PMH CROFT
ARCHITECTS & ENGINEERS

ADDENDUM NO. 2
HGTC CONSTRUCTION OF
GT WORKFORCE TRAINING CENTER
GEORGETOWN, SOUTH CAROLINA
STATE PROJECT NUMBER H59-6255-CB
PMH | CROFT PROJECT NO. 23041
September 15, 2025

NOTE: ADDENDUM NO. 2 IS BEING PUBLISHED ON THE OWNER'S WEBSITE FOR DISTRIBUTION. IT IS THE GENERAL CONTRACTORS RESPONSIBLITY FOR COMMUNICATION OF THE ITEMS CONTAINED WITHIN THIS ADDENDUM TO APPROPRIATE SUB-CONTRACTORS.

THIS ADDENDUM CONTAINS:

- TWELVE (12) PAGES OF WRITTEN ADDENDUM
- FORTY-SIX (46) PAGES OF SPECIFICATIONS
- THREE (3) PAGE OF BULLETIN DRAWINGS
- TWELVE (12) FULL SIZE DRAWINGS

CLARIFICATIONS

1. **For Clarification**: Contractor's are advised that the **BID DATE** is being revised to **Tuesday, September 23, 2025** at 2:00 PM local time.

QUESTIONS AND ANSWERS

Q1. THERE ARE SEVERAL PLACES WHERE IT SHOWS NOTE #1 (M103 FOR EXAMPLE) WHICH STATES THAT EXPOSED DUCT TO BE DOUBLE WALL DUCT WITH PERFORATED INTER LINER WHICH HAS ALWAYS BEEN REFERRED TO AS DOUBLE WALL SPIRAL BUT THIS IS SHOWING RECTANGULAR DUCT WHICH I HAVE NEVER SEEN BEFORE. PLEASE ADVISE.

A1. Double wall spiral and rectangular duct indicated on the plans. Reference revised Specification Section 233113.

Q2. IN THE ELECTRICAL DRAWINGS ON PAGE E080. NOTE 5 MAKES REFERENCE TO AN OTTERBINE LOW VOLTAGE LED LIGHT SYSTEM, AN AERATING FOUNTAIN AND ASSOCIATED SHOP DRAWINGS. I DID NOT SEE ANY SHOP DRAWINGS IN THE BID DOCUMENTS. CAN YOU PLEASE PROVIDE THEM FOR OUR REFERENCE?

A2. Revised sheet L302 dated 09/10/2025 is attached.

Q3. CAN YOU PLEASE CONFIRM THAT THE BASIS OF DESIGN FOR CEILING TYPE B ON THE RCP IS ARMSTRONG ULTIMA 1911? THE SPECS INDICATE THAT THE TILE SHOULD BE 5/8" THICK, BUT THE 2'X2' TEGULAR ULTIMA TILE FOR 15/16" GRID THAT MEETS THIS DESCRIPTION IS ¾" THICK.

A3. The thickness of the 2'x2' tegular Ultima tile is ¾" in lieu of 5/8" as specified.

Q4. I'M FOLLOWING UP FROM THE VOICEMAIL I LEFT YOU TO SEE ABOUT THE STRUCTURED CABLING PORTION OF THE PROJECT. WILL THIS WORK BE UNDER YOU OR BY OWNER?

A4. Cabling will be by Owner.

Q5. THE CODES ON THE REFERENCE NOTES SCHEDULE ON L100 ARE MISSING. WILL YOU PLEASE PROVIDE THESE?

A5. Revised landscape sheets L100, L101, L102 are attached.

Q6. WILL YOU PLEASE CONFIRM THAT THE MANUAL WINDOW SHADES ARE TO BE OWNER FURNISHED, CONTRACTOR INSTALLED?

A6. Manual windows shade noted as E8 on A-714, is to be provided by owner and installed by GC.

Q7. WILL YOU PLEASE PROVIDE TOP OF FOOTING ELEVATIONS?

A7. The top of footing elevations are at -1'-4", typically. Noted in Sheets S4.3, S4.4 and S4.5.

Q8. A-201 SHOWS MP3 AS BEING SHADED LIGHT AND MP4 AS SHADED DARK, WHEREAS A-210 HAS THE SHADES REVERSED, WITH THE LIGHT AREAS MP4 AND DARK ARE MP3. THE LIGHT AND DARK ARE IN THE SAME CONFIGURATION ON BOTH PAGES.

A8. A-201 is correct. Revised A-210 is attached.

Q9. SHEET E101-----CAN WE GET A CLARIFICATION OF THE SCOPE OF WORK FOR NOTE #2? THE WAY IT READS THE ELECTRICAL CONTRACTOR JUST SUPPLIES AND MOUNTS A DISCONNECT TO THE WALL.

A9. The Electrical Contractor supplies and mounts the disconnect for the MAU. Wire and conduit for the MAU will be provided and run by others and will come from the lamination booth control panel.

Q10. SHEET E101-----WHERE IS THE NOTE NARRATIVE FOR NOTE 18 (FLOOR BOX IN ROOM #103).

A10. Keynote 18 located in the conference room should be keynote 15, which calls for 2" conduit to be routed from the floor box to the TV rough-in location.

Q11. SHEET E101 & E102 WHAT SIZE CONDUIT STUB UPS ARE REQUIRED FOR TELECOM/DATA OUTLETS.

A11. Provide 1" Conduit with pull wire for Telecom/Data outlets above the lay-in ceiling. Turn conduit 12" into ceiling cavity a minimum of 6" above the ceiling and terminate with an insulated bushing.

Q12. SHEET E080---WHO SUPPLIES AND INSTALLS THE AERATING FOUNTAIN CONTROL CENTERS

A12. Contractor shall supply and install the Aerating Fountain System and Control Center. Manufacturer shall be Otterbine. Product: Phoenix Aerating Fountain. Model: 3HP 460V 3PH 60 HZ. See revised Sheet L302 dated 09/10/2025 attached.

Q13. SHEET E080---WHO SUPPLIES AND INSTALLS THE OTTERBINE LOW VOLTAGE LIGHT SYSTEM CONTROL PANELS.

A13. Contractor shall supply and install the Otterbine Low Voltage Light System. The Control Panel is provided with the Otterbine Light System and shall be installed by the contractor.

Q14. SHEET E080—WHAT ARE THE CONDUIT REQUIREMENTS FROM THE FOUNTAIN CONTROL EQUIPMENT OUT TO THE PONDS.

A14. Provide ¾" Conduit for underground SOOW Cable. Type of conduit shall be indicated in specs.

Q15. SHEET E080—EQUIPMENT STAND DETAIL IS CALLING FOR 4" STAINLESS STEEL UPRIGHTS, THIS TYPE OF CONDUIT IS EXTREMELY EXPENSIVE. COULD WE SUGGEST STANDARD GALVANIZED RIGID CONDUIT FOR THESE UPRIGHTS?

A15. It is acceptable to use Galvanized Rigid Conduit in lieu of stainless-steel uprights.

Q16. SHEET E301---WHAT ARE THE CONDUIT REQUIREMENTS FOR THE CARD READERS AND THE ELECTRONIC DOOR STRIKES.

A16. Provide 1" Conduit for Card Readers and Electronic Door Strikes. Type of conduit shall be indicated in specs.

Q17. SHEET E301---WHAT ARE THE CONDUIT REQUIREMENTS FOR THE SECURITY CAMERAS.

A17. Provide 1" Conduit for Security Cameras. Type of conduit shall be indicated in specs.

Q18. SHEET E001---THE GENERAL LOW VOLTAGE NOTE #1 SAYS TO RUN A 3" CONDUIT FROM DATA ROOM 108A OUT TO THE SERVICE POINT LOCATION ON THE SITE PLAN SHEET E080. THE SERVICE POINT LOCATION IS NOT SHOWN ON THE SITE PLAN, PLEASE ADVISE WHERE THE LOCATION IS.

A18. Owner and Owner Vendor shall extend fiber from existing building to new building. Provide (3) 3" Conduits from Data Room 108A to entry point in building and towards the existing building. Coordinate location of entry point and location of existing building with Owner and Owner Vendor.

Q19. SHEET E004—REGARDING THE DAS REPEATER SYSTEM, SHOULD WE INCLUDE BOTH THE SIGNAL TEST AND SYSTEM IN OUR BASE BID? OR JUST THE SIGNAL TEST?

A19. Include the signal test and the system in the base bid.

Q20. WE WOULD LIKE TO PROPOSE SCH 40 PVC PIPING AS AN ACCEPTABLE SUBSTITUTION FOR THE FACILITY STORM DRAINAGE PIPING ABOVE GRADE. SPEC SECTION FACILITY STORM DRAINAGE PIPING SECTION 221413-7 PARAGRAPH 3.10 ITEM A ONLY LIST NO HUB CAST IRON FOR THE ABOVE GRADE STORM DRAINAGE PIPING. DUE TO THE FACT THAT SCH 40 PVC IS APPROVED FOR THE ABOVE GRADE DWV SYSTEM, WE WOULD LIKE TO PROPOSE USING SCH 40 PVC FOR THE ABOVE GRADE STORM DRAINAGE SYSTEM.

A20. Above ground storm drainage piping shall be Cast Iron as specified in section 221413. This is due to the fact that much of it is exposed, unlike the sanitary sewer and vent piping.

Q21. IT APPEARS THAT THE DATA INFRASTRUCTURE WILL NOT BE PROVIDED BY THE OWNER AND IS PART OF THE CONTRACTOR'S SCOPE. WILL YOU PLEASE CONFIRM?

A21. This is correct.

Q22. PLAN SHEETS L100, L101, & L200 HAVE NOTE LEADERS AND REFERENCE NOTES TABLES THAT ARE INCOMPLETE. PLEASE PROVIDE REVISED PLAN SHEETS.

A22. Revised sheets L100, L101, L200 and L302 dated 09/10/2025 are attached.

Q23. REGARDING THE PERMALOC GEO EDGE… THERE IS SOME DISCREPANCY OF THE LENGTH OF GEOGRID TO BE USED. PERMALOC'S SPEC SHEET AND THE DETAIL ON L-301 STATED 6" PERMALOC'S INSTALLATION GUIDE AND VIDEO STATE EITHER PEDESTRIAN WITH 4' GEOGRID OR VEHICULAR WITH 6' GEOGRID.

A23A. Is the Plaza area to be considered pedestrian or vehicular?
The Plaza area is going to be pedestrian in use. The vehicular rated paver was selected for its 13" length which only comes in a thicker block. For that reason, the 6" geogrid is recommended.

Q23B. ADDITIONALLY:
SPECIFICATION 321400-4; 2.3.B STATES THE 3.5 X 4.5" BASE. DRAWING L301 STATES 4.5X4.5" BASE. WHICH WOULD YOU PREFER?

A23B. 4.5" X 4.5" Base

Q24. COLUMN SCHEDULE CALLS OUT TS5X5X1/4. S201 CALLS OUT TS5X5X5/16. WHICH ONE DO WE USE?

A24. Use HSS 5x5x1/4"

Q25. COLUMN SCHEDULE CALLS OUT 10" STANDARD PIPE. S201 CALLS OUR HSS10X.250 FOR ALL HSS COLUMNS. DETAIL 4/S406 CALLS OUT HSSR12.75X1/4? WHICH ONE DO WE USE?

A25. Either 10" or 12" pipe column will work.

Q26. SPEC SECTION 05120-3 CALLS OUT RED OXIDE PRIMER. SPEC SECTION 099000-3 CALLS FOR STEEL TO HAVE A PRO-CRYL PRIMER BY SHERWIN-WILLIAMS. WHICH ONE DO WE USE?

A26. Reference Specification Section 05120-3, 2.2-A, delete SSPC standards (red oxide/zinc chromate primers, Paint 1 and Paint 11). These products are no longer standard in the market due to regulatory and health restrictions. Structural steel is to be primed with Sherwin-Williams Pro-Cryl Primer as specified in section 099000.

Q27. IS THE LIGHTED BOLLARDS PART OF DIVISION 5 SCOPE OF WORK? REFERENCE AS101

A27. Electrical sheet E080 shows the Bollards as 'G1' and we specify the manufacturer and Catalog # on sheet E002. The light bollards should be part of Division 26 scope of work.

Q28. ARE THE FOUNTAINS/AERATORS SHOWN ON THE LANDSCAPING DRAWINGS PROVIDED BY THE GENERAL CONTRACTOR? IF SO, CAN YOU PLEASE PROVIDE A SPEC FOR THIS PRODUCT.

A28. See revised L302 dated 09/10/2025 attached.

Q29. IS POLYGLASS FLUID APPLIED WATERPROOFING AND WEATHER BARRIER APPROVED TO BE QUOTED FOR THIS PROJECT?

A29. Refer to Prior Approval list included in this addendum.

Q30. PER WINDOW LEGEND ON A-611, IT CALLS OUT FOR 2 TYPES OF EXTERIOR TINT. CLEAR OVER GRAY AND CLEAR OVER BLUE. THE ONLY SPECIFIED TINT IN THE GLAZING SPEC'S 088000 IS "CRYSTAL GRAY". IS THERE BLUE TINT ON THIS PROJECT? IF SO, WHAT COLOR BLUE?

A30. "Blue tint" is to be removed from legend on Sheets A201, A611 and A612. Product specified in spec is the design intent.

Q31. THERE ARE NO TOP OF FOOTING ELEVATIONS PROVIDED ON THE FOUNDATION PLANS. PLEASE PROVIDE TOP OF FOOTING ELEVATIONS.

A31. The top of footing elevations is at -1'-4", typically. Noted on Sheets S4.3, S4.4 and S4.5.

Q32. WF2 AND SECTION 6/S302 ARE BOTH LABELED AT THE WALL ALONG COLUMN LINE 5 BETWEEN COLUMN LINES M AND N ON SHEET S202. WF2 IS A WALL FOOTING WHILE 6/S302 IS A THICKENED SLAB DETAIL. WHICH IS CORRECT?

A32. This foundation can be thickened slab as shown in section 6/S302.

Q33. WF3 AND SECTION 6/S302 ARE BOTH LABELED AT THE WALL ALONG COLUMN LINE 8 BETWEEN COLUMN LINES M AND N ON SHEET S202. WF2 IS A WALL FOOTING WHILE 6/S302 IS A THICKENED SLAB DETAIL. WHICH IS CORRECT?

A33. This foundation can be thickened slab as shown in section 6/S302.

Q34. THE "MASONRY BLOCK LINTEL SCHEDULE" ON SHEET S401 HAS A COLUMN FOR "OPENING WIDTH FOR NON-LOAD BEARING WALL". DOES THIS SCHEDULE ONLY APPLY AT NON-LOAD BEARING WALLS? IF SO PLEASE PROVIDE A SCHEDULE FOR LOAD BEARING WALLS AS THERE ARE MANY OPENINGS IN LOAD BEARING CMU WALLS.

A34. The lintel schedule is for load bearing walls. The lintels are called out on the plan examples are located under the "Mark" column and titled B8.1 through B12.5. There are beam locations that are also on plan indicating beam size and required plate.

Q35. ARE BEARING PLATES REQUIRED FOR STEEL LINTELS IN CMU WALLS? IF SO WOULD THE BEARING PLATE SCHEDULE ON SHEET S401 APPLY TO STEEL LINTELS?

A35. Yes.

Q36. PLEASE PROVIDE BEARING PLATE INFORMATION FOR THE W24X62 BEAMS SHOWN ON S221 AND 14/S402.

A36. Refer to the Bearing Plate Schedule shown on Sheet S401 for Bearing Plate W21.

Q37. SECTION 6/S403 NOTES A W8X24 BEAM OVER THE 80' WIDE E12 STOREFRONT WINDOW AND REFERS TO THE PLAN. THE PLAN DOES NOT SHOW THIS BEAM. DOES THIS BEAM RUN THE ENTIRE 80' WIDTH OF THE WINDOW?

A37. The beam does run the entire width of the window but is supported by HSS 4x3x1/4" at 8'-0" o/c.

Q38. SECTION 2/S405 NOTES A W8X24 BEAM OVER THE 64' WIDE E11 STOREFRONT WINDOW AND REFERS TO THE PLAN. THE PLAN DOES NOT SHOW THIS BEAM. DOES THIS BEAM RUN THE ENTIRE 64' WIDTH OF THE WINDOW?

A38. The beam does run the 64 feet of the window refer to Detail 6/S402.

Q39. SECTIONS A8 & A13/A-314 AND DETAIL K19/A-351 SHOW METAL STUD FRAMING AT THE BEAM ABOVE THE WINDOW. SECTION 6/S403 SHOWS CMU AROUND THE BEAM. THIS DISCREPANCY OCCURS AT OTHER LOCATIONS AS WELL. DO THE ARCHITECTURAL OR STRUCTURAL PLANS TAKE PRECEDENCE?

A39. Since gyp/mtl stud furring is provided, CMU is not necessary to conceal beams. Metal stud infill is preferred. The framing shown in A8 and A13 on 314 is below the load bearing.

Q40. I HAVE BEEN UNABLE TO LOCATE ANY BITUMINOUS DAMPPROOFING NOTED ON THE PLANS. DOES SECTION 071113 APPLY TO THE PROJECT? IF SO PLEASE PROVIDE LOCATIONS.

A40. Dampproofing to be provided at CMU foundation walls throughout project. See revisions under specifications below.

Q41. THERE ARE TWO SIDEWALK DETAILS, ONE ON S301 AND ONE ON C-620. WHICH TAKES PRECEDENCE?

A41. Sidewalk details on C-620 are to be used. Omit sidewalk Detail on S301.

Q42. THERE ARE 3 DIFFERENT BOLLARD DETAILS – K16/AS102, G/C-621 AND THE "TYPICAL BOLLARD DETAIL" ON S301. WHICH TAKES PRECEDENCE?

A42. If a bollard is called out on both the Civil Plans and Architectural Plans, the Architectural plans and details shall be adhered to. For bollards elsewhere on-site, that have not been specifically called out on Architectural, the Civil plans and details shall be adhered to.

Q43. THERE IS A PROBLEM WITH THE LANDSCAPE PLAN NOTES – THE NOTES DO NOT DISPLAY CORRECTLY. PLEASE RE-ISSUE THESE SHEET.

A43. Revised sheets L100, L101, L200 and L302 dated 09/10/2025 are attached.

Q44. I HAVE A QUESTION ON THE INTERIOR STOREFRONT ELEVATIONS 13, 15, 16 & 110 SHOW FIRE-RATED GLASS. ON ELEVATION 13, BOTH HAVE DOORS 110A & 120A, BOTH ARE 60-MINUTE RATED. WE HAVE NO SPEC ON A FIRE-RATED STOREFRONT. I JUST SENT THIS TO A COUPLE OF CONTRACTORS. SAFETY FIRST MAKES FIRE RATED STOREFRONT.

A44. Refer to the revised Specification Section 08 4313 attached.

Q45. **I WANTED TO CONFIRM THE COVE BASE. IT IS CALLED A THERMOSET WHICH IS A COVE BASE WITH A TOE, BUT YOU REQUESTED A REVEAL WHICH SEEMS TO INDICATE IT MAY BE A WOOD LOOK BASE. CAN YOU PLEASE CONFIRM WHICH TYPE YOU WANT? OR IS IT INTENDED TO BE MILLWORK?**

A45. *Johnsonite Millwork Wall Base System Reveal MW-XX-F6 in color 197 Shaded.*

Q46. **DOES THE COLLEGE HAVE A PREFERRED VENDER FOR BAS?**

A46. *The system must be compatible with Genetec hardware. Vendor must be certified in installing the hardware and integrating into the existing Genetec Platform.*

Q47. **IS DAS STRUCTURED CABLING AND SECURITY CABLING TO BE HANDLED BY OWNER? IS THERE A RELEVANT CONTACT FOR HGTC?**

A47. *The DAS Structured Cabling and Security Cabling will not be handled by Owner. No there is no information for HGTC contact at this time.*

Q48. **ROOM 105/106 GANG RESTROOM – WALL FINISH CONFLICT [A-711, A-400 (K18)] THE ENTRY WALL IS NOTED AS T-4 ON THE OVERALL FINISH PLAN, BUT APPEARS AS T-3 ON THE ELEVATION PLAN. PLEASE CONFIRM THE CORRECT TILE DESIGNATION FOR THE ENTRY WALL.**

A48. *T-3 is the desired finish at restroom entry wall. Please install with smaller cut piece of tile at bottom of wall.*

Q49. **BASE MATERIAL – B-1 BASE SPECIFICATION CONFLICT [A-701] FINISH SCHEDULE LISTS "JOHNSONITE MILLWORK 6" THERMOSET RUBBER BASE WITH REVEAL; SHADED WG 197". DIVISION 9 REFERS TO A COVE BASE, NOT MILLWORK. AS WRITTEN, THIS DOES NOT INDICATE ONE PRODUCT.**

A49. *Link to product below. This is a resilient wall base from the Johnsonite Millwork wall base system product. Johnsonite Millwork Wall Base® System - Tarkett Commercial*

Q50. **PLEASE CONFIRM WHICH OF THE FOLLOWING IS CORRECT:**
-JOHNSONITE TSB-197 6" BASEWORKS THERMOSET RUBBER COVE BASE – SHADED
-JOHNSONITE MW-XX-F6 MILLWORK 6" REVEAL WALL BASE (PLEASE CONFIRM COLOR NUMBER IF APPLICABLE)

A50. *Johnsonite MW-XX-F6 Millwork 6" Reveal Wall Base. Color to be 197 shaded.*

Q51. **T-5 AND T-6 TILE – FINISH TYPE [A-701] DRAWINGS INDICATE TILE FINISH AS "MATTE AND GLOSSY".**

A51. *Per note on elevation P13/A-731 and P21/A-731 please provide 70% T-5 and 30% T-6 installed randomly.*

Q52. **PLEASE CLARIFY WHETHER:**
-TILE FINISHES ARE INTENDED TO BE MATTE OR GLOSSY, OR
-A MIX OF BOTH IS REQUIRED (IF SO, PLEASE PROVIDE PERCENTAGE SPLIT).

A52. *See answer A53 above.*

Q53. NOTE 4 ON SHEET M102 AND NOTE 1 ON SHEET M103 CALL FOR ALL EXPOSED DUCTWORK TO BE DOUBLE WALL WITH PERFORATED INNER LINER AND 1" FLEXIBLE ELASTOMERIC INSULATION. MANUFACTURERS ARE MOVING AWAY FROM THE SPIRAL/OVAL DUCTWORK DUE TO EXPENSE AND DIFFICULTY. THE DUCTWORK SPECIFICATION STATES THAT ELASTOMERIC INSULATION AND FIBERGLASS INSULATION ARE BOTH APPROVED. WOULD IT BE ACCEPTABLE FOR THE EXPOSED DUCTWORK TO BE DOUBLE WALL WITH FIBERGLASS INSULATION AND A SOLID INNER LINER?

A53. All exposed supply and return ductwork in 117 Viewing Area, 110 Boat Building, 103 Conference Room, and 120 Outboard Marine shall be double wall duct with perforated inner liner and flexible elastomeric insulation. This is typical of both spiral and rectangular ducts. Exhaust ducts shall be single wall uninsulated. Please note that duct returning air to DOAU-3 energy recovery wheel in 120 Outboard Marine is considered return duct and shall be double wall as well. All exposed duct shall be prepared for painting by mechanical contractor and painted per Architectural documents.

Q54. NOTE 1 ON SHEET M102 CALLS FOR COORDINATION OF DUCTWORK WITH THE LAMINATION BOOTH EQUIPMENT (EXHAUST FAN & MAKE UP AIR UNIT) SHOWN ON THE ARCHITECTURAL DRAWINGS. WE DO NOT SEE THE REFERENCED LAMINATION EQUIPMENT IN THE PLANS. PLEASE ADVISE ON THE PLANS NEEDED FOR COORDINATION.

A54. Reference Specification Section 132127 for Enclosed Lamination Booth.

Q55. THE EXTERIOR MATERIAL AND FINISH SCHEDULE ON A-201 SHOWS ANODIZED ALUMINUM GUTTER/DOWNSPOUTS. DOES THE COPING CAP NEED TO BE ANODIZED ALUMINUM?

A55. See Spec 07 7100, 2.2 Coping requirement.

Q56. SPEC 074213-2 CALLS FOR EXTERIOR WALL PANELS TO BE PAC-CLAD REVEAL WALL PANELS, BUT IN THE EXTERIOR MATERIAL AND FINISH SCHEDULE ON A-201, MATERIAL MP-2 SHOWS A PAC-CLAD BOX RIB 1 PANEL. ARE WE TO FIGURE THE BOX RIB 1 PANEL AND IS IT TO BE IN .040" ALUMINUM?

A56. Yes, it is the Box Rib 1 panel with .040 aluminum as indicated in Spec Section 07 4213, 2.2, B.

Q57. I WANTED TO CONFIRM THE COVE BASE. IT IS CALLED A THERMOSET WHICH IS A COVE BASE WITH A TOE, BUT YOU REQUESTED A REVEAL WHICH SEEMS TO INDICATE IT MAY BE A WOOD LOOK BASE. CAN YOU PLEASE CONFIRM WHICH TYPE YOU WANT? OR IS IT INTENDED TO BE MILLWORK?

A57. Link to product below. This is a resilient wall base from the Johnsonite Millwork wall base system product. Johnsonite Millwork Wall Base® System - Tarkett Commercial

Q58. INSTEAD OF A 2" BASE LAYER OF ROOF INSULATION NOTED ON SPEC 075419-9, CAN WE INSTALL (3) LAYERS OF 1.5" TO ACHIEVE THE MIN R-25 VALUE? ALSO WANTED TO CONFIRM IF THE MAXIMUM INSULATION THICKNESS IS 2", OR COULD WE USE (2) LAYERS OF 2.2" TO ACHIEVE THE R-25 VALUE?

A58. No, the specifications call for a total of 5" of insulation. 2" is the maximum board thickness permitted. Any thickness over 2" will not be accepted.

Q59. WHAT IS THE SIZE OF THE ROOF HATCH? SPEC 077200-2 SHOWS TYPE E 36"X36", SPEC 07723-1 SHOWS TYPE S 30"X36", AND THE ROOF DETAIL ON A-161 SHOWS A 48" ROOF HATCH.

A59. Reference Specification Section 077200, 2.1, B., 4, omit reference to single leaf, 36"x36" and replace with single leaf 36"x48". Specification Section 07723-1, 2.1-A omit reference to 'Type S' roof hatch and replace with 'Type E' roof hatch. Reference Specification Section 07723-1, 2.2-A omit reference to 30"x36" and replace with 30"x48".

Q60. SPEC SECTION 099600-3 CALLS OUT FOR HIGH PERFORMANCE PRIMER FOR STEEL. CAN YOU TELL US WHAT STEEL THIS PRIMER IS USED FOR?

A60. The high-performance coating will be applied to the columns and steel structure at the exterior covered area outside the labs that will be exposed to weather.

SPECIFICATIONS

1. DOCUMENT SE-310 – INVITATION FOR DESIGN-BID-BUILD CONSTRUCTION SERVICES

   A. Contractor's attention is directed to DOCUMENT SE-310 – INVITATION FOR DESIGN-BID-BUILD CONSTRUCTION SERVICES issued in Addenda #1. Contractor is advised to omit this in its entirety and replace with DOCUMENT SE-310 – INVITATION FOR DESIGN-BID-BUILD CONSTRUCTION SERVICES (attached herewith) consisting of 1 page for the new date for the Bid Opening.

