SCALE: 1 1/2" = 1'-0"

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INTERIOR
DETAILS

A11.2

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FINISH SCHEDULE

NO.	DESCRIPTION	MANUFACTURER	BASIS OF DESIGN (BOD) PRODUCT	COLOR/FINISH	SIZE	COMMENTS	Location
033543 CONCRETE FINISHING							
SCE-01	SEALED CONCRETE BOH					OPAQUE GRAY SEALER, PREMIUM QUALITY, LOW VOC	SEE FINISH PLANS
064000 INTERIOR ARCHITECTURE WOODWORK							
WD-01	WOOD VENEER		RIFT CUT WHITE OAK	CLEAR STAIN			RECPETION/GRAB-N-GO MILLWORK
WD-02	WOOD VENEER			MATCH ADJACENT EXISTING CASEWORK		VIF FINISH IN FIELD	
064116 PLASTIC LAMINATE FACED MILLWORK							
PL-01	PLASTIC LAMINATE	WILSONART	LAMINATE	LANDMARK WOOD			ADMIN/FACULTY MILLWORK
PL-02	PLASTIC LAMINATE	WILSONART	LAMINATE	BLACK 1595			CONTROL ROOM
PULL-01	HARDWARE PULLS	ELEMENTS	GIBSON CENTER TO CENTER SOFT SQUARE CABINET HANDLE/DRAWER PULL	SATIN NICKEL	3 - 3/4"		
PULL-02	HARDWARE PULLS					MATCH EXISTING ADJACENT PULLS, VIF	
066400 PLASTIC PANELING							
FRP-01	FIBERGLASS REINFORCED PANEL		SEE SPEC 066400				WELDING LAB
088000 GLAZING							
GF-01	GLAZING FILM	LLUMAR	MINI-DOT MATRIX GRADIENT	GRADIENT	STD ROLL: 60"WIDE X 50 YDS	60" RAILROAD APPLICATION	
093013 TILING, GROUT & METAL TRIM ACCESSORIES							
B-04	PORCELAIN TILE BASE	CROSSVILLE	OWEN STONE TRIM OST03.10424LBN	SLIPPER - LEATHER FINISH	4X24		WALL BASE AT COMMONS SINGLE USER TOILET ROOMS
T-01	PORCELAIN TILE	CROSSVILLE	OWEN STONE	SLIPPER - LEATHER FINISH	12X24	GRID	FLOORING AT COMONS SINGLE USER TOILET ROOMS
T-02	CERAMIC TILE	MOSA	MURALS CHANGE	BRIGHT WHITE - 34510-1530	6X12	STACKED HORIZONTAL	WALL TILE AT ALL SINGLE USER TOILETS
T-03A	CERAMIC TILE	MOSA	MURALS CHANGE	BRIGHT WHITE 34510-1515	6X6	SEE TILE INSTALL DIAGRAM ELEVATION	WALL TILE AT GRAB-N-GO, DRINKING FOUNTAIN ALCOVES
T-03B	CERAMIC TILE	MOSA	MURALS BLEND	BRIGHT WHITE 30510 -1530 GLOSSY	6X12	SEE TILE INSTALL DIAGRAM ELEVATION	WALL TILE AT GRAB-N-GO, DRINKING FOUNTAIN ALCOVES
T-03C	CERAMIC TILE	MOSA	MURALS BLEND	BRIGHT WHITE 30010 - 1530 MATTE	6X12	SEE TILE INSTALL DIAGRAM ELEVATION	WALL TILE AT GRAB-N-GO, DRINKING FOUNTAIN ALCOVES
T-03D	CERAMIC TILE	MOSA	MURALS BLEND	BRIGHT WHITE 30510 - 3030 GLOSSY	12X12	SEE TILE INSTALL DIAGRAM ELEVATION	WALL TILE AT GRAB-N-GO, DRINKING FOUNTAIN ALCOVES
T-03E	CERAMIC TILE	MOSA	MURALS BLEND	BRIGHT WHITE 30010 - 3030 MATTE	12X12	SEE TILE INSTALL DIAGRAM ELEVATION	WALL TILE AT GRAB-N-GO, DRINKING FOUNTAIN ALCOVES
T-04	CERAMIC TILE	DALITLE	MULTITUDE - RECTANGLE WAVE	MU16 ORIGAMI WHITE - TEXTURED	12X24	BRICK	WALL TILE AT GROUP TOILET ROOMS, SEE FINISH PLANS
T-05	CERAMIC TILE	DALITLE	MULTITUDE -RECTANGLE WAVE	MU18 URBAN GREY - TEXTURED	12X24	BRICK	WALL TILE AT GROUP TOILET ROOMS, SEE FINISH PLANS
T-06	CERAMIC TILE	TRINITY SURFACES	COLOR CODE	ICELAND - MATTE	3X9	STACKED VERTICAL	BACKSPLASH AT KITCHENETTES, CASEWORK WITH SINKS
TS-01	TRANSITION	SCHLUTER	SCHIENE	STAINLESS STEEL	VIF	TILED WALL EXPOSED CORNERS	EXPOSED EDGES AT WALL TILE
TS-04	TRANSITION	SCHLUTER	RENO-U	STAINLESS STEEL	VIF	TILE TO RF	FLOOR TRANSITION
095113 ACOUSTICAL PANEL CEILINGS							
APC-01	ACOUSTIC PANEL CEILING	USG	MARS ACOUSTICAL 86785	WHITE - SHADOWLINE TAPERED EDGE	24"X24"	GRID 15/16", 4" COMPASSO TRIM SURROUND AT ALL CLOUDS	TYP
APC-02	ACOUSTIC PANEL CEILING	USG	MARS HIGH -NRC ACOUSTICAL PANELS	BLACK - SHADOWLINE TAPERED EDGE	24"X24"	GRID 15/16", HIGH NRC RATING	CONTROL ROOM
APC-03	ACOUSTIC PANEL CEILING	USG	KITCHEN LAY-IN PANELS 3210	WHITE - SQUARE EDGE	24"X24"	GRID 15/16", MEETS USDA/FSIS GUIDELINES	CULINARY
APC-04	ACOUSTIC PANEL CEILING	USG	MARS HIGH-NRC ACOUSTICAL 88138	WHITE - SHADOWLINE TAPERED EDGE	24"X24"	GRID 15/16", HIGH NRC RATING, BACKED WITH KINETICS NOISE CONTROL TILE ADHERED TO APC ABOVE CEILING	PODCAST/BREAKOUT ROOM
APC-05	NOISE CONTROL CEILING TILE	KINETICS	QUIET TILE CEILING TREATMENT		24"X24"		
095133 ACOUSTICAL METAL PAN CEILINGS							
MTL-01	PERFORATED METAL CEILING	ARMSTRONG	METALWORKS MESH EXPANDED METAL	SCALLOP PATTERN	24"x24"		
096513 RESILIENT BASE AND ACCESSORIES							
B-01	RESILIENT BASE	JOHNSONITE	DURACOVE RUBBER	BURNT UMBER	4"		TYP ALL AREAS UNO
B-02	RESILIENT BASE	JOHNSONITE	DURACOVE RUBBER	BURNT UMBER	6"		TYP CORRIDORS
B-03	RESILIENT BASE	JOHNSONITE	DURACOVE RUBBER	40 BLACK	4"		BROADCAST STUDIO, CONTROL ROOM
TS-02	RESILIENT FLOOR TRANSITION	JOHNSONITE	SLIMLINE	BURNT UMBER	VIF		CPT TO CONC REDUCER, CPT TO RF, RF TO EXIST
TS-03	RESILIENT FLOOR TRANSITION	JOHNSONITE	CTA-63-D	BURNT UMBER	VIF	CPT TO EXIST	CPT TO EXIST
096513 RESINOUS FLOORING							
ERF-01	EPOXY RESIN FLOORING	DUR-A-FLEX	SHOP FLOOR	COMET			AUTO LABS, MANUFACTURING LAB, INDUSTRIAL TECH, AREA C WEST CORRIDOR
ERF-02	EPOXY RESIN FLOORING	DUR-A-FLEX	DUR-A-CHIP	FLAKE COLOR TBD			CULINARY SPACES, DESIGN PRODUCTION
ERF-03	EPOXY RESIN FLOORING	DUR-A-FLEX	DUR-A-CHIP	FLAKE COLOR TBD			ALL TOILET ROOMS - EXCEPT COMMONS
ERF-04	EPOXY RESIN FLOORING	DUR-A-FLEX	SHOP FLOOR	CONCRETE GREY			AREA C WEST CORRIDOR
096543 RESILIENT FLOORING							
RF-01	SHEET LINOLEUM	FORBO	MARMOLEUM SHEET	3702 LIQUID CLAY	ROLL		CORRIDOR TYP
RF-02	SHEET LINOLEUM	FORBO	MARMOLEUM SHEET	3705 METEORITE	ROLL		CORRIDOR ACCENT
RF-03	MODULAR LINOLEUM	FORBO	MARMOLEUM MCT	MCT-629 EIGER	33CM X 33CM	GRID INSTALL	MEDICAL SPACES, KITCHENETTE, DESIGN CLASSROOM, NURSE, CLASSROOM, CAD LAB
RF-04	MODULAR LINOLEUM	FORBO	MARMOLEUM MCT	MCT-3048 GRAPHITE	33CM X 33CM	GRID INSTALL	MEDICAL SPACES, DESIGN LAB
RF-05	STATIC CONTROL TILE	FORBO	MARMOLEUM OHMEX	SERENE GREY	33CM X 33CM	GRID INSTALL	IT CLASSROOM
RF-06	SHEET LINOLEUM	FORBO	MARMOLEUM SHEET	WALTON - 3323 BLACK	ROLL		BROADCAST STUDIO
096813 TILE CARPETING							
CPT-01	CARPET	MILLIKEN	COASTLINES - AMERICA SEASCAPE	SEA79-120 SHORELINE	50CM X 50CM	QUARTER DROP INSTALL	CLASSROOM
CPT-02	CARPET	MILLIKEN	HEAVY METALS - ALLOY	ALY215-174 WELD	25X100CM	ASHLAR INSTALL	ADMIN SPACES
CPT-03	CARPET	MILLIKEN	HEAVY METALS - FOUNDRY	FDR215-174 WELD	25X100CM	ASHLAR INSTALL	SMALL GROUP ROOMS
CPT-10	WALKOFF CARPET	SHAW CONTRACT	STEPPIN OUT - WELCOME II 5T031	31549 - CHARCOAL	24X24	QUARTER TURN INSTALL	MAIN ENTRY
097200 WALL COVERING							
VWG-01	CUSTOM VINYL WALL GRAPHIC		DREAMSCAPE TERRALON WALLCOVERING	CUSTOM	VARIES, VIF.		AREA A, B, AND C.
098433 SOUND ABSORBING WALL UNITS							
AWP-01A	ACOUSTICAL WALL PANEL	CSI CREATIVE	CARVED SURFACES TF034	SOUNDCORE 12MM - SND037 PAPER	12X12	SEE ELEVATION FOR INSTALL PATTERN	COMMONS
AWP-01B	ACOUSTICAL WALL PANEL	CSI CREATIVE	CARVED SURFACES TF034	SOUNDCORE 12MM - SND130 BUCKSKIN	12X12	SEE ELEVATION FOR INSTALL PATTERN	COMMONS, PODCAST, RECEPTION
AWP-01C	ACOUSTICAL WALL PANEL	CSI CREATIVE	CARVED SURFACES TF034	SOUNDCORE 12MM - SND131 ABALONE	12X12	SEE ELEVATION FOR INSTALL PATTERN	COMMONS, PODCAST, RECEPTION
AWP-02A	ACOUSTICAL WALL PANEL	CSI CREATIVE	CARVED SURFACES TF034	SOUNDCORE 12MM - SND037 PAPER	24X24	SEE ELEVATION FOR INSTALL PATTERN	COMMONS
AWP-02B	ACOUSTICAL WALL PANEL	CSI CREATIVE	CARVED SURFACES TF034	SOUNDCORE 12MM - SND130 BUCKSKIN	24X24	SEE ELEVATION FOR INSTALL PATTERN	COMMONS, PODCAST, RECEPTION
AWP-02C	ACOUSTICAL WALL PANEL	CSI CREATIVE	CARVED SURFACES TF034	SOUNDCORE 12MM - SND131 ABALONE	24X24	SEE ELEVATION FOR INSTALL PATTERN	COMMONS, PODCAST, RECEPTION
AWP-03	ACOUSTICAL WALL PANEL	KINETICS	KLEEN PANEL	HEATHER GREY	2" DEPTH, SEE ELEVATION	SEE ELEVATION FOR DESIGN AND INSTALL	COMMONS AND AUTOMOTIVE
098436 SOUND-ABSORBING CEILING UNIT							
CLOUD-01	SOUND ABSORBING CEILING BAFFLES	CSI CREATIVE	PROFILE CLOUDS 001	SND714 ENGLISH WALNUT	1/2" DEPTH	2" RETURN OUTSIDE PERIMETER & LIGHT CHANNELS	COMMONS MAIN
UA	SOUND ABSORBING CEILING BAFFLES	FOCAL POINT	NIVO ACOUSTIC	CLASSIC WHITE	2X2 - 2" DEPTH		CORRIDOR/PODCAST
UB	SOUND ABSORBING CEILING BAFFLES	FOCAL POINT	NIVO ACOUSTIC	CLASSIC WHITE	2X2 - 4" DEPTH		CORRIDOR/PODCAST
UC	SOUND ABSORBING CEILING BAFFLES	FOCAL POINT	NIVO ACOUSTIC	CLASSIC WHITE	2X2 - 6" DEPTH		CORRIDOR/PODCAST
UD	SOUND ABSORBING CEILING BAFFLES	FOCAL POINT	NIVO ACOUSTIC	CLASSIC WHITE	2X2 - 8" DEPTH		CORRIDOR/PODCAST
099000 PAINTING							
P-12	PAINT	SHERWIN WILLIAMS		COLOR TBD			EXTERIOR PRECAST CONCRETE
099123 INTERIOR PAINTING							
P-01	PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 7004 SNOWBOUND, EGGSHELL			FIELD PAINT
P-02	PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 7007 BRIGHT WHITE, EGGSHELL			CEILING PAINT
P-03	PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 7675 SEALSKIN, SEMI-GLOSS			HM
P-04	PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 6258 TRICORN BLACK, MATTE			BROADCAST STUDIO, CONTROL ROOM
P-05	PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 6622 HEARTY ORANGE; EGGSHELL			AREA A
P-06	PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 6487 CLOUD BURST, EGGSHELL			AREA B
P-07	PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 6905 GOLDFINCH, EGGSHELL			AREA C
P-08	PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 6922 OUTRAGEOUS GREEN, MATTE		GREEN SCREEN	GREEN SCREEN ROOM
P-09	PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 9052 BLITHE BLUE, EGGSHELL			BREAKOUT ROOMS ACCENT
P-10	PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 7015 REPOSE GRAY, EGGSHELL			ACCENT PAINT CLASSROOMS
P-11	PAINT	SHERWIN WILLIAMS	WATERBORNE ACRYLIC DRYFALL	SW 7007 CEILING BRIGHT WHITE, EGGSHELL			GROUP TOILET ROOMS, CLASSROOM ACCENT
P-13	PAINT	SHERWIN WILLIAMS	LOW VOC, PREMIUM PAINT	SW 7019 GAUNTLET GRAY, EGGSHELL			WELDING LAB ACCENT
099600 HIGH PERFORMANCE COATING							
HPC	HIGH PERFORMANCE COATING			MATCH PAINT DESIGNATIONS			
102100 TOILET COMPARTMENTS							
TP-01	PHENOLIC RESIN TOILET COMPARTMENT	SEE SPEC		SELECT FROM MANUFACTURERS STANDARDS			
102123 CUBICLE CURTAIN							
CC-01	CUBICLE CURTAIN FABRIC	INPRO - CLICKEZE	BOARDWALK	MINK		28" EZE MESH - COLOR: SNOW	NURSE/NURSING LAB
CC-02	CUBICLE CURTAIN TRACK	INPRO	OPTITRAC	WHITE BAKED ACRYLIC ENAMEL	SEE RCP		NURSE/NURSING LAB
102600 WALL PROTECTION & CORNER GUARDS							
CGD-01	CORNER GUARD	INPRO	SURFACE MOUNT STAINLESS STEEL	STAINLESS STEEL	3 1/2"		AREA C HEAVY DUTY AREAS
CGD-02	CORNER GUARD	INPRO	CLEAR CORNER GUARD	CLEAR	1 1/8" FULL HEIGHT - VIF		GRAPHIC LOCATIONS

FINISH SCHEDULE

NO.	DESCRIPTION	MANUFACTURER	BASIS OF DESIGN (BOD) PRODUCT	COLOR/FINISH	SIZE	COMMENTS	Location
CGD-03	CORNER GUARD	INPRO	TAPE-ON CORNER GUARD	MATCH ADJACENT SURFACE	1 1/2"		TYP CORNERGUARD UNO
122200 CURTAINS AND DRAPES							
CURT-01	CURTAIN DRAPERY	DESIGNTEX	CURTAIN CALL	NIGHT	SEE PLAN	BLACKOUT	BROADCAST STUDIO
CURT-02	CURTAIN DRAPERY TRACK	AKON	SUSPENDED CURTAIN TRACK SYSTEM	GALVANIZED STEEL	SUSPENDED TO 10' AFF	THREADED ROD CURTAIN TRACK	BROADCAST STUDIO
122413 WINDOW TREATMENT							
WT-01	WINDOW TREATMENT	DRAPER	FLEXSHADE CLN	SW 2705, 5% OPEN, COLOR: V65 CHARCOAL/TAUPE, CHARCOAL FACE OUTSIDE/TAUPE FACE INSIDE		FASCIA: SURFACE MOUNT HEADBOX, COLOR DARK BRONZE	CLASSROOMS EXTERIOR WINDOWS
WT-02	WINDOW TREATMENT	DRAPER	FLEXSHADE CLN	SW 2705, 5% OPEN, COLOR: V21 CHARCOAL		FASCIA: SURFACE MOUNT HEADBOX, COLOR DARK BRONZE	BROADCAST STUDIO, CONTROL ROOM
WT-03	WINDOW TREATMENT	DRAPER	FLEXSHADE MOTORIZED	SW 2705, 5% OPEN, COLOR: V65 CHARCOAL/TAUPE, CHARCOAL FACE OUTSIDE/TAUPE FACE INSIDE		FASCIA: SURFACE MOUNT HEADBOX, COLOR DARK BRONZE	COMMONS CLERESTORY-WEST AND EAST
WT-04	WINDOW TREATMENT	DRAPER	FLEXSHADE TWIN PULL	SPARTA TWILIGHT M04942, 0% BLACKOUT, 060060 BLACK/BLACK		BLACK BRACKETS, SLIM FLAT SEALED HEM BAR.	CLASSROOM INTERIOR GLAZINGS
123661.16 SOLID SURFACING COUNTERTOPS							
SSM-01	SOLID SURFACE MATERIAL	CORIAN	SOLID SURFACE	RAIN CLOUD			ADMIN/FACULTY MILLWORK
SSM-02	SOLID SURFACE MATERIAL	CORIAN	SOLID SURFACE	DEEP ANTHRACITE			PROD. LAB, STUDIO COUNTERTOP
SSM-03	SOLID SURFACE MATERIAL	CORIAN	SOLID SURFACE	ARTISTA CANVAS			WINDOW SILLS
SSM-04	SOLID SURFACE MATERIAL	CORIAN	SOLID SURFACE	SILVER BIRCH		COUNTERTOP WITH INTEGRAL TROUGH STYLE SOLID SURFACE SINKS.	GROUP TOILET ROOMS

ALL SPACES BELOW THE NORTH AND SOUTH PENTHOUSES TO HAVE QUIET TILE APPLIED TO ABOVE CEILING SURFACE ON SPECIFIED ACP SYSTEM

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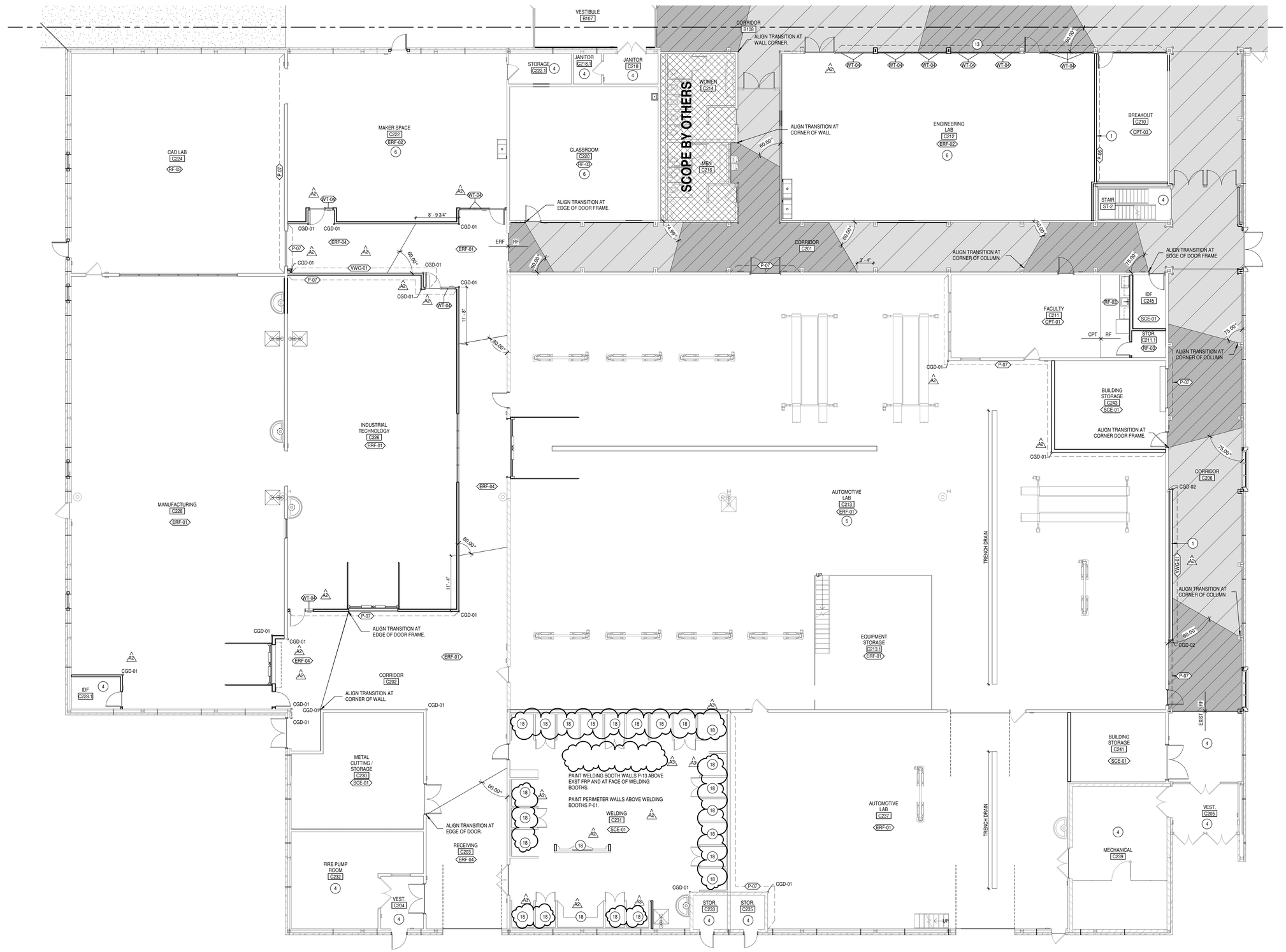
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IFP-HD	10/08/2024	ISSUED FOR PERMIT - HEALTH DEPARTMENT
A2	10/24/2024	ADDENDUM 2
A3	11/6/2024	ADDENDUM 3

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FINISH SCHEDULE

A12.0

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1 A12.1C FINISH PLAN LEVEL 01 - AREA C PHASE I
SCALE: 1/8" = 1'-0"

INTERIOR FINISH PLAN GENERAL NOTES

A. INTERIOR FINISH PLAN GENERAL NOTES APPLY TO ALL INTERIOR FINISH PLAN SHEETS.
B. FOR FLOOR TILE PRODUCTS, ADJUST LAYOUT AS NECESSARY TO AVOID USING CUT WIDTHS THAT EQUAL LESS THEN ONE-HALF OF A TILE AT ROOM PERIMETER.
C. SEE SPECIFICATIONS FOR PAINTING OF ITEMS NOT NOTED ON FINISH PLANS OR ELEVATIONS.
D. WHERE FLOOR FINISH CHANGES FROM ONE ROOM TO ANOTHER, SET JOINT OF THE MATERIALS AT THE CENTER OF THE COMMUNICATING DOOR, U.N.O. SEE A11 SERIES SHEETS FOR TYPICAL FLOOR TRANSITION DETAILS.
E. SEE FINISH SCHEDULE ON SHEET A12.0 FOR BASIS OF DESIGN PRODUCT INFORMATION AND DESIGNATIONS.
F. PAINT ALL WALLS, NEW AND EXISTING, P-01, INCLUDING ALL WOOD PANELS AND TRIM APPLIED TO WALL FINISH U.N.O.
G. PROVIDE B-02 AT ALL CORRIDOR WALL FACES UNO. PROVIDE B-01 AT ALL NON CORRIDOR WALL FACES UNO. DO NOT APPLY TO SPECIALTY WALL FINISHES OR TILE. STRAIGHT BASE AT CARPET, COVE BASE AT ALL OTHER LOCATIONS.
H. SEE SHEET A8.1 FOR PARTITION TYPES.
I. PAINT ALL HM DOORS & FRAMES P-03 UNO ON FINISH PLANS IN SEMI-GLOSS.
J. PAINT ALL EXPOSED CONDUIT, GRILLES AND DIFFUSERS TO MATCH ADJACENT SURFACE UNO.
K. SEE SHEET A3.0 FOR REFLECTED CEILING PLAN GENERAL NOTES.
L. VERIFY LEAD TIMES FOR ALL MATERIALS TO ENSURE TIMELY DELIVERY.
M. ARCHITECT-DESIGNER TO APPROVE ALL FLOORING MATERIAL LAYOUTS PRIOR TO INSTALL. CARPET PATTERN TO ALIGN AT ALL SEAMS WITH ADJOINING CARPET. PROVIDE ALL FLOORING SEAMING MATERIAL DIAGRAMS TO ARCHITECT FOR APPROVAL PRIOR TO ORDERING CARPET/FLOORING MATERIALS. SEAM SEALER MUST BE USED ON CARPET. ALL SEAMS SHALL BE SECURED AND IN ACCORDANCE WITH MANUFACTURER INSTALL INSTRUCTIONS AND SPECIFICATIONS.
N. REFER TO ELEVATIONS FOR EXTENTS OF FINISH MATERIALS AND DETAILS AS NEEDED.
O. REFER TO CONSTRUCTION PLAN FOR PARTITION FINISH LEVEL IF NOTED.
P. INSTALL AND TREAT ALL MATERIALS PER MANUFACTURERS SPECIFICATIONS.
Q. REFER TO REFLECTED CEILING PLAN FOR ALL CEILING FINISHES.
R. SEE ROOM OPENING SCHEDULE FOR ALL EXISTING, NEW & RELOCATED DOORS & HM FRAME FINISHES.
S. PAINT ACCESS PANELS AND OTHER MISCELLANEOUS WALL OR CEILING-MOUNTED ITEMS TO MATCH THE SURFACE UPON WHICH THEY OCCUR UNO.
T. ALL FLOOR AND WALL FINISHES TO EXTEND BEHIND ANY BUILT-IN CASEWORK OR MILLWORK, UNO.
U. ALL PERIMETER METAL HEAT SYSTEM COVERS TO BE PAINTED TO MATCH ADJACENT WALL FINISH IN SATIN HEAT RESISTANT FORMULATED TYPE PAINT.
V. ATTIC STOCK -SALVAGE MATERIAL OVERAGES FOR OWNER STORAGE, INCLUDING ALL WC, P, ACP AND RF. REVIEW ANY CPT OVERAGES WITH TENANT PRIOR TO DISPOSAL.
W. CONTRACTOR SHALL COORDINATE WORK OF ALL FLOORING SUBCONTRACTORS TO ENSURE THAT ALL VARYING FLOOR MATERIALS USED ARE INSTALLED FLUSH. ALL TRANSITION METHODS AS INDICATED PER TRANSITION DETAILS.
X. ALL EXPOSED GYP AND WALLCOVERING CORNERS TO BE FINISHED WITH CG-01. SEE FINISH SCHEDULE.
Y. PROVIDE MATCHING INTEGRAL EPOXY 4" COVE BASE AT ENTIRE EXTENTS OF ROOM WHERE EPOXY (ERF) FLOORING OCCURS ILO OTHER BASES.
Z. FLOOR PATTERN DIMENSIONS AND LOCATIONS ARE APPROXIMATE. MINOR ADJUSTMENTS MAY BE MADE FOR LAYOUT AND TO MINIMIZE WASTE AS LONG AS THE DESIGN INTENT IS MAINTAINED.
AA. INSTALL ALL FLOOR TILE PRODUCTS IN THE NORTH/SOUTH DIRECTION UNO.
BB. TYP CORNER GUARDS TO BE CGD-03 UNO.

SHEET NOTES

1 WALL TO RECEIVE LEVEL 5 WALL FINISH AT FULL EXTENT OF CUSTOM GRAPHIC AND ACCENT PAINT (SEE PLAN).
2 ROOM TO RECEIVE NEW PAINT AND WALL BASE. EXISTING FLOORING TO REMAIN. PROTECT DURING CONSTRUCTION.
3 NO NEW FINISH WORK THIS ROOM.
4 EXISTING FLOORING TO REMAIN. PROTECT DURING CONSTRUCTION.
5 HPC MATCHING WALL FINISH ABOVE APPLIED TO ALL WALLS - UP TO 4'-8" AFF.
6 LOCATE WITH OWNER TEACHING WALL TO RECEIVE ACCENT PAINT P-10 FULL HEIGHT.
10 WALL TO RECEIVE FULL HEIGHT TILE. SEE INSTALL DIAGRAM.
11 PATCH AND REPLACE MISSING FLOORING TO MATCH ADJACENT FLOORING FINISH.
13 GLAZING FILM THIS LOCATION FROM BASE TO 66" AFF. SEE SCHEDULE GF-01.
14 ROOM TO RECEIVE BLACK MATTE PAINT P-04 FULL HEIGHT WALLS, CEILINGS, & EXPOSED STRUCTURE/MEP. BLACK BASE B-03 THIS ROOM ILO B-01.
15 ROOM TO RECIEVE COMERCIAL KITCHEN GRADE EPOXY PAINT FULL HEIGHT HPC TO MATCH P-01 AT ALL WALLS INCLUDING BEHIND SPECIALTY EQUIPMENT. SEE SCHEDULE.
16 P-04 PAINT THIS ROOM FULL HEIGHT. B-03 BLACK BASE THIS ROOM ILO B-01.
17 LEVEL 5 GYPSUM WALL FINISH WITH GREEN SCREEN PAINT APPLIED. SEE FINISH SCHEDULE.
18 FRP AT ADA WELDING BOOTH ONLY AND AT TEACHING WALL. SEE SPEC.

INTERIOR FINISH PLAN LEGEND

XX-XX — FINISH MATERIAL TAG
XXX XXX — FLOOR FINISH TRANSITION
MATERIAL DIRECTION
XX-XX — FINISH EXTENT LINES. SEE INTERIOR ELEVATION FOR ADDITIONAL INFORMATION
RF-01
RF-02

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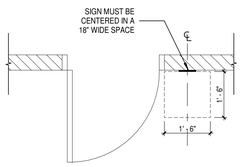
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A3	11/6/2024	ADDENDUM 3

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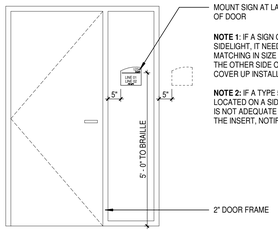
LEVEL 01 - AREA C - FINISH PLAN

A12.1C

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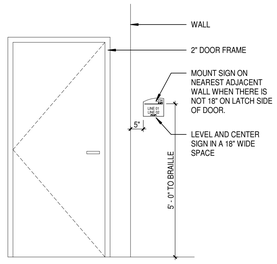


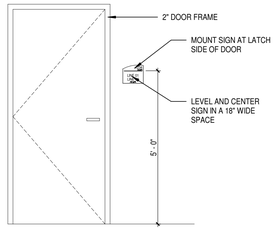
NOTE: 2018 IAC, 703.4 INSTALLATION HEIGHT AND LOCATION

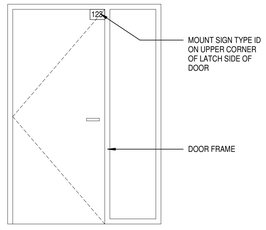


NOTE 1: IF A SIGN GOES ON A GLASS SIDELIGHT, IT NEEDS A BACK PLATE MATCHING IN SIZE AND COLOR ON THE OTHER SIDE OF THE GLASS TO COVER UP INSTALL METHODS.

NOTE 2: IF A TYPE 5 (INSERT) SIGN IS LOCATED ON A SIDELITE AND THERE IS NOT ADEQUATE SPACE TO INSTALL THE INSERT, NOTIFY ARCHITECT.



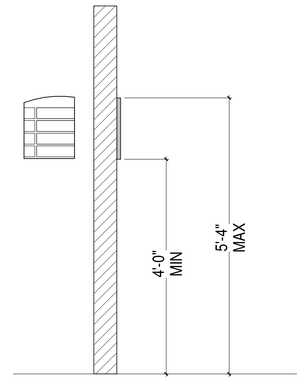




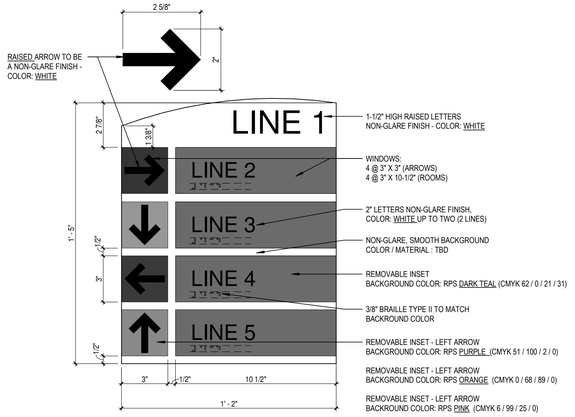
1A A14.01 SINGLE DOOR SIGN LOCATION
SCALE: 1/2" = 1'-0"

NOTE: 2018 IAC, 703.4 INSTALLATION HEIGHT AND LOCATION

2A A14.01 DOUBLE DOOR SIGN PLACEMENT ELEVATIONS
SCALE: 1/2" = 1'-0"



SIGN POSITION



3E A14.01 WAYFINDING - SIGN TYPE 7
SCALE: 3" = 1'-0"

A3

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RPS 205 SIGNAGE STANDARDS

A14.01

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SIGNAGE PLAN GENERAL NOTES

1. EXTERIOR ENTRANCE DESIGNATION SIGNAGE TO BE PROVIDED BY OWNER.
2. ALL INTERIOR ROOM DOORS TO RECEIVE SIGN TYPE I, LOCATED IN THE INSIDE, TOP, LATCH SIDE CORNER OF THE DOOR, PER OWNER STANDARDS.
3. ALL EXTERIOR WINDOWS TO RECEIVE SIGN TYPE W, LOCATED IN THE TOP RIGHT CORNER OF THE TOP RIGHT WINDOW, PER OWNER STANDARD.S

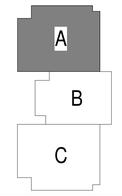


N

LEVEL 1 - AREA A SIGNAGE PLAN

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

KEY PLAN



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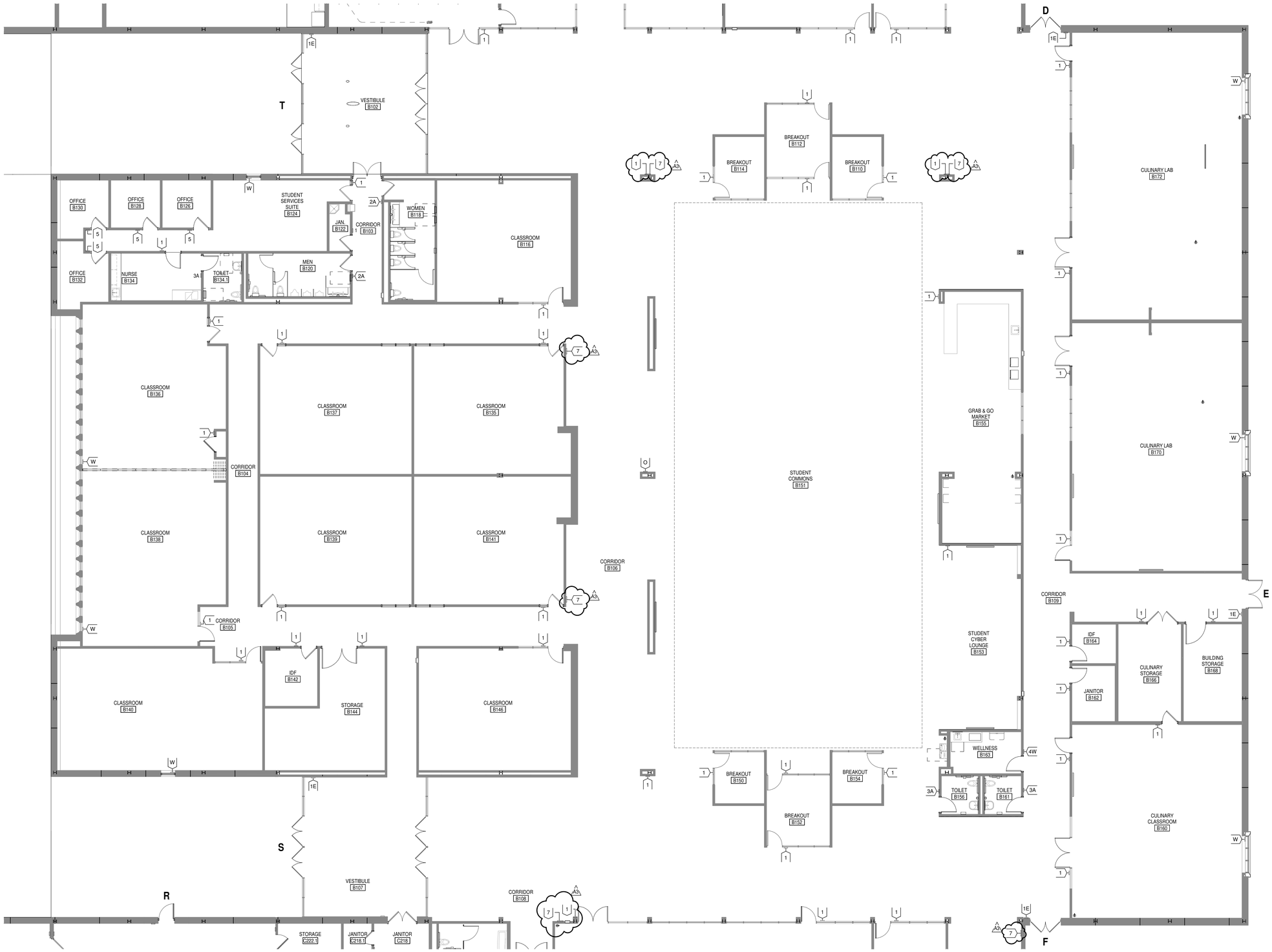
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LEVEL 01 - AREA A - SIGNAGE PLAN

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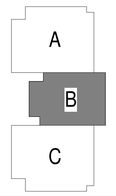
LEVEL 01 - AREA B SIGNAGE PLAN

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

SIGNAGE PLAN GENERAL NOTES

1. EXTERIOR ENTRANCE DESIGNATION SIGNAGE TO BE PROVIDED BY OWNER.
2. ALL INTERIOR ROOM DOORS TO RECEIVE SIGN TYPE I, LOCATED IN THE INSIDE, TOP, LATCH SIDE CORNER OF THE DOOR, PER OWNER STANDARDS.
3. ALL EXTERIOR WINDOWS TO RECEIVE SIGN TYPE W, LOCATED IN THE TOP RIGHT CORNER OF THE TOP RIGHT WINDOW, PER OWNER STANDARD.S

KEY PLAN



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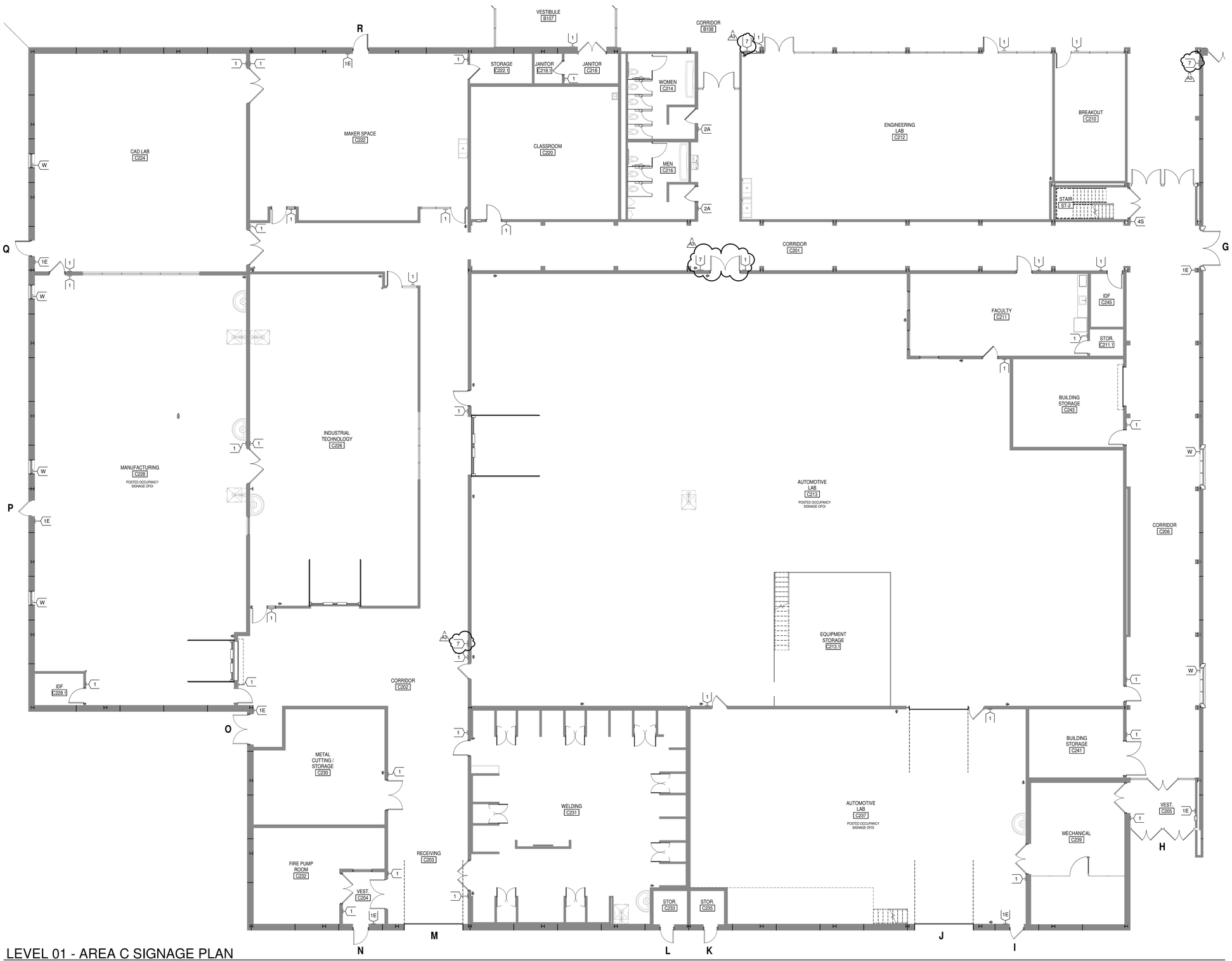
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IFP-HD	10/08/2024	ISSUED FOR PERMIT - HEALTH DEPARTMENT
A3	11/6/2024	ADDENDUM 3

22-24119-00

LEVEL 01 - AREA B - SIGNAGE PLAN

A14.1B

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LEVEL 01 - AREA C SIGNAGE PLAN

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

SIGNAGE PLAN GENERAL NOTES

1. EXTERIOR ENTRANCE DESIGNATION SIGNAGE TO BE PROVIDED BY OWNER.
2. ALL INTERIOR ROOM DOORS TO RECEIVE SIGN TYPE I, LOCATED IN THE INSIDE, TOP, LATCH SIDE CORNER OF THE DOOR, PER OWNER STANDARDS.
3. ALL EXTERIOR WINDOWS TO RECEIVE SIGN TYPE W, LOCATED IN THE TOP RIGHT CORNER OF THE TOP RIGHT WINDOW, PER OWNER STANDARD.S

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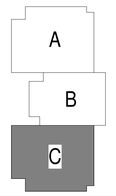
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KEY PLAN

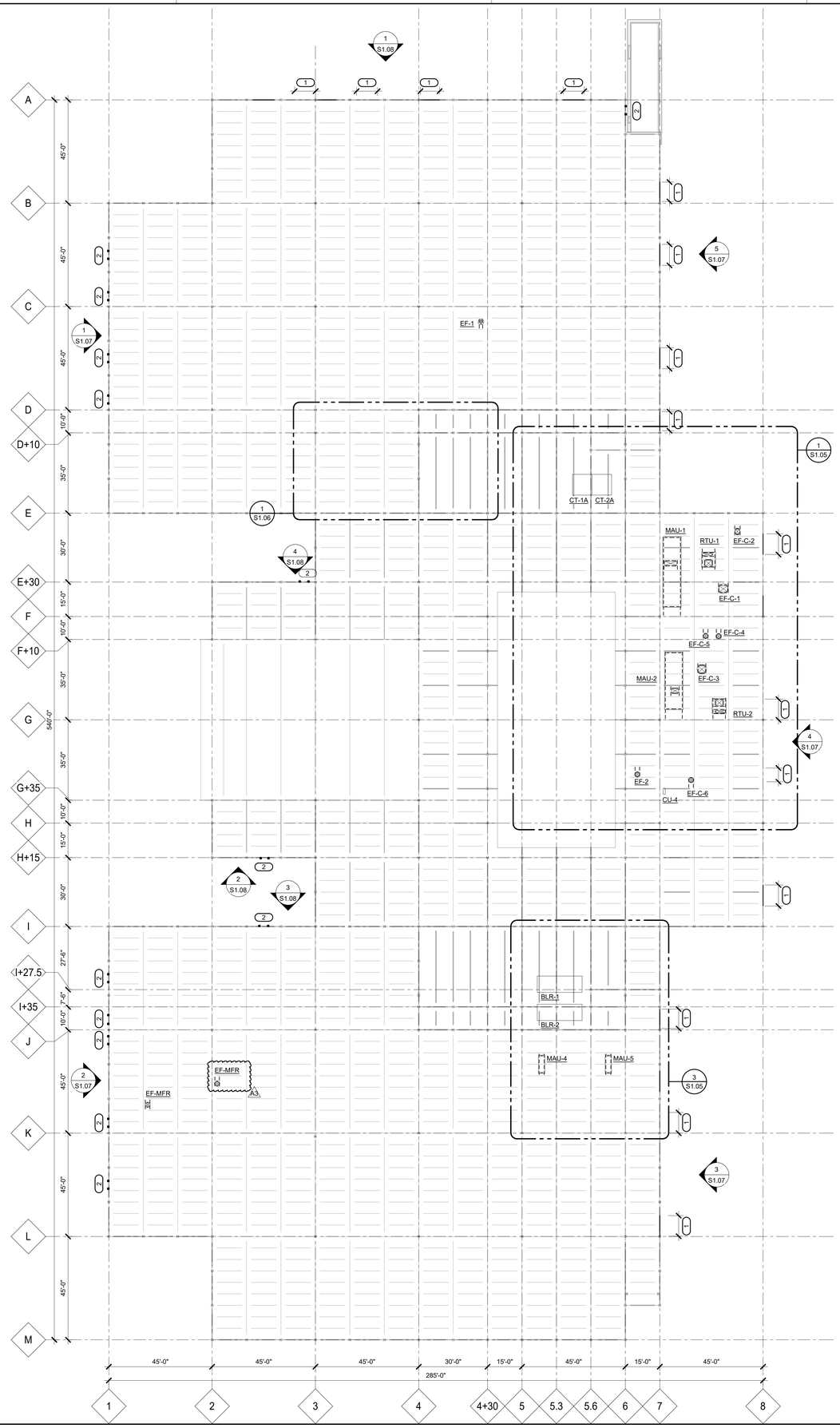


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LEVEL 01 - AREA C - SIGNAGE PLAN

A14.1C

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1 ROOF FRAMING PLAN - OVERALL

3/64" = 1'-0"

NORTH

STEEL ROOF FRAMING NOTES:

1. SEE GENERAL NOTES AND TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
2. TYPICAL EXISTING ROOF DECK CONSISTS OF 1 1/2" (22 GA) TYPE B ROOF DECK.
3. AROUND OPENINGS AND BELOW MECH CURBS, PROVIDE ANGLE FRAMING PER DETAIL 8/S3.00.
4. PROVIDE JOIST REINFORCING AT CONCENTRATED LOADS PER DETAIL 1/S3.00. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS.

