SZOSTAK

ADDENDUM NUMBER THREE

10 November 2025

NC Department of Natural and Cultural Resources
Fort Fisher Aquarium – Renovation & Expansion
Phase 1
SCO ID #17-18042-02A

The following items supersede the bid documents dated 8 September 2025 and shall become a part of those bid documents with full force and effect, as though set forth therein. Bidders shall acknowledge receipt of this Addendum #3 in the appropriate place on the "Form of Proposal".

Where any article, division or subparagraph of the original contract documents or other addenda is supplemented herein, the provisions of the original documents shall remain in effect. All the supplemental provisions shall be considered as added thereto. Where any such article, division or subparagraphs are amended, voided or superseded thereby, the provisions of such article, division or subparagraph not so specifically amended, voided or superseded shall remain in effect.

It will be the responsibility of each Contractor to call such clarifications, additions to and changes in the plans and specifications to the attention of subcontractors concerned. The Designer in no way assumes any responsibility for notifying any subcontractor, material dealers or others not having received the original contract documents.

CHANGES TO THE DOCUMENTS:

GENERAL

1. Items discussed at the Pre-Bid Meeting and subsequent RFIs will be incorporated into a future Addendum, if required.

CHANGES TO THE SPECIFICATIONS:

1. Section 000002 TOC
2. Section 011000 SUMMARY
3. Section 012300 ALTERNATES
    a. Updated sheet references for Alternate #3 Exotic Aquatics.
4. Section 075423 THERMOPLASTIC POLYOLEFIN (TPO) ROOFING
    a. Removed mechanical fasteners.
5. Section 071616 CRYSTALLINE INTERIOR TANK WATERPROOFING
    a. Added section. Clarified and specified product to be used in back of house tanks and/or basins.
6. Section 093000 TILING
    a. Updated 12x24 tile product and clarified locations.
7. Section 100000 MISCELLANEOUS SPECIALTIES
    a. Updated colors for toilet partitions and signage.
    b. Added description of graphic for signage.
    c. Removed marker and tack boards.
8. Section 170267 LSS Piping Insulation
    a. Revised temperature requirements
9. Section 170723 O3 EQUIP
    a. Clarify oxygen fed ozone generators to match schedule and design intent.
10. Section 170783 WATER SOFTENER
    a. New spec section. Removed small section from RO spec.

11. Section 170786 REVERSE OSMOSIS SYSTEM
    a. Removed water softener portion due to separate water softener spec created.
12. Section 170933 AUTOMATED CONTROLS
    a. Revise ACS continuous operation of three consecutive days without system malfunction requirement. Added sentences under scope for clarification of scope.
13. Section 230546 COATINGS FOR HVAC
14. Section 230923 DIRECT DIGITAL CONTROL SYSTEM FOR HVAC
15. Section 230924 BACNET-IP INTEGRATION FOR EXISTING BAS
16. Section 231323 FACILITY ABOVEGROUND FUEL-OIL STORAGE TANKS
17. Section 263213.13 DIESEL-ENGINE-DRIVEN GENERATOR SETS
    a. Revised to remove day tanks and fuel oil piping, which are now included in Div 23, and changed the generator communication protocol to BACnet IP.
    b. Several other changes were made regarding generator warranty, revised cooling system details, construction details for the silencer, added dual fuel filtering, details for the generator output circuit breaker and generator windings.
18. Section 329200 TURF AND GRASSES
19. Section 329300 PLANTS

CHANGES TO THE DRAWINGS:

Replace the following drawing sheets with those noted below:

1. AD-1.21 A: FIRST FLOOR DEMO PLAN – CAPE FEAR
    a. Updated demo notes.
2. AD-1.21 B: FIRST FLOOR DEMO PLAN – MAIN ENTRY & TOUCH TANK
    a. Updated demo notes.
3. AD-1.22 A: SECOND FLOOR DEMO PLAN – CAPE FEAR
    a. Updated demo notes.
4. AD-1.22 B: SECOND FLOOR DEMO PLAN – TOUCH TANK
    a. Updated demo notes.
5. AD-1.23 A: THIRD FLOOR DEMO PLAN – CAPE FEAR
    a. Updated demo notes.
6. A-2.21 B: FIRST FLOOR PLAN – TOUCH & SHARK TANK
    a. Added FRP grating at Pump Pit
    b. Moved Catering Kitchen refrigerator (NIC) and freezer (NIC) north 6”.
    c. Door E108-A is now floodproof, barriers removed.
7. A-2.22 A: SECOND FLOOR PLAN – CAPE FEAR SHOALS
    a. Moved location of towel dispensers in staff showers.
8. A-4.11 A: FIRST FLOOR – ENLARGED FLOOR PLANS
    a. Moved Catering Kitchen refrigerator (NIC) and freezer (NIC) north 6”.
9. A-4.12: SECOND FLOOR – ENLARGED FLOOR PLANS
    a. Moved location of towel dispensers in staff showers.
10. A-4.13: THIRD FLOOR – ENLARGED PLANS
    a. Updated FRP note on DATs w/ reference detail.
11. A-6.32: TOILET ELEVATIONS
    a. Moved location of towel dispensers in staff showers.
12. A-6.41: INTERIOR ELEVATIONS
    a. Moved Catering Kitchen refrigerator (NIC) and freezer (NIC) north 6”.
13. A-7.7: WALL SECTIONS
    a. Updated FRP panel notes.
14. A-8.10: SHARK TANK DETAILS
    a. Updated FRP grating notes.
15. A-9.3: DOOR SCHEDULE
    a. Removed Door R105-C from Door Schedule.

b. Updated Flood Proofing Door Schedule.
c. Door E108-A is now floodproof, barriers removed.

16. S-001: GENERAL NOTES
17. S-110 A: FOUNDATION PLAN – CAPE FEAR SHOALS
18. S-111 B: FOUNDATION PLAN – TOUCH & SHARK TANK
19. S-130 B: SECOND FLOOR FRAMING PLAN – TOUCH & SHARK TANK
20. S-150 B: THIRD FLOOR FRAMING PLAN – TOUCH & SHARK TANK
21. S-200 B: FRAMING PLAN – ENLARGED PARTIAL PLANS
22. S-300: TYPICAL FOUNDATION DETAILS
23. S-310: TYPICAL CONCRETE FLOOR FRAMING DETAILS
24. S-400: SALT MIXING AREA PLANS AND SECTIONS
25. S-411: SECTIONS
26. S-503: SOUTHEAST WING – FIRST FLOOR SECTIONS
27. S-518: HOIST BEAM DETAILS
28. S-519: HOIST BEAM DETAILS
29. F-2.23B: THIRD FLOOR FIRE PROTECTION PLAN – SHARK TANK
30. M-6.1: MECHANICAL SCHEDULES
31. M-6.2: MECHANICAL SCHEDULES
32. EP1.01: ELECTRICAL SITE PLAN
33. EP2.21B: FIRST FLOOR PLAN – TOUCH AND SHARK TANK - POWER
34. EP2.21C: FIRST FLOOR PLAN – SOUTHEAST WING - POWER
35. EP2.21D: FIRST FLOOR PLAN – MAIN ENTRY, GENERATOR BUILDING, CHILLER PLATFORM – POWER
36. EP2.22 B: SECOND FLOOR PLAN – TOUCH AND SHARK TANK - POWER
37. EP2.22C: SECOND FLOOR PLAN – SOUTHEAST WING – POWER
38. EP2.23 B: THIRD FLOOR PLAN – SHARK TANK – POWER
39. EP3.21 B: FIRST FLOOR PLAN – TOUCH AND SHARK TANK – HVAC POWER
40. EP3.21 C: FIRST FLOOR PLAN – SOUTHEAST WING – HVAC POWER
41. EP3.21 D: FIRST FLOOR PLAN – MAIN ENTRY, BOOSTER PUMP BLDG & MECH BLDG – HVAC POWER
42. EP3.22 B: SECOND FLOOR PLAN – TOUCH AND SHARK TANK – HVAC POWER
43. EP3.23 B: THIRD FLOOR PLAN – SHARK TANK – HVAC POWER
44. EP4.02: ELECTRICAL ENLARGED PLANS 1ST FLOOR PUMP PIT, WORKSHOP, LIFE SUPPORT SYSTEMS
45. EP4.03: ELECTRICAL ENLARGED PLANS 2ND FLOOR SUPPORT AREA AND CORA MEZZ
46. EP4.04: ELECTRICAL ENLARGED PLANS 2ND AND 3RD FLOORS
47. EL1.21 C: FIRST FLOOR – SOUTHEAST WING – LIGHTING
48. EL1.21 D: FIRST FLOOR – MAIN ENTRY, CHILLER PLATFORM, PUMP AND GENERATOR BUILDINGS – LIGHTING
49. E-5.1: ELECTRICAL DETAILS
50. E-5.2: ELECTRICAL DETAILS
51. E-5.4: ELECTRICAL DETAILS
52. E-5.5: ELECTRICAL DETAILS
53. E-5.6: ELECTRICAL DETAILS
54. E-5.7: PLACARD AND PLACARD MAP
55. E-6.1: SINGLE LINE DIAGRAM (1 OF 2)
56. E-6.2: SINGLE LINE DIAGRAM (2 OF 2)
57. E-6.4: ELECTRICAL PANEL SCHEDULES
58. E-6.6: ELECTRICAL PANEL SCHEDULES
59. E-6.7: ELECTRICAL PANEL SCHEDULES
60. E-6.8: ELECTRICAL PANEL SCHEDULES
61. E-6.10: ELECTRICAL PANEL SCHEDULES
62. E-6.11: ELECTRICAL PANEL SCHEDULES
63. E-6.12: ELECTRICAL PANEL SCHEDULES
64. E-6.13: ELECTRICAL PANEL SCHEDULES

65. E-6.14: SYSTEM GROUND RISER
66. E-6.15: ELECTRICAL WIRING DIAGRAM AND FIRST RESPONDERS RISER
67. E-6.17: TELECOM AND CAMERA RISER
68. E-6.18: MECHANICAL EQUIPMENT CONNECTION SCHEDULE
69. E-6.19: ELECTRICAL EQUIPMENT CONNECTION SCHEDULE
70. PSE001: PUMP STATION ELECTRICAL NOTES, LEGENDS, DETAILS, SCHEDULE
71. PSE002: PUMP STATION ELECTRICAL SPECIFICATIONS
72. PSE101: PUMP STATION ELECTRICAL PLANS
73. LT-003: LIGHT FIXTURE SCHEDULE
74. LT-004: PANEL SCHEDULE
75. LT-005: ELECTRICAL ROOM PLANS
76. LT-008: CONTROL RACK LAYOUT
77. LT-101: OVERALL FLOOR PLAN – LEVEL 1
78. LT-102: OVERALL FLOOR PLAN – LEVEL 2
79. LT-201: OVERALL RCP – LEVEL 1
80. LT-202: OVERALL RCP – LEVEL 2
81. LT-203: OVERALL RCP – LEVEL 2
82. LT-312: ENLARGED RCP – LEVEL 1 – VIEWING AREA, TEACHING ROOM, AND OUTDOOR CLASSROOM
83. LT-313: ENLARGED RCP – LEVEL 1 – CENTRAL MEZZANINE AND OCEAN GALLERY
84. LT-314: ENLARGED RCP – LEVEL 1 – EXOTIC ANIMALS AND CORRIDORS
85. LT-317: ENLARGED RCP – LEVEL 2 – CENTRAL MEZZANINE
86. LT-318: ENLARGED RCP – LEVEL 2 – SALTMARSH AND TURTLE GALLERY
87. LT-319: ENLARGED RCP – LEVEL 2 – TOUCH TANK AND IMMERSION
88. LT-320: ENLARGED RCP – LEVEL 2 – SHARK TANK
89. LT-321: ENLARGED RCP – LEVEL 3 – SHARK TANK
90. FA6.1: FUNCTIONAL FIRE ALARM RISER DIAGRAM
91. FA6.2: FIRE ALARM MATRIX
92. LS0.01: SHEET INDEX
    a. New sheet added. LS5.09
93. LS0.04: EQUIPMENT SCHEDULES
    a. Updated CTF heat exchanger process water flow
94. LS0.05: EQUIPMENT SCHEDULES
    a. Corrected water softener model and capacities to meet potable water flow 2. updated PRC AND CRO heat exchanger process water temps out
95. LS0.06: EQUIPMENT SCHEDULES
    a. Added column to filter schedule to clarify flow. updated drum filter connections to match drawing
    b. Corrected TOU UV flow for clarification
96. LS0.10: CONTROL SCHEDULES
    a. Updated wire tag letter for REC frac injection pump.
    b. Removed "G" from project for clarification.
97. LS0.41A-TOU: TOUCH TANK EXHIBIT AND HOLDING - PIPING AND INSTRUMENTATION DIAGRAM
    a. Upsized TOU SWM and MU pipe and valves from 2" to 3" to allow quicker tank fill during startup.
    b. Added notes to clarify exotics aquatics Add-Alt #3 scope and base scope. Revised AQC O/F connection to NPDES to avoid enlarged beam
98. LS0.41B-TOU: TOUCH TANK EXHIBIT AND HOLDING - PIPING AND INSTRUMENTATION DIAGRAM
    a. Corrected filter flow and system flow for clarification
99. LS0.41C-TOU: TOUCH TANK EXHIBIT AND HOLDING - PIPING AND INSTRUMENTATION DIAGRAM
    a. Corrected system flow for clarification
100. LS0.42C-SRK: SAND TIGER SHARK EXHIBIT AND HOLDING - PIPING AND INSTRUMENTATION DIAGRAM
    a. added injector size
101. LS0.42D-SRK: SAND TIGER SHARK EXHIBIT AND HOLDING - PIPING AND INSTRUMENTATION DIAGRAM
    a. Revise blower air flow to match equipment schedule for clarification

b. Revise skr tower pressure trasducer connection on sight guage EQ, instead of directly to tower

102. LS0.43A-LCR: LIVE CORAL - PIPING AND INSTRUMENTATION DIAGRAM
   a. Added 2" BLV to match plan
   b. Added filter flow
   c. Revised drum piping highloop outlet elevation to prevent filter running dry without the longer "LT"model due to space constaint
103. LS0.43B-LCR: LIVE CORAL - PIPING AND INSTRUMENTATION DIAGRAM
   a. Clarified flex coupling on frac suction to match plan and spec requirements
104. LS0.53A-REC: BACKWASH RECOVERY - PIPING AND INSTRUMENTATION DIAGRAM
   a. Fix REC pipe tag prcoress fluid id
   b. Revised RO skid reject connection to drain
105. LS0.53B-REC: BACKWASH RECOVERY - PIPING AND INSTRUMENTATION DIAGRAM
   a. Clarified water softener backwash discharge drain to plumbing's floor sink on 3rd level. Revised clean basin vent size to match drawings. Revised REC frac NPWS size to match drawings.
106. LS0.54A-FMU: FRESHWATER MAKEUP - PIPING AND INSTRUMENTATION DIAGRAM
   a. Revise water softener package to clarify items provided on packaged skid and piping by contractor
   b. Clarified water softener backwash drain piping to plumbing's floor sink on 3rd level.
   c. Removed RO reject piping due to reroute on different sheet.
   d. Remove note "provide fwm to animal holding quarantine". Separate pipe is already going to animal ambassador room
107. LS0.55A-SMU: SALTWATER MAKEUP - PIPING AND INSTRUMENTATION DIAGRAM
   a. Updated mixing basin overflow piping from 8" to 6" to match plan for clarification 2. remove note "provide swm to animal holding quariantine". Separate pipe is already going to animal ambassador room
108. LS0.56A-ROF: REVERSE OSMOSIS/ DI FRESHWATER SYSTEM - PIPING AND INSTRUMENTATION DIAGRAM
   a. Added note to clarify base design ROF piping connection requirement if add alt #3 is not included.
   b. Revised RO skid reject connection to drain
109. LS0.57A-ROS: REVERSE OSMOSIS/ DI SALTWATER SYSTEM - PIPING AND INSTRUMENTATION DIAGRAM
   a. Added note to clarify base design ROS piping connection requirement if add alt #3 is not included
110. LS1.11: LSS SITE PLAN - 1ST FLOOR
   a. Add pipe tag and note for clarification
111. LS3.00: ENLARGED LSS PLAN - BELOW GRADE - EL. 0' TO 10.33'
   a. Added note to clarify pipe connection difficult to see
   b. Added section 2/507 for clarification.
   c. ROS-MIX, SMU-MIX,ROS-EQ, SMU-EQ piping lowered
112. LS3.01: ENLARGED LSS PLAN - BELOW GRADE - EL. -5.0' TO 0.83'
   a. piping adjust to sump locations.
113. LS3.02: ENLARGED LSS PLAN - BELOW GRADE - EL. -1.0' TO 10.0'
   a. Add pipe tag for clarification and fix tag overlap.
   b. Expand section 2 to see adjacent pipe.
   c. Added section 2/507 for clarification.
   d. Updated mixing basin return pipe elevations to be below grade. ROS-MIX, SMU-MIX,ROS-EQ, SMU-EQ piping lowered
114. LS3.11: ENLARGED LSS PLAN - PUMP PIT AND BELOW GRADE - EL. 0.83' TO 6.75'
   a. Show basin bottom sumps to match structural and adjust piping terminations. Tagged sumps
   b. ROS-MIX, SMU-MIX,ROS-EQ, SMU-EQ piping lowered
   c. Revised ROS-MIX and SMU-MIX drain piping
115. LS3.13: ENLARGED LSS PLAN - PUMP PIT AND BELOW GRADE - EL. 0.83' TO 6.75'
   a. Add pipe elevations and sump tag for clarification.
   b. ROS-EQ, piping lowered
116. LS3.17: ENLARGED LSS PLAN - BELOW GRADE - EL. 0.5' TO 8.75'

a. Revised AQC O/F connection to NPDES to avoid enlarged beam

117. LS3.21: ENLARGED LSS PLAN - PUMP PIT CEILING PLAN AND BELOW GRADE - EL. 6.75' TO 10.33'
   a. Changed portion of SMU HEX piping from CPVC to PVC to match P&ID for clarification.
   b. Tagged piping for clarification.
   c. Added section 7/5.06 for clarification.
   d. Added section 1/5.09 for clarification
118. LS3.23: ENLARGED LSS PLAN - PUMP PIT CEILING PLAN AND BELOW GRADE - EL. 6.75' TO 10.33'
   a. Changed portion of SMU HEX piping from CPVC to PVC to match P&ID for clarification
119. LS3.30: ENLARGED LSS PLAN - 1ST FLOOR - EL. 10.33' TO 18.33'
   a. Added section 2/507 for clarification.
120. LS3.31: ENLARGED LSS PLAN - 1ST FLOOR - EL. 10.33' TO 18.33'
   a. Add pipe tag for clarification
   b. Added section 7/5.06 for clarification
   c. Added section 1/5.09 for clarification
   d. Located water softener brine tank on lower level for ease of salt loading.
   e. Fix view to not see pipe frc pipe run
121. LS3.32: ENLARGED LSS PLAN - 1ST FLOOR - EL. 10.0' TO 18.33'
   a. Added section 2/507 for clarification.
122. LS3.34: ENLARGED LSS PLAN - 1ST FLOOR - EL. 9.08' TO 18.33'
   a. Added notes to clarify Add-Alt #3 scope.
   b. Reroute AQC overflow pipe to outfall to prevent conflict with larger beam. CRO O/F pipe stays 3" to outfall O/F connection instead of 4"
123. LS3.35: ENLARGED LSS PLAN - 1ST FLOOR - EL. 9.67' TO 12.17'
   a. Removed unnecessary detail call out.
124. LS3.36: ENLARGED LSS PLAN - 1ST FLOOR - EL. 13.83' TO 16.5'
   a. Upsized TOU MU pipe from 2" to 3" to allow quicker tank fill during startup.
   b. Added notes to clarify exotics aquatics Add-Alt #3 scope and base scope.
   c. With AQC eroute AQC overflow pipe reroute, CRO O/F pipe stays 3" to outfall O/F connection.
   d. Adjusted background to visibly see TOU upflow piping and vac & SWS pipe in vertical
125. LS3.37: ENLARGED LSS PLAN - 1ST FLOOR - EL. 9.08' TO 17.83’
   a. Reroute AQC overflow pipe to outfall to prevent conflict with enlarged beam.
126. LS3.38: ENLARGED LSS PLAN - 1ST FLOOR - EL. 11.33' TO 17.83'
   a. Pipe tag fix
127. LS3.41: ENLARGED LSS PLAN - 2ND FLOOR ADMIN - EL. 18.36' TO 23.94'
   a. Add section 1/5.09 to clarify piping.
   b. Add pipe tag for clarification.
   c. Add potable water pipe to water softener brine tank that was relocated to level 1 equipment room for ease of salt addition and revise SRK tower ORP smp piping.
128. LS3.43: ENLARGED LSS PLAN - 2ND FLOOR ADMIN - EL. 18.36' TO 24.86'
   a. Moved obscured ro skid tag.
   b. RO skid REJ pipe routed to BWD REC drum filter pipe for sewer
   c. Add pipe tag
129. LS3.44: ENLARGED LSS PLAN - 2ND FLOOR ADMIN - EL. 18.36' TO 26.69'
   a. Added note to clarify base design ROS & ROF piping connection requirement if add alt #3 is not included.
   b. Iso #2 tag cleanup.
   c. Added Iso callout on drawing to match iso #1 located on LS6.06
130. LS3.46: ENLARGED LSS PLAN - 2ND FLOOR ADMIN - EL. 16.5' TO 26.69'
   a. Upsized TOU MU pipe from 2" to 3" to allow quicker tank fill during startup.
   b. Add pipe tag and notes for clarification.
   c. Routed AQC frac drain to floor drain near PBA reservoir
131. LS3.47: ENLARGED LSS PLAN - 2ND FLOOR ADMIN - EL. 18.36' TO 26.69'
   a. Add tag for clarification.

b. Add iso call out for new 4/ls6.06 iso for clarification

132. LS3.48: ENLARGED LSS PLAN - 2ND FLOOR ADMIN - EL. 17.83' TO 26.44'
   a. Add iso callouts for new isos 3 & 5 on LS6.06.
   b. Fix pipe tag.
   c. Add iso call out for Iso #4 on LS6.01
   d. Add drum piping highloop outlet elevation to prevent filter running dry without the longer "LT"model due to space constraint

133. LS3.49: ENLARGED LSS CEILING PLAN - EXOTICS - EL. 16.67' TO 19.25'
   a. Added notes clarifying exotics aquatics add alt 3 scope

134. LS3.51: ENLARGED LSS PLAN - 2ND FLOOR ADMIN CEILING PLAN - EL. 23.94' TO 34.78'
   a. Added 2" BLV on drum filter NPWS to match P&ID.
   b. Add section 1/5.09 to clarify piping.
   c. Revise SRK tower ORP smp piping.
   d. Revised piping to and from water softener skid, added water softener bwd piping, and rearranged SRK tower pressure transducer and sight gauge
   e. Relocated section 5/5.03 to behind ROS tank for clarification.
   f. Added section 2/5.09.

135. LS3.53: ENLARGED LSS PLAN - 2ND FLOOR ADMIN CEILING PLAN - EL. 24.86' TO 34.78'
   a. Tag pipe.
   b. RO skid REJ pipe routed to BWD REC drum filter pipe for sewer
   c. New section #4

136. LS3.54: ENLARGED LSS PLAN - 2ND FLOOR ADMIN CEILING PLAN - EL. 26.69' TO 35.46'
   a. Added tags for clarify.
   b. Added Iso callout on drawing to match iso #1 located on LS6.06.
   c. Routed AQC frac drain to floor drain near PBA reservoir

137. LS3.56: ENLARGED LSS PLAN - 2ND FLOOR ADMIN CEILING PLAN - EL. 26.69' TO 34.36'
   a. Routed AQC frac drain to floor drain near PBA reservoir

138. LS3.57: ENLARGED LSS PLAN - 2ND FLOOR ADMIN CEILING PLAN - EL. 26.69' TO 34.28'
   a. Routed AQC frac drain to floor drain near PBA reservoir

139. LS3.58: ENLARGED LSS PLAN - 2ND FLOOR ADMIN CEILING PLAN - EL. 26.44' TO 34.28'
   a. Added piping tags for clarification

140. LS3.59: ENLARGED LSS CEILING PLAN - CYLINDERS - EL. 10.83' TO 19.36'
   a. Added notes to clarify exotics aquatics Add-Alt #3 scope.

141. LS3.61: ENLARGED LSS PLAN - 3RD FLOOR - EL. 34.78' TO 41.73'
   a. Routed water softener backwash drain piping to plumbing's floor sink on 3rd level.

142. LS3.64: ENLARGED LSS PLAN - 3RD FLOOR - EL. 35.46' TO 45.96'
   a. Routed AQC frac drain to floor drain near PBA reservoir.
   b. Add pipe tag

143. LS3.81: ENLARGED LSS PLAN - 3RD FLOOR CEILING PLAN - EL. 45.17' TO 52.54'
   a. Routed SRK-ABO002-001 blower vent thru roof instead of thru side of wall

144. LS5.01: SECTIONS
   a. Section #1 Upsized TOU SWM and MU pipe and valves from 2" to 3" to allow quicker tank fill during startup.
   b. Section added pipe tags for clarification.
   c. Section 5 add pipe tags and flow meter tag for clarification. RO skid REJ pipe routed to BWD REC drum filter pipe for sewer.
   d. Sections 2 & 3, 4. RO skid REJ pipe routed to BWD REC drum filter pipe for sewer.

145. LS5.02: SECTIONS
   a. Section 2 revised piping to and from water softener skid, added water softener bwd piping, and rearranged SRK tower pressure transducer and sight gauge

146. LS5.03: SECTIONS
   a. Deleted outdated note in section #2
   b. Section 4, water softener brine tank relocated to level 1 equipment room for ease of salt addition and revise tower ORP smp piping.

147. LS5.04: SECTIONS

a. Add note on section #7 for clarification 2. routed SRK-ABO002-001 blower vent thru roof instead of thru side of wall

148. LS5.06: SECTIONS
a. Added section 7 for clarification

149. LS5.07: SECTIONS
a. section 4, Added 2" BLV on drum filter NPWS to match P&ID.
b. Section 4 changed portion of SMU HEX piping from CPVC to PVC to match P&ID for clarification Reroute NPWS piping to water softener skid.
c. RO skid REJ pipe routed to BWD REC drum filter pipe for sewer
d. Section 1, adjust view to see EQ pipes in section for clarification
e. Added section #2 for clarification

150. LS5.08: SECTIONS
a. Section 1 revised srk orp smp piping and add NPW piping to water softener brine tank.

151. LS5.09: SECTIONS
a. Add new sheet for additional project section

152. LS6.01: ISOMETRICS
a. Iso #1 Upsized TOU SWM and MU pipe and valves from 2" to 3" to allow quicker tank fill during startup.
b. Iso #4 add drum piping highloop outlet elevation to prevent filter running dry without the longer "LT"model due to space constraint

153. LS6.02: ISOMETRICS
a. Iso #3 add valve and piping tag for clarification 2. in Iso #2 and #4, routed water softener backwash discharge drain to plumbing's floor sink on 3rd level

154. LS6.03: ISOMETRICS
a. Iso #3, add drum piping highloop outlet elevation to prevent filter running dry without the longer "LT"model due to space constaint
b. Iso #4 add note to clarify CRO add-alternate #3 scope and base scope. Reduce entire CRO overflow pipe size to 3" due to AQC overflow pipe not combining

155. LS6.04: ISOMETRICS
a. Iso #2 & #3, Added 2" BLV on drum filter NPWS to match P&ID. Fixed pipe tag.
b. Iso #4 Added valve and piping tags for clarification.
c. Iso 1 Routed AQC frac drain to floor drain near PBA reservoir
d. Section 6, frac piping lowered to resolve beam conflict

156. LS6.05: ISOMETRICS
a. Iso #1 reroute of POT piping to water softener. 2 iso #6 added pipe tag

157. LS6.06: ISOMETRICS
a. Iso #1 Added note to clarify base design ROS & ROF piping connection requirement if add alt #3 is not included. Routed AQC frac drain to floor drain near PBA reservoir
b. Added #3 Iso for clarification.
c. Added #4 Iso for clarification.
d. Added #5 Iso for clarification.

158. LS8.01: DETAILS
a. Detail #10, clarified diameter is referencing interior dimension for clarification

159. LS8.03: DETAILS
a. Updated dirty recovery basin sump, ROS and SMU elevations to match structural.
b. Added clean, intermediate, smu, fmu, sumps to table

160. LS9.01: 36" DIA. - FILTER FABRICATION
a. Revised spec # reference and updated top layer of media to crushed glass to match drawings, schedule, and spec

161. LS9.02: 48" DIA. - FILTER FABRICATION
a. Revised spec # references
b. Corrected equipment tag to mirrored filter

162. LS9.03: 96" DIA. - FILTER FABRICATION
a. Revised spec # references.
b. Reduce side shell dimension.

c. Revise connection sizes to match drawings

163. LS9.04: AQC-DEA030-001 - DEAERATION TOWER FABRICATION
   a. added hole sizes and Qty to distributor pipe. 2. Added tower i.d. and note for clarification
164. LS9.05: PBA-DEA024-001 - DEAERATION TOWER FABRICATION
   a. Added hole sizes and Qty to distributor pipe.
   b. Added tower i.d. and note for clarification
165. LS9.06: CTF-DEA018-001 - DEAERATION TOWER FABRICATION
   a. Added tower i.d. and spec number for clarification
166. LS9.07: LPS-DEA012-001 - DEAERATION TOWER FABRICATION
   a. Added spec number for clarification and revised nozzle callouts
167. LS9.08: PRC-DEA030-001 - DEAERATION TOWER FABRICATION
   a. Added spec number for clarification
168. LS9.09: WSD-DEA018-001 - DEAERATION TOWER FABRICATION
   a. Added spec number for clarification. Revised nozzle callouts and orientations
169. LS9.10: AQC-RES001-001 - RESERVOIR FABRICATION
   a. Added hole sizes and Qty to distributor pipe.
   b. Removed extra drain connection from table
170. LS9.12: LCR-RES001-001 - RESERVOIR FABRICATION
   a. Revised reservoir note stand for clarification
171. LS9.14: PRC-RES001-001 - RESERVOIR FABRICATION
   a. Added hole sizes and Qty to distributor pipe.
172. LS9.16: ROF-TNK060-001 - TANK FABRICATION
   a. Revised hex inlet elevation
173. LS9.18: CRO-TNK060-001 - TANK FABRICATION
   a. Revised section callouts on section 1
174. C-1: DEMOLITION & TREE REMOVAL PLAN
175. C-2.0: GRADING, DRAINAGE, & EROSION CONTROL PLAN
176. C-2.1: GRADING, DRAINAGE, & EROSION CONTROL PLAN
177. C-4: UTILITY PLAN
178. C-5: LAYOUT PLAN
179. C-9.4: NOTES & DETAILS
180. C-9.5: NOTES & DETAILS
181. L-1.20: LANDSCAPE / HARDSCAPE DEMOLITION PLAN – BASE BID
182. L-1.21: LANDSCAPE / HARDSCAPE DEMOLITION PLAN – BASE BID & ALTERNATE
183. L-1.30: MATERIALS PLAN – ENTRY PLAZA
   a. ADDED “SALVAGE AND REINSTALLED” FOR GREENWAY BOLLARD AND ACCENT LIGHTS IN MATERIALS LEGEND.
184. L-1.31: MATERIALS PLAN – LOADING YARD
   a. ADDED SPEED BUMP IN.
   b. REVISED THE NOTE FOR ACCENT LIGHT
   c. ADDED “SALVAGE AND REINSTALLED” FOR GREENWAY BOLLARD AND ACCENT LIGHTS IN MATERIALS LEGEND.
185. L-1.32: MATERIALS PLAN – EAST ENTRANCE
   a. ADDED CALLOUT AND DETAIL NUMBER FOR GALVANIZED SCREEN DOWNSPOUT NOZZLE FOR DAYLIGHT PIPE
   b. ADDED “SALVAGE AND REINSTALLED” FOR GREENWAY BOLLARD AND ACCENT LIGHTS IN MATERIALS LEGEND.
   c. ADJUSTED FRENCH DRAIN DETAIL CALLOUT TO A4/L-500
186. L-1.33: MATERIALS PLAN – ALTERNATES
187. L-1.34: MATERIALS PLAN - ALTERNATES
188. L-1.50: GRADING PLAN – ENTRY PLAZA
   a. REVISED RIM ELEVATION, LOCATION AND ADDED INV IN AND INV OUT
189. L-1.51: GRADING PLAN – LOADING YARD
190. L-1.52: GRADING PLAN – EAST ENTRANCE
   a. ADDED 4” SOLID PVC PIPE TO DAYLIGHT

b. ADDED 6” ADA HEEL SAFE DRAIN IN PAVEMENT CALLOUT

191. L-1.54: GRADING PLAN - ALTERNATES

192. L-1.60: PLANTING PLAN – ENTRY PLAZA

a. DELETED PLANT NOTE NO.12, “ALL SOILS SHALL BE IMPORTED, PLANTING SOIL TYPE B”

193. L-1.61: PLANTING PLAN – LOADING YARD

a. ADJUSTED THE CALLOUT NOTE FROM “ZOYSIA SEED” TO “BERMUDA SEED”.

194. L-1.70: IRRIGATION PLAN – BASE BID

195. L-500: DETAILS

196. L-502: DETAILS

a. ADDED DETAIL B1/L502

197. L-503: DETAILS

a. DETAIL C3/L503- REVISED REBAR LOCATION AND ADDED EXTRA DIMENSION; REVISED ‘½” X6” STAINLESS STEEL DOWELS’ TO ‘½”X6” STAINLESS STEEEL DOWELS’

b. DETAIL A1/L503- REVISED ‘½” X6” STAINLESS STEEL DOWELS’ TO ‘½”X6” STAINLESS STEEL DOWELS’; ADJUSTED STAIR FOOTING SIZE

c. DETAIL A3/L503- REVISED ‘½” X6” STAINLESS STEEL DOWELS’ TO ‘½”X6” STAINLESS STEEEL DOWELS’; ADJUSTED STAIR FOOTING SIZE

198. L-507: DETAILS

a. REMOVED METAL EDGE FROM DETAIL 7/L507 SECTION LAWN CONDITION.

Changes from 9/8/25 Bid Set documents noted with revision clouds.

ATTACHMENTS:

REVISED SPECIFICATION SECTIONS AS NOTED ABOVE

REVISED SPECIFICATION SECTIONS AS LISTED IN THE ATTACHED DOCUMENT:

FFA_ADDENDUM_3_SPEC CHANGES_20251110

REVISED DRAWING SHEETS AS NOTED ABOVE

End of Addendum Number Three

FORT FISHER AQUARIUM - ADDENDUM #3 SPEC CHANGES

Spec Section	Subsection	Changes
055213 - Pipe and Tube Railings	**1.2 Summary**	Added new item: **"Exterior aluminum illuminated handrails."** This type of handrail was not included in the original specification.
	2.2 Handrails	Added new subsection **C – Illuminated Handrail**, with detailed requirements for integrated LED lighting systems:
	2.5 Aluminum Railings (New Section)	Entirely new section added. Specifies materials, alloys, and standards for aluminum railings:
	2.7 Fasteners (Renumbered)	Added note distinguishing fasteners for **aluminum railings**: must be stainless steel, Type 304 or 316, to prevent galvanic corrosion.
	2.9 Fabrication (Renumbered)	Added coordination note to match **finish of illuminated aluminum railings** with other metal finishes.
075423 SF - THERMOPLASTIC POLYOLEFIN (TPO) ROOFING	**1.2 – Performance Requirements**	Added new requirement: "Meet NCSBC requirements for wind uplift." Existing Solar Reflectance Index and Energy Performance requirements remain unchanged.
	3.1 – Insulation Installation	Section title modified from "Insulation Installation" to "Insulation Installation (Adhered)" to clarify installation method. No additional technical text added or removed.
088000 SF - GLAZING	**2.2 Materials**	Simplified and consolidated glass types: removed separate listings for *ultra-clear low-iron float glass (Q5)* and *patterned glass*. Retained only one universal specification: *Float Glass, ASTM C1036 Type I, Quality Q3, Class I.*
	2.4 Insulating-Glass Types	Changed the description for the **Outdoor Lite** from "GL-1 with VE85 on surface #2" to "GL-1 with low-e coating on surface #2." This removes the specific product (VE85) reference and allows for generic low-e glass coatings.
100000 – Miscellaneous Specialties	**2.5 Toilet Compartments**	Added new design and hardware requirements:
		– Provide **Extra Privacy panels** 71½ inches high, mounted 4 inches above floor.
		– Add **continuous aluminum door strikes** the full length of each door.
		– Include **occupancy indicator** on each latch.
	2.8 Expansion Joint Covers	Increased joint design width from **1 inch to 2 inches**.
		Changed model numbers from **C/S VF-100** to **C/S VF-200**.
		Added new fire-rated option: **Construction Specialties VFR-200**.
		Updated gypsum board cover model from **ASM-100** to **ASM-200** to match width change.
170010 – General Provisions	**1.1 Summary**	Expanded scope to include **chemical systems** along with saltwater and freshwater systems.
	1.1 B – Automated Controls Supplier (ACS)	Added detailed responsibilities for the **ACS**, including installation of indicators, transmitters, and devices related to life support system monitoring.
	1.1 D – Testing Laboratory Requirements	Added new section requiring that **equipment be listed or labeled** by an approved **Nationally Recognized Testing Laboratory (NRTL)** such as CSA, ETL, or UL, accredited by the **North Carolina Building Code Council (NCBCC)**.
	1.1 F – Pressure Testing	Added detailed coordination requirements for **pressure testing procedures** across systems and trades.
	1.1 I – Contractor Prepared Drawings	Added requirement for **contractor-prepared coordination drawings** for system installation.
	1.1 J – Startup Operations	Added new section defining startup and commissioning steps including pump rotation checks, calibration, and turnover procedures.
	1.1 L – Technical Seminars	Added requirement for **technical training sessions** by manufacturers for Owner and facility staff, covering up to eight key life-support system components.
	1.2 General Arrangement Drawings	Added new section defining **contractor responsibilities** for coordination with civil and structural drawings, field fitting, and conflict resolution.
	1.3 Definitions and Standards	Added definitions for **"Provide," "Typical," and "Or approved equal"** and included a list of reference standards (ANSI, ASTM, AWWA, NFPA).
	1.4 Codes, Permits, and Inspections	Added detailed requirement for the **contractor to obtain and pay for all permits** and to provide signed inspection certificates.
	1.5 NIC Work	Added definition of **Not in Contract (NIC)** work and coordination requirements.
	1.6 Owner-Furnished Equipment	Added procedures for **delivery, inspection, and installation coordination** of Owner-furnished items.
	1.7 Quality Assurance	Added new section specifying **labor, material, and warranty** quality standards, including conflict resolution between drawings and specifications.
	1.8 Submittals and Approvals	Added submittal timing requirements and procedures for **approval coordination**, including contractor accountability for errors.
	1.9 Shop Drawings	Added **Level of Development (LOD 300/400)** requirements and **digital submission standards**.
	1.10 Record Drawings	Added **photo documentation requirement** for buried piping and concealed systems.
	1.11 Electronic Documents	Added clause stating **printed documents take precedence** over digital versions and limiting use of design files.
	1.12 Delivery, Storage, and Handling	Added protection requirements for **UV exposure, above-ground storage, and handling of pipe materials**.
	1.13 Guarantee of Materials and Workmanship	Added **minimum 1-year guarantee** requirement with OSHA compliance language.
	1.14 Maintenance and Operation Data Manual	Added detailed **O&M manual format and content requirements**, including electronic submittal limitations (≤10 MB per file).
	3.1 General Installation of Piping	Added new tolerances for **buried pipe elevations (≤25% of pipe ID variation)**, continuous slope requirements, and temporary supports.
	3.3 Cutting and Patching	Added requirement for **water-stop flanges** in hydraulic walls and clarified when **Link-Seal** may be used.
	3.5 Safety and Protection	Added section mandating compliance with **OSHA standards**, installation of **drive guards**, and **impact padding** in work zones.
170024 FRP Filters	**1.1 C – Port Locations**	Added detailed subdivision: small (< 48") filters ports in sidewall; large ≥ 48") filters must have top-center inlet and lower-side outlet — "no exceptions."
	1.2 B – Design criteria	Added explicit design criteria: 75 psi for REC & FMU filters; 50 psi for recirculation; test pressure = 1.1 × design for 4 hours; max strain 0.001; min burst = 4 × design; negative = 5 in Hg.
	1.5 Submittals	Consolidated and reordered into numbered sub-items (1–7 for pre-fabrication and 1–4 for post-fabrication). Warranty moved into subsection C.
	1.5 Post-fabrication docs	Same requirements retained but re-sequenced and clarified; added phrase "on manufacturer's letterhead or signed by PE."
	2.1 A – Usage	Condensed to two sentences referencing sand and carbon media only.
	2.1 N – Manufacturers	Updated to LS9.01, LS9.02, and LS9.03 for accuracy.
170028 Modular Drum Filters	**1.1 – Usage**	Added clarification that the drum filters are used not only for *backwash water* but also for *exhibit water*.
	1.2 – General	Added requirement that delivered products must conform to specified controls requirements.
		Added a new item "Each self-backwashing drum filter shall be delivered in a modular self-standing housing."
		Reordered and renumbered subparagraphs for clarity.
		Added requirement that controller must include an Ethernet port for LSS ACS connection.
		Added a new paragraph (H) requiring the contractor to arrange a *technical seminar* by the manufacturer or factory distributor for owner training.

	1.4 – Coordination	Added new item (A) requiring coordination with *construction of concrete reservoir basins* for fit of drum filters.
		Clarified that the *main disconnect switch* must be provided *by the Contractor* (instead of being "per electrical plans").
		Removed the optional note about 120 VAC special order.
	1.6 – Submittals	Added clarity in item H referencing that the letter from the manufacturer must be signed by *senior personnel* and printed on *company letterhead* .
	1.8 – Warranty	Increased warranty period for all components (external, screens, internal components, booster pump, accessories) from **1-year** to **2-years**.
	2.2 – System Components	Added specific enumeration of sub-items under "Materials" (Tank Housing, Drum Frame, Cast Alloys, etc.).
	2.4 – Manufacturer	Expanded "Alternate Manufacturers" section:
		– Added explanation that selection of alternate units may require adjustments to *Aquarium structure, pipe routing, and power supply* .
		– Stated that contractor is responsible for coordination and space/power accommodations.
		– Added note that alternate manufacturers may not have off-the-shelf sizes as on drawings.
170032 Bag Filters	**2.2 A – Design**	Added requirement: *"Provide flanged bags with molded-in handles."* This improves ease of removal and handling
	2.2 B – Bag Filters	• Added new bag size: *7-inch × 16-inch* (in addition to 7 × 32 in).
		• Added note: *"Refer to schedule for sizes."*
		• Maintains polypropylene construction but now explicitly covers multiple filter lengths
	2.2 C – Performance	• Flow rate reduced from 16 GPM to 10 GPM.
		• Pressure-drop criterion changed from "< 0.4 psi at 16 GPM" to "allow for functional operations at 10 GPM."
	2.2 E – Suppliers	• Re-ordered and expanded approved list: now lists Hayward → Aquatic Eco-Systems → 3M → or approved substitute (previous document listed 3M first).
		Ensures 3M filters are still acceptable but clarifies preferred vendor order
170035 Cartridge Filters	**1.1 Usage**	Removed Tag No. **LCR-FGN001-001 Live Coral Flexible Cartridge Filter Housing** and its description from scope — this filter is no longer included in the project. Only Tag No. **HTT-FCRT01-001 Holding Touch Tank / Carbon Cartridge Filter** remains in the specification.
	3.1 Installation	Deleted reference to "**Part 3 – (blank)**" and renumbered execution section correctly. No additional installation requirements added or removed beyond the renumbering. Technical content otherwise unchanged.
170062 Sand Media	**1.1 Usage**	Added explicit reference to **pressure-vessel filters** and defined three use cases: (1) support media with #20 fine sand top layer, (2) support media with glass top layer (Section 170063), and (3) support media with carbon top layer (Section 170072).
	1.2 General & Quality Control	Added specific quality-control standards: **Federal SS-C744a**, **ASCE Manual of Practice No. 13**, and **AWWA B100**; introduced detailed **soundness test** requirement limiting weight loss to 5 % after 20 cycles and added hardness/toughness criteria.
	1.3 Referenced Standards	Expanded list to include **API Recommended Practices RP 56** for hydraulic-fracturing sand testing, in addition to AWWA B100, ASCE 13, and SS-C744a.
	2.1 General Materials	Added requirement that **media must be free of iron or manganese compounds** and that **angularity, sphericity, and roundness** be determined using the **API Frac-Sand Roundness Chart (Fig. 5.1)**.
	2.2 Support Gravel	Added quantitative physical properties: roundness ≥ 0.4, sphericity > 0.5, specific gravity ≥ 2.60; not more than 25 % fractured faces; ≤ 2 % flat/elongated pieces; ≤ 1 % foreign material; acid solubility ≤ 10 %.
	2.3 Support Sand Media	Introduced explicit **chemical composition** (≥ 90 % SiO_2, ≥ 85 % quartz, ≤ 15 % feldspar) and **gradation ranges**: #16 sand (0.59–0.71 mm, UC ≤ 1.6) and #10 sand (1.5–2.0 mm, UC ≤ 2.0); acid solubility limit ≤ 5 %.
	2.4 Top Filter Sand Media	Added requirement for **crushed-rock angular particles** (roundness ≤ 0.5, sphericity > 0.5); defined gradation range for #20 media (0.45–0.55 mm, UC 1.35–1.70); set composition (≥ 60 % quartz, ≤ 35 % feldspar, ≤ 5 % others); specified acid solubility ≤ 5 % with defined test procedure (40 % HCl at 65–75 °F for 24 h).
	2.5 Top Filter Glass Media	Added cross-reference: "See specification Section 170063."
	2.6 Top Filter Carbon Media	Added cross-reference: "See specification Section 170072."
	3.2 Installation of Gravel and Support Sand Layers	Added requirement for **initial backwash** before gravel placement and inspection of lower laterals after backwash; emphasized avoiding fine material around lower distributor and preventing sand migration into gravel.
	3.3 Installation of Top Sand Layer	Added detailed **backwash procedure**: initial rate ≤ 2 gpm/ft², increase gradually to specified rate for ≥ 5 min; optional scour rate 18 gpm/ft²; requires post-backwash inspection and top-off of final layer.
170063 Glass Media	**2.3 Top Crushed Glass Filter Media**	Added specific **supplier list** identifying Lincoln Equipment Inc. (Portland, OR) and Trivitro Corporation (Seattle, WA) as reference sources, with allowance for *approved substitute* . This information was not included in Document 1.
170072 Carbon Media	**2.3 Top Crushed Glass Filter Media**	Added explicit **gradation and performance data table** for top crushed glass: *Effective Grain Size 0.45 mm – 0.55 mm; Uniformity Coefficient 1.35 – 1.70; Comment – Angular* . This defines filtration range not previously stated.
	1.1 Usage	Added two specific application types for carbon media: (1) *Incoming water filters loaded with Carbon Media* and (2) *Pressure filters for quenching dissolved ozone loaded with carbon media.* This clarifies where the carbon media is used.
	1.5 Submittals	Expanded list of required submittal data to include: *Iodine number, mesh size (% greater and less), mean particle size, apparent density, and monochloramine removal efficiency.* These parameters were not previously required.
	2.1 GAC Carbon Media (Coconut Shell)	Added specific **performance criteria**: GAC must be *"surface activated"* and capable of removing at least *75% monochloramine* with *10-minute contact time.*
	2.1 GAC Carbon Media (Coconut Shell)	Added **product composition limits**: Iodine number ≥ 975 mg/g, size range 20×50 mesh (preferred) or 12×40 (optional), apparent density 0.49–0.60 g/cc, and ash ≤ 2%. These quantified specifications were not present before.
	2.1 Standards	Added requirement that media must meet **Food Chemical Codex**, **AWWA B604-9**, **NSF/ANSI 61**, **WQA Gold Seal**, and **Prop 65** compliance for drinking water applications. These standards were not included in the prior version.
	2.1 Cleanliness	Added requirement that media be **pre-moistened and acid-washed** to eliminate dust and fines.
	2.1 Suppliers	Added approved supplier list: *Resintech, American Activated Carbon Corp., Carbon Activated Corp., and PureWater.* This list did not exist in the previous version.
	3.1 Installation – Safety & Health	Added explicit **safety note** on oxygen depletion hazard from wet activated carbon and requirement to follow *low-oxygen work procedures* per MSDS.
	3.1 Installation – Washing Media	Added requirement to **thoroughly wash media prior to placement** to remove all fine material and dust.
170088 Aeration Tower Packing Media	**1.1 Summary**	Added specification that **random packing** is also installed in *biomedia chambers such as biomedia boxes in reservoirs and CTF, LPS, PRC, and WSD towers* . Expands list of application locations.
	2.1 Random Biomedia – Usage	Clarified that **packing is used in filtered aquarium saltwater trickling chambers** for nitrification and bubble reduction. Text now explicitly defines performance intent.

	2.2 Structured Tower Packing Media – Performance Criteria	Added detailed numerical criteria: **Void space > 95 %**, **specific surface area > 67 ft²/ft³**, **corrugation angle 30°**, **sheets per ft = 26**, **mixing points > 2,400 per ft³**, **sheet thickness 10 mil**, **height 11.8 – 12 in.** and identified **Brentwood CF 1200 or substitute**. These quantitative values were not included before.
	2.2 Structured Tower Packing Media – Material Properties	Added mechanical property requirements referencing **ASTM D638/D882, D790, D4226, D648** with numerical minimums for tensile, flexural, impact, and heat-distortion strength. Defines measurable structural standards.
	2.3 Cellular Type Drift Eliminators – Design Criteria	Added detailed **cell and material data**: *Unit Depth 5.25 in. , Cell Size 0.86 in. (0.80 – 1.0 in. alternates) , Material Gauge 13 mil – 20 mil (15 mil optional)* ; limits drift loss to **≤ 0.0005 % recirculation** verified by **CTI STD-140 or EPA Method 13 A**.
	2.3 Cellular Type Drift Eliminators – Manufacturers	Added approved products: **Brentwood CFUltra or CF80Max**, with optional alternates **Koch-Glitsch** and **Sulzer Chemtech USA Inc.** Prior version did not list specific models or alternates.
	3.1 Installation – Random Biomedia	Added placement criteria: compare each shipment to approved sample; reject material with flash or broken pieces;**avoid dropping from height**, **dump gently**, and **rake for level surface**.
	3.1 Installation – Structured Packing	Added explicit requirements: install **two perpendicular layers**, **¼-inch clearance** from vessel wall, **remove trimmings**, and **install protective grid** above top layer.
	3.1 Installation – Drift Eliminators	Added full installation sequence: precise **cutting tolerance ≤ ¼ in.**, **prevent debris from falling into media**, **orient perpendicular to FRP supports**, **prohibit walking on modules**, and **require protective grid if foot traffic expected**.
170107 Current Effects Flow Generators	**1.2 Quality Assurance**	Added requirement that **pumps and motors shall be preassembled at the factory** to ensure quality control and assurance.
	1.3 Coordination	Revised mounting requirements: replaced magnetic mount option with directive to use **adjustable in-tank mounts for all submerged units**, eliminating reliance on magnetic mounts.
	1.4 Submittals	Added requirement to **submit mounts and hardware for each tank location** to verify compatibility with installation.
	2.1 Current Effects Generators – Alternate Manufacturers	Added detailed paragraph stating that **alternate manufacturer selections must not compromise specifications** and may require contractor coordination for **physical space and alternate electrical requirements**. Any modifications required to accommodate alternates are the **contractor's responsibility**.
	3.1 Installation	Added explicit instruction to **mount with titanium adjustable pipe mount** to secure the Abyzz AFC mount underwater for **stability and adjustability**.
170110 Chemical Metering Pumps	**1.2 General Requirements – Codes and Testing**	Added explicit requirement for **Testing Laboratory accreditation** under the **North Carolina Building Code Council (NCBCC)** for electrical and mechanical equipment labeling.
	1.2 General Requirements – Testing Agencies	Expanded list of acceptable testing laboratories to include **Intertek Testing Services (ITS-ETL)** and clarified that **NSF International and other research labs** may be accepted depending on the "equipment category."
	1.2 General Requirements – Compliance Responsibility	Added that the **supplier** is fully responsible for compliance with testing and listing requirements; any required **field approval** must be completed without project delay or added cost to the Owner.
170114 Submersible Pumps	**New Spec Section**	
170120 Horizontal FRP Pumps	**1.2 Codes**	Added new paragraph specifying **Testing Laboratory Requirements**: All electrical and mechanical equipment must be listed by a laboratory accredited by the **North Carolina Building Code Council (NCBCC)**. Accepted agencies include **CSA, ITS-ETL, and UL**. The supplier/manufacturer is fully responsible for compliance, and field approvals must be done at no cost to the Owner.
	1.4 Submittals	Added requirement to submit **proof of approved testing agency listing mark or classification markings** for all installed electrical equipment.
	1.4 Submittals	Reorganized content for clarity but maintained all existing submittal categories; no items removed.
	1.9 Manufacturer	Clarified manufacturer reference to "Fybroc, CECO Environmental" but kept all model series the same.
170129 Small Composite Pumps & Controllers	**1.5 Submittals**	Added new requirement: **"Submit proof that installed electrical equipment will bear approved testing agency listing mark or classification markings."** This confirms compliance with testing standards not previously specified.
170130 Large and Medium ESC Pumps	**1.1 Summary**	Expanded scope to include **all 480V, 3-phase pumps** listed on the schedule instead of only "Genesys" and "Advanced" models. Applies the same performance criteria but broadens coverage to other manufacturer models.
	1.3 Submittals	Added new requirement to **submit proof of approved testing agency listing mark or classification markings** for all electrical equipment.
	1.3 Submittals	Added requirement for **grounding VFD product data** and for **listing modifications required for alternate manufacturers**.
	1.4 Quality Assurance	Added **factory preassembly requirement** to ensure pump/motor fit before delivery.
	1.4 Quality Assurance	Added **Testing Laboratory Requirements** mandating that electrical/mechanical equipment be listed by an **NCBCC-accredited lab** (CSA, ITS-ETL, or UL). Supplier responsible for compliance; field approval at no cost to Owner.
	2.1 Large Non-Metallic Close-Coupled Pumps	Retained same MDM "Genesys" pump basis but added **Alternate Manufacturer** option and defined **contractor responsibilities** for structural, piping, and electrical modifications when alternates are used.
	2.1 Large Non-Metallic Close-Coupled Pumps	Added requirement that **one spare pump** must be provided for each model/impeller trim smaller than 10 hp.
	2.2 Medium Non-Metallic Close-Coupled Pumps	Retained MDM "Advance" basis but added **Alternate Manufacturer** clause with same coordination and spare pump requirements as above.
	3.1 General Installation	Added requirement for **Contractor modifications** when alternate manufacturer is selected to ensure complete functional installation.
	3.1 General Installation	Consolidated **Genesys** and **Advanced** installation procedures under one section; deleted separate installation subsections. Requirements for HDPE baseplate, stanchions, and SS anchors retained under new subsections (H and I).
170138 Magnetic Drive Pumps	**1.3 Quality Assurance**	Added new requirement that **pumps and motors must be preassembled at the factory** to ensure proper fit before delivery.
	1.3 Quality Assurance	Added **Testing Laboratory Requirements** specifying that all electrical and mechanical equipment must be listed by a laboratory accredited by the **North Carolina Building Code Council (NCBCC)**. Acceptable agencies now include **CSA, ITS-ETL, and UL**. Supplier is responsible for compliance; field approvals must be completed at no cost to the Owner.
	1.4 Submittals	Added requirement to **submit proof that all installed electrical equipment bears an approved testing agency listing mark or classification markings.** This was not included in the previous version.
170140 Electric Valve Actuators	**1.3 Quality Control**	Added **Testing Laboratory Requirements** specifying that all electrical and mechanical equipment must be listed by a laboratory accredited by the **North Carolina Building Code Council (NCBCC)**. Acceptable agencies include **CSA, ITS-ETL, and UL**. Manufacturer/supplier responsible for compliance; field approvals must be completed at no cost to Owner.
	1.4 Submittals	Added new requirement to **submit proof that all installed materials will bear approved testing agency listing mark or classification markings.**
		Expanded **motor actuator design requirements** with new quantitative and qualitative details:
		– Housing now specified as aluminum, carbon steel, ductile iron, or composite non-metallic, rated NEMA 4.
		– Torque rating must be at least **25% greater** than calculated torque.
		– Coating system defined: zinc primer + acrylic/polyester UV topcoat (epoxy not recommended).

	2.1 Motor Actuators for Butterfly Valves	– Mounting blocks required to be **Type 316 stainless steel.**
		– Gearing must use **hardened steel or bronze** (aluminum or plastic gears not acceptable).
		– Added **permanent molybdenum grease lubrication** requirement.
		– Added **manual override handwheel design** to be clutch-free with position indicator.
		– Added **over-torque protection** and **internal heater** requirements.
		– Defined **motor duty**: continuous 15-minute duty, Class F insulation, UL/CSA/FM labeled, thermal overload protection at 275°F.
		– Defined **rotation time (≤30 seconds)** and **adjustable motor speed (6:1 turndown ratio).**
		– Added independent limit switches for open/close positions and stainless steel external hardware.
	2.2 Motor Actuators for Reversing Two-Way Ball Valves	Added detailed product specifications:
		– Housing must be non-metallic composite or cast aluminum, NEMA 4X rated, with O-ring seals.
		– Motor duty defined as **25% duty cycle at 10-second intervals.**
		– Added heater requirement for condensation protection in metal housings.
		– External hardware must be 300-series stainless steel.
		– Actuator must have **manual override** (hex socket or spinner wheel).
	3.1 Installation	Added new requirement that **electrical equipment must conform to approved testing laboratory listing** and bear certification labeling.
		Clarified **support installation criteria** for oversized actuators to prevent deflection and added requirement to correct deflection immediately at no cost to Owner.
170142 Butterfly Valves	**1.2 Coordination**	Deleted requirement to "verify mating of valves to flanges" with flange modification details (previously listed subpoints 1–2). Retained only coordination note for actuators and lug style selection.
	1.2 Coordination (C)	Simplified lug coordination list – removed "heat exchanger influent and effluent" and added "UV sterilizer influent and effluent."
	2.1 General Material Requirements (A)	Reformatted coating systems—removed detailed coating brands (Carboline, Porter, International Protective Coatings references) and simplified to general coating categories; no new coating types added.
	2.3 Remote Operators (A)	Deleted detailed three-part selection guidance for operator type (dry location/ wet location / elevated height) and kept only summary instruction to provide extensions where needed.
	3.1 Installation (K)	Added sub-requirements for fasteners:
		– Nuts may be bronze to prevent galling.
		– Require flat washers under all bolt heads and lock washers under nut side.
		– Threads of bolts to be lubricated with grease or anti-seize compound.
		– Threads must extend fully through lug for dead-end installations.
	Throughout Part 3 – Execution	Added emphasis that **excessive deflection in extensions must be corrected immediately at no cost to Owner.**
	General Update	All references to specific coating manufacturers or product names were removed for generality; no new performance or testing requirements added.
170144 Ball Valves	**2.2 PVC/CPVC Two-Way Ball Valves**	Deleted detailed component list and end-of-service valve note ("Provide 'Single Entry' or 'Utility' (non-true union) ball valves at vent and drain lines"). Retained only general description of 2-way valves with PVC/CPVC body, Teflon seats, and Viton or EPDM seals rated 150 psi @ 75 °F. Removed explicit size limit (≦ 2 in.) and manufacturer list.
	2.3 PVC/CPVC Flow Control (Linear Flow) Ball Valves	Deleted list of detailed valve body features (true-union, full-port, full-sphere ball) and manufacturer references. Retained only core functional and material description (150 psi rating, PVC/CPVC body with Viton or EPDM seals and Teflon seats).
	2.4 PVC Lab Cocks & Gauge Cocks	Retained same functional requirements but simplified title ("PVC PVC Lab Cocks & Gauge Cocks" → "PVC PVC Lab Cocks & Gauge Cocks"). No dimensional changes to connections (¼-in.).
	2.5 Stainless Steel 3-Piece Ball Valves	Deleted detailed manufacturer list and explicit references to product series (Swagelok Series 63, Worcester Mizer, Neles-Jamesbury Series 3, Apollo 3-Piece). Material requirements (316 SS body and trim, Teflon or graphite packing, 150 psi rating) unchanged.
	Part 3 – Execution (3.1 Installation)	No changes to installation procedure or technical criteria. All flow-direction and support requirements unchanged.
170146 Globe Valves	**2.1 PVC Globe Valves – Manufacturer List**	Removed all specific manufacturer listings. The previous version listed: ASAHI/AMERICA, Hayward Industrial Products Inc., and Spears Manufacturing Co. The revised document deleted these names, leaving only "Manufacturer:" without details.
	3.1 Installation – Fasteners	Entire **Fasteners subsection** (requirements for 316 SS bolts, bronze nuts, washers, and anti-seize compound) was **deleted** from the revised version. The section now includes only general installation requirements and the strain/deflection clause.
170148 Diaphragm Valves	**2.1 C – Pressure Rating**	Added specific rating requirements: (1) Valves used in sludge and vacuum service must include options for vacuum service. (2) Minimum positive pressure rating of 75 psi. These were not listed in Document 1.
	2.1 F – Manufacturers	Added complete manufacturer list with contact details: ASAHI/AMERICA; GF Piping Systems; and Hayward Flow Control. Previously, this section was blank.
	2.1 F – Approved Products	Changed language from "approved substitute" to "approved equal." This aligns with standardized specification terminology.
170155 Check Valves	**2.1A Check Valves 2.5-Inch Diameter and Larger**	Deleted all detailed performance criteria including pressure ratings (150 psi @ 70°F for≤8" and 85 psi for ≥10"), flow coefficients (Cv values for sizes 3"–10"), and spring/closure requirements. Removed material listings (PVC body, Viton/EPDM seals, Hastelloy or Inconel spring) and manufacturer list (Hayward Flow Control, ASAHI/AMERICA). Retained only the base description: "Wafer, swing-type check valve manufactured of PVC."
	2.1B Check Valves Two-Inch Diameter and Smaller	Removed "Y-type" valve specification, minimum Cv value, and statement that "ball-type check valves are not acceptable." Removed multiple manufacturer options; retained only "Clear plastic valve, true-union end connections, with EPDM seals. 'Swing Check' design with weighted disc and no internal spring. By Spears Manufacturing."
	3.1 Installation	Deleted all **fastener specifications**: 316 SS hex-head bolts, bronze nut option, flat and lock washer requirements, and anti-seize compound use. Retained only general installation instructions and spacing requirements for valve placement relative to pumps.
170157 Needle Type Valve	**2.1 Stainless Steel Needle Valves (C)**	Deleted detailed flow range specifications (previously listed five flow-rate categories from 37 SCFH to 650 SCFH with valve model numbers, orifice sizes, and Cv values). The revised version retains only general sizing and coordination requirements without performance data or model listings.
	2.1 Stainless Steel Needle Valves (E)	Retained manufacturer "Whitey Company (Swagelok)" but deleted detailed model references ("1," "6N," "18," and "12N") associated with each flow range.
170220 PVC.CPVC Pipe and Fittings	**1.3 B – Submittals**	Added requirement to **submit concentric flanged FRP composite reducer fittings**.
	2.2 D – PVC Fittings	Added full technical details describing base material, self-supporting design, molded/fabricated construction, and ASTM identification requirements. These criteria were not included in Document 1.
	2.2 E – PVC Fittings Manufactured by	Added explicit **manufacturer list** (Dura Plastic, Chemtrol /Nibco, George Fischer Harvel, Spears Manufacturing, Eslon Thermoplastics**) instead of blank placeholder in Document 1.
	2.2 G – Special Fabricated Fittings	Added nine sub-clauses detailing U.S. material origin, pressure rating (90 psi @ 73°F), socket interference fit (ASTM D2466/D2467), fabrication tolerances (±1°), bonding methods (Weld-On 811 or equivalent), QA testing requirements, and marking requirements. These specifications were absent previously.

	2.6 E – Full-Circle Stainless Steel Repair Clamps	**Deleted entirely**; repair clamps no longer permitted for standard construction and moved to restricted use within Document 1 only.
	2.6 E (Renumbered to 2.6 E Bulkhead Fittings)	Removed section on "Full-Circle Stainless Steel Repair Clamps"; bulkhead fittings section now immediately follows telescoping expansion joint requirements.
	2.6 E – Bulkhead Fittings (Tank Adapters)	Simplified manufacturer list (removes Smith-Blair, Baker, Straub references and limits to Spears, Harrington, Hayward, Ryan-Herco**).
170233 Compressed Air Piping	**1.1 Usage**	Added clarification describing where non-metallic compressed air piping is used: *"LSS back areas, near or below saltwater, and other locations where plastic compressed air piping is called for on the Drawings."*
	1.1 Usage	Added instruction to use **copper piping** (per Section 170206) for compressed air service between ozone air compressors, air receivers, and air filters where "CU" piping is noted on Drawings.
	2.1 Distribution Pipe & Fittings	Added full list of **three approved system types**: (1) fusion-welded HDPE, (2) solvent-welded ABS, and (3) push-to-connect ABS.
	2.1 Distribution Pipe & Fittings	Added **detailed performance data** for each system option:
		– HDPE: rated to 230 psi, color-coded blue.
		– ABS cement-joined: 145 psi @ 73°F, color-coded, with specific manufacturers (ASAHI/AMERICA, Ryan Herco, IPEX, Chemtrol/NIBCO).
		– ABS push-to-fit: 145 psi @ 73°F, color-coded green, with collar-tool disconnection requirement.
	2.2 Leader Piping	Added **metallic piping requirement** for leader sections upstream of plastic piping. Specifies use of **Schedule 10 Type 316 Stainless Steel**, minimum 10-ft length for heat dissipation, and **ASTM A312 / ASME SA312** compliance.
	2.2 Leader Piping	Added detail allowing **threaded 316 stainless steel fittings** where flanges are not required.
170250 Polyethylene Pipe & Fittings	**1.1 Usage**	Added new clause: "All below-grade HDPE piping is to be butt-fused. If Contractor would like to request specific locations for an electrofusion coupling in an underground location they must submit a shop drawing indicating proposed coupling location and documentation for electrofusion coupling warranty for engineer's review and confirmation."
	1.5 Submittals (H)	Added same butt-fusion/electrofusion submittal requirement for below-grade HDPE as in § 1.1 – Contractor must provide shop drawing and warranty documentation for any electrofusion coupling requested below grade.
	2.2 H – Electrofusion Fittings	Added requirement that electro-fusion fittings "may be substituted for thermally butt-fused pipe joints if manufacturer warranty is included for each size proposed to be used."
	2.3 C – Electrofused Couplings	Expanded paragraph to include explicit warranty requirement and submission process: contractor must submit shop drawing and warranty for each underground coupling for engineer review and confirmation.
170261 Ozone Gas Piping	**2.1 Stainless Steel Piping Materials**	The combined "Stainless Steel Tubing or Pipe Materials" section was simplified to only **Schedule 40 316 stainless steel pipe** (ASTM A312). The option for **stainless steel tubing** (ASTM A269) was deleted. Fittings for tubing and the associated Swagelok/Crawford specifications were removed.
		Retained socket-weld, TIG process, threaded and flanged connections but deleted the tubing ferrule-type connection requirements. Now applies strictly to pipe.
		Changed from **"Stainless Steel Tubing or Pipe Materials"** to **"316 Stainless Steel Pipe Materials."**
	Deleted Content	All content describing **tubing fittings, annealed hydraulic tubing, ferrule-type tube fittings, and tubing wall thicknesses per ASTM A269** was deleted. Only Schedule 40 stainless steel pipe remains.
170270 Flexible Molded-Rubber Couplings	**1.1 C – Types at Locations**	Deleted specific requirements to "Provide twin sphere where indicated on P&IDs at pump suctions" and "Provide single sphere in valve pits to assist with ease of valve maintenance." Retained only general reference to types at locations.
	2.1 G – Liner Materials	Deleted all detailed liner material specifications including EPDM, Viton, silicone, and hydrogen-peroxide-cured EPDM with Kevlar reinforcement. The section header "Liner Materials" remains but contains no details.
	2.1 I – Manufacturer	Deleted full list of approved manufacturers and their contact information (General Rubber, Mason Industries, Proco Products, Red Valve, RM-Holz, Unaflex). Retained only general statement that product must be "Special Ordered" to meet requirements.
	3.1 A(1–2) – Installation at Pumps	Deleted detailed installation requirements for bolting (per Section 170316) and alignment tolerances (≤5 degrees or ≤0.5 inch). The section remains but no subpoints.
170280 Mechanical Pipe Seals	**1.1 A – Locations (3)**	Added new clause permitting use of mechanical seals in *planned new wall construction* only after **Owner's approval of a substitution request** for cost savings on concrete form penetrations. Specifies that the approved substitution must include an **oversized PVC pipe sleeve with a cast-in-place water-stop flange**.
	2.1 C – Manufacturer	Added detailed manufacturer list: **GPT Industries (Link-Seal)**, **Flexicraft Industries**, or approved substitute. These names were not listed previously.
	3.1 B – Installation	Added requirement to **coat exposed reinforcing steel** with **20-mil thickness of "Armatec 110 EpoCem" by Sika, or equal corrosion protection coating** when reinforcement is cut or exposed. This note was not in the prior version.
170286 Quick Disconnect Fittings & Vacuum Hose	**2.1 C – Manufacturers/Suppliers**	Deleted specific manufacturer listings: *"Cam Lever Couplings by Banjo, supplied by Harrington Plastics,"* and *"PT Coupling."* The revised version omits all manufacturer references and retains only general product requirements.
170288 Eductor Injectors	**2.1 D – Manufacturer**	Changed manufacturer clause from "no substitutions" to "no known equal," allowing potential consideration of alternate equivalent products.
170310 Pipe Supports	**2.1 C – Material Locations**	Deleted detailed list of **Water Zone, Floor Zone, and Ceiling Zone** material requirements. Revised document now omits all descriptions regarding corrosion resistance, material type, or height-based material allowances.
	2.2 B – Floor Mounted Pipe Stands	Removed entire list of material-specific fabrication requirements (fiberglass stress ratio, aluminum coating, PVC fitting details, flange assembly, and fastener count). Retained only the general statement that supports shall be "fabricated, floor mounted pipe supports manufactured of fiberglass, stainless steel, or PVC."
	2.2 E – Pipe Clamps	Deleted performance rating for FRP pipe clamps (175# load for 6-inch pipe) and reference to **vinyl ester resin** for ozone environments. Simplified to general note on FRP and metal clamp materials.
	2.2 F – FRP Struts and Structural Shapes	Deleted all subsections describing resin type, ASTM standards (E-84 Class 1), glass content, flame rating, ultraviolet protection, and sealing of cut edges. Revised version retains only single-sentence reference to "pultruded construction."
	2.5 – Manufacturers	Entire manufacturer list was deleted. Revised document no longer provides supplier names or contact information for FRP and nonmetallic support manufacturers.
170316 Fasteners	**2.1 C – Non-Metallic Fasteners**	Deleted references to specific product types: *Studs (pultruded vinyl ester)* , *Bolts ("Fibrebolt" by Strongwell)* , and *Washers (FRP oxidation-resistant)* . Revised to only require non-metallic fasteners to be of suitable material and prohibit non-reinforced PVC.
	2.1 D – Wall Anchors	Deleted detailed **Option 1** (threaded plastic inserts) and **Option 2** (drilled and epoxy anchored stainless all-thread). The revised document keeps only a general heading "Wall Anchors" without specifying anchor types or manufacturers.
	2.1 E – All-Thread	Retained section but simplified the text. Removed the reference to "materials requirements as fasteners in this Section" for cross-section 170310. Now states conformance in simpler terms.

	2.3 B – Anchor Stud Designs	Deleted explicit list of anchor designs (*cast-in-place "J" bolts, epoxy/aggregate filler, wedge anchors, dual drilled swiss lock type*). Simplified to note that anchor bolts, studs, washers, and nuts shall be Type 316 stainless steel only.
	2.4 – Manufacturers	Deleted all manufacturer listings and contact information for specific products (Hilti, Structural Anchoring Systems, Molly Fastener Group, Strongwell, etc.). Retained only generic references to non-proprietary stainless steel hardware and approved substitutes.
	3.1 A – Installation Methods	Removed installation subsections describing procedures for *cast-in-place, epoxy/aggregate anchoring, and expansion type anchors* . Revised to a general statement that powder-driven fasteners are not allowed, without prescribing detailed methods.
	3.1 C – FRP Fastener Installation	Deleted detailed manufacturer-specific requirements (*torque wrench use, bearing surface parallelism, lubrication, and polyurethane coating*). Retained only general instruction to install per manufacturer recommendations.
170360 Basket Strainers	**2.2 B – General Description**	Deleted the detailed **minimum basket-to-pipe cross-section ratio and basket area table** for 3-inch through 12-inch nozzle sizes. The revised document keeps only the general description of "oversized" body diameter without listing minimum ratios or square inch basket areas.
	2.2 F – Accessories	Deleted the accessory list that previously required **top vent**, **pressure taps at inlet and outlet**, and **spare basket per basket size.** The revised version no longer includes these accessory details.
	2.2 G – Manufacturer	Deleted the manufacturer list and contact information (**Fluidtrol Process Technologies, Mer-Made Filter, or approved substitute**). The revised document leaves the section header but omits specific manufacturer names.
170410 Pressure Gauges	**2.2 – Gauge Cocks**	Changed section title to **"Gauge Cock Stop Valves."** Expanded content to differentiate products for saltwater or aquarium applications. Added subpoints detailing approved valve configurations.
	2.2 B(1)	Added requirement for **PVC uni-body type** with EPDM seats/seals and lever handle, identifying **"LC Series Universal Stopcock" by Hayward Industrial Products Inc.** as basis of design.
	2.2 B(2)	Added a new option for **0.5-inch diameter pipe size**: compact PVC thread-by-thread ball valve; identified acceptable products **Spears Manufacturing** and **NIBCO (4660-T)** as approved substitutes.
	3.1 C – Installation	Deleted requirement for **pressure snubbers** at centrifugal pump discharges. Section no longer mentions snubber installation as a condition.
170430 Temperature Devices	**1.1 A – Usage**	Deleted specific operating temperature range "49°F to 80°F aquarium seawater." Section now only states general use of thermometers and sensing wells.
	1.4 A – Quality Assurance	Deleted detailed language specifying the manufacturer's responsibility for compliance, Pyromation CSA accreditation, and field approval requirements. Simplified to only list qualified testing laboratories (CSA, ITS-ETL, UL, etc.) without references to manufacturer compliance.
	2.1 D – Temperature Range	Removed detailed thermometer ranges for process, heating, and chilling water applications. The revised section leaves the range heading but omits numerical specifications.
	2.2 A – Thermowell Dimensions	Deleted dimensional details including sensor well diameter (0.375" or 0.5"), well length by pipe size, and male/female thread diameters. Retained only general description of thermowell assembly.
	2.3 B – Temperature Sensors / Transmitters	Deleted full list of product specifications (Pyromation and Weed model numbers, component ratings, part numbers, voltage, and calibration data). Retained only general description that the sensor/transmitter be an assembly with the thermowell.
	2.3 D – Manufacturers	Deleted manufacturer contact information (Weed by Ultra Electronics and Pyromation RTD) and product details. Section header remains but without listed manufacturers.
170441 Mag-Meter FMs	**1.3 D – Submittals**	Added new requirement to **submit proof that installed electrical equipment bears approved testing agency listing or classification markings** (e.g., CSA, UL, ETL).
	General Coordination Notes (Part 1)	Deleted specific reference to **GF 2581 FlowtraMag® flow sensors** and **GF 9900 transmitters**, retaining only general coordination requirements for power and wiring. This removes manufacturer-specific details about power cabling, signal types, and voltage ratings.
	2.3 A – Transmitter Housings	Deleted full description of **9900 Transmitter Housing** (dimensions, construction, and mounting features). Revised document keeps only the header "Provide housings matching transmitter requirements."
	General References (Throughout)	Deleted repeated references to **GF Signet model numbers and installation accessories**, consolidating the text to general descriptions of "mag-meter flow sensors" and "transmitters."
	Part 3 – Execution	Deleted detailed instruction to provide **technical seminar** by manufacturer representative to Owner's staff. This section is now removed entirely from the execution requirements.
170446 Flow Rotameters	**2.1 C – Materials (Ozone Gas Flow Rotameters)**	Deleted detailed material list specifying tube (glass), float (Teflon, glass, 316 SS, Hastelloy, or Tantalum), seals (Teflon), safety cage (300 SS frame with polycarbonate shields), and end connections (ozone-resistant, panel mount or straight-through). Revised version leaves the "Materials" heading without subpoints.
	2.2 C – Materials (Air or Water Flow Rotameters)	Deleted full material list specifying tube (Acrylic or Polysulfone), float (Teflon, glass, 316 SS, Hastelloy, or Tantalum), seals (Teflon or Viton), and end connection requirements (300 SS or plastic for air; 316 SS for saltwater). Revised version keeps only the "Materials" heading.
170455 ORP & pH Monitoring	**1.4 B – Submittals**	Added new submittal requirement: contractor must **submit proof that all installed electrical equipment bears an approved testing agency listing or classification mark** (CSA, UL, ETL, etc.).
	1.4 – Submittals (General)	Clarified submittal list order and punctuation; merged information for **transformer and enclosures** into a single line item.
	1.2 – General Requirements	Deleted detailed description of scope of work subpoints (installation of ORP and pH sensors with control functions). The revised version retains only the introductory paragraph without subitems describing automation control use.
170467 CO2 Feeder for pH	**1.1 A – General**	Deleted items **"CO2 Monitor and Alarm"** and **"two (2) initial 20 lb. CO2 cylinders for startup"** from the list of required equipment. Revised list now includes only CO2 feeder, in-line heater, gas pressure regulator, tubing, fittings, and diffuser.
	1.7 B – Suppliers	Deleted detailed contact information and website listings for **ProMinent Fluid Controls, Inc.**, **Link Automation**, and **Ozone Water Systems**. Revised version lists only manufacturer names without addresses or URLs.
	2.1 A – CO2 Feeder	Deleted sentence describing **mounting of flowmeter and selector switch** within the enclosure. The feeder description now refers only to control signal receipt and safe operation.
	2.4 – Diffuser Injector	Deleted specific model number **ProMinent P/N 7746926 CO2-D-L Diffuser** and **Link Automation Injection/Check Valve** references. Revised version retains only the general diffuser requirement without manufacturer product detail.
	2.6 – CO2 Monitor and Alarm	Entire section deleted. The revised document omits all requirements for ambient CO2 monitoring and alarm systems.
	2.7 – CO2 Cylinder	Entire section deleted. The revised version no longer specifies CO2 cylinder supply requirements, sizes, or sources.
170476 Water Level Pressure Transmitters	**1.1 – Usage**	Revised control range requirements: – For PLSM01, tolerance changed from **±0.10 inch** to **±0.21 inch.** – For PLSM02, tolerance changed from **±0.84 inch** to **±0.70 inch.** Deleted description stating that PLSM01 units are "installed with a separate wall-mounted transmitter with LED display."

	1.5 – Submittals	Added requirement that contractor **submit proof of approved testing agency listing or classification markings** (e.g., CSA, UL, ETL).
	2.1 – PLSM01 Pressure Transducers	Added specification for **accuracy: 0.5% of range.** Other performance requirements (range, output, power) remain unchanged.
	2.2 – PLSM02 Pressure Transmitters	Added specification for **accuracy: 0.25% of range.**
		Deleted reference to "integral transmitter with LED display."
		Retained same 0–10 psi range and power requirements.
	2.3 – Indicating Gauge	Expanded requirement to include **some PLSM01 transducers** in addition to all PLSM02. Added cross-reference to **Section 170410** (formerly referenced Section 170641).
	3.1 – Installation	Added clause specifying that when used at ozone tower locations, **0.5-inch ball valves must be PVDF material.**
		Deleted requirement for calibration demonstration to Owner's satisfaction.
170584 Plastic Air Blowers	**1.4 – Quality Assurance (New Section)**	Added entirely new section defining testing laboratory and listing agency requirements. Requires all blowers and related electrical equipment to bear approved testing agency marks (CSA, UL, ETL, NSF, or equivalent). Specifies manufacturer responsibility for compliance and field approval at no cost to Owner.
	1.6 – Submittals (was 1.5)	Added new submittal requirement to provide proof that installed electrical equipment bears an approved testing agency listing mark or classification marking.
170586 Rotary Blower Package	**1.3 – Codes**	Added new clause requiring all blowers and associated electrical equipment to comply with **NCBCC testing laboratory and listing agency requirements.** Acceptable agencies now listed as **CSA, ETL, and UL.** Manufacturers must ensure compliance and provide field approval at no cost to Owner if required.
	1.4 – Submittals	Added new submittal requirement: contractor must **submit proof that all installed electrical equipment bears an approved testing agency listing mark or classification marking.**
170666 Plate-Type Heat Exchangers	**2.2 H – Construction**	Added new requirement: **"Systems that require insulation, require insulation jackets on heat exchangers."** This note did not appear in the previous version.
170667 Tube Type Heat Exchangers	**1.3 A – Coordination**	Deleted factory mount options listed as "1. Factory wall-mount support … 2. Factory floor stands …" and simplified text to a single requirement for 316 SS mounts.
	1.3 B – Coordination	Corrected text from "Hot and cold water piping …" (two words) to "Hot and coldwater piping …" (single word). Minor editorial correction retained for consistency across Division 17.
	2.1 A – Tube Type Heat Exchanger	Revised mounting description from "mounted on a stainless steel mounting rack/stand" to "mounted on a 316 stainless steel mounting rack/stand."
	2.1 C – Housing Shell	Changed material specification from "Schedule 40 or Schedule 80 CPVC" to "Schedule 80 CPVC only." Eliminated Schedule 40 option.
	2.1 G – Support Rack	Changed acceptable materials from "Type 316 or Type 304 SS with a superior corrosion-resistant coating" to "Type 316 stainless steel only."
	2.1 H – Manufacturers	Re-ordered list: Delta Hydronics now listed first and AquaLogic second (to match supplier preference).
170723 O3 Equip	**1.2 E – Testing Laboratory Requirements**	Added explicit requirement that all ozone-generation electrical and mechanical equipment **comply with North Carolina Building Code Council (NCBCC)**–accredited listing agencies (**CSA, ETL, UL, NSF International, or approved research laboratories**). Manufacturer must ensure compliance and obtain **field approval at no cost to Owner if required**.
	1.3 B – Submittals	Added new submittal requirement: contractor must **submit proof that all installed materials bear an approved testing-agency listing mark or classification marking.**
	1.6 – Guarantee & Warranty	Clarified that **supplier is responsible for factory warranties for all peripheral equipment**, and that the **manufacturer must guarantee documented power consumption, hour test capacity, and ozone production**; dielectric warranty remains three-year non-prorated.
	3.2 C – Installation by Contractor	Added requirement that the **contractor ensure electrical equipment is in conformance with an approved testing laboratory listing and bears certification labeling.**
	General Update	References to **testing-laboratory compliance and labeling** were added consistently through the section (Quality Assurance, Submittals, Installation), aligning this specification with current NC code requirements for listed electrical equipment.
170753 Calcium Reactors	**1.2 D – Submittals**	Added new requirement: "Submit proof that installed electrical equipment will bear approved testing agency listing mark or classification markings."
	1.6 – PACKAGED EQUIPMENT MANUFACTURER/SUPPLIER	Renumbered from **1.08** to **1.6** for alignment with specification format conventions. No content modification, numbering only.
	3.1 A – Installation and Set-Up	Relettered sequence to start with "A." instead of "D." to correct order. Text remains same. No technical changes.
170774 UV Sterilizer	**1.5 D – Submittals**	Added new submittal requirement: "Submit proof that installed electrical equipment will bear approved testing agency listing mark or classification markings."
	2.1 A – Design and Performance	Added "HDPE" to clarify material type in vessel description. Text now specifies "HDPE vessel configurations shall be a U-type configuration, or Z-type configuration as shown on project drawings."
	2.1 F – Design and Performance	Added "HDPE" to specify that the vessel shall be HDPE, not just any material: "HDPE vessel shall have a max pressure of 75 PSI minimum."
170786 Reverse Osmosis System	**1.2 B – Capacity**	Clarified capacity as 3,000 gpd RO product water; added instruction that the contractor must verify flow rate with the schedule shown on the drawings.
	1.3 C – Testing Laboratory Requirements	Added new clause requiring compliance with NCBCC-accredited testing laboratories and listed acceptable agencies: CSA, ETL, UL, NSF, or other approved labs. Added requirement for manufacturer to obtain field approval if necessary at no cost to Owner.
	1.4 D – Submittals	Added requirement for submittal of proof that all installed materials bear an approved testing agency listing mark or classification marking.
	3.1 D – Installation	Added explicit requirement that the contractor must ensure all electrical equipment conforms to an approved testing laboratory listing and bears certification labeling.
170805 Pressure Ozone Contactors	**1.4 – Coordination**	Changed reference from "Section 170720" to "Section 170723" for ozone equipment supplier.
	Removed Dimensions under 1.2 C	Deleted specific tank dimension list: 63-inch diameter x 86-inch height, 8500-gallon capacity, 16-inch manway, 6-inch flanged port, and tripod base. The revised document omits all dimension verification details
170810 Large Fractionators	**1.5 – Coordination / Vents**	Deleted detailed vent requirements (standard air vent, ozone vent with check valve, and off-gas connection). Document 2 retains only the section header "D. Vents:" with no vent descriptions.
	2.1 E – Provide base hold down clips	Removed detailed anchoring requirements (Type 316 SS clips, minimum anchor stud sizes, and quantity per diameter). Revised document lists only "Provide base hold down clips."
	2.1 F – Venturi Injector Circuit	Deleted all technical specifications for pumps, air inlet, ozone inlet, Mazzei injectors, and co-branding requirement. Now only the heading "Venturi Injector Circuit" remains.
	2.1 G – Wash-Down Systems	Removed all listed components (freshwater sprinklers, chimney sweep, HMI controller, 120 VAC power requirements, ASAHI/Hayward valve references). Now only the section title appears.
	2.1 I – Top Vents	Deleted detailed vent sizing and check-valve type (Spears brand 1" for ≤14" units and 2" for ≥16" units). Section header remains but no technical content.
	2.1 J – Pro-Model Features	Retained section but removed itemized features (list now truncated after "including the following features"). Original specifications for Sch 40 piping, wash-down upgrades, true union PVC valves, bulkhead fittings, and Asahi valves were deleted.
	2.2 A – Manufacturer	Changed phrase "or approved substitute" to "or approved equal."

170820 FRP Fabrications	**2.2 B – Primary structural components**	Removed list of specific vinyl ester resin brands for ozone applications ("Extren 625", "Creative Pultrusions 1625", or approved substitute). Only general resin specification remains.
	2.2 C – General purpose applications	Moved and simplified language to combine vinyl ester and polyester resin options without explicit manufacturer examples.
	2.2 E – Manufacturers	Deleted full manufacturer list (Aickinstrut/TYCO, Bedford Reinforced Plastics, Champion Strut, Creative Pultrusions, Fibergrate, Seasafe, Strongwell, StrutTech, Ultra Fiberglass Systems). Now only a general manufacturer reference appears.
	2.3 C – FRP Manways requirements	Removed all specific pressure, resin, flange, and inspection requirements for FRP manways (Class 100 psi rating, AWWA C950-88 design criteria, 150 lb bolt pattern details, flat face specs, inspection report). Section now retains only introductory statement.
	2.4 G – Manufacturers (Vee-Notch Launders)	Entire manufacturer list removed (Augusta Fiberglass through World of Plastics). Section now ends without manufacturer references.
170821 Raised Sand Tank Floors	**2.1 C – Mesh**	Deleted full technical table specifying detailed screen types, hole sizes, thickness, percent open area, and weight for top, middle, and bottom layers. The section now only references that screen selection shall be "as given in the following table," but the actual table is omitted
170822 FRP Deaeration Tower and Storage Tanks	**1.3 D – Reference Standards**	Deleted list of specific ASTM and NBS standards (ASTM D3299, ASTM 4097, NBS PS 15–69). Now section ends after "Reference Standards:" without specifying details.
	2.1 B – Wall Thickness	Removed detailed wall design criteria including 10:1 safety factor, fixed piping connections requirement, and explicit design conditions. Section now only lists "Wall Thickness:" as a heading without any requirements.
	2.1 G – Pipe Nozzles	Deleted entire flange thickness and projection table (with detailed dimensions for 2"–18" pipe nozzles). Section now ends before listing table values.
	2.1 K – Standard Appurtenances	Deleted detailed list of required tank accessories (lifting lugs, gaskets, fasteners, sight gauge tabs, tie-down lugs). Section now contains only the opening line referencing general appurtenances.
	2.1 M – Manway/Viewport	Removed flange projection table (with diameters 16"–30" and associated thicknesses). Remaining text retains descriptive requirements but omits numeric flange data.
	2.1 Q – Structured Tower Packing Media	Deleted numeric performance criteria and brand/model specification ("CF 1200 ACCU-PAC by Brentwood Industries"). Section heading remains but no detailed content provided.
	2.1 S – Drift Eliminators	Removed detailed technical data (blade spacing, material thickness, model numbers CFUltra and CF80Max, manufacturer contact information). Only general product type and material remain.
	2.1 T – Tank Manufacturers	Removed full list of approved manufacturers and substitutes. Section heading remains but without listed companies.
	2.3 A – Grating	Revised allowable bar spacing and depth options: added "2-inch or 1-1/2 inch" as acceptable dimensions (previously only 1-1/2 inch depth).
170845 Rectangular Fiberglass Tanks	**2.1 O – Manufacturers**	Entire list of approved manufacturers (Augusta Fiberglass, Custom Structures, Hydro Composites, Johnson Custom Fiberglass, Industrial Plastics, Micro-Fab, R&B Aquatics, Waterdog Products) was **removed**. Section heading "Manufacturers:" remains but with no content.
170846 Single Wall Mixing Tank	**2.1 C – Accessories**	Deleted entire list of accessories including 12" poly stand, tank-wall fittings, flexible couplings, 2" vent, and hinged cover. Section now only references accessory note about bulkhead fitting welds.
	2.1 D – Manufacturer	Deleted full list of approved manufacturers (Snyder Industries, Chemical Containment, Inc.) and contact information. Section header remains but contains no manufacturer names or details.
170933 Automated Controls	**1.3 I – Testing Laboratory Requirements**	Replaced the long list of Washington State–approved testing labs with a concise requirement that laboratories be accredited by the **North Carolina Building Code Council (NCBCC)**. Acceptable listing agencies limited to **CSA, Intertek ITS-ETL, and UL**. Added note that field approval, if required, must be completed without delay or added cost.
	4.4 A – PAC Description (Hardware)	Updated **Basis of Design** from *Phoenix Contact BL2 BPC 7000 RCK 03 (1.8 GHz Intel Atom D525)* to *Phoenix Contact BL2 BPC 7000 RCK 03 (Intel Core i5-7442EQ 2.1/2.9 GHz)*. All other specs unchanged.
	4.4 A – PAC Description (Software)	Clarified comparable OS requirement: *Windows 10 Embedded or comparable most recent applicable operating system* (was "Windows 10 Embedded or comparable most recent applicable operating system" but context now emphasizes update to current OS versions).
	3.1 D – Submittals	Added new requirement that **proof of approved testing-agency listing marks** or classification markings must be submitted for installed electrical equipment.
260010 - Supplemental Requirements for Electrical	**1.13 A – Reference Standards**	Updated applicable code list to reflect **current editions**: added "2023 NEC" explicitly; retained reference to **North Carolina Building Code Council (NCBCC)**; clarified applicability to *current at bid time* .
	1.13 B – Testing Agency Requirements	Revised language to specify **only laboratories accredited by the North Carolina Building Code Council (NCBCC)** are acceptable for listing electrical and mechanical equipment. Removed prior references to "Washington State" or "WAC 296 46B-999." Clarified that all materials and equipment must bear appropriate **listing marks or classification markings**, or be **field-certified** before use.
	1.15 B – Inspections	Clarified that **inspections must be scheduled with the State Electrical Inspectors** at the **State Construction Office (SCO)** and conducted **Monday through Friday** unless otherwise approved. Removed allowance for local jurisdiction inspections.
	1.16 F – Electrical Distribution System Tests	Minimum insulation resistance value raised to **1 megohm** (previously lower threshold unspecified). Clarified requirement that **tests be performed before load connections** and that documentation of readings must be provided for final acceptance.
	1.16 C – Testing Requirements	Added requirement to **verify torque settings** of wire and cable terminations per equipment manufacturer's data. Added explicit responsibility to **record** motor rotation checks and corrective actions.
260510 - Electrical Demolition	**3.2 I – Existing Standby Power Generators**	Added clarification: "All cutover work shall be done after facility normal business hours and on weekends." This specifies timing restrictions for generator cutover work.
	3.2 J – Existing Fire Alarm System	Expanded coordination note: specified coordination with **Johnson Controls/Simplex**, the Owner's vendor, and required establishment of a **24-hour fire watch** if the system must be taken out of service.
260519 - Low-Voltage Electrical Power Conductors and Cables	**2.2 Aluminum Feeder Conductor Option**	Entire section **removed**. Aluminum conductors are no longer permitted as an optional substitution for copper feeders or service entrance conductors. The previous text allowing AA-8000 series aluminum up to 500 KCMil was deleted.
	2.3 Lighting Control Cable	Section renumbered (previously 2.3). No technical text change except re-indexing.
	2.4 Wiring Connectors and Connections	Section renumbered (previously 2.4). No wording modifications—content retained verbatim.
	2.5 System Description	Section renumbered (previously 2.4). No changes in requirements
260526 - Grounding and Bonding for Electrical Systems	**1.2 A – Grounding System Description**	Clarified that **only one neutral-to-ground connection** is permitted at the main disconnect; explicitly required all grounding conductors #8 AWG through #4 AWG to be **insulated green** and routed in **conduit sized per NEC**; added requirement that the **conduit itself be grounded at the earth electrode**.
	1.2 B – Earth Electrode System	Added detail for **ground rods and ground ring**: must be driven **11 feet** and connections made by **brazing or exothermic welding**; clarified that all connection points must be **visible and accessible** at completion.
	1.3 – Performance Requirements	Added explicit requirement that if ground resistance > 25 ohms, **additional rods or other approved methods** must be installed until ≤ 25 ohms and **retested for compliance**.
	2.4 – Connectors	Added explicit **prohibition on aluminum or aluminum-alloy ground clamps**; expanded connector types (bus-bar, beam clamp, cable tray clamp, conduit hub, etc.) with detailed material requirements.
	2.5 – Rod Electrodes	Specified **copper-clad steel 3/4 in × 10 ft** with **13-mil copper coating minimum**.

	2.6 – Bonding Bushings	Replaced general text with performance criteria: must be **steel or malleable iron**, **zinc-plated interior / galvanized exterior**, with **150 °C insulated throat liner** and third-party listing; **die-cast zinc bushings not acceptable**.
	2.7 – Ground Rod Inspection Wells	Added two new subsections defining **Pedestrian-rated** (HDPE housing 9 in Ø, 300 PSF) and **Vehicle-rated** (concrete 10 in Ø, 20,000 PSF) well assemblies, including **twist-lock covers embossed "GROUND."**
	2.8 – Grounding Busbars	Added new section specifying **electrical and telecom grounding busbars** with **tin-plated copper**, **600 V standoff insulators**, **25 % spare lugs**, and **Lexan cover**; telecom bars must comply with **TIA-607-C and BICSI standards**.
	3.3 – Grounding Underground Distribution Components	Added detailed installation methods for **grounding manholes and handholes**, including **No. 1/0 AWG tinned copper**, waterproof sleeves, grout sealing, and **No. 4 AWG bonding** to inserts and cable shields.
	3.4 – Equipment Grounding	Expanded to require **grounding electrode and separate insulated equipment grounding conductor** for outdoor lighting poles; added **bonding of metallic fences** and **communications equipment grounding** per TIA/ATIS J-STD-607-A.
	3.5 – Installation Requirements	Added explicit requirement for **green grounding conductor in all raceways**—raceway cannot be relied on for ground continuity—with listed exceptions (telecom, data, audio, services); added **bonding jumper sizing per NEC**, and clarified that all connections must be **accessible and made with solderless connectors, brazed or bolted**.
	3.7 – Labeling	Added new instruction: label text must be **green** and state "If this connector or cable is loose … notify the facility manager."
	3.8 – Field Quality Control	Added detailed **testing and inspection** procedures: torque verification of bolted connections with **calibrated wrench**, resistance tests at each ground location **before energizing**, and reporting requirements for excessive ground resistance.
260529 - Hangers and Supports for Electrical Systems	**2.2 A – Stainless Steel Slotted Support Systems**	Deleted the detailed manufacturer list (**Unistrut, B-Line, Erico**) and substitution clause. The revised version retains only general compliance with **MFMA-4** without listing manufacturers or substitution language.
	2.2 A (2) – Material Specification	Simplified description: removed option allowing "equivalent materials protected from corrosion by factory-applied coatings, paint and galvanizing." The new version requires Type 316 stainless steel only.
	2.2 A (3) – Channel Width	Deleted note specifying "1-5/8 inches, or as required to carry load." Channel width and load criteria are no longer explicitly stated.
	2.2 A (4-5) – Protective Finish and Dimensions	Removed requirements for temporary protective coverings and specific channel dimension selection criteria.
	2.2 E – Mounting, Anchoring, and Attachment Components	Deleted detailed attachment methods (beam clamps, self-drilling anchors, toggle bolts, expansion anchors, screws). The revised section only references general mounting/anchoring components.
260533.13 - Conduits for Electrical Systems	**2.1 B – Minimum Conduit Size**	Minimum conduit size increased from **½ inch to ¾ inch** for all raceways. Flexible nonmetallic "sealtite" conduit still allowed starting at ½ inch.
	2.1 D – Life Safety Feeders	Clarified that LS feeders must be installed **horizontally in/under slabs** and **vertically in rated walls** using **ERMC-PVC where exposed**; previously only referenced "Life Safety System Feeders" without specifying exposure conditions.
	2.1 F – Finished Dry Locations	Added reference to **Table 'Non-Corrosive Atmosphere Spaces' on Sheet E6.16**; not present in Doc 1.
	2.1 H – Underground Installations	Now specifies **Schedule 40 PVC only**; deleted optional use of Schedule 80 PVC where exposed.
	2.1 I – Wet or Damp Interior Locations	Rewritten to match new language in H — allows only Schedule 40 PVC or Schedule 80 PVC if exposed to damage.
	2.1 J – Exterior Locations	Clarified same restriction as above (Schedule 40 PVC or 80 PVC if exposed). Previously broader.
	3.1 E – EMT Restrictions	Added explicit prohibition on EMT **encased in concrete**; reworded to clarify "no EMT in slab-on-grade or earth."
	3.1 G.1 – Installation Sequence	Added requirement to **complete raceway installation before starting conductor pull**; expanded subsections b–s for spacing, cutting, sealing, and moisture protection.
	3.1 G.1 (m & n added)**	New limitations: prohibit raceways on explosion-relief walls; maintain 2 in clearance from roof deck.
	3.1 G.1 (o new)**	Requires 6-in minimum separation from steam or hot-water piping; must run above water/steam lines.
	3.1 G.5 – Types FMC and LFNC	Revised max length for flexible connections from **48 in to 72 in** for luminaires, motors, and transformers.
	3.1 G.6 – Type PVC	Added temperature limit **122 °F max**, conductor rating limits (75 °C or 90 °C when encased), and curing time for solvent-weld joints (24 h).
	3.1 G.7 – Embedded Raceways	Added rules for placement relative to reinforcement and expansion joints and for minimum 2 in concrete cover; previous section had no detail.
	3.1 G.9 – Fittings	Added references to NEMA FB 2.10 and 2.20; introduced material restrictions (zinc-plated steel for EMT, no pot-metal fittings).
	3.1 G.10 – Expansion Joints	Completely new subsection with thermal movement criteria (0.00041 in/ft PVC, 0.000078 in/ft metal) and temperature ranges (125–155 °F).
	3.1 K – Grounding Continuity	Added explicit statement that raceway system **shall not be relied on for grounding continuity** and must be bonded per 260526.
	3.1 M – Bonding Bushings	Added requirement for **grounding-type insulated bushings and jumpers** at concentric/eccentric knockouts.
	3.1 R–S – Supports	Added explicit prohibition of wire or perforated pipe strap supports and requirement for steel/malleable iron hangers or stainless hardware.
	3.1 T – Bonding to Equipment Ground Bus	Added requirement that each metallic raceway segment be **individually bonded to equipment ground bus** using copper conductor sized per NEC.
	3.1 V – Fittings	Added explicit ban on **pressure-cast (pot-metal) fittings** or conduit bodies.
	3.1 AA – PVC Use in Walls	Added restriction that **Schedule 40 PVC not be used in gypsum walls**, permitted only in CMU walls.
	3.1 GG – PVC in Slabs	Added minimum concrete cover requirements (¾ in formed, 3 in on grade) and reference to **ACI 318 Chapter 6** for compliance.
	3.1 JJ–LL – Encasement Depths	New subsections defining **encasement cover depths (18–30 in)** for service and feeder raceways and minimum concrete thickness.
	3.1 QQ – Underground Identification	Added requirement for **buried conduit identification tape 6–8 in below grade**, per Section 260553.
	3.1 RR – Below Roof Deck	Added 11/2 in clearance requirement below roof deck to prevent fastener penetration of EMT during reroofing.
	3.1 TT–UU – Surface Raceways	Added entire new section for surface metal raceways with support spacing (≤ 48 in) and minimum bend radius (2 in).
	3.3 – Field Quality Control	Added mandrel test requirement for raceways (12 in long, raceway size minus ¼ in); added verification steps for alignment, support torque, and expansion devices.
	3.4 – Cleaning	Added requirement to contain and remove drilling fluids (bentonite).
	3.5 – Protection	Added explicit repair procedures for damaged galvanized or PVC coatings using manufacturer-approved touch-up materials.
260533.16 - Boxes and Covers for Electrical Systems	**1.1 A (6)**	Deleted reference to **"Fire Rated Poke-Throughs."** Now the list ends at "Hoods for Outlet Boxes."
	1.1 B (4)	Deleted related section **262726 'Wiring Devices' for boxes and covers.**
	2.2 A (1)	Removed manufacturer list (Appleton, Raco Taymac Bell, Spring City Electrical Mfg.). Now only generic "NEMA OS 1 galvanized steel."
	2.2 A (2–4)	Deleted detailed construction requirements (4" sq x 2-1/8" deep, gauge thickness, plaster rings, etc.). No dimensional or UL gauge detail remains.
	2.2 A (4 a–c)	Removed special-purpose box features (luminaire up to 50 lb, paddle fan up to 70 lb, wall plates ref 262726).

	2.2 B (1)	Removed manufacturer list (Appleton, Crouse-Hinds, Killark). Now generic “NEMA FB 1 Type FD cast feralloy.”
	2.2 B (2–3)	Removed technical requirements for gasketed covers and threaded hubs.
	2.2 C	Deleted entire listing criteria (UL CCN QCIT, UL 514A) and “Standard Features” for metallic conduit bodies.
	2.3 A (1)	Removed manufacturer list (Cantex, Carlon, Hubbell Premise Wiring). Now generic reference only.
	2.3 A (2–3)	Removed NEMA OS 1 / UL 514A and box construction details.
	2.3 B (1–3)	Removed manufacturer list and UL CCN QCMZ reference; section condensed to title only.
	2.4 A (1)	Deleted manufacturer list (Appleton, Cooper B-Line, Raco Taymac Bell). Now generic “Indoor Sheet Metal Junction and Pull Boxes.”
	2.4 A (2–3)	Removed UL CCN BGUZ and UL 50 listing criteria and standard features (galvanized steel / PVC options).
	2.4 B	Removed technical references for Outdoor Non-metallic Boxes (Type 4X Protection and UL BGUZ criteria).
	2.5 A	Deleted UL listing criteria (UL 514D, QCIT/QCMZ) and material specifications (0.032″ SS Type 302/304). Section now generic.
	2.6 A and B	Removed UL listing and performance criteria for “Retractable” and “Extra-Duty While-in-Use Hoods.” Only titles remain.
	3.2 B	Removed specific Type 4 degree-of-protection requirement for indoors and outdoors.
	3.2 C	Deleted requirements for non-metallic boxes below 8 ft and prohibition on angled-slot covers.
	3.3 B (1–10)	Eliminated detailed reference standards list (ICC, NFPA 1, NFPA 70E, NECA NEIS, BICSI, NFPA 101, NFPA 110 etc.). Revised to single generic reference.
	3.3 D	Removed installation techniques (ADA mount heights, masonry saw-cutting, sealing, acoustical putty requirements, mounting brackets types Erico Caddy RBS / Raco 9001 / B-Line BB8-16 etc.).
	3.3 E	Removed identification requirements (labels, arc-flash warnings, engraved nameplates).
	Overall Content Reduction	All manufacturer references, UL listing numbers, construction details, and installation procedures have been deleted or condensed to titles only — specification is now baseline outline without product standards.
260533.23 - Surface Raceways for Electrical Systems	**1.1 B (4) – Related Requirements**	Deleted reference to Section **271100 "Communications Equipment Room Fittings"**, removing communication system identification coordination.
	1.1 C – References	Entire detailed reference list removed, including **NECA “Standard of Installation”**, **NFPA 70**, **NEMA 250**, **UL 5**, **UL 94**, **UL 111**, and **UL 870**. Only heading “References” remains.
	2.3 A – Surface Nonmetallic Raceways	Deleted subparagraphs detailing **UL CCN RJTX/UL 5A**, **UL 94 flame rating**, and **requirements for wiring channel configurations** (20–30 A device accommodation). Now only section title remains without standards or product criteria.
	2.4 A – Nonmetallic Wireways and Auxiliary Gutters	Deleted all listing and material specifications: **UL CCN ZOYX**, **UL 870**, **UL 94**, fiberglass/polyester and PVC materials, gasket details, stainless screws, and adhesive types. Section reduced to title only.
	3.1 B – Reference Standards for Installation	Retained only heading; deleted list of standards: **ICC IBC, ICC IFC, NFPA 1, NFPA 70, NFPA 70E, NECA NEIS 1 & 331, BICSI N1, NFPA 350, NFPA 520**, and related NEC articles (366, 386, 388).
	3.1 C – Special Installation Techniques	Deleted all requirements for **minimum radius (2 in)**, **support spacing (48 in)**, and **prohibition of tape/glue support methods**. Only section heading remains.
260544 - Sleeves and Sleeve Seals for Electrical Raceways and Cabling	**1.1 B – Related Requirements**	Removed detailed reference to coordination, scheduling, sequencing, submittal, and installation requirements under Section 260010 “Supplemental Requirements for Electrical.” Now shortened to heading only with no explanatory text.
	2.1 A – Steel Wall Sleeves	Deleted ASTM A53/A53M Type E Grade B Schedule 40 zinc-coated specification and “integral waterstop” requirement.
	2.1 B – Cast-Iron Wall Sleeves	Removed equivalence clause to “ductile-iron pressure pipe with plain ends and integral waterstop.”
	2.1 C–F – PVC, Molded, and Galvanized Sleeves	Deleted all ASTM D1785, material thickness, and fabrication details. Sections reduced to titles only.
	2.2 A – Rectangular Sleeves	Removed galvanized sheet-steel thickness requirements (0.052 in and 0.138 in based on perimeter).
	2.3 A–B – Sleeve-Seal Systems	Deleted EPDM rubber, stainless-steel pressure plate, and bolt requirements; section now general description only.
	2.4 A – Sleeve-Seal Fittings	Removed reference to “plastic or rubber waterstop collar matching pipe OD.”
	2.5 A – Grout	Deleted ASTM C1107/C1107M standard and design-mix criteria (5000 psi 28-day strength and factory packaging requirement).
	2.6 A – Pourable Sealants	Removed description of single-component neutral-curing elastomeric self-leveling formulation.
	2.7 A – Foam Sealants	Deleted multicomponent liquid elastomer performance requirements and foam expansion limitations.
	3.1 A–E – Installation of Sleeves for Non-Fire-Rated Penetrations	Removed explicit directions for mortar/grout packing, joint sealant coordination with Section 079200, 1/4 in annular space clearance, flush mounting instructions, and 2 in floor extension above finish floor. Section now outline only.
	3.2 A–D – Rectangular Sleeves and Seals	Deleted requirement to reinforce structural wall openings and to finish metal sheet coverings to match surroundings.
	3.3 A–B – Sleeve-Seal Systems	Removed instructions on centering raceway in sleeve and torque tightening pressure plates for watertight seal.
260548 - Vibration and Seismic Controls for Electrical Systems	**1.4 A – Product Data**	All sub-requirements (a through d) deleted – no longer requires rated load capacity, listing markings, load ratings, or application annotations.
	1.4 B – Shop Drawings	Deleted detailed fabrication and assembly submittals for vibration-isolation bases, anchorages, and coordination of seismic/wind bracing with adjacent systems.
	1.4 C – Delegated Design Submittals	All detailed calculation and testing requirements removed – no longer requires seismic/wind restraint selection criteria, anchor design data, or certifications from qualified testing laboratories.
	2.2 A – Elastomeric Isolation Pads	Deleted all construction details – removed pad material specifications (neoprene/silicone), durometer stiffness, metal plate reinforcement, and surface pattern requirements.
	2.3 A – Restraints – Rigid Type	Deleted references to ANSI/AISI S110-07-S1, ASTM A53/A53M, and corrosion-resistant coating ratings for tension/compression/torsion forces.
	2.3 B – Restraints – Cable Type	Deleted ASTM A492 stainless-steel cable requirement and ASCE/SEI 19 compliance; removed restrictions on U-shaped clips and wedge end fittings.
	2.3 C – Restraint Accessories	Deleted hanger-rod stiffener, hinged brace attachments, neoprene bushing, and resilient washer specifications. Now only a heading remains.
	2.3 D – Mechanical Anchor Bolts	Deleted ASTM E488/E488M testing and ACI 355.2 qualification requirements for post-installed anchors in concrete and masonry.
	2.3 E – Adhesive Anchor Bolts	Deleted all resin/mortar composition criteria (PVC, urethane methacrylate, polymer hybrid) and testing references (ACI 355.2).
	2.3 F – Concrete Inserts	Removed ICC-ES AC446 seismic prequalification and MSS SP-58 compliance references.
	3.4 B – Special Structural Tests and Inspections	Deleted testing protocols – no requirement for calibrated equipment evidence, advance scheduling, minimum four tests per type/size, or 90 percent proof-load criteria.
	3.4 C – Nonconforming Work	Deleted requirement to remove and replace malfunctioning units and retest seismic controls that fail inspection.
260580 - Equipment Wiring Systems	**1.2 N**	Added new related section **260900 – Power Controls.**
	3.2 A	Expanded scope: added **fire protection, Lighting Designer/Consultant lighting and controls, and exhibits** to list of systems for which Division 26 provides power and connections.

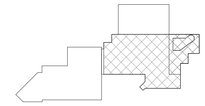
	3.2 B	Replaced reference to “safety switches and other electrical equipment” with “disconnecting means and other electrical equipment.”
	3.2 C	Added coordination requirements for **fire protection, Lighting Designer/Consultant lighting and controls, and exhibits.** Clarified coordination across all systems prior to ordering or installation.
	3.2 D	Added exception phrase “except as noted below” regarding entities responsible for providing control devices and raceways.
	3.2 H	Expanded **Division 21 (Fire Protection)** section: • Added new subsections specifying Division 26 shall furnish and install **fusible safety switches** for air compressors. • Added provision requiring Division 26 to provide **power for Division 21 water reservoir alarm/control panels**. • Added coordination requirements with **Division 21 Contractor** and referenced **Fire Protection drawings** and Division 21 specifications.
	3.2 M (new)	Added new section **“Lighting Designer/Consultant’s Lighting Fixtures and Controls.”** Specifies that Division 26 shall provide power, installation, and testing per Sections **260900, 260923, and 265101** and coordinate with Lighting Designer/Consultant.
	3.2 N (new)	Added new section **A/V Systems Equipment.** Requires Division 26 to provide boxes, raceways, and power for **Owner-provided A/V Systems** and coordinate with Owner’s vendor.
	3.2 O (new)	Added new section **Existing Paging System Extensions.** Division 26 to provide power and raceways for extensions to existing paging systems, coordinated with Owner’s vendor.
	3.2 P (new)	Added new section **Existing CCTV Camera System Extensions.** Division 26 to provide boxes, raceways, and power for CCTV system extensions, coordinated with Owner’s vendor.
	3.2 Q (new)	Added new section **Existing Access Control System Extensions.** Division 26 to provide boxes, raceways, and power for access control system extensions, coordinated with Owner’s vendor.
260900 - Power Controls	**2.1 A – Acceptable Manufacturer**	The manufacturer’s contact information has been updated to remove the fax number and web URL was reformatted with secure link protocol.
	2.2 A – Power Control Enclosures	Minor editorial corrections to product description: “Echo Relay Panel Mains Feed (ERP)” retained but added clarification “Control-oriented power center” and standardized description to match current ETC product catalog.
	2.2 A.9 – Standards Compliance	Expanded to explicitly list compliance with **UL508**, **UL67**, **UL924**, and **ANSI E1.31 streaming ACN**. These were previously partially referenced; now fully enumerated and aligned with ETC product listings.
	3.1 B – Examination	Clarified contractor’s responsibility: added that “If substrate preparation is by another installer, notify Architect **in writing** of any unsatisfactory conditions prior to proceeding.” This was previously stated less formally.
	3.4 A – Field Inspection	Revised to specify that field inspections must be coordinated “**in accordance with appropriate sections in Division 01**” rather than “as required by Division 01.” Clarifies procedural responsibility.
	3.5 B – Cleaning and Protection	Expanded to include explicit requirement to “**Touch-up, repair, or replace damaged products before Substantial Completion.**” Previously only referenced cleaning.
260923 - Lighting Control Devices	**2.2 A – Time Switch Manufacturers**	Manufacturer list retained but clarified ordering: Eaton, Intermatic, Leviton. No other alternates added. Updated labeling guidance for UL WGZR compliance remains unchanged.
	2.3 A – Wall-Switch Occupancy Sensor Manufacturers	No change to technical performance, but manufacturer listing reformatted; product performance values (coverage 900 sq ft, PIR + ultrasonic dual tech, adjustable delay 1–15 min) confirmed and retained.
	2.4 A – Emergency Lighting Controls	Added explicit requirement that listed products be investigated per **UL 1008** under **UL CCN WPWR**, clarifying previous reference ambiguity.
	3.1 F – Examination (Verification Step)	Reworded verification statement to require confirmation that branch-circuit wiring installation is **completed, tested, and ready** prior to device connection (was “installed and ready”).
	3.3 C – Special Installation Techniques	Clarified coordination wording to include **partition assemblies** explicitly in list of elements sharing ceiling space; requirement unchanged otherwise.
	3.3 D – Interfaces with Other Work	Revised to specify **Section 260534** for outlet-box coordination (reference added). Added ADA note “All wiring devices shall be installed at heights as required by the A.D.A.”
	3.5 A – Adjusting (Occupancy Adjustments)	Expanded service window description: clarified “two visits to the Project site during other-than-normal occupancy hours.” No change to scope but increased scheduling detail.
260943 - Network Lighting Controls	**1.2 Related Sections**	Added new related section reference **260923 – Lighting Control Devices**; previously only referenced 265100 – Interior Fixtures.
	1.4 D	Clarified contractor coordination: electrical subcontractor must now provide each manufacturer **complete control device information** (expanded emphasis on cross-coordination).
	1.5 Reference Standards	Updated standard dates and added new reference **UL 1598C – LED Retrofit Luminaire Conversion Kits**; clarified inclusion of all “current editions, including revisions.”
	1.6 A.1	Expanded control unit description to include **Artnet** in addition to sACN, DMX, and 0–10V; clarified ability to handle both wired and wireless field devices.
	1.6 A.4	Added network communication requirement via **separate VLAN** for lighting data distribution to reduce data collisions and latency.
	1.6 A.6	Added protocol requirement that **wireless communication only allowed when DMX is not available and must still be DMX-controlled.** Strengthened hierarchy of protocol preference.
	1.6 A.15–18	Added new integration interfaces: **Audio Visual Equipment, BACnet, Tridium Niagara, and Energy Dashboard.**
	1.7 B	Added requirement for **Pre-Wire Meeting** including review of sensor layouts with manufacturer and possible relocation based on site conditions.
	1.7 B.5	Introduced reference to **Lighting Control Manufacturer Sensor Layout and Tuning Service** (new coordination requirement).
	1.10 F	Expanded code compliance requirements to include both **FCC and IC** compliance; previously referenced only UL and NEC.
	1.11 B	Revised environmental conditions for field devices to include **condensing humidity (0–100% RH) rating for damp locations**.
	1.13 A–B	Expanded manufacturer warranty to include **Platinum Enhanced Warranty (Lutron LSC-E8P)** with detailed coverage tiers for Years 1–8.
	2.1 A–F	Updated manufacturer list: added **Athena by Lutron**, **Pharos**, and **Obsidian Control Systems**; revised allowed sensor manufacturers to include **ENCELIUM Sensors by OSRAM SYLVANIA** and **PLC Multipoint**.
	2.2 D–E	Clarified acceptance of **non-proprietary DMX** and **0–10V/DALI drivers**, emphasizing cross-system compatibility.
	2.2 E	Added requirement for UL 924-listed devices to handle **120V/277V/347V/480V loads.**
	2.2 H	Rewrote lighting control software section to require **native, web-based graphical interface** with drag-and-drop programming and prohibit third-party linked graphics or spreadsheets.
	2.2 I	Added requirement for **3-D and multi-floor graphical visualization**, real-time feedback, and vector-based zoom/pan/tilt controls.
	2.2 L	Expanded daylight harvesting controls to include **open-loop and closed-loop averaging**, harmonized operation between multiple users, and reduced photo sensor quantity through shared inputs.

	2.2 N	Added detailed **Emergency Mode** specification requiring single-point interface with building emergency system.
	2.2 BB	Added limit stating system must control up to **20A load per group of luminaires.**
	2.2 DD–FF	Added new features: **Astronomical Clock**, **Auto-configuration for reconfigurable spaces**, and **Circadian color emulation (daylight cycle).**
	2.2 HH	Added **BAS interface** capability via **BACnet/IP or Tridium Niagara AX**, specifying feedback of lighting and sensor data to mechanical systems.
	2.2 II	Added **A/V system integration** requirement via **TCP/IP**, expanding interoperability with presentation systems.
262213 - Low-Voltage Distribution Transformers	**1.6 Delivery, Storage, and Handling – Item B**	Removed the second paragraph requiring repackaging of transformers after inspection; inspection clause simplified to note visible shipping damage only.
	3.2 Installation – Item A	Deleted sub-paragraphs referencing coordination of wall-mounted and structure-hanging supports; installation statement simplified to one line directing level and plumb installation with wall brackets fabricated — technical requirement unchanged.
	3.2 Installation – Items B and C	Deleted detailed guidance for constructing concrete bases, anchor-bolt inserts, and vibration-pad dimensions; retained general requirement to install level and plumb on vibration-dampening supports.
	3.2 Installation – Items D through G	Removed trapeze-mount, stacking-frame, and specific Korfund pad references; replaced with single general statement requiring vibration isolation and manufacturer-recommended anchorage.
	3.3 Connections	No change to wiring method or torque values, but minor edit: conduit minimum length kept (2 ft) – clarified "for connection to transformer case" → "to transformer enclosure" for clarity (no performance impact).
	3.5 Adjusting	Deleted requirement for "Output Settings Report" submission; adjustment criteria for voltage taps retained.
262726 - Wiring Devices	**1.3 Related Sections**	Added Section 260010 "Supplemental Requirements for Electrical" to related sections list.
	2.5 USB Receptacles – Description	Updated USB receptacle specification: changed from "Type A and C, 5A, 5V USB charging ports" to specify both Type A and C included for dual compatibility. Clarified that receptacles must maintain 5A total output, 5V regulated, not per-port.
	2.5 USB Receptacles – Device Face and Body	Added requirement for red devices and plates where noted; previously not mentioned.
	2.8 Cord Reels – Description	Updated cord specification from 35 feet to 45 feet of 12/3 Type SJOW cord. Added requirement for GFCI duplex receptacles in pendant outlet box. Clarified cord to include twist-lock plug connection.
	3.3 Installation	Added specific instruction to mount receptacles horizontally over counters and backsplashes; previously this was not stated explicitly.
	3.4 Interface with Other Products – Item B	Added explicit reference that "All wiring devices shall be installed at heights as required by the ADA."
	3.4 Interface with Other Products – Items C–F	Clarified mounting heights for switches (48"), receptacles (18"), and dimmers (48"); standardized text to include both inch and metric equivalents.
262813 - Fuses	**1.1 Summary – Related Requirements**	Added reference to **Section 260010 "Supplemental Requirements for Electrical."** This coordination reference was not present in Document 1.
	1.2 Action Submittals – Item B	Clarified that coordination curves and current-limitation charts must be provided **both in electronic format suitable for coordination software and in PDF**; electronic file requirement added.
	1.2 Action Submittals – Item B.6	Added explicit requirement to include **fuse sizes for elevator feeders and elevator disconnect switches.**
	2.1 Performance Requirements – Item D	Added explicit line identifying "**Third-party testing agency Listed**" requirement—new compliance verification note.
	2.1 Performance Requirements – Circuit Type Table	Added 200 kA interrupting-rating values for **each fuse class** (L, RK1/J, RK5). Previously ratings were general; now explicitly specified.
	2.1 Performance Requirements – Item E	Added permission for **Class K5 fuses** where fault current ≤ 50 kA—new design flexibility.
	2.2 Nonrenewable Cartridge Fuses – All Subsections	Added manufacturer lists (Bussmann/Eaton, Littelfuse, Mersen USA) and **UL listing criteria references** for each fuse class (J, L, RK1, RK5). Document 1 did not include manufacturer or UL category detail.
	2.2 Class L Fuse	Interrupting-rating increased from 200 kA to **300 kA (sym)**. Added requirement for **bolt-on terminals.**
	2.3 Spare-Fuse Cabinet	Added requirement for **15 percent spare-capacity minimum** and **beige baked-enamel finish.**
	2.4 Maintenance Material Items	Revised spare-fuse quantity from "10 percent of quantity installed" to clarify **minimum of three of each size and type.**
	3.2 Installation of Fuses – Item B	Added expanded list of **reference installation standards** (IBC, IFC, NFPA 1, 70, 70B, 70E, 350, NEIS 1, 402, 420). This list was new.
	3.2 Installation of Fuses – Item C	Added requirement to provide **open-fuse indicator fuses or covers with indication.**
	3.2 Installation of Fuses – Item F	Added coordination requirements to verify **fuse ratings vs. equipment nameplate limits** and **arc-flash/coordination-study results.**
	3.2 Installation of Fuses – Identification	Added label requirement for **"SPARE FUSES" legend in 1½-inch-high letters on cabinet door.**
262913.03 - Manual and Magnetic Motor Controllers	**1.2 Summary – Related Requirements**	Added reference to **Section 262813 "Fuses."**
	1.5 Informational Submittals	Added explicit requirement for **seismic qualification data** from manufacturer, including anchorage provisions and center-of-gravity data.
	1.9 Field Conditions	Defined **ambient operating range (23 °F – 104 °F)** and **altitude limit (≤ 6600 ft)** for continuous operation.
	2.2 Manual Motor Controllers	Added full manufacturer list (ABB, Eaton, Siemens, Square D) and overload-relay specifications (Class 10 bimetallic, ambient compensated type). Added **red pilot-light requirement** for each controller.
	2.3 Enclosed Full-Voltage Magnetic Motor Controllers	Added detailed requirements for **UL 508 and UL 60947-4-1 compliance**, **NEMA ICS 2 Class A**, encapsulated contactor coils, thermal overload relays (Class 10), and **automatic resetting feature**.
	2.4 Combination Full-Voltage Magnetic Motor Controllers	Added Class II ground-fault protection per UL 1053; added **digital RS-485 Modbus communication module** with monitoring of current, voltage, and energy (kWh). Added disconnecting-means options (fusible, non-fusible, MCP, MCCB) with padlockable handles.
	2.5 Enclosures	Defined **NEMA 250 Type 4X** rating; added requirement for compliance with NEMA ICS 6 construction and UL 1203 for classified locations.
	2.6 Accessories	Added **NEMA ICS 5 compliance** for control circuit/pilot devices and clarified heavy-duty/oil-tight requirements.
	2.7 Identification	Added detailed **arc-flash label requirements** per Sections 260573 and 260553 including label size, orange header, and required data fields (voltage, incident energy, category, etc.).
	3.2 Installation	Added compliance with **Section 260548.16 "Seismic Controls for Electrical Systems"** and maintained minimum NFPA 70 clearances.
	3.4 Field Quality Control	Added **infrared inspection** procedures per NFPA 70B and NETA ATS including 60-day and 11-month follow-up scans, detailed reporting items, and temperature sensitivity criteria.
	3.5 System Function Tests	Added requirement for verifying **interlock safety, alarm, and indicating devices** as part of complete functional testing.
262923 - Variable-Frequency Motor Controllers	**1.1 Summary – Related Requirements**	Added reference to Section 262813 "Fuses."
	1.4 Informational Submittals	Added requirement for **Seismic Qualification Data**: manufacturer must provide center of gravity, anchorage details, and certification based on tested anchorage.
	1.4 Informational Submittals – Item E	Added new **Harmonic Analysis Report** requirement per IEEE 519.
	1.9 Project Conditions	Revised environmental limits: added NEMA 4X sealed enclosure requirement for outdoor locations; altitude limit changed from 3300 ft to **100 ft** for standard operation.
	1.10 Warranty	Extended warranty period from **one year to five years** from date of Final Acceptance.

	2.1 Manufacturers	Added Eaton to approved list; reorganized manufacturer names for consistency.
	2.2 System Description	Added requirement for compliance with **NEMA ICS 61800-2** and expanded NEMA ICS 7 reference.
	2.2.C VFC Description	Clarified that units must be **NRTL listed and labeled as a complete unit**; added integrated short-circuit current withstand rating requirement.
	2.2.F Unit Operating Requirements	Revised minimum efficiency to **96% at full load** and minimum short-circuit withstand rating to **22 kA**. Added power factor and overload capability requirements.
	2.2.J Self-Protection	Added surge suppression per **UL 1449 Type 1 or Type 2 SPD**, added critical frequency rejection, phase-loss, reverse-phase, and motor-overtemperature protections.
	2.2.K Automatic Reset	Added specific requirement for **three restart attempts** with adjustable delay between attempts.
	2.2.M Bidirectional Autospeed Search	Added this as a new capability for motors to resume rotation in either direction.
	2.2.P Integral Disconnecting Means	Changed to require **fusible switch with padlockable handle** per NEMA KS 1. Added auxiliary contact operation sequence details.
	2.3 Performance Requirements	Added new **Seismic Performance** section: testing per ASCE/SEI 7 and ICC-ES AC156; defined "withstand" operational requirements after seismic events.
	2.4 Controls and Indication	Expanded control interfaces: added real-time clock, fault log, multi-level access security, multiple digital/analog input/output configurations, and **PID control interface** for dual feedback.
	2.4.H DDC Interface	Added requirement for **ASHRAE 135** (BACnet) communication compatibility with DDC systems.
	2.5 Line Conditioning and Filtering	Added total harmonic distortion (THD(V)) limit ≤ **5%**, new **output reactor** requirement for cable runs >75 ft.
	2.6 Bypass Systems	Added detailed requirements for **two-contactor-style bypass**, isolation switch, manual/automatic transfer logic, overload integration, and damper/end-of-travel feedback.
	2.7 Enclosures	Revised to require **NEMA 4X** for both indoor and outdoor locations; added **plenum rating per UL 1995**.
	2.8 Accessories	Added new accessories: phase-failure/reversal protection, space heaters with NC contacts, breather/drain assemblies, and **sun shields** for outdoor installations.
	2.9 Source Quality Control	Added factory testing per **NEMA ICS 61800-2** with on-motor verification and inspection report submittals.
	3.2 Installation	Added seismic restraint requirements per **Section 260548**; added references to **Section 260010** for supplemental electrical coordination; clarified VFC to motor conduit distance ≤ 10 ft.
	3.5 Field Quality Control	Added mandatory **infrared thermographic scan** testing 60 days and 11 months after Final Acceptance per NFPA 70B.
	3.7 Adjusting	Added explicit procedure for circuit-breaker trip settings (6–8x FLA, 11x for premium motors); referenced **Section 260573 "Power System Studies."**
	3.9 Demonstration	Added requirement for **Owner training** on programming, adjustment, and maintenance.
265000 - Lighting	**1.1 Summary – Related Requirements**	Added reference to Section 260010 "Supplemental Requirements for Electrical."
	1.1 Summary – Scope	Clarified that section includes both *luminaires* and *luminaire fittings* .
	1.3 Action Submittals – Product Data for Luminaires	Added detailed requirements for photometric data certified under NVLAP, construction details, finishes, operating and electrical characteristics, luminaire schedule format, battery and charger data, ballast factor, lumen/CCT/CRI data, photometric test data, and warranty language.
	1.3 Action Submittals – Luminaire Fittings	Added requirement for product listing approval letters from qualified testing agencies, detailed construction data, operating data, and manufacturer warranty sample.
	1.3 Action Submittals – Shop Drawings	Added requirement for drawings and wiring diagrams for custom luminaires, including weights, loads, clearances, and field connections.
	1.4 Informational Submittals	Added manufacturer's published instructions and field report requirements for both field QC support and system startup.
	1.9 Warranty for Batteries	Added explicit extended-warranty periods: **five years for Li-ion and Ni-Cd batteries**, materials only, freight prepaid.
	2.1 Performance Requirements	Added requirement that products be *listed and labeled* per NFPA 70 by qualified laboratories and marked for intended location and application.
	2.2 Surface-Mounted Luminaires	Added UL listing criteria (UL CCN IFAM and IFAW with UL 1598), corrosion-resistant hardware/finish for damp environments, and reference to fixture schedules for manufacturers.
	2.2 Recessed Luminaires	Added source limitation to one manufacturer per type and UL CCN IFAO listing; added standard features including ceiling compatibility (NEMA LE 4) and light-leak prevention.
	2.2 Track-Lighting Systems	Added UL CCN IFFR listing with UL 1574 and compatibility marking requirements.
	2.3 Luminaire Fittings	Added performance requirements for supports (horizontal force = 100 % of weight, vertical = 400 %), plus hook hangers, ASTM A641 wire supports, stainless-steel aircraft cables, steel stems/rods and finishes.
	3.3 Installation – Reference Standards	Added full list of installation standards: ICC IBC, ICC IFC, NFPA 1, NFPA 70, NECA NEIS 1, 331, 500, 501; NFPA 350, 410, 700 NFPA 101; clarified coordination with Architect for conflicts.
	3.3 Installation – Exterior Bollard and In-Ground Luminaires	Added installation on 4 in high concrete bases with conduit cast in place; referenced Section 033000 "Cast-in-Place Concrete."
	3.3 Installation – Corrosion Prevention	Added restrictions on aluminum contact with earth or concrete and requirements for protective wrapping of steel conduits.
	3.3 Installation – Suspended and Ceiling-Grid Mounted Luminaires	Added seismic-restraint requirements (wire or rod with breaking strength > luminaire weight × 3).
	3.4 Field Quality Control – Testing	Added requirement for independent testing agency and factory-authorized service representative to perform tests and submit field QC reports; added photometric measurements for exterior illumination at night.
	3.5 System Startup	Added detailed startup tasks: complete installation checks, burn-in lamps before occupancy, charge batteries 24 hours, and conduct one-hour discharge test.
	3.6 Adjusting	Added requirement to inspect all luminaires during aiming adjustments and replace defective units with manufacturer-authorized parts.
	3.7 Closeout Activities	Added Owner training on adjustment, operation, and maintenance of luminaires and photoelectric controls.
265100 - Architectural Interior Light Fixtures	**1.2 Related Sections**	Added reference to **Section 265000 – Lighting** and **260923 – Lighting Control Devices.**
	1.4 General Requirements	Added explicit requirement for **luminaire supplier coordination with lighting-control manufacturer** for dimming compatibility and system integration.
	1.5 Standards	Added **IES LM-79, LM-80, and TM-30** references; clarified that LED fixtures must meet **DOE Energy Star** and **California Title 24** efficiency criteria.
	1.7 Substitutions	Added condition that alternate manufacturers must provide **IES photometric data, mock-up samples, and UL compliance proof** before approval.
	1.8 Submittals for Review	Added requirement for **electronic submittals with IES and Revit (RFA) files.** Mock-ups must now include photometric measurements verified by Architect.
	1.10 Quality Assurance	Added requirement for **third-party certified installer training and factory-authorized startup technician for complex systems.**
	1.11 Warranties	Extended warranty from **1 year to 5 years for fixtures and drivers.** Added **10-year finish corrosion warranty** for marine-grade locations.
	1.12 Extra Products	Added requirement for Owner-turnover of **10 % extra LED modules and drivers** (minimum one per type).
	2.1 General Requirements	Added compliance with **UL 8750 and IEC 61347** for LED drivers; required **PF ≥ 0.9** and **THD < 20 %.**
	2.1 Mounting Hardware	Added requirement for **316 stainless steel or marine-grade aluminum hardware within 100 ft of saltwater.**
	2.1 Reflector Cones	Increased minimum reflectance requirement to **85 %** (from 83 %); added **PVD coating option** for corrosion control.

	2.1 LED Lighting Systems / Fixtures	Revised minimum CRI from 80 to **90**; added CCT tolerance of ±100 K and lumen-maintenance requirement of **L90 @ 60,000 hrs.**
	2.1 LED Drivers	Added requirements for **0-10 V and DMX/RDM protocol support**, **inrush-current limiting**, and **surge suppression ≥ 10 kV.**
	2.1 Testing	Added factory burn-in period of **24 hours (minimum)** for each fixture prior to shipment.
	2.1 Environmental Rating	Added explicit ratings for IP65 wet and IP68 submersible locations; defined "marine environment" requirements for aquarium spaces.
	2.2 Lighting Fixture Descriptions	Added directive to base all types on **updated Lighting Schedule LT-004**; included driver dimming curve coordination with control system manufacturer.
	3.1 Execution	Added requirement for **factory startup verification report** and **photometric performance validation test before final acceptance.**
	3.1 Wiring	Added **color-coding standardization for DMX and power leads** and requirement for **separate neutrals per dimming circuit.**
	3.3 Field Quality Control	Added mandated **infrared thermographic inspection and functional dimming test** per NFPA 70B.
265200 - Emergency and Exit Lighting	**1.1 Summary**	Removed reference to *LED emergency drivers, lighting inverters, and transfer switching devices* – scope limited to *emergency exit lighting* and *emergency egress lighting units only* .
	2.3 LED Emergency Driver	Entire section **deleted** (manufacturer-installed UL 924 LED emergency battery supply and diagnostics).
	2.4 Exit Lighting Units	Entire section **deleted** (construction, battery, charger, lamp, and housing requirements for exit signs).
	2.5 Transfer Switching Devices	Entire section **deleted** (UL 924 relay devices, voltage ratings, dimmer override, and five-year warranty).
	3.5 Demonstration and Instructions – Testing	Retained existing 90-minute battery test procedure but **removed** cross-reference to State Construction Office submission and deleted requirement to submit test report to SCO (only Architect/Engineer copy remains).
	Overall Product Scope	Revised specification now applies **only to self-contained LED emergency lighting (egress)** fixtures. All references to *exit signs* , *inverters* , *transfer switches* , and *LED emergency drivers* were removed.
	Cross-References	Removed Section 260553 (Identification for Electrical Systems) and all references to sections relating to deleted products.
265613 - Lighting Poles and Standards	**1.3.B.4**	Requirement for foundation construction details **no longer specifies signed/sealed structural calculations by a licensed professional engineer**.
	2.1.E.1	**Wind load parameters removed:** "Basic Wind Speed: 150 mph," "Wind Importance Factor: 1.0," "Minimum Design Life: 25 years," and "Velocity Conversion Factor: 1.3."
	2.1.H	Detailed finish quality control text removed (protective coverings, sample variance tolerances).
	2.2.A	**Mounting provision type** removed — no longer specifies "butt flange for bolted mounting or breakaway support."
	2.2.D	Material compatibility details for fasteners simplified; **galvanizing and galvanic action notes deleted.**
	2.2.F	Full description of **clear-anodic finish (AA-M32C22A41)** deleted; finish standard now references only NAAMM guidelines generally.
	2.2.G	**Powder coat finish section reduced** – removed detailed surface prep and curing specs (SSPC, AAMA 2604 thickness, and color specification).
	2.4.A–C	Retained anchor bolt, nut, and washer standards; **deleted galvanizing references (ASTM A153 Class C)** and bent rod specification.
	2.5.A	Submittal list reduced – **removed requirements for construction details, weights, design loads, and pole foundation certificates.**
	3.3.C.1–3	Deleted detailed torque tightening, seismic resistance, grout filling, drain hole, and base cover installation instructions.
	3.4.B	Conduit corrosion protection simplified – **removed specific wrapping thickness and overlap (0.010" tape, 50% overlap).**
	3.5.A.1	Grounding revised – **removed note that grounding electrode be installed unless otherwise indicated.**
	3.7.B	Field testing simplified – **inspection for nicks, dents, and scratches removed; system function testing retained.**
271100 - Communications Equipment Room Fittings	**1.1 Summary – Products Installed, but Not Furnished**	Added explicit cross-reference to **Section 260010 "Supplemental Requirements for Electrical"** for shared definitions, submittals, and testing requirements.
	2.1 Communications-Circuit Accessories – Performance Criteria	Added detailed **UL listing references** (UL 1863 and UL 467 for communications circuits; UL 1977 and UL 467 for A/V and data circuits) and clarified **NFPA 70** listing requirement.
	2.1 UL DUXR – 66-Style or 110-Style Cross-Connect Frame	Added requirement that frames **match Owner's existing equipment** and be sourced from a single manufacturer.
	2.1 UL DUXR – Patch Panel	Added detailed **mounting types (equipment or wall rack), modular configuration, EMI compatibility (unshielded), and labeling provisions**; also required 25 % spare port capacity and Cat 6 cable compatibility.
	3.1 Preparation – Shop Drawings	Added complete list of required coordination items (equipment rack clearances, bonding busbar locations, luminaires, controls, and power receptacle coordination).
	3.3 Installation of Bonding for Communications – Reference Standards	Added **BICSI N3** as governing standard for bonding and grounding of communications systems.
	3.3 Installation of Bonding – Special Techniques	Added explicit installation rules: horizontal busbar mounting height (12 in above floor), no stacking conductors under one bolt, minimum bend radius (10× conductor diameter), maximum bend (90 °), and support spacing (36 in max).
	3.4 Field Quality Control for Bonding of Communications	Added specific test procedures: two-point bonding resistance tests (max 100 mΩ), earth resistance limit (5 Ω to ground), and ground-loop current test (max 1 A). Referenced **BICSI N1** test process.
	3.4 Field Quality Control – Nonconforming Work	Added requirement to **remove and replace** any defective bonding connections and retest until compliance is achieved.
323300 - Site Furnishings	**2.6 REMOVABLE STANCHIONS – Frame and Finish specifications**	Changed from **"Frame: Stainless Steel; Finish: Satin"** to **"Frame: Powdercoat; Color: Black."** All other dimensional requirements remain the same.

KEY PLAN



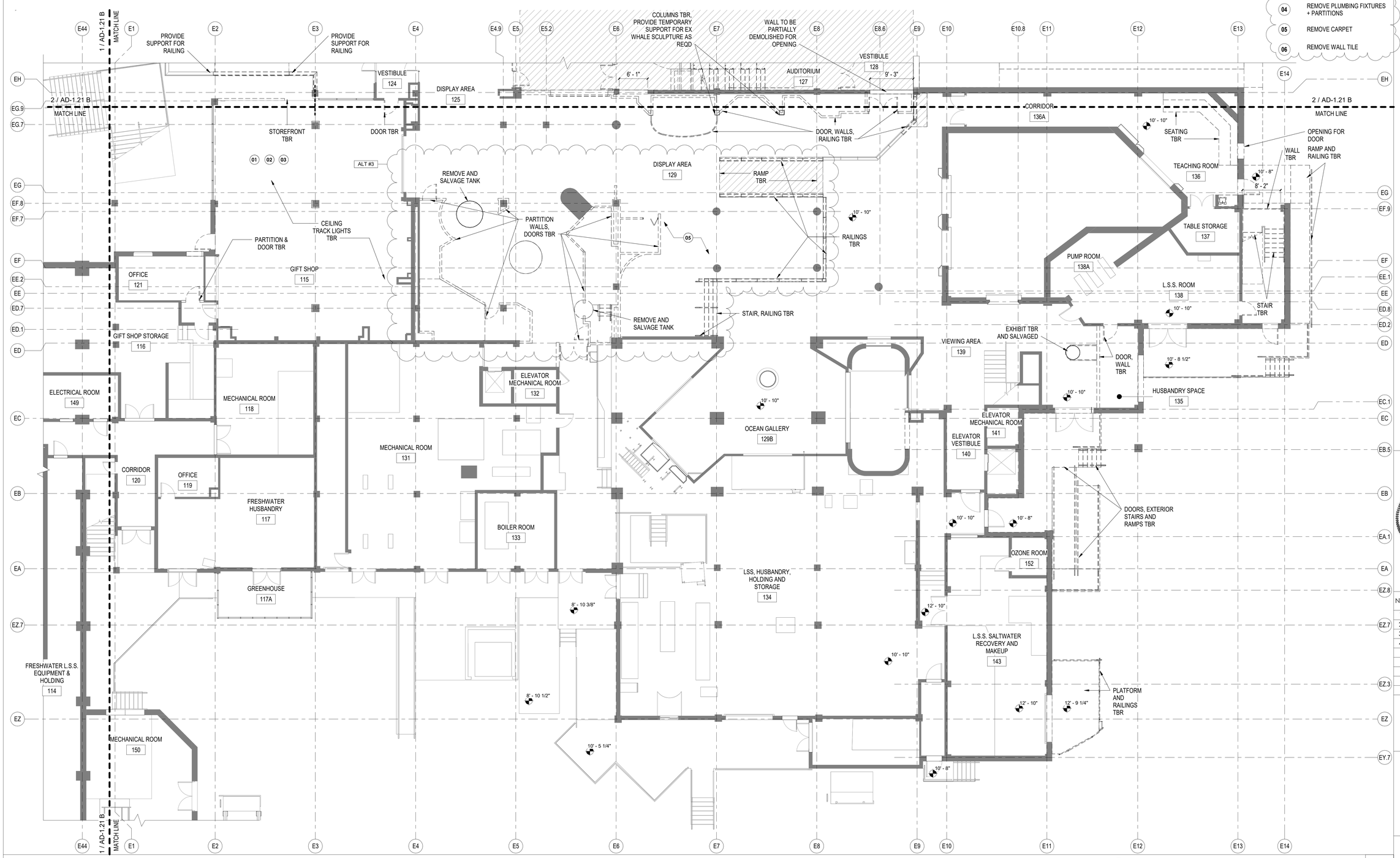
GENERAL NOTES

1. REFER TO SPECIFICATION SECTION 024119 PART 1.3 FOR DEFINITIONS.

2. REMOVE AND HAND OVER TO THE OWNER - ALL ACCESS CONTROL HARDWARE FROM THE DOORS BEING REMOVED

DEMOLITION PLAN LEGEND

- EXISTING TO BE DEMOLISHED
- EXISTING TO REMAIN
- REMOVE SETTING BED
- REMOVE FLOOR SLAB
- 01 REMOVE FLOORING
- 02 REMOVE ACT + LIGHTS
- 03 REMOVE CASEWORK
- 04 REMOVE PLUMBING FIXTURES + PARTITIONS
- 05 REMOVE CARPET
- 06 REMOVE WALL TILE



1/8" = 1' 0" (0, 10', 20', 40', 80')

1ST FLOOR - DEMO - CAPE FEAR
SCALE : 1/8" = 1'-0"

1

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
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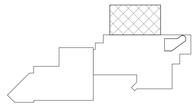
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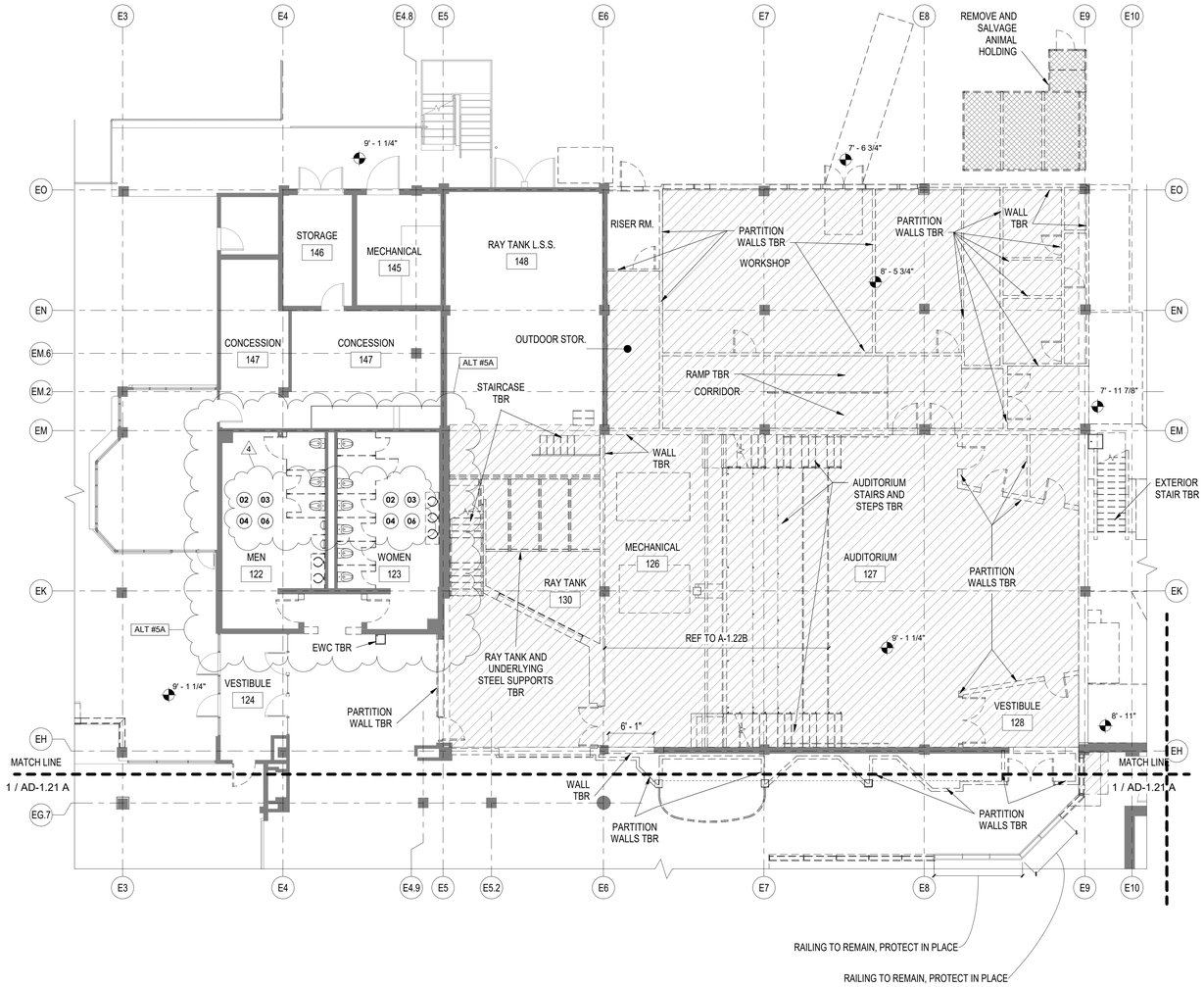
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2	10-17-25	ADDENDUM #1
3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

FIRST FLOOR DEMO PLAN - CAPE FEAR

AD-1.21 A

KEY PLAN





1/8" = 1' 0"

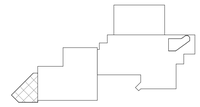
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1ST FLOOR - DEMO - TOUCH AND SHARK TANK

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

2

KEY PLAN



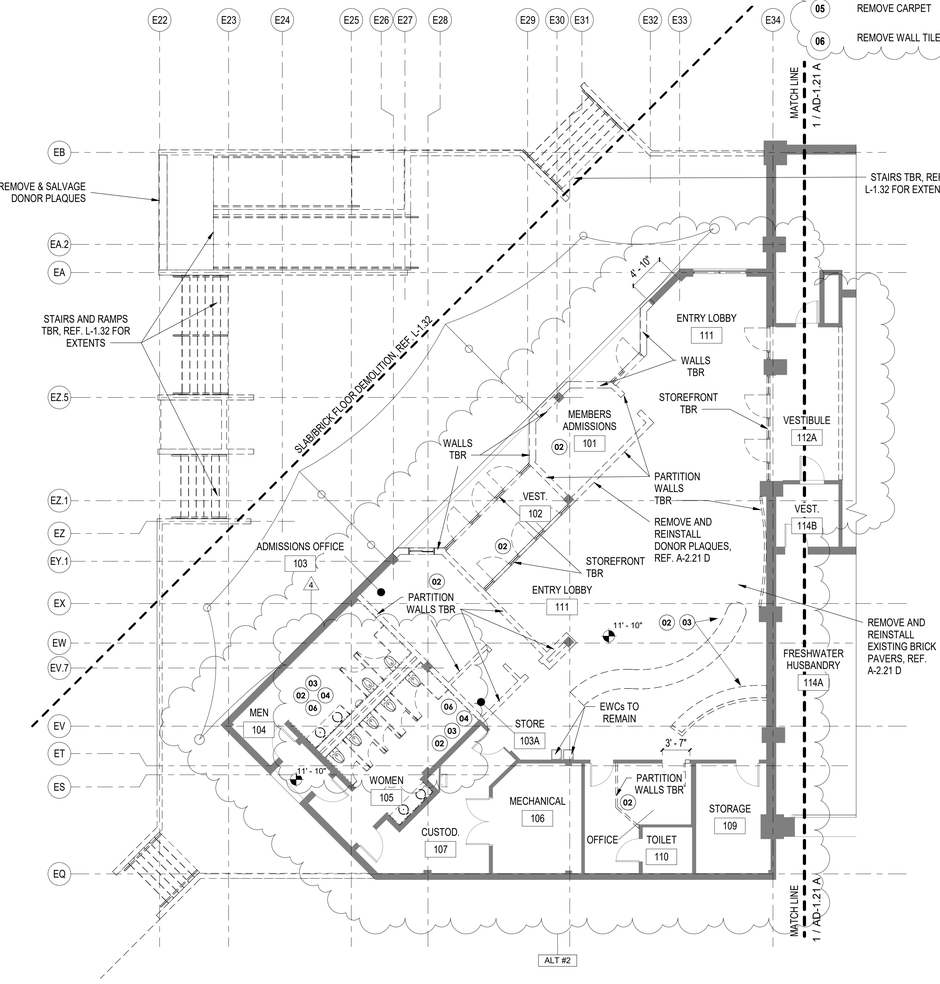
GENERAL NOTES

1. REFER TO SPECIFICATION SECTION 024119 PART 1.3 FOR DEFINITIONS.

2. REMOVE AND HAND OVER TO THE OWNER - ALL ACCESS CONTROL HARDWARE FROM THE DOORS BEING REMOVED

DEMOLITION PLAN LEGEND

- EXISTING TO BE DEMOLISHED
- EXISTING TO REMAIN
- REMOVE SETTING BED
- REMOVE FLOOR SLAB
- 01 REMOVE FLOORING
- 02 REMOVE ACT + LIGHTS
- 03 REMOVE CASEWORK
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- 05 REMOVE CARPET
- 06 REMOVE WALL TILE



1ST FLOOR - DEMO - MAIN ENTRY

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

1

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
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DUBLIN, OHIO 43017
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SURFACE 678, PA
LANDSCAPE ARCHITECT
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FAX: 919.419.1669
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LICENSE # C-1073

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DURHAM, NC 27703
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PHILIP SZOSTAK REGISTERED 3433 SCOTT ARCHITECT NORTH CAROLINA

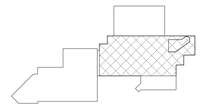
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4	11-10-25	ADDENDUM #3

FIRST FLOOR DEMO PLAN - MAIN ENTRY & TOUCH TANK

AD-1.21 B

KEY PLAN



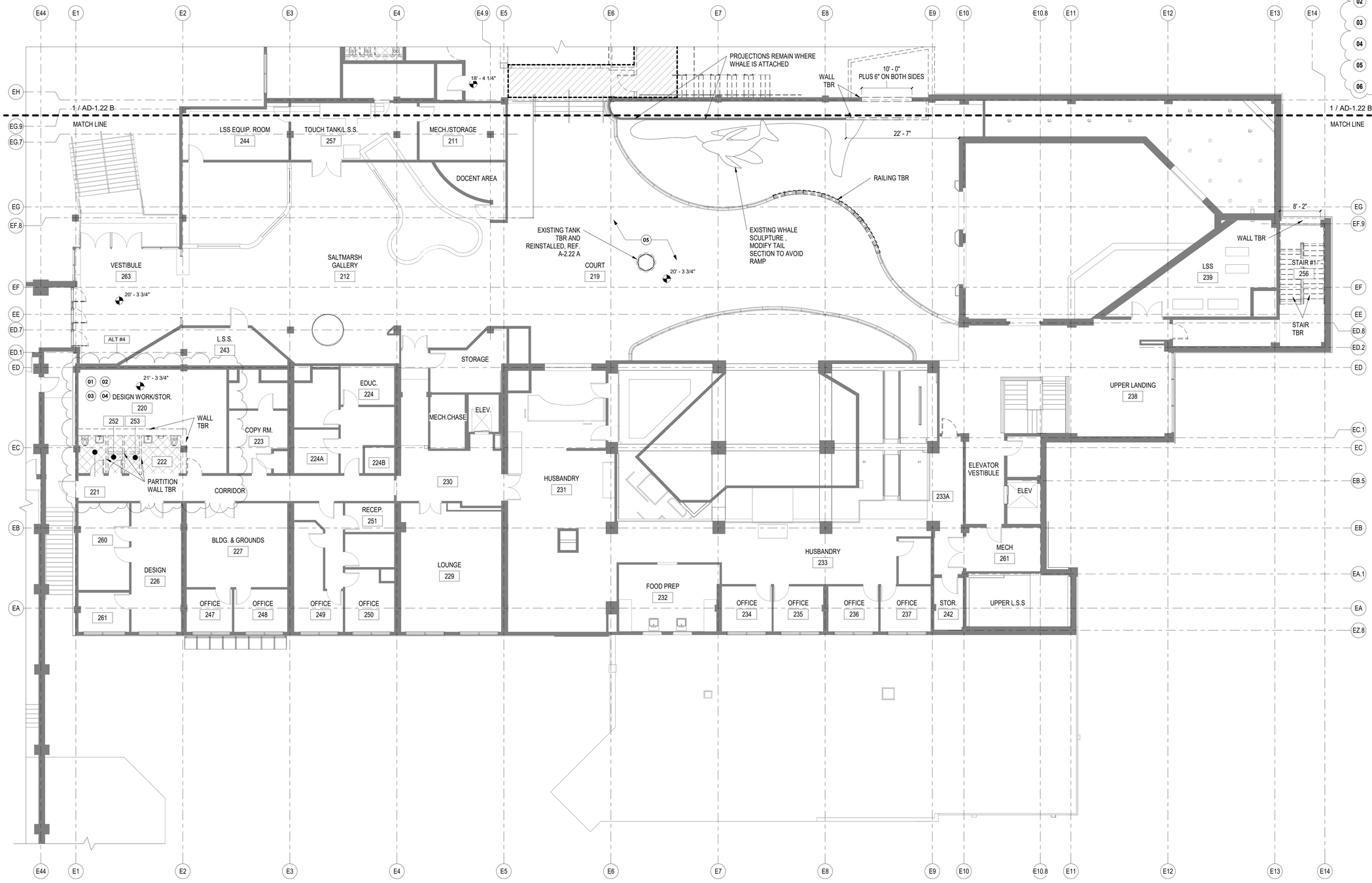
GENERAL NOTES

1. REFER TO SPECIFICATION SECTION 024119 PART 1.3 FOR DEFINITIONS.

2. REMOVE AND HAND OVER TO THE OWNER - ALL ACCESS CONTROL HARDWARE FROM THE DOORS BEING REMOVED

DEMOLITION PLAN LEGEND

- EXISTING TO BE DEMOLISHED
- EXISTING TO REMAIN
- REMOVE SETTING BED
- REMOVE FLOOR SLAB
- 01 REMOVE FLOORING
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- 03 REMOVE CASEWORK
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- 05 REMOVE CARPET
- 06 REMOVE WALL TILE



1/8" = 1' 0" 0 10' 20' 40' 80'

2ND FLOOR - DEMO - CAPE FEAR
SCALE : 1/8" = 1'-0"

1

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
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Szostak Design, Incorporated 51679 NORTH CAROLINA ARCHITECTURE Chapel Hill, NC

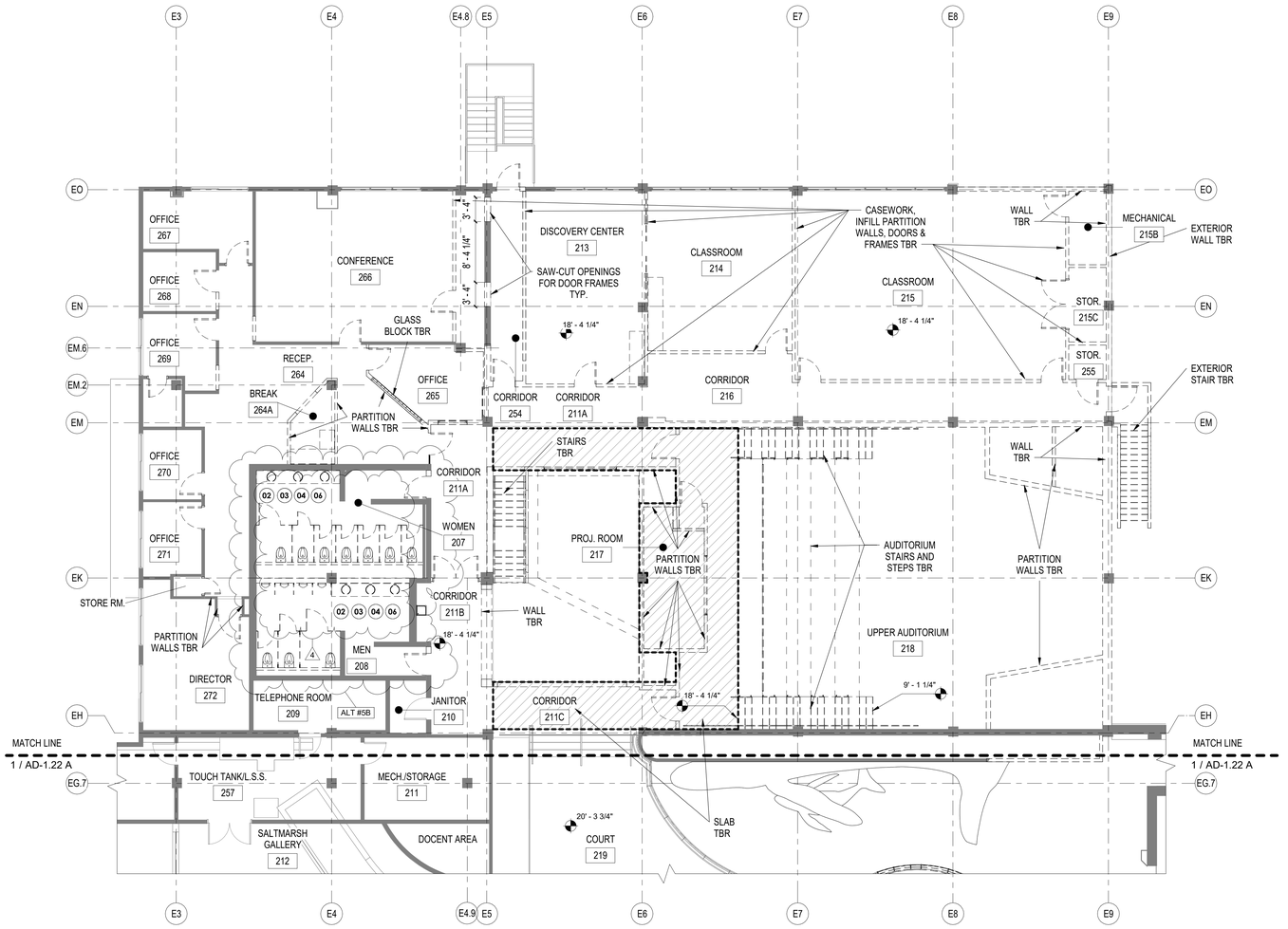
PHILIP SZOSTAK REGISTERED 3433 ARCHITECT NORTH CAROLINA

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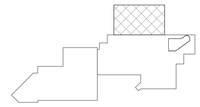
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SECOND FLOOR DEMO PLAN - CAPE FEAR

AD-1.22 A



KEY PLAN



GENERAL NOTES

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SZOSTAK DESIGN

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WILMINGTON, NC 28412
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Szostak Design, Incorporated — 51679 — North Carolina — Chapel Hill, NC

Philip Szostak — Registered — 3433 — Architect — North Carolina

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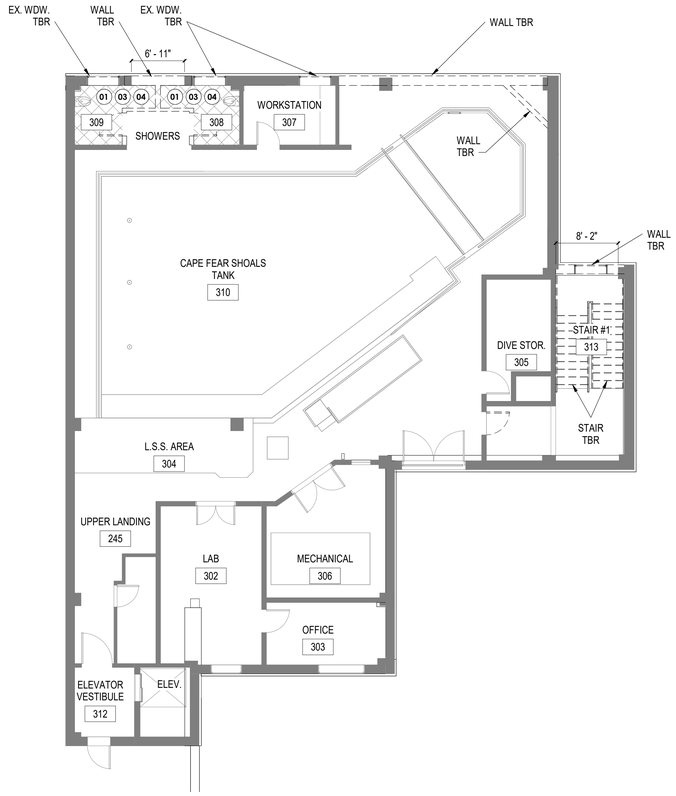
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SECOND FLOOR DEMO PLAN - TOUCH TANK

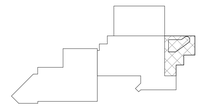
AD-1.22 B

1/8" = 1' 0" — 0, 10', 20', 40', 80'

2ND FLOOR - DEMO - TOUCH AND SHARK TANK
SCALE : 1/8" = 1'-0"



KEY PLAN



GENERAL NOTES

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SZOSTAK DESIGN

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BEND, OR 97707
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LICENSE # C-1075

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PHILIP SZOSTAK REGISTERED 3833 ARCHITECT NORTH CAROLINA

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THIRD FLOOR DEMO PLAN - CAPE FEAR

AD-1.23 A

1/8" = 1' 0" 0 10' 20' 40' 80'

3RD FLOOR - DEMO - CAPE FEAR
SCALE : 1/8" = 1'-0"

1

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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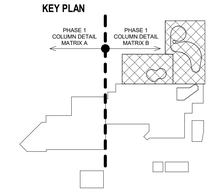
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KEY PLAN

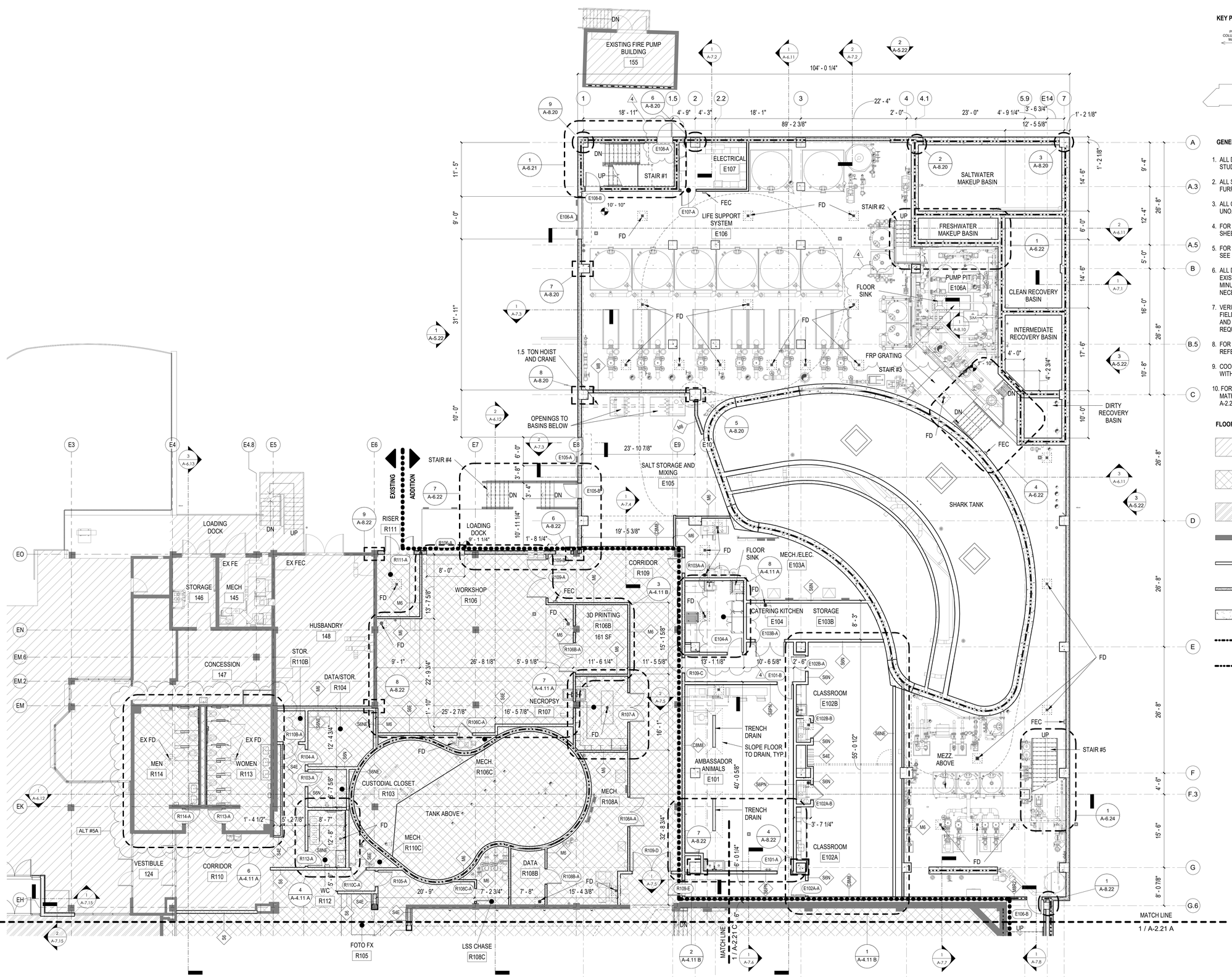


GENERAL NOTES

1. ALL DIMENSIONS ARE TO FACE OF STUD OR MASONRY UNO.
2. ALL STUDS ARE 6", UNO (EXCEPTION FURRING OVER MASONRY).
3. ALL CMU WALLS ARE 8" NOMINAL, UNO.
4. FOR ROOM FINISH SCHEDULES, SEE SHEET A-9.1.
5. FOR DOOR AND FRAME SCHEDULES, SEE SHEETS A-9.2 - A-9.3.
6. ALL DIMENSIONS SHOWN AT EXISTING CONDITIONS ARE PLUS OR MINUS AND SHOULD BE VERIFIED, IF NECESSARY, ON THE PROJECT SITE.
7. VERIFY EXISTING FLOOR LEVELS IN FIELD. COORDINATE STRUCTURAL AND FINISHED FLOOR HEIGHTS AS REQUIRED.
8. FOR STANDARD MOUNTING HEIGHTS, REFER TO SHEET G-1.23.
9. COORDINATE FRP GATE CHANNELS WITH CIP CONC TANK WALLS.
10. FOR PHASE 1 COLUMN DETAIL MATRIX, REFER TO SHEET A-2.21C, A-2.21D, A-2.22C, AND A-2.23C

FLOOR PLAN LEGEND

- EXISTING BUILDING
- RENOVATED AREA
- UPFIT BY OTHERS
- EXISTING WALLS
- METAL STUD WALL
- CMU WALL
- CIP CONC WALL
- 1-HR RATED WALL
- 2-HR RATED WALL



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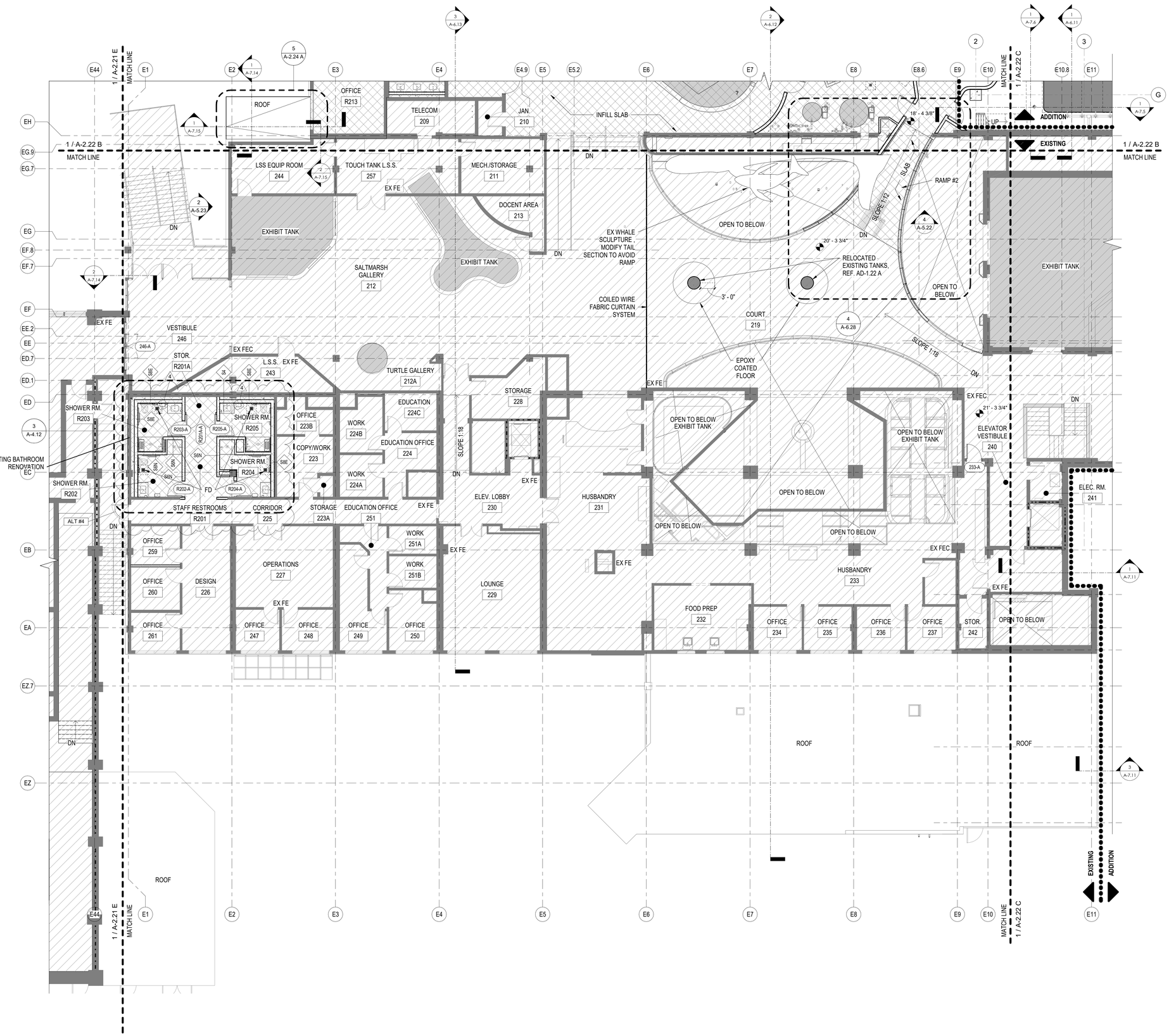
FIRST FLOOR PLAN - TOUCH & SHARK TANK

A-2.21 B

1/8" = 1' 0" 0 10' 20' 40' 80'

1ST FLOOR PLAN - TOUCH & SHARK TANK
SCALE : 1/8" = 1'-0"

1

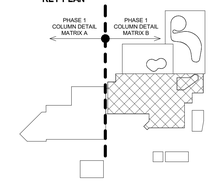


1/8" = 1' 0" 0 10' 20' 40' 80'

2ND FLOOR PLAN - CAPE FEAR SHOALS
SCALE : 1/8" = 1'-0"

1

KEY PLAN



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- RENOVATED AREA
- UPFIT BY OTHERS
- EXISTING WALLS
- METAL STUD WALL
- CMU WALL
- CIP CONC WALL
- 1-HR RATED WALL
- 2-HR RATED WALL

SZOSTAK DESIGN

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CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD.
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
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56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
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DUBLIN, OHIO 43017
TELE: 617.765.8690
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LICENSE # P-0506

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10265 INDIANA COURT
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TELE: 909.360.2900
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LANDSCAPE ARCHITECT
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DURHAM, NC 27701
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FAX: 919.419.1669
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LICENSE # C-098

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LICENSE # C-1075

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DURHAM, NC 27703
TELE: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

NOTE: IF THIS DRAWING IS NOT 30" X 42", IT IS A REDUCED PRINT. REFER TO GRAPHIC SCALE.