2. SECTION 051200 – STRUCTURAL STEEL

   A. Contractor's attention is directed to 2.2, A. Contractor is advised to omit this item in its entirety and replace with the following:

      "A. Primer: Sherwin-Williams Pro-Cryl"

3. SECTION 07 1113 – BITUMINOUS DAMPPRROFING

   A. Contractor's attention is directed to Section 2.2, A, 4. Contractor is advised to change this item to number 5.

   B. Contractor's attention is directed to Section 2.2, A. Contractor is advised to add the following:

      "4. Location: Below grade CMU foundation walls."

4. SECTION 07223 – ROOF HATCH RAIL SYSTEM

   A. Contractor's attention is directed to SECTION 07223 – ROOF HATCH RAIL SYSTEM. Contractor is advised to insert this section in its entirety (attached herewith) consisting of 2 pages.

4. SECTION 07 4213 – METAL WALL PANELS

   A. Contactor's attention is directed to 2.1, A., 3. Contractor is advised to omit this item in its entirety and replace with the following to show correct materials and manufacturers.

      "3. Basis of Design: Pac-Clad Petersen Aluminum Corporation; Box Rib 1 Panels: www.pac-clad.com/#sle.
      5. Substitutions: See Section 01 6000 - Product Requirements."

   B. Contractor's attention is directed to 2.1, B. Contractor is advised to omit this item in its entirety.

5. SECTION 077200 – ROOF ACCESSORIES

A. Contractor's attention is directed to 2.1, B., 4. Contractor is advised to omit this item in its entirety and replace with the following:

"4. For Ladder Access: Single leaf; 36" x 48"

6. SECTION 07723 – ROOF HATCHES

A. Contractor's attention is directed to 2.1, A. Contractor is advised to omit "Type S Roof Hatch" and replace with "Type E Roof Hatch".

B. Contractor's attention is directed to 2.2, A. Contractor is advised to omit this item in its entirety and replace with the following:

"A. Furnish and install where indicated on plans metal roof hatch Type E, size width: 36" (762mm) x length: 48". Length denotes hinge side. The roof hatch shall be single leaf. The roof hatch shall be pre-assembled from the manufacturer."

7. SECTION 08 4313 – ALUMINUM-FRAMED STOREFRONTS

A. Contractor's attention is directed to Section 2.3, C. Contractor is advised to omit this item in its entirety and replace with the following for the addition of a fire-rated swing door Manufacturer:

"C. Fire-Resistance Rated, Wide stile, Fire-Resistance glazing (See Section 088000 - Glazing); Provide product as required to achieve indicated fire-rating period:
1. Basis of Design: Safti First; GPX Architectural Series SuperLite II-XL: www.safti.com
2. Other Manufacturers:
   a. FireGlass; Fireframes Designer Series ; www.fireglass.com

D. Substitutions: See Section 01 6000 - Product Requirements.
1. For any product not identified as "Basis of Design", submit information as specified for substitutions."

8. SECTION 08 7100 - DOOR HARDWARE

A. Contractor's attention is directed to SECTION 08 7100 – DOOR HARDWARE. Contractor is advised to omit this section in its entirety and replace with SECTION 08 7100 – DOOR HARDWARE (attached herewith) consisting of 27 pages.

9. SECTION 233133 – METAL DUCTS

A. Contractor's attention is directed to SECTION 233133 – METAL DUCTS. Contractor is advised to omit this section in its entirety and replace with SECTION 233133 – METAL DUCTS (attached herewith) consisting of 14 pages to include clarifications on double wall ductwork to include perforated inner liner and flexible elastomeric interstitial insulation for exposed ductwork.

10. SECTION 260536 – CABLE TRAYS FOR ELECTRICAL SYSTEMS

A. Contractor's attention is directed to SECTION 260536 – CABLE TRAYS FOR ELECTRICAL SYSTEMS. Contractor is advised to insert this section in its entirety (attached herewith) consisting of 2 pages.

11. SECTION 237433 – DEDICATED OUTDOOR AIR UNITS

A. Contractor's attention is directed to Article 2.1, B. Valent shall be included as a listed comparable product manufacturer.

DRAWINGS

1. SHEET A201 – EXTERIOR ELEVATIONS

A. Contractor is advised to omit any reference to "Blue Tint".

2. SHEET A210 – EXTERIOR DETAILS

A. Contractor's attention is directed to SHEET A210 – EXTERIOR DETAILS. Contractor is advised to omit this sheet in its entirety and replace with SHEET A210 – EXTERIOR DETAILS (attached herewith) consisting of 1 page and dated 09/11/2025 for the revisions to the configuration of MP3 and MP4 shading.

3. SHEET A611 – STOREFRONT ELEVATIONS

A. Contractor is advised to omit any reference to "Blue Tint".

4. SHEET A612 – CURTAIN WALL ELEVATIONS

A. Contractor is advised to omit any reference to "Blue Tint".

5. SHEET S402 – FRAMING SECTIONS AND DETAILS

A. Contractor's attention is directed to Bulletin Drawings (attached herewith) consisting of 3 pages with handwritten notes. For clarification, Contractor is advised to provide HSS 6x3x1/4" and associated steel at 8'-0" (not 16'-0") on center for sections 6/S402, 6/S403, and 2/S402.

6. SHEET S403 – FRAMING SECTIONS AND DETAILS

A. Contractor's attention is directed to Bulletin Drawings (attached herewith) consisting of 3 pages with handwritten notes. For clarification, Contractor is advised to provide HSS 6x3x1/4" and associated steel at 8'-0" (not 16'-0") on center for sections 6/S402, 6/S403, and 2/S402.

7. SHEET S404 – FRAMING SECTIONS AND DETAILS

A. Contractor's attention is directed to Bulletin Drawings (attached herewith) consisting of 3 pages with handwritten notes. For clarification, Contractor is advised to provide HSS 6x3x1/4" and associated steel at 8'-0" (not 16'-0") on center for sections 6/S402, 6/S403, and 2/S402.

8. SHEET L-100 – LANDSCAPE SITE PLAN

A. Contractor's attention is directed to SHEET L-100 – LANDSCAPE SITE PLAN. Contractor is advised to omit this sheet in its entirety and replace with SHEET L-100 – LANDSCAPE SITE PLAN (attached herewith) dated 9/10/25 and consisting of 1 page.

9. SHEET L-101 – ENLARGED PLAZA LAYOUT PLAN

A. Contractor's attention is directed to SHEET L-101 – ENLARGED PLAZA LAYOUT PLAN. Contractor is advised to omit this sheet in its entirety and replace with SHEET L-101 – ENLARGED PLAZA LAYOUT PLAN (attached herewith) dated 9/10/25 and consisting of 1 page.

10. SHEET L-200 – LANDSCAPE PLANTING PLAN

A. Contractor's attention is directed to SHEET L-200 – LANDSCAPE PLANTING PLAN. Contractor is advised to omit this sheet in its entirety and replace with SHEET L-200 – LANDSCAPE PLANTING PLAN (attached herewith) dated 9/10/25 and consisting of 1 page.

11. SHEET L-302 – SITE CONSTRUCTION DETAILS

A. Contractor's attention is directed to SHEET L-302 – SITE CONSTRUCTION DETAILS. Contractor is advised to omit this sheet in its entirety and replace with SHEET L-302 – SITE CONSTRUCTION DETAILS (attached herewith) dated 9/10/25 and consisting of 1 page.

12. SHEET P001 – PLUMBING SCHEDULES, NOTES & LEGENDS

A. Contractor's attention is directed to SHEET P001 – PLUMBING SCHEDULES, NOTES & LEGENDS. Contractor is advised to omit this sheet in its entirety and replace with SHEET P001 – PLUMBING SCHEDULES, NOTES & LEGENDS (attached herewith) dated 9/10/25 and consisting of 1 page for revised motel numbers for fixture marks P-1 and P-1A.

13. SHEET E001 – ELECTRICAL NOTES

A. Contractor's attention is directed to SHEET E001 – ELECTRICAL NOTES. Contractor is advised to omit this sheet in its entirety and replace with SHEET E001 – ELECTRICAL NOTES (attached herewith) dated 9/9/25 and consisting of 1 page for a cable tray added to General Note 6 and the cable tray symbol added to Systems Symbol Legend.

14. SHEET E080 – ELECTRICAL SITE PLAN

A. Contractor's attention is directed to SHEET E080 – ELECTRICAL SITE PLAN. Contractor is advised to omit this sheet in its entirety and replace with SHEET E080 – ELECTRICAL SITE PLAN (attached herewith) dated 9/9/25 and consisting of 1 page for the renovations Keynote (3) revised to coordinate exact location and specification with landscape plans.

15. SHEET E101 – FIRST FLOOR POWER & TELECOM PLAN A

A. Contractor's attention is directed to SHEET E101 – FIRST FLOOR POWER & TELECOM PLAN A. Contractor is advised to omit this sheet in its entirety and replace with SHEET E101 – FIRST FLOOR POWER & TELECOM PLAN A (attached herewith) dated 9/9/25 and consisting of 1 page for the Receptacle and Data moved in Classroom 109 and Classroom 111.

16. SHEET E102 – FIRST FLOOR POWER & TELECOM PLAN B

A. Contractor's attention is directed to SHEET E102 – FIRST FLOOR POWER & TELECOM PLAN B. Contractor is advised to omit this sheet in its entirety and replace SHEET E102 – FIRST FLOOR POWER & TELECOM PLAN B (attached herewith) dated 9/9/25 and consisting of 1 page for the Receptacle and Data moved in Classroom 121.

17. SHEET E301 – FIRST FLOOR SYSTEMS PLAN A

A. Contractor's attention is directed to SHEET E301 – FIRST FLOOR SYSTEMS PLAN A. Contractor is advised to omit this sheet in its entirety and replace SHEET E301 – FIRST FLOOR SYSTEMS PLAN A (attached herewith) dated 9/9/25 and consisting of 1 page for the addition of a cable tray route and a General Note to coordinate cable tray routing with crane rail locations added.

18. SHEET E302 – FIRST FLOOR SYSTEMS PLAN B

A. Contractor's attention is directed to SHEET E302 – FIRST FLOOR SYSTEMS PLAN B. Contractor is advised to omit this sheet in its entirety and replace SHEET E302 – FIRST FLOOR SYSTEMS PLAN B (attached herewith) dated 9/9/25 and consisting of 1 page for the addition of a Cable tray route.

APPROVED EQUIVALENTS

The following manufacturers have been approved as equivalents.

Section 07140 – Fluid Applied Waterproofing	Polyglass USA, Inc. –
Section 072500 – Weather Barriers	Mapeseal GC 1111 W Newport Center Dr Deerfield Beach, FL 33442 888-410-1375
Section 075419 – Polyvinyl-Chloride (PVC) Roofing	Flex MF/R 60 mil PVC Membrane, Flex Membrane International, 5103A Pottsville Pike, Reading PA 19605, 610-916-9500
Section 083323 – Overhead Coiling Doors	Cornell Cookson Model # ESD20 Coiling Door and ERD10 Fire 800-233-8366
Section 097200 – Wall Coverings	Write Walls, WriteNow 60" Glass, National Solutions 800-222-1028
Section 102113.17 – Phenolic Toilet Compartments	Sierra Series (SCRC) 1090 Partitions. 800-982-9600
Section 10512 – Phenolic Lockers	Spectrum 416-282-1010

END OF ADDENDUM NO. 2

SE-310
INVITATION FOR DESIGN-BID-BUILD CONSTRUCTION SERVICES

AGENCY: HGTC - Horry-Georgetown Technical College

PROJECT NAME: Construction of GT Workforce Training Center

PROJECT NUMBER: H59-6255-CB **CONSTRUCTION COST RANGE:** $10,000,000 **to** $12,500,000

PROJECT LOCATION: Georgetown Marine Technology Center

DESCRIPTION OF PROJECT/SERVICES: *(450 character limit)*

New construction of 25,000 sf Marine Technology Insitute of Technology Institute of SC on the Georgetown Campus. The building will support boat building and outboard marine motor technician programs. The building will be a conventional steel, masonry, metal wall panels w/aluminum framed storefront & glazed aluminum curtain wall. Roof system will be PVC fully adhered membrane. Interior finishes include wood wall paneling, carpet, & porcelain.

BID/SUBMITTAL DUE DATE: 09/23/2025 **TIME:** 02:00 PM **NUMBER OF COPIES:** 1

PROJECT DELIVERY METHOD: Design-Bid-Build

AGENCY PROJECT COORDINATOR: Kevin Brown, Director Capital Improvements

EMAIL: kevin.brown@hgtc.edu **TELEPHONE:** (843) 349-5354

DOCUMENTS OBTAINED FROM: www.hgtc.edu/purchasing

BID SECURITY IS REQUIRED IN AN AMOUNT NOT LESS THAN 5% OF THE BASE BID.
PERFORMANCE AND LABOR & MATERIAL PAYMENT BONDS: The successful Contractor will be required to provide Performance and Labor and Material Payment Bonds, each in the amount of 100% of the Contract Price.

DOCUMENT DEPOSIT AMOUNT: $0.00 **IS DEPOSIT REFUNDABLE:** ○ **Yes** ○ **No** ● **N/A**

Bidders must obtain Bidding Documents/Plans from the above listed sources(s) to be listed as an official plan holder. Bidders that rely on copies obtained from any other source do so at their own risk. All written communications with official plan holders & bidders will be via email or website posting.

Agency **WILL NOT** accept Bids sent via email.

All questions & correspondence concerning this Invitation shall be addressed to the A/E.

A/E NAME: PMH-Croft Architects & Engineers **A/E CONTACT:** Diane Price

EMAIL: dprice@pmhcroft.com **TELEPHONE:** (843) 497-0272

PRE-BID CONFERENCE: ● **Yes** ○ **No** **MANDATORY ATTENDANCE:** ○ **Yes** ● **No**

PRE-BID DATE: 08/27/2025 **TIME:** 10:00 AM

PRE-BID PLACE: HGTC Conway Campus at 2050 Hwy 501 E, Conway SC 29526, Bldg. 100, Room 122

BID OPENING PLACE: HGTC Conway Campus at 2050 Hwy 501 E., Conway SC 29526, Bldg. 100, Room 122

BID DELIVERY ADDRESSES:

HAND-DELIVERY:

Attn: Procurement Office, Bldg. 100 Room 120
2050 Hwy 501 E
Conway, SC 29526

MAIL SERVICE:

Attn: Procurement Office, Bldg. 100, Room 120
2050 Hwy 501 E
Conway, SC 29526

IS PROJECT WITHIN AGENCY CONSTRUCTION CERTIFICATION? ○ **Yes** ● **No**

APPROVED BY: _____ **DATE:** _____
(OSE PROJECT MANAGER)

SECTION 07723 – ROOF HATCH RAIL SYSTEM

PART 1 – GENERAL

1.1 SUMMARY

A. Work includes: Provide factory-fabricated fixed hatch railing system.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's product data.

B. Shop Drawings: Submit shop drawings including profiles, accessories, location, adjacent construction interface, and dimensions.

C. Warranty: Submit executed copy of manufacturer's standard warranty.

1.3 QUALITY ASSURANCE

A. Manufacturer: A minimum of 5 years experience manufacturing similar products.

B. Installer: A minimum of 2 years experience installing similar products.

C. Manufacturer's Quality System: Registered to ISO 9001:2008 Quality Standards including in-house engineering for product design activities.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver products in manufacturer's original packaging. Store materials in a dry, protected, well-vented area. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.

1.5 WARRANTY

A. Manufacturer's Warranty: Provide manufacturer's standard warranty. Materials shall be free of defects in material and workmanship for a period of five years from the date of purchase. Should a part fail to function in normal use within this period, manufacturer shall furnish a new part at no charge.

PART 2 – PRODUCTS

2.1 MANUFACTURER

A. Basis-of-Design Manufacturer: Type E Roof Hatch by The Bilco Company, P.O. Box 1203, New Haven, CT 06505, 1-800-366-6530, Fax: 1-203-933-8478, Web: www.bilco.com.

2.2 HATCH RAIL SYSTEM

A. Furnish and install where indicated on plans hatch rail system Model RL2-E. The hatch rail system shall be field assembled and installed (by others) per the manufacturer's instructions.

B. Performance characteristics:

1. High visibility safety yellow powder coat paint finish (*other colors available as a special order*).
2. Hatch rail system shall attach to the capflashing of the roof hatch and shall not penetrate any roofing material.
3. Hatch rail system shall satisfy the requirements of OSHA 29 CFR 1910.29 and shall meet OSHA strength requirements with a factor of safety of two.
4. Corrosion resistant construction with a five-year warranty.
5. Hinged gate shall ensure continuous barrier around the roof hatch.
6. Self-closing gate hinge and positive latching system provided with hatch rail system.

C. Posts and Rails: 1-1/4” (32mm) 6061 T6 schedule 40 aluminum pipe.

D. Hardware: Mounting brackets shall be 3/8” (9mm) thick extruded aluminum. Pivoting post guides with compression fittings and latching mechanism shall be cast aluminum. Self-closing hinges and all fasteners shall be type 316 stainless steel.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates and openings for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install products in strict accordance with manufacturer’s instructions and approved submittals. Locate units, level, plumb, and in proper alignment with adjacent work.

1. Test units for proper function and adjust until proper operation is achieved.
2. Repair finishes damaged during installation.
3. Restore finishes so no evidence remains of corrective work.

3.3 ADJUSTING AND CLEANING

A. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.

END OF SECTION 07723

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Mechanical and electrified door hardware
2. Electronic access control system components

B. Section excludes:

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

C. Related Sections:

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

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

6. Division 26 "Electrical" sections for connections to electrical power system and for low-voltage wiring.
7. Division 28 "Electronic Safety and Security" sections for coordination with other components of electronic access control system and fire alarm system.

1.2 REFERENCES

A. UL LLC

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

B. DHI - Door and Hardware Institute

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

C. NFPA – National Fire Protection Association

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

D. ANSI - American National Standards Institute

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

1.3 SUBMITTALS

A. General:

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

    a. Review drawings and Sections from related trades to verify compatibility with specified hardware.
    b. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.

B. Action Submittals:

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

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

        1) Details of interface of electrified door hardware and building safety and security systems.
        2) Schematic diagram of systems that interface with electrified door hardware.
        3) Point-to-point wiring.
        4) Risers.
3. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated and tagged with full description for coordination with schedule.

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

4. Door Hardware Schedule:

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

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

5. Key Schedule:

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

C. Informational Submittals:

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

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

D. Closeout Submittals:

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

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

E. Inspection and Testing:

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

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

1.4 QUALITY ASSURANCE

A. Qualifications and Responsibilities:

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

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

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

B. Certifications:

1. Fire-Rated Door Openings:
    a. Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction.

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

2. Smoke and Draft Control Door Assemblies:

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

3. Electrified Door Hardware

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

4. Accessibility Requirements:

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

C. Pre-Installation Meetings

1. Keying Conference

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

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

2. Pre-installation Conference

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

3. Electrified Hardware Coordination Conference:
a. Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.

1.5 DELIVERY, STORAGE, AND HANDLING

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

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

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

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

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

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

1.6 COORDINATION

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

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

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

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

1.7 WARRANTY

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

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

a. Mechanical Warranty

1) Locks

a) Schlage L Series: 10 years

2) Exit Devices

a) Von Duprin: 10 years

3) Closers

a) LCN 1460 Series: 30 years
b) LCN 4050 Series: 25 years

b. Electrical Warranty

1) Exit Devices

a) on Duprin: 3 years

1.8 MAINTENANCE

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

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

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Approval of alternate manufacturers and/or products other than those listed as "Scheduled Manufacturer" or "Acceptable Manufacturers" in the individual article for the product category are only to be considered by official substitution request in accordance with section 01 25 00.

B. Approval of products from manufacturers indicated in "Acceptable Manufacturers" is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.

C. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.2 MATERIALS

A. Fabrication

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

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

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

C. Cable and Connectors:

1. Where scheduled in the hardware sets, provide each item of electrified hardware and wire harnesses with number and gage of wires enough to accommodate electric function of specified hardware.
2. Provide Molex connectors that plug directly into connectors from harnesses, electric locking and power transfer devices.
3. Provide through-door wire harness for each electrified locking device installed in a door and wire harness for each electrified hinge, electrified continuous hinge, electrified pivot, and electric power transfer for connection to power supplies.

2.3 HINGES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Ives 5BB series

2. Acceptable Manufacturers and Products:

a. Hager BB1191/1279 series
b. McKinney TB series

B. Requirements:

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

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

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

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

5. 2 inches or thicker doors:

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

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

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

10. Provide hinges with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware. Locate electric hinge at second hinge from bottom or nearest to electrified locking component. Provide mortar guard for each electrified hinge specified.

2.4 CONTINUOUS HINGES

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Select
b. ABH

B. Requirements:

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

2.5 ELECTRIC POWER TRANSFER

A. Manufacturers:

1. Scheduled Manufacturer and Product:

a. Von Duprin EPT-10

2. Acceptable Manufacturers and Products:

a. ABH PT1000
b. Securitron CEPT-10

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

2.6 PIVOT SETS

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Rixson
b. ABH

B. Requirements:

1. Provide pivot sets complete with oil-impregnated top pivot, unless indicated otherwise.
2. Where offset pivots are specified, Provide one intermediate pivot for doors less than 91 inches (2311 mm) high and one additional intermediate pivot per leaf for each additional 30 inches (762 mm) in height or fraction thereof. Intermediate pivots spaced equally not less than 25 inches (635 mm) or not more than 35 inches (889 mm) on center, for doors over 121 inches (3073 mm) high.
3. Provide appropriate model where pivot sets are scheduled at fire rated openings.
4. Provide pivots with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware. Locate electrified pivot nearest to electrified locking component. If manufacturer of electrified locking component requires another device for power transfer, then provide recommended power transfer device and appropriate quantity of pivots.
5. Provide mortar guard for each electric pivot specified, unless specified in hollow metal frame specification.

2.7 FLUSH BOLTS

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Burns
b. Trimco

B. Requirements:

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

2.8 COORDINATORS

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Burns
b. Trimco

B. Requirements:

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

2.9 MORTISE LOCKS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Schlage L9000 series

2. Acceptable Manufacturers and Products:

a. Accurate 9000/9100 series
b. Best 45H series

B. Requirements:

1. Provide mortise locks conforming to ANSI/BHMA A156.13 Series 1000, Grade 1, and UL Listed for 3-hour fire doors.
2. Indicators: Where specified, provide indicator window measuring a minimum 2-3/5-inch x 3/5 inch with 180-degree visibility. Provide messages color-coded using ANSI Z535 Safety Red with full text and/or symbols, as scheduled, for easy visibility. When applicable allows for lock status indication on both sides of the door.
3. Provide locks manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance.
4. Provide lock case that is multi-function and field reversible for handing without opening case. Cylinders: Refer to "KEYING" article, herein.
5. Provide locks with standard 2-3/4 inches (70 mm) backset with full 3/4 inch (19 mm) throw stainless steel mechanical anti-friction latchbolt. Provide deadbolt with full 1-inch (25 mm) throw, constructed of stainless steel.
6. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim. Provide electrified options as scheduled in the hardware sets. Where scheduled, provide switches and sensors integrated into the locks and latches.
7. Provide motor based electrified locksets that comply with the following requirements:

a. Universal input voltage – single chassis accepts 12 or 24VDC to allow for changes in the field without changing lock chassis.
b. Fail Safe/Fail Secure – changing mode between electrically locked (fail safe) and electrically unlocked (fail secure) is field selectable without opening the lock case.
c. Low maximum current draw – maximum 0.4 amps to allow for multiple locks on a single power supply.

d. Low holding current – maximum 0.01 amps to produce minimal heat, eliminate “hot levers” in electrically locked applications, and to provide reliable operation in wood doors that provide minimal ventilation and air flow.
e. Connections – provide quick-connect Molex system standard.

8. (KEY OVERRIDE OPTION WHEN XL13-439 IS SPECIFIED IN HARDWARE SETS) Provide locks with a key override feature built into the chassis that allows the outside key to retract the deadbolt and/or latchbolt, overriding the inside thumbturn when it is being held in the locked position.
9. Lever Trim: Solid brass, bronze, or stainless steel, cast or forged in design specified, with wrought roses and external lever spring cages. Provide thru-bolted levers with 2-piece spindles.

    a. Vandlgard: Provide levers with vandal resistant technology for use at heavy traffic or abusive applications.
    b. Lever Design: <INSERT LEVER DESIGN>.

2.10 EXIT DEVICES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

    a. Von Duprin 98/35A series

2. Acceptable Manufacturers and Products:

    a. Detex Advantex series
    b. Sargent 19-43-GL-80 series

B. Requirements:

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

14. Provide electrified options as scheduled.
15. Top latch mounting: double- or single-tab mount for steel doors, face mount for aluminum doors eliminating requirement of tabs, and double tab mount for wood doors.
16. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.

2.11 POWER SUPPLIES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Schlage/Von Duprin PS900 Series

2. Acceptable Manufacturers and Products:

a. No Substitute
b. Precision ELR series
c. Sargent 3500 series

B. Requirements:

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

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

2.12 CYLINDERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Schlage S

2. Acceptable Manufacturers and Products:

a. No Substitute
b. Corbin-Russwin Patented Keyway

c. Yale Keymark

B. Requirements:

1. Provide cylinders/cores compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset; manufacturer's series as indicated. Refer to "KEYING" article, herein.
2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.

a. Patented Open: cylinder with interchangeable core with open keyway.

3. Patent Protection: Cylinders/cores requiring use of restricted, patented keys, patent protected.
4. Nickel silver bottom pins.

2.13 KEY CONTROL SYSTEM

A. Manufacturers:

1. Scheduled Manufacturer:

a. Telkee

2. Acceptable Manufacturers:

a. HPC
b. Lund

B. Requirements:

1. Provide key control system, including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150% of number of locks required for Project.

a. Provide complete cross index system set up by hardware supplier, and place keys on markers and hooks in cabinet as determined by final key schedule.
b. Provide hinged-panel type cabinet for wall mounting.

2.14 DOOR CLOSERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. LCN 1460 series

2. Acceptable Manufacturers and Products:

a. Corbin-Russwin DC6000 series
b. Stanley QDC 200

B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory.

2. Provide door closers with fully hydraulic, full rack and pinion action cast iron cylinder.
3. Closer Body: 1-1/4-inch (32 mm) diameter, with 5/8-inch (16 mm) diameter heat-treated pinion journal.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.
7. Pressure Relief Valve (PRV) Technology: Not permitted.
8. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.15 DOOR CLOSERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. LCN 4050A series

2. Acceptable Manufacturers and Products:

a. Falcon SC70A series
b. Norton 7500 series

B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
2. Provide door closers with fully hydraulic, full rack and pinion action with cast aluminum cylinder.
3. Closer Body: 1-1/2-inch (38 mm) diameter with 11/16-inch (17 mm) diameter heat-treated pinion journal and full complement bearings.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and all weather requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and back check.
7. Pressure Relief Valve (PRV) Technology: Not permitted.
8. Provide stick on templates, special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.16 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Burns
b. Trimco

B. Requirements:

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

2.17 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Burns
b. Trimco

B. Requirements:

1. Provide protection plates with a minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
2. Sizes plates 2 inches (51 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards.
3. At fire rated doors, provide protection plates over 16 inches high with UL label.