KEYNOTES: (#)

1. ATTACH NEW CURTAIN WALL TO EXISTING STEEL FRAME. SEE DETAIL 9/S3.00 FOR ATTACHEMENT.
2. STEEL FRAME BEHIND OPENING IN PRECAST WALL. SEE DETAIL 11/S3.00 FOR ATTACHMENT.

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KEY PLAN

A
B
C

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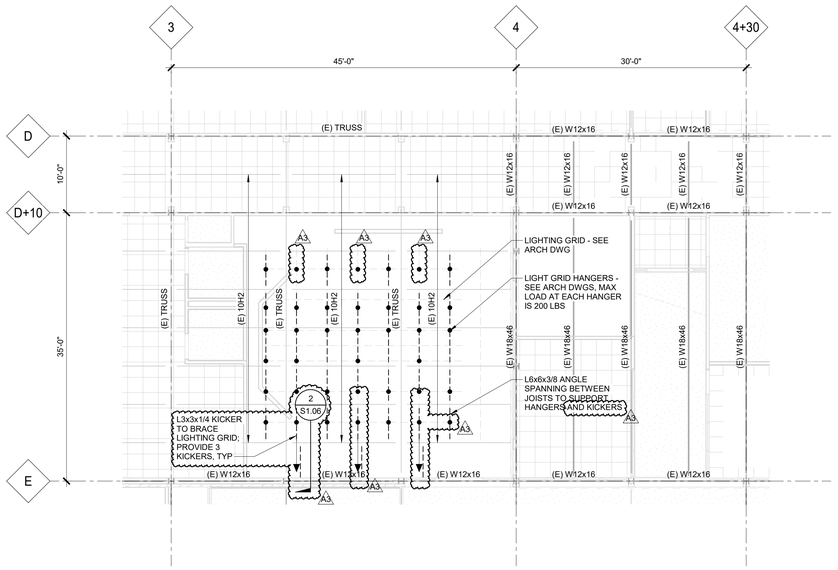
A2	10/24/2024	ADDENDUM 2
A3	11/4/2024	ADDENDUM 3

22-24119-00

ROOF FRAMING PLAN - OVERALL

S1.02

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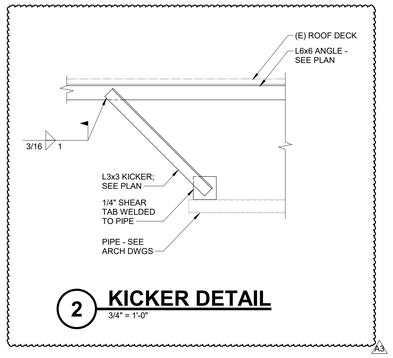
NORTH

1 PARTIAL ROOF FRAMING PLAN - LIGHT GRID REINFORCING

1/8" = 1'-0"

NOTES:

1. LIGHT GRID DESIGNED TO SUPPORT 25 PLF IN ALL DIRECTIONS. LIGHTING INSTRUMENTS ARE NON-FIXED EQUIPMENT AND ARRANGEMENT OF PIPE GRID WILL BE ECCENTRIC.
2. MAXIMUM GRID HANGER SPACING = 8'-0". PROVIDE ADDITIONAL HANGERS AS REQUIRED.



2 KICKER DETAIL

3/4" = 1'-0"

STEEL FLOOR FRAMING NOTES:

1. TYPICAL (E) ROOF DECK CONSISTS OF 1 1/2" (22 GA) TYPE B STEEL ROOF DECK.

KEYNOTES: (#)

J#. REINFORCE EXISTING JOISTS PER DETAIL 2/S3.00.

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ENLARGED PLAN

S1.06

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KEYNOTES:

1. PROVIDE NEW FIRE PROTECTION SPRINKLERS AND PIPING TO ACCOMMODATE NEW CEILING LAYOUT.
2. VERIFY SPRINKLER SPACING IN ROOMS WITHOUT CEILINGS HAVE PROPER COVERAGE OF NEW FLOOR PLANS.

VESTIBULE B107

CORRIDOR B108

STORAGE C222.1

JANITOR C218.1

JANITOR C218

WOMEN C214

NIC

MEN C216

CAD LAB C224

MAKER SPACE C222

CLASSROOM C220

WALL WASH SPRINKLERS (SPR-3) DIRECTED AT STOREFRONT, BOTH SIDES OF DOORWAY. ALL EXPOSED PIPING SHALL BE PAINTED OR STAINLESS STEEL. LOCATE SPRINKLERS AS TIGHT TO CEILING AS POSSIBLE.

ENGINEERING LAB C212

BREAKOUT C210

STAIR ST-2

WALL WASH SPRINKLERS (SPR-3) DIRECTED AT STOREFRONT, BOTH SIDES OF DOORWAY. ALL EXPOSED PIPING SHALL BE PAINTED OR STAINLESS STEEL. LOCATE SPRINKLERS AS TIGHT TO CEILING AS POSSIBLE.

CORRIDOR C201

FACULTY C211

IDF C245

STOR C211.1

BUILDING STORAGE C243

CORRIDOR C206

POWDER COATING BOOTH WILL BE PROVIDED WITH INTERNAL FIRE SUPPRESSION AS REQUIRED BY CODE. FIELD INSTALLED FIRE SUPPRESSION WILL NOT BE REQUIRED INSIDE POWDER COATING BOOTH.

INDUSTRIAL TECHNOLOGY C226

MANUFACTURING C228

AUTOMOTIVE LAB C213

EQUIPMENT STORAGE C213.1

CORRIDOR C202

IDF C228.1

BUILDING STORAGE C241

METAL CUTTING / STORAGE C230

WELDING C231

AUTOMOTIVE LAB C237

MECHANICAL C239

VEST. C205

RECEIVING C203

FIRE PUMP ROOM C232

VEST. C204

PROVIDE DRY SIDEWALL SPRINKLERS WITH PROTECTIVE CAGE.

STOR C233

STOR C235

1 2 4 4+30 5 6 7

I I+27.5 I+35 J K L M

1 LEVEL 01 PLAN - FIRE PROTECTION - AREA C

1/8" = 1'-0"

NORTH

KEY PLAN

A B C

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A3 11/05/2024 ADDENDUM 3

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LEVEL 01 PLAN - FIRE PROTECTION - AREA C

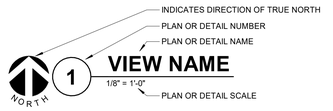
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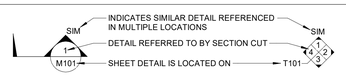
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VIEW KEY

NAME — LEVEL NAME
10'-0" — HEIGHT ABOVE PROJECT 0'-0"

1 — KEYNOTE: INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL





LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)
- NEW
- EXISTING TO BE REMOVED (SHORT DASHED PATTERN)
- NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)
- EXISTING
- EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)
- EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-E — TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

TAG-1 — UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

FIRE / SMOKE BARRIER DESIGNATIONS

THE LINE TYPES SHOWN ARE FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL VERIFY RATINGS WITH THE LATEST SET OF ARCHITECTURAL PLANS AND FURNISH ALL MATERIALS REQUIRED TO COMPLY WITH THOSE RATINGS WHETHER SHOWN OR NOT.

FIRE PARTITION	- -
1 HOUR FIRE BARRIER	— —
2 HOUR FIRE BARRIER OR WALL	— —
3 HOUR FIRE BARRIER OR WALL	— —
4 HOUR FIRE BARRIER OR WALL	— —
SMOKE PARTITION	· ·

APPLICABLE CODES

CONTRACTOR SHALL COMPLY WITH APPLICABLE CODES AND LOCAL AMENDMENTS INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

BUILDING CODE:	IBC 2015 EDITION
FIRE CODE:	IFC 2015 EDITION
PLUMBING CODE:	ILLINOIS PLUMBING CODE 2014 EDITION
MECHANICAL CODE:	IMC 2015 EDITION
ELECTRICAL CODE:	NFPA 70 (NEC) 2014 EDITION
ENERGY CONSERVATION CODE:	IECC 2015
HEALTH DEPARTMENT CODE:	CURRENT EDITION
LOCAL BUILDING CODE:	CURRENT EDITION

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
A.C.	ASBESTOS ABATEMENT CONTRACTOR
A.V.C.	AUDIO/VISUAL CONTRACTOR
C.C.	CIVIL CONTRACTOR
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
F.S.C.	FOOD SERVICE CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
T.C.	TECHNOLOGY CONTRACTOR
T.C.C.	TEMPERATURE CONTROLS CONTRACTOR
V.C.	VENTILATION CONTRACTOR

CONTACT PERSONS:

DESCRIPTION:	PERSON:
PROJECT MANAGER	BRANDON PIERSON
MECHANICAL	DREW MINAS/CHARLIE HAYES
ELECTRICAL	JEREMY VETTING
TECHNOLOGY	PHIL NIETFELDT

PLUMBING SHEET INDEX

P0.00	PLUMBING COVERSHEET
P1.01A	UNDERFLOOR DEMOLITION PLAN - PLUMBING - AREA A
P1.01B	UNDERFLOOR DEMOLITION PLAN - PLUMBING - AREA B
P1.01C	UNDERFLOOR DEMOLITION PLAN - PLUMBING - AREA C
P1.11A	LEVEL 01 DEMOLITION PLAN - PLUMBING - AREA A
P1.11B	LEVEL 01 DEMOLITION PLAN - PLUMBING - AREA B
P1.11C	LEVEL 01 DEMOLITION PLAN - PLUMBING - AREA C
P1.12N	LEVEL 02 DEMOLITION PLAN - PLUMBING - PENTHOUSE
P2.01A	UNDERFLOOR PLAN - PLUMBING - AREA A
P2.01B	UNDERFLOOR PLAN - PLUMBING - AREA B
P2.01C	UNDERFLOOR PLAN - PLUMBING - AREA C
P2.11A	LEVEL 01 PLAN - PLUMBING - AREA A
P2.11B	LEVEL 01 PLAN - PLUMBING - AREA B
P2.11C	LEVEL 01 PLAN - PLUMBING - AREA C
P2.12N	LEVEL 02 PLAN - PLUMBING - PENTHOUSE
P2.13A	ROOF PLAN - PLUMBING - AREA A
P2.13B	ROOF PLAN - PLUMBING - AREA B
P2.13C	ROOF PLAN - PLUMBING - AREA C
P3.00	NATURAL GAS FLOW DIAGRAM & DETAILS
P4.00	PLUMBING DETAILS
P4.01	PLUMBING DETAILS
P6.00	PLUMBING SCHEDULES

GRAND TOTAL: 22

PLUMBING SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
—AV—	ACID VENT
—AW—	ACID WASTE
—CA—	COMPRESSED AIR
—CW—	COLD WATER - POTABLE
—D—	DRAIN
—DI—	DEIONIZED WATER
—DT—	DRAIN TILE
—FOR—	FUEL OIL RETURN
—FOS—	FUEL OIL SUPPLY
—G—	NATURAL GAS
—GRV—	GAS REGULATOR VENT
—GSAN—	SANITARY DRAINAGE (GREASE SANITARY DRAINAGE)
—GV—	GREASE VENT
—HW—	HOT WATER - POTABLE
—HWC—	HOT WATER CIRCULATING - POTABLE
—HW140—	HOT WATER - POTABLE NUMBER INDICATES TEMP
—HWC140—	HOT WATER CIRC. - POTABLE NUMBER INDICATES TEMP
—IA—	INSTRUMENT AIR
—MA—	MEDICAL AIR
—MPG—	MEDIUM PRESSURE GAS
—MV—	MEDICAL VACUUM
—N—	NITROGEN
—NCW—	NON-POTABLE COLD WATER
—NHW—	NON-POTABLE HOT WATER
—NO—	NITROUS OXIDE
—O—	OXYGEN
—P—	PROPANE GAS
-PCWS/PCWR-	PROCESS COOLING WATER SUPPLY/RETURN
—PD—	PUMPED DISCHARGE
—PW—	PURE WATER
—RO—	REVERSE OSMOSIS WATER
—SAN—	SANITARY DRAINAGE
—SCW—	SOFT COLD WATER
—SHW—	SOFT HOT WATER
—ST(1,000)—	STORM DRAINAGE (ROOF SQUARE FOOTAGE)
—STS—	STORM DRAINAGE (SECONDARY)
—STW—	SOFT TEMPERED WATER
—TW—	TEMPERED WATER
—V—	VENT
—VAC—	LAB VACUUM
—W—	SERVICE WATER - POTABLE
—WAGD—	WASTE ANETHESIA GAS DISPOSAL
	PIPE CONTINUATION
	PIPE CAP
	PIPE DOWN
	PIPE UP OR UP/DOWN
FD	PIPE SERVING FIXTURE ON FLOOR ABOVE (EXAMPLE: FD = FLOOR DRAIN)
	PITCH PIPE IN DIRECTION
	DIRECTION OF FLOW IN PIPE
	ROUTE TO DRAIN
RD-1 6"(1000)	ROOF DRAIN PROPERTIES SYMBOL SIZE (ROOF SQ. FT.)
	DIELECTRIC CONNECTION
	UNION/FLANGE
	SHUTOFF VALVE NORMALLY OPEN
	SHUTOFF VALVE NORMALLY CLOSED
GPM	BALANCING VALVE (NUMBER INDICATES GPM)
	CHECK VALVE
	BACKFLOW PREVENTER
	SOLENOID VALVE
	SAFETY/RELIEF VALVE
	SAFETY RELIEF VALVE W/ DRIP PAN ELBOW
	VACUUM BREAKER
P	PRESSURE GAUGE (FURNISHED WITH BALL VALVE)
P	PRESSURE SENSOR (FURNISHED WITH BALL VALVE)
T	TEMPERATURE SENSOR WITH WELL
T	THERMOMETER WITH WELL (DIAL TYPE)
	THERMOMETER WITH WELL (FILLED TYPE)
	REDUCER - REFERENCE SPECIFICATION FOR CONCENTRIC/ECCENTRIC AND FOT/FOB
	PRESSURE REDUCING VALVE (LIQUID/GAS)
	PUMP
M	METER
	ALIGNMENT GUIDE
	PIPE ANCHOR
EJ-# (9.#")	EXPANSION JOINT #.# IS THE EXPANSION TRAVEL INCHES
	AIR ADMITTANCE VALVE

PLUMBING ABBREVIATION KEY

ABBR:	DESCRIPTION:
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
BFP	BACKFLOW PREVENTER
CB	CATCH BASIN
CI	CAST IRON
CO	CLEANOUT
CS	CLINICAL SINK
DB	DIALYSIS BOX
DF	DRINKING FOUNTAIN
DI	DUCTILE IRON
DN	DOWN
E	EXISTING
EE	EMERGENCY EYEWASH
ES	EMERGENCY SHOWER
ESE	EMERGENCY SHOWER/EYEWASH
EWC	ELECTRIC WATER COOLER
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FM	FLOW METER
FS	FLOOR SINK
GD	GARBAGE DISPOSER
GI	GREASE INTERCEPTOR
HB	HOSE BIBB
I.E.	INVERT ELEVATION (FOR REFERENCE ONLY)
L or LAV	LAVATORY
MB	MOP BASIN
MH	MANHOLE
MV	MIXING VALVE
NIC	NOT IN CONTRACT
NT	NEUTRALIZATION TANK
OS	OIL SEPARATOR
RD	ROOF DRAIN
SCCR	SHORT CIRCUIT CURRENT RATING
SH	SHOWER
SK	SINK
SS	SERVICE SINK
TD	TRENCH DRAIN
TYP	TYPICAL
UR	URINAL
VTR	VENT THROUGH ROOF
WC	WATER CLOSET
WCO	WALL CLEANOUT
WF	WASH FOUNTAIN
WH	WATER HEATER
WMF	WASHING MACHINE FIXTURE
WM	WATER METER
WS	WATER SOFTENER
UB	UTILITY BOX
YCO	YARD CLEANOUT

PLUMBING ROUGH-IN SCHEDULE

NOTES: (APPLIES TO ALL PLUMBING FIXTURES LISTED BELOW)
1) SIZES SHOWN ARE MINIMUMS. LARGER SIZES SHOWN ON THE DRAWING SHALL DICTATE THE ROUGH-IN SIZE. 2) SANITARY RISERS UP IN WALL TO FIXTURES SHALL BE A MINUMUM OF 2". 3) DOMESTIC WATER BRANCH PIPING OUTSIDE OF THE WALL/CHASE SHALL BE A MINIMUM OF 3/4" UNLESS NOTED OTHERWISE. ONLY THE FINAL RISE-DROP SHALL BE SMALLER.

TAG NAME	DESCRIPTION	TRAP	COLD WATER	HOT WATER	SANITARY	VENT
ESE-1	EMERGENCY SHOWER EYE/FACE WASH		1 1/2"	-	-	-
ESE-2	EMERGENCY SHOWER EYE/FACE WASH		1 1/2"	-	-	-
FD-1	FLOOR DRAIN		-	-	2"	1 1/2"
FS-1	FLOOR SINK		-	-	4"	2"
MB-1	MOP BASIN		3/4"	3/4"	3"	1 1/2"
SK-1	SINK		1/2"	1/2"	1 1/2"	1 1/2"
SK-2	SINK		1/2"	1/2"	1 1/2"	1 1/2"
SK-3	SINK		1/2"	1/2"	1 1/2"	1 1/2"
TD-1	TRENCH DRAIN					
UB-1	UTILITY BOX (WASHING MACHINE)		3/4"	3/4"	2"	1 1/4"
UR-1	URINAL (ACCESSIBLE)		3/4"	-	2"	1 1/2"
UR-2	URINAL		3/4"	-	2"	1 1/2"
WC-1	WATER CLOSET (ACCESSIBLE)		1 1/2"	-	4"	2"
WC-2	WATER CLOSET		1 1/2"	-	4"	2"
WF-1	SINK		1/2"	1/2"	1 1/2"	1 1/2"

MECHANICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, VENTILATION, PIPING AND TEMPERATURE CONTROL.

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
2. NOT ALL EXISTING DUCTWORK AND PIPING IS SHOWN. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK. NOTIFY ENGINEER OF ANY CONFLICTS WITH NEW WORK.
3. FIELD VERIFY THE AVAILABLE CLEARANCES FOR DUCTWORK AND PIPING BEFORE FABRICATION. RISES AND DROPS MAY BE NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS.
4. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CUTTING, REMOVAL AND PATCHING OF ROOFS, WALLS, AND FLOORS ASSOCIATED WITH WORK BY ALL CONTRACTORS. CONTRACTORS SHALL NOTIFY THE GC OF AFFECTED AREAS PRIOR TO BIDDING
5. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF CEILINGS, CEILING TILES, AND CEILING GRIDS ASSOCIATED WITH AREAS OF WORK BY ALL CONTRACTORS. NOTIFY THE GENERAL CONTRACTOR OF AFFECTED AREAS PRIOR TO BIDDING.
6. WHERE EXISTING MECHANICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, PIPING, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING MECHANICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.
7. PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS THAT REMAIN ACTIVE.
8. OBTAIN PERMISSION FROM OWNER BEFORE SHUTTING DOWN ANY SYSTEM FOR ANY REASON. MAINTAIN SERVICE TO ALL COMPONENTS THAT ARE TO REMAIN UNTIL NEW SYSTEMS ARE INSTALLED.
9. MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR TIE IN AND SWITCHOVER. DRAIN SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER BEFORE PARTIALLY OR COMPLETELY DRAINING SYSTEM. MAKE CHANGEOVER TO NEW SYSTEMS WITH MINIMUM OUTAGE.

PLUMBING GENERAL NOTES:

1. THE SYMBOLS AND THE MATERIAL LIST ARE FOR THE CONVENIENCE OF THE CONTRACTOR. CONTRACTOR SHALL VERIFY QUANTITIES AND FURNISH ALL MATERIALS REQUIRED FOR FULLY OPERATIONAL SYSTEMS, WHETHER SPECIFIED OR NOT.
2. CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR A COMPLETE DESCRIPTION OF MATERIAL ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL TAKES PRECEDENCE OVER THE CATALOG NUMBER. THE FIRST MANUFACTURER LISTED IS THE BASIS OF DESIGN.
3. CONTRACTOR SHALL VERIFY THAT FIXTURES SUPPLIED ARE APPROVED PER ALL APPLICABLE STATE, LOCAL AND GOVERNING AUTHORITIES.
4. ALL FIXTURES SHALL CONFORM TO FEDERAL ACT S.3874.
5. INVERT ELEVATIONS ARE FROM EXISTING DRAWINGS AND MAY NOT BE ACCURATE. VERIFY ALL ELEVATIONS BEFORE BEGINNING WORK.
6. VERIFY UNDERGROUND PIPE SIZES, INVERT ELEVATIONS, AND LOCATIONS PRIOR TO BEGINNING ANY WORK.
7. REFER TO THE PLUMBING ROUGH-IN SCHEDULE FOR THE SIZES OF BRANCH PIPES TO PLUMBING FIXTURES.
8. EXISTING CONDITIONS ON DEMOLITION PLANS ARE PROVIDED TO INDICATE THE GENERAL SCOPE OF ITEMS TO BE REMOVED. REFER TO SPECIFICATION SECTION 22 05 05 FOR ADDITIONAL DEMOLITION INFORMATION.
9. P.C. SHALL CUT AND PATCH EXISTING AS REQUIRED FOR NEW OR DEMOLITION WORK UNLESS NOTED OTHERWISE. REFER TO SPECIFICATION SECTION 22 05 05 FOR ADDITIONAL INFORMATION.

MECHANICAL GENERAL NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, VENTILATION, PIPING AND TEMPERATURE CONTROL.

1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
2. CATALOG AND MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE DESCRIPTION OF MATERIAL SCHEDULED ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL AND SCHEDULED PERFORMANCE TAKES PRECEDENCE OVER THE MODEL NUMBER. THE FIRST MANUFACTURER SCHEDULED IS THE BASIS OF DESIGN.
3. DETERMINATION OF QUANTITIES OF MATERIAL AND EQUIPMENT REQUIRED SHALL BE MADE BY THE CONTRACTOR FROM THE DOCUMENTS. WHERE MATERIAL AND/OR QUANTITY DISCREPANCIES ARISE BETWEEN DRAWINGS, SCHEDULES AND/OR SPECIFICATIONS, THE HIGHER QUALITY/ GREATER NUMBER SHALL GOVERN.
4. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
5. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
6. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
7. ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.
8. EACH CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT PROPOSED THAT DIFFERS FROM THE BASIS OF DESIGN.
9. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY AUDIO/VISUAL, AND OTHER MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS.
10. EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
11. IN AREAS WITH DRYWALL CEILINGS COORDINATE LOCATIONS OF ACCESS PANELS WITH THE GC FOR ACCESS TO VALVES, DUCTWORK ACCESSORIES, DAMPERS, ETC. COORDINATE PANEL TYPE AND COLOR WITH ARCHITECT. NOTIFY THE GC OF THE REQUIRED ACCESS PANELS PRIOR TO BIDDING.
12. SEAL ALL FLOOR, WALL, AND ROOF PENETRATIONS AIRTIGHT WHERE CONDUITS, PIPING, AND DUCTS PENETRATE. PENETRATIONS THROUGH EXTERIOR WALLS AND ROOF SHALL BE SEALED AIRTIGHT WITH WATERPROOFING MATERIALS RECOMMENDED BY MANUFACTURER FOR OUTDOOR USE.
13. CAULK ALL PIPE AND DUCT PENETRATIONS OF FULL HEIGHT NON-FIRE RATED WALL, PARTITION, FLOOR, AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN ROOMS.
14. WHERE PIPES AND DUCTS ARE SHOWN TO PENETRATE FLOORS, PROVIDE SLEEVED OPENINGS WITH THE TOP EDGE RAISED ABOVE FLOOR SURFACE IN ACCORDANCE WITH ALL RELEVANT SPEC SECTIONS. SEAL SLEEVE PERIMETER TO BE WATERTIGHT.
15. EQUIPMENT SIZES AND SERVICE CLEARANCE REQUIREMENTS VARY AMONG DIFFERENT MANUFACTURERS. CONSULT APPROVED SHOP DRAWINGS FOR EQUIPMENT SIZES AND REQUIRED SERVICE CLEARANCES. COORDINATE WITH LAYOUT OF EQUIPMENT PADS, PIPING, DUCTWORK, ETC.
16. DO NOT BLOCK TUBE PULL OR EQUIPMENT SERVICE CLEARANCES.
17. MAINTAIN A MINIMUM WORKING CLEARANCE OF 3'-6" IN FRONT OF ALL ELECTRICAL EQUIPMENT REQUIRING MAINTENANCE, INSPECTION, AND TESTING INCLUDING BUT NOT LIMITED TO PANELS, DISTRIBUTION PANELS, SWITCHBOARDS, MOTOR CONTROL CENTERS, TRANSFORMERS, EQUIPMENT DISCONNECTS AND STARTERS.
18. MAINTAIN THE DEDICATED ELECTRICAL EQUIPMENT SPACE DEFINED BY THE WIDTH / DEPTH OF ELECTRICAL EQUIPMENT MEASURED FROM THE FLOOR TO A HEIGHT 6'-0" ABOVE THE EQUIPMENT OR THE STRUCTURAL CEILING, WHICHEVER IS LOWER. SYSTEMS FOREIGN TO THE ELECTRICAL DISTRIBUTION SYSTEM ARE NOT ALLOWED IN THE DEDICATED ELECTRICAL SPACE INCLUDING: DUCTWORK, PIPING, ETC.
19. PROVIDE CONCRETE EQUIPMENT PAD FOR ALL FLOOR MOUNTED EQUIPMENT. PAD SHALL EXTEND MINIMUM 6" BEYOND ALL SIDES OF EQUIPMENT EXCEPT WHERE PAD EXTENSION WOULD INTERFERE WITH WORKING SPACE AT EQUIPMENT CONTROL PANELS AND ELECTRICAL PANELS.
20. DO NOT EXCEED 25 LBS PER HANGER AND A MINIMUM SPACING OF 2'-0" ON CENTER WHEN ATTACHING TO METAL ROOF DECKING (LIMITATION NOT REQUIRED WITH CONCRETE ON METAL DECK). THIS 25 LBS. LOAD AND 2'-0" SPACING INCLUDE ADJACENT ELECTRICAL AND ARCHITECTURAL ITEMS HANGING FROM DECK. IF THE HANGER RESTRICTIONS CANNOT BE ACHIEVED, SUPPLEMENTAL FRAMING OFF STEEL FRAMING SHALL BE ADDED. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

PLUMBING SLOPE REQUIREMENTS:

BASED ON PLUMBING CODE: IDPH-2014

INTERIOR:

SANITARY WASTE:	≤2-1/2"ø=1/4" PER FOOT ≥3"ø = 1/8" PER FOOT ≥8"ø = 1/16" PER FOOT
GREASE WASTE:	1/4" PER FOOT
STORM (GRAVITY):	1/8" PER FOOT
CONDENSATE AND INDIRECT DRAINAGE:	1/8" PER FOOT
SANITARY AND GREASE VENT:	NO SPECIFIC PITCH, PITCH TO FIXTURES
DOMESTIC WATER:	NO SPECIFIC PITCH, PITCH TO FIXTURES

PIPE INSULATION SCHEDULE (PLUMBING)

GENERAL NOTES:
1. REFER TO THE SPECIFICATIONS FOR TYPE DESCRIPTIONS AND JACKETING REQUIREMENTS.
2. TYPE A INSULATION IS NOT ALLOWED IN NON-AIR CONDITIONED SPACES, SUCH AS MECHANICAL ROOMS, EXTERIOR, ATTICS, ETC.
3. TYPE B INSULATION GREATER THAN 1" THICK SHALL BE INSTALLED USING MULTIPLE LAYERS OF 3/4" OR 1" WITH STAGGERED SEAMS.
4. TYPE E IS NOT ALLOWED IN RETURN AIR PLENUMS, UNLESS LISTED AND LABELED AS 25/50 RATED PER ASTM E84/UL723
5. TYPE G 4" SHALL BE INSTALLED IN TWO (2) 2" LAYERS WITH STAGGERED SEAMS.
6. PROVIDE RIGID INSERT AT HANGERS, EITHER PRE-MANUFACTURED COUPLINGS (REFER TO PIPE HANGER AND SUPPORTS SPECIFICATIONS) OR TYPE C, D, OR E INSULATION. SEE SPEC. FOR MORE DETAILS.
7. DIRECT BUIRED PIPING SHALL ONLY USE TYPE C OR TYPE E. REDUCTION IN THICKNESS FOR DIRECT BURED PIPING IS ALLOWED PER ASHRAE / IECC AS APPLICABLE.

SYMBOL	PIPE SYSTEM	INSULATION TYPE	INSULATION THICKNESS PER NOMINAL PIPE OR TUBE SIZE					NOTES
			< 1"	1" TO < 1.5"	1.5" TO < 4"	4" TO < 8"	≥ 8"	
22 PLUMBING - GENERAL GAS								
VAC	LAB VACUUM	A (GlsFbr), B (Elasto), E (Plyiso), F (Phenol)	0"	0"	0"	0"	0"	APPLY INSULATION ONLY WITHIN 10' OF EXTERIOR PENETRATION
22 PLUMBING - STORM								
ST	STORM DRAINAGE	A (GlsFbr), B (Elasto), E (Plyiso), F (Phenol)	1/2"	1/2"	1"	1"	1"	APPLY INSULATION ONLY TO HORIZONTAL PIPES AND DRAIN BODIES
22 PLUMBING - WASTE								
AV	ACID VENT	A (GlsFbr), B (Elasto), E (Plyiso), F (Phenol)	1/2"	1/2"	1"	1"	1"	APPLY INSULATION ONLY WITHIN 10' OF EXTERIOR PENETRATION
AW	ACID WASTE	A (GlsFbr), B (Elasto), E (Plyiso), F (Phenol)	1/2"	1/2"	1"	1"	1"	APPLY INSULATION ONLY TO FLOOR DRAIN BODY, P-TRAP AND 10' DOWNSTREAM AT LOW TEMP DRAIN DISCHARGE (55 DEG AND LOWER IE: COOLING COIL CONDENSATE, ICE MACHINE DRAINS, ETC.)
GSAN	SANITARY DRAINAGE - GREASE LADEN	A (GlsFbr), B (Elasto), E (Plyiso), F (Phenol)	1/2"	1/2"	1"	1"	1"	APPLY INSULATION ONLY TO FLOOR DRAIN BODY, P-TRAP AND 10' DOWNSTREAM AT LOW TEMP DRAIN DISCHARGE (55 DEG AND LOWER IE: COOLING COIL CONDENSATE, ICE MACHINE DRAINS, ETC.)
GV	GREASE VENT	A (GlsFbr), B (Elasto), E (Plyiso), F (Phenol)	1/2"	1/2"	1"	1"	1"	APPLY INSULATION ONLY WITHIN 10' OF EXTERIOR PENETRATION
SAN	SANITARY DRAINAGE	A (GlsFbr), B (Elasto), E (Plyiso), F (Phenol)	1/2"	1/2"	1"	1"	1"	APPLY INSULATION ONLY TO FLOOR DRAIN BODY, P-TRAP AND 10' DOWNSTREAM AT LOW TEMP DRAIN DISCHARGE (55 DEG AND LOWER IE: COOLING COIL CONDENSATE, ICE MACHINE DRAINS, ETC.)
V	VENT	A (GlsFbr), B (Elasto), E (Plyiso), F (Phenol)	1/2"	1/2"	1"	1"	1"	APPLY INSULATION ONLY WITHIN 10' OF EXTERIOR PENETRATION
22 PLUMBING - WATER								
CW	COLD WATER - POTABLE	A (GlsFbr), B (Elasto), E (Plyiso), F (Phenol)	1/2"	1/2"	1"	1"	1"	
HW	HOT WATER - POTABLE	A (GlsFbr), B (Elasto), E (Plyiso), F (Phenol)	1"	1"	1 1/2"	1 1/2"	1 1/2"	
HWC	HOT WATER CIRCULATING - POTABLE	A (GlsFbr), B (Elasto), E (Plyiso), F (Phenol)	1"	1"	1 1/2"	1 1/2"	1 1/2"	
NCW	NON-POTABLE COLD WATER	A (GlsFbr), B (Elasto), E (Plyiso), F (Phenol)	1/2"	1/2"	1"	1"	1"	
SCW	SOFT COLD WATER	A (GlsFbr), B (Elasto), E (Plyiso), F (Phenol)	1/2"	1/2"	1"	1"	1"	

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22-24119-00

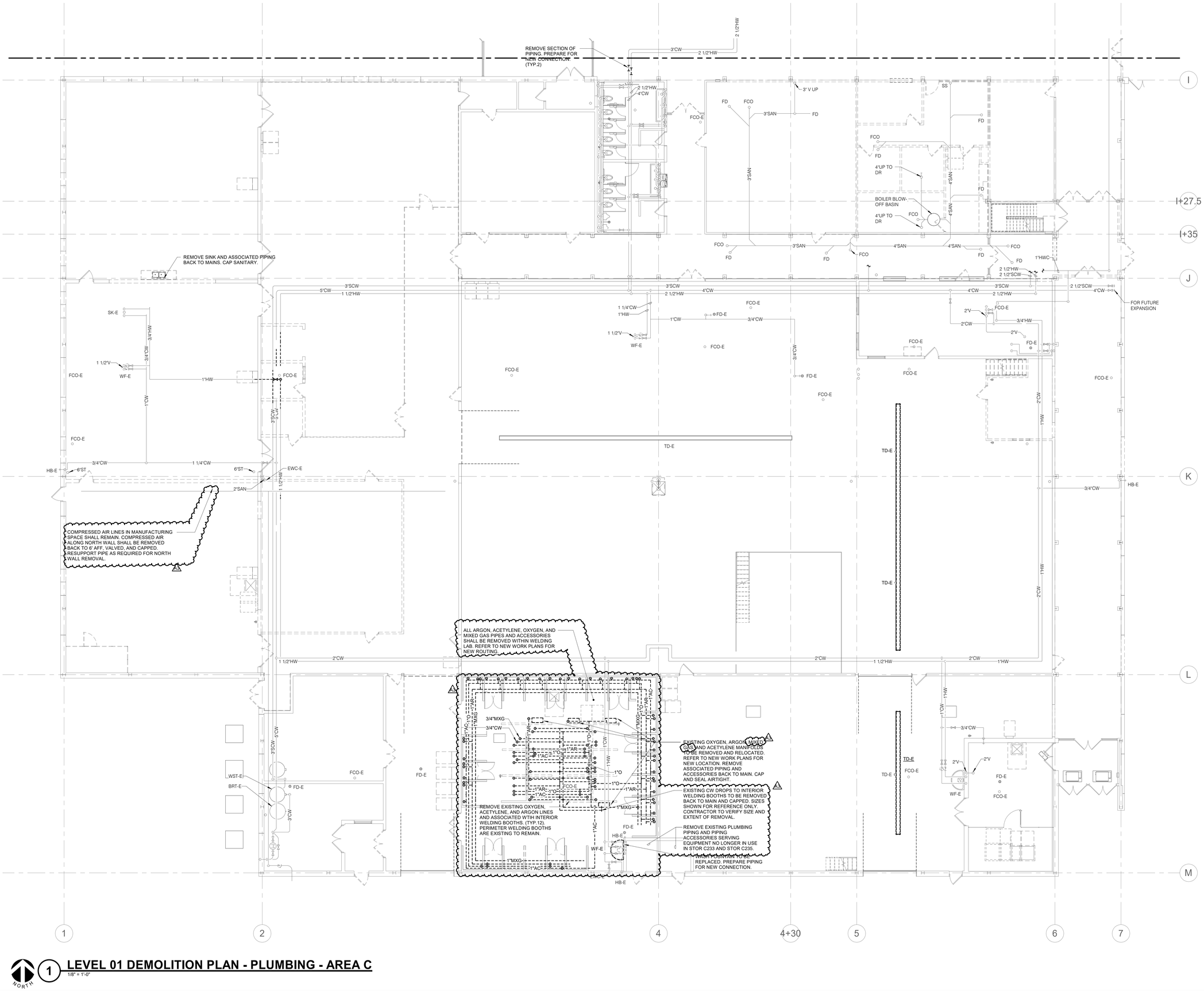
PLUMBING COVERSHEET

P0.00

KEYNOTES:

1. REMOVE EXISTING PLUMBING FIXTURE AND PREPARE PIPING FOR NEW CONNECTION TO NEW FIXTURE.



1 LEVEL 01 DEMOLITION PLAN - PLUMBING - AREA C

1/8" = 1'-0"

NORTH

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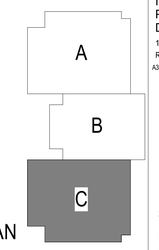
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LEVEL 01 DEMOLITION PLAN - PLUMBING - AREA C

P1.11C

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KEYNOTES:

1. RELOCATED OXYGEN, ACETYLENE, MIXED GAS, AND ARGON MANIFOLDS, VALVES, AND ACCESSORIES. PROVIDE WITH 1" REGULATOR AND FLEXIBLE CONNECTION TO TANK WITH SHUTOFF VALVE FOR EACH.

RELOCATED EYE WASH/SHOWER. REROUTE PIPING AS REQUIRED.

RELOCATE 1 1/2"HW, 5"CW, AND 3"SCW TO ACCOMMODATE NEW EXHAUST DUCT SERVING PLASMA CUTTER.

TEACHER DEMO STATION SHALL HAVE A 1/2" O, AR, MXG, AND AC CONNECTION WITH REGULATOR AND SHUTOFF FOR EACH LINE. ROUTE ALL PIPES DOWN WALL. TERMINATE PIPE WITH CAP 5' AFF.

EXTEND GAS PIPING AS REQUIRED FROM GAS CANISTERS TO SERVE PERIMETER WELDING BOOTHS. ALL DROPS SHALL TERMINATE WITH VALVE AND CAP 5' AFF. ALL NEW WELDING GAS PIPING SHALL BE LABELED WITH VINYL PIPE MARKERS IN ACCORDANCE WITH SPECIFICATION SECTION 22 05 53.

REFER TO 5/P4.01 FOR GAS MANIFOLD DETAIL (TYP.)

1 OXYGEN AND MIXED GAS MANIFOLDS TO BE STORED IN SEPARATE ROOM FROM FLAMMABLE GASES IN ACCORDANCE WITH NFPA 55.

FOR FUTURE EXPANSION

NIC

1 LEVEL 01 PLAN - PLUMBING - AREA C

1/8" = 1'-0"

NORTH

KEY PLAN

A
B
C

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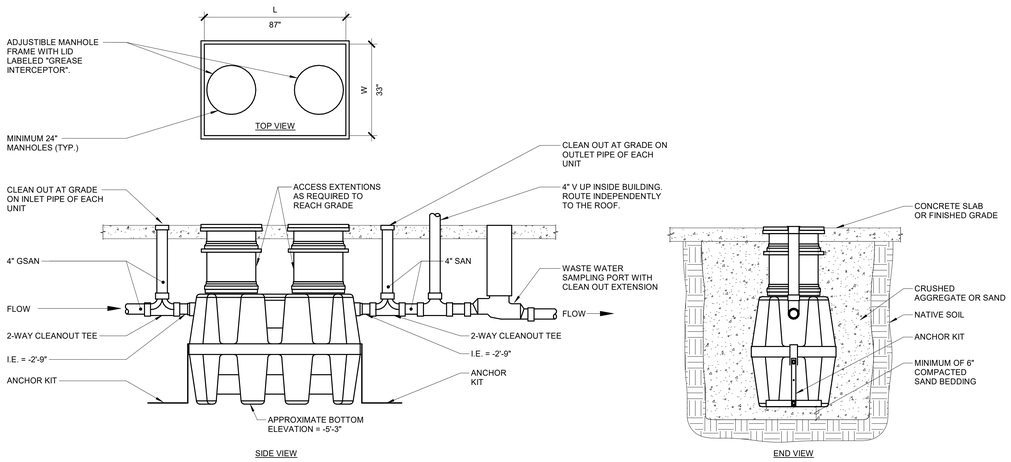
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LEVEL 01 PLAN - PLUMBING - AREA C

P2.11C

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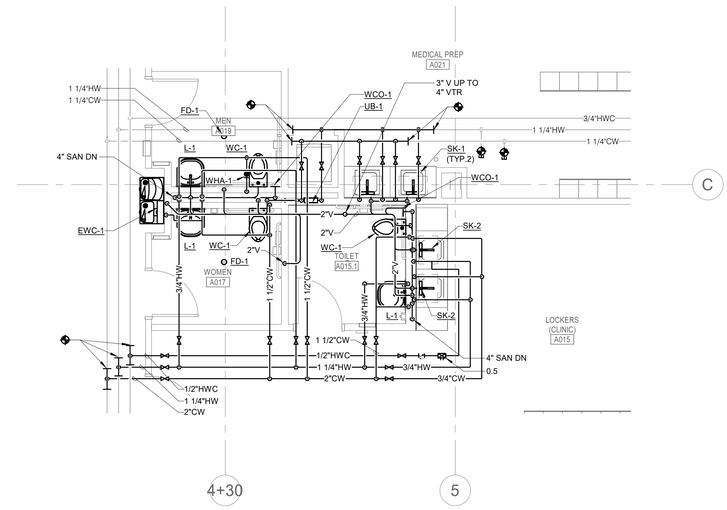


NOTES:

1. REFER TO MANUFACTURERS RECOMMENDATIONS FOR SPECIFIC VENTING REQUIREMENTS.

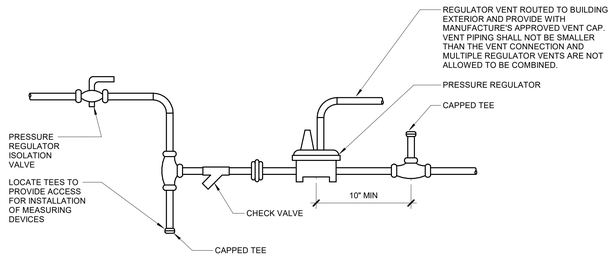
1 GREASE INTERCEPTOR - EXTERIOR PLASTIC

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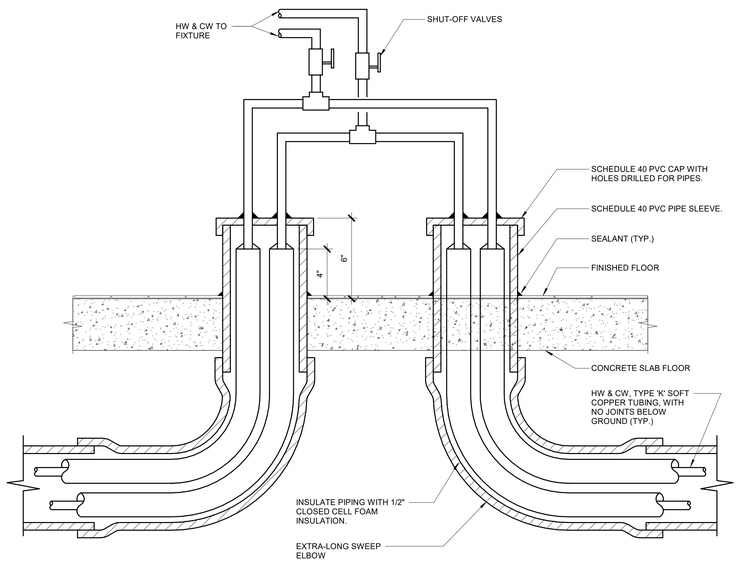
2 LEVEL 01 PLAN - PLUMBING - AREA A - ENLARGE PLAN

1/4" = 1'-0"



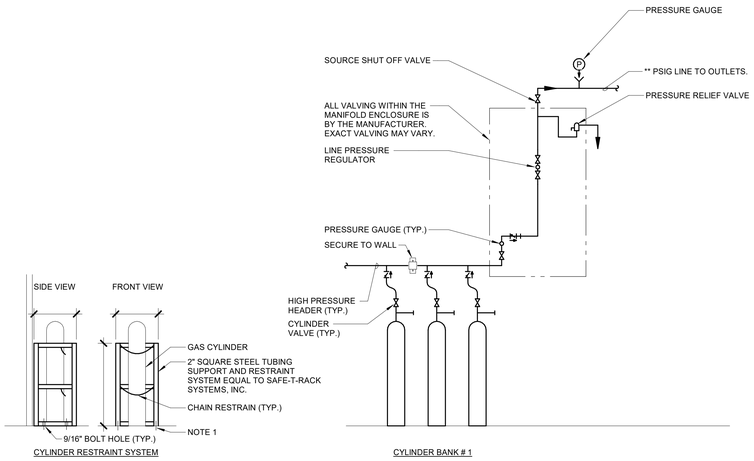
3 GAS PRESSURE REGULATOR

NO SCALE



4 UNDERGROUND TUBING SLEEVE TO ISLAND FIXTURES

NO SCALE



NOTES:

1. SECURE RESTRAINT SYSTEM TO CONCRETE FLOOR WITH 1/2"DIA HILTI KB-TZ S.S. W/2" EMBED MIN. (INSTALLATION TORQUE = 40 FT-LB) LARR #25701
2. RESTRAINT SYSTEM DIMENSIONS TO BE COORDINATED WITH FINAL CYLINDER SELECTION. TYPICAL DIMENSIONS FOR UP TO 12" CYLINDERS PER BAY: HEIGHT 30", WIDTH 16", DEPTH 16".
3. RESTRAINT SYSTEM CONSTRUCTION: 2" SQUARE TUBE STEEL, 11-GAUGE. POWDER COAT FINISH.

NOTES:

1. ALL CYLINDERS, THOSE IN SERVICE AND THOSE IN STORAGE, MUST BE INDIVIDUALLY SECURED AND LOCATED TO PREVENT THEM FROM FALLING OR BEING KNOCKED OVER PER NFPA 99.
2. NUMBER OF CYLINDERS MAY VARY.