Szostak Design, Incorporated ARCHITECTURE PLANNING PRESERVATION 51679 NORTH CAROLINA Chapel Hill, NC

PHILIP SZOSTAK REGISTERED SEAL 5833 ARCHITECT NORTH CAROLINA

NOT FOR CONSTRUCTION

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3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

SECOND FLOOR PLAN - CAPE FEAR SHOALS

A-2.22 A

	TOILET ACCESSORY SCHEDULE
a	GRAB BAR: BRADLEY 812 SERIES, 1 1/2" INCH DIAMETER WITH PEENED SURFACE, 36" LONG, CONCEAL MOUNTING FLANGES WITH SNAP FLANGE COVERS (FLUSH VALVE SIDE).
b	GRAB BAR: BRADLEY 812 SERIES, 1 1/2" INCH DIAMETER WITH PEENED SURFACE, 42" LONG, CONCEAL MOUNTING FLANGES WITH SNAP FLANGE COVERS (PARTITION SIDE, HORIZONTAL).
c	GRAB BAR: BRADLEY 812 SERIES, 1 1/2" INCH DIAMETER WITH PEENED SURFACE, 48" LONG, CONCEAL MOUNTING FLANGES WITH SNAP FLANGE COVERS (CORNER, HORIZONTAL).
d	GRAB BAR: BRADLEY 812 SERIES, 1 1/2" INCH DIAMETER WITH PEENED SURFACE, 18" LONG, CONCEAL MOUNTING FLANGES WITH SNAP FLANGE COVERS (SIDE, VERTICAL).
e	HAND DRYER: BY OWNER. GC INSTALL.
f	PAPER TOWEL DISPENSERS: BY OWNER. GC INSTALL.
g	PAPER TOWEL WASTE DISPOSER: BRADLEY 355
h	LIQUID SOAP DISPENSERS: BY OWNER. GC INSTALL.
i	DUAL ROLL TOILET PAPER DISPENSERS: BY OWNER. GC INSTALL.
j	COAT/CLOTHES HOOK: BY TOILET PARTITION SUPPLIER (ONE PER STALL DOOR).
k	FEMININE NAPKIN RECEPTACLE: BY OWNER. GC INSTALL (ONE PER STALL IN WOMEN'S TOILETS).
l	MIRROR: 24" WIDE X 36" HIGH, BRADLEY 747-024360.
m	MIRROR: 24" WIDE X 60" HIGH, BRADLEY 747 SERIES.
n	ADULT CHANGING STATION: BY OWNER. GC INSTALL.
o	MOP RACK: BY OWNER. GC INSTALL. (ONE PER CUSTODIAL CLOSET)
p	SHOWER SEAT: BRADLEY 9562 SERIES

GENERAL NOTES

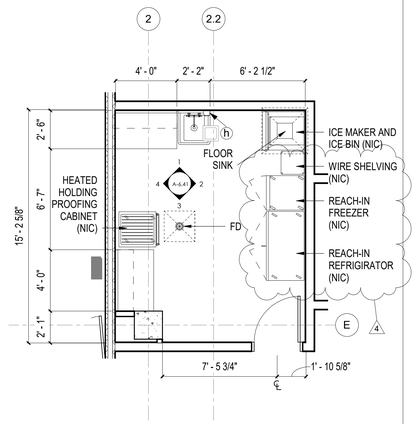
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5. FOR DOOR AND FRAME SCHEDULES, SEE SHEETS 9.2 - 9.3.
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7. FOR STANDARD MOUNTING HEIGHTS, REFER TO SHEET G-1.23.

FLOOR PLAN LEGEND

EXISTING WALLS

MTL STUD WALLS

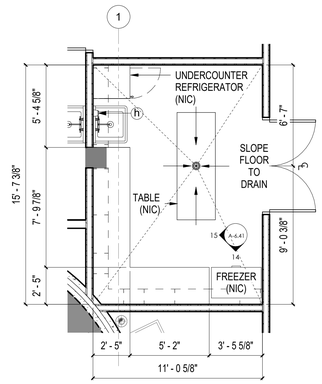
CMU WALLS



1ST FLOOR - CATERING KITCHEN

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

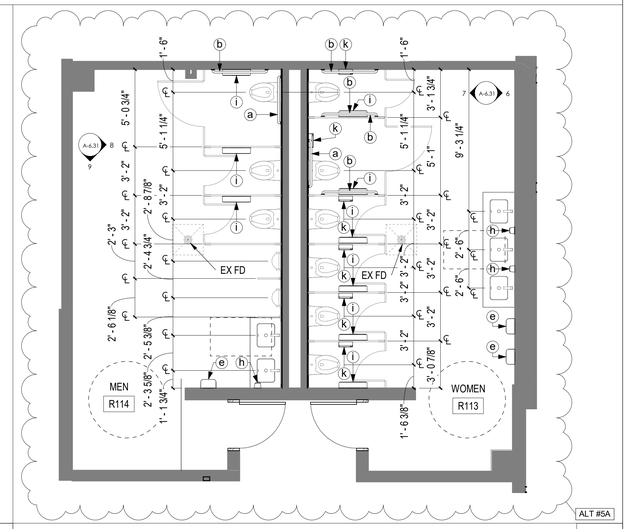
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1ST FLOOR - NECROPSY

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

7

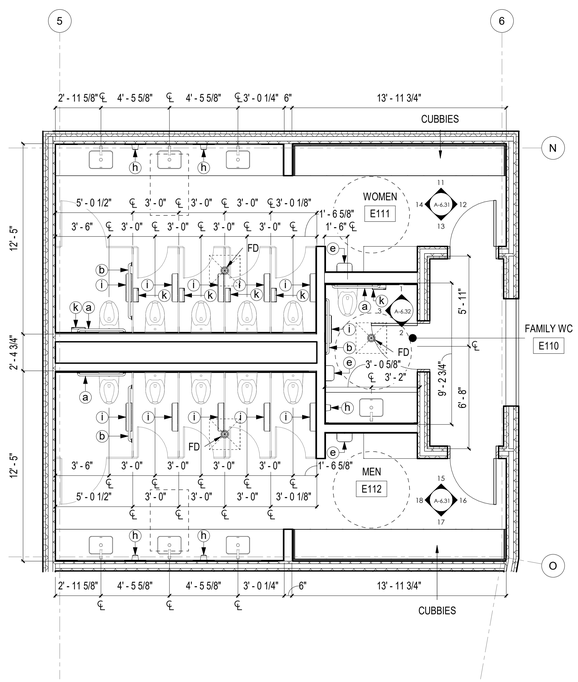


ALT #5A

1ST FLOOR - TOUCH & SHARK TANK - TOILETS

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

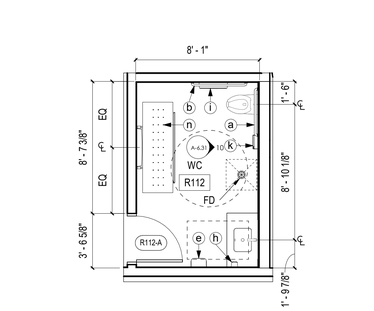
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1ST FLOOR - SOUTHEAST WING - TOILETS

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

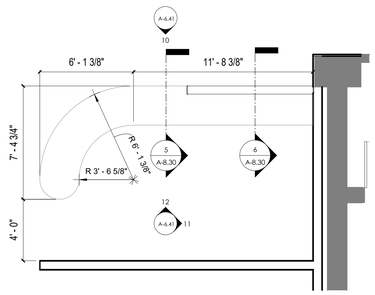
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1ST FLOOR - TOUCH TANK - TOILETS

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

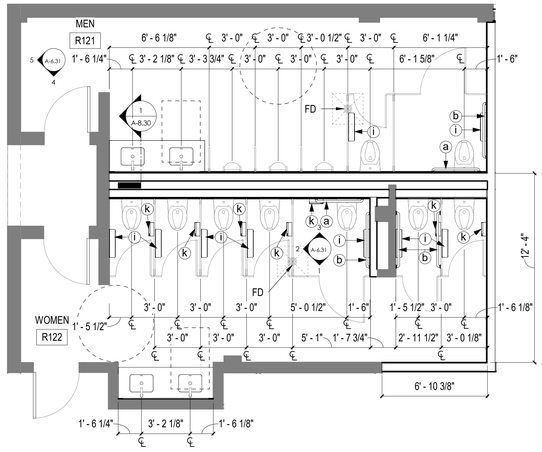
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1ST FLOOR - MAIN ENTRY - CASEWORK

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

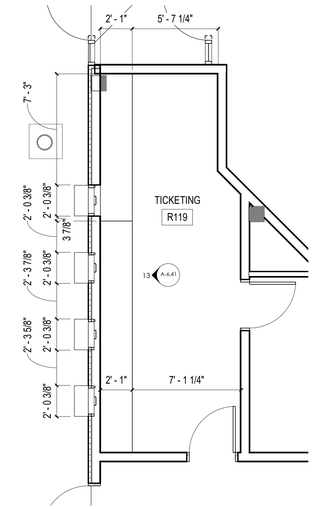
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1ST FLOOR - MAIN ENTRY - TOILETS

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

2



1ST FLOOR PLAN - TICKETING

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

1

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
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ARCHITECT
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CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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56880 VENTURE LANE SUITE 2004
BEND, OR 97707
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DUBLIN, OHIO 43017
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LICENSE # P-0806

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TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
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DURHAM, NC 27703
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Szostak Design, Incorporated — 51679 — NORTH CAROLINA — Chapel Hill, NC

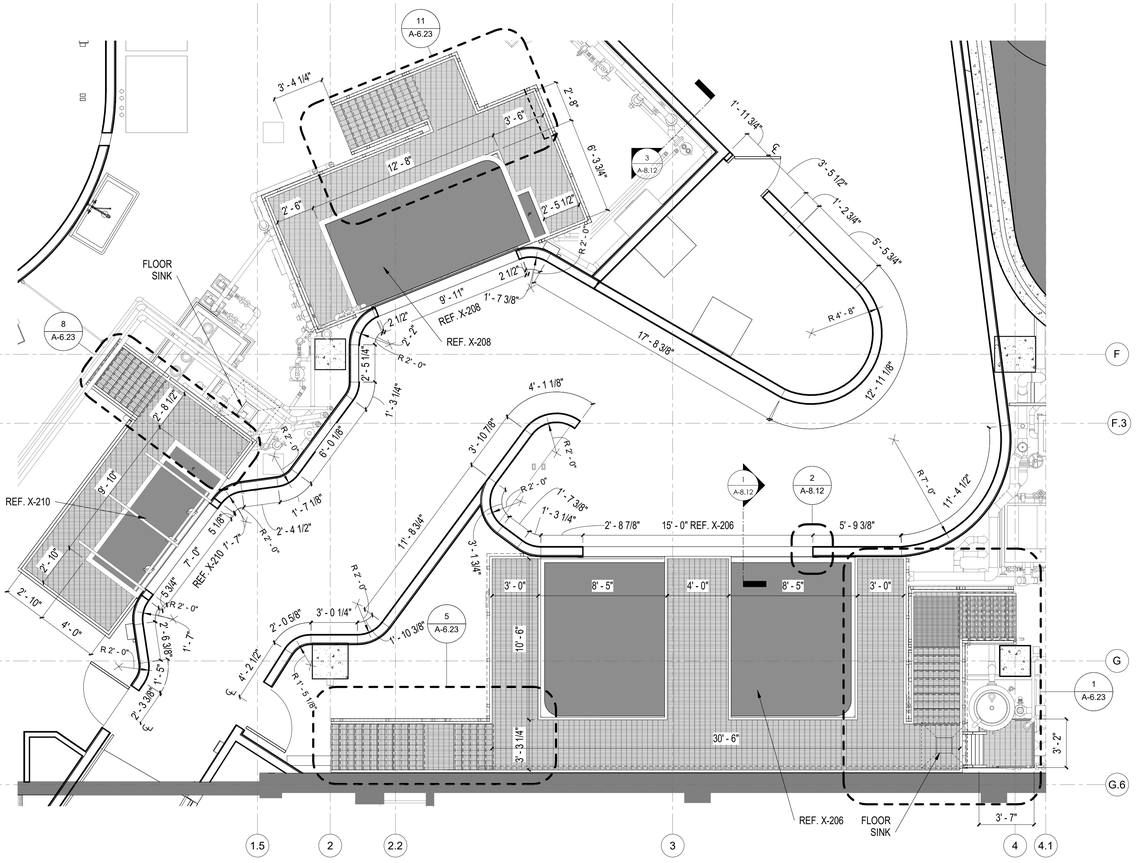
PHILIP SZOSTAK — REGISTERED — ARCHITECT — NORTH CAROLINA

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FIRST FLOOR - ENLARGED FLOOR PLANS

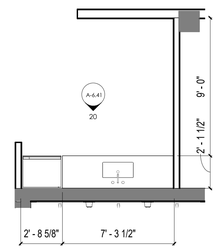
A-4.11 A



2ND FLOOR - EXHIBIT

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

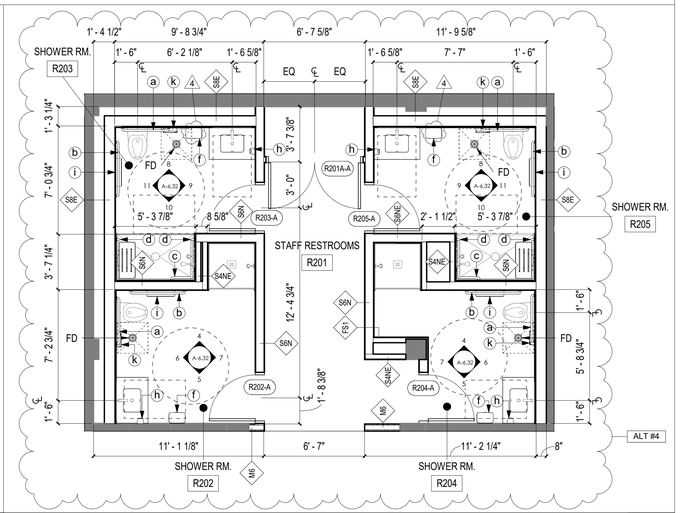
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2ND FLOOR - TOUCH & SHARK TANK - BREAK ROOM

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

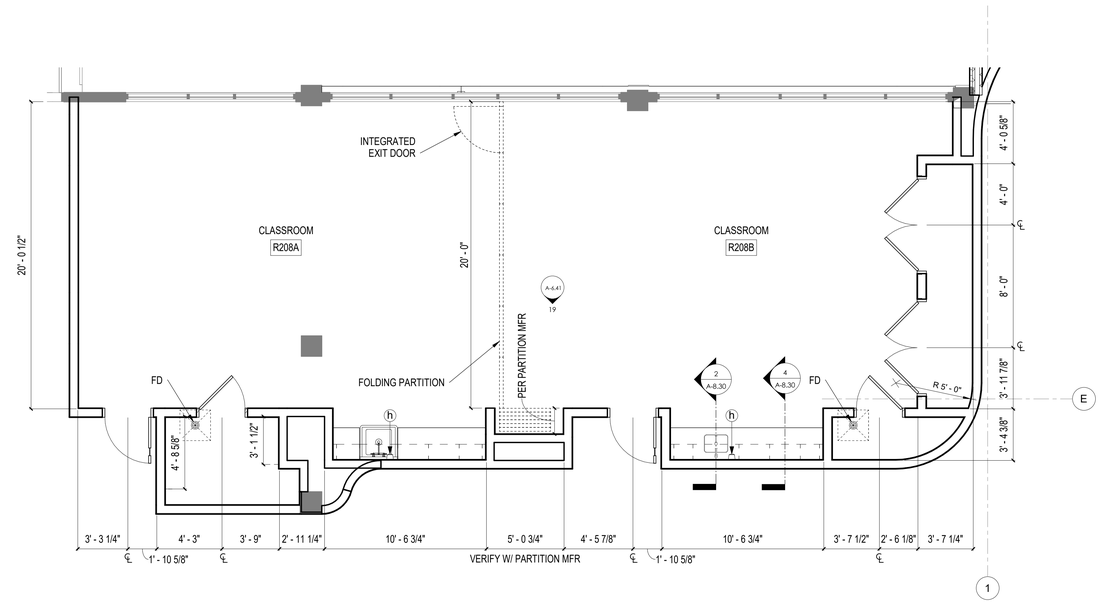
4



2ND FLOOR - CAPE FEAR - STAFF TOILETS

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

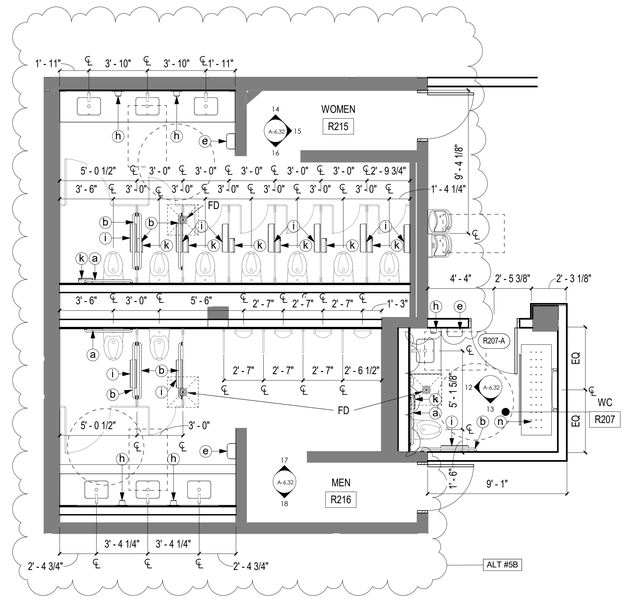
3



2ND FLOOR - TOUCH & SHARK TANK - CLASSROOMS

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

2



2ND FLOOR - TOUCH TANK - TOILETS

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

1

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f	PAPER TOWEL DISPENSERS: BY OWNER. GC INSTALL.
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l	MIRROR: 24" WIDE X 36" HIGH, BRADLEY 747-024360.
m	MIRROR: 24" WIDE X 60" HIGH, BRADLEY 747 SERIES.
n	ADULT CHANGING STATION: BY OWNER. GC INSTALL.
o	MOP RACK: BY OWNER. GC INSTALL. (ONE PER CUSTODIAL CLOSET)
p	SHOWER SEAT: BRADLEY 9562 SERIES

GENERAL NOTES

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FLOOR PLAN LEGEND

EXISTING WALLS

MTL STUD WALLS

CMU WALLS

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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SECOND FLOOR - ENLARGED FLOOR PLANS

A-4.12

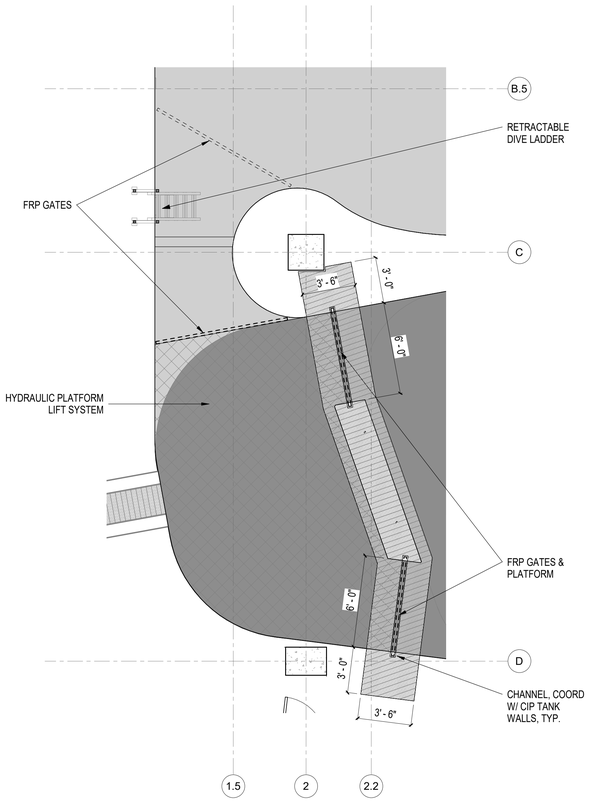
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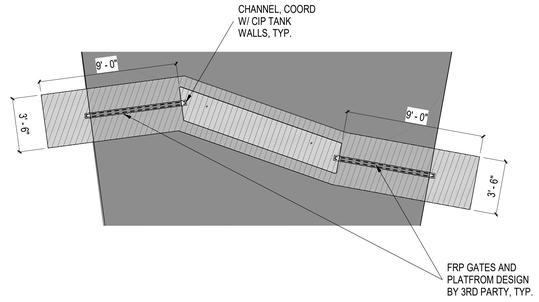
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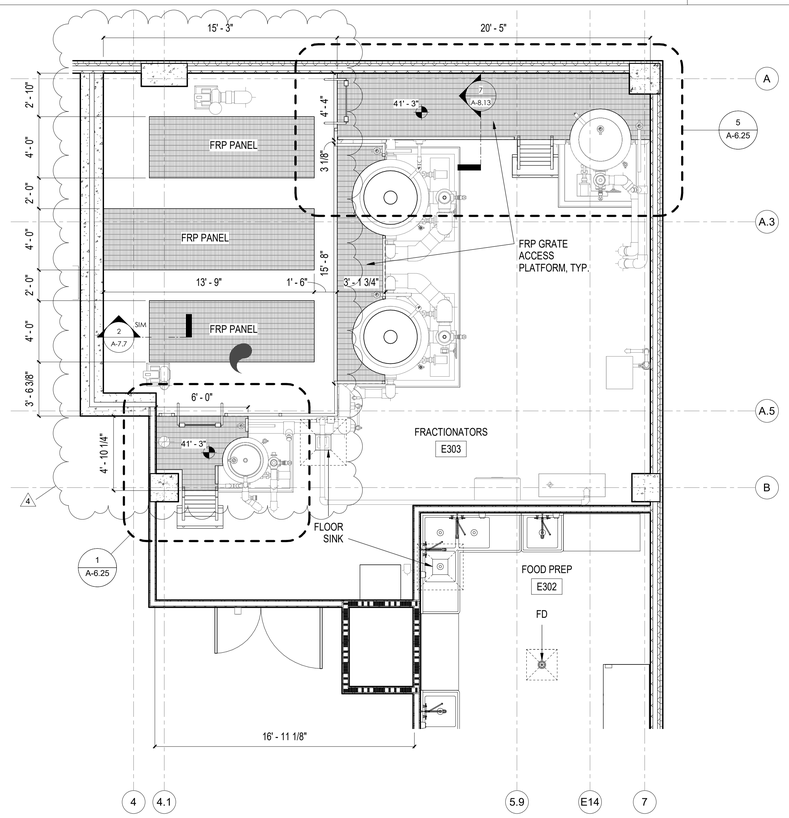
EXISTING WALLS
MTL STUD WALLS
CMU WALLS



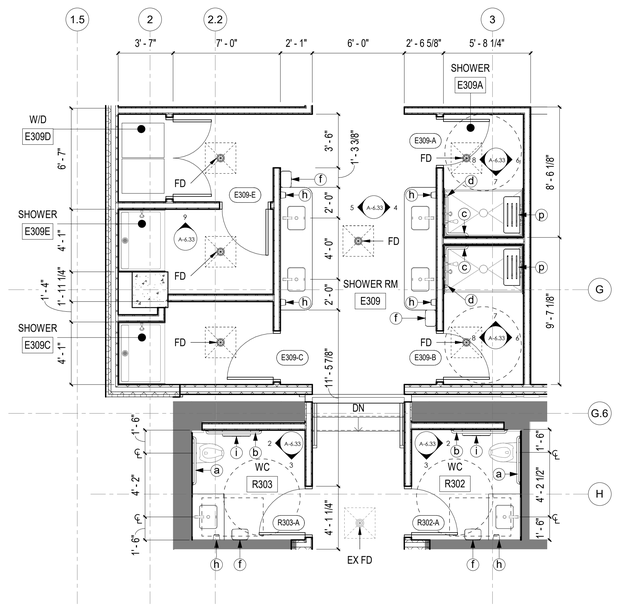
3RD FLOOR PLAN - SHARK TANK - NORTH WING TANK
SCALE : 1/4" = 1'-0"
5



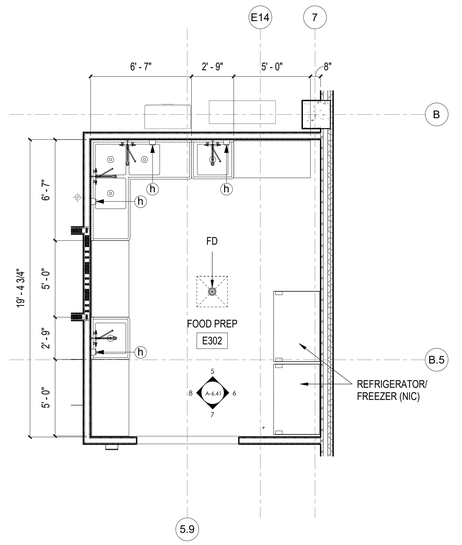
3RD FLOOR PLAN - SHARK TANK - SOUTH WING TANK
SCALE : 1/4" = 1'-0"
4



3RD FLOOR PLAN - FRACTIONATORS
SCALE : 1/4" = 1'-0"
3



3RD FLOOR - SHARK TANK - SHOWER AND TOILETS
SCALE : 1/4" = 1'-0"
2



3RD FLOOR - SHARK TANK - FOOD PREP
SCALE : 1/4" = 1'-0"
1

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TEL#: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TEL#: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TEL#: 617.960.8690
WWW.ROTO.COM

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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TEL#: 919.832.5987
WWW.BENNETT-PLESS.COM
LICENSE # P-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TEL#: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0806

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TEL#: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TEL#: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TEL#: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TEL#: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TEL#: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

NOTE: IF THIS DRAWING IS NOT 30" X 42", IT IS A REDUCED PRINT. REFER TO GRAPHIC SCALE.

Szostak Design, Incorporated 51679 NORTH CAROLINA ARCHITECT Chapel Hill, NC

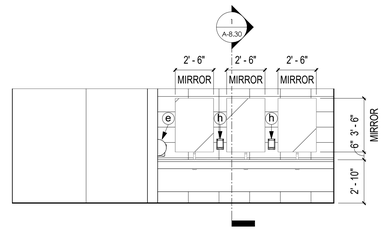
PHILIP SZOSTAK REGISTERED 5833 ARCHITECT NORTH CAROLINA

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

THIRD FLOOR - ENLARGED FLOOR PLANS

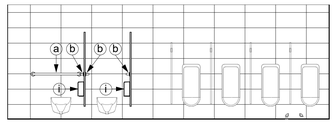
A-4.13



2ND FLOOR - TOUCH TANK - TOILET MEN - R216 - SOUTH

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

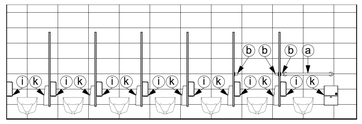
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2ND FLOOR - TOUCH TANK - TOILET MEN - R216 - NORTH

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

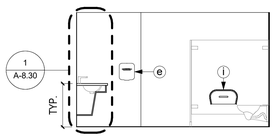
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2ND FLOOR - TOUCH TANK - TOILET WOMEN - R215 - SOUTH

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

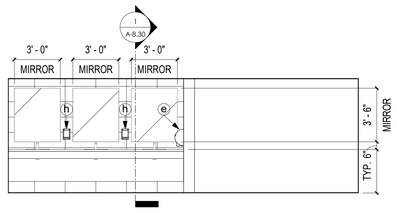
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2ND FLOOR - TOUCH TANK - TOILET WOMEN - R215 - EAST

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

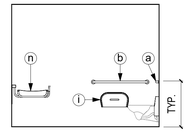
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2ND FLOOR - TOUCH TANK - TOILET WOMEN - R215 - NORTH

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

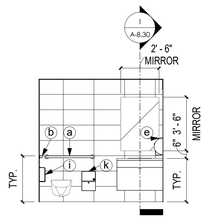
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2ND FLOOR - TOUCH TANK - NEW WC - R207 - SOUTH

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

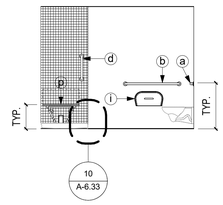
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2ND FLOOR - TOUCH TANK - NEW WC - R207 - WEST

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

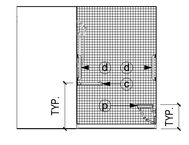
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2ND FLOOR - STAFF SHOWER RM - R203 / R205 - WEST / EAST

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

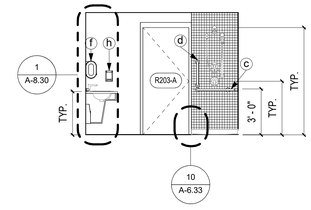
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2ND FLOOR - STAFF SHOWER RM - R203 / R205 - SOUTH

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

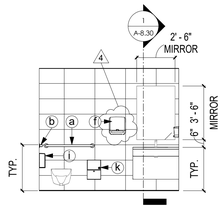
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2ND FLOOR - STAFF SHOWER RM - R203 / R205 - EAST / WEST

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

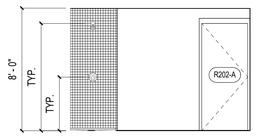
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2ND FLOOR - STAFF SHOWER RM - R203/ R205 - NORTH

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

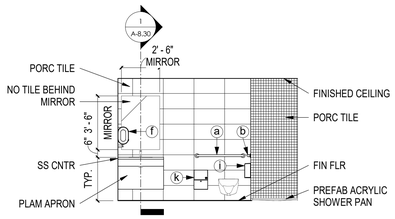
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2ND FLOOR - STAFF SHOWER RM - R202 / R204 - EAST / WEST

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

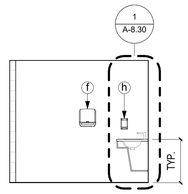
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2ND FLOOR - STAFF SHOWER RM - R202 / R204 - WEST / EAST

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

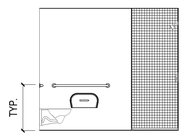
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2ND FLOOR - STAFF SHOWER RM - R202 / R204 - SOUTH

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

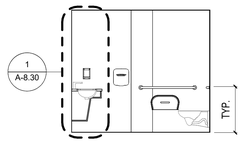
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2ND FLOOR - STAFF SHOWER RM - R202 / R204 - NORTH

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

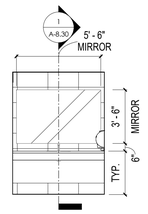
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1ST FLOOR - SOUTHEAST WING - FAMILY WC - E110 - WEST

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

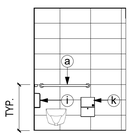
3



1ST FLOOR - SOUTHEAST WING - FAMILY WC - E110 - SOUTH

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

2



1ST FLOOR - SOUTHEAST WING - FAMILY WC - E110 - NORTH

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

1

	TOILET ACCESSORY SCHEDULE
a	GRAB BAR: BRADLEY 812 SERIES, 1 1/2" INCH DIAMETER WITH PEENED SURFACE, 36" LONG, CONCEAL MOUNTING FLANGES WITH SNAP FLANGE COVERS (FLUSH VALVE SIDE).
b	GRAB BAR: BRADLEY 812 SERIES, 1 1/2" INCH DIAMETER WITH PEENED SURFACE, 42" LONG, CONCEAL MOUNTING FLANGES WITH SNAP FLANGE COVERS (PARTITION SIDE, HORIZONTAL).
c	GRAB BAR: BRADLEY 812 SERIES, 1 1/2" INCH DIAMETER WITH PEENED SURFACE, 48" LONG, CONCEAL MOUNTING FLANGES WITH SNAP FLANGE COVERS (CORNER, HORIZONTAL).
d	GRAB BAR: BRADLEY 812 SERIES, 1 1/2" INCH DIAMETER WITH PEENED SURFACE, 18" LONG, CONCEAL MOUNTING FLANGES WITH SNAP FLANGE COVERS (SIDE, VERTICAL).
e	HAND DRYER: BY OWNER. GC INSTALL.
f	PAPER TOWEL DISPENSERS: BY OWNER. GC INSTALL.
g	PAPER TOWEL WASTE DISPOSER: BRADLEY 355
h	LIQUID SOAP DISPENSERS: BY OWNER. GC INSTALL.
i	DUAL ROLL TOILET PAPER DISPENSERS: BY OWNER. GC INSTALL.
j	COAT/CLOTHES HOOK: BY TOILET PARTITION SUPPLIER (ONE PER STALL DOOR).
k	FEMININE NAPKIN RECEPTACLE: BY OWNER. GC INSTALL (ONE PER STALL IN WOMEN'S TOILETS).
l	MIRROR: 24" WIDE X 36" HIGH, BRADLEY 747-024360.
m	MIRROR: 24" WIDE X 60" HIGH, BRADLEY 747 SERIES.
n	ADULT CHANGING STATION: BY OWNER. GC INSTALL.
o	MOP RACK: BY OWNER. GC INSTALL. (ONE PER CUSTODIAL CLOSET)
p	SHOWER SEAT: BRADLEY 9562 SERIES

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
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FAX: 919.960.7967
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Szostak Design, Incorporated — 51679 — Chapel Hill, NC

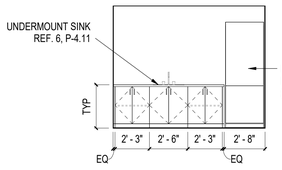
PHILIP SZOSTAK — REGISTERED — ARCHITECT — NORTH CAROLINA

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

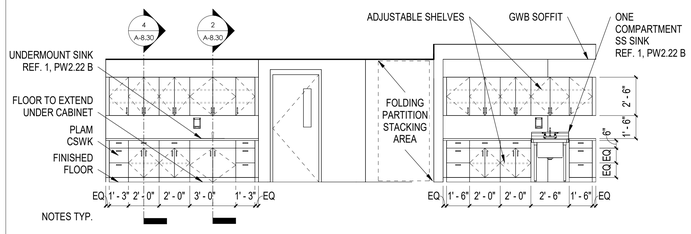
TOILET ELEVATIONS

A-6.32



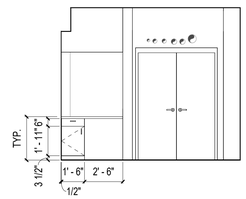
2ND FLOOR - TOUCH & SHARK TANK - BREAK ROOM — 20

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



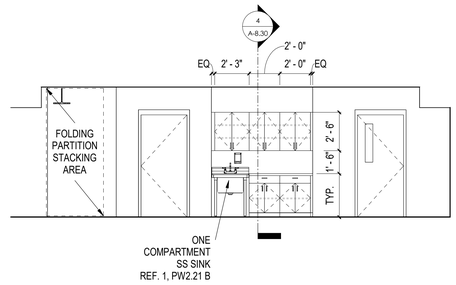
2ND FLOOR - TOUCH AND SHARK TANK - CLASSROOMS — 19

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



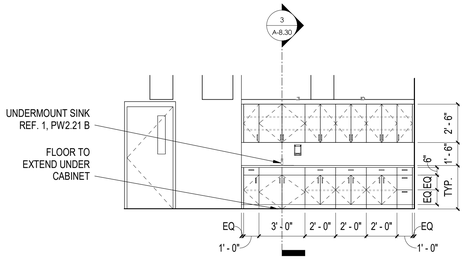
1ST FLOOR - TEACHING ROOM - 136 - SOUTH — 18

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



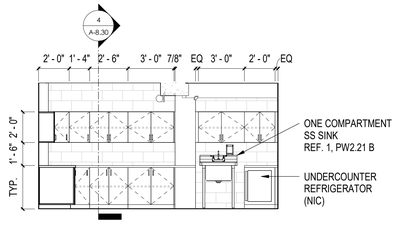
1ST FLOOR - CLASSROOM - E102B - WEST — 17

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



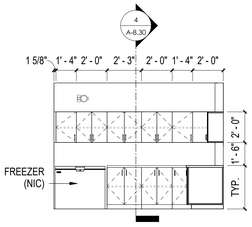
1ST FLOOR - CLASSROOM - E102A - WEST — 16

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



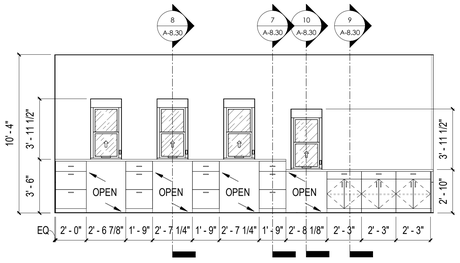
1ST FLOOR - NECROPSY - R107 - WEST — 15

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



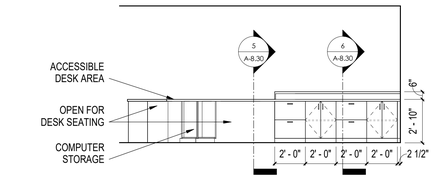
1ST FLOOR - NECROPSY - R107 - SOUTH — 14

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



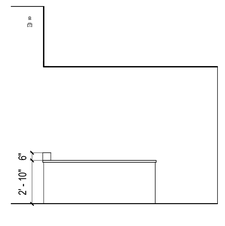
1ST FLOOR - TICKETING - R119 - NORTH WEST — 13

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



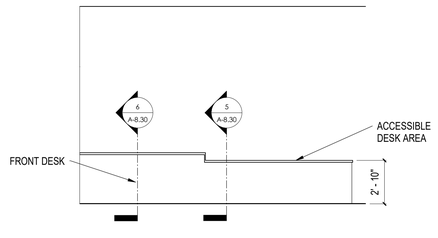
1ST FLOOR - MAIN ENTRY - LOBBY - NORTH — 12

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



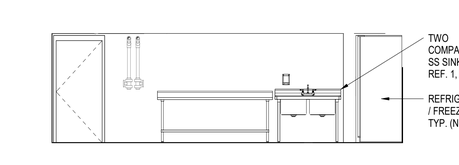
1ST FLOOR - MAIN ENTRY - LOBBY - EAST — 11

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



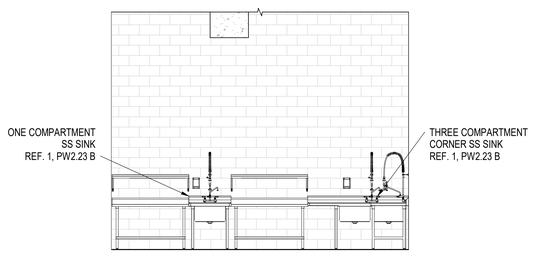
1ST FLOOR - MAIN ENTRY - LOBBY - SOUTH-B — 10

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



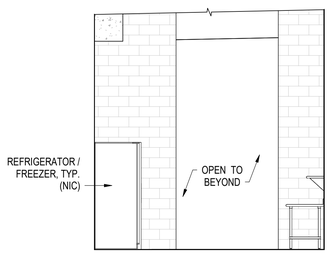
1ST FLOOR - AMBASSADOR ANIMALS - SOUTH — 9

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



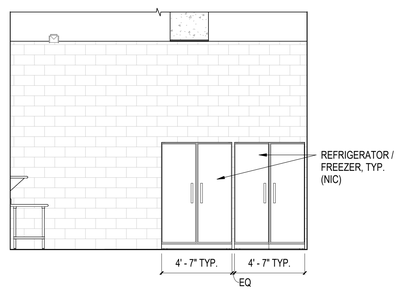
3RD FLOOR - FOOD PREP - WEST — 8

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



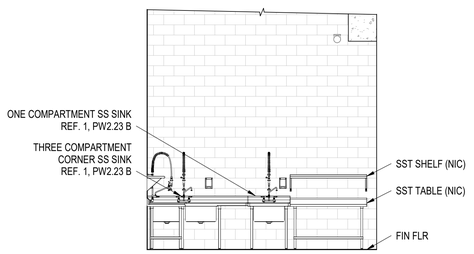
3RD FLOOR - FOOD PREP - SOUTH — 7

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



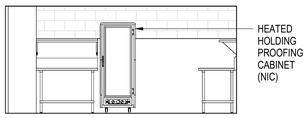
3RD FLOOR - FOOD PREP - EAST — 6

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



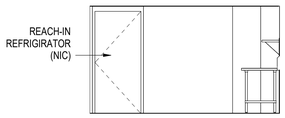
3RD FLOOR - FOOD PREP - NORTH — 5

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



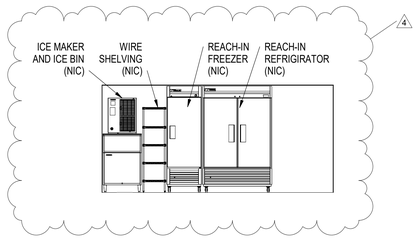
1ST FLOOR - CATERING KITCHEN - WEST — 4

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



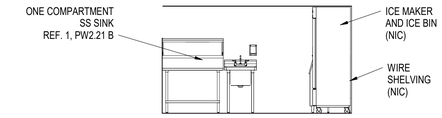
1ST FLOOR - CATERING KITCHEN - SOUTH — 3

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



1ST FLOOR - CATERING KITCHEN - EAST — 2

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



1ST FLOOR - CATERING KITCHEN - NORTH — 1

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

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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KURE BEACH, NC 28449

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NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.765.8690
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BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
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RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
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215 MORRIS STREET SUITE 150
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PHILIP SZOSTAK — REGISTERED — 3433 — ARCHITECT — NORTH CAROLINA

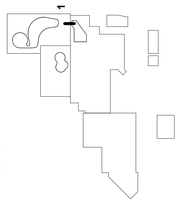
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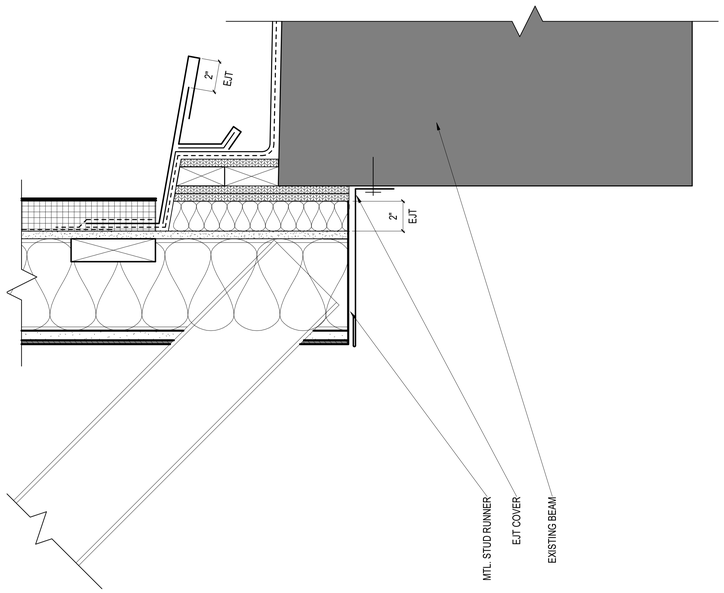
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3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

INTERIOR ELEVATIONS

A-6.41

KEY PLAN

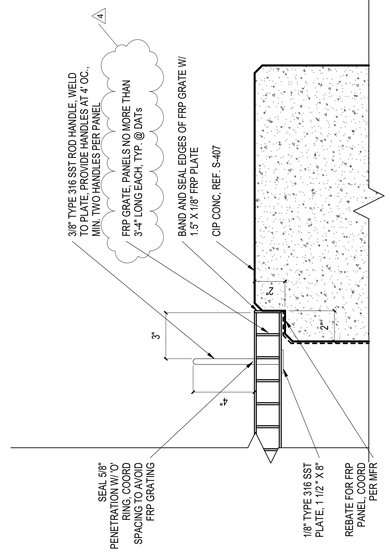


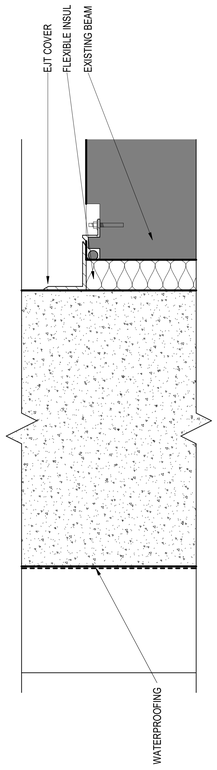


3

SHARK TANK - SOUTH - ROOF

SCALE : 3" = 1'-0"

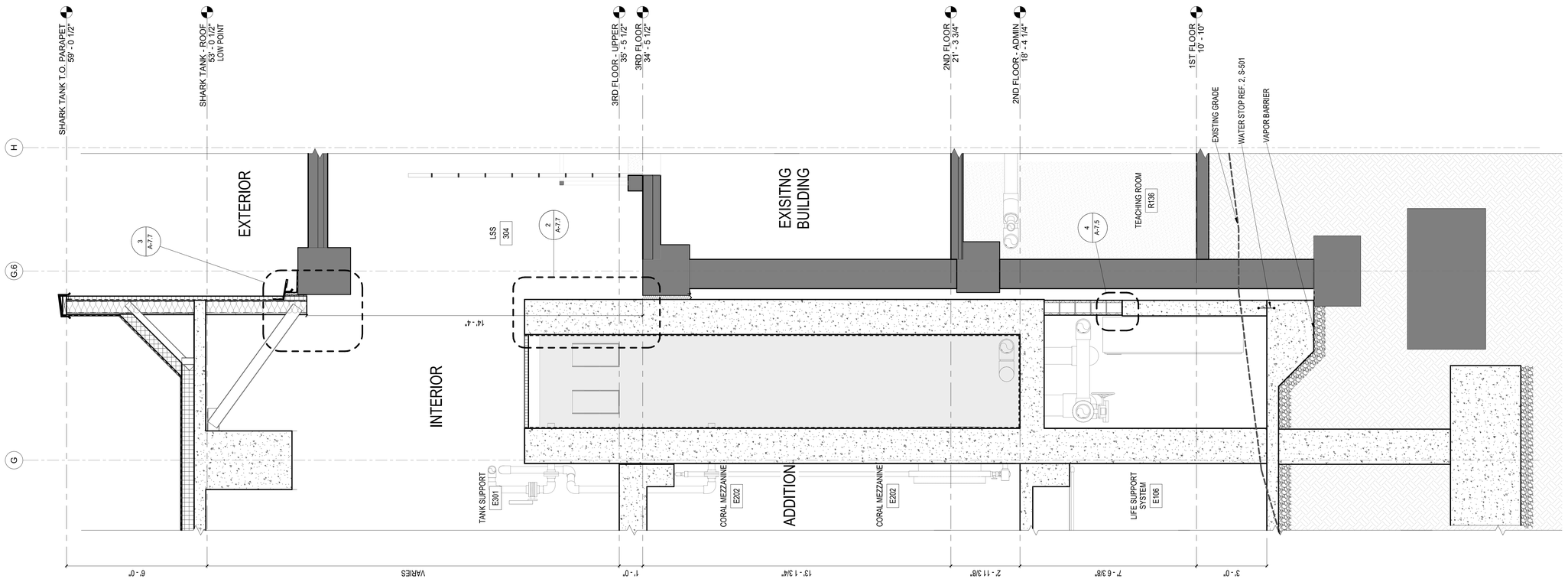




2

SHARK TANK - SOUTH - 3RD FLOOR - DAT PANEL/HANDLE

SCALE : 3" = 1'-0"



1

SHARK TANK - SOUTH - EXISTING & ADDITION

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

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-5505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.960.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
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2246 YAUPON DRIVE
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TELE: 910.791.4000
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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
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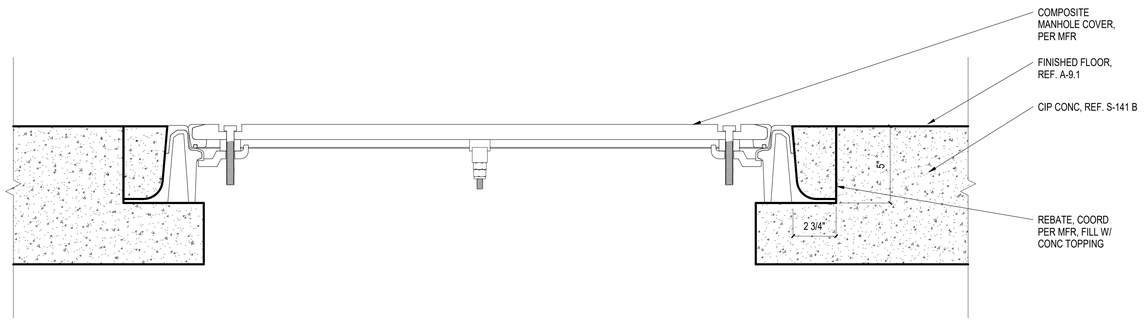
PHILIP SZOSTAK — REGISTERED — ARCHITECT — NORTH CAROLINA

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4	11-10-25	ADDENDUM #3

WALL SECTIONS

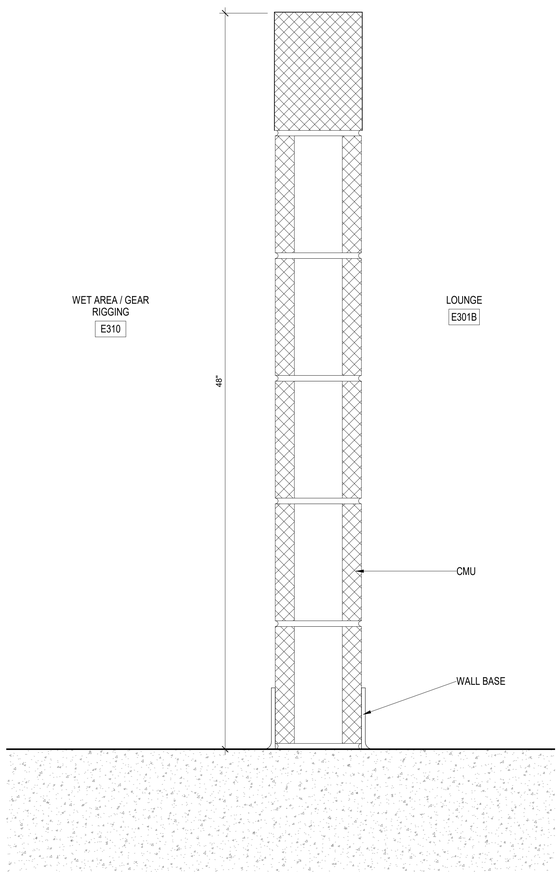
A-7.7



TYP. COMPOSITE MANHOLE COVER

SCALE : 3" = 1'-0"

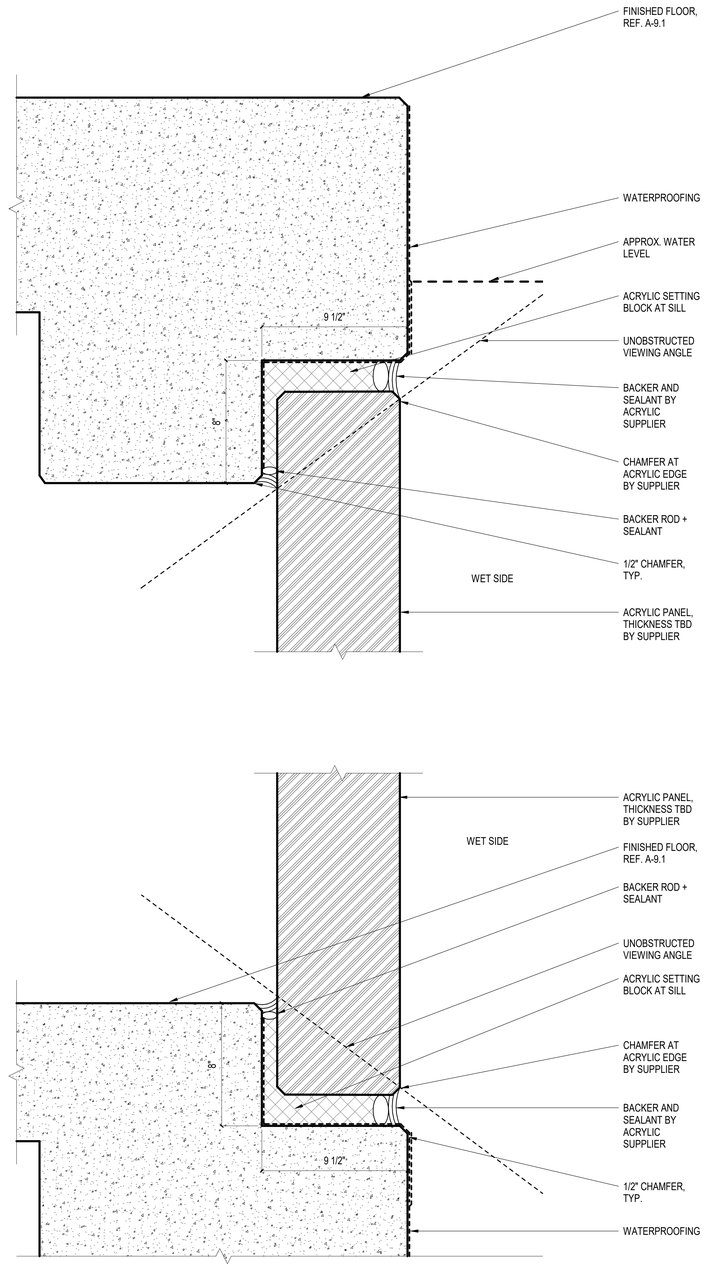
5



TYP. 4' CMU WALL

SCALE : 3" = 1'-0"

4



SHARK TANK ACRYLIC WINDOW SILL AND HEAD DETAIL

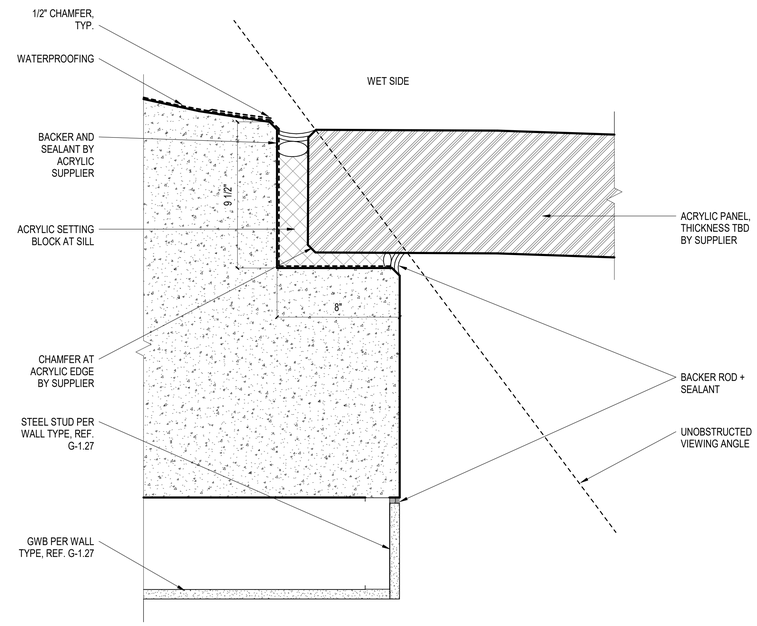
SCALE : 3" = 1'-0"

3

ACRYLIC PANEL SCHEDULE

EXHIBIT NUMBER	EXHIBIT NAME	PANEL NUMBER	PANEL TYPE	INNER RADIUS	OPENING WIDTH (ALONG WET SIDE)	OPENING HEIGHT	AREA	WATER DEPTH ABOVE ACRLYIC BASE	SUPPORTS
E-2	SAND TIGER	E2	CURVED	33' - 6"	44' - 1 3/4"	15' - 0"	662 SF	16' - 0"	4 SIDED
E-1	TOUCH TANK	E1.1	CURVED	12' - 8 7/8"	12' - 10"	1' - 8"	22 SF	1' - 4"	3 SIDED
E-1	TOUCH TANK	E1.2	CURVED	12' - 8 7/8"	12' - 10"	1' - 8"	22 SF	1' - 4"	3 SIDED

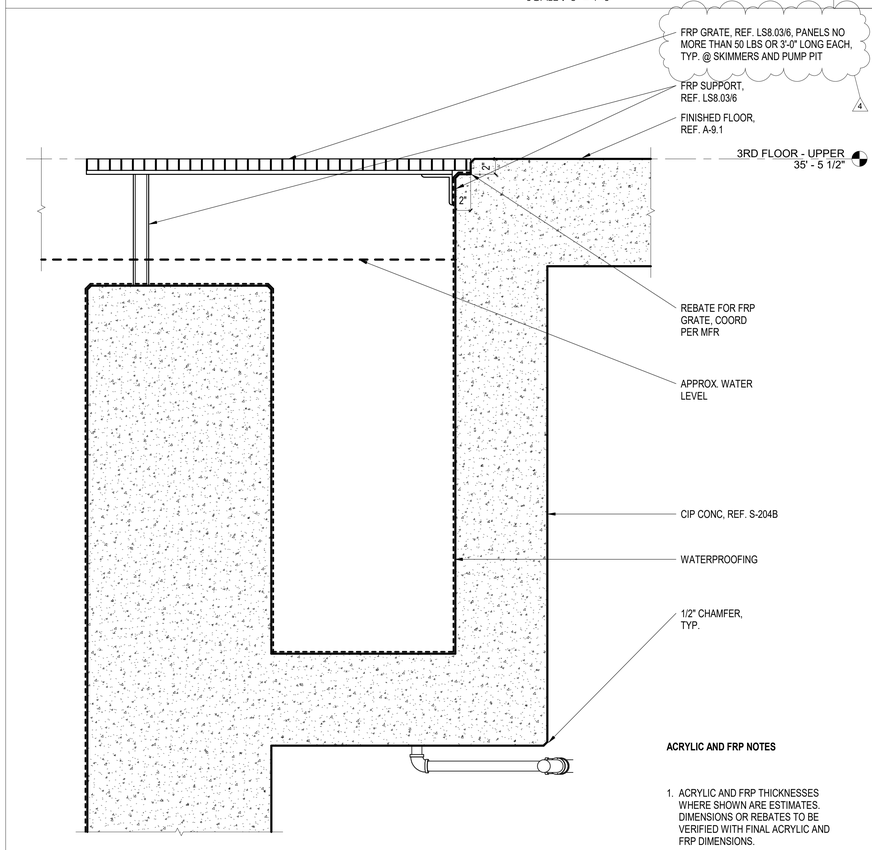
WIDTHS, HEIGHTS, AND AREAS REFLECT FINISHED DIMENSIONS, IRRESPECTIVE OF REBATES



SHARK TANK ACRYLIC WINDOW JAMB DETAIL

SCALE : 3" = 1'-0"

2



ACRYLIC AND FRP NOTES

1. ACRYLIC AND FRP THICKNESSES WHERE SHOWN ARE ESTIMATES. DIMENSIONS OR REBATES TO BE VERIFIED WITH FINAL ACRYLIC AND FRP DIMENSIONS.

TYP. SHARK TANK SKIMMER DETAIL

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

1

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
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MEP ENGINEER
2246 TAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
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SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4010
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PALACIO COLLABORATIVE
COST ESTIMATOR
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PHILIP SZOSTAK REGISTERED SC8333 ARCHITECT NORTH CAROLINA

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SHARK TANK DETAILS

SCALE: 3" = 1'-0" U.O.N.

A-8.10

DOOR SCHEDULE

MARK	LEVEL	TYPE	FRAME TYPE	HEIGHT	WIDTH	THICKNESS	DOOR MATERIAL	FRAME MATERIAL	HARDWARE SET	FIRE RATING	COMMENTS
1ST FLOOR											
151-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	56	90 MINS	PANIC HDW, THERMALLY BROKEN DOOR FRAME, CARD ACCESS
E101-A	1ST FLOOR	SF		6' - 8"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	21	UNRATED	
E101-B	1ST FLOOR	SF		6' - 8"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	21	UNRATED	
E102-A	1ST FLOOR	G2	SF-04	7' - 1 7/8"	7' - 0"		GLASS	ALUMINUM	60	UNRATED	PANIC HDW, AUTO OPENER, CARD ACCESS
E102-B	1ST FLOOR	G2	SF-05	7' - 2 1/4"	7' - 0"		GLASS	ALUMINUM	46	UNRATED	PANIC HDW, AUTO OPENER
E102A-A	1ST FLOOR	SF-V		6' - 8"	3' - 0"	1 3/4"	WOOD	ALUMINUM	54	UNRATED	PANIC HDW
E102A-B	1ST FLOOR	SF		6' - 8"	3' - 0"	1 3/4"	WOOD	ALUMINUM	09	UNRATED	
E102B-A	1ST FLOOR	SF-V		6' - 8"	3' - 0"	1 3/4"	WOOD	ALUMINUM	26	UNRATED	PANIC HDW
E102B-B	1ST FLOOR	SF		6' - 8"	3' - 0"	1 3/4"	WOOD	ALUMINUM	09	UNRATED	
E103B-A	1ST FLOOR	DF		7' - 0"	6' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	16	UNRATED	
E104-A	1ST FLOOR	SF		6' - 8"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	06	UNRATED	
E105-A	1ST FLOOR	RS		8' - 0"	6' - 0"	2"	GALV STEEL	GALV STEEL	03	UNRATED	SAFETY CHAIN, 42" AFF
E105-B	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	42	UNRATED	THERMALLY BROKEN DOOR FRAME, CARD ACCESS
E106-A	1ST FLOOR	RS		12' - 0"	9' - 0"	2"	GALV STEEL	GALV STEEL	03	UNRATED	SAFETY CHAIN, 42" AFF
E106-B	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	STAINLESS STEEL	STAINLESS STEEL	63	90 MINS	PANIC HDW, CARD ACCESS, FLOODPROOF
E107-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	27	UNRATED	
E108-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	55	90 MINS	PANIC HDW, THERMALLY BROKEN DOOR FRAME, CARD ACCESS, FLOODPROOF
E108-B	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	24	90 MINS	
E110-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	19	UNRATED	THERMALLY BROKEN DOOR FRAME
E111-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	30	UNRATED	THERMALLY BROKEN DOOR FRAME
E112-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	30	UNRATED	THERMALLY BROKEN DOOR FRAME
E113-A	1ST FLOOR	SF		7' - 0"	4' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	56	90 MINS	PANIC HDW, THERMALLY BROKEN DOOR FRAME, CARD ACCESS
E115-A	1ST FLOOR	SF		7' - 2"	3' - 4"	1 3/4"	-	-	62	UNRATED	EXISTING DOOR, CARD ACCESS
E115-B	1ST FLOOR	SF-V		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	39	UNRATED	CARD ACCESS
R101B-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	07	UNRATED	
R103-A	1ST FLOOR	SF		6' - 8"	3' - 0"	1 3/4"	WOOD	ALUMINUM	35	UNRATED	CARD ACCESS
R103A-A	1ST FLOOR	SF		6' - 8"	3' - 0"	1 3/4"	STAINLESS STEEL	STAINLESS STEEL	53	UNRATED	CARD ACCESS, FLOODPROOF
R104-A	1ST FLOOR	SF		6' - 8"	3' - 0"	1 3/4"	WOOD	ALUMINUM	35	UNRATED	CARD ACCESS
R105-A	1ST FLOOR	SF		6' - 8"	3' - 0"	1 3/4"	WOOD	ALUMINUM	23	UNRATED	
R106-A	1ST FLOOR	RS		6' - 8"	8' - 0"	2"	GALV STEEL	GALV STEEL	03	UNRATED	
R106B-A	1ST FLOOR	DF		7' - 0"	6' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	13	UNRATED	
R106C-A	1ST FLOOR	SF		6' - 8"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	09	UNRATED	
R107-A	1ST FLOOR	DF		7' - 0"	6' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	13	UNRATED	
R108A-A	1ST FLOOR	DF		7' - 0"	6' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	50	UNRATED	CARD ACCESS
R108B-A	1ST FLOOR	SF		6' - 8"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	41	UNRATED	CARD ACCESS
R108C-A	1ST FLOOR	SF		6' - 8"	2' - 6"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	11	UNRATED	
R109-A	1ST FLOOR	DF		6' - 8"	8' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	14	UNRATED	
R109-B	1ST FLOOR	SF		6' - 8"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	57	UNRATED	PANIC HDW, THERMALLY BROKEN DOOR FRAME, CARD ACCESS, 2" HEAD FRAME
R109-C	1ST FLOOR	SF		6' - 8"	3' - 0"	1 3/4"	STAINLESS STEEL	STAINLESS STEEL	65	UNRATED	PANIC HDW, HOLD OPEN, FLOODPROOF
R109-D	1ST FLOOR	DF		6' - 8"	8' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	48	UNRATED	CARD ACCESS
R109-E	1ST FLOOR	SF		6' - 8"	3' - 0"	1 3/4"	STAINLESS STEEL	STAINLESS STEEL	53	UNRATED	PANIC HDW, CARD ACCESS, FLOODPROOF
R110B-A	1ST FLOOR	SF		6' - 8"	3' - 0"	1 3/4"	WOOD	ALUMINUM	37	UNRATED	CARD ACCESS
R110C-A	1ST FLOOR	SF		6' - 8"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	38	UNRATED	CARD ACCESS
R111-A	1ST FLOOR	DF		7' - 0"	6' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	47	UNRATED	THERMALLY BROKEN DOOR FRAME, CARD ACCESS
R112-A	1ST FLOOR	SF		6' - 8"	3' - 0"	1 3/4"	WOOD	ALUMINUM	17	UNRATED	
R113-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	29	UNRATED	
R114-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	29	UNRATED	
R118-A	1ST FLOOR	G1	SF-01	7' - 0"	2' - 11 1/2"		GLASS	ALUMINUM	32	UNRATED	PANIC HDW
R118-B	1ST FLOOR	G1	SF-01	7' - 0"	2' - 11 1/2"		GLASS	ALUMINUM	32	UNRATED	PANIC HDW
R118-C	1ST FLOOR	G1	SF-01	7' - 0"	2' - 11 1/2"		GLASS	ALUMINUM	31	UNRATED	PANIC HDW, AUTO OPENER, CARD ACCESS
R119-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	35	UNRATED	CARD ACCESS
R119A-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	35	UNRATED	CARD ACCESS
R120-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	31	UNRATED	PANIC HDW, THERMALLY BROKEN DOOR FRAME, AUTO OPENER, CARD ACCESS
R120-B	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	08	UNRATED	PANIC HDW, AUTO OPENER
R123-A	1ST FLOOR	G1	SF-02	7' - 0"	2' - 11 1/2"				33		PANIC HDW
R123-B	1ST FLOOR	G1	SF-02	7' - 0"	2' - 11 1/2"				33		PANIC HDW
R123-C	1ST FLOOR	G1	SF-02	7' - 0"	2' - 11 1/2"				34		PANIC HDW, AUTO OPENER
R123A-A	1ST FLOOR	-		6' - 9"	2' - 11 7/8"		-	-	01	UNRATED	EXISTING DOOR, RELOCATE AUTO OPENER AS REQUIRED
R125-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	35	UNRATED	CARD ACCESS
R126-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	35	UNRATED	CARD ACCESS
R128-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	40	UNRATED	CARD ACCESS
R130-A	1ST FLOOR	DF		7' - 0"	6' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	49	UNRATED	CARD ACCESS
R130A-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	36	UNRATED	CARD ACCESS
R130B-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	43	UNRATED	CARD ACCESS
R132-A	1ST FLOOR	G2	SF-08	7' - 9 1/2"	6' - 0"		GLASS	ALUMINUM	59	UNRATED	PANIC HDW, CARD ACCESS
R136-A	1ST FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	40	90 MINS	CARD ACCESS
1ST FLOOR - MECH BLDGS											
E120-A	1ST FLOOR - MECH BLDGS	DF		7' - 0"	5' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	28	90 MINS	PANIC HDW
E121-A	1ST FLOOR - MECH BLDGS	DF		7' - 0"	6' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	58	UNRATED	PANIC HDW, THERMALLY BROKEN DOOR FRAME, CARD ACCESS
E122-A	1ST FLOOR - MECH BLDGS	DF		7' - 0"	6' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	58	UNRATED	PANIC HDW, THERMALLY BROKEN DOOR FRAME, CARD ACCESS
E122-B	1ST FLOOR - MECH BLDGS	SF		6' - 8"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	57	UNRATED	PANIC HDW, THERMALLY BROKEN DOOR FRAME, CARD ACCESS
E123-A	1ST FLOOR - MECH BLDGS	DF		7' - 0"	6' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	51	UNRATED	CARD ACCESS
E124-A	1ST FLOOR - MECH BLDGS	DF		7' - 0"	6' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	51	UNRATED	CARD ACCESS

DOOR SCHEDULE

MARK	LEVEL	TYPE	FRAME TYPE	HEIGHT	WIDTH	THICKNESS	DOOR MATERIAL	FRAME MATERIAL	HARDWARE SET	FIRE RATING	COMMENTS
2ND FLOOR - ADMIN											
E202-A	2ND FLOOR - ADMIN	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	64	90 MINS	PANIC HDW, CARD ACCESS
E202-B	2ND FLOOR - ADMIN	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	43	UNRATED	CARD ACCESS
R205-A	2ND FLOOR - ADMIN	SF-V		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	05	UNRATED	
R206-A	2ND FLOOR - ADMIN	SF		7' - 0"	3' - 0"	1 3/4"	WOOD - VIF	GALV HM - VIF	01	UNRATED	EXISTING DOOR TO BE REMOUNTED IN DIFFERENT LOCATION, MAINTAIN CARD ACCESS
R207-A	2ND FLOOR - ADMIN	SF		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	18	UNRATED	
R208A-A	2ND FLOOR - ADMIN	SF-V		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	44	UNRATED	PANIC HDW, CARD ACCESS
R208A-B	2ND FLOOR - ADMIN	SF		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	09	UNRATED	
R208B-A	2ND FLOOR - ADMIN	SF-V		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	44	UNRATED	PANIC HDW, CARD ACCESS
R208B-B	2ND FLOOR - ADMIN	SF		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	09	UNRATED	
R208B-C	2ND FLOOR - ADMIN	DF		7' - 0"	6' - 0"	1 3/4"	WOOD	ALUMINUM	15	UNRATED	
R208B-D	2ND FLOOR - ADMIN	DF		7' - 0"	6' - 0"	1 3/4"	WOOD	ALUMINUM	15	UNRATED	
R210-A	2ND FLOOR - ADMIN	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	36	UNRATED	CARD ACCESS
R210-B	2ND FLOOR - ADMIN	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	36	UNRATED	CARD ACCESS
R210-C	2ND FLOOR - ADMIN	DF		5' - 10 1/2"	1' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	66	UNRATED	CONCEALED FRAME AND HINGES, NOTCH DOOR PANEL AROUND CURTAIN TRACK, VERIFY & COORD HEIGHT W/ CURTAIN TRACK
R210-D	2ND FLOOR - ADMIN	DF		5' - 10 1/2"	1' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	66	UNRATED	CONCEALED FRAME AND HINGES, NOTCH DOOR PANEL AROUND CURTAIN TRACK, VERIFY & COORD HEIGHT W/ CURTAIN TRACK
R211A-A	2ND FLOOR - ADMIN	SF		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	18	UNRATED	
R211A-B	2ND FLOOR - ADMIN	SF		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	09	UNRATED	CARD ACCESS
R212-A	2ND FLOOR - ADMIN	SF		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	22	UNRATED	ACOUSTIC GASKETING
R213-A	2ND FLOOR - ADMIN	SF-V		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	45	UNRATED	CARD ACCESS
R214-A	2ND FLOOR - ADMIN	SF-V		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	45	UNRATED	CARD ACCESS
R215-A	2ND FLOOR - ADMIN	SF		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	29	UNRATED	
R216-A	2ND FLOOR - ADMIN	SF		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	29	UNRATED	
R217-A	2ND FLOOR - ADMIN	SF-V		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	37	UNRATED	CARD ACCESS
R217-B	2ND FLOOR - ADMIN	SF		6' - 8"	2' - 2"	1 3/4"	WOOD	ALUMINUM	12	UNRATED	
R218-A	2ND FLOOR - ADMIN	SF-V		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	45	UNRATED	CARD ACCESS
R220-A	2ND FLOOR - ADMIN	SF-V		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	45	UNRATED	CARD ACCESS
R221-A	2ND FLOOR - ADMIN	SF-V		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	45	UNRATED	CARD ACCESS
R222-A	2ND FLOOR - ADMIN	SF-V		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	45	UNRATED	CARD ACCESS
R222A-A	2ND FLOOR - ADMIN	SF		6' - 8"	2' - 6"	1 3/4"	WOOD	ALUMINUM	07	UNRATED	
R223-A	2ND FLOOR - ADMIN	SF-V		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	45	UNRATED	CARD ACCESS
R224-A	2ND FLOOR - ADMIN	SF-V		7' - 0"	3' - 0"	1 3/4"	WOOD	ALUMINUM	45	UNRATED	CARD ACCESS
2ND FLOOR											
233-A	2ND FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	61	90 MINS	PANIC HDW
246-A	2ND FLOOR	ASD		7' - 0"	9' - 8 1/2"	1 3/4"	GLASS	ALUMINUM	02	UNRATED	
E201A-A	2ND FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	55	UNRATED	CARD ACCESS
E204-A	2ND FLOOR	SF		7' - 0"	4' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	10	UNRATED	
R201A-A	2ND FLOOR	DF		7' - 0"	6' - 0"	1 3/4"	WOOD	ALUMINUM	15	UNRATED	
R202-A	2ND FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	20	UNRATED	
R203-A	2ND FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	20	UNRATED	
R204-A	2ND FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	20	UNRATED	
R205-A	2ND FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	20	UNRATED	
R256-A	2ND FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	61	90 MINS	PANIC HDW
3RD FLOOR											
E309-A	3RD FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	20	UNRATED	
E309-B	3RD FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	20	UNRATED	
E309-C	3RD FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	20	UNRATED	
E309-D	3RD FLOOR	DF		7' - 0"	5' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	04	UNRATED	
E309-E	3RD FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	20	UNRATED	
R302-A	3RD FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	20	UNRATED	
R303-A	3RD FLOOR	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	20	UNRATED	
R313-A	3RD FLOOR	SF		6' - 10"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	64	90 MINS	PANIC HDW, CARD ACCESS
3RD FLOOR - UPPER											
E108-C	3RD FLOOR - UPPER	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	25	90 MINS	PANIC HDW
E301-A	3RD FLOOR - UPPER	SF		7' - 0"	3' - 4"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	52	90 MINS	PANIC HDW, CARD ACCESS
E301-B	3RD FLOOR - UPPER	RS		10' - 0"	8' - 0"	2"	GALV STEEL	GALV STEEL	03	UNRATED	SAFETY CHAIN, 42" AFF
E303-A	3RD FLOOR - UPPER	DF		7' - 0"	7' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	16	UNRATED	3' 0" AND 4' 0" PANELS
E304-A	3RD FLOOR - UPPER	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	09	UNRATED	
E305-A	3RD FLOOR - UPPER	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	45	UNRATED	CARD ACCESS
E306-A	3RD FLOOR - UPPER	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	45	UNRATED	CARD ACCESS
E307-A	3RD FLOOR - UPPER	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	43	UNRATED	CARD ACCESS
E308-A	3RD FLOOR - UPPER	SF		7' - 0"	3' - 0"	1 3/4"	FIBERGLASS REINFORCED PLASTIC (FRP)	ALUMINUM	43	UNRATED	CARD ACCESS

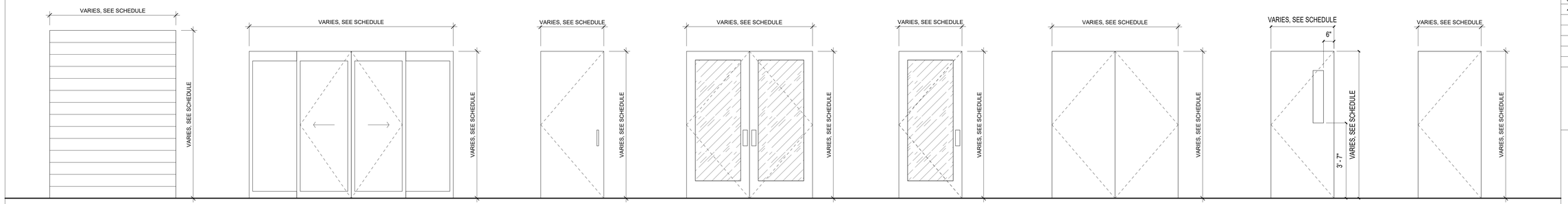
FLOOD PROOFING DOOR SCHEDULE

MARK	FLOOD BARRIER HEIGHT
E105-A	3' 2"
E105-B	3' 2"
E106-A	3' 2"
E110-A	3' 2"
E111-A	3' 2"
E112-A	3' 2"
E113-A	3' 2"

ONLY ONE FLOOD BARRIER AT THE SHARED VESTIBULE OPENING IS PROPOSED FOR DOOR E110-A, E111-A AND E112-A.

GLAZING SCHEDULE

GL-1	MONOLITHIC CLEAR
GL-2	INSULATED CLEAR



TYPE RS
OVERHEAD ROLL-UP DOOR

TYPE ASD
AUTOMATIC SLIDING DOOR

TYPE G3
SINGLE GLASS INTERIOR DOOR

TYPE G2
DOUBLE ALUMINUM STOREFRONT DOOR
(REF. A-9.2 FOR GLAZING SCHEDULE)

TYPE G1
SINGLE ALUMINUM STOREFRONT DOOR
(REF. A-9.2 FOR GLAZING SCHEDULE)

TYPE DF
DOUBLE FLUSH DOOR
SEE SCHEDULE FOR MATERIAL

TYPE SF-V
SINGLE FLUSH DOOR WITH VISION PANEL
SEE SCHEDULE FOR MATERIAL

TYPE SF
SINGLE FLUSH DOOR
SEE SCHEDULE FOR MATERIAL

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 YEWVIRE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.742.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5084
WWW.CBHFENGINEERS.COM
LICENSE # P-0806

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

NOTE: IF THIS DRAWING IS NOT 30" X 42", IT IS A REDUCED PRINT. REFER TO GRAPHIC SCALE.

Szostak Design, Incorporated — Chapel Hill, NC — 51679 — NORTH CAROLINA — ARCHITECTURE

PHILIP SZOSTAK — REGISTERED — 3433 — ARCHITECT — NORTH CAROLINA

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

DOOR SCHEDULE

A-9.3

GENERAL:

1. PROVIDE CONSTRUCTION CONFORMING TO THE 2018 NORTH CAROLINA BUILDING CODE. REFERENCE TO LATEST EDITION OR OTHER STANDARDS, SPECIFICATIONS OR CODES SHALL MEET THE LATEST STANDARD OR CODE PUBLISHED AND ADOPTED BY THE LISTED BUILDING CODE.
2. MATERIAL TESTS AND INSPECTIONS ARE REQUIRED PER CHAPTER 17 OF THE 2018 NORTH CAROLINA BUILDING CODE. REFER TO THE PROJECT STATEMENT OF SPECIAL INSPECTIONS FOR REQUIRED TESTS AND INSPECTIONS.
3. THESE NOTES APPLY EXCEPT WHERE OTHERWISE INDICATED BY DRAWINGS OR SPECIFICATIONS.
4. STRUCTURAL DRAWINGS INDICATE TYPICAL AND CERTAIN SPECIFIC CONDITIONS ONLY. SUBMITTED SHOP DRAWINGS DETAIL ALL CONDITIONS IN ACCORDANCE WITH SPECIFIED STANDARDS AND THE SPECIFIC REQUIREMENTS OF THIS PROJECT AS INDICATED ON THE DRAWINGS.
5. COORDINATE THE STRUCTURAL CONTRACT DOCUMENTS WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, CIVIL AND ALL OTHER CONSULTANTS. NOTIFY THE ARCHITECT AND STRUCTURAL ENGINEER OF RECORD IN WRITING OF ANY CONFLICT AND/OR OMISSION. WHERE A CONFLICT OCCURS, THE STRICTEST REQUIREMENT SHALL GOVERN UNLESS OTHERWISE DECIDED BY THE DESIGN TEAM.
6. COORDINATE AND VERIFY FLOOR AND ROOF OPENING SIZES AND LOCATIONS SHOWN WITH ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS. FOR ADDITIONAL OPENINGS NOT SHOWN ON THE STRUCTURAL DRAWINGS REFER TO THE ARCHITECTURAL AND MECHANICAL DRAWINGS. OBTAIN WRITTEN APPROVAL OF ADDITIONAL OPENINGS LARGER THAN 12" x 12" FROM THE STRUCTURAL ENGINEER OF RECORD.
7. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN, ADEQUACY AND SAFETY OF ERECTION BRACING, SHORING, TEMPORARY SUPPORTS AND ALL OTHER MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION.
8. COORDINATE THE BUILDING ORIENTATION WITH THE ARCHITECTURAL DRAWINGS.
9. COMPLETE SHOP DRAWINGS FOR CONSTRUCTION OF EACH BUILDING COMPONENT NOT DESIGNED BY THE DESIGN TEAM OF RECORD AND NOT SPECIFIED ON THE PROJECT CONSTRUCTION DOCUMENTS SHALL BE SEALED AND SIGNED BY A PROFESSIONAL ENGINEER IN THE STATE WHERE THE PROJECT IS LOCATED AND SHALL BE MADE AVAILABLE AT THE JOB SITE.
10. UNO, FIREPROOFING REQUIREMENTS, METHODS AND MATERIALS FOR STRUCTURAL MEMBERS ARE NOT SHOWN ON STRUCTURAL DRAWINGS, REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.
11. DO NOT SCALE OFF OF DRAWINGS, ASK ARCHITECT FOR DIMENSIONS NOT SHOWN.

DESIGN NOTES

1. 1. STRUCTURAL DESIGN IS IN ACCORDANCE WITH THE FOLLOWING CODES AND CRITERIA:
   - A. 2018 NORTH CAROLINA BUILDING CODE, BASED UPON 2015 INTERNATIONAL BUILDING CODE
   - B. ASCE 7-16, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
   - C. ASCE 24-14, FLOOD RESISTANT DESIGN AND CONSTRUCTION
2. LIVE LOADS: (UNIFORM / CONCENTRATED)
   - STAIR = 100 PSF / 300LB
   - ROOF = 20 PSF
   - SOLAR = 10 PSF
   - CORRIDORS (FIRST FLOOR) = 100 PSF / 2,000LB
   - LOBBIES/LEARNING COMMONS = 100 PSF / 2,000LB
   - CORRIDORS (SECOND FLOOR) = 80 PSF / 2,000LB
   - OFFICES = 80 PSF / 2,000LB
   - CLASSROOMS = 60 PSF / 1,000LB
   - MECHANICAL ROOMS = 125 PSF
   - TOUCH TANK = 390 PSF (WATER DEPTH = 6'-0")
   - SHARK TANK = 1625 PSF (WATER DEPTH = 24'-0")
   - HOLDING TANK = 260 PSF (WATER DEPTH = 4'-0")
3. SNOW LOADS:
   - GROUND SNOW LOAD (P_G) = 10 PSF
   - FLAT-ROOF SNOW LOAD (P_F) = 7 PSF
   - SNOW EXPOSURE FACTOR (C_E) = 0.9
   - SNOW LOAD IMPORTANCE FACTOR (I) = 1.10
   - THERMAL FACTOR (C_T) = 1.0
   - MINIMUM SNOW LOAD (PG) = 11 PSF
4. SEISMIC LOADS:
   - SEISMIC IMPORTANCE FACTOR (II) = 1.25
   - MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETERS
     - (S_S) = 0.156g
     - (S_1) = 0.071g
   - SITE CLASS = D
   - DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETERS
     - (S_{DS}) = 0.175g
     - (S_{D1}) = 0.114g
   - SEISMIC DESIGN CATEGORY = B
   - BASIC SEISMIC FORCE RESISTING SYSTEM
     - SHARK TANK BUILDING: ORDINARY REINFORCED CONCRETE MOMENT FRAMES (ORCMF)
     - SOUTHEAST ADDITION: ORDINARY REINFORCED MASONRY SHEAR WALL
   - SEISMIC RESPONSE COEFFICIENT (C_S) = 0.08
   - RESPONSE MODIFICATION COEFFICIENT (R) = 3
   - PROCEDURE USED = EQUIVALENT LATERAL FORCE PROCEDURE
   - SEISMIC BASE SHEAR IN BOTH DIRECTIONS = 1280K
5. FLOOD DESIGN DATA:
   - FLOOD HAZARD ZONE DESIGNATION = AE (SPECIAL)
   - BASE FLOOD ELEVATION = 10.00'
   - FLOOD DESIGN CLASS = 3
   - FLOOD PROOFED ELEVATION = 14.00'
6. WIND LOADS:
   - BASIC WIND SPEED, V = 160 MPH
   - RISK CATEGORY = III
   - WIND EXPOSURE = D
   - INTERNAL PRESSURE COEFFICIENT = ±0.18
   - WIND BASE SHEAR
     - X DIRECTION = 670K
     - Y DIRECTION = 270K

COMPONENT AND CLADDING WIND PRESSURES:

WIND LOADS ON COMPONENTS & CLADDING FOR GIVEN TRIBUTARY AREAS (psf)

	ZONE	10 SQ FT	20 SQ FT	50 SQ FT	100 SQ FT	500 SQ FT
ROOF	1	+34/-134	+32/-125	+29/-114	+27/-105	+27/-84
	2	+77/-177	+74/-166	+69/-151	+66/-139	+56/-113
	3	+77/-177	+74/-166	+69/-151	+66/-139	+56/-113
WALL	4	+77/-84	+74/-80	+69/-76	+66/-72	+58/-64
	5	+77/-103	+74/-96	+69/-87	+66/-80	+58/-64
PARAPET	4p	+79/-180	+75/-169	+71/-154	+67/-142	+59/-115
	5p	+79/-180	+75/-169	+71/-154	+67/-142	+59/-115

1. DETERMINE WIND LOADS ON COMPONENTS IN ACCORDANCE WITH THE NCSBC AND ASCE 7 OR WITH THIS TABLE. REFERENCE ASCE 7-16 FIGURES 30.3-2A. TRIBUTARY AREA = GREATER OF LxW OR LxL/3.
2. WIND PRESSURES INDICATED ARE AT STRENGTH-LEVEL (WIND LOAD FACTOR= 1.0). MULTIPLY BY 0.6 TO OBTAIN NOMINAL (ALLOWABLE) WIND PRESSURES
3. DEFLECTIONS MAY BE CALCULATED BASED ON 70% OF THESE LOADS.
4. POSITIVE AND NEGATIVE SIGNS SIGNIFY PRESSURES ACTING TOWARD AND AWAY FROM THE SURFACES, RESPECTIVELY.
5. NET UPLIFT IS EQUAL TO THE GROSS UPLIFT LOAD CALCULATED FROM ASCE 7 OR FROM THIS TABLE MINUS 60% OF THE ROOF DEAD LOAD.
6. FOR WALL PRESSURES, END ZONE WIDTH = 10'-6".
7. BUILDING ZONES ARE DEFINED IN ASCE 7. SEE SHEET S-021 FOR ROOF WIND PRESSURE ZONES. ZONE 2 ROOF WIND LOADS APPLY IN ZONE 3 AREAS WHERE PARAPET HEIGHT EXCEEDS 3 FEET.

EXISTING CONDITIONS:

1. RENOVATION OF EXISTING STRUCTURES REQUIRES THOROUGH COORDINATION OF THE CONTRACT DOCUMENTS WITH EXISTING CONDITIONS. THE CONTRACTOR MUST VERIFY ALL RELEVANT EXISTING CONDITIONS, DIMENSIONS, AND DETAILS PRIOR TO BEGINNING CONSTRUCTION. REPORT ANY DEVIATIONS FROM CONDITIONS OR DIMENSIONS SHOWN ON THE CONTRACT DOCUMENTS TO THE ARCHITECT AND STRUCTURAL ENGINEER OF RECORD FOR REVIEW OF THE DESIGN AND POSSIBLE REVISION OF THE CONTRACT DOCUMENTS.
2. THE NATURE OF STRUCTURAL DEMOLITION AND STABILIZATION IS INHERENTLY UNCERTAIN. THE EXACT CONDITION AND CAPACITY OF EACH STRUCTURAL ELEMENT CANNOT BE VERIFIED PRIOR TO THE COMMENCEMENT OF WORK. AS A RESULT, IT IS IMPERATIVE TO REPORT ANY DISCREPANCIES BETWEEN THE CONTRACT DOCUMENTS AND ACTUAL FIELD CONDITIONS, AS WELL AS ANY ELEMENT OF QUESTIONABLE STRUCTURAL INTEGRITY IMMEDIATELY TO THE ARCHITECT AND STRUCTURAL ENGINEER OF RECORD FOR REVIEW.
3. NO ATTEMPT HAS BEEN MADE TO DEFINE EACH SPECIFIC STRUCTURAL ELEMENT THAT MUST BE REMOVED, ENHANCED, OR REPLACED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW THE CONDITION OF INDIVIDUAL ELEMENTS TO DETERMINE WHICH ELEMENTS CAN BE SALVAGED, WHICH ELEMENTS MUST BE REPLACED, AND WHICH ELEMENTS ARE QUESTIONABLE. THE CONTRACTOR SHOULD CONSULT WITH THE ARCHITECT AND STRUCTURAL ENGINEER OF RECORD TO DETERMINE THE APPROPRIATE PROCEDURE FOR HANDLING ELEMENTS IN QUESTIONABLE CONDITION.
4. THE DIMENSIONS AND ELEVATIONS SHOWN FOR THE EXISTING CONSTRUCTION ARE AS-BUILT DIMENSIONS OBTAINED FROM SURVEY INFORMATION AND AMOUNT OF ANY DISCREPANCY, SUBMIT SURVEY PRIOR TO PLACEMENT OF PILE CAPS. THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS, ELEVATIONS AND MEMBER SIZES AS REQUIRED PRIOR TO BEGINNING CONSTRUCTION, FABRICATION, ETC.
5. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS NOT TO DISTURB OR UNDERMINE ANY EXISTING BUILDING FOUNDATIONS OR STRUCTURE AND SHALL PROVIDE SHORING AS REQUIRED.
6. IN AREAS WHERE UNDERMINING OF EXISTING BUILDING FOUNDATION OR STRUCTURE IS REQUIRED BY THE CONSTRUCTION DOCUMENTS, THE CONTRACTOR SHALL PROVIDE UNDERPINNING AND/OR SHORING AS REQUIRED BY A PROFESSIONAL ENGINEERING FOUNDATIONS AND STRUCTURES. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND SIGNED AND SEALED CALCULATIONS FOR APPROVAL, PRIOR TO CONSTRUCTION. DESIGN SHALL BE COORDINATED WITH GEOTECHNICAL ENGINEERS REPORT AND RECOMMENDATIONS.

FOUNDATION:

1. THE DESIGN OF SHALLOW FOUNDATIONS, RETAINING WALLS, AND SLABS-ON-GRADE IS BASED ON THE FOLLOWING CRITERIA ESTABLISHED IN THE GEOTECHNICAL REPORT BY S&ME, INC. DATED MAY 16, 2024 REPORT NUMBER 23060119
   - ALLOWABLE SOIL BEARING PRESSURE: 3,000 PSF
   - EQUIVALENT LATERAL FLUID PRESSURE - ACTIVE CASE: 39 PSF/FT
   - EQUIVALENT LATERAL FLUID PRESSURE - AT-REST CASE: 60 PSF/FT
   - EQUIVALENT LATERAL FLUID PRESSURE - PASSIVE CASE: 300 PSF/FT
   - COEFFICIENT OF SLIDING FRICTION: 0.36
   - SOIL DENSITY: 120 PCF

   AFTER EXCAVATION, IF THE CONDITION OF THE SOILS DO NOT MEET THE RECOMMENDED DESIGN CRITERIA STATED IN THE GEOTECHNICAL REPORT, NOTIFY THE ARCHITECT AND STRUCTURAL ENGINEER OF RECORD SO THAT THE FOUNDATIONS MAY BE REDESIGNED IF NECESSARY.
2. THE GEOTECHNICAL ENGINEER MUST VERIFY THE CONDITION AND/OR ADEQUACY OF ALL SUB-GRADES, FILLS, AND BACKFILLS PRIOR TO THE PLACEMENT OF FOUNDATIONS, FOOTINGS, SLABS, WALLS, ETC.
3. DESIGN OF SLAB-ON-GRADE IS BASED UPON A MODULUS OF SUBGRADE REACTION OF 175 PCI.
4. CONTRACT THE ARCHITECT AND ENGINEER OF RECORD IF, AFTER EXCAVATION, THE CONDITION OF THE SOIL INDICATES A SAFE BEARING CAPACITY OF LESS THAN 3,000 PSF. BEAR ALL FOOTINGS ON ORIGINAL, UNDISTURBED SOIL OR STRUCTURAL FILL.
5. COORDINATE TOP OF FOOTING ELEVATIONS WITH THE REQUIREMENTS OF OTHER TRADES (PLUMBING, ELECTRICAL, ETC.).
6. BACK FILLING WALLS:
   - A. DEPOSIT BACKFILL AGAINST WALLS EVENLY AGAINST BOTH SIDES OF WALL UNTIL THE LOWER FINAL GRADE IS REACHED.
   - B. DO NOT PLACE BACKFILL AGAINST WALLS DEPENDENT UPON TOP AND BOTTOM CONCRETE SLABS FOR SUPPORT UNTIL THE CONCRETE SLABS HAVE ATTAINED 65% OF THEIR DESIGN 28 DAY COMPRESSION STRENGTH.
   - C. SHORE AND BRACE WALLS SHOWN MONOLITHIC WITH A SLAB-ON-GRADE AT THE TOP OF THE WALL DURING BACKFILLING OPERATIONS.
7. CONSTRUCT COLUMN FOOTINGS AND WALL FOOTINGS MONOLITHICALLY WITH TOPS OF ADJACENT FOOTINGS AT THE SAME ELEVATION.
8. FILLS:
   - A. REMOVE ALL UNSUITABLE SOILS AND REPLACE WITH CLEAN STRUCTURAL FILL AT THE DIRECTION OF THE GEOTECHNICAL ENGINEER.
   - B. PLACE FILL SOILS IN MAXIMUM LOOSE LIFTS AT MOISTURE CONTENTS AS DESCRIBED IN THE GEOTECHNICAL REPORT.
   - C. COMPACT ALL FILL WITHIN 10'-0" OF THE BUILDING LIMIT TO 95% STANDARD PROCTOR.
   - D. TEST FIELD DENSITY AS DESCRIBED IN THE GEOTECHNICAL REPORT TO VERIFY ADEQUATE COMPACTION AND DESIGN BEARING PRESSURE.
9. SIDES OF FOUNDATIONS MUST BE FORMED UNLESS CONDITIONS PERMIT EARTH FORMING. FOUNDATIONS PLACED AGAINST EARTH REQUIRE THE FOLLOWING PRECAUTIONS: SLOPE SIDES OF EXCAVATIONS AS APPROVED BY THE GEOTECHNICAL ENGINEER AND CLEAN UP SLOUGHING BEFORE AND DURING CONCRETE PLACEMENT.
10. WHERE FOOTING STEPS ARE NECESSARY, SLOPE NO STEEPER THAN ONE VERTICAL TO TWO HORIZONTAL.

AUGER CAST-IN-PLACE (ACIP) REINFORCED CONCRETE PILES:

1. DEEP FOUNDATION ELEMENTS CONSIST OF PILE CAPS SUPPORTED ON AUGURED CAST-IN-PLACE GROUT PILES OF THE DIAMETER AND DEPTH INDICATED.
2. AUGER-CAST GROUT PILES MUST BE 16 INCH NOMINAL (MINIMUM) DIAMETER.
3. DESIGN CAPACITIES OF PILES ARE AS FOLLOWS: 67 TONS IN COMPRESSION, 30 TONS IN TENSION (AT TENSION PILES ONLY), AND IN TONS LATERAL. BASE BID LENGTH FOR THE PILES MUST BE (25 FEET) FROM TIP TO BOTTOM OF PILE CAP.
4. A STATIC PILE TEST MUST BE PERFORMED BY THE PILE INSTALLER AND OBSERVED BY THE SPECIAL INSPECTOR. THE PILE TEST MUST BE FOR AXIAL (COMPRESSIVE) CAPACITY AND MUST LOAD THE TEST PILE TO GEOTECHNICAL FAILURE OR THREE TIMES THE DESIGN LOAD, WHICHEVER OCCURS FIRST. THE TEST PILE MUST BE INSTRUMENTED WITH STRAIN GAUGES ALONG ITS LENGTH TO MEASURE PILE STRAINS DURING TESTING. REACTION PILES AND TEST RIG MUST HAVE ADEQUATE CAPACITY FOR THE LOAD INDICATED. THE TEST PILE MUST BE INSTALLED USING THE SAME CONSTRUCTION TECHNIQUES PLANNED FOR THE PRODUCTION PILES.
5. PILES MUST BE CONTINUOUSLY MONITORED DURING AUGURING AND GROUTING OPERATIONS. LOW-STRAIN INTEGRITY TESTING MUST BE PREFORMED ON 7 OF THE FIRST 100 PILES, AND 1 PERCENT OF PILES THEREAFTER, PROVIDED THAT INSTALLATION IS FOUND TO BE ACCEPTABLE. TESTING MUST BE BY THE PILE INSTALLER AND OBSERVED BY THE SPECIAL INSPECTOR.
6. A CERTIFIED SURVEY OF PILE LOCATIONS MUST BE PREPARED AND SUBMITTED FOR APPROVAL. PILES OUT OF ALLOWABLE TOLERANCE (4" ANY DIRECTION) MUST BE CLEARLY MARKED. SURVEY MUST INDICATE DIRECTION AND AMOUNT OF ANY DISCREPANCY, SUBMIT SURVEY PRIOR TO PLACEMENT OF PILE CAPS.
7. ALL ACIP SHALL BE VERTICAL CAST-IN-PLACE REINFORCED CONCRETE PIERS, UNLESS INDICATED OTHERWISE. CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5000 PSI.
8.
9.
10. ALL ACIP SHALL BE INSTALLED IN ACCORDANCE WITH THE REPORT OF GEOTECHNICAL EXPLORATION NOTED IN THE FOUNDATION NOTES SECTION OF THIS SHEET.
11. STRAIGHT-SIDED PIERS SHALL BE CENTERED ABOUT COLUMN LINES, U.N.O.

CONCRETE WATER TANK NOTES:

1. REINFORCED CONCRETE TANKS ARE DESIGNED IN ACCORDANCE WITH ACI 350-20. SEISMIC DESIGN OF CONCRETE TANKS IS IN ACCORDANCE WITH ACI 350.3.
2. CONCRETE TANKS MUST BE TESTED IN ACCORDANCE WITH ACI 350.1-10, SPECIFICATION FOR TIGHTNESS TESTING OF ENVIRONMENTAL ENGINEERING CONCRETE CONTAINMENT STRUCTURE.
3. DESIGN LOADS FOR TANKS
   - A. HYDROSTATIC LOAD (WATER) 65 PCF
4. DESIGN CRITERIA:
   - A. RISK CATEGORY III
   - B. IMPORTANCE FACTOR, Ie 1.0
   - C. CONCRETE STRENGTH, MIN 5000 PSI
   - D. COVER ON REINFORCING 3"
   - E. ENVIRONMENTAL EXPOSURE (ACI 350) NORMAL
   - F. SULFATE EXPOSURE MODERATE
5. ALL TANKS ARE DESIGNED FOR WATER DEPTH EQUAL TO TOP OF RIM ELEVATION.
6. INSTALL CONTINUOUS WATERSTOP IN ALL CONSTRUCTION AND CONTROL JOINTS.
7. REINFORCING LAP SPLICES MUST BE TENSION LAPS, UNLESS OTHERWISE INDICATED. STAGGER SPLICES OF HORIZONTAL REINFORCING IN CIRCULAR TANKS.

MICROPILES (AT TOUCH TANK):

1. MICROPILES MUST BE MINIMUM 8 INCH IN DIAMETER.
2. DESIGN CAPACITIES OF MICROPILES ARE AS FOLLOWS: 27 TONS IN COMPRESSION, 15 TONS IN TENSION (AT TENSION PILES ONLY).
3. DESIGN CAPACITIES OF MICROPILES (BOTH TEST PILE AND PRODUCTION PILES) MUST INCLUDE FACTOR OF SAFETY OF 2.0 FOR COMPRESSION LOAD. THE FACTOR OF SAFETY OF 3.0 MUST BE APPLIED FOR LOADS IN TENSION.
4. MINIMUM LENGTH OF THE PILES MUST BE 25 FEET.
5. A STATIC TEST PILE TEST MUST BE PERFORMED BY THE PILE INSTALLER AND OBSERVED BY THE SPECIAL INSPECTOR.

POST-INSTALLED ANCHORS:

1. GENERAL
   - A. PRE-CONSTRUCTION DUTIES OF THE CONTRACTOR:
     1. ARRANGE FOR AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED.
     2. PROVIDE THE STRUCTURAL ENGINEER OF RECORD MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S PERSONNEL WHO INSTALL ANCHORS ARE TRAINED PRIOR TO THE COMMENCEMENT OF INSTALLING ANCHORS.
   - B. INSTALL POST-INSTALLED ANCHORS ONLY WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS.
   - C. OBTAIN APPROVAL FROM THE ENGINEER-OF-RECORD PRIOR TO INSTALLING POST-INSTALLED ANCHORS IN PLACE OF MISSING OR MISPLACED CAST-IN-PLACE ANCHORS.
   - D. ANCHOR CAPACITY IS DEPENDANT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS OR INDICATED IN THE MANUFACTURER'S LITERATURE.
   - E. EXISTING REINFORCING BARS AND OTHER EMBEDDED MATERIAL CONTAINED IN THE CONCRETE STRUCTURE MAY CONFLICT WITH SPECIFIC ANCHOR LOCATIONS.
     1. CONTRACTOR REVIEW THE EXISTING STRUCTURAL DRAWINGS AND UNDERTAKE TO LOCATE THE POSITION OF MATERIAL EMBEDDED IN THE CONCRETE AT THE LOCATIONS OF THE DETAILED ANCHORS, BY HILTI FERROSCAN, GPR, X-RAY, CHIPPING OR OTHER MEANS UNLESS IT IS NOTED ON THE DRAWINGS THAT THE BARS CAN BE CUT.
   - F. DRILL AND CLEAN HOLES IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
   - G. SUBMIT SUBSTITUTION REQUESTS, FOR PRODUCTS OTHER THAN THOSE SPECIFIED BELOW TO THE ENGINEER-OF-RECORD PRIOR TO USE ALONG WITH:
     1. PROVIDE CALCULATIONS THAT ARE PREPARED & SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
     2. PROVIDE CALCULATIONS THAT DEMONSTRATE THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING EQUIVALENT PERFORMANCE VALUES (A MINIMUM) OF THE SPECIFIED PRODUCT USING THE APPROPRIATE DESIGN PROCEDURE AND/OR STANDARD(S) AS REQUIRED BY THE BUILDING CODE.
     3. INCLUDE CONSIDERATION OF CREEP, IN-SERVICE TEMPERATURE AND INSTALLATION TEMPERATURE IN SUBSTITUTION REQUEST.
     4. EVALUATION OF SUBSTITUTIONS WILL BE BASED ON THEIR HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS.
2. CONCRETE ANCHORS
   - A. MEDIUM DUTY MECHANICAL AND SCREW ANCHORS FOR USE IN CRACKED AND UN-CRACKED CONCRETE THAT HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.2 AND ICC-ES AC193. PRE-APPROVED MECHANICAL AND SCREW ANCHORS INCLUDE:
     1. HILTI KWIK BOLT-TZ EXPANSION ANCHORS (ICC ESR-1917)
     2. HILTI KWIK HUS-EZ AND KWIK HUS EZI SCREW ANCHORS (ICC ESR-3027)
     3. SIMPSON STRONG-TIE "TITEN-HD" SCREW ANCHORS (ICC ESR-2713)
     4. SIMPSON STRONG-TIE "STRONG-BOLT 2" EXPANSION ANCHORS (ICC ESR-3037)
     5. DEWALT / POWERS POWER-STUD + SD2 EXPANSION ANCHORS (ICC ESR 2502)
   - B. HEAVY DUTY MECHANICAL ANCHORS FOR CRACKED AND UN-CRACKED CONCRETE USE:
     1. HILTI HDA UNDERCUT ANCHORS (ICC ESR 1546)
     2. HILTI HSL-3 EXPANSION ANCHORS (ICC ESR 1545)
     3. DEWALT / POWERS ATOMIC + UNDERCUT ANCHOR (ICC ESR 3067)
   - C. ADHESIVE ANCHORS FOR USE IN CRACKED AND UN-CRACKED CONCRETE THAT HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC308. PRE-APPROVED ADHESIVE ANCHORS INCLUDE:
     1. HILTI HIT-HY 200 SAFE SET SYSTEM WITH HILTI HIT-Z ROD (ICC ESR-3187)
     2. HILTI HIT-RE 500-V3 EPOXY ADHESIVE ANCHORING SYSTEM WITH HAS-E THREADED ROD (ICC ESR-3814)
     3. DEWALT / POWERS PURE 110 + STANDARD CURE EPOXY (ICC ESR 3298)
3. MASONRY ANCHORS
   - A. ANCHORAGE TO SOLID-GROUTED CONCRETE MASONRY
     1. MECHANICAL AND CONCRETE SCREW ANCHORS FOR USE IN SOLID-GROUTED CONCRETE MASONRY SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC01 OR AC106, RESPECTIVELY. PRE-APPROVED MECHANICAL AND CONCRETE SCREW ANCHORS INCLUDE:
        - a. HILTI KWIK HUS-EZ SCREW ANCHOR (ICC ESR-3056)
        - b. HILTI KWIK BOLT-3 EXPANSION ANCHORS (ICC ESR-1385)
        - c. SIMPSON STRONG-TIE "WEDGE-ALL" (ICC ESR-1396)
        - d. SIMPSON STRONG-TIE "TITEN-HD" (ICC ESR-1056)
        - e. DEWALT / POWERS POWER-STUD + SD1 (ICC ESR 2966)
     2. ADHESIVE ANCHORS FOR USE IN SOLID-GROUTED CONCRETE MASONRY SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC58. PRE-APPROVED ADHESIVE ANCHORS INCLUDE:
        - a. HILTI HIT-HY 200 MASONRY ADHESIVE ANCHORING SYSTEM (ICC ESR-3963).
        - b. SIMPSON STRONG-TIE "SET-XP" (ICC ESR-1772)
        - c. SIMPSON STRONG-TIE "AT" (ICC ESR-1958)
        - d. DEWALT / POWERS AC200 + FAST CURE ACRYLIC (ICC ESR-4027)

STRUCTURAL MASONRY:

1. PROVIDE STRUCTURAL MASONRY CONFORMING TO THE FOLLOWING STANDARDS:
   - A. ACI 530 / ASCE 5 / TMS 402, BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY STRUCTURES, LATEST EDITIONS.
   - B. ACI 530.1 / ASCE 6 / TMS 602, SPECIFICATIONS FOR CONCRETE MASONRY STRUCTURES, LATEST EDITIONS
2. LOAD BEARING MASONRY WALLS ARE DESIGNED IN ACCORDANCE WITH CHAPTERS 1 AND 2 OF ACI 530.
3. PROVIDE HOLLOW, LOAD BEARING CONCRETE MASONRY UNITS (CMU) CONFORMING TO ASTM C 90 WITH A MINIMUM COMPRESSIVE STRENGTH OF MASONRY (F'M) OF 2000 PSI AND A NET STRENGTH OF 2000 PSI ON THE NET CROSS-SECTIONAL AREA OF CMU DETERMINED IN ACCORDANCE WITH ASTM C 140.
4. PROVIDE BRICK MASONRY UNITS CONSTRUCTED OF CLAY OR SHALE CONFORMING TO ASTM C 652.
5. PROVIDE MORTAR CONFORMING TO ASTM C 270, TYPE S. STANDARD MORTAR BED JOINT THICKNESS IS 3/8" AND MUST NOT VARY OUTSIDE OF THE RANGE BETWEEN ONE QUARTER INCH AND ONE HALF INCH. DO NOT USE AIR ENTRAINED MORTAR.
6. PROVIDE GROUT FOR REINFORCED MASONRY CONFORMING TO ASTM C 476 WITH MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI AND A MINIMUM SLUMP OF 10".
7. PROVIDE STEEL REINFORCEMENT IN MASONRY WALLS CONFORMING TO ASTM A615, GRADE 60.
8. PROVIDE MASONRY TIES AND ANCHORS OF THE TYPE AND SPACING AS DETAILED ON THE STRUCTURAL DRAWINGS AND IN CONFORMANCE WITH ASTM A82.
9. PROVIDE LADDER TYPE HORIZONTAL JOINT REINFORCING CONFORMING TO ASTM A951 IN ALL MASONRY WALLS. UNLESS NOTED OTHERWISE, PLACE 9 GAGE ZINC COATED LADDER TYPE HORIZONTAL JOINT REINFORCING AT 16" ON CENTER. LAP HORIZONTAL JOINT REINFORCING MINIMUM 12". USE PREFABRICATED 'L'S AND 'T'S AT CORNERS AND INTERSECTIONS.
10. LAY ALL MASONRY UNITS IN RUNNING BOND.
11. FOR GROUTED WALLS:
    - A. THE MAXIMUM HEIGHT OF GROUT LIFTS MUST NOT EXCEED 5'-0".
    - B. THE MAXIMUM UN-GROUTED HEIGHT OF 8" OR THICKER CMU WALLS PRIOR TO GROUTING MUST NOT EXCEED 12'-0"
    - C. REFER TO TABLE 7 OF ACI 530.1 FOR THE MAXIMUM UN-GROUTED HEIGHT OF CMU WALLS THINNER THAN 8".
    - D. CONSOLIDATE AND RECONSOLIDATE GROUT IN ACCORDANCE WITH PARAGRAPH 3.5.E OF ACI 530.1.
    - E. ALL GROUT POURS HIGHER THAN 5'-0" MUST HAVE INSPECTION HOLES AT THE BASE OF THE WALL.
12. REINFORCEMENT:
    - A. DETAIL REINFORCEMENT IN LOAD BEARING CMU WALLS IN ELEVATION ON SHOP DRAWINGS.
    - B. LAP VERTICAL MASONRY WALL REINFORCING AS SHOWN IN THE MASONRY LAP LENGTH SCHEDULE AND PROVIDE MINIMUM BAR SPLICE LENGTH.
13. PROVIDE VERTICAL CONTROL JOINTS IN ALL MASONRY WALLS NOT RETAINING EARTH. UNLESS NOTED OTHERWISE ON THE ARCHITECTURAL DRAWINGS, PLACE VERTICAL CONTROL JOINTS AT THREE TIMES THE WALL STORY HEIGHT, BUT NOT CLOSER THAN 25'-0" ON CENTER OR FARTHER THAN 40'-0" ON CENTER.
14. UNLESS NOTED OTHERWISE, PROVIDE MINIMUM (1) #5 VERTICAL BAR, GROUTED FULL STORY HEIGHT, AT EACH SIDE OF OPENINGS AND AT ALL CORNERS AND ENDS OF WALLS, INCLUDING BOTH SIDES AT ENDS OF WALL PANELS AT VERTICAL CONTROL JOINTS.
15. UNLESS NOTED OTHERWISE, ANCHOR SIDES AND TOPS OF MASONRY WALL PANELS TO THE STRUCTURE BY DOVETAIL ANCHORS, METAL STRAPS, OR EQUIVALENT.
16. PLACE CONNECTORS FOR MASONRY VENEERS AT NOT MORE THAN 16" ON CENTER VERTICALLY OR 24" ON CENTER HORIZONTALLY.
17. PROVIDE A CONTINUOUS BOND BEAM AT THE TOP OF ALL MASONRY WALLS. UNLESS NOTED OTHERWISE REINFORCE BOND BEAMS WITH (2) #4 CONTINUOUS REINFORCING BARS.
18. PROVIDE LEVEL B QUALITY ASSURANCE AS DESCRIBED IN TABLE 4 OF ACI 530.1 / ASCE 6 / TMS 602, LATEST EDITIONS.
19. SAMPLE AND TEST GROUT IN ACCORDANCE WITH ARTICLES 1.4 B AND 1.6 OF ACI 530.1 / ASCE 6 / TMS 602, LATEST EDITIONS.

REINFORCED CONCRETE:

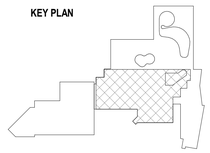
1. PROVIDE REINFORCED CONCRETE CONFORMING TO THE FOLLOWING STANDARDS.
   - A. ACI 301, SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS, LATEST EDITION.
   - B. ACI 318, BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, LATEST EDITION.
   - C. ACI 302.1R, GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION, LATEST EDITION.
   - D. ACI 360R, DESIGN OF SLABS-ON-GROUND, LATEST EDITION.
   - E. PROJECT SPECIFICATION MANUAL DIVISION 3 (WHEN PROVIDED)
2. FULLY DOCUMENT AND SUBMIT FOR REVIEW THE PROPOSED MATERIALS AND MIX DESIGN FOR ALL CONCRETE WORK. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING THE REQUIRED DESIGN STRENGTH. ALL CONCRETE TEST DATA MUST BE AVAILABLE AT THE JOB SITE.
3. DETAIL CONCRETE REINFORCEMENT ACCORDING TO ACI SP-66 DETAILING MANUAL. SUBMIT SHOP DRAWINGS FOR APPROVAL SHOWING ALL FABRICATION DIMENSIONS AND LOCATIONS FOR PLACING C

FRAMING PLAN LEGEND

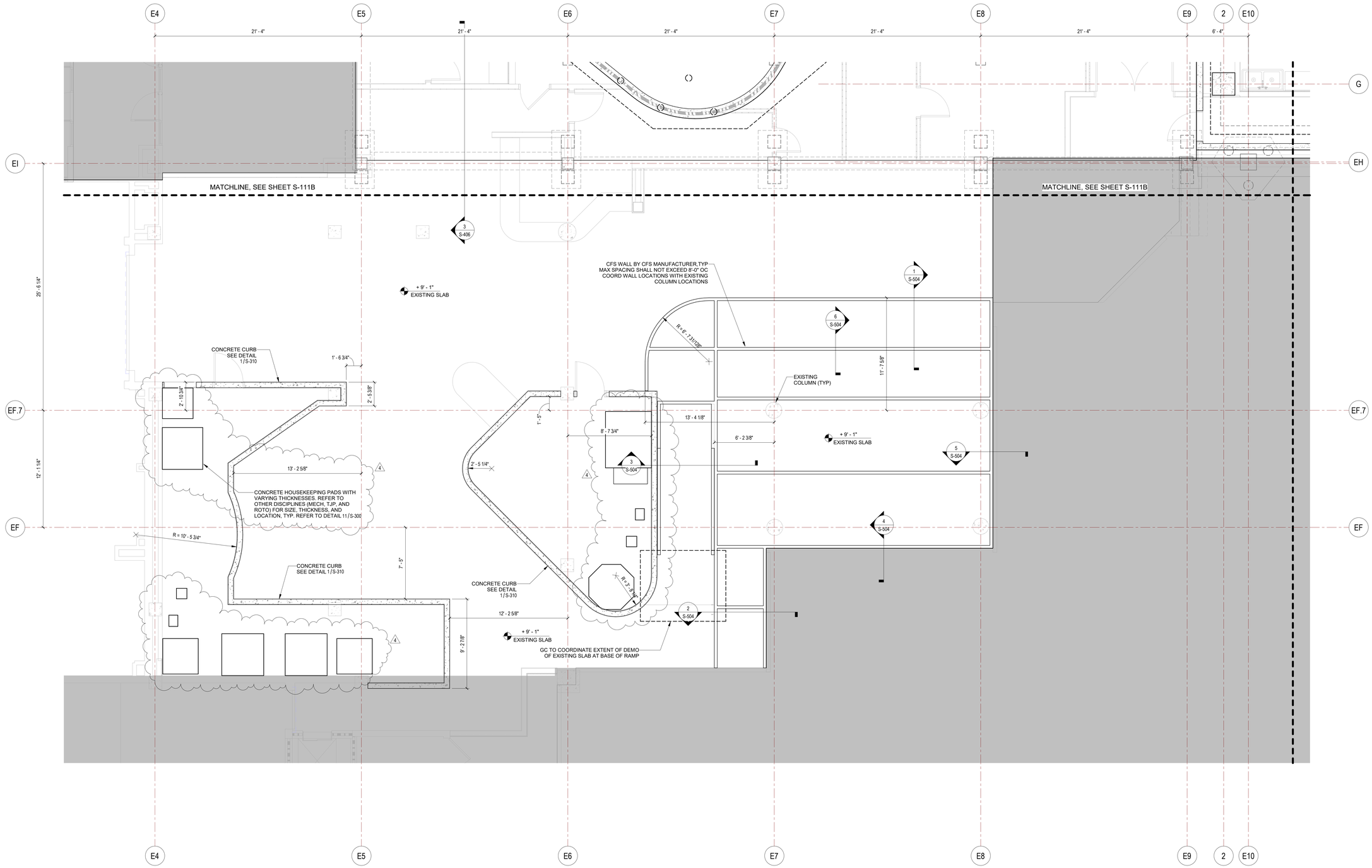
INDICATES SLAB ELEVATION RELATIVE TO SEA LEVEL.

FRAMING PLAN NOTES:
1. FOR GENERAL NOTES, ABBREVIATIONS, AND STRUCTURAL LEGEND, SEE SHEETS S-001, S-010, AND S-020 .
2. SEE ARCHITECTURAL AND/OR MEP DRAWINGS FOR LOCATIONS OF DRAINS AND SLOPES.
3. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
4. REFER TO EXISTING BUILDING RECORD DRAWINGS FOR INFORMATION NOT SHOWN
5. TOP OF SLAB ELEVATION ARE DENOTED AS [=X'-X"]. ALL ELEVATIONS ARE REFERENCED FROM SEA LEVEL DATUM, UON.

KEY PLAN



PLAN LEGEND
- RENOVATION
- EXISTING BUILDING



1/4" = 1' 0" 0 4.0' 7.0' 15' 30'

1 S-110 A **FIRST FLOOR FRAMING PLAN - CAPE FEAR SHOALS -LOWER LEVEL 9'-1"**
SCALE: 1/4" = 1'-0"

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200#4
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5987
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5066
WWW.CBHFENGINEERS.COM
LICENSE # P-0806

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.WEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4010
WWW.CHEATHAMPA.COM
LICENSE # C-1075

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

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NORTH CAROLINA SEAL 028371 ENGINEER KARL L. PERKINS 11-10-25

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1	9-8-25	BID SET
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3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

FOUNDATION PLAN - CAPE FEAR SHOALS

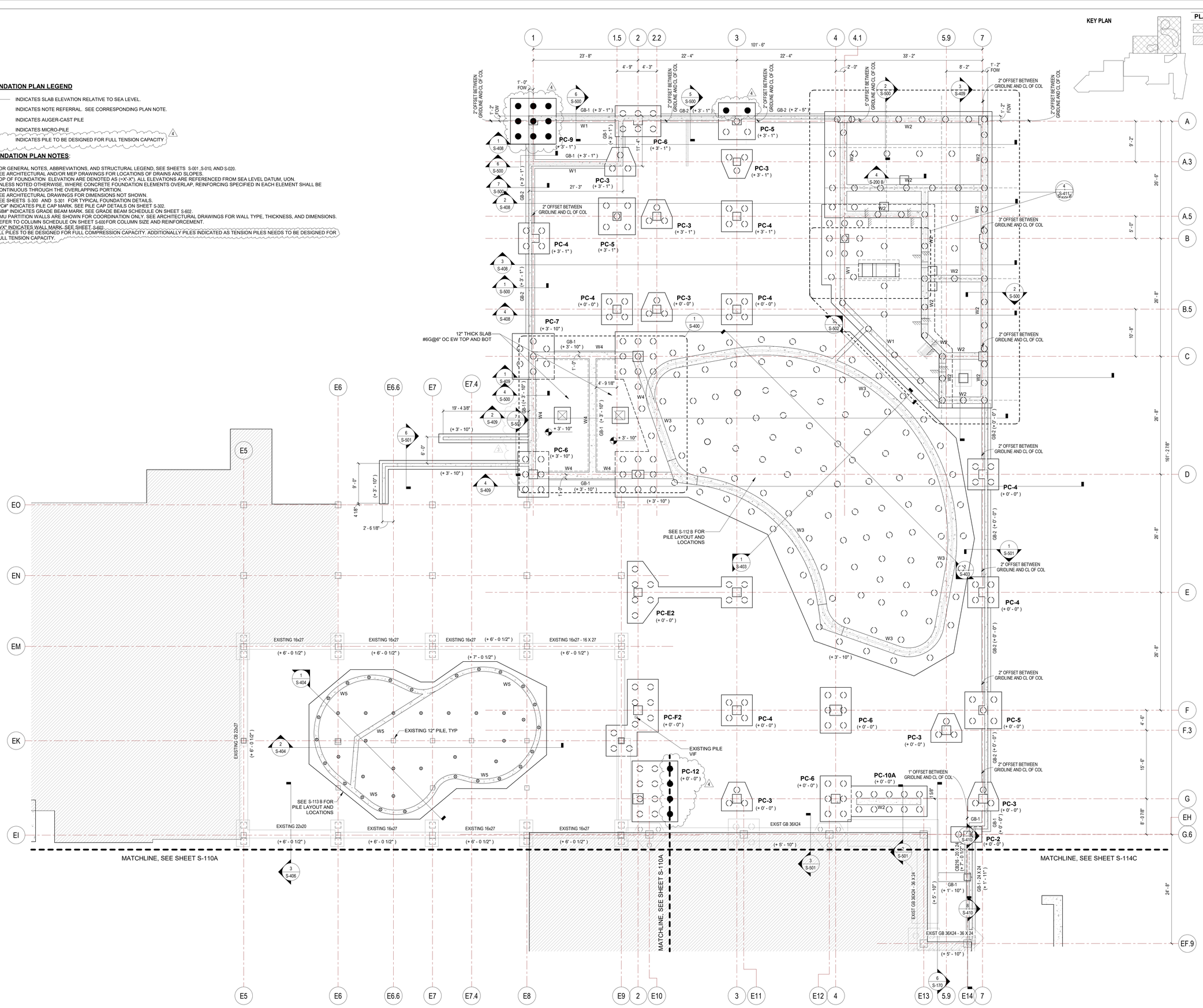
S-110 A

FOUNDATION PLAN LEGEND

- INDICATES SLAB ELEVATION RELATIVE TO SEA LEVEL.
- (1) INDICATES NOTE REFERRAL. SEE CORRESPONDING PLAN NOTE.
- INDICATES AUGER-CAST PILE
- INDICATES MICRO-PILE
- INDICATES PILE TO BE DESIGNED FOR FULL TENSION CAPACITY (4)

FOUNDATION PLAN NOTES:

1. FOR GENERAL NOTES, ABBREVIATIONS, AND STRUCTURAL LEGEND, SEE SHEETS S-001,S-010, AND S-020.
2. SEE ARCHITECTURAL AND/OR MEP DRAWINGS FOR LOCATIONS OF DRAINS AND SLOPES.
3. TOP OF FOUNDATION ELEVATION ARE DENOTED AS (+X-X"). ALL ELEVATIONS ARE REFERENCED FROM SEA LEVEL DATUM, UON.
4. UNLESS NOTED OTHERWISE, WHERE CONCRETE FOUNDATION ELEMENTS OVERLAP, REINFORCING SPECIFIED IN EACH ELEMENT SHALL BE CONTINUOUS THROUGH THE OVERLAPPING PORTION.
5. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
6. SEE SHEETS S-300 AND S-301 FOR TYPICAL FOUNDATION DETAILS.
7. "PC#" INDICATES PILE CAP MARK. SEE PILE CAP DETAILS ON SHEET S-302.
8. "GB#" INDICATES GRADE BEAM MARK. SEE GRADE BEAM SCHEDULE ON SHEET S-602.
9. CMU PARTITION WALLS ARE SHOWN FOR COORDINATION ONLY. SEE ARCHITECTURAL DRAWINGS FOR WALL TYPE, THICKNESS, AND DIMENSIONS.
10. REFER TO COLUMN SCHEDULE ON SHEET S-600 FOR COLUMN SIZE AND REINFORCEMENT.
11. "WX" INDICATES WALL MARK- SEE SHEET S-602.
12. (4) ALL PILES TO BE DESIGNED FOR FULL COMPRESSION CAPACITY. ADDITIONALLY PILES INDICATED AS TENSION PILES NEEDS TO BE DESIGNED FOR FULL TENSION CAPACITY.



1/8" = 1' 0" — 0, 10', 20', 40', 80'

1 S-111 B — FOUNDATION PLAN - TOUCH & SHARK TANK
SCALE: 1/8" = 1'-0"

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
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SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8701
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.765.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # P-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5066
WWW.CBHFENGINEERS.COM
LICENSE # P-0806

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTENGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.405.8952
WWW.PALACIOCOLLABORATIVE.COM

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NORTH CAROLINA — SEAL 028371 — ENGINEER — KYLE J. PERKINS — 11-10-25

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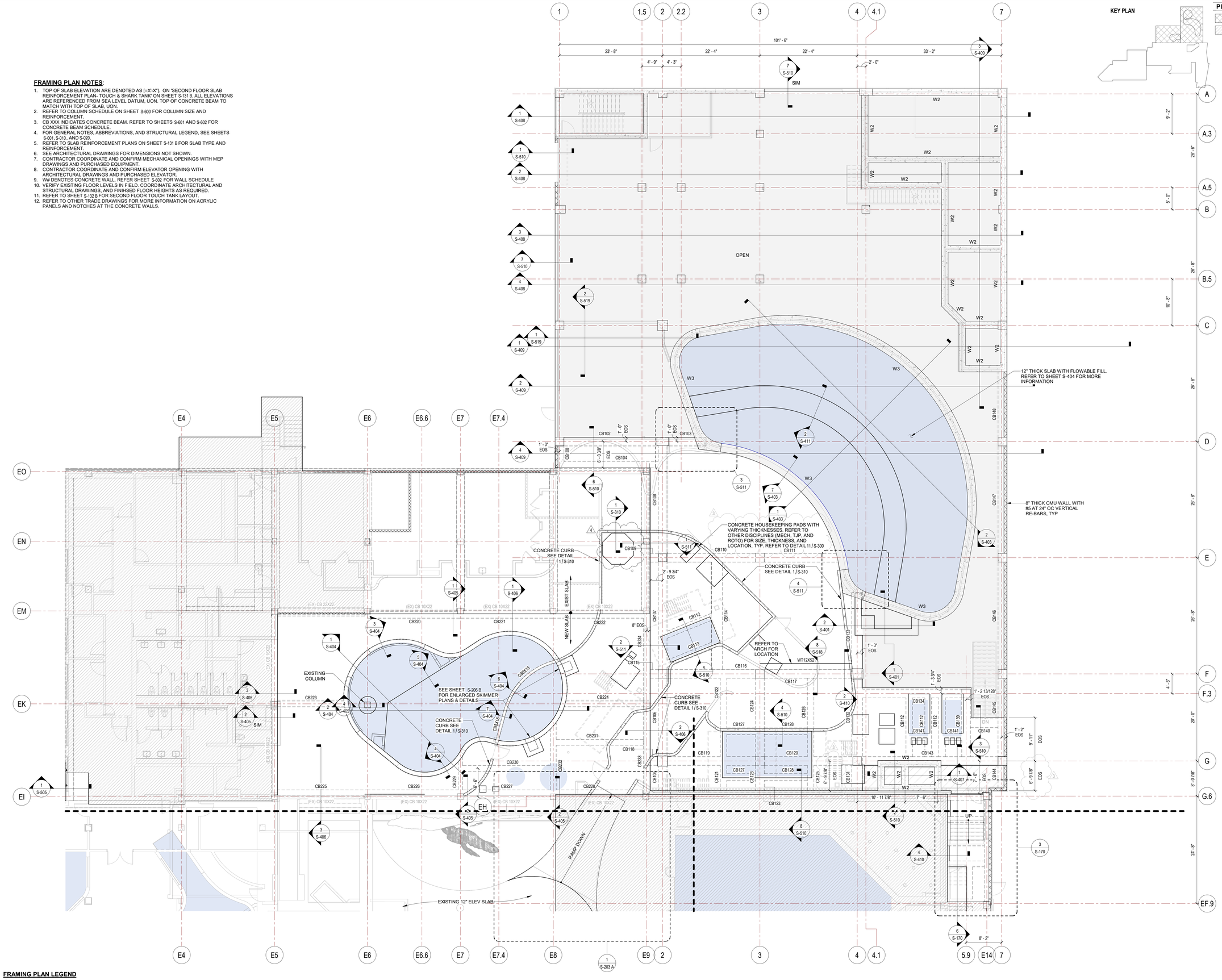
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FOUNDATION PLAN - TOUCH & SHARK TANK

S-111 B

FRAMING PLAN NOTES:

1. TOP OF SLAB ELEVATION ARE DENOTED AS [=X'-X"]. ON 'SECOND FLOOR SLAB REINFORCEMENT PLAN- TOUCH & SHARK TANK' ON SHEET S-131 B. ALL ELEVATIONS ARE REFERENCED FROM SEA LEVEL DATUM, UON. TOP OF CONCRETE BEAM TO MATCH WITH TOP OF SLAB, UON.
2. REFER TO COLUMN SCHEDULE ON SHEET S-600 FOR COLUMN SIZE AND REINFORCEMENT.
3. CB XXX INDICATES CONCRETE BEAM. REFER TO SHEETS S-601 AND S-602 FOR CONCRETE BEAM SCHEDULE.
4. FOR GENERAL NOTES, ABBREVIATIONS, AND STRUCTURAL LEGEND, SEE SHEETS S-001, S-010, AND S-020.
5. REFER TO SLAB REINFORCEMENT PLANS ON SHEET S-131 B FOR SLAB TYPE AND REINFORCEMENT.
6. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
7. CONTRACTOR COORDINATE AND CONFIRM MECHANICAL OPENINGS WITH MEP DRAWINGS AND PURCHASED EQUIPMENT.
8. CONTRACTOR COORDINATE AND CONFIRM ELEVATOR OPENING WITH ARCHITECTURAL DRAWINGS AND PURCHASED ELEVATOR.
9. W# DENOTES CONCRETE WALL. REFER SHEET S-602 FOR WALL SCHEDULE
10. VERIFY EXISTING FLOOR LEVELS IN FIELD. COORDINATE ARCHITECTURAL AND STRUCTURAL DRAWINGS, AND FINIHSED FLOOR HEIGHTS AS REQUIRED.
11. REFER TO SHEET S-132 B FOR SECOND FLOOR TOUCH TANK LAYOUT.
12. REFER TO OTHER TRADE DRAWINGS FOR MORE INFORMATION ON ACRYLIC PANELS AND NOTCHES AT THE CONCRETE WALLS.



FRAMING PLAN LEGEND

INDICATES SLAB ELEVATION RELATIVE TO SEA LEVEL.

1/8" = 1' 0" — 0, 10', 20', 40', 80'

1 S-130 B — 2ND FLOOR FRAMING PLAN_TOUCH & SHARK TANK — SCALE: 1/8" = 1'-0"

KEY PLAN

PLAN LEGEND

- RENOVATION
- EXISTING BUILDING

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
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KURE BEACH, NC 28449

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SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.765.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # P-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0806

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1599
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8902
WWW.PALACIOCOLLABORATIVE.COM

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NORTH CAROLINA REGISTERED SEAL 028171 ENGINEER MARK L. PENNING 11-10-25

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SECOND FLOOR FRAMING PLAN - TOUCH & SHARK TANK

S-130 B

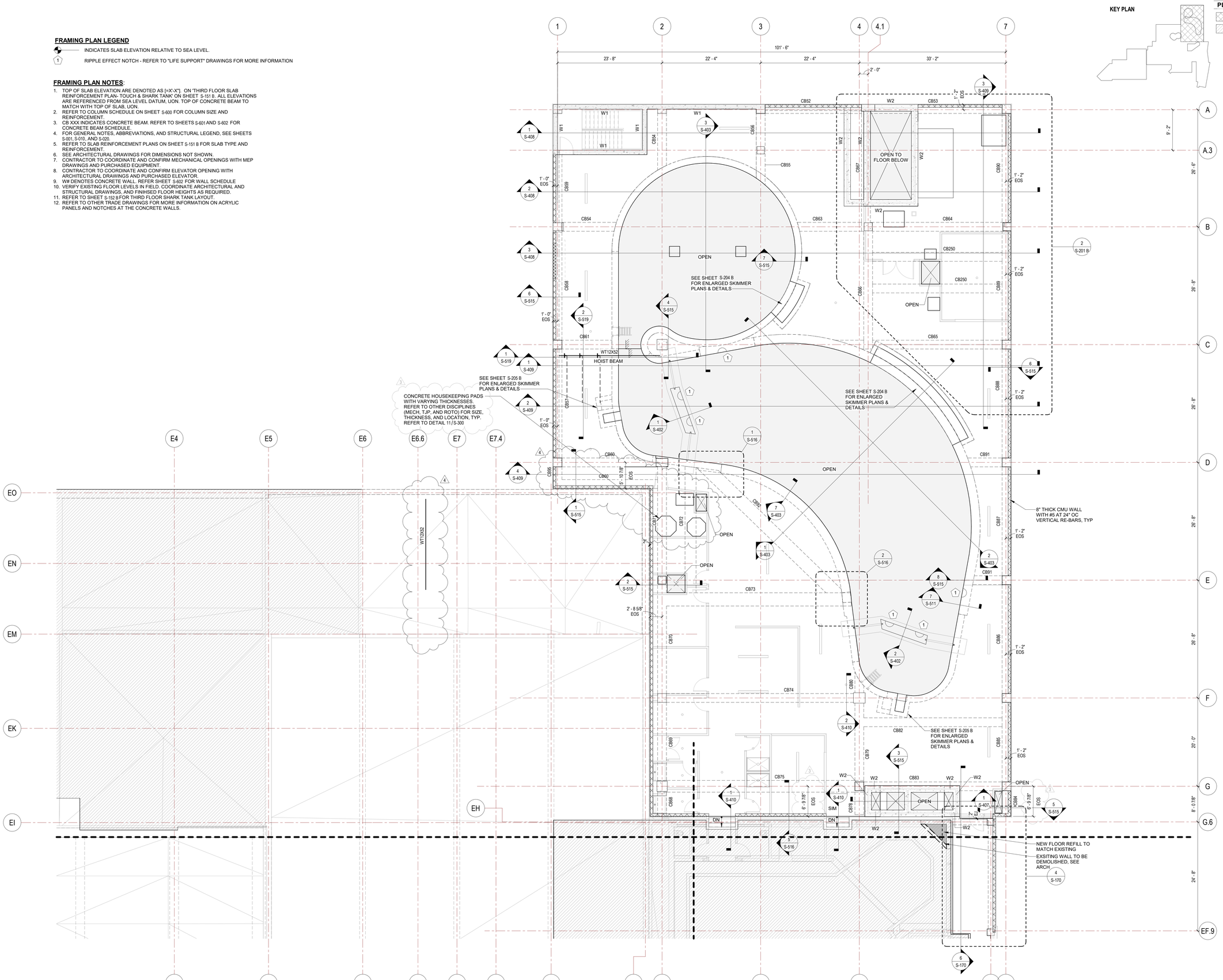
FRAMING PLAN LEGEND

INDICATES SLAB ELEVATION RELATIVE TO SEA LEVEL.

RIPPLE EFFECT NOTCH - REFER TO "LIFE SUPPORT" DRAWINGS FOR MORE INFORMATION

FRAMING PLAN NOTES:

1. TOP OF SLAB ELEVATION ARE DENOTED AS [=X'-X"]. ON 'THIRD FLOOR SLAB REINFORCEMENT PLAN- TOUCH & SHARK TANK' ON SHEET S-151 B. ALL ELEVATIONS ARE REFERENCED FROM SEA LEVEL DATUM, UON. TOP OF CONCRETE BEAM TO MATCH WITH TOP OF SLAB, UON.
2. REFER TO COLUMN SCHEDULE ON SHEET S-600 FOR COLUMN SIZE AND REINFORCEMENT.
3. CB XXX INDICATES CONCRETE BEAM. REFER TO SHEETS S-601 AND S-602 FOR CONCRETE BEAM SCHEDULE.
4. FOR GENERAL NOTES, ABBREVIATIONS, AND STRUCTURAL LEGEND, SEE SHEETS S-001, S-010, AND S-020.
5. REFER TO SLAB REINFORCEMENT PLANS ON SHEET S-151 B FOR SLAB TYPE AND REINFORCEMENT.
6. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
7. CONTRACTOR TO COORDINATE AND CONFIRM MECHANICAL OPENINGS WITH MEP DRAWINGS AND PURCHASED EQUIPMENT.
8. CONTRACTOR TO COORDINATE AND CONFIRM ELEVATOR OPENING WITH ARCHITECTURAL DRAWINGS AND PURCHASED ELEVATOR.
9. W# DENOTES CONCRETE WALL. REFER SHEET S-602 FOR WALL SCHEDULE
10. VERIFY EXISTING FLOOR LEVELS IN FIELD. COORDINATE ARCHITECTURAL AND STRUCTURAL DRAWINGS, AND FINIHSED FLOOR HEIGHTS AS REQUIRED.
11. REFER TO SHEET S-152 B FOR THIRD FLOOR SHARK TANK LAYOUT.
12. REFER TO OTHER TRADE DRAWINGS FOR MORE INFORMATION ON ACRYLIC PANELS AND NOTCHES AT THE CONCRETE WALLS.



1/8" = 1' 0" 0 10' 20' 40' 80'

1 / S-150 B **THIRD FLOOR FRAMING PLAN - TOUCH & SHARK TANK**
SCALE: 1/8" = 1'-0"

KEY PLAN

PLAN LEGEND

RENOVATION

EXISTING BUILDING

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
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ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
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BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5987
WWW.BENNETT-PLESS.COM
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
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LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
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2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.WEHCIVILENGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
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WWW.CHEATHAMPA.COM
LICENSE # C-1073

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COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.405.8902
WWW.PALACIOCOLLABORATIVE.COM

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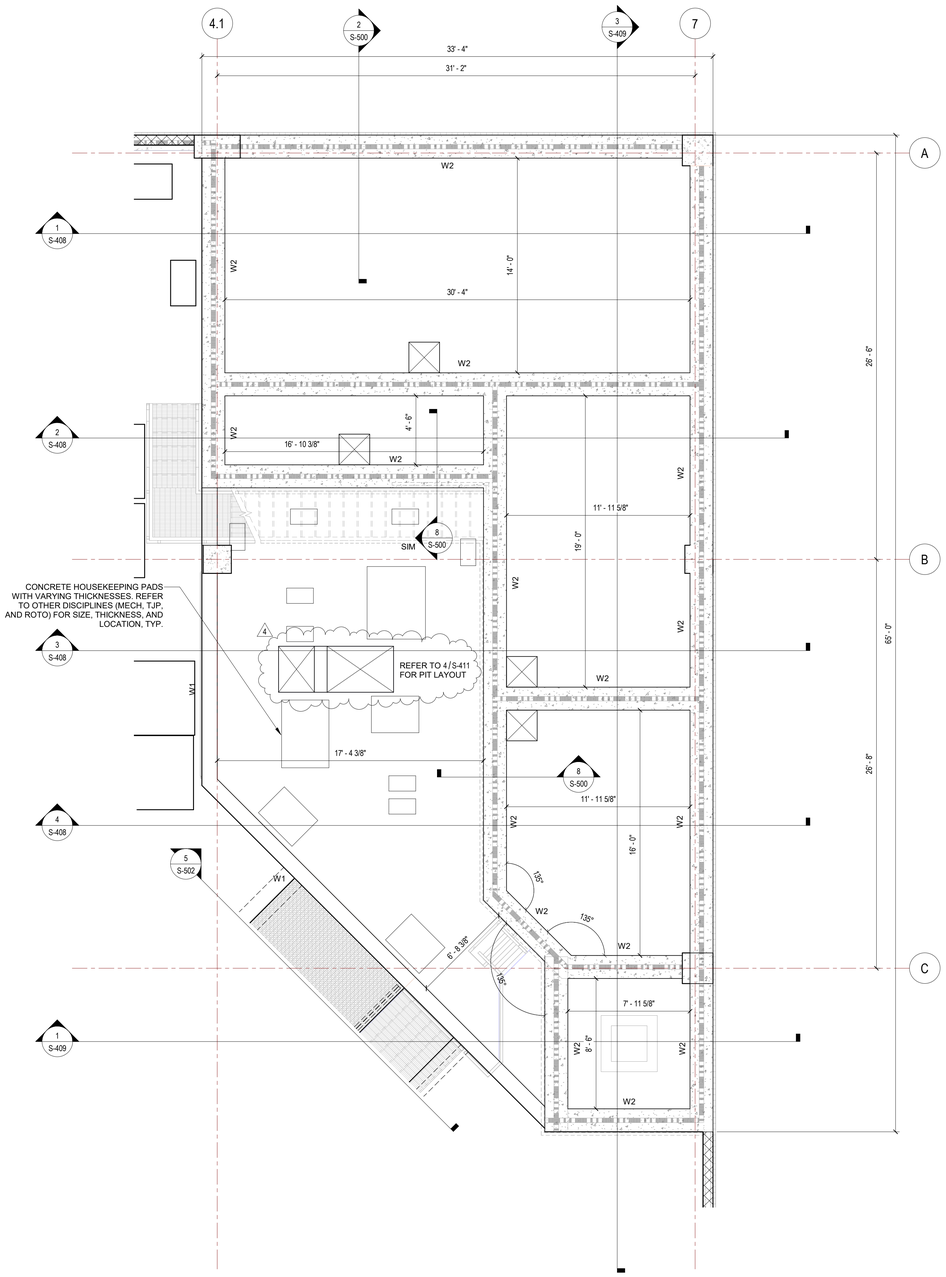
NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT SEAL 028371 KURT L. PERKINS 11-10-25

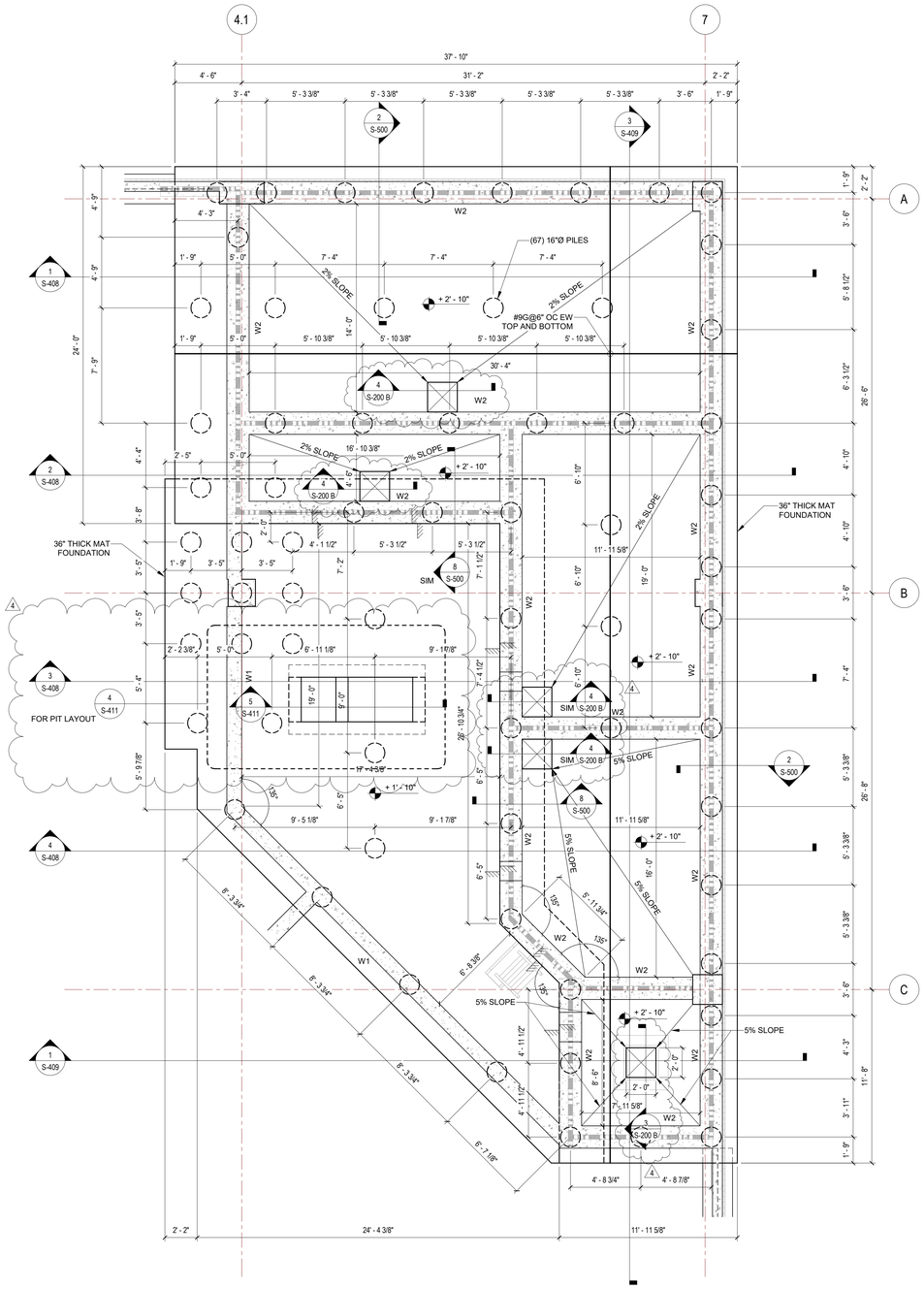
NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
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3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

THIRD FLOOR FRAMING PLAN - TOUCH & SHARK TANK

S-150 B





2 S-200 B FIRST FLOOR SLAB ENLARGED PARTIAL PLAN

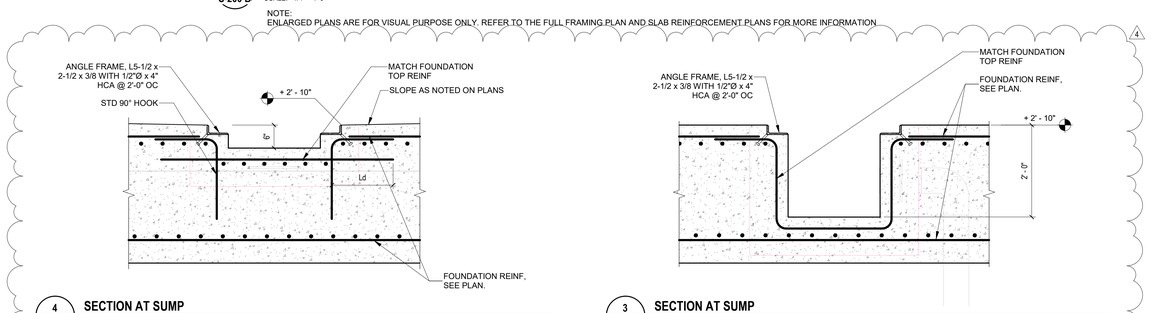
SCALE: 1/4" = 1'-0"

NOTE:
ENLARGED PLANS ARE FOR VISUAL PURPOSE ONLY. REFER TO THE FULL FRAMING PLAN AND SLAB REINFORCEMENT PLANS FOR MORE INFORMATION

1 S-200 B FOUNDATION ENLARGED PARTIAL PLAN

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

NOTE:
ENLARGED PLANS ARE FOR VISUAL PURPOSE ONLY. REFER TO THE FULL FRAMING PLAN AND SLAB REINFORCEMENT PLANS FOR MORE INFORMATION



4 S-200 B SECTION AT SUMP

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

3 S-200 B SECTION AT SUMP

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

1/4" = 1' 0" 0 4.0' 7.0' 15' 30'

3/4" = 1' 0" 0 6" 1' 2' 3' 4' 5'

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
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NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27514
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 5:679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3503

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.763.8690
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RALEIGH, NC 27607
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5066
WWW.CBHFENGINEERS.COM
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10265 INDIANA COURT
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NORTH CAROLINA SEAL 028171 ENGINEER KAMIR L. PERRITT 11-10-25

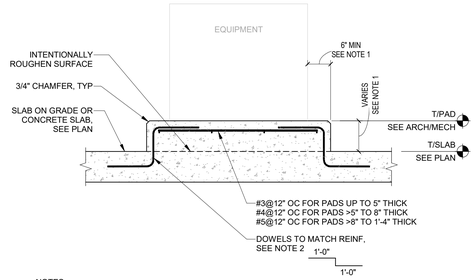
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FRAMING PLAN -ENLARGED PARTIAL PLANS

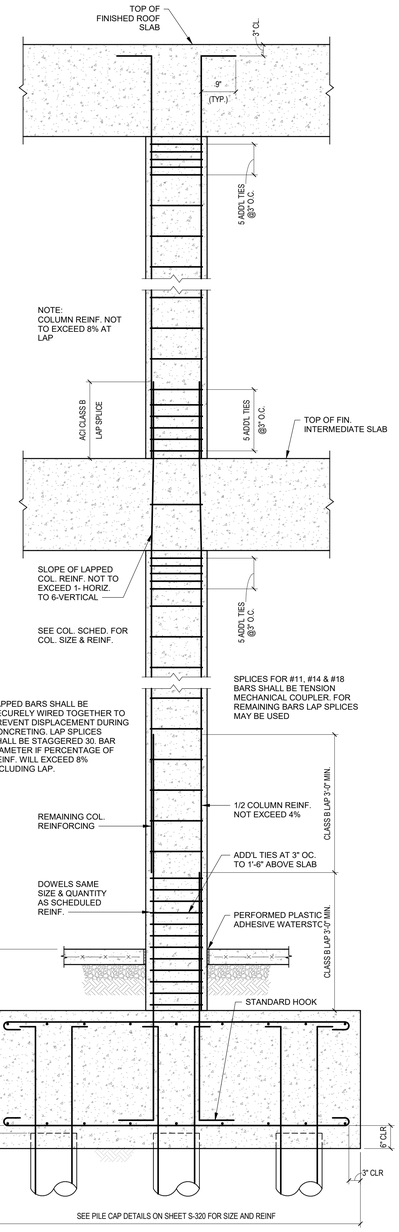
S-200 B

COLUMN FOOTING SCHEDULE				
MARK	SIZE	DEPTH	REINFORCING	REMARKS
F4	4' - 0" x 4' - 0"	1' - 8"	(5)#5 EW T&B	
F5	5' - 0" x 5' - 0"	1' - 8"	(6)#5 EW T&B	

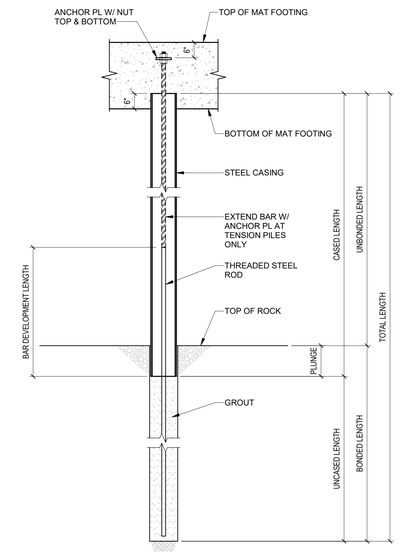


NOTES:
1. CONTRACTOR COORDINATE EQUIPMENT PAD SIZE WITH PURCHASED EQUIPMENT AND REQUIRED CONNECTIONS. CONTRACTOR PROVIDE CONNECTIONS TO PAD PER EQUIPMENT VENDOR.
2. AT CONTRACTOR OPTION, DOWELS MAY BE POST-INSTALLED INTO SLAB. FOR POST-INSTALLED CONDITION, DRILL AND SET VERTICAL PORTION OF DOWEL INTO ADHESIVE WITH 4" EMBED INTO SLAB ON GRADE OR 3" EMBED INTO CONCRETE SLAB. HORIZONTAL PORTION OF DOWEL MAY BE OMITTED FROM BASE SLAB FOR POST-INSTALLED CONDITION.

11 / S-300 TYPICAL HOUSEKEEPING PAD
SCALE: 3/4" = 1'-0"

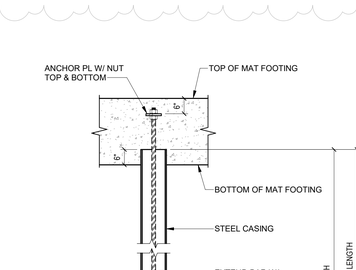


1 / S-300 TYPICAL COLUMN FOOTING
SCALE: 3/4" = 1'-0"

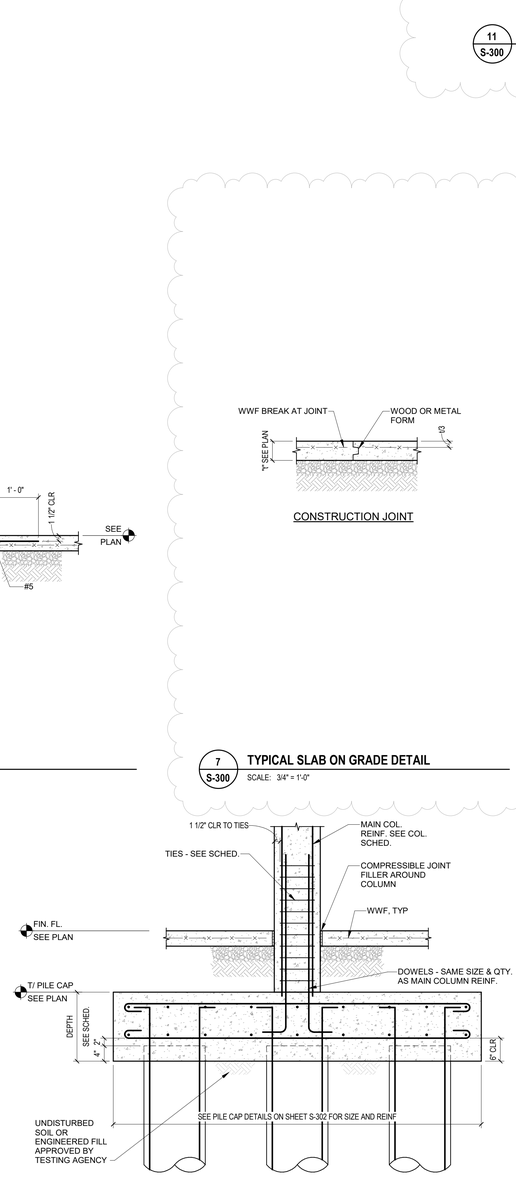


NOTE: REFER TO MICROPILES (AT TOUCH TANK) NOTES ON SHEET S-001

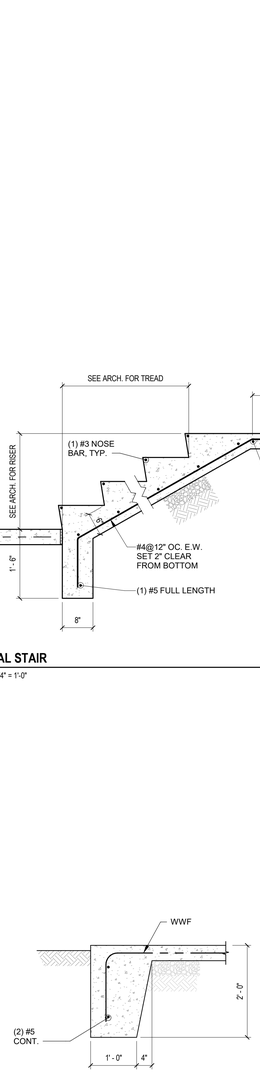
6 / S-300 MICROPILE DETAIL
SCALE: 1/2" = 1'-0"



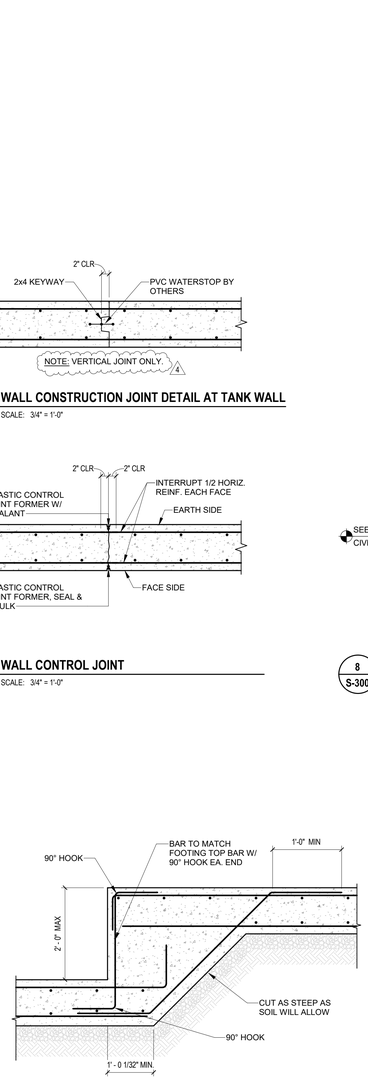
2 / S-300 PILASTER PLAN
SCALE: 3/4" = 1'-0"



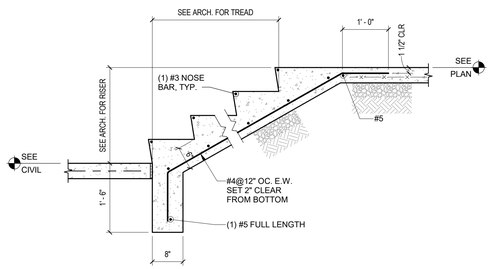
3 / S-300 PILE CAP AT COLUMN
SCALE: 3/4" = 1'-0"



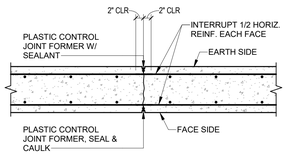
4 / S-300 TYPICAL LUG FOOTING
SCALE: 3/4" = 1'-0"



5 / S-300 STEPPED FOOTING DETAIL A
SCALE: 3/4" = 1'-0"



8 / S-300 TYPICAL STAIR
SCALE: 3/4" = 1'-0"



10 / S-300 WALL CONSTRUCTION JOINT DETAIL AT TANK WALL
SCALE: 3/4" = 1'-0"

9 / S-300 WALL CONTROL JOINT
SCALE: 3/4" = 1'-0"

CONSTRUCTION JOINT

7 / S-300 TYPICAL SLAB ON GRADE DETAIL
SCALE: 3/4" = 1'-0"

3/4" = 1' 0" 0 6" 1' 2' 3' 4' 5'

1/2" = 1' 0" 0 6" 1' 2' 3' 4' 5' 6'

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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CODE: 42014-4G02
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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
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LICENSE # C-1075

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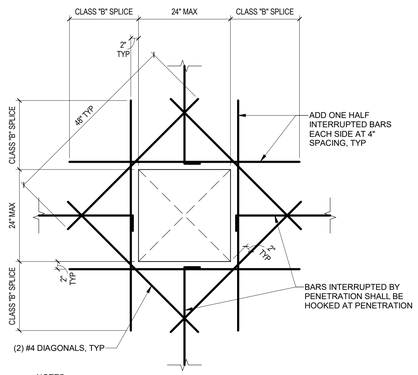
NORTH CAROLINA
SEAL
028371
11-10-25
ENGINEER
KARL L. PERRIN

NOT FOR CONSTRUCTION

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1	9-8-25	BID SET
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4	11-10-25	ADDENDUM #3

TYPICAL FOUNDATION DETAILS

S-300



NOTES:
1. MAXIMUM PENETRATION SIZE IS 24"x24" SQUARE OR 24" DIAMETER CIRCLE.
2. ALL PENETRATIONS NOT SHOWN ON STRUCTURAL DRAWINGS SHALL BE APPROVED BY ENGINEER OF RECORD PRIOR TO CONSTRUCTION.

3 / S-310 TYPICAL DETAIL AT CONCRETE WALL PENETRATION

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

NOTES:
1. ALL THE WALL AND SLAB PENETRATIONS ARE NOT SHOWN ON THE STUCTURAL DRAWINGS. REFER TO OTHER TRADES DRAWINGS FOR ALL THE LOCATION AND SIZES.
2. ALL THE LOCATION OF THE PENETRATIONS MUST BE REVIEWED AND APPROVED BY EOR DURING CONCRETE SHOP DRAWINGS REVIEW.
3. MINIMUM SPACING BETWEEN THE OPENINGS SHALL BE MINIMUM 12"
4. MINIMUM SPACING BETWEEN PIPE SLEEVE SHALL BE 4"

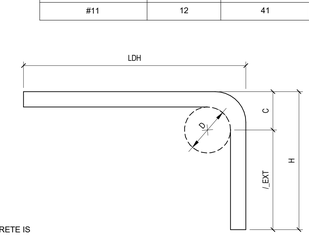
4

LAP SPLICE SCHEDULE (INCH)
NORMAL WEIGHT CONCRETE, ASTM 615 GR 60 REINFORCEMENT (GALVANIZED)

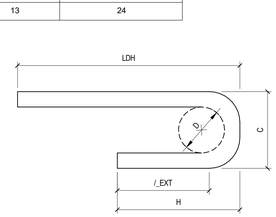
BAR SIZE	LAP CLASS	4000psi		5000psi	
		TOP BARS	OTHERS	TOP BARS	OTHERS
#3	A	24	22	22	19
	B	31	29	28	25
#4	A	32	29	29	25
	B	42	38	38	33
#5	A	40	36	43	32
	B	52	46	56	41
#6	A	48	43	43	38
	B	63	55	56	50
#7	A	71	62	63	56
	B	92	81	82	72
#8	A	81	71	72	64
	B	105	92	94	83
#9	A	91	80	81	72
	B	118	104	106	93
#10	A	102	90	92	81
	B	133	117	119	105
#11	A	114	100	102	90
	B	148	130	132	117

END HOOK LENGTH (INCH)
NORMAL WEIGHT CONCRETE, ASTM 615 GR 60 REINFORCEMENT

BAR DIAMETER, DB	INTERNAL DIAMETER, D	LDH	180 DEGREE HOOK, H	90 DEGREE HOOK, H
#3	2 1/4	11	4	6
#4	3	15	4 1/2	8
#5	3 3/4	18	5	10
#6	4 1/2	22	6	12
#7	5 1/4	25	7	14
#8	6	29	8	16
#9	9 1/2	33	11	20
#10	10 3/4	37	12	22
#11	12	41	13	24



90 DEGREE HOOK

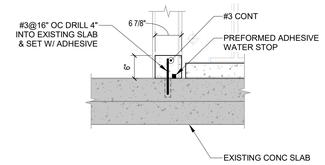


180 DEGREE HOOK

1. "TOP BARS" ARE DEFINED AS HORIZONTAL REINFORCEMENT PLACED SUCH THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST BELOW THE DEVELOPMENT LENGTH OR SPLICE. "OTHERS" ARE ALL BARS FOR WHICH THIS DOES NOT APPLY.
2. TABULATED VALUES ARE FOR GALVANIZED, GRADE 60 REINFORCEMENT IN NORMAL WEIGHT CONCRETE.
3. DECREASE LAP SPLICE LENGTH BY 30% FOR NON-EPOXY COATED BARS.

2 / S-310 TYPICAL DEVELOPMENT AND HOOK LENGTH SCHEDULE

SCALE: NTS



1 / S-310 CONCRETE CURB DETAIL

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

3/4" = 1' 0" 0 6" 1' 2' 3' 4' 5'

1" = 1' 0" 0 3" 6" 1' 2' 3' 4'

SZOSTAK DESIGN

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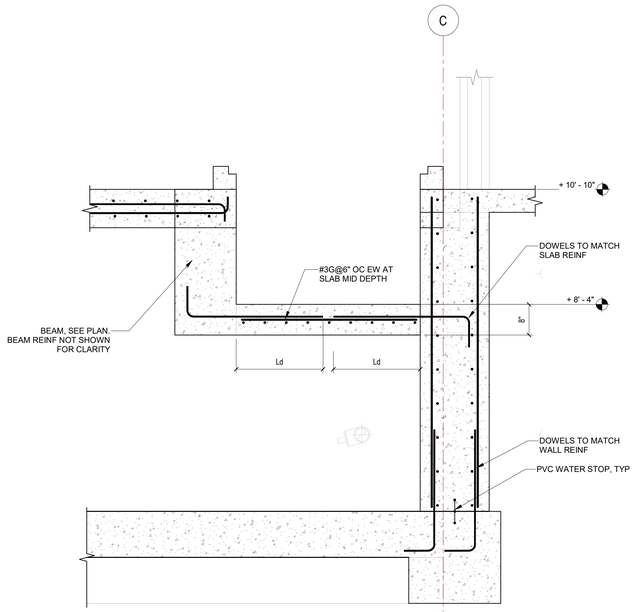
NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT SEAL 028371 KRAIG L. PERKINS 11-10-25

NOT FOR CONSTRUCTION

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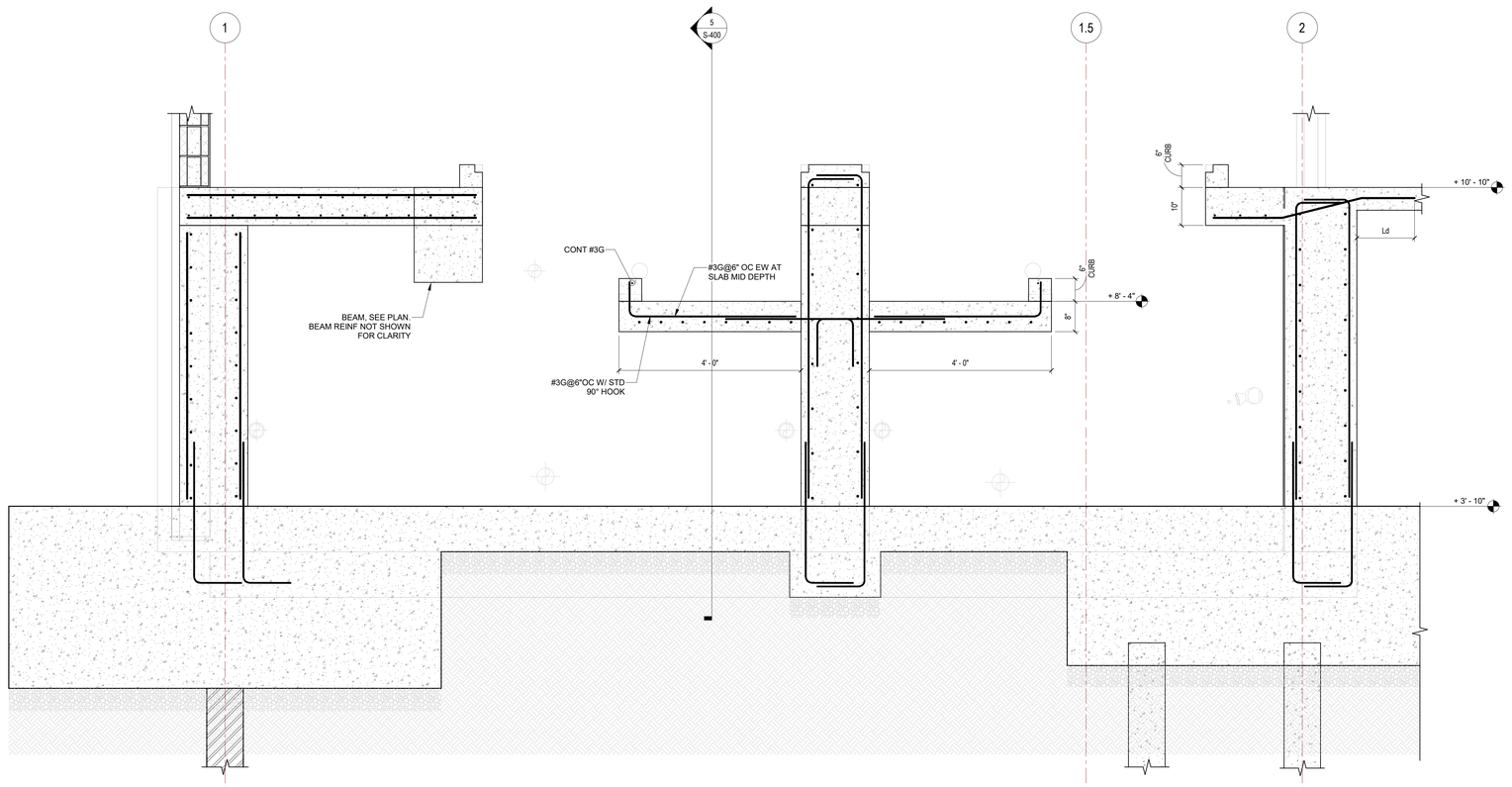
TYPICAL CONCRETE FLOOR FRAMING DETAILS

S-310



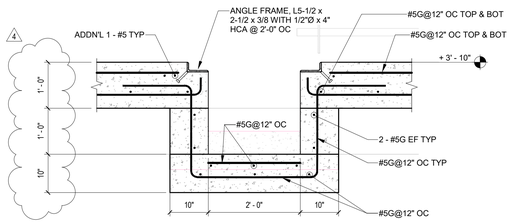
5 S-400 **SECTION AT SALT STORAGE AND MIXING**

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



4 S-400 **SECTION AT SALT STORAGE AND MIXING**

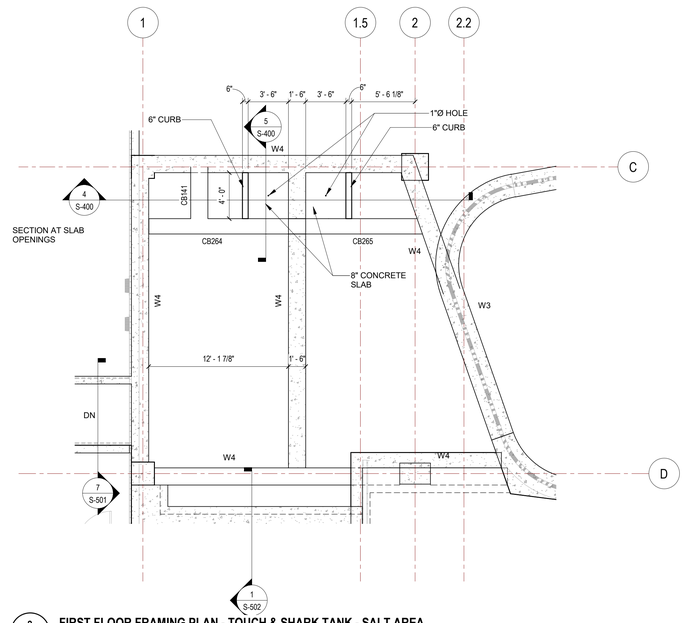
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NOTE: REFER TO "LIFE SUPPORT" DRAWINGS FOR MORE INFORMATION

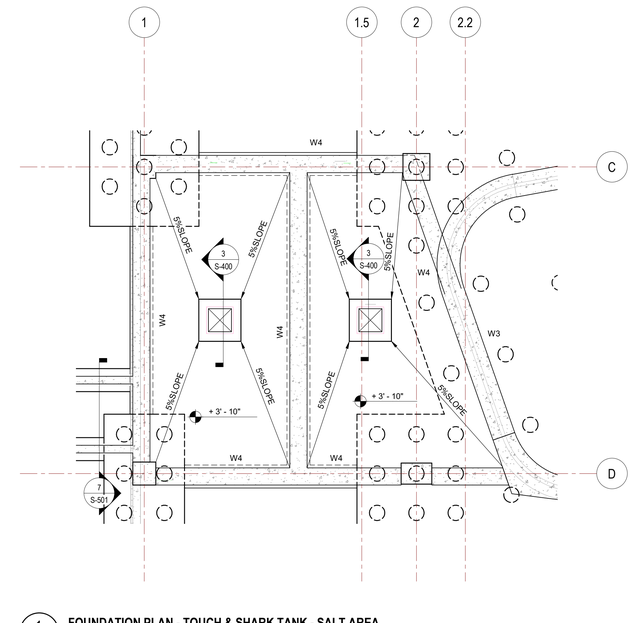
3 S-400 **SECTION AT SUMP**

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



2 S-400 **FIRST FLOOR FRAMING PLAN - TOUCH & SHARK TANK - SALT AREA**

SCALE: 3/16" = 1'-0"



1 S-400 **FOUNDATION PLAN - TOUCH & SHARK TANK - SALT AREA**

SCALE: 3/16" = 1'-0"

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

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EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
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5430 WADE PARK BOULEVARD SUITE 400
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TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

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2246 TAUPON DRIVE
WILMINGTON, NC 28401
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FAX: 910.791.5066
WWW.CBHFENGINEERS.COM
LICENSE # P-0806

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LIGHTING DESIGNER
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TELE: 909.360.2900
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2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMFA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

NOTE: IF THIS DRAWING IS NOT 30" X 42", IT IS A REDUCED PRINT. REFER TO GRAPHIC SCALE.