2.18 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

A. Manufacturers:

1. Scheduled Manufacturers:

a. Glynn-Johnson

2. Acceptable Manufacturers:

a. Rixson
b. ABH

B. Requirements:

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

2.19 DOOR STOPS AND HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Burns
b. Trimco

B. Provide door stops at each door leaf:

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

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

A. Manufacturers:

1. Scheduled Manufacturer:

a. Zero International

2. Acceptable Manufacturers:

a. National Guard
b. Pemko

B. Requirements:

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

2.21 SILENCERS

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Burns
b. Trimco

B. Requirements:

1. Provide "push-in" type silencers for hollow metal or wood frames.
2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.
3. Omit where gasketing is specified.

2.22 DOOR POSITION SWITCHES

A. Manufacturers:

1. Scheduled Manufacturer:

a. Schlage

2. Acceptable Manufacturers:

a. GE-Interlogix
b. Sargent

B. Requirements:

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

2.23 FINISHES

A. FINISH: BHMA 626/652 (US26D); EXCEPT:

1. Hinges at Exterior Doors: BHMA 630 (US32D)
2. Aluminum Geared Continuous Hinges: BHMA 628 (US28)
3. Push Plates, Pulls, and Push Bars: BHMA 630 (US32D)
4. Protection Plates: BHMA 630 (US32D)
5. Overhead Stops and Holders: BHMA 630 (US32D)
6. Door Closers: Powder Coat to Match
7. Wall Stops: BHMA 630 (US32D)
8. Latch Protectors: BHMA 630 (US32D)
9. Weatherstripping: Clear Anodized Aluminum
10. Thresholds: Mill Finish Aluminum

PART 3 - EXECUTION

3.1 EXAMINATION

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

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

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

3.2 INSTALLATION

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

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

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

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

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

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

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

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

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

I. Lock Cylinders:

1. Install construction cores to secure building and areas during construction period.
2. Furnish permanent cores to Owner for installation.

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

1. Conduit, junction boxes and wire pulls.
2. Connections to and from power supplies to electrified hardware.
3. Connections to fire/smoke alarm system and smoke evacuation system.
4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
5. Connections to panel interface modules, controllers, and gateways.
6. Testing and labeling wires with Architect's opening number.

K. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

L. Continuous Hinges: Re-locate the door and frame fire rating labels where they will remain visible so that the hinge does not cover the label once installed.

M. Door Closers & Auto Operators: Mount closers/operators on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers/operators so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.

N. Overhead Stops/Holders: Mount overhead stops/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.

O. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.

P. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

Q. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.

R. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

S. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

T. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.3 ADJUSTING

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

1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.4 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items per manufacturer's instructions to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.5 DOOR HARDWARE SCHEDULE

A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.

B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.
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C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.

D. Hardware Sets:

SCHEDULE OF HARDWARE

122574 OPT0358759 Version 2
Legend:
Link to catalog cut sheet / Electrified Opening

Hardware Set #1 – Doors 110B, 110C, 110D, 110E, 116A, 117C, 120B, 120C, 120D, 120E, 201A

Each RU door(s) to have:

1 ea. No 087100 SCOPE

Hardware Set #2 – Doors 118, 126

Each PR door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
8	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		630	IVE
2	EA	MANUAL FLUSH BOLT	FB458		626	IVE
1	EA	DUST PROOF STRIKE	DP2		626	IVE
1	EA	STOREROOM LOCK	L9080T 06A		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	COORDINATOR	COR X FL		628	IVE
2	EA	SURFACE CLOSER	4050A SCUSH MC		689	LCN
1	EA	RAIN DRIP	142AA		AA	ZER
1	EA	GASKETING	188SBK PSA		BK	ZER
2	EA	DOOR SWEEP	39A		A	ZER
1	EA	MEETING STILE	8195AA		AA	ZER
1	EA	THRESHOLD	655A-223		A	ZER

Hardware Set #3 – Doors 201B

Each SGL door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		630	IVE
1	EA	STOREROOM LOCK	L9080T 06A		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4050A SCUSH MC		689	LCN
1	EA	RAIN DRIP	142AA AS REQ IF NO OVERHANG		AA	ZER
1	EA	GASKETING	188SBK PSA		BK	ZER

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	655A-223		A	ZER

Hardware Set #03A – Doors 117B

Each SGL door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
4	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		630	IVE
1	EA	STOREROOM LOCK	L9080T 06A		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4050A SCUSH MC		689	LCN
1	EA	RAIN DRIP	142AA AS REQ IF NO OVERHANG		AA	ZER
1	EA	GASKETING	188SBK PSA		BK	ZER
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	655A-223		A	ZER

Hardware Set #4 – Doors 119

Each SGL door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		630	IVE
1	EA	PANIC HARDWARE	LD-98-NL-OP		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4050A SCUSH MC		689	LCN
1	EA	RAIN DRIP	142AA AS REQ IF NO OVERHANG		AA	ZER
1	EA	GASKETING	188SBK PSA		BK	ZER
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	655A-223		A	ZER

Hardware Set #04A – Doors 110F, 120F

Each SGL door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
4	EA	HINGE	5BB1HW 5 X 4.5 NRP		630	IVE
1	EA	PANIC HARDWARE	LD-98-NL-OP		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4050A SCUSH MC		689	LCN
1	EA	RAIN DRIP	142AA AS REQ IF NO OVERHANG		AA	ZER
1	EA	GASKETING	188SBK PSA		BK	ZER
1	EA	DOOR SWEEP	39A		A	ZER

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	THRESHOLD	655A-223		A	ZER

Hardware Set #5 – Doors 101A, 102

Each PR door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	224HD EPT		628	IVE
2	EA	POWER TRANSFER	EPT10		689	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-9847-EO 24 VDC		626	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-9847-NL-OP 24 VDC		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
2	EA	90 DEG OFFSET PULL	8190EZHD 12" STD		630-316	IVE
1	EA	SEALS	BY DOOR MANUFACTURER			
2	EA	DOOR SWEEP	8198AA		AA	ZER
1	EA	THRESHOLD	655A-223		A	ZER
1	EA	CREDENTIAL READER	BY OTHERS			
2	EA	DOOR CONTACT	679-05HM		BLK	SCE
1	EA	POWER SUPPLY	PS902 900-2RS 120/240 VAC		LGR	SCE
1	EA	WIRE HARNESS	CON X LENGTH AS REQUIRED			

- The hardware supplier shall coordinate the electrified hardware with all related trades.
- Door normally closed and locked.
- Door may be electrically dogged during business hours.
- Presenting valid credential at reader will retract latchbolt and allow for entry.
- Door always available for free egress.
- Key override available.
- Credentials, reader, and connections to the owner's network provided by access control provider.
- All other work provided by electrical contractor.

Hardware Set #6 – Doors 115, 125

Each PR door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
8	EA	HINGE	5BB1 4.5 X 4.5		626	IVE
2	EA	MANUAL FLUSH BOLT	FB458		626	IVE
1	EA	DUST PROOF STRIKE	DP2		626	IVE
1	EA	STOREROOM LOCK	L9080T 06A		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
2	EA	OH STOP	90S		630	GLY
2	EA	SILENCER	SR64/65 AS REQ		GRY	IVE

Hardware Set #7 – Doors 104

Each SGL door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
4	EA	HINGE	5BB1 4.5 X 4.5		626	IVE
1	EA	PRIVACY LOCK W/ OUTSIDE INDICATOR	L9040 06A L583-363 OS-OCC		626	SCH
1	EA	1461 REG	1461 REG OR PA AS REQ FC		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS ADJUST MOP PLATE HEIGHT AS DICTATED BY OPENING BOTTOM RAIL HEIGHT.		630	IVE
1	EA	WALL STOP	WS406/407CCV		630	IVE
1	EA	GASKETING	188SBK PSA		BK	ZER

Hardware Set #8 – Doors 113, 114, 123, 124

Each SGL door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
4	EA	HINGE	5BB1 4.5 X 4.5		626	IVE
1	EA	OFFICE W/SIM RETRACT	L9056T 06A L583-363		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	WALL STOP	WS406/407CCV		630	IVE
3	EA	SILENCER	SR64/65 AS REQ		GRY	IVE

Hardware Set #9 – Doors 116B

Each SGL door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5		626	IVE
1	EA	CLASSROOM LOCK	L9070T 06A		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4050A REG OR PA AS REQ MC		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CCV		630	IVE
3	EA	SILENCER	SR64/65 AS REQ		GRY	IVE

Hardware Set #09A – Doors 201D, 201E

Each SGL door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
4	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	CLASSROOM LOCK	L9070T 06A		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4050A REG OR PA AS REQ MC		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CCV		630	IVE
1	EA	GASKETING	488FSBK PSA		BK	ZER

Hardware Set #10 – Doors 109A, 109B, 111A, 111B, 121A

Each SGL door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	PIVOT SET	7226 SET		US26D	IVE
1	EA	INTERMEDIATE PIVOT	7226 INT		US26D	IVE
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	L9071T 06A IS-LOC		626	SCH
2	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4050A REG OR PA AS REQ MC		689	LCN
1	EA	WALL STOP	WS406/407CCV		630	IVE
1	EA	SEALS	BY DOOR MANUFACTURER			

- 109B - REPLACE WALL STOP WS406 WITH FLOOR STOP FS410

Hardware Set #11 – Doors 121B

Each SGL door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
4	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	L9071T 06A IS-LOC		626	SCH
2	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4050A REG OR PA AS REQ MC		689	LCN
1	EA	WALL STOP	WS406/407CCV		630	IVE
1	EA	GASKETING	488FSBK PSA		BK	ZER

Hardware Set #12 – Doors 104A, 108A

Each SGL door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
4	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	STOREROOM LOCK	L9080T 06A		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	WALL STOP	WS406/407CCV		630	IVE
3	EA	SILENCER	SR64/65 AS REQ		GRY	IVE

Hardware Set #13 – Doors 103

Each SGL door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	PIVOT SET	7226 SET		US26D	IVE
1	EA	INTERMEDIATE PIVOT	7226 INT		US26D	IVE
1	EA	PASSAGE SET	L9010 06A		626	SCH
1	EA	SURFACE CLOSER	4050A REG OR PA AS REQ MC		689	LCN
1	EA	WALL STOP	WS406/407CCV		630	IVE
1	EA	SEALS	BY DOOR MANUFACTURER			

Hardware Set #14 – Doors 117A

Each SGL door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP		626	IVE
1	EA	CLASSROOM LOCK	L9070T 06A		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4050A REG OR PA AS REQ MC		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CCV		630	IVE
3	EA	SILENCER	SR64/65 AS REQ		GRY	IVE

Hardware Set #15 – Doors 107

Each SGL door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	PIVOT SET	7226 SET		US26D	IVE
1	EA	INTERMEDIATE PIVOT	7226 INT		US26D	IVE
1	EA	CLASSROOM SECURITY W/ INSIDE INDICATOR	L9071T 06A IS-LOC		626	SCH
2	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4050A SCUSH MC		689	LCN
1	EA	SEALS	BY DOOR MANUFACTURER			

Hardware Set #16 – Doors 110A, 120A

Each SGL door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	PIVOT SET	7226 SET		US26D	IVE
1	EA	INTERMEDIATE PIVOT	7226 INT		US26D	IVE
1	EA	FIRE EXIT HARDWARE	98-L-F-06		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4050A SCUSH MC		689	LCN
1	EA	SEALS	BY DOOR MANUFACTURER			

Hardware Set #17 – Doors 101B

Each PR door(s) to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	224HD EPT		628	IVE
2	EA	POWER TRANSFER	EPT10	✓	689	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-9847-EO 24 VDC	✓	626	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-9847-NL-OP 24 VDC	✓	626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
2	EA	90 DEG OFFSET PULL	8190EZHD 12" STD		630-316	IVE

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	SEALS	BY DOOR MANUFACTURER				
1	EA	CREDENTIAL READER	BY OTHERS				
2	EA	DOOR CONTACT	679-05HM			BLK	SCE
1	EA	POWER SUPPLY	PS902 900-2RS 120/240 VAC			LGR	SCE
1	EA	WIRE HARNESS	CON X LENGTH AS REQUIRED				

- The hardware supplier shall coordinate the electrified hardware with all related trades.
- Door normally closed and locked.
- Door may be electrically dogged during business hours.
- Presenting valid credential at reader will retract latchbolt and allow for entry.
- Door always available for free egress.
- Key override available.
- Credentials, reader, and connections to the owner's network provided by access control provider.
- All other work provided by electrical contractor.

END OF SECTION 087100

SECTION 233113 - METAL DUCTS

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. Single-wall rectangular ducts and fittings.
2. Double-wall rectangular ducts and fittings.
3. Single-wall round ducts and fittings.
4. Double-wall round ducts and fittings.
5. Sheet metal materials.
6. Sealants and gaskets.
7. Hangers and supports.
8. Seismic-restraint devices.
9. Duct liner.

B. Related Sections:

1. Section 230593 "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing requirements for metal ducts.
2. Section 233300 "Air Duct Accessories" for dampers, sound-control devices, duct-mounting access doors and panels, turning vanes, and flexible ducts.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Duct Design: Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and performance requirements and design criteria indicated in "Duct Schedule" Article.

B. Structural Performance: Duct hangers and supports and seismic restraints shall withstand the effects of gravity and seismic loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and ASCE/SEI 7. and SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems."

1. Seismic Hazard Level as stated on contract documents.

C. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of the following products:

1. Sealants and gaskets.
2. Seismic-restraint devices.

B. Shop Drawings:
   1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.
   2. Factory- and shop-fabricated ducts and fittings.
   3. Duct layout indicating sizes, configuration, liner material, and static-pressure classes.
   4. Elevation of top of ducts.
   5. Dimensions of main duct runs from building grid lines.
   6. Fittings.
   7. Reinforcement and spacing.
   8. Seam and joint construction.
   9. Penetrations through fire-rated and other partitions.
   10. Equipment installation based on equipment being used on Project.
   11. Locations for duct accessories, including dampers, turning vanes, and access doors and panels.
   12. Hangers and supports, including methods for duct and building attachment, seismic restraints, and vibration isolation.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

   1. Duct installation in congested spaces, indicating coordination with general construction, building components, and other building services. Indicate proposed changes to duct layout.
   2. Suspended ceiling components.
   3. Structural members to which duct will be attached.
   4. Size and location of initial access modules for acoustical tile.
   5. Penetrations of smoke barriers and fire-rated construction.
   6. Items penetrating finished ceiling including the following:

      a. Lighting fixtures.
      b. Air outlets and inlets.
      c. Speakers.
      d. Sprinklers.
      e. Access panels.
      f. Perimeter moldings.

B. Welding certificates.

C. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and System Start-up."

B. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6.4.4 - "HVAC System Construction and Insulation."

PART 2 - PRODUCTS

2.1 SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.
B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.2 DOUBLE-WALL RECTANGULAR DUCTS AND FITTINGS

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

1. McGill AirFlow LLC.
2. Sheet Metal Connectors, Inc.
3. Lindab, Inc.
4. SEMCO Incorporated. 5. Eastern Sheet Metal. 6. Hamlin Sheet Metal.
7. Turn Key Duct Systems.

B. Rectangular Ducts: Fabricate ducts with indicated dimensions for the inner duct.

C. Outer Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.

D. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

E. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct- support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

F. Interstitial Insulation: Flexible elastomeric duct liner complying with ASTM C 534, Type II for sheet materials, and with NFPA 90A or NFPA 90B.

1. Maximum Thermal Conductivity: 0.25 Btu x in./h x sq. ft. x deg F at 75 deg F mean temperature.

G. Inner Duct: Minimum 0.028-inch perforated galvanized sheet steel having 3/32-inch- diameter perforations, with overall open area of 23 percent.

H. Formed-on Transverse Joints (Flanges): Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Traverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

I. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct- support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.3 SINGLE-WALL ROUND DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class unless otherwise indicated.

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

a. Lindab Industries, Inc.
b. McGill AirFlow LLC.
c. SEMCO Incorporated.
d. Sheet Metal Connectors, Inc.
e. Spiral Manufacturing Co., Inc.
f. Eastern Sheet Metal.
g. Hamlin Sheet Metal.
h. Turn Key Duct Systems.

B. Flat-Oval Ducts: Indicated dimensions are the duct width (major dimension) and diameter of the round sides connecting the flat portions of the duct (minor dimension).

C. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Round Duct Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1. Transverse Joints in Ducts Larger Than 60 Inches in Diameter: Flanged.

D. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-2, "Round Duct Longitudinal Seams," for

static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1. Fabricate round ducts larger than 90 inches in diameter with butt-welded longitudinal seams.
2. Fabricate flat-oval ducts larger than 72 inches in width (major dimension) with butt-welded longitudinal seams.

E. Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.4 DOUBLE-WALL ROUND DUCTS AND FITTINGS

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

1. Lindab Inc.
2. McGill AirFlow LLC.
3. SEMCO Incorporated.
4. Sheet Metal Connectors, Inc.
5. Hamlin Sheet Metal.
6. Turn Key Duct Systems.

B. Flat-Oval Ducts: Indicated dimensions are the duct width (major dimension) and diameter of the round sides connecting the flat portions of the duct (minor dimension) of the inner duct.

C. Outer Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on static-pressure class unless otherwise indicated.

1. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Round Duct Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

   a. Transverse Joints in Ducts Larger Than 60 Inches in Diameter: Flanged.

2. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-2, "Round Duct Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

   a. Fabricate round ducts larger than 90 inches in diameter with butt-welded longitudinal seams.
   b. Fabricate flat-oval ducts larger than 72 inches in width (major dimension) with butt-welded longitudinal seams.

3. Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees," for static-pressure class, applicable sealing requirements,

materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

D. Inner Duct: Minimum 0.028-inch perforated galvanized sheet steel having 3/32-inch- diameter perforations, with overall open area of 23 percent.

E. Interstitial Insulation: Flexible elastomeric duct liner complying with ASTM C 534, Type II for sheet materials, and with NFPA 90A or NFPA 90B.

1. Maximum Thermal Conductivity: 0.25 Btu x in./h x sq. ft. x deg F at75 deg F mean temperature.

2.5 SHEET METAL MATERIALS

A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

1. Galvanized Coating Designation: G90.
2. Finishes for Surfaces Exposed to View: Mill phosphatized.

C. Factory- or Shop-Applied Antimicrobial Coating:

1. Apply to the surface of sheet metal that will form the interior surface of the duct. An untreated clear coating shall be applied to the exterior surface.
2. Antimicrobial compound shall be tested for efficacy by an NRTL and registered by the EPA for use in HVAC systems.
3. Coating containing the antimicrobial compound shall have a hardness of 2H, minimum, when tested according to ASTM D 3363.
4. Surface-Burning Characteristics: Maximum flame-spread index of 25 and maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.
5. Shop-Applied Coating Color: Black or White.
6. Antimicrobial coating on sheet metal is not required for duct containing liner treated with antimicrobial coating.

D. Reinforcement Shapes and Plates: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

1. Where black- and galvanized-steel shapes and plates are used to reinforce aluminum ducts, isolate the different metals with butyl rubber, neoprene, or EPDM gasket materials.

E. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.6 DUCT LINER

A. Flexible Elastomeric Duct Liner: Preformed, cellular, closed-cell, sheet materials complying with ASTM C 534, Type II, Grade 1; and with NFPA 90A or NFPA 90B.
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

      a. Aeroflex USA Inc.
      b. Armacell LLC.
      c. K-flex Duct Liner

   2. Surface-Burning Characteristics: Maximum flame-spread index of 25 and maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.
   3. Liner Adhesive: As recommended by insulation manufacturer and complying with NFPA 90A or NFPA 90B.

      a. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
      b. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.7 SEALANT AND GASKETS

A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.

B. Two-Part Tape Sealing System:

   1. Tape: Woven cotton fiber impregnated with mineral gypsum and modified acrylic/silicone activator to react exothermically with tape to form hard, durable, airtight seal.
   2. Tape Width: 4 inches.
   3. Sealant: Modified styrene acrylic.
   4. Water resistant.
   5. Mold and mildew resistant.
   6. Maximum Static-Pressure Class: 10-inch wg , positive and negative.
   7. Service: Indoor and outdoor.
   8. Service Temperature: Minus 40 to plus 200 deg F .
   9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum.

C. Water-Based Joint and Seam Sealant:

   1. Application Method: Brush on.
   2. Solids Content: Minimum 65 percent.
   3. Shore A Hardness: Minimum 20.
   4. Water resistant.
   5. Mold and mildew resistant.
   6. VOC: Maximum 75 g/L (less water).
   7. Maximum Static-Pressure Class: 10-inch wg , positive and negative.
   8. Service: Indoor or outdoor.

9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.

D. Solvent-Based Joint and Seam Sealant:

1. Application Method: Brush on.
2. Base: Synthetic rubber resin.
3. Solvent: Toluene and heptane.
4. Solids Content: Minimum 60 percent.
5. Shore A Hardness: Minimum 60.
6. Water resistant.
7. Mold and mildew resistant.
8. Maximum Static-Pressure Class: 10-inch wg , positive or negative.
9. Service: Indoor or outdoor.
10. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.

E. Flanged Joint Sealant: Comply with ASTM C 920.

1. General: Single-component, acid-curing, silicone, elastomeric.
2. Type: S.
3. Grade: NS.
4. Class: 25.
5. Use: O.

F. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

G. Round Duct Joint O-Ring Seals:

1. Seal shall provide maximum leakage class of 3 cfm/100 sq. ft. at 1-inch wg and shall be rated for 10-inch wg static-pressure class, positive or negative.
2. EPDM O-ring to seal in concave bead in coupling or fitting spigot.
3. Double-lipped, EPDM O-ring seal, mechanically fastened to factory-fabricated couplings and fitting spigots.

2.8 HANGERS AND SUPPORTS

A. Hanger Rods for Corrosive Environments: Stainless steel all-thread rods, nuts, bolts, and washers Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."

B. Steel Cables for Galvanized-Steel Ducts: Galvanized steel complying with ASTM A 603.

C. Steel Cables for Stainless-Steel Ducts: Stainless steel complying with ASTM A 492.

D. Steel Cable End Connections: Cadmium-plated steel assemblies with brackets, swivel, and bolts designed for duct hanger service; with an automatic-locking and clamping device.

E. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.

F. Trapeze and Riser Supports:

1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.

2. Supports for Stainless-Steel Ducts: Stainless-steel shapes and plates.
3. Supports for Aluminum Ducts: Aluminum or galvanized steel coated with zinc chromate.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings.

B. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.

C. Install round ducts in maximum practical lengths.

D. Install ducts with fewest possible joints.

E. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.

F. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.

G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.

H. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.

I. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.

J. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.

K. Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers. Comply with requirements in Section 233300 "Air Duct Accessories" for fire and smoke dampers.

L. Protect duct interiors from moisture, construction debris and dust, and other foreign materials.

3.2 INSTALLATION OF EXPOSED DUCTWORK

A. Protect ducts exposed in finished spaces from being dented, scratched, or damaged.

B. Trim duct sealants flush with metal. Create a smooth and uniform exposed bead. Do not use two-part tape sealing system.

C. Grind welds to provide smooth surface free of burrs, sharp edges, and weld splatter. When welding stainless steel with a No. 3 or 4 finish, grind the welds flush, polish the exposed welds, and treat the welds to remove discoloration caused by welding.

D. Maintain consistency, symmetry, and uniformity in the arrangement and fabrication of fittings, hangers and supports, duct accessories, and air outlets.

E. Repair or replace damaged sections and finished work that does not comply with these requirements.

F. Prepare for painting.

3.3 DUCT SEALING

A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

B. Seal ducts to the following seal classes according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible":

1. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
2. Outdoor, Supply-Air Ducts: Seal Class A.
3. Outdoor, Exhaust Ducts: Seal Class C.
4. Outdoor, Return-Air Ducts: Seal Class C.
5. Unconditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg and Lower: Seal Class B.
6. Unconditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg : Seal Class A.
7. Unconditioned Space, Exhaust Ducts: Seal Class C.
8. Unconditioned Space, Return-Air Ducts: Seal Class B.
9. Conditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg and Lower: Seal Class C.
10. Conditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg : Seal Class B.
11. Conditioned Space, Exhaust Ducts: Seal Class B.
12. Conditioned Space, Return-Air Ducts: Seal Class C.

3.4 ADDITIONAL INSTALLATION REQUIREMENTS FOR COMMERCIAL KITCHEN HOOD EXHAUST DUCT

A. Install commercial kitchen hood exhaust ducts without dips and traps that may hold grease, and sloped a minimum of 2 percent to drain grease back to the hood.

B. Install fire-rated access panel assemblies at each change in direction and at maximum intervals of 20 feet in horizontal ducts, and at every floor for vertical ducts, or as indicated on Drawings. Locate access panel on top or sides of duct a minimum of 1-1/2 inches from bottom of duct.

C. Do not penetrate fire-rated assemblies except as allowed by applicable building codes and authorities having jurisdiction.

3.5 HANGER AND SUPPORT INSTALLATION

A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."

B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.

1. Where practical, install concrete inserts before placing concrete.

2. Install powder-actuated concrete fasteners after concrete is placed and completely cured.
3. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches thick.
4. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches thick.
5. Do not use powder-actuated concrete fasteners for seismic restraints.

C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1 (Table 5-1M), "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection.

D. Hangers Exposed to View: Threaded rod and angle or channel supports.

E. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet.

F. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

3.6 SEISMIC-RESTRAINT-DEVICE INSTALLATION

A. Install ducts with hangers and braces designed to support the duct and to restrain against seismic forces required by applicable building codes. Comply with requirements indicated in Seismic Specification.

B. Select seismic-restraint devices with capacities adequate to carry present and future static and seismic loads.

C. Install cables so they do not bend across edges of adjacent equipment or building structure.

D. Install cable restraints on ducts that are suspended with vibration isolators.

E. Attachment to Structure: If specific attachment is not indicated, anchor bracing and restraints to structure, to flanges of beams, to upper truss chords of bar joists, or to concrete members.

F. Drilling for and Setting Anchors:

1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcement or embedded items during drilling. Notify the Architect if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
4. Set anchors to manufacturer's recommended torque, using a torque wrench.
5. Install zinc-coated steel anchors for interior applications and stainless-steel anchors for applications exposed to weather.

3.7 CONNECTIONS

A. Make connections to equipment with flexible connectors complying with Section 233300 "Air Duct Accessories."

B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.8 PAINTING

A. Paint interior of metal ducts that are visible through louvers and that do not have duct liner. Apply one coat of flat, black, latex paint over a compatible galvanized-steel primer. Paint materials and application requirements are specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

3.9 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Leakage Tests:

1. Comply with SMACNA's "HVAC Air Duct Leakage Test Manual." Submit a test report for each test.
2. Test the following systems:

    a. All new ductwork.

3. Disassemble, reassemble, and seal segments of systems to accommodate leakage testing and for compliance with test requirements.
4. Test for leaks before applying external insulation.
5. Conduct tests at static pressures equal to maximum design pressure of system or section being tested. If static-pressure classes are not indicated, test system at maximum system design pressure. Do not pressurize systems above maximum design operating pressure.
6. Give five days' advance notice for testing.

C. Duct System Cleanliness Tests:

1. Visually inspect duct system to ensure that no visible contaminants are present.

D. Duct system will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

3.10 START UP

A. Air Balance: Comply with requirements in Section 230593 "Testing, Adjusting, and Balancing for HVAC."

3.11 DUCT SCHEDULE

A. Fabricate ducts with galvanized sheet steel except as otherwise indicated and as follows:

B. Ductwork

3.12 DUCT LINER

A. Duct Liner:

1. Supply, Return, and DOAU Exhaust Air Ducts:

a. 1" thick duct liner in the first 10 feet from unit on supply and return duct unless noted otherwise.
b. Flexible elastomeric, 1 inch thick.