5 MEDICAL GAS - MANIFOLD SOURCE PIPING SYSTEM

NO SCALE

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PLUMBING DETAILS

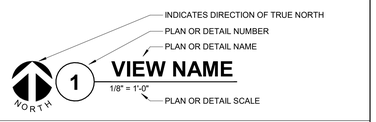
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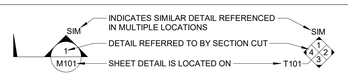
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VIEW KEY

NAME — LEVEL NAME
10'-0" — HEIGHT ABOVE PROJECT 0'-0"

1 — KEYNOTE: INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL





LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)
- NEW
- EXISTING TO BE REMOVED (SHORT DASHED PATTERN)
- NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)
- EXISTING
- EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)
- EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-E — TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

TAG-1 — UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

FIRE / SMOKE BARRIER DESIGNATIONS

THE CONTRACTOR SHALL VERIFY RATINGS WITH THE LATEST SET OF ARCHITECTURAL PLANS AND FURNISH ALL MATERIALS REQUIRED TO COMPLY WITH THOSE RATINGS WHETHER SHOWN OR NOT.

A3

APPLICABLE CODES

CONTRACTOR SHALL COMPLY WITH APPLICABLE CODES AND LOCAL AMENDMENTS INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

BUILDING CODE:	IBC 2015 EDITION
FIRE CODE:	IFC 2015 EDITION
PLUMBING CODE:	ILLINOIS PLUMBING CODE 2014 EDITION
MECHANICAL CODE:	IMC 2015 EDITION
ELECTRICAL CODE:	NFPA 70 (NEC) 2014 EDITION
ENERGY CONSERVATION CODE:	ILLINOIS ENERGY CONSERVATION CODE (IECC 2021)
HEALTH DEPARTMENT CODE:	CURRENT EDITION
LOCAL BUILDING CODE:	CURRENT EDITION

A3

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
A.C.	ASBESTOS ABATEMENT CONTRACTOR
A.V.C.	AUDIO/VISUAL CONTRACTOR
C.C.	CIVIL CONTRACTOR
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
F.S.C.	FOOD SERVICE CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
T.C.	TECHNOLOGY CONTRACTOR
T.C.C.	TEMPERATURE CONTROLS CONTRACTOR
V.C.	VENTILATION CONTRACTOR

CONTACT PERSONS:

DESCRIPTION:	PERSON:
PROJECT MANAGER	BRANDON PIERSON
MECHANICAL	DREW MINAS/CHARLIE HAYES
ELECTRICAL	JEREMY VETTING
TECHNOLOGY	PHIL NIETFELDT

HVAC SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
BD	BOILER BLOW DOWN
BF	BOILER FEED WATER
CHR	CHILLED/HEATING WATER RETURN
CHS	CHILLED/HEATING WATER SUPPLY
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
DPP	DRAIN
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
G	NATURAL GAS
GV	GAS REGULATOR VENT
GWR	GLYCOL WATER RETURN
GWS	GLYCOL WATER SUPPLY
HG	REFRIGERANT HOT GAS
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
LCS	LOW PRESSURE CLEAN STEAM (0 TO 15 PSIG)
LIQ	REFRIGERANT LIQUID
LPC	LOW PRESSURE CONDENSATE (0 TO 15 PSIG)
S10	STEAM (10 PSIG)
PC	PUMPED CONDENSATE
PD	PUMPED DISCHARGE
REF	REFRIGERANT
RWR	REHEAT WATER RETURN
RWS	REHEAT WATER SUPPLY
SCT	SAMPLE COOLER TUBING
SV	SAFETY RELIEF VENT
DMG	DRAIN
	PIPE CAP
	PIPE DOWN
	PIPE UP OR UP/DOWN
	PITCH PIPE IN DIRECTION
	DIRECTION OF FLOW IN PIPE
	ROUTE TO DRAIN
	DIELECTRIC CONNECTION
	UNION/FLANGE
	SHUTOFF VALVE NORMALLY OPEN
	SHUTOFF VALVE NORMALLY CLOSED
	THROTTLING VALVE
	BALANCING VALVE (NUMBER INDICATES GPM)
	AUTOMATIC BALANCING VALVE
	MIXING VALVE
	CONTROL VALVE (THREE-WAY)
	CONTROL VALVE (TWO-WAY)
	SOLENOID VALVE
	CHECK VALVE
	SAFETY/RELIEF VALVE
	SAFETY RELIEF VALVE W/ DRIP PAN ELBOW
	PRESSURE REDUCING VALVE (LIQUID/GAS)
	PRESSURE REDUCING VALVE (STEAM)
	TRIPLE DUTY VALVE (ANGLE TYPE)
	TRIPLE DUTY VALVE (IN-LINE TYPE)
	PUMP
	VACUUM BREAKER
	"WYE" - STRAINER
	"WYE" - STRAINER W/SHUTOFF VALVE AND HOSE CONNECTION WITH CAP
	CHECK VALVE
	BACKFLOW PREVENTER
	PRESSURE REDUCING VALVE (LIQUID/GAS)
	BASKET STRAINER
	FLEXIBLE CONNECTION
	PRESSURE/TEMPERATURE TEST PLUG
	REDUCER - REFERENCE SPECIFICATION FOR CONCENTRIC/ECCENTRIC AND FOT/FOB
	SUCTION DIFFUSER WITH SUPPORT FOOT
	AUTOMATIC AIR VENT
	MANUAL AIR VENT
	DRAIN VALVE WITH HOSE CONNECTION AND CAP
T,*	STEAM TRAP (REFER TO SCHEDULE)
T,*	F&T STEAM TRAP (REFER TO SCHEDULE)
T,*	INVERTED BUCKET STEAM TRAP (REFER TO SCHEDULE)
	ALIGNMENT GUIDE
	PIPE ANCHOR
EJ-# (#.#")	EXPANSION JOINT #.#" IS THE EXPANSION TRAVEL INCHES
M	METER

HVAC SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
	DIRECTION OF AIR FLOW
	FLEXIBLE DUCT
	MANUAL VOLUME DAMPER
	DUCT CAP
	DUCT DOWN
	DUCT UP
	SUPPLY/OUTSIDE AIR DUCT SECTION
	RETURN AIR DUCT SECTION
	EXHAUST/RELIEF AIR DUCT SECTION
	4-WAY DIFFUSER WITH BLANKOFF IN ONE DIRECTION
SD-1 6/115	AIR TERMINAL PROPERTIES SYMBOL NECK SIZE/CFM
###	TERMINAL AIR BOX (REFER TO SCHEDULE)
###	TERMINAL AIR BOX w/REHEAT COIL (REFER TO SCHEDULE)
	FAN POWERED TERMINAL AIR BOX w/REHEAT COIL (REFER TO SCHEDULE)
H	HUMIDIFIER
	OPPOSED BLADE DAMPER (REFER TO SCHEDULE)
	PARALLEL BLADE DAMPER (REFER TO SCHEDULE)
XX-Y	AIRFLOW MEASUREMENT SYMBOL XX - AHU SYMBOL Y - SEQUENTIAL NUMBER
DP	DIFFERENTIAL PRESSURE SWITCH
FM	FLOW METER
	FAN
	PUMP
AI	ANALOG INPUT
AO	ANALOG OUTPUT
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
FM	FLOW METER
F	FLOW SWITCH
FS	FLOW SENSOR
P	PRESSURE SENSOR (FURNISHED WITH BALL VALVE)
P	PRESSURE GAUGE (FURNISHED WITH BALL VALVE)
	DIFFERENTIAL PRESSURE SENSOR
P	PRESSURE SENSOR (DUCT MOUNTED)
SP	STATIC SWITCH
T	THERMOSTAT
T	THERMOSTAT/SENSOR WITH HEAVY DUTY ENCLOSURE
T	TEMPERATURE SENSOR (DUCT MOUNTED)
T	TEMPERATURE SENSOR WITH WELL
T	THERMOMETER WITH WELL (DIAL TYPE)
	THERMOMETER WITH WELL (FILLED TYPE)
T	AVERAGING TEMPERATURE SENSOR
T	LOW LIMIT TEMPERATURE SWITCH
T	PROBE TEMPERATURE SENSOR
	FILTER
DSD	DUCT SMOKE DETECTOR
	HEATING/ COOLING COIL

HVAC ABBREVIATION KEY

ABBR:	DESCRIPTION:
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
C	COMMON
CFSD	CONTROL/FIRE/SMOKE DAMPER
CO	CLEANOUT
DN	DOWN
DPG (0-2")	DIFFERENTIAL PRESSURE GAUGE (RANGE)
DPS	DIFFERENTIAL PRESSURE SWITCH
EP	ELECTRICAL TO PNEUMATIC VALVE
FD	FIRE DAMPER
FMCS	FACILITY MANAGEMENT AND CONTROL SYSTEM
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FSD	FIRE/SMOKE DAMPER
I.E.	INVERT ELEVATION (FOR REFERENCE ONLY)
MV	MIXING VALVE
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
PS	PRESSURE SWITCH
SCCR	SHORT CIRCUIT CURRENT RATING
SD	SMOKE DAMPER
TAB	TERMINAL AIR BOX
TD	TRANSFER DUCT
TYP	TYPICAL
UC-1	DOOR UNDERCUT BY OTHERS (1" TYPICAL)
UON	UNLESS OTHERWISE NOTED

MECHANICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, VENTILATION, PIPING AND TEMPERATURE CONTROL.

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
2. NOT ALL EXISTING DUCTWORK AND PIPING IS SHOWN. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK. NOTIFY ENGINEER OF ANY CONFLICTS WITH NEW WORK.
3. FIELD VERIFY THE AVAILABLE CLEARANCES FOR DUCTWORK AND PIPING BEFORE FABRICATION. RISES AND DROPS MAY BE NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS.
4. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CUTTING, REMOVAL AND PATCHING OF ROOFS, WALLS, AND FLOORS ASSOCIATED WITH WORK BY ALL CONTRACTORS. CONTRACTORS SHALL NOTIFY THE GC OF AFFECTED AREAS PRIOR TO BIDDING
5. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF CEILINGS, CEILING TILES, AND CEILING GRIDS ASSOCIATED WITH AREAS OF WORK BY ALL CONTRACTORS. NOTIFY THE GENERAL CONTRACTOR OF AFFECTED AREAS PRIOR TO BIDDING.
6. WHERE EXISTING MECHANICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, PIPING, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING MECHANICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.
7. PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS THAT REMAIN ACTIVE.
8. OBTAIN PERMISSION FROM OWNER BEFORE SHUTTING DOWN ANY SYSTEM FOR ANY REASON. MAINTAIN SERVICE TO ALL COMPONENTS THAT ARE TO REMAIN UNTIL NEW SYSTEMS ARE INSTALLED.
9. MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR TIE IN AND SWITCHOVER. DRAIN SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER BEFORE PARTIALLY OR COMPLETELY DRAINING SYSTEM. MAKE CHANGEOVER TO NEW SYSTEMS WITH MINIMUM OUTAGE.

MECHANICAL GENERAL NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, VENTILATION, PIPING AND TEMPERATURE CONTROL.

1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
2. CATALOG AND MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE DESCRIPTION OF MATERIAL SCHEDULED ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL AND SCHEDULED PERFORMANCE TAKES PRECEDENCE OVER THE MODEL NUMBER. THE FIRST MANUFACTURER SCHEDULED IS THE BASIS OF DESIGN.
3. DETERMINATION OF QUANTITIES OF MATERIAL AND EQUIPMENT REQUIRED SHALL BE MADE BY THE CONTRACTOR FROM THE DOCUMENTS. WHERE MATERIAL AND/OR QUANTITY DISCREPANCIES ARISE BETWEEN DRAWINGS, SCHEDULES AND/OR SPECIFICATIONS, THE HIGHER QUALITY/ GREATER NUMBER SHALL GOVERN.
4. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
5. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
6. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
7. ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.
8. EACH CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT PROPOSED THAT DIFFERS FROM THE BASIS OF DESIGN.
9. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN. ELECTRICAL, TECHNOLOGY AUDIO/VISUAL, AND OTHER MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS.
10. EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
11. IN AREAS WITH DRYWALL CEILINGS COORDINATE LOCATIONS OF ACCESS PANELS WITH THE GC FOR ACCESS TO VALVES, DUCTWORK ACCESSORIES, DAMPERS, ETC. COORDINATE PANEL TYPE AND COLOR WITH ARCHITECT. NOTIFY THE GC OF THE REQUIRED ACCESS PANELS PRIOR TO BIDDING.
12. SEAL ALL FLOOR, WALL, AND ROOF PENETRATIONS AIRTIGHT WHERE CONDUITS, PIPING, AND DUCTS PENETRATE. PENETRATIONS THROUGH EXTERIOR WALLS AND ROOF SHALL BE SEALED AIRTIGHT WITH WATERPROOFING MATERIALS RECOMMENDED BY MANUFACTURER FOR OUTDOOR USE.
13. CAULK ALL PIPE AND DUCT PENETRATIONS OF FULL HEIGHT NON-FIRE RATED WALL PARTITION, FLOOR, AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN ROOMS.
14. WHERE PIPES AND DUCTS ARE SHOWN TO PENETRATE FLOORS, PROVIDE SLEEVED OPENINGS WITH THE TOP EDGE RAISED ABOVE FLOOR SURFACE IN ACCORDANCE WITH ALL RELEVANT SPEC SECTIONS. SEAL SLEEVE PERIMETER TO BE WATERTIGHT.
15. EQUIPMENT SIZES AND SERVICE CLEARANCE REQUIREMENTS VARY AMONG DIFFERENT MANUFACTURERS. CONSULT APPROVED SHOP DRAWINGS FOR EQUIPMENT SIZES AND REQUIRED SERVICE CLEARANCES. COORDINATE WITH LAYOUT OF EQUIPMENT PADS, PIPING, DUCTWORK, ETC.
16. DO NOT BLOCK TUBE PULL OR EQUIPMENT SERVICE CLEARANCES.
17. MAINTAIN A MINIMUM WORKING CLEARANCE OF 3'-6" IN FRONT OF ALL ELECTRICAL EQUIPMENT REQUIRING MAINTENANCE, INSPECTION, AND TESTING INCLUDING BUT NOT LIMITED TO PANELS, DISTRIBUTION PANELS, SWITCHBOARDS, MOTOR CONTROL CENTERS, TRANSFORMERS, EQUIPMENT DISCONNECTS AND STARTERS.
18. MAINTAIN THE DEDICATED ELECTRICAL EQUIPMENT SPACE DEFINED BY THE WIDTH / DEPTH OF ELECTRICAL EQUIPMENT MEASURED FROM THE FLOOR TO A HEIGHT 6'-0" ABOVE THE EQUIPMENT OR THE STRUCTURAL CEILING, WHICHEVER IS LOWER. SYSTEMS FOREIGN TO THE ELECTRICAL DISTRIBUTION SYSTEM ARE NOT ALLOWED IN THE DEDICATED ELECTRICAL SPACE INCLUDING: DUCTWORK, PIPING, ETC.
19. PROVIDE CONCRETE EQUIPMENT PAD FOR ALL FLOOR MOUNTED EQUIPMENT. PAD SHALL EXTEND MINIMUM 6" BEYOND ALL SIDES OF EQUIPMENT EXCEPT WHERE PAD EXTENSION WOULD INTERFERE WITH WORKING SPACE AT EQUIPMENT CONTROL PANELS AND ELECTRICAL PANELS.
20. DO NOT EXCEED 25 LBS PER HANGER AND A MINIMUM SPACING OF 2'-0" ON CENTER WHEN ATTACHING TO METAL ROOF DECKING (LIMITATION NOT REQUIRED WITH CONCRETE ON METAL DECK). THIS 25 LBS. LOAD AND 2'-0" SPACING INCLUDE ADJACENT ELECTRICAL AND ARCHITECTURAL ITEMS HANGING FROM DECK. IF THE HANGER RESTRICTIONS CANNOT BE ACHIEVED, SUPPLEMENTAL FRAMING OFF STEEL FRAMING SHALL BE ADDED. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

VENTILATION GENERAL NOTES:

1. UNLESS NOTED OTHERWISE, THE SIZE OF EACH BRANCH DUCT TO A TERMINAL AIR BOX (TAB) SHALL MATCH THE INLET SIZE UNLESS THE BRANCH IS GREATER THAN 6 FEET IN LENGTH, IN WHICH CASE THE BRANCH DUCT SHALL BE SIZED AT A PRESSURE DROP OF 0.07" W.C. PER 100' OF DUCTWORK.
2. UNLESS NOTED OTHERWISE, THE SIZE OF EACH BRANCH DUCT TO AN AIR TERMINAL SHALL MATCH THE INLET SIZE.
3. ALIGN TEMPERATURE SENSORS WITH LIGHT SWITCHES AND WHEN IN CLOSE PROXIMITY TO EACH OTHER.
4. PROVIDE ACCESS DOORS AT ALL DUCT MOUNTED EQUIPMENT.
5. EXISTING AIR INLET AND OUTLET CFM SHOWN ON DRAWINGS ARE FROM EXISTING DRAWINGS, AND ARE FOR REFERENCE ONLY. CONTRACTOR SHALL USE PRE-BALANCE VALUES, AND NOT EXISTING CFM SHOWN ON DRAWINGS.
6. CONTRACTOR MAY REUSE PORTIONS OF EXISTING DUCT PROVIDED SIZES AND PRESSURE CLASSES ARE CORRECT, DUCT IS THOROUGHLY CLEANED AND FREE OF DEFECTS, AND ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS, AND DUCT WALL PENETRATIONS ARE SEALED AS SPECIFIED FOR NEW DUCTWORK.

TAB PRE-DEMOLITION NOTES:

1. BEFORE ANY DEMOLITION WORK IS BEGUN A COMPLETE AIR BALANCE TEST SHALL BE PERFORMED BY THE TESTING, ADJUSTING AND BALANCING (TAB) CONTRACTOR ON EXISTING AIR HANDLERS AND EXHAUST FANS SERVING THE AREAS AFFECTED BY CONSTRUCTION. EQUIPMENT TO BE DEMOLISHED DOES NOT REQUIRE TESTING. PROVIDE AIR BALANCE TESTING ONLY ON EQUIPMENT THAT WILL CONTINUE TO BE USED TO SERVE RENOVATED AREAS AFTER THE CONSTRUCTION PHASE IS COMPLETED.
2. PROVIDE DUCT TRAVERSE READINGS AT LOCATIONS DESIGNATED ON THE DRAWINGS BY THE "AIRFLOW MEASUREMENT SYMBOL". THOSE MEASUREMENTS SHALL BE INCLUDED IN THE PRE DEMOLITION REPORT AND SHALL BE DESIGNATED WITH THE IDENTIFIER AS MARKED ON THE DRAWINGS. READINGS SHALL BE DESIGNATED WITH THE ROOM NAME AND NUMBER AS MARKED ON THE DRAWINGS. IF FLOOR PLANS DO NOT HAVE UNIQUE ROOM NAMES AND NUMBERS, TAB CONTRACTOR SHALL INCLUDE FLOOR PLAN WITH UNIQUE NUMBER DESIGNATIONS ASSIGNED TO READINGS THAT MATCH THOSE USED IN THE FINAL PRE-DEMOLITION REPORT. DRAWINGS THAT ARE HAND-MARKED WITH RED INK ARE ACCEPTABLE, PROVIDED THEY ARE LEGIBLE.
3. IN THE EVENT A DUCT TRAVERSE LOCATION AS MARKED ON THIS PLAN IS INACCESSIBLE FOR MEASUREMENT, THE TAB CONTRACTOR SHALL PERFORM THE TRAVERSE AT AN ALTERNATE LOCATION OR SHALL TAKE MULTIPLE DUCT TRAVERSES AND/OR READINGS AS REQUIRED TO DETERMINE THE AIRFLOW READING WHERE THE DUCT TRAVERSE SYMBOL IS SHOWN. IN THE EVENT TRAVERSES ARE TAKEN AT ALTERNATE LOCATION(S), TAB CONTRACTOR SHALL INCLUDE A DRAWING THAT SHOWS THE LOCATIONS WHERE THE ACTUAL MEASUREMENTS WERE TAKEN.
4. TAKE A DUCT STATIC PRESSURE READING AT EACH LOCATION WHERE A DUCT TRAVERSE READING IS TAKEN AND INCLUDE IN THE FINAL PRE-DEMOLITION TAB REPORT.
5. TAB CONTRACTOR SHALL COMPILE AND SUBMIT FOUR COPIES OF THE FINAL PRE-DEMOLITION REPORT WITHIN 10 WORKING DAYS AFTER THE FIELD MEASUREMENTS ARE COMPLETED. FINAL TAB REPORT SHALL BE SUBMITTED FOR REVIEW TO THE ARCHITECT/ENGINEER. TESTING SHALL INCLUDE ALL ITEMS REQUIRED IN THE SPECIFICATIONS.
6. TAB CONTRACTOR SHALL PROVIDE DUCT TRAVERSE READINGS AT LOCATIONS DESIGNATED ON THE DRAWINGS BY THE "AIRFLOW MEASUREMENT SYMBOL". THOSE MEASUREMENTS SHALL BE INCLUDED IN THE POST-CONSTRUCTION REPORT AND SHALL BE DESIGNATED WITH THE IDENTIFIER AS MARKED ON THE CONSTRUCTION DRAWINGS. GRILLE AND DIFFUSER READINGS SHALL BE DESIGNATED WITH THE ROOM NAME AND NUMBER AS MARKED ON THE DRAWINGS. IF THE DRAWINGS DO NOT HAVE UNIQUE ROOM NAMES AND NUMBERS, TAB CONTRACTOR SHALL INCLUDE FLOOR PLANS WITH UNIQUE NUMBER DESIGNATIONS ASSIGNED TO TRAVERSES, GRILLES, AND DIFFUSERS THAT MATCH THOSE USED IN THE FINAL PRE-DEMOLITION REPORT. SIMILAR ROOM NAMES, NUMBERS, OR DESIGNATIONS SHALL BE USED TO SIMPLIFY THE CROSS- REFERENCING OF READINGS TAKEN BETWEEN PRE-DEMOLITION AND POST-CONSTRUCTION REPORTS.
7. BALANCING CONTRACTOR SHALL PRE-BALANCE ALL EXISTING SYSTEMS TO REMAIN PER SPECIFICATION SECTION 23 05 93. BALANCE READINGS WILL BE REQUIRED AT AIR OUTLETS AND DUCT TRAVERSES TO VERIFY EXISTING AIRFLOW TO UNAFFECTED SPACES.

TAB POST-CONSTRUCTION NOTES:

1. AFTER CONSTRUCTION ACTIVITIES ARE COMPLETE, TESTING, ADJUSTING (TAB) AND BALANCING CONTRACTOR SHALL REBALANCE AIR HANDLING UNITS AND EXHAUST FANS AS REQUIRED TO ACHIEVE THE NEW AIRFLOW VALUES SHOWN ON THE CONSTRUCTION DRAWINGS.
2. AREAS SERVED BY THIS EQUIPMENT WHICH WERE NOT RENOVATED SHALL BE RE-BALANCED TO THE AIRFLOW RATES MEASURED BEFORE THE RENOVATION OCCURRED (REFER TO THE FINAL PRE- DEMOLITION REPORT).
3. TAB CONTRACTOR SHALL COMPILE AND SUBMIT COPIES OF THE FINAL POST-CONSTRUCTION TAB REPORT AS REQUIRED BY SECTION 23 05 93.
4. THE FINAL POST CONSTRUCTION REPORT SHALL INCLUDE ALL ITEMS REQUIRED IN THE SPECIFICATIONS.

HVAC SHEET INDEX

M0.00	HVAC COVERSHEET
M1.01A	LEVEL 01 DEMOLITION PLAN - HVAC - AREA A
M1.01B	LEVEL 01 DEMOLITION PLAN - HVAC - AREA B
M1.01C	LEVEL 01 DEMOLITION PLAN - HVAC - AREA C
M1.02N	LEVEL 02 DEMOLITION PLAN - HVAC - PENTHOUSE
M1.03A	ROOF DEMOLITION PLAN - HVAC - AREA A
M1.03B	ROOF DEMOLITION PLAN - HVAC - AREA B
M1.03C	ROOF DEMOLITION PLAN - HVAC - AREA C
M2.01A	LEVEL 01 PLAN - HVAC - AREA A
M2.01B	LEVEL 01 PLAN - HVAC - AREA B
M2.01C	LEVEL 01 PLAN - HVAC - AREA C
M2.02N	LEVEL 02 PLAN - HVAC - PENTHOUSE
M2.03A	ROOF PLAN - HVAC - AREA A
M2.03B	ROOF PLAN - HVAC - AREA B
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M3.00	HVAC ENLARGED PLANS
M3.01	HVAC ENLARGED PLANS
M4.00	HVAC DETAILS
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M4.03	MAURTU COMPONENT DIAGRAMS
M5.00	STEAM AND CONDENSATE FLOW DIAGRAM - DEMOLITION
M5.01	STEAM AND CONDENSATE FLOW DIAGRAM - NEW WORK
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M5.03	HVAC CONTROL DIAGRAMS
M5.04	HVAC CONTROL DIAGRAMS
M5.05	HVAC CONTROL DIAGRAMS
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M5.07	HVAC CONTROL DIAGRAMS
M6.00	HVAC SCHEDULES
M6.01	HVAC SCHEDULES
GRAND TOTAL: 31	

DUCT ABBREVIATION KEY

ABBR.	DESCRIPTION
DE	DISHWASHER EXHAUST
EA	EXHAUST AIR
GE	GREASE EXHAUST
HVC	SUPPLY AIR - COLD
HVH	SUPPLY AIR - HOT
MUA	MAKE-UP AIR
RA	RETURN AIR
SA	SUPPLY AIR

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PROJECT #24002060.00

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ROCKFORD PUBLIC SCHOOLS

COLLEGE & CAREER EDUCATION CENTER

ROCKFORD PUBLIC SCHOOLS - DISTRICT 205
RPS 205 IFB #25-11
RPS 205 PROJECT #2444
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Rockford, IL 61109

ISSUED FOR PERMIT - HEALTH DEPARTMENT
10/08/2024
REVISIONS
A3 11/05/2024 ADDENDUM 3

22-24119-00

HVAC COVERSHEET

M0.00

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EXISTING THERMOSTAT AND ASSOCIATED ACCESSORIES TO BE REMOVED. TURN OVER THERMOSTAT TO OWNER OR REMOVE FROM SITE AS DIRECTED BY OWNER (TYP.). SEE NEW WORK PLANS FOR NEW THERMOSTAT PLACEMENT.

REMOVE AND REPLACE EXISTING EXHAUST GRILLES IN BATHROOMS.

SALVAGE, CLEAN, AND REINSTALL EXISTING DIFFUSERS. ALIGN WITH NEWLY INSTALLED CEILING TILE. COORDINATE WITH ALL CEILING DEVICES AND LIGHTS PRIOR TO INSTALLATION.

EXISTING 8x8 EA UP. RISER AND ASSOCIATED EXHAUST FAN AND ACCESSORIES SHALL BE REMOVED. PATCH AND SEAL ROOF PENETRATION TO MATCH EXISTING.

EXISTING 10x10 EA UP. RISER AND ASSOCIATED EXHAUST FAN AND ACCESSORIES SHALL BE REMOVED. PATCH AND SEAL ROOF PENETRATION TO MATCH EXISTING.

NIC

EA UP TO EF-E

RECORD THE FOLLOWING DATA FOR EXHAUST FAN PFPEF-4:
1. AMP DRAW PER PHASE.
2. FAN SPEED.
3. FAN STATIC PRESSURE (ENTERING AND LEAVING)
4. FAN AIRFLOW.

LEVEL 01 DEMOLITION PLAN - HVAC - AREA A

1/8" = 1'-0"

NORTH

KEYNOTES:

1. PRIOR TO DEMOLITION, COMMAND ASSOCIATED BOX TO MAXIMUM. MEASURE AIRFLOW FROM EXISTING DIFFUSER. AFTER DEMOLITION HAS COMPLETED, REBALANCE EXISTING DIFFUSER TO PREVIOUSLY MEASURED AIRFLOW VALUES.
2. REMOVE DUCT BACK TO LOCATION SHOWN. PREPARE DUCTWORK FOR NEW CONNECTION.
3. REMOVE DUCTWORK BACK TO LOCATION SHOWN. CAP AND SEAL AIR TIGHT.
4. COMMAND THIS BOX TO FULL COOLING PRIOR TO MEASURING AIRFLOWS. RECORD AIRFLOW READING AT BAS FROM THIS TERMINAL AIR BOX.

PRE-DESIGN TEST AND BALANCE TAGS

EA-G-* :MEASURE EXHAUST AIRFLOW AT EXHAUST GRILLE.
EA-D-* :MEASURE EXHAUST AIRFLOW AND STATIC PRESSURE IN EXHAUST DUCT AT SHOWN TRAVERSE LOCATION.

SA-G-* :MEASURE SUPPLY AIRFLOW AT SUPPLY GRILLE/DIFFUSER. CONFIRM CONNECTION SIZE TO DIFFUSER.
SAC-D-* :MEASURE SUPPLY AIRFLOW AND STATIC PRESSURE IN COLD SUPPLY DUCT AT SHOWN TRAVERSE LOCATION.
SAH-D-* :MEASURE SUPPLY AIRFLOW AND STATIC PRESSURE IN HOT SUPPLY DUCT AT SHOWN TRAVERSE LOCATION.

RA-G-* :MEASURE RETURN AIRFLOW AT RETURN GRILLE.
RA-D-* :MEASURE RETURN AIRFLOW AND STATIC PRESSURE IN RETURN DUCT AT SHOWN TRAVERSE LOCATION.

CONTRACTOR SHALL UTILIZE THE TAGS ON THIS DOCUMENT IN THEIR REPORT OF THE AIRFLOW AND STATIC PRESSURE READINGS.

PRE-DESIGN TEST AND BALANCE NOTES

AT EACH DUCT TRAVERSE LOCATION SHOWN (TAGS REFERENCED ABOVE) CONTRACTOR SHALL DO THE FOLLOWING:

1. FOR COLD DECK:
   A. COMMAND ALL DOWNSTREAM TERMINAL AIR BOXES TO FULL COOLING AIRFLOW. MEASURE SUPPLY AIRFLOW AND STATIC PRESSURE IN SUPPLY DUCT.
2. FOR HOT DECK:
   A. COMMAND ALL DOWNSTREAM TERMINAL AIR BOXES TO FULL HEATING AIRFLOW. MEASURE SUPPLY AIRFLOW AND STATIC PRESSURE IN SUPPLY DUCT.

AT EACH TAB TO BE MEASURED, CONTRACTOR SHALL DO THE FOLLOWING:

1. COMMAND TERMINAL AIR BOX TO FULL COOLING AIRFLOW AND RECORD TERMINAL AIR BOX COLD DECK AND HOT DECK AIRFLOW READINGS AT THE BUILDING AUTOMATION SYSTEM.
2. COMMAND TERMINAL AIR BOX TO FULL HEATING AIRFLOW AND RECORD TERMINAL AIR BOX COLD DECK AND HOT DECK AIRFLOW READINGS AT THE BUILDING AUTOMATION SYSTEM.
3. IF TERMINAL AIR BOX IS NOT CONNECTED TO THE BUILDING AUTOMATION SYSTEM, MEASURE COLD DECK AND HOT DECK SUPPLY AIRFLOWS IN DUCTWORK.

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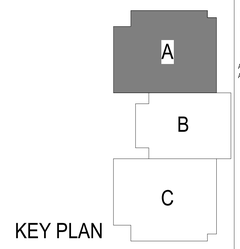
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A2 10/24/2024 ADDENDUM 2
A3 11/05/2024 ADDENDUM 3

KEY PLAN



22-24119-00

LEVEL 01 DEMOLITION PLAN - HVAC - AREA A

M1.01A

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KEYNOTES:

1. REPROGRAM EXISTING DUAL DUCT TAB TO NEW AIRFLOWS SHOWN ON PLAN. CONTRACTOR TO CONFIRM EXISTING BOX MINIMUM AND HEATING AIRFLOWS.
2. REBALANCE EXISTING DIFFUSER TO PREVIOUSLY MEASURED AIRFLOW VALUES FROM TEST AND BALANCING REPORT.
3. PROVIDE EXISTING DUAL DUCT TAB WITH NEW THERMOSTAT. IF EXISTING BOX IS NOT CONNECTED TO BAS, PROVIDE DDC CONTROLS AND WIRING TO CONNECT BAS AS REQUIRED. PROGRAM NEW THERMOSTAT TO EXISTING BOX.

PROVIDE 4" DIAMETER DUCT EXTENSION FROM CONVEYER DRYER HEATING CHAMBER DUCT COLLAR. EXTEND DUCT 3' FROM HEATER CHAMBER PER MANUFACTURER'S INSTALLATION GUIDE. LOCATE EG-1 OVER CONVEYER DRYER. EXACT LOCATION TO BE COORDINATED IN THE FIELD. BALANCE EA DAMPER TO 25 CFM.

REPLACE EXISTING EXHAUST GRILLES IN MEN AND WOMEN'S BATHROOMS. AIRFLOWS ARE SHOWN FOR REFERENCE ONLY. BALANCE NEW GRILLES TO PRE DEMOLITION AIRFLOW VALUES.

EXISTING GRILLES AND DIFFUSERS TO BE REINSTALLED IN NEW CEILING. COORDINATE NEW LOCATIONS WITH ALL CEILING DEVICES. EXTEND EXISTING DUCTWORK AS REQUIRED TO FEED RELOCATED DIFFUSERS.

DUCTWORK IN EXISTING SPACES UNAFFECTED BY REMODEL SCOPE IS NOT SHOWN (TYP.).

REFER TO 1/M4.02 FOR LINT TRAP AND DRYING INSTALLATION REQUIREMENTS.

3/4" DPP DN TO FD

LIQ/SUC PIPING UP TO ROOF CU-2. SIZE REFRIGERANT LINES PER MANUFACTURER'S REQUIREMENTS.

SAW-CUT EXISTING CONCRETE CEILING FOR NEW SUPPLY DIFFUSER INSTALLATION. PATCH CEILING TO MATCH EXISTING.

3/4" DPP DN TO MOP BASIN

NIC

HATCHED DUCTWORK SHALL BE COVERED IN ACOUSTICAL LAGGING. REFER TO SPECIFICATION SECTION 23 31 00 FOR PRODUCT AND INSTALL REQUIREMENTS.

LIQ/SUC PIPING UP TO ROOF CU-1.

SIZE REFRIGERANT LINES PER MANUFACTURER'S REQUIREMENTS.

EXISTING TO REMAIN DUCTWORK TO BE WRAPPED IN ACOUSTICAL LAGGING.

HATCHED NEW AND EXISTING DUCTWORK SHALL BE COVERED IN ACOUSTICAL LAGGING. REFER TO SPECIFICATION SECTION 23 31 00 FOR PRODUCT AND INSTALL REQUIREMENTS.

EXISTING IN-WALL SUPPLY GRILLE TO BE REMOVED AND REPLACED WITH SG-1. COLOR SHALL BE MATCHED TO SHERWIN WILLIAMS "SNOWBOUND" 7004. CONFIRM COLOR WITH ARCHITECT PRIOR TO INSTALLATION.

REUSE EXISTING DIFFUSERS IN SPACE AND RECONNECT TO EXISTING DUCTWORK.

REPROGRAM EXISTING BOX COOLING MAX TO AIRFLOWS SHOWN ON PLAN. NEW HEATING MAX AND COOLING MIN SHALL BE 350 CFM.

LEVEL 01 PLAN - HVAC - AREA A

1/8" = 1'-0"

NORTH

KEY PLAN

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A3	11/05/2024	ADDENDUM 3

22-24119-00

LEVEL 01 PLAN - HVAC - AREA A

M2.01A

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KEYNOTES:

1. EXISTING AIRFLOW VALUES ARE GIVEN FOR REFERENCE ONLY. REBALANCE DIFFUSER TO PREVIOUSLY MEASURED AIRFLOW VALUES.
2. PROVIDE EXISTING DUAL DUCT TAB WITH NEW THERMOSTAT. IF EXISTING BOX IS NOT CONNECTED TO BAS, PROVIDE DDC CONTROLS AND WIRING TO CONNECT BAS. PROGRAM NEW THERMOSTAT TO EXISTING BOX.

NIC

HATCHED DUCTWORK SHALL BE COVERED IN ACOUSTICAL LAGGING. REFER TO SPECIFICATION SECTION 23 31 00 FOR PRODUCT AND INSTALL REQUIREMENTS.

EXISTING IN-WALL SUPPLY GRILLE TO BE REMOVED AND REPLACED WITH SG-1. COLOR SHALL BE MATCHED TO SHERWIN WILLIAMS "SNOWBOUND" 7004. CONFIRM COLOR WITH ARCHITECT PRIOR TO INSTALLATION.

REUSE EXISTING DIFFUSERS IN SPACE AND RECONNECT TO EXISTING DUCTWORK.

LIQ/SUC PIPING UP TO ROOF CU-3 SIZE REFRIGERANT LINES PER MANUFACTURER'S REQUIREMENTS.

ROUTE 3/4" DPP TO JAN C218 ROOM FLOOR DRAIN OR MOP BASIN.

RELOCATED TAB. REBALANCE BOX TO PREVIOUSLY MEASURED MAXIMUM AIRFLOW VALUES MINUS REMOVED DIFFUSERS.

REPROGRAM EXISTING BOX MAXIMUM TO NEWLY CONNECTED AIRFLOW. SET MININUM CFM AND HEATING MAX TO 250 CFM.

EXISTING RETURN AIR DAMPER TO BE BALANCED TO PRE-DEMOLITION AIRFLOW VALUES.

REBALANCE TAB TO PREVIOUSLY MEASURED SA MAX AND MIN VALUES

REBALANCE TAB TO PREVIOUSLY MEASURED SA MAX AND MIN VALUES.

LIQ/SUC PIPING UP TO ROOF CU-4

EXISTING CUH TO REMAIN.

62X20 MUA UP TO MAU-1

36x20A MUA UP TO MAU-2

10x10 TD

24x10 TD

1 LEVEL 01 PLAN - HVAC - AREA B

1/8" = 1'-0"

NORTH

KEY PLAN

A
B
C

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A2	10/24/2024	ADDENDUM 2
A3	11/05/2024	ADDENDUM 3

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LEVEL 01 PLAN - HVAC - AREA B

M2.01B

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KEYNOTES:

1. REMOVE AND REPLACE EXISTING DUCTWORK AS REQUIRED TO INSTALL NEW EF-5 DAMPER.
2. 3'x3' CANOPY HOOD WITH 20x20 EXHAUST OUTLET. MONOXIVENT CH-3636 OR EQUIVALENT. HOOD MATERIAL SHALL BE MADE FROM 16 GAUGE GALVANIZED STEEL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. UNIT SHALL BE PROVIDED WITH MANUFACTURER PROVIDED HANGING BRACKETS. BOTTOM OF HOOD SHALL BE 3 FEET ABOVE LAGUNA PLASMA CUTTER.

POWDER COATING BOOTH HAS INTERNAL CIRCULATING FAN AND FILTERS THAT EXHAUST AIR BACK INTO SPACE AND IS COMPLIANT WITH NFPA AND IMC. NO EXTERNAL EXHAUST IS REQUIRED.

20x20 EA UP TO EF-5. DUCT TO EXTEND DOWN TO LAGUNA PLASMA CUTTER CANOPY HOOD. COORDINATE HOOD LOCATION AND DUCT DROP WITH FINAL LOCATION OF PLASMA CUTTER.

26x24 EA UP TO EF-3.

LIQ/SUC PIPING UP TO ROOF CU-6 SIZE REFRIGERANT LINES PER MANUFACTURER'S REQUIREMENTS.

ROUTE 3/4" DPP TO EXTERIOR GRADE. PROVIDE WITH CONCRETE SPLASH BLOCK.

MANUFACTURING AND INDUSTRIAL TECHNOLOGY AREAS SHALL CONTAIN PRIMARILY METAL CUTTING EQUIPMENT AND DO NOT REQUIRE THE ADDITION OF A DUST COLLECTOR.

ROUTE 3/4" DPP TO JAN C218 ROOM FLOOR DRAIN OR MOP BASIN.

MEASURE TOTAL AIRFLOW IN DUCT PRIOR TO DEMOLITION. BALANCE EACH GRILLE PROPORTIONALLY TO TOTAL AIRFLOW IN SUPPLY DUCT.

EXISTING TO REMAIN DUCTWORK IN AUTOMOTIVE LABS TO BE PREPPED FOR PAINTING. CONFIRM PAINT COLOR WITH ARCHITECT.

RAISE EXISTING DUCTWORK AND UTILITIES IN ENGINEERING LAB TO HAVE MINIMUM 110" CLEARANCE AFF. REFER TO HATCHED REGION FOR LOCATION. ALL NEW AND EXISTING DUCTWORK IN HATCHED REGION SHALL BE COVERED IN ACOUSTICAL LAGGING. REFER TO SPECIFICATION SECTION 23 31 00 FOR INSTALL AND PRODUCT REQUIREMENTS.

I+27.5

LIQ/SUC PIPING UP TO ROOF CU-5. SIZE PER MANUFACTURER'S REQUIREMENTS

I+35

REBALANCE EXHAUST FAN TO PREVIOUSLY MEASURED AIRFLOW VALUES MINUS AIRFLOW OF REMOVED EXHAUST GRILLES.

ROUTE 3/4" DPP TO THE FLOOR DRAIN IN THE STORAGE ROOM. REFER TO PLUMBING PLAN.

REBALANCE SUPPLY AIRFLOW TO MATCH REDUCTION IN WELDING EXHAUST IN WELDING LAB. REDUCE AIRFLOW FOR ALL SUPPLY GRILLES IN SPACE PROPORTIONALLY. CAP AND SEAL ALL EXHAUST OPENINGS ASSOCIATED WITH REMOVED WELDING BOOTHS. (TYP.)

EXISTING UNIT HEATER

EXISTING EXHAUST AND BLAST GATE CONTROLS TO REMAIN.

ASSUMED RELOCATED PLYMOVENT WELDING FUME EXTRACTOR LOCATION. PROVIDE NEW ROUND DUCT CONNECTION TO RELOCATED PLYMOVENT WELDING FUME EXTRACTOR. CONTRACTOR TO CONFIRM DUCT CONNECTION SIZE PRIOR TO INSTALLATION. OWNER TO CONFIRM FINAL LOCATION OF FUME EXTRACTOR.

EXISTING CEILING MOUNTED EXHAUST FAN

EXISTING CEILING MOUNTED EXHAUST FAN

EXISTING TO REMAIN DUCTWORK IN AUTOMOTIVE LABS TO BE PREPPED FOR PAINTING. CONFIRM PAINT COLOR WITH ARCHITECT.

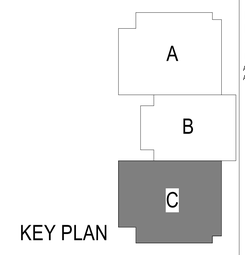
EA DN AND UP TO ROOF.

