GALLAGHER

ADDENDUM NO. 1

TO THE CONTRACT DOCUMENTS FOR:

CRANDALL ISD – PERFORMING ARTS CENTER ADDITION TO CRANDALL HIGH SCHOOL

AUGUST 26, 2024

GENERAL CLARIFICATIONS TO ALL PROPOSERS

1. **CRANDALL ISD – PERFORMING ARTS CENTER ADDITION TO CRANDALL HIGH SCHOOL – DLR GROUP - ADDENDUM NO. 1:** The attached Addendum No. 1 to the Drawings and Specifications for Crandall ISD – Performing Arts Center Addition To Crandall High School, as prepared by DLR Group and dated August 20, 2024 is included in this Addendum and shall become a part of the Contract Documents for this project.

2. **BID DATE:** The project "Proposal Due" remains **2:00 PM, on September 12, 2024**

3. **A REMINDER TO EACH BIDDER: Please review the Gallagher "Contract Conditions and CSP Package Scope of Work" specification Volume #1 in its entirety.**
   a. **Reference the bid package as it pertains to your scope, submit your proposal on the bid form provided within this specification.**
   b. **Include the performance & payment bond costs in your proposal pricing (if proposal is at/more than $25,000).**
   c. **If a contractor is awarded a CSP package by the owner, contractors will be required to provide the performance & payment bond within 5 days of receiving the contract.**

CLARIFICATIONS AND CHANGES TO SECTION 01 81 00 SCOPE OF WORK

1. **CLARIFICATION TO ALL CSP BID PACKAGES:**
   a. Replace Spec Section 00 01 00 – Table Of Contents
   b. Please see attached RFI Log

2. **CLARIFICATIONS TO CSP BID PACKAGE 08-A Frames, Doors and Hardware:**
   a. Replace Spec Section 08 71 00 Door Hardware in this CSP Trade Package in its entirety.

3. **CLARIFICATION TO CSP BID PACKAGE 22-A PLUMBING:**
   a. Replace Spec Section 22 05 17 – Sleeves And Sleeve Seals For Plumbing Piping in its entirety.

4. **CLARIFICATION TO CSP BID PACKAGE 22-A, PLUMBING:**
   a. Replace Spec Section 22 05 18 – Escutcheons For Plumbing Piping in its entirety.

5. **CLARIFICATION TO CSP BID PACKAGE 22-A, PLUMBING:**
   a. Replace Spec Section 22 05 19 – Hangers And Supports For Plumbing Piping And Equipment in its entirety.

6. **CLARIFICATION TO CSP BID PACKAGE 22-A, PLUMBING:**
   a. Replace Spec Section 22 13 19 – Sanitary Waste Piping Specialties in its entirety.

End of Gallagher Addendum No. 1

GALLAGHER

RFI LOG: CRANDALL ISD - PERFORMING ARTS CENTER ADDITION TO CRANDALL HIGH SCHOOL

DATE: 8/22/2024

DATE	RFI #	CONTRACTOR	CSP/TRADE	REFERENCE	RFI QUESTION	DATE2	ANSWERED BY	ANSWER
7/30/2024	1				Sheet C1.02 shows four islands in the parking lot to be sawcut and removed. Sheet L1.01 shows seven island to receive new concrete finishes. What scope of work needs to be performed at the three additional islands shown to receive new concrete finishes ?	8/15/2024	CL	Four islands will be removed to replace the concrete curbs. The islands shown without sawcut will keep the existing curb, and the banded concrete will be poured within the existing curbed areas. The banded concrete within all seven islands will ultimately look the same, the only difference is whether the existing curb will remain.
7/30/2024	2				Sheet C1.03 there is a callout for retaining walls at the loading dock drive. Sheet AS1.2 shows the retaining wall layout. Sheet S1.1A - Foundation Plan - Level 1 Area A does not call out the retaining walls. Please provide structural details for the footings and walls.	8/15/2024	CL	Sheet C1.14 shows footing detail information in the detail titled "LOADING DOCK WALLS".
7/30/2024	3		Masonry		Sheets A6.1 & A6.2 call for a BB-1 Brick Blended. 042000 / 2.5 / B - Clay Face Brick & C - Perforated Clay Face Brick call for color as selected by architect. Which color an from what manufacturer are these to be coming from. Please provide.	8/15/2024	CL	Weatherwood Gray
7/30/2024	4		Millwork		Sheet A2.16 - at Dressing Rooms A128, Elev 2C & Dressing Room A129, Elev 1C, there are what look to be, wardrobe storage units. There is no callout for what the finish is for these. Is this what spec section 064116 is for ?	8/15/2024	CL	Yes, spec section 064116 refers to this millwork - finish is PLAM. Please assume closure panel matching cabinetry from top of cabinet to underside of ceiling.
7/31/2024	5		Wood Door Frames		There are seven locations that are scheduled for wood door frames : A111 A146A, A206B, A208B. These are S/L Lock to Auditorium locations. A207 is to the Control Room. A101M & A101N are 3'-1" x 4'-0" openings that are not on the plans. Please verify that these are to be wood frames ? Where are A101M & A101N located ?	8/15/2024	CL	No wood door frames, hollow metal painted. a101M & a101N are located at concessions.
7/31/2024	6		Aluminum Door Frames		There are twelve locations that are scheuled for aluminum door frames: A109 Custodial Closet, A111B - S/L Lock to Auditorium, A117A - Stage Access, A121A - Stage Entrance, A124B - Band Storage, A125 - Costume Storage, A143A - Sound & Lighting Storage, A146B - S/L Lock to Auditorium, A203 - Custodial Closet, A206A - S/L Lock to Auditorium, A208A - S/L Lock to Auditorium & A300A - Electrical Closet. Please verify that these are to be aluminum door frames.	8/15/2024	CL	No aluminum door frames, all hollow metal.
7/31/2024	7		Room A207		Room A207 - Projection Control Room - Interior Elevation callouts shown are for A103 Concession / Box Office. Please provide interior elevations for A207.	8/15/2024	CL	To be addressed in coming addendum.
7/31/2024	8		Rolltop Assembly		Sheet A11.4 / Detail 4D - Auditorium Rolltop Counter Section - Is this actually inclusive to this project ? Please provide a location for this detail, if so, showing the actual size, along with a specific manufacturer and model number, other than basis of design.	8/15/2024	CL	Yes, it is applicable to be located in coming addendum.
8/1/2024	9		Acoust. Ceil.		Sheet A3.2A - A207 - Projection / Control Rm - Ceiling callout is for APC-03. There is no APC-03 on the finish schedule. Should this be APC-02 ? Please advise.	8/15/2024	CL	Ceiling in A207 Projection Control Room will be APC-02, team will update drawings in coming addendum.
8/5/2024	10		Floor Base		Sheet A12.1A - Unisex Toilet A138 - B-01 - Resilient Base is called out for this toilet room. Is this correct ? Please verify.	8/15/2024	CL	Base in A138 is B-02, team will update drawings in coming addendum.
8/5/2024	11		Display Cases		Spec Section 10 12 00 / 2.3 Display Cases calls out a specific manufacturer with specific KV shelf brackets. On plan sheet A11.5 / 5A, this detail shows a field built display case with a different KV bracket. Are these display cases to be prefabricated units or field built ? Please advise.			
8/7/2024	12		Signage		Please provide signage schedule showing sizes and types.	8/22/2024	CL	To be addressed in future addendum.
8/7/2024	13		Plaques		Please provide size of plaque to be priced.	8/22/2024	CL	To be addressed in future addendum.
8/7/2024	14		Dimensional Letter Signage		10-14-19 Calls for this signage to be illuminated, Please identify which electrical circuit is designated for this exterior signage to be illuminated. Please provide letter sizes.			

8/7/2024	15		School Logos		3A/A4.1 & 3A/A4.2 show school logos. Please provide material type that these are to be manufactured in and any other pertinent info for pricing.	8/22/2024	CL	To be addressed in future addendum.
8/7/2024	16		Audience Seating		Sheet A2.6 shows each row with a number. These numbers total 778, which was the seat count on the 75% CD drawings. The actual seat count on the 100% CD drawings is 816. Which count is correct ? Please advise.	8/22/2024	CL	Seat count is 814, including ADA seating.
8/7/2024	17		Window Treatments		There are provisions to provode power to window locations for "connection of future motorized shading system" per note E34 on sheets E2.1A & E2.2A. Will there be no louvered blinds, roller shades or motorized shades in this bidding ? Please advise.	8/22/2024	CL	No shades/blinds in this bidding.
8/21/2024	18		Motorized Rigging		Spec section 11 61 33 / 2.10 - Rigging Of Electrical Multicables / B. "Refer both rigging drawings and theatrical lighting drawings for specific details regarding cable lengths and location." The theatrical drawings show only a generic cable management detail. Please provide clarification on the theatrical rigging cable management.			
8/26/2024	20		Door Locations		In RFI #5, I asked for the locations of doors A101M & A101N. The response was they are located in the concessions. There is only one concession, A103, which has doors Entry A103B and Storage A104. The hardware schedule issued even calls these doors out as "Openings not found" and "Not tagged on floor plans". Once again, please provide the locations of doors A101M & A101N.	8/26/2024	CL	Doors A101M and A101N are located at concession and are counter height pocket doors to conceal the concession counter. See attached image.

ADDENDUM No. 1

for

Crandall High School:
Performing Arts Center Addition

CRANDALL INDEPENDENT SCHOOL DISTRICT

August 20, 2024

The Bidder or proposer is responsible for obtaining all Addenda prior to submitting a bid or proposal to the district.

ADDENDUM NO. 01
TO THE
PROJECT MANUAL AND DRAWINGS
FOR

CLIENT NAME: **Crandall ISD**
PROJECT NAME: **Crandall HS: Performing Arts Center Addition**
DLR Group Project No. 39-23712-00

Prepared by:
DLR Group Inc. of Texas

The Drawings and Project Manual for the above named Project, dated J**uly 25, 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.

REVISIONS TO THE PROJECT MANUAL

The following Specification Sections are revised with this Addendum:

ITEM 1. Specification Section 08 71 00 DOOR HARDWARE has been revised and re-issued in its entirety.

ITEM 2. Specification Section 22 05 17 SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING has been revised and re-issued in its entirety.

ITEM 3. Specification Section 22 05 18 ESCUTCHEONS FOR PLUMBING PIPING has been revised and re-issued in its entirety.

ITEM 4. Specification Section 22 05 29 HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT has been revised and re-issued in its entirety.

ITEM 5. Specification Section 22 13 19 SANITARY WASTE PIPING SPECIALTIES has been revised and re-issued in its entirety.

REVISIONS TO DRAWINGS

The following Drawings are revised and reissued with this Addendum:

ITEM 6. G0.1 – COVER SHEET – has been revised to include new sheets added to the set as indicated on the re-issued sheet.

ITEM 7. CP1.1 – LEVEL 01 CODE PLAN – has been revised to include the correct square footage of the lobby on the re-issued sheet.

ITEM 8. The Drawing Set has been revised to include Sheet EN0.3 – LIGHTING COMPLIANCE CERTIFICATE - has been added to include the interior and exterior lighting compliance certificates. The sheet has been issued in its entirety.

ITEM 9. C1.00 – COVER SHEET – has been revised to include updated sheets as indicated on the re-issued sheet.

ITEM 10. C1.03 – SITE PLAN – has been revised to include the proposed fire line and FDC line and noted for contractor to field verify depth of existing utilities as indicated on the re-issued sheet.

ITEM 11. C1.04 – DIMENSION CONTROL PLAN – has been revised to include new points on the sidewalk coordinate control table as indicated on the re-issued sheet.

ITEM 12. C1.05 – DIMENSION CONTROL PLAN INSET – has been revised to include new points on the parking coordinate control table as indicated on the re-issued sheet.

ITEM 13. C1.08 – STORM DRAIN PLAN – has a revised storm drain plan as indicated on the re-issued sheet.

ITEM 14. C1.09 – STORM DRAIN PROFILES – SD Line 'A' and SD Line 'B' have been revised as indicated on the re-issued sheet.

ITEM 15. C1.10 – SANITARY SEWER & WATER PLAN – has been revised to reflect the fire line and FDC line as indicated on the re-issued sheet.

ITEM 16. C1.11 – PAVING PLAN – has been revised to reflect replacing paving where the fire line and FDC line disturbed existing conditions as indicated on the re-issued sheet.

ITEM 17. The Drawing Set has been revised to include C1.18 – WATER DETAILS – New details added to include Thrust Block Detail, Pavement Cuts Removal and Replacement, and Gate Valve 4" to 12" Box & Extension Stem. This sheet has been issued in its entirety.

ITEM 18. A1.1B – LEVEL 01 – AREA B – FLOOR PLAN – Renamed Storage room to change use to Fire Riser Room as indicated on re-issued sheet.

ITEM 19. A1.4 – OVERALL ROOF PLAN - has been revised as follows and indicated on the re-issued sheet:

i. Roof slope has been updated over the audience chamber from to ¼"/1'-0".

ii. Tapered insulation has been updated to match drawings in section.

ITEM 20. A2.3 – ENLARGED PLAN – AUDIENCE CHAMBER - CATWALK – Revised catwalk to avoid conflict with Theatrical line set as indicated on the re-issued sheet.

ITEM 21. A2.4 – ENLARGED PLAN – AUDIENCE CHAMBER – LOADING BRIDGE – Revised loading bridge walkway to avoid conflict with Theatrical line set as indicated on the re-issued sheet.

ITEM 22. A2.5 – ENLARGED PLAN – AUDIENCE CHAMBER – GRID LEVEL – Revised circular stair to meet loading bridge walkway as indicated on the re-issued sheet.

ITEM 23. A2.11 – ENLARGED PLAN – BAND / PERCUSSION ROOMS RENOVATION – Detail 2A has been revised to include additional scope of reflooring the existing entry to school as indicated on the re-issued sheet.

ITEM 24. A2.15 – ENLARGED RESTROOM PLANS AND ELEVATIONS – FRONT OF HOUSE – Mirrors in group restroom walls have been changed in size as indicated on the re-issued sheet.

ITEM 25. A4.1 - EXTERIOR ELEVATIONS – Brick control joints have been added as indicated on the re-issued sheet.

ITEM 26. A4.2 EXTERIOR ELEVATIONS – Brick control joints have been added as indicated on the re-issued sheet.

ITEM 27. A7.1 – STAIR VIEWS – has been revised as follows and indicated on the re-issued sheet:

i. Added Detail 1D.

ii. Revised Details 1A, 5A, and 5C as indicated.

ITEM 28. A8.3 – DOOR & FRAME TYPE & SCHEDULE – Sheet has been revised with updated door schedule as indicated on the re-issued sheet.

ITEM 29. A9.0 – EXTERIOR ASSEMBLIES – Detail 1A has been revised as indicated on the re-issued sheet.

ITEM 30. A9.2 – EXTERIOR DETAILS – Details 1E, 2D, 5B, and 5C have been revised as indicated on the re-issued sheet.

ITEM 31. A11.9 – INTERIOR DETAILS – AUDIENCE CHAMBER – has been revised to include Details 2A Stage Apron Detail (Typ.) and 2B Stage Apron Detail @ Speaker.

ITEM 32. A12.1A – LEVEL 01 – AREA A – FINISH PLAN – Sheet has been revised to update finish in unisex restroom as indicated on the re-issued sheet.

ITEM 33. A12.1B – LEVEL 01 – AREA B – FINISH PLAN - has been revised to include additional scope of reflooring the existing entry to school as indicated on the re-issued sheet.

ITEM 34. S1.1A – LEVEL 01 – AREA A – FOUNDATION PLAN – has been revised to coordinate plumbing sleeves as indicated on the re-issued sheet.

ITEM 35. S1.2A – LEVEL 02 MEZZANINE – AREA A – FRAMING PLAN – has been revised to include HSS for storefront support as indicated on the re-issued sheet.

ITEM 36. S2.3A – LEVEL 03 CATWALK – AREA A – FRAMING PLAN – has been revised to accommodate RTU changes as indicated on the re-issued sheet.

ITEM 37. S2.3B – LEVEL 03 CATWALK – AREA B – FRAMING PLAN – has been revised to accommodate RTU changes as indicated on the re-issued sheet.

ITEM 38. S3.1 – STRUCTURAL DETAILS – Detail 3A has been revised to include void forms under structure as indicated on the re-issued sheet.

ITEM 39. S3.4 – STRUCTURAL DETAILS – Detail 1A has been revised to include void forms under structure as indicated on the re-issued sheet.

ITEM 40. S3.5 – STRUCTURAL DETAILS – Detail 3A has been revised to include continuous angles to protect corners of the dock leveler as indicated on the re-issued sheet.

ITEM 41. S5.7 – STEEL SECTIONS – Detail 5B has been added as indicated on the re-issued sheet.

ITEM 42. FP1.1 – LEVEL 01 – FIRE PROTECTION PLAN – has been revised to include FDC water supply, Detail 2, Detail 3, and Detail 4 as indicated on the re-issued sheet.

ITEM 43. P0.1 – PLUMBING GENERAL NOTES & SYMBOLS – has been revised to include plumbing void form note as indicated on the re-issued sheet.

ITEM 44. P2.1 – OVERALL UNDERGROUND PLUMBING PLAN – has been revised to include FDC and additional priming ups as indicated on the re-issued sheet.

ITEM 45. P2.2MA – LEVEL 02 MEZZANINE – AREA A – PLUMBING PLAN – has revised roof drain plumbing locations as indicated on the re-issued sheet.

ITEM 46. P2.3 – OVERALL ROOF PLUMBING PLAN – has been updated with 8" roof drain and 2 ½" Gas indicated on the re-issued sheet.

ITEM 47. P3.1 - ENLARGED PLUMBING PLANS – has updated lavatory piping layouts as indicated on the re-issued sheet.

ITEM 48. P5.1 – PLUMBING DETAILS – has updated Detail 1 and Detail 2 and added Detail 13 and Detail 14 as indicated on the re-issued sheet.

ITEM 49. P6.1 – PLUMBING SCHEDULES – Schedules have been updated as indicated on the re-issued sheet.

ITEM 50. MD1.1B – LEVEL 01 – AREA B – HVAC DEMOLITION PLAN – Sheet notes have been revised as indicated on the re-issued sheet.

ITEM 51. M1.1A – LEVEL 01 – AREA A – HVAC PLAN – RTU ducts have been updated as indicated on the re-issued sheet.

ITEM 52. M1.2MA – LEVEL 02 MEZZANINE – AREA A – HVAC PLAN – ducts have been revised as indicated on the re-issued sheet.

ITEM 53. M1.3A – LEVEL 03 – AREA A – ROOF MECHANICAL PLAN – RTU's and OA have been updated as indicated on the re-issued sheet.

ITEM 54. M1.3B – LEVEL 03 – AREA B – MECHANICAL PLAN – RTU 2 and 3 have been updated as indicated on the re-issued sheet.

ITEM 55. M1.4B – LEVEL 04 – AREA B – ROOF MECHANICAL PLAN – RTU 2 and 3 have been updated as indicated on the re-issued sheet.

ITEM 56. M5.1 – CONTROLS DIAGRAMS – Building pressure triggering exhaust fan and supply plan has been changes to 0.05 IN.WG as indicated on the re-issued sheet.

ITEM 57. M7.1 – MECHANICAL DETAILS – Detail 2C has been revised as indicated on the re-issued sheet.

ITEM 58. M8.1 – MECHANICAL SCHEDULES – Schedules have been updated as indicated on the re-issued sheet.

ITEM 59. E0.1 – ELECTRICAL SYMBOLS, ABBREVIATIONS & NOTES – Symbols have been updated as indicated on the re-issued sheet.

ITEM 60. ED1.1B – LEVEL 01 – AREA B – ELECTRICAL DEMOLITION PLAN – has been revised to include a note to protect overhead conduits as indicated on the re-issued sheet.

ITEM 61. ES1.1 – ELECTRICAL SITE PLAN – Site lighting has been updated as indicated on the re-issued sheet.

ITEM 62. ES1.2 – SITE LIGHTING PHOTOMETRICS – Photometrics have been updates as indicated on the re-issued sheet.

ITEM 63. EL1.1A – LEVEL 01 – AREA A – LIGHTING PLAN – Lighting has been updated as indicated on the re-issued sheet.

ITEM 64. EL1.1B – LEVEL 01– AREA B – LIGHTING PLAN – Lighting has been updated as indicated on the re-issued sheet.

ITEM 65. EL1.2A – LEVEL 02 MEZZANINE – AREA A – LIGHTING PLAN – Lighting has been updated as indicated on the re-issued sheet.

ITEM 66. E2.1 – LEVEL 01 – POWER PLAN – has been updated as indicated on the re-issued sheet.

ITEM 67. E2.1A – LEVEL 01 – AREA A – POWER PLAN – has been updated as indicated on the re-issued sheet.

ITEM 68. E2.1B – LEVEL 01 – AREA B – POWER PLAN – has been revised as indicated on the re-issued sheet.

ITEM 69. E2.2A – LEVEL 02 MEZZANINE – AREA A – POWER PLAN – has updated conduit layout as indicated on the re-issued sheet.

ITEM 70. E3.1B – LEVEL 01 – AREA B – SPECIAL SYSTEMS PLAN – has been updated as indicated on the re-issued sheet.

ITEM 71. E3.2A – LEVEL 02 MEZZANINE – AREA A – SPECIAL SYSTEMS PLAN – has been updated as indicated on the re-issued sheet.

ITEM 72. E5.1 – ELECTRICAL DIAGRAMS – Feeder Schedule – Copper, Feeder Schedule – Aluminum, 3-Phase Transformer Primary and Secondary Schedule – Copper, and 3-Phase Transformer Primary and Secondary Schedule – Aluminum have been revised as indicated on the re-issued sheet.

ITEM 73. E6.2 – ELECTRICAL DETAILS – Details 4E and 4F have been added as indicated on the re-issued sheet.

ITEM 74. E7.1 – LIGHTING SCHEDULES – Lighting Sequence of Operations has been added as indicated on the re-issued sheet.

ITEM 75. E7.2 – ELECTRICAL SCHEDULES – Updates to Roof-Top Unit Schedule and Electric Water Heater Schedule have been made as indicated on the re-issued sheet.

ITEM 76. E7.3 – ELECTRICAL SCHEDULES –Updates to Panel H1K, MH1K, and L1AK have been made as indicated on the re-issued sheet.

ITEM 77. E7.4 – ELECTRICAL SCHEDULES – Updates to Panel L2TK, H2K, L2K, and ML2K have been made as indicated on the re-issued sheet.

ITEM 78. QT3.21 – THEATRICAL DRAPERY, LONGITUDINAL SECTION – Drapery track has been updated as indicated on re-issued sheet.

END OF ADDENDUM NO. 01

DOCUMENT 00 01 07

PROFESSIONAL SEALS PAGE

The specification sections listed below were prepared by or under the direct supervision of the Architect:

DLR Group
2500 Pacific Avenue, Suite 1600
Dallas, Texas 25226

SEAL

DIVISION 08 – OPENINGS

08 71 00 Door Hardware
Door Hardware Schedule

END OF DOCUMENT

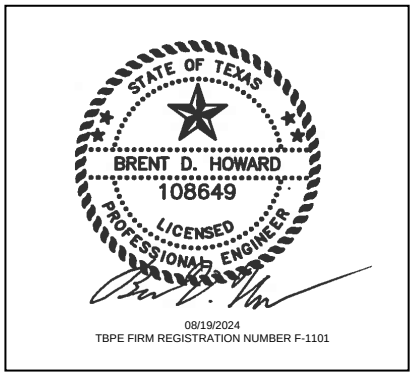
DOCUMENT 00 01 07

PROFESSIONAL SEALS PAGE

The specification sections listed below were prepared by or under the direct supervision of the Mechanical Engineer:

DLR Group
2500 Pacific Avenue, Suite 1600
Dallas, Texas 25226

SEAL



DIVISION 22 – PLUMBING

22 05 17 Sleeves and Sleeve Seals for Plumbing Piping
22 05 18 Escutcheons for Plumbing Piping
22 05 29 Hangers and Supports for Plumbing Piping and Equipment
22 13 19 Sanitary Waste Piping Specialties

END OF DOCUMENT

DOCUMENT 00 01 10

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DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS			
00 26 00	Procurement Substitution Procedures	25 Jul 24	
	Procurement Substitution Request Form	25 Jul 24	
00 31 32	Geotechnical Data	25 Jul 24	
	Geotechnical Report	25 Jul 24	
DIVISION 01 – GENERAL REQUIREMENTS			
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01 25 00	Substitution Procedures	25 Jul 24	
	Substitution Request Form	25 Jul 24	
01 26 00	Contract Modification Procedures	25 Jul 24	
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01 43 39	Mockups	25 Jul 24	
01 50 00	Temporary Facilities and Controls	25 Jul 24	
01 56 39	Temporary Tree and Plant Protection	25 Jul 24	
01 57 13	Erosion and Sedimentation Control	25 Jul 24	
01 57 23	Temporary Storm Water Pollution Control (C)	25 Jul 24	
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DIVISION 02 – EXISTING CONDITIONS			
02 41 19	Selective Demolition	25 Jul 24	
DIVISION 03 – CONCRETE			
03 30 00	Cast-In-Place Concrete (S)	25 Jul 24	
03 30 35	Under Slab Sheet Vapor Retarder	25 Jul 24	
03 35 43	Polished Concrete Finishing	25 Jul 24	
03 54 16	Hydraulic Cement Underlayment	25 Jul 24	
DIVISION 04 – MASONRY			
04 20 00	Unit Masonry	25 Jul 24	

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SECTION 08 71 00

DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes commercial door hardware for the following:

1. Swinging doors.
2. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical door hardware.
3. Cylinders specified for doors in other sections.

C. Related Sections:

1. Division 08 Section “Hollow Metal Doors and Frames”.
2. Division 08 Section “Flush Wood Doors”.
3. Division 08 Section “Sound Control Hollow Metal Door Assemblies”.
4. Division 08 Section “Sound Control Wood Door Assemblies”.
5. Division 08 Section “Aluminum-Framed Entrances and Storefronts”.

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
3. ANSI/UL 294 - Access Control System Units.
4. UL 305 - Panic Hardware.
5. ANSI/UL 437- Key Locks.

1.2 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

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

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:

    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware.
    g. Door and frame sizes and materials.
    h. Warranty information for each product.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

    a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
    b. Complete (risers, point-to-point) access control system block wiring diagrams.
    c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

E. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

1.3 CLOSEOUT SUBMITTALS

A. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

1. Maintenance manual must be provided for tornado/hurricane storm shelter impact protective systems.

B. Project Record Documents: Provide record documentation of as-built door hardware sets in digital format (.pdf, .docx, .xlsx, .csv) and as required in Division 01, Project Record Documents.

C. Project Record Documents: Provide record documentation of as-built door hardware sets in digital format (.pdf, .docx, .xlsx, .csv) or acceptable integrated file format for updating of Openings Studio™ management software and as required in Division 01, Project Record Documents.

1.4 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

F. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.

G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

I. At completion of installation, provide written documentation that components were applied according to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

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

B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.

2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Warranty Period: Unless otherwise indicated, warranty shall be one year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 BUTT HINGES

A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:

a. Two Hinges: For doors with heights up to 60 inches.
b. Three Hinges: For doors with heights 61 to 90 inches.
c. Four Hinges: For doors with heights 91 to 120 inches.
d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following:

   a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
   b. Cam Lift Hinges: Where specified provide hinges that move the door up and then lower it to create a tight seal when the door is closed.

5. Manufacturers:

   a. McKinney (MK) - TA/T4A Series, 5-knuckle.

2.3 CONTINUOUS HINGES

A. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 continuous geared hinge. with minimum 0.120-inch thick extruded 6063-T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Manufacturers:.

   a. Pemko (PE).

2.4 POWER TRANSFER DEVICES

A. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Manufacturers:

   a. Pemko (PE) - EL-CEPT Series.
   b. Securitron (SU) - EL-CEPT Series.

B. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Provide one each of the following tools as part of the base bid contract:

   a. McKinney (MK) - Electrical Connecting Kit: QC-R001.
   b. McKinney (MK) - Connector Hand Tool: QC-R003.

2. Manufacturers:

   a. McKinney (MK) - QC-C Series.

2.5 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: Provide products conforming to ANSI/BHMA A156.3 and A156.16, Grade 1.

1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
2. Furnish dust proof strikes for bottom bolts.
3. Surface bolts to be minimum 8” in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
5. Manufacturers:

    a. Rockwood (RO).

B. Coordinators: ANSI/BHMA A156.3 door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Model as indicated in hardware sets.

1. Manufacturers:

    a. Rockwood (RO).

C. Door Push Plates and Pulls: ANSI/BHMA A156.6 door pushes and pull units of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
4. Pulls, where applicable, shall be provided with a 10” clearance from the finished floor on the push side to accommodate wheelchair accessibility.
5. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets. When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.
6. Manufacturers:

    a. Rockwood (RO).

2.6 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:

1. Threaded mortise cylinders with rings and cams to suit hardware application.
2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
4. Tubular deadlocks and other auxiliary locks.
5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
6. Keyway: Manufacturer’s Standard.

C. Large Format Interchangeable Cores: Provide removable cores (LFIC) as specified, core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware.

D. Patented Cylinders: ANSI/BHMA A156.5, Grade 1 Certified Products Directory (CPD) listed cylinders employing a utility patented and restricted keyway requiring the use of a patented key. Cylinders are to be protected from unauthorized manufacture and distribution by manufacturer's United States patents.

1. Patented key systems shall not be established with products that have an expired patent. Expired systems shall only be specified and supplied to support existing systems.
2. Manufacturers:

a. Corbin Russwin (RU) - Pyramid.
b. No Substitution.

E. Keying System: Each type of lock and cylinders to be factory keyed.

1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. Existing System: Field verify and key cylinders to match Owner's existing system.

F. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).

G. Construction Keying: Provide construction master keyed cylinders.

H. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

2.7 KEY CONTROL

A. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.

1. Manufacturers:

a. Lund Equipment (LU).
b. MMF Industries (MM).
c. Telkee (TK).

P. Electronic Key Management System: Provide an electronic key control system with Stand-alone Plug and Play features including advanced RFID technology. Touchscreen interface with PIN access for keys individually locked in place. Minimum 1,000 system users and 21 iFobs for locking receptors. System shall have a minimum 250,000 audit events screen displayed or ability to be exported via USB port.

1. Manufacturers:

a. Medeco (MC).

2.8 MORTISE LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): Provide ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed mortise locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Manufacturers:

a. Corbin Russwin Hardware (RU) - ML2000 Series.
b. No Substitution.

2.9 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.10 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. Exit devices shall have a five-year warranty.
2. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
3. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.
4. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
5. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.

a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2” wide stiles.
9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed exit devices. Listed manufacturers shall meet all functions and features as specified herein.

1. Electromechanical exit devices shall have the following functions and features:

   a. Universal Molex plug-in connectors that have standardized color-coded wiring and are field configurable in fail safe or fail secure and operate from 12vdc to 24vdc regulated.
   b. Wire routing for all non-access control electromechanical functions and EcoFlex trim to be contained within the carrier of the device eliminating the need for cavities in doors to be drilled. Include a protective film so that wires don't get damaged if the rail needs to be removed.
   c. EcoFlex or equivalent technology that reduces energy consumption up to 92% as certified by GreenCircle.
   d. Options to be available for request-to-exit or enter signaling, latchbolt and touchbar monitoring.
   e. Field configurable electrified trim to fail-safe or fail-secure that operates from 12-24VDC.

2. Manufacturers:

   a. Corbin Russwin Hardware (RU) - PED4000 / PED5000 Series.
   b. No Substitution.

C. Security Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed rim panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be constructed of high grade, heat treated, corrosion resistant nickel steel alloy, and have a full 3/4" throw projection with slide action positive deadlocking.

1. Static Load Force Resistance: Minimum 3000 lbs. certified independent tested.

2. Manufacturers:

   a. Corbin Russwin Hardware (RU) - ED4000S / ED5000S Series.
   b. No Substitution.

D. Tubular Panic Devices: ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Device to be ADA compliant requiring less than 5 lbs. of force to activate. Post mounting with optional mechanical dogging. Provide proper fasteners as required by manufacturer to meet application requirements. Provide exit devices on both leaves of pairs of doors.

1. Style: Exposed vertical rod. 1-1/4” grip diameter with interior operating panic handle in combination with exterior fixed pull handle. Panic mechanism shall be concealed within brass or stainless steel tubing. Optional entrance from exterior by a keyed cylinder.
2. Configurations (provide as specified):
3. Push/pull operation when dogged from the inside.
4. Latching: Top latching. Reversed, flat, Pullman style. Roller-type latching not acceptable.
5. Engraved "PUSH" signage with optional paint infill and boundary grooves.

6. Manufacturers:

   a. Rockwood (RO) - PDU8500 Series.
   b. No Substitution.

2.11 DOOR CLOSERS

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

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

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

1. Large body cast iron surface mounted door closers shall have a 30-year warranty.
2. Manufacturers:

   a. Corbin Russwin Hardware (RU) - DC8000 Series.
   b. No Substitution.

2.12 SURFACE MOUNTED CLOSER HOLDERS

A. Electromagnetic Door Holders: ANSI A156.15 electromagnetic door holder/releases with a minimum 20 to 40 pounds holding power and single coil construction able to accommodate.12VDC, 24VAC, 24VDC and 120VAC. Coils to be independently wound, employing an integral fuse and armatures to include a positive release button.

1. Manufacturers:

   a. Norton Rixson (RF) - 980/990 Series.
   b. No Substitution.

2.13 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 protection plates (kick, armor, or mop), fabricated from the following:

    a. Stainless Steel: 300 grade, 050-inch thick.

5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:

    a. Rockwood (RO).

2.14 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

    a. Rockwood (RO).

2.15 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Manufacturers:

1. Pemko (PE).

2.16 ELECTRONIC ACCESSORIES

A. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.

1. Manufacturers:

a. Securitron (SU) - DPS Series.

B. Switching Power Supplies: Provide power supplies with either single or dual voltage configurations at 12 or 24VDC. Power supplies shall have battery backup function with an integrated battery charging circuit and shall provide capability for power distribution, direct lock control and Fire Alarm Interface (FAI) through add on modules. Power supplies shall be expandable up to 16 individually protected outputs. Output modules shall provide individually protected, continuous outputs and/or individually protected, relay controlled outputs.

1. Manufacturers:

a. Securitron (SU) - AQD Series.

2.17 FABRICATION

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

2.18 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

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

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

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Push Plates and Door Pulls: When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.

E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

F. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection (Punch Report): Reference Division 01 Sections “Closeout Procedures”. Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.

1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

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

3.8 DOOR HARDWARE SETS

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

1. Quantities listed are for each pair of doors, or for each single door.
2. The supplier is responsible for handing and sizing all products.
3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

B. Refer to attached document for Door Hardware Schedule.

END OF SECTION

DOOR HARDWARE SCHEDULE

A. Manufacturer's Abbreviations:

1. MK - McKinney
2. PE - Pemko
3. SU - Securitron
4. RO - Rockwood
5. RU - Corbin Russwin
6. NO - Norton
7. RF - Rixson
8. OT - Other

Hardware Sets

Set: 1.0

Doors: A101A
Description: EXTERIOR STOREFRONT PAIR CARD READER TUBULAR PANIC (BLACK FINISH)

2	Continuous Hinge	BSPFM95SLF-HD1		PE	08 71 00	
2	Storefront Panic Device	PDU8500-3 04	BSP	RO	08 71 00	
2	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00	
1	Electric Strike Kit	ESK-1600-DBL LM	BSP	RO	08 71 00	
2	Surface Closer w/ Hvy Dty Stop	DC8210 A11	BSP	RU	08 71 00	
1	Perimeter Seals	By Door & Frame Manufacturer		OT		
1	Rain Guard	346BSP + 4" ODW		PE	08 71 00	
2	Sweep	345BSPNB		PE	08 71 00	
1	Threshold	252x3BSPFG		PE	08 71 00	
1	ElectroLynx Harness	QC-C2500P		MK	08 71 00	⚡
1	Motion Sensor	XMS		SU	08 71 00	⚡
2	Position Switch	DPS-X-BK		SU	08 71 00	⚡
1	Power Supply	AQD x Amps Required		SU	08 71 00	⚡
1	Card Reader	By Security Contractor		OT		

Set: 2.0

Doors: A196

Description: EXTERIOR STOREFRONT PAIR EXIT ONLY TUBULAR PANIC (BLACK FINISH)

2	Continuous Hinge	BSPFM95SLF-HD1		PE	08 71 00	
2	Storefront Panic Device, Exit Only	PDU8500	BSP	RO	08 71 00	
2	Surface Closer w/ Hvy Dty Stop	DC8210 A11	BSP	RU	08 71 00	
1	Perimeter Seals	By Door & Frame Manufacturer		OT		
1	Rain Guard	346BSP + 4" ODW		PE	08 71 00	
2	Sweep	345BSPNB		PE	08 71 00	
1	Threshold	252x3BSPFG		PE	08 71 00	

Set: 3.0

Doors: A101B

Description: EXTERIOR STOREFRONT PAIR CARD READER (BLACK FINISH) AUTO OPERATOR

2	Continuous Hinge	BSPFM95SLF-HD1 PT		PE	08 71 00	
2	Electric Power Transfer	CEPT-10	BSP	SU	08 71 00	⚡
1	Mullion	CR908BKM CT7R		RU	08 71 00	
1	Rim Exit Device, Nightlatch	ED5200S K157ET M92 MELR M52	BSP	RU	08 71 00	⚡
1	Rim Exit Device, Exit Only	ED5200S EO M92 M52	BSP	RU	08 71 00	⚡
3	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00	
1	Rim Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00	
2	Pull	RM201	BSP	RO	08 71 00	
1	Surface Closer w/ Hvy Dty Stop	DC8210 A11	BSP	RU	08 71 00	
1	Automatic Opener	6071 RF	BSP	NO	08 71 00	⚡
1	Perimeter Seals	By Door & Frame Manufacturer		OT		
1	Rain Guard	346BSP + 4" ODW		PE	08 71 00	
2	Sweep	345BSPNB		PE	08 71 00	
1	Threshold	252x3BSPFG		PE	08 71 00	
2	ElectroLynx Harness	QC-C012P		MK	08 71 00	⚡
2	ElectroLynx Harness	QC-C2500P		MK	08 71 00	⚡
2	Door Switch	504		NO	08 71 00	⚡
2	Position Switch	DPS-X-BK		SU	08 71 00	⚡
1	Power Supply	AQD x Amps Required		SU	08 71 00	⚡
1	Card Reader	By Security Contractor		OT		

Set: 4.0

Doors: A114B, A127A

Description: EXTERIOR HM PAIR CARD READER SVR (BLACK FINISH)

2	Continuous Hinge	BSPFM83HD1 SER12		PE	08 71 00	
1	Electrified SVR Exit, Fail Secure	ED5470 N9905ET M55 M92 M52	BSP	RU	08 71 00	⚡
1	Surface Vert Rod Exit, Dummy	ED5470 N950ET M55 M92 M52	BSP	RU	08 71 00	⚡
3	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00	
2	Surface Closer w/ Hvy Dty Stop	DC8210 A11	BSP	RU	08 71 00	
2	Kick Plate	K1050 10" CSK BEV	BSP	RO	08 71 00	
1	Astragal	18041BSPNB		PE	08 71 00	
1	Rain Guard	346BSP + 4" ODW		PE	08 71 00	
1	Gasketing	2891BSPV		PE	08 71 00	
2	Sweep	345BSPNB		PE	08 71 00	
1	Threshold	252x3BSPFG		PE	08 71 00	
2	ElectroLynx Harness	QC-C2500P		MK	08 71 00	⚡
2	ElectroLynx Harness	QC-C300P		MK	08 71 00	⚡
2	Position Switch	DPS-X-BK		SU	08 71 00	⚡
1	Power Supply	AQD x Amps Required		SU	08 71 00	⚡
1	Card Reader	By Security Contractor		OT		

Set: 5.0

Doors: A118

Description: EXTERIOR HM PAIR EXIT ONLY STC

2	Continuous Hinge	CFM83HD1		PE	08 71 00
1	Mullion	CR972BKM 7'2" CT7R		RU	08 71 00
2	Rim Exit Device, Exit Only	ED5200S EO	630	RU	08 71 00
2	Surface Closer w/ Hvy Dty Stop	DC8210 A11	689	RU	08 71 00
2	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00
1	Rain Guard	346C + 4" ODW		PE	08 71 00
1	Gasketing (Mullion)	5110BL		PE	08 71 00
1	Acoustic Seal Set (Includes STC Threshold, Astragal)	PEMKOSTCSET-2A	BL	PE	08 71 00
2	Door Bottom	420APKL 36"		PE	08 71 00

Set: 6.0

Doors: A101E

Description: EXTERIOR HM PAIR EXIT ONLY RIM EXIT (BLACK FINISH)

2	Continuous Hinge	BSPFM83HDI		PE	08 71 00
1	Mullion	CR972BKM 7'2" CT7R		RU	08 71 00
2	Rim Exit Device, Exit Only	ED5200S EO	BSP	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
2	Surface Closer w/ Hvy Dty Stop	DC8210 A11	BSP	RU	08 71 00
1	Gasketing (Mullion)	5110BL		PE	08 71 00
1	Rain Guard	346BSP + 4" ODW		PE	08 71 00
1	Gasketing	2891BSPV		PE	08 71 00
2	Sweep	345BSPNB		PE	08 71 00
1	Threshold	252x3BSPFG		PE	08 71 00

Set: 7.0

Doors: A117B

Description: SGL CLASSROOM FUNCTION OUTSWING (BLACK FINISH)

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	BSP	MK	08 71 00
1	Classroom Lock	ML2055 NSA	BSP	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8210	BSP	RU	08 71 00
1	Kick Plate	K1050 10" CSK BEV	BSP	RO	08 71 00
1	Wall Stop	406	BSP	RO	08 71 00
3	Silencer	608-RKW		RO	08 71 00

Set: 8.0

Doors: A349A, A349B

Description: SGL STOREROOM FUNCTION INSWING RATED (BLACK FINISH)

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	BSP	MK	08 71 00
1	Storeroom Lock	ML2057 NSA	BSP	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8200	BSP	RU	08 71 00
1	Kick Plate	K1050 10" CSK BEV	BSP	RO	08 71 00
1	Wall Stop	406	BSP	RO	08 71 00
1	Gasketing	S773BL		PE	08 71 00

Set: 9.0

Doors: A131

Description: SGL STOREROOM FUNCTION INSWING RATED

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	08 71 00
1	Storeroom Lock	ML2057 NSA	626	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8200	689	RU	08 71 00
1	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00
1	Wall Stop	406	US32D	RO	08 71 00
1	Gasketing	S773BL		PE	08 71 00

Set: 10.0

Doors: A109, A143B, A145, A154, A203

Description: SGL STOREROOM FUNCTION INSWING

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	08 71 00
1	Storeroom Lock	ML2057 NSA	626	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8200	689	RU	08 71 00
1	Stop (Wall / Floor)	406 / 481 To Suit	US26D	RO	08 71 00
3	Silencer	608-RKW		RO	08 71 00

Set: 11.0

Doors: A120B, A126

Description: SGL STOREROOM FUNCTION INSWING KP

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	08 71 00
1	Storeroom Lock	ML2057 NSA	626	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8200	689	RU	08 71 00
1	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00
1	Stop (Wall / Floor)	406 / 481 To Suit	US26D	RO	08 71 00
3	Silencer	608-RKW		RO	08 71 00

Set: 12.0

Doors: A102B

Description: SGL STOREROOM FUNCTION OUTSWING

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	08 71 00
1	Storeroom Lock	ML2057 NSA	626	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8210	689	RU	08 71 00
1	Stop (Wall / Floor)	406 / 481 To Suit	US26D	RO	08 71 00
3	Silencer	608-RKW		RO	08 71 00

Set: 13.0

Doors: A117A

Description: SGL STOREROOM FUNCTION INSWING WIDE STC

3	Hinge, Cam Lift	MKCL180	US32D	MK	08 71 00
1	Storeroom Lock	ML2057 NSA	626	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8200	689	RU	08 71 00
1	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00
1	Stop (Wall / Floor)	406 / 481 To Suit	US26D	RO	08 71 00
1	Acoustic Seal Set (Includes Auto Door Bottom)	PEMKOSTCSET-1A	BL	PE	08 71 00
1	Threshold	151A		PE	08 71 00

Set: 14.0

Doors: A137

Description: SGL STOREROOM FUNCTION INSWING STC

3	Hinge, Cam Lift	MKCL134 4-1/2" x 4-1/2"	US32D	MK	08 71 00
1	Storeroom Lock	ML2057 NSA	626	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8200	689	RU	08 71 00
1	Stop (Wall / Floor)	406 / 481 To Suit	US26D	RO	08 71 00
1	Acoustic Seal Set (Includes Auto Door Bottom)	PEMKOSTCSET-1A	BL	PE	08 71 00
1	Threshold	151A		PE	08 71 00

Set: 15.0

Doors: A132, A133, A134

Description: SGL STOREROOM FUNCTION INSWING STC KP

3	Hinge, Cam Lift	MKCL134 4-1/2" x 4-1/2"	US32D	MK	08 71 00
1	Storeroom Lock	ML2057 NSA	626	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8200	689	RU	08 71 00
1	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00
1	Stop (Wall / Floor)	406 / 481 To Suit	US26D	RO	08 71 00
1	Acoustic Seal Set (Includes Auto Door Bottom)	PEMKOSTCSET-1A	BL	PE	08 71 00
1	Threshold	151A		PE	08 71 00

Set: 16.0

Doors: A301A, A302B, A304

Description: SGL STOREROOM FUNCTION INSWING STC (BLACK FINISH)

3	Hinge, Cam Lift	MKCL134	BSP	MK	08 71 00
1	Storeroom Lock	ML2057 NSA	BSP	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8200	BSP	RU	08 71 00
1	Wall Stop	406	US32D	RO	08 71 00
1	Acoustic Seal Set (Includes Auto Door Bottom)	PEMKOSTCSET-1A	BL	PE	08 71 00
1	Threshold	151BSP		PE	08 71 00

Set: 17.0

Doors: A207

Description: SGL STOREROOM FUNCTION INSWING STC (BLACK FINISH) KP

3	Hinge, Cam Lift	MKCL134	BSP	MK	08 71 00
1	Storeroom Lock	ML2057 NSA	BSP	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8200	BSP	RU	08 71 00
1	Kick Plate	K1050 10" CSK BEV	BSP	RO	08 71 00
1	Wall Stop	406	US32D	RO	08 71 00
1	Acoustic Seal Set (Includes Auto Door Bottom)	PEMKOSTCSET-1A	BL	PE	08 71 00
1	Threshold	151BSP		PE	08 71 00

Set: 18.0

Doors: A102, A104, A107

Description: SGL STOREROOM FUNCTION INSWING (BLACK FINISH) WIDE

3	Hinge, Full Mortise, Hvy Wt	T4A3786 5" x 4-1/2"	BSP	MK	08 71 00
1	Storeroom Lock	ML2057 NSA	BSP	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8200	BSP	RU	08 71 00
1	Kick Plate	K1050 10" CSK BEV	BSP	RO	08 71 00
1	Wall Stop	406	BSP	RO	08 71 00
3	Silencer	608-RKW		RO	08 71 00

Set: 19.0

Doors: A103B, A300, A303

Description: SGL STOREROOM FUNCTION INSWING (BLACK FINISH)

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	BSP	MK	08 71 00
1	Storeroom Lock	ML2057 NSA	BSP	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8200	BSP	RU	08 71 00
1	Wall Stop	406	BSP	RO	08 71 00
3	Silencer	608-RKW		RO	08 71 00

Set: 20.0

Doors: A302A

Description: SGL STOREROOM FUNCTION OUTSWING (BLACK FINISH)

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	BSP	MK	08 71 00
1	Storeroom Lock	ML2057 NSA	BSP	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8210	BSP	RU	08 71 00
1	Wall Stop	406	BSP	RO	08 71 00
3	Silencer	608-RKW		RO	08 71 00

Set: 21.0

Doors: A116B

Description: SGL STOREROOM FUNCTION INSWING WIDE RATED

3	Hinge, Full Mortise, Hvy Wt	T4A3786 5" x 4-1/2"	US26D	MK	08 71 00
1	Storeroom Lock	ML2057 NSA	626	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8200	689	RU	08 71 00
1	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00
1	Stop (Wall / Floor)	406 / 481 To Suit	US26D	RO	08 71 00
1	Gasketing	S773BL		PE	08 71 00

Set: 22.0

Doors: A116D

Description: SGL STOREROOM FUNCTION OUTSWING WIDE RATED CLOSER/STOP

3	Hinge, Full Mortise, Hvy Wt	T4A3786 5" x 4-1/2"	US26D	MK	08 71 00
1	Storeroom Lock	ML2057 NSA	626	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer w/ Stop	DC8210 A4	689	RU	08 71 00
1	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00
1	Gasketing	S773BL		PE	08 71 00

Set: 23.0

Doors: A124B, A125

Description: PAIR A/I STOREROOM FUNCTION RATED

6	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	08 71 00
1	Dust Proof Strike	570	US26D	RO	08 71 00
1	Flush Bolt	2945	US26D	RO	08 71 00
1	Storeroom Lock	ML2057 NSA	626	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Coordinator	1700	US28	RO	08 71 00
2	Surface Closer	DC8200	689	RU	08 71 00
2	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00
2	Wall Stop	406	US32D	RO	08 71 00
1	Astragal	18041CNB		PE	08 71 00
1	Gasketing	S773BL		PE	08 71 00

Set: 24.0

Doors: A143A

Description: PAIR A/I STOREROOM FUNCTION

6	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	08 71 00
1	Dust Proof Strike	570	US26D	RO	08 71 00
1	Flush Bolt	2945	US26D	RO	08 71 00
1	Storeroom Lock	ML2057 NSA	626	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Coordinator	1700	Black	RO	08 71 00
2	Surface Closer	DC8200	689	RU	08 71 00
2	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00
2	Wall Stop	406	US32D	RO	08 71 00
1	Astragal	18041CNB		PE	08 71 00
2	Silencer	608-RKW		RO	08 71 00

Set: 25.0

Doors: A115, A115B

Description: SGL STOREROOM FUNCTION RIM EXIT RATED

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	08 71 00
1	Fire Rated Rim Exit, Storeroom	ED5200SA N959ET	630	RU	08 71 00
1	Rim Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8210	689	RU	08 71 00
1	Wall Stop	406	US32D	RO	08 71 00
1	Gasketing	S773BL		PE	08 71 00

Set: 26.0

Doors: A123

Description: SGL STOREROOM FUNCTION RIM RATED WIDE STC

3	Hinge, Cam Lift	MKCL180	US32D	MK	08 71 00
1	Fire Rated Rim Exit, Storeroom	ED5200SA N959ET	630	RU	08 71 00
1	Rim Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8210	689	RU	08 71 00
1	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00
1	Wall Stop	406	US32D	RO	08 71 00
1	Acoustic Seal Set (Includes Auto Door Bottom)	PEMKOSTCSET-1A	BL	PE	08 71 00
1	Threshold	151A		PE	08 71 00

Set: 27.0

Doors: E106B

Description: SGL STOREROOM FUNCTION RIM EXIT RATED CLOSER/STOP

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	08 71 00
1	Fire Rated Rim Exit, Storeroom	ED5200SA N959ET	630	RU	08 71 00
1	Rim Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer w/ Hvy Dty Stop	DC8210 A11	689	RU	08 71 00
1	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00
1	Gasketing	S773BL		PE	08 71 00

Set: 28.0

Doors: E101, E104

Description: SGL STOREROOM FUNCTION (NO CLOSER) STC

3	Hinge, Cam Lift	MKCL134 4-1/2" x 4-1/2"	US32D	MK	08 71 00
1	Storeroom Lock	ML2057 NSA	626	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Wall Stop	406	US32D	RO	08 71 00
1	Acoustic Seal Set (Includes Auto Door Bottom)	PEMKOSTCSET-1A	BL	PE	08 71 00
1	Threshold	151A		PE	08 71 00

Set: 29.0

Doors: E100A, E100B, E100C, E106A, E106C

Description: PAIR STOREROOM FUNCTION SVR STC

6	Hinge, Cam Lift	MKCL180	US32D	MK	08 71 00
1	Surf Vert Rod, Storeroom	ED5470B N959ET M55	630	RU	08 71 00
1	Surf Vert Rod, Dummy	ED5470B N950ET M55	630	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
2	Surface Closer w/ Hvy Dty Stop	DC8210 A11	689	RU	08 71 00
2	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00
1	Acoustic Seal Set (Includes STC Threshold, Astragal)	PEMKOSTCSET-2A	BL	PE	08 71 00

Notes: AT NON-RATED OPENINGS PROVIDE ED5400 PANIC DEVICES IN LIEU OF ED5470B.

A135: OMIT KICK PLATE.

Set: 30.0

Doors: A111A, A146A, A206A, A208A

Description: PAIR SVR x PULLS STC (BLACK FINISH)

6	Hinge, Cam Lift	MKCL180	US32D	MK	08 71 00	
1	Surface Vert Rod Exit	PED5450T M52 K157ET M55	BSP	RU	08 71 00	
1	Surface Vert Rod Exit	PED5440 EO M55 M52	BSP	RU	08 71 00	⚡
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00	
2	Pull	RM3101-48 Mtg-Type 12XHD	BSP	RO	08 71 00	
2	Surface Closer w/ Hvy Dty Stop	DC8210 A11	BSP	RU	08 71 00	
1	Acoustic Seal Set (Includes STC Threshold, Astragal)	PEMKOSTCSET-2A	BL	PE	08 71 00	

Notes: MOUNT PULLS 7" FROM DOOR EDGE SO AS NOT TO BE AN OBSTRUCTION TO KEYED CYLINDER.

Set: 31.0

Doors: A135B

Description: PAIR STOREROOM FUNCTION SVR STC RATED (BLACK FINISH)

6	Hinge, Cam Lift	MKCL180	US32D	MK	08 71 00	
1	Fire Rated Surf Vert Rod, Storeroom	ED5470B N959ET M55	BSP	RU	08 71 00	
1	Fire Rated Surf Vert Rod, Dummy	ED5470B N950ET M55	BSP	RU	08 71 00	
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00	
2	Surface Closer	DC8210	BSP	RU	08 71 00	
2	Kick Plate	K1050 10" CSK BEV	BSP	RO	08 71 00	
2	Wall Stop	406	BSP	RO	08 71 00	
1	Acoustic Seal Set (Includes STC Threshold, Astragal)	PEMKOSTCSET-2A	BL	PE	08 71 00	

Set: 32.0

Doors: A101C

Description: PAIR STOREROOM FUNCTION SVR RATED MHO (CORRIDOR)

2	Continuous Hinge	CFM83HD1		PE	08 71 00	
1	Surf Vert Rod, Storeroom	ED5470B N959ET M55	630	RU	08 71 00	
1	Surf Vert Rod, Dummy	ED5470B N950ET M55	630	RU	08 71 00	
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00	
2	Surface Closer	DC8210 A3	689	RU	08 71 00	
2	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00	
2	Electromagnetic Holder	998M	689	RF	08 71 00	⚡
1	Astragal	18041CNB		PE	08 71 00	
1	Gasketing	S773BL		PE	08 71 00	

Set: 33.0

Doors: A112, A127

Description: PAIR STOREROOM FUNCTION SVR MHO (CORRIDOR)

2	Continuous Hinge	CFM83HD1		PE	08 71 00	
1	Surf Vert Rod, Storeroom	ED5470 N959ET M55	630	RU	08 71 00	
1	Surface Vert Rod Exit, Dummy	ED5470 N950ET M55	630	RU	08 71 00	
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00	
2	Surface Closer	DC8210 A3	689	RU	08 71 00	
2	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00	
2	Electromagnetic Holder	998M	689	RF	08 71 00	⚡
1	Astragal	18041CNB		PE	08 71 00	
2	Silencer	608-RKW		RO	08 71 00	

Set: 34.0

Doors: A127B

Description: PAIR STOREROOM FUNCTION SVR MHO (CORRIDOR) RATED

2	Continuous Hinge	CFM83HD1		PE	08 71 00	
1	Surf Vert Rod, Storeroom	ED5470B N959ET M55	630	RU	08 71 00	
1	Surf Vert Rod, Dummy	ED5470B N950ET M55	630	RU	08 71 00	
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00	
2	Surface Closer	DC8210 A3	689	RU	08 71 00	
2	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00	
2	Electromagnetic Holder	998M	689	RF	08 71 00	⚡
1	Astragal	18041CNB		PE	08 71 00	
1	Gasketing	S773BL		PE	08 71 00	

Set: 35.0

Doors: A112A

Description: PAIR CARD READER SVR MHO (CORRIDOR)

2	Continuous Hinge	CFM83HD1 EL-CEPTx32D		PE	08 71 00	⚡
1	Electrified SVR Exit, Fail Secure	ED5470 N9905ET M55 M92	630	RU	08 71 00	⚡
1	Surface Vert Rod Exit, Dummy	ED5470 N950ET M55 M92	630	RU	08 71 00	⚡
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00	
2	Surface Closer	DC8210	689	RU	08 71 00	
2	Electromagnetic Holder	998M	689	RF	08 71 00	⚡
1	Astragal	18041CNB		PE	08 71 00	
2	Silencer	608-RKW		RO	08 71 00	
2	ElectroLynx Harness	QC-C2500P		MK	08 71 00	⚡
2	ElectroLynx Harness	QC-C300P		MK	08 71 00	⚡
2	Position Switch	DPS-X-GY		SU	08 71 00	⚡
1	Power Supply	AQD x Amps Required		SU	08 71 00	⚡
1	Card Reader	By Security Contractor		OT		

Set: 36.0

Doors: A121A

Description: PAIR STOREROOM FUNCTION RIM EXIT WIDE STC

8	Hinge, Cam Lift	MKCL180	US32D	MK	08 71 00
1	Mullion	CR910BKM CT7R		RU	08 71 00
1	Rim Exit Device, Storeroom	ED5200S N959ET	630	RU	08 71 00
1	Rim Exit Device, Dummy	ED5200S N950ET	630	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Rim Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
2	Surface Closer	DC8210 A3	689	RU	08 71 00
2	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00
2	Wall Stop	406	US32D	RO	08 71 00
1	Gasketing	S773BL		PE	08 71 00
1	Gasketing (Mullion)	5110BL		PE	08 71 00
1	Acoustic Seal Set (Includes STC Threshold, Astragal)	PEMKOSTCSET-2A	BL	PE	08 71 00

Set: 37.0

Doors: E100D

Description: PAIR STOREROOM FUNCTION SVR KP

6	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	08 71 00
1	Surf Vert Rod, Storeroom	ED5470 N959ET M55	630	RU	08 71 00
1	Surface Vert Rod Exit, Dummy	ED5470 N950ET M55	630	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
2	Surface Closer	DC8210	689	RU	08 71 00
2	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00
2	Wall Stop	406	US32D	RO	08 71 00
1	Astragal	18041CNB		PE	08 71 00
1	Gasketing	S773BL		PE	08 71 00

Set: 38.0

Doors: A300A

Description: PAIR STOREROOM FUNCTION SVR

6	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	08 71 00
1	Surf Vert Rod, Storeroom	ED5470 N959ET M55	630	RU	08 71 00
1	Surface Vert Rod Exit, Dummy	ED5470 N950ET M55	630	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
2	Surface Closer	DC8210	689	RU	08 71 00
2	Wall Stop	406	US32D	RO	08 71 00
1	Astragal	18041CNB		PE	08 71 00
1	Gasketing	S773BL		PE	08 71 00

Set: 39.0

Doors: A205

Description: SGL STOREROOM FUNCTION RIM EXIT (BLACK FINISH)

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	BSP	MK	08 71 00
1	Rim Exit Device, Storeroom	ED5200S N959ET	BSP	RU	08 71 00
1	Rim Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer w/ Stop	DC8210 A4	BSP	RU	08 71 00
1	Kick Plate	K1050 10" CSK BEV	BSP	RO	08 71 00
3	Silencer	608-RKW		RO	08 71 00

Set: 40.0

Doors: A144B

Description: SGL STOREROOM FUNCTION RIM EXIT RATED (BLACK FINISH) RATED

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	BSP	MK	08 71 00
1	Fire Rated Rim Exit, Storeroom	ED5200SA N959ET	BSP	RU	08 71 00
1	Rim Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer w/ Stop	DC8210 A4	BSP	RU	08 71 00
1	Kick Plate	K1050 10" CSK BEV	BSP	RO	08 71 00
1	Gasketing	S773BL		PE	08 71 00

Set: 41.0

Doors: A108

Description: SGL PRIVACY FUNCTION INSWING (BLACK FINISH)

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	BSP	MK	08 71 00
1	Privacy Lock	ML2030 NSA M19V	BSP	RU	08 71 00
1	Surface Closer	DC8200	BSP	RU	08 71 00
1	Wall Stop	406	BSP	RO	08 71 00
3	Silencer	608-RKW		RO	08 71 00

Set: 42.0

Doors: A128B, A129B, A138

Description: SGL PRIVACY FUNCTION INSWING

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	08 71 00
1	Privacy Lock	ML2030 NSA M19V	626	RU	08 71 00
1	Surface Closer	DC8200	689	RU	08 71 00
1	Wall Stop	406	US32D	RO	08 71 00
3	Silencer	608-RKW		RO	08 71 00

Set: 43.0

Doors: A128A, A129A, A130

Description: SGL PRIVACY/ENTRANCE FUNCTION CLOSER/STOP RATED

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	08 71 00
1	Entrance Lock w/ Indicator	ML2024 NSVN V33	626	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer w/ Stop	DC8210 A4	689	RU	08 71 00
1	Gasketing	S773BL		PE	08 71 00

Set: 44.0

Doors: A139

Description: SGL ENTRY FUNCTION CLOSER/STOP

3	Hinge, Full Mortise, Hvy Wt	T4A3786 5" x 4-1/2"	US26D	MK	08 71 00
1	Entrance Lock	ML2024 NSA	626	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer w/ Stop	DC8210 A4	689	RU	08 71 00
3	Silencer	608-RKW		RO	08 71 00

Set: 45.0

Doors: E102A, E102B, E103

Description: SGL ENTRY FUNCTION STC

3	Hinge, Cam Lift	MKCL134 4-1/2" x 4-1/2"	US32D	MK	08 71 00
1	Entrance Lock	ML2024 NSA	626	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Wall Stop	406	US32D	RO	08 71 00
1	Acoustic Seal Set (Includes Auto Door Bottom)	PEMKOSTCSET-1A	BL	PE	08 71 00
1	Threshold	151A		PE	08 71 00

Set: 46.0

Doors: A106

Description: SGL ENTRY FUNCTION INSWING (BLACK FINISH)

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	BSP	MK	08 71 00
1	Entrance Lock	ML2024 NSA	BSP	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Surface Closer	DC8200	BSP	RU	08 71 00
1	Wall Stop	406	BSP	RO	08 71 00
3	Silencer	608-RKW		RO	08 71 00

Set: 47.0

Doors: A140

Description: SGL ENTRY FUNCTION NO CLOSER

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US26D	MK	08 71 00
1	Entrance Lock	ML2024 NSA	626	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Wall Stop	406	US32D	RO	08 71 00
3	Silencer	608-RKW		RO	08 71 00

Set: 48.0

Doors: A121C

Description: SGL PUSH/PULL (BSP FINISH) WIDE

3	Hinge, Full Mortise, Hvy Wt	T4A3786 5" x 4-1/2"	BSP	MK	08 71 00
1	Pull	RM3101-48 Mtg-Type 12XHD	BSP	RO	08 71 00
1	Push Plate	RM1010	Match	RO	08 71 00
1	Surface Closer	DC8210	BSP	RU	08 71 00
1	Kick Plate	K1050 10" CSK BEV	BSP	RO	08 71 00
1	Wall Stop	406	BSP	RO	08 71 00
1	Gasketing	S773BL		PE	08 71 00

Set: 49.0

Doors: A344

Description: SGL PASSAGE FUNCTION RIM EXIT STC (BLACK FINISH)

3	Hinge, Cam Lift	MKCL134	BSP	MK	08 71 00
1	Rim Exit Device, Passage	ED5200S N910ET	BSP	RU	08 71 00
1	Surface Closer	DC8210	BSP	RU	08 71 00
1	Kick Plate	K1050 10" CSK BEV	BSP	RO	08 71 00
1	Wall Stop	406	BSP	RO	08 71 00
1	Acoustic Seal Set (Includes Auto Door Bottom)	PEMKOSTCSET-1A	BL	PE	08 71 00
1	Gasketing	S773BL		PE	08 71 00
1	Threshold	151BSP		PE	08 71 00

Set: 50.0

Doors: A144C

Description: SGL PASSAGE FUNCTION RIM EXIT STC

3	Hinge, Cam Lift	MKCL134	US32D	MK	08 71 00
1	Rim Exit Device, Passage	ED5200S N910ET	630	RU	08 71 00
1	Surface Closer	DC8210	689	RU	08 71 00
1	Kick Plate	K1050 10" BEV CSK	US32D	RO	08 71 00
1	Wall Stop	406	US32D	RO	08 71 00
1	Acoustic Seal Set (Includes Auto Door Bottom)	PEMKOSTCSET-1A	BL	PE	08 71 00
1	Gasketing	S773BL		PE	08 71 00
1	Threshold	151A		PE	08 71 00

Set: 51.0

Doors: A144A

Description: SGL PASSAGE FUNCTION RIM EXIT (BLACK FINISH)

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	BSP	MK	08 71 00
1	Rim Exit Device, Passage	ED5200S N910ET	BSP	RU	08 71 00
1	Surface Closer	DC8210	BSP	RU	08 71 00
1	Kick Plate	K1050 10" CSK BEV	BSP	RO	08 71 00
1	Wall Stop	406	BSP	RO	08 71 00
1	Gasketing	S773BL		PE	08 71 00

Set: 52.0

Doors: A105, A110, A202, A204

Description: SGL PUSH / PULL (BLACK FINISH)

3	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	BSP	MK	08 71 00
1	Deadbolt	DL4117	BSP	RU	08 71 00
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00
1	Push Plate	RM1010	Match	RO	08 71 00
1	Pull	RM3101-12 Mtg-Type 12XHD	BSP	RO	08 71 00
1	Surface Closer	DC8200	BSP	RU	08 71 00
1	Kick Plate	K1050 10" CSK BEV	BSP	RO	08 71 00
1	Mop Plate	K1050 6" CSK BEV	BSP	RO	08 71 00
1	Wall Stop	406	BSP	RO	08 71 00
3	Silencer	608-RKW		RO	08 71 00

Set: 53.0

Doors: A135A

Description: PAIR PUSH/PULL (BSP FINISH) KP

6	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	BSP	MK	08 71 00
2	Pull	RM3101-48 Mtg-Type 12XHD	BSP	RO	08 71 00
2	Push Plate	RM1010	Match	RO	08 71 00
2	Surface Closer	DC8210	BSP	RU	08 71 00
2	Kick Plate	K1050 10" CSK BEV	BSP	RO	08 71 00
2	Wall Stop	406	BSP	RO	08 71 00
1	Astragal	18041BSPNB		PE	08 71 00
1	Gasketing	S773BL		PE	08 71 00

Notes:

Set: 54.0

Doors: A111B, A146B, A206B, A208B

Description: PAIR PUSH/PULL (BSP FINISH)

6	Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	BSP	MK	08 71 00	
2	Pull	RM3101-48 Mtg-Type 12XHD	BSP	RO	08 71 00	
2	Push Plate	RM1010	Match	RO	08 71 00	
2	Surface Closer	DC8210	BSP	RU	08 71 00	
2	Wall Stop	406	BSP	RO	08 71 00	
1	Astragal	18041BSPNB		PE	08 71 00	
1	Gasketing	S773BL		PE	08 71 00	

Notes: MOUNT PULLS 7" FROM EDGE OF DOOR.

Set: 55.0

Doors: A114A, A116A, A116C, A119, A120A, A121B, A124A

Description: OVERHEAD DOOR

2	Rim Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00	
1	Balance of Hardware	By Assembly Manufacturer		OT		

Set: 56.0

Doors: A205A

Description: SGL CARD READER LOCK OUTSWING WIDE

3	Hinge, Full Mortise, Hvy Wt	T4A3786 5" x 4-1/2"	US26D	MK	08 71 00	
1	Electric Power Transfer	CEPT-10	630	SU	08 71 00	⚡
1	Fail Secure Lock	ML20906-SEC NSA M92	626	RU	08 71 00	⚡
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00	
1	Surface Closer	DC8210	689	RU	08 71 00	
1	Wall Stop	406	US32D	RO	08 71 00	
3	Silencer	608-RKW		RO	08 71 00	
1	ElectroLynx Harness	QC-C2500P		MK	08 71 00	⚡
1	ElectroLynx Harness	QC-C300P		MK	08 71 00	⚡
1	Position Switch	DPS-X-GR		SU	08 71 00	⚡
1	Power Supply	AQD x Amps Required		SU	08 71 00	⚡
1	Card Reader	By Security Contractor		OT		

Set: 57.0

Doors: A142

Description: SGL CARD READER LOCK INSWING WIDE

3	Hinge, Full Mortise, Hvy Wt	T4A3786 5" x 4-1/2"	US26D	MK	08 71 00	
1	Electric Power Transfer	CEPT-10	630	SU	08 71 00	⚡
1	Fail Secure Lock	ML20906-SEC NSA M92	626	RU	08 71 00	⚡
1	Mortise Cylinder/Core	Match Existing Pyramid LFIC Key System	Match	RU	08 71 00	
1	Surface Closer	DC8200	689	RU	08 71 00	
1	Wall Stop	406	US32D	RO	08 71 00	
3	Silencer	608-RKW		RO	08 71 00	
1	ElectroLynx Harness	QC-C2500P		MK	08 71 00	⚡
1	ElectroLynx Harness	QC-C300P		MK	08 71 00	⚡
1	Position Switch	DPS-X-GR		SU	08 71 00	⚡
1	Power Supply	AQD x Amps Required		SU	08 71 00	⚡
1	Card Reader	By Security Contractor		OT		

Set: 58.0

Doors: A101M, A101N

Description: OPENING(S) NOT FOUND

1	Openings	Not Found	OT	

Notes: OPENINGS LISTED IN DOOR SCHEDULE, NOT TAGGED ON FLOOR PLANS.

END OF DOCUMENT

SECTION 22 05 17

SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sleeves.
2. Stack-sleeve fittings.
3. Sleeve-seal systems.
4. Sleeve-seal fittings.
5. Grout.
6. Silicone sealants.

1.2 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation, and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.3 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. 2018 California Plumbing Code.
2. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

D. Pipe and Pressure-Vessel Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

1.4 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work

shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.5 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.6 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.7 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.8 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, one (1) digital (PDF) copy of valid submittal data on all fixtures, material, equipment, and devices. Each submitted item shall be indexed and referenced to these specifications (1 pdf submittal for each specification section) and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project, but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance, and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page, and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternative.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty-five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

    b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved, and resubmittal will not be allowed.

3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications, or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures, or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.9 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.10 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.11 RECORD DRAWINGS

A. Contractor shall provide and keep up to date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.12 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 SLEEVES

A. Cast-Iron Pipe Sleeves: Cast or fabricated of cast or ductile iron and equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop collar.

B. Steel Pipe Sleeves: ASTM A53/A53M, Type E, Grade B, Schedule 40, anticorrosion coated or galvanized, with plain ends and integral welded waterstop collar.

C. Galvanized-Steel Sheet Sleeves: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.

D. PVC Pipe Sleeves: ASTM D1785, Schedule 40.

E. Molded-PVC Sleeves: With nailing flange for attaching to wooden forms.

F. Molded-PE or -PP Sleeves: Removable, tapered-cup shaped, and smooth outer surface with nailing flange for attaching to wooden forms.

2.2 STACK-SLEEVE FITTINGS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Zurn.
2. JR Smith.

B. Description: Manufactured, Dura-coated or Duco-coated galvanized cast-iron sleeve with integral clamping flange for use in waterproof floors and roofs. Include clamping ring, bolts, and nuts for membrane flashing.

1. Underdeck Clamp: Clamping ring with setscrews.

2.3 SLEEVE-SEAL SYSTEMS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Advance Products & Systems, Inc.
2. Metraflex Company (The).
3. Pipeline Seal and Insulator, Inc.

B. Description:

1. Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.
2. Designed to form a hydrostatic seal of 20 psig minimum.
3. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
4. Pressure Plates: Stainless steel.
5. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements.

2.4 SLEEVE-SEAL FITTINGS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Advance Products & Systems, Inc.
2. Metraflex Company (The).
3. Pipeline Seal and Insulator, Inc.

B. Description: Manufactured plastic, sleeve-type, waterstop assembly made for imbedding in concrete slab or wall.

C. Plastic or rubber waterstop collar with center opening to match piping OD.

2.5 GROUT

A. Description: Nonshrink, for interior and exterior sealing openings in non-fire-rated walls or floors.

B. Standard: ASTM C1107/C1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

C. Design Mix: 5000-psi, 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

2.6 SILICONE SEALANTS

A. Silicone, S, NS, 25, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant, ASTM C920, Type S, Grade NS, Class 25, Use NT.

B. Silicone, S, P, 25, T, NT: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade P, Class 25, Uses T and NT. Grade P Pourable (self-leveling) formulation is for opening in floors and other horizontal surfaces that are not fire rated.

C. Silicone Foam: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION

A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.

B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch annular clear space between piping and concrete slabs and walls.

1. Sleeves are not required for core-drilled holes.

C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.

1. Permanent sleeves are not required for holes in slabs formed by molded-PE or -PP sleeves.
2. Cut sleeves to length for mounting flush with both surfaces.

a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level.

3. Using grout or silicone sealant, seal the space outside of sleeves in slabs and walls without sleeve-seal system.

D. Install sleeves for pipes passing through interior partitions.

1. Cut sleeves to length for mounting flush with both surfaces.
2. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
3. Seal annular space between sleeve and piping or piping insulation; use joint sealants appropriate for size, depth, and location of joint.

E. Fire-Resistance-Rated Penetrations, Horizontal Assembly Penetrations, and Smoke Barrier Penetrations: Maintain indicated fire or smoke rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with fire- and smoke-stop materials. Comply with requirements for firestopping and fill materials specified in Section 078413 "Penetration Firestopping."

3.2 STACK-SLEEVE-FITTING INSTALLATION

A. Install stack-sleeve fittings in new slabs as slabs are constructed.

1. Install fittings that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
2. Secure flashing between clamping flanges for pipes penetrating floors with membrane waterproofing. Comply with requirements for flashing specified in Section 076200 "Sheet Metal Flashing and Trim."
3. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level.
4. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
5. Use silicone sealant to seal the space around outside of stack-sleeve fittings.

B. Fire-Resistance-Rated Penetrations, Horizontal Assembly Penetrations, and Smoke Barrier Penetrations: Maintain indicated fire or smoke rating of floors at pipe penetrations. Seal pipe penetrations with fire- and smoke-stop materials. Comply with requirements for firestopping specified in Section 078413 "Penetration Firestopping."

3.3 SLEEVE-SEAL-SYSTEM INSTALLATION

A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building.

B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

3.4 SLEEVE-SEAL-FITTING INSTALLATION

A. Install sleeve-seal fittings in new walls and slabs as they are constructed.

B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange to be centered in concrete slab or wall.

C. Secure nailing flanges to concrete forms.

D. Use grout or silicone sealant to seal the space around outside of sleeve-seal fittings.

3.5 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Leak Test: After allowing for a full cure, test sleeves and sleeve seals for leaks. Repair leaks and retest until no leaks exist.

B. Sleeves and sleeve seals will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

3.6 SLEEVE AND SLEEVE-SEAL SCHEDULE

A. Use sleeves and sleeve seals for the following piping-penetration applications:

1. Exterior Concrete Walls above Grade:

a. Piping Smaller Than NPS 6: Cast-iron pipe sleeves.
b. Piping NPS 6 and Larger: Cast-iron pipe sleeves.

2. Exterior Concrete Walls below Grade:

a. Piping Smaller Than NPS 6: Cast-iron pipe sleeves with sleeve-seal system.

1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

b. Piping NPS 6 and Larger: Cast-iron pipe sleeves with sleeve-seal system.

1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

3. Concrete Slabs-on-Grade:

a. Piping Smaller Than NPS 6: Cast-iron pipe sleeves with sleeve-seal system.

1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

b. Piping NPS 6 and Larger: Cast-iron pipe sleeves with sleeve-seal system.

1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

4. Concrete Slabs above Grade:

a. Piping Smaller Than NPS 6: Sleeve-seal fittings.
b. Piping NPS 6 and Larger: Steel pipe sleeves or Stack-sleeve fittings.

5. Interior Partitions:

a. Piping Smaller Than NPS 6: Steel pipe sleeves.
b. Piping NPS 6 and Larger: Galvanized-steel sheet sleeves.

END OF SECTION

SECTION 22 05 18

ESCUTCHEONS FOR PLUMBING PIPING

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. Escutcheons.
2. Floor plates.

1.3 DEFINITIONS

A. Existing Piping to Remain: Existing piping that is not to be removed and that is not otherwise indicated to be removed and salvaged, or removed and reinstalled.

1.4 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation, and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.5 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. 2018 International Plumbing Code.
2. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.6 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.7 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.8 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.9 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.10 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.11 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, one (1) digital (PDF) copy of valid submittal data on all fixtures, material, equipment, and devices. Each submitted item shall be indexed and referenced to these specifications (1 pdf submittal for each specification section) and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project, but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance, and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page, and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternative.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty-five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

    a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

        1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved, and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications, or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures, or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.12 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.13 RECORD DRAWINGS

A. Contractor shall provide and keep up to date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 ESCUTCHEONS

A. One-Piece, Steel Type: With polished, chrome-plated finish and setscrew fastener.

B. One-Piece, Stainless-Steel Type: With polished stainless-steel finish.

C. One-Piece, Cast-Brass Type: With polished, chrome-plated finish and setscrew fastener.

D. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with polished, chrome-plated finish and spring-clip fasteners.

E. One-Piece, Stamped-Steel Type: With polished, chrome-plated finish and spring-clip fasteners.

F. Split-Plate, Stamped-Steel Type: With polished, chrome-plated finish; concealed hinge; and spring-clip fasteners.

2.2 FLOOR PLATES

A. Split Floor Plates: Cast brass with concealed hinge.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.

B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of insulated piping and with OD that completely covers opening.

1. Escutcheons for Piping:

a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep pattern.
b. Chrome-Plated Piping: One-piece steel with polished, chrome-plated finish.
c. Insulated Piping: One-piece steel with polished, chrome-plated finish.
d. Insulated Piping: One-piece stainless steel with polished stainless-steel finish.
e. Insulated Piping: One-piece cast brass with polished, chrome-plated finish.
f. Insulated Piping: One-piece stamped steel with polished, chrome-plated finish.
g. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece steel with polished, chrome-plated finish.
h. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece stainless steel with polished stainless-steel finish.
i. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece cast brass with polished, chrome-plated finish.
j. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece stamped steel with polished, chrome-plated finish.
k. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece steel with polished, chrome-plated finish.
l. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece stainless steel with polished stainless-steel finish.
m. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece cast brass with polished, chrome-plated finish.
n. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece stamped steel with polished, chrome-plated finish.

o. Bare Piping in Unfinished Service Spaces: One-piece steel with polished, chrome-plated finish.
p. Bare Piping in Unfinished Service Spaces: One-piece cast brass with polished, chrome-plated finish.
q. Bare Piping in Unfinished Service Spaces: One-piece stamped steel with polished, chrome-plated finish.
r. Bare Piping in Equipment Rooms: One-piece steel with polished, chrome-plated finish.
s. Bare Piping in Equipment Rooms: One-piece cast brass with polished, chrome-plated finish.
t. Bare Piping in Equipment Rooms: One-piece stamped steel with polished, chrome-plated finish.

2. Escutcheons for Existing Piping to Remain:

a. Chrome-Plated Piping: Split-casting, stamped steel with concealed hinge with polished, chrome-plated finish.
b. Insulated Piping: Split-plate, stamped steel with concealed hinge with polished, chrome-plated finish
c. Bare Piping at Wall and Floor Penetrations in Finished Spaces: Split-plate, stamped steel with concealed hinge with polished, chrome-plated finish.
d. Bare Piping at Ceiling Penetrations in Finished Spaces: Split-plate, stamped steel with concealed hinge with polished, chrome-plated finish.
e. Bare Piping in Unfinished Service Spaces: Split-plate, stamped steel with concealed hinge with polished, chrome-plated finish.
f. Bare Piping in Equipment Rooms: Split-plate, stamped steel with concealed hinge with polished, chrome-plated finish.

C. Install floor plates for piping penetrations of equipment-room floors.

D. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

1. New Piping and Relocated Existing Piping: One-piece, floor plate.
2. Existing Piping: Split floor plate.

3.2 FIELD QUALITY CONTROL

A. Using new materials, replace broken and damaged escutcheons and floor plates.

END OF SECTION

SECTION 22 05 29

HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal pipe hangers and supports.
2. Trapeze pipe hangers.
3. Metal framing systems.
4. Thermal hanger-shield inserts.
5. Fastener systems.
6. Pipe stands.
7. Pipe-positioning systems.
8. **VoidForm System**
9. Equipment supports.

1.2 DEFINITIONS

A. MSS: Manufacturers Standardization Society of The Valve and Fittings Industry Inc.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design trapeze pipe hangers and equipment supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Hangers and supports for plumbing piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.

C. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.

D. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

E. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

1.4 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation, and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.5 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. 2018 International Plumbing Code
2. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

C. Structural-Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M.

D. Pipe Welding Qualifications: Qualify procedures and operators according to 2021 ASME Boiler and Pressure Vessel Code, Section IX.

1.6 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.7 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.8 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.9 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Show fabrication and installation details and include calculations for the following:

1. Trapeze pipe hangers.
2. Metal framing systems.
3. Fiberglass strut systems.
4. Pipe stands.
5. Equipment supports.

C. Delegated-Design Submittal: For trapeze hangers indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Detail fabrication and assembly of trapeze hangers.
2. Include design calculations for designing trapeze hangers.

1.10 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, one (1) digital (PDF) copy of valid submittal data on all fixtures, material, equipment, and devices. Each submitted item shall be indexed and referenced to these specifications (1 pdf submittal for each specification section) and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project, but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
c. Include all pertinent construction, installation, performance, and technical data.
d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page, and item numbers.

e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternative.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty-five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled "SPECIFIED ITEM, NOT SUBMITTED". Product data sheets for the corresponding proposed substitution item shall be clearly labeled "PROPOSED SUBSTITUTION".

b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor's responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved, and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications, or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.

5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures, or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.11 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.12 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.13 RECORD DRAWINGS

A. Contractor shall provide and keep up to date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.14 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design trapeze pipe hangers and equipment supports.

B. Structural Performance: Hangers and supports for plumbing piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to **ASCE/SEI 7**.

1. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.
2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
3. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

2.2 METAL PIPE HANGERS AND SUPPORTS

A. Carbon-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Galvanized Metallic Coatings: Pregalvanized, hot-dip galvanized, or electro-galvanized.
3. Nonmetallic Coatings: Plastic coated or epoxy powder coated.
4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
5. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

B. Stainless-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
3. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

C. Copper Pipe and Tube Hangers:

1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.
2. Hanger Rods: Continuous-thread rod, nuts, and washer made of copper-coated steel.

2.3 TRAPEZE PIPE HANGERS

A. Description: MSS SP-58, Type 59, shop- or field-fabricated pipe-support assembly, made from structural-carbon-steel shapes, with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

2.4 THERMAL HANGER-SHIELD INSERTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ERICO International Corporation.
2. PHS Industries, Inc.

3. Pipe Shields, Inc.; a subsidiary of Piping Technology & Products, Inc.
4. Piping Technology & Products, Inc.

B. Insulation-Insert Material for Cold Piping: ASTM C552, Type II cellular glass with 100-psig or ASTM C591, Type VI, Grade 1 polyisocyanurate with 125-psig minimum compressive strength and vapor barrier.

C. Insulation-Insert Material for Hot Piping: ASTM C552, Type II cellular glass with 100-psig or ASTM C591, Type VI, Grade 1 polyisocyanurate with 125-psig minimum compressive strength.

D. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.

E. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.

F. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.5 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

B. Mechanical-Expansion Anchors: Insert-wedge-type anchors, for use in hardened portland cement concrete, with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

1. Indoor Applications: Zinc-coated or stainless steel.
2. Outdoor Applications: Stainless steel.

2.6 PIPE STANDS

A. General Requirements for Pipe Stands: Shop- or field-fabricated assemblies made of manufactured corrosion-resistant components to support roof-mounted piping.

B. Compact Pipe Stand:

1. Description: Single base unit with integral-rod roller, pipe clamps, or V-shaped cradle to support pipe, for roof installation without membrane penetration.
2. Base: Single, vulcanized rubber, molded polypropylene, or polycarbonate.
3. Hardware: Galvanized steel or polycarbonate.
4. Accessories: Protection pads.

C. Low-Profile, Single-Base, Single-Pipe Stand:

1. Description: Single base with vertical and horizontal members, and pipe support, for roof installation without membrane protection.
2. Base: Single, vulcanized rubber, molded polypropylene, or polycarbonate.
3. Vertical Members: Two galvanized-steel, continuous-thread, 1/2-inch rods.
4. Horizontal Member: Adjustable horizontal, galvanized-steel pipe support channels.
5. Pipe Supports: Clevis hanger.
6. Hardware: Galvanized steel.
7. Accessories: Protection pads.

8. Height: 12 inches above roof**.**

D. High-Profile, Single-Base, Single-Pipe Stand:

1. Description: Single base, vertical and horizontal members, and pipe support, for roof installation without membrane penetration.
2. Base: Single vulcanized rubber or molded polypropylene.
3. Vertical Members: Two galvanized-steel, continuous-thread, 1/2-inch rods.
4. Horizontal Member: One adjustable-height, galvanized-steel, pipe-support slotted channel or plate.
5. Pipe Supports: Clevis hanger.
6. Hardware: Galvanized steel.
7. Accessories: Protection pads, 1/2-inch, continuous-thread, galvanized-steel rod.
8. Height: 36 inches above roof.

E. High-Profile, Multiple-Pipe Stand:

1. Description: Assembly of bases, vertical and horizontal members, and pipe supports, for roof installation without membrane penetration.
2. Bases: Two or more; vulcanized rubber.
3. Vertical Members: Two or more, galvanized-steel channels.
4. Horizontal Members: One or more, adjustable-height, galvanized-steel pipe support.
5. Pipe Supports: Clevis hanger.
6. Hardware: Galvanized steel.
7. Accessories: Protection pads, 1/2-inch, continuous-thread rod.
8. Height: 36 inches above roof.

F. Curb-Mounted-Type Pipe Stands: Shop- or field-fabricated pipe supports made from structural-steel shapes, continuous-thread rods, and rollers, for mounting on permanent stationary roof curb.

2.7 PIPE-POSITIONING SYSTEMS

A. Description: IAPMO PS 42 positioning system composed of metal brackets, clips, and straps for positioning piping in pipe spaces; for plumbing fixtures in commercial applications.

2.8 VOIDForm SYSTEM - Plumbing Pipe Support Below Structural Slabs on Grade

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. VoidForm-PlumbingVoid System

B. Description: Comprised of corrosion-proof components made from materials that include fiber-reinforced polymer (FRP), polypropylene, and polyacetal plastics. The polypropylene material is produced as a fluted (i.e. channeled) plastic panel having supports perpendicular to the exterior faces that connect to create a rigid sheet. This sheet is used to fabricate the Side Panels, End Caps (i.e. bulkheads) and TopCaps™ that form the exterior shell, which is held in position with U-shaped Connectors and Crossbars. This assembly forms a rigid structure that resists lateral soil pressures. Additional Connector/Crossbar Assemblies, as well as the provided Washer Assemblies, are positioned on the top edge of the Side Panels and span between them. This provides a supporting structure by which the pipes can be temporarily suspended and adjusted to the proper slope. Two different configurations are available: one for trench depths up to 6' and another for trench depths ranging from 6’ to 10’.

C. **After the Side Panels and End Caps have been joined together with the appropriate Connectors and Crossbars, the clevis hanger spacing is determined. An embed plate, strut channel, or other attachment device used with each clevis hanger assembly is positioned at the top of a vertical threaded rod and will become anchored into the concrete slab as it sets for permanent support. After the pipes are inspected (initially visible from above through the open top), the slit-scored TopCap™ is formed and**

held in place with Connectors and Crossbars to create an enclosing cover. Once the PlumbingVoid System is backfilled, the underlying, swelling soils can expand vertically through the open bottom and into the empty space that has been created. Side Panels in contact with the soil at the bottom can be safely forced upwards by vertical soil expansion; the system is designed to disengage from the supporting threaded rod at the Washer Assembly. The assembled PlumbingVoid® System effectively isolates the plumbing network from the damaging soil upheaval that causes broken, leaking pipes.

D. All plumbing pipes shall be supported by an approved suspension system.

E. System Structure:

1. Provides a dimensionally stable underground void space that is independent from the overhead structural slab. The subterranean system shall support the weight of suspended lateral pipes and typical backfill material throughout the construction process.

2. The system shall be designed to temporarily position and suspend the lateral pipes at the specified height and slope until pipes are permanently anchored to the overhead structural slab by the securing hanger (clevis) system. The open, underground system will then remain independent from the securing hangers.

3. The open space of the system beneath the structural slab is designed to receive the infill of vertical expansion from the underlying soils. If vertical pressure is applied to the edges of the system in contact with the soil, the uplifting soil pressure will apply exclusively to the system and not the pipes. Therefore, the system shall be designed to move separately and independently of the lateral pipes.

F. System Components:

1. The system shall have waterproof components related to its intended performance.

2. The system must maintain its structural integrity in all humid environments.

3. The system must have industry-proven performance in inclement weather conditions.

4. The system shall be able to perform when submerged in water.

5. All system components, excluding clevises, threaded rods, and nuts, shall be furnished by the designed system manufacturer.

6. It is recommended that all independent components not included in the designed system should comply with the project specifications in order to get the intended results of the designed system.

7. Each vertical threaded rod must have a component secured toward the top end and be permanently affixed into the concrete slab in order to maintain the specified elevation.

8. System shall be installed per the manufacturer's requirements and recommendations.

9. Acceptable Products: Proven systems that comply with these requirements.

2.9 EQUIPMENT SUPPORTS

A. Description: Welded, shop- or field-fabricated equipment support made from structural-carbon-steel shapes.

2.10 MATERIALS

A. Aluminum: ASTM B221.

B. Carbon Steel: ASTM A1011/A1011M.

C. Structural Steel: ASTM A36/A36M carbon-steel plates, shapes, and bars; black and galvanized.

D. Stainless Steel: ASTM A240/A240M.

E. Grout: ASTM C1107/C1107M, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.

1. Properties: Nonstaining, noncorrosive, and nongaseous.
2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping materials and installation, for penetrations through fire-rated walls, ceilings, and assemblies.

B. Strength of Support Assemblies: Where not indicated, select sizes of components, so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

3.2 HANGER AND SUPPORT INSTALLATION

A. Metal Pipe-Hanger Installation: Comply with MSS SP-58. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.

B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-58. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.

1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size, or install intermediate supports for smaller-diameter pipes as specified for individual pipe hangers.
2. Field fabricate from ASTM A36/A36M carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.

C. Fiberglass Pipe-Hanger Installation: Comply with applicable portions of MSS SP-58. Install hangers and attachments as required to properly support piping from building structure.

D. Metal Framing System Installation: Arrange for grouping of parallel runs of piping, and support together on field-assembled metal framing systems.

E. Thermal Hanger-Shield Installation: Install in pipe hanger or shield for insulated piping.

F. Fastener System Installation:

1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete, after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
2. Install mechanical-expansion anchors in concrete, after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

G. Pipe Stand Installation:

1. Pipe Stand Types, except Curb-Mounted Type: Assemble components and mount on smooth roof surface. Do not penetrate roof membrane.
2. Curb-Mounted-Type Pipe Stands: Assemble components or fabricate pipe stand and mount on permanent, stationary roof curb. See Section 077200 "Roof Accessories" for curbs.

H. Pipe-Positioning-System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture.

I. Plumbing Void System Installation: For Plumbing Pipe Support Below Structural Slabs on Grade: Install support system including clevis hangers, panels, connector/crossbar assemblies, top cap assemblies, stiffening rods, complete with necessary attachments, corrosive proof threaded rod, nuts, washers and other accessories. Adhere to manufacturer recommendations for device and support spacing. Refer to Geotechnical Technical Report and Structural for required void space following the most stringent requirement. Provide suitability backfill materials. Refer to manufacturer instructions to protect installation during construction.

J. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

K. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

L. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

M. Install lateral bracing with pipe hangers and supports to prevent swaying.

N. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

O. Load Distribution: Install hangers and supports, so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

P. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.

Q. Insulated Piping:

1. Attach clamps and spacers to piping.

a. Piping Operating Above Ambient Air Temperature: Clamp may project through insulation.

b. Piping Operating Below Ambient Air Temperature: Use thermal hanger-shield insert with clamp sized to match OD of insert.
c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.

2. Install MSS SP-58, Type 39 protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.

a. Option: Thermal hanger-shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.

3. Install MSS SP-58, Type 40 protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.

a. Option: Thermal hanger-shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.

4. Shield Dimensions for Pipe: Not less than the following:

a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
b. NPS 4: 12 inches long and 0.06 inch thick.
c. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
d. NPS 8 to NPS 14: 24 inches long and 0.075 inch thick.
e. NPS 16 to NPS 24: 24 inches long and 0.105 inch thick.

5. Pipes NPS 8 and Larger: Include wood or reinforced calcium-silicate-insulation inserts of length at least as long as protective shield.
6. Thermal Hanger Shields: Install with insulation of same thickness as piping insulation.

3.3 EQUIPMENT SUPPORTS

A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.

B. Grouting: Place grout under supports for equipment and make bearing surface smooth.

C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.4 METAL FABRICATIONS

A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.

B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish welds at exposed connections, so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.5 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.6 PAINTING

A. Touchup: Clean field welds and abraded, shop-painted areas. Paint exposed areas immediately after erecting hangers and supports. Use same materials as those used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.

B. Touchup: Cleaning and touchup painting of field welds, bolted connections, and abraded, shop-painted areas on miscellaneous metal are specified in Section 099113 "Exterior Painting." Section 099123 "Interior Painting" or Section 099600 "High-Performance Coatings."

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas, and apply galvanizing-repair paint to comply with ASTM A780/A780M.

3.7 HANGER AND SUPPORT SCHEDULE

A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.

B. Comply with MSS SP-58 for pipe-hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finishes.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use carbon-steel pipe hangers and supports, metal trapeze pipe hangers and metal framing systems and attachments for general service applications.

F. Use stainless-steel pipe hangers and stainless-steel or corrosion-resistant attachments for hostile environment applications.

G. Use copper-plated pipe hangers and copper attachments for copper piping and tubing.

H. Use padded hangers for piping that is subject to scratching.

I. Use thermal hanger-shield inserts for insulated piping and tubing.

J. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 30.

2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of up to 1050 deg F pipes NPS 4 to NPS 24, requiring up to 4 inches of insulation.
3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes NPS 3/4 to NPS 36, requiring clamp flexibility and up to 4 inches of insulation.
4. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes NPS 1/2 to NPS 24 if little or no insulation is required.
5. Pipe Hangers (MSS Type 5): For suspension of pipes NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
6. Adjustable, Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of noninsulated, stationary pipes NPS 3/4 to NPS 8.
7. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
8. Adjustable, Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
9. Split Pipe Ring with or without Turnbuckle Hangers (MSS Type 11): For suspension of noninsulated, stationary pipes NPS 3/8 to NPS 8.
10. Extension Hinged or Two-Bolt Split Pipe Clamps (MSS Type 12): For suspension of noninsulated, stationary pipes NPS 3/8 to NPS 3.
11. U-Bolts (MSS Type 24): For support of heavy pipes NPS 1/2 to NPS 30.
12. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.
13. Pipe Saddle Supports (MSS Type 36): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate.
14. Pipe Stanchion Saddles (MSS Type 37): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate, and with U-bolt to retain pipe.
15. Adjustable Pipe Saddle Supports (MSS Type 38): For stanchion-type support for pipes NPS 2-1/2 to NPS 36 if vertical adjustment is required, with steel-pipe base stanchion support and cast-iron floor flange.
16. Single-Pipe Rolls (MSS Type 41): For suspension of pipes NPS 1 to NPS 30, from two rods if longitudinal movement caused by expansion and contraction occurs.
17. Adjustable Roller Hangers (MSS Type 43): For suspension of pipes NPS 2-1/2 to NPS 24, from single rod if horizontal movement caused by expansion and contraction occurs.
18. Complete Pipe Rolls (MSS Type 44): For support of pipes NPS 2 to NPS 42 if longitudinal movement caused by expansion and contraction occurs but vertical adjustment is unnecessary.
19. Pipe Roll and Plate Units (MSS Type 45): For support of pipes NPS 2 to NPS 24 if small horizontal movement caused by expansion and contraction occurs and vertical adjustment is unnecessary.
20. Adjustable Pipe Roll and Base Units (MSS Type 46): For support of pipes NPS 2 to NPS 30 if vertical and lateral adjustment during installation, in addition to expansion and contraction, is required.

K. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.
2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 if longer ends are required for riser clamps.

L. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel Turnbuckles (MSS Type 13): For adjustment of up to 6 inches for heavy loads.
2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11 split pipe rings.
4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.

M. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel or Malleable-Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
6. C-Clamps (MSS Type 23): For structural shapes.
7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of steel I-beams for heavy loads, with link extensions.
11. Malleable-Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
12. Welded-Steel Brackets: For support of pipes from below or for suspending from above by using clip and rod. Use one of the following for indicated loads:

    a. Light (MSS Type 31): 750 lb.
    b. Medium (MSS Type 32): 1500 lb.
    c. Heavy (MSS Type 33): 3000 lb.

13. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
14. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.
15. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.

N. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
3. Thermal Hanger-Shield Inserts: For supporting insulated pipe.

O. Comply with MSS SP-58 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.

P. Comply with MFMA-103 for metal framing system selections and applications that are not specified in piping system Sections.

Q. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

R. Use pipe-positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures.

END OF SECTION

SECTION 22 13 19

SANITARY WASTE PIPING SPECIALTIES

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. Floor drains.
2. Floor sinks
3. Trench drains.
4. Cleanouts.
5. Miscellaneous sanitary drainage piping specialties.

1.3 DEFINITIONS

A. ABS: Acrylonitrile butadiene styrene.

B. PVC: Polyvinyl chloride.

C. FOG: Fats, oils, and greases.

D. HDPE: High-density polyethylene plastic.

1.4 WORK INCLUDED

A. Furnish all labor, materials, services, testing, transportation, and equipment necessary for the completion of all plumbing work as indicated on drawings and specified herein. Work materials and equipment not indicated or specified which is necessary for the complete and proper operation of the work of this Section in accordance with the true intent and meaning of the contract documents shall be provided and incorporated at no additional cost to the Owner.

1.5 QUALITY ASSURANCE

A. Code Requirements: All work covered by this Section shall conform to the latest requirements of the following regulations:

1. 2018 International Plumbing Code.
2. Any other legally constituted body-having jurisdiction thereof.

B. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted authorities having jurisdiction and from the Owner's representative.

1.6 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10-foot head of water.

B. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1.7 DRAWINGS

A. Because of the small-scale drawings, it is not possible to indicate all offsets, fittings and accessories which may be required. The Contractor shall carefully investigate the conditions surrounding installation of his work, furnishing the necessary piping, fittings, valves, traps, and other devices which may be required to complete the installation.

B. The general arrangement indicated on the drawings shall be followed as closely as possible. Coordinate with the Architectural, Structural, Mechanical and Electrical Drawings and the work of other trades prior to installation of piping fixtures and equipment to verify adequate space available for installation of the work shown. In the event a field condition arises which makes it impossible to install the work as indicated, submit, in writing, the proposed departures to the Architect for his approval. Only when Architect's approval is given, in writing, shall Contractor proceed with installation of the work.

C. Special Note: Should the Contractor make changes in the installation differing from what is indicated on the contract drawings and not necessitated due to field conditions as indicated hereinabove, the Contractor shall be required to re-install the work to comply with what has been indicated on the contract drawings. Should it be impossible to re-install the work and the installation is in accordance with all governing authorities, the architect may permit the installation to remain. However, all costs incurred to revise the contract drawings by the engineer for resubmittal to the building department indicating the as-installed condition shall become the responsibility of the Contractor.

D. In case of a difference in the specifications or between the specifications and the drawings, the Contractor shall figure the most expensive alternate and after award of contract, shall secure direction from the Architect.

1.8 PERMITS, INSPECTIONS AND LICENSES

A. All permits, inspections and licenses required by the legally constituted authorities for installation of the work according to the plans and specifications shall be obtained and paid as a part of the work of this section.

1.9 PROTECTION

A. All work, equipment and materials shall be protected at all times. Contractor shall make good all damage caused either directly or indirectly by his own workmen. Contractor shall also protect his own work from damage. He shall close all pipe openings with caps or plugs during installation. He shall protect all his equipment and materials against dirt, water, chemical and mechanical injury. Upon completion, all work shall be thoroughly cleaned and delivered in a new condition.

B. Contractor shall be held responsible for all damage to equipment and materials until he has received written notice from the Architect or Engineer that his work has been accepted.

1.10 LOCATIONS

A. The locations of apparatus, piping and equipment indicated on the drawings are approximate. Piping and equipment shall be installed in such a manner as to avoid all obstruction, preserve headroom, and keep openings and passages clear. The locations of and mounting heights of all fixtures shall be coordinated with the architectural plans and room elevations.

B. Clearances and Openings: Contractor shall cooperate and coordinate his work with all other trades to avoid conflict and permit for a neat and orderly appearance of the entire installation. The Contractor shall, in advance of the work, furnish instructions to the General Contractor as to his requirements for equipment and material installation of any kind, whether or not specifically mentioned on drawings or in the specifications, and shall include recesses, chases in walls, and all required openings in the structure. Should furnishing this information be neglected, delayed or incorrect and additional cuttings are found to be required, the cost of the same shall be charged to this Contractor.

C. Contractor shall verify and coordinate pipe routing with location of all electrical rooms, elevator equipment rooms, telecom/data rooms, and other rooms dedicated to the housing of switchgear, panels, or other electrical equipment. In no case shall piping be installed within or above the ceiling of such rooms.

1.11 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.12 SUBMITTAL DATA

A. Submittal Requirements:

1. Furnish, all at one time, prior to any installation, within the time noted below, one (1) digital (PDF) copy of valid submittal data on all fixtures, material, equipment, and devices. Each submitted item shall be indexed and referenced to these specifications (1 pdf submittal for each specification section) and to identification numbers on fixtures and equipment schedules.
2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
3. Submittals will be checked for general conformance with the design concept of the project, but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly install work.
4. To be valid, all submittals must:

    a. Be delivered to the Architect's office within thirty-five (35) days of award of the contract. Contractor shall make time allowance for Engineer's review, return of comments, if any, and resubmittal if required. Corrections or changes in submittals returned as inadequate or incomplete shall be accomplished within this time limit.
    b. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
    c. Include all pertinent construction, installation, performance, and technical data.
    d. Have all product data sheets clearly labeled to indicate the individual items being submitted. In addition, all required options and accessories shall be clearly marked.