2. Exhaust Air Ducts: Flexible elastomeric, 2 inch thick.
3. Transfer Air Ducts: Flexible elastomeric, 1 inch thick.

3.13

Table 1: Recommended Ductwork Seal Levels by Duct Type (2005 ASHRAE Handbook – Fundamentals)

Duct Location	Supply (less than or equal to 2 in-wg)	Supply (greater than to 2 in-wg)	Exhaust	Return
Outdoors	A	A	A	A
Unconditioned Spaces	B	A	B	B
Conditioned Spaces (concealed ductwork)	C	B	B	C
Conditioned Spaces (exposed ductwork)	A	A	B	B

Table 2: Duct Leakage Classification (2005 ASHRAE Handbook – Fundamentals)

Duct Type	Sealed	Unsealed
Metal (flexible excluded) – Round and flat oval	3	30
Metal – Rectangular (less than or equal to 2 in-wg)	12	48
Metal – Rectangular (greater than 2 in-wg)	6	48
Flexible (metal, aluminum)	8	30

A. Intermediate Reinforcement:

1. Galvanized-Steel Ducts: Galvanized steel.
2. Stainless-Steel Ducts:

a. Exposed to Airstream: Match duct material.
b. Not Exposed to Airstream: Match duct material.

B. Elbow Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."

a. Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
b. Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.

2. Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows." Round Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "Round Duct Elbows."

    a. Minimum Radius-to-Diameter Ratio and Elbow Segments: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 3-1, "Mitered Elbows." Elbows with less than 90-degree change of direction have proportionately fewer segments.

        1) Radius-to Diameter Ratio: 1.5.

    b. Round Elbows, 12 Inches and Smaller in Diameter: Stamped or pleated.
    c. Round Elbows, 14 Inches and Larger in Diameter: Standing seam.

C. Branch Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-6, "Branch Connection."

    a. Rectangular Main to Rectangular Branch: 45-degree entry.
    b. Rectangular Main to Round Branch: Spin in.

2. Round and Flat Oval: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees." Saddle taps are permitted in existing duct.

    a. Velocity (less than 2 in-wg) 1000 fpm or Lower: 90-degree tap.
    b. Velocity 1000 to 1500 fpm : Conical tap.
    c. Velocity 1500 fpm or Higher: 45-degree lateral.

END OF SECTION 233113

SECTION 260536 – CABLE TRAYS FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.1 SUMMARY

A. This section includes the requirements for the following:

B. Provide cable tray system in areas indicated, complete with all supports, fittings and accessories.

C. Furnishing, installation and connection of raceway systems and wiring for the radiology equipment.

1.2 SUBMITTALS

A. Refer to section 260510.

1.3 QUALITY ASSURANCE

A. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for purpose specified and shown

B. The drawings, which constitute a part of these specifications, indicate the general route of the cable tray systems. Data presented on these drawings is as accurate as preliminary surveys and planning can determine until final equipment selection is made. Accuracy is not guaranteed and field verification of all dimensions, routing, etc., is required by the contractor.

C. Drawings are for assistance and guidance, but exact routing, locations, distances and levels will be governed by actual field conditions. Contractor is directed to make field surveys as part of his work prior to submitting system layout drawings.

PART 2 - PRODUCTS

2.1 WIRE BASKET STYLE CABLE TRAY

A. Acceptable manufacturers, contingent upon compliance with the contract documents, are as listed below. Bidders shall carefully review the requirements listed in the technical specifications and only submit products that are equal or better. Equal products by other manufacturers are acceptable providing substitutions are submitted in accordance with requirements listed in the “Instructions to Bidders” and “Supplemental Instructions to Bidders” (AIA A701) and approved by the A/E. Bidders shall carefully review the front end documents (AIA A701) and submit all information required to allow the A/E the ability to make a fully informed decision.

1. Basis of design manufacturers

    a. Mono-Systems, Inc.
    b. Atlas
    c. B-line

B. Wire basket shall be made of high strength steel wires and formed into a standard 2 inch by 4 inch wire mesh pattern with intersecting wires welded together. All mesh sections must have at least one bottom longitudinal wire along entire length of straight section.

C. Wire basket shall have a 2 inch usable loading depth by 12 inches wide.

PART 3 - EXECUTION

3.1 LAYOUT

A. Layout of cable tray is the responsibility of the Contractor. Coordinate location with building structure and other trades to ensure that the tray is readily accessible. Tray shall not be installed more than 18" above ceilings, without written permission by the Architect.

B. Provide sufficient space encompassing wire basket to permit access for installing and maintaining cables.

3.2 INSTALLATION

A. Provide all connector assemblies, clamp assemblies, connector plates, splice plates and splice bars, and mounting hardware required for a compete system.

B. Splice Connectors: Sections of tray shall be joined using a two bolt rectangular splice connector which telescopes into the spine of the tray. Splice connectors shall allow for thermal expansion/contraction of the tray system.

C. Supporting: The tray shall be supported on 12-foot centers, maximum.

D. Bracing and Leveling: Brace trays on intervals required to prevent lateral movement. After installation of cables by other trades, adjust supports and braces so that tray is level.

E. Trough-type raceway sections and cable tray sections shall be made electrically continuous by short bonding jumpers between adjacent sections.

F. Ground all cable tray and trough.

G. Fittings: All fittings, inserts, covers, couplings, connectors and other accessories required to effect a complete rigid mechanical installation shall be provided and shall be listed as suitable for use with cable tray.

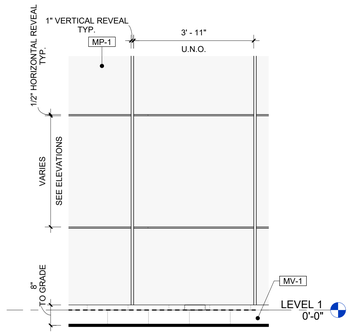
H. Bushings: Provide conduit bushings and bond to ground, attached to tray, to accommodate conduit sleeves terminated at tray or trough. Conduits shall be supported within 6" of tray, independent of tray supports.

I. Cable tray and trough loading: Provide cross-section of cable tray for every wing/area to show proposed location/spacing of cables. Layout of cables in tray is the contractor's responsibility. Maintain required spacing between cables of different systems while leaving room for the future installation of 25% additional cables.

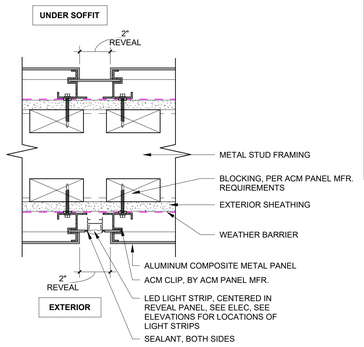
END OF SECTION 260536

THIS SHEET PLOTS ON 22" x 34" ANSI D

3" 2" 1" 1/2" 0



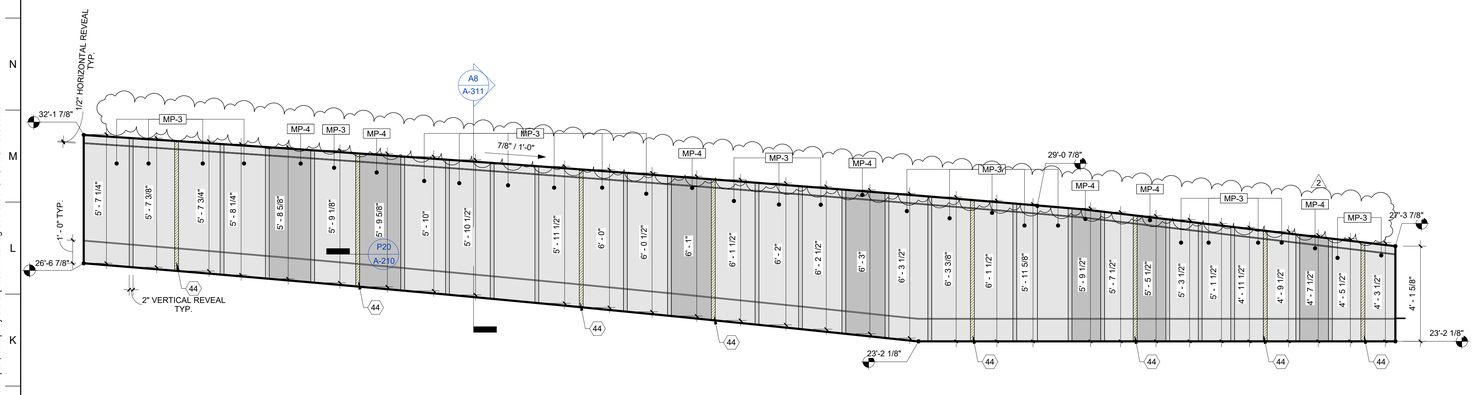
P14 A-210 DETAIL - TYPICAL METAL PANEL REVEAL ELEVATION
1/2" = 1'-0"
0 1 5 FT



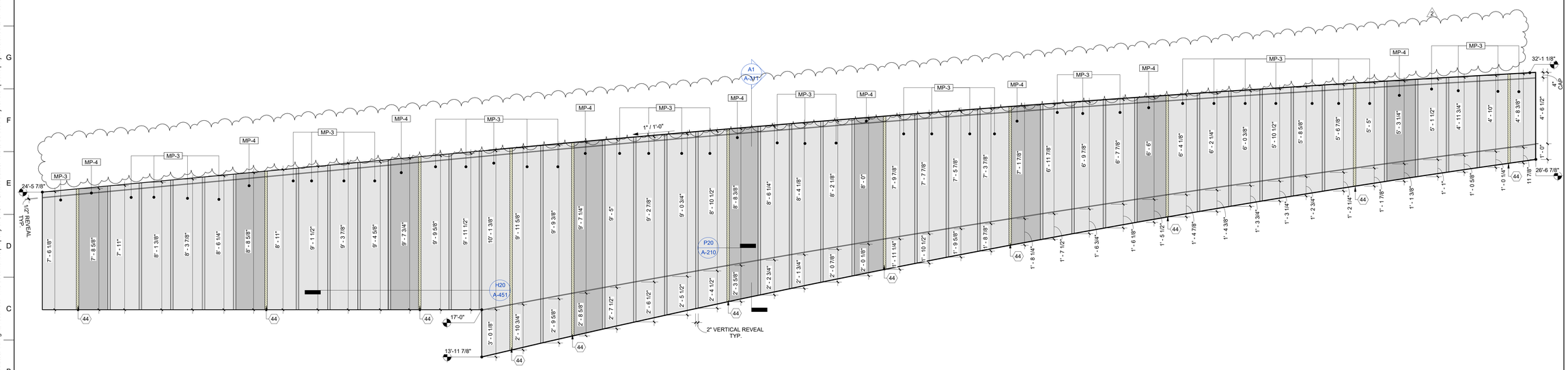
P20 A-210 PLAN DETAIL - CANOPY PANEL AT VERTICAL REVEAL
3" = 1'-0"
0 3 6 9 12 IN

EXTERIOR MATERIAL AND FINISH SCHEDULE

MATERIAL TAG	MATERIAL TYPE	MANUFACTURER	PRODUCT MODEL	FINISH
CW-1	CURTAIN WALL	YKK OR SIMILAR	YHC300	ANODIZED ALUMINUM
CW-2	CURTAIN WALL	YKK OR SIMILAR	YHC300	ANODIZED ALUMINUM
DS-1	6" x 6" ALUMINUM DOWNSPOUT			ANODIZED ALUMINUM
MP-1	ACM PANEL	ALUCOBOND	ALUCOBOND PLUS	SLATE GRAY
MP-2	BOX RIB METAL PANEL	PAC-CLAD OR SIM.	BOX RIB 1	CITY SCAPE
MP-3	ACM PANEL	ALUCOBOND	ALUCOBOND PLUS	BONE WHITE
MP-4	ACM PANEL	ALUCOBOND	ALUCOBOND PLUS	MOONSTONE METALLIC
MP-5	ACM PANEL	PAC-CLAD OR SIM.	PAC 3000-RS	GOLDEN MAPLE
MV-1	PREFABRICATION THIN MASONRY	BASIS OF DESIGN	ARRIS-CLIP RENAISSANCE UNITS	TO BE SELECTED
RF-1	MEMBRANE ROOF			WHITE
SM-1	SPLITFACE MASONRY	OLDCASTLE - ECHELON MASONRY	MONDRIAN STONE	GRAY GRANITE



2 A-210 LOBBY ROOF CANOPY - EAST ELEVATION
3/8" = 1'-0"
0 5 FT



1 A-210 LOBBY ROOF CANOPY - SOUTH ELEVATION
3/8" = 1'-0"
0 5 FT

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STATE OF SOUTH CAROLINA
GREGORY T. McFARLAND
MYRTLE BEACH, S.C.
5047
REGISTERED ARCHITECT

09-11-2025

OWNER
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H59-6255-CB
HGTC MARINE TECHNOLOGY INSTITUTE OF SOUTH CAROLINA
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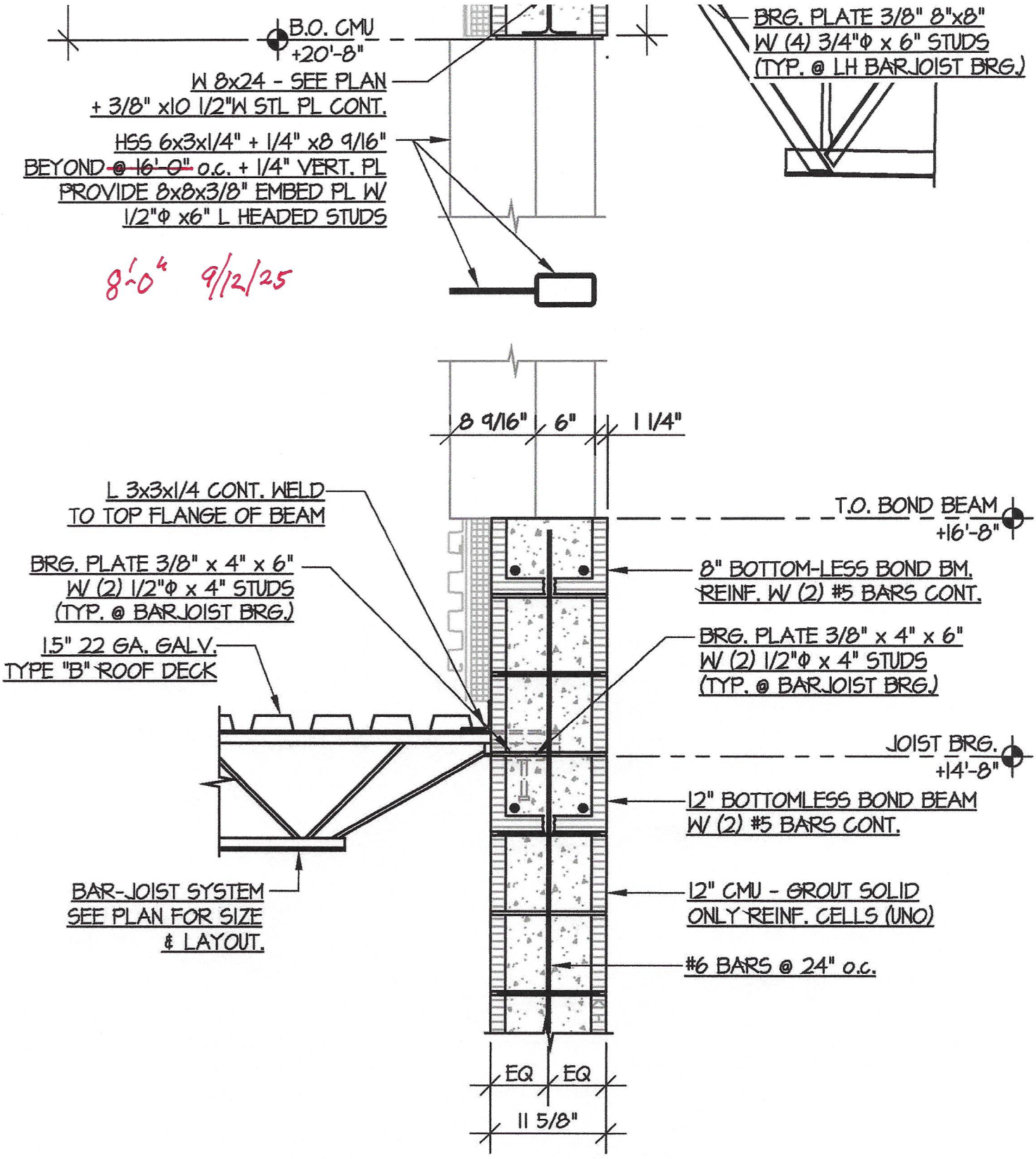
NO.	DATE	DESCRIPTION
		ISSUANCE
2	2025-09-11	BID ADDENDUM #2
0	2025-05-19	OSE COMMENTS
B	2025-03-21	CONSTRUCTION DOCUMENTS
A	2024-12-13	DESIGN DEVELOPMENT

PROJECT NUMBER
2024-202
DRAWN: Author
CHECKED: Checker

SHEET TITLE
EXTERIOR DETAILS

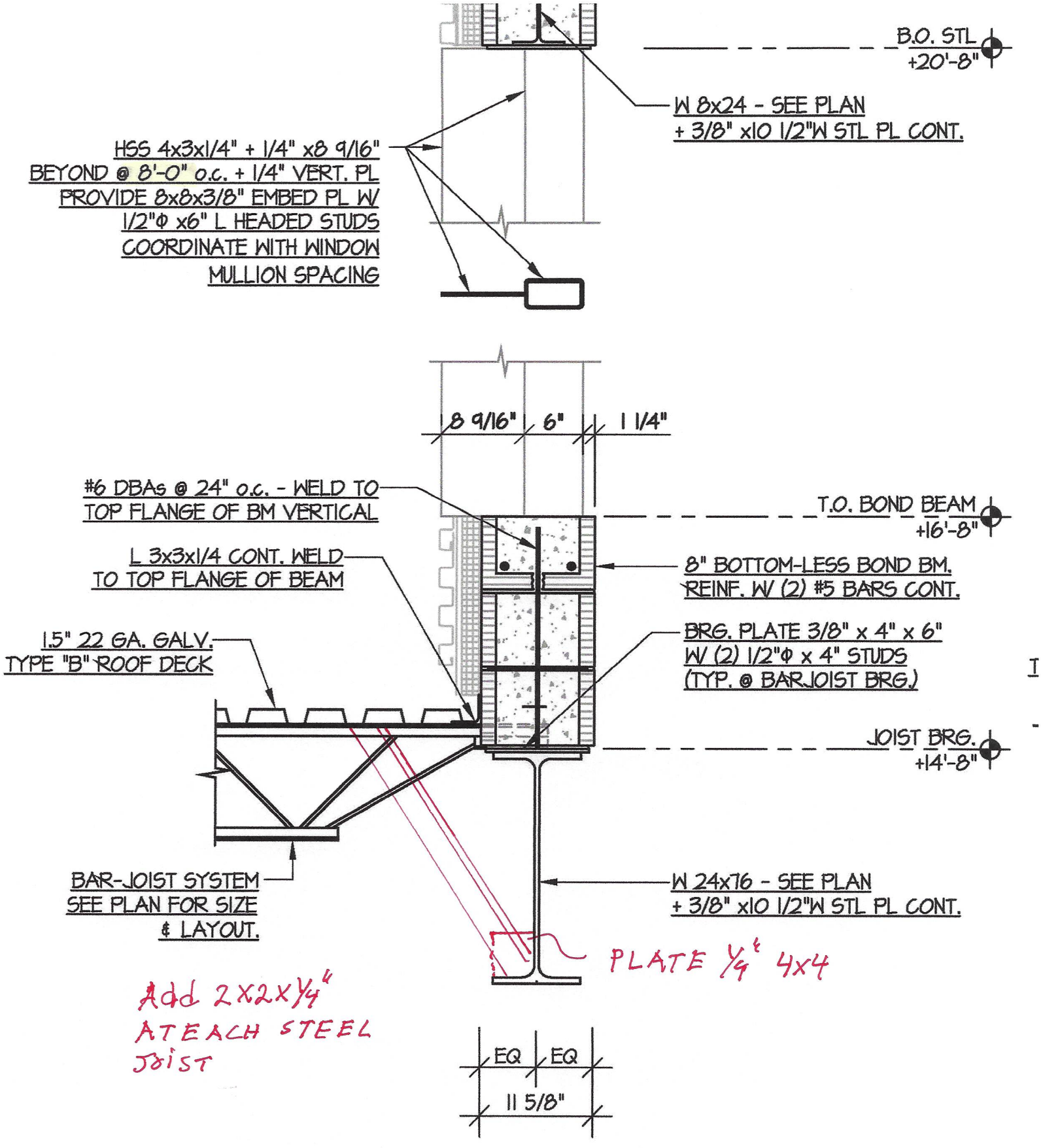
SHEET NO.
A-210



SECTION

SCALE == 3/4" = 1'-0"

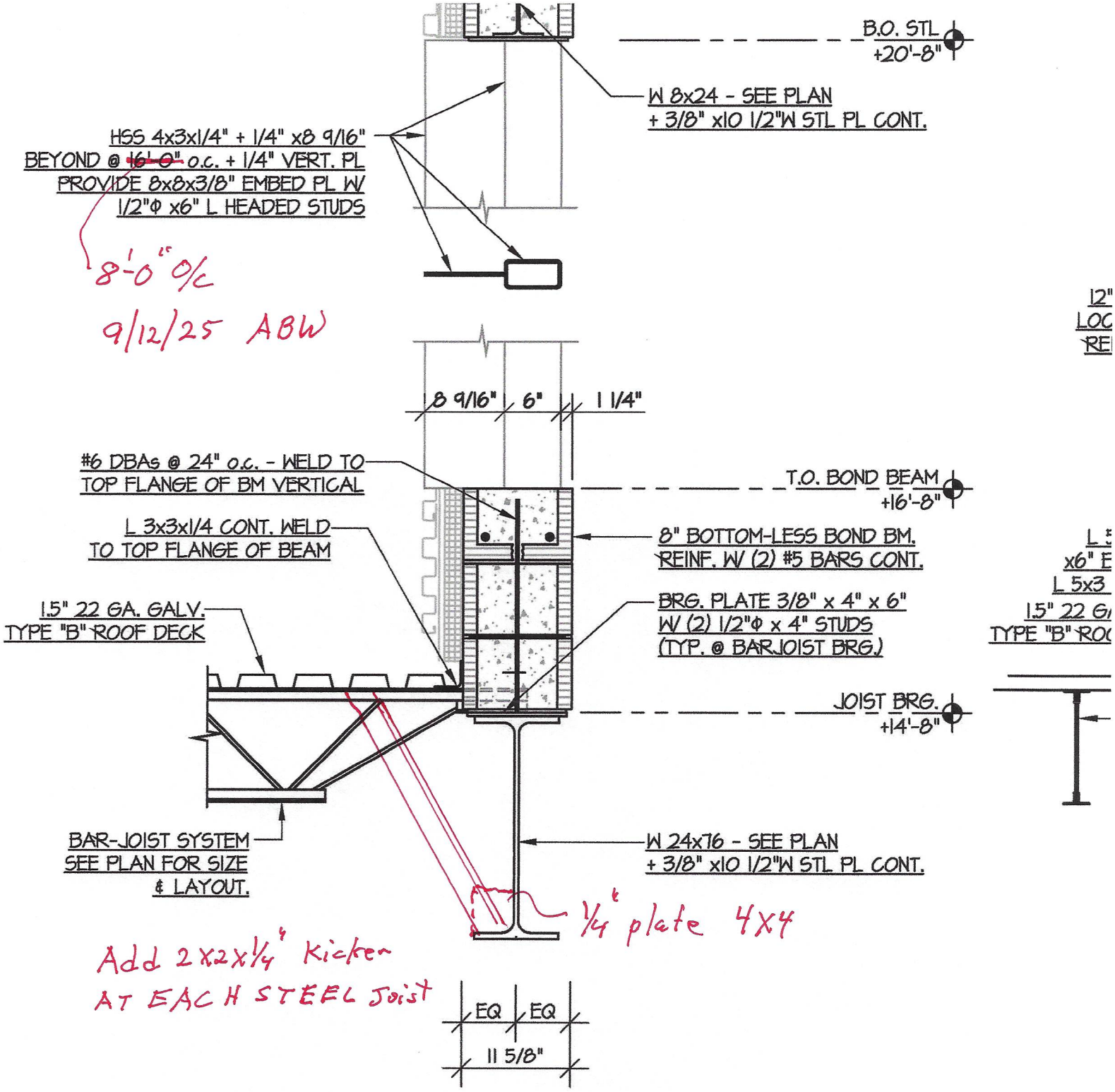
2
S404



SECTION

SCALE == 3/4" = 1'-0"

6
S402



SECTION

SCALE == 3/4" = 1'-0"

6
S403

THIS SHEET PLOTS ON 30" x 42" ANSI E1

3" 2" 1" 1/2" 0

UPDATED USGS DATUM

LIMITS OF CONSTRUCTION

PROPERTY LINE

COVERED CONCRETE PICNIC AREA

NEW MARINE TECHNOLOGY BUILDING (FFE: 40.04')

CONTAMINATION STORAGE (FFE: 39.94')

ENLARGEMENT SEE SHEET L101

WET POND

TOP OF POND

ASPHALT

CONCRETE

PAINTED STRIPES (TYPICAL)

CONCRETE CURB & GUTTER (TYPICAL)

HGTC SIGN

ELECTRIC OUTLET

OLD CONCRETE

SOUTH FRASER STREET (U.S. HWY 17) 150' R/W

01-01 01-02 QTY: 3 01-03 01-04 01-05 TYPICAL 01-06 QTY: 3 01-07 01-08 01-09 01-10 01-11 01-12 01-13 01-14 COORDINATE W/ ELEC. QTY: 6 01-15 COORDINATE W/ ELEC. 01-16 01-17

REFERENCE NOTES SCHEDULE		
CODE	DESCRIPTION	DETAIL
01 GENERAL		
01-01	DUMPSTER ENCLOSURE	ARCH
01-02	BACKED BENCH	D/L301
01-03	TRASH / RECYCLE RECEPTACLE – DETAIL A & B	L301
01-04	PERMEABLE PAVERS (PARKING)	A/L302
01-05	BOLLARDS	CIVIL
01-06	SEAT WALL (CAST IN PLACE)	C/L301
01-07	EXISTING MONUMENT SIGN TO REMAIN	
01-08	NEW LIGHT POLE LOCATION	ELEC
01-09	EXISTING LIGHT POLE	ELEC
01-10	EXISTING POWER POLE	ELEC
01-11	EXISTING BACKFLOW HOUSING BOX TO REMAIN	CIVIL
01-12	NEW FIRE HYDRANT	CIVIL
01-13	TEMPORARY WOOD SIGN TO BE REMOVED AND REPLACED BY NEW SITE CONSTRUCTION SIGN	BY OWNER
01-14	DECORATIVE BOLLARD	F/L301
01-15	POND AERATOR / FOUNTAIN	C/L302
01-16	PERMEABLE PAVERS (PLAZA)	E/L301
01-17	18" CHIP SLATE BAND WITH STEEL EDGING	B/L302

*ELECTRICAL SITE NOTE
COORDINATION WITH ELECTRICAL FOR NEW POWER POLES LOCATIONS IS CURRENTLY STILL UNDER DESIGN AND MAY CHANGE FINAL LANDSCAPE DESIGN.