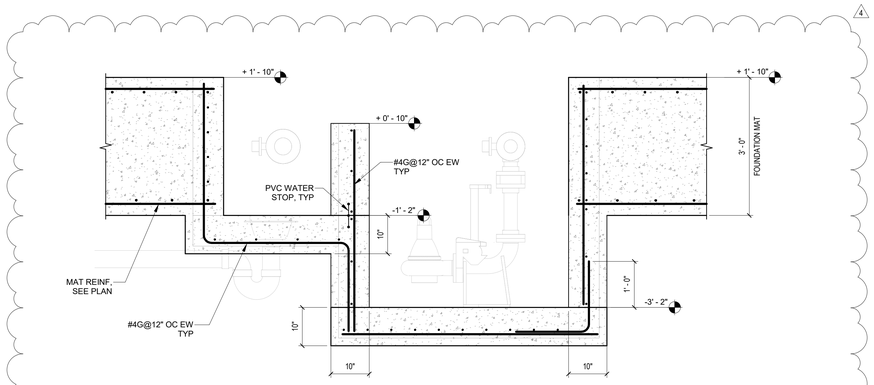
NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT SEAL 02837 11-10-25 KLAUS J. PERKINS

NOT FOR CONSTRUCTION

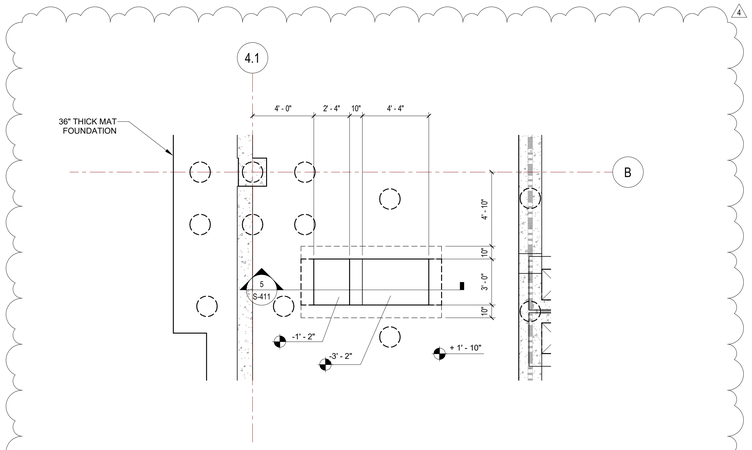
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4	11-10-25	ADDENDUM #3

SALT MIXING AREA PLANS AND SECTIONS

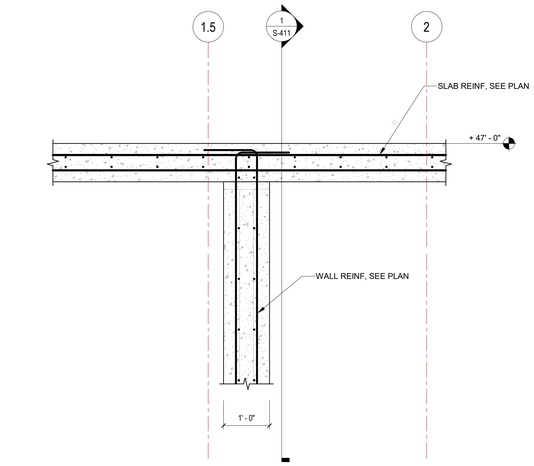
S-400



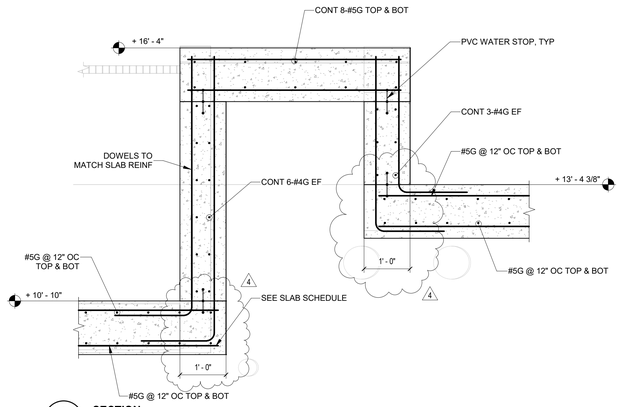
5 S-411 **SECTION**
SCALE: 3/4" = 1'-0"



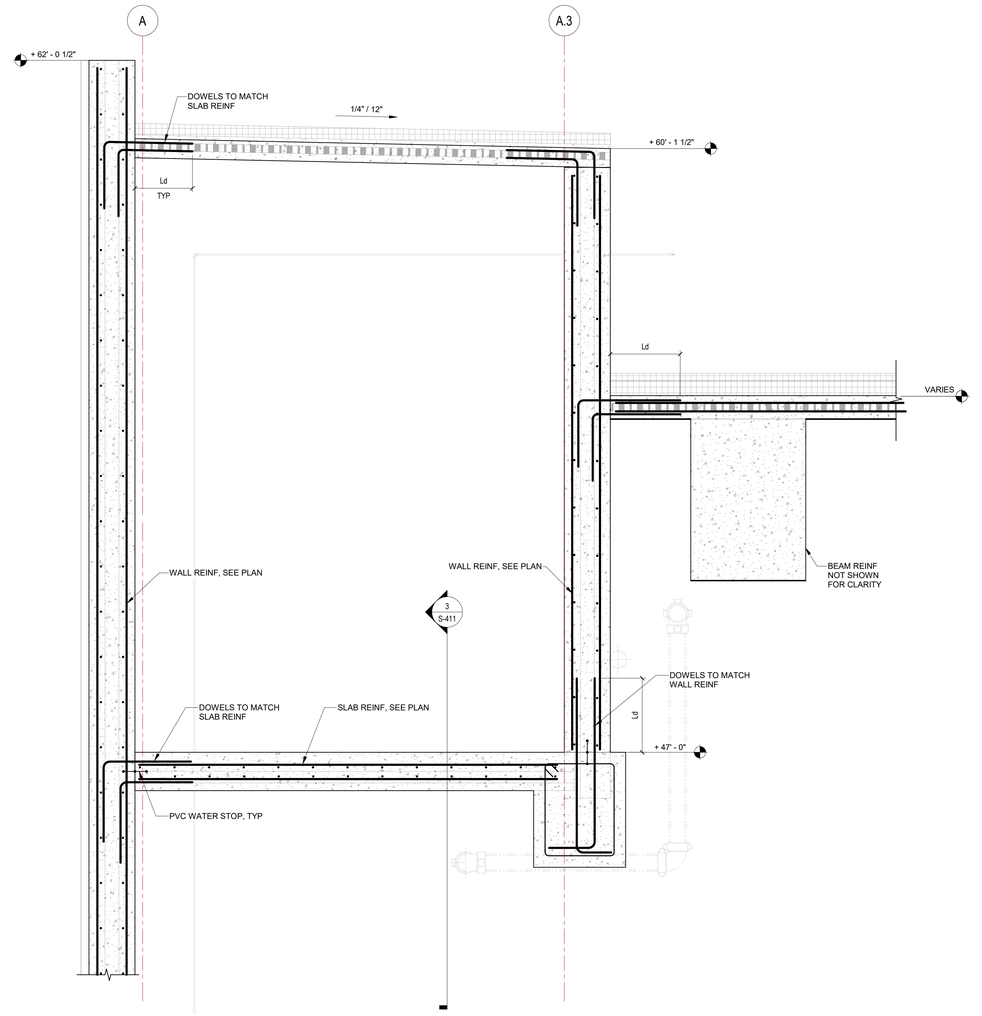
4 S-411 **FOUNDATION ENLARGED PARTIAL PLAN - PIT LAYOUT**
SCALE: 1/4" = 1'-0"



3 S-411 **SECTION**
SCALE: 3/4" = 1'-0"



2 S-411 **SECTION**
SCALE: 3/4" = 1'-0"



1 S-411 **SECTION**
SCALE: 3/4" = 1'-0"

3/4" = 1' 0" 0 6" 1' 2' 3' 4' 5'

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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ARCHITECT
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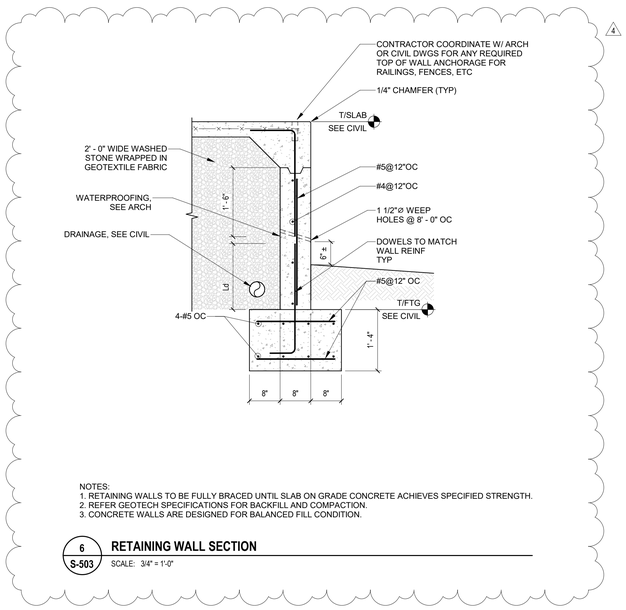
NORTH CAROLINA REGISTERED SEAL 028371 ENGINEER KYLE L. PERRIN 11-10-25

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
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2	10-17-25	ADDENDUM #1
3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

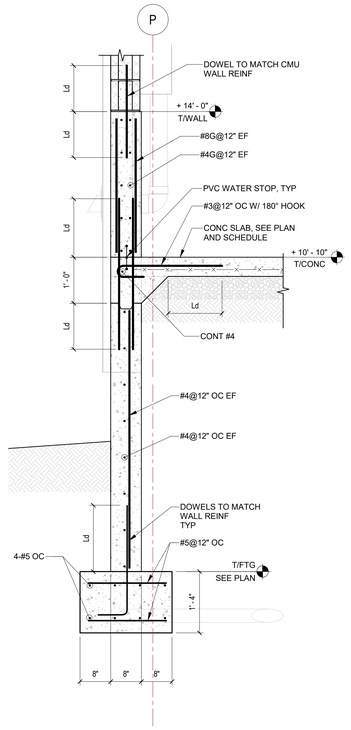
SECTIONS

S-411



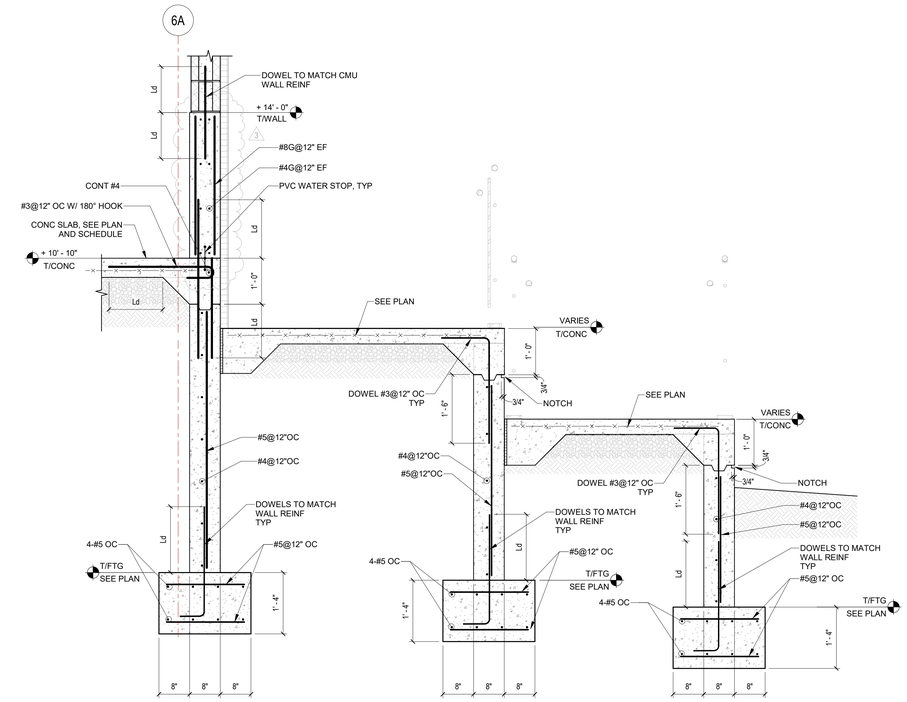
NOTES:
1. RETAINING WALLS TO BE FULLY BRACED UNTIL SLAB ON GRADE CONCRETE ACHIEVES SPECIFIED STRENGTH.
2. REFER GEOTECH SPECIFICATIONS FOR BACKFILL AND COMPACTION.
3. CONCRETE WALLS ARE DESIGNED FOR BALANCED FILL CONDITION.

6 / S-503 RETAINING WALL SECTION
SCALE: 3/4" = 1'-0"



NOTES:
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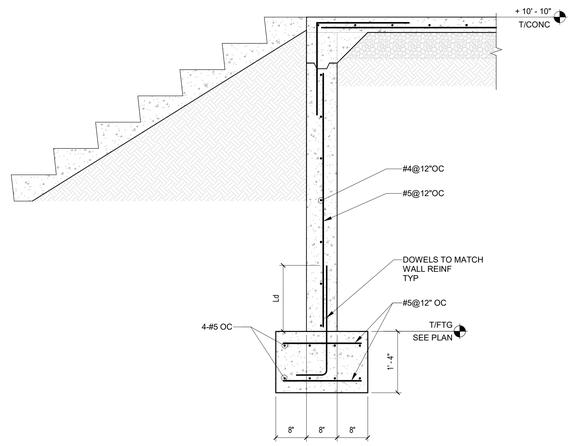
5 / S-503 SECTION
SCALE: 3/4" = 1'-0"



NOTES:
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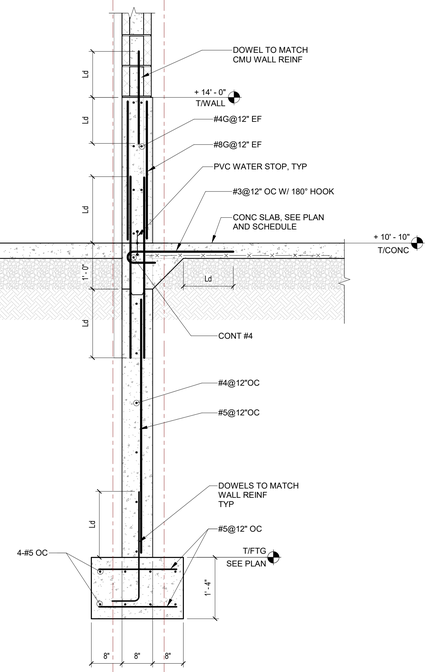
4 / S-503 SECTION
SCALE: 3/4" = 1'-0"

4 5



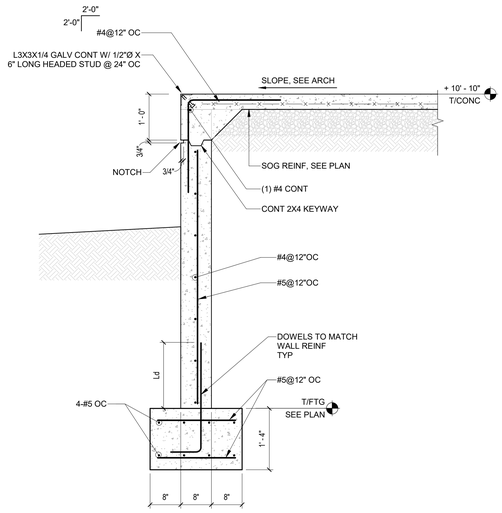
NOTES:
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3 / S-503 SECTION
SCALE: 3/4" = 1'-0"



NOTES:
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2 / S-503 SECTION
SCALE: 3/4" = 1'-0"



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3. CONCRETE WALLS ARE DESIGNED FOR BALANCED FILL CONDITION.

1 / S-503 SECTION
SCALE: 3/4" = 1'-0"

3/4" = 1' 0" 0 6" 1' 2' 3' 4' 5'

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
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SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
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LANDSCAPE ARCHITECT
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LICENSE # C-098

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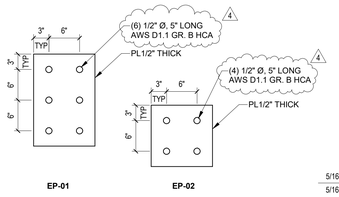
NORTH CAROLINA REGISTERED SEAL 028171 ENGINEER ARTHUR L. PERKINS
11-10-25

NOT FOR CONSTRUCTION

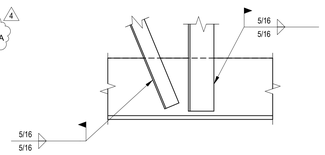
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3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

SOUTHEAST WING - FIRST FLOOR SECTIONS

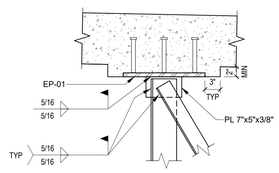
S-503



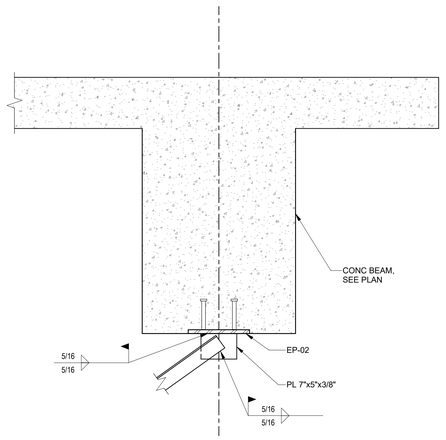
7 / S-518 EMBED PLATE DETAILS
SCALE: 1" = 1'-0"



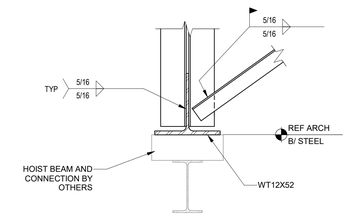
6 / S-518 DETAIL
SCALE: 1" = 1'-0"



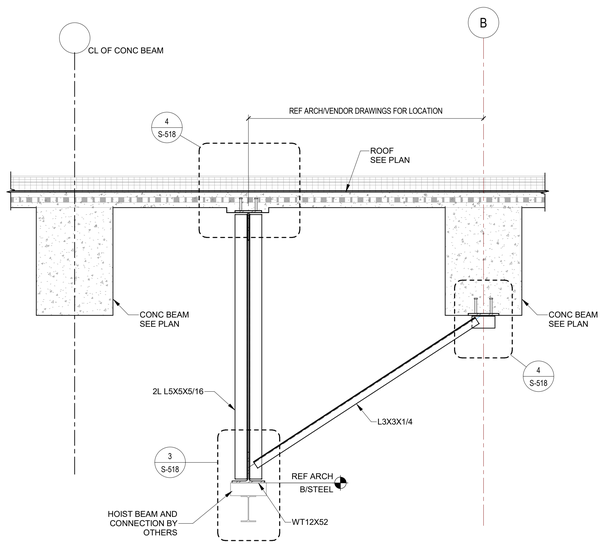
5 / S-518 DETAIL
SCALE: 1" = 1'-0"



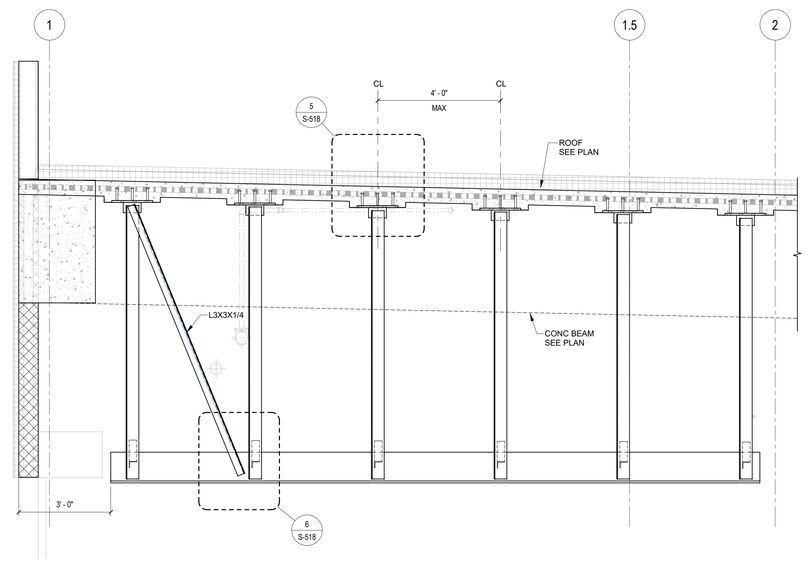
4 / S-518 DETAIL
SCALE: 1" = 1'-0"



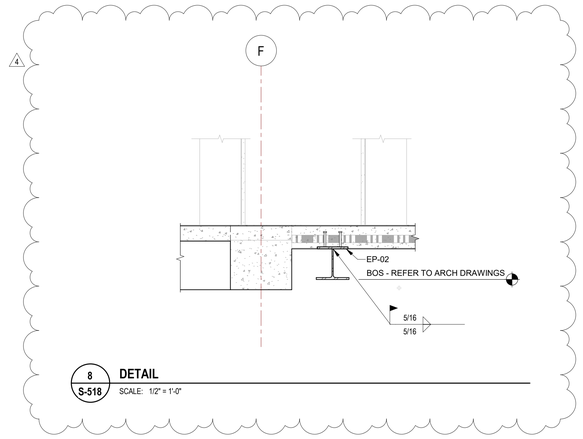
3 / S-518 DETAIL
SCALE: 1" = 1'-0"



2 / S-518 DETAIL
SCALE: 1/2" = 1'-0"



1 / S-518 DETAIL
SCALE: 1/2" = 1'-0"



8 / S-518 DETAIL
SCALE: 1/2" = 1'-0"

3/4" = 1' 0" 0 6" 1' 2' 3' 4' 5'

SZOSTAK DESIGN

FORT FISHER
AQUARIUM
RENOVATION
& EXPANSION:
PHASE 1

SCO #17-18042-02A
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WWW.PALACIOCOLLABORATIVE.COM

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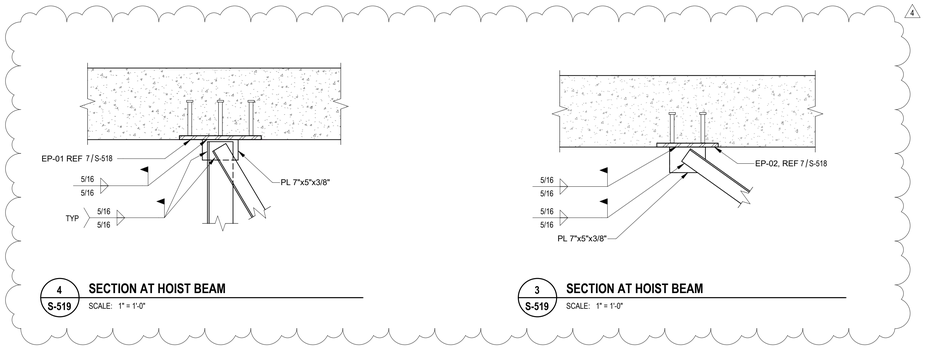


NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

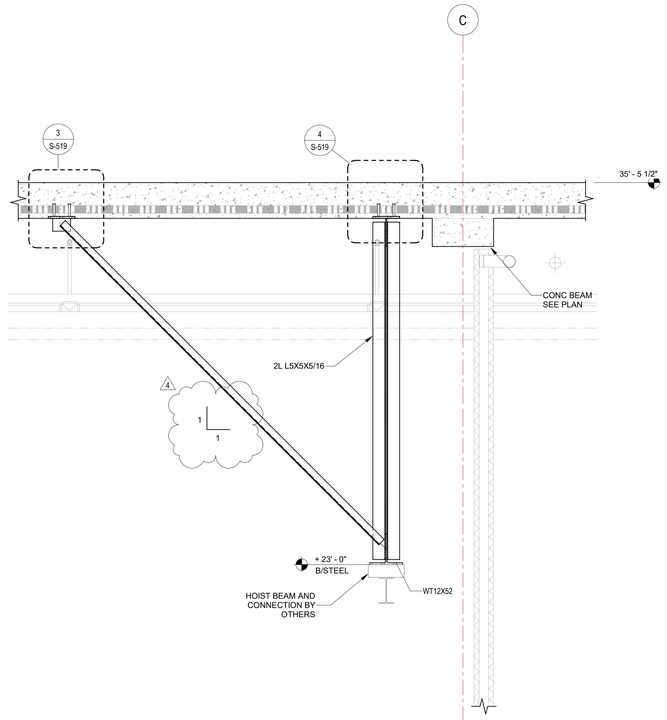
HOIST BEAM DETAILS

S-518

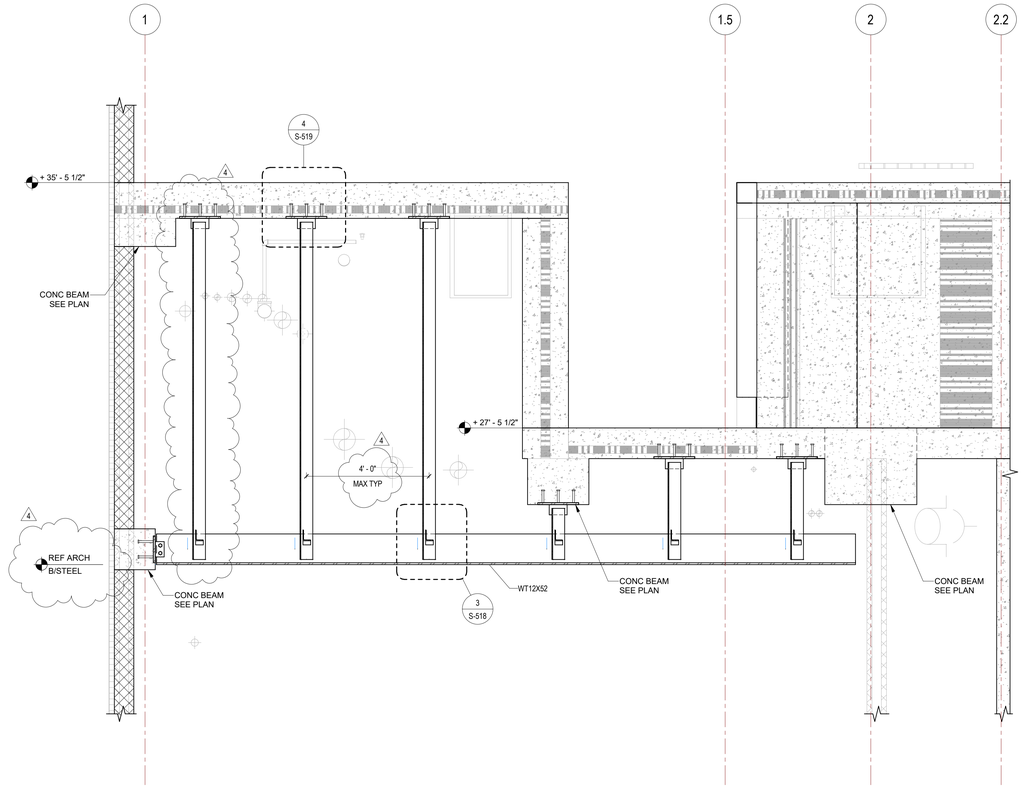


4 S-519 SECTION AT HOIST BEAM
SCALE: 1" = 1'-0"

3 S-519 SECTION AT HOIST BEAM
SCALE: 1" = 1'-0"



2 S-519 SECTION AT HOIST BEAM
SCALE: 1/2" = 1'-0"



1 S-519 SECTION AT HOIST BEAM
SCALE: 1/2" = 1'-0"

SZOSTAK DESIGN

FORT FISHER
AQUARIUM
RENOVATION
& EXPANSION:
PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF
NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 5167

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5066
WWW.CBHFENGINEERS.COM
LICENSE # P-0806

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.NTENGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1799
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMFA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

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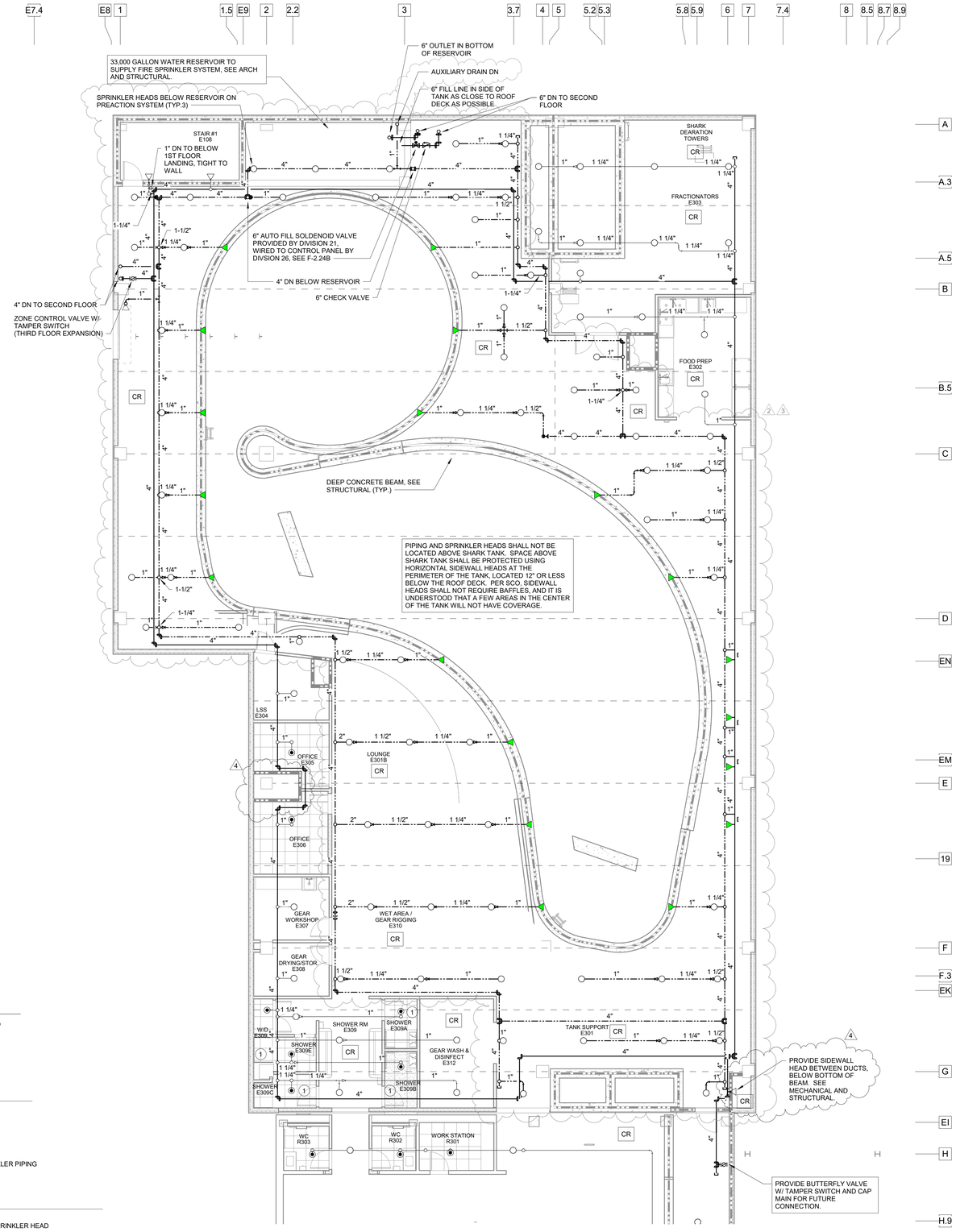
NORTH CAROLINA
SEAL
028371
11-10-25
ENGINEER
KLAUS L. PIEPKE

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

HOIST BEAM DETAILS

S-519



KEYED NOTES: (THIS SHEET ONLY)

(1) PROVIDE CORROSION RESISTANT SPRINKLER HEADS AND ESCUCHEONS IN THIS ROOM.

SPRINKLER PIPE LEGEND

- EXISTING WET SPRINKLER PIPING TO REMAIN
- EXISTING DRY SPRINKLER PIPING TO REMAIN
- NEW WET SYSTEM SPRINKLER PIPING
- NEW DRY SYSTEM SPRINKLER PIPING
- NEW SINGLE INTERLOCK PREACTION SYSTEM SPRINKLER PIPING

SPRINKLER LEGEND

- EXISTING PENDENT SPRINKLER HEAD
- EXISTING CONCEALED PENDENT HEAD
- EXISTING DRY PENDENT SPRINKLER HEAD
- EXISTING SIDEWALL SPRINKLER HEAD
- EXISTING UPRIGHT SPRINKLER HEAD
- CR — PIPE, FITTINGS, COUPLINGS, HEADS, ESCUTCHEONS, AND SUPPORTS LOCATED IN THIS ROOM SHALL BE CORROSION RESISTANT PER THE SPECIFICATIONS
- RECESSED PENDENT SPRINKLER HEAD
- CONCEALED PENDENT SPRINKLER HEAD
- RECESSED DRY PENDENT SPRINKLER HEAD
- SIDEWALL SPRINKLER HEAD
- DRY SIDEWALL SPRINKLER HEAD
- EXTENDED COVERAGE SIDEWALL SPRINKLER HEAD (16' X 22')
- UPRIGHT SPRINKLER HEAD
- UPRIGHT SPRINKLER HEAD W/ HEAVY-DUTY GUARD
- UPRIGHT SPRINKLER HEAD W/ SHIELD

1 / F-2.23B — THIRD FLOOR FIRE PROTECTION PLAN - SHARK TANK
SCALE: 1/8" = 1'-0"

KEY PLAN

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

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
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FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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PRELIMINARY - DO NOT USE FOR CONSTRUCTION

SEAL 043164 ENGINEER CASEY D. GILMAN

NOT FOR CONSTRUCTION

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1	9-8-25	BID SET
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4	11-10-25	ADDENDUM #3

THIRD FLOOR FIRE PROTECTION PLAN - SHARK TANK

F-2.23B

AIR COOLED HEAT PUMP CHILLER SCHEDULE

DRAWING CODE	BOD MFR.	BOD MODEL	ALTERNATE APPROVED MFR	NOMINAL CAPACITY (TONS)	PERFOMANCE - COOLING MODE								PERFOMANCE - HEATING MODE								REFRIGERANT			COMPRESSOR	EVAPORATOR				CONDENSER		SOUND AT FULL LOAD	ELECTRICAL						PHYSICAL DIMS. (IN.)			WEIGHT (LBS)	NOTES	ACCESS.
					CAPACITY (TONS)	MIN EER	MIN IPLV (BTU/W-h)	MAX POWER INPUT (KW)	AMBIENT TEMP. (°F db)	EWT (°F)	LWT (°F)	DESIGN FLOW (GPM)	HX HEAD LOSS (FT H20)	STRAINER HEAD LOSS (FT H20)	CAPACITY (MBH)	MIN COP (kW/kW)	MAX POWER INPUT (KW)	AMBIENT TEMP (°F db/wb)	EWT (°F)	LWT (°F)	DESIGN FLOW (GPM)	HX HEAD LOSS (FT H20)	STRAINER HEAD LOSS (FT H20)	TYPE	CIRCUIT SQTY	CHARGE PER CKT (LBS)	TYPE	QTY	FLUID	TYPE	FOULING FACTOR	PIPE SIZE (IN.)	EAT (°F)	NUMBER OF FANS	POWER LEVEL (dBA)	PRESS. LEVEL (dBA)	VOLTAGE (V/PH/HZ)	MCA (A)	MOCP (A)	COMP. (KW)	FANS (KW)	COMP. RLA CKT 1A/B/C (EA.) (A)	COMP. RLA CKT. 2A/B/C (EA.) (A)	L	W	H			
ACCH-1	TRANE	ACXA230	PETRA, CLIMACOOL	230	200.10	10.28	17.76	233.5	95.0	54.00	44.00	478.6	12.80	2.07	301.90	1,769	2.17	238.7	21.0 / 20.0	107.50	120.00	285.9	3.09	0.40	R-454B	2	189.0	SCREW	2	WATER	BRAZED PLATE	0.00010	4	95.0	12	99	68	460/3/60	466.0	500	224.0	14.3	69.0	69.0	338	88	98	13,311	1 - 7	A - M
ACCH-2	TRANE	ACXA230	PETRA, CLIMACOOL	230	200.10	10.28	17.76	233.5	95.0	54.00	44.00	478.6	12.80	2.07	301.90	1,769	2.17	238.7	21.0 / 20.0	107.50	120.00	285.9	3.09	0.40	R-454B	2	189.0	SCREW	2	WATER	BRAZED PLATE	0.00010	4	95.0	12	99	68	460/3/60	466.0	500	224.0	14.3	69.0	69.0	338	88	98	13,311	1 - 7	A - M

NOTES:
1 REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.
2 CHILLER TO BE PROVIDED WITH EVAPORATOR FREEZE PROTECTION WIRE/TERMINATED BY MECHANICAL CONTRACTOR. FREEZE PROTECTION SHALL BE POWERED BY A DEDICATED 20A 120V CIRCUIT PROVIDED/INSTALLED BY ELECTRICAL CONTRACTOR.
3 WEIGHT LISTED IS OPERATING WEIGHT.
4 MANUFACTURER PROVIDED 5 YEAR PARTS, LABOR AND REFRIGERANT WARRANTY.
5 PROVIDE NEXT-GEN REFRIGERANT.
6 CONDENSER FIN: COATED COPPER ROUND TUBE, ALUMINUM PLATE FIN
7 ADVANCED DEFROST LOGIC INCLUDING LOSS OF FLOW LOGIC DURING DEFROST CHANGEOVER AND WARM-UP CYCLE.

ACCE...
A FACTORY-PROVIDED EPOXY-COATED CONDENSER COILS MEETING 10,000-HOUR ASTM B117 SALT SPRAY TEST. CABINET AND STRUCTURAL ELEMENTS WITH BAKED-ON POWDER COAT FINISH. INCLUDE FULL MANUFACTURER COASTAL PROTECTION PACKAGE.
B BACNET MS/TP CONTROL INTERFACE
C ARCHITECTURAL LOUVERED PANELS COMPLETELY COVERING CONDENSING COIL AND SERVICE AREA BENEATH THE CONDENSER
D MOLDED ELASTOMERIC ISOLATORS
E FACTORY INSTALLED WATER STRAINER
F FACTORY INSTALLED FLOW SWITCH
G AMBIENT CONTROL FOR OPERATION FROM 0 TO 125 DEG F
H WIRELESS LTE MODEM
I FACTORY STARTUP
J FACTORY INSTALLED MINIMUM 1-1/4 INCH INSULATION, ALL COLDED SURFACES
K PHASE VOLTAGE MONITOR
L CONVENIENCE OUTLET: 115V / 60HZ / 20A
M TOUCH SCREEN CONTROL PANEL

AIR COOLED MODULAR CHILLER WITH HEAT RECOVERY SCHEDULE

DRAWING CODE	UNIT LOCATION	BOD MFR	BOD MODEL	ALTERNATE APPROVED MFRS	QTY OF ASSEMB.	NUMBER OF MODULES IN ASSEMB.	COOLING ONLY CAPACITY		SIMULTANEOUS HEATING AND COOLING CAPACITY			MAX POWER INPUT (KW) (SIMULTANEOUS)	COOLING ONLY MIN EER	SIMULTANEOUS EER / COP	MIN UNLOADING (TONS)	REFRIG.		COMPR.		EVAPORATOR (SIMULTANEOUS MODE - COOLING)						EVAPORATOR (SIMULTANEOUS MODE - HEATING)						CONDENSER		ELECTRICAL PER POWER SUPPLY						WEIGHT OPERATING (LBS)	NOTES	ACCESS
							COOLING (TONS)	HEATING (MBH)	COOLING (TONS)	HEATING (MBH)	HEATING (TONS)					TYPE	CKTS QTY (PER MOD)	TYPE	QTY (PER MOD)	FLUID	EWT (°F)	LWT (°F)	FLOW RATE (GPM)	WPD (FT. H2O)	FOULIN G...	FLUID	EWT (°F)	LWT (°F)	FLOW RATE (GPM)	WPD (FT. H2O)	FOULING FACTOR	EAT (°F)	ALTITUDE (FT. ASL)	NUM. POWER SUPPLIES	MODULES PER POWER SUPPLIES	VOLTAGE (V/PH/HZ)	MCA (A)	MOP (A)			
HRCH-1	MECH PLANT	TRANE	SXAMC50-HR	JETSON, CLIMACOOL	1	5	208.1	N/A	209.3	3243.3	270.3	234.25	10.66	11.04 / 4.18	20.8	R-545B	2	SCROLL	2	WATER	54.0	44.0	500.64	13.1	.0001	WATER	100.0	120.0	326.98	5.31	.0001	95.0	0	1	5	460/3/60	459	500	25,000	1 - 13	A - G

NOTES:
1 REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.
2 SIMULTANEOUS HEATING AND COOLING UNITS.
3 PROVIDE NEXT-GEN REFRIGERANT.
4 CONDENSER FIN: COATED COPPER ROUND TUBE, ALUMINUM PLATE FIN
5 LOW NOISE ECM VARIABLE SPEED FANS
6 DUAL REFRIGERATION CIRCUITS ON EACH CHILLER MODULE.
7 SCROLL COMPRESSOR ON EACH REFRIGERATION CIRCUIT EACH WITH SERVICE VALVES, CRANKCASE HEATER, SOLID STATE OVERLOAD PROTECTION AND IN-LINE CIRCUIT BREAKER
8 MANUAL ISOLATION VALVES ON EVAPORATOR AND CONDENSER BRANCH LINES TO PERMIT SERVICE ISOLATION OF THE FLOW SWITCH, STRAINER AND EVAPORATOR.
9 ELECTRONIC ISOLATION INSTALLED AT EACH HEAT EXCHANGER W/ CONTROLS FOR HEAT RECOVERY OPERATION.
10 CHILLER TO BE PROVIDED WITH EVAPORATOR FREEZE PROTECTION WIRE/TERMINATED BY MECHANICAL CONTRACTOR. FREEZE PROTECTION SHALL BE POWERED BY A DEDICATED 20A 120V CIRCUIT PROVIDED/INSTALLED BY ELECTRICAL CONTRACTOR.
11 EACH MODULE SHALL HAVE A SEPARATE CABINET FOR THE HIGH VOLTAGE AND LOW VOLTAGE ELECTRICAL POWER
12 BACNET MS/TP CONTROL INTERFACE
13 MANUFACTURER PROVIDED 5 YEAR PARTS, LABOR AND REFRIGERANT WARRANTY.

ACCESS:
A FACTORY-PROVIDED EPOXY-COATED CONDENSER COILS MEETING 10,000-HOUR ASTM B117 SALT SPRAY TEST. CABINET AND STRUCTURAL ELEMENTS WITH BAKED-ON POWDER COAT FINISH. INCLUDE FULL MANUFACTURER COASTAL PROTECTION PACKAGE.
B NEMA 4X SINGLE POINT POWER DISTRIBUTION PANEL W/ NON-FUSED DISCONNECT
C MODULES SHALL BE FACTORY MOUNTED ON POWDER COATED BASE FRAME, SHIPPED AS A COMPLETE UNIT
D CLEANABLE Y-STRAINER SYSTEM ON EVAPORATOR AND CONDENSER HEADERS
E TOUCH SCREEN CONTROL PANEL
F DISTRIBUTED MICROPROCESSOR CONTROLLER THAT ALLOWS OPERATION IN EVENT OF PRIMARY CONTROLLER FAILURE
G PHASE MONITOR ON THE POWER SUPPLY TO PROTECT AGAINST LOW VOLTAGE, PHASE UNBALANCE, PHASE LOSS, AND PHASE REVERSAL CONDITIONS.

DIFFUSERS, REGISTERS AND GRILLES SCHEDULE

DRAWING CODE	BOD MFR	BOD MODEL	ALTERNATE APPROVED MFRS	TYPE	SERVICE	NECK SIZE (IN.)	BRANCH CONN. SIZE (IN.)	MODULE SIZE (IN.)	MATERIAL	FINISH	MOUNTING	NOTES	ACCESS
S1	PRICE	ASPD	GREENHECK, TITUS	SQUARE CEILING DIFFUSER	SUPPLY	6%%C		24 X 24	ALUMINUM	WHITE	T-BAR	1,2	A
S2	PRICE	ASPD	GREENHECK, TITUS	SQUARE CEILING DIFFUSER	SUPPLY	8%%C		24 X 24	ALUMINUM	WHITE	T-BAR	1,2	A
S3	PRICE	ASPD	GREENHECK, TITUS	SQUARE CEILING DIFFUSER	SUPPLY	10%%C		24 X 24	ALUMINUM	WHITE	T-BAR	1,2	A
S5	PRICE	620	GREENHECK, TITUS	SQUARE CEILING DIFFUSER	SUPPLY	6%%C		12 X 12	ALUMINUM	WHITE	CEILING...	1,2	A
S8	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	12 X 6		14 X 8	ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S9	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	16 x 10		18 x 12	ALUMINUM	MATCH	WALL SURFACE	1,2,3	B
S10	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	12 X 6		14 X 8	ALUMINUM	MATCH	WALL SURFACE	1,2,3	B
S11	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	16 x 10		18 x 12	ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S12	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	20 X 10		22 X 12	ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S13	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	28 X 12		30 X 14	ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S14	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	12 X 8		14 x 10	ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S15	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	14 X 6		16 X 8	ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S16	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	8 X 8		10 X 10	ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S17	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	16 X 16		18 X 18	ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S18	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	10 X 10		12 X 12	ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
S19	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	6 X 6		8 X 8	ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S20	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	20 X 10			ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S21	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	12 X 8			ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S23	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	18 X 12			ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S25	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	16 X 6		16 X 8	ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S26	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	16 X 16		18 X 18	ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S27	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	14 X 10		16 X 12	ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S28	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	10 X 4		12 X 6	ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S29	PRICE	620	GREENHECK, TITUS	DBL DEFLECTION	SUPPLY	48 X 12		50 X 14	ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S30	PRICE	ARCD	GREENHECK, TITUS	ROUND CONE DIFFUSER	SUPPLY	6%%C			ALUMINUM	MATCH	DUCT SURFACE	1,2	A
S31	PRICE	ARCD	GREENHECK, TITUS	ROUND CONE DIFFUSER	SUPPLY	8%%C			ALUMINUM	MATCH	DUCT SURFACE	1,2	A
T1	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	TRANSFER	22 X 22	8%%C	24 X 24	ALUMINUM	WHITE	T-BAR	1,2,3	-
T2	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	TRANSFER	22 X 22	10%%C	24 X 24	ALUMINUM	WHITE	T-BAR	1,2,3	-
T3	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	10 X 10		12 X 12	ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
T4	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	TRANSFER	10 X 10	6%%C	12 X 12	ALUMINUM	WHITE	T-BAR	1,2,3	-
R1	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	22 X 22	6%%C	24 X 24	ALUMINUM	WHITE	T-BAR	1,2,3	-
R2	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	22 X 22	8%%C	24 X 24	ALUMINUM	WHITE	T-BAR	1,2,3	-
R3	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	22 X 22	10%%C	24 X 24	ALUMINUM	WHITE	T-BAR	1,2,3	-
R4	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	22 X 22	12%%C	24 X 24	ALUMINUM	WHITE	T-BAR	1,2,3	-
R5	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	22 X 22	NOTE 2	24 X 24	ALUMINUM	WHITE	T-BAR	1,2,3	-
R10	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	10 X 10		12 X 12	ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
R11	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	16 X 16		18 X 18	ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
R12	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	14 X 14		16 X 16	ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
R14	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	20 X 16		22 X 18	ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
R16	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	18 X 10		20 X 12	ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
R17	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	40 x 24		40 x 26	ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
R18	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	30 X 14		32 X 16	ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
R19	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	8 X 8		10 X 10	ALUMINUM	MATCH	WALL SURFACE	1,2,3	-
R20	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	72 x 16			ALUMINUM	MATCH	DUCT SURFACE	1,2	-
R21	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	28 X 28			ALUMINUM	MATCH	DUCT SURFACE	1,2	-
R24	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	16 X 8			ALUMINUM	MATCH	DUCT SURFACE	1,2	-
R25	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	12 X 6			ALUMINUM	MATCH	DUCT SURFACE	1,2	-
R26	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	36 X 20			ALUMINUM	MATCH	DUCT SURFACE	1,2	-
R28	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	48 X 20			ALUMINUM	MATCH	DUCT SURFACE	1,2	-
R29	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	28 X 12		30 X 14	ALUMINUM	MATCH	DUCT SURFACE	1,2	-
R30	PRICE	ARCD	GREENHECK, TITUS	ROUND CONE DIFFUSER	RETURN	6%%C			ALUMINUM	MATCH	DUCT SURFACE	1,2	-
R31	PRICE	ARCD	GREENHECK, TITUS	ROUND CONE DIFFUSER	RETURN	8%%C			ALUMINUM	MATCH	DUCT SURFACE	1,2	-
R34	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	RETURN	8 X 8		10 X 10	ALUMINUM	MATCH	DUCT SURFACE	1,2	-
E1	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	EXHAUST	22 X 22	6%%C	24 X 24	ALUMINUM	WHITE	T-BAR	1,2,3	A
E2	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	EXHAUST	22 X 22	8%%C	24 X 24	ALUMINUM	WHITE	T-BAR	1,2,3	A
E3	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	EXHAUST	22 X 22	10%%C	24 X 24	ALUMINUM	WHITE	T-BAR	1,2,3	A
E5	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	EXHAUST	8 X 8		10 X 10	ALUMINUM	MATCH	WALL SURFACE	1,2,3	A
E6	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	EXHAUST	24 X 12		26 X 14	ALUMINUM	MATCH	DUCT SURFACE	1,2	A
E7	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	EXHAUST	38 X 10		40 X 12	ALUMINUM	MATCH	DUCT SURFACE	1,2	A
E8	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	EXHAUST	10 X 10		12 X 12	ALUMINUM	WHITE	CEILING...	1,2,3	A
E9	PRICE	630	GREENHECK, TITUS	FIXED FACE GRILLE	EXHAUST	12 X 10		14 X 10	ALUMINUM	MATCH	DUCT SURFACE	1,2	A

NOTES:
1 REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.
2 DUCT BRANCH CONNECTION SIZE TO BE EQUAL TO THE NECK SIZE OF DIFFUSER UNLESS NOTED OTHERWISE ON PLANS.
3 PAINT ALL VISIBLE DUCTWORK THROUGH GRILLES AND REGISTERS FLAT BLACK.

ACCESS:
A MANUAL VOLUME DAMPER
B INTEGRAL VOLUME DAMPER

MINI-SPLIT SYSTEM SCHEDULE

DRAWING CODE (IDU / ODU)	INDOOR UNIT LOCATION	BOD MFR	BOD MODEL (IDU / ODU)	ALTERNATE APPROVED MFRS	INDOOR UNIT CONFIG.	SYSTEM TYPE	ARI COOLING 80/67/95		ARI HEAT 70/47	MIN SEER	MIN HSPF	INDOOR UNIT				OUTDOOR UNIT				LSS EMERG. POWER?	REF. PIPING				NOTES	ACCESS
							TOTAL (MBH)	MIN (MBH)	TOTAL (MBH)	2	2	FAN SA MIN-MAX (CFM)	ELECTRICAL VOLTAGE (V/PH/HZ)	MCA (A)	WEIGHT (LBS)	ELECTRICAL VOLTAGE (V/PH/HZ)	MCA (A)	MANUF. REC. BKR SIZE (A)	WEIGHT (LBS)		TYPE	MAX LENGTH (FT.)	MAX HEIGHT DIFF. (FT.)	MAX SYSTEM CHARGE (LB)	MIN. APPLIED FLOOR AREA (SF)	ACTUAL APPLIED FLOOR AREA (SF)		
DAH-3 / DHP-3	(104) IT ROOM	MITSUBISHI	PKA-AL18NL / PUY-AK18NL	DAIKIN, LG	WALL MTD	A/C	18.0	4.3	-	19.5	-	265 - 450	208/1/60	1.0	28	208/1/60	16.0	20	99	NO	R-454B	165	100	4.41	79.8	145	1 - 7, 9	A - D
DAH-4 / DHP-4	(E103B) ELECTRICAL	MITSUBISHI	PKA-AL18NL / PUY-AK18NL	DAIKIN, LG	WALL MTD	A/C	18.0	4.3	-	19.5	-	265 - 450	208/1/60	1.0	28	208/1/60	16.0	20	99	NO	R-454B	165	100	4.41	79.8	140	1 - 6, 9	A - D
DAH-5 / DHP-5	(209) TELECOM	MITSUBISHI	PKA-AL18NL / PUY-AK18NL	DAIKIN, LG	WALL MTD	A/C	18.0	4.3	-	19.5	-	265 - 450	208/1/60	1.0	28	208/1/60	16.0	20	99	NO	R-454B	165	100	4.41	79.8	125	1 - 6, 9	A - D
DAH-6 / DHP-6	GENERATOR BLDG	MITSUBISHI	PKA-AL24NL / PUZ-AH24NL	DAIKIN, LG	WALL MTD	HP	24.0	10.1	28.0	21.1	9.2	635 - 775	208/1/60	1.0	46	208/1/60	22.0	25	155	YES	R-454B	165	100	7.72	139.6	285	1 - 6, 9	A - D
DAH-7 / DHP-7	GENERATOR BLDG	MITSUBISHI	PKA-AL24NL / PUZ-AH24NL	DAIKIN, LG	WALL MTD	HP	24.0	10.1	28.0	21.1	9.2	635 - 775	208/1/60	1.0	46	208/1/60	22.0	25	155	YES	R-454B	165	100	7.72	139.6	460	1 - 6, 9	A - D
DAH-8 / DHP-8	(E201A) ELECTRICAL	MITSUBISHI	PKA-AL24NL / PUY-AH24NL	DAIKIN, LG	WALL MTD	A/C	24.0	10.1	-	21.1	-	635 - 775	208/1/60	1.0	46	208/1/60	22.0	25	155	NO	R-454B	225	100	7.72	139.6	145	1 - 6, 9	A - D
DAH-9 / DHP-9	(R108B) DATA	MITSUBISHI	PKA-AL18NL / PUY-AK18NL	DAIKIN, LG	WALL MTD	A/C	18.0	4.3	-	19.5	-	265 - 450	208/1/60	1.0	28	208/1/60	16.0	20	99	YES	R-454B	165	100	4.41	79.8	85	1 - 6, 9	A - D
DAH-10 / DHP-10	CHILLER PUMP BLDG	MITSUBISHI	PKA-AL24NL / PUZ-AH24NL	DAIKIN, LG	WALL MTD	HP	24.0	10.1	28.0	21.1	9.2	635 - 775	208/1/60	1.0	46	208/1/60	22.0	25	155	YES	R-454B	225	100	7.72	139.6	370	1 - 6, 9	A - D
DAH-11 / DHP-11	(E103A) MECH./ELEC.	MITSUBISHI	PKA-AL24NL / PUY-AH24NL	DAIKIN, LG	WALL MTD	A/C	24.0	10.1	-	21.1	-	635 - 775	208/1/60	1.0	46	208/1/60	22.0	25	155	NO	R-454B	225	100	7.72	139.6	415	1 - 6, 9	A - D
DAH-12 / DHP-12	DOM. BOOSTER PUMP BLDG	MITSUBISHI	PKA-AL24NL / PUZ-AH24NL	DAIKIN, LG	WALL MTD	HP	24.0	10.1	28.0	21.1	9.2	635 - 775	208/1/60	1.0	46	208/1/60	22.0	25	155	YES	R-454B	225	100	7.72	139.6	180	1 - 6, 9	A - D
DAH-13 / DHP-13	(R104) DATA/STOR.	MITSUBISHI	PKA-AL18NL / PUY-AK18NL	DAIKIN, LG	WALL MTD	A/C	12.0	4.3	-	21.1	-	215 - 375	208/1/60	1.0	28	208/1/60	16.0	20	99	NO	R-454B	165	100	4.41	79.8	156	1 - 6, 9	A - D
DAH-14 / DHP-14	GENERATOR BLDG	MITSUBISHI	PKA-AL24NL / PUZ-AH24NL	DAIKIN, LG	WALL MTD	HP	24.0	10.1	28.0	21.1	9.2	635 - 775	208/1/60	1.0	46	208/1/60	22.0	25	155	YES	R-454B	225	100	7.72	139.6	960	1 - 6, 8, 9	A - D

NOTES:
1 REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.
2 ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT AND CONDUCTOR FROM OUTDOOR UNIT TO INDOOR UNIT.
3 MOUNT INDOOR UNIT AT MAX ALLOWED HEIGHT WHILE MAINTAINING MANUFACTURERS RECOMMENDED CLEARANCES.
4 INSTALL BASE FOUNDATION BOLTS FOR HIGH WIND PROTECTION.
5 LOW AMBIENT COOLING
6 CONTROLS BY DDC CONTRACTOR
7 INCLUDED IN ALTERNATE #2 ONLY
8 DUCTLESS SYSTEM TO SHUT DOWN UPON GENERATOR START-UP, COINCIDING WITH THE OPENING OF GENERATOR INTAKE LOUVERS
9 SYSTEM USES R-454B (A2L). MINIMUM APPLIED FLOOR AREA IS BASED ON INSTALLED REFRIGERANT CHARGE AND RCL PER ASHRAE 15-2022 USING A 6 FT MOUNTING HEIGHT

ACCESS:
A FACTORY-APPLIED EPOXY-COATED COILS AND COASTAL-RATED CASING FINISH
B PROVIDE CONDENSATE PUMP AND RESERVOIR OR EQUAL WITH CAPACITY OF 1.6 GAL/HR AT 33 FT OF HEAD. INTERLOCK TO SHUTDOWN UNIT
C WIRED WALL-MOUNTED REMOTE CONTROLLER
D BACNET MSTP DDC CONTROL SYSTEM INTERFACE

POWER VENTILATOR SCHEDULE

DRAWING CODE	UNIT LOCATION	BOD MFR	BOD MODEL	ALTERNATE APPROVED MFRS	FAN TYPE	SERVICE	DRIVE TYPE	SPEED CONTROL	FAN DIAM. (IN)	DAMPER	MOTOR ENCLOSURE	CAPACITIES			ELECTRICAL				SONES	WEIGHT (LBS.)	NOTES	ACCESS
												AIRFLOW (CFM)	ESP (IN. WG.)	FAN RPM	MOTOR RPM	MOTOR TYPE	MOTOR SIZE (HP)	V/PH/HZ	MOCP (A)			
PV1	MAIN ENTRY - R129	COOK	GNVF-100	GREENHECK, TWIN CITY	CENTRIFUGAL INLINE CABINET	EXHAUST	DIRECT	EC	7.63	BACKDRAFT -		70	0.35	846	1,000	ECM	0.13	120/1/60	15	2	17	1,2,5	A,B,C,D,E,F
PV2	MAIN ENTRY (ROOF)	COOK	120 ACED OR91	GREENHECK, TWIN CITY	DOWNBLAST CENTRIFUGAL EXHAUST	EXHAUST	DIRECT	EC	12.00	BACKDRAFT	OPEN	600	0.60	1,334	1,725	ECM	0.25	120/1/60	15	10	80	1,2,4,5	E,G,H,I,J,K,L,M,N,O
PV3	SE WING	COOK	GNVF-700	GREENHECK, TWIN CITY	CENTRIFUGAL INLINE CABINET	EXHAUST	DIRECT	EC	6.31	BACKDRAFT -		550	0.60	1,515	1,778	ECM	0.33	120/1/60	15	5	38	1,2	A,B,D,E,P
PV4	CONCESSIONS	COOK	GNVF-700	GREENHECK, TWIN CITY	CENTRIFUGAL INLINE CABINET	EXHAUST	DIRECT	EC	6.31	BACKDRAFT -		650	0.75	1,724	1,778	ECM	0.33	120/1/60	15	6	38	1,2	A,B,D,E,P
PV5	TOUCH 2ND FLR	COOK	120 ACED	GREENHECK, TWIN CITY	DOWNBLAST CENTRIFUGAL EXHAUST	EXHAUST	DIRECT	EC	12.00	BACKDRAFT	OPEN	1,000	0.60	1,309	1,725	ECM	0.25	120/1/60	15	9	79	1,2,4	E,G,H,I,J,L,M,N,Q
PV6	3RD FLR SHARK (ROOF)	COOK	120 ACED	GREENHECK, TWIN CITY	DOWNBLAST CENTRIFUGAL EXHAUST	EXHAUST	DIRECT	EC	12.00	BACKDRAFT	OPEN	1,000	0.60	1,309	1,725	ECM	0.25	120/1/60	15	9	79	1,2	E,G,H,I,J,L,M,N,Q
PV7	NECROPSY	COOK	GNVF-700	GREENHECK, TWIN CITY	CENTRIFUGAL INLINE CABINET	EXHAUST	DIRECT	EC	6.31	BACKDRAFT -		380	0.75	1,519	1,778	ECM	0.33	120/1/60	15	4	39	1,3	A,B,D,E,P
PV8	CORAL MEZZ (AMB.AN)	COOK	135 SQN-D GALV	GREENHECK, TWIN CITY	SQUARE CENTRIFUGAL INLINE BLOWER	EXHAUST	DIRECT	EC	13.50	BACKDRAFT	OPEN	1,440	0.75	1,390	1,725	ECM	0.50	120/1/60	15	9

ROOFTOP UNIT SCHEDULE

DRAWING CODE	UNIT LOCATION	BOD MFR	BOD MODEL	ALTERNATE APPROVED MFRS (SEE NOTE 18)	SYSTEM TYPE	AIRFLOW CONDITIONS SA	SA ESP (IN. WG.)	MAX OA	MIN OA	RA	SUPPLY FAN QTY	TYPE	AIRFLOW	TOTAL ESP (IN. WG.)	RPM	HP	BHP	MOTOR HEAT	TOTAL ESP (IN.WG.)	CHILLED WATER COIL AIRFLOW MAX	EAT (db)	EAT (wb)	LAT (db)	LAT (wb)	SENS CAP (MBH)	TOTAL CAP (MBH)	EWT	LWT	FLOW (GPM)	TOTAL CAP (TON)	WPD (FT. H20)	PIPE CONN. (IN)	PREHEAT AND/OR REHEAT COIL COIL POSITION (SEE NOTE 9)	AIRFLOW	EAT	LAT	EWT	LWT	FLOW (GPM)	TOTAL CAP (MBH)	WPD (FT. H20)	PIPE CONN. (IN)	FILTERS PRE FILTERS SA & EA	FINAL FILTERS SA	ELECTRICAL POWER SUPPLY (V/PH/HZ)	UNIT FLA (A)	MCA (A)	MOCP (A)	LSS EMERG. BACKUP	EST. WEIGHT (LBS)	OCCUP. CONTROL METHOD	NOTES	ACCESS
RTU-01	N.E. SHARK ROOF	ANNEXAIR	AHU-E-03-C-H	TRANE, PETRA, CAHS	4-PIPE CAV	3,690	1.5	610	-	3,080	2	PLUG	1,845	4.91	2,734	4.14	3.76	5.26	4.91	3,690	79.0	64.6	53.0	52.2	106	135	44	54	27.0	11.3	20.0	1.5	REHEAT	3,690	50.0	75.0	120	100	10.0	102.0	10.0	1	2" MERV 10	4" MERV...	460/3/60	16.0	18.0	25	YES	2,800	24 HR	1 - 18	A - H
RTU-02	CENTER SHARK ROOF	ANNEXAIR	AHU-E-07-C-H	TRANE, PETRA, CAHS	4-PIPE CAV	8,295	1.5	1,025	185	7,270	3	PLUG	2,765	4.91	2,338	4.88	4.44	4.27	4.91	8,295	78.6	67.2	52.7	51.8	237	387	44	54	77.0	32.3	20.0	2	REHEAT	8,295	50.0	75.0	120	100	23.0	229.0	10.0	1.25	2" MERV 10	4" MERV...	460/3/60	25.0	27.0	35	YES	4,500	24 HR	1 - 18	A - H
RTU-03	S.E. SHARK ROOF	ANNEXAIR	AHU-E-02-C-H	TRANE, PETRA, CAHS	4-PIPE CAV	1,820	1.5	540	220	1,280	2	PLUG	910	4.91	2,735	2.19	1.99	6.06	4.91	1,820	81.6	69.0	53.0	52.5	58	94	44	54	19.0	7.9	20.0	1.25	REHEAT	1,820	50.0	75.0	120	100	5.0	51.0	10.0	3/4	2" MERV 10	4" MERV...	460/3/60	9.0	10.0	15	YES	2,500	24 HR	1 - 18	A - H
RTU-04	S.W. SHARK ROOF	ANNEXAIR	AHU-E-07-H-C-H	TRANE, PETRA, CAHS	4-PIPE VAV	6,510	1.5	2,230	2,300	4,280	2	PLUG	3,255	5.13	2,323	7.74	7.04	5.69	5.13	6,510	80.9	69.9	51.1	50.5	214	390	44	54	78.0	32.5	20.0	2	PRE / REHEAT	2230 / 6510	23.0 / 50.0	50.0 / 75.0	120	100	7.0 / 18.0	67.0 / 180.0	10.0 /10.0	.75 / 1.25	2" MERV 10	4" MERV...	460/3/60	22.0	25.0	35	NO	4,600	DCV	1 - 18	A - H

NOTES:
1 REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.
2 AIRFLOW IN CFM; TEMPERATURES IN °F
3 COIL, DRAIN AND MOTOR SIDE ACCESS TO BE FIELD CONFIRMED PRIOR TO SUBMITTING FOR APPROVAL.
4 MAX COIL FACE VELOCITY SHALL NOT EXCEED SCHEDULED VALUES.
5 ALL CONTROLS SENSORS, ACTUATORS AND WIRING PROVIDED AND INSTALLED BY DDC CONTRACTOR.
6 REFER TO PLANS AND SECTION FOR UNIT ARRANGEMENTS.
7 FAN SHALL BE DIRECT DRIVE ECM W/ CORROSION COATED MOTORS W/ MODULATING SPEED CONTROLLER PER MOTOR. SEE EQUIPMENT SCHEDULE FOR SIZES AND QUANTITIES.
8 N+1 FAN REDUNDANCY WITH BACKDRAFT DAMPERS.
9 CONSTRUCTION TYPE: BIOCOMPOSITE
10 CASING: DEFLECTION OF L/300
11 CASING: 0.5% LEAKAGE RATE AT 6 INCHES (ASHRAE 111 CLASS 2)
12 CASING: R-13 THERMAL PERFORMANCE W/ FOAM INSULATION
13 CASING: SHALL HAVE NO EXTERIOR CONDENSATION W/ INTERIOR AHU TEMPERATURE DOWN TO 42.5 °F WHILE EXTERIOR CONDITIONS ARE 95.0°F db / 85.0°F wb
14 CASING SHALL BE COMPLETELY PROTECTED AGAINST WEATHERIZATION W/ MINIMUM 15-YEAR WARRANTY AGAINST CORROSION
15 EQUIPMENT SPECIFIC SEISMIC & WIND RATED CURB, RESTRAINT & FASTENERS W/ ENGINEER CERTIFICATION
16 FILTER FRAMES SHALL BE CORROSION COATED
17 ALL COILS SHALL BE CORROSION COATED
18 ALTERNATE 11 - ALTERNATE APPROVED MANUFACTURERS SHALL MEET ALL OF THE CONSTRUCTION LEVEL REQUIREMENTS AS PER SCHEDULE, NOTES & ACCESSORIES INCLUDING MINIMUM 15-YEAR CASING WARRANTY
(18.1) 14 GAUGE MARINE GRADE POWDER COATED ALUMINUM EXTERIOR AND INTERIOR CABINET
(18.2) EXTERIOR COATINGS MUST BE HIGH-PERFORMANCE EPOXY OR POLYURETHANE BASED WITH A MINIMUM OF 5,000 HOUR SALT SPRAY RATING (ASTM B117), IF A HIGHER RATED COATING IS AVAILABLE, INCLUDE THE ASSOCIATED COST INCREASE AS A SEPERATE LINE ITEM IN THE SUBMITTAL.

ACCESS:
A COOLING COIL SECTIONS SHALL BE PROVIDED WITH AN INSULATED, DOUBLE WALL, BIOCOMPOSITE OR 316 STAINLESS STEEL DRAIN PAN WITH POSITIVE DRAINAGE MEETING INDOOR AIR QUALITY (IAQ) IN ACCORDANCE WITH ASHRAE 62.1.
B COPPER COIL, ALUMINUM FIN, STAINLESS STEEL COIL CASING.
C PROVIDE FILTERS AS SPECIFIED, THREE SETS OF EACH TYPE. PROVIDE ONE SET IN UNIT, PROVIDE ONE SET FOR INSTALLATION AFTER SYSTEM IS BALANCED AND BUILDING IS CLEANED, AND ONE SET FOR TURN OVER TO OWNER.
D PROVIDE RETURN AIR AND OUTDOOR AIR DAMPERS. ALL DAMPERS SHALL BE ALL ALUMINUM CONSTRUCTION.
E HINGED ACCESS DOORS
F PROVIDE MARINE LIGHTS AND GFI RECEPTACLE, REQUIRES SEPEARATE 120V CIRCUIT PROVIDED/INSTALLED BY ELECTRICAL CONTRACTOR
G SINGLE POINT POWER W/ FACTORY DISCONNECT SWITCH
H 316 STAINLESS STEEL OR NON-CORROSIVE COATED FASTENERS THROUGHOUT UNIT CABINET

INDOOR AIR HANDLER SCHEDULE

DRAWING CODE	AREA SERVED	BOD MFR	MODEL	ALTERNATE APPROVED MFRS	CONFIGURATION (4 PIPE)	COOLING COIL TOTAL CAP (MBH)	SENSIBLE CAP (MBH)	EAT (°F db)	EAT (°F wb)	LAT (°F db)	LAT (°F wb)	EWT (°F)	LWT (°F)	FLOW (GPM)	COIL PD (FT. H2O)	PREHEAT / REHEAT COIL COIL POS. PH	COIL POS. RH	CAP (MBH)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	FLOW (GPM)	COIL PD (FT. H2O)	FAN SECTION SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	ESP (IN.H20)	MOTOR QTY	(W)	(HP)	VOLTAGE (V/PH/HZ)	MCA (A)	MOCP (A)	UNIT DIMENSIONS L (IN.)	W (IN.)	H (IN.)	OPERATING WEIGHT (LBS.)	LSS EMERGENCY POWER	FILTER	NOTES	ACCESS
FCU-01	E204 - OZONE	TRANE	FCDB120	DAIKIN, IEC	HORIZONTAL CAB	35.0	26.8	76.9	64.1	53.4	52.7	44.0	55.6	6.0	11.4	-	RH	14.8	60.4	73.4	120.0	100.2	1.5	1.0	1,050	210	0.00	1	277	-	120/1/60	6.1	15	83.0	26.0	10.0	218	YES	1" MERV 13	1 - 9	-
FCU-02	E303 - FRACTIONATORS	TRANE	FCDB060	DAIKIN, IEC	HORIZONTAL CAB	11.5	11.5	74.8	45.8	53.8	34.9	44.0	55.4	2.0	2.1	-	RH	5.6	69.5	79.8	120.0	105.0	0.8	0.2	505	-	0.00	1	110	-	120/1/60	3.9	15	58.0	26.0	10.0	155	YES	1" MERV 13	1 - 9	-
FCU-03	E306 - OFFICES	TRANE	BCHE024	DAIKIN, IEC	HORIZONTAL	29.2	16.2	81.5	69.8	52.1	50.9	44.0	54.0	6.0	6.4	-	RH	24.2	50.8	95.6	120.0	101.3	2.5	3.2	500	200	0.50	1	-	.5	120/1/60	9.3	15	53.7	30.0	17.0	226	NO	2" MERV 13	1 - 8,10	-	C
FCU-04	148 - HUSBANDRY	TRANE	BCVE036	DAIKIN, IEC	VERT / FRONT RET.	34.9	21.9	76.6	65.6	51.8	50.9	44.0	53.6	7.5	4.5	-	RH	31.1	55.0	90.7	120.0	102.8	3.5	0.6	805	85	0.50	1	-	.5	120/1/60	9.3	15	23.0	29.8	49.9	244	YES	2" MERV 13	1 - 8,10	-	-
FCU-05	R208B - CLASSROOM	TRANE	BCVE024	DAIKIN, IEC	VERTICAL	41.6	21.6	84.7	72.7	53.5	52.2	44.0	54.1	8.5	11.0	-	RH	26.9	44.3	84.0	120.0	99.5	2.5	0.5	625	340	0.50	1	-	.5	120/1/60	9.3	15	19.5	29.8	45.9	204	NO	2" MERV 13	1 - 8,10	-	-
FCU-06	R208A - CLASSROOM	TRANE	BCVE024	DAIKIN, IEC	VERTICAL	40.0	20.6	85.1	73.1	53.1	51.9	44.0	54.3	8.0	9.9	-	RH	26.3	42.9	84.7	120.0	99.9	2.5	0.5	580	330	0.50	1	-	.5	120/1/60	9.3	15	19.5	29.8	45.9	204	NO	2" MERV 13	1 - 8,10	-	-
FCU-07	114A - FW HUSBANDRY	TRANE	BCHE054	DAIKIN, IEC	HORIZONTAL	43.2	37.6	76.3	62.3	53.0	52.0	44.0	54.7	8.5	2.1	-	RH	32.7	55.0	75.5	120.0	102.6	3.5	0.6	1,470	125	0.50	1	-	1	120/1/60	16.6	25	59.9	46.0	18.0	337	YES	2" MERV 13	1 - 8,10,12	-	C
FCU-08	R210 - SUPPORT	TRANE	BCVE036	DAIKIN, IEC	VERTICAL	51.9	29.4	80.9	69.5	52.9	52.0	44.0	54.1	10.5	8.2	-	RH	33.0	56.8	88.9	120.0	102.0	3.5	0.6	950	260	0.50	1	-	.5	120/1/60	9.3	15	23.0	29.8	49.9	244	YES	2" MERV 13	1 - 8,10	-	-
FCU-09	E113 - MECH.	TRANE	BCHE072	DAIKIN, IEC	HORIZONTAL	56.8	56.8	76.7	46.8	50.4	33.0	44.0	54.5	11.5	4.2	-	RH	45.6	55.0	76.0	120.0	101.3	4.5	1.0	1,900	-	0.50	1	-	1.5	460/60/3	4.1	15	59.9	58.0	18.0	424	YES	2" MERV 13	1 - 8,10	C	C
FCU-10	R131 - CFS EXHIBIT	TRANE	BCVE060	DAIKIN, IEC	VERT / FRONT RET.	63.8	45.0	74.3	63.3	52.7	51.7	44.0	54.3	13.0	7.9	-	RH	67.6	54.0	86.9	120.0	100.2	6.5	1.3	1,900	-	0.75	1	-	1.5	460/60/3	4.1	15	27.5	34.8	58.6	372	NO	2" MERV 13	1 - 8,10	-	-
FCU-11	E102A - CLASSROOM	TRANE	BCVE024	DAIKIN, IEC	VERTICAL	33.0	16.7	84.6	73.1	51.9	50.8	44.0	54.4	6.5	6.8	-	RH	21.5	43.0	86.1	120.0	99.3	2.0	0.4	460	265	0.50	1	-	.5	120/1/60	9.3	15	19.5	29.8	45.9	204	NO	2" MERV 13	1 - 8,10	-	-
FCU-12	E102B - CLASSROOM	TRANE	BCVE024	DAIKIN, IEC	VERTICAL	33.0	16.6	84.4	73.1	51.9	50.8	44.0	54.4	6.5	6.8	-	RH	21.5	43.0	86.1	120.0	99.3	2.0	0.4	460	265	0.50	1	-	.5	120/1/60	9.3	15	19.5	29.8	45.9	204	NO	2" MERV 13	1 - 8,10	-	-
FCU-13	E103B - STORAGE	TRANE	FCCB020	DAIKIN, IEC	HORIZONTAL CONC	3.8	3.2	74.9	62.2	52.5	51.9	44.0	54.0	0.8	1.3	-	RH	3.1	57.0	79.2	120.0	111.6	0.8	0.1	130	-	0.25	1	42	-	120/1/60	2.8	15	32.7	25.0	10.0	81	NO	1" MERV 13	1 - 8,10	-	-
FCU-14	E101 - AMB. ANIMALS	TRANE	BCVE072	DAIKIN, IEC	VERTICAL	138.2	63.4	91.5	78.9	52.1	51.2	44.0	55.9	23.5	15.2	PH	-	-	23.0	-	120.0	-	-	-	1,440	1,440	1.00	1	-	1	460/60/3	3.1	15	54.6	58.0	53.8	500	YES	2" MERV 13	1,2,3,5,6,7,8,10,11	C	C
FCU-15	E104 - CATERING KITCHEN	TRANE	BCVE024	DAIKIN, IEC	VERTICAL	19.7	11.5	82.1	69.2	50.9	49.9	44.0	54.1	4.0	2.9	-	RH	10.3	50.8	79.2	120.0	100.4	1.0	0.3	335	100	0.50	1	-	.5	120/1/60	9.3	15	19.5	29.8	45.9	200	NO	2" MERV 13	1 - 8,10	-	-
FCU-16	E105 - SALT STORAGE	TRANE	BCVE036	DAIKIN, IEC	VERTICAL	30.6	20.0	75.7	64.7	51.7	50.7	44.0	53.7	6.5	3.5	-	RH	30.0	55.0	91.7	120.0	103.4	3.5	0.6	755	55	0.50	1	-	.5	120/1/60	9.3	15	23.0	29.8	49.9	244	NO	2" MERV 13	1 - 8,10	-	-
FCU-17	R106 - WORKSHOP	TRANE	BCVE024	DAIKIN, IEC	VERTICAL	22.3	14.4	78.6	66.3	52.5	51.3	44.0	54.3	4.5	3.6	-	RH	19.2	50.3	95.1	120.0	105.3	2.5	0.5	500	105	0.50	1	-	.5	120/1/60	9.3	15	19.5	29.8	45.9	204	NO	2" MERV 13	1 - 8,10	-	-
FCU-18	R107 - NECROPSPY	TRANE	BCVE024	DAIKIN, IEC	VERTICAL	38.1	17.9	93.0	79.0	50.9	49.8	44.0	54.3	7.5	8.8	PH	-	-	23.0	-	120.0	-	-	-	380	380	0.50	1	-	.5	120/1/60	9.3	15	19.5	29.8	45.9	200	NO	2" MERV 13	1,2,3,5,6,7,8,10,11	-	-
FCU-19	E112 - MEN	TRANE	BCVE036	DAIKIN, IEC	HORIZONTAL	57.2	26.9	93.0	79.0	49.2	48.2	44.0	54.5	11.0	9.9	PH	-	-	23.0	-	120.0	-	-	-	550	550	0.80	1	-	.5	120/1/60	9.3	15	56.7	42.0	17.0	292	NO	2" MERV 13	1,2,3,5,6,7,8,10,11	C	C
FCU-20	R213 - TOUCH TANK OFFICES	TRANE	BCVE024	DAIKIN, IEC	VERTICAL	22.3	15.7	77.0	64.5	53.3	51.9	44.0	54.4	4.5	3.6	-	RH	21.2	55.0	87.4	120.0	100.0	2.0	0.4	605	85	0.50	1	-	.5	120/1/60	9.3	15	19.5	29.8	45.9	204	NO	2" MERV 13	1 - 8,10	-	B
FCU-21	R205 - LIBRARY / CONF. / OFF.	TRANE	BCVE036	DAIKIN, IEC	VERTICAL	44.5	25.6	79.3	68.3	52.6	51.6	44.0	54.2	9.0	6.3	-	RH	30.9	54.4	87.2	120.0	100.2	3.0	0.4	870	280	0.50	1	-	.5	120/1/60	9.3	15	23.0	29.8	49.9	244	NO	2" MERV 13	1 - 8,10	-	-
FCU-22	R110 - CORRIDOR	TRANE	BCVE024	DAIKIN, IEC	VERTICAL	22.9	14.5	79.0	66.7	52.6	51.4	44.0	54.5	4.5	3.6	-	RH	12.5	55.0	78.0	120.0	101.5	1.3	0.4	500	120	0.50	1	-	.5	120/1/60	9.3	15	19.5	29.8	45.9	200	NO	2" MERV 13	1 - 8,10	-	-
FCU-23	R106B - CNC/3D PRINTING	TRANE	FCCB030	DAIKIN, IEC	HORIZONTAL CONC	7.6	7.0	74.9	61.6	53.4	52.6	44.0	54.1	1.5	4.3	-	RH	3.9	65.0	77.0	120.0	112.2	1.0	0.2	300	-	0.25	1	113	-	120/1/60	2.8	15	32.7	25.0	10.0	81	NO	1" MERV 13	1 - 9	-	-
FCU-24	147 - CONCESSION	TRANE	BCVE024	DAIKIN, IEC	VERTICAL	25.2	16.1	77.8	66.2	53.4	52.2	44.0	54.6	5.0	4.3	-	RH	20.8	61.2	93.3	120.0	104.3	2.5	0.5	600	105	0.50	1	-	0.5	120/1/60	9.3	15	19.5	29.8	45.9	204	NO	2" MERV 13	1 - 8,10	-	-
AHU-07	R123 - MAIN LOBBY	TRANE	BCVE090	DAIKIN, IEC	HORIZ. MZ VAV	131.5	74.0	80.4	69.3	53.5	52.4	44.0	54.1	27.0	7.7	-	RH	-	-	-	-	-	-	-	2,490	855	1.50	1	-	3.0	460/60/3	6.9	15	60.8	48.0	66.7	574	NO	2" MERV 13	1 - 8,10,12	-	A, C

NOTES:
1 REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.
2 PROVIDE FACTORY INSTALLED DISCONNECT SWITCH.
3 PROVIDE ECM FAN MOTOR.
4 PROVIDE HEATING COIL IN REHEAT POSITION.
5 PROVIDE STAINLESS STEEL DRAIN PAN WITH WATER-LEVEL DETECTION DEVICE CONFORMING TO UL 508 IN ACCORDANCE WITH NCMC DECTION 307.2.3.
6 CONTROL VALVE SUPPLIED BY CONTROLS CONTRACTOR.
7 DOUBLE WALL PANELS
8 FIELD-APPLY CORROSION-RESISTANT COATING TO ALL COILS AND INTERIOR AND EXTERIOR CABINETS PRIOR TO INSTALLATION TO MEET ASTM-B117 15,000 HR
9 PROVIDE 1" MERV 13 FILTER WHERE RETURN GRILLE NOT PROVIDED WITH FILTER GRILLE.
10 PROVIDE 2" MERV 13 FILTER WHERE RETURN GRILLE NOT PROVIDED WITH FILTER GRILLE.
11 UNIT INCLUDES AN INTERNAL PREHEAT COIL AND A DUCT-MOUNTED REHEAT COIL.
12 INCLUDED IN ALTERNATE #2 ONLY

ACCESS:
A DUCT SMOKE DETECTOR INSTALLED IN RETURN AIR DUCT.
B 120V CONDENSATE PUMP
C FACTORY OR FIELD-FABRICATED ANGLED FILTER BOX

LOUVER SCHEDULE

DRAWING CODE	BOD MFR	BOD MODEL	ALTERNATE APPROVED MFRS	TYPE	FRAME	DESCRIPTION	MATERIAL	LOUVER DEPTH (IN.)	SIZE (W x H) (IN.)	SERVICE	AIRFLOW (CFM)	PERFORMANCE RATINGS FREE AREA (SF)	FREE AREA VEL (FPM)	S.P. LOSS (IN. H20)	WATER PEN. (OZ./SF)	LOCATION	CONNECTED UNIT/S	NOTES	ACCESS
L1	RUSKIN	EME5625MDE	GREENHECK, VENT PRDOUCTS	FIXED	STANDARD	VERTICAL, WIND-DRIVEN-RAIN-RESISTANT	ALUMINUM	5	120 X 120	EXHAUST	50,570	60.02	843	0.14	0.00	GEN. BLDG	GENERATOR 1	1,2,3,6	B
L2	RUSKIN	EME5625MDE	GREENHECK, VENT PRDOUCTS	FIXED	STANDARD	VERTICAL, WIND-DRIVEN-RAIN-RESISTANT	ALUMINUM	5	120 X 120	EXHAUST	50,570	60.02	843	0.14	0.00	GEN. BLDG	GENERATOR 2	1,2,3,6	B
L3	RUSKIN	EME5625MDE	GREENHECK, VENT PRDOUCTS	FIXED	STANDARD	VERTICAL, WIND-DRIVEN-RAIN-RESISTANT	ALUMINUM	5	16 X 16	EXHAUST	200	0.63	318	0.02	0.00	E306 - OFFICE	FCU-03	1,2,3,4,5	A
L4	RUSKIN	EME5625MDE	GREENHECK, VENT PRDOUCTS	FIXED	STANDARD	VERTICAL, WIND-DRIVEN-RAIN-RESISTANT	ALUMINUM	5	16 X 16	EXHAUST	140	0.63	223	0.01	0.00		PV11	1,2,3,4,5	A
L5	RUSKIN	EME5625MDE	GREENHECK, VENT PRDOUCTS	FIXED	STANDARD	VERTICAL, WIND-DRIVEN-RAIN-RESISTANT	ALUMINUM	5	16 X 16	EXHAUST	380	0.63	605	0.07	0.00	R106 WORKSHOP	PV7	1,2,3,4,5	A
L6	RUSKIN	EME5625MDE	GREENHECK, VENT PRDOUCTS	FIXED	STANDARD	VERTICAL, WIND-DRIVEN-RAIN-RESISTANT	ALUMINUM	5	24 X 16	EXHAUST	550	1.02	538	0.06	0.00	E112 - MEN	PV3	1,2,3,4,5	A
L7	RUSKIN	EME5625MDE	GREENHECK, VENT PRDOUCTS	FIXED	STANDARD	VERTICAL, WIND-DRIVEN-RAIN-RESISTANT	ALUMINUM	6	32 X 32	EXHAUST	1,440	3.54	407	0.03	0.00	E202 - CORAL MEZZ.	PV8	1,2,3,4,5	A
L8	RUSKIN	EME5625MDE	GREENHECK, VENT PRDOUCTS	FIXED	STANDARD	VERTICAL, WIND-DRIVEN-RAIN-RESISTANT	ALUMINUM	5	16 X 16	EXHAUST	250	0.63	398	0.03	0.00	R106B 3D PRINTING	PV12	1,2,3,4,5	A
L9	RUSKIN	EME5625MDE	GREENHECK, VENT PRDOUCTS	FIXED	STANDARD	VERTICAL, WIND-DRIVEN-RAIN-RESISTANT	ALUMINUM	5	24 X 14	EXHAUST	650	0.93	701	0.10	0.00	R114 MEN	PV4	1,2,3,4,5	A
L10	RUSKIN	EME5625MDE	GREENHECK, VENT PRDOUCTS	FIXED	STANDARD	VERTICAL, WIND-DRIVEN-RAIN-RESISTANT	ALUMINUM	5	120 X 120	INTAKE	54,740	60.02	912	0.17	0.00	GEN. BLDG	GENERATOR 1	1,2,3,6	B
L11	RUSKIN	EME5625MDE	GREENHECK, VENT PRDOUCTS	FIXED	STANDARD	VERTICAL, WIND-DRIVEN-RAIN-RESISTANT	ALUMINUM	5	120 X 120	INTAKE	54,740	60.02	912	0.17	0.00	GEN. BLDG	GENERATOR 2	1,2,3,6	B
L13	RUSKIN	EME5625MDE	GREENHECK, VENT PRDOUCTS	FIXED	STANDARD	VERTICAL, WIND-DRIVEN-RAIN-RESISTANT	ALUMINUM	5	24 X 16	INTAKE	550	1.02	538	0.06	0.00	E112 - MEN	FCU-19	1,2,3,4,5	A
L14	RUSKIN	EME5625MDE	GREENHECK, VENT PRDOUCTS	FIXED	STANDARD	VERTICAL, WIND-DRIVEN-RAIN-RESISTANT	ALUMINUM	5	48 X 32	INTAKE	2,725	5.53	492	0.05	0.00	E202 - CORAL MEZZ.	FCU-05/08/11/12/14/15/16	1,2,3,4,5	A
L15	RUSKIN	EME5625MDE	GREENHECK, VENT PRDOUCTS	FIXED	STANDARD	VERTICAL, WIND-DRIVEN-RAIN-RESISTANT	ALUMINUM	5	16 X 16	INTAKE	295	0.63	470	0.04	0.00	145 - MECH	FCU-04/17/24	1,2,3,4,5	A
L16	RUSKIN	EME5625MDE	GREENHECK, VENT PRDOUCTS	FIXED	STANDARD	VERTICAL, WIND-DRIVEN-RAIN-RESISTANT	ALUMINUM	5	16 X 16	INTAKE	380	0.63	605	0.07	0.00	R106 - WORKSHOP	FCU-18	1,2,3,4,5	A
L17	RUSKIN	EME5625MDE	GREENHECK, VENT PRDOUCTS	FIXED	STANDARD	VERTICAL, WIND-DRIVEN-RAIN-RESISTANT	ALUMINUM	5	16 X 16	INTAKE	280	0.63	446	0.04	0.00	R211A - NURSING	FCU-21	1,2,3,4,5	A
L18	RUSKIN	EME5625MDE	GREENHECK, VENT PRDOUCTS	FIXED	STANDARD	VERTICAL, WIND-DRIVEN-RAIN-RESISTANT	ALUMINUM	5	16 X 16	INTAKE	330	0.63	525	0.06	0.00	R208A CLASSROOM	FCU-06	1,2,3,4,5	A

NOTES:
1 REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.
2 AMCA 540 LISTED (IMPACT RESISTANCE)
3 AMCA 550 LISTED (WATER PENETRATION) WITHOUT RELYING ON A SEPARATE DAMPER TO ACHIEVE THE LISTING.
4 SEACOAST RATED FINISH AS SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE OF COLOR AND GLOSS.
5 INTERLOCK WITH ASSOCIATED POWER VENTILATOR OR AHU/FCU
6 LOUVERS SERVING LEVEL 1 GENERATOR SHALL BE SPRING-LOADED TO OPEN AND MOTOR-POWERED TO CLOSE IN COMPLIANCE WITH NFPA 110 REQUIREMENTS.

ACCESS:
A BIRD SCREENING (MATERIAL TO MATCH LOUVER MATERIAL)
B LOW-LEAK COASTAL ENVIRONMENT DAMPERS WITH FAST-ACTING GENSET 8-SECOND SPRING OPEN ACTUATOR, RUSKIN MODEL #CD50CE

PACKAGED DEHUMIDIFIER SCHEDULE

DRAWING CODE	BOD MFR	BOD MODEL	ALTERNATE APPROVED MFRS	DEHUMID. CAPACITY @ 80°F/60%RH (PINTS/DAY)	INDOOR SECTION FAN SA (CFM)	OA (CFM)	ESP (IN H2O)	ELECTRICAL VOLTAGE (V/PH/HZ)	MCA (A)	MOCP (A)	WEIGHT (LBS)	NOTES	ACCESS
D1	SANTA-FE	COMPACT 70	APRILAIRE, QUEST	70.0	150	-	0.00	120/1/60	3.7	15	55	1,2,3,4,5	A
D2	SANTA-FE	OASIS 105	APRILAIRE, QUEST	100.0	320	-	0.00	120/1/60	5.6	15	81	1,2,3,4,6	A

NOTES:
1 REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.
2 9' CORD PLUGS INTO DEDICATED DUPLEX OUTLET.
3 WALL MOUNT OR SUSPEND WITH HANGING KIT
4 ON-BOARD CONTROLS
5 UNIT DIMENSION: 12" X 12" X 21"
6 UNIT DIMENSION: 14.5" X 19.5" X 32.4"

ACCESS
A MERV 13 FILTER

SINGLE DUCT VAV TERMINAL BOX SCHEDULE

DRAWING CODE	BOD MFR	BOD MODEL	ALTERNATE APPROVED MFRS	PRIMARY AIRFLOW COOLING MAX (CFM)	COOLING MIN (CFM)	HEATING (CFM)	INLET DIA. (IN)	AIR PRESSURE...	COOLING INLET VELOCITY (FPM)	HEATING COIL CAPACITY (MBH)	ROWS	EAT (°F)	LAT (°F)	EWT (°F)	FLOW (GPM)	WPD (FT H2O)	RUNOUT SIZE (SUP/RET) (IN)	NOISE CRITERIA DISCH (NC)	RAD (NC)	WEIGHT OPERATING (LBS.)	UNIT SERVED FROM	NOTES	ACCESS
VAV-07-1	TRANE	VCWF12	PRICE, IEC	960	750	750	12	0.33	1,222	29.0	3 ROW	55.0	90.6	120.0	3.0	0.66	7/8 / 7/8	34.0	23.0	58	AHU-7	1 - 7	A - D
VAV-07-2

KEYNOTES

#	
1	ELECTRICAL CONTRACTOR MUST PROVIDE AND INSTALL 2-2" GRAY PVC CONDUITS PER DUKE ENERGY INSTALLATION REQUIREMENTS FOR SITE LIGHTING. REFER TO DUKE SERVICE INSTALLATION MANUAL FOR ALL REQUIREMENTS. COORDINATE ALL ADDITIONAL CONDUIT NEEDS WITH THE DUKE ENERGY REPRESENTATIVE PROVIDING THE LIGHTING.
2	ELECTRICAL CONTRACTOR MUST COORDINATE EXACT LOCATION OF PUMP STATION CONTROL PANEL PCP. COORDINATE VOLTAGE, PHASE AND AMPERAGE WITH DRAWINGS PROVIDED BY CHEATHAM & ASSOCIATES, P.A. IF ELECTRICAL REQUIREMENTS ARE DIFFERENT THAN INDICATED ON THE ELECTRICAL DRAWINGS, THE ELECTRICAL CONTRACTOR MUST CONTACT THE ELECTRICAL ENGINEER FOR DIRECTION PRIOR TO ROUGH-IN AND INSTALLATION.
3	FIBER: SEE TELECOM RISER ON E-6.17 FOR FIBER OPTIC REQUIREMENTS.
4	ELECTRICAL CONTRACTOR MUST PROVIDE AND INSTALL 1" PVC CONDUIT FROM SIMPLEX CONTROL PANEL IN ELEC. [E121] TO FUEL TANK PUMP #1 D.S., MOUNT DISCONNECT SWITCH ON E.C. PROVIDED EQUIPMENT STAND, FIELD COORDINATE FINAL LOCATION OF DISC. SW.'S PRIOR TO ROUGH-IN.

STORMWATER POND #3

CANTILEVER GATE 1 D.S. 30A/2/4X, W/ 20AF

CANTILEVER GATE 2 D.S. 30A/2/4X, W/ 20AF

2LSSPB-3.5

2#12 & 1#12GND-3/4"CND

CANTILEVER GATE ACCESS CONTROLS, PROVIDE 1"PVC CND WITH NYLON PULL STRING FROM GATE CONTROLLER UNDERGROUND TO PUMP BLDG [E120]

2#10 & 1#10GND-3/4"CND

2LSSPB-7,9

PUMP STATION CONTROL PANEL "PCP". (SEE PUMP STATION DESIGN PROVIDED BY CHEATHAM & ASSOC. P.A.)

PCP: CONCRETE ENCASED UG FEEDERS, SEE SLD E-6.2

PUMP BLDG E126

2LSSPB

T-2LSSPB (15KVA)

4LSSPB

4LSSPB1: CONCRETE ENCASED UG FEEDERS, SEE SLD E-6.2

EXISTING FIRE PUMP BUILDING 155

UGS

INTERCEPT SERVICE RACEWAYS AND INSTALL NEW TRAFFIC RATED SPLICE BOX, CUT RACEWAYS ON XFMR SIDE OF BOX, REMOVE SERIVCE CONDUCTORS TO SWBD AND PULL IN NEW FEEDER FROM SWBD TO 4LSS

PROVIDE (2) 4" UG CND'S CONCRETE ENCASED FROM EXISTING UTILITY PAD WHERE EXISTING 480/277V UTILITY TRANSFORMER WAS REMOVED UNDERGROUND TO TRANSFORMER LOCATION INDICATED

PUMP BLDG E123

2LSSCH

4LSSCH

T-2LSSCH

4LSSCH: CONCRETE ENCASED UG FEEDERS, SEE SLD E-6.2

(X) LA

MECH. RM. 131

ECB-T-4LSSEX

ECB-(X)DIST

DIST SECT 208V

(X) LLA
(X) EM
(X) HB
(X) MDPA
T-(X)DIST (ABOVE)

T-4LSSEX (BELOW)
EGB2
4LSSEX
20LP

4LS14 (FUTURE)

L.S.S., HUSBANDRY, HOLDING AND STORAGE 134

ECB-(X)DIST, NEMA 4X PULL BOX (12x12x24)

ECB-T-4LSSEX NEMA 4X PULL BOX (12x12x24)

SPARE CND: CONCRETE ENCASED UG, STUB UP 6" AFG AND CAP

MECH. E113

(X)MAIN SWBD (480V)

(X)EMERGENCY SWITCHBOARD

(X)ATS-2 ENCL.

(X)EXISTING 600A GEN 2 ENCL. CB

ELEC. 156

(X) CH

(X)MTS

40PRLA

RA

4LS1A

2LS1A

(X)UGS

APPROX. LOCATION OF EXISTING 600A FEEDER FROM (X) GEN 2 ENCL. IN ELEC. [156]

(X)MAIN SWBD (480V): CONCRETE ENCASED UG FEEDERS, SEE SLD E-6.1

4OPRLA: CONCRETE ENCASED UG FEEDERS, SEE SLD E-6.1

T-(X)DIST: CONCRETE ENCASED UG FEEDERS, SEE SLD E-6.1

4LS1: CONCRETE ENCASED UG FEEDERS, SEE SLD E-6.1

4LSS1

4LSS1:CONCRETE ENCASED UG FEEDERS, SEE SLD E-6.2

OP: CONCRETE ENCASED UG FEEDERS, SEE SLD E-6.1

T-4LSSEX: CONCRETE ENCASED UG FEEDERS, SEE SLD E-6.2

EXISTING SSMH FILTER BLDG

(X) G

APPROX. LOCATION OF EXISTING (9)4" SERVICE RACEWAYS (3 SPARE)

EXISTING 480V PAD MOUNT XFMR

EXISTING SHEDS ON ELEVATED PLATFORM

FUEL PUMP #1 D.S. 30A/2/4X

FUEL PUMP #2 D.S. 30A/2/4X

NEW 20,000 GAL. FUEL TANK, SEE DIVISION 23

INTERCEPT 600A FEEDER AND INSTALL NEW TRAFFIC RATED SPLICE BOX, CUT FEEDER AT EXISTING GEN 2 SIDE OF BOX AND SPLICE & EXTEND NEW FEEDER USING IN-LINE COMPRESSION SPLICES AND WP, HEAVY DUTY HEAT SHRINK TUBING. INSTALL SPLICE BOX AT LOCATION PROVIDING THE MOST EFFICIENT USE OF THE EXISTING FEEDER

4OP1

4OP

4LSS

EPS

4LS MSB

GENERATOR E120

MSB: CONCRETE ENCASED UG FEEDERS, SEE SLD E-6.1

T-4LSSEX: CONCRETE ENCASED UG FEEDERS, SEE SLD E-6.2

480/277V UTILITY PAD MOUNTED TRANSFORMER, EC MUST COORDINATE EXACT ELEVATION WITH UTILITY, SEE PAD DETAILS 6 & 7 DRAWING E-5.4

NOTE: SEE DUCTBANK AND CONCRETE ENCASEMENT DETAILS ON SHEET E-5.4

LDP1D
LDP1E
LDP1F

NOTES:
BASED ON INFORMATION FROM CIVIL DRAWING C-4:
1. THE 100-YEAR FLOOD ELEVATION (BASE FLOOD ELEV.) IS 10'-0".
2. 2' ABOVE (FREEBOARD) 100-YEAR FLOOD ELEVATION IS 12'-0" (REGULATORY FLOOD PROOFING ELEVATION).
3. FUTURE PROOFING 4' ABOVE 100-YEAR FLOOD ELEVATION IS 14'-0".

30' 15' 30'

SCALE : 1" = 30'-0"

ELECTRICAL SITE PLAN

SCALE : 1" = 30'-0"

1

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.3244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-5005

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1075

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.625.8952
WWW.PALACIOCOLLABORATIVE.COM

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JASON P. FAMIGLIETTI — SEAL 35230 — ENGINEER

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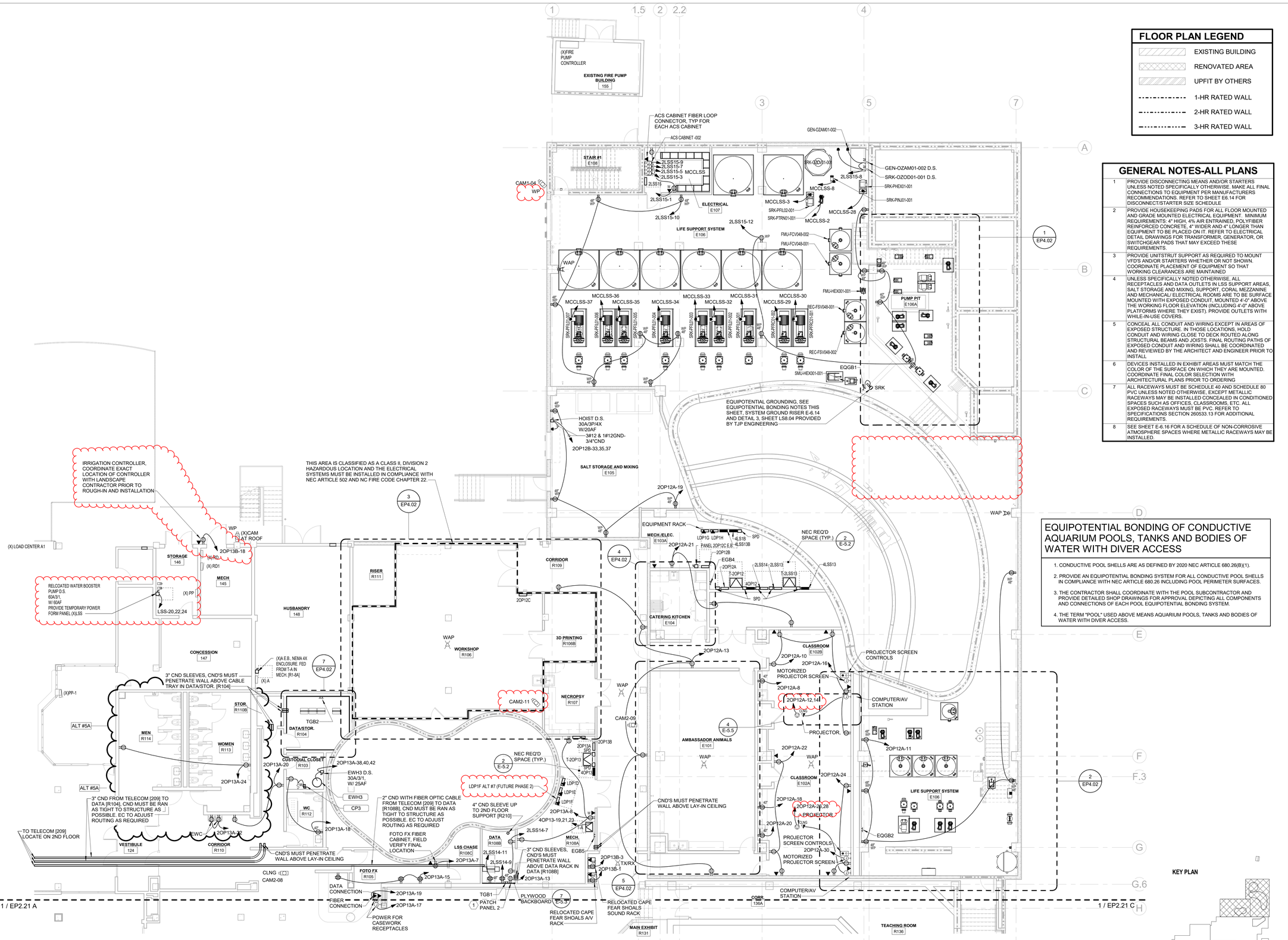
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4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

ELECTRICAL SITE PLAN

EP1.01

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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FLOOR PLAN LEGEND

- EXISTING BUILDING
- RENOVATED AREA
- UPFIT BY OTHERS
- 1-HR RATED WALL
- 2-HR RATED WALL
- 3-HR RATED WALL

GENERAL NOTES-ALL PLANS

1	PROVIDE DISCONNECTING MEANS AND/OR STARTERS UNLESS NOTED SPECIFICALLY OTHERWISE. MAKE ALL FINAL CONNECTIONS TO EQUIPMENT PER MANUFACTURERS RECOMMENDATIONS. REFER TO SHEET E6.14 FOR DISCONNECT/STARTER SIZE SCHEDULE
2	PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
3	PROVIDE UNITSTRUT SUPPORT AS REQUIRED TO MOUNT VFD'S AND/OR STARTERS WHETHER OR NOT SHOWN. COORDINATE PLACEMENT OF EQUIPMENT SO THAT WORKING CLEARANCES ARE MAINTAINED
4	UNLESS SPECIFICALLY NOTED OTHERWISE, ALL RECEPTACLES AND DATA OUTLETS IN LSS SUPPORT AREAS, SALT STORAGE AND MIXING, SUPPORT, CORAL MEZZANINE AND MECHANICAL/ ELECTRICAL ROOMS ARE TO BE SURFACE MOUNTED WITH EXPOSED CONDUIT, MOUNTED 4'-0" ABOVE THE WORKING FLOOR ELEVATION (INCLUDING 4'-0" ABOVE PLATFORMS WHERE THEY EXIST). PROVIDE OUTLETS WITH WHILE-IN-USE COVERS.
5	CONCEAL ALL CONDUIT AND WIRING EXCEPT IN AREAS OF EXPOSED STRUCTURE. IN THOSE LOCATIONS, HOLD CONDUIT AND WIRING CLOSE TO DECK ROUTED ALONG STRUCTURAL BEAMS AND JOISTS. FINAL ROUTING PATHS OF EXPOSED CONDUIT AND WIRING SHALL BE COORDINATED AND REVIEWED BY THE ARCHITECT AND ENGINEER PRIOR TO INSTALL
6	DEVICES INSTALLED IN EXHIBIT AREAS MUST MATCH THE COLOR OF THE SURFACE ON WHICH THEY ARE MOUNTED. COORDINATE FINAL COLOR SELECTION WITH ARCHITECTURAL PLANS PRIOR TO ORDERING
7	ALL RACEWAYS MUST BE SCHEDULE 40 AND SCHEDULE 80 PVC UNLESS NOTED OTHERWISE, EXCEPT METALLIC RACEWAYS MAY BE INSTALLED CONCEALED IN CONDITIONED SPACES SUCH AS OFFICES, CLASSROOMS, ETC. ALL EXPOSED RACEWAYS MUST BE PVC. REFER TO SPECIFICATIONS SECTION 260533.13 FOR ADDITIONAL REQUIREMENTS.
8	SEE SHEET E-6.16 FOR A SCHEDULE OF NON-CORROSIVE ATMOSPHERE SPACES WHERE METALLIC RACEWAYS MAY BE INSTALLED.

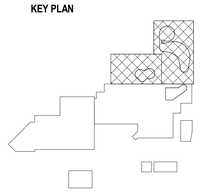
EQUIPOTENTIAL BONDING OF CONDUCTIVE AQUARIUM POOLS, TANKS AND BODIES OF WATER WITH DIVER ACCESS

1. CONDUCTIVE POOL SHELLS ARE AS DEFINED BY 2020 NEC ARTICLE 680.26(B)(1).
2. PROVIDE AN EQUIPOTENTIAL BONDING SYSTEM FOR ALL CONDUCTIVE POOL SHELLS IN COMPLIANCE WITH NEC ARTICLE 680.26 INCLUDING POOL PERIMETER SURFACES.
3. THE CONTRACTOR SHALL COORDINATE WITH THE POOL SUBCONTRACTOR AND PROVIDE DETAILED SHOP DRAWINGS FOR APPROVAL DEPICTING ALL COMPONENTS AND CONNECTIONS OF EACH POOL EQUIPOTENTIAL BONDING SYSTEM.
4. THE TERM "POOL" USED ABOVE MEANS AQUARIUM POOLS, TANKS AND BODIES OF WATER WITH DIVER ACCESS.

KEYNOTES

#	
1	POWER: ELECTRICAL CONTRACTOR MUST COORDINATE REQUIRED ELECTRICAL CHARACTERISTICS, AMPERAGE, NUMBER OF POLES, AND MOUNTING HEIGHTS OF RECEPTACLE WITH POWER SCHEDULE AND DRAWINGS PROVIDED BY ROTO GROUP, LLC.

KEY PLAN



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

1ST FLOOR PLAN - TOUCH & SHARK TANK - POWER

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

2

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.3244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 31479

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
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ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5387
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
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FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
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TELE: 910.343.9653
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LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
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WWW.SURFACE678.COM
LICENSE # C-098

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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

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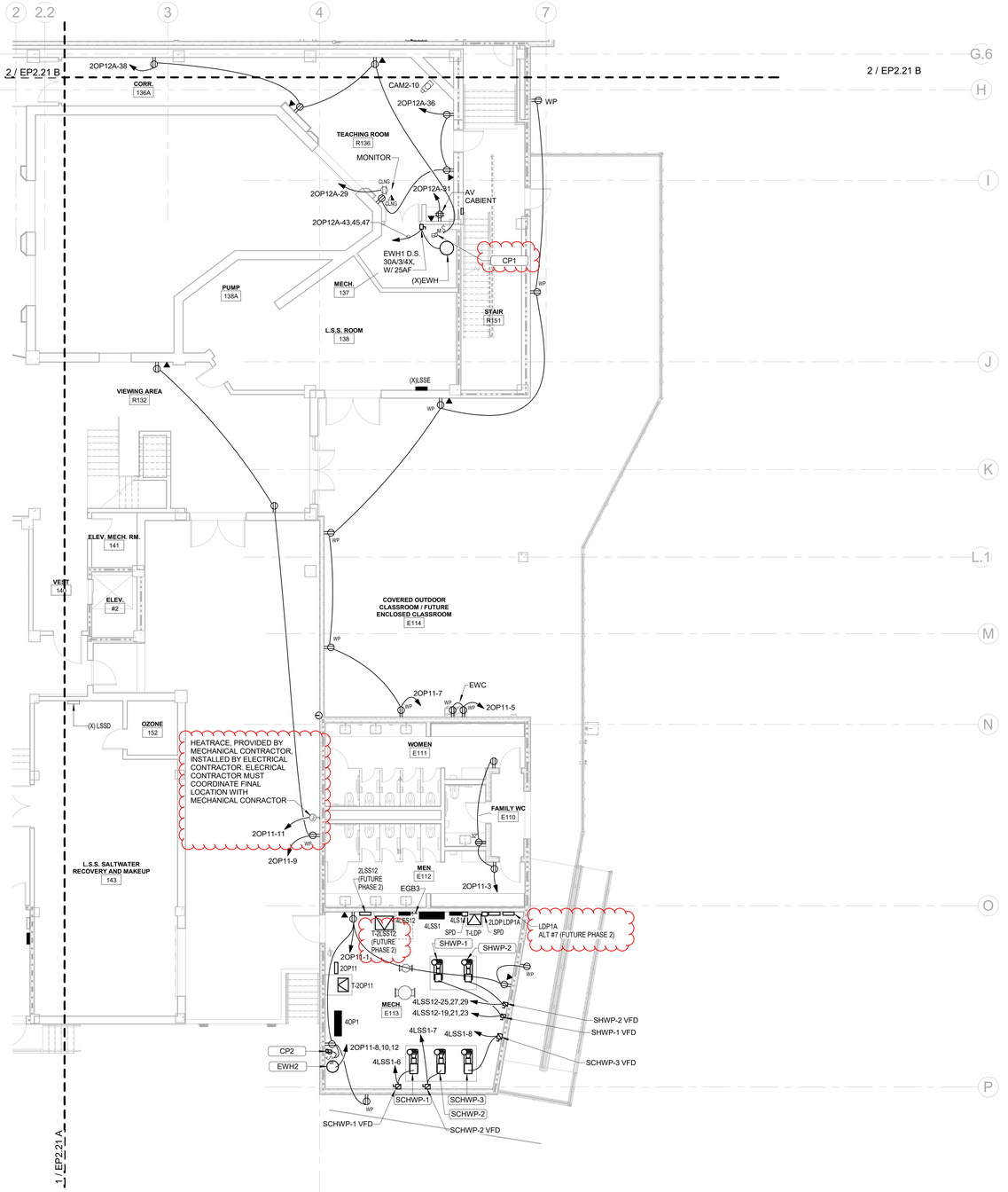
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FIRST FLOOR PLAN - TOUCH AND SHARK TANK - POWER

EP2.21 B

CBHF Engineers, PLLC
2246 Yaupon Drive
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Phone: 910.791.4000
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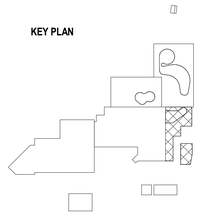
FLOOR PLAN LEGEND

- EXISTING BUILDING
- RENOVATED AREA
- UPFIT BY OTHERS
- 1-HR RATED WALL
- 2-HR RATED WALL
- 3-HR RATED WALL

GENERAL NOTES-ALL PLANS

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KEY PLAN



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

CBHF
Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
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www.cbhfengineers.com

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1ST FLOOR PLAN - SOUTHEAST WING - POWER
SCALE : 1/8" = 1'-0"

1

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
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RALEIGH, NC 27607
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DURHAM, NC 27703
TELE: 919.605.8902
WWW.PALACIOCOLLABORATIVE.COM

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PE SEAL 35230 JASON P. FAMIGLIETTI

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FIRST FLOOR PLAN - SOUTHEAST WING - POWER

EP2.21 C

GENERAL NOTES-ALL PLANS

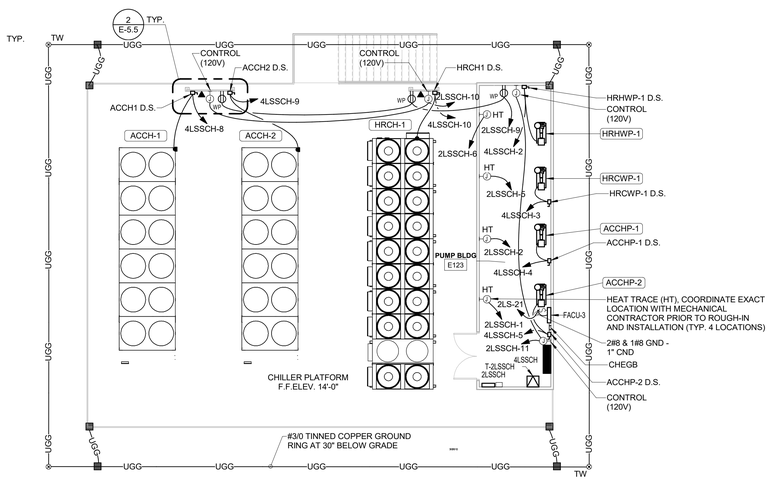
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KEYNOTES

#	
1	RECEPTACLE: UTILIZE EXITING FLUSH MOUNTED OUTLET BOX FOR INSTALLATION OF RECEPTACLE.
2	HANDICAP DOOR OPENER: RECONNECT TO EXISTING DOOR OPENER.
3	DUPLEX PUMP CONTROLLER: SEE ADDITIONAL INFORMATION DETAIL 5/E-6.15.
4	FUEL TANK MANAGEMENT PANEL: SEE ADDITIONAL INFORMATION DETAIL 5/E-6.15.

FLOOR PLAN LEGEND

- EXISTING BUILDING
- RENOVATED AREA
- UPFIT BY OTHERS
- 1-HR RATED WALL
- 2-HR RATED WALL
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NOTES:
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2. 2' ABOVE (FREEBOARD) 100-YEAR FLOOD ELEVATION IS 12'-0" (REGULATORY FLOOD PROOFING ELEVATION).
3. FUTURE PROOFING 4' ABOVE 100-YEAR FLOOD ELEVATION IS 14'-0".

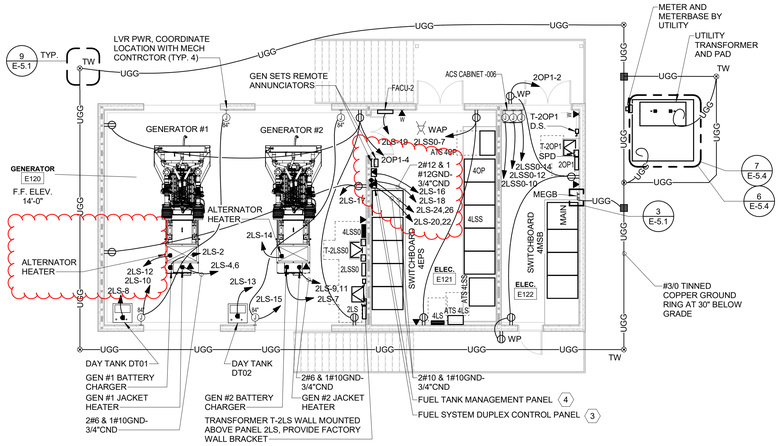
8' 4' 0' 8'

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

CHILLER PLATFORM - POWER

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

3



NOTES:
BASED ON INFORMATION FROM CIVIL DRAWING C-4:
1. THE 100-YEAR FLOOD ELEVATION (BASE FLOOD ELEV.) IS 10'-0".
2. 2' ABOVE (FREEBOARD) 100-YEAR FLOOD ELEVATION IS 12'-0" (REGULATORY FLOOD PROOFING ELEVATION).
3. FUTURE PROOFING 4' ABOVE 100-YEAR FLOOD ELEVATION IS 14'-0".

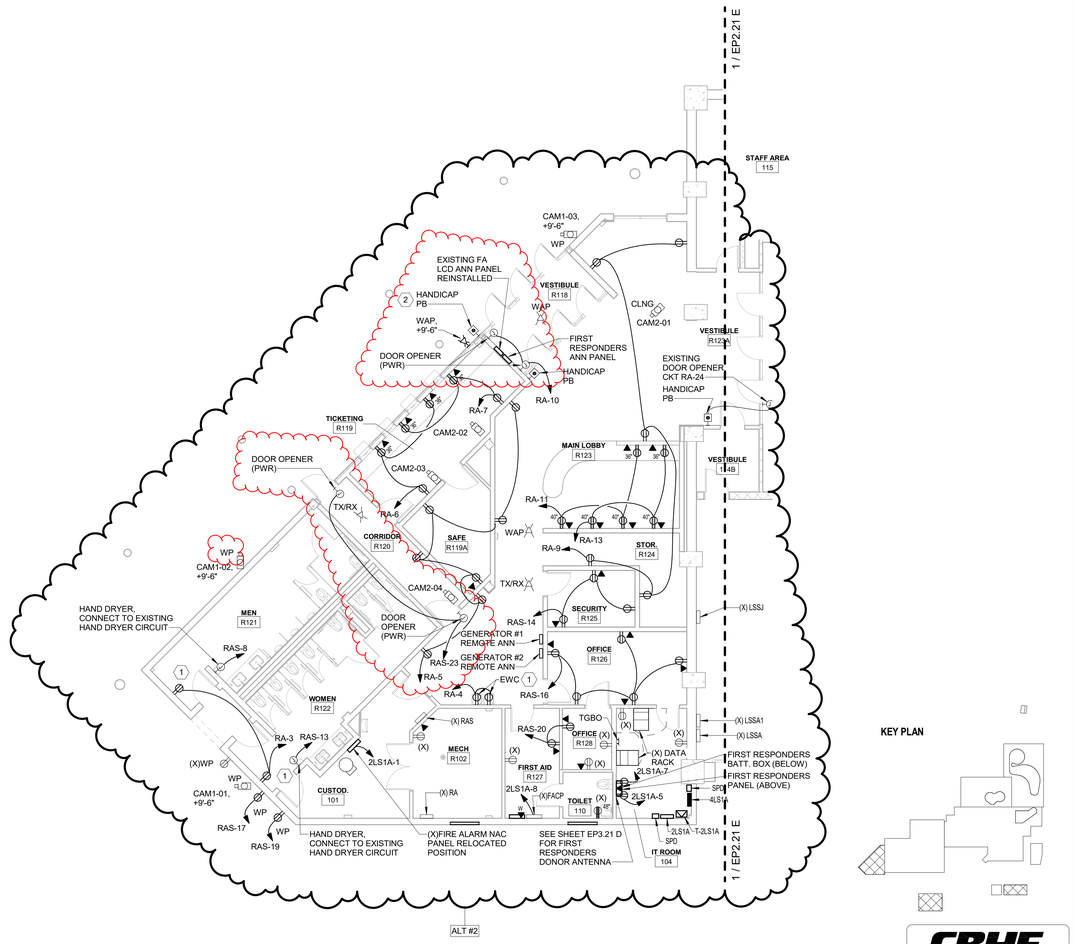
8' 4' 0' 8'

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

1ST FLOOR PLAN - GENERATOR BUILDING -POWER

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

2



KEY PLAN

8' 4' 0' 8'

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

1ST FLOOR PLAN - MAIN ENTRY - POWER

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

1

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

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310 1/2 WEST FRANKLIN STREET
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CIVIL ENGINEER
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JASON P. FAMIGLETTI — SEAL 35230 — ENGINEER

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6	11-10-25	ADDENDUM #3

FIRST FLOOR PLAN - MAIN ENTRY, GENERATOR BUILDING, CHILLER PLATFORM - POWER

EP2.21 D

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2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
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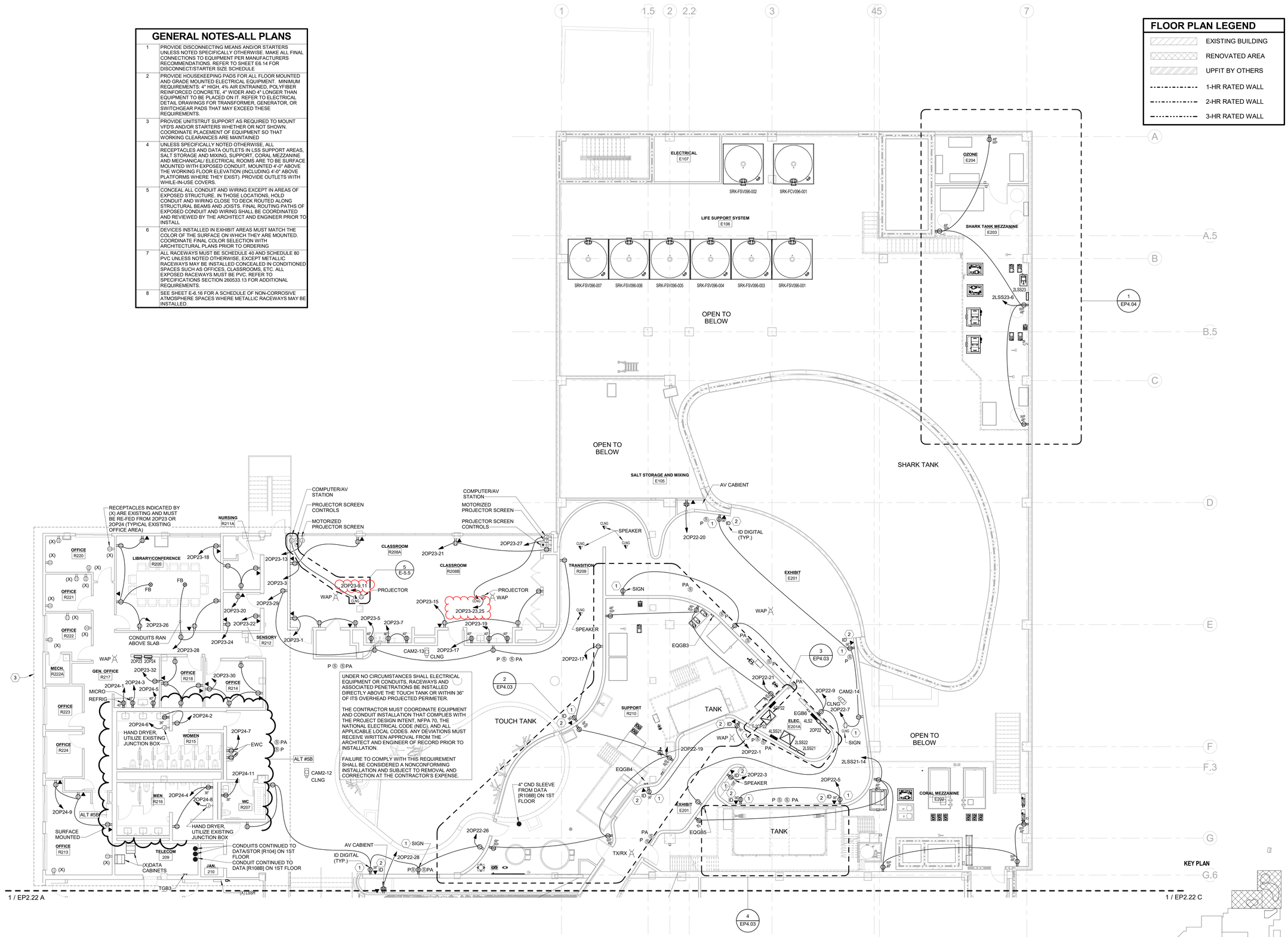
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GENERAL NOTES-ALL PLANS

1	PROVIDE DISCONNECTING MEANS AND/OR STARTERS UNLESS NOTED SPECIFICALLY OTHERWISE. MAKE ALL FINAL CONNECTIONS TO EQUIPMENT PER MANUFACTURERS RECOMMENDATIONS. REFER TO SHEET E6.14 FOR DISCONNECT/STARTER SIZE SCHEDULE
2	PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
3	PROVIDE UNITSTRUT SUPPORT AS REQUIRED TO MOUNT VFD'S AND/OR STARTERS WHETHER OR NOT SHOWN. COORDINATE PLACEMENT OF EQUIPMENT SO THAT WORKING CLEARANCES ARE MAINTAINED
4	UNLESS SPECIFICALLY NOTED OTHERWISE, ALL RECEPTACLES AND DATA OUTLETS IN LSS SUPPORT AREAS, SALT STORAGE AND MIXING, SUPPORT, CORAL MEZZANINE AND MECHANICAL/ ELECTRICAL ROOMS ARE TO BE SURFACE MOUNTED WITH EXPOSED CONDUIT. MOUNTED 4'-0" ABOVE THE WORKING FLOOR ELEVATION (INCLUDING 4'-0" ABOVE PLATFORMS WHERE THEY EXIST). PROVIDE OUTLETS WITH WHILE-IN-USE COVERS.
5	CONCEAL ALL CONDUIT AND WIRING EXCEPT IN AREAS OF EXPOSED STRUCTURE. IN THOSE LOCATIONS, HOLD CONDUIT AND WIRING CLOSE TO DECK ROUTED ALONG STRUCTURAL BEAMS AND JOISTS. FINAL ROUTING PATHS OF EXPOSED CONDUIT AND WIRING SHALL BE COORDINATED AND REVIEWED BY THE ARCHITECT AND ENGINEER PRIOR TO INSTALL.
6	DEVICES INSTALLED IN EXHIBIT AREAS MUST MATCH THE COLOR OF THE SURFACE ON WHICH THEY ARE MOUNTED. COORDINATE FINAL DEVICE SELECTION WITH ARCHITECTURAL PLANS PRIOR TO ORDERING
7	ALL RACEWAYS MUST BE SCHEDULE 40 AND SCHEDULE 80 PVC UNLESS NOTED OTHERWISE. EXCEPT METALLIC RACEWAYS MAY BE INSTALLED CONCEALED IN CONDITIONED SPACES SUCH AS OFFICES, CLASSROOMS, ETC. ALL EXPOSED RACEWAYS MUST BE PVC. REFER TO SPECIFICATIONS SECTION 260533.13 FOR ADDITIONAL REQUIREMENTS.
8	SEE SHEET E-6.16 FOR A SCHEDULE OF NON-CORROSIVE ATMOSPHERE SPACES WHERE METALLIC RACEWAYS MAY BE INSTALLED.

FLOOR PLAN LEGEND

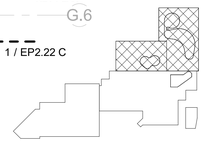
- EXISTING BUILDING
- RENOVATED AREA
- UPFIT BY OTHERS
- 1-HR RATED WALL
- 2-HR RATED WALL
- 3-HR RATED WALL



KEYNOTES

#	
1	POWER: ELECTRICAL CONTRACTOR MUST COORDINATE REQUIRED ELECTRICAL CHARACTERISTICS, AMPERAGE, NUMBER OF POLES, AND MOUNTING HEIGHTS OF RECEPTACLE WITH POWER SCHEDULE AND DRAWINGS PROVIDED BY ROTO GROUP, LLC.
2	DATA: ELECTRICAL CONTRACTOR MUST COORDINATE QUANTITY OF PORTS, FINAL LOCATIONS AND MOUNTING HEIGHTS OF DATA DEVICES WITH DRAWINGS PROVIDED BY ROTO GROUP, LLC.
3	POWER: SEVERAL LOADS WERE DISCONNECTED DURING DEMOLITION WHEN PANELS DP, DP1, DP2, AND TLP WERE REMOVED. THE ELECTRICAL CONTRACTOR MUST UTILIZE SPARE BREAKERS IN PANELS 2OP23 AND 2OP24 TO REFEED THESE LOADS.

KEY PLAN



8' 4' 0' 8'
SCALE : 1/8" = 1'-0"

2ND FLOOR PLAN - TOUCH & SHARK TANK - POWER
SCALE : 1/8" = 1'-0"

1

SZOSTAK DESIGN

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ARCHITECT
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CHAPEL HILL, NORTH CAROLINA 27516
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FAX: 919.960.7967
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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
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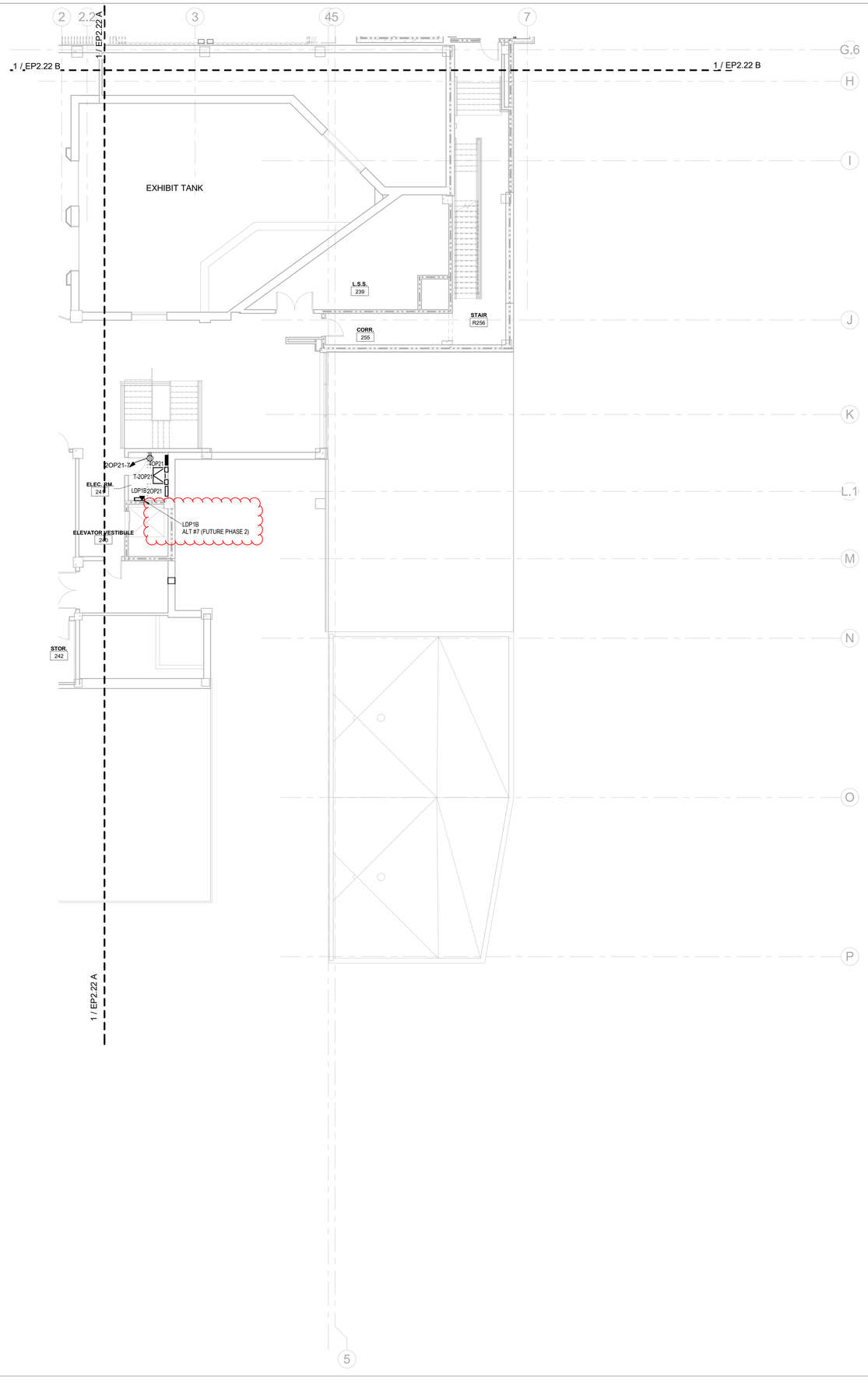
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SECOND FLOOR PLAN - TOUCH AND SHARK TANK - POWER

EP2.22 B

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2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
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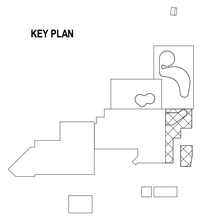
FLOOR PLAN LEGEND

- EXISTING BUILDING
- RENOVATED AREA
- UPFIT BY OTHERS
- 1-HR RATED WALL
- 2-HR RATED WALL
- 3-HR RATED WALL

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KEY PLAN



8' 4' 0' 8'

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

2ND FLOOR PLAN - SOUTHEAST WING - POWER

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

1

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
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SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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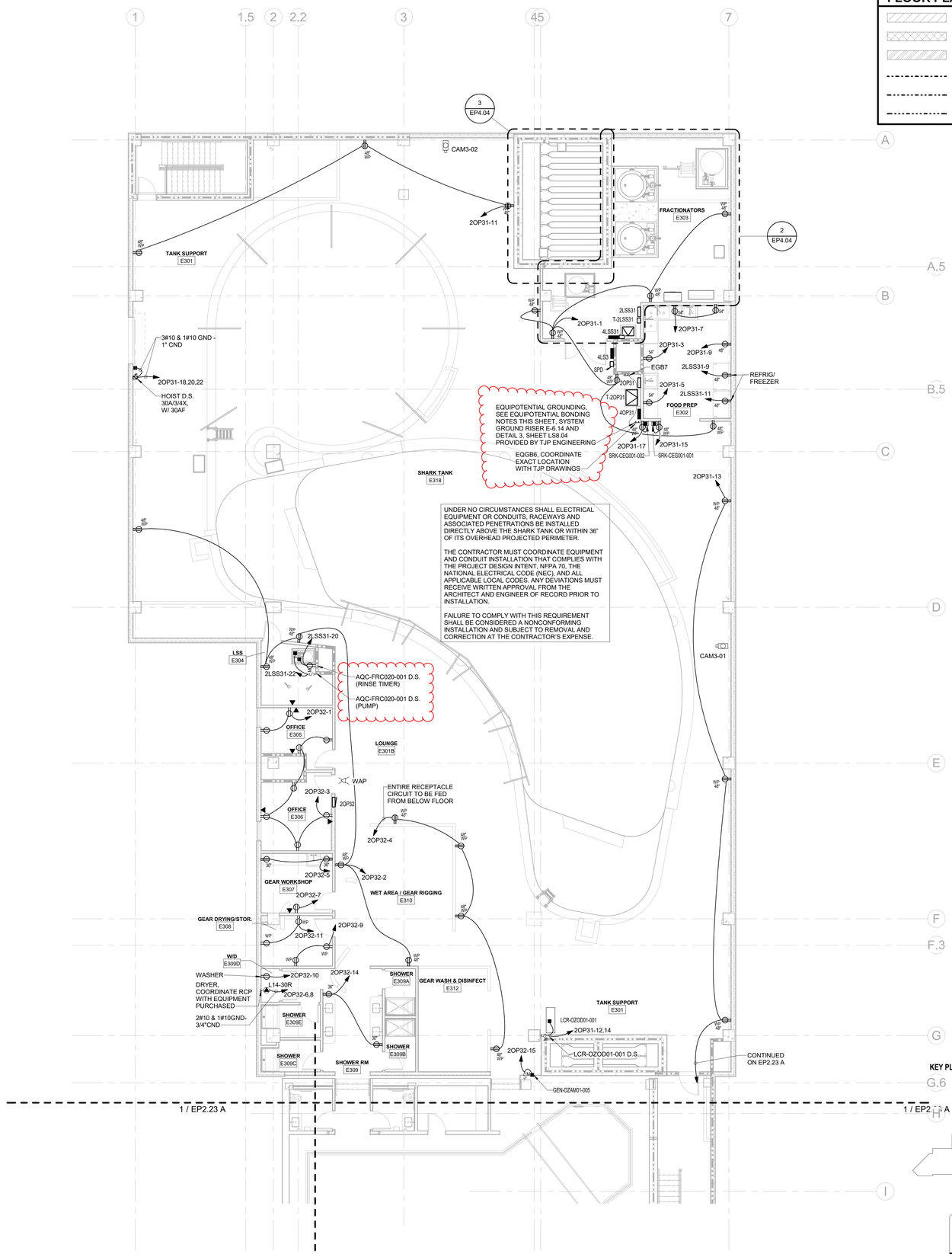
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SECOND FLOOR PLAN - SOUTHEAST WING - POWER

EP2.22 C

EQUIPOTENTIAL BONDING OF CONDUCTIVE AQUARIUM POOLS, TANKS AND BODIES OF WATER WITH DIVER ACCESS

1. CONDUCTIVE POOL SHELLS ARE AS DEFINED BY 2020 NEC ARTICLE 680.26(B)(1).
2. PROVIDE AN EQUIPOTENTIAL BONDING SYSTEM FOR ALL CONDUCTIVE POOL SHELLS IN COMPLIANCE WITH NEC ARTICLE 680.26 INCLUDING POOL PERIMETER SURFACES.
3. THE CONTRACTOR SHALL COORDINATE WITH THE POOL SUBCONTRACTOR AND PROVIDE DETAILED SHOP DRAWINGS FOR APPROVAL DEPICTING ALL COMPONENTS AND CONNECTIONS OF EACH POOL EQUIPOTENTIAL BONDING SYSTEM.
4. THE TERM "POOL" USED ABOVE MEANS AQUARIUM POOLS, TANKS AND BODIES OF WATER WITH DIVER ACCESS.



FLOOR PLAN LEGEND

- EXISTING BUILDING
- RENOVATED AREA
- UPFIT BY OTHERS
- 1-HR RATED WALL
- 2-HR RATED WALL
- 3-HR RATED WALL

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

3RD FLOOR PLAN - SHARK TANK - POWER
SCALE : 1/8" = 1'-0"

1

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THIRD FLOOR PLAN - SHARK TANK - POWER

EP2.23 B

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3	PROVIDE UNITSTRUT SUPPORT AS REQUIRED TO MOUNT VFD'S AND/OR STARTERS WHETHER OR NOT SHOWN. COORDINATE PLACEMENT OF EQUIPMENT SO THAT WORKING CLEARANCES ARE MAINTAINED
4	UNLESS SPECIFICALLY NOTED OTHERWISE, ALL RECEPTACLES AND DATA OUTLETS IN LSS SUPPORT AREAS, SALT STORAGE AND MIXING, SUPPORT, CORAL MEZZANINE AND MECHANICAL/ ELECTRICAL ROOMS ARE TO BE SURFACE MOUNTED WITH EXPOSED CONDUIT, MOUNTED 4'-0" ABOVE THE WORKING FLOOR ELEVATION (INCLUDING 4'-0" ABOVE PLATFORMS WHERE THEY EXIST). PROVIDE OUTLETS WITH WHILE-IN-USE COVERS.
5	CONCEAL ALL CONDUIT AND WIRING EXCEPT IN AREAS OF EXPOSED STRUCTURE. IN THOSE LOCATIONS, HOLD CONDUIT AND WIRING CLOSE TO DECK ROUTED ALONG STRUCTURAL BEAMS AND JOISTS. FINAL ROUTING PATHS OF EXPOSED CONDUIT AND WIRING SHALL BE COORDINATED AND REVIEWED BY THE ARCHITECT AND ENGINEER PRIOR TO INSTALL
6	DEVICES INSTALLED IN EXHIBIT AREAS MUST MATCH THE COLOR OF THE SURFACE ON WHICH THEY ARE MOUNTED. COORDINATE FINAL COLOR SELECTION WITH ARCHITECTURAL PLANS PRIOR TO ORDERING
7	ALL RACEWAYS MUST BE SCHEDULE 40 AND SCHEDULE 80 PVC UNLESS NOTED OTHERWISE, EXCEPT METALLIC RACEWAYS MAY BE INSTALLED CONCEALED IN CONDITIONED SPACES SUCH AS OFFICES, CLASSROOMS, ETC. ALL EXPOSED RACEWAYS MUST BE PVC. REFER TO SPECIFICATIONS SECTION 260533.13 FOR ADDITIONAL REQUIREMENTS.
8	SEE SHEET E-6.16 FOR A SCHEDULE OF NON-CORROSIVE ATMOSPHERE SPACES WHERE METALLIC RACEWAYS MAY BE INSTALLED.

FLOOR PLAN LEGEND

- EXISTING BUILDING
- RENOVATED AREA
- UPFIT BY OTHERS
- 1-HR RATED WALL
- 2-HR RATED WALL
- 3-HR RATED WALL

EXISTING FIRE PUMP BUILDING 155

STAIR #1 E108

ELECTRICAL E107

LIFE SUPPORT SYSTEM E106

PUMP PIT E106A

SALT STORAGE AND MIXING E105

THIS AREA IS CLASSIFIED AS A CLASS II, DIVISION 2 HAZARDOUS LOCATION AND THE ELECTRICAL SYSTEMS MUST BE INSTALLED IN COMPLIANCE WITH NEC ARTICLE 502 AND NC FIRE CODE CHAPTER 22.

HVAC CTRL POWER, COORDINATE EXACT LOCATION WITH MECH CONTRACTOR

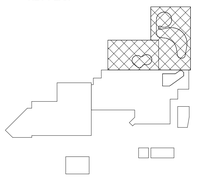
STORAGE 146 · RD · RD1 · MECH 145 · FCU-04 D.S. · 2LSS14-10 · HUSBANDRY 148 · FCU-04 · 2OP12B-11 · FCU-24 · FCU-17 · FCU-24 D.S. · FCU-17 D.S. · 2OP12B-9 · CONCESSION 147 · (X)DAH-1 · (X) (X)PP-1 · MEN R114 · WOMEN R113 · PV4 D.S. MOUNTED ABOVE CEILING AT UNIT, CONTROLLED VIA BAS SYSTEM · PV4 · 2OP13A-21 · ALT #5A · DATA/STOR. R104 · DAH-13 · CUSTODIAL CLOSET R103 · WC R112 · MECH R110C · FCU-22 · 2OP13B-8 · VESTIBULE 124 · CORRIDOR R110 · RISER R111 · CORRIDOR R109 · FCU-23 D.S. · FCU-23 · 2OP12C · 2OP12B-8 3D PRINTING R106B · PROVIDE WITH DUST TIGHT, GASKETED, WEATHERPROOF, VERTICAL SINGLE POLE TOGGLE SWITCH COVER. · PV12 D.S. · 2OP12B-10 · PV12 · PV7 · PV7 D.S. · 2OP12B-6 · PV7 D.S. MOUNTED ON WALL AT UNIT, CONTROLLED VIA BAS SYSTEM · WORKSHOP R106 · 2OP12B-7 · FCU-18 · FCU-18 D.S. · MECH R106C · TO DHP-13 ON ROOF, SEE EP3-2.4 B · NECROPSY R107 · 2OP13B 2OP13A · T-2OP13 · 4OP13 · TO DHP-9 ON ROOF, SEE EP3-2.4 B · DAH-9 · 2LSS13-52,54 · DATA R108B · 2OP13B-14 · T-A · 4OP13-2,4,6 · HVAC CTRL POWER, COORDINATE EXACT LOCATION WITH MECH CONTRACTOR · FCU-10 · FCU-10 D.S. · MECH R105A · FCU-16 D.S. · FCU-16 · 2OP12B-5 · LDP1G · 4LSS13B · LDP1H · 4LS1B · FCU-15 D.S. · 2OP12B-3 · 2OP12B · FCU-15 · MECH./ELEC. E103A · TO DHP-11 ON ROOF, SEE EP3-2.4 B · T-2OP12 · 2OP12H · 4OP12 · 2LSS14 · 2LSS15 · T-2LSS13 · 4LSS13 · DAH-11 · DAH-11 D.S. · FCU-13 D.S. · 2OP12B-1 · FCU-13 · 4LSS13-43,45,47 · FCU-14 D.S. · FCU-14 · CLASSROOM E102B · 2OP12B-4 · FCU-12 · FCU-11 D.S. · AMBASSADOR ANIMALS E101 · 2OP12B-2 · FCU-11 D.S. · FCU-11 · CLASSROOM E102A · CORR. 136A · TEACHING ROOM R136 · FOTO FX R105A

1 / EP3.21 A · 1 / EP3.21 A · 1 / EP3.21 C · 1 / EP3.21 C · EP3.21 A / 1 / 1 / EP3.21 C

1 · 1.5 · 2 · 2.2 · 4 · 4.1 · 5.9 · 7 · E14

A · A.3 · A.5 · B · B.5 · C · D · E · F · F.3 · G · G.6 · H · I

KEY PLAN



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

1ST FLOOR PLAN - TOUCH & SHARK TANK - HVAC POWER

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

1

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TEL/: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
BEND, OR 97707
TEL/: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-5005

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EXHIBIT DESIGNER
7051 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TEL/: 617.760.8690
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TEL/: 919.832.5587
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CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TEL/: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TEL/: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TEL/: 910.343.9653
FAX: 910.343.9654
WWW.NTENGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TEL/: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TEL/: 910.452.4210
WWW.CHEATHAMFA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TEL/: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

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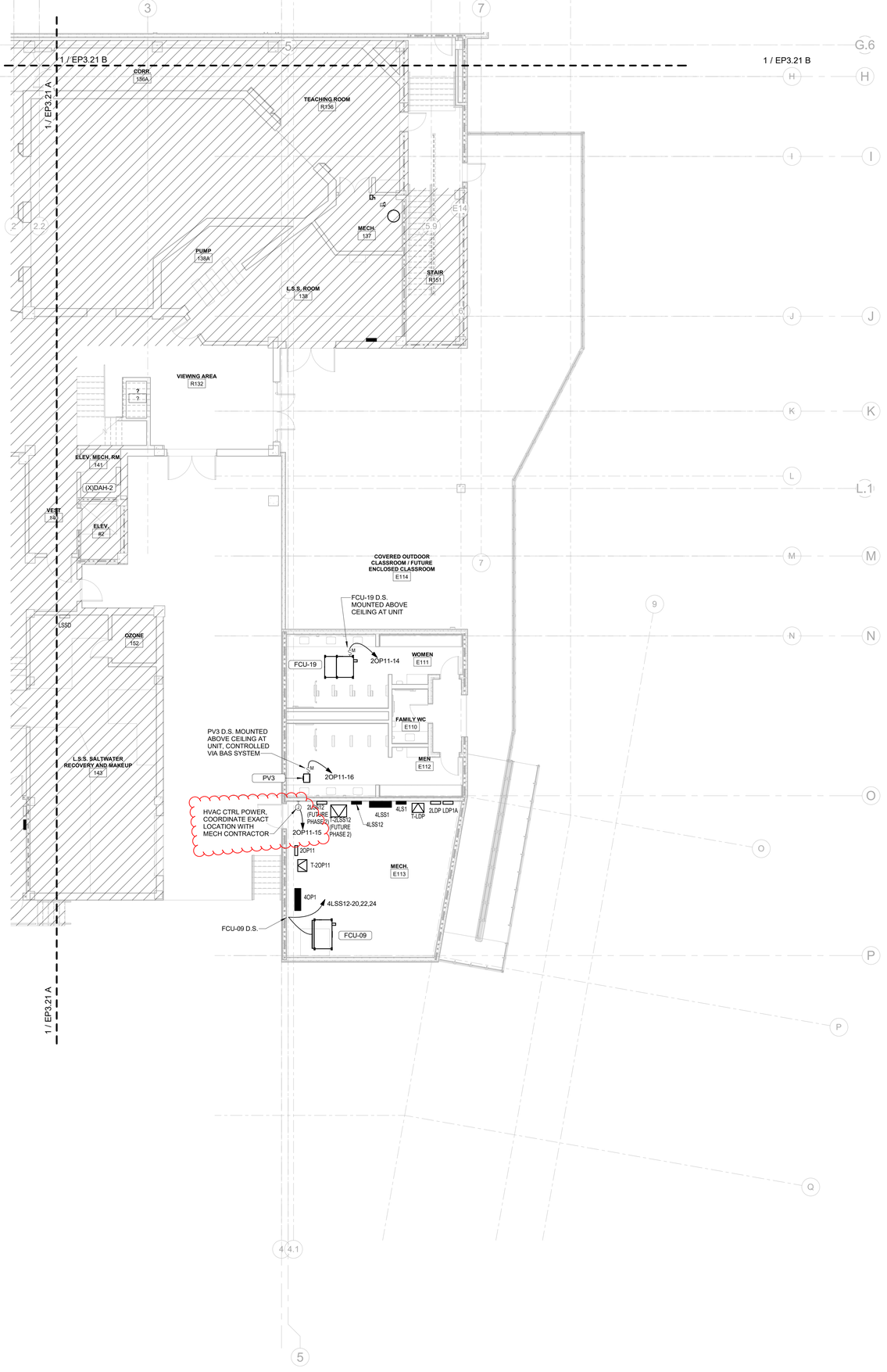
JASON P. FAMIGLETTI · SEAL 35230 · ENGINEER

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3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

FIRST FLOOR PLAN - TOUCH AND SHARK TANK - HVAC POWER

EP3.21 B



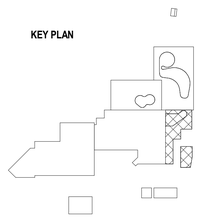
FLOOR PLAN LEGEND

- EXISTING BUILDING
- RENOVATED AREA
- UPFIT BY OTHERS
- 1-HR RATED WALL
- 2-HR RATED WALL
- 3-HR RATED WALL

GENERAL NOTES-ALL PLANS

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8	SEE SHEET E-6.16 FOR A SCHEDULE OF NON-CORROSIVE ATMOSPHERE SPACES WHERE METALLIC RACEWAYS MAY BE INSTALLED.

KEY PLAN



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

1ST FLOOR PLAN - EDUCATION WING - HVAC POWER

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

1

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
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LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1075

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8902
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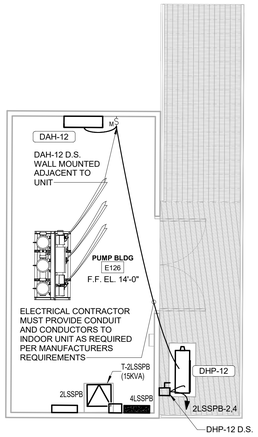
SEAL 35230 — JASON P. FAMIGLIETTI — PE — ENGINEER — NOT FOR CONSTRUCTION

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FIRST FLOOR PLAN - SOUTHEAST WING - HVAC POWER

EP3.21 C



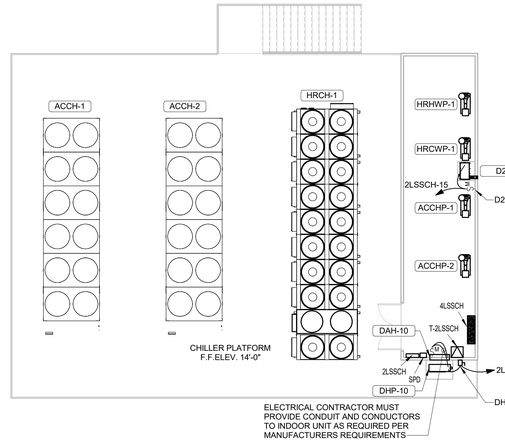
NOTES:
BASED ON INFORMATION FROM CIVIL DRAWING C-4:
1. THE 100-YEAR FLOOD ELEVATION (BASE FLOOD ELEV.) IS 10'-0".
2. 2' ABOVE (FREEBOARD) 100-YEAR FLOOD ELEVATION IS 12'-0" (REGULATORY FLOOD PROOFING ELEVATION).
3. FUTURE PROOFING 4' ABOVE 100-YEAR FLOOD ELEVATION IS 14'-0".

4' 2' 0' 4'

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

DOMESTIC WATER BOOSTER PUMP BLDG - HVAC POWER

SCALE : 1/4" = 1'-0" — 5



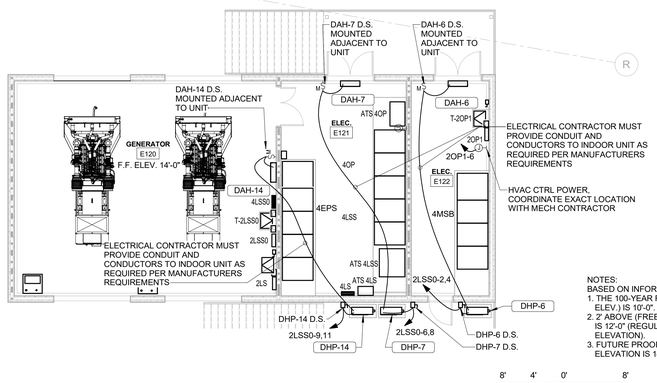
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8' 4' 0' 8'

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

CHILLER PLATFORM - POWER HVAC

SCALE : 1/8" = 1'-0" — 4



NOTES:
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8' 4' 0' 8'

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

1ST FLOOR PLAN - GENERATOR BUILDING -HVAC POWER

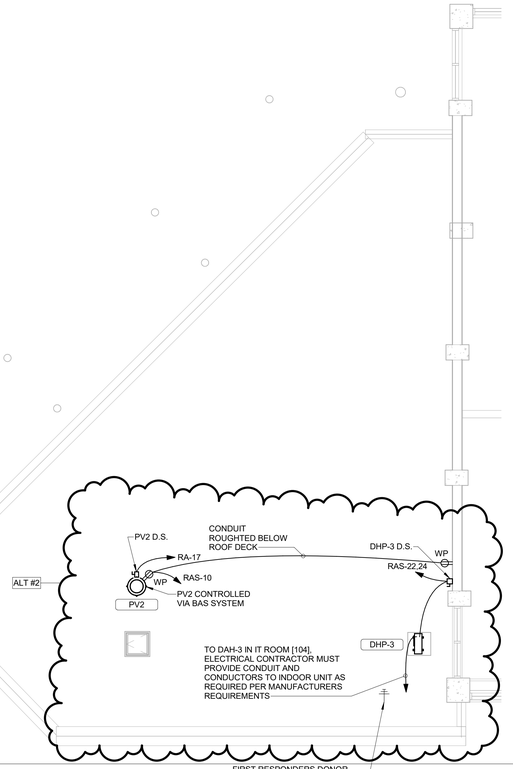
SCALE : 1/8" = 1'-0" — 3

FLOOR PLAN LEGEND

- EXISTING BUILDING
- RENOVATED AREA
- UPFIT BY OTHERS
- 1-HR RATED WALL
- 2-HR RATED WALL
- 3-HR RATED WALL

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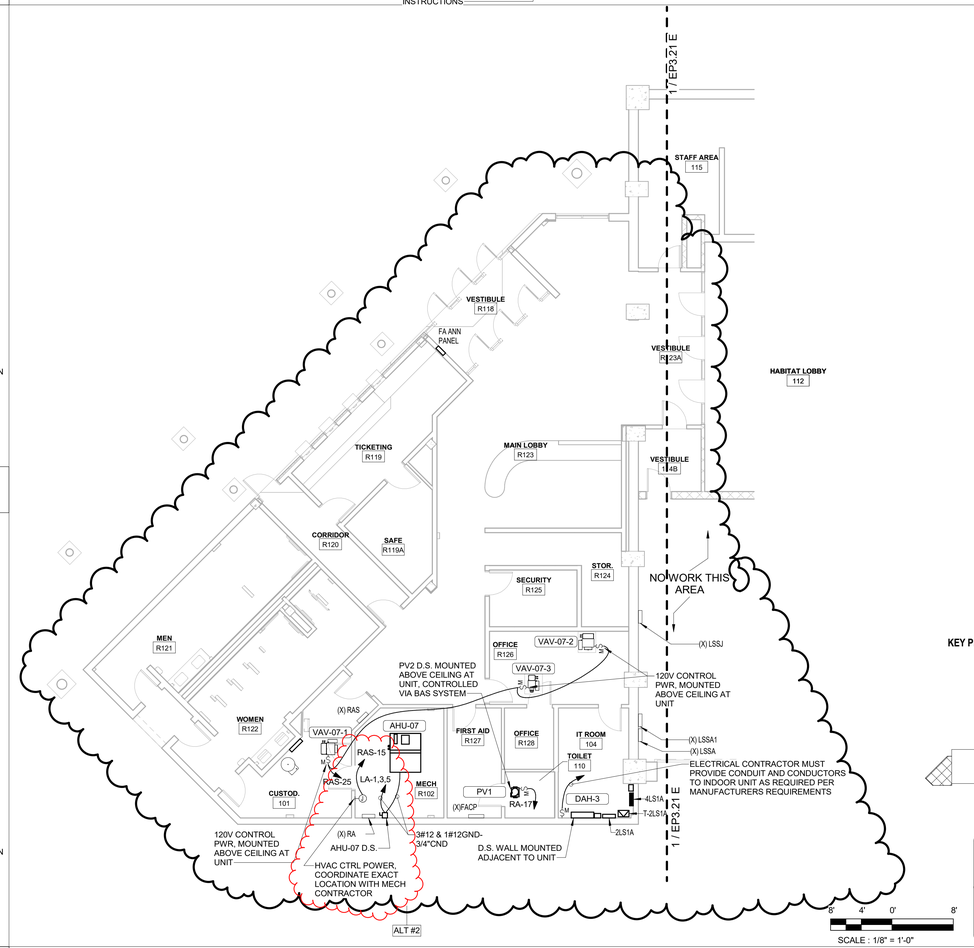


8' 4' 0' 8'

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

ROOF PLAN - MAIN ENTRY

SCALE : 1/8" = 1'-0" — 2



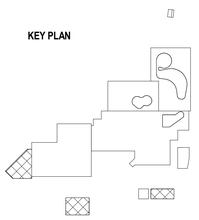
8' 4' 0' 8'

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

1ST FLOOR PLAN - MAIN ENTRY - HVAC POWER

SCALE : 1/8" = 1'-0" — 1

KEY PLAN



SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
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SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.3244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
BEND, OR 97707
TELE: 619.423.8700
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FAX: 910.791.5266
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LICENSE # P-0506

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WWW.LIGHTSWITCH.NET

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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
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FAX: 919.419.1669
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LICENSE # C-098

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NOT FOR CONSTRUCTION

JASON P. FAMIGLIETTI — SEAL 35230 — ENGINEER

NOT FOR CONSTRUCTION

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3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

FIRST FLOOR PLAN - MAIN ENTRY, BOOSTER PUMP BLDG & MECH BLDG - HVAC POWER

EP3.21 D

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

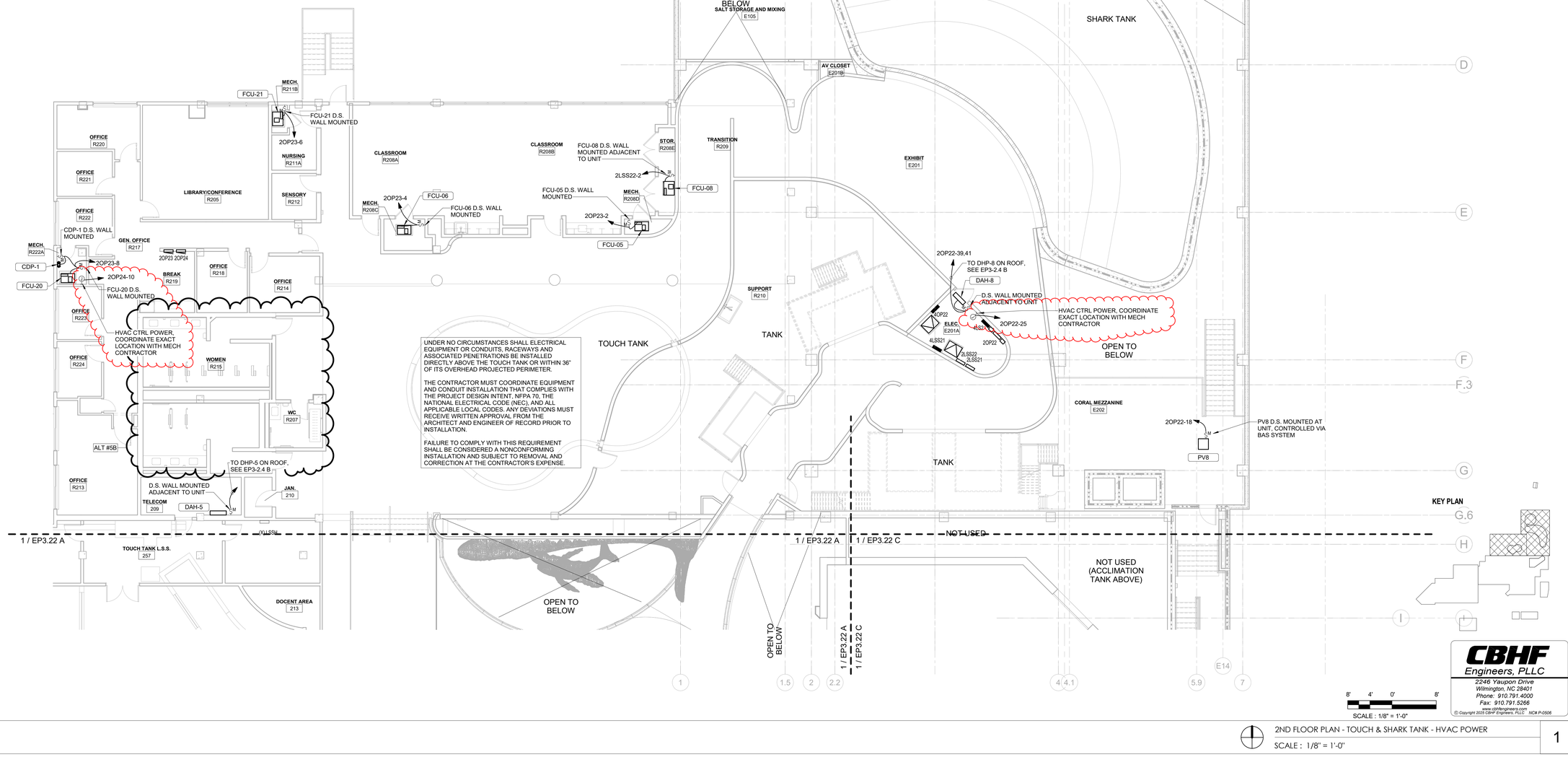
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GENERAL NOTES-ALL PLANS

1	PROVIDE DISCONNECTING MEANS AND/OR STARTERS UNLESS NOTED SPECIFICALLY OTHERWISE. MAKE ALL FINAL CONNECTIONS TO EQUIPMENT PER MANUFACTURERS RECOMMENDATIONS. REFER TO SHEET E6.14 FOR DISCONNECT/STARTER SIZE SCHEDULE
2	PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
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5	CONCEAL ALL CONDUIT AND WIRING EXCEPT IN AREAS OF EXPOSED STRUCTURE. IN THOSE LOCATIONS, HOLD CONDUIT AND WIRING CLOSE TO DECK ROUTED ALONG STRUCTURAL BEAMS AND JOISTS. FINAL ROUTING PATHS OF EXPOSED CONDUIT AND WIRING SHALL BE COORDINATED AND REVIEWED BY THE ARCHITECT AND ENGINEER PRIOR TO INSTALL
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8	SEE SHEET E-6.16 FOR A SCHEDULE OF NON-CORROSIVE ATMOSPHERE SPACES WHERE METALLIC RACEWAYS MAY BE INSTALLED.

FLOOR PLAN LEGEND

- EXISTING BUILDING
- RENOVATED AREA
- UPFIT BY OTHERS
- 1-HR RATED WALL
- 2-HR RATED WALL
- 3-HR RATED WALL



8' 4' 0' 8'
SCALE : 1/8" = 1'-0"

2ND FLOOR PLAN - TOUCH & SHARK TANK - HVAC POWER
SCALE : 1/8" = 1'-0"

1

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TEL/F: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
BEND, OR 97707
TEL/F: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-5005

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EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
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STRUCTURAL ENGINEER
5400 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
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SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 130
DURHAM, NC 27701
TEL/F: 919.419.1199
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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
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COST ESTIMATOR
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JASON P. FAMIGLIETTI PE SEAL 35230 ENGINEER

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SECOND FLOOR PLAN - TOUCH AND SHARK TANK - HVAC POWER

EP3.22 B

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

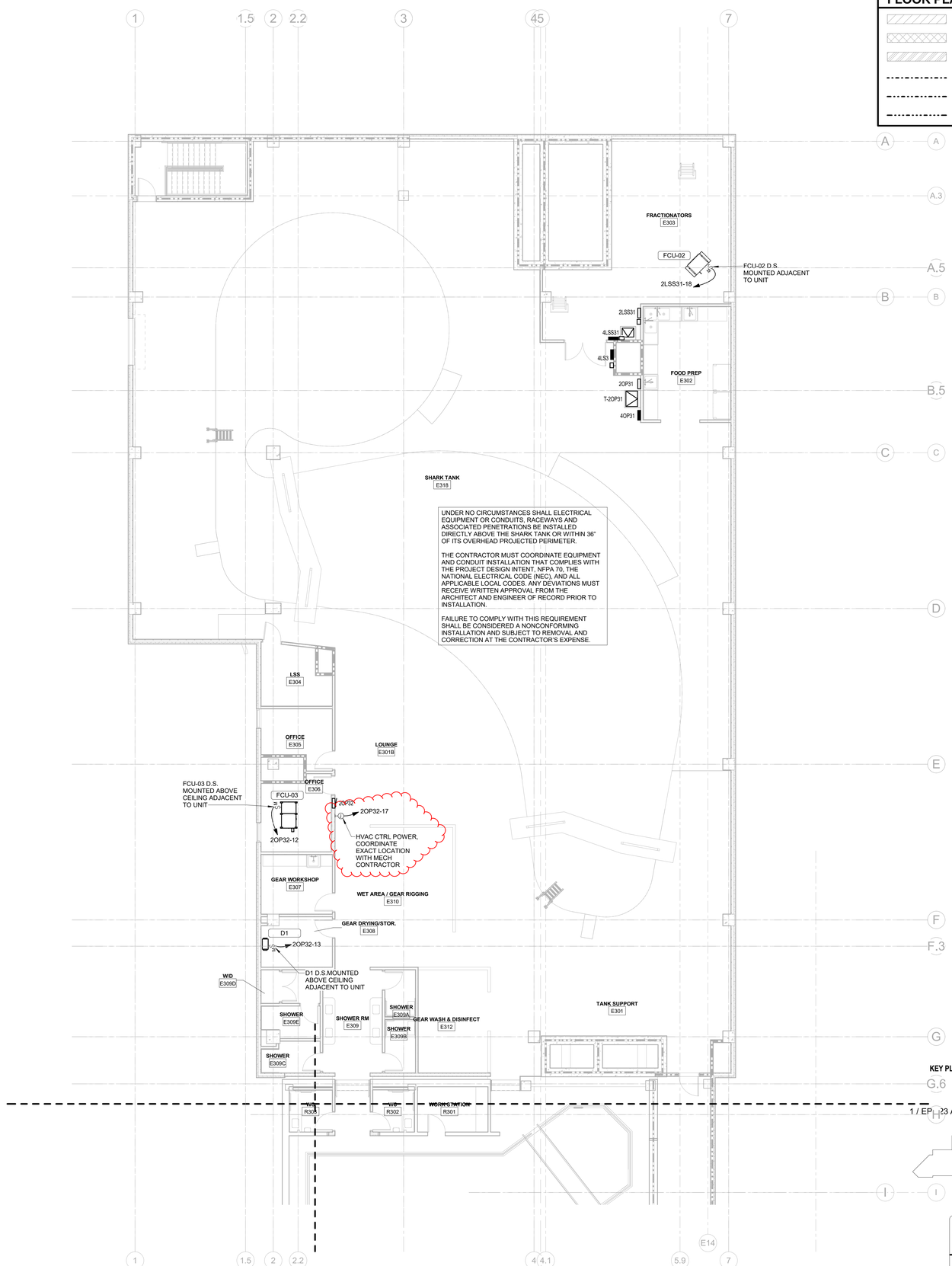
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- UPFIT BY OTHERS
- 1-HR RATED WALL
- 2-HR RATED WALL
- 3-HR RATED WALL



8' 4' 0' 8'

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

3RD FLOOR PLAN - SHARK TANK - HVAC POWER

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

1

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TEL#: 919.929.3244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
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MEP ENGINEER
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TEL#: 910.343.9653
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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TEL#: 919.419.1779
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DURHAM, NC 27703
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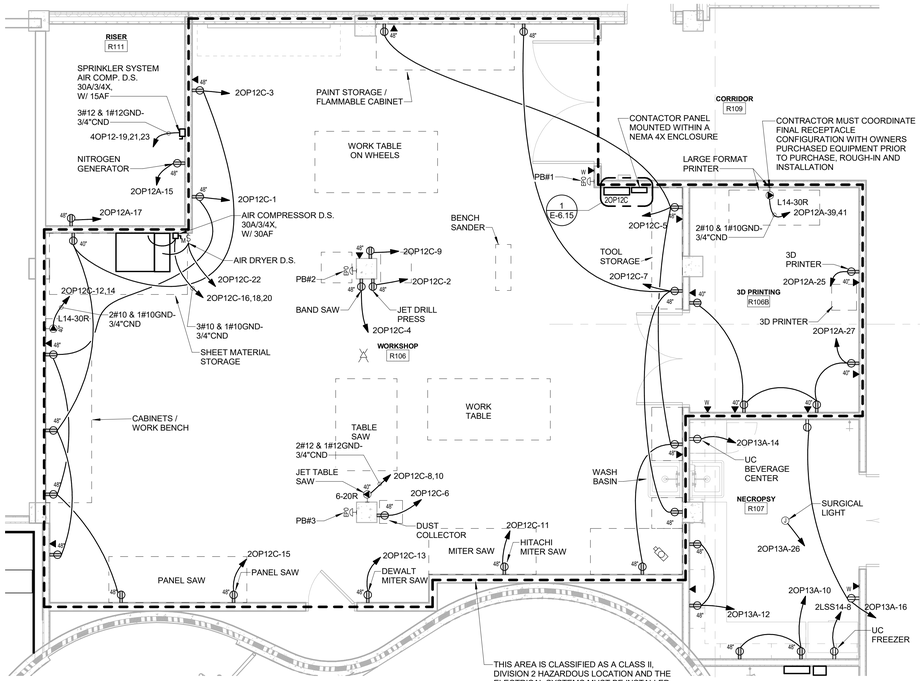
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THIRD FLOOR PLAN - SHARK TANK - HVAC POWER

EP3.23 B

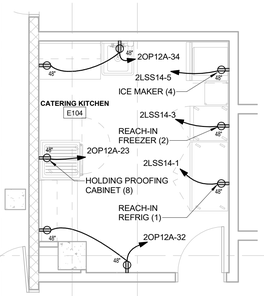
RECEPTACLES IN THE CLASS II, DIVISION 2 AREA:
120V, 20A: CROUSE HINDS POWERGARD MODEL CFS175-2023-M15 WITH MATCHING CORD CAP, OR EQUIVALENT BY KILLARK OR APPLETON.
208V, 20A: CROUSE HINDS POWERGARD MODEL CFS175-20232-M15 WITH MATCHING CORD CAP, OR EQUIVALENT BY KILLARK OR APPLETON.
208V, 30A: CROUSE HINDS POWERMATE MODEL CCP3033 SERIES WITH MATCHING CORD CAP, OR EQUIVALENT BY KILLARK OR APPLETON.



1ST FLOOR PLAN - ENLARGED EXPANDED WORKSHOP R106, CNC/3D PRNT R106B, NECROPSY R107 - POWER

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

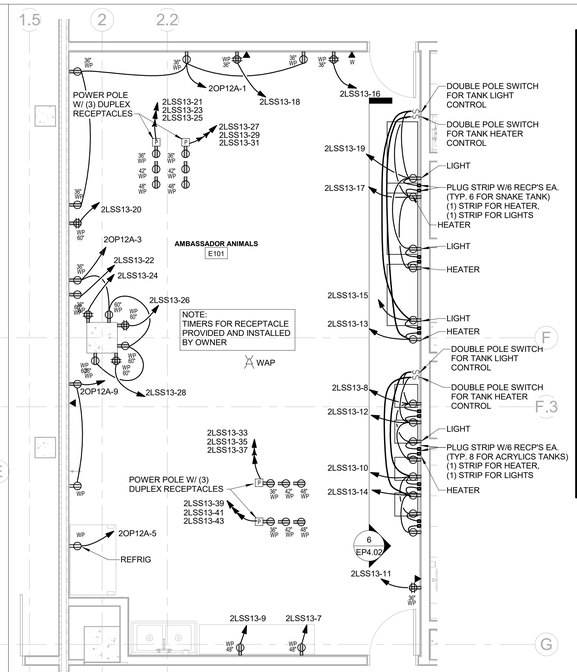
3



FIRST FLOOR - ENLARGED CATERING KITCHEN E104 - POWER

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

4



1ST FLOOR PLAN - ENLARGED AMBASSADOR ANIMALS E101 - POWER

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

5

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SZOSTAK DESIGN

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 913-679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 203H
BEND, OR 97707
TELE: 619.423.8700
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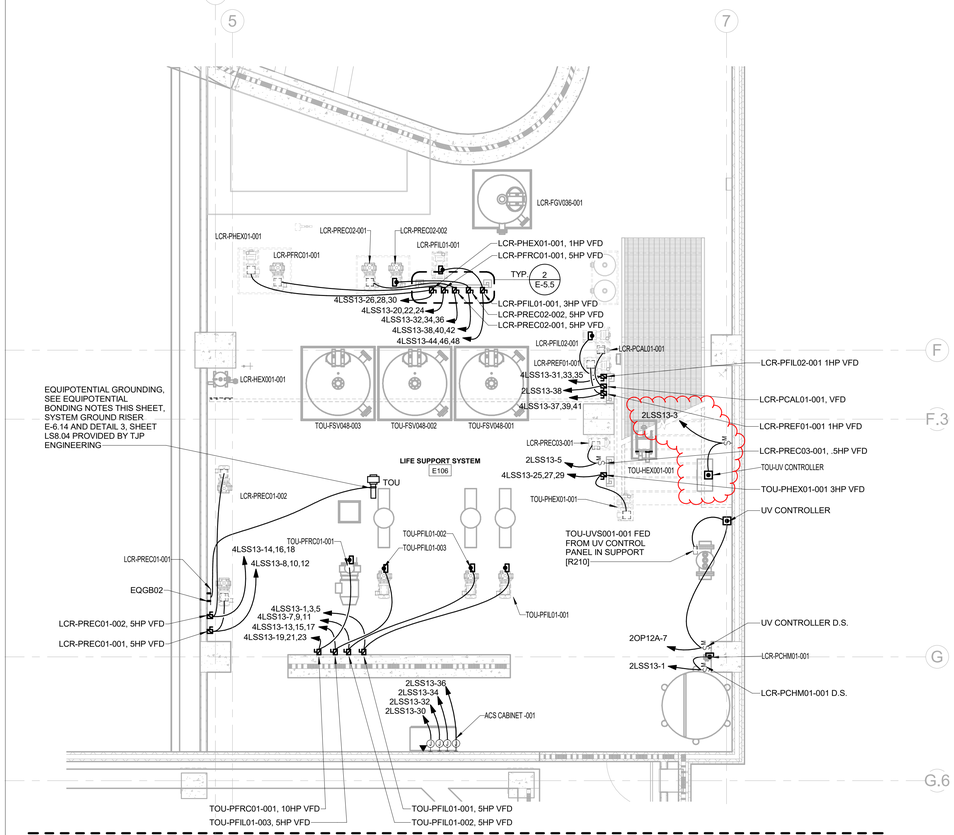
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
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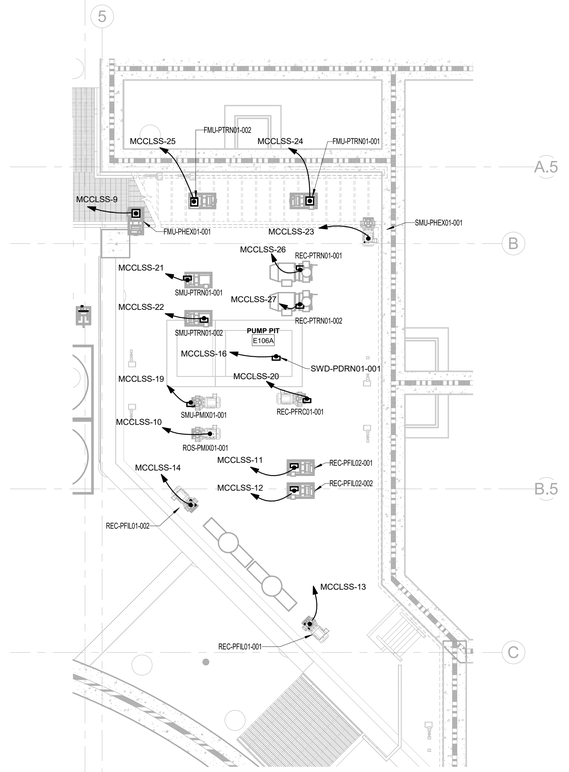
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1ST FLOOR PLAN - ENLG LIFE SUPPORT SYSTEM E106 - LOWER LEVEL

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

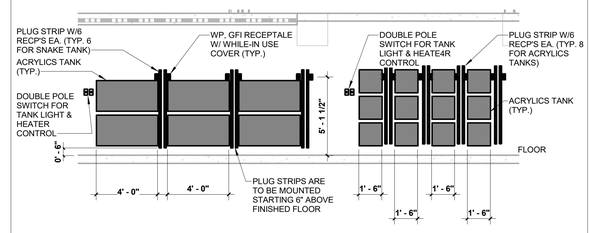
2



1ST FLOOR PLAN - ENLG LIFE SUPPORT SYSTEM PUMP PIT E103A - POWER

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

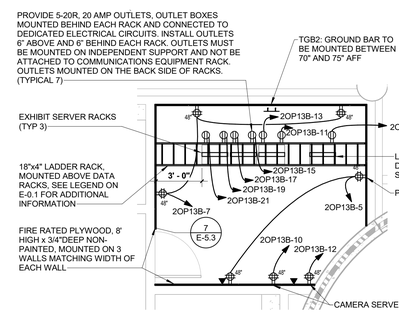
1



ELECTRICAL TANK ELEVATION

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

6



1ST FLOOR PLAN - DATA/STOR R104 - POWER

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

7

EQUIPOTENTIAL BONDING OF CONDUCTIVE AQUARIUM POOLS, TANKS AND BODIES OF WATER WITH DIVER ACCESS

1. CONDUCTIVE POOL SHELLS ARE AS DEFINED BY 2020 NEC ARTICLE 680.26(B)(1).
2. PROVIDE AN EQUIPOTENTIAL BONDING SYSTEM FOR ALL CONDUCTIVE POOL SHELLS IN COMPLIANCE WITH NEC ARTICLE 680.26 INCLUDING POOL PERIMETER SURFACES.
3. THE CONTRACTOR SHALL COORDINATE WITH THE POOL SUBCONTRACTOR AND PROVIDE DETAILED SHOP DRAWINGS FOR APPROVAL DEPICTING ALL COMPONENTS AND CONNECTIONS OF EACH POOL EQUIPOTENTIAL BONDING SYSTEM.
4. THE TERM "POOL" USED ABOVE MEANS AQUARIUM POOLS, TANKS AND BODIES OF WATER WITH DIVER ACCESS.