        1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding fixture or equipment tag number.
        2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, page, and item numbers.

    e. Include, for every item which differs in size, configuration, connections, service, accessibility or any other significant way, a drawing to the same (or larger) scale as to the pertinent

portions of the contract drawings. In this drawing show a complete layout of the system except that which is identical to the contract drawings unless the unchanged portions must be shown to indicate such things as clearances. This drawing, together with the contract design drawings must show the complete system as revised to accommodate the proposed alternative.

B. Substitution Requirements:

1. Any items included in submittals and proposed by the Contractor as substitution for that specified or shown on plans shall be submitted within thirty-five (35) days of award of the contract. After such time, proposed substitutions shall not be accepted for review, and the Contractor shall submit all items as specified or shown on plans.

   a. For each item proposed as substitution for that specified or shown on plans, copies of product data sheets for the specified item shall be placed side by side with product data sheets for the proposed substitution item within the submittal.

      1) In addition to the Submittal Requirements for labeling listed above, product data sheets for the specified item shall be clearly labeled “SPECIFIED ITEM, NOT SUBMITTED”. Product data sheets for the corresponding proposed substitution item shall be clearly labeled “PROPOSED SUBSTITUTION”.

   b. Provide calculations and other detailed data justifying how any items proposed as substitution were selected for proposal. Data must be complete enough to permit detailed comparison of every significant characteristic for which the specified item was analyzed during design.

2. It shall be the Contractor’s responsibility to provide sufficient information to allow the Engineer to analyze any proposed alternate. If inadequate information is provided, the proposal will not be approved, and resubmittal will not be allowed.
3. The Contractor shall provide or perform tests required by Engineer for purpose of judging acceptability of proposed substitutions.
4. The Contractor assumes full responsibility that alternate items and procedures will meet the job requirements and is responsible for cost of redesign and of modifications to this and other parts of work caused by alternate items furnished under work in this Section. In view of these responsibilities, it is the purpose of these specifications to establish procedures to ensure that the Contractor has considered all the ramifications of proposed alternates before submitting them for review. Submittals which do not comply with the requirements of these specifications, or which indicate proposed alternates that were selected without proper regard to the requirements of the job will not be approved. No more than one proposed alternate will be considered for each item.
5. Alternate items installed without Engineer's approval will be replaced with specified items at Contractor's expense.
6. The Architect or his authorized representative shall be the sole judge as to the quality and suitability of proposed alternate equipment, fixtures, or materials. Decisions of the Architect or that of his representative shall be final and conclusive.

1.13 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For drainage piping specialties to include in emergency, operation, and maintenance manuals.

1.14 UNINSPECTED WORK

A. The Contractor shall not allow or cause any of his work to be covered up or closed in until it has been inspected, tested, approved by all authorities have jurisdiction, and until Project Record drawings have been properly annotated.

B. Should any of his work be covered up or closed in before such inspection, he shall, at his own expense, uncover the work to the satisfaction of the inspection party. All related repair work cost shall be borne by the Contractor.

1.15 RECORD DRAWINGS

A. Contractor shall provide and keep up to date a complete "as-built" record set of blueline prints which shall show every change from the original drawings and the exact "as-built" locations and sizes of the work provided under this Section of the specifications. This set shall include locations, dimensions, depth of buried piping, cleanouts, shut-off valves, sewer invert locations, plugged wyes, tees, etc. On completion of the work, the Contractor shall incorporate all as-built information on a set of reproducible tracings provided by the Architect and this set of reproducibles shall be delivered to the Architect.

1.16 GUARANTEES

A. Contractor shall guarantee the entire plumbing and piping systems unconditionally for a period of one (1) year after final acceptance. If, during this period, any materials, equipment, or any part of the systems fail to function properly, the Contractor shall make good the defects promptly and without any expense to the Owner.

B. Contractor shall be responsible for all damage to any part of the premises caused by leaks in pipelines or equipment furnished and installed under this Section for a period of one (1) year after date of acceptance of his work.

C. All equipment and fixtures shall carry manufacturer's warranty against defective parts or poor workmanship for not less than one (1) year. See specific equipment specifications for extended warranty requirements.

1.17 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Section 033000 "Cast-in-Place Concrete."

B. Coordinate size and location of roof penetrations.

1.18 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1.19 WARRANTY

A. Listed manufacturers to provide labeling and warranty of their respective products.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTIONS

A. Sanitary waste piping specialties shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF 14 for plastic sanitary waste piping specialty components.

2.2 FLOOR DRAINS

A. Cast-Iron Floor Drains:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Zurn Industries, LLC; Plumbing Products Group.
   b. Jay R. Smith Mfg. Co.
   c. Watts; a division of Watts Water Technologies, Inc.

2. Standard: ASME A112.6.3.
3. Pattern: Floor drain.
4. Body Material: Gray iron.
5. Seepage Flange: Required.
6. Anchor Flange: Required.
7. Clamping Device: Required.
8. Outlet: Bottom.
9. Coating in first subparagraph below is usually used only on sanitary floor drains.
10. Coating on Interior and Exposed Exterior Surfaces: Acid-resistant enamel.
11. Sediment Bucket: Not required.
12. Top or Strainer Material: Nickel bronze.
13. Top of Body and Strainer Finish: Nickel bronze.
14. Top Shape: Round.

B. Stainless-Steel Floor Drains:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

   a. Josam Company.

2. Standard: ASME A112.3.1.
3. Outlet: Bottom.
4. Top or Strainer Material: Stainless steel.
5. Top Shape: Round.
6. Trap-Primer Connection: Required.

2.3 FLOOR SINKS

A. Cast-Iron Floor Sinks:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Zurn Industries, LLC; Plumbing Products Group.
   b. Jay R. Smith Mfg. Co.
   c. Watts; a division of Watts Water Technologies, Inc.

2. Standard: ASME A112.6.3.
3. Pattern: Floor Sink.
4. Body Material: Gray iron with enameled finish.
5. Seepage Flange: Required.
6. Anchor Flange: Required.
7. Clamping Device: Required.
8. Outlet: Bottom.
9. Coating on Interior and Exposed Exterior Surfaces: Acid-resistant enamel.
10. Sediment Bucket: Not required.
11. Top or Strainer Material: Nickel bronze.
12. Top of Body and Strainer Finish: Nickel bronze.
13. Top Shape: Square.

2.4 TRENCH DRAINS

A. Trench Drains:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Zurn Industries, LLC; Plumbing Products Group.
   b. Watts; a division of Watts Water Technologies, Inc.

2. Standard: ASME A112.6.3 for trench drains.
3. Material: Ductile or gray iron.
4. Flange: Anchor.
5. Clamping Device: Required.
6. Outlet: Bottom.
7. Grate Material: Ductile iron.
8. Grate Finish: Painted.
9. Top Loading Classification: Medium Duty.

2.5 CLEANOUTS

A. Cast-Iron Exposed Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Zurn Industries, LLC; Plumbing Products Group.
   b. Jay R. Smith Mfg. Co.
   c. Watts; a division of Watts Water Technologies, Inc.

2. Size: Same as connected drainage piping.
3. Body Material: Hubless, cast-iron soil pipe test tee as required to match connected piping.
4. Closure: Countersunk, brass plug.
5. Closure Plug Size: Same as or not more than one size smaller than cleanout size.

B. Stainless Steel Exposed Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Zurn Industries, LLC; Plumbing Products Group.
   b. Jay R. Smith Mfg. Co.
   c. Watts; a division of Watts Water Technologies, Inc.

2. Standard: ASME A112.3.1.
3. Size: Same as connected drainage piping.
4. Body Material: Stainless steel tee with side cleanout as required to match connected piping.
5. Closure: Stainless steel plug with seal.

C. Cast-Iron Exposed Floor Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Zurn Industries, LLC; Plumbing Products Group.
   b. Jay R. Smith Mfg. Co.
   c. Watts; a division of Watts Water Technologies, Inc.

2. Standard: ASME A112.36.2M for threaded, adjustable housing cleanout.
3. Size: Same as connected branch.
4. Type: Threaded, adjustable housing.

5. Body or Ferrule: Cast iron.
6. Clamping Device: Required.
7. Outlet Connection: Threaded.
8. Closure: Brass plug with straight threads and gasket.
9. Adjustable Housing Material: Cast iron with threads.
10. Frame and Cover Material and Finish: Stainless steel.
11. Frame and Cover Shape: Round.
12. Top-Loading Classification: Heavy Duty.
13. Riser: ASTM A74, Service Class, cast-iron drainage pipe fitting and riser to cleanout.

D. Stainless Steel Exposed Floor Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Zurn Industries, LLC; Plumbing Products Group.
    b. Jay R. Smith Mfg. Co.
    c. Watts; a division of Watts Water Technologies, Inc.

2. Standards: ASME A112.3.1NSF listed.
3. Size: Same as connected branch.
4. Housing: Type 316 stainless steel.
5. Closure: Stainless steel with seal.
6. Riser: ASTM A74, Service Class, cast-iron drainage pipe fitting and riser to cleanout.
7. Body or Ferrule: Stainless steel.
8. Clamping Device: Required.
9. Outlet Connection: Threaded.
10. Adjustable Housing Material: Cast iron with threads.
11. Frame and Cover Material and Finish: Stainless steel.
12. Frame and Cover Shape: Round.
13. Top-Loading Classification: Heavy Duty.

E. Cast-Iron Wall Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Zurn Industries, LLC; Plumbing Products Group.
    b. Jay R. Smith Mfg. Co.
    c. Watts; a division of Watts Water Technologies, Inc.

2. Standard: ASME A112.36.2M. Include wall access.
3. Size: Same as connected drainage piping.
4. Body: Hubless, cast-iron soil pipe test tee as required to match connected piping.
5. Closure Plug:

    a. Brass.
    b. Countersunk head.
    c. Drilled and threaded for cover attachment screw.
    d. Size: Same as or not more than one size smaller than cleanout size.

6. Wall Access, Cover Plate: Round, flat, chrome-plated brass, or stainless-steel cover plate with screw.
7. Wall Access, Frame and Cover: Round, stainless steel.

2.6 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES

A. Open Drains:

1. Description: Shop or field fabricate from ASTM A74, Service Class, hubless, cast-iron soil-pipe fittings. Include P-trap, hubless riser section; and where required, increaser fitting joined with ASTM C564 rubber gaskets.
2. Size: Same as connected waste piping with increaser fitting of size indicated.

B. Air-Gap Fittings:

1. Standard: ASME A112.1.2, for fitting designed to ensure fixed, positive air gap between installed inlet and outlet piping.
2. Body: Bronze or cast iron.
3. Inlet: Opening in top of body.
4. Outlet: Larger than inlet.
5. Size: Same as connected waste piping and with inlet large enough for associated indirect waste piping.

C. Sleeve Flashing Device:

1. Description: Manufactured, cast-iron fitting, with clamping device that forms sleeve for pipe floor penetrations of floor membrane. Include galvanized-steel pipe extension in top of fitting that will extend 2 inches above finished floor and galvanized-steel pipe extension in bottom of fitting that will extend through floor slab.
2. Size: As required for close fit to riser or stack piping.

D. Vent Caps:

1. Description: Cast-iron body with threaded or hub inlet and vandal-proof design. Include vented hood and setscrews to secure to vent pipe.
2. Size: Same as connected stack vent or vent stack.
3. inside of flashing collar extension, with counterflashing.

E. Expansion Joints:

1. Standard: ASME A112.6.4.
2. Body: Cast iron with bronze sleeve, packing, and gland.
3. End Connections: Matching connected piping.
4. Size: Same as connected soil, waste, or vent piping.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:

1. Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated.
2. Locate at each change in direction of piping greater than 45 degrees.
3. Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping.
4. Locate at base of each vertical soil and waste stack.

B. For floor cleanouts for piping below floors, install cleanout deck plates with top flush with finished floor.

C. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.

D. Assemble open drain fittings and install with top of hub 2 inches above floor.

E. Install deep-seal traps on floor drains and other waste outlets, if indicated.

F. Install floor-drain, trap-seal primer fittings on inlet to floor drains that require trap-seal primer connection.

1. Exception: Fitting may be omitted if trap has trap-seal primer connection.
2. Size: Same as floor drain inlet.

G. Install air-gap fittings on draining-type backflow preventers and on indirect-waste piping discharge into sanitary drainage system.

H. Install sleeve and sleeve seals with each riser and stack passing through floors with waterproof membrane.

I. Install vent caps on each vent pipe passing through roof.

J. Install expansion joints on vertical stacks and conductors. Position expansion joints for easy access and maintenance.

K. Install wood-blocking reinforcement for wall-mounting-type specialties.

L. Install traps on plumbing specialty drain outlets. Omit traps on indirect wastes unless trap is indicated.

3.2 PIPING CONNECTIONS

A. Comply with requirements in Section 221316 "Sanitary Waste and Vent Piping" for piping installation requirements. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment, to allow service and maintenance.

3.3 LABELING AND IDENTIFYING

A. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit.

1. Nameplates and signs are specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.4 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.

B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

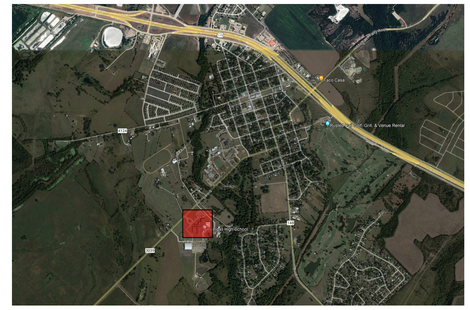
END OF SECTION

CRANDALL ISD

PERFORMING ARTS CENTER ADDITION TO CRANDALL HIGH SCHOOL

13385 FM 3039
CRANDALL, TX 75114

PROJECT LOCATION



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PROJECT DESCRIPTION

A NEW GROUND UP ADDITION TO THE EXISTING CRANDALL ISD HIGH SCHOOL. ADDITION WILL HOUSE PERFORMING ARTS LEARNING SPACES ALONG WITH A NEW PERFORMING ARTS THEATER. NEW ADDITION WILL BE SEPARATED FROM THE EXISTING HIGH SCHOOL WITH AN EXISTING FIRE WALL.

BUILDING CODE INFORMATION

2021 INTERNATIONAL BUILDING CODE (IBC)
2021 INTERNATIONAL FIRE CODE (IFC)
2021 INTERNATIONAL MECHANICAL CODE (IMC)
2021 INTERNATIONAL FUEL GAS CODE (IFGC)
2023 NATIONAL ELECTRICAL CODE (NEC)
2021 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
2012 TEXAS ACCESSIBILITY STANDARDS (TAS)

SHEET LIST

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CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS
01 08/19/24 ADDENDUM 01

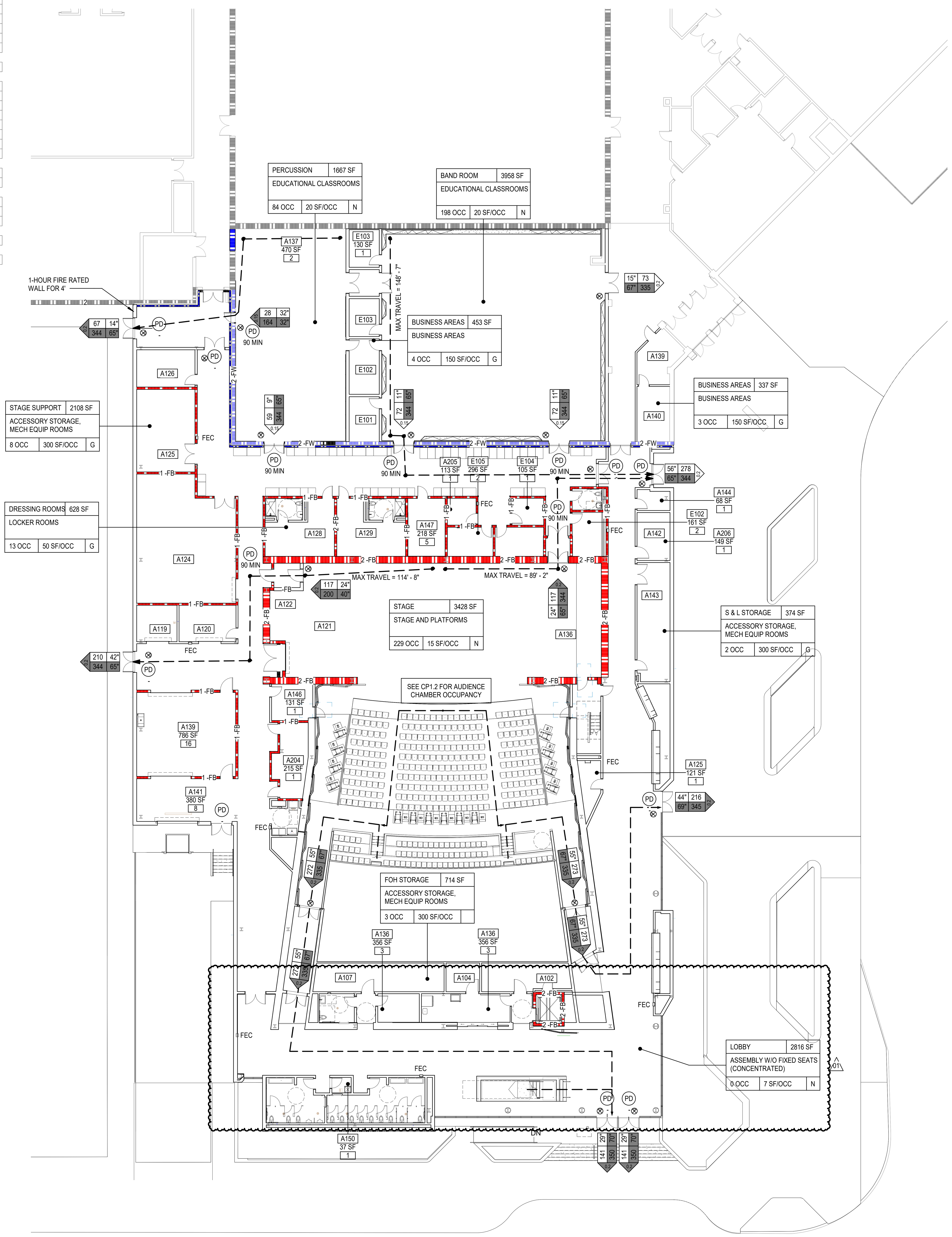
39-23712-00

COVER SHEET

G0.1

OCCUPANT LOAD TABLE - LEVEL 01

NAME	FUNCTION OF SPACE	AREA	GROSS/NET	OLF	OCCUPANT LOAD
ACCESSORY STORAGE, MECH EQUIP ROOMS					
ACCESSORY STORAGE, MECH EQUIP ROOMS	ACCESSORY STORAGE, MECH EQUIP ROOMS	37 SF	GROSS	300	1
BLDG MAINT. / FIRE PANEL / PHONE	ACCESSORY STORAGE, MECH EQUIP ROOMS	68 SF	GROSS	300	1
STORAGE	ACCESSORY STORAGE, MECH EQUIP ROOMS	121 SF	GROSS	300	1
ACCESSORY STORAGE, MECH EQUIP ROOMS	ACCESSORY STORAGE, MECH EQUIP ROOMS	131 SF	GROSS	300	1
IDF	ACCESSORY STORAGE, MECH EQUIP ROOMS	149 SF	GROSS	300	1
ELECTRICAL ROOM	ACCESSORY STORAGE, MECH EQUIP ROOMS	215 SF	GROSS	300	1
S & L STORAGE	ACCESSORY STORAGE, MECH EQUIP ROOMS	374 SF	GROSS	300	2
PERCUSSION CAGE	ACCESSORY STORAGE, MECH EQUIP ROOMS	470 SF	GROSS	300	2
FOH STORAGE	ACCESSORY STORAGE, MECH EQUIP ROOMS	714 SF	GROSS	300	3
STAGE SUPPORT	ACCESSORY STORAGE, MECH EQUIP ROOMS	2108 SF	GROSS	300	8
ASSEMBLY W/O FIXED SEATS (CONCENTRATED)					
LOBBY	ASSEMBLY W/O FIXED SEATS (CONCENTRATED)	2816 SF	NET	7	0
BUSINESS AREAS					
PRACTICE ROOMS	BUSINESS AREAS	105 SF	GROSS	150	1
PRACTICE ROOMS	BUSINESS AREAS	113 SF	GROSS	150	1
BUSINESS AREAS	BUSINESS AREAS	130 SF	GROSS	150	1
PRACTICE ROOMS	BUSINESS AREAS	161 SF	GROSS	150	2
BUSINESS AREAS	BUSINESS AREAS	296 SF	GROSS	150	2
BUSINESS AREAS	BUSINESS AREAS	337 SF	GROSS	150	3
BUSINESS AREAS	BUSINESS AREAS	356 SF	GROSS	150	3
BUSINESS AREAS	BUSINESS AREAS	453 SF	GROSS	150	4
EDUCATIONAL CLASSROOMS					
PERCUSSION	EDUCATIONAL CLASSROOMS	1667 SF	NET	20	84
BAND ROOM	EDUCATIONAL CLASSROOMS	3958 SF	NET	20	198
EDUCATIONAL CLASSROOMS - SHOPS/VOCATIONAL					
MAKEUP	EDUCATIONAL CLASSROOMS - SHOPS/VOCATIONAL	218 SF	NET	50	5
LOADING DOCK	EDUCATIONAL CLASSROOMS - SHOPS/VOCATIONAL	380 SF	NET	50	8
WORKSHOP	EDUCATIONAL CLASSROOMS - SHOPS/VOCATIONAL	786 SF	NET	50	16
LOCKER ROOMS					
DRESSING ROOMS	LOCKER ROOMS	628 SF	GROSS	50	13
STAGE AND PLATFORMS					
STAGE	STAGE AND PLATFORMS	3428 SF	NET	15	229
Grand total					591



LEVEL 01 - CODE PLAN

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

LEGEND - CODE FLOOR PLANS

Area name	XXXX SF
Space Function	
XXX OCC · XXX SF/OCC	G

OCCUPANT LOAD TAG (GROSS)
- SEE PATTERN FOR APPLIED LOAD FACTOR

ROOM NUMBER (###)
AREA (SF) (XXXX SF)
OCCUPANT LOAD (XXX)

OCCUPANT LOAD TAG (NET)
- THIS LOAD DOES NOT EXTEND BEYOND THIS SPACE
- SEE PATTERN FOR APPLIED LOAD FACTOR

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

PD / XX MIN — 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
- 0 = 0 HOUR
- 5 = 1/2 HOUR
- 1 = 1 HOUR
- 2 = 2 HOUR
- 3 = 3 HOUR
- 4 = 4 HOUR
- SP = SMOKE PARTITION

FIRE AND SMOKE SEPARATION TYPES
- C = CORRIDOR (CYAN)
- EW = EXTERIOR WALL (PURPLE)
- FW = FIRE WALL (BLUE)
- FB = FIRE BARRIER (RED)
- FP = FIRE PARTITION (MAGENTA)
- SP = SMOKE PARTITION (GREEN)
- SB = SMOKE BARRIER (GREEN)
- VS = VERTICAL SHAFT (ORANGE)
- VX = VERTICAL EXIT ENCLOSURE (ORANGE)
- XP = EXIT PASSAGEWAY (YELLOW)

OCCUPANT LOAD FACTOR PATTERNS

- 7 NET SF
- 15 NET SF
- 20 NET SF
- 50 NET SF
- 50 GROSS SF
- 150 GROSS SF
- 300 GROSS SF

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CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS

01	08/19/24	ADDENDUM 01

39-23712-00

LEVEL 01 - CODE PLAN

CP1.1

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COM*check* Software Version COMcheckWeb

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: CRANDALL ISD HIGH SCHOOL PAC ADDITION
Project Type: Addition

Construction Site:
13385 Fm 3039, Crandall, TX 75114
Crandall, Texas 75114

Owner/Agent:
Scott Stewart
Crandall ISD
400 W. Lewis Street, Crandall, Tx 75114
Crandall, Texas 75114
972-427-6024
Sstewart@crandall-isd.net

Designer/Contractor:
Mark Niechwiadowicz
DLR Group
2500 Pacific Ave Ste. 1600, Dallas
Dallas, Texas 75226
402-972-4624
Mniechwiadowicz@dlrgroup.com

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts
1-PERFORMING ARTS CENTER (School/University)	37270	0.72	26834
		Total Allowed Watts =	26834

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
1-PERFORMING ARTS CENTER (School/University)				
LED: BA1: 4 FOOT STRIP LIGHT: Other:	1	115	41	4715
LED: WD1: 4-FOOT HORIZ. WALL MOUNT: Other:	1	12	40	480
LED: RA3: MULTI-CELL RECESSED DOWNLIGHT -: Other:	1	17	34	578
LED: BD1: 6-FOOT LINEAR PENDANT: Other:	1	3	60	180
LED: FL1: TAPE LIGHT: Other:	1	80	3	240
LED: WD2: 4-FOOT VERT. WALL MOUNT: Other:	1	26	40	1040
LED: PD1: CYLINDER, MEDIUM FLOOD: Other:	1	6	35	210
LED: PD2: CYLINDER, WIDE FLOOD: Other:	1	20	55	1100
LED: PD3: CYLINDER, FLOOD: Other:	1	6	35	210
LED: WC2: 6-FOOT LINEAR WALL MOUNTED (VER: Other:	1	19	60	1140
LED: WC1: 6-FOOT LINEAR WALL MOUNTED: Other:	1	12	60	720
LED: RA1: MULTI-CELL RECESSED DOWNLIGHT -: Other:	1	54	24	1296
LED: RL2: 1-INCH RECESED MUD-IN: Other:	1	6	4	24
LED: RL2A: 1-INCH RECESED MUD-IN (VERTICAL: Other:	1	6	3	18
LED: RD1: 4-INCH NOMINAL RECESSED DOWNLI: Other:	1	19	8	152
LED: RA2: MULTI-CELL RECESSED DOWNLIGHT -: Other:	1	4	24	96
LED: RT2A: 1X4 RECESSED TROFFER: Other:	1	43	47	2021
LED: WL1: 2-FOOT WALL MOUNTED VANITY: Other:	1	4	14	56
LED: RD2: 4-INCH DOWNLIGHT: Other:	1	3	9	27
LED: RL5: 4-FOOT RECESSED LINEAR: Other:	1	43	36	1548
LED: BC1: 4-FOOT SEALED STRIP LIGHT: Other:	1	4	49	196
LED: BB1: 2X4 HIGH BAY: Other:	1	9	265	2385

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
LED: RT1B: 2X2 RECESSED TROFFER: Other:	1	6	23	138
LED: RT1A: 2X2 RECESSED TROFFER ACT: Other:	1	73	38	2774
Track Lighting: TA1: TRSCK LIGHTING: Wattage based on 93 feet of track	0	0	744	744
			Total Proposed Watts =	22088

Interior Lighting PASSES: Design 18% better than code

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2021 IECC requirements in *COMcheck* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Mark Niechwiadowicz
Name - Title

Signature

8/19/2024
Date

COM*check* Software Version COMcheckWeb

Exterior Lighting Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: CRANDALL ISD HIGH SCHOOL PAC ADDITION
Project Type: Addition
Exterior Lighting Zone 1 (Developed rural area (LZ1))

Construction Site:
13385 Fm 3039, Crandall, TX 75114
Crandall, Texas 75114

Owner/Agent:
Scott Stewart
Crandall ISD
400 W. Lewis Street, Crandall, Tx 75114
Crandall, Texas 75114
972-427-6024
Sstewart@crandall-isd.net

Designer/Contractor:
Mark Niechwiadowicz
DLR Group
2500 Pacific Ave Ste. 1600, Dallas
Dallas, Texas 75226
402-972-4624
Mniechwiadowicz@dlrgroup.com

Allowed Exterior Lighting Power

A Area/Surface Category	B Quantity	C Allowed Watts /	D Tradable Wattage	E Allowed Watts (B X C)
Loading dock	2150 ft2	0.35	Yes	752
Plaza area	13500 ft2	0.1	Yes	1350
Walkway >= 10 feet wide	6675 ft2	0.1	Yes	668
Driveway	17820 ft2	0.03	Yes	535
			Total Tradable Watts (a) =	3305
			Total Allowed Watts =	3305
			Total Allowed Supplemental Watts (b) =	350

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.
(b) A supplemental allowance equal to 350 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Proposed Exterior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
Loading dock (2150 ft2): Tradable Wattage				
LED: E2: 16' POST TOP PEDESTRIAN POLE: Other:	1	6	61	366
Plaza area (13500 ft2): Tradable Wattage				
LED: ES1: SPOT LIGHT: Other:	1	2	8	16
LED: EW3: SURFACED LINEAR WITH WALL WASH: Other:	1	128	2	256
LED: EW1: SCONCE WITH TYPE IV OPTICS: Other:	1	8	20	160
LED: EW2: DIRECT/INDIRECT SCONE - 30-DEGR: Other:	1	8	20	160
Walkway >= 10 feet wide (6675 ft2): Tradable Wattage				
LED: EG1: 4' INGRADE WALL GRAZER: Other:	1	5	20	100
LED: EW4: EXTERIOR STEP LIGHT: Other:	1	8	7	56
Driveway (17820 ft2): Tradable Wattage				
LED: E3: 35' AREA LIGHT POLE: Other:	1	2	138	276
			Total Tradable Proposed Watts =	1390

Exterior Lighting PASSES: Design 62% better than code

Exterior Lighting Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 2021 IECC requirements in *COMcheck* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Mark Niechwiadowicz
Name - Title

Signature

8/19/2024
Date

COM*check* Software Version COMcheckWeb

Inspection Checklist

Energy Code: 2021 IECC

Requirements: 100.0% were addressed directly in the *COMcheck* software
Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR4][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E0.1, ES1.2, E7.1
C103.2 [PR8][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the exterior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include exterior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E0.1, ES1.2, E7.1
C406 [PR9][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.3.1 [EL22][1]	Spaces required to have light-reduction controls have a manual control that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern >= 50 percent.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E7.1
C405.2.1, C405.2.1.1 [EL18][1]	Occupancy sensors installed in classrooms/lecture/training rooms, conference/meeting/multipurpose rooms, copy/print rooms, lounges/breakrooms, enclosed offices, open plan office areas, restrooms, storage rooms, locker rooms, corridors, warehouse storage areas, and other spaces <= 300 sqft that are enclosed by floor-to-ceiling height partitions. Reference section language C405.2.1.2 for control function in warehouses and section C405.2.1.3 for open plan office spaces.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** EL1.1A, EL1.1B, EL1.2A
C405.2.1.2 [EL19][1]	Occupancy sensors control function in warehouses: In warehouses, the lighting in aisleways and open areas is controlled with occupant sensors that automatically reduce lighting power by 50% or more within 20 minutes of when the areas are unoccupied. The occupant sensors control lighting in each aisleway independently and do not control lighting beyond the aisleway being controlled by the sensor. Lights not turned off by occupant sensors is done so by time-switch.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.2.1.3 [EL20][1]	Occupant sensor control function in open plan office areas: Occupant sensor controls in open office spaces >= 300 sq.ft. have controls 1) configured so that general lighting can be controlled separately in control zones with floor areas <= 600 sq.ft. within the space, 2) general lighting in each zone permitted to turn on upon occupancy in control zone, 3) automatically turn off general lighting in all control zones within 20 minutes after all occupants have left the space, 4) are configured so that general lighting power in each control zone is reduced by >= 80% of the full zone general lighting power within 20 minutes of all occupants leaving that control zone.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.2.2, C405.2.2.1 [EL21][2]	Each area not served by occupancy sensors (per C405.2.1.1) have time-switch controls and functions detailed in sections C405.2.2.1.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E7.1

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.4, C405.2.4.1, C405.2.4.2 [EL23][2]	Daylight zones provided with individual controls that control the lights independent of general area lighting. See code section C405.2.3 Daylight-responsive controls for applicable spaces, C405.2.3.1 Daylight responsive control function and section C405.2.3.2 Sidelit zone.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.2.5 [EL27][1]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E7.1
C405.2.7 [EL28][1]	Automatic lighting controls for exterior lighting installed. Controls will be daylight controlled, set based on business operation time-of-day, or reduce connected lighting > 30%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E7.1
C405.7 [EL26][2]	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** SPEC SECTION: 262213
C405.8 [EL27][2]	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.9.1, C405.9.2 [EL28][1]	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.10 [EL29][2]	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E5.1
C405.1.1 [EL30][2]	At least 90% of dwelling unit permanently installed lighting shall have lamp efficacy >= 65 lm/W or luminaires with efficacy >= 45 lm/W or comply with C405.2.4 or C405.3.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.11., C405.11.1 [EL31][2]	50% of 15/20 amp receptacles installed in enclosed offices, conference rooms, copy rooms, break rooms, classrooms and workstations and > 25% of branch circuit feeders for modular furniture will have automatic receptacle control in accordance with C405.11.1.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E2.1A, E2.1B, E7.1

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.2 [FI17][3]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.5.1 [FI19][3]	Exterior lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Exterior Lighting fixture schedule for values.*
C408.1.1 [FI57][3]	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5 [FI16][3]	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.3 [FI33][1]	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** SPEC SECTION: 265100

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

INTERIOR AND EXTERIOR LIGHTING COMPLIANCE CERTIFICATE

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS
01 08/19/24 ADDENDUM 01

39-23712-00

LIGHTING COMPLIANCE CERTIFICATE

EN0.3

CONSTRUCTION/RENOVATION PLANS FOR

CRANDALL ISD HIGH SCHOOL PAC ADDITION

SITE DEVELOPMENT
CITY OF CRANDALL
KAUFMAN COUNTY, TEXAS

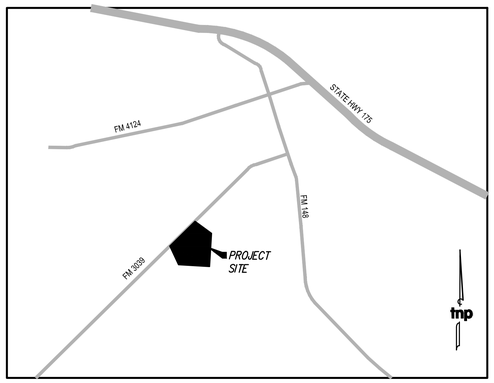
OWNER/APPLICANT:
CRANDALL I.S.D.
400 W LEWIS ST
CRANDALL, TEXAS 75114
PHONE: 972.427.6000
CONTACT: MS. CHRISTY STARRETT

ARCHITECT:
DLR ARCHITECTS
2500 PACIFIC AVE., SUITE 1600
DALLAS, TX 75236
214.747.2511
CONTACT: CHARLES BRANDT

ENGINEER:
TEAGUE NALL & PERKINS, INC.
825 WATTERS CREEK BLVD., STE. M300
ALLEN, TEXAS 75013
214.396.9564
CONTACT: JOEL RICHEY, P.E.

SURVEYOR:
TEAGUE NALL & PERKINS, INC.
825 WATTERS CREEK BLVD., STE. M300
ALLEN, TEXAS 75013
214.461.9918
CONTACT: BRIAN J. MADDOX II, R.P.L.S.

LANDSCAPE ARCHITECT:
TEAGUE NALL & PERKINS, INC.
5237 N RIVERSIDE, SUITE 100
FORT WORTH, TEXAS 76137
817.336.5773
CONTACT: WILLIAM H. SMITH, R.L.A.



LOCATION MAP
NTS

Sheet List Table	
SHEET NUMBER	SHEET TITLE
C1.00	COVER SHEET
C1.01	EXISTING TOPOGRAPHIC PLAN
C1.02	DEMOLITION PLAN
C1.03	SITE PLAN
C1.04	DIMENSION CONTROL PLAN
C1.05	DIMENSION CONTROL PLAN INSET
C1.06	GRADING PLAN
C1.07	GRADING PLAN LOADING DOCK INSET
C1.08	STORM DRAIN PLAN
C1.09	STORM DRAIN PROFILES
1 C1.10	SANITARY SEWER & WATER PLAN
C1.11	PAVING PLAN
C1.12	EROSION CONTROL PLAN
C1.13	EROSION CONTROL DETAILS
C1.14	SITE DETAILS
C1.15	PAVING DETAILS
C1.16	STORM DRAIN DETAILS
C1.17	SANITARY SEWER DETAILS
1 C1.18	WATER DETAILS
L1.01	LANDSCAPE PLAN
L1.02	LANDSCAPE NOTES
L1.03	LANDSCAPE DETAILS (1 of 2)
L1.04	LANDSCAPE DETAILS (2 of 2)
IR1.01	IRRIGATION PLAN
IR1.02	TREE IRRIGATION PLAN
IR1.03	IRRIGATION SCHEDULE & NOTES
IR1.04	IRRIGATION DETAILS

Crandall Independent School District

STATE OF TEXAS
JOEL M. RICHEY
136432
LICENSED PROFESSIONAL ENGINEER
08/19/2024

no.	revision	by	date
1	ADDENDUM 01		08/19/24

AUGUST 2024

teague nall and perkins, inc
825 Watters Creek Blvd., Suite M300
Allen, Texas 75013
214.461.9867 ph 214.461.9864 fx
www.tnpinc.com
TBPELS: ENGR F-230; SURV 10011600, 10011601, 10194381
GBPE: PEF007431; TBAE: BR 2673

CRANDALL ISD - HIGH SCHOOL - PAC ADDITION
CITY OF CRANDALL, TX
tnp Project DLR23073

DLR GROUP
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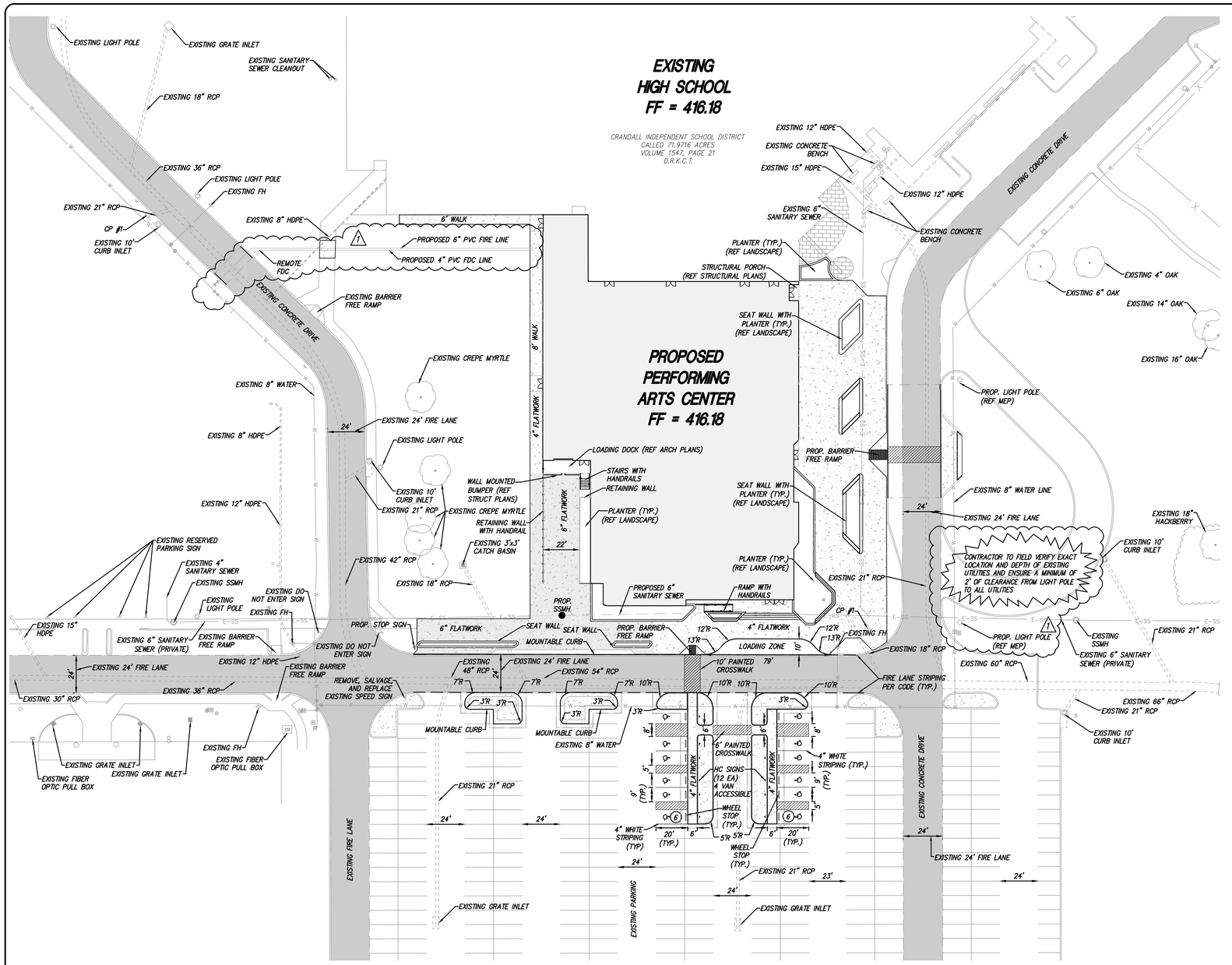
CRANDALL ISD HIGH SCHOOL
PAC ADDITION
COVER SHEET
13385 Fm 3039, Crandall, TX 75114

100% CD

2024.07.25
REVISIONS
ADDENDUM 01 08/19/2024

COVER SHEET

C1.00



LEGEND

- 4" CONCRETE FLATWORK WITH SANDBLASTED CONCRETE BANDS (REF LANDSCAPE PLANS)
- EXISTING CONCRETE FIRE LANE
- 6" CONCRETE FLATWORK
- EXISTING WATER METER
- EXISTING WATER VALVE

GRAPHIC SCALE
30 0 15 30 60
GRAPHIC SCALE: 1" = 30'

SITE DATA SUMMARY

EXISTING ZONING:	PDD
PROPOSED USE:	HIGH SCHOOL
GROSS LOT AREA:	106.995 ACRES (4,660,702 SF)
PROPOSED BUILDING AREA:	30,310 SF
EXISTING BUILDING AREA:	165,394 SF
TOTAL BUILDING AREA:	195,704 SF
HEIGHT:	<=80'-0" (2 STORIES)
LOT COVERAGE RATIO:	12.36%
FLOOR AREA RATIO:	17.24%
REQUIRED PARKING: (1:4 SEATS FOR ASSEMBLY AREAS) (280 SEATS)	70 SPACES
REQUIRED HANDICAP SPACES:	3 SPACES (PER LOT)
TOTAL PROVIDED PARKING:	484 SPACES
STANDARD SPACES: (9'x20')	462 SPACES
HANDICAP SPACES:	12 SPACES

TREE SURVEY NOTES

PRESERVE AND PROTECT:

5 – CREPE MYRTLES
1 – 18" HACKBERRY
1 – 16" OAK
1 – 14" OAK
1 – 6" OAK
1 – 4" OAK

ENGINEER:
TEAGUE NALL & PERKINS
CONTACT: JOEL RICHEY, P.E.
214.396.9564 PHONE
825 WATTERS CREEK BLVD., STE. M300
ALLEN, TEXAS 75013

SURVEYOR:
TEAGUE NALL & PERKINS
CONTACT: BRIAN J. MADDOX II, R.P.L.S.
214.461.9918 PHONE
825 WATTERS CREEK BLVD., STE. M300
ALLEN, TEXAS 75013

ARCHITECT:
DLR ARCHITECTS
CONTACT: CHARLES BRANDT
214.747.2511 PHONE
2500 PACIFIC AVE., SUITE 1600
DALLAS, TEXAS 75236

OWNER:
CRANDALL ISD
CONTACT: MS. CHRISTY STARRETT
972.427.6000 PHONE
400 W LEWIS ST
CRANDALL, TEXAS 75114

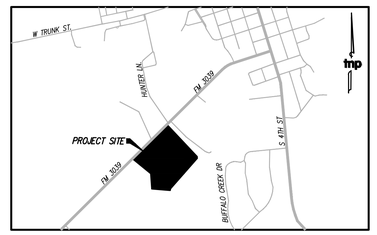
LANDSCAPE ARCHITECT:
TEAGUE NALL & PERKINS
CONTACT: WILLIAM H. SMITH, R.L.A.
817.336.5773 PHONE
5237 N RIVERSIDE DRIVE, SUITE 100
FORT WORTH, TEXAS 76137

SITE PLAN FOR CRANDALL HIGH SCHOOL PERFORMING ARTS CENTER

BEING 106.995 ACRES OF LAND
SITUATED IN THE J. BOWLIN EXEMPT SURVEY, ABSTRACT NO. 14
CITY OF CRANDALL, KAUFMAN COUNTY, TEXAS
PREPARED: APRIL 10,2024

NOTES

1. ACCORDING TO FLOOD INSURANCE RATE MAP (FIRM) PANEL 48257C0280E DATED JANUARY 12, 2023 BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), THE SUBJECT TRACT OF LAND SHOWN HEREON LIES WITHIN ZONE "X" UNSHADED, DEFINED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN".



LOCATION MAP
NTS

no.	revision	by	date
1	ADDENDUM 01		08/19/24

Crandall Independent School District

scale
horiz 1"=30'
vert N/A
date AUG 2024

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STATE OF TEXAS · JOEL M. RICHEY · 136432 · LICENSED PROFESSIONAL ENGINEER
08/19/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
SITE PLAN

tnp project DLR23073
sheet C1.03

tnp
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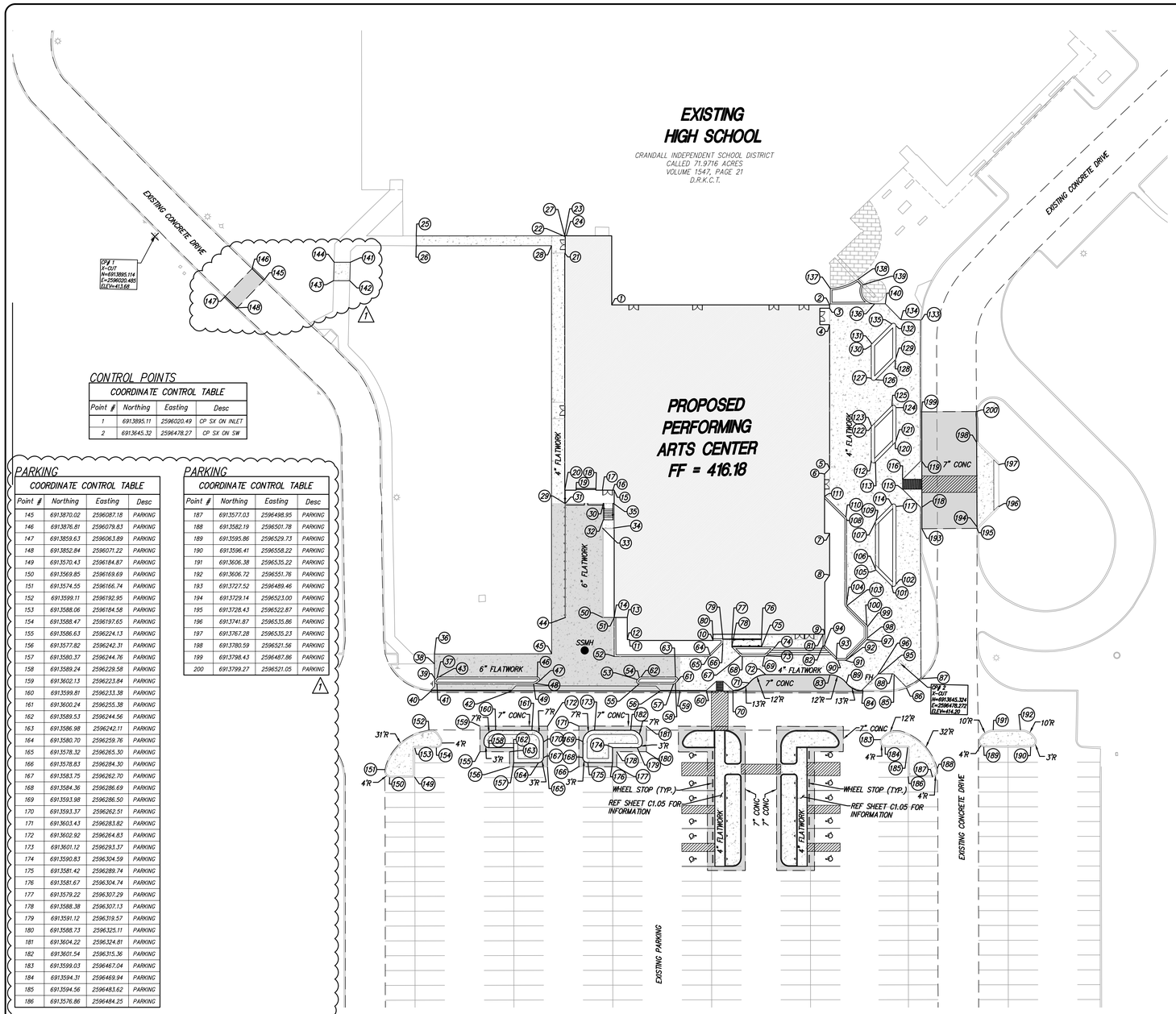
C1.03



CONTROL POINTS

COORDINATE CONTROL TABLE

Point #	Northing	Easting	Desc
1	6913895.11	2596020.49	CP SX ON INLET
2	6913645.32	2596478.27	CP SX ON SW

PARKING

COORDINATE CONTROL TABLE

Point #	Northing	Easting	Desc
145	6913870.02	2596087.18	PARKING
146	6913876.81	2596079.83	PARKING
147	6913859.63	2596063.89	PARKING
148	6913852.84	2596071.22	PARKING
149	6913570.43	2596184.87	PARKING
150	6913569.85	2596169.69	PARKING
151	6913574.55	2596166.74	PARKING
152	6913599.11	2596192.95	PARKING
153	6913588.06	2596184.58	PARKING
154	6913588.47	2596197.65	PARKING
155	6913586.63	2596224.13	PARKING
156	6913577.82	2596242.31	PARKING
157	6913580.37	2596244.76	PARKING
158	6913589.24	2596229.58	PARKING
159	6913602.13	2596223.84	PARKING
160	6913599.81	2596233.38	PARKING
161	6913600.24	2596255.38	PARKING
162	6913589.53	2596244.56	PARKING
163	6913586.98	2596242.11	PARKING
164	6913580.70	2596259.76	PARKING
165	6913578.32	2596265.30	PARKING
166	6913578.83	2596284.30	PARKING
167	6913583.75	2596262.70	PARKING
168	6913584.36	2596286.69	PARKING
169	6913593.98	2596286.50	PARKING
170	6913593.37	2596262.51	PARKING
171	6913603.43	2596283.82	PARKING
172	6913602.92	2596264.83	PARKING
173	6913601.12	2596293.37	PARKING
174	6913590.83	2596304.59	PARKING
175	6913581.42	2596289.74	PARKING
176	6913581.67	2596304.74	PARKING
177	6913579.22	2596307.29	PARKING
178	6913588.38	2596307.13	PARKING
179	6913591.12	2596319.57	PARKING
180	6913588.73	2596325.11	PARKING
181	6913604.22	2596324.81	PARKING
182	6913601.54	2596315.36	PARKING
183	6913599.03	2596467.04	PARKING
184	6913594.31	2596469.94	PARKING
185	6913594.56	2596483.62	PARKING
186	6913576.86	2596484.25	PARKING

PARKING

COORDINATE CONTROL TABLE

Point #	Northing	Easting	Desc
187	6913577.03	2596498.95	PARKING
188	6913582.19	2596501.78	PARKING
189	6913595.86	2596529.73	PARKING
190	6913596.41	2596558.22	PARKING
191	6913606.38	2596535.22	PARKING
192	6913606.72	2596551.76	PARKING
193	6913727.52	2596489.46	PARKING
194	6913729.14	2596523.00	PARKING
195	6913728.43	2596522.87	PARKING
196	6913741.87	2596535.86	PARKING
197	6913767.28	2596535.23	PARKING
198	6913780.59	2596521.56	PARKING
199	6913798.43	2596487.86	PARKING
200	6913799.27	2596521.05	PARKING

NOTES

1. THIS PLAN SHALL BE USED TO CONTROL THE GEOMETRICS OF THE SITE LAYOUT. DIMENSIONAL TIES AND COORDINATES ARE PROVIDED TO ADDIST IN THE LAYOUT OF THE SITE IMPROVEMENTS. THE CONTRACTOR SHALL VERIFY THE COORDINATE TIES WITH THE DIMENSIONS PROVIDED ON THE PLANS.
2. AL DIMENSIONS AND COORDINATES ARE TO THE FACE OF CURB AND BUILDING.
3. ALL BUILDING TIES AND DIMENSIONS SHALL BE COORDINATED AND VERIFIED WITH THE ARCHITECT'S PLANS. ALL DIMENSIONS TO BUILDINGS SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION.
4. ALL CURB RADII ARE 5' UNLESS OTHERWISE NOTED.

GRAPHIC SCALE
30 0 15 30 60
GRAPHIC SCALE: 1" = 30'

SIDEWALK

COORDINATE CONTROL TABLE

Point #	Northing	Easting	Desc
25	6913898.78	2596178.98	SIDEWALK
26	6913892.79	2596179.10	SIDEWALK
27	6913900.69	2596269.10	SIDEWALK
28	6913894.52	2596261.23	SIDEWALK
29	6913738.39	2596272.47	SIDEWALK
30	6913738.88	2596295.89	SIDEWALK
31	6913738.40	2596272.97	SIDEWALK
32	6913728.88	2596296.10	SIDEWALK
33	6913723.87	2596295.70	SIDEWALK
34	6913724.01	2596302.27	SIDEWALK
35	6913739.00	2596301.96	SIDEWALK
36	6913645.33	2596195.35	SIDEWALK
37	6913631.01	2596197.25	SIDEWALK
38	6913639.37	2596195.49	SIDEWALK
39	6913629.84	2596196.13	SIDEWALK
40	6913622.97	2596193.88	SIDEWALK
41	6913627.30	2596197.24	SIDEWALK
42	6913623.93	2596242.71	SIDEWALK
43	6913631.41	2596198.30	SIDEWALK
44	6913669.19	2596274.40	SIDEWALK
45	6913646.94	2596266.43	SIDEWALK
46	6913632.65	2596258.00	SIDEWALK
47	6913629.98	2596258.94	SIDEWALK
48	6913628.78	2596256.97	SIDEWALK
49	6913628.46	2596255.85	SIDEWALK
50	6913669.66	2596296.76	SIDEWALK
51	6913669.80	2596303.89	SIDEWALK
52	6913646.12	2596304.40	SIDEWALK
53	6913632.35	2596318.79	SIDEWALK
54	6913633.52	2596319.91	SIDEWALK
55	6913629.82	2596319.90	SIDEWALK
56	6913625.74	2596332.69	SIDEWALK
57	6913630.23	2596340.74	SIDEWALK
58	6913630.69	2596341.79	SIDEWALK
59	6913625.96	2596344.75	SIDEWALK
60	6913626.27	2596360.85	SIDEWALK
61	6913631.86	2596342.92	SIDEWALK
62	6913633.98	2596320.96	SIDEWALK
63	6913634.40	2596341.84	SIDEWALK
64	6913647.80	2596362.74	SIDEWALK
65	6913647.34	2596361.69	SIDEWALK
66	6913655.49	2596370.13	SIDEWALK
67	6913648.15	2596381.05	SIDEWALK
68	6913647.73	2596382.12	SIDEWALK
69	6913648.01	2596395.57	SIDEWALK
70	6913626.58	2596376.84	SIDEWALK
71	6913631.77	2596386.75	SIDEWALK
72	6913636.97	2596396.65	SIDEWALK
73	6913648.47	2596396.63	SIDEWALK
74	6913653.89	2596401.84	SIDEWALK
75	6913653.73	2596393.61	SIDEWALK
76	6913658.69	2596393.51	SIDEWALK
77	6913658.32	2596375.52	SIDEWALK
78	6913653.32	2596375.62	SIDEWALK
79	6913658.26	2596370.08	SIDEWALK
80	6913658.14	2596364.10	SIDEWALK
81	6913662.25	2596430.83	SIDEWALK
82	6913655.52	2596430.97	SIDEWALK
83	6913637.71	2596435.53	SIDEWALK
84	6913628.10	2596455.72	SIDEWALK
85	6913638.65	2596474.41	SIDEWALK
86	6913630.69	2596482.10	SIDEWALK
87	6913636.55	2596491.23	SIDEWALK
88	6913639.08	2596473.33	SIDEWALK
89	6913632.91	2596445.62	SIDEWALK
90	6913646.65	2596440.19	SIDEWALK
91	6913646.73	2596444.51	SIDEWALK
92	6913647.19	2596445.56	SIDEWALK
93	6913647.07	2596439.12	SIDEWALK

SIDEWALK

COORDINATE CONTROL TABLE

Point #	Northing	Easting	Desc
94	6913654.47	2596431.43	SIDEWALK
95	6913638.92	2596465.50	SIDEWALK
96	6913638.47	2596464.46	SIDEWALK
97	6913659.44	2596457.33	SIDEWALK
98	6913660.49	2596457.75	SIDEWALK
99	6913667.28	2596457.61	SIDEWALK
100	6913668.33	2596457.15	SIDEWALK
101	6913692.55	2596471.85	SIDEWALK
102	6913693.66	2596474.38	SIDEWALK
103	6913679.94	2596445.05	SIDEWALK
104	6913680.93	2596444.65	SIDEWALK
105	6913701.90	2596462.12	SIDEWALK
106	6913702.68	2596461.74	SIDEWALK
107	6913730.93	2596461.15	SIDEWALK
108	6913732.51	2596443.63	SIDEWALK
109	6913731.90	2596461.50	SIDEWALK
110	6913733.56	2596443.17	SIDEWALK
111	6913746.07	2596429.98	SIDEWALK
112	6913768.32	2596457.85	SIDEWALK
113	6913767.31	2596460.43	SIDEWALK
114	6913741.66	2596470.87	SIDEWALK
115	6913751.21	2596477.18	SIDEWALK
116	6913757.22	2596477.04	SIDEWALK
117	6913740.65	2596473.46	SIDEWALK
118	6913740.54	2596489.16	SIDEWALK
119	6913768.46	2596488.53	SIDEWALK
120	6913779.54	2596472.19	SIDEWALK
121	6913780.61	2596472.61	SIDEWALK
122	6913788.73	2596457.45	SIDEWALK
123	6913789.11	2596457.62	SIDEWALK
124	6913800.68	2596472.21	SIDEWALK
125	6913801.70	2596469.69	SIDEWALK
126	6913817.32	2596459.39	SIDEWALK
127	6913818.02	2596456.84	SIDEWALK
128	6913829.56	2596471.15	SIDEWALK
129	6913830.63	2596471.57	SIDEWALK
130	6913838.04	2596456.42	SIDEWALK
131	6913839.11	2596456.83	SIDEWALK
132	6913850.33	2596471.18	SIDEWALK
133	6913854.23	2596486.64	SIDEWALK
134	6913854.06	2596474.05	SIDEWALK
135	6913851.34	2596468.59	SIDEWALK
136	6913863.35	2596457.96	SIDEWALK
137	6913872.07	2596430.86	SIDEWALK
138	6913878.01	2596447.52	SIDEWALK
139	6913874.83	2596450.71	SIDEWALK
140	6913863.50	2596464.46	SIDEWALK
141	6913881.95	2596139.32	SIDEWALK
142	6913870.77	2596139.26	SIDEWALK
143	6913870.57	2596129.45	SIDEWALK
144	6913881.75	2596129.54	SIDEWALK

BUILDING

COORDINATE CONTROL TABLE

Point #	Northing	Easting	Desc
1	6913859.39	2596298.46	BLDG
2	6913862.13	2596430.67	BLDG
3	6913860.13	2596430.71	BLDG
4	6913850.13	2596430.91	BLDG
5	6913762.65	2596432.73	BLDG
6	6913759.50	2596429.70	BLDG
7	6913723.53	2596433.54	BLDG
8	6913698.13	2596434.07	BLDG
9	6913662.27	2596431.83	BLDG
10	6913657.14	2596364.12	BLDG
11	6913656.03	2596313.50	BLDG
12	6913656.52	2596312.15	BLDG
13	6913669.97	2596311.85	BLDG
14	6913669.80	2596303.89	BLDG
15	6913747.01	2596302.29	BLDG
16	6913746.99	2596301.50	BLDG
17	6913746.86	2596295.17	BLDG
18	6913746.78	2596291.22	BLDG
19	6913746.53	2596279.23	BLDG
20	6913746.39	2596272.30	BLDG
21	6913890.30	2596269.32	BLDG
22	6913900.30	2596269.11	BLDG
23	6913900.86	2596269.10	BLDG
24	6913900.88	2596270.08	BLDG

BENCHMARKS

BM #1:
[CP#50] 5/8" CAPPED IRON ROD SET WITH A CAP STAMPED "TNP" LOCATED ON AN ISLAND AT THE MAIN ENTRANCE APPROXIMATELY 210' SOUTH EAST OF THE CENTERLINE OF F.M. 3039 AND APPROXIMATELY 15' BEHIND THE MONUMENT SIGN
N = 6914317.207
E = 2596030.924
ELEV. 415.60

BM #2:
[CP#2] X-CUT SET ON THE CORNER OF A SIDEWALK LOCATED APPROXIMATELY 225' SOUTH OF THE SCHOOLS SOUTH FACE AND APPROXIMATELY 600' WEST OF THE TENNIS COURTS
N = 6913645.324
E = 2596478.272
ELEV. 414.20

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JOEL M. RICHEY
136432
LICENSED PROFESSIONAL ENGINEER
08/19/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
DIMENSION CONTROL PLAN

tnp project DLR23073
sheet C1.04

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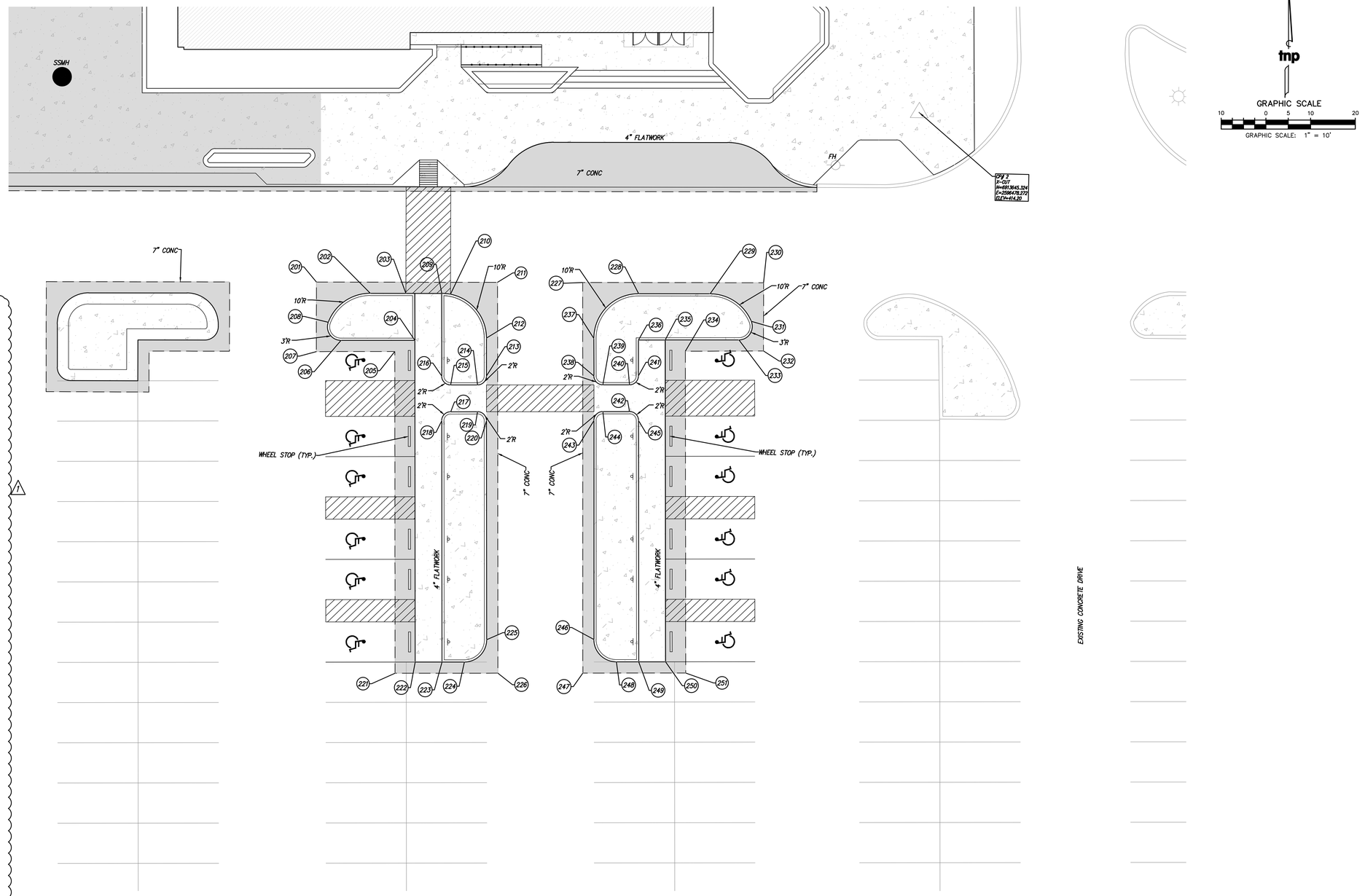
DIMENSION CONTROL PLAN

C1.04



PARKING

COORDINATE CONTROL TABLE

Point #	Northing	Easting	Desc
201	691,3604.60	2596,344.25	PARKING
202	691,3602.33	2596,356.36	PARKING
203	691,3602.49	2596,364.31	PARKING
204	691,3592.02	2596,366.53	PARKING
205	691,3589.42	2596,362.09	PARKING
206	691,3591.66	2596,350.01	PARKING
207	691,3589.04	2596,344.55	PARKING
208	691,3595.66	2596,347.12	PARKING
209	691,3602.64	2596,372.33	PARKING
210	691,3602.49	2596,374.27	PARKING
211	691,3605.38	2596,384.75	PARKING
212	691,3592.86	2596,382.52	PARKING
213	691,3584.37	2596,382.70	PARKING
214	691,3582.33	2596,380.75	PARKING
215	691,3582.20	2596,374.75	PARKING
216	691,3584.15	2596,372.71	PARKING
217	691,3576.20	2596,374.88	PARKING
218	691,3574.15	2596,372.92	PARKING
219	691,3576.33	2596,380.88	PARKING
220	691,3574.37	2596,382.92	PARKING
221	691,3517.44	2596,363.65	PARKING
222	691,3520.04	2596,368.10	PARKING
223	691,3520.17	2596,374.10	PARKING
224	691,3520.28	2596,379.10	PARKING
225	691,3525.38	2596,383.99	PARKING
226	691,3517.94	2596,386.65	PARKING
227	691,3605.75	2596,403.79	PARKING
228	691,3603.49	2596,416.36	PARKING
229	691,3603.79	2596,432.34	PARKING
230	691,3606.52	2596,444.25	PARKING
231	691,3597.83	2596,441.68	PARKING
232	691,3591.25	2596,444.54	PARKING
233	691,3593.62	2596,439.00	PARKING
234	691,3590.84	2596,427.07	PARKING
235	691,3593.27	2596,422.52	PARKING
236	691,3593.11	2596,416.52	PARKING
237	691,3593.28	2596,406.56	PARKING
238	691,3584.89	2596,406.74	PARKING
239	691,3582.94	2596,408.78	PARKING
240	691,3583.06	2596,414.74	PARKING
241	691,3585.11	2596,416.70	PARKING
242	691,3577.07	2596,414.87	PARKING
243	691,3574.89	2596,406.95	PARKING
244	691,3576.94	2596,408.90	PARKING
245	691,3575.11	2596,416.91	PARKING
246	691,3525.91	2596,407.98	PARKING
247	691,3518.35	2596,405.64	PARKING
248	691,3521.01	2596,413.09	PARKING
249	691,3521.12	2596,418.09	PARKING
250	691,3521.25	2596,424.09	PARKING
251	691,3518.85	2596,428.64	PARKING

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1	ADDENDUM 01		08/19/24

Crandall Independent School District

scale: horiz 1"=10' | vert N/A | date AUG 2024

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STATE OF TEXAS · JOEL M. RICHEY · 136432 · LICENSED PROFESSIONAL ENGINEER · 08/19/2024

City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
DIMENSION CONTROL PLAN INSET

tnp project DLR23073
sheet C1.05

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CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

100% CD

2024.07.25
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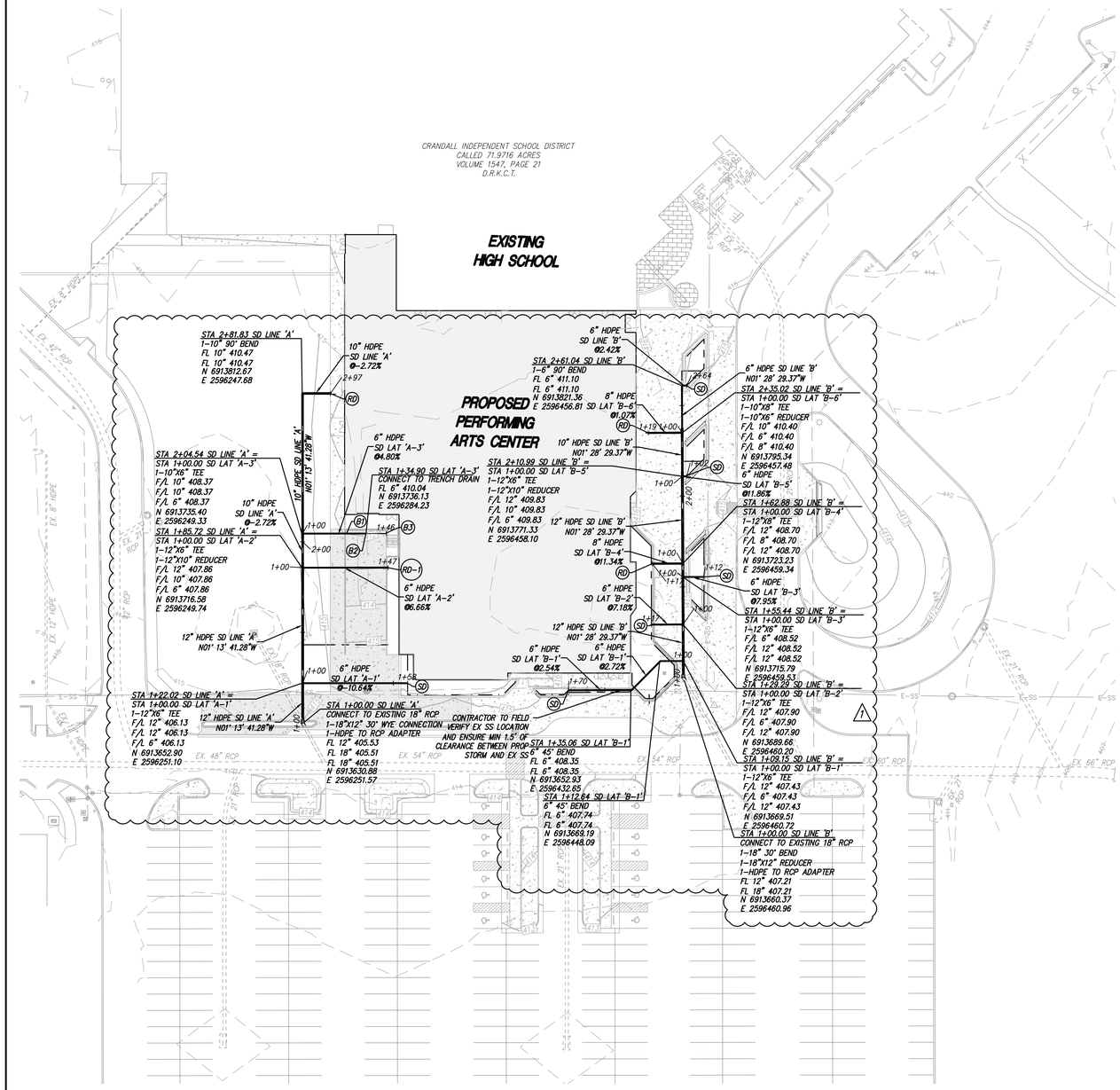
ADDENDUM 01 08/19/2024

DIMENSION CONTROL PLAN INSET

C1.05



tnp

GRAPHIC SCALE

30 0 15 30 60

GRAPHIC SCALE: 1" = 30'

NOTES

1. ALL DIMENSIONS ARE TO FACE OF BUILDING.
2. SANITARY SEWER AND STORM LINE CROSSINGS ARE INDICATED ON THE UTILITY PLAN.
3. REFER TO THE GRADING PLAN FOR THE FINISH FLOOR ELEVATIONS AND THE PERIMETER GRADES.
4. ALL STORM DRAIN LINES ARE TO BE HDPE/RCP UNLESS OTHERWISE NOTED.
5. REFER TO THE ARCHITECTS' PLANS FOR THE EXACT LOCATIONS OF THE DOWN SPOUTS. REFER TO THE MEP PLANS FOR THE EXACT LOCATIONS OF THE ROOF DRAINS.

DRAINAGE SPECIFICATIONS

1. HDPE SHALL BE HEAVY WALL MEETING THE REQUIREMENTS OF ASTM 2648 AND ASTM F477. HDPE SHALL BE ADS N-12 (WT) OR EQUAL, CORRUGATED EXTERIOR W/ SMOOTH LINED INTERIOR.
2. ALL PIPES UNDER FIRE LANE SHALL BE RCP.
3. ALL PIPE, COUPLINGS, TEES, & BENDS SHALL BE HDPE WATERTIGHT SEWER GRADE GASKETED PVC FITTINGS.
4. PROVIDE ALL NECESSARY FITTINGS AT TIE-IN LOCATIONS.

1 (RD) FLOWLINES OF ROOF DRAINS ARE 2.5 FEET BELOW FINISHED FLOOR ELEV. (F/L=410.60) REFER TO MEP PLANS FOR CONNECTION

(RD-1) FLOWLINES OF ROOF DRAINS ARE 5.18 FEET BELOW FINISHED FLOOR ELEV. (F/L=411.00) REFER TO MEP PLANS FOR CONNECTION

(SD) CONNECT SUBDRAINS/LANDSCAPE DRAINS TO THE STORM DRAIN SYSTEM AS INDICATED. SUBDRAINS SHALL BE A MINIMUM OF 4" UNLESS OTHERWISE NOTED AND HAVE A MINIMUM SLOPE OF 1.0%

NOTE

CONTRACTOR TO TIE DOWNSPOUTS TO STORM DRAIN SYSTEM.

LEGEND

— · — LANDSCAPE DRAIN (REF LANDSCAPE PLANS)

LOADING DOCK TRENCH DRAIN

#	Station	ABT PolyDrain Presloped Drain System	Grate	F/L Information
B1	STA 1+24.24 SD LAT 'A-3'	Part No. 106 Begin Trench Drain: Part No. 010 to Part No. 030	ADA Stainless Steel Heel Proof Grate Part No. 2452 - Trench Drain Rim Elevation Varies per Plan	F/L = 411.627
B2	STA 1+34.86 SD LAT 'A-3'	Part No. 2900 Catch Basin Connect 6" HDPE		F/L = 410.05
B3	STA 1+45.47 SD LAT 'A-5'	Part No. 030 to Part No. 010 Part No. 106: End Trench Drain		F/L = 411.57

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08/19/2024

City of Crandall, Texas

Crandall Independent School District

High School - PAC Addition

STORM DRAIN PLAN

tnp project: DLR23073

sheet: C1.08

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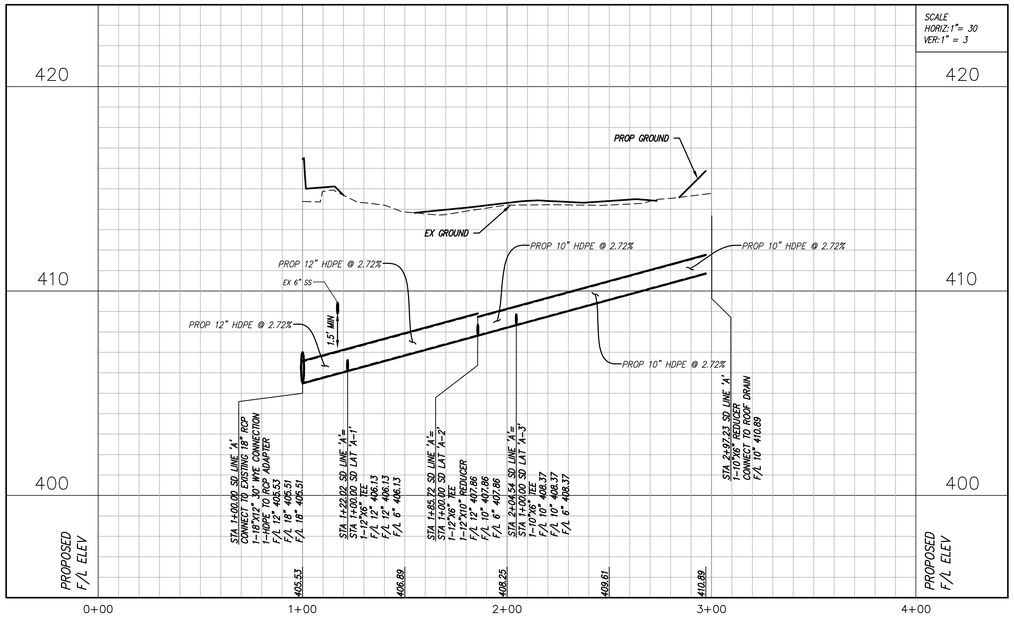
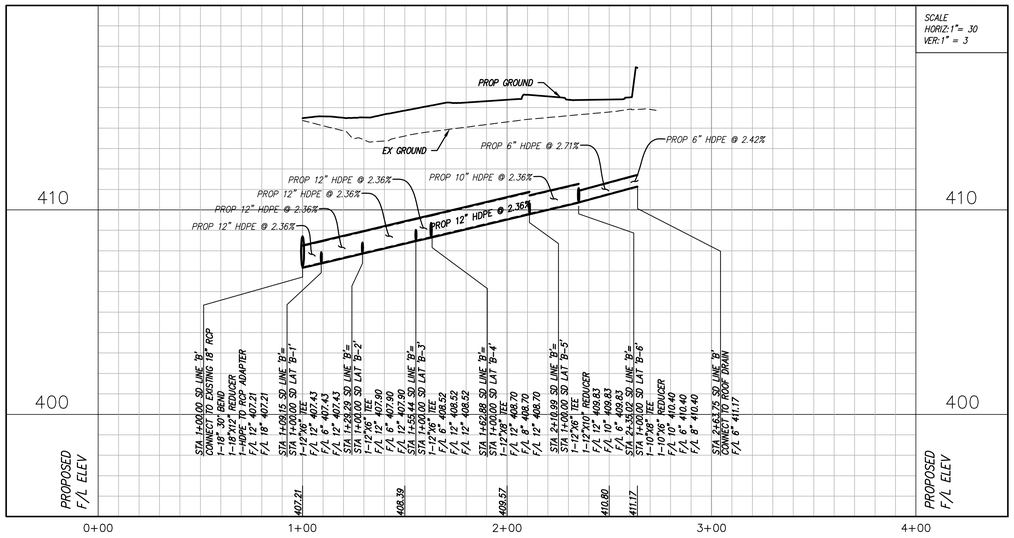
STORM DRAIN PLAN

C1.08



SD LINE 'A'



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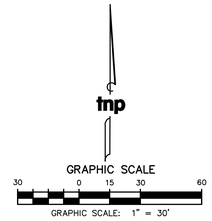

no.	revision	by	date
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vert 1"=3'
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City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
STORM DRAIN PROFILES

tnp project DLR23073
sheet C1.09

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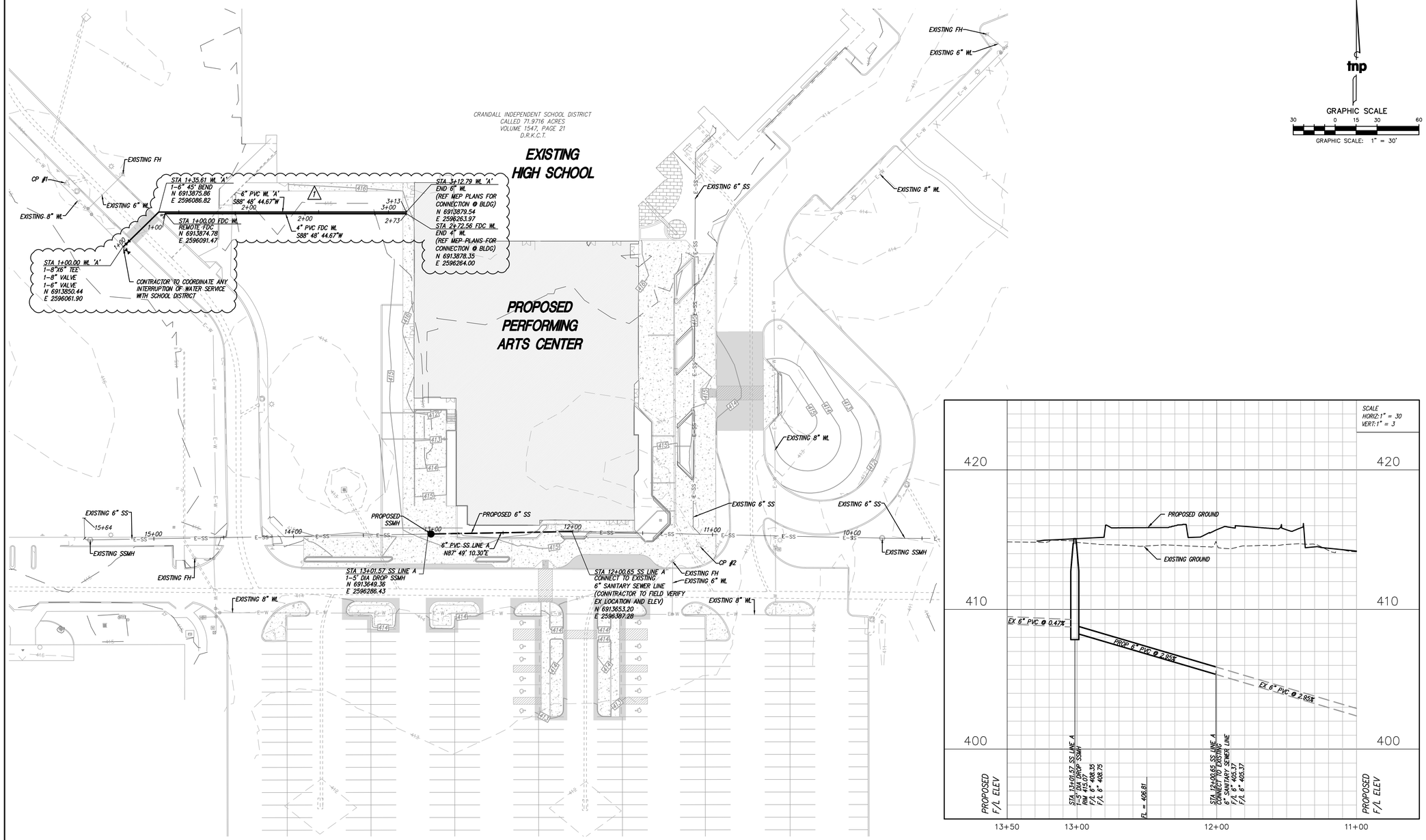
STORM DRAIN PROFILES

C1.09



GRAPHIC SCALE
30 0 15 30 60
GRAPHIC SCALE: 1" = 30'

SS LINE A

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scale
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vert 1"=3'
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City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
SANITARY SEWER & WATER PLAN

tnp project DLR23073
sheet C1.10

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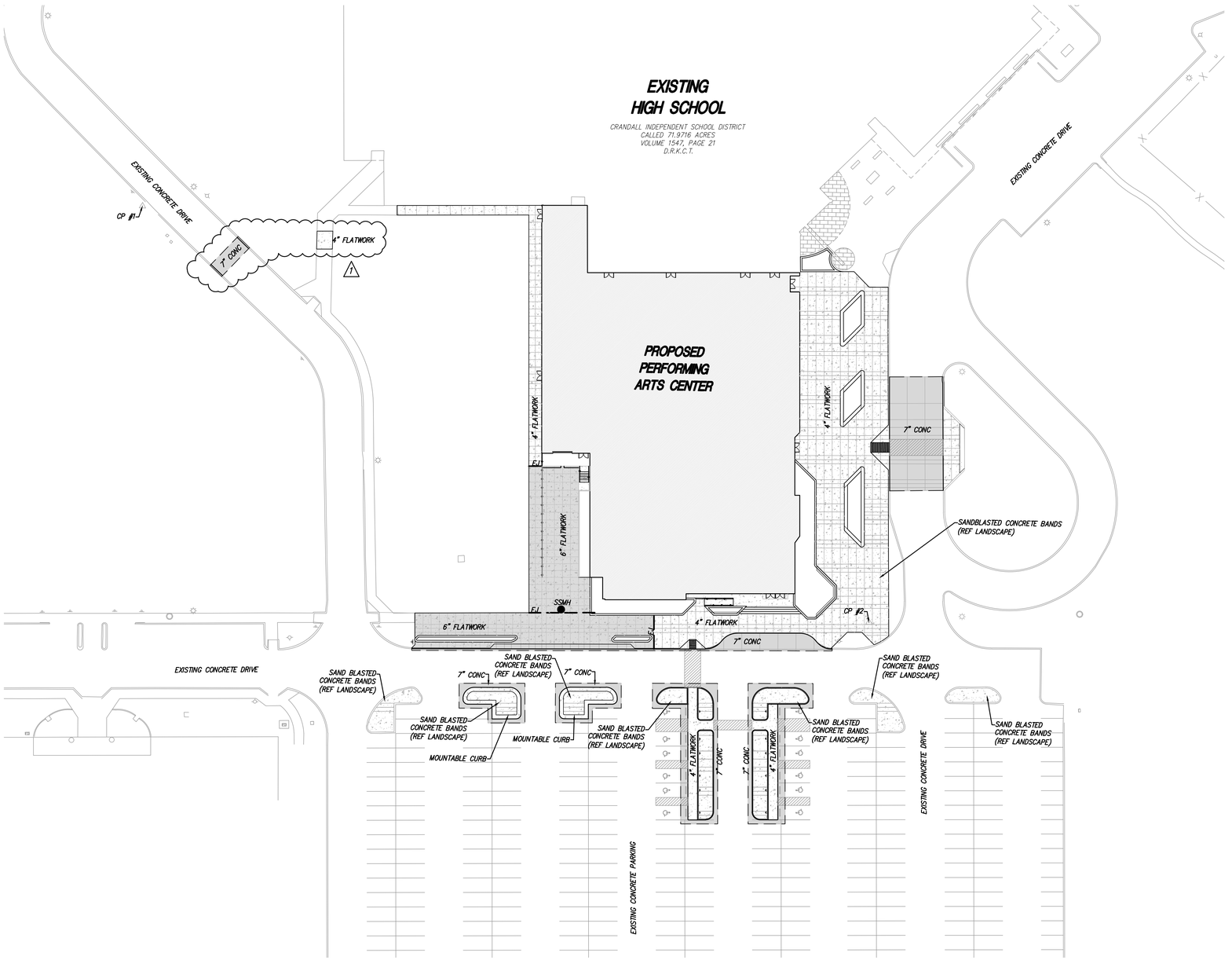
SANITARY SEWER & WATER PLAN

C1.10



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GRAPHIC SCALE

30 0 15 30 60

GRAPHIC SCALE: 1" = 30'

LEGEND

- 6" CONCRETE FLATWORK
- 7" CONCRETE PAVEMENT (3,500 psi)
- 4" CONCRETE FLATWORK
- EJ — EXPANSION JOINT
- SAWED DUMMY JOINT

FIRE LANE NOTES

1. REFER TO SITE PLAN SHEET FOR LIMITS OF FIRE LANES.

PAVING NOTES

1. ALL 7" CONCRETE PAVING SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,500 PSI AT 28 DAYS. MISC. 4" CONCRETE FLATWORK SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,500 PSI AT 28 DAYS.
2. CONCRETE PAVING SHALL BE PLACED ON 6" COMPACTED NATIVE SOIL.
3. ALL CONCRETE SAWCUT JOINTS SHALL BE SPACED AT 15' MAXIMUM CENTERS EACH WAY, UNLESS NOTED OTHERWISE. SAWCUTTING SHALL BE ACCOMPLISHED WITHIN 4 TO 12 HOURS OF PLACING CONCRETE PAVEMENT. CONTRACTOR SHALL MAKE NECESSARY PROVISIONS FOR LIGHTING, EQUIPMENT AND LABOR TO MEET THE SAWCUT SPECIFICATIONS. NO TOLERANCE IS PERMITTED IN THE SAWCUTTING TIME.
4. CONTRACTOR SHALL TAKE NOTE OF DIFFERENT TYPES OF EDGE OF PAVEMENTS TO BE USED ON THIS PROJECT.
5. ALL TRAFFIC CONTROL DEVICES AND PROCEDURES SHALL CONFORM TO THE LATEST VERSION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
6. CONTRACTOR IS RESPONSIBLE FOR REMOVING DIRT, MUD, AND SPOILS TRACKED ONTO PUBLIC ROADS RESULTING FROM CONSTRUCTION ACTIVITIES. SEE EROSION CONTROL PLAN FOR REQUIREMENTS TO INSTALL A WHEEL-WASH STATION AT THE CONSTRUCTION EXIT.
7. CONTRACTOR SHALL VERIFY SLEEVE SIZE AND LOCATIONS WITH MEP PLANS.
8. CONTRACTOR SHALL STAMP CURBS INDICATING SIZE, LOCATION, AND TYPE OF SLEEVE.
9. ALL WORK SHALL BE IN ACCORDANCE WITH GEOTECHNICAL REPORT BY ALPHA TESTING, PROJECT G240443, DATED APRIL 19, 2024.

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City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
PAVING PLAN

tnp project: DLR23073
sheet: C1.11

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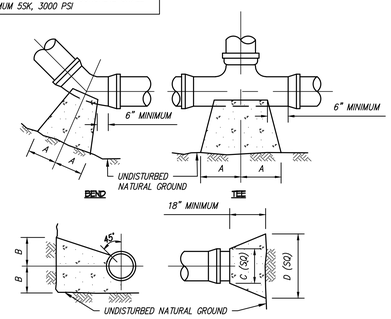
PAVING PLAN

C1.11

NOTE:
THRUST BLOCKS AT TRENCH FACE MUST HAVE A MINIMUM BEARING SURFACE OF 10 SQ. FEET AND THE LEAST DIMENSION SHALL BE NO SMALLER THAN 1.5 TIMC PIPE DIAMETER, BUT NOT LESS THAN 10 FT. ALL CONCRETE SHALL BE MINIMUM 5SK, 3000 PSI

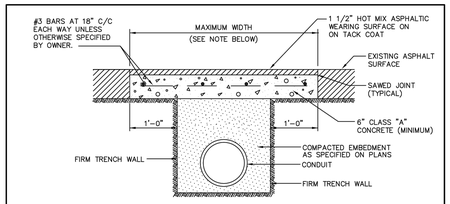


24" MINIMUM 12" & LARGER PIPE
18" MINIMUM 10" & LARGER PIPE

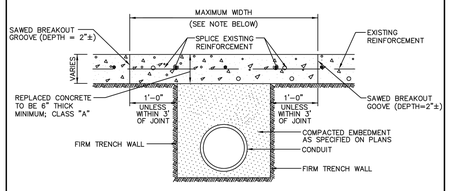
BEND & TEE PLUG

SIZE	90° BEND		45° BEND		22 1/2° BEND		TEES		PLUGS	
	A	B	A	B	A	B	A	B	A	B
2 1/2"	12"	7"	6"	7"	6"	6"	7"	8"	8"	14"
6"	16"	10"	9"	10"	6"	12"	10"	12"	10"	21"
8"	22"	13"	12"	13"	8"	10"	13"	16"	12"	29"
10"	26"	17"	14"	17"	10"	13"	16"	20"	14"	36"
12"	29"	21"	16"	21"	11"	16"	18"	24"	16"	41"
14"	35"	24"	19"	24"	12"	20"	22"	27"	18"	48"
16"	38"	27"	21"	27"	12"	24"	24"	30"	20"	54"

THRUST BLOCK DETAIL
NOT TO SCALE



ASPHALT PAVEMENT
N.T.S.

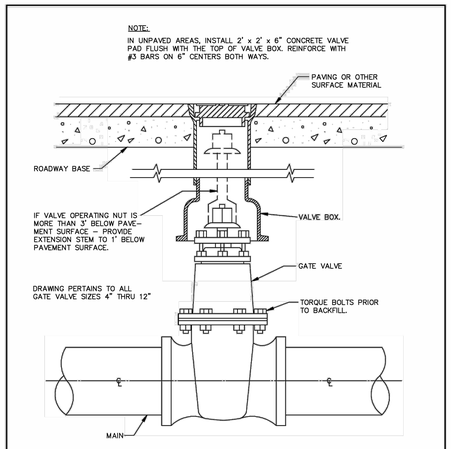


CONCRETE PAVEMENT
N.T.S.

NOTES:
1. PAYMENT TO THE CONTRACTOR FOR REPLACEMENT OF PAVEMENT AND/OR DRIVEWAYS WILL BE BASED ON ACTUAL MEASUREMENTS UP TO A MAXIMUM WIDTH EQUAL TO THE SPECIFIED MAXIMUM TRENCH WIDTH (PER STD. SPEC. ITEM 6.2.) PLUS 2 FEET. ANY EXISTING PAVEMENT DAMAGED OR REMOVED IN EXCESS OF THE MAXIMUM LIMITS SHALL BE AT THE EXPENSE OF THE CONTRACTOR.
2. WHEN REMOVING CONCRETE PAVEMENT THE CONTRACTOR SHALL ENDEAVOR TO LIMIT DAMAGE TO EXISTING REINFORCEMENT SO IT MAY BE EMPLOYED IN THE REPLACEMENT OPERATION. IF ORIGINAL REINFORCEMENT IS CUT OR BROKEN, REPLACEMENT BARS OF THE SAME SIZE SHALL BE INSTALLED BY DRILLING AND DOWELLING AS DIRECTED BY THE OWNER.

PAVEMENT CUTS	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 402.1	
REMOVAL AND REPLACEMENT		DATE OCT. '04	STANDARD DRAWING NO. 3070

NOTE:
IN UNPAVED AREAS, INSTALL 2' x 2' x 6" CONCRETE VALVE PAD FLUSH WITH THE TOP OF VALVE BOX. REINFORCE WITH #3 BARS ON 6" CENTERS BOTH WAYS.



GATE VALVE BOX AND EXTENSION STEM
N.T.S.

GATE VALVE 4" TO 12"	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.6.6*	
BOX & EXTENSION STEM		DATE OCT. '04	STANDARD DRAWING NO. 4050

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*

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City of Crandall, Texas
Crandall Independent School District
High School - PAC Addition
WATER DETAILS

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WATER DETAILS

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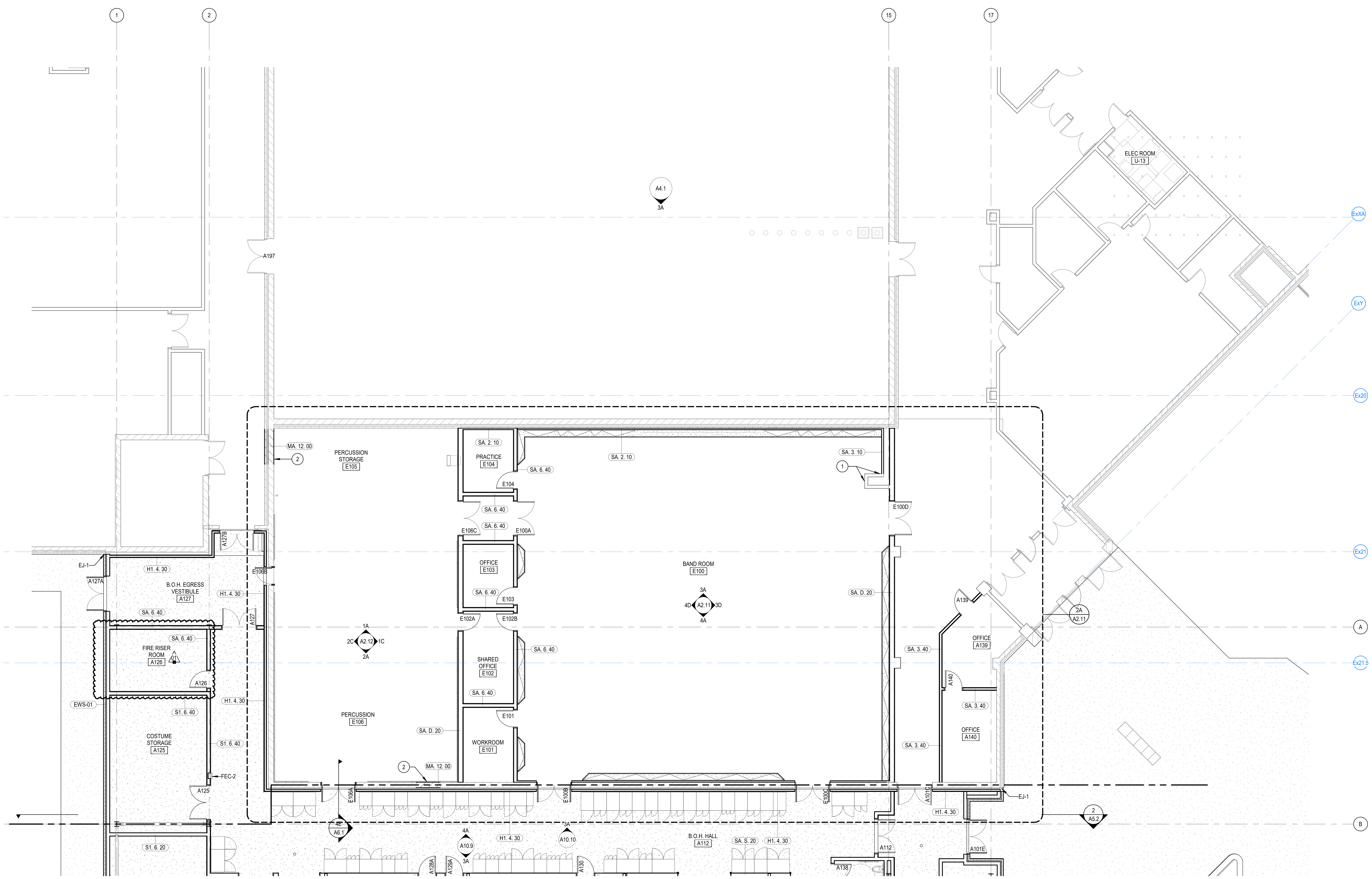


LEVEL 01 - AREA B - FLOOR PLAN

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

GENERAL ARCHITECTURAL NOTES

1. PARTITION TYPES SHALL BE DESIGNATED ON FLOOR PLANS (XX. X. XX) THUS: SEE SHEET A8.3 FOR TYPES. ALL INTERIOR PARTITIONS ARE TYPE SA.3.20 UNLESS NOTED OTHERWISE.
2. ALL MASONRY WALLS AND INTERIOR STUD WALLS SHALL EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE UNLESS NOTED OTHERWISE, PER PARTITION TYPE.
3. PROVISIONS SHALL BE MADE AT ALL FULL HEIGHT NON-BEARING WALLS FOR 1-INCH VERTICAL MOVEMENT OF THE BUILDING STRUCTURE WITHOUT TRANSFER OF COMPRESSIVE LOADS TO WALL. FILL IRREGULARITIES BETWEEN TOP OF WALL AND DECK ABOVE WITH MINERAL WOOL INSULATION OR FIRE STOPPING MATERIALS AS REQUIRED TO MEET FIRE RATING OF RESPECTIVE WALLS. SEE DETAILS ON SHEET XX.X.
4. SEE STRUCTURAL DRAWINGS FOR BRACING OF NON-LOAD BEARING MASONRY WALLS.
5. FURNISH AND INSTALL FIRE-TREATED WOOD BLOCKING OR METAL BACKING PLATE IN METAL STUD PARTITIONS FOR THE PROPER ANCHORAGE OF ALL WALL ATTACHED ITEMS; I.E. TOILET ACCESSORIES, CASEWORK, MILLWORK, WALL-MOUNTED FIXTURES, MARKER BOARDS, TACK BOARDS, DOOR STOPS, AUDIO VISUAL BRACKETS, AND OTHER WALL ATTACHED ITEMS.
6. GYPSUM BOARD SURFACES SHALL BE ISOLATED WITH CONTROL JOINTS WHERE SHOWN ON DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS.
7. MASONRY CONTROL JOINTS (CJ) AND CONTROL JOINTS ABOVE (CJA) SHALL BE LOCATED AS SHOWN ON THE FLOOR PLAN AND BUILDING ELEVATIONS, AND WHERE LARGE PLUMBING VENTS OR RISERS OCCUR IN SINGLE WYTHE MASONRY WALLS, AND WHERE MASONRY WALLS BEARING ON THE CONCRETE FLOOR SLAB ABUT MASONRY WALLS BEARING ON CONCRETE FOOTINGS OR AS INDICATED ON DRAWINGS.
8. EXTEND FURRING CHANNELS AND GYPSUM BOARD UP 4 INCHES ABOVE FINISHED CEILING ON CMU WALLS.
9. SCRIBE GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

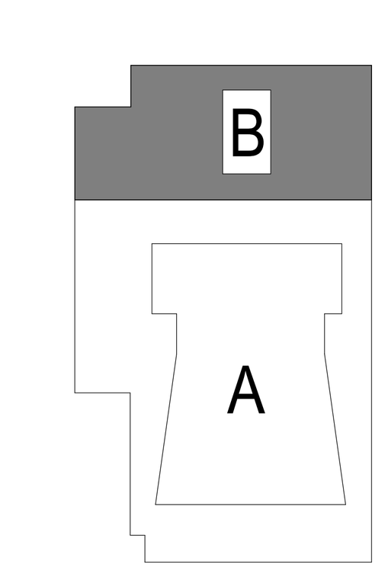
REFERENCE KEYNOTES

EJ-1	EXPANSION JOINT TYPE 1
FEC-2	FIRE EXTINGUISHER CABINET RECESSED

(#) SHEET NOTES

1 EXISTING WALL COVERING IN-WALL UTILITIES TO REMAIN, NEW WALLS TO TIE IN.
2 EXISTING WALL INFILL

KEY PLAN



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01	08/19/24	ADDENDUM 01

39-23712-00

LEVEL 01 - AREA B - FLOOR PLAN

A1.1B

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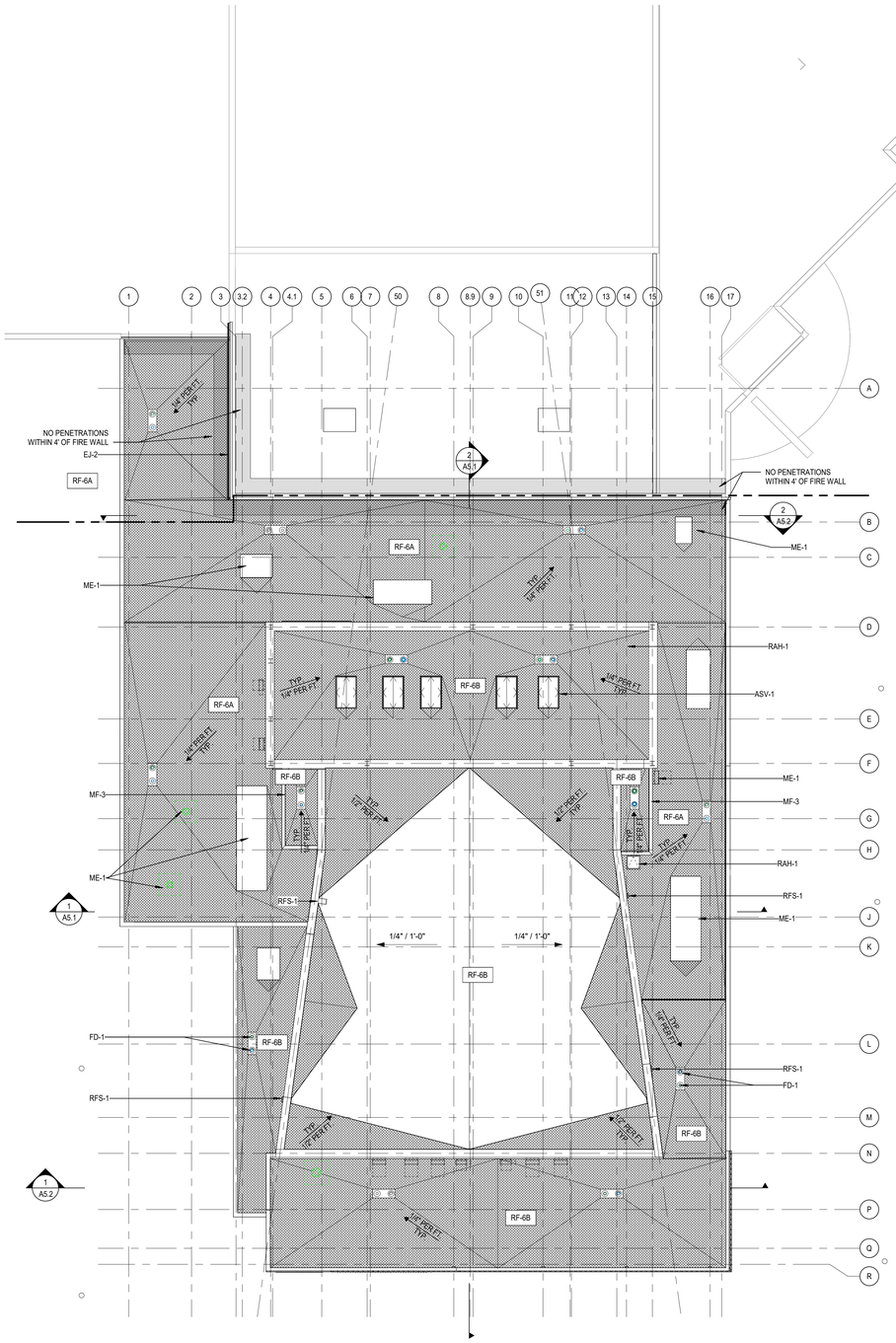


N

TRUE

OVERALL ROOF PLAN

SCALE: 1/16" = 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 12 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.