HORIZONTAL SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

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ADC PROJECT # 24077.00

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION ADC ENGINEERING INC. No. 00253

SOUTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 01-21-25 No. 999 HARRISON P. SUTER

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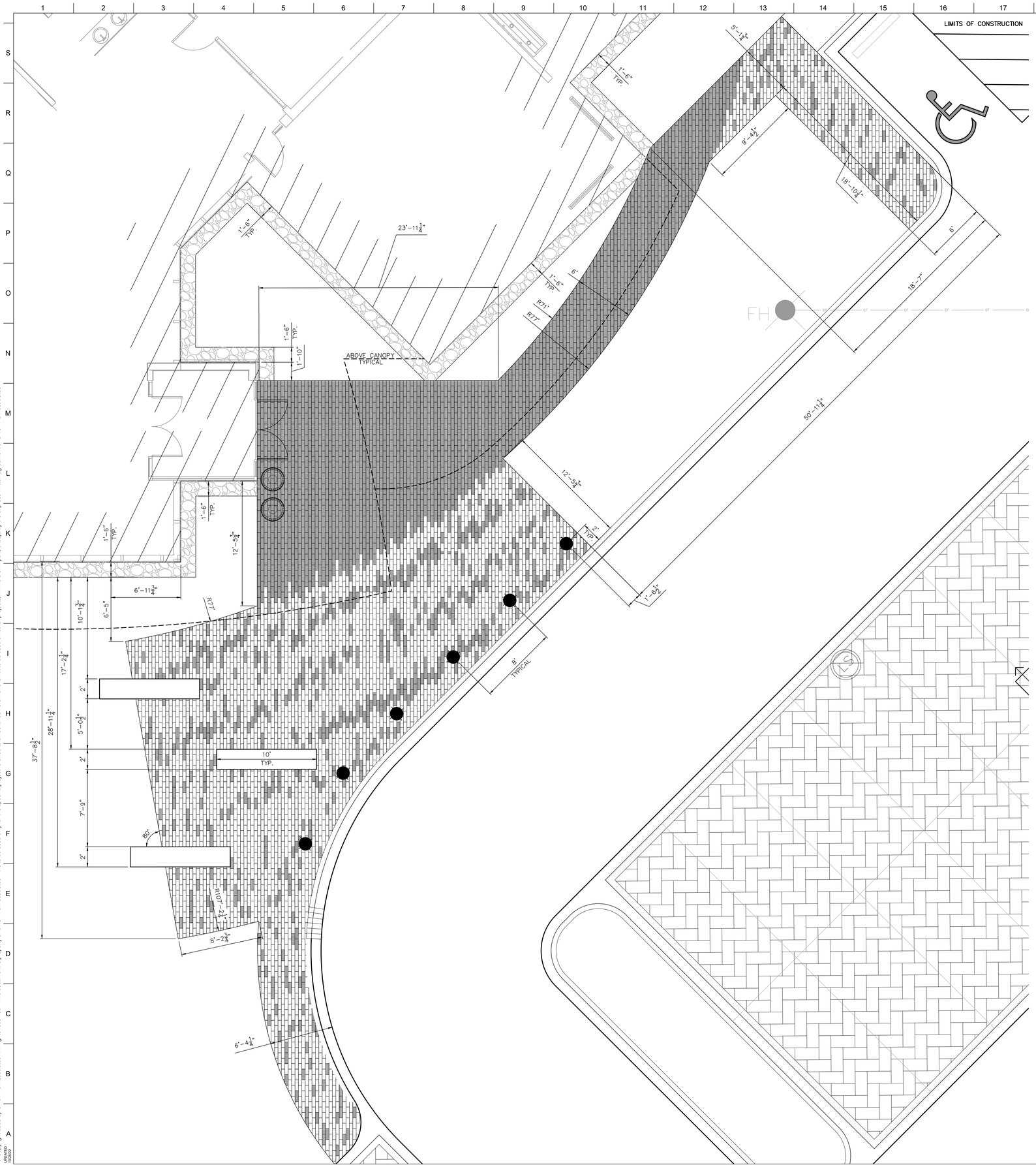
NO.	DATE	DESCRIPTION
1	9/10/25	ADDENDUM REVISION
ISSUANCE		

PROJECT NUMBER
2024-202
DRAWN: JRZ
CHECKED: RWH

SHEET TITLE
LANDSCAPE SITE PLAN

SHEET NO.
L-100

THIS SHEET PLOTS ON 30" x 42" ANSI E1



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01-06	SEAT WALL (CAST IN PLACE)	C/L301
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01-08	NEW LIGHT POLE LOCATION	ELEC
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01-10	EXISTING POWER POLE	ELEC
01-11	EXISTING BACKFLOW HOUSING BOX TO REMAIN	CIVIL
01-12	NEW FIRE HYDRANT	CIVIL
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01-14	DECORATIVE BOLLARD	F/L301
01-15	POND AERATOR / FOUNTAIN	C/L302
01-16	PERMEABLE PAVERS (PLAZA)	E/L301
01-17	18" CHIP SLATE BAND WITH STEEL EDGING	B/L302

PAVER COLOR TABLE

COLOR 1: CHARCOAL	
COLOR 2: BATTERY GREY	

SCALE
4 0 2 4 8 16
(IN FEET)
1 inch = 4 ft.

UPDATED 10/9/25

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ADC PROJECT # 24077.00

SOUTH CAROLINA ADC ENGINEERING INC. No. 00253 CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA LANDSCAPE ARCHITECTURE 01-21-25 No. 999 HARRISON P. SLATER

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GEORGETOWN, SC 29440

HORRY GEORGETOWN TECHNICAL COLLEGE

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HGTC MARINE TECHNOLOGY INSTITUTE OF SOUTH CAROLINA
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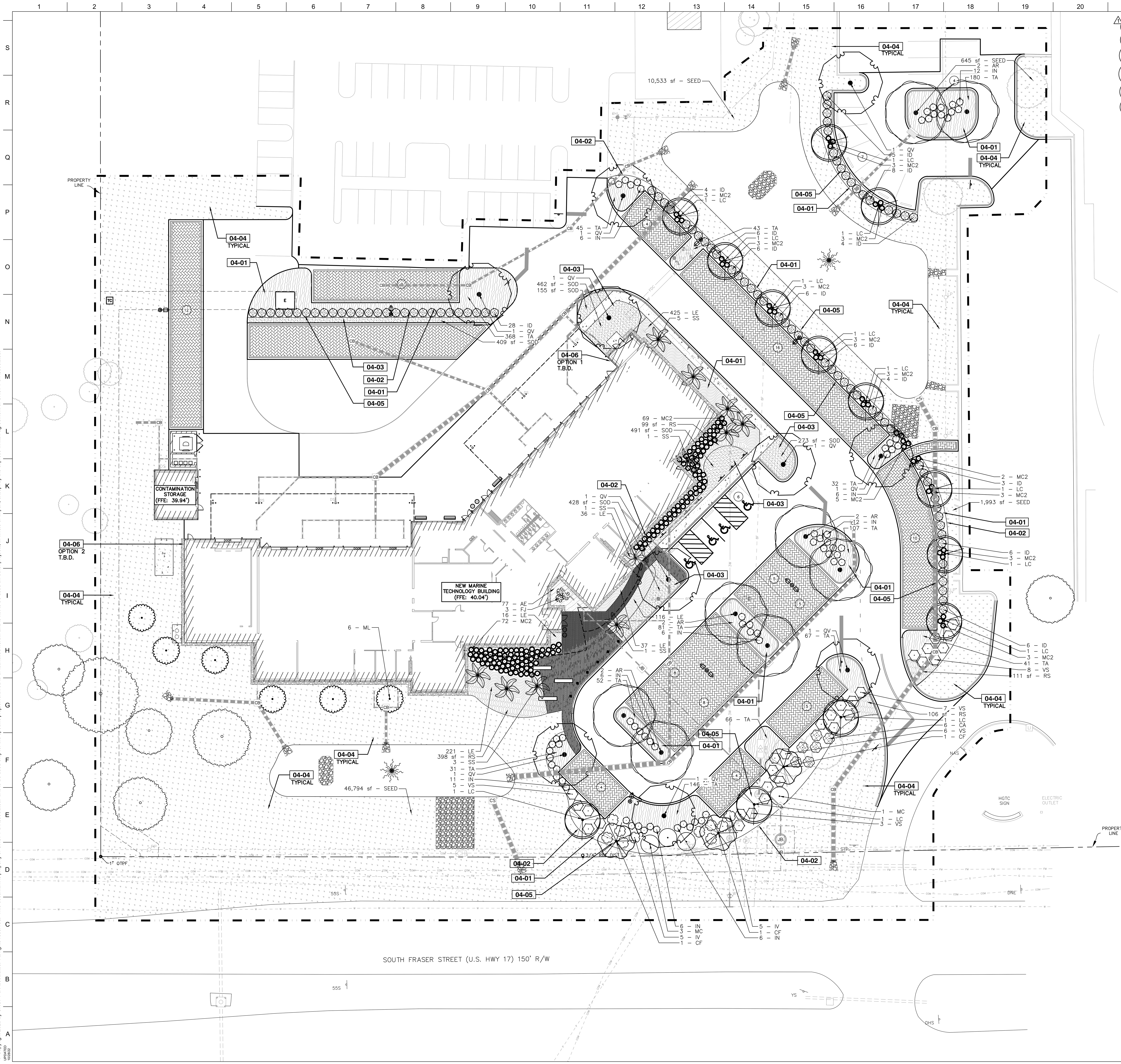
GEORGETOWN, SC 29440

NO.	DATE	DESCRIPTION
1	9/10/25	ADDENDUM REVISION
ISSUANCE		

PROJECT NUMBER
2024-202
DRAWN: JRZ
CHECKED: RWH

SHEET TITLE
ENLARGED PLAZA LAYOUT PLAN

SHEET NO.
L-101



THIS SHEET PLOTS ON 30" x 42" ANSI E1

REFERENCE NOTES SCHEDULE		
CODE	DESCRIPTION	DETAIL
04 LANDSCAPE		
04-01	3" DEPTH MULCH ALL PLANT BEDS TYPICAL	
04-02	TRENCHED EDGE TYPICAL	
04-03	SOD AREA	
04-04	SEED DISTURBED AREA	
04-05	BUFFERED PARKING LOT PLANTINGS	
04-06	FUTURE WEATHER PROOF IRRIGATION CONTROLLER LOCATION T.B.D.	BY OTHERS

MINIMUM PLANT SIZE REQUIREMENTS

PLANT MATERIAL	PLANTING WITHIN BUFFER AREA	OTHER PLANTING
CANOPY TREE – SINGLE–STEM – MULTI–STEM	1.5–2 INCH CALIPER 8 FEET HIGH	1.5–2 INCH CALIPER 8 FEET HIGH
UNDERSTORY TREE	6 FEET HIGH	1.5–2 INCH CALIPER 8 FEET HIGH
EVERGREEN/CONIFER	3 FEET HIGH	1.5–2 INCH CALIPER 8 FEET HIGH
SHRUB – DECIDUOUS – EVEGREEN	15 INCHES HIGH 12 INCHES HIGH	24 INCHES HIGH 18 INCHES HIGN

*REFERENCE: CHART 1, ARTICLE XII, SECTION 1201.8, BUFFER REQUIREMENTS

REQUIRED PLANT MATERIALS FOR INTERIOR PARKING AREAS

THERE SHALL BE A SUFFICENT NUMBER OF CANOPY TREES IN AND AROUND THE PARKING AREA SO THAT NO PARKING SPACE SHALL BE FURTHER THAN 50 FEET FROM THE TRUNK OF A SHADE TREE OR FARTHER THAN 75 FEET FROM TWO OR MORE SHADE TREES.
*REFERENCE: ARTICLE XII, SECTION 1203.2

EACH LANDSCAPE PENNINSULA OR ISLAND SHALL CONTAIN A MINIMUM OF ONE CANOPY TREE WITH A DBH OF 2 INCHES OR GREATER AND A MINIMUM HEIGHT OF 10 FEET, SURROUNDED BY AT LEAST 60 SQUARE FEET OF CONTINUOUS PERVIOUS LAND AREA. LOW–BRANCHING TREES SHALL BE AVOIDED SO AS NOT TO RESTRICT VISIBILITY.
*REFERENCE: ARTICLE XII, SECTION 1203.201

SHRUBS SHALL ACCOMPANY TREES WITHIN THE PENISULA OR ISLAND AND BE 15 INCHES IN HEIGHT AT THE TIME OF PLANTING, PROJECTED TO REACH A HEIGHT OF 24 INCHES AT MATURITY. THE NUMBER OF SHRUBS REQUIRED SHALL EQUAL 12 THREE–GALLON SHRUBS OR 6 SEVEN–GALLON SHRUBS FOR EVERY 150 SQUARE FEET OF SURFACE AREA;GROUPING OR CLUSTERING IS ADVISED
*REFERENCE: ARTICLE XII, SECTION 1203.202

LANDSCAPE STRIP AROUND PARKING AREAS

A MINIMUM 15' LANDSCAPE STRIP SHALL BE REQUIRED ALONG THE EXTERIOR OF ALL PARKING AREAS/MODULES. PLANTING SCHEDULE SHALL BE IN ACCORDANCE WITH A TYPE ONE BUFFER AS DESCRIBED IN SECTION 1209, CHART 3.
*REFERENCE: ARTICLE XII, SECTION 1203.3

BUFFER REQUIREMENT AROUND PARKING AREAS

TYPE	BUFFER AREA WIDTH	REQUIRED PLANT UNITS PER 100' LF
(1)	FIFTEEN (15) FEET	2 CANOPY TREES 2 UNDERSTORY TREES 4 EVERGREEN/CONIFERS 4 SHRUBS (***)

(***) 50% OF REQUIRED PLANTING SHALL BE OF AN EVERGREEN VARIETY.
*REFERENCE: CHART 3, ARTICLE XII, SECTION 1209

PERCENTAGE OF INTERIOR PARKING AREA PLANTING

TOTAL AREA OF PARKING LOT		PERCENTAGE OF INTERIOR PLANTING REQUIREMENT
0–49,999	SQ. FT.	5%
50,000–149,999	SQ. FT.	8%
150,000 OR LARGER	SQ. FT.	10%
PROPOSED AREA = 48,258.6	SQ. FT.	@ 5% = 2,413 SQ. FT.
PROPOSED INTERIOR LANDSCAPE AREA =		5,500 SQ. FT.

*REFERENCE: ARTICLE XII, SECTION 1203.1

*ELECTRICAL SITE NOTE
COORDINATION WITH ELECTRICAL FOR NEW POWER POLES LOCATIONS AND LIGHT POLES IS CURRENTLY STILL UNDER DESIGN AND MAY CHANGE FINAL LANDSCAPE DESIGN.

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ADC PROJECT # 24077.00

SOUTH CAROLINA ADC ENGINEERING INC. No. 00253 CERTIFICATE OF AUTHORIZATION

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GEORGETOWN, SC 29440

H59-6255-CB
HGTC MARINE TECHNOLOGY INSTITUTE OF SOUTH CAROLINA
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NO.	DATE	DESCRIPTION
1	9/10/25	ADDENDUM REVISION

ISSUANCE

PROJECT NUMBER
2024-202
DRAWN: JRZ
CHECKED: RWH

SHEET TITLE
LANDSCAPE PLANTING PLAN

SHEET NO.
L-200

THIS SHEET PLOTS ON 30" x 42" ANSI E1

OTTERBINE BAREBO, INC.

EQUAL TO OR BETTER

PHOENIX AERATING FOUNTAIN

3HP 460V 3PH 60HZ

MODEL: The aerator shall be a floating, surface spray aerator with a dual spray pattern; a geyser type center spray surrounded by a fan shaped pattern.

LOW VOLTAGE LED LIGHT SYSTEM

4 LIGHTS PER UNIT (6.5W LED)
LIGHT COLOR WHITE
COORDINATE ALL FOUNTAIN INSTALLATION WITH MEP

C POND AERATOR/FOUNTAIN – BASIS OF DESIGN
NOT TO SCALE

PHOENIX AERATING FOUNTAIN
SPECIFICATIONS
3HP 460V 3PH 60HZ

www.otterbine.com/phoenix

CADdetails

MODEL: The aerator shall be a floating, surface spray aerator with a dual spray pattern; a geyser type center spray surrounded by a fan shaped pattern.

Spray dimensions for the upper pattern are: 15 feet (4.6m) in height, and 3 feet (91cm) in diameter. Spray dimensions for the lower pattern are: 9 feet (2.7m) in height, and 28 feet (8.5m) in diameter.

PUMPING CAPACITIES: The primary pumping rate of the unit is 275 GPM (1 m3/hr) and the secondary or induced circulation rate is 2750 GPM (10.4 m3/hr).

FLOAT: The float shall be made of seamless, one-piece high-density polyethylene plastic, filled with high density closed cell polyurethane foam. The float shall be capable of providing full floatation if the shell is punctured or cracked. The float shall have protective pockets for lights and handles molded into the bottom for easy handling. Metal floats or those with an internal void for additional ballast are not acceptable.

☐ **FIXED FOUNTAIN STAND:** When selected the fixed fountain stand will replace the Float. The Fixed Fountain Stand shall be manufactured out of 316 stainless steel, with 304 stainless steel hardware and is designed with adjustable legs that can be used in depths between 22in to 30in (56cm to 76cm). Each stand will be supplied with rubber pads on each leg to be used with solid/mason type bottom applications, where rubber pads are to be removed for earth bottoms.

IMPELLER: The impeller shall be balanced and investment cast from types 304/CF8 stainless steel. A type 304 stainless steel bolt and set-screw shall secure the impeller to the motor shaft. Flexible shaft couplings are not acceptable.

MOTOR: The motor shall be a 3HP, 460 volt, 3 phase, 60 HZ oil-cooled, submersible motor operating at 3450 RPM or 50 Hz operates at 2875 RPM. The motor shaft exposed to water shall be 316 stainless steel. The service factor shall be 1.15 except for 5HP 1Ph which shall be 1.00. The motor shall operate in a reservoir of Otterbine oil for continuous lubrication of bearings and for efficient transfer of heat through the motor housing wall. Top mounted motors and water-lubricated motors are not acceptable. The rotor shall be dynamically balanced. The winding (stator) wires shall be covered with class F rated insulation designed for complete immersion in oil. The motor shall be attached to a thermoplastic motor base plate. The motor shall be protected against oil and water leakage by a combination of rotary seals, stationary seals, and molded rubber "O" rings. Motor shall be serviceable.

MOTOR HOUSING: The external motor housing shall be a canister formed from deep drawn 316 stainless steel. The motor base plate shall be constructed of 420 Valox thermoplastic. A Valox boss will provide support and protection for the male electrical connector.

FASTENERS: All fasteners are to be metric and stainless steel.

ELECTRICAL CONNECTORS: The electrical connectors shall consist of a receptacle and a plug constructed of non-conductive polymers. The system shall create a vacuum seal when connected and have a threaded nut system as a backup. The plug shall have a keyway and be threaded into the motor base plate. The connector system shall be UL recognized.

UNDERWATER POWER CABLE: The power cables shall be type SOOW specifically designed for underwater use. The conductors shall be flexible, stranded bare copper 12, 10 or 8-gauge The outer jacket of the cable shall be a black

CPE material. All underwater connections shall be vulcanized. Power cable shall be able to be furnished in unspliced lengths up to one thousand feet (305m) if necessary.

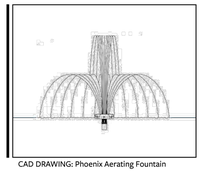
POWER CONTROL CENTER: The electrical components shall be mounted in a NEMA 4X rated enclosure with an externally mounted disconnect switch, and a HAND - OFF - AUTO selector switch. The electrical system for all units (115, 208-230, 380-415 & 460V) shall include a non-reversing 600V rated contactor, thermal overload relay, short circuit protection, and 24hr timer. All units shall include 5mA trip level ground fault protection. To operate the ground fault protection and control circuit on 208-230 volt systems a neutral must be present. The electrical system shall include a lightning arrester, rated for a maximum of 100,000 amperes discharge.

TESTING: A. Safety - Unit must be tested by ETL, ETL-C, UL or other accredited testing facilities. B.PCC (Power Control Center) must conform to UL508A and be built in a UL508A certified panel shop. Performance - Unit must have independent performance testing provided by the University of Minnesota.

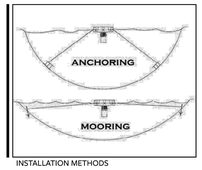
WARRANTY: The warranty shall be five years.

ACCEPTABLE MANUFACTURER: This unit shall be an OTTERBINE Phoenix Aerating Fountain manufactured by OTTERBINE BAREBO, INC., 3840 MAIN ROAD EAST, EMMAUS, PA 18049 U.S.A. PH: (610) 965-6018. WEB: www.otterbine.com

☑ **OPTIONAL LIGHT PACKAGE:** Unit to include manufacturer's suggested light package, see additional specification form.



CAD DRAWING: Phoenix Aerating Fountain



INSTALLATION METHODS

Best method T.B.D. on-site

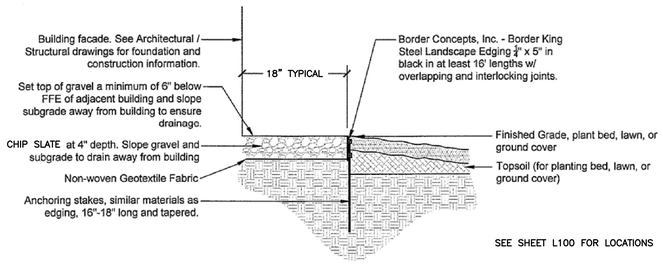
MODEL: PHOENIX AERATING FOUNTAIN

Motor	HP	Spray Height ft (m)	Spray Diameter ft (m)	Pumping Rate* GPM (m³/hr)	Electrical Rating	Running Amps	Maximum Cable Gauge/Length (*Additional cable options may be available) 12AWG/4mm²	10AWG/6mm²	8AWG/10mm²	Shipping Weight**
3450RPM @ 60Hz	1	UPPER: 8ft LOWER: 4ft	UPPER 2ft LOWER: 14ft	150 GPM	115V 1Ph	15		150ft	250ft	150lbs
					208/230V 1Ph	8.3/7.5	300/375ft	500/600ft	800/975ft	
	2	UPPER: 11ft LOWER: 6ft	UPPER 2ft LOWER: 20ft	210 GPM	208/230V 1Ph	13.7/12.4	175/225ft	300/375ft	475/575ft	150lbs
	3	UPPER: 15ft LOWER: 9ft	UPPER 3ft LOWER: 28ft	275 GPM	208/230V 1Ph	15.5/14.		250/325ft	425/525ft	155lbs
					208/230V 3Ph	9.7/8.6		500/625ft	800/975ft	
					460V 3Ph	4.3	1000ft			
	5	UPPER: 18ft LOWER: 10ft	UPPER 3ft LOWER: 34ft	400 GPM	230V 1Ph	23			300ft	160lbs
					208/230V 3Ph	15.1/13.4	200/250ft	300/400ft	500/625ft	
					460V 3Ph	7.2	925ft	1000ft		

*Induced Circulation is 10X the Pumping Rate. ** Shipping weights are estimates and include unit, power control center and 50ft (15m) of cable. Minimum Operating Depths: Floating Fountain is 30in (75cm); Fixed Fountain Stand is 22in (56cm). 415V and 575V units available upon request. *Spray performance and pumping rates are approximate and may vary due to voltage, elevation and relative humidity.* Specifications are subject to change.

Product Specifications:
LOW VOLTAGE LED LIGHT SYSTEM

Lights (6.5W LED)	2*	2	4	6	8**
Amp Draw	.15	0.18	.35	0.53	0.7
Output Electrical Rating	12VDC	13VDC	13VDC	13VDC	13VDC
Lamp Wattage (Total)	13	13	26	39	52
Max Cable Run (16/2)	150ft (46m)	650ft (198m)	325ft (99m)	215ft (65m)	325ft (99m)
Max Cable Run (12/3)	300ft (91m)	1000ft (305m)	700ft (213m)	525ft (160m)	700ft (213m)



B CHIP SLATE BAND DETAIL
NOT TO SCALE

UPDATED 10/9/25

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ADC PROJECT # 24077.00

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION ADC ENGINEERING INC. No. 00253

SOUTH CAROLINA LANDSCAPE ARCHITECTURE HARRISON P. SLATER 01-21-25 No. 995

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NO.	DATE	DESCRIPTION
1	9/10/25	ADDENDUM REVISION
ISSUANCE		

PROJECT NUMBER
2024-202
DRAWN: JRZ
CHECKED: RWH

SHEET TITLE
SITE CONSTRUCTION DETAILS

SHEET NO.
L-302

THIS SHEET PLOTS ON 22" x 34" ANSI D

3" 2" 1" 1/2" 0

PLUMBING SYSTEMS SEISMIC AND WIND REQUIREMENTS

PER IBC-2021/ASCE 7-16

A. PER THE 2021 INTERNATIONAL BUILDING CODE, MECHANICAL, PLUMBING AND ELECTRICAL EQUIPMENT AND COMPONENTS, INCLUDING THEIR SUPPORTS AND ATTACHMENTS, SHALL BE DESIGNED FOR SEISMIC FORCES IN ACCORDANCE WITH CHAPTER 13 OF ASCE 7.
B. EXTERIOR EQUIPMENT (INCLUDING ROOF CURBS, RAILS, SUPPORTS) EXPOSED TO WIND SHALL BE DESIGNED AND INSTALLED TO RESIST THE WIND PRESSURES DETERMINED IN ACCORDANCE WITH CHAPTER 26 TO 29 OF ASCE 7.
C. WHERE DESIGN FOR SEISMIC AND WIND LOADS IS REQUIRED, THE MORE DEMANDING FORCE MUST BE USED.
D. REFERENCE THE STRUCTURAL DRAWINGS FOR SITE SPECIFIC INFORMATION ON SEISMIC DESIGN CATEGORY, WIND SPEEDS, ETC.
E. USE THE TABLE BELOW TO DETERMINE SEISMIC RESTRAINT REQUIREMENTS FOR EACH COMPONENT.
F. FOR ALL COMPONENTS REQUIRING SEISMIC RESTRAINT, THE COMPONENT SUPPORTS AND ATTACHMENTS SHALL BE DESIGNED BY A REGISTERED DESIGN PROFESSIONAL REGISTERED IN THE STATE THE JOB IS LOCATED. SUBMITTALS MUST INCLUDE STAMPED AND SIGNED DRAWINGS AND CALCULATIONS.
G. WHERE SEISMIC RESTRAINT IS REQUIRED, HOUSEKEEPING PADS NEEDED FOR THE INSTALLATION OF EQUIPMENT UNDER THIS CONTRACT MUST BE DESIGNED BY THE SEISMIC ENGINEER. DO NOT POUR ANY HOUSEKEEPING PADS PRIOR TO THE RECEIPT OF THE APPROVED SEISMIC SUBMITTAL.
H. SEISMIC RESTRAINTS FOR DUCTWORK, PIPING, CONDUIT, CABLE TRAYS AND BUS DUCT MUST BE SHOWN ON LAYOUT DRAWINGS SHOWING SPECIFIC RESTRAINT LOCATIONS ALONG WITH ACCOMPANYING DETAILS AND CALCULATIONS.