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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SEAL 35230 JASON P. FAMIGLETTI ENGINEER

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NO.	DATE	DESCRIPTION
1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

ELECTRICAL ENLARGED PLANS 1ST FLOOR PUMP PIT, WORKSHOP, LIFE SUPPORT SYSTEMS

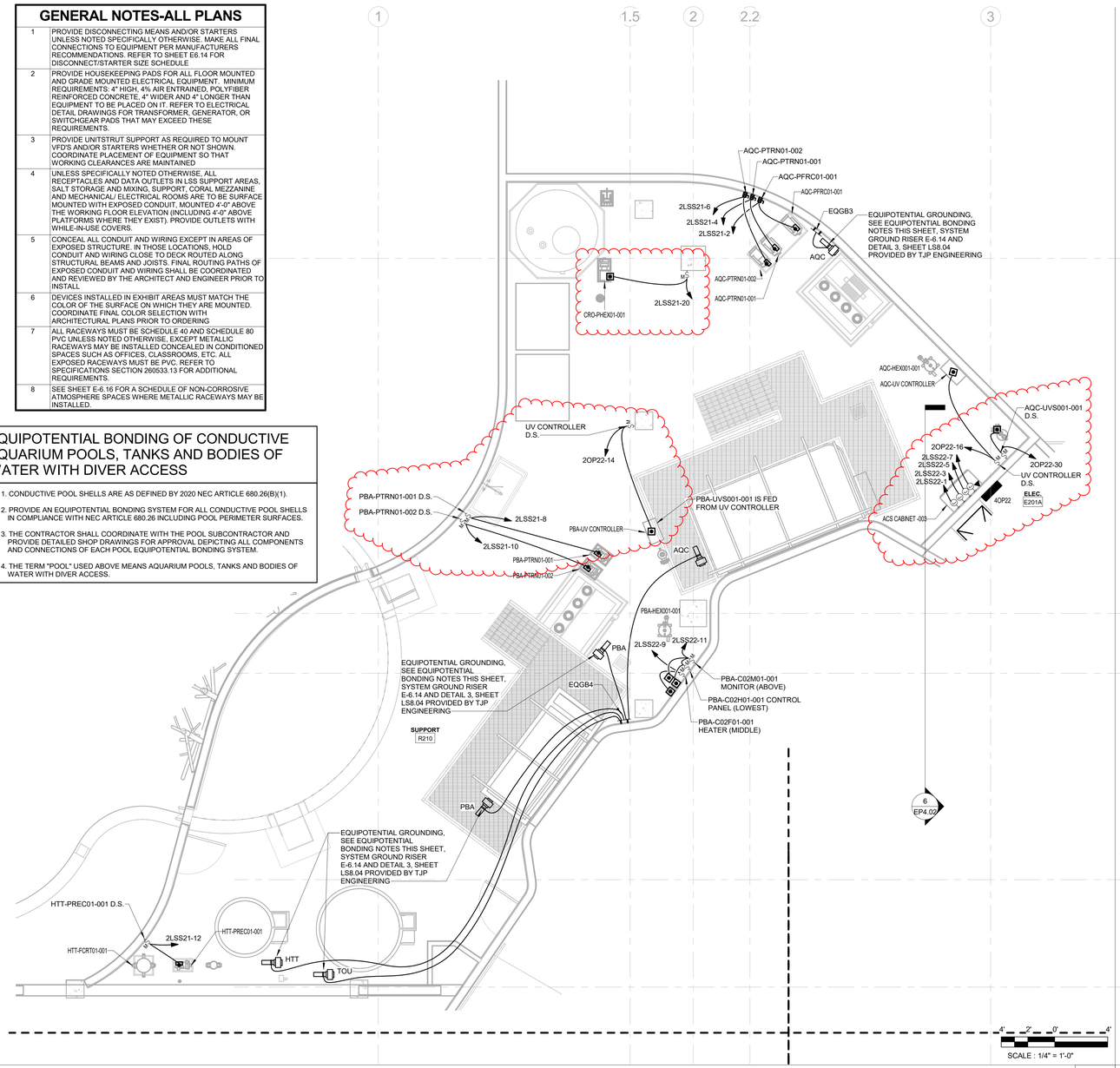
EP4.02

GENERAL NOTES-ALL PLANS

1	PROVIDE DISCONNECTING MEANS AND/OR STARTERS UNLESS NOTED SPECIFICALLY OTHERWISE. MAKE ALL FINAL CONNECTIONS TO EQUIPMENT PER MANUFACTURERS RECOMMENDATIONS. REFER TO SHEET E6.14 FOR DISCONNECT/STARTER SIZE SCHEDULE
2	PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
3	PROVIDE UNITSTRUT SUPPORT AS REQUIRED TO MOUNT VFD'S AND/OR STARTERS WHETHER OR NOT SHOWN. COORDINATE PLACEMENT OF EQUIPMENT SO THAT WORKING CLEARANCES ARE MAINTAINED
4	UNLESS SPECIFICALLY NOTED OTHERWISE, ALL RECEPTACLES AND DATA OUTLETS IN LSS SUPPORT AREAS, SALT STORAGE AND MIXING, SUPPORT, CORAL MEZZANINE AND MECHANICAL/ ELECTRICAL ROOMS ARE TO BE SURFACE MOUNTED WITH EXPOSED CONDUIT, MOUNTED 4'-0" ABOVE THE WORKING FLOOR ELEVATION (INCLUDING 4'-0" ABOVE PLATFORMS WHERE THEY EXIST). PROVIDE OUTLETS WITH WHILE-IN-USE COVERS.
5	CONCEAL ALL CONDUIT AND WIRING EXCEPT IN AREAS OF EXPOSED STRUCTURE. IN THOSE LOCATIONS, HOLD CONDUIT AND WIRING CLOSE TO DECK ROUTED ALONG STRUCTURAL BEAMS AND JOISTS. FINAL ROUTING PATHS OF EXPOSED CONDUIT AND WIRING SHALL BE COORDINATED AND REVIEWED BY THE ARCHITECT AND ENGINEER PRIOR TO INSTALL
6	DEVICES INSTALLED IN EXHIBIT AREAS MUST MATCH THE COLOR OF THE SURFACE ON WHICH THEY ARE MOUNTED. COORDINATE FINAL COLOR SELECTION WITH ARCHITECTURAL PLANS PRIOR TO ORDERING
7	ALL RACEWAYS MUST BE SCHEDULE 40 AND SCHEDULE 80 PVC UNLESS NOTED OTHERWISE, EXCEPT METALLIC RACEWAYS MAY BE INSTALLED CONCEALED IN CONDITIONED SPACES SUCH AS OFFICES, CLASSROOMS, ETC. ALL EXPOSED RACEWAYS MUST BE PVC. REFER TO SPECIFICATIONS SECTION 260533.13 FOR ADDITIONAL REQUIREMENTS.
8	SEE SHEET E-6.16 FOR A SCHEDULE OF NON-CORROSIVE ATMOSPHERE SPACES WHERE METALLIC RACEWAYS MAY BE INSTALLED.

EQUIPOTENTIAL BONDING OF CONDUCTIVE AQUARIUM POOLS, TANKS AND BODIES OF WATER WITH DIVER ACCESS

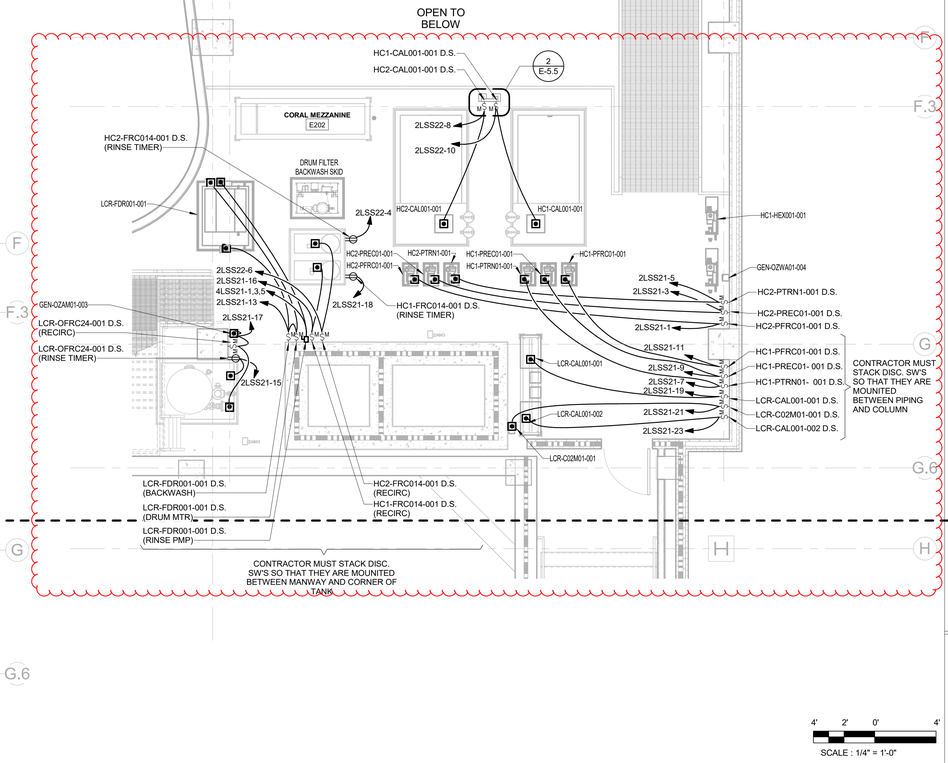
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2ND FLOOR PLAN - ENLARGED SUPPORT AREA - POWER

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

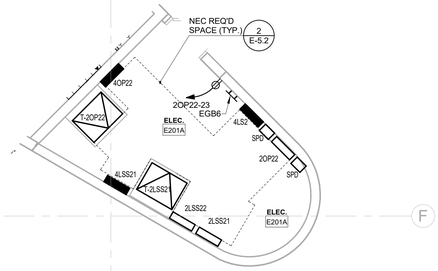
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2ND FLOOR PLAN - ENLARGED CORAL MEZZ - POWER

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

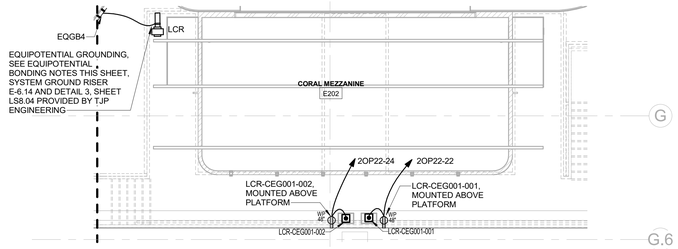
1



2ND FLOOR PLAN -ENLARGED STORAGE E201A - POWER

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

3



2ND FLOOR PLAN - CORAL MEZZ PLATFORM - E202

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

4

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TEL/F: 919.929.3244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 31479

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
BEND, OR 97707
TEL/F: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3005

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TEL/F: 617.740.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TEL/F: 919.832.5387
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TEL/F: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TEL/F: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TEL/F: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TEL/F: 919.419.1669
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TEL/F: 910.452.4210
WWW.CHEATHAMFA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4619 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TEL/F: 919.605.8952
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SEAL 35230 — JASON P. FAMIGLIETTI — REGISTERED ENGINEER

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ELECTRICAL ENLARGED PLANS 2ND FLOOR SUPPORT AREA AND CORA MEZZ

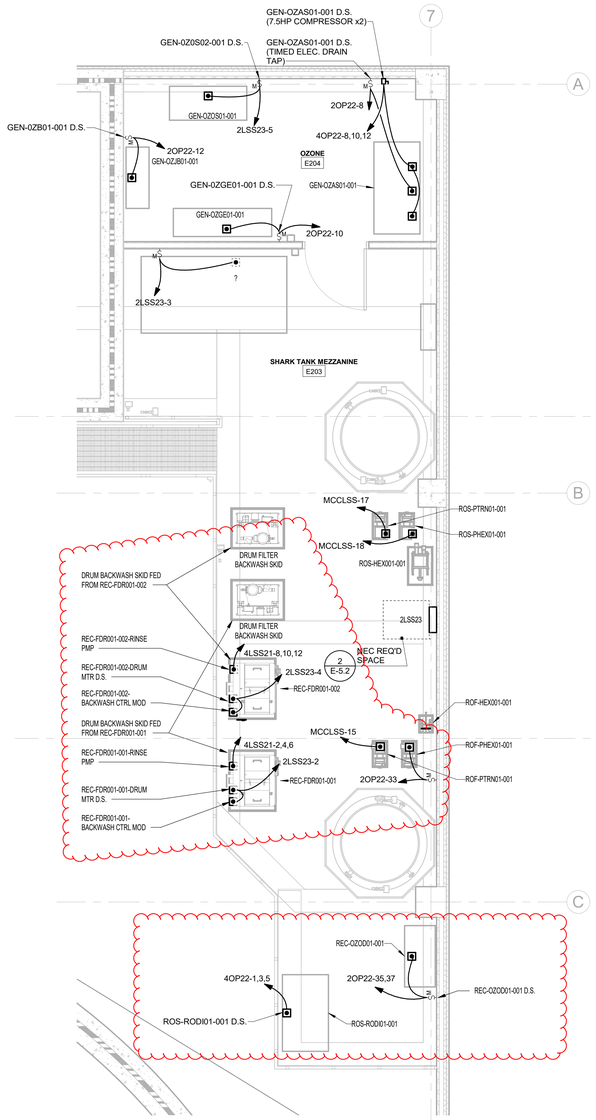
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CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
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GENERAL NOTES-ALL PLANS

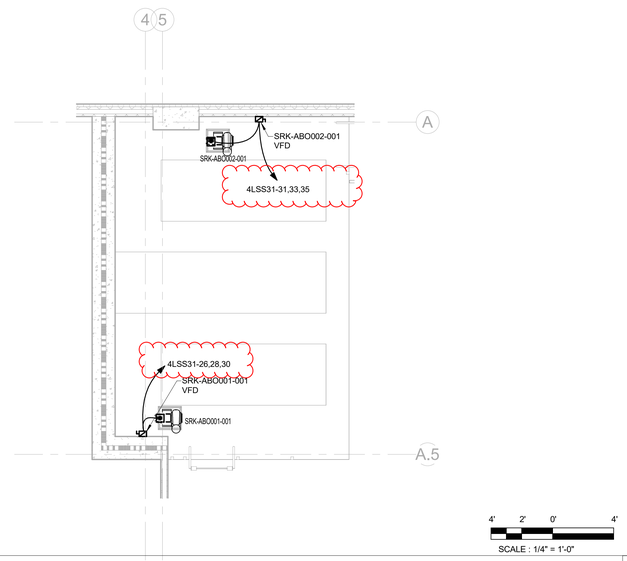
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2ND FLOOR PLAN - ENLARGED SHARK TANK & OZONE MEZZ - POWER

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

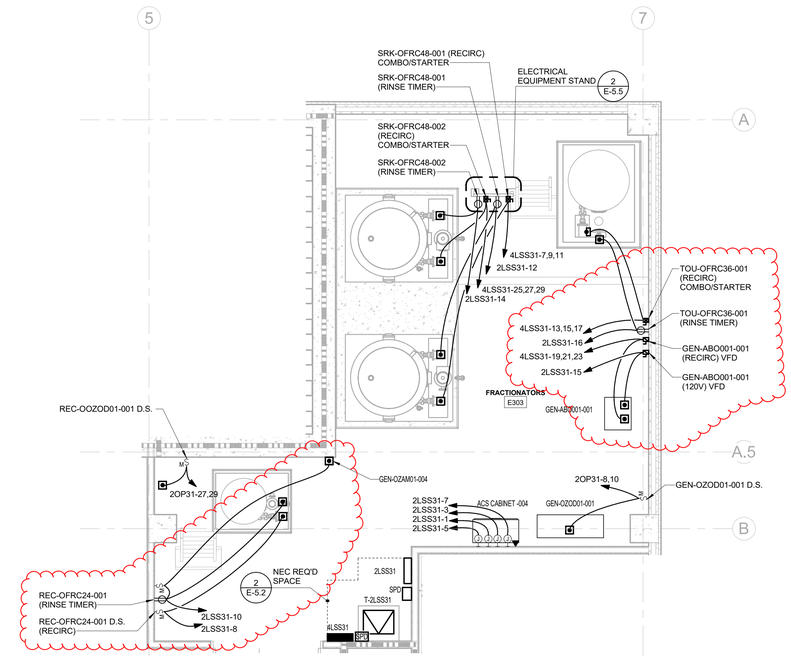
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3RD FLOOR PLAN - ENLARGED T.O.R. - POWER

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

3



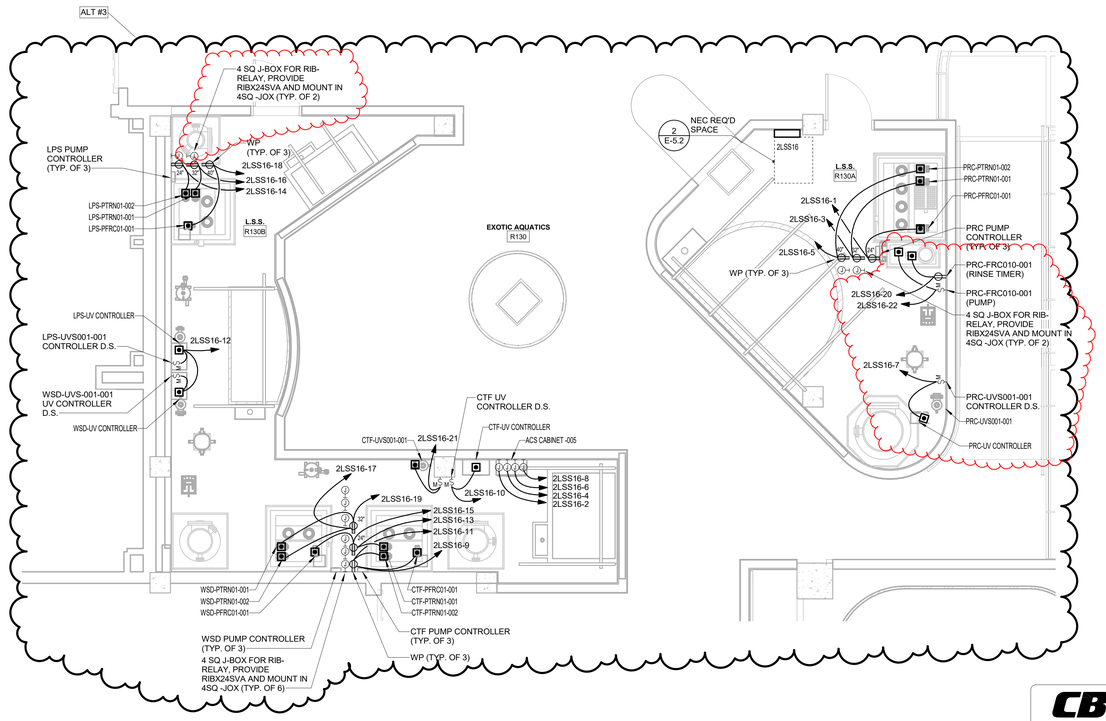
4' 2' 0' 4'

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

3RD FLOOR PLAN - ENLARGED FRACTIONATORS - POWER

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

2



4' 2' 0' 4'

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

1ST FLOOR - EXOTIC AQUATICS - R130

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

4

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
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SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
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KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-5005

ROTO GROUP, LLC.
EXHIBIT DESIGNER
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DUBLIN, OHIO 43017
TELE: 617.760.8690
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5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5387
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
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TELE: 909.360.2900
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CIVIL ENGINEER
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WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
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FIRE PROTECTION ENGINEER
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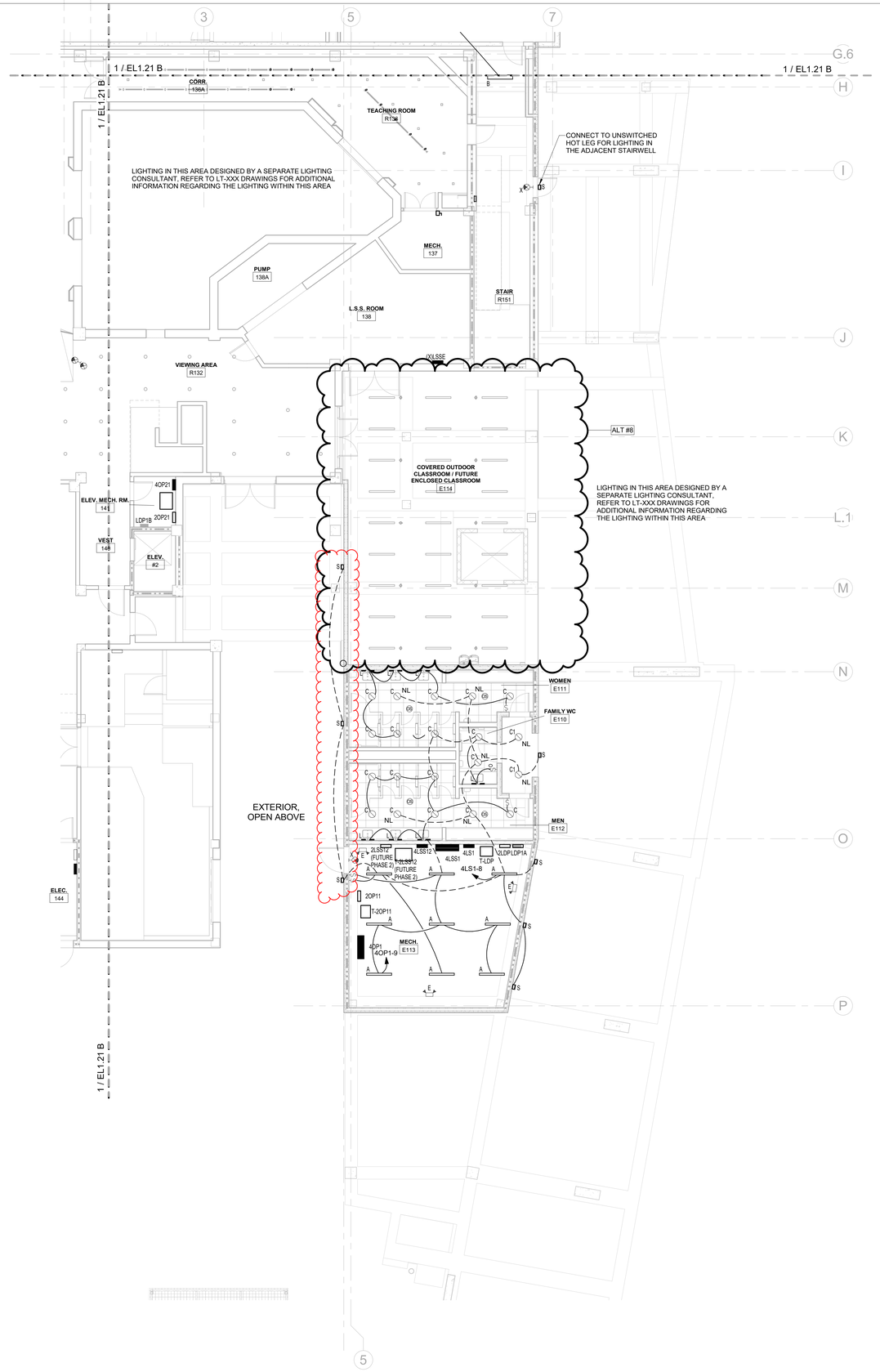
PROFESSIONAL ENGINEER SEAL 35230 JASON P. FAMIGLIETTI

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ELECTRICAL ENLARGED PLANS 2ND AND 3RD FLOORS

EP4.04



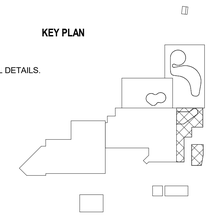
FLOOR PLAN LEGEND

- EXISTING BUILDING
- RENOVATED AREA
- UPFIT BY OTHERS
- 1-HR RATED WALL
- 2-HR RATED WALL
- 3-HR RATED WALL

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KEY PLAN



NOTE:
SEE LT SHEETS FOR ADDITIONAL DETAILS.

8' 4' 0' 8'
SCALE : 1/8" = 1'-0"

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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1st FLOOR - SOUTHEAST WING - LIGHTING
SCALE : 1/8" = 1'-0"

1

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
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BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
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SURFACE 678, PA
LANDSCAPE ARCHITECT
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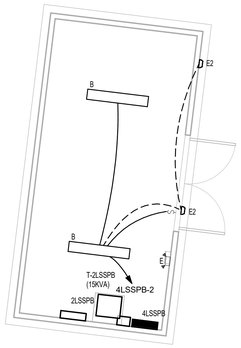
JASON P. FAMIGLIETTI — PE — SEAL 35230 — ENGINEER

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

FIRST FLOOR - SOUTHEAST WING - LIGHTING

EL1.21 C



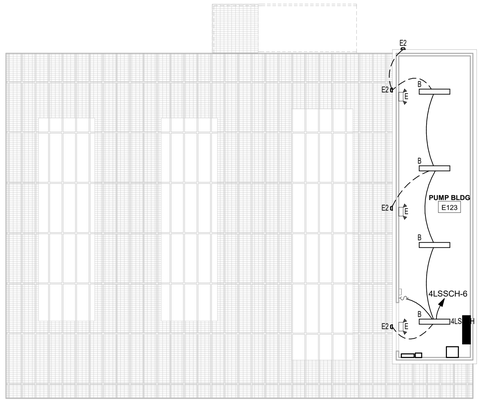
8' 4' 0' 8'

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

DOMESTIC WATER BOOSTER PUMP BLDG - LIGHTING

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

4



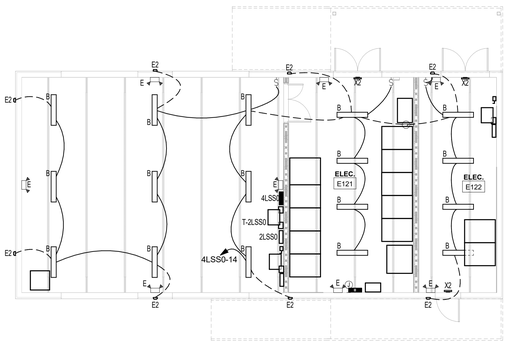
8' 4' 0' 8'

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

CHILLER PLATFORM PUMP BUILDING - LIGHTING

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

3



8' 4' 0' 8'

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

1st FLOOR - GENERATOR BUILDING - LIGHTING

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

2

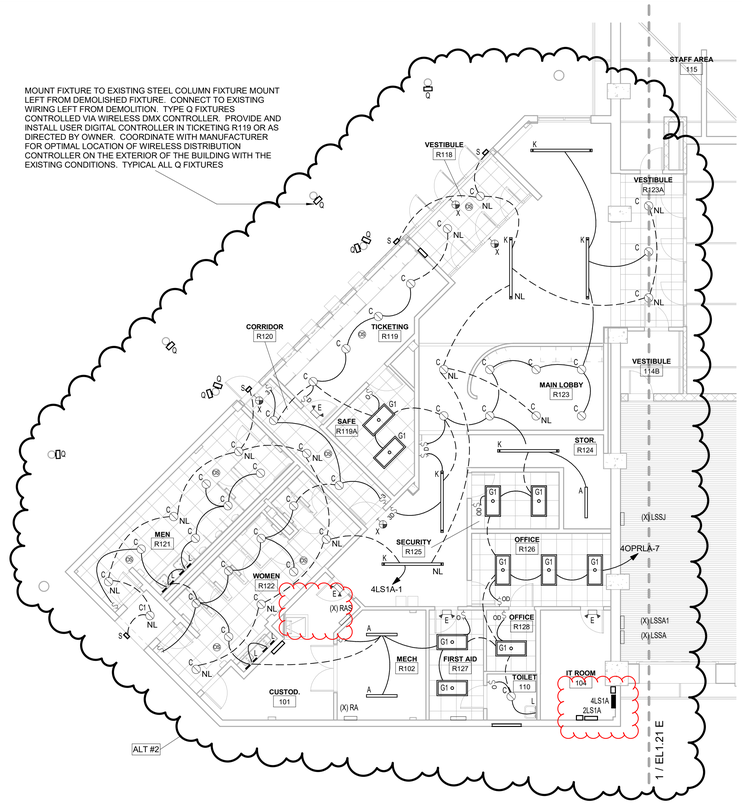
FLOOR PLAN LEGEND

- EXISTING BUILDING
- RENOVATED AREA
- UPFIT BY OTHERS
- 1-HR RATED WALL
- 2-HR RATED WALL
- 3-HR RATED WALL

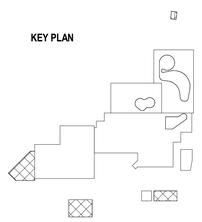
GENERAL NOTES-ALL PLANS

1	PROVIDE DISCONNECTING MEANS AND/OR STARTERS UNLESS NOTED SPECIFICALLY OTHERWISE. MAKE ALL FINAL CONNECTIONS TO EQUIPMENT PER MANUFACTURERS RECOMMENDATIONS. REFER TO SHEET E6.14 FOR DISCONNECT/STARTER SIZE SCHEDULE
2	PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
3	PROVIDE UNITSTRUT SUPPORT AS REQUIRED TO MOUNT VFD'S AND/OR STARTERS WHETHER OR NOT SHOWN. COORDINATE PLACEMENT OF EQUIPMENT SO THAT WORKING CLEARANCES ARE MAINTAINED
4	UNLESS SPECIFICALLY NOTED OTHERWISE, ALL RECEPTACLES AND DATA OUTLETS IN LSS SUPPORT AREAS, SALT STORAGE AND MIXING, SUPPORT, CORAL MEZZANINE AND MECHANICAL/ ELECTRICAL ROOMS ARE TO BE SURFACE MOUNTED WITH EXPOSED CONDUIT, MOUNTED 4'-0" ABOVE THE WORKING FLOOR ELEVATION (INCLUDING 4'-0" ABOVE PLATFORMS WHERE THEY EXIST). PROVIDE OUTLETS WITH WHILE-IN-USE COVERS.
5	CONCEAL ALL CONDUIT AND WIRING EXCEPT IN AREAS OF EXPOSED STRUCTURE. IN THOSE LOCATIONS, HOLD CONDUIT AND WIRING CLOSE TO DECK ROUTED ALONG STRUCTURAL BEAMS AND JOISTS. FINAL ROUTING PATHS OF EXPOSED CONDUIT AND WIRING SHALL BE COORDINATED AND REVIEWED BY THE ARCHITECT AND ENGINEER PRIOR TO INSTALL
6	DEVICES INSTALLED IN EXHIBIT AREAS MUST MATCH THE COLOR OF THE SURFACE ON WHICH THEY ARE MOUNTED. COORDINATE FINAL COLOR SELECTION WITH ARCHITECTURAL PLANS PRIOR TO ORDERING
7	ALL RACEWAYS MUST BE SCHEDULE 40 AND SCHEDULE 80 PVC UNLESS NOTED OTHERWISE, EXCEPT METALLIC RACEWAYS MAY BE INSTALLED CONCEALED IN CONDITIONED SPACES SUCH AS OFFICES, CLASSROOMS, ETC. ALL EXPOSED RACEWAYS MUST BE PVC. REFER TO SPECIFICATIONS SECTION 260533.13 FOR ADDITIONAL REQUIREMENTS.
8	SEE SHEET E-6.16 FOR A SCHEDULE OF NON-CORROSIVE ATMOSPHERE SPACES WHERE METALLIC RACEWAYS MAY BE INSTALLED.

MOUNT FIXTURE TO EXISTING STEEL COLUMN FIXTURE MOUNT LEFT FROM DEMOLISHED FIXTURE. CONNECT TO EXISTING WIRING LEFT FROM DEMOLITION. TYPE Q FIXTURES CONTROLLED VIA WIRELESS DMX CONTROLLER. PROVIDE AND INSTALL USER DIGITAL CONTROLLER IN TICKETING R119 OR AS DIRECTED BY OWNER. COORDINATE WITH MANUFACTURER FOR OPTIMAL LOCATION OF WIRELESS DISTRIBUTION CONTROLLER ON THE EXTERIOR OF THE BUILDING WITH THE EXISTING CONDITIONS. TYPICAL ALL Q FIXTURES



KEY PLAN



8' 4' 0' 8'

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

1st FLOOR - MAIN ENTRY - LIGHTING

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

1

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

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SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205N
BEND, OR 97757
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-5505

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EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
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STRUCTURAL ENGINEER
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RALEIGH, NC 27607
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CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

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2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
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LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
WWW.CHEATHAMPA.COM
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COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
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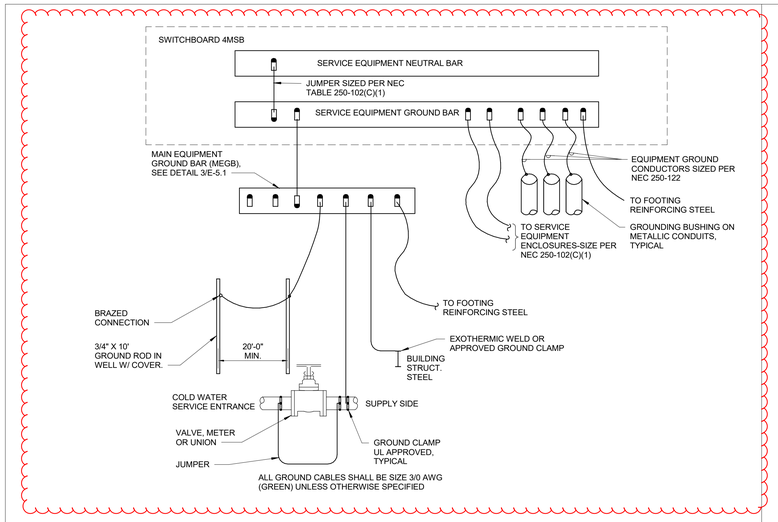
SEAL 35230 JASON P. FAMIGLIETTI ENGINEER

NOT FOR CONSTRUCTION

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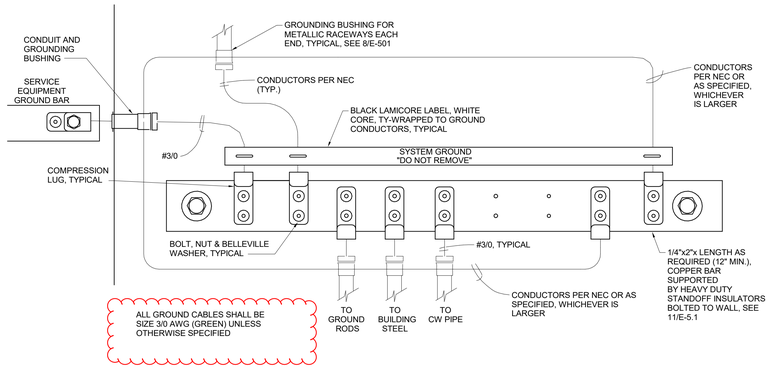
FIRST FLOOR - MAIN ENTRY, CHILLER PLATFORM, PUMP AND GENERATOR BUILDINGS - LIGHTING

EL1.21 D



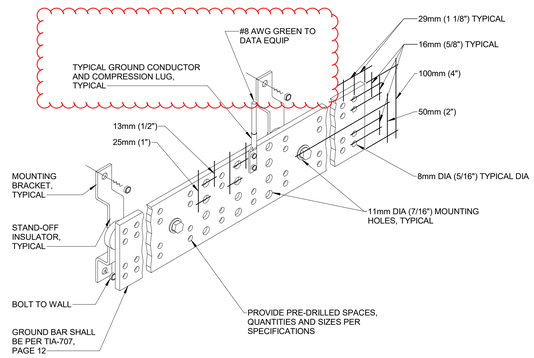
GROUNDING DETAIL - SERVICE

SCALE : NO SCALE — SEE SHEET E-6.14 FOR ADDITIONAL DETAILS — 1



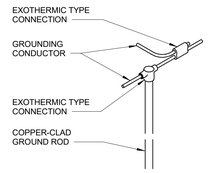
EQUIPMENT GROUND BAR DETAIL (MEGB) — MEGB

SCALE : NO SCALE — SEE SHEET E-6.14 FOR ADDITIONAL DETAILS — 3



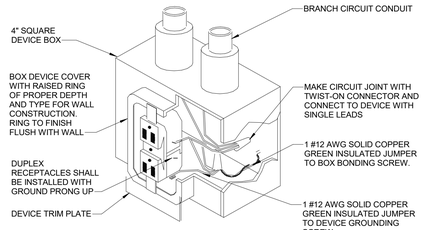
TELECOM GROUND BAR DETAIL (TGB)

SCALE : NO SCALE — SEE SHEET E-6.14 FOR ADDITIONAL DETAILS — 4



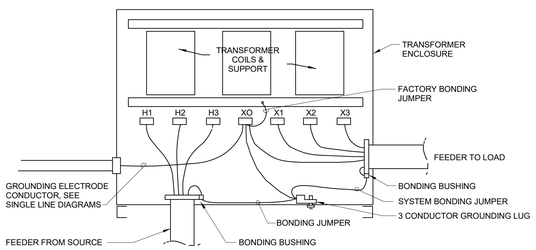
GROUND ROD DETAIL

SCALE : NO SCALE — 5



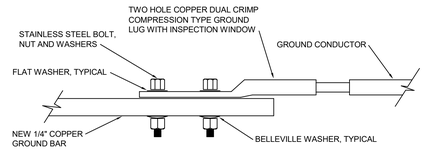
RECEPTACLE GROUNDING DETAIL

SCALE : NO SCALE — 6



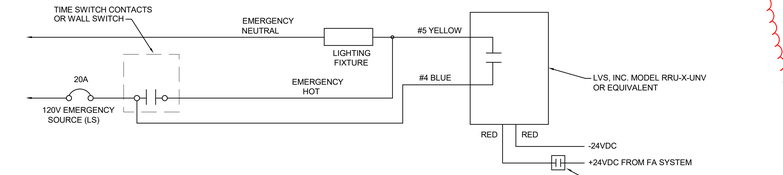
TRANSFORMER GROUNDING DETAIL

SCALE : NO SCALE — 8



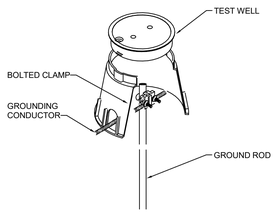
GROUND LUG DETAIL

SCALE : NO SCALE — 10



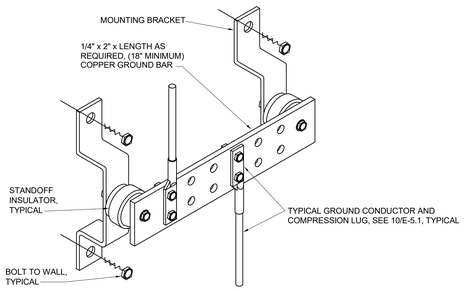
LIFE SAFETY LIGHTING SHUNT RELAY DETAIL

SCALE : NO SCALE — 12



GRND ROD TEST WELL

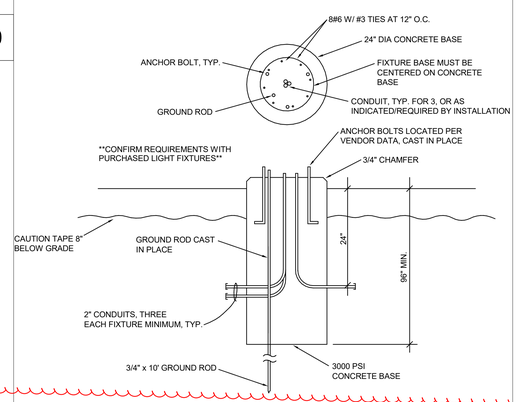
SCALE : NO SCALE — 9



SEE SPECS SECTION 260526 FOR ADDITIONAL DETAILS

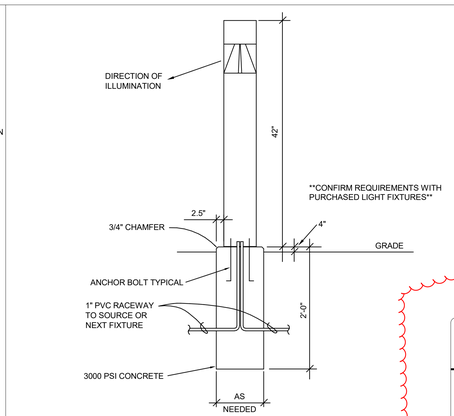
GROUND BAR MOUNTING DETAIL

SCALE : NO SCALE — 11



LIGHTING POLE BASE DETAIL

SCALE : NO SCALE — 13



BOLLARD DETAIL

SCALE : NO SCALE — 14

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
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SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205N
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
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LANDSCAPE ARCHITECT
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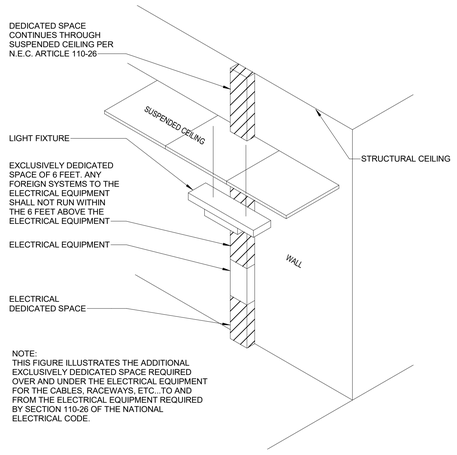
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ELECTRICAL DETAILS

E-5.1

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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DEDICATED SPACE FOR ELECTRICAL EQUIPMENT N.E.C. ARTICAL 1101

SCALE : NO SCALE

1

TABLE 110.26(A)(1) - WORKING SPACES

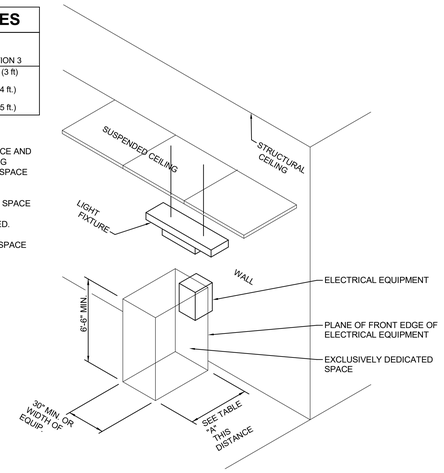
NOMINAL VOLTAGE TO GROUND	MINIMUM CLEAR DISTANCE (FEET)		
	CONDITION 1	CONDITION 2	CONDITION 3
0 - 150	900mm (3 ft)	900mm (3 ft)	900mm (3 ft)
151 - 600	900mm (3 ft)	1.0m (3 ft 6 in.)	1.2 m (4 ft.)
601 - 1000	900mm (3 ft)	1.2 m (4 ft.)	1.5 m (5 ft.)

NOTE: WHERE THE "CONDITIONS" ARE AS FOLLOWS:

CONDITION 1 - EXPOSED LIVE PARTS ON ONE SIDE OF WORKING SPACE AND NO LIVE OR GROUNDED PARTS ON THE OTHER SIDE OF THE WORKING SPACE, OR EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORKING SPACE THAT ARE EFFECTIVELY GUARDED BY INSULATING MATERIALS.

CONDITION 2 - EXPOSED LIVE PARTS ON ONE SIDE OF THE WORKING SPACE AND GROUNDED PARTS ON THE OTHER SIDE OF WORKING SPACE. CONCRETE BRICK, OR TILE WALLS SHALL BE CONSIDERED GROUNDED.

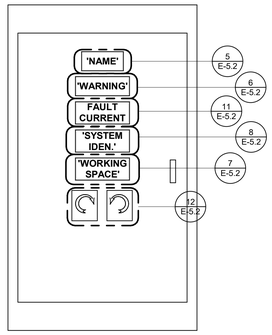
CONDITION 3 - EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORK SPACE



WORKING CLEARANCE FOR ELECTRICAL EQUIPMENT

SCALE : NO SCALE

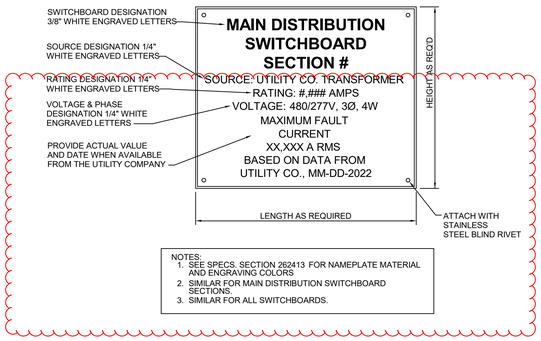
2



LABELS - REQUIRED SWITCHBOARDS AND PANELBOARDS NP & LABELS

SCALE : NO SCALE

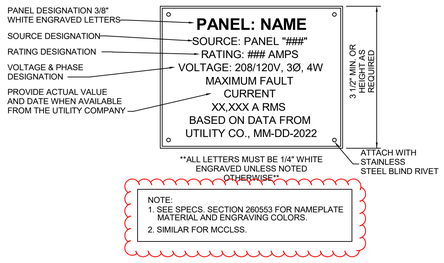
3



LABEL - MAIN DIST.SWITCHBOARD

SCALE : NO SCALE

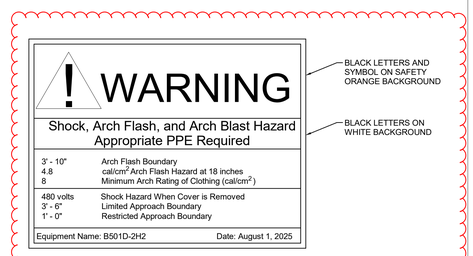
4



LABEL - PANELBOARD NAMEPLATE

SCALE : NO SCALE

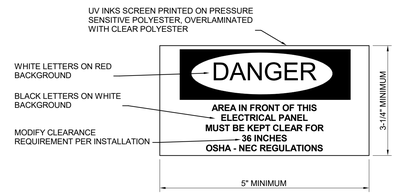
5



LABEL - ELECT EQ WARNING

SCALE : NO SCALE

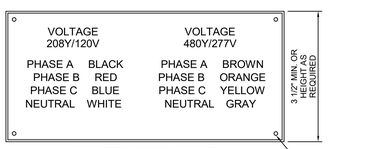
6



LABEL - NEC WORKING SPACE

SCALE : NO SCALE

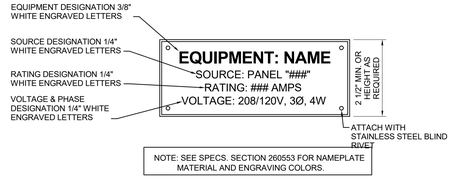
7



LABEL - SYSTEM IDENTIFICATION

SCALE : NO SCALE

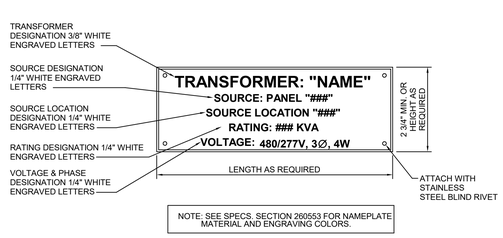
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LABEL - EQUIPMENT NAMEPLATE

SCALE : NO SCALE

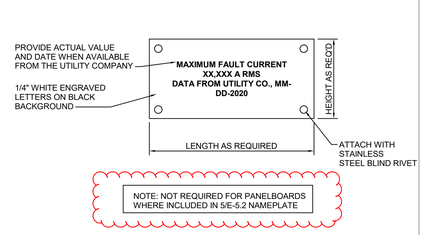
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LABEL - TRANSFORMER

SCALE : NO SCALE

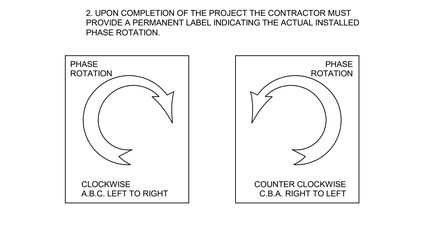
10



LABEL - FAULT CURRENT NAMEPLATE

SCALE : NO SCALE

11



PHASE ROTATION LABEL

SCALE : 12" = 1'-0"

12

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 31679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-5005

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

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LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.WEINGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1771
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
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WWW.CHEATHAMFA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8952
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NOT FOR CONSTRUCTION

JASON P. FAMIGLETTI — SEAL 35230 — ENGINEER

NOT FOR CONSTRUCTION

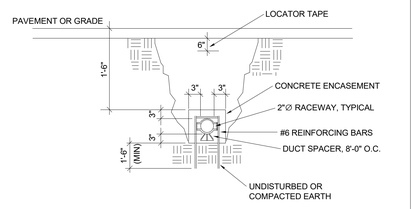
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2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

ELECTRICAL DETAILS

E-5.2

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

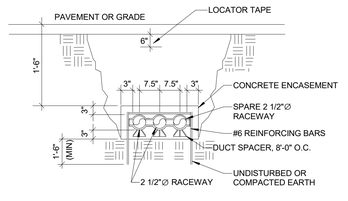
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DUCTBANK - SECONDARY CONCRETE ENCASED

SCALE : NO SCALE

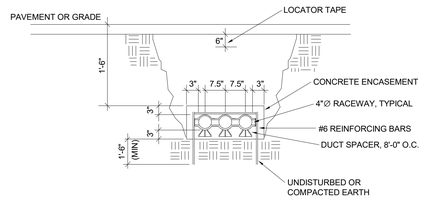
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DUCTBANK - SECONDARY CONCRETE ENCASED PARALLEL

SCALE : NO SCALE

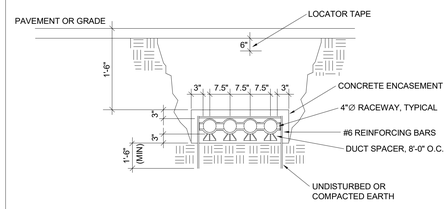
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DUCTBANK - SECONDARY CONCRETE ENCASED 3 PARALLEL

SCALE : NO SCALE

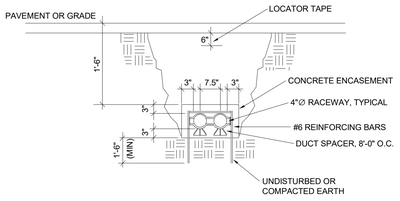
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DUCTBANK - SECONDARY CONCRETE ENCASED 4 PARALLEL

SCALE : NO SCALE

4



DUCTBANK - TELECOM CONCRETE ENCASED

SCALE : NO SCALE

5

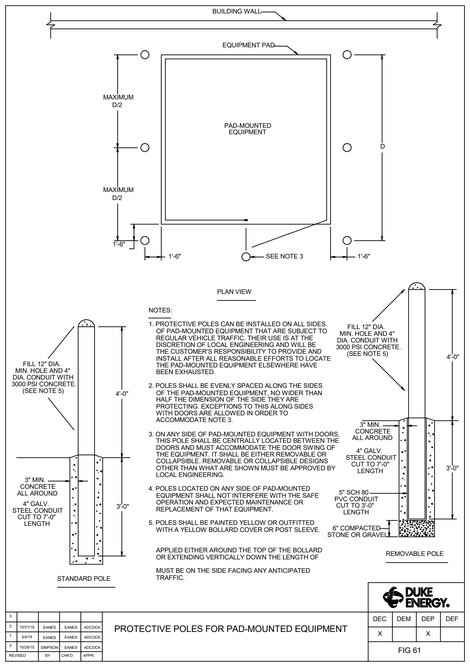
SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES



NOTES:

1. PROTECTIVE POLES CAN BE INSTALLED ON ALL SIDES OF PAD-MOUNTED EQUIPMENT THAT ARE SUBJECT TO REGULAR VEHICLE TRAFFIC. THEIR USE IS AT THE DISCRETION OF LOCAL ENGINEERING AND WILL BE THE CUSTOMER'S RESPONSIBILITY TO PROVIDE AND INSTALL AFTER ALL REASONABLE EFFORTS TO LOCATE THE PAD-MOUNTED EQUIPMENT ELSEWHERE HAVE BEEN EXHAUSTED.
2. POLES SHALL BE EVENLY SPACED ALONG THE SIDES OF THE PAD-MOUNTED EQUIPMENT, NO WIDER THAN HALF THE DIMENSION OF THE SIDE THEY ARE PROTECTING. EXCEPTIONS TO THIS ALONG SIDES WITH DOORS ARE ALLOWED IN ORDER TO ACCOMMODATE NOTE 3.
3. ON ANY SIDE OF PAD-MOUNTED EQUIPMENT WITH DOORS, THIS POLE SHALL BE CENTRALLY LOCATED BETWEEN THE DOORS AND MUST ACCOMMODATE THE DOOR SWING OF THE EQUIPMENT. IT SHALL BE EITHER REMOVABLE OR COLLAPSIBLE. REMOVABLE OR COLLAPSIBLE DESIGNS OTHER THAN WHAT ARE SHOWN MUST BE APPROVED BY LOCAL ENGINEERING.
4. POLES LOCATED ON ANY SIDE OF PAD-MOUNTED EQUIPMENT SHALL NOT INTERFERE WITH THE SAFE OPERATION AND EXPECTED MAINTENANCE OR REPLACEMENT OF THAT EQUIPMENT.
5. POLES SHALL BE PAINTED YELLOW OR OUTFITTED WITH A YELLOW BOLLARD COVER OR POST SLEEVE.

APPLIED EITHER AROUND THE TOP OF THE BOLLARD OR EXTENDING VERTICALLY DOWN THE LENGTH OF

MUST BE ON THE SIDE FACING ANY ANTICIPATED TRAFFIC.

8				
7	10/31/19	EANES	EANES	ADCOCK
1	3/4/19	EANES	EANES	ADCOCK
0	10/28/15	SIMPSON	EANES	ADCOCK
REVISED		BY	CHKD	APPR

DUKE ENERGY.

DEC	DEM	DEP	DEF
		X	

PROTECTIVE POLES FOR PAD-MOUNTED EQUIPMENT

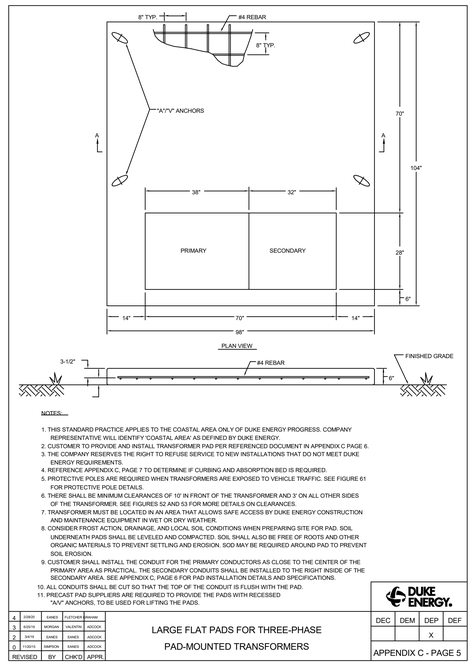
FIG 61

NOTE: ELECTRICAL CONTRACTOR MUST PROVIDE PROTECTIVE POLES (BOLLARDS) AS REQUIRED BY DUKE ENERGY

DUKE BOLLARD DETAIL

SCALE : NO SCALE

6



NOTES:

1. THIS STANDARD PRACTICE APPLIES TO THE COASTAL AREA ONLY OF DUKE ENERGY PROGRESS. COMPANY REPRESENTATIVE WILL IDENTIFY "COASTAL AREA" AS DEFINED BY DUKE ENERGY.
2. CUSTOMER TO PROVIDE AND INSTALL TRANSFORMER PAD PER REFERENCED DOCUMENT IN APPENDIX C PAGE 6.
3. THE COMPANY RESERVES THE RIGHT TO REFUSE SERVICE TO NEW INSTALLATIONS THAT DO NOT MEET DUKE ENERGY REQUIREMENTS.
4. REFERENCE APPENDIX C, PAGE 7 TO DETERMINE IF CURBING AND ABSORPTION BED IS REQUIRED.
5. PROTECTIVE POLES ARE REQUIRED WHEN TRANSFORMERS ARE EXPOSED TO VEHICLE TRAFFIC. SEE FIGURE 61 FOR PROTECTIVE POLE DETAILS.
6. THERE SHALL BE MINIMUM CLEARANCES OF 10' IN FRONT OF THE TRANSFORMER AND 3' ON ALL OTHER SIDES OF THE TRANSFORMER. SEE FIGURES 52 AND 53 FOR MORE DETAILS ON CLEARANCES.
7. TRANSFORMER MUST BE LOCATED IN AN AREA THAT ALLOWS SAFE ACCESS BY DUKE ENERGY CONSTRUCTION AND MAINTENANCE EQUIPMENT IN WET OR DRY WEATHER.
8. CONSIDER FROST ACTION, DRAINAGE, AND LOCAL SOIL CONDITIONS WHEN PREPARING SITE FOR PAD. SOIL UNDERNEATH PADS SHALL BE LEVELED AND COMPACTED. SOIL SHALL ALSO BE FREE OF ROOTS AND OTHER ORGANIC MATERIALS TO PREVENT SETTLING AND EROSION. SOD MAY BE REQUIRED AROUND PAD TO PREVENT SOIL EROSION.
9. CUSTOMER SHALL INSTALL THE CONDUIT FOR THE PRIMARY CONDUCTORS AS CLOSE TO THE CENTER OF THE PRIMARY AREA AS PRACTICAL. THE SECONDARY CONDUITS SHALL BE INSTALLED TO THE RIGHT INSIDE OF THE SECONDARY AREA. SEE APPENDIX C, PAGE 6 FOR PAD INSTALLATION DETAILS AND SPECIFICATIONS.
10. ALL CONDUITS SHALL BE CUT SO THAT THE TOP OF THE CONDUIT IS FLUSH WITH THE PAD.
11. PRECAST PAD SUPPLIERS ARE REQUIRED TO PROVIDE THE PADS WITH RECESSED "A/V" ANCHORS, TO BE USED FOR LIFTING THE PADS.

4	2/26/20	EANES	FLETCHER	BRAHAM
3	6/20/18	MORGAN	VALENTA	ADCOCK
2	3/4/19	EANES	EANES	ADCOCK
0	1/28/15	SIMPSON	EANES	ADCOCK
REVISED		BY	CHKD	APPR

DUKE ENERGY.

DEC	DEM	DEP	DEF
		X	

LARGE FLAT PADS FOR THREE-PHASE PAD-MOUNTED TRANSFORMERS

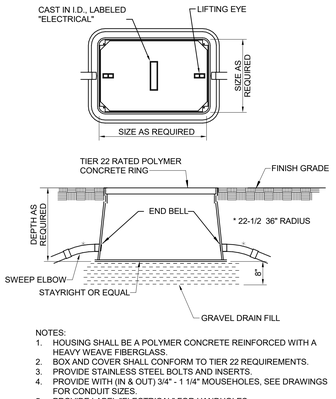
APPENDIX C - PAGE 5

NOTE: ELECTRICAL CONTRACTOR MUST PROVIDE TRANSFORMER PAD AS REQUIRED BY DUKE ENERGY

DUKE LARGE FLAT CONCRETE PAD DETAIL

SCALE : NO SCALE

7



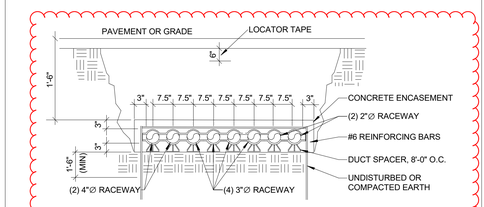
NOTES:

1. HOUSING SHALL BE A POLYMER CONCRETE REINFORCED WITH A HEAVY WEAVE FIBERGLASS.
2. BOX AND COVER SHALL CONFORM TO TIER 22 REQUIREMENTS.
3. PROVIDE STAINLESS STEEL BOLTS AND INSERTS.
4. PROVIDE WITH (IN & OUT) 3/4" - 1 1/4" MOUSEHOLES, SEE DRAWINGS FOR CONDUIT SIZES.
5. PROVIDE LABEL "ELECTRICAL" FOR HANDHOLES.

HAND HOLE DETAIL

SCALE : NO SCALE

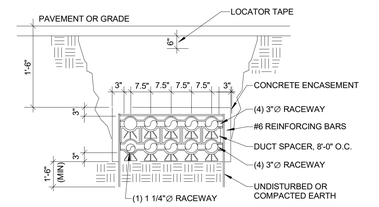
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DUCTBANK - SECONDARY CONCRETE ENCASED 6 PARALLEL

SCALE : NO SCALE

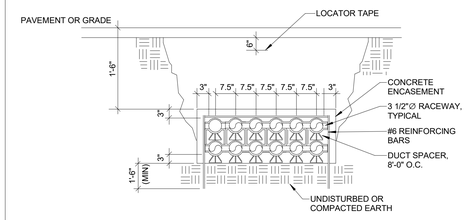
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DUCTBANK - SECONDARY CONCRETE ENCASED 9 PARALLEL

SCALE : NO SCALE

10



DUCTBANK - PRIMARY CONCRETE ENCASED

SCALE : NO SCALE

11

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-5005

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EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
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10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9633
FAX: 910.343.9604
WWW.WITHCONSULTANTS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.451.3911
FAX: 919.419.1669
WWW.SURFACE678.COM

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4010
WWW.CHEATHAMPA.COM
LICENSE # C-1075

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

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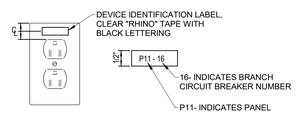
PROFESSIONAL ENGINEER SEAL 35230 JASON P. FAMIGLIETTI

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

ELECTRICAL DETAILS

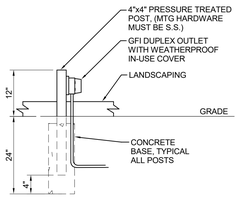
E-5.4



LABELING DETAIL

SCALE : NO SCALE

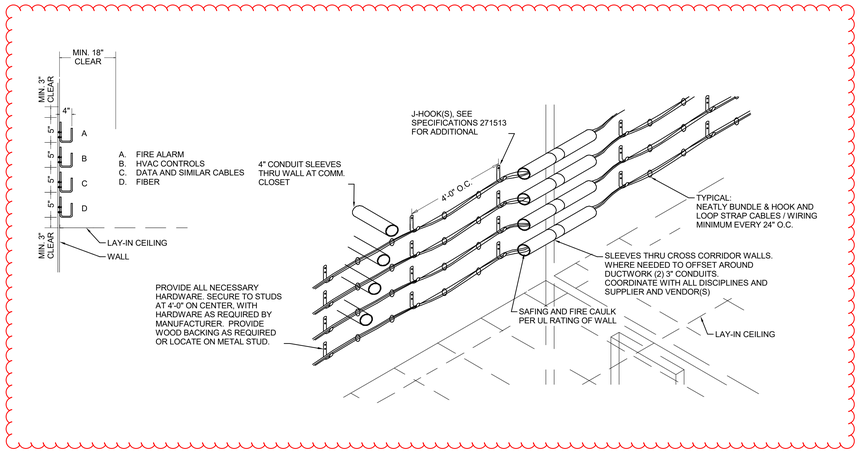
12



OUTDOOR RECEPTACLE MOUNTING DETAIL

SCALE : NO SCALE

13



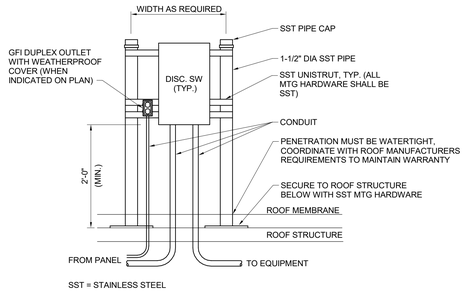
J-HOOK DETAIL

SCALE : 12" = 1'-0"

14

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Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

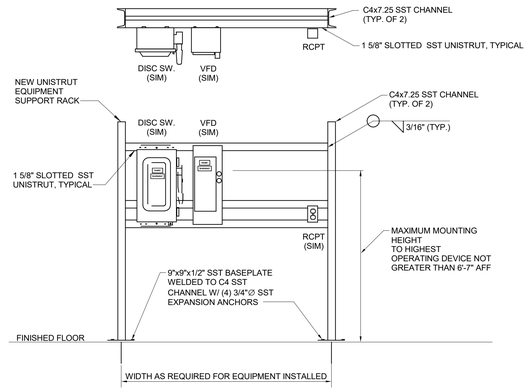
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EQUIPMENT SUPPORT RACK DETAIL - ROOF

SCALE : NO SCALE

1



EQUIPMENT SUPPORT RACK DETAIL

SCALE : NO SCALE

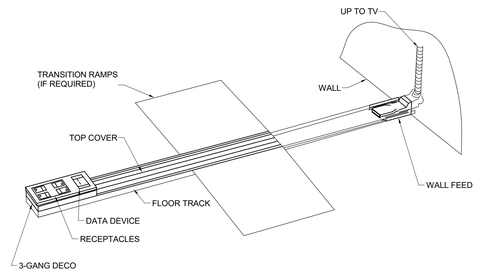
2

MANUFACTURERS:
FLOORTRAK PRO SYSTEM (BASIS OF DESIGN)
LEGRAND CONNECTRACK
FLEX RACEWAY

FLOORTRAK PRO SYSTEM - MODULAR ON-FLOOR POWER AND DATA SYSTEM OR CONNECTRACK.

- FLOOR TRACK: HBLFMRBA (BASE, EDGES, AND TOP COVER) (EC MUST CONFIRM COLOR)
- 3-GANG DECO: HBLFMD2P1D (2 POWER 1 DATA)
- WALL FEED: HBLWMHA (EC MUST CONFIRM COLOR)

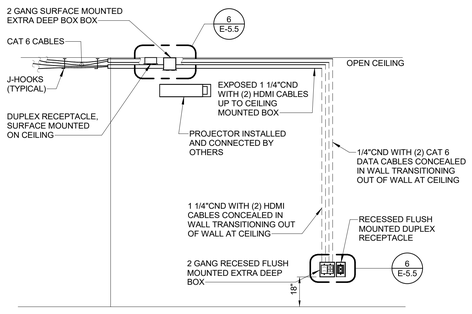
ELECTRICAL CONTRACTOR MUST PROVIDE A COMPLETE AND OPERATIONAL SYSTEM INCLUDING BUT NOT LIMITED TO, ALL FITTINGS, WALL ENTRANCE FITTINGS, POWER AND DATA TRAC, POWER AND DATA HUBS, EXTENDERS, RECEPTACLE AND DATA DEVICES, COVERS, RAMPS ETC.



FLOOR BOX - SURFACE

SCALE : NO SCALE

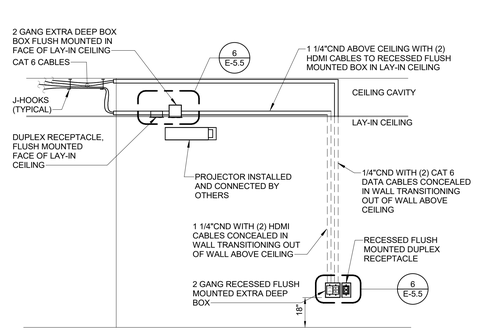
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OUTLET DETAIL - COMPUTER/AV/PROJECTOR-1

SCALE : NO SCALE

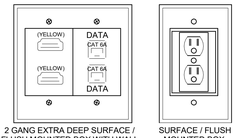
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OUTLET DETAIL - COMPUTER/AV/PROJECTOR-2

SCALE : NO SCALE

5



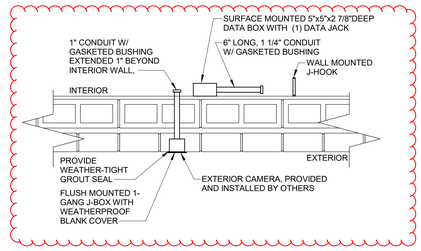
2 GANG EXTRA DEEP SURFACE / FLUSH MOUNTED BOX WITH WALL PLATE FOR 2 CAT6 CONNECTIONS AND WALL PLATE FOR (2) HDMI CONNECITONS

SURFACE / FLUSH MOUNTED BOX DUPLEX RECEPTACLE

OUTLET DETAIL - AV FACE PLATE

SCALE : NO SCALE

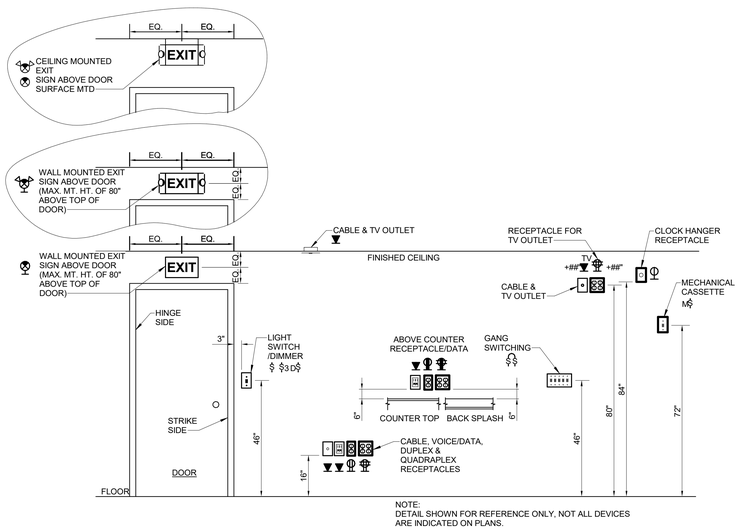
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CAMERA MOUNTING DETAIL

SCALE : NO SCALE

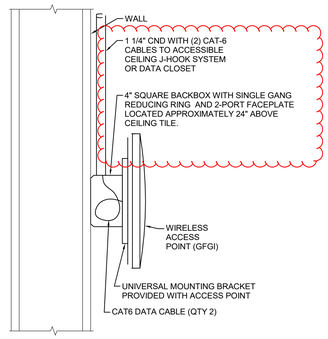
7



ELECTRICAL DEVICES MOUNTING DETAIL

SCALE : NO SCALE

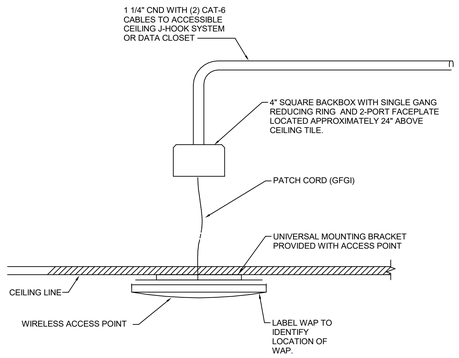
8



WAP - SURFACE WALL MOUNTING DETAIL

SCALE : NO SCALE

9



WAP - CEILING MOUNTING DETAIL

SCALE : NO SCALE

10

CBHF
Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.3244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-5005

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5387
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.WEHCENGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1177
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
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WWW.PALACIOCOLLABORATIVE.COM

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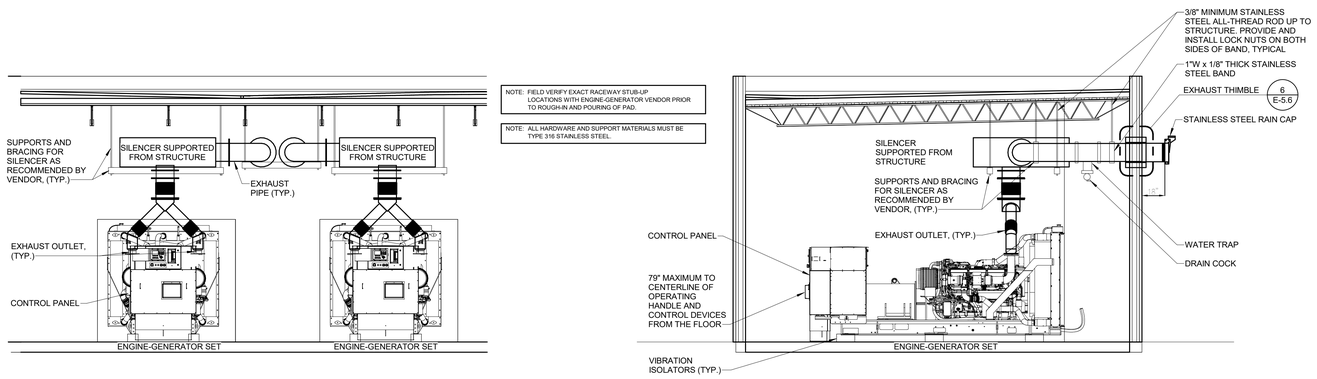
JASON P. FAMIGLIETTI — SEAL 35230 — ENGINEER

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

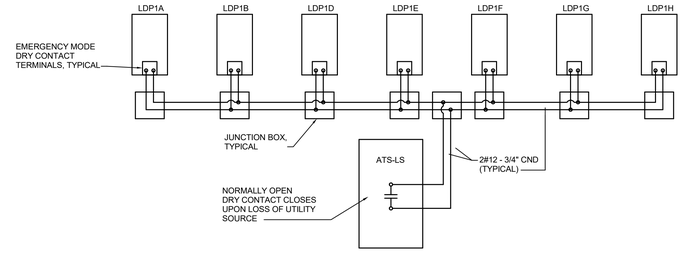
ELECTRICAL DETAILS

E-5.5



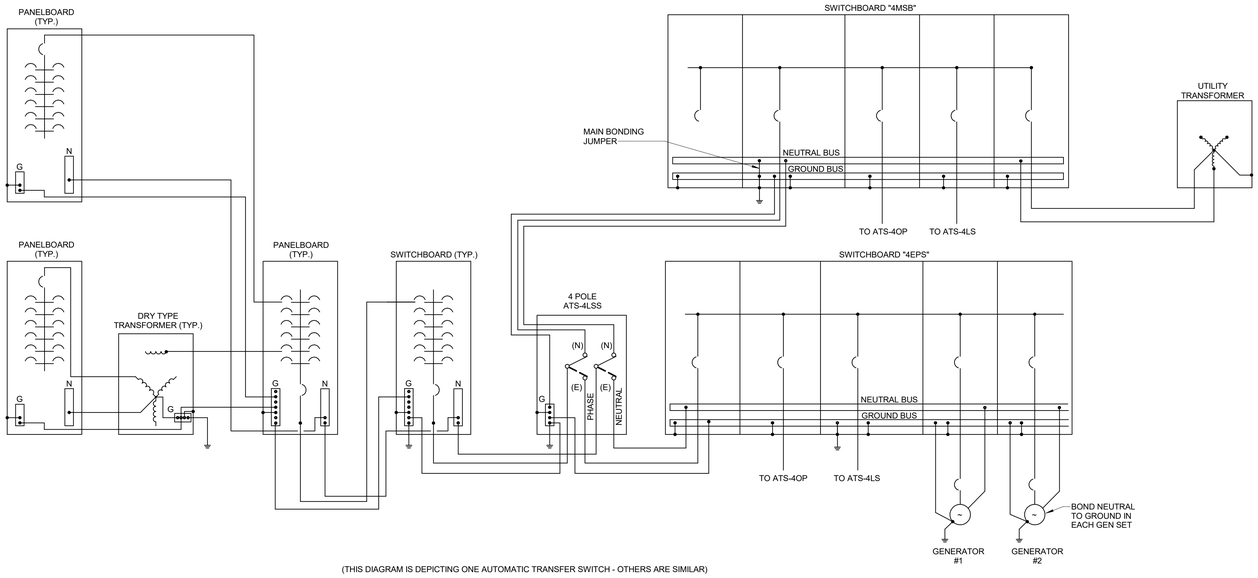
ENGINE GENERATOR SETS DETAIL | 1

SCALE : NO SCALE



DIMMING PANELS EMERGENCY MODE SENSE DETAIL | 4

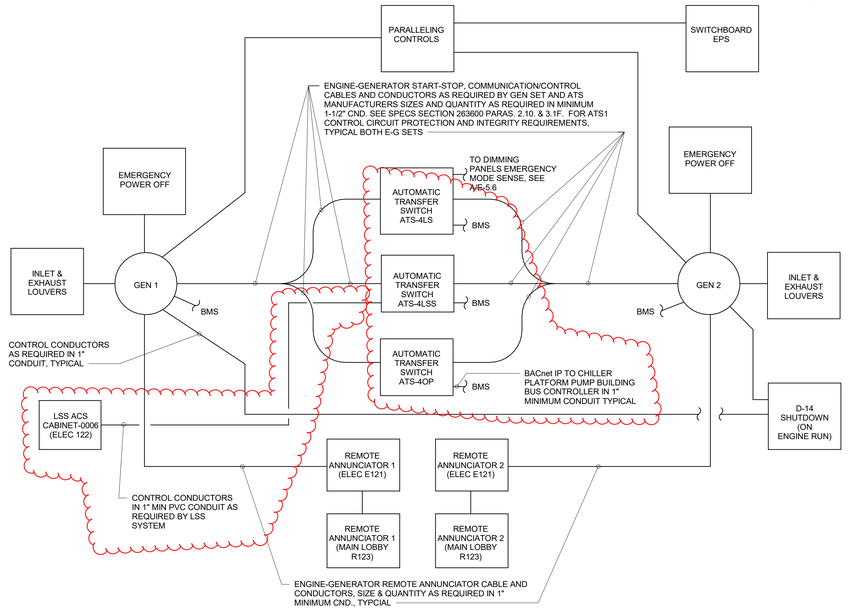
SCALE : NO SCALE



(THIS DIAGRAM IS DEPICTING ONE AUTOMATIC TRANSFER SWITCH - OTHERS ARE SIMILAR)

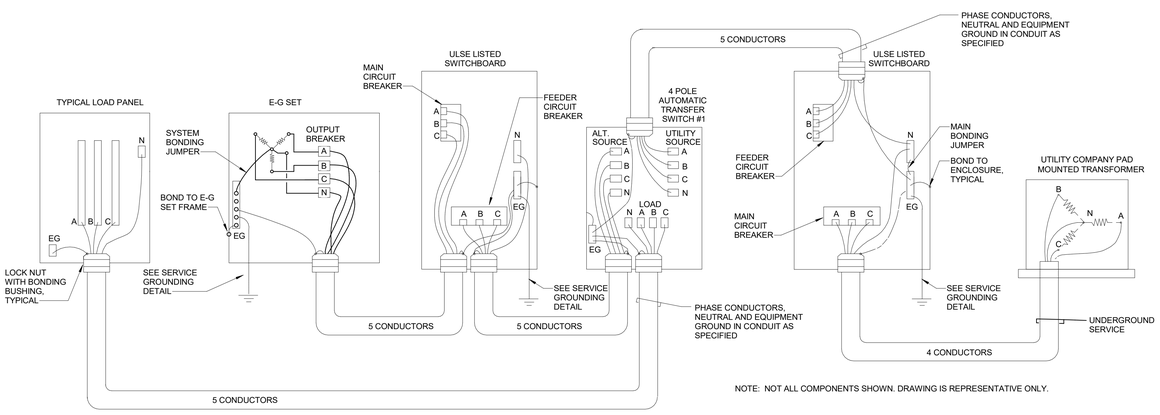
SYSTEM SINGLE LINE GROUNDING DIAGRAM | 2

SCALE : NO SCALE



ENGINE GENERATOR CONTROL BLOCK DIAGRAM | 5

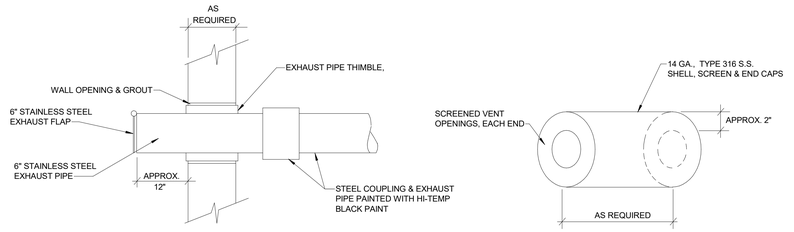
SCALE : NO SCALE



NOTE: NOT ALL COMPONENTS SHOWN. DRAWING IS REPRESENTATIVE ONLY.

GROUNDING DETAIL - GENERATOR | 3

SCALE : NO SCALE



ENGINE GENERATOR EXHAUST PIPE DETAIL | 6

SCALE : NO SCALE

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
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WILMINGTON, NC 28401
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
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FAX: 910.343.9604
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LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

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NOT FOR CONSTRUCTION

JASON P. FAMIGLETTI — SEAL 35220 — ENGINEER

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

ELECTRICAL DETAILS

E-5.6

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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WARNING LABEL, 3/8" WHITE ENGRAVED LETTERS

INFORMATION 1/4" WHITE ENGRAVED LETTERS

WARNING

MULTIPLE ELECTRICAL FEEDERS SUPPLY THIS BUILDING
TWO ELECTRICAL FEEDERS PRESENT INSIDE
FEEDER 1: PANEL 4OPRLA
FEEDER 2: (2002) MAIN SWITCHBOARD (480V)

CAUTION: A PORTION OF THE OVERHEAD WIRING LOCATED INSIDE THE BUILDING IS ENERGIZED UNTIL THE ASSOCIATED CIRCUITS ARE OPENED AT THE SOURCE IN THE GENERATOR BUILDING.

TWO OTHER GROUPS OF FEEDERS PRESENT INSIDE LOADING DOCK DOOR AND IN NEW ADDITION ELECTRICAL ROOM AT SOUTHEAST CORNER OF BUILDING. MAIN UTILITY SERVICE DISCONNECT LOCATED IN GENERATOR BUILDING.

REFER TO BUILDING SINGLE LINE DIAGRAM AND FLOOR PLAN POSTED IN THE GENERATOR BUILDING FOR DETAILED INFORMATION ON ALL SOURCES AND THEIR RESPECTIVE DISCONNECT LOCATIONS.

IDENTIFY AND DISCONNECT ALL POWER SOURCES BEFORE SERVICING. FAILURE TO DO SO MAY RESULT IN SEVERE INJURY OR DEATH. ALWAYS FOLLOW ESTABLISHED LOCKOUT/TAGOUT PROCEDURES.

HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON EXTERIOR DOOR OF ELECT. [156]

PANELBOARD DESIGNATION , 3/8" WHITE ENGRAVED LETTERS

VOLTAGE & PHASE DESIGNATION 1/4" WHITE ENGRAVED LETTERS

PANEL 4OPRLA MAIN DISCONNECT (FEEDER 1)
400A, 480/277V, 3 PH, 4 WIRES
CAUTION - OTHER FEEDERS PRESENT
SEE EXTERIOR DOOR WARNING PLACARD

HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON PANEL 40PRLA

SWITCHBOARD DESIGNATION , 3/8" WHITE ENGRAVED LETTERS

VOLTAGE & PHASE DESIGNATION 1/4" WHITE ENGRAVED LETTERS

MAIN SWITCHBOARD (480V) MAIN DISCONNECT (FEEDER 2)
1200A, 480/277V, 3 PH, 4 WIRES
CAUTION - OTHER FEEDERS PRESENT
SEE EXTERIOR DOOR WARNING PLACARD

HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON PANEL 480V SWITCHBOARD

1 WARNING PLACARDS - ELECT. [156]
NOT TO SCALE

WARNING LABEL, 3/8" WHITE ENGRAVED LETTERS

INFORMATION 1/4" WHITE ENGRAVED LETTERS

WARNING

MULTIPLE ELECTRICAL FEEDERS SUPPLY THIS BUILDING
TWO ELECTRICAL FEEDERS PRESENT INSIDE
FEEDER 3: ECB-T-4LSSEX
FEEDER 4: ECB-T-(X)DIST

CAUTION: A PORTION OF THE OVERHEAD WIRING LOCATED INSIDE THE BUILDING IS ENERGIZED UNTIL THE ASSOCIATED CIRCUITS ARE OPENED AT THE SOURCE IN THE GENERATOR BUILDING.

TWO OTHER GROUPS OF FEEDERS PRESENT INSIDE ELECTRICAL ROOM AT SOUTHEAST CORNER OF 2002 ADDITION AND IN NEW ADDITION ELECTRICAL ROOM AT SOUTHEAST CORNER OF BUILDING.

MAIN UTILITY SERVICE DISCONNECT LOCATED IN GENERATOR BUILDING. REFER TO BUILDING SINGLE LINE DIAGRAM AND FLOOR PLAN POSTED IN THE GENERATOR BUILDING FOR DETAILED INFORMATION ON ALL SOURCES AND THEIR RESPECTIVE DISCONNECT LOCATIONS.

IDENTIFY AND DISCONNECT ALL POWER SOURCES BEFORE SERVICING. FAILURE TO DO SO MAY RESULT IN SEVERE INJURY OR DEATH. ALWAYS FOLLOW ESTABLISHED LOCKOUT/TAGOUT PROCEDURES.

HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON EXTERIOR DOOR OF ELECT. [134]

PANELBOARD DESIGNATION , 3/8" WHITE ENGRAVED LETTERS

VOLTAGE & PHASE DESIGNATION 1/4" WHITE ENGRAVED LETTERS

ECB-T-4LSSEX MAIN DISCONNECT (FEEDER 3)
225A, 480/277V, 3 PH, 4 WIRES
CAUTION - OTHER FEEDERS PRESENT
SEE EXTERIOR DOOR WARNING PLACARD

HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON ECB-T-4LSSEX MAIN DISCONNECT

ENCLOSED CIRCUIT BREAKERDESIGNATION , 3/8" WHITE ENGRAVED LETTERS

VOLTAGE & PHASE DESIGNATION 1/4" WHITE ENGRAVED LETTERS

ECB-T-(X)DIST (2002) DIST MAIN DISCONNECT (208V) (FEEDER 4)
225A, 480/277V, 3 PH, 4 WIRES
CAUTION - OTHER FEEDERS PRESENT
SEE EXTERIOR DOOR WARNING PLACARD

HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON ECB-(X)T-DIST MAIN DISCONNECT

2 WARNING PLACARDS - L.L.S. HUSB., HOLDING AND STORAGE [134]
NOT TO SCALE

CAUTION

THE ENGINE-GENERATOR SET IS CONNECTED AS A SEPARATELY DERIVED SOURCE. THE ALTERNATOR NEUTRAL IS BONDED TO THE GENERATOR SET FRAME AND THE DISTRIBUTION SYSTEM GROUND ELECTRODE. THE DOWNSTREAM AUTOMATIC TRANSFER SWITCHES ARE 4 POLE, SWITCHED NEUTRAL TYPE

HEIGHT AS REQ'D

LENGTH AS REQUIRED

PLACARD TO BE MOUNTED ON THE EXTERIOR OF ENGINE-GENERATOR SET CONTROLS ACCESS PANEL

9 SEPARATELY DERIVED SYSTEM CAUTION NAMEPLATE DETAIL
NOT TO SCALE

WARNING LABEL, 3/8" WHITE ENGRAVED LETTERS

INFORMATION 1/4" WHITE ENGRAVED LETTERS

WARNING

MULTIPLE ELECTRICAL FEEDERS SUPPLY THIS BUILDING
THREE ELECTRICAL FEEDERS PRESENT INSIDE
FEEDER 5: PANEL 4OP1
FEEDER 6: PANEL 4LSS1
FEEDER 7: PANEL 4LS1

TWO OTHER GROUPS OF FEEDERS PRESENT INSIDE LOADING DOCK DOOR AND AT SOUTHEAST CORNER OF 2002 ADDITION.

MAIN UTILITY SERVICE DISCONNECT LOCATED IN GENERATOR BUILDING. REFER TO BUILDING SINGLE LINE DIAGRAM AND FLOOR PLAN POSTED IN THE GENERATOR BUILDING FOR DETAILED INFORMATION ON ALL SOURCES AND THEIR RESPECTIVE DISCONNECT LOCATIONS.

IDENTIFY AND DISCONNECT ALL POWER SOURCES BEFORE SERVICING. FAILURE TO DO SO MAY RESULT IN SEVERE INJURY OR DEATH. ALWAYS FOLLOW ESTABLISHED LOCKOUT/TAGOUT PROCEDURES.

HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON EXTERIOR DOOR OF MECH. [E113]

PANELBOARD DESIGNATION , 3/8" WHITE ENGRAVED LETTERS

VOLTAGE & PHASE DESIGNATION 1/4" WHITE ENGRAVED LETTERS

PANEL 4OP1 MAIN DISCONNECT (FEEDER 5)
1200A, 480/277V, 3 PH, 4 WIRES
CAUTION - OTHER FEEDERS PRESENT
SEE EXTERIOR DOOR WARNING PLACARD

HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON PANEL 4OP1

SWITCHBOARD DESIGNATION , 3/8" WHITE ENGRAVED LETTERS

VOLTAGE & PHASE DESIGNATION 1/4" WHITE ENGRAVED LETTERS

PANEL 4LSS1 MAIN DISCONNECT (FEEDER 6)
1200A, 480/277V, 3 PH, 4 WIRES
CAUTION - OTHER FEEDERS PRESENT
SEE EXTERIOR DOOR WARNING PLACARD

HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON PANEL 4LSS1

PANELBOARD DESIGNATION , 3/8" WHITE ENGRAVED LETTERS

VOLTAGE & PHASE DESIGNATION 1/4" WHITE ENGRAVED LETTERS

PANEL 4LS1 MAIN DISCONNECT (FEEDER 7)
225A, 480/277V, 3 PH, 4 WIRES
CAUTION - OTHER FEEDERS PRESENT
SEE EXTERIOR DOOR WARNING PLACARD

HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON PANEL 4LS1

3 WARNING PLACARDS - MECH. [E113]
NOT TO SCALE

WARNING LABEL, 3/8" WHITE ENGRAVED LETTERS

INFORMATION 1/4" WHITE ENGRAVED LETTERS

MAIN UTILITY SERVICE DISCONNECT LOCATED INSIDE

WARNING

MULTIPLE ELECTRICAL FEEDERS SUPPLY THE AQUARIUM BUILDING. LOOK FOR WARNING PLACARDS AT THREE LOCATIONS ON THE SOUTH FACE OF THE BUILDING. REFER TO BUILDING SINGLE LINE DIAGRAM AND FLOOR PLAN POSTED INSIDE FOR DETAILED INFORMATION ON ALL SOURCES AND THEIR RESPECTIVE DISCONNECT LOCATIONS.

IDENTIFY AND DISCONNECT ALL POWER SOURCES BEFORE SERVICING. FAILURE TO DO SO MAY RESULT IN SEVERE INJURY OR DEATH.

ALWAYS FOLLOW ESTABLISHED LOCKOUT/TAGOUT PROCEDURES.

HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON EXTERIOR DOOR OF ELECT. [E122]

4 WARNING PLACARD - ELECT. [E122]
NOT TO SCALE

WARNING LABEL, 3/8" WHITE ENGRAVED LETTERS

INFORMATION 1/4" WHITE ENGRAVED LETTERS

WARNING

STANDBY EMERGENCY POWER EQUIPMENT INSIDE

MAIN UTILITY SERVICE DISCONNECT LOCATED INSIDE DOOR TO THE LEFT. MULTIPLE ELECTRICAL FEEDERS ORIGINATING INSIDE SUPPLY THE AQUARIUM BUILDING. LOOK FOR WARNING PLACARDS AT THREE LOCATIONS ON THE SOUTH FACE OF THE BUILDING.

REFER TO BUILDING SINGLE LINE DIAGRAM AND FLOOR PLAN POSTED INSIDE FOR DETAILED INFORMATION ON ALL SOURCES AND THEIR RESPECTIVE DISCONNECT LOCATIONS.

IDENTIFY AND DISCONNECT ALL POWER SOURCES BEFORE SERVICING. FAILURE TO DO SO MAY RESULT IN SEVERE INJURY OR DEATH.

ALWAYS FOLLOW ESTABLISHED LOCKOUT/TAGOUT PROCEDURES.

HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON EXTERIOR DOOR OF ELECT. [E121]

5 WARNING PLACARD - ELECT. [E121]
NOT TO SCALE

WARNING LABEL, 3/8" WHITE ENGRAVED LETTERS

INFORMATION 1/4" WHITE ENGRAVED LETTERS

INFORMATION 1/4" WHITE ENGRAVED LETTERS

WARNING

MULTIPLE ELECTRICAL FEEDERS SUPPLY THIS BUILDING.
TWO ELECTRICAL FEEDERS PRESENT INSIDE
FEEDER 1: PANEL 4LSSCH
FEEDER 2: PANEL 2LS (BRANCH CIRCUIT FOR FACU-3)

MAIN UTILITY SERVICE DISCONNECT LOCATED INSIDE GENERATOR BUILDING. MULTIPLE ELECTRICAL FEEDERS SUPPLY THE AQUARIUM BUILDING. LOOK FOR WARNING PLACARDS AT THREE LOCATIONS ON THE SOUTH FACE OF THE BUILDING.

REFER TO BUILDING SINGLE LINE DIAGRAM AND FLOOR PLAN POSTED INSIDE THE GENERATOR BUILDING FOR DETAILED INFORMATION ON ALL SOURCES AND THEIR RESPECTIVE DISCONNECT LOCATIONS.

IDENTIFY AND DISCONNECT ALL POWER SOURCES BEFORE SERVICING. FAILURE TO DO SO MAY RESULT IN SEVERE INJURY OR DEATH.

ALWAYS FOLLOW ESTABLISHED LOCKOUT/TAGOUT PROCEDURES.

HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON EXTERIOR DOOR OF PUMP BLDG [E123]

PANELBOARD DESIGNATION , 3/8" WHITE ENGRAVED LETTERS

VOLTAGE & PHASE DESIGNATION 1/4" WHITE ENGRAVED LETTERS

PANEL 4LSSCH MAIN DISCONNECT (FEEDER 1)
1200A, 480/277V, 3 PH, 4 WIRES
CAUTION - OTHER FEEDERS PRESENT
SEE EXTERIOR DOOR WARNING PLACARD

HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON PANEL 4LSSCH

DISCONNECT DESIGNATION, 3/8" WHITE ENGRAVED LETTERS

VOLTAGE & PHASE DESIGNATION 1/4" WHITE ENGRAVED LETTERS

FACU-3 BRANCH CIRCUIT FROM 2LS DISCONNECT (FEEDER 2)
20A, 120V, 1 PH, 3 WIRES
CAUTION - OTHER FEEDERS PRESENT
SEE EXTERIOR DOOR WARNING PLACARD

HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON FACU-3

6 WARNING PLACARD - PUMP BLDG [E123]
NOT TO SCALE

WARNING LABEL, 3/8" WHITE ENGRAVED LETTERS

INFORMATION 1/4" WHITE ENGRAVED LETTERS

WARNING

MULTIPLE ELECTRICAL FEEDERS SUPPLY THIS BUILDING
TWO ELECTRICAL FEEDERS PRESENT INSIDE
FEEDER 1: PANEL 4LSSPB
FEEDER 2: PANEL 2LS (BRANCH CIRCUIT FOR FACU-4)

CAUTION: A PORTION OF THE OVERHEAD WIRING LOCATED INSIDE THE BUILDING IS ENERGIZED UNTIL THE ASSOCIATED CIRCUITS ARE OPENED AT THE SOURCE IN THE GENERATOR BUILDING.

TWO OTHER GROUPS OF FEEDERS PRESENT INSIDE LOADING DOCK DOOR AND IN NEW ADDITION ELECTRICAL ROOM AT SOUTHEAST CORNER OF BUILDING. MAIN UTILITY SERVICE DISCONNECT LOCATED IN GENERATOR BUILDING.

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HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON EXTERIOR DOOR OF ELECT. [E126]

PANELBOARD DESIGNATION , 3/8" WHITE ENGRAVED LETTERS

VOLTAGE & PHASE DESIGNATION 1/4" WHITE ENGRAVED LETTERS

PANEL 4LSSPB MAIN DISCONNECT (FEEDER 1)
200A, 480/277V, 3 PH, 4 WIRES
CAUTION - OTHER FEEDERS PRESENT
SEE EXTERIOR DOOR WARNING PLACARD

HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON PANEL 4LSSPB

DISCONNECT DESIGNATION, 3/8" WHITE ENGRAVED LETTERS

VOLTAGE & PHASE DESIGNATION 1/4" WHITE ENGRAVED LETTERS

FACU-4 BRANCH CIRCUIT FROM 2LS DISCONNECT (FEEDER 2)
20A, 120V, 1 PH, 3 WIRES
CAUTION - OTHER FEEDERS PRESENT
SEE EXTERIOR DOOR WARNING PLACARD

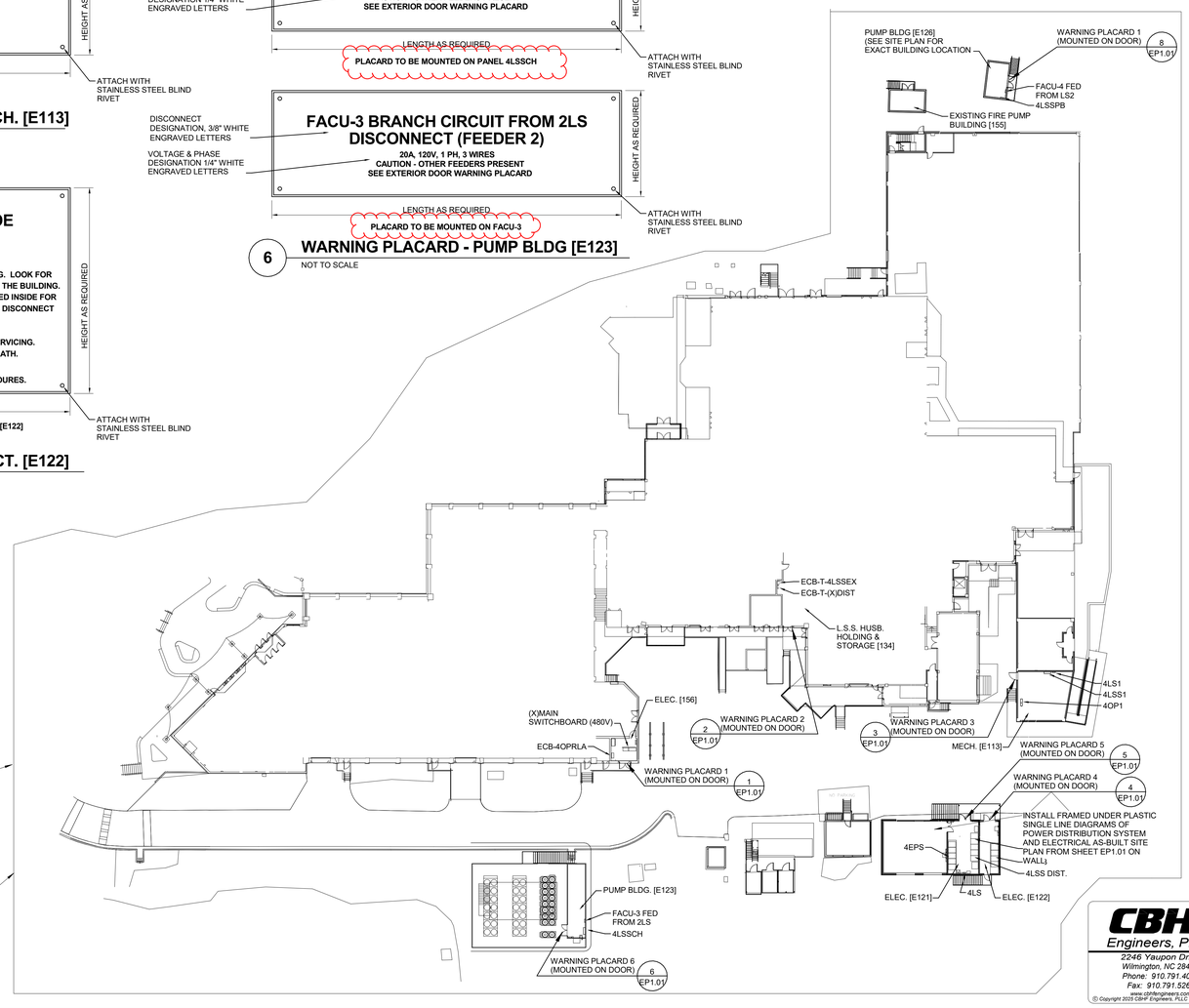
HEIGHT AS REQUIRED

LENGTH AS REQUIRED

ATTACH WITH STAINLESS STEEL BLIND RIVET

PLACARD TO BE MOUNTED ON FACU-4

8 WARNING PLACARDS - PUMP BLDG.[E126]
NOT TO SCALE



ELECTRICAL CONTRACTOR MUST PROVIDE 24"X36" PLACARD MAP AND MOUNT ON INTERIOR OF GENERATOR BUILDING

THE ELECTRICAL CONTRACTOR MUST PROVIDE CAMPUS MAPS SIMILAR TO PLACARDS 1 THIS SHEET, MAPS MUST BE APPROVED BY THE ARCHITECT/ENGINEER PRIOR TO PRINTING. PROVIDE SCREEN-PRINTED ON UV-RESISTANT, WEATHERPROOF MEDIA. THE MAP MUST BE AT LEAST 18" X 24" AND CLEARLY SHOW THE LOCATIONS OF ALL ELECTRICAL ROOMS WITH THEIR DISCONNECTING MEANS. THE PURPOSE IS TO PROVIDE AN EASY REFERENCE FOR FIRST RESPONDERS AND MAINTENANCE STAFF. A COPY OF THIS MAP MUST BE PLACED ON THE DOORS OF THE FOLLOWING ROOMS: ELEC. 134, 156, MECH. E113, PUMP BUILDING E123, AND ELEC. E122.

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD.
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.3244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 203H
BEND, OR 97707
TELE: 619.423.8700
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EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.WITHCAREERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: N/A
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

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NOT FOR CONSTRUCTION

SEAL 35230 JASON P. FAMIGLIETTI ENGINEER

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

PLACARD AND PLACARD MAP

E-5.7

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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PLACARDS

SCALE : NO SCALE

TRANSFORMER SECONDARY CONDUIT AND CONDUCTOR, SSBJ & GEC SCHEDULE

TRANSFORMER RATING (KVA)	TAG/CIRCUIT RATING	SETS	SECONDARY CONDUCTORS	CONDUIT SIZE	GEC
6	25	1	4#10 & 1#8 SSBJ	3/4"	#8
15	60	1	4#6 & 1#8 SSBJ	1"	#8
45	150	1	4#1/0 & 1#6 SSBJ	2"	#6
75	225	1	4#4/0 &1#2 SSBJ	2 1/2"	#2
112.5	400	2	4#3/0 & 1#2 SSBJ	2"	#2
150	500	2	4-250kcmil & 1#1/0 SSBJ	2 1/2"	#1/0

NOTES:
SSBJ = SUPPLY SIDE BONDING JUMPER
GEC = GROUNDING ELECTRODE CONDUCTOR

CONDUIT AND CONDUCTOR SCHEDULE

TAG/CIRCUIT RATING	SETS	CONDUCTORS	GROUND SIZE	CONDUIT SIZE
15	1	#12	#12	3/4"
20	1	#12	#12	3/4"
25	1	#10	#10	3/4"
30	1	#10	#10	3/4"
40	1	#8	#10	3/4"
50	1	#8	#10	3/4"
60	1	#6	#10	1"
70	1	#4	#8	1 1/4"
80	1	#4	#8	1 1/4"
90	1	#3	#8	1 1/4"
100	1	#3	#8	1 1/4"
110	1	#2	#6	1 1/4"
125	1	#1	#6	1 1/2"
150	1	#1/0	#6	2"
175	1	#2/0	#6	2"
200	1	#3/0	#6	2 1/2"
225	1	#4/0	#4	2 1/2"
250	1	250kcmil	#4	2 1/2"
300	1	350kcmil	#4	3"
350	1	500kcmil	#3	3 1/2"
400	2	#3/0	#3	2"
450	2	#4/0	#2	2 1/2"
500	2	250kcmil	#2	2 1/2"
600	2	350kcmil	#1	4"
700	2	500kcmil	#1/0	3 1/2"
800	2	500kcmil	#1/0	3 1/2"
1000	3	400kcmil	#2/0	3 1/2"
1200	4	350kcmil	#3/0	3"
1600	5	400kcmil	#4/0	3 1/2"
2000	6	400kcmil	250kcmil	3 1/2"
2500	7	500kcmil	350kcmil	3 1/2"
4000	11	500kcmil	N/A	3 1/2"

CONDUIT AND CONDUCTOR SCHEDULE NOTES:

1. TABLE IS FOR COPPER CONDUCTORS WITH THHN/THWN/XHHW 75°C INSULATION PER NEC TABLE 310.16 WITH FULL SIZE NEUTRALS AND ARE NOT CORRECTED FOR TEMPERATURE OR VOLTAGE DROP AS NOTED ON THE SINGLE LINE DIAGRAM NOTES. OTHER INSULATIONS, RACEWAY TYPES OR CONDUCTOR CONFIGURATIONS MAY REQUIRE LARGER RACEWAYS OR DIFFERENT CONDUCTOR CONFIGURATIONS AND ARE THE RESPONSIBILITY OF THE CONTRACTOR.
2. RACEWAYS ARE SCHEDULE 40 PVC AT A MAXIMUM OF 40% FILL. EMT RACEWAYS ARE PERMITTED IN FINISHED, CONDITIONED OFFICES, CLASSROOMS, ETC. ADJUST RACEWAYS SIZE AS REQUIRED. SEE NON-CORROSIVE ATMOSPHERE SPACES TABLE ON SHEET E-6.16.
3. ALL SWITCHBOARD, PANELBOARD, ATS AND GENERATOR FEEDERS ARE 4 WIRE + EG. SERVICE IS 4 WIRE.
4. DRY TYPE TRANSFORMER PRIMARY FEEDERS ARE 3 WIRE + EG.
5. DRY TYPE TRANSFORMER SECONDARY FEEDERS ARE 4 WIRE + EG.
6. PROVIDE PARALLEL SETS OF RACEWAYS AND CONDUCTORS AS INDICATED IN THE SETS COLUMN.
7. OTHER COMBINTIONS ACHIEVING EQUIVALENT AMPACITY AND RACEWAY FILL MAY BE ACCEPTABLE IF APPROVED IN WRITING BY THE ARCHITECT/ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR ALTERNATE CONDUCTOR AND RACEWAY COMBINATIONS.
8. TABLE CONDUCTORS ARE AWG, UNO.
9. SUPERSCRIPT ON CONDUCTOR TAG INDICATES 3 PHASE CONDUCTORS, NO NEUTRAL.
10. ENCLOSED CIRCUIT BREAKERS (ECB) MUST BE INSTALLED IN NEMA-4X ENCLOSURES AND BE RATED AT 30,000 AIC.

SEE SINGLE LINE (POWER RISER) DIAGRAM NOTES ON SHEET E-6.2

SZOSTAK DESIGN

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JASON P. FAMIGLIETTI — SEAL 35230 — ENGINEER

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SINGLE LINE DIAGRAM (1 OF 2)

E-6.1

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
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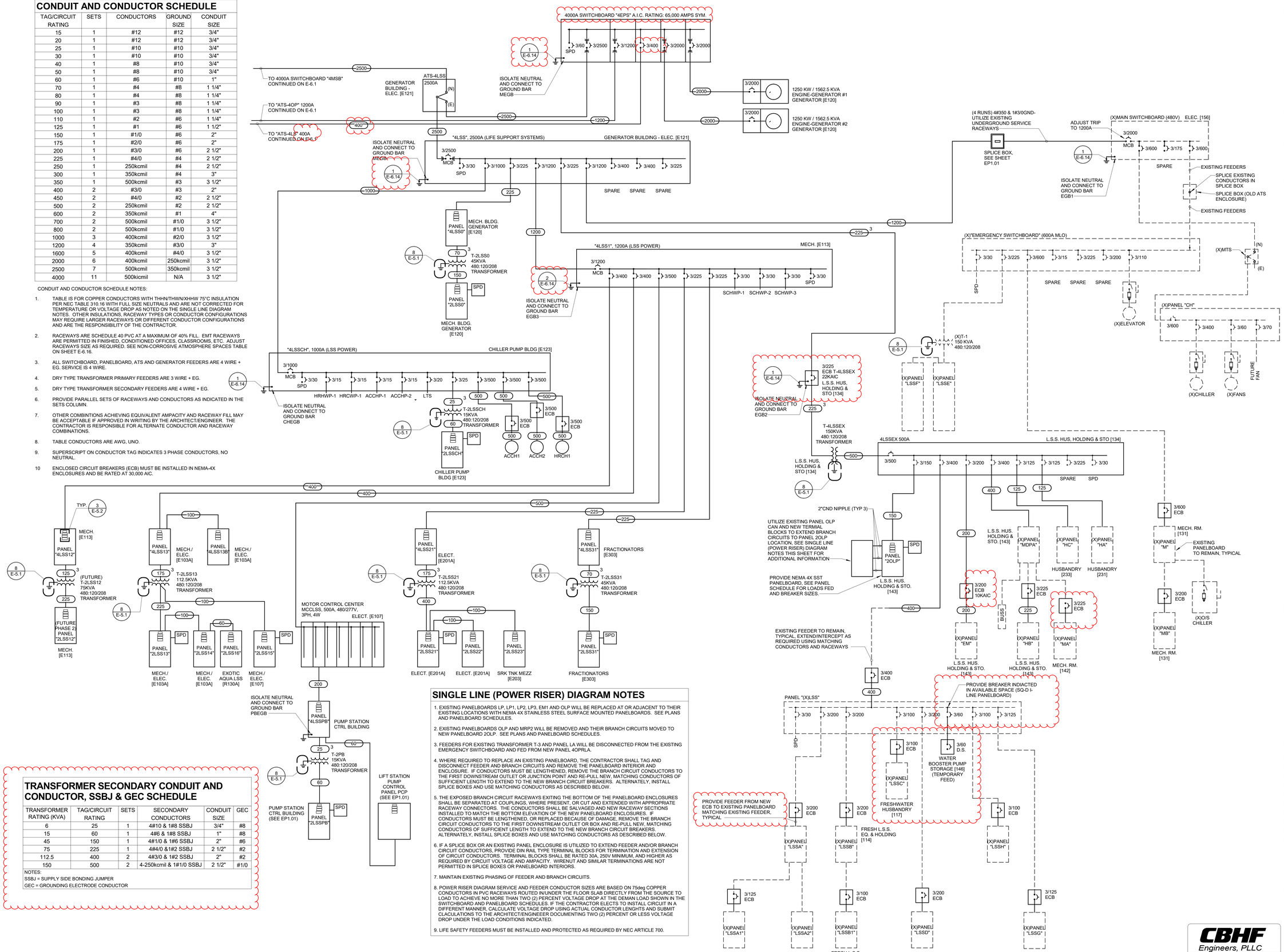
SINGLE LINE DIAGRAM (1 OF 2)
SCALE : NO SCALE

CONDUIT AND CONDUCTOR SCHEDULE

TAG/CIRCUIT RATING	SETS	CONDUCTORS	GROUND SIZE	CONDUIT SIZE
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150	500	2	4-250kcmil & 1#1/0 SSBJ	2 1/2"	#1/0

NOTES:
SSBJ = SUPPLY SIDE BONDING JUMPER
GEC = GROUNDING ELECTRODE CONDUCTOR

SINGLE LINE (POWER RISER) DIAGRAM NOTES

1. EXISTING PANELBOARDS LP, LP1, LP2, LP3, EM1 AND OLP WILL BE REPLACED AT OR ADJACENT TO THEIR EXISTING LOCATIONS WITH NEMA 4X STAINLESS STEEL SURFACE MOUNTED PANELBOARDS. SEE PLANS AND PANELBOARD SCHEDULES.
2. EXISTING PANELBOARDS OLP AND MRP2 WILL BE REMOVED AND THEIR BRANCH CIRCUITS MOVED TO NEW PANELBOARD 2OLP. SEE PLANS AND PANELBOARD SCHEDULES.
3. FEEDERS FOR EXISTING TRANSFORMER T-3 AND PANEL LA WILL BE DISCONNECTED FROM THE EXISTING EMERGENCY SWITCHBOARD AND FED FROM NEW PANEL 4OPRLA.
4. WHERE REQUIRED TO REPLACE AN EXISTING PANELBOARD, THE CONTRACTOR SHALL TAG AND DISCONNECT FEEDER AND BRANCH CIRCUITS AND REMOVE THE PANELBOARD INTERIOR AND ENCLOSURE. IF CONDUCTORS MUST BE LENGTHENED, REMOVE THE BRANCH CIRCUIT CONDUCTORS TO THE FIRST DOWNSTREAM OUTLET OR JUNCTION POINT AND RE-PULL NEW, MATCHING CONDUCTORS OF SUFFICIENT LENGTH TO EXTEND TO THE NEW BRANCH CIRCUIT BREAKERS. ALTERNATELY, INSTALL SPLICE BOXES AND USE MATCHING CONDUCTORS AS DESCRIBED BELOW.
5. THE EXPOSED BRANCH CIRCUIT RACEWAYS EXITING THE BOTTOM OF THE PANELBOARD ENCLOSURES SHALL BE SEPARATED AT COUPLINGS, WHERE PRESENT, OR CUT AND EXTENDED WITH APPROPRIATE RACEWAY CONNECTORS. THE CONDUCTORS SHALL BE SALVAGED AND NEW RACEWAY SECTIONS INSTALLED TO MATCH THE BOTTOM ELEVATION OF THE NEW PANELBOARD ENCLOSURES. IF CONDUCTORS MUST BE LENGTHENED, OR REPLACED BECAUSE OF DAMAGE, REMOVE THE BRANCH CIRCUIT CONDUCTORS TO THE FIRST DOWNSTREAM OUTLET OR BOX AND RE-PULL NEW, MATCHING CONDUCTORS OF SUFFICIENT LENGTH TO EXTEND TO THE NEW BRANCH CIRCUIT BREAKERS. ALTERNATELY, INSTALL SPLICE BOXES AND USE MATCHING CONDUCTORS AS DESCRIBED BELOW.
6. IF A SPLICE BOX OR AN EXISTING PANEL ENCLOSURE IS UTILIZED TO EXTEND FEEDER AND/OR BRANCH CIRCUIT CONDUCTORS, PROVIDE DIN RAIL TYPE TERMINAL BLOCKS FOR TERMINATION AND EXTENSION OF CIRCUIT CONDUCTORS. TERMINAL BLOCKS SHALL BE RATED 30A, 250V MINIMUM, AND HIGHER AS REQUIRED BY CIRCUIT VOLTAGE AND AMPACITY. WIRENUT AND SIMILAR TERMINATIONS ARE NOT PERMITTED IN SPLICE BOXES OR PANELBOARD INTERIORS.
7. MAINTAIN EXISTING PHASING OF FEEDER AND BRANCH CIRCUITS.
8. POWER RISER DIAGRAM SERVICE AND FEEDER CONDUCTOR SIZES ARE BASED ON 75deg COPPER CONDUCTORS IN PVC RACEWAYS ROUTED IN/UNDER THE FLOOR SLAB DIRECTLY FROM THE SOURCE TO LOAD TO ACHIEVE NO MORE THAN TWO (2) PERCENT VOLTAGE DROP AT THE DEMAN LOAD SHOWN IN THE SWITCHBOARD AND PANELBOARD SCHEDULES. IF THE CONTRACTOR ELECTS TO INSTALL CIRCUIT IN A DIFFERENT MANNER, CALCULATE VOLTAGE DROP USING ACTUAL CONDUCTOR LENGHTS AND SUBMIT CLACULATIONS TO THE ARCHITECT/ENGINEEER DOCUMENTING TWO (2) PERCENT OR LESS VOLTAGE DROP UNDER THE LOAD CONDITIONS INDICATED.
9. LIFE SAFETY FEEDERS MUST BE INSTALLED AND PROTECTED AS REQUIRED BY NEC ARTICLE 700.

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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ARCHITECT
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CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
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WWW.SZOSTAKDESIGN.COM
LICENSE # 5167F

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 203H
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DURHAM, NC 27701
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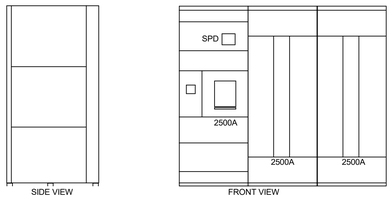
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SINGLE LINE DIAGRAM (2 OF 2)

E-6.2

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
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4LSS MAXIMUM DIMENSIONS: 108" WIDE x 48" DEEP x 92" HIGH

Switchboard: 4LSS

Location: ELEC. 122
Supply From: 4MSB
Mounting: SURFACE
Enclosure: NEMA 1

Volts: 480Y/277
Phases: 3
Wires: 4

A.I.C. Rating: 65,000 AMPS SYMMETRICAL
Mains Type: MCB
Mains Rating: 2500 A
MCB Rating: 2500 A

Notes:

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	SPD	3	30 A	30 A	0 VA	
2	PANEL 4LSSCH	3	1200 A	1000 A	654550 VA	
3	PANEL 4LSS0 - GEN BLDG [E120]	3	225 A	225 A	14757 VA	
4	PANEL 4LSS1 - MECH. [E113]	3	1200 A	1200 A	688376 VA	
5	PANEL 4LSSEX (VIA XFMR T-4LSSEX) - LSS HUSB. H&S [134]	3	225 A	225 A	145028 VA	
6	(X)MAIN SWITCHBOARD (480V)	3	1200 A	1100 A	537000 VA	
7	SPARE	3	400 A	400 A	0 VA	
8	SPARE	3	400 A	400 A	0 VA	
9	SPARE	3	225 A	225 A	0 VA	
				Total Conn. Load:	2039533 VA	
				Total Amps:	2453.2 A	

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	705911 VA	100.00%	705911 VA		
Motor	512147 VA	102.59%	525388 VA	**Total Conn. Load:**	2039533 VA
Other	6656 VA	100.00%	6656 VA	**Total Est. Demand:**	2042283 VA
Power	47705 VA	100.00%	47705 VA	**Total Conn.:**	2453.2 A
Lighting	1065 VA	125.00%	1332 VA	**Total Est. Demand:**	2456.5 A
Mechanical	56211 VA	100.00%	56211 VA		
Receptacle	31057 VA	66.10%	20529 VA		
Existing Loads	682028 VA	100.00%	682028 VA		

Notes:
ALL CIRCUIT BREAKERS LARGER THAN 1200A MUST BE DRAWOUT TYPE.

Branch Panel: 4LS

Location:
Supply From: 4MSB
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 480Y/277
Phases: 3
Wires: 4

A.I.C. Rating: 42,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 400 A
MCB Rating: 400 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1				0 VA	0 VA					1	20 A	SPARE	2
3	SPD	30 A	3			0 VA	0 VA			1	20 A	SPARE	4
5								0 VA	0 VA	1	20 A	SPARE	6
7	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	8
9	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	10
11	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	12
13				10358 VA	0 VA					1	20 A	SPARE	14
15	PANEL 2LS (VIA XFMR T-2LS) - ELEC [E121]	70 A	3			10149 VA	0 VA			1	20 A	SPARE	16
17								8225 VA	0 VA	1	20 A	SPARE	18
19				14164 VA	1750 VA								20
21	PANEL 4LS1 - MECH. [E113]	225 A	3			17046 VA	1750 VA			3	60 A	FUTURE PHASE 2	22
23								16191 VA	1750 VA				24
		Total Load:		26218 VA		28913 VA		26166 VA					
		Total Amps:		95 A		104 A		94 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	0 VA	0.00%	0 VA		
Power	27132 VA	100.00%	27132 VA	**Total Conn. Load:**	78823 VA
Lighting	45776 VA	125.00%	57220 VA	**Total Est. Demand:**	90262 VA
Receptacle	720 VA	100.00%	720 VA	**Total Conn.:**	95 A
Future Phase 2	5250 VA	100.00%	5250 VA	**Total Est. Demand:**	109 A

Notes:
1. FUTURE PHASE 2: 26,222 SF @ 0.2 VA/SF = 5,200 VA.
2. PANEL 4LS1 FEEDER CB MUST BE ELECTRONIC LSI TRIP.

Branch Panel: 2LS

Location:
Supply From: T-2LS
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 150 A
MCB Rating: 150 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1				0 VA	1920 VA					1	20 A	GEN #1 CHARGER GENE [E120]	2
3	SPD	30 A	3			0 VA	2500 VA			2	40 A	GEN #1 HEATER, JACKET HEATER, ALTERNATOR	4
5								0 VA	2500 VA				6
7	GEN #2 CHARGER GENE [E120]	20 A	1	1920 VA	864 VA					1	20 A	GEN #1 DAY TANK DT01- GEN. [E120]	8
9	GEN #2 HEATER, JACKET HEATER, ALTERNATOR	40 A	2			2500 VA	1392 VA			1	20 A	GEN #1 LOUVER PWR	10
11								2500 VA	500 VA	1	20 A	GEN #1 ALTERNATOR HEATER	12
13	GEN # 2 DAY TANK DT02- GEN. [E120]	20 A	1	864 VA	500 VA					1	20 A	GEN #2 ALTERNATOR HEATER	14
15	GEN #2 LOUVER PWR	20 A	1			1392 VA	20 VA			1	15 A	TMS 3000 LEAK DETECTION PNL [E121]	16
17	RCPT: GEN [E120]	20 A	1					360 VA	20 VA	1	15 A	FUEL TANK PUMP CONTROLLER [E121]	18
19	FACU-2 ELEC [E121] (NOTE 1)	20 A	1	400 VA	1945 VA					2	30 A	FUEL TANK PUMP #1 VIA FUEL SYSTEM DUPLEX CONTROL PANEL	20
21	FACU-3 PUMP BLDG [E123] (NOTE 1)	20 A	1			400 VA	1945 VA						22
23	FACU-4 PUMP BLDG [E126] (NOTE 1)	20 A	1					400 VA	1945 VA	2	30 A	FUEL TANK PUMP #2 VIA FUEL SYSTEM DUPLEX CONTROL PANEL	24
25	SPARE	20 A	1	0 VA	1945 VA								26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1	--	--			--	--	1	--	SPACE	42
		Total Load:		10358 VA		10149 VA		8225 VA					
		Total Amps:		89 A		87 A		69 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	0 VA	0.00%	0 VA		
Power	27132 VA	100.00%	27132 VA	**Total Conn. Load:**	27492 VA
Receptacle	360 VA	100.00%	360 VA	**Total Est. Demand:**	27492 VA
				Total Conn.:	76 A
				Total Est. Demand:	76 A

Notes:
1. PROVIDE CIRCUIT BREAKER LOCKING DEVICE FOR FACU ALONG WITH IDENTIFYING CIRCUIT BREAKER IN ACCORDANCE WITH NEC 760.41.

Branch Panel: 4LS1

Location: MECH. E113
Supply From: 4LS
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 480Y/277
Phases: 3
Wires: 4

A.I.C. Rating: 14,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1				13134 VA	0 VA								2
3	PANEL 2LDP - MECH. [E113] (VIA XFMR T-2LDP)	70 A	3			16116 VA	0 VA			3	30 A	SPD	4
5								14767 VA	0 VA				6
7				855 VA	253 VA					1	20 A	LTG: E112, E111, E113	8
9	PANEL 4LS1B (1ST FLOOR SHARK TANK AREA)	60 A	3			230 VA	620 VA						10
11								0 VA	1424 VA	3	60 A	PANEL 4LS1A (MAIN ENTRY AREA)	12
13				930 VA	400 VA								14
15	PANEL 4LS3 (3RD FLOOR SHARK TANK AREA) SHARK TANK [E318]	60 A	3			175 VA	1215 VA						16
17								0 VA	0 VA	3	60 A	PANEL 4LS2 (2ND FLOOR SHARK TANK AREA) ELEC. [E201A]	18
19	SPARE	20 A	1	0 VA	0 VA								20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
		Total Load:		14164 VA		17046 VA		16191 VA					
		Total Amps:		51 A		63 A		60 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	0 VA	0.00%	0 VA		
Power	0 VA	0.00%	0 VA	**Total Conn. Load:**	46135 VA
Lighting	45776 VA	125.00%	57220 VA	**Total Est. Demand:**	57579 VA
Receptacle	360 VA	100.00%	360 VA	**Total Conn.:**	55 A
				Total Est. Demand:	69 A

Notes:
1. THE MCB AND BRANCH CIRCUIT BREAKERS MUST BE ELECTRONIC LSI TRIP.

Branch Panel: 4LS1A

Location: IT ROOM 104
Supply From: 4LS1
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 480Y/277
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 100 A
MCB Rating: 60 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	LTG: WOMEN R122	20 A	1	440 VA	0 VA								2
3	LTG: FRONT ENTRY LANDSCAPE AND AREA	20 A	1			444 VA	0 VA			3	30 A	SPD	4
5	SPARE	20 A	1					0 VA	0 VA				6
7	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	8
9	SPARE	20 A	1			0 VA	980 VA						10
11	SPARE	20 A	1					0 VA	400 VA	3	15 A	PANEL 2LS1A VIA XFMR T-2LS1A	12
13	SPARE	20 A	1	0 VA	180 VA								14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
		Total Load:		620 VA		1424 VA		400 VA					
		Total Amps:		2 A		5 A		1 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Power	0 VA	0.00%	0 VA		
Lighting	884 VA	125.00%	1105 VA	**Total Conn. Load:**	1244 VA
Receptacle	360 VA	100.00%	360 VA	**Total Est. Demand:**	1465 VA
				Total Conn.:	1 A
				Total Est. Demand:	2 A

Notes:

Branch Panel: 2LS1A

Location: IT ROOM 104
Supply From: T-2LS1A
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 60 A
MCB Rating: 25 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	(X)NAC PANEL CUSTOD. 101 (NOTE 1)	20 A	1	400 VA	0 VA								2
3	(X)NAC PANEL ELECTRICAL ROOM 149 (NOTE 1)	20 A	1			400 VA	0 VA			3	30 A	SPD	4
5	RCPT: FIRST RESPONDERS PANEL (NOTE 1)	20 A	1					180 VA	0 VA				6
7	RCPT: FIRST RESPONDERS BATT. BOX (NOTE 1)	20 A	1	180 VA	400 VA					1	20 A	(X)FACP FIRST AID R127 (NOTE 1)	8
9	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	10
11	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	12
		Total Load:		980 VA		400 VA		180 VA					
		Total Amps:		8 A		4 A		2 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Power	0 VA	0.00%	0 VA		
Receptacle	360 VA	100.00%	360 VA	**Total Conn. Load:**	360 VA
				Total Est. Demand:	360 VA
				Total Conn.:	1 A
				Total Est. Demand:	1 A

Notes:
1. PROVIDE CIRCUIT BREAKER LOCKING DEVICE FOR FACU ALONG WITH IDENTIFYING CIRCUIT BREAKER IN ACCORDANCE WITH NEC 760.41.

Branch Panel: 4LS1B

Location: MECH./ELEC. E103A
Supply From: 4LS1
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 480Y/277
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 100 A
MCB Rating: 60 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	LTG: R103,R105,R106,R108,R107,R108,R112,R113,R114	20 A	1	855 VA	0 VA								2
3	LTG: R377	20 A	1			230 VA	0 VA			3	30 A	SPD	4
5	SPARE	20 A	1					0 VA	0 VA				6
7	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	8
9	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	10
11	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	12
13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
		Total Load:		855 VA		230 VA		0 VA					
		Total Amps:		3 A		1 A		0 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Power	0 VA	0.00%	0 VA		
Lighting	1075 VA	125.00%	1344 VA	**Total Conn. Load:**	1075 VA
				Total Est. Demand:	1344 VA
				Total Conn.:	1 A
				Total Est. Demand:	2 A

Notes:

SWITCHBOARDS AND PANELBOARDS NOTES

1. PROVIDE 480V, 1,000A AND LARGER SERVICE AND FEEDER CIRCUIT BREAKERS WITH GROUND FAULT PROTECTION OF EQUIPMENT PER NEC ART. 230.95. PROVIDE DOCUMENTATION AND PERFORMANCE TESTING AS REQUIRED BY NEC ART. 230.95(C).
2. PROVIDE ALL 1,200A AND LARGER CIRCUIT BREAKERS WITH CLEARLY LABELLED ARC FLASH ENERGY REDUCTION MODE SWITCH WITH INDICATOR. PROVIDE DOCUMENTATION AND PERFORMANCE TESTING AS REQUIRED BY NEC ART. 240.87(C).
3. COORDINATE CIRCUIT BREAKERS TRIP WITH EQUIPMENT.
4. COORDINATE SPD CIRCUIT BREAKERS TRIP WITH SPDs PROVIDED.
5. SEE SPECIFICATIONS SECTION 262413 AND SWITCHBOARD ELEVATIONS ON SHEET E-6.3 AND E-6.4 OR ADDITIONAL DETAILS AND REQUIREMENTS.
6. ARRANGE PANELBOARD BRANCH CIRCUIT BREAKERS AS SHOWN ON THE ABOVE SCHEDULES. AGREEMENT OF CIRCUIT BREAKER POLE NUMBERS WITH THE PANELBOARD SCHEDULES AND ELECTRICAL FLOOR PLANS IS REQUIRED IN ORDER TO AVOID CONFUSION DURING CONSTRUCTION, REDRAWING THE CIRCUITRY FOR RECORD DRAWING PURPOSES AND ACCURATE DOCUMENTATION OF THE AS-BUILT CONDITIONS.

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com
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NOT FOR CONSTRUCTION

JASON P. FAMIGLETTI — SEAL 35230 — ENGINEER

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

ELECTRICAL PANEL SCHEDULES

E-6.4

Switchboard: 4OP1

Location: MECH. E113
Supply From: 4OP
Mounting: FLOOR
Enclosure: NEMA 1

Volts: 480Y/277
Phases: 3
Wires: 4

A.I.C. Rating: 65,000 AMPS SYMMETRICAL
Mains Type: MCB
Mains Rating: 600 A
MCB Rating: 500 A

Notes:

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	PANEL 2OP11 (VIA XFMR T-2OP11)	3	100 A	70 A	13807 VA	
2	PANEL 4OP12 - MECH./ELEC. [E103]	3	225 A	225 A	77586 VA	
3	PANEL 4OP13 - MECH. [R108A]	3	225 A	225 A	39699 VA	
4	PANEL 4OP21 - ELEC. RM. [241]	3	225 A	225 A	10641 VA	
5	PANEL 4OP22 - STORAGE [E201A]	3	225 A	225 A	74635 VA	
6	PANEL 4OP31 - SHARK TANK [E318]	3	150 A	150 A	43526 VA	
7	SPARE	3	225 A	225 A	0 VA	
8	SPARE	3	225 A	225 A	0 VA	
9	LTG: E110, E111, E112, E113	1	20 A	20 A	426 VA	
10	SPARE	1	20 A	20 A	0 VA	
				Total Conn. Load:	254826 VA	
				Total Amps:	306.5 A	

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	68087 VA	100.00%	68087 VA		
Motor	3998 VA	119.77%	4789 VA	**Total Conn. Load:**	254826 VA
Other	799 VA	100.00%	799 VA	**Total Est. Demand:**	203421 VA
Power	18240 VA	100.00%	18240 VA	**Total Conn.:**	306.5 A
Lighting	10053 VA	125.00%	12566 VA	**Total Est. Demand:**	244.7 A
Mechanical	42596 VA	100.00%	42596 VA		
Receptacle	116856 VA	54.28%	63428 VA		

Notes:

Branch Panel: 2OP11

Location: MECH. E113
Supply From: T-2OP11
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 200 A
MCB Rating: 150 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	RCPT, MTR; MECH [E113], CP2 (NOTE 1)	20 A	1	970 VA	0 VA					3	20 A	SPD	2
3	RCPT: MN[E112],WOMN[E111],FAM WC[E110] (NOTE 1)	20 A	1			540 VA	0 VA						4
5	RCPT: EWC OD CLASSROOM [E114] (NOTE 1)	20 A	1					859 VA	0 VA				6
7	RCPT: OD CLASSROOM [E114] (NOTE 1)	20 A	1	1080 VA	2033 VA								8
9	RCPT: EXTERIOR (NOTE 1)	20 A	1			540 VA	2033 VA			3	25 A	EWH2	10
11	HEAT TRACE FREEZE PROTECTION (NOTE 2)	20 A	1					1600 VA	2033 VA				12
13	30MA GFE	--	1	--	895 VA					1	15 A	FCU-19 D.S. MEN [E111]	14
15	HVAC CTRL POWER MECH. [E113]	20 A	1			360 VA	864 VA			1	20 A	PV3 D.S. WOMEN [E112]	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42
		Total Load:		4978 VA		4337 VA		4492 VA					
		Total Amps:		42 A		36 A		38 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	7858 VA	100.00%	7858 VA		
Motor	70 VA	125.00%	88 VA	**Total Conn. Load:**	13807 VA
Power	1960 VA	100.00%	1960 VA	**Total Est. Demand:**	13825 VA
Receptacle	3919 VA	100.00%	3919 VA	**Total Conn.:**	38 A
				Total Est. Demand:	38 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.
2. PROVIDE 30MA GFE BREAKER.

Branch Panel: 4OP12

Location: MECH./ELEC. E103A
Supply From: 4OP1
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 480Y/277
Phases: 3
Wires: 4

A.I.C. Rating: 22,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	SPARE	20 A	1	0 VA	0 VA					3	30 A	SPD	2
3	SPARE	20 A	1			0 VA	0 VA						4
5	SPARE	20 A	1					0 VA	0 VA				6
7	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	8
9	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	10
11	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	12
13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19				1330 VA	0 VA					1	20 A	SPARE	20
21	SPRINKLER SYSTEM COMPRESOR D.S. RISER [R111]	15 A	3			1330 VA	0 VA			1	20 A	SPARE	22
23								1330 VA	0 VA	1	20 A	SPARE	24
25				23916 VA	0 VA					1	20 A	SPARE	26
27	PANEL 2OP12A & 2OP12C- MECH./ELEC/. [E103] (VIA XFMR T-2OP12)	175 A	3			24717 VA	0 VA			1	20 A	SPARE	28
29								24975 VA	0 VA	1	20 A	SPARE	30
		Total Load:		25242 VA		26043 VA		26302 VA					
		Total Amps:		91 A		94 A		95 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	17213 VA	100.00%	17213 VA		
Motor	3162 VA	125.00%	3953 VA	**Total Conn. Load:**	72411 VA
Power	9416 VA	100.00%	9416 VA	**Total Est. Demand:**	58162 VA
Mechanical	2832 VA	100.00%	2832 VA	**Total Conn.:**	87 A
Receptacle	40096 VA	62.47%	25048 VA	**Total Est. Demand:**	70 A

Notes:

Branch Panel: 2OP12A

Location: MECH./ELEC. E103A
Supply From: T-2OP12
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	RCPT: AMBAS. ANIMALS [E101] (NOTE 1)	20 A	1	720 VA	0 VA					3	30 A	SPD	2
3	RCPT: AMBAS. ANIMALS [E101] (NOTE 1)	20 A	1			720 VA	0 VA						4
5	RCPT: REFRIG (NOTE 1)	20 A	1					1200 VA	0 VA				6
7	UV CONTROLLER D.S. LIFE SUPPORT [E106]	20 A	1	1332 VA	180 VA					1	20 A	RCPT: CLASSROOM COUNTER [E102B] (NOTE 1)	8
9	RCPT: AMBAS. ANIMALS [E101] (NOTE 1)	20 A	1			360 VA	900 VA			1	20 A	RCPT: CLASSROOM [E102B]	10
11	RCPT: LIFE SUPPORT SYS [E106] (NOTE 1)	20 A	1					900 VA	832 VA	1	20 A	RCPT: CLASSROOM PROJECTOR [E102B]	12
13	RCPT: CORRIDOR [R109]	20 A	1	900 VA	832 VA								14
15	RCPT: NITROGEN GEN RISER [R111] (NOTE 1)	20 A	1			516 VA	528 VA			1	20 A	MOTORIZED SCREEN [E102B]	16
17	RCPT: RISER [R111] (NOTE 1)	20 A	1					180 VA	180 VA	1	20 A	RCPT: CLASSROOM COUNTER [E102A] (NOTE 1)	18
19	RCPT: SALT STO/MIX [E105] (NOTE 1)	20 A	1	720 VA	180 VA					1	20 A	RCPT: CLASSROOM COUNTER [E102A] (NOTE 1)	20
21	RCPT: MECH/ELEC [E103] (NOTE 1)	20 A	1			540 VA	540 VA			1	20 A	RCPT: CLASSROOM [E102A]	22
23	RCPT: HOLDING PROOFING CABINET (8) (NOTE 1)	20 A	1					1440 VA	540 VA	1	20 A	RCPT: CLASSROOM [E102A]	24
25	RCPT: 3D PRINTER 3D PRNT [R106B]	20 A	1	1920 VA	832 VA					2	20 A	RCPT: CLASSROOM PROJECTOR [E102A]	26
27	RCPT: 3D PRNT [R106B]	20 A	1			720 VA	832 VA						28
29	RCPT: MONITOR TEACHING RM [136]	20 A	1					180 VA	528 VA	1	20 A	MOTORIZED SCREEN [E102A]	30
31	RCPT: AV CABNIET TEACHING RM [136]	20 A	1	360 VA	360 VA					1	20 A	RCPT: CATERING KITCHEN [E104] (NOTE 1)	32
33	SPARE	20 A	1			0 VA	360 VA			1	20 A	RCPT: CATERING KITCHEN [E104] (NOTE 1)	34
35	SPARE	20 A	1					0 VA	540 VA	1	20 A	RCPT: TEACHING RM [136]	36
37	SPARE	20 A	1	0 VA	540 VA					1	20 A	RCPT: CORR [136A], TEACHING RM [136], CP1	38
39	RCPT: LRG FORMAT PRINTR 3D PRNT [R106B]	30 A	2			2496 VA	0 VA			1	20 A	SPARE	40
41								2496 VA	0 VA	1	20 A	SPARE	42
43				2033 VA	0 VA					1	20 A	SPARE	44
45	EWH1 D.S.	25 A	3			2033 VA	0 VA			1	20 A	SPARE	46
47								2033 VA	0 VA	1	20 A	SPARE	48
49				4209 VA	0 VA					1	20 A	SPARE	50
51	PANEL 2OP12B - MECH./ELEC. [E103]	100 A	3			5224 VA	0 VA			1	20 A	SPARE	52
53								6567 VA	0 VA	1	20 A	SPARE	54
		Total Load:		15001 VA		15570 VA		17400 VA					
		Total Amps:		125 A		130 A		146 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	17213 VA	100.00%	17213 VA		
Motor	3162 VA	125.00%	3953 VA	**Total Conn. Load:**	47966 VA
Power	1416 VA	100.00%	1416 VA	**Total Est. Demand:**	41953 VA
Mechanical	2832 VA	100.00%	2832 VA	**Total Conn.:**	133 A
Receptacle	23607 VA	71.18%	16803 VA	**Total Est. Demand:**	116 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

Branch Panel: 2OP12B

Location: MECH./ELEC. E103A
Supply From: 2OP12A
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	FCU-13 D.S. - MECH.ELEC [E103]	15 A	1	264 VA	895 VA					1	15 A	FCU-11 D.S. - CLASSROOM [E102A]	2
3	FCU-15 D.S. - MECH.ELEC [E103]	15 A	1			895 VA	895 VA			1	15 A	FCU-12 D.S. - CLASSROOM [E102B]	4
5	FCU-16 D.S. - MECH.ELEC [E103]	15 A	1					895 VA	864 VA	1	20 A	PV7- D.S. WORKSHOP [R106]	6
7	FCU-18 D.S. - MECH. [R106C]	15 A	1	895 VA	264 VA					1	15 A	FCU-23 D.S. CNC/3D PRINTING [R106B]	8
9	FCU-17 D.S. - MECH. [145]	15 A	1			895 VA	420 VA			1	15 A	PV12 3D PRINTING R106B	10
11	FCU-24 D.S. - MECH. [145]	15 A	1					895 VA	360 VA	1	20 A	HVAC CTRL POWER MECH./ELEC. E103A	12
13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	DHP-4 D.S. ON ROOF (FEEDS DAH-4)	20 A	2					1435 VA	0 VA	1	20 A	SPARE	30
31				1435 VA	0 VA					1	20 A	SPARE	32
33						500 VA	0 VA			1	20 A	SPARE	34
35	HOIST D.S. SALT STO AND MIXING [E105]	20 A	3					500 VA	0 VA	1	20 A	SPARE	36
37				500 VA	0 VA					1	20 A	SPARE	38
39	DHP-11 D.S.ON ROOF (FEEDS DAH-11 ELECT [E103A])	25 A	2			1664 VA	0 VA			1	20 A	SPARE	40
41								1664 VA	0 VA	1	20 A	SPARE	42
		Total Load:		4209 VA		5224 VA		6567 VA					
		Total Amps:		35 A		45 A		56 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	11113 VA	100.00%	11113 VA		
Motor	3162 VA	125.00%	3953 VA	**Total Conn. Load:**	15999 VA
Power	360 VA	100.00%	360 VA	**Total Est. Demand:**	16789 VA
Mechanical	1500 VA	100.00%	1500 VA	**Total Conn.:**	44 A
				Total Est. Demand:	47 A

Notes:

SWITCHBOARDS AND PANELBOARDS NOTES

1. PROVIDE 480V, 1,000A AND LARGER SERVICE AND FEEDER CIRCUIT BREAKERS WITH GROUND FAULT PROTECTION OF EQUIPMENT PER NEC ART. 230.95. PROVIDE DOCUMENTATION AND PERFORMANCE TESTING AS REQUIRED BY NEC ART. 230.95(C).
2. PROVIDE ALL 1,200A AND LARGER CIRCUIT BREAKERS WITH CLEARLY LABELLED ARC FLASH ENERGY REDUCTION MODE SWITCH WITH INDICATOR. PROVIDE DOCUMENTATION AND PERFORMANCE TESTING AS REQUIRED BY NEC ART. 240.87(C).
3. COORDINATE CIRCUIT BREAKERS TRIP WITH EQUIPMENT.
4. COORDINATE SPD CIRCUIT BREAKERS TRIP WITH SPDs PROVIDED.
5. SEE SPECIFICATIONS SECTION 262413 AND SWITCHBOARD ELEVATIONS ON SHEET E-6.3 AND E-6.4 OR ADDITIONAL DETAILS AND REQUIREMENTS.
6. ARRANGE PANELBOARD BRANCH CIRCUIT BREAKERS AS SHOWN ON THE ABOVE SCHEDULES. AGREEMENT OF CIRCUIT BREAKER POLE NUMBERS WITH THE PANELBOARD SCHEDULES AND ELECTRICAL FLOOR PLANS IS REQUIRED IN ORDER TO AVOID CONFUSION DURING CONSTRUCTION, REDRAWING THE CIRCUITRY FOR RECORD DRAWING PURPOSES AND ACCURATE DOCUMENTATION OF THE AS-BUILT CONDITIONS.

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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JASON P. FAMIGLIETTI — SEAL 35230 — ENGINEER — NORTH CAROLINA

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

ELECTRICAL PANEL SCHEDULES

E-6.6

Branch Panel: 2OP12C

Location: WORKSHOP R106
Supply From: T-2OP12
Mounting:
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 225 A
MCB Rating: 150 A

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	RCPT: EXP. WKSHP [R106] (NOTE 1)	20 A	1	720 VA 1080 VA			1	20 A	RCPT: JET DRILL PRS EXP. WKSHP [R106] COL (NOTE 1)	2
3	RCPT: EXP. WKSHP [R106] (NOTE 1)	20 A	1		720 VA 1200 VA		1	20 A	RCPT: BAND SAW EXP. WKSHP [R106] COL (NOTE 1)	4
5	RCPS: EXP. WKSHP [R106] (NOTE 1)	20 A	1			720 VA 1440 VA	1	20 A	RCPT: DUSCT COLL. WKSHOP [R106] COLUMN (NOTE 1)	6
7	RCPT: EXP. WKSHOP [R106] (NOTE 1)	20 A	1	540 VA 1508 VA			2	20 A	RCPT: JET TABLE SAW WKSHOP [R106] COLUMN	8
9	RCPT: EXP. WKSHOP [R106] COLUMN (NOTE 1)	20 A	1		180 VA 1508 VA					10
11	RCPT: EXP. WKSHP [R106] HITACHI MITR SAW (NOTE 1)	20 A	1			1800 VA 1040 VA	2	30 A	RCPT: EXP. WKSHOP [R106]	12
13	RCPT: EXP. WKSHP [R106] DEWALT MITR SAW (NOTE 1)	20 A	1	1560 VA 1040 VA						14
15	RCPT: EXP. WKSHOP [R106] PANEL SAW (NOTE 1)	20 A	1		1800 VA 2667 VA					16
17	SPARE	20 A	1			0 VA 2667 VA	3	30 A	AIR COMPRESSOR D.S.	18
19	SPARE	20 A	1	0 VA 2667 VA						20
21	SPARE	20 A	1		0 VA 1200 VA		1	20 A	COMP AIR DRYER D.S.	22
23	SPARE	20 A	1			0 VA 0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA 0 VA			1	20 A	SPARE	26
27	SPARE	20 A	1		0 VA 0 VA		1	20 A	SPARE	28
29	SPARE	20 A	1			0 VA 0 VA	1	20 A	SPARE	30
		Total Load:		8929 VA	9148 VA	7576 VA				
		Total Amps:		76 A	78 A	63 A				

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Power	8000 VA	100.00%	8000 VA	
Receptacle	16497 VA	80.31%	13248 VA	**Total Conn. Load:** 24448 VA
				Total Est. Demand: 21203 VA
				Total Conn.: 68 A
				Total Est. Demand: 59 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

Branch Panel: 2OP13B

Location: MECH. R108A
Supply From: T-2OP13
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	RCPT: CAPE FEAR SHOALS A/V RACK [R104]	20 A	1	1200 VA 0 VA						2
3	RCPT: CAPE FEAR SHOALS SOUND RACK [R104]	20 A	1		1200 VA 0 VA		3	30 A	SPD	4
5	RCPT: PATCH PANEL 1 DATA/STOR [R104]	20 A	1			720 VA 0 VA				6
7	RCPT: DATA/STOR [R104]	20 A	1	1080 VA 895 VA			1	15 A	FCU-22 D.S. [R110C]	8
9	RCPT: LIGHTSWITCH RACK DATA/STOR [R104]	20 A	1		180 VA 360 VA		1	20 A	RCPT: CAMERA SRVR DATA/STOR [R104]	10
11	RCPT: EXHIBIT RACK DATA/STOR [R104]	20 A	1			180 VA 360 VA	1	20 A	RCPT: CAMERA SRVR DATA/STOR [R104]	12
13	RCPT: EXHIBIT RACK DATA/STOR [R104]	20 A	1	180 VA 360 VA			1	20 A	HVAC CTRL POWER MECH. [R108A]	14
15	RCPT: EXHIBIT RACK DATA/STOR [R104]	20 A	1		180 VA 799 VA		1	20 A	DOOR OPENERS VEST [E102]	16
17	RCPT: EXHIBIT RACK DATA/STOR [R104]	20 A	1			180 VA 180 VA	1	20 A	RCPT: IRRIGATION CONTROLLER EXTERIOR (NOTE 1)	18
19	RCPT: EXHIBIT RACK DATA/STOR [R104]	20 A	1	180 VA 0 VA			1	20 A	SPARE	20
21	RCPT: EXHIBIT RACK DATA/STOR [R104]	20 A	1		180 VA 0 VA		1	20 A	SPARE	22
23	SPARE	20 A	1			0 VA 0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA 0 VA			1	20 A	SPARE	26
27	SPARE	20 A	1		0 VA 0 VA		1	20 A	SPARE	28
29	SPARE	20 A	1			0 VA 0 VA	1	20 A	SPARE	30
		Total Load:		3895 VA	2899 VA	1620 VA				
		Total Amps:		34 A	26 A	14 A				

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	895 VA	100.00%	895 VA	
Other	799 VA	100.00%	799 VA	**Total Conn. Load:** 8414 VA
Power	360 VA	100.00%	360 VA	**Total Est. Demand:** 8414 VA
Receptacle	6360 VA	100.00%	6360 VA	**Total Conn.:** 23 A
				Total Est. Demand: 23 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

Branch Panel: 4OP22

Location: ELEC. E201A
Supply From: 4OP1
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 480Y/277
Phases: 3
Wires: 4

A.I.C. Rating: 35,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1										2
3	ROS-RODI01-001 - SHRK TNK MEZZ [E203]	15 A	3	2106 VA 0 VA	2106 VA 0 VA		3	30 A	SPD	4
5						2106 VA 0 VA				6
7	SPARE	20 A	1	0 VA 6097 VA						8
9	SPARE	20 A	1		0 VA 6097 VA		3	40 A	GEN-OZAS01-001 (7.5HP COMPRESSOR X2)	10
11	SPARE	20 A	1			0 VA 6097 VA				12
13	LTG: 202-218 ADMIN AREA, CL RMS AND REST RMS	20 A	1	2267 VA 0 VA			1	20 A	SPARE	14
15	LTG: 105,201A,202,203,204,210,	20 A	1		2172 VA 0 VA		1	20 A	SPARE	16
17	SPARE	20 A	1			0 VA 0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA 0 VA			1	20 A	SPARE	20
21	SPARE	20 A	1		0 VA 0 VA		1	20 A	SPARE	22
23	SPARE	20 A	1			0 VA 0 VA	1	20 A	SPARE	24
25	SPACE	--	1	-- --			1	--	SPACE	26
27	SPACE	--	1		-- --		1	--	SPACE	28
29	SPACE	--	1			-- --	1	--	SPACE	30
31	SPACE	--	1	-- --			1	--	SPACE	32
33	SPACE	--	1		-- --		1	--	SPACE	34
35	SPACE	--	1			-- --	1	--	SPACE	36
37				16817 VA --			1	--	SPACE	38
39	PANEL 2OP22 (VIA T-2OP22)	175 A	3		16330 VA --		1	--	SPACE	40
41						14531 VA --	1	--	SPACE	42
		Total Load:		27277 VA	24675 VA	22724 VA				
		Total Amps:		100 A	90 A	82 A				

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	7822 VA	100.00%	7822 VA	
Motor	3858 VA	120.49%	4649 VA	**Total Conn. Load:** 74635 VA
Power	4704 VA	100.00%	4704 VA	**Total Est. Demand:** 68615 VA
Lighting	3259 VA	125.00%	4074 VA	**Total Conn.:** 90 A
Mechanical	31060 VA	100.00%	31060 VA	**Total Est. Demand:** 83 A
Receptacle	24844 VA	70.13%	17422 VA	

Notes:

Branch Panel: 4OP13

Location: MECH. R108A
Supply From: 4OP1
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 480Y/277
Phases: 3
Wires: 4

A.I.C. Rating: 22,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1				0 VA 916 VA						2
3	SPD	30 A	3		0 VA 916 VA		3	15 A	FCU-10 D.S. MECH. R108A	4
5						0 VA 916 VA				6
7	LTG: 130A,130B	20 A	1	138 VA 0 VA			1	20 A	SPARE	8
9	LTG: WORKSHOP R106	20 A	1		1933 VA 0 VA		1	20 A	SPARE	10
11	SPARE	20 A	1			0 VA 0 VA	1	20 A	SPARE	12
13	SPARE	20 A	1	0 VA 0 VA			1	20 A	SPARE	14
15	SPARE	20 A	1		0 VA 0 VA		1	20 A	SPARE	16
17	SPARE	20 A	1			0 VA 0 VA	1	20 A	SPARE	18
19				0 VA 0 VA			1	20 A	SPARE	20
21	PANEL A (VIA XFMR T-A) - HUSBANDRY [148]	70 A	3		0 VA 0 VA		1	20 A	SPARE	22
23						0 VA 0 VA	1	20 A	SPARE	24
25				12880 VA 0 VA			1	20 A	SPARE	26
27	PANEL 2OP13A & 2OP13B (VIA T-2OP13) MECH [R108]	125 A	3		12496 VA 0 VA		1	20 A	SPARE	28
29						11075 VA 0 VA	1	20 A	SPARE	30
		Total Load:		13797 VA	13988 VA	11990 VA				
		Total Amps:		51 A	52 A	43 A				

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	13476 VA	100.00%	13476 VA	
Motor	70 VA	125.00%	88 VA	**Total Conn. Load:** 39699 VA
Other	799 VA	100.00%	799 VA	**Total Est. Demand:** 33347 VA
Power	1800 VA	100.00%	1800 VA	**Total Conn.:** 48 A
Lighting	2068 VA	125.00%	2584 VA	**Total Est. Demand:** 40 A
Receptacle	23052 VA	71.69%	16526 VA	

Notes:

Branch Panel: 4OP21

Location: ELEC. 241
Supply From: 4OP1
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 480Y/277
Phases: 3
Wires: 4

A.I.C. Rating: 35,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	LTG: 201,202,203,204,205	20 A	1	329 VA 0 VA						2
3	SPARE	20 A	1		0 VA 0 VA		3	30 A	SPD	4
5	SPARE	20 A	1			0 VA 0 VA				6
7	SPARE	20 A	1	0 VA 0 VA			1	20 A	SPARE	8
9	SPARE	20 A	1		0 VA 0 VA		1	20 A	SPARE	10
11	SPARE	20 A	1			0 VA 0 VA	1	20 A	SPARE	12
13	SPARE	20 A	1	0 VA 0 VA			1	20 A	SPARE	14
15	SPARE	20 A	1		0 VA 0 VA		1	20 A	SPARE	16
17	SPARE	20 A	1			0 VA 0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA 0 VA			1	20 A	SPARE	20
21	SPACE	--	1		-- --		1	--	SPACE	22
23	SPACE	--	1			-- --	1	--	SPACE	24
25				4021 VA --			1	--	SPACE	26
27	PANEL 2OP21 (VIA T-2OP21) ELECT RM. [241]	125 A	3		3847 VA --		1	--	SPACE	28
29						2496 VA --	1	--	SPACE	30
		Total Load:		4350 VA	3847 VA	2496 VA				
		Total Amps:		16 A	15 A	9 A				

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Power	0 VA	0.00%	0 VA	
Lighting	329 VA	125.00%	411 VA	**Total Conn. Load:** 10641 VA
Receptacle	10312 VA	98.49%	10156 VA	**Total Est. Demand:** 10567 VA
				Total Conn.: 13 A
				Total Est. Demand: 13 A

Notes:

Branch Panel: 2OP22

Location: ELEC. E201A
Supply From: T-2OP22
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 14,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 400 A
MCB Rating: 400 A

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	RCPT: EXHIBIT [E201]	20 A	1	720 VA 0 VA						2
3	RCPT: EXHIBIT [E201]	20 A	1		360 VA 0 VA		3	30 A	SPD	4
5	RCPT: EXHIBIT [E201]	20 A	1			360 VA 0 VA				6
7	RCPT: EXHIBIT [E201]	20 A	1	1234 VA 600 VA			1	15 A	GEN-OZAS01-001 D.S.(TIMED ELEC. DRAIN TAP)	8
9	RCPT: EXHIBIT [E201]	20 A	1		878 VA 2400 VA		1	30 A	GEN-OZGE01-001 D.S. - OZON [E204]	10
11	SPARE	20 A	1			0 VA 600 VA	1	15 A	GEN-OZJB01-001 D.S.	12
13	SPARE	20 A	1	0 VA 222 VA			1	20 A	UV CONTROLLER D.S. SUPPORT [R210]	14
15	SPARE	20 A	1		0 VA 468 VA		1	20 A	UV CONTROLLER D.S. SUPPORT [R210]	16
17	RCPT: EXHIBIT [R206]	20 A	1			720 VA 1176 VA	1	15 A	PWB D.S. CORAL MEZZ [E202]	18
19	RCPT: SUPPORT [R210] (NOTE 1)	20 A	1	720 VA 360 VA			1	20 A	RCPT: AV CABINET EXHIBIT [E201]	20
21	RCPT: SUPPORT [R210] (NOTE 1)	20 A	1		540 VA 450 VA		1	20 A	RCPT: AV CABINET EXHIBIT [E201]	22
23	RCPT: ELEC. [E201A] (NOTE 1)	20 A	1			180 VA 450 VA	1	20 A	RCPT: LCR-CEG001-002 (NOTE 1)	24
25	HVAC CTRL POWER, COORDINATE EXACT LOCATION...	20 A	1	360 VA 1056 VA			1	20 A	RCPT: EXHIBIT [R206]	26
27	SPARE	20 A	1		0 VA 360 VA		1	20 A	RCPT: AV CABINET EXHIBIT [R206]	28
29	SPARE	20 A	1			0 VA 444 VA	1	20 A	AQC-UVS001-001 D.S. [R210]	30
31	SPARE	20 A	1	0 VA 0 VA			1	20 A	SPARE	32
33	ROF-PHEX01-001 D.S.	20 A	1		696 VA 0 VA		1	20 A	SPARE	34
35	REZ-OZOD01-001 D.S.- SRK TNK MEEZZ [E203]	15 A	2			600 VA 0 VA	1	20 A	SPARE	36
37				600 VA 0 VA			1	20 A	SPARE	38
39	DHP-8 D.S.ON ROOF (FEEDS DAH-8 ELECT [E201A])	25 A	2		1664 VA 0 VA		1	20 A	SPARE	40
41						1664 VA 0 VA	1	20 A	SPARE	42
43				4483 VA 0 VA			1	20 A	SPARE	44
45	PANEL 2OP24 - GEN OFFICE [R217]	100 A	3		2760 VA 0 VA		1	20 A	SPARE	46
47						1824 VA 0 VA	1	20 A	SPARE	48
49				6600 VA 0 VA			1	20 A	SPARE	50
51	PANEL 2OP23 - GEN OFFICE [R217]	100 A	3		5850 VA 0 VA		1	20 A	SPARE	52
53						6694 VA 0 VA	1	20 A	SPARE	54
		Total Load:		16817 VA	16330 VA	14531 VA				
		Total Amps:		142 A	138 A	121 A				

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	7822 VA	100.00%	7822 VA	
Motor	3858 VA	120.49%	4649 VA	**Total Conn. Load:** 47675 VA
Power	4704 VA	100.00%	4704 VA	**Total Est. Demand:** 41047 VA
Mechanical	6676 VA	100.00%	6676 VA	**Total Conn.:** 132 A
Receptacle	24844 VA	70.13%	17422 VA	**Total Est. Demand:** 114 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

Branch Panel: 2OP13A

Location: MECH. R108A
Supply From: T-2OP13
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	RCPT: EXOTIC AQ [R130]	20 A	1	1800 VA 0 VA						2
3	RCPT: EXOTIC AQ [R130], OCEAN GALLERY [129B]	20 A	1		1440 VA 0 VA		3	30 A	SPD	4
5	RCPT: MAIN EXH[R131],EXOT AQ[R130], OCN GAL[129B]	20 A	1			900 VA 0 VA				6
7	RCPT: FIBER CABINET FOTO FX [R205]	20 A	1	180 VA 540 VA			1	20 A	RCPT: MECH [R108A] (NOTE 1)	8
9	RCPT-SPCL: MAIN EXHIBIT [R131]	20 A	2		832 VA 360 VA		1	20 A	RCPT: COUNTER NECROPSY [R107] (NOTE 1)	10
11						832 VA 360 VA	1	20 A	RCPT: COUNTER NECROPSY [R107] (NOTE 1)	12
13	RCPT: PATCH PANEL MAIN EXH [R131]	20 A	1	180 VA 180 VA			1	20 A	RCPT: UC BEVG CNTR NCRPSY [R107] (NOTE 1)	14
15	RCPT: FOTO FX BOOTH [R105] , FOTO FX F/H [E105A]	20 A	1		1080 VA 360 VA		1	20 A	RCPT: NECROPSY [R107] (NOTE 1)	16
17	J-BOX: FOTO FX F/H DESK [E105A]	20 A	1			1440 VA 430 VA	1	20 A	RCPT: WC [R112],CUST.CLST[R103],CP3[R103] (NOTE 1)	18
19	J-BOX: FOTO FX F/H DESK [E105A]	20 A	1	1440 VA 360 VA			1	20 A	RCPT: CORR MAIN EXHIBIT [R131]	20
21	PV4 D.S. MEN [R14]	20 A	1		864 VA 360 VA		1	20 A	RCPT: EWC MAIN EXHIBIT [R131] (NOTE 1)	22
23	RCPT-SPCL: MAIN EXHIBIT [R131]	20 A	2			832 VA 360 VA	1	20 A	RCPT: MEN [R114], WOMEN [R113] (NOTE 1)	24
25				832 VA 1440 VA			1	20 A	CEILING SURG LT NEC [R107]	26
27	RCPT-SPCL: MAIN EXHIBIT [R131]	20 A	2		832 VA 0 VA		1	20 A	SPARE	28
29						832 VA 0 VA	1	20 A	SPARE	30
31				0 VA			1	20 A	SPARE	32
33	SPARE	20 A	1		0 VA 0 VA		1	20 A	SPARE	34
35	SPARE	20 A	1			0 VA 0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA 2033 VA						38
39	DHP-13 D.S. (ON ROOF) FEEDS DAH-13)	20 A	2		1435 VA 2033 VA		3	25 A	EWH3 D.S.	40
41						1435 VA 2033 VA				42
		Total Load:		8985 VA	9597 VA	9455 VA				
		Total Amps:		75 A	81 A	79 A				

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	9834 VA	100.00%	9834 VA	
Motor	70 VA	125.00%	88 VA	**Total Conn. Load:** 28036 VA
Power	1440 VA	100.00%	1440 VA	**Total Est. Demand:** 24708 VA
Receptacle	16692 VA	79.95%	13346 VA	**Total Conn.:** 78 A
				Total Est. Demand: 69 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

Branch Panel: 2OP21

Location: ELEC. 241
Supply From: T-2OP21
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1				0 VA 1440 VA			1	20 A	RCPT: SALTMARSH [212], CLNG COURT [219]	2
3	SPD	30 A	3		0 VA 360 VA		1	20 A	RCPT: CLNG COURT [219]	4
5						0 VA 832 VA	2	20 A	RCPT-SPCL: CLNG COURT [219]	6
7	RCPT: ELECT RM [241] (NOTE 1)	20 A	1	180 VA 832 VA						8
9	RCPT: CLNG COURT [219]	20 A	1		1920 VA 832 VA					10
11	SPARE	20 A	1			0 VA 832 VA	2	20 A	RCPT-SPCL: CLNG COURT [219]	12
13	SPARE	20 A	1	0 VA 832 VA						14
15	SPARE	20 A	1		0 VA 832 VA		2	20 A	RCPT-SPCL: CLNG COURT [219]	16
17	SPARE	20 A	1			0 VA 832 VA				18
19	SPARE	20 A	1	0 VA 832 VA						20
21	SPARE	20 A	1		0 VA 0 VA		1	20 A	SPARE	22
23	SPARE	20 A	1			0 VA 0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA 0 VA			1	20 A	SPARE	26
27	SPARE	20 A	1		0 VA 0 VA		1	20 A	SPARE	28
29	SPARE	20 A	1			0 VA 0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0 VA 0 VA			1	20 A	SPARE	32
33	SPARE	20 A	1		0 VA 0 VA		1	20 A	SPARE	34
35	SPARE	20 A	1			0 VA 0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA 0 VA			1	20 A	SPARE	38
39	SPARE	20 A	1		0 VA 0 VA		1	20 A	SPARE	40
41	SPARE	20 A	1			0 VA 0 VA	1	20 A	SPARE	42
		Total Load:		4021 VA	3847 VA	2496 VA				
		Total Amps:		35 A	34 A	21 A				

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Power	0 VA	0.00%	0 VA	
Receptacle	10312 VA	98.49%	10156 VA	**Total Conn. Load:** 10312 VA
				Total Est. Demand: 10156 VA
				Total Conn.: 29 A
				Total Est. Demand: 28 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

SWITCHBOARDS AND PANELBOARDS NOTES

1. PROVIDE 480V, 1,000A AND LARGER SERVICE AND FEEDER CIRCUIT BREAKERS WITH GROUND FAULT PROTECTION OF EQUIPMENT PER NEC ART. 230.95. PROVIDE DOCUMENTATION AND PERFORMANCE TESTING AS REQUIRED BY NEC ART. 230.95(C).
2. PROVIDE ALL 1,200A AND LARGER CIRCUIT BREAKERS WITH CLEARLY LABELLED ARC FLASH ENERGY REDUCTION MODE SWITCH WITH INDICATOR. PROVIDE DOCUMENTATION AND PERFORMANCE TESTING AS REQUIRED BY NEC ART. 240.87(C).
3. COORDINATE CIRCUIT BREAKERS TRIP WITH EQUIPMENT.
4. COORDINATE SPD CIRCUIT BREAKERS TRIP WITH SPDs PROVIDED.
5. SEE SPECIFICATIONS SECTION 262413 AND SWITCHBOARD ELEVATIONS ON SHEET E-6.3 AND E-6.4 OR ADDITIONAL DETAILS AND REQUIREMENTS.
6. ARRANGE PANELBOARD BRANCH CIRCUIT BREAKERS AS SHOWN ON THE ABOVE SCHEDULES. AGREEMENT OF CIRCUIT BREAKER POLE NUMBERS WITH THE PANELBOARD SCHEDULES AND ELECTRICAL FLOOR PLANS IS REQUIRED IN ORDER TO AVOID CONFUSION DURING CONSTRUCTION, REDRAWING THE CIRCUITRY FOR RECORD DRAWING PURPOSES AND ACCURATE DOCUMENTATION OF THE AS-BUILT CONDITIONS.

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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NOT FOR CONSTRUCTION
JASON P. FAMIGLETTI ENGINEER SEAL 35230

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION

Branch Panel: 2OP23

Location: GEN. OFFICE R217
Supply From: 2OP22
Mounting: RECESSED
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	RCPT: CLASSROOM [R208A]	20 A	1	540 VA	895 VA					1	15 A	FCU-05 D.S. - MECH [R208D]	2
3	RCPT: CLASSROOM [R208A]	20 A	1			360 VA	895 VA			1	15 A	FCU-06 D.S. - MECH [R208C]	4
5	RCPT: CLASSROOM COUNTER [R208A] (NOTE 1)	20 A	1					180 VA	895 VA	1	15 A	FCU-21 D.S. - MECH [R211C]	6
7	RCPT: CLASSROOM COUNTER [R208A] (NOTE 1)	20 A	1	360 VA	925 VA					1	15 A	FCU-20 D.S. AND CDP-1 - MECH [R202A]	8
9	RCPT: CLASSROOM PROJECTOR [R208A]	20 A	2			832 VA	1435 VA			1	20 A	DHP-5 D.S. ON ROOF - DAH-5 RM [209]	10
11								832 VA	1435 VA	2			12
13	MOTORIZED SCREEN [E208A]	20 A	1	528 VA	180 VA					1	20 A	RCPT: ON ROOF AT DHP-5 (NOTE 1)	14
15	RCPT: CLASSROOM [R208B]	20 A	1			540 VA	0 VA			1	15 A	PV09 D.S. (ON ROOF)	16
17	RCPT: CLASSROOM COUNTER [R208B] (NOTE 1)	20 A	1					180 VA	720 VA	1	20 A	RCPT: NURSING [R211B], LIB/CONF [R205]	18
19	RCPT: CLASSROOM COUNTER [R208B] (NOTE 1)	20 A	1	360 VA	180 VA					1	20 A	RCPT: SENSORY [R211A]	20
21	RCPT: CLASSROOM [R208B]	20 A	1			360 VA	180 VA			1	20 A	RCPT: SENSORY [R211A]	22
23	RCPT: CLASSROOM PROJECTOR [R208A]	20 A	2					832 VA	180 VA	1	20 A	RCPT: SENSORY [R211A]	24
25				832 VA	900 VA					1	20 A	RCPT: LIB/CONF [R205]	26
27	MOTORIZED SCREEN [E208A]	20 A	1			528 VA	720 VA			1	20 A	RCPT: FLR BOXES - LIB/CONF [R205]	28
29	RCPT: EXHIBIT [R206]	20 A	1					720 VA	720 VA	1	20 A	RCPT: OFF [R214]	30
31	PV5 D.S. (ON ROOF)	15 A	1	0 VA	900 VA					1	20 A	RCPT: OFF [R218], GEN OFF R217]	32
33	SPARE (NOTE 2)	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE (NOTE 2)	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42
		Total Load:		6600 VA		5850 VA		6694 VA					
		Total Amps:		56 A		49 A		57 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	6480 VA	100.00%	6480 VA		
Power	1056 VA	100.00%	1056 VA	**Total Conn. Load:**	19144 VA
Receptacle	11608 VA	93.07%	10804 VA	**Total Est. Demand:**	18340 VA
				Total Conn.:	53 A
				Total Est. Demand:	51 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.
2. UTILIZE BREAKER FOR EXISTING LOADS REMOVED FROM OFFICE AREA DURING DEMOLITION.

Branch Panel: 2OP24

Location: GEN. OFFICE R217
Supply From: 2OP22
Mounting: RECESSED
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	RCPT: REFRIG - GEN OFF [R217] (NOTE 1)	20 A	1	1800 VA	360 VA					1	20 A	RCPT: WOMEN [R215] (NOTE 1)	2
3	RCPT: COFFEE COUNTER GEN OFF [R217] (NOTE 1)	20 A	1			1500 VA	360 VA			1	20 A	RCPT: MEN [R216], WC [R207] (NOTE 1)	4
5	RCPT: COUNTER GEN OFF [R217] (NOTE 1)	20 A	1					180 VA	1464 VA	1	20 A	HAND DRYER WOMEN[R215] (NOTE 1)	6
7	RCPT: EWC EXHIBIT [R206] (NOTE 1)	20 A	1	859 VA	1464 VA					1	20 A	HAND DRYER MEN [R216] (NOTE 1)	8
9	RCPT: OFFICE [R212], OFFICE [R213]	20 A	1			540 VA	360 VA			1	20 A	HVAC CTRL POWER MECH. [R222A]	10
11	RCPT: WC [R207]	20 A	1					180 VA	0 VA	1	20 A	SPARE	12
13	SPARE (NOTE 2)	20 A	1	0 VA	0 VA					1	20 A	SPARE (NOTE 2)	14
15	SPARE (NOTE 2)	20 A	1			0 VA	0 VA			1	20 A	SPARE (NOTE 2)	16
17	SPARE (NOTE 2)	20 A	1					0 VA	0 VA	1	20 A	SPARE (NOTE 2)	18
19	SPARE (NOTE 2)	20 A	1	0 VA	0 VA					1	20 A	SPARE (NOTE 2)	20
21	SPARE (NOTE 2)	20 A	1			0 VA	0 VA			1	20 A	SPARE (NOTE 2)	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
		Total Load:		4483 VA		2760 VA		1824 VA					
		Total Amps:		39 A		24 A		15 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Power	3288 VA	100.00%	3288 VA		
Receptacle	5779 VA	100.00%	5779 VA	**Total Conn. Load:**	9067 VA
				Total Est. Demand:	9067 VA
				Total Conn.:	25 A
				Total Est. Demand:	25 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.
2. UTILIZE BREAKER FOR EXISTING LOADS REMOVED FROM OFFICE AREA DURING DEMOLITION.

Branch Panel: 4OP31

Location:
Supply From: 4OP1
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 480Y/277
Phases: 3
Wires: 4

A.I.C. Rating: 14,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 150 A
MCB Rating: 150 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	PANEL 2OP31 & 2OP32 (VIA T-2OP31 XFMR) - SHARK TANK [E318]	70 A	3	9457 VA	0 VA								2
3						8144 VA	0 VA			3	30 A	SPD	4
5								8294 VA	0 VA				6
7	LTG: SHARK TNK LOW LVL & 304,305,306,307,308,309	20 A	1	2714 VA	5543 VA								8
9	LTG: 301, 303 ,310 & 318 OVERHEAD	20 A	1			2024 VA	5543 VA			3	35 A	RTU-04 D.S. ON ROOF	10
11	SPARE	20 A	1					0 VA	5543 VA				12
13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
		Total Load:		15890 VA		13946 VA		13817 VA					
		Total Amps:		57 A		50 A		50 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	18555 VA	100.00%	18555 VA		
Power	360 VA	100.00%	360 VA	**Total Conn. Load:**	43526 VA
Lighting	4718 VA	125.00%	5898 VA	**Total Est. Demand:**	41504 VA
Mechanical	9092 VA	100.00%	9092 VA	**Total Conn.:**	52 A
Receptacle	14832 VA	83.71%	12416 VA	**Total Est. Demand:**	50 A

Notes:

Branch Panel: 2OP31

Location:
Supply From: T-2OP31
Mounting: SURFACE
Enclosure: NEMA 4XST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 150 A
MCB Rating: 150 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	RCPT: FRACT. [E303], SRK TNK [E318] (NOTE 1)	20 A	1	1080 VA	0 VA								2
3	RCPT: FOOD PREP COUNTER [E302] (NOTE 1)	20 A	1			180 VA	0 VA			3	30 A	SPD	4
5	RCPT: FOOD PREP COUNTER [E302] (NOTE 1)	20 A	1					180 VA	0 VA				6
7	RCPT: FOOD PREP COUNTER [E302] (NOTE 1)	20 A	1	360 VA	1040 VA								8
9	RCPT: FOOD PREP [E302] (NOTE 1)	20 A	1			180 VA	1040 VA			2	15 A	GEN-OZOD01-001 D.S. FRACT [E303]	10
11	RCPT: SRK TNK [E318], TNK SPRT [E301] (NOTE 1)	20 A	1					540 VA	1040 VA				12
13	RCPT: SRK TNK [E318] (NOTE 1)	20 A	1	720 VA	1040 VA					2	15 A	LCR-OZOD01-001 D.S. - TNK SUPPORT [E301]	14
15	RCPT: SRK-CEG001-001 SRK TNK [E318]	20 A	1			1200 VA	720 VA						16
17	RCPT: SRK-CEG001-002 SRK TNK [E318]	20 A	1					1200 VA	500 VA	1	20 A	RCPT: OIN ROOF AT RTU'S (NOTE 1)	18
19	SPARE	20 A	1	0 VA	500 VA								20
21	PV10 D.S. - OZONE [E204]	15 A	1			420 VA	500 VA			3	20 A	HOIST D.S. SHARK TANK [E318]	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	REC-OZOD01-001 FRACT [E303]	20 A	2			520 VA	0 VA			1	20 A	SPARE	28
29								520 VA	0 VA	1	20 A	SPARE	30
31				4908 VA	0 VA					1	20 A	SPARE	32
33	PANEL 2OP32	100 A	3			3540 VA	0 VA						34
35								4471 VA	0 VA	1	20 A	SPARE	36
		Total Load:		9457 VA		8144 VA		8294 VA					
		Total Amps:		79 A		68 A		69 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	1927 VA	100.00%	1927 VA		
Power	360 VA	100.00%	360 VA	**Total Conn. Load:**	25894 VA
Mechanical	9092 VA	100.00%	9092 VA	**Total Est. Demand:**	23495 VA
Receptacle	14832 VA	83.71%	12416 VA	**Total Conn.:**	72 A
				Total Est. Demand:	65 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

Branch Panel: 2OP32

Location:
Supply From: 2OP31
Mounting: RECESSED
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	RCPT: OFF'S [E304], [E305]	20 A	1	360 VA	900 VA					1	20 A	RCPT: SK TK[E318],LNG[E301B],WET/RG[E310] (NOTE 1)	2
3	RCPT: OFF'S [E304], [E306]	20 A	1			1080 VA	720 VA			1	20 A	RCPT: WET/RG [E310], GEAR WASH [E312] (NOTE 1)	4
5	RCPT: GEAR WK SHOP COUNTER [E308] (NOTE 1)	20 A	1					360 VA	2496 VA				6
7	RCPT: GEAR WK SHOP [E308]	20 A	1	180 VA	2496 VA					2	30 A	RCPT: DRYER (NOTE 1)	8
9	RCPT: GEAR DRYINF/STOR [E308] (NOTE 1)	20 A	1			360 VA	1200 VA			1	20 A	RCPT: WASHER (NOTE 1)	10
11	RCPT: GEAR DRYINF/STOR [E308] (NOTE 1)	20 A	1					360 VA	895 VA	1	15 A	FCU-03 D.S. OFFICE [E306]	12
13	D1 D.S. GEAR DRYING/STO [E308]	15 A	1	612 VA	360 VA					1	20 A	RCPT: SHOWER RM AT SINKS [E309] (NOTE 1)	14
15	CP1 D.S. GEN OZAMP1-065 [E318]	15 A	1			180 VA	0 VA			1	15 A	PV6 D.S. (ON ROOF)	16
17	HVAC CTRL POWER LOUNGE [E301B]	20 A	1					360 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
		Total Load:		4908 VA		3540 VA		4471 VA					
		Total Amps:		42 A		30 A		38 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	1507 VA	100.00%	1507 VA		
Power	360 VA	100.00%	360 VA	**Total Conn. Load:**	12919 VA
Mechanical	180 VA	100.00%	180 VA	**Total Est. Demand:**	12483 VA
Receptacle	10872 VA	95.99%	10436 VA	**Total Conn.:**	36 A
				Total Est. Demand:	35 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

Branch Panel: 4OPRLA

Location: ELEC. 156
Supply From: 4OP
Mounting: SURFACE
Enclosure: NEMA 4X

Volts: 480Y/277
Phases: 3
Wires: 4

A.I.C. Rating: 42,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 400 A
MCB Rating: 400 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1				37800 VA	23700 VA								2
3	(X)PANEL R, MECH [118]	225 A	3			40700 VA	19500 VA			3	200 A	(X)PANEL LA ELECTRICAL ROOM [149]	4
5								32000 VA	19050 VA				6
7	LTG: R102,R123,R123A,R124,R125,R126,R127,R128...	20 A	1	1190 VA	0 VA					1	20 A	SPARE	8
9	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	10
11	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	12
13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
		Total Load:		62684 VA		60200 VA		51050 VA					
		Total Amps:		231 A		222 A		184 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	1190 VA	125.00%	1487 VA		
Existing Loads	172750 VA	100.00%	172750 VA	**Total Conn. Load:**	173934 VA
				Total Est. Demand:	174230 VA
				Total Conn.:	209 A
				Total Est. Demand:	210 A

Notes:

Branch Panel: R (EXISTING REVISED)

Location: *MECH 118*
Supply From: *(X)XFMR T-3*
Mounting:
Enclosure: *NEMA 1*

Volts: *208Y/120*
Phases: *3*
Wires: *4*

A.I.C. Rating: *10,000 AMPS SYMMETRICAL*
Mains Type: *MAIN CB*
Mains Rating: *600 A*
MCB Rating: *600 A*

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1				*0 VA*	*0 VA*								2
3	*(X)PANEL RB*	*150 A*	*3*			*0 VA*	*0 VA*			*3*	*150 A*	*(X)PANEL RD*	4
5								*0 VA*	*0 VA*				6
7				*0 VA*	*0 VA*								8
9	*(X)WATER HEATER*	*60 A*	*3*			*0 VA*	*0 VA*			*3*	*35 A*	*(X)WATER HEATER*	10
11								*0 VA*	*0 VA*				12
13	*(X)SPARE*	*15 A*	*1*	*0 VA*	*0 VA*								14
15	*(X)CHEM TREAT REC.*	*15 A*	*1*			*0 VA*	*0 VA*			*3*	*100 A*	*(X)PANEL RA*	16
17	*(X)GIFT SHOP CEILING REC*	*20 A*	*1*					*0 VA*	*0 VA*				18
19	*(X)NAC EXTENDER*	*20 A*	*1*	*0 VA*	*0 VA*								20
21	*(X)PUMP OUTSIDE*	*20 A*	*1*			*0 VA*	*0 VA*			*3*	*60 A*	*(X)PANEL RC*	22
23	**RCPT: OFFICE [E115] (NOTE 1)**	*20 A*	*1*					**900 VA**	*0 VA*				24
25	*(X)DECK LIGHTS*	*20 A*	*1*	*0 VA*	*0 VA*								26
27	*SPACE*	*--*	*1*			*--*	*0 VA*			*3*	*20 A*	*(X)SPARE*	28
29	*SPACE*	*--*	*1*					*--*	*0 VA*				30
31	*SPACE*	*--*	*1*	*--*	*--*					*1*	*--*	*SPACE*	32
33	*SPACE*	*--*	*1*			*--*	*--*			*1*	*--*	*SPACE*	34
35	*SPACE*	*--*	*1*					*--*	*--*	*1*	*--*	*SPACE*	36
		Total Load:		*0 VA*		*0 VA*		**900 VA**					
		Total Amps:		*0 A*		*0 A*		**8 A**					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	900 VA	100.00%	900 VA		
				Total Conn. Load:	900 VA
				Total Est. Demand:	900 VA
				Total Conn.:	2 A
				Total Est. Demand:	2 A

Notes:
1. PROVIDE BREAKER INDICATED, BRKR AIC MUST MATCH PANEL AIC RATING.
2. ELECTRICAL CONTRACTOR MUST FIELD VERIFY EXISTING BRANCH CIRCUITS AND LABEL EACH BREAKER WITH THE CORRECT LOAD SERVED.