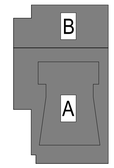
REFERENCE KEYNOTES

ASV-1	AUTOMATIC SMOKE VENT
EJ-2	EXPANSION JOINT COVER TYPE 2
FD-1	METAL ROOF DRAIN
ME-1	MECHANICAL EQUIPMENT
MF-3	PREFINISHED SHEET METAL PARAPET CAP W/ CONT CLEAT
RAH-1	ROOF ACCESS HATCH
RFS-1	ROOF SCUPPER

STAGEHOUSE SMOKE VENT INFORMATION:

- STAGE AREA: 3,508 SF
- 5% TOTAL AREA REQUIRED: .05 X 3508 SF = 175.4 SF PER IBC 410.2.7 ROOF VENTS
  5 X 40 SF ROOF VENT OPENINGS = 200 SF TOTAL ROOF VENT OPENING

KEY PLAN



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REGISTERED ARCHITECT STATE OF TEXAS CHARLES E. BRANT 2018

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

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OVERALL ROOF PLAN

A1.4

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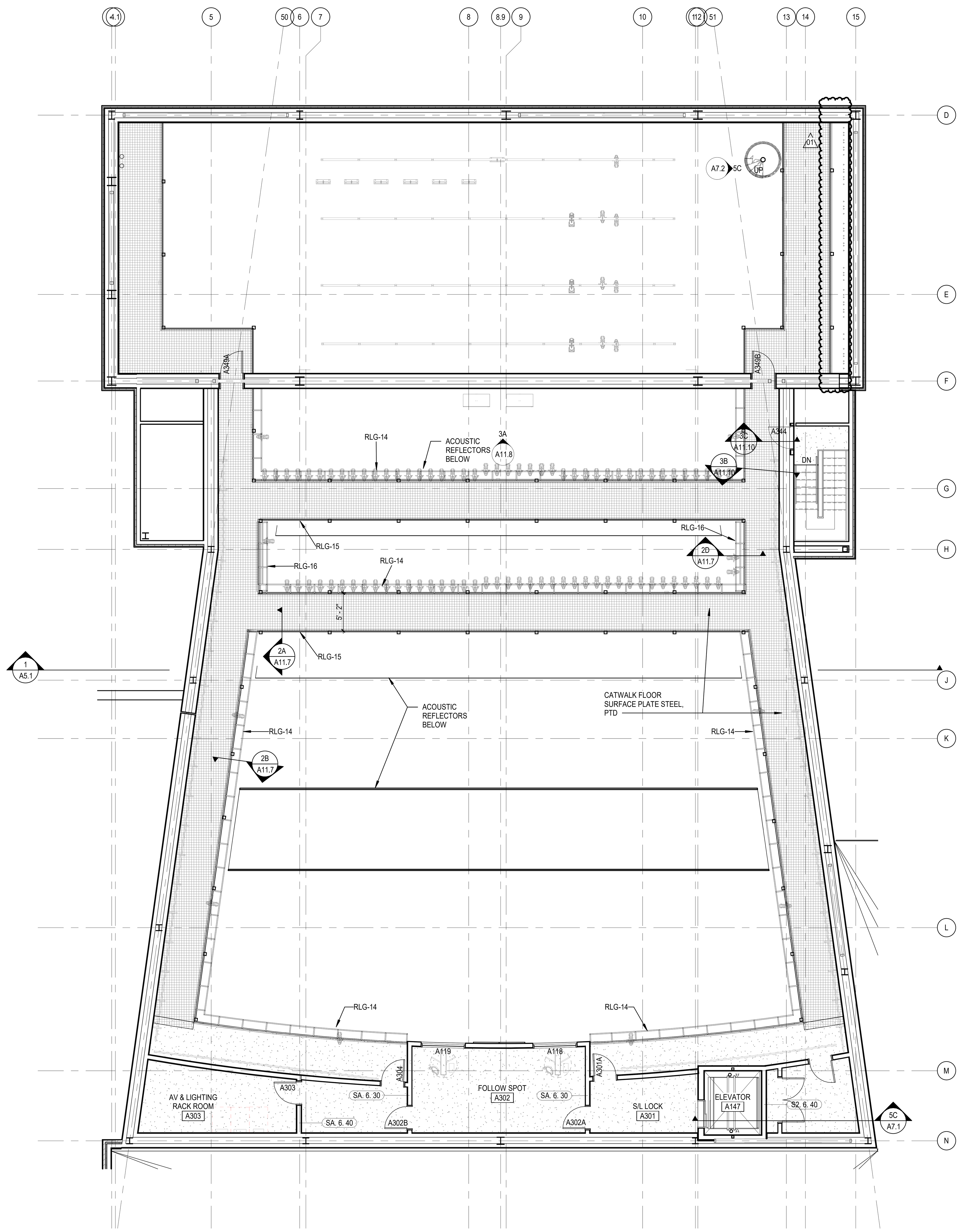


LEVEL 03 - AREA A - FLOOR PLAN

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

GENERAL ARCHITECTURAL NOTES

1. PARTITION TYPES SHALL BE DESIGNATED ON FLOOR PLANS (XX. X. XX) THUS: SEE SHEET A8.3 FOR TYPES. ALL INTERIOR PARTITIONS ARE TYPE SA.3.20 UNLESS NOTED OTHERWISE.
2. ALL MASONRY WALLS AND INTERIOR STUD WALLS SHALL EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE UNLESS NOTED OTHERWISE, PER PARTITION TYPE.
3. PROVISIONS SHALL BE MADE AT ALL FULL HEIGHT NON-BEARING WALLS FOR 1-INCH VERTICAL MOVEMENT OF THE BUILDING STRUCTURE WITHOUT TRANSFER OF COMPRESSIVE LOADS TO WALL. FILL IRREGULARITIES BETWEEN TOP OF WALL AND DECK ABOVE WITH MINERAL WOOL INSULATION OR FIRE STOPPING MATERIALS AS REQUIRED TO MEET FIRE RATING OF RESPECTIVE WALLS. SEE DETAILS ON SHEET XX.X.
4. SEE STRUCTURAL DRAWINGS FOR BRACING OF NON-LOAD BEARING MASONRY WALLS.
5. FURNISH AND INSTALL FIRE-TREATED WOOD BLOCKING OR METAL BACKING PLATE IN METAL STUD PARTITIONS FOR THE PROPER ANCHORAGE OF ALL WALL ATTACHED ITEMS; I.E. TOILET ACCESSORIES, CASEWORK, MILLWORK, WALL-MOUNTED FIXTURES, MARKER BOARDS, TACK BOARDS, DOOR STOPS, AUDIO VISUAL BRACKETS, AND OTHER WALL ATTACHED ITEMS.
6. GYPSUM BOARD SURFACES SHALL BE ISOLATED WITH CONTROL JOINTS WHERE SHOWN ON DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS.
7. MASONRY CONTROL JOINTS (CJ) AND CONTROL JOINTS ABOVE (CJA) SHALL BE LOCATED AS SHOWN ON THE FLOOR PLAN AND BUILDING ELEVATIONS, AND WHERE LARGE PLUMBING VENTS OR RISERS OCCUR IN SINGLE WYTHE MASONRY WALLS, AND WHERE MASONRY WALLS BEARING ON THE CONCRETE FLOOR SLAB ABUT MASONRY WALLS BEARING ON CONCRETE FOOTINGS OR AS INDICATED ON DRAWINGS.
8. EXTEND FURRING CHANNELS AND GYPSUM BOARD UP 4 INCHES ABOVE FINISHED CEILING ON CMU WALLS.
9. SCRIBE GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

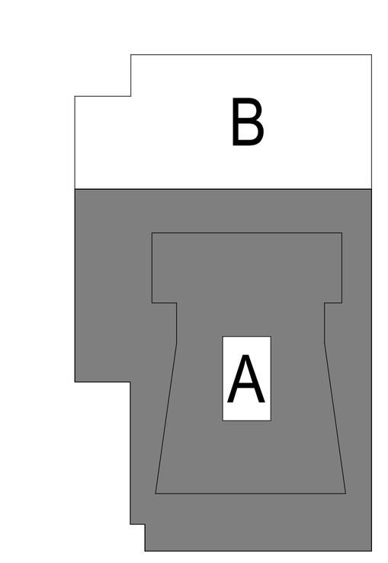
REFERENCE KEYNOTES

RLG-14	CATWALK STEEL PIPE / TUBE RAIL WITH LIGHTING OUTRIGGER; BLACK
RLG-15	CATWALK RAILING, NO OUTRIGGER
RLG-16	

SHEET NOTES

1 EXISTING WALL COVERING IN-WALL UTILITIES TO REMAIN, NEW WALLS TO TIE IN.
2 EXISTING WALL INFILL

KEY PLAN



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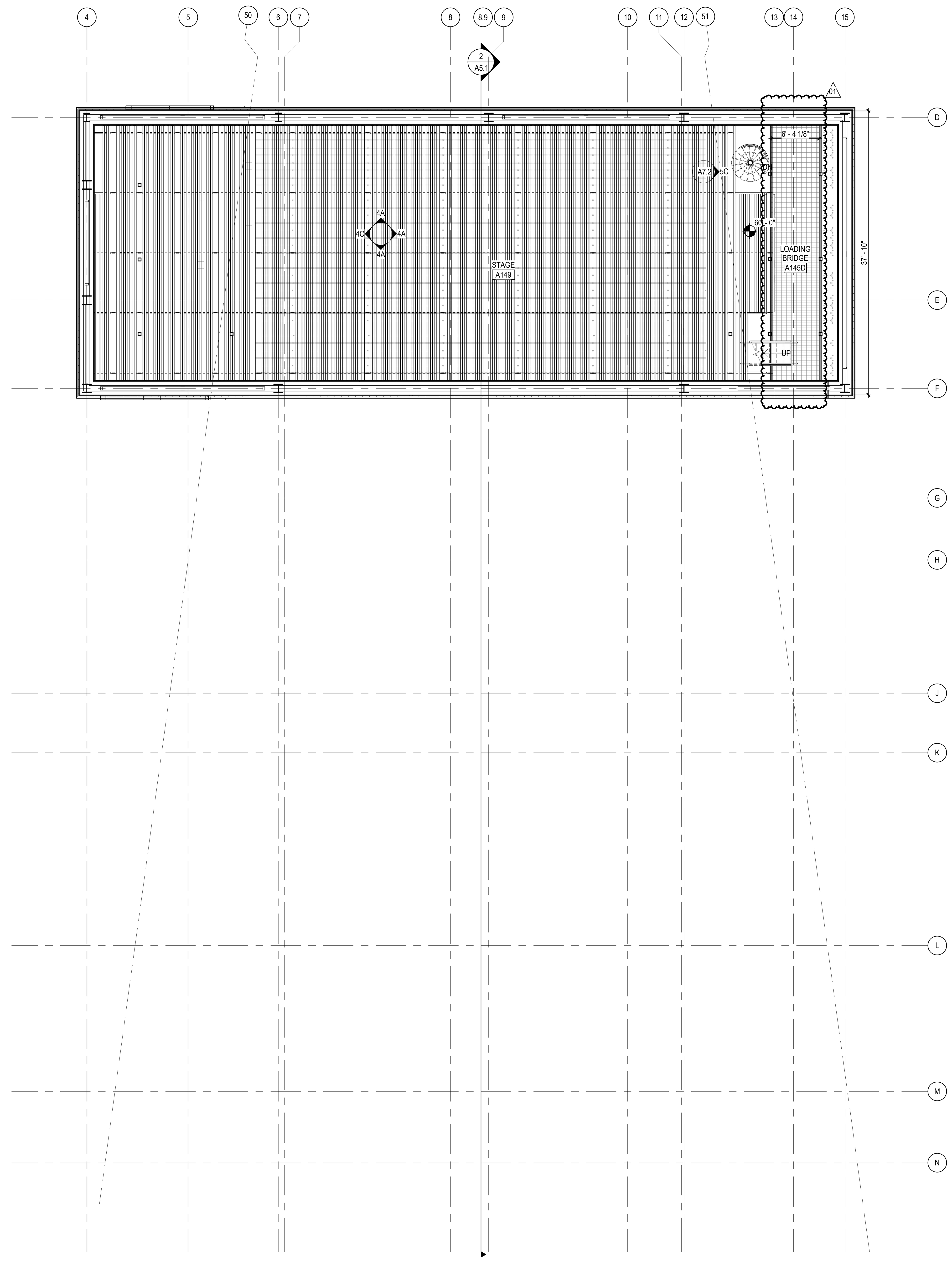
ENLARGED PLAN - AUDIENCE CHAMBER - CATWALK

A2.3



LEVEL 04 LOADING BRIDGE - AREA A_C - FLOOR PLAN

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

GENERAL ARCHITECTURAL NOTES

1. PARTITION TYPES SHALL BE DESIGNATED ON FLOOR PLANS (XX. X. XX) THUS: SEE SHEET A8.3 FOR TYPES. ALL INTERIOR PARTITIONS ARE TYPE SA.3.20 UNLESS NOTED OTHERWISE.
2. ALL MASONRY WALLS AND INTERIOR STUD WALLS SHALL EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE UNLESS NOTED OTHERWISE, PER PARTITION TYPE.
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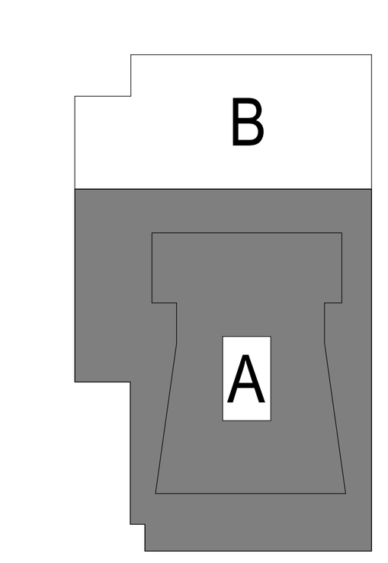
4. SEE STRUCTURAL DRAWINGS FOR BRACING OF NON-LOAD BEARING MASONRY WALLS.
5. FURNISH AND INSTALL FIRE-TREATED WOOD BLOCKING OR METAL BACKING PLATE IN METAL STUD PARTITIONS FOR THE PROPER ANCHORAGE OF ALL WALL ATTACHED ITEMS; I.E. TOILET ACCESSORIES, CASEWORK, MILLWORK, WALL-MOUNTED FIXTURES, MARKER BOARDS, TACK BOARDS, DOOR STOPS, AUDIO VISUAL BRACKETS, AND OTHER WALL ATTACHED ITEMS.
6. GYPSUM BOARD SURFACES SHALL BE ISOLATED WITH CONTROL JOINTS WHERE SHOWN ON DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS.
7. MASONRY CONTROL JOINTS (CJ) AND CONTROL JOINTS ABOVE (CJA) SHALL BE LOCATED AS SHOWN ON THE FLOOR PLAN AND BUILDING ELEVATIONS, AND WHERE LARGE PLUMBING VENTS OR RISERS OCCUR IN SINGLE WYTHE MASONRY WALLS, AND WHERE MASONRY WALLS BEARING ON THE CONCRETE FLOOR SLAB ABUT MASONRY WALLS BEARING ON CONCRETE FOOTINGS OR AS INDICATED ON DRAWINGS.
8. EXTEND FURRING CHANNELS AND GYPSUM BOARD UP 4 INCHES ABOVE FINISHED CEILING ON CMU WALLS.
9. SCRIBE GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

REFERENCE KEYNOTES

SHEET NOTES

1. EXISTING WALL COVERING IN-WALL UTILITIES TO REMAIN, NEW WALLS TO TIE IN.
2. EXISTING WALL INFILL

KEY PLAN



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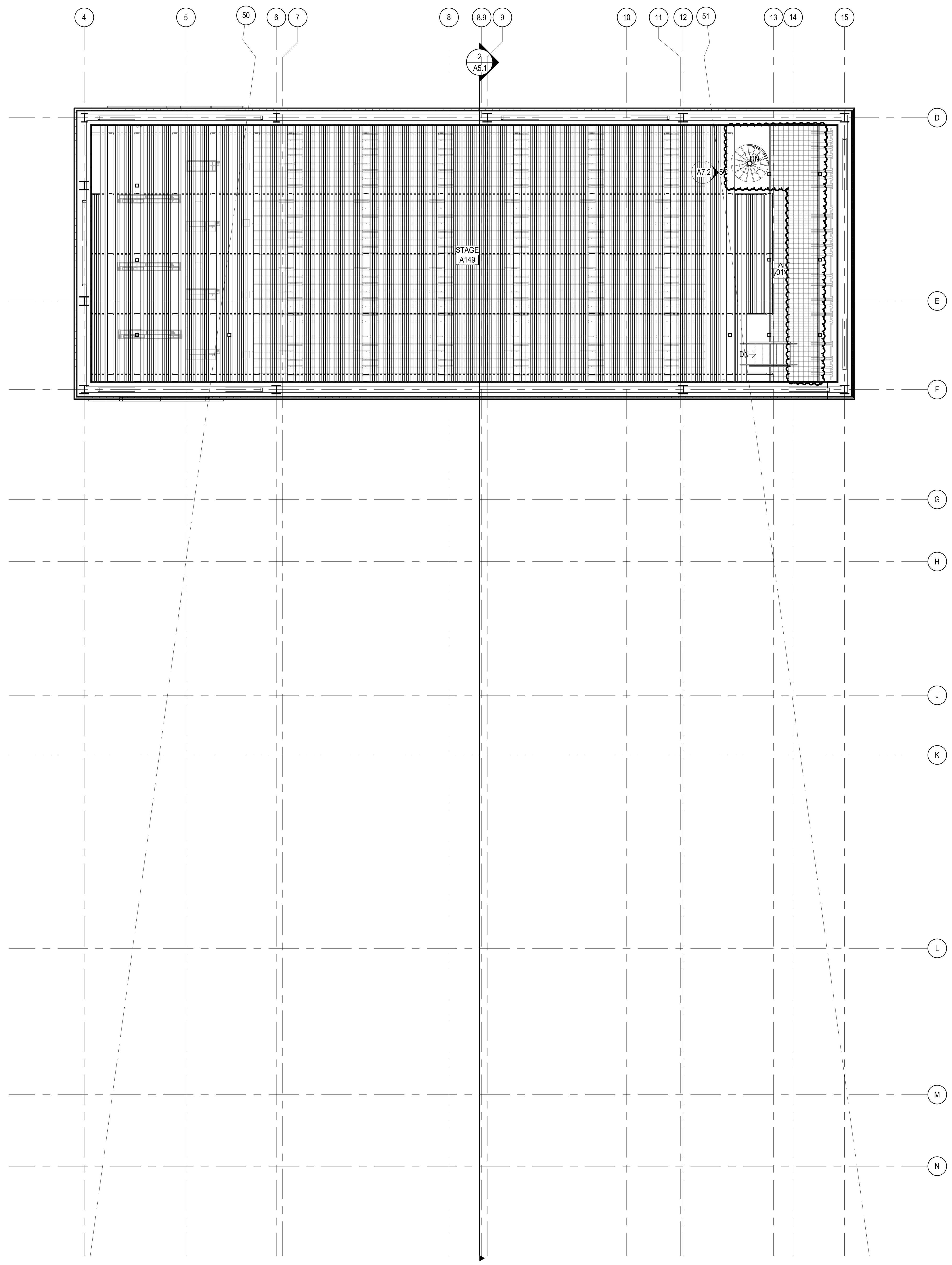
ENLARGED PLAN - AUDIENCE CHAMBER - LOADING BRIDGE

A2.4



GRID LEVEL 05 - AREA A_C - FLOOR PLAN

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

GENERAL ARCHITECTURAL NOTES

1. PARTITION TYPES SHALL BE DESIGNATED ON FLOOR PLANS (XX. X. XX) THUS: SEE SHEET A8.3 FOR TYPES. ALL INTERIOR PARTITIONS ARE TYPE SA.3.20 UNLESS NOTED OTHERWISE.
2. ALL MASONRY WALLS AND INTERIOR STUD WALLS SHALL EXTEND TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE UNLESS NOTED OTHERWISE, PER PARTITION TYPE.
3. PROVISIONS SHALL BE MADE AT ALL FULL HEIGHT NON-BEARING WALLS FOR 1-INCH VERTICAL MOVEMENT OF THE BUILDING STRUCTURE WITHOUT TRANSFER OF COMPRESSIVE LOADS TO WALL. FILL IRREGULARITIES BETWEEN TOP OF WALL AND DECK ABOVE WITH MINERAL WOOL INSULATION OR FIRE STOPPING MATERIALS AS REQUIRED TO MEET FIRE RATING OF RESPECTIVE WALLS. SEE DETAILS ON SHEET XX.X.
4. SEE STRUCTURAL DRAWINGS FOR BRACING OF NON-LOAD BEARING MASONRY WALLS.
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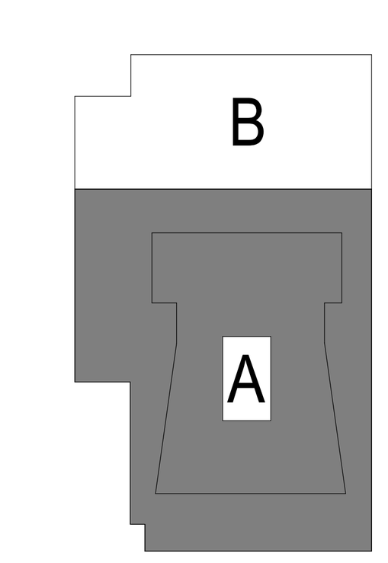
7. MASONRY CONTROL JOINTS (CJ) AND CONTROL JOINTS ABOVE (CJA) SHALL BE LOCATED AS SHOWN ON THE FLOOR PLAN AND BUILDING ELEVATIONS, AND WHERE LARGE PLUMBING VENTS OR RISERS OCCUR IN SINGLE WYTHE MASONRY WALLS, AND WHERE MASONRY WALLS BEARING ON THE CONCRETE FLOOR SLAB ABUT MASONRY WALLS BEARING ON CONCRETE FOOTINGS OR AS INDICATED ON DRAWINGS.
8. EXTEND FURRING CHANNELS AND GYPSUM BOARD UP 4 INCHES ABOVE FINISHED CEILING ON CMU WALLS.
9. SCRIBE GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

REFERENCE KEYNOTES

SHEET NOTES

1 EXISTING WALL COVERING IN-WALL UTILITIES TO REMAIN, NEW WALLS TO TIE IN.
2 EXISTING WALL INFILL

KEY PLAN



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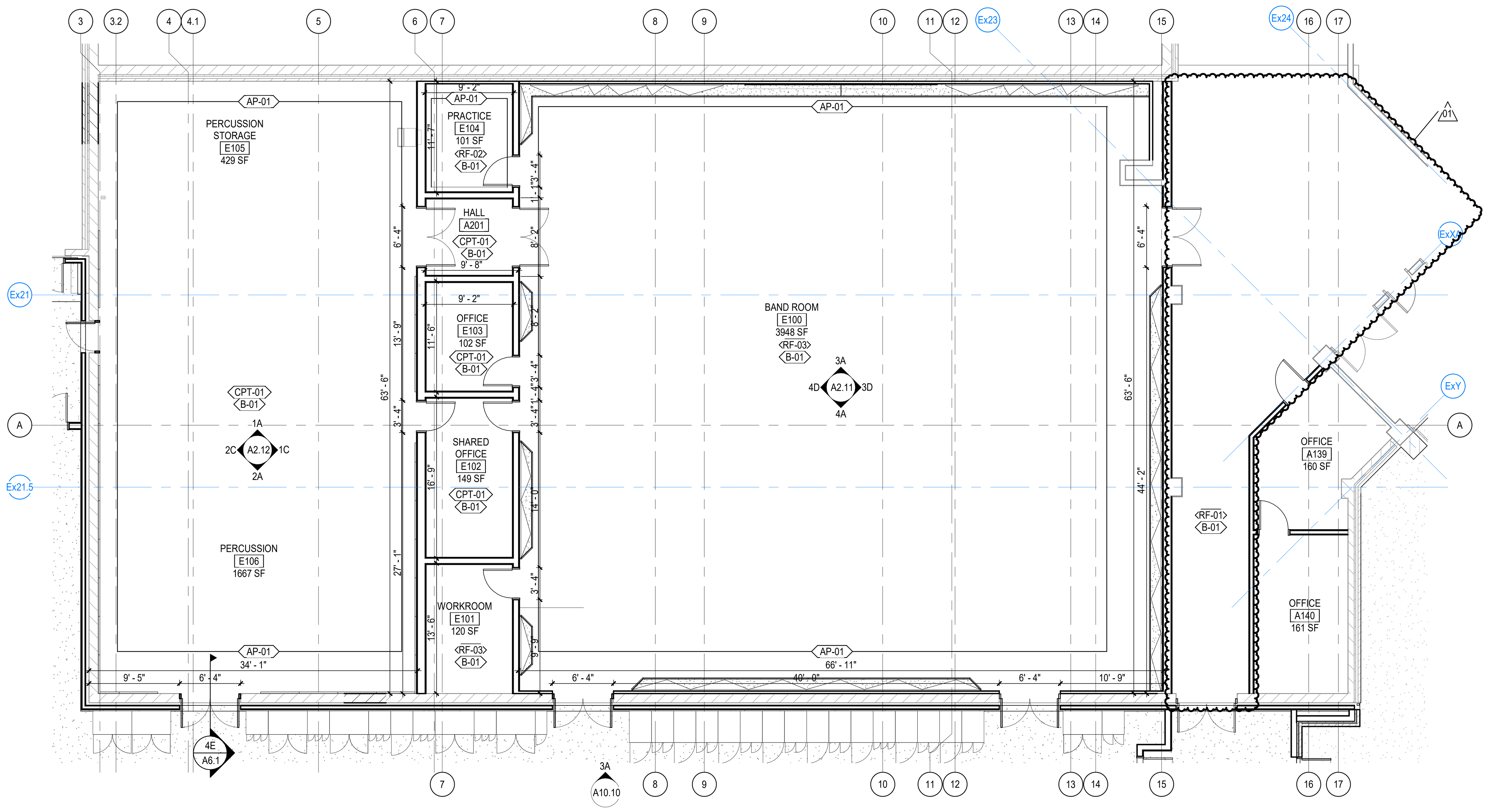
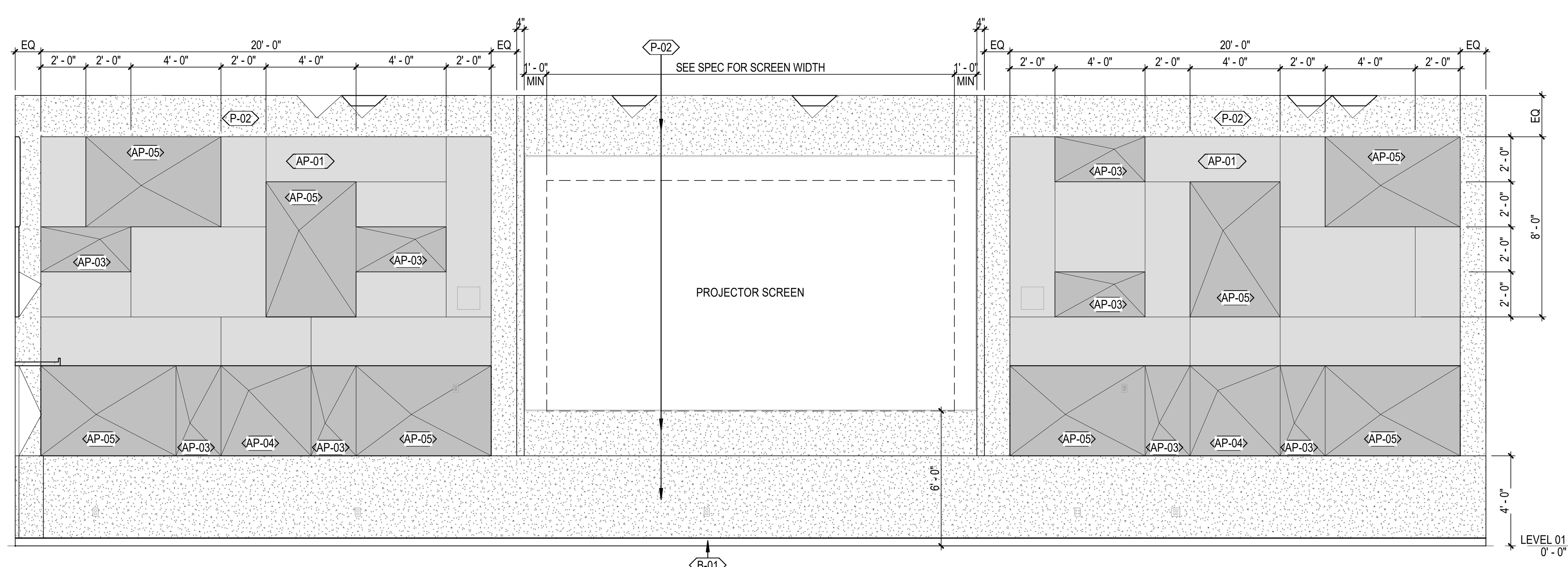
ENLARGED PLAN - AUDIENCE CHAMBER - GRID LEVEL

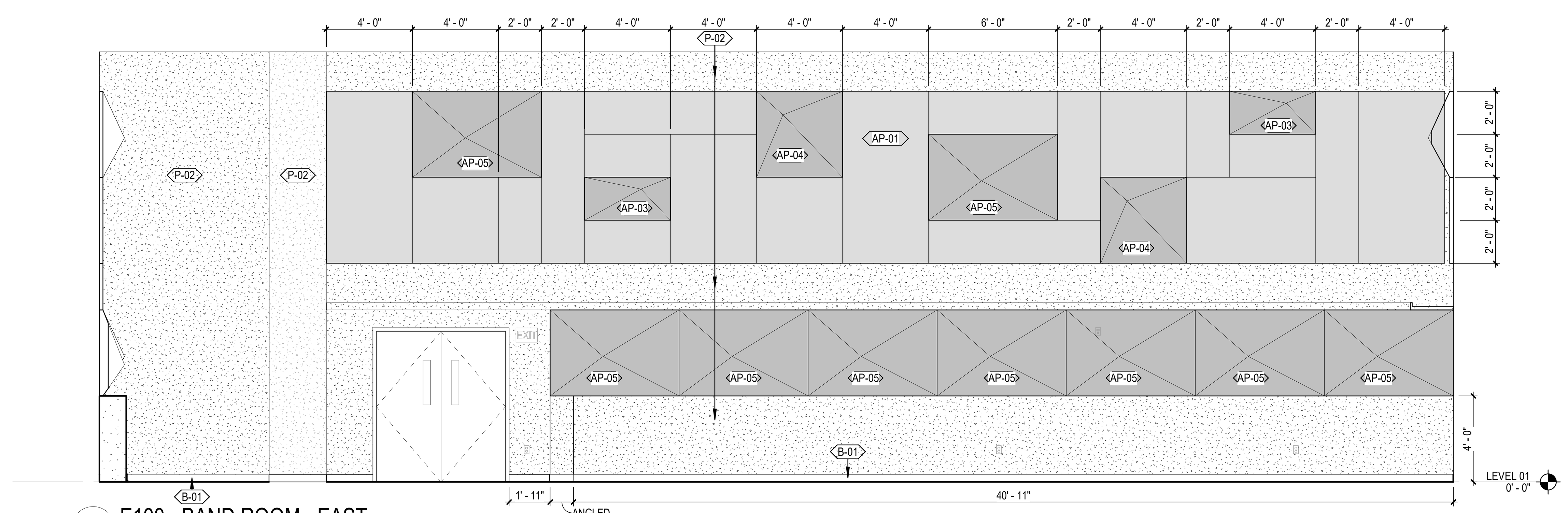
A2.5



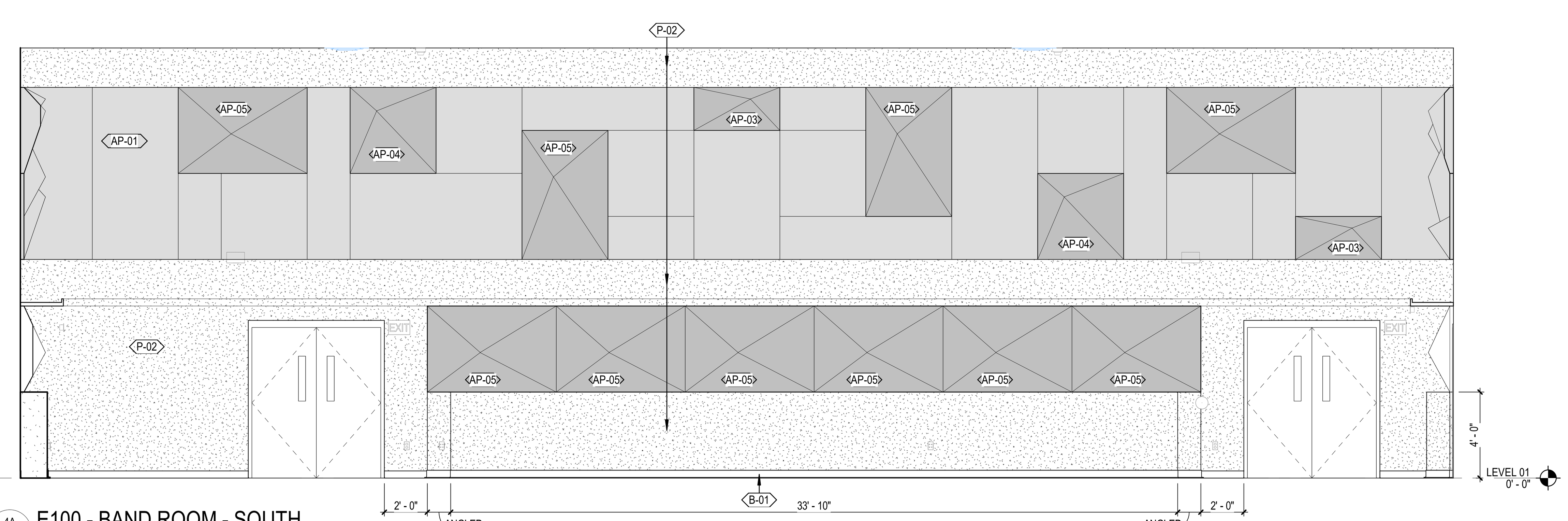
2A BAND RENOVATION - ENLARGED PLAN
A2.11 SCALE: 1/8" = 1'-0"



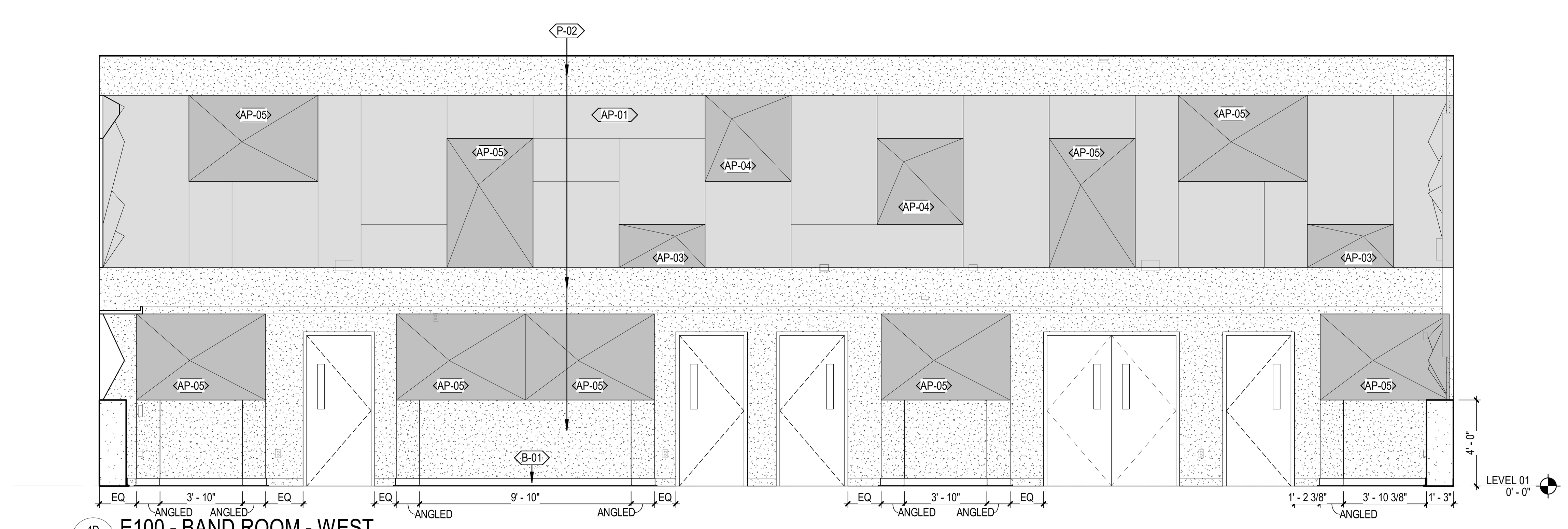
3A E100 - BAND ROOM - NORTH
A2.11 SCALE: 1/4" = 1'-0"



3D E100 - BAND ROOM - EAST
A2.11 SCALE: 1/4" = 1'-0"



4A E100 - BAND ROOM - SOUTH
A2.11 SCALE: 1/4" = 1'-0"



4D E100 - BAND ROOM - WEST
A2.11 SCALE: 1/4" = 1'-0"

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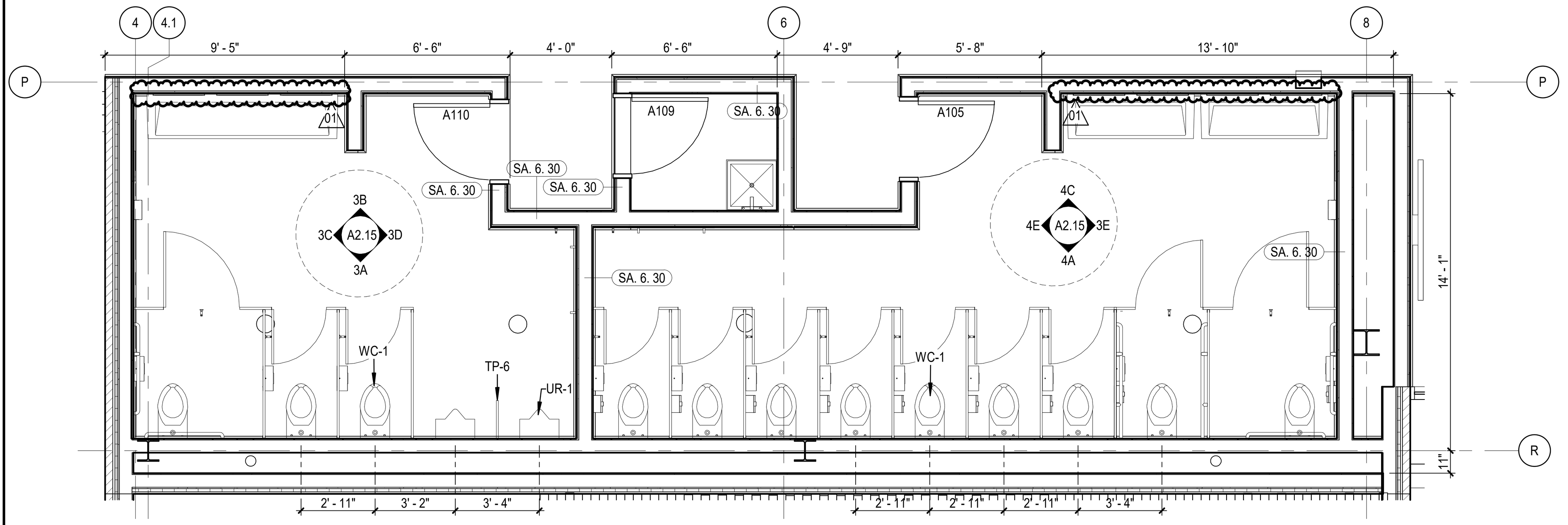
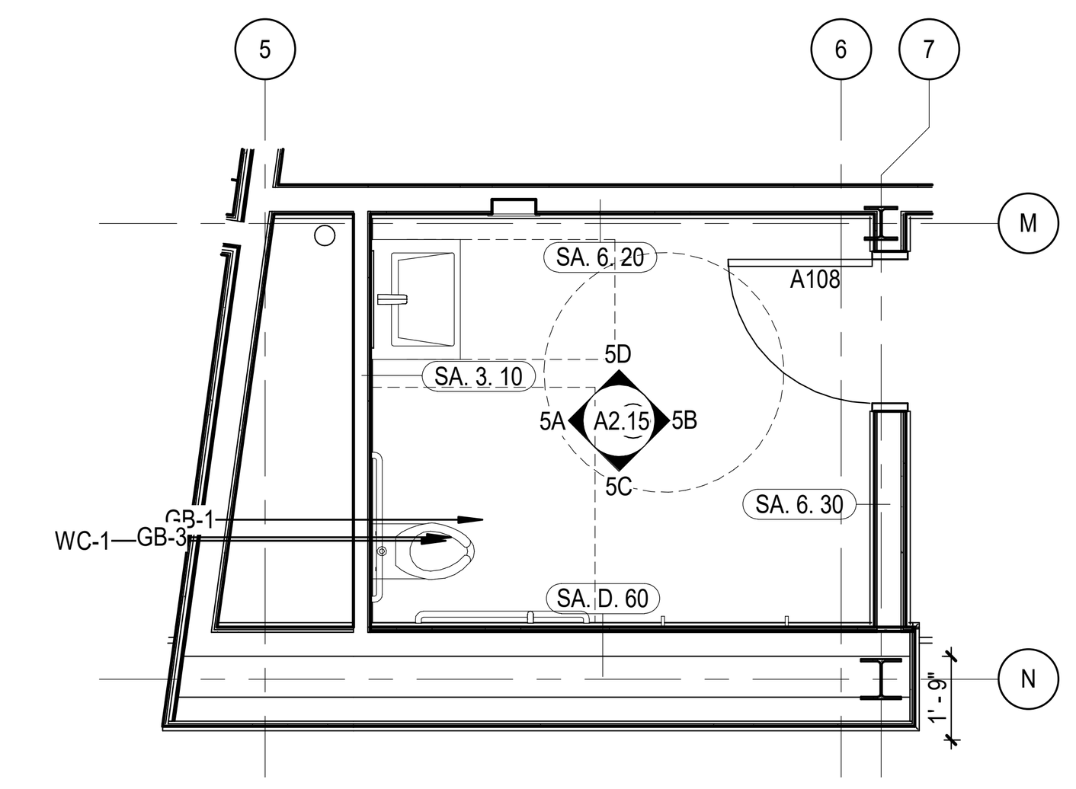
ENLARGED PLAN - BAND / PERCUSSION ROOMS RENOVATION

A2.11

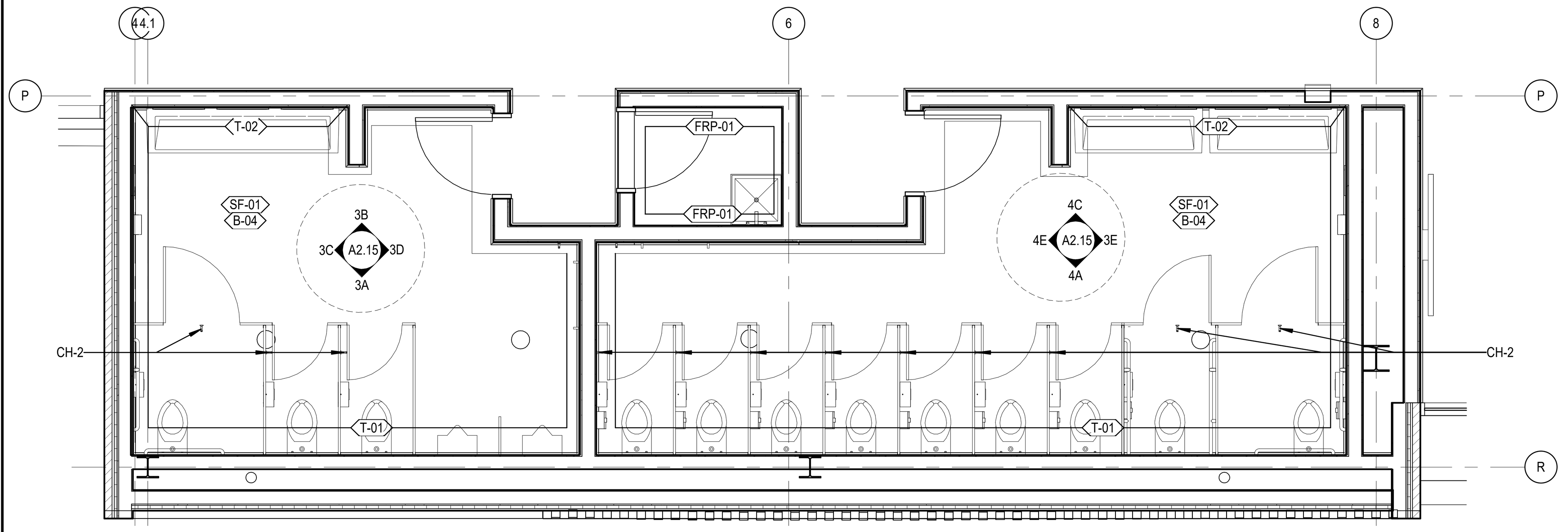
A B C D E F



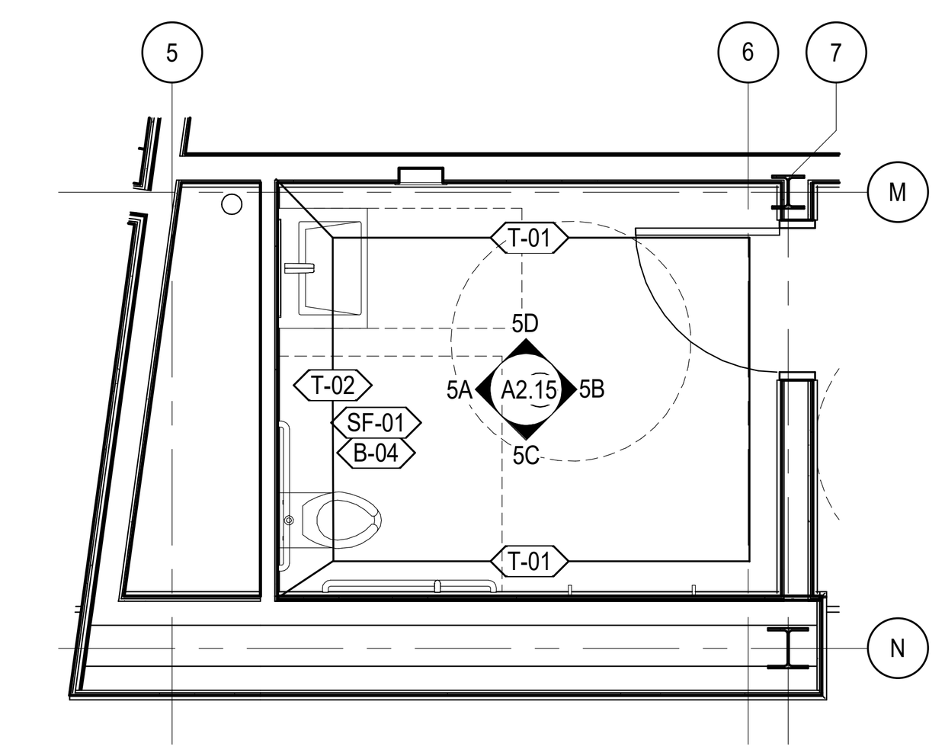
1A TYPICAL ENLARGED GROUP RESTROOMS - FLOOR PLAN
A2.15 SCALE: 1/4" = 1'-0"



1D ENLARGED RESTROOM A108
A2.15 SCALE: 1/4" = 1'-0"

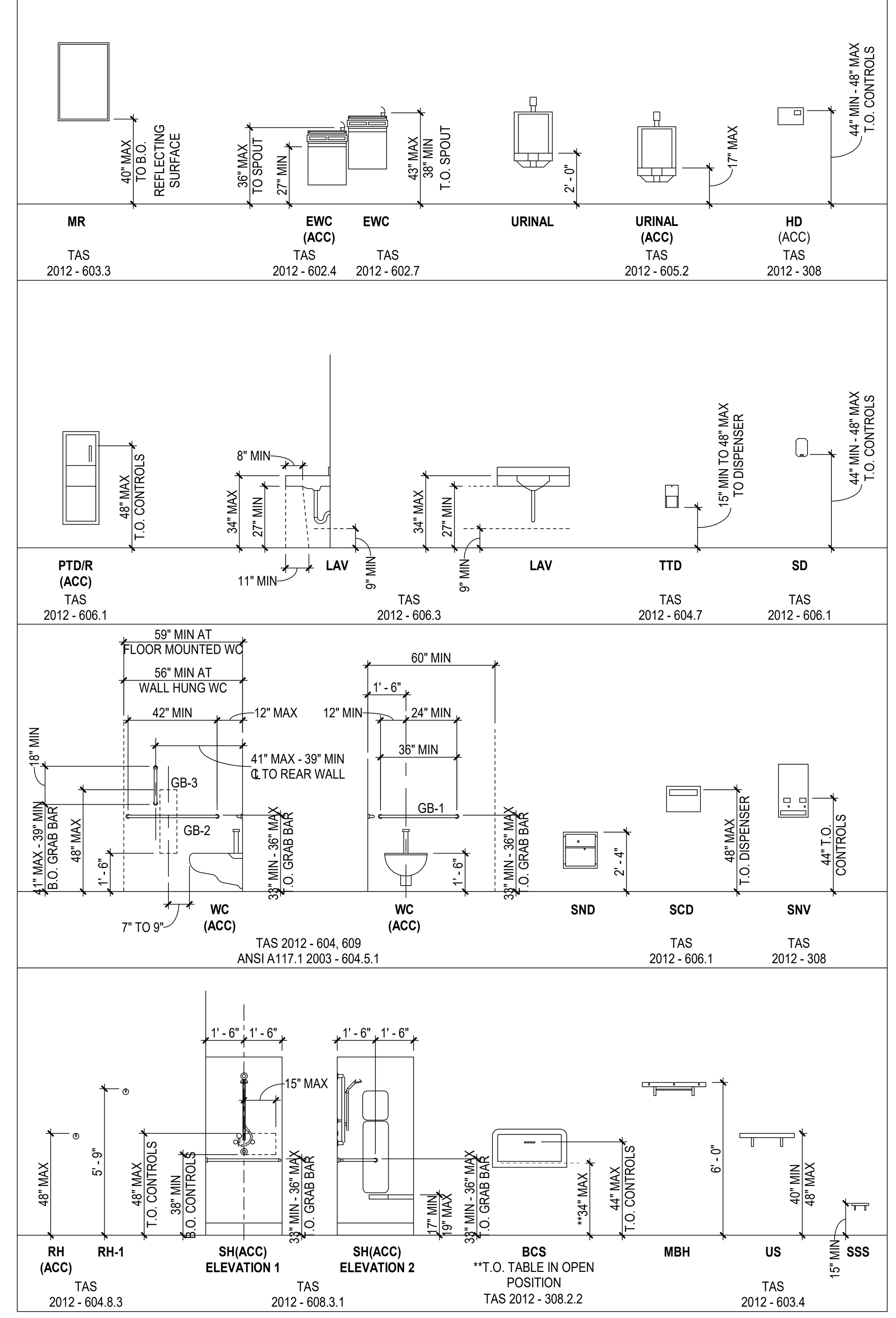


2A TYPICAL ENLARGED GROUP RESTROOMS - FINISH PLAN
A2.15 SCALE: 1/4" = 1'-0"



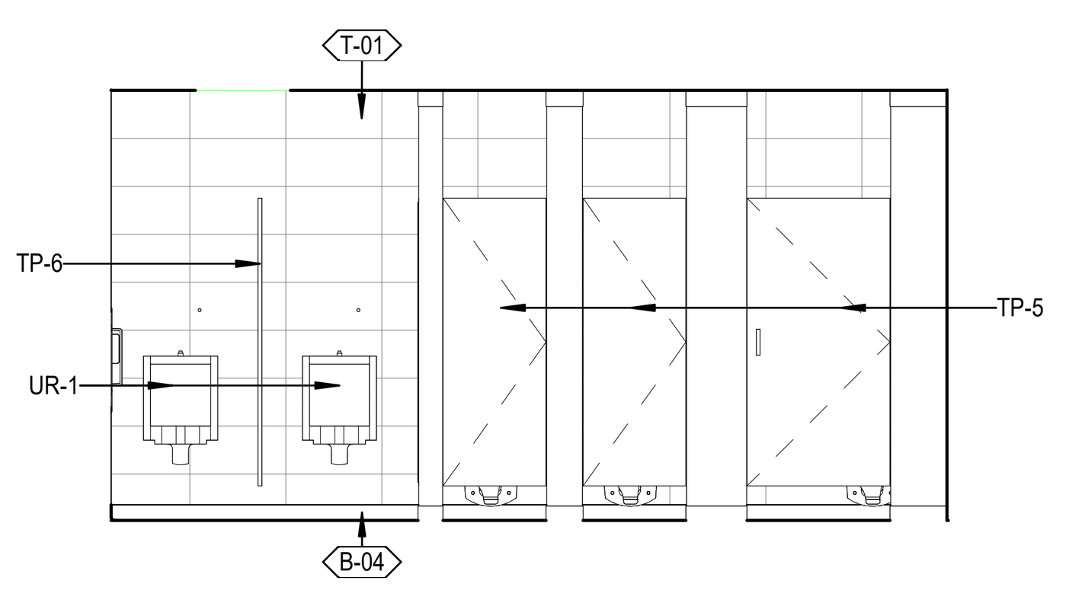
2D ENLARGED FINISH PLAN RESTROOM A108
A2.15 SCALE: 1/4" = 1'-0"

ADULT MOUNTING HEIGHTS

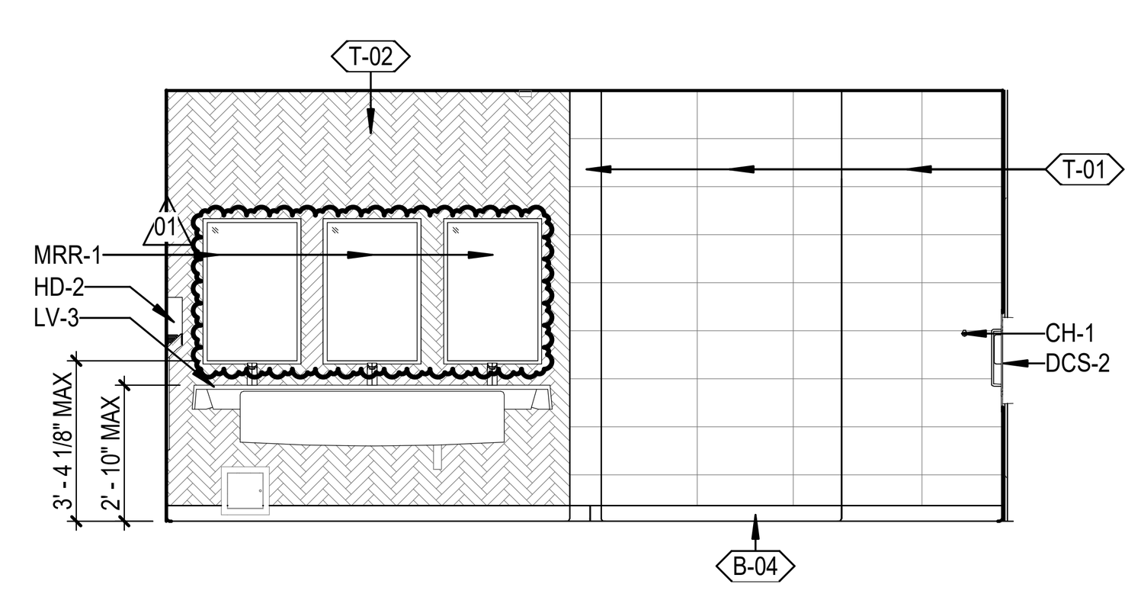


REFERENCE KEYNOTES

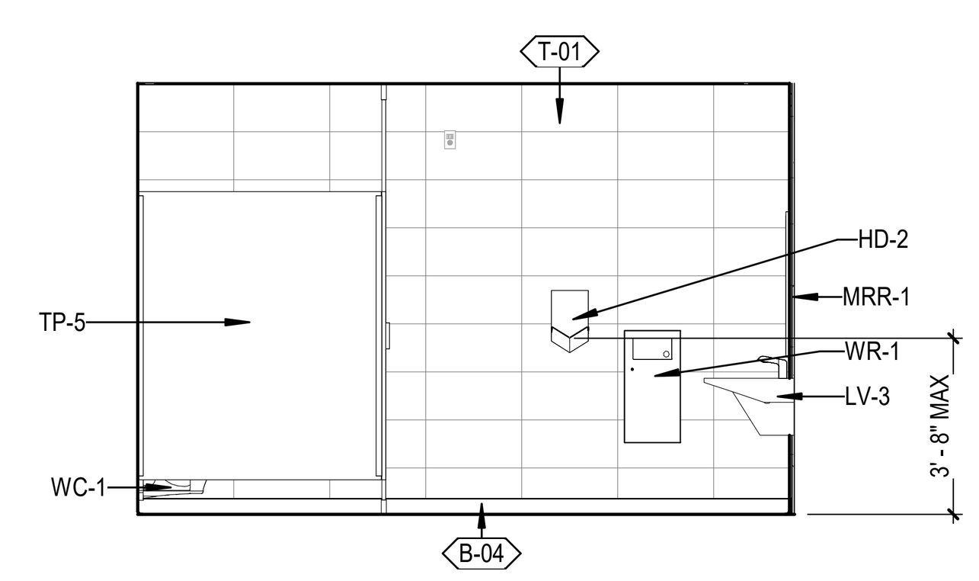
CH-1	COAT HOOK
CH-2	COAT HOOK
DCS-2	DIAPER CHANGING STATION - STAINLESS STEEL
GB-1	HORIZONTAL GRAB BAR - 36"
GB-3	VERTICAL GRAB BAR - 18"
HD-2	HAND DRYER - HIGH SPEED
LV-1	LAVATORY - SINGLE TROUGH
LV-2	LAVATORY - 2 FIXTURE TROUGH
LV-3	LAVATORY - 3 FIXTURE TROUGH
MRR-1	MIRROR
MRR-2	MIRROR WITH SHELF
PTDWR-1	PAPER TOWEL DISPENSER AND WASTE RECEPTACLE - SURFACE MOUNTED
TP-5	PHENOLIC TOILET PARTITION
TP-6	PHENOLIC URINAL PARTITION
UR-1	URINAL
WC-1	TOILET - WALL MOUNT
WR-1	WATER REPELLENT



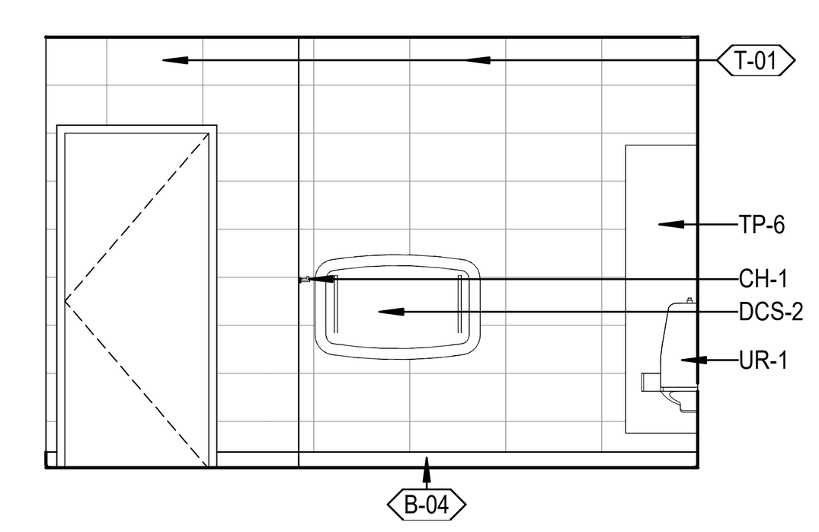
3A A173 RESTROOM - SOUTH
A2.15 SCALE: 1/4" = 1'-0"



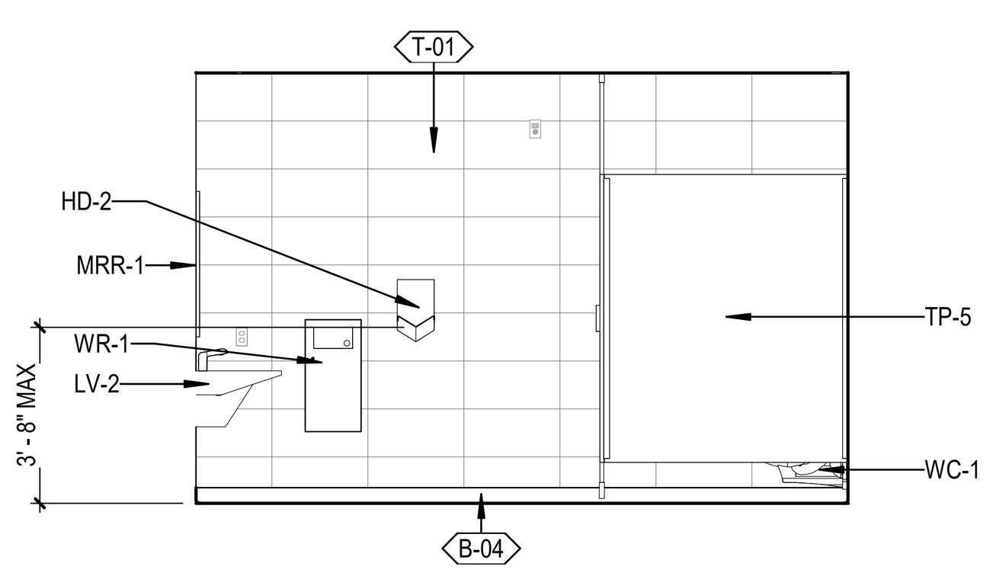
3B A173 RESTROOM - NORTH
A2.15 SCALE: 1/4" = 1'-0"



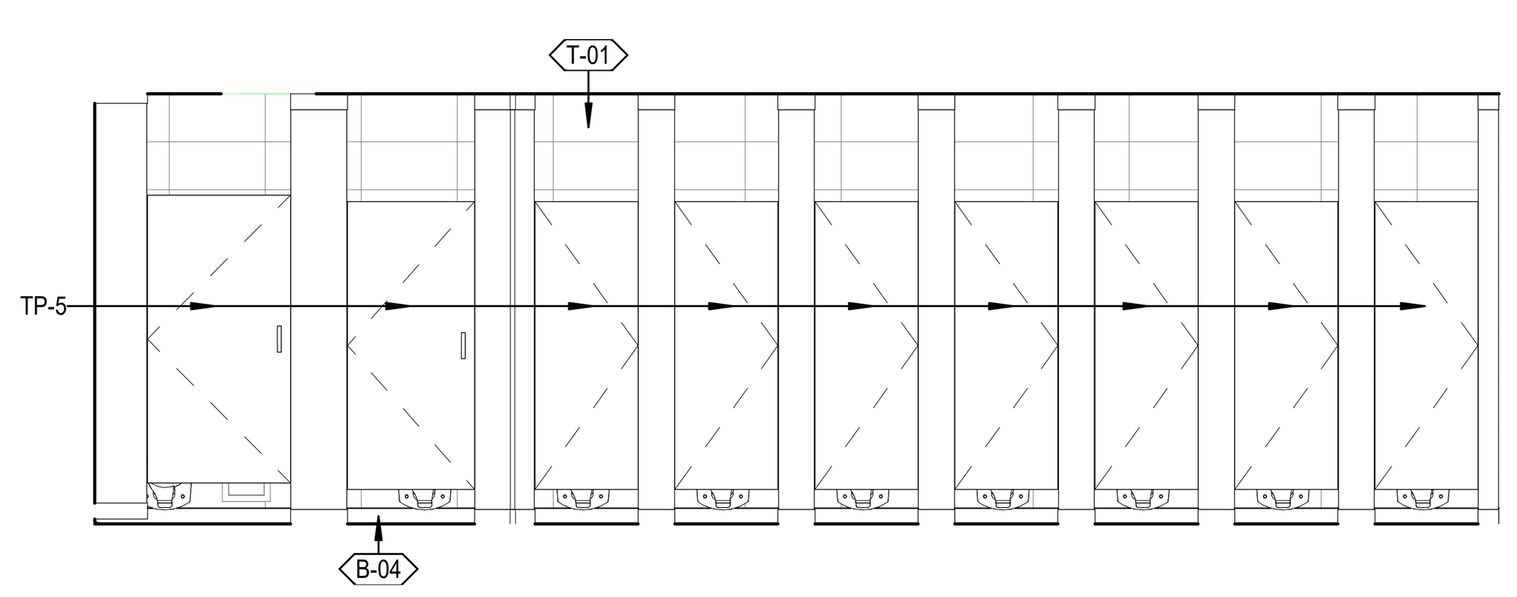
3C A173 RESTROOM - WEST
A2.15 SCALE: 1/4" = 1'-0"



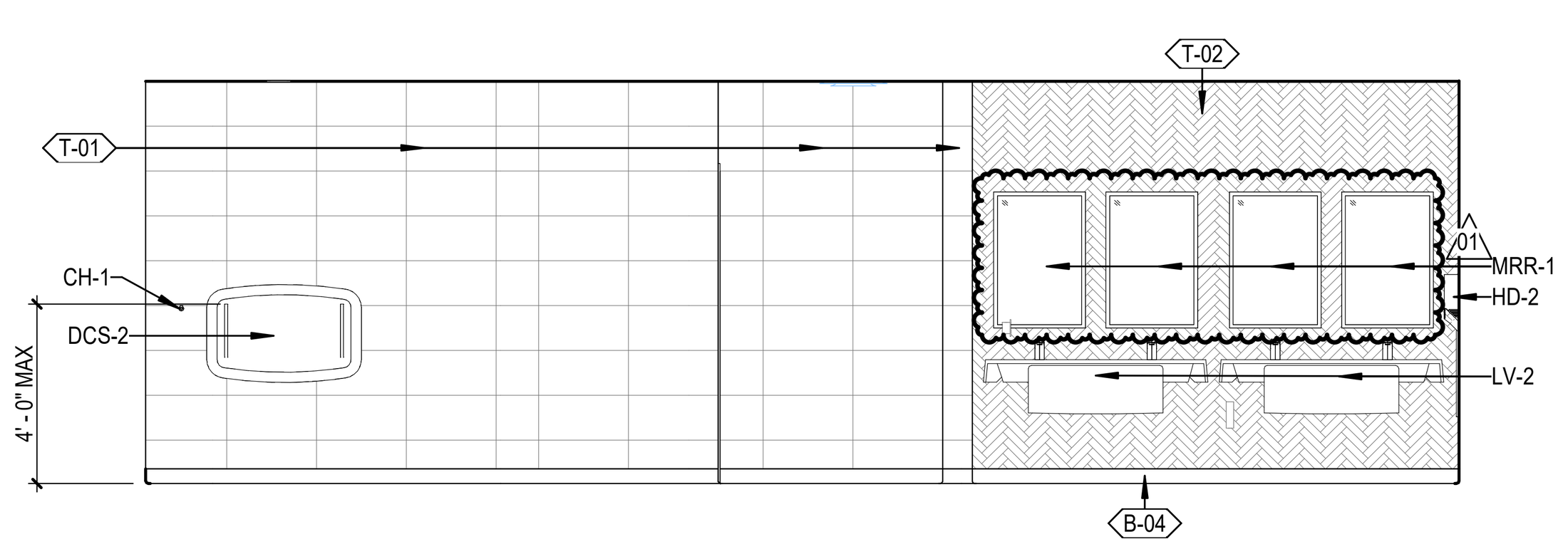
3D A173 RESTROOM - EAST
A2.15 SCALE: 1/4" = 1'-0"



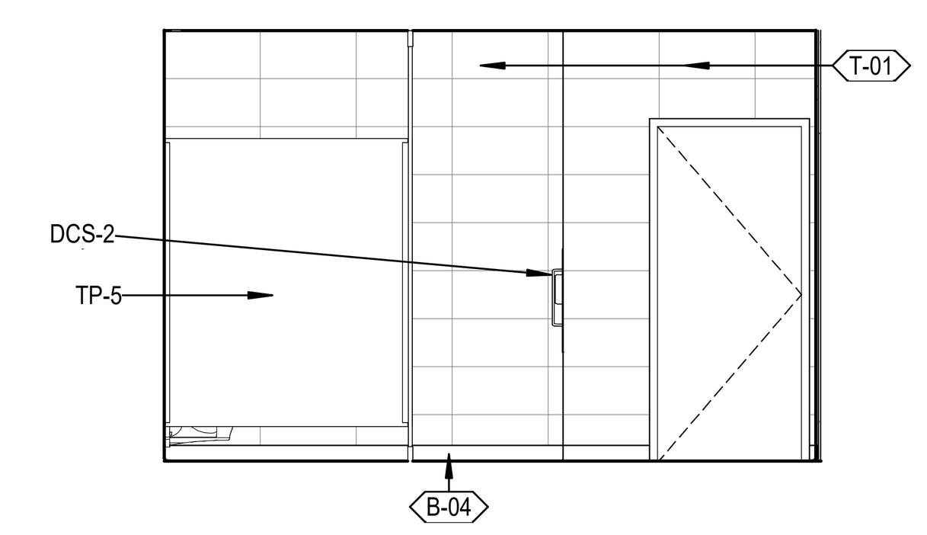
3E A171 RESTROOM - EAST
A2.15 SCALE: 1/4" = 1'-0"



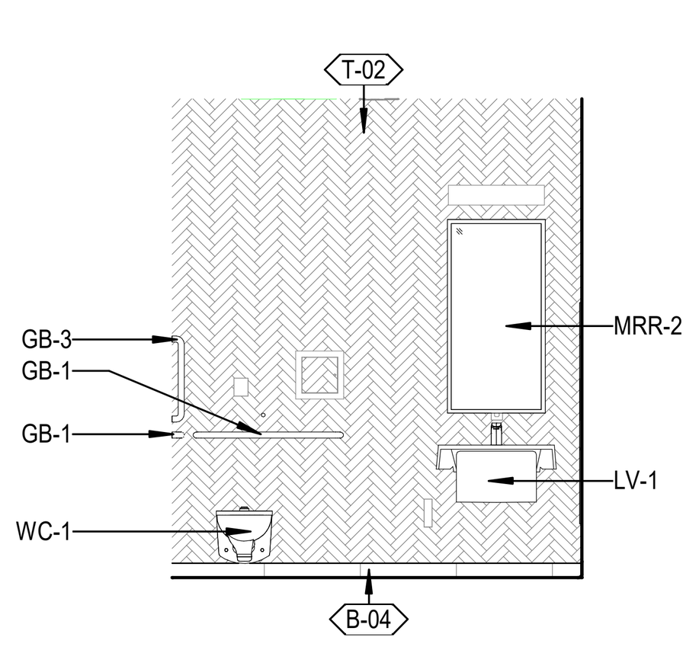
4A A171 RESTROOM - SOUTH
A2.15 SCALE: 1/4" = 1'-0"



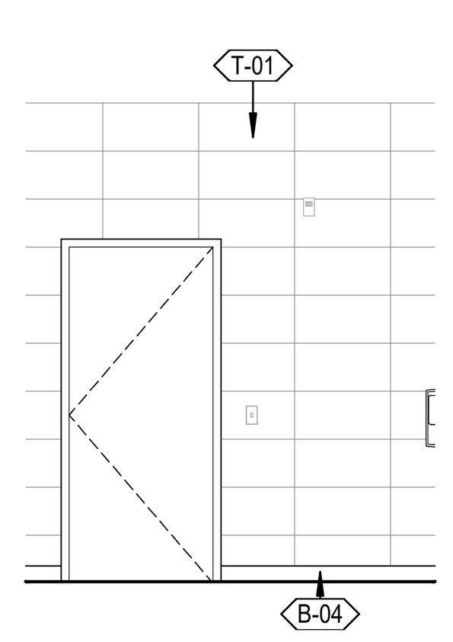
4C A171 RESTROOM - NORTH
A2.15 SCALE: 1/4" = 1'-0"



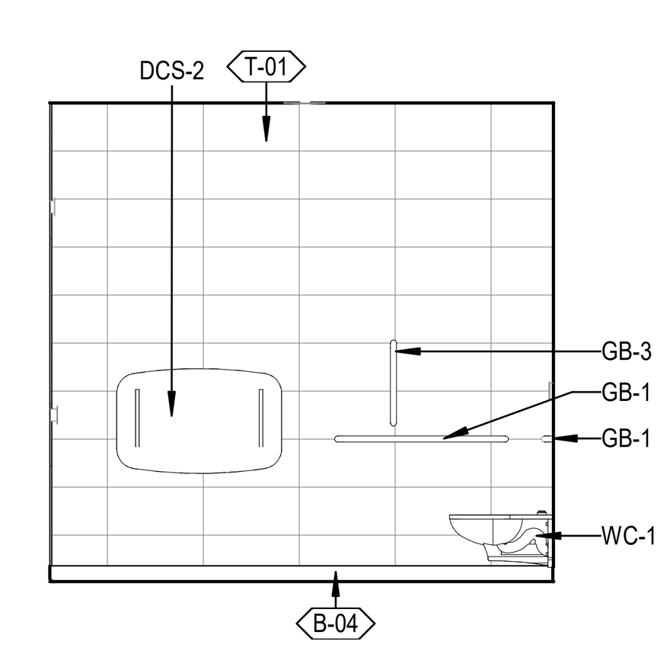
4E A171 RESTROOM - WEST
A2.15 SCALE: 1/4" = 1'-0"



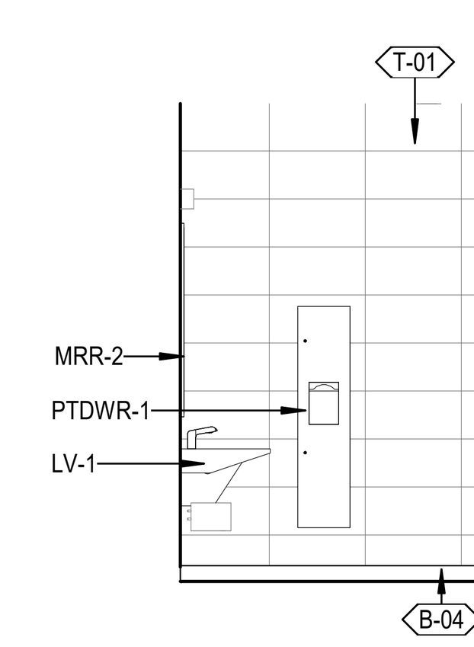
5A A167 RESTROOM - WEST
A2.15 SCALE: 1/4" = 1'-0"



5B A167 RESTROOM - EAST
A2.15 SCALE: 1/4" = 1'-0"



5C A167 RESTROOM - SOUTH
A2.15 SCALE: 1/4" = 1'-0"



5D A167 RESTROOM - NORTH
A2.15 SCALE: 1/4" = 1'-0"

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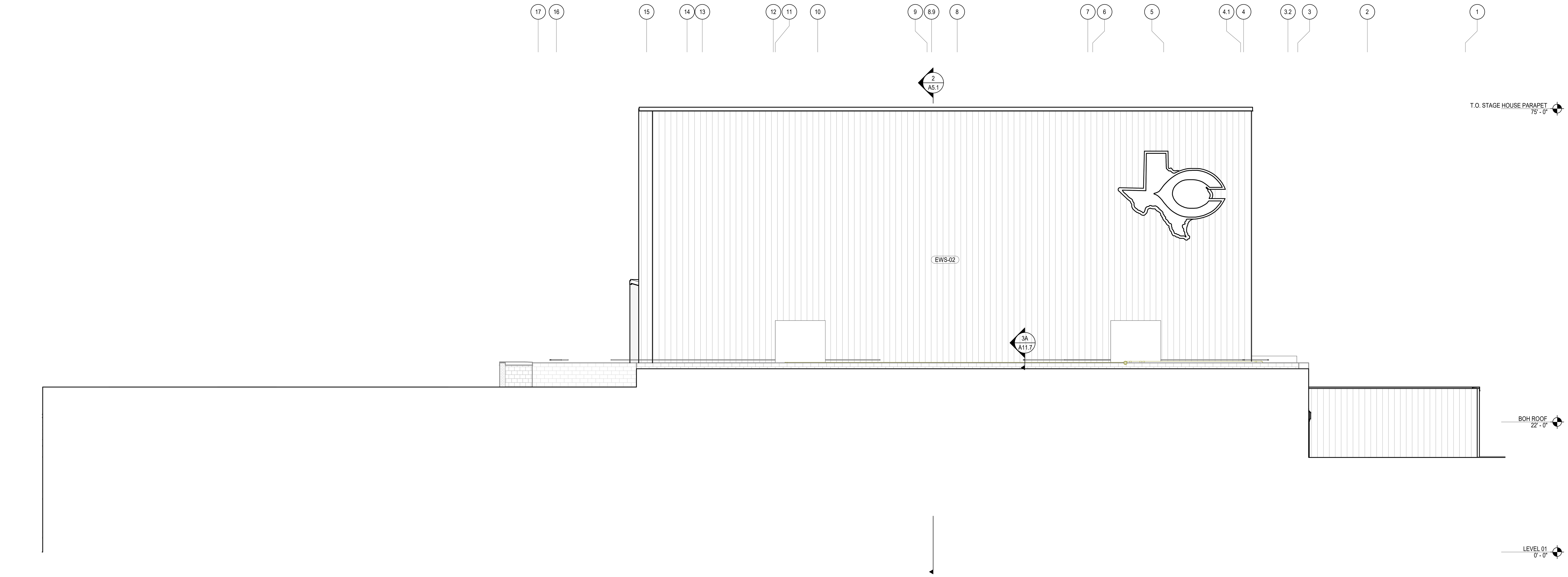
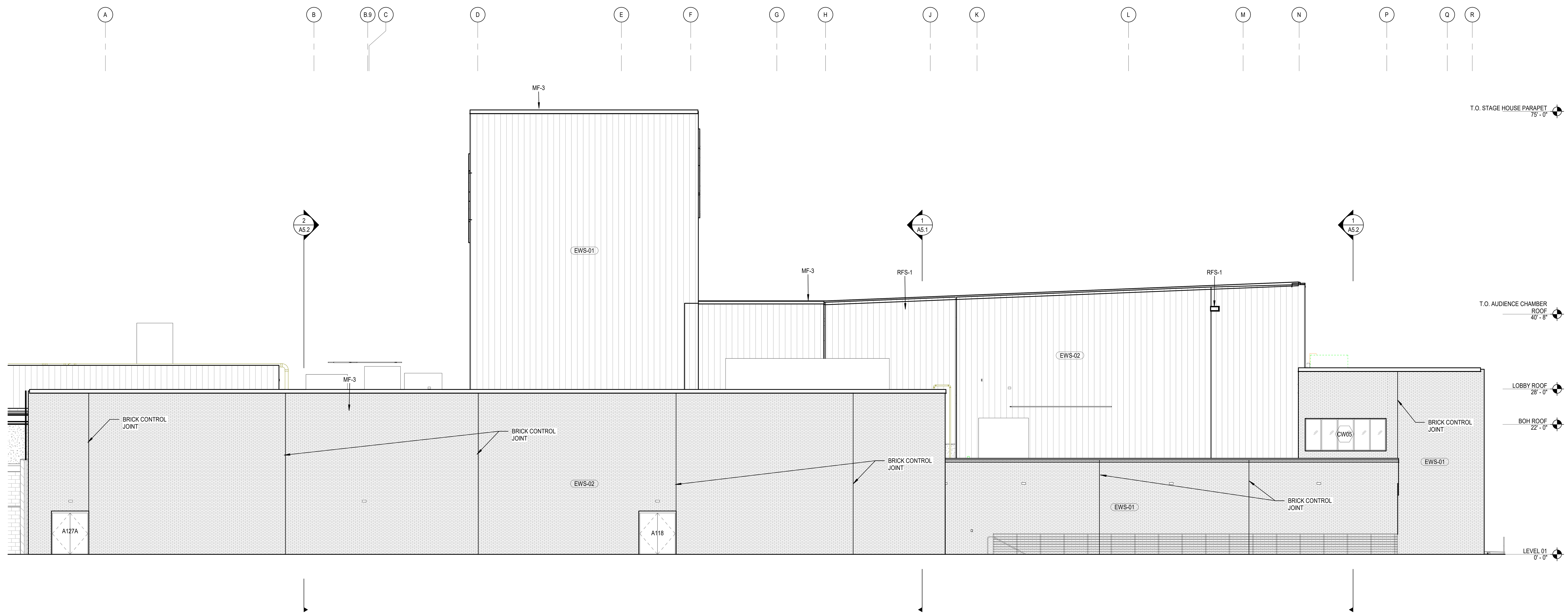
ENLARGED RESTROOM PLANS AND ELEVATIONS - FRONT OF HOUSE

A2.15



3A
A4.1
NORTH BUILDING ELEVAION
SCALE: 1/8" = 1'-0"



5A
A4.1
WEST BUILDNIG ELEVATION
SCALE: 1/8" = 1'-0"

REFERENCE KEYNOTES

MF-3	PREFINISHED SHEET METAL PARAPET CAP W/ CONT CLEAT
RFS-1	ROOF SCUPPER

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EXTERIOR ELEVATIONS

A4.1

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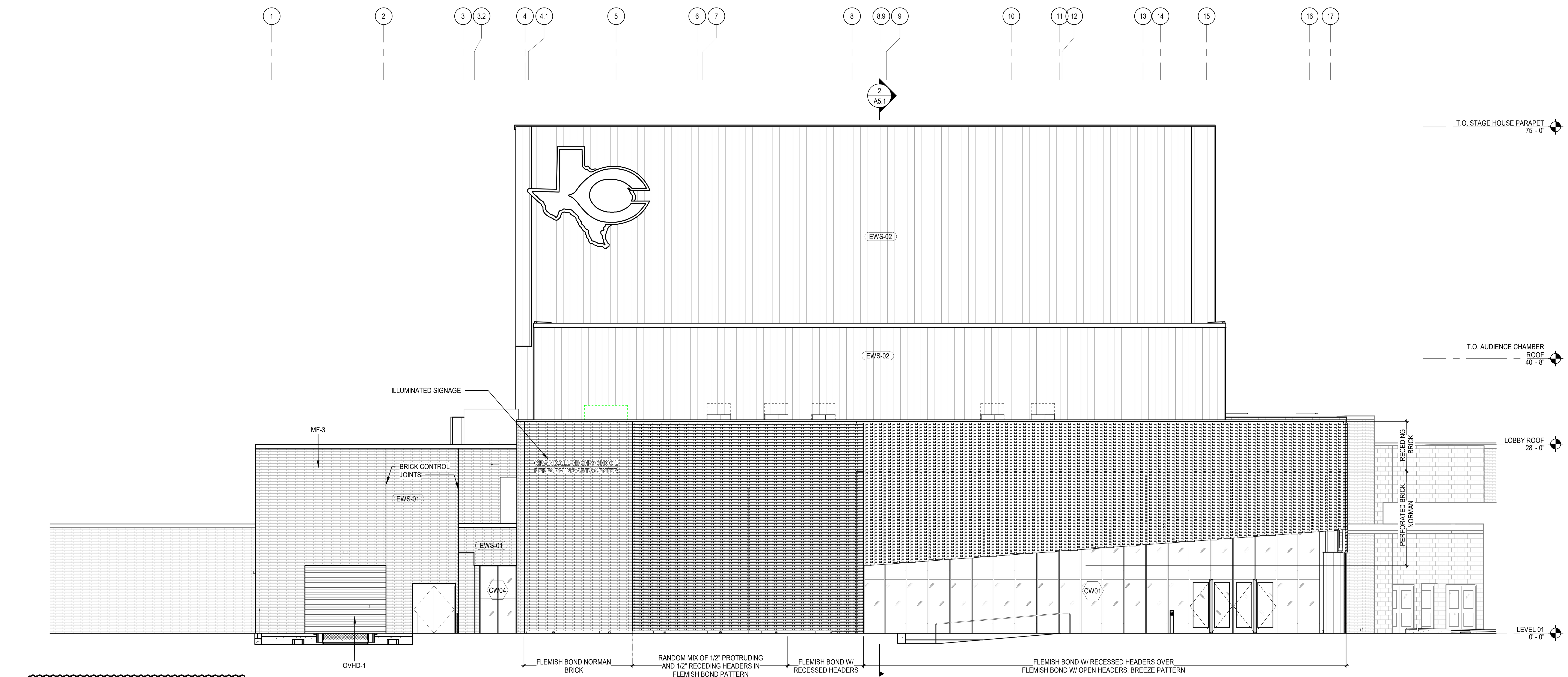
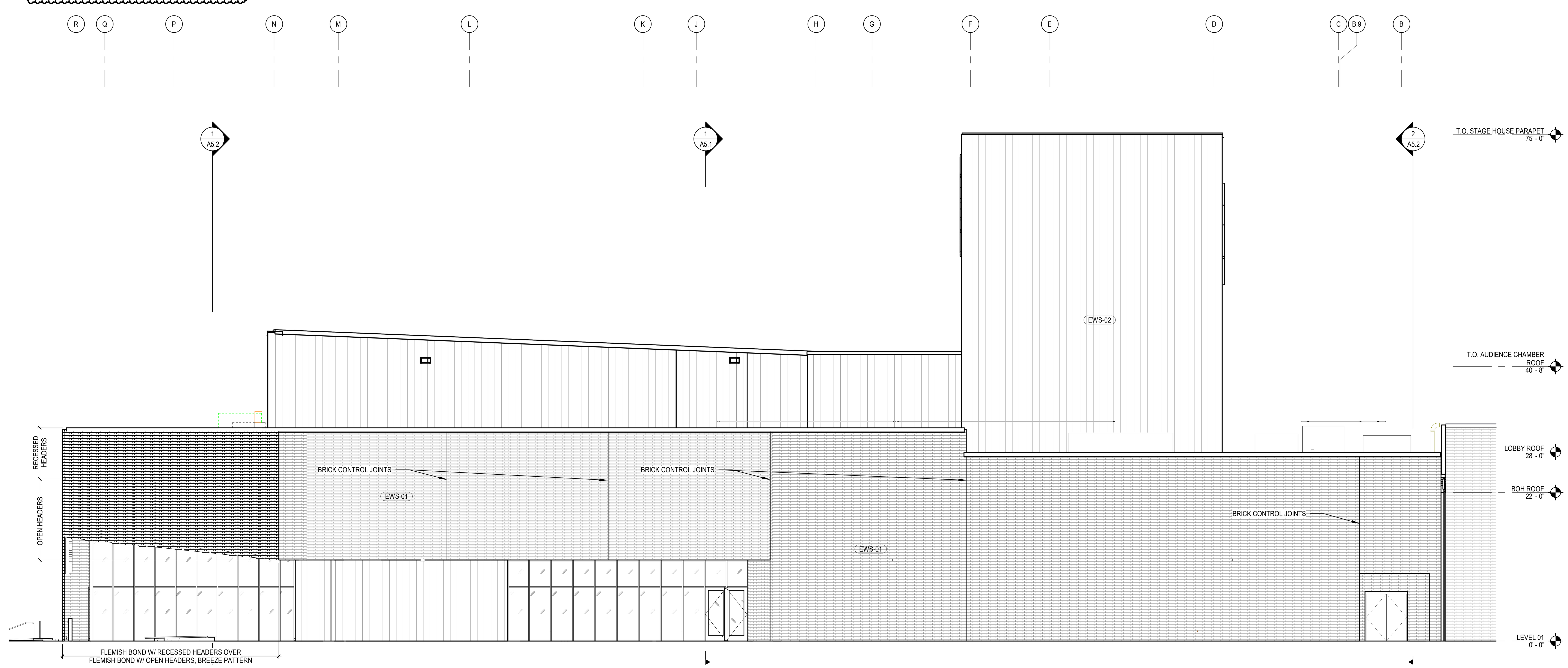


3A A4.2 SOUTH BUILDING ELEVATION
SCALE: 1/8" = 1'-0"



5A A4.2 EAST BUILDING ELEVATION
SCALE: 1/8" = 1'-0"

REFERENCE KEYNOTES

MF-3	PREFINISHED SHEET METAL PARAPET CAP W/ CONT CLEAT
OVHD-1	OVERHEAD COILING DOOR

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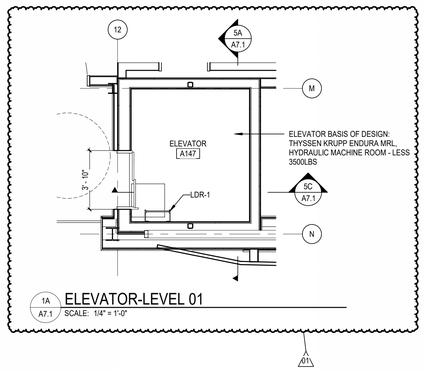
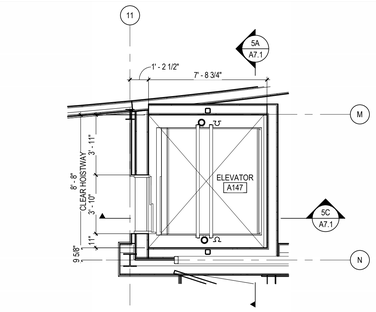
EXTERIOR ELEVATIONS

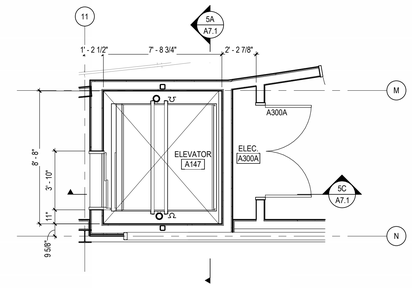
A4.2



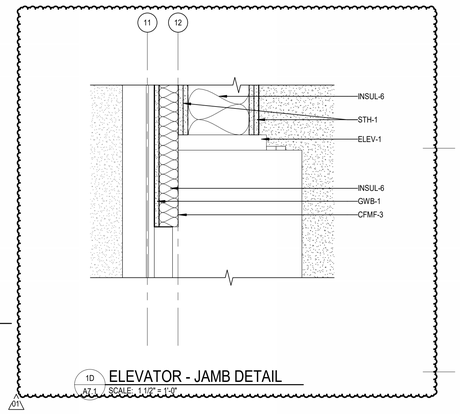
1A A7.1 ELEVATOR-LEVEL 01
SCALE: 1/4" = 1'-0"



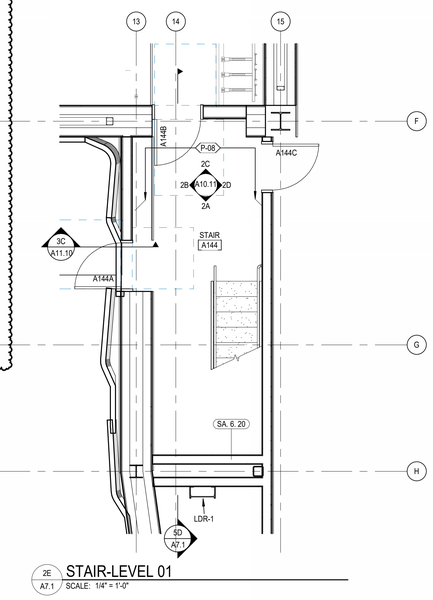
1B A7.1 ELEVATOR - MEZZANINE LEVEL
SCALE: 1/4" = 1'-0"



1C A7.1 ELEVATOR - CATWALK LEVEL
SCALE: 1/4" = 1'-0"



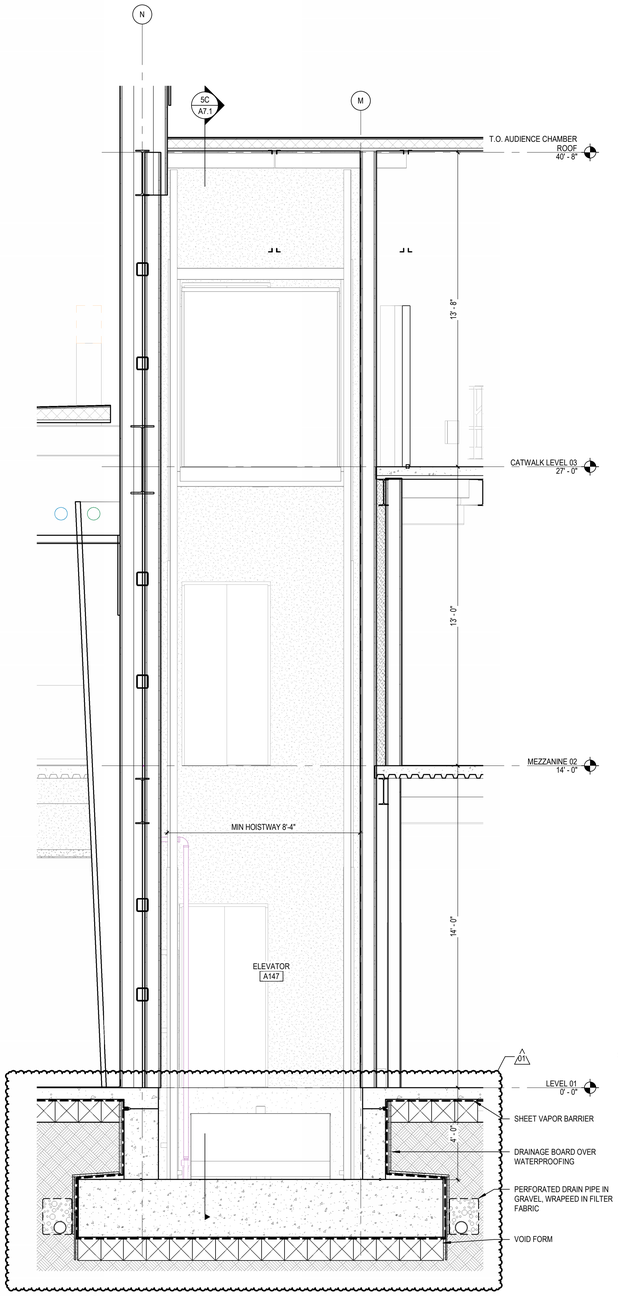
1D A7.1 ELEVATOR - JAMB DETAIL
SCALE: 1 1/2" = 1'-0"



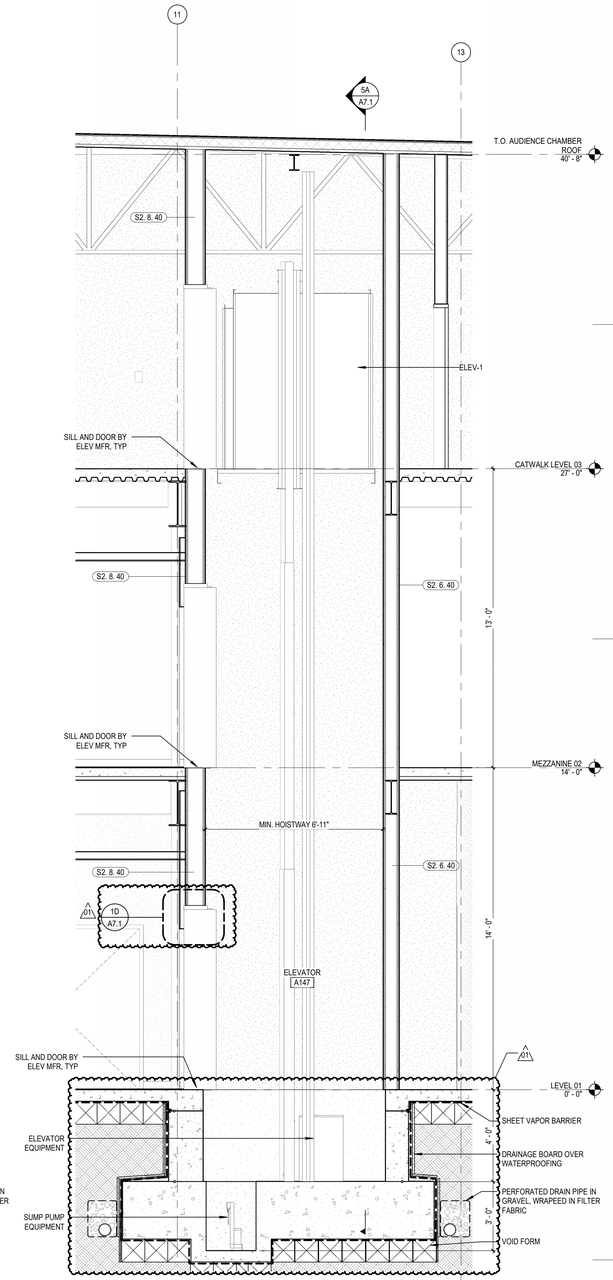
2E A7.1 STAIR-LEVEL 01
SCALE: 1/4" = 1'-0"

REFERENCE KEYNOTES

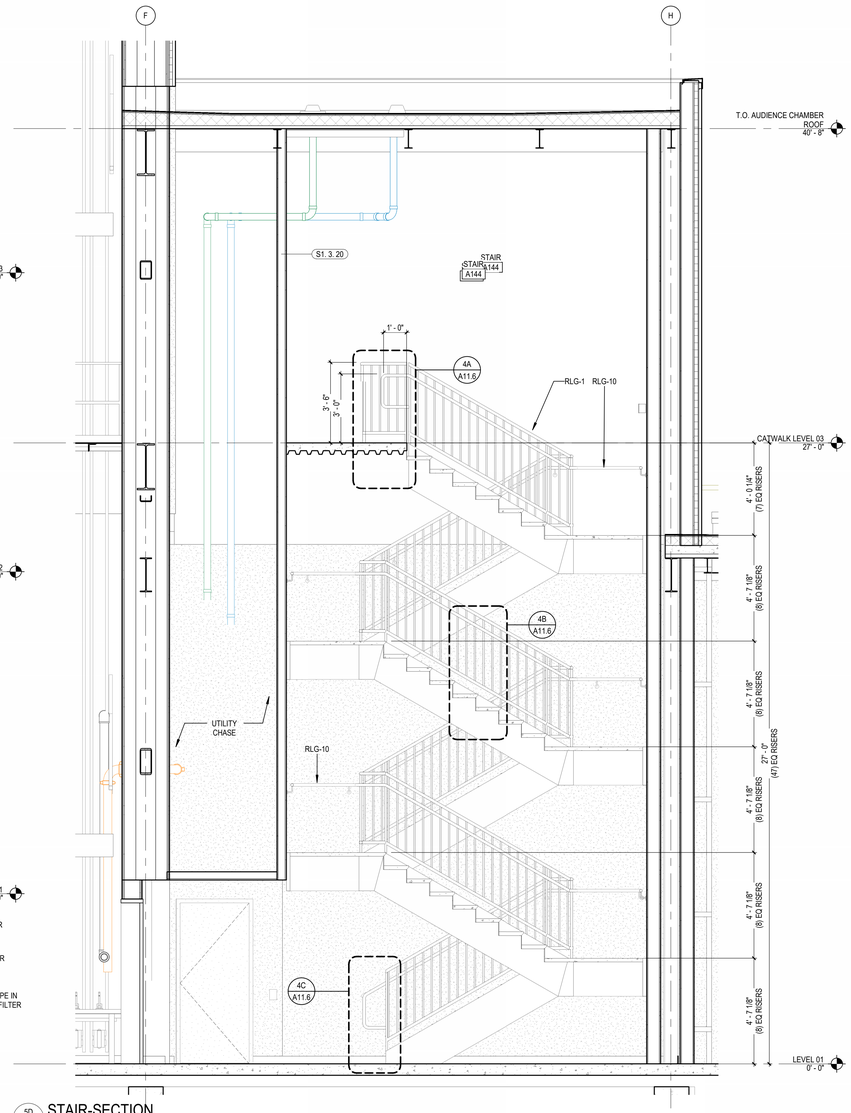
CFMF-3	CFMF INTERIOR NON-LOAD-BEARING WALL FRAMING
ELEV-1	HYDRAULIC MACHINE ROOM LESS ELEVATOR
GWB-1	TYPE X GYPSUM WALL BOARD
INSUL-6	MINERAL-WOOL BLANKET INSULATION, UNFACED
LDR-1	METAL LADDER
RLG-1	STEEL PIPE/TUBE RAIL
RLG-10	STEEL DECORATIVE RAILING
STH-1	GLASS-MAT GYPSUM SHEATHING



5A A7.1 ELEVATOR - SECTION
SCALE: 3/8" = 1'-0"



5C A7.1 ELEVATOR - SECTION
SCALE: 3/8" = 1'-0"



5D A7.1 STAIR-SECTION
SCALE: 3/8" = 1'-0"