LEVEL 01 PLAN - HVAC - AREA C

1/8" = 1'-0"

NORTH

KEY PLAN



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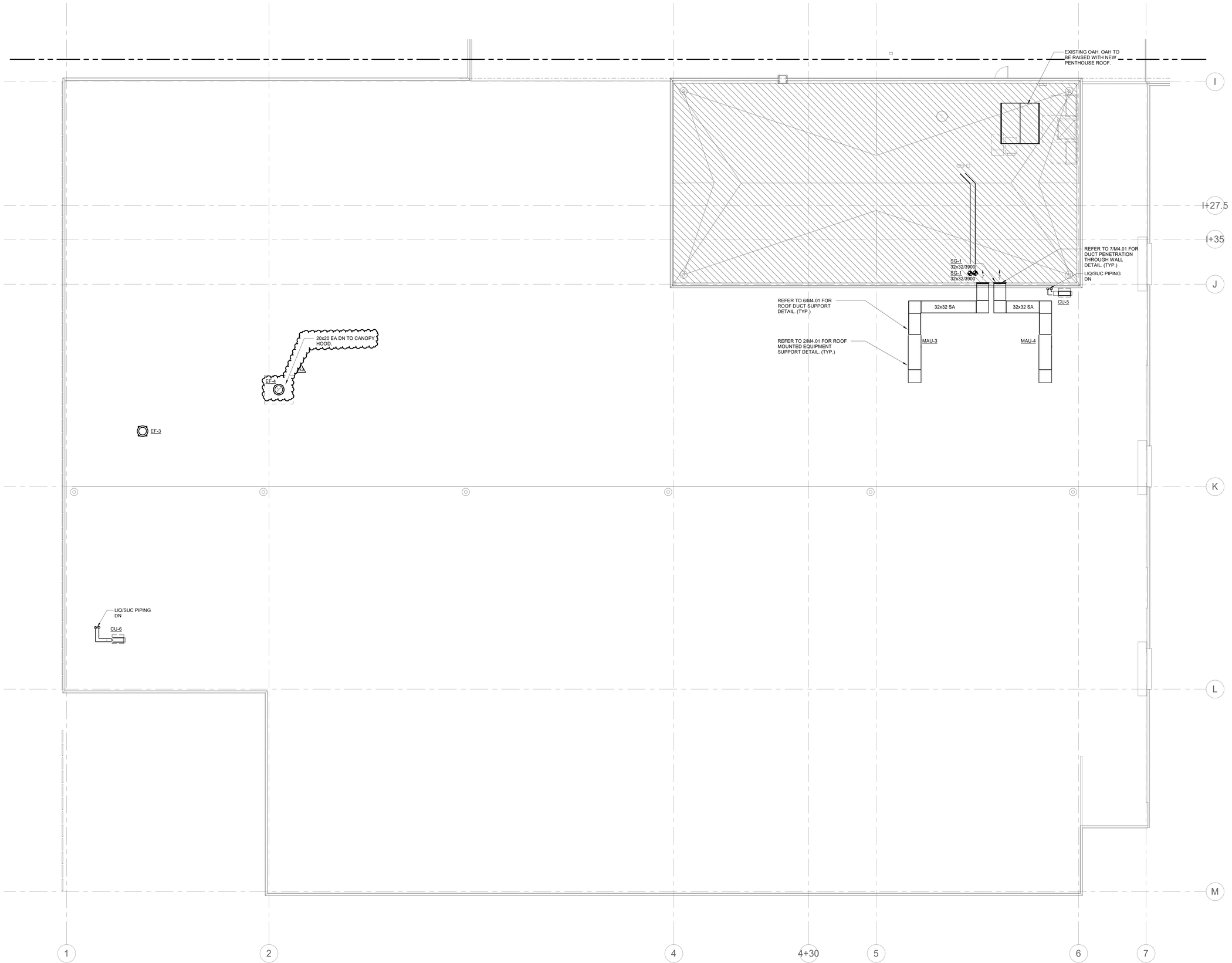
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A3	11/05/2024	ADDENDUM 3

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LEVEL 01 PLAN - HVAC - AREA C

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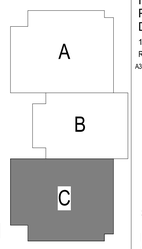


ROOF PLAN - HVAC - AREA C

1/8" = 1'-0"

NORTH

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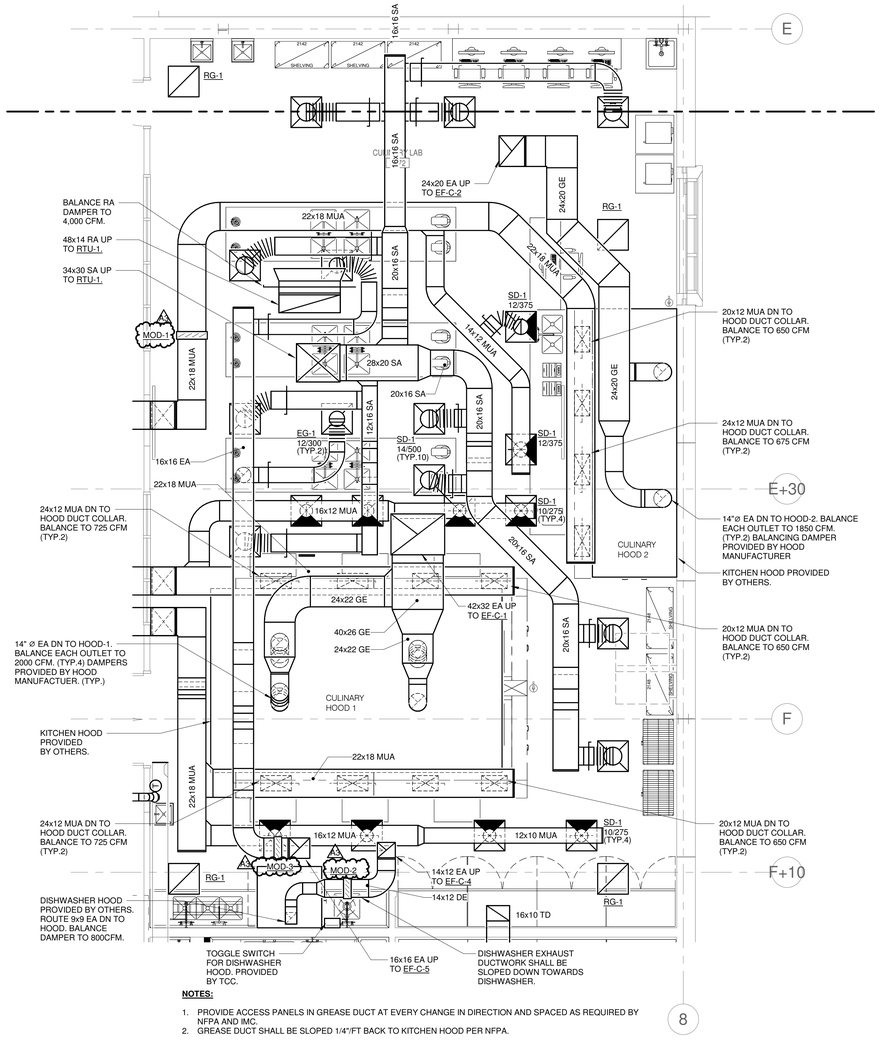
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A3 11/05/2024 ADDENDUM 3

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ROOF PLAN - HVAC - AREA C

M2.03C

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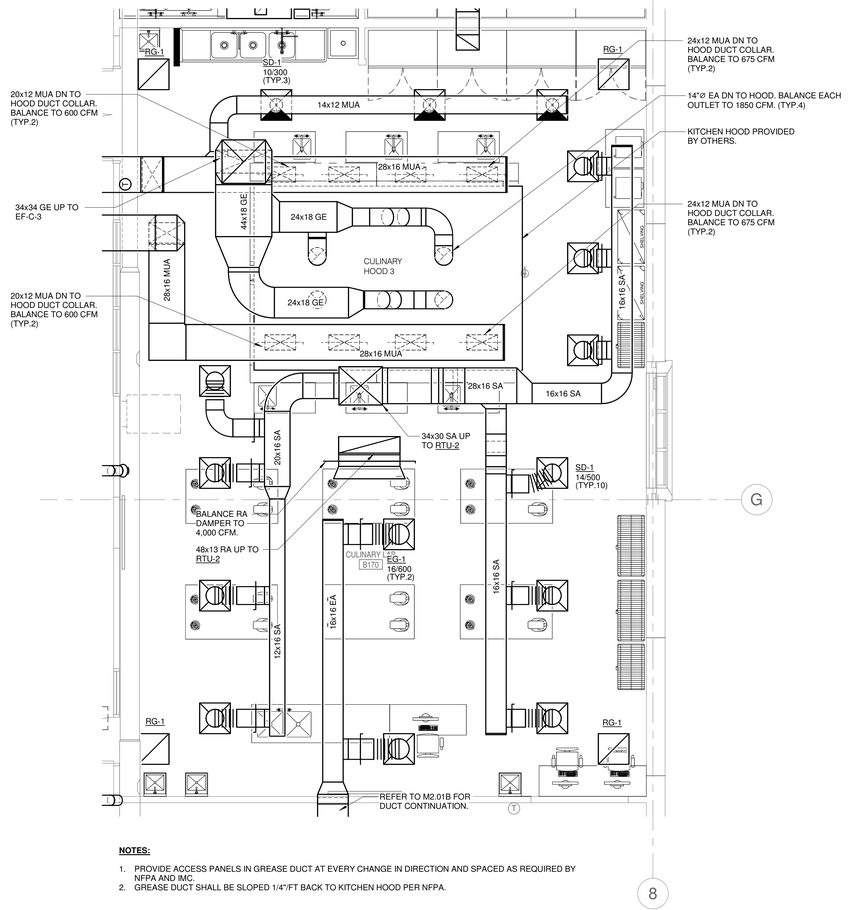


NOTES:

1. PROVIDE ACCESS PANELS IN GREASE DUCT AT EVERY CHANGE IN DIRECTION AND SPACED AS REQUIRED BY NFPA AND IMC.
2. GREASE DUCT SHALL BE SLOPED 1/4"/FT BACK TO KITCHEN HOOD PER NFPA.

1 LEVEL 01 PLAN - HVAC - AREA B - CULINARY LAB B170

1/4" = 1'-0"



NOTES:

1. PROVIDE ACCESS PANELS IN GREASE DUCT AT EVERY CHANGE IN DIRECTION AND SPACED AS REQUIRED BY NFPA AND IMC.
2. GREASE DUCT SHALL BE SLOPED 1/4"/FT BACK TO KITCHEN HOOD PER NFPA.

2 LEVEL 01 PLAN - HVAC - AREA B - CULINARY LAB B168

1/4" = 1'-0"

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HVAC ENLARGED PLANS

M3.01

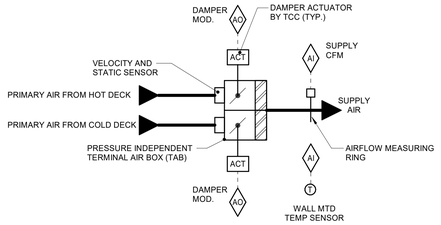
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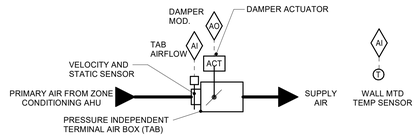
SEQUENCE OF OPERATION:

- FMCS TAB CONTROLLER SHALL MODULATE THE TAB DAMPERS TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 2°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/- 3°F (ADJ.) OFFSET FROM THE DDC SETPOINT.
- AT FULL COOLING, THE TAB SHALL BE OPEN TO MAXIMUM CFM POSITION AND HEATING DAMPER SHALL BE CLOSED.
- UPON A FALL IN SPACE TEMPERATURE, THE TAB SHALL MODULATE THE COOLING DAMPER CLOSED UNTIL SPACE SETPOINT IS MAINTAINED, OR UNTIL IT REACHES ITS MINIMUM SCHEDULED CFM POSITION PER THE TAB SCHEDULE.
- UPON A FURTHER FALL IN SPACE TEMPERATURE THE TAB SHALL MODULATE THE COOLING DAMPER CLOSED AND OPEN THE HEATING DAMPER TO ITS MINIMUM POSITION PER THE TAB SCHEDULE.
- THE HEATING DAMPER SHALL MODULATE OPEN TO ITS MAXIMUM POSITION OR UNTIL THE SPACE SETPOINT IS MAINTAINED.
- THE FMCS SHALL UTILIZE OUTPUT FROM ALL TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

ALARMS, INTERLOCKS & SAFETIES:

- SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS MORE THAN 10°F (ADJ.) ABOVE OR BELOW SETPOINT.

1 DUAL DUCT TAB CONTROL - TAB-A
NO SCALE



SEQUENCE OF OPERATION:

- FMCS TAB CONTROLLER SHALL MODULATE THE TAB DAMPER TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 5°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/- 3°F (ADJ.) OFFSET FROM THE DDC SETPOINT.
- AT FULL COOLING, THE TAB SHALL BE OPEN TO MAXIMUM CFM POSITION.
- UPON A FALL IN SPACE TEMPERATURE, THE TAB SHALL MODULATE CLOSED UNTIL SPACE SETPOINT IS MAINTAINED, OR UNTIL IT REACHES ITS MINIMUM SCHEDULED CFM POSITION PER THE TAB SCHEDULE.
- THE FMCS SHALL UTILIZE OUTPUT FROM ALL TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

ALARMS, INTERLOCKS & SAFETIES:

SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS MORE THAN 10°F (ADJ.) ABOVE OR BELOW SETPOINT.

2 TAB CONTROL W/ COOLING ONLY - TAB-B
NO SCALE

TERMINAL AIR BOX REPORT & DUCT MOUNTED HOT WATER REHEAT COIL GENERATION:
DDC FMCS SHALL BE PROGRAMMED TO GENERATE THE FOLLOWING REPORT BASED ON A MANUAL COMMAND FROM THE DDC FMCS WORKSTATION BY CLICKING ON A GRAPHICAL BUTTON. UPON INITIATING COMMAND THE DDC FMCS SHALL COMPILE A REPORT AS FOLLOWS:

TAB/COIL SYMBOL	AIRFLOW(CFM) MAX/ACTUAL/MIN	DAMPER POS (% OPEN)	VALVE POS (% OPEN)	SUP AIR TEMP (DEG. F)	ROOM TEMP (DEG. F)	ROOM SETPOINT (DEG. F)
***	***/***/***	85%	10%	65.2	73.6	72.0
***	***/***/***	80%	60%	75.1	71.1	72.0

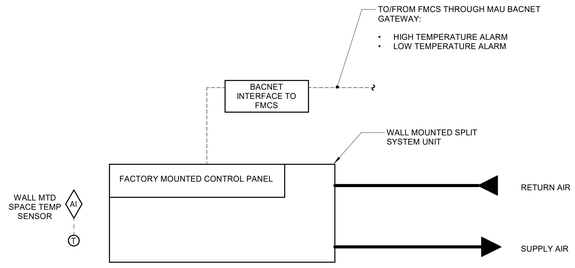
WHEREAS THE SAMPLE REPORT ABOVE SHOWS ONLY A COUPLE TAB/COILS, THE FINAL PROGRAMMED REPORT SHALL LIST ALL TABS/COILS SERVED BY A SINGLE AHU. A SEPARATE REPORT SHALL BE PROGRAMMED FOR EACH AHU AND FOR EACH FLOOR.

AFTER THE REPORT PRINTS OUT ALL TAB/HEATING COIL DATA, THE DDC FMCS SHALL AUTOMATICALLY TOTAL ALL THE INDIVIDUAL TAB AIRFLOW TO A SINGLE VALUE.

AFTER PRINTING THE SUM OF THE TAB/HEATING COIL AIRFLOW CFM, THE DDC FMCS SHALL THEN AUTOMATICALLY PRINT OUT THE AIR HANDLER REPORT FOR THE AHU WHICH SERVES THE TABS/HEATING COILS LISTED IN THE REPORT.

DDC FMCS SHALL ALLOW THE DDC FMCS OPERATOR TO ISSUE A SINGLE COMMAND THAT WILL AUTOMATICALLY CHANGE THE LOCAL SETPOINT FOR EACH TAB SERVED BY A AHU TO A SINGLE VALUE (E.G. A SINGLE COMMAND WILL SET ALL TABS/HEATING COILS SERVED BY AHU-A TO 80°F). A SEPARATE TAB/HEATING COIL SETPOINT OVERRIDE COMMAND SHALL BE PROGRAMMED IN THE FMCS FOR EACH AHU.

3 TERMINAL AIR BOX REPORT GENERATION
NO SCALE



SSAC (SPLIT SYSTEM AIR CONDITIONER) SEQUENCE OF OPERATION GENERAL (CONTROLS PROVIDED WITH UNIT)

THE SSAC IS CONTROLLED BY A FACTORY ASSEMBLED AND MOUNTED MICROPROCESSOR BASED CONTROL SYSTEM AND CONNECTED TO THE FACILITY MANAGEMENT CONTROL SYSTEM (FMCS) FOR MONITORING PURPOSES.

THE MICROPROCESSOR CONTROL SYSTEM SHALL MONITOR THE RETURN AIR TEMPERATURE AND HUMIDITY. THE MICROPROCESSOR CONTROL SYSTEM SHALL AUTOMATICALLY HEAT, COOL, REHEAT, HUMIDIFY, AND DEHUMIDIFY AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE AND HUMIDITY SETPOINTS.

THE SPACE SETPOINTS ARE 75°F (ADJ.)

ALARMS, INTERLOCKS, AND SAFETIES AT UNIT:

ACTIVATE AN AUDIBLE AND VISUAL ALARM UPON THE OCCURRENCE OF ANY OF THE FOLLOWING MICROPROCESSOR CONTROL SYSTEM ALARM CONDITIONS:

- HIGH TEMPERATURE
- LOW TEMPERATURE

MICROPROCESSOR CONTROL SYSTEM SHALL BE CAPABLE OF DISABLING ANY ALARM IF REQUIRED.

FMCS SEQUENCE OF OPERATION (CONTROLS PROVIDED BY TCC)

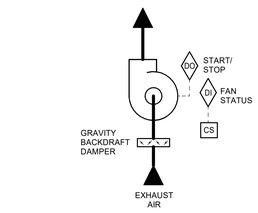
THE TCC SHALL EXTEND THE FMCS NETWORK TO THE SSAC MICROPROCESSOR CONTROLLER PER THE PROTOCOL SPECIFIED IN SECTION 23 09 00. THE FMCS SHALL MONITOR THE OPERATING PARAMETERS AND ALARM CONDITIONS INDICATED BY THE SSAC.

ALARMS, INTERLOCKS AND SAFETIES AT FMCS:

SEND AN ALARM TO THE FMCS OPERATOR INTERFACE UPON THE OCCURRENCE OF ANY OF THE FOLLOWING MICROPROCESSOR CONTROL SYSTEM ALARM CONDITIONS:

- LOSS OF POWER TO SSAC
- HIGH TEMPERATURE
- LOW TEMPERATURE

4 SSAC UNIT CONTROL - SSAC-A
NO SCALE



SEQUENCE OF OPERATION:

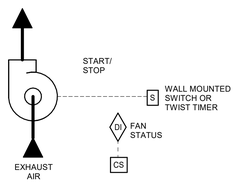
FAN IS EQUIPPED WITH AN ELECTRICALLY COMMUTATED MOTOR CAPABLE OF BEING MODULATED BY A SIGNAL FROM THE BUILDING AUTOMATION SYSTEM. TCC SHALL COORDINATE WITH MC, EC, AND FAN MANUFACTURER FOR REQUIRED WIRING OF EC MOTOR.

FMCS SHALL INDEX FAN TO RUN CONTINUOUSLY.

WHENEVER EXHUAST FAN IS OPERATING, IT SHALL OPERATE AT A SET SPEED. TCC SHALL COORDINATE WITH TESTING, ADJUSTING, AND BALANCING CONTRACTOR TO DETERMINE PROPER FAN SPEED SETPOINT TO ACHIEVE THE REQUIRED ROOM PRESSURES DURING SYSTEM BALANCING.

ALARMS, INTERLOCKS AND SAFETIES:
AN ALARM SHALL BE GENERATED AT THE FMCS OPERATOR WORKSTATION IN THE EVENT THE FMCS COMMANDS THE EXHAUST FAN TO OPERATE AND THE CURRENT SENSING RELAY DETECTS INSUFFICIENT CURRENT DRAW.

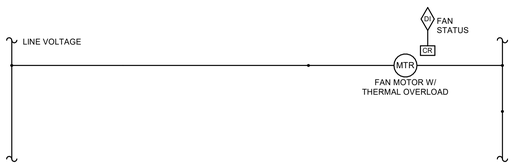
5 FAN - ECM (FAN-A)
NO SCALE



SEQUENCE OF OPERATION:
FAN SHALL BE CONTROLLED BY MANUAL MOTOR STARTER (WALL SWITCH) PROVIDED BY OTHERS.

FMCS SHALL MONITOR FAN STATUS. FAN STATUS SHALL BE INDICATED AT BUILDING AUTOMATION SYSTEM DISPLAY

6 FAN - WALL SWITCH (FAN-B)
NO SCALE



SEQUENCE OF OPERATION:
FAN SHALL BE CONTROLLED DIRECTLY FROM THE CIRCUIT BREAKER.

FAN SHALL RUN CONTINUOUSLY 24 HOURS/DAY, 7 DAYS PER WEEK.

ALARMS AND SAFETIES:
AN ALARM SHALL BE INDICATED AT THE FMCS OPERATOR WORKSTATION (OWS) WHEN THE EXHAUST FAN IS COMMANDED TO RUN AND THE CURRENT RELAY DETECTS INSUFFICIENT CURRENT FLOW.

7 EXHAUST FAN - SINGLE PHASE (FAN-C)
NO SCALE

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A3 11/05/2024 ADDENDUM 3

22-24119-00

HVAC CONTROL DIAGRAMS

M5.05

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SPLIT SYSTEM UNIT SCHEDULE

NOTES:
1.CONTRACTOR SHALL PROVIDE IN LINE CONDENSATE PUMP TO DRAINAGE LINE. PUMP SHALL BE LITTLE GIANT VCMX OR EQUIVALENT AND SHALL BE POWERED BY THE UNIT. IF NOT POWERED BY THE UNIT, MECHANCIAL CONTRACTOR IS RESPONSIBLE TO PROVIDE POWER FOR CONDENSATE PUMP.
2.UNIT REFRIGERANT MAY BE SELECTED WITH R-410A, R-32, OR R-454B REFRIGERANT.

			INDOOR UNIT			OUTDOOR UNIT							ELECTRICAL										
									MAX. DIMENSIONS								DISCONNECT		CONTROLLER/ STARTER		CONTROL		
TAG NAME	AREA SERVED	CFM	COOLING MBH	HEATING MBH	MODEL	TAG NAME	CFM	SEER	HEIGHT	LENGTH	WIDTH	MODEL	VOLTAGE	PHASE	MCA	MOCP AMPS	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	SCCR	DIAGRAM	MANUFACTURER	NOTES
SS-1	IDF A060	524	18000	18000	MWMC018S4-2P	CU-1	1355	21.5	2'-2 1/2"	3'-1 5/8"	1'-3"	MLB018S4S-1P	208	1	16.0	25	E.C.	NF	E.C.	5000	SSAC-A	LENNOX	NOTE 1
SS-2	IT A023.1	524	18000	18000	MWMC018S4-2P	CU-2	1355	21.5	2'-2 1/2"	3'-1 5/8"	1'-3"	MLB018S4S-1P	208	1	16.0	25	E.C.	NF	E.C.	5000	SSAC-A	LENNOX	NOTE 1
SS-3	IT B142	524	18000	18000	MWMC018S4-2P	CU-3	1355	21.5	2'-2 1/2"	3'-1 5/8"	1'-3"	MLB018S4S-1P	208	1	16.0	25	E.C.	NF	E.C.	5000	SSAC-A	LENNOX	NOTE 1
SS-4	IDF B164	524	18000	18000	MWMC018S4-2P	CU-4	1355	21.5	2'-2 1/2"	3'-1 5/8"	1'-3"	MLB018S4S-1P	208	1	16.0	25	E.C.	NF	E.C.	5000	SSAC-A	LENNOX	NOTE 1
SS-5	IDF C245	524	18000	18000	MWMC018S4-2P	CU-5	1355	21.5	2'-2 1/2"	3'-1 5/8"	1'-3"	MLB018S4S-1P	208	1	16.0	25	E.C.	NF	E.C.	5000	SSAC-A	LENNOX	NOTE 1
SS-6	IDF C228.1	524	18000	18000	MWMC018S4-2P	CU-6	1355	21.5	2'-2 1/2"	3'-1 5/8"	1'-3"	MLB018S4S-1P	208	1	16.0	25	E.C.	NF	E.C.	5000	SSAC-A	LENNOX	NOTE 1

MOTOR OPERATED DAMPER SCHEDULE

NOTES:
1.COORDINATE DAMPER ACTUATOR LOCATION AND MOUNTING REQUIREMENTS WITH TEMPERATURE CONTROL CONTRACTOR.
2.REFER TO 23 09 00 FOR DAMPER CONSTRUCTION AND PERFORMANCE REQUIREMENTS.
3.DAMPER SHALL BE ALUMINUM BLADE, ALUMINUM FRAME, AND STAINLESS STEEL HARDWARE FOR MOISTURE RESISTANCE.
4.DAMPER VOLTAGE SHALL BE 24V UNLESS OTHERWISE NOTED. DAMPER WIRING AND CONTROLS SHALL BE INSTALLED BY TCC PER 23 09 00.

TAG NAME	AREA SERVED	SIZE		CFM		BLADE CONFIGURATION	BLADE ORIENTATION	INSULATED	ACTUATOR TYPE (NOTE 1)	ACTUATOR STYLE	POWER FAILURE POSITION	POSITIVE POSITION FEEDBACK REQUIRED	NOTES
		WIDTH	HEIGHT	MAX.	MIN.								
MOD-1	KITCHEN HOOD 2	22	18	6000	0	PARALLEL	HORIZONTAL	Yes	ELECTRIC	TWO POSITION	NORMALLY OPEN (NO)	Yes	NOTES 1 AND 2
MOD-5	EF-C-4	14	12	800	0	PARALLEL	HORIZONTAL	Yes	ELECTRIC	TWO POSITION	NORMALLY OPEN (NO)	Yes	NOTES 1-3
MOD-6	EF-C-5	16	16	600	0	PARALLEL	HORIZONTAL	Yes	ELECTRIC	TWO POSITION	NORMALLY OPEN (NO)	Yes	NOTES 1 AND 2
MOD-7	EF-C-6	16	16	1200	0	PARALLEL	HORIZONTAL	Yes	ELECTRIC	TWO POSITION	NORMALLY OPEN (NO)	Yes	NOTES 1 AND 2

TERMINAL AIR BOX SCHEDULE - DUAL DUCT

NOTES:
1.NEITHER RADIATED NOR DISCHARGE SOUND LEVELS SHALL EXCEED NC 35 AT 1.5" INLET STATIC PRESSURE WHEN TESTED PER AHRI STANDARD 885-2008 USING 5/8" 20-LB DENSITY MINERAL FIBER CEILING TILE.
2.TOTAL AIR PRESSURE DROP OF TAB AND REHEAT COIL SHALL NOT EXCEED 0.50" WC.
3.REFER TO CONTROL DRAWINGS FOR DESCRIPTION OF CONTROL TYPE.
4.SENSOR TYPES: 1 - SENSOR ONLY, 2 - SENSOR WITH ADJUSTMENT, 3 - SENSOR WITH OVERRIDE, 4 - SENSOR WITH ADJUSTMENT AND OVERRIDE.

TAG NAME	AREA SERVED	COOLING CFM		HEATING CFM	MIN. INLET SIZE	MIN. INLET SIZE	CONTROL TYPE (NOTE 3)	SENSOR TYPE (NOTE 4)	MANUFACTURER	MODEL (NOTES 1, 2)	NOTES
		MAX.	MIN.	MAX.	COOL	HEAT					
TAB-1-101	BUSINESS INCUBATOR A030	2,000	1,200	1,200	12"	12"	TAB-A	2	TRANE	VDDF	NOTES 1, 2
TAB-1-102	SMALL GRP. A030.1	600	210	300	8"	8"	TAB-A	2	TRANE	VDDF	NOTES 1, 2
TAB-1-103	CONTROL RM. A052.1	300	220	220	5"	5"	TAB-A	2	TITUS	DEDV	NOTES 1, 2
TAB-2-101	CLASSROOM A053	900	750	500	8"	8"	TAB-A	2	TRANE	VDDF	NOTES 1, 2
TAB-2-102	BROADCAST STUDIO A052	1,300	1,000	1,300	10"	10"	TAB-A	2	TRANE	VDDF	NOTES 1, 2
TAB-2-103	CLASSROOM A025	900	750	750	8"	8"	TAB-A	2	TRANE	VDDF	NOTES 1, 2
TAB-2-104	CONFERENCE A014	200	100	200	5"	5"	TAB-A	2	TITUS	DEDV	NOTES 1, 2
TAB-2-105	VESTIBULE A001	300	300	300	6"	6"	TAB-A	2	TRANE	VDDF	NOTES 1, 2
TAB-2-106	MEDICAL PREP A021	600	600	200	8"	8"	TAB-A	2	TRANE	VDDF	NOTES 1, 2
TAB-2-107	MEDIA PRODUCTION CLASSROOM A058	1,200	1,000	1,000	10"	10"	TAB-A	2	TRANE	VDDF	NOTES 1, 2
TAB-4-101	CLASSROOM B140	1,700	1,225	1,950	12"	12"	TAB-A	2	TRANE	VDDF	NOTES 1, 2
TAB-5-101	BREAKOUT B110	300	150	300	6"	6"	TAB-A	2	TRANE	VDDF	NOTES 1, 2
TAB-5-102	GRAB & GO MARKET B155	700	500	500	8"	8"	TAB-A	2	TRANE	VDDF	NOTES 1, 2
TAB-5-103	STUDENT CYBER	700	500	500	8"	8"	TAB-A	2	TRANE	VDDF	NOTES 1, 2

FAN SCHEDULE

NOTES:
1.PROVIDE SHAFT GROUNDING AS REQUIRED IN THE MOTOR SPECIFICATION 23 05 13.
2.PROVIDE GREASE TRAP AT FAN CURB. FAN SHALL BE UL 762 LISTED FOR GREASE EXHAUST APPLICATIONS.
3.SCHEDULED FAN AIRFLOW INCLUDES ≈ 7% DUCT LEAKAGE ALLOWANCE.
4.PROVIDE VENTED CURB EXTENSION AND HINGED BASE PER NFPA 96. CURB SHALL BE CONSTRUCTED FROM NON-COMBUSTIBLE MATERIALS.
5.SEE MOTOR OPERATED DAMPER SCHEDULE FOR MORE INFORMATION.

											ELECTRICAL (NOTE 1)										
															DISCONNECT		CONTROLLER/ STARTER			CONTROL			
TAG NAME	AREA SERVED	CFM	S.P. IN. W.C.	FAN TYPE	WHEEL DIA. INCHES	FAN RPM (NOTE F)	DRIVE TYPE	MAX. AMCA SONES	BACKDRAFT DAMPER TYPE	CURB TYPE (NOTE G)	BHP (NOTE E)	MHP (NOTE E)	VOLTAGE	PHASES	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	TYPE (NOTE C)	EMERGENCY POWER	DIAGRAM	MANUFACTURER	MODEL	NOTES
EF-1	GENERAL EXHAUST	500	1.00	UPBLAST	14.63	1,300	DIRECT	14	GRAVITY DAMPER	MFR	0.2	0.5	120	1	MFR	NF	MFR	ECM	No	FAN-C	GREENHECK	CUE-100HP-VG	NOTES 1,3
EF-2	GRAB AND GO MARKET	400	1.00	UPBLAST	15	1,300	BELT	40	GRAVITY DAMPER	MFR	0.2	0.5	460	3	MFR	NF	MFR	ECM	No	FAN-A	GREENHECK	CUBE-140	NOTES 1,3
EF-3	MANUFACTURING	5,000	1.50	DOWNBLAST	24.5	957	DIRECT	16.9	GRAVITY DAMPER	MFR	2.3	5	460	3	MFR	NF	MFR	ECM	No	FAN-A	GREENHECK	G-24D-B-VSD	NOTES 1,3
EF-4	MANUFACTURING	2,500	0.50	UPBLAST	18.62	1,140	DIRECT	14	GRAVITY DAMPER	MFR	0.6	0.75	120	1	EC	NF	EC	MS	No	FAN-B	GREENHECK	CUE-180-B	NOTES 1,3
EF-C-1	CULINARY LAB - GREASE EXHAUST - HOOD 1	8,000	2.00	UPBLAST	27	1,294	BELT	23	NONE	MFR	5.2	7.5	460	3	MFR	NF	MFR	VFD	No	KES-A	GREENHECK	CUBE-380XP	NOTES 1-4
EF-C-2	CULINARY LAB - GREASE EXHAUST - HOOD 2	3,700	2.00	UPBLAST	22.25	1,228	BELT	18	NONE	MFR	2.1	3	460	3	MFR	NF	MFR	VFD	No	KES-A	GREENHECK	CUBE-300XP	NOTES 1-4
EF-C-3	CULINARY LAB - GREASE EXHAUST - HOOD 3	7,400	2.00	UPBLAST	27	1,236	BELT	21	NONE	MFR	4.6	5	460	3	MFR	NF	MFR	VFD	No	KES-B	GREENHECK	CUBE-360XP	NOTES 1-4
EF-C-4	CULINARY LAB - DISHWASHER EXHAUST	800	1.00	UPBLAST	13.5	1,503	DIRECT	9.3	NOTE 5	MFR	0.29	1	460	3	MFR	NF	MFR	ECM	No	KES-A	GREENHECK	CUE-160XP-VG	NOTES 1,3
EF-C-5	CULINARY LAB - GENERAL EXHAUST	600	0.50	UPBLAST	13.5	1,075	DIRECT	5.8	NOTE 5	MFR	0.1	1	460	3	MFR	NF	MFR	ECM	No	KES-A	GREENHECK	CUE-160XP-VG	NOTES 1,3
EF-C-6	CULINARY LAB - GENERAL EXHAUST	1,200	0.50	UPBLAST	14.63	1,000	DIRECT	8.4	NOTE 5	MFR	0.25	0.5	460	3	MFR	NF	MFR	ECM	No	KES-B	GREENHECK	CUBE-140	NOTES 1,3
SF-1	BOILER ROOM VENTILATION	8,000	0.25	IN WALL	24.13	1,750	DIRECT	31	NONE	NONE	1.37	1.5	460	3	EC	-	EC	VFD	Yes	BRV-A	GREENHECK	AER-24-03	NOTES 1,3
SF-2	BOILER ROOM VENTILATION	8,000	0.25	IN WALL	24.13	1,750	DIRECT	31	NONE	NONE	1.37	1.5	460	3	EC	-	EC	VFD	Yes	BRV-A	GREENHECK	AER-24-03	NOTES 1,3

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A3 11/05/2024 ADDENDUM 3

22-24119-00

HVAC SCHEDULES

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SHEET NOTES:

1. REMOVE ALL EXISTING FIRE ALARM DEVICES (INCLUDING DUCT DETECTORS, MAGNETIC DOOR HOLDERS, RELAYS, ETC.), COMPONENTS, AND ASSOCIATED FIRE ALARM WIRING COMPLETELY. NOT ALL FIRE ALARM DEVICES ARE SHOWN ON PLANS. AIR SAMPLING DETECTION IN DATA CENTER TO REMAIN.

KEYNOTES:

1. EXISTING PANEL TO BE REMOVED AND REPLACED. REFER TO NEW WORK DRAWINGS FOR NEW PANEL LOCATION. EXTEND EXISTING PANEL FEEDER AND BRANCH CIRCUITS TO REMAIN TO NEW PANEL LOCATION.
2. REMOVE EXISTING RECEPTACLE. EXISTING BRANCH RECEPTACLE CIRCUIT TO REMAIN TO SERVE NEW RECEPTACLE.
3. REMOVE EXISTING STRIP FIXTURES IN EXISTING COVE TO REMAIN. EXISTING BRANCH LIGHTING CIRCUIT TO REMAIN TO SERVE NEW LUMINAIRES.
4. DISCONNECT AND REMOVE FIXTURE. SALVAGE AND MAINTAIN LIGHTING CIRCUIT AND CONTROLS FOR CONNECTION TO NEW FIXTURE.
5. DISCONNECT AND REMOVE FIXTURE. SALVAGE AND MAINTAIN LIGHTING CIRCUIT FOR CONNECTION TO NEW FIXTURE.
6. REMOVE EXISTING SWITCH. SALVAGE SWITCH FOR REINSTALLATION.
7. ONLY FIRE ALARM IN THIS SPACE IS TO BE REMOVED AS PART OF CONTRACT. THE REST OF THE EQUIPMENT AND DEVICES IN THE SPACE IS TO REMAIN.
8. DISCONNECT AND REMOVE FIXTURE. SALVAGE FIXTURE FOR REINSTALLATION.

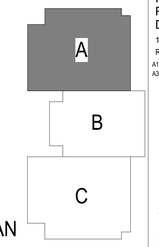
EXISTING PANEL RP-A3
EXISTING PANEL RP-A2
EXISTING PANEL LP-A1
EXISTING PANEL RP-A4
CAB-E
CAB-E
FAA-E
EXISTING PANEL CH
EXISTING PANEL LP-A3
EXISTING PANEL RP-A1A
EXISTING PANEL RP-A1B
EXISTING PANEL LP-A2
EXISTING PANEL PP-A1
EXISTING PANEL LP-A5
EXISTING PANEL LP-A4

1 LEVEL 01 DEMOLITION PLAN - ELECTRICAL - AREA A

1/8" = 1'-0"

NORTH

KEY PLAN



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REVISIONS

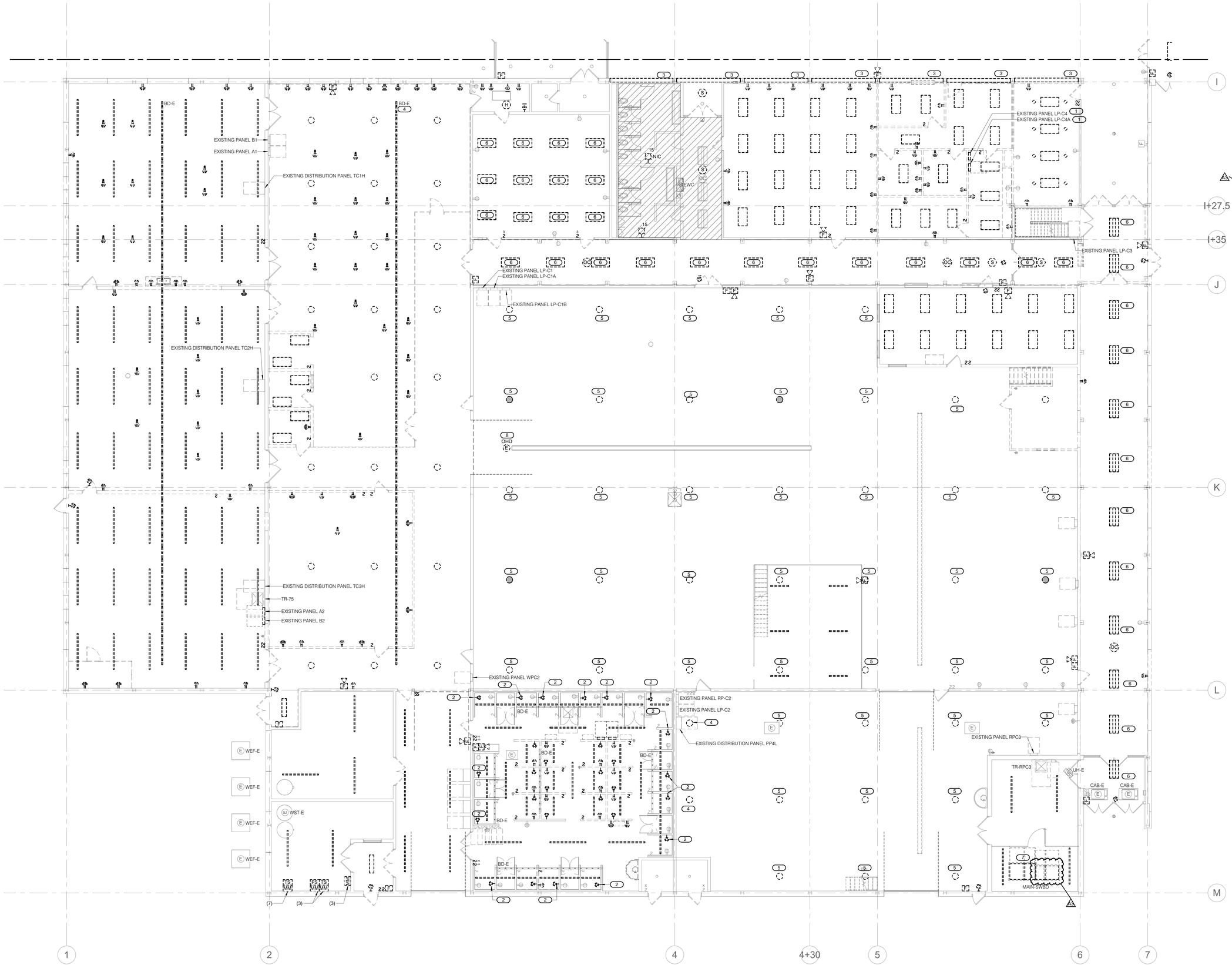
A1	10/15/2024	ADDENDUM 1
A3	11/06/2024	ADDENDUM 3

22-24119-00

LEVEL 01 DEMOLITION PLAN - ELECTRICAL - AREA A

E1.01A

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SHEET NOTES:

1. REMOVE ALL EXISTING FIRE ALARM DEVICES (INCLUDING DUCT DETECTORS, MAGNETIC DOOR HOLDERS, RELAYS, ETC.), COMPONENTS, AND ASSOCIATED FIRE ALARM WIRING COMPLETELY. NOT ALL FIRE ALARM DEVICES ARE SHOWN ON PLANS. AIR SAMPLING DETECTION IN DATA CENTER TO REMAIN.

KEYNOTES:

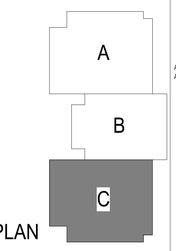
1. EXISTING PANEL TO BE REMOVED AND REPLACED. REFER TO NEW WORK DRAWINGS FOR NEW PANEL LOCATION. EXTEND EXISTING PANEL FEEDER AND BRANCH CIRCUITS TO REMAIN TO NEW PANEL LOCATION.
2. DISCONNECT AND REMOVE WELDING RECEPTACLE. SALVAGE AND MAINTAIN CIRCUIT FOR NEW CONNECTION.
3. REMOVE EXISTING STRIP FIXTURES IN EXISTING COVE TO REMAIN. EXISTING BRANCH LIGHTING CIRCUIT TO REMAIN TO SERVE NEW LUMINAIRES.
4. DISCONNECT AND REMOVE BUSDUCT. MAINTAIN BUSDUCT FEEDER AND FEEDERS TO PANELS 'A' AND 'B'. PROVIDE JUNCTION BOX IN PLACE OF BUSDUCT AND CONNECT BUSDUCT FEEDER AND THE FEEDERS TO PANELS 'A' AND 'B' TOGETHER.
5. DISCONNECT AND REMOVE FIXTURE. SALVAGE AND MAINTAIN LIGHTING CIRCUIT AND CONTROLS FOR CONNECTION TO NEW FIXTURE.
6. DISCONNECT AND REMOVE FIXTURE. SALVAGE AND MAINTAIN LIGHTING CIRCUIT FOR CONNECTION TO NEW FIXTURE.
7. MAIN SWITCHBOARD TO BE REMOVED. SERVICE CONDUCTORS AND FEEDERS TO REMAIN FOR CONNECTION TO NEW SWITCHBOARD. REFER TO RISER DIAGRAM 1/E5.00 FOR ADDITIONAL INFORMATION.
8. MOTOR OPERATED DOOR CLOSER TO BE REMOVED. SALVAGE AND MAINTAIN CIRCUIT FOR CONNECTION TO NEW EQUIPMENT.

1 LEVEL 01 DEMOLITION PLAN - ELECTRICAL - AREA C

1/8" = 1'-0"

NORTH

KEY PLAN



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REVISIONS
A1 10/15/2024 ADDENDUM 1
A3 11/06/2024 ADDENDUM 3

22-24119-00

LEVEL 01 DEMOLITION PLAN - ELECTRICAL - AREA C

E1.01C

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KEYNOTES:

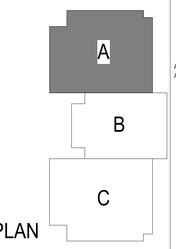
1. UTILIZE EXISTING UNSWITCHED LIGHTING CIRCUIT IN SPACE SALVAGED FROM DEMOLITION TO FEED NEW FIXTURES VIA 2#12 & 1#12 EGC IN 3/4" CONDUIT.
2. UTILIZE EXISTING LIGHTING CIRCUIT SALVAGED FROM DEMOLITION TO FEED NEW FIXTURE VIA 2#12 & 1#12 EGC IN 3/4" CONDUIT. MAINTAIN EXISTING LIGHTING CONTROLS IN SPACE.
3. COORDINATE FINAL LOCATION OF DEVICE WITH WALL PANELS PRIOR TO ROUGH-IN.
4. REINSTALL SWITCH SALVAGED FROM DEMOLITION. MAINTAIN EXISTING CONTROL SCHEME.
5. EXISTING FIXTURES TO BE CONTROLLED BY NEW SWITCH AND SENSOR PER THE SEQUENCE OF OPERATION.
6. MOUNT FIXTURES AND SENSORS AT 10'-0" AFF IN THIS SPACE.

NIC

LEVEL 01 PLAN - LIGHTING - AREA A

1/8" = 1'-0"

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REVISIONS

A1	10/15/2024	ADDENDUM 1
A3	11/06/2024	ADDENDUM 3

22-24119-00

LEVEL 01 PLAN - LIGHTING - AREA A

E2.11A

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11/6/2024 2:26:42 PM

KEYNOTES:

1. DISTRICT TO REPLACE EXISTING INCANDESCENT OR FLUORESCENT BULB WITH LED BULB WITH MATCHING BASE AND COMPARABLE OUTPUT.
2. UTILIZE EXISTING UNSWITCHED LIGHTING CIRCUIT IN SPACE SALVAGED FROM DEMOLITION TO FEED NEW FIXTURES VIA 2#12 CONDUCTORS IN 3/4" CONDUIT.
3. UTILIZE EXISTING LIGHTING CIRCUIT SALVAGED FROM DEMOLITION TO FEED NEW FIXTURE VIA 2#12 & 1#12 EGC IN 3/4" CONDUIT. MAINTAIN EXISTING LIGHTING CONTROLS IN SPACE. PROVIDE NEW FROSTED ACRYLIC LENS IN PERIMETER COVE. REFER TO ARCHITECTURAL FOR SIZE.

1 LEVEL 01 PLAN - LIGHTING - AREA B

1/8" = 1'-0"

NORTH

KEY PLAN

A
B
C

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A3	11/06/2024	ADDENDUM 3

22-24119-00

LEVEL 01 PLAN - LIGHTING - AREA B

E2.11B

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KEYNOTES:

1. OWNER TO REPLACE EXISTING INCANDESCENT OR FLUORESCENT BULB WITH LED BULB WITH MATCHING BASE AND COMPARABLE OUTPUT.
2. UTILIZE EXISTING UNSWITCHED LIGHTING CIRCUIT IN SPACE SALVAGED FROM DEMOLITION TO FEED NEW FIXTURES VIA 2#12 & 1#12 EGC IN 3/4" CONDUIT.
3. UTILIZE EXISTING LIGHTING CIRCUIT SALVAGED FROM DEMOLITION TO FEED NEW FIXTURE VIA 2#12 & 1#12 EGC IN 3/4" CONDUIT. MAINTAIN EXISTING LIGHTING CONTROLS IN SPACE.
4. MOUNT FIXTURE TO UNISTRUT PROVIDED BY OWNER.
5. PROVIDE UNISTRUT ACROSS THE TOP OF THE WELDING BOOTH TO MOUNT FIXTURE AT THE TOP OF THE WELDING BOOTH.