SWITCHBOARDS AND PANELBOARDS NOTES

1. PROVIDE 480V, 1,000A AND LARGER SERVICE AND FEEDER CIRCUIT BREAKERS WITH GROUND FAULT PROTECTION OF EQUIPMENT PER NEC ART. 230.95. PROVIDE DOCUMENTATION AND PERFORMANCE TESTING AS REQUIRED BY NEC ART. 230.95(C).
2. PROVIDE ALL 1,200A AND LARGER CIRCUIT BREAKERS WITH CLEARLY LABELLED ARC FLASH ENERGY REDUCTION MODE SWITCH WITH INDICATOR. PROVIDE DOCUMENTATION AND PERFORMANCE TESTING AS REQUIRED BY NEC ART. 240.87(C).
3. COORDINATE CIRCUIT BREAKERS TRIP WITH EQUIPMENT.
4. COORDINATE SPD CIRCUIT BREAKERS TRIP WITH SPDs PROVIDED.
5. SEE SPECIFICATIONS SECTION 262413 AND SWITCHBOARD ELEVATIONS ON SHEET E-6.3 AND E-6.4 OR ADDITIONAL DETAILS AND REQUIREMENTS.
6. ARRANGE PANELBOARD BRANCH CIRCUIT BREAKERS AS SHOWN ON THE ABOVE SCHEDULES. AGREEMENT OF CIRCUIT BREAKER POLE NUMBERS WITH THE PANELBOARD SCHEDULES AND ELECTRICAL FLOOR PLANS IS REQUIRED IN ORDER TO AVOID CONFUSION DURING CONSTRUCTION, REDRAWING THE CIRCUITRY FOR RECORD DRAWING PURPOSES AND ACCURATE DOCUMENTATION OF THE AS-BUILT CONDITIONS.

CBHF
Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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NOTE: IF THIS DRAWING IS NOT 30" X 42", IT IS A REDUCED PRINT. REFER TO GRAPHIC SCALE.

NOT FOR CONSTRUCTION

JASON P. FAMIGLIETTI — SEAL 35230 — ENGINEER

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

ELECTRICAL PANEL SCHEDULES

E-6.8

Branch Panel: EM1 (NEW PANEL REPLACING EXISTING PANEL OF SAME NAME)

Location: CORRIDOR 225 | **Volts:** 208Y/120 | **A.I.C. Rating:** 10,000 AMPS SYMMETRICAL
Supply From: LP3 | **Phases:** 3 | **Mains Type:** MAIN CB
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: NEMA 4X SST | **MCB Rating:** 50 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	LTG SPECIAL WORK AREA ELEC. LAB. LABS 1 & 2	20 A	1	0 VA	0 VA								2
3	LTS CORR & EXTERIOR	20 A	1			0 VA	0 VA			3	30 A	EXHAUST FAN ON ROOF (#9)	4
5	20A BENCH RECEPT	20 A	1					0 VA	0 VA				6
7	HUSBANDRY RECEPTS (STRIPS)	20 A	1	0 VA	0 VA					1	20 A	HUSBANDRY RECEPTS (STRIPS)	8
9	REC	20 A	1			0 VA	0 VA			1	20 A	REC AND LIGHTS EDUCATION OFFICE	10
11	SPACE	--	1					--	--	1	--	SPACE	12
		Total Load:		0 VA		0 VA		0 VA					
		Total Amps:		0 A		0 A		0 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
				Total Conn. Load: 0 VA
				Total Est. Demand: 0 VA
				Total Conn.: 0 A
				Total Est. Demand: 0 A

Notes:
1. CONNECT LOAD REMOVED AND LABELED DURING DEMOLITION TO BREAKER INDICATED.
2. LOADS SHOWN ARE FROM PANEL DIRECTORY. SEE REQUIREMENTS FOR MIGRATING EXISTING LOADS TO NEW PANEL IN SINGLE LINE (POWER RISER) DIAGRAM NOTES ON SHEET E-6.2.

Switchboard: 4LSSCH

Location: PUMP BLDG E123 | **Volts:** 480Y/277 | **A.I.C. Rating:** 42,000
Supply From: 4LSS | **Phases:** 3 | **Mains Type:** MCB
Mounting: FLOOR | **Wires:** 4 | **Mains Rating:** 1200 A
Enclosure: Type 1 | **MCB Rating:** 1000 A

Notes:

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	SPD	3	30 A	30 A	0 VA	
2	HRHWP-1 D.S.	3	30 A	15 A	3997 VA	
3	HRCWP-1 D.S.	3	30 A	15 A	9145 VA	
4	ACCHP-1 D.S.	3	30 A	15 A	6319 VA	
5	ACCHP-2 D.S.	3	30 A	15 A	6319 VA	
6	LTG: INTERIOR & EXTERIOR CHILLER PUMP BLDG.	1	30 A	20 A	187 VA	
7	T-2LSCH	3	30 A	25 A	12844 VA	NOTE 1
8	ACCH1 D.S. - CHILLER PLATFORM	3	600 A	500 A	309940 VA	
9	ACCH2 D.S. - CHILLER PLATFORM	3	600 A	500 A	0 VA	
10	HRCH-1 D.S. - CHILLER PLATFORM	3	600 A	500 A	305949 VA	
				Total Conn. Load:	654550 VA	
				Total Amps:	787.3 A	

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	636429 VA	100.00%	636429 VA	
Motor	9145 VA	125.00%	11431 VA	**Total Conn. Load:** 654550 VA
Other	0 VA	0.00%	0 VA	**Total Est. Demand:** 656845 VA
Power	8400 VA	100.00%	8400 VA	**Total Conn.:** 787.3 A
Lighting	187 VA	125.00%	234 VA	**Total Est. Demand:** 790.1 A
Receptacle	540 VA	100.00%	540 VA	

Notes:
1. THE MAXIMUM LOAD OF ACCH1, ACCH2 AND HRCH-1 IS ONE ACCH AND HRCH-1. ONE ACCH IS REDUNDANT.

Branch Panel: 2LSSCH

Location: PUMP BLDG E123 | **Volts:** 208Y/120 | **A.I.C. Rating:** 10,000 AMPS SYMMETRICAL
Supply From: T-2LSSCH | **Phases:** 3 | **Mains Type:** MAIN CB
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: NEMA 4X SST | **MCB Rating:** 60 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	HEAT TRACE CHILLER PLATFORM (NOTE 1)	20 A	1	1920 VA	1920 VA					1	20 A	HEAT TRACE CHILLER PLATFORM (NOTE 1)	2
3	-30MA GFE	--	1			--	--			1	--	-30MA GFE	4
5	HEAT TRACE CHILLER PLATFORM (NOTE 1)	20 A	1					1920 VA	1920 VA	1	20 A	HEAT TRACE CHILLER PLATFORM (NOTE 1)	6
7	-30MA GFE	--	1	--	--					1	--	-30MA GFE	8
9	RCPT: CHILLER PLATFORM (NOTE 2)	20 A	1			540 VA	360 VA			1	20 A	HVAC CTRL PWR - CHILLER PLATFORM	10
11	HVAC CTRL PWR - PUMP BLDG [E123]	20 A	1					360 VA	0 VA	1	20 A	SPARE	12
13	SPARE	20 A	1	0 VA	1664 VA					2	25 A	DHP-10 CHILLER PLATFORM BLDG (DAH10 FED FROM DHP-10)	14
15	D2 D.S. CHILLER PLATFORM BLDG	15 A	1			576 VA	1664 VA						16
17	SPACE	--	1					--	--	1	--	SPACE	18
19	SPACE	--	1	--	--					1	--	SPACE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
		Total Load:		5504 VA		3140 VA		4200 VA					
		Total Amps:		47 A		26 A		36 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	742 VA	100.00%	742 VA	
Motor	3162 VA	125.00%	3953 VA	**Total Conn. Load:** 12844 VA
Power	8400 VA	100.00%	8400 VA	**Total Est. Demand:** 13635 VA
Receptacle	540 VA	100.00%	540 VA	**Total Conn.:** 36 A
				Total Est. Demand: 38 A

Notes:
1. PROVIDE 30MA GFE BREAKER.
2. PROVIDE GFCI CIRCUIT BREAKER.

Branch Panel: 4LSS0

Location: GEN E120 | **Volts:** 480Y/277 | **A.I.C. Rating:** 35,000 AMPS SYMMETRICAL
Supply From: 4LSS | **Phases:** 3 | **Mains Type:** MAIN CB
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 225 A
Enclosure: NEMA 4X SST | **MCB Rating:** 225 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	SPARE	20 A	1	0 VA	0 VA								2
3	SPARE	20 A	1			0 VA	0 VA			3	30 A	SPD	4
5	SPARE	20 A	1					0 VA	0 VA				6
7	SPARE	20 A	1	0 VA	5128 VA								8
9	SPARE	20 A	1			0 VA	4768 VA			3	70 A	PANEL 2LSS1 - GEN. [E120] (VIA 45KVA XFMR T-2LSS1)	10
11	SPARE	20 A	1					0 VA	4768 VA				12
13	SPARE	20 A	1	0 VA	785 VA					1	20 A	LTG: GENERATOR BUILDING INTERIOR	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
		Total Load:		5258 VA		4768 VA		4768 VA					
		Total Amps:		19 A		17 A		17 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	6822 VA	100.00%	6822 VA	
Motor	3162 VA	125.00%	3953 VA	**Total Conn. Load:** 14757 VA
Power	0 VA	0.00%	0 VA	**Total Est. Demand:** 15575 VA
Lighting	785 VA	125.00%	982 VA	**Total Conn.:** 18 A
Receptacle	4680 VA	100.00%	4680 VA	**Total Est. Demand:** 19 A

Notes:

Branch Panel: 2LSS0

Location: GEN E120 | **Volts:** 208Y/120 | **A.I.C. Rating:** 10,000 AMPS SYMMETRICAL
Supply From: T-2LSS0 | **Phases:** 3 | **Mains Type:** MAIN CB
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 150 A
Enclosure: NEMA 4X SST | **MCB Rating:** 150 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1				0 VA	1664 VA								2
3	SPD	30 A	3			0 VA	1664 VA			2	25 A	DHP-6 D.S. (DAH-6 FED FROM DHP-6)	4
5								0 VA	1664 VA				6
7	RCPT: ELEC [E121] (NOTE 1)	20 A	1	360 VA	1664 VA					2	25 A	DHP-7 D.S. (DAH-6 FED FROM DHP-7)	8
9	DHP-14 D.S. (DAH-14 FED FROM DHP-14)	25 A	2			1664 VA	1440 VA			1	20 A	ACS CABINET-006 SUPPORT ELEC [E122]	10
11								1664 VA	1440 VA	1	20 A	ACS CABINET-006 SUPPORT ELEC [E122]	12
13	SPARE	20 A	1	0 VA	1440 VA					1	20 A	ACS CABINET-006 SUPPORT ELEC [E122]	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
		Total Load:		5128 VA		4768 VA		4768 VA					
		Total Amps:		43 A		40 A		40 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	6822 VA	100.00%	6822 VA	
Motor	3162 VA	125.00%	3953 VA	**Total Conn. Load:** 14664 VA
Power	0 VA	0.00%	0 VA	**Total Est. Demand:** 15455 VA
Receptacle	4680 VA	100.00%	4680 VA	**Total Conn.:** 41 A
				Total Est. Demand: 43 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

Switchboard: 4LSS1

Location: MECH. E113 | **Volts:** 480Y/277 | **A.I.C. Rating:** 65,000 AMPS SYMMETRICAL
Supply From: 4LSS | **Phases:** 3 | **Mains Type:** MCB
Mounting: | **Wires:** 4 | **Mains Rating:** 1200 A
Enclosure: NEMA 4X SST | **MCB Rating:** 1200 A

Notes:

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	PANEL 4LSS12 - MECH. [E113] (VIA XFMR T-4LSS12)	3	400 A	400 A	59283 VA	
2	PANEL 4LSS13 - MECH./ELEC. [E103]	3	400 A	400 A	121225 VA	
3	MCCLSS - ELEC [E107]	3	600 A	500 A	351864 VA	
4	PANEL 4LSS21 - STORAGE [E210A]	3	225 A	225 A	43077 VA	
5	PANEL 4LSS31 - FRACTIONATORS [E303]	3	225 A	225 A	61551 VA	
6	SCHWP-1 VFD	3	30 A	30 A	17460 VA	
7	SCHWP-2 VFD	3	30 A	30 A	17460 VA	
8	SCHWP-3 VFD	3	30 A	30 A	17460 VA	
9						
				Total Conn. Load:	688376 VA	
				Total Amps:	828.0 A	

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	50353 VA	100.00%	50353 VA	
Motor	512147 VA	102.59%	525388 VA	**Total Conn. Load:** 688376 VA
Other	6656 VA	100.00%	6656 VA	**Total Est. Demand:** 693698 VA
Power	39305 VA	100.00%	39305 VA	**Total Conn.:** 828.0 A
Lighting	94 VA	125.00%	117 VA	**Total Est. Demand:** 834.4 A
Mechanical	56211 VA	100.00%	56211 VA	
Receptacle	25841 VA	69.35%	17921 VA	

Notes:

Branch Panel: 4LSS13

Location: MECH./ELEC. E103A | **Volts:** 480Y/277 | **A.I.C. Rating:** 35,000 AMPS SYMMETRICAL
Supply From: 4LSS1 | **Phases:** 3 | **Mains Type:** MAIN CB
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 400 A
Enclosure: NEMA 4X SST | **MCB Rating:** 400 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1				2106 VA	0 VA								2
3	TOU-PFIL01-001 VFD, LIFE SUPPORT SYS [E106]	15 A	3			2106 VA	0 VA			3	30 A	SPD	4
5								2106 VA	0 VA				6
7				2106 VA	2106 VA								8
9	TOU-PFIL01-002 VFD, LIFE SUPPORT SYS [E106]	15 A	3			2106 VA	2106 VA			3	15 A	LCR-PREC01-001 VFD, LIFE SUPPORT SYS [E106]	10
11								2106 VA	2106 VA				12
13				2106 VA	2106 VA								14
15	TOU-PFIL01-003 VFD, LIFE SUPPORT SYS [E106]	15 A	3			2106 VA	2106 VA			3	15 A	LCR-PREC01-002 VFD, LIFE SUPPORT SYS [E106]	16
17								2106 VA	2106 VA				18
19				3880 VA	2106 VA								20
21	TOU-PFRC01-001 VFD, LIFE SUPPORT SYS [E106]	15 A	3			3880 VA	2106 VA			3	15 A	LCR-PFRC01-001 VFD, LIFE SUPPORT SYS [E106]	22
23								3880 VA	2106 VA				24
25				1330 VA	582 VA								26
27	TOU-PHEX01-001 VFD, LIFE SUPPORT SYS [E106]	15 A	3			1330 VA	582 VA			3	15 A	LCR-PHEX01-001 VFD, LIFE SUPPORT SYS [E106]	28
29								1330 VA	582 VA				30
31				582 VA	2106 VA								32
33	LCR-PFIL02-001 VFD., LIFE SUPPORT SYS [E106]	15 A	3			582 VA	2106 VA			3	15 A	LCR-PREC02-001 VFD, LIFE SUPPORT SYS [E106]	34
35								582 VA	2106 VA				36
37				582 VA	2106 VA								38
39	LCR-PREF01-001 VFD., LIFE SUPPORT SYS [E106]	15 A	3			582 VA	2106 VA			3	15 A	LCR-PREC02-002 VFD, LIFE SUPPORT SYS [E106]	40
41								582 VA	2106 VA				42
43				694 VA	1330 VA								44
45	FCU-14 D.S. AMBASSADIR ANIMAL [E101]	20 A	3			694 VA	1330 VA			3	20 A	LCR-PFIL01-001 VFD, LIFE SUPPORT SYS [E106]	46
47								694 VA	1330 VA				48
49				0 VA	0 VA					1	20 A	SPARE	50
51	PANEL 4LSS13B MECH./ELEC. [E103A]	100 A	3			0 VA	0 VA			1	20 A	SPARE	52
53								0 VA	0 VA	1	20 A	SPARE	54
55				14439 VA	0 VA					1	20 A	SPARE	56
57	PANELS 2LSS13, 2LSS14, 2LSS15 (VIA 112.5KVA XMFRT-2LSS13)	175 A	3			14576 VA	0 VA			1	20 A	SPARE	58
59								14766 VA	0 VA	1	20 A	SPARE	60
		Total Load:		40258 VA		40390 VA		40577 VA					
		Total Amps:		145 A		146 A		147 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	5847 VA	100.00%	5847 VA	
Motor	76591 VA	103.97%	79630 VA	**Total Conn. Load:** 121225 VA
Power	11520 VA	100.00%	11520 VA	**Total Est. Demand:** 119045 VA
Mechanical	6894 VA	100.00%	6894 VA	**Total Conn.:** 146 A
Receptacle	20442 VA	74.46%	15221 VA	**Total Est. Demand:** 143 A

Notes:

Branch Panel: 4LSS13B

Location: MECH./ELEC. E103A | **Volts:** 480Y/277 | **A.I.C. Rating:** 22,000 AMPS SYMMETRICAL
Supply From: 4LSS13 | **Phases:** 3 | **Mains Type:** MAIN CB
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 400 A
Enclosure: NEMA 1 | **MCB Rating:** 400 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1				0 VA	0 VA								2
3	SPARE	15 A	3			0 VA	0 VA			3	15 A	SPARE	4
5								0 VA	0 VA				6
7				0 VA	0 VA								8
9	SPARE	15 A	3			0 VA	0 VA			3	15 A	SPARE	10
11								0 VA	0 VA				12
13				0 VA	0 VA								14
15	SPARE	20 A	3			0 VA	0 VA			3	20 A	SPARE	16
17								0 VA	0 VA				18
19				0 VA	0 VA								20
21	SPARE	20 A	3			0 VA	0 VA			3	20 A	SPARE	22
23								0 VA	0 VA				24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42
		Total Load:		0 VA		0 VA		0 VA					
		Total Amps:		0 A		0 A		0 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
				Total Conn. Load: 0 VA
				Total Est. Demand: 0 VA
				Total Conn.: 0 A
				Total Est. Demand: 0 A

Notes:

SWITCHBOARDS AND PANELBOARDS NOTES

1. PROVIDE 480V, 1,000A AND LARGER SERVICE AND FEEDER CIRCUIT BREAKERS WITH GROUND FAULT PROTECTION OF EQUIPMENT PER NEC ART. 230.95. PROVIDE DOCUMENTATION AND PERFORMANCE TESTING AS REQUIRED BY NEC ART. 230.95(C).
2. PROVIDE ALL 1,200A AND LARGER CIRCUIT BREAKERS WITH CLEARLY LABELLED ARC FLASH ENERGY REDUCTION MODE SWITCH WITH INDICATOR. PROVIDE DOCUMENTATION AND PERFORMANCE TESTING AS REQUIRED BY NEC ART. 240.87(C).
3. COORDINATE CIRCUIT BREAKERS TRIP WITH EQUIPMENT.
4. COORDINATE SPD CIRCUIT BREAKERS TRIP WITH SPDs PROVIDED.
5. SEE SPECIFICATIONS SECTION 262413 AND SWITCHBOARD ELEVATIONS ON SHEET E-6.3 AND E-6.4 OR ADDITIONAL DETAILS AND REQUIREMENTS.
6. ARRANGE PANELBOARD BRANCH CIRCUIT BREAKERS AS SHOWN ON THE ABOVE SCHEDULES. AGREEMENT OF CIRCUIT BREAKER POLE NUMBERS WITH THE PANELBOARD SCHEDULES AND ELECTRICAL FLOOR PLANS IS REQUIRED IN ORDER TO AVOID CONFUSION DURING CONSTRUCTION, REDRAWING THE CIRCUITRY FOR RECORD DRAWING PURPOSES AND ACCURATE DOCUMENTATION OF THE AS-BUILT CONDITIONS.

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

ELECTRICAL PANEL SCHEDULES

E-6.10

Branch Panel: 2LSS13

Location: MECH./ELEC. E103A
Supply From: T-2LSS13
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	LCR-PCHM01-001 & TOU-UVS001-001 LSS [E106]	15 A	1	72 VA	0 VA								2
3	TOU-UV CONTROLLER LSS [E106]	20 A	1			1332 VA	0 VA			3	30 A	SPD	4
5	LCR-PREC03-001 LSS [E106]	15 A	1					1176 VA	0 VA				6
7	RCPT: AMB ANIMAL [E101] (NOTE 1)	20 A	1	180 VA	1080 VA					1	20 A	RCPT: PLUG STRIP AMB ANIMAL [E101]	8
9	RCPT: AMB ANIMAL [E101] (NOTE 1)	20 A	1			180 VA	1080 VA			1	20 A	RCPT: PLUG STRIP AMB ANIMAL [E101]	10
11	RCPT: AMB ANIMAL [E101] (NOTE 1)	20 A	1					360 VA	1080 VA	1	20 A	RCPT: PLUG STRIP AMB ANIMAL [E101]	12
13	RCPT: PLUG STRIP AMB ANIMAL [E101]	20 A	1	540 VA	1080 VA					1	20 A	RCPT: AMB ANIMAL [E101] (NOTE 1)	14
15	RCPT: PLUG STRIP AMB ANIMAL [E101]	20 A	1			540 VA	360 VA			1	20 A	RCPT: AMB ANIMAL [E101] (NOTE 1)	16
17	RCPT: PLUG STRIP AMB ANIMAL [E101]	20 A	1					1080 VA	360 VA	1	20 A	RCPT: AMB ANIMAL [E101] (NOTE 1)	18
19	RCPT: PLUG STRIP AMB ANIMAL [E101]	20 A	1	1080 VA	360 VA					1	20 A	RCPT: AMB ANIMAL [E101] (NOTE 1)	20
21	RCPT: POWER POLE AMB ANIMAL [E101] (NOTE 1)	20 A	1			180 VA	180 VA			1	20 A	RCPT: AMB ANIMAL [E101] (NOTE 1)	22
23	RCPT: POWER POLE AMB ANIMAL [E101] (NOTE 1)	20 A	1					180 VA	360 VA	1	20 A	RCPT: AMB ANIMAL [E101]	24
25	RCPT: POWER POLE AMB ANIMAL [E101] (NOTE 1)	20 A	1	180 VA	360 VA					1	20 A	RCPT: AMB ANIMAL [E101] (NOTE 1)	26
27	RCPT: POWER POLE AMB ANIMAL [E101] (NOTE 1)	20 A	1			180 VA	360 VA			1	20 A	RCPT: AMB ANIMAL [E101] (NOTE 1)	28
29	RCPT: POWER POLE AMB ANIMAL [E101] (NOTE 1)	20 A	1					180 VA	720 VA	1	20 A	ACS CABINET-00 I CLSS SPRT SYS [E106]	30
31	RCPT: POWER POLE AMB ANIMAL [E101] (NOTE 1)	20 A	1	180 VA	720 VA					1	20 A	ACS CABINET-00 I CLSS SPRT SYS [E106]	32
33	RCPT: POWER POLE AMB ANIMAL [E101] (NOTE 1)	20 A	1			180 VA	720 VA			1	20 A	ACS CABINET-00 I CLSS SPRT SYS [E106]	34
35	RCPT: POWER POLE AMB ANIMAL [E101] (NOTE 1)	20 A	1					180 VA	720 VA	1	20 A	ACS CABINET-00 I CLSS SPRT SYS [E106]	36
37	RCPT: POWER POLE AMB ANIMAL [E101] (NOTE 1)	20 A	1	180 VA	132 VA					1	20 A	LCR-PCAL01-001 LSS [E106]	38
39	RCPT: POWER POLE AMB ANIMAL [E101] (NOTE 1)	20 A	1			180 VA	0 VA			1	20 A	SPARE	40
41	RCPT: POWER POLE AMB ANIMAL [E101] (NOTE 1)	20 A	1					180 VA	0 VA	1	20 A	SPARE	42
43	RCPT: POWER POLE AMB ANIMAL [E101] (NOTE 1)	20 A	1	180 VA	0 VA					1	20 A	SPARE	44
45	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	46
47	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	48
49			6406 VA	0 VA						1	20 A	SPARE	50
51	PANEL 2LSS14	100 A	3			5147 VA	1435 VA			2	20 A	DHP-9 D.S.ON ROOF (FEEDS DAH-9 IN DATA RM [R108B])	52
53								4968 VA	1435 VA				54
		Total Load:		12644 VA		11883 VA		12791 VA					
		Total Amps:		106 A		99 A		108 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	3765 VA	100.00%	3765 VA	
Motor	1308 VA	122.48%	1602 VA	**Total Conn. Load:** 37310 VA
Power	8640 VA	100.00%	8640 VA	**Total Est. Demand:** 33799 VA
Mechanical	6156 VA	100.00%	6156 VA	**Total Conn.:** 104 A
Receptacle	17566 VA	78.46%	13783 VA	**Total Est. Demand:** 94 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

Branch Panel: 2LSS14

Location: MECH./ELEC. E103A
Supply From: 2LSS13
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	RCPT: REACH-IN REFRIG (1) (NOTE 1)	20 A	1	648 VA	0 VA								2
3	RCPT: REACH-IN FREEZER (2) (NOTE 1)	20 A	1			444 VA	0 VA			3	30 A	SPD	4
5	RCPT: ICE MAKER (4) (NOTE 1)	20 A	1					1272 VA	0 VA				6
7	RCPT: DATA RM [R108B]	20 A	1	360 VA	1440 VA					1	20 A	RCPT: UC FREZER NECROPSY [R107] (NOTE 1)	8
9	RCPT: RACK DATA [R108B]	20 A	1			360 VA	895 VA			1	15 A	FCU-04 D.S. - MECH. [145]	10
11	RCPT: RACK DATA [R108B]	20 A	1					360 VA	0 VA	1	20 A	SPARE	12
13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25			3958 VA	0 VA						1	20 A	SPARE	26
27	PANEL 2LSS16, EXOTIC AQUATICS L.S.S. [R130A]	60 A	3			3448 VA	0 VA			1	20 A	SPARE	28
29								3336 VA	0 VA	1	20 A	SPARE	30
		Total Load:		6406 VA		5147 VA		4968 VA					
		Total Amps:		54 A		43 A		41 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	895 VA	100.00%	895 VA	
Power	5760 VA	100.00%	5760 VA	**Total Conn. Load:** 16521 VA
Mechanical	4862 VA	100.00%	4862 VA	**Total Est. Demand:** 16521 VA
Receptacle	5004 VA	100.00%	5004 VA	**Total Conn.:** 46 A
				Total Est. Demand: 46 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

Branch Panel: 2LSS15

Location: ELECTRICAL E107
Supply From: T-2LSS13
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	RCPT: ELECT [E107] (NOTE 1)	20 A	1	360 VA	0 VA								2
3	ACS CABINET-002 - ELECT [E107]	20 A	1			720 VA	0 VA			3	30 A	SPD	4
5	ACS CABINET-002 - ELECT [E107]	20 A	1					720 VA	0 VA				6
7	ACS CABINET-002 - ELECT [E107]	20 A	1	720 VA	780 VA					1	15 A	SRK-OZOD01 AND GEN-OZAM01 - L.S. SYS [E106]	8
9	ACS CABINET-002 - ELECT [E107]	20 A	1			720 VA	1260 VA			1	20 A	RCPT: LIFE SUPPORT SYS [E106] (NOTE 1)	10
11	SPARE	20 A	1					0 VA	1260 VA	1	20 A	RCPT: LIFE SUPPORT [E106], PMP PIT [E103A] (NOTE 1)	12
13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42
		Total Load:		1814 VA		2700 VA		1980 VA					
		Total Amps:		15 A		23 A		17 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Power	2880 VA	100.00%	2880 VA	
Mechanical	780 VA	100.00%	780 VA	**Total Conn. Load:** 6471 VA
Receptacle	2880 VA	100.00%	2880 VA	**Total Est. Demand:** 6471 VA
				Total Conn.: 18 A
				Total Est. Demand: 18 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

Branch Panel: 2LSS16

Location: MAIN EXHIBIT L.S.S. R130A
Supply From: 2LSS14
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 100 A
MCB Rating: 60 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	PRC-PFRC01-001 L.S.S. [R130A]	20 A	1	132 VA	1440 VA					1	20 A	ACS CABINET #5 L.S.S. [R130B]	2
3	PRC-PTRN01-001 L.S.S. [R130A]	20 A	1			400 VA	1440 VA			1	20 A	ACS CABINET #5 L.S.S. [R130B]	4
5	PRC-PTRN01-002 L.S.S. [R130A]	20 A	1					520 VA	1440 VA	1	20 A	ACS CABINET #5 L.S.S. [R130B]	6
7	PRC UVS001-001 CONTROLLER D.S. L.S.S. [R130A]	20 A	1	222 VA	1440 VA					1	20 A	ACS CABINET #5 L.S.S. [R130B]	8
9	CTF-PFRC01-001 L.S.S. [R130B]	20 A	1			132 VA	222 VA			1	20 A	CTF UV CONTROLLER L.S.S. [R130B]	10
11	CTF-PTRN01-001 L.S.S. [R130B]	20 A	1					400 VA	444 VA	1	20 A	WSD UV AND LPS UV CONTROLLERS L.S.S [R130B]	12
13	CTF-PTRN01-002 L.S.S. [R130B]	20 A	1	400 VA	204 VA					1	20 A	LPS-PTRN01-002 L.S.S. [R130B]	14
15	WSD-PFRC01-001 L.S.S. [R130B]	20 A	1			132 VA	204 VA			1	20 A	LPS-PTRN01-001 L.S.S. [R130B]	16
17	WSD-PTRN01-002 L.S.S. [R130B]	20 A	1					400 VA	132 VA	1	20 A	LPS-PFRC01-001 L.S.S. [R130B]	18
19	WSD-PTRN01-001 L.S.S. [R130B]	20 A	1	0 VA	120 VA					1	20 A	RCP: PRC-FRC010-001 [R103] (NOTE 1)	20
21	CTF-UVS001-001 L.S.S. [R130B]	20 A	1			222 VA	696 VA			1	20 A	PRC-FRC010-001 D.S. [R103]	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
		Total Load:		3958 VA		3448 VA		3336 VA					
		Total Amps:		33 A		29 A		28 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Power	5760 VA	100.00%	5760 VA	
Mechanical	4862 VA	100.00%	4862 VA	**Total Conn. Load:** 10742 VA
Receptacle	120 VA	100.00%	120 VA	**Total Est. Demand:** 10742 VA
				Total Conn.: 30 A
				Total Est. Demand: 30 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

Branch Panel: 4LSSPB

Location: PUMP E126
Supply From: MCCLSS
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 480Y/277
Phases: 3
Wires: 4

A.I.C. Rating: 14,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 200 A
MCB Rating: 200 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	SPARE	20 A	1	0 VA	94 VA					1	20 A	LTS: PUMP BLDG [E126]	2
3	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	4
5	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	6
7	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	8
9	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	10
11	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	12
13				17459 VA	--					1	--	SPACE	14
15	PBP01 PUMP BLDG [E126]	80 A	3			17459 VA	--			1	--	SPACE	16
17								17459 VA	--	1	--	SPACE	18
19				3772 VA	6382 VA								20
21	PANEL 2LSSPB (VIA T-2LSSPS) PUMP BLDG [E126]	25 A	3			4880 VA	6382 VA			3	60 A	PANEL PCP (AT LIFT STATION)	22
23								1664 VA	6382 VA				24
		Total Load:		27572 VA		28536 VA		25348 VA					
		Total Amps:		101 A		104 A		92 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	3328 VA	100.00%	3328 VA	
Motor	52376 VA	125.00%	65470 VA	**Total Conn. Load:** 81452 VA
Other	6656 VA	100.00%	6656 VA	**Total Est. Demand:** 94544 VA
Power	19145 VA	100.00%	19145 VA	**Total Conn.:** 98 A
Lighting	94 VA	125.00%	117 VA	**Total Est. Demand:** 114 A
Receptacle	540 VA	100.00%	540 VA	

Notes:

Branch Panel: 2LSSPB

Location: PUMP E126
Supply From: T-2LSSPB (15KVA)
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 100 A
MCB Rating: 60 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	RCPT: BOILER BLDG (NOTE 1)	20 A	1	540 VA	1664 VA					2	25 A	DHP-12 D.S. (FEEDS DAH-12) - PUMP BLDG [E12]	2
3						1664 VA	1664 VA						4
5	CANTILEVER GATE 1	20 A	2					1664 VA	0 VA	1	20 A	SPARE	6
7				1664 VA	0 VA					1	20 A	SPARE	8
9	CANTILEVER GATE 2	20 A	2			1664 VA	0 VA			1	20 A	SPARE	10
11	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	12
13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
		Total Load:		3772 VA		4880 VA		1664 VA					
		Total Amps:		34 A		43 A		14 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	166 VA	100.00%	166 VA	
Motor	3162 VA	125.00%	3953 VA	**Total Conn. Load:** 10276 VA
Other	6656 VA	100.00%	6656 VA	**Total Est. Demand:** 11037 VA
Power	0 VA	0.00%	0 VA	**Total Conn.:** 29 A
Receptacle	540 VA	100.00%	540 VA	**Total Est. Demand:** 31 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

Branch Panel: 4LSS21

Location: ELEC. E201A
Supply From: 4LSS1
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 480Y/277
Phases: 3
Wires: 4

A.I.C. Rating: 22,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1				831 VA	582 VA								2
3	LCR-FDR001-001 (RINSE PUMP) [E202]	15 A	3			831 VA	582 VA			3	15 A	REC-FDR001-001-RINSE PMP [E203]	4
5								831 VA	582 VA				6
7	SPARE	20 A	1	0 VA	582 VA								8
9	SPARE	20 A	1			0 VA	582 VA			3	15 A	REC-FDR001-002-RINSE PMP [E203]	10
11	SPARE	20 A	1					0 VA	582 VA				12
13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
37				14512 VA	0 VA								38
39	PANEL 2LSS21 - ELECT [E120A] (VIA 112.5KVA XFMR T-2LSS21)	175 A	3			12445 VA	0 VA			1	20 A	SPARE	40
41								10324 VA	0 VA	1	20 A	SPARE	42
		Total Load:		16450 VA		14366 VA		12269 VA					
		Total Amps:		61 A		53 A		44 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	1478 VA	100.00%	1478 VA	
Motor	3812 VA	111.87%	4265 VA	**Total Conn. Load:** 43077 VA
Power	5760 VA	100.00%	5760 VA	**Total Est. Demand:** 43520 VA
Mechanical	30223 VA	100.00%	30223 VA	**Total Conn.:** 52 A
Receptacle	2286 VA	100.00%	2286 VA	**Total Est. Demand:** 52 A

Notes:

Branch Panel: 2LSS21

Location: ELEC. E201A
Supply From: T-2LSS21
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 400 A
MCB Rating: 400 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	HC2-PFRC01-001 D.S. CORAL MEZZ [E202]	15 A	1	696 VA	1920 VA					1	30 A	AQC-PFRC01-001 SUPPORT [R210]	2
3	HC2-PREC01-001 D.S.CORAL MEZZ [E202]	20 A	1			1176 VA	2400 VA			1	30 A	AQC-PTRN01-001 SUPPORT [R210]	4
5	HC2-PTRN01-001 D.S.CORAL MEZZ [E202]	20 A	1					1176 VA	2400 VA	1	30 A	AQC-PTRN01-002 SUPPORT [R210]	6
7	HC1-PTRN01-001 D.S. CORAL MEZZ [E202]	20 A	1	1176 VA	1920 VA					1	20 A	PBA-PTRN01-001 D.S. SUPPORT [R210]	8
9	HC1-PREC01-001 D.S. CORAL MEZZ [E202]	20 A	1			912 VA	1920 VA			1	20 A	PBA-PTRN01-002 D.S. SUPPORT [R210]	10
11	HC1-PFRC01-001 D.S. CORAL MEZZ [E202]	20 A	1					696 VA	1176 VA	1	20 A	HTT-PREC01-001 D.S. SUPPORT [R210]	12
13	LCR-FDR001-001 D.S. (BACKWASH & DRUM MTR) [E202]	20 A	1	1008 VA	900 VA					1	20 A	RCPT: CORAL MEZZ [E202] (NOTE 1)	14
15	LCR-OFRC24-001 D.S. (WASHDOWN) CORAL MEZZ...	15 A	1			433 VA	396 VA			1	15 A	HC1-FRC014-001 D.S. [E202]	16
17	LCR-OFRC24-001 D.S., GEN-OZAM01-003 CRL MEZZ...	15 A	1					564 VA	222 VA	1	15 A	HC1-FRC014-001 D.S. [E202] (NOTE 1)	18
19	LCR-CAL001-001 D.S. CORAL MEZZ [E202]	15 A	1	360 VA	1176 VA					1	20 A	CRO-PTRN01-001 D.S. [R210]	20
21	LCR-OZOM01-001 D.S.CORAL MEZZ [E202]	15 A	1			180 VA	0 VA			1	20 A	SPARE	22
23	LCR-CAL001-002 D.S.CORAL MEZZ [E202]	15 A	1					360 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
37				1554 VA	4102 VA								38
39	PANEL 2LSS23 - SRK TNK MEZZ [E203]	100 A	3			1353 VA	3845 VA			3	100 A	PANEL 2LSS22 -ELECT. [E201A]	40
41								1056 VA	2842 VA				42
		Total Load:		14512 VA		12445 VA		10324 VA					
		Total Amps:		124 A		106 A		86 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	1478 VA	100.00%	1478 VA	
Motor	327 VA	115.42%	378 VA	**Total Conn. Load:** 37274 VA
Power	5760 VA	100.00%	5760 VA	**Total Est. Demand:** 37325 VA
Mechanical	27874 VA	100.00%	27874 VA	**Total Conn.:** 103 A
Receptacle	2286 VA	100.00%	2286 VA	**Total Est. Demand:** 104 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

SWITCHBOARDS AND PANELBOARDS NOTES

1. PROVIDE 480V, 1,000A AND LARGER SERVICE AND FEEDER CIRCUIT BREAKERS WITH GROUND FAULT PROTECTION OF EQUIPMENT PER NEC ART. 230.95. PROVIDE DOCUMENTATION AND PERFORMANCE TESTING AS REQUIRED BY NEC ART. 230.95(C).
2. PROVIDE ALL 1,200A AND LARGER CIRCUIT BREAKERS WITH CLEARLY LABELLED ARC FLASH ENERGY REDUCTION MODE SWITCH WITH INDICATOR. PROVIDE DOCUMENTATION AND PERFORMANCE TESTING AS REQUIRED BY NEC ART. 240.87(C).
3. COORDINATE CIRCUIT BREAKERS TRIP WITH EQUIPMENT.
4. COORDINATE SPD CIRCUIT BREAKERS TRIP WITH SPDs PROVIDED.
5. SEE SPECIFICATIONS SECTION 262413 AND SWITCHBOARD ELEVATIONS ON SHEET E-6.3 AND E-6.4 OR ADDITIONAL DETAILS AND REQUIREMENTS.
6. ARRANGE PANELBOARD BRANCH CIRCUIT BREAKERS AS SHOWN ON THE ABOVE SCHEDULES. AGREEMENT OF CIRCUIT BREAKER POLE NUMBERS WITH THE PANELBOARD SCHEDULES AND ELECTRICAL FLOOR PLANS IS REQUIRED IN ORDER TO AVOID CONFUSION DURING CONSTRUCTION. REDRAWING THE CIRCUITRY FOR RECORD DRAWING PURPOSES AND ACCURATE DOCUMENTATION OF THE AS-BUILT CONDITIONS.

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOS

Branch Panel: 2LSS22

Location: ELEC. E201A
Supply From: 2LSS21
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	ACS CABINET-003 SUPPORT [R210]	20 A	1	1440 VA	895 VA					1	15 A	FCU-08 D.S. STORE [208E]	2
3	ACS CABINET-003 SUPPORT [R210]	20 A	1			1440 VA	222 VA			1	15 A	HC2-FRC014-001 D.S. [E202] (NOTE 1)	4
5	ACS CABINET-003 SUPPORT [R210]	20 A	1					1440 VA	396 VA	1	15 A	HC2-FRC014-001 D.S. [E202]	6
7	ACS CABINET-003 SUPPORT [R210]	20 A	1	1440 VA	360 VA					1	15 A	HC2-CAL001-001 D.S.[E202]	8
9	PBA-C02F01-001 CTRL PANEL SUPPORT [R210]	20 A	1			1920 VA	360 VA			1	15 A	HC1-CAL001-001 D.S.[E202]	10
11	PBA-C02M01-001,PBA-C02H01-001 [R210]	20 A	1					1080 VA	0 VA	1	20 A	SPARE	12
13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
		Total Load:		4102 VA		3845 VA		2842 VA					
		Total Amps:		35 A		33 A		24 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	895 VA	100.00%	895 VA		
Power	5760 VA	100.00%	5760 VA	**Total Conn. Load:**	10732 VA
Mechanical	4116 VA	100.00%	4116 VA	**Total Est. Demand:**	10732 VA
Receptacle	222 VA	100.00%	222 VA	**Total Conn.:**	30 A
				Total Est. Demand:	30 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

Branch Panel: 2LSS23

Location: E203
Supply From: 2LSS21
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	FCU-01 D.S. OZONE [E204]	15 A	1	583 VA	1008 VA					1	20 A	REC-FDR001-001-DRM VFD & REC-FDR001-001-BKWSH	2
3	FMU-WSP001-001 D.S.	15 A	1			360 VA	994 VA			1	20 A	REC-FDR001-002-DRM VFD & REC-FDR002-001-BKWSH	4
5	GEN-02DS02-001 D.S.	15 A	1					360 VA	720 VA	1	20 A	RCPT: SRK TNK MEZZ [E203], OCONE [E204] (NOTE 1)	6
7	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	8
9	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	10
11	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	12
13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
		Total Load:		1554 VA		1353 VA		1056 VA					
		Total Amps:		13 A		12 A		9 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	583 VA	100.00%	583 VA		
Motor	327 VA	115.42%	378 VA	**Total Conn. Load:**	3944 VA
Power	0 VA	0.00%	0 VA	**Total Est. Demand:**	3995 VA
Mechanical	2400 VA	100.00%	2400 VA	**Total Conn.:**	11 A
Receptacle	720 VA	100.00%	720 VA	**Total Est. Demand:**	11 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

Branch Panel: 4LSS31

Location: E303
Supply From: 4LSS1
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 480Y/277
Phases: 3
Wires: 4

A.I.C. Rating: 22,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1					0 VA	2204 VA							2
3	SPD	30 A	3				0 VA	3299 VA					4
5									0 VA	2494 VA	3	70 A	T-2LSS31 (PANEL 2LSS31 VIA 45KVA XFMR)	6
7					942 VA	3991 VA							8
9	SRK-OFRC48-001 D.S. [E303]	15 A	3				942 VA	3991 VA			3	25 A	RTU-01 D.S. ON ROOF	10
11									942 VA	3991 VA				12
13					942 VA	5986 VA								14
15	TOU-OFRC36-001 D.S. [E303]	15 A	3				942 VA	5986 VA			3	35 A	RTU-02 D.S. ON ROOF	16
17									942 VA	5986 VA				18
19					1330 VA	2217 VA								20
21	GEN-ABO0001-001 D.S. [E303]	15 A	3				1330 VA	2217 VA			3	15 A	RTU-03 D.S. ON ROOF	22
23									1330 VA	2217 VA				24
25					942 VA	831 VA								26
27	SRK-OFRC48-002 D.S. [E303]	15 A	3				942 VA	831 VA			3	15 A	SRK-ABO001-001 VFD [E303] T.O.R.	28
29									942 VA	831 VA				30
31					831 VA	0 VA					1	20 A	SPARE	32
33	SRK-ABO002-001 VFD [E303] T.O.R.	15 A	3				831 VA	0 VA			1	20 A	SPARE	34
35									831 VA	0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA	0 VA						1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA				1	20 A	SPARE	40
41	SPARE	20 A	1					0 VA	0 VA		1	20 A	SPARE	42
		Total Load:		20058 VA		21140 VA		20355 VA					
		Total Amps:		72 A		76 A		74 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	36953 VA	100.00%	36953 VA		
Power	2880 VA	100.00%	2880 VA	**Total Conn. Load:**	61551 VA
Mechanical	19308 VA	100.00%	19308 VA	**Total Est. Demand:**	61551 VA
Receptacle	2580 VA	100.00%	2580 VA	**Total Conn.:**	74 A
				Total Est. Demand:	74 A

Notes:

Branch Panel: 2LSS31

Location: E303
Supply From: T-2LSS31
Mounting: SURFACE
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 22,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 150 A
MCB Rating: 150 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	ACS CABINET-003	20 A	1	720 VA	0 VA								2
3	ACS CABINET-003	20 A	1			720 VA	0 VA			3	30 A	SPD	4
5	ACS CABINET-003	20 A	1					720 VA	0 VA				6
7	ACS CABINET-003	20 A	1	720 VA	288 VA					1	15 A	REC-OFRC24-001 D.S. [E303]	8
9	RCPT: FOOD PREP REF/FRZ [E302] (NOTE 1)	20 A	1			1200 VA	402 VA			1	15 A	RCP: REC-OFRC24-001 (NOTE 1), GEN-OZAM01-004, D...	10
11	RCPT: FOOD PREP REF/FRZ [E302] (NOTE 1)	20 A	1					1200 VA	222 VA	1	15 A	RCP: SRK-OFRC48-001 [E303] (NOTE 1)	12
13	RCPT: FA ROOF TANK WATER PANEL (NOTE 1)	20 A	1	180 VA	222 VA					1	15 A	RCP: SRK-OFRC48-002 [E303] (NOTE 1)	14
15	GEN-ABO001-001 VFD [E303]	20 A	1			240 VA	120 VA			1	15 A	RCP: TOU-OFRC36-001 [E303] (NOTE 1)	16
17	SPARE	20 A	1					0 VA	372 VA	1	15 A	FCU-02 FRACTIONAORS [E303]	18
19	SPARE	20 A	1	0 VA	120 VA					1	15 A	RCP: AQC-FRC020-001 [E304] (NOTE 1)	20
21	SPARE	20 A	1			0 VA	696 VA			1	15 A	AQC-FRC020-001 D.S. [E304]	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42
		Total Load:		2204 VA		3299 VA		2494 VA					
		Total Amps:		18 A		28 A		21 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	372 VA	100.00%	372 VA		
Power	2880 VA	100.00%	2880 VA	**Total Conn. Load:**	7986 VA
Mechanical	2288 VA	100.00%	2288 VA	**Total Est. Demand:**	7986 VA
Receptacle	2580 VA	100.00%	2580 VA	**Total Conn.:**	22 A
				Total Est. Demand:	22 A

Notes:
1. PROVIDE GFCI CIRCUIT BREAKER.

Panelboard: 4LSSEX

Location: L.S.S., HUSBANDRY, HOLDIN...
Supply From: T-4LSSEX
Mounting:
Enclosure: NEMA 4X SST

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 35,000 AMPS SYMMETRICAL
Mains Type: MCB
Mains Rating: 600 A
MCB Rating: 500 A

Notes:

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	PANEL 2OLP (EXISTING LOADS) L.S.S., HUSB., HOLDING AND STORAGE...	3	150 A	150 A	15600 VA	
2	(X)LSS (EXISTING LOADS)	3	400 A	400 A	41429 VA	
3	(X)EM (EXISTING LOADS)	3	200 A	200 A	20714 VA	
4	(X)MOPA (EXISTING LOADS)	3	400 A	400 A	41427 VA	
5	PANEL HC (EXISTING LOADS)	3	125 A	125 A	12929 VA	
6	PANEL HA (EXISTING LOADS)	3	125 A	125 A	12929 VA	
7	SPACE	3	--	--	--	
8	SPACE	3	--	--	--	
				Total Conn. Load:	145028 VA	
				Total Amps:	402.6 A	

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	0 VA	0.00%	0 VA		
Existing Loads	145028 VA	100.00%	145028 VA	**Total Conn. Load:**	145028 VA
				Total Est. Demand:	145028 VA
				Total Conn.:	402.6 A
				Total Est. Demand:	402.6 A

Notes:

Branch Panel: 2OLP (FORMALLY OLP)

Location: L.S.S., HUSBANDRY, HOLDIN...
Supply From:
Mounting:
Enclosure: NEMA 1

Volts: 208Y/120
Phases: 3
Wires: 4

A.I.C. Rating: 14,000 AMPS SYMMETRICAL
Mains Type: MAIN CB
Mains Rating: 150 A
MCB Rating: 150 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	2
3	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	4
5	SPARE	20 A	1					0 VA	0 VA	1	20 A	LIONFISH LIGHTS	6
7	SPARE	20 A	1	0 VA	0 VA					1	20 A	PACIFIC REFFF LIGHTS	8
9	SEC SYS INTERFACE	20 A	1			0 VA	0 VA			1	20 A	SPARE	10
11	CHILLER REC.	20 A	1					0 VA	0 VA	1	20 A	PACIFIC REEF PUMP	12
13	SPARE	20 A	1	0 VA	0 VA					1	20 A	PACIFIC REEF PUMP	14
15	SPARE	20 A	1			0 VA	0 VA			2	25 A	PACIFIC REEF CHILLER	16
17	LIGHTS	20 A	1					0 VA	0 VA				18
19	FROG	20 A	1	0 VA	0 VA					2	25 A	SPARE	20
21	FROG	20 A	1			0 VA	0 VA						22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	RCPT: P/R & LIONFISH	24
25	WALK-IN FREEZER	25 A	2	0 VA	0 VA					1	20 A	SEA SNAKE PUMP	26
27						0 VA	0 VA			1	20 A	SEA SNAKE PUMP	28
29	SPARE	20 A	1					0 VA	0 VA	2	25 A	SPARE	30
31	CUTTLEFISH PUMP	20 A	1	0 VA	0 VA								32
33						0 VA	0 VA			1	20 A	CUTTLFISH RCP'S	34
35	BOILER #1 CIRC PUMP RELCOATED FROM MRP2 (NOTE 1)	30 A	3					0 VA	0 VA	1	20 A	CUTTLEFISH PUMP	36
37				0 VA	0 VA					1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA			3	30 A	BOILER #1 3PH POWER RELCOATED FROM MRP2 (NOTE 1)	40
41	SPARE	20 A	1					0 VA	0 VA				42
		Total Load:		0 VA		0 VA		0 VA					
		Total Amps:		0 A		0 A		0 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
				Total Conn. Load:	0 VA
				Total Est. Demand:	0 VA
				Total Conn.:	0 A
				Total Est. Demand:	0 A

Notes:
1. RELOCATED EQUIPMENT, PROVIDE GFI BREAKER.
2. CONNECT LOAD REMOVED AND LABELED DURING DEMOLITION TO BREAKER INDICATED.
3. LOADS SHOWN ARE FROM PANEL DIRECTORY. SEE REQUIREMENTS FOR MIGRATING EXISTING LOADS TO NEW PANEL IN SINGLE LINE (POWER RISER) DIAGRAM NOTES ON SHEET E-6.2.

SWITCHBOARDS AND PANELBOARDS NOTES

1. PROVIDE 480V, 1,000A AND LARGER SERVICE AND FEEDER CIRCUIT BREAKERS WITH GROUND FAULT PROTECTION OF EQUIPMENT PER NEC ART. 230.95. PROVIDE DOCUMENTATION AND PERFORMANCE TESTING AS REQUIRED BY NEC ART. 230.95(C).
2. PROVIDE ALL 1,200A AND LARGER CIRCUIT BREAKERS WITH CLEARLY LABELLED ARC FLASH ENERGY REDUCTION MODE SWITCH WITH INDICATOR. PROVIDE DOCUMENTATION AND PERFORMANCE TESTING AS REQUIRED BY NEC ART. 240.87(C).
3. COORDINATE CIRCUIT BREAKERS TRIP WITH EQUIPMENT.
4. COORDINATE SPD CIRCUIT BREAKERS TRIP WITH SPDs PROVIDED.
5. SEE SPECIFICATIONS SECTION 262413 AND SWITCHBOARD ELEVATIONS ON SHEET E-6.3 AND E-6.4 OR ADDITIONAL DETAILS AND REQUIREMENTS.
6. ARRANGE PANELBOARD BRANCH CIRCUIT BREAKERS AS SHOWN ON THE ABOVE SCHEDULES. AGREEMENT OF CIRCUIT BREAKER POLE NUMBERS WITH THE PANELBOARD SCHEDULES AND ELECTRICAL FLOOR PLANS IS REQUIRED IN ORDER TO AVOID CONFUSION DURING CONSTRUCTION, REDRAWING THE CIRCUITRY FOR RECORD DRAWING PURPOSES AND ACCURATE DOCUMENTATION OF THE AS-BUILT CONDITIONS.

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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NO.	DATE	DESCRIPTION
1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

ELECTRICAL PANEL SCHEDULES

E-6.12

Branch Panel: LSSA EXISTING REVISED

Location: FRESHWATER L.S.S.... | Volts: 208Y/120 | A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Supply From: | Phases: 3 | Mains Type: MAIN CB
Mounting: SURFACE | Wires: 4 | Mains Rating: 225 A
Enclosure: NEMA 1 | MCB Rating: 200 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	(X)REC F. W. HUS 114A	20 A	1	0 VA	0 VA					1	20 A	(X)REC. 114A	2
3	(X)PUMP	20 A	1			0 VA	0 VA			1	20 A	(X)REC 114A	4
5	(X)REC. F. W. HUS 114	20 A	1					0 VA	0 VA	1	20 A	(X)RECP. SNAKE	6
7	(X)REC 114A RAVEN ROCK	20 A	1	0 VA	0 VA					1	20 A	(X)REC 114A & OUTSIDE	8
9	(X)SPARE	20 A	1			0 VA	0 VA			1	20 A	(X)REC 114B	10
11	(X)PUMP CAROLINA BAY	20 A	1					0 VA	0 VA	1	20 A	(X)REC 114B	12
13	(X)RAVEN ROCK PH CONT.	20 A	1	0 VA	0 VA					1	20 A	(X)REC 114B	14
15	(X)REC	20 A	1			0 VA	0 VA			1	20 A	(X)IRRIGATION CONTROL	16
17	(X)REC. CAR. BAY POND	20 A	1					0 VA	0 VA	1	20 A	(X)WALL HEATER	18
19	(X)REC. CAR. BAY POND	20 A	1	0 VA	0 VA					1	20 A	(X)WALL HEATER SNAKE HOLDING	20
21	(X)REC. SERPENTINE WALL	20 A	1			0 VA	0 VA			2	20 A	(X)5 & 6 ROOF PANEL	22
23	(X)REC 114A	20 A	1					0 VA	0 VA				24
25	(X)REC 114A	20 A	1	0 VA	0 VA								26
27	(X)KIOSK TANKS	20 A	1			0 VA	0 VA			3	20 A	(X)LSSA (WATERFALL)	28
29	(X)KIOSK TANKS	20 A	1					0 VA	0 VA				30
31	(X)TF-8	20 A	1	0 VA	**1596 VA**					1	**20 A**	**FCU-07 D.S. (NOTE 1)**	32
33	(X)REC SNAKE ROOM	20 A	1			0 VA	0 VA			2	100 A	(X)PANEL LSSA A2	34
35								0 VA	0 VA				36
37	(X)LSSA-1	125 A	3	0 VA	0 VA					1	20 A	(X)WALL HEATER	38
39						0 VA	0 VA			1	20 A	(X)UV STERILIZER	40
41	|	0 A	1					0 VA	0 VA	1	20 A	(X)UV STERILIZER	42
43	|	0 A	1	0 VA	--					1	--	(X)UNUSABLE SPACE	44
45	|	0 A	1			0 VA	--			1	--	(X)UNUSABLE SPACE	46
47	|	--	1					--	--	1	--	(X)UNUSABLE SPACE	48
		Total Load:		**1596 VA**		0 VA		0 VA					
		Total Amps:		**13 A**		0 A		0 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	1596 VA	100.00%	1596 VA		
Power	0 VA	0.00%	0 VA	**Total Conn. Load:**	1596 VA
				Total Est. Demand:	1596 VA
				Total Conn.:	4 A
				Total Est. Demand:	4 A

Notes:
1. PROVIDE BREAKER INDICATED, BRKR AIC MUST MATCH PANEL AIC RATING.

Branch Panel: LSSG EXISTING REVISED

Location: TANK SUPPORT E301 | Volts: 208Y/120 | A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Supply From: | Phases: 3 | Mains Type: MAIN CB
Mounting: SURFACE | Wires: 4 | Mains Rating: 125 A
Enclosure: NEMA 1 | MCB Rating: 125 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	(X)RM 301, 312 REC	20 A	1	0 VA	0 VA					1	20 A	(X)TF-11-BLOWER	2
3	(X)RM 302 REC	20 A	1			0 VA	0 VA			2	30 A	(X)DRYER REC	4
5	(X)RM 302 REC	20 A	1					0 VA	0 VA				6
7	(X)RM 302 REC	20 A	1	0 VA	0 VA					1	20 A	(X)TF-12-BLOWER	8
9	(X)RM 303, 304, 306 REC	20 A	1			0 VA	0 VA			1	20 A	(X)DRYER REC	10
11	(X)RM 304, 313 REC	20 A	1					0 VA	0 VA	1	20 A	(X)OZONE SPUTTER REC	12
13	(X)RM 304, 305 REC, 03 CONTROLLER	20 A	1	0 VA	0 VA					1	20 A	(X)LOAD	14
15						0 VA	0 VA			1	20 A	(X)RM 307 FAN	16
17	(X)50A CRANE	50 A	3					0 VA	0 VA	1	20 A	(X)LOAD	18
19				0 VA	0 VA								20
21	**PV11 D.S. WC [R303] (NOTE 3)**	**15 A**	1			420 VA	0 VA			3	30 A	(X)CRITEC	22
23	(X)CARBON FILTER	20 A	1					0 VA	0 VA				24
25	**RCPT: WC'S RR303, R302 (NOTE 2)**	**20 A**	1	360 VA	0 VA								26
27	**RCPT: RM 307 REC, DIVE OFFICE (NOTE 1)**	20 A	1			720 VA	0 VA			3	3 A	(X)AIR COMPR. DISCONNECT	28
29	(X)TANK 1, PUMP 1 - FRACTIONATOR	20 A	1					0 VA	0 VA				30
31	(X)TANK 1, PUMP 2 - FRACTIONATOR	20 A	1	0 VA	0 VA								32
33	(X)TANK 2, PUMP 3 - FRACTIONATOR	20 A	1			0 VA	0 VA			3	20 A	(X)FAN #12 AHU EXHAUST	34
35	(X)TANK 2, PUMP 4 - FRACTIONATOR	20 A	1					0 VA	0 VA				36
37	(X)TANK 3, PUMP 5 - FRACTIONATOR	20 A	1	0 VA	0 VA					1	20 A	(X)FAN #10 STAIRWAC	38
39	(X)TANK 3, PUMP 6 - FRACTIONATOR	20 A	1			0 VA	--			1	--	SPACE	40
41	(X)FRACTIONATOR PUMP	20 A	1					0 VA	--	1	--	SPACE	42
		Total Load:		360 VA		1140 VA		0 VA					
		Total Amps:		3 A		10 A		0 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	420 VA	100.00%	420 VA		
Power	0 VA	0.00%	0 VA	**Total Conn. Load:**	1500 VA
Receptacle	1080 VA	100.00%	1080 VA	**Total Est. Demand:**	1500 VA
				Total Conn.:	4 A
				Total Est. Demand:	4 A

Notes:
1. UTILIZE EXISTING BREAKER.
2. PROVIDE GFCI CIRCUIT BREAKER.
3. PROVIDE BREAKER INDICATED, BRKR AIC MUST PATCH PANEL AIC.

SWITCHBOARDS AND PANELBOARDS NOTES

1. PROVIDE 480V, 1,000A AND LARGER SERVICE AND FEEDER CIRCUIT BREAKERS WITH GROUND FAULT PROTECTION OF EQUIPMENT PER NEC ART. 230.95. PROVIDE DOCUMENTATION AND PERFORMANCE TESTING AS REQUIRED BY NEC ART. 230.95(C).
2. PROVIDE ALL 1,200A AND LARGER CIRCUIT BREAKERS WITH CLEARLY LABELLED ARC FLASH ENERGY REDUCTION MODE SWITCH WITH INDICATOR. PROVIDE DOCUMENTATION AND PERFORMANCE TESTING AS REQUIRED BY NEC ART. 240.87(C).
3. COORDINATE CIRCUIT BREAKERS TRIP WITH EQUIPMENT.
4. COORDINATE SPD CIRCUIT BREAKERS TRIP WITH SPDs PROVIDED.
5. SEE SPECIFICATIONS SECTION 262413 AND SWITCHBOARD ELEVATIONS ON SHEET E-6.3 AND E-6.4 OR ADDITIONAL DETAILS AND REQUIREMENTS.
6. ARRANGE PANELBOARD BRANCH CIRCUIT BREAKERS AS SHOWN ON THE ABOVE SCHEDULES. AGREEMENT OF CIRCUIT BREAKER POLE NUMBERS WITH THE PANELBOARD SCHEDULES AND ELECTRICAL FLOOR PLANS IS REQUIRED IN ORDER TO AVOID CONFUSION DURING CONSTRUCTION, REDRAWING THE CIRCUITRY FOR RECORD DRAWING PURPOSES AND ACCURATE DOCUMENTATION OF THE AS-BUILT CONDITIONS.

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-5005

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1599
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1075

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8952
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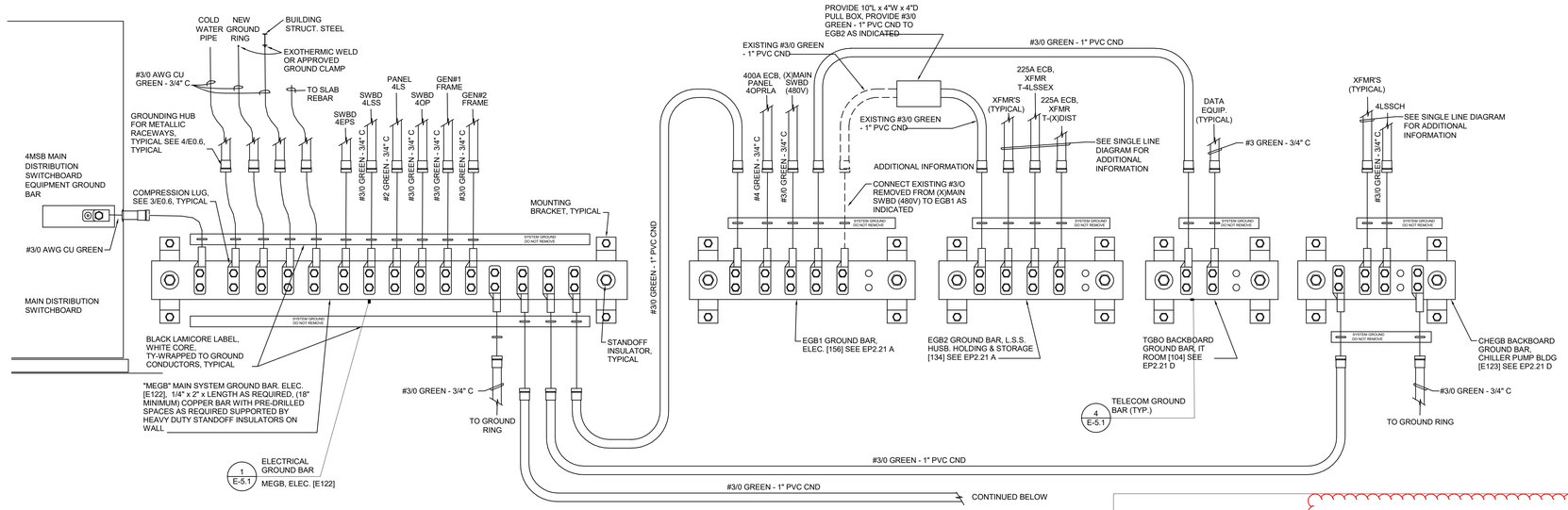
JASON P. FAMIGLIETTI — SEAL 35230 — ENGINEER — NORTH CAROLINA

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NO.	DATE	DESCRIPTION
1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

ELECTRICAL PANEL SCHEDULES

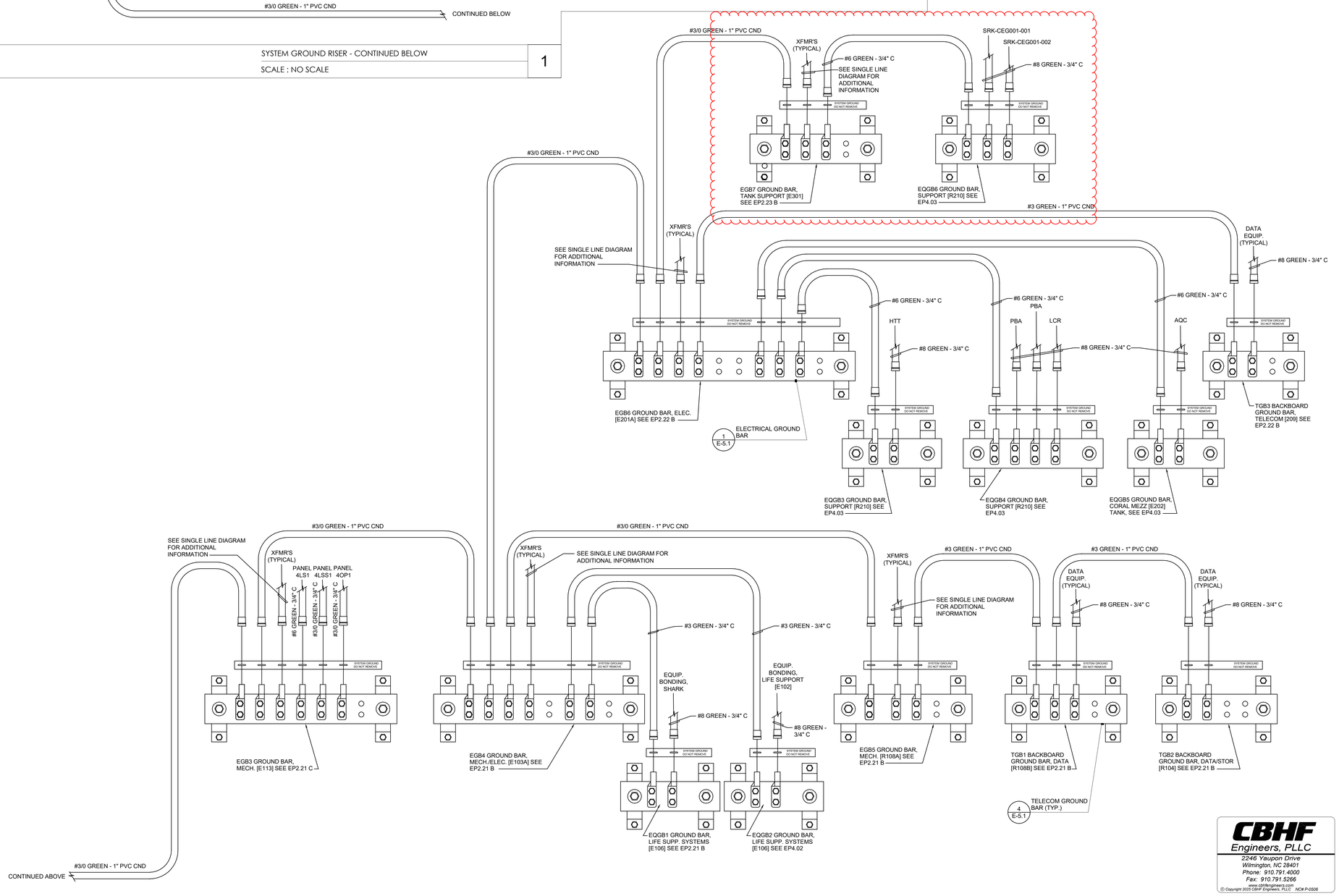
E-6.13



SYSTEM GROUND RISER - CONTINUED BELOW

SCALE : NO SCALE

1



SYSTEM GROUND RISER - CONTINUED FROM ABOVE

SCALE : NO SCALE

2

SZOSTAK DESIGN

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310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TEL/: 919.929.5244
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LICENSE # 31679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
BEND, OR 97707
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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TEL/: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1075

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TEL/: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

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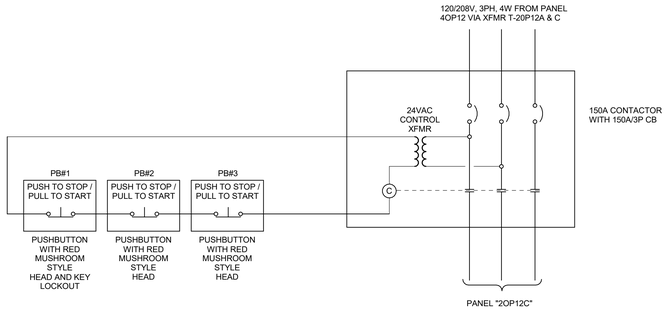
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SYSTEM GROUND RISER

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CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

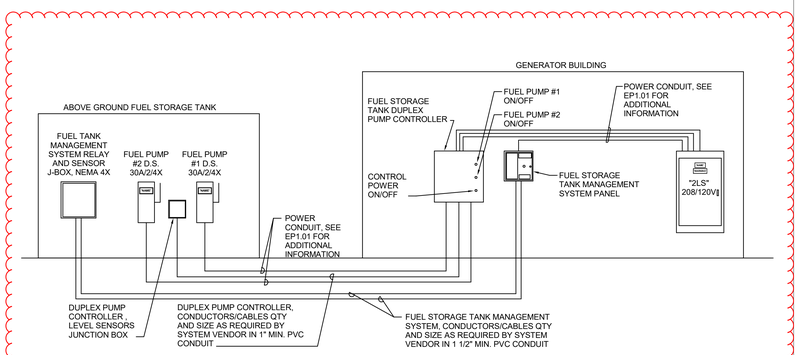
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WORK SHOP PANEL SHUT-DOWN CONTACTOR DETAIL

SCALE : NO SCALE

1



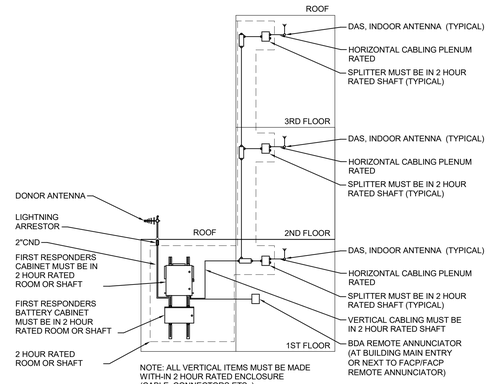
FUEL SYSTEM BLOCK DIAGRAM

SCALE : NO SCALE

5

FIRST RESPONDERS INSTALLATION NOTES

1. ALL WIRING SHALL BE IN ACCORDANCE WITH LOCAL AND NATIONAL CODES, INCLUDING NFPA 72 (2013 EDITION) AND NEC.
2. A FIRST RESPONDERS SYSTEM IS AN EMERGENCY RESPONDER RADIO ENHANCED SYSTEM IN COMPLIANCE WITH THE NC FIRE CODE, SECTION 510.
3. WHERE REQUIRED, WIRING SHALL BE RUN IN MINIMUM 3/4" CONDUIT. SURFACE METAL RACEWAY IS ACCEPTABLE.
4. PLENUM RATED COAXIAL CABLE WITHOUT CONDUIT, MAY BE ACCEPTABLE FOR HORIZONTAL RUNS IN AREAS OTHER THAN WHERE WATERPROOF DEVICES ARE REQUIRED. HOWEVER, CONDUIT SHALL BE USED TO PENETRATIONS IN RATED WALLS SHALL BE MADE IN CONDUIT PER APPROPRIATE U.L. SYSTEM.
5. MANUFACTURER'S 1/2" COAXIAL CABLE SHALL BE USED FOR THE FIRST RESPONDERS SYSTEM, DUE TO ITS LOW OHM LOSS PROPERTIES.
6. THE DIRECTIONAL DONOR ANTENNA ON THE ROOF SHALL BE TIED INTO THE BUILDING GROUNDING SYSTEM.
7. ALL CABLES USED FOR FIRST RESPONDERS SHALL BE GROUNDED TO THE BUILDING GROUNDING SYSTEM.
8. THE CABLE BETWEEN THE DONOR ANTENNA AND THE AMPLIFIER MAY BE RUN TO THE ROOF, BUT IT MUST BE IN CONDUIT.
9. A LIGHTNING ARRESTOR SHALL BE INSTALLED ON THE ANTENNA.
10. THE CABLE FROM THE DONOR ANTENNA TO THE AMPLIFIER SHALL BE SEPARATED FROM THE RISER CABLE FROM THE FIRST RESPONDERS SYSTEM TO THE INDOOR ANTENNA, THIS REQUIREMENT APPLIES TO THE RISER.
    - IF BOTH CABLES ARE NOT IN CONDUIT, THE MINIMUM SEPARATION SHALL BE SIX (6) FEET.
    - IF AT LEAST ONE CABLE IS IN CONDUIT, THE MINIMUM SEPARATION SHALL BE THREE (3) FEET.
    - THESE CABLES ARE ALLOWED TO CROSS A MAXIMUM OF ONE TIME.
11. THE FIRST RESPONDERS AMPLIFIER ENCLOSURE SHALL BE INSTALLED ON METAL STRUT CHANNEL (TO ALLOW AIRFLOW). SEE INSTALLATION DIAGRAM.
12. THE FIRST RESPONDERS AMPLIFIER AND BATTERY ENCLOSURES SHALL BE GROUNDED TO THE BUILDING GROUNDING SYSTEM UTILIZING A SHORT, DIRECT PATH WITH THE MINIMUM NUMBER OF BENDS (GROUNDING CABLES SHALL NOT REVERSE DIRECTION WHEN CONNECTING TO TERMINATION POINTS.)
13. A.C. WIRES SHALL BE RUN IN SEPARATE CONDUIT FROM D.C. WIRING, SUCH THAT A SYSTEM ALARM DOES NOT DE-ENERGIZE THE CONTROL PANEL, MINIMUM SIZE WIRE TO BE AWG 12 THHN. PROTECTION AGAINST VOLTAGE TRANSIENTS AND SURGES SHALL BE INSTALLED AT THE ELECTRICAL PANELBOARD AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
    - PRIMARY AC POWER TO THE FIRST RESPONDERS AMPLIFIER SHALL BE DEDICATED CIRCUIT.
    - REDUNDANT AC POWER TO THE FIRST RESPONDERS AMPLIFIER SHALL BE A 120VAC CIRCUIT. (PROVIDING A SECOND (REDUNDANT) POWER CIRCUIT IS PER THE MANUFACTURERS RECOMMENDED PRACTICE.)
    - CIRCUIT DISCONNECTING MEANS SHALL BE PERMANENTLY IDENTIFIED BY THE SYSTEM TYPE: i.e. "EMERGENCY COMMUNICATION SYSTEM" (ECS)
14. CONDUIT FOR THE DONOR (ROOF) ANTENNA AND FOR THE RISER COAXIAL CABLE SHALL BE PARALLEL TO THE FIRST RESPONDERS ENCLOSURE. THESE CONDUITS SHALL TERMINATE WITH A BUSHING WITHIN TWO (2) FEET OF THE BOTTOM OF THE ENCLOSURE. THE FIRST RESPONDERS INSTALLER SHALL MAKE THE CONNECTION PROVIDED, PRE-WIRED 1/4" FLEX CABLE FROM THE FIRST RESPONDERS SYSTEM.
15. INSTALLATION REQUIREMENTS TO COMPLY WITH NFPA 72, SECTION 24.3.6.8:
    - THE RISER COAXIAL CABLE SHALL BE INSTALLED IN A 2 HOUR RATED ENCLOSURE OR SHAFT. (2 HOUR RATED COAXIAL CABLE IS NOT AVAILABLE AT THE CORRECT LOW OHM LOSS RATING.)
    - THE SPLITTER CONNECTIONS BETWEEN THE RISER CABLE AND THE HORIZONTAL FEEDER CABLE SHALL ALSO BE MADE WITH A 2 HOUR RATED ENCLOSURE. THE FEEDER CABLE PASSAGE THROUGH THAT 2 HOUR ENCLOSURE SHALL BE FIRE STOPPED WITH THE APPROPRIATE U.L. SYSTEM.
    - ALL FEEDER CABLES SHALL BE PLENUM RATED AT A MINIMUM. (FEEDER CABLES ARE THE HORIZONTAL RUNS TO THE DAS.)
16. WHEN SPLITTER CONNECTIONS ARE IN CONDUIT, PROVIDE A MINIMUM 12 INCH x 12 INCH JUNCTION COX TO MAKE THE CONNECTION.
17. THE FIRST RESPONDERS ANNUNCIATOR SHALL BE INSTALLED NEAR THE FIRE ALARM CONTROL PANEL.
18. ALL FIELD WIRING SHALL BE CHECKED FOR SHORTS, OPENS, AND GROUNDS BEFORE MAKING CONNECTIONS.
19. SEE MANUFACTURERS SHEETS FOR MOUNTING DETAILS.
20. ALL JUNCTION BOX COVERS SHALL BE RED IN COLOR. THOSE IN FINISHED ARES ARE PERMITTED TO MATCH THE FINISH COLOR.
21. ALL PENETRATIONS THROUGH RATED WALLS SHALL BE SEALED USING APPROPRIATE U.L. SYSTEM.
22. PROVIDE THE FOLLOWING ALARMS TO THE FIRE ALARM CONTROLS PANEL.
    a. AC FAIL
    b. LOW BATTERY
    c. CHARGER FAIL
    d. BOOSTER FAIL
    e. ANTENNA MALFUNCTION
    f. SYSTEM COMPONENT FAIL



FIRST RESPONDERS PROJECT NOTES IN TESTING AND INSTALLATION SEQUENCING

1. A PRELIMINARY SITE SURVEY IS NEEDED TO DETERMINE THE EXISTING dBm SIGNAL STRENGTH.
2. A MORE DETAILED SURVEY WILL MAP THE BUILDING ONCE THE BUILDING IS SUBSTANTIALLY COMPLETED.
3. THE NEXT SIGNAL STRENGTH SURVEY WILL COMPLY WITH THE 2018 NCFC, 510.5.3 AND NFPA 72, 24.5.2.1 (2013 EDITION)
    - EACH FLOOR SHALL BE DIVIDED INTO 20 (APPROXIMATELY) EQUAL TEST AREAS, THE WORST CASE SIGNAL STRENGTH READING SHALL BE RECORDED. PROVIDE 90 PERCENT FLOOR AREA RADIO COVERAGE.
    - CRITICAL AREAS, IF PRESENT, SHALL BE SURVEYED SEPARATE FROM THE EQUAL TEST AREAS;
    --- EXIT STAIRS
    --- EXIT PASSAGEWAYS
    --- ELEVATOR LOBBIES
    --- AT STANDPIPE CABINETS
    --- SPRINKLER SECTIONAL VALVE LOCATIONS
    --- AHJ MAY REQUIRE ADDITIONAL LOCATIONS.

    -- CRITICAL AREAS SHALL BE PROVIDED WITH 99 PERCENT RADIO COVERAGE.
4. THE MINIMUM SIGNAL STRENGTH OF -95 dBm IS REQUIRED.

FIRST RESPONDERS GENERAL NOTE

1. NOT ALL COMPONENTS REQUIRED ARE INDICATED IN THE INFORMATION PROVIDED IN THE INSTALLATION NOTES, RISER AND FLOOR PLAN(S). THE CONTRACTOR MUST PROVIDE A FULLY FUNCTIONAL AND OPERATIONAL SYSTEM AS PART OF THIS PROJECTS CONTRACT.

FIRST RESPONDER RADIO RISER DIAGRAM

SCALE : NO SCALE

2

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NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3005

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
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BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
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LANDSCAPE ARCHITECT
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DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4410
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
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4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
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REGISTERED PROFESSIONAL ENGINEER

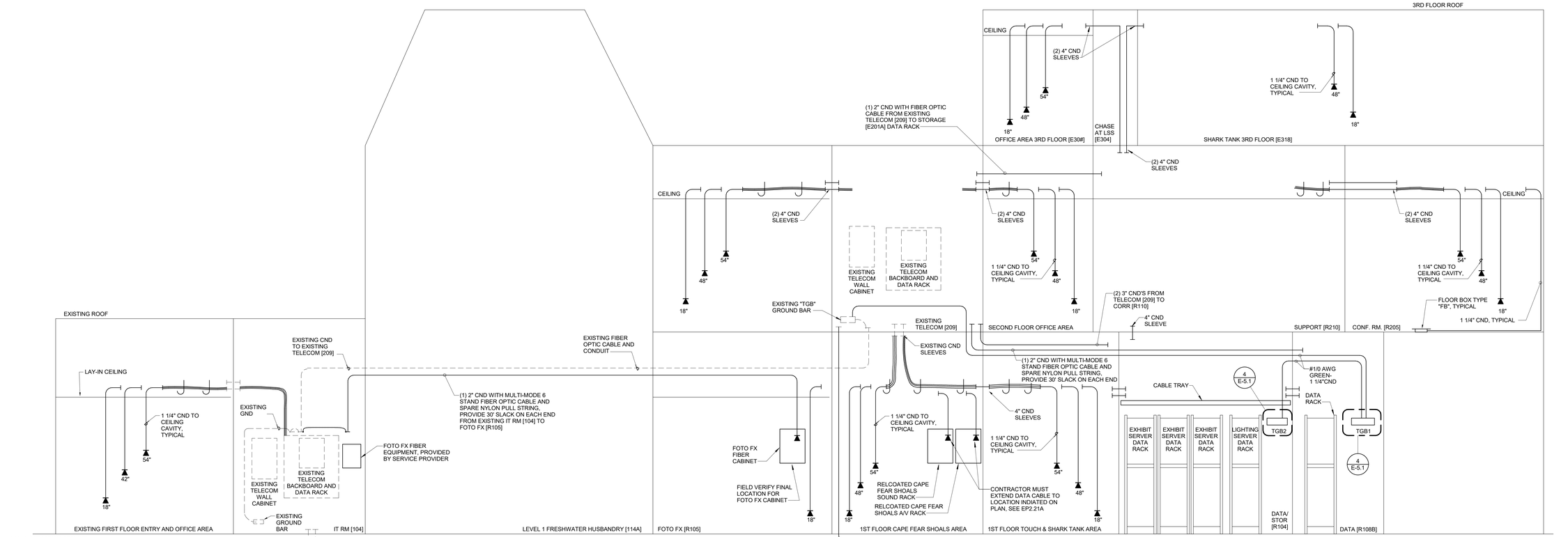
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ELECTRICAL WIRING DIAGRAM AND FIRST RESPONDERS RISER

E-6.15

CBHF
Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com
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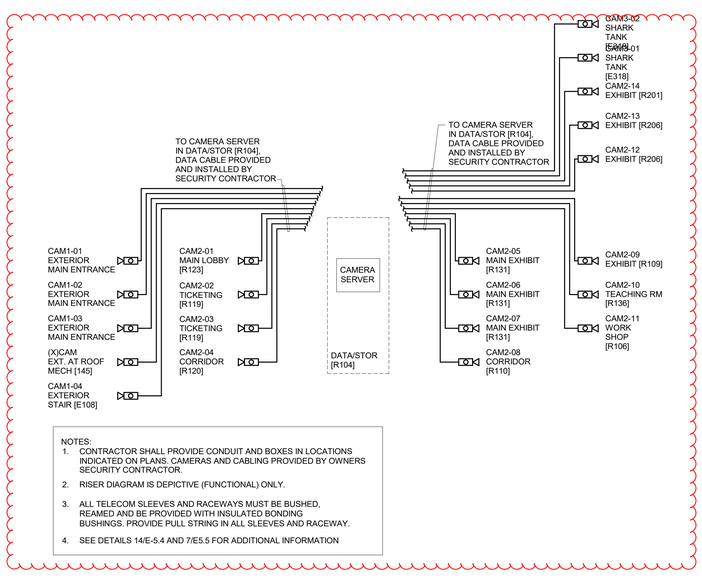


NOTES:
1. CONTRACTOR SHALL PROVIDE AND INSTALL DATA CABLE. SEE SPECIFICATIONS SECTIONS 270510, 271100, 271323 & 271513 FOR ADDITIONAL DETAILS AND REQUIREMENTS.
2. RISER DIAGRAM IS DEPICTIVE (FUNCTIONAL) ONLY.
3. ALL DEVICES ARE NOT SHOWN ALL TELECOM SLEEVES AND RACEWAYS SHALL BE BUSHED, REAMED AND BE PROVIDED WITH INSULATED BONDING BUSHINGS. PROVIDE PULL STRING IN ALL SLEEVES AND RACEWAY.
4. CABLES NOT INDICATED IN ALL RACEWAYS FOR CLARITY

TELECOM RISER

SCALE : NO SCALE

1

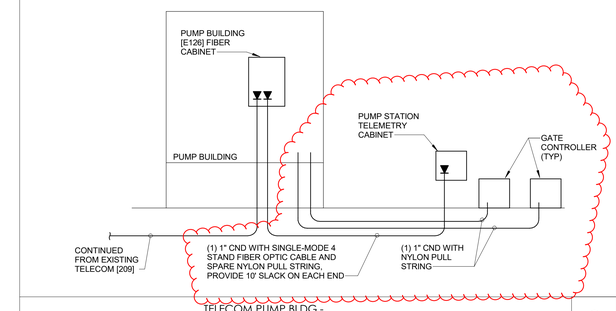


NOTES:
1. CONTRACTOR SHALL PROVIDE CONDUIT AND BOXES IN LOCATIONS INDICATED ON PLANS. CAMERAS AND CABLING PROVIDED BY OWNERS SECURITY CONTRACTOR.
2. RISER DIAGRAM IS DEPICTIVE (FUNCTIONAL) ONLY.
3. ALL TELECOM SLEEVES AND RACEWAYS MUST BE BUSHED, REAMED AND BE PROVIDED WITH INSULATED BONDING BUSHINGS. PROVIDE PULL STRING IN ALL SLEEVES AND RACEWAY.
4. SEE DETAILS 14/E-5.4 AND 7/E5.5 FOR ADDITIONAL INFORMATION

CAMERA RISER

SCALE : NO SCALE

3



TELECOM PUMP BLDG -

SCALE : NO SCALE

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2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
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FAX: 910.343.9604
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JASON P. FAMIGLIETTI — PE — ENGINEER — SEAL 35230

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NO.	DATE	DESCRIPTION
1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

TELECOM AND CAMERA RISER

E-6.17

CBHF Engineers, PLLC
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Fax: 910.791.5266
www.cbhfengineers.com

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MECHANICAL EQUIPMENT ELECTRICAL CONNECTION SCHEDULE

LOAD	FLA	HP (KW NOTED)	VOLTS	PHASE	DISCONNECTING MEANS	FUSE/ BREAKER SIZE	ENCLOSURE NEMA TYPE	WIRE AND CONDUIT	REMARKS
ACCHP-1	7.60	5	480	3	VFD W/ BY-BYPASS DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
ACCHP-2	7.6	5	480	3	VFD W/ BY-BYPASS DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
HRCWP-1	11.0	7.5	480	3	VFD W/ BY-BYPASS DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
HRHWP-1	4.8	3	480	3	VFD W/ BY-BYPASS DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
SCHWP-1	21	15	480	3	VFD W/ BY-BYPASS DISC. SWITCH	30	4X	3#10, #10 GND - 3/4"CND	
SCHWP-2	21	15	480	3	VFD W/ BY-BYPASS DISC. SWITCH	30	4X	3#10, #10 GND - 3/4"CND	
SCHWP-3	21	15	480	3	VFD W/ BY-BYPASS DISC. SWITCH	30	4X	3#10, #10 GND - 3/4"CND	
SHWP-1	14	10	480	3	VFD W/ BY-BYPASS DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
SHWP-2	14	10	480	3	VFD W/ BY-BYPASS DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
CDP-1	0.88	1/30	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
HRCH-1	368	-	480	3	600A/3P FUSED DISC. SWITCH	500	4X	2 PARALLEL 3#250kcmil, #2 GND - 2 1/2"CND	
ACCH-1	373	-	480	3	600A/3P FUSED DISC. SWITCH	500	4X	2 PARALLEL 3#250kcmil, #2 GND - 2 1/2"CND	
ACCH-2	373	-	480	3	600A/3P FUSED DISC. SWITCH	500	4X	2 PARALLEL 3#250kcmil, #2 GND - 2 1/2"CND	
FCU-01	4.88	0.277KW	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-02	3.12	0.110KW	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-03	7.46	.5	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-04	7.46	.5	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-05	7.46	.5	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-06	7.46	.5	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-07	13.30	1	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-08	7.46	.5	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-09	3.30	1.5	480	3	30A/3P FUSED DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
FCU-10	3.30	1.5	480	3	30A/3P FUSED DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
FCU-11	7.46	.5	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-12	7.46	.5	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-13	2.20	0.042KW	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-14	2.50	1	480	3	30A/3P FUSED DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
FCU-15	7.46	.5	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-16	7.46	.5	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-17	7.46	.5	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-18	7.46	.5	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-19	7.46	1	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-20	7.46	.5	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-21	7.46	.5	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-22	7.46	.5	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-23	2.20	0.113KW	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
FCU-24	7.46	.5	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
AHU-07	6.9	3	480	3	30A/3P FUSED DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
RTU-01	16.0	-	480	3	30A/3P FUSED DISC. SWITCH	25	4X	3#10, #10 GND - 3/4"CND	
RTU-02	25.0	-	480	3	60A/3P FUSED DISC. SWITCH	35	4X	3#8, #12 GND - 3/4"CND	
RTU-03	9.0	-	480	3	30A/3P FUSED DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
RTU-04	22.0	-	480	3	60A/3P FUSED DISC. SWITCH	35	4X	3#8, #10 GND - 3/4"CND	
DAH-3 (FED FROM DHP-3)	1.0		208	1	TOGGLE SWITCH	---	4X	CONDUCTORS AS SPECIFIED BY MECH MFR	
DAH-4 (FED FROM DHP-4)	1.0		208	1	TOGGLE SWITCH	---	4X	CONDUCTORS AS SPECIFIED BY MECH MFR	
DAH-5 (FED FROM DHP-5)	1.0		208	1	TOGGLE SWITCH	---	4X	CONDUCTORS AS SPECIFIED BY MECH MFR	
DAH-6 (FED FROM DHP-6)	1.0		208	1	TOGGLE SWITCH	---	4X	CONDUCTORS AS SPECIFIED BY MECH MFR	
DAH-7 (FED FROM DHP-7)	1.0		208	1	TOGGLE SWITCH	---	4X	CONDUCTORS AS SPECIFIED BY MECH MFR	
DAH-8 (FED FROM DHP-8)	1.0		208	1	TOGGLE SWITCH	---	4X	CONDUCTORS AS SPECIFIED BY MECH MFR	
DAH-9 (FED FROM DHP-9)	1.0		208	1	TOGGLE SWITCH	---	4X	CONDUCTORS AS SPECIFIED BY MECH MFR	
DAH-10 (FED FROM DHP-10)	1.0		208	1	TOGGLE SWITCH	---	4X	CONDUCTORS AS SPECIFIED BY MECH MFR	
DAH-11 (FED FROM DHP-11)	1.0		208	1	TOGGLE SWITCH	---	4X	CONDUCTORS AS SPECIFIED BY MECH MFR	
DAH-12 (FED FROM DHP-12)	1.0		208	1	TOGGLE SWITCH	---	4X	CONDUCTORS AS SPECIFIED BY MECH MFR	
DAH-13 (FED FROM DHP-13)	1.0		208	1	TOGGLE SWITCH	---	4X	CONDUCTORS AS SPECIFIED BY MECH MFR	
DAH-14 (FED FROM DHP-14)	1.0		208	1	TOGGLE SWITCH	---	4X	CONDUCTORS AS SPECIFIED BY MECH MFR	

MECHANICAL EQUIPMENT ELECTRICAL CONNECTION SCHEDULE

LOAD	FLA	HP (KW NOTED)	VOLTS	PHASE	DISCONNECTING MEANS	FUSE/ BREAKER SIZE	ENCLOSURE NEMA TYPE	WIRE AND CONDUIT	REMARKS
DHP-3	12.8		208	1	30A/2P FUSED DISC. SWITCH	20	4X	2#12, #12 GND - 3/4"CND	
DHP-4	12.8		208	1	30A/2P FUSED DISC. SWITCH	20	4X	2#12, #12 GND - 3/4"CND	
DHP-5	12.8		208	1	30A/2P FUSED DISC. SWITCH	20	4X	2#12, #12 GND - 3/4"CND	
DHP-6	17.6		208	1	30A/2P FUSED DISC. SWITCH	25	4X	2#10, #10 GND - 3/4"CND	
DHP-7	17.6		208	1	30A/2P FUSED DISC. SWITCH	25	4X	2#10, #10 GND - 3/4"CND	
DHP-8	17.6		208	1	30A/2P FUSED DISC. SWITCH	25	4X	2#10, #10 GND - 3/4"CND	
DHP-9	12.8		208	1	30A/2P FUSED DISC. SWITCH	20	4X	2#12, #12 GND - 3/4"CND	
DHP-10	17.6		208	1	30A/2P FUSED DISC. SWITCH	25	4X	2#10, #10 GND - 3/4"CND	
DHP-11	17.6		208	1	30A/2P FUSED DISC. SWITCH	25	4X	2#10, #10 GND - 3/4"CND	
DHP-12	17.6		208	1	30A/2P FUSED DISC. SWITCH	25	4X	2#10, #10 GND - 3/4"CND	
DHP-13	12.8		208	1	30A/2P FUSED DISC. SWITCH	20	4X	2#12, #12 GND - 3/4"CND	
DHP-14	17.6		208	1	30A/2P FUSED DISC. SWITCH	25	4X	2#10, #10 GND - 3/4"CND	
VAV-07-1	1.666		120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
VAV-07-2	1.666		120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
VAV-07-3	1.666		120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PV1	3.5	0.125HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PV2	5.8	0.25HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PV3	7.2	0.33HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PV4	7.2	0.33HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PV5	5.8	0.25HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PV6	5.8	0.25HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PV7	7.2	0.33HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PV8	9.8	0.5HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PV9	5.8	0.25HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PV10	3.5	0.125HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PV11	3.5	0.125HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
D1	3.7		120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
D2	5.6		120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PBP01	68.2	15 (x3)	480	3	BREAKER	80	4X	3#4, #8 GND - 1"CND	
EWH1	16.7	6KW	208	3	30A/3P FUSED DISC. SWITCH	25	4X	3#10, #10 GND - 3/4"CND	
EWH2	16.7	6KW	208	3	30A/3P FUSED DISC. SWITCH	25	4X	3#10, #10 GND - 3/4"CND	
EWH3	16.7	6KW	208	3	30A/3P FUSED DISC. SWITCH	25	4X	3#10, #10 GND - 3/4"CND	
CP1	0.6	0.07KW	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
CP2	0.6	0.07KW	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
CP3	0.6	0.07KW	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	

MECHANICAL EQUIPMENT GENERAL NOTES:

1. CONTRACTOR SHALL REFER TO ALL MECHANICAL, PLUMBING, AND ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS AND CHARACTERISTICS OF ALL EQUIPMENT LISTED ABOBE. ANY MODIFICATIONS AND/OR ADDITIONAL WORK NECESSARY SHALL BE INCLUDED IN THE BASE BID.
2. CONTRACTOR SHALL CHECK THE ROTATION OF ALL THREE PHASE MOTORS AND CORRECT THE ROTATION IF REVERSED.
3. ALL TEMPERATURE CONTROL AND INTERLOCK WIRING SHALL BE BY THE HVAC CONTRACTOR UNLESS NOTED OTHERWISE.
4. CONTRACTOR SHALL COORDINATE THE ROUTING OF POWER WIRING TO ROOF MOUNTED EQUIPMENT WITH MECHANICAL PIPE CURB ASSEMBLY. NO SEPARATE ROOF PENETRATIONS SHALL BE PERMITTED.
5. CONTRACTOR SHALL FURNISH AND WIRE DUCT SMOKE DETECTORS IN THE RETURN AIR PLENUM AND A PROVIDE A FAN SHUT DOWN RELAY FOR ALL AIR SUPPLY UNITS. DETECTORS WILL BE INSTALLED BY MECHANICAL CONTRACTOR.
6. CONTRACTOR SHALL FURNISH AND INSTALL A WEATHER PROOF, GROUND FAULT INTERRUPTER TYPE RECEPTACLE, AT AN ACCESSIBLE LOCATION FOR SERVICING ON ROOFTOP HEATING AND AIR CONDITIONING EQUIPMENT. THIS RECEPTACLE SHALL BE LOCATED WITHIN 25 FEET AND AT THE SAME LEVEL AS THIS EQUIPMENT.
7. TOGGLE SWITCHES SPECIFIED FOR MOTOR LOADS LOCAL DISCONNECTING MEANS MUST BE 30A, 600V, INDUSTRIAL GRADE, 2 HP AT 120V AND 208V AND MOTOR RATED, SINGLE AND DOUBLE POLE AS REQURED, WITH CLEAR NON-METALLIC WEATHERPROOF COVER.
8. ALL FLEXIBLE CONDUIT EQUIPMENT CONNECTIONS SHALL BE LIQUIDTIGHT FLEXIBLE NON-METALLIC CONDUIT WITH NON-METALLIC FITTINGS. SEE SPECIFICATION 260533.13.
9. SEE SPECIFICATION SECTIONS 260580, 262419, 262816, 262913.03 & 262923 FOR ADDITIONAL DETAILS AND REQUIREMENTS.

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 31679

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LIFE SUPPORT SYSTEMS ENGINEER
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BEND, OR 97707
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7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
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RALEIGH, NC 27607
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CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
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LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
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CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1075

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

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JASON P. FAMIGLIETTI — SEAL 35230 — PROFESSIONAL ENGINEER

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NO.	DATE	DESCRIPTION
1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
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6	11-10-25	ADDENDUM #3

MECHANICAL EQUIPMENT CONNECTION SCHEDULE

E-6.18

LSS EQUIPMENT ELECTRICAL CONNECTION SCHEDULE

LOAD	FLA	HP (KW NOTED)	VOLTS	PHASE	DISCONNECTING MEANS	FUSE/ BREAKER SIZE	ENCLOSURE NEMA TYPE	WIRE AND CONDUIT	NOTES
ACS Cabinets									
ACS 001 (FOUR 20 AMP BREAKERS)	6.0	---	120	1	120V, NEMA 5-20R RECEPTACLE W/ WIU COVER	---	4X	2#12, #12 GND - 3/4"CND	
ACS 002 (FOUR 20 AMP BREAKERS)	6.0	---	120	1	120V, NEMA 5-20R RECEPTACLE W/ WIU COVER	---	4X	2#12, #12 GND - 3/4"CND	
ACS 003 (FOUR 20 AMP BREAKERS)	6.0	---	120	1	120V, NEMA 5-20R RECEPTACLE W/ WIU COVER	---	4X	2#12, #12 GND - 3/4"CND	
ACS 004 (FOUR 20 AMP BREAKERS)	6.0	---	120	1	120V, NEMA 5-20R RECEPTACLE W/ WIU COVER	---	4X	2#12, #12 GND - 3/4"CND	
ACS 005 (FOUR 20 AMP BREAKERS)	6.0	---	120	1	120V, NEMA 5-20R RECEPTACLE W/ WIU COVER	---	4X	2#12, #12 GND - 3/4"CND	
Air Blower									
SRK-ABO001-001 (VFD)	3	1.5HP	480	3	VFD W/ BYPASS & DISC. SWITCH	15	4X	2#10, #10 GND - 3/4"CND	
SRK-ABO002-001 (VFD)	3	1.5HP	480	3	VFD W/ BYPASS & DISC. SWITCH	15	4X	2#10, #10 GND - 3/4"CND	
GEN-ABO001-001 (VFD)	4.8	3HP	480	3	VFD W/ BYPASS & DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
GEN-ABO001-001	2	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
Calcium Reactor									
LCR-CAL001-001	3	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
LCR-CAL001-002	3	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
LCR-C02M01-001	2	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
HC1-CAL001-001	3	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
HC2-CAL001-001	3	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
Current Effect Generator									
SRK-CEG001-001	10.0	1.2KW	120	1	Cord & Plug VIA 120V NEMA 5-20R RECEPTACLE	---	4X	2#12, #12 GND - 3/4"CND	WIU COVER
SRK-CEG001-002	10.0	1.2KW	120	1	Cord & Plug VIA 120V NEMA 5-20R RECEPTACLE	---	4X	2#12, #12 GND - 3/4"CND	WIU COVER
LCR-CEG001-001	3.75	0.45KW	120	1	Cord & Plug VIA 120V NEMA 5-20R RECEPTACLE	---	4X	2#12, #12 GND - 3/4"CND	WIU COVER
LCR-CEG001-002	3.75	0.45KW	120	1	Cord & Plug VIA 120V NEMA 5-20R RECEPTACLE	---	4X	2#12, #12 GND - 3/4"CND	WIU COVER
Fractionator									
TOU-OFRC36-001-PUMP	3.4	2HP	480	3	30A/3P COMBINATION STARTER / DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
TOU-OFRC36-001-RINSE TIMER	1.0	---	120	1	Cord & Plug VIA 120V NEMA 5-20R RECEPTACLE	---	4X	2#12, #12 GND - 3/4"CND	WIU COVER
SRK-OFRC48-001-PUMP	3.4	2HP	480	3	30A/3P COMBINATION STARTER / DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
SRK-OFRC48-001-RINSE TIMER	1.0	---	120	1	Cord & Plug VIA 120V NEMA 5-20R RECEPTACLE	---	4X	2#12, #12 GND - 3/4"CND	WIU COVER
SRK-OFRC48-002-PUMP	3.4	2HP	480	3	30A/3P COMBINATION STARTER / DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
SRK-OFRC48-002-RINSE TIMER	1.9	---	120	1	Cord & Plug VIA 120V NEMA 5-20R RECEPTACLE	---	4X	2#12, #12 GND - 3/4"CND	WIU COVER
LCR-OFRC024-001-PUMP	3.0	1.5HP	480	3	30A/3P COMBINATION STARTER / DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
LCR-OFRC024-001-RINSE TIMER	1.0	---	120	1	Cord & Plug VIA 120V NEMA 5-20R RECEPTACLE	---	4X	2#12, #12 GND - 3/4"CND	WIU COVER
AQC-FRC020-001-PUMP	5.8	0.25HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
AQC-FRC020-001-RINSE TIMER	1.9	---	120	1	Cord & Plug VIA 120V NEMA 5-20R RECEPTACLE	---	4X	2#12, #12 GND - 3/4"CND	WIU COVER
HC1-FRC014-001-PUMP	2.4	0.125HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
HC1-FRC014-001-RINSE TIMER	1.9	---	120	1	Cord & Plug VIA 120V NEMA 5-20R RECEPTACLE	---	4X	2#12, #12 GND - 3/4"CND	WIU COVER
HC2-FRC014-001-PUMP	2.4	0.125HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
HC2-FRC014-001-RINSE TIMER	1.9	---	120	1	Cord & Plug VIA 120V NEMA 5-20R RECEPTACLE	---	4X	2#12, #12 GND - 3/4"CND	WIU COVER
PRC-FRC010-001-PUMP	2.4	0.125HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PRC-FRC010-001-RINSE TIMER	1.9	---	120	1	Cord & Plug VIA 120V NEMA 5-20R RECEPTACLE	---	4X	2#12, #12 GND - 3/4"CND	WIU COVER
REC-OFRC24-001-PUMP	2.4	0.125HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
REC-OFRC24-001-RINSE TIMER	1.9	---	120	1	Cord & Plug VIA 120V NEMA 5-20R RECEPTACLE	---	4X	2#12, #12 GND - 3/4"CND	WIU COVER
Ozone									
GEN-OZAS01-001-AIR PREP SKID (x2 for total 15HP)	1 (x2)	7.5HP	480	3	60A/3P DISC. SWITCH	40	4X	3#/8, #10 GND - 3/4"CND	
GEN-OZAS01-001-AIR PREP SKID-ELEC DRAIN	5.0	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
GEN-OZOS01-001-OXYGEN CONC. SKID	3.0	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
GEN-OZGE01-001-OZONE GENERATOR ENCL	20.0	---	120	1	TOGGLE SWITCH	---	4X	2#10, #10 GND - 3/4"CND	
GEN-OZOD01-001-OFFGAS DESTRUCT	10.0	---	208	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
GEN-OZAM01-002-AMBIENT OZONE MONITOR	1.5	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
GEN-OZAM01-003-AMBIENT OZONE MONITOR	1.5	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
GEN-OZAM01-004-AMBIENT OZONE MONITOR	1.5	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
GEN-OZAM01-005-AMBIENT OZONE MONITOR	1.5	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
LCR-OZOD01-001-OFFGAS DESTRUCT	10.0	---	208	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
REC-OZODO1-001-OFFGAS DESTRUCT	10.0	---	208	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
Pumps									
TOU-PFIL01-001	7.6	5HP	480	3	VFD W/ BYPASS & DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
TOU-PFIL01-002	7.6	5HP	480	3	VFD W/ BYPASS & DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
TOU-PFIL01-003	7.6	5HP	480	3	VFD W/ BYPASS & DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
TOU-PFRC01-001	14.0	10HP	480	3	VFD W/ BYPASS & DISC. SWITCH	20	4X	3#12, #12 GND - 3/4"CND	
TOU-PHEX01-001	4.8	3HP	480	3	VFD W/ BYPASS & DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
SRK-PFIL01-001	21.0	15HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	30	---	3#10, #10 GND - 3/4"CND	
SRK-PFIL01-002	21.0	15HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	30	---	3#10, #10 GND - 3/4"CND	
SRK-PFIL01-003	21.0	15HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	30	---	3#10, #10 GND - 3/4"CND	
SRK-PFIL01-004	21.0	15HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	30	---	3#10, #10 GND - 3/4"CND	
SRK-PFIL01-005	21.0	15HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	30	---	3#10, #10 GND - 3/4"CND	
SRK-PFIL01-006	21.0	15HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	30	---	3#10, #10 GND - 3/4"CND	
SRK-PFIL01-007	21.0	15HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	30	---	3#10, #10 GND - 3/4"CND	
SRK-PFRC01-001	11.0	7.5HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	20	---	3#12, #12 GND - 3/4"CND	
SRK-PFRC01-002	11.0	7.5HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	20	---	3#12, #12 GND - 3/4"CND	
SRK-PHEX01-001	11.0	7.5HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	20	---	3#12, #12 GND - 3/4"CND	
SRK-PINJ01-001	4.8	3HP	480	3	30A/3 COMBINATION STARTER / DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	

LSS EQUIPMENT ELECTRICAL CONNECTION SCHEDULE

LOAD	FLA	HP (KW NOTED)	VOLTS	PHASE	DISCONNECTING MEANS	FUSE/ BREAKER SIZE	ENCLOSURE NEMA TYPE	WIRE AND CONDUIT	REMARKS
SRK-PTRN01-001	7.6	5HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	15	-	3#12, #12 GND - 3/4"CND	
SRK-PFIL02-001	11.0	7.5 HP	480	3	VFD W/ BYPASS & DISC. SWITCH	20	4X	3#12, #12 GND - 3/4"CND	
LCR-PREC01-001	7.6	5HP	480	3	VFD W/ BYPASS & DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
LCR-PREC01-002	7.6	5HP	480	3	VFD W/ BYPASS & DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
LCR-PFIL01-001	4.8	3HP	480	3	VFD W/ BYPASS & DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
LCR-PFRC01-001	7.6	5HP	480	3	VFD W/ BYPASS & DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
LCR-PREF01-001	2.1	1HP	480	3	VFD W/ BYPASS & DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
LCR-PREC02-001	7.6	5HP	480	3	VFD W/ BYPASS & DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
LCR-PREC02-002	7.6	5HP	480	3	VFD W/ BYPASS & DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
LCR-PFIL02-001	2.1	1HP	480	3	VFD W/ BYPASS & DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
LCR-PHEX01-001	2.1	1HP	480	3	VFD W/ BYPASS & DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
LCR-PREC03-001	9.8	0.5HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
LCR-PCAL01-001	1.1	-	120	1	VFD W/ BYPASS & DISC. SWITCH	15	4X	2#12, #12 GND - 3/4"CND	
LCR-PCHM01-001	0.6	-	120	1	30A/1 COMBINATION STARTER / DISC. SWITCH	15	4X	2#12, #12 GND - 3/4"CND	
PBA-PTRN01-001	16.0	1HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PBA-PTRN01-002	16.0	1HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
AQC-PTRN01-001	20.0	1.5HP	120	1	30A/1 COMBINATION STARTER / DISC. SWITCH	30	4X	2#10, #10 GND - 3/4"CND	
AQC-PTRN01-002	20.0	1.5HP	120	1	30A/1 COMBINATION STARTER / DISC. SWITCH	30	4X	2#10, #10 GND - 3/4"CND	
AQC-PFRC01-001	16.0	1HP	120	1	30A/1 COMBINATION STARTER / DISC. SWITCH	30	4X	2#10, #10 GND - 3/4"CND	
HTT-PREC01-001	9.8	0.5HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
HC1-PTRN01-001	9.8	0.5HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
HC1-PFRC01-001	5.8	0.25HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
HC1-PREC01-001	7.6	0.5HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
HC2-PTRN01-001	9.8	0.5HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
HC2-PFRC01-001	5.8	0.25HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
HC2-PREC01-001	7.6	0.5HP	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
CTF-PTRN01-001	3.3	-	120	1	120V, NEMA 5-20R RECEPTACLE W/ WIU COVER	---		2#12, #12 GND - 3/4"CND	RIB RELAY REQUIRED
CTF-PTRN01-002	3.3	-	120	1	120V, NEMA 5-20R RECEPTACLE W/ WIU COVER	---		2#12, #12 GND - 3/4"CND	RIB RELAY REQUIRED
CTF-PFRC01-001	1.1	-	120	1	120V, NEMA 5-20R RECEPTACLE W/ WIU COVER	---		2#12, #12 GND - 3/4"CND	---
LPS-PTRN01-001	1.7	-	120	1	120V, NEMA 5-20R RECEPTACLE W/ WIU COVER	---		2#12, #12 GND - 3/4"CND	RIB RELAY REQUIRED
LPS-PTRN01-002	1.7	-	120	1	120V, NEMA 5-20R RECEPTACLE W/ WIU COVER	---		2#12, #12 GND - 3/4"CND	RIB RELAY REQUIRED
LPS-PFRC01-001	1.1	-	120	1	120V, NEMA 5-20R RECEPTACLE W/ WIU COVER	---		2#12, #12 GND - 3/4"CND	---
PRC-PTRN01-001	3.3	-	120	1	120V, NEMA 5-20R RECEPTACLE W/ WIU COVER	---		2#12, #12 GND - 3/4"CND	RIB RELAY REQUIRED
PRC-PTRN01-002	3.3	-	120	1	120V, NEMA 5-20R RECEPTACLE W/ WIU COVER	---		2#12, #12 GND - 3/4"CND	RIB RELAY REQUIRED
PRC-PFRC01-001	1.1	-	120	1	120V, NEMA 5-20R RECEPTACLE W/ WIU COVER	---		2#12, #12 GND - 3/4"CND	---
WSD-PTRN01-001	3.3	-	120	1	120V, NEMA 5-20R RECEPTACLE W/ WIU COVER	---		2#12, #12 GND - 3/4"CND	RIB RELAY REQUIRED
WSD-PTRN01-002	3.3	-	120	1	120V, NEMA 5-20R RECEPTACLE W/ WIU COVER	---		2#12, #12 GND - 3/4"CND	RIB RELAY REQUIRED
WSD-PFRC01-001	1.1	-	120	1	120V, NEMA 5-20R RECEPTACLE W/ WIU COVER	---		2#12, #12 GND - 3/4"CND	
REC-PFIL01-001	7.6	5HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	15	-	3#12, #12 GND - 3/4"CND	
REC-PFIL01-002	7.6	5HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	15	-	3#12, #12 GND - 3/4"CND	
REC-PFIL02-001	4.8	3HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	15	-	3#12, #12 GND - 3/4"CND	
REC-PFIL02-002	4.8	3HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	15	-	3#12, #12 GND - 3/4"CND	
REC-PFRC01-001	4.8	3HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	15	-	3#12, #12 GND - 3/4"CND	
REC-PTRN01-001	14.0	10HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	20	-	3#12, #12 GND - 3/4"CND	
REC-PTRN01-002	14.0	10HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	20	-	3#12, #12 GND - 3/4"CND	
FMU-PTRN01-001	7.6	5HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	15	-	3#12, #12 GND - 3/4"CND	
FMU-PTRN01-002	7.6	5HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	15	-	3#12, #12 GND - 3/4"CND	
FMU-PHEX01-001	1.1	0.5HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	15	-	3#12, #12 GND - 3/4"CND	
SMU-PTRN01-001	7.6	5HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	15	-	3#12, #12 GND - 3/4"CND	
SMU-PTRN01-002	7.6	5HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	15	-	3#12, #12 GND - 3/4"CND	
SMU-PHEX01-001	7.6	5HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	15	-	3#12, #12 GND - 3/4"CND	
SMU-PMIX01-001	7.6	5HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	15	-	3#12, #12 GND - 3/4"CND	
ROF-PTRN01-001	3.4	2HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	15	-	3#12, #12 GND - 3/4"CND	
ROF-PHEX01-001	5.8	0.25HP	120	1	TOGGLE SWITCH	---	-	2#12, #12 GND - 3/4"CND	
ROS-PMIX01-001	7.6	5HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	15	-	3#12, #12 GND - 3/4"CND	
ROS-PTRN01-001	3.4	2HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	15	-	3#12, #12 GND - 3/4"CND	
ROS-PHEX01-001	1.1	0.5HP	480	3	MCC VFD W/ BYPASS & DISC. SWITCH	15	-	3#12, #12 GND - 3/4"CND	
CRO-PHEX01-001	9.8	0.5HP	120	1	TOGGLE SWITCH	---	-	2#12, #12 GND - 3/4"CND	
SWD-PDRN01-001	2.1	1HP	480	3	30A/3P DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
Reverse Osmosis									
REZ-OZOD01-001	7.6	5HP	480	3	30A/3P DISC. SWITCH PROVIDED WITH SKID	15	4X	3#12, #12 GND - 3/4"CND	
U.V. Sterilizer									
TOU-UVS001-001	11.1	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
LCR-UVS001-001 (NOT USED)	5.6	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PBA-UVS001-001	1.9	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
AQC-UVS001-001	3.7	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
CTF-UVS001-001	1.9	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
LSP-UVS001-001	1.9	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PRC-UVS001-001	1.9	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
WSD-UVS-001-001	1.9	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
Water Softener									
FMU-WSP001-001	3 (1.5A x2)		120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
Filter									
LCR-FDR001-001-BACKWASH PUMP	7.0	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
LCR-FDR001-001-DRUM MOTOR	1.4	0.18HP	120	1	FED FROM BACKWASH PUMP THIS SKID DISC. SWITCH	15	4X	2#12, #12 GND - 3/4"CND	
LCR-FDR001-001-RINSE PUMP	3.0	1.5HP	480	3	30A/3 DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
REC-FDR001-001-BACKWASH PUMP	7.0	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
REC-FDR001-001--DRUM MOTOR	1.4	0.18HP	120	1	FED FROM BACKWASH PUMP THIS SKID DISC. SWITCH	15	4X	2#12, #12 GND - 3/4"CND	
REC-FDR001-001-RINSE PUMP	2.1	1HP	480	3	30A/3P DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
REC-FDR001-002	7.0	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
REC-FDR001-002	1.4	0.18HP	120	1	FED FROM BACKWASH PUMP THIS SKID DISC. SWITCH	15	4X	2#12, #12 GND - 3/4"CND	
REC-FDR001-002	2.1	1HP	480	3	30A/3P DISC. SWITCH	15	4X	3#12, #12 GND - 3/4"CND	
C02									
PBA-CO2F01-001	15.0	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PBA-CO2H01-001	<5	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	
PBA-CO2M01-001	<5	---	120	1	TOGGLE SWITCH	---	4X	2#12, #12 GND - 3/4"CND	

LSS EQUIPMENT GENERAL NOTES:

1. CONTRACTOR SHALL VERIFY THE EXACT LOCATION, HEIGHT, AND ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT PRIOR TO ROUGH-IN WITH EQUIPMENT SUPPLIER AND LSS DRAWINGS.
2. CONTRACTOR SHALL FURNISH AND INSTALL ALL CODE REQUIRED LOCAL DISCONNECTS AND SPECIAL ENCLOSURES (I.E., NEMA 4X).
3. CONTRACTOR SHALL CHECK ROTATION OF ALL THREE PHASE MOTORS AND CORRECT ROTATION IF REVERSED.
4. CONTRACTOR SHALL FURNISH AND INSTALL ALL FINAL EQUIPMENT POWER TERMINATIONS. CONTROL CONDUCTOR TERMINATIONS WILL BE BY THE EQUIPMENT VENDOR/CONTRACTOR.
5. ALL FLEXIBLE CONDUIT EQUIPMENT CONNECTIONS SHALL BE LIQUIDTIGHT FLEXIBLE NON-METALLIC CONDUIT WITH NON-METALLIC FITTINGS. SEE SPECIFICATION 260533.13.
6. CONTRACTOR SHALL REFER TO ALL LSS DRAWINGS FOR EXACT LOCATIONS AND CHARACTERISTICS OF ALL EQUIPMENT LISTED ABOVE. ANY MODIFICATIONS AND/OR ADDITIONAL WORK NECESSARY SHALL BE INCLUDED IN THE BASE BID.
7. CONFIRM ALL OVERCURRENT PROTECTION DEVICE AND/OR FUSE SIZES WITH EQUIPMENT PROVIDED.
8. PROVIDE CONDUIT AND WIRING BETWEEN OXYGEN PREP SKID AND OZONE SKID.
9. CONTRACTOR MUST PROVIDE CONDUIT AND WIRING BETWEEN ALL COMPONENTS
10. WIU = WHILE IN USE
11. CONTRACTOR TO PROVIDE CONDUIT AND POWER BETWEEN ALL COMPONENTS FOR LIVE CORAL / DRUM FILTER AND RECOVERY / DRUM FILTER.
12. TOGGLE SWITCHES SPECIFIED FOR MOTOR LOADS LOCAL DISCONNECTING MEANS MUST BE 30A, 600V, INDUSTRIAL GRADE, 2 HP AT 120V AND 208V AND MOTOR RATED, SINGLE AND DOUBLE POLE AS REQURED, WITH CLEAR NON-METALLIC WEATHERPROOF COVER.
13. SEE SPECIFICATION SECTIONS 260580, 262419, 262816, 262913.03 & 262923 FOR ADDITIONAL DETAILS AND REQUIREMENTS.
14. VFD AND DISC. SW. PROVIDED INTEGRAL TO EQUIPMENT.

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 31679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-5005

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1777
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4010
WWW.CHEATHAMPA.COM
LICENSE # C-1075

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8902
WWW.PALACIOCOLLABORATIVE.COM

NOTE: IF THIS DRAWING IS NOT 30" X 42", IT IS A REDUCED PRINT. REFER TO GRAPHIC SCALE.

NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL 35230 JASON P. FAMIGLETTI

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

ELECTRICAL EQUIPMENT CONNECTION SCHEDULE

E-6.19

TYPE	DESCRIPTION	MANUFACTURER	FIXTURE SERIES	NOMINAL SIZE	TRIM SIZE	TRIM TYPE	MOUNTING	HOUSING	LISTING	RATING	FINISH	CORROSION RESISTANCE	SOURCE	SOURCE COLOR / COLOR TEMPERATURE	LUMENS	VOLTS	WATTS	BEAM ANGLE	DRIVER	CONTROL	FIXTURE ACCESSORIES 1	FIXTURE ACCESSORIES 2	FIXTURE ACCESSORIES 3	REMARKS
CTRL01	LIGHTING CONTROLLER	ELECTRONIC THEATER CONTROLS PHAROS LUTRON	UNISON MOSAIC SHOW CONTROLLER LIGHTING PLAYBACK CONTROLLER ATHENA SYSTEM CONTROLS	3.5" X 5.75" X2.25"			RACK MOUNT		UL, ETL, OR CSA	IP20						POE	7		POE	INTERNET PROTOCOL	DIN RAIL RACKMOUNT KIT			1
CTRL02	BUILDING LIGHTING INTERFACE	ELECTRONIC THEATER CONTROLS CRESTRON LUTRON	PARADIGM ARCHITECTURAL CONTROL PROCESSOR 4-SERIES CONTROL SYSTEM ATHENA SYSTEM CONTROLS	11" X3.5" X 19"			RACK MOUNT		UL, ETL, OR CSA	IP20						POE	N/A		POE	INTERNET PROTOCOL, DMX	RACK MOUNT ENCLOSURE KIT			
CTRL03	RELAY/DIMMER PANEL 24WAY	ELECTRONIC THEATER CONTROLS VARILITE LIGHTRONICS	ECHO RELAY PANELS RIGDIM POWER CABINET UNITY ARCHITECTURAL DIMMING SYSTEMS	67" X 14.5" X 4.5"			WALL MOUNT	NEMA -4X ENCLOSURE	UL, ETL, OR CSA	NEMA-4X		MARINE-GRADE CORROSION RESISTANT				120/208	7200		MAINS	DMX	PHASE ADAPTIVE DIMMER MODULES			2
CTRL04	1X8 DATA DISTRIBUTION	PATHWAY CONNECTIVITY OBSIDIAN CONTROL SYSTEMS ELECTRONIC THEATER CONTROLS	PWPP RACK MOUNT DMX GATEWAY NETRON ETHERDMX NODES EN12 RESPONSE MK2 GATEWAY SERIES	17" X 1.75" X 7"			RACK MOUNT		UL, ETL, OR CSA	IP20						120	0		INTERNAL TRANSFORMER	SACN (DMX OVER ETHERNET)				3
CTRL05	EQUIPMENT CONTROL RACK	MIDDLE ATLANTIC LOWELL HAMMOND	SR LARGE PIVOTING WALL RACK SERIES LWBR SERIES HWF SERIES	90.75" (H) X 23.5" (W) 28.5" (D) (40-44 UNITS)			WALL MOUNT	LARGE PIVOTING OR "SWING-OUT" WALL-MOUNT RACK W/ FLOOR BASE	UL, ETL, OR CSA	IP20	BLACK										16-PORT NETWORK SWITCH 24-PORT PATCHBAY MINI-COMPUTER	18" RACK-MOUNT MONITOR KEYBOARD & MOUSE NAME PLATE, BRUSH PLATES, BLANK PLATES	DRAWER UNINTERRUPTIBLE POWER SUPPLY	4
CTRL06	4-WAY E-DIN DMX SPLITTER	PATHWAY CONNECTIVITY OBSIDIAN CONTROL SYSTEMS ELECTRONIC THEATER CONTROLS	REPEATER DIN-MOUNT DMX/RDM OPTO SPLITTER NETRON RDM6D DIN RAIL SPLITTER RESPONSE OPTO-SPLITTER DIN BOX	10.5" x 6.25" x 3.75"			SURFACE MOUNT	NEMA -4X ENCLOSURE	UL, ETL, OR CSA	NEMA-4X		MARINE-GRADE CORROSION RESISTANT				120	10		LOCAL TRANSFORMER	DMX	IP65 NEMA 4 ENCLOSURE	DIN-MOUNT POWER SUPPLY		5
CTRL07	TOUCH PANEL CONTROLLER	ELECTRONIC THEATER CONTROLS PHAROS LUTRON	UNISON MOSIAC 5" TOUCHSCREEN TPC (TOUCH PANEL CONTROLLER) ATHENA TOUCHSCREEN	5.5" X 4" X 2"	5.5" X 4" X 2"		RACK MOUNT	RACK MOUNT PLATE	UL, ETL, OR CSA	IP20						POE	4		POE	INTERNET PROTOCOL				6
D02	INTERIOR FIXED DOWNLIGHT	INTENSE LIGHTING COOPER LIGHTING SOLUTIONS USAI LIGHTING	MX G2 DOWNLIGTHT SERIES PORTFOLIO DOWNLIGHT SERIES BEVELED 2.2 COMPLETE DOWNLIGHT SERIES	4.5" DIA	4.5" DIA	ROUND FIXED REGRESS FLANGE	CEILING RECESSED	NEW CONSTRUCTION	UL, ETL, OR CSA	IP20	BLACK		LEDs	3000K	1525	120	20	45°	DIMMABLE LED DRIVER	PHASE DIMMING	SOFT FOCUS LENS	ACCESSORY HOLDER		17, 18
D03	SIGN AND WAYFINDING DOWNLIGHT	INTENSE LIGHTING COOPER LIGHTING SOLUTIONS USAI LIGHTING	MX G2 DOWNLIGTHT SERIES PORTFOLIO DOWNLIGHT SERIES BEVELED 2.2 COMPLETE DOWNLIGHT SERIES	4.5" DIA	4.5" DIA	ROUND ADJUSTABLE REGRESS FLANGE	CEILING RECESSED	NEW CONSTRUCTION	UL, ETL, OR CSA	IP20	BLACK		LEDs	3000K	1525	120	20	15°	DIMMABLE LED DRIVER	PHASE DIMMING	SOFT FOCUS LENS	HONEY COMB LOUVER	ACCESSORY HOLDER	8, 17, 18
D04	ANIMAL SPOTLIGHT	KESSIL LIGHTING	W500 AQUASCAPE SERIES	13.8" X 6.5" X 6.5"	6.5" DIA		MONOPOINT ADAPTER MOUNT	ARCHITECTURAL SPOTLIGHT	UL, ETL, OR CSA	IP65	BLACK	MARINE-GRADE CORROSION RESISTANT	LEDs	10000K-20000K	5750	120	175	35°	DMX LED DRIVER	DMX	GLARE SHIELD		STAINLESS STEEL SAFETY CABLE	9, 10
D05	OUTDOOR TURTLE SAFE DOWNLIGHT	USAI LIGHTING LIGMAN LIGHTING ZANIBONI LIGHTING	BEVELED 2.2 COLORS SERIES NIKON 1 SERIES LUNA 2 WL	5.5" DIA	5.5" DIA	ROUND FIXED FLANGE		NEW CONSTRUCTION AIRTIGHT	UL, ETL, OR CSA	WET LOCATION	BLACK	MARINE-GRADE CORROSION RESISTANT	LEDs	AMBER	450	120	15	40°-50°	DIMMABLE LED DRIVER	PHASE DIMMING				17
D06	TURTLE SPOTLIGHT	KESSIL LIGHTING COEMAR LUMASCAPE	W360 AQUASCAPE SERIES SUNLITE LED KOLOLUX K6 SERIES	13.8" X 6.5" X 6.5"	4.5" DIA		MONOPOINT ADAPTER MOUNT	ARCHITECTURAL SPOTLIGHT	UL, ETL, OR CSA	IP65	BLACK	MARINE-GRADE CORROSION RESISTANT	LEDs	4000K-6500K	2148	120	80	15°	DMX LED DRIVER	DMX	GLARE SHIELD		STAINLESS STEEL SAFETY CABLE	9
DMX01	DMX PORT	PATHWAY CONNECTIVITY OBSIDIAN CONTROL SYSTEMS ELECTRONIC THEATER CONTROLS	PWINS DATA RECEPTACLES NETRON WP1DO 5-PIN DMX OUTPUT ECPB REMOTE PLUG-IN STATIONS	4" X 2" X 2"	4" X 2"	WALL PLATE	WALL RECESSED OR SURFACE MOUNT	WALL BACK BOX OR JUNCTION BOX	UL, ETL, OR CSA	IP20	BLACK													5, 17
L01A	LINEAR 1M RGBLA+UV BATTEN FIXTURE	ELATION CHAUVET PROFESSIONAL ADJ LIGHTING	SIX+ SERIES SIX+ BAR L COLORDASH SERIES BATTEN H12X IP ULTRA SERIES UBL12H	39.5" X 7" X 8.25"			SURFACE MOUNT	EXTRUDED ALUMINUM	UL, ETL, OR CSA	IP65	BLACK	MARINE-GRADE CORROSION RESISTANT	LEDs	RGBLA+UV	9325	120	210	WALL WASH	DMX LED DRIVER	DMX	1° X40° LENS (HORIZ. x VERT.); FROST FILTER	GLARE SHIELD	STAINLESS STEEL SAFETY CABLE	12, 13, 18
L01B	LINEAR 500MM RGBLA+UV BATTEN FIXTURE	ELATION CHAUVET PROFESSIONAL ADJ LIGHTING	SIX+ SERIES SIX+ BAR S COLORDASH SERIES BATTEN H12X IP ULTRA SERIES UBL6H	19.75" X 7" X 8.25"			SURFACE MOUNT	EXTRUDED ALUMINUM	UL, ETL, OR CSA	IP65	BLACK	MARINE-GRADE CORROSION RESISTANT	LEDs	RGBLA+UV	4650	120	110	WALL WASH	DMX LED DRIVER	DMX	1° X40° LENS (HORIZ. x VERT.); FROST FILTER	GLARE SHIELD	STAINLESS STEEL SAFETY CABLE	12, 13, 18
L02	LINEAR 4FT RGBW WALL WASH	LUMASCAPE ACCLAIM LIGHTING MARTIN PROFESSIONAL	LINEALUX L3 SERIES LINEAR ONE DMX EXTERIOR EXTERIOR LINEAR PRO GRAZE QUAD	48" x 2" x 2"			SURFACE MOUNT	EXTRUDED ALUMINUM	UL, ETL, OR CSA	IP65	BLACK	MARINE-GRADE CORROSION RESISTANT	LEDs	RGBW	3370	120	48	WALL WASH	DMX LED DRIVER	DMX	ASYMMETRIC WALL WASH OPTIC	EXTERNAL SHIELD/VISOR (1-SIDED)	STAINLESS STEEL SAFETY CABLE	13
L04	OUTDOOR RECESSED LINEAR DOWNLIGHT	BIRCHWOOD LIGHTING ALW A-LIGHT	SMALL PROFILE 1.65" RECESSED LINEAR FLUSH LIGHTPLANE 3.5 RECESSED (WET LOCATION) ACCOLED ACL5	48" X 3.25" X 3.25"	48" X 3.25"	LINEAR FIXED FLANGE	CEILING RECESSED	RECESSED LINEAR HOUSING	UL, ETL, OR CSA	WET LOCATION	BLACK	MARINE-GRADE CORROSION RESISTANT	LEDs	3000K	4312	120	40	120°	DIMMABLE LED DRIVER	PHASE DIMMING	HARMONIZED LENS			17
NET01	NETWORK PORT	PATHWAY CONNECTIVITY OBSIDIAN CONTROL SYSTEMS ELECTRONIC THEATER CONTROLS	PWINS DATA RECEPTACLES NETRON WP1CAT6 RJ45 CONNECTOR ECPB REMOTE PLUG-IN STATIONS	4" X 2" X 2"	4" X 2"	WALL PLATE	WALL RECESSED	WALL BACK BOX	UL, ETL, OR CSA	IP20	BLACK													17
P01A	INTERIOR PENDANT LIGHT	INTENSE LIGHTING COOPER LIGHTING SOLUTIONS USAI LIGHTING	MX G2 DOWNLIGHT CYLINDER SERIES PORTFOLIO CYLINDER SERIES BEVELED MINI CYLINDER SERIES	12" X 3.75"	3.75" DIA	REGRESS FULL HEIGHT SHROUD	SUSPENDED	SUSPENDED 12" ROUND CYLINDER	UL, ETL, OR CSA	IP20	BLACK		LEDs	3000K	1525	120	20	45°	DIMMABLE LED DRIVER	PHASE DIMMING	SOLITE LENS	ACCESSORY HOLDER		16, 17, 18
P01B	INTERIOR PENDANT DARK LIGHT	INTENSE LIGHTING COOPER LIGHTING SOLUTIONS USAI LIGHTING	MX G2 DOWNLIGHT CYLINDER SERIES PORTFOLIO CYLINDER SERIES BEVELED MINI CYLINDER SERIES	12" X 3.75"	3.75" DIA	REGRESS FULL HEIGHT SHROUD	SUSPENDED	SUSPENDED 12" ROUND CYLINDER	UL, ETL, OR CSA	IP20	BLACK		LEDs	3000K	900	120	10	24°	DIMMABLE LED DRIVER	PHASE DIMMING	SOLITE LENS	HEX LOUVER, (2) COLOR FILTERS	ACCESSORY HOLDER	16, 18
PSU01	DMX POWER SUPPLY/DRIVER	LUMASCAPE ACCLAIM LIGHTING MARTIN PROFESSIONAL	POWERSYNC DATA INJECTOR GEN2 (NONE REQUIRED) (NONE REQUIRED)	11" X 6" X 4"			SURFACE MOUNT	ENCLOSURE	UL, ETL, OR CSA	IP66	GRAY	MARINE-GRADE CORROSION RESISTANT				TBD	5		DMX LED DRIVER	DMX				5, 14
PSU02	DMX POWER SUPPLY & DISTRIBUTOR	GANTOM ELDOLED (FOR TARGETTI) MEAN WELL (FOR GRIVEN)	G8 DISTRIBUTION BOX POWERDRIVE 50W INDOOR COMPACT DRIVERS HLG LED DRIVER SERIES	8" X 4" X 2.5"			SURFACE MOUNT	ENCLOSURE	UL, ETL, OR CSA	IP40	WHITE					24			DMX LED DRIVER	DMX	120W 120v to 24v Transformer			13, 15
S01	SHARK TANK LIGHTING	LUMASCAPE ACCLAIM LIGHTING MARTIN PROFESSIONAL	QUADRALUX Q6 SERIES DYNA DRUM SO COLOR G2 EXTERIOR WASH PRO L QUAD	16.75" X 11.25"			UNISTRUT MOUNT	ARCHITECTURAL SPOTLIGHT	UL, ETL, OR CSA	IP66	BLACK	MARINE-GRADE CORROSION RESISTANT	LEDs	RGBW	4300	120	80	30°	DMX LED DRIVER	DMX			STAINLESS STEEL SAFETY CABLE, UNISTRUT MOUNTING HARDWARE	13, 18
S02	SHARKTANK BEAMS	ELECTRONIC THEATER CONTROLS MARTIN PROFESSIONAL CHAUVET PROFESSIONAL	COLORSOURCE SPOT VXT ELP CL IP OVATION E-910FC IP	21" X 14" X 31"	6.5" X 6.5"	FRAMABLE	UNISTRUT MOUNT	ELLIPSOIDAL SPOTLIGHT	UL, ETL, OR CSA	IP65	BLACK	MARINE-GRADE CORROSION RESISTANT	LEDs	3000K	9000	120	239	26°	DMX LED DRIVER	DMX	CONFIRM LENS WITH LIGHTING DESIGNER PRIOR TO PURCHASE.	(2) STANDARD STEEL GOBOS, (1) 20° X 24° GEL FILTER SHEET, GEL FRAME	STAINLESS STEEL SAFETY CABLE, UNISTRUT MOUNTING HARDWARE	18
S03	SMALL TANK RGBW LIGHT	LUMASCAPE ACCLAIM LIGHTING MARTIN PROFESSIONAL	QUADRALUX Q2 SERIES DYNA DRUM EO COLOR EXTERIOR WASH PRO M QUAD	9" X 9.25" X 2.75"			UNISTRUT MOUNT	ARCHITECTURAL SPOTLIGHT	UL, ETL, OR CSA	IP66	BLACK	MARINE-GRADE CORROSION RESISTANT	LEDs	RGBW	1890	120	30	45°	DMX LED DRIVER	DMX			STAINLESS STEEL SAFETY CABLE, UNISTRUT MOUNTING HARDWARE	13, 18
S05	MICRO RGBW SPOTLIGHT	GANTOM TARGETTI GRIVEN	GANTOM ONE UP DART ROUND SMALL RGBW MOON MARINE RGBW	3.5" X 2.5" X 2.5"	2.5" DIA		SURFACE OR UNISTRUT MOUNT	ARCHITECTURAL SPOTLIGHT	UL, ETL, OR CSA	IP65	BLACK		LEDs	RGBW	250	12-24	5.5	4.5°	DMX LED DRIVER	DMX	HALF HAT GLARE SHIELD	DIFFUSION FILTER PACK W/ HEX FILTER	BLACK SAFETY CABLE	13
S06	RGBW WATER EFFECTS PROJECTOR	ROSCO MARTIN PROFESSIONAL PRECISION PROJECTION SYSTEMS	X-EFFECTS PROJECTOR EXTERIOR PROJECTION PRO COMPACT WAVE LIGHT SERIES	5.5" X 10" X 6"			SURFACE OR UNISTRUT MOUNT	ARCHITECTURAL EFFECT PROJECTOR	UL, ETL, OR CSA	IP65	BLACK		LEDs	RGBW	3000	120	90	70°	DMX LED DRIVER	DMX	70° LENS	CYAN WATER EFFECT FILTER	BLACK SAFETY CABLE	18
S07A	CORAL TANK FLOODLIGHT	MAXSPECT KESSIL LIGHTING	COMMERCIAL LED FLOODLIGHT SERIES W2K AQUASCAPE SERIES	12" x 11" x16"	15" DIA		UNISTRUT MOUNT	COMMERCIAL LED FLOODLIGHT	UL, ETL, OR CSA	IP65	BLACK		LEDs	10000K	**TBD**	120	600	45°	DMX LED DRIVER	DMX	ANTI-GLARE HONEYCOMB GRID	BARNDOOR LIGHT SHIELD	STAINLESS STEEL SAFETY CABLE	11
S07B	CORAL TANK FLOODLIGHT	MAXSPECT KESSIL LIGHTING	COMMERCIAL LED FLOODLIGHT SERIES W2K AQUASCAPE SERIES	12" x 11" x16"	15" DIA		UNISTRUT MOUNT	COMMERCIAL LED FLOODLIGHT	UL, ETL, OR CSA	IP65	BLACK		LEDs	14000K	**TBD**	120	600	45°	DMX LED DRIVER	DMX	ANTI-GLARE HONEYCOMB GRID	BARNDOOR LIGHT SHIELD	STAINLESS STEEL SAFETY CABLE	11
T01	EXHIBIT TRACK H TRACK 2-CIRCUIT 8-FOOT	COOPER SOLUTIONS CONTECH LIGHTING JUNO	HALO TEK4 2-CIRCUIT/2-NEUTRAL TRACK SYSTEM NTEK 2-CIRCUIT/2-NEUTRAL TRACK SERIES TEK4 2-CIRCUIT/2-NEUTRAL TRACK SYSTEM	8'-0" X 1.25" X 1.25"			SURFACE MOUNT OR SUSPENDED		UL, ETL, OR CSA	IP20	BLACK					120				PHASE DIMMING				16, 17
T01A	LONG SUSPENSION EXHIBIT TRACK H TRACK 2-CIRCUIT 8-FOOT	COOPER SOLUTIONS CONTECH LIGHTING JUNO	HALO TEK4 2-CIRCUIT/2-NEUTRAL TRACK SYSTEM NTEK 2-CIRCUIT/2-NEUTRAL TRACK SERIES TEK4 2-CIRCUIT/2-NEUTRAL TRACK SYSTEM	8'-0" X 1.25" X 1.25"			SUSPENDED		UL, ETL, OR CSA	IP20	BLACK					120				PHASE DIMMING				16, 17
T02	TRACK SPOTLIGHT	COOPER SOLUTIONS CONTECH LIGHTING JUNO	HALO LAZER LZR305 STEP CYLINDER ELITE CTL330 STEP CYLINDER TRAC-LITES RS12 STEP CYLINDER	4.44" x 6.5" x 9.81"	4.44" DIA		TRACK MOUNT	PAR30L STEP CYLINDER TRACK HEAD	UL, ETL, OR CSA	IP20	BLACK		SORAA PAR30L LED	3000K	1000	120	18.5	9°	DIMMABLE LED DRIVER	PHASE DIMMING	2-CIRCUIT/2-NEUTRAL TRACK ADAPTER	SORAA SNAP SYSTEM: (3) BEAM SPREADERS, (1) LOUVER	(3) COLOR FILTERS	12, 18
T03	TRACK WALL WASH FIXTURE	COOPER SOLUTIONS CONTECH LIGHTING JUNO	HALO LAZER LZR305 STEP CYLINDER ELITE CTL330 STEP CYLINDER TRAC-LITES RS12 STEP CYLINDER	4.44" x 6.5" x 9.81"	4.44" DIA		TRACK MOUNT	PAR30L STEP CYLINDER TRACK HEAD	UL, ETL, OR CSA	IP20	BLACK		SORAA PAR30L LED	3000K	1000	120	18.5	9°	DIMMABLE LED DRIVER	PHASE DIMMING	2-CIRCUIT/2-NEUTRAL TRACK ADAPTER	SORAA SNAP SYSTEM: (1) BEAM SPREADER, (1) FLAT TOP SNAP, (1) AIM SNAP	(3) COLOR FILTERS	12, 18

REMARKS:

1. THE LIGHTING CONTROLLER MUST BE ABLE TO RECEIVE UDP COMMANDS AND TRANSMIT STREAMING ACN AND DMX, AND MUST HAVE A LICENSE WITH AN APPROPRIATE AMOUNT OF DMX UNIVERSES FOR THE PROJECT.
2. RELAY/DIMMER PANEL MUST HAVE RELAY AND DIMMER MODULE CAPABILITIES. SEE PANEL SCHEDULES FOR QUANTITIES.
3. THIS DEVICE MUST BE ABLE TO RECEIVE STREAMING ACN AND CONVERT SIGNAL TO DMX. IT MUST ALSO HAVE A MINIMUM OF 8 OUTPUTS.
4. THE LIGHTING CONTROL RACK MUST HAVE ENOUGH RACK UNITS TO ACCOMMODATE ALL LIGHTING CONTROL DEVICES INTENDED FOR THE RACK.
5. CONTROLS DEVICES IN ANIMAL TANK ENVIRONMENTS OR OUTDOORS MUST HAVE A NEMA 4 RATED ENCLOSURE OR MARINE-GRADE CORROSION RESISTANT COATING.
6. THE TOUCH PANEL CONTROLLER MUST BE COMPATIBLE WITH THE CTRL01 LIGHTING CONTROLLER.
7. FIXTURE MUST HAVE 360-DEGREE ADJUSTABLE ROTATION AND 0- TO 30-DEGREE ADJUSTABLE TILT.
8. FIXTURE MUST HAVE 360-DEGREE ADJUSTABLE ROTATION AND 0- TO 45-DEGREE ADJUSTABLE TILT.
9. FIXTURE TO REPRODUCE VISIBLE DAYLIGHT COLOR FOR HEALTH OF ANIMALS.
10. THE KESSIL LIGHTING FIXTURE IS UMATCHED BY ANY OTHER MANUFACTURER, NO SUBSTITUTES WILL BE ACCEPTED.
11. THE MAXSPECT AND KESSIL LIGHTING FIXTURES ARE UNMATCHED BY ANY OTHER MANUFACTURERS. NO SUBSTITUTIONS WILL BE ACCEPTED.
12. FIXTURES MUST BE FURNISHED WITH LENSING ACCESSORIES TO MEET DESIGN INTENT.
13. FIXTURE TO BE PROVIDED WITH ALL LEADER CABLES, JUMPER CABLES, AND JUNCTION BOXES TO FORM A COMPLETE WORKING SYSTEM.
14. THIS DEVICE IS AN ALLOCATION FOR A DMX-CONTROLLABLE POWER SUPPLY/DRIVER FOR FIXTURES S01 & S03, DEPENDING ON THE FINAL SPECIFICATION OF THOSE FIXTURES.
15 THIS DEVICE IS AN ALLOCATION FOR A DMX-CONTROLLABLE POWER SUPPLY/DRIVER FOR FIXTURE S05, DEPENDING ON THE FINAL SPECIFICATION OF THAT FIXTURE.
16 VERIFY FINAL MOUNTING HEIGHT WITH ARCHITECT.
17 FINAL COLOR SELECTION BY ARCHITECT.
18. VERIFY FINAL LENS / BEAM ANGLE SELECTION WITH LIGHTING DESIGNER PRIOR TO PURCHASE.
19. THIS DEVICE IS AN ALLOCATION FOR A DMX-CONTROLLABLE POWER SUPPLY/DRIVER FOR FIXTURE E01, DEPENDING ON THE FINAL SPECIFICATION OF THAT FIXTURE.

GENERAL NOTES:

A. THE CONTRACTOR SHALL VERIFY THE LEAD TIME OF ALL PRODUCTS SPECIFIED IN THIS SCHEDULE AT THE TIME OF PACKAGE QUOTE.
B. DURING THE BID PROCESS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/DESIGNER OF ANY DELIVERY/SCHEDULING ISSUES.
C. NO SUBSTITUTES WILL BE ALLOWED DUE TO THE LACK OF COORDINATION OF DELIVERY DATES AND CONSTRUCTION SCHEDULE AFTER BID.
D. ALL EXPEDITED EXPENSES SHALL BE THE RESPONSIBILITY OF THE CONTRACTORS.
E. THE ELECTRICAL CONTRACTOR SHALL RECEIVE APPROVAL FOR ALL LIGHTING FIXTURES AND CONTROLS FROM THE ARCHITECT/OWNER PRIOR TO PURCHASE AND ROUGH-IN.
F. FIXTURES INSTALLED IN CEILINGS INDICATED ON THE ARCHITECTURAL PLANS AS HAVING INSULATION IN CONTACT WITH THE CEILING SURFACE SHALL BE MANUFACTURER RATED "IC".
G. ALL LIGHTING FIXTURES PENETRATING RATED FLOOR/CEILING ASSEMBLY SHALL BE PROVIDED WITH ACCESSORIES TO MAINTAIN ASSEMBLY FIRE RATING. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL RATINGS.
H. SEE SPECIFICATIONS SECTIONS 265100 AND 260943 FOR ADDITIONAL REQUIREMENTS
I. THE FIRST FIXTURE NAMED IN THE MANUFACTURER & FIXTURE SERIES COLUMNS IS THE BASIS OF DESIGN. OTHER FIXTURES ARE SIMILAR IN THE OPINION OF THE LIGHTING DESIGNER. IF THE CONTRACTOR ELECTS TO SUBMIT A FIXTURE OTHER THAN THE BASIS OF DESIGN FIXTURE, INCLUDING ONE OF THE TWO SIMILAR FIXTURES, REQUIREMENTS OF NOTES J. AND K. APPLY.
J. LIGHTING FIXTURES HAVE BEEN SELECTED AND SPECIFIED TO ACHIEVE REQUIRED/DESIRED ILLUMINATION LEVELS AND OTHER CHARACTERISTICS IN THEIR RESPECTIVE AREAS. SPECIFIED FIXTURES HAVE SPECIFIC CHARACTERISTICS WHICH MAY CREATE UNIQUE ILLUMINATION RESULTS ESSENTIAL TO THE PROJECT. LIGHTING FIXTURES PROVIDED SHALL MEET THE AESTHETICS, DETAILS, AND SPECIFICATIONS STATED ABOVE AND IN THE DIVISION 11 SPECIFICATIONS, AND MOUNTING HEIGHTS AND SPACINGS SHOWN ON THE DRAWINGS. ANY DEVIATION FROM THE SPECIFIED FIXTURES SHALL DEEM ALL PARTIES IN THE SUPPLY CHAIN AND CONTRACTOR RESPONSIBLE FOR PROVIDING DETAILED COMPARISONS OF THE SPECIFIED FIXTURE AND THE PROPOSED FIXTURE FOR ARCHITECT AND DESIGNER REVIEW IN DETERMINING EQUALITY. PROVIDE COMPLETE POINT BY POINT ILLUMINATION STUDIES FOR ALL SUBSTITUTIONS.
K. SUBSTITUTIONS MAY BE APPROVED BY THE ARCHITECT AND DESIGNER IF THEY ARE JUDGED TO BE EQUAL TO THE SPECIFIED FIXTURES. "EQUAL" MAY INCLUDE, AT THE DISCRETION OF THE ARCHITECT AND DESIGNER, LENS MATERIAL AND CHARACTERISTICS, COLORS, REFLECTORS, HOUSING MATERIAL AND CONFIGURATION, FINISHES, PHOTOMETRICS, EFFICIENCY, OPTIONS, FUNCTIONALITY, ETC.

4 NOTE: TYPES D02A AND D02B REMOVED FROM LIGHT FIXTURE SCHEDULE

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 31679

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56880 VENTURE LANE SUITE 2004
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TELE: 617.765.8690
WWW.ROTO.COM

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TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
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2246 YAUPON DRIVE
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TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0356

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TELE: 910.343.9653
FAX: 910.343.9404
WWW.MTENGINEERS.COM
LICENSE # P-3152

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TELE: 919.419.1199
FAX: 919.419.1669
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NOTE: IF THIS DRAWING IS NOT 30" X 42", IT IS A REDUCED PRINT, REFER TO GRAPHIC SCALE.

Szostak Design, Incorporated — 51679 — North Carolina — Chapel Hill, NC

PHILIP SZOSTAK — REGISTERED — 3433 — ARCHITECT — NORTH CAROLINA

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

Light Fixture Schedule

LT-003

NOTE: OMIT ALL PHASE 2 CIRCUITS FROM PHASE 1 BASE BID AND ALTERNATES

Branch Panel: LDP1A

Location: MECH./ELEC. E113 | **Volts:** 208Y/120 | **A.I.C. Rating:** 10 KAIC
Supply From: | **Phases:** 3 | **Mains Type:** MAIN CB
Mounting: | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: NEMA 4X | **MCB Rating:** 60 A

Notes:
PANEL IS ALT #7

PRICE AS ALTERNATE #8: LDP1A-2 AND LDP1A-4 CIRCUITS FOR OUTDOOR CLASSROOM

CKT	Phase	Type	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	Type	Phase	CKT
LDP1A-1	P1	Dimmer	Viewing Area Track	2.5 A	1	37 VA	150 VA		1	2.5 A	Classroom Downlight	Dimmer	P1	LDP1A-2
LDP1A-3	P1	Dimmer	Viewing Area Track	2.5 A	1		37 VA	280 VA	1	2.5 A	Classroom Linear	Dimmer	P1	LDP1A-4
LDP1A-5	P1	Dimmer	Viewing Area Downlight	2.5 A	1			180 VA	200 VA	1	2.5 A	Viewing Area Downlight	Dimmer	P1	LDP1A-6
LDP1A-7	P1	Dimmer	Classroom Linear	2.5 A	1	240 VA	280 VA		1	2.5 A	Classroom Linear	Dimmer	P1	LDP1A-8
LDP1A-9	P1	Dimmer	Classroom Linear	2.5 A	1		280 VA	81 VA	1	2.5 A	East Facade Indicator LX	Dimmer	P2	LDP1A-10
LDP1A-11	P2	Dimmer	Vestibule E118 Downlights	2.5 A	1			160 VA	100 VA	1	2.5 A	East Lobby Downlights	Dimmer	P2	LDP1A-12
LDP1A-13	P2	Dimmer	East Lobby Downlights	2.5 A	1	80 VA	84 VA		1	2.5 A	Southeast Stair Lights	Dimmer	P2	LDP1A-14
LDP1A-15	P2	Relay	East Entry RGBW Sconces	20 A	1		124 VA	15 VA	1	20 A	East Entry Stair LX	Relay	P2	LDP1A-16
LDP1A-17	P2	Relay	East Entry RGBW Down LX	20 A	1			594 VA	102 VA	1	2.5 A	Southeast Stair Lights	Dimmer	P2	LDP1A-18
LDP1A-19	P2	Dimmer	East Facade Indicator LX	2.5 A	1	88 VA	77 VA		1	2.5 A	East Facade Indicator LX	Dimmer	P2	LDP1A-20
LDP1A-21	P1	Dimmer	Spare	2.5 A	1		0 VA	0 VA	1	2.5 A	Spare	Dimmer	P1	LDP1A-22
LDP1A-23	P1	Dimmer	Spare	2.5 A	1			0 VA	0 VA	1	2.5 A	Spare	Dimmer	P1	LDP1A-24
				Total Load:		1036 VA	817 VA	1336 VA						
				Total Amps:		9 A	7 A	11 A						

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Lighting	3188 VA	125.00%	3985 VA	
Other	0 VA	0.00%	0 VA	**Total Conn. Load:** 3188 VA
				Total Est. Demand: 3985 VA
				Total Conn. Current: 9 A
				Total Est. Demand Current: 11 A

Notes:
PANEL CONTAINS 2.5 AMP DIMMER MODULES WITH CIRCUIT BREAKERS AND 20 AMP RELAYS WITH CIRCUIT BREAKERS. ALL TRACK LIGHTING ON THIS PANEL IS PLACED ON CIRCUITS WITH 2.5 AMP DIMMER MODULES WITH CIRCUIT BREAKERS.

Branch Panel: LDP1D

Location: MECH R108 | **Volts:** 208Y/120 | **A.I.C. Rating:** 10 KAIC
Supply From: | **Phases:** 3 | **Mains Type:** MAIN CB
Mounting: | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: NEMA 4X | **MCB Rating:** 60 A

Notes:
PANEL IS ALT #7

PRICE AS ALTERNATE #3: LDP1D-8, LDP1D-12, LDP1D-14, LDP1D-15, AND LDP1D-20 CIRCUITS FOR EXOTIC AQUATICS EXHIBIT

CKT	Phase	Type	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	Type	Phase	CKT
LDP1D-1	P1	Dimmer	Foto FX Track	2.5 A	1	37 VA	20 VA		1	2.5 A	Foto FX Downlight	Dimmer	P1	LDP1D-2
LDP1D-3	P1	Dimmer	Foto FX Track	2.5 A	1		19 VA	30 VA	1	20 A	Ocean Galley Jellies	Relay	P1	LDP1D-4
LDP1D-5	P1	Dimmer	Vestibule Downlight	2.5 A	1			40 VA						LDP1D-6
LDP1D-7	P1	Dimmer	Lvl1 Main Exhibit Track	2.5 A	1	130 VA	65 VA		1	20 A	Exotic Aquatics Track	Relay	P1	LDP1D-8
LDP1D-9	P1	Dimmer	Corridor Downlight	2.5 A	1		100 VA	74 VA	1	2.5 A	Main Exhibit Track	Dimmer	P1	LDP1D-10
LDP1D-11	P1	Dimmer	Lvl1 Main Exhibit Track	2.5 A	1			93 VA	93 VA	1	2.5 A	Exotic Aquatics Track	Dimmer	P1	LDP1D-12
LDP1D-13	P1	Dimmer	Main Exhibit Track	2.5 A	1	74 VA	155 VA		1	20 A	Exotic Aquatics Tank	Relay	P1	LDP1D-14
LDP1D-15	P1	Relay	Exotic Aquatics Tank	20 A	1		95 VA	111 VA	1	2.5 A	Saltmarsh Track	Dimmer	P1	LDP1D-16
LDP1D-17	P1	Dimmer	Ocean Gallery Track	2.5 A	1			148 VA	74 VA	1	2.5 A	Saltmarsh Track	Dimmer	P1	LDP1D-18
LDP1D-19						74 VA			1	2.5 A	Exotic Aquatics Track	Dimmer	P1	LDP1D-20
LDP1D-21	P1	Dimmer	Main Exhibit Track	2.5 A	1		93 VA	93 VA	1	2.5 A	Ocean Gallery Track	Dimmer	P1	LDP1D-22
LDP1D-23	P1	Dimmer	Main Exhibit Track	2.5 A	1			111 VA	0 VA	1	2.5 A	Spare	Dimmer	P1	LDP1D-24
				Total Load:		555 VA	614 VA	558 VA						
				Total Amps:		5 A	5 A	5 A						

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Lighting	1726 VA	125.00%	2158 VA	
				Total Conn. Load: 1726 VA
				Total Est. Demand: 2158 VA
				Total Conn. Current: 5 A
				Total Est. Demand Current: 6 A

Notes:
PANEL CONTAINS 2.5 AMP DIMMER MODULES WITH CIRCUIT BREAKERS AND 20 AMP RELAYS WITH CIRCUIT BREAKERS. ALL TRACK LIGHTING ON THIS PANEL IS PLACED ON CIRCUITS WITH 2.5 AMP DIMMER MODULES WITH CIRCUIT BREAKERS.

Branch Panel: LDP1G

Location: MECH./ELEC. E103 | **Volts:** 208Y/120 | **A.I.C. Rating:** 10 KAIC
Supply From: | **Phases:** 3 | **Mains Type:** MAIN CB
Mounting: | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: NEMA 4X | **MCB Rating:** 100 A

Notes:
PANEL IS BASE BID

PRICE AS ALTERNATE #7: LDP1G-1 THRU LDP1G-6 CIRCUITS FOR TEACHING ROOM R136 AND CORRIDOR 136A

CKT	Phase	Type	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	Type	Phase	CKT
LDP1G-1	P1	Dimmer	Teaching Corridor Track	2.5 A	1	204 VA	80 VA		1	2.5 A	Teaching Corridor...	Dimmer	P1	LDP1G-2
LDP1G-3	P1	Dimmer	Teaching Corridor Track	2.5 A	1		167 VA	180 VA	1	2.5 A	Teaching Room Downlight	Dimmer	P1	LDP1G-4
LDP1G-5	P1	Dimmer	Teaching Room Track	2.5 A	1			56 VA	37 VA	1	2.5 A	Teaching Room Track	Dimmer	P1	LDP1G-6
LDP1G-7	P1	Dimmer	Sensory Corridor Downlight	2.5 A	1	220 VA	37 VA		1	2.5 A	Shark Title Track	Dimmer	P1	LDP1G-8
LDP1G-9	P1	Dimmer	Exhibit Downlight	2.5 A	1		160 VA	241 VA	1	2.5 A	Touch Tank Track	Dimmer	P1	LDP1G-10
LDP1G-11	P1	Dimmer	Exhibit Downlight	2.5 A	1			260 VA	1260...	1	20 A	Immersion Corridor...	Relay	P1	LDP1G-12
LDP1G-13	P1	Dimmer	Touch Tank Track	2.5 A	1	204 VA	280 VA		1	2.5 A	Touch Tank Pendants	Dimmer	P1	LDP1G-14
LDP1G-15	P1	Dimmer	Exhibit Downlight	2.5 A	1		80 VA	222 VA	1	2.5 A	Touch Tank Track	Dimmer	P1	LDP1G-16
LDP1G-17	P1	Relay	Shark Tank S01	20 A	1		1890...	1590...	1	20 A	Immersion Corridor...	Relay	P1	LDP1G-18
LDP1G-19	P1	Dimmer	Touch Tank Track	2.5 A	1	148 VA	37 VA		1	2.5 A	Shark Title Track	Dimmer	P1	LDP1G-20
LDP1G-21	P1	Relay	Immersion Corridor...	20 A	1			805 VA	956 VA	1	20 A	Immersion Corridor...	Relay	P1	LDP1G-22
LDP1G-23	P1	Relay	Shark Tank S01	20 A	1			650 VA	0 VA	1	2.5 A	Spare	Dimmer	P1	LDP1G-24
				Total Load:		1209 VA	4529 VA	4024 VA						
				Total Amps:		10 A	41 A	37 A						

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Lighting	9762 VA	125.00%	12202 VA	
				Total Conn. Load: 9762 VA
				Total Est. Demand: 12202 VA
				Total Conn. Current: 27 A
				Total Est. Demand Current: 34 A

Notes:
PANEL CONTAINS 2.5 AMP DIMMER MODULES WITH CIRCUIT BREAKERS AND 20 AMP RELAYS WITH CIRCUIT BREAKERS. ALL TRACK LIGHTING ON THIS PANEL IS PLACED ON CIRCUITS WITH 2.5 AMP DIMMER MODULES WITH CIRCUIT BREAKERS.

Branch Panel: LDP1B

Location: ELEC. 241 | **Volts:** 208Y/120 | **A.I.C. Rating:** 10 KAIC
Supply From: | **Phases:** 3 | **Mains Type:** MAIN CB
Mounting: | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: NEMA 4X | **MCB Rating:** 60 A

Notes:
PANEL IS ALT #7

CKT	Phase	Type	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	Type	Phase	CKT
LDP1B-1	P1	Dimmer	Upper Landing Wall Wash	2.5 A	1	100 VA	280 VA		1	2.5 A	Upper Landing Downlight	Dimmer	P1	LDP1B-2
LDP1B-3	P2	Dimmer	Lvl 2 Dry Exhibit Track	2.5 A	1		259 VA	220 VA	1	2.5 A	Dry Exhibit Pendants	Dimmer	P2	LDP1B-4
LDP1B-5	P1	Dimmer	Upper Landing Downlight	2.5 A	1			240 VA	200 VA	1	2.5 A	Dry Exhibit Pendants	Dimmer	P2	LDP1B-6
LDP1B-7	P2	Dimmer	Dry Exhibit Pendants	2.5 A	1	280 VA	296 VA		1	2.5 A	Lvl 2 Dry Exhibit Track	Dimmer	P2	LDP1B-8
LDP1B-9	P2	Dimmer	Lvl 2 Dry Exhibit Track	2.5 A	1		222 VA	296 VA	1	2.5 A	Lvl 2 Dry Exhibit Track	Dimmer	P2	LDP1B-10
LDP1B-11	P2	Dimmer	Lvl 2 Dry Exhibit Track	2.5 A	1			185 VA	222 VA	1	2.5 A	Lvl 3 Dry Exhibit Track	Dimmer	P2	LDP1B-12
LDP1B-13	P2	Dimmer	Lvl3 Dry Exhibit Track	2.5 A	1	259 VA	333 VA		1	2.5 A	Lvl3 Dry Exhibit Track	Dimmer	P2	LDP1B-14
LDP1B-15	P2	Dimmer	Lvl3 Dry Exhibit Track	2.5 A	1		278 VA	222 VA	1	2.5 A	Lvl3 Dry Exhibit Track	Dimmer	P2	LDP1B-16
LDP1B-17	P2	Dimmer	Lvl3 Dry Exhibit Track	2.5 A	1			333 VA	352 VA	1	2.5 A	Lvl3 Dry Exhibit Track	Dimmer	P2	LDP1B-18
LDP1B-19	P2	Dimmer	Lvl3 Dry Exhibit Track	2.5 A	1	296 VA	296 VA		1	2.5 A	Lvl3 Dry Exhibit Track	Dimmer	P2	LDP1B-20
LDP1B-21	P2	Dimmer	Lvl3 Dry Exhibit Track	2.5 A	1		241 VA	148 VA	1	2.5 A	Lvl 2 Dry Exhibit Track	Dimmer	P2	LDP1B-22
LDP1B-23	P1	Dimmer	Spare	2.5 A	1			0 VA	0 VA	1	2.5 A	Spare	Dimmer	P1	LDP1B-24
				Total Load:		2140 VA	1885 VA	1532 VA						
				Total Amps:		18 A	16 A	13 A						

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Lighting	5557 VA	125.00%	6946 VA	
				Total Conn. Load: 5557 VA
				Total Est. Demand: 6946 VA
				Total Conn. Current: 15 A
				Total Est. Demand Current: 19 A

Notes:
PANEL CONTAINS 2.5 AMP DIMMER MODULES WITH CIRCUIT BREAKERS AND 20 AMP RELAYS WITH CIRCUIT BREAKERS. ALL TRACK LIGHTING ON THIS PANEL IS PLACED ON CIRCUITS WITH 2.5 AMP DIMMER MODULES WITH CIRCUIT BREAKERS.

Branch Panel: LDP1E

Location: MECH R108 | **Volts:** 208Y/120 | **A.I.C. Rating:** 10 KAIC
Supply From: | **Phases:** 3 | **Mains Type:** MAIN CB
Mounting: | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: NEMA 4X | **MCB Rating:** 100 A

Notes:
PANEL IS BASE BID

PRICE AS ALTERNATE #7: LDP1E-1, 3, 7, 8, 9, 10, 11, 14, 15, 16, 17, 19, 20, 22, 23

CKT	Phase	Type	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	Type	Phase	CKT
LDP1E-1	P1	Dimmer	Bridge Track	2.5 A	1	19 VA	74 VA		1	2.5 A	Immersion Track	Dimmer	P1	LDP1E-2
LDP1E-3	P1	Dimmer	Bridge Track	2.5 A	1		19 VA	40 VA	1	2.5 A	Exhibit Downlight	Dimmer	P1	LDP1E-4
LDP1E-5	P1	Dimmer	Immersion Track	2.5 A	1			74 VA	80 VA	1	2.5 A	Sensory Downlight	Dimmer	P1	LDP1E-6
LDP1E-7	P1	Dimmer	Exhibit Downlight	2.5 A	1	100 VA	185 VA		1	2.5 A	Main Exhibit Track	Dimmer	P1	LDP1E-8
LDP1E-9	P1	Dimmer	Saltmarsh Gallery Track	2.5 A	1		111 VA	296 VA	1	2.5 A	Exotics Aquatics Track	Dimmer	P1	LDP1E-10
LDP1E-11	P1	Dimmer	Exotics Aquatics Track	2.5 A	1			259 VA	80 VA	1	2.5 A	Foto FX Corridor Downlight	Dimmer	P1	LDP1E-12
LDP1E-13	P1	Dimmer	Sensory Hallway Downlight	2.5 A	1	80 VA	1050...		1	20 A	Saltmarsh Exhibit Lighting	Relay	P1	LDP1E-14
LDP1E-15	P1	Relay	Saltmarsh Linears	20 A	1		394 VA	259 VA	1	2.5 A	Main Exhibit Track	Dimmer	P1	LDP1E-16
LDP1E-17	P1	Relay	Saltmarsh Exhibit Lighting	20 A	1			240 VA	1575...	1	20 A	Touch Tank	Relay	P1	LDP1E-18
LDP1E-19	P1	Relay	Saltmarsh Exhibit Lighting	20 A	1	1050...	93 VA		1	2.5 A	Saltmarsh Gallery Track	Dimmer	P1	LDP1E-20
LDP1E-21	P1	Relay	Touch Tank	20 A	1		1750...	93 VA	1	2.5 A	Lvl2 Court Track	Dimmer	P1	LDP1E-22
LDP1E-23	P1	Dimmer	Lvl2 Court Track	2.5 A	1			93 VA	0 VA	1	2.5 A	Spare	Dimmer	P1	LDP1E-24
				Total Load:		2650 VA	2961 VA	2401 VA						
				Total Amps:		22 A	25 A	20 A						

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Lighting	8012 VA	125.00%	10014 VA	
				Total Conn. Load: 8012 VA
				Total Est. Demand: 10014 VA
				Total Conn. Current: 22 A
				Total Est. Demand Current: 28 A

Notes:
PANEL CONTAINS 2.5 AMP DIMMER MODULES WITH CIRCUIT BREAKERS AND 20 AMP RELAYS WITH CIRCUIT BREAKERS. ALL TRACK LIGHTING ON THIS PANEL IS PLACED ON CIRCUITS WITH 2.5 AMP DIMMER MODULES WITH CIRCUIT BREAKERS.

Branch Panel: LDP1H

Location: MECH./ELEC. E103 | **Volts:** 208Y/120 | **A.I.C. Rating:** 10 KAIC
Supply From: | **Phases:** 3 | **Mains Type:** MAIN CB
Mounting: | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: NEMA 4X | **MCB Rating:** 100 A

Notes:
PANEL IS BASE BID

CKT	Phase	Type	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	Type	Phase	CKT
LDP1H-1	P1	Relay	Shark Area Downlight	2.5 A	1	150 VA	120 VA		1	2.5 A	Coral Area Downlight	Dimmer	P1	LDP1H-2
LDP1H-3	P1	Relay	Exhibit S03	20 A	1			155 VA	1800...	1	20 A	Coral Lighting	Relay	P1	LDP1H-4
LDP1H-5	P1	Relay	Coral Lighting	20 A	1			1800...	1800...	1	20 A	Coral Lighting	Relay	P1	LDP1H-6
LDP1H-7	P1	Relay	Coral Lighting	20 A	1	1800...	1800...		1	20 A	Coral Lighting	Relay	P1	LDP1H-8
LDP1H-9	P1	Relay	Coral Lighting	20 A	1			1800...	111 VA	1	2.5 A	Coral Area Track	Dimmer	P1	LDP1H-10
LDP1H-11	P1	Dimmer	Coral Area Track	2.5 A	1				111 VA	56 VA	1	20 A	Coral Area Track	Relay	P1	LDP1H-12
LDP1H-13	P1	Dimmer	Coral Area Track	2.5 A	1	37 VA	140 VA				1	2.5 A	Coral Area Downlight	Dimmer	P1	LDP1H-14
LDP1H-15	P1	Dimmer	Shark Track	2.5 A	1		74 VA	111 VA			1	2.5 A	Shark Track	Dimmer	P1	LDP1H-16
LDP1H-17	P1	Relay	Tank Lighting	20 A	1				95 VA	77 VA	1	20 A	Shark Event Lighting	Relay	P1	LDP1H-18
LDP1H-19																LDP1H-20
LDP1H-21	P1	Dimmer	Spare	2.5 A	1		0 VA	0 VA			1	2.5 A	Spare	Dimmer	P1	LDP1H-22
LDP1H-23	P1	Dimmer	Spare	2.5 A	1			0 VA	0 VA		1	2.5 A	Spare	Dimmer	P1	LDP1H-24
				Total Load:		4047 VA	4051 VA	3939 VA						
				Total Amps:		34 A	34 A	33 A						

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Lighting	12004 VA	125.00%	15004 VA	
Other	33 VA	125.00%	41 VA	**Total Conn. Load:** 12037 VA
				Total Est. Demand: 15046 VA
				Total Conn. Current: 33 A
				Total Est. Demand Current: 42 A

Notes:
PANEL CONTAINS 2.5 AMP DIMMER MODULES WITH CIRCUIT BREAKERS AND 20 AMP RELAYS WITH CIRCUIT BREAKERS. ALL TRACK LIGHTING ON THIS PANEL IS PLACED ON CIRCUITS WITH 2.5 AMP DIMMER MODULES WITH CIRCUIT BREAKERS.

Branch Panel: LDP1F

Location: MECH R108 | **Volts:** 208Y/120 | **A.I.C. Rating:** 10 KAIC
Supply From: | **Phases:** 3 | **Mains Type:** MAIN CB
Mounting: | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: NEMA 4X | **MCB Rating:** 60 A

Notes:
PANEL IS ALT #7

CKT	Phase	Type	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	Type	Phase	CKT
LDP1F-1	P1	Dimmer	Bridge Track	2.5 A	1	204 VA	241 VA		1	2.5 A	Bridge Downlight	Dimmer	P1	LDP1F-2
LDP1F-3	P1	Dimmer	Saltmarsh Downlight	2.5 A	1		160 VA	74 VA	1	2.5 A	Saltmarsh Track	Dimmer	P1	LDP1F-4
LDP1F-5	P1	Dimmer	Saltmarsh Track	2.5 A	1			56 VA	80 VA	1	2.5 A	Turtle Downlight	Dimmer	P1	LDP1F-6
LDP1F-7	P1	Dimmer	Saltmarsh Track	2.5 A	1	111 VA	220 VA				1	2.5 A	Saltmarsh Downlight	Dimmer	P1	LDP1F-8
LDP1F-9	P1	Dimmer	Saltmarsh Downlight	2.5 A	1		180 VA	220 VA			1	2.5 A	Bridge Downlight	Dimmer	P1	LDP1F-10
LDP1F-11	P1	Dimmer	Bridge Downlight	2.5 A	1			140 VA								LDP1F-12
LDP1F-13	P1	Dimmer	Bridge Track	2.5 A	1	167 VA	204 VA		1	2.5 A	Bridge Track	Dimmer	P1	LDP1F-14
LDP1F-15	P1	Dimmer	Saltmarsh Downlight	2.5 A	1		240 VA	180 VA	1	2.5 A	Bridge Downlight	Dimmer	P1	LDP1F-16
LDP1F-17	P1	Dimmer	Bridge Downlight	2.5 A	1			260 VA	222 VA	1	2.5 A	Bridge Downlight	Dimmer	P1	LDP1F-18
LDP1F-19	P1	Dimmer	Bridge Track	2.5 A	1	204 VA	148 VA		1	2.5 A	Saltmarsh Track	Dimmer	P1	LDP1F-20
LDP1F-21	P1	Dimmer	Bridge Track	2.5 A	1		204 VA									LDP1F-22
LDP1F-23	P1	Dimmer	Bridge Track	2.5 A	1			222 VA	0 VA	1	2.5 A	Spare	Dimmer	P1	LDP1F-24
				Total Load:		1497 VA	1258 VA	980 VA						
				Total Amps:		13 A	11 A	8 A						

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Lighting	3734 VA	125.00%	4667 VA	
				Total Conn. Load: 3734 VA
				Total Est. Demand: 4667 VA
				Total Conn. Current: 10 A
				Total Est. Demand Current: 13 A

Notes:
PANEL CONTAINS 2.5 AMP DIMMER MODULES WITH CIRCUIT BREAKERS AND 20 AMP RELAYS WITH CIRCUIT BREAKERS. ALL TRACK LIGHTING ON THIS PANEL IS PLACED ON CIRCUITS WITH 2.5 AMP DIMMER MODULES WITH CIRCUIT BREAKERS.