PLUMBING COMPONENT IMPORTANCE FACTOR (Ip) DESIGNATION

Ip = 1.0	Ip = 1.5
• ALL PLUMBING COMPONENTS EXCEPT AS LISTED UNDER Ip = 1.5	• NATURAL GAS PIPING & APPURTENANCES

SEISMIC DESIGN CATEGORIES D,E,F

	COMPONENT IMPORTANCE FACTOR (Ip)			
	1.0		1.5	
COMPONENT IDENTIFICATION	SEISMIC RESTRAINT REQUIREMENT	NOTES	SEISMIC RESTRAINT REQUIREMENT	NOTES
ROOF MOUNTED	RESTRAIN ALL	1	RESTRAIN ALL	-
FLOOR MOUNTED	RESTRAIN ALL	1, 2	RESTRAIN ALL	-
WALL MOUNTED	RESTRAIN ALL	1, 2	RESTRAIN ALL	-
COMPONENT SUPPORTS	RESTRAIN ALL	1	RESTRAIN ALL	-
SUSPENDED EQUIPMENT	RESTRAIN ALL	3	RESTRAIN ALL	3
SUSPENDED DUCTILE PIPING (STEEL, ALUMINUM, COPPER, ETC.)	>3"	4	>1"	4
SUSPENDED NON DUCTILE PIPING (CAST IRON, PLASTIC, CERAMIC)	RESTRAIN ALL	4	RESTRAIN ALL	4
SUSPENDED PIPE ON TRAPEZE	RESTRAIN IF ANY PIPE ON TRAPEZE > 3" RESTRAIN IF TOTAL WEIGHT OF PIPES ON TRAPEZE > 10	4	RESTRAIN IF ANY PIPE ON TRAPEZE > 1" RESTRAIN IF TOTAL WEIGHT OF PIPES ON TRAPEZE > 10	4
COMPONENT CERTIFICATION (SEE NOTE 6)	NOT REQUIRED	5	REQUIRED	5

NOTES:
1. EQUIPMENT 20 LBS. OR LESS IS EXEMPT IF THE COMPONENT IS POSITIVELY ATTACHED TO THE STRUCTURE AND FLEXIBLE CONNECTIONS ARE PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT.
2. RESTRAINTS ARE NOT REQUIRED IF THE COMPONENT WEIGHS 400 LBS. OR LESS, IS MOUNTED WITH THE CENTER OF MASS LOCATED AT 4 FT. OR LESS ABOVE A FLOOR, IS POSITIVELY ATTACHED TO THE STRUCTURE AND HAS FLEXIBLE CONNECTIONS BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT.
3. FLEXIBLE CONNECTIONS REQUIRED FOR PIPE CONNECTIONS ONLY.
4. RESTRAINT IS NOT REQUIRED IF THE PIPING / DUCTWORK IS SUPPORTED BY HANGERS AND EACH HANGER IN THE PIPING RUN IS 12 IN. OR LESS IN LENGTH FROM THE TOP OF THE PIPE TO THE SUPPORTING STRUCTURE. WHERE PIPES ARE SUPPORTED ON A TRAPEZE, THE TRAPEZE SHALL BE SUPPORTED BY HANGERS HAVING A LENGTH OF 12 IN. OR LESS. WHERE ROD HANGERS ARE USED, THEY SHALL BE EQUIPPED WITH SWIVELS, EYE NUTS OR OTHER DEVICES TO PREVENT BENDING IN THE ROD.
5. ALL DUCTWORK , REGARDLESS OF SIZE, DESIGNED TO CARRY TOXIC, HIGHLY TOXIC, OR EXPLOSIVE GASES OR USED FOR SMOKE CONTROL MUST BE RESTRAINED.
6. COMPONENT CERTIFICATION MUST BE SUPPLIED BY THE EQUIPMENT MANUFACTURER AT TIME OF SUBMITTAL FOR REVIEW BY ENGINEER OF RECORD.

GENERAL PLUMBING NOTES

1. PROVIDE ALL MATERIALS AND LABOR NECESSARY FOR A COMPLETE PLUMBING SYSTEM.
2. DO NOT SCALE DRAWINGS. OBTAIN ROUGH-IN DIMENSIONS FROM ARCHITECTURAL DRAWINGS OR FROM MANUFACTURERS PRINTED INSTRUCTIONS AND RECOMMENDATIONS ONLY.
3. COORDINATE PLUMBING SYSTEMS WITH ALL TRADES TO AVOID CONFLICTS PRIOR TO INSTALLATION OF PLUMBING COMPONENTS.
4. WHENEVER THE WORD "PROVIDE" IS USED, IT SHALL MEAN FURNISH AND INSTALL COMPLETE AND READY FOR USE.
5. UNLESS OTHERWISE SHOWN OR NOTED, ALL PIPING SHALL BE RUN CONCEALED IN WALLS, CHASES AND/OR ABOVE CEILINGS.
6. ALL SUSPENDED PIPING SHALL BE SUPPORTED FROM BUILDING STRUCTURAL MEMBERS. IN NO CASE SHALL PIPING BE SUSPENDED FROM FLOOR OR ROOF DECK.
7. WHERE PIPES PENETRATE FIRE RATED ASSEMBLIES, SEAL OPENING AROUND PIPES WITH U.L. LISTED FIRE STOPPING MATERIAL TO MAINTAIN THE FIRE RATING OF THE ASSEMBLY.
8. PROVIDE INSULATION FOR PIPING COLLECTING CONDENSATE DRAIN.
9. PROVIDE HANGERS AND SUPPORTS WITHIN 12" OF EACH HORIZONTAL ELBOW FOR SANITARY AND VENT PIPING.
10. PROVIDE A TEMPERATURE LIMITING DEVICE CONFORMING TO ASSE 1070 AT EACH LAVATORY, HAND WASHING SINK, OR ANY FIXTURE WITH A SENSOR FAUCET TO DELIVER 105°F WATER, UNLESS OTHERWISE NOTED. PROVIDE WATTS LFUSG-B FOR INDIVIDUAL LAVATORIES OR WATTS LFMMV FOR GROUPS OF LAVATORIES, OR APPROVED EQUALS.

PLUMBING CODES AND STANDARDS (WITH ALL SOUTH CAROLINA MODIFICATIONS)

CODE	DESCRIPTION
IBC (2021)	INTERNATIONAL BUILDING CODE
IECC (2009)	INTERNATIONAL ENERGY CONSERVATION CODE
IFGC (2021)	INTERNATIONAL FUEL GAS CODE
IPC (2021)	INTERNATIONAL PLUMBING CODE

PLUMBING ABBREVIATIONS

ABBR	DESCRIPTION
A/C	ABOVE CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
BFP	BACKFLOW PREVENTER
C	DOMESTIC COLD WATER SUPPLY
CFM	CUBIC FEET PER MINUTE
CV	CONCENTRIC VENT
DIA	DIAMETER
DS	DRY TYPE FIRE SPRINKLER PIPING
F/A	FROM ABOVE
FCO	FLOOR CLEANOUT
FT	FEET
G	GREASE/KITCHEN WASTE
GPF	GALLON PER FLUSH
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
H	DOMESTIC HOT WATER SUPPLY
HA	HAMMER ARRESTOR
HB	HOSE BIBB
HCP	HOT WATER RECIRCULATING PUMP
HR	DOMESTIC HOT WATER RETURN
IN WG	INCHES WATER GUAGE
OF	SECONDARY STORM
OFO	OVERFLOW OUTLET
P	PROPANE
PC	PLUMBING CONTRACTOR
S	SANITARY/WASTE PIPING
ST	STORM
TP	TRAP PRIMER
U/G	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
V	VENT PIPING
VAC	VACUUM
VTR	VENT THRU ROOF
WCO	WALL CLEANOUT
WH	WATER HEATER

PLUMBING SYMBOL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
BFP	BACKFLOW PREVENTER		CONNECTION TO EXISTING SYSTEM
	FLOW CONTROL		CONTROL VALVE
	PRESSURE REDUCING VALVE		BALANCING VALVE
	SWING CHECK VALVE		ISOLATION VALVE
	PLUG VALVE		SOLENOID VALVE
	PIPE UP		PIPE DOWN
	PIPE REDUCER		PIPE STRAIGHT TEE
	PIPE TEE DOWN	FCO	FLOOR CLEANOUT
	HOSE BIBB - INTERIOR, EXTERIOR	FD	FLOOR DRAIN WITH FLOOR SLOPED TO DRAIN
VTR	VENT THRU ROOF		TRAP PRIMER

PLUMBING PIPING LEGEND

———	SANITARY AND WASTE PIPING
- - - - - - - - - - - -	VENT PIPING
——— – ———	DOMESTIC COLD WATER PIPING
——— – – ———	DOMESTIC HOT/TEMPERED WATER PIPING
——— – – – ———	DOMESTIC HOT/TEMPERED WATER RETURN PIPING
——— · ——— · ———	NATURAL GAS PIPING
———	STORM PIPING
———	SECONDARY STORM PIPING

HAMMER ARRESTOR SCHEDULE

UNIT I.D.	PDI UNIT	FIXTURE UNIT	MANUFACTURER
HA	A	1-11	JOSAM 75000 OR EQUIVALENT ZURN, SMITH
HA	B	12-32	JOSAM 75000 OR EQUIVALENT ZURN, SMITH
HA	C	33-60	JOSAM 75000 OR EQUIVALENT ZURN, SMITH
HA	D	61-113	JOSAM 75000 OR EQUIVALENT ZURN, SMITH
HA	E	114-154	JOSAM 75000 OR EQUIVALENT ZURN, SMITH

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE TYPE	HOT WATER	COLD WATER	WASTE	VENT	BASIS OF DESIGN	MODEL
FD	FLOOR DRAIN	---	1/2" (TP)	3"	2"	ZURN	Z415
P-1	FLOOR MOUNTED WATER CLOSET - BATTERY-POWERED SENSOR FLUSH VALVE - 1.28 GPF	---	1-1/2"	4"	2"	SLOAN	WETS-2000.1420 (1)
P-1A	FLOOR MOUNTED WATER CLOSET - ADA BATTERY-POWERED SENSOR FLUSH VALVE - 1.28 GPF	---	1-1/2"	4"	2"	SLOAN	WETS-2020.1420 (1)
P-2	WALL-HUNG URINAL - BATTERY-POWERED SENSOR FLUSH VALVE - 0.5 GPF	---	3/4"	2"	1-1/2"	SLOAN	WEUS-1005.1423
P-3	UNDERMOUNT LAVATORY - BATTERY-POWERED SENSOR OPERATION - 0.5 GPM	1/2"	1/2"	1-1/2"	1-1/2"	SLOAN BASIN SLOAN FAUCET	SS-3021 EBF-415-BAT-BDT-CP-0.5GPM-MLM-BAA-FCT
P-4	WALL-MOUNTED LAVATORY - BATTERY-POWERED SENSOR OPERATION - 0.5 GPM	1/2"	1/2"	1-1/2"	1-1/2"	SLOAN BASIN SLOAN FAUCET	SS-3106 EBF-415-BAT-BDT-CP-0.5GPM-MLM-BAA-FCT
P-5	BREAK ROOM SINK - 0.5 GPM	1/2"	1/2"	2"	1-1/2"	ELKAY SINK KOHLER FAUCET	ELUH2115PD K-7505-CP
P-6	WASH BASIN	1/2"	1/2"	2"	1-1/2"	ELKAY	EWSF39026SACC
P-7	EMERGENCY SHOWER/EYE/FACE WASH	3/4"	3/4"	2"	1-1/2"	BRADLEY	S19314
P-8	ELETRIC WATER COOLER AND BOTLE FILLING STATION	---	1/2"	1-1/2"	1-1/2"	ELKAY	LZSTL8WSLK
P-9	MOP SINK	1/2"	1/2"	3"	2"	FIAT BASIN CHICAGO FAUCET	TSB200 897-CCP
P-10	NON-FREEZE ROOF HYDRANT	---	1"	---	---	WOODFORD	SRH-MS
P-11	NON-FREEZE WALL HYDRANT	---	3/4"	---	---	ZURN	Z1321XL
P-12	INTERIOR HOSE BIB	---	3/4"	---	---	ZURN	Z1341XL
RD/OD	ROOF DRAIN	---	---	4"	---	ZURN	Z163
TD	TRENCH DRAIN	---	---	4"	---	ZURN	Z664

NOTES:
1. PROVIDE ANGLE STOPS VALVES, SUPPLY TUBING, GRID STRAINERS, ADA OFFSET DRAINS, REMOVABLE P-TRAPS, ESCUTCHEON PLATES, DECK PLATES, CARRIERS, ADA LAVATORY SHIELD COVERS, ETC. FOR A COMPLETE INSTALLATION.
2. PROVIDE ALL REQUIRED ACCESSORIES AND OPTIONS FOR COMPLETE DRAIN INSTALLATIONS. REFER TO ARCHITECTURAL DETAILS FOR ADDITIONAL INFORMATION ON FLOOR AND ROOF CONSTRUCTION.
3. COORDINATE HEIGHT OF FLUSH VALVES AND SUPPLIES THROUGH WALL WITH ADA GRAB BARS PRIOR TO ORDERING. LOCATE FLUSH HANDLE OR MECHANICAL OVERRIDE ON ADA APPROACH SIDE.
4. COORDINATE ROUGH-IN LOCATIONS WITH BASEBOARD SO THAT THE ROUGH-IN AND ESCUTCHEON IS ABOVE THE BASEBOARD WITHOUT CONFLICT.
5. SEE ARCHITECTURAL PLANS FOR HEIGHT AND EXACT LOCATION OF FIXTURES.
6. WATER CLOSETS, URINALS, LAVATORY FAUCETS, AND SINK FAUCET SHALL BE WATERSENSE CERTIFIED.
7. HOT WATER RE-CIRCULATION LINES SHALL BE CONNECTED TO WITHIN 6" OF FIXTURE HOT WATER SUPPLY CONNECTION TO FIXTURES TO MEET GREEN GLOBES REQUIREMENT. WHIPS TO FIXTURES SHALL BE LIMITED TO 6" AND RECIRCULATION CONNECTION SHALL BE DIRECTLY BEHIND ANGLE SUPPLY SHUT-OFFS.
8. ALL FIXTURES SHALL BE WATERSENSE COMPLIANT.

ELECTRIC WATER HEATER SCHEDULE

MARK	STORAGE (GALLONS)	INPUT CAPACITY (kW)	RECOVERY @ 100°F (GPH)	FUEL	BASIS OF DESIGN	MODEL
WH-1	119	24	98	ELEC.	A. O. Smith	DRE-120

NOTES:
1. REFER TO ELECTRICAL DRAWINGS FOR VOLTAGE REQUIREMENTS.
2. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
3. PROVIDE WITH EXPANSION TANK AND DRAIN PAN. REFER TO DETAIL FOR ADDITIONAL INFORMATION.

HOT WATER RECIRCULATING PUMP

MARK	MOTOR SIZE	RATED SPEED RPM	TYPE	BASIS OF DESIGN	MODEL
HCP-1	0.125 hp	3250	ECM CIRCULATOR	XYLEM/BELL & GOSSETT	ECOCIRC XL

NOTES:
1. REFER TO ELECTRICAL DRAWINGS FOR VOLTAGE REQUIREMENTS.
2. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
3. PROVIDE WITH ADJUSTABLE AQUASTAT AND TIMER. REFER TO DETAIL FOR ADDITIONAL INFORMATION.

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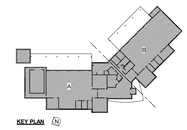


NO.	DATE	DESCRIPTION
1	2025-09-09	BID ADDENDUM #2
0	2025-05-19	OSE COMMENTS
B	2025-03-21	CONSTRUCTION DOCUMENTS
A	2024-12-13	DESIGN DEVELOPMENT

ISSUANCE

PROJECT NUMBER
2024-202

DRAWN: KMM
CHECKED: WDB

SHEET TITLE
PLUMBING SCHEDULES, NOTES & LEGENDS

SHEET NO.
P001

THIS SHEET PLOTS ON 22" x 34" ANSI D

ELECTRICAL SYSTEMS SEISMIC REQUIREMENTS

PER IBC-2021/ASCE 7-16

A. PER THE 2021 INTERNATIONAL BUILDING CODE, MECHANICAL, PLUMBING AND ELECTRICAL EQUIPMENT AND COMPONENTS, INCLUDING THEIR SUPPORTS AND ATTACHMENTS, SHALL BE DESIGNED FOR SEISMIC FORCES IN ACCORDANCE WITH CHAPTER 13 OF ASCE 7.

B. EXTERIOR EQUIPMENT (INCLUDING ROOF CURBS, RAILS, SUPPORTS) EXPOSED TO WIND SHALL BE DESIGNED AND INSTALLED TO RESIST THE WIND PRESSURES DETERMINED IN ACCORDANCE WITH CHAPTER 26 TO 29 OF ASCE 7.

C. WHERE DESIGN FOR SEISMIC AND WIND LOADS IS REQUIRED, THE MORE DEMANDING FORCE MUST BE USED.

D. REFERENCE THE STRUCTURAL DRAWINGS FOR SITE SPECIFIC INFORMATION ON SEISMIC DESIGN CATEGORY, WIND SPEEDS, ETC.

E. USE THE TABLE BELOW TO DETERMINE SEISMIC RESTRAINT REQUIREMENTS FOR EACH COMPONENT.

F. FOR ALL COMPONENTS REQUIRING SEISMIC RESTRAINT, THE COMPONENT SUPPORTS AND ATTACHMENTS SHALL BE DESIGNED BY A REGISTERED DESIGN PROFESSIONAL REGISTERED IN THE STATE THE JOB IS LOCATED. SUBMITTALS MUST INCLUDE STAMPED AND SIGNED DRAWINGS AND CALCULATIONS.

G. WHERE SEISMIC RESTRAINT IS REQUIRED, HOUSEKEEPING PADS NEEDED FOR THE INSTALLATION OF EQUIPMENT UNDER THIS CONTRACT MUST BE DESIGNED BY THE SEISMIC ENGINEER. DO NOT POUR ANY HOUSEKEEPING PADS PRIOR TO THE RECEIPT OF THE APPROVED SEISMIC SUBMITTAL.

H. SEISMIC RESTRAINTS FOR DUCTWORK, PIPING, CONDUIT, CABLE TRAYS AND BUS DUCT MUST BE SHOWN ON LAYOUT DRAWINGS SHOWING SPECIFIC RESTRAINT LOCATIONS ALONG WITH ACCOMPANYING DETAILS AND CALCULATIONS.

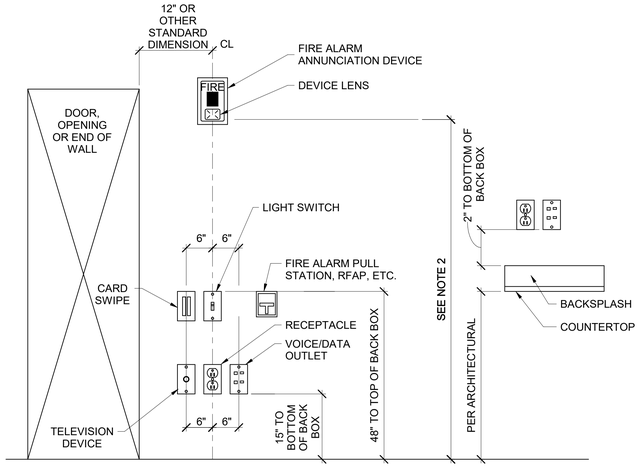
ELECTRICAL COMPONENT IMPORTANCE FACTOR (Ip) DESIGNATION

Ip = 1.0	Ip = 1.5		
• ALL ASSOCIATED ELECTRICAL WORK UNLESS NOTED OTHERWISE	• EMERGENCY LIGHTS	• EXIT LIGHTS	• FIRE ALARM

SEISMIC DESIGN CATEGORIES D,E,F

	COMPONENT IMPORTANCE FACTOR (Ip)			
	1.0		1.5	
COMPONENT IDENTIFICATION	SEISMIC RESTRAINT REQUIREMENT	NOTES	SEISMIC RESTRAINT REQUIREMENT	NOTES
ROOF MOUNTED	RESTRAIN ALL	1	RESTRAIN ALL	-
FLOOR MOUNTED	RESTRAIN ALL	1,2	RESTRAIN ALL	-
WALL MOUNTED	RESTRAIN ALL	1,2	RESTRAIN ALL	-
COMPONENT SUPPORTS	RESTRAIN ALL	1	RESTRAIN ALL	-
SUSPENDED EQUIPMENT	RESTRAIN ALL	1	RESTRAIN ALL	-
SINGLE CONDUIT	RESTRAIN IF > 2.5"	3	RESTRAIN IF > 2.5"	3
CABLE TRAY/BUS DUCT TRAPEZED CONDUIT	DO NOT DELETE ON TRAPEZE >.2.5". RESTRAIN IF TOTAL WEIGHT OF SUSPENDED COMPONENT > 10 LBS/FT	3	RESTRAIN IF ANY CONDUIT ON TRAPEZE >.2.5". RESTRAIN IF TOTAL WEIGHT OF SUSPENDED COMPONENT > 10 LBS/FT	3
COMPONENT CERTIFICATION	NOT REQUIRED	-	REQUIRED	5
PENDANT, LAY-IN AND CAN LIGHTS	REQUIRED	4	REQUIRED	4

NOTES:
1. EQUIPMENT 20 LBS. OR LESS IS EXEMPT IF THE COMPONENT IS POSITIVELY ATTACHED TO THE STRUCTURE AND FLEXIBLE CONNECTIONS ARE PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING AND CONDUIT.
2. RESTRAINTS ARE NOT REQUIRED IF THE COMPONENT WEIGHS 400 LBS. OR LESS, IS MOUNTED WITH THE CENTER MASS AT 4' OR LESS ABOVE A FLOOR, IS POSITIVELY ATTACHED TO THE STRUCTURE, AND HAS FLEXIBLE CONNECTIONS BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING AND CONDUIT.
3. RESTRAINT IS NOT REQUIRED IF THE CONDUIT IS SUPPORTED BY HANGERS AND EACH HANGER IN THE RUN IS 12" IN. OR LESS IN LENGTH FROM THE TOP OF THE PIPE TO THE SUPPORTING STRUCTURE. WHERE PIPES ARE SUPPORTED ON A TRAPEZE, THE TRAPEZE SHALL BE SUPPORTED BY HANGERS HAVING A LENGTH OF 12" IN. OR LESS. WHERE ROD HANGERS ARE USED, THEY SHALL BE EQUIPPED WITH SWIVELS, EYE NUTS OR OTHER DEVICES TO PREVENT BENDING IN THE ROD.
4. THE RESTRAINT OF PENDANT, LAY-IN AND CAN LIGHTS IS ADDRESSED IN ASTM C636 AND E580.
5. COMPONENT CERTIFICATION MUST BE SUPPLIED BY THE EQUIPMENT MANUFACTURER AT TIME OF SUBMITTAL FOR REVIEW BY ENGINEER OF RECORD.



NOTE 1:
DEVICES SHOWN WITHIN 48" OF EACH OTHER ON ALL ELECTRICAL PLANS SHALL BE ALIGNED PER THIS DETAIL. IF DEVICES ARE SHOWN IN MIDDLE OF WALL, THEN CENTER DEVICES ON WALL.

NOTE 2:
MOUNT 80" ABOVE FINISHED FLOOR WHERE POSSIBLE. WHERE CEILING HEIGHTS DO NOT ALLOW THIS HEIGHT, MOUNT 6" BELOW CEILING. WHERE OBSTRUCTIONS DO NOT ALLOW THIS HEIGHT, MOUNT 80" TO 96" ABOVE FINISHED FLOOR. ALL MOUNTING HEIGHTS FOR NOTIFICATION DEVICES SHALL BE MEASURED TO THE BOTTOM OF THE LENS.

1 / E001 DEVICE ALIGNMENT DETAIL
NOT TO SCALE

GENERAL ELECTRICAL NOTES

1. BRANCH CIRCUIT WIRING FOR 20A CIRCUITS SHALL BE SIZED PER WIRE SIZING CHART. WHERE CONDUCTOR AND RACEWAY SIZE ARE SHOWN AT HOMERUN, SUCH SIZE SHALL BE USED FOR THE ENTIRE CIRCUIT. EXCEPTION: FINAL CONNECTION TO DEVICES IN OUTLET BOXES IS NOT REQUIRED TO BE LARGER THAN #12.
2. PRIOR TO ROUGH-IN, COORDINATE THE LOCATION AND MOUNTING HEIGHT OF ALL WALL MOUNTED DEVICES WITH THE ARCHITECTURAL INTERIOR ELEVATIONS AND MILLWORK SHOP DRAWINGS. IN THE EVENT OF A CONFLICT, NOTIFY THE ARCHITECT. MINOR ADJUSTMENTS IN DEVICE LOCATION, SUCH AS 5'-0" IN ANY DIRECTION, SHALL BE DONE AT NO ADDITIONAL COST TO THE OWNER. UNDERCABINET LIGHT FIXTURES, RECEPTACLES AND OTHER DEVICES TO BE MOUNTED INSIDE CABINETS TO BE REVIEWED WITH THE ARCHITECT PRIOR TO ROUGH IN TO CONFIRM THE EXACT LOCATION OF FIXTURES AND DEVICES.
3. COORDINATE THE LOCATION OF ALL FLOOR BOXES WITH THE ARCHITECT PRIOR TO ROUGH IN. ALL FLOOR BOXES SHALL BE INSTALLED TO MAINTAIN THE FIRE RATING OF THE FLOOR. COORDINATE CORE DRILLING HOLES IN FLOOR WITH STRUCTURAL ENGINEER.
4. OUTLET BOXES FOR SWITCHES, RECEPTACLES, ETC. MOUNTED ON OPPOSITE SIDES OF PARTITIONS SHALL NOT BE MOUNTED IN THE SAME WALL CAVITY. SEPARATE WALL PENETRATIONS BY MOUNTING ON OPPOSITE SIDES OF WALL STUDS OR OTHER VERTICAL STRUCTURAL MEMBERS IN THE WALL. WHERE OUTLET BOXES ARE INSTALLED IN A FIRE-RATED PARTITION, INSTALLATION SHALL COMPLY WITH INTERNATIONAL BUILDING CODE 714.4.2.
5. RACEWAYS SHALL BE INSTALLED CONCEALED IN NEW WALL CONSTRUCTION, ABOVE CEILINGS, BELOW FLOOR AND IN OTHER CAVITIES TO THE GREATEST EXTENT POSSIBLE. EXPOSED RACEWAYS MAY BE USED IN UNFINISHED SPACES, WHERE EXPLICITLY NOTED ON PLANS AND WHERE APPROVED BY THE ARCHITECT AND ENGINEER. LAY OUT EXPOSED RACEWAYS TO MINIMIZE THE NUMBER OF VERTICAL RUNS. 1
6. FEEDER CONDUITS AND BRANCH CIRCUITS AND CABLE TRAY SHALL COMPLY WITH DETAILS ON DRAWINGS AND SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES BEFORE AND DURING CONSTRUCTION. COORDINATE THE ROUTING OF UNDERGROUND CONDUCTORS/CONDUITS WITH STRUCTURAL FOOTINGS OF BUILDING.
7. WHERE LIGHT SWITCH AND ABOVE COUNTER RECEPTACLES ARE INDICATED TO BE MOUNTED ADJACENT TO EACH OTHER, THE DEVICES SHALL BE MOUNTED IN THE SAME BOX UNDER A COMMON DEVICE PLATE. IN THE CASE WHERE THE DEVICE VOLTAGES ARE DIFFERENT, PROVIDE A PERMANENT VOLTAGE BARRIER IN THE BOX PER NEC 404.8.B.
8. A FIRESTOP SYSTEM SHALL BE USED TO SEAL ALL PENETRATIONS OF ELECTRICAL CONDUITS AND CABLES THROUGH FIRE-RATED PARTITIONS. THE FIRESTOP SYSTEM SHALL CONSIST OF A FIRE-RATED CAULK TYPE SUBSTANCE AND HIGH TEMPERATURE FIBER INSULATION BY STI OR APPROVED EQUAL. ONLY METAL CONDUIT SHALL BE USED TO PENETRATE FIRE-RATED PARTITIONS. SEE ARCHITECTURAL DRAWINGS FOR ALL LOCATIONS OF FIRE-RATED WALLS.
9. THE USE OF MC CABLE IS ALLOWED ABOVE ACCESSIBLE CEILINGS AND IN STUD CONSTRUCTION ONLY. HOMERUNS TO PANEL SHALL BE WIRE IN RACEWAY ONLY, MC CABLE IS NOT ACCEPTABLE FOR HOMERUNS. MC CABLE IS ONLY ACCEPTABLE FOR 20A BRANCH CIRCUITS.
10. PROVIDE A LISTED EXPANSION/DEFLECTION FITTING FOR ALL CONDUIT CROSSING EXPANSION JOINTS PER NEC 300.4.H. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF EXPANSION JOINTS.
11. WHEREVER THE WORD "PROVIDE" IS USED ON THE ELECTRICAL DRAWINGS, IT SHALL BE INFERRED TO MEAN "FURNISH AND INSTALL", UNLESS NOTED OTHERWISE.
12. THE ARRANGEMENT, GROUPING, AND ROUTING OF BRANCH CIRCUITS SHALL BE PROVIDED AT THE CONTRACTOR'S DISCRETION IN ACCORDANCE WITH GENERALLY ACCEPTED PRACTICE FOR ELECTRICAL WORK, THE NATIONAL ELECTRICAL CODE REQUIREMENTS, LOCAL ORDINANCES, AND THE FOLLOWING: 1 - A COMMON NEUTRAL MAY BE INSTALLED IN A HOMERUN FOR 2 OR 3 BRANCH CIRCUITS ONLY IF A MEANS TO SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS AT THE POINT OF ORIGIN IS PROVIDED PER NEC 210.4.B. 2 - MULTIPLE SINGLE-POLE BRANCH CIRCUITS (UP TO 3 HOTS, 3 NEUTRALS AND 1 GROUND) RATED FOR 30A OR LESS MAY BE PULLED INTO A SINGLE RACEWAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SIZING THE RACEWAYS AND DE-RATING CONDUCTORS PER NEC 310.15. 3 - A GROUND CONDUCTOR SHALL BE PROVIDED IN ALL RACEWAYS UNLESS NOTED OTHERWISE.
13. REFER TO THE ARCHITECTURAL DRAWINGS FOR PROJECT PHASING.
14. PROVIDE A U.L. LISTED LIGHTNING PROTECTION SYSTEM.