NIC

EXISTING PANEL LP-C1B
EXISTING PANEL LP-C1A
EXISTING PANEL LP-C1
EXISTING DISTRIBUTION PANEL TC1H
EXISTING DISTRIBUTION PANEL TC2H
EXISTING PANEL WPC2
EXISTING PANEL RP-C2
EXISTING PANEL LP-C2
EXISTING DISTRIBUTION PANEL PP4L
EXISTING PANEL LP-C3
EXISTING PANEL RPC3

LEVEL 01 PLAN - LIGHTING - AREA C

1/8" = 1'-0"

NORTH

KEY PLAN

A
B
C

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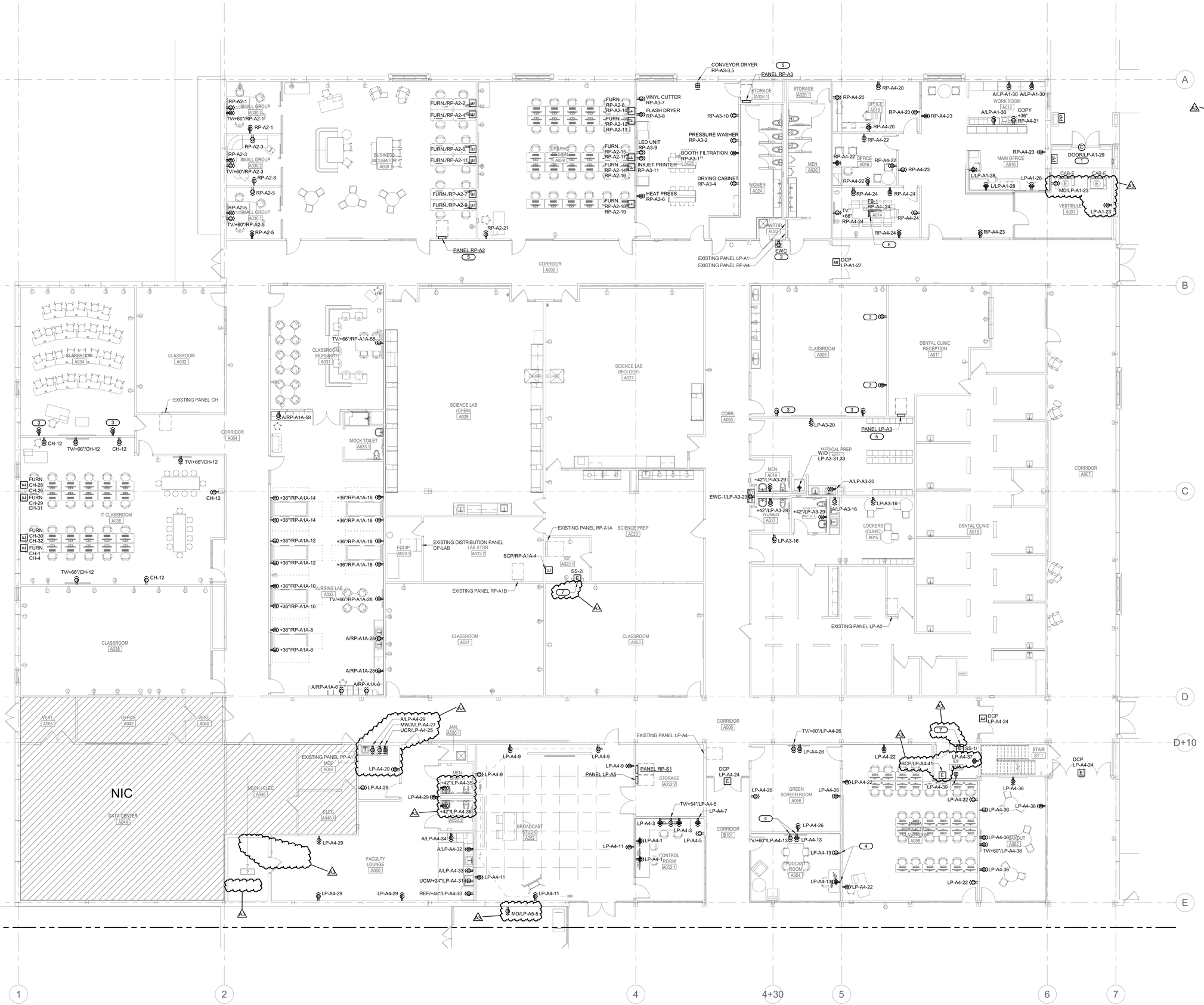
A1	10/15/2024	ADDENDUM 1
A3	11/06/2024	ADDENDUM 3

22-24119-00

LEVEL 01 PLAN - LIGHTING - AREA C

E2.11C

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LEVEL 01 PLAN - POWER - AREA A

1/8" = 1'-0"

NORTH

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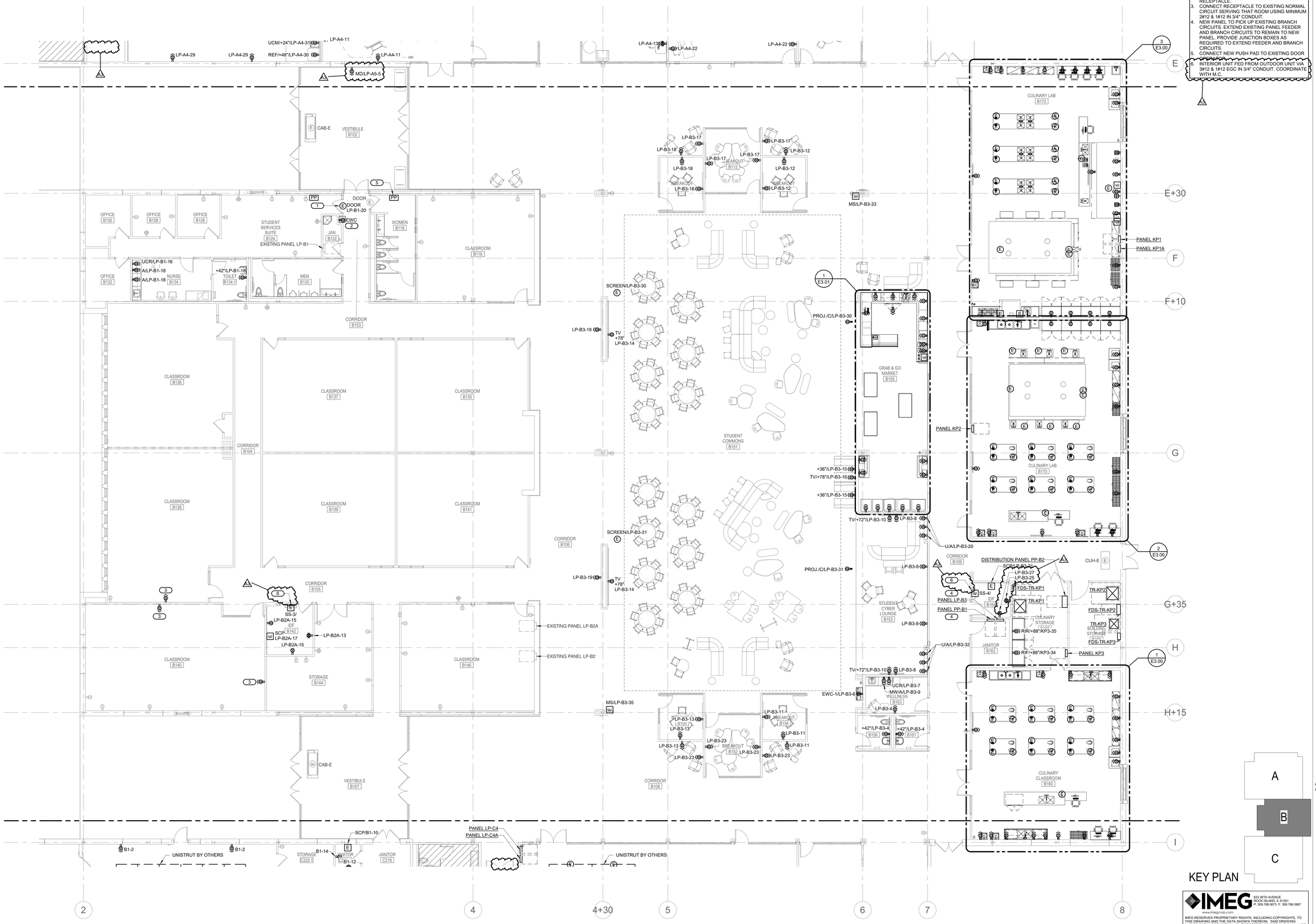
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A1 10/15/2024 ADDENDUM 1
A2 10/24/2024 ADDENDUM 2
A3 11/06/2024 ADDENDUM 3

22-24119-00

LEVEL 01 PLAN - POWER - AREA A

E2.21A

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LEVEL 01 PLAN - POWER - AREA B

1/8" = 1'-0"

NORTH

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A1	10/15/2024	ADDENDUM 1
A3	11/06/2024	ADDENDUM 3

KEY PLAN

22-24119-00

LEVEL 01 PLAN - POWER - AREA B

E2.21B

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SHEET NOTES:

1. COORDINATE FINAL CONNECTION TYPE AND LOCATION TO OWNER FURNISHED EQUIPMENT WITH OWNER PRIOR TO ROUGH-IN.

KEYNOTES:

1. UTILIZE WELDING CIRCUIT SALVAGED FROM DEMOLITION TO FEED NEW CONNECTION.
2. CONNECT RECEPTACLE TO EXISTING NORMAL CIRCUIT SERVING THAT ROOM USING MINIMUM 2#12 & 1#12 IN 3/4" CONDUIT.
3. JUNCTION BOX TO BE MOUNTED TO UNISTRUT PROVIDED BY G.C. DEVICE TO BE FED VIA FLEXIBLE METAL CABLE OR SO CORD.
4. MOUNT CORD REEL TO UNISTRUT PROVIDED BY G.C.
5. MOUNT CORD REEL TO UNISTRUT BELOW ACT CEILING PROVIDED BY G.C.
6. UTILIZE CIRCUIT SALVAGED FROM DEMOLITION TO FEED NEW EQUIPMENT. PROVIDE ADDITIONAL CONDUIT AND WIRE (2#12 & 1#12 EGC IN 3/4" CONDUIT) AS REQUIRED.
7. INSTALL NEW SWITCHBOARD FURNISHD BY OWNER. REUSE SERVICE ENTRANCE AND BRANCH PANEL FEEDERS. REFER TO RISER DIAGRAM.
8. MOUNT SWITCHBOARD ON PLYWOOD BACKBOARD.
9. DROP CORD. MOUNT TO UNISTRUT PROVIDED BY G.C. REFER TO DETAIL 7/E5.00
10. INTERIOR UNIT FED FROM OUTDOOR UNIT VIA 3#12 & 1#12 EGC IN 3/4" CONDUIT. COORDINATE WITH M.C.
11. INSTALL NEW SWITCHBOARD FURNISHED BY OWNER. PROVIDE NEW FEEDER FROM NEW SERVICE SWITCHGEAR. REUSE BRANCH PANEL FEEDERS. REFER TO RISER DIAGRAM.

LEVEL 01 PLAN - POWER - AREA C

1/8" = 1'-0"

NORTH

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A1	10/15/2024	ADDENDUM 1
A2	10/24/2024	ADDENDUM 2
A3	11/06/2024	ADDENDUM 3

KEY PLAN

22-24119-00

LEVEL 01 PLAN - POWER - AREA C

E2.21C

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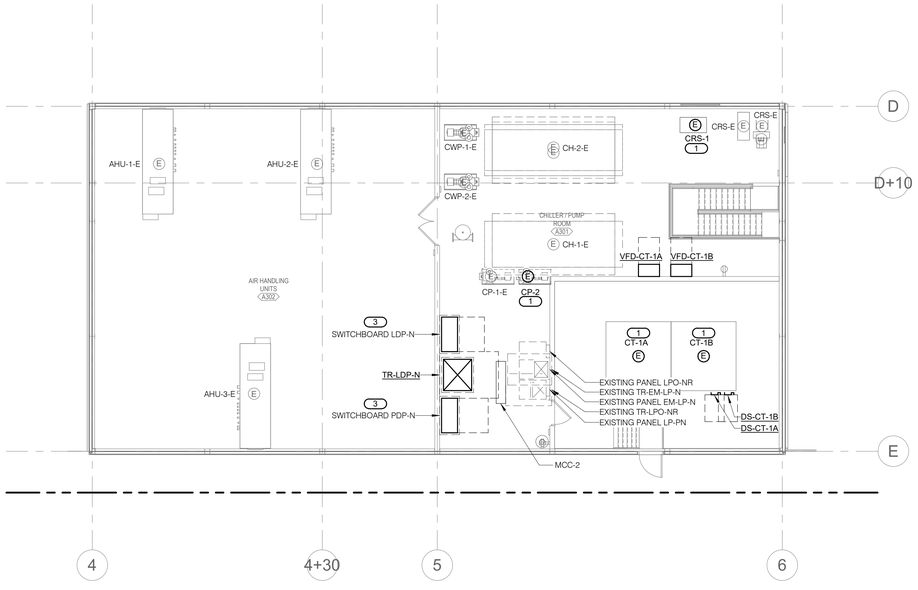
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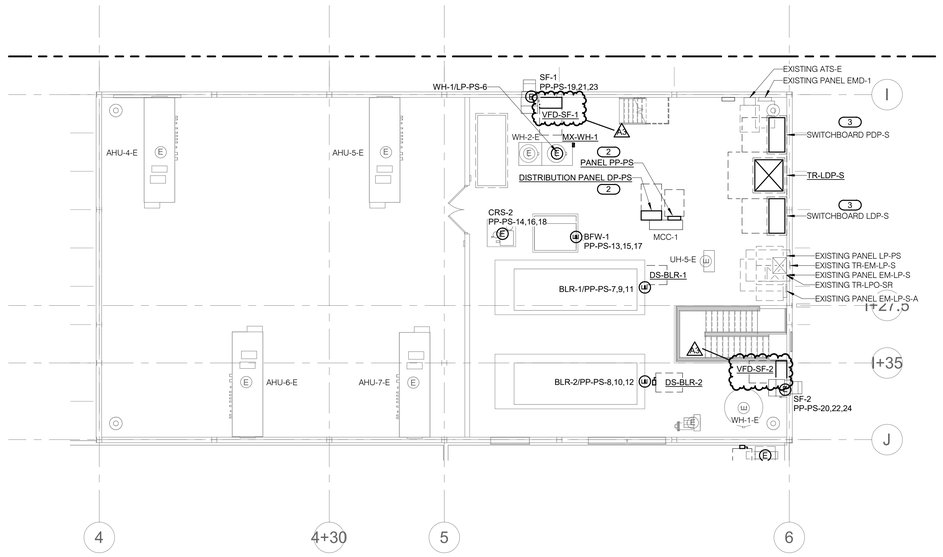
1. UTILIZE EXISTING CIRCUIT SALVAGED FROM DEMOLITION TO FEED NEW EQUIPMENT.
2. PROVIDE UNISTRUT FOR MOUNTING OF NEW PANELS.
3. INSTALL SWITCHBOARD FURNISHED BY OWNER. CONNECT EXISTING FEEDERS TO REMAIN TO NEW SWITCHBOARD.



NORTH

1 LEVEL 02 PLAN - POWER - NORTH PENTHOUSE

1/8" = 1'-0"



NORTH

2 LEVEL 02 PLAN - POWER - SOUTH PENTHOUSE

1/8" = 1'-0"

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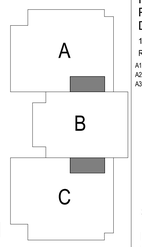
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A1	10/15/2024	ADDENDUM 1
A2	10/24/2024	ADDENDUM 2
A3	11/06/2024	ADDENDUM 3



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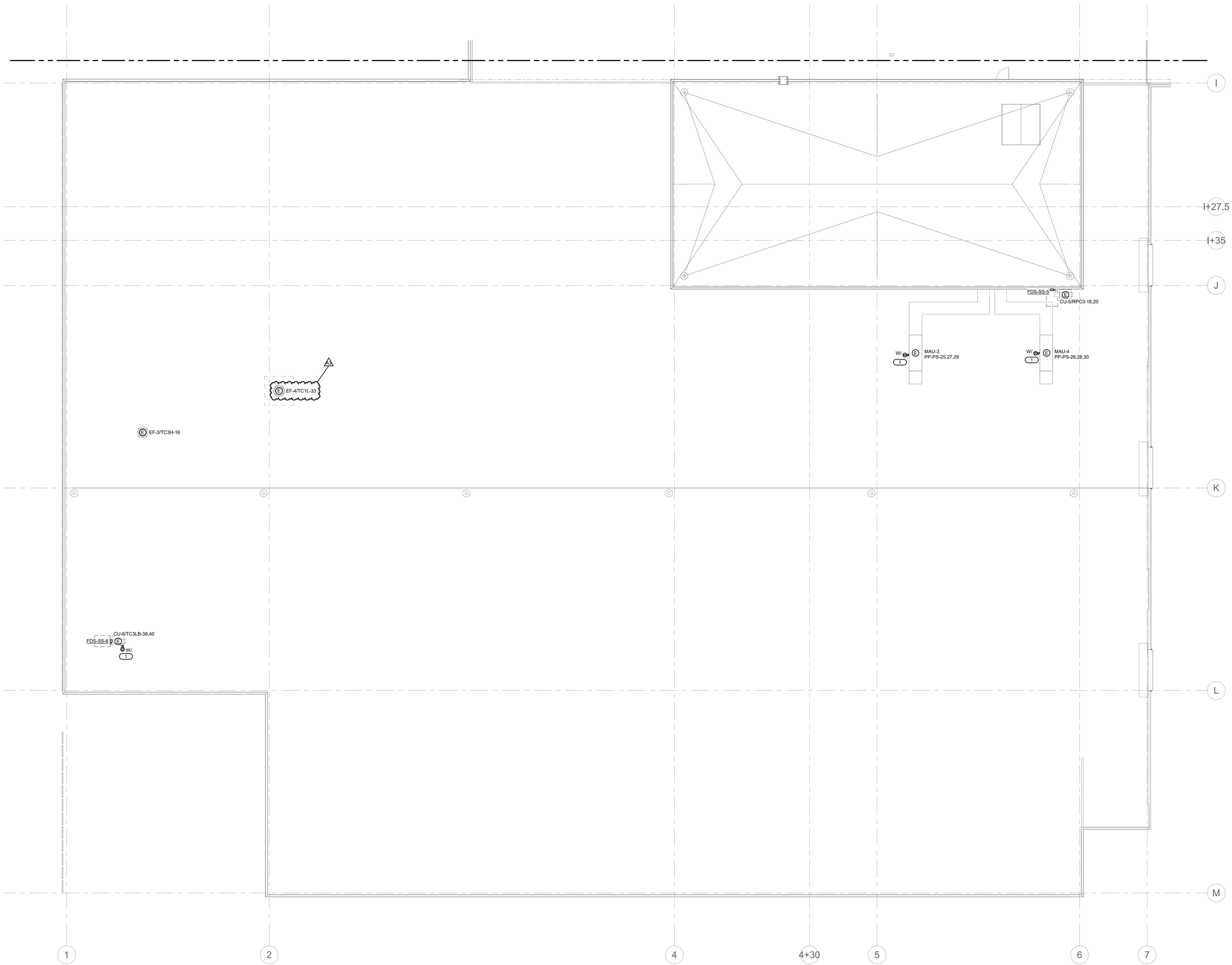
PROJECT #24002060.00

22-24119-00

LEVEL 02 PLAN - POWER - PENTHOUSE

E2.22N

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SHEET NOTES:

1. MAINTENANCE RECEPTACLE(S). COORDINATE MOUNTING ON EQUIPMENT OR CURB WITH EQUIPMENT PROVIDER TO MAINTAIN EQUIPMENT ACCESS. CONCEAL RACEWAY IN EQUIPMENT OR EQUIPMENT CURB (NO ADDITIONAL ROOF PENETRATIONS.

1 ROOF PLAN - ELECTRICAL - AREA C

1/8" = 1'-0"

NORTH

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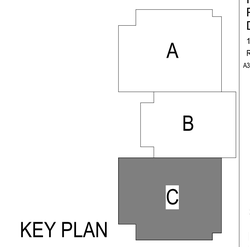
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RPS 205 PROJECT #24444
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10/08/2024

REVISIONS
A3 11/06/2024 ADDENDUM 3

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0 1 2 3
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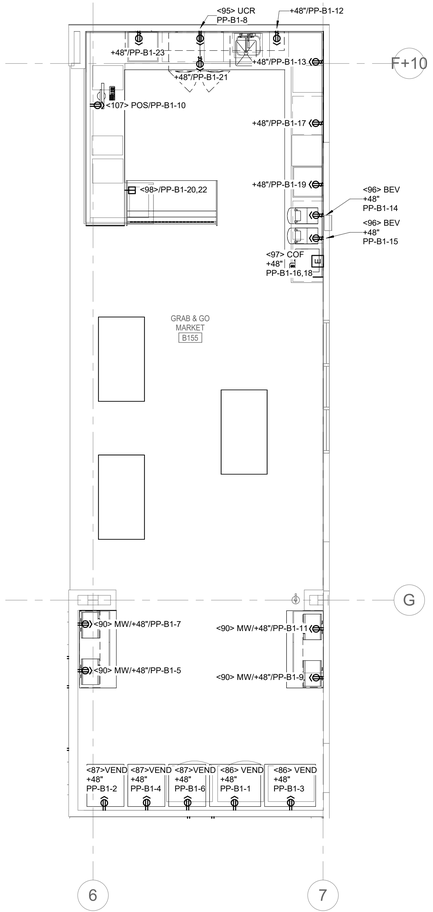
PROJECT #24000060.00

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ROOF PLAN - ELECTRICAL - AREA C

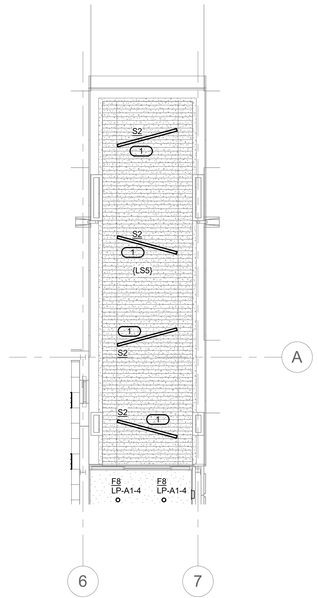
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1 ENLARGED GRAB & GO MARKET PLAN - POWER

1/4" = 1'-0"



2 LEVEL 01 PLAN - LIGHTING - CANOPY

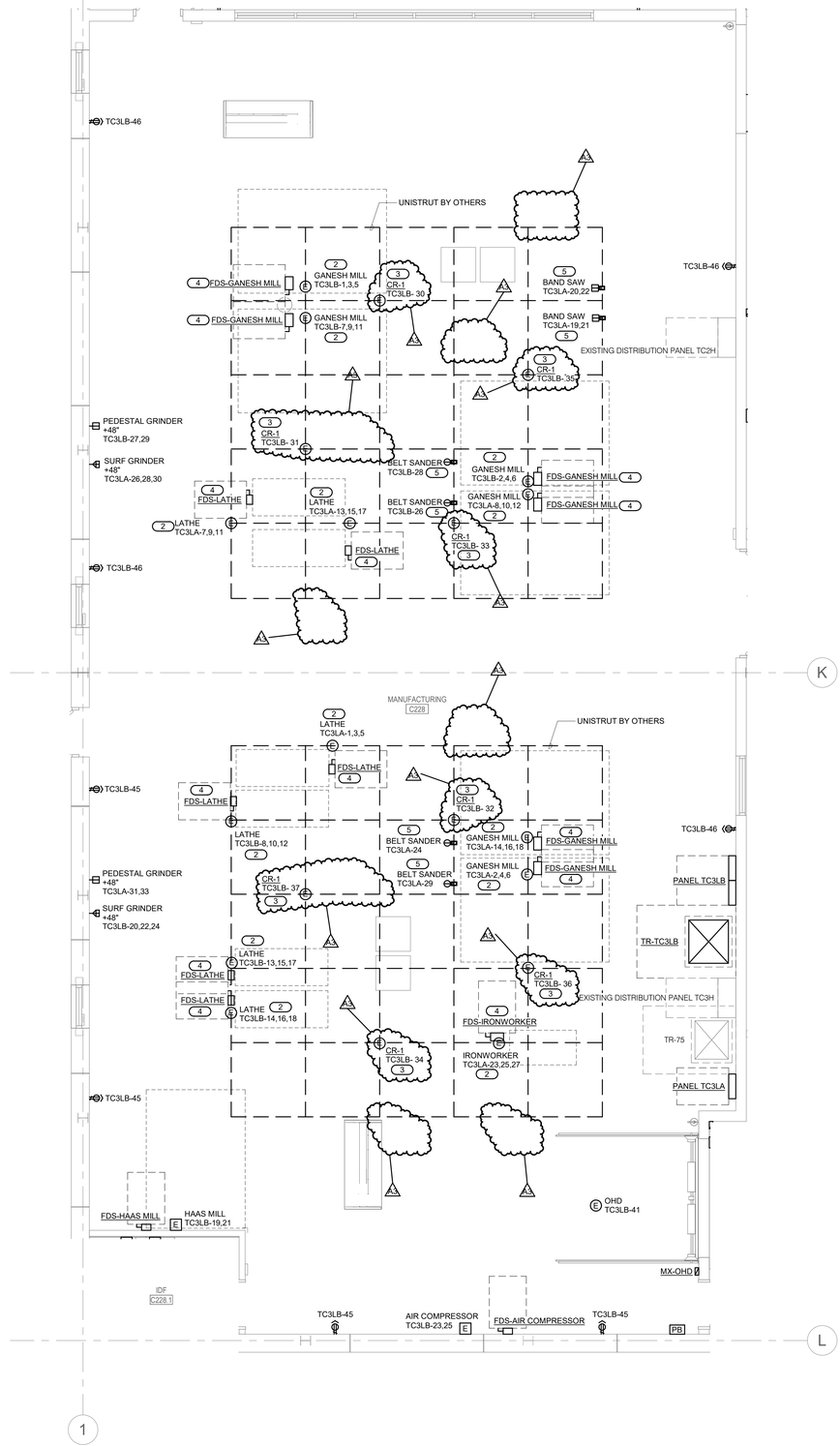
1/8" = 1'-0"

SHEET NOTES:

1. <#> REFERS TO ITEM NUMBER ON FOOD SERVICE DRAWINGS. REFER TO FOOD SERVICE DRAWINGS FOR ADDITIONAL INFORMATION. BASED ON DRAWINGS DATED 09/30/2024.
2. PROVIDE FINAL CONNECTION OF ALL CULINARY EQUIPMENT.
3. COORDINATE FINAL CONNECTION TYPE AND LOCATION TO OWNER FURNISHED EQUIPMENT WITH OWNER PRIOR TO ROUGH-IN.

KEYNOTES:

1. UTILIZE EXISTING LIGHTING CIRCUIT SALVAGED FROM DEMOLITION TO FEED NEW FIXTURE VIA 2#12 & 1#12 EGC IN 3/4" CONDUIT. MAINTAIN EXISTING LIGHTING CONTROLS IN SPACE.
2. JUNCTION BOX TO BE MOUNTED TO UNISTRUT PROVIDED BY G.C. DEVICE TO BE FED VIA FLEXIBLE METAL CABLE OR SO CORD.
3. MOUNT CORD REEL TO UNISTRUT PROVIDED BY G.C.
4. MOUNT DISCONNECT TO EQUIPMENT.
5. DROP CORD. MOUNT TO UNISTRUT PROVIDED BY G.C. REFER TO DETAIL 1/E4.00.



3 ENLARGED PLAN - MANUFACTURING C228 - POWER

1/4" = 1'-0"

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RPS 205 IFB #25-11
RPS 205 PROJECT #2444
4151 San Remo Road
Rockford, IL 61109

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10/08/2024

REVISIONS

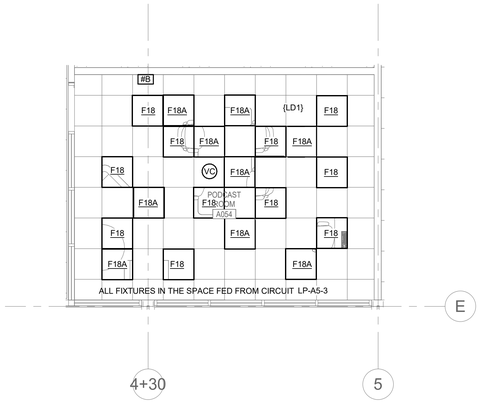
A1	10/15/2024	ADDENDUM 1
A2	10/24/2024	ADDENDUM 2
A3	11/06/2024	ADDENDUM 3

22-24119-00

ELECTRICAL ENLARGED PLANS

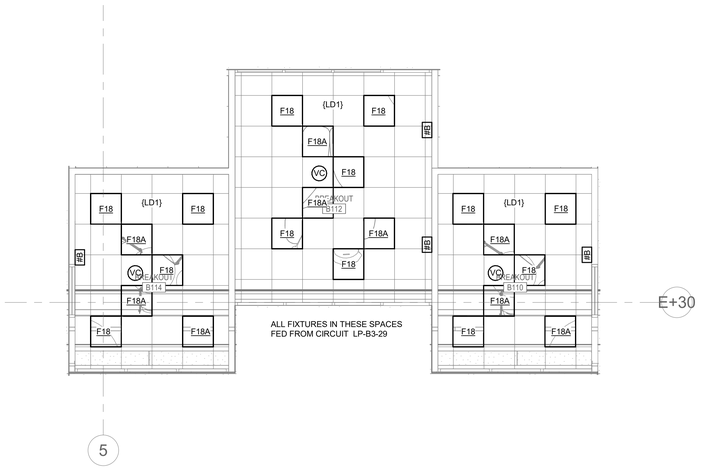
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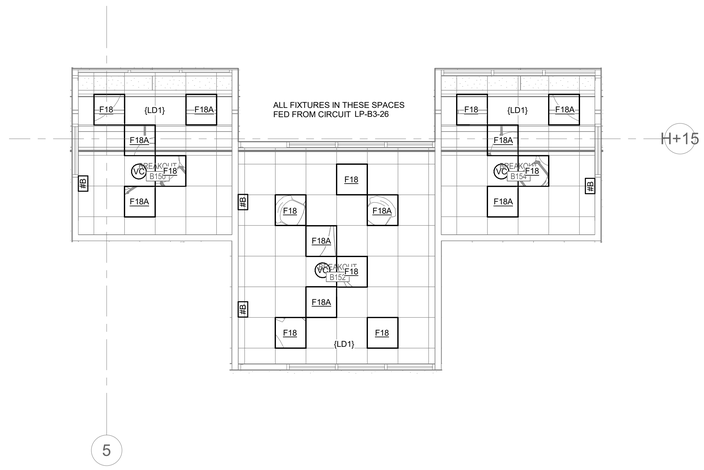
1 ENLARGED PODCAST ROOM A054 - LIGHTING

1/4" = 1'-0"



2 ENLARGED BREAKOUT B110, B112, & B114 - LIGHTING

1/4" = 1'-0"



3 ENLARGED BREAKOUT B150, B152, & B154 - LIGHTING

1/4" = 1'-0"

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A3 11/06/2024 ADDENDUM 3

22-24119-00

ELECTRICAL ENLARGED PLANS

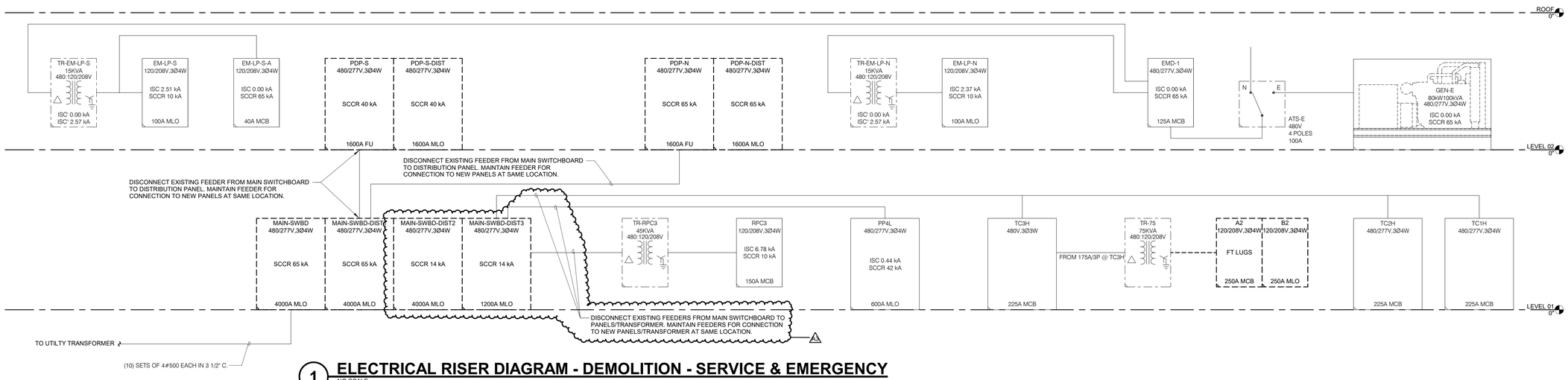
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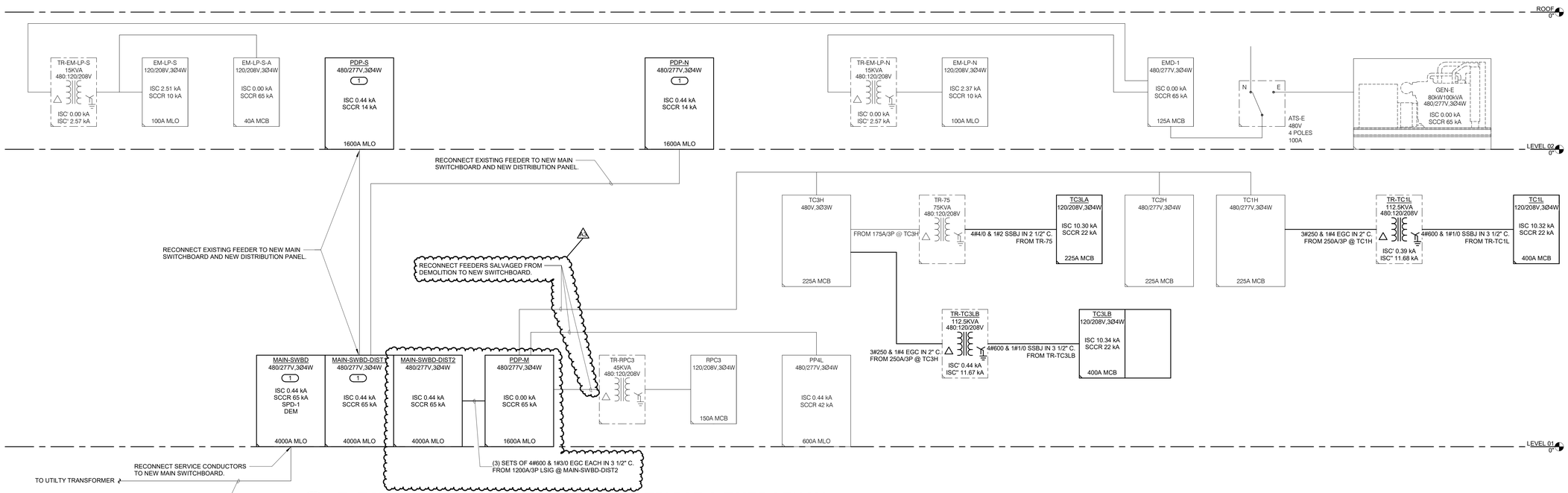
KEYNOTES:

1. EQUIPMENT FURNISHED BY OWNER.



1 ELECTRICAL RISER DIAGRAM - DEMOLITION - SERVICE & EMERGENCY

NO SCALE



2 ELECTRICAL RISER DIAGRAM - NEW - SERVICE & EMERGENCY

NO SCALE

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A1	10/15/2024	ADDENDUM 1
A2	10/24/2024	ADDENDUM 2
A3	11/06/2024	ADDENDUM 3

22-24119-00

ELECTRICAL DIAGRAMS

E5.00

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LIGHTING SEQUENCE OF OPERATION

NOTES:
1. {L##} DENOTES THE LIGHTING SEQUENCE OF OPERATIONS FOR THIS SPACE.
2. {##} PUSH BUTTON REFERS TO SCENE QUANTITY. CONTROL STATION SHALL BE CAPABLE OF [RAISE/LOWER AND] SWITCHING ON/OFF FOR MULTIPLE SCENES AS INDICATED ON SHEETS AND THE LIGHTING SEQUENCE OF OPERATIONS {L##}. COORDINATE QUANTITIES OF BUTTONS FOR CONTROL STATIONS WITH LIGHTING CONTROL MANUFACTURER.
3. a = SWITCH DESIGNATION FOR LIGHTING CONTROL
4. VERIFY AND COORDINATE ALL TIME CLOCK SETTINGS WITH OWNER PRIOR TO FINAL PROGRAMMING.
5. VERIFY AND COORDINATE ALL PUSH BUTTON WALL DEVICES AND QUANTITIES OF INDIVIDUAL BUTTONS WITH SCENES AND ZONES PER LOCATION.

PLAN ID	LIGHTING SWITCHED
{LD1D}	Sequence: Dimmed lights are vacancy controlled in this space. ON: The lights turned on using a wall control. ADJUST: The dimming luminaires are raised / lowered using a controller. Dimmable lights in the daylight zone will continuously adjust to the presence of daylight to maintain 40 foot-candles at +30". OFF: The lights turn off using a wall controller. After the space has been vacant for 15 minutes, the lights will automatically turn off.
{LD1E}	Sequence: Dimmed lights are vacancy controlled in this space. ON: The lights turned on using a wall control. ADJUST: The dimming luminaires are raised / lowered using a controller. OFF: The lights turn off using a wall controller. After the space has been vacant for 15 minutes, the lights will automatically turn off. EMERGENCY: The emergency lights are controlled the same as normal lights. When normal power fails the switched emergency lights turn on. The ALCR UL924 device shall bypass local lighting controls. Local lighting control is resumed when normal power restored.
{LD1}	Sequence: Dimmed lights are vacancy controlled in this space. ON: The lights turned on using a wall control. ADJUST: The dimming luminaires are raised / lowered using a controller. OFF: The lights turn off using a wall controller. After the space has been vacant for 15 minutes, the lights will automatically turn off.
{LD2}	Sequence: Dimmed lights are vacancy controlled in this space. Switched lights are controlled in this space with 3 presets. ON: The dimming lights turned on using a wall control. The switch lights are manual on with preset control station. Presets are: Ambient, Reading, Exam. ADJUST: The dimming luminaires are raised / lowered using a controller. OFF: The lights turn off using a wall controller. After the space has been vacant for 15 minutes, the dimming lights will automatically turn off.
{LS1}	Sequence: Switched lights are controlled in this space. ON: The lights turn on using switches. OFF: The lights turn off using switches.
{LS2}	Sequence: Switched lights are controlled in this space. ON: The lights turned on using switches. OFF: After the space has been vacant for 15 minutes, the lights will automatically turn off.
{LS3}	Sequence: Switched lights are controlled in this space. ON: The lights are turn on by occupancy sensor. OFF: After the space has been vacant for 15 minutes, the lights will automatically turn off.
{LS4D}	Sequence: Switched lights are controlled in this space. ON: The normal lights turn on by occupancy sensors in corridor. Night lights will remain on at all times. ADJUST: Dimmable lights will continuously adjust to the presence of daylight to maintain 15 foot-candles at finished floor. OFF: The normal lights turn off after the space has been vacant for 15 minutes.
{LS4E}	Sequence: Switched lights are controlled in this space. ON: The normal lights turn on by occupancy sensors in corridor. Night lights will remain on at all times. OFF: The normal lights turn off after the space has been vacant for 15 minutes. EMERGENCY: The emergency lights are controlled the same as normal lights. When normal power fails the switched emergency lights turn on. The ALCR UL924 device shall bypass local lighting controls. Local lighting control is resumed when normal power restored
{LS4}	Sequence: Switched lights are controlled in this space. ON: The normal lights turn on by occupancy sensors in corridor. Night lights will remain on at all times. OFF: The normal lights turn off after the space has been vacant for 15 minutes.
{LS5}	Sequence: Switched lights are controlled in this space. ON: The lights turn on via a photo sensor switch. OFF: The lights will automatically turn off by astronomic time switch.
{LS6}	Sequence: Switched lights are schedule controlled in this space. ON: The lights will automatically turn on a maximum of 60 minutes before business opening. OFF: The lights will automatically turn off a maximum of 60 minutes after building closing.

LED LUMINAIRE SCHEDULE

(DESC) DOOR:
- FA - FLAT ALUMINUM
- FS - FLAT STEEL
- RA - REGRESSED ALUMINUM
- RS - REGRESSED STEEL

FINISH:
- PAF - PAINT AFTER FABRICATION
- CFSA - COLOR-FINISH SELECTION BY ARCHITECT

DISTRIBUTION:
- II - ANSI/IES TYPE 2 DISTRIBUTION
- III - ANSI/IES TYPE 3 DISTRIBUTION
- IV - ANSI/IES TYPE 4 DISTRIBUTION
- V - ANSI/IES TYPE 5 DISTRIBUTION

BEAMWIDTH:
- NSP - VERY NARROW SPOT
- SP - SPOT
- MD - MEDIUM
- WD - WIDE
- VWD - VERY WIDE
- WW - WALL WASH

(L/L) LENS/LOUVER:
- A - .125" ACRYLIC
- B - BAFFLE/LOUVER
- C - CLEAR ALZAK
- F - FROSTED ACRYLIC
- G - TEMPERED GLASS
- K - KSH12 .125" ACRYLIC
- K19 - KSH19 .156" ACRYLIC
- M - MATTE DIFFUSE CLEAR
- N - NONE
- P - POLYCARBONATE
- R - HIGH IMPACT DR ACRYLIC
- SS - SEMI-SPECULAR CLEAR
- O - OTHER (SEE DESCRIPTION)
- [DESIGN SPECIFIC BLANKS]

(MTG) MOUNTING:
- CL - CEILING SURFACE
- CV - COVE
- FR - FLANGED RECESSED
- P - PERIMETER
- PL - POLE
- RE - RECESSED
- SP - SUSPENDED
- SU - SURFACE
- UC - UNDER CABINET
- WL - WALL
- O - OTHER (SEE DESCRIPTION)

(WATT) PER: FIX - FIXTURE, FT - FOOT, LAMP

(TYPE) LED
- LED - LIGHT EMITTING DIODE
- TLED - TUBULAR LED LAMP
- OLED - ORGANIC LED
- DLED - DYNAMIC TUNABLE LED
- RGB - COLOR CHANGING LED
- RGBW - COLOR CHANGING + WHITE
- RGBA - COLOR CHANGING + AMBER
- RLED - RETROFIT LED
- WLED - WARM DIM LED

(TYPE) DRIVER:
- 0-10V - 0-10V DIMMING
- DALI - DIGITAL ADDRESSABLE
- DMX - DIGITAL MULTIPLEX
- EB - ELECTRONIC
- ELV - ELECTRONIC LOW VOLTAGE
- EM - EMERGENCY BATTERY
- HL - HIGH/LOW (100%/50%) STEP DIM
- LINE - LINE VOLTAGE DIMMING
- ML - MULTI-LEVEL SWITCHING
- MV - MULTI-VOLTAGE ELECTRONIC
- REM - REMOTE
- O - OTHER (SEE DESCRIPTION)

CATALOG NUMBER SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND CATALOG NUMBER ONLY. THE COMPLETE DESCRIPTION AND THE SPECIFICATION SHALL BE COORDINATED WITH THE CATALOG NUMBER TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE FIRST MANUFACTURER LISTED IS THE BASIS OF DESIGN.

VERIFY AND COORDINATE ALL CEILING TYPES WITH LUMINAIRE MOUNTING AND TRIM REQUIREMENTS PRIOR TO THE RELEASE OF THE LUMINAIRE ORDER.
CONFIRM ALL COLORS AND FINISHES OF ALL LUMINAIRE COMPONENTS WITH ARCHITECT AND INTERIOR DESIGNER PRIOR TO THE RELEASE OF THE LUMINAIRE ORDER.
UNLESS INDICATED ON LIGHTING PLANS OR BELOW, REFER TO ARCHITECTURAL AND INTERIOR DESIGN ELEVATIONS, SECTIONS AND DETAILS FOR ALL SUSPENDED AND WALL MOUNTED LUMINAIRE MOUNTING HEIGHTS.

REFER TO SPECIFICATION SECTIONS LED LIGHTING 26 51 19 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
INTERIOR CORRELATED COLOR TEMPERATURE 4000/4100K, COLOR RENDERING INDEX (CRI) AT OR ABOVE 80, UNLESS NOTED OTHERWISE.
EXTERIOR CORRELATED COLOR TEMPERATURE 4000/4100K, COLOR RENDERING INDEX (CRI) AT OR ABOVE 80, UNLESS NOTED OTHERWISE.