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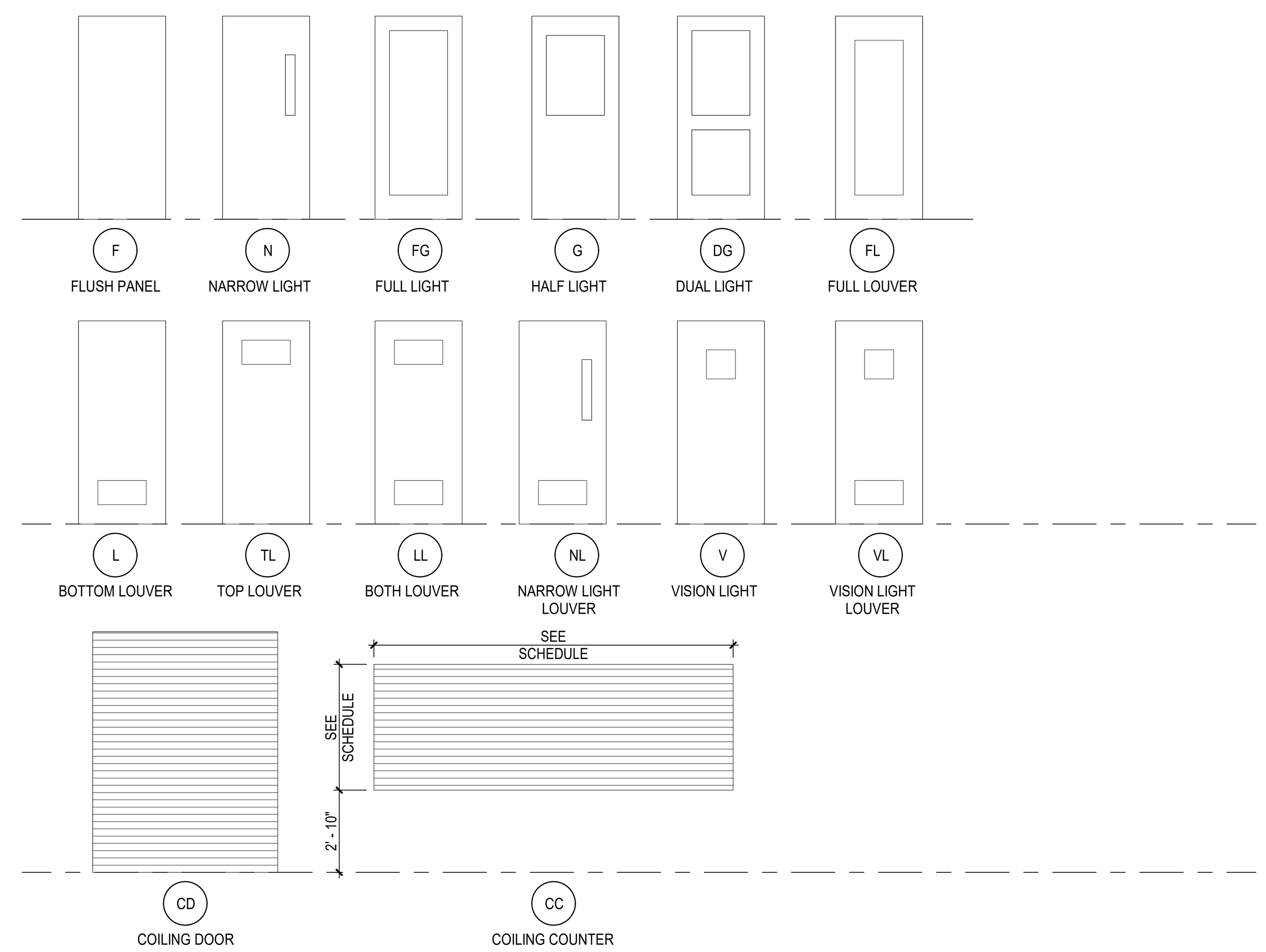
STAIR VIEWS

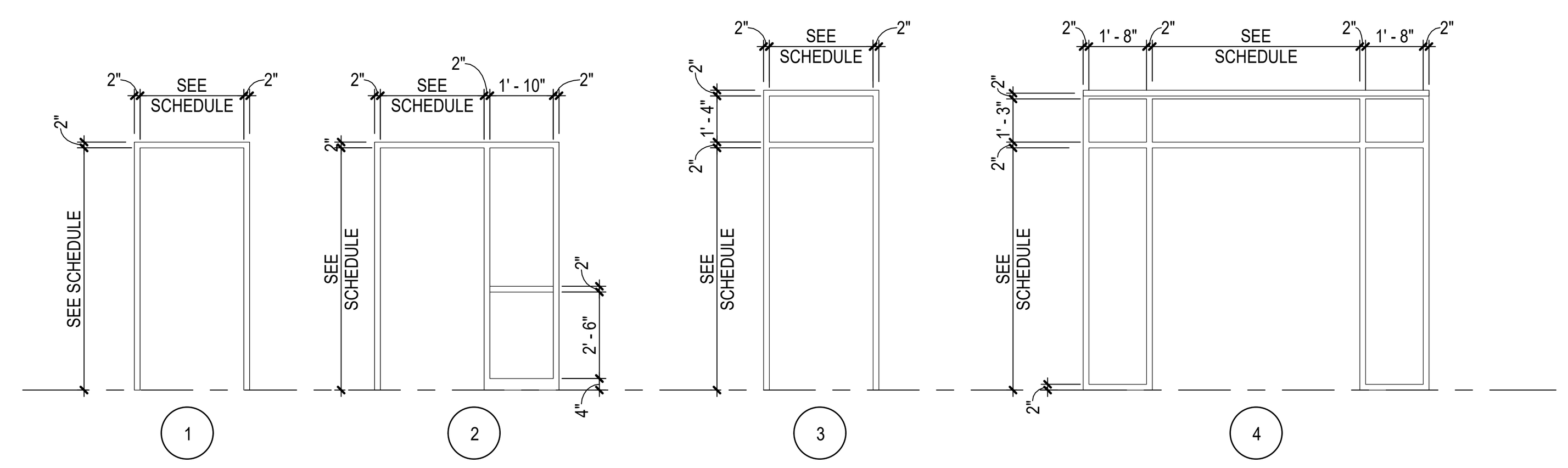
A7.1

DOOR AND FRAME SCHEDULE

NUMBER	PANEL							FRAME		FIRE RATING	Door STC Rating	Door Gasket Type	AAOS Shared HW Set	DETAILS				Comments	Door Security	KICK PLATE
	NO. OF PANELS	WIDTH	HEIGHT	THICKNESS	MATERIAL	GLASS	TYPE	MATERIAL	TYPE					HEAD	JAMB LEFT	JAMB RIGHT	SILL			
LEVEL 01																				
A101A	2	3' - 1 171/256"	7' - 11 171/256"	1 3/4"	ALUM	TIG	DG	ALUM		-			1.0						Yes	NO
A101B	2	3' - 1 171/256"	7' - 11 171/256"	1 3/4"	ALUM	TIG	DG	ALUM		-			3.0						Yes	NO
A101C	2	3' - 0"	7' - 0"	1 3/4"	HM	TIG	DG	HM	1	90 MIN			32.0						No	YES
A101E	2	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			6.0							NO
A101M	2	3' - 1"	4' - 0"	1 3/4"	WD			*Interior - Wood		-			58.0							-
A101N	2	3' - 1"	4' - 0"	1 3/4"	WD			*Interior - Wood		-			58.0							-
A102	1	3' - 8"	7' - 0"	1 3/4"	HM		F	HM	1	-			18.0						No	YES
A102B	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			12.0						No	NO
A103B	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	-			19.0						No	NO
A104	1	3' - 8"	7' - 0"	1 3/4"	HM		F	HM	1	-			18.0						No	YES
A105	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			52.0						No	YES
A106	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	-			46.0						No	NO
A107	1	3' - 8"	7' - 0"	1 3/4"	HM		F	HM	1	-			18.0						No	YES
A108	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			41.0						No	NO
A109	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	ALUM	1	-			10.0						No	NO
A110	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			52.0						No	YES
A111A	2	3' - 0"	7' - 0"	1 3/4"	HM - P06		F	WD - P06	1	-		G1	30.0						No	NO
A111B	2	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	-			54.0						No	NO
A112	2	3' - 0"	7' - 0"	1 3/4"	HM	TIG	DG	HM	1	-			33.0						No	YES
A112A	2	3' - 0"	7' - 0"	1 3/4"	HM	TIG	DG	HM	1	-			35.0						Yes	NO
A114A		12' - 0"	10' - 0"		STL		CD	Steel, Paint Finish, Dark Gray, Matte		-			55.0						No	-
A114B	2	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			4.0						Yes	YES
A115	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	45 MIN			25.0						No	NO
A115B	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	45 MIN			25.0						No	NO
A116A		12' - 0"	10' - 0"		STL		CD	Steel, Paint Finish, Dark Gray, Matte		45 MIN			55.0						No	-
A116B	1	3' - 8"	7' - 0"	1 3/4"	HM		F	HM	1	45 MIN			21.0						No	YES
A116C		12' - 0"	14' - 0"		STL		CD	Steel, Paint Finish, Dark Gray, Matte		45 MIN			55.0						No	-
A116D	1	3' - 8"	7' - 0"	1 3/4"	HM		F	HM	1	45 MIN			22.0						No	YES
A117A	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	ALUM	1	45 MIN		G1	13.0						No	YES
A117B	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			7.0						No	YES
A118	2	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-		G1	5.0					EXIT ONLY - NO EXTERIOR HARDWARE		YES
A119		6' - 8"	8' - 0"		STL		CD	STL		-			55.0						No	-
A120A		6' - 8"	8' - 0"		STL		CD	STL		-			55.0						No	-
A120B	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	-			11.0						No	YES
A121A	2	4' - 0"	9' - 0"	1 3/4"	HM		F	ALUM	1	-	STC 51		36.0						No	YES
A121B		8' - 0"	14' - 0"		STL		CD	STL		90 MIN			55.0						No	-
A121C	1	3' - 8"	7' - 0"	1 3/4"	HM		F	HM	1	-			48.0						No	YES
A123	1	3' - 8"	7' - 0"	1 3/4"	HM		F	HM	1	90 MIN		G1	26.0						No	YES
A124A		6' - 0"	8' - 0"		STL		CD	STL		45 MIN			55.0						No	-
A124B	2	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	45 MIN			23.0						No	YES
A125	2	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	45 MIN			23.0						No	YES
A126	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			11.0						No	YES
A127	2	3' - 0"	7' - 0"	1 3/4"	HM	TIG	DG	HM	1	-			33.0						No	YES
A127A	2	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			4.0							YES
A127B	2	3' - 0"	7' - 0"	1 3/4"	HM		DG	HM	1	90 MIN			34.0						No	YES
A128A	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	45 MIN			43.0						No	NO
A128B	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			42.0						No	NO
A129A	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	45 MIN			43.0						No	NO
A129B	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			42.0						No	NO
A130	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	45 MIN			43.0						No	NO
A131	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	45 MIN		G2	9.0						No	YES
A132	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	45 MIN		G2	15.0						No	YES
A133	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	45 MIN		G2	15.0						No	YES
A134	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	45 MIN		G2	15.0						No	YES
A135A	2	3' - 0"	7' - 0"	1 3/4"	HM	TIG	F	HM	1	-			53.0							YES
A135B	2	3' - 0"	7' - 0"	1 3/4"	HM	TIG	F	HM	1	90 MIN		G1	31.0							YES
A137	1	3' - 0"	7' - 0"	1 3/4"	HM		N	HM	1	45 MIN		G2	14.0						No	NO
A138	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1				42.0						No	NO
A139	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	-			44.0						No	NO
A140	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	-			47.0						No	NO
A142	1	3' - 6"	7' - 0"	1 3/4"	HM		F	HM	1	-			57.0						Yes	NO
A143A	2	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	-			24.0						No	YES
A143B	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			10.0						No	NO
A144A	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			51.0						No	YES
A144B	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	90 MIN			40.0						No	YES
A144C	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-		G1	50.0						No	YES
A145	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			10.0						No	NO
A146A	2	3' - 0"	7' - 0"	1 3/4"	HM - P06		F	WD - P06	1	-		G1	30.0						No	NO
A146B	2	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	-			54.0						No	NO
A154	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			10.0						No	NO
A196	2	3' - 1 7/256"	7' - 11"	1 3/4"	ALUM	TIG	DG	ALUM		-			2.0					EXIT ONLY - NO EXTERIOR HARDWARE	No	NO
E100A	2	3' - 0"	7' - 0"	1 3/4"	HM	FRG	N	HM	1	-		G1	29.0							YES
E100B	2	3' - 0"	7' - 0"	1 3/4"	HM	FRG	N	HM	1	90 MIN		G2	29.0							YES
E100C	2	3' - 0"	7' - 0"	1 3/4"	HM	FRG	N	HM	1	90 MIN		G2	29.0							YES
E100D	2	3' - 0"	7' - 0"	1 3/4"	HM	FRG	N	HM	1	-		G2	37.0							YES
E101	1	3' - 0"	7' - 0"	1 3/4"	HM	FRG	N	HM	1	-		G1	28.0						No	NO
E102A	1	3' - 0"	7' - 0"	1 3/4"	HM	FRG	N	HM	1	-		G1	45.0						No	NO
E102B	1	3' - 0"	7' - 0"	1 3/4"	HM	FRG	N	HM	1	-		G1	45.0						No	NO
E103	1	3' - 0"	7' - 0"	1 3/4"	HM	FRG	N	HM	1	-		G1	45.0						No	NO
E104	1	3' - 0"	7' - 0"	1 3/4"	HM	FRG	N	HM	1	-		G2	28.0						No	NO
E106A	2	3' - 0"	7' - 0"	1 3/4"	HM	FRG	N	HM	1	90 MIN		G2	29.0							YES
E106B	1	3' - 0"	7' - 0"	1 3/4"	HM	FRG	N	HM	1	90 MIN		G2	27.0						Yes	YES
E106C	2	3' - 0"	7' - 0"	1 3/4"	HM	FRG	N	HM	1	90 MIN		G1	29.0							YES
MEZZANINE 02																				
A202	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			52.0						No	YES
A203	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	ALUM	1	-			10.0						No	NO
A204	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			52.0						No	YES
A205	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			39.0						No	YES
A205A	1	3' - 6"	7' - 0"	1 3/4"	HM		F	HM	1	-			56.0						Yes	NO
A206A	2	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	-		G1	30.0						No	NO
A206B	2	3' - 0"	7' - 0"	1 3/4"	HM - P06		F	WD - P06	1	-			54.0						No	NO
A207	1	3' - 0"	7' - 0"	1 3/4"	HM - P06		F	HM - P06	1	-		G1	17.0						No	YES
A208A	2	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	-		G1	30.0						No	NO
A208B	2	3' - 0"	7' - 0"	1 3/4"	HM - P06		F	WD - P06	1	-			54.0						No	NO
CATWALK LEVEL 03																				
A300	1	3' - 0"	7' - 0"	1 3/4"	HM - P05		F	HM - P05	1	-			19.0							NO
A300A	2	3' - 0"	7' - 0"	1 3/4"	HM		N	HM	1	-			38.0						No	NO
A301A	1	3' - 0"	7' - 0"	1 3/4"	HM - P05		F	HM - P05	1	-		G1	16.0							NO
A302A	1	3' - 0"	7' - 0"	1 3/4"	HM	TIG	N	HM	1	-			20.0						No	NO
A302B	1	3' - 0"	7' - 0"	1 3/4"	HM		F	HM	1	-			16.0						No	NO
A303	1	3' - 0"	7' - 0"	1 3/4"	HM - P05		F	HM - P05	1	-			19.0							NO
A304	1	3' - 0"	7' - 0"	1 3/4"	HM - P05		F	HM - P05	1	-		G1	16.0							NO
A344	1	3' - 0"	7' - 2"	1 3/4"	HM - P05		F	HM - P05	1	-		G1	49.0						No	YES
A349A	1	3' - 0"	7' - 0"	1 3/4"	HM - P05		F	HM - P05	1	90 MIN			8.0							YES
A349B	1	3' - 0"	7' - 0"	1 3/4"	HM - P05		F	HM - P05	1	90 MIN			8.0							YES



DOOR PANEL TYPES



INTERIOR FRAME TYPES

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.

DOOR PANEL TYPE DESCRIPTIONS

DG	DUAL LITE GLASS
F	FLUSH PANEL
FG	FULL LITE GLASS
FL	FULL LOUVERED
G	HALF LITE GLASS
GL	HALF LITE GLASS & LOUVERED
L	LOUVERED (BOTTOM)
LL	LOUVERED (TOP & BOTTOM)
N	NARROW LITE GLASS
NL	NARROW LITE GLASS & LOUVERED
TL	LOUVERED (TOP)
V	VISION LITE GLASS (10" SQUARE)
VL	VISION LITE GLASS & LOUVERED

GLAZING TYPE DESCRIPTIONS

CG	CLEAR FLOAT GLASS
CIG	CLEAR INSULATING GLASS
CTG	CLEAR TEMPERED FLOAT GLASS
CTIG	CLEAR TEMPERED INSULATING GLASS
GL	GLASS
IIP	INSULATED INFILL PANEL GLASS
LG	LAMINATED GLASS
PG	PATTERN GLASS
PIG	PATTERN INSULATING GLASS
SG	SPANDREL GLASS
SG	SPECIALTY GLASS
TFG	TINTED FLOAT GLASS
TG	TEMPERED GLASS
TIG	TINTED INSULATING GLASS
TTG	TINTED TEMPERED FLOAT GLASS
TTIG	TINTED TEMPERED INSULATING GLASS
WG	POLISHED WIRE GLASS

DLRGROUP

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

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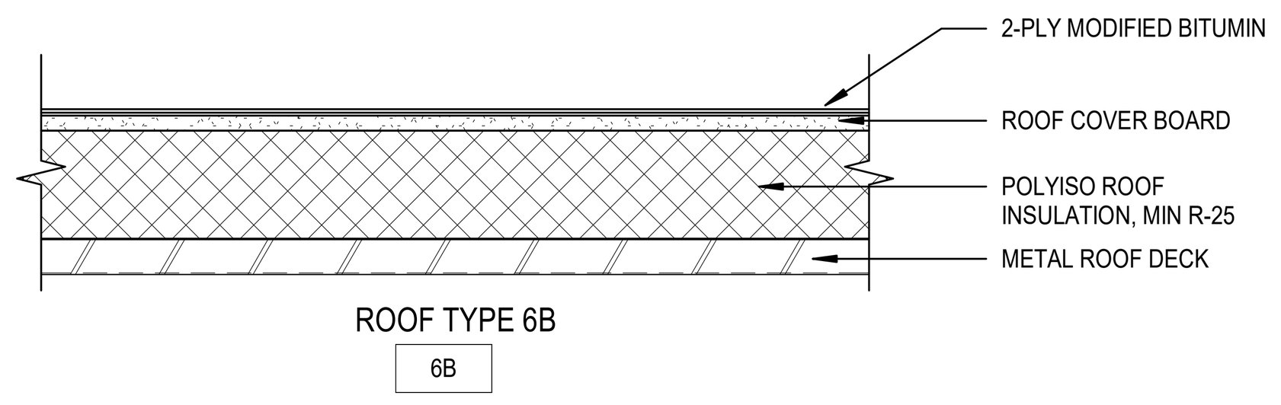
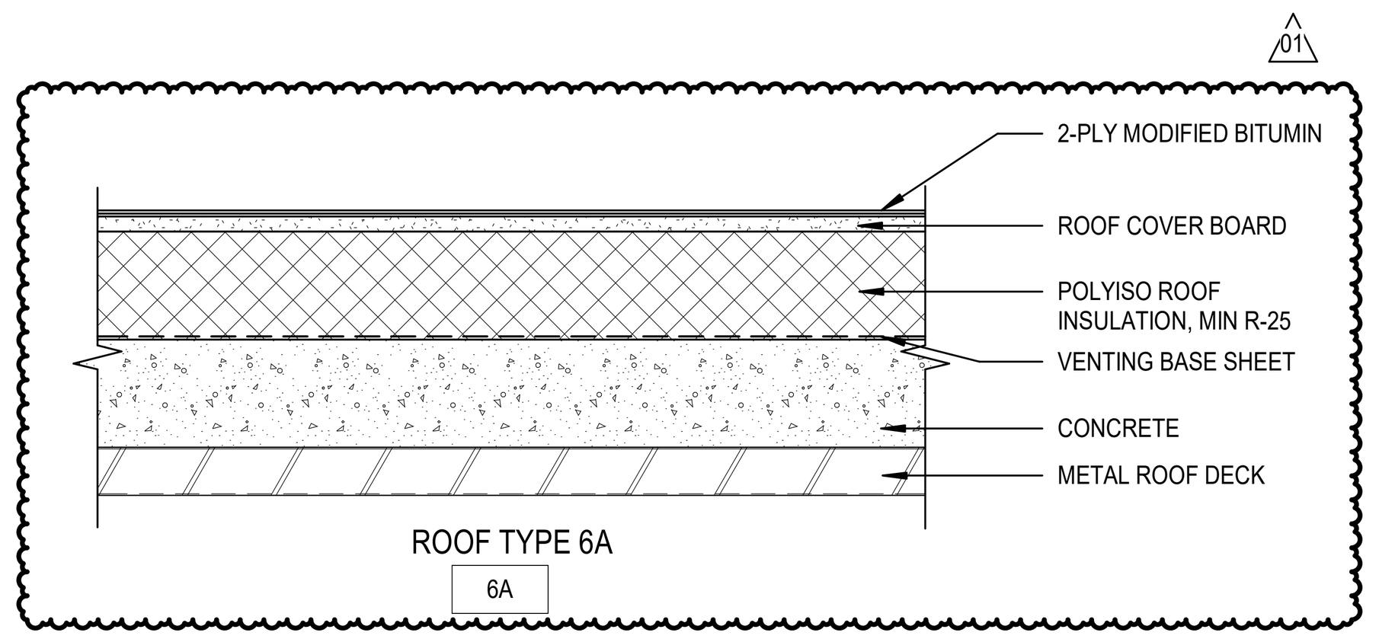
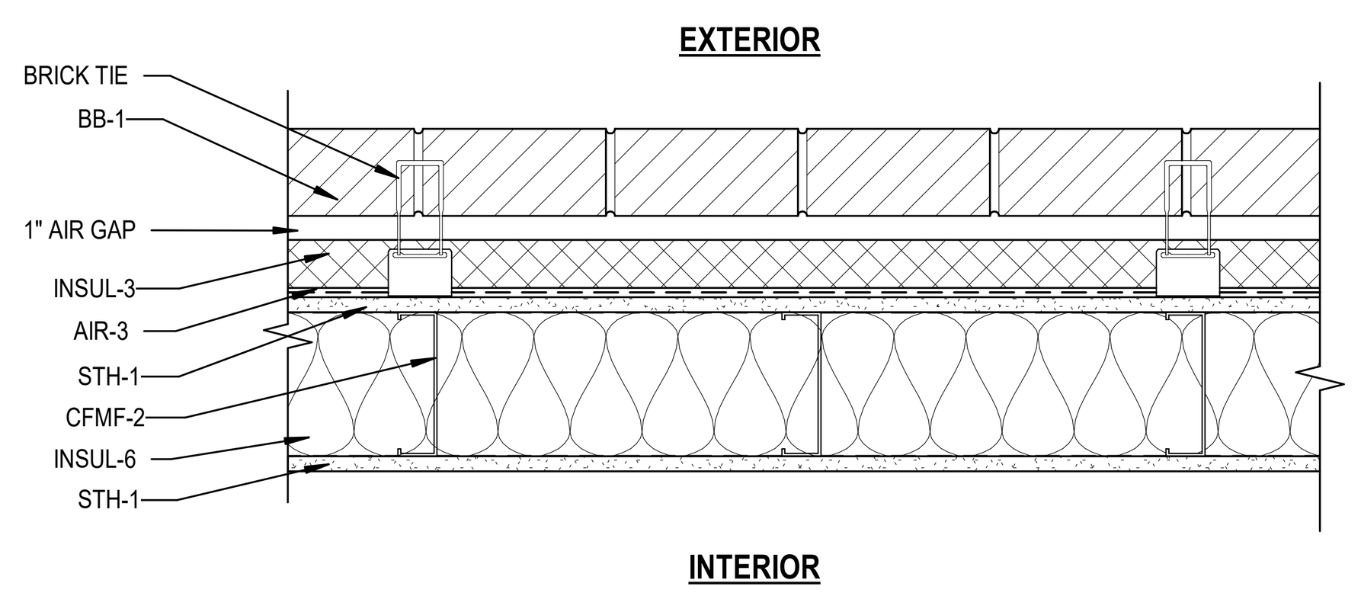
DOOR & FRAME TYPE & SCHEDULE

A8.3

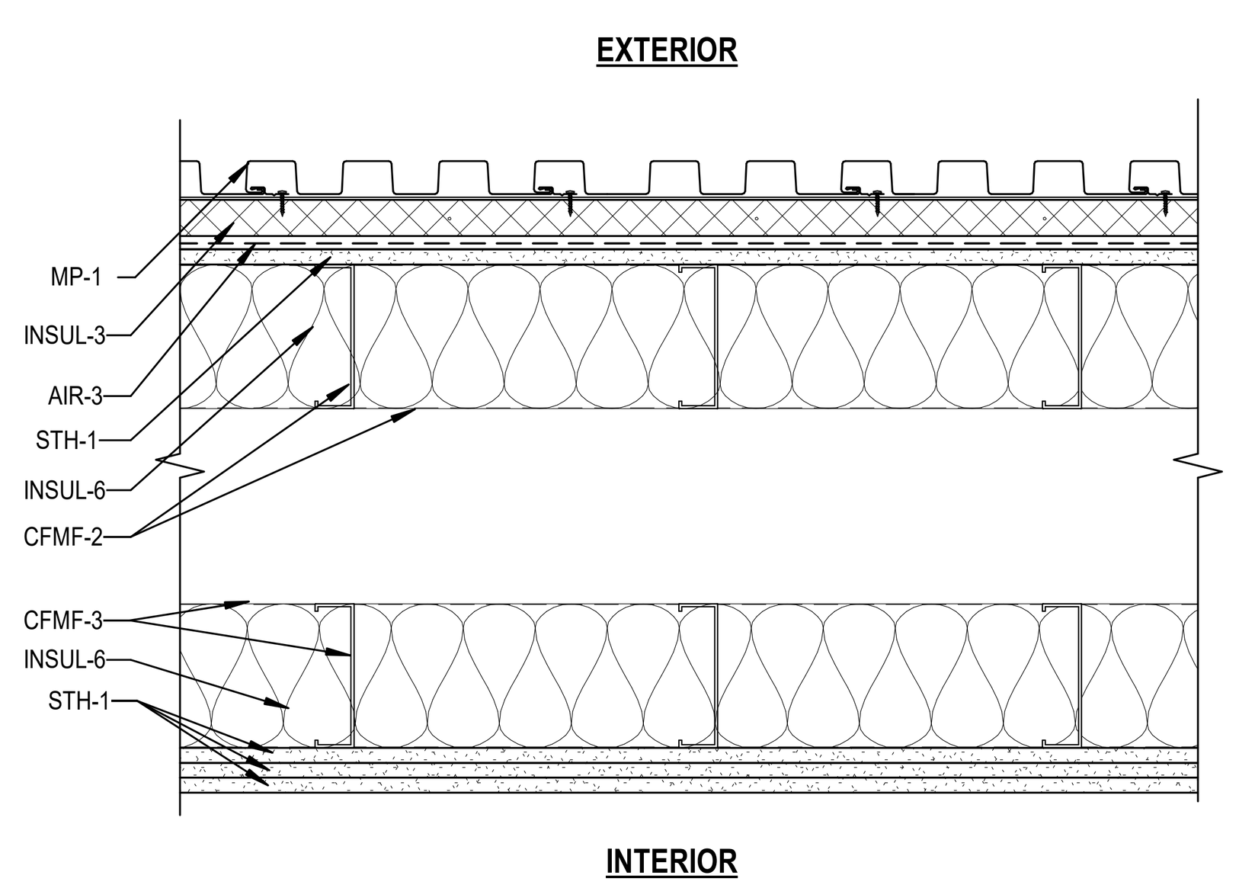




1A A9.0 **ROOF TYPE LEGEND**
SCALE: 1 1/2" = 1'-0"



2A A9.0 **EWS-01 WALL ASSEMBLY**
SCALE: 1 1/2" = 1'-0"



3A A9.0 **EWS-02 WALL ASSEMBLY**
SCALE: 1 1/2" = 1'-0"

REFERENCE KEYNOTES

AIR-3	WEATHER BARRIER
BB-1	BRICK BLENDED
CFMF-2	CFMF EXTERIOR NON-LOAD-BEARING WALL FRAMING
CFMF-3	CFMF INTERIOR NON-LOAD-BEARING WALL FRAMING
INSUL-3	POLYISOCYANURATE (POLYISO) INSULATION
INSUL-6	MINERAL-WOOL BLANKET INSULATION, UNFACED
STH-1	GLASS-MAT GYPSUM SHEATHING

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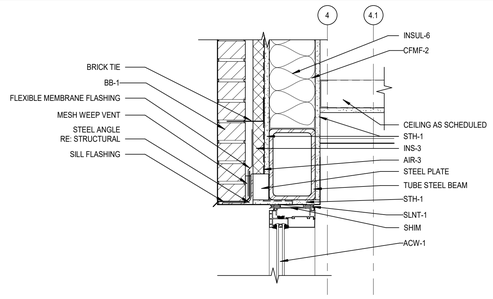
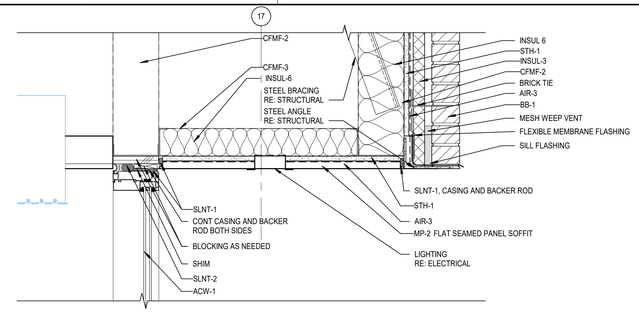
EXTERIOR ASSEMBLIES

A9.0



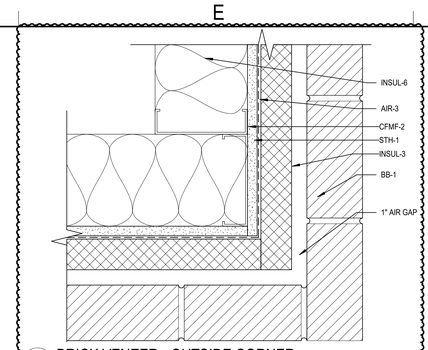
1A A9.2 SECTION DETAIL AT WINDOW HEAD

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



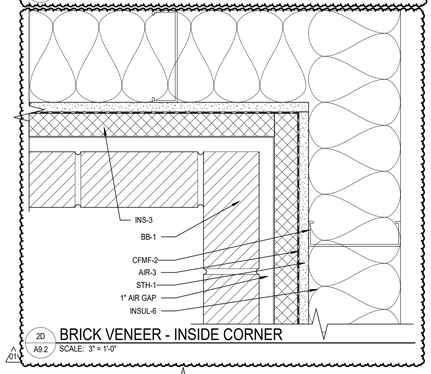
2C A9.2 SECTION DETAIL AT SOFFIT

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



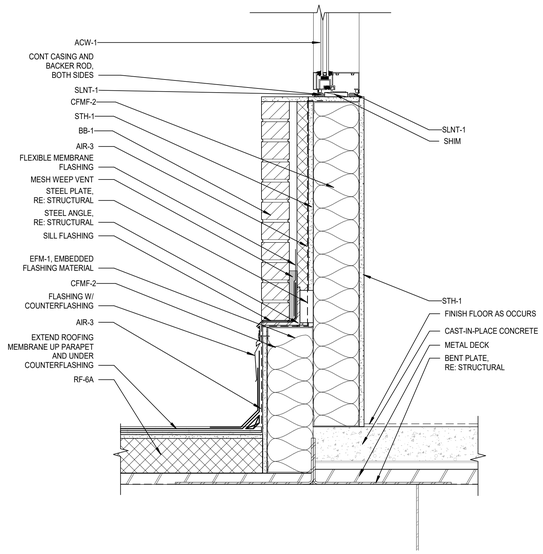
1E A9.2 BRICK VENEER - OUTSIDE CORNER

SCALE: 3" = 1'-0"



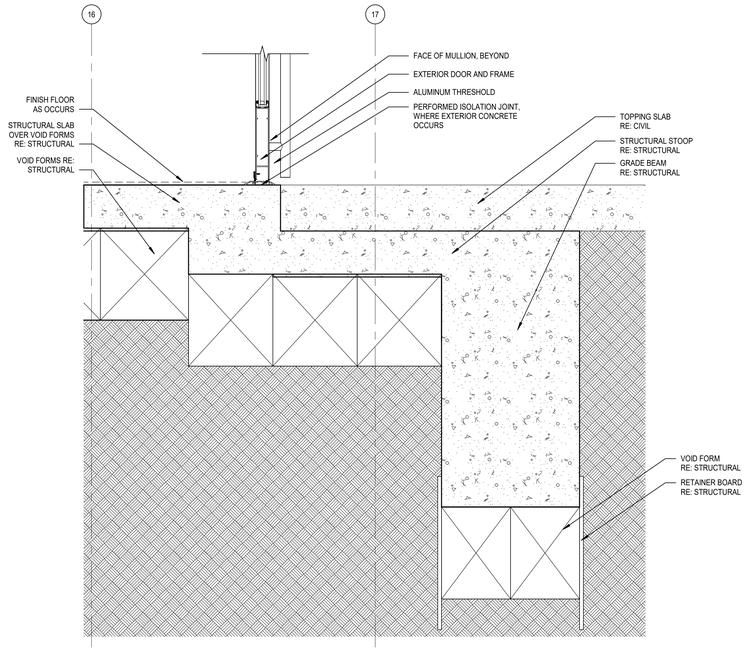
2D A9.2 BRICK VENEER - INSIDE CORNER

SCALE: 3" = 1'-0"



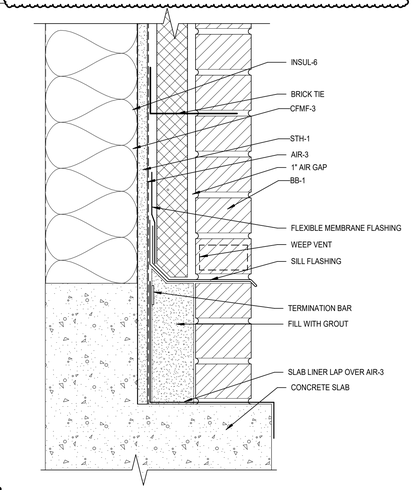
3A A9.2 SECTION DETAIL AT WINDOW SILL

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



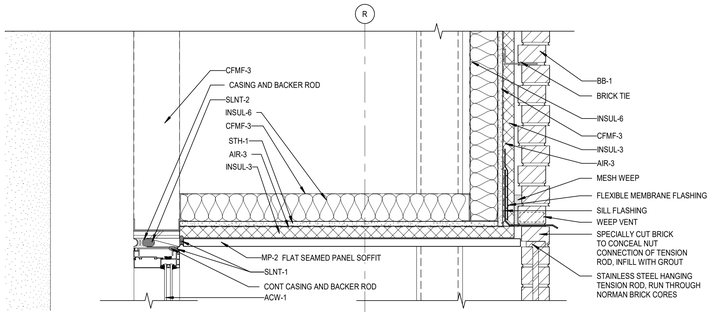
3C A9.2 SECTION DETAIL AT ENTRY

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



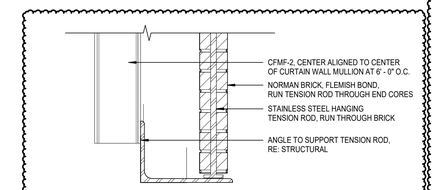
4E A9.2 BRICK VENEER - SILL

SCALE: 3" = 1'-0"



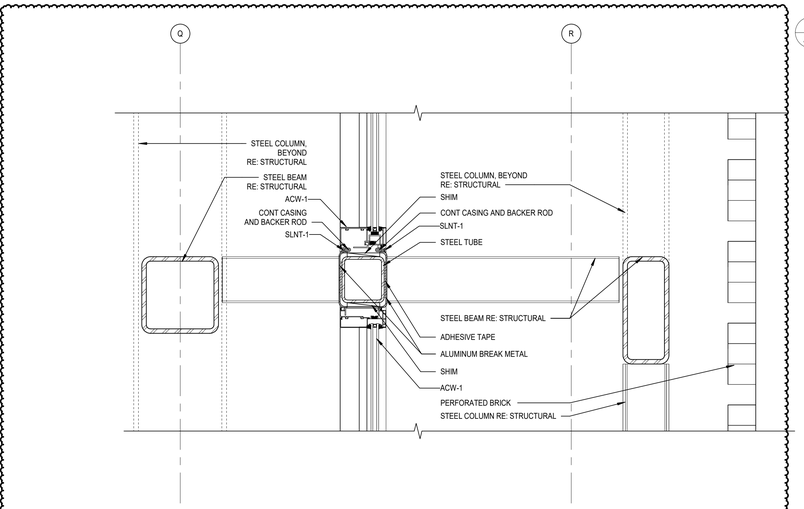
4A A9.2 SECTION DETAIL AT PERFORATED BRICK SOFFIT

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



5B A9.2 SECTION DETAIL AT PERFORATED BRICK LEDGE

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



5C A9.2 SECTION DETAIL AT CURTAIN WALL

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

REFERENCE KEYNOTES

ACW-1	ALUM CURTAIN WALL TYPE 1
AIR-3	WEATHER BARRIER
BB-1	BRICK BLENDED
CFMF-2	CFMF EXTERIOR NON-LOAD-BEARING WALL FRAMING
CFMF-3	CFMF INTERIOR NON-LOAD-BEARING WALL FRAMING
INSUL-3	POLYISOCYANURATE (POLYISO) INSULATION
INSUL-6	MINERAL-WOOL BLANKET INSULATION, UNFACED
MP-2	FORMED METAL WALL PANEL, PAC-CLAD FLUSH PANEL, OR SIMILAR. AT ALL PLACES WHERE ROOF TO CAP EXCEEDS 12" AS SHOWN, LAP UNDER COPING
SLNT-1	SEALANT TYPE 1
SLNT-2	SEALANT TYPE 2
STH-1	GLASS-MAT GYPSUM SHEATHING

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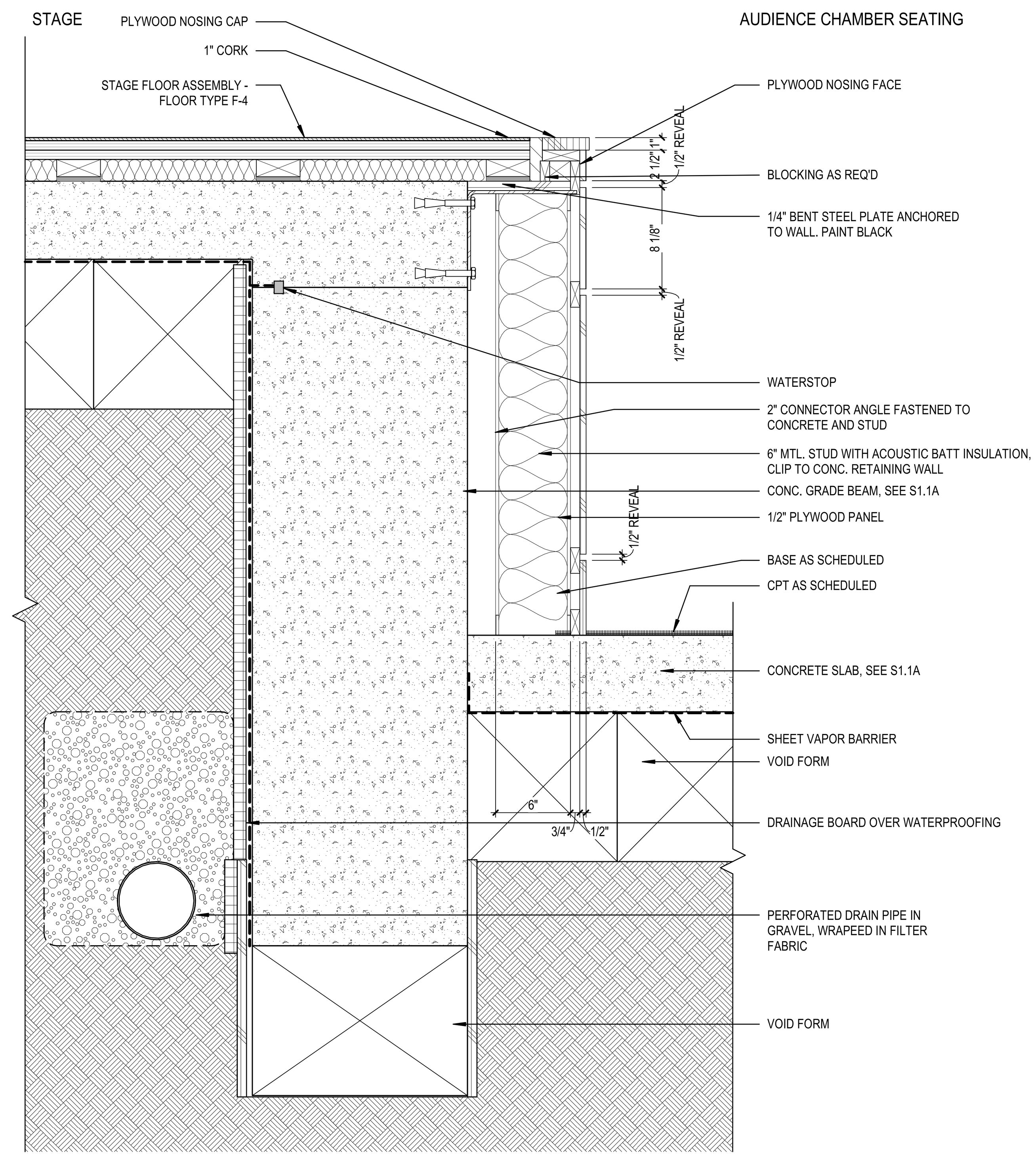
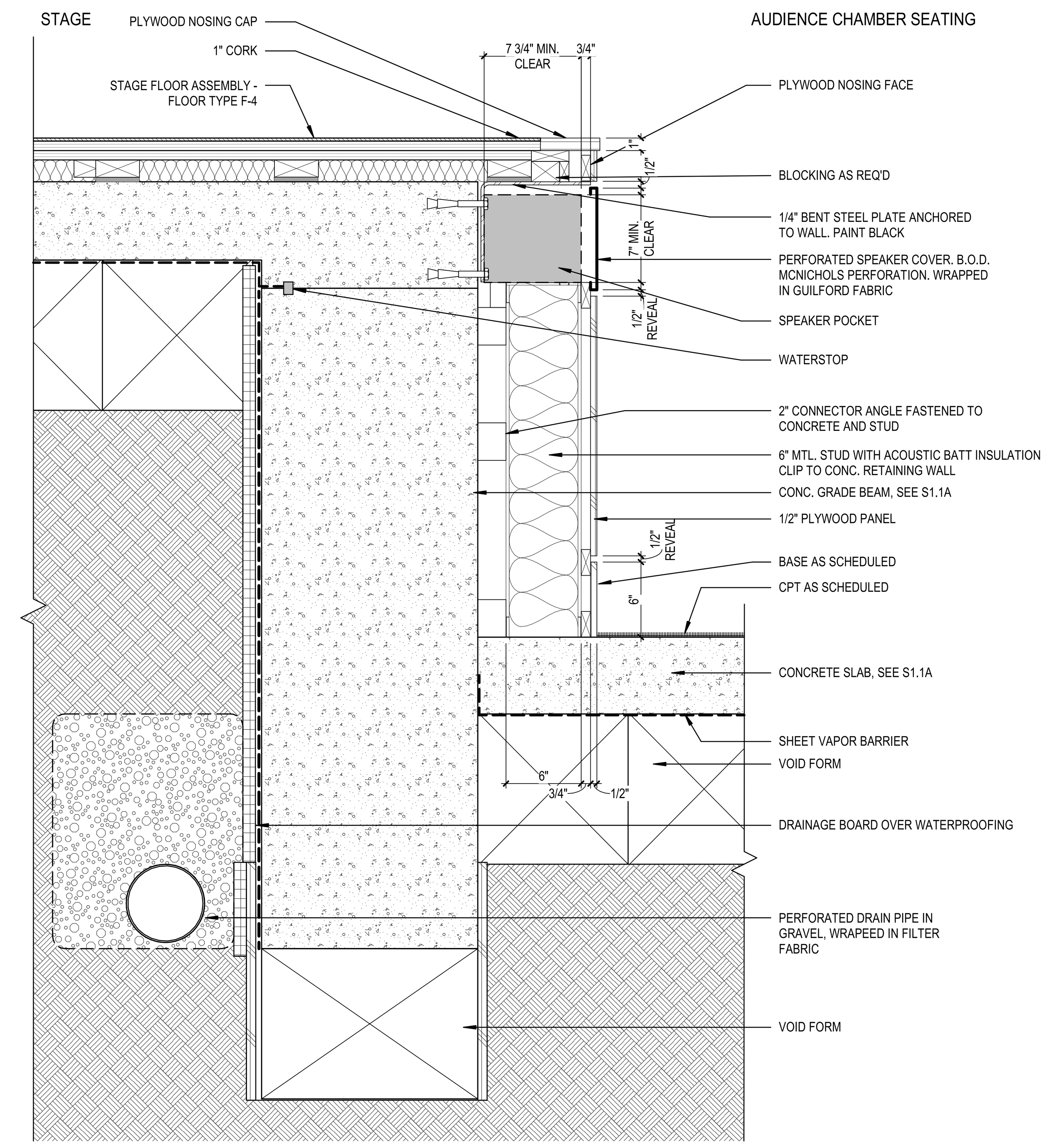
EXTERIOR DETAILS

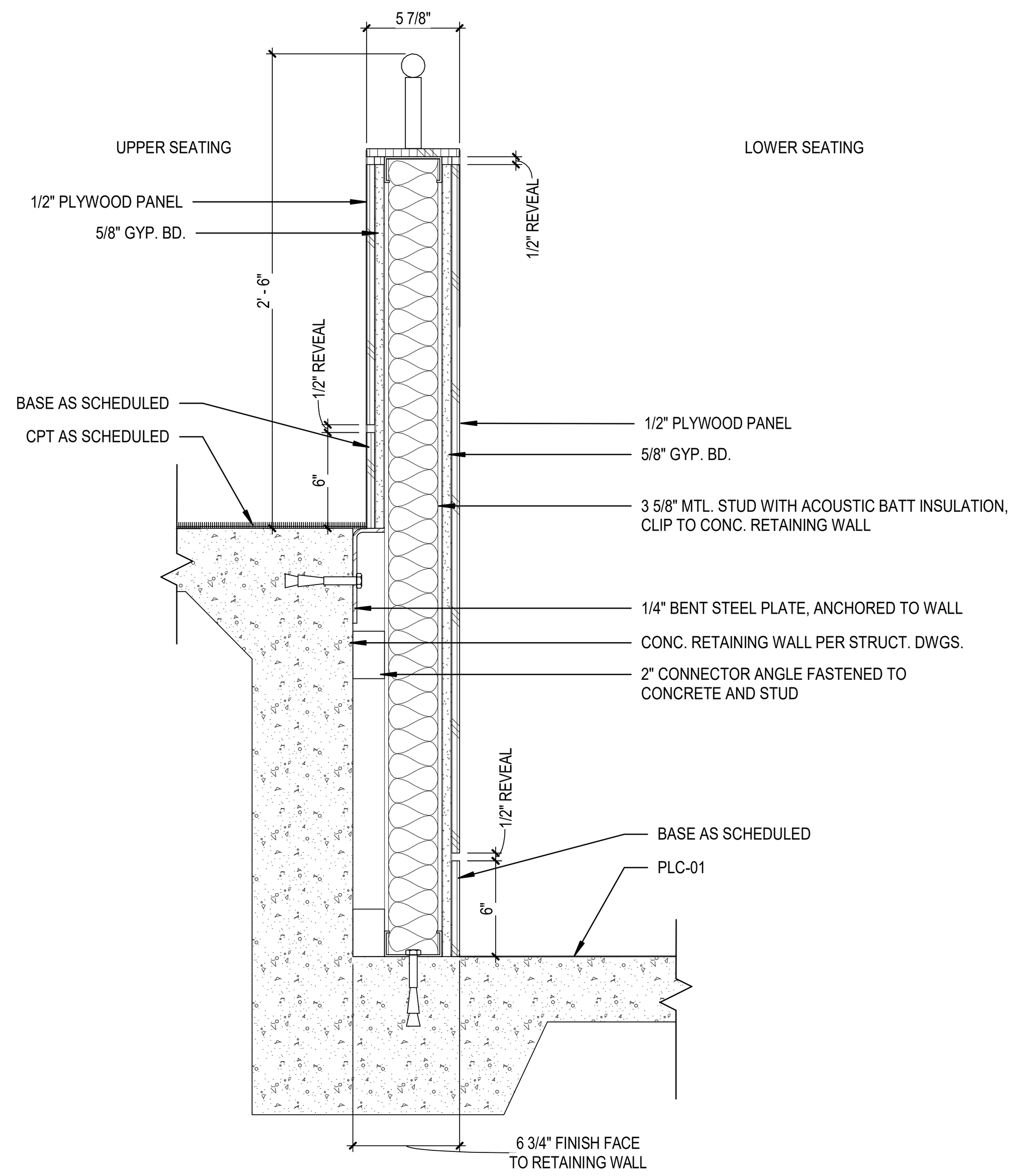
A9.2



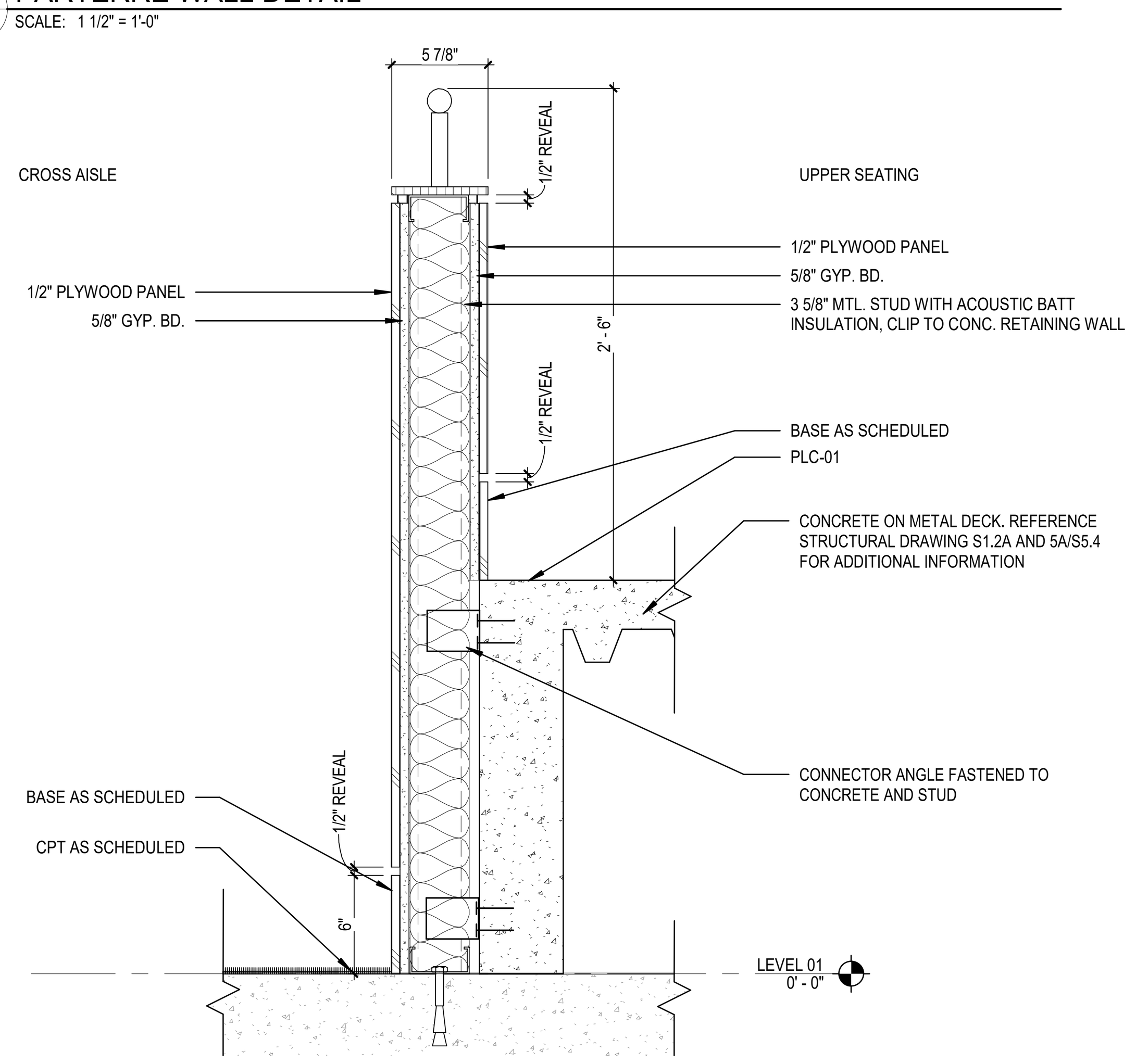
2A A11.9 STAGE APRON DETAIL (TYP.)
SCALE: 1 1/2" = 1'-0"



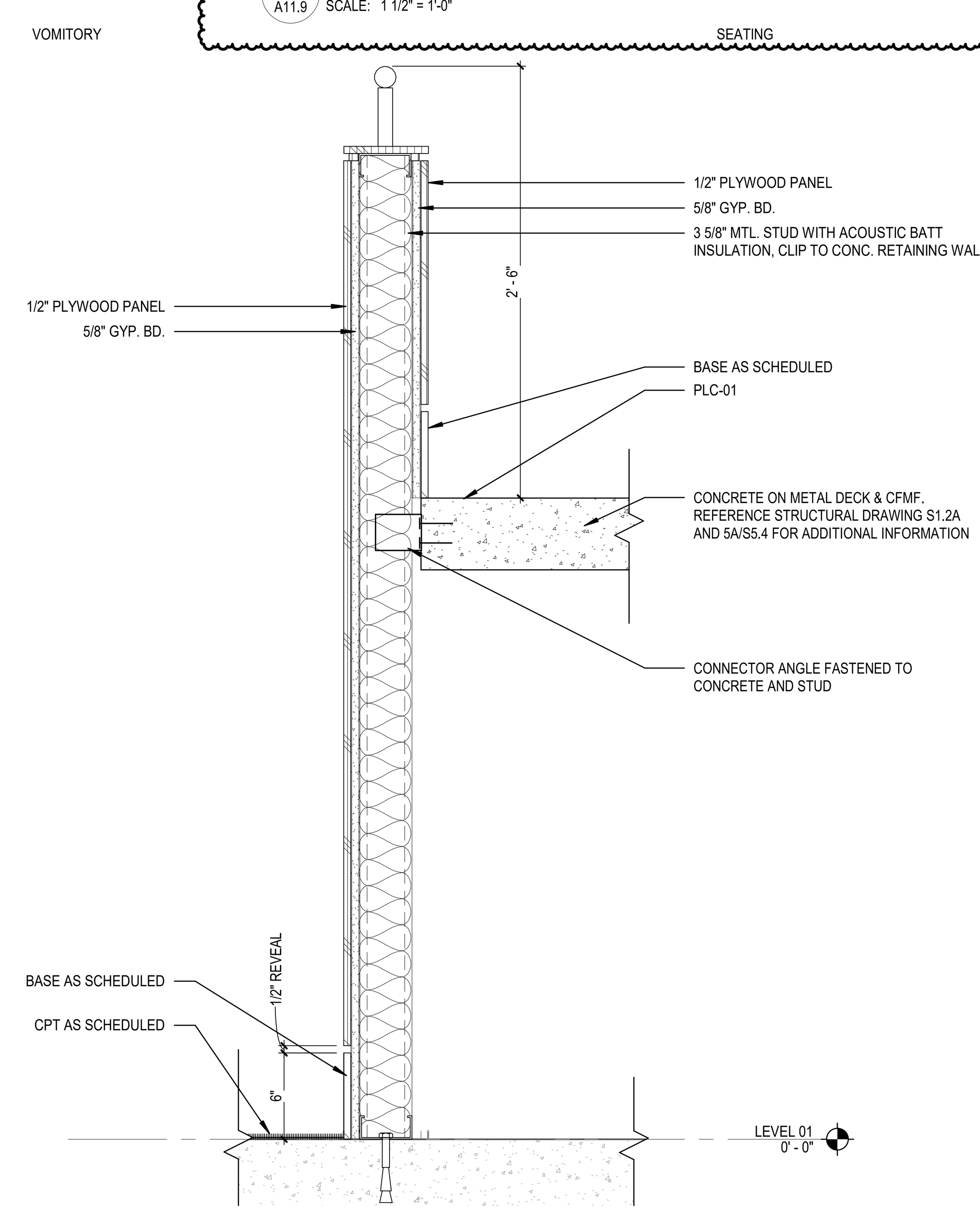
2B A11.9 STAGE APRON DETAIL @ SPEAKER
SCALE: 1 1/2" = 1'-0"



4A A11.9 PARTERRE WALL DETAIL
SCALE: 1 1/2" = 1'-0"



5A A11.9 CROSS AISLE WALL DETAIL
SCALE: 1 1/2" = 1'-0"



5B A11.9 VOMITORY AISLE WALL DETAIL
SCALE: 1 1/2" = 1'-0"

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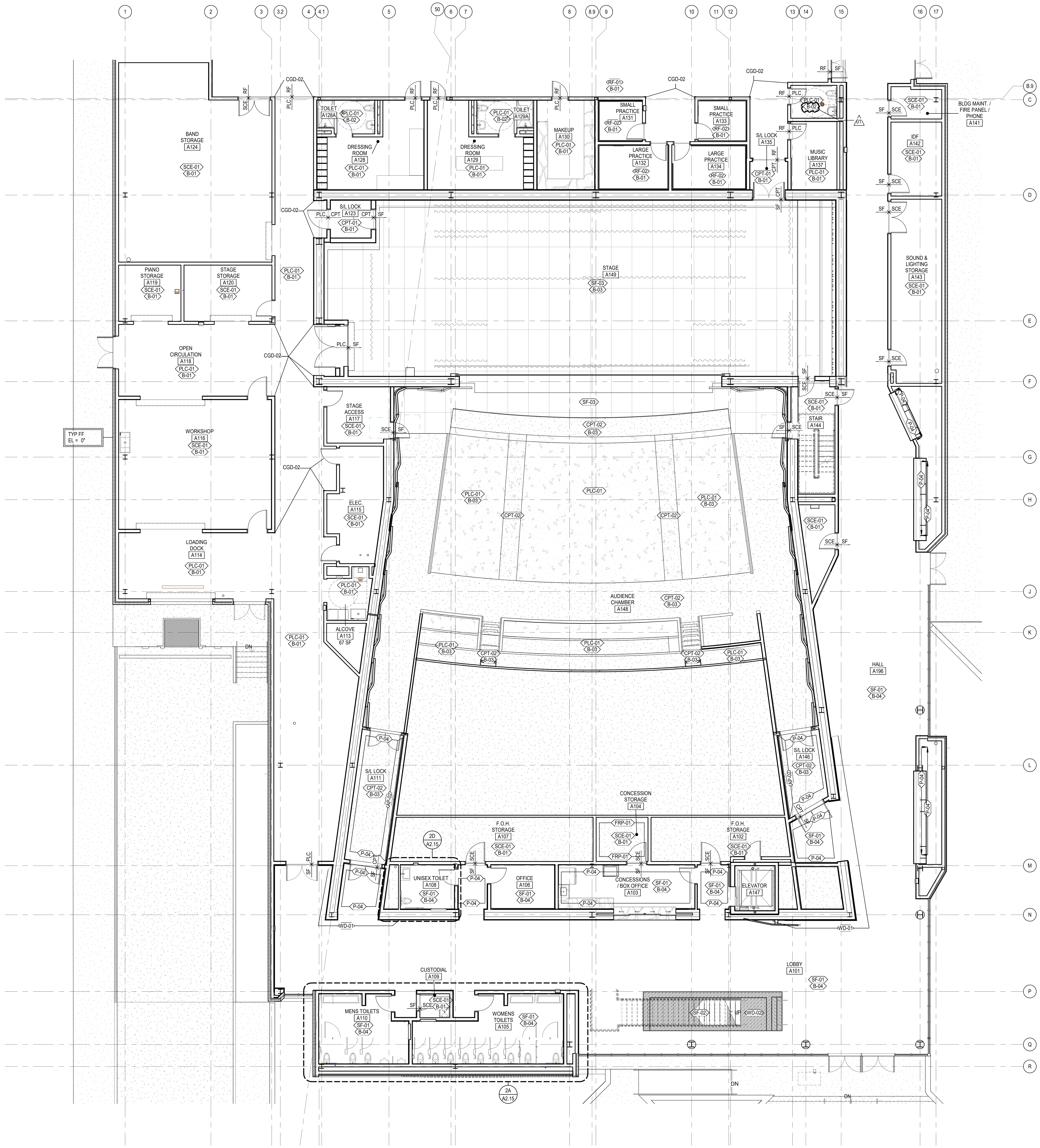
INTERIOR DETAILS - AUDIENCE CHAMBER

A11.9



LEVEL 01 - AREA A - FINISH PLAN

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

INTERIOR FINISH PLAN GENERAL NOTES

A. ROOM FINISH SCHEDULE GENERAL NOTES APPLY TO ALL ROOM FINISH SCHEDULE SHEETS.
B. INTERIOR FINISH PLAN GENERAL NOTES APPLY TO ALL INTERIOR FINISH PLAN SHEETS.
C. NOT ALL FLOOR AND WALL FINISHES ARE NOTED ON THE INTERIOR FINISH PLANS. SEE ROOM FINISH SCHEDULE FOR FLOOR AND WALL FINISHES NOT NOTED.
D. 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.
E. 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.

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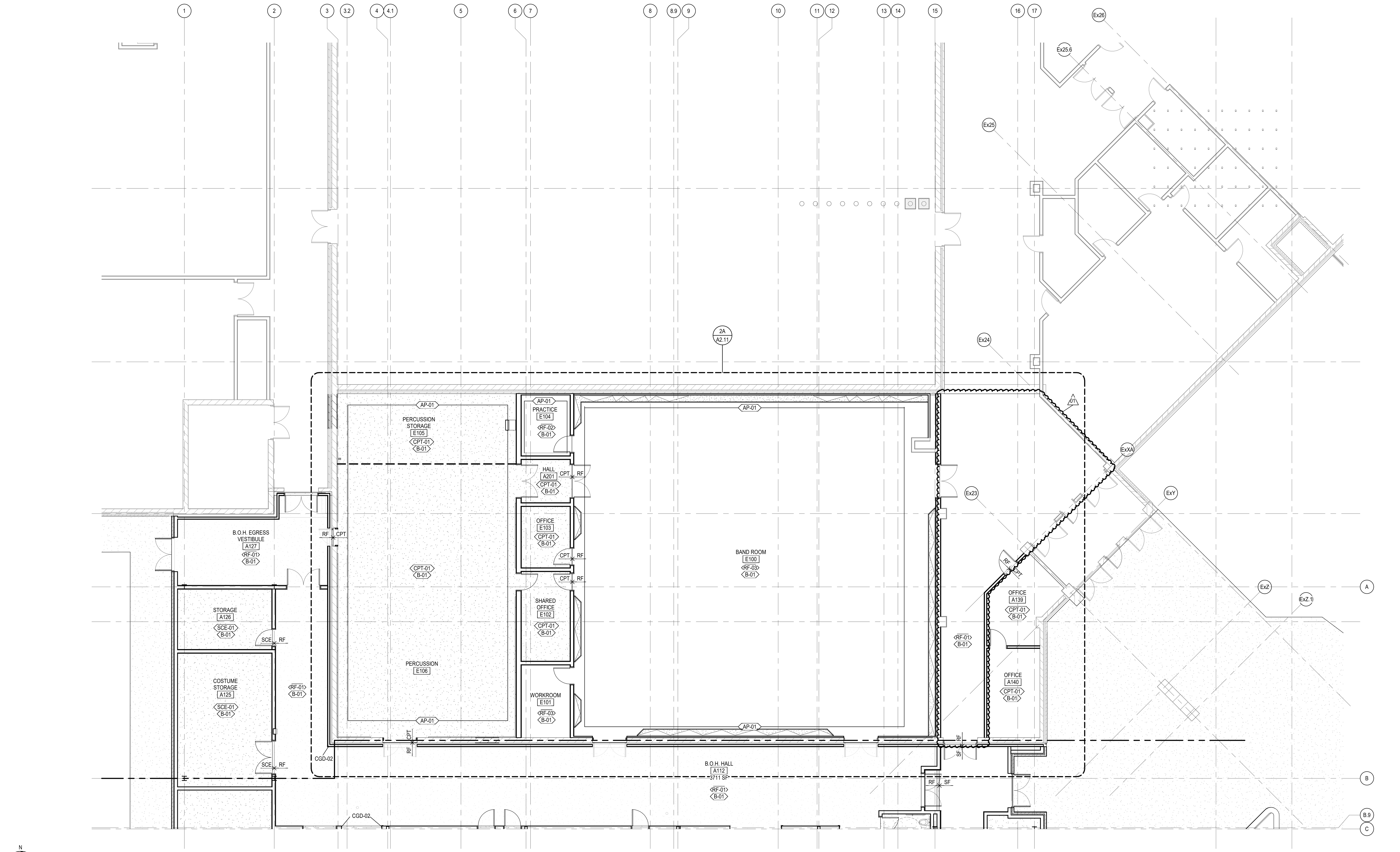
LEVEL 01 - AREA A - FINISH PLAN

A12.1A

INTERIOR FINISH PLAN GENERAL NOTES

A. ROOM FINISH SCHEDULE GENERAL NOTES APPLY TO ALL ROOM FINISH SCHEDULE SHEETS.
B. INTERIOR FINISH PLAN GENERAL NOTES APPLY TO ALL INTERIOR FINISH PLAN SHEETS.
C. NOT ALL FLOOR AND WALL FINISHES ARE NOTED ON THE INTERIOR FINISH PLANS. SEE ROOM FINISH SCHEDULE FOR FLOOR AND WALL FINISHES NOT NOTED.
D. 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.
E. 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.



LEVEL 01 - AREA B - FINISH PLAN
SCALE: 1/8" = 1'-0"

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LEVEL 01 - AREA B - FINISH PLAN

A12.1B

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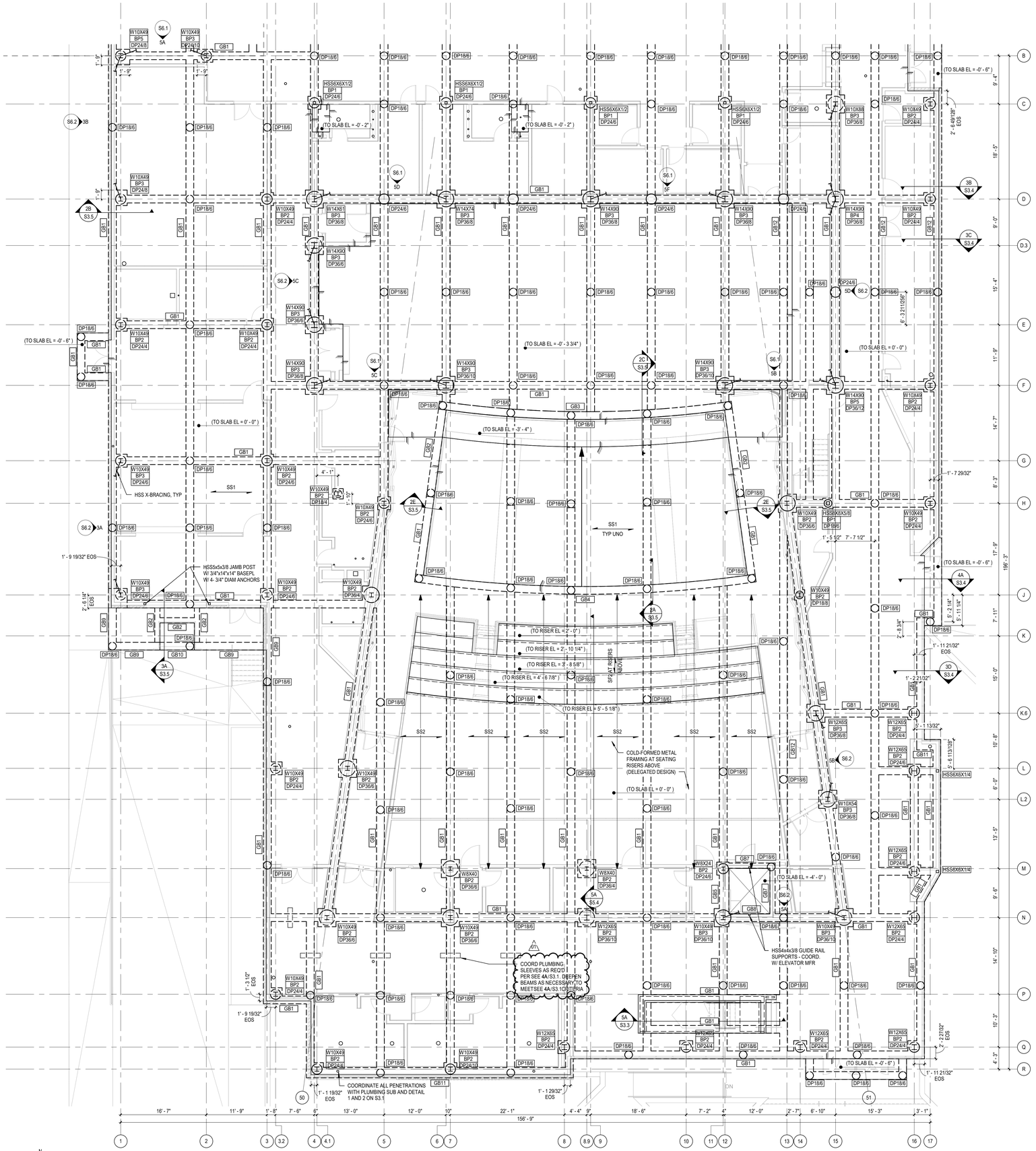


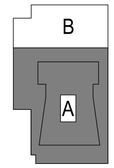
LEVEL 01 - AREA A - FOUNDATION PLAN

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

FOUNDATION PLAN GENERAL NOTES

A. TOP OF STRUCTURAL SLAB ELEVATION = 0' - 0" UNO. COORDINATE TOP OF SLAB WITH FLOOR FINISHES, SEE ARCHITECTURAL DRAWINGS.
B. TOP OF PIER ELEVATION (TPE) = -3' - 2" UNO.
C. SS1 = 6" CONCRETE SLAB ON 12" VOID FORMS. REINF. W/ #5 AT 8" OC TOP AND BOTTOM IN DIREC OF SPAN (OUTER LAYER), AND #4 AT 16" OC PERPENDICULAR TO SPAN DIRECTION (INNER LAYER)
D. SS2 = 6" CONCRETE SLAB ON 12" VOID FORMS. REINF. W/ #5 AT 8" OC TOP AND BOTTOM IN DIREC OF SPAN (OUTER LAYER), AND #4 AT 16" OC PERPENDICULAR TO SPAN DIRECTION (INNER LAYER)
E. SF1 = 4-1/2" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA, GALV). TOTAL SLAB THICKNESS = 6-1/2". REINF W/ 6x6-W2.9XW2.9 WWR
F. SF2 = 5" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA, GALV). TOTAL SLAB t=5". REINF W/ 6x6-W2.9Xw2.9
G. SEE GEOTECHNICAL REPORT FOR SITE AND SUBGRADE PREPARATIONS.
H. PROVIDE STOOPS/FROST SLABS AT ALL EXTERIOR DOORS. COORDINATE WITH CIVIL AND ARCHITECTURAL DRAWINGS.

KEY PLAN



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83534
LICENSED PROFESSIONAL ENGINEER
08/19/2024

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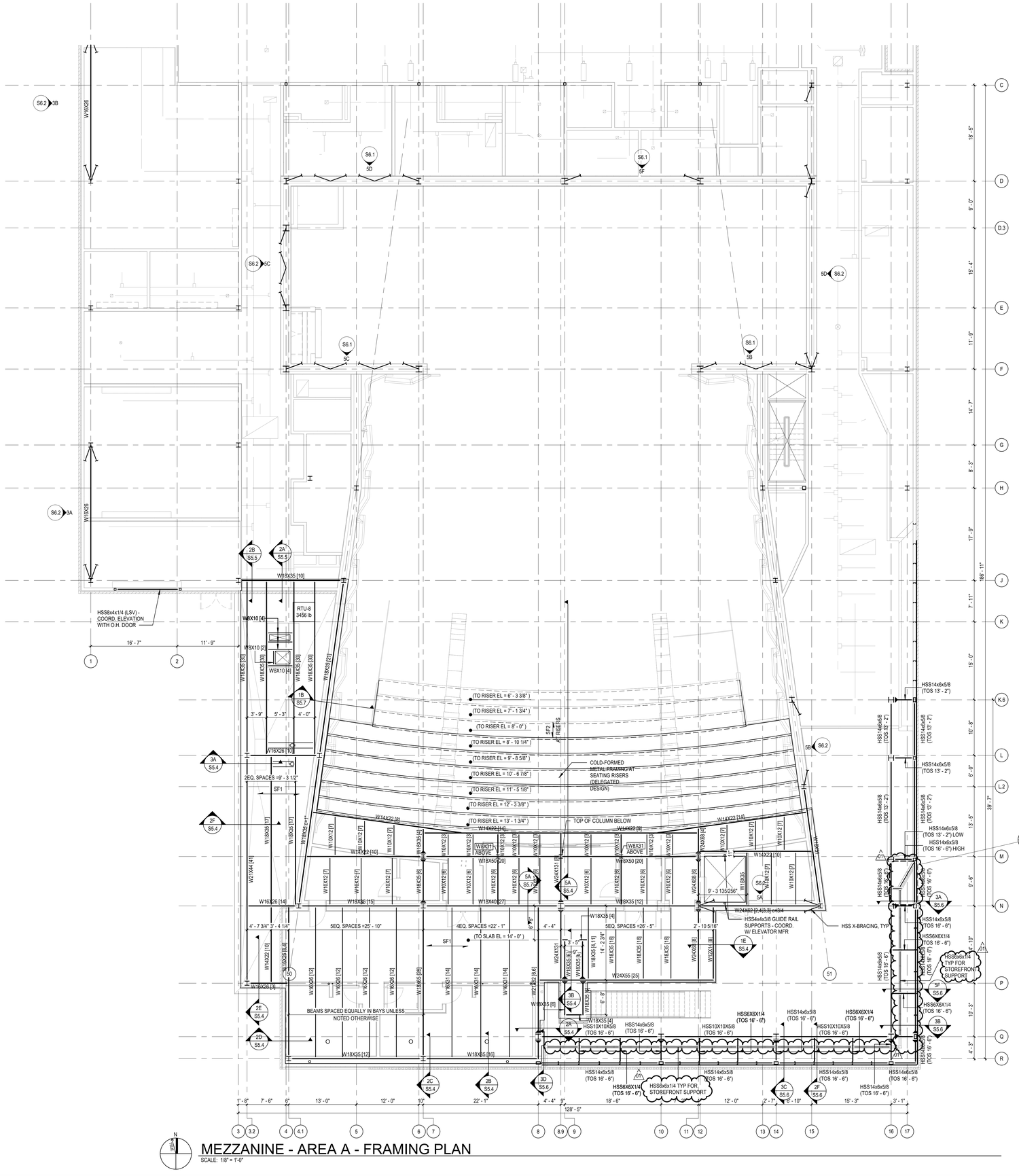
LEVEL 01 AREA A - FOUNDATION PLAN

S1.1A



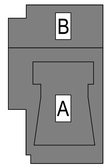
MEZZANINE - AREA A - FRAMING PLAN

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

FLOOR FRAMING PLAN GENERAL NOTES

A. SEE PLAN FOR TOP OF SLAB ELEVATIONS (TSE).
B. TOP OF STEEL (TOS) ELEVATION EQUAL TO BOTTOM OF SLAB ON DECK ELEVATION UNO.
C. BEAMS/JOISTS SHALL BE SPACED EVENLY BETWEEN NEAREST COLUMN LINES AND/OR LOCATED STRUCTURAL MEMBERS (WALLS, BEAMS) UNO.
D. SF1 = 4-1/2" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=6-1/2". REINF W/ 6x6-W2.9XW2.9
E. SF2 = 3" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=5". REINF W/ 6x6-W2.9XW2.9
F. SP1 = 3/8" STEEL PLATE
G. SR1 = 1-1/2" METAL ROOF DECK, TYPE B, 20 GA. GALV
H. STEEL ANGLES OR BENT PLS ARE REQUIRED AT ALL DECK PERIMETERS, EVEN WHEN NOT INDICATED. REFERENCE TYPICAL DETAILS.
I. STEEL MEMBERS AND CONNECTIONS EXPOSED TO THE WEATHER ARE TO BE GALVANIZED.

KEY PLAN



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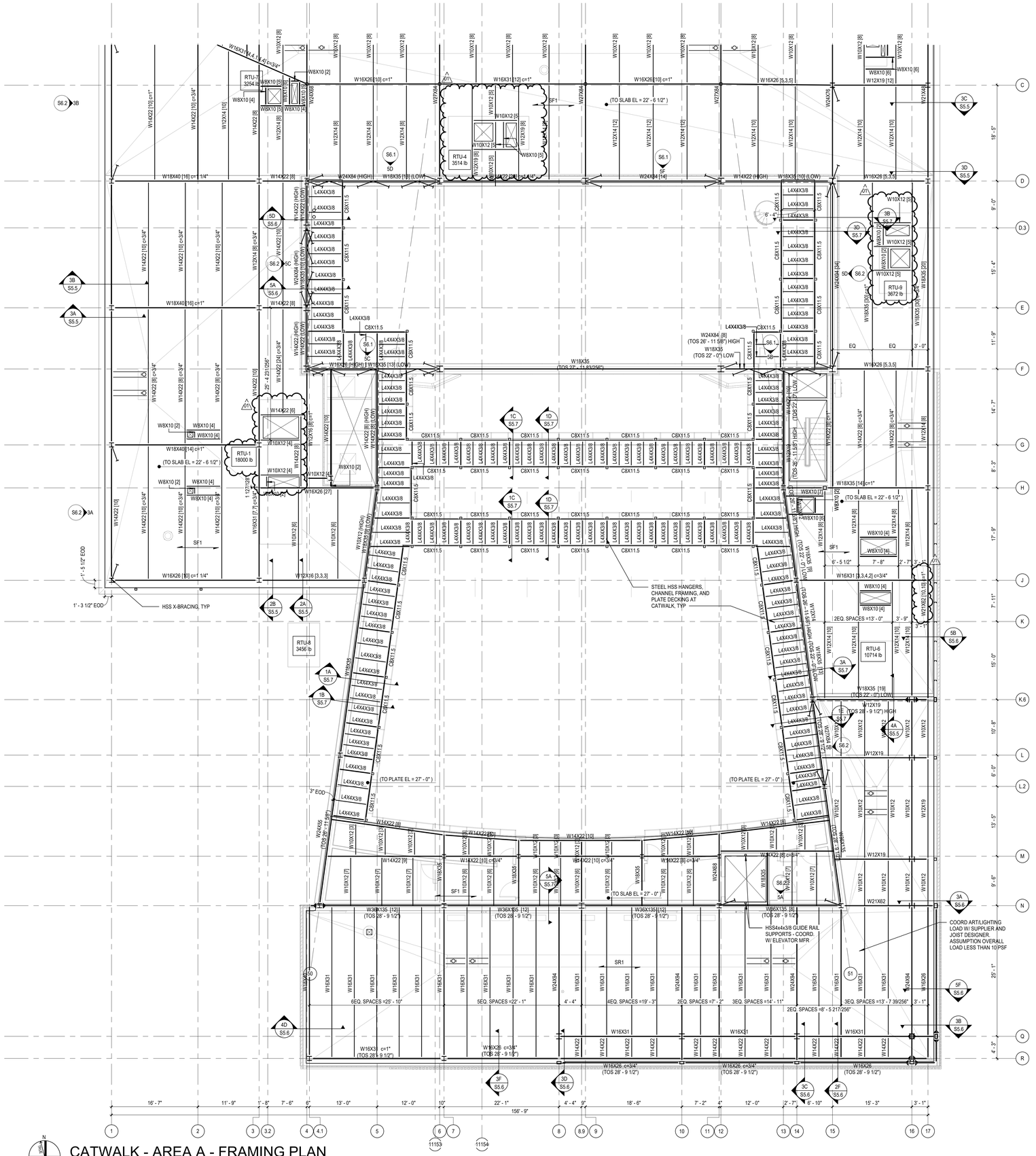
LEVEL 02 MEZZANINE - AREA A - FRAMING PLAN

S1.2A



FLOOR FRAMING PLAN GENERAL NOTES

A. SEE PLAN FOR TOP OF SLAB ELEVATIONS (TSE).
B. TOP OF STEEL (TOS) ELEVATION EQUAL TO BOTTOM OF SLAB ON DECK ELEVATION UNO.
C. BEAMS/JOISTS SHALL BE SPACED EVENLY BETWEEN NEAREST COLUMN LINES AND/OR LOCATED STRUCTURAL MEMBERS (WALLS, BEAMS) UNO.
D. SF1 = 4-1/2" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=6-1/2". REINF W/ 6x6-W2.9xW2.9
E. SF2 = 3" NORMAL-WT CONCRETE OVER 3" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=9". REINF W/ 6x6-W2.9xW2.9
F. SP1 = 3/8" STEEL PLATE
G. SR1 = 1-1/2" METAL ROOF DECK, TYPE B, 20 GA. GALV
H. STEEL ANGLES OR BENT PLS ARE REQUIRED AT ALL DECK PERIMETERS, EVEN WHEN NOT INDICATED. REFERENCE TYPICAL DETAILS.
I. STEEL MEMBERS AND CONNECTIONS EXPOSED TO THE WEATHER ARE TO BE GALVANIZED.

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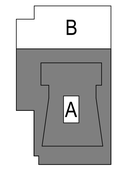

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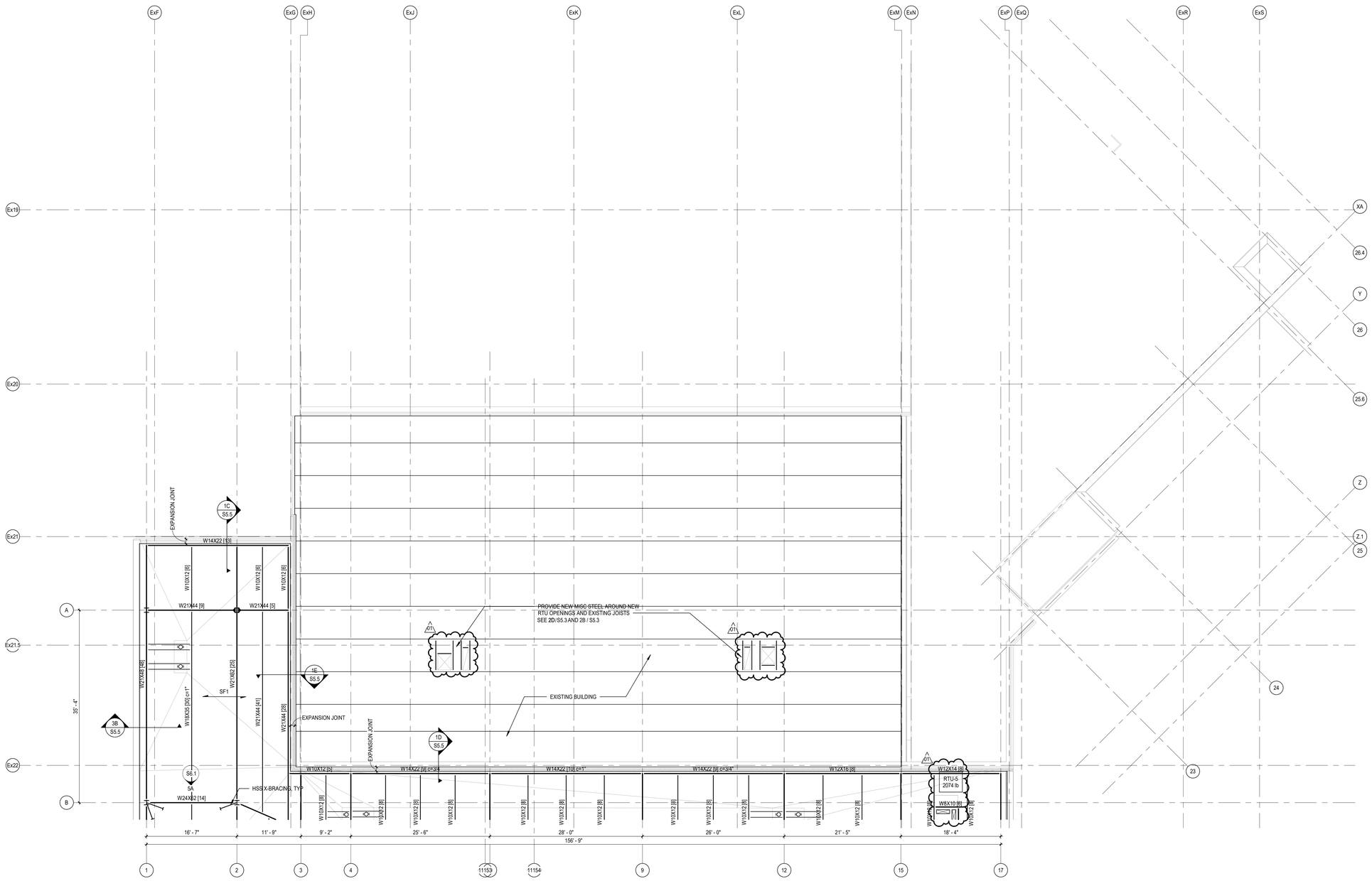
LEVEL 03
CATWALK - AREA A - FRAMING PLAN

S2.3A



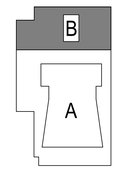
LEVEL 03 CATWALK - AREA B - FRAMING PLAN

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

FLOOR FRAMING PLAN GENERAL NOTES

A. SEE PLAN FOR TOP OF SLAB ELEVATIONS (TSE).
B. TOP OF STEEL (TOS) ELEVATION EQUAL TO BOTTOM OF SLAB ON DECK ELEVATION UNO.
C. BEAMS/JOISTS SHALL BE SPACED EVENLY BETWEEN NEAREST COLUMN LINES AND/OR LOCATED STRUCTURAL MEMBERS (WALLS, BEAMS) UNO.
D. SF1 = 4-1/2" NORMAL-WT CONCRETE OVER 2" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=6-1/2". REINF W/ 6x6-W2.9XW2.9
E. SF2 = 3" NORMAL-WT CONCRETE OVER 3" COMPOSITE METAL DECK (20 GA. GALV). TOTAL SLAB t=5". REINF W/ 6x6-W2.9XW2.9
F. SP1 = 3/8" STEEL PLATE
G. SR1 = 1-1/2" METAL ROOF DECK, TYPE B, 20 GA. GALV
H. STEEL ANGLES OR BENT PLS ARE REQUIRED AT ALL DECK PERIMETERS, EVEN WHEN NOT INDICATED. REFERENCE TYPICAL DETAILS.
I. STEEL MEMBERS AND CONNECTIONS EXPOSED TO THE WEATHER ARE TO BE GALVANIZED.

KEY PLAN



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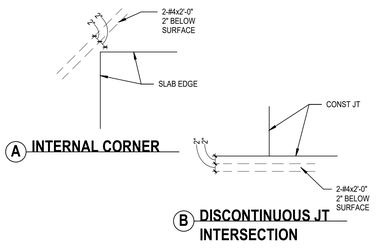
LEVEL 03 CATWALK - AREA B - FRAMING PLAN

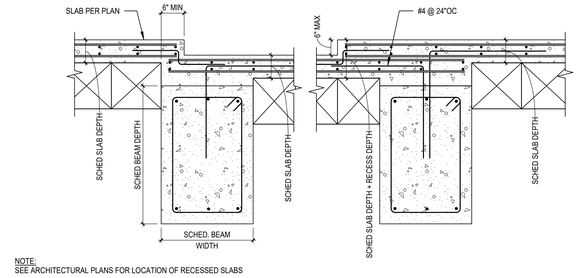
S2.3B

GRADE BEAM SCHEDULE

MARK	WIDTH	THICKNESS	LONGITUDINAL REINFORCEMENT	TRANSVERSE REINFORCEMENT
GB1	1' - 6"	2' - 6"	(3) #8 CONT T&B	#3 @ 12" OC
GB2	1' -6"	4' -4"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB3	1' - 6"	5' - 10"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB4	1' - 6"	3' - 6"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB5	1' - 10 1/4"	4' - 0"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB7	1' - 0"	4' - 0"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB8	1' - 6"	4' - 0"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB9	1' - 6"	6' - 8"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB10	1' - 6"	5' - 0"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB11	2' - 0"	2' - 6"	(3) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC
GB12	1' - 6"	2' - 6"	(4) #7 CONT T&B, #4 MID BARS @ 12" OC	#3 @ 12" OC

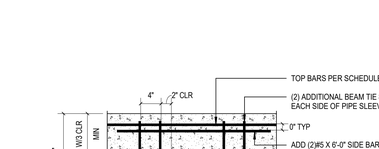


1A S3.1 TYP SLAB CORNERS
NO SCALE

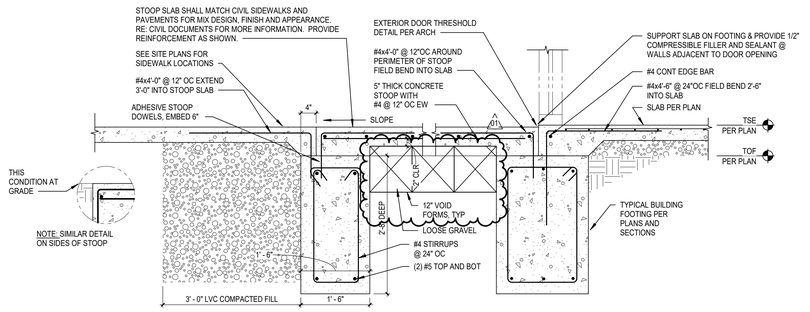


NOTE:
SEE ARCHITECTURAL PLANS FOR LOCATION OF RECESSED SLABS

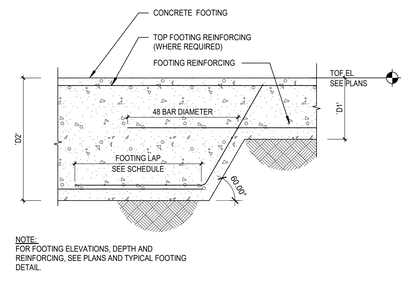
1B S3.1 TYPICAL FLOOR SLAB RECESS DETAIL
SCALE: 3/4" = 1'-0"



2A S3.1 TYP STAIR POST BASE DETAIL
NO SCALE

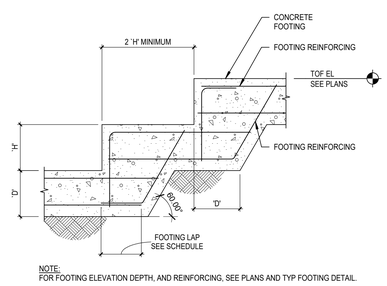


3A S3.1 TYPICAL STRUCTURAL STOOP DETAIL
NO SCALE



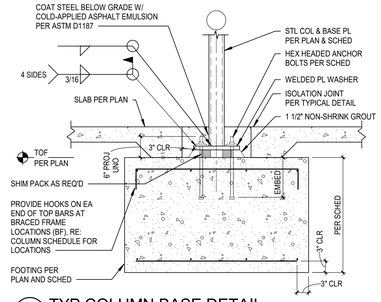
NOTE:
FOR FOOTING ELEVATIONS, DEPTH AND REINFORCING, SEE PLANS AND TYPICAL FOOTING DETAIL.

3C S3.1 TYP BOT STEP FTG DETAIL
NO SCALE

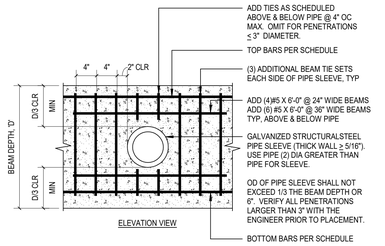


NOTE:
FOR FOOTING ELEVATION DEPTH, AND REINFORCING, SEE PLANS AND TYP FOOTING DETAIL.

3D S3.1 TYP STEP FOOTING DETAIL
NO SCALE

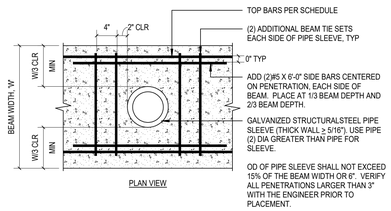


3E S3.1 TYP COLUMN BASE DETAIL
NO SCALE



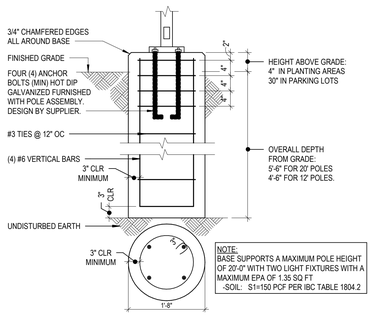
NOTES:
1. PRIOR TO PLACEMENT OF REINFORCING AND CONCRETE, THE CONTRACTOR SHALL COORDINATE THE LOCATION, SIZE, AND ELEVATION OF ALL REQUIRED PENETRATIONS THROUGH CONCRETE BEAMS.
2. WHERE NOT SPECIFICALLY DETAILED ON THE STRUCTURAL DRAWINGS, THE CONTRACTOR SHALL SUBMIT DRAWINGS TO THE ENGINEER FOR REVIEW SHOWING DIMENSIONS AND LOCATIONS OF ALL REQUIRED PENETRATIONS PRIOR TO CONSTRUCTION. THIS MAY BE INCLUDED ON REINFORCING STEEL SHOP DRAWINGS.
3. MINIMUM CLEAR SPACING BETWEEN PENETRATIONS SHALL BE 24".
4. SCHEDULED TIES ARE NOT SHOWN FOR CLARITY.
5. PENETRATIONS SHOWN ON PLANS WITHOUT DIMENSIONS FROM TOP OF CONCRETE SHALL BE CENTERED AT HALF THE BEAM DEPTH.

4A S3.1 TYP GRADE BEAM HORIZ PIPE PENETRATION
NO SCALE



NOTES:
1. PRIOR TO PLACEMENT OF REINFORCING AND CONCRETE, THE CONTRACTOR SHALL COORDINATE THE LOCATION, SIZE, AND ELEVATION OF ALL REQUIRED PENETRATIONS THROUGH CONCRETE BEAMS.
2. WHERE NOT SPECIFICALLY DETAILED ON THE STRUCTURAL DRAWINGS, THE CONTRACTOR SHALL SUBMIT DRAWINGS TO THE ENGINEER FOR REVIEW SHOWING DIMENSIONS AND LOCATIONS OF ALL REQUIRED PENETRATIONS PRIOR TO CONSTRUCTION. THIS MAY BE INCLUDED ON REINFORCING STEEL SHOP DRAWINGS.
3. SLEEVES MUST BE CENTERED ON BEAM CENTERLINE.
4. MINIMUM CLEAR SPACING BETWEEN PENETRATIONS SHALL BE 24".
5. MINIMUM CLEAR SPACING BETWEEN PENETRATIONS AND THE FACE OF PILE CAPS SHALL BE 4".
6. PENETRATIONS ON EACH SIDE OF PILE CAPS MUST ALIGN.
7. SCHEDULED TIES ARE NOT SHOWN FOR CLARITY.
8. CONTINUOUS BEAM REINFORCING MAY BE DISPLACED (3" MAXIMUM) OR ADJACENT BARS BUNDLED (2 BAR BUNDLES MAXIMUM) TO FACILITATE SLEEVE INSTALLATION. DO NOT CUT, OFFSET, OR BEND REINFORCING.