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27514
TELE: 919.929.5244
FAX: 919.960.7847
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3503

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.763.8490
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0356

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
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WWW.LIGHTSWITCH.NET

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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9433
FAX: 910.343.9404
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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8932
WWW.PALACIOCOLLABORATIVE.COM

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Szostak Design, Incorporated — Architecture — Interior Architecture — Historic Preservation — 51679 — North Carolina — Chapel Hill, NC

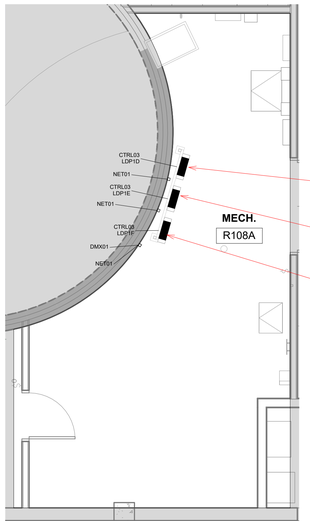
PHILIP SZOSTAK — REGISTERED — 3433 — ARCHITECT — NORTH CAROLINA

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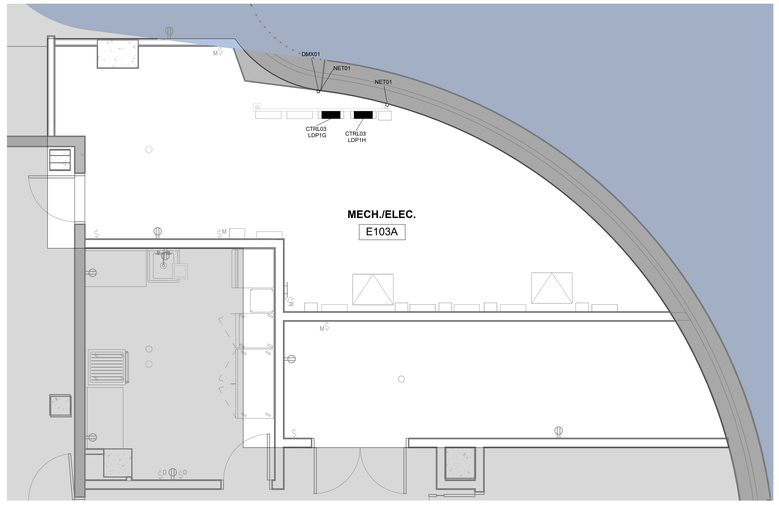
Panel Schedule

LT-004



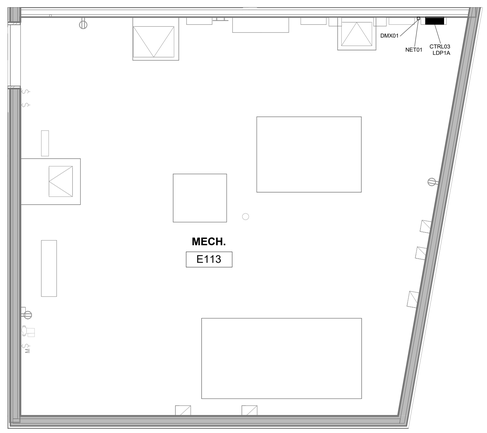
1 Level 1 - Mechanical Room 108
1/4" = 1'-0"

BASE BID



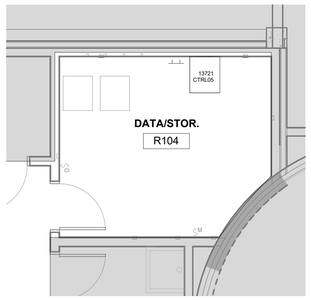
2 Level 1 - Mechanical/Electrical Room 103
1/4" = 1'-0"

ALT #7



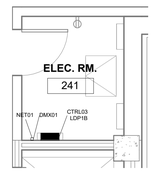
3 Level 1 - Mechanical Room 113
1/4" = 1'-0"

BASE BID



4 Level 1 - Data/Storage Room R104
1/4" = 1'-0"

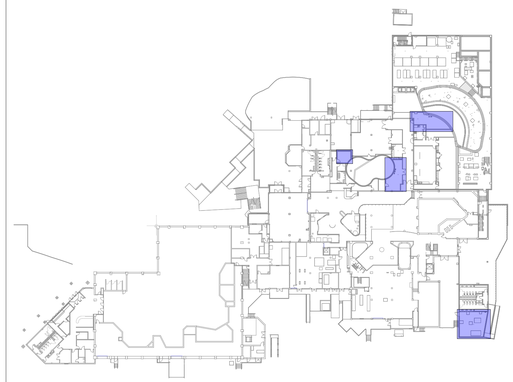
ALT #7



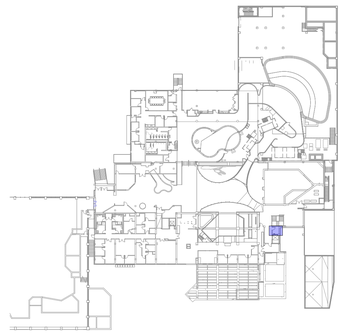
5 Level 2 - Electrical Room 241
1/4" = 1'-0"

2

LEVEL 1 KEY PLAN



LEVEL 2 KEY PLAN



SZOSTAK DESIGN

FORT FISHER
AQUARIUM
RENOVATION
& EXPANSION:
PHASE 1

SCO #17-18042-02A
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NORTH CAROLINA DEPT. OF
NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.765.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.WTENGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

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51679
NORTH CAROLINA
Chapel Hill, NC

PHILIP SZOSTAK
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3433
ARCHITECT
NORTH CAROLINA

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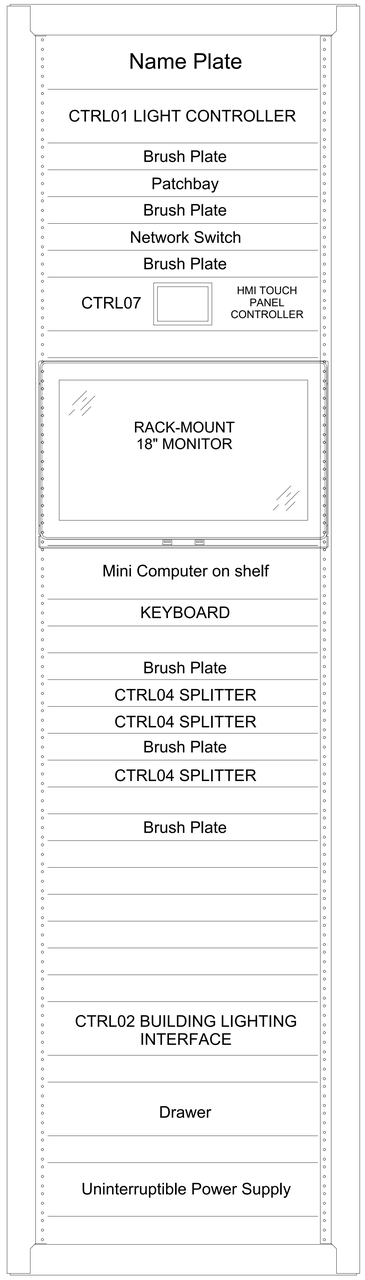
Electrical Room Plans

LT-005

4

LIGHTING CONTROL RACK: BASE BID

CTRL05 Equipment Control Rack



1 Ph 1 Control Rack Layout
3" = 1'-0"

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
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SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9453
FAX: 910.343.9404
WWW.TCENGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
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CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8932
WWW.PALACIOCOLLABORATIVE.COM

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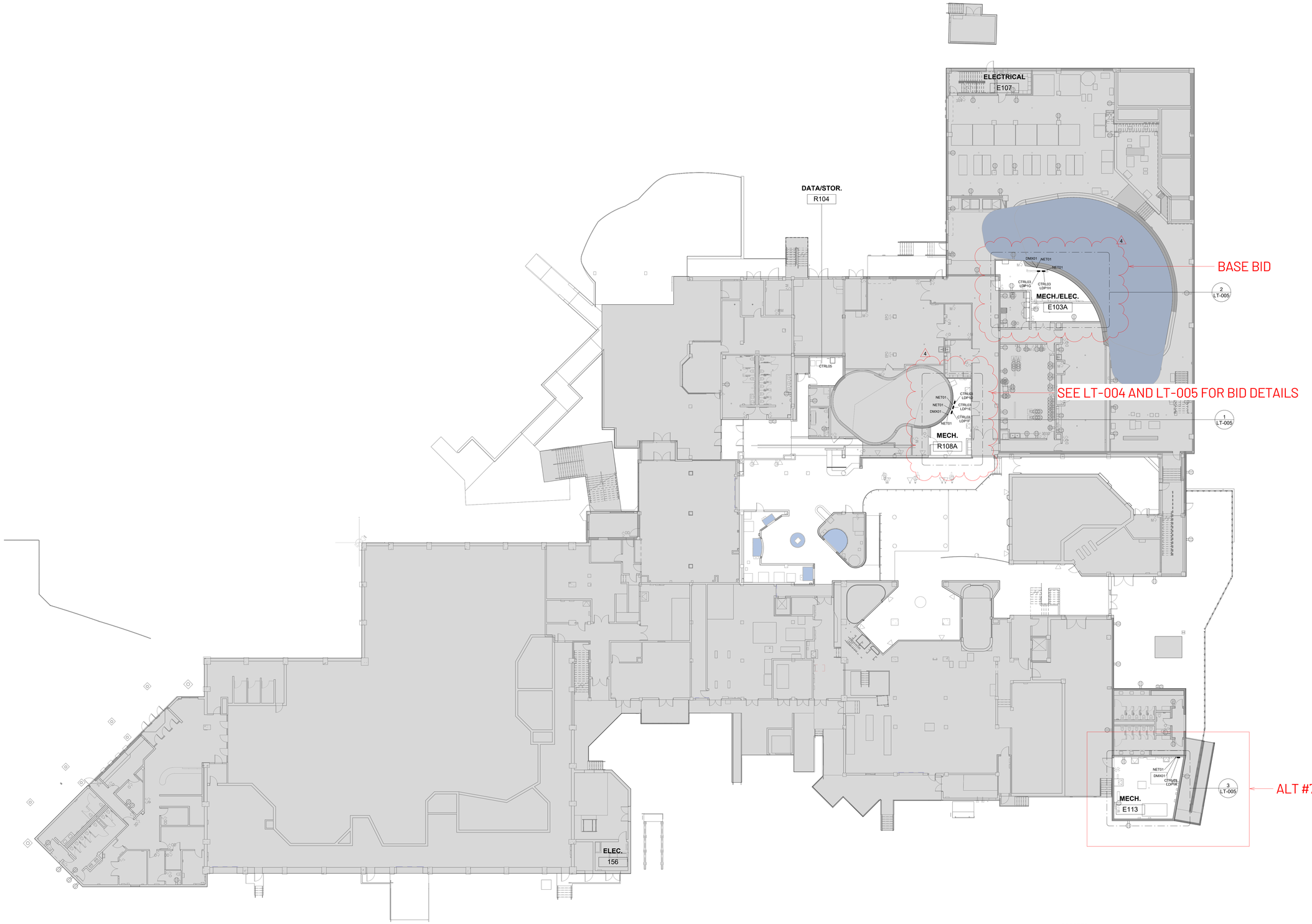
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4	11-10-25	ADDENDUM #3

Control Rack Layout

LT-008



1 Level 1 - Floor Plan - Ph 1
1/16" = 1'-0"

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
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SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200H
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.763.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4200
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9654
WWW.NTENGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
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LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMFA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
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DURHAM, NC 27703
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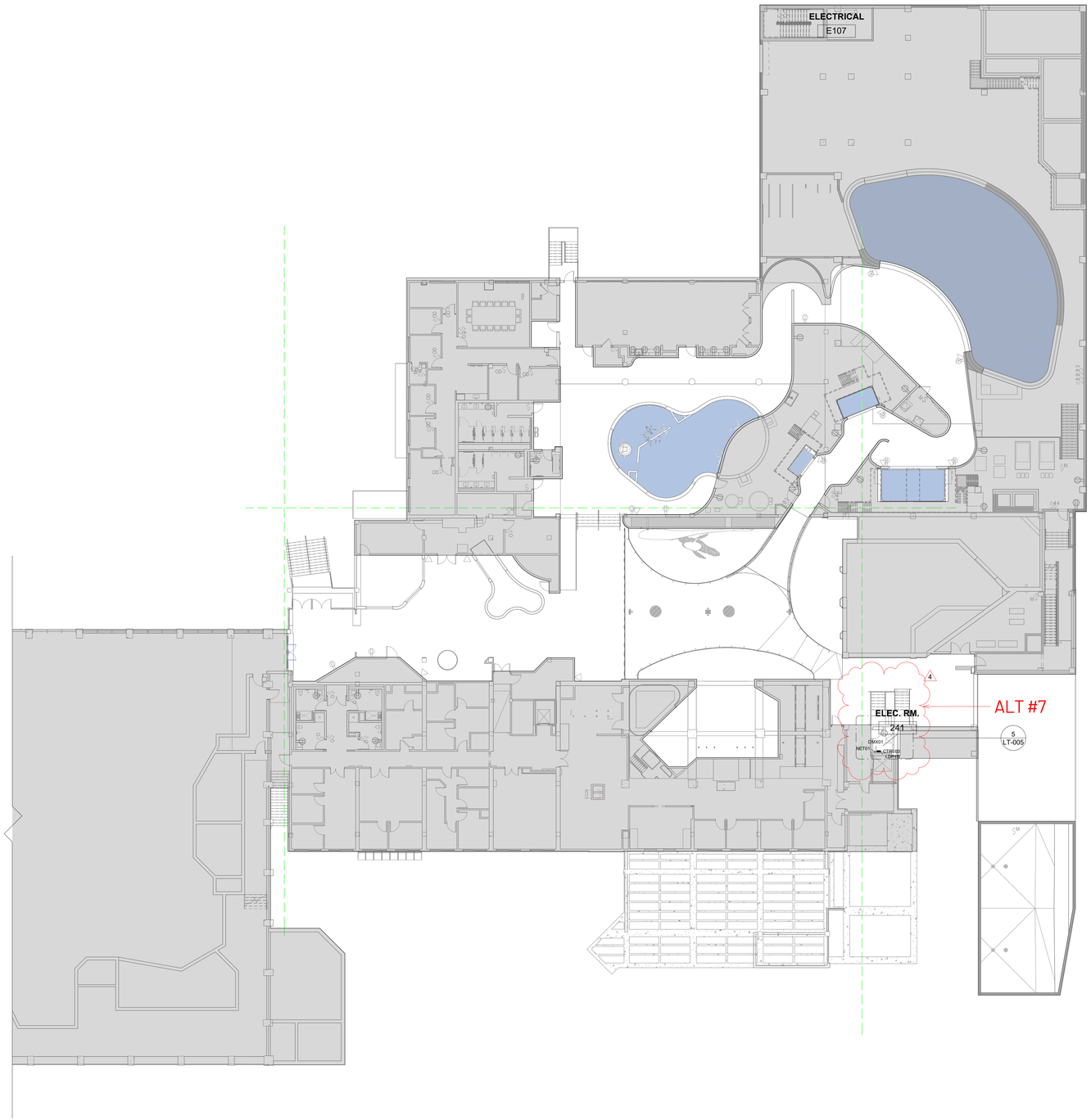
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4	11-10-25	ADDENDUM #3

Overall Floor Plan - Level 1

LT-101



1 Level 2 - Floor Plan - Ph 1
1/16" = 1'-0"

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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CHAPEL HILL, NORTH CAROLINA 27516
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
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WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
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FAX: 910.343.9404
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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
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3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
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LICENSE # C-1073

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WWW.PALACIOCOLLABORATIVE.COM

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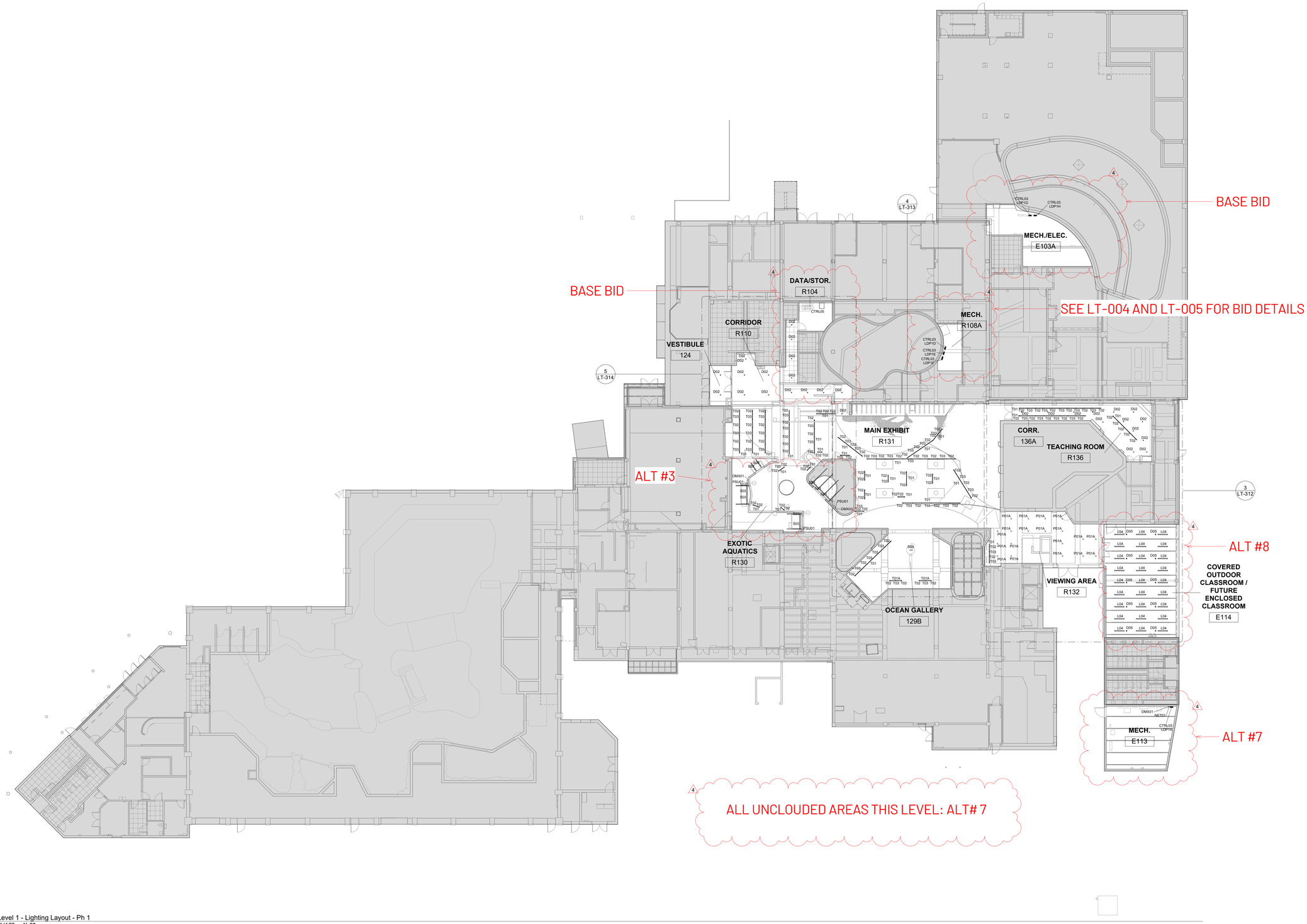
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Overall Floor Plan - Level 2

LT-102



2 Level 1 - Lighting Layout - Ph 1
1/16" = 1'-0"

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200M
BEND, OR 97707
TELE: 619.423.8700
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7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.765.8690
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BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
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TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9433
FAX: 910.343.9404
WWW.NTENGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1399
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

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3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
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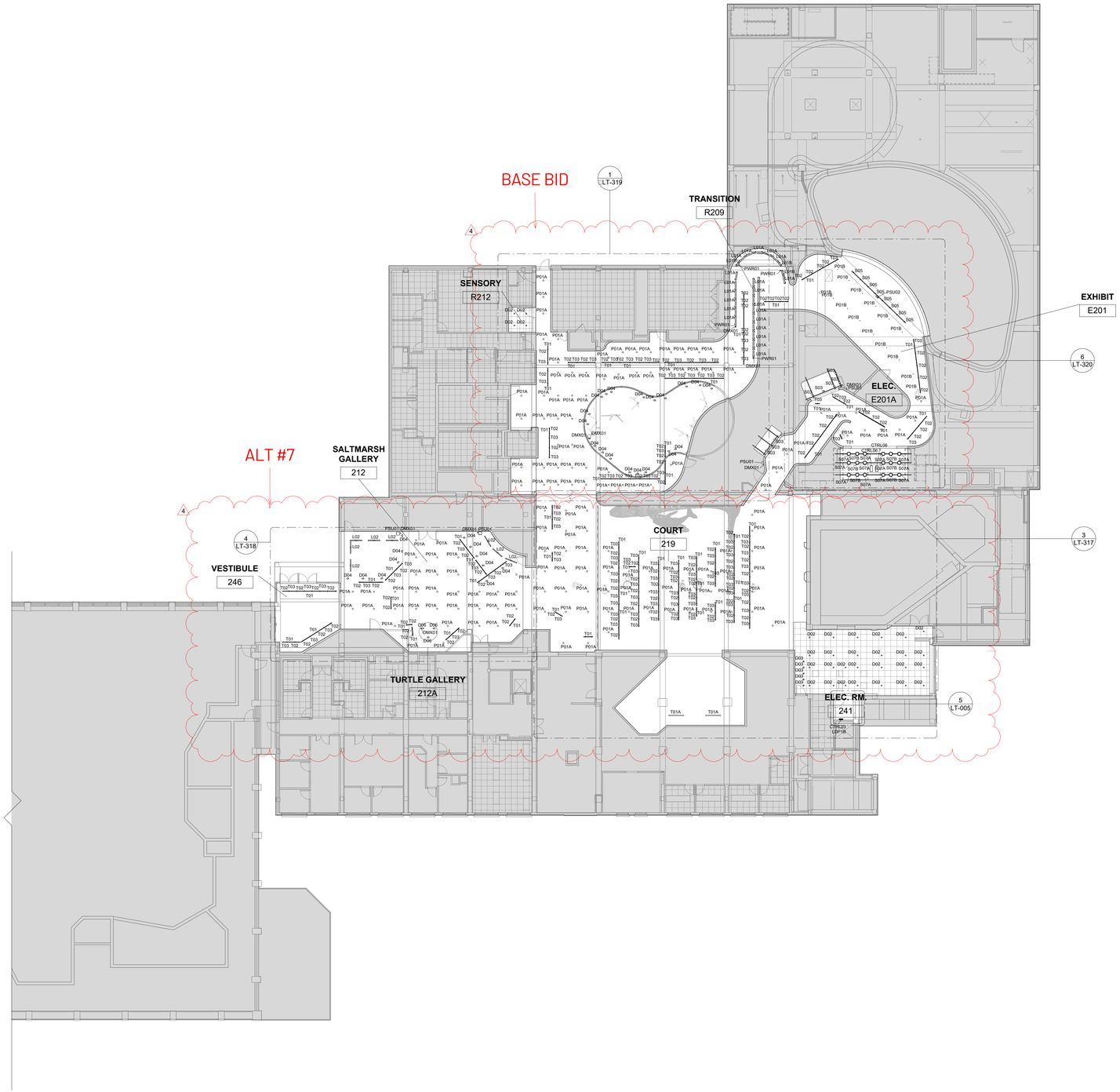
PHILIP SZOSTAK — REGISTERED — 3433 — ARCHITECT — NORTH CAROLINA

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NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

Overall RCP - Level 1

LT-201



1 Level 2 - Lighting Layout - Ph 1
1/16" = 1'-0"

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
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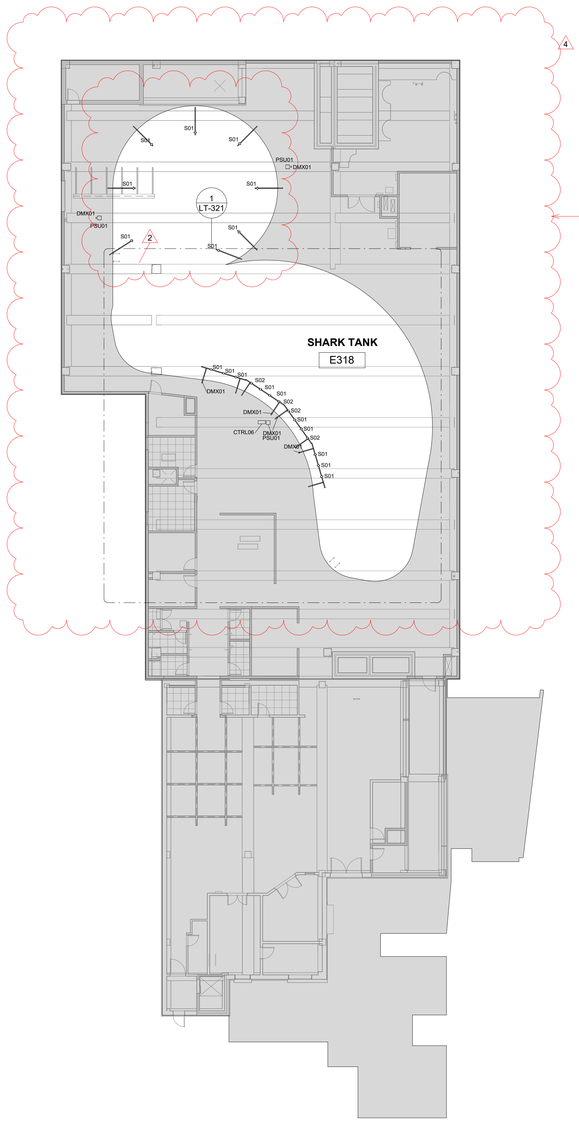
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1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

Overall RCP - Level 2

LT-202



1 Level 3 - Lighting Layout - Ph 1
1/16" = 1'-0"

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
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ARCHITECT
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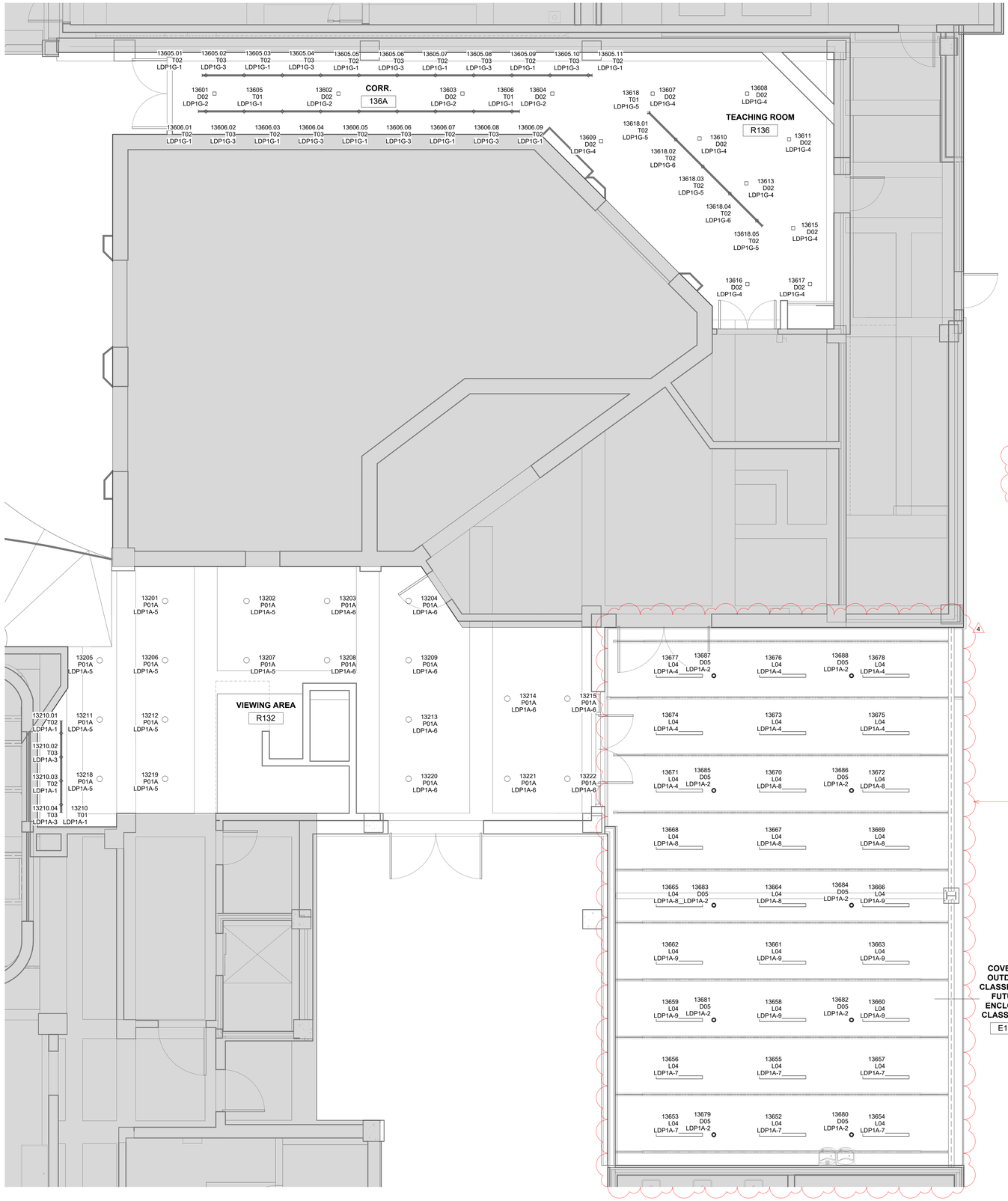
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4	11-10-25	ADDENDUM #3

Overall RCP - Level 3

LT-203

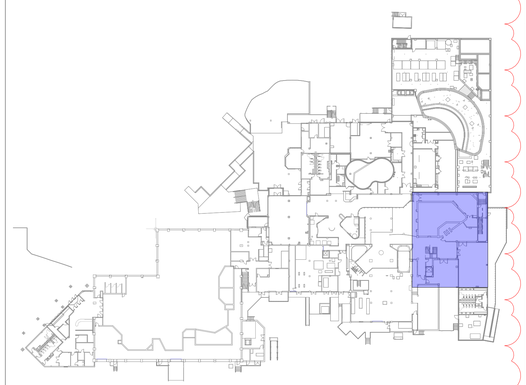


ALL UNCLOUDED AREAS THIS PAGE: ALT# 7

3 Enlarged Level 1 - Viewing Area, Teaching Room, and Outdoor Classroom
1/4" = 1'-0"

2

KEY PLAN



SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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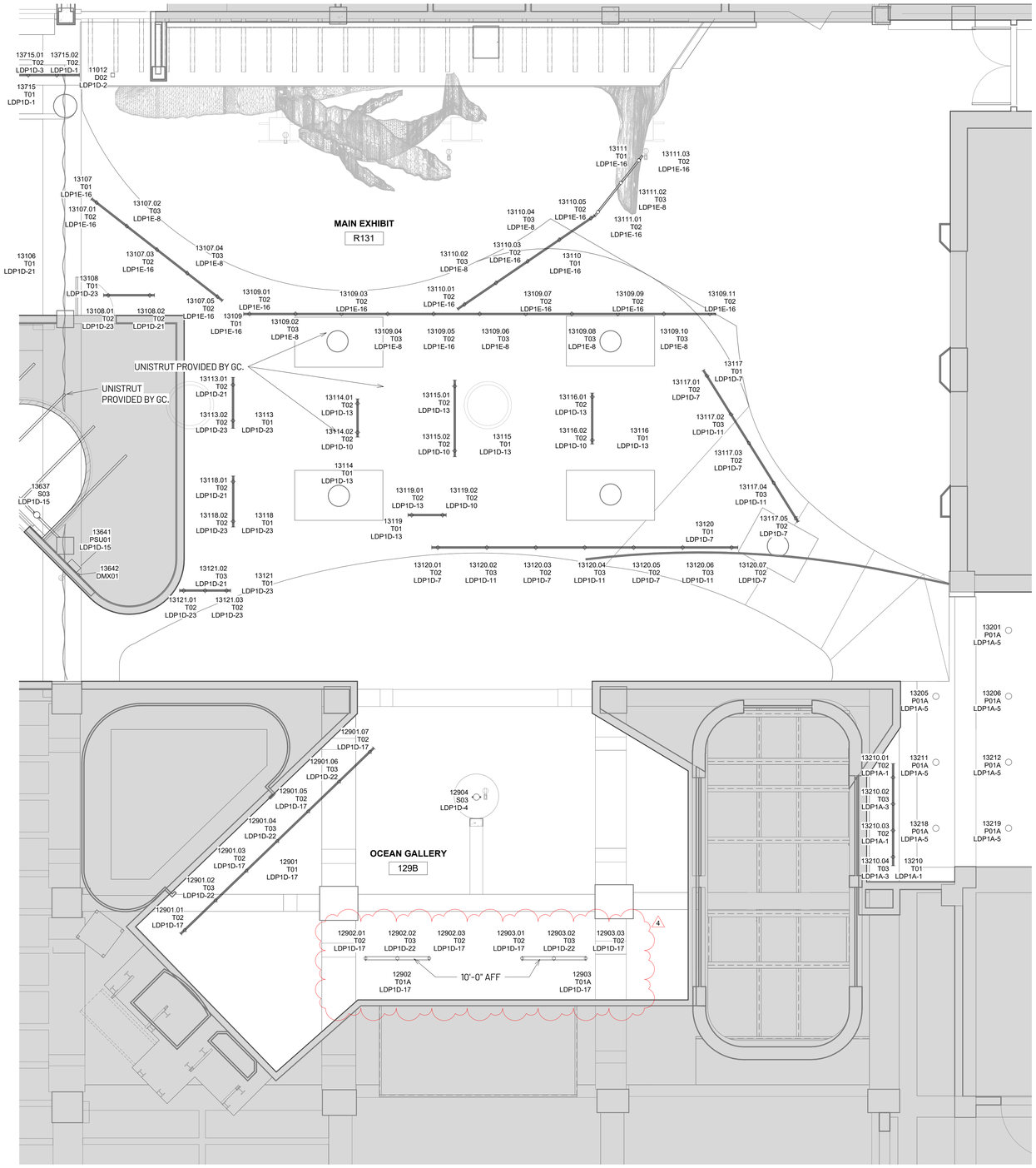
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NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

Enlarged RCP - Level 1 - Viewing Area, Teaching Room, and Outdoor Classroom

LT-312



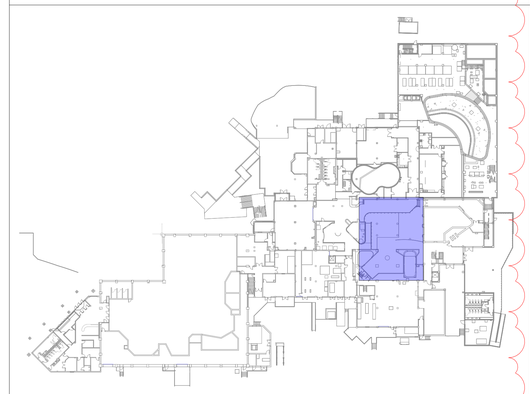
4 Enlarged Level 1 - Central Mezzanine and Ocean Gallery
1/4" = 1'-0"

4

ALL LIGHTING THIS PAGE: ALT # 7

2

KEY PLAN



SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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KURE BEACH, NC 28449

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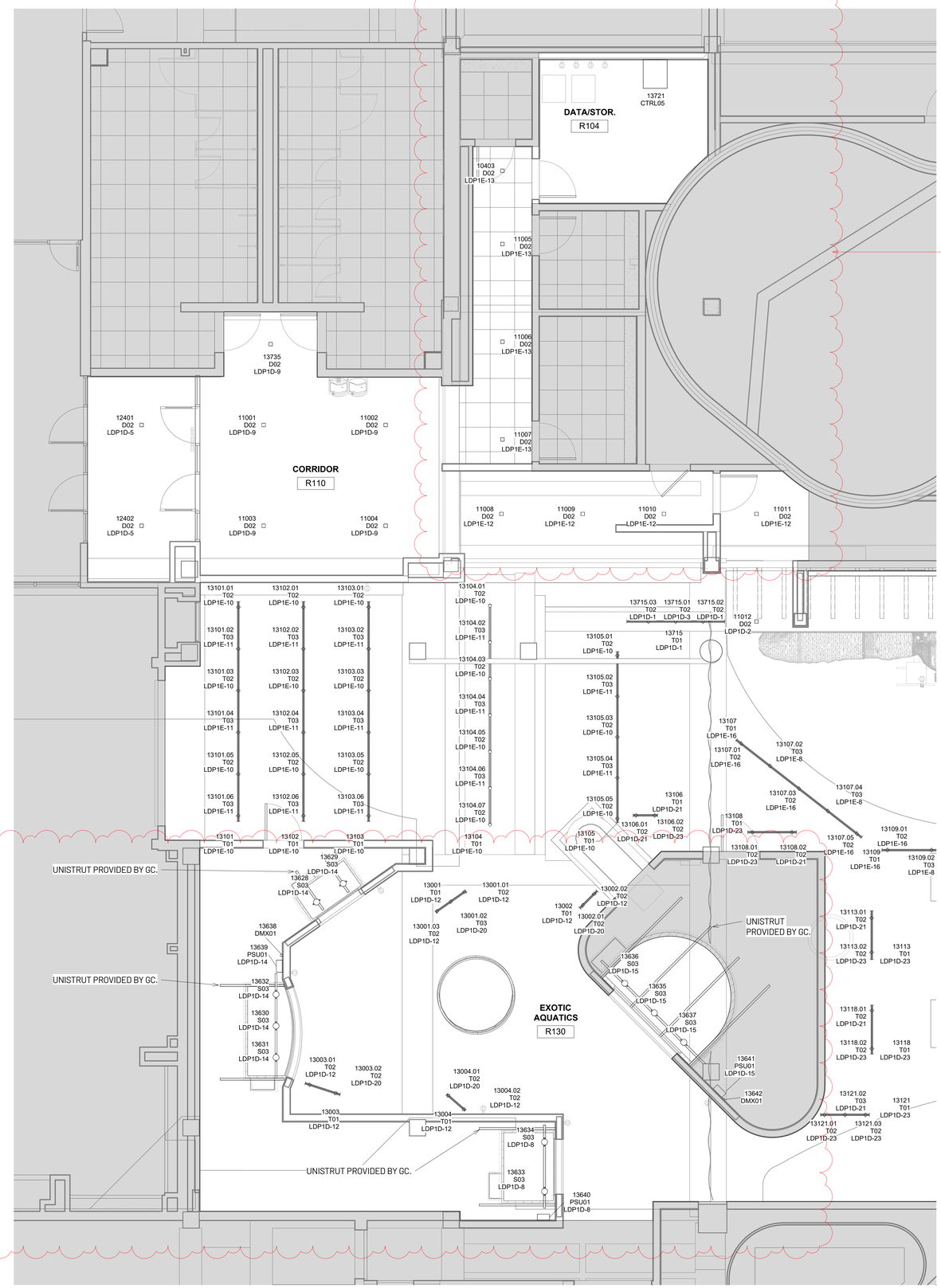
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1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

Enlarged RCP - Level 1 - Central Mezzanine and Ocean Gallery

LT-313



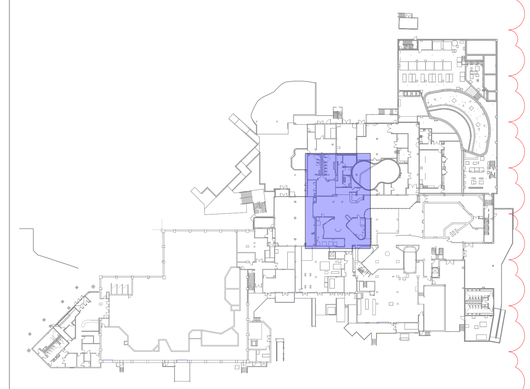
BASE BID

ALT #3

ALL UNCLOUDED AREAS THIS PAGE: ALT # 7

5 Enlarged Level 1 - Exotic Animals and Corridors
1/4" = 1'-0"

KEY PLAN



SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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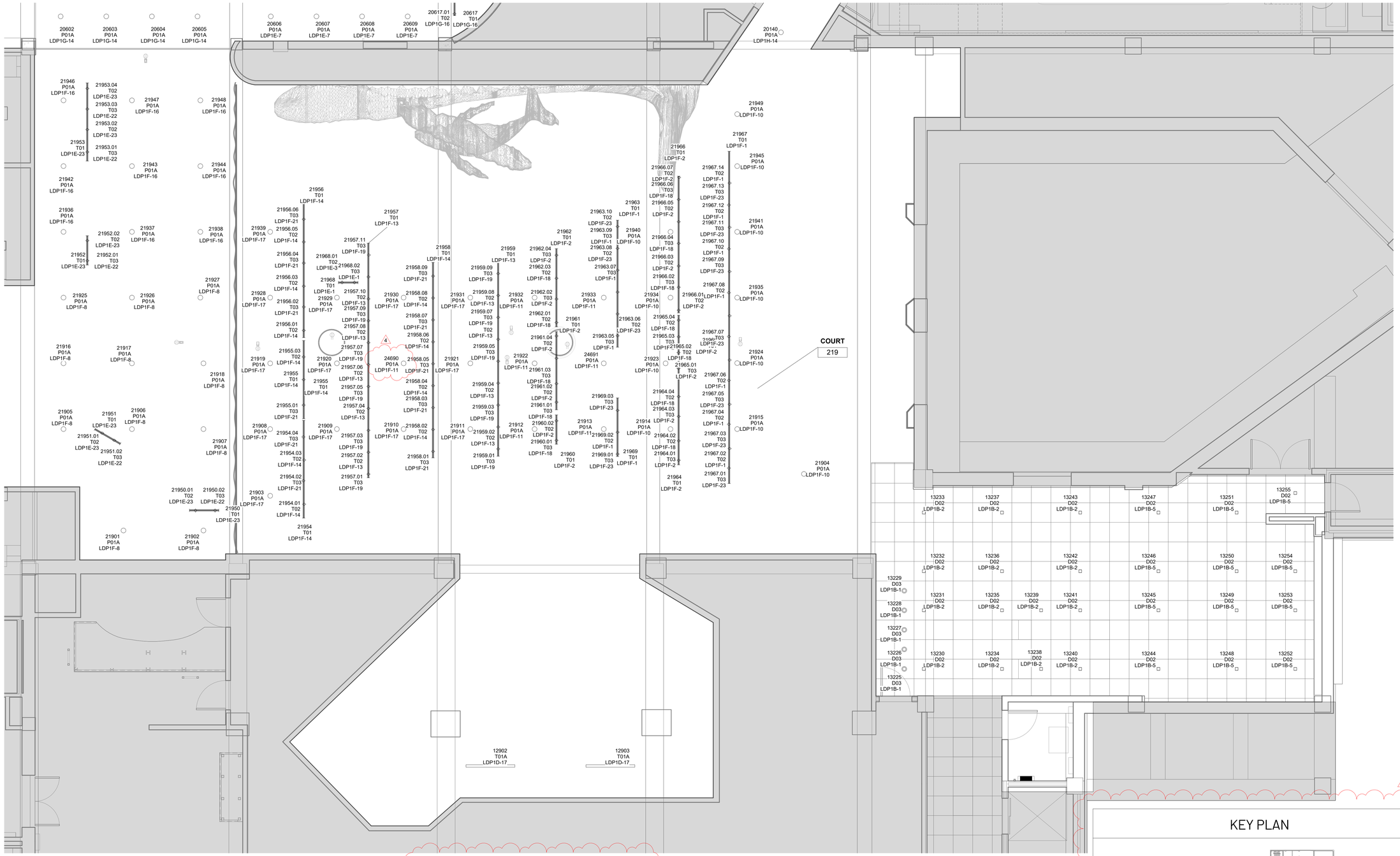
Philip Szostak Registered 3433 Architect North Carolina

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2	10-17-25	ADDENDUM #1
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Enlarged RCP - Level 1 - Exotic Animals and Corridors

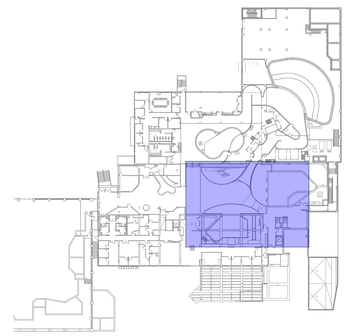
LT-314



ALL LIGHTING ON THIS PAGE: ALT #7

3 Enlarged Level 2 - Central Mezzanine
1/4" = 1'-0"

KEY PLAN



SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
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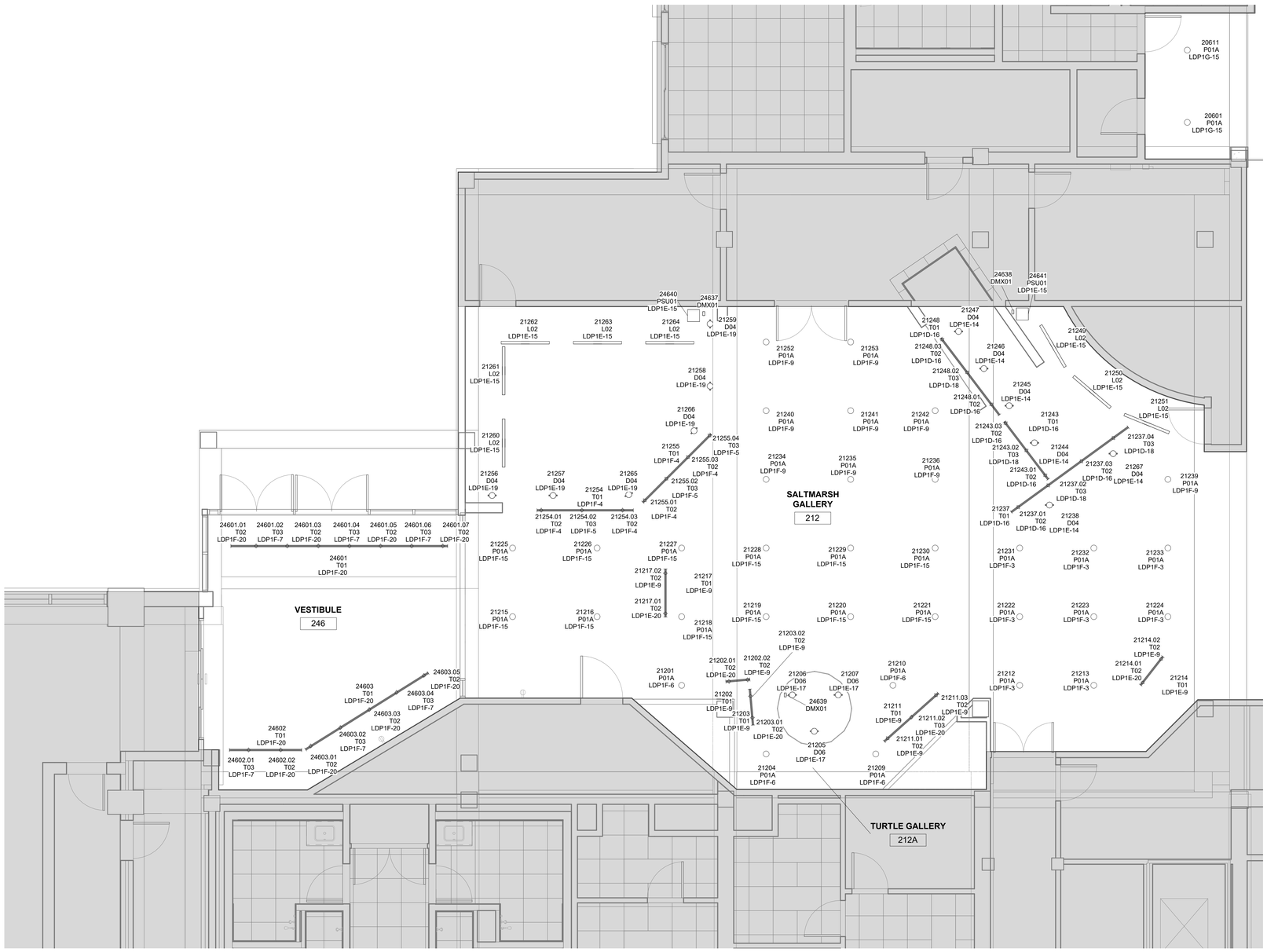
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Enlarged RCP - Level 2 - Central Mezzanine

LT-317



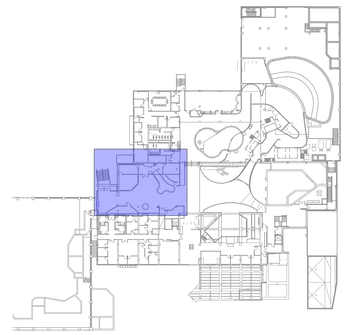
4 Enlarged Level 2 - Saltmarsh and Turtle Gallery
1/4" = 1'-0"

4

ALL LIGHTING ON THIS PAGE: ALT #7

2

KEY PLAN



SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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TELE: 919.929.5244
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215 MORRIS STREET SUITE 150
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1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

Enlarged RCP - Level 2 - Saltmarsh and Turtle Gallery

LT-318

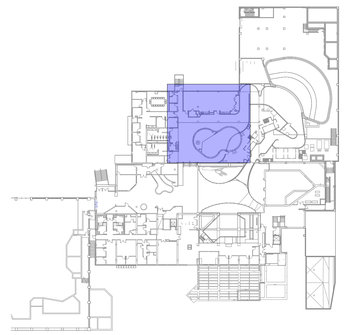


5 Enlarged Level 2 - Touch Tank and Immersion
1/4" = 1'-0"

4 ALL LIGHTING ON THIS PAGE: BASE BID

2

KEY PLAN



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ARCHITECT
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FAX: 919.960.7947
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LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
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FAX: 910.343.9604
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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

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COST ESTIMATOR
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DURHAM, NC 27703
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4	11-10-25	ADDENDUM #3

Enlarged RCP - Level 2 - Touch Tank and Immersion

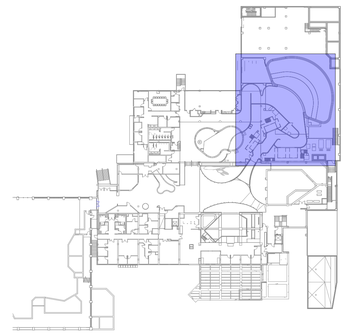
LT-319



6 Enlarged Level 2 - Shark Tank
1/4" = 1'-0"

4 ALL LIGHTING ON THIS PAGE: BASE BID

2 KEY PLAN



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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
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LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200H
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TELE: 619.423.8700
WWW.TJPENGINEERING.COM
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EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
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TELE: 617.765.8690
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STRUCTURAL ENGINEER
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RALEIGH, NC 27607
TELE: 919.832.5587
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MEP ENGINEER
2246 TAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
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TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
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FAX: 910.343.9604
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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
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FAX: 919.419.1669
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LICENSE # C-098

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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
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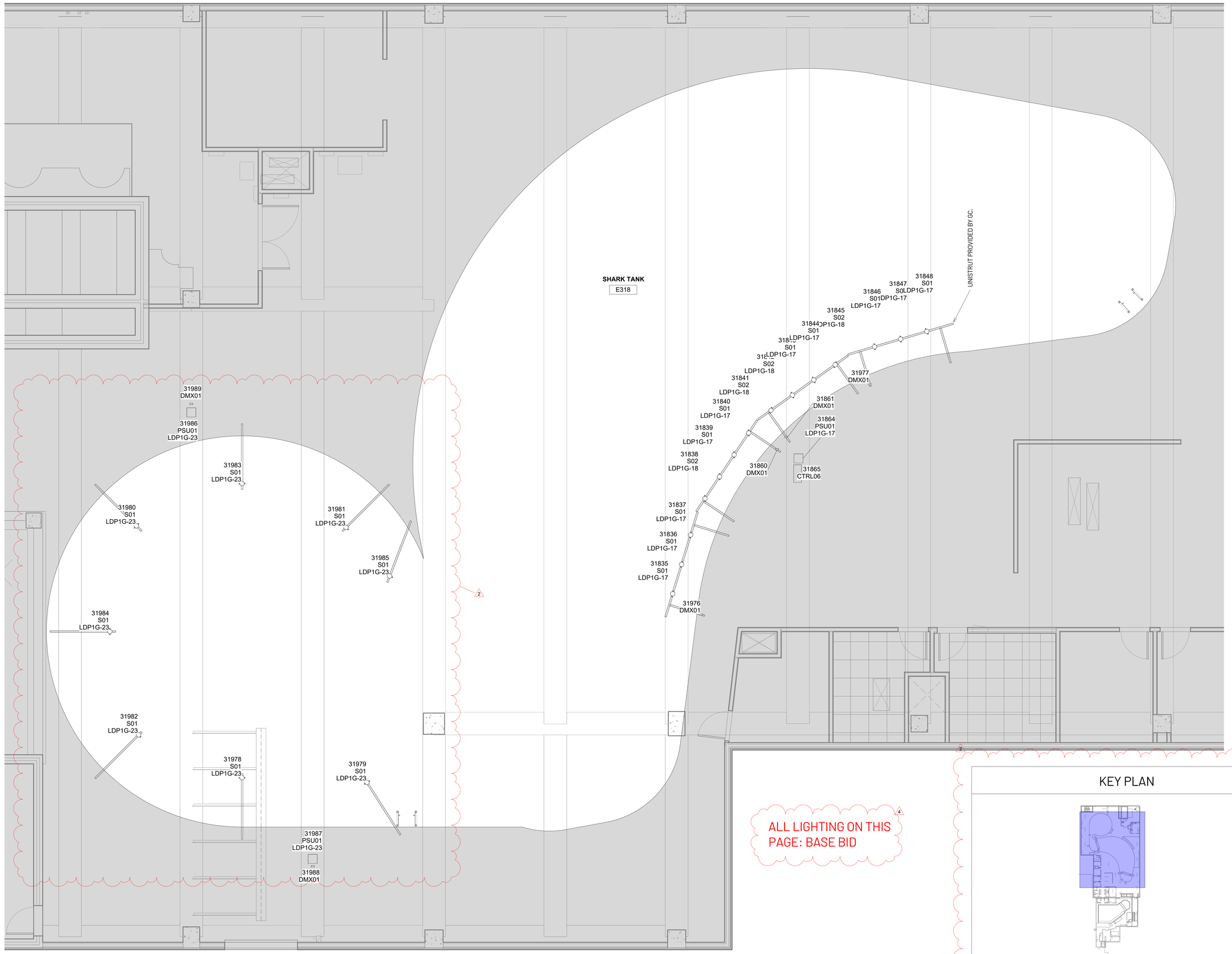
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2	10-17-25	ADDENDUM #1
3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

Enlarged RCP - Level 2 - Shark Tank

LT-320



ALL LIGHTING ON THIS PAGE: BASE BID

1 Enlarged Level 3 - Shark Tank
1/4" = 1'-0"

KEY PLAN

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FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
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FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200M
BEND, OR 97707
TELE: 619.423.8700
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TELE: 909.360.2900
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.NTENGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

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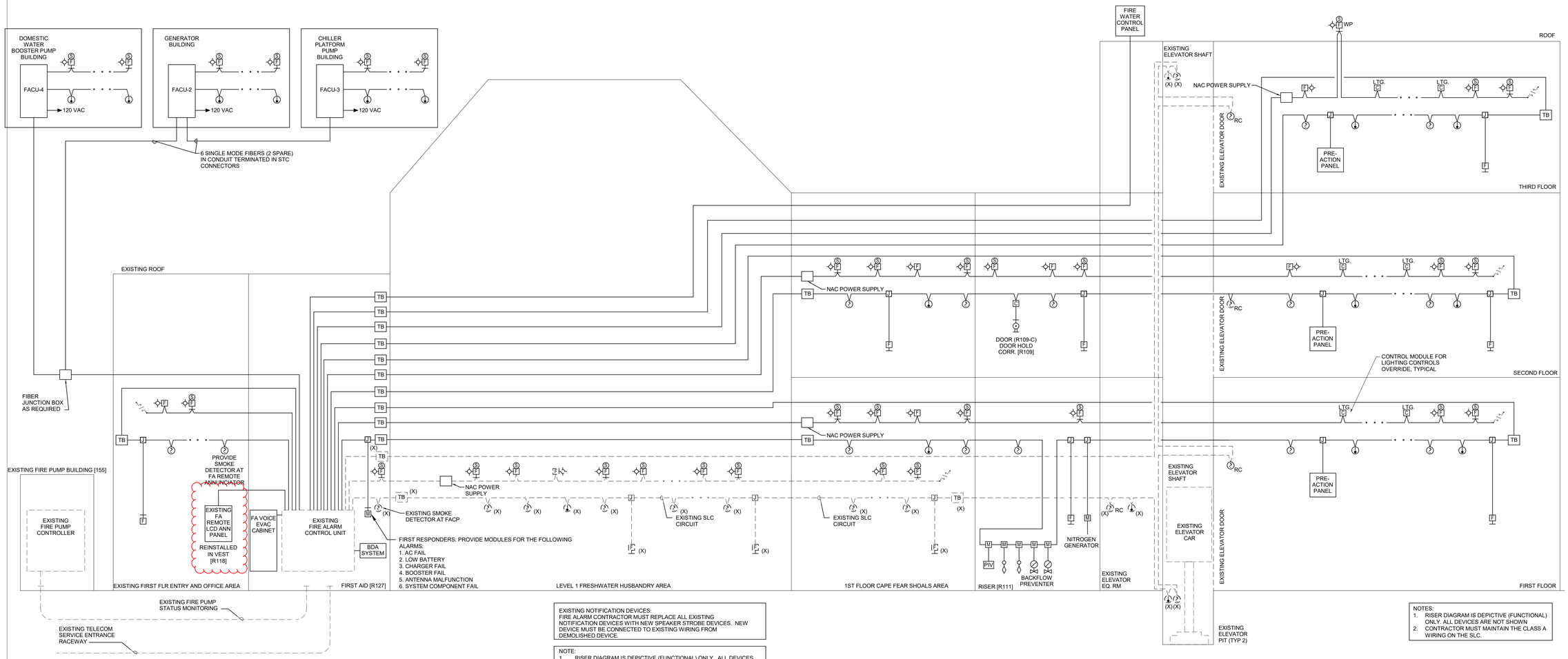
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2	10-17-25	ADDENDUM #1
3	10-29-25	ADDENDUM #2
4	11-10-25	ADDENDUM #3

Enlarged RCP - Level 3 - Shark Tank

LT-321



EXISTING NOTIFICATION DEVICES:
FIRE ALARM CONTRACTOR MUST REPLACE ALL EXISTING NOTIFICATION DEVICES WITH NEW SPEAKER STROBE DEVICES. NEW DEVICE MUST BE CONNECTED TO EXISTING WIRING FROM DEMOLISHED DEVICE.

NOTE:
1. RISER DIAGRAM IS DEPICTIVE (FUNCTIONAL) ONLY. ALL DEVICES ARE NOT SHOWN.
2. THE FUNCTIONAL FIRE ALARM RISER DIAGRAM INDICATES SUPERVISION OF TYPICAL VALVES CONTROLLING THE WATER SUPPLY FOR AUTOMATIC SPRINKLER SYSTEMS, PUMPS, TANKS, WATER LEVELS, TEMPERATURES, CRITICAL AIR PRESSURES AND WATERFLOW SWITCHES. THE CONTRACTOR MUST COORDINTATE ALL OF THE ABOVE WITH THE FIRE PROTECTION CONTRACTOR.
3. SEE SPECIFICATION SECTION 283111 FOR ADDITIONAL DETAILS AND REQUIREMENTS.
4. NO MORE THAN 20 DEVICES ARE PERMITTED BETWEEN ISOLATION MODULES.

NOTES:
1. RISER DIAGRAM IS DEPICTIVE (FUNCTIONAL) ONLY. ALL DEVICES ARE NOT SHOWN
2. CONTRACTOR MUST MAINTAIN THE CLASS A WIRING ON THE SLC.

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FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
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SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205N
BEND, OR 97707
TELE: 619.423.8700
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ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
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BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5387
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

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MEP ENGINEER
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WILMINGTON, NC 28401
TELE: 910.791.4000
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LANDSCAPE ARCHITECT
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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
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1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

FUNCTIONAL FIRE ALARM RISER DIAGRAM

FA6.1

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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FIRE ALARM RISER
SCALE : NOT TO SCALE

FIRE ALARM SYSTEM CONTROL MATRIX

	SYSTEM INPUTS	NOTE	SYSTEM OUTPUTS																			
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
			ACTUATE COMMON ALARM SIGNAL INDICATOR	ACTUATE NOTIFICATION APPLIANCES	ACTUATE AUDIBLE SUPERVISORY SIGNAL	ACTUATE EXTERIOR ELECTRIC BELL	ACTUATE COMMON TROUBLE SIGNAL INDICATOR	ACTUATE COMMON SUPERVISORY SIGNAL INDICATOR	ALARM SIGNAL TO MONITORING SERVICE	SUPERVISORY SIGNAL TO MONITORING SERVICE	TROUBLE SIGNAL TO MONITORING SERVICE	DISPLAY/PRINT CHANGE OF STATUS	RECALL ELEVATOR TO PRIMARY RECALL FLOOR	RECALL ELEVATOR TO ALTERNATE RECALL FLOOR	ACTIVATE FIRE HAT SIGNAL	SHUNT TRIP ELEVATOR CONTROLLER FEEDER CIRCUIT BREAKER	ACTIVATE SMOKE DAMPERS CLOSE	START FIRE PUMP	SIGNAL HVAC CONTROL SYSTEM	DOOR HOLD OPEN RELEASE	RECORD EVENTS IN SYSTEM MEMORY
1	INITIATING DEVICES																				X
2	SMOKE DETECTORS		X	X					X			X							X	X	X
4	DUCT MOUNTED SMOKE DETECTORS		X	X					X			X					X		X	X	X
5	HEAT DETECTORS		X	X					X			X							X	X	X
6	MANUAL PULL STATIONS		X	X					X			X							X	X	X
8	TROUBLE INPUTS																				X
9	SYSTEM TROUBLE CONDITION						X				X	X									X
10	LOSS OF FACU AC POWER	1					X				X	X									X
11	FACP LOW BATTERY						X				X	X									X
12	SHORT CIRCUIT						X				X	X									X
13	NAC POWER SUPPLY LOW BATTERY						X				X	X									X
14	GROUND FAULT						X				X	X									X
15	OPEN CIRCUIT						X				X	X									X
16	NITROGEN GENERATOR				X			X		X		X									X
17	SUPERVISORY INPUTS																				X
18	AHU SHUTDOWN AND SMOKE DAMPER OVERRIDE SWITCH				X			X		X	X	X							X		X
19	ELEVATOR #1	4																			X
20	PRIMARY FLOOR ELEVATOR LOBBY RECALL SMOKE DETECTOR		X	X					X			X		X					X	X	X
21	ALTERNATE FLOOR ELEVATOR LOBBY RECALL SMOKE DETECTOR		X	X					X			X	X						X	X	X
22	ELEVATOR MACHINE ROOM SMOKE DETECTOR		X	X					X			X	X		X				X	X	X
23	ELEVATOR SHAFT HEAT DETECTOR		X	X					X			X			X	X			X	X	X
24	ELEVATOR SHAFT SMOKE DETECTOR		X	X					X			X			X				X	X	X
25	ELEVATOR PIT HEAT DETECTOR		X	X					X			X				X			X	X	X
26	ELEVATOR PIT SMOKE DETECTOR		X	X					X			X							X	X	X
27	ELEVATOR SHUNT TRIP LOSS OF POWER				X			X		X		X									X
28	ELEVATOR #2	4																			X
29	PRIMARY FLOOR ELEVATOR LOBBY RECALL SMOKE DETECTOR		X	X					X			X		X					X	X	X
30	ALTERNATE FLOOR ELEVATOR LOBBY RECALL SMOKE DETECTOR		X	X					X			X	X						X	X	X
31	ELEVATOR MACHINE ROOM SMOKE DETECTOR		X	X					X			X	X		X				X	X	X
32	ELEVATOR SHAFT HEAT DETECTOR		X	X					X			X			X	X			X	X	X
33	ELEVATOR SHAFT SMOKE DETECTOR		X	X					X			X			X				X	X	X
34	ELEVATOR PIT HEAT DETECTOR		X	X					X			X				X			X	X	X
35	ELEVATOR PIT SMOKE DETECTOR		X	X					X			X							X	X	X
36	ELEVATOR SHUNT TRIP LOSS OF POWER				X			X		X		X									X
37	FIRE SUPPRESSION SYSTEM																				X
38	SPRINKLER SYSTEM FLOW SWITCH	2	X	X		X			X			X							X	X	X	X
39	SPRINKLER SYSTEM TAMPER SWITCH	2			X			X		X		X										X
40	SPRINKLER PRESSURE SWITCH	2			X			X		X		X										X
41	POST INDICATOR VALVE TAMPER SWITCH	2			X			X		X		X										X
42	RPZ TAMPER SWITCHES	2			X			X		X		X										X
45	FIRE & JOCKEY PUMPS																					X
46	FIRE PUMP CONTROLLER SUPERVISORY				X			X		X		X										X
47	FIRE PUMP FLOW SWITCHES	2	X	X		X			X			X								X	X	X
48	FIRE PUMP TAMPER SWITCHES	2			X			X		X		X										X
49	JOCKEY PUMP CONTROLLER TROUBLE				X			X		X		X										X
50	JOCKEY PUMP TAMPER SWITCHES	2			X			X		X		X										X
51	WATER FLOW ALARM SWITCH		X	X		X			X			X								X	X	X
52	FIRST RESPONDERS SYSTEM																					X
53	LOSS OF AC POWER				X			X		X		X										X
54	BATTERY CHARGER FAILURE				X			X		X		X										X
55	DONOR ANTENNA MALFUNCTION				X			X		X		X										X
56	FAILURE OF ACTIVE RF-EMITTING DEVICES				X			X		X		X										X
57	LOW BATTERY CAPACITY (AT 70% DEPLETION)				X			X		X		X										X
58	FAILURE OF CRITICAL SYSTEM COMPONENTS				X			X		X		X										X
59	COMMUNICATION LINK FAILURE BETWEEN FA SYSTEM & RADIO SYS.				X			X		X		X										X
60	OSCILLATION OF ACTIVE RF-EMITTING DEVICES				X			X		X		X										X

NOTES:

1. ONLY AFTER LOSS OF POWER FOR > 8 HOURS.
2. TYPICAL, QUANTITIES OF DEVICES ARE NOT SHOWN, REFER TO FIRE PROTECTION SYSTEM DRAWINGS FOR QUANTITIES AND LOCATIONS.
3. FIRST FLOOR IS PRIMARY RECALL FLOOR. SECOND FLOOR IS ALTERNATE RECALL FLOOR.
4. ELEVATORS ARE EXISTING. CONFIRM EXISTING FIRE ALARM DEVICES AND FUNCTIONALITY.

CBHF Engineers, PLLC
2246 Yaupon Drive
Wilmington, NC 28401
Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
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900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205N
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3005

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5387
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMFA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

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JASON P. FAMIGLIETTI — NORTH CAROLINA — SEAL 35230 — ENGINEER

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NO.	DATE	DESCRIPTION
1	4-25-25	100% CDs
2	8-8-25	Revised 100% CDs
3	9-19-25	Revised 100% CDs #2
4	10-17-25	ADDENDUM #1
5	10-29-25	ADDENDUM #2
6	11-10-25	ADDENDUM #3

FIRE ALARM MATRIX

FA6.2

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5	LS0.05	EQUIPMENT SCHEDULES
6	LS0.06	EQUIPMENT SCHEDULES
7	LS0.07	EQUIPMENT SCHEDULES
8	LS0.08	MAKEUP WATER MATRIX
9	LS0.09	CONTROL NOTES
10	LS0.10	CONTROL SCHEDULES
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15	LS0.42B-SRK	SAND TIGER SHARK EXHIBIT AND HOLDING - PIPING AND INSTRUMENTATION DIAGRAM
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NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.765.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # P-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5066
WWW.CBHFENGINEERS.COM
LICENSE # P-0806

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1075

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

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11/10/2025

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
4	11-10-25	ADDENDUM #3

SHEET INDEX

LS0.01

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OZONE SCHEDULE

DESIGNATION	SERVICE / FUNCTION	QTY	CAPACITY	ELECTRICAL					REMARKS	SPECIFICATION
				POWER	VOLTS	PHASE	HERTZ	EMERGENCY POWER		
GEN-OZAS01-001	GENERAL / AIR PREP SKID	1	56 SCFM @ 125 PSI AIR COMPRESSOR OUTPUT (TWO 28 SCFM AIR COMPRESSORS)	15 HP (7.5 HP DROP TO EACH OF THE TWO COMPRESSORS)	480	3	60	NO	ROTARY SCREW TYPE COMPRESSORS SKID MOUNTED WITH AIR RECEIVER TANK / EQUIPMENT MANUFACTURER TO SUPPLY SINGLE POINT ELECTRICAL CONNECTION TO EACH COMPRESSOR	170723
				5 A	120	1	60	NO	POWER FOR TIMED ELECTRIC DRAIN TAP ON AIR RECEIVER	170723
GEN-OZOS01-001	GENERAL / OXYGEN CONCENTRATOR SKID	1	TWO 80 SCFH OXYGEN CONCENTRATORS	3 A	120	1	60	NO	DUAL AIRSEP OXYGEN CONCENTRATORS WITH SKID BY / REFER TO DRAWINGS AND SPECIFICATIONS FOR ALL EQUIPMENT INCLUDED ON SKID / PROVIDE CONDUIT AND WIRING BETWEEN OXYGEN PREP SKID AND OZONE SKID	170723
GEN-OZGE01-001	GENERAL / OZONE GENERATOR ENCLOSURE	1	N/A	20 A	120	1	60	N/A	ENCLOSURE SHALL INCLUDE ALL OZONE GENERATORS AND BACKFLOW PREVENTION DEVICES LISTED BELOW WITH GEN-OZAM01-001 AMBIENT MONITOR AND OZONE GAS SUPPLY JUNCTION BOX. ENCLOSURE SHALL INCLUDE DOOR MOUNT INTERFACE CONTROL PANEL. POWER DROP SHALL BE SINGLE POINT AND SUPPLIER SHALL PROVIDE ANY REQUIRED ELECTRICAL TRANSFORMERS / PROVIDE BACKFLOW PREVENTION DEVICES PER GENERATOR	170723
TOU-OZGN01-001	TOUCH TANK / FRACTIONATOR OZONE GENERATOR	1	5 GR/HR UNIT	N/A	N/A	N/A	N/A	N/A	CORONA DISCHARGE	170723
TOU-OZBP01-001	TOUCH TANK / BACKFLOW PREVENTION DEVICE	1	AS REQUIRED	N/A	N/A	N/A	N/A	N/A	POWER SUPPLED BY ENCLOSURE CABINET WITH PRE-WIRED CONNECTIONS BY SUPPLIER	170723
SRK-OZGN01-001	SAND TIGER SHARK / CONTACTOR OZONE GENERATOR	1	27 GR/HR UNIT	N/A	N/A	N/A	N/A	N/A	CORONA DISCHARGE	170723
SRK-OZBP01-001	SAND TIGER SHARK / BACKFLOW PREVENTION DEVICE	1	AS REQUIRED	N/A	N/A	N/A	N/A	N/A	POWER SUPPLED BY ENCLOSURE CABINET WITH PRE-WIRED CONNECTIONS BY SUPPLIER	170723
SRK-OZGN02-001 AND 002	SAND TIGER SHARK / FRACTIONATOR OZONE GENERATOR	2	9 GR/HR UNIT	N/A	N/A	N/A	N/A	N/A	CORONA DISCHARGE	170723
SRK-OZBP02-001 AND 002	SAND TIGER SHARK / BACKFLOW PREVENTION DEVICE	2	AS REQUIRED	N/A	N/A	N/A	N/A	N/A	POWER SUPPLED BY ENCLOSURE CABINET WITH PRE-WIRED CONNECTIONS BY SUPPLIER	170723
LCR-OZGN01-001	LIVE CORAL / FRACTIONATOR OZONE GENERATOR	1	3 GR/HR UNIT	N/A	N/A	N/A	N/A	N/A	CORONA DISCHARGE	170723
LCR-OZBP01-001	LIVE CORAL / BACKFLOW PREVENTION DEVICE	1	AS REQUIRED	N/A	N/A	N/A	N/A	N/A	POWER SUPPLED BY ENCLOSURE CABINET WITH PRE-WIRED CONNECTIONS BY SUPPLIER	170723
REC-OZGN01-001	RECOVERY / FRACTIONATOR OZONE GENERATOR	1	9 GR/HR UNIT	N/A	N/A	N/A	N/A	N/A	CORONA DISCHARGE	170723
REC-OZBP01-001	RECOVERY / BACKFLOW PREVENTION DEVICE	1	AS REQUIRED	N/A	N/A	N/A	N/A	N/A	POWER SUPPLED BY ENCLOSURE CABINET WITH PRE-WIRED CONNECTIONS BY SUPPLIER	170723
GEN-OZJB01-001	GENERAL / OZONE GAS PIPING JUNCTION BOX	1	N/A	N/A	N/A	N/A	N/A	N/A	POWER SUPPLED BY ENCLOSURE CABINET WITH PRE-WIRED CONNECTIONS BY SUPPLIER / UFC COMPLIANT OZONE GAS DELIVERY JUNCTION BOX / INTEGRAL AMBIENT MONITOR FOR LEAK DETECTION AND BLOWER TO VENT CONTAINMENT PIIPNG INTO OZONE ROOM	170723
GEN-OZOD01-001	GENERAL / OFFGAS DESTRUCT	1	50 SCFM	10 A	208 - 230	1	60	NO	BLOWER TYPE / FOR FRACTIONATORS	170723
GEN-OZAM01-001	GENERAL / AMBIENT OZONE MONITOR	1	N/A	N/A	N/A	N/A	N/A	N/A	LOCATED AT OZONE CABINET ENCLOSURE / POWER SUPPLIED BY ENCLOSURE CABINET WITH PRE-WIRED CONNECTIONS BY SUPPLIER	170723
GEN-OZAM01-002	GENERAL / AMBIENT OZONE MONITOR	1	N/A	N/A	120	1	N/A	N/A	LOCATED ON FIRST FLOOR NEAR SRK-OZCV01-001	170723
GEN-OZAM01-003	GENERAL / AMBIENT OZONE MONITOR	1	N/A	N/A	120	1	N/A	N/A	LOCATED ON SECOND FLOOR NEAR LCR-OFRC24-001	170723
GEN-OZAM01-004	GENERAL / AMBIENT OZONE MONITOR	1	N/A	N/A	120	1	N/A	N/A	LOCATED IN THIRD FLOOR FRACTONATOR ROOM E303	170723
GEN-OZAM01-005	GENERAL / AMBIENT OZONE MONITOR	1	N/A	N/A	120	1	N/A	N/A	LOCATED ON THIRD FLOOR NEAR TOP OF TOU AND LCR DEAERATION TOWER AND LCR OZONE DESTRUCT	170723
GEN-OZWA01-001	GENERAL / WARNING ALARM	1	N/A	N/A	N/A	N/A	N/A	N/A	LOCATED ON FIRST FLOOR AT OZONE ROOM ENTRANCE / CONNECT TO GEN-OZAM01-001 AMBIENT MONITOR / PROVIDE CONDUIT AND WIRING BETWEEN DEVICES AS REQUIRED	170723
GEN-OZWA01-002	GENERAL / WARNING ALARM	1	N/A	N/A	N/A	N/A	N/A	N/A	LOCATED ON FIRST FLOOR ENTRANCE IN STAIRWELL #1 / CONNECT TO GEN-OZAM01-002 AMBIENT MONITOR / PROVIDE CONDUIT AND WIRING BETWEEN DEVICES AS REQUIRED	170723
GEN-OZWA01-003	GENERAL / WARNING ALARM	1	N/A	N/A	N/A	N/A	N/A	N/A	LOCATED AT LOWER LEVEL ENTRANCE TO NORTH LSS EQUIPMENT ROOM E106 / CONNECT TO GEN-OZAM01-002 AMBIENT MONITOR / PROVIDE CONDUIT AND WIRING BETWEEN DEVICES AS REQUIRED	170723
GEN-OZWA01-004	GENERAL / WARNING ALARM	1	N/A	N/A	N/A	N/A	N/A	N/A	LOCATED ON SECOND FLOOR AT SOUTH ENTRANCE OF SOUTHERN LSS EQUIPMENT ROOM E106 / CONNECT TO GEN-OZAM01-003 AMBIENT MONITOR / PROVIDE CONDUIT AND WIRING BETWEEN DEVICES AS REQUIRED	170723
GEN-OZWA01-005	GENERAL / WARNING ALARM	1	N/A	N/A	N/A	N/A	N/A	N/A	LOCATED ON SECOND FLOOR IN CORAL MEZZANINE E202 / CONNECT TO GEN-OZAM01-003 AMBIENT MONITOR / PROVIDE CONDUIT AND WIRING BETWEEN DEVICES AS REQUIRED	170723
GEN-OZWA01-006	GENERAL / WARNING ALARM	1	N/A	N/A	N/A	N/A	N/A	N/A	LOCATED OUTSIDE THIRD FLOOR FRACTONATOR ROOM E303 / CONNECT TO GEN-OZAM01-004 AMBIENT MONITOR / PROVIDE CONDUIT AND WIRING BETWEEN DEVICES AS REQUIRED	170723
GEN-OZWA01-007	GENERAL / WARNING ALARM	1	N/A	N/A	N/A	N/A	N/A	N/A	LOCATED ON THIRD FLOOR SERVICE DECK ENTRANCE TO EXISTING AQUARIUM NEAR TOU AND LCR DEAERATION TOWERS / CONNECT TO GEN-OZAM01-005 AMBIENT MONITOR / PROVIDE CONDUIT AND WIRING BETWEEN DEVICES AS REQUIRED	170723
GEN-OZWA01-008	GENERAL / WARNING ALARM	1	N/A	N/A	N/A	N/A	N/A	N/A	LOCATED ON THIRD FLOOR SERVICE DECK ENTRANCE TOU AND LCR DEAERATION TOWERS / CONNECT TO GEN-OZAM01-005 AMBIENT MONITOR / PROVIDE CONDUIT AND WIRING BETWEEN DEVICES AS REQUIRED	170723
LCR-OZOD01-001	LIVE CORAL / OFFGAS DESTRUCT	1	50 SCFM	10 A	208 - 230	1	60	NO	BLOWER TYPE / FOR FRACTIONATOR	170723
SRK-OZCV01-001	SAND TIGER SHARK / CONTACT VESSEL	1	850 GAL (63" DIA X 86" TALL)	N/A	N/A	N/A	N/A	NO	16" TOP MANWAY / 6" BOTTOM FLANGE / PENTAIR STRUCTURAL "COMPOSITE"	170805
REC-OZOD01-001	RECOVERY / OFFGAS DESTRUCT	1	50 SCFM	10 A	208 - 230	1	60	NO	BLOWER TYPE / FOR RECOVERY BASINS	170723

TUBE TYPE HEAT EXCHANGER SCHEDULE

DESIGNATION	SERVICE / FUNCTION	QTY	MINIMUM CAPACITY REQUIREMENT	POOL WATER			PROCESS WATER			REMARKS	SPECIFICATION
			HEATING (BTU/HR) / CHILLING (TON)	IN (DEG F)	OUT (DEG F)	FLOW (GPM)	IN (DEG F)	OUT (DEG F)	FLOW (GPM)		
LCR-HEX001-001	LIVE CORAL / HEAT EXCHANGER	1	60,000	81	84	39	120	100	6	DELTA HYDRONICS "DH-WTW" / SALTWATER / SCH 80 CPVC SHELL CONSTRUCTION	170667
			5	79	76	39	44	54	12		
AQC-HEX001-001	AQUACULTURE / HEAT EXCHANGER	1	24,000	78	81	16	120	100	2	DELTA HYDRONICS "DH-WTW" / SALTWATER / SCH 80 CPVC SHELL CONSTRUCTION	170667
			2.0	70	67	16	44	54	5		
PBA-HEX001-001	PIABA / HEAT EXCHANGER	1	18,000	86	89	12	120	100	2	DELTA HYDRONICS "DH-WTW" / FRESHWATER / SCH 80 CPVC SHELL CONSTRUCTION	170667
			1.5	80	77	12	44	54	3		
HC1-HEX001-001	HOLDING CORAL GROWING TANK #1 / HEAT EXCHANGER	1	12,000	81	84	8	120	100	1	DELTA HYDRONICS "DH-WTW" / SALTWATER / SCH 80 CPVC SHELL CONSTRUCTION	170667
			1.0	79	76	8	44	54	2		
HC2-HEX001-001	HOLDING CORAL GROWING TANK #2 / HEAT EXCHANGER	1	12,000	81	84	8	120	100	1	DELTA HYDRONICS "DH-WTW" / SALTWATER / SCH 80 CPVC SHELL CONSTRUCTION	170667
			1.0	79	76	8	44	54	2		
CTF-HEX001-001	CUTTLEFISH / HEAT EXCHANGER	1	12,000	75	78	8	120	100	1	DELTA HYDRONICS "DH-WTW" / SALTWATER / SCH 80 CPVC SHELL CONSTRUCTION / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170667
			1.0	72	69	8	44	54	2 4		
LPS-HEX001-001	SPINY LUMP SUCKER / HEAT EXCHANGER	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	DELTA HYDRONICS "DH-WTW" / SALTWATER / SCH 80 PVC SHELL CONSTRUCTION / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170667
			0.5	52	51	12	44	54	5		

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
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900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200#4
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # P-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5066
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8902
WWW.PALACIOCOLLABORATIVE.COM

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NORTH CAROLINA PROFESSIONAL SEAL 049024 ENGINEER TERRI JOHNSON

11/10/2025

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
4	11-10-25	ADDENDUM #3

EQUIPMENT SCHEDULES

LS0.04

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CURRENT EFFECT GENERATOR SCHEDULE

DESIGNATION	SERVICE / FUNCTION	QTY	FLOW (GPM)	MATERIAL	MINIMUM EFFICIENCY (%)	ELECTRICAL					REMARKS	SPECIFICATION
						KW	VOLTS	PHASE	HERTZ	SERVICE EMERGENCY POWER		
SRK-CEG001-001 AND -002	SAND TIGER SHARK / CURRENT EFFECT GENERATOR	2	2000	COMPOSITE	N/A	1.2	120	1	60	NO	ABYZZ "AFC1200IPU" / SALTWATER / LISTED POWER IS FOR THE CONTROLLER WITH WALL PLUG PROVIDE CORD LENGTH AS REQUIRED BETWEEN UNIT AND CONTROLLER	170107
LCR-CEG001-001 AND -002	LIVE CORAL / CURRENT EFFECT GENERATOR	2	726	COMPOSITE	N/A	0.45	120	1	60	NO	ABYZZ "AFC400IPU" / SALTWATER / LISTED POWER IS FOR THE CONTROLLER WITH WALL PLUG PROVIDE CORD LENGTH AS REQUIRED BETWEEN UNIT AND CONTROLLER	170107

AIR BLOWER SCHEDULE

DESIGNATION	SERVICE / FUNCTION	QTY	CAPACITY (SCFM)	PRESSURE / STATIC PRESSURE	ELECTRICAL						2 REMARKS	SPECIFICATION
					POWER	VOLTS	PHASE	HERTZ	DRIVE	EMERGENCY POWER		
SRK-ABO001-001	SAND TIGER SHARK / DEAERATION TOWER SUPPLY AIR BLOWER	1	2 550	2.5"	1.5 HP	480	3	60	VFD	YES	PLASTEC 20, FAN SPEED TO BE ADJUSTED BY TURNING DOWN THE VFD TO APPROXIMATELY 40 HZ, BLOWER IS ON EMERGENCY POWER BUT IS NOT CONNECTED TO THE ACS, IN A POWER OUTAGE BLOWER WILL NEED TO BE RESTARTED MANUALLY / SEE ELECTRICAL DRAWINGS FOR VFD WITH DISCONNECT	170584
SRK-ABO002-001	SAND TIGER SHARK / DEAERATION TOWER EXHAUST AIR BLOWER	1	550	2.5"	1.5 HP	480	3 2	60	VFD	YES	PLASTEC 20, FAN SPEED TO BE ADJUSTED BY TURNING DOWN THE VFD TO APPROXIMATELY 40 HZ, BLOWER IS ON EMERGENCY POWER BUT IS NOT CONNECTED TO THE ACS, IN A POWER OUTAGE BLOWER WILL NEED TO BE RESTARTED MANUALLY / SEE ELECTRICAL DRAWINGS FOR VFD WITH DISCONNECT	170584
GEN-ABO001-001	GENERAL / AIR BLOWER	1	60	3 PSI	3 HP	480	3	60	VFD	YES	KAESER "COMPAK PLUS" ROTARY BLOWER PACKAGE / INCLUDE INLET SILENCER WITH FILTER, SOUND ENCLOSURE WITH VENT FAN, DISCHARGE SILENCER, PRESSURE RELIEF VALVE, STAINLESS STEEL PIPING AND PRESSURE GAUGE ON BLOWER DISCHARGE / SEE ELECTRICAL DRAWINGS FOR VFD WITH DISCONNECT, BLOWER IS ON EMERGENCY POWER BUT IS NOT CONNECTED TO THE ACS, IN A POWER OUTAGE BLOWER WILL NEED TO BE RESTARTED MANUALLY.	170586
					2 A	120	1	60	N/A			

2

REVERSE OSMOSIS SCHEDULE

DESIGNATION	SERVICE / FUNCTION	QTY	MINIMUM PRODUCT WATER FLOW	SKID COMPONENTS	ELECTRICAL					EMERGENCY POWER	REMARKS	SPECIFICATION
					POWER	HP	VOLTS	PHASE	HERTZ			
ROS-RODI01-001	REVERSE OSMOSIS / R. O. D. I. EQUIPMENT SKID	1	2 3,000 GPD	R.O. UNIT PUMP	14 AMPS	3/4	120	1	60	YES	USED TO TREAT POTABLE WATER / INCLUDE R.O. UNITS, D.I. UNITS, BOOSTER PUMP, CONTROLLER, AND FILTERS / EVOQUA WATER TECHNOLOGIES "MFXR41 002A" / FLOOR STANDING DESIGN SKID / SKID TO INCLUDE PUMP MOTOR STARTER-DISCONNECT	170786
				PRETREATMENT FILTERS	5 AMPS	-	120	1	60	YES		
				SOLENOID VALVE	5 AMPS	-	120	1	60	YES		

TANK SCHEDULE

DESIGNATION	SERVICE / FUNCTION	QTY	SIZE	CAPACITY (GAL)	ORIENTATION	MATERIAL	REMARKS	SPECIFICATION
LCR-TNK048-001	LIVE CORAL / BATCH TANK	1	48" DIA X 53" TALL	360	VERTICAL	LINEAR PE	SNYDER " OPEN TOP BATCH MIXING TANK" WITH HINGED LID ASSEMBLY AND GALLON MARKS / PROVIDE WITH 12" BOTTOM CLEARANCE POLY STAND	170846
ROS-TNK060-001	REVERSE OSMIOSIS MAKEUP / RO SALTWATER STORAGE TANK	1	60" DIA X 90" TALL	1,027	VERTICAL	FRP	SEE FABRICATION SHEET LS9.17	170822
ROF-TNK060-001	REVERSE OSMIOSIS MAKEUP / RO FRESHWATER STORAGE TANK	1	60" DIA X 90" TALL	1,027	VERTICAL	FRP	SEE FABRICATION SHEET LS9.16	170822
CRO-TNK060-001	COLD REVERSE OSMOSIS SALTWATER MAKEUP / STORAGE TANK	1	60" DIA X 60" TALL	600	VERTICAL	FRP	SEE FABRICATION SHEET LS9.18 / PROVIDED WITH INTEGRAL INSULATION / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170822

WATER SOFTENER SCHEDULE

DESIGNATION	SERVICE / FUNCTION	QTY	4 NOMINAL FLOW CAPACITY (GPM)	MINIMUM PRODUCT MEDIA VOLUME (CUFT)	MINIMUM EXCHANGE CAPACITY (GRAINS PER REGEN)	ELECTRICAL				EMERGENCY POWER	4 REMARKS	SPECIFICATION
						POWER	VOLTS	PHASE	HERTZ			
FMU-WSP001-001	FRESHWATER MAKEUP / WATER SOFTENER PACKAGE	1	75	25	750,000	1.5 A (FOR EACH OF THE 2 CONTROLLERS)	120	1	60	YES	USED TO TREAT POTABLE WATER / LAKESIDE WATER TREATMENT "LWTSF-0750-20" / TWIN ALTERNATING SOFTENER SYSTEM WITH BRINE TANK	170786

PLATE TYPE HEAT EXCHANGER SCHEDULE

DESIGNATION	SERVICE / FUNCTION	QTY	MINIMUM CAPACITY REQUIREMENT	POOL WATER			PROCESS WATER			REMARKS *ACTUAL FLOW DEPENDENT ON HEAT EXCHANGER SELECTION	SPECIFICATION
			HEATING (BTU/HR) / CHILLING (TON)	IN (DEG F)	OUT (DEG F)	FLOW (GPM*)	IN (DEG F)	OUT (DEG F)	FLOW (GPM*)		
TOU-HEX001-001	TOUCH TANK / HEAT EXCHANGER	1	360,000	78	88	70	120	100	35	PLATE TYPE / SALTWATER / TITANIUM PLATES	170666
			30	70	60	70	44	54	70		
SRK-HEX001-001	SAND TIGER SHARK / HEAT EXCHANGER	1	1,800,000	78	88	350	120	100	175	PLATE TYPE / SALTWATER / TITANIUM PLATES	170666
			150	68	58	350	44	54	350		
PRC-HEX001-001	PACIFIC ROCKY COAST / HEAT EXCHANGER	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PLATE TYPE / SALTWATER / TITANIUM PLATES / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170666
			2.0	49	47	23	44	46 4	24		
WSD-HEX001-001	WEEDY SEA DRAGON / HEAT EXCHANGER	1	24,000	60	65	9	120	100	2	PLATE TYPE / SALTWATER / TITANIUM PLATES / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170666
			2.0	59	54	9	44	54	5		
FMU-HEX001-001	FRESHWATER MAKEUP / HEAT EXCHANGER	1	60,000	82	92	12	120	100	6	PLATE TYPE / FRESHWATER / TYPE 316SS PLATES	170666
			5	68	58	12	44	54	12		
SMU-HEX001-001	SALTWATER MAKEUP / HEAT EXCHANGER	1	600,000	82	92	117	120	100	58	PLATE TYPE / SALTWATER / TITANIUM PLATES	170666
			50	68	58	117	44	54	117		
ROF-HEX001-001	REVERSE OSMOSIS FRESHWATER MAKEUP / HEAT EXCHANGER	1	24,000	81	91	5	120	100	2	PLATE TYPE / FRESHWATER / TYPE 316SS PLATES	170666
			2	79	69	5	44	54	5		
ROS-HEX001-001	REVERSE OSMOSIS SALTWATER MAKEUP / HEAT EXCHANGER	1	96,000	81	91	19	120	100	9	PLATE TYPE / SALTWATER / TITANIUM PLATES	170666
			8	79	69	19	44	54	19		
CRO-HEX001-001	COLD REVERSE OSMOSIST SALTWATER MAKEUP / HEAT EXCHANGER	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	PLATE TYPE / SALTWATER / TITANIUM PLATES / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170666
			2.0	49	47	23	44	46 4	24		

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
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900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.763.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8902
WWW.PALACIOCOLLABORATIVE.COM

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11/10/2025

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
4	11-10-25	ADDENDUM #3

EQUIPMENT SCHEDULES

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FILTER SCHEDULE

DESIGNATION	SERVICE / FUNCTION	QTY	FLOW (GPM)	SIZE	ORIENTATION	MEDIA	MATERIAL	ELECTRICAL						REMARKS	SPECIFICATION
								COMPONENT	HP	VOLTS	PHASE	HERTZ	EMERGENCY POWER		
TOU-FSV048-001 THRU -003	TOUCH TANK / SAND FILTER	3	135	48" DIA	VERTICAL	SAND	FRP	N/A	N/A	N/A	N/A	N/A	N/A	CUSTOM FRP FILTER WITH 60" SIDEWALL / REFER TO FABRICATION SHEET LS9.02	170024 & 170062
SRK-FSV096-001 THRU -007	SAND TIGER SHARK / SAND FILTER	7	600	96" DIA	VERTICAL	SAND	FRP	N/A	N/A	N/A	N/A	N/A	N/A	CUSTOM FRP FILTER WITH 60" SIDEWALL / REFER TO FABRICATION SHEET LS9.03	170024 & 170062
SRK-FCV096-001	SAND TIGER SHARK / CARBON FILTER	1	300	96" DIA	VERTICAL	CARBON	FRP	N/A	N/A	N/A	N/A	N/A	N/A	CUSTOM FRP FILTER WITH 60" SIDEWALL / REFER TO FABRICATION SHEET LS9.03	170024 & 170072
LCR-FGV036-001	LIVE CORAL / GLASS FILTER	1	85	36" DIA	VERTICAL	CRUSHED GLASS	FRP	N/A	N/A	N/A	N/A	N/A	N/A	CUSTOM FRP FILTER WITH 60" SIDEWALL / REFER TO FABRICATION SHEET LS9.01	170024 & 170063
LCR-FDR001-001	LIVE CORAL / DRUM FILTER	1	300	400 mm DIA. (16 in)	HORIZONTAL	MESH DRUM - 30 MICRON HOLE SIZE	HDPE TANK WITH 2205 SS DUPLEX SS FOR WARM SALTWATER WETTED COMPONENTS	BACKWASH CONTROL MODULE	7 AMPS MAX	120	1	60	YES	CM AQUA TECHNOLOGIES, HEX "X2-2" TANK VERSION / WITH FLANGED 6" INLET AND OUTLET CONNECTIONS / INCLUDES BACKWASH PUMP WITH MOTOR STARTER, CONTROLS JUNCTION BOX, VFD DRUM MOTOR DRIVE, AND WATER LEVEL SENSOR / SUPPLIER TO INCLUDE PRE-BUILT STILLING WELL ASSEMBLY / ELECTRICAL TO PROVIDE TWO POWER DROPS TO BACKWASH SKID, ONE 120V-1P-60HZ AND ONE 480V-3P-60HZ / PROVIDE CONDUIT AND WIRING BETWEEN ALL COMPONENTS / CONTROLLER IS PRE-WIRED TO SUBMERSIBLE PRESSURE LEVEL SENSOR WITH 30 FT CABLE	170028
								DRUM MOTOR / VFD	0.18 HP	120	1	60	YES		
								RINSE PUMP / MOTOR STARTER	1.5 HP	480	3	60	YES		
PBA-FBG001-001 THRU -004	PIABA / OPEN FILTER BAG	4	25	7" DIA x 32" LONG BAG	VERTICAL	BAGS (10 MICRON)	POLYPROPYLENE NEEDLE FELT FILTER	N/A	N/A	N/A	N/A	N/A	N/A	BAG LOCATED IN RESERVOIR / DOUBLE LENGTH BY HAYWARD OR EQUAL	170032
AQC-FBG001-001 THRU -004	AQUACULTURE / OPEN FILTER BAG	4	25	7" DIA x 32" LONG BAG	VERTICAL	BAGS (10 MICRON)	POLYPROPYLENE NEEDLE FELT FILTER	N/A	N/A	N/A	N/A	N/A	N/A	BAG LOCATED IN RESERVOIR / DOUBLE LENGTH BY HAYWARD OR EQUAL	170032
HTT-FCRT01-001	HOLDING TOUCH TANK / CARBON CARTRIDGE FILTER	1	25	12" DIA X 40" TALL FILTER HOUSING	VERTICAL	CARBON	GFPP HOUSING	N/A	N/A	N/A	N/A	N/A	N/A	2" CONNECTIONS / GENERAL PURPOSE NON-METALLIC FILTER HOUSING TO ACCEPT CARBON CARTRIDGE	170035
CTF-FBG001-001 AND -002	CUTTLEFISH / OPEN FILTER BAG	2	15	7" DIA x 16" LONG BAG	VERTICAL	BAGS (10 MICRON)	POLYPROPYLENE NEEDLE FELT FILTER	N/A	N/A	N/A	N/A	N/A	N/A	BAG LOCATED IN RESERVOIR / SINGLE LENGTH BY HAYWARD OR EQUAL / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170032
LPS-FBG001-001 AND -002	SPINY LUMPSUCKER / OPEN FILTER BAG	2	10	7" DIA x 16" LONG BAG	VERTICAL	BAGS (10 MICRON)	POLYPROPYLENE NEEDLE FELT FILTER	N/A	N/A	N/A	N/A	N/A	N/A	BAG LOCATED IN RESERVOIR / SINGLE LENGTH BY HAYWARD OR EQUAL / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170032
PRC-FBG001-001 THRU -004	PACIFIC ROCKY COAST / OPEN FILTER BAG	4	20	7" DIA x 32" LONG BAG	VERTICAL	BAGS (10 MICRON)	POLYPROPYLENE NEEDLE FELT FILTER	N/A	N/A	N/A	N/A	N/A	N/A	BAG LOCATED IN RESERVOIR / SINGLE LENGTH BY HAYWARD OR EQUAL / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170032
PRC-FBG002-001	PACIFIC ROCKY COAST / PRESSURIZED FILTER BAG	1	25	7" DIA x 32" LONG BAG	VERTICAL	BAGS (600 MICRON)	GFPP HOUSING / MONOFILAMENT POLYPROPYLENE NEEDLE FELT FILTER	N/A	N/A	N/A	N/A	N/A	N/A	2" CONNECTIONS / DOUBLE LENGTH BY HAYWARD OR EQUAL / BAG FILTER TO PROTECT PLATE AND FRAME HEAT EXCHANGER IF RESERVOIR BAG IS BYPASSED / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170032
WSD-FBG001-001 AND -002	WEEDY SEA DRAGONS / OPEN FILTER BAG	2	20	7" DIA x 16" LONG BAG	VERTICAL	BAGS (10 MICRON)	POLYPROPYLENE NEEDLE FELT FILTER	N/A	N/A	N/A	N/A	N/A	N/A	BAG LOCATED IN RESERVOIR / SINGLE LENGTH BY HAYWARD OR EQUAL / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170032
WSD-FBG002-001	WEEDY SEA DRAGONS / PRESSURIZED FILTER BAG	1	10	7" DIA x 32" LONG BAG	VERTICAL	BAGS (600 MICRON)	GFPP HOUSING / MONOFILAMENT POLYPROPYLENE NEEDLE FELT FILTER	N/A	N/A	N/A	N/A	N/A	N/A	2" CONNECTIONS / DOUBLE LENGTH BY HAYWARD OR EQUAL / BAG FILTER TO PROTECT PLATE AND FRAME HEAT EXCHANGER IF RESERVOIR BAG IS BYPASSED / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170032
REC-FDR001-001 AND -002	RECOVERY / DRUM FILTER	2	120	400 mm DIA. (16 in)	HORIZONTAL	MESH DRUM - 30 MICRON HOLE SIZE	HDPE TANK WITH 2205 SS DUPLEX SS FOR WARM SALTWATER WETTED COMPONENTS	BACKWASH CONTROL MODULE	7 AMPS MAX	120	1	60	YES	CM AQUA TECHNOLOGIES, HEX "X2-1" TANK VERSION / WITH FLANGED 4" INLET & OUTLET CONNECTIONS / INCLUDES BACKWASH PUMP WITH MOTOR STARTER, CONTROLS JUNCTION BOX, VFD DRUM MOTOR DRIVE, AND WATER LEVEL SENSOR / SUPPLIER TO INCLUDE PRE-BUILT STILLING WELL ASSEMBLY / ELECTRICAL TO PROVIDE TWO POWER DROPS TO BACKWASH SKID, ONE 120V-1P-60HZ AND ONE 480V-3P-60HZ / PROVIDE CONDUIT AND WIRING BETWEEN ALL COMPONENTS / CONTROLLER IS PRE-WIRED TO SUBMERSIBLE PRESSURE LEVEL SENSOR WITH 30 FT CABLE	170028
								DRUM MOTOR / VFD	0.18 HP	120	1	60	YES		
								RINSE PUMP / MOTOR STARTER	1.0 HP	480	3	60	YES		
REC-FSV048-001 AND -002	RECOVERY / SAND FILTER	2	75	48" DIA	VERTICAL	SAND	FRP	N/A	N/A	N/A	N/A	N/A	N/A	CUSTOM FRP FILTER WITH 60" SIDEWALL / REFER TO FABRICATION SHEET LS9.02	170024 & 170062
FMU-FCV048-001 AND -002	FRESHWATER MAKEUP / CARBON FILTER	2	75	48" DIA	VERTICAL	CARBON	FRP	N/A	N/A	N/A	N/A	N/A	N/A	CUSTOM FRP FILTER WITH 60" SIDEWALL / REFER TO FABRICATION SHEET LS9.02	170024 & 170072

U.V. STERILIZER SCHEDULE

DESIGNATION	SERVICE / FUNCTION	QTY	DESIGN FLOW (GPM)	MINIMUM CAPACITY (mJ/cm2)	ELECTRICAL					REMARKS	SPECIFICATIONS
					POWER (WATTS)	VOLTS	PHASE	HERTZ	EMERGENCY POWER		
TOU-UVS001-001	TOUCH TANK / ULTRAVIOLET STERILIZER	1	405	40	MAX 1330 W	120	1	60	NO	SITA UV "PE200" HDPE VESSEL WITH "Z"-CONFIGURATION 6 x 200W LAMPS / PROVIDE WITH 8" FLANGES / PROVIDE WITH ECOLINE CONTROLLER IN NEMA4X PLASTIC ENCLOSURE, UL LISTED	170774
LCR-UVS001-001	LIVE CORAL / FUTURE ULTRAVIOLET STERILIZER	0	300	30	MAX 666 W	120	1	60	NO	SITA UV "PE100" HDPE VESSEL / CONTRACTOR TO ALLOW SPACE AND ELECTRICAL REQUIRMENT CAPACITY FOR FUTURE INSTALLATION	-
PBA-UVS001-001	PIABA / ULTRAVIOLET STERILIZER	1	50	30	MAX 222 W	120	1	60	NO	SITA UV "PE20" HDPE VESSEL WITH "U"-CONFIGURATION 1 x 200W LAMPS / PROVIDE WITH 3" FLANGES / PROVIDE WITH ECOLINE CONTROLLER IN NEMA4X PLASTIC ENCLOSURE, UL LISTED	170774
AQC-UVS001-001	AQUACULTURE / ULTRAVIOLET STERILIZER	1	100	30	MAX 444 W	120	1	60	NO	SITA UV "PE61" HDPE VESSEL WITH "U"-CONFIGURATION 2 x 200W LAMPS / PROVIDE WITH 4" FLANGES / PROVIDE WITH ECOLINE CONTROLLER IN NEMA4X PLASTIC ENCLOSURE, UL LISTED	170774
CTF-UVS001-001	CUTTLEFISH / ULTRAVIOLET STERILIZER	1	30	30	MAX 222 W	120	1	60	NO	SITA UV "PE20" HDPE VESSEL WITH "U"-CONFIGURATION 1 x 200W LAMPS / PROVIDE WITH 2" FLANGES / PROVIDE WITH ECOLINE CONTROLLER IN NEMA4X PLASTIC ENCLOSURE, UL LISTED / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170774
LPS-UVS001-001	SPINY LUMPSUCKER / ULTRAVIOLET STERILIZER	1	20	30	MAX 222 W	120	1	60	NO	SITA UV "PE20" HDPE VESSEL WITH "U"-CONFIGURATION 1 x 200W LAMPS / PROVIDE WITH 2" FLANGES / PROVIDE WITH ECOLINE CONTROLLER IN NEMA4X PLASTIC ENCLOSURE, UL LISTED / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170774
PRC-UVS001-001	PACIFIC ROCKY COAST / ULTRAVIOLET STERILIZER	1	76	30	MAX 222 W	120	1	60	NO	SITA UV "PE20" HDPE VESSEL WITH "U"-CONFIGURATION 1 x 200W LAMPS / PROVIDE WITH 4" FLANGES / PROVIDE WITH ECOLINE CONTROLLER IN NEMA4X PLASTIC ENCLOSURE, UL LISTED / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170774
WSD-UVS001-001	WEEDY SEA DRAGON / ULTRAVIOLET STERILIZER	1	40	30	MAX 222 W	120	1	60	NO	SITA UV "PE20" HDPE VESSEL WITH "U"-CONFIGURATION 1 x 200W LAMPS / PROVIDE WITH 3" FLANGES / PROVIDE WITH ECOLINE CONTROLLER IN NEMA4X PLASTIC ENCLOSURE, UL LISTED / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170774

REACTOR SCHEDULE

DESIGNATION	SERVICE / FUNCTION	QTY	MEDIA	ELECTRICAL					REMARKS	SPECIFICATION
				POWER (AMPS)	VOLTS	PHASE	HERTZ	EMERGENCY POWER		
LCR-CAL001-001 AND -002	LIVE CORAL / CALCIUM REACTOR	2	ARAGONITE	3	120	1	60	YES	MRC CCR-3824 TRIPLE CALCIUM REACTOR / pH PROBE HOLDER, SPRAY BAR, VALVES, AND RECIRCULATION PUMP TO BE INCLUDED / EQUIPMENT MANUFACTURER TO SUPPLY SINGLE POINT OF CONNECTION / CO2 CANISTER TO BE PROVIDED BY CONTRACTOR	170753 & 170065
LCR-CO2M01-001	LIVE CORAL / CO2 MONITOR AND WARNING ALARM	1	N/A	FRACTIONAL	120	1	60	YES	MOUNTED ON WALL BY CONTRACTOR	170753
LCR-FGN001-001 AND 002	LIVE CORAL / FLEXIBLE FLUIDIZED CANISTER	2	OWNER PROVIDED	N/A	N/A	N/A	N/A	N/A	MRC FMC 1460I / FLUIDIZED CANISTER THAT HOLDS MINIMUM OF 25 GALLONS OF MEDIA	-
HC1-CAL001-001	CORAL GROWING HOLDING #1 / CALCIUM REACTOR	1	ARAGONITE	3	120	1	60	YES	MRC PRO CCR-818 SINGLE CALCIUM REACTOR	170753 & 170065
HC1-FCR001-001	CORAL GROWING HOLDING #1 / FLUIDIZED CARBON REACTOR	1	CARBON	N/A	N/A	N/A	N/A	N/A	MRC FMC-620 FLUIDIZED MEDIA CHAMBER REACTOR	170755
HC1-FGR001-001	CORAL GROWING HOLDING #1 / FLUIDIZED GFO REACTOR	1	GRANULAR FERRIC OXIDE	N/A	N/A	N/A	N/A	N/A	MRC FMC-620 FLUIDIZED MEDIA CHAMBER REACTOR	170755
HC2-CAL001-001	CORAL GROWING HOLDING #2 / CALCIUM REACTOR	1	ARAGONITE	3	120	1	60	YES	MRC PRO CCR-818 SINGLE CALCIUM REACTOR	170753 & 170065
HC2-FCR001-001	CORAL GROWING HOLDING #2 / FLUIDIZED CARBON REACTOR	1	CARBON	N/A	N/A	N/A	N/A	N/A	MRC FMC-620 FLUIDIZED MEDIA CHAMBER REACTOR	170755
HC2-FGR001-001	CORAL GROWING HOLDING #2 / FLUIDIZED GFO REACTOR	1	GRANULAR FERRIC OXIDE	N/A	N/A	N/A	N/A	N/A	MRC FMC-620 FLUIDIZED MEDIA CHAMBER REACTOR	170755

FRP RESERVOIR SCHEDULE

DESIGNATION	DESCRIPTION	INTERIOR DIMENSIONS (FT) (W x L x D)	REMARKS	SPECIFICATION
AQC-RES001-001	AQUACULTURE / RETURN RESERVOIR	4' X 6' X 4'	SEE FABRICATION SHEET DWG LS9.10	170845
PBA-RES001-001	PIABA / RETURN RESERVOIR	3' X 4' X 4'	SEE FABRICATION SHEET DWG LS9.11	170845
LCR-RES001-001	LIVE CORAL / REFUGIUM-ALGAE SCRUBBER RESERVOIR	2' X 8' X 1.33'	SEE FABRICATION SHEET DWG LS9.12	170845
HC1-RES001-001	LIVE CORAL GROWING HOLDING TANK #1 / RESERVOIR	8' X 4' X 2.5'	PENTAIR FT5321 FIBERGLASS TANK / INSTALL 24" TALL SKIMMER PARTITION WALL / INSTALL SHELF OVER LIVE ROCK CHAMBER AS REQUIRED / INSTALL CONNECTIONS AS REQUIRED	-
HC2-RES001-001	LIVE CORAL GROWING HOLDING TANK #2 / RESERVOIR	8' X 4' X 2.5'	PENTAIR FT5321 FIBERGLASS TANK / INSTALL 24" TALL SKIMMER PARTITION WALL / INSTALL SHELF OVER LIVE ROCK CHAMBER AS REQUIRED / INSTALL CONNECTIONS AS REQUIRED	-
CTF-RES001-001	CUTTLEFISH / RETURN RESERVOIR	3' X 3' X 4'	SEE FABRICATION SHEET DWG LS9.13 / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170845
LPS-RES001-001	SPINY LUMPSUCKER / RETURN RESERVOIR	3' X 3' X 4'	SEE FABRICATION SHEET DWG LS9.13 / PROVIDE WITH INTREGRAL INSULATION / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170845
PRC-RES001-001	PACIFIC ROCKY COAST / RETURN RESERVOIR	3.5' X 4.5' X 4'	SEE FABRICATION SHEET DWG LS9.14 / PROVIDE WITH INTREGRAL INSULATION / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170845
WSD-RES001-001	WEEDY SEA DRAGONS / RETURN RESERVOIR	3' X 3' X 4'	SEE FABRICATION SHEET DWG LS9.15 / INCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3	170845

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD.
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.762.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5066
WWW.CBHFENGINEERS.COM
LICENSE # P-0506

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.WTEENGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMFA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.465.8952
WWW.PALACIOCOLLABORATIVE.COM

NOTE: IF THIS DRAWING IS NOT 30" X 42", IT IS A REDUCED PRINT. REFER TO GRAPHIC SCALE.

NORTH CAROLINA PROFESSIONAL SEAL 049024 ENGINEER TERRI JOHNSON

11/10/2025

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
4	11-10-25	ADDENDUM #3

EQUIPMENT SCHEDULES

LS0.06

11/10/2025 5:01:28 PM Autodesk Docs://Fort Fisher Aquarium Renovation and Addition/TJP-LSS-NCA001-CENTRAL.rvt

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ACS WIRING NOTES:

ACS CONTROL CABINET:
EACH CONTROL CABINET REQUIRES FOUR (3), 120 VAC, 20 AMP CIRCUITS, EMERGENCY POWER CIRCUITS . SEE ELECTRICAL DRAWINGS FOR POWER SUPPLY TO THE CONTROL CABINETS. THERE IS NO CENTRAL WORK STATION AND ACS SOFTWARE WILL BE ACCESSED THROUGH REMOTE NETWORK CONNECTION. PROVIDE FIBER LOOP INTERCONNECTING ALL OF THE ACS CONTROL CABINETS.

A. PRESSURE TRANSDUCER FOR WATER LEVEL AND LINE PRESSURE
24 VDC LOOP POWER IS SOURCED FROM ACS CONTROL CABINET.
1 - #18, (2) TWO CONDUCTOR, TWISTED SHIELDED CABLE.

B. SIGNET SMARTPRO® 9900 MONITOR/TRANSMITTER:
120 VOLT POWER FOR EACH INSTRUMENTATION MONITOR IS SOURCED FROM ACS CABINETS. NOTE THAT, UNLIKE POWER, EACH INSTRUMENTATION MONITOR'S TRANSMITTER REQUIRES ISOLATED SIGNAL WIRING.
3 - #14, FOR POWER AND INCLUDES GROUND.
1 - #18, (2) TWO CONDUCTOR, TWISTED SHIELDED CABLE.

C. SIGNET 2551 FLOW SENSOR:
POWER IS SOURCED FROM SMARTPRO® 9900.
1 - #18, THREE CONDUCTOR, TWISTED SHIELDED CABLE.
1 - #14, GROUND.

D. SIGNET 2751 ORP/pH SENSOR ELECTRONICS:
POWER IS SOURCED FROM SMARTPRO® 9900.
1 - #18, THREE CONDUCTOR, TWISTED SHIELDED CABLE.
1 - #14, GROUND.

E. TEMPERATURE SENSOR/TRANSMITTER:
24 VDC LOOP POWER IS SOURCED FROM ACS CONTROL CABINET.
1 - #18, (2) TWO CONDUCTOR, TWISTED SHIELDED CABLE.

F. THREE PHASE PUMP: (WITH VFD)
1 - CAT 6 SHIELDED ETHERNET CABLE 4

G. NOT USED

H. CONSTANT SPEED PUMPS
4 - #14 WIRES.

I. NOT USED

J. DRUM FILTERS
1 - CAT 6 SHIELDED ETHERNET CABLE

K. 12V DC PUMP RELAY INTERFACE
AT EACH 12 VDC PUMP ELECTRICAL CONTRACTOR IS PROVIDING A RELAY DEVICE TO INDICATE ON/OFF RUN STATUS AND ALLOW THE ACS TO TURN THE PUMP ON AND OFF. CONTROL SIGNAL TO BE 24 VDC.
4 - #14 WIRES.

L. NOT USED

M. OZONE GENERATOR:
1 - CAT 6 SHIELDED ETHERNET CABLE

Q. AMBIENT MONITOR STATUS:
2 - #14 WIRES.

S. OZONE OFFGAS DESTRUCT
4 - #14 WIRES.

T. ELECTRICALLY ACTUATED VALVES:
120 VAC POWER IS SOURCED FROM ACS CONTROL CABINET.
7 - #14 WIRES PER ACTUATOR, INCLUDES GROUND.
1 - OPEN
1 - CLOSE
1 - OPENED INDICATOR
1 - CLOSED INDICATOR
1 - VALVE HEATER
1 - NEUTRAL
1 - GROUND

W. CO2 FEEDER:
AT THE CO2 FEEDER ELECTRICAL CONTRACTOR IS PROVIDING A RELAY DEVICE TO INDICATE ON/OFF RUN STATUS AND ALLOW THE ACS TO TURN THE FEEDER ON AND OFF. SEE ELECTRICAL DRAWINGS
4 - #14 WIRES.

NOTES:
1) ALL ACS CABINETS WILL REQUIRE POWER AS SHOWN, FROM EMERGENCY GENERATOR BACKED CIRCUITS.
2) THE CONTROL WIRING SHOWN ON THE LSC DRAWINGS IS A PLACEHOLDER FOR BID AND IS TO BE CONFIRMED BY THE ACS SUPPLIER. ACS SUPPLIER SHALL DESIGN CONTROL WIRING BASED ON THEIR SYSTEM DESIGN AND FIELD DEVICES PROCURED BY THE CONTRACTOR.
3) COORDINATE TERMINATION LOCATIONS WITH INSTALLED EQUIPMENT, VALVES, AND FIELD DEVICES.
4) ALL POWER SUPPLY WIRING IS TO RUN IN SEPARATE CONDUIT FROM CONTROL WIRING.
5) CONTRACTOR SHALL COORDINATE WITH ACS SUPPLIER FOR WIRING. ACS VENDOR SHALL PROVIDE AND INSTALL ALL CONDUIT, POWER WIRING TO FIELD DEVICES, COMMUNICATIONS WIRING, AND COMPLETE ALL WIRING TERMINATIONS. ALL WORK SHALL BE PERFORMED TO CODE REGULATIONS AND QUALITY REFERENCES GIVEN IN ELECTRICAL SPECIFICATION SUBSECTION. 2
6) CABINET ACS 006 IS LOCATED IN ELECTRICAL ROOM E122 (GENERATOR ROOM LOCATED SEPARATE FROM AQUARIUM). CABINET CONNECTS TO ELECTRICAL'S POWER GENERATOR FOR RUN TIME STATUS. ELECTRICAL WILL PROVIDE HARDWIRE CONNECTIONS FOR TRANSFER SWITCH AND ETHERNET CONNECTION FOR GENERATOR STATUS TO ACS 006 CABINET. PROVIDE FIBER LOOP TO CABINET ACS 001

LSS AUTOMATED CONTROLS SYSTEM POINTS LIST

SYSTEM	DEVICE	DESCRIPTION	HOME RUN TO:	DRAWING	CONTROL TYPE	WIRE TYPE
AQUACULTURE	AQC-PLSM01-001	AQUACULTURE TOWER WATER LEVEL	ACS-004	LS3.64	P/2	A
	AQC-BVM003-200	AQUACULTURE TOWER DISCHARGE VALVE	ACS-003	LS3.46	V/5	T
	AQC-PLSM01-002	AQUACULTURE RESERVOIR WATER LEVEL	ACS-003	LS3.44	P/3	A
	AQC-PTRN01-001	AQUACULTURE TRANSFER PUMP 1	ACS-003	LS3.44	PU/10	H
	AQC-PTRN01-002	AQUACULTURE TRANSFER PUMP 2	ACS-003	LS3.44	PU/10	H
	AQC-PFRC01-001	AQUACULTURE FRACTIONATOR PUMP	ACS-003	LS3.44	PU/2	H
	AQC-PINJ01-001	AQUACULTURE FRACTIONATOR INJECTION PUMP	ACS-004	LS3.64	PU/7	H
	AQC-TMO001-001	AQUACULTURE TEMPERATURE SENSOR	ACS-003	LS3.44	T/1	E
	AQC-FMO001-001	AQUACULTURE FLOW METER	ACS-003	LS3.44	F/4	B/C
PIABA	PBA-PLSM01-001	PIABA TOWER WATER LEVEL	ACS-004	LS3.64	P/2	A
	PBA-BLVM002-200	PIABA TOWER DISCHARGE VALVE	ACS-003	LS3.46	V/5	T
	PBA-PLSM01-002	PIABA RESERVOIR WATER LEVEL	ACS-003	LS3.46	P/3	A
	PBA-PTRN01-001	PIABA TRANSFER PUMP 1	ACS-003	LS3.46	PU/10	H
	PBA-PTRN01-002	PIABA TRANSFER PUMP 2	ACS-003	LS3.46	PU/10	H
	PBA-TMO001-001	PIABA TEMPERATURE SENSOR	ACS-003	LS3.47	T/1	E
	PBA-FMO001-001	PIABA FLOW METER	ACS-003	LS3.46	F/4	B/C
	PBA-PHM001-001	PIABA pH SENSOR	ACS-003	LS3.47	pH/1	B/D
	PBA-CO2M01-001	PIABA CO2 AMBIENT MONITOR	ACS-003	LS3.47	C/1	Q
	PBA-CO2F01-001	PIABA CO2 FEEDER	ACS-003	LS3.47	C/2	W
HC1	HC1-PTRN01-001	CORAL HOLDING 1 TRANSFER PUMP	ACS-001	LS3.48	PU/11	H
	HC1-FMO001-001	CORAL HOLDING 1 FLOW METER	ACS-001	LS3.48	F/4	B/C
	HC1-TMO001-001	CORAL HOLDING 1 TEMPERATURE SENSOR	ACS-001	LS3.48	T/1	E
HC2	HC2-PTRN01-001	CORAL HOLDING 2 TRANSFER PUMP	ACS-001	LS3.48	PU/11	H
	HC2-FMO002-001	CORAL HOLDING 2 FLOW METER	ACS-001	LS3.48	F/4	B/C
	HC2-TMO002-001	CORAL HOLDING 2 TEMPERATURE SENSOR	ACS-001	LS3.48	T/1	E
CUTTLEFISH	CTF-PLSM01-001	CUTTLEFISH RESERVOIR LEVEL SENSOR	ACS-005	LS3.39	P/3	A
	CTF-TMO001-001	CUTTLEFISH TEMPERATURE SENSOR	ACS-005	LS3.39	T/1	E
	CTF-FMO001-001	CUTTLEFISH FLOW METER	ACS-005	LS3.39	F/4	B/C
	CTF-PTRN01-001	CUTTLEFISH TRANSFER PUMP 1	ACS-005	LS3.39	PU/19	K
	CTF-PTRN01-002	CUTTLEFISH TRANSFER PUMP 2	ACS-005	LS3.39	PU/19	K
SPINY LUMP-SUCKERS	LPS-PLSM01-001	SPINY LUMPSUCKERS RESERVOIR LEVEL SENSOR	ACS-005	LS3.39	P/3	A
	LPS-TMO001-001	SPINY LUMPSUCKERS TEMPERATURE SENSOR	ACS-005	LS3.39	T/1	E
	LPS-FMO001-001	SPINY LUMPSUCKERS FLOW METER	ACS-005	LS3.39	F/4	B/C
	LPS-PTRN01-001	SPINY LUMPSUCKERS PUMP 1	ACS-005	LS3.39	PU/19	K
	LPS-PTRN01-002	SPINY LUMPSUCKERS PUMP 2	ACS-005	LS3.39	PU/19	K
PACIFIC ROCKY COAST	PRC-PLSM01-001	PACIFIC ROCKY COAST RESERVOIR LEVEL SENSOR	ACS-005	LS3.39	P/3	A
	PRC-TMO001-001	PACIFIC ROCKY COAST TEMPERATURE SENSOR	ACS-005	LS3.39	T/1	E
	PRC-FMO001-001	PACIFIC ROCKY COAST FLOW METER	ACS-005	LS3.39	F/4	B/C
	PRC-PTRN01-001	PACIFIC ROCKY COAST PUMP 1	ACS-005	LS3.39	PU/19	K
	PRC-PTRN01-002	PACIFIC ROCKY COAST PUMP 2	ACS-005	LS3.39	PU/19	K
WEEDY SEA DRAGONS	WSD-PLSM01-001	WEEDY SEA DRAGONS RESERVOIR LEVEL SENSOR	ACS-005	LS3.39	P/3	A
	WSD-TMO001-001	WEEDY SEA DRAGONS TEMPERATURE SENSOR	ACS-005	LS3.39	T/1	E
	WSD-FMO001-001	WEEDY SEA DRAGONS FLOW METER	ACS-005	LS3.39	F/4	B/C
	WSD-PTRN01-001	WEEDY SEA DRAGONS COAST PUMP 1	ACS-005	LS3.39	PU/19	K
	WSD-PTRN01-002	WEEDY SEA DRAGONS PUMP 2	ACS-005	LS3.39	PU/19	K
BACKWASH RECOVERY	REC-PLSM02-001	RECOVERY DIRTY BASIN LEVEL	ACS-002	LS3.14	P/4	A
	REC-PLSM02-002	RECOVERY INTERMEDIATE BASIN LEVEL	ACS-002	LS3.11	P/5	A
	REC-PLSM02-003	RECOVERY CLEAN BASIN LEVEL	ACS-002	LS3.11	P/6	A
	REC-PFIL01-001	RECOVERY DRUM FILTER PUMP 1	ACS-002	LS3.13	PU/12	F
	REC-PFIL01-002	RECOVERY DRUM FILTER PUMP 2	ACS-002	LS3.13	PU/12	F
	REC-FDR001-001	RECOVERY DRUM FILTER 1	ACS-004	LS3.53	DF/1	J
	REC-FDR001-002	RECOVERY DRUM FILTER 2	ACS-004	LS3.53	DF/1	J
	REC-BVM004-421	RECOVERY PUMP SUCTION VALVE	ACS-002	LS3.13	V/6	T
	REC-BVM004-422	RECOVERY PUMP SUCTION VALVE	ACS-002	LS3.13	V/6	T
	REC-BVM004-423	RECOVERY PUMP DISCHARGE VALVE	ACS-002	LS3.13	V/7	T
	REC-BVM004-424	RECOVERY FILTER DISCHARGE VALVE	ACS-002	LS3.31	V/8	T
	REC-BVM004-425	RECOVERY BACKWASH DISCHARGE VALVE	ACS-002	LS3.31	V/9	T
	REC-BVM004-426	RECOVERY BACKWASH SUPPLY VALVE	ACS-002	LS3.31	V/10	T
	REC-BVM004-431	RECOVERY PUMP SUCTION VALVE	ACS-002	LS3.13	V/6	T
	REC-BVM004-432	RECOVERY PUMP SUCTION VALVE	ACS-002	LS3.13	V/6	T
	REC-BVM004-433	RECOVERY PUMP DISCHARGE VALVE	ACS-002	LS3.13	V/7	T
	REC-BVM004-434	RECOVERY FILTER DISCHARGE VALVE	ACS-002	LS3.33	V/8	T
	REC-BVM004-435	RECOVERY BACKWASH DISCHARGE VALVE	ACS-002	LS3.33	V/9	T
	REC-BVM004-436	RECOVERY BACKWASH SUPPLY VALVE	ACS-002	LS3.33	V/10	T
	REC-PFIL02-001	RECOVERY SAND FILTER PUMP 1	ACS-002	LS3.13	PU/13	F
	REC-PFIL02-002	RECOVERY SAND FILTER PUMP 2	ACS-002	LS3.13	PU/13	F
	REC-FMO001-001	RECOVERY SAND FILTER FLOW METER 1	ACS-002	LS3.31	F/1	B/C
	REC-FMO001-002	RECOVERY SAND FILTER FLOW METER 2	ACS-002	LS3.33	F/1	B/C
	REC-PFRC01-001	RECOVERY FRACTIONATOR PUMP	ACS-002	LS3.11	PU/14	F
	REC-PTRN01-001	RECOVERY TRANSFER PUMP 1	ACS-002	LS3.11	PU/15	F
	REC-PTRN01-002	RECOVERY TRANSFER PUMP 2	ACS-002	LS3.11	PU/15	F
	REC-FMO001-003	RECOVERY FRACTIONATOR FLOW METER	ACS-004	LS3.61	F/2	B/C
	REC-ORPM01-001	RECOVERY FRAC ORP SENSOR	ACS-004	LS3.61	O/1	B/C 4
	REC-PINJ01-001	RECOVERY FRACTIONATOR INJECTION PUMP	ACS-004	LS3.61	PU/7	H
	REC-OZOD01-001	RECOVERY OFFGAS DESTRUCT	ACS-004	LS3.53	OZ/1	S
FRESHWATER MAKEUP	FMU-FMO001-001	FWMU FILTER FLOW METER	ACS-004	LS3.51	F/5	B/C
	FMU-FMO001-002	FWMU LOOP RETURN FLOW METER	ACS-002	LS3.42	F/7	B/C
	FMU-TMO001-001	FWMU TEMPERATURE SENSOR	ACS-002	LS3.21	T/2	E
	FMU-PLSM02-001	FWMU BASIN LEVEL	ACS-002	LS3.11	P/7	A
	FMU-PLSM02-002	FWMU LOOP RETURN PRESSURE SENSOR	ACS-002	LS3.51	P/8	A
	FMU-BVM004-250	FWMU FILL VALVE	ACS-002	LS3.41	V/11	T
	FMU-BVM003-240	FWMU LOOP RETURN VALVE	ACS-002	LS3.51	V/12	T
	FMU-PTRN01-001	FWMU TRANSFER PUMP 1	ACS-002	LS3.11	PU/16	F
	FMU-PTRN01-002	FWMU TRANSFER PUMP 1	ACS-002	LS3.11	PU/16	F
	FMU-PHEX01-001	FWMU HEAT EXCHANGER PUMP	ACS-002	LS3.11	PU/3	F
SALTWATER MAKEUP	SMU-FMO001-001	SWMU LOOP RETURN FLOW METER	ACS-002	LS3.42	F/7	B/C
	SMU-TMO001-001	SWMU TEMPERATURE SENSOR	ACS-002	LS3.21	T/2	E
	SMU-PLSM02-001	SWMU MIXING BASIN LEVEL	ACS-002	LS3.11	P/3	A
	SMU-PLSM02-002	SWMU BASIN LEVEL	ACS-002	LS3.11	P/3	A
	SMU-PLSM02-003	SWMU LOOP RETURN PRESSURE SENSOR	ACS-002	LS3.51	P/8	A
	SMU-BVM003-350	SWMU LOOP RETURN VALVE	ACS-002	LS3.51	V/12	T
	SMU-PTRN01-001	SWMU TRANSFER PUMP 1	ACS-002	LS3.11	PU/16	F
	SMU-PTRN01-002	SWMU TRANSFER PUMP 2	ACS-002	LS3.11	PU/16	F
	SMU-PMIX01-001	SWMU MIXING PUMP	ACS-002	LS3.11	PU/17	F
	SMU-PHEX01-001	SWMU HEAT EXCHANGER PUMP	ACS-002	LS3.11	PU/3	F
REVERSE OSMOSIS FRESHWATER	ROF-FMO001-001	ROF LOOP RETURN FLOW	ACS-004	LS3.53	F/7	B/C
	ROF-TMO001-001	ROFW TEMPERATURE SENSOR	ACS-004	LS3.53	T/2	E
	ROF-PLSM02-001	ROFW BASIN LEVEL	ACS-004	LS3.53	P/9	A
	ROF-PLSM02-002	ROFW LOOP RETURN	ACS-004	LS3.53	P/8	A
	ROF-BLVM001-560	ROFW FILL VALVE	ACS-004	LS3.53	V/13	T
	ROF-BLVM001.5-553	ROFW LOOP RETURN VALVE	ACS-004	LS3.53	V/12	T
	ROF-PTRN01-001	ROFW TRANSFER PUMP	ACS-004	LS3.53	PU/16	F
	ROF-PHEX01-001	ROFW HEAT EXCHANGER PUMP	ACS-004	LS3.53	PU/3	F
REVERSE OSMOSIS SALTWATER	ROS-FMO001-001	ROS LOOP RETURN FLOW	ACS-004	LS3.51	F/7	B/C
	ROS-TMO001-001	ROSW TEMPERATURE SENSOR	ACS-004	LS3.51	T/2	E
	ROS-PLSM02-001	ROSW MIXING BASIN LEVEL	ACS-004	LS3.51	P/3	A
	ROS-PLSM02-002	ROSW BASIN LEVEL	ACS-004	LS3.51	P/3	A
	ROS-PLSM02-003	ROSW LOOP RETURN	ACS-004	LS3.51	P/8	A
	ROS-BLVM002-573	ROSW LOOP RETURN VALVE	ACS-004	LS3.51	V/12	T
	ROS-PTRN01-001	ROSW TRANSFER PUMP 1	ACS-004	LS3.51	PU/16	F
	ROS-PMIX01-001	ROSW MIXING PUMP	ACS-004	LS3.51	PU/17	F
	ROS-PHEX01-001	ROSW HEAT EXCHANGER PUMP	ACS-004	LS3.51	PU/3	F
GENERAL	GEN-OZGE01-001	GEN OZONE GENERATOR	ACS-004	LS3.51	OZ/3	M
	GEN-OZAM01-001	GEN OZONE MONITOR IN OZONE ENCLOSURE	ACS-004	LS3.51	OZ/2	Q
	GEN-OZAM01-002	GEN OZONE MONITOR NEAR SRK CONTACTOR	ACS-002	LS3.31	OZ/2	Q
	GEN-OZAM01-003	GEN OZONE MONITOR NEAR LCR FRACTIONATOR	ACS-001	LS3.48	OZ/2	Q
	GEN-OZAM01-004	GEN OZONE MONITOR NEAR SRK FRACTIONATORS	ACS-004	LS3.61	OZ/2	Q
	GEN-OZAM01-005	GENERAL OZONE MONITOR NEAR LCR DESTRUCT	ACS-001	LS3.68	OZ/2	Q
	GEN-OZOD01-001	GENERAL OFFGAS DESTRUCT	ACS-004	LS3.61	OZ/1	S
COLD RO	CRO-PLSM02-001	CRO BASIN LEVEL	ACS-003	LS3.44	P/3	A
	CRO-TMO001-001	CRO TEMPERATURE SENSOR	ACS-003	LS3.44	T/2	E
	ROS-BLM002-851	ROS FILL VALVE	ACS-003	LS3.44	V/15	T

LSS AUTOMATED CONTROLS SYSTEM POINTS LIST

SYSTEM	DEVICE	DESCRIPTION	HOME RUN TO:	DRAWING	CONTROL TYPE	WIRE TYPE
TOUCH TANK	TOU-PLSM01-001	TOUCH TANK POOL WATER LEVEL	ACS-003	LS3.46	P/1	A
	TOU-BLVM002-500	TOUCH TANK POOL MAKEUP VALVE	ACS-003	LS3.46	V/1	T
	TOU-PFIL01-001	TOUCH TANK FILTER PUMP 1	ACS-001	LS3.28	PU/1	F
	TOU-PFIL01-002	TOUCH TANK FILTER PUMP 2	ACS-001	LS3.28	PU/1	F
	TOU-PFIL01-003	TOUCH TANK FILTER PUMP 3	ACS-001	LS3.28	PU/1	F
	TOU-FMO001-001	TOUCH TANK FILTER FLOW METER	ACS-001	LS3.28	F/1	B/C
	TOU-FMO001-002	TOUCH TANK FILTER FLOW METER	ACS-001	LS3.28	F/1	B/C
	TOU-FMO001-003	TOUCH TANK FILTER FLOW METER	ACS-001	LS3.28	F/1	B/C
	TOU-BVM004-013	TOUCH TANK FILTER PUMP 1 DISCHARGE VALVE	ACS-001	LS3.38	V/2	T
	TOU-BVM004-023	TOUCH TANK FILTER PUMP 2 DISCHARGE VALVE	ACS-001	LS3.38	V/2	T
	TOU-BVM004-033	TOUCH TANK FILTER PUMP 3 DISCHARGE VALVE	ACS-001	LS3.38	V/2	T
	TOU-BVM004-015	TOUCH TANK FILTER 1 BACKWASH VALVE	ACS-001	LS3.38	V/3	T
	TOU-BVM004-025	TOUCH TANK FILTER 2 BACKWASH VALVE	ACS-001	LS3.38	V/3	T
	TOU-BVM004-035	TOUCH TANK FILTER 3 BACKWASH VALVE	ACS-001	LS3.38	V/3	T
	TOU-BVM008-100	TOUCH TANK BACKWASH THROTTLING VALVE	ACS-001	LS3.38	V/4	T
	TOU-PFRC01-001	TOUCH TANK FRACTIONATOR PUMP	ACS-001	LS3.28	PU/2	F
	TOU-FMO001-004	TOUCH TANK FRACTIONATOR FLOW METER	ACS-004	LS3.61	F/2	B/C
	TOU-ORPM01-003	TOUCH TANK FRAC ORP SENSOR	ACS-004	LS3.61	O/1	B/D
	TOU-PINJ02-001	TOUCH TANK FRACTIONATOR INJECTION PUMP	ACS-004	LS3.61	PU/7	H
	TOU-TMO001-001	TOUCH TANK TEMPERATURE SENSOR	ACS-001	LS3.38	T/1	E
	TOU-PHEX01-001	TOUCH TANK HEAT EXCHANGER PUMP	ACS-001	LS3.28	PU/3	F
	TOU-PLSM02-001	TOUCH TANK TOWER WATER LEVEL	ACS-001	LS3.48	P/2	A
	TOU-BVM010-200	TOUCH TANK TOWER DISCHARGE VALVE	ACS-001	LS3.28	V/5	T
	TOU-ORPM01-001	TOUCH TANK TOWER DISCHARGE ORP	ACS-001	LS3.38	O/2	B/D
	TOU-ORPM01-002	TOUCH TANK TOWER DISCHARGE ORP	ACS-001	LS3.38	O/2	B/D
SHARK	SRK-PLSM01-001	SHARK POOL WATER LEVEL	ACS-002	LS3.51	P/1	A
	SRK-PFIL01-001	SHARK FILTER PUMP 1	ACS-002	LS3.32	PU/1 - PU/18	F
	SRK-PFIL01-002	SHARK FILTER PUMP 2	ACS-002	LS3.32	PU/1	F
	SRK-PFIL01-003	SHARK FILTER PUMP 3	ACS-002	LS3.32	PU/1	F
	SRK-PFIL01-004	SHARK FILTER PUMP 4	ACS-002	LS3.32	PU/1	F
	SRK-PFIL01-005	SHARK FILTER PUMP 5	ACS-002	LS3.32	PU/1	F
	SRK-PFIL01-006	SHARK FILTER PUMP 6	ACS-002	LS3.32	PU/1	F
	SRK-PFIL01-007	SHARK FILTER PUMP 7	ACS-002	LS3.32	PU/1	F
	SRK-BVM008-013	SHARK FILTER PUMP 1 DISCHARGE VALVE	ACS-002	LS3.32	V/2	T
	SRK-BVM008-023	SHARK FILTER PUMP 2 DISCHARGE VALVE	ACS-002	LS3.32	V/2	T
	SRK-BVM008-033	SHARK FILTER PUMP 3 DISCHARGE VALVE	ACS-002	LS3.32	V/2	T
	SRK-BVM008-043	SHARK FILTER PUMP 4 DISCHARGE VALVE	ACS-002	LS3.32	V/2	T
	SRK-BVM008-053	SHARK FILTER PUMP 5 DISCHARGE VALVE	ACS-002	LS3.32	V/2	T
	SRK-BVM008-063	SHARK FILTER PUMP 6 DISCHARGE VALVE	ACS-002	LS3.32	V/2	T
	SRK-BVM008-073	SHARK FILTER PUMP 7 DISCHARGE VALVE	ACS-002	LS3.32	V/2	T
	SRK-BVM008-015	SHARK FILTER 1 BACKWASH VALVE	ACS-002	LS3.32	V/3	T
	SRK-BVM008-025	SHARK FILTER 2 BACKWASH VALVE	ACS-002	LS3.32	V/3	T
	SRK-BVM008-035	SHARK FILTER 3 BACKWASH VALVE	ACS-002	LS3.32	V/3	T
	SRK-BVM008-045	SHARK FILTER 4 BACKWASH VALVE	ACS-002	LS3.32	V/3	T
	SRK-BVM008-055	SHARK FILTER 5 BACKWASH VALVE	ACS-002	LS3.32	V/3	T
	SRK-BVM008-065	SHARK FILTER 6 BACKWASH VALVE	ACS-002	LS3.32	V/3	T
	SRK-BVM008-075	SHARK FILTER 7 BACKWASH VALVE	ACS-002	LS3.32	V/3	T
	SRK-FMO001-001	SHARK FILTER FLOW METER	ACS-002	LS3.30	F/1	B/C
	SRK-FMO001-002	SHARK FILTER FLOW METER	ACS-002	LS3.30	F/1	B/C
	SRK-FMO001-003	SHARK FILTER FLOW METER	ACS-002	LS3.30	F/1	B/C
	SRK-FMO001-004	SHARK FILTER FLOW METER	ACS-002	LS3.30	F/1	B/C
	SRK-FMO001-005	SHARK FILTER FLOW METER	ACS-002	LS3.30	F/1	B/C
	SRK-FMO001-006	SHARK FILTER FLOW METER	ACS-002	LS3.30	F/1	B/C
	SRK-FMO001-007	SHARK FILTER FLOW METER	ACS-002	LS3.30	F/1	B/C
	SRK-BVM024-100	SHARK BACKWASH THROTTLING VALVE	ACS-002	LS3.40	V/4	T
	SRK-FMO001-011	SHARK VACUUM DISCHARGE FLOW METER	ACS-002	LS3.33	F/6	B/C
	SRK-BVM004-900	SHARK VACUUM DISCHARGE VALVE	ACS-003	LS3.53	V/14	T
	SRK-TMO001-001	SHARK TEMPERATURE SENSOR	ACS-002	LS3.32	T/1	E
	SRK-PHEX01-001	SHARK HEAT EXCHANGER PUMP	ACS-002	LS3.31	PU/3	F
	SRK-PFRC01-001	SHARK FRACTIONATOR PUMP 1	ACS-002	LS3.32	PU/2	F
	SRK-PFRC01-002	SHARK FRACTIONATOR PUMP 2	ACS-002	LS3.32	PU/2	F
	SRK-FMO001-008	SHARK FRACTIONATOR FLOW METER	ACS-004	LS3.61	F/2	B/C
	SRK-FMO001-009	SHARK FRACTIONATOR FLOW METER	ACS-004	LS3.61	F/2	B/C
	SRK-ORPM01-003	SHARK FRAC ORP SENSOR	ACS-004	LS3.61	O/1	B/D
	SRK-ORPM01-004	SHARK FRAC ORP SENSOR	ACS-004	LS3.61	O/1	B/D
	SRK-PINJ02-001	SHARK FRACTIONATOR INJECTION PUMP	ACS-004	LS3.61	PU/7	H
	SRK-PINJ02-002	SHARK FRACTIONATOR INJECTION PUMP	ACS-004	LS3.61	PU/7	H
	SRK-PINJ02-003	SHARK FRACTIONATOR INJECTION PUMP	ACS-004	LS3.61	PU/7	H
	SRK-PINJ02-004	SHARK FRACTIONATOR INJECTION PUMP	ACS-004	LS3.61	PU/7	H
	SRK-PINJ01-001	SHARK OZONE INJECTION PUMP	ACS-002	LS3.31	PU/4	F
	SRK-PTRN01-001	SHARK OZONE CONTACTOR TRANSFER PUMP	ACS-002	LS3.31	PU/5	F
	SRK-PFIL02-001	SHARK CARBON FILTER PUMP	ACS-002	LS3.30	PU/6	F
	SRK-FMO001-010	SHARK CARBON FILTER FLOW METER	ACS-002	LS3.30	F/3	B/C
	SRK-ORPM01-005	SHARK SWS TO TOWER ORP SENSOR	ACS-002	LS3.31	O/3	B/D
	SRK-ORPM01-007	SHARK CONTACTOR DISCHARGE ORP SENSOR	ACS-002	LS3.31	O/5	B/D
	SRK-PLSM02-001	SHARK TOWER WATER LEVEL	ACS-004	LS3.51	P/2	A
	SRK-BVM018-207	SHARK TOWER DISCHARGE VALVE	ACS-002	LS3.33	V/5	T
	SRK-ORPM01-001	SHARK TOWER DISCHARGE ORP	ACS-004	LS3.51	O/2	B/D
	SRK-ORPM01-002	SHARK TOWER DISCHARGE ORP	ACS-004	LS3.51	O/2	B/D
	SRK-ORPM01-006	SHARK POOL RETURN ORP	ACS-002	LS3.32	O/4	B/D
LIVE CORAL	LCR-PLSM02-002	LIVE CORAL TOWER WATER LEVEL	ACS-001	LS3.48	P/2	A
	LCR-BVM006-200	LIVE CORAL TOWER DISCHARGE VALVE	ACS-001	LS3.48	V/5	T
	LCR-ORPM01-001	LIVE CORAL TOWER DISCHARGE ORP	ACS-001	LS3.48	O/2	B/D
	LCR-ORPM01-002	LIVE CORAL TOWER DISCHARGE ORP	ACS-001	LS3.48	O/2	B/D
	LCR-FDR001-001	LIVE CORAL DRUM FILTER	ACS-001	LS3.48	DF/1	J
	LCR-PREC01-001	LIVE CORAL TRANSFER PUMP 1	ACS-001	LS3.28	PU/8	F
	LCR-PREC01-002	LIVE CORAL TRANSFER PUMP 2	ACS-001	LS3.28	PU/8	F
	LCR-PFIL01-001	LIVE CORAL GLASS FILTER PUMP	ACS-001	LS3.28	PU/9	F
	LCR-FMO001-001	LIVE CORAL FILTER FLOW METER	ACS-001	LS3.28	F/1	B/C
	LCR-PLSM02-001	LIVE CORAL RESERVOIR WATER LEVEL	ACS-001	LS3.28	P/3	A
	LCR-PFRC01-001	LIVE CORAL FRACTIONATOR PUMP	ACS-001	LS3.28	PU/2	F
	LCR-ORPM01-003	LIVE CORAL FRAC ORP SENSOR	ACS-001	LS3.48	O/1	B/D
	LCR-PINJ01-001	LIVE CORAL FRACTIONATOR INJECTION PUMP	ACS-001	LS3.48	PU/7	H
	LCR-TMO001-001	LIVE CORAL TEMPERATURE SENSOR	ACS-001	LS3.48	T/1	E
	LCR-PHEX01-001	LIVE CORAL HEAT EXCHANGER PUMP	ACS-001	LS3.28	PU/3	F
	LCR-PFIL02-001	LIVE CORAL FILTER PUMP	ACS-001	LS3.28	PU/10	F
	LCR-PREF01-001	LIVE CORAL REFUGIUM PUMP	ACS-001	LS3.28	PU/10	F
	LCR-PCAL01-001	LIVE CORAL CALCIUM REACTOR PUMP	ACS-001	LS3.28	PU/10	H
	LCR-PREC02-001	LIVE CORAL RECIRC PUMP 1	ACS-001	LS3.28	PU/10	F
	LCR-PREC02-002	LIVE CORAL RECIRC PUMP 2	ACS-001	LS3.28	PU/10	F
	LCR-PREC03-001	LIVE CORAL RECIRC PUMP TO HOLDING	ACS-001	LS3.28	PU/10	H
	LCR-CO2M01-001	LIVE CORAL CO2 AMBIENT MONITOR	ACS-001	LS3.48	C/1	Q

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

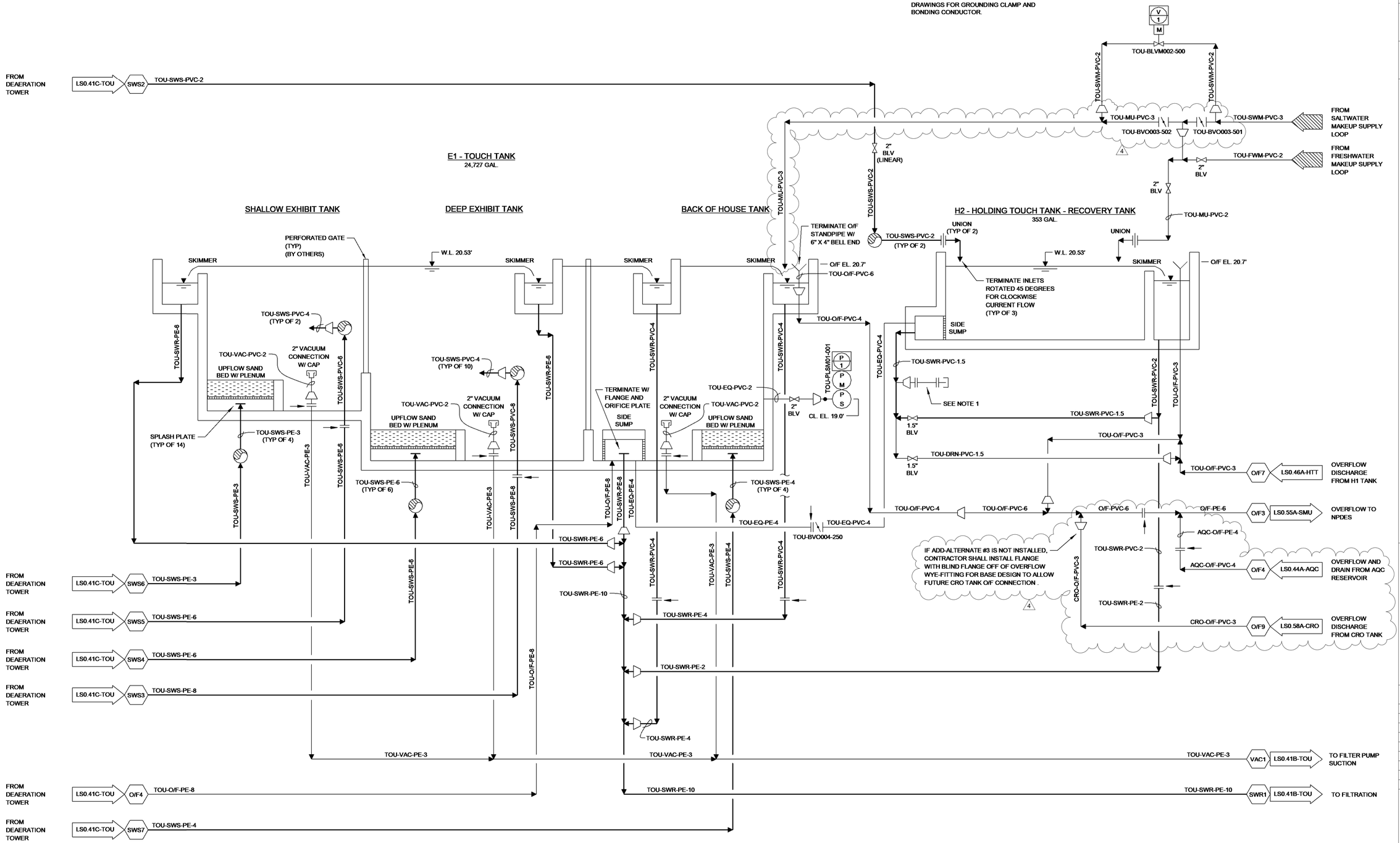
900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST

NOTE:

1. SEGMENT FOR EQUIPOTENTIAL BONDING. 2" BY 6" LONG TITANIUM NIPPLE INTO THREADED COUPLING. SEE ELECTRICAL DRAWINGS FOR GROUNDING CLAMP AND BONDING CONDUCTOR.



TOUCH TANK EXHIBIT AND HOLDING - PIPING AND INSTRUMENTATION DIAGRAM

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
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900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.765.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # P-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
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FAX: 919.419.1669
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LICENSE # C-098

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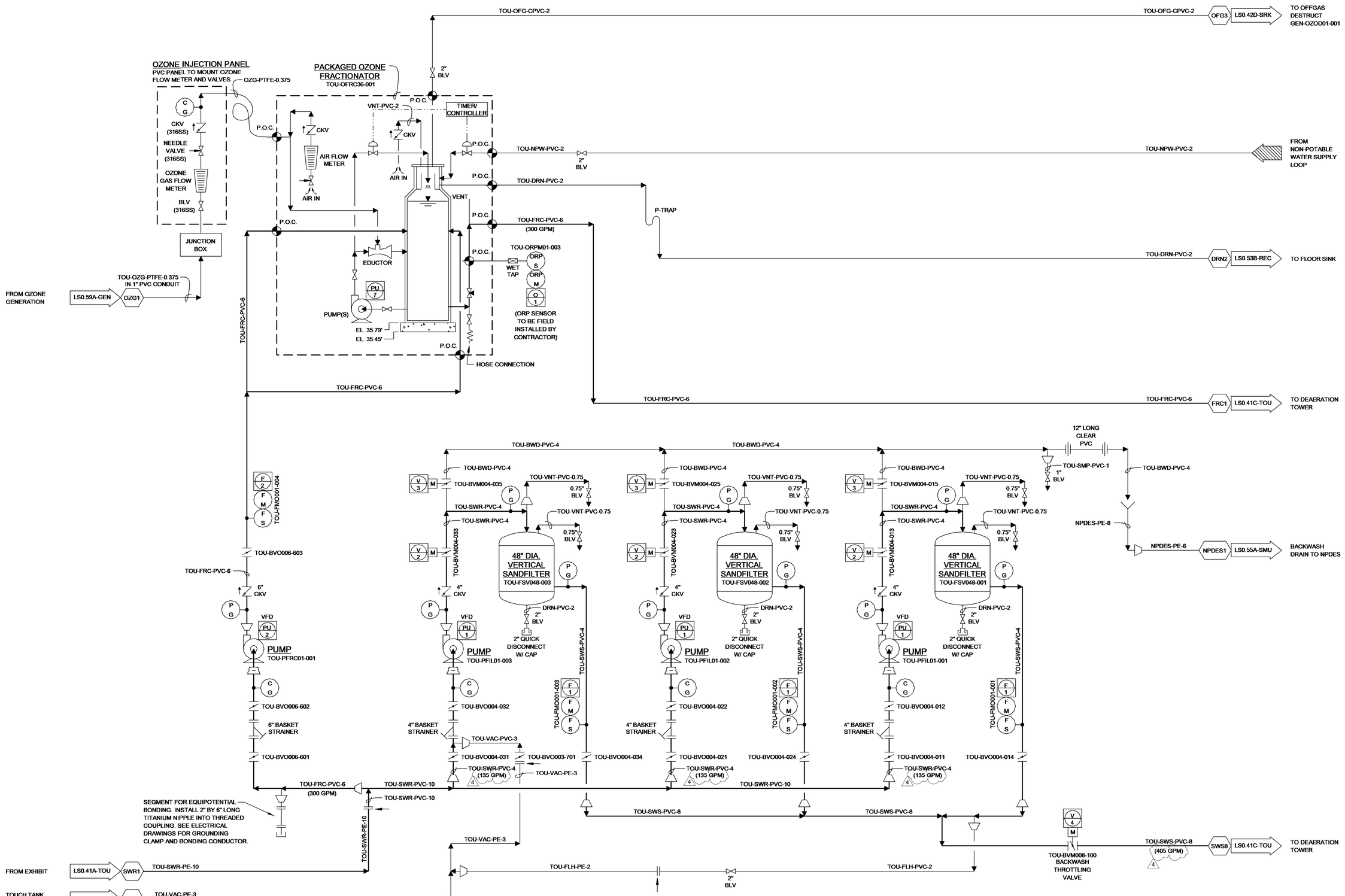
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TOUCH TANK EXHIBIT AND HOLDING - PIPING AND INSTRUMENTATION DIAGRAM

LS0.41A-TOU

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FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
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TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
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TELE: 617.760.8690
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
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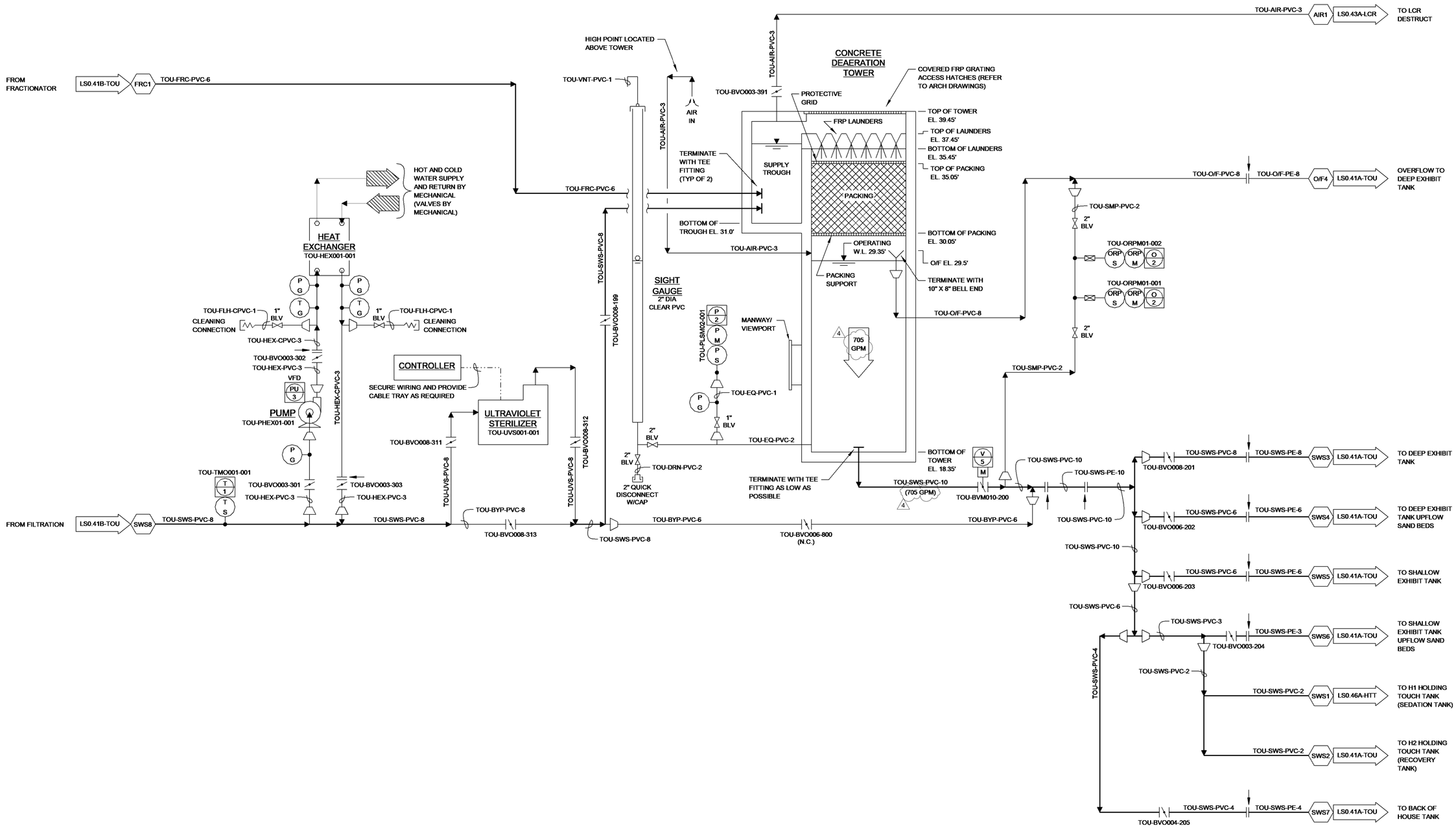
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LS0.41B-TOU

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TOUCH TANK EXHIBIT AND HOLDING - PIPING AND INSTRUMENTATION DIAGRAM

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ARCHITECT
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CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.3244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
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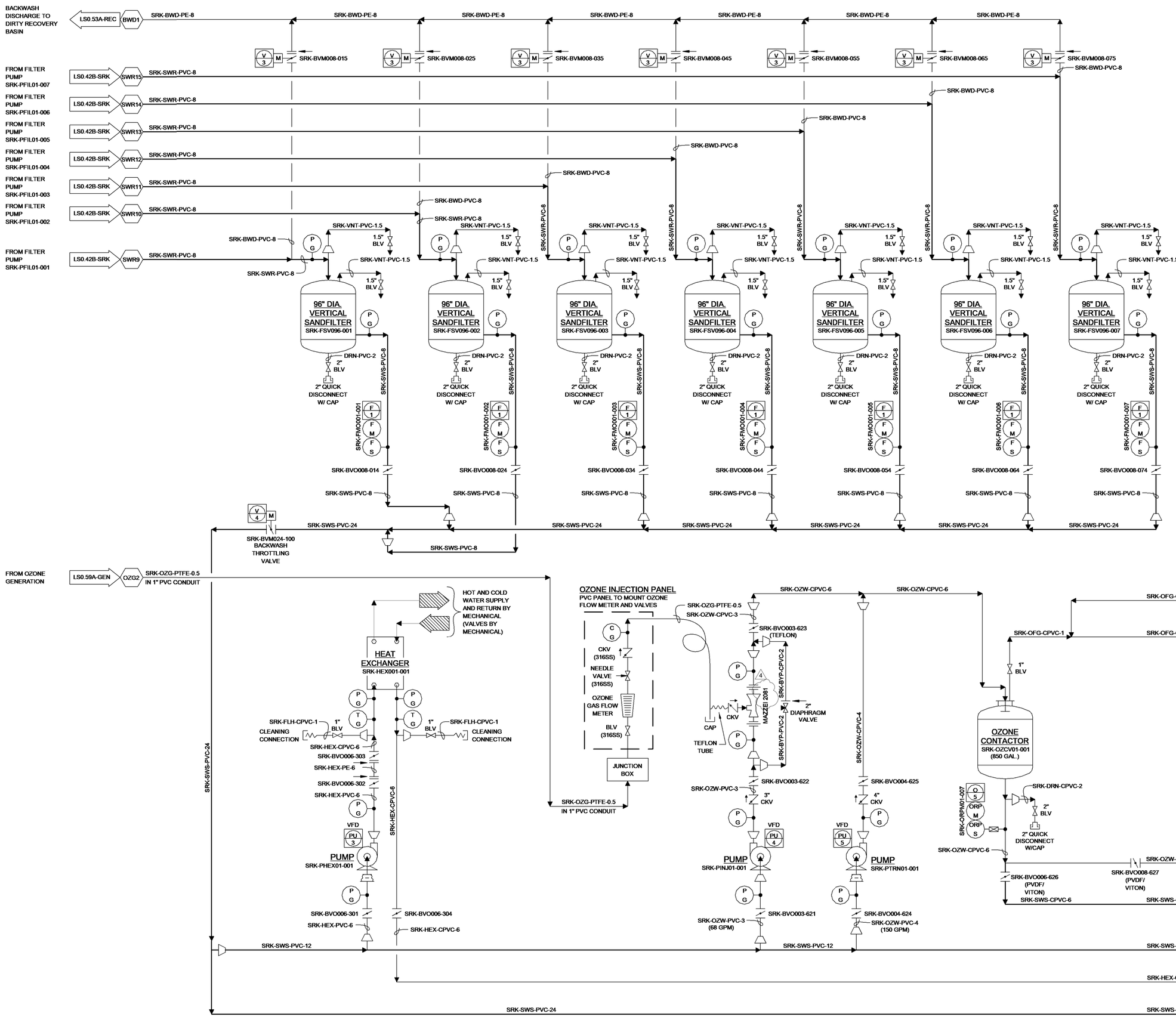
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SAND TIGER SHARK EXHIBIT AND HOLDING - PIPING AND INSTRUMENTATION DIAGRAM

LS0.42C-SRK

SAND TIGER SHARK EXHIBIT AND HOLDING - PIPING AND INSTRUMENTATION DIAGRAM

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OFFGAS FROM SRK FRACTIONATOR — LS0.42B-SRK — OFG1 — SRK-OFG-CPVC-2

OFFGAS FROM SRK FRACTIONATOR — LS0.42B-SRK — OFG2 — SRK-OFG-CPVC-2

OFFGAS FROM TOU FRACTIONATOR — LS0.41B-TOU — OFG3 — TOU-OFG-CPVC-2

OFFGAS FROM REC FRACTIONATORS — LS0.53B-REC — OFG4 — REC-OFG-CPVC-2

GEN-OFG-CPVC-3

GEN-OFG-CPVC-3 (50 SCFM)

P.O.C.

OFFGAS DESTRUCT GEN-OZOD01-001 (OZ 1)

DEMISTER

GEN-VNT-CPVC-3 → ROUTE NEAR GEN-OZAM01-004 AMBIENT MONITOR

0.5" PVC PETCOCK VALVE

WARNING: .....

PROVIDE SIGN (NEAR DESTRUCT DISCHARGE)

VENT TO OUTSIDE AIR, TERMINATE GOOSENECK OUTSIDE WITH 316SS MESH BIRD SCREEN W/ 0.25" OPENINGS.

SRK-AIR-CPVC-8

INSTALL FLEX PVC CONNECTION PER BLOWER MANUFACTURER

AIR BLOWER SRK-ABO002-001

SRK-AIR-CPVC-8 (550 SCFM) 4

TOP ACCESS HATCHES (REFER TO ARCH DRAWINGS)

FROM FRACTIONATOR — LS0.42B-SRK — FRC2 — SRK-FRC-PVC-10

FROM FRACTIONATOR — LS0.42B-SRK — FRC1 — SRK-FRC-PVC-10

SRK-FRC-PVC-10

SRK-FRC-PVC-10

FRP LAUNDERS

PROTECTIVE GRID

SUPPLY TROUGH

PACKING

PACKING SUPPORT

BOTTOM OF CONCRETE LID EL. 45.17'

TOP OF LAUNDER EL. 43.75'

BOTTOM OF LAUNDER EL. 41.75'

TOP OF PACKING EL. 41.50'

BOTTOM OF PACKING EL. 38.50'

O/F EL. 38.0'

OFFGAS TO FRACTIONATORS — LS0.42C-SRK — OFG2 — SRK-OFG-CPVC-1

FROM OZONE CONTACTOR — LS0.42C-SRK — OZW1 — SRK-OZW-CPVC-6

1" BLV

1" BLV

KEEP VENT VALVE PARTIALLY OPEN WHEN CARBON FILTER IS OPERATING DOWNSTREAM OF OZONE CONTACTOR

SRK-OFG-CPVC-1

SRK-OZW-CPVC-8

TERMINATE O/F STANDPIPE WITH 24" X 18" BELL END

SIGHT GAUGE 2" DIA CLEAR PVC

BOTTOM OF TROUGH EL. 35.42'

OPERATING W.L. 37.83'

SRK-O/F-PVC-24

SRK-SWS-PVC-24

CONCRETE DEAERATION TOWER

5,400 MAX GPM

SRK-O/F-PVC-18

SRK-AIR-PVC-4 (TYP OF 2)

SRK-AIR-PVC-8

HIGH LOOP ABOVE TOP OF TOWER

SRK-AIR-PVC-8 (550 SCFM) 4

INSTALL FLEX PVC CONNECTOR PER BLOWER MANUFACTURER

ADJUSTABLE CPVC BUTTERFLY DAMPER PER MANUFACTURER

AIR IN

INLET GUARD PER BLOWER MANUFACTURER

AIR BLOWER SRK-ABO001-001

BACKWASH DISCHARGE TO DIRTY RECOVERY BASIN — LS0.53A-REC — BWD2 — SRK-BWD-PE-6

SRK-BVO006-635

SRK-BWD-CPVC-6

SRK-SWS-CPVC-6

SRK-SWS-CPVC-6

SRK-VNT-PVC-1.5

1.5" BLV

96" DIA. CARBON FILTER SRK-FCV096-001

SRK-BVO006-632

6" CKV

VFD

PUMP SRK-PFIL02-001

SRK-BVO006-633 (PVDF/VITON)

SRK-FMO001-010

SRK-BVO006-631

SRK-SWS-PVC-6

SRK-SWS-CPVC-6

SRK-BVO024-801

MANWAY/ VIEWPORT

SRK-ORPM01-005

2" BLV

2" BLV

SRK-SMP-PVC-2

SRK-PLSM02-001

1" BLV

SRK-EQ-PVC-1

SRK-EQ-PVC-2

2" BLV

2" BLV

SRK-DRN-PVC-2

2" QUICK DISCONNECT W/CAP

EXTEND PIPE IN TOWER

SRK-SMP-PVC-2

SRK-ORPM01-001

SRK-ORPM01-002

2" BLV

2" BLV

SRK-SMP-PVC-2 → SMP1 — LS0.42A-SRK — TO H3 HOLDING TANK SKIMMER

SRK-O/F-PVC-18 → O/F2 — LS0.42A-SRK — OVERFLOW TO H3 HOLDING TANK

SRK-SWS-PVC-18

SRK-BVO018-200

SRK-SWS-PVC-18

EL. 24.83'

SRK-BYP-PVC-18

FROM FILTRATION — LS0.42C-SRK — SWS7 — SRK-SWS-PVC-12

FROM OZONE CONTACTOR — LS0.42C-SRK — SWS8 — SRK-SWS-CPVC-6

SRK-SWS-CPVC-6

SRK-SWS-CPVC-12

FROM HEAT EXCHANGER — LS0.42C-SRK — HEX1 — SRK-HEX-CPVC-6

SRK-HEX-CPVC-6

FROM FILTRATION — LS0.42C-SRK — SWS6 — SRK-SWS-PVC-24

SRK-SWS-PVC-24

SRK-BYP-PVC-18

SRK-BVO018-800 (N.C.)

SRK-BYP-PVC-18

SRK-SWS-PVC-18

SRK-BVM018-207

SRK-SWS-PVC-18

SRK-RIP-PVC-6 → RIP1 — LS0.42A-SRK — TO MAIN TANK RIPPLE EFFECTS

SRK-BVO006-206

SRK-SWS-PVC-8 → SWS4 — LS0.42A-SRK — TO NORTH WEST HOLDING TANK

SRK-BVO008-201

SRK-SWS-PVC-24

SRK-SWS-PVC-12 → SWS5 — LS0.42A-SRK — TO H3 HOLDING TANK

SRK-BVO012-202

SRK-SWS-PVC-16 → SWS1 — LS0.42A-SRK — TO MAIN TANK

SRK-BVO016-203

SRK-SWS-PVC-24 → SRK-SWS-PE-24 → SWS2 — LS0.42A-SRK — TO MAIN TANK UPFLOW SAND BED

SRK-BVO024-204

SRK-SWS-PVC-24

SRK-SWS-PVC-8 → SWS3 — LS0.42A-SRK — TO SOUTH EAST HOLDING TANK

SRK-BVO008-205

SRK-SWS-PVC-18

SAND TIGER SHARK EXHIBIT AND HOLDING - PIPING AND INSTRUMENTATION DIAGRAM

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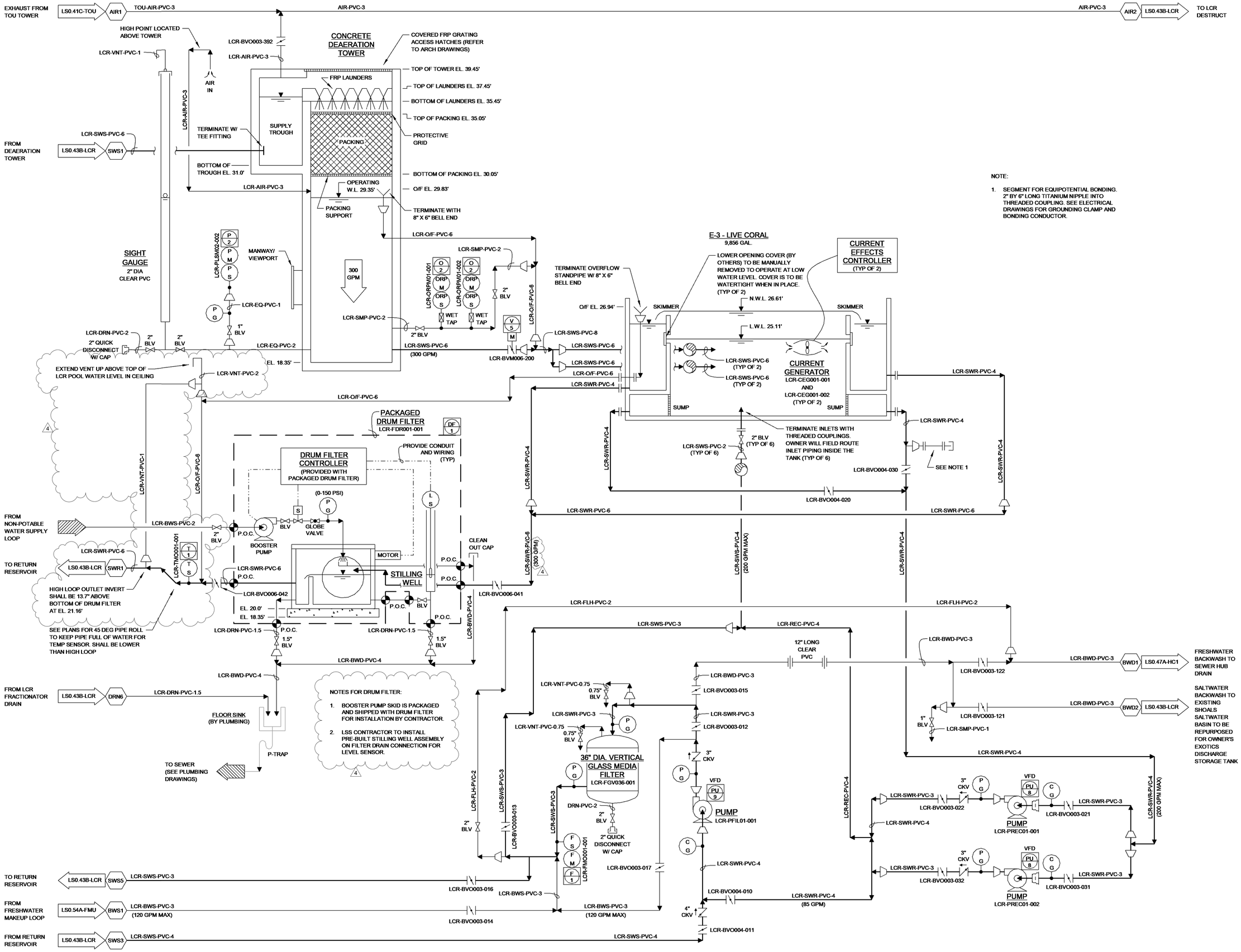
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LS0.42D-SRK

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NOTE:

1. SEGMENT FOR EQUIPOTENTIAL BONDING. 2" BY 6" LONG TITANIUM NIPPLE INTO THREADED COUPLING. SEE ELECTRICAL DRAWINGS FOR GROUNDING CLAMP AND BONDING CONDUCTOR.