GENERAL POWER NOTES

1. PROVIDE UTILITY TRANSFORMER PAD IN ACCORDANCE WITH UTILITY REQUIREMENTS. EXTEND (1) 5" CONDUIT FROM TRANSFORMER TO UTILITY SERVICE POINT. ALL ELBOWS SHALL BE RIGID GALVANIZED STEEL. SEE THE ELECTRICAL SITE PLAN FOR ASSUMED LOCATIONS OF THE TRANSFORMER PAD AND UTILITY SERVICE POINT. COORDINATE EXACT LOCATION WITH THE UTILITY COMPANY. COORDINATE WITH THE UTILITY COMPANY TO PROVIDE A METER ON SERVICE. METER SHALL BE LOCATED PER UTILITY COMPANY REQUIREMENTS. ALL COSTS ASSOCIATED WITH THE UTILITY SERVICE (PAD, PRIMARY CONDUIT, METER, PERMITTING, ETC.) SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. THE GROUND ROD CLUSTER FOR THE SERVICE GROUND SHALL CONSIST OF THREE 3/4" X 10'-0" COPPER CLAD STEEL GROUND RODS. THEY SHALL BE DRIVEN IN A TRIANGULAR CONFIGURATION APPROXIMATELY 20' APART AND INTERCONNECTED IN DELTA WITH A BARE COPPER CONDUCTOR. REFER TO ONE-LINE DIAGRAM FOR GROUNDING ELECTRODE CONDUCTOR SIZE. TOPS OF THE RODS SHALL BE 12" BELOW FINISHED GRADE. CONNECTION TO THE RODS SHALL BE WITH EXOTHERMIC WELDS.
3. STUB OUT AND CAP (2) 4" SPARE CONDUITS FROM THE MAIN SERVICE PANEL TO A MINIMUM OF 10'-0" BEYOND BUILDING SLAB. TERMINATE CONDUITS IN GRASSY AREA AND CAP. PROVIDE LOCATING MEANS AT END OF CONDUIT. LOCATING MEANS SHALL NOT BE VISIBLE ABOVE GRADE.
4. STUB-UP (6) 3/4" SPARE CONDUITS FROM EACH FLUSH MOUNTED PANELBOARD TO ABOVE FINISHED CEILING.
5. PROVIDE NEMA CONFIGURATION RECEPTACLES TO MATCH PLUGS ON EQUIPMENT FURNISHED.
6. PROVIDE 2' GRAY CONDUIT WITH PULL STRINGS 36" BELOW FINISHED GRADE BETWEEN UTILITY PROVIDED POLE MOUNTED LIGHT FIXTURES AND UTILITY TRANSFORMER. COORDINATE POLE LOCATIONS WITH UTILITY. A 90° BEND WITH 36" RADIUS SHALL BE AT THE END OF EACH RUN. STUB UP CONDUIT AT EACH FIXTURE LOCATION. SITE LIGHTING TO BE PROVIDED AND INSTALLED BY UTILITY. COORDINATE LOCATION AND QUANTITY WITH UTILITY. AFTER INSTALLATION, CONDUIT MUST BE INSPECTED AND APPROVED BY UTILITY PRIOR TO BACKFILL. UTILITY PREFERED INSTALLATION FOR POLE MOUNTED SITE LIGHTING IS DIRECT BURY. IF THERE ARE CONDITIONS THAT PREVENT DIRECT BURY OR A LIGHT POLE IS SUBJECT TO DAMAGE (SUCH AS IN THE MIDDLE OF A PARKING LOT), ELECTRICAL CONTRACTOR SHALL PROVIDE A POLE BASE INSTALLED PER UTILITY'S POLE BASE SPECIFICATIONS FOR INSTALLATION. POLE BASES SHALL BE INSPECTED AND APPROVED BY UTILITY PRIOR TO POLE INSTALLATION. LIGHT POLE INSTALLATION SHALL BE PROVIDED BY UTILITY.

GENERAL LIGHTING NOTES

1. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR THE EXACT LOCATION OF ALL CEILING MOUNTED LIGHTING FIXTURES. REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING DETAILS OF LIGHT FIXTURE TO ACOUSTICAL CEILING SYSTEM AND STRUCTURE.
2. EXACT LOCATIONS OF LIGHTING FIXTURES IN MECHANICAL SPACES SHALL BE DETERMINED IN THE FIELD. DO NOT SUPPORT FIXTURES FROM DUCT OR PIPING. PROVIDE CHAIN OR TRAPEZE-TYPE HANGERS WHERE FIXTURES CANNOT BE MOUNTED DIRECTLY TO CEILING.
3. LIGHTING FIXTURE CATALOG NUMBERS ARE INDICATIVE OF THE STYLE OF FIXTURE REQUIRED. CONTRACTOR SHALL PROVIDE FIXTURES WITH THE PROPER TRIM, VOLTAGE AND OPTIONS NECESSARY FOR INSTALLATION.
4. DOUBLE-FACED EXIT FIXTURES SHALL BE OF THE SAME MANUFACTURER AND SERIES AS THE SINGLE-FACED EXIT FIXTURES.
5. REGARDLESS OF CATALOG NUMBER INDICATED IN SCHEDULE, PROVIDE BATTERY BACK-UP FOR ALL FIXTURES INDICATED ON THE DRAWINGS TO BE EMERGENCY TYPE.
6. REGARDLESS OF HOW NOTED ON PLANS, ALL EMERGENCY LIGHTING FIXTURES INDICATED IN PRIVATE SPACES SHALL BE WIRED SO AS TO BE SWITCHED "ON/OFF" WITHOUT OPERATING THE EMERGENCY BATTERY BACK-UP. ALL EMERGENCY LIGHTING FIXTURES INDICATED IN PUBLIC SPACES OR MEANS OF EGRESS (CORRIDORS, LOBBIES, BATHROOMS, ETC.) SHALL BE WIRED AHEAD OF LOCAL SWITCH AS A NIGHT LIGHT AND SHALL NOT BE SWITCHED. EMERGENCY BATTERY BACK-UP SHALL NOT BE ACTIVATED UNLESS A LOSS OF NORMAL BUILDING POWER OCCURS.
7. REGARDLESS OF CATALOG NUMBER INDICATED IN SCHEDULE, ALL EXIT SIGNS AND EMERGENCY LIGHTING UNITS SHALL BE PROVIDED WITH BATTERY BACK-UP, SHALL BE WIRED AHEAD OF LOCAL SWITCH AND SHALL NOT BE SWITCHED.

GENERAL FIRST RESPONDER RADIO SYSTEM NOTES

1. PROVIDE AN IN-BUILDING PUBLIC SAFETY RADIO ENHANCEMENT SYSTEM PER IFC 510 (2018) AND INSTALL PER NFPA 1221 (2019) SECTION 9.6. COORDINATE RADIO FREQUENCY BANDWIDTH REQUIREMENTS WITH THE AHJ. PRIOR TO INSTALLATION, TEST RADIO COVERAGE IN BUILDING. IF INBOUND/OUTBOUND RADIO SIGNAL STRENGTH MEETS THE CRITERIA OF NFPA 1221 SECTION 9.6, DO NOT INSTALL RADIO ENHANCEMENTS AND PROVIDE CREDIT TO THE OWNER.

GENERAL LOW VOLTAGE NOTES

1. EXTEND A (3) 3" CONDUIT FROM THE COMMUNICATIONS BACKBOARD TO THE COMMUNICATIONS SERVICE POINT. SEE THE ELECTRICAL SITE PLAN FOR THE ASSUMED LOCATION, COORDINATE FINAL LOCATION WITH COMMUNICATIONS PROVIDER.
2. COMMUNICATION BACKBOARD (CBB) SHALL BE 8'H X 4'L X 3/4"D PLYWOOD WITH THE BOTTOM AT 6" ABOVE FINISHED FLOOR. EXTEND A #6 BARE COPPER GROUNDING CONDUCTOR FROM THE ELECTRICAL SERVICE GROUND TO THE BACKBOARD AND LEAVE WITH SUFFICIENT SLACK TO REACH ANY PLACE THEREON. COAT BACKBOARD WITH A MINIMUM OF TWO COATS OF FIRE RETARDANT PAINT.
3. THE MAIN COMMUNICATIONS GROUNDING BUSBAR (MCGB) SHALL BE A PRE-DRILLED COPPER BUSBAR WITH STANDARD NEMA BOLT HOLE SIZING THAT IS NO SMALLER THAN 6MM THICK BY 100MM WIDE BY 1 FOOT LONG. THE MCGB SHALL BE BONDED TO THE BUILDING SERVICE GROUND AND ALL COMMUNICATIONS METALLIC RACEWAYS LOCATED IN THE SAME ROOM. MCGB CONNECTIONS SHALL BE LISTED TWO HOLE COMPRESSION TYPE.

GENERAL HVAC CONTROLS CONDUIT NOTES

1. PROVIDE CONDUIT FOR HVAC CONTROL CIRCUITS AS REQUIRED TO INTERCONNECT HVAC UNIT TO CONTROL CIRCUITS. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH MECHANICAL CONTRACTOR AND CONTROLS PROVIDER TO DETERMINE SCOPE OF CONDUITS REQUIRED FOR HVAC CONTROLS. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL REQUIRED CONDUIT. COORDINATE POINTS OF CONNECTION WITH DIVISION 23. PROVIDE PULL CORD IN ALL EMPTY CONDUITS. SEE MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL HVAC EQUIPMENT (AHU, HP, CU, RTU, DUCT SMOKE DETECTORS, VAV, FCU, THERMOSTATS, ETC).

GENERAL FIRE ALARM SYSTEM NOTES

1. PROVIDE ALL DUCT SMOKE DETECTORS AND ACCESSORIES NECESSARY FOR INTERLOCKING WITH MECHANICAL EQUIPMENT (AHU'S, ETC). COORDINATE WITH MECHANICAL PLANS FOR LOCATIONS AND REQUIREMENTS.
2. INSTALL DUCT SMOKE DETECTORS TO COMPLY WITH NFPA 72. WHERE TWO DETECTOR LOCATIONS ARE SHOWN AT A SINGLE PIECE OF EQUIPMENT, INSTALL ONE DETECTOR IN THE SUPPLY DUCTWORK AND ONE DETECTOR IN THE RETURN DUCTWORK. COORDINATE MOUNTING LOCATION WITH THE MECHANICAL CONTRACTOR. PROVIDE WEATHERPROOF ENCLOSURE FOR DUCT DETECTORS INSTALLED IN EXTERIOR DUCTWORK. LOCATION SHOWN IS FOR REFERENCE ONLY.

LIGHTING SYMBOL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	LIGHT FIXTURE (TYPICAL ALL DIMENSIONS)	S	LIGHT SWITCH, SINGLE POLE
	LIGHT FIXTURE (SHADING INDICATES EMERGENCY, TYPICAL ALL LIGHTING SYMBOLS)	S^X	LIGHT SWITCH, "X" INDICATES SWITCH TYPE
	STRIP LIGHT FIXTURE	S^a	LIGHT SWITCH, LOWERCASE LETTER INDICATES SWITCHLEG
	LIGHT FIXTURE (TYPICAL ALL DIMENSIONS)	OS	OCCUPANCY SENSOR (CEILING MOUNTED)
	LIGHT FIXTURE (TYPICAL ALL DIMENSIONS)	OS	OCCUPANCY SENSOR (WALL MOUNTED)
	POLE MOUNTED LIGHT FIXTURE	PC	PHOTOCELL LIGHTING CONTROL (WALL MOUNTED)
	EMERGENCY LIGHTING UNIT		EXIT SIGN, SINGLE SIDED (ARROWS INDICATE CHEVRON DIRECTION)
0	LIGHTING CONTROL SCHEME CALLOUT (SEE SCHEDULE)		EXIT SIGN, DOUBLE SIDED (ARROWS INDICATE CHEVRON DIRECTION)

POWER AND TELECOMMUNICATIONS SYMBOL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
X	DUPLEX RECEPTACLE "X" INDICATES RECEPTACLE TYPE		COMMUNICATION OUTLET (ROUGH-IN ONLY)
X	GFCI DUPLEX RECEPTACLE "X" INDICATES RECEPTACLE TYPE	WP	Wi-Fi ACCESS POINT (ROUGH-IN ONLY)
X	QUADRUPLEX RECEPTACLE "X" INDICATES RECEPTACLE TYPE	GBB	GROUND BUS BAR
X	GFCI QUADRUPLEX RECEPTACLE "X" INDICATES RECEPTACLE TYPE	MCGB	MAIN COMMUNICATIONS GROUND BUS BAR
	CEILING MOUNTED RECEPTACLE (TYPICAL ALL TYPES)	CBB	COMMUNICATIONS BACKBOARD
	FLOOR MOUNTED RECEPTACLE (TYPICAL ALL TYPES)	SPD	SURGE PROTECTION DEVICE
X	JUNCTION BOX (WALL MOUNTED) "X" INDICATES JUNCTION BOX TYPE	M	METER
X	JUNCTION BOX (FLOOR MOUNTED) "X" INDICATES JUNCTION BOX TYPE		PANELBOARD - BRANCH, SURFACE MOUNTED
	DISCONNECT SWITCH (FUSIBLE OR NON-FUSIBLE)		PANELBOARD - DISTRIBUTION, SURFACE MOUNTED
	TRANSFORMER		SWITCHBOARD
		JC	UTILITY JUNCTION CABINET

SYSTEMS SYMBOL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
SD	SMOKE DETECTOR (CEILING MOUNTED)	TS	FIRE ALARM TAMPER SWITCH
SD	SMOKE DETECTOR (DUCT MOUNTED)	FS	FIRE ALARM FLOW SWITCH
HD	HEAT DETECTOR (CEILING MOUNTED)	PS	FIRE ALARM PRESSURE SWITCH
X	CONTROL PANEL, "X" INDICATES TYPE	F	FIRE ALARM PULL STATION
RFAP	REMOTE FIRE ALARM ANNUNCIATOR	V	FIRE ALARM STROBE NOTIFICATION APPLIANCE (WALL MOUNTED)
C	SECURITY CAMERA (ROUGH-IN ONLY)	S	FIRE ALARM SPEAKER/STROBE NOTIFICATION APPLIANCE (WALL MOUNTED)
C	SECURITY CAMERA (ROUGH-IN ONLY)	V	FIRE ALARM STROBE NOTIFICATION APPLIANCE (CEILING MOUNTED)
CR	CARD READER (ROUGH-IN ONLY)	S	FIRE ALARM SPEAKER/STROBE NOTIFICATION APPLIANCE (CEILING MOUNTED)
E	ELECTRONIC DOOR STRIKE (ROUGH-IN ONLY)		CABLE TRAY

0 1

ELECTRICAL ABBREVIATIONS

ABBR	DESCRIPTION
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
BFC	BELOW FINISHED CEILING
BOD	BOTTOM OF DEVICE
CBB	COMMUNICATIONS BACKBOARD
cd	CANDELA
CGB	COMMUNICATIONS GROUNDING BUSBAR
CLG	CEILING
DAS	DISTRIBUTED ANTENNA SYSTEM
ECB	ENCLOSED CIRCUIT BREAKER
EF	EXHAUST FAN
FACP	FIRE ALARM CONTROL PANEL
FCU	FAN COIL UNIT
GBB	GROUND BUSBAR
GFCI	GROUND-FAULT CIRCUIT-INTERRUPTING
HP	HEAT PUMP
J-BOX	JUNCTION BOX
KW	KILOWATTS
MCGB	MAIN COMMUNICATIONS GROUNDING BUSBAR
NEC	NATIONAL ELECTRICAL CODE
NFDS	NON-FUSED DISCONNECT SWITCH
RTU	ROOF TOP UNIT
SPD	SURGE PROTECTION DEVICE
UG	UNDERGROUND
VFD	VARIABLE FREQUENCY DRIVE
WH	WATER HEATER
WP	WEATHERPROOF
XFMR	TRANSFORMER

LIGHT SWITCH	DESCRIPTION
3	THREE WAY
D	DIMMER
OD	COMBINATION OCCUPANCY SENSOR / DIMMER
VS	VACANCY SENSOR
RECEPTACLE	**DESCRIPTION**
C	MOUNT ABOVE COUNTER
M	MICROWAVE
R	REFRIGERATOR
WP	WEATHERPROOF
CONTROL PANELS	**DESCRIPTION**
FACP	FIRE ALARM CONTROL PANEL
LCP	LIGHTING CONTROL PANEL
NAC	NOTIFICATION APPLIANCE CIRCUIT
JUNCTION BOX/SWITCH	**DESCRIPTION**
HT	HEAT TRACE
OH	OVERHEAD DOOR

ELECTRICAL CODES AND STANDARDS (WITH ALL SOUTH CAROLINA MODIFICATIONS)

CODE	DESCRIPTION
IBC (2021)	INTERNATIONAL BUILDING CODE
IECC (2009)	INTERNATIONAL ENERGY CONSERVATION CODE
NFPA 70 (2020)	NATIONAL ELECTRICAL CODE
NFPA 72 (2019)	NATIONAL FIRE ALARM AND SIGNALING CODE

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ISSUANCE		

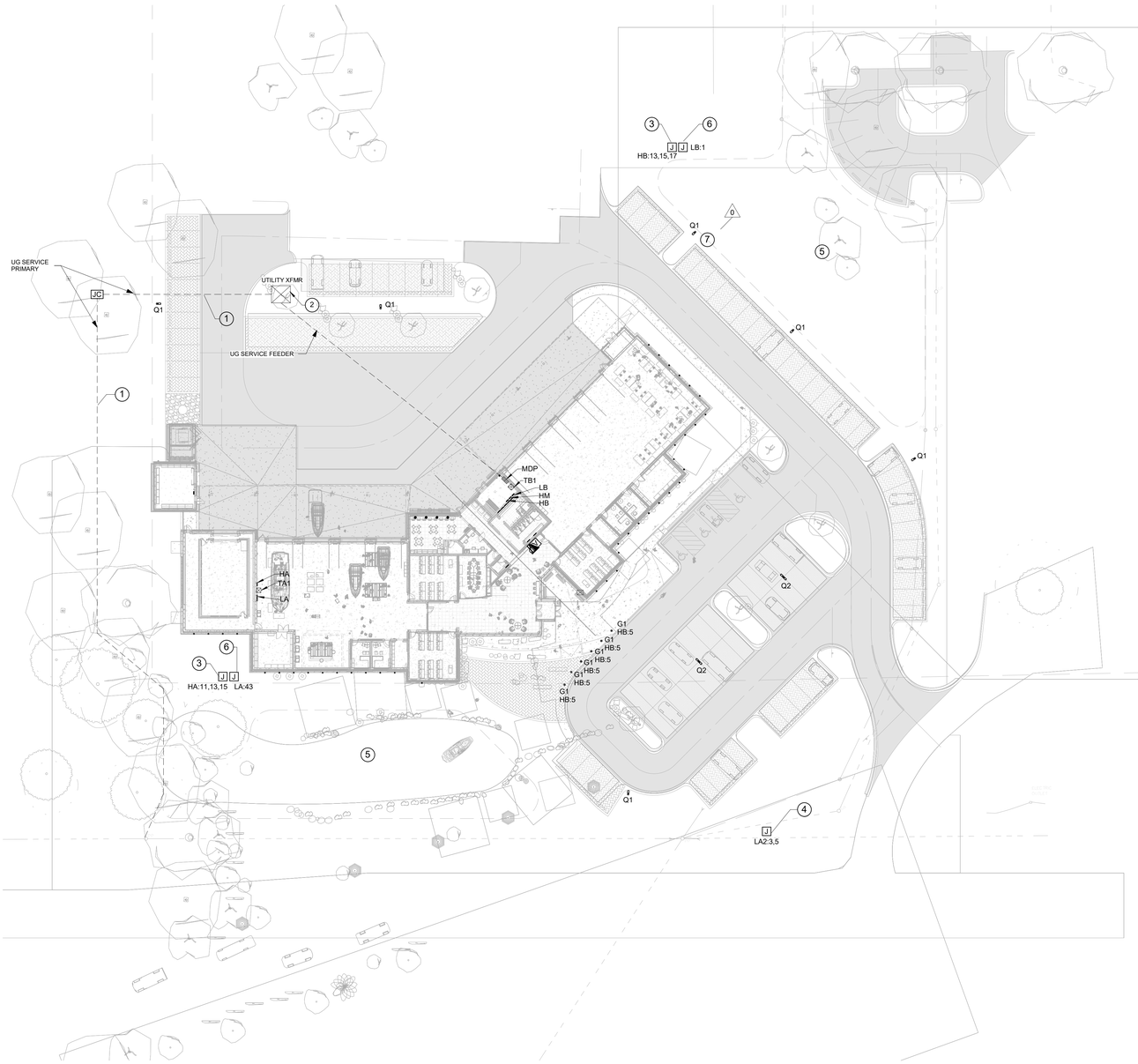
PROJECT NUMBER
2024-202
DRAWN: KMD
CHECKED: MHS

SHEET TITLE
ELECTRICAL NOTES

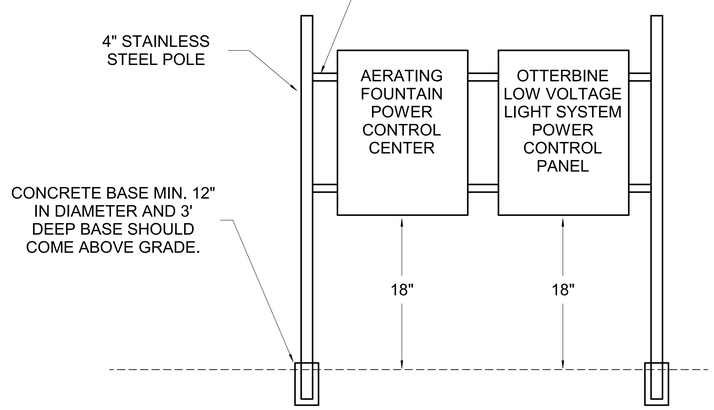
SHEET NO.
E001

THIS SHEET PLOTS ON 22" x 34" ANSI D

3" 2" 1" 1/2" 0



1 E080 ELECTRICAL SITE PLAN
SCALE: 1" = 30'-0"



2 E080 AERATING FOUNTAIN & LED LIGHT SYSTEM POWER CONTROL CENTERS
NOT TO SCALE

RENOVATION KEYNOTES

1. APPROXIMATE ROUTING OF UNDERGROUND PRIMARY UTILITY FEEDER.
2. PROPOSED LOCATION OF SANTEE ELECTRIC PAD MOUNTED TRANSFORMER. EXACT LOCATION SHALL BE COORDINATED WITH SANTEE ELECTRIC.
3. PROVIDE 3 #12 & 1#12G IN 3/4" CONDUIT FOR AERATING FOUNTAIN POWER CONTROL CENTER. COORDINATE EXACT LOCATION AND SPECIFICATION WITH LANDSCAPE PLANS. PROVIDE ALL SUPPORTS NECESSARY TO MOUNT POWER CONTROL CENTER AND PROVIDE FINAL POWER CONNECTION. PROVIDE 3#12 & 1#12G SOOW CABLE SPECIFICALLY DESIGNED FOR UNDERWATER USE FOR AERATING FOUNTAIN. PROVIDE FINAL CONNECTION TO FOUNTAIN FROM POWER CONTROL CENTER. COORDINATE EXACT LOCATION AND CONNECTION REQUIREMENTS WITH CIVIL AND THE AERATING FOUNTAIN SHOP DRAWINGS.
4. PROVIDE 2#12 & 1#12G IN 3/4" CONDUIT FOR SEWER LIFT STATION. STUB UP AND CAP WIRE AND CONDUIT. COORDINATE EXACT LOCATION WITH CIVIL AND GEORGETOWN COUNTY WATER & SEWER. FINAL CONNECTION TO SEWER LIFT STATION SHALL BE DONE BY OTHERS.
5. PROVIDE OTTERBINE LOW VOLTAGE LED LIGHT SYSTEM WITH (4) 3000K LED LIGHTS. PROVIDE INTERNAL PHOTOCELL OPTION FOR LIGHTING CONTROLS. LED LIGHTS SHALL BE MOUNTED TO FOUNTAIN SYSTEM LOCATED IN POND. COORDINATE EXACT LOCATION WITH CIVIL. PROVIDE FINAL CONNECTION TO LED LIGHTS FROM POWER CONTROL PANEL USING SJOOW CABLE PROVIDED BY OTTERBINE LIGHT SYSTEM. COORDINATE EXACT CONNECTION REQUIREMENTS WITH OTTERBINE LOW VOLTAGE LIGHT SYSTEM SHOP DRAWINGS.
6. PROVIDE 2#12 & 1#12G IN 3/4" CONDUIT FOR OTTERBINE LOW VOLTAGE LED LIGHT SYSTEM POWER CONTROL PANEL. PROVIDE ALL SUPPORTS NECESSARY TO MOUNT POWER CONTROL PANEL.
7. PROVIDE TAMPER SWITCH CONNECTIONS FOR POST INDICATOR VALVE (PIV) TO FIRE ALARM CONTROL PANEL. COORDINATE EXACT LOCATION WITH CIVIL.