ITEM	DESCRIPTION	L/L	MTG	DIMENSIONS L	W	H	DIA.	WATT ANSI WATTS	PER	LED TYPE	QTY	DELIVERED LUMENS (MIN)	DRIVER VOLTS	TYPE	MANUFACTURER AND MODEL
EX1	SINGLE-FACE EXIT SIGN, WHITE DIE-CAST ALUMINUM BODY, RED LETTERS, UNIVERSAL ARROWS/MOUNTING. VERIFY RECESSED END, BACK OR CEILING MOUNTING AND ARROWS WITH PLANS.	O	CL/WL	1'-0"	2"	10"		4 W	FIX	LED	1	3 WATT LED	120 V	MV	ACUITY LITHONIA LE H.E. WILLIAMS EXIT/CA LIGHTALARMS GALAXY TX SERIES CURRENT DUAL-LITE SE EVENLITE CCDS
EX2	DOUBLE FACED EXIT SIGN, WHITE DIE-CAST ALUMINUM BODY, RED LETTERS, UNIVERSAL ARROWS/MOUNTING. VERIFY RECESSED END, BACK OR CEILING MOUNTING AND ARROWS WITH PLANS.	O	CL	1'-0"	2"	10"		4 W	FIX	LED	1	3 WATT LED	120 V	MV	ACUITY LITHONIA LE H.E. WILLIAMS EXIT/CA LIGHTALARMS GALAXY TX SERIES CURRENT DUAL-LITE SE EVENLITE CCDS
F1	RECESSED TROFFER, STEEL HOUSING, SMOOTH CURVED MATTE ACRYLIC DIFFUSER. WHITE FINISH.	O	RE	4'-0"	2'-0"	3"		23 W	FIX	LED	1	3000	120 V	0-10V	ACUITY LITHONIA 2BLT4 COOPER METALUX CRUZE SB 24CZ CURRENT COLUMBIA LCAT24-S SIGNIFY DAYBRITE FGX
F1A	SIMILAR TO F1 W/ 4800 LUMEN OUTPUT.	O	RE	4'-0"	2'-0"	3"		39 W	FIX	LED	1	4800	120 V	0-10V	REFER TO F1
F1B	SIMILAR TO F1 W/ 7200 LUMEN OUTPUT.	O	RE	4'-0"	2'-0"	3"		60 W	FIX	LED	1	7200	120 V	0-10V	REFER TO F1
F2	RECESSED TROFFER, STEEL HOUSING, SMOOTH CURVED MATTE ACRYLIC DIFFUSER. WHITE FINISH.	O	RE	2'-0"	2'-0"	5 1/2"		17 W	FIX	LED	1	2000	120 V	0-10V	ACUITY LITHONIA 2BLT2 COOPER METALUX CRUZE SB 22CZ CURRENT COLUMBIA LCAT22-S SIGNIFY DAYBRITE FGX
F2A	SIMILAR TO F2 W/ 3300 LUMEN OUTPUT.	O	RE	2'-0"	2'-0"	5 1/2"		27 W	FIX	LED	1	3300	120 V	0-10V	REFER TO F2
F4	ROUND OPEN DOWNLIGHT, 16 GAUGE GALVANIZED STEEL HOUSING, SELF-FLANGED, CLEAR, SPECULAR, 45 DEGREE CUTOFF, LIGHT ENGINE SERVICEABLE FROM BELOW THE CEILING.	N	RE			6"	4"	20 W	FIX	LED	1	2000	120 V	0-10V	ACUITY GOTHAM EVO4 COOPER PORTFOLIO LD4B CURRENT PRESCOLITE LITEISTRY LTR-4RD LIGHTOLIER P4R
F5	INDIRECT/ DIRECT CONTINUOS LINEAR PENDENT, EXTRUDED ALUMINUM HOUSING, SATIN GOLD LOUVER. AIR CRAFT CABLE MOUNTING. LAMBERTIAN INDIRECT OPTIC. 1 CIRCUIT OPERATION. FINISH SELECTION BY ARCHITECT FROM STANDARD FINISHES.	O	SP	10'-0"	8 1/2"	3"		48 W	FIX	LED	1	DIRECT: 1200 INDIRECT: 3000	120 V	0-10V	BETACALCO LELP2P FINELITE HP-2
F6	6" ROUND PENDENT MOUNT CYLINDER, RIGID STEM. INTEGRAL DRIVER. FINISH FOR FIXTURE, CANOPY, STEM AND CORD SELECTED BY ARCHITECT. WIDE BEAM/SPREAD. STEM FINISH TO MATCH FIXTURE FINISH.		SP/CL			11 5/8"	6"	20 W	FIX	LED	1	2000	120 V	0-10V	ACUITY GOTHAM EVO6PC CURRENT PRESCOLITE LTC-6RDW LIGHTOLIER C6
F7	LED LENSED STRIP LIGHT, DIE-FORMED COLD-ROLLED STEEL HOUSING, ROUND FULL FROST LENS. PAF.	O	SP	4'-0"	1'-0"	4 1/4"		35 W	FIX	LED	1	4500	120 V	0-10V	COOPER METALUX SNLED H.E. WILLIAMS 75 LED SERIES ACUITY LITHONIA ZL1D LSI SDL CURRENT COLUMBIA MPS
F7A	SIMILAR TO F7.	O	SP	8'-0"	1'-0"	4 1/4"		70 W	FIX	LED	1	9000	120 V	0-10V	REFER TO F7
F7B	SIMILAR TO F7.	O	SP	4'-0"	1'-0"	4 1/4"		35 W	FIX	LED	1	4500	120 V	0-10V	REFER TO F7
F8	ROUND OPEN DOWNLIGHT, 16 GAUGE GALVANIZED STEEL HOUSING, SELF-FLANGED, CLEAR, SEMI-SPECULAR, 45 DEGREE CUTOFF, LIGHT ENGINE SERVICEABLE FROM BELOW THE CEILING.	N	RE			9 1/2"	6"	15 W	FIX	LED	1	1500	120 V	0-10V	ACUITY GOTHAM EVO6 COOPER PORTFOLIO LD6B CURRENT PRESCOLITE LITEISTRY LTR-6RD LIGHTOLIER P6R
F9	CONTINUOUS LINEAR, ALUMINUM HOUSING, FROSTED ACRYLIC FLUSH LENS, WHITE. SEE DRAWINGS FOR TOTAL REQUIRED LENGTH.	F	RE	<varies>	4"	4"		4 W	FT	LED	1	400	120 V	0-10V	COOPER METALUX SNLED LUMENWERX VIA4R ALW LIGHTPLANE 4R FOCAL POINT SEEM 4 FSM4L
F10	DIRECT CONTINUOUS LINEAR PENDENT, EXTRUDED ALUMINUM HOUSING, FLUSH LENS, LAMBERTIAN OPTIC, AIR CRAFT CABLE MOUNTING, CFSA. SEE DRAWINGS FOR TOTAL REQUIRED LENGTH.	F	SP	<varies>	4"	5"		10 W	FT	LED	1	1000	120 V	0-10V	AXIS BEAM 4 TB4DLED LUMENWERX VIA4PD ALW SUPERPLANE 4 SP4S FOCAL POINT SEEM 4 FSM4LS
F10A	SIMILAR TO F10	F	SP	12'-0"	4"	5"		5 W	FT	LED	1	500	120 V	0-10V	REFER TO F10
F11	SUPER LINEAR, ALUMINUM HOUSING, EXTRUDED ALUMINUM HOUSING, FLUSH LENS, LAMBERTIAN OPTIC, AIR CRAFT CABLE MOUNTING, CFSA. FINISH TO BE SELECTED BY ARCHITECT. SEE DRAWINGS FOR TOTAL REQUIRED LENGTH.	F	SP	<varies>	4"	5"		10 W	FT	LED	1	1000	120 V	0-10V	AXIS BEAM 4 TB4DLED LUMENWERX VIA4PD ALW SUPERPLANE 4 SP4S FOCAL POINT SEEM 4 FSM4LS
F12	LED LOW BAY, ALUMINUM HOUSING, ACRYLIC LENS, CLEAR REFLECTOR, WHITE FINISH.	O	SP			2'-1"	1'-4"	125 W	FIX	LED	1	18,000	120 V	0-10V	ACUITY LITHONIA JCBL COOPER METALUX UHB CURRENT HLI UTILIBAY UTB
F12A	SIMILAR TO F12 W/ 9400 LUMENS.	O	SP			2'-1"	1'-4"	63 W	FIX	LED	1	9,400	120 V	0-10V	REFER TO F12
F13	LED LENSED STRIP LIGHT, DIE-FORMED COLD-ROLLED STEEL HOUSING, ROUND FULL FROST LENS. PAF.	O	CL	4'-0"	3"	4"		35 W	FIX	LED	1	4500	120 V	0-10V	COOPER METALUX SNLED H.E. WILLIAMS 75 LED SERIES ACUITY LITHONIA ZL1D LSI SDL CURRENT COLUMBIA MPS
F13A	SIMILAR TO F13	O	CL	4'-0"	3"	4"		62 W	FIX	LED	1	7000	120 V	0-10V	REFER TO F13
F14	ENCLOSED AND GASKETED INDUSTRIAL WITH MOLDED IN PLACE GASKET, FROSTED LENS, FIBERGLASS HOUSING, STAINLESS STEEL LATCHES.	DR	SU	4'-0"	7"	6"		30 W	FIX	LED	1	4000	120 V	0-10V	COOPER METALUX VAPORITE 4VT2 ACUITY LITHONIA FEM4 LED H.E. WILLIAMS 97 SERIES SIGNIFY DAYBRITE V2 CURRENT COLUMBIA LXFM
F15H	CONTINUOUS LINEAR, ALUMINUM HOUSING, FROSTED ACRYLIC FLUSH LENS, WHITE. SEE DRAWINGS FOR TOTAL REQUIRED LENGTH. HORIZONTAL AND VERTICAL FIXTURES TO BE CONTIGUOUS.	F	RE	12'-11 10\125 6"	2"	3 1/4"		4 W	FIX	LED	1	400	120 V	0-10V	AXIS BEAM 2 B2SQRLED FOCAL POINT FSM2L-FL LUMENWERX VIA2R
F15V	CONTINUOUS VERTICAL LINEAR, ALUMINUM HOUSING, FROSTED ACRYLIC FLUSH LENS, WHITE. SEE DRAWINGS FOR TOTAL REQUIRED LENGTH. HORIZONTAL AND VERTICAL FIXTURES TO BE CONTIGUOUS.	F	WL	4"	3 1/4"	6'-0"		4 W	FIX	LED	1	400	120 V	0-10V	AXIS BEAM 2 B2SQRVLED FOCAL POINT FSM2L-FL LUMENWERX VIA2R
F15VA	SIMILAR TO F15V.	F	WL	4"	3 1/4"	8'-0"		4 W	FIX	LED	1	400	120 V	0-10V	REFER TO F15V
F16	TRACK HEAD, DIE CAST ALUMINUM CONSTRUCTION, INTEGRATED DRIVER, 350 DEGREE HORIZONTAL ROTATION, 90 DEGREE VERTICAL AIMING, PHASE DIMMABLE, CFSA.	O		0"	0"		0"	16 W	FIX	LED	1	2300	120 V	O	ACUITY JUNO T105TL SIGNIFY LIGHTOLIER LWW
F16T	TRACK, LOW PROFILE, SINGLE CIRCUIT, EXTRUDED ALUMINUM CHANNEL, PROVIDE ALL PARTS NECESSARY TO CREATE A COMPLETE AND OPERABLE SYSTEM, PROVIDE WITH [XX] WATT CIRCUIT LIMITER, CFSA							0 W	FIX				120 V		ACUITY JUNO T SERIES SIGNIFY LIGHTOLIER 6000 SERIES
F17	CONTINUOUS LINEAR, ALUMINUM HOUSING, FROSTED ACRYLIC FLUSH LENS, ASSYMETRIC OPTIC, WHITE. SEE DRAWINGS FOR TOTAL REQUIRED LENGTH.	O	RE	<varies>	4"	4"		5 W	FT	LED	1	500	120 V	0-10V	COOPER METALUX SNLED LUMENWERX VIA4R ALW LIGHTPLANE 4R FOCAL POINT SEEM 4 FSM4L
F18	LED STATIC GRID LENSED TROFFER, 20 GAUGE STEEL HOUSING IN MATTE SATIN WHITE, 0.125" THICK ACRYLIC 2" DROP LENS.	O	RE	2'-0"	2'-0"	5"		18 W	FIX	LED	1	1500	120 V	0-10V	FOCAL POINT FNVL
F18A	SIMILAR TO F18 W/ 4" DROP LENS.	O	RE	2'-0"	2'-0"	5"		18 W	FIX	LED	1	1500	120 V	0-10V	REFER TO F18
F19	RECESSED DAYDRADE, ALUMINUM FRAME SATIN WHITE LENS. CONFIGURABLE.	LD	RE	4'-0"	4'-0"	4 1/8"		57 W	FIX	LED	1	7600	120 V	0-10V	ACUITY LITHONIA CPX COOPER COLUMBIA CPX SIGNIFY DAYBRITE CPX
F20	SURFACE MOUNT TROFFER, STEEL HOUSING, SMOOTH CURVED MATTE ACRYLIC DIFFUSER. WHITE FINISH.	O	CL	2'-0"	2'-0"	3 1/2"		27 W	FIX	LED	1	3300	120 V	0-10V	ACUITY LITHONIA 2BLTX2 COOPER METALUX CURRENT COLUMBIA SIGNIFY DAYBRITE FGX
F21	SQUARE OPEN DOWNLIGHT, 16 GAUGE GALVANIZED STEEL HOUSING, SELF-FLANGED, CLEAR, SEMI-SPECULAR, 45 DEGREE CUTOFF, LIGHT ENGINE SERVICEABLE FROM BELOW THE CEILING.	N	RE	4"	4"	0"		6 W	FIX	LED	1	500	120 V	0-10V	ACUITY GOTHAM EVO4SQ COOPER PORTFOLIO LD4B CURRENT PRESCOLITE LITEISTRY LTR-4SQD LIGHTOLIER P4S
F22	HEADWALL LUMINAIRE, ALUMINUM HOUSING, PRISMATIC ACRYLIC SNAP IN LENSES. AMBIENT UPLIGHT AND READING DOWNLIGHT FUNCTIONS. CSFA.	A	WL	4'-0"	4"	8"		73 W	FIX	LED	1	INDIRECT: 3500 DIRECT: 1800	120 V	0-10V	COOPER METALUX SLHLED CURRENT HLI HEALTHCARE EVEXIA AMICO SKYLINE L-SKY
F23	WALL BRACKET, COLD-ROLLED STEEL HOUSING WITH FROSTED ACRYLIC LENS, PAF.	A	WL	4'-0"	2 1/2"	3"		31 W	FIX	LED	1	4000	120 V	0-10V	SIGNIFY DAYBRITE FLUXSTREAM FSS ACUITY LITHONIA WL4 CURRENT COLUMBIA MPS COOPER METALUX SWLED

LED LUMINAIRE SCHEDULE

(DESC) DOOR:
- FA - FLAT ALUMINUM
- FS - FLAT STEEL
- RA - REGRESSED ALUMINUM
- RS - REGRESSED STEEL

FINISH:
- PAF - PAINT AFTER FABRICATION
- CFSA - COLOR-FINISH SELECTION BY ARCHITECT

DISTRIBUTION:
- II - ANSI/IES TYPE 2 DISTRIBUTION
- III - ANSI/IES TYPE 3 DISTRIBUTION
- IV - ANSI/IES TYPE 4 DISTRIBUTION
- V - ANSI/IES TYPE 5 DISTRIBUTION

BEAMWIDTH:
- NSP - VERY NARROW SPOT
- SP - SPOT
- MD - MEDIUM
- WD - WIDE
- VWD - VERY WIDE
- WW - WALL WASH

(L/L) LENS/LOUVER:
- A - .125" ACRYLIC
- B - BAFFLE/LOUVER
- C - CLEAR ALZAK
- F - FROSTED ACRYLIC
- G - TEMPERED GLASS
- K - KSH12 .125" ACRYLIC
- K19 - KSH19 .156" ACRYLIC
- M - MATTE DIFFUSE CLEAR
- N - NONE
- P - POLYCARBONATE
- R - HIGH IMPACT DR ACRYLIC
- SS - SEMI-SPECULAR CLEAR
- O - OTHER (SEE DESCRIPTION)
- [DESIGN SPECIFIC BLANKS]

(MTG) MOUNTING:
- CL - CEILING SURFACE
- CV - COVE
- FR - FLANGED RECESSED
- P - PERIMETER
- PL - POLE
- RE - RECESSED
- SP - SUSPENDED
- SU - SURFACE
- UC - UNDER CABINET
- WL - WALL
- O - OTHER (SEE DESCRIPTION)

(WATT) PER: FIX - FIXTURE, FT - FOOT, LAMP

(TYPE) LED
- LED - LIGHT EMITTING DIODE
- TLED - TUBULAR LED LAMP
- OLED - ORGANIC LED
- DLED - DYNAMIC TUNABLE LED
- RGB - COLOR CHANGING LED
- RGBW - COLOR CHANGING + WHITE
- RGBA - COLOR CHANGING + AMBER
- RLED - RETROFIT LED
- WLED - WARM DIM LED

(TYPE) DRIVER:
- 0-10V - 0-10V DIMMING
- DALI - DIGITAL ADDRESSABLE
- DMX - DIGITAL MULTIPLEX
- EB - ELECTRONIC
- ELV - ELECTRONIC LOW VOLTAGE
- EM - EMERGENCY BATTERY
- HL - HIGH/LOW (100%/50%) STEP DIM
- LINE - LINE VOLTAGE DIMMING
- ML - MULTI-LEVEL SWITCHING
- MV - MULTI-VOLTAGE ELECTRONIC
- REM - REMOTE
- O - OTHER (SEE DESCRIPTION)

CATALOG NUMBER SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND CATALOG NUMBER ONLY. THE COMPLETE DESCRIPTION AND THE SPECIFICATION SHALL BE COORDINATED WITH THE CATALOG NUMBER TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE FIRST MANUFACTURER LISTED IS THE BASIS OF DESIGN.

VERIFY AND COORDINATE ALL CEILING TYPES WITH LUMINAIRE MOUNTING AND TRIM REQUIREMENTS PRIOR TO THE RELEASE OF THE LUMINAIRE ORDER.
CONFIRM ALL COLORS AND FINISHES OF ALL LUMINAIRE COMPONENTS WITH ARCHITECT AND INTERIOR DESIGNER PRIOR TO THE RELEASE OF THE LUMINAIRE ORDER.
UNLESS INDICATED ON LIGHTING PLANS OR BELOW, REFER TO ARCHITECTURAL AND INTERIOR DESIGN ELEVATIONS, SECTIONS AND DETAILS FOR ALL SUSPENDED AND WALL MOUNTED LUMINAIRE MOUNTING HEIGHTS.

REFER TO SPECIFICATION SECTIONS LED LIGHTING 26 51 19 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
INTERIOR CORRELATED COLOR TEMPERATURE 4000/4100K, COLOR RENDERING INDEX (CRI) AT OR ABOVE 80, UNLESS NOTED OTHERWISE.
EXTERIOR CORRELATED COLOR TEMPERATURE 4000/4100K, COLOR RENDERING INDEX (CRI) AT OR ABOVE 80, UNLESS NOTED OTHERWISE.

ITEM	DESCRIPTION	L/L	MTG	DIMENSIONS L	W	H	DIA.	WATT ANSI WATTS	PER	LED TYPE	QTY	DELIVERED LUMENS (MIN)	DRIVER VOLTS	TYPE	MANUFACTURER AND MODEL
F24	DIRECT CONTINUOUS LINEAR PATTERN PENDENT, EXTRUDED ALUMINUM HOUSING, FLUSH LENS, LAMBERTIAN OPTIC, AIR CRAFT CABLE MOUNTING, CFSA. CUSTOM COLOR SELECTION BY ARCHITECT. SEE DRAWINGS FOR TOTAL REQUIRED LENGTH AND SHAPE.	F	SP	<varies>	4"	2"		4 W	FT	LED	1	375	120 V	0-10V	LUMENWERX VIA4PD AXIS BEAM 4 TB4DLED ALW SUPERPLANE 4 SP4S FOCAL POINT SEEM 4 FSM4LS
F24A	INDIRECT CONTINUOUS LINEAR PATTERN PENDENT, EXTRUDED ALUMINUM HOUSING, FLUSH LENS, BATWING OPTIC, AIR CRAFT CABLE MOUNTING, CFSA. CUSTOM COLOR SELECTION BY ARCHITECT. SEE DRAWINGS FOR TOTAL REQUIRED LENGTH AND SHAPE.	F	SP	4'-0"	4"	2"		4 W	FT	LED	1	375	120 V	0-10V	LUMENWERX VIA4PI AXIS BEAM 4 TB4ILED ALW SUPERPLANE 4 SP4S FOCAL POINT SEEM 4 FSM4LS
F25	TAPE LIGHT AND CHANNEL, ALUMINUM EXTRUSION, CLEAR LENS, SILVER FINISH, OPERABLE FROM -40 DEGREES CELSIUS TO 48 DEGREES CELSIUS. PROVIDE WITH MOUNTING CLIPS AND [XX] WATT DRIVERS; CONTRACTOR TO VERIFY QUANTITY. REFER TO PLANS FOR EXACT LENGTHS.	O	SU	<varies>	1"	1"		2 W	FT	LED	1	200	120 V	0-10V	LUMINII KXL GENLED ACOLYTE A3S
F26	CONTINUOUS LINEAR, ALUMINUM HOUSING, FROSTED ACRYLIC FLUSH LENS WITH GRAZE OPTIC, WHITE. SEE DRAWINGS FOR TOTAL REQUIRED LENGTH.	O	RE	16'-0"	2"	2"		6 W	FT	LED	1	500	120 V	0-10V	COOPER METALUX SNLED LUMENWERX VIA2R ALW LIGHTPLANE 2R FOCAL POINT SEEM 2 FSM4L
S1	WALL PACK, GLASS LENS, DIE-CAST ALUMINUM HOUSING, GASKETED, VISUAL COMFORT FORWARD THROW DISTRIBUTION. ZERO UPLIGHT. IP65 RATED. SUITABLE FOR OPERATION IN TEMPERATURES BETWEEN -30 DEGREE CELSIUS AND 40 DEGREE CELSIUS, FINISH SELECTION BY ARCHITECT.	G	WL	1'-4"	10"	10 1/2"		11 W	FIX	LED	1	1500	120 V	0-10V	ACUITY LITHONIA WDGE2 CURRENT BEACON VPW1 GARDCO GWS
S2	CONTINUOUS LINEAR, ALUMINUM HOUSING, FROSTED ACRYLIC FLUSH LENS, ARCHITECT TO SELECT FINISH. IP66 RATED.	O	CL	8'-0"	4"	4"		4 W	FT	LED	1	400	120 V	0-10V	AXIS B2SQRLED EXT
S3	WALL BRACKET, EXTRUDED ALUMINUM HOUSING, CFSA. MARINE GRADE 316 STAINLESS STEEL HARDWARE. IP65 AND IK07 RATED. FINISH FOR FIXTURE SELECTED BY ARCHITECT.	G	WL	4'-0"	5 1/8"	3"		72 W	FIX	LED	1	4900	120 V	0-10V	LIGMAN UGN-30081
S3A	WALL BRACKET, EXTRUDED ALUMINUM HOUSING, CFSA. MARINE GRADE 316 STAINLESS STEEL HARDWARE. IP65 AND IK07 RATED. FINISH FOR FIXTURE SELECTED BY ARCHITECT.	G	WL	2'-0"	5 1/8"	3"		72 W	FIX	LED	1	4900	120 V	0-10V	LIGMAN UGN-30041
S4	TAPE LIGHT AND CHANNEL, ALUMINUM EXTRUSION, FROSTED LENS, SATIN ALUMINUM FINISH, OPERABLE FROM -40 DEGREES CELSIUS TO 48 DEGREES CELSIUS, IP67 RATED. PROVIDE WITH MOUNTING CLIPS AND [XX] WATT DRIVERS; CONTRACTOR TO VERIFY QUANTITY. REFER TO PLANS FOR EXACT LENGTHS.	O	O	19'-0"	3/4"	5/8"		2 W	FT	LED	1	50	120 V	0-10V	QTL LIGHTING TOSSW KKDC MG

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Illinois Design Firm Registration #184008976-0014

REF. SCALE IN INCHES 0 1 2 3

PROJECT #24002060.00

DLR GROUP
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- NOT FOR CONSTRUCTION -

IMEG
ERIKSSON ENGINEERING ASSOCIATES
ROCKFORD PUBLIC SCHOOLS

COLLEGE & CAREER EDUCATION CENTER

ROCKFORD PUBLIC SCHOOLS - DISTRICT 205
RPS 205 IFB #25-11
RPS 205 PROJECT #2444
4151 Samuelson Road
Rockford, IL 61109

ISSUED FOR PERMIT - HEALTH DEPARTMENT
10/08/2024

REVISIONS
A1 10/15/2024 ADDENDUM 1
A3 11/06/2024 ADDENDUM 3

22-24119-00

ELECTRICAL SCHEDULES

E6.00

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TRANSFORMER SCHEDULE

TYPE:			ACCESSORIES & OPTIONS
K1 - DOE 2016 DRY TYPE		AUT - AUTOTRANSFORMER	AL - ALUMINUM WINDINGS
K4 - K4 RATED DRY TYPE		BB - BUCK BOOST	CU - COPPER WINDINGS
K13 - K13 RATED DRY TYPE		LIQ - LIQUID FILLED	RS - EPOXY RESIN ENCAPSULATED
HM - HARMONIC MITIGATING			FL - FILTERED
PE - NEMA PREMIUM EFFICIENCY			NV - NON-VENTILATED
			NL - 200% RATED NEUTRAL
			EL - ELECTROSTATIC SHIELD

ITEM	KVA RATING	TYPE	ENCLOSURE	MAX. TEMP. RISE C.	PRIMARY VOLTS	PRIMARY PH	SECONDARY VOLTS	SECONDARY PH	REQUIRED ACCESSORIES & OPTIONS	COMMENTS
TR-KP1	112.5 kVA	K-1	NEMA 1	115	480	3	120/208	3	AL	
TR-KP2	112.5 kVA	K-1	NEMA 1	115	480	3	120/208	3	AL	
TR-KP3	45 kVA	K-1	NEMA 1	115	480	3	120/208	3	AL	
TR-LDP-N	500 kVA	K-1	NEMA 1	115	480	3	120/208	3	AL	
TR-LDP-S	500 kVA	K-1	NEMA 1	115	480	3	120/208	3	AL	
TR-TC1L	112.5 kVA	K-1	NEMA 1	115	480	3	120/208	3	AL	
TR-TC3LB	112.5 kVA	K-1	NEMA 1	115	480	3	120/208	3	AL	

VARIABLE FREQUENCY DRIVE SCHEDULE

STARTER TYPE:	ACCESSORIES & OPTIONS (REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION):	
PWM - PULSE WIDTH MODULATED	SC - SHIELDED VFD CABLE	RSS - REMOTE START-STOP, DRIVE RUN, FAULT TRIP
(6,12,18 PULSE PWM REQUIRED)	LPF - LEADING POWER FACTOR MANAGEMENT	SA - STANDARD ACCESSORIES FOR ALL DRIVES
AFE - ACTIVE FRONT END / ULTRA	DB - DYNAMIC BRAKING	(INCLUDES * ITEMS)
LOW HARMONIC (REQUIRED)	PHF - PASSIVE HARMONIC FILTER	* MANUAL SPEED ADJUSTMENT
LINE DISCONNECT:	AHF - ACTIVE HARMONIC FILTER	* ELECTRONIC THERMAL OVERLOADS
DS - DISCONNECT SWITCH	CA - TWO CONVERTIBLE AUXILIARY CONTACTS	* CONTROL TRANSFORMER, FUSED, 120V
FDS - FUSED DISCONNECT SWITCH	TO - MELTING THERMAL OVERLOADS	* HAND-OFF-AUTO DOOR SWITCH
CB - CIRCUIT BREAKER	MMO - MULTIPLE MOTOR OVERLOADS	* SKIP FREQUENCY CAPABILITY
	FCH - FORCED COOLING / HEATING	* HARMONIC DISTORTION PERFORMANCE CRITERIA
		REFER TO SPECIFICATIONS

ITEM	LINE RISC	DRIVE BYPASS	SCCR	CIRCUIT VOLTAGE	POLES	DRIVE HP RATING	DRIVE TYPE	DRIVE TORQUE TYPE	ENCLOSURE	REQUIRED ACCESSORIES & OPTIONS	COMMENTS
VFD-SF-2	FDS	NONE	100 kA	480 V	3	3	PWM	VARIABLE	NEMA 1	SA	
VFD-SF-1	FDS	NONE	100 kA	480 V	3	3	PWM	VARIABLE	NEMA 1	SA	
VFD-CT-1	FDS	NONE	100 kA	480 V	3	20	PWM	VARIABLE	NEMA 1	SA	
VFD-CT-1B	FDS	NONE	100 kA	480 V	3	20	PWM	VARIABLE	NEMA 1	SA	

ELECTRICAL CONNECTION SCHEDULE

	ITEM	LOCATION	VOLTAGE	LOAD CLASS.	MOTOR	MOTORS QTY @ HP	MOTORS QTY @ HP	MOTORS QTY @ HP	ELECTRIC HEATING ELEMENT (KW)	APPARENT LOAD	FLA	MCA	MOCP	OCPD	REQ EMER	CIRCUIT NUMBER	WIRE AND RACEWAY	ISC	SCCR	DISCONNECT BY	DISCONNECT TYPE	CONTROLLER / STARTER BY	CONTROLLER / STARTER TYPE	COMMENTS
	<27> HOOD	CULINARY LAB B170	120 V, 1Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					
	<53> HOOD	CULINARY LAB B172	120 V, 1Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					
	CP-2	CHILLER / PUMP ROOM A301	480 V, 3Ø	Power	Yes	1 @ 15	0 - 0	0 - 0	0	17.46 kVA	21 A	26.3 A	40 A	0 A	No			0 A	0 A	E.C.	N.F.	E.C.	FV	FED FROM EIXSTING CIRCUIT.
	CRS-1	CHILLER / PUMP ROOM A301	480 V, 3Ø	Power	Yes	2 @ 0.5	0 - 0	0 - 0	0	1.83 kVA	2.2 A	2.5 A	15 A	0 A	No			0 A	5,000 A	MFR	FUSED	MFR		FED FROM EIXSTING CIRCUIT.
	CT-1A		480 V, 3Ø	HVAC Cooling Only	Yes	1 @ 20	0 - 0	0 - 0	0	22.45 kVA	27 A	33.8 A	50 A	0 A	No			0 A	0 A	EC	F	EC	VFD	FED FROM EIXSTING CIRCUIT.
	CT-1B		480 V, 3Ø	HVAC Cooling Only	Yes	1 @ 20	0 - 0	0 - 0	0	22.45 kVA	27 A	33.8 A	50 A	0 A	No			0 A	0 A	EC	F	EC	VFD	FED FROM EIXSTING CIRCUIT.
	HOOD-3	CULINARY LAB B172	0 V, 1Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					
	OHD	AUTOMOTIVE LAB C213	120 V, 1Ø	Power	Yes	1 @ 0.75	0 - 0	0 - 0	0	1.66 kVA	13.8 A	17.3 A	25 A	0 A	No			713.8 A	0 A					FED FROM EXISTING CIRCUIT.
	SIGN		120 V, 1Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					FED FROM EXISTING CIRCUIT.
	SS-1	IDF A060	208 V, 1Ø	HVAC	No	0 - 0	0 - 0	0 - 0	0	3.33 kVA	0 A	16 A	25 A	0 A	No			0 A	5,000 A	E.C.	NF	E.C.		FED FROM EXTERIOR UNIT.
	SS-2	IT A023.1	208 V, 1Ø	HVAC	No	0 - 0	0 - 0	0 - 0	0	3.33 kVA	0 A	16 A	25 A	0 A	No			0 A	5,000 A	E.C.	NF	E.C.		FED FROM EXTERIOR UNIT.
	SS-3	IT B142	208 V, 1Ø	HVAC	No	0 - 0	0 - 0	0 - 0	0	3.33 kVA	0 A	16 A	25 A	0 A	No			0 A	5,000 A	E.C.	NF	E.C.		FED FROM EXTERIOR UNIT.
	SS-4	IDF B164	208 V, 1Ø	HVAC	No	0 - 0	0 - 0	0 - 0	0	3.33 kVA	0 A	16 A	25 A	0 A	No			0 A	5,000 A	E.C.	NF	E.C.		FED FROM EXTERIOR UNIT.
	SS-5	IDF C245	208 V, 1Ø	HVAC	No	0 - 0	0 - 0	0 - 0	0	3.33 kVA	0 A	16 A	25 A	0 A	No			0 A	5,000 A	E.C.	NF	E.C.		FED FROM EXTERIOR UNIT.
	SS-6	IDF C228.1	208 V, 1Ø	HVAC	No	0 - 0	0 - 0	0 - 0	0	3.33 kVA	0 A	16 A	25 A	0 A	No			0 A	5,000 A	E.C.	NF	E.C.		FED FROM EXTERIOR UNIT.
	WELDER	WELDING C231	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					FED FROM EXISTING CIRCUIT.
	WELDER	WELDING C231	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					FED FROM EXISTING CIRCUIT.
	WELDER	WELDING C231	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					FED FROM EXISTING CIRCUIT.
	WELDER	WELDING C231	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					FED FROM EXISTING CIRCUIT.
	WELDER	WELDING C231	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					FED FROM EXISTING CIRCUIT.
	WELDER	WELDING C231	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					FED FROM EXISTING CIRCUIT.
	WELDER	WELDING C231	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					FED FROM EXISTING CIRCUIT.
	WELDER	WELDING C231	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					FED FROM EXISTING CIRCUIT.
	WELDER	WELDING C231	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					FED FROM EXISTING CIRCUIT.
	WELDER	WELDING C231	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					FED FROM EXISTING CIRCUIT.
	WELDER	WELDING C231	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					FED FROM EXISTING CIRCUIT.
	WELDER	WELDING C231	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					FED FROM EXISTING CIRCUIT.
	WELDER	WELDING C231	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					FED FROM EXISTING CIRCUIT.
	WELDER	WELDING C231	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	0 A	No			0 A	0 A					FED FROM EXISTING CIRCUIT.
A1																								
	FURN.	CAD LAB C224	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.20 kVA	0 A	0 A	15 A	20 A	No	2	2#12 & 1#12 EGC IN 3/4" C.	447.8 A	0 A					
	FURN.	CAD LAB C224	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.20 kVA	0 A	0 A	15 A	20 A	No	6	2#12 & 1#12 EGC IN 3/4" C.	464.6 A	0 A					
	FURN.	CAD LAB C224	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.20 kVA	0 A	0 A	15 A	20 A	No	10	2#12 & 1#12 EGC IN 3/4" C.	449.9 A	0 A					
	FURN.	CAD LAB C224	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.20 kVA	0 A	0 A	15 A	20 A	No	14	2#12 & 1#12 EGC IN 3/4" C.	434 A	0 A					
	FURN.	CAD LAB C224	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.20 kVA	0 A	0 A	15 A	20 A	No	29	2#12 & 1#12 EGC IN 3/4" C.	383.7 A	0 A					
B1																								
	SCP	IT CLOS. C218.1	120 V, 1Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.50 kVA	0 A	0 A	15 A	20 A	No	10	2#12 & 1#12 EGC IN 3/4" C.	331 A	0 A					
CH																								
	FURN.	IT CLASSROOM A036	120 V, 1Ø	Power	No	0 - 0	0 - 0	0 - 0	0	1.80 kVA	0 A	0 A	20 A	20 A	No	30	2#10 & 1#10 EGC IN 3/4" C.	0 A	0 A					
	FURN.	IT CLASSROOM A036	120 V, 1Ø	Power	No	0 - 0	0 - 0	0 - 0	0	1.80 kVA	0 A	0 A	20 A	20 A	No	1	2#10 & 1#10 EGC IN 3/4" C.	0 A	0 A					
	FURN.	IT CLASSROOM A036	120 V, 1Ø	Power	No	0 - 0	0 - 0	0 - 0	0	1.80 kVA	0 A	0 A	20 A	20 A	No	28	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	FURN.	IT CLASSROOM A036	120 V, 1Ø	Power	No	0 - 0	0 - 0	0 - 0	0	1.80 kVA	0 A	0 A	20 A	20 A	No	29	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
DP-PS																								
	MAU-1		480 V, 3Ø	HVAC	Yes	0 - 0	0 - 0	0 - 0	0	102.76 kVA	0 A	123.6 A	125 A	125 A	No	1	3#1 & 1#6 EGC IN 1 1/4" C.	414.9 A	0 A	MFR		MFR	VFD	
	MAU-2		480 V, 3Ø	HVAC	Yes	0 - 0	0 - 0	0 - 0	0	82.31 kVA	0 A	99 A	125 A	125 A	No	2	3#1 & 1#6 EGC IN 1 1/4" C.	415.5 A	0 A	MFR		MFR	VFD	
KP1																								
	<45>	CULINARY LAB B172	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	2.38 kVA	6.6 A	0 A	0 A	15 A	No	5,7,9	3#12 & 1#12 EGC IN 3/4" C.	969 A	0 A					
	<46>	CULINARY LAB B172	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	18.91 kVA	52.5 A	0 A	0 A	70 A	No	6,8,10	3#4 & 1#8 EGC IN 1" C.	3,751.5 A	0 A					
	<54>	CULINARY LAB B172	120 V, 1Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	20 A	No	41		0 A	0 A					
	<55> UDS	CULINARY LAB B172	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	18.01 kVA	50 A	0 A	0 A	70 A	No	35,37,39	3#4 & 1#8 EGC IN 1" C.	4,800.9 A	0 A					
	<62>	CULINARY LAB B172	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	20 A	No	22	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<62>	CULINARY LAB B172	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	20 A	No	17	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<62>	CULINARY LAB B172	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	20 A	No	24	2#10 & 1#10 EGC IN 3/4" C.	0 A	0 A					
	<62>	CULINARY LAB B172	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	20 A	No	19	2#10 & 1#10 EGC IN 3/4" C.	0 A	0 A					
	<62>	CULINARY LAB B172	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	20 A	No	20	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<62>	CULINARY LAB B172	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	20 A	No	18	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<62>	CULINARY LAB B172	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	20 A	No	13	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<62>	CULINARY LAB B172	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	20 A	No	15	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<62>	CULINARY LAB B172	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	20 A	No	16	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<62>	CULINARY LAB B172	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	20 A	No	11	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<62>	CULINARY LAB B172	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	20 A	No	12	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<62>	CULINARY LAB B172	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	20 A	No	14	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<65>	CULINARY LAB B172	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	30	2#12 & 1#12 EGC IN 3/4" C.	594.9 A	0 A					
	<67> HOOD	CULINARY LAB B172	120 V, 1Ø	Power	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	27	2#12 & 1#12 EGC IN 3/4" C.	1,274.9 A	0 A					
	<88>	CULINARY LAB B172	120 V, 1Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	20 A	No	29	2#12 & 1#12 EGC IN 3/4" C.	1,331.6 A	0 A					
KP1A																								
	<73>	CULINARY LAB B172	208 V, 3Ø	Kitchen Equip.	No	0 - 0	0 - 0	0 - 0	0	5.76 kVA	0 A	0 A	20 A	20 A	No	5,7,9	3#12 & 1#12 EGC IN 3/4" C.	1,746.7 A	0 A					
KP2																								
	<18> MIX	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	10	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<18> MIX	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	16	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<18> MIX	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	7	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<18> MIX	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	19	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<18> MIX	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	13	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<18> MIX	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	4	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<19> BLEND	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	3	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<19> BLEND	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	5	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<19> BLEND	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	15	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<19> BLEND	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	6	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<19> BLEND	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	9	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<19> BLEND	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	17	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<19> BLEND	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	18	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<19> BLEND	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	8	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<19> BLEND	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	11	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<19> BLEND	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	20	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<19> BLEND	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	12	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<19> BLEND	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	14	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<25>	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	1	2#12 & 1#12 EGC IN 3/4" C.	509 A	0 A					
	<26>	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	21	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<26>	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	22	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<26>	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	23	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<26>	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	24	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<26>	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	25	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<26>	CULINARY LAB B170	120 V, 1Ø	Receptacles	No	0 - 0	0 - 0	0 - 0	0	1.92 kVA	0 A	0 A	20 A	20 A	No	26	2#12 & 1#12 EGC IN 3/4" C.	0 A	0 A					
	<28>	CULINARY LAB B170	120 V, 1Ø	Power	No	0 - 0	0 - 0	0 - 0	0	0.00 kVA	0 A	0 A	0 A	20 A	No	39		0 A	0 A					
	<29> UDS	CULINARY LAB B170	208 V, 3Ø	Power	No	0 - 0	0 - 0	0 - 0	0	36.03 kVA	100 A	0 A	0 A	125 A	No	49,51,53	3#1 & 1#6 EGC IN 1 1/4" C.	4,687.2 A	0 A					

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ROCKFORD PUBLIC SCHOOLS

COLLEGE & CAREER EDUCATION CENTER

ROCKFORD PUBLIC SCHOOLS - DISTRICT 205

RPS 205 IFB #25-11
RPS 205 PROJECT #2444
4151 Johnston Oaks Road
Rockford, IL 61109

ISSUED FOR PERMIT - HEALTH DEPARTMENT
10/08/2024

REVISIONS
A2 10/24/2024 ADDENDUM 2
A3 11/06/2024 ADDENDUM 3

22-24119-00

ELECTRICAL SCHEDULES

E6.01

Autodesk Docs://22-24119-00 RPS205 College Career Ctr Reno/MEP/24_24002060.00_RPS 205 CCEC Renovation_C.rvt
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ELECTRICAL DISTRIBUTION SCHEDULE

ITEM	VOLTAGE	MAINS RATING / XFMR RATING	FEEDER		CIRCUIT LENGTH	CONNECTED LOAD	ESTIMATED DEMAND LOAD	CONNECTED CURRENT	ESTIMATED DEMAND CURRENT	ESTIMATED ISC	SCCR	VOLTAGE DROP				LEVEL	LOCATION	COMMENTS
												FEEDERS		BRANCH CIRCUITS				
			UPSTREAM OCPD OR TERMINATION	WIRE AND RACEWAY								FEEDER VOLTAGE DROP	UPSTREAM FEEDERS VOLTAGE DROP	MAX BRANCH VOLTAGE DROP	TOTAL VOLTAGE DROP AT MAX BRANCH			
MAIN-SWBD	480/277V, 3Ø4W	4,000 A MLO	4,000 A	(10) SETS OF 4#600 & 1#500 EACH IN 3 1/2" C.	73'-4"	1081.95 kVA	911.52 kVA	1,301.4 A	1,096.4 A	0.44 kA	65 kA	0.40%		0.40%	0.40%	LEVEL 01	MECHANICAL C239	
MAIN-SWBD-DIST1	480/277V, 3Ø4W	4,000 A MLO	4,000 A	(10) SETS OF 4#600 & 1#500 EGC EACH IN 3 1/2" C.	24'-0"	821.15 kVA	676.74 kVA	987.7 A	814 A	0.44 kA	65 kA	0.12%	0.40%	0.52%	0.52%	LEVEL 01	MECHANICAL C239	
MAIN-SWBD-DIST2	480/277V, 3Ø4W	4,000 A MLO	4,000 A	(10) SETS OF 4#600 & 1#500 EGC EACH IN 3 1/2" C.	27'-0"	260.79 kVA	239.78 kVA	313.7 A	288.4 A	0.44 kA	65 kA	0.14%	0.40%	0.54%	0.54%	LEVEL 01	MECHANICAL C239	
PDP-S	480/277V, 3Ø4W	1,600 A MLO	1,600 A LSIG	(4) SETS OF 4#600 & 1#4/0 EGC EACH IN 3 1/2" C.	215'-3"	686.78 kVA	594.27 kVA	826.1 A	714.8 A	0.44 kA	14 kA	1.08%	0.52%	1.60%	1.60%	LEVEL 02	BOILER ROOM C301	
TR-LDP-S	480:120/208V, 3Ø4W	500 kVA	800 A	(2) SETS OF 3#600 & 1#1/0 EGC EACH IN 3" C.	24'-10"	95.15 kVA	84.20 kVA	264.1 A	233.7 A	0.44 kA PRIMARY, 38.55 kA SECONDARY		0.12%	1.60%	1.72%	1.72%	LEVEL 02	BOILER ROOM C301	
LDP-S	120/208V, 3Ø4W	1,600 A MLO	1,600 A	(4) SETS OF 4#600 & 1#1/0 SSBJ EACH IN 3 1/2" C.	24'-1"	95.15 kVA	84.20 kVA	264.1 A	233.7 A	34.91 kA	42 kA	0.28%	1.72%	2.00%	2.00%	LEVEL 02	BOILER ROOM C301	
LP-B3	120/208V, 3Ø4W	100 A MLO	150 A	4#1/0 & 1#6 EGC IN 1 1/2" C.	108'-1"	23.99 kVA	22.64 kVA	66.6 A	62.8 A	6.78 kA	10 kA	1.43%	2.00%	3.43%	2.80%	6.23%	LEVEL 01	JANITOR B162
LP-C4A	120/208V, 3Ø4W	225 A MLO	200 A	4#3/0 & 1#6 EGC IN 2" C.	99'-0"	0 kVA		0 A		9.38 kA	22 kA	1.06%	2.00%	3.06%		3.06%	LEVEL 01	ENGINEERING LAB C212
LP-C4	120/208V, 3Ø4W	225 A MLO	200 A	4#3/0 & 1#6 EGC IN 2" C.	101'-1"	0 kVA		0 A		9.24 kA	22 kA	1.06%	2.00%	3.06%		3.06%	LEVEL 01	ENGINEERING LAB C212
PP-PS	480/277V, 3Ø4W	200 A MLO	200 A	4#3/0 & 1#6 EGC IN 2" C.	48'-11"	46.89 kVA	46.89 kVA	56.4 A	56.4 A	0.44 kA	14 kA	0.26%	1.60%	1.86%	0.36%	2.22%	LEVEL 02	BOILER ROOM C301
PP-B2	480/277V, 3Ø4W	600 A MLO	600 A	(2) SETS OF 4#350 & 1#1 EGC EACH IN 2 1/2" C.	115'-2"	359.3 kVA	282.74 kVA	432.2 A	340.1 A	0.44 kA	14 kA	0.57%	1.60%	2.17%	0.94%	3.11%	LEVEL 01	CULINARY STORAGE B166
TR-KP1	480:120/208V, 3Ø4W	112.5 kVA	250 A	3#250 & 1#4 EGC IN 2" C.	29'-8"	94.59 kVA	83.55 kVA	262.6 A	231.9 A	0.44 kA PRIMARY, 17.35 kA SECONDARY		0.10%	2.17%	2.27%		2.27%	LEVEL 01	CULINARY STORAGE B166
KP1	120/208V, 3Ø4W	400 A MCB	400 A	4#600 & 1#1/0 SSBJ IN 3 1/2" C.	119'-7"	94.59 kVA	83.55 kVA	262.6 A	231.9 A	8.99 kA	10 kA	1.38%	2.27%	3.65%	2.96%	6.61%	LEVEL 01	CULINARY LAB B172
TR-KP2	480:120/208V, 3Ø4W	112.5 kVA	250 A	3#250 & 1#4 EGC IN 2" C.	30'-1"	104.85 kVA	77.17 kVA	291 A	214.2 A	0.44 kA PRIMARY, 11.57 kA SECONDARY		0.10%	2.17%	2.27%		2.27%	LEVEL 01	BUILDING STORAGE B168
KP2	120/208V, 3Ø4W	400 A MLO	400 A	4#600 & 1#1/0 SSBJ IN 3 1/2" C.	82'-3"	104.85 kVA	77.17 kVA	291 A	214.2 A	7.04 kA	10 kA	0.95%	2.27%	3.22%	2.96%	6.18%	LEVEL 01	CULINARY LAB B170
TR-KP3	480:120/208V, 3Ø4W	45 kVA	100 A	3#3 & 1#8 EGC IN 1" C.	33'-4"	65.08 kVA	39.91 kVA	180.7 A	110.8 A	0.44 kA PRIMARY, 7.71 kA SECONDARY		0.16%	2.17%	2.33%		2.33%	LEVEL 01	BUILDING STORAGE B168
KP3	120/208V, 3Ø4W	150 A MCB	150 A	4#1/0 & 1#6 SSBJ IN 1 1/2" C.	30'-0"	65.08 kVA	39.91 kVA	180.7 A	110.8 A	6.15 kA	10 kA	0.40%	2.33%	2.73%	2.55%	5.28%	LEVEL 01	CULINARY STORAGE B166
DP-PS	480/277V, 3Ø4W	600 A MLO	600 A	(2) SETS OF 4#350 & 1#1 EGC EACH IN 2 1/2" C.	50'-0"	185.07 kVA	185.07 kVA	222.6 A	222.6 A	0.44 kA	14 kA	0.25%	1.60%	1.85%	1.69%	3.54%	LEVEL 02	BOILER ROOM C301
PDP-N	480/277V, 3Ø4W	1,600 A MLO	1,600 A LSIG	(5) SETS OF 4#500 & 1#250 EGC EACH IN 3" C.	425'-3"	134.37 kVA	87.91 kVA	161.6 A	105.7 A	0.44 kA	14 kA	1.85%	0.52%	2.37%		2.37%	LEVEL 02	CHILLER / PUMP ROOM A301
TR-LDP-N	480:120/208V, 3Ø4W	500 kVA	800 A MCCB	(2) SETS OF 3#600 & 1#1/0 EGC EACH IN 3" C.	24'-10"	133.86 kVA	87.40 kVA	371.6 A	242.6 A	0.44 kA PRIMARY, 38.59 kA SECONDARY		0.12%	2.37%	2.49%		2.49%	LEVEL 02	CHILLER / PUMP ROOM A301
LDP-N	120/208V, 3Ø4W	1,600 A MLO	1,600 A	(4) SETS OF 4#600 & 1#1/0 SSBJ EACH IN 3 1/2" C.	24'-1"	133.86 kVA	87.40 kVA	371.6 A	242.6 A	34.94 kA	42 kA	0.28%	2.49%	2.77%		2.77%	LEVEL 02	CHILLER / PUMP ROOM A301
PP-B1	120/208V, 3Ø4W	225 A MLO	200 A CB	4#300 & 1#3 EGC IN 2 1/2" C.	226'-6"	40.48 kVA	28.33 kVA	112.4 A	78.6 A	6.41 kA	10 kA	1.89%	2.77%	4.66%	2.89%	7.55%	LEVEL 01	JANITOR B162
RP-A3	120/208V, 3Ø4W	200 A MLO	200 A CB	4#500 & 1#1 EGC IN 3" C.	189'-10"	14.39 kVA	14.39 kVA	39.9 A	39.9 A	8.56 kA	10 kA	1.80%	2.77%	4.57%	2.80%	7.37%	LEVEL 01	STORAGE A024.1
RP-A2	120/208V, 3Ø4W	200 A MLO	200 A CB	4#500 & 1#1 EGC IN 3" C.	286'-6"	27.36 kVA	18.68 kVA	75.9 A	51.9 A	6.19 kA	10 kA	1.80%	2.77%	4.57%	2.41%	6.98%	LEVEL 01	BUSINESS INCUBATOR A030
LP-A3	120/208V, 3Ø4W	225 A MLO	150 A CB	4#1/0 & 1#6 EGC IN 1 1/2" C.	113'-5"	9.22 kVA	9.22 kVA	25.6 A	25.6 A	6.56 kA	10 kA	1.50%	2.77%	4.27%	2.66%	6.93%	LEVEL 01	DENTAL CLINIC RECEPTION A011
LP-A5	120/208V, 3Ø4W	200 A MLO	200 A CB	4#3/0 & 1#6 EGC IN 2" C.	65'-0"	2.68 kVA	2.68 kVA	7.4 A	7.4 A	12.56 kA	22 kA	0.81%	2.77%	3.58%	2.92%	6.50%	LEVEL 01	STORAGE A052.2
TC3LA	120/208V, 3Ø4W	225 A MCB	225 A	4#4/0 & 1#2 SSBJ IN 2 1/2" C.	16'-8"	63.12 kVA	61.99 kVA	175.2 A	172.1 A	10.30 kA	22 kA	0.20%	2.39%	2.59%	2.16%	4.75%	LEVEL 01	MANUFACTURING C228
TR-TC3LB	480:120/208V, 3Ø4W	112.5 kVA	250 A	3#250 & 1#4 EGC IN 2" C.	23'-4"	88.42 kVA	88.42 kVA	245.4 A	245.4 A	0.44 kA PRIMARY, 11.67 kA SECONDARY		0.08%	2.31%	2.39%		2.39%	LEVEL 01	MANUFACTURING C228
TC3LB	120/208V, 3Ø4W	400 A MCB	400 A	4#600 & 1#1/0 SSBJ IN 3 1/2" C.	17'-1"	88.42 kVA	88.42 kVA	245.4 A	245.4 A	10.34 kA	22 kA	0.20%	2.39%	2.59%	2.91%	5.50%	LEVEL 01	MANUFACTURING C228
TR-TC1L	480:120/208V, 3Ø4W	112.5 kVA	250 A	3#250 & 1#4 EGC IN 2" C.	55'-10"	86.69 kVA	81.70 kVA	240.6 A	226.8 A	0.39 kA PRIMARY, 11.68 kA SECONDARY		0.19%	2.31%	2.50%		2.50%	LEVEL 01	INDUSTRIAL TECHNOLOGY C226
TC1L	120/208V, 3Ø4W	400 A MCB	400 A	4#600 & 1#1/0 SSBJ IN 3 1/2" C.	17'-1"	86.69 kVA	81.70 kVA	240.6 A	226.8 A	10.32 kA	22 kA	0.20%	2.50%	2.70%	2.86%	5.56%	LEVEL 01	INDUSTRIAL TECHNOLOGY C226

DISCONNECT AND STARTER SCHEDULE

NOTE: ALL DISCONNECTS (EXCEPT MANUAL STARTERS) SHALL BE HEAVY DUTY TYPE.