5A S3.1 TYP GRADE BEAM VERTICAL PIPE PENETRATION
NO SCALE



NOTE:
BASE SUPPORTS A MAXIMUM POLE HEIGHT OF 20'-0" WITH TWO LIGHT FIXTURES WITH A MAXIMUM EPA OF 1.35 SQ FT
-SOIL: S1=150 PCF PER IBC TABLE 1804.2

5C S3.1 TYP LIGHT POLE BASE
SCALE: 3/4" = 1'-0"

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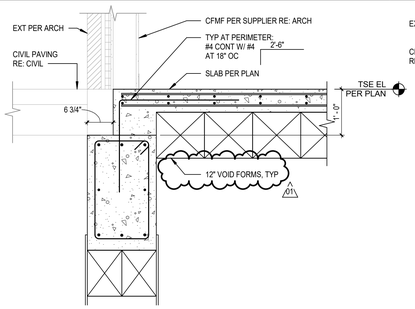
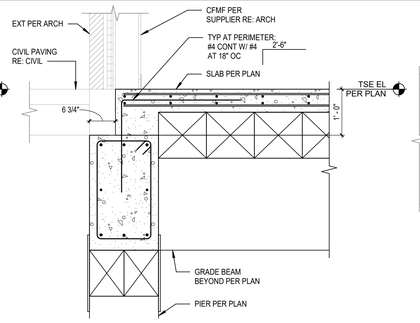
STRUCTURAL DETAILS

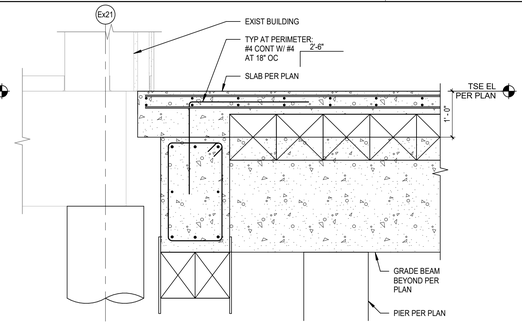
S3.1



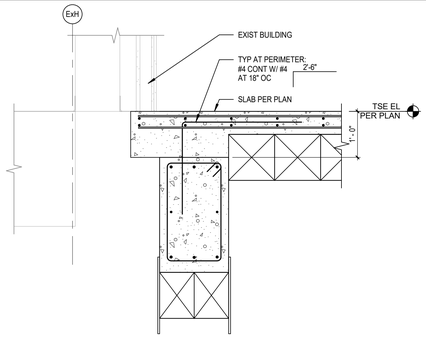
1A S3.4 SECTION AT PERIMETER
SCALE: 3/4" = 1'-0"



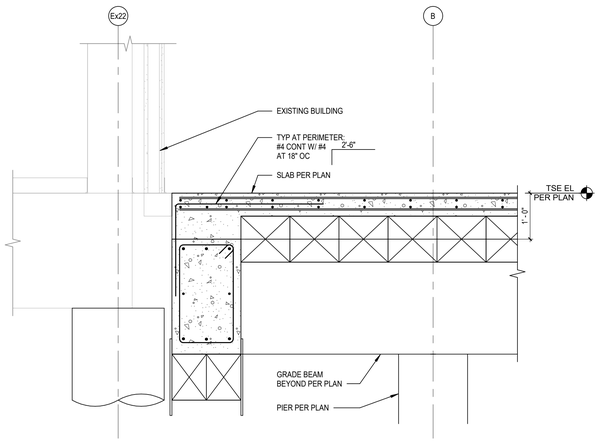
1B S3.4 SECTION AT PERIMETER
SCALE: 3/4" = 1'-0"



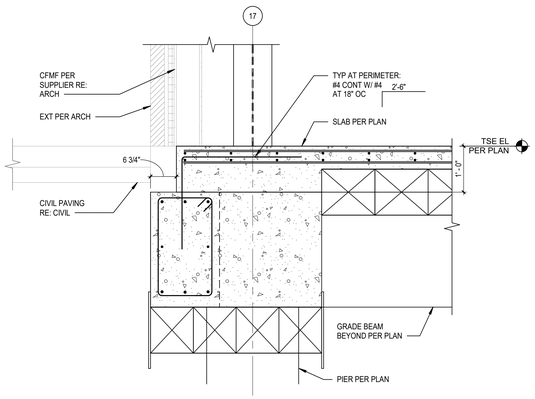
1C S3.4 SECTION AT EXISTING PERIMETER
SCALE: 3/4" = 1'-0"



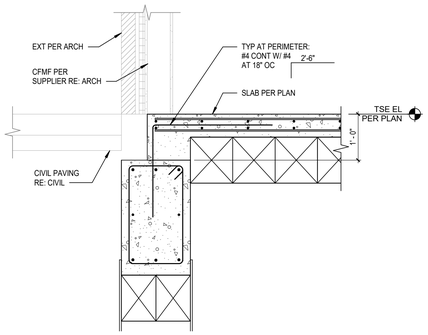
1D S3.4 SECTION AT EXISTING PERIMETER
SCALE: 3/4" = 1'-0"



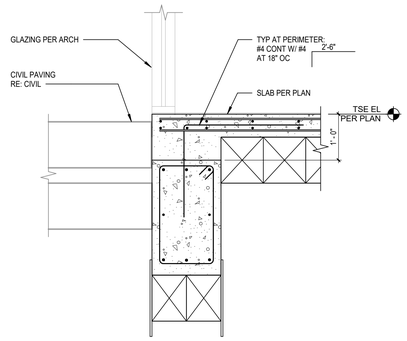
3A S3.4 SECTION AT EXISTING PERIMETER
SCALE: 3/4" = 1'-0"



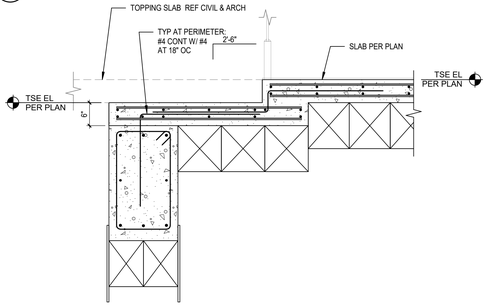
3B S3.4 SECTION AT PERIMETER
SCALE: 3/4" = 1'-0"



3C S3.4 SECTION AT PERIMETER
SCALE: 3/4" = 1'-0"



3D S3.4 SECTION AT PERIMETER
SCALE: 3/4" = 1'-0"



4A S3.4 SECTION AT ENTRY
SCALE: 3/4" = 1'-0"

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JAMES H. WHITT
83534
LICENSED PROFESSIONAL ENGINEER
08/19/2024

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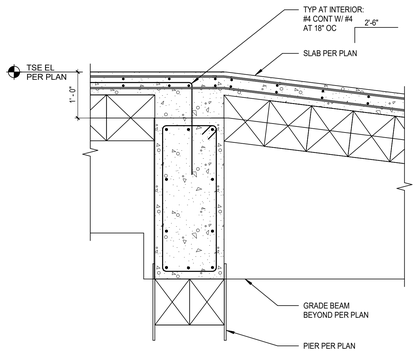
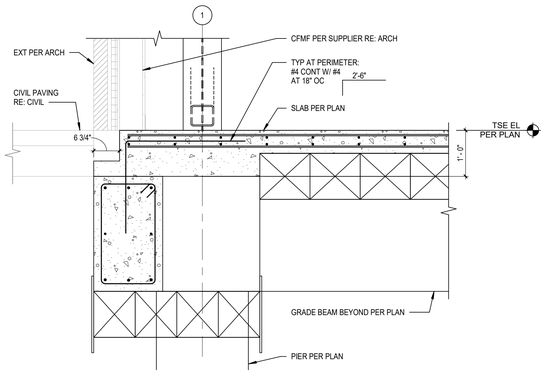
STRUCTURAL DETAILS

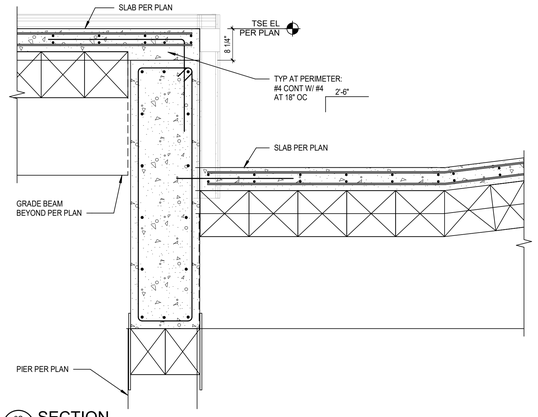
S3.4



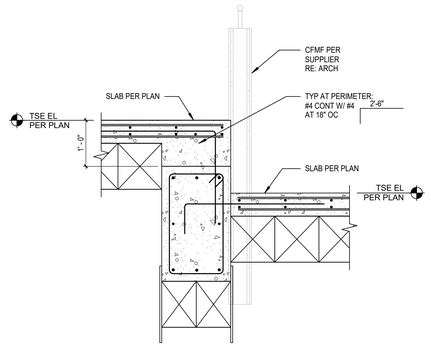
2A S3.5 SECTION
SCALE: 3/4" = 1'-0"



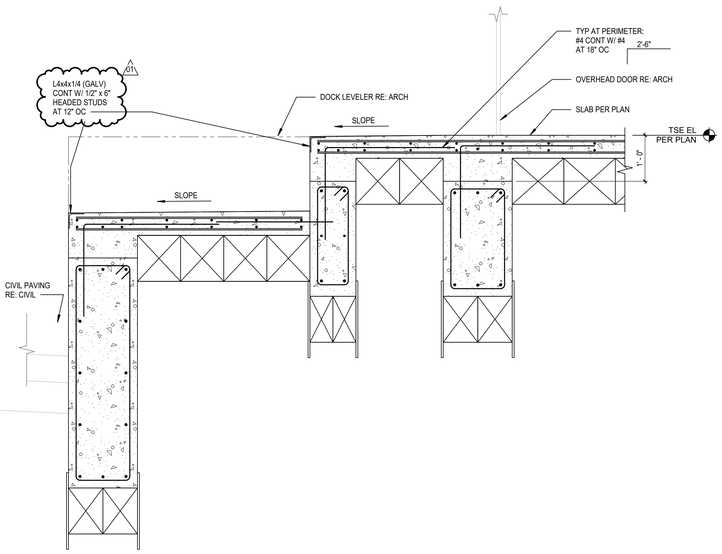
2B S3.5 SECTION
SCALE: 3/4" = 1'-0"



2C S3.5 SECTION
SCALE: 3/4" = 1'-0"



2E S3.5 SECTION
SCALE: 3/4" = 1'-0"



3A S3.5 SECTION AT DOCK LEVELER
SCALE: 3/4" = 1'-0"

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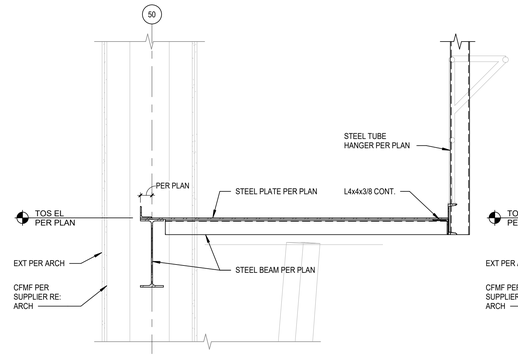
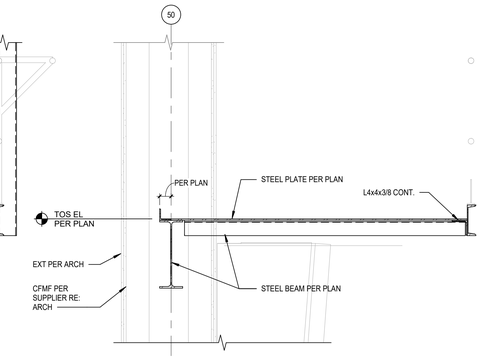
STRUCTURAL
DETAILS

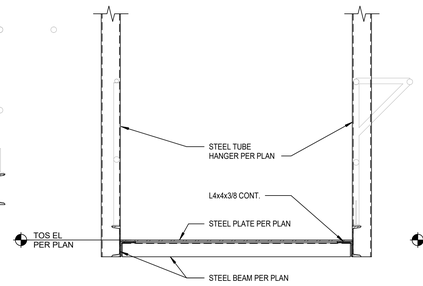
S3.5



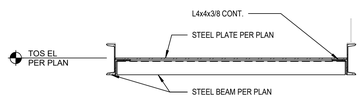
1A S5.7 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"



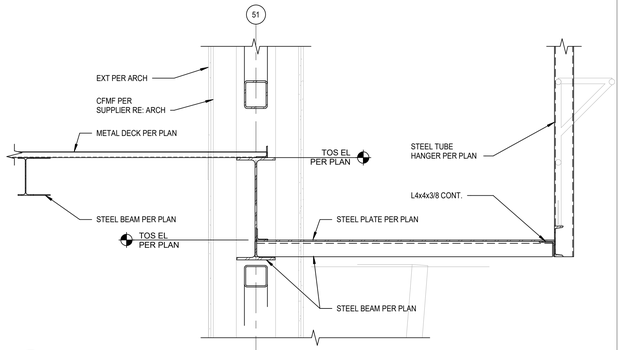
1B S5.7 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"



1C S5.7 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"



1D S5.7 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"



1E S5.7 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"

3A S5.7 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"

3B S5.7 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"

3D S5.7 SECTION AT CATWALK
SCALE: 3/4" = 1'-0"

5A S5.7 SECTION AT LOBBY ROOF
NO SCALE

5B S5.7 STOREFRONT SUPPORT - PLAN DETAIL
SCALE: 3/4" = 1'-0"

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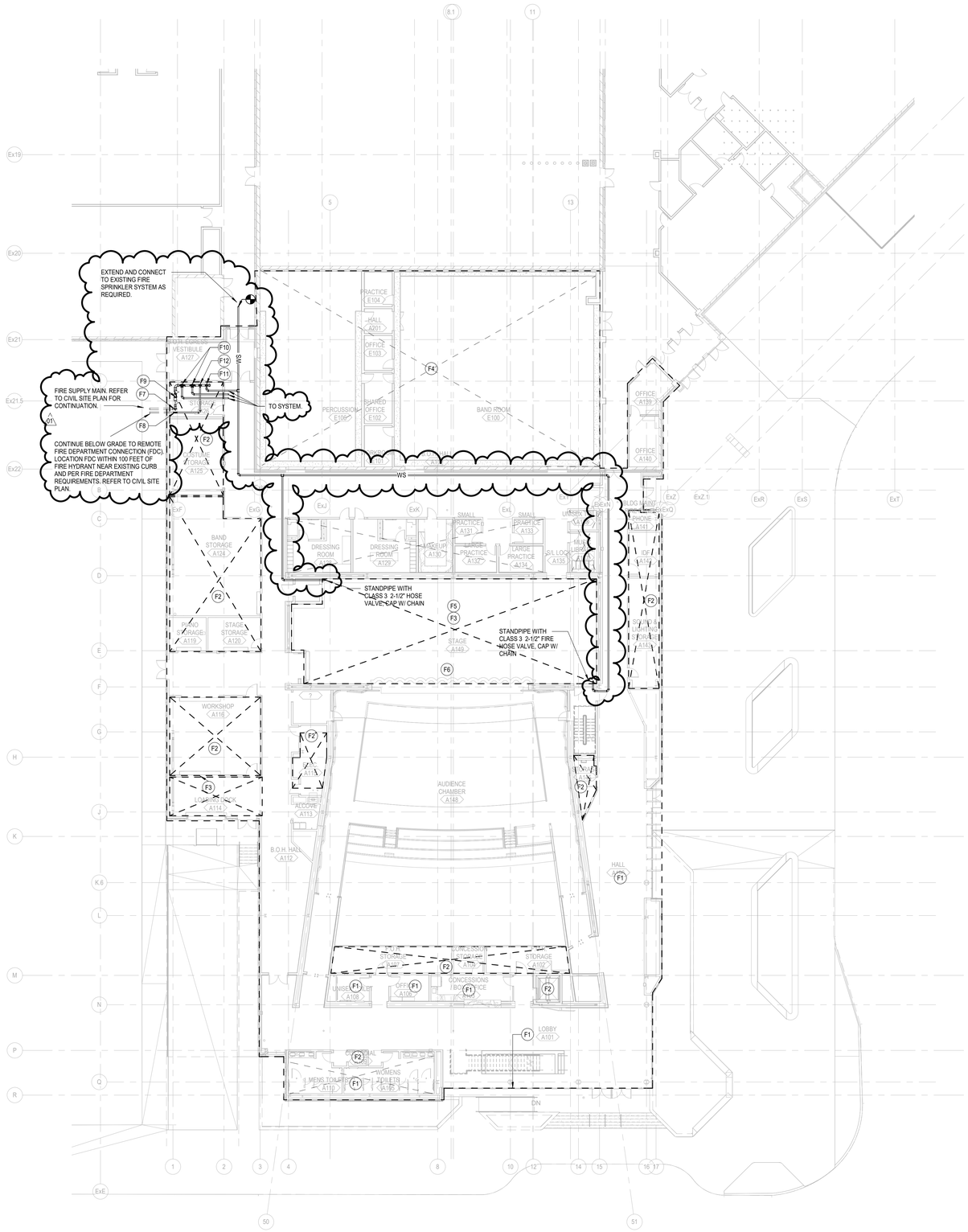
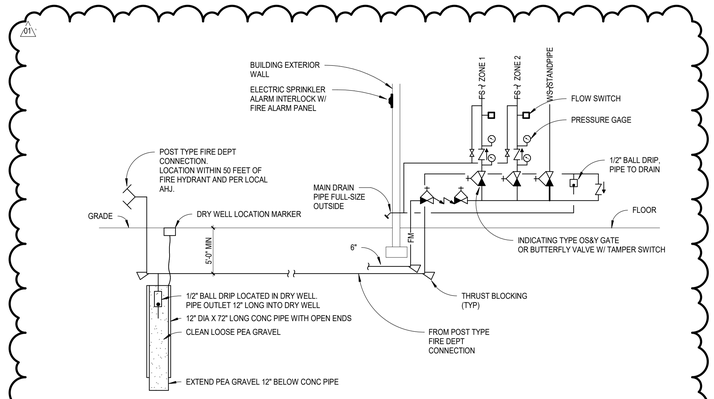
STEEL SECTIONS

S5.7



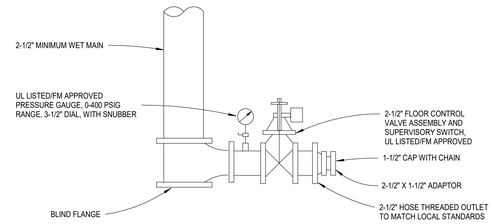
LEVEL 01 - FIRE PROTECTION PLAN

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



2 FP1.1 FIRE RISER ASSEMBLY W/ POST TYPE FDC

NO SCALE

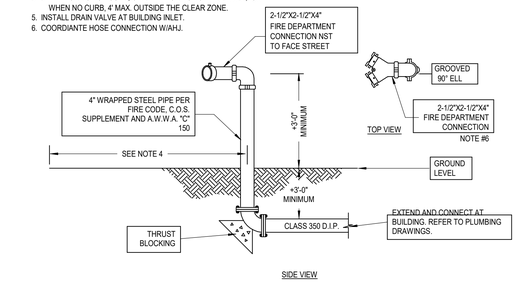


3 FP1.1 STAGE FIRE HOSE CONNECTION DETAIL

NO SCALE

GENERAL NOTES

1. PROVIDE BUILDING I.D. ON REMOTE FIRE DEPT. CONNECTION.
2. NO TREES, BUSHES OR WALLS WITHIN 5' RADIUS OF FIRE DEPT. CONNECTION
3. IF FIRE SPRINKLER DESIGN INDICATES DEMAND OF 1000 GPM OR GREATER, THE UNDERGROUND FIRE DEPT. CONNECTION LINE SHALL BE INCREASED TO 6" DIAMETER WITH A THREE WAY 2-1/2" FIRE DEPT. HOSE CONNECTION
4. 4' MIN. TO BACK OF CURB, OR 2' MIN TO BACK OF SIDEWALK, OR WHEN NO CURB, 4' MAX. OUTSIDE THE CLEAR ZONE.
5. INSTALL DRAIN VALVE AT BUILDING INLET.
6. COORDIANTE HOSE CONNECTION W/AHJ.



4 FP1.1 FIRE DEPARTMENT REMOTE SIAMESE CONNECTION

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

GENERAL NOTES

A. PROVIDE ALTERATIONS TO THE EXISTING FIRE PROTECTION SYSTEM AS REQUIRED TO ACCOMMODATE THE NEW ADDITION AND THE RENOVATED FLOOR PLAN/CEILINGS IN THE EXISTING BUILDING. PROVIDE A COMPLETE WET PIPE SYSTEM INCLUDING NEW MAINS, BRANCHES, HEADS, VALVES, AND ACCESSORIES AS REQUIRED. RE-USE EXISTING SYSTEM EQUIPMENT WHERE APPLICABLE IN THE EXISTING BUILDING. REFER TO THE ARCHITECTURAL REFLECTIVE CEILING PLAN. THE FIRE PROTECTION SYSTEM SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS, RECOMMENDATIONS, AND PER REQUIREMENTS OF THE STATE BUILDING CODE, LOCAL FIRE DEPARTMENT, AND ALL FEDERAL, STATE, AND LOCAL AUTHORITIES, NFPA, AND FACTORY MUTUAL.

SHEET NOTES

F1 AREA TO BE PROTECTED AS LIGHT HAZARD OCCUPANCY IN ACCORDANCE WITH NFPA 13.

F2 AREA TO BE PROTECTED AS ORDINARY HAZARD GROUP 1 OCCUPANCY IN ACCORDANCE WITH NFPA 13.

F3 AREA TO BE PROTECTED AS ORDINARY HAZARD GROUP 2 OCCUPANCY IN ACCORDANCE WITH NFPA 13.

F4 MODIFY EXISTING FIRE SPRINKLER PIPING AND SPRINKLER HEAD LOCATIONS FOR NEW WALL LAYOUT.

F5 DUE TO THE LIMITED SPACE AT CEILING LEVEL. THE CONTRACTOR AND HIS FIRE SPRINKLER SUB-CONTRACTOR ARE RESPONSIBLE TO CAREFULLY COORDINATE FIRE SPRINKLER PIPING AND HEAD LOCATION WITH CEILING MOUNTED STAGE RIGGING SYSTEM INSTALLATION. EQUIPMENT IS NOT INDICATED ON THIS SHEET. REFER TO APPROVED VENDOR FOR DETAILS.

F6 STAGE OPENING. PROVIDE NFPA 13 APPROPRIATE FIRE SPRINKLER COVERAGE AND SPACING AT STAGE OPENING.

01 F7 6" FIRE WATER SUPPLY DOWN. REFER TO CIVIL SITE PLAN FOR CONTINUATION.

F8 4" FIRE WATER SUPPLY DOWN. CONTINUE PIPING BELOW GRADE TO REMOTE FIRE DEPARTMENT CONNECTION (FDC). LOCATION FDC WITH IN 100 FEET OF FIRE HYDRANT. REFER TO CIVIL SITE PLAN.

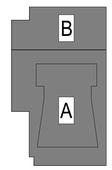
F9 6" DOUBLE CHECK VALVE ASSEMBLY BACKFLOW PREVENTER.

F10 WET VALVE ZONE RISERS. SIZE AND QUANTITY BY DESIGNER, PER FIRE CODE AND NFPA 13.

F11 WET STANDPIPE.

F12 FDC WATER SUPPLY.

KEY PLAN



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BRENT D. HOWARD
108649
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PROFESSIONAL ENGINEER
08/19/2024
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LEVEL 01 - FIRE PROTECTION PLAN

FP1.1

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GENERAL PLUMBING NOTES

1.1 GENERAL PLUMBING NOTES

A. THESE NOTES SHALL BE GENERALLY APPLIED TO ALL PLUMBING DRAWINGS. AS THEY ARE GENERAL IN NATURE, THEY MAY NOT BE SPECIFICALLY CALLED OUT ON THE PLANS. REFERENCE THE INDIVIDUAL DRAWINGS AS WELL AS DIVISION 22 SPECIFICATIONS FOR ADDITIONAL CONTRACTUAL REQUIREMENTS.

B. SHOULD ANY CONFLICT OCCUR BETWEEN ANY PORTIONS OF THE CONTRACT DOCUMENTS (DRAWINGS AND SPECIFICATIONS), THE CONTRACTOR IS DEEMED TO HAVE BASED THEIR BID/PRICE ON THE MORE EXPENSIVE MATERIAL, EQUIPMENT, PRODUCT OR WORK, UNLESS THEY HAVE REQUESTED AND OBTAINED A WRITTEN CLARIFICATION OR DECISION IN REGARD TO THE CONFLICT FROM THE ARCHITECT/ENGINEER.

C. DRAWINGS AND MEASUREMENTS:
1. THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL SCOPE OF THE WORK I.E., ARRANGEMENT OF SYSTEMS AND EQUIPMENT, EXCEPT WHEN THEY HAVE BEEN SPECIFICALLY DIMENSIONED OR DETAILED.
2. PLUMBING PLANS ARE INTENDED TO SHOW SIZE, CAPACITY, APPROXIMATE LOCATION, DIRECTION, AND GENERAL RELATIONSHIP OF ONE WORK TRADE TO ANOTHER.
3. COORDINATION: THE PLUMBING DESIGN SHALL BE COORDINATED WITH ALL OTHER ASPECTS OF THE BUILDING. TO THAT END, THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL AND CIVIL DRAWINGS WHERE AVAILABLE, AS WELL AS PHYSICALLY OBSERVING FIELD CONDITIONS BEFORE PERFORMING ANY WORK. EXTRAS WILL NOT BE PAID TO MOVE PIPING DUE TO CONFLICTS ARISING FROM LACK OF COORDINATION.
   a. REFER TO THE ARCHITECTURAL DRAWINGS FOR BUILDING ELEVATIONS, CEILING DETAILS, PARTITIONS, AND OCCUPANCIES.
   b. REFER TO STRUCTURAL DRAWINGS TO COORDINATE PIPING LAYOUT WITH STRUCTURAL ELEMENTS OF THE BUILDING.
   c. REFER TO THE FIRE PROTECTION DRAWINGS AND MECHANICAL DRAWINGS TO ASSESS THE CONGESTION ABOVE CEILINGS. THE PLUMBING CONTRACTOR SHALL SPECIFICALLY BE CONSCIOUS OF ANY HORIZONTAL MECHANICAL EQUIPMENT LOCATIONS AS WELL AS THEIR CLEAR SERVICE SPACE REQUIREMENTS IN ADDITION TO ANY DUCTWORK OR HYDRONIC PIPING.
   d. CONTRACT DRAWINGS SHALL ONLY SERVE TO SHOW THE GENERAL ARRANGEMENT OF EQUIPMENT AND STRUCTURE. SUCH DRAWINGS SHALL NOT BE CONSIDERED A SUBSTITUTE FOR FIELD VERIFICATION OF CONDITIONS. COORDINATION SHALL OCCUR PRIOR TO FABRICATION, PURCHASE, AND/OR INSTALLATION OF ALL WORK. DISCUSS, COORDINATE AND COOPERATE WITH OTHER TRADES AND COORDINATE THE WORK WITH THEIRS. COORDINATE CEILING CAVITY SPACE CAREFULLY WITH OTHER TRADES. BRING ANY CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER.
   e. AS THE DRAWINGS ARE OF SMALL SCALE, IT IS NOT POSSIBLE TO SHOW ALL NECESSARY OFFSETS, FITTINGS, AND ACCESSORIES. OBTAIN EXACT LOCATIONS, FIELD MEASUREMENTS, ETC., AT THE SITE PRIOR TO THE FABRICATION OF ANY MATERIAL OR ORDERING OF EQUIPMENT.
4. THE DESIGN (DRAWINGS AND SPECIFICATIONS) ARE BASED ON THE CHARACTERISTICS OF THE EQUIPMENT SCHEDULED / SPECIFIED. ALL CHANGES REQUIRED BY THE USE OF OTHER MANUFACTURERS (INCLUDING MANUFACTURERS THAT ARE LISTED IN THE SPECIFICATIONS) SHALL BE MADE BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
   a. THESE CHANGES SHALL INCLUDE, BUT NOT BE LIMITED TO REVISIONS TO FOUNDATIONS, ELECTRICAL CHANGES, SPACE REQUIRED FOR PLACEMENT OF EQUIPMENT, EQUIPMENT BASES, PIPING, CONTROLS, WIRING, WALL OR BUILDING OPENINGS, SERVICE ACCESS REQUIREMENTS, PIPING AND STRUCTURAL MODIFICATIONS.

D. REFER TO THE CODE PLANS FOR FIRE AND/OR SMOKE CONSTRUCTION RATINGS. MAINTAIN INDICATED FIRE AND/OR SMOKE RATING OF WALLS, PARTITIONS, CEILINGS, AND FLOORS AT PIPE PENETRATIONS. SEAL PIPE PENETRATIONS WITH FIRESTOP MATERIALS. REFER TO DIVISION 07 SECTIONS PENETRATION FIRESTOPPING AND JOINT FIRESTOPPING FOR THROUGH-PENETRATION FIRESTOP ASSEMBLY PRODUCT SPECIFICATIONS. INSTALLATION OF FIRESTOP MATERIALS IS SPECIFIED AS WORK OF DIVISION 22.

E. WORK SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE 2018 INTERNATIONAL PLUMBING CODE, LOCAL AMENDMENTS, LAWS AND GOVERNING BODIES. WHERE THE PLANS AND/OR SPECIFICATIONS EXCEED THE GOVERNING CODE REQUIREMENTS, THE PLANS AND SPECIFICATIONS WILL GOVERN.

F. EXTERIOR EXPOSED GAS PIPING SHALL BE PAINTED IN ACCORDANCE WITH DIVISION 09. PAINT TYPE AND COLOR SHALL BE AS SPECIFIED IN DIVISION 09.

G. PROVIDE COORDINATION DRAWINGS WHERE REQUIRED BY THE SPECIFICATIONS. RFIs RELATED TO COORDINATION ITEMS WILL NOT BE REVIEWED UNLESS COORDINATION DRAWINGS HAVE BEEN SUBMITTED.

H. REFER TO THE PLUMBING FIXTURE SCHEDULE FOR NON-ACCESSIBLE PLUMBING FIXTURE MOUNTING HEIGHTS. COORDINATE WITH THE ARCHITECTURAL PLANS FOR THE MOUNTING HEIGHT OF ACCESSIBLE PLUMBING FIXTURES.

I. COORDINATE ALL UNDERGROUND PIPING (SANITARY, WASTE, VENT & STORM DRAINAGE) WITH STRUCTURAL FOUNDATIONS, SITE UTILITIES SERVICES, AND BUILDING SERVICES PIPING. OFFSET UNDERGROUND PIPING TO AVOID FOUNDATION PENETRATIONS. WHERE IT IS IMPOSSIBLE TO AVOID FOUNDATIONS, SLEEVE PIPE PENETRATIONS AS INDICATED IN STRUCTURAL DRAWINGS AND SPECIFICATIONS WHEN APPLICABLE. CONTACT THE ENGINEER WHEN NO SLEEVE INFORMATION IS PROVIDED OR CONDITIONS DIFFER FROM STRUCTURAL DRAWINGS.

J. ALL MATERIALS EXPOSED WITHIN AN AIR PLENUM SHALL BE NONCOMBUSTIBLE OR HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPMENT INDEX OF NOT MORE THAN 50.

K. WHERE LOCATIONS OF ANY EXISTING UTILITY SERVICES ARE SHOWN, THEY SHALL BE CONSIDERED AS 'APPROXIMATE'. EXACT LOCATIONS OF ANY EXISTING UTILITY SERVICES SHALL BE CONFIRMED BY THE CONTRACTOR PRIOR TO BEGINNING ANY CONSTRUCTION OR EXCAVATION. COORDINATE UTILITY SERVICE CONNECTION POINTS WITH EXTERIOR UNDERGROUND AND OVERHEAD UTILITIES AND SERVICES. COMPLY WITH REQUIREMENTS OF GOVERNING REGULATIONS, FRANCHISED SERVICE COMPANIES, AND CONTROLLING AGENCIES. THE CONTRACTOR IS RESPONSIBLE FOR AND SHALL BEAR ALL COSTS ASSOCIATED WITH DAMAGE TO ANY EXISTING UTILITIES DURING CONSTRUCTION.

L. EQUIPMENT LOCATION AND ACCESS
1. LOCATE EQUIPMENT WHICH MUST BE SERVICED, OPERATED, OR MAINTAINED IN ACCESSIBLE LOCATIONS. EQUIPMENT SHALL INCLUDE BUT NOT BE LIMITED TO WATER HEATERS, WATER CONDITIONING EQUIPMENT, VALVES, TRAPS, CLEANOUTS, MOTORS, CONTROLLERS, AND LOW POINT DRAIN LOCATIONS. MINOR DEVIATIONS FROM THE CONTRACT DRAWINGS MAY BE ALLOWED TO PROVIDE BETTER ACCESSIBILITY UNDER THE CONDITION THE CHANGES ARE REVIEWED & APPROVED BY THE ARCHITECT/ENGINEER PRIOR TO MAKING THE CHANGE.
2. INACCESSIBLE INSTALLATION: WHERE THE ENGINEER DETERMINES THAT THE CONTRACTOR HAS INSTALLED EQUIPMENT SUCH THAT IT IS NOT CONVENIENTLY ACCESSIBLE FOR OPERATION AND/OR MAINTENANCE, THE EQUIPMENT WILL BE REMOVED AND REINSTALLED OR REMEDIAL ACTION SHALL BE PERFORMED AS SO AS TO MAKE THE INSTALLATION CONVENIENTLY ACCESSIBLE AT NO ADDITIONAL COST TO THE OWNER. THE TERM "CONVENIENTLY ACCESSIBLE" IS DEFINED AS CAPABLE OF BEING REACHED WITHOUT THE USE OF LADDERS, OR WITHOUT CLIMBING OR CRAWLING UNDER OR OVER OBSTACLES SUCH AS ELECTRICAL CONDUIT, MOTORS, FANS, PUMPS, BELT GUARDS, TRANSFORMERS, HIGH VOLTAGE LINES, PIPING, AND DUCTWORK.
   a. EXCEPTION: ACCESSING VALVES FROM A LADDER IS ACCEPTABLE WHEN INSTALLED AS OUTLINED IN OTHER PARAGRAPHS OF THESE NOTES. ACCESSING POINT-OF-USE WATER HEATER(S) THAT ARE LOCATED ABOVE A CEILING WHERE INDICATED AND DETAILED ON THE DRAWINGS.

M. PIPE RUNS SHALL BE INSTALLED TO AVOID INTERFERENCE WITH OTHER WORKTRADES. INSTALL PIPING AT RIGHT ANGLES TO OR PARALLEL WITH BUILDING WALLS OR COLUMN CENTER LINES. DIAGONAL PIPING RUNS ARE PROHIBITED UNLESS SPECIFICALLY INDICATED OTHERWISE. LOCATE GROUPS OF PIPES PARALLEL TO EACH OTHER. SPACE PIPING INCLUDING ANY INSULATION TO PROVIDE A 1-INCH MINIMUM CLEARANCE BETWEEN ADJACENT PIPING OR OTHER SURFACES. SPACE PIPING TO PERMIT VALVE SERVICING OR REPLACEMENT.

N. IN AREAS WHERE PIPING IS INSTALLED ABOVE A CEILING AND THERE IS CONGESTED CEILING SPACE, INSTALL THE PIPING AS HIGH AS POSSIBLE WHILE GIVING CONSIDERATION OF OTHER TRADES AND THE SERVICEABILITY OF THE SYSTEMS. WHERE VALVES ARE SHOWN, THEY SHALL BE INSTALLED NO MORE THAN 18-INCHES ABOVE THE CEILINGS. IF IT IS NECESSARY TO INSTALL OFFSET(S) IN THE PIPING SO THE VALVES ARE INSTALLED NO MORE THAN 18-INCHES ABOVE THE CEILINGS, INSTALL A DRAIN VALVE WITH HOSE END CONNECTION FOR EACH SYSTEM ADJACENT TO THE ISOLATION VALVE(S). IF THERE IS AN OFFSET UP ON THE OUTLET SIDE OF THE ISOLATION VALVE(S), THEN PROVIDE A SECOND DRAIN VALVE AT THAT LOCATION.

O. IN AREAS WHERE PIPING IS EXPOSED, INSTALL THE PIPING AS HIGH AS POSSIBLE. IF PRACTICABLE, INSTALL PIPING TIGHT TO STRUCTURE AND/OR STACKED ALONG AND TIGHT TO WALLS. IF VALVES ARE SHOWN IN THE EXPOSED PIPING, INSTALL AN OFFSET(S) IN THE PIPING SO THE VALVES ARE INSTALLED NO MORE THAN 10'-00" AFF. INSTALL A DRAIN VALVE WITH HOSE END CONNECTION FOR EACH SYSTEM ADJACENT TO THE ISOLATION VALVE(S). IF THERE IS AN OFFSET UP ON THE OUTLET SIDE OF THE ISOLATION VALVE(S), THEN PROVIDE A SECOND DRAIN VALVE AT THAT LOCATION.

P. PLUMBING EQUIPMENT, PIPING, OR ACCESSORIES SHOULD NOT BE LOCATED WITHIN ELECTRICAL EQUIPMENT ROOMS UNLESS INDICATED ON THE DRAWINGS. WHERE PIPING AND EQUIPMENT ARE INDICATED TO BE INSTALLED WITHIN ELECTRICAL EQUIPMENT ROOMS, MAINTAIN THE ELECTRICAL CODE REQUIRED WORKING AND DEDICATED SPACES.

Q. PLUMBING EQUIPMENT, PIPING, OR ACCESSORIES NOT USED IN CONNECTION WITH THE OPERATION OF THE ELEVATOR SHALL NOT BE INSTALLED IN ANY HOSTWAY, MACHINERY SPACE, MACHINE ROOM, CONTROL SPACE OR CONTROL ROOM.

R. PLUMBING EQUIPMENT, PIPING, OR ACCESSORIES SHALL NOT PASS THRU OR OVER ANY SERVER (COMM / IT) ROOMS.

S. RUN CW, HW AND HWC LINES FULL SIZE THE ENTIRE LENGTH OF THE PLUMBING CHASE. BRANCH OFF TO INDIVIDUAL PLUMBING FIXTURES WITH PIPE SIZES AS SHOWN ON THE PLUMBING FIXTURE CONNECTION SCHEDULE. REFER TO PLUMBING RISER / ISOMETRIC DIAGRAMS FOR PIPING SIZES NOT SHOWN ON THE PLANS OR PLUMBING FIXTURE CONNECTION SCHEDULE.

1. INSTALL HANGERS FOR METALLIC PIPE AND TUBING NOT TO EXCEED THE MAXIMUM HORIZONTAL AND VERTICAL SPACING AND MINIMUM HANGER ROD DIAMETERS TO COMPLY WITH THE INTERNATIONAL PLUMBING CODE (IPC), MSS SP-58 STANDARD PRACTICE FOR PIPE HANGERS AND SUPPORTS, LOCALLY ENFORCED CODES AND AHJ REQUIREMENTS, WHICHEVER ARE MOST STRINGENT. WHERE CONFLICTS ARISE BETWEEN THE PLUMBING CODE REQUIREMENTS, MSS SP-58 AND THE PROJECT SPECIFICATIONS, THE MOST RESTRICTIVE OR THE REQUIREMENT THAT SPECIFIES SUPPORTS WITH HIGHEST LOAD RATING OR SHORTEST HANGER SPACING SHALL APPLY
   WHERE HANGER SPACING DOES NOT CORRESPOND WITH JOIST OR RIB SPACING, USE STRUCTURAL STEEL CHANNELS SECURED DIRECTLY TO JOIST AND RIB STRUCTURE TO MEET THE REQUIRED HANGER SPACING. THEN, SUSPEND THE EQUIPMENT AND PIPING FROM THE CHANNELS. HOLES WILL NOT BE DRILLED OR BURNED IN STRUCTURAL STEEL WITHOUT PRIOR WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD.
2. PROVIDE ADDITIONAL SUPPORTS AT VALVES, STRAINERS, INLINE PUMPS AND OTHER HEAVY COMPONENTS. PROVIDE SUPPORT WITHIN ONE FOOT OF EACH PIPE ELBOW.
3. INSTALL HANGERS FOR PLASTIC, FRP OR GLASS PIPING WITH THE MAXIMUM HORIZONTAL SPACING AND MINIMUM ROD DIAMETERS, TO COMPLY WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS, LOCALLY ENFORCED CODES, AND AUTHORITIES HAVING JURISDICTION REQUIREMENTS, WHICHEVER ARE MOST STRINGENT.
4. SUPPORT VERTICAL RUNS OF PLASTIC, FRP OR GLASS PIPING TO COMPLY WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS, LOCALLY ENFORCED CODES, AND AUTHORITIES HAVING JURISDICTION REQUIREMENTS, WHICHEVER ARE MOST STRINGENT.
5. THE USE OF CHAINS, WIRE, CABLE OR STRAP HANGERS ARE NOT ALLOWED FOR PIPE SUPPORTS.
6. REFER TO GENERAL SEISMIC NOTES FOR ADDITIONAL REQUIREMENTS FOR PROJECTS SUBJECTED TO SEISMIC DESIGN REQUIREMENTS.

T. PROVIDE SHUT OFF VALVES FOR ALL BRANCH WATER PIPING WHERE THE BRANCH CONNECTS TO THE MAIN. LOCATE / ORIENT THE VALVES TO PERMIT PROPER OPERATION AND ACCESS FOR MAINTENANCE. GENERALLY, LOCATE VALVE STEMS IN OVERHEAD PIPING IN HORIZONTAL POSITION. PROVIDE A UNION ADJACENT TO ONE END OF ALL THREADED END VALVES. AS A RULE, THE VALVES SHALL BE INSTALLED NO MORE THAN 18-INCHES ABOVE AN ACCESSIBLE CEILING. IF THE CEILING IS NOT ACCESSIBLE, PROVIDE A MINIMUM 18" X 18" SIZE LOCKABLE ACCESS PANEL TO ACCESS TO SERVICE AND/OR REPLACE THE VALVES.
1. ANY BRANCH PIPING FROM MAIN SERVING MORE THAN ONE PLUMBING FIXTURE SHALL HAVE SHUT-OFF VALVES.

U. SANITARY DRAINAGE PIPING SHALL SLOPED IN ACCORDANCE WITH THE TABLE BELOW FROM THE 2018 INTERNATIONAL PLUMBING CODE.

PIPE SIZE (IN)	IPC 2018 MINIMUM SLOPE (INCH PER LF)
< = 2.5	1/4
3 TO 6	1/8
> = 8	1/16

V. GREASE WASTE DRAINAGE PIPING UPSTREAM OF A GREASE INTERCEPTOR SHALL SLOPE AT NOT LESS THAN 1/4 INCH PER FOOT.

W. CONDENSATE SHALL NOT DISCHARGE INTO A STREET, ALLEY OR ONTO GRADE. CONDENSATE DRAINS FROM ALL COOLING COILS AND EVAPORATORS SHALL BE CONVEYED FROM THE DRAIN PAN OUTLET TO A DRYWELL AS SHOWN ON THE PLANS.

X. EACH PLUMBING VENT SHALL TERMINATE NOT LESS THAN 10 FEET FROM, OR NOT LESS THAN 3-FEET ABOVE, AN OPENABLE WINDOW, DOOR, OPENING, AIR INTAKE, OR VENT SHAFT, OR NOT LESS THAN 3-FEET IN EVERY DIRECTION FROM A LOT LINE, ALLEY AND STREET EXCEPTED. WHEN INSTALLED ABOVE THE ROOF. THE PLUMBING VENTS SHALL BE LOCATED 18-INCHES ABOVE THE ROOF LEVEL FOR HOSPITAL APPLICATIONS, PLUMBING VENT PIPING SHALL TERMINATE NOT LESS THAN TWENTY-FIVE (25) FEET FROM ANY AIR INTAKE OR VENT SHAFT.

Y. CLEANOUTS SHALL NOT BE LOCATED ABOVE CEILINGS FOR WASTE SYSTEMS. IN AREAS REQUIRING WASTE DRAIN PIPING UNDER SUPPORTED STRUCTURAL FLOOR SLABS, THE CLEANOUTS SHALL BE ACCESSED AT LEAST 6-INCHES ABOVE THE FLOOD LEVEL OF THE HIGHEST FIXTURE SERVED. CLEANOUT RISER(S) SHALL BE PROPERLY PLUGGED AND PAINTED TO MATCH THE ADJACENT SURFACE.

Z. PROVIDE A BARRIER TYPE FLOOR DRAIN TRAP SEAL PROTECTION DEVICE (AS DEFINED BY THE ASSE 1072 STANDARD) EQUAL TO 'SURESEAL' BRAND.

AA. WATER HAMMER ARRESTORS WILL BE INSTALLED IN WATER PIPING ACCORDING TO PDI-WH 201. WATER HAMMER ARRESTERS SHALL BE INSTALLED WITH INLET ISOLATION VALVES TO ALLOW FOR MAINTENANCE.

BB. THE DETAILS SHOWN ON THE DETAIL SHEETS APPLY TO ALL PLUMBING PLAN SHEETS. THE DETAILS ARE TO BE FOLLOWED FOR THE INSTALLATION OF ALL COMPONENTS AND EQUIPMENT SHOWN.

01 CC. PROVIDE VOIDFORM - PLUMBING VOID SYSTEM TO SUPPORT PLUMBING PIPE SUPPORT BELOW STRUCTURAL SLABS ON GRADE WHERE GEOTECHNICAL REPORT INDICATES AND RECOMMENDS EXPANSIVE SOIL MOVEMENT UNDER THE PROJECT BUILDING.
1. SYSTEM STRUCTURE:
   a. PROVIDES A DIMENSIONALLY STABLE UNDERGROUND VOID SPACE THAT IS INDEPENDENT FROM THE OVERHEAD STRUCTURAL SLAB. THE SUBTERRANEAN SYSTEM SHALL SUPPORT THE WEIGHT OF SUSPENDED LATERAL PIPES AND TYPICAL BACKFILL MATERIAL THROUGHOUT THE CONSTRUCTION PROCESS.
   b. THE SYSTEM SHALL BE DESIGNED TO TEMPORARILY POSITION AND SUSPEND THE LATERAL PIPES AT THE SPECIFIED HEIGHT AND SLOPE UNTIL PIPES ARE PERMANENTLY ANCHORED TO THE OVERHEAD STRUCTURAL SLAB BY THE SECURING HANGER (CLEVIS) SYSTEM. THE OPEN, UNDERGROUND SYSTEM WILL THEN REMAIN INDEPENDENT FROM THE SECURING HANGERS.
   c. THE OPEN SPACE OF THE SYSTEM BENEATH THE STRUCTURAL SLAB IS DESIGNED TO RECEIVE THE INFILL OF VERTICAL EXPANSION FROM THE UNDERLYING SOILS. IF VERTICAL PRESSURE IS APPLIED TO THE EDGES OF THE SYSTEM IN CONTACT WITH THE SOIL THE UPLIFTING SOIL PRESSURE WILL APPLY EXCLUSIVELY TO THE SYSTEM AND NOT THE PIPES. THEREFORE, THE SYSTEM SHALL BE DESIGNED TO MOVE SEPARATELY AND INDEPENDENTLY OF THE LATERAL PIPES.

SHEET INDEX

GENERAL SYMBOLS

	POINT OF DISCONNECT - DEMOLITION REMOVED FROM EXISTING
	POINT OF CONNECTION - NEW CONNECTS TO EXISTING
	AREA NOT IN CONTRACT

PIPING ANNOTATIONS

SCHEMATIC	3D	DESCRIPTION
		EXISTING TO REMAIN - (E) or EXIST
		ITEM TO BE DEMOLISHED - (D) or DEMO
18" CHWS	18" CHWS	PIPE SIZE TAG (DIAMETER WITH SYSTEM NAME)
		ABOVE GROUND PIPING
		BELOW GROUND PIPING
1/8" / 12" SLOPE IE: -93' - 1"	1/8" / 12" SLOPE IE: -93' - 8"	PIPE SLOPE PIPE INVERT ELEVATION
DDC-xx		MECHANICAL EQUIPMENT TAG MECHANICAL EQUIPMENT CLEARANCE

PLUMBING SYMBOLS

SCHEMATIC	3D	DESCRIPTION
		DOMESTIC COLD WATER (LINETYPE)
		DOMESTIC HOT WATER (LINETYPE)
		DOMESTIC HOT WATER RECIRC (LINETYPE)
NV	NV	LAB NITROGEN VENT
AV	AV	ACID VENT
GV	GV	GREASE VENT
OV	OV	OIL VENT
IW	IW	INDIRECT WASTE
V	V	SANITARY VENT
CO	CO	CLEAN OUT
WCO	WCO	WALL CLEAN OUT
FCO	FCO	FLOOR CLEAN OUT
GCO	GCO	GRADE CLEAN OUT (DOUBLE CLEAN OUT) FLOOR DRAIN / FLOOR SINK
		ROOF DRAIN / OVERFLOW DRAIN
		DOWNSPOUT NOZZLE
		WALL HYDRANT
		HOSE BIBB
X		WATER HAMMER ARRESTER
AE		ANESTHESIA EVACUATOR
MA		MEDICAL COMPRESSED AIR OUTLET
DI		DEIONIZED WATER OUTLET
DS		DISTILLED WATER OUTLET
NG		NATURAL GAS OUTLET
N2		NITROGEN OUTLET
N2O		NITROUS OXIDE OUTLET
O2		OXYGEN OUTLET
VA		VACUUM INLET
XX		RISER TAG
8" RD 1,500 SF		ROOF DRAIN TAG
3" FS-2		PLUMBING FIXTURE TAG

PIPING VALVES AND FITTINGS

SCHEMATIC	3D	DESCRIPTION
		PIPE DROP
		PIPE RISE
		PIPE TEE DOWN
		PIPE TEE UP
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
		PIPE CAP
		PIPE ALIGNMENT GUIDE
		PIPE ANCHOR
		FLOW DIRECTION
		EXPANSION JOINT
		FLEXIBLE CONNECTION
		UNION
		DIRECTION OF PIPE PITCH
		AQUASTAT
		EXPANSION LOOP
		BALANCING VALVE
		BALANCING VALVE W/ METERING POINTS
		BALL VALVE
		BUTTERFLY VALVE
		CHECK VALVE
		STEAM TRAP
		GATE VALVE
		CIRCUIT SETTER
		MANUAL AIR VENT
		AUTOMATIC AIR VENT
		PLUG VALVE
		PRESSURE GAUGE
		SOLENOID VALVE
		ANGLE VALVE
		AUTOMATIC CONTROL VALVE 2-WAY
		AUTOMATIC CONTROL VALVE 3-WAY
		AUTOMATIC FLOW CONTROL VALVE
		STRAINER
PT		PRESSURE AND TEMPERATURE TEST PORT
		THERMOMETER
		PRESSURE REDUCING VALVE (WATER SYSTEMS) PRESSURE REGULATING VALVE (GAS SYSTEMS)
		RELIEF VALVE
		FLOW MEASURING DEVICE
		BACKFLOW PREVENTER
		UNION

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER
08/19/2024
TBPE FIRM REGISTRATION NUMBER P-1101

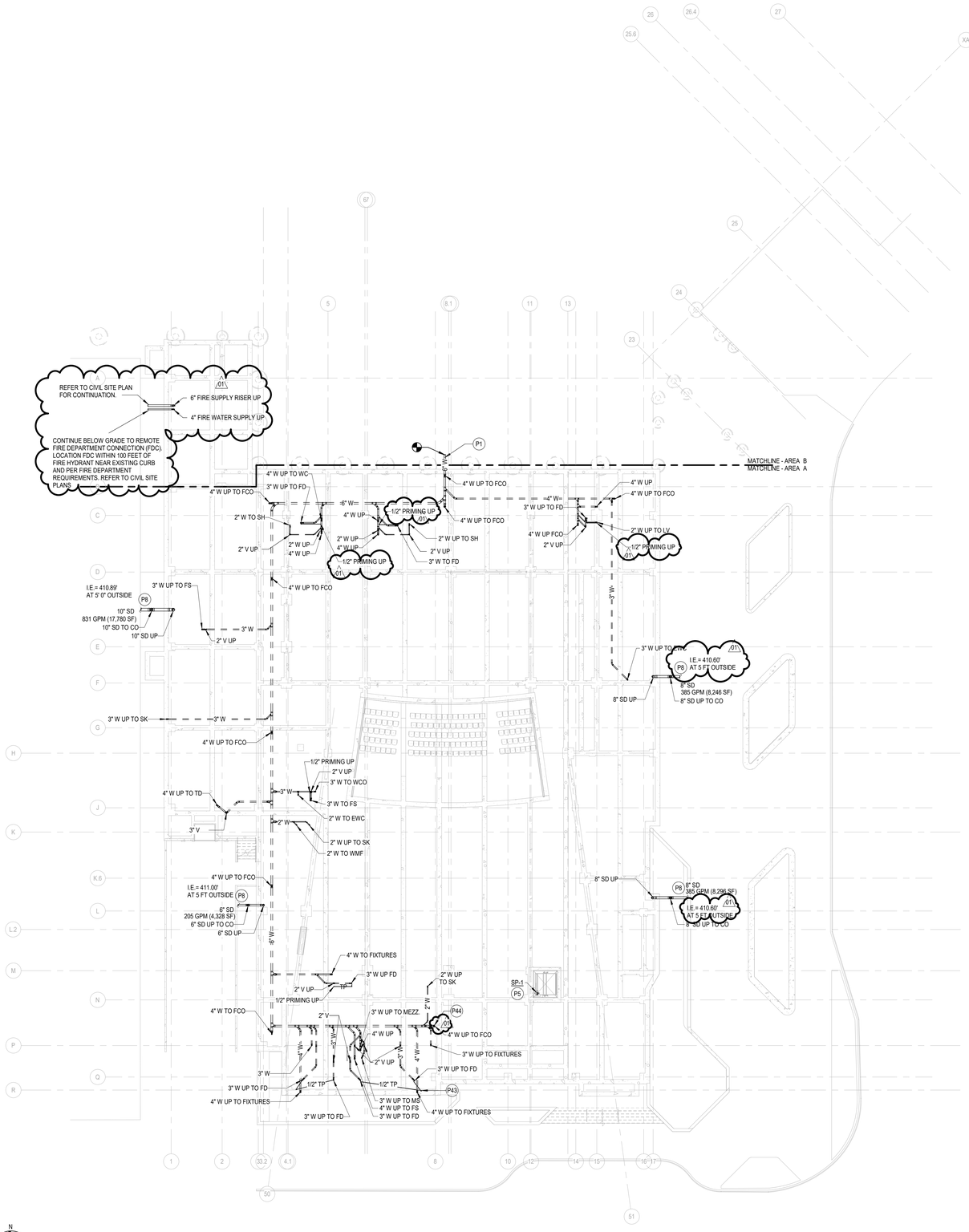
CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS
01 08/19/2024 ADDENDUM 01

39-23712-00

PLUMBING GENERAL NOTES & SYMBOLS

P0.1



N

OVERALL UNDERGROUND PLUMBING PLAN

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

PLUMBING GENERAL NOTES

A FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS P0.1 & P.02.

B BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING BY PHYSICAL EXCAVATION AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.

C THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES AND POINTS OF CONNECTION PRIOR TO BIDDING PROJECT.

D ALL UNDERGROUND SANITARY AND STORM PIPING SHALL BE SUPPORTED BY AN APPROVED SUSPENSION SYSTEM DESIGNED FOR VERTICAL EXPANSION FOR THE UNDERLYING SOIL.

SHEET NOTES

P1 CONNECT TO EXISTING 6" SANITARY LINE. INVERT AT 410.13'. BASED ON CIVIL FINISHED FLOOR ELEVATION OF 416.18' FIELD VERIFY.

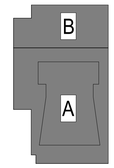
P5 PROVIDE SUMP PUMP FOR ELEVATOR SHAFT PIT AND DISCHARGE INTO FLOOR SINK.

P8 SEE CIVIL SHEETS FOR CONTINUATION.

P43 TWO (2) 1/2" PRIMING TUBING UP TO DEVICE.

P44 START INVERT ELEVATION OF 6" SANITARY LINE. INVERT AT 413.27'. BASED ON CIVIL FINISHED FLOOR ELEVATION OF 416.18'. FIELD VERIFY ALL INVERT PRIOR TO PERFORM ANY WORK.

KEY PLAN



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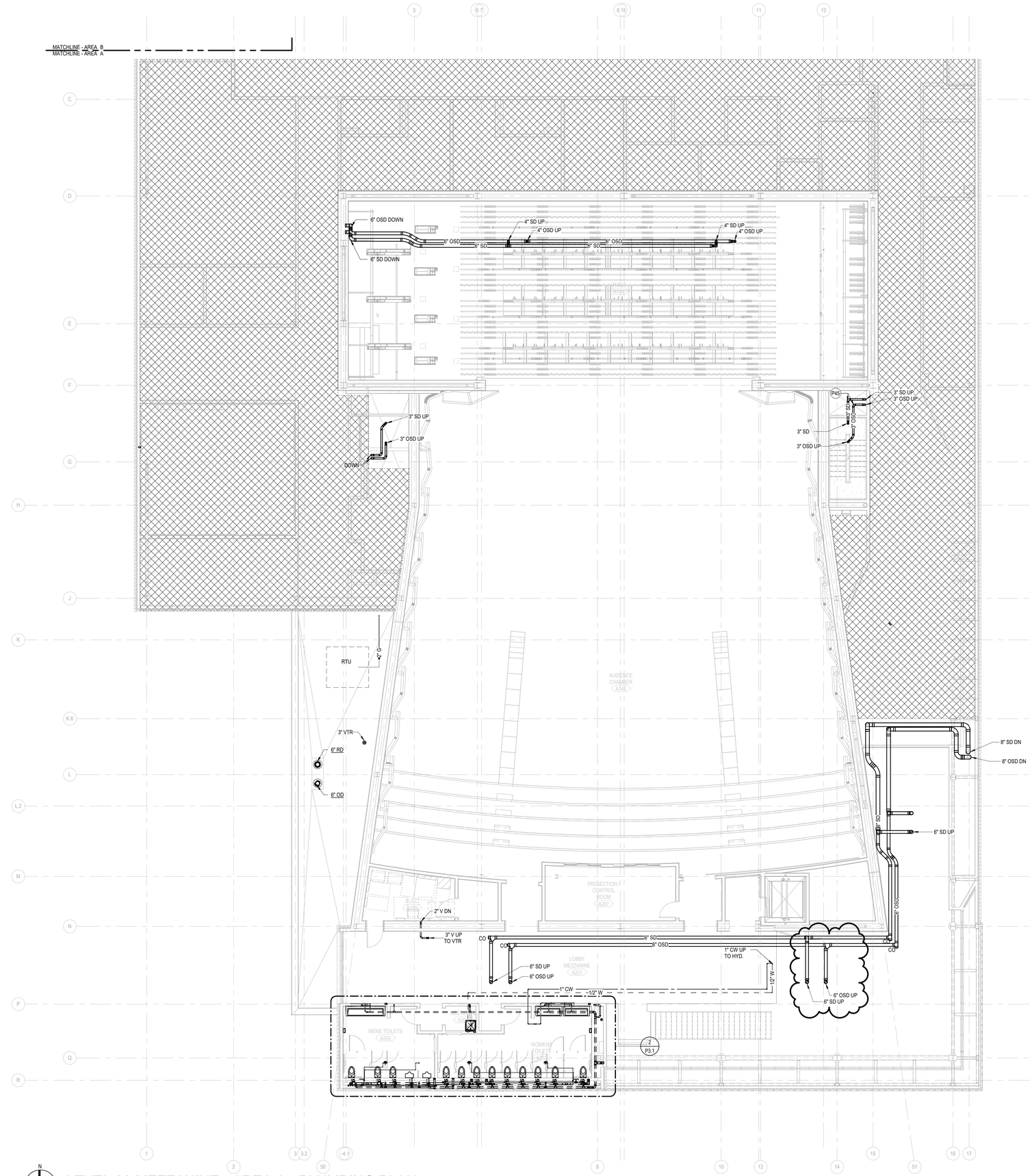
OVERALL UNDERGROUND PLUMBING PLAN

P2.1



LEVEL 02 MEZZANINE - AREA A - PLUMBING PLAN

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

PLUMBING GENERAL NOTES

A FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS P0.1 & P.02.

B BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING BY PHYSICAL EXCAVATION AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.

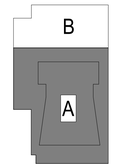
C THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES AND POINTS OF CONNECTION PRIOR TO BIDDING PROJECT.

D ALL UNDERGROUND SANITARY AND STORM PIPING SHALL BE SUPPORTED BY AN APPROVED SUSPENSION SYSTEM DESIGNED FOR VERTICAL EXPANSION FOR THE UNDERLYING SOIL.

SHEET NOTES

P45 PROVIDE CAST IRON PIPING IN RETURN AIR PLENUM.

KEY PLAN



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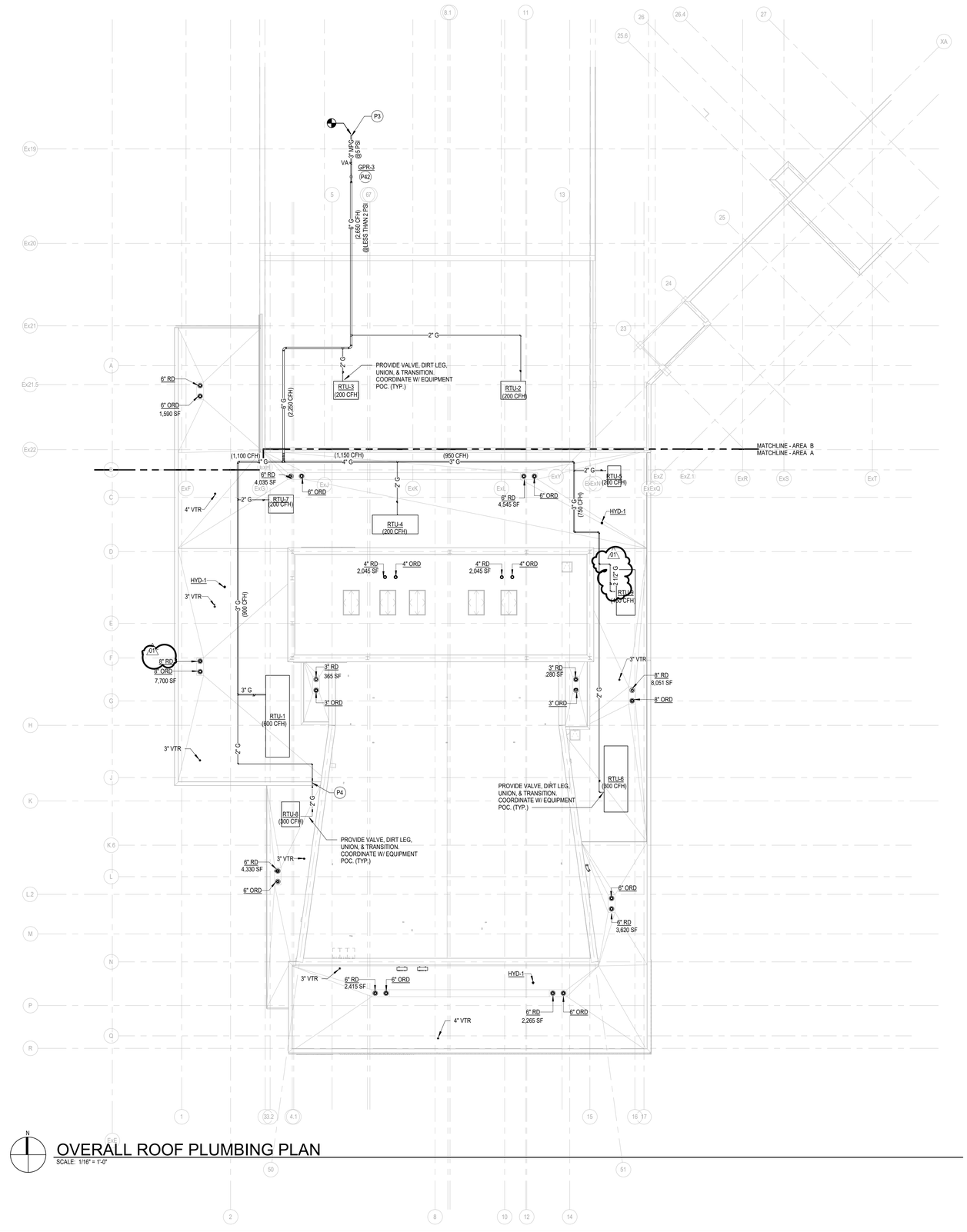
LEVEL 02 MEZZANINE - AREA A - PLUMBING PLAN

P2.2MA



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OVERALL ROOF PLUMBING PLAN

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

PLUMBING GENERAL NOTES

A FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS P0.1 & P.02.

B BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING BY PHYSICAL EXCAVATION AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.

C THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES AND POINTS OF CONNECTION PRIOR TO BIDDING PROJECT.

D ALL UNDERGROUND SANITARY AND STORM PIPING SHALL BE SUPPORTED BY AN APPROVED SUSPENSION SYSTEM DESIGNED FOR VERTICAL EXPANSION FOR THE UNDERLYING SOIL.

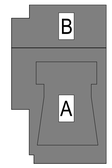
SHEET NOTES

P3 P.O.C. NEW 6" G LINE WITH SHUT-OFF VALVE AND GAS PRESSURE REGULATOR TO EXISTING MPG LINE ON EXISTING ROOF. VERIFY DOWNSTREAM EQUIPMENT PRESSURE REQUIREMENT WITH MANUFACTURER PRIOR SETTING REGULATOR MAXIMUM PRESSURE. FIELD VERIFY POINTS OF CONNECTION PRIOR TO INSTALLATION OF ANY PIPING.

P4 GAS PIPING UP AND OVER PARAPET. TYPICAL.

P42 SET OUTLET PSI TO EQUIPMENTS MANUFACTURER'S RECOMMENDED PSI

KEY PLAN



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TBPE FIRM REGISTRATION NUMBER P-1101

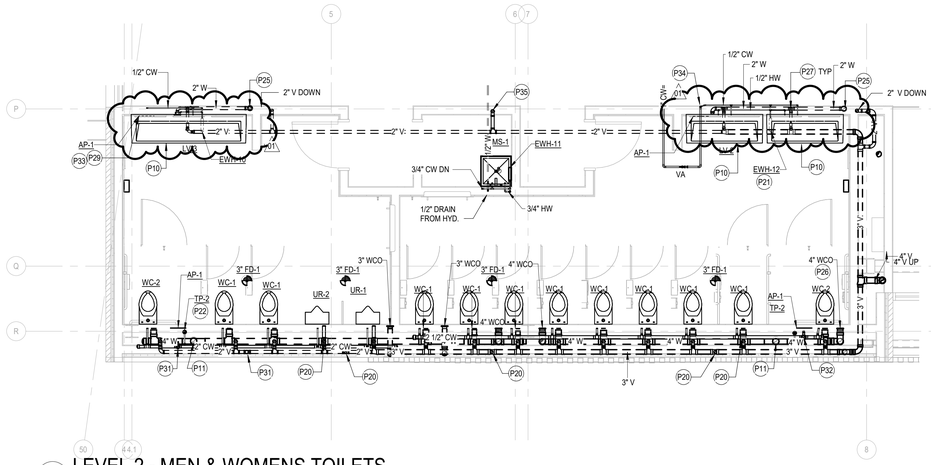
CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS
01 08/19/2024 ADDENDUM 01

39-23712-00

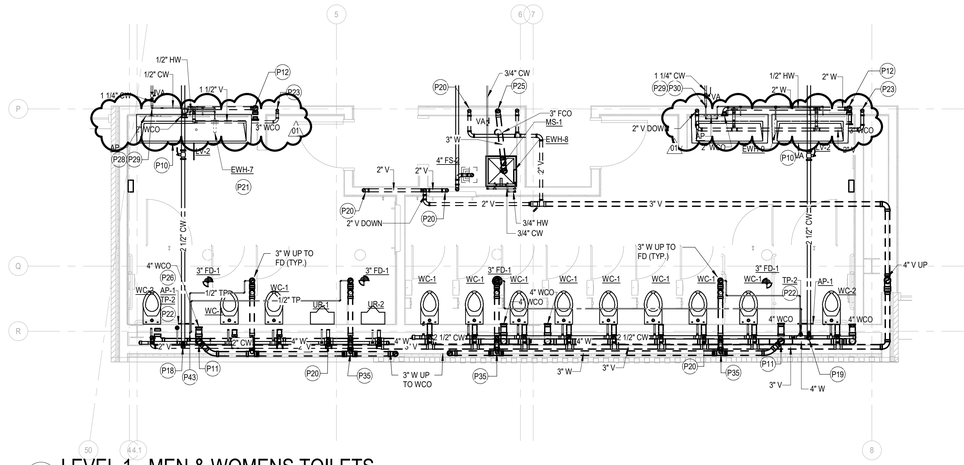
OVERALL ROOF PLUMBING PLAN

P2.3



2 P3.1 LEVEL 2 - MEN & WOMENS TOILETS

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



1 P3.1 LEVEL 1 - MEN & WOMENS TOILETS

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

PLUMBING GENERAL NOTES

A FOR SYMBOLS AND ABBREVIATIONS SEE DRAWINGS P0.1 & P.02.

B BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING BY PHYSICAL EXCAVATION AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.

C THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES AND POINTS OF CONNECTION PRIOR TO BIDDING PROJECT.

D ALL UNDERGROUND SANITARY AND STORM PIPING SHALL BE SUPPORTED BY AN APPROVED SUSPENSION SYSTEM DESIGNED FOR VERTICAL EXPANSION FOR THE UNDERLYING SOIL.

SHEET NOTES

P10 1/2" CW, 1/2" HW, 2" V EACH DRAIN AND FAUCET LOCATION.
P11 4" W UP.
P12 3" W UP.
P18 2" CW DOWN TO SHUTOFF VALVE BEHIND ACCESS PANEL. CONTINUE FULL-SIZED HORIZONTAL IN WALL.
P19 2-1/2" CW DOWN TO SHUTOFF VALVE BEHIND ACCESS PANEL. CONTINUE FULL-SIZED HORIZONTALLY IN WALL.
P20 2" VENT DOWN. TYPICAL.
P21 ELECTRIC WATER HEATER. INSTALL CONCEALED BEHIND LAVATORY APRON. ROUTE HW PIPING IN THE WALL. TYPICAL.
P22 TRAP PRIMER DEVICE ACCESSIBLE BEHIND ACCESS PANEL. CONTINUE 1/2" SUPPLY TUBING BELOW FLOOR DRAIN PRIMING CONNECTION. VALVED 3/4" CW
P23 2" VENT UP.
P25 3" W DOWN.
P26 4" WCO ABOVE WATER CLOSET RIM. TYPICAL.
P27 1-1/2" VENT DOWN. TYPICAL.
P28 3/4" UP AND DOWN.
P29 3/4" VALVE BEHIND ACCESS PANEL BELOW FIXTURE. TYPICAL.
P30 3/4" DOWN AND 1" UP.
P31 2" CW UP TO TO SHUTOFF VALVE BEHIND ACCESS PANEL.
P32 2-1/2" CW UP TO TO SHUTOFF VALVE BEHIND ACCESS PANEL.
P33 3/4" UP TO SHUTOFF VALVE BEHIND ACCESS PANEL.
P34 1" CW UP. BRANCH 3/4" TO SHUTOFF VALVE BEHIND ACCESS PANEL. CONTINUE 1" CW UP TO ROOF HYDRANT.
P35 2" VENT DOWN.
P43 TWO (2) 1/2" PRIMING TUBING UP TO DEVICE.

DLR GROUP
© DLR Group

STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER
08/19/2024
TBPE FIRM REGISTRATION NUMBER F-1101

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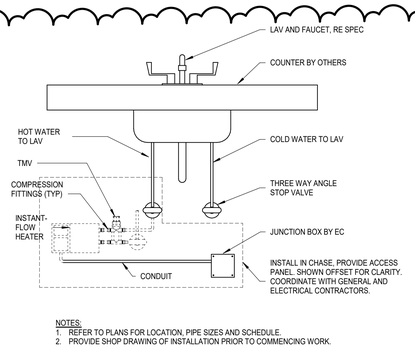
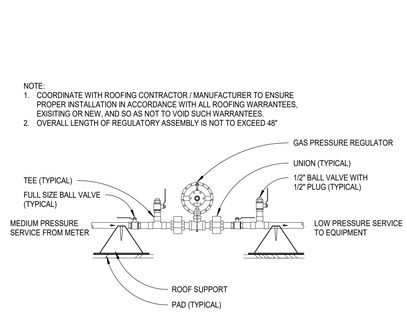
ENLARGED PLUMBING PLANS

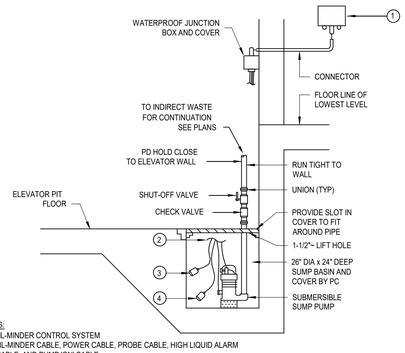
P3.1



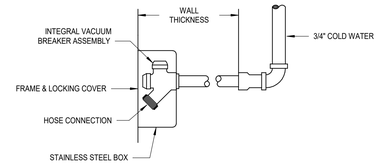
1 P5.1 INSTANTANEOUS WATER HEATER (SINGLE LAV)
NO SCALE



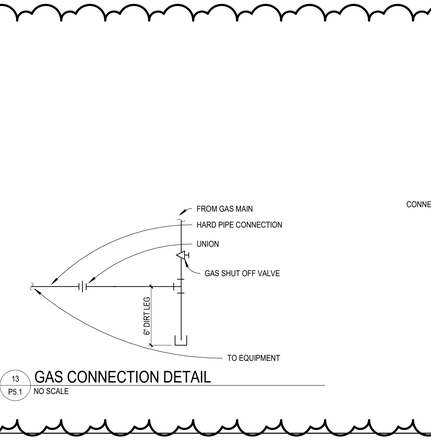
2 P5.1 GAS PRESSURE REGULATOR DETAIL
NO SCALE



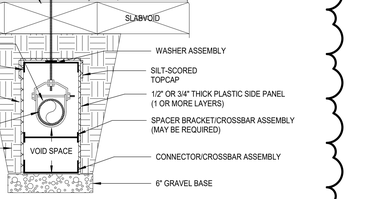
3 P5.1 ELEVATOR PIT SUMP PUMP DETAIL
NO SCALE



4 P5.1 FREEZE-PROOF HOSE BIBB DETAIL
NO SCALE



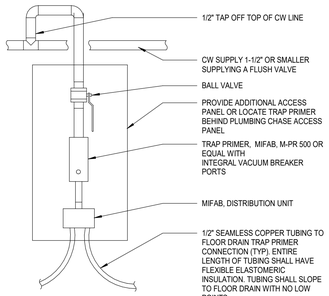
5 P5.1 Roof Mounted Freeze Proof Hydrant
NO SCALE



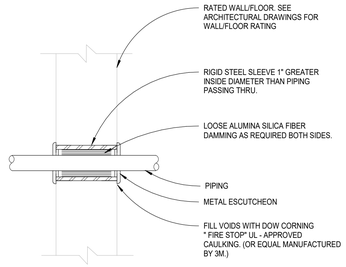
6 P5.1 REDUCED PRESSURE ZONE BACKFLOW PREVENTER ASSEMBLY
NO SCALE

7 P5.1 TANKLESS ELECTRIC WATER HEATER (MULTIPLE FIXTURES)
NO SCALE

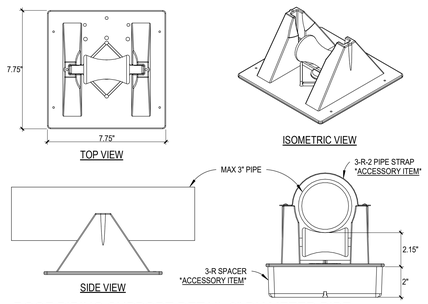
8 P5.1 WATER HAMMER ARRESTOR
SCALE: 1/8" = 1'-0"



9 P5.1 FLOOR DRAIN TRAP PRIMER DETAIL
NO SCALE



10 P5.1 PIPE THRU RATED WALL DETAIL
NO SCALE

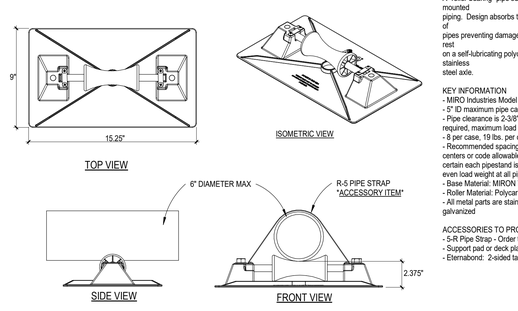


11 P5.1 ROOF PIPING SUPPORT DETAIL 3" DIAMETER PIPE OR LESS
NO SCALE

PRODUCT DESCRIPTION
A "roller-bearing" pipe support used to support roof-mounted pipes. Absorbs thermal expansion and contraction of pipes and prevents damage to the roof membrane. Pipes rest on a polycarbonate resin roller and a rod situated in a polycarbonate resin seat.

KEY INFORMATION
- MIRO Industries Model 1.5
- 3" ID maximum pipe capacity 3-3/4" OD maximum.
- Pipe clearance is 2-1/8", even load required, maximum load is 79 lbs.
- Recommended spacing is not to exceed 7 feet centers or code required spacing. Make certain each pipestand is properly elevated to even load weight at all pipestands.
- Base Material: MIRON TPC
- Axle and Roller Material: Polycarbonate

ACCESSORIES TO PROVIDE
- 3-R-2 pipe strap
- 3-R spacer
- Support pad or deck plate
- Elernabond: 2-sided tape



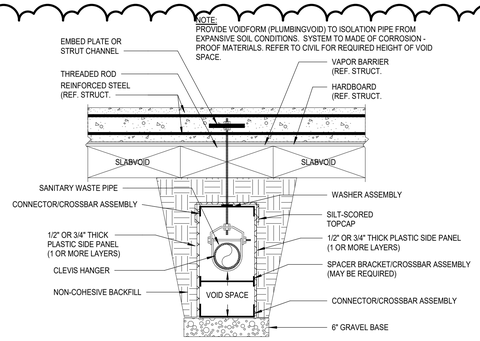
PRODUCT DESCRIPTION
A "roller-bearing" pipe support used to support roof-mounted
piping. Design absorbs thermal expansion and contraction of
pipes preventing damage to the roof membrane. Pipes rest
on a self-lubricating polycarbonate resin roller and a stainless
steel axle.

KEY INFORMATION
- MIRO Industries Model 5-R
- 5" ID maximum pipe capacity 6" OD maximum
- Pipe clearance is 2-3/8", even load required, maximum load is 223 lbs.
- 8 per case, 19 lbs. per case
- Recommended spacing is not to exceed 10 feet centers or code allowable spacing. Make certain each pipestand is properly elevated to even load weight at all pipestands.
- Base Material: MIRON TPC
- Roller Material: Polycarbonate
- All metal parts are stainless steel or hot-dip galvanized

ACCESSORIES TO PROVIDE
- 5-R Pipe Strap - Order to Pipe O.D.
- Support pad or deck plate
- Elernabond: 2-sided tape

12 P5.1 ROOF PIPING SUPPORT DETAIL 4"-6" DIAMETER
NO SCALE

13 P5.1 GAS CONNECTION DETAIL
NO SCALE



14 P5.1 UNDERSLAB PIPING DETAIL
NO SCALE

DLR GROUP
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STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER
SEE DETAIL
TBPE FIRM REGISTRATION NUMBER F-1101

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PAC ADDITION
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PLUMBING DETAILS

P5.1

DOMESTIC FIXTURE SCHEDULE

NOTES:
1. PROVIDE KEYED ACCESS PANELS FOR VALVES, WATER HEATER, AND TRAP PRIMER DEVICES IN TOILET ROOMS. ACCESS PANELS (AP-1) SHALL BE EQUAL TO WILLIAMS BROTHERS M# WB DWAL 414 SERIES FOR TILE WALLS. DRYWALL ACCESS PANELS TO BE EQUAL TO WILLIAMS BROTHERS M# WB DWAL 415 SERIES.
2. PROVIDE TRAP PRIMER DEVICE WITH SUPPLY DISTRIBUTION ON ALL FLOOR DRAINS, FLOOR SINKS, AND TRENCH DRAIN S. TRAP PRIMER TO BE EQUAL TO WATTS LFTP300-DU-DR. INSTALL DISTRIBUTION UNIT AS REQUIRED. CAP OFF ALL UN-USED SUPPLY CONNECTIONS.
3. ALL PUBLIC LAVATORY SINK AND HANDWASH SINK TO BE PROVIDE WITH TEMPER VALVE EQUAL TO LEONARD MODEL # LF-170 SERIES FOR SINGLE LAVATORY AND MODEL # LF-270 SERIES FOR MULTIPLE LAVATORIES.
4.
5.

ID	DESCRIPTION	MATERIAL DESCRIPTION	FINISH	TRIM				FLOW FIXTURE			PIPE CONNECTION SIZE (IN)						SPECIFICATION	BASIS OF DESIGN		NOTES
				MANUFACTURER	MODEL	TYPE	MOTION SENSOR CONTROL	WATER FLOW (GPM)	WATER TEMP (°F)		WASTE			MINIMUM VENT	WATER			MANUFACTURER	MODEL	
									COLD	HOT	PRIMARY	AUX	INDIRECT		COLD	HOT				
EWC-1	WATER COOLER	GALVANIZED STEEL	STAINLESS STEEL CABINET				No	0.13	60		2"			1-1/2"	1/2"		BOTTLE FILLING STATION. THE UNIT SHALL BE COMPLETE WITH CABINET, MOUNTING FRAME, ELECTRONIC BOTTLE FILLER SENSOR CONTROLS, REFRIGERATING SYSTEM, AIR COOLED, 120 VOLT, 60 CYCLE, SINGLE PHASE POWER CONNECTION, FULLY AUTOMATIC, COMPLETE AND READY TO OPERATE.	ELKAY	LZWSM8K	
HB-1	HOSE BIBB	BRASS	CHROME PLATED	WOODFORD	B65	MANUAL	No	2.5	60						3/4"		EXTERIOR BOX & DOOR, CHROME PLATED, HOSE BIBB WITH VACUUM BREAKER, AUTOMATIC DRAIINING, 3/4" HOSE THREAD OUTLET, AND REMOVABLE "TEE" HANDLE. PROVIDE SHUTOFF VALVE IN COLD WATER SUPPLY AHEAD OF HOSE BIBB.	CHICAGO FAUCET CO	952-CP	
HYD-1	ROOF HYDRANT	CAST IRON	PAINTED	WOODFORD	RHY2-1-MS	MANUAL		2.5	60		1/2"				1"		NON-FREEZE TYPE ROOF HYDRANT, WITH ASSE 1052 DOUBLE CHECK BACKFLOW PREVENTER, VALVE ON THE INSIDE OF THE ROOF. HOSE CONNECTION WITH BACKFLOW PREVENTER, AND CLOCKING HANDLE ON THE OUTSIDE OF THE ROOF. ALL EXPOSED PARTS SHALL BE PAINTED. MAKE ARRANGEMENTS WITH THE GENERAL CONTRACTOR TO PROVIDE THE NECESSARY SUPPORT OF ROOF. PROVIDE SHUTOFF VALVE IN ACCESSIBLE LOCATION AND ROUTE DRAIN PIPE TO NEAREST FLOOR DRAIN.	WOODFORD	RHY2-MS	
IMB-1	ICE MAKER OUTLET BOX	ABS PLASTIC	WHITE				No	0.5	60						1/2"		FULLY RECESSED FIRE RATED ICE MAKER SUPPLY BOX WITH COVER. PROVIDE 1/4 TURN BALL VALVES AND WATER HAMMER ARRESTORS IN BOX.	SIOUX CHIEF	696-RG1010MF	
LV-1	LAVATORY - WALL HUNG - ADA	EVERO CLASSIC	GEO SERIES-MYKONOS	BRADLEY	VERGE LINEA	ELECTRONIC	Yes	0.5	60	110	1-1/2"			1-1/2"	1/2"	1/2"	SINGLE STATION LAVATORY, DECK-MOUNTED FAUCET WITH SENSOR, EXTERNAL ASSE 1070 COMPLIANT THERMOSTATIC MIXING VALVE, GRID DRAIN, LOOSE KEY ANGLE STOPS AND SUPPLIES. MOUNT AT ADA COMPLIANT HEIGHT.	BRADLEY	LVRD1	FAUCET M# SS3-3500
LV-2	LAVATORY - WALL HUNG - ADA	EVERO CLASSIC	GEO SERIES-MYKONOS	BRADLEY	VERGE LINEA	ELECTRONIC	Yes	0.5	60	110	1-1/2"			1-1/2"	1/2"	1/2"	TWO STATION LAVATORY, DECK-MOUNTED FAUCETS WITH SENSOR, EXTERNAL ASSE 1070 COMPLIANT THERMOSTATIC MIXING VALVE, GRID DRAIN, LOOSE KEY ANGLE STOPS AND SUPPLIES. MOUNT AT ADA COMPLIANT HEIGHT.	BRADLEY	LVRD2	FAUCET M# SS3-3500
LV-3	LAVATORY - WALL HUNG - ADA	EVERO CLASSIC	GEO SERIES-MYKONOS	BRADLEY	VERGE LINEA	ELECTRONIC	Yes	0.5	60	110	1-1/2"			1-1/2"	1/2"	1/2"	THREE STATION LAVATORY. DECK-MOUNTED FAUCETS WITH SENSOR, EXTERNAL ASSE 1070 COMPLIANT THERMOSTATIC MIXING VALVE, GRID DRAIN, LOOSE KEY ANGLE STOPS AND SUPPLIES. MOUNT AT ADA COMPLIANT HEIGHT.	BRADLEY	LVRD3	FAUCET M# SS3-3500
LV-4	LAVATORY - WALL HUNG - ADA	VITREOUS CHINA	EVERCLEAN	BRADLEY	VERGE LINEA	ELECTRONIC	Yes	0.5	60	110	1-1/2"			1-1/2"	1/2"	1/2"	WALL HUNG LAVATORY, DECK-MOUNTED FAUCET WITH SENSOR, EXTERNAL ASSE 1070 COMPLIANT THERMOSTATIC MIXING VALVE, GRID DRAIN, LOOSE KEY ANGLE STOPS AND SUPPLIES. MOUNT AT ADA COMPLIANT HEIGHT.	AMERICAN STANDARD	MURRO	FAUCET M# SS3-3500
MS-1	SINGLE BOWL SINK	STAINLESS STEEL	STAINLESS STEEL	CHICAGO FAUCET CO	897-CP	MANUAL	No	1	60	120	3"			1-1/2"	3/4"	3/4"	MOPSINK, FLOOR MOUNT, MOLDED STONE, STRIANER, 2" LEVER FAUCET. VACUUM BREAKER, INTERGRAL STOPS, ADJUSTABLE WALL BRACE, PAIL HOOK, 3/4" HOSE THREAD, HOSE. HOSE BRACKET 832-AA MOP HANGER 889-CC. STAINLESS STEEL BUMPERGUARD, AND WALL GUARD.	FIAT	MSB-2424	
SH-1	SHOWER STALL - ADA			BRADLEY	HN300-EF-ST-A36-RSS-RS D-GB-CRH	MANUAL	No	2	60	115	2"			1-1/2"	1/2"	1/2"	THE INDIVIDUAL SHOWER STALL IS SPECIFIED IN ANOTHER DIVISION. PROVIDE A SHOWER DRAIN AS SPECIFIED IN "SOIL, WASTE AND VENT PIPING SYSTEMS." SHOWER SYSTEM WITH ASSE 1016 COMPLIANT TYPE "T/P" THERMOSTATIC/PRESSURE BALANCING COMBINATION VALVE WITH ADJUSTABLE STOP SCREW TO LIMIT HANDLE TURN. CONCEALED 3-PORT DIVERTER VALVE WITH LEVER HANDLE WITH ARM AND FLANGE, INTEGRAL STOPS, AND IN-LINE VACUUM BREAKER. HAND SHOWER SYSTEM WITH STANDARD HAND SHOWER, 60" FLEXIBLE METAL HOSE, AND 48" SLIDE BAR FOR HAND SHOWER MOUNTING. PROVIDE MANUFACTURER'S FLOW RATE RESTRICTOR ON SHOWERHEAD.	BY OTHERS	BY OTHERS	
SK-1	SINGLE BOWL SINK	STAINLESS STEEL	STAINLESS STEEL	ELKAY	LK940AT08L2H	MANUAL	No	1	60	120	1-1/2"			1-1/2"	1/2"	1/2"	SINGLE COMPARTMENT, ADA COMPLIANT, FREE STANDING , 18 GAUGE. 2" LEVER SWIVEL FAUCET, ONE ELKAY MODEL NO. LK35 BASKET STRAINER, P-TRAP, TAILPIECES. SUPPLIES AND STOPS. INSULATE WATER AND WASTE TO MEET ADA REQUIREMENTS.	ELKAY	14-1C16X20-2-18X	
SK-2	SINGLE BOWL SINK	STAINLESS STEEL	STAINLESS STEEL	ELKAY	LK940AT08L2H	MANUAL	No	1	60	120	1-1/2"			1-1/2"	1/2"	1/2"	SINGLE COMPARTMENT, ADA COMPLIANT, FREE STANDING, 18 GAUGE. 2" LEVER SWIVEL FAUCET. ONE ELKAY MODEL NO. LK35 BASKET STRAINER, P-TRAP, TAILPIECES, SUPPLIES AND STOPS. INSULATE WATER AND WASTE TO MEET ADA REQUIREMENTS.	ELKAY	B1C24X24X	
SK-3	HAND SINK	VITREOUS CHINA	WHITE	KOHLER	K-14408-4-CP	MANUAL	No	1.2	60	110	1-1/2"			1-1/2"	1/2"	1/2"	SINGLE COMPARTMENT, UNDERMOUNT, 18 GAUGE, WITH STRAINER AND FAUCET INCLUDED, P-TRAP, TAILPIECES, SUPPLIES AND STOPS. PROVIDE WITH HAWS MODEL NO. 7620 FAUCET MOUNTED EYEWASH AXION EYEPOD.	ELKAY	EHS-18X	
UR-1	URINAL	VITREOUS CHINA	WHITE	SLOAN	186 ESS 0.125 TMO LT	ELECTRONIC	Yes		60		2"			1-1/2"	3/4"		WALL HUNG URINAL WITH WASHOUT ACTION, TOP SPUD, SIZE 18" WITH INTEGRAL EXTENDED SHIELDS SUPPORTED BY THROUGH GOING BOLTS AND C.P. NUTS. SOLAR POWERED SENSOR ACTIVATED FLUSHOMETER.	AMERICAN STANDARD	WASHBROOK	
UR-2	URINAL - ADA	VITREOUS CHINA	WHITE	SLOAN	186 ESS 0.125 TMO LT	ELECTRONIC	Yes		40		2"			1-1/2"	3/4"		WALL HUNG URINAL WITH WASHOUT ACTION, TOP SPUD, SIZE 18" WITH INTEGRAL EXTENDED SHIELDS SUPPORTED BY THROUGH GOING BOLTS AND C.P. NUTS. SOLAR POWERED SENSOR ACTIVATED FLUSHOMETER. INSTALL AT ADA COMPLIANT HEIGHT.	AMERICAN STANDARD	WASHBROOK	
WC-1	WATER CLOSET - WALL HUNG	VITREOUS CHINA	WHITE	SLOAN	111 ESS-1.28 TMO-LT	ELECTRONIC	Yes		60		3"			2"	1"		ELONGATED WALL HUNG WATER CLOSET, 1-1/2" TOP SPUD, WITH CHURCH 295CT ELONGATED OPEN FRONT SEAT. HARDWIRED, 24V, SENSOR ACTIVATED FLUSHOMETER, TRUE MECHANICAL OVERRIDE.	AMERICAN STANDARD	AFWALL	
WC-2	WATER CLOSET - WALL HUNG - ADA	VITREOUS CHINA	WHITE	SLOAN	111 ESS-1.28 TMO-LT	ELECTRONIC	Yes		60		4"			2"	1"		ELONGATED WALL HUNG WATER CLOSET, 1-1/2" TOP SPUD, WITH CHURCH 295CT ELONGATED OPEN FRONT SEAT. HARDWIRED, 24V, SENSOR ACTIVATED FLUSHOMETER, TRUE MECHANICAL OVERRIDE. INSTALL AT ADA COMPLIANT HEIGHT.	AMERICAN STANDARD	AFWALL	
WMB-1	WASHING MACHINE OUTLET BOX	ABS PLASTIC	WHITE				No	0.5	60	120	2"			2"	1/2"	1/2"	FULLY RECESSED FIRE RATED WASHING MACHINE SUPPLY BOX WITH COVER. PROVIDE 1/4 TURN BALL VALVES AND WATER HAMMER ARRESTORS IN BOX. PROVIDE A 2" TRAPPED STANDPIPE IN CONCEALED WALL SPACE.	SIOUX CHIEF	696-R2313MF	
TP-1	TRAP PRIMER	BRASS	BRASS					2.5	60						1/2"		MIFAB NO. MR-500 TRAP PRIMER VALVE, BRASS BODY, ADJUSTABLE, COMPLETE WITH 1/2" COPPER TYPE "L" PIPE TO RECEPTOR. INSTALL PER MANUFACTURER'S RECOMMENDATIONS, COMPLETE BEHIND ACCESS PANEL WITH SHUT-OFF VALVE.	MIFAB	MR-500	
TP-2	TRAP PRIMER (MULTI)	BRASS	BRASS					2.5	60						3/4"		MIFAB NO. MR-500 TRAP PRIMER VALVE, BRASS BODY, ADJUSTABLE, COMPLETE WITH MI-DU DISTRIBUTION UNIT, 1/2" COPPER TYPE "L" PIPE TO EACH RECEPTOR. INSTALL PER MANUFACTURER'S RECOMMENDATIONS, COMPLETE BEHIND ACCESS PANEL WITH SHUT-OFF VALVE.	MIFAB	MR-500	
GPR-3	GAS PRESSURE REGULATOR	STEEL	STEEL														3" SIZE CONNECTION, 1/4" ORIFICE, 3/4" VENT WITH 5" TO 10" WATER COLUMN @ 5.0 PSI INLET PRESSURE AND A FLOW UP TO 4500 CFH. CAST IRON CONSTRUCTION.	MAXITROL	325-11L210G	

ELECTRIC WATER HEATER SCHEDULE

/01

NOTES:
1. EWH-1 AND EWH-2 REQUIRES TWO (2) 40 AMP CONNECTIONS FOR THE MODEL SELECTED. COORDINATE WITH ELECTRICAL CONTRACTOR.
2. WATER HEATER TO FACTORY SET TO 109 DEGREE F MAXIMUM.
3. WATER HEATER TO FACTORY SET TO 115 DEGREE F MAXIMUM.
4. WATER HEATER TO FACTORY SET TO 120 DEGREE F MAXIMUM.
5. PROVIDE TEMPERATURE LIMITING DEVICE ON HOT WATER SUPPLY TO LAVATORY(IES) SINKS. COMPLY WITH ASSE 1017 AND ASSE 1070.
6. PROVIDE THERMOSTAT MIXING VALVE ON WATER HEATER HOT WATER SUPPLY PIPING. COMPLY WITH ASSE 1017 AND ASSE 1070.

ID	TYPE	HEATING CAPACITY (KW)	WATER SIDE DATA			HEATING ELEMENT DATA		ELECTRICAL DATA					BASIS OF DESIGN		NOTES
			FLOW (GPM)		TEMPERATURE (°F)	KW	SCR	FLA (A)	MCA (A)	MOCP (A)	VOLT (V)	PH	MANUFACTURER	MODEL	
			DESIGN	MIN	MAX TEMP RISE										
EWH-1	TANKLESS	16.6	2.2	0.3	47	17	Yes	40	40	45	208	1	EEMAX	EX1608TC-ML	1, 2, 5
EWH-2	TANKLESS	16.6	2.2	0.3	47	17	Yes	40	40	45	208	1	EEMAX	EX1608TC-ML	1, 2, 5
EWH-3	TANKLESS	3.6	0.5	0.3	33	4	Yes	17	17	20	208	1	EEMAX	AM005240T	2,5
EWH-4	TANKLESS	8.7	1.5	0.2	33	9	Yes	48	48	50	208	1	EEMAX	SPEX012240T-ML	2,5
EWH-5	TANKLESS	24	3	0.7	53	24	Yes	68	68	70	208	3	EEMAX	EX2407T2T-FS	2,5
EWH-6	TANKLESS	3.6	0.5	0.3	33	4	Yes	17	17	20	208	1	EEMAX	AM005240T	2,5
EWH-7	TANKLESS	8.7	1.5	0.2	33	9	Yes	48	48	50	208	1	EEMAX	SPEX012240T-ML	2,5
EWH-8	TANKLESS	24	3	0.7	53	24	Yes	68	68	70	208	3	EEMAX	EX2407T2T-FS	2,5
EWH-9	TANKLESS	8.7	1.5	0.2	33	9	Yes	48	48	50	208	1	EEMAX	SPEX012240T-ML	2,5
EWH-10	TANKLESS	8.7	1.5	0.2	33	9	Yes	48	48	50	208	1	EEMAX	SPEX012240T-ML	2,5
EWH-11	TANKLESS	24	3	0.7	53	24	Yes	68	68	70	208	3	EEMAX	EX2407T2T-FS	2,5
EWH-12	TANKLESS	8.7	1.5	0.2	33	9	Yes	48	48	50	208	1	EEMAX	SPEX012240T-ML	2,5
EWH-13	TANKLESS	8.7	1.5	0.2	33	9	Yes	48	48	50	208	1	EEMAX	SPEX012240T-ML	2,5

FLOOR DRAIN SCHEDULE

NOTES:
1. FLOOR DRAINS AND FLOOR SINKS, AND TRENCH DRAINS TO BE PROVIDE WITH 1/2" TRAP PRIMER CONNNECTION OR TRAP PRIMER ADAPTER. TRAP PRIMER DEVICE WITH DISTRIBUTION EQUAL TO WATTS MODEL # LF TP300-DR.
2. TRAP BARRIER SEAL DEVICE TO BE EQUAL TO ZURN MODEL # Z1072.

ID	DESCRIPTION	MATERIAL DESCRIPTION		PRIMER CONNECTION	WASTE PIPE SIZE	VENT PIPE SIZE	SPECIFICATION	BASIS OF DESIGN		NOTES
		DRAIN BODY	STRAINER					MANUFACTURER	MODEL	
FD-1	FLOOR DRAIN	EPOXY COATED CAST IRON	NICKEL BRONZE	No	3"	2"	EPOXY COATED CAST IRON FLOOR DRAIN WITH ANCHOR FLANGE, REVERSIBLE CLAMPING COLLAR WITH PRIMARY & SECONDARY WEEPHOLES, ADJUSTABLE HEAVY DUTY ROUND HEEL PROOF NICKEL BRONZE STRAINER, TRAP BARRIER SEAL, AND NO HUB OUTLET.	WATTS	FD-100-A	1
FS-1	FLOOR SINK	EPOXY COATED CAST IRON	ALUMINUM		3"	2"	8" SQUARE X 6" DEEP SANITARY FLOOR SINK WITH WHITE ACID RESISTANT PORCELAIN ENAMEL COATED INTERIOR, LOOSE SET PORCELAIN ENAMEL COATED CAST IRON GRATE, ALUMINUM DOME BOTTOM STRAINER, TRAP BARRIER SEAL, AND NO HUB OUTLET.	WATTS	FS-710	1
FS-2	FLOOR SINK	EPOXY COATED CAST IRON	ALUMINUM		4"	2"	12" SQUARE X 10" DEEP SANITARY FLOOR SINK WITH WHITE ACID RESISTANT PORCELAIN ENAMEL COATED INTERIOR, LOOSE SET PORCELAIN ENAMEL COATED CAST IRON GRATE, ALUMINUM DOME BOTTOM STRAINER, TRAP BARRIER SEAL, AND NO HUB OUTLET.	WATTS	FS-750	1
TD-1	TRENCH DRAIN	PREAST CONCRETE			4"	---	PRE-SLOPED TRENCH DRAIN SYSTEM WITH 6IN WIDE X 144 IN LONG DUCTILE IRON FRAME, UV STABILIZED TALC-FILLED POLYPROPYLENE CHANNELS WITH 4IN NO HUB BOTTOM OR END OUTLETS. SYSTEM SHALL BE FRAME ANCHORED, WITH REINFORCED GALVANIZED SLOTTED GRATING TO SUIT DIN CLASS LOAD RATING. SYSTEM TO INCLUDE FRAME CONNECTORS, GRATE LOCKDOWNS, AND CONSTRUCTION COVERS. PROVIDE WITH MANUFACTURER'S CATCH BASIN WITH DUCTILE IRON GRATE. INSTALLATION TO BE PERFORMED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND LOCAL BUILDING CODE. PROVIDE TRAP BARRIER SEAL.	WATTS	DEAD LEVEL D	2

SUMP PUMP SCHEDULE

NOTES:
1. INCLUDES CONTROL PANEL A3SEE16010 WITH OIL SMART SWITCH, LIQUID SMART SENSOR AND ALARMS .
2. FURNISH ALL WIRING, CONDUITS, SUPPORTS, AND ASSOCIATED APPURTENANCES FOR COMPLETE INSTALLATION.
3. POWER CORD TYPE. COORDINATE ELECTRICAL OUTLETS WITH ELECTRICAL CONTRACTOR.
4.

ID	SYSTEM NAME	TYPE	PUMP DATA					BASIN DIMENSIONS		ELECTRICAL DATA					WEIGHT (LBS)	BASIS OF DESIGN		NOTES
			FLOW (GPM)	HEAD (FT)	MOTOR			DEPTH (FT-IN)	DIA ("ø)	FLA (A)	MCA (A)	MOCP (A)	VOLT (V)	PH		MANUFACTURER	MODEL	
					HP	RPM	ECM											
SP-1	PD 1	SUBMERSIBLE	55	40	0.75	3450	No	0' - 0"	20"	3.7	4.6	5	200	3	70	B&G	ELKT2EC1038	1, 2, 3

STORM DRAIN SCHEDULE

NOTES:
1. ROOF DRAINS TO SHALL CONFORM TO ASME A112.6.4 OR ASME A112.3.1.
2. INSTALL PER MANUFACTURER INSTRUCTIONS.
3.
4.
5.

DESCRIPTION	MATERIAL DESCRIPTION		SPECIFICATION	BASIS OF DESIGN		NOTES
	BODY	STRAINER		MANUFACTURER	MODEL	
ORD	LACQUERED CAST IRON	ALUMINUM	DEEP SUMP ROOF DRAIN WITH 15" DIAMETER ANCHOR FLANGE, 2" HIGH CAST IRON EXTERNAL COMBINED WATER DAM AND WATERPROOFING MEMBRANE CLAMP RING, AND STANDARD SELF-LOCKING DOME STRAINER WITH A FREE AREA OF 125 SQUARE INCHES.	MIFAB	R1200-R	1, 2
RD	LACQUERED CAST IRON	ALUMINUM	DEEP SUMP ROOF DRAIN WITH 15" DIAMETER ANCHOR FLANGE, LARGE CAST IRON WATERPROOFING MEMBRANE CLAMP RING WITH INTEGRAL GRAVEL STOP, AND STANDARD SELF-LOCKING DOME STRAINER WITH A FREE AREA OF 125 SQUARE INCHES.	MIFAB	R1200	1, 2
6" DSN	CAST NICKEL BRONZE		DOWNSPOUT NOZZLE WITH ANCHOR FLANGE, COUNTERSUNK MOUNTING HOLES	WATTS	RD-940	2
8" DSN	CAST NICKEL BRONZE		DOWNSPOUT NOZZLE WITH ANCHOR FLANGE, COUNTERSUNK MOUNTING HOLES	WATTS	RD-948	2
10" DSN	CAST NICKEL BRONZE		DOWNSPOUT NOZZLE WITH ANCHOR FLANGE, COUNTERSUNK MOUNTING HOLES	WATTS	RD-9410	2

STATE OF TEXAS
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PLUMBING SCHEDULES

P6.1

GENERAL NOTES

A. FULL-TONED EQUIPMENT AND/OR PIPING AND DUCTWORK SHALL BE REMOVED. ALL EQUIPMENT AND/OR PIPING AND DUCTWORK DRAWN HALF TONED IS EXISTING TO REMAIN AND SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION.

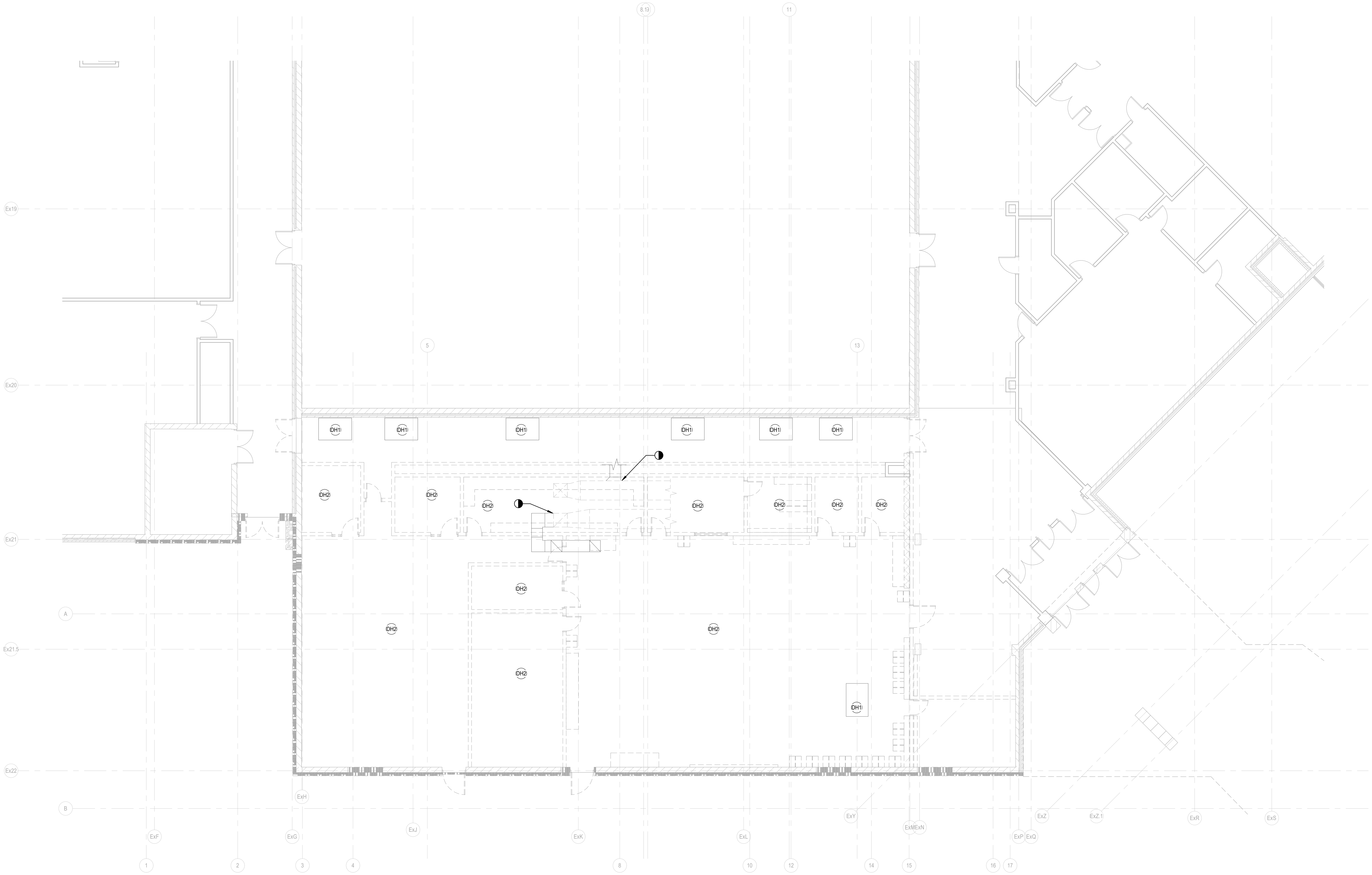
B. LEAVE ALL SPACES, INCLUDING ALL STRUCTURAL SYSTEMS, ROOM FINISHED, FIXTURES, AND EQUIPMENT (WHETHER BUILT IN OR MOVEABLE) IN THE SAME GENERAL CONDITION AS IT IS FOUND AT THE START OF THE WORK. ALL FIXTURES AND EQUIPMENT MOVED OR DISTURBED IN CONNECTION WITH THE WORK SHALL BE PROPERLY INSTALLED IN THE MANNER CORRESPONDING TO THE ORIGINAL METHOD, AND ALL DAMAGE TO EXISTING FIXTURES, INSULATING MATERIALS, AND EQUIPMENT SHALL BE FULLY REPAIRED.

C. LOCATION OF EXISTING MECHANICAL SYSTEMS TAKEN FROM COMBINATION OF A FIELD SURVEY AND ORIGINAL DRAWINGS. THE ACTUAL LOCATIONS OF THE DUCTWORK OR PIPING MAY VARY SLIGHTLY DUE TO AS-BUILT CONDITIONS. THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS IN THE FIELD PRIOR TO ORDERING ANY MATERIALS FOR CONSTRUCTION. ANY DUCTWORK OR PIPING TO BE REMOVED SHALL BE REMOVED IN ITS ENTIRETY. NO DUCTWORK OR PIPING SHALL BE ABANDONED IN PLACE UNLESS IT HAS BEEN SPECIFICALLY CALLED OUT TO BE ABANDONED IN PLACE. IF UNEXPECTED CONDITIONS ARE ENCOUNTERED, NOTIFY THE OWNER'S REPRESENTATIVE. THE CONTRACTOR SHALL BEAR THE COSTS OF DAMAGE RESULTING FROM FAILURE TO EXERCISE REASONABLE CARE FOR CONTINUING OPERATIONS WITHOUT NOTIFYING THE OWNER.