GENERAL NOTES

1. PROVIDE 2" CONDUIT TO EVERY UTILITY PROVIDED LIGHT POLE. COORDINATE LIGHT POLE LOCATIONS WITH THE UTILITY, SANTEE ELECTRIC AND CIVIL. CONTACT INFORMATION FOR UTILITY: JOE ADAMS, (843)355-0680.
2. COORDINATE DEMOLISHED POWER POLES AND NEW POWER POLE LOCATIONS WITH SANTEE ELECTRIC AND CIVIL. NEW POWER POLE LOCATIONS ARE OUTSIDE OF THE LINES OF DISTURBANCE BUT COST AND COORDINATION EFFORT WITH THE UTILITY SHALL BE THE CONTRACTORS RESPONSIBILITY.

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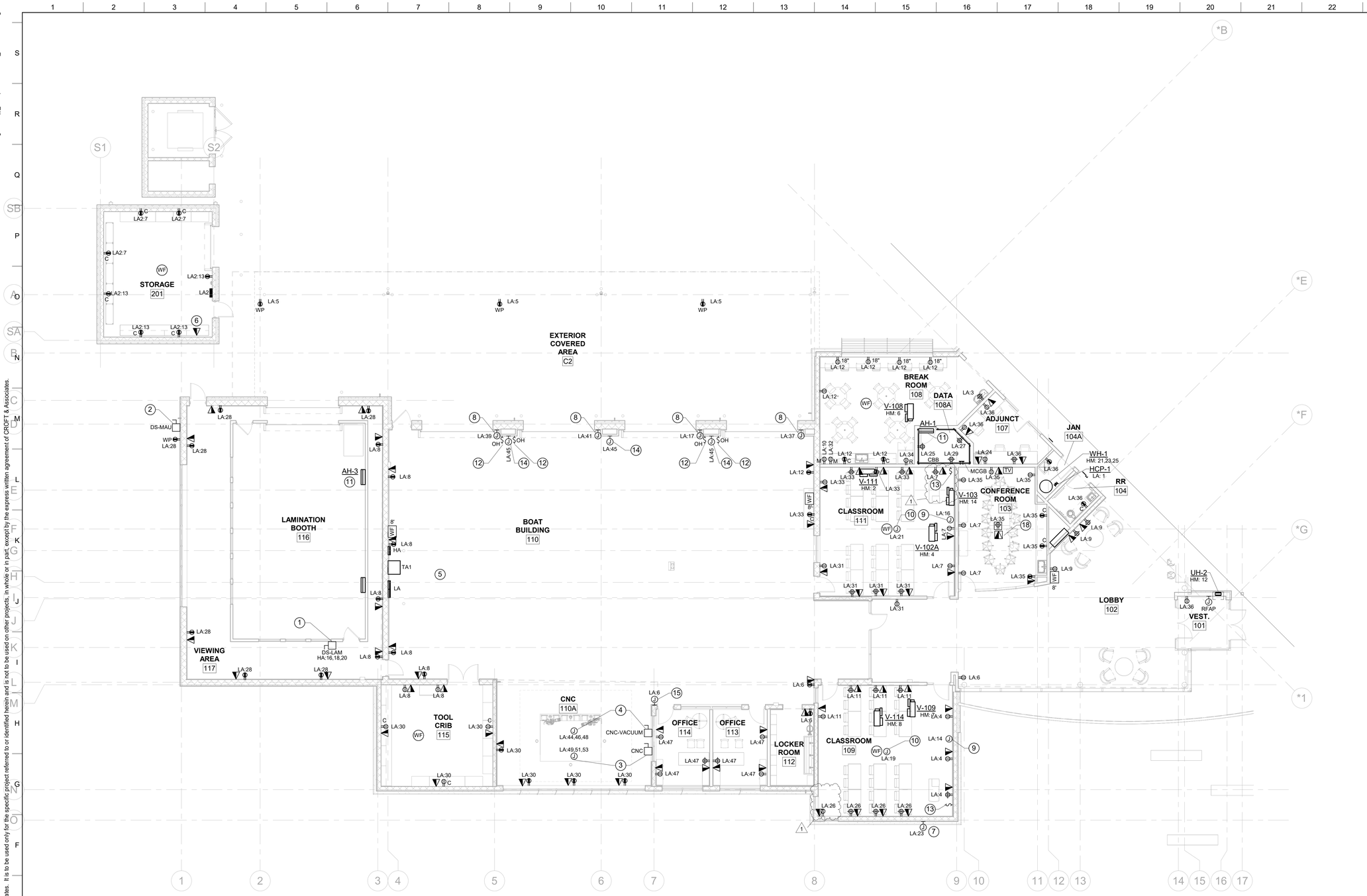
SHEET TITLE
ELECTRICAL SITE PLAN

SHEET NO.
E080



1 E101 FIRST FLOOR POWER & TELECOM PLAN A
SCALE: 1/8" = 1'-0"

RENOVATION KEYNOTES

1. PROVIDE NFDS: 200A / 3P / NEMA 1 FOR LAMINATION BOOTH CONTROL PANEL. DISCONNECT SHALL BE WITHIN 3 FEET OF THE LAMINATION BOOTH DOOR. PROVIDE FINAL CONNECTION TO DISCONNECT WITH 3 #1 & 1#6G IN 1 1/2" CONDUIT. COORDINATE EXACT LOCATION WITH LAMINATION BOOTH CONSULTANT. FINAL CONNECTION TO LAMINATION BOOTH CONTROL PANEL SHALL BE DONE BY OTHERS.
2. PROVIDE NFDS: 100A / 3P / NEMA 4X FOR LAMINATION BOOTH MAU. COORDINATE EXACT LOCATION WITH LAMINATION BOOTH CONSULTANT. FINAL CONNECTION TO MAU DISCONNECT AND MAU SHALL BE DONE BY OTHERS.
3. PROVIDE 3#3 & 1#8G IN 1 1/4" CONDUIT FOR CNC SPINDLE. COORDINATE EXACT LOCATION WITH CNC SHOP DRAWINGS. PROVIDE FINAL CONNECTION TO SPINDLE FROM 100A/3P/NEMA 1 NFDS INDICATED.
4. PROVIDE 3#8 & 1#10G IN 3/4" CONDUIT FOR CNC VACUUM SYSTEM. COORDINATE EXACT LOCATION WITH CNC SHOP DRAWINGS. PROVIDE FINAL CONNECTION TO VACUUM SYSTEM FROM 60A/3P/NEMA 1 NFDS INDICATED.
5. PROVIDE (4) SAFETY BOLLARDS LOCATED 4' IN FRONT OF ELECTRICAL EQUIPMENT. COORDINATE EXACT LOCATION WITH ARCHITECT.
6. 2" CONDUIT FOR FIBER FROM MAIN IT ROOM.
7. PROVIDE POWER FOR EXTERIOR BACKLIT SIGNAGE. COORDINATE EXACT HEIGHT AND LOCATION WITH ARCHITECT.
8. PROVIDE NFDS: 30A / 1P / NEMA 4X FOR OVERHEAD DOOR OPERATOR, LOCATED WITHIN SITE OF OVERHEAD DOOR OPERATOR. PROVIDE FINAL CONNECTION TO OPERATOR AND DISCONNECT, WITH 2#10 & 1#10G IN 3/4" CONDUIT. COORDINATE EXACT LOCATION WITH OVERHEAD DOOR SHOP DRAWINGS.
9. PROVIDE FINAL CONNECTION TO PROJECTOR SCREEN. COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.
10. PROVIDE FINAL CONNECTION TO PROJECTOR. COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.
11. INDOOR UNIT POWERED BY OUTDOOR UNIT.
12. INSTALL NEW OVERHEAD DOOR CONTROLLER. PROVIDE REQUIRED WIRE AND CONDUIT BETWEEN CONTROLLER AND OVERHEAD DOOR MOTOR. COORDINATE EXACT LOCATION AND WIRING REQUIREMENTS WITH OVERHEAD DOOR SHOP DRAWINGS.
13. PROVIDE CONTROLS FOR PROJECTOR SCREEN. PROVIDE REQUIRED WIRE AND CONDUIT BETWEEN PROJECTOR SCREEN AND CONTROLLS. COORDINATE WIRING REQUIREMENTS WITH PROJECTOR SCREEN SHOP DRAWINGS.
14. WALL MOUNTED JUNCTION BOX FOR CONNECTED CORD REEL ATTACHED TO WALL AT 4' AFF. PROVIDE HUBBEL RETRACTABLE HOSE REEL WITH GFCI DUPLEX RECEPTACLE AND ALL NECESSARY SUPPORTS PER MANUFACTURER RECOMENDATIONS.
15. ROUTE 2" CONDUIT FOR HDMI CABLE FROM FLOOR BOX TO ROUGH-IN LOCATION INDICATED.

GENERAL NOTES

1. COORDINATE WITH CRANE RAIL LOCATIONS TO ROUTE ALL ELECTRICAL FEEDERS AND BRANCH CIRCUITS ABOVE OR AROUND RAILS.

GRAPHIC SCALE
0 4' 8' 16' 32'
Scale: 1/8"= 1'-0"

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KEY PLAN

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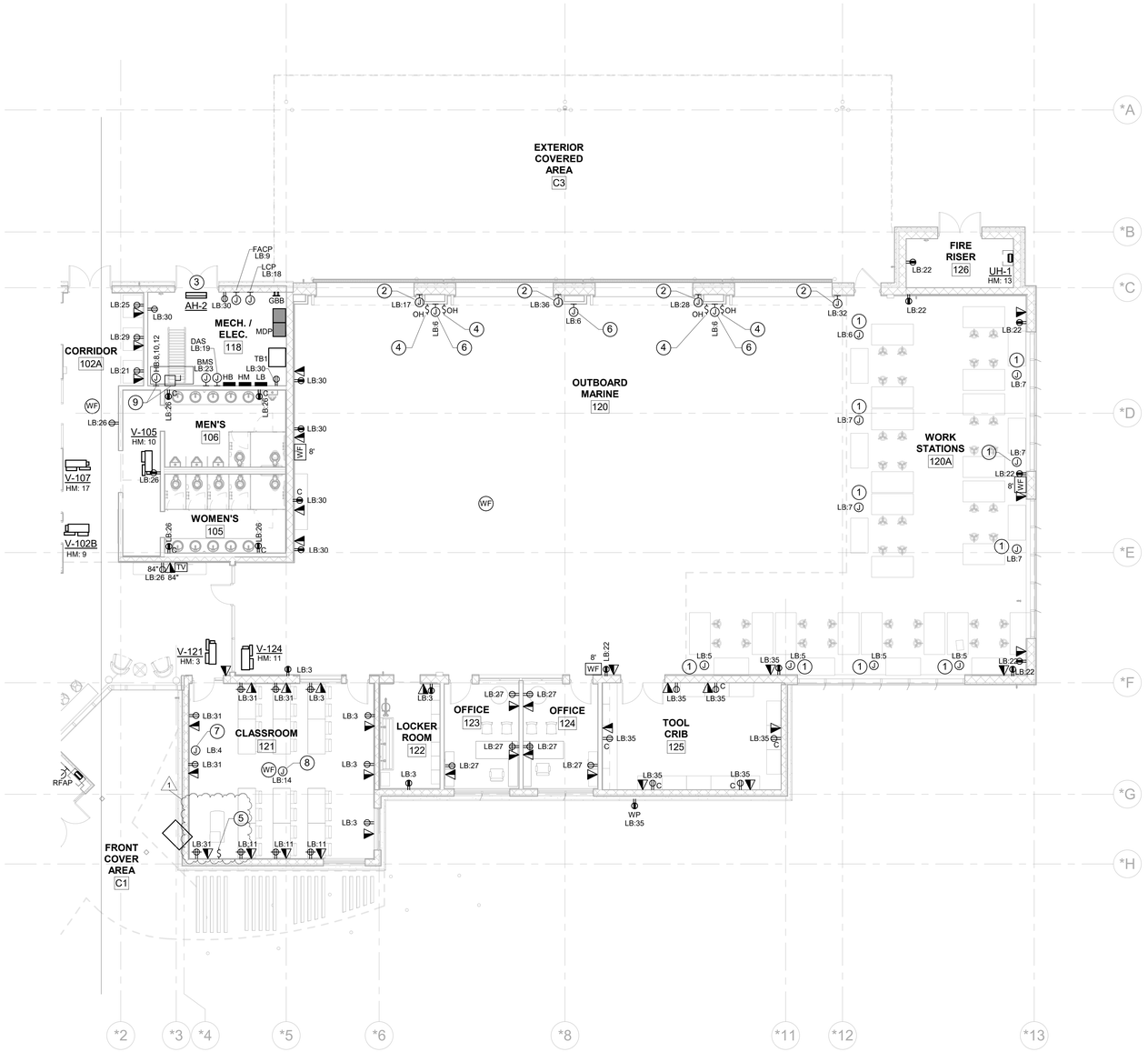
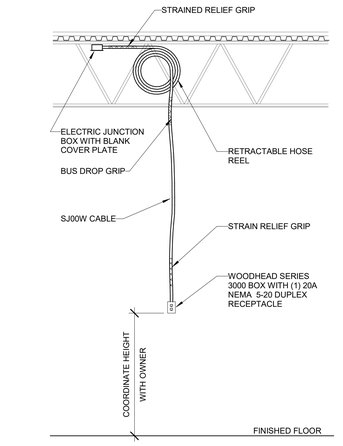
SHEET TITLE
FIRST FLOOR POWER & TELECOM PLAN A

SHEET NO.
E101



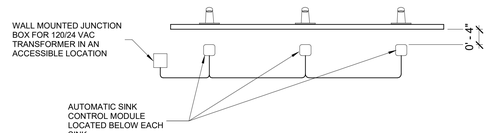
1 E102 FIRST FLOOR POWER & TELECOM PLAN B
SCALE: 1/8" = 1'-0"



2 E102 POWER DROP
NOT TO SCALE

AUTOMATIC SINK GENERAL NOTES

1. COORDINATE ROUGH-IN LOCATIONS WITH PLUMBING TO AVOID CONFLICTS.
2. COORDINATE WITH PLUMBING SELECTIONS FOR CONTROL MODULE EXACT LOCATIONS AND CONNECTIONS REQUIRED FOR THE TRANSFORMER AND CONTROL MODULES.
3. THERE SHALL NOT BE MORE THAN 4 AUTOMATIC SINK CONTROL MODULES CONNECTED TO A SINGLE TRANSFORMER.



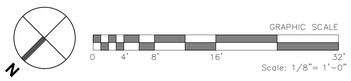
3 E102 AUTOMATIC SINK
NOT TO SCALE

RENOVATION KEYNOTES

0

1. CEILING MOUNTED JUNCTION BOX FOR CONNECTED CORD REEL HUNG FROM OPEN CEILING. PROVIDE HUBBEL RETRACTABLE HOSE REEL WITH DUPLEX RECEPTACLE AND ALL NECESSARY SUPPORTS PER MAUFACTURER RECOMMENDATIONS.
2. PROVIDE NFDS: 30A / 1P / NEMA 4X FOR OVERHEAD DOOR OPERATOR, LOCATED WITHIN SITE OF OVERHEAD DOOR OPERATOR. PROVIDE FINAL CONNECTION TO OPERATOR AND DISCONNECT, WITH 2#10 & 1#10G IN 3/4" CONDUIT. COORDINATE EXACT LOCATION WITH OVERHEAD DOOR SHOP DRAWINGS.
3. INDOOR UNIT POWERED BY OUTDOOR UNIT.
4. INSTALL NEW OVERHEAD DOOR CONTROLLER. PROVIDE REQUIRED WIRE AND CONDUIT BETWEEN CONTROLLER AND OVERHEAD DOOR MOTOR. COORDINATE EXACT LOCATION AND WIRING REQUIREMENTS WITH OVERHEAD DOOR SHOP DRAWINGS.
5. PROVIDE CONTROLS FOR PROJECTOR SCREEN. PROVIDE REQUIRED WIRE AND CONDUIT BETWEEN PROJECTOR SCREEN AND CONTROLS. COORDINATE WIRING REQUIREMENTS WITH PROJECTOR SCREEN SHOP DRAWINGS.
6. WALL MOUNTED JUNCTION BOX FOR CONNECTED CORD REEL ATTACHED TO WALL AT 4' AFF. PROVIDE HUBBEL RETRACTABLE HOSE REEL WITH DUPLEX RECEPTACLE AND ALL NECESSARY SUPPORTS PER MANUFACTURER RECOMMENDATIONS.
7. PROVIDE FINAL CONNECTION TO PROJECTOR SCREEN. COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.
8. PROVIDE FINAL CONNECTION TO PROJECTOR. COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER.
9. PROVIDE NFDS: 60A / 3P / NEMA 1 FOR OWNER PROVIDED AIR COMPRESSOR. PROVIDE 3#6 & 1#10G IN 1" CONDUIT TO DISCONNECT SWITCH AND FROM DISCONNECT SWITCH TO AIR COMPRESSOR. COORDINATE EXACT LOCATION WITH OWNER.

GENERAL NOTES



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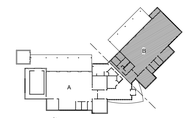

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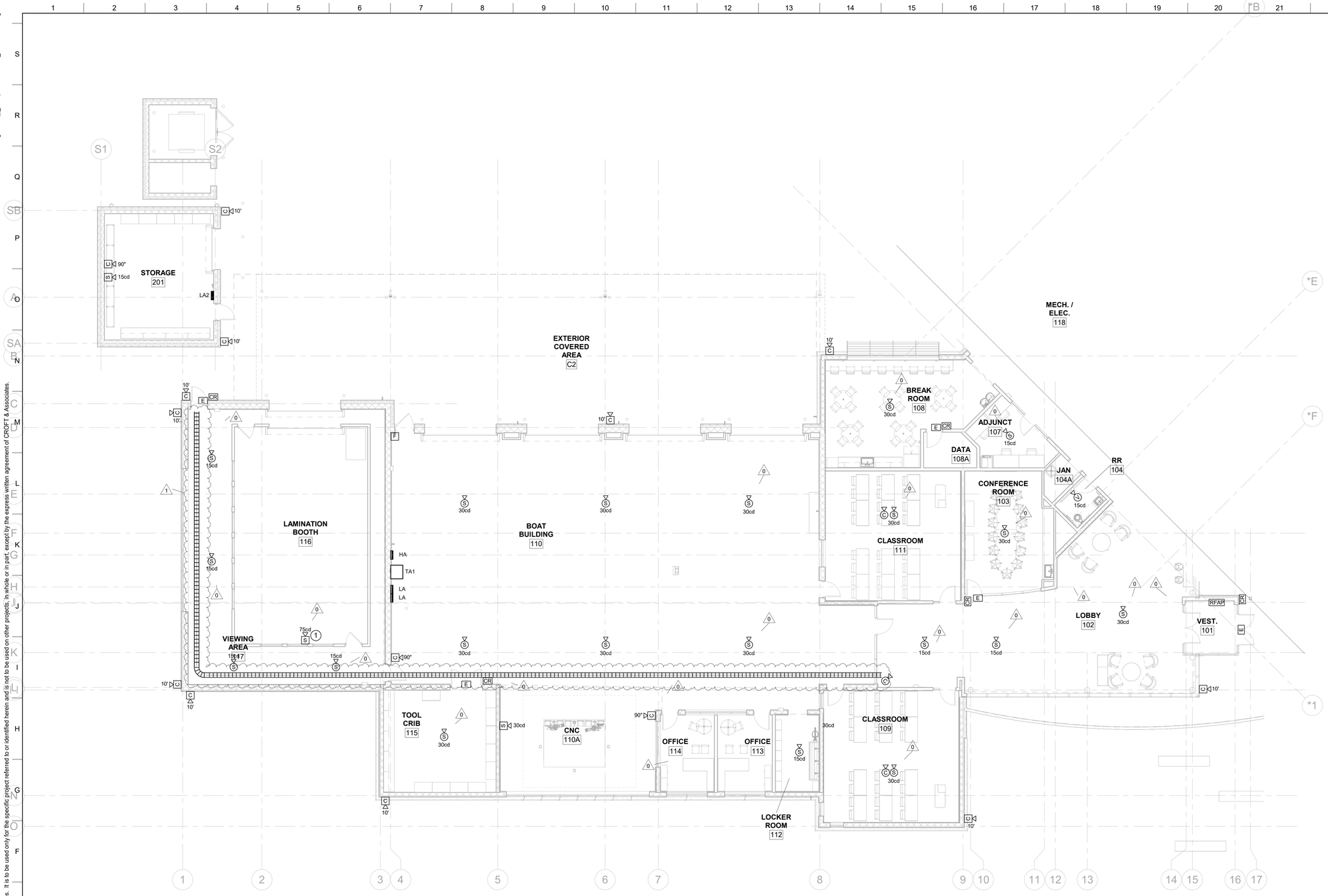
SHEET TITLE
FIRST FLOOR POWER & TELECOM PLAN B

SHEET NO.
E102

THIS SHEET PLOTS ON 22" x 34" ANSI D
3" 2" 1" 1/2" 0



1 / E301 FIRST FLOOR SYSTEMS PLAN A
SCALE: 1/8" = 1'-0"

RENOVATION KEYNOTES

1. PROVIDE NOTIFICATION DEVICE IN LAMINATION BOOTH, PROVIDED BY OTHERS. COORDINATE WITH LAMINATION BOOTH SHOP DRAWINGS FOR MOUNTING LOCATION.

GENERAL NOTES

1. ~~COORDINATE WITH CRANE RAIL LOCATIONS TO ROUTE ALL BRANCH AND CONTROL CIRCUITS ABOVE OR AROUND RAILS.~~
2. COORDINATE WITH CRANE RAIL LOCATIONS TO ROUTE CABLE TRAY ABOVE OR AROUND RAILS.

GRAPHIC SCALE
0 4' 8' 16' 32'
Scale: 1/8"= 1'-0"

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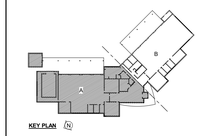

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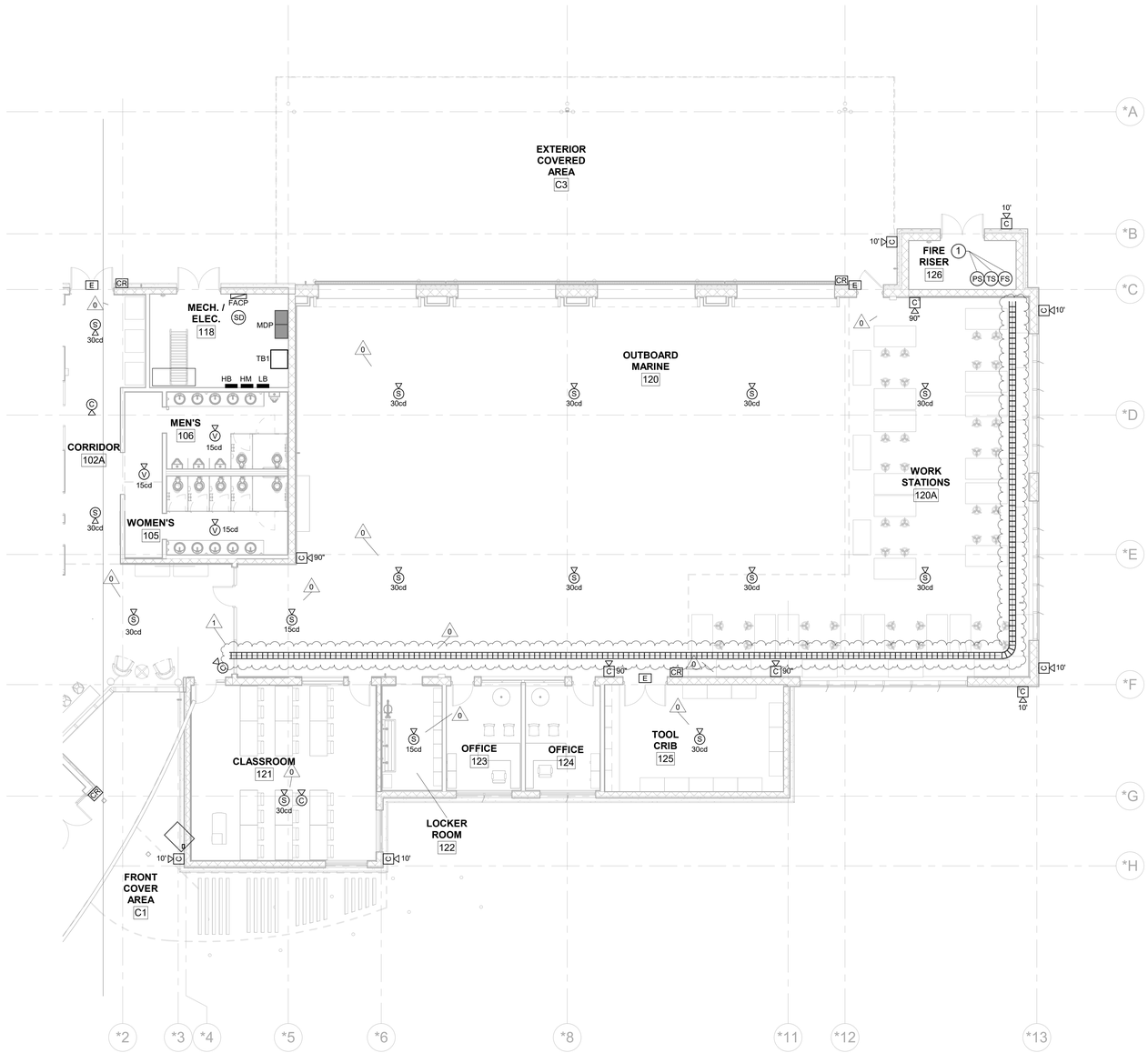
SHEET TITLE
FIRST FLOOR SYSTEMS PLAN A

SHEET NO.
E301

THIS SHEET PLOTS ON 22" x 34" ANSI D



1 E302 FIRST FLOOR SYSTEMS PLAN B
SCALE: 1/8" = 1'-0"

RENOVATION KEYNOTES

1 PROVIDE ALL REQUIRED TAMPER, FLOW, AND PRESSURE SWITCHES FOR THE FIRE RISER. COORDINATE INSTALLATION, QUANTITY, AND LOCATION OF TAMPER, FLOW AND PRESSURE SWITCHES WITH APPROVED FIRE SUPPRESSION SHOP DRAWINGS. REFER TO FIRE PROTECTION DRAWINGS FOR ADDITIONAL INFORMATION.

GENERAL NOTES

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

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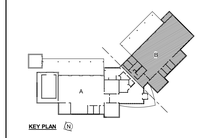

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CHECKED: MHS
SHEET TITLE
FIRST FLOOR SYSTEMS PLAN B
SHEET NO.
E302