LIVE CORAL - PIPING AND INSTRUMENTATION DIAGRAM

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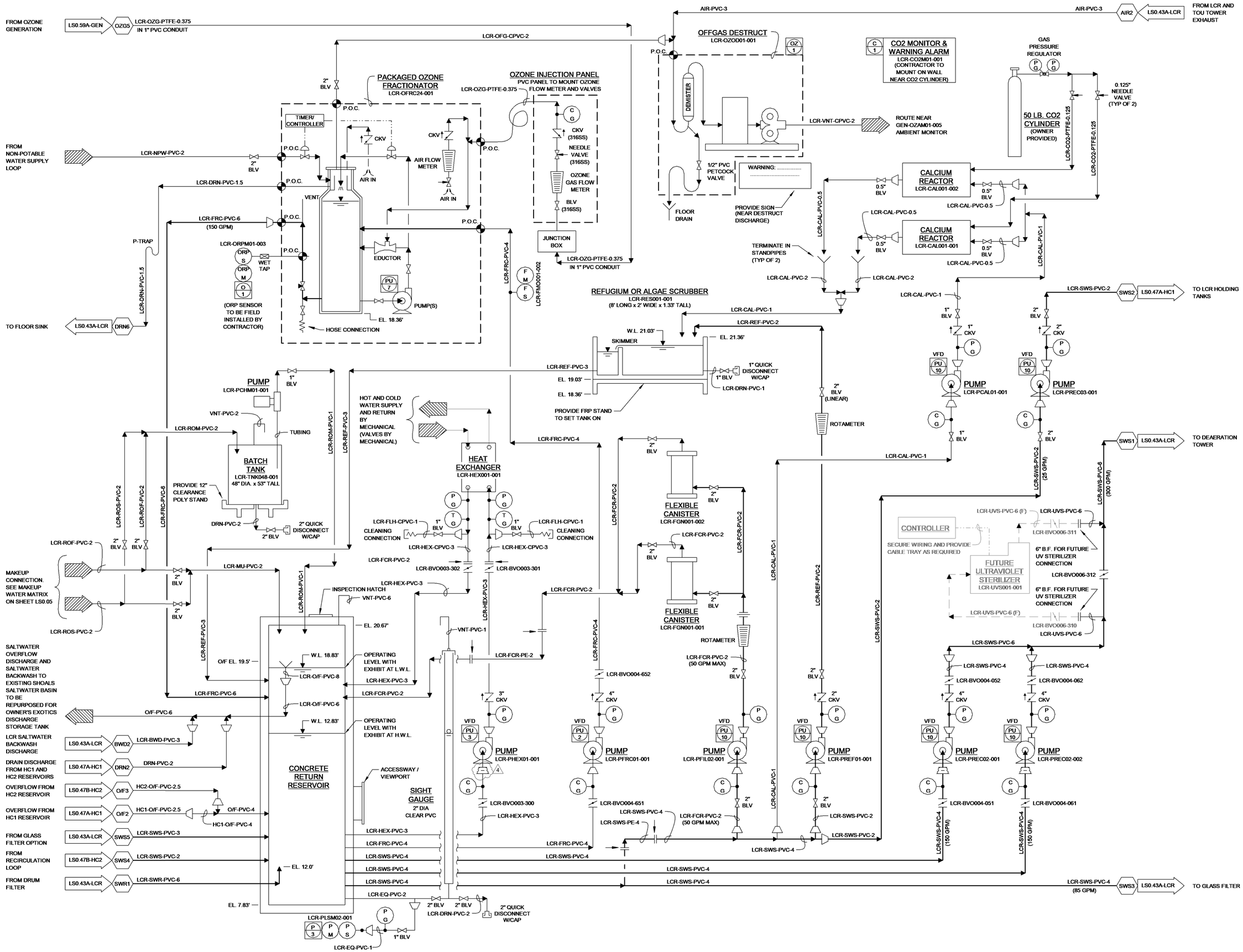
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LIVE CORAL - PIPING AND INSTRUMENTATION DIAGRAM

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LIVE CORAL - PIPING AND INSTRUMENTATION DIAGRAM

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CODE: 42014-4G02
ITEM: 41414-4Y4A

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56880 VENTURE LANE SUITE 200M
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7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5066
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10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTENGINEERS.COM
LICENSE # P-3152

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LANDSCAPE ARCHITECT
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DURHAM, NC 27701
TELE: 919.419.1599
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
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PALACIO COLLABORATIVE
COST ESTIMATOR
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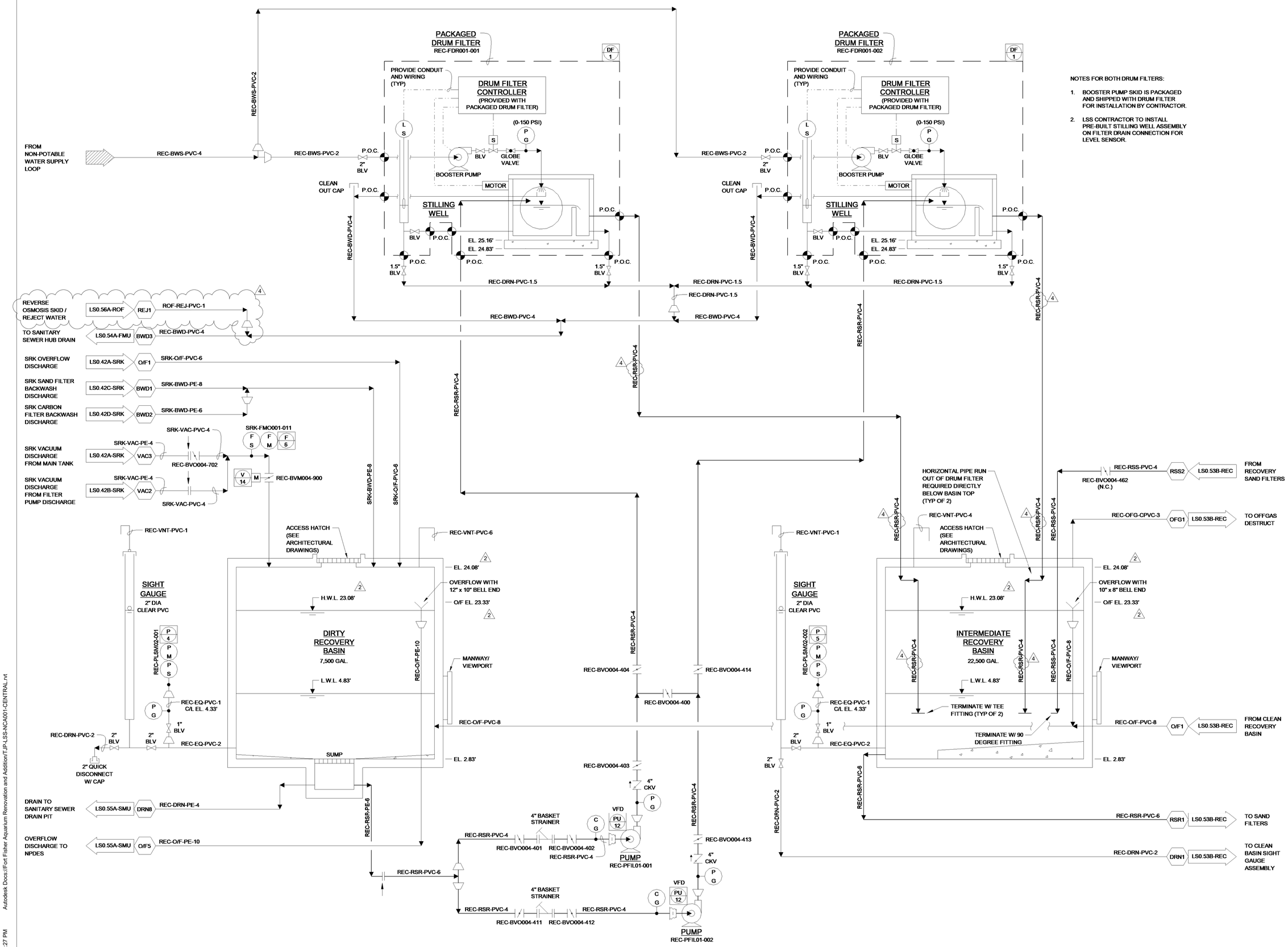
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BACKWASH RECOVERY - PIPING AND INSTRUMENTATION DIAGRAM

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200M
BEND, OR 97707
TELE: 619.423.8700
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LICENSE # C-3505

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EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5987
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
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TELE: 909.360.2900
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2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
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SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
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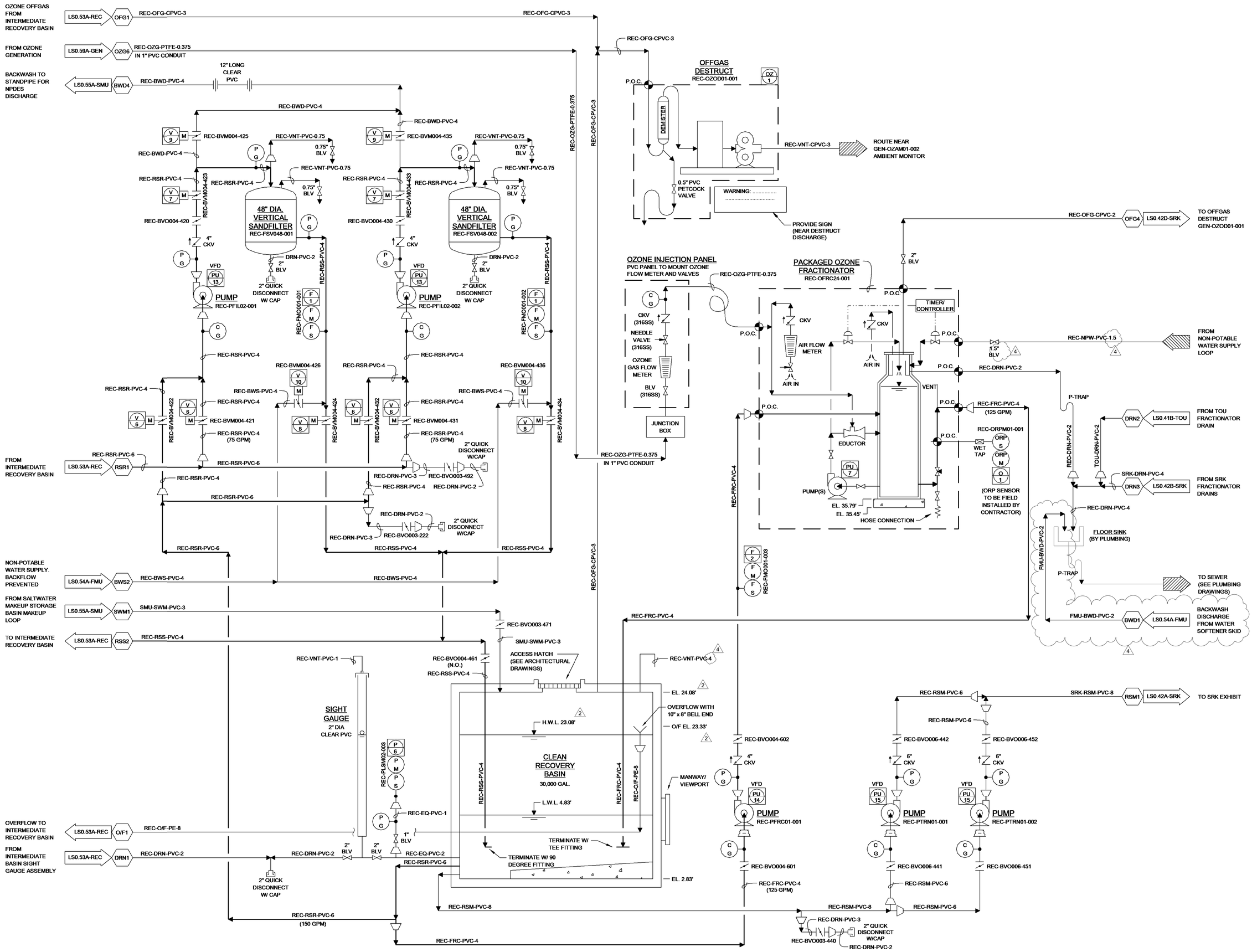
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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
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LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

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EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5066
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LIGHTING DESIGNER
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
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PALACIO COLLABORATIVE
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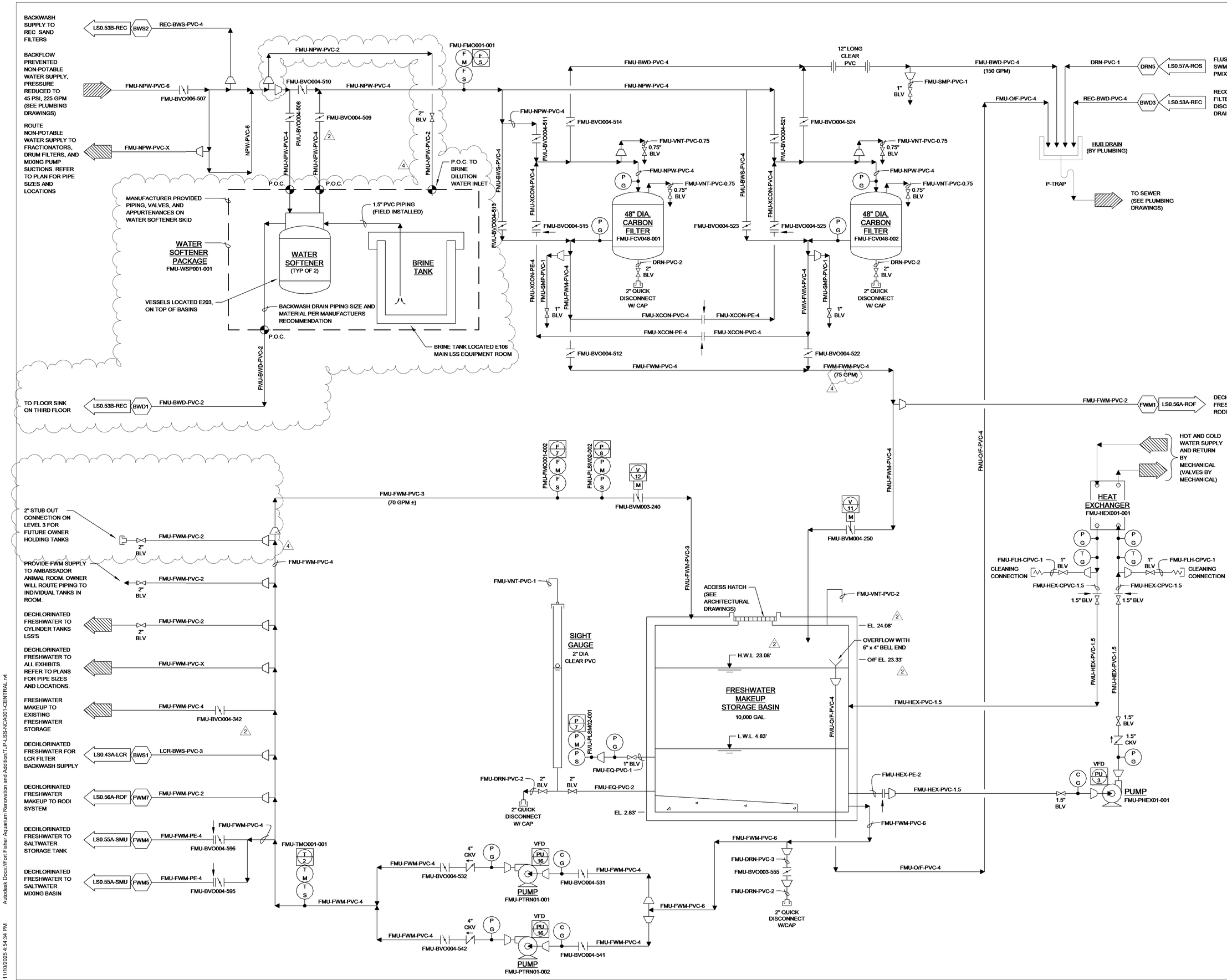
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FRESHWATER MAKEUP - PIPING AND INSTRUMENTATION DIAGRAM

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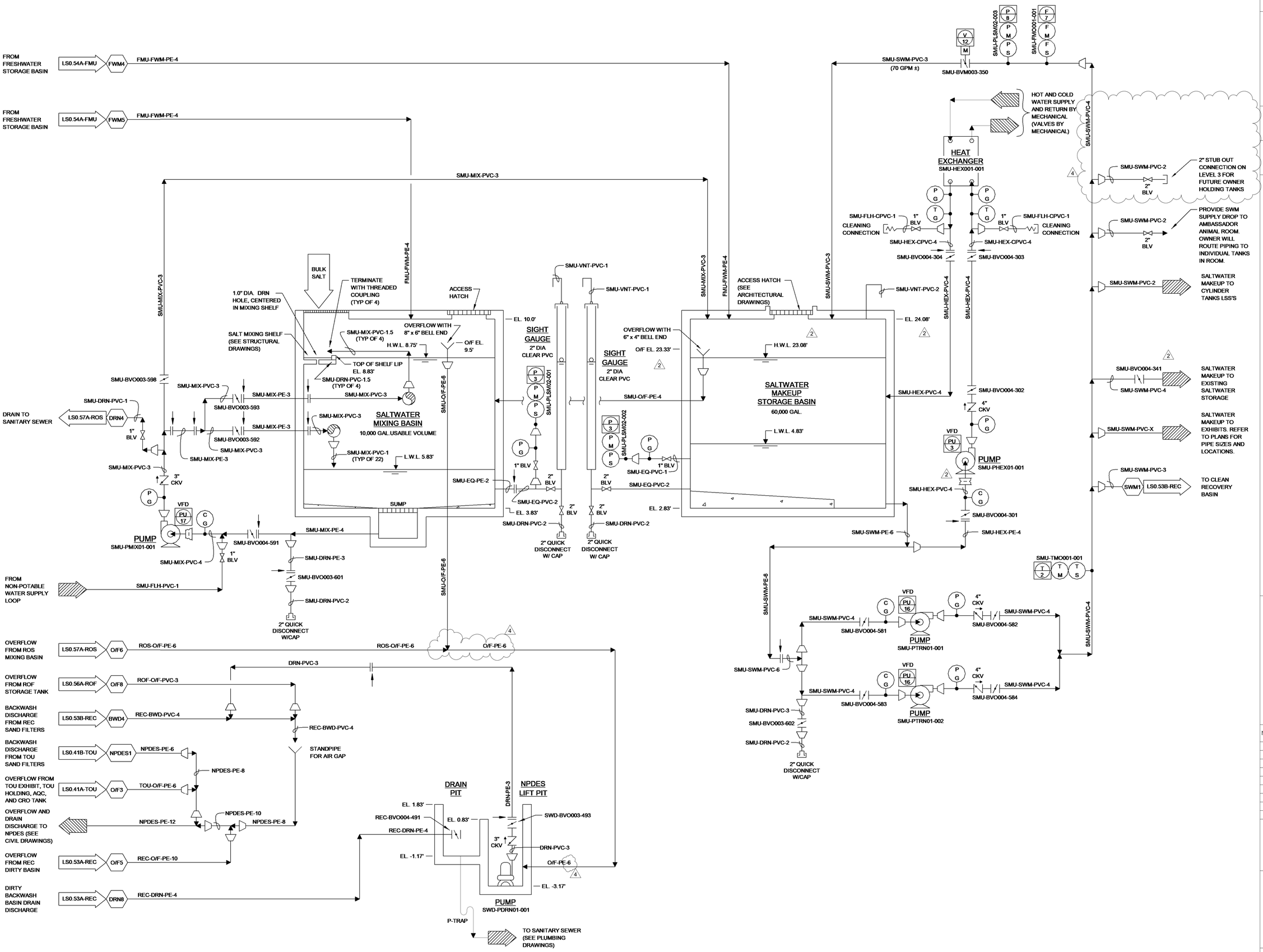
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FRESHWATER MAKEUP - PIPING AND INSTRUMENTATION DIAGRAM

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SALTWATER MAKEUP - PIPING AND INSTRUMENTATION DIAGRAM

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CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.3244
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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
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DUBLIN, OHIO 43017
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STRUCTURAL ENGINEER
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2246 YAUPON DRIVE
WILMINGTON, NC 28401
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
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SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

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FIRE PROTECTION ENGINEER
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WILMINGTON, NC 28405
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WWW.CHEATHAMPA.COM
LICENSE # C-1073

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COST ESTIMATOR
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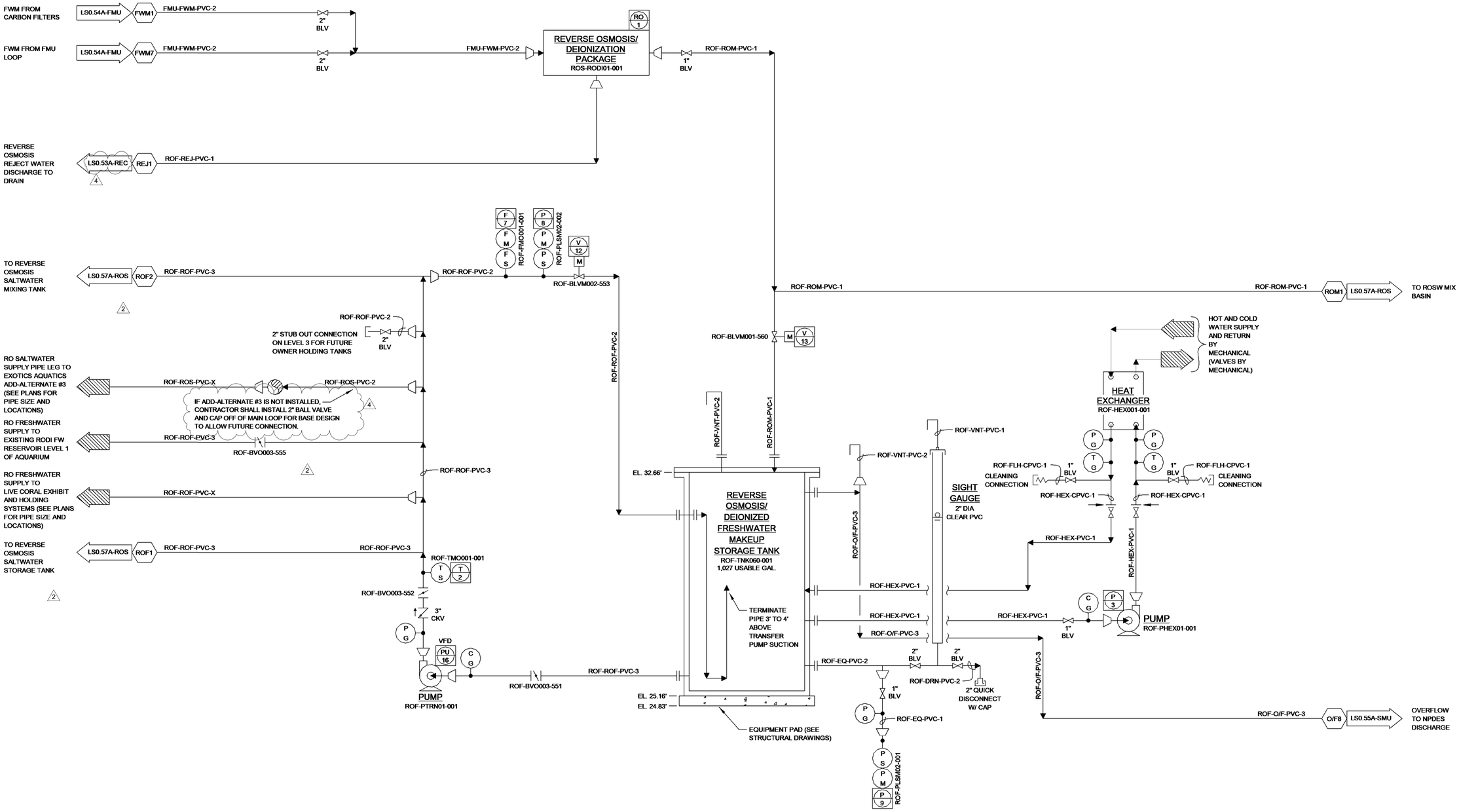
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SALTWATER MAKEUP - PIPING AND INSTRUMENTATION DIAGRAM

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REVERSE OSMOSIS/ DI FRESHWATER SYSTEM - PIPING AND INSTRUMENTATION DIAGRAM

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
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DUBLIN, OHIO 43017
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STRUCTURAL ENGINEER
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RALEIGH, NC 27607
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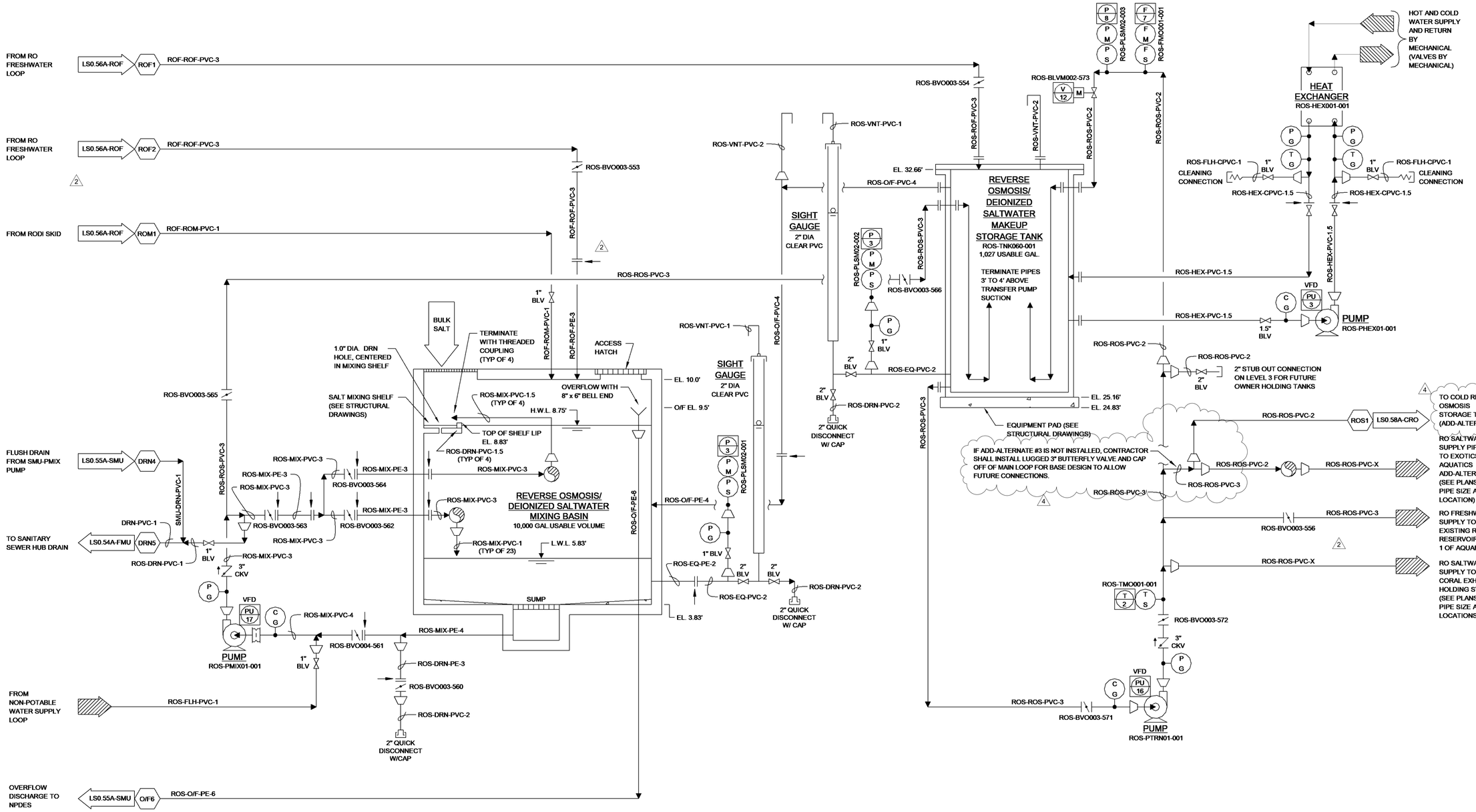
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REVERSE OSMOSIS/ DI FRESHWATER SYSTEM - PIPING AND INSTRUMENTATION DIAGRAM

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SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
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56880 VENTURE LANE SUITE 2004
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TELE: 619.423.8700
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DUBLIN, OHIO 43017
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5066
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LICENSE # P-0806

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LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.WEENGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATAMAPA.COM
LICENSE # C-1073

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DURHAM, NC 27703
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11/10/2025

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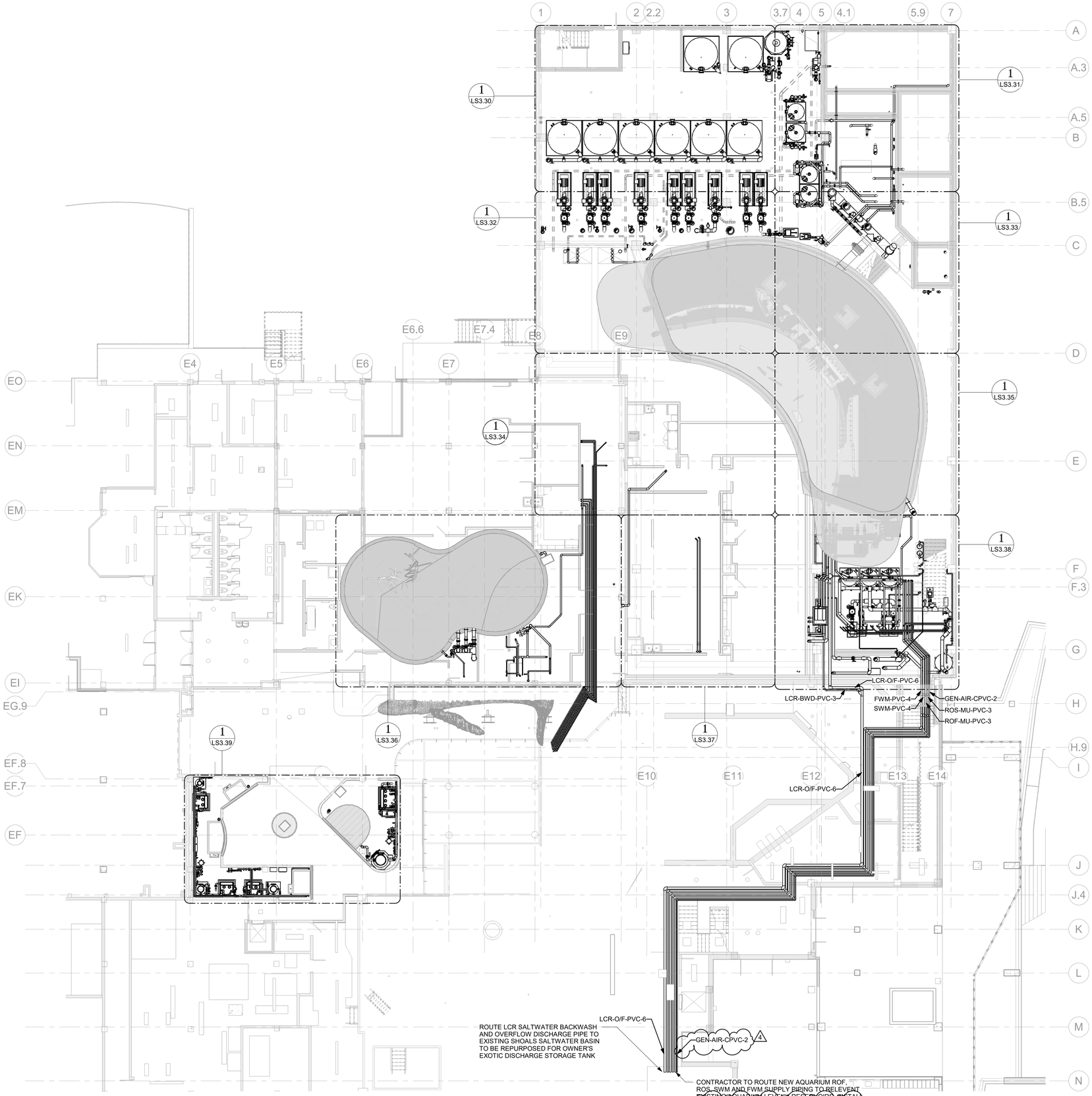
REVERSE OSMOSIS/ DI SALTWATER SYSTEM - PIPING AND INSTRUMENTATION DIAGRAM

LS0.57A-ROS

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REVERSE OSMOSIS/ DI SALTWATER SYSTEM - PIPING AND INSTRUMENTATION DIAGRAM

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1 LSS SITE PLAN - 1ST FLOOR
SCALE: 1" = 10'-0"

SCALE: 1" = 10'-0"
0 10 20 30 40

N

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200M
BEND, OR 97707
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7001 DISCOVERY BOULEVARD
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STRUCTURAL ENGINEER
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
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FAX: 910.343.9604
WWW.NTENGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
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DURHAM, NC 27701
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WILMINGTON, NC 28405
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DURHAM, NC 27703
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LSS SITE PLAN - 1ST FLOOR

LS1.11

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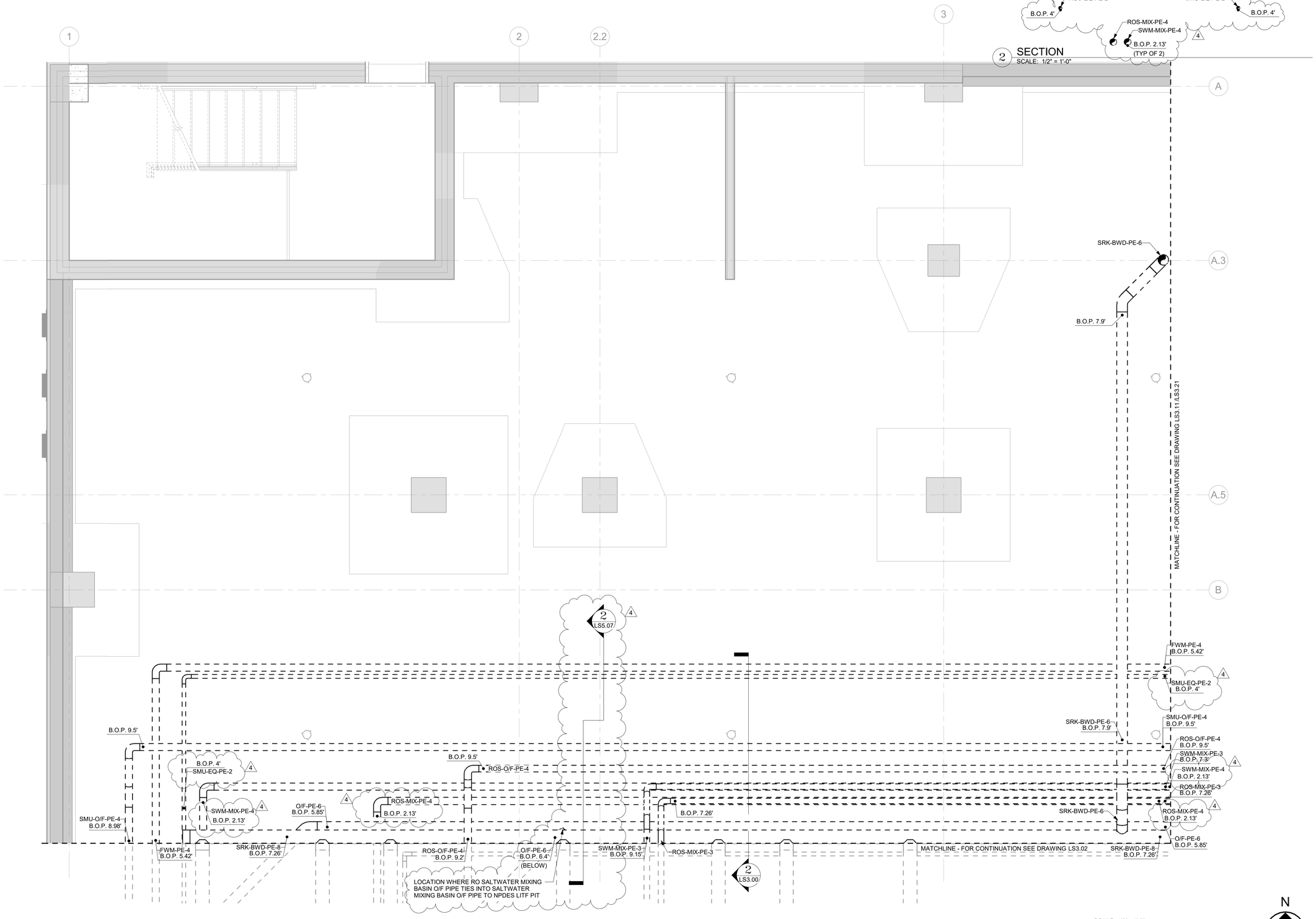
NOTES:

1. ALL UNDERGROUND LSS PIPING SHALL BE HDPE AND SHALL CONFORM WITH SPECIFICATION SECTIONS 170010 AND 170250.

2. ALL LSS PIPING IS TO BE PRESSURE TESTED PER SPECIFICATION SECTION 170010 PRIOR TO CONCEALMENT WITHIN THE BUILDING STRUCTURE OR BELOW GRADE.

3. ALL BELOW GRADE HDPE PIPING IS TO BE BUTT FUSED. IF CONTRACTOR WOULD LIKE TO REQUEST SPECIFIC LOCATIONS FOR AN ELECTROFUSION COUPLING IN AN UNDERGROUND LOCATION THEY MUST SUBMIT A SHOP DRAWING INDICATING PROPOSED COUPLING LOCATION AND DOCUMENTATION FOR ELECTROFUSION COUPLING WARRANTY FOR ENGINEER'S REVIEW AND CONFIRMATION.

4. CONTRACTOR SHALL INSTALL LONG-SWEEP RADIUS OF MOLDED OR MITERED CONSTRUCTED FITTINGS FOR 90 DEGREE FITTINGS FOR VACUUM PIPING PER SPECIFICATION SECTION 170250 FROM POOLS TO PUMP SUCTIONS.



1 ENLARGED LSS PLAN - BELOW GRADE - EL. 0' TO 10.33'
SCALE: 1/2" = 1'-0"

SZOSTAK DESIGN

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200M
BEND, OR 97707
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7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
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MEP ENGINEER
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WILMINGTON, NC 28401
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WILMINGTON, NC 28412
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SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
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LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4410
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
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11/10/2025

NO.	DATE	DESCRIPTION
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4	11-10-25	ADDENDUM #3

ENLARGED LSS PLAN - BELOW GRADE - EL. 0' TO 10.33'

LS3.00

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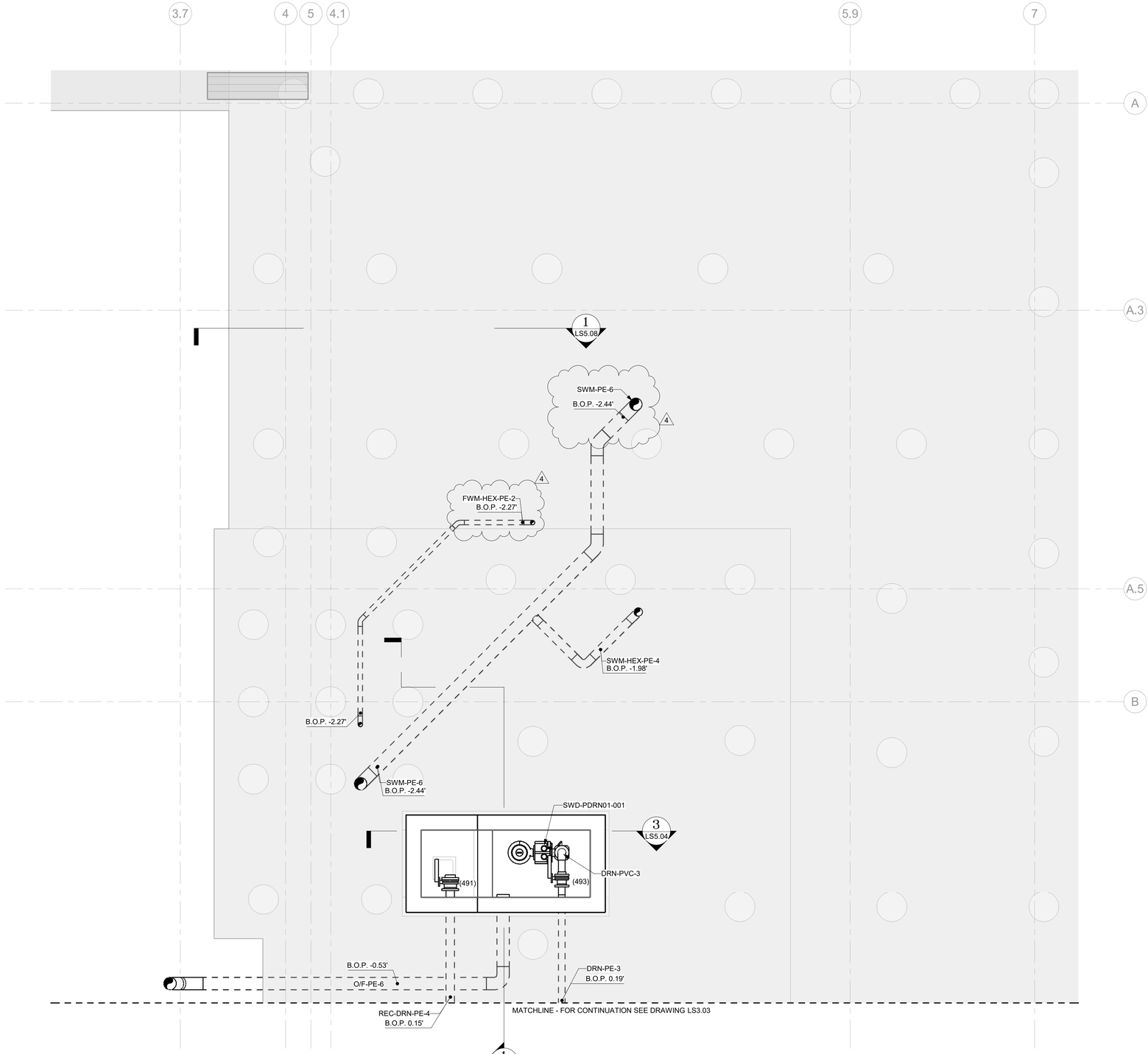
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4. CONTRACTOR SHALL INSTALL LONG-SWEEP RADIUS OF MOLDED OR MITERED CONSTRUCTED FITTINGS FOR 90 DEGREE FITTINGS FOR VACUUM PIPING PER SPECIFICATION SECTION 170250 FROM POOLS TO PUMP SUCTIONS.



1 ENLARGED LSS PLAN - BELOW GRADE - EL. -5.0' TO 0.83'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
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EXHIBIT DESIGNER
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TELE: 617.960.8690
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RALEIGH, NC 27607
TELE: 919.832.5587
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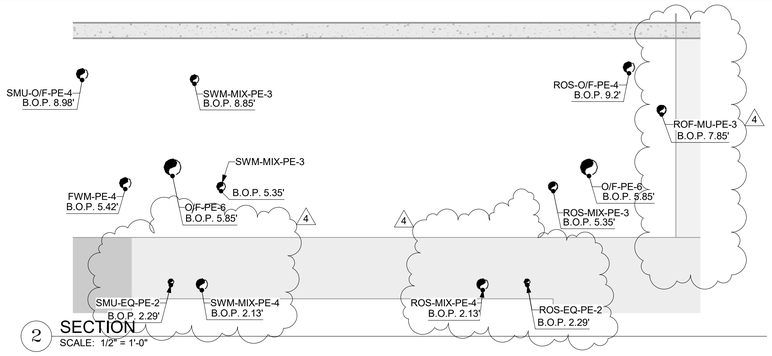
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ENLARGED LSS PLAN - BELOW GRADE - EL. -5.0' TO 0.83'

LS3.01

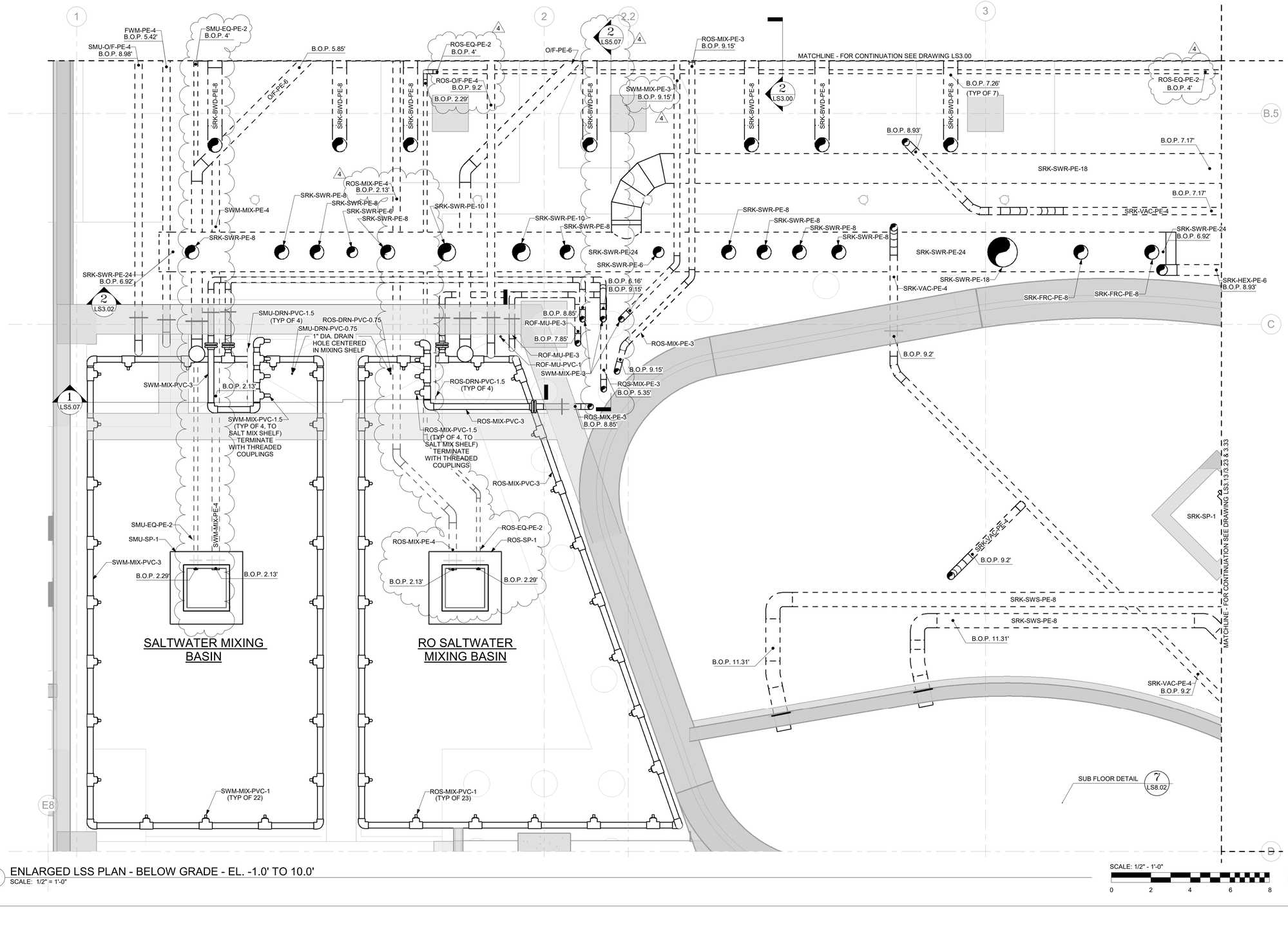
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2 SECTION
SCALE: 1/2" = 1'-0"

NOTES:

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1 ENLARGED LSS PLAN - BELOW GRADE - EL. -1.0' TO 10.0'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27514
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
54880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
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7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5987
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WILMINGTON, NC 28401
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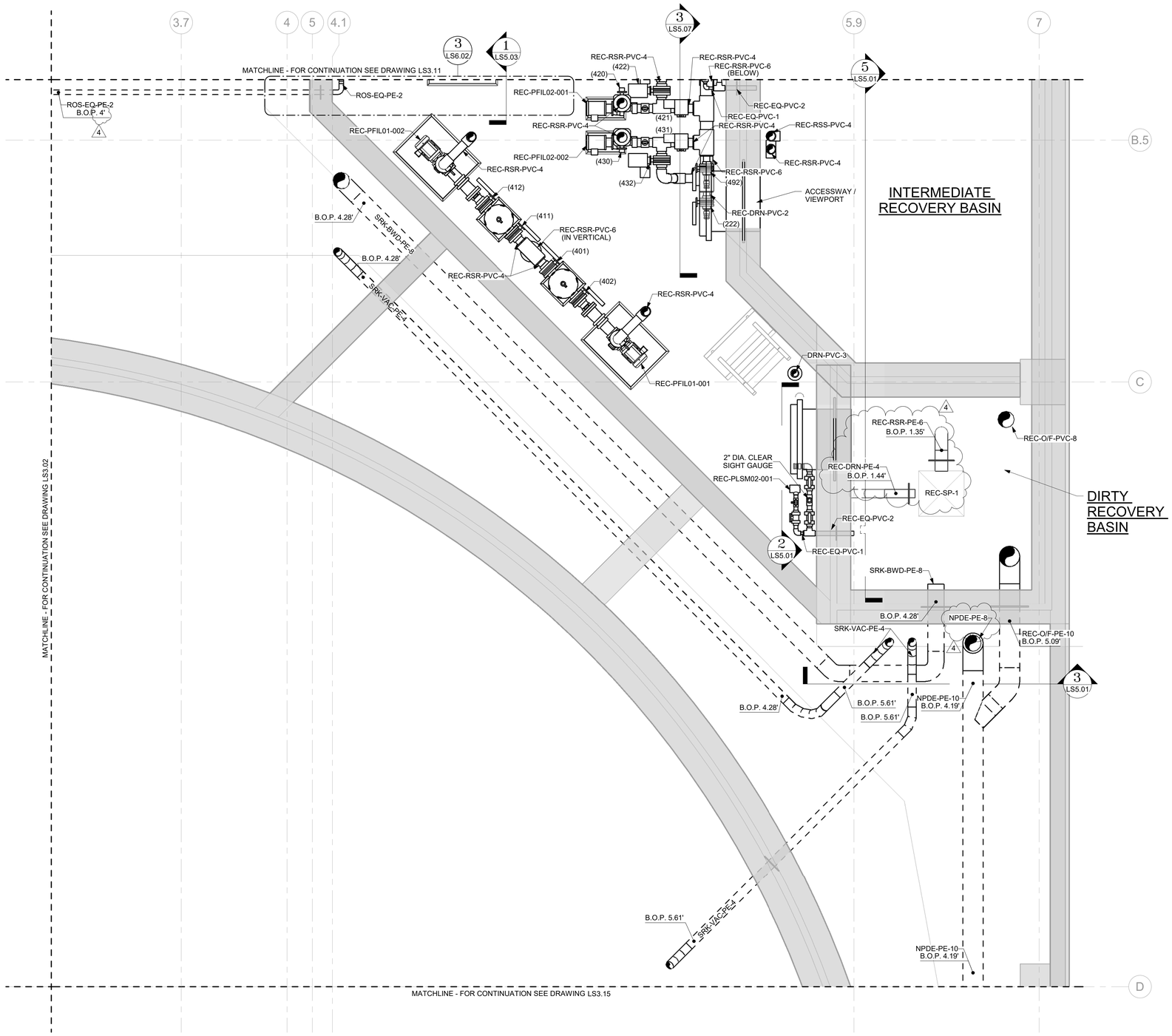
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ENLARGED LSS PLAN - BELOW GRADE - EL. -1.0' TO 10.0'

LS3.02

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1 ENLARGED LSS PLAN - PUMP PIT AND BELOW GRADE - EL. 0.83' TO 6.75'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
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11/10/2025

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
4	11-10-25	ADDENDUM #3

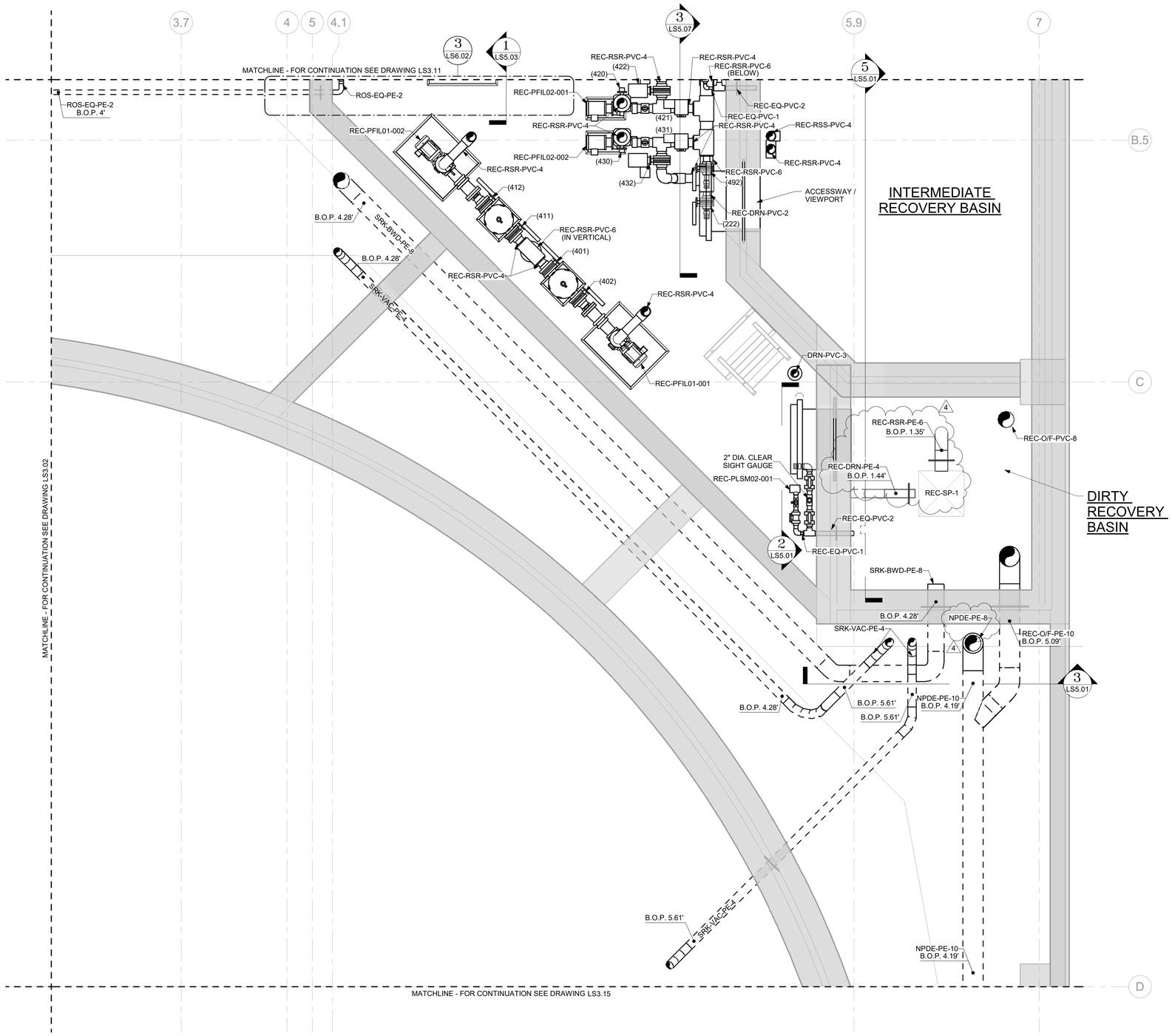
ENLARGED LSS PLAN - PUMP PIT AND BELOW GRADE - EL. 0.83' TO 6.75'

LS3.13

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NOTES:

1. ALL UNDERGROUND LSS PIPING SHALL BE HDPE AND SHALL CONFORM WITH SPECIFICATION SECTIONS 170010 AND 170250.
2. ALL LSS PIPING IS TO BE PRESSURE TESTED PER SPECIFICATION SECTION 170010 PRIOR TO CONCEALMENT WITHIN THE BUILDING STRUCTURE OR BELOW GRADE.
3. ALL BELOW GRADE HDPE PIPING IS TO BE BUTT FUSED. IF CONTRACTOR WOULD LIKE TO REQUEST SPECIFIC LOCATIONS FOR AN ELECTROFUSION COUPLING IN AN UNDERGROUND LOCATION THEY MUST SUBMIT A SHOP DRAWING INDICATING PROPOSED COUPLING LOCATION AND DOCUMENTATION FOR ELECTROFUSION COUPLING WARRANTY FOR ENGINEER'S REVIEW AND CONFIRMATION.
4. CONTRACTOR SHALL INSTALL LONG-SWEEP RADIUS OF MOLDED OR MITERED CONSTRUCTED FITTINGS FOR 90 DEGREE FITTINGS FOR VACUUM PIPING PER SPECIFICATION SECTION 170250 FROM POOLS TO PUMP SUCTIONS.



1 ENLARGED LSS PLAN - PUMP PIT AND BELOW GRADE - EL. 0.83' TO 6.75'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

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FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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KURE BEACH, NC 28449

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
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56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
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LICENSE # C-3505

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EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.742.8690
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5987
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
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10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
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LANDSCAPE ARCHITECT
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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
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4	11-10-25	ADDENDUM #3

ENLARGED LSS PLAN - PUMP PIT AND BELOW GRADE - EL. 0.83' TO 6.75'

LS3.13

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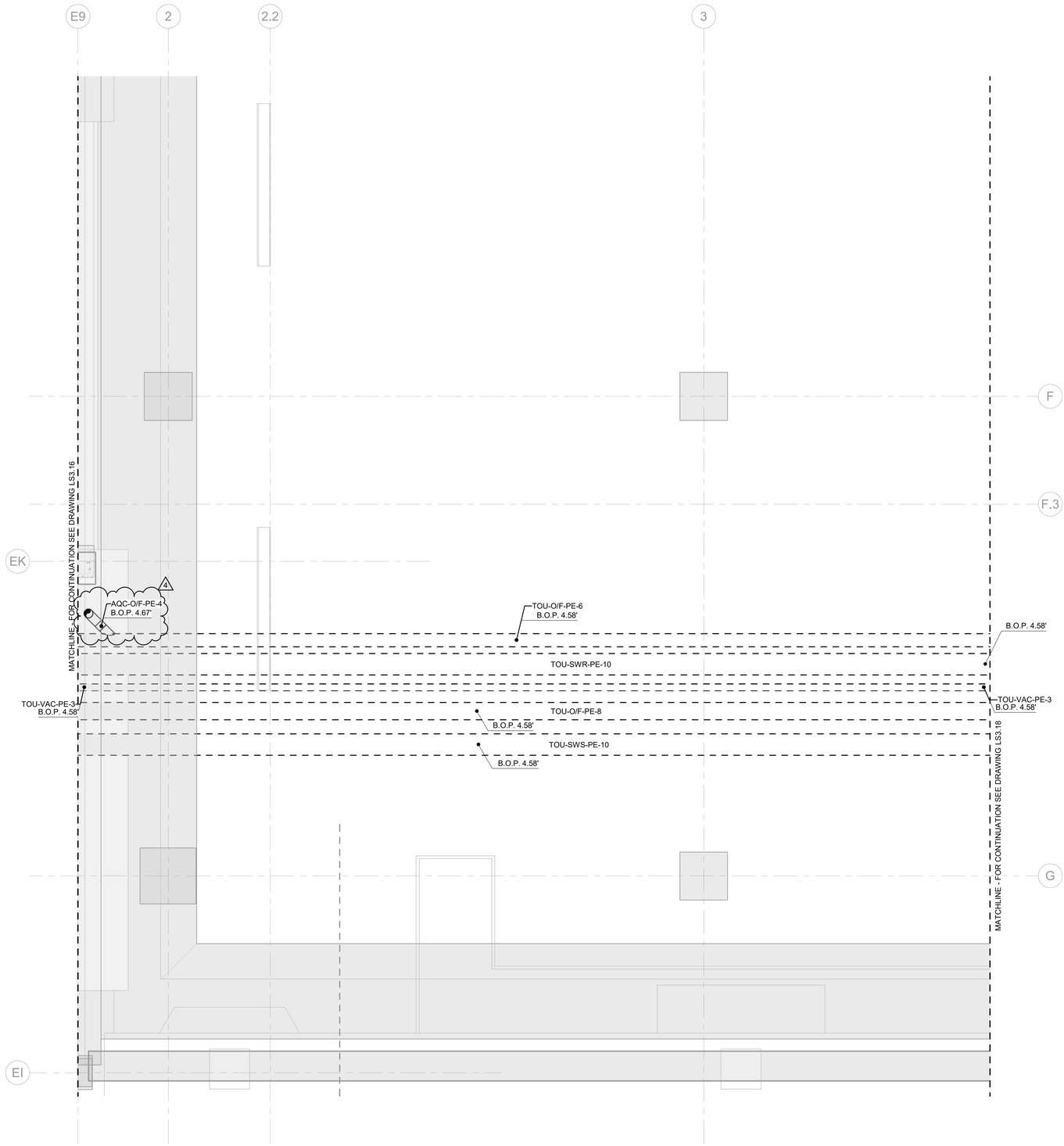
NOTES:

1. ALL UNDERGROUND LSS PIPING SHALL BE HDPE AND SHALL CONFORM WITH SPECIFICATION SECTIONS 170010 AND 170250.

2. ALL LSS PIPING IS TO BE PRESSURE TESTED PER SPECIFICATION SECTION 170010 PRIOR TO CONCEALMENT WITHIN THE BUILDING STRUCTURE OR BELOW GRADE.

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4. CONTRACTOR SHALL INSTALL LONG-SWEEP RADIUS OF MOLDED OR MITERED CONSTRUCTED FITTINGS FOR 90 DEGREE FITTINGS FOR VACUUM PIPING PER SPECIFICATION SECTION 170250 FROM POOLS TO PUMP SUCTIONS.



1 ENLARGED LSS PLAN - BELOW GRADE - EL. 0.5' TO 8.75'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

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SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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ARCHITECT
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CHAPEL HILL, NORTH CAROLINA 27516
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56880 VENTURE LANE SUITE 2004
BEND, OR 97707
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7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
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RALEIGH, NC 27607
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SURFACE 678, PA
LANDSCAPE ARCHITECT
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11/10/2025

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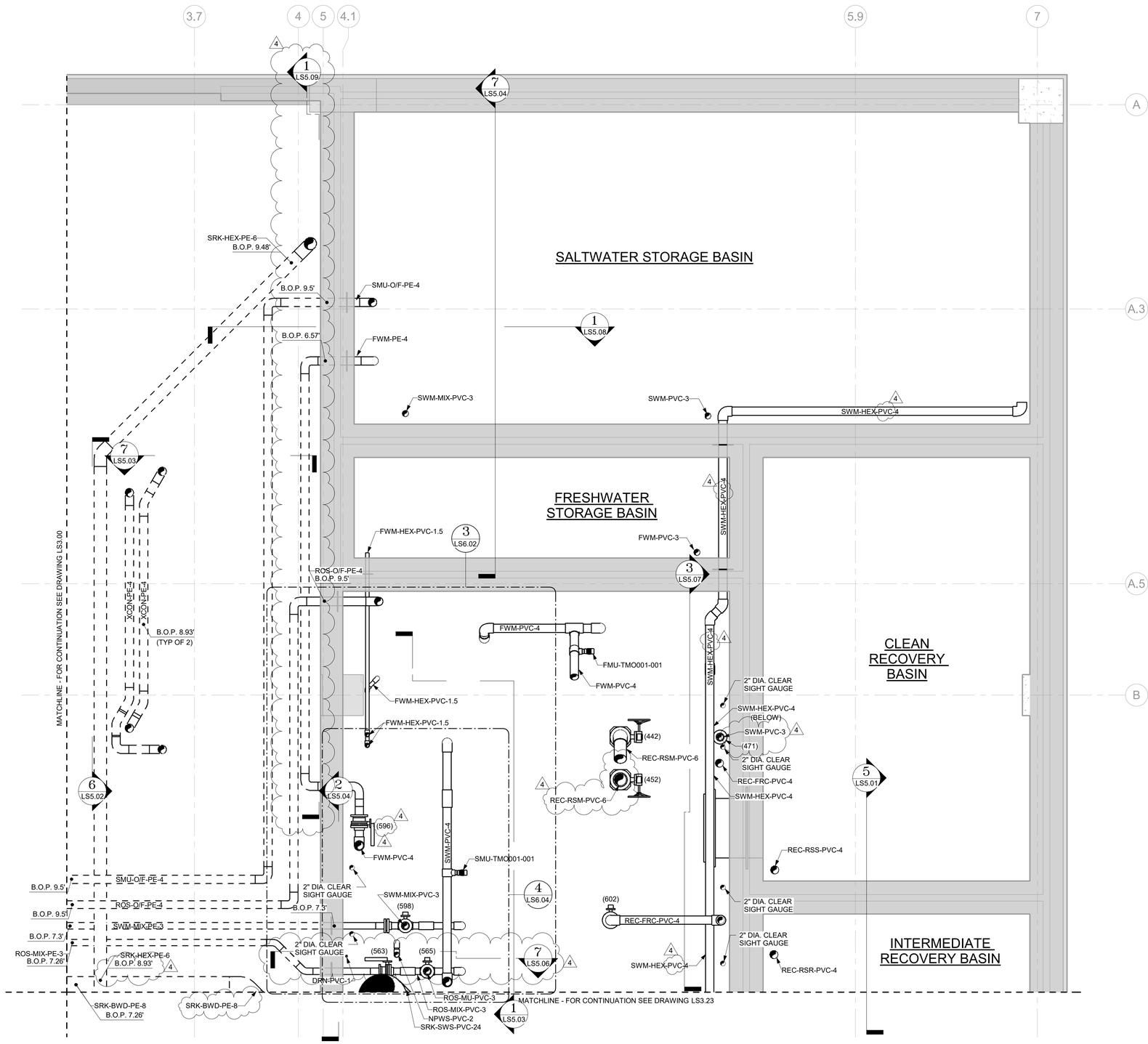
ENLARGED LSS PLAN - BELOW GRADE - EL. 0.5' TO 8.75'

LS3.17

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1 ENLARGED LSS PLAN - PUMP PIT CEILING PLAN AND BELOW GRADE - EL. 6.75' TO 10.33'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

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FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
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TELE: 617.760.8690
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11/10/2025

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4	11-10-25	ADDENDUM #3

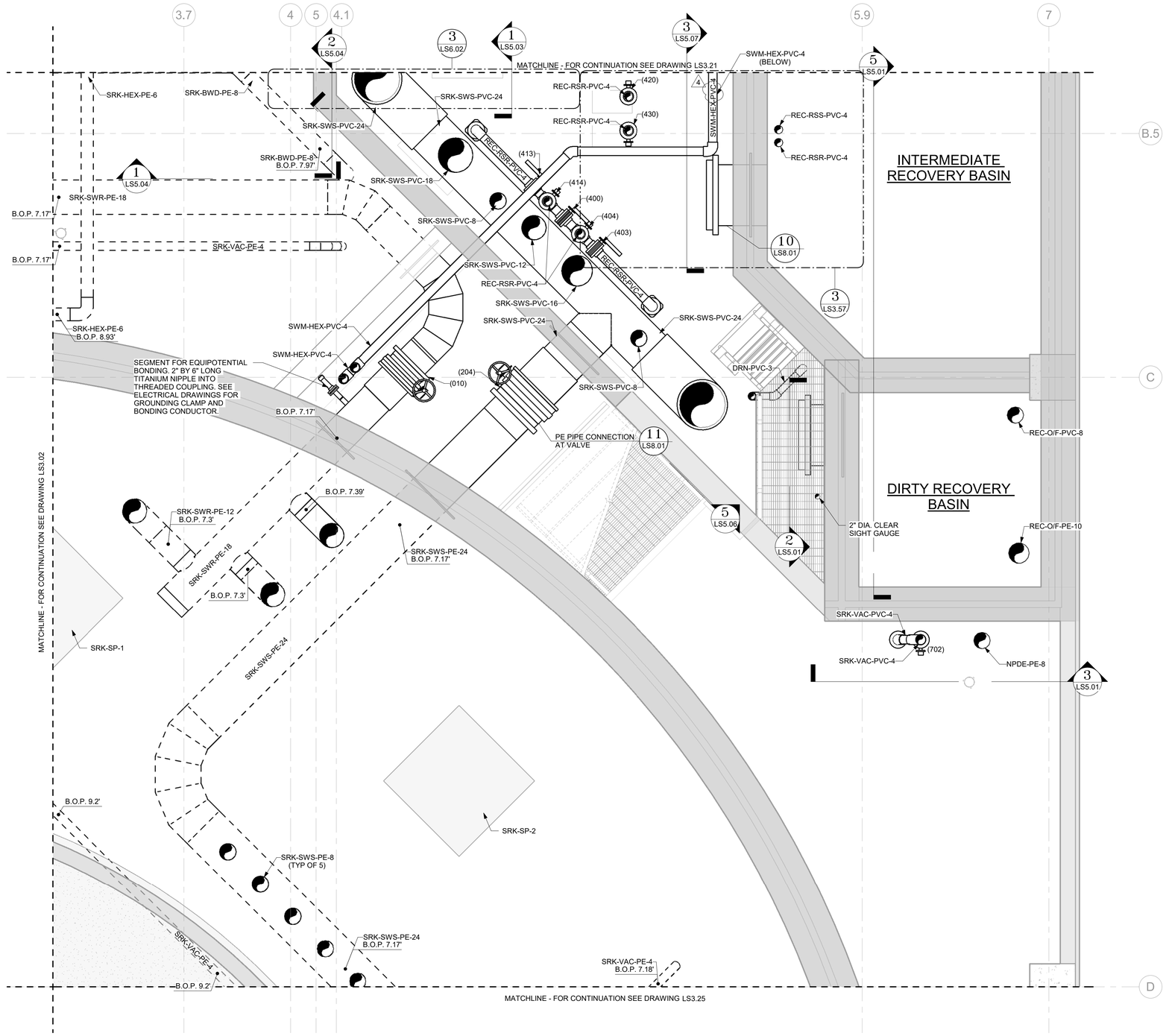
ENLARGED LSS PLAN - PUMP PIT CEILING PLAN AND BELOW GRADE - EL. 6.75' TO 10.33'

LS3.21

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1 ENLARGED LSS PLAN - PUMP PIT CEILING PLAN AND BELOW GRADE - EL. 6.75' TO 10.33'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

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SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
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TELE: 919.832.5587
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WILMINGTON, NC 28401
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FAX: 910.791.5066
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
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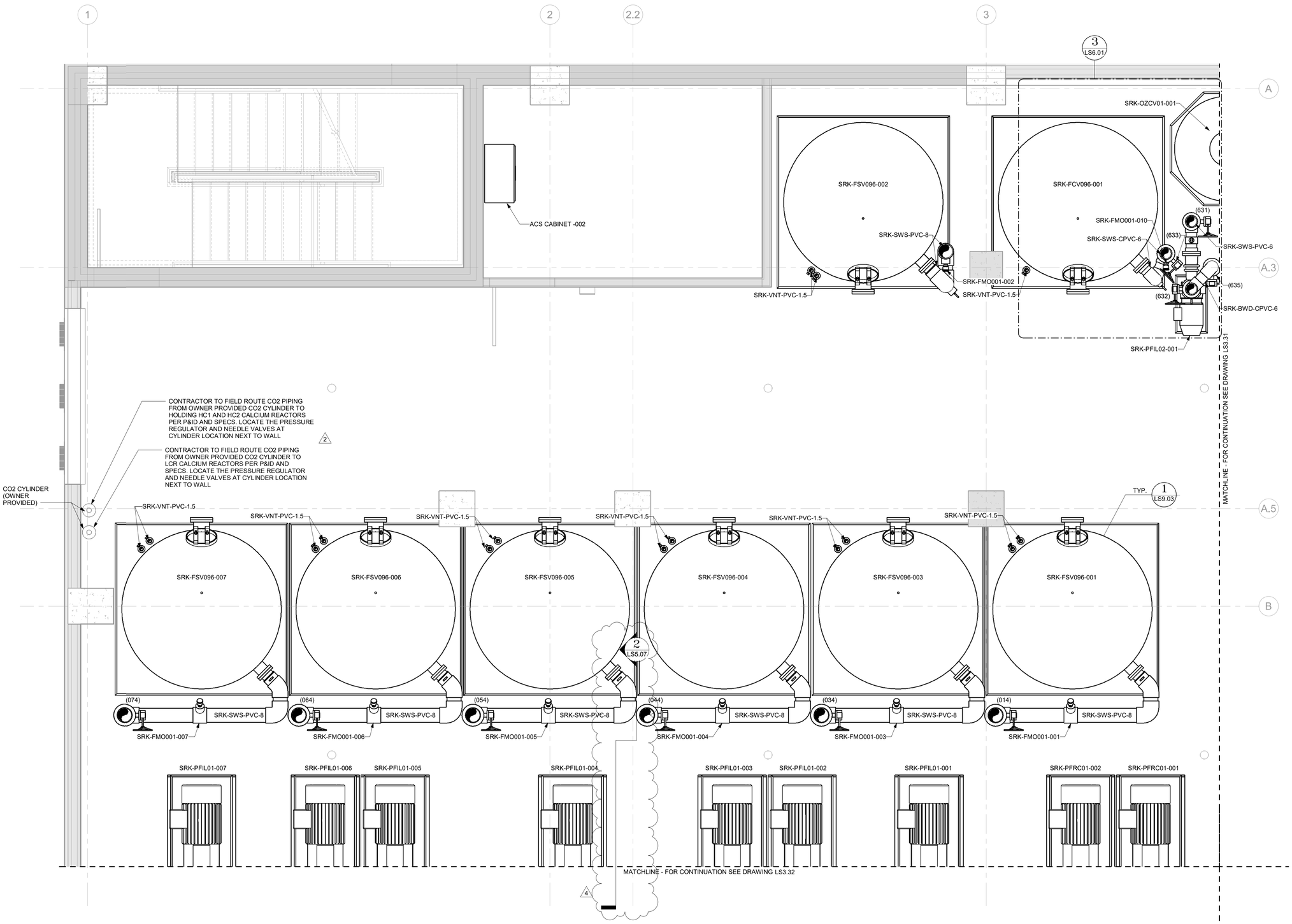
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NO.	DATE	DESCRIPTION
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ENLARGED LSS PLAN - PUMP PIT CEILING PLAN AND BELOW GRADE - EL. 6.75' TO 10.33'

LS3.23

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1 ENLARGED LSS PLAN - FIRST FLOOR - EL. 10.33' TO 18.33'
SCALE: 1/2" = 1'-0"

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BEND, OR 97707
TELE: 619.423.8700
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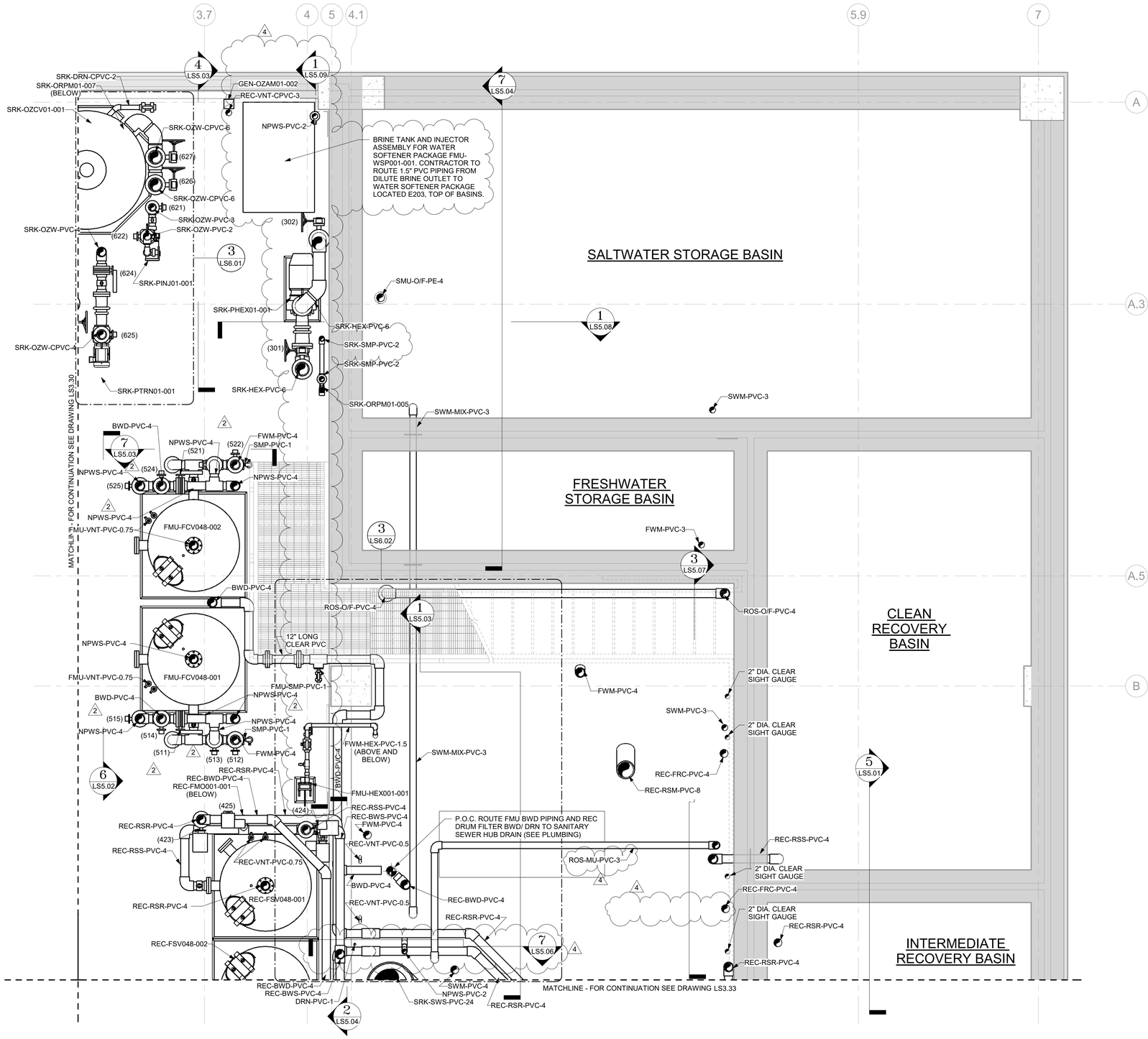
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ENLARGED LSS PLAN - 1ST FLOOR - EL. 10.33' TO 18.33'

LS3.30

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1 ENLARGED LSS PLAN - FIRST FLOOR - EL. 10.33' TO 18.33'
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SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

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SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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2246 YAUPON DRIVE
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TELE: 910.791.4000
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9654
WWW.NTENGINEERS.COM
LICENSE # P-3152

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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
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TELE: 919.419.1199
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FIRE PROTECTION ENGINEER
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TELE: 910.452.4210
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LICENSE # C-1073

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COST ESTIMATOR
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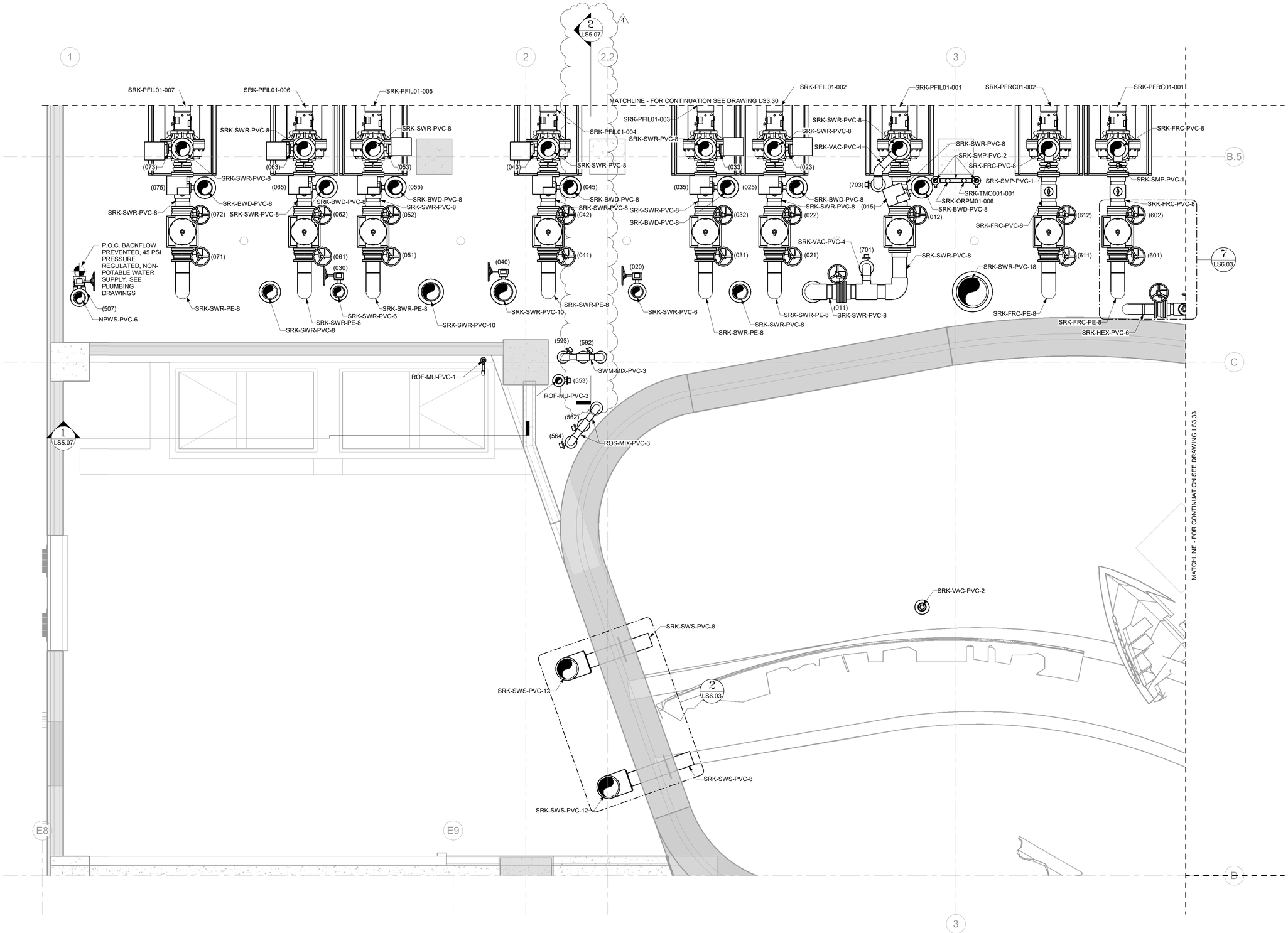
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NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
4	11-10-25	ADDENDUM #3

ENLARGED LSS PLAN - 1ST FLOOR - EL. 10.33' TO 18.33'

LS3.31

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1 ENLARGED LSS PLAN - FIRST FLOOR - EL. 10.0' TO 18.33'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
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LIFE SUPPORT SYSTEMS ENGINEER
5680 VENTURE LANE SUITE 200M
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

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EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.765.8690
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STRUCTURAL ENGINEER
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RALEIGH, NC 27607
TELE: 919.832.5587
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0806

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10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
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LICENSE # C-1073

PALACIO COLLABORATIVE
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4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
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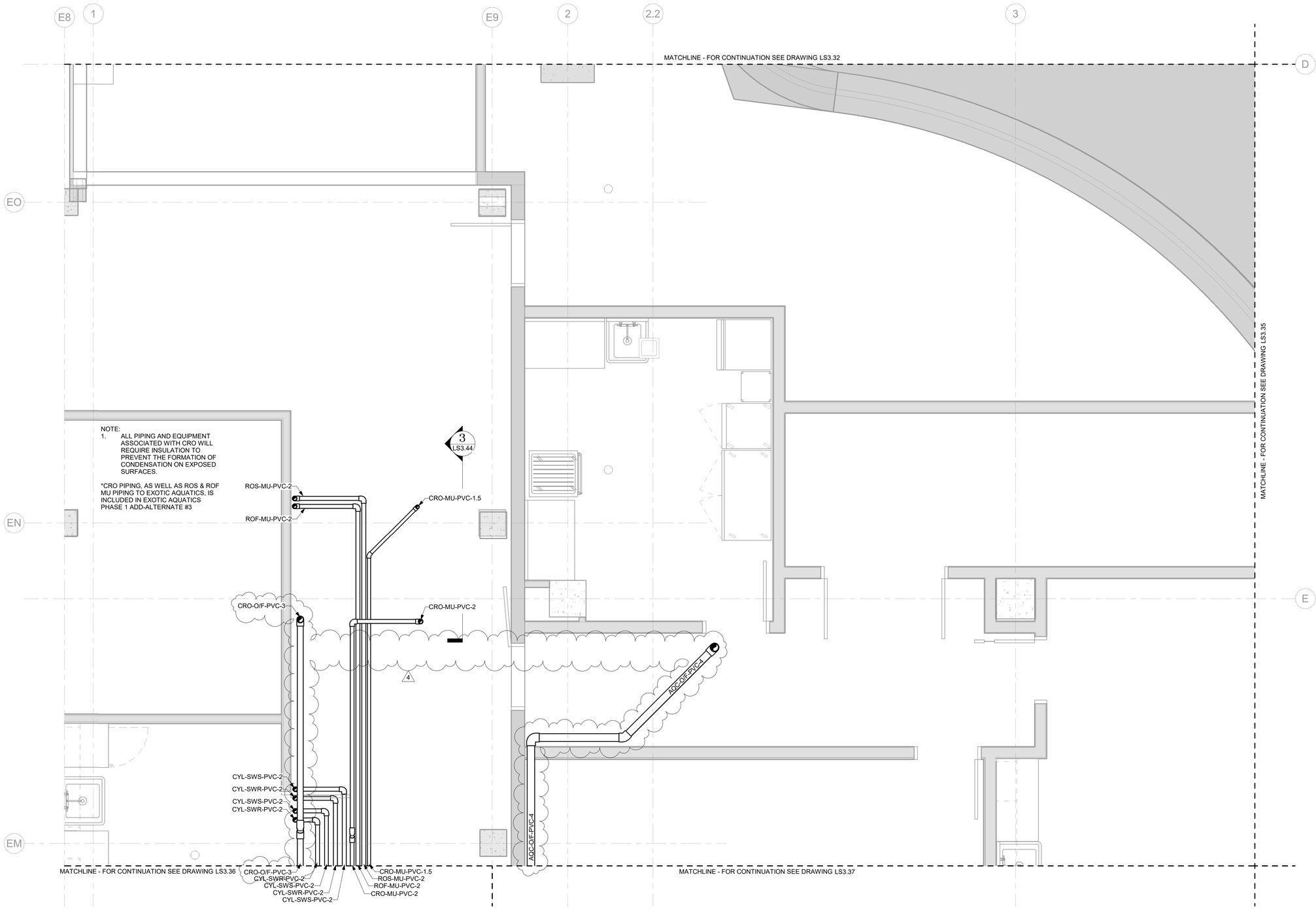
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ENLARGED LSS PLAN - 1ST FLOOR - EL. 10.0' TO 18.33'

LS3.32

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1 ENLARGED LSS PLAN - 1ST FLOOR - EL. 9.08' TO 18.33'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
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FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200M
BEND, OR 97707
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7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
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2246 YAUPON DRIVE
WILMINGTON, NC 28401
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FAX: 910.791.5066
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2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4410
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
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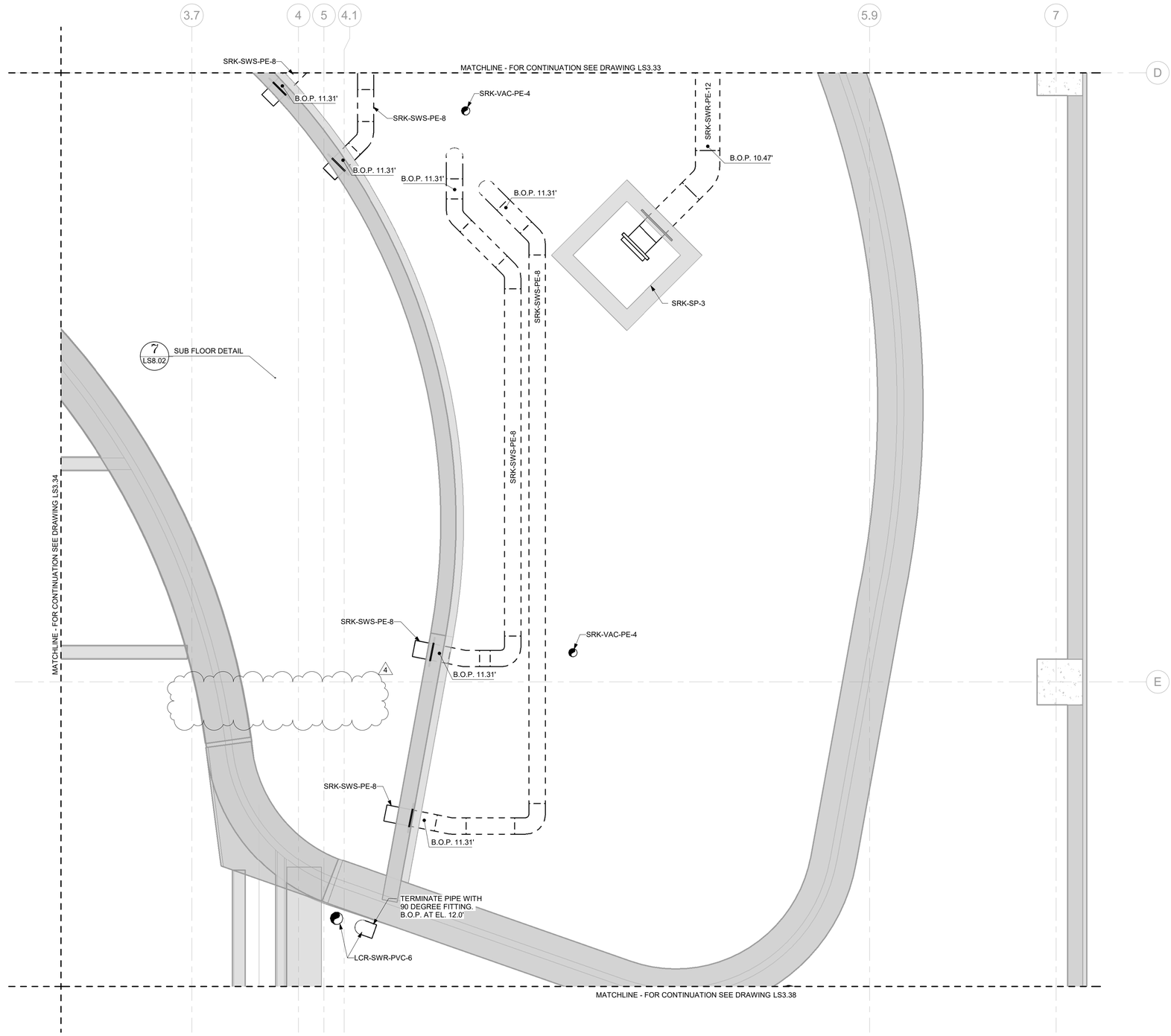
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ENLARGED LSS PLAN - 1ST FLOOR - EL. 9.08' TO 18.33'

LS3.34

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1 ENLARGED LSS PLAN - FIRST FLOOR - EL. 9.67' TO 12.17'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

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EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.742.8690
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5987
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

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MEP ENGINEER
2246 TAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
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LIGHTING DESIGNER
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RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
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LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1799
FAX: 919.419.1669
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COST ESTIMATOR
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DURHAM, NC 27703
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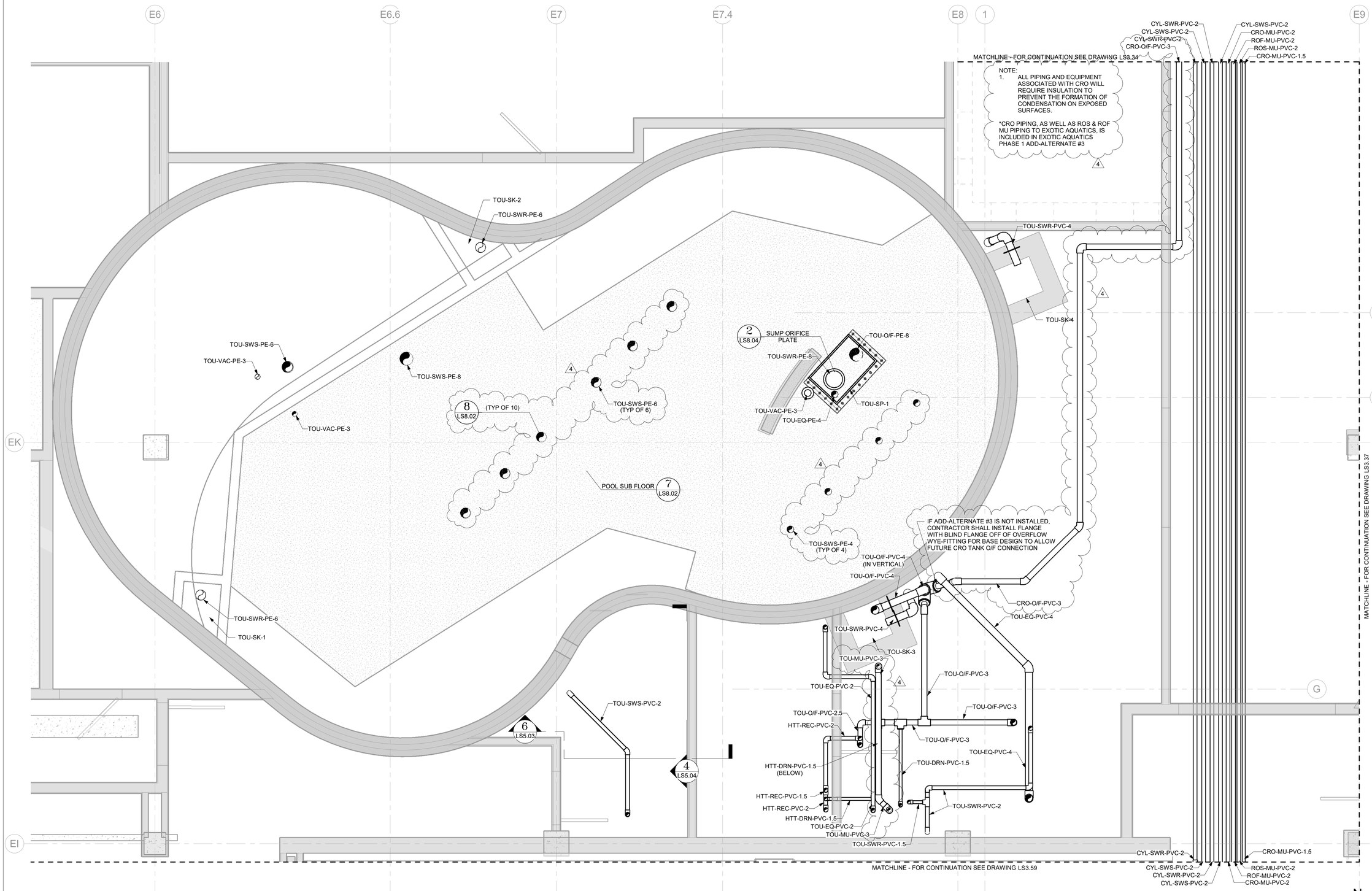
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ENLARGED LSS PLAN - 1ST FLOOR - EL. 9.67' TO 12.17'

LS3.35

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1 ENLARGED LSS PLAN - FIRST FLOOR - EL. 13.83' TO 16.5'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

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ARCHITECT
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CHAPEL HILL, NORTH CAROLINA 27516
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FAX: 919.960.7947
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56880 VENTURE LANE SUITE 200M
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TELE: 619.423.8700
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STRUCTURAL ENGINEER
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TELE: 919.832.5587
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MEP ENGINEER
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WILMINGTON, NC 28401
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FAX: 910.791.5266
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RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTENGINEERS.COM
LICENSE # P-3152

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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
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LICENSE # C-098

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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
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LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
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DURHAM, NC 27703
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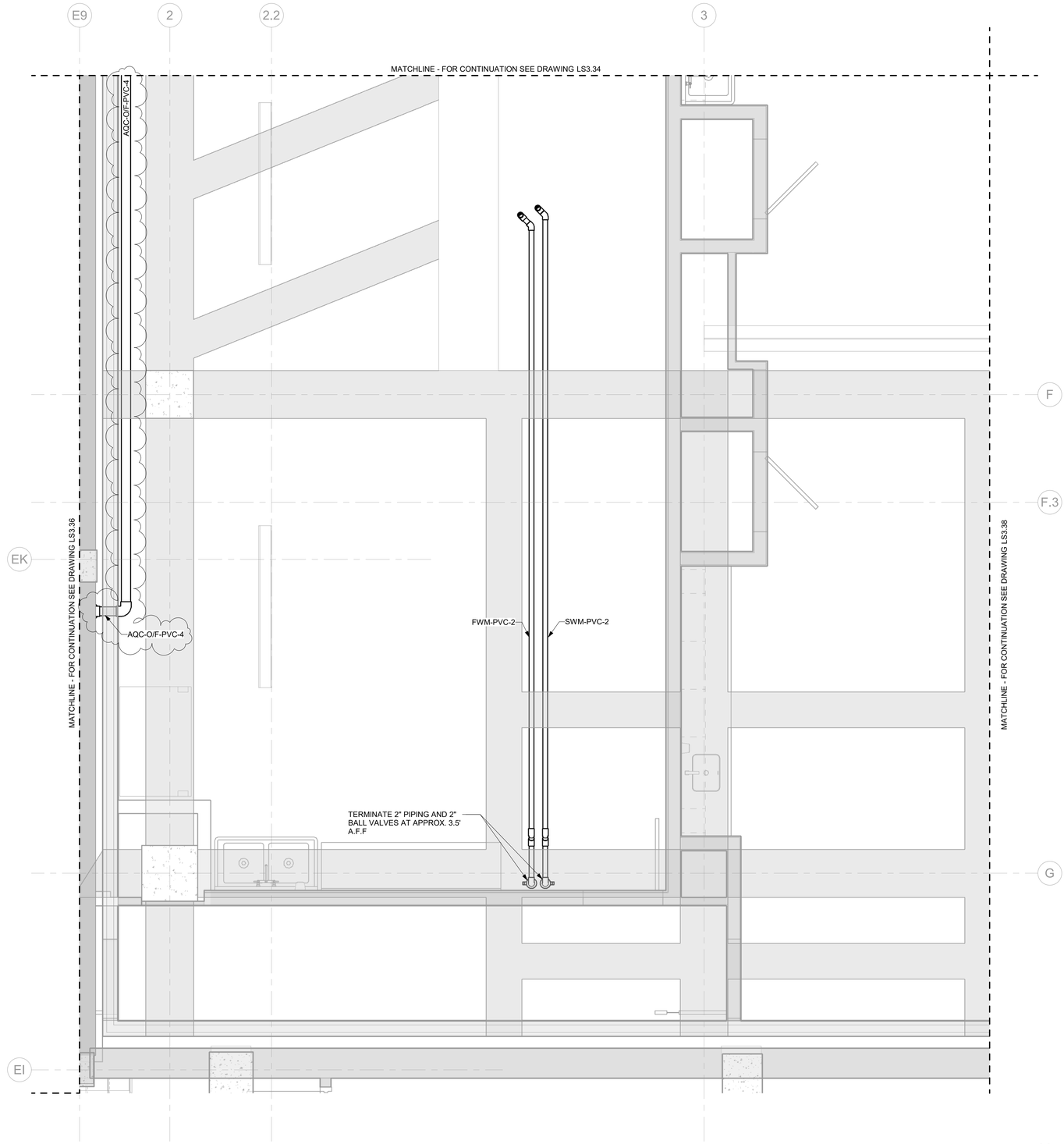
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ENLARGED LSS PLAN - 1ST FLOOR - EL. 13.83' TO 16.5'

LS3.36

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1 ENLARGED LSS PLAN - 1ST FLOOR - EL. 9.08' TO 17.83
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

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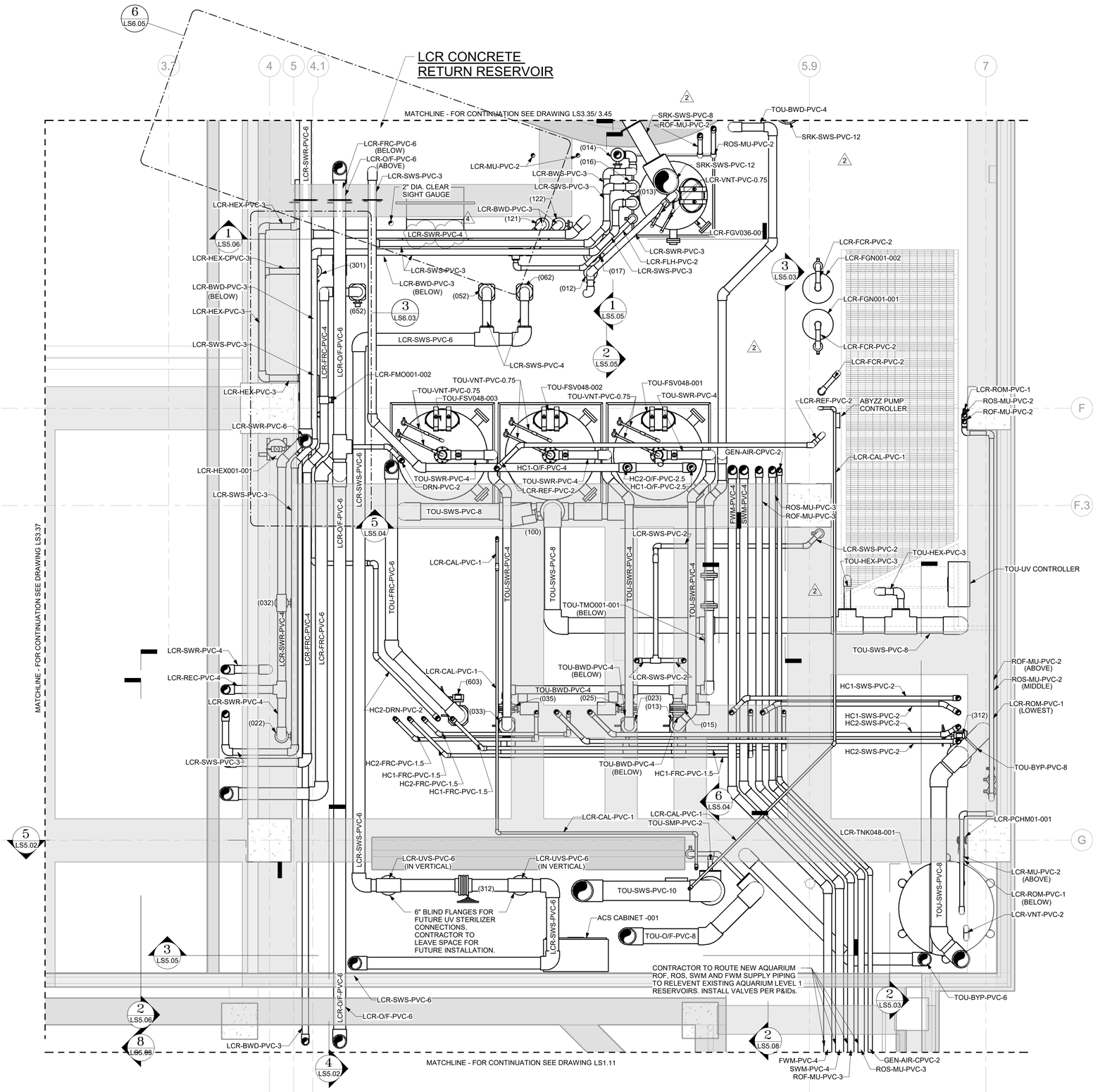
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ENLARGED LSS PLAN - 1ST FLOOR - EL. 9.08' TO 17.83

LS3.37

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1 ENLARGED LSS PLAN - FIRST FLOOR - EL. 11.33' TO 17.83'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

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2602 IRON GATE DRIVE SUITE 102
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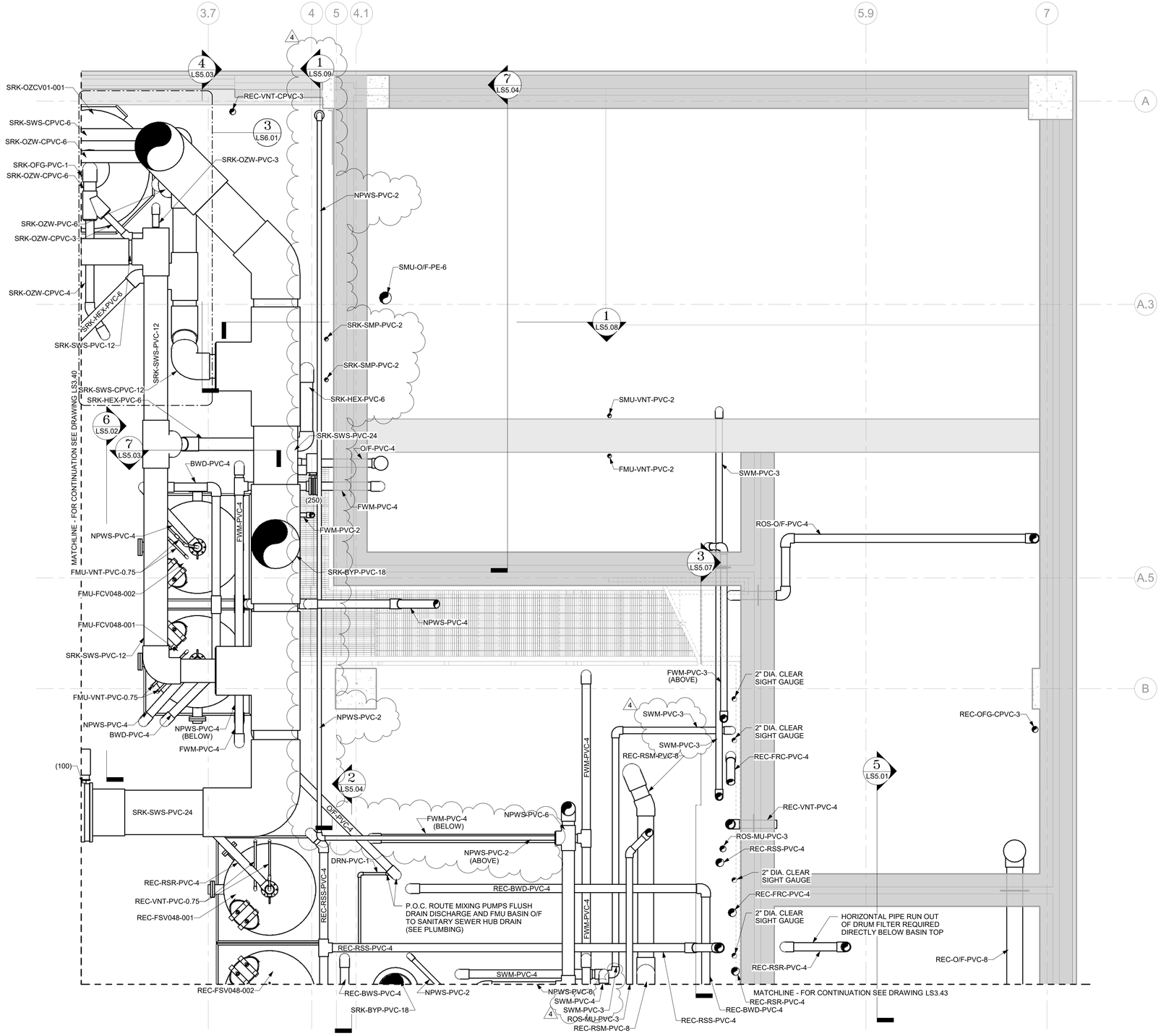
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NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
4	11-10-25	ADDENDUM #3

ENLARGED LSS PLAN - 1ST FLOOR - EL. 11.33' TO 17.83'

LS3.38

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1 ENLARGED LSS PLAN - 2ND FLOOR ADMIN - EL. 18.36' TO 23.94'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
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EXHIBIT DESIGNER
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STRUCTURAL ENGINEER
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5066
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LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
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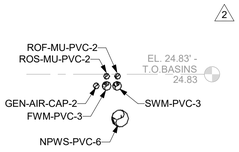
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ENLARGED LSS PLAN - 2ND FLOOR ADMIN - EL. 18.36' TO 23.94'

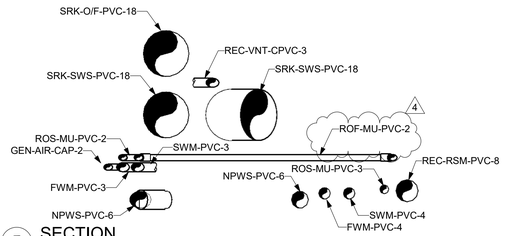
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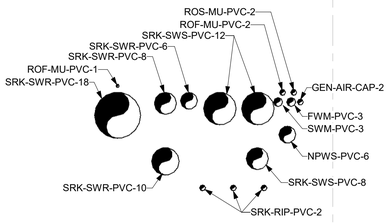
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6 SECTION
SCALE: 1/2" = 1'-0"



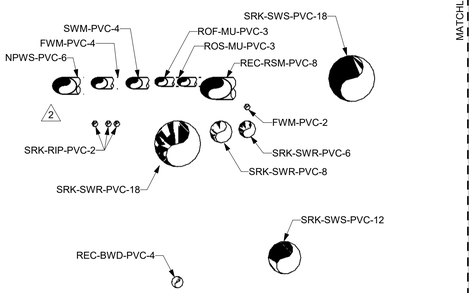
5 SECTION
SCALE: 1/2" = 1'-0"



*HEAT EXCHANGER PIPING HIDDEN FOR CLARITY

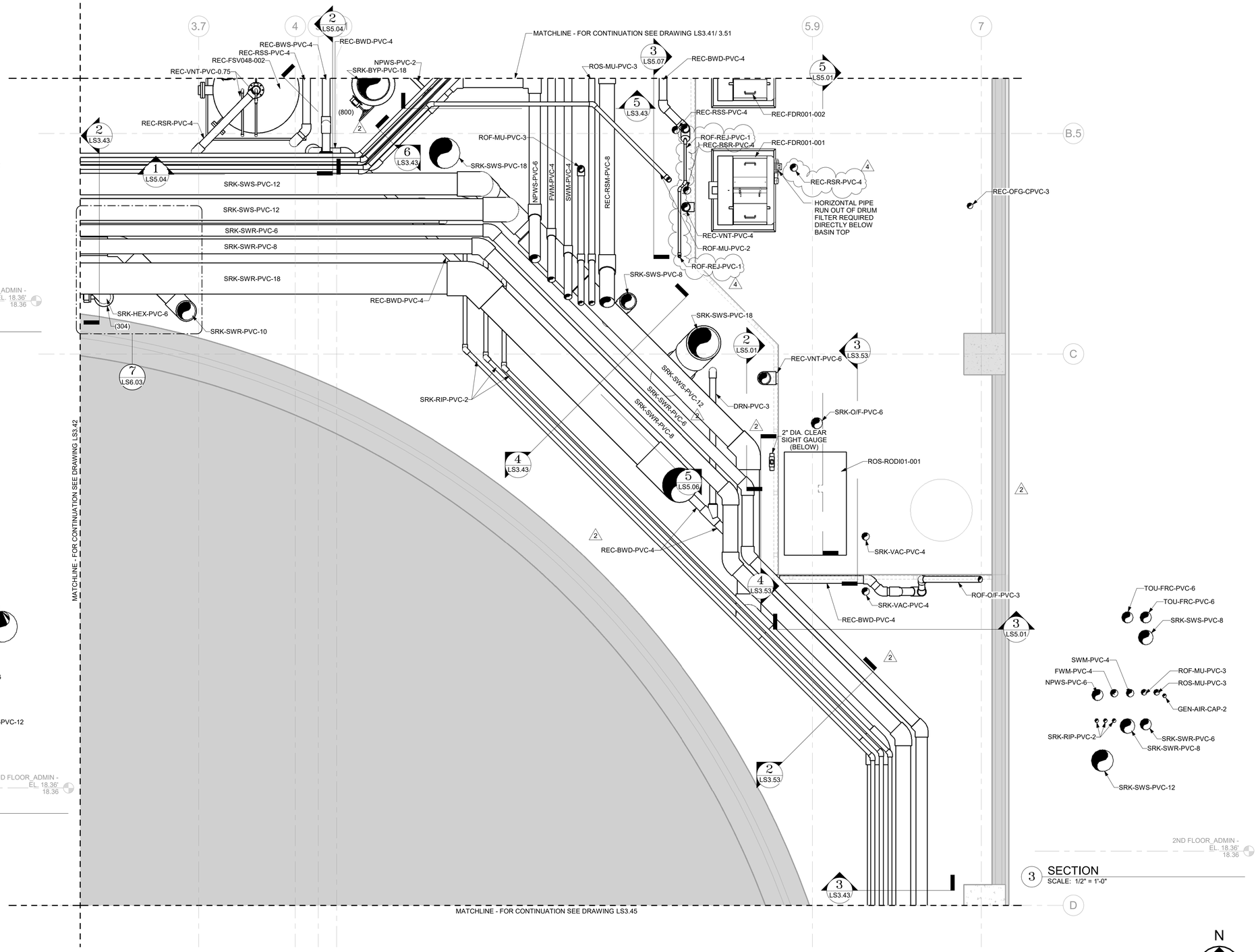
2ND FLOOR_ADMIN - EL. 18.36' 18.36

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



2ND FLOOR_ADMIN - EL. 18.36' 18.36

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



2ND FLOOR_ADMIN - EL. 18.36' 18.36

3 SECTION
SCALE: 1/2" = 1'-0"

1 ENLARGED LSS PLAN - 2ND FLOOR ADMIN - EL. 18.36' TO 24.86'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.3244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

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EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
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BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5987
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5066
WWW.CBHFENGINEERS.COM
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LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9633
FAX: 910.343.9604
WWW.NTEN GINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4410
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
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DURHAM, NC 27703
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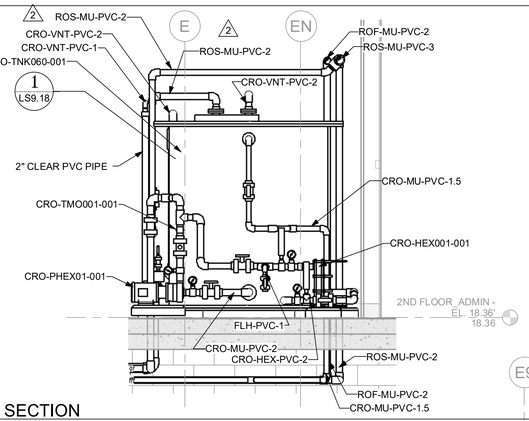
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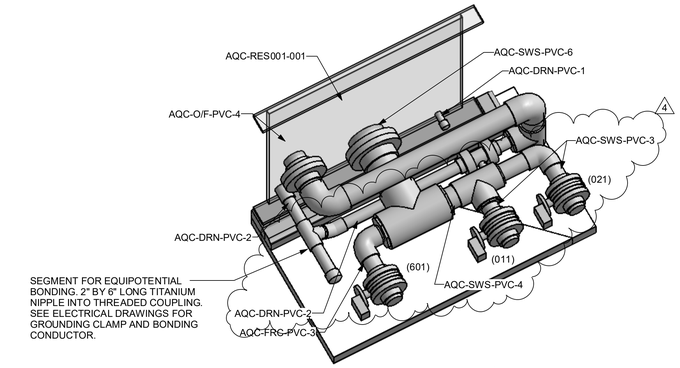
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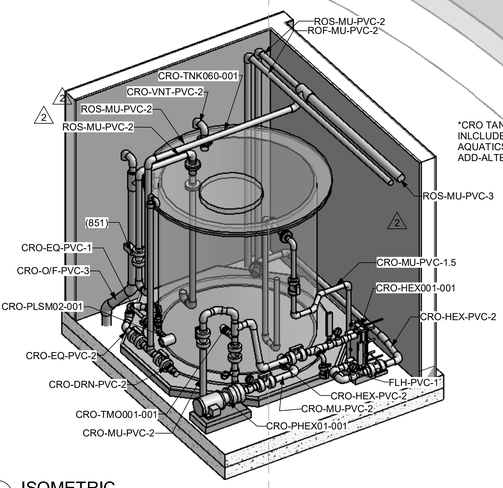


3 SECTION
SCALE: 1/2" = 1'-0"



2 ISOMETRIC
SCALE: NONE

MATCHLINE - FOR CONTINUATION SEE DRAWING LS3.42



NOTE:
ALL PIPING AND EQUIPMENT ASSOCIATED WITH CRO WILL REQUIRE INSULATION TO PREVENT THE FORMATION OF CONDENSATION OF EXPOSED SURFACES.

IF ADD-ALTERNATE #3 IS NOT INSTALLED, CONTRACTOR SHALL INSTALL LUGGED 3" BUTTERFLY VALVE AND 2" BALL VALVE AND CAP OFF OF MAIN LOOP FOR BASE DESIGN TO ALLOW FUTURE CONNECTIONS.

*CRO TANK AND PIPING INLCLUDED IN EXOTIC AQUATICS PHASE 1 ADD-ALTERNATE #3

CONTRACTOR TO TERMINATE CYLINDER TANK SUPPLY AND RETURN PIPES WITH 2" BALL VALVE AND END CAP. OWNER TO FINALIZE CONNECTIONS TO CYLINDER LSS SYSTEMS.

OWNER PROVIDED LSS SYSTEM

OWNER PROVIDED LSS SYSTEM

4 ISOMETRIC
SCALE: NONE

SEGMENT FOR EQUIPOTENTIAL BONDING. 2" BY 6" LONG TITANIUM NIPPLE INTO THREADED COUPLING. SEE ELECTRICAL DRAWINGS FOR GROUNDING CLAMP AND BONDING CONDUCTOR.

MATCHLINE - FOR CONTINUATION SEE DRAWING LS3.45

MATCHLINE - FOR CONTINUATION SEE DRAWING LS3.46

MATCHLINE - FOR CONTINUATION SEE DRAWING LS3.47

1 ENLARGED LSS PLAN - 2ND FLOOR ADMIN - EL. 18.36' TO 26.69'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
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TELE: 909.360.2900
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CIVIL ENGINEER
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LANDSCAPE ARCHITECT
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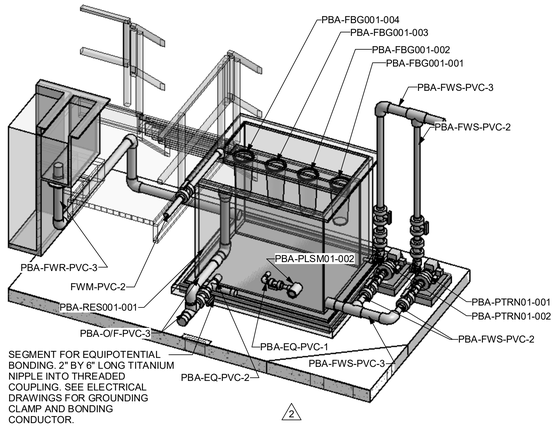
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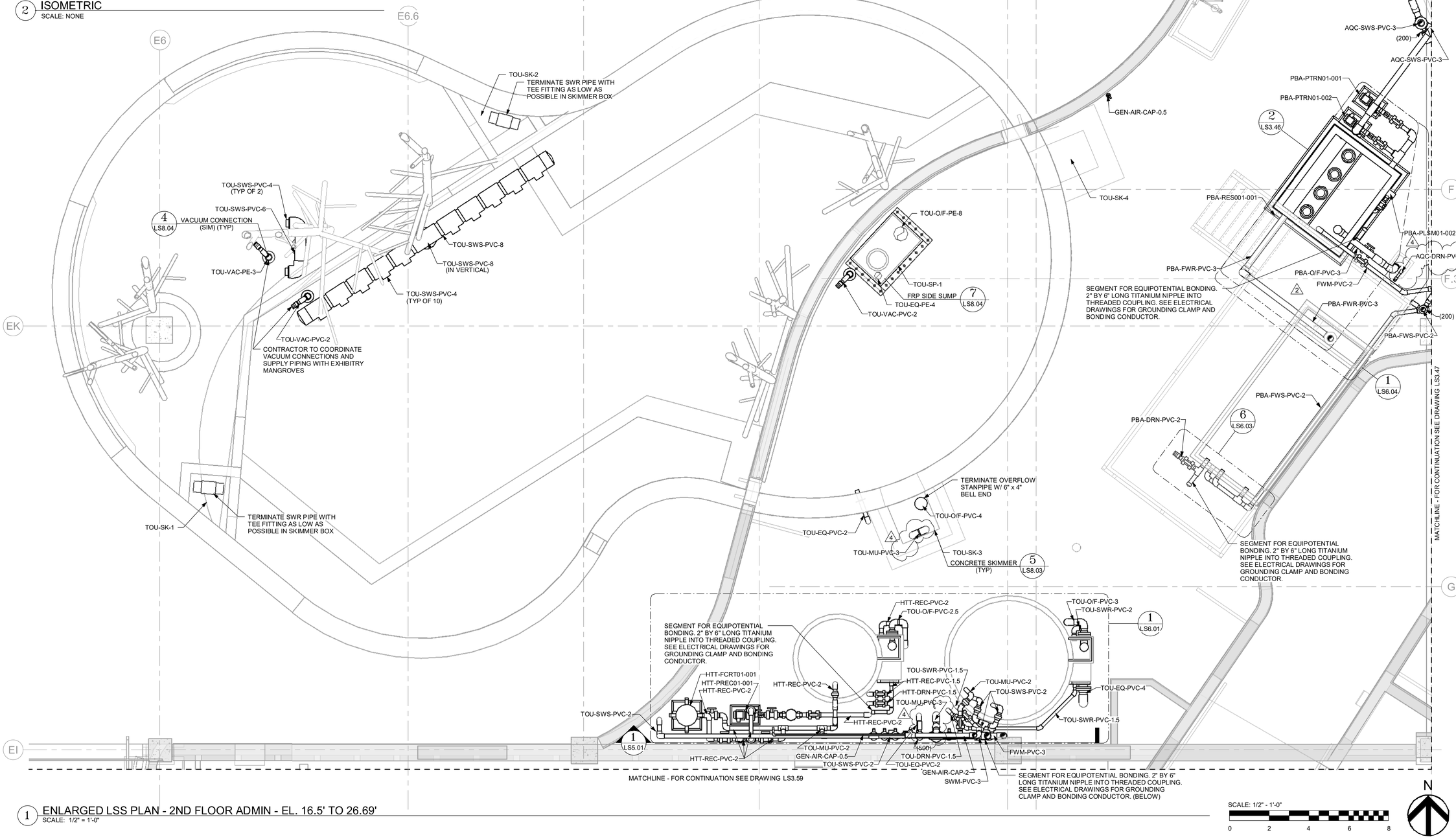
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2 ISOMETRIC
SCALE: NONE



1 ENLARGED LSS PLAN - 2ND FLOOR ADMIN - EL. 16.5' TO 26.69'
SCALE: 1/2" = 1'-0"

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CHAPEL HILL, NORTH CAROLINA 27516
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56880 VENTURE LANE SUITE 200H
BEND, OR 97707
TELE: 619.403.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3005

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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.802.5587
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WILMINGTON, NC 28401
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CIVIL ENGINEER
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WILMINGTON, NC 28412
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DURHAM, NC 27701
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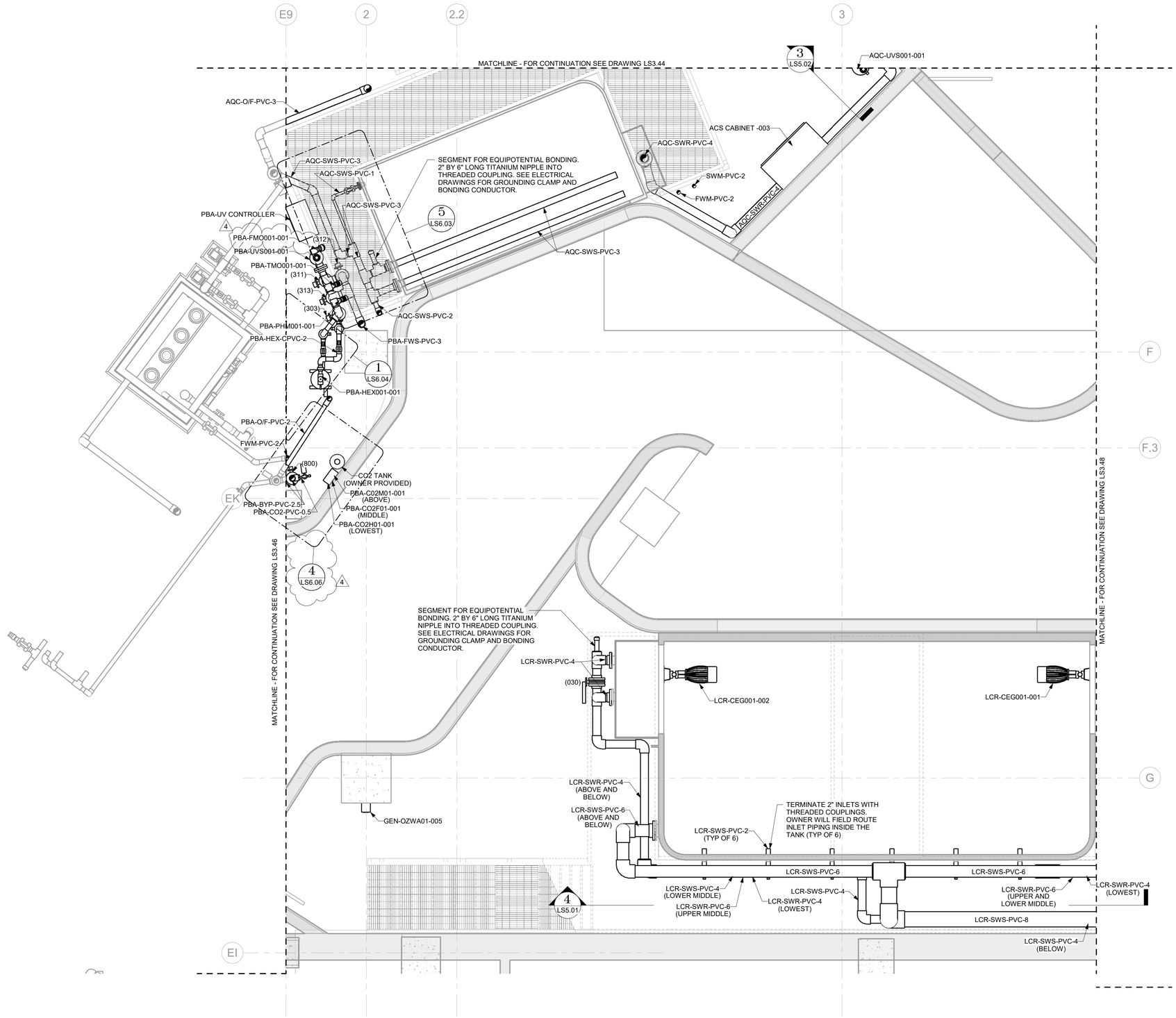
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LS3.46

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

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

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TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
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RALEIGH, NC 27607
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WILMINGTON, NC 28401
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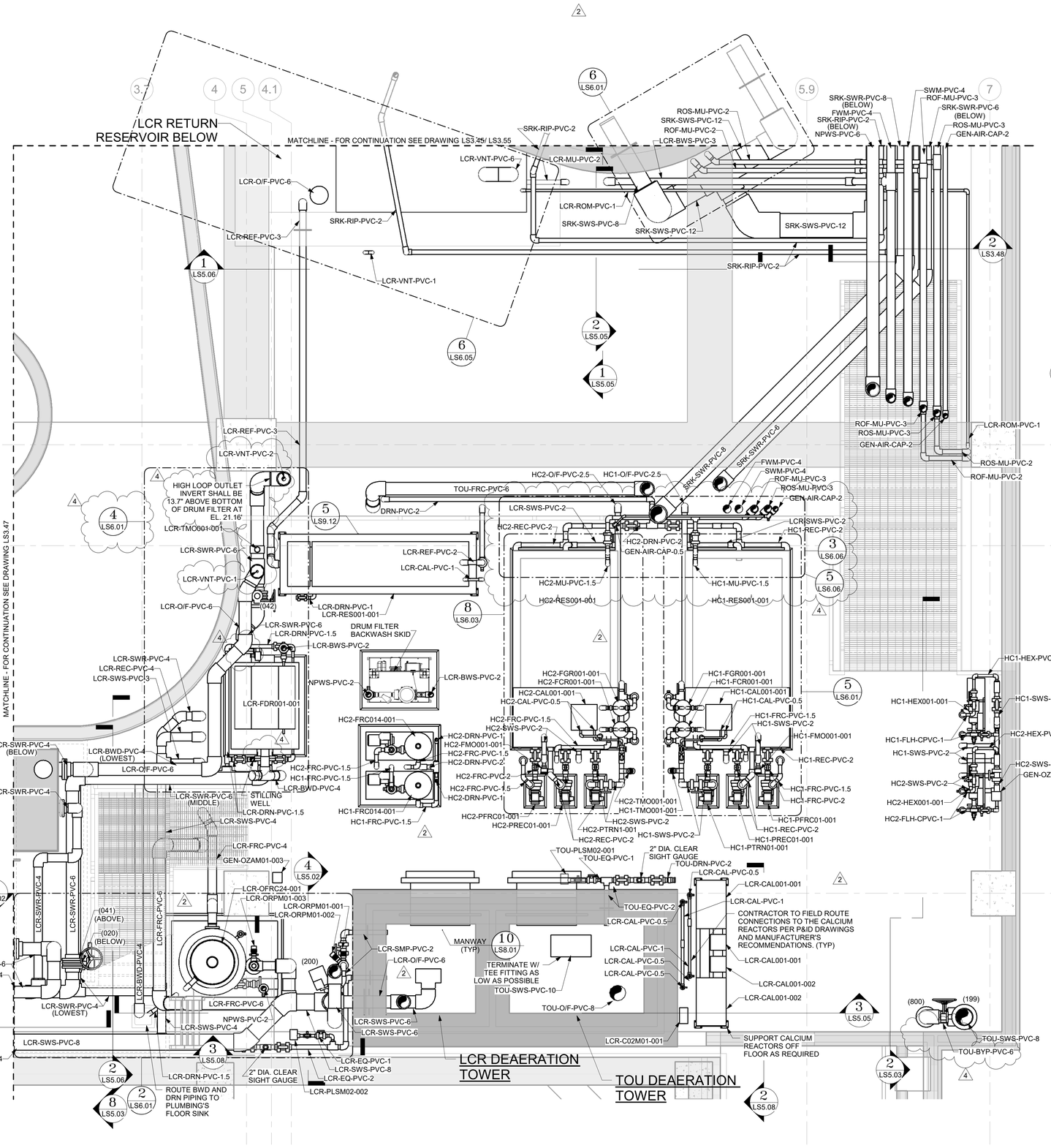
11/10/2025

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
4	11-10-25	ADDENDUM #3

ENLARGED LSS PLAN - 2ND FLOOR ADMIN - EL. 18.36' TO 26.69'

LS3.47

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

1 ENLARGED LSS PLAN - 2ND FLOOR ADMIN - EL. 17.83' TO 26.44'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD.
KURE BEACH, NC 28449

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200H
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TELE: 619.423.8700
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EXHIBIT DESIGNER
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DUBLIN, OHIO 43017
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MEP ENGINEER
2246 TAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
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10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
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LICENSE # P-3152

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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
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TELE: 919.419.1199
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WWW.SURFACE678.COM
LICENSE # C-098

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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4410
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LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
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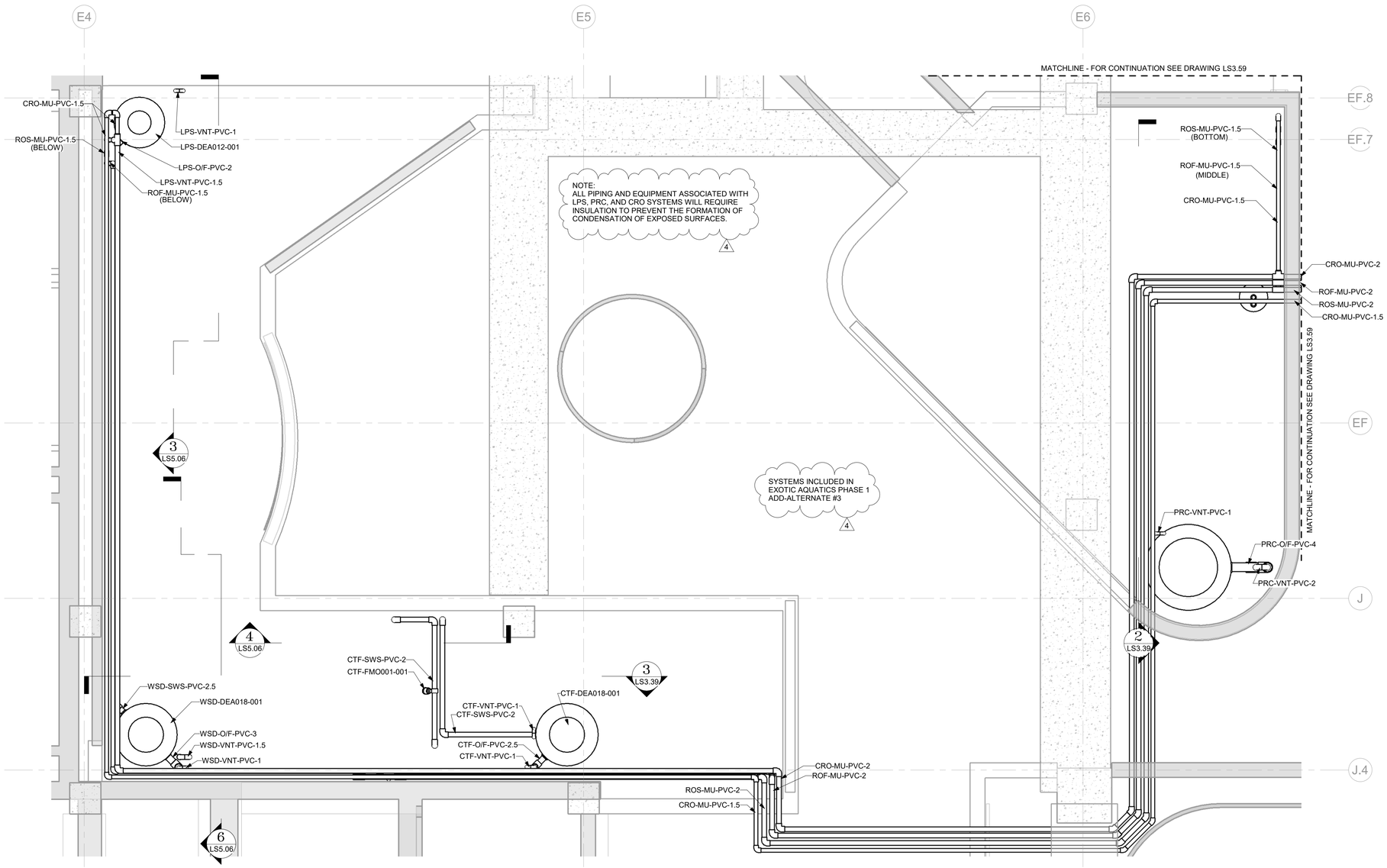
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ENLARGED LSS PLAN - 2ND FLOOR ADMIN - EL. 17.83' TO 26.44'

LS3.48

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1 ENLARGED LSS CEILING PLAN - EXOTICS - EL. 16.67' TO 19.25'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

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FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
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SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

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EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
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LICENSE # P-1105

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2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
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10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1599
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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
HILLSBOROUGH, NC 28425
TELE: 910.452.4210
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LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
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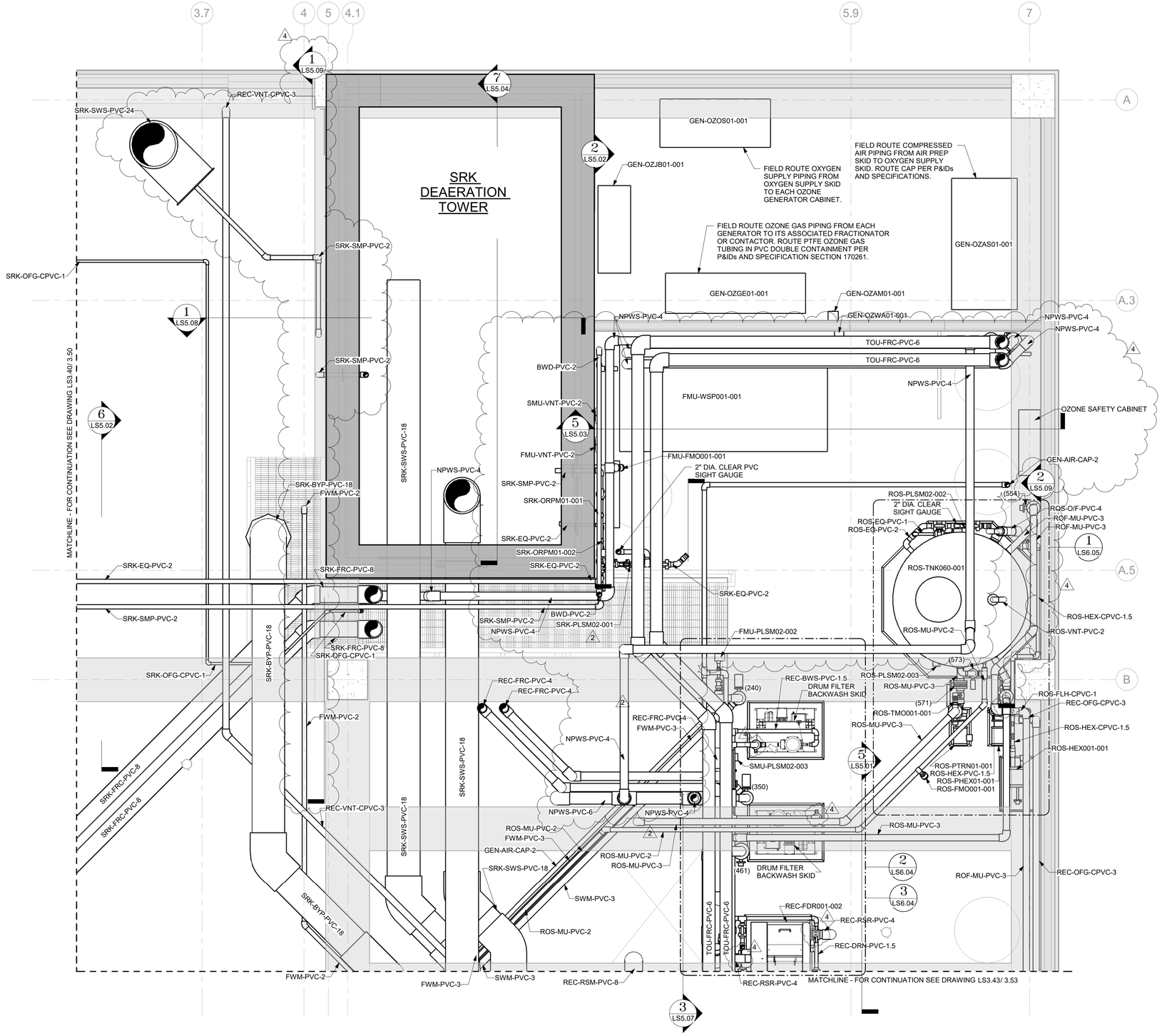
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ENLARGED LSS CEILING PLAN - EXOTICS - EL. 16.67' TO 19.25'

LS3.49

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1 ENLARGED LSS PLAN - 2ND FLOOR ADMIN CEILING PLAN - EL. 23.94' TO 34.78'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

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SCO #17-18042-02A
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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
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56880 VENTURE LANE SUITE 2004
BEND, OR 97707
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DUBLIN, OHIO 43017
TELE: 617.765.8690
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STRUCTURAL ENGINEER
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RALEIGH, NC 27607
TELE: 919.832.5587
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2246 YAUPON DRIVE
WILMINGTON, NC 28401
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FAX: 910.791.5266
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TELE: 909.360.2900
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
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TELE: 910.343.9653
FAX: 910.343.9604
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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 130
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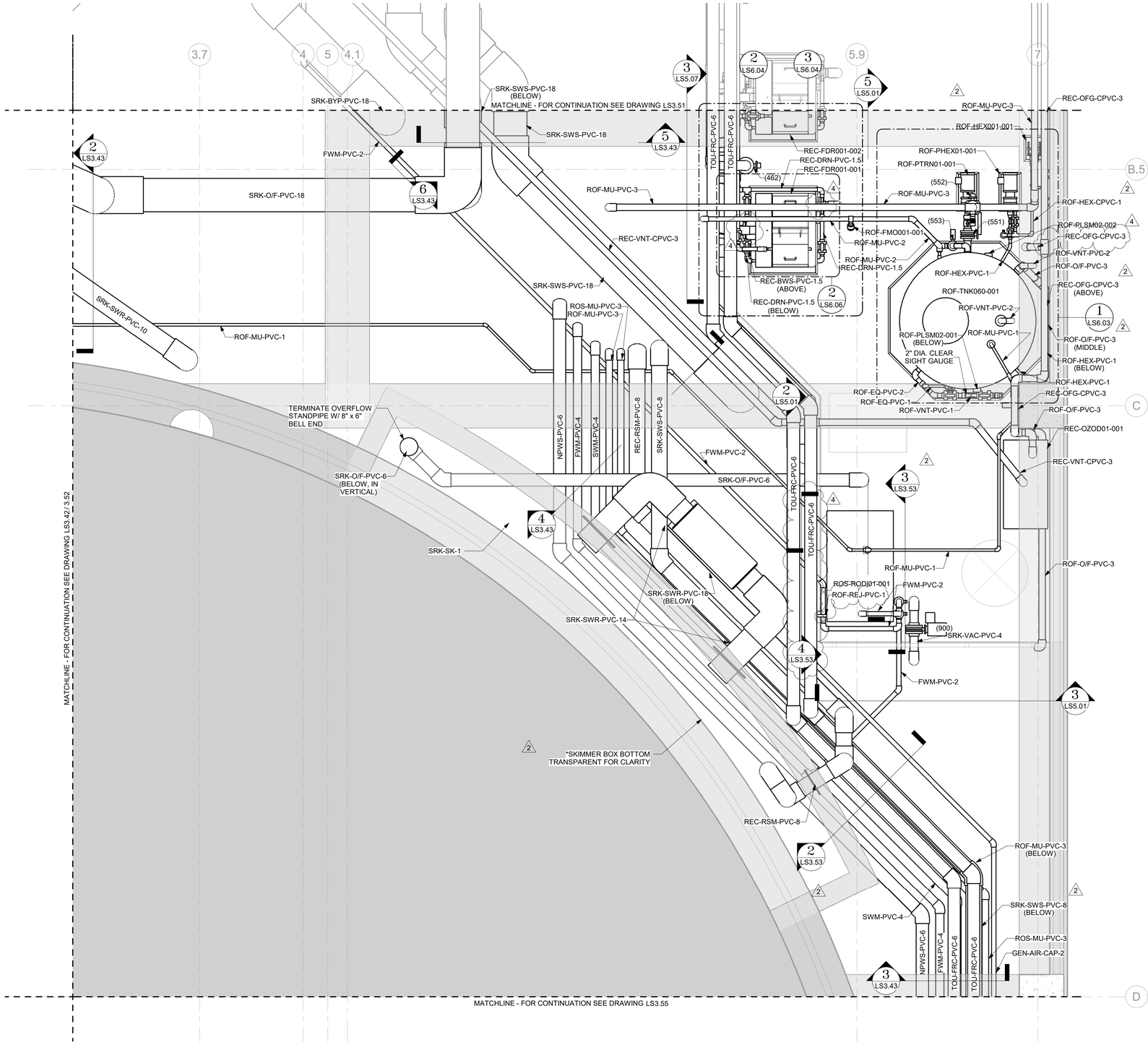
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NO.	DATE	DESCRIPTION
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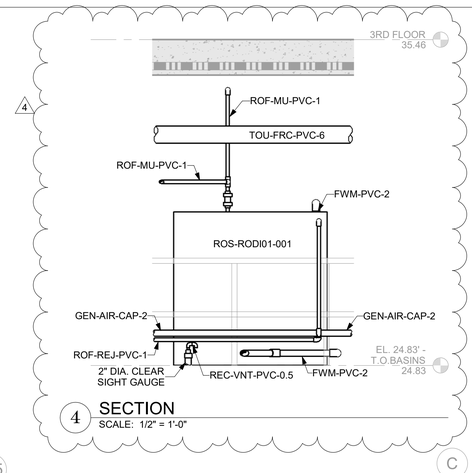
ENLARGED LSS PLAN - 2ND FLOOR ADMIN CEILING PLAN - EL. 23.94' TO 34.78'

LS3.51

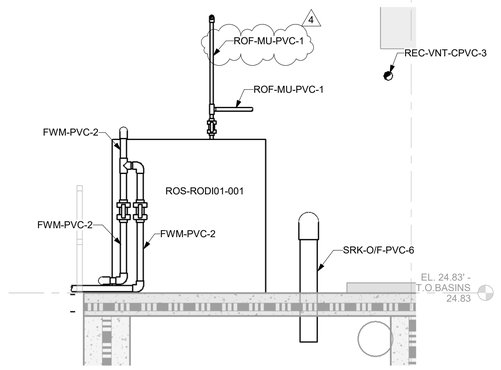
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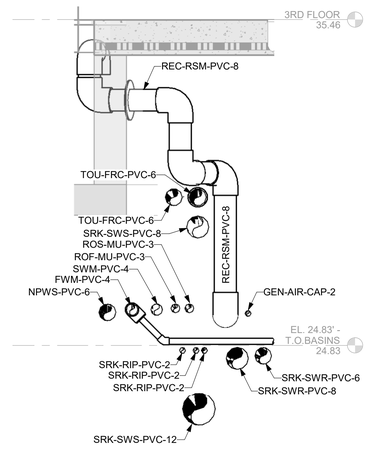
1 ENLARGED LSS PLAN - 2ND FLOOR ADMIN CEILING PLAN - EL. 24.86' TO 34.78'
SCALE: 1/2" = 1'-0"



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



3 SECTION
SCALE: 1/2" = 1'-0"



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

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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ARCHITECT
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TELE: 919.832.5587
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WILMINGTON, NC 28401
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FAX: 910.791.5066
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CIVIL ENGINEER
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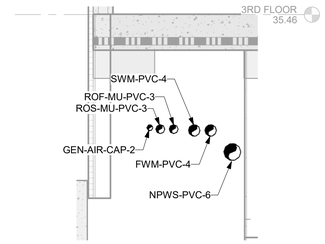
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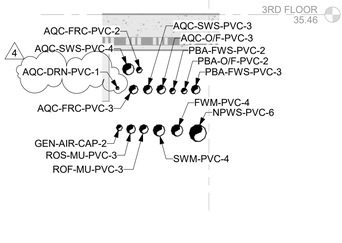
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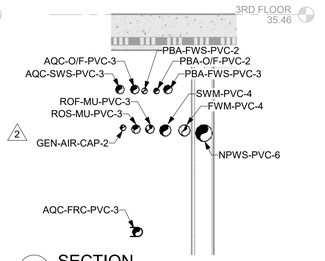
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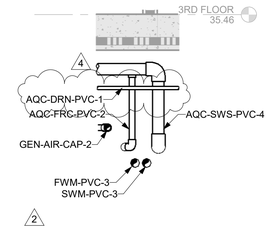
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SCALE: 1/2" = 1'-0"



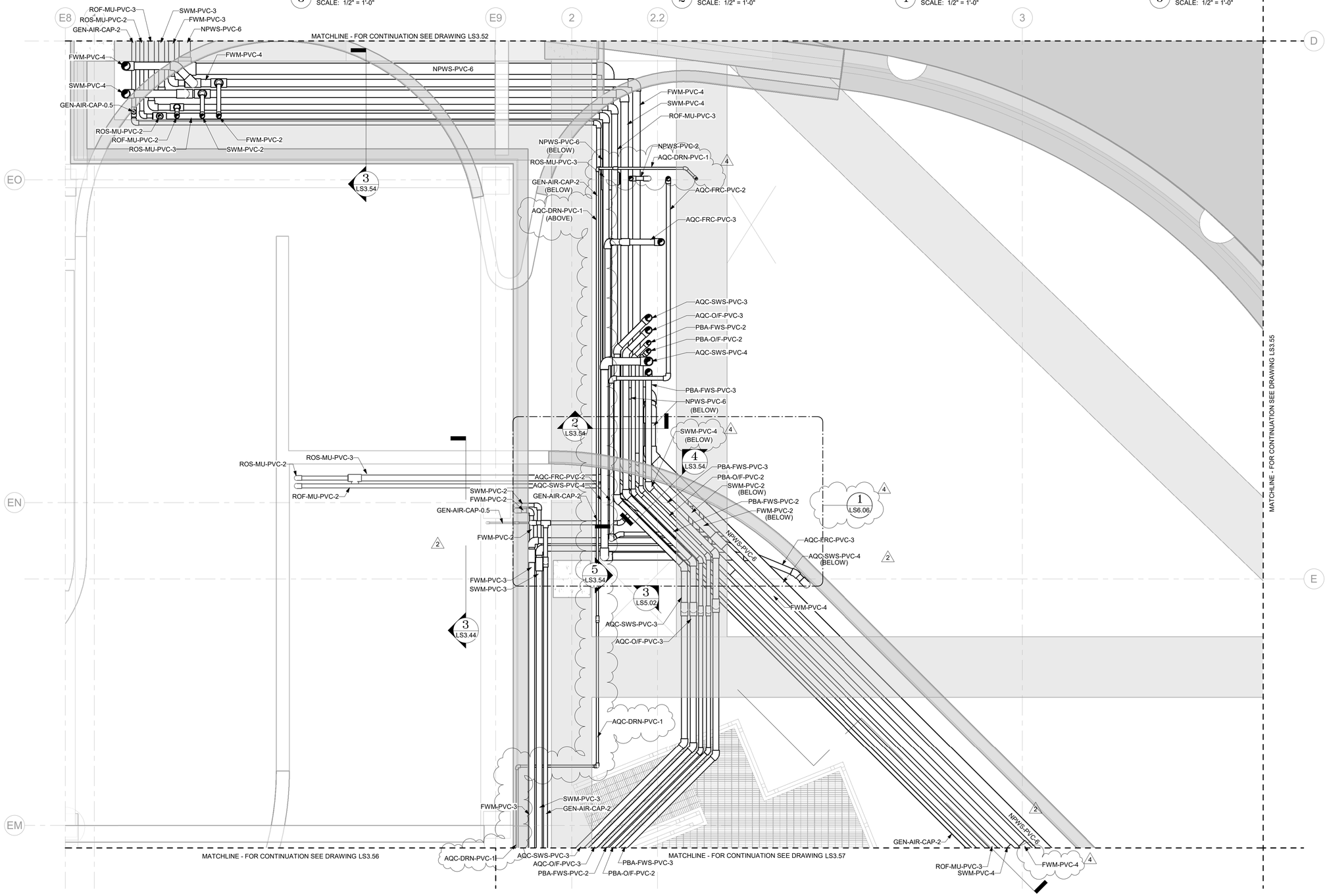
2 SECTION
SCALE: 1/2" = 1'-0"



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



5 SECTION
SCALE: 1/2" = 1'-0"



1 ENLARGED LSS PLAN - 2ND FLOOR ADMIN CEILING PLAN - EL. 26.69' TO 35.46'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

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FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.3244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200#4
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
WWW.ROTO.COM

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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
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WWW.BENNETT-PLESS.COM
LICENSE # P-1105

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WILMINGTON, NC 28401
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LANDSCAPE ARCHITECT
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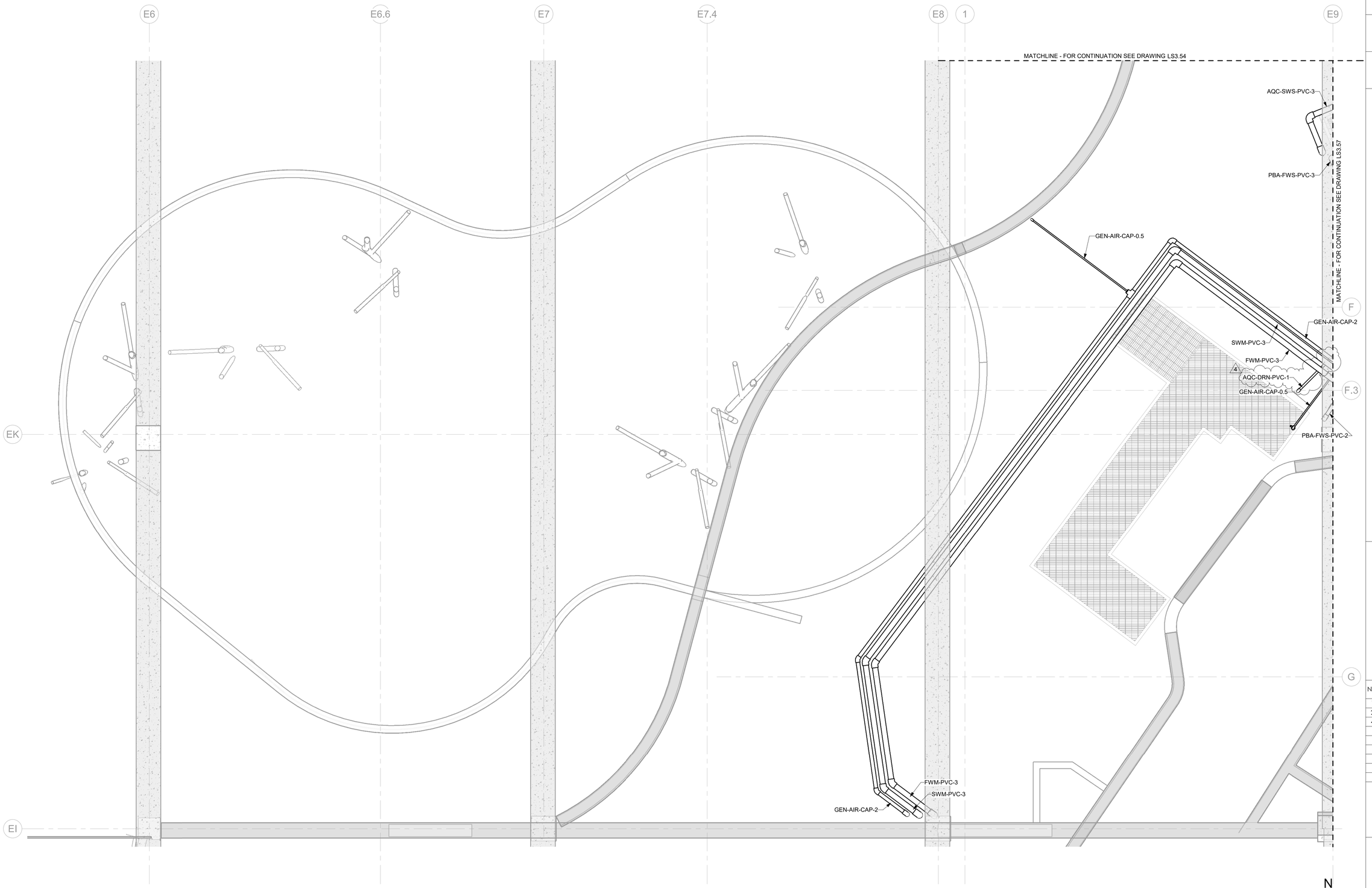
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ENLARGED LSS PLAN - 2ND FLOOR ADMIN CEILING PLAN - EL. 26.69' TO 35.46'

LS3.54

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1 ENLARGED LSS PLAN - 2ND FLOOR ADMIN CEILING PLAN - EL. 26.69' TO 34.36'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

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CODE: 42014-4G02
ITEM: 41414-4Y4A

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TUNSTALL CONSULTING ENGINEERS PLLC
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2602 IRON GATE DRIVE SUITE 102
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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
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TELE: 919.419.1199
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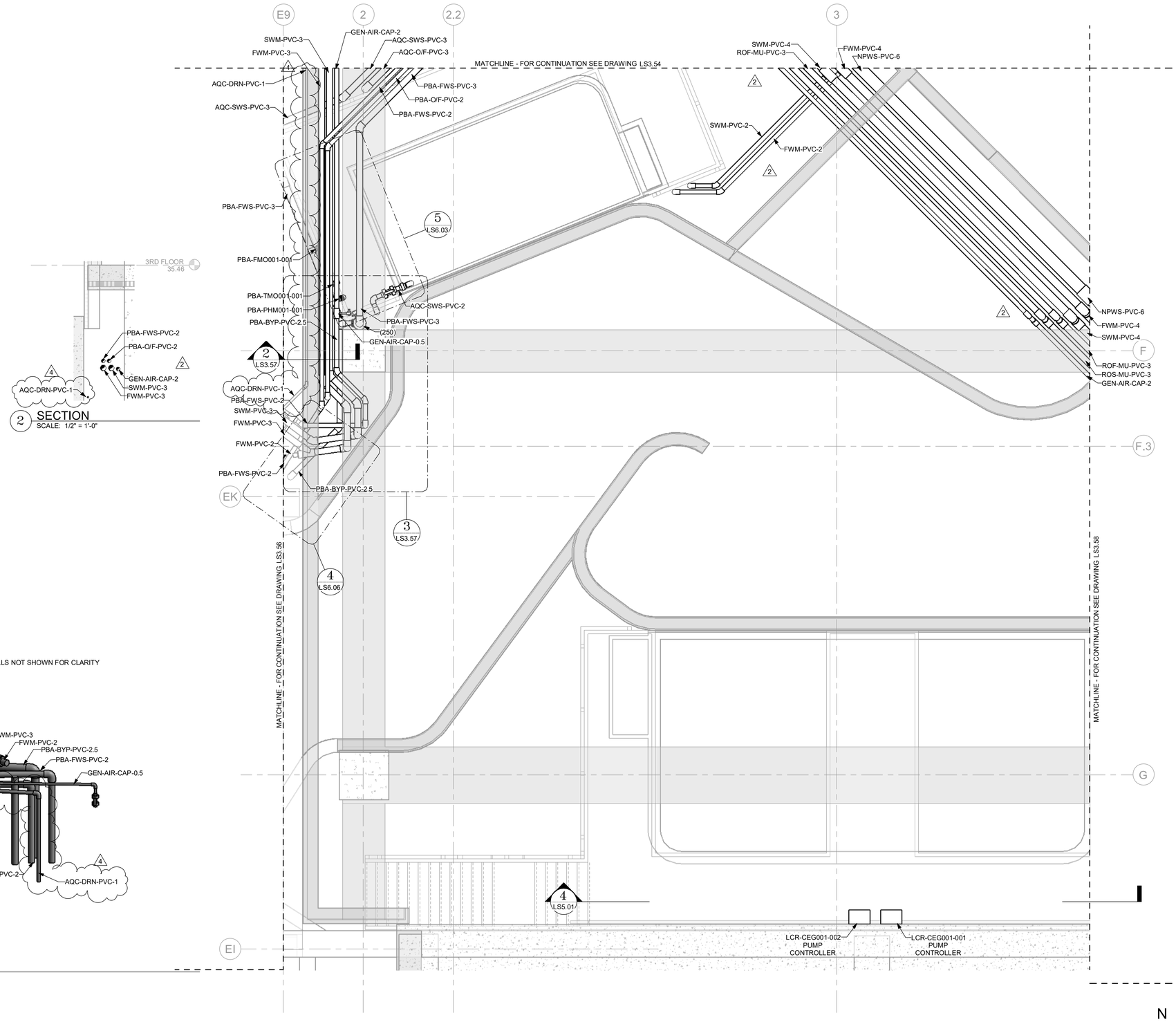
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4	11-10-25	ADDENDUM #3

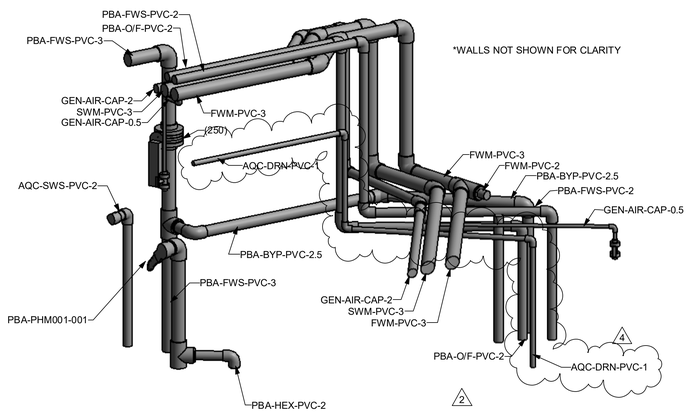
ENLARGED LSS PLAN - 2ND FLOOR ADMIN CEILING PLAN - EL. 26.69' TO 34.36'

LS3.56

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



3 ISOMETRIC
SCALE: NONE

1 ENLARGED LSS PLAN - 2ND FLOOR ADMIN CEILING PLAN - EL. 26.69' TO 34.28'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
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WWW.SZOSTAKDESIGN.COM
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56890 VENTURE LANE SUITE 205H
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EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
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TELE: 617.760.8690
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.802.5587
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LICENSE # P-1105

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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
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LIGHTING DESIGNER
10065 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9458
FAX: 910.343.9604
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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
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TELE: 919.419.1199
FAX: 919.419.1669
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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
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TELE: 910.452.4310
WWW.CHEATHAMPA.COM
LICENSE # C-1073

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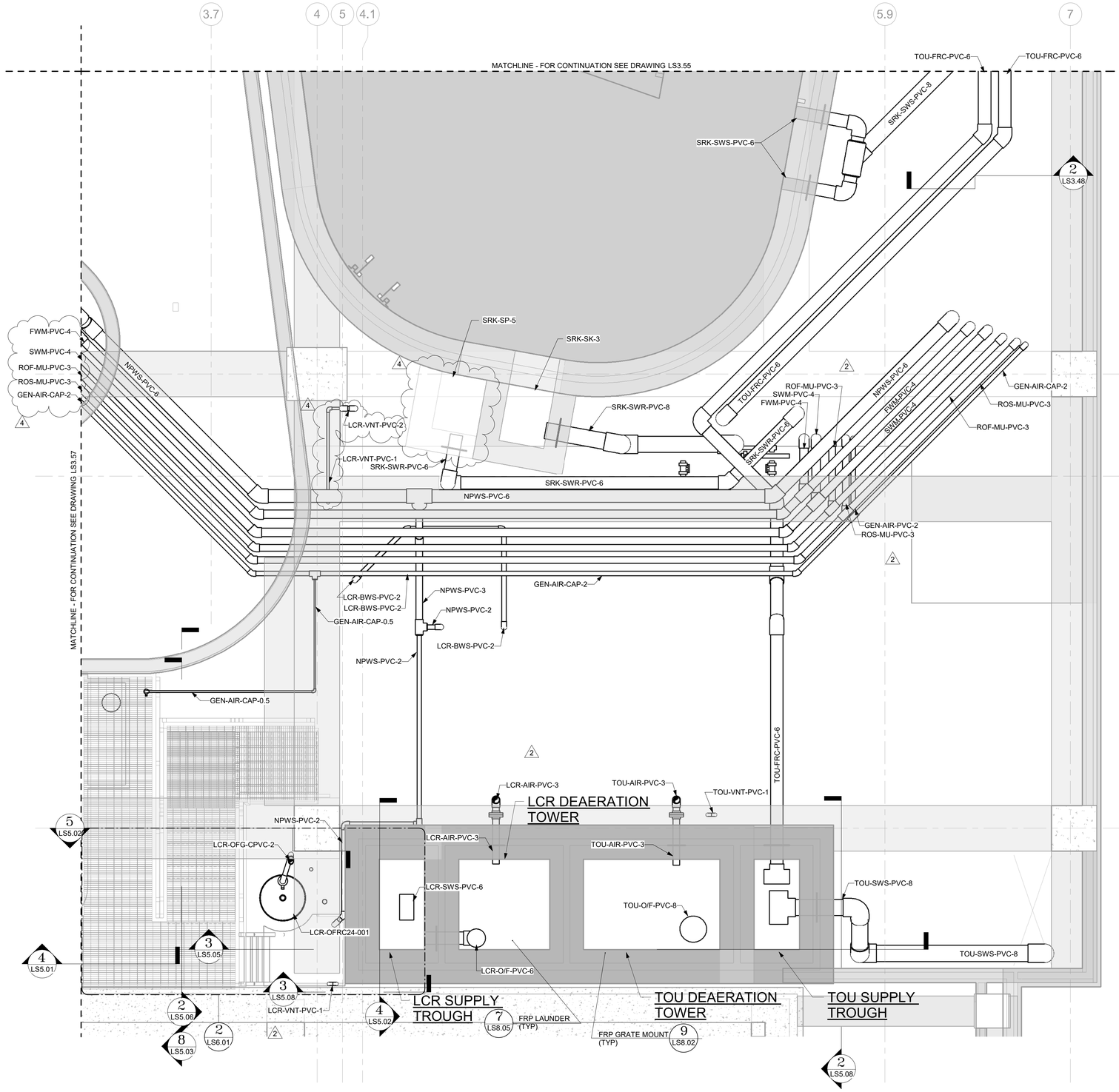
NO.	DATE	DESCRIPTION
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ENLARGED LSS PLAN - 2ND FLOOR ADMIN CEILING PLAN - EL. 26.69' TO 34.28'

LS3.57

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1 ENLARGED LSS PLAN - 2ND FLOOR ADMIN CEILING PLAN - EL. 26.44' TO 34.28'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200M
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
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BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.832.5587
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LICENSE # P-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 TAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
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LICENSE # P-0806

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LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
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TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
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LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
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TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
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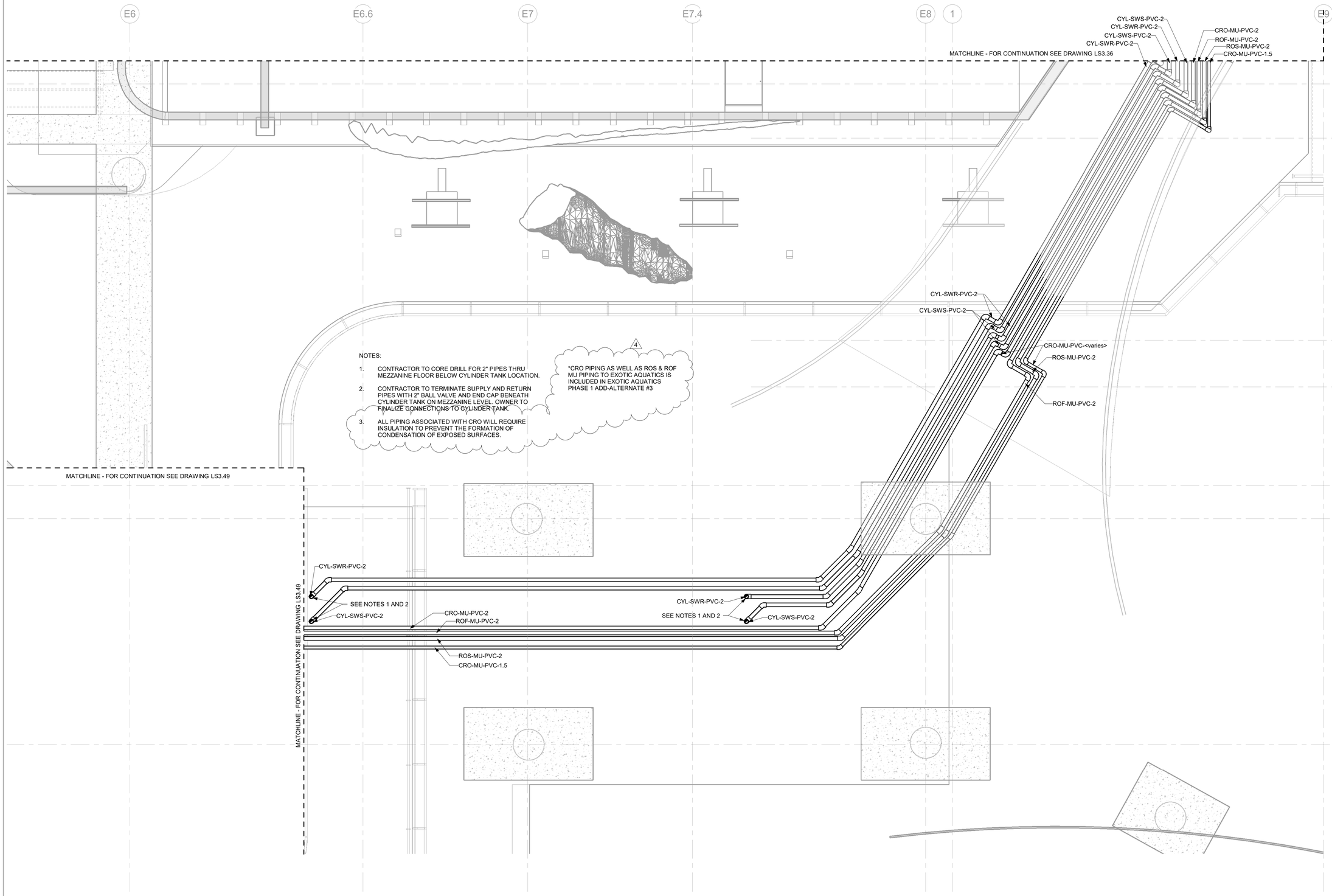
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ENLARGED LSS PLAN - 2ND FLOOR ADMIN CEILING PLAN - EL. 26.44' TO 34.28'

LS3.58

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1 ENLARGED LSS CEILING PLAN - CYLINDERS - EL. 10.83' TO 19.36'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

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SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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TELE: 619.423.8700
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EXHIBIT DESIGNER
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FAX: 910.343.9604
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LICENSE # C-1073

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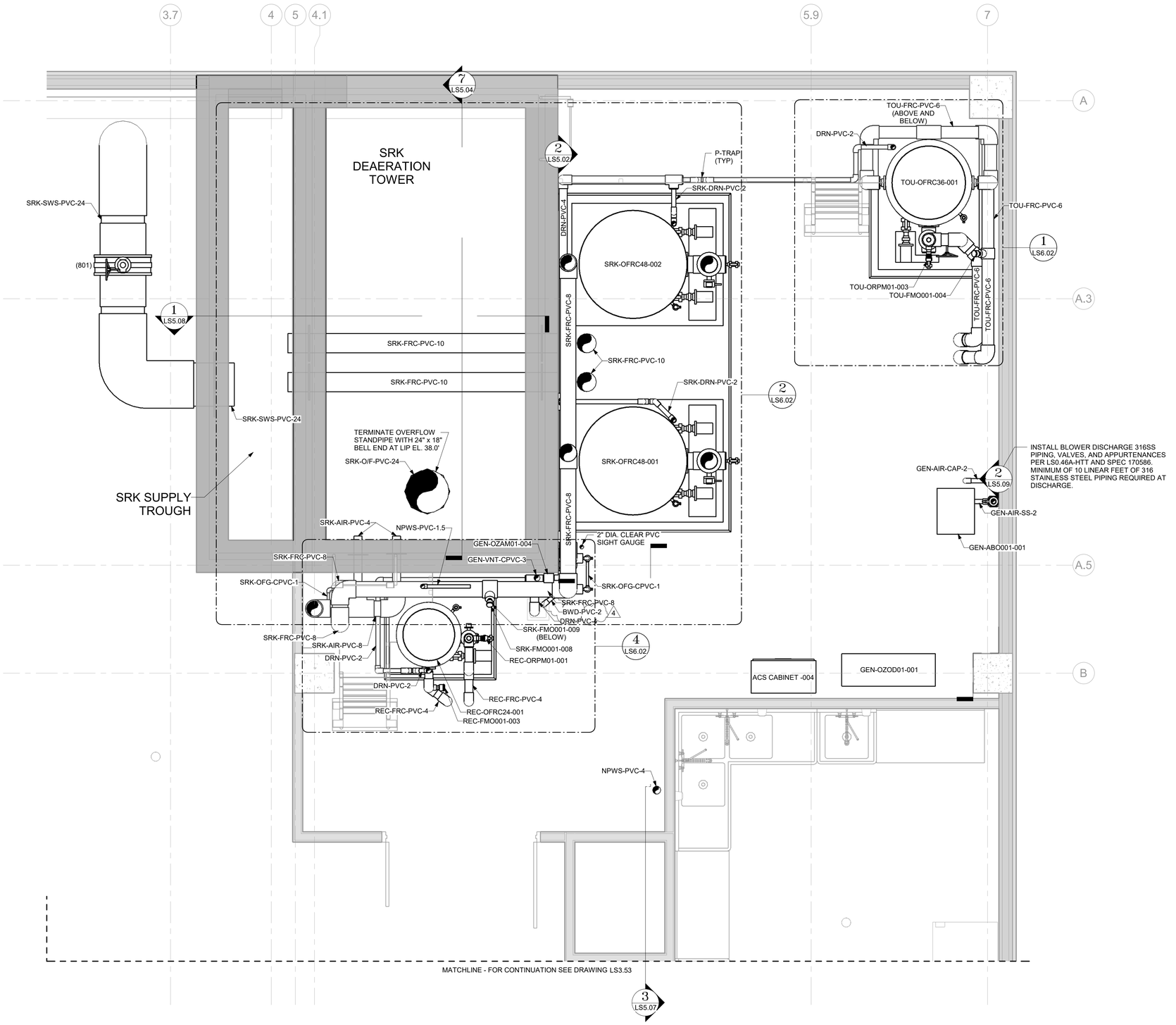
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2	10-17-25	ADDENDUM #1
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ENLARGED LSS CEILING PLAN - CYLINDERS - EL. 10.83' TO 19.36'

LS3.59

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1 ENLARGED LSS PLAN - 3RD FLOOR - EL. 34.78' TO 41.73'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

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SCO #17-18042-02A
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310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200M
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

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EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.760.8690
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RALEIGH, NC 27607
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MEP ENGINEER
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WILMINGTON, NC 28401
TELE: 910.791.4000
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10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
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2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
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COST ESTIMATOR
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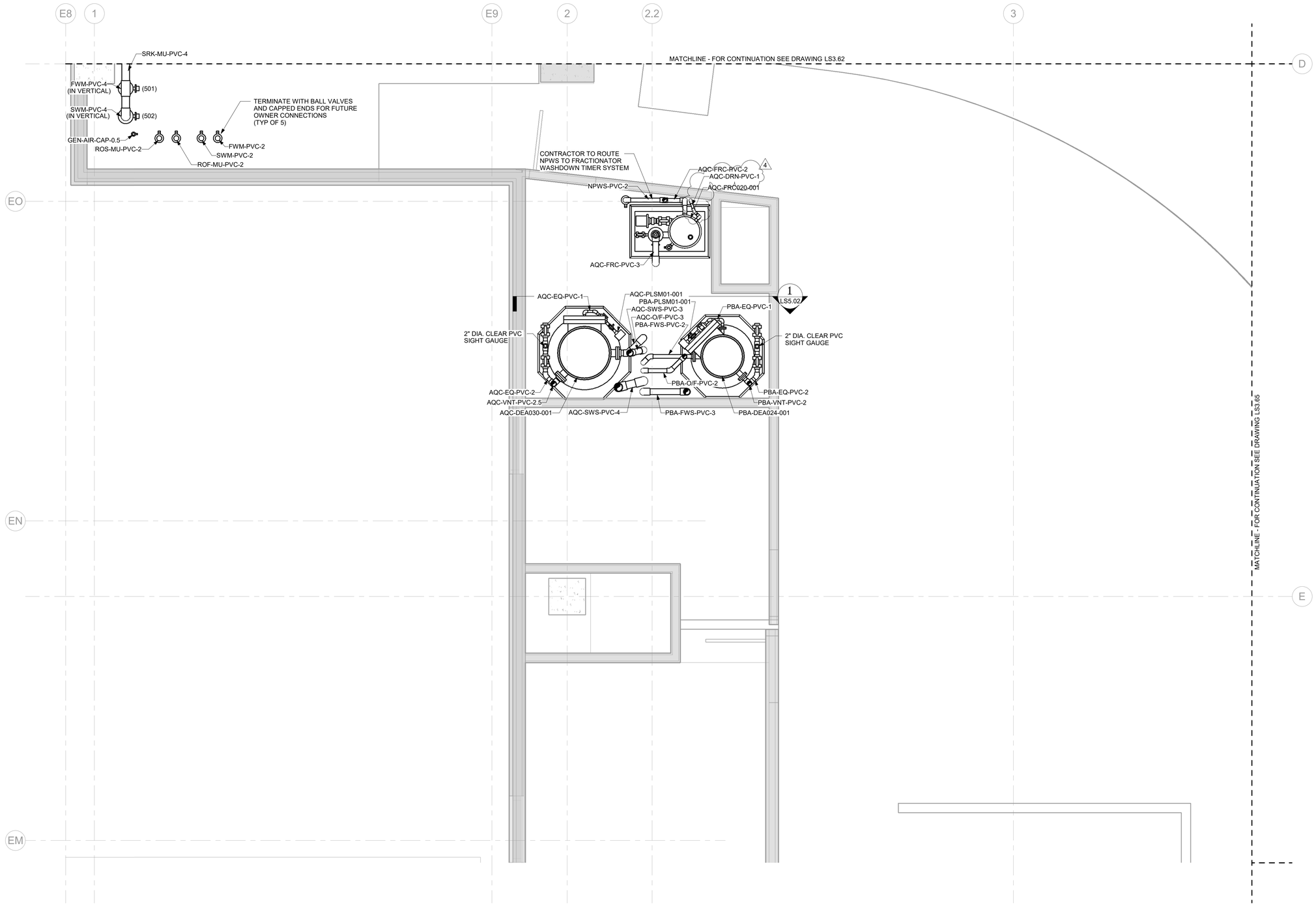
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ENLARGED LSS PLAN - 3RD FLOOR - EL. 34.78' TO 41.73'

LS3.61

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1 ENLARGED LSS PLAN - 3RD FLOOR - EL. 35.46' TO 45.96'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

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AQUARIUM
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PHASE 1

SCO #17-18042-02A
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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.3244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.763.8690
WWW.ROTO.COM