SHEET NOTES

01

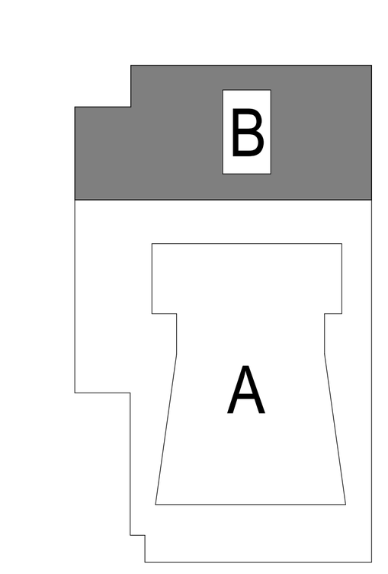
- DH1 REMOVE AND DISPOSE OF EXISTING HEAT PUMP UNIT INCLUDING ALL ASSOCIATED PIPING AND CONTROLS.
- DH2 REMOVE AND DISPOSE OF ALL EXISTING DUCTWORK, PIPING, AND AIR DEVICES ASSOCIATED WITH EXISTING HEAT PUMP IN THIS AREA.



LEVEL 01 - AREA B - HVAC DEMOLITION PLAN

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

KEY PLAN



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LEVEL 01 - AREA B - HVAC DEMOLITION PLAN

MD1.1B

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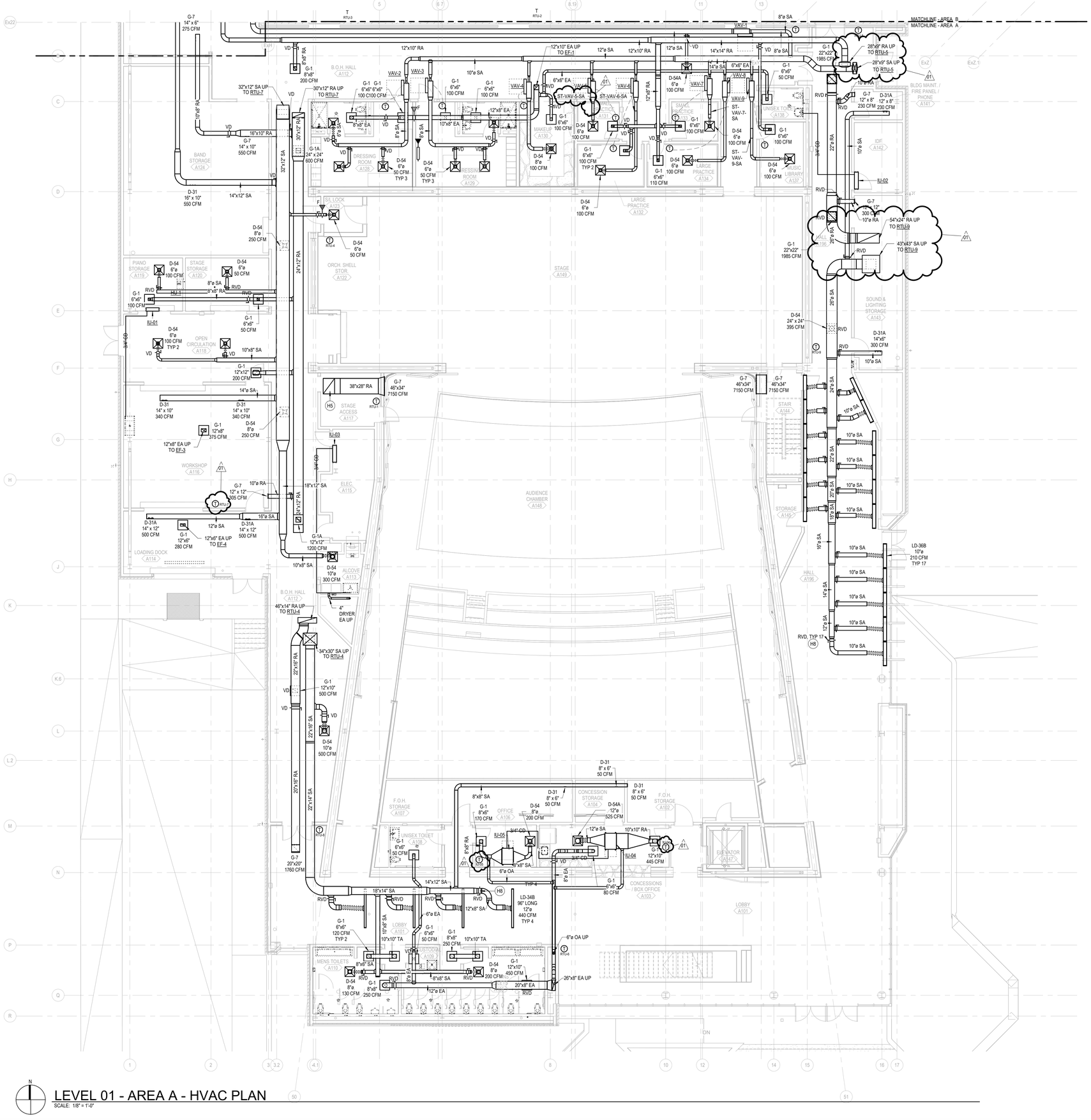


GENERAL NOTES

A. FOR SYMBOLS AND ABBREVIATIONS SEE SHEETS M0.1 AND M0.2.

B. COORDINATE SPACE TEMPERATURE SENSORS AND THERMOSTAT LOCATIONS TO ALIGN VERTICALLY WITH LIGHT SWITCHES. MOUNT A MINIMUM OF 8" FROM LIGHT SWITCH.

C. FINAL LOCATIONS OF ALL AIR DEVICES SHALL BE COORDINATED WITH ARCHITECTURAL CEILING FINISHES.

D. ALL DUCT SIZE NOTES REFER TO CLEAR INSIDE DIMENSION OF DUCT.

E. FLEXIBLE DUCT SHALL NOT BE LONGER THAN 6'-0".

F. PROVIDE VOLUME DAMPERS FOR ALL SUPPLY, RETURN, AND EXHAUST.

G. FIRE SEAL AROUND DUCT AND PIPING PENETRATIONS OF FIRE RATED WALLS.

H. FOR DIFFUSERS OR GRILLES IN IN-ACCESSIBLE CEILINGS, PROVIDE BALANCE DAMPERS WITH ABILITY TO BE REMOTELY ADJUSTED.

I. EXPOSED ROUND DUCTS OF DIAMETER 10 INCHES OR LARGER TO BE SPIRAL WOUND.

J. PROVIDE ALL NEW CONTROLS CAPABLE OF TOTAL INTEGRATION WITH EXISTING BUILDING AUTOMATION SYSTEM THROUGH CLIMATECH. THE NEW SYSTEM SHALL PROVIDE USER ACCESS TO ALL SYSTEM DATA BOTH LOCALLY OVER A SECURE INTRANET WITHIN THE BUILDING AND BY REMOTE ACCESS BY A STANDARD WEB BROWSER OVER THE INTERNET. THIS WILL INCLUDE HVAC CONTROLS, ENERGY MANAGEMENT, ALARM MONITORING, AND ALL TRENDING/REPORTING FUNCTIONS RELATED TO NORMAL BUILDING OPERATIONS.

K. ROUTE REFRIGERANT PIPING FROM OUTDOOR UNITS TO ASSOCIATED INDOOR UNITS. REFER TO MANUFACTURER'S INSTRUCTIONS FOR SIZES AND MAX LENGTHS.

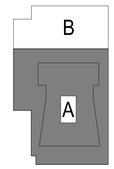
SHEET NOTES

H5 38"X28" RA UP, CONNECTING TO 46"X38" RA. SEE M1.2A FOR CONTINUATION.

H8 REMOTE ACTUATED VOLUME DAMPER. PROVIDE YOUNG REGULATOR 270-275 OR APPROVED EQUIVALENT. MOUNT ACTUATOR IN PLENUM OF CORRESPONDING LINEAR DIFFUSER.

LEVEL 01 - AREA A - HVAC PLAN
SCALE: 1/8" = 1'-0"

KEY PLAN



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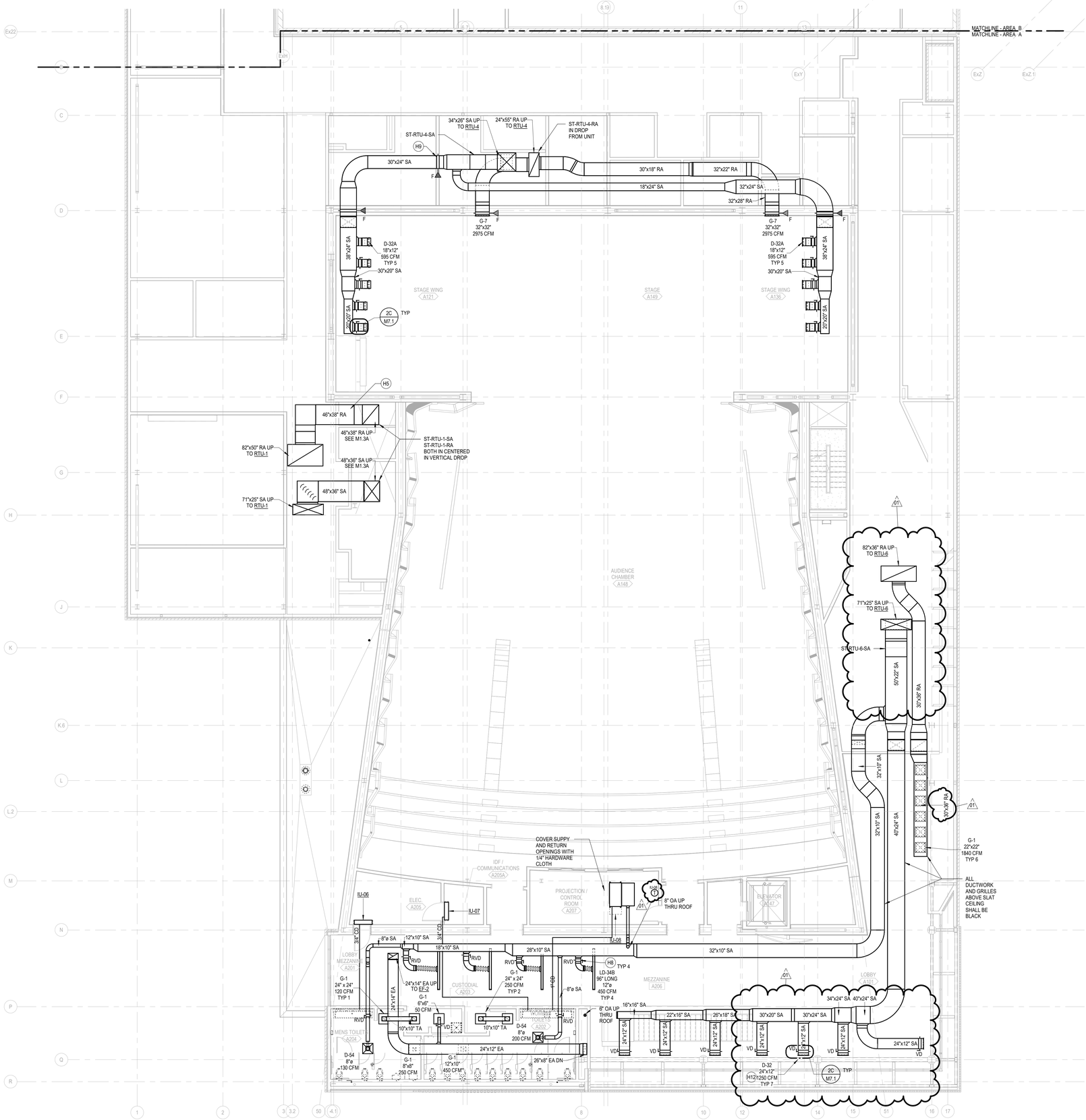
LEVEL 01 - AREA A - HVAC PLAN

M1.1A



GENERAL NOTES

A. FOR SYMBOLS AND ABBREVIATIONS SEE SHEETS M0.1 AND M0.2.

B. COORDINATE SPACE TEMPERATURE SENSORS AND THERMOSTAT LOCATIONS TO ALIGN VERTICALLY WITH LIGHT SWITCHES. MOUNT A MINIMUM OF 8" FROM LIGHT SWITCH.

C. FINAL LOCATIONS OF ALL AIR DEVICES SHALL BE COORDINATED WITH ARCHITECTURAL CEILING FINISHES.

D. ALL DUCT SIZE NOTES REFER TO CLEAR INSIDE DIMENSION OF DUCT.

E. FLEXIBLE DUCT SHALL NOT BE LONGER THAN 6'-0".

F. PROVIDE VOLUME DAMPERS FOR ALL SUPPLY, RETURN, AND EXHAUST.

G. FIRE SEAL AROUND DUCT AND PIPING PENETRATIONS OF FIRE RATED WALLS.

H. FOR DIFFUSERS OR GRILLES IN IN-ACCESSIBLE CEILINGS, PROVIDE BALANCE DAMPERS WITH ABILITY TO BE REMOTELY ADJUSTED.

I. EXPOSED ROUND DUCTS OF DIAMETER 10 INCHES OR LARGER TO BE SPIRAL WOUND.

J. PROVIDE ALL NEW CONTROLS CAPABLE OF TOTAL INTEGRATION WITH EXISTING BUILDING AUTOMATION SYSTEM THROUGH CLIMATECH. THE NEW SYSTEM SHALL PROVIDE USER ACCESS TO ALL SYSTEM DATA BOTH LOCALLY OVER A SECURE INTRANET WITHIN THE BUILDING AND BY REMOTE ACCESS BY A STANDARD WEB BROWSER OVER THE INTERNET. THIS WILL INCLUDE HVAC CONTROLS, ENERGY MANAGEMENT, ALARM MONITORING, AND ALL TRENDING/REPORTING FUNCTIONS RELATED TO NORMAL BUILDING OPERATIONS.

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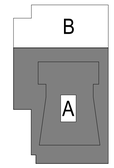
H8 REMOTE ACTUATED VOLUME DAMPER. PROVIDE YOUNG REGULATOR 270-275 OR APPROVED EQUIVALENT. MOUNT ACTUATOR IN PLENUM OF CORRESPONDING LINEAR DIFFUSER.

H9 PROVIDE FIRE DAMPER FOR BOTH SUPPLY AND RETURN PENETRATION THROUGH WALL.

H12 ADJUST GRILLE TO THROW DOWN AT 30 DEGREES.

KEY PLAN



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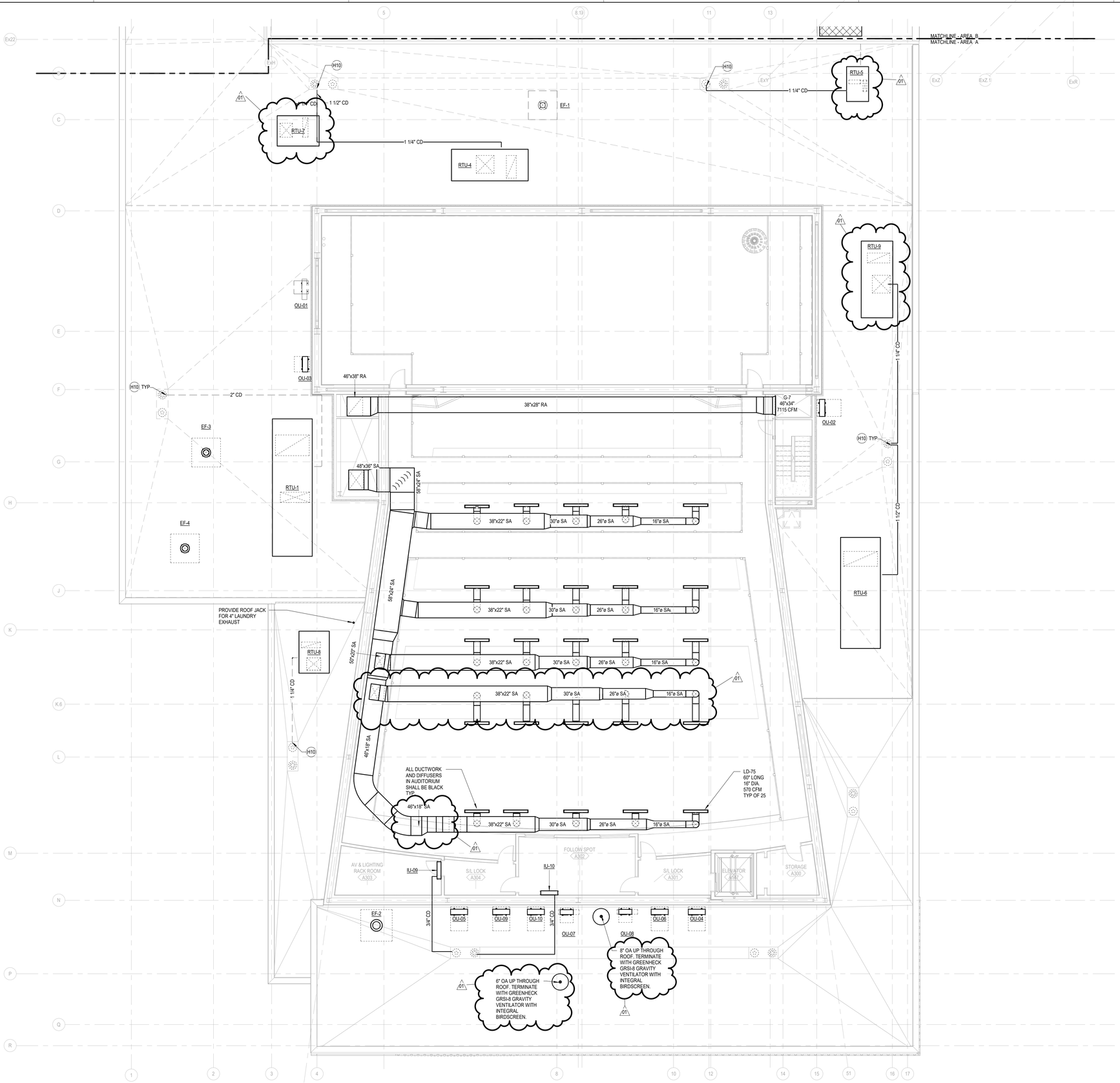
LEVEL 02 MEZZANINE - AREA A - HVAC PLAN

M1.2MA

LEVEL 02 MEZZANINE - AREA A - HVAC PLAN
SCALE: 1/8" = 1'-0"



GENERAL NOTES

A. FOR SYMBOLS AND ABBREVIATIONS SEE SHEETS M0.1 AND M0.2.

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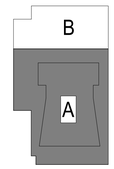
SHEET NOTES

H10 ROUTE CONDENSATE LINE TO NEAREST ROOF DRAIN AND TERMINATE WITH 1" AIR GAP.

KEY PLAN



LEVEL 03 - AREA A - ROOF MECHANICAL PLAN

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

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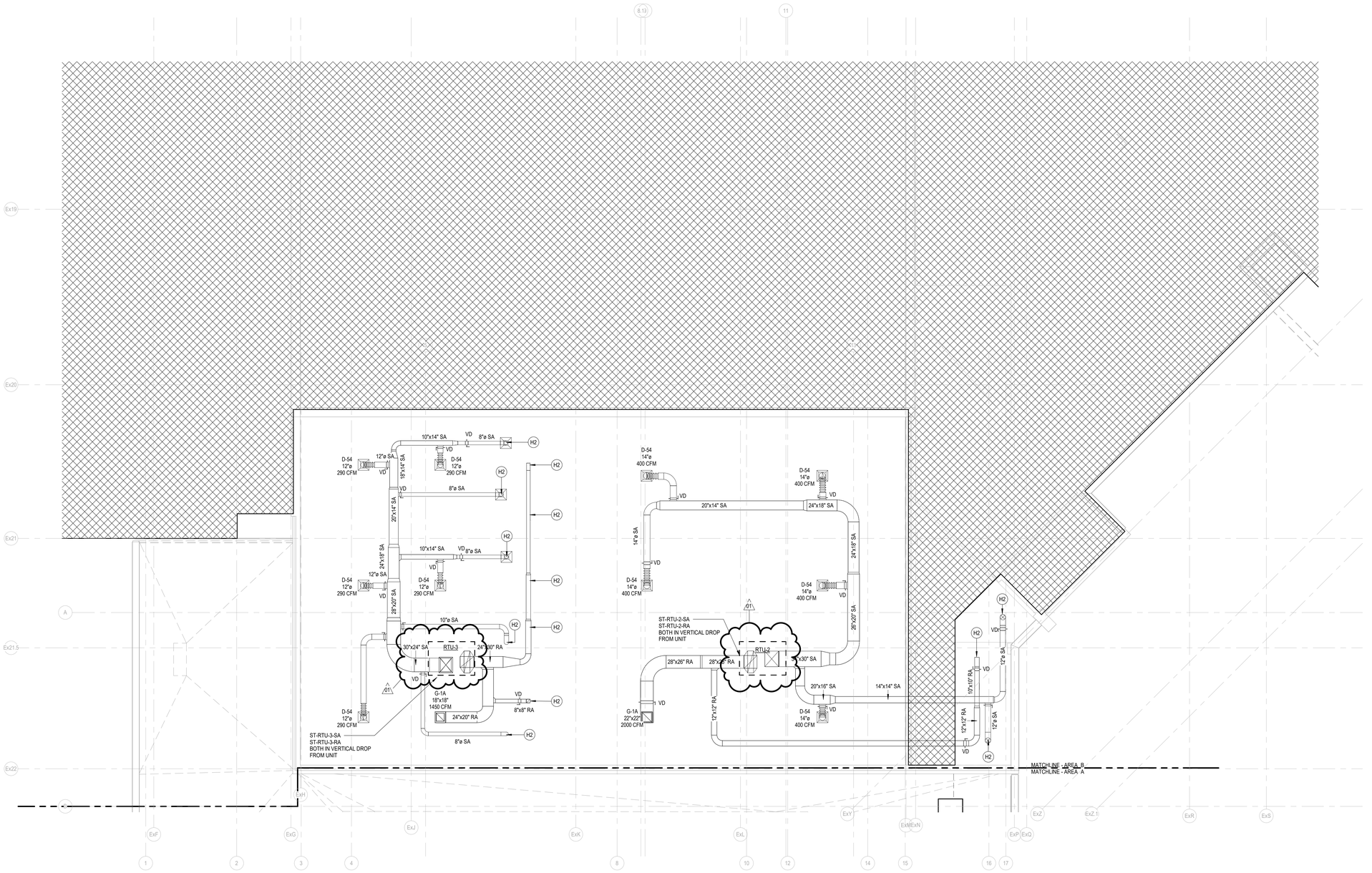
LEVEL 03 - AREA A - ROOF MECHANICAL PLAN

M1.3A



LEVEL 03 - AREA B - ROOF MECHANICAL PLAN

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

GENERAL NOTES

A. FOR SYMBOLS AND ABBREVIATIONS SEE SHEETS M0.1 AND M0.2.

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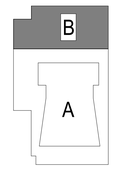
K. ROUTE REFRIGERANT PIPING FROM OUTDOOR UNITS TO ASSOCIATED INDOOR UNITS. REFER TO MANUFACTURER'S INSTRUCTIONS FOR SIZES AND MAX LENGTHS.

SHEET NOTES

H2 DUCTWORK DOWN THROUGH TO NEXT LEVEL.

KEY PLAN



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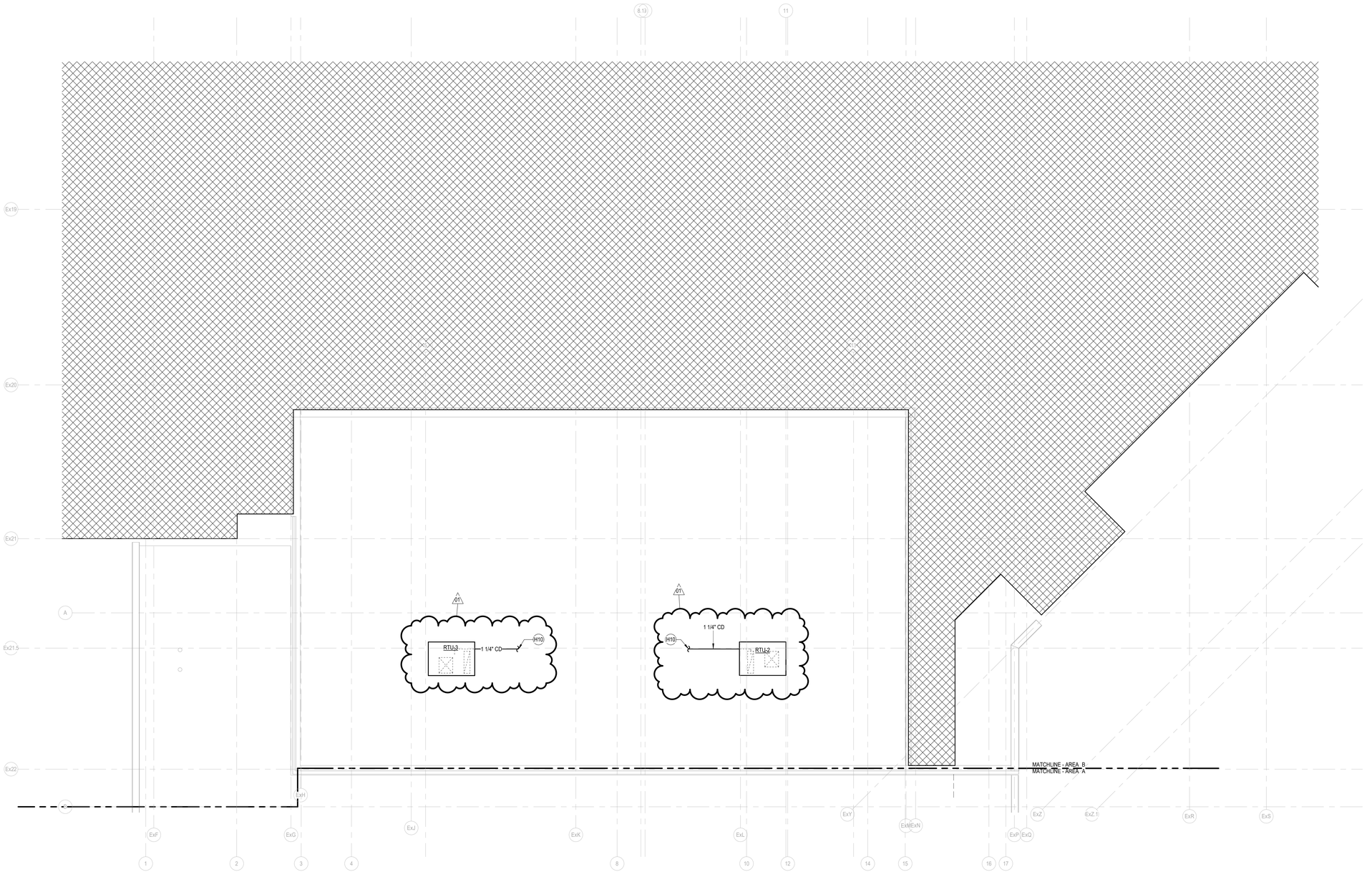
LEVEL 03 - AREA B - MECHANICAL PLAN

M1.3B



N

LEVEL 04 - AREA B - ROOF MECHANICAL PLAN

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

GENERAL NOTES

A. FOR SYMBOLS AND ABBREVIATIONS SEE SHEETS M0.1 AND M0.2.

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H. FOR DIFFUSERS OR GRILLES IN IN-ACCESSIBLE CEILINGS, PROVIDE BALANCE DAMPERS WITH ABILITY TO BE REMOTELY ADJUSTED.

I. EXPOSED ROUND DUCTS OF DIAMETER 10 INCHES OR LARGER TO BE SPIRAL WOUND.

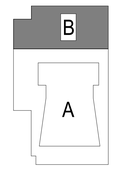
J. PROVIDE ALL NEW CONTROLS CAPABLE OF TOTAL INTEGRATION WITH EXISTING BUILDING AUTOMATION SYSTEM THROUGH CIMATECH. THE NEW SYSTEM SHALL PROVIDE USER ACCESS TO ALL SYSTEM DATA BOTH LOCALLY OVER A SECURE INTRANET WITHIN THE BUILDING AND BY REMOTE ACCESS BY A STANDARD WEB BROWSER OVER THE INTERNET. THIS WILL INCLUDE HVAC CONTROLS, ENERGY MANAGEMENT, ALARM MONITORING, AND ALL TRENDING/REPORTING FUNCTIONS RELATED TO NORMAL BUILDING OPERATIONS.

K. ROUTE REFRIGERANT PIPING FROM OUTDOOR UNITS TO ASSOCIATED INDOOR UNITS. REFER TO MANUFACTURER'S INSTRUCTIONS FOR SIZES AND MAX LENGTHS.

SHEET NOTES

H10 ROUTE CONDENSATE LINE TO NEAREST ROOF DRAIN AND TERMINATE WITH 1" AIR GAP.

KEY PLAN



DLR GROUP
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STATE OF TEXAS
BRENT D. HOWARD
108649
LICENSED
PROFESSIONAL ENGINEER
08/19/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

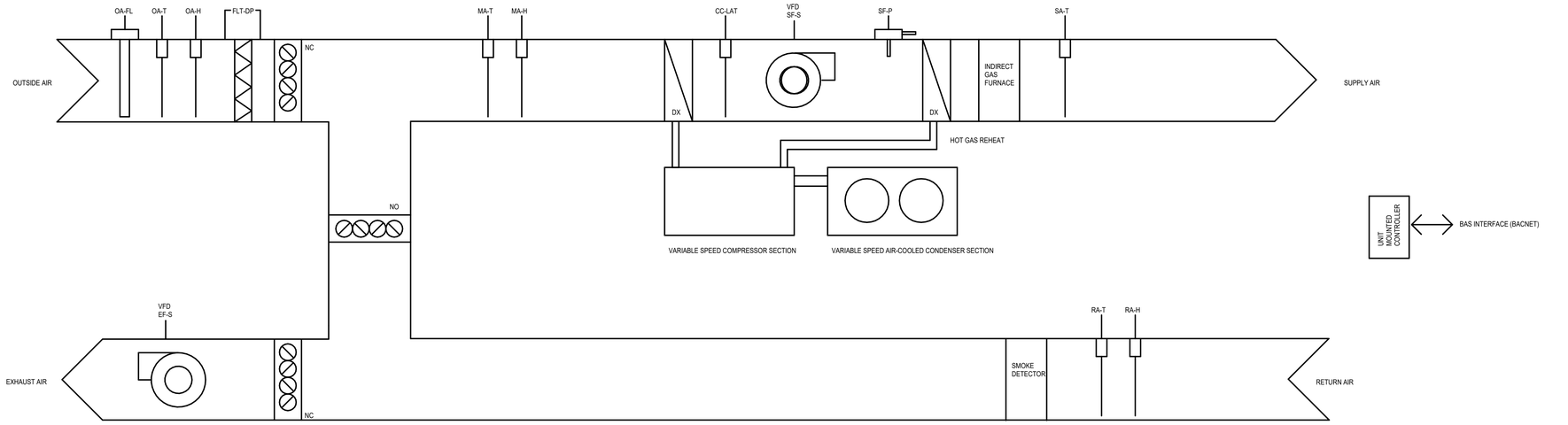
ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS
01 08/20/2024

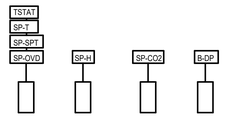
39-23712-00

LEVEL 04 - AREA B - ROOF MECHANICAL PLAN

M1.4B

RTU-1,
RTU-2,
RTU-3,
RTU-4,
RTU-6,
RTU-7,
RTU-8,
RTU-9





SEQUENCE OF OPERATIONS

GENERAL

1. THIS CONTROL SEQUENCE APPLIES TO THE FOLLOWING UNITS:
RTU-1, RTU-2, RTU-3, RTU-4, RTU-6, RTU-7, RTU-8, RTU-9
1.2. DURING OPTIMAL START THE OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL REMAIN CLOSED WITH THE RETURN AIR DAMPER OPEN.

2. ALL CONTROLS DESCRIBED HEREIN SHALL BE PERFORMED BY THE UNIT MOUNTED CONTROLLER. PROVIDE BAS BACNET INTERFACE, REMOTE SENSORS, AND REQUIRED PROGRAMMING FOR COMPLETE INTEGRATION INTO THE BAS.
3. ALL CONTROLS DESCRIBED HEREIN ARE SUBJECT TO THE SAFETIES INTEGRAL TO THE UNIT MOUNTED CONTROLLER AND SHALL NOT OVERRIDE THOSE SAFETIES.
4. PROVIDE WIRING, RELAYS, CONTROLS, PROGRAMMING AND STARTUP AS REQUIRED TO PROVIDE DESCRIBED INTERLOCKS TO OTHER MECHANICAL EQUIPMENT (FANS, COILS, ETC.)
5. WHEN THE UNIT IS OFF-LINE VIA THE START/STOP COMMAND OR VIA THE SERVICE DISCONNECT(S) OR ANY OF THE SAFETIES, COMPONENTS SHALL GO TO THEIR FAIL-SAFE POSITIONS. THE ASSOCIATED EXHAUST FANS SHALL BE DISABLED.
6. FILTER STATUS SHALL BE MONITORED BY FILTER DIFFERENTIAL PRESSURE SWITCH (FLT-DP) ACROSS THE FILTERS.
7. FAN STATUS SHALL BE MONITORED BY THE UNIT CONTROLLER.
8. ALL SET POINTS SHALL BE ADJUSTABLE THROUGH THE BAS WITHOUT SOFTWARE OR HARDWARE REVISIONS.

OCCUPIED MODE OF OPERATION

1. OPTIMAL START:

1.1. THE UNIT SHALL USE AN OPTIMAL START ALGORITHM FOR MORNING START-UP. THIS ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM-UP OR COOL-DOWN PERIOD WHILE STILL ACHIEVING COMFORT CONDITIONS BY THE START OF THE SCHEDULED OCCUPIED PERIOD.

2. BASIC OPERATION:

2.1. THE UNIT CONTROLLER SHALL MODULATE THE SUPPLY FAN SPEED TO MAINTAIN THE ADJUSTABLE SPACE TEMPERATURE SET POINT. THE FAN SPEED SHALL INCREASE AS THE ZONE TEMPERATURE RISES ABOVE COOLING SET POINT, OR AS THE ZONE TEMPERATURE DROPS BELOW HEATING SET POINT. THE SUPPLY FAN SPEED SHALL NOT DROP BELOW 25% (ADJ.).
2.1.1. OCCUPIED COOLING SET POINT: 75°F (ADJ.)
2.1.2. OCCUPIED HEATING SET POINT: 70°F (ADJ.)

3. COOLING MODE:

3.1. COOLING SHALL BE ENABLED WHENEVER:
3.1.1. OUTSIDE AIR TEMPERATURE IS GREATER THAN 50°F (ADJ.).
3.1.2. AND THE ECONOMIZER IS DISABLED OR FULLY OPEN.
3.1.3. AND HEATING IS NOT ACTIVE.
3.1.4. AND THE SUPPLY FAN STATUS IS ON.
3.2. THE UNIT CONTROLLER SHALL MODULATE THE COOLING SYSTEM TO MAINTAIN THE COOLING COIL DISCHARGE AIR TEMPERATURE SET POINT OF 52°F (ADJ.).
3.3. IF THE SUPPLY FAN IS AT MINIMUM SPEED AND THE SPACE TEMPERATURE FALLS BELOW THE COOLING SET POINT, MODULATE THE HOT GAS REHEAT COIL TO MAINTAIN SPACE TEMPERATURE AT 1°F (ADJ.) LESS THAN COOLING SET POINT.
3.4 WHENEVER THE SUPPLY FAN STATUS IS ON THE CONTROLLER SHALL MEASURE THE RETURN AIR HUMIDITY. WHEN THE RETURN AIR HUMIDITY LEVEL RISES ABOVE 60% RH (ADJ.) AND THE ZONE TEMPERATURE IS SATISFIED (NOT IN COOLING MODE) DEHUMIDIFICATION MODE SHALL BE ENABLED. WHEN IN DEHUMIDIFICATION MODE:
3.4.1 THE SUPPLY FAN SHALL OPERATE AT MINIMUM SPEED.
3.4.2 MODULATE COOLING TO MAINTAIN A 55 DEGF (ADJ) COOLING COIL LEAVING TEMPERATURE.
3.4.3 MODULATE THE HOT GAS REHEAT TO MAINTAIN THE SUPPLY AIR TEMPERATURE AT THE ZONE SETPOINT 70°-76° F.
3.4.4 ALARMS SHALL BE PROVIDED AS FOLLOWS:
3.4.4.1 HIGH RETURN AIR HUMIDITY: IF THE RETURN AIR HUMIDITY IS GREATER THAN 70%(ADJ.).

4. HEATING MODE:

4.1. HEATING SHALL BE ENABLED WHENEVER:
4.1.1. OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
4.1.2. AND THE SPACE TEMPERATURE IS BELOW HEATING SET POINT.
4.1.3. AND COOLING IS NOT ACTIVE.
4.1.4. AND THE SUPPLY FAN STATUS IS ON.
4.2. THE UNIT CONTROLLER SHALL MODULATE THE INDIRECT GAS FURNACE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINT OF 85°F (ADJ.).
4.3. FOR UNITS WITH RADIATORS WITHIN THE ZONE SERVED, INTERLOCK RTU OPERATION WITH RADIATORS AND ENABLE RADIATORS DURING HEATING MODE.

5. OUTSIDE AIR CONTROL:

5.1. WHEN IN THE OCCUPIED MODE, MODULATE OUTSIDE AIR AND RETURN AIR DAMPERS TO MAINTAIN THE OUTSIDE AIR FLOW SET POINT (ADJ.). SEE SCHEDULE FOR AIRFLOW VALUES.
5.2 DEMAND CONTROL VENTILATION:
5.2.1 WHEN THE SPACE IS BELOW 600 PPM (ADJ) CO2 THE MINIMUM OUTSIDE AIRFLOW SETPOINT SHALL BE REDUCED BY 10% (ADJ) EVERY 5 MINUTES (ADJ) UNTIL THE SPACE CO2 LEVEL RISES TO 850 PPM (ADJ). THE OUTSIDE AIRFLOW SHALL HOLD AT THIS VALUE UNTIL THE SPACE CO2 LEVEL RISES TO 950 PPM (ADJ), WHICH SHALL RESET THE MINIMUM OUTSIDE AIRFLOW SETPOINT UP BY 10% (ADJ) EVERY 5 MINUTES (ADJ) UNTIL THE INITIAL SETPOINT AS INDICATED IN THE EQUIPMENT SCHEDULE IS REACHED.

6. DEMAND CONTROL VENTILATION:

6.1. THE BAS SHALL MONITOR SPACE CO2 CONCENTRATION.
6.2. IF SPACE CO2 CONCENTRATION IS LESS THAN 1000 PPM (ADJ.), THEN RESET OUTSIDE AIR FLOW SET POINT INCREMENTALLY TO THE SCHEDULED MINIMUM. UPON A RISE IN RETURN AIR CO2 ABOVE 1000 PPM (ADJ.), THE RESET SHALL BE DISABLED.

7. EXHAUST FAN

7.1 THE EXHAUST FAN SHALL RUN IN THE OCCUPIED MODE WHENEVER THE SUPPLY FAN RUNS AND THE BUILDING PRESSURE IS LESS THAN 0.05 IN.WG (ADJ.) TO THE OUTSIDE. THE EXHAUST FAN SHALL MODULATE SPEED TO MAINTAIN 0.05 IN.WG (ADJ.) POSITIVE BUILDING PRESSURE.
7.2 ALARMS SHALL BE PROVIDED AS FOLLOWS:
7.2.1 EXHAUST FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
7.2.2 EXHAUST FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
7.2.3 EXHAUST FAN FAULT.

8. AIR-SIDE ECONOMIZER:

8.1. WHEN THE OUTSIDE AIR ENTHALPY IS LESS THAN 28 BTU/LB (ADJ.), THE AIR-SIDE ECONOMIZER SHALL BE ENGAGED.
8.2. THE RETURN AIR DAMPER SHALL MODULATE CLOSED AND THE OUTSIDE AIR DAMPER SHALL MODULATE OPEN TO MAINTAIN DISCHARGE SET POINTS.

UNOCCUPIED MODE OF OPERATION

1. DURING THE UNOCCUPIED PERIOD (ADJUSTABLE PER SCHEDULE), THE UNIT CONTROLLER SHALL OPERATE THE UNIT IN A RECIRCULATION MODE TO MAINTAIN THE UNOCCUPIED SPACE TEMPERATURE SET POINTS. THE OUTSIDE AIR AND EXHAUST DAMPERS SHALL REMAIN CLOSED AND THE FANS SHALL CYCLE WITH A CALL FOR HEATING OR COOLING.
1.1. UNOCCUPIED COOLING SET POINT: 85°F (ADJ.)
1.2. UNOCCUPIED HEATING SET POINT: 55°F (ADJ.)
2. A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW AN OCCUPANT TO OVERRIDE THE SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED MODE FOR AN ADJUSTABLE PERIOD OF TIME. AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE SCHEDULE.

SAFETIES AND ALARMS

1. THE FOLLOWING SAFETIES SHALL SHUT DOWN ITS RESPECTIVE UNIT, AND INITIATE AN ALARM THROUGH THE BAS AFTER APPROPRIATE TIME DELAYS WHERE SPECIFIED:
1.1. UNIT CONTROLLER OR INTERNAL SAFETIES INDICATE A "FAULT." -DELAY: NONE.
1.2. DUCT SMOKE DETECTORS (SEE FIRE ALARM) INDICATE SMOKE -DELAY: NONE. CONTACTS FROM FIRE ALARM SYSTEM INITIATES THE SHUTDOWN OF THE RTU.
1.3. SUPPLY AIR HIGH LIMIT: SUPPLY AIR DIFFERENTIAL PRESSURE EXCEEDS 4 IN. W.C. (ADJ.) -DELAY: NONE.
2. ALARMS SHALL BE PROVIDED AS FOLLOWS:
2.1. SUPPLY OR EXHAUST FAN FAILURE: COMMANDED ON, BUT STATUS IS OFF.
2.2. AIRFLOW MEASURING STATION INDICATES OUTSIDE AIR OFF SET POINT BY MORE THAN 10% FLOW - DELAY: 15 MIN.

SINGLE-ZONE VARIABLE VOLUME RTU POINTS SCHEDULE		
POINT	DESCRIPTION	ANALOG INPUT
SA-T	SUPPLY AIR TEMP	DIGITAL INPUT
SF-S	SUPPLY FAN STATUS	ANALOG INPUT
CC-LAT	COOLING COIL LEAVING AIR TEMP	DIGITAL INPUT
FLT-DP	FILTER DIFFERENTIAL PRESSURE	ANALOG INPUT
OA-T	OUTSIDE AIR TEMPERATURE	ANALOG INPUT
OA-H	OUTSIDE AIR HUMIDITY	ANALOG INPUT
OA-FL	OUTSIDE AIR FLOW RATE	ANALOG INPUT
RA-T	RETURN AIR TEMP	ANALOG INPUT
RA-H	RETURN AIR HUMIDITY	ANALOG INPUT
EF-S	EXHAUST FAN STATUS	DIGITAL INPUT
SP-T	SPACE TEMP	ANALOG INPUT
SP-SPT	SPACE TEMP SET POINT	ANALOG INPUT
SP-OVD	SPACE TEMP UNOCCUPIED OVERRIDE	DIGITAL INPUT
SP-H	SPACE HUMIDITY	ANALOG INPUT
SP-CO2	SPACE CO2 CONCENTRATION	ANALOG INPUT
B-DP	BUILDING STATIC PRESSURE	ANALOG INPUT
MA-T	MIXED AIR TEMP	ANALOG INPUT
MA-H	MIXED AIR HUMIDITY	ANALOG INPUT
SF-P	SUPPLY FAN DISCHARGE PRESSURE	ANALOG INPUT

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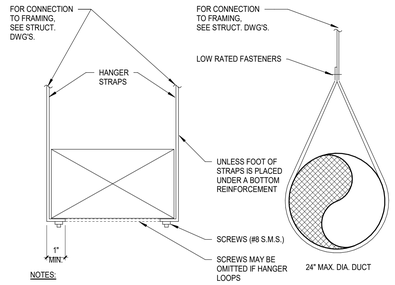
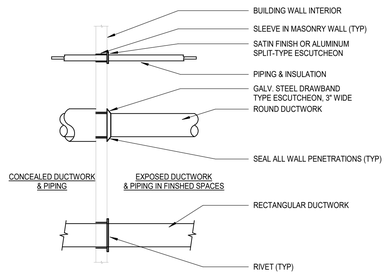
CONTROLS DIAGRAMS

M5.1



1A M7.1 DUCT HANGER DETAIL
NO SCALE



1B M7.1 DUCT/PIPE WALL PENETRATION DETAIL
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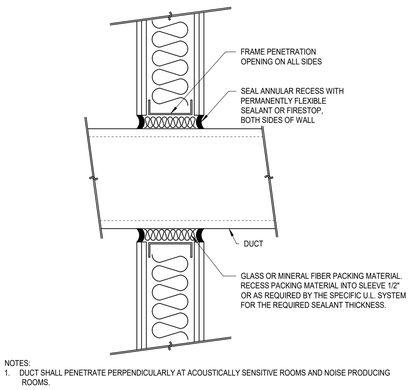
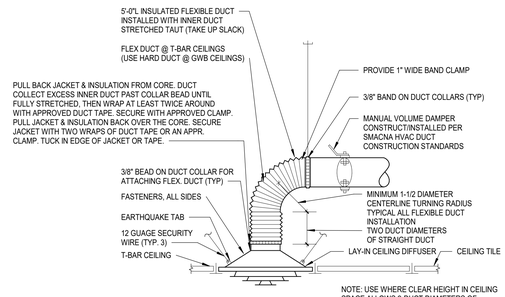
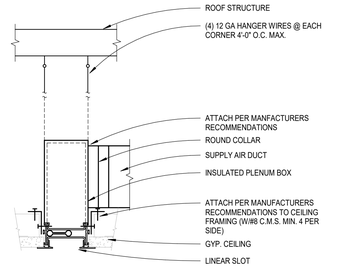


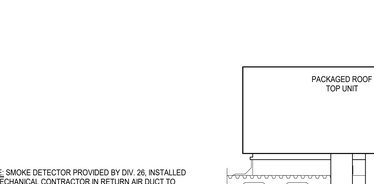
1C M7.1 DUCT PENETRATION THROUGH FRAMED WALL
NO SCALE



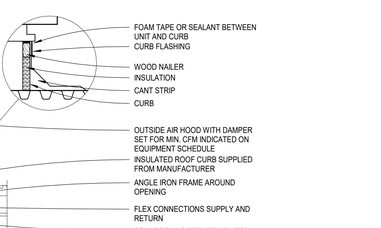
1D M7.1 CEILING SUPPLY DIFFUSER CONNECTION DETAIL
NO SCALE



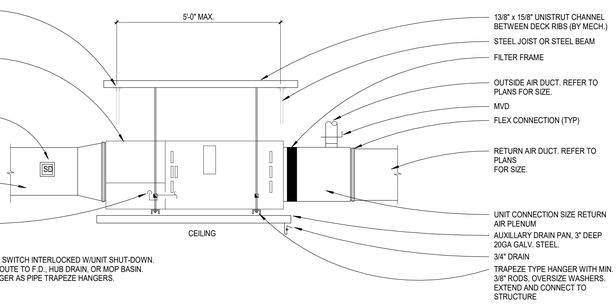
1E M7.1 LINEAR SLOT IN GYP CEILNG DETAIL
NO SCALE



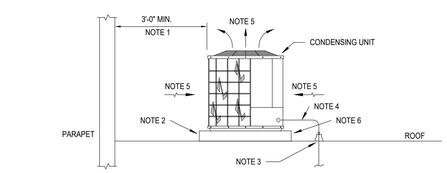
2A M7.1 TYPICAL DUCT MOUNTED REGISTER
NO SCALE



2B M7.1 TYPICAL BRANCH TAKEOFF FITTING DETAIL
NO SCALE

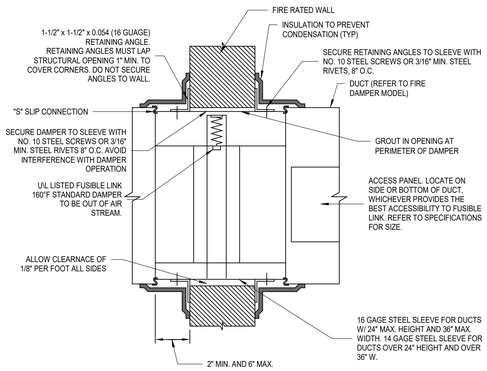


2C M7.1 STAGE/LOBBY SUPPLY GRILLE DETAIL
NO SCALE



DETAIL NOTES:
1. CLOSEST TAP TO VAV BOX SHALL BE LOCATED MINIMUM 5' DOWNSTREAM FROM VAV BOX.
2. PROVIDE SECTION OF STRAIGHT DUCT AT TERMINAL UNIT INLET WITH LENGTH AS RECOMMENDED BY UNIT MANUFACTURER, BUT IN NO CASE LESS THAN FOUR TIMES THE DIAMETER OF THE UNIT INLET CONNECTION.
3. PROVIDE SERVICE CLEARANCE PER MANUFACTURER'S RECOMMENDED INSTRUCTIONS.

2D M7.1 VAV BOX DETAIL
NO SCALE

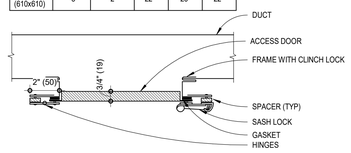


NOTE:
SEE SPECIFICATIONS FOR FIRE DAMPER MODELS.

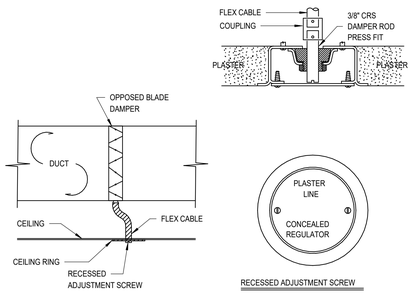
AT EXISTING MASONRY WALLS MOUNT DAMPER FLUSH TO WALL PER MFR'S INSTRUCTIONS.

3A M7.1 FIRE DAMPER DETAIL
NO SCALE

MAX DOOR SIZE	NUMBER OF HINGES	NUMBER OF HANDLES	SHEET METAL GAUGE THICKNESS		
			DOOR	BACK	FRAME
12"x12" (305x305)	2	1	26	26	24
16"x16" (405x405)	2	2	24	26	22
24"x24" (610x610)	3	2	22	26	22

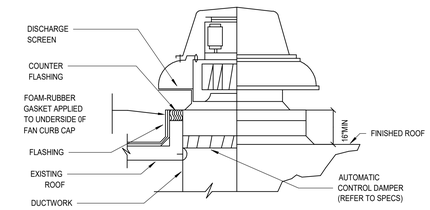


3B M7.1 DUCT ACCESS DOOR DETAIL
NO SCALE

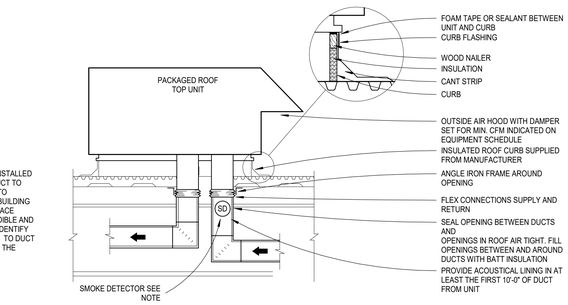


NOTE:
THIS DETAIL APPLIES TO ALL BRANCH RUNOUTS ABOVE HARD CEILINGS, (SEE ARCH. A3- SERIES.)

3C M7.1 REMOTE VOLUME DAMPER DETAIL
NO SCALE



3D M7.1 ROOF MOUNTED EXHAUST FAN DETAIL
NO SCALE



NOTE: SMOKE DETECTOR PROVIDED BY DIV. 26, INSTALLED BY MECHANICAL CONTRACTOR IN RETURN AIR DUCT TO SHUT DOWN UNIT UPON DETECTION. CONNECT TO BUILDING FIRE ALARM PANEL IF PRESENT. IF NO BUILDING FIRE ALARM PANEL IS PRESENT, PROVIDE A SURFACE MOUNT COMBINATION REMOTE ALARM, TEST, AUDIBLE AND VISUAL ALARM IN A NORMALLY OCCUPIED AREA, IDENTIFY AS AIR DUCT DETECTOR TROUBLE AND CONNECT TO DUCT SMOKE DETECTOR. LABEL WITH THE NUMBER OF THE ASSOCIATED AIR HANDLING UNIT.

4A M7.1 ROOFTOP UNIT MOUNTING
NO SCALE

NOTES:
1. PROVIDE AUXILLARY DRAIN PAN FLOAT SWITCH INTERLOCKED W/UNIT SHUT-DOWN.
2. COLLECT CONDENSATE DRAINS AND ROUTE TO F.D., HUB DRAIN, OR MOP BASIN.
3. FOR WEIGHT < 300 LBS USE SAME HANGER AS PIPE TRAPEZE HANGERS.

4B M7.1 HORIZONTAL MECHANICAL UNIT DETAIL
NO SCALE

DETAIL NOTES:
1. MAINTAIN SERVICE CLEARANCES PER MANUFACTURES RECOMMENDATIONS
2. MOUNT LEVEL ON PREFABRICATED EQUIPMENT CURB.
3. ROUTE REFRIGERANT LINES THRU ROOF MOUNTED WATERTIGHT PIPE CURB, PER DETAIL. GROUP LINE SETS TOGETHER WHERE MULTIPLE CONDENSING UNITS.
4. ALL EXPOSED CONTROL WIRING TO BE INSTALLED IN CONDUIT.
5. MAINTAIN MINIMUM 3'-0" CLEARANCE PER MANUFACTURES RECOMMENDATIONS FOR AIRFLOW AROUND CONDENSING UNIT. MAINTAIN MINIMUM CLEARANCES WHEN MULTIPLE CONDENSING UNITS MOUNTED ADJACENT TO EACH OTHER.
6. MOUNT UNIT ON SPRING-TYPE ISOLATION CURBS.

4C M7.1 CONDENSING UNIT DETAIL
NO SCALE

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MECHANICAL DETAILS

M7.1

LINEAR SLOT DIFFUSERS SCHEDULE

NOTES:
1. SEE PLANS FOR NECK SIZES.
2. ALL SLOT DIFFUSERS AND PLENUMS SHALL BE INSULATED.
3. FLEX AND HARD DUCT RUNOUT TO DIFFUSER SHALL MATCH NECK SIZE UNLESS NOTED OTHERWISE.
4. CUSTOM FIELD BUILT INSULATED PLENUM WITH 16" INLET.

ID	SLOT		LINEAR FACE DIMS (IN)	PLENUM DATA			FRAME TYPE	MATERIAL	FINISH	BASIS OF DESIGN		NOTES
	WIDTH (IN)	QTY		INCLUDED (Y / N)	LENGTH (IN)	MODEL				MANUFACTURER	MODEL	
LD-34B	1	2	96 x 4	Y	96	MP-39	SURFACE	ALUMINUM	WHITE ENAMEL	TITUS	ML-39	1-3
LD-36B	1	4	60 x 8	Y	60	MP-39	SURFACE	ALUMINUM	WHITE ENAMEL	TITUS	ML-39	1-3
LD-75A	2.5	1	60 x 6	Y	60	FT-25	SURFACE	ALUMINUM	BLACK	TITUS	FL-25-JT	1-4
LD-75B	2.5	1	60 x 6	Y	60	FT-25	SURFACE	ALUMINUM	BLACK	TITUS	FL-25-JT	1-4

GRILLES, REGISTERS AND DIFFUSERS SCHEDULE

NOTES:
1. SEE PLANS FOR NECK SIZE.
2. FLEX AND HARD DUCT RUNOUT TO RGD UNIT SHALL MATCH NECK SIZE UNLESS NOTED OTHERWISE.

ID	DESCRIPTION	DAMPER		FRAME TYPE	PANEL SIZE	FACE (W" x H")	MATERIAL	FINISH	BASIS OF DESIGN		NOTES
		INCLUDED (Y / N)	DESCRIPTION						MANUFACTURER	MODEL	
D-31	LOUVERED DOUBLE DEFLECTION GRILLE	N	---	SURFACE	---	SEE PLANS	ALUMINUM	WHITE ENAMEL	TITUS	300FL	1, 2
D-32	LOUVERED DOUBLE DEFLECTION GRILLE	N	---	DUCT MOUNTED	---	SEE PLANS	ALUMINUM	WHITE (BLACK IN LOBBY)	TITUS	300FL	1, 2
D-54	3-CONE DIFFUSER	N	---	LAY-IN	24 x 24	24 x 24	ALUMINUM	WHITE ENAMEL	TITUS	TMS-AA	1, 2
G-1	EGGCRATE RETURN GRILLE	N	---	LAY-IN	24 x 24	SEE PLANS	ALUMINUM	WHITE (BLACK IN LOBBY)	TITUS	50F	1, 2
G-7	LOUVERED GRILLE	N	---	SURFACE	---	SEE PLANS	ALUMINUM	WHITE ENAMEL	TITUS	350FL	1, 2

ROOFTOP UNIT SCHEDULE

MARK			RTU-1	RTU-2	RTU-3	RTU-4	RTU-5	RTU-6	RTU-7	RTU-8	RTU-9
SERVICE			AUDITORIUM	BAND ROOM	PERCUSSION RMS	STAGE	DRESSING RMS	MAIN LOBBY	WORKSHOP	CONCESSIONS	EAST CORRIDOR
EER / IEER			10.2 / 16.5	11.0 / 18.0	12.0 / 20.0	11.0 / 20.0	11.0 / 21.0	10.7 / 17.1	12.0 / 20.0	13.0 / 20.0	11.0 / 20.0
CONFIGURATION			SINGLE ZONE VAV	SINGLE ZONE VAV	SINGLE ZONE VAV	SINGLE ZONE VAV	MULTI ZONE VAV	SINGLE ZONE VAV	SINGLE ZONE VAV	SINGLE ZONE VAV	SINGLE ZONE VAV
DISCHARGE			VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL	VERTICAL
NOMINAL CAPACITY (TONS)			68	12	10	25	6	35	10	13.5	16
SUPPLY FAN SECTION	AIRFLOW	CFM	14,230	2,530	2,085	5,930	1490	11425	2750	2590	5000
	OUTSIDE AIR	CFM	5,640	1,190	1,190	1,890	615	2400	700	1000	900
	FAN TYPE		SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)
	QUANTITY OF FANS		4	1	1	1	1	4	1	1	1
	MOTOR BHP	TOTAL	13.09	0.86	0.73	2.43	0.56	7.97	0.97	0.95	2.53
	MOTOR HP	EACH	5.50	2.40	2.4	5	1.7	17.60	7	2.40	5.00
	E.S.P.	IN. W.C.	2.00	1.00	1.00	1.00	1.00	1.50	1.00	1.00	1.00
	T.S.P.	IN. W.C.	3.33	1.39	1.37	1.71	1.39	2.76	1.44	1.49	1.67
EXHAUST FAN SECTION	AIRFLOW	CFM	14,230	2,530	2,085	5,930	1490	11425	2750	2590	5000
	FAN TYPE		SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)	SWSI AF (ECM)
	QUANTITY OF FANS		2	1	1	1	1	2	1	1	1
	MOTOR BHP	TOTAL	2.68	0.46	0.32	1.51	0.08	3.68	0.54	0.46	1.02
	MOTOR HP	TOTAL	5.5	1.7	1.7	4.3	0.5	3.7	1.7	1.7	2.4
	E.S.P.	IN. W.C.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
COOLING	TOTAL CAPACITY	MBH	740.0	139.2	123	278.7	68	409	119.5	93.3	183.6
	SENSIBLE CAPACITY	MBH	400	74.2	61.6	128.5	37	271	75.8	63.4	135
	MAX FACE VELOCITY	FPM	500	500	500	500	500	500	500	500	500
	EAT (MIXED AIR)	DB / WB °F	78 / 69	81 / 71	81 / 72	76 / 69	79 / 69	76 / 66	77 / 66	77 / 66	80 / 67
	LAT	DB / WB °F	52.3 / 52.3	52.6 / 53.0	52.4 / 52.8	53.2 / 53.6	55.2 / 54.0	54.3 / 54.3	50.6 / 50.8	53.6 / 53.7	53.2 / 53.2
	REFRIGERANT		R-32	R-32	R-32	R-32	R-32	R-32	R-32	R-32	R-32
HOT GAS REHEAT COIL	TOTAL CAPACITY	MBH	273.0	47.8	39.9	108	28.3	200	57.8	46.1	90.4
	CONTROL	STAGES	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING
	MAX FACE VELOCITY	FPM	500	500	500	500	500	500	500	500	500
	LAT	DB / WB °F	70 / 59.5	70 / 59.2	70 / 59.1	70 / 59.5	70 / 59.5	70 / 59.5	70 / 59.5	70 / 59.5	70 / 59.5
HEATING	TYPE		NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS	NATURAL GAS
	STAGES		MODULATING	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING	MODULATING
	CAPACITY INPUT / OUTPUT	MBH	600 / 486	200 / 160	200 / 160	300 / 240	200 / 160	400 / 324	200 / 160	300 / 240	450 / 360
	MAX FACE VELOCITY	FPM	500	500	500	500	500	500	500	500	500
	EAT / LAT	°F	20 / 120	20 / 120	20 / 120	20 / 120	20 / 120	20 / 120	20 / 120	20 / 120	20 / 120
FILTERS	PRE-FILTERS	MERV	8	8	8	8	8	8	8	8	8
	FINAL FILTERS	MERV	13	13	13	13	13	13	13	13	13
ELECTRICAL	VOLTAGE		460	460	460	460	460	460	460	460	460
	PHASE		3	3	3	3	3	3	3	3	3
	MCA	A	150.0	39.9	32.4	68.0	20.4	111.6	36.5	24.9	49.0
	MOCP	A	175.0	60	50	90	30	125.0	50	35	70
MAXIMUM DIMENSIONS (LXWXH)		IN	333 x 96.5 x 102	101.6 x 85.9 x 73.4	101.6 x 85.9 x 73.4	202.5 x 72.1 x 76.5	84.5 x 69.5 x 53.3	269 x 96.5 x 77.6	101.6 x 85.9 x 73.4	101.6 x 85.9 x 73.4	202.5 x 72.1 x 76.5
WEIGHT		LB	12060	2675	2675	4100	1420	9156	2675	2675	4132
BASIS OF DESIGN	MANUFACTURER		DAIKIN	DAIKIN	DAIKIN	DAIKIN	DAIKIN	DAIKIN	DAIKIN	DAIKIN	DAIKIN
	MODEL		DPSA068	DPSC12B	DPSC10B	DPSC25B	DPSC06B	DPSA035	DPSC10B	DPSC07B	DPSC16B
REMARKS			1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4

REMARKS:
1. PROVIDE 0-100% MODULATING AIRSIDE ECONOMIZER WITH EXHAUST FAN.
2. PROVIDE GAS FURNACE WITH STAINLESS STEEL HEAT EXCHANGER.
3. PROVIDE DISCONNECT.
4. PROVIDE 14" INSULATED ROOF CURB.

SPLIT SYSTEM INDOOR UNIT SCHEDULE

NOTES:
1. INDOOR UNIT POWERED FROM OUTDOOR UNIT
2. PROVIDE MERV 13 FILTER KIT
3. PROVIDE DAIKIN DACA-CP3-1 CONDENSATE PUMP
4. INTEGRAL TEMPERATURE SENSOR

ID	LOCATION		COOLING		HEATING	AMBIENT TEMP DB (F)	SEER	EER	ELECTRICAL DATA					OUTDOOR UNIT ID	WEIGHT	BASIS OF DESIGN		NOTES
	NO.	NAME	CAPACITY (TONS)	REFRIGERANT	CAPACITY (BTUH)	SUMMER			RLA (A)	MCA (A)	MOCP (A)	VOLT (V)	PH			MANUFACTURER	MODEL	
IU-1	A119	PIANO STORAGE	1	R-32	13,600	100	25.2	13.2	12	12.3	15	208	1	OU-01	32	DAIKIN	FTXM	1,3,4
IU-2	A142	IDF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	OU-02	32	DAIKIN	FTXM	1,3,4
IU-3	A115	ELECTRICAL	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	OU-03	32	DAIKIN	FTXM	1,3,4
IU-4	A103	CONCESSIONS	2	R-32	24000	100	25.2	13.2	12	12.3	15	208	1	OU-04	82	DAIKIN	FDMQ	1,2,3
IU-5	A106	OFFICE	1	R-32	10900	100	14.3	8.5	7.5	8	15	208	1	OU-05	82	DAIKIN	FDMQ	1,2,3
IU-6	A205	ELECTRICAL	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	OU-06	32	DAIKIN	FTXM	1,3,4
IU-7	A205A	IDF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	OU-07	32	DAIKIN	FTXM	1,3,4
IU-8	A207	PROJECTION RM	2	R-32	24000	100	25.2	13.2	12	12.3	15	208	1	OU-08	82	DAIKIN	FDMQ	1,2,3
IU-9	A303	AV	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	OU-09	32	DAIKIN	FTXM	1,3,4
IU-10	A302	FOLLOW SPOT	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	OU-10	32	DAIKIN	FTXM	1,3,4

SPLIT SYSTEM CONDENSING UNIT SCHEDULE

NOTES:
1. PROVIDE WITH WIND BAFFLES FOR LOW AMBIENT COOLING.
2. PROVIDE 14" CONDENSING UNIT STAND.

ID	LOCATION	COOLING		HEATING	AMBIENT TEMP DB (F)	SEER	EER	ELECTRICAL DATA					INDOOR UNIT ID	WEIGHT	BASIS OF DESIGN		NOTES
	NAME	CAPACITY (TONS)	REFRIGERANT	CAPACITY (BTUH)	SUMMER			RLA (A)	MCA (A)	MOCP (A)	VOLT (V)	PH			MANUFACTURER	MODEL	
OU-1	ROOF	1	R-32	13,600	100	25.2	13.2	12	12.3	15	208	1	IU-01	132	DAIKIN	RXM	1,2
OU-2	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-02	132	DAIKIN	RXM	1,2
OU-3	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-03	132	DAIKIN	RXM	1,2
OU-4	ROOF	2	R-32	24000	100	25.2	13.2	12	12.3	15	208	1	IU-04	132	DAIKIN	RXM	1,2
OU-5	ROOF	1	R-32	10900	100	14.3	8.5	7.5	8	15	208	1	IU-05	132	DAIKIN	RXM	1,2
OU-6	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-06	132	DAIKIN	RXM	1,2
OU-7	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-07	132	DAIKIN	RXM	1,2
OU-8	ROOF	4	R-32	24000	100	25.2	13.2	12	12.3	15	208	1	IU-08	132	DAIKIN	RXM	1,2
OU-9	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-09	132	DAIKIN	RXM	1,2
OU-10	ROOF	2	R-32	24,000	100	22	12	18.25	19.8	20	208	1	IU-10	132	DAIKIN	RXM	1,2

VARIABLE AIR VOLUME TERMINAL UNIT SCHEDULE

NOTES:
1. ALL PERFORMANCE BASED ON TESTS CONDUCTED IN ACCORDANCE WITH ASHRAE 130-2008 AND AHRI 880-2011.
2. ALL AIRFLOW, PRESSURE LOSSES AND HEATING PERFORMANCE VALUES HAVE BEEN CORRECTED FOR THE PROJECT SITE ALTITUDE.
3. COIL AIR PRESSURE DROP SHOWN IS FOR COOLING CFM.
4. ALL NC LEVELS DETERMINED USING AHRI 885-2008 APPENDIX E.
5. IN THE "STEPS" COLUMN, CODE "S" DENOTES A MODULATING SCR HEATER.
6. ELECTRIC HEATING COILS SHALL BE HOUSED IN AN ATTENUATOR SECTION THAT IS INTEGRAL TO THE TERMINAL UNIT.
7. THE MINIMUM SUPPLY CIRCUIT AMPACITY (MCA) AND MAXIMUM OVERCURRENT PROTECTION (MOP) RATINGS WERE CALCULATED IN ACCORDANCE WITH UL STANDARDS
   BASED ON MOTOR AND ELECTRIC COIL FULL LOAD CURRENT RATINGS.

ID	LOCATION		TYPE	AIRFLOW (CFM)		STATIC PRESS (IN WG)	ELECTRIC HEATING COIL DATA					MAX NOISE CRITERIA (NC)		ELECTRICAL DATA				SOUND ATTENUATOR INCLUDED	BASIS OF DESIGN		NOTES
							AIR SIDE			HTG ELEMENT									MANUFACTURER	MODEL	
	NO.	NAME		MAX	MIN	MIN	CAPACITY (BTUH)	HEATING AIRFLOW (CFM)	TEMP DB (°F) ENT	TEMP DB (°F) LVG	KW	STEPS	RAD	DISCH	MCA (A)	MOCP (A)	VOLT (V)	PH			
VAV-1	A112	BOH HALL	SINGLE DUCT	560	170	0.5	9,490	220	55	95	3	S	19	25	13.5	15	277	1	Yes	TITUS	DESV	1-7
VAV-2	A128	DRESSING ROOM	SINGLE DUCT	150	45	0.5	3,451	80	55	95	1.5	S	10	14	6.8	15	277	1	Yes	TITUS	DESV	1-7
VAV-3	A129	DRESSING ROOM	SINGLE DUCT	150	45	0.5	3,451	80	55	95	1.5	S	10	14	6.8	15	277	1	Yes	TITUS	DESV	1-7
VAV-4	A130	MAKEUP	SINGLE DUCT	100	30	0.5	3,451	80	55	95	1.5	S	10	17	6.8	15	277	1	Yes	TITUS	DESV	1-7
VAV-5	A131	MUSIC LIBRARY	SINGLE DUCT	100	30	0.5	3,451	80	55	95	1.5	S	10	10	6.8	15	277	1	Yes	TITUS	DESV	1-7
VAV-6	A132	LARGE PRACTICE	SINGLE DUCT	100	30	0.5	3,451	80	55	95	1.5	S	10	10	6.8	15	277	1	Yes	TITUS	DESV	1-7
VAV-7	A133	SMALL PRACTICE	SINGLE DUCT	100	30	0.5	3,451	80	55	95	1.5	S	10	10	6.8	15	277	1	Yes	TITUS	DESV	1-7
VAV-8	A134	UNISEX TOILET	SINGLE DUCT	100	30	0.5	3,451	80	55	95	1.5	S	10	10	6.8	15	277	1	Yes	TITUS	DESV	1-7
VAV-9	A137	SMALL PRACTICE	SINGLE DUCT	130	40	0.5	3,451	80	55	95	1.5	S	10	11	6.8	15	277	1	Yes	TITUS	DESV	1-7

FAN SCHEDULE

NOTES:
1. PROVIDE UNIT MOUNTED SOLID STATE SPEED CONTROLLER AND/OR EC MOTOR WITH SPEED CONTROL OPTIONS
2. 12" INSULATED ROOF CURB
3. PROVIDE MOTORIZED DAMPER
4. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH
5. CONSTANT VOLUME
6. INTERLOCK WITH RTU-5
7. INTERLOCK WITH RTU-6 and RTU-8
8. INTERLOCK WITH RTU-7

ID	LOCATION	SERVES	FAN DATA				DRIVE	ELECTRICAL DATA							DAMPER TYPE	BASIS OF DESIGN		NOTES
	NAME		AIRFLOW (CFM)	ESP (IN WG)	FAN TYPE			HP WATTS	FLA (A)	MCA (A)	MOCP (A)	V	PH	HZ		MANUFACTURER	MODEL	
EF-1	ROOF	DRESSING ROOMS	550	0.38	CENTRIFUGAL UPLAST		DIRECT	0.1	2.5	3.1	4.5	120	1	60	MOTORIZED	GREENHECK	G-090-VG	1-6
EF-2	ROOF	LOBBY RESTROOMS	1,630	0.5	CENTRIFUGAL UPLAST		DIRECT	0.5	9.8	12.3	15	120	1	60	MOTORIZED	GREENHECK	G-133-C	1-5,7
EF-3	ROOF	WORKSHOP	375	0.1	CENTRIFUGAL UPLAST		DIRECT	0.1	2.5	3.1	4.5	120	1	60	MOTORIZED	GREENHECK	G-090-VG	1-5,8
EF-4	ROOF	LOADING DOCK	280	0.1	CENTRIFUGAL UPLAST		DIRECT	0.1	2.5	3.1	4.5	120	1	60	MOTORIZED	GREENHECK	G-090-VG	1-5,8

SILENCER SCHEDULE (VIBRO-ACOUSTICS)

TAG	SYSTEM	TYPE (NOTE 1)	DIMENSIONS					AIRFLOW, CFM	VELOCITY, FPM (NOTE 2)	IDEAL DP IN.W.G. (NOTE 3)	MAX.DP W/SYS EFF IN.W.G. (NOTE 4)	MINIMUM DYNAMIC INSERTION LOSS, dB (NOTE 5)						BASIS OF DESIGN VIBRO-ACOUSTICS MODEL NUMBER	NOTES
			DUCT WIDTH, IN.	DUCT HEIGHT, IN.	DUCT INLET DIA., IN.	DUCT OUTLET DIA., IN.	OUTER DIAMETER, IN.	LENGTH IN.				OCTAVE BAND CENTER FREQUENCY, HZ							
												63	125	250	500	1000	2000	4000	8000
ST-RTU-1 RA	RTU-1 RETURN AIR	RD	46	38				36	14230	0.09	0.09	4	6	11	17	16	12	9	7	RD-MHV-F4	
ST-RTU-1-SA	RTU-1 SUPPLY AIR	RD	48	36				36	14230	+1186	0.09	3	5	10	16	16	12	9	7	RD-MHV-F4	
ST-RTU-2-RA	RTU-2 RETURN AIR	RD	28	28				36	2500	-459	0.1	0.11	7	14	20	20	27	21	16	13	RD-ULV-F2	6
ST-RTU-2-SA	RTU-2 SUPPLY AIR	RD	34	30				36	2500	+353	0.07	0.08	6	9	20	28	34	30	21	15	RD-ULV-F7	6
ST-RTU-3-RA	RTU-3 RETURN AIR	RD	30	24				36	2805	-561	0.08	0.09	6	11	17	18	21	15	15	13	RD-LV-F1	6
ST-RTU-3-SA	RTU-3 SUPPLY AIR	RD	30	24				36	2805	+561	0.08	0.09	5	10	16	17	20	18	16	13	RD-LV-F1	6
ST-RTU-4-RA	RTU-4 RETURN AIR	RD	55	24				48	5930	-647	0.13	0.23	8	13	21	26	29	21	16	13	RD-LV-F2	
ST-RTU-4-SA	RTU-4-SUPPLY AIR	RD	34	26				36	5930	+966	0.1	0.12	3	5	13	21	24	19	13	9	RD-MV-F7	
ST-RTU-6-SA	RTU-6 SUPPLY AIR	RD	50	22				36	11425	+1496	0.09	0.09	3	4	9	16	19	15	10	7	RD-HV-F7	
ST-RTU-9-RA	RTU-9 RETURN AIR	CD			26	26	42	36	5000	-1356	0.14	0.16	5	9	20	27	41	41	31	15	CD-LV-F1	
ST-RTU-9-SA	RTU-9 SUPPLY AIR	CD			36	36	52	36	5000	+707	0.04	0.05	5	8	17	23	32	28	18	8	CD-LV-F1	
ST-VAV-5-SA	VAV-5 SUPPLY AIR	CD			12	12	28	24	100	+127	0.01	UNKNOWN	7	11	16	26	35	42	43	31	CD-LV-F1	
ST-VAV-6-SA	VAV-6 SUPPLY AIR	CD			12	12	28	24	100	+127	0.01	UNKNOWN	7	11	16	26	35	42	43	31	CD-LV-F1	
ST-VAV-7-SA	VAV-7 SUPPLY AIR	CD			12	12	28	24	100	+127	0.01	UNKNOWN	7	11	16	26	35	42	43	31	CD-LV-F1	
ST-VAV-9-SA	VAV-9 SUPPLY AIR	CD			12	12	28	24	100	+127	0.01	UNKNOWN	7	11	16	26	35	42	43	31	CD-LV-F1	

Notes:
1. TYPE R - RECTANGULAR; C - CIRCULAR; D - DISSIPATIVE
2. VELOCITY SHOWN IS + (FORWARD FLOW) OR - (REVERSE FLOW) AS DEFINED BY ASTM E477-20.
3. IDEAL PRESSURE DROP AS DETERMINED PER ASTM E477-20 IN A NVLAP-ACCREDITED ACOUSTICAL LABORATORY.
4. PRESSURE DROP PER ASTM E477-20 PLUS SYSTEM EFFECTS FOR NEARBY DUCT ELEMENTS.
5. MINIMUM DYNAMIC INSERTION LOSS DETERMINED PER ASTM E477-20 IN A NVLAP-ACCREDITED ACOUSTICAL LABORATORY.
6. HIGH TRANSMISSION LOSS (HTL) 18 GA. SILENCER CASING

HUMIDIFIER STEAM GENERATOR SCHEDULE

MARK			HU-1
SERVICE			PIANO STO. 145
OUTPUT		LB/HR	2
DISPERSION UNIT	DESIGN TEMPERATURE	°F	72
	DESIRED RH	%	50-60
	AIRFLOW	CFM	100
	DISPERSION DISTANCE	INCH	9
	UNIT DIMENSIONS	LxWxH	27x17x15
ELECTRICAL DATA	MCA	AMPS	1
	VOLTS / PHASE		120 / 1
	WEIGHT	LBS	55
BASIS OF DESIGN	MANUFACTURER		NORTEC
	MODEL		EL 005 RMBP
REMARKS			1-4

REMARKS:

1. PROVIDE WITH INTEGRAL DRAIN TEMPERING VALVE TO TEMPER CONDENSATE TO 140 DEG. F MAX. AND PROVIDE 1 INCH INTERNAL AIR GAP.

2. PROVIDE WITH BLOWER PACK FOR STAND ALONE OPERATION.

3. PROVIDE WITH BAS INTERFACE.

4. INSTALL WITH MANUFACTURER RECOMMENDED CLEARANCES. BOD CLEARANCES: 36" FRONT, 12" CEILING, 24" FLOOR, 12" SIDES.

DLR GROUP
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STATE OF TEXAS — BRENT D. HOWARD — 108649 — LICENSED PROFESSIONAL ENGINEER — 08/19/2024
TBPE FIRM REGISTRATION NUMBER P-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3038, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.07.25
REVISIONS
01 08/20/2024

39-23712-00

MECHANICAL SCHEDULES

M8.1

(R)	RELOCATED
Ø	PHASE
A	AMPERE
AC	ABOVE COUNTER
AF	AMP FRAME (CIRCUIT BREAKER)
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
AMP	AMPERE
AP	WIRELESS ACCESS POINT
AT	AMP TRIP (CIRCUIT BREAKER OR FUSE)
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO-VIDEO, AUDIO-VISUAL
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BJ	BONDING JUMPER
BKR	BREAKER
BMS	BUILDING MANAGEMENT SYSTEM
C	CONDUIT
CAS	CASING
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CE	COVER ELEVATION
CEM	CEMENT
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CG	CORNER GUARD
CH	CHANNEL
CJ	CONSTRUCTION JOINT
CKT	CIRCUIT
CKT BK	CIRCUIT BREAKER
CL	CIRCUIT LINE
CM	CEILING MOUNTED
CMP	CORRUGATED METAL PIPE
CO	CONDUIT ONLY
COMP	COMPOSITE
COOR	COORDINATE
COORD	COORDINATE
CSK	COUNTERSUNK
CT	CURRENT TRANSFORMER
CTL	CONTROL
CU	COPPER
CWV	COMBINATION WASTE AND VENT
DB	DECIBEL
DC	DIRECT CURRENT
DISC	DISCONNECT
DP	DISTRIBUTION PANELBOARD
DW	DISHWASHER
ECS	EMERGENCY COMMUNICATION SYSTEM
EGB	ELECTRICAL GROUNDING BUSBAR
EMD	ESTIMATED MAXIMUM DEMAND
EMGB	ELECTRICAL MAIN GROUNDING BUSBAR
EP	EXPLOSION PROOF
ERMS	ENERGY REDUCTION MAINTENANCE SWITCH
EWC	ELECTRIC WATER COOLER
FA	FIRE ALARM
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FC	FOOT CANDLE
FLA	FULL LOAD AMPS
FS	FLOW SWITCH
FSD	FIRE SMOKE DAMPER
G	EQUIPMENT GROUNDING CONDUCTOR
GEN	GENERATOR
GFI, GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFPE	GROUND FAULT PROTECTION OF EQUIPMENT
GND	EQUIPMENT GROUNDING CONDUCTOR
HH	HANDHOLE
HOA	HAND-OFF-AUTOMATIC
HP	HORSE POWER
IC	INTERCOM
IG	ISOLATED GROUND
JB	JUNCTION BOX
KAIC	THOUSAND AMPERE INTERRUPTING CIRCUIT
KV	KILOVOLT
KVA	KILOVOLT AMPERES
KW	KILOWATT
LT	LIGHT
LTG	LIGHTING
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MH	MANHOLE
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MRTS	MOTOR RATED TOGGLE SWITCH
MSB	MAIN SWITCHBOARD
MTD	MOUNTED
MTG	MOUNTING
MTS	MAIN TRANSFER SWITCH
N	NEUTRAL
NC	NORMALLY CLOSED
NF	NON-FUSED
NL	NIGHT LIGHT
NO	NORMALLY OPEN
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OS&Y	OUTSIDE SCREW AND YOKE
P	POLE(S)
PA	PUBLIC ADDRESS
PB	PULL BOX
PH	PHASE
PIV	POST INDICATOR VALVE
PNL	PANEL
PWR	POWER
RCP	REFLECTED CEILING PLAN
RECPT	RECEPTACLE
REF	REFERENCE
RESP	RESPONSIVE
SCCR	SHORT CIRCUIT CURRENT RATING
SD	SMOKE DAMPER
SEC	SECONDARY
SPD	SURGE PROTECTION DEVICE
SWBD	SWITCHBOARD
TBB	TELECOMMUNICATIONS BONDING BACKBONE
TC	TIME CLOCK
TGB	TELECOMMUNICATIONS GRONDING BUSBAR
TMGB	TELECOMMUNICATIONS MAIN GRONDING BUSBAR
TO	TELECOMMUNICATIONS OUTLET
TR	TELECOMMUNICATIONS ROOM
TS	TAMPER SWITCH
TV	TELEVISION
UG	UNDERGROUND
UPS	UNINTERRUPTABLE POWER SUPPLY
V	VOLT
VA	VOLT-AMPERE
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE
WA	TELECOMMUNICATIONS WORK AREA
WG	WIRE GUARD
WP	WEATHER-PROOF (NEMA 3R)
XFMR	TRANSFORMER

* NOTE *

ALL NOTES ON THIS SHEET ARE APPLICABLE TO ALL OTHER SHEETS IN THIS SET.

THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE APPLICABLE IN THIS SET OF DRAWINGS.

NOTES

GENERAL NOTES

1 MODIFICATIONS TO EXISTING POWER DISTRIBUTION EQUIPMENT: MATCH EXISTING MANUFACTURER, SWITCH TYPE, FUSE TYPE, BREAKER TYPE AND KAIC RATING FOR ALL INSTALLED DEVICES.

2 EXISTING PANEL DIRECTORIES AT PANELS AFFECTED BY WORK: PROVIDE UPDATED TYPED PANEL DIRECTORY. CONSULT OWNER FOR INPUT ON LABELING OF ALL EXISTING CIRCUITS.

3 DEVICES AND LIGHT FIXTURES DENOTED 'ER' ARE EXISTING TO BE RELOCATED. NOTIFY A/E IF DEVICES OR FIXTURES ARE DAMAGED.

GENERAL DEMOLITION NOTES

1 ITEMS INDICATED ON DEMOLITION PLANS ARE BASED ON AS-BUILT DRAWINGS AND FIELD OBSERVATIONS AND ARE INTENDED TO GIVE THE BIDDER A GENERAL REPRESENTATION OF EXISTING CONDITIONS.

2 REMOVE ALL ITEMS SHOWN FULL-TONE OR NOTED ELSEWHERE IN THE DOCUMENTS TO BE REMOVED OR DEMOLISHED. DEMOLISH ADDITIONAL ITEMS NOT SHOWN ON DRAWINGS, BUT WHICH MUST BE REMOVED TO COMPLETE THE PROJECT.

3 ITEMS SHOWN HALF-TONE ARE EXISTING TO REMAIN.

4 RELOCATE ITEMS DENOTED 'ER'. SEE LIGHTING, POWER AND/OR SPECIAL SYSTEM SHEETS FOR NEW LOCATIONS. 'ER' IS DEFINED AS EXISTING (TO BE) RELOCATED.

5 EXISTING CONDUIT MAY REMAIN IF ALL THE FOLLOWING ARE TRUE:
A. IT CAN BE REUSED TO FEED DEVICES INSTALLED UNDER THIS CONTRACT.
B. IT DOES NOT INTERFERE WITH OTHER TRADES.
C. IT WAS ORIGINALLY INSTALLED MEETING SPECIFICATIONS RELATED TO THIS PROJECT.
D. IT WILL NOT BE EXPOSED IN A FINISHED AREA (UNLESS NOTED OTHERWISE).

6 PROVIDE ELECTRICAL DEMOLITION ASSOCIATED WITH MECHANICAL EQUIPMENT TO BE REMOVED. IN ADDITION TO DEVICES SHOWN, REFER TO MECHANICAL AND ARCHITECTURAL DEMOLITION SHEETS TO DETERMINE EQUIPMENT TO BE REMOVED.

7 MAINTAIN FUNCTIONALITY OF ALL EXISTING LOW VOLTAGE SYSTEMS INCLUDING, BUT NOT LIMITED TO, TELECOM CABLING NETWORKS, INTERCOM, CLOCKS, FIRE ALARM, SAFETY AND SECURITY DURING ALL PHASES OF CONSTRUCTION. PROVIDE TEMPORARY INTERCONNECTIONS AS REQUIRED TO ACCOMMODATE CONSTRUCTION SCHEDULE.

GENERAL SITE PLAN NOTES

1 ALL LIGHTING AND POWER CONDUCTORS SHALL BE INSTALLED BETWEEN 24" (MINIMUM) AND 36" (MAXIMUM) BELOW FINISHED GRADE.

2 ALL COMMUNICATIONS CONDUIT AND CABLES SHALL BE INSTALLED 36" (MINIMUM) BELOW FINISHED GRADE.

3 ALL CONDUCTORS FOR EXTERIOR LIGHTING AND POWER CIRCUITS SHALL BE #10 AWG MINIMUM.

4 POLE BASE HEIGHTS:
A. PEDESTRAIN POLES IN SIDEWALKS OR PLAZAS - CONCRETE BASE WITH RUBBED FINISH, TOP OF FOOTING FLUSH WITH PAVING.
B. PEDESTRAIN POLES IN LAWN - CONCRETE BASE WITH ROUNDED EDGES AND RUBBED FINISH, BASE EXTENDS 4" ABOVE FINISHED GRADE.
C. PARKING LOT POLES BEHIND CURBS - CONCRETE BASE WITH ROUNDED EDGES AND RUBBED FINISH, BASE 2'-6" ABOVE FINISHED GRADE.

GENERAL POWER NOTES

1 VERIFY ANY NEUTRAL WIRES REQUIRED ON 1Ø OR 3Ø MECHANICAL UNITS FURNISHED UNDER DIVISION 23. IF REQUIRED, PROVIDE NEUTRAL.

2 PROVIDE DEDICATED 120-VOLT CIRCUITS TO ALL HVAC BAS CONTROL DEVICES AND PANELS. COORDINATE QUANTITY WITH DIVISION 23. UTILIZE NEAREST SPARE 120-VOLT, 20/1 BREAKER. LABEL TYPED PANEL DIRECTORY ACCORDING TO LOAD BEING SERVED.

3 IN ADDITION TO DEVICES SHOWN, SEE SCHEDULE SHEETS FOR CONNECTIONS TO ALL MECHANICAL EQUIPMENT.

4 LOCATE SWITCHES FOR CONTROL OF FANS IN TWO-GANG BOX WITH LIGHT SWITCH WHERE APPLICABLE.

5 PROVIDE #10AWG CONDUCTORS FOR ALL WARM AIR DRYER CIRCUITS. PROVIDE LOCKOUT DEVICE AT ALL BREAKERS SERVING WARM AIR DRYERS.

GENERAL LIGHTING NOTES

1 SEE LIGHT FIXTURE SCHEDULE AND SYMBOLS LEGEND FOR MOUNTING HEIGHTS, UNLESS NOTED OTHERWISE.

2 PROVIDE #10AWG MINIMUM CONDUCTORS FOR ALL EXTERIOR LIGHTING CIRCUITS.

3 SEE ARCHITECTURAL BUILDING ELEVATIONS FOR LOCATION OF BUILDING MOUNTED EXTERIOR LIGHT FIXTURES.

4 PROVIDE BEAD OF SILICONE SEALANT AROUND RECESSED BACK BOX PERIMETER AT ALL BUILDING MOUNTED EXTERIOR LIGHT FIXTURE LOCATIONS.

5 FIXTURES DENOTED WITH 'NL' ARE PROGRAMMED AS NIGHT LIGHTS. DO NOT CIRCUIT THESE AS UN-SWITCHED. SEE LIGHTING CONTROL SCHEDULES FOR MORE INFORMATION

6 FIXTURES DENOTED WITH LOWER CASE LETTERS SHALL BE CONTROLLED BY SWITCHES DENOTED WITH THE SAME LOWER CASE LETTER IN EACH ROOM.

GENERAL DEVICE BOX NOTES

1 SEE SYMBOLS LEGEND THIS SHEET FOR MOUNTING HEIGHTS UNLESS NOTED OTHERWISE ON DRAWINGS.

2 ALL MOUNTING HEIGHTS ARE TO CENTERLINE OF BOXES UNLESS NOTES OTHERWISE.

3 PROVIDE BOX EXTENDER FOR FLUSH INSTALLATION OF DEVICES LOCATED IN ARCHITECTURAL CASEWORK THAT IS FLUSH WITH ADJACENT WALL (SUCH AS RECEPTACLES FOR GARBAGE DISPOSERS).

4 FLOOR BOXES: OBTAIN OWNER APPROVAL OF ALL BOX LOCATIONS PRIOR TO ROUGH IN. PROVIDE DEVICE PLATES AT DEVICES AND BLANK PLATES AT ALL UNUSED COMPARTMENTS.

5 COORDINATE LOCATION OF DEVICE BOXES FOR SWITCHES, RECEPTACLES, AND SYSTEMS DEVICES WITH MARKERBOARDS. ADJUST BOX LOCATIONS TO AVOID MARKERBOARDS.

6 COORDINATE LOCATION OF DEVICE BOXES FOR SWITCHES, RECEPTACLES, AND SYSTEMS DEVICES WITH TACKBOARDS. ADJUST BOX LOCATIONS TO AVOID TACKBOARDS. PROVIDE BOX EXTENDER FOR A FLUSH INSTALLATION WHERE DEVICES MUST BE MOUNTED AT TACKBOARD/TACKWALL.

7 CEILING MOUNTED RECEPTACLES: AT SUSPENDED CEILINGS, ROUTE POWER TO RECEPTACLE VIA FLEXIBLE METALLIC CONDUIT WITH 6-FOOT SERVICE LOOP. FEED FMC FROM A J-BOX RIGIDLY SUPPORTED A MAXIMUM OF 24-INCHES ABOVE SUSPENDED CEILING OR AT BOTTOM OF STRUCTURE ABOVE, WHICHEVER IS LOWER. LOCATE J-BOX DIRECTLY ABOVE RECEPTACLE AND SUPPORT VIA STRUCTURE, OR VIA THREAD ROD AND UNISTRUT HUNG FROM STRUCTURE ABOVE IN HIGH STRUCTURE APPLICATIONS.

8 DEVICES RECESSED IN MULLIONS: BACK BOXES TO BE RECESSED FOR FLUSH INSTALLATION OF DEVICE AND WALLPLATE. EXTEND CONCEALED CONDUIT IN MULLION UP TO WALL ABOVE AND STUB OUT ABOVE ACCESSIBLE CEILING. IN AREAS WITH NO CEILING, EXTEND CONDUIT TOWARDS CABLING SOURCE TO ABOVE NEAREST ACCESSIBLE CEILING.

GENERAL LIGHTNING PROTECTION AND GROUNDING NOTES

1 ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR WIRING ALL ELECTRICAL ITEMS SHOWN ON THE DRAWINGS.

2 ALL UNDERGROUND CONNECTIONS OF GROUNDING CONDUCTORS AND LIGHTNING PROTECTION SHALL BE BY EXOTHERMIC WELD, ALL BUILDING CONNECTIONS TO STRUCTURAL STEEL SHALL BE BY EXOTHERMIC WELD.

3 PROVIDE GROUND RING ELECTRODE AROUND ENTIRE BUILDING: 17 GAUGE 32 STRAND COPPER. BURIAL DEPTH SHALL BE 30". LOCATE BETWEEN 3'-0" AND 8'-0" FROM BUILDING FOUNDATION, CONNECT TO GROUND RODS AT EACH CORNER OF BUILDING.

4 UNDER SLAB STATIC GROUND CONDUCTORS SHALL BE BARE 17 GAUGE 32 STRAND COPPER.

5 ALL DOWN CONDUCTORS AND MAIN CONDUCTORS OF LIGHTNING PROTECTION SYSTEM SHALL BE 17 GAUGE 32 STRAND COPPER.

6 FURNISH AND INSTALL 1" PVC SLEEVE THRU FOUNDATION WALLS FOR ALL FOUNDATION PENETRATIONS.

7 NO BEND OF A CONDUCTOR SHALL FORM AN INCLUDED ANGLE OF LESS THAN 90°, NOR SHALL IT HAVE A RADIUS OF BEND LESS THAN 8".

8 ALL MAIN CONDUCTORS SHALL BE COPPER, EXCEPT WHERE ALUMINUM IS REQUIRED AT MECHANICAL EQUIPMENT. PROVIDE BIMETAL PARALLEL SPLICER AT TRANSITION TO ALUMINUM.

9 PROVIDE TYPE "P" AIR TERMINALS ON PARAPET, SPACED AT NO GREATER THAN 20'-0" APART, AND LOCATED WITHIN 2'-0" OF CORNERS OF STRUCTURE.

GENERAL SYSTEMS NOTES

DIVISION 26

1 TELECOMMUNICATIONS OUTLETS: PROVIDE TWO-GANG BOX (2.25-INCH DEEP MINIMUM) WITH SINGLE-GANG STRAP MOUNT PLASTER RING AND 1-INCH CONDUIT STUBBED INTO ACCESSIBLE SPACE ABOVE FINISHED CEILING (EXCEPTION: VOICE-ONLY OR VIDEO-ONLY OUTLETS PER NOTE BELOW).

2 TELECOMMUNICATIONS OUTLET INDICATED AS ROUGH IN ONLY (NO SUBSCRIPTS): INSTALL PER NOTE ABOVE, WITH BLANK 302SS SINGLE-GANG WALLPLATE.

3 VOICE-ONLY OR VIDEO-ONLY TELECOMMUNICATIONS OUTLET: PROVIDE SINGLE-GANG BOX WITH 1-INCH CONDUIT STUBBED INTO ACCESSIBLE SPACE ABOVE FINISHED CEILING.

4 MISCELLANEOUS LOW VOLTAGE OUTLETS (CALL STATIONS, HANDSETS, VOLUME CONTROL, MICROPHONE OUTLETS, SURFACE-MOUNT WALL SPEAKERS AND FIRE ALARM DEVICES): PROVIDE SINGLE-GANG BOX WITH 3/4-INCH CONDUIT STUBBED INTO ACCESSIBLE SPACE ABOVE FINISHED CEILING.

5 INSULATED BUSHINGS: PROVIDE BUSHINGS ON ALL CONDUIT STUB UPS, INCLUDING BUT NOT LIMITED TO, OUTLETS FOR TELECOMMUNICATIONS, FIRE ALARM, SECURITY, ACCESS CONTROL, MASS NOTIFICATION, PUBLIC ADDRESS, ALL OTHER LOW VOLTAGE INTERCOMMUNICATIONS AND UNUSED STUB-UPS OR STUB-UPS INDICATED FOR FUTURE USE.

6 FLOOR BOXES CONTAINING TELECOMMUNICATIONS OUTLETS: FOR EACH LOW-VOLTAGE COMPARTMENT, ROUTE 1-INCH CONDUIT WITH PULL STRING UNDERFLOOR, UP NEAREST WALL, AND STUB INTO ACCESSIBLE SPACE ABOVE FINISHED CEILING. LABEL CONDUIT END 'FLOOR BOX'

7 SLEEVES FOR LOW VOLTAGE CABLES: PROVIDE 2-INCH SLEEVES UNLESS NOTED OTHERWISE. COORDINATE WITH PATH OF DUCTWORK AND GWB CEILING TO ENSURE ACCESSIBILITY, EXTEND SLEEVES AS REQUIRED. INSTALL ALL SLEEVES 4-INCHES ABOVE HIGHER CEILING OF TWO ADJACENT SPACES. REFER TO ROOM FINISH SCHEDULES AND REFLECTED CEILING PLANS FOR CEILING HEIGHTS. STUB SLEEVES INTO JOIST SPACE OF FINISHED ROOMS WITH EXPOSED STRUCTURE. PROVIDE INSULATED BUSHINGS ON BOTH ENDS OF ALL SLEEVES, INCLUDING UNUSED SLEEVES. PROVIDE GROUT OR ESCUTCHEONS TO SECURE SLEEVES TO WALL. PROVIDE FIRE-RATED SLEEVES AT ALL FIRE-RATED WALLS.

8 PROVIDE ADDITIONAL CONDUIT, BOXES, CONDUCTORS AND OVERCURRENT PROTECTION FOR 120-VOLT BRANCH CIRCUITS NOT SPECIFICALLY COVERED UNDER DIVISION 26 WORK, BUT REQUIRED TO COMPLETE DIVISION 08 AND 28 WORK. DEVICES SHALL INCLUDE, BUT NOT BE LIMITED TO, POWER SUPPLIES FOR DOOR HARDWARE, ACCESS CONTROL, FIRE ALARM AND VIDEO SURVEILLANCE.

9 CARD READERS: PROVIDE RECESSED SINGLE-GANG BOX WITH GASKETED BLANK COVERPLATE AND EMPTY 1-INCH CONDUIT STUBBED INTO NEAREST ACCESSIBLE SPACE ABOVE FINISHED CEILING OR JOIST SPACE OF ADJACENT EXPOSED STRUCTURE. LABEL CONDUIT END 'CARD READER'. COORDINATE FINAL CARD READER LOCATIONS WITH OWNERS ACCESS CONTROL CONTRACTOR.

10 PROVIDE WATERFALL DROPOUTS AT ALL CABLE TRAY LOCATIONS ABOVE RUNWAYS, WALL/FLOOR MOUNTED RACKS, AND EQUIPMENT ENCLOSURES.

11 AUDIO VISUAL (AV) SYSTEMS: PROVIDE RECESSED BOXES, CONDUIT AND PULL STRINGS FOR ALL SYSTEM COMPONENTS. SEE TA SERIES SHEETS

DIVISION 27

1 ALL SPEAKERS AND HORN-TYPE SPEAKERS ARE PART OF THE INTERCOM SYSTEM, UNLESS NOTED OTHERWISE.

2 PROVIDE SURFACE MOUNT ENCLOSURE AND BAFFLE FOR ALL SPEAKERS IN FINISHED SPACES WITH NO CEILINGS (EXPOSED STRUCTURE).

3 WIRELESS ACCESS POINTS: INSTALL ONE HORIZONTAL DATA CABLE, PER SPECIFICATIONS, TO EACH WAP SHOWN ON E3 SERIES SHEETS. TERMINATE EACH CABLE IN SURFACE BOX AND COIL A 6' SLACK LOOP.

4 UTILIZE SLEEVES AND FIRE RATED SLEEVES AT RATED WALLS PROVIDED UNDER DIVISION 26 FOR INSTALLATION OF ALL LOW VOLTAGE CABLING. FOLLOW INDUSTRY STANDARDS TO MAINTAIN 40% FILL REQUIREMENTS IN ALL SLEEVES (SUPERSEDES NEC - DO NOT FILL SLEEVES TO CAPACITY). PROVIDE ADDITIONAL SLEEVES MEETING DIVISION 26 REQUIREMENTS AS REQUIRED.

5 SYSTEM PANEL LOCATIONS: AUXILIARY SYSTEM PANELS, POWER SUPPLIES OR OTHER EQUIPMENT ENCLOSURES SHALL NOT BE LOCATED IN TELECOM ROOMS UNLESS NOTED OTHERWISE. IF DRAWINGS DO NOT DEPICT LOCATIONS FOR AUXILIARY COMPONENTS, CONSULT OWNER OR A/E FOR APPROVED LOCATIONS PRIOR TO EQUIPMENT INSTALL.

DIVISION 28

1 PROVIDE MINIMUM CANDELA RATINGS FOR ROOMS WITH WALL MOUNTED VISUAL NOTIFICATION APPLIANCES AS FOLLOWS:
- <20'x20' = 15cd
- <28'x28' = 30cd
- <40'x40' = 60cd
- >40'x40' = 110cd

2 PROVIDE MINIMUM CANDELA RATINGS FOR ROOMS WITH CEILING MOUNTED VISUAL NOTIFICATION APPLIANCES ON MAXIMUM 10' HIGH CEILING AS FOLLOWS:
- <20'x20' = 15cd
- <30'x30' = 30cd
- <40'x40' = 60cd
- >40'x40' = 110cd

3 INCREASE DEVICE RATINGS/SETTINGS WHEN LOCATED OFF-CENTER IN ROOMS TO MAINTAIN NFPA COVERAGE.

4 VISUAL DEVICES IN CORRIDORS SHALL BE 15cd. VISUAL DEVICES LOCATED IN OTHER AREAS SHALL BE 110cd UNLESS NOTED OTHERWISE.

5 IN ADDITION TO DEVICES SHOWN, SEE SCHEDULE SHEETS FOR FIRE ALARM SYSTEM DEVICES CONNECTIONS TO MECHANICAL EQUIPMENT.

6 PROVIDE FIRE ALARM MONITORING OF ALL FLOW AND TAMPER SWITCHES. CONFIRM QUANTITIES AND LOCATION WITH DIVISION 21.

7 UTILIZE SLEEVES AND FIRE RATED SLEEVES AT RATED WALLS PROVIDED UNDER DIVISION 26 FOR INSTALLATION OF ALL LOW VOLTAGE CABLING. FOLLOW INDUSTRY STANDARDS TO MAINTAIN 40% FILL REQUIREMENTS IN ALL SLEEVES (SUPERSEDES NEC - DO NOT FILL SLEEVES TO CAPACITY). PROVIDE ADDITIONAL SLEEVES MEETING DIVISION 26 REQUIREMENTS AS REQUIRED.

8 SYSTEM PANEL LOCATIONS: AUXILIARY SYSTEM PANELS, POWER SUPPLIES OR OTHER EQUIPMENT ENCLOSURES SHALL NOT BE LOCATED IN TELECOM ROOMS UNLESS NOTED OTHERWISE. IF DRAWINGS DO NOT DEPICT LOCATIONS FOR AUXILIARY COMPONENTS, CONSULT OWNER OR A/E PRIOR TO EQUIPMENT INSTALLATION.