DISCONNECT TYPE:	**ACCESSORIES & OPTIONS**	
FU - FUSED	SA - STANDARD ACCESSORIES (INCLUDES * ITEMS)	PF - PHASE LOSS PROTECTION (5 HP OR GREATER, 3 PHASE...
NF - NON-FUSED	*CT - CONTROL TRANSFORMER, FUSED 120V	TO - MELTING THERMAL OVERLOADS (1 PHASE)
CB - CIRCUIT BREAKER	*EO - ELECTRONIC OVERLOAD (3 PHASE MOTORS)	TS - 2 SPEED SELECTOR SWITCH IN DOOR
	*HA - HAND-OFF-AUTO IN DOOR	GP - GREEN (OFF) PILOT LIGHT IN DOOR
STARTER TYPE:	*RP - RED (RUN) PILOT LIGHT IN DOOR	FA - 4-CONVERTIBLE AUXILIARY CONTACTS
FV - FULL VOLTAGE	*TA - TWO CONVERTIBLE AUXILIARY CONTACTS	EI - ELECTRICAL INTERLOCK (2)-N.O. & (2)-N.C.
YD - WYE - DELTA	S/N - INSULATED NEUTRAL ASSEMBLY	SS - START-STOP PUSHBUTTON IN DOOR
RE - REVERSING		HL - HANDLE PADLOCK HASP
TW - 2 SPEED, 2 WINDING		
SW - 2 SPEED, 1 WINDING		
RV - REDUCED VOLTAGE AUTOXFMR		
SS - SOLID STATE		
MS - MANUAL STARTER		
MX - MANUAL SWITCH		
FS - FUSED SWITCH		
AMS-ASSEMBLED MOTOR STARTER		

ITEM	DISCONNECT TYPE & RATING: TYPE	RATING	TRIP RATING	VOLTAGE	POLES	STARTER: NEMA SIZE	STARTER: TYPE	ENCLOSURE	REQUIRED ACCESSORIES & OPTIONS	COMMENTS
MS-EF-4		16 A		120 V	1	0	MS	NEMA 1	RP,TO,HL	
MX-OHD		30 A		120 V	1	0	MX	NEMA 1	RP, 115 VOLT PILOT LIGHT CIRCUIT	
MX-OHD		30 A		120 V	1	0	MX	NEMA 1	RP, 115 VOLT PILOT LIGHT CIRCUIT	
MX-FDO		30 A		120 V	1	0	MX	NEMA 1	RP, 115 VOLT PILOT LIGHT CIRCUIT	
MX-OHD		30 A		120 V	1	0	MX	NEMA 1	RP, 115 VOLT PILOT LIGHT CIRCUIT	
MX-OHD		30 A		120 V	1	0	MX	NEMA 1	RP, 115 VOLT PILOT LIGHT CIRCUIT	
MX-WH-1		30 A		120 V	1	0	MX	NEMA 1	RP, 115 VOLT PILOT LIGHT CIRCUIT	
FDS-PLASMA CNC	FU	30 A	30 A	208 V	3			NEMA 1		
FDS-IRONWORKER	FU	30 A	30 A	208 V	3			NEMA 1		
FDS-GANESH MILL	FU	30 A	30 A	208 V	3			NEMA 1		
FDS-GANESH MILL	FU	30 A	30 A	208 V	3			NEMA 1		
FDS-GANESH MILL	FU	30 A	30 A	208 V	3			NEMA 1		
FDS-GANESH MILL	FU	30 A	30 A	208 V	3			NEMA 1		
FDS-GANESH MILL	FU	30 A	30 A	208 V	3			NEMA 1		
FDS-AIR COMPRESSOR	FU	30 A	30 A	208 V	2			NEMA 1		
FDS-IRONWORKER	FU	30 A	30 A	208 V	3			NEMA 1		
FDS-SS-5	FU	30 A	30 A	208 V	2			NEMA 3R		
FDS-SS-1	FU	30 A	30 A	208 V	2			NEMA 3R		
FDS-SS-2	FU	30 A	30 A	208 V	2			NEMA 3R		
FDS-SS-6	FU	30 A	30 A	208 V	2			NEMA 3R		
FDS-SS-3	FU	30 A	30 A	208 V	2			NEMA 3R		
FDS-SS-4	FU	30 A	30 A	208 V	2			NEMA 3R		
FDS-HAAS MILL	FU	60 A	60 A	208 V	2			NEMA 1		
FDS-LATHE	FU	60 A	60 A	208 V	3			NEMA 1		
FDS-LATHE	FU	60 A	60 A	208 V	3			NEMA 1		
FDS-LATHE	FU	60 A	60 A	208 V	3			NEMA 1		
FDS-LATHE	FU	60 A	60 A	208 V	3			NEMA 1		
FDS-LATHE	FU	60 A	60 A	208 V	3			NEMA 1		
FDS-TR-KP3	FU	200 A	150 A	208 V	3			NEMA 1		
FDS-TR-KP1	FU	400 A	400 A	208 V	3			NEMA 1		
FDS-TR-KP2	FU	400 A	400 A	208 V	3			NEMA 1		
DS-WELDER	NF	0 A	60

SWITCHBOARD MAIN-SWBD

ENCLOSURE: NEMA 1
FED FROM: 4,000 A/3P @ UTILITY
LOCATION: MECHANICAL C239
SPD: SPD-1
METER: DEM

SOLID NEUTRAL GROUND BUS

VOLTS: 480/277 Wye
PHASE: 3
WIRE: 4
SCCR: 65 kA
ISC: 0.44 kA

NOTES: EXISTING SECTIONS ARE WESTINGHOUSE. PANEL FURNISHED BY OWNER.

MAIN OCPD

POLES	FRAME	TRIP	TYPE	ACCESSORIES
3	4,000 A	4,000 A	MLO	

DISTRIBUTION SUMMARY	CONNECTED LOAD
MAIN-SWBD-DIST1	821.15 kVA
MAIN-SWBD-DIST2	260.79 kVA

LOAD SUMMARY (INCLUDES ALL SECTIONS OF THIS SWITCHBOARD)

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	TOTALS*	
HVAC	321.932 kVA	100.00%	321.932 kVA		
HVAC Heating Only	31.26 kVA	100.00%	31.26 kVA	**TOTAL CONNECTED LOAD:**	1081.95 kVA
Kitchen Equip.	37.166 kVA	83.00%	30.847 kVA	**TOTAL ESTIMATED DEMAND LOAD:**	911.523 kVA
Lighting	23.184 kVA	100.00%	23.184 kVA	**TOTAL CONNECTED AMPS:**	1301.38 A
Power	330.196 kVA	100.00%	330.196 kVA	**TOTAL ESTIMATED DEMAND AMPS:**	1,096.4 A
Receptacles	338.208 kVA	51.48%	174.104 kVA		

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES: *1 = REVISE EXISTING BREAKER TO ADD ARC ENERGEY REDUCTION AND GROUND FAULT TO EXISTING BREAKER.

MAIN-SWBD-DIST1

CKT	LOAD DESCRIPTION	Load	POLES	FRAME	TRIP	OCPD TYPE	ACCESSORIES	WIRE AND RACEWAY	CIRCUIT KEY
1	PDP-S	686.78...	3	1,600 A	1,600 A	LSIG	AER	(4) SETS OF 4#600 & 1#4/0 EGC EACH IN 3 1/2" C.	
2	PDP-N	134.37...	3	1,600 A	1,600 A	LSIG	AER	(5) SETS OF 4#500 & 1#250 EGC EACH IN 3" C.	

MAIN-SWBD-DIST2

CKT	LOAD DESCRIPTION	Load	POLES	FRAME	TRIP	OCPD TYPE	ACCESSORIES	WIRE AND RACEWAY	CIRCUIT KEY
1	PDP-M	260.79...	3	1,600 A	1,200 A	LSIG	AER	(3) SETS OF 4#600 & 1#3/0 EGC EACH IN 3 1/2" C.	
2	SPACE	--	3	--	--	--	--	--	--

SWITCHBOARD PDP-M

ENCLOSURE: NEMA 1
FED FROM: 1,200 A/3P LSIG @ MAIN-SWBD-DIST2
LOCATION: MECHANICAL C239

SOLID NEUTRAL GROUND BUS

MAIN: 1,600 A MLO
VOLTS: 480/277 Wye
PHASE: 3
WIRE: 4
SCCR: 65 kA
ISC UNKNOWN 0.00 kA

NOTES:

CKT	LOAD DESCRIPTION	Load	POLES	FRAME	TRIP	TYPE	ACC.	WIRE AND RACEWAY	CIRCUIT KEY
1	EAST BUSWAY WELDING LAB	0 kVA	3	200 A	200 A	--	--	--	--
2	SOUTH BUSWAY WELDING LAB	0 kVA	3	200 A	200 A	--	--	--	--
3	PP4L	0 kVA	3	600 A	600 A	MCCB			
4	TC1H, TC2H, TC3H	244.55 kVA	3	600 A	600 A	MCCB			
5	TRANSMISSION DYNO AUTOMOTIVE	0 kVA	3	60 A	60 A	--	--	--	--
6	TR-RPC3	16.24 kVA	3	60 A	60 A	CB			

LOAD SUMMARY (INCLUDES ALL TUBS IN THIS PANEL)

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	TOTALS*	
HVAC	14.631 kVA	100.00%	14.631 kVA		
Power	194.134 kVA	100.00%	194.134 kVA	**TOTAL CONNECTED LOAD:**	260.79 kVA
Receptacles	52.028 kVA	59.61%	31.014 kVA	**TOTAL ESTIMATED DEMAND LOAD:**	239.779 kVA
				TOTAL CONNECTED AMPS:	313.69 A
				TOTAL ESTIMATED DEMAND AMPS:	288.4 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES:

SWITCHBOARD PDP-N

ENCLOSURE: NEMA 1
FED FROM: 1,600 A/3P LSIG @ MAIN-SWBD-DIST1
LOCATION: CHILLER / PUMP ROOM A301

SOLID NEUTRAL GROUND BUS

MAIN: 1,600 A MLO
VOLTS: 480/277 Wye
PHASE: 3
WIRE: 4
SCCR: 14 kA
ISC: 0.44 kA

NOTES: PANEL FURNISHED BY OWNER.

CKT	LOAD DESCRIPTION	Load	POLES	FRAME	TRIP	TYPE	ACC.	WIRE AND RACEWAY	CIRCUIT KEY
1	CHILLER #2	0 kVA	3	600 A	450 A	--	--	--	--
2	CHILLER #1	0 kVA	3	600 A	600 A	--	--	--	--
3	DUCT HEATER IN ELECT. ASSEMBLY	0 kVA	3	150 A	40 A	--	--	--	--
4	NORTHEAST LOT LIGHTS	0 kVA	3	150 A	20 A	--	--	--	--
5	TR-LDP-N	133.86 kVA	3	800 A	800 A	MCCB		(2) SETS OF 3#600 & 1#1/0 EGC EACH IN 3" C.	
6	DP-L4B	0 kVA	3	600 A	600 A	MCCB		(2) SETS OF 4#350 & 1#1 EGC EACH IN 2 1/2" C.	*1
7	MCC-2	0 kVA	3	400 A	400 A	--	--	--	--
8	TR-LPO-NR	0.51 kVA	2	150 A	100 A	CB		3#3 & 1#8 EGC IN 1" C.	*1
9	NORTHWEST LOT LIGHTS	0 kVA	2	150 A	30 A	--	--	--	--
10	CHILLER COND PUMPS	0 kVA	3	150 A	20 A	--	--	--	--
11	HEAT & COOLING IN ELEC. ASSEMBLY	0 kVA	3	150 A	100 A	--	--	--	--
12	SPACE	--	3	--	--	--	--	--	--

LOAD SUMMARY (INCLUDES ALL TUBS IN THIS PANEL)

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	TOTALS*	
HVAC	7.832 kVA	100.00%	7.832 kVA		
Kitchen Equip.	1.248 kVA	100.00%	1.248 kVA	**TOTAL CONNECTED LOAD:**	134.37 kVA
Lighting	7.952 kVA	100.00%	7.952 kVA	**TOTAL ESTIMATED DEMAND LOAD:**	87.906 kVA
Power	14.41 kVA	100.00%	14.41 kVA	**TOTAL CONNECTED AMPS:**	161.62 A
Receptacles	102.928 kVA	54.86%	56.464 kVA	**TOTAL ESTIMATED DEMAND AMPS:**	105.7 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES: *1 = CONNECT EXISTING FEEDER TO NEW BREAKER.

SWITCHBOARD LDP-N

ENCLOSURE: NEMA 1
FED FROM: 1,600 A/3P @ TR-LDP-N
LOCATION: CHILLER / PUMP ROOM A301
SPD: SPD-2

SOLID NEUTRAL GROUND BUS

MAIN: 1,600 A MLO
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 42 kA
ISC: 34.94 kA

NOTES: PANEL FURNISHED BY OWNER.

CKT	LOAD DESCRIPTION	Load	POLES	FRAME	TRIP	TYPE	ACC.	WIRE AND RACEWAY	CIRCUIT KEY
1	PP-B1	40.48 kVA	3	225 A	200 A	CB		4#300 & 1#3 EGC IN 2 1/2" C.	
2	LP-A1 & RP-A4	12.04 kVA	3	225 A	200 A	CB		4#3/0 & 1#6 EGC IN 2" C.	*1
3	LP-B1	1.32 kVA	3	225 A	200 A	CB		4#3/0 & 1#6 EGC IN 2" C.	*1
4	RP-A2 & RP-A3	41.75 kVA	3	225 A	200 A	CB		4#500 & 1#1 EGC IN 3" C.	
5	LP-A4	18.85 kVA	3	225 A	200 A	CB		4#3/0 & 1#6 EGC IN 2" C.	*1
6	LP-A2 & LP-A3	9.22 kVA	3	225 A	150 A	CB		4#1/0 & 1#6 EGC IN 1 1/2" C.	*1
7	RP-A1A	7.53 kVA	3	225 A	150 A	CB		4#1/0 & 1#6 EGC IN 1 1/2" C.	*1
8	LP-A5	2.68 kVA	3	250 A	200 A	CB		4#3/0 & 1#6 EGC IN 2" C.	
9	PP-A1	0 kVA	3	225 A	150 A	CB		4#1/0 & 1#6 EGC IN 1 1/2" C.	*1
10	LP-PN	0 kVA	3	150 A	100 A	CB		4#3 & 1#8 EGC IN 1 1/4" C.	*1
11	SPACE	--	3	--	--	--	--	--	--
12	SPACE	--	3	--	--	--	--	--	--

LOAD SUMMARY (INCLUDES ALL TUBS IN THIS PANEL)

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	TOTALS*	
HVAC	7.832 kVA	100.00%	7.832 kVA		
Kitchen Equip.	1.248 kVA	100.00%	1.248 kVA	**TOTAL CONNECTED LOAD:**	133.86 kVA
Lighting	7.446 kVA	100.00%	7.446 kVA	**TOTAL ESTIMATED DEMAND LOAD:**	87.4 kVA
Power	14.41 kVA	100.00%	14.41 kVA	**TOTAL CONNECTED AMPS:**	371.57 A
Receptacles	102.928 kVA	54.86%	56.464 kVA	**TOTAL ESTIMATED DEMAND AMPS:**	242.6 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES: *1 = CONNECT EXISTING FEEDER TO NEW BREAKER.

DISTRIBUTION PANEL DP-PS

ENCLOSURE: NEMA 1
FED FROM: 600 A/3P @ PDP-S
LOCATION: BOILER ROOM C301

SOLID NEUTRAL GROUND BUS

MAIN: 600 A MLO
VOLTS: 480/277 Wye
PHASE: 3
WIRE: 4
SCCR: 14 kA
ISC: 0.44 kA

NOTES:

CKT	LOAD DESCRIPTION	Load	POLES	FRAME	TRIP	TYPE	ACC.	WIRE AND RACEWAY	CIRCUIT KEY
1	HVAC; MAU-1	102.76 kVA	3	150 A	125 A			3#1 & 1#6 EGC IN 1 1/4" C.	
2	HVAC; MAU-2	82.31 kVA	3	150 A	125 A			3#1 & 1#6 EGC IN 1 1/4" C.	
3	SPACE	--	3	--	--	--	--	--	--
4	SPACE	--	3	--	--	--	--	--	--

LOAD SUMMARY (INCLUDES ALL TUBS IN THIS PANEL)

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	TOTALS*	
HVAC	185.066 kVA	100.00%	185.066 kVA		
				TOTAL CONNECTED LOAD:	185.07 kVA
				TOTAL ESTIMATED DEMAND LOAD:	185.066 kVA
				TOTAL CONNECTED AMPS:	222.60 A
				TOTAL ESTIMATED DEMAND AMPS:	222.6 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES:

SWITCHBOARD PDP-S

ENCLOSURE: NEMA 1
FED FROM: 1,600 A/3P LSIG @ MAIN-SWBD-DIST1
LOCATION: BOILER ROOM C301

SOLID NEUTRAL GROUND BUS

MAIN: 1,600 A MLO
VOLTS: 480/277 Wye
PHASE: 3
WIRE: 4
SCCR: 14 kA
ISC: 0.44 kA

NOTES: PANEL FURNISHED BY OWNER.

CKT	LOAD DESCRIPTION	Load	POLES	FRAME	TRIP	TYPE	ACC.	WIRE AND RACEWAY	CIRCUIT KEY
1	EXISTING	0 kVA	3	250 A	200 A	--	--	--	--
2	MCC-1	0 kVA	3	400 A	400 A	--	--	--	--
3	TR-LPO-SR	0.38 kVA	2	150 A	100 A			3#3 & 1#8 EGC IN 1" C.	*1
4	TR-LDP-S	95.15 kVA	3	800 A	800 A			(2) SETS OF 3#600 & 1#1/0 EGC EACH IN 3" C.	
5	PP-PS	46.89 kVA	3	250 A	200 A			4#3/0 & 1#6 EGC IN 2" C.	
6	PP-B2	359.3 kVA	3	600 A	600 A			(2) SETS OF 4#350 & 1#1 EGC EACH IN 2 1/2" C.	
7	DP-PS	185.07 kVA	3	600 A	600 A			(2) SETS OF 4#350 & 1#1 EGC EACH IN 2 1/2" C.	
8	SPACE	--	3	--	--	--	--	--	--
9	SPACE	--	3	--	--	--	--	--	--
10	SPACE	--	3	--	--	--	--	--	--
11									
12									

LOAD SUMMARY (INCLUDES ALL TUBS IN THIS PANEL)

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	TOTALS*	
HVAC	299.47 kVA	100.00%	299.47 kVA		
HVAC Heating Only	31.26 kVA	100.00%	31.26 kVA	**TOTAL CONNECTED LOAD:**	686.78 kVA
Kitchen Equip.	35.918 kVA	83.62%	30.036 kVA	**TOTAL ESTIMATED DEMAND LOAD:**	594.275 kVA
Lighting	15.231 kVA	100.00%	15.231 kVA	**TOTAL CONNECTED AMPS:**	826.07 A
Power	121.652 kVA	100.00%	121.652 kVA	**TOTAL ESTIMATED DEMAND AMPS:**	714.8 A
Receptacles	183.252 kVA	52.73%	96.626 kVA		

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES: *1 = CONNECT EXISTING FEEDER TO NEW BREAKER.

SWITCHBOARD LDP-S

ENCLOSURE: NEMA 1
FED FROM: 1,600 A/3P @ TR-LDP-S
LOCATION: BOILER ROOM C301
SPD: SPD-2

SOLID NEUTRAL GROUND BUS

MAIN: 1,600 A MLO
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 42 kA
ISC: 34.91 kA

NOTES: PANEL FURNISHED BY OWNER.

CKT	LOAD DESCRIPTION	Load	POLES	FRAME	TRIP	TYPE	ACC.	WIRE AND RACEWAY	CIRCUIT KEY
1	LP-B2	6.17 kVA	3	225 A	100 A			4#2 & 1#6 EGC IN 1 1/4" C.	*1
2	LP-B3	23.99 kVA	3	150 A	150 A			4#1/0 & 1#6 EGC IN 1 1/2" C.	
3	LP-C4	0 kVA	3	225 A	200 A			4#3/0 & 1#6 EGC IN 2" C.	
4	LP-C3	22.21 kVA	3	225 A	150 A			4#1/0 & 1#6 EGC IN 1 1/2" C.	*1
5	LP-C2	0.67 kVA	3	150 A	150 A			4#3/0 & 1#4 EGC IN 2" C.	*1
6	LP-P5	1.44 kVA	3	225 A	100 A			4#3 & 1#8 EGC IN 1 1/4" C.	*1
7	RP-C2	0 kVA	3	150 A	100 A			4#1/0 & 1#4 EGC IN 2" C.	*1
8	LP-C1 & LP-C1A	6.74 kVA	3	400 A	300 A			4#350 & 1#4 EGC IN 2 1/2" C.	*1
9	BUSWAY & PANELS A & B	33.92 kVA	3	400 A	400 A			(2) SETS OF 4#250 & 1#3 EGC EACH IN 2 1/2" C.	*1
10	BUSWAY	0 kVA	3	400 A	400 A	--	--	--	--
11	BUSWAY	0 kVA	3	400 A	400 A	--	--	--	--
12	BUSWAY	0 kVA	3	400 A	400 A	--	--	--	--
13	SPARE	0 kVA	3	400 A	100 A	--	--	--	--
14	SPARE	0 kVA	3	400 A	125 A	--	--	--	--
15	SPACE	--	3	--	--	--	--	--	--
16	SPACE	--	3	--	--	--	--	--	--

LOAD SUMMARY (INCLUDES ALL TUBS IN THIS PANEL)

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	TOTALS*	
HVAC	6.656 kVA	100.00%	6.656 kVA		
Lighting	14.851 kVA	100.00%	14.851 kVA	**TOTAL CONNECTED LOAD:**	95.15 kVA
Power	41.74 kVA	100.00%	41.74 kVA	**TOTAL ESTIMATED DEMAND LOAD:**	84.197 kVA
Receptacles	31.9 kVA	65.67%	20.95 kVA	**TOTAL CONNECTED AMPS:**	264.10 A
				TOTAL ESTIMATED DEMAND AMPS:	233.7 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES: *1 = CONNECT EXISTING FEEDER TO NEW BREAKER.

DISTRIBUTION PANEL PP-B2

ENCLOSURE: NEMA 1
FED FROM: 600 A/3P @ PDP-S
LOCATION: CULINARY STORAGE B166

SOLID NEUTRAL GROUND BUS

MAIN: 600 A MLO
VOLTS: 480/277 Wye
PHASE: 3
WIRE: 4
SCCR: 14 kA
ISC: 0.44 kA

NOTES:

CKT	LOAD DESCRIPTION	Load	POLES	FRAME	TRIP	TYPE	ACC.	WIRE AND RACEWAY	CIRCUIT KEY
1	HVAC; EF-C-1	9.15 kVA	3	150 A	20 A			3#12 & 1#12 EGC IN 3/4" C.	
2	HVAC; EF-C-2	3.99 kVA	3	150 A	15 A			3#12 & 1#12 EGC IN 3/4" C.	
3	HVAC; EF-C-3	6.32 kVA	3	150 A	15 A			3#12 & 1#12 EGC IN 3/4" C.	
4	HVAC; EF-2	0.91 kVA	3	150 A	15 A			3#12 & 1#12 EGC IN 3/4" C.	
5	HVAC; RTU-1	35 kVA	3	400 A	20 A				
6	HVAC; RTU-2	35 kVA	3	150 A	60 A			3#6 & 1#10 EGC IN 3/4" C.	
7	TR-KP1	94.59 kVA	3	250 A	250 A			3#250 & 1#4 EGC IN 2" C.	
8	TR-KP2	104.85 kVA	3	250 A	250 A			3#250 & 1#4 EGC IN 2" C.	
9	TR-KP3	65.08 kVA	3	150 A	100 A			3#3 & 1#8 EGC IN 1" C.	
10	SPACE	--	3	--	--	--	--	--	--
11	SPACE	--	3	--	--	--	--	--	--
12	SPACE	--	3	--	--	--	--	--	--

LOAD SUMMARY (INCLUDES ALL TUBS IN THIS PANEL)

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	TOTALS*	
HVAC	94.778 kVA	100.00%	94.778 kVA		
Kitchen Equip.	35.918 kVA	83.62%	30.036 kVA	**TOTAL CONNECTED LOAD:**	359.30 kVA
Power	77.252 kVA	100.00%	77.252 kVA	**TOTAL ESTIMATED DEMAND LOAD:**	282.741 kVA
Receptacles	151.352 kVA	53.30%	80.676 kVA	**TOTAL CONNECTED AMPS:**	432.17 A
				TOTAL ESTIMATED DEMAND AMPS:	340.1 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES:

IMEG
623 26TH AVENUE
ROCK ISLAND, IL 61201
P: 309.788.0673 F: 309.786.5967
www.imegcorp.com

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ROCKFORD PUBLIC SCHOOLS

COLLEGE & CAREER EDUCATION CENTER

ROCKFORD PUBLIC SCHOOLS - DISTRICT 205
RPS 205 IFB #25-11
RPS 205 PROJECT #2444
4103 25th Avenue Court
Rockford, IL 61109

ISSUED FOR PERMIT - HEALTH DEPARTMENT
10/08/2024
REVISIONS
A1 10/15/2024 ADDENDUM 1
A3 11/06/2024 ADDENDUM 3

22-24119-00

ELECTRICAL PANEL SCHEDULES

E7.00

Autodesk Docs://22-24119-00 RPS205 College Career Ctr Reno\MEPT24_24002060_00_RPS 205 CCEC Renovation_C.rvt
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EXISTING PANEL LP-A1

MOUNTING: RECESSED
ENCLOSURE: NEMA 1
FED FROM: 200 A/3P CB @ LDP-N
LOCATION: JANITOR A022

SINGLE TUB
SOLID NEUTRAL
GROUND BUS

SUB FEED LUGS

MAIN: 225 A MLO
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 10 kA
ISC: 6.68 kA

NOTES: PANEL IS WESTINGHOUSE NQB PANELBOARD. ALL CIRCUITS ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE.

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
--	1	Lighting	20 A	1	--	--	--		0	0.51		2.19	12	12	12	1	20 A	Lighting Room A002, A003, A004	2	*EB
*EB	3	Lighting Room A012, A010, A018, A01...	20 A	1	12	12	12	2.91			0.77	0.78				2.49	10	10	10	1	20 A	Lighting Room A001, A007	4	*EB
*EB	5	Lighting Room A020, A024, A020.1,...	20 A	1	10	10	10	2.37					0.89	0.52	2.01	12	12	12	1	20 A	Lighting GRAPHIC DESIGN A028	6	*EB
--	7	Lighting	20 A	1	--	--	--		0	0.61					1.97	10	10	10	1	20 A	Lighting Room A030.3, A030, A030.2...	8	*EB
--	9	Lighting	20 A	1	--	--	--				0	0				--	--	--	1	20 A	Power, SHOWER HEATERS	10	--
--	11	EXISTING	20 A	1	--	--	--						0	0.89	2.14	10	10	10	1	20 A	Lighting CLASSROOM A025	12	*EB
--	13	Lighting	20 A	1	--	--	--		0	0						--	--	--	1	20 A	Lighting	14	--
--	15	EXISTING	20 A	1	--	--	--				0	0				--	--	--	1	20 A	Lighting	16	--
--	17	Lighting	20 A	1	--	--	--						0	0		--	--	--	1	20 A	Lighting	18	--
--	19	Lighting	20 A	1	--	--	--		0	0						--	--	--	1	20 A	Lighting	20	--
--	21	Lighting	20 A	1	--	--	--				0	0				--	--	--	1	20 A	Lighting	22	--
*RB	23	Power: METAL DETECTOR	20 A	1	12	12	12	2.28					0.38	0		--	--	--	1	20 A	Lighting	24	--
	25									0						--	--	--	1	20 A	Lighting	26	--
*RB	27	Power CORRIDOR A007	20 A	1	12	12	12	0.41			0.5	1.08			1.77	12	12	12	1	20 A	Receptacles MAIN OFFICE A010	28	*RB
*RB	29	Power; DOOR OPERATOR	20 A	1	12	12	12	1.86					0.8	0.54	1.11	12	12	12	1	20 A	Receptacles WORK ROOM A012	30	*RB
								Total Load:	1.12 kVA		3.12 kVA		4.02 kVA								
								Total Amps:	9.31		28.61		36.07								

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
Lighting	4.962 kVA	100.00%	4.962 kVA
Power	1.3 kVA	100.00%	1.3 kVA
Receptacles	2 kVA	100.00%	2 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	8.26 kVA
TOTAL ESTIMATED DEMAND LOAD:	8.262 kVA
TOTAL CONNECTED AMPS:	22.93 A
TOTAL ESTIMATED DEMAND AMPS:	22.9 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES: *EB = EXISTING BREAKRE W/ NEW CIRCUIT; *RB = REPLACE EXISTING BREAKER W/ NEW BREAKER

PANEL LP-A3

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 150 A/3P CB @ LDP-N
LOCATION: DENTAL CLINIC RECEPTION A011

SINGLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 225 A MLO
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 10 kA
ISC: 6.56 kA

NOTES:

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
--	1	EXISTING	20 A	1	--	--	--			0	0					1	20 A	EXISTING	2	--
--	3	EXISTING	20 A	1	--	--	--					0	0			1	20 A	EXISTING	4	--
--	5	EXISTING	20 A	1	--	--	--							0	0	1	20 A	EXISTING	6	--
--	7	EXISTING	20 A	1	--	--	--			0	0					1	20 A	EXISTING	8	--
--	9	EXISTING	20 A	1	--	--	--					0	0			1	20 A	EXISTING	10	--
--	11	EXISTING	20 A	1	--	--	--							0	0	1	20 A	EXISTING	12	--
--	13	EXISTING	20 A	1	--	--	--		0	0						1	20 A	SPARE	14	--
--	15	EXISTING	20 A	1	--	--	--				0	0.54			0.55	12	12	12	1	20 A	Receptacles TOILET A021.1	16	
--	17	EXISTING	20 A	1	--	--	--						0	1.18	2.66	12	12	12	1	20 A	HVAC; EF-1	18	
--	19	SPARE	20 A	1	--	--	--		0	0.36					0.3	12	12	12	1	20 A	Receptacles MEDICAL PREP A021	20	
--	21	SPARE	20 A	1	--	--	--				0	0				--	--	--	1	20 A	SPARE	22	--
*G	23	Receptacles CORR. A003	20 A	1	12	12	12	1.64					1	0		--	--	--	1	20 A	EXISTING	24	--
--	25	SPARE	20 A	1	--	--	--		0	0						--	--	--	1	20 A	EXISTING	26	--
--	27	SPARE	20 A	1	--	--	--				0	0				--	--	--	1	20 A	EXISTING	28	--
	29	Receptacles Room A015.1, A019, A017	20 A	1	12	12	12	0.73					0.54	0		--	--	--	1	20 A	EXISTING	30	--
	31	Receptacles MEDICAL PREP A021	30 A	2	10	10	10	1.59	2.8	0						--	--	--	1	20 A	EXISTING	32	--
--	33	--	--	--	--	--	--	--			2.8	0				--	--	--	1	20 A	EXISTING	34	--
--	35	EXISTING	20 A	2	--	--	--						0	0		--	--	--	1	20 A	EXISTING	36	--
--	37	--	--	--	--	--	--	--	0	0						--	--	--	1	20 A	EXISTING	38	--
--	39	EXISTING	20 A	2	--	--	--				0	0				--	--	--	1	20 A	EXISTING	40	--
--	41	--	--	--	--	--	--	--					0	0		--	--	--	1	20 A	SPARE	42	--
								Total Load:	3.16 kVA		3.34 kVA		2.72 kVA								
								Total Amps:	26.90		28.40		22.63								

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
HVAC	1.176 kVA	100.00%	1.176 kVA
Receptacles	8.04 kVA	100.00%	8.04 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	9.22 kVA
TOTAL ESTIMATED DEMAND LOAD:	9.216 kVA
TOTAL CONNECTED AMPS:	25.58 A
TOTAL ESTIMATED DEMAND AMPS:	25.6 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES: *G = GFCI BREAKER

EXISTING PANEL LP-A4

MOUNTING: RECESSED
ENCLOSURE: NEMA 1
FED FROM: 200 A/3P CB @ LDP-N
LOCATION: CORRIDOR A006

SINGLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 225 A MLO
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 22 kA
ISC: 13.81 kA

NOTES: PANEL IS WESTINGHOUSE NQB PANELBOARD. ALL CIRCUITS ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE.

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
*EB	1	Receptacles CONTROL RM. A052.1	20 A	1	12	12	12	0.7	0.72	0				--	--	1	20 A	Lighting	2	--
*EB	3	Receptacles CONTROL RM. A052.1	20 A	1	12	12	12	0.43			0.72	0		--	--	1	20 A	Lighting	4	--
*EB	5	Receptacles CONTROL RM. A052.1	20 A	1	12	12	12	0.24					0.36	0		--	--	--	1	20 A	Lighting	6	--
*EB	7	Receptacles CONTROL RM. A052.1	20 A	1	12	12	12	0.3	0.36	0				--	--	1	20 A	Lighting	8	--
*EB	9	Receptacles BROADCAST STUDIO...	20 A	1	12	12	12	0.78			0.72	0		--	--	1	20 A	Lighting	10	--
*EB	11	Receptacles BROADCAST STUDIO...	20 A	1	12	12	12	0.91					0.54	0		--	--	--	1	20 A	Lighting	12	--
*EB	13	Receptacles PODCAST ROOM A054	20 A	1	12	12	12	1.47	1.08	0				--	--	1	20 A	Lighting	14	--
--	15	Lighting	20 A	1	--	--	--				0	0				--	--	--	1	20 A	Lighting	16	--
--	17	Lighting	20 A	1	--	--	--						0	0		--	--	--	1	20 A	Lighting	18	--
--	19	EXISTING	20 A	1	--	--	--		0	0						--	--	--	1	20 A	Lighting	20	--
--	21	EXISTING	20 A	1	--	--	--				0	0.9			1.94	12	12	12	1	20 A	Receptacles MEDIA PRODUCTION...	22	*EB
--	23	EXISTING	20 A	1	--	--	--						0	0		12	12	12	1	20 A	Power Room A007, B101	24	*EB
*EB	25	Receptacles WELLNESS A050.4	20 A	1	12	12	12	2.05	0.6	0.9					1.25	12	12	12	1	20 A	Receptacles GREEN SCREEN ROOM...	26	*EB
*EB	27	Receptacles WELLNESS A050.4	20 A	1	8	8	8	2.03			1.5	0				--	--	--	1	20 A	EXISTING	28	--
*EB	29	Receptacles FACULTY LOUNGE A050	20 A	1	12	12	12	2.43					1.26	0.8	1.94	12	12	12	1	20 A	Receptacles FACULTY LOUNGE A050	30	*EB
*EB	31	Receptacles FACULTY LOUNGE A050	20 A	1	12	12	12	2.18	1.5	0.18					0.39	12	12	12	1	20 A	Receptacles FACULTY LOUNGE A050	32	*EB
*EB	33	Receptacles FACULTY LOUNGE A050	20 A	1	12	12	12	0.42			0.18	0.18			0.4	12	12	12	1	20 A	Receptacles FACULTY LOUNGE A050	34	*EB
*EB	35	Receptacles Room A050.2, A050.3	20 A	1	12	12	12	0.63					0.36	1.08	2.71	12	12	12	1	20 A	Receptacles BREAKOUT A062	36	*EB
*EB	37	Receptacles IDF A060	20 A	1	12	12	12	1.25	0.72	1.66					1.89	10	--	10	2	25 A	HVAC; SS-1	38	*RB
*EB	39	Receptacles IDF A060	20 A	1	12	12	12	0.35			0.18	1.66			--	--	--	--	--	--	--	40	--
*EB	41	Power IDF A060	20 A	1	12	12	12	0.95					0.5	0.18	0.5	12	12	12	1	20 A	Receptacles; ROOF	42	*EB
								Total Load:	7.72 kVA		6.04 kVA		5.08 kVA								
								Total Amps:	65.60		51.60		42.33								

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
HVAC	3.328 kVA	100.00%	3.328 kVA
Power	0.5 kVA	100.00%	0.5 kVA
Receptacles	15.02 kVA	83.29%	12.51 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	18.85 kVA
TOTAL ESTIMATED DEMAND LOAD:	16.338 kVA
TOTAL CONNECTED AMPS:	52.32 A
TOTAL ESTIMATED DEMAND AMPS:	45.3 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES: *EB = EXISTING BREAKER; *RB = REPLACE EXISTING BREAKER

PANEL LP-A5

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 200 A/3P CB @ LDP-N
LOCATION: STORAGE A052.2

SINGLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 200 A MLO
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 22 kA
ISC: 12.56 kA

NOTES:

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
	1	Lighting Room A050, A050.4, A050.2,...	20 A	1	8	8	8	2.92	1.3	0				--	--	1	20 A	SPARE	2	--
	3	Lighting Room A058, A058, A060, A054	20 A	1	8	8	8	2.24			1.18	0		--	--	1	20 A	SPARE	4	--
	5	Receptacles VESTIBULE B102	20 A	1	12	12	12	0.37					0.2	0		--	--	--	1	20 A	SPARE	6	--
--	7	Lighting	20 A	1	--	--	--		0	0						--	--	--	1	20 A	Lighting	8	--
--	9	Lighting	20 A	1	--	--	--				0	0				--	--	--	1	20 A	Lighting	10	--
--	11	Lighting	20 A	1	--	--	--						0	0		--	--	--	1	20 A	Lighting	12	--
--	13	Lighting	20 A	1	--	--	--		0	0						--	--	--	1	20 A	Lighting	14	--
--	15	Lighting	20 A	1	--	--	--				0	0				--	--	--	1	20 A	Lighting	16	--
--	17	Lighting	20 A	1	--	--	--						0	0		--	--	--	1	20 A	Lighting	18	--
--	19	Lighting	20 A	1	--	--	--		0	0						--	--	--	1	20 A	Lighting	20	--
--	21	Lighting	20 A	1	--	--	--				0	0				--	--	--	1	20 A	Lighting	22	--
--	23	Lighting	20 A	1	--	--	--						0	0		--	--	--	1	20 A	Lighting	24	--
--	25	Lighting	20 A	1	--	--	--		0	0						--	--	--	1	20 A	Lighting	26	--
--	27	Lighting	20 A	1	--	--	--				0	0				--	--	--	1	20 A	Lighting	28	--
--	29	Receptacles	20 A	1	--	--	--						0	0		--	--	--	1	20 A	Lighting	30	--
--	31	Receptacles	20 A	1	--	--	--		0	0						--	--	--	1	20 A	Lighting	32	--
--	33	Receptacles	20 A	1	--	--	--				0	0				--	--	--	1	20 A	Lighting	34	--
--	35	Receptacles	20 A	1	--	--	--		0	0						--	--	--	1	20 A	Lighting	36	--
--	37	Receptacles	20 A	1	--	--	--				0	0				--	--	--	1	20 A	Lighting	38	--
--	39	Receptacles	20 A	2	--	--	--		0	0						--	--	--	1	20 A	SPARE	40	--
--	41	--	--	--	--	--	--	--					0	0		--	--	--	1	--	SPACE	42	--
								Total Load:	1.30 kVA		1.18 kVA		0.20 kVA								
								Total Amps:	12.10		11.11		1.67								

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
Lighting	2.483 kVA	100.00%	2.483 kVA
Receptacles	0.2 kVA	100.00%	0.2 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	2.68 kVA
TOTAL ESTIMATED DEMAND LOAD:	2.683 kVA
TOTAL CONNECTED AMPS:	7.45 A
TOTAL ESTIMATED DEMAND AMPS:	7.4 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES:

EXISTING PANEL RP-A1A

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 150 A/3P CB @ LDP-N
LOCATION: IT A023.1

DOUBLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 225 A MLO
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 10 kA
ISC: 5.65 kA

NOTES: PANEL IS SQUARE D LOAD CENTER. UNLESS NOTED OTHERWISE ALL CIRCUITS ARE EXISTING TO REMAIN.

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
--	1	Receptacles	20 A	1	--	--	--		0	0				--	--	1	20 A	EXISTING	2	--
--	3	Receptacles	20 A	1	--	--	--				0	0.6			0.3	12	12	12	1	20 A	Power IT A023.1	4	*EB
--	5	Receptacles	20 A	1	--	--	--						0	0.36	0.72	12	12	12	1	20 A	Receptacles NURSING LAB A033	6	*EB
--	7	Receptacles	20 A	1	--	--	--		0	0.36					0.77	12	12	12	1	20 A	Receptacles NURSING LAB A033	8	*EB
--	9	Receptacles	20 A	1	--	--	--				0	0.36			0.68	12	12	12	1	20 A	Receptacles NURSING LAB A033	10	*EB
--	11	Receptacles	20 A	1	--	--	--						0	0.36	0.61	12	12	12	1	20 A	Receptacles NURSING LAB A033	12	*EB
--	13	Receptacles	20 A	1	--	--	--		0	0.36					0.65	12	12	12	1	20 A	Receptacles NURSING LAB A033	14	*EB
--	15	Receptacles	20 A	1	--	--	--				0	0.36			0.42	12	12	12	1	20 A	Receptacles NURSING LAB A033	16	*EB
--	17	Receptacles	20 A	1	--	--	--						0	0.36	0.38	12	12	12	1	20 A	Receptacles NURSING LAB A033	18	*EB
--	19	Receptacles	20 A	1	--	--	--		0	0						--	--	--	1	20 A	EXISTING	20	--
--	21	Receptacles	20 A	1	--	--	--				0	0				--	--	--	1	20 A	EXISTING	22	--
--	23	Receptacles	20 A	1	--	--	--						0	1.66	1.34	12	--	12	2	25 A	HVAC; SS-2	24	*RB
--	25	Receptacles	20 A	1	--	--	--		0	1.66					--	--	--	--	--	--	--	26	--
--	27	Receptacles	20 A	1	--	--	--				0	0.54			0.85	12	12	12	1	20 A	Receptacles NURSING LAB A033	28	*EB
--	29	Receptacles	20 A	1	--	--	--						0	0		--	--	--	1	20 A	EXISTING	30	--
--	31	Receptacles	20 A	1	--	--	--		0	0						--	--	--	1	20 A	PLUG STRIP 122	32	--
--	33	Receptacles	20 A	1	--	--	--				0	0.18			0.23	12	12	12	1	20 A	Receptacles; ROOF	34	*EB
--	35	Receptacles	20 A	1	--	--	--						0	0		--	--	--	1	20 A	EXISTING	36	--
--	37	JCI	20 A	1	--	--	--		0	0						--	--	--	1	20 A	SCRUB SINK 168A	38	--
--	39	JCI	20 A	1	--	--	--				0	0				--	--	--	1	20 A	Receptacles 125	40	--
--	41	JCI	20 A	1	--	--	--						0	0		--	--	--	1	20 A	IDF 6	42	--
	43	RP-A1B	100 A	3	3	3	8	0.43	0	0						--	--	--	1	20 A	EXISTING	44	--
--	45	--	--	--	--	--	--	--			0	0				--	--	--	1	20 A	EXISTING	46	--
--	47	--	--	--	--	--	--	--					0	0		--	--	--	1	20 A	EXISTING	48	--
--	49	Receptacles	20 A	1	--	--	--		0	0						--	--	--	1	20 A	EXISTING	50	--
--	51	SPARE	20 A	1	--	--	--				0	0				--	--	--	1	20 A	EXISTING	52	--
--	53	EXISTING	20 A	1	--	--	--						0	0		--	--	--	1	20 A	Receptacles	54	--
--	55	EXISTING	20 A	1	--	--	--		0	0						--	--	--	1	20 A	WIREMOLD 142	56	--
--	57	EXISTING	20 A	1	--	--	--				0	0.36			0.96	12	12	12	1	20 A	Receptacles Room A033, A031	58	*EB
--	59	EXISTING	20 A	1	--	--	--						0	0		--	--	--	1	20 A	HOODS/EYEWASH 141,142	60	--
--	61	EXISTING	20 A	1	--	--	--		0	0						--	--	--	1	20 A	PROXIMA 141,142	62	--
--	63	EXISTING	20 A	1	--	--	--				0	0				--	--	--	1	20 A	EXISTING	64	--
--	65	EXISTING	20 A	1	--	--	--						0	0		--	--	--	1	20 A	EXISTING	66	--
--	67	EXISTING	20 A	1	--	--	--		0	0						--	--	--	1	20 A	WIREMOLD 142	68	--
--	69	SPARE	20 A	1	--	--	--				0	0				--	--	--	1	20 A	SPARE	70	--
--	71	SPARE	20 A	1	--	--	--						0	0		--	--	--	1	20 A	HOODS 142	72	--
--	73	SPARE	20 A	1	--	--	--		0	0						--	--	--	1	20 A	WIREMOLD 142	74	--
--	75	SPARE	20 A	1	--	--	--				0	0				--	--	--	1	30 A	SPARE	76	--
--	77	CUBICLE 124	20 A	1	--	--	--						0	0		--	--	--	1	20 A	Receptacles	78	--
--	79	CUBICLE 124	20 A	1	--	--	--		0	0						--	--	--	1	20 A	Receptacles	80	--
--	81	CUBICLE 124	20 A	1	--	--	--				0	0				--	--	--	1	20 A	Receptacles	82	--
--	83	IDF 5	20 A	1	--	--	--						0	0		--	--	--	1	20 A	CARD ACCESS PANEL	84	--
								Total Load:	2.38 kVA		2.40 kVA		2.74 kVA								
								Total Amps:	19.87		20.02		22.89								

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
HVAC	3.328 kVA	100.00%	3.328 kVA
Power	0.6 kVA	100.00%	0.6 kVA
Receptacles	3.6 kVA	100.00%	3.6 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	7.53 kVA
TOTAL ESTIMATED DEMAND LOAD:	7.528 kVA
TOTAL CONNECTED AMPS:	20.90 A
TOTAL ESTIMATED DEMAND AMPS:	20.9 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES: *EB = EXISTING BREAKER WITH NEW CIRCUIT; *RB = REPLACE EXISTING BREAKER WITH NEW

EXISTING PANEL RP-A1B

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 100 A/3P @ RP-A1A
LOCATION: LAB STORAGE A023.2

SINGLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 225 A MLO
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 10 kA
ISC: 4.31 kA

NOTES: PANEL IS SQUARE D NQ PANELBOARD. ALL CIRCUITS ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE.