9 DUCT SMOKE DETECTION: DETERMINE QUANTITY AND PLACEMENT OF DETECTORS REQUIRED FOR COVERAGE OF DUCTWORK BASED ON NFPA REQUIREMENTS. PROVIDE MECHANICAL EQUIPMENT FAN SHUTDOWN RELAY AT ALL DUCT DETECTORS. SEE HVAC PLANS FOR EQUIPMENT LOCATIONS. COORDINATE SHUTDOWN CONTROL WITH DIVISION 23.

10 SMOKE DAMPERS AND FIRE-SMOKE DAMPERS: PROVIDE FIRE ALARM CONNECTION AND 120-VOLT POWER TO EACH FIRE/SMOKE DAMPER SHOWN ON HVAC PLANS. PROVIDE DEDICATED CIRCUIT TO DAMPERS, ROUTED THROUGH NORMALLY CLOSED FIRE ALARM RELAY, MOUNTED ON WALL IN NEAREST ELECTRICAL ROOM. COORDINATE WITH DAMPER MANUFACTURER FOR SPECIFIC DAMPER LOAD REQUIREMENTS. RELAY SHALL BE CONTROLLED BY FACP, SUCH THAT, ON GENERAL ALARM DAMPERS CLOSE. FIRE ALARM CONNECTION TO DAMPER SHALL BE A SUPERVISORY CIRCUIT MONITORING STATUS OF INTEGRAL SMOKE DETECTOR, AND SHALL PROVIDE REMOTE FIRE/SMOKE DAMPER RESET. FACP SHALL INITIATE A SUPERVISORY SIGNAL WHEN INTEGRAL DETECTOR GOES INTO ALARM. FIRE/SMOKE DAMPERS MAY BE GROUPED TOGETHER ON SUPERVISORY CIRCUITS TO SIMPLIFY WIRING. COORDINATE REQUIREMENTS WITH FIRE/SMOKE DAMPER MANUFACTURER. UTILIZE SPARE 20/1 BREAKERS. LABEL TYPED PANEL DIRECTORY 'FIRE/SMOKE DAMPERS - (INDICATE AREA SERVED)'.

11 PROVIDE ONE HORIZONTAL DATA CABLE, PER SPECIFICATIONS, TO EACH CCTV CAMERA SHOWN ON E3 SERIES SHEETS. TERMINATE EACH INTERIOR AND BUILDING MOUNT CABLE IN SURFACE BOX AND COIL A 6' SLACK LOOP. DO NOT MAKE PENETRATIONS ON EXTERIOR OF BUILDING.

L6-20 WIRE MATRIX

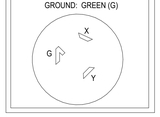
208V, 2 POLE / 3WIRE

CABLE COLOR CODE

LINE: BLACK (X)

NEUTRAL: WHITE (Y)

GROUND: GREEN (G)



ELECTRICAL SYMBOLS

LIGHTING

LIGHTING FIXTURE TAG

XXX — FIXTURE TYPE
XXX-X — CKT DESIGNATION (PNL - CKT NO.)
XXX-X — RELAY PANEL - RELAY NO. OR LOCAL SWITCH DESIGNATION

LIGHTING FIXTURES

▭	LIGHTING FIXTURE
◪	LIGHTING FIXTURE ON EMERGENCY SYSTEM
○	CEILING FIXTURE, SURFACE, RECESSED OR PENDANT
●	LIGHTING FIXTURE ON EMERGENCY SYSTEM
▽ ▽	LIGHTING TRACK, TRACK MOUNTED LIGHT FIXTURES
• •	LIGHTING FIXTURE
	WALL MOUNTED LIGHTING FIXTURE
◐	WALL WASHER
◎	HIGH BAY LIGHTING FIXTURE
⊢○	WALL MOUNTED LIGHTING FIXTURE
	SELF CONTAINED EMERGENCY LIGHTING UNIT MOUNT 94-INCHES AFF, UNO
⊗ ↔	EXIT SIGN, CEILING MOUNTED, DIRECTIONAL ARROW(S) AS INDICATED
⊢⊗ →	EXIT SIGN, WALL MOUNTED, DIRECTIONAL ARROW(S) AS INDICATED. MOUNT 94-INCHES AFF, UNO

AREA LIGHTING

○	SITE LIGHTING - POLE
⊣□	POLE MOUNTED AREA LIGHTING FIXTURE
○–□	POLE WITH POLE MOUNTED AREA LIGHTING FIXTURE
⊢□	WALL MOUNTED AREA LIGHTING FIXTURE
▣	IN GRADE LIGHT FIXTURE
⊛	POST TOP LIGHT FIXTURE
◁▷	SPOT LIGHT

LIGHTING CONTROL DEVICES

LCP	LIGHTING CONTROL PANEL
INV	CENTRAL BATTERY INVERTER
R	LOW VOLTAGE RELAY
PC	PHOTOELECTRIC CELL

SWITCHES AND WALL-BOX CONTROLS

SWITCHES: MOUNT 48-INCHES AFF UNO

x — SUPERSCRIPT , SWITCH SHALL CONTROL FIXTURE DENOTED WITH SAME LOWER CASE LETTER
$ — SWITCH SYMBOL
X — SUBSCRIPT, SWITCH TYPE - SEE BELOW
LINE THRU SWITCH INDICATES A KEY OPERATED SWITCH

S	SWITCH, SINGLE POLE
S_2	SWITCH, DOUBLE POLE
S_3	SWITCH, 3-WAY
S_4	SWITCH, 4-WAY
S_D	SWITCH, DIMMER
$S_{L\#}$	SWITCH, LOW VOLTAGE. SEE LOW VOLTAGE SWITCH SCHEDULE
S_O	SWITCH, WALL-BOX OCCUPANCY SENSOR
S_P	SWITCH WITH PILOT LIGHT
S_{OD}	WALL OCC, DIMMING

CEILING MOUNTED LIGHTING CONTROL DEVICES
MAXIMUM MOUNTING HEIGHT OF 10-FEET AFF

OS	OCCUPANCY/ VACANCY SENSOR

WALL MOUNTED LIGHTING CONTROL DEVICES:
MOUNT 94-INCHES AFF, UNO

OS	OCCUPANCY/VACANCY SENSOR

COMMUNICATIONS

TELECOMMUNICATIONS OUTLETS: MOUNT 18-INCHES AFF, UNO, AND WITHIN 8-INCHES OF ADJACENT RECEPTACLE
WHERE DENOTED 'AC', MOUNT ABOVE COUNTER
WHERE DENOTED 'C', MOUNT FLUSH IN CEILING

◁ X,Y,Z	TELECOMMUNICATIONS OUTLET PROVIDE JACKS UNDER A COMMON FACEPLATE: X = QTY OF VOICE JACKS Y = QTY OF DATA JACKS Z = QTY OF VIDEO JACKS
◁ DISP	TELECOMMUNICATIONS OUTLET IN AV BACKBOX. SEE TA SERIES SHEETS.
WAP	WIRELESS ACCESS POINT
⊢TV	VIDEO ONLY TELECOM OUTLET (TELEVISION OUTLET) MOUNT 94-INCHES AFF, UNO. EQUIVALENT TO ◁0,0,1
TV	TELEVISION OUTLET, FLUSH IN CEILING
⊢AV	AV OUTLET.
▯	FLOOR MOUNTED TELECOMMUNICATIONS RACK

BELLS, BUZZERS, CHIMES AND WALL SPEAKERS:
MOUNT 94-INCHES AFF, UNO

	CLASS PROGRAM BELL
	BUZZER
C	CHIME
⊢S	INTERCOM SPEAKER, WALL
S	INTERCOM SPEAKER, FLUSH IN CEILING, ENCLOSED IN BACKBOX WHERE EXPOSED
⊢H	SPEAKER/HORN, WALL
⊢IC	INTERCOM CALLBACK STATION MOUNT 42-INCHES AFF
⊢IC_2	TWO-WAY INTERCOM/CALL STATION COMBINATION UNIT MOUNT 42-INCHES AFF
⊢IC_M	INTERCOM MASTER STATION OUTLET MOUNT 18-INCHES AFF
H	INTERCOM HANDSET MOUNT 50-INCHES AFF
⊢V	VOLUME CONTROL, WALL MOUNT 48-INCHES AFF

SAFETY

FACP	FIRE ALARM CONTROL PANEL MOUNT CENTER OF DISPLAY 54-INCHES AFF
FAA	FIRE ALARM ANNUNCIATOR PANEL MOUNT CENTER OF DISPLAY 54-INCHES AFF
LOC	LOCAL OPERATOR'S CONSOLE MOUNT CENTER OF DISPLAY 54-INCHES AFF
NAC	NOTIFICATION APPLIANCE CIRCUIT CABINET MOUNT CENTER OF DISPLAY 54-INCHES AFF
F	MANUAL FIRE ALARM PULL STATION MOUNT 48-INCHES AFF

FIRE ALARM A/V DEVICES: MOUNT 94-INCHES AFF, OR 6-INCHES BELOW CEILING, WHICHEVER IS LOWER UNO

F	FIRE ALARM BELL
F	FIRE ALARM HORN
F	FIRE ALARM VISUAL WARNING SIGNAL
F	FIRE ALARM BELL WITH VISUAL WARNING SIGNAL
F	FIRE ALARM HORN WITH VISUAL WARNING SIGNAL
F	MINI FIRE ALARM HORN WITH VISUAL WARNING SIGNAL
F	FIRE ALARM SPEAKER WITH VISUAL WARNING SIGNAL
F	FIRE ALARM SPEAKER, FLUSH IN CEILING
F	FIRE ALARM SPEAKER WITH VISUAL WARNING SIGNAL, CEILING
F	FIRE ALARM VISUAL WARNING SIGNAL, CEILING
⊢EC	EMERGENCY RADIO CALL STATION, 48" AFF.

S	SPRINKLER SYSTEMS ELECTRIC BELL ALARM
D	FIRE ALARM MAGNETIC DOOR HOLDER MOUNT 74-INCHES AFF
L	REMOTE INDICATOR LAMP
OSY	OS&Y VALVE
FS	WATER FLOW ALARM SWITCH
TS	TAMPER SWITCH
⊢T	BEAM TRANSMITTER
⊢R	BEAM RECEIVER
◀FF	FIRE FIGHTERS TELEPHONE MOUNT 54-INCHES AFF
⊢<	DAS ANTENNA
I_D	SMOKE DETECTOR - IONIZATION TYPE (D = DUCT)
P_D	SMOKE DETECTOR - PHOTOELECTRIC TYPE (D = DUCT)
I	SMOKE DETECTOR - IONIZATION TYPE
P	SMOKE DETECTOR - PHOTOELECTRIC TYPE
C	CARBON MONOXIDE DETECTOR
⬡	HEAT DETECTOR RATE-OF-RISE AND FIXED TEMPERATURE, 135 F
⬡	HEAT DETECTOR, RATE-OF-RISE AND FIXED TEMPERATURE, 200 F
⬡	HEAT DETECTOR, FIXED TEMPERATURE ONLY, 135 F
⬢	HEAT DETECTOR, FIXED TEMPERATURE ONLY, 200 F

ADD-1

POWER

	CIRCUIT HOME RUN
—○	CONDUIT TURNING UP
—●	CONDUIT TURNING DOWN
	CONDUIT STUB-UP
	CONDUIT SLEEVE
	CONDUIT SEAL
	CONDUIT CONCEALED IN CEILING OR WALLS, POWER
*	CONDUIT CONCEALED IN CEILING OR WALLS, OTHER (* = SEE ABBREVIATIONS)
	CONDUIT CONCEALED IN FLOOR OR UNDERGROUND, POWER
*	CONDUIT CONCEALED IN FLOOR OR UNDERGROUND, OTHER (* = SEE ABBREVIATIONS)
	EXPOSED CONDUIT, POWER
*	EXPOSED CONDUIT, OTHER (* = SEE ABBREVIATIONS)
FRS	FIRE RATED SLEEVE
T	TRANSFORMER
XXX	BRANCH CIRCUIT PANELBOARD MOUNT 72-INCHES TO TOP
XXX	DISTRIBUTION PANELBOARD MOUNT 72-INCHES TO TOP
▭	EQUIPMENT CABINET, AS NOTED
XXX	SWITCHBOARD
☒	MOTOR STARTER OR DRIVE
□	DISCONNECT SWITCH
☒	COMBINATION STARTER / DISCONNECT SWITCH
CT	CURRENT TRANSFORMER ENCLOSURE
M	METER
GEN	GENERATOR
ATS	AUTOMATIC TRANSFER SWITCH
	SYSTEM GROUND ELECTRODE
⊢T	THERMOSTAT
	MUSHROOM SWITCH, 48" AFF
MH	ELECTRICAL MANHOLE
HH	ELECTRICAL HAND HOLE
	MECHANICAL CONNECTION
S_F	FUSE AND SWITCH ASSEMBLY
S_T	MANUAL CONTROLLER WITH THERMAL OVERLOAD
S_M	MANUAL CONTROLLER W/O THERMAL OVERLOAD
B	ENCLOSED CIRCUIT BREAKER
PB	PULL BOX
	EQUIPMENT CONNECTION
	CABLE TRAY, LADDER TYPE OR RUNWAY
	CABLE TRAY
	MULTI-OUTLET ASSEMBLIES MOUNT 18-INCHES AFF, UNO WHERE DENOTED 'AC', MOUNT ABOVE COUNTER
	DIVIDED SURFACE RACEWAY MOUNT 18-INCHES AFF, UNO WHERE DENOTED 'AC', MOUNT ABOVE COUNTER

PUSHBUTTON STATION: MOUNT 48-INCHES AFF UNO

⊡	SWITCH, PUSH BUTTON, SINGLE
	SWITCH, PUSH BUTTON, DOUBLE
	SWITCH, PUSH BUTTON, TRIPLE

RECEPTACLES: MOUNT 18-INCHES AFF, UNO

DIAGONAL LINE THROUGH SYMBOL OR DENOTED 'AC' INDICATES MOUNT DEVICE ABOVE COUNTER.
WHERE INDICATED AS 'MOUNT ABOVE COUNTER' MOUNT BOTTOM OF BOX 2-INCHES ABOVE TOP OF BACKSPLASH OR 6-INCHES ABOVE COUNTERTOP IF NO BACKSPLASH EXISTS.

LABELS SHALL BE MACHINE PRINTED, UNO

⊢⊖	SIMPLEX RECEPTACLE
⊖	DUPLEX RECEPTACLE
	DUPLEX RECEPTACLE, GFI TYPE
	DUPLEX RECEPTACLE, MOUNT ABOVE COUNTER
	DUPLEX RECEPTACLE, GFI TYPE, MOUNT ABOVE COUNTER
⊕	FOURPLEX RECEPTACLE
	FOURPLEX RECEPTACLE, GFI TYPE
	FOURPLEX RECEPTACLE, MOUNT ABOVE COUNTER
	FOURPLEX RECEPTACLE, GFI TYPE, MOUNT ABOVE COUNTER
	DUPLEX RECEPTACLE, FLUSH IN CEILING
	FOURPLEX RECEPTACLE, FLUSH IN CEILING
	DUPLEX RECEPTACLE, HORIZONTALLY MOUNTED
	DUPLEX RECEPTACLE, HORIZ. MTD, GFI TYPE
	DUPLEX RECEPTACLE, HORIZ. MTD, ABOVE COUNTER
	DUPLEX RECEPTACLE, HORIZ. MTD, GFI TYPE, MOUNT ABOVE COUNTER
R	WEATHER RESISTANT GFI DUPLEX RECEPTACLE, ROOF MOUNT 18-INCHES ABOVE ADJACENT STRUCTURE WITH A WEATHERPROOF, IN-USE COVER
WP	WEATHER RESISTANT GFI DUPLEX RECEPTACLE, MOUNT 18-INCHES AFF WITH A WEATHERPROOF, IN-USE COVER
EWC	STD DUPLEX RECEPTACLE TO SERVE ELECTRIC WATER COOLER, MOUNT AT HEIGHT PER EQUIPMENT MANUFACTURER'S INSTALLATION GUIDELINES. WIRE TO GFCI BKR IN PANELBOARD.
TV	DUPLEX RECEPTACLE TO SERVE TELEVISION, MOUNT AT SAME HEIGHT AND WITHIN 8-INCHES OF ADJACENT TV OUTLET
AV	RECEPTACLE TO SERVE AUDIOVISUAL EQUIPMENT, MOUNT AT SAME HEIGHT AND WITHIN 8-INCHES OF ADJACENT AV OUTLET. SEE TA SERIES SHEETS. ISOLATED GROUND CONNECTED PER DETAIL XX/E6.1
IG	ISOLATED GROUND RECEPTACLE TO SERVE EQUIPMENT UNDER AV SCOPE SHOWN ON TA SERIES SHEETS, MOUNT AT HEIGHT / LOCATION INDICATED ON TA SHEETS. CONNECTED PER DETAIL 4D/E6.1
⊢J AV	RECESSED BACK BOX FOR WALL MOUNTED DISPLAY. BACK BOX PROVIDED BY DIV 27, INSTALLED BY DIV 26. INSTALL DUPLEX RECEPTACLE IN BACK BOX. COORDONATE HEIGHT AND LOCATION WITH DRAWINGS
	DUPLEX RECEPTACLE, EMERGENCY
	FOURPLEX RECEPTACLE, EMERGENCY
	FOURPLEX RECEPTACLE, ONE DUPLEX SWITCHED, ONE DUPLEX UNSWITCHED
	DUPLEX RECEPTACLE, SPLIT CONTROLLED, LOWER SWITCH
	DUPLEX RECEPTACLE, SWITCHED
	RANGE RECEPTACLE, MOUNT 8-INCHES AFF
	SPECIAL RECEPTACLE, DEEP WELL BOX
AV	MULTI-DEVICE FLOOR BOX WITH RECEPTACLE, TELECOMMUNICATIONS, AND AV OUTLETS. SEE FLOOR BOX SCHEDULE.
⊢U	USB ONLY RECEPTACLE
U	RECEPTACLE WITH USB PORTS
J	FLUSH JUNCTION BOX
⊢J	FLUSH JUNCTION BOX, WALL MOUNTED
⊢H	HAND DRYER, INSTALL HAND DRYER SPECIFIED IN DIV. 11
	RECEPTACLE ON CORD REEL, CEILING MOUNTED

ADD-1

SECURITY

CR	CARD READER
SS	SECURITY SYSTEM CALL BUTTON
IC	FACILITY INTERCOM
IC	HANDS FREE INTERCOM
ID	INTRUSION DETECTOR, CEILING
⊢ID	INTRUSION DETECTOR, WALL
R	INTRUSION DETECTOR RECEIVER
R	INTRUSION DETECTOR TRANSMITTER
MD	MOTION DETECTOR
L	INDICATOR LIGHT, CEILING
⊢L	INDICATOR LIGHT, WALL
⊢K	SECURITY KEYPAD
C	MAGNETIC CONTACT (DOOR POSTION SENSOR)
ES	ELECTRIC STRIKE ON SECURITY ACCESS DOOR
⊢X	REQUEST-TO-EXIT MOTION SENSOR
X	REQUEST-TO-EXIT BUTTON

ONE-LINE DIAGRAM

☒ XX	ENCLOSED CONTROLLER (ACROSS-THE-LINE UNO) MOUNT 60-INCHES AFF TO TOP XX = STARTER NEMA SIZE
XX/X XXAF XX	ENCLOSED SWITCH; MOUNT 60-INCHES AFF TO TOP XX/X = AMP RATING / NO. OF POLES XXAF = FUSE SIZE; AF=AMP FUSE; NF=NO FUSE XX = STARTER NEMA SIZE
XX/X XXAF XX	COMBINATION CONTROLLER \ DISCONNECT; MOUNT 60-INCHES AFF TO TOP XX/X = AMP RATING / NO. OF POLES XXAF = FUSE SIZE; AF=AMP FUSE; NF=NO FUSE XX = ENCLOSURE NEMA RATING; BLANK=NEMA 1; WP=NEMA 3R
M	METER SOCKET/METER
SPD	SURGE PROTECTION DEVICE
T XX	TRANSFORMER T = TRANSFORMER ID XX = SIZE
XXX/X LSIG	BREAKER XXX/X = AMP RATING / POLES LSIG = ADJUSTABLE SETTINGS (WHERE NOTED) L = LONG TIME S = SHORT TIME I = INSTANTANEOUS G = GROUND FAULT PROTECTION OF EQUIPMENT GFPE = GROUND FAULT PROTECTION OF EQUIPMENT ERMS = ENERGY REDUCTION MAINTENANCE SWITCH ST = SHUNT TRIP
XXX/X XXX	FUSIBLE SWITCH XXX/X = SWITCH AMP RATING / POLES XXX = FUSE SIZE
	GROUNDING ELECTRODE SYSTEM

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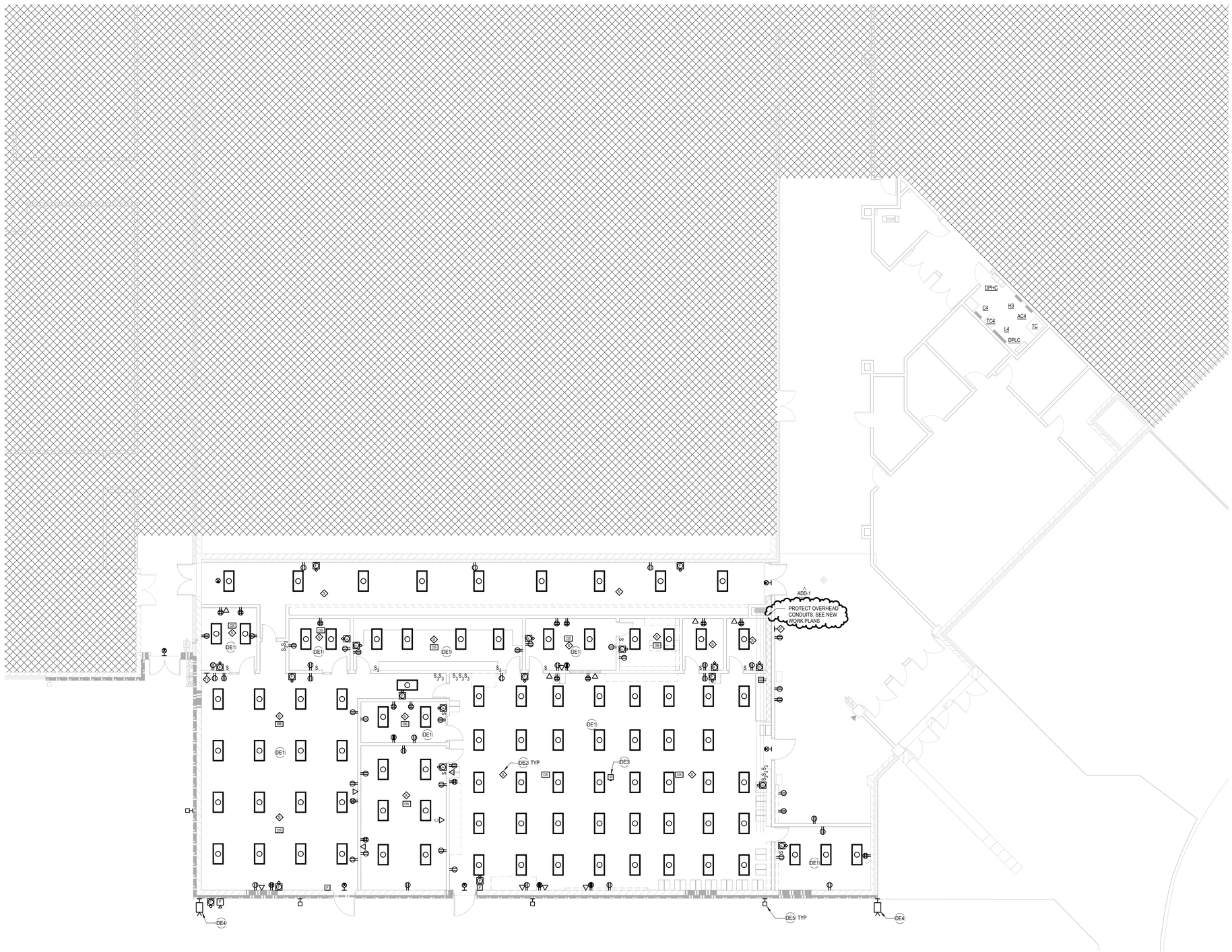
ELECTRICAL SYMBOLS, ABBREVIATIONS & NOTES

E0.1



SHEET NOTES

DE1 DEMOLISH ALL ELECTRICAL SYSTEMS IN THE ROOM INCLUDING LIGHTING, CONTROLS, FIRE ALARM, AND RECEPTACLES.

DE2 DEMOLISH INTERCOM SPEAKERS AND RETURN TO OWNER.

DE3 DEMOLISH A/V EQUIPMENT IN THIS ROOM INCLUDING PROJECTOR AND SOUND REINFORCEMENT SPEAKERS AND RETURN TO OWNER.

DE4 DEMOLISH SECURITY CAMERAS AND RETURN TO OWNER

DE5 DEMOLISH EXTERIOR WALL PACKS

N

LEVEL 01 - AREA B - ELECTRICAL DEMOLITION PLAN

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

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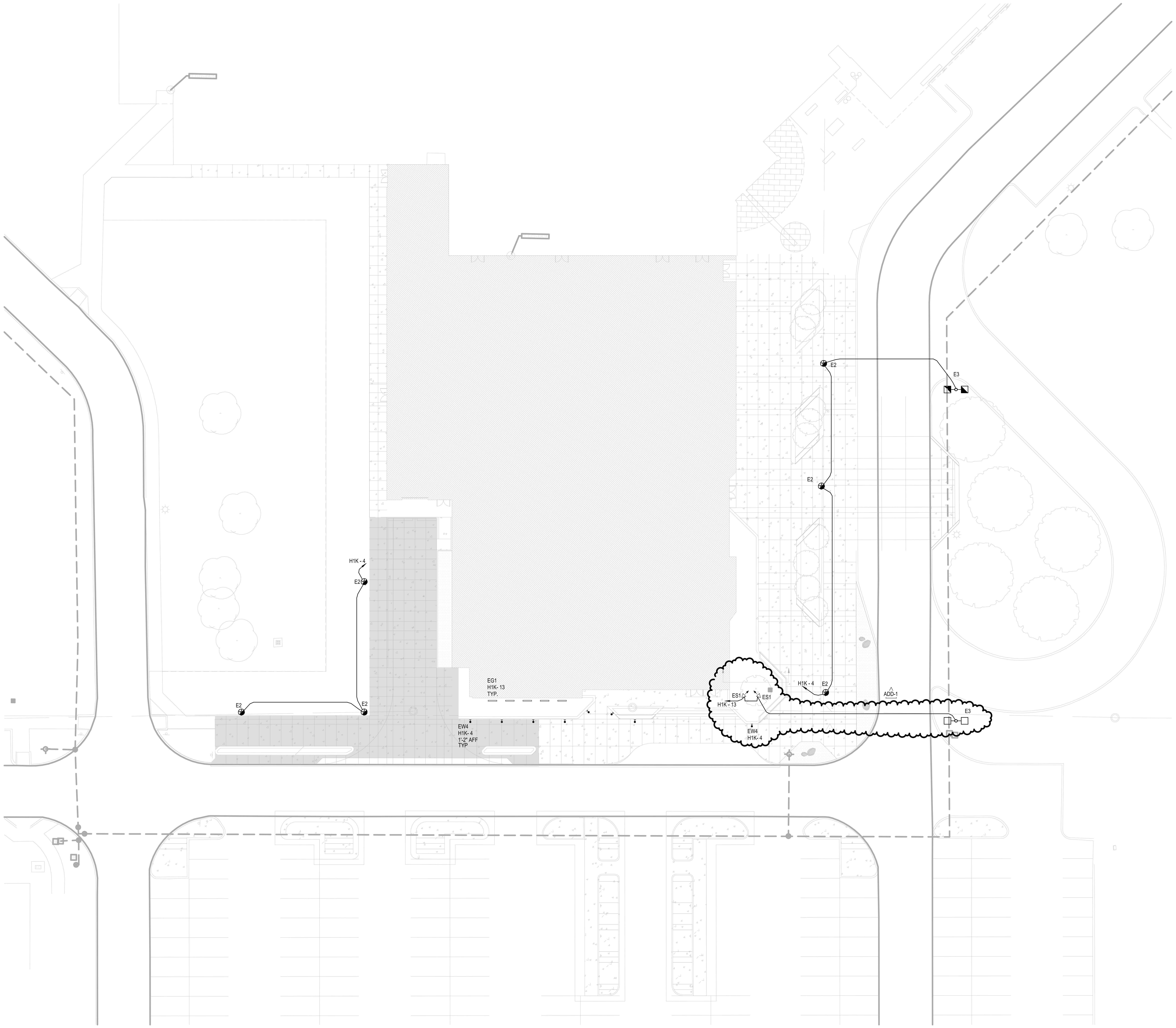
LEVEL 01 - AREA B - ELECTRICAL DEMOLITION PLAN

ED1.1B



ELECTRICAL SITE PLAN

SCALE: 1" = 20'-0"

SHEET NOTES

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ELECTRICAL SITE PLAN

ES1.1

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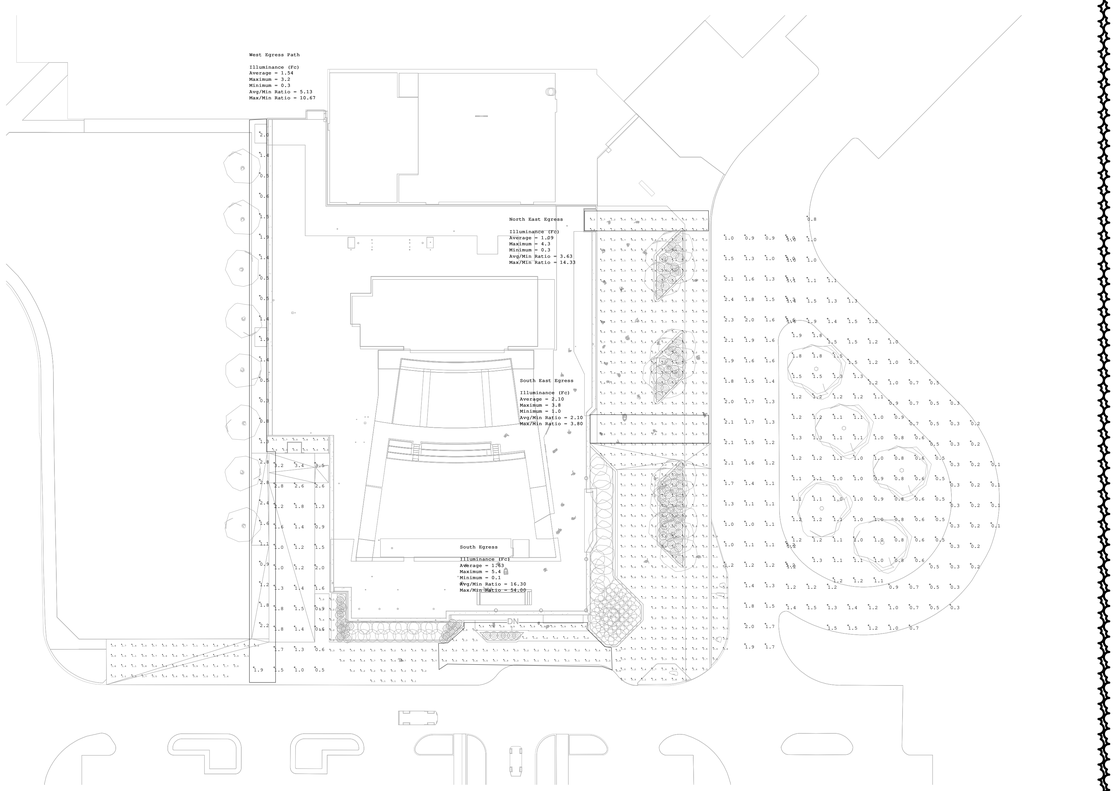
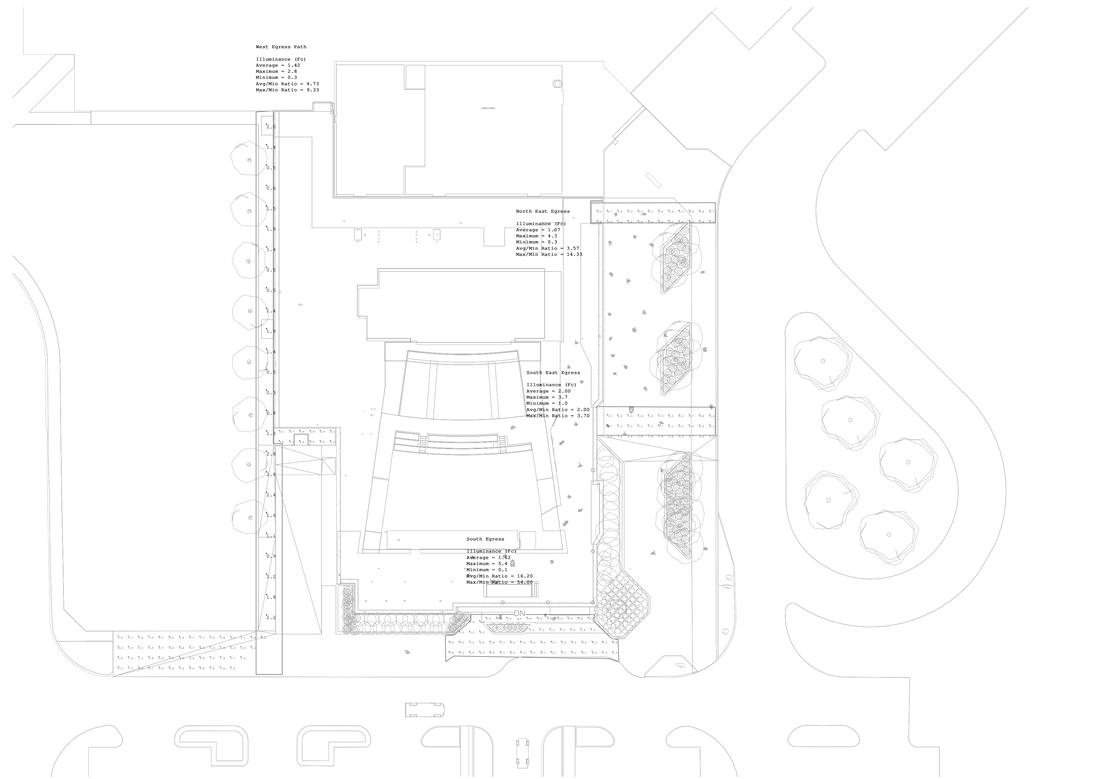


N

SITE LIGHTING EGRESS CALCULATIONS

SCALE: 1" = 30'-0"



N

SITE LIGHTING EMERGENCY CALCULATIONS

SCALE: 1" = 30'-0"

ADD-1

ADD-1

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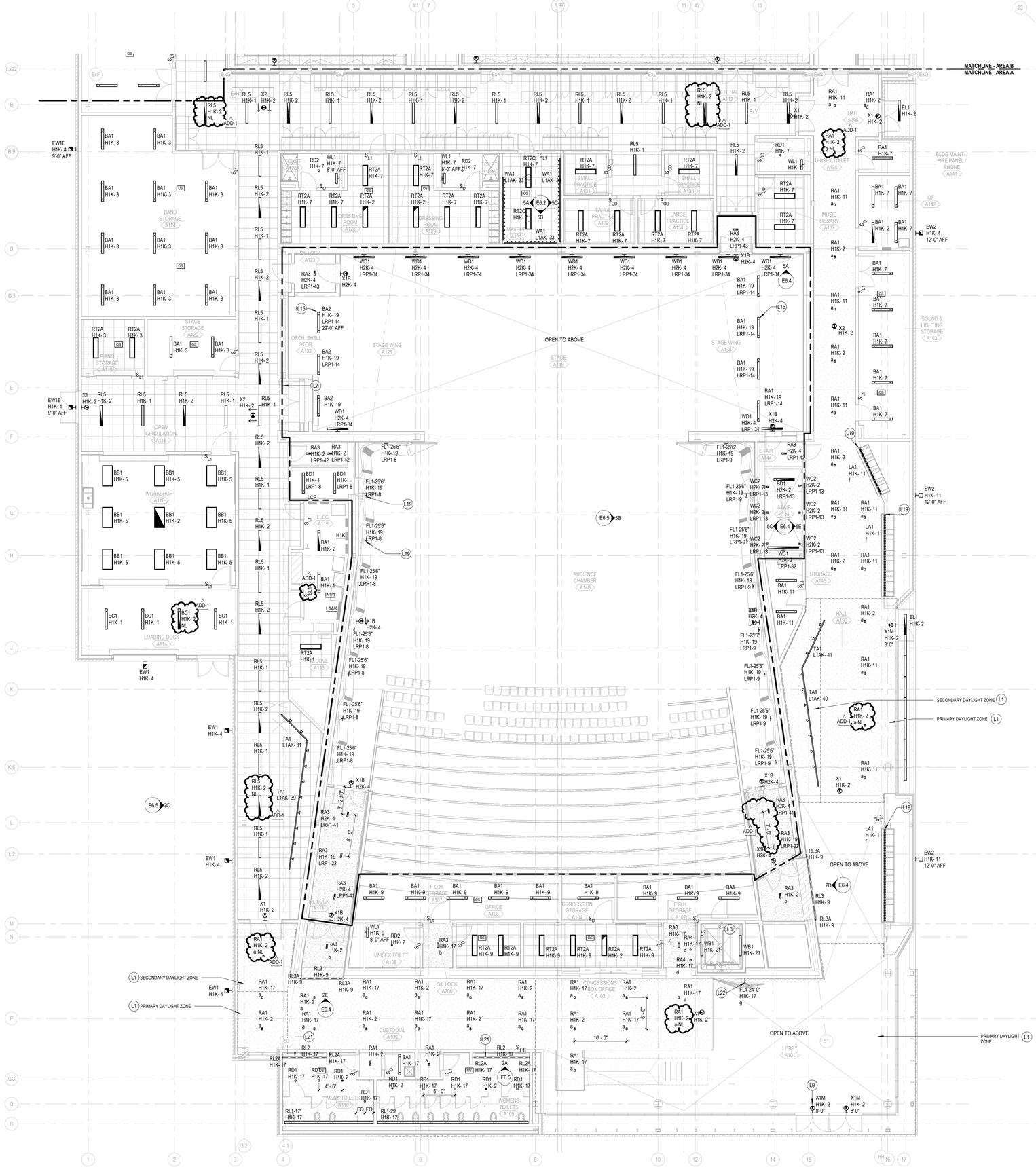
SITE LIGHTING PHOTOMETRICS

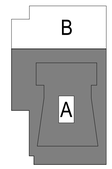
ES1.2



SHEET NOTES

- L1 GENERAL LIGHTING IN DAYLIGHT ZONES IS LESS THAN 150 WATTS. DAYLIGHT RESPONSIVE CONTROLS NOT REQUIRED PER 2021 IECC C408.
- L7 LIGHTING WITHIN BOUNDARY CONTROLLED BY THEATRICAL LIGHTING CONTROL SYSTEM. COORDINATE WITH QT SERIES SHEETS.
- L8 MOUNT SWITCH IN SHAFT AT 42" ABOVE LEVEL 1 FINISHED FLOOR. SWITCH CONTROLS LIGHTS IN ELEVATOR PIT. MOUNT LIGHT FIXTURES 6" ABOVE LEVEL 1 FINISHED FLOOR.
- L9 MOUNTED ABOVE MULLION, TYPICAL
- L15 TYP. MOUNT TO UNDERSIDE OF CATWALK.
- L19 SEE MOUNTING DETAIL 5A/A11.10. IN ARCHITECTURAL DRAWINGS. MOUNT FIXTURE SO THAT ASYMMETRIC OPTICS POINT AWAY FROM THE WALL.
- L21 TYPICAL FOR RL2 & RL2A. PROVIDE A CONTINUOUS PORTAL. BOTTOM OF VERTICAL SECTION SHOULD ALIGN WITH TOP OF SINK COUNTER.
- L22 LOCATE REMOTE DRIVER BEHIND AN ACCESS PANEL IN ADJACENT HARD LID CEILING.

KEY PLAN



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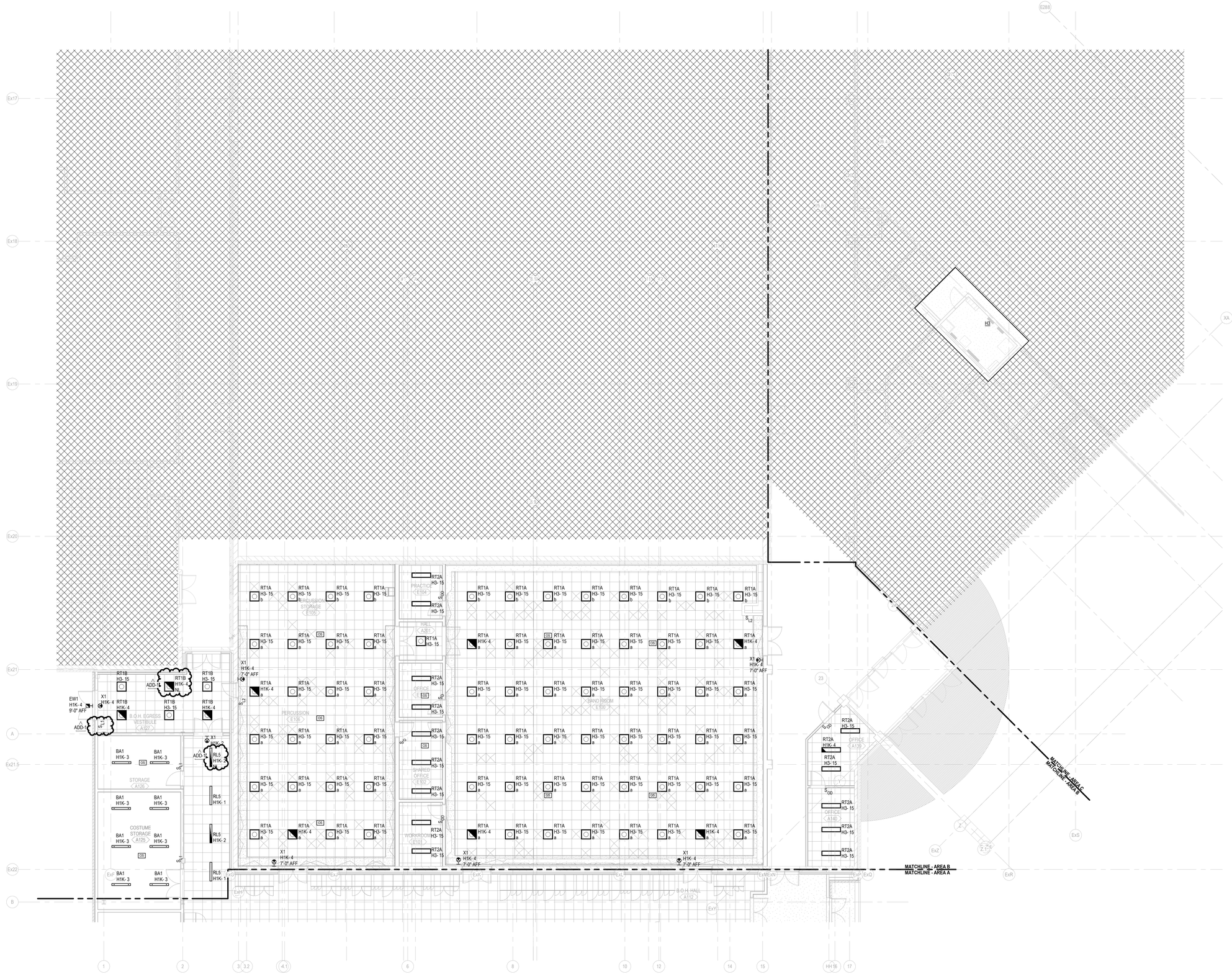
LEVEL 01 - AREA A - LIGHTING PLAN

EL1.1A

LEVEL 01 - AREA A - LIGHTING PLAN

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

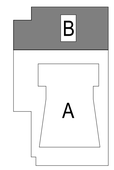


LEVEL 01 - AREA B - LIGHTING PLAN

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

SHEET NOTES

KEY PLAN



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LEVEL 01 - AREA B - LIGHTING PLAN

EL1.1B

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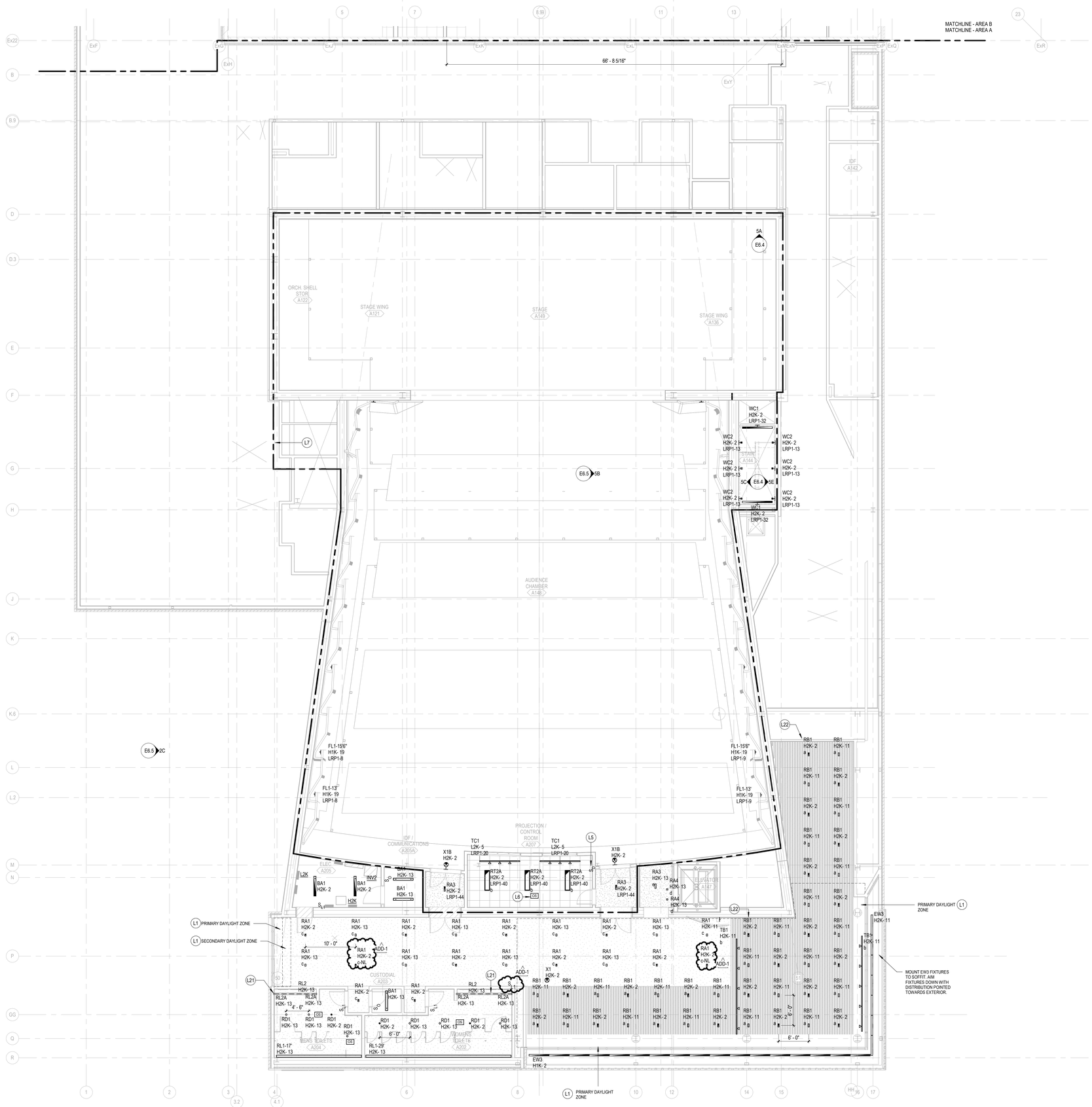


LEVEL 02 MEZZANINE - AREA A - LIGHTING PLAN

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

SHEET NOTES

L1 GENERAL LIGHTING IN DAYLIGHT ZONES IS LESS THAN 150 WATTS. DAYLIGHT RESPONSIVE CONTROLS NOT REQUIRED PER 2021 IECC C408.

L5 0-10V DIMMER WITH ELV RELAY FOR LOCAL CONTROL OF TC1 TRACK FIXTURE. PROVIDE BLACK DEVICE AND FACEPLATE.

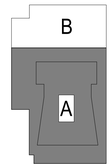
L6 PROVIDE BLACK VACANCY SENSOR COVER. COORDINATE WITH THEATRICAL LIGHTING CONTROL SYSTEM IN THIS SPACE.

L7 LIGHTING WITHIN BOUNDARY CONTROLLED BY THEATRICAL LIGHTING CONTROL SYSTEM. COORDINATE WITH QT SERIES SHEETS.

L21 TYPICAL FOR RL2 & RL2A. PROVIDE A CONTINUOUS PORTAL. BOTTOM OF VERTICAL SECTION SHOULD ALIGN WITH TOP OF SINK COUNTER.

L22 LOCATE REMOTE DRIVER BEHIND AN ACCESS PANEL IN ADJACENT HARD LID CEILING.

KEY PLAN



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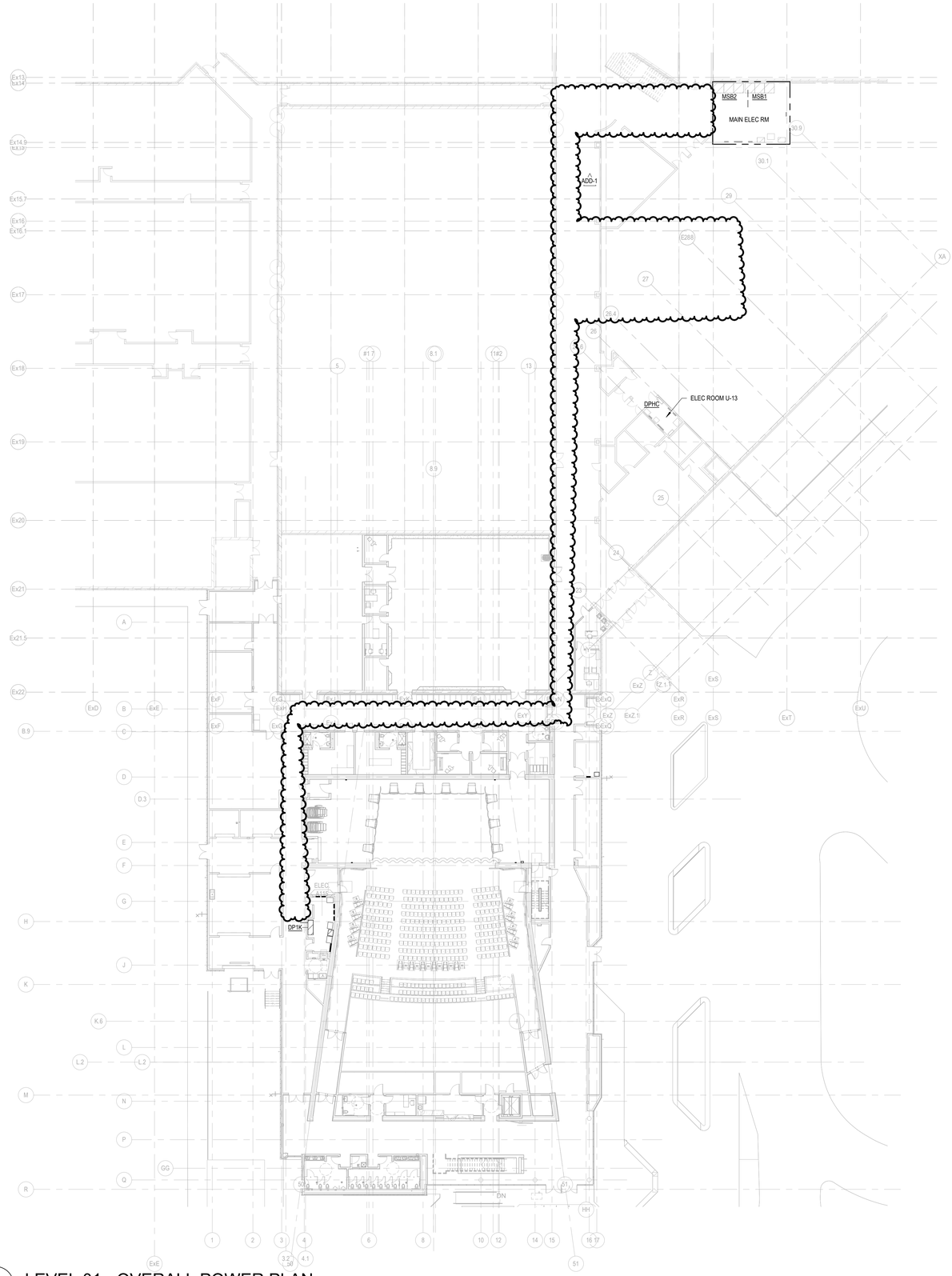
LEVEL 02 MEZZANINE - AREA A - LIGHTING PLAN

EL1.2A



N

LEVEL 01 - OVERALL POWER PLAN

SCALE: 1" = 20'-0"

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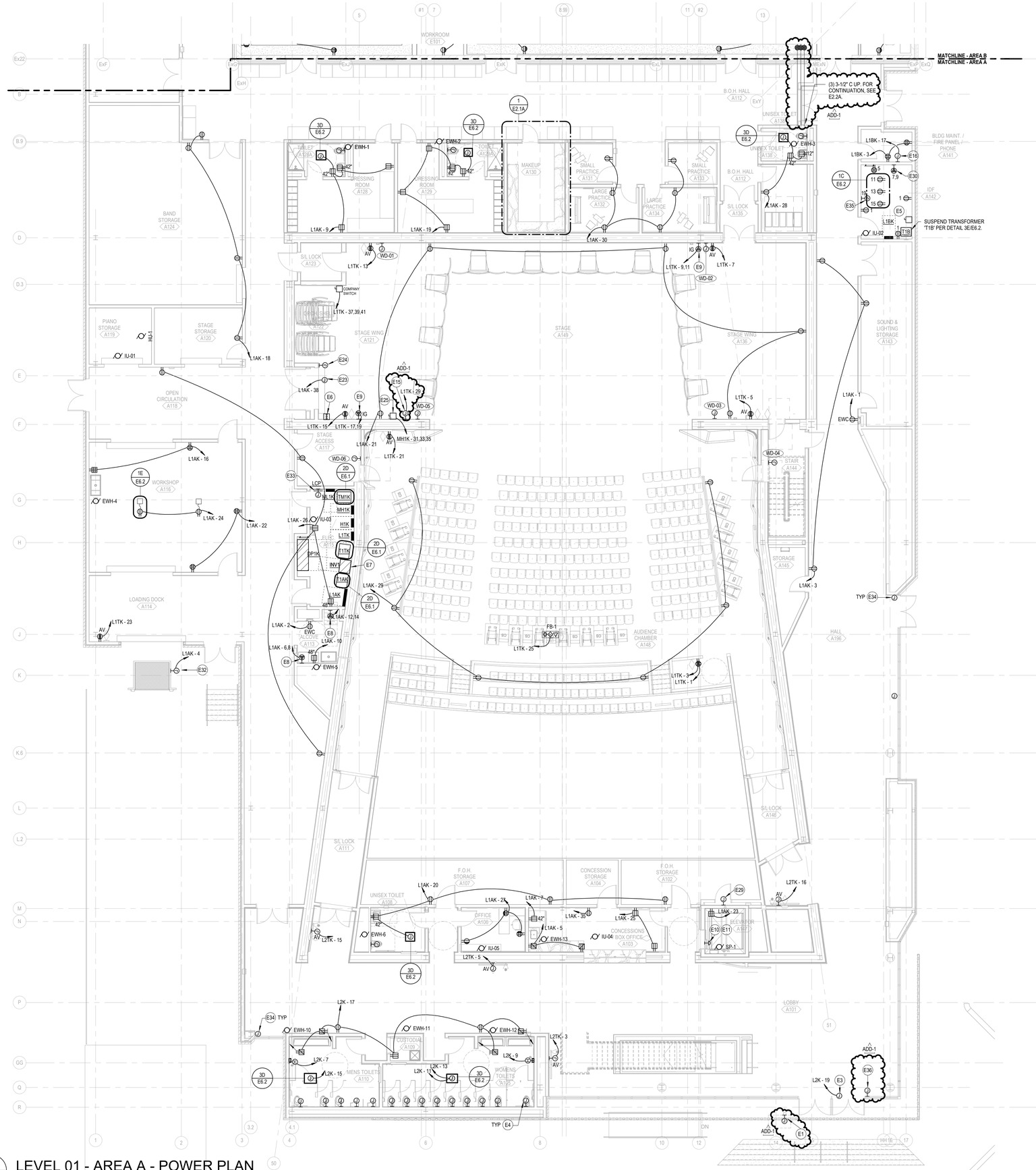
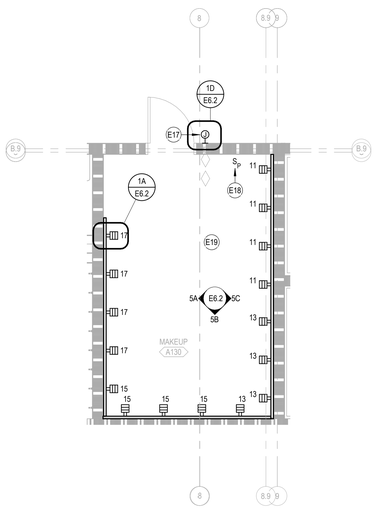
LEVEL 01 - POWER PLAN

E2.1



LEVEL 01 - AREA A - POWER PLAN

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



1 E2.1A — ENLARGED POWER PLAN MAKEUP A130

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

GENERAL NOTES

A PROVIDE BLACK RECEPTICLES WITH BLACK NYLON FACEPLATES IN THE AUDITORIUM AND STAGE.

SHEET NOTES

E1 PUSHBAD FOR ADA OPERATOR MOUNTED ON BOLLARD. PROVIDE 1"C TO AUTO DOOR OPERATOR. ACTUATOR FURNISHED BY DIV 8. INSTALL AND CONNECT DOOR ACTUATOR. SEE DETAIL 3C/E6.2 FOR CONDUIT ROUTING.

ADD-1

E3 CONNECT POWER DOOR OPERATOR TO CIRCUIT SHOWN. PROVIDE 18/2 WIRE TO EACH DOOR ACTUATOR.

E4 PROVIDE 4" SQUARE FLUSH JUNCTION BOX WITH PLASTER RING. INSTALL MECHANICAL FURNISHED SOLENOID, SENSOR AND COVER PLATE. LOW VOLTAGE WIRING DAISY CHAINED BETWEEN UNITS TO TRANSFORMER PROVIDED BY MECHANICAL CONTRACTOR.

E5 ALL CIRCUITS IN THIS ROOM CONNECTED TO PANEL L1B.

E6 PUSHBUTTON CONTROL FOR MOTORIZED DOOR FURNISHED BY DIVISION 8, PUSHBUTTON CONTROL AND SAFETY SYSTEM INSTALLED AND CONNECTED BY DIV 26.

E7 FLOOR MOUNTED CENTRAL BATTERY INVERTER. HOMERUN 30-2W TO PANEL H1. SEE INVERTER SCHEDULE ON E6.2 FOR ADDITIONAL INFORMATION.

E8 NEMA 6-20R WITH 20-2W. VERIFY WITH OWNER FURNISHED EQUIPMENT PRIOR TO INSTALLATION.

E9 NEMA L21-30R WITH 30-2W.

E10 CONNECT EMERGENCY STOP PUSHBUTTON TO CONTROL PANEL IN ELEVATOR CONTROL ROOM.

E11 INSTALL DEVICES IN ELEVATOR PIT 12 INCHES ABOVE FIRST LEVEL FINISH FLOOR LINE.

E15 WALL MOUNTED RIGGING CONTROLLER.

E16 PROVIDE CONNECTION TO FIRE ALARM CONTROL PANEL. COORDINATE WITH REVIEWED FIRE ALARM SHOP DRAWINGS.

E17 PROVIDE REMOTE PILOT FACEPLATE AND CONNECT TO LIGHTS AND RECEPTACLES IN DRESSING ROOM PER NEC 520.74.

E18 SWITCH CONNECTED TO CONTACTOR TO CONTROL POWER IN DRESSING ROOM.

E19 CONNECT EACH RECEPTACLE IN THIS DRESSING ROOM TO CIRCUIT INDICATED IN PANEL L1A VIA MECHANICALLY HELD CONTACTOR. CONNECT THE CONTACTOR TO SWITCH AND REMOTE PILOT INDICATOR. PROVIDE ENGRAVED STAINLESS STEEL FACEPLATE LABELED "RECEPTACLE POWER".

E23 PROVIDE POWER FOR OVERHEAD MOTORIZED DOOR. PROVIDE RECEPTACLE OR MOTOR RATED TOGGLE SWITCH AND CONNECT TO OPERATOR AND CIRCUIT SHOWN. CONFIRM CONNECTION REQUIREMENTS WITH REVIEWED SHOP DRAWINGS.

E24 PROVIDE SINGLE GANG OUTLET BOX AT 12" AFF WITH 1/2"C TO OPERATOR FOR SAFETY SENSOR WIRING. PROVIDE ON BOTH SIDES IF REQUIRED. COORDINATE WITH REVIEWED SHOP DRAWINGS.

E25 PROVIDE POWER FOR FIRE HOIST MOTOR. 20-3W. 30A/3P NF DISCONNECT.

E29 ALARM PANEL LOCATION FOR ELEVATOR SUMP PUMP. PROVIDE POWER PER MECHANICAL CONNECTION SCHEDULE AND 1-INCH CONDUIT FOR OIL SENSOR CABLE TO SUMP PIT. NO JUNCTION BOXES IN HOISTWAY FOR SENSOR CABLE.

E30 NEMA L5-30R WITH 30-2W

E32 CONNECTION TO DOCK LEVELER. CONNECT TO CIRCUIT INDICATED.

E33 CONNECTION TO LIGHTING CONTROL PANEL. COORDINATE WITH REVIEWED SHOP DRAWINGS.

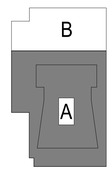
E34 (2) 1/2"C FROM OF CURTAIN WALL SYSTEM TO STRUCTURE FOR CONNECTION OF FUTURE MOTORIZED SHADING SYSTEM.

E35 PROVIDE CONNECTION FOR FUTURE DOOR CONTROL PANEL PROVIDED UNDER SEPARATE CONTRACT.

E36 PUSHBAD FOR ADA OPERATOR MOUNTED ON MOLLION. PROVIDE 1"C TO AUTO DOOR OPERATOR. ACTUATOR FURNISHED BY DIV 8. INSTALL AND CONNECT THE DOOR ACTUATOR. SEE DETAIL 3A/E6.2 FOR CONDUIT ROUTING.

ADD-1

KEY PLAN



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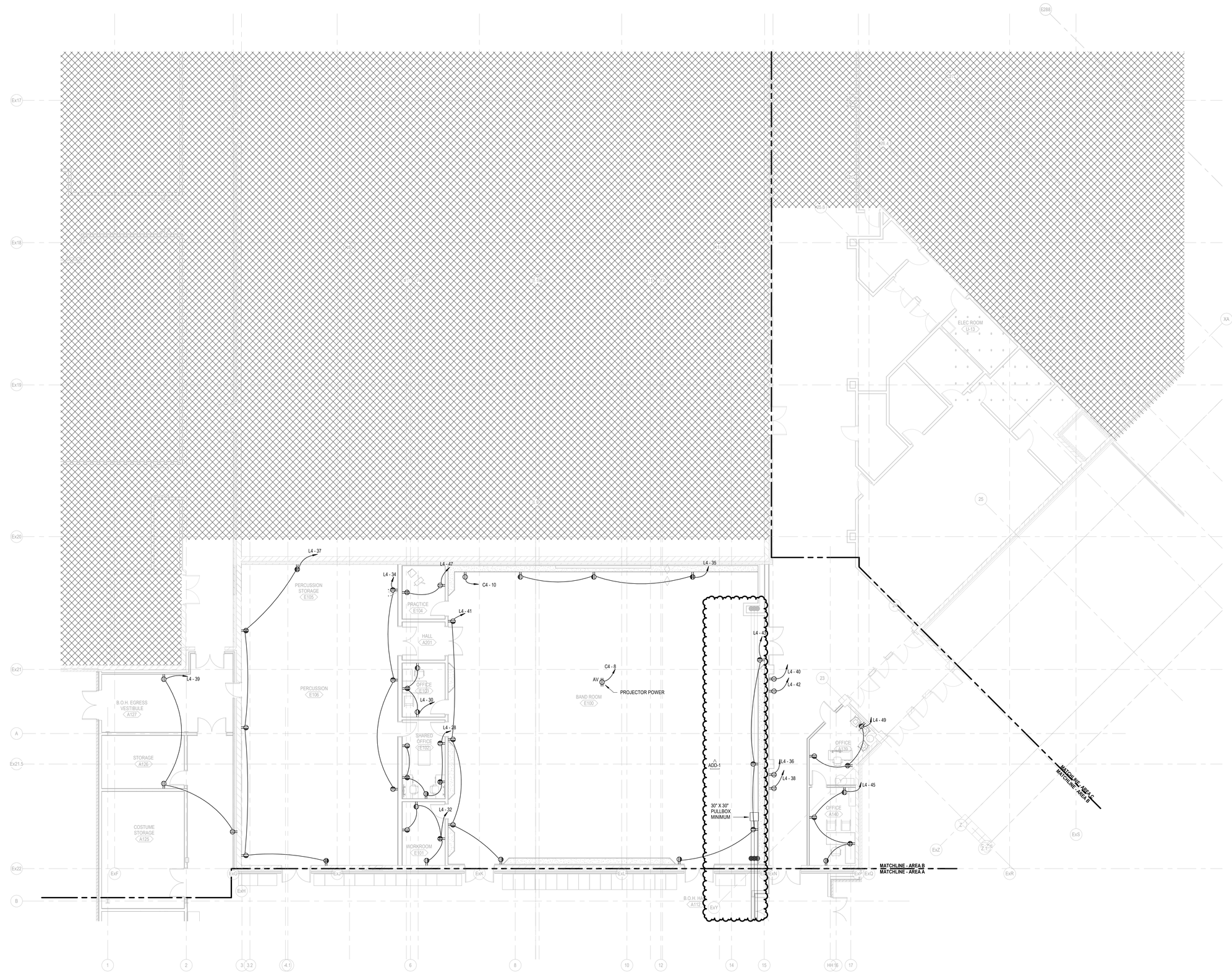
LEVEL 01 - AREA A - POWER PLAN

E2.1A



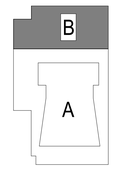
N

LEVEL 01 - AREA B - POWER PLAN

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

SHEET NOTES

KEY PLAN



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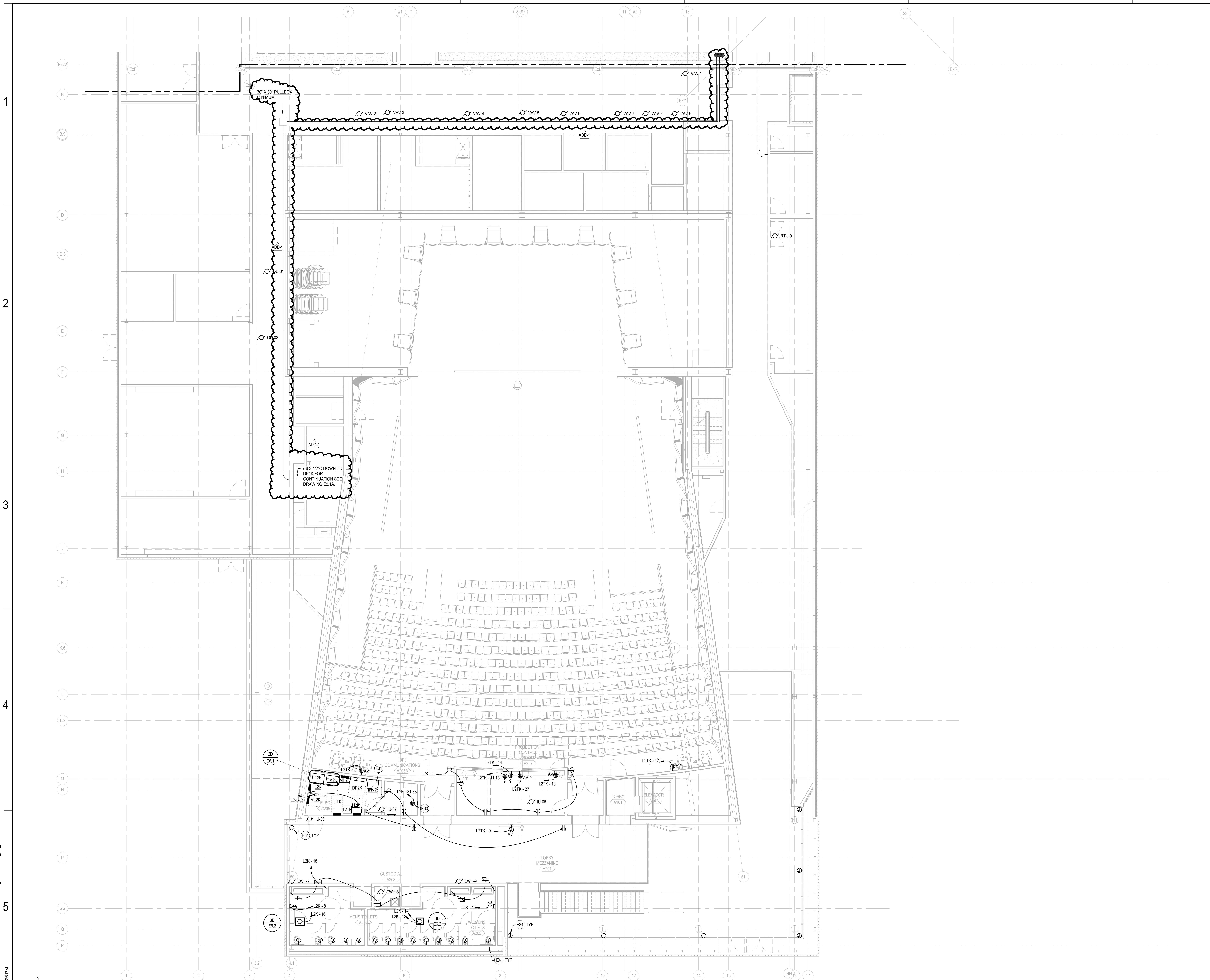
LEVEL 01 - AREA B - POWER PLAN

E2.1B



LEVEL 02 MEZZANINE - AREA A - POWER PLAN

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

GENERAL NOTES

A PROVIDE BLACK RECEPTICLES WITH BLACK NYLON FACEPLATES IN THE AUDITORIUM AND STAGE.

SHEET NOTES

E4 PROVIDE 4" SQUARE FLUSH JUNCTION BOX WITH PLASTER RING. INSTALL MECHANICAL FURNISHED SOLENOID, SENSOR AND COVER PLATE. LOW VOLTAGE WIRING DAISY CHAINED BETWEEN UNITS TO TRANSFORMER PROVIDED BY MECHANICAL CONTRACTOR.

E30 NEMA L5-30R WITH 30-2W

E31 FLOOR MOUNTED CENTRAL BATTERY INVERTER. HOMERUN 30-2W TO PANEL H2. SEE INVERTER SCHEDULE ON E6.2 FOR ADDITIONAL INFORMATION.

E34 (2) 1/2"C FROM OF CURTAIN WALL SYSTEM TO STRUCTURE FOR CONNECTION OF FUTURE MOTORIZED SHADING SYSTEM.

KEY PLAN

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CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.08.19

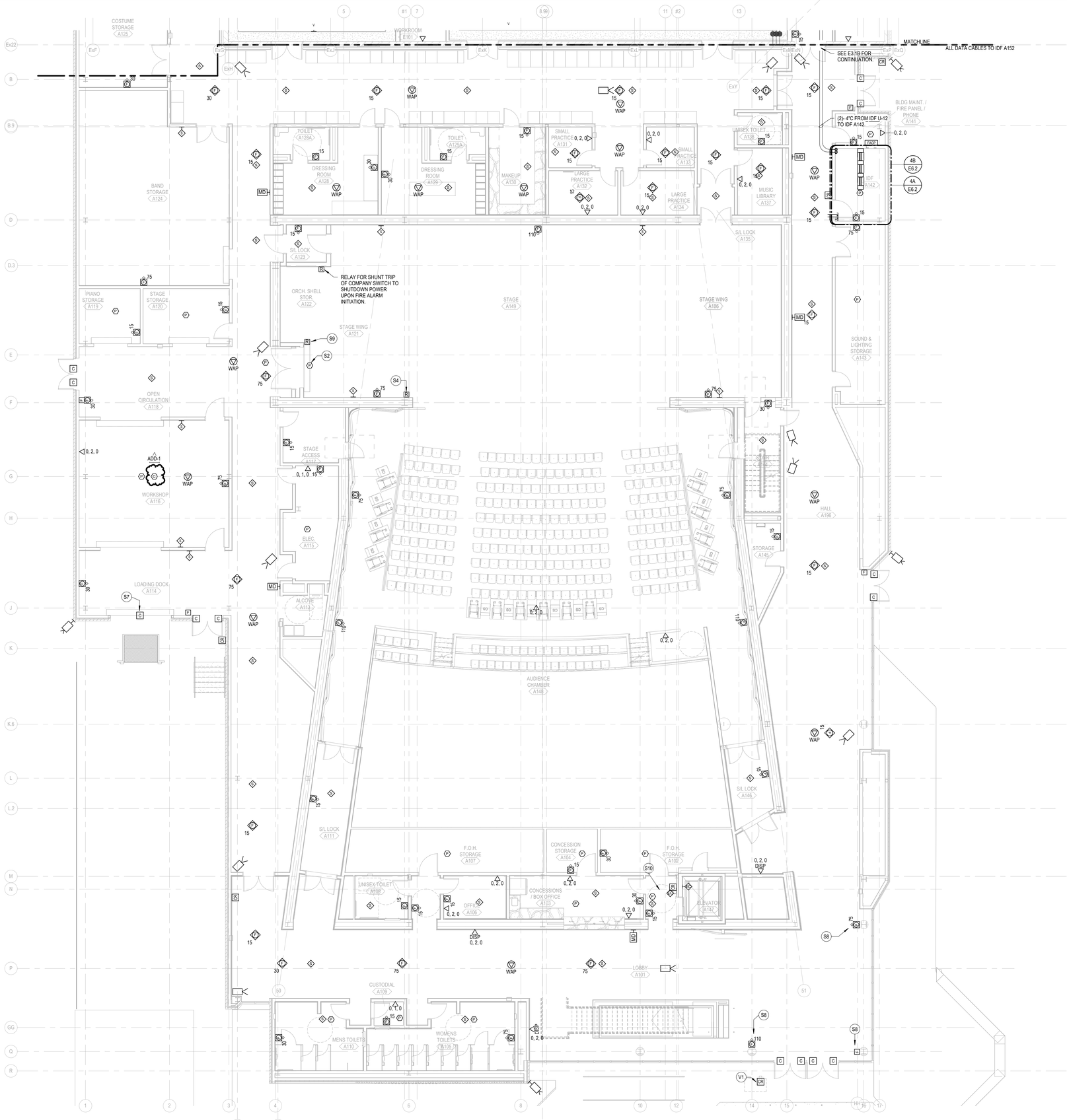
REVISIONS

ADD-1 8/8/24

39-23712-00

LEVEL 02 MEZZANINE - AREA A - POWER PLAN

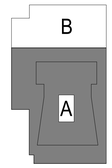
E2.2A



SHEET NOTES

S2	PROVIDE 3/4"C TO OVERHEAD DOOR FOR DOOR POSITION SWITCH. COORDINATE LOCATION WITH SECURITY CONTRACTOR.
S4	PROVIDE FIRE ALARM CONTROL MODULE FOR RELEASE OF FIRE CURTAIN.
S7	PROVIDE 3/4"C TO OVERHEAD DOOR FOR DOOR POSITION SWITCH. COORDINATE LOCATION WITH SECURITY CONTRACTOR.
S8	MOUNT FIRE ALARM DEVICE ON WRAPPED COLUMN. INSTALL RECESSED BACK BOX FOR FLUSH MOUNTING OF DEVICE.
S9	FIRE ALARM RELAY ABOVE DOOR FOR RELEASE OF COILING DOOR UPON AREA DETECTION ON EITHER SIDE OF DOOR.
S10	CO-LOCATE CARD READER WITH ELEVATOR CALL BUTTONS.
V1	CARD READER MOUNTED ON BOLLARD. SEE DETAIL 3C/E6.2.

KEY PLAN



LEVEL 01 - AREA A - SPECIAL SYSTEMS PLAN

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

DLR GROUP
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STATE OF TEXAS
MARK JOSEPH NIECHWIADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
ENGINEER
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

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2024.08.19
REVISIONS
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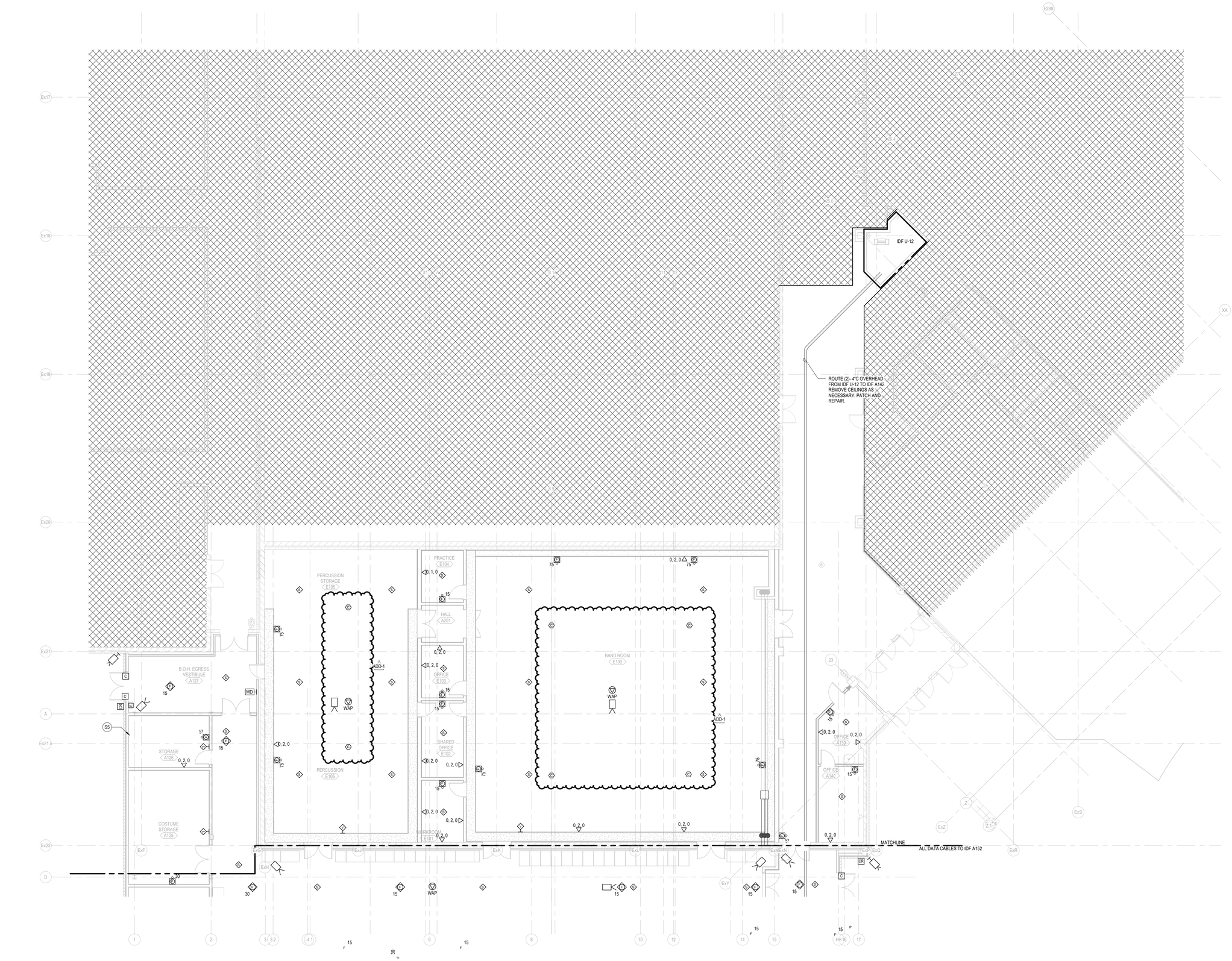
39-23712-00

LEVEL 01 - AREA A - SPECIAL SYSTEMS PLAN

E3.1A



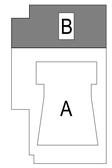
LEVEL 01 - AREA B - SPECIAL SYSTEMS PLAN

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

SHEET NOTES

S5 PROVIDE TAMPER AND FLOW SWITCHES FOR FIRE SUPPRESSION SYSTEMS. COORDINATE WITH FIRE SUPPRESSION DRAWINGS.

KEY PLAN



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TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385.Fm 3939, Crandall, TX 75114

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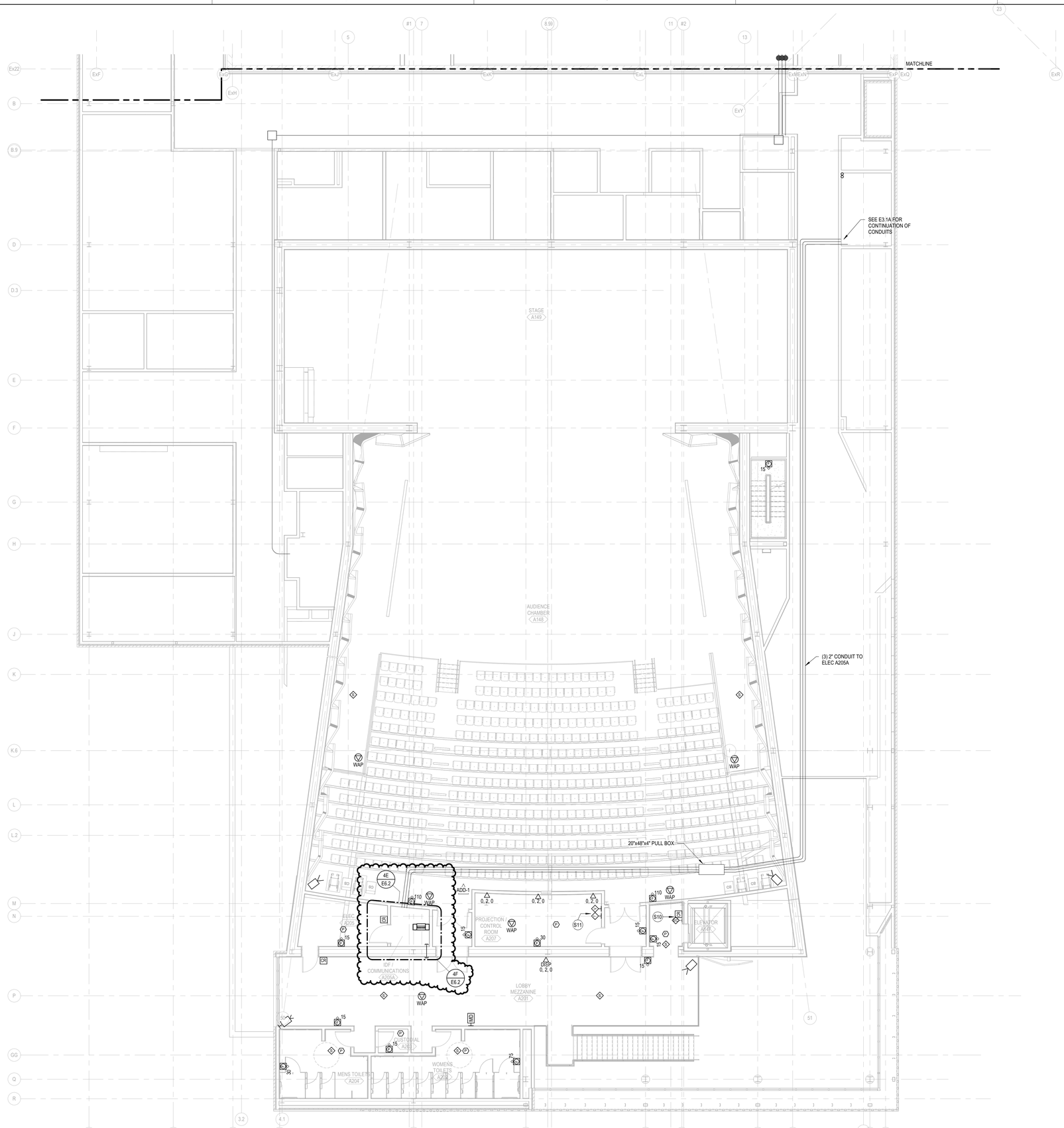
LEVEL 01 - AREA B - SPECIAL SYSTEMS PLAN

E3.1B



GENERAL NOTES

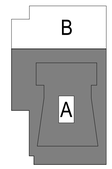
A ALL DATA CABLES THIS SHEET TO COMM ROOM A205A

SHEET NOTES

S10 CO-LOCATE CARD READER WITH ELEVATOR CALL BUTTONS

S11 PROVIDE TIMER AND RELAY CONNECTED TO TURN OFF ALL INTERCOM SPEAKERS ASSOCIATED WITH THE AUDITORIUM AND STAGE AREA. WHEN TIMER IS OFF, SPEAKERS TURN ON.

KEY PLAN



LEVEL 02 MEZZANINE - AREA A - SPECIAL SYSTEMS PLAN

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

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08/24/2024
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CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT

2024.08.19

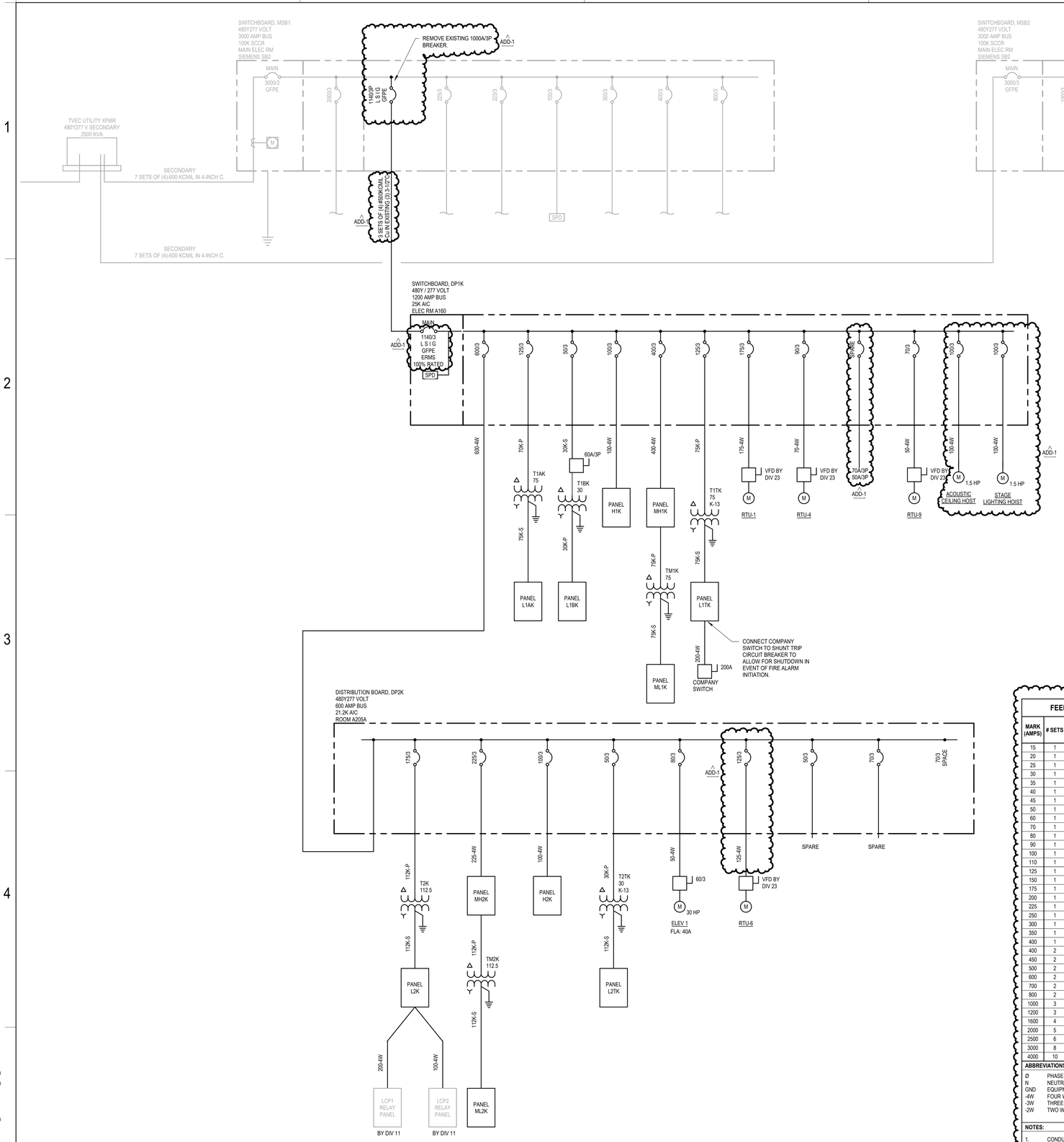
REVISIONS

ADD-1 8/8/24

39-23712-00

LEVEL 02 MEZZANINE - AREA A - SPECIAL SYSTEMS PLAN

E3.2A



1 E5.1 ELECTRICAL ONE-LINE DIAGRAM
NO SCALE

GENERAL SINGLE LINE NOTES

1. OVERCURRENT DEVICES OF ENTIRE DISTRIBUTION SYSTEM SHALL MEET STATED FAULT CURRENT VALUES WITH FULLY RATED EQUIPMENT.
2. CONDUCTOR LENGTHS INDICATED ON THE SINGLE LINE DIAGRAM ARE FOR FAULT CURRENT CALCULATIONS ONLY. ACTUAL LENGTH SHALL BE DETERMINED BY FIELD CONDITIONS AND ACTUAL ROUTES OF FEEDERS.
3. REFER TO SWITCHBOARD SCHEDULES AND DISTRIBUTION PANEL SCHEDULES FOR ADDITIONAL REQUIREMENTS. WHERE A DISCREPANCY EXISTS BETWEEN EQUIPMENT ON THE SINGLE LINE DIAGRAM AND THE DETAILED SCHEDULES, THE ITEM OR ARRANGEMENT WITH BETTER QUALITY, GREATER QUANTITY, OR HIGHER COST SHALL BE USED.
4. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
5. REFER TO THE MOTOR AND SPECIAL CONNECTION SCHEDULE FOR ALL FEEDERS DESIGNATED "EQ".
6. GROUNDING ELECTRODE CONDUCTORS SIZES ARE NOT INDICATED ON THE SINGLE LINE DIAGRAM ARE. REFER TO THE GROUNDING RISER DIAGRAM FOR CONNECTIONS AND CONDUCTOR SIZES.

FEEDER SCHEDULE - COPPER

MARK (AMPS)	# SETS	Ø & N	GND	CONDUIT SIZE MARK SUFFIX -4W	-3W	-2W
15	1	12	12	3/4"	3/4"	3/4"
20	1	12	12	3/4"	3/4"	3/4"
25	1	10	10	3/4"	3/4"	3/4"
30	1	10	10	3/4"	3/4"	3/4"
35	1	8	10	3/4"	3/4"	3/4"
40	1	8	10	3/4"	3/4"	3/4"
45	1	6	10	1"	3/4"	3/4"
50	1	6	10	1"	3/4"	3/4"
60	1	4	10	1-1/4"	1"	3/4"
70	1	4	8	1-1/4"	1"	3/4"
80	1	3	8	1-1/4"	1-1/4"	1"
90	1	2	8	1-1/4"	1-1/4"	1"
100	1	1	8	1-1/2"	1-1/2"	1-1/4"
110	1	1	6	1-1/2"	1-1/2"	1-1/4"
125	1	1	6	1-1/2"	1-1/2"	1-1/4"
150	1	1/0	6	2"	1-1/2"	1-1/4"
175	1	2/0	6	2"	1-1/2"	1-1/4"
200	1	3/0	6	2"	2"	1-1/2"
225	1	4/0	4	2-1/2"	2"	1-1/2"
250	1	250	4	2-1/2"	2"	1-1/2"
300	1	350	4	3"	2-1/2"	2"
350	1	500	3	3-1/2"	3"	2-1/2"
400	1	600	3	3-1/2"	3"	2-1/2"
400	2	3/0	3	2"	2"	1-1/2"
450	2	4/0	2	2-1/2"	2"	1-1/2"
500	2	250	2	2-1/2"	2-1/2"	2"
600	2	350	1	3"	2-1/2"	2"
700	2	500	1/0	3-1/2"	3"	2-1/2"
800	2	600	1/0	3-1/2"	3"	2-1/2"
1000	3	400	2/0	3"	3"	2-1/2"
1200	3	600	3/0	3-1/2"	3-1/2"	3"
1600	4	600	4/0	3-1/2"	3-1/2"	3"
2000	5	600	250	4"	3-1/2"	3"
2500	6	600	350	4"	3-1/2"	3"
3000	8	500	400	3-1/2"	3"	2-1/2"
4000	10	600	500	4"	3-1/2"	3"

ABBREVIATIONS:

Ø PHASE
N NEUTRAL
GND EQUIPMENT GROUNDING CONDUCTOR
-4W FOUR WIRE + GROUND (3Ø,N,GND)
-3W THREE WIRE + GROUND (3Ø,GND or 2Ø,N,GND)
-2W TWO WIRE + GROUND

NOTES:

1. CONDUCTOR AMPACITIES ARE BASED ON NEC TABLE 310.15(B)(16).
2. CONDUIT SIZES ARE BASED ON A MAXIMUM FILL RATIO OF 40%.
3. SCHEDULE SHALL BE USED FOR FEEDERS AND BRANCH CIRCUITS WHERE APPLICABLE.
4. ALL FEEDERS AND BRANCH CIRCUITS SHALL INCLUDE AN EQUIPMENT GROUNDING CONDUCTOR.
5. SCHEDULE IS VALID FOR TYPE THHN, THWN-2, AND XHHW-2 CONDUCTORS. SEE SPECIFICATIONS FOR CONDUCTOR TYPES REQUIRED.
6. SCHEDULE IS VALID FOR TYPE EMT, IMC, FMC, LFMC, HDPE, AND RNC-40 RACEWAYS. SEE SPECIFICATIONS FOR RACEWAY APPLICATIONS.
7. OPTIONAL CONFIGURATIONS (1 OR 2 SETS) ARE GIVEN FOR SOME SIZES.
8. NOT ALL SIZES USED.

FEEDER SCHEDULE - ALUMINUM

MARK (AMPS)	# SETS	Ø & N	GND	CONDUIT SIZE MARK SUFFIX -4W	-3W	-2W
15						
20						
25						
30						
35						
40						
45						
50						
60						
70						
80						
90						
100						
110	1	1/0	4	2"	1-1/2"	1-1/4"
125	1	2/0	4	2"	2"	1-1/2"
150	1	3/0	4	2"	2"	1-1/2"
175	1	4/0	4	2-1/2"	2"	1-1/2"
200	1	250	4	2-1/2"	2-1/2"	2"
225	1	300	2	3"	2-1/2"	2"
250	1	350	2	3"	2-1/2"	2"
300	1	500	2	3-1/2"	3"	2-1/2"
350	1	750	1	4"	3-1/2"	3"
350	2	4/0	1	2-1/2"	2"	1-1/2"
400	2	250	1	2-1/2"	2-1/2"	2"
450	2	300	1/0	3"	2-1/2"	2"
500	2	350	1/0	3"	2-1/2"	2"
600	2	500	2/0	3-1/2"	3"	2-1/2"
700	2	750	3/0	4"	3-1/2"	3"
800	3	400	3/0	3"	3"	2-1/2"
1000	3	600	4/0	3-1/2"	3-1/2"	3"
1200	4	500	250	3-1/2"	3"	2-1/2"
1600	5	600	350	4"	3-1/2"	3"
2000	6	600	400	4"	3-1/2"	3"
2500	7	750	600	4"	4"	3-1/2"
3000	8	750	600	4"	4"	3-1/2"
4000	11	750	500 cu	4"	4"	3-1/2"

ALUMINUM IS NOT PERMITTED FOR SIZES 100AMP AND UNDER - USE COPPER

ABBREVIATIONS:

Ø PHASE
N NEUTRAL
GND EQUIPMENT GROUNDING CONDUCTOR
-4W FOUR WIRE + GROUND (3Ø,N,GND)
-3W THREE WIRE + GROUND (3Ø,GND or 2Ø,N,GND)
-2W TWO WIRE + GROUND

NOTES:

1. CONDUCTOR AMPACITIES ARE BASED ON NEC TABLE 310.15(B)(16).
2. CONDUIT SIZES ARE BASED ON A MAXIMUM FILL RATIO OF 40%.
3. SCHEDULE SHALL BE USED FOR FEEDERS AND BRANCH CIRCUITS WHERE APPLICABLE.
4. ALL FEEDERS AND BRANCH CIRCUITS SHALL INCLUDE AN EQUIPMENT GROUNDING CONDUCTOR.
5. SCHEDULE IS VALID FOR TYPE THHN, THWN-2, AND XHHW-2 CONDUCTORS. SEE SPECIFICATIONS FOR CONDUCTOR TYPES REQUIRED.
6. SCHEDULE IS VALID FOR TYPE EMT, IMC, FMC, LFMC, HDPE, AND RNC-40 RACEWAYS. SEE SPECIFICATIONS FOR RACEWAY APPLICATIONS.
7. OPTIONAL CONFIGURATIONS (1 OR 2 SETS) FOR SOME SIZES LISTED.
8. USE A COPPER GROUNDING CONDUCTOR FOR THE 4000 AMP FEEDER AS LISTED ABOVE.
9. NOT ALL SIZES USED.

3-PHASE TRANSFORMER PRIMARY AND SECONDARY SCHEDULE - COPPER

XFMR KVA	PRIMARY MARK	AMPS	# SETS	Ø	GND	C	SECONDARY MARK	AMPS	# SETS	Ø & N	BJ	C
15	15K-P	25	1	10	10	3/4"	15K-S	50	1	6	8	1"
30	30K-P	50	1	6	10	3/4"	30K-S	100	1	1	6	1-1/2"
45	45K-P	70	1	4	8	1"	45K-S	150	1	1/0	6	2"
75	75K-P	150	1	1/0	6	1-1/2"	75K-S	225	1	4/0	2	2-1/2"
112.5	112K-P	175	1	2/0	6	1-1/2"	112K-S	350	1	500	1/0	3-1/2"
150	150K-P	250	1	250	4	2"	150K-S	500	2	250	1/0	2-1/2"
225	225K-P	350	1	500	3	3"	225K-S	700	2	500	2/0	3-1/2"
300	300K-P	500	2	250	2	2-1/2"	300K-S	1000	3	400	3/0	3"

ABBREVIATIONS:

Ø PHASE
BJ BONDING JUMPER
C CONDUIT SIZE
N NEUTRAL
GND EQUIPMENT GROUNDING CONDUCTOR
-P PRIMARY - THREE WIRE + GROUND (3Ø,GND).
-S SECONDARY - FOUR WIRE + BONDING JUMPER (3Ø, N, BJ)

NOTES:

1. CONDUCTOR AMPACITIES ARE BASED ON NEC TABLE 310.15(B)(16).
2. CONDUIT SIZES ARE BASED ON A MAXIMUM FILL RATIO OF 40%.
3. SCHEDULE SHALL BE USED FOR TRANSFORMERS WITH THE FOLLOWING CONFIGURATION: 480 V DELTA PRIMARY AND 208Y/120 V SECONDARY
4. ALL FEEDERS TO TRANSFORMERS SHALL INCLUDE AN EQUIPMENT GROUNDING CONDUCTOR.
5. SCHEDULE IS VALID FOR TYPE THHN, THWN-2, AND XHHW-2 CONDUCTORS. SEE SPECIFICATIONS FOR CONDUCTOR TYPES REQUIRED.
6. SCHEDULE IS VALID FOR TYPE EMT, IMC, FMC, LFMC, HDPE, AND RNC-40 RACEWAYS. SEE SPECIFICATIONS FOR RACEWAY APPLICATIONS.
7. NOT ALL SIZES USED.

3-PHASE TRANSFORMER PRIMARY AND SECONDARY SCHEDULE - ALUMINUM

XFMR KVA	PRIMARY MARK	AMPS	# SETS	Ø	GND	C	SECONDARY MARK	AMPS	# SETS	Ø & N	BJ	C
15	15K-P	ALUMINUM NOT PERMITTED - USE COPPER					15K-S	ALUMINUM NOT PERMITTED - USE COPPER				
30	30K-P	ALUMINUM NOT PERMITTED - USE COPPER					30K-S	ALUMINUM NOT PERMITTED - USE COPPER				
45	45K-P	ALUMINUM NOT PERMITTED - USE COPPER					45K-S	150	1	3/0	4	2"
75	75K-P	150	1	3/0	4	2"	75K-S	225	1	300	1/0	3"
112.5	112K-P	175	1	4/0	4	2"	112K-S	350	1	750	3/0	4"
150	150K-P	250	1	350	2	2-1/2"	150K-S	500	2	350	3/0	3"
225	225K-P	350	1	750	1	3-1/2"	225K-S	700	2	750	4/0	4"
300	300K-P	500	2	350	1/0	2-1/2"	300K-S	1000	3	600	250	4"

ABBREVIATIONS:

Ø PHASE
BJ BONDING JUMPER
C CONDUIT SIZE
N NEUTRAL
GND EQUIPMENT GROUNDING CONDUCTOR
-P PRIMARY - THREE WIRE + GROUND (3Ø,GND)
-S SECONDARY - FOUR WIRE + BONDING JUMPER (3Ø, N, BJ)

NOTES:

1. CONDUCTOR AMPACITIES ARE BASED ON NEC TABLE 310.15(B)(16).
2. CONDUIT SIZES ARE BASED ON A MAXIMUM FILL RATIO OF 40%.
3. SCHEDULE SHALL BE USED FOR TRANSFORMERS WITH THE FOLLOWING CONFIGURATION: 480 V DELTA PRIMARY AND 208Y/120 V SECONDARY
4. ALL FEEDERS TO TRANSFORMERS SHALL INCLUDE AN EQUIPMENT GROUNDING CONDUCTOR.
5. SCHEDULE IS VALID FOR TYPE THHN, THWN-2, AND XHHW-2 CONDUCTORS. SEE SPECIFICATIONS FOR CONDUCTOR TYPES REQUIRED.
6. SCHEDULE IS VALID FOR TYPE EMT, IMC, FMC, LFMC, HDPE, AND RNC-40 RACEWAYS. SEE SPECIFICATIONS FOR RACEWAY APPLICATIONS.
7. NOT ALL SIZES USED.

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ISSUE FOR BID AND PERMIT
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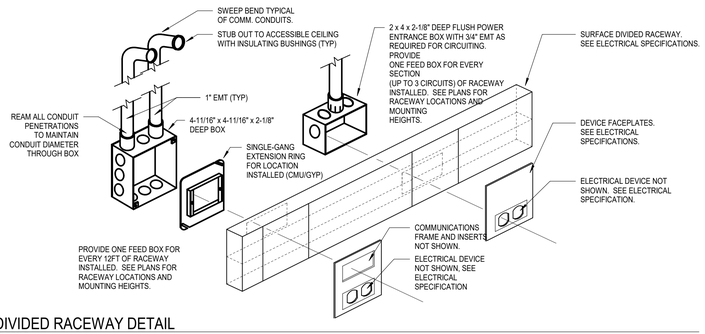
REVISIONS
ADD-1 8/8/24

39-23712-00

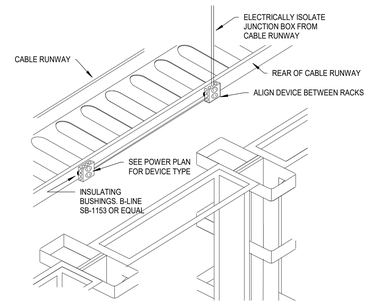
ELECTRICAL DIAGRAMS

E5.1

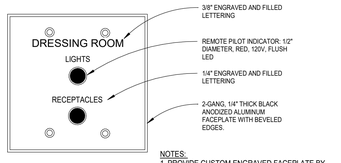
Autodesk Docs://39-23712-00 Crandall ISD - PAC/39-23712-00_Crandall ISD_EL_2024.rvt
8/20/2024 2:29:36 PM



1A E6.2 DIVIDED RACEWAY DETAIL
NO SCALE

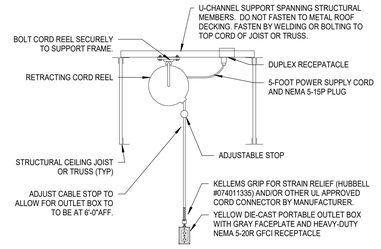


1C E6.2 CABLE RUNWAY RECEPTACLES
NO SCALE



NOTES:
1. PROVIDE CUSTOM ENGRAVED FACEPLATE BY RCI CUSTOM, PANELCRAFTERS OR APPROVED EQUAL.
2. SUBMIT CUSTOM PUNCHED PANEL LAYOUT AND COVERPLATES WITH ENGRAVING FOR APPROVAL.

1D E6.2 REMOTE PILOT FACEPLATE
NO SCALE



1E E6.2 CORD REEL - EXPOSED CEILING
NO SCALE

FLOOR BOX SCHEDULE

GENERAL NOTES:

A. BASIS OF DESIGN IS LEGRAND. PROVIDE EQUAL FROM HUBBELL.

B. PROVIDE UL LISTED DIVIDERS BETWEEN POWER AND LOW VOLTAGE DEVICES.

C. COMMUNICATIONS (COMM) OUTLETS PER DETAIL.

D. SOUND OUTLET PER NOTES AND DETAILS.

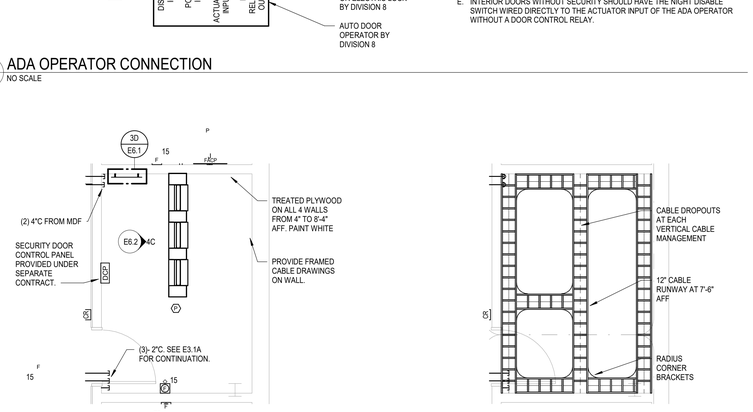
E. VIDEO OUTLET PER NOTES AND DETAILS.

F. THEATRICAL LIGHTING OUTLET PER NOTES AND DETAILS

NOTES:

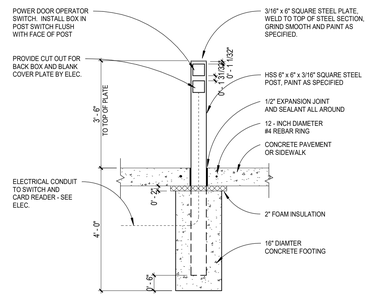
1. PROVIDE BRACKET FOR MOUNTING COMMUNICATION JACKS WITH TIA-606 IDENTIFICATION LABELS. COORDINATE BEZEL WITH COMMUNICATIONS CABLING CONTRACTOR.
2. SEE PLANS FOR RECEPTACLE TYPE.

ID	APPLICATION	FLOORING TYPE	COVER		POSITIONS / DEVICES				BASIS OF DESIGN		NOTES
			TYPE	COLOR / MATERIAL	1	2	3	4	MANUFACTURER	MODEL	
FB-1	ON GRADE	CARPET	FLANGED, CARPET INSERT	BLACK	DUPLEX 5-20R	AV	AV	THEATRICAL	WIREMOLD	EFB-8S	1

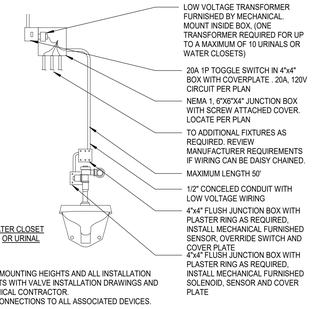


NOTES:
A. WHEN DOOR IS LOCKED BY KEY, NIGHT DISABLE TOGGLE SWITCH IS TURNED OFF TO PREVENT ACCESS USING THE EXTERIOR ADA PUSHPAD. INTERIOR ADA PUSHPAD IS ALWAYS ACTIVE.
B. MANUAL OPERATION - WHEN DOOR IS CLOSED BUT UNLOCKED, LEVER RETRACTS LATCHBOLT. WHEN DOOR IS LOCKED, LEVER DOES NOT RETRACT LATCHBOLT.
C. ADA OPERATION - WHEN DOOR IS CLOSED BUT UNLOCKED, PRESSING EITHER PUSHPAD ACTIVATES ELECTRIC STRIKE AND AFTER DELAY ACTIVATES ADA OPERATOR TO OPEN DOOR. WHEN DOOR IS LOCKED, PRESSING EXTERIOR PUSHPAD DOES NOT OPEN DOOR. AFTER VALID CARD READ IS RECEIVED, SECURITY SYSTEM ENABLES RELAY TO ENABLE PUSHPAD TO ACTIVATE OPERATOR WHICH ACTIVATES ELECTRIC STRIKE AND AFTER DELAY ACTIVATES ADA OPERATOR TO OPEN DOOR.
D. CONNECT REMOTE OFF/AUTO/HOLD KEYSWITCH IF SPECIFIED.
E. INTERIOR DOORS WITHOUT SECURITY SHOULD HAVE THE NIGHT DISABLE SWITCH WIRED DIRECTLY TO THE ACTUATOR INPUT OF THE ADA OPERATOR WITHOUT A DOOR CONTROL RELAY.

3A E6.2 ADA OPERATOR CONNECTION
NO SCALE

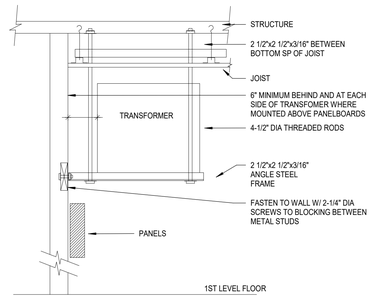


3C E6.2 DOOR OPERATOR POST
NO SCALE

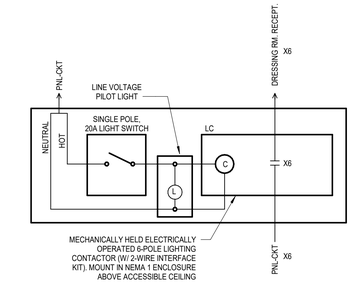


NOTES:
1. COORDINATE MOUNTING HEIGHTS AND ALL INSTALLATION REQUIREMENTS WITH VALVE INSTALLATION DRAWINGS AND WITH MECHANICAL CONTRACTOR.
2. MAKE FINAL CONNECTIONS TO ALL ASSOCIATED DEVICES.

3D E6.2 AUTO. FLUSHING CONTROL DIAGRAM
NO SCALE



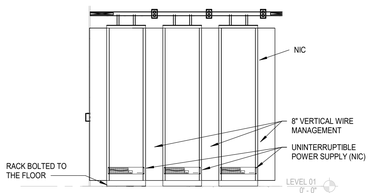
3E E6.2 DRY-TYPE TRANSFORMER CEILING HUNG
NO SCALE



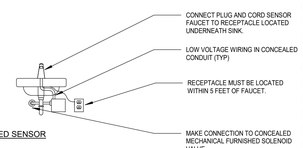
3F E6.2 DRESSING ROOM CONTACTOR DIAGRAM
NO SCALE

4A E6.2 ENLARGED EQUIPMENT PLAN IDF A158
SCALE: 1/4" = 1'-0"

4B E6.2 ENLARGED CABLE RUNWAY PLAN IDF A158
SCALE: 1/4" = 1'-0"

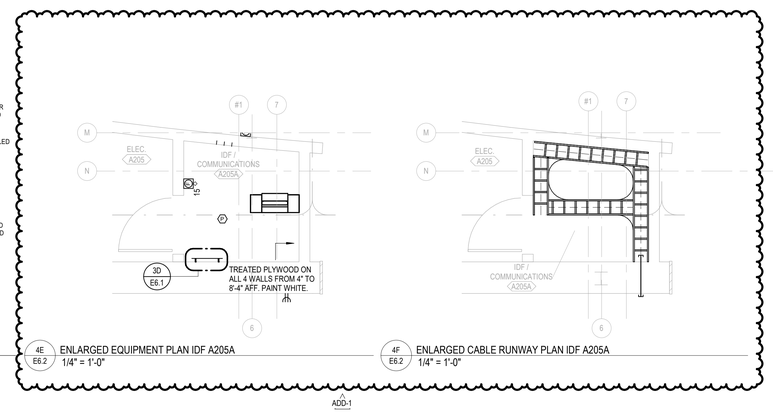


4C E6.2 IDF A158 RACK ELEVATION
SCALE: 3/8" = 1'-0"



NOTES:
1. COORDINATE MOUNTING HEIGHTS AND ALL INSTALLATION REQUIREMENTS WITH SHOP DRAWINGS AND MECHANICAL CONTRACTOR.
1. MAKE FINAL CONNECTIONS TO ALL ASSOCIATED DEVICES.

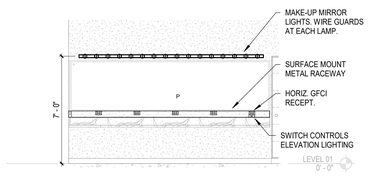
4D E6.2 AUTO. LAV/WASH FOUNTAIN DIAGRAM
NO SCALE



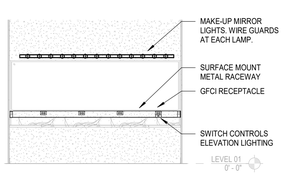
4E E6.2 ENLARGED EQUIPMENT PLAN IDF A205A
1/4" = 1'-0"

4F E6.2 ENLARGED CABLE RUNWAY PLAN IDF A205A
1/4" = 1'-0"

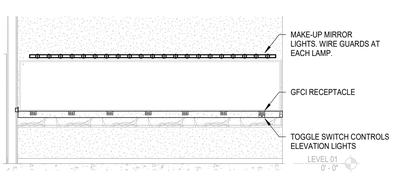
ADD-1



5A E6.2 MAKEUP ELEVATION WEST
SCALE: 1/4" = 1'-0"



5B E6.2 MAKEUP ELEVATION SOUTH
SCALE: 1/4" = 1'-0"



5C E6.2 MAKEUP ELEVATION EAST
SCALE: 1/4" = 1'-0"

DLR GROUP
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STATE OF TEXAS
MARK JOSEPH NIECHWIADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER

TBAE/BPAE
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.08.19
REVISIONS
ADD-1 8/8/24

39-23712-00

ELECTRICAL DETAILS

E6.2

INTERIOR LUMINAIRE SCHEDULE

GENERAL NOTES:
1. FURNISH ALL LIGHTING FIXTURES COMPLETE WITH MOUNTING ACCESSORIES TO MEET JOB REQUIREMENTS. VERIFY FIXTURE MOUNTING, LOCATION, AND FIXED OPTICAL ORIENTATION AGAINST ARCHITECT'S PLANS, ELEVATIONS, AND DETAIL DRAWINGS. EXACT LOCATION OF ALL FIXTURES SHALL BE CONFIRMED WITH THE ARCHITECT PRIOR TO ROUGHING IN.
2. FIXTURES SHOWN IN CONTINUOUS RUNS TO SATISFY NOMINAL LENGTHS AS SHOWN ON DRAWINGS. FIXTURE TAGS SHOWN ONCE ON A CONTINUOUS ROW OF FIXTURES SHALL BE TYPICAL FOR THAT ROW UNLESS OTHERWISE NOTED.
3. ALL FIXTURES WILL BE SUPPORTED FROM THE BUILDING STRUCTURE, INDEPENDENT OF HUNG CEILING WITH ROD OR JACK CHAIN SUPPORT. AIRCRAFT CABLE LENGTHS, STEM LENGTHS, AND STEM LOCATIONS OF ALL PENDANT FIXTURES TO BE VERIFIED AND CONFIRMED BY OWNER, ARCHITECT, AND CONSULTANT PRIOR TO ORDERING STEMS. AIRCRAFT CABLE HUNG FIXTURES TO BE PROVIDED WITH 18" OF EXTRA LENGTH WITH EXCESS TO BE LOCATED ABOVE THE CEILING ALONG WITH 18" OF EXTRA POWER CORD LENGTH.
4. LED FIXTURES WILL USE INTEGRAL DRIVERS UNLESS OTHERWISE NOTED. DIMMABLE DRIVERS SHALL BE COMPATIBLE WITH LAMPS AND DIMMERS/CONTROL SYSTEM.
5. ALL LIGHT FIXTURES ARE TO BE PROVIDED BY SPECIFIED MANUFACTURER OR APPROVED EQUAL. "ALTERNATE MANUFACTURER" AND "OR APPROVED" MEAN EQUIVALENT OR SUPERIOR IN PERFORMANCE, MATERIALS, WORKMANSHIP, AND APPEARANCE TO THE SPECIFIED EQUIPMENT.
6. CONTRACTOR TO PROVIDE AND INSTALL ALL TRANSFORMERS, DRIVERS, BATTERY PACKS, AND/OR BALLASTS REQUIRED TO OPERATE LAMPS SPECIFIED, INCLUDING REMOTE POWER SUPPLIES AND THE ENCLOSURES FOR SAME. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF COMPATIBILITY BETWEEN SPECIFIED LAMPS, SPECIFIED POWER SUPPLIES, DIMMING, AND OTHER CONTROL DEVICES SPECIFIED. NOTIFY ARCHITECT AND CONSULTANT OF AN INCOMPATIBILITY PRIOR TO ORDERING EQUIPMENT.
7.CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE COORDINATION OF ALL LIGHTING EQUIPMENT AND CONTROL DEVICES WITH CEILING, WALL, AND GROUND TYPES SPECIFIED PRIOR TO ORDERING LIGHTING EQUIPMENT. NOTIFY ARCHITECT AND CONSULTANT OF ANY INCOMPATIBILITY PRIOR TO ORDERING EQUIPMENT.
8. ALL LED LUMINAIRES TO HAVE A LIFE RATING OF 50,000 HOURS OR HIGHER AT L70 OR BETTER AND A FIVE-YEAR WARRANTY.
9. PRELIMINARY AIMING OF ALL ADJUSTABLE LIGHTING EQUIPMENT WILL BE DONE DURING INSTALLATION BY THE ELECTRICAL CONTRACTOR AS INDICATED ON THE LIGHTING PLANS / AIMING DIAGRAM, WHERE SUCH A DIAGRAM IS INCLUDED IN CONTRACT.
10. SCHEDULED LUMEN OUTPUT REPRESENTS DELIVERED LUMENS.
11. NO PENDANTS ABOVE FURNITURE TO BE MOUNTED BELOW 7'-0" AFF UNLESS OTHERWISE SPECIFIED.
12. LUMINAIRE CATALOG/MODEL NUMBERS ARE PROVIDED FOR CONVENIENCE ONLY AND ARE SUBJECT TO CHANGE. CONTRACTOR TO GENERATE EXACT CATALOG NUMBERS AT TIME OR ORDER. DEFER TO PERFORMANCE SPECIFICATIONS LISTED IN THIS SCHEDULE IN EVENT OF CONFLICT OR CHANGE.

TYPE	CONSTRUCTION				LIGHT SOURCE				ELECTRICAL				PRODUCT		
	DESCRIPTION	MOUNTING	FINISH	LUMENS PER FOOT	LUMENS DOWN	LUMENS UP	CCT	CRI	DRIVER	VOLT	WATTS (W)	WATTS PER FOOT (W / LF)	MFR	MODEL	EQUIVALENT MFR
BA1	4-FT STRIP LIGHT WITH ROUND LENS	PENDANT	WHITE		5000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	41 W		LITHONIA	ZL1D-L48-SMR-5000LM-FST-MVOLT-35K	METALUX
BA2	4-FT STRIP LIGHT WITH ROUND LENS	PENDANT	BLACK		5000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	41 W		LITHONIA	ZL1D-L48-SMR-5000LM-FST-MVOLT-35K	METALUX
BB1	2X4 HIGH BAY FIXTURE	PENDANT	WHITE		24000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	265 W		LITHONIA	XIB-L48-24000-AVCL-MVOLT-GZ1 0-35K	
BC1	4-FT SEALED STRIP LIGHT	PENDANT	WHITE		6000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	49 W		LITHONIA	CSVT-L48-6000LM-MVOLT-35K-80CRI	METALUX
BD1	6-FT LINEAR PENDANT WITH 3-SIDED LENS - RGBW	PENDANT	BLACK		7200 lm	0 lm	RGBW	80	DMX	277 V	60 W		LUMENWERX	QUAD WIDE	
FL1-1-13'	1-INCH NOMINAL TAPE LIGHT IN EXTRUSION WITH GRAZE OPTIC LENS	SURFACE	WHITE	294 lm	3822 lm	0 lm	3000K	90	DMX	277 V	39 W	3 W	QTRAN	VERS-GRAZEIER SERIES	
FL1-1-5'6"	1-INCH NOMINAL TAPE LIGHT IN EXTRUSION WITH GRAZE OPTIC LENS	SURFACE	WHITE	294 lm	4557 lm	0 lm	3000K	90	DMX	277 V	45 W	3 W	QTRAN	VERS-GRAZEIER SERIES	
FL1-2-4' 0"	1-INCH NOMINAL TAPE LIGHT IN EXTRUSION WITH GRAZE OPTIC LENS	SURFACE	WHITE	294 lm	7056 lm	0 lm	3000K	90	DMX	277 V	72 W	3 W	QTRAN	VERS-GRAZEIER SERIES	
FL1-2-5'6"	1-INCH NOMINAL TAPE LIGHT IN EXTRUSION WITH GRAZE OPTIC LENS	SURFACE	WHITE	294 lm	7497 lm	0 lm	3000K	90	DMX	277 V	77 W	3 W	QTRAN	VERS-GRAZEIER SERIES	
LA1	CASEWORK MOUNTED LINEAR WITH 85-DEGREE ASYMMETRIC OPTIC	SURFACE	BLACK	209 lm	0 lm	0 lm	3000K	90	0-10V DIMMING	277 V		4 W	VODE	ZIPTWO MICRO 3508 SERIES	
PD1	9X16 INCH CYLINDER WITH MEDIUM FLOOD OPTICS AND REMOTE DRIVER	PENDANT	BLACK		2500 lm	0 lm	3000K	80	REMOTE DMX	277 V	35 W		KIRLIN	SSR-09620-2500-30K-MFL-38-AS B	
PD2	9X16 INCH CYLINDER WITH WIDE FLOOD OPTICS AND REMOTE DRIVER	PENDANT	BLACK		5000 lm	0 lm	3000K	80	REMOTE DMX	277 V	55 W		KIRLIN	SSR-09620-5000-30K-WFL-38-AS B	
PD3	9X16 INCH CYLINDER WITH WIDE FLOOD OPTICS AND REMOTE DRIVER	PENDANT	BLACK		2500 lm	0 lm	3000K	80	REMOTE DMX	277 V	35 W		KIRLIN	SSR-09620-2500-30K-WFL-38-AS B	
RA1	MULTI-CELL RECESSED DOWNLIGHT - WHITE GYP CEILING	RECESSED	WHITE		1475 lm	0 lm	3500K	80	0-10V DIMMING, 1%	277 V	13 W		USAI	MDF-04-13H1-35KS-50-WH-WH-NC-UNV-DBE	
RA3	MULTI-CELL RECESSED DOWNLIGHT - DARK GYP CEILING	RECESSED	BLACK		4675 lm	0 lm	3500K	80	0-10V DIMMING, 1%	277 V	41 W		USAI	MDF-12-41H1-35KS-50-BL-BL-NC-UNV	
RA4	MULTI-CELL RECESSED DOWNLIGHT - DARK GYP CEILING	RECESSED	BLACK		750 lm	0 lm	3500K	80	REMOTE 0-10V DIMMING, 1%	277 V	8 W		USAI	MDF-02-08-35KS-50-BL-BL-RM	
RB1	MULTI-CELL RECESSED DOWNLIGHT - WOOD CEILING	RECESSED	BLACK		2900 lm	0 lm	3500K	80	REMOTE 0-10V DIMMING, 1%	277 V	27 W		USAI	MDG-08-27H1-35KS-35-BL-BL-RM VS-UB76	
RD1	4-INCH NOMINAL RECESSED DOWNLIGHT - MEDIUM WIDE OPTIC	RECESSED	SEMI-SPECULAR		750 lm	0 lm	3500K	80	0-10V DIMMING	277 V	8 W		GOTHAM	EVO 4 SERIES	
RD2	4-INCH NOMINAL RECESSED DOWNLIGHT - MEDIUM WIDE OPTIC	RECESSED	SEMI-SPECULAR		1000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	9 W		GOTHAM	EVO 4 SERIES	
RL1-17'	2-INCH NOMINAL RECESSED LINEAR WITH LAMBERTIAN OPTICS	RECESSED	WHITE		350 lm	0 lm	3500K	80	0-10V DIMMING	277 V	54 W		LUMENWERX	VIA2R D HLO FH SW 90CRI 500LM 35K	
RL1-29'	2-INCH NOMINAL RECESSED LINEAR WITH LAMBERTIAN OPTICS	RECESSED	WHITE		350 lm	0 lm	3500K	80	0-10V DIMMING	277 V	93 W		LUMENWERX	VIA2R D HLO FH SW 90CRI 500LMF 35K	
RL2	1-INCH NOMINAL RECESSED MUD-IN LINEAR CAPABLE OF 90-DEGREE CORNERS ONTO WALL; LUMENS IS PER FOOT	RECESSED	N/A	0 lm	369 lm	0 lm	3500K	90	0-10V DIMMING	277 V		4 W	PUREEDGE	TL1A 5WDC-X-ST35K	
RL2A	SAME AS RL2, EXCEPT VERTICAL PORTION	RECESSED	N/A	0 lm	369 lm	0 lm	3500K	90	0-10V DIMMING	277 V		3 W	PUREEDGE	TL1A 5WDC-X-ST35K	
RL3	1-INCH NOMINAL RECESSED LINEAR CAPABLE OF 90-DEGREE CORNERS; LUMENS IS PER FOOT PROVIDE FLANGE TRIM	RECESSED	CUTSOM WOOD FINISH	0 lm	216 lm	0 lm	3500K	90	0-10V DIMMING	277 V		4 W	CORONET	RUSH RECESSED SERIES	
RL3A	1-INCH NOMINAL TAPE LIGHT IN EXTRUSION, VERTICAL POSITION, PROVIDE FLANGE TRIM	RECESSED	CUTSOM WOOD FINISH	0 lm	216 lm	0 lm	3500K	90	0-10V DIMMING	277 V	0 W	4 W	CORONET	RUSH RECESSED SERIES	
RL5	4-FOOT RECESSED LINEAR	RECESSED	WHITE		4000 lm	0 lm	3500K	90	0-10V DIMMING	277 V	36 W		LUMENWERX	VIA 5 RECESSED SERIES	
RT1A	2-FOOT BY 2-FOOT RECESSED TROFFER - ACT CEILING	RECESSED	N/A	0 lm	4050 lm	0 lm	3500K	80	0-10V DIMMING	277 V	38 W	0 W	FLUXWERX	TRANSOM SERIES	
RT1B	2-FOOT BY 2-FOOT RECESSED TROFFER - ACT CEILING	RECESSED	N/A	0 lm	2650 lm	0 lm	3500K	80	0-10V DIMMING	277 V	23 W	0 W	FLUXWERX	TRANSOM SERIES	
RT2A	1-FOOT BY 4-FOOT RECESSED TROFFER - ACT CEILING	RECESSED	NA	0 lm	4700 lm	0 lm	3500K	80	0-10V DIMMING	277 V	47 W	0 W	FLUXWERX	TRANSOM SERIES	
RT2C	1-FOOT BY 4-FOOT RECESSED TROFFER - ACT CEILING	RECESSED	NA	0 lm	4050 lm	0 lm	3500K	80	0-10V DIMMING	277 V	38 W	0 W	FLUXWERX	TRANSOM SERIES	
TA1	TRACK HEAD & SURFACE MOUNTED TRACK SYSTEM - PROVIDE A HEXCELL LOUVER , LINEAR SPREAD LENS, 22-DEGREEE, 31-DEGREE, 40-DEGREE LENS FOR EACH SPOT LIGHT	SURFACE	WHITE		847 lm	0 lm	3500K	90	ELV DIMMING	120 V	<varies>		AMERLUX	SPEQ-S / GES SERIES	
TB1	MINI-TRACK HEAD WITH 28-DEGREE OPTICS & PENDANT MOUNTED TRACK SYSTEM	PENDANT	BLACK		1120 lm	0 lm	3500K	90	0-10V DIMMING	277 V	12 W		JOKER LIGHT	FIT 48V SERIES	
TC1	TRACK HEAD & SURFACE MOUNTED TRACK SYSTEM - BLACK FINISH- PROVIDE A HEXCELL LOUVER , LINEAR SPREAD LENS, 22-DEGREEE, 31-DEGREE, 40-DEGREE LENS FOR EACH SPOT LIGHT	SURFACE	BLACK		847 lm	0 lm	3500K	90	ELV DIMMING	120 V	9 W		AMERLUX	SPEQ-S / GES SERIES	
TS1	6-INCH STEP LIGHT	WALL	SEMI GLOSS BLACK	0 lm	194 lm	0 lm	3000K	0	0-10V DIMMING	277 V	5 W	0 W	HYDREL	HSL13 SERIES	
TS2	BLUE NODE STEP LIGHT	WALL	BLACK	0 lm	2 lm	0 lm	BLUE	0	DMX	120 V	3 W	0 W	ETC	BLUE DOME SERIES	
TS3	6-INCH STEP LIGHT - BLUE	WALL	SEMI GLOSS BLACK	0 lm	194 lm	0 lm	BLUE	0	0-10V DIMMING	277 V	5 W	0 W	HYDREL	HSL13 SERIES - BLUE	
WA1	MAKEUP VANITY LIGHT WITH LED FROSTED LAMPS EVERY 9-INCHES AND SQUARE GUARDS ON EACH LAMP	WALL	WHITE	0 lm	350 lm	0 lm	2700K	0	FORWARD PHASE DIMMING	120 V		4 W	CALIFORNIA ACCENT LIGHTING	ALS300P-SG-9"-27K-GSFW-DM-DRY	
WB1	WALL MOUNTED SEALED FIXTURE	WALL	N/A		5000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	<varies>		LITHONIA	CSVT	
WC1	6-FOOT WALL MOUNTED LINEAR FIXTURE - RGBW	WALL	BLACK	0 lm	7200 lm	0 lm	RGBW	80	DMX	277 V	60 W	0 W	LUMENWERX	QUAWW-HLO-LED-QUADRO-10 WF-6'-277-DMX-1-DRM	
WC2	3-FOOT WALL MOUNTED LINEAR FIXTURE - RGBW - VERTICAL MOUNT	WALL	BLACK	0 lm	7200 lm	0 lm	RGBW	80	DMX	277 V	60 W	0 W	LUMENWERX	QUAWW-HLO-LED-QUADRO-10 WF-3'-277-DMX-1-DRM	
WD1	4-FOOT HORIZONTAL WALL MOUNTED LINEAR FIXTURE	WALL	BLACK	0 lm	5000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	40 W	0 W	LITHONIA	ZL1D-L48-SMR-5000LM-FST-MVOLT-35K	
WD2	4-FOOT VERTICAL WALL MOUNTED LINEAR FIXTURE	WALL	BLACK	0 lm	5000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	40 W	0 W	LITHONIA	ZL1D-L48-SMR-5000LM-FST-MVOLT-35K	
WL1	2-FOOT WALL-MOUNTED VANITY	WALL	BLACK	0 lm	1258 lm	0 lm	3500K	90	0-10V DIMMING	277 V	14 W	0 W	OXYGEN	ADELPHI SERIES	
X1	EDGE LIT EXIT SIGN - UNIVERSAL MOUNTING - PROVIDE ARROWS AS SHOWN - BRUSHED ALUMINUM	UNIVERSAL	BRUSHED ALUMINUM		0 lm	0 lm	GREEN	0		277 V	2 W		SURE -LITES	EUX SERIES AC ONLY	
X1B	EDGE LIT EXIT SIGN - UNIVERSAL MOUNTING - PROVIDE ARROWS AS SHOWN - BLACK FINISH	UNIVERSAL	BLACK		0 lm	0 lm	GREEN	0		277 V	2 W		SURE -LITES	EUX SERIES AC ONLY	
X1M	EDGE LIT EXIT SIGN - MULLION MOUNT	MULLION	BLACK		0 lm	0 lm	GREEN	0		277 V	2 W		SURE -LITES	EUX SERIES AC ONLY	
X2	DOUBLE SIDED EDGE LIT EXIT SIGN - UNIVERSAL MOUNTING - PROVIDE ARROWS AS SHOWN - BRUSHED ALUMINUM	UNIVERSAL	BRUSHED ALUMINUM		0 lm	0 lm	GREEN	0		277 V	2 W		SURE -LITES	EUX SERIES AC ONLY	

EXTERIOR LUMINAIRE SCHEDULE

TYPE	CONSTRUCTION			LIGHT SOURCE				ELECTRICAL			PRODUCT		NOTE
	DESCRIPTION	MOUNTING	FINISH	LUMENS DOWN	LUMENS UP	CCT	CRI	DRIVER	VOLT	WATTS (W)	MFR	MODEL	
E2	16-FOOT PEDESTRIAN POLE WITH TYPE V OPTICS. PROVIDE ROUND STRAIGHT ALUMINUM POLE	POLE	BLACK	6843 lm	0 lm	3500K	80	0-10V DIMMING	277 V	61 W	SELUX	MISTELLA SERIES	7-PIN TWIST LOCK RECEPTACLE, VANDAL RESISTANT POLE BASE COVER
E3	35-FOOT POLE WITH TWO HEADS AT 180-DEGREE ORIENTATION - TYPE 2M OPTICS. PROVIDE ROUND STRAIGHT ALUMINUM POLE	POLE	BLACK	16723 lm	0 lm	3500K	80	0-10V DIMMING	277 V	138 W	LITHONIA	DSX1 LED SERIES	LUMENS AND WATTS PER HEAD. WIRELESS NLIGHT AIR
EG1	4-FT INGRADE WALL GRAZER WITH 10X30 OPTICS AND 2.5 TILT	INGRADE	BLACK	1400 lm	0 lm	3500K	80	0-10V DIMMING	277 V	20 W	LUMENPULSE	INGROUND LOI SERIES	
EL1	4-FOOT RECESSED LINEAR - WET RATED	RECESSED	BLACK	1000 lm	0 lm	3500K	80	0-10V DIMMING	277 V	11 W	LUMENWERX	VIA WET RECESSED SERIES	
ES1 ADD-1	SPOT LIGHT WITH STANCHION AND KNUCKLE MOUNTED ON BASE - 10-DEGREE OPTIC, HALF SNOOT, HONEYCOMB LOUVER, FULL SET OF BEAM ANGLE LENS DEGREE, BLUE COLOR FILTER - STANCHION AND KNUCKLE		BLACK	761 lm	0 lm	3500K	80	0-10V DIMMING	277 V	8 W	ECOSENSE	RISE SERIES	
EW1	SCONCE WITH TYPE IV OPTICS	SURFACE WALL	BLACK	2422 lm	0 lm	3500K	80	0-10V DIMMING	277 V	20 W	LIGMAN	ULEE-30021 SERIES	
EW2	DIRECT/INDIRECT SCONCE - 30-DEGREE UP OPTIC AND TYPE III DOWN OPTIC	SURFACE WALL	BLACK	982 lm	982 lm	3500K	80	0-10V DIMMING	277 V	20 W	LIGMAN	UGI-31651 SERIES	
EW3	4-FT SURFACE MOUNTED LINEAR WITH ASYMMETRIC OPTICS	SURFACE	BLACK	708 lm	0 lm	3500K	80	0-10V DIMMING	277 V	8 W	LUMENPULSE	LUMENFACADE SERIES	ADJUSTABLE MOUNTING BRACKET WITH 90 DEG ROTATION
EW4	RECESSED STEP LIGHT WITH EXTENDED THROW OPTICS	RECESSED WALL	BLACK	301 lm	0 lm	3500K	80	0-10V DIMMING	277 V	7 W	BEGA	B24063	PROVIDE SPECIAL BACKBOX FOR RECESSED MOUNTING

ENERGY CODE: IECC 2021

LIGHTING SEQUENCE OF OPERATIONS

SPACE TYPE	OCCUPANCY (AUTO ON)	VACANCY (MANUAL ON)	TIME OUT PERIOD (MIN)	TIMECLOCK CONTROL	DIMMING	MANUAL ON/OFF	DAYLIGHT CONTROL	PHOTOCELL ILLUMINANCE (FC)	RECEPTACLE CONTROL	THEATRICAL CONTROL	SCHEDULE NOTES
LOBBY/MEZZANINE		X	20	X			X	20 FC @36"		X	1
ELEVATOR LOBBY & SURROUNDING CORRIDORS		X	20	X							1
GROUP RESTROOM	X		20								
SINGLE RESTROOM	X		10								
CONCESSIONS		X	20								
OFFICES		X	20						X		5
STAIRS	X		20		X						
DRESSING ROOMS		X	20								
BAND/PRACTICE ROOMS		X									5
WORKSHOP		X									2
THEATER-AUDIENCE					X					X	3
THEATER-STAGE					X					X	3
SOUND AND LIGHT LOCK					X					X	3
PROJECTION CONTROL ROOM					X					X	3
CONCESSIONS/BOX OFFICE	X				X						
STORAGE/JANITOR		X	20								
IDF		X	20								
LOADING DOCK		X	20								
ELECTRICAL/MECHANICAL		X	20			X					2
EXTERIOR SITE POLE LIGHTING				X	X		X				
EXTERIOR CANOPIES/FAÇADE				X	X		X				
EXTERIOR SCONCES				X	X		X				
LANDSCAPE LIGHTING				X	X		X				
WORKROOMS		X	20								5

ADD-1

GENERAL NOTES:
A. LIGHTING CONTROLS INDICATED ARE FOR REFERENCE ONLY AND MUST BE COORDINATED WITH CONTROLS SHOP DRAWINGS FOR EXACT QUANTITIES OF SENSORS, DEVICES, AND ALL NECESSARY CONNECTIVITY EQUIPMENT.
B. PROVIDE UL924 RELAYS FOR EMERGENCY LIGHTING TO ALLOW FULL CONTROLS UNDER NORMAL CONDITIONS. EMERGENCY LUMINAIRES SHALL TURN FULL "ON" UPON LOSS OF NORMAL POWER.
C. PROVIDE THE NUMBER OF ZONES AS INDICATED ON PLANS.
D. PROVIDE 0-10V DIMMING ON ALL 277V DIMMING ZONES AND FORWARD-PHASE DIMMING ON ALL 120V DIMMING ZONES.
E. COMPLETE COMMISSIONING OF CONTROL SYSTEM AND PROVIDE REPORT TO ENGINEER OF REVIEW
F. VERIFY ALL ON/OFF, OCCUPIED/UNOCCUPIED TIMES WITH OWNER PRIOR TO PROGRAMMING.

SCHEDULE NOTES:
1. LIGHT FIXTURES DESIGNATED AS NIGHT LIGHT (NL-#) SHALL BE CONNECTED TO THE NETWORK LIGHTING CONTROL SYSTEM INDEPENDENT OF REGULARLY CONTROLLED FIXTURES AND SHALL OPERATE AS FOLLOWS:
   A. FIXTURES SHALL TURN TO FULL-ON WHEN OCCUPIED AND/OR "ON" MODE
   B. FIXTURES SHALL TURN OFF WHEN IN UNOCCUPIED MODE
2. MANUAL ON SWITCH TO TURN ON LIGHTS AFTER HOURS ONLY PERMITS LIGHTS TO BE ON FOR 2 HOURS
3. THEATRICAL LIGHTING IS CONTROLLED BY DMX SYSTEM AND ITS DATA CONTROL PROTOCOL. ARCHITECTURAL DMX FIXTURES SHALL BE ADDRESSED SEPARATELY.
4. AUTOMATIC RECEPTACLE CONTROL VIA OCCUPANCY SENSOR
5. AUTOMATIC RECEPTACLE CONTROL VIA TIMECLOCK

SEQUENCE OF OPERATIONS GENERAL NOTES:
A. SEQUENCE OF OPERATIONS SHALL CONFORM TO LIGHTING CONTROL REQUIREMENTS PER IECC 2021
B. BUILDING TIME SCHEDULE - VERIFY WITH OWNER PRIOR TO PROGRAMMING:
   a. SCHOOL HOURS: 7 AM - 5 PM
   b. AFTER HOURS: 5 PM - 7 AM

IECC COMMISSIONING NOTES:
A. PROJECT SHALL BE COMMISSIONED IN ACCORDANCE WITH SECTION C408 OF IECC 2021. IN ADDITION TO OTHER PROJECT REQUIREMENTS, THE FOLLOWING DOCUMENTATION SHALL BE PROVIDED TO THE BUILDING OWNER WITHIN 90 DAYS OF THE DATE OF RECEIPT OF THE CERTIFICATE OF OCCUPANCY.
- OPERATING AND MAINTENANCE MANUAL WITH COMPONENTS INDICATED IN C408.2.5.2
- AS-BUILT DRAWINGS FOR ELECTRICAL POWER SYSTEMS.
- DOCUMENTATION CERTIFYING LIGHTING SYSTEM FUNCTIONAL TESTING INCLUDING:
  1. OCCUPANT SENSOR CONTROLS
  2. TIME-SWITCH CONTROLS
  3. DAYLIGHT RESPONSIVE CONTROLS

CRANDALL PENDANT MOUNTING SCHEDULE

ROOM	TYPE	MOUNTING HEIGHT BOTTOM OF LUMINAIRE	NOTES
LEVEL 1			
F.O.H. STORAGE A102	BA1	9'-6"	MOUNT BELOW MECHANICAL EQUIPMENT
CONCESSION STORAGE A104	BA1	9'-6"	MOUNT BELOW MECHANICAL EQUIPMENT
F.O.H. STORAGE A107	BA1	9'-6"	MOUNT BELOW MECHANICAL EQUIPMENT
CUSTODIAL A109	BA1	8'-0"	MOUNT BELOW MECHANICAL EQUIPMENT
LOADING DOCK A114	BC1	14'-6"	MOUNT BELOW MECHANICAL EQUIPMENT
WORKSHOP A116	BB1	18'-0"	
ELEC. A115	BA1	10'-0"	
STAGE ACCESS A117	BD1	10'-0"	
STAGE STORAGE A120	BA1	14'-6"	MOUNT BELOW MECHANICAL EQUIPMENT
BAND STORAGE A124	BA1	14'-6"	MOUNT BELOW MECHANICAL EQUIPMENT
COSTUME STORAGE A125	BA1	14'-6"	
STORAGE A126	BA1	14'-6"	
ORCH. SHELL STOR. A122 /STAGE	BA2	22'-6"	
BLDG MAINT. FIRE PANEL/PHONE A141	BA1	8'-0"	
IDF A142	BA1	9'-6"	
SOUND & LIGHTING STORAGE A143	BA1	9'-6"	
STAIR A144	DB1	8'-0"	
STORAGE A145	BA1	9'-6"	
LEVEL 2			
CUSTODIAL A203	BA1	8'-6"	
ELEC. A205	BA1	8'-6"	
LEVEL 3			
STORAGE A300	BA2	8'-0"	
S/L A301	BA2	8'-0"	
FOLLOW SPOT A302	BA2	8'-0"	
S/L A304	BA2	8'-0"	
AV & LIGHTING RACK ROOM A303	BA2	8'-0"	
LEVEL 4			
GRID LEVEL	BA2	7' - 6"	

DLR GROUP
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STATE OF TEXAS
MARK JOSEPH NIECHWIADOWICZ
146025
LICENSED
PROFESSIONAL ENGINEER
TBPE/BPAE
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.08.19
REVISIONS
ADD-1 8/8/24

39-23712-00

LIGHTING SCHEDULES

E7.1

FAN SCHEDULE

NOTES:
1. FAN PROVIDED WITH FACTORY MOUNTED DISCONNECT SWITCH
2. PROVIDE CONNECTION TO MOTORIZED DAMPER
3. INTERCONNECT WITH RTU-7
4.
5.

ID	SERVES	ECM	LOAD HP	LOAD FLA (A)	LOAD MCA (A)	LOAD MOCP (A)	LOAD TOTAL LOAD (VA)	VOLTAGE (V)	PHASE	DISCONNECT	STARTER	PANEL	CIRCUIT NO.	CONDUIT & WIRE SIZE	NOTES
EF-1	DRESSING ROOMS	Yes	0.1	1.5	1.9	15	180	120	1	BY DIV 23	NEMA 00	ML1K	27	15-2W	1,2
EF-2	LOBBY RESTROOMS	Yes	0.5	6.6	8.2	15	792	120	1	BY DIV 23	NEMA 00	ML2K	1	15-2W	1,2
EF-3	WORKSHOP	Yes	0.1	1.5	1.9	15	180	120	1	BY DIV 23	NEMA 00	ML1K	27	15-2W	1,2,3
EF-4	WORKSHOP	Yes	0.1	1.5	1.9	15	180	120	1	BY DIV 23	BY DIV 23	ML1K	27	15-2W	1,2,3

HUMIDIFIER SCHEDULE

NOTES:
1.
2.
3.
4.
5.

ID	LOCATION NO.	LOCATION NAME	LOAD HP	LOAD FLA (A)	LOAD MCA (A)	LOAD MOCP (A)	LOAD TOTAL LOAD (VA)	VOLTAGE (V)	PHASE	DISCONNECT	STARTER	PANEL	CIRCUIT NO.	CONDUIT & WIRE SIZE	NOTES
HU-1	A143	PIANO STORAGE	0	16.8	21	25	2,016	120	1	BY DIV 23		ML1K	29	25-2W	

PUMP SCHEDULE

NOTES:
1. SEE PLANS FOR ALARM PANEL LOCATION. ROUTE CIRCUIT SHOWN TO ALARM PANEL. CONNECT OUTPUT OF ALARM PANEL TO SIMPLEX RECEPTACLE IN ELEVATOR PIT.
2. PROVIDE PATHWAY FOR OIL MINDER SENSOR CABLE FROM ALARM PANEL TO SUMP PIT SENSOR.
3.
4.
5.

ID	LOCATION NO.	LOCATION NAME	SERVES	ECM	LOAD HP	LOAD FLA (A)	LOAD MCA (A)	LOAD MOCP (A)	LOAD TOTAL LOAD (VA)	VOLTAGE (V)	PHASE	DISCONNECT	STARTER	PANEL	CIRCUIT NO.	CONDUIT & WIRE SIZE	NOTES
SP-1			ELEVATOR	No	0.75	12	15	20	1,440	120	1	CORD AND PLUG	FLOAT SWITCH AND ALARM PANEL	L1AK	37	20-2W	1,2

ROOF-TOP UNIT SCHEDULE

NOTES:
1. PROVIDE DUCT SMOKE DETECTOR IN SUPPLY AND RETURN DUCTS PER IFC REQUIREMENTS.
2.
3.
4.
5.

ID	LOCATION	CFM	LOAD FLA (A)	LOAD MCA (A)	LOAD MOCP (A)	LOAD TOTAL LOAD (VA)	VOLTAGE (V)	PHASE	DISCONNECT	STARTER	PANEL	CIRCUIT NO.	CONDUIT & WIRE SIZE	NOTES
RTU-1	ROOF	14230 CFM	149	150	175	123,876	480	3	VFD BY DIV 23	VFD BY DIV 23	DP1K	7	SEE ONE-LINE	1
RTU-2	ROOF	2530 CFM	33.7	39.9	60	28,018	480	3	VFD BY DIV 23	VFD BY DIV 23	MH1K	2,4,6	40-4W	1
RTU-3	ROOF	2085 CFM	27.7	32.4	50	23,029	480	3	VFD BY DIV 23	VFD BY DIV 23	MH1K	8,10,12	35-4W	1
RTU-4 (ADD-1)	ROOF	5930 CFM	61.8	68	90	51,380	480	3	VFD BY DIV 23	VFD BY DIV 23	DP1K	8	SEE ONE-LINE	1
RTU-5 (ADD-1)	ROOF	5390 CFM	16.3	20.4	30	13,568	480	3	VFD BY DIV 23	VFD BY DIV 23	MH1K	32,34,36	30-4W	1
RTU-6	ROOF	11425 CFM	89.3	111.6	125	74,226	480	3	VFD BY DIV 23	VFD BY DIV 23	DP2K	6	SEE ONE-LINE	1
RTU-7	ROOF	2750 CFM	31.8	36.5	50	26,438	480	3	VFD BY DIV 23	VFD BY DIV 23	MH1K	14,16,18	40-4W	1
RTU-8	ROOF	2550 CFM	21.7	24.9	35	18,041	480	3	VFD BY DIV 23	VFD BY DIV 23	MH1K	20,22,24	30-4W	1
RTU-9	ROOF	5000 CFM	42.7	49	70	35,500	480	3	VFD BY DIV 23	VFD BY DIV 23	DP1K	10	SEE ONE-LINE	1

SPLIT SYSTEM INDOOR UNIT ELEC. CONNECTION SCHEDULE

NOTES:
1. POWER FOR INDOOR UNITS ARE PROVIDED BY OUTDOOR UNIT.
2. PROVIDE 3/4"C BETWEEN INDOOR AND OUTDOOR UNIT FOR CONTROL WIRING.
3.
4.
5.

ID	LOCATION	LOAD FLA (A)	LOAD MCA (A)	LOAD MOCP (A)	LOAD TOTAL LOAD (VA)	VOLTAGE (V)	PHASE	DISCONNECT	PANEL	CIRCUIT NO.	CONDUIT & WIRE SIZE	NOTES
IU-01	PIANO STORAGE	0.3	0.4	15	62	208	1	MOTOR RATED TOGGLE SWITCH	ML2K	21,23	15-2W	1,2
IU-02	IDF	0.6	0.8	20	125	208	1	MOTOR RATED TOGGLE SWITCH	ML2K	25,27	20-2W	1,2
IU-03	ELEC. ROOM	0.6	0.8	20	125	208	1	MOTOR RATED TOGGLE SWITCH	ML2K	29,31	20-2W	1,2
IU-04	BOX OFFICE & CONCESSIONS	1.1	1.4	15	229	208	1	MOTOR RATED TOGGLE SWITCH	ML2K	33,35	20-2W	1,2
IU-05	MGR / FIRST AID	0.5	0.6	15	104	208	1	MOTOR RATED TOGGLE SWITCH	ML2K	37,39	15-2W	1,2
IU-06	ELEC. ROOM	0.6	0.8	20	125	208	1	MOTOR RATED TOGGLE SWITCH	ML2K	2,4	20-2W	1,2
IU-07	ELEC. ROOM	0.6	0.7	20	121	208	1	MOTOR RATED TOGGLE SWITCH	ML2K	6,8	20-2W	1,2
IU-08	ELEC. ROOM	1.1	1.4	15	229	208	1	MOTOR RATED TOGGLE SWITCH	ML2K	10,12	20-2W	1,2
IU-09	ELEC. ROOM	0.6	0.7	20	121	208	1	MOTOR RATED TOGGLE SWITCH	ML2K	38,40	20-2W	1,2
IU-10	ELEC. ROOM	0.6	0.7	20	121	208	1	MOTOR RATED TOGGLE SWITCH	ML2K	18,20	20-2W	1,2

SPLIT SYSTEM CONDENSING UNIT ELEC. CONNECTION SCHEDULE

NOTES:
1.
2.
3.
4.
5.

ID	LOCATION	LOAD FLA (A)	LOAD MCA (A)	LOAD MOCP (A)	LOAD TOTAL LOAD (VA)	VOLTAGE (V)	PHASE	DISCONNECT	PANEL	CIRCUIT NO.	CONDUIT & WIRE SIZE	NOTES
OU-01	ROOF	12	12.3	15	2,496	208	1	NEMA 3R NF 30A/2P	ML2K	21,23	15-2W	
OU-02	ROOF	18.3	19.8	20	3,806	208	1	NEMA 3R NF 30A/2P	ML2K	25,27	20-2W	
OU-03	ROOF	18.3	19.8	20	3,806	208	1	NEMA 3R NF 30A/2P	ML2K	29,31	20-2W	
OU-04	ROOF	12	13.3	15	2,496	208	1	NEMA 3R NF 30A/2P	ML2K	33,35	20-2W	
OU-05	ROOF	7.5	8	15	1,560	208	1	NEMA 3R NF 30A/2P	ML2K	37,39	15-2W	
OU-06	ROOF	18.3	19.8	20	3,806	208	1	NEMA 3R NF 30A/2P	ML2K	2,4	20-2W	
OU-07	ROOF	13.3	19.8	20	2,766	208	1	NEMA 3R NF 30A/2P	ML2K	6,8	20-2W	
OU-08	ROOF	12	13.1	15	2,496	208	1	NEMA 3R NF 30A/2P	ML2K	10,12	20-2W	
OU-09	ROOF	13.3	19.8	20	2,766	208	1	NEMA 3R NF 30A/2P	ML2K	38,40	20-2W	
OU-10	ROOF	13.3	19.8	20	2,766	208	1	NEMA 3R NF 30A/2P	ML2K	18,20	20-2W	

VARIABLE AIR VOLUME TERMINAL UNIT SCHEDULE

NOTES:
1.
2.
3.
4.
5.

ID	LOCATION	LOAD FLA (A)	LOAD MCA (A)	LOAD MOCP (A)	LOAD TOTAL LOAD (VA)	VOLTAGE (V)	PHASE	DISCONNECT	PANEL	CIRCUIT NO.	CONDUIT & WIRE SIZE	NOTES
VAV-1	ROOF	14.5	18.1	20	4,011	277	1	BY DIV 23	MH1K	1	20-3W	
VAV-2	ROOF	3.6	4.5	15	997	277	1	BY DIV 23	MH1K	3	15-3W	
VAV-3	ROOF	3.6	4.5	15	997	277	1	BY DIV 23	MH1K	5	15-3W	
VAV-4	ROOF	9	11.3	15	2,504	277	1	BY DIV 23	MH1K	7	15-3W	
VAV-5	ROOF	3.6	4.5	15	997	277	1	BY DIV 23	MH1K	9	15-3W	
VAV-6	ROOF	5.4	6.8	15	1,507	277	1	BY DIV 23	MH1K	11	15-3W	
VAV-7	ROOF	3.6	4.5	15	997	277	1	BY DIV 23	MH1K	13	15-3W	
VAV-8	ROOF	3.6	4.5	15	997	277	1	BY DIV 23	MH1K	15	15-3W	
VAV-9	ROOF	3.6	4.5	15	997	277	1	BY DIV 23	MH1K	17	15-3W	

ELECTRIC WATER HEATER SCHEDULE

NOTES:
1.
2.
3.
4.
5.

ID	LOCATION	KW	SCR	LOAD FLA (A)	LOAD MCA (A)	LOAD MOCP (A)	LOAD TOTAL LOAD (VA)	VOLTAGE (V)	PHASE	DISCONNECT	PANEL	CIRCUIT NO.	CONDUIT & WIRE SIZE	NOTES
EWH-1	DRESSING ROOMS	16.6	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH	ML1K	1,3	40-2W	
EWH-1	DRESSING ROOMS	16.6	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH	ML1K	5,7	40-2W	
EWH-2	DRESSING ROOMS	16.6	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH	ML1K	9,11	40-2W	
EWH-2	DRESSING ROOMS	16.6	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH	ML1K	13,15	40-2W	
EWH-3	UNISEX TOILET	3.6	YES	17	20	20	3,600	208	1	MOTOR RATED TOGGLE SWITCH	ML1K	17,19	20-2W	
EWH-4	UNISEX TOILET	8.7	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH	ML1K	21,23	40-2W	
EWH-5	CUSTODIAL	24	YES	29	30	30	24,000	480	3	NEMA 3R 60/3 NF (ADD-1)	MH1K	37,39,41	30-3W	
EWH-6	CUSTODIAL	3.6	YES	17	20	20	3,600	208	1	MOTOR RATED TOGGLE SWITCH	ML2K	9,11	20-2W	
EWH-7	LOBBY RESTROOMS	8.7	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH	ML2K	28,30	40-2W	
EWH-8	LOBBY RESTROOMS	24	YES	29	30	70	24,000	480	3	NEMA 3R 60/3 NF (ADD-1)	MH2K	1,3,5	30-3W	
EWH-9	MEZZANINE	8.7	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH	ML2K	13,15	40-2W	
EWH-10	MEZZANINE	8.7	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH	ML2K	17,19	40-2W	
EWH-11	WORKSHOP	24	YES	29	30	70	24,000	480	3	NEMA 3R 60/3 NF (ADD-1)	MH2K	7,9,11	30-3W	
EWH-12	ALCOVE	8.7	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH	ML2K	5,7	40-2W	
EWH-13	BOX OFFICE & CONS.	8.7	YES	40	40	40	8,300	208	1	MOTOR RATED TOGGLE SWITCH	ML2K	32,34	40-2W	

DLRGROUP

STATE OF TEXAS
146025
LICENSED PROFESSIONAL ENGINEER

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.08.19
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ADD-1 8/8/24

39-23712-00

ELECTRICAL SCHEDULES

E7.2

SWITCHBOARD: DP1K

LOCATION ELEC. A160
BUS RATING 1200.0 A
MAIN BREAKER 1140/3
VOLTAGE: 480Y/277
PHASES: 3
WIRES: 4
SCCR: 25 kA

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	LOAD (kVA)	NOTES
1	DP2K	600.0 A	3		S; L; R; O; M	324	
2	L1AK VIA XFMR T1AK	50.0 A	3		S; L; R; O; M	37	
3	L1BK VIA XFMR T1BK	50.0 A	3		S; R; O	7	
4	H1K	100.0 A	3		S; L	11	
5	MH1K	400.0 A	3		S; R; M	198	
6	L1TK VIA XFMR T1TK	150.0 A	3		S; R; O; M;...	70	
7	RTU-1	175.0 A	3		M	124	
8	RTU-4	90.0 A	3		M	51	
9							
10	RTU-9	70.0 A	3		M	36	
11	ACOUSTIC CEILING HOIST	100.0 A	3		M	58	
12	STAGE LIGHTING HOIST	100.0 A	3		NC	58	
13							
14							
15							
16							
					TOTAL LOAD:	973 kVA	
					TOTAL AMPS:	1170 A	

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	25232 VA	100.00%	25232 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	68420 VA	57.31%	39210 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFCI (30mA)	**CONNECTED LOAD:** 973 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN EQUIPMENT, NEC ART. 220	ST = SHUNT TRIP	**ESTIMATED DEMAND:** 828 kVA
M	MOTOR	701994 VA	100.00%	701994 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	**CONNECTED CURRENT:** 1170 A
C	COOLING	0 VA	0.00%	0 VA			**EMD CURRENT:** 995.9 A
H	HEATING	0 VA	0.00%	0 VA			
NC	NONCOINCIDENT	115797 VA	0.01%	12 VA	NON-COINCIDENT LOADS, NEC ART. 220		
O	OTHER	60992 VA	100.00%	60992 VA			
Spare	SPARE	500 VA	100.00%	500 VA			

NOTES:

PANEL: MH1K

LOCATION: ELEC. A160
BUS RATING: 400 A
MAIN BREAKER: 400 A
VOLTS: 480Y/277
PHASES: 3
WIRES: 4
SCCR: 23.9 KA
MOUNTING: SURFACE
FED FROM: DP1K
INTEGRAL SPD: NO
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	VAV-1	20	1		M	4,011	9,339					M		3	60	RTU-2	2
3	VAV-2	15	1		M			997	9,339								4
5	VAV-3	15	1		M					997	9,339						6
7	VAV-4	15	1		M	2,504	7,676					M		3	50	RTU-3	8
9	VAV-5	15	1		M			997	7,676								10
11	VAV-6	15	1		M					1,507	7,676						12
13	VAV-7	15	1		M	997	8,813					M		3	50	RTU-7	14
15	VAV-8	15	1		M			997	8,813								16
17	VAV-9	15	1		M					997	8,813						18
19	SPARE	20	1		Spare	0	6,014					M		3	35	RTU-8	20
21	SPARE	15	1		Spare			0	6,014								22
23	SPARE	15	1		Spare					0	6,014						24
25	SPARE	20	1		Spare	0	0					Spare		3	20	SPARE	26
27	SPARE	20	1		Spare			0	0								28
29	SPARE	20	1		Spare					0	0						30
31	FIRE CURTAIN MOTOR	15	3		M	582	4,523					M		3	30	RTU-5	32
33								582	4,523								34
35										582	4,523						36
37	EWH-5	30	3		M	8,000	15,510					Spare; R; M		3	150	ML1K VA XFMR TM1K	38
39								8,000	17,140								40
41										8,000	16,266						42
					TOTAL LOAD:	67969 VA		65078 VA		64714 VA							
					TOTAL AMPS	245.6 A		235.1 A		233.6 A							

ADD-1

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	1260 VA	100.00%	1260 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	**CONNECTED LOAD:** 198 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	**ESTIMATED DEMAND:** 198 kVA
M	MOTOR	196501 VA	100.00%	196501 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	**CONNECTED CURRENT:** 237.9 A
C	COOLING	0 VA	0.00%	0 VA			**EMD CURRENT:** 237.9 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	0 VA	0.00%	0 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:

PANEL: L1AK

LOCATION: ELEC. A160
BUS RATING: 225 A
MAIN BREAKER: 225 A
ADD-1
VOLTS: 208Y/120
PHASES: 3
WIRES: 4
SCCR: 8 KA
MOUNTING: SURFACE
FED FROM: T1AK
INTEGRAL SPD: YES
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	A		B		C		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	EWC-HALL A196	20	1	G	R	500	500					R	G	1	20	EWC-ALCOVE A113	2
3	R-HALL A196, A143	20	1		R			540	1,560			M		1	20	DOCK LEVELER	4
5	R BOX OFFICE & CONCESSIONS A165	20	1		R					360	1,500	R	G	2	20	R-ALCOVE A113 DRYER	6
7	R-BOX OFFICE & CONCESSIONS A165 FRIDGE	20	1		R	180	1,500										8
9	R-DRESSING ROOM A128,A128A VALVES	20	1		R; O			900	1,000			R		1	20	R-ALCOVE A113 WASHER	10
11	R-MAKEUP A187 COUNTER	20	1		R					720	1,500	O	G	2	30	R-ALCOVE A113 ICE MACHINE	12
13	R-MAKEUP A187 COUNTER	20	1		R	720	1,500										14
15	R-MAKEUP A187 COUNTER	20	1		R			720	720			R		1	20	R-WORKSHOP A116 W,N	16
17	R-MAKEUP A187 COUNTER	20	1		R					720	720	R		1	20	R-STORAGE A120,A124	18
19	R-DRESSING ROOM A129,A129A VALVES	20	1		R; O	1,080	900					R		1	20	R-STORAGE, TOILET A102,A104,A107-A108	20
21	R STAGE WING A186	20	1		R			900	720			R		1	20	R-WORKSHOP A116 E,S	22
23	R-ELEVATOR A147	20	1		R					180	360	R		1	20	R-WORKSHOP A116 CORD REEL	24
25	R-CONSESSIONS A103	20	1		R	360	900					R		1	20	R-ELEC, OPEN CIRC. A115, A117-A120	26
27	R-OFFICE A106	20	1		R			900	720			R		1	20	R-TOILET, LIBRARY A137,A138 VALVES	28
29	R-AUDIENCE CHAMBER A148	20	1		R					1,080	1,080	R		1	20	R-PRACTICE A131-A134	30
31	L TRACK, OPEN CIRCULATION A138	20	1		L	525	1,200					R		1	20	INDEX STRIP LIGHT RIGHT	32
33	L-MAKEUP A187	20	1		L			120	1,200			R		1	20	INDEX STRIP LIGHT RIGHT	34
35	R-CONCESSIONS EQUIPMENT	20	1	G	R					1,600	1,200	R		1	20	INDEX STRIP LIGHT LEFT	36
37	SP-1	20	1		M	1,440	250					O		1	20	OVERHEAD DOOR-STAGE A149	38
39	L - TRACK OPEN CIRCULATION A138	20	1		L			1,875	1,725			L		1	20	L - TRACK A196	40
41	L - TRACK A196	20	1		L					750	0	Spare		1	20	SPARE	42
43	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	44
45	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	46
47	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	48
49	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	50
51	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	52
53	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	54
55	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	56
57	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	58
59	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	60
61	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	62
63	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	64
65	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	66
67	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	68
69	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	70
71	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	72
73	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	74
75	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	76
77	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	78
79	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	80
81	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	82
83	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	84
					TOTAL LOAD:	11555 VA		13600 VA		11770 VA							
					TOTAL AMPS	96.3 A		113.6 A		98.4 A							

ADD-1

ADD-1

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	4995 VA	100.00%	4995 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	25320 VA	69.75%	17660 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	**CONNECTED LOAD:** 37 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	**ESTIMATED DEMAND:** 29 kVA
M	MOTOR	3000 VA	100.00%	3000 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	**CONNECTED CURRENT:** 102.5 A
C	COOLING	0 VA	0.00%	0 VA			**EMD CURRENT:** 81.2 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	3610 VA	100.00%	3610 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:

PANEL: H1K

LOCATION: ELEC. A160
BUS RATING: 100 A
MAIN BREAKER: 100 A
VOLTS: 480Y/277
PHASES: 3
WIRES: 4
SCCR: 22.2 KA
MOUNTING: SURFACE
FED FROM: DP1K
INTEGRAL SPD: NO
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	L-OPEN CIRCULATION A138 & BOH HALL A112	20	1		L	1,111	1,857					L		1	20	L-CIRCULATION, LOBBY (VIA INVERTER)*	2
3	L-BAND STORAGE A124, A125, A119, A120	20	1		L			996	1,245			L		1	20	L-BANDROOM, EXTERIOR (VIA INVERTER)*	4
5	L-WORKSHOP A116	20	1		L					2,123	0	Spare		1	20	SPARE	6
7	L-DRESSING ROOM, A130-A138,A141-A143	20	1		L	1,151	0					Spare		1	20	SPARE	8
9	L-F.O.H. STORAGE A106, CONCESSIONS A103	20	1		L			605	0			Spare		1	20	SPARE	10
11	L-HALL A196, EXTERIOR	20	1		L					316	0	Spare		1	20	SPARE	12
13	L-SITE POST LIGHTING	20	1		L	255	0					Spare		1	20	SPARE	14
15	L-GRID LEVEL	20	1		L			574	0			Spare		1	20	SPARE	16
17	L-LOBBY A101, A105, A110	20	1		L					464	0	Spare		1	20	SPARE	18
19	L-ORCH. STORAGE, AUDENCE CHAMBER	20	1		L	374	0					Spare		1	20	SPARE	20
21	L-ELEVATOR PIT	20	1		L			84	0			Spare		1	20	SPARE	22
23	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	24
25	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	26
27	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	28
29	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	30
31	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	32
33	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	34
35	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	36
37	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	38
39	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	40
41	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	42
					TOTAL LOAD:	4747 VA		3504 VA		2903 VA							
					TOTAL AMPS	17.5 A		13.0 A		10.5 A							

ADD-1

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	11154 VA	100.00%	11154 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	0 VA	0.00%	0 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	**CONNECTED LOAD:** 11 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	**ESTIMATED DEMAND:** 11 kVA
M	MOTOR	0 VA	0.00%	0 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	**CONNECTED CURRENT:** 13.4 A
C	COOLING	0 VA	0.00%	0 VA			**EMD CURRENT:** 13.4 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	0 VA	0.00%	0 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:
A. CIRCUITS NOTED WITH " * " ARE FED THROUGH INVERTER, SEE INVERTER SCHEDULE ON E6.2

PANEL: ML1K

LOCATION: ELEC. A160
BUS RATING: 225 A
MAIN BREAKER: 225 A
VOLTS: 208Y/120
PHASES: 3
WIRES: 4
SCCR: 6.4 KA
MOUNTING: SURFACE
FED FROM: TM1K
INTEGRAL SPD: NO
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	EWH-1a	40	2		M	4,150	0					Spare		1	20	SPARE	2
3								4,150	0			Spare		1	20	SPARE	4
5	EWH-1b	40	2		M					4,150	0	Spare		1	20	SPARE	6
7						4,150	0					Spare		1	20	SPARE	8
9	EWH-2a	40	2		M			4,150	0			Spare		1	20	SPARE	10
11										4,150	0	Spare		1	20	SPARE	12
13	EWH-2b	40	2		M	4,150	0					Spare		1	20	SPARE	14
15								4,150	0			Spare		1	20	SPARE	16
17	EWH-3	20	2		M					1,800	0	Spare		1	20	SPARE	18
19						1,800	0					Spare		1	20	SPARE	20
21	EWH-4	40	2		M			4,150	0			Spare		1	15	SPARE	22
23										4,150	0	Spare		2	20	SPARE	24
25	R-ROOF NORTH	20	1		R	1,260	0										26
27	EF-1, EF-3, EF-4	15	1		M			540	--					1	--	SPACE	28
29	HU-01	25	1		M					2,016	--			1	--	SPACE	30
31	SPARE	20	1		Spare	0	--							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:	15510 VA		17140 VA		16266 VA							
					TOTAL AMPS	129.3 A		143.8 A		136.5 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	1260 VA	100.00%	1260 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	**CONNECTED LOAD:** 49 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	**ESTIMATED DEMAND:** 49 kVA
M	MOTOR	47656 VA	100.00%	47656 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	**CONNECTED CURRENT:** 135.8 A
C	COOLING	0 VA	0.00%	0 VA			**EMD CURRENT:** 135.8 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	0 VA	0.00%	0 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:

PANEL: L1BK

LOCATION: IDF A158
BUS RATING: 50 A
MAIN BREAKER: 50 A
VOLTS: 208Y/120
PHASES: 3
WIRES: 4
SCCR: 1.3 KA
MOUNTING: SURFACE
FED FROM: T1B
INTEGRAL SPD: YES
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	R-IDF WEST AND EAST WALL A158	20	1		R	1,080	0					Spare		1	20	SPARE	2
3	R-BLDG MAINT A141	20	1		R			720	0			Spare		1	20	SPARE	4
5	R IDF NORTH WALL A158	20	1		R					360	0	Spare		1	20	SPARE	6
7	UPS-IDF A142	30	2		R	1,500	0					Spare		1	20	SPARE	8
9								1,500	0			Spare		1	20	SPARE	10
11	R-IDF A158	20	1		R					180	0	Spare		1	20	SPARE	12
13	R-IDF A158	20	1		R	180	0					Spare		1	20	SPARE	14
15	R-IDF A158	20	1		R			180	0			Spare		1	20	SPARE	16
17	FIRE ALARM CONTROL PANEL	20	1		O					500	0	Spare		1	20	SPARE	18
19	DOOR CONTROL PANEL	20	1		O	500	0					Spare		1	20	SPARE	20
21	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	22
23	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	24
25	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	26
27	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	28
29	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	30
31	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	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:	3260 VA		2400 VA		1040 VA							
					TOTAL AMPS	28.9 A		21.7 A		8.7 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	5700 VA	100.00%	5700 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	**CONNECTED LOAD:** 7 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	**ESTIMATED DEMAND:** 7 kVA
M	MOTOR	0 VA	0.00%	0 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	**CONNECTED CURRENT:** 18.6 A
C	COOLING	0 VA	0.00%	0 VA			**EMD CURRENT:** 18.6 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	1000 VA	100.00%	1000 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:

PANEL: L1TK

LOCATION: ELEC. A160
BUS RATING: 300 A
MAIN BREAKER: 300 A
VOLTS: 208Y/120
PHASES: 3
WIRES: 4
SCCR: 6.4 KA
MOUNTING: SURFACE
FED FROM: T1TK
INTEGRAL SPD: YES
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	R-AUD CHAMBER SOUND POSITION	20	1		R	360	0					Spare		1	20	SPARE	2
3	R-AUD CHAMBER SOUND POSITION	20	1		R			360	0			Spare		1	20	SPARE	4
5	R-STAGE WING A185	20	1		R					180	0	Spare		1	20	SPARE	6
7	R-STAGE WING A185	20	1		R	180	0					Spare		1	20	SPARE	8
9	R-STAGE WING A185	30	2		R			2,080	0			Spare		1	20	SPARE	10
11										2,080	0	Spare		1	20	SPARE	12
13	R-STAGE WING A186	20	1		R	180	0					Spare		1	20	SPARE	14
15	R-STAGE WING A186	20	1		R			180	0			Spare		1	20	SPARE	16
17	R-STAGE WING A186	30	2		R					2,080	0	Spare		1	20	SPARE	18
19						2,080	0					Spare		1	20	SPARE	20
21	R-AUDIENCE CHAMBER A148	20	1		R			180	0			Spare		1	20	SPARE	22
23	R-LOADING DOCK A114	20	1		R					180	0	Spare		1	20	SPARE	24
25	R-AUD CHAMBER FLOOR BOX	20	1		R	360	0					Spare		1	20	SPARE	26
27	PROJECTION SCREEN-AUDITORIUM	20	1		O			1,000	0			Spare		1	20	SPARE	28
29	RIGGING CONTROLER	20	1		M					600	0	Spare		1	20	SPARE	30
31	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	32
33	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	34
35	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	36
37	COMPANY SWITCH	200	3	ST	NC	19,200	0					Spare		1	20	SPARE	38
39								19,200	0			Spare		1	20	SPARE	40
41										19,200	0	Spare		1	20	SPARE	42
					TOTAL LOAD:	22360 VA		23000 VA		24320 VA							
					TOTAL AMPS	186.3 A		192.5 A		203.5 A							

ADD-1

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	10480 VA	97.71%	10240 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	**CONNECTED LOAD:** 70 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	**ESTIMATED DEMAND:** 12 kVA
M	MOTOR	600 VA	100.00%	600 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	**CONNECTED CURRENT:** 193.4 A
C	COOLING	0 VA	0.00%	0 VA			**EMD CURRENT:** 32.9 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	1000 VA	100.00%	1000 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:
PROVIDE WITH SEPARATE ISOLATED GROUND BUS. 200% RATED NEUTRAL

EXISTING PANEL: H3

LOCATION: ELEC ROOM U-13
BUS RATING: 250 A
MAIN BREAKER: MLO
VOLTS: 480Y/277
PHASES: 3
WIRES: 4
SCCR:
MOUNTING: SURFACE
FED FROM: DPHC
INTEGRAL SPD: NONE
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	EXISTING - LTG-F110,MRS	--	1	20		--	--						20	1	--	EXISTING - LTG-G114,F107	2
3	EXISTING - LTG-G101,G104-G108	--	1	20				--	--				20	1	--	EXISTING - CORRIDOR LTG	4
5	EXISTING - LTG-G111,G112,G113	--	1	20						--	--		20	1	--	EXISTING - LTG-G102,G103,GG110	6
7	EXISTING - LTG-113	--	1	20		--	--						20	1	--	EXISTING - LTG-CAFETORIUM	8
9	EXISTING - LTG-CAFETORIUM	--	1	20				--	--				20	1	--	EXISTING - LTG-CAFETORIUM	10
11	EXISTING - LTG-F116,F118,F120,F121, SNAC...	--	1	20						--	--		20	1	--	EXISTING - LTG-CAFETORIUM	12
13	EXISTING - LTG-KITCHEN	--	1	20		--	--						20	1	--	EXISTING - LTG-STAGE	14
15	L-BANDROOM,PERCUSSION (1)	20	1		L			3,351	--				20	1	--	EXISTING - CRAC-1	16
17	SPARE	20	1		Spare					0	--		20	1	--	EXISTING - CAFETERIA	18
19	SPARE	20	1		Spare	0	--						20	1	--	EXISTING - CAFETERIA	20
21	SPARE	25	1		Spare			0	--					1	--	SPACE	22
23	SPACE	--	1							--	--			1	--	SPACE	24
25	SPACE	--	1			--	--							1	--	SPACE	26
27	SPACE	--	1					--	--					1	--	SPACE	28
29	SPACE	--	1							--	--			1	--	SPACE	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:	0 VA		3351 VA		0 VA							
					TOTAL AMPS	0.0 A		12.1 A		0.0 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND...	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS
L	LIGHTING	3351 VA	100.00%	3351 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)	
R	RECEPTACLES	0 VA	0.00%	0 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFCI (30mA)	**CONNECTED LOAD:** 3 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	**ESTIMATED DEMAND:** 3 kVA
M	MOTOR	0 VA	0.00%	0 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	**CONNECTED CURRENT:** 4.0 A
C	COOLING	0 VA	0.00%	0 VA			**EMD CURRENT:** 4.0 A
H	HEATING	0 VA	0.00%	0 VA			
O	OTHER	0 VA	0.00%	0 VA			
Spare	SPARE	0 VA	0.00%	0 VA			

NOTES:
SIEMENS P1 PANELBOARD
(1) CIRCUIT TO EXISTING 20A/1P BREAKER

DLR GROUP
© DLR Group

MARK JOSEPH NIECHWIADOWICZ
146025
08/19/2024
TBPE FIRM REGISTRATION NUMBER F-1101

CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.08.19
REVISIONS
ADD-1 8/8/24

39-23712-00

ELECTRICAL SCHEDULES

DP1K	MH1K	L1AK
H1K	ML1K	L1BK
L1TK	H3	

E7.3

SWITCHBOARD: DP2K

LOCATION ELEC. A179
BUS RATING 600.0 A
MAIN BREAKER MLO
VOLTAGE: 480Y/277
PHASES: 3
WIRES: 4
SCCR: 21.2 KA

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	LOAD (kVA)	NOTES
1	L2K VIA XFMR T2K	175.0 A	3		S; L; R; O; M	65	
2	MH2K	225.0 A	3		S; R; M	125	
3	H2K	100.0 A	3		S; L; M	9	
4	L2TK VIA XFMR T2TK	50.0 A	3		S; R; O	17	
5	ELEV 1	80.0 A	3		M	33	
6	RTU-6	110.0 A	3		M	74	
7							
8							
9							
10							
11							
12							
					TOTAL LOAD:	324 kVA	
					TOTAL AMPS:	389 A	

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS	
L	LIGHTING	9083 VA	100.00%	9083 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)		
R	RECEPTACLES	25660 VA	69.49%	17830 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFCI (30mA)	CONNECTED LOAD:	324 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN EQUIPMENT, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND:	316 kVA
M	MOTOR	232940 VA	100.00%	232940 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT:	389 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT:	379.8 A
H	HEATING	0 VA	0.00%	0 VA				
NC	NONCOINCIDENT	0 VA	0.00%	0 VA	NON-COINCIDENT LOADS, NEC ART. 220			
O	OTHER	55382 VA	100.00%	55382 VA				
Spare	SPARE	500 VA	100.00%	500 VA				

NOTES:

PANEL: H2K

LOCATION: ELEC. A179
BUS RATING: 100 A
MAIN BREAKER: 100 A
VOLTS: 480Y/277
PHASES: 3
WIRES: 4
SCCR: 19.1 KA
MOUNTING: SURFACE
FED FROM: DP2K
INTEGRAL SPD: NO
LUG ACCESSORIES: NONE

ADD-1

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	L-AUD CHAMPER-SEATS	20	1		L	1,200	1,108					L		1	20	L-LEVEL 2 MEZZANINE A206 (VIA INVERTER)*	2
3	L-CATWALK STEP LIGHTS	20	1		L; M			1,080	2,088			L		1	20	L-CHAMBER, CATWALK LEVEL & GRID LEVEL*	4
5	L-AV, RACK ROOM, AUDENCE CHAMBER	20	1		L					1,328	0	Spare		1	20	SPARE	6
7	L-AUD CHAMPER-STEP	20	1		L	738	0					Spare		1	20	SPARE	8
9	L-STAGE BACK WALL-STEP	20	1		L			378	0			Spare		1	20	SPARE	10
11	L-MEZZANINE, EXTERIOR	20	1		L					658	0	Spare		1	20	SPARE	12
13	L-A205, A202, A204, A207	20	1		L	478	0					Spare		1	20	SPARE	14
15	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	16
17	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	18
19	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	20
21	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	22
23	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	24
25	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	26
27	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	28
29	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	30
31	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	32
33	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	34
35	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	36
37	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	38
39	SPARE	20	1		Spare			0	0			Spare		1	20	SPARE	40
41	SPARE	20	1		Spare					0	0	L		1	20	SPARE	42
					TOTAL LOAD:	3524 VA		3546 VA		1986 VA							
					TOTAL AMPS	13.6 A		13.7 A		7.2 A							

ADD-1

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS	
L	LIGHTING	9056 VA	100.00%	9056 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)		
R	RECEPTACLES	0 VA	0.00%	0 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	CONNECTED LOAD:	9 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND:	9 kVA
M	MOTOR	0 VA	0.00%	0 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT:	10.9 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT:	10.9 A
H	HEATING	0 VA	0.00%	0 VA				
O	OTHER	0 VA	0.00%	0 VA				
Spare	SPARE	0 VA	0.00%	0 VA				

NOTES:
A. CIRCUITS NOTED WITH " * " FED THROUGH INVERTER, SEE CENTRAL BATTERY INVERTER SCHEDULE ON E6.2

EXISTING PANEL: L4

LOCATION: ELEC ROOM U-13
BUS RATING: 250 A
MAIN BREAKER: MLO
VOLTS: 208Y/120
PHASES: 3
WIRES: 4
SCCR:
MOUNTING: SURFACE
FED FROM: DPLC
INTEGRAL SPD:
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	EXISTING - LR GOORIPOON REC	--	1	R		--	--							1	--	EXISTING - 502 OUTLETS	2
3	EXISTING - PROJECTOR REC	--	1	R				--	--					1	--	EXISTING - 502 ROLL UP DOOR	4
5	EXISTING - 501 - OUTLETS - NORTH WALL	--	1	R						--	--			1	--	EXISTING - 502 OUTLETS	6
7	EXISTING - 501 - SEATING OUTLETS - N	--	1	R		--	--							1	--	EXISTING - 502 OUTLETS	8
9	EXISTING - 501 - SEATING OUTLETS - S	--	1	R				--	--					1	--	EXISTING - 502 DISPOSAL	10
11	EXISTING - OVERHEAD VIDEO PROJECTOR	--	1	R						--	--			1	--	EXISTING - 502 MICROWAVE	12
13	EXISTING - PROJECTION SCREEN ON STAGE	--	1	R		--	--							1	--	EXISTING - 502 OUTLETS	14
15	EXISTING - OUTLETS - FRONT OF STAGE	--	1	R				--	--					2	--	EXISTING - 502 COOKTOP	16
17	EXISTING - 501 - STAGE CURTAIN	--	1	R						--	--						18
19	EXISTING - 501 - TV OUTLETS S WALL	--	1	R		--	--							2	--	EXISTING - 502 RANGE	20
21	EXISTING - 501 - TV OUTLETS S WALL	--	1	R				--	--								22
23	EXISTING - 503 - OUTLETS	--	1	R						--	--			1	--	EXISTING - 502 REFRIGERATOR	24
25	EXISTING - 503 - OUTLETS	--	1	R		--	--							1	--	EXISTING - 502 OUTLETS	26
27	EXISTING - 503.1 - GFI OUTLET	--	1	R				--	1,260			R		1	20	R - OFFICE E102 & WORKROOM E101	28
29	EXISTING - 503.1-&2 - *CONT	--	1	R						--	720	R		1	20	R - OFFICE A199 (1)	30
31	EXISTING - 503.1-&2 - GFI OUTLET	--	1	R		--	900					R		1	20	R - OFFICE E102 & OFFICE E103 (1)	32
33	EXISTING - 503.1-&2 - CONT	--	1	R				--	540			R		1	20	R - PERCUSSION E106 (1)	34
35	R-BAND ROOM NORTH WALL E100 (1)	20	1		R					720	900	R	G	1	20	R - VENDING MACHINE- G114 (2)	36
37	R-PERCUSSION E106 (1)	20	1		R	1,440	900					R	G	1	20	R - VENDING MACHINE- G114 (2)	38
39	R-B.O.H. / VESTIBULE A127 (1)	20	1		R			540	900			R	G	1	20	R - VENDING MACHINE- G114 (2)	40
41	R-BAND ROOM WEST WALL E100 (1)	20	1		R					720	900	R	G	1	20	R - VENDING MACHINE- G114 (2)	42
43	R-BAND ROOM EAST WALL E200 (1)	20	1		R	900											44
45	R-OFFICE A140 (1)	20	1		R			720									46
47	R PRACTICE A202 (1)	20	1		R					540							48
49	R -OFFICE A176 (1)	20	1		R	720											50
51																	52
53																	54
55	EXISTING	20	2		Spare	0											56
57								0									58
59	EXISTING	20	1		Spare					0							60
61	EXISTING	20	1		Spare	0	0					Spare		2	60	EXISTING	62
63	SPARE	20	1		Spare			0	0								64
65	SPARE	20	1		Spare					0	0	Spare		1	20	EXISTING	66
67	EXISTING	20	1		Spare	0	0					Spare		1	20	EXISTING	68
69	EXISTING	20	1		Spare			0	0			Spare		1	20	EXISTING	70
71	EXISTING	20	1		Spare					0	0	Spare		1	20	EXISTING	72
73	EXISTING	20	1		Spare	0	0					Spare		1	20	EXISTING	74
75	EXISTING	20	1		Spare			0	0			Spare		1	20	EXISTING	76
77	EXISTING	20	1		Spare					0	--			1	--	SPACE	78
79	EXISTING	20	1		Spare	0	--							1	--	SPACE	80
81	EXISTING	20	1		Spare			0	--					1	--	SPACE	82
83	EXISTING	20	1		Spare					0	--			1	--	SPACE	84
					TOTAL LOAD:	4860 VA		3960 VA		4500 VA							
					TOTAL AMPS	41.2 A		33.0 A		38.2 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAN D...	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS	
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)		
R	RECEPTACLES	13320 VA	87.54%	11660 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFCI (30mA)	CONNECTED LOAD:	13 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND:	12 kVA
M	MOTOR	0 VA	0.00%	0 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT:	37.0 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT:	32.4 A
H	HEATING	0 VA	0.00%	0 VA				
O	OTHER	0 VA	0.00%	0 VA				
Spare	SPARE	0 VA	0.00%	0 VA				

NOTES:
SIEMENS P1 PANELBOARD
(1) CIRCUIT TO SPARE 20A/1P BREAKER IN PANEL.
(2) PROVIDE NEW 20A/1P GFCI BREAKER IN PANEL.

PANEL: L2TK

LOCATION: ELEC. A179
BUS RATING: 100 A
MAIN BREAKER: 100 A
VOLTS: 208Y/120
PHASES: 3
WIRES: 4
SCCR: 2.1 KA
MOUNTING: SURFACE
FED FROM: T2TK
INTEGRAL SPD: YES
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	R-CATWALK BOH LEFT	20	1		R	360	1,000					R		1	20	AV RACK-AV RACK ROOM A303	2
3	AV DISPLAY-LOBBY A101	20	1		R			500	1,000			R		1	20	AV RACK-AV RACK ROOM A303	4
5	R - AV DISPLAY-LOBBY A101	20	1		R					500	1,000	R		1	20	AV RACK-AV RACK ROOM A303	6
7	R-CATWALK BOH RIGHT	20	1		R	360	1,000					R		1	20	AV RACK-AV RACK ROOM A303	8
9	AV DISPLAY-LOBBY A201	20	1		O			500	1,500			R		1	30	AV RACK-AV RACK ROOM A303	10
11	PROJECTOR-CONTROL ROOM A150	20	2		R					1,500	1,500	R		1	30	AV RACK-AV RACK ROOM A303	12
13						1,500	180					R		1	20	PROJECTOR-CONTROL ROOM A150	14
15	AV DISPLAY-S/L A111	20	1		R			500	500			O		1	20	AV DISPLAY-S/L A146	16
17	R-AUDIENCE CHAMBER A148 BACK	20	1		R					180	360	R		1	20	R-FOLLOW SPOT A302	18
19	R-CONTROL ROOM A207	20	1		R	360	0					Spare		1	20	SPARE	20
21	R-AUDIENCE CHAMBER A148 BACK	20	1		R			180	0			Spare		1	20	SPARE	22
23	R-CATWALK WEST CENTER	20	1		R					360	0	Spare		1	20	SPARE	24
25	R-CATWALK SOUTH EAST	20	1		R	360	0					Spare		1	20	SPARE	26
27	R-CONTROL ROOM A207	20	1		R			360	0			Spare		1	20	SPARE	28
29	R-CATWALK EAST CENTER	20	1		R					360	0	Spare		1	20	SPARE	30
31	R-CATWALK CENTER	20	1		R	360	0					Spare		1	20	SPARE	32
33	R-CATWALK SOUTH WEST	20	1		R			360	0			Spare		1	20	SPARE	34
35	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	36
37	SPARE	20	1		Spare	0	0					Spare		1	20	SPARE	38
39	R-CATWALK CENTER	20	1		R			360	0			Spare		1	20	SPARE	40
41	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	42
					TOTAL LOAD:	5480 VA		5760 VA		5760 VA							
					TOTAL AMPS	45.7 A		48.4 A		48.4 A							

ADD-1

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS	
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)		
R	RECEPTACLES	16000 VA	81.25%	13000 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	CONNECTED LOAD:	17 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND:	14 kVA
M	MOTOR	0 VA	0.00%	0 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT:	47.2 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT:	38.9 A
H	HEATING	0 VA	0.00%	0 VA				
O	OTHER	1000 VA	100.00%	1000 VA				
Spare	SPARE	0 VA	0.00%	0 VA				

NOTES:
PROVIDE WITH SEPARATE ISOLATED GROUND BUS. 200% RATED NEUTRAL

PANEL: L2K

LOCATION: ELEC. A179
BUS RATING: 400 A
MAIN BREAKER: 400 A
VOLTS: 208Y/120
PHASES: 3
WIRES: 4
SCCR: 6.7 KA
MOUNTING: SURFACE
FED FROM: T2K
INTEGRAL SPD: YES
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	ELEV CAB LIGHTS/FAN	20	1		M	1,440	1,080					R		1	20	R - LOBBY A201,ELEC A205	2
3	R - FOLLOW SPOT A153	20	1		R			720	900			R		1	20	R - PROJECTOR RM A207	4
5	L-CONTROL ROOM A150 TRACK	20	1		L					27	1,080	R		1	20	R - AV LIGHTING AND RACK ROOM	6
7	HAND DRYER-MENS A110	20	1		O	1,000	1,000					O		1	20	HAND DRYER-MENS A204	8
9	HAND DRYER-WOMENS A171	20	1		O			1,000	1,000			O		1	20	HAND DRYER-WOMENS A202	10
11	FLUSH VALVES-WOMENS A175	20	1		O					500	500	O		1	20	FLUSH VALVES-WOMENS A202	12
13	FLUSH VALVES-WOMENS A175	20	1		O	500	500					O		1	20	FLUSH VALVES-WOMENS A202	14
15	FLUSH VALVES-MENS A175	20	1		O			500	500			O		1	20	FLUSH VALVES-MENS A204	16
17	R - MENS / WOMEN TOILETS A175	20	1		R					1,260	900	R		1	20	R-TOILETS A202-A204	18
19	AUTO DOOR OPERATOR - LOBBY A101	20	1		O	150	0					Spare		1	20	SPARE	20
21	ALP	20	1		O			1,500	0			Spare		1	20	SPARE	22
23	RELAY PANEL ELECTRONICS	20	1		O					500	0	Spare		1	20	SPARE	24
25	EMERGENCY BYPASS DETECTION KIT	20	1		O	1,000	0					Spare		1	20	SPARE	26
27	DMX EMERG BYPASS	20	1		O			1,000	0			Spare		1	20	SPARE	28
29	R-ELEC A300A	20	1		R					180	0	Spare		1	20	SPARE	30
31	UPS-ELEC. A205	30	2		R	1,500	9,607										32
33								1,500	9,607			O		3	200	LCP-01	34
35	SPARE	20	1		Spare					0	9,607						36
37	SPARE	20	1		Spare	0	4,804										38
39	SPARE	20	1		Spare			0	4,804			O		3	100	LCP-02	40
41	SPARE	20	1		Spare					0	4,804						42
					TOTAL LOAD:	22581 VA		23031 VA		19358 VA							
					TOTAL AMPS	192.3 A		196.1 A		161.3 A							

ADD-1

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS	
L	LIGHTING	27 VA	100.00%	27 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)		
R	RECEPTACLES	9120 VA	100.00%	9120 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	CONNECTED LOAD:	65 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND:	65 kVA
M	MOTOR	1440 VA	100.00%	1440 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT:	180.3 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT:	180.3 A
H	HEATING	0 VA	0.00%	0 VA				
O	OTHER	54382 VA	100.00%	54382 VA				
Spare	SPARE	0 VA	0.00%	0 VA				

NOTES:

EXISTING PANEL: C4

LOCATION: ELEC ROOM U-13
BUS RATING: 125 A
MAIN BREAKER: 125 A
VOLTS: 208Y/120
PHASES: 3
WIRES: 4
SCCR: 10 kA
MOUNTING: SURFACE
FED FROM: DPLC
INTEGRAL SPD:
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	EXISTING	20	1		Spare	0	0					Spare		3	60	SPARE	2
3	EXISTING	20	1		Spare			0	0								4
5	EXISTING	20	1		Spare					0	0						6
7	EXISTING	20	1		Spare	0	180					R		1	20	R-BAND ROOM A200 PROJECTOR (1)	8
9	EXISTING	20	1		Spare			0	180			R		1	20	R-BAND ROOM A200 (1)	10
11	EXISTING	20	1		Spare					0	0	Spare		1	20	EXISTING	12
13	EXISTING	20	1		Spare	0	0					Spare		1	20	EXISTING	14
15	EXISTING	20	1		Spare			0	0			Spare		1	20	EXISTING	16
17	EXISTING	20	1		Spare					0	0	Spare		1	20	EXISTING	18
19	SPARE	20	1		Spare	0	0					Spare		1	20	EXISTING	20
21	EXISTING	20	1		Spare			0	0			Spare		1	20	EXISTING	22
23	EXISTING	20	1		Spare					0	0	Spare		1	20	EXISTING	24
25	EXISTING	20	1		Spare	0	0					Spare		1	20	EXISTING	26
27	EXISTING	20	1		Spare			0	0			Spare		1	20	EXISTING	28
29	EXISTING	20	1		Spare					0	0	Spare		1	20	EXISTING	30
31	EXISTING	30	1		Spare	0	0					Spare		1	20	SPARE	32
33	EXISTING	20	1		Spare			0	0			Spare		1	20	SPARE	34
35	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	36
37	SPARE	30	3		Spare	0	0					Spare		1	20	SPARE	38
39								0	--					1	--	SPACE	40
41										0	--			1	--	SPACE	42
					TOTAL LOAD:	180 VA		180 VA		0 VA							
					TOTAL AMPS	1.7 A		1.7 A		0.0 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAN D...	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS	
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)		
R	RECEPTACLES	360 VA	100.00%	360 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFCI (30mA)	CONNECTED LOAD:	0 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND:	0 kVA
M	MOTOR	0 VA	0.00%	0 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT:	1.0 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT:	1.0 A
H	HEATING	0 VA	0.00%	0 VA				
O	OTHER	0 VA	0.00%	0 VA				
Spare	SPARE	0 VA	0.00%	0 VA				

NOTES:
SIEMENS P1 PANELBOARD. PANEL IS EQUIPED WITH ISOLATED GROUND BUS AND 200% NEUTRAL
(1) CIRCUIT TO SPARE 20A/1P BREAKER IN PANEL.

PANEL: MH2K

LOCATION: ELEC. A179
BUS RATING: 225 A
MAIN BREAKER: 225 A
VOLTS: 480Y/277
PHASES: 3
WIRES: 4
SCCR: 20.7 KA
MOUNTING: SURFACE
FED FROM: DP2K
INTEGRAL SPD: NO
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	EWH-8	30	3		M	8,000	0					Spare		1	20	SPARE	2
3								8,000	0			Spare		1	20	SPARE	4
5										8,000	0	Spare		1	20	SPARE	6
7	EWH-11	30	3		M	8,000	0					Spare		1	20	SPARE	8
9								8,000	0			Spare		1	20	SPARE	10
11										8,000	0	Spare		1	20	SPARE	12
13	SPACE	--	1			--	0					Spare		3	30	SPARE	14
15	SPACE	--	1					--	0								16
17	SPACE	--	1							--	0						18
19	SPACE	--	1			--	0					Spare		3	20	SPARE	20
21	SPACE	--	1					--	0								22
23	SPACE	--	1							--	0						24
25	SPACE	--	1			--	0					Spare		1	20	SPARE	26
27	SPACE	--	1					--	0			Spare		1	20	SPARE	28
29	SPACE	--	1							--	0	Spare		1	20	SPARE	30
31	SPACE	--	1			--	0					Spare		1	20	SPARE	32
33	SPACE	--	1					--	0			Spare		1	20	SPARE	34
35	SPACE	--	1							--	500	Spare		1	20	2ND LVL- FIRE/SMOKE DAMPERS	36
37	SPACE	--	1			--	28,451					Spare; R; M		3	175	ML2K VIA XFMR TM2K	38
39	SPACE	--	1					--	25,001								40
41	SPACE	--	1							--	23,107						42
					TOTAL LOAD:	44451 VA		41001 VA		39607 VA							
					TOTAL AMPS	161.3 A		148.8 A		143.0 A							

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS	
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)		
R	RECEPTACLES	540 VA	100.00%	540 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	CONNECTED LOAD:	125 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND:	125 kVA
M	MOTOR	124019 VA	100.00%	124019 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT:	150.4 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT:	150.4 A
H	HEATING	0 VA	0.00%	0 VA				
O	OTHER	0 VA	0.00%	0 VA				
Spare	SPARE	500 VA	100.00%	500 VA				

NOTES:

PANEL: ML2K

LOCATION: ELEC. A179
BUS RATING: 400 A
MAIN BREAKER: 400 A
VOLTS: 208Y/120
PHASES: 3
WIRES: 4
SCCR: 8.2 KA
MOUNTING: SURFACE
FED FROM: TM2K
INTEGRAL SPD: NO
LUG ACCESSORIES: NONE

CKT	CIRCUIT DESCRIPTION	BKR TRIP	P	BKR TYPE	LOAD TYPE	PHASE A (VA)		PHASE B (VA)		PHASE C (VA)		LOAD TYPE	BKR TYPE	P	BKR TRIP	CIRCUIT DESCRIPTION	CKT
1	EF-2	15	1		M	792	1,966					M		2	20	OU-06, IU-06	2
3	R-ROOF SOUTH	20	1		R			540	1,966								4
5	EWH-12	40	2		M					4,150	1,444	M		2	20	OU-07, IU-07	6
7						4,150	1,444										8
9	EWH-6	20	2		M			1,800	1,362			M		2	15	OU-08, IU-08	10
11										1,800	1,362						12
13	EWH-9	40	2		M	4,150	0					Spare		2	20	SPARE	14
15								4,150	0								16
17	EWH-10	40	2		M					4,150	1,444	M		2	20	OU-10, IU-10	18
19						4,150	1,444										20
21	OU-01, IU-01	15	2		M			1,279	0			Spare		1	20	SPARE	22
23										1,279	0	Spare		1	20	SPARE	24
25	OU-02, IU-02	20	2		M	1,966	0					Spare		1	20	SPARE	26
27								1,966	4,150			M		2	40	EWH-7	28
29	OU-03, IU-03	20	2		M					1,966	4,150						30
31						1,966	4,150					M		2	40	EWH-13	32
33	OU-04, IU-04	15	2		M			1,362	4,150								34
35										1,362	0	Spare		1	20	SPARE	36
37	OU-05, IU-05	15	2		M	832	1,444					M		2	20	OU-09, IU-09	38
39								832	1,444								40
41	SPARE	20	1		Spare					0	0	Spare		1	20	SPARE	42
					TOTAL LOAD:	28451 VA		25001 VA		23107 VA							
					TOTAL AMPS	239.5 A		210.8 A		192.6 A							

ADD-1

LOAD TYPE	LOAD DESCRIPTION	CONNECTED LOAD (VA)	DEMAND FACTOR	ESTIMATED DEMAND (VA)	DEMAND FACTOR NOTES	BKR TYPE	PANEL TOTALS	
L	LIGHTING	0 VA	0.00%	0 VA	CONTINUOUS LOAD @ 125%	G = GFCI (5mA)		
R	RECEPTACLES	540 VA	100.00%	540 VA	FIRST 10KVA @ 100%, REMAINDER @ 50%	GP = GFP (30mA)	CONNECTED LOAD:	77 kVA
K	KITCHEN	0 VA	0.00%	0 VA	NON-DWELLING KITCHEN LOADS, NEC ART. 220	ST = SHUNT TRIP	ESTIMATED DEMAND:	77 kVA
M	MOTOR	76019 VA	100.00%	76019 VA	LARGEST MOTOR, NEC ART. 430	LO = LOCK OUT	CONNECTED CURRENT:	212.5 A
C	COOLING	0 VA	0.00%	0 VA			EMD CURRENT:	212.5 A
H	HEATING	0 VA	0.00%	0 VA				
O	OTHER	0 VA	0.00%	0 VA				
Spare	SPARE	0 VA	0.00%	0 VA				

NOTES:
PROVIDE WITH SEPARATE ISOLATED GROUND BUS. 200% RATED NEUTRAL

DP2K	H2K	L4
L2TK	L2K	C4
MH2K	ML2K	

MARK JOSEPH NIECHWIADOWICZ
146025
08/19/2024
TBPE FIRM REGISTRATION NUMBER F-1101

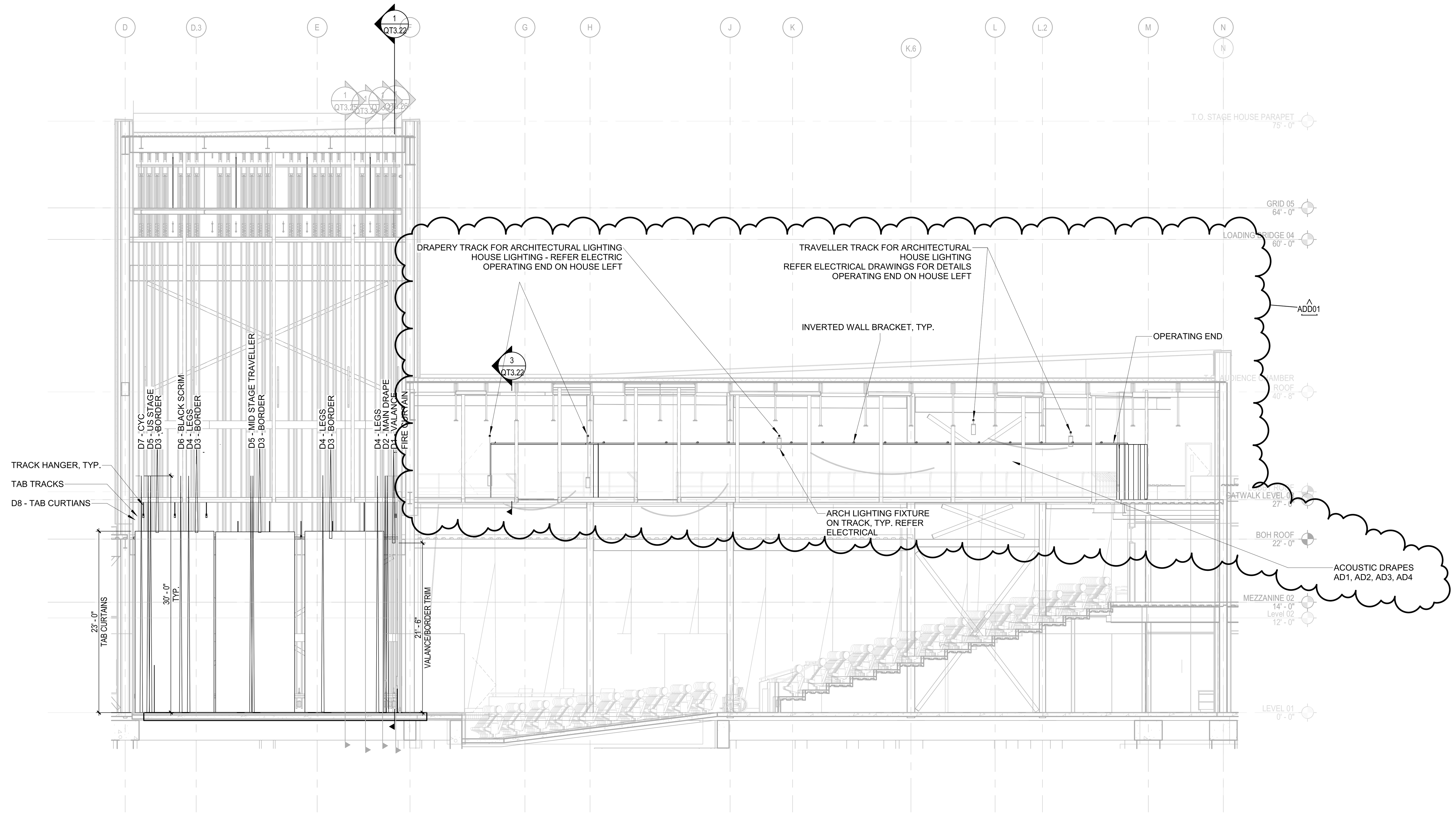
CRANDALL ISD HIGH SCHOOL
PAC ADDITION
13385 Fm 3039, Crandall, TX 75114

ISSUE FOR BID AND PERMIT
2024.08.19
REVISIONS
ADD-1 8/8/24

39-23712-00

ELECTRICAL SCHEDULES

E7.4



THEATRICAL DRAPERY LONGITUDINAL SECTION

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

DLRGROUP
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CRANDALL ISD HIGH SCHOOL

PAC ADDITION

13385 Fm 3039, Crandall, TX 75114

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2024.07.25
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THEATRICAL DRAPERY, LONGITUDINAL SECTION

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