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
--	1	Receptacles BIOLOGY LAB TABLE	20 A	1	--	--	--		0	0				--	--	1	20 A	Receptacles CHEM LAB TABLE	2	--
--	3	Receptacles BIOLOGY LAB TABLE	20 A	1	--	--	--				0	0		--	--	1	20 A	Receptacles CHEM LAB TABLE	4	--
--	5	Receptacles BIOLOGY LAB TABLE	20 A	1	--	--	--						0	0		--	--	--	1	20 A	Receptacles CHEM LAB TABLE	6	--
--	7	Receptacles BIOLOGY LAB TABLE	20 A	1	--	--	--		0	0						--	--	--	1	20 A	Receptacles CHEM LAB TABLE	8	--
--	9	Receptacles BIOL

PANEL LP-C4

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 200 A/3P @ LDP-S
LOCATION: ENGINEERING LAB C212

SINGLE TUB
SOLID NEUTRAL
GROUND BUS

SUB FEED LUGS

MAIN: 225 A MLO
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 22 kA
ISC: 9.24 kA

NOTES:

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
--	1	SPARE	20 A	1	--	--	--		0	0			--	--	--	1	20 A	SPARE	2	--
--	3	SPARE	20 A	1	--	--	--			0	0		--	--	--	1	20 A	SPARE	4	--
--	5	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	6	--
--	7	SPARE	20 A	1	--	--	--		0	0			--	--	--	1	20 A	SPARE	8	--
--	9	SPARE	20 A	1	--	--	--			0	0		--	--	--	1	20 A	SPARE	10	--
--	11	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	12	--
--	13	SPARE	20 A	1	--	--	--		0	0			--	--	--	1	20 A	SPARE	14	--
--	15	SPARE	20 A	1	--	--	--			0	0		--	--	--	1	20 A	SPARE	16	--
--	17	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	18	--
--	19	SPARE	20 A	1	--	--	--		0	0			--	--	--	1	20 A	SPARE	20	--
--	21	SPARE	20 A	1	--	--	--			0	0		--	--	--	1	20 A	SPARE	22	--
--	23	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	24	--
--	25	SPARE	20 A	1	--	--	--		0	0			--	--	--	1	20 A	SPARE	26	--
--	27	SPARE	20 A	1	--	--	--			0	0		--	--	--	1	20 A	SPARE	28	--
--	29	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	30	--
--	31	SPARE	20 A	1	--	--	--		0	0			--	--	--	1	20 A	SPARE	32	--
--	33	SPARE	20 A	1	--	--	--			0	0		--	--	--	1	20 A	SPARE	34	--
--	35	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	36	--
--	37	SPARE	20 A	1	--	--	--		0	0			--	--	--	1	20 A	SPARE	38	--
--	39	SPARE	20 A	1	--	--	--			0	0		--	--	--	1	20 A	SPARE	40	--
--	41	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	42	--
		Total Load:							0.00 kVA	0.00 kVA	0.00 kVA									
		Total Amps:							0.00	0.00	0.00									

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND

TOTALS*	
TOTAL CONNECTED LOAD:	0.00 kVA
TOTAL ESTIMATED DEMAND LOAD:	0 kVA
TOTAL CONNECTED AMPS:	0.00 A
TOTAL ESTIMATED DEMAND AMPS:	0 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES:

PANEL LP-C4A

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 200 A/3P @ LDP-S
LOCATION: ENGINEERING LAB C212

SINGLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 225 A MLO
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 22 kA
ISC: 9.38 kA

NOTES:

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
--	1	SPARE	20 A	1	--	--	--		0	0			--	--	--	1	20 A	SPARE	2	--
--	3	SPARE	20 A	1	--	--	--			0	0		--	--	--	1	20 A	SPARE	4	--
--	5	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	6	--
--	7	SPARE	20 A	1	--	--	--		0	0			--	--	--	1	20 A	SPARE	8	--
--	9	SPARE	20 A	1	--	--	--			0	0		--	--	--	1	20 A	SPARE	10	--
--	11	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	12	--
--	13	SPARE	20 A	1	--	--	--		0	0			--	--	--	1	20 A	SPARE	14	--
--	15	SPARE	20 A	1	--	--	--			0	0		--	--	--	1	20 A	SPARE	16	--
--	17	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	18	--
--	19	SPARE	20 A	1	--	--	--		0	0			--	--	--	1	20 A	SPARE	20	--
--	21	SPARE	20 A	1	--	--	--			0	0		--	--	--	1	20 A	SPARE	22	--
--	23	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	24	--
--	25	SPARE	20 A	1	--	--	--		0	0			--	--	--	1	20 A	SPARE	26	--
--	27	SPARE	20 A	1	--	--	--			0	0		--	--	--	1	20 A	SPARE	28	--
--	29	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	30	--
--	31	SPARE	20 A	1	--	--	--		0	0			--	--	--	1	20 A	SPARE	32	--
--	33	SPARE	20 A	1	--	--	--			0	0		--	--	--	1	20 A	SPARE	34	--
--	35	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	36	--
--	37	SPARE	20 A	1	--	--	--		0	0			--	--	--	1	20 A	SPARE	38	--
--	39	SPARE	20 A	1	--	--	--			0	0		--	--	--	1	20 A	SPARE	40	--
--	41	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	42	--
		Total Load:							0.00 kVA	0.00 kVA	0.00 kVA									
		Total Amps:							0.00	0.00	0.00									

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND

TOTALS*	
TOTAL CONNECTED LOAD:	0.00 kVA
TOTAL ESTIMATED DEMAND LOAD:	0 kVA
TOTAL CONNECTED AMPS:	0.00 A
TOTAL ESTIMATED DEMAND AMPS:	0 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES:

PANEL TC1L

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 400 A/3P @ TR-TC1L
LOCATION: INDUSTRIAL TECHNOLOGY C226

SINGLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 400 A MCB
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 22 kA
ISC: 10.32 kA

NOTES:

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
	1	Receptacles INDUSTRIAL...	20 A	1	12	12	12	1.76	1.32	1.8			1.74	12	12	1	20 A	Power INDUSTRIAL TECHNOLOGY...	2	
	3	Welders INDUSTRIAL TECHNOLOGY...	50 A	2	6	--	10	1.45			4.16	1.8	1.81	12	12	1	20 A	Power INDUSTRIAL TECHNOLOGY...	4	
--	5	--	--	--	--	--	--	--					4.16	1.8	2.43	12	12	1	20 A	Power INDUSTRIAL TECHNOLOGY...	6	
	7	Power INDUSTRIAL TECHNOLOGY...	20 A	1	12	12	12	2.5	1.8	2.01			1.22	10	--	10	3	30 A	Power INDUSTRIAL TECHNOLOGY...	8	
	9	Power INDUSTRIAL TECHNOLOGY...	25 A	1	10	10	10	1.99			1.66	2.01								
	11	Welders INDUSTRIAL TECHNOLOGY...	60 A	2	4	--	10	1.16					4.16	2.01	--	--	--	--	--	--
--	13	--	--	--	--	--	--	--	4.16	4.16			1.15	10	--	4	2	60 A	Power INDUSTRIAL TECHNOLOGY...	14	
	15	Power INDUSTRIAL TECHNOLOGY...	20 A	1	10	10	10	1.88			1.8	4.16	--	--	--	--	--	--	--	--
	17	Power INDUSTRIAL TECHNOLOGY...	20 A	1	10	10	10	1.93					1.8	4.8	0.87	10	--	6	3	50 A	Power INDUSTRIAL TECHNOLOGY...	18	
	19	Receptacles INDUSTRIAL...	20 A	1	10	10	10	1.83	1.8	4.8			--	--	--	--	--	--	--	--
	21	Power INDUSTRIAL TECHNOLOGY...	20 A	1	10	10	10	2.11			1.68	4.8	--	--	--	--	--	--	--	--
	23	Power INDUSTRIAL TECHNOLOGY...	20 A	1	10	10	10	2.17					1.68	0.72	1.07	12	12	1	20 A	Receptacles INDUSTRIAL...	24	
	25	Receptacles INDUSTRIAL...	50 A	2	6	6	10	0.42	4.06	1.56			1.53	12	12	12	1	20 A	Receptacles INDUSTRIAL...	26	
--	27	--	--	--	--	--	--	--			4.06	1.56	2.79	12	--	12	2	20 A	Receptacles METAL CUTTING /...	28	
	29	Receptacles INDUSTRIAL...	20 A	1	12	12	12							0	1.56					
	31	Power INDUSTRIAL TECHNOLOGY...	20 A	1	12	12	12	2.34	1.8	1.8			2.85	12	12	1	20 A	Power INDUSTRIAL TECHNOLOGY...	32	
	33	HVAC; EF-4	25 A	1	12	12	12	2.82			1.66	1.8	2.4	12	12	1	20 A	Power INDUSTRIAL TECHNOLOGY...	34	
	35	Power INDUSTRIAL TECHNOLOGY...	20 A	1	12	12	12	2.86					1.8	0	--	--	--	20 A	SPARE	36	
--	37	SPARE	20 A	1	--	--	--		0	0			--	--	--	1	20 A	SPARE	38	--
--	39	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	40	--
--	41	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	42	--
		Total Load:							31.07 kVA	31.14 kVA	24.49 kVA									
		Total Amps:							267.31	267.91	204.08									

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
HVAC	1.656 kVA	100.00%	1.656 kVA
Power	65.043 kVA	100.00%	65.043 kVA
Receptacles	19.992 kVA	75.01%	14.996 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	86.69 kVA
TOTAL ESTIMATED DEMAND LOAD:	81.695 kVA
TOTAL CONNECTED AMPS:	240.63 A
TOTAL ESTIMATED DEMAND AMPS:	226.8 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES:

PANEL TC3LA

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 225 A/3P @ TR-75
LOCATION: MANUFACTURING C228

SINGLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 225 A MCB
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 22 kA
ISC: 10.30 kA

NOTES:

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
	1	Power MANUFACTURING C228	40 A	3	8	--	10	1.81	3.84	1.14			0.78	12	--	12	3	15 A	Power MANUFACTURING C228	2	
--	3	--	--	--	--	--	--	--		3.84	1.14		--	--	--	--	--	--	--	4	--
--	5	--	--	--	--	--	--	--			3.84	1.14	--	--	--	--	--	--	--	6	--
	7	Power MANUFACTURING C228	40 A	3	8	--	10	2.16	3.84	1.14			0.93	12	--	12	3	15 A	Power MANUFACTURING C228	8	
--	9	--	--	--	--	--	--	--		3.84	1.14		--	--	--	--	--	--	--	10	--
--	11	--	--	--	--	--	--	--			3.84	1.14	--	--	--	--	--	--	--	12	--
	13	Power MANUFACTURING C228	40 A	3	8	--	10	1.98	3.84	1.14			0.85	12	--	12	3	15 A	Power MANUFACTURING C228	14	
--	15	--	--	--	--	--	--	--		3.84	1.14		--	--	--	--	--	--	--	16	--
--	17	--	--	--	--	--	--	--			3.84	1.14	--	--	--	--	--	--	--	18	--
	19	Power MANUFACTURING C228	20 A	2	12	--	12	1.82	1.61	0.99			0.98	12	--	12	2	15 A	Power MANUFACTURING C228	20	
--	21	--	--	--	--	--	--	--		1.61	0.99		--	--	--	--	--	--	--	22	--
	23	Power MANUFACTURING C228	30 A	3	10	--	10	1.02			2.01	1.8	1.67	12	12	12	1	20 A	Power MANUFACTURING C228	24	
--	25	--	--	--	--	--	--	--	2.01	0.82			0.53	12	--	12	3	15 A	Power MANUFACTURING C228	26	
--	27	--	--	--	--	--	--	--		2.01	0.82		--	--	--	--	--	--	--	28	--
	29	Power MANUFACTURING C228	20 A	1	12	12	12	1.44				1.8	0.82	--	--	--	--	--	--	30	--
	31	Power MANUFACTURING C228	15 A	2	12	--	12	0.52	0.5	0			--	--	--	1	20 A	SPARE	32	--
--	33	--	--	--	--	--	--	--		0.5	0		--	--	--	1	20 A	SPARE	34	--
--	35	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	36	--
--	37	SPARE	20 A	1	--	--	--		0	0			--	--	--	1	20 A	SPARE	38	--
--	39	SPARE	20 A	1	--	--	--			0	0		--	--	--	1	20 A	SPARE	40	--
--	41	SPARE	20 A	1	--	--	--				0	0	--	--	--	1	20 A	SPARE	42	--
		Total Load:							20.87 kVA	20.87 kVA	21.37 kVA									
		Total Amps:							173.94	173.94	178.11									

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
Power	50.87 kVA	100.00%	50.87 kVA
Receptacles	12.248 kVA	90.82%	11.124 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	63.12 kVA
TOTAL ESTIMATED DEMAND LOAD:	61.994 kVA
TOTAL CONNECTED AMPS:	175.20 A
TOTAL ESTIMATED DEMAND AMPS:	172.1 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES:

PANEL TC3LB

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 400 A/3P @ TR-TC3LB
LOCATION: MANUFACTURING C228

DOUBLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 400 A MCB
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 22 kA
ISC: 10.34 kA

NOTES:

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
	1	Power MANUFACTURING C228	15 A	3	12	--	12	0.96	1.14	1.14			0.82	12	--	12	3	15 A	Power MANUFACTURING C228	2	
--	3	--	--	--	--	--	--	--			1.14	1.14	--	--	--	--	--	--	--	4	--
--	5	--	--	--	--	--	--	--					1.14	1.14	--	--	--	--	--	6	--
	7	Power MANUFACTURING C228	15 A	3	12	--	12	0.89	1.14	3.84			1.64	10	--	8	3	40 A	Power MANUFACTURING C228	8	
--	9	--	--	--	--	--	--	--			1.14	3.84	--	--	--	--	--	--	--	10	--
--	11	--	--	--	--	--	--	--					1.14	3.84	--	--	--	--	--	12	--
	13	Power MANUFACTURING C228	40 A	3	8	--	10	1.46	3.84	3.84			1.29	10	--	8	3	40 A	Power MANUFACTURING C228	14	
--	15	--	--	--	--	--	--	--			3.84	3.84	--	--	--	--	--	--	--	16	--
--	17	--	--	--	--	--	--	--				3.84	3.84	--	--	--	--	--	--	18	--
	19	Power MANUFACTURING C228	50 A	2	6	--	10	0.48	4.16	0.82			0.56	12	--	12	3	15 A	Power MANUFACTURING C228	20	
--	21	--	--	--	--	--	--	--			4.16	0.82	--	--	--	--	--	--	--	22	--
	23	Power MANUFACTURING C228	30 A	2	10	--	10	1.48					2.34	0.82	--	--	--	--	--	24	--
--	25	--	--	--	--	--	--	--	2.34	1.8			1.19	12	12	12	1	20 A	Power MANUFACTURING C228	26	
	27	Power MANUFACTURING C228	15 A	2	12	--	12	0.37			0.5	1.8	1.42	12	12	12	1	20 A	Power MANUFACTURING C228	28	
--	29	--	--	--	--	--	--	--				0.5	1.8	2.04	10	10	10	1	20 A	Power MANUFACTURING C228	30	
	31	Power MANUFACTURING C228	20 A	1	10	10	10	2.31	1.8	1.8			1.55	12	12	12	1	20 A	Power MANUFACTURING C228	32	
	33	Power MANUFACTURING C228	20 A	1	12	12	12	2.91			1.8	1.8	2.43	12	12	12	1	20 A	Power MANUFACTURING C228	34	
	35	Power MANUFACTURING C228	20 A	1	12	12	12	2.46					1.8	1.8	1.97	12	12	12	1	20 A	Power MANUFACTURING C228	36	
	37	Power MANUFACTURING C228	20 A	1	12	12	12	2	1.8	1.66			2.46	12	--	12	2	25 A	HVAC	38	
	39	Power CORRIDOR C202	25 A	1	12	12	12	1.37			1.66	1.66	--	--	--	--	--	--	--	40	--
	41	Power MANUFACTURING C228	25 A	1	12	12	12	2.03					1.66	0.5	0.92	12	12	12	1	15 A	Power IDF C228.1	42	
	43	Receptacles IDF C228.1	20 A	1	12	12	12	0.78	0.36	0.18			0.4	12	12	12	1	20 A	Receptacles IDF C228.1	44	
	45	Receptacles MANUFACTURING C228	20 A	1	12	12	12	0.45			0.72	0.72	1.26	12	12	12	1	20 A	Receptacles MANUFACTURING C228	46	
	47																			48	
	49																			50	
	51																			52	
	53																			54	
	55																			56	
	57																			58	
	59																			60	
		Total Load:							31.67 kVA	30.59 kVA	26.16 kVA									
		Total Amps:							269.60	260.56	218.02									

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
HVAC	3.328 kVA	100.00%	3.328 kVA
Power	76.065 kVA	100.00%	76.065 kVA
Receptacles	9.028 kVA	100.00%	9.028 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	88.42 kVA
TOTAL ESTIMATED DEMAND LOAD:	88.421 kVA
TOTAL CONNECTED AMPS:	245.43 A
TOTAL ESTIMATED DEMAND AMPS:	245.4 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES:

PANEL PP-PS

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 200 A/3P @ PDP-S
LOCATION: BOILER ROOM C301

SINGLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 200 A MLO
VOLTS: 480/277 Wye
PHASE: 3
WIRE: 4
SCCR: 14 kA
ISC: 0.44 kA

NOTES:

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
--	1	VIBE MACHINE	70 A	3	--	--	--		0	0			--	--	--	3	50 A	ENVIRO CHAMBER	2	--
--	3	--	--	--	--	--	--	--					--	--	--	--	--	--	4	--
--	5	--	--	--	--	--	--	--		0	0		--	--	--	--	--	--	6	--
	7	HVAC Heating Only; BLR-1	25 A	3	12	--	12	0.24	3.88	3.88			0.36	12	--	12	3	25 A	HVAC Heating Only; BLR-2	8	
--	9	--	--	--	--	--	--	--			3.88	3.88	--	--	--	--	--	--	10	--
--	11	--	--	--	--	--	--	--					3.88	3.88	--	--	--	--	12	--
	13	HVAC Heating Only; BFW-1	15 A	3	12	--	12	0.18	2.66	0.89			0.09	12	--	12	3	15 A	Power BOILER ROOM C301	14	
--	15	--	--	--	--	--	--	--			2.66	0.89	--	--	--	--	--	--	16	--
--	17	--	--	--	--	--	--	--					2.66	0.89	--	--	--	--	18	--
	19	HVAC; SF-1	15 A	3	12	--	12	0.11	0.83	0.83			0.11	12	--	12	3	15 A	HVAC; SF-2	20	
--	21	--	--	--	--	--	--	--			0.83	0.83	--	--	--	--	--	--	22	--
--	23	--	--	--	--	--	--	--					0.83	0.83	--	--	--	--	24	--
	25	HVAC; MAU-4	15 A	3	12	--	12	0.27	1.33	1.33			0.22	12	--	12	3	15 A	HVAC; MAU-5	26	
--	27	--	--	--	--	--	--	--			1.33	1.33	--	--	--	--	--	--	28	--
--	29	--	--	--	--	--	--	--					1.33	1.33	--	--	--	--	30	--
--	31	SPACE	--	1	--	--	--		--	--			--	--	--	1	--	SPACE	32	--
--	33	SPACE	--	1	--	--	--				--	--	--	--	--	1	--	SPACE	34	--
--	35	SPACE	--	1	--	--	--						--	--	--	1	--	SPACE	36	--
--	37	SPACE	--	1	--	--	--		--	--			--	--	--	1	--	SPACE	38	--
--	39	SPACE	--	1	--	--	--				--	--	--	--	--	1	--	SPACE	40	--
--	41	SPACE	--	1	--	--	--				--	--	--	--	--	1	--	SPACE	42	--
		Total Load:							15.63 kVA	15.63 kVA	15.63 kVA									
		Total Amps:							56.43	56.43	56.43									

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
HVAC	12.97 kVA	100.00%	12.97 kVA
HVAC Heating Only	31.26 kVA	100.00%	31.26 kVA
Power	2.66 kVA	100.00%	2.66 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	46.89 kVA
TOTAL ESTIMATED DEMAND LOAD:	46.89 kVA
TOTAL CONNECTED AMPS:	56.40 A
TOTAL ESTIMATED DEMAND AMPS:	56.4 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES:

DLR GROUP
© DLR Group

- NOT FOR CONSTRUCTION -

IMEG
ERIKSSON ENGINEERING ASSOCIATES

ROCKFORD PUBLIC S

EXISTING PANEL WPC2

MOUNTING: RECESSED
ENCLOSURE: NEMA 1
FED FROM: 0 A/0P @
LOCATION: CORRIDOR C202

SINGLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 225 A MLO
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 65 kA
ISC UNKNOWN 0.00 kA

NOTES: PANEL IS GE A SERIES PANELBOARD. UNLESS NOTED OTHERWISE ALL CIRCUITS ARE EXISTING TO REMAIN.

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
--	1	Receptacles	20 A	1	--	--	--		0	0			--	--	--	1	20 A	Lighting	2	--
--	3	Receptacles	20 A	1	--	--	--				0	0	--	--	--	1	20 A	Lighting	4	--
--	5	Receptacles	20 A	1	--	--	--						--	--	--	1	20 A	HVAC, EF-E	6	--
--	7	Lighting	20 A	1	--	--	--		0	0			--	--	--	1	20 A	Receptacles	8	--
--	9	Receptacles	20 A	1	--	--	--				0	0	--	--	--	1	20 A	Receptacles	10	--
--	11	Lighting	20 A	1	--	--	--						--	--	--	1	20 A	Lighting	12	--
--	13	Receptacles	20 A	1	--	--	--		0	0			--	--	--	1	20 A	HVAC, EF-E	14	--
--	15	Receptacles	20 A	1	--	--	--				0	0	--	--	--	1	20 A	HVAC, EF-E	16	--
--	17	Receptacles	20 A	1	--	--	--		0	0			--	--	--	1	20 A	HVAC, EF-E	18	--
--	19	Receptacles	20 A	1	--	--	--		0	0			--	--	--	2	25 A	DUST COLLECTOR	20	--
--	21	Receptacles	20 A	1	--	--	--				0	0	--	--	--		--	--	22	--
--	23	Receptacles	20 A	1	--	--	--						--	--	--	2	25 A	DUST COLLECTOR	24	--
--	25	PANIC BUTTON	20 A	1	--	--	--		0	0			--	--	--	--	--	--	26	--
*EB	27	Receptacles WELDING C231	20 A	1	12	12	12	0.58			0.4	0	--	--	--	2	25 A	DUST COLLECTOR	28	--
--	29	Receptacles	20 A	1	--	--	--						--	--	--	--	--	--	30	--
--	31	Receptacles	20 A	1	--	--	--		0	0			--	--	--	1	20 A	Receptacles	32	--
*EB	33	Receptacles WELDING C231	20 A	1	12	12	12	2.81			1.8	0	--	--	--	1	20 A	JCI	34	--
--	35	Receptacles	20 A	1	--	--	--						--	--	--	3	20 A	DOCK LIFT	36	--
--	37	JOCKEY PUMP	20 A	1	--	--	--		0	0			--	--	--	--	--	--	38	--
--	39	JOCKEY PUMP	20 A	1	--	--	--				0	0	--	--	--	--	--	--	40	--
--	41	Receptacles	20 A	1	--	--	--						--	--	--	1	20 A	SPARE	42	--
								Total Load:	0.00 kVA		2.20 kVA	0.00 kVA							
								Total Amps:	0.00		18.33	0.00							

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
Receptacles	2.2 kVA	100.00%	2.2 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	2.20 kVA
TOTAL ESTIMATED DEMAND LOAD:	2.2 kVA
TOTAL CONNECTED AMPS:	6.11 A
TOTAL ESTIMATED DEMAND AMPS:	6.1 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES: *EB = EXISTING BREAKER

EXISTING PANEL LP-C3

MOUNTING: RECESSED
ENCLOSURE: NEMA 1
FED FROM: 150 A/3P @ LDP-S
LOCATION: STAIR ST-2

SINGLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 225 A MLO
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 22 kA
ISC: 16.91 kA

NOTES: PANEL IS WESTINGHOUSE NQB PANELBOARD. UNLESS NOTED OTHERWISE ALL CIRCUITS ARE EXISTING TO REMAIN.

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
--	1	EXISTING	20 A	1	--	--	--		0	0							20 A	EXISTING	2	--
--	3	EXISTING	20 A	1	--	--	--				0	1.8	2.84	10	10	10	1	20 A	Power ENGINEERING LAB C212	4	*EB
--	5	EXISTING	20 A	1	--	--	--						2.29	10	10	10	1	20 A	Power ENGINEERING LAB C212	6	*EB
*EB	7	Power ENGINEERING LAB C212	20 A	1	10	10	10	2.56	1.8	0							--	--	EXISTING	8	--
*EB	9	Lighting Room C210, C212	20 A	1	12	12	12	2.83			0.95	0					--	--	EXISTING	10	--
*EB	11	Power ENGINEERING LAB C212	20 A	1	10	10	10	2.28									--	--	EXISTING	12	--
*EB	13	Power ENGINEERING LAB C212	20 A	1	10	10	10	2.57	1.8	0.92							1.94	10	10	10	1	20 A	Lighting ENGINEERING LAB C212	14	*EB
*EB	15	Power ENGINEERING LAB C212	20 A	1	10	10	10	2.02			1.8	0											EXISTING	16	--
*EB	17	Power CORRIDOR B108	20 A	1	12	12	12	2.3					1.2	1.8	2.84	10	10	10	1	20 A	Power ENGINEERING LAB C212	18	*EB
*EB	19	Power ENGINEERING LAB C212	20 A	1	10	10	10	2.56	1.8	1.8					2.15	10	10	10	1	20 A	Power ENGINEERING LAB C212	20	*EB
--	21	EXISTING	20 A	1	--	--	--				0	0					--	--	1	20 A	SPARE	22	--
*EB	23	Power ENGINEERING LAB C212	20 A	1	10	10	10	2.42					1.8	0			--	--	1	20 A	SPARE	24	--
--	25	SPARE	20 A	1	--	--	--		0	0							--	--	1	20 A	EXISTING	26	--
--	27	EXISTING	20 A	1	--	--	--				0	0					--	--	1	20 A	EXISTING	28	--
--	29	EXISTING	20 A	1	--	--	--						0	0			--	--	1	20 A	EXISTING	30	--
--	31	EXISTING	20 A	1	--	--	--		0	0.36					0.92	12	12	12	1	20 A	Receptacles ENGINEERING LAB C212	32	*EB
--	33	EXISTING	20 A	1	--	--	--				0	0.54			0.69	12	12	12	1	20 A	Receptacles ENGINEERING LAB C212	34	*EB
--	35	EXISTING	20 A	1	--	--	--						0	0.54	0.27	12	12	12	1	20 A	Receptacles ENGINEERING LAB C212	36	*EB
								Total Load:	8.48 kVA		5.09 kVA		8.94 kVA							
								Total Amps:	75.04		42.44		78.85							

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
Lighting	1.877 kVA	100.00%	1.877 kVA
Power	19.2 kVA	100.00%	19.2 kVA
Receptacles	1.44 kVA	100.00%	1.44 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	22.52 kVA
TOTAL ESTIMATED DEMAND LOAD:	22.517 kVA
TOTAL CONNECTED AMPS:	62.50 A
TOTAL ESTIMATED DEMAND AMPS:	62.5 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES: *EB = EXISTING BREAKER W/ NEW CIRCUIT

EXISTING DISTRIBUTION PANEL TC3H

ENCLOSURE: NEMA 1
FED FROM: 600 A/3P MCCB @ PDP-M
LOCATION: MANUFACTURING C228

GROUND BUS

MAIN: 225 A MCB
VOLTS: 480 Delta
PHASE: 3
WIRE: 3
SCCR: 14 kA
ISC: 0.44 kA

NOTES: **PANEL IS SQUARE D I-LINE HCM. ALL CIRCUITS ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE.**

CKT	LOAD DESCRIPTION	Load	POLES	FRAME	TRIP	TYPE	ACC.	WIRE AND RACEWAY	CIRCUIT KEY
1	MAIN	0 kVA	3	400 A	225 A	--	--	--	--
2	TR#	63.12 kVA	3	250 A	175 A			3#2/0 & 1#6 EGC IN 1 1/2" C.	--
3	PLASMA CUTTER	0 kVA	2	400 A	30 A	--	--	--	--
4	FAN FILTER UNIT #1	0 kVA	3	400 A	50 A	--	--	--	--
5	METAL SHEAR	0 kVA	2	400 A	15 A	--	--	--	--
6	FAN FILER UNIT #2	0 kVA	3	400 A	50 A	--	--	--	--
7	MAU-1	0 kVA	3	400 A	15 A	--	--	--	--
8	FAN FILTER UNIT #3	0 kVA	3	400 A	50 A	--	--	--	--
9	MAU-2 & EXH-5	0 kVA	3	400 A	15 A	--	--	--	--
10	FAN FILTER UNIT #4	0 kVA	3	400 A	50 A	--	--	--	--
11	EXISTING	0 kVA	2	400 A	100 A	--	--	--	--
12	EXISTING	0 kVA	3	400 A	15 A	--	--	--	--
13	METAL MUNCHER	0 kVA	3	400 A	60 A	--	--	--	--
14	WELDING SHOP	0 kVA	3	400 A	50 A	--	--	--	--
15	EXISTING	0 kVA	3	400 A	30 A	--	--	--	--
16	HVAC; EF-3	6.32 kVA	3	150 A	15 A			3#12 & 1#12 EGC IN 3/4" C.	--
17									
18									
19	SPACE	--	3	--	--	--	--	--	--
20	SPACE	--	3	--	--	--	--	--	--
21	SPACE	--	3	--	--	--	--	--	--
22	SPACE	--	3	--	--	--	--	--	--
23	TR-TC3LB	88.42 kVA	3	250 A	250 A			3#250 & 1#4 EGC IN 2" C.	*NB

LOAD SUMMARY (INCLUDES ALL TUBS IN THIS PANEL)

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
HVAC	9.647 kVA	100.00%	9.647 kVA
Power	126.935 kVA	100.00%	126.935 kVA
Receptacles	21.276 kVA	73.50%	15.638 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	157.86 kVA
TOTAL ESTIMATED DEMAND LOAD:	152.22 kVA
TOTAL CONNECTED AMPS:	189.87 A
TOTAL ESTIMATED DEMAND AMPS:	183.1 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES: *NB = NEW BREAKER

EXISTING DISTRIBUTION PANEL TC1H

ENCLOSURE: NEMA 1
FED FROM: 600 A/3P MCCB @ PDP-M
LOCATION: CAD LAB C224

SOLID NEUTRAL
GROUND BUS

MAIN: 225 A MCB
VOLTS: 480/277 Wye
PHASE: 3
WIRE: 4
SCCR: 14 kA
ISC: 0.39 kA

NOTES: **PANEL IS SQUARE D I-LINE HCM PANELBOARD. ALL CIRCUITS ARE EXISTING UNLESS NOTED OTHERWISE.**

CKT	LOAD DESCRIPTION	Load	POLES	FRAME	TRIP	TYPE	ACC.	WIRE AND RACEWAY	CIRCUIT KEY
1	TR-TC1L	86.69 kVA	3	250 A	250 A			3#250 & 1#4 EGC IN 2" C.	*NB
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

LOAD SUMMARY (INCLUDES ALL TUBS IN THIS PANEL)

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
HVAC	1.656 kVA	100.00%	1.656 kVA
Power	65.043 kVA	100.00%	65.043 kVA
Receptacles	19.992 kVA	75.01%	14.996 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	86.69 kVA
TOTAL ESTIMATED DEMAND LOAD:	81.695 kVA
TOTAL CONNECTED AMPS:	104.27 A
TOTAL ESTIMATED DEMAND AMPS:	98.3 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES: *NB = NEW BREAKER

EXISTING DISTRIBUTION PANEL TC2H

ENCLOSURE: NEMA 1
FED FROM: 600 A/3P MCCB @ PDP-M
LOCATION: MANUFACTURING C228

SOLID NEUTRAL
GROUND BUS

MAIN: 225 A MCB
VOLTS: 480/277 Wye
PHASE: 3
WIRE: 4
SCCR: 14 kA
ISC: 0.39 kA

NOTES: **PANEL IS SQUARE D I-LINE HCM PANELBOARD. ALL CIRCUITS ARE EXISTING UNLESS NOTED OTHERWISE.**

CKT	LOAD DESCRIPTION	Load	POLES	FRAME	TRIP	TYPE	ACC.	WIRE AND RACEWAY	CIRCUIT KEY
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

LOAD SUMMARY (INCLUDES ALL TUBS IN THIS PANEL)

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND

TOTALS*	
TOTAL CONNECTED LOAD:	0.00 kVA
TOTAL ESTIMATED DEMAND LOAD:	0 kVA
TOTAL CONNECTED AMPS:	0.00 A
TOTAL ESTIMATED DEMAND AMPS:	0 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES:

EXISTING PANEL A1

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 400 A/3P @ LDP-S
LOCATION: MAKER SPACE C222

SINGLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 200 A MCB
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 22 kA
ISC: 11.43 kA

NOTES: PANEL IS A SQUARE D LOAD CENTER. UNLESS NOTED OTHERWISE ALL CIRCUITS ARE EXISTING TO REMAIN.

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
*NB	1	Power MAKER SPACE C222	20 A	1	12	12	12	1.8	1.8	1.2									2	*EB
--	3	SPACE	--	1	--	--	--				--	1.2							4	*EB
--	5	SPACE	--	1	--	--	--						--	1.2	1.89	12	12	12	1	20 A	Receptacles CAD LAB C224	6	*EB
--	7	SPARE	30 A	3	--	--	--		0	1.2									1	20 A	Receptacles CAD LAB C224	8	*EB
--	9	--	--	--	--	--	--				0	1.2							1	20 A	Receptacles CAD LAB C224	10	*EB
--	11	--	--	--	--	--	--						0	1.2	1.93	12	12	12	1	20 A	Receptacles CAD LAB C224	12	*EB
--	13	SPARE	30 A	3	--	--	--		0	1.2									1	20 A	Receptacles CAD LAB C224	14	*EB
--	15	--	--	--	--	--	--				0	1.2							1	20 A	Receptacles CAD LAB C224	16	*EB
--	17	--	--	--	--	--	--						0	0			--	--	3	20 A	SPARE	18	--
--	19	SPARE	30 A	2	--	--	--		0	0							--	--				20	--
--	21	--	--	--	--	--	--				0	0					--	--				22	--
--	23	SPARE	15 A	1	--	--	--						0	0			--	--	3	20 A	SPARE	24	--
--	25	SPARE	20 A	2	--	--	--		0	0							--	--				26	--
--	27	--	--	--	--	--	--				0	0					--	--				28	--
*EB	29	Receptacles CAD LAB C224	20 A	1	12	12	12	2.3					1.2	1.8	1.3	12	12	12	1	20 A	Power MAKER SPACE C222	30	*EB
*EB	31	Receptacles CAD LAB C224	20 A	1	12	12	12	2.29	1.2	1.8					1.98	12	12	12	1	20 A	Power MAKER SPACE C222	32	*EB
*EB	33	Receptacles CAD LAB C224	20 A	1	12	12	12	0.48			0.36	1.8			2.66	12	12	12	1	20 A	Power MAKER SPACE C222	34	*EB
*EB	35	Receptacles CAD LAB C224	20 A	1	12	12	12	0.37					0.36	0.36	0.11	12	12	12	1	20 A	Receptacles CAD LAB C224	36	*EB
*EB	37	Power MAKER SPACE C222	20 A	1	12	12	12	0.84	1.8	1.8					1.53	12	12	12	1	20 A	Power MAKER SPACE C222	38	*EB
*NB	39	Power MAKER SPACE C222	20 A	1	12	12	12	1.26			1.8	1.8			2.2	12	12	12	1	20 A	Power MAKER SPACE C222	40	*EB
*NB	41	Power MAKER SPACE C222	20 A	1	12	12	12	1.94					1.8	1.8	2.62	12	12	12	1	20 A	Power MAKER SPACE C222	42	*NB
								Total Load:	12.00 kVA		9.36 kVA		9.72 kVA							
								Total Amps:	100.46		78.00		81.46							

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
Power	18 kVA	100.00%	18 kVA
Receptacles	13.08 kVA	88.23%	11.54 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	31.08 kVA
TOTAL ESTIMATED DEMAND LOAD:	29.54 kVA
TOTAL CONNECTED AMPS:	86.27 A
TOTAL ESTIMATED DEMAND AMPS:	82 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES: *EB = EXISTING BREAKER W/ NEW CIRCUIT; *NB = NEW BREAKER

EXISTING PANEL B1

MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FED FROM: 400 A/3P @ LDP-S
LOCATION: MAKER SPACE C222

SINGLE TUB
SOLID NEUTRAL
GROUND BUS

MAIN: 200 A MCB
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 22 kA
ISC: 11.33 kA

NOTES: PANEL IS A SQUARE D LOAD CENTER. UNLESS NOTED OTHERWISE ALL CIRCUITS ARE EXISTING TO REMAIN.

KEY	CKT NO.	LOAD DESCRIPTION	OCPD AMPS	P	WIRE SIZE H	N	G	VD %	A	B	C	VD %	WIRE SIZE G	N	H	P	OCPD AMPS	LOAD DESCRIPTION	CKT NO.	KEY
--	1	SPARE	30 A	3	--	--	--		0	0.36			0.33	12	12	1	20 A	Receptacles MAKER SPACE C222	2	*EB
--	3	--	--	--	--	--	--				0	0.36	0.12	12	12	1	20 A	Receptacles MAKER SPACE C222	4	*EB
--	5	--	--	--	--	--	--						0.43	12	12	1	20 A	Receptacles MAKER SPACE C222	6	*EB
--	7	SPARE	30 A	3	--	--	--		0	0.36			0.5	12	12	1	20 A	Receptacles MAKER SPACE C222	8	*EB
--	9	--	--	--	--	--	--				0	0.5	1.12	12	12	1	20 A	Power IT CLOS. C218.1	10	*EB
--	11	--	--	--	--	--	--						1.54	12	12	1	20 A	Receptacles IT CLOS. C218.1	12	*EB
--	13	SPARE	30 A	3	--	--	--		0	0.18			0.39	12	12	1	20 A	Receptacles IT CLOS. C218.1	14	*EB
--	15	--	--	--	--	--	--				0	0				1	20 A	SPARE	16	--
--	17	--	--	--	--	--	--						0	0		1	20 A	SPARE	18	--
--	19	SPARE	20 A	3	--	--	--		0	0						3	20 A	SPARE	20	--
--	21	--	--	--	--	--	--				0	0	--	--	--	--	--	--	22	--
--	23	--	--	--	--	--	--						0	0	--	--	--	--	24	--
--	25	SPARE	20 A	1	--	--	--		0	0					--	--	--	3	20 A	SPARE	26	--
--	27	SPARE	20 A	1	--	--	--				0	0	--	--	--	--	--	--	28	--
--	29	SPARE	20 A	1	--	--	--						0	0	--	--	--	--	30	--
--	31	SPARE	20 A	1	--	--	--		0	0					--	--	--	3	20 A	SPARE	32	--
--	33	SPARE	20 A	1	--	--	--				0	0	--	--	--	--	--	--	34	--
--	35	SPARE	20 A	1	--	--	--						0	0	--	--	--	--	36	--
--	37	SPARE	20 A	1	--	--	--		0	0					--	--	--	3	20 A	SPARE	38	--
--	39	SPARE	20 A	1	--	--	--				0	0	--	--	--	--	--	--	40	--
--	41	SPARE	20 A	1	--	--	--						0	0	--	--	--	--	42	--
								Total Load:	0.90 kVA		0.86 kVA		1.08 kVA							
								Total Amps:	7.55		7.17		9.05							

LOAD SUMMARY

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND
Power	0.5 kVA	100.00%	0.5 kVA
Receptacles	2.34 kVA	100.00%	2.34 kVA

TOTALS*	
TOTAL CONNECTED LOAD:	2.84 kVA
TOTAL ESTIMATED DEMAND LOAD:	2.84 kVA
TOTAL CONNECTED AMPS:	7.88 A
TOTAL ESTIMATED DEMAND AMPS:	7.9 A

*TOTAL DEMAND CALCS SUBTRACT ANY REDUNDANT LOAD AND THE SMALLER OF ANY NONCOINCIDENT HVAC LOADS. THIS CALC IS DONE AT EACH PANEL.

CIRCUIT KEY NOTES: *EB = EXISTING BREAKER W/ NEW CIRCUIT; *NB = NEW BREAKER

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Rockford, IL 61109

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10/08/2024
REVISIONS
A3 11/05/2024 ADDENDUM 3

22-24119-00

ELECTRICAL PANEL SCHEDULES

E7.05

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VIEW NOTES:

1. CONTRACTOR TO REMOVE ALL EXISTING CAMERAS AND RETURN TO OWNER.

KEYNOTES:

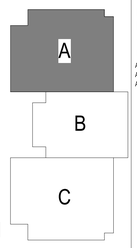
1. REMOVE AND RETURN IDF EQUIPMENT / CABINET TO OWNER.
2. DEMO CATV CABLING AND EQUIPMENT AND ANY OTHER LOW VOTAGE SYSTEM AND COMPONENTS IN THE ROOM. CORRIDANATE. COORDINATE THE PHASING AND DEMOLTION OF THE IDF SPACE AND COMPONENTS WITH OWNER.

1 LEVEL 01 DEMOLITION PLAN - TECHNOLOGY - AREA A

1/8" = 1'-0"

NORTH

KEY PLAN



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A1	10/15/2024	ADDENDUM 1
A2	10/24/2024	ADDENDUM 2
A3	11/05/2024	ADDENDUM 3

22-24119-00

LEVEL 01 DEMOLITION PLAN - TECHNOLOGY - AREA A

T1.01A

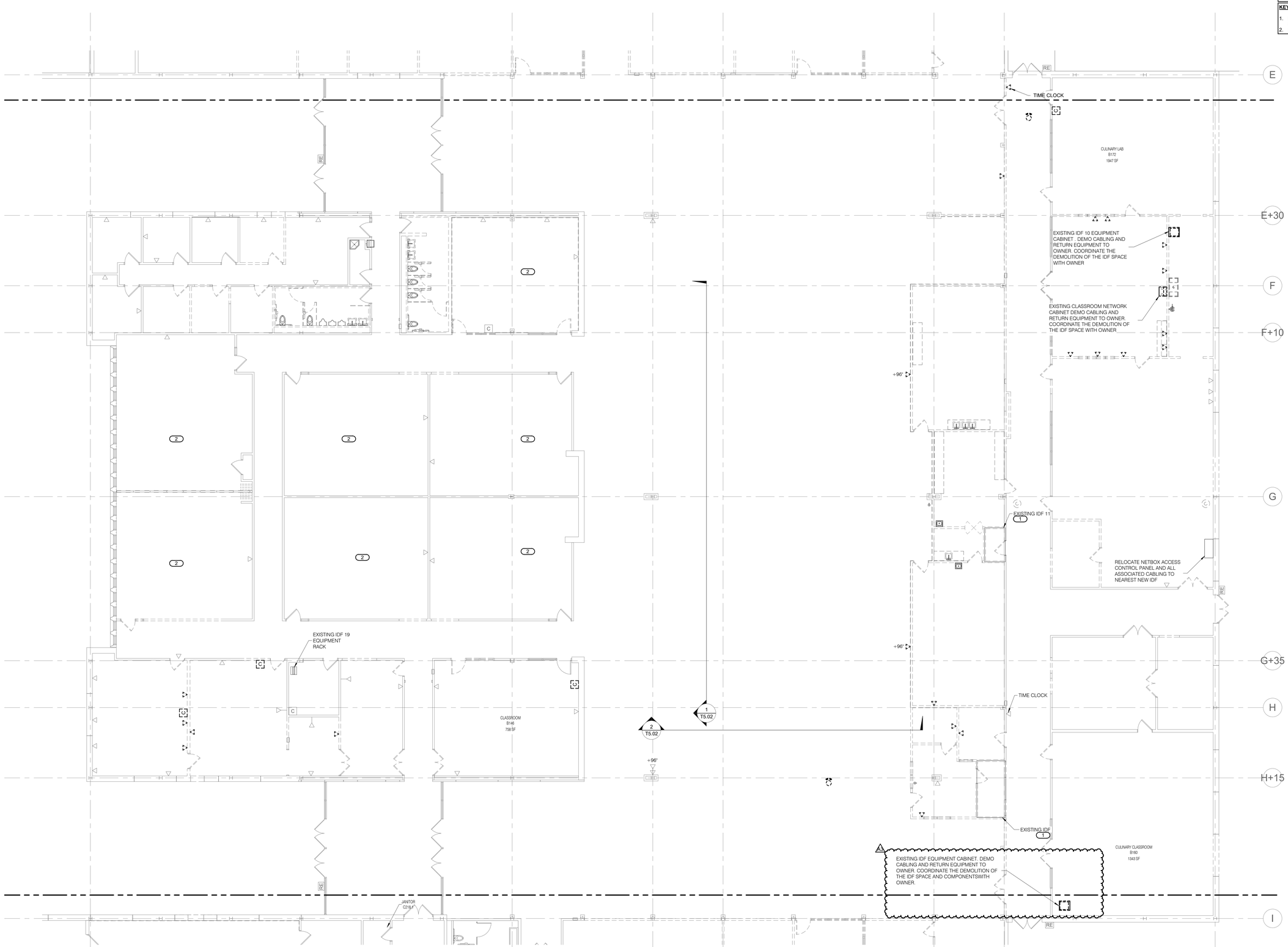
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SHEET NOTES:

1. CONTRACTOR TO REMOVE ALL EXISTING CAMERAS AND RETURN TO OWNER (ROCK VALLEY COLLEGE).

KEYNOTES:

1. REMOVE AND RETURN IDF EQUIPMENT / CABINET TO OWNER.
2. CONTRACTOR TO REMOVE SOUND SYSTEM.

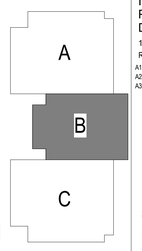


LEVEL 01 DEMOLITION PLAN - TECHNOLOGY - AREA B

1/8" = 1'-0"

NORTH

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A1	10/15/2024	ADDENDUM 1
A2	10/24/2024	ADDENDUM 2
A3	11/05/2024	ADDENDUM 3

22-24119-00

LEVEL 01 DEMOLITION PLAN - TECHNOLOGY - AREA B

T1.01B

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SHEET NOTES:

1. CONTRACTOR TO REMOVE ALL EXISTING CAMERAS AND RETURN TO OWNER (ROCK VALLEY COLLEGE).

EXISTING IDF EQUIPMENT CABINET. DEMO CABLING AND RETURN TO OWNER. COORDINATE THE DEMOLITION OF THE IDF SPACE AND COMPONENTS WITH OWNER

CAD LAB
C224

EXISTING IDF EQUIPMENT CABINET. DEMO CABLING AND RETURN TO OWNER. COORDINATE THE DEMOLITION OF THE IDF SPACE AND COMPONENTS WITH OWNER

JANITOR
C218

SHELF MOUNT IDF NETWORK SWITCH. DEMO ALL CABLING AND COMPONENTS AND RETURN TO OWNER.

EXISTING IDF 14 EQUIPMENT CABINET. DEMO CABLING AND RETURN EQUIPMENT TO OWNER. COORDINATE THE DEMOLITION OF THE IDF SPACE WITH OWNER

EXISTING IDF EQUIPMENT CABINET. DEMO CABLING AND RETURN TO OWNER. COORDINATE THE DEMOLITION OF THE IDF SPACE AND COMPONENTS WITH OWNER

MANUFACTURING
C228

RE

RE

1 2 4 4+30 5 6 7

I I+27.5 I+35 J K L M

1 2 3 4 5

1 LEVEL 01 DEMOLITION PLAN - TECHNOLOGY - AREA C

1/8" = 1'-0"

NORTH

KEY PLAN

A
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C

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A2	10/24/2024	ADDENDUM 2
A3	11/05/2024	ADDENDUM 3

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LEVEL 01 DEMOLITION PLAN - TECHNOLOGY - AREA C

T1.01C

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