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STRUCTURAL ENGINEER
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RALEIGH, NC 27607
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WILMINGTON, NC 28401
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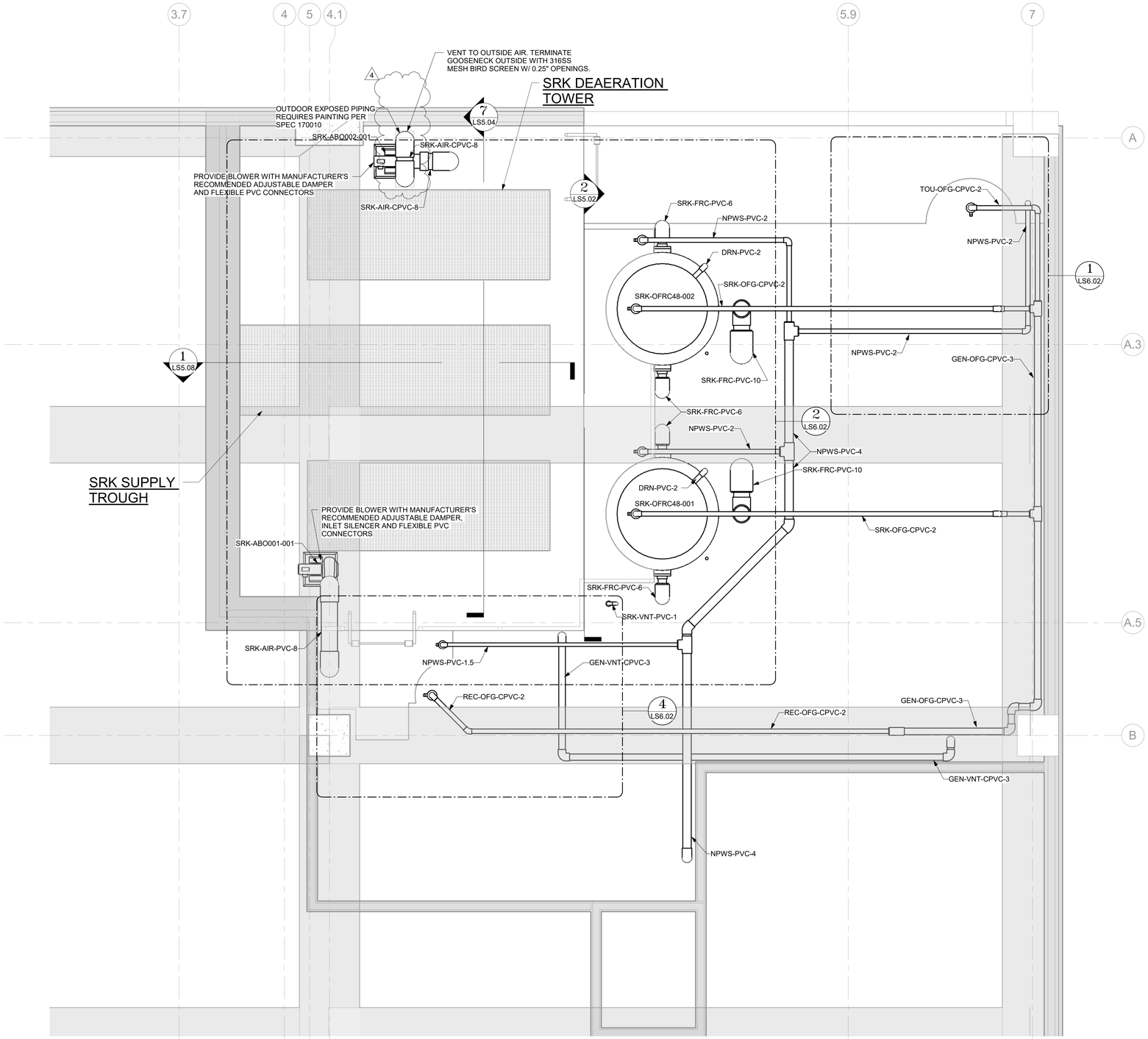
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ENLARGED LSS PLAN - 3RD FLOOR - EL. 35.46' TO 45.96'

LS3.64

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1 ENLARGED LSS CEILING PLAN - 3RD FLOOR - EL. 45.17' TO 52.54'
SCALE: 1/2" = 1'-0"

SCALE: 1/2" - 1'-0"
0 2 4 6 8

N

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
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FAX: 919.960.7967
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2602 IRON GATE DRIVE SUITE 102
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FAX: 910.343.9654
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215 MORRIS STREET SUITE 150
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TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

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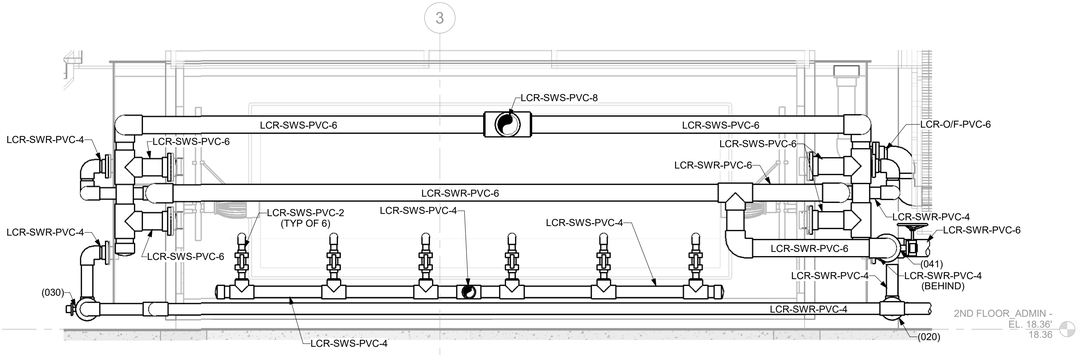
11/10/2025

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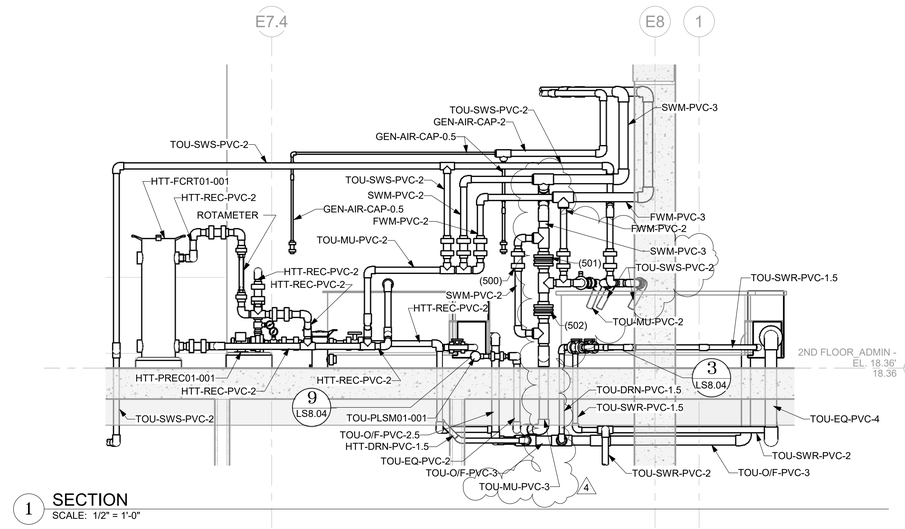
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LS3.81

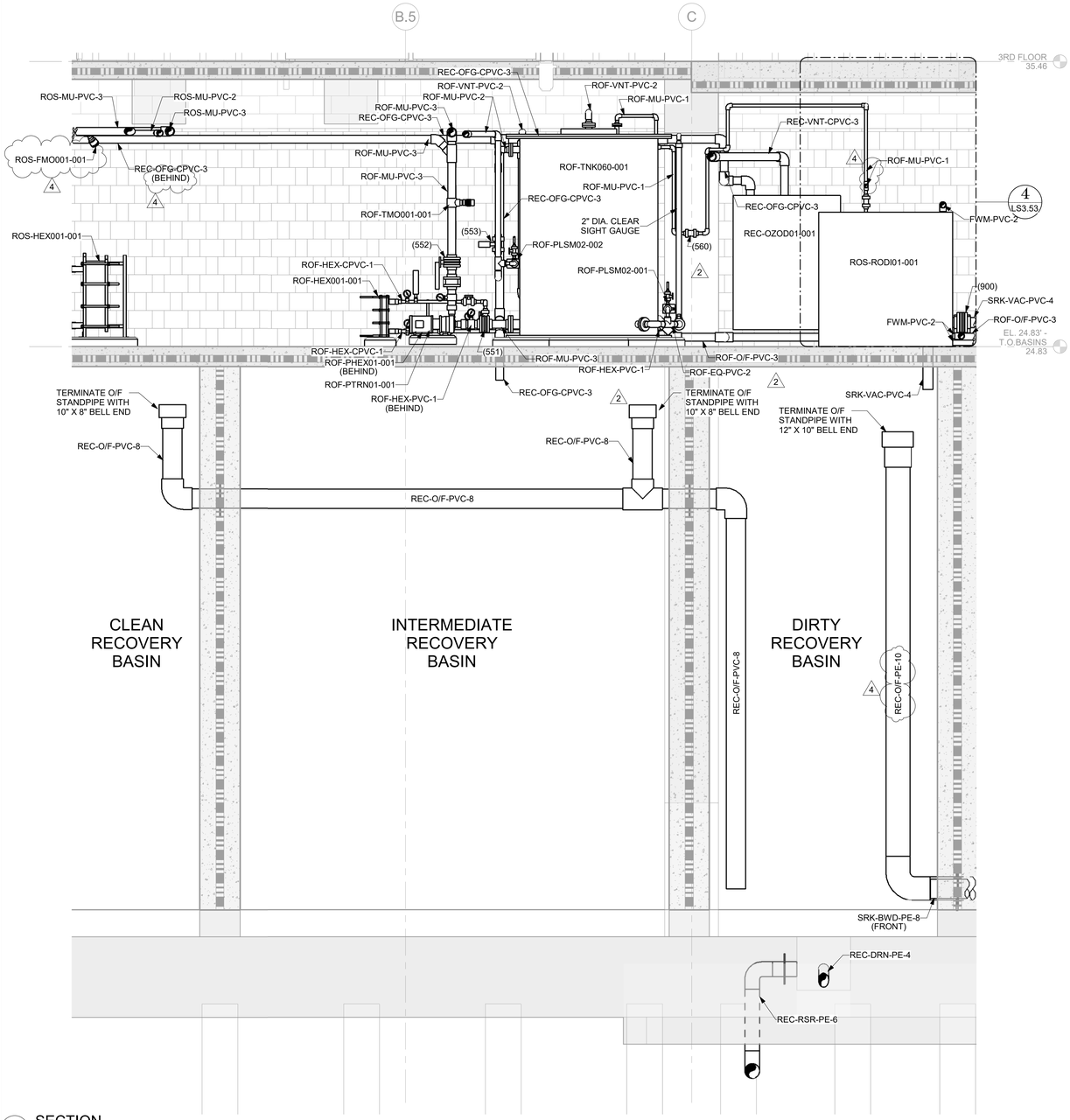
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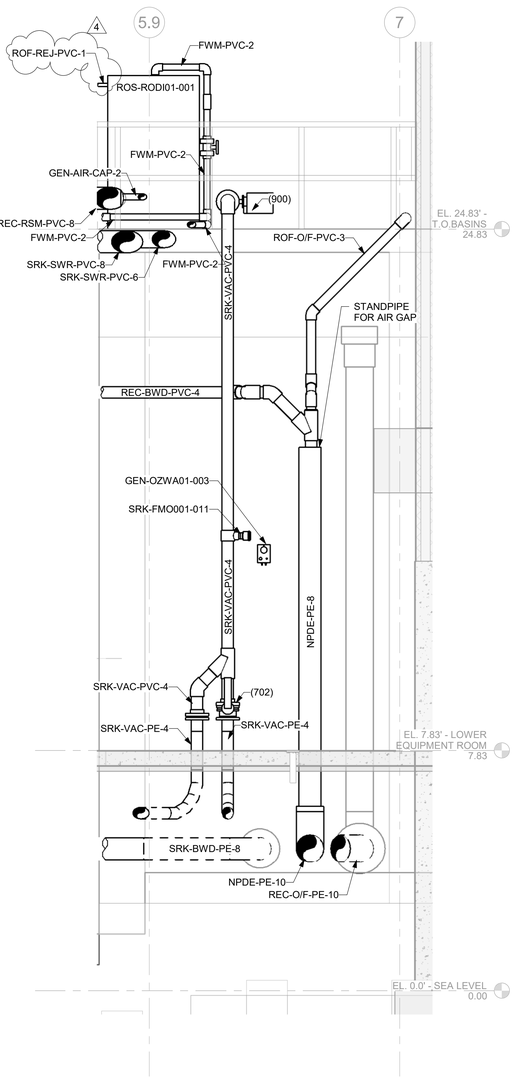
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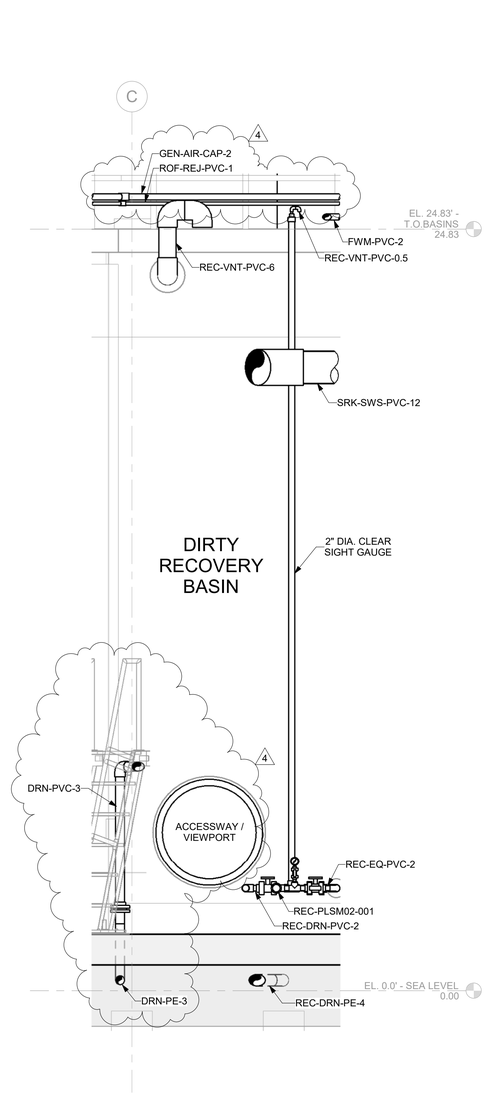
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5 SECTION
SCALE: 1/2" = 1'-0"



3 SECTION
SCALE: 1/2" = 1'-0"



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

SCALE: 1/2" - 1'-0"
0 2 4 6 8

SZOSTAK DESIGN

FORT FISHER
AQUARIUM
RENOVATION
& EXPANSION:
PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27514
TEL: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TEL: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3500

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7001 DISCOVERY BOULEVARD
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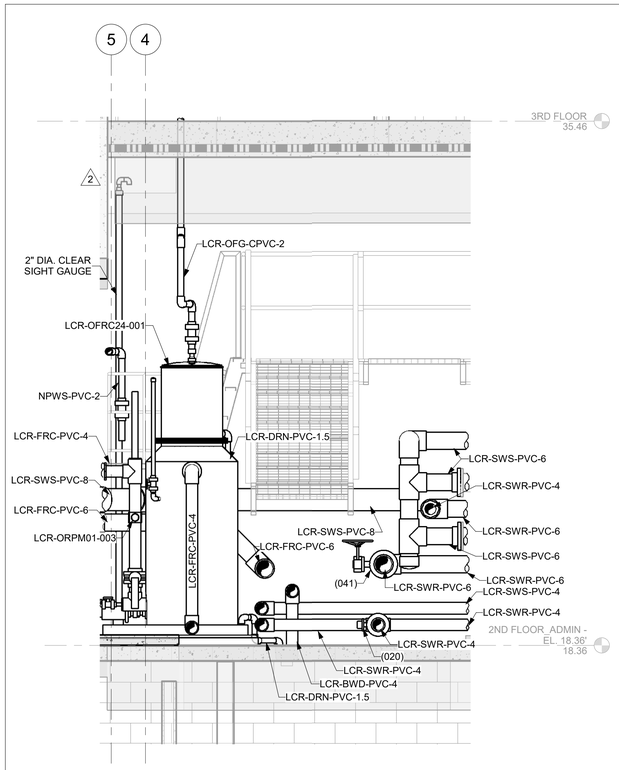
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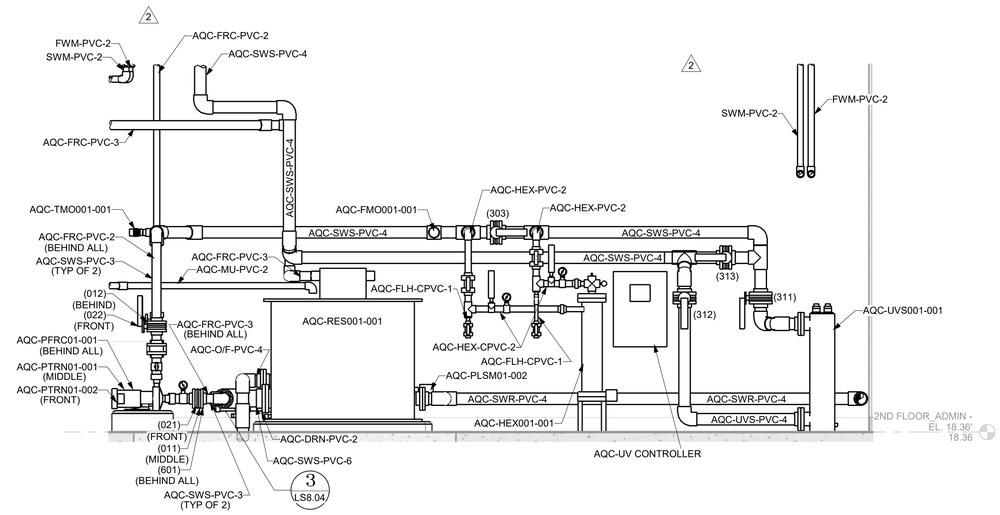
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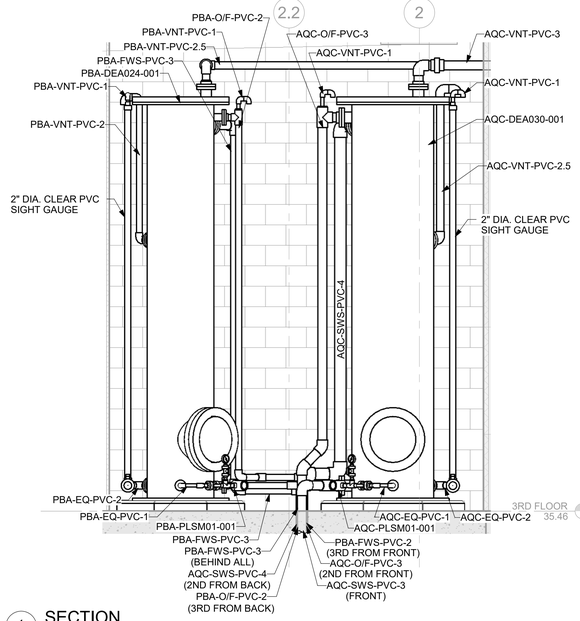
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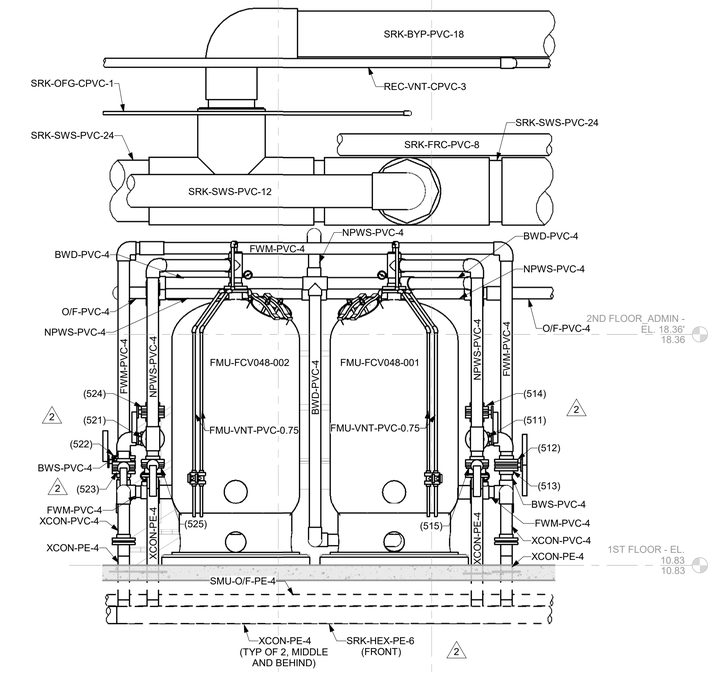
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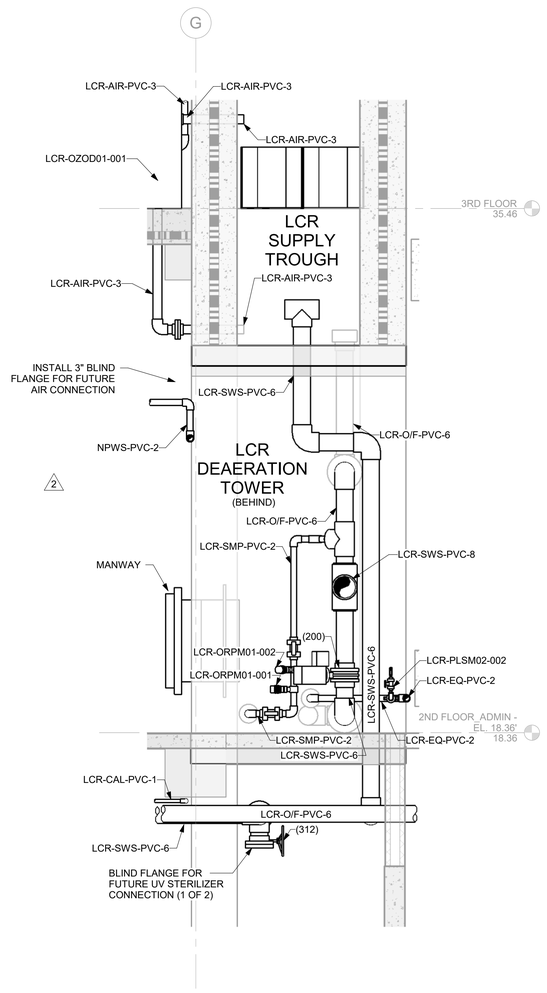
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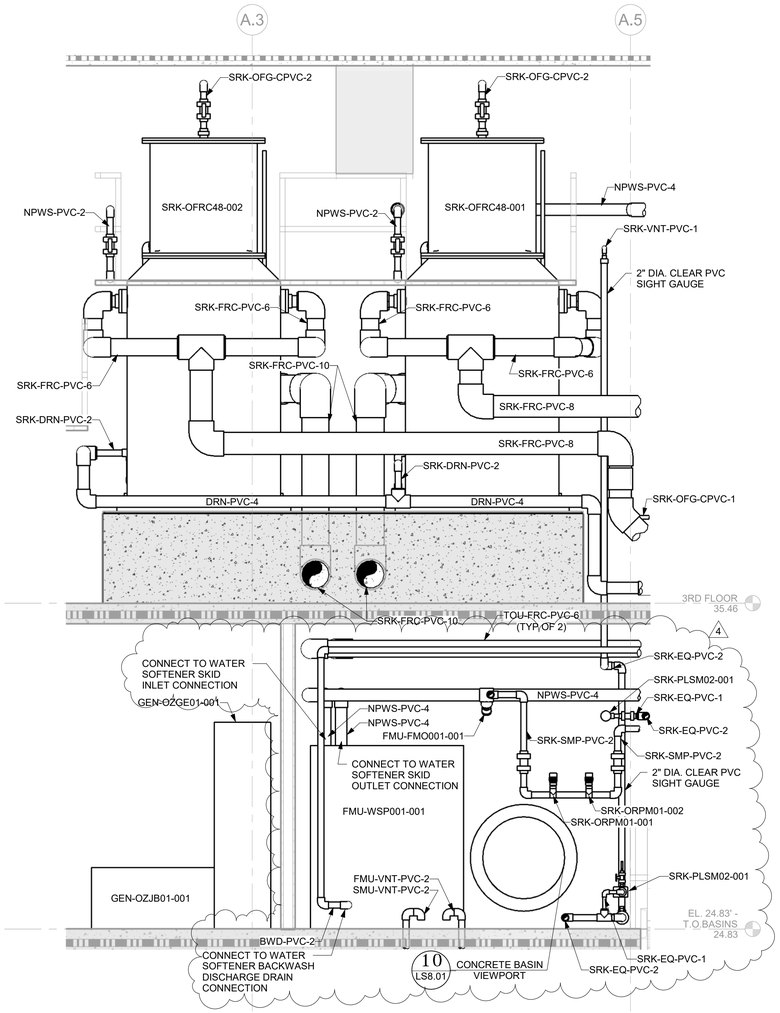
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6 SECTION
SCALE: 1/2" = 1'-0"



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



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

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
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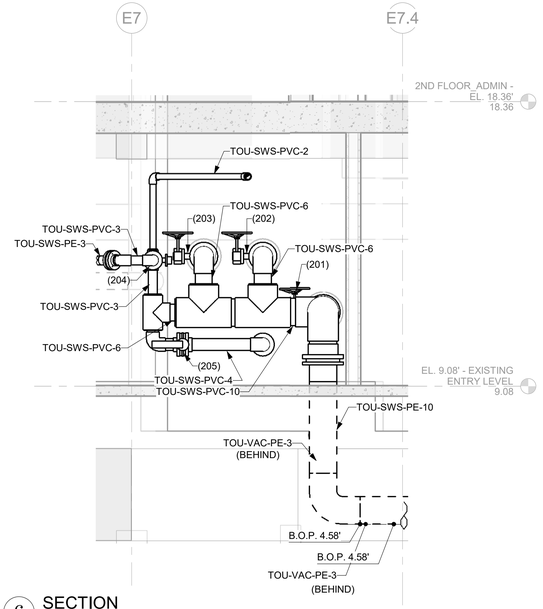
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SECTIONS

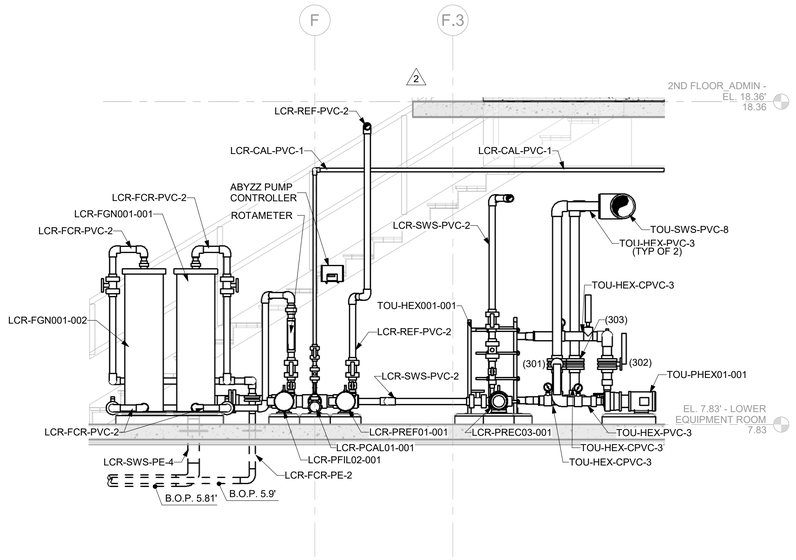
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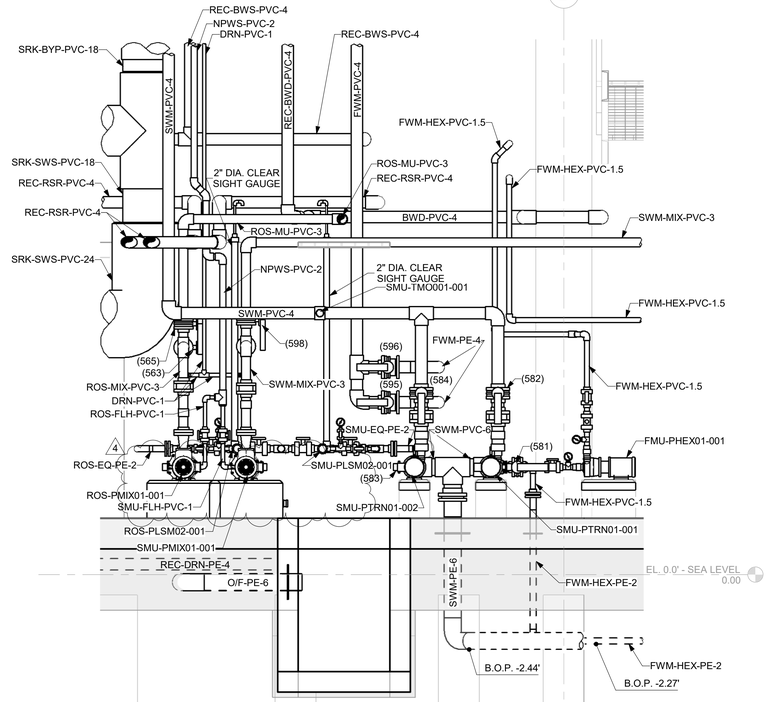
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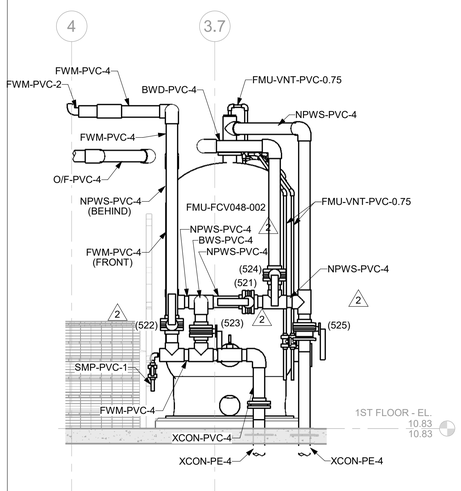
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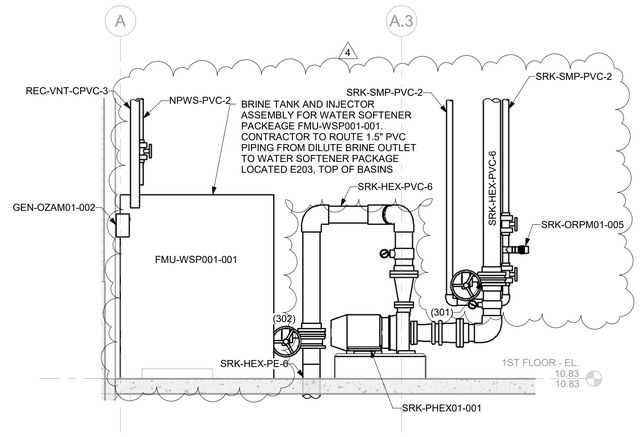
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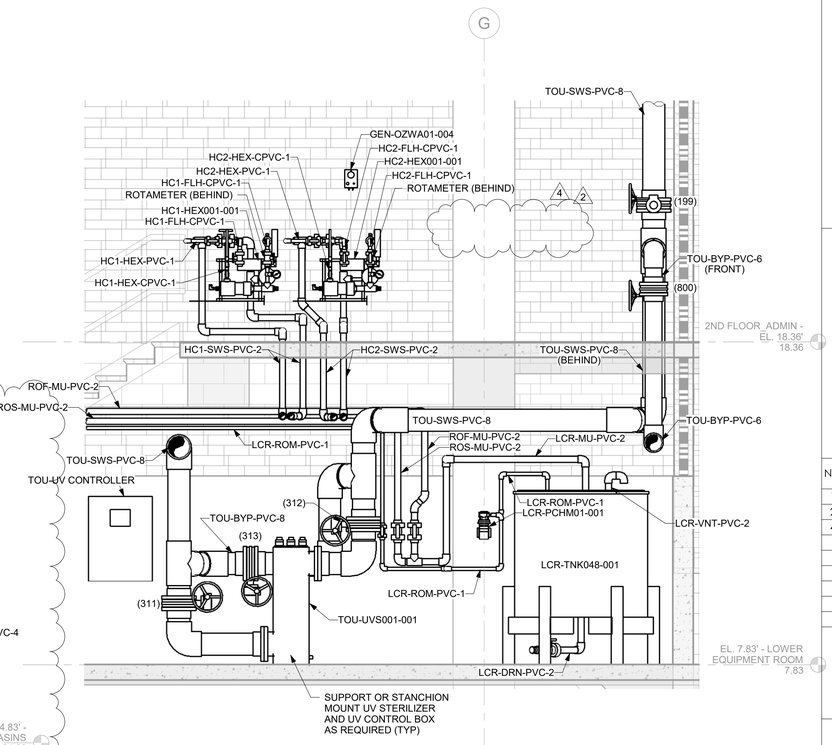
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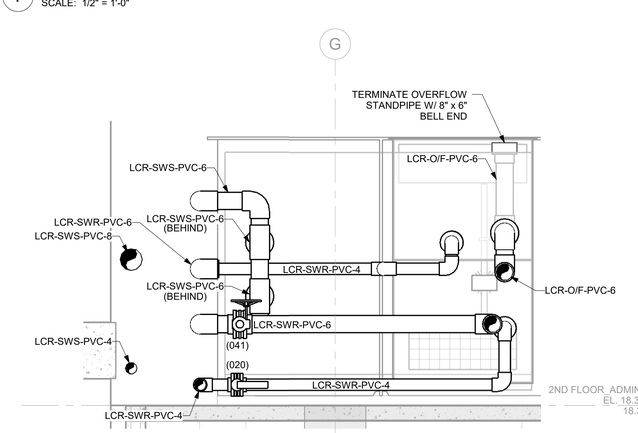
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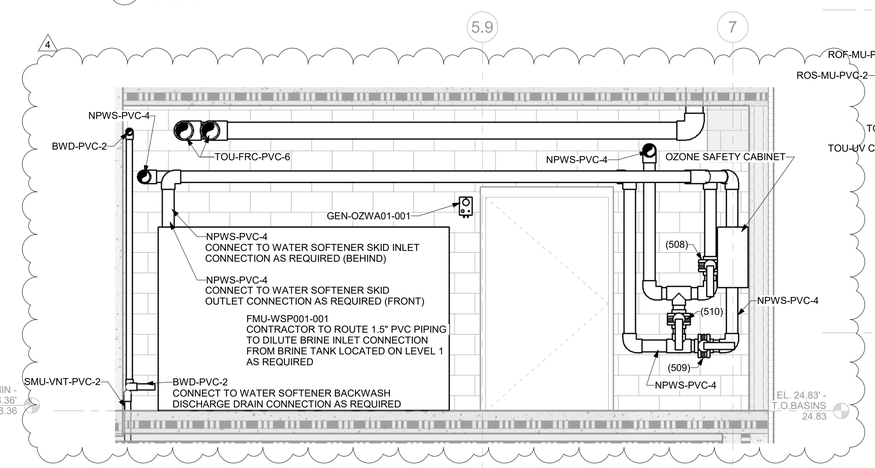
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SCALE: 1/2" - 1'-0"
0 2 4 6 8

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27514
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51479

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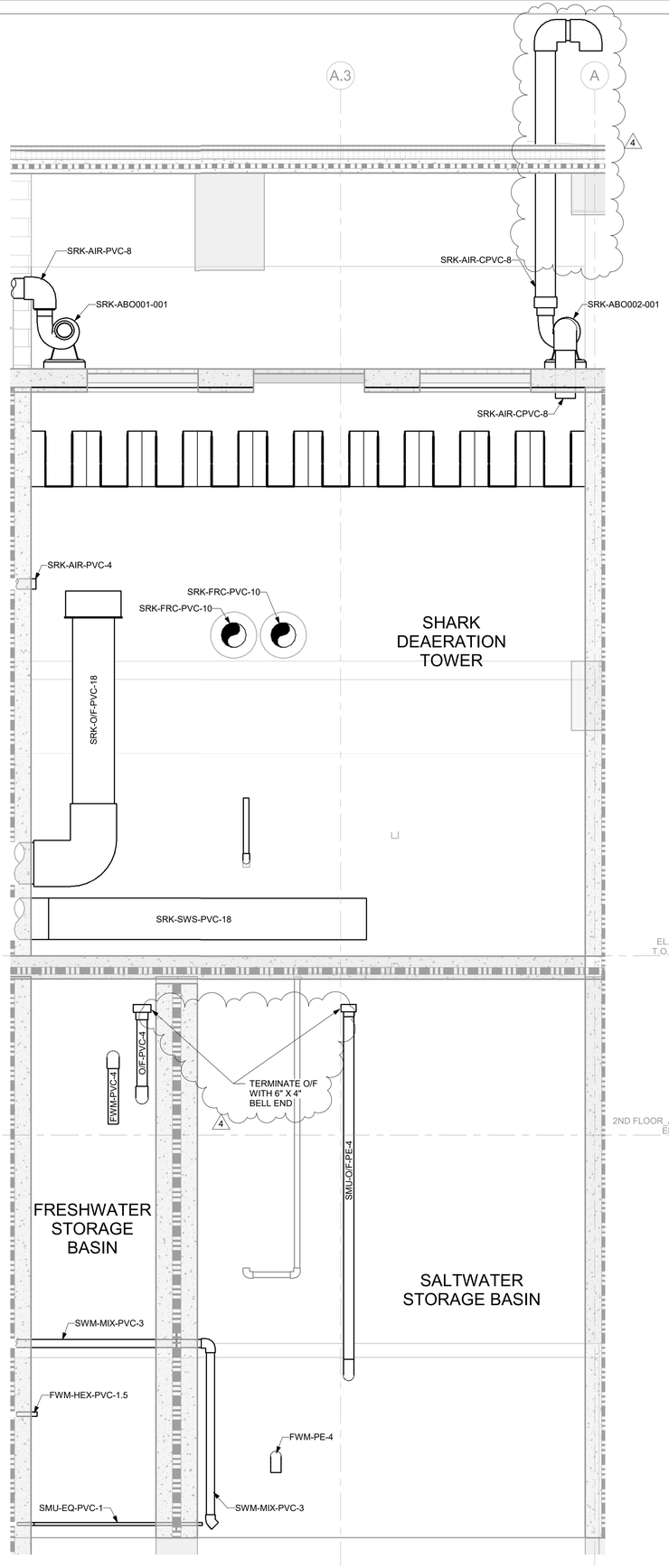
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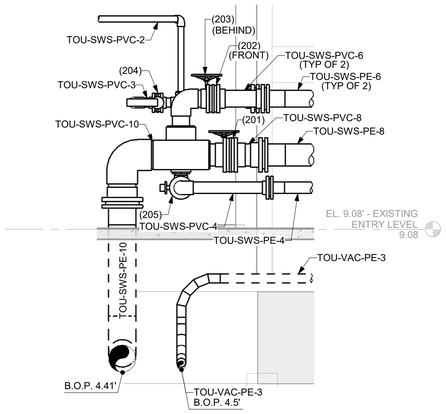
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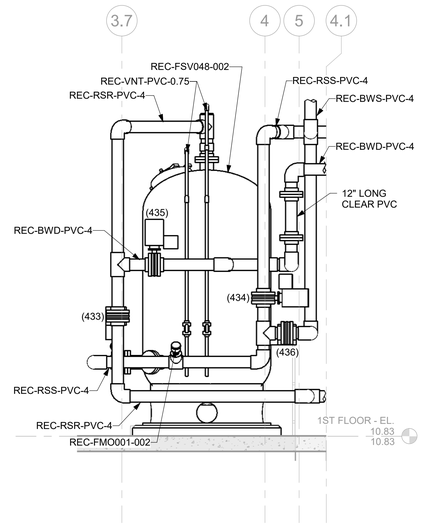
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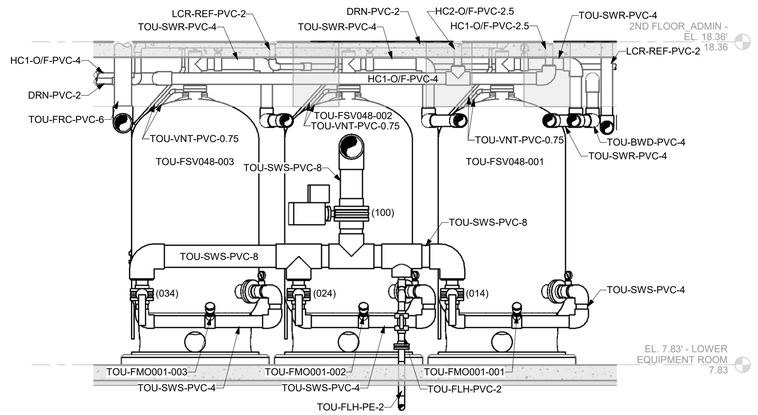
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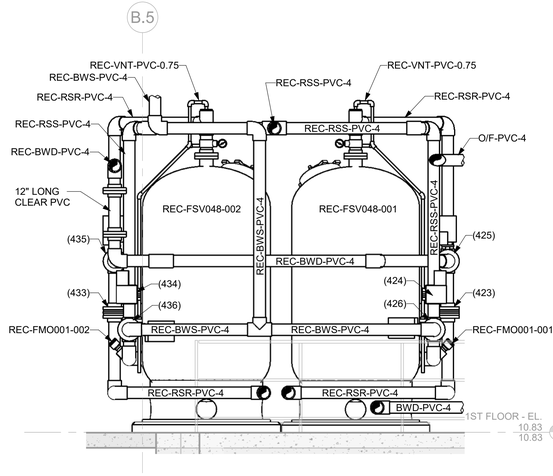
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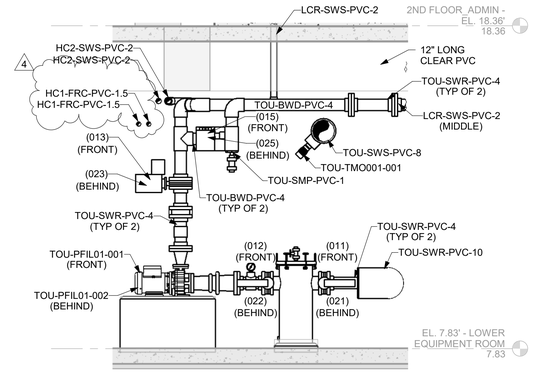
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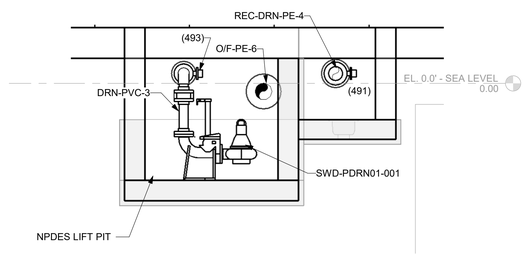
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SCALE: 1/2" = 1'-0"



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



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

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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56880 VENTURE LANE SUITE 2004
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WWW.TJPENGINEERING.COM
LICENSE # C-3505

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WWW.ROTO.COM

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TELE: 919.832.5587
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LICENSE # P-1105

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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
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FAX: 910.791.5066
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
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LICENSE # C-098

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WWW.CHEATHAMPA.COM
LICENSE # C-1073

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SEAL
049024
ENGINEER
TERRI JOHNSON

11/10/2025

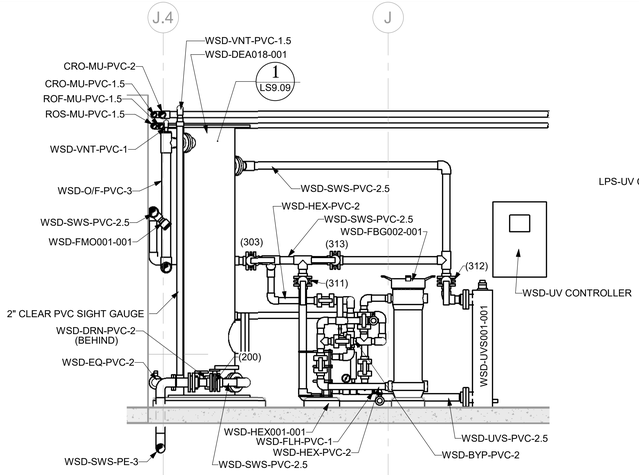
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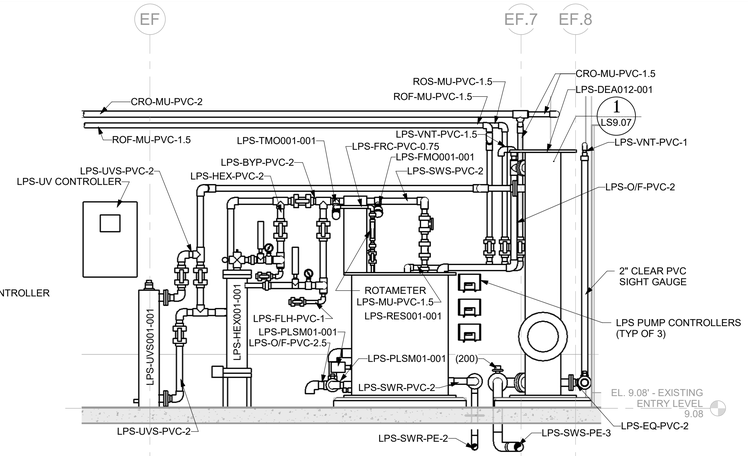
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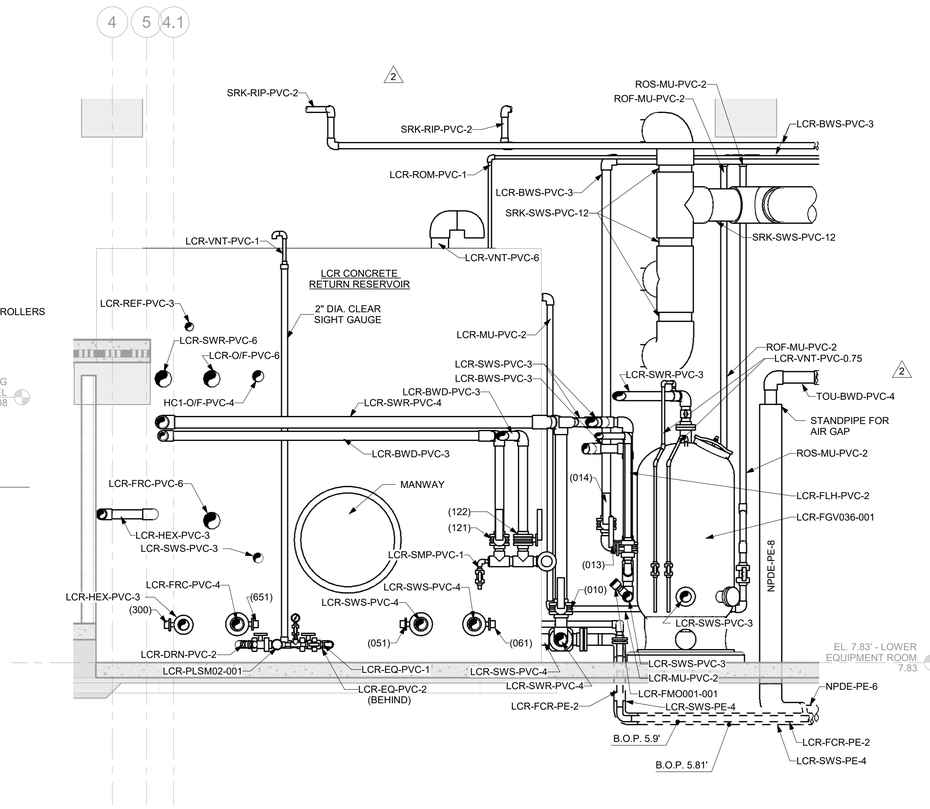
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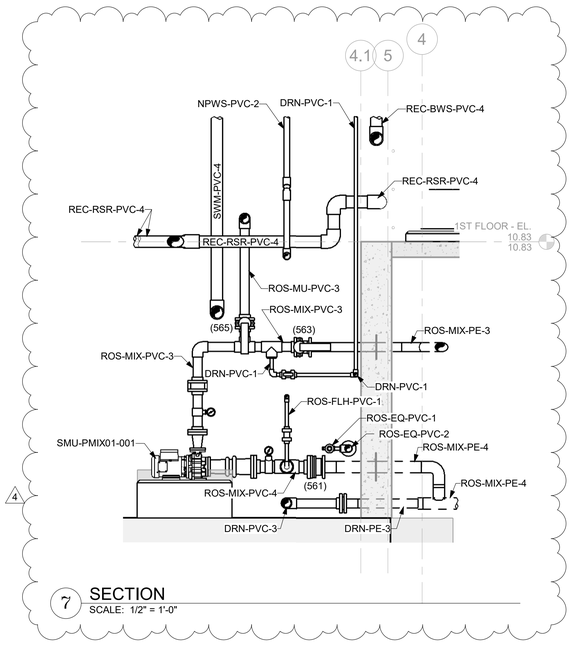
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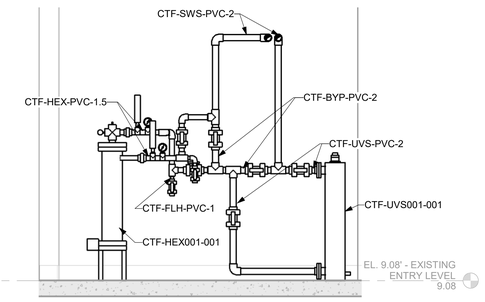
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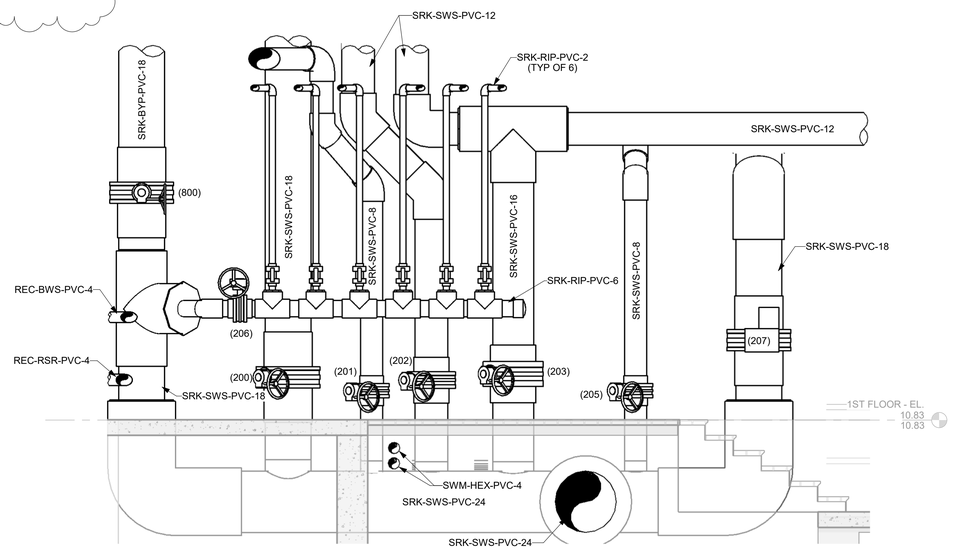
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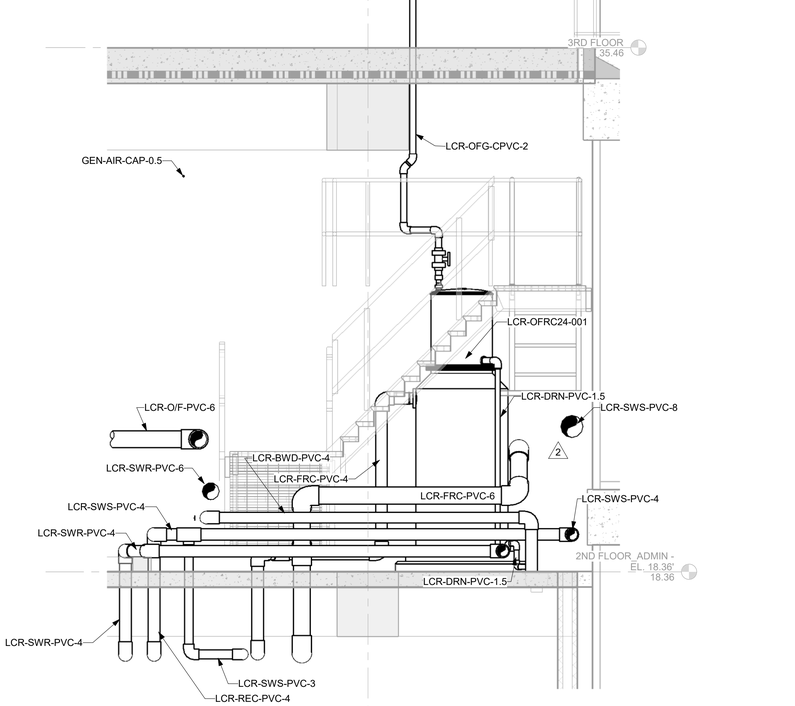
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4 SECTION
SCALE: 1/2" = 1'-0"



5 SECTION
SCALE: 1/2" = 1'-0"



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

SCALE: 1/2" - 1'-0"
0 2 4 6 8

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27514
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2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
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FAX: 919.419.1669
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LICENSE # C-098

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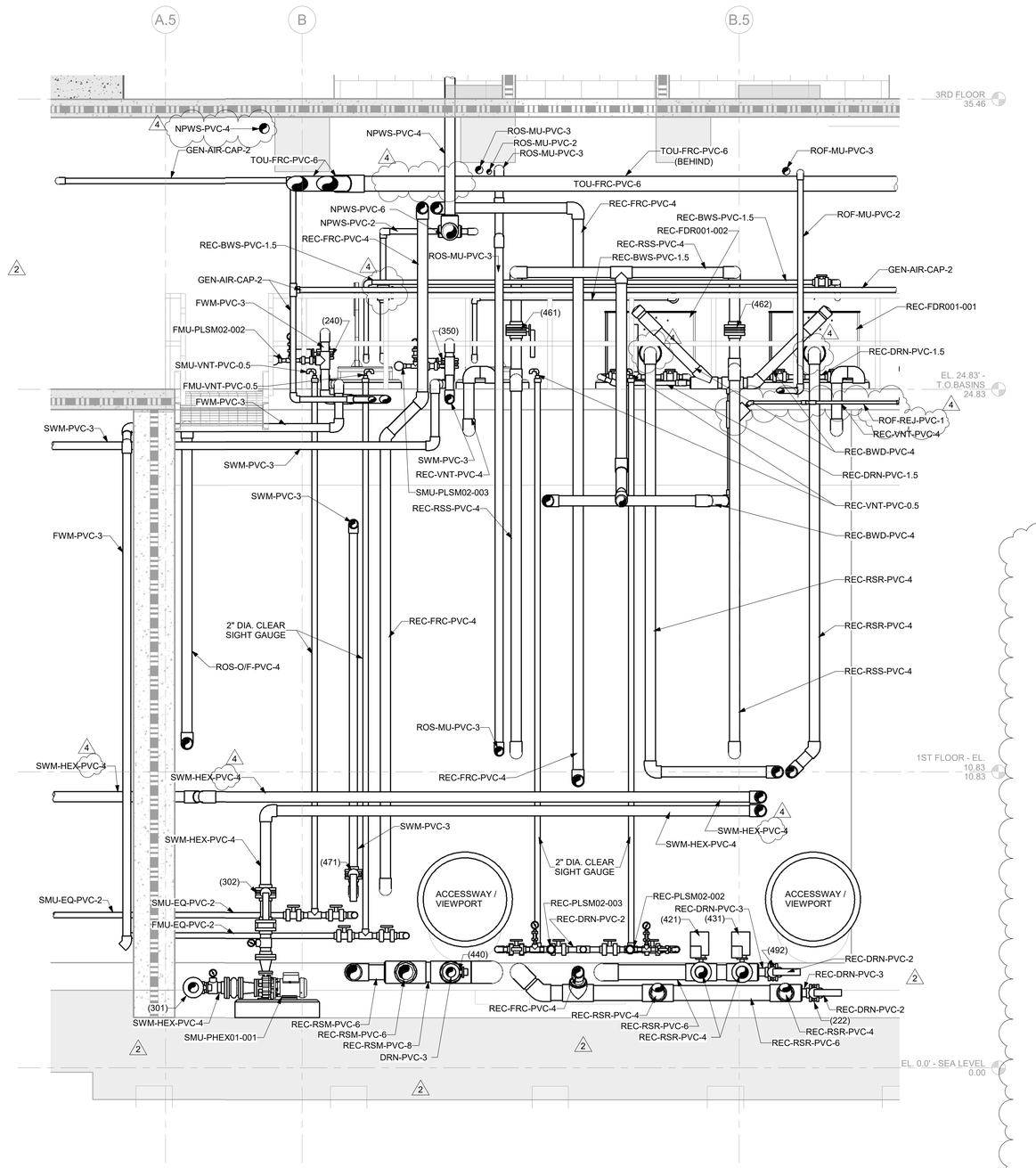
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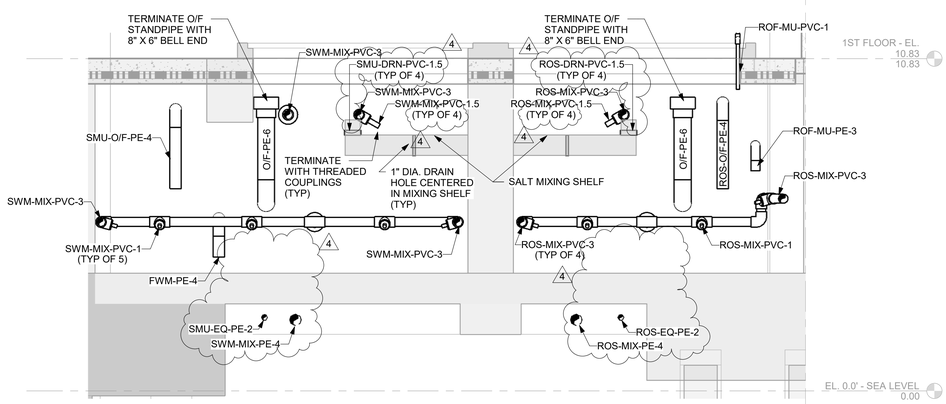
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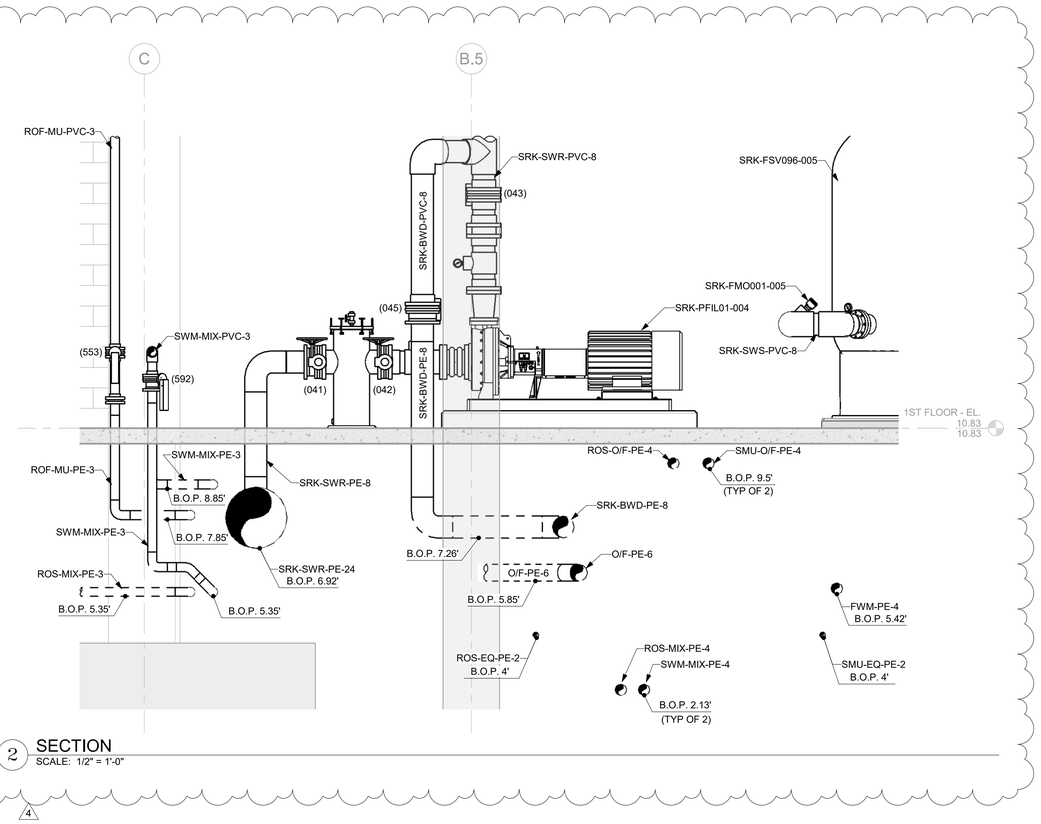
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3 SECTION
SCALE: 1/2" = 1'-0"



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



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

SCALE: 1/2" - 1'-0"
0 2 4 6 8

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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CODE: 42014-4G02
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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
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56880 VENTURE LANE SUITE 2004
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STRUCTURAL ENGINEER
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2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
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SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
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LICENSE # C-098

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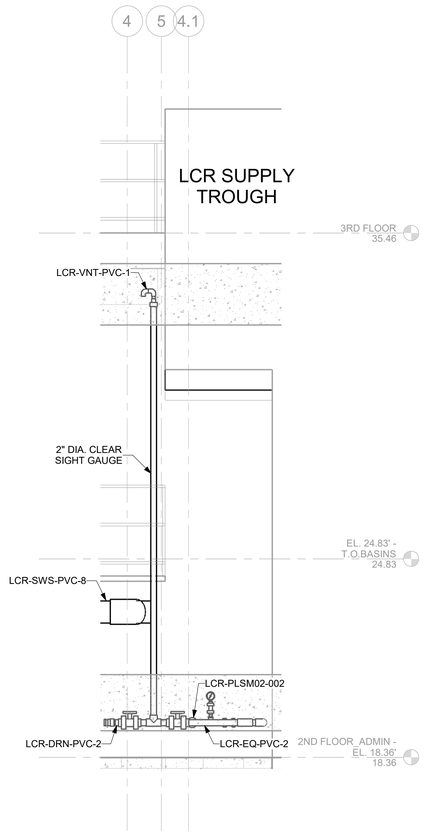
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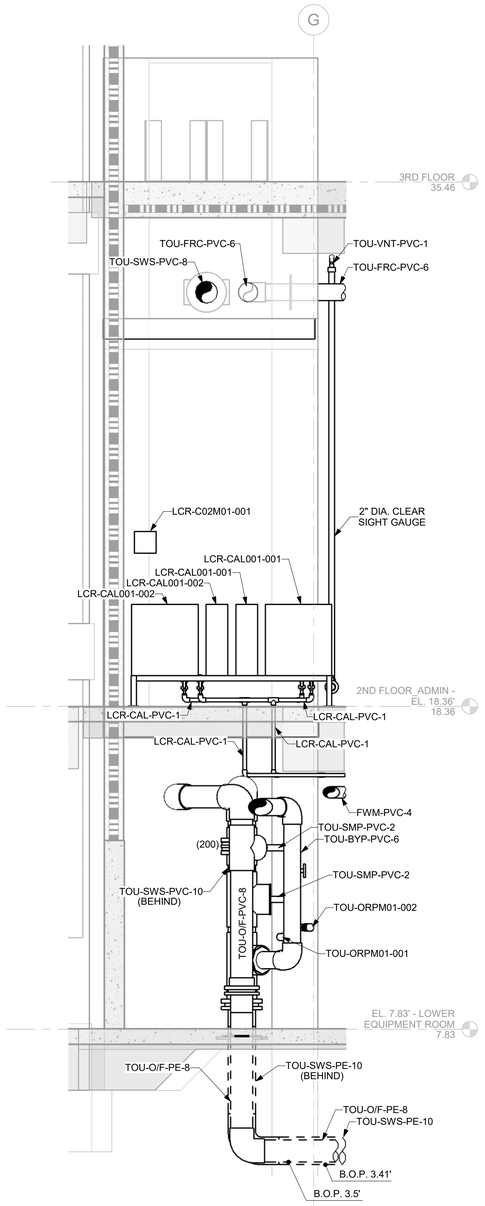
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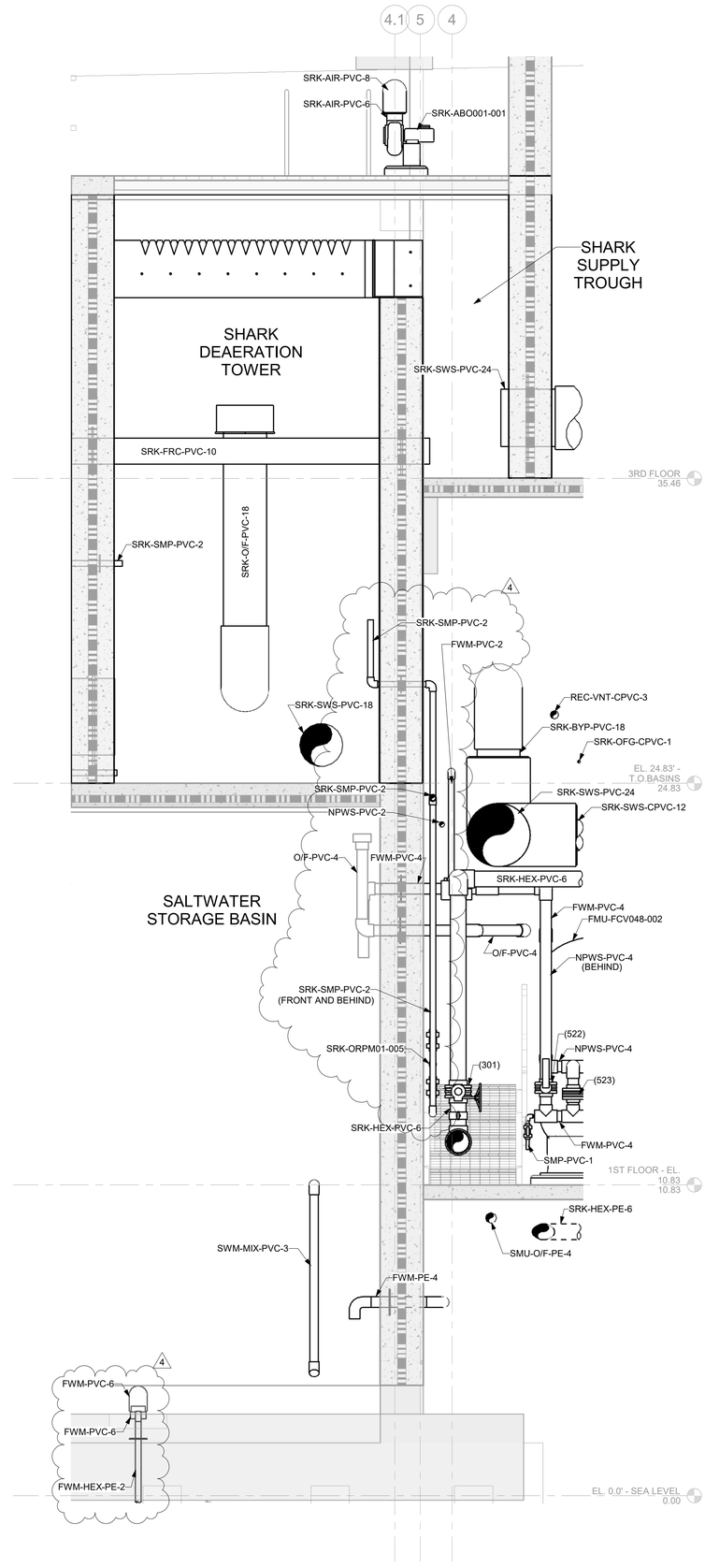
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3 SECTION
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2 SECTION
SCALE: 1/2" = 1'-0"



1 SECTION
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0 2 4 6 8

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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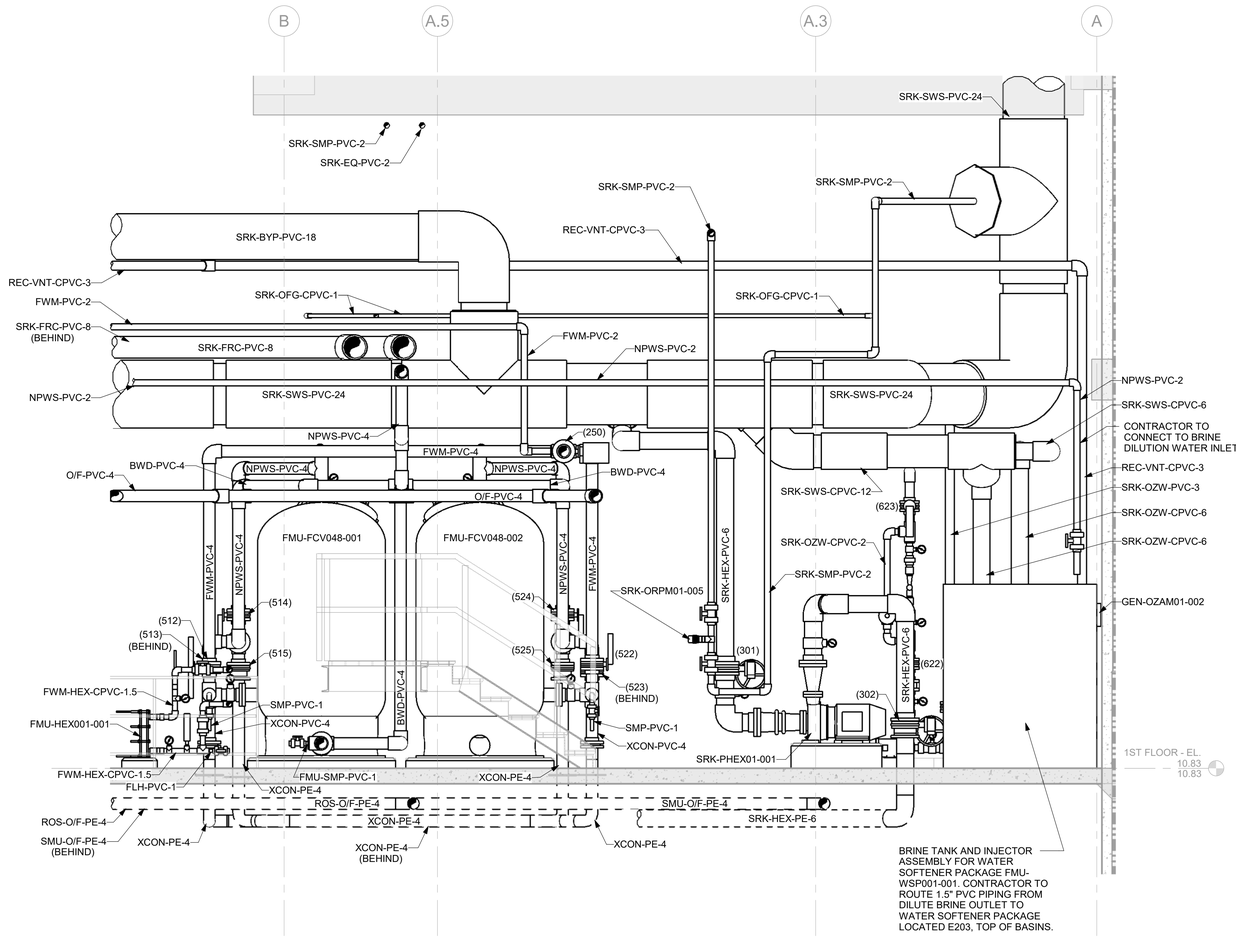
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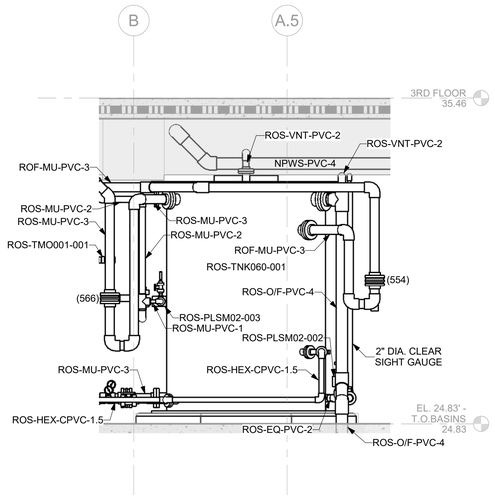
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1 SECTION
SCALE: 1/2" = 1'-0"



2 SECTION
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SCALE: 1/2" - 1'-0"
0 2 4 6 8

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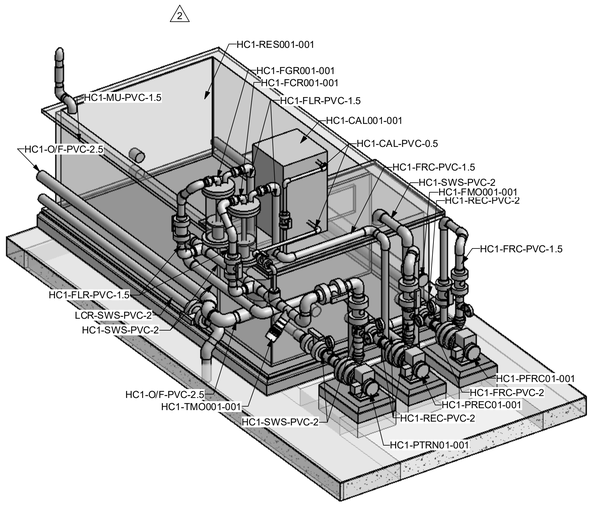
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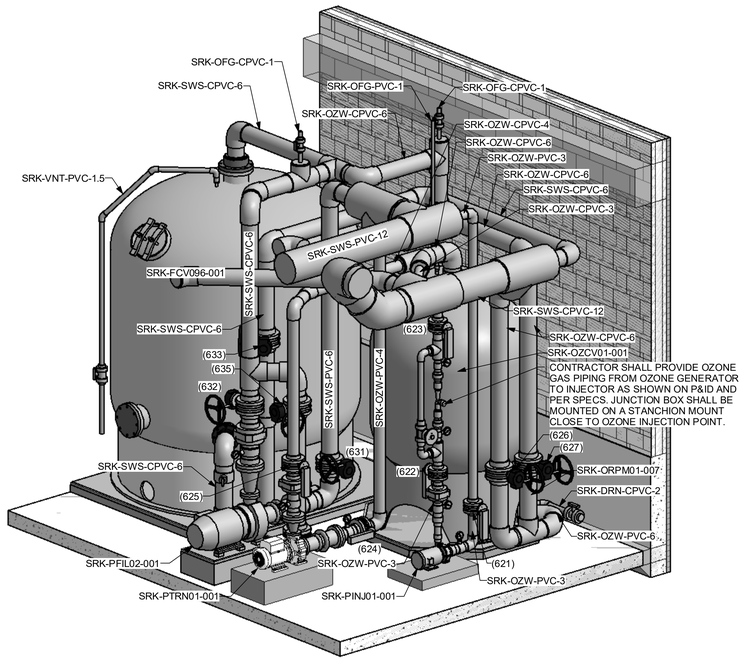
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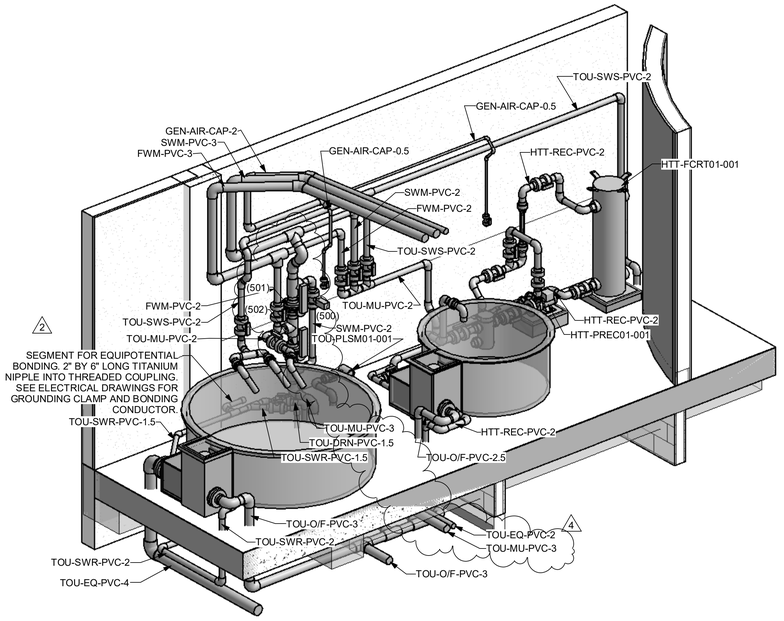
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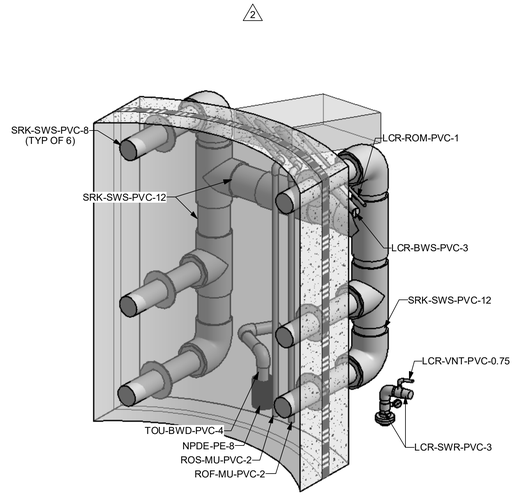
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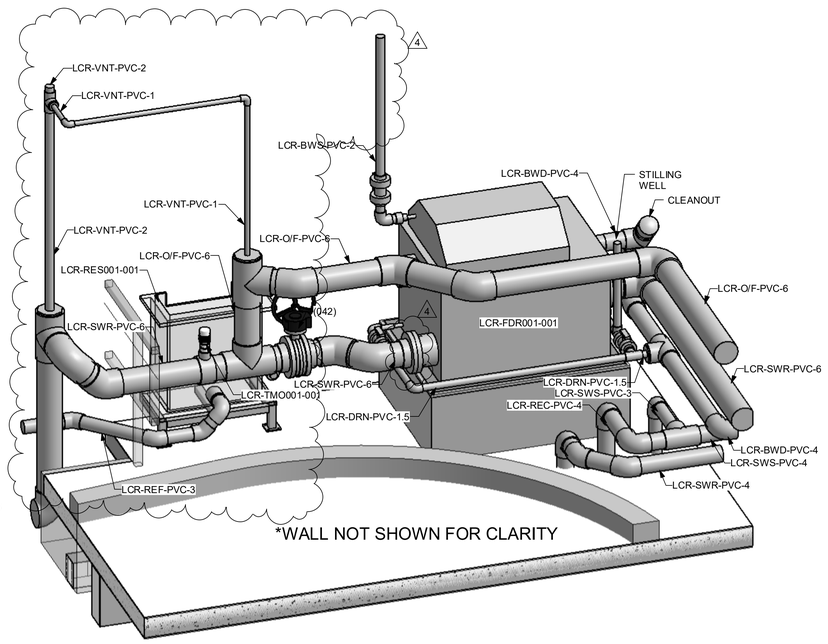
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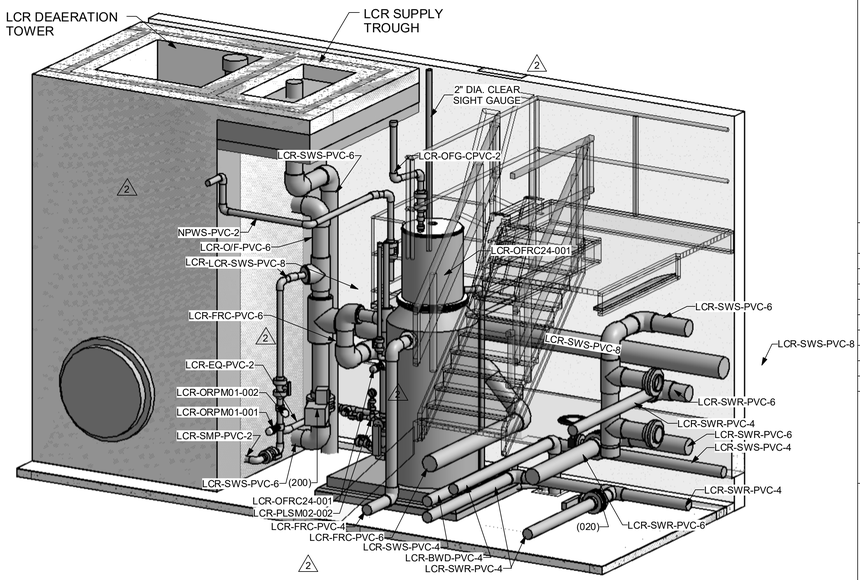
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SCALE: 1/4" = 1'-0"



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SCALE: NONE

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 16479

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56890 VENTURE LANE SUITE 205H
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3005

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.963.8690
WWW.ROTO.COM

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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
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TELE: 919.802.5587
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MEP ENGINEER
2246 YAUPON DRIVE
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TELE: 910.791.4000
FAX: 910.791.5564
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SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
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11/10/2025

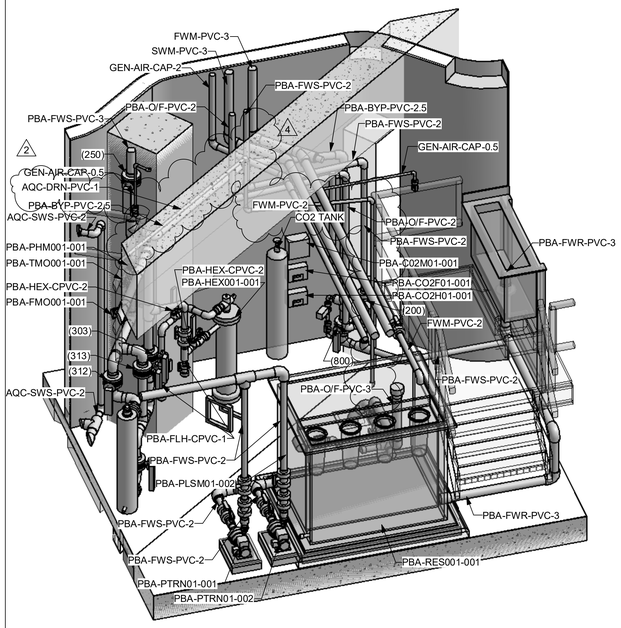
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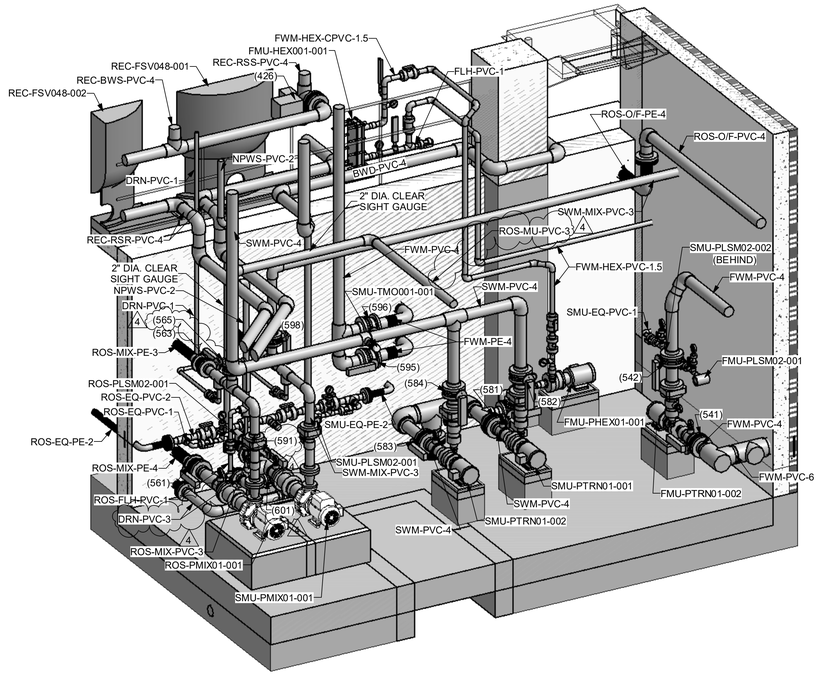
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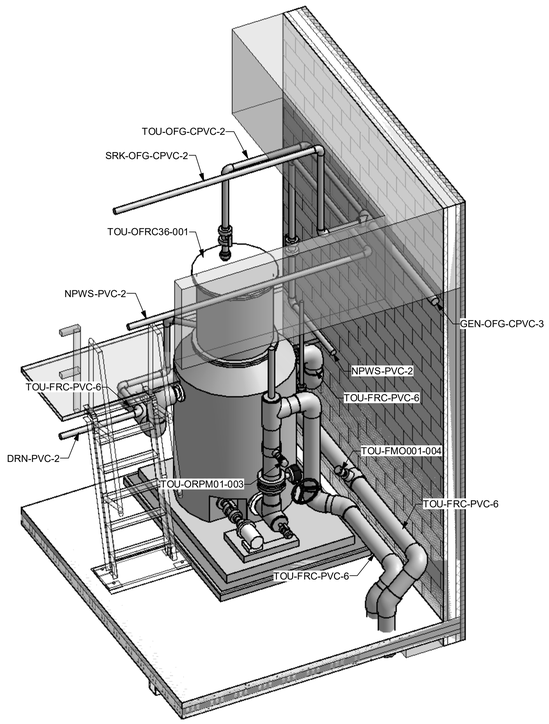
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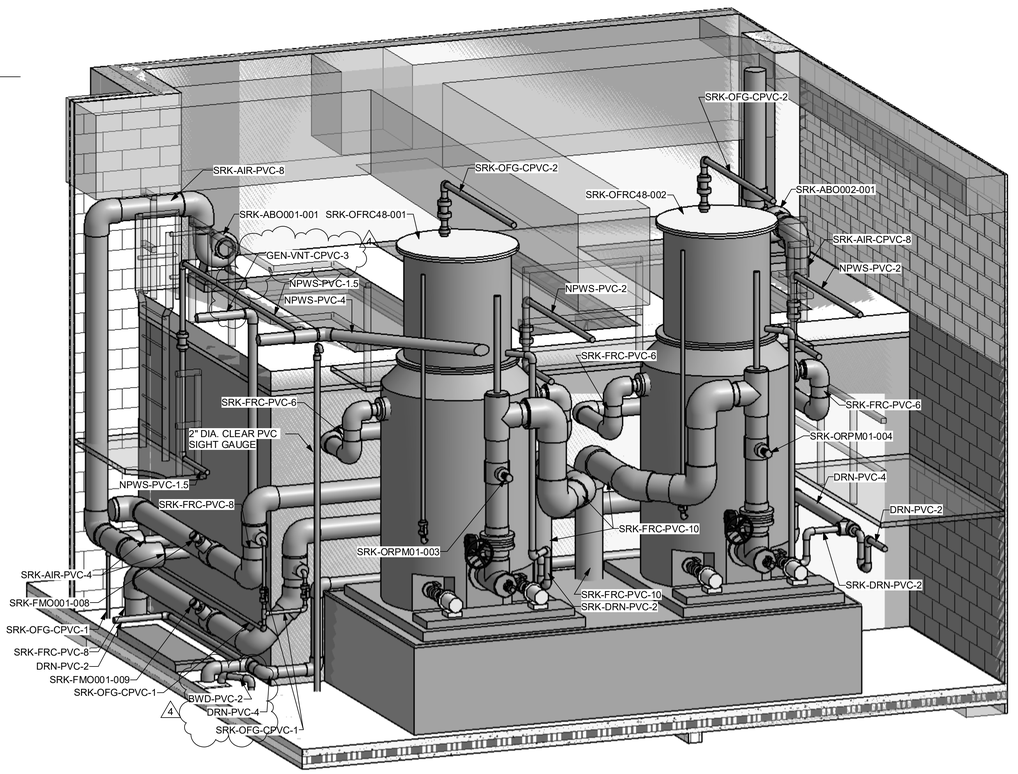
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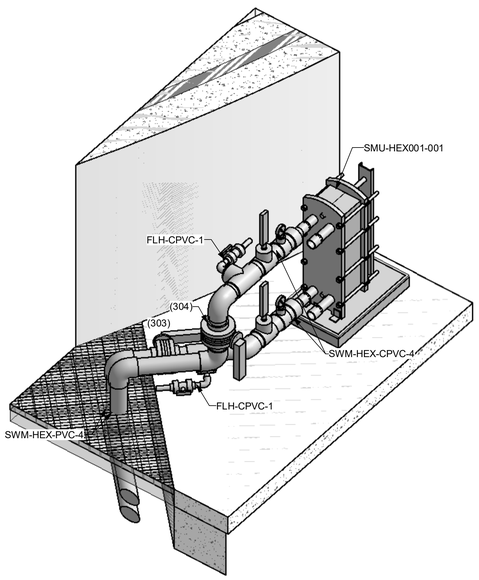
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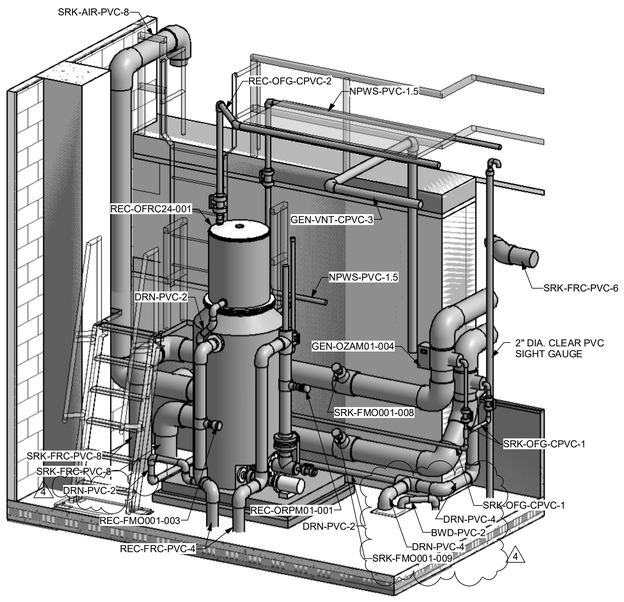
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SCALE: NONE

SZOSTAK DESIGN

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
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FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 31679

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LIFE SUPPORT SYSTEMS ENGINEER
56890 VENTURE LANE SUITE 205H
BEND, OR 97707
TELE: 619.423.8700
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EXHIBIT DESIGNER
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DUBLIN, OHIO 43017
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.802.5587
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MEP ENGINEER
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WILMINGTON, NC 28401
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FAX: 910.791.5564
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RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9450
FAX: 910.343.9604
WWW.NTEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1599
FAX: 919.419.1669
WWW.SURFACE678.COM
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LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
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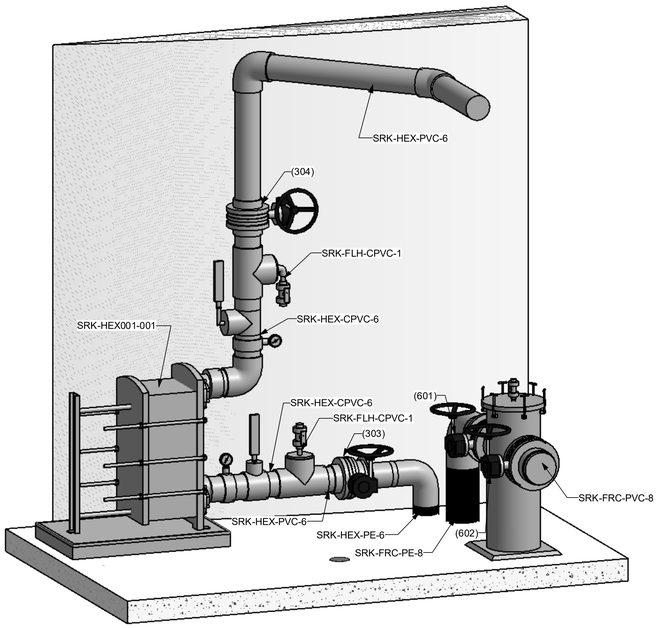
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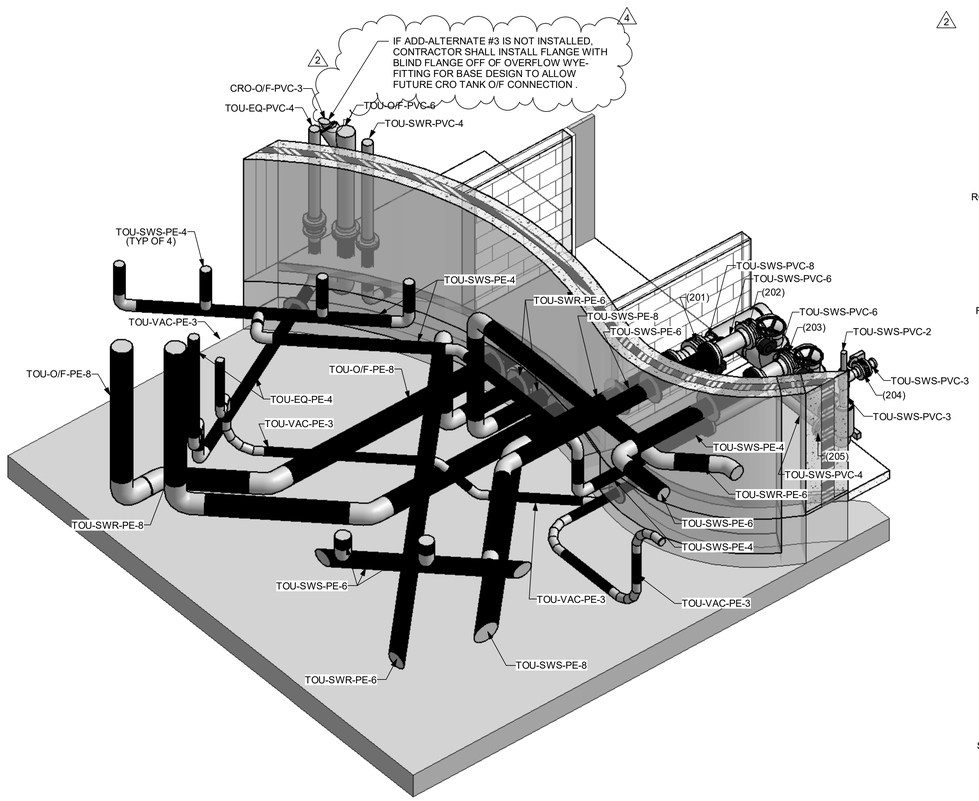
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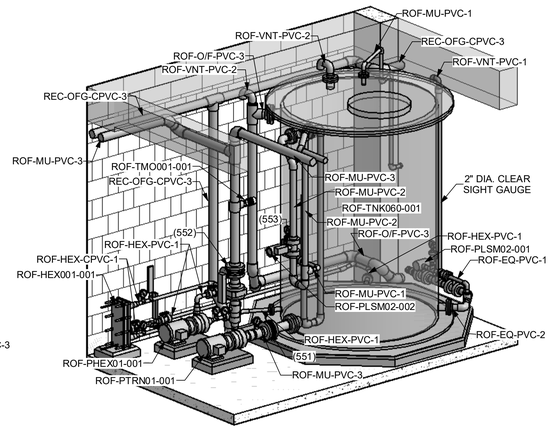
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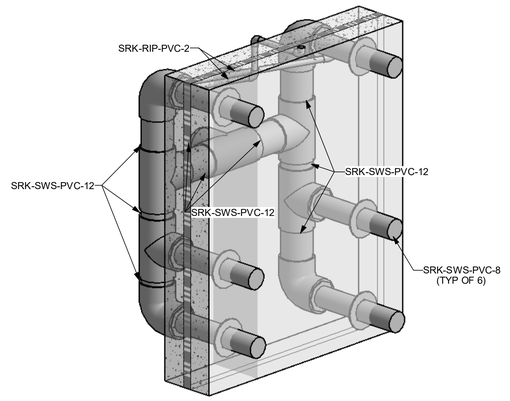
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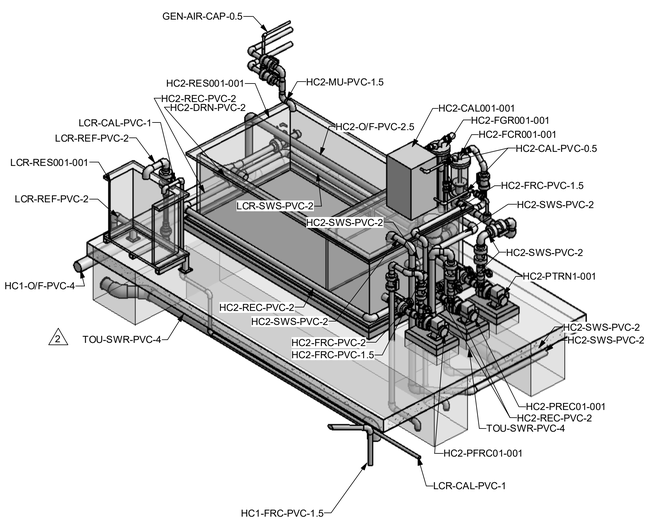


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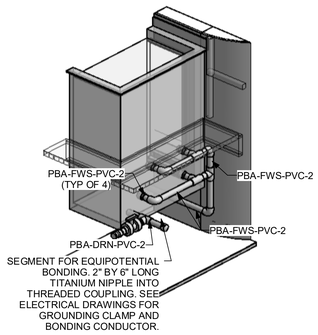


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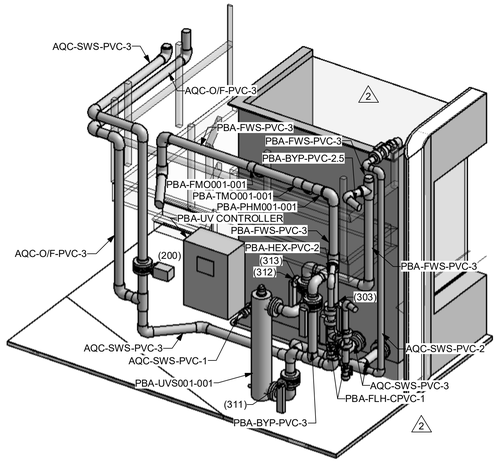




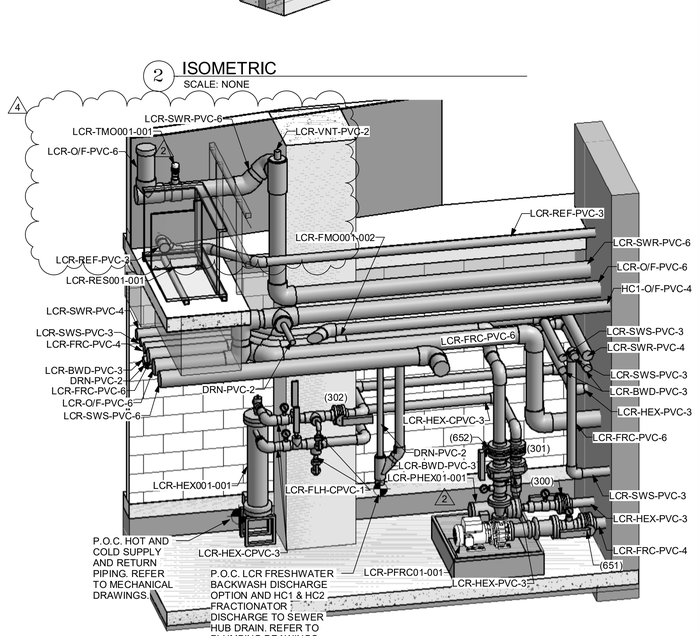
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SCALE: NONE

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SCALE: NONE

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7667
WWW.SZOSTAKDESIGN.COM
LICENSE # 31679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56890 VENTURE LANE SUITE 205H
BEND, OR 97707
TELE: 619.403.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3005

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EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.802.5587
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
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LIGHTING DESIGNER
10865 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9455
FAX: 910.343.9604
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SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
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FIRE PROTECTION ENGINEER
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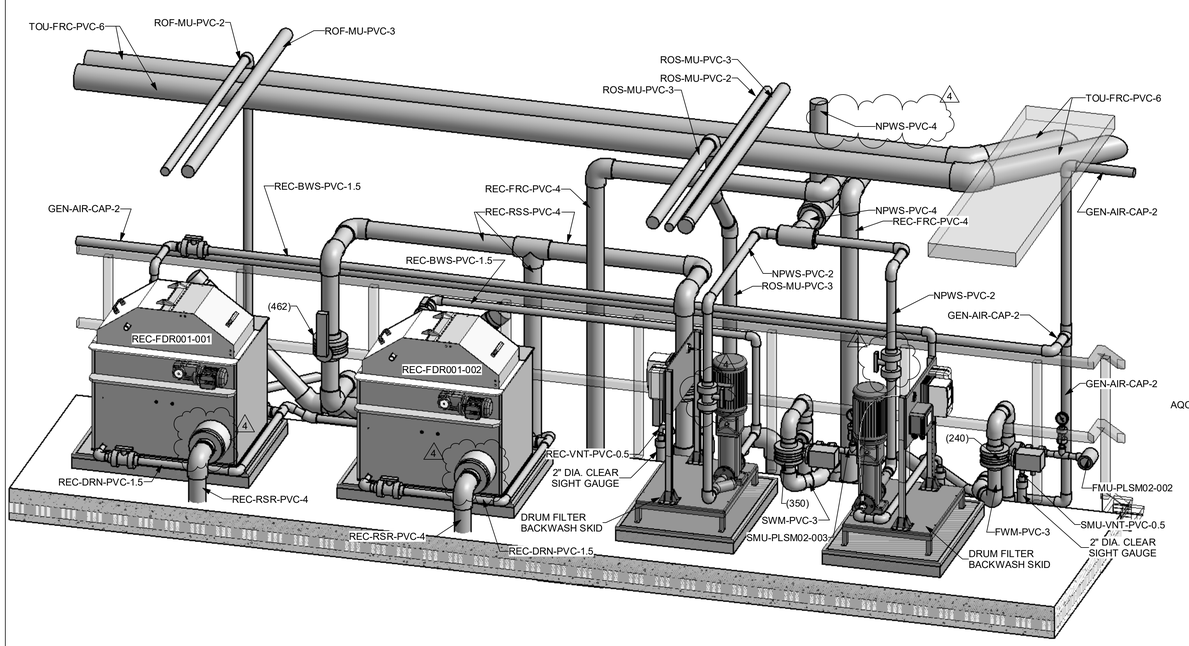
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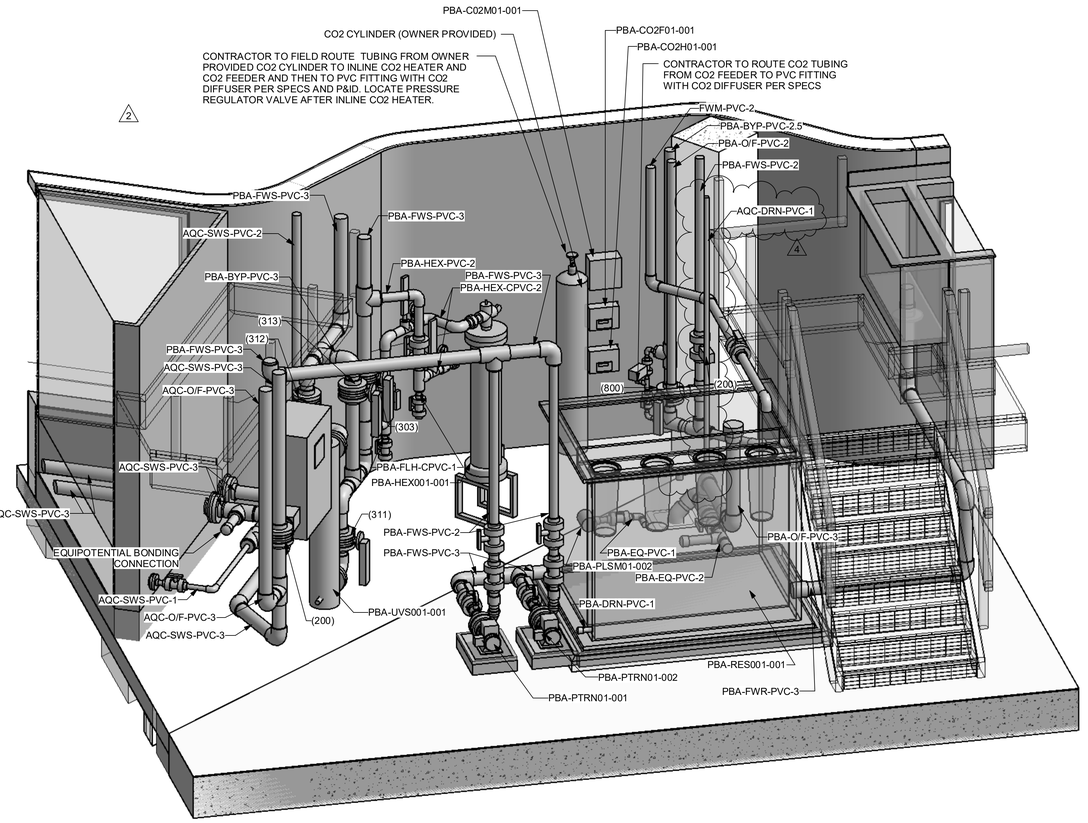
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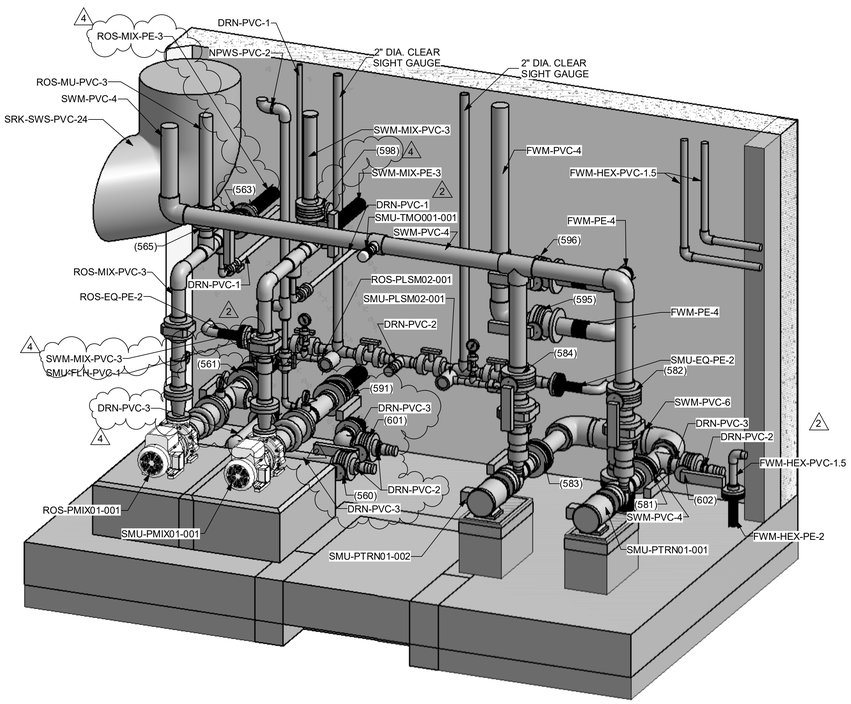
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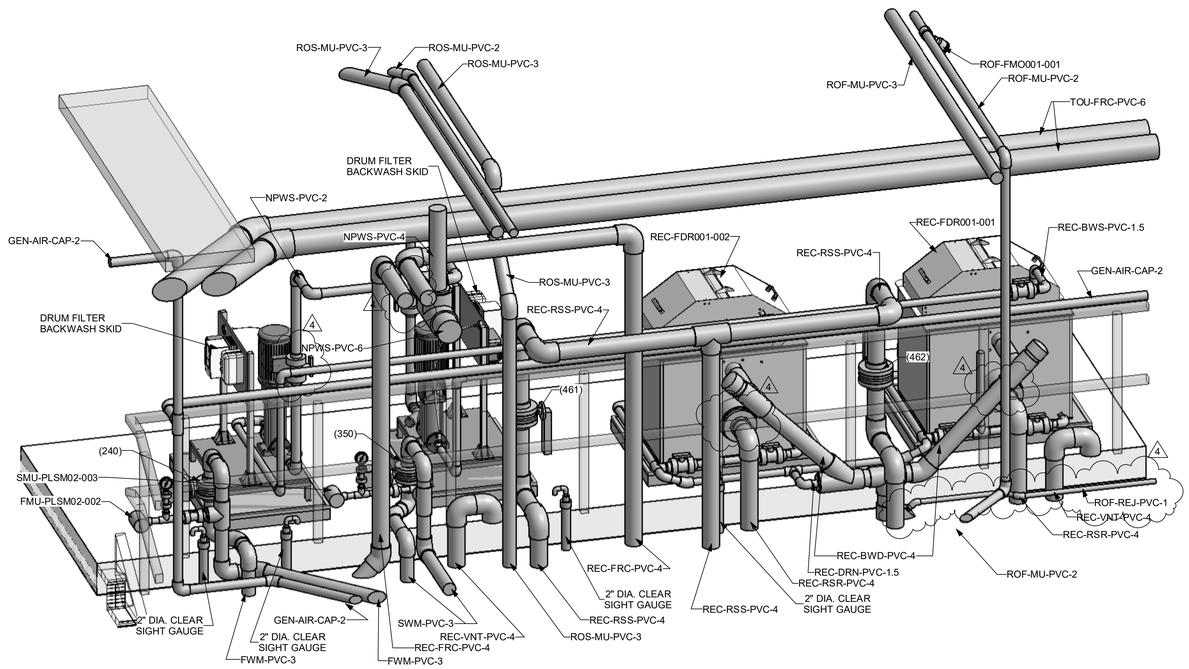
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4 ISOMETRIC
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SCALE: NONE

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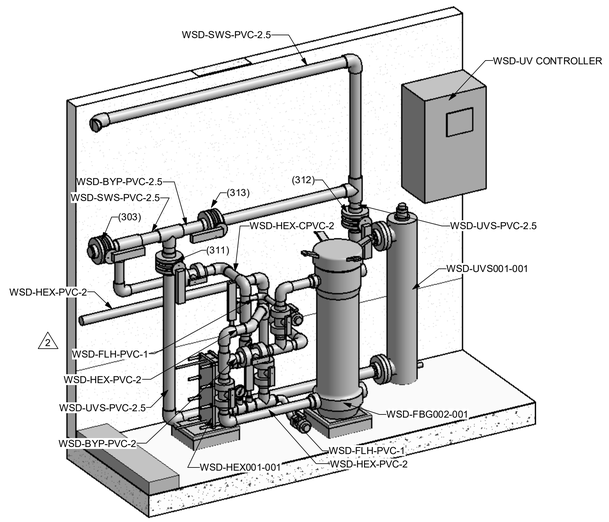
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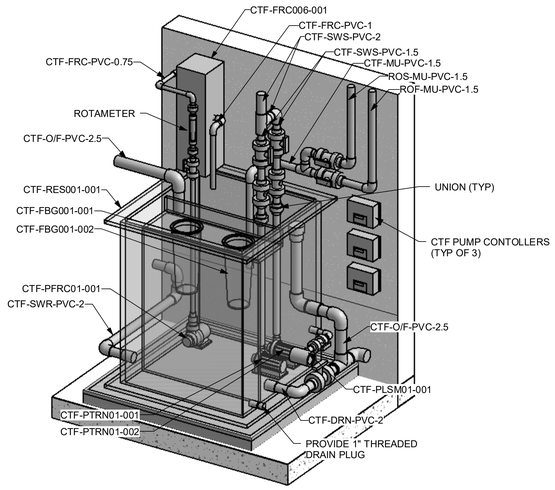
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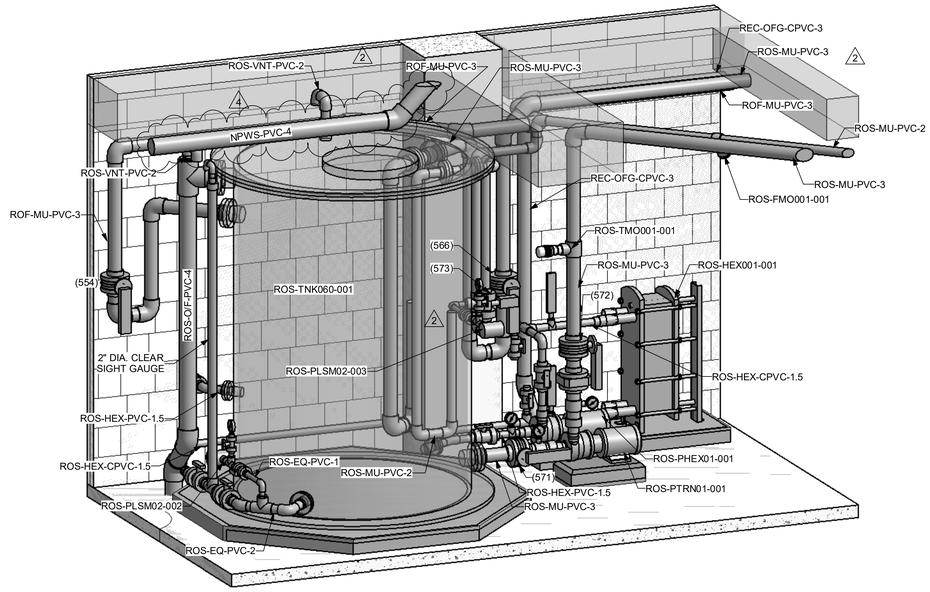
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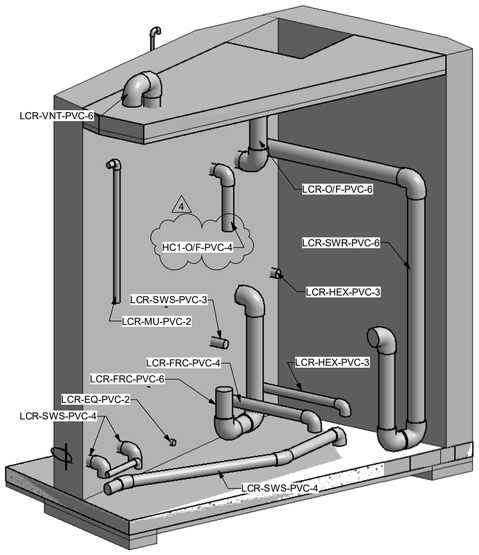


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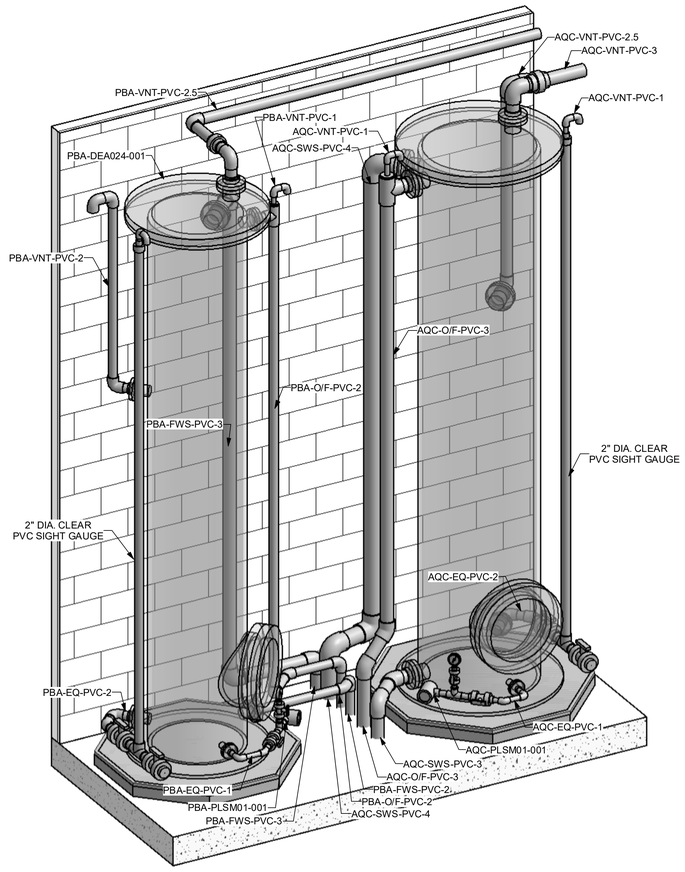


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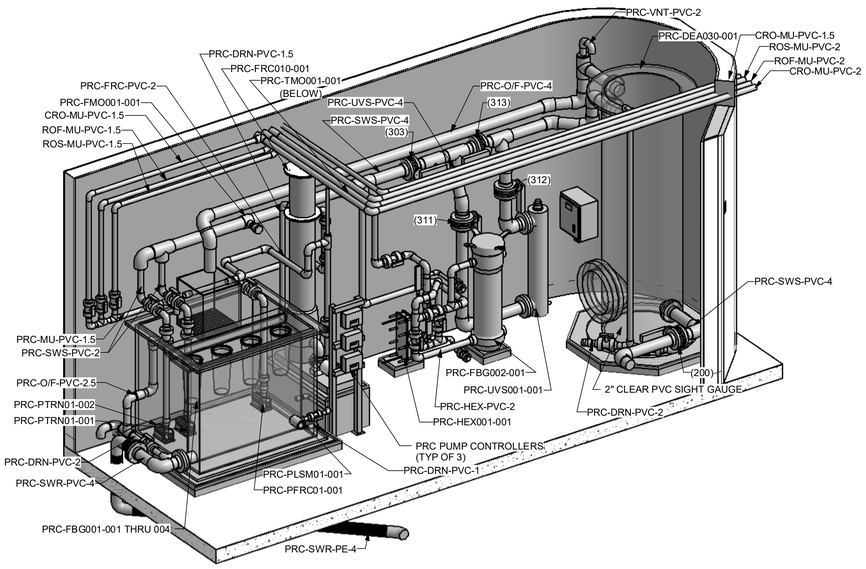
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6 ISOMETRIC
SCALE: NONE



4 ISOMETRIC
SCALE: NONE



2 ISOMETRIC
SCALE: NONE

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
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NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7647
WWW.SZOSTAKDESIGN.COM
LICENSE # 31679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200SH
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3005

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.963.8690
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STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
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FAX: 910.791.5064
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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
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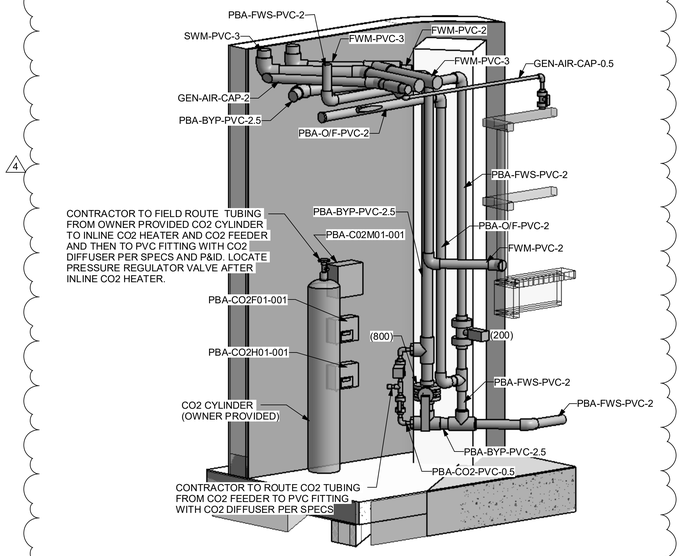
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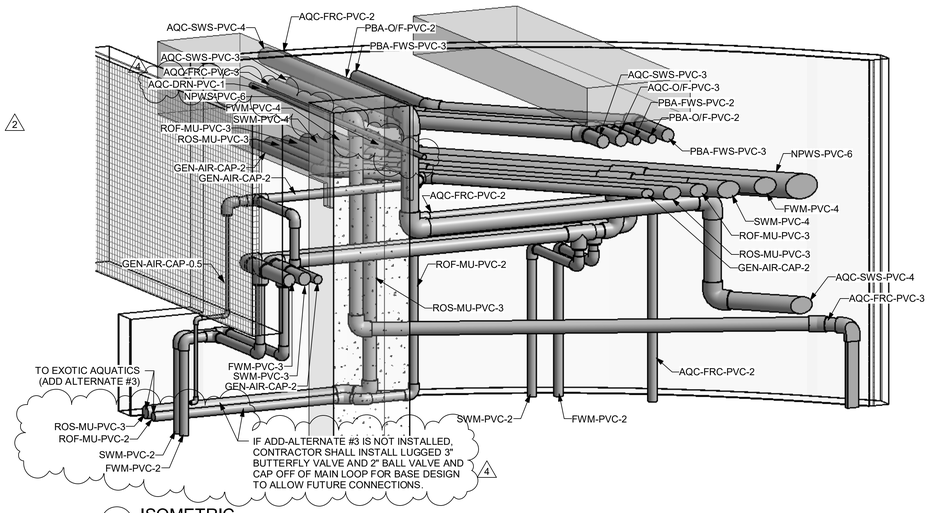
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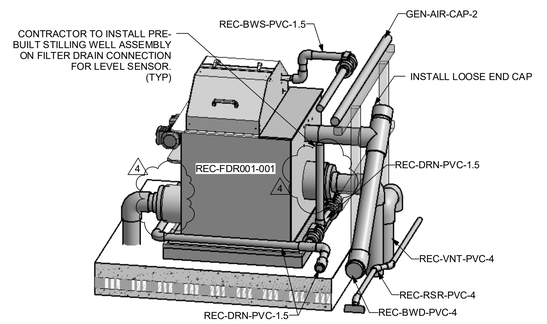
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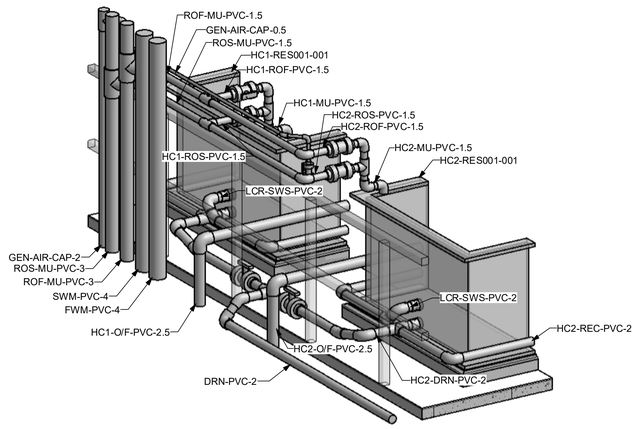
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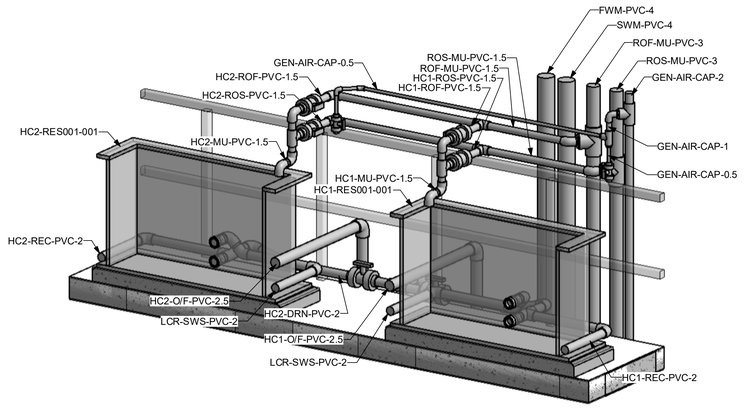
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SCALE: NONE



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SCALE: NONE



5 ISOMETRIC
SCALE: NONE



3 ISOMETRIC
SCALE: NONE

4

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FAX: 910.791.5266
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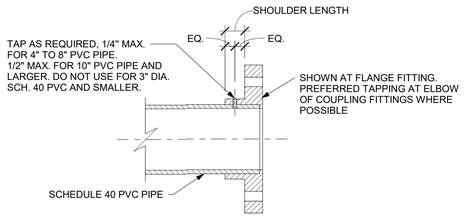
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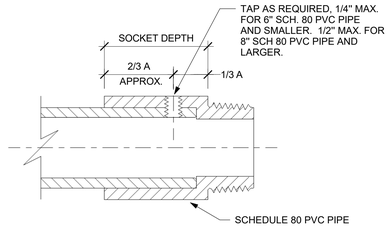
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NOTE:

TAPPED CONNECTION MUST BE LOCATED IN THE DOUBLE-WALLED SOLVENT CEMENT JOINT BETWEEN THE FITTINGS AND PIPE (SEE ILLUSTRATION). DO NOT TAP THROUGH THE FITTING WALL AT ANY OTHER LOCATION.

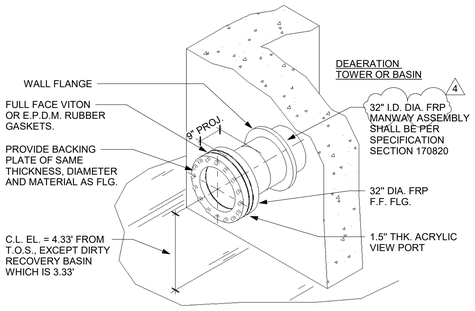
9 TAPPING SCHEDULE 40 PVC PIPE
SCALE: NONE



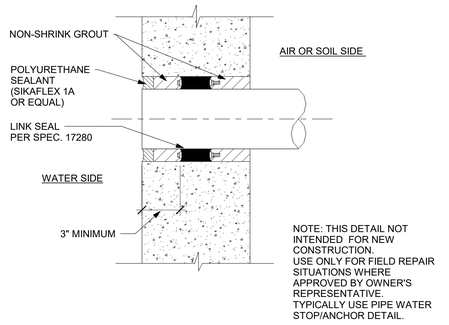
NOTE:

TAPPED CONNECTION MUST BE LOCATED IN THE DOUBLE-WALLED SOLVENT CEMENT JOINT BETWEEN THE FITTINGS AND PIPE (SEE ILLUSTRATION). DO NOT TAP THROUGH THE FITTING WALL AT ANY OTHER LOCATION.

5 TAPPING SCHEDULE 80 PVC PIPE
SCALE: NONE

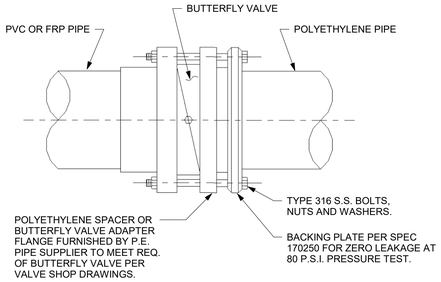


10 CONCRETE BASIN VIEWPORT
SCALE: NONE

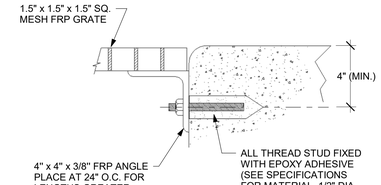


NOTE: THIS DETAIL NOT INTENDED FOR NEW CONSTRUCTION. USE ONLY FOR FIELD REPAIR SITUATIONS WHERE APPROVED BY OWNER'S REPRESENTATIVE. TYPICALLY USE PIPE WATER STOP/ANCHOR DETAIL.

6 LINK SEAL
SCALE: NONE



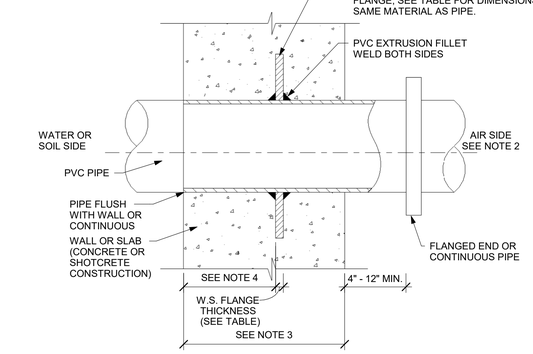
11 PE PIPE CONNECTION AT VALVE
SCALE: NONE



NOTE:

1) ALL FASTENERS AND BOLTS USED IN THIS DETAIL SHALL BE 316SS OR BETTER, PER SPEC. 170316.

7 GRATE ATTACHMENT
SCALE: NONE

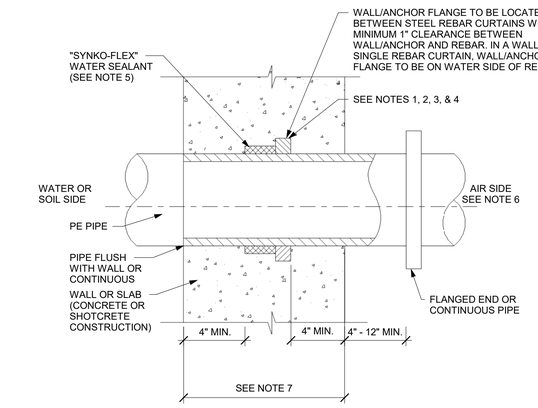


1 PVC PIPE WATER STOP
SCALE: NONE

PVC WATER STOP FLANGES		
PIPE DIAMETER	PROJECTION	THICKNESS
1/2" - 2"	2" ±1/2"	1/4" - 3/8"
2.5" - 4"	2.5" ±1/2"	3/8" -1/2"
6" - 10"	3" ±1/2"	1/2"
12" - 24"	4" ±1"	1/2" - 3/4"

NOTES:

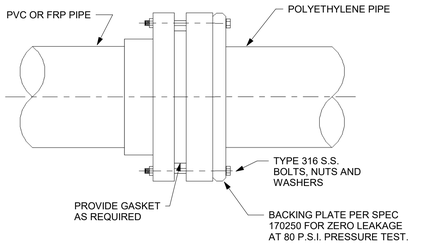
1. THIS DETAIL REQUIRED AT PVC PIPE PENETRATIONS THROUGH ALL WALLS RETAINING WATER OR BELOW WATER TABLE.
2. THE AIR SIDE AS SHOWN MAY ALSO BE A WATER SIDE WHERE WALLS HAVE WATER ON BOTH SIDES.
3. SEE STRUCTURAL DRAWINGS FOR CONCRETE THICKNESS AND REINFORCING.
4. LOCATE WATERSTOP FLANGE IN CENTER OF CONCRETE WALL OR SLAB +/- 2".



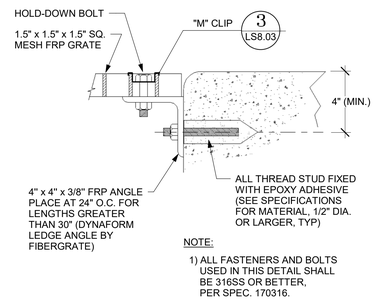
NOTES:

1. ALL PE PIPE PENETRATIONS THROUGH REINFORCED CONCRETE WALLS SHALL HAVE THRUST RESTRAINT OR ANCHOR.
2. MACHINED THRUST RESTRAINTS SHALL BE PROVIDED FOR WATER STOPS OR WALL FLANGES AT ALL WET CONDITIONS.
3. WHERE MACHINED THRUST RESTRAINTS ARE NOT AVAILABLE IN PIPE DIAMETERS 18" AND LARGER, OR AT THE ELECTION OF THE CONTRACTOR, SUBMIT SHOP DRAWINGS FOR EXTRUSION WELDED PE THRUST RESTRAINTS.
4. WALLS WITH DRY CONDITIONS ON EACH SIDE MAY HAVE THE MACHINED PE THRUST RESTRAINT OR A FLEXIBLE PE ELECTROFUSION RESTRAINT.
5. PROVIDE "SYNKO-FLEX" WATER SEALANT FOR PIPE PENETRATIONS THROUGH ALL WALLS RETAINING WATER OR SOIL BELOW WATER TABLE. NOT REQUIRED AT DRY PENETRATIONS.
6. THE AIR SIDE AS SHOWN MAY ALSO BE A WATER SIDE WHERE WALLS HAVE WATER ON BOTH SIDES.
7. SEE STRUCTURAL DRAWINGS FOR CONCRETE THICKNESS AND REINFORCING.

2 PE PIPE WATER STOP/ANCHOR
SCALE: NONE



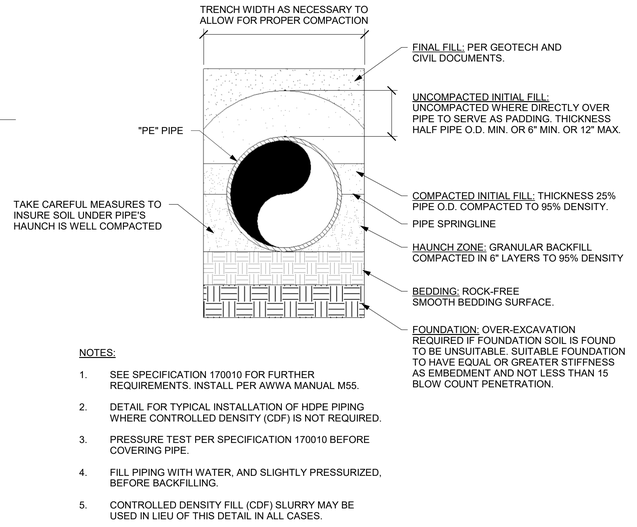
12 PE PIPE CONNECTION DETAIL
SCALE: NONE



NOTE:

1) ALL FASTENERS AND BOLTS USED IN THIS DETAIL SHALL BE 316SS OR BETTER, PER SPEC. 170316.

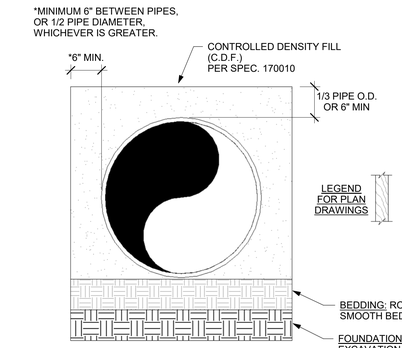
8 GRATE ATTACHMENT WITH "M" CLIP
SCALE: NONE



NOTES:

1. SEE SPECIFICATION 170010 FOR FURTHER REQUIREMENTS. INSTALL PER AWWA MANUAL M55.
2. DETAIL FOR TYPICAL INSTALLATION OF HDPE PIPING WHERE CONTROLLED DENSITY (CDF) IS NOT REQUIRED.
3. PRESSURE TEST PER SPECIFICATION 170010 BEFORE COVERING PIPE.
4. FILL PIPING WITH WATER, AND SLIGHTLY PRESSURIZED, BEFORE BACKFILLING.
5. CONTROLLED DENSITY FILL (CDF) SLURRY MAY BE USED IN LIEU OF THIS DETAIL IN ALL CASES.

4 PE PIPE EMBEDMENT
SCALE: NONE



NOTES:

1. AFTER PLACEMENT OF BEDDING LAYER, FILL PIPE WITH WATER.
2. PRESSURE TEST PER SPEC. 170010 BEFORE COVERING PIPE.
3. PLACE FILL IN LAYERS TO PREVENT FLOATING OF PIPE.
4. THIS DETAIL TO BE USED AT CONTRACTOR'S OPTION AT ANY LOCATION AND WHERE SPECIFICALLY INDICATED ON THE DRAWINGS.

3 CDF ENCASEMENT
SCALE: NONE

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LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
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STRUCTURAL ENGINEER
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RALEIGH, NC 27607
TELE: 919.832.5987
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WILMINGTON, NC 28401
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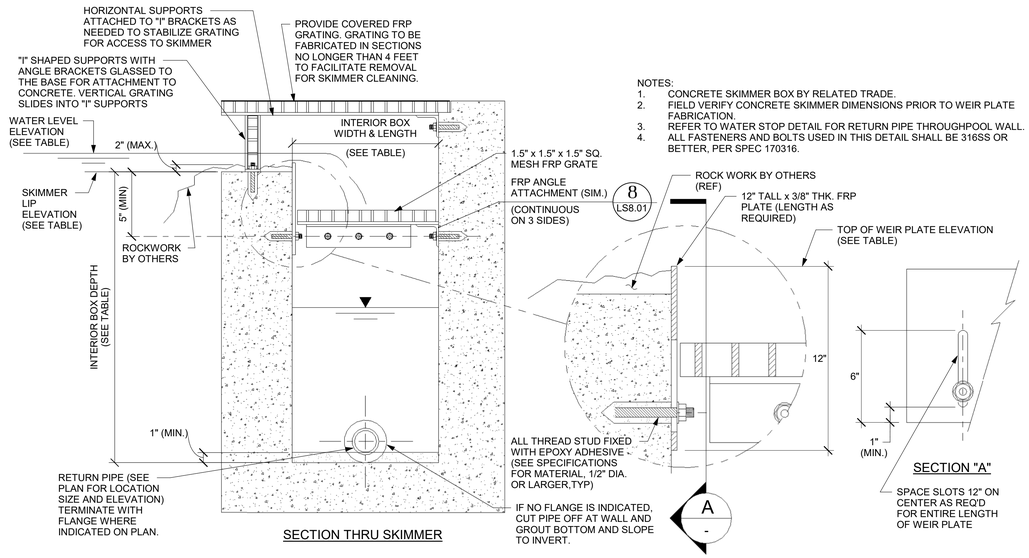
DETAILS

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CONCRETE SKIMMER BOX TABLE									
EXHIBIT	SKIMMER NUMBER	QUANTITY	WATER LEVEL (FT)	TOP OF WEIR PLATE (FT)	SKIMMER LIP ELEVATION (FT)	INTERIOR BOX DEPTH (FT)	INTERIOR BOX WIDTH (FT)	INTERIOR BOX WEIR LENGTH (FT)	COMMENTS
TOUCH TANK EXHIBIT	TOU-SK-1 AND TOU-SK-2	2	20.53	20.43	20.20	3.70	2	2	IRREGULAR SHAPE. SEE PLANS
TOUCH TANK BACK OF HOUSE SIDE	TOU-SK-3 AND TOU-SK-4	2	20.53	20.43	20.20	2.68	2	2	
SAND TIGER SHARK EXHIBIT	SRK-SK-1	1	34.36	34.24	34.03	4	2	28	
SAND TIGER SHARK EXHIBIT	SRK-SK-2 AND SRK-SK-3	2	34.36	34.24	34.03	6.57	2	2	
SAND TIGER SHARK HOLDING	SRK-SK-4	1	34.36	34.24	34.03	4	2	8	

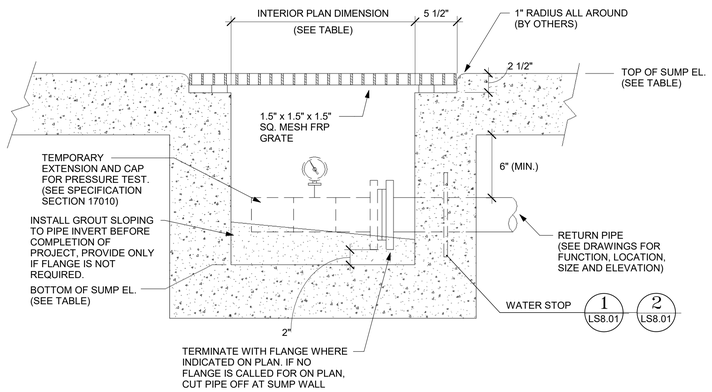


NOTES:
1. CONCRETE SKIMMER BOX BY RELATED TRADE.
2. FIELD VERIFY CONCRETE SKIMMER DIMENSIONS PRIOR TO WEIR PLATE FABRICATION.
3. REFER TO WATER STOP DETAIL FOR RETURN PIPE THROUGHPOOL WALL.
4. ALL FASTENERS AND BOLTS USED IN THIS DETAIL SHALL BE 316SS OR BETTER, PER SPEC 170316.

5 CONCRETE SKIMMER WITH INTERNAL GRATE, WEIR PLATE AND GRATING OVER TOP (NO M CLIPS)
SCALE: NONE

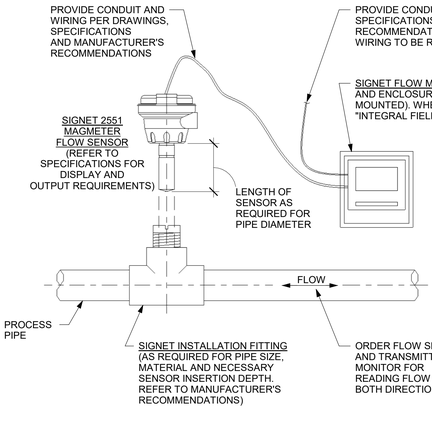
CONCRETE BOTTOM SUMP TABLE						
EXHIBIT	SUMP NUMBER	QUANTITY	TOP OF SUMP ELEVATION (FT)	INTERIOR BOTTOM OF SUMP ELEVATION (FT)	OPENING DIMENSIONS (FT)	COMMENTS
SAND TIGER SHARK EXHIBIT	SRK-SP-1, SRK-SP-2, & SRK-SP-3	3	13.365	10.365	3.33 X 3.33	
SAND TIGER SHARK HOLDING	SRK-SP-4 & SRK-SP-5	2	28.458	25.958	2 X 2	
DIRTY RECOVERY BASIN	REC-SP-1	1	2.83	0.83	2 X 2	
INTERMEDIATE RECOVERY BASIN	REC-SP-2	1	2.83	2.33	2 X 2	
CLEAN RECOVERY BASIN	REC-SP-3	1	2.83	2.33	2 X 2	
FRESHWATER STORAGE BASIN	FMU-SP-1	1	2.83	2.33	2 X 2	
SALTWATER STORAGE BASIN	SMU-SP-2	1	2.83	2.33	2 X 2	
SALTWATER MIXING BASIN	SMU-SP-1	1	3.83	1.83	2 X 2	
RO SALTWATER MIXING BASIN	ROS-SP-1	1	3.83	1.83	2 X 2	

4



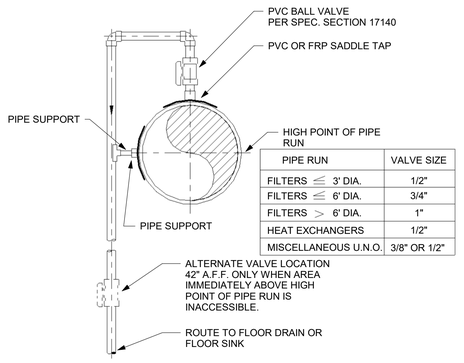
NOTES:
1. CONCRETE SUMP BOX BY RELATED TRADE.
2. FIELD VERIFY CONCRETE SUMP DIMENSIONS PRIOR TO GRATING FABRICATION
3. REFER TO WATERSTOP DETAIL FOR RETURN PIPE THROUGH POOL WALL
4. ALL FASTENERS AND BOLTS USED IN THIS DETAIL SHALL BE 316SS OR BETTER, PER SPECIFICATION 170316
5. COORDINATE CONCRETE SUMP DIMENSIONS AND REINFORCING WITH POOL FABRICATOR (SEE STRUCTURAL DRAWINGS).
6. COORDINATE CONCRETE SUMP LOCATIONS IN DEEPEST PART OF POOL WITH POOL FABRICATOR AND EXHIBITRY.
7. COORDINATE PIPE PENETRATION WITH POOL FABRICATOR AND PLAN DRAWINGS.
8. SEE STRUCTURAL DRAWINGS FOR CONCRETE THICKNESS AND REINFORCING.

6 CONCRETE BOTTOM SUMP WITH GRATE
SCALE: NONE



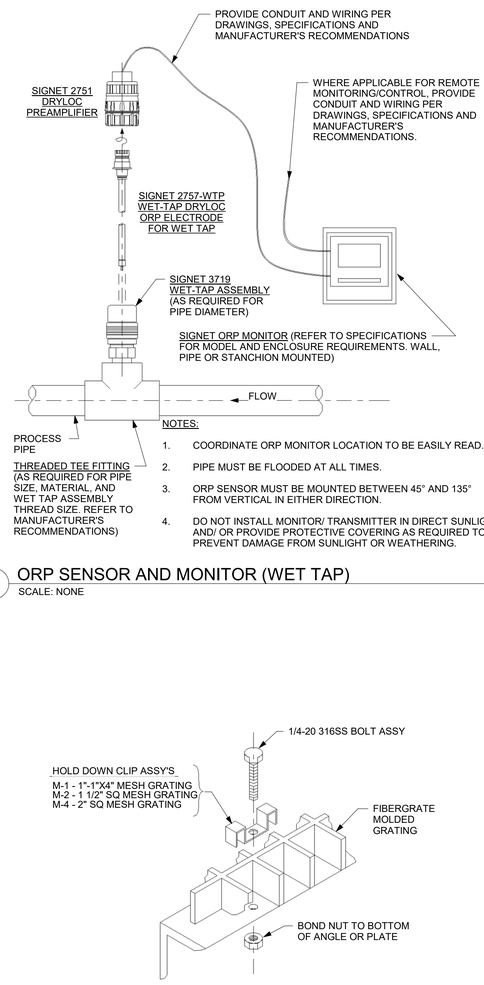
NOTES:
1. WHERE APPLICABLE, COORDINATE MONITOR LOCATION TO BE EASILY READ WHILE OPERATING PUMP DISCHARGE, BACKWASH DRAIN, AND BACKWASH SUPPLY VALVES.
2. FOR HORIZONTAL PIPE INSTALLATIONS, FLOW SENSOR MUST BE MOUNTED BETWEEN 45° AND 135° IN EITHER DIRECTION FROM VERTICAL.
3. AVOID INSTALLING TOO CLOSE TO FITTINGS, VALVES AND OTHER FLOW OBSTRUCTIONS AS PER MANUFACTURER'S RECOMMENDATIONS.
4. DO NOT INSTALL MONITOR/ TRANSMITTER IN DIRECT SUNLIGHT AND/ OR PROVIDE PROTECTIVE COVERING AS REQUIRED TO PREVENT DAMAGE FROM SUNLIGHT OR WEATHERING.
5. LENGTH SHOWN IN LS PLAN DRAWINGS FOR UNOBSTRUCTED DISTANCE ON INFLUENT AND EFFLUENT OF FLOW METER SHALL BE CONSIDERED THE MINIMUM ALLOWABLE. CONTRACTOR SHALL NOT REDUCE LAY LENGTH FURTHER THAN SHOWN IN PLAN DRAWINGS WITHOUT PRIOR APPROVAL OF OWNER AND LSS ENGINEER

1 FLOW SENSOR AND MONITOR (MAGMETER)
SCALE: NONE



PIPE RUN	VALVE SIZE
FILTERS ≤ 3' DIA.	1/2"
FILTERS ≤ 6' DIA.	3/4"
FILTERS > 6' DIA.	1"
HEAT EXCHANGERS	1/2"
MISCELLANEOUS U.N.O.	3/8" OR 1/2"

4 AIR VENT
SCALE: NONE



NOTES:
1. COORDINATE ORP MONITOR LOCATION TO BE EASILY READ.
2. PIPE MUST BE FLOODED AT ALL TIMES.
3. ORP SENSOR MUST BE MOUNTED BETWEEN 45° AND 135° FROM VERTICAL IN EITHER DIRECTION.
4. DO NOT INSTALL MONITOR/ TRANSMITTER IN DIRECT SUNLIGHT AND/ OR PROVIDE PROTECTIVE COVERING AS REQUIRED TO PREVENT DAMAGE FROM SUNLIGHT OR WEATHERING.

2 ORP SENSOR AND MONITOR (WET TAP)
SCALE: NONE

3 "M" CLIPS INSTALLATION
SCALE: NONE

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27514
TELE: 919.929.5244
FAX: 919.960.7947
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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200#4
BEND, OR 97707
TELE: 619.423.8700
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EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.765.8690
WWW.ROTO.COM

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RALEIGH, NC 27607
TELE: 919.832.5987
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WILMINGTON, NC 28401
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WWW.LIGHTSWITCH.NET

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CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
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LANDSCAPE ARCHITECT
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TELE: 919.419.1199
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11/10/2025

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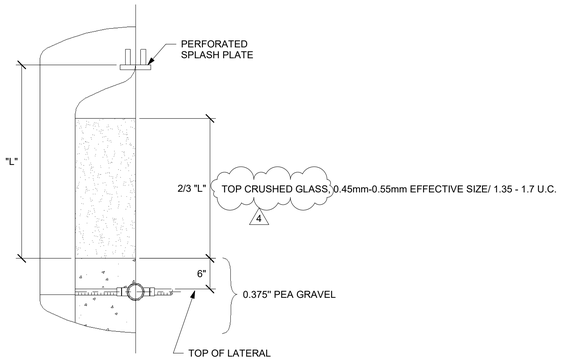
DETAILS

LS8.03

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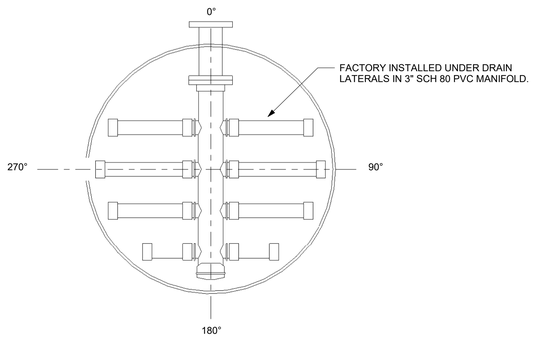
3 MEDIA PROFILE
SCALE: NONE

GENERAL INSTALLATION NOTES:

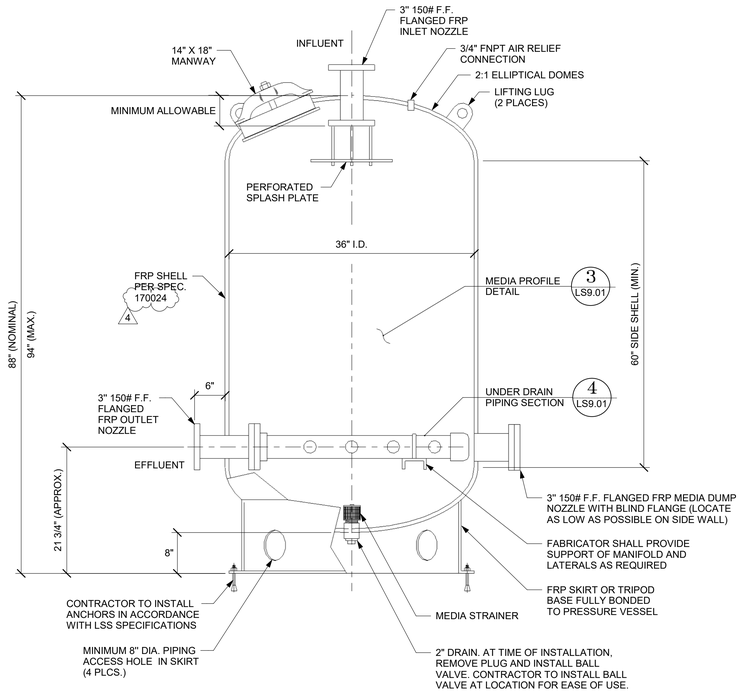
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2. IN ACCORDANCE WITH THE SPECIFICATIONS, THE INSTALLING CONTRACTOR SHALL FIRST COMPLETE ALL PIPING CONNECTIONS BEFORE LOADING SAND MEDIA.
3. CONTRACTOR SHALL ANCHOR FILTERS TO CONCRETE SLAB.

GENERAL FABRICATION NOTES:

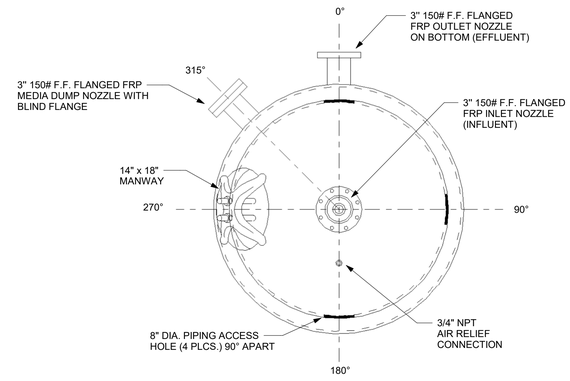
1. FILTER FABRICATION AND MEDIA SHALL BE IN ACCORDANCE WITH LSS SPECIFICATIONS.
2. THIS VESSEL SHALL BE DESIGNED AND BUILT FOR AN INTERNAL PRESSURE NOT LESS THAN 50 PSIG WITH A DESIGN FACTOR OF 10:1. IN ACCORDANCE WITH THE SPECIFICATIONS, SUPPLIER SHALL DESIGN, PERFORM CALCULATIONS, FABRICATE VESSELS, AND USE MATERIALS IN ACCORDANCE WITH SECTION X, ASME BOILER AND PRESSURE VESSEL CODE, "FIBER-REINFORCED PLASTIC PRESSURE VESSELS".
3. IN ACCORDANCE WITH THE SPECIFICATIONS, THE SUPPLIER SHALL RECORD THE RESULTS OF AN IN-SHOP HYDRO TEST FOR EACH VESSEL BUILT.
4. ALL HARDWARE SHALL BE 316 STAINLESS. ALL BOLTS ARE TO BE STAMPED "316".
5. VESSEL MANUFACTURER SHALL WARRANTY THE FILTER FOR A PERIOD OF 5 YEARS AFTER INSTALLATION, AGAINST STRUCTURAL FAILURE OR DELAMINATIONS.



4 SECTION
SCALE: NONE



1 SECTION
SCALE: NONE



2 PLAN
SCALE: NONE

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
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WILMINGTON, NC 28401
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FAX: 910.791.5066
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RANCHO CUCAMONGA, CA 91730
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CIVIL ENGINEER
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WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
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215 MORRIS STREET SUITE 150
DURHAM, NC 27701
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FAX: 919.419.1669
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WILMINGTON, NC 28405
TELE: 910.452.4210
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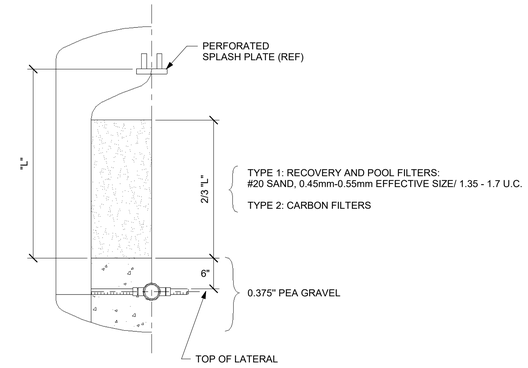
36" DIA. - FILTER FABRICATION

LS9.01

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FIELD INSTALLATION DETAILS



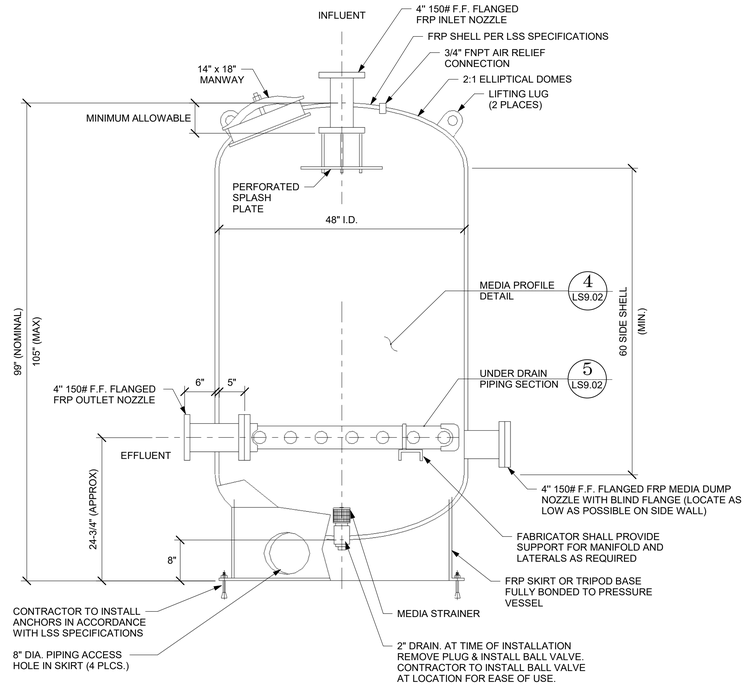
4 MEDIA PROFILE
SCALE: NONE

GENERAL INSTALLATION NOTES:

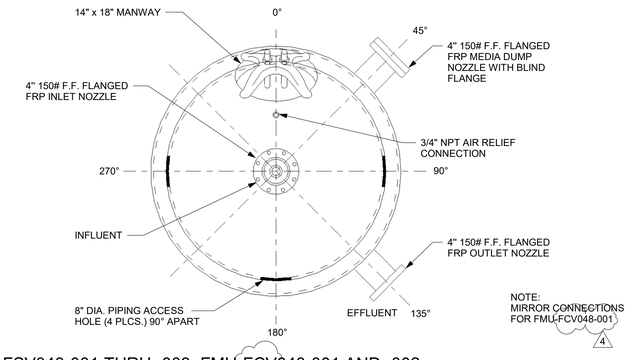
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3. CONTRACTOR SHALL ANCHOR FILTERS TO CONCRETE SLAB.

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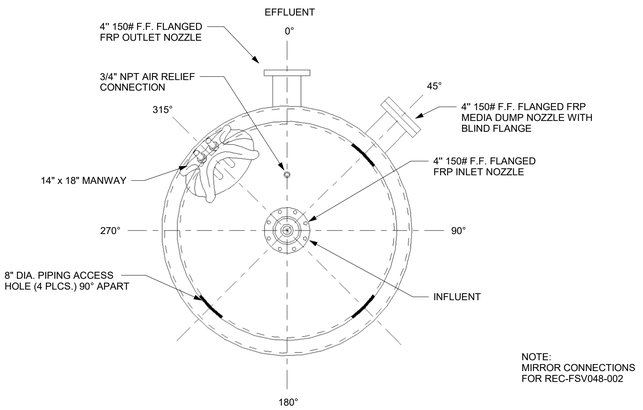
1. SEE PLAN DRAWINGS FOR ORIENTATION OF INLETS, OUTLETS, MANWAYS, AND MEDIA DUMPS.
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3. THIS VESSEL SHALL BE DESIGNED AND BUILT FOR AN INTERNAL PRESSURE NOT LESS THAN 50 PSIG. IN ACCORDANCE WITH THE SPECIFICATIONS, SUPPLIER SHALL DESIGN, PERFORM CALCULATIONS, FABRICATE VESSELS AND USE MATERIALS IN ACCORDANCE WITH SECTION X, ASME BOILER AND PRESSURE VESSEL CODE, "FIBER-REINFORCED PLASTIC PRESSURE VESSELS".
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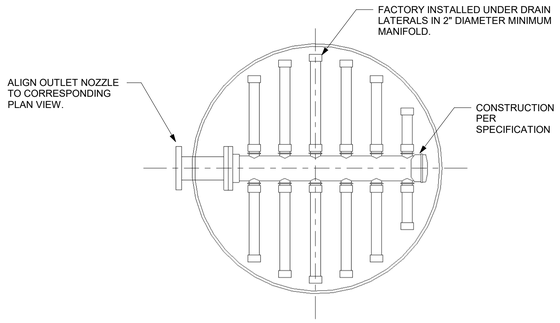
1 SECTION
SCALE: NONE



2 TOU-FSV048-001 THRU -003, FMU-FCV048-001 AND -002
SCALE: NONE



3 REC-FSV048-001 AND -002
SCALE: NONE



5 SECTION
SCALE: NONE

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
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RALEIGH, NC 27607
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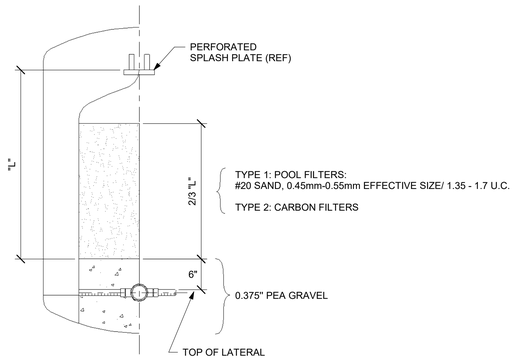
48" DIA. - FILTER FABRICATION

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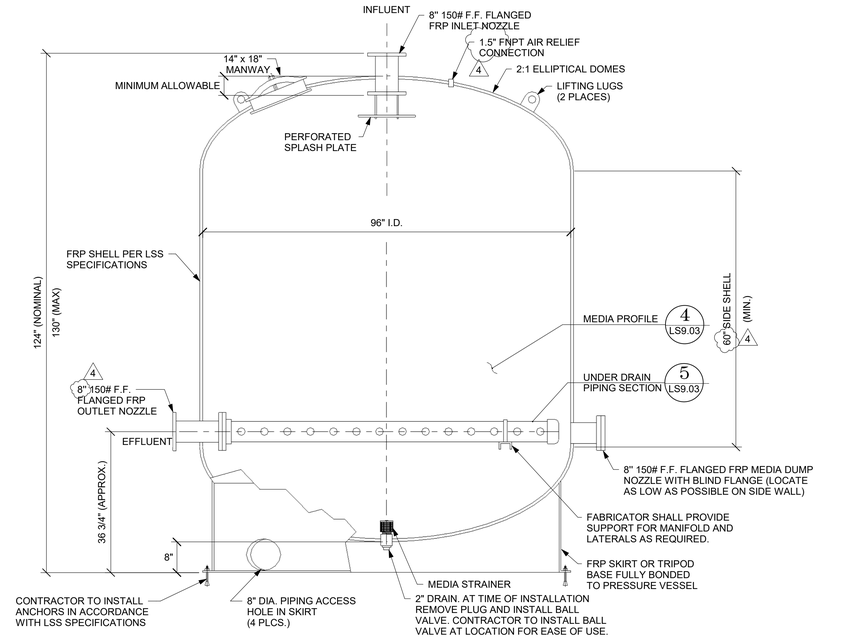
4 MEDIA PROFILE
SCALE: NONE

GENERAL INSTALLATION NOTES:

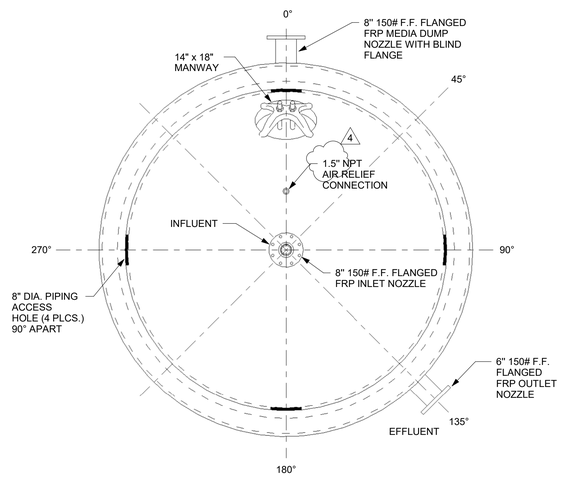
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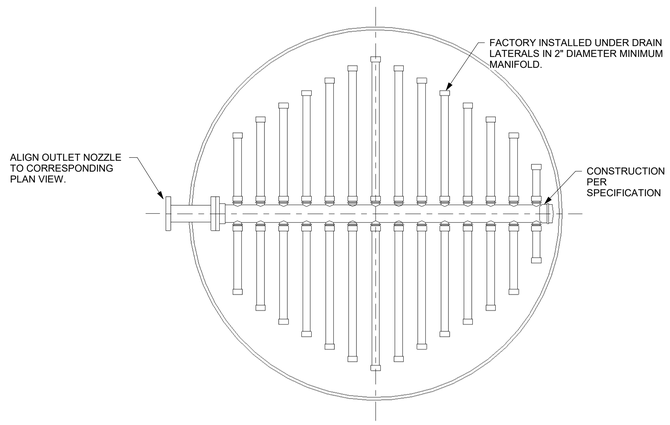
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5. ALL HARDWARE SHALL BE 316 STAINLESS. ALL BOLTS ARE TO BE STAMPED "316".
6. VESSEL MANUFACTURER SHALL WARRANTY THE FILTER FOR A PERIOD OF 5 YEARS AFTER INSTALLATION, AGAINST STRUCTURAL FAILURE OR DELAMINATIONS.



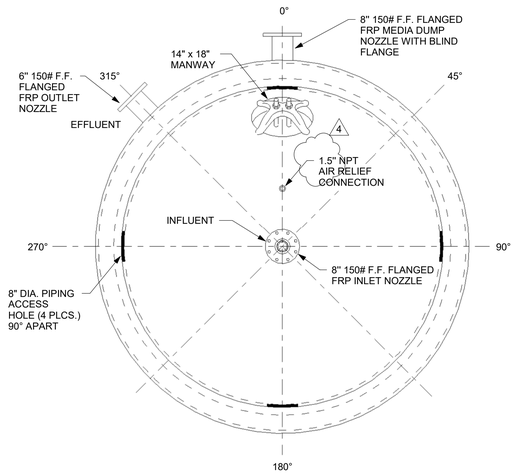
1 SECTION
SCALE: NONE



2 SRK-FSV096-001 AND SRK FSV096-003 THRU SRK-FSV096-007 PLAN VIEW
SCALE: NONE



5 SECTION (UNDER DRAIN PIPING)
SCALE: NONE



3 SRK-FCV096-001 AND SRK FSV096-002 PLAN VIEW
SCALE: NONE

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7947
WWW.SZOSTAKDESIGN.COM
LICENSE # 51679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 2004
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3505

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.765.8690
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2246 YAUPON DRIVE
WILMINGTON, NC 28401
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FAX: 910.791.5066
WWW.CBHFENGINEERS.COM
LICENSE # P-0806

LIGHTSWITCH
LIGHTING DESIGNER
10265 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.MTEHGINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

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NORTH CAROLINA PROFESSIONAL SEAL 049024 ENGINEER TERRI JOHNSON

11/10/2025

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
4	11-10-25	ADDENDUM #3

96" DIA. - FILTER FABRICATION

LS9.03

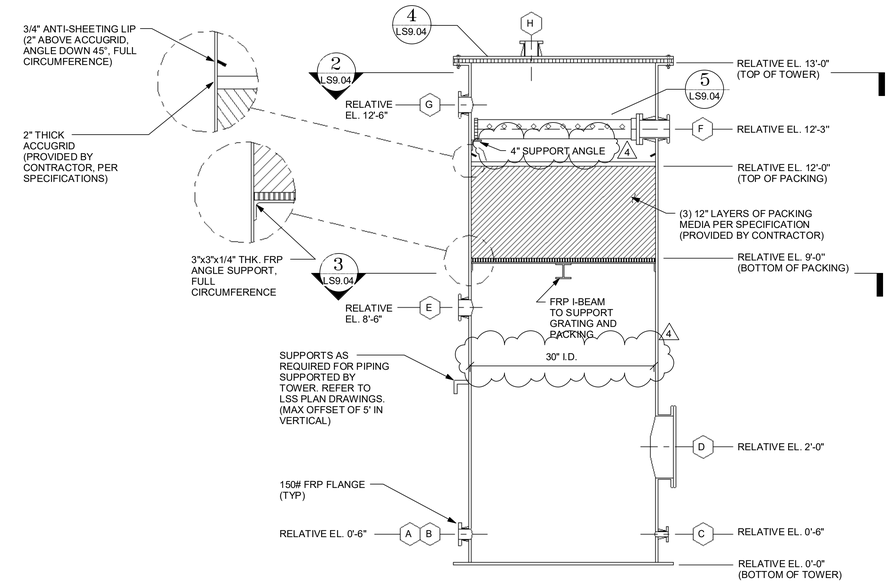
11/10/2025 5:06:07 PM Autodesk Docs://Fort Fisher Aquarium Renovation and Addition/TJP-LSS-NCA001-CENTRAL.rvt

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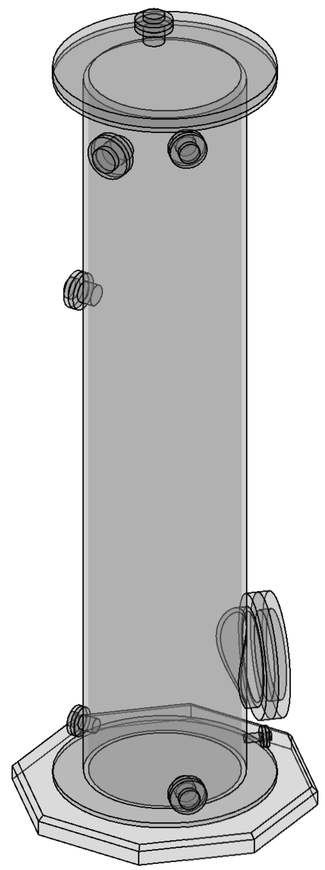
AQC-DEA030-001 PIPE CONNECTION SCHEDULE					
NOZZLE	DESCRIPTION	SIZE	ORIENTATION	ELEVATION	REMARKS
A	STILLING WELL / DRAIN	2" FLG	225°	0'-6"	FABRICATOR TO PROVIDE SIGHT GAUGE AND FASTENERS PER LSS DRAWINGS.
B	OUTLET	3" FLG	90°	0'-6"	---
C	PRESSURE TRANSDUCER	1" FLG	0°	0'-6"	---
D	ACCESSWAY / VIEWPORT	18" FLG	0°	2'-0"	FABRICATOR TO PROVIDE WITH ACRYLIC BLIND FLANGE AND FASTENERS
E	VENT	2.5" FLG	225°	8'-6"	---
F	INLET	4" FLG	135°	12'-3"	FABRICATOR TO PROVIDE WITH DISTRIBUTOR PIPE AND FASTENERS / SEE DETAIL 5
G	OVERFLOW	3" FLG	90°	12'-6"	---
H	VENT	3" FLG	270°	N/A	---

GENERAL NOTES:

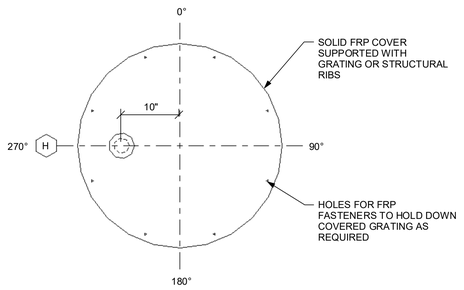
1. ALL FIBERGLASS RESIN, INCLUDING FLANGES, SUPPORTS, GRATING, ETC, SHALL BE PER LSS SPECIFICATIONS.
2. FABRICATOR TO PROVIDE ALL FASTENERS AS SERIES 316 SS UNLESS OTHERWISE NOTED.
3. FABRICATOR SHALL DESIGN TOWER TO WITHSTAND HYDROSTATIC FORCE (ASSUME VESSEL IS FULL OF EXHIBIT WATER).
4. LATERAL PIPE SHALL BE SUPPORTED BY FABRICATOR.
5. HEIGHT DIMENSIONS ARE FROM BOTTOM OF VESSEL. CONTRACTOR TO INSTALL VESSEL ON CONCRETE HOUSEKEEPING PAD.
6. FABRICATOR TO DESIGN LIFTING LUGS FOR INSTALLATION.



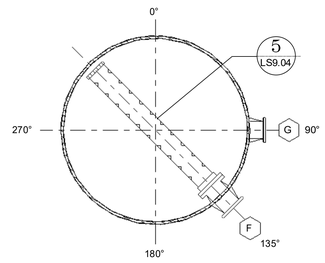
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SCALE: NONE



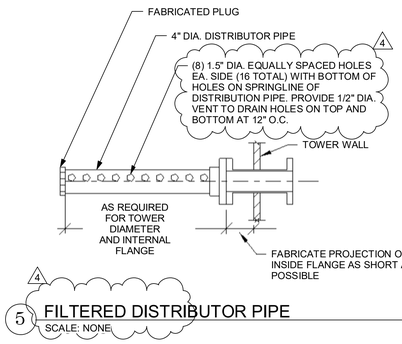
6 ISOMETRIC
SCALE: NONE



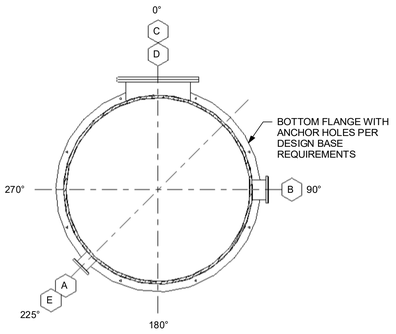
4 TOWER LID
SCALE: NONE



2 SECTION
SCALE: NONE



5 FILTERED DISTRIBUTOR PIPE
SCALE: NONE



3 SECTION
SCALE: NONE

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 205H
BEND, OR 97707
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NORTH CAROLINA PROFESSIONAL SEAL 049024 ENGINEER TERRI JOHNSON

11/10/2025

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4	11-10-25	ADDENDUM #3

AQC-DEA030-001 - DEAERATION TOWER FABRICATION

LS9.04

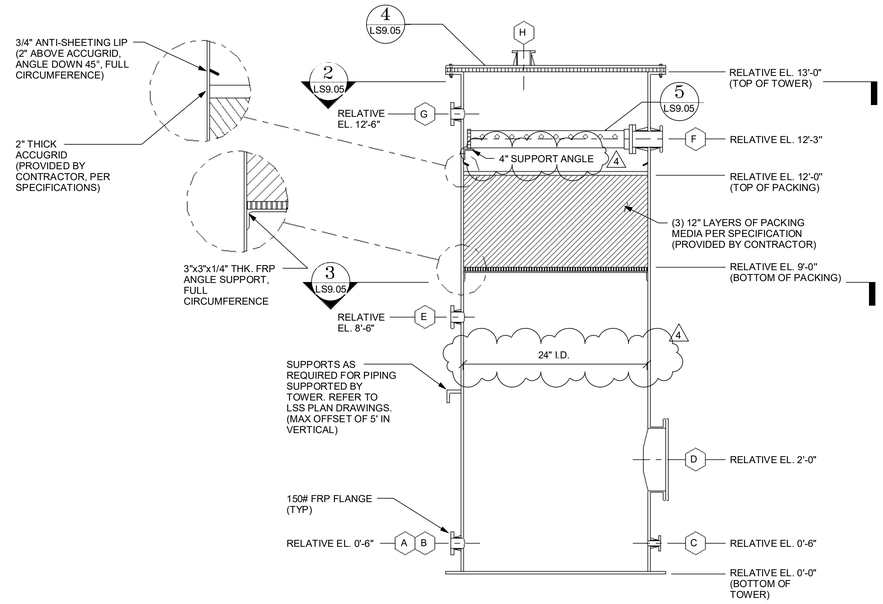
11/10/2025 5:06:14 PM Autodesk Docs://Fort Fisher Aquarium Renovation and Addition/TJP-LSS-NCA001-CENTRAL.rvt

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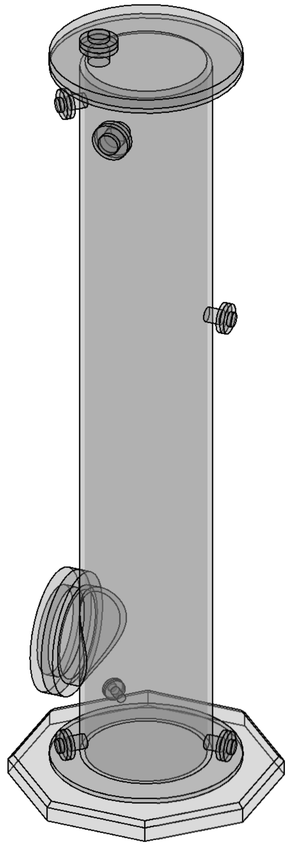
PBA-DEA024-001 PIPE CONNECTION SCHEDULE					
NOZZLE	DESCRIPTION	SIZE	ORIENTATION	ELEVATION	REMARKS
A	STILLING WELL / DRAIN	2" FLG	135°	0'-6"	FABRICATOR TO PROVIDE SIGHT GAUGE AND FASTENERS PER LSS DRAWINGS.
B	OUTLET	2" FLG	270°	0'-6"	---
C	PRESSURE TRANSDUCER	1" FLG	0°	0'-6"	---
D	ACCESSWAY / VIEWPORT	18" FLG	315°	2'-0"	FABRICATOR TO PROVIDE WITH ACRYLIC BLIND FLANGE AND FASTENERS
E	VENT	2" FLG	135°	8'-6"	---
F	INLET	3" FLG	225°	12'-3"	FABRICATOR TO PROVIDE WITH DISTRIBUTOR PIPE AND FASTENERS / SEE DETAIL 5
G	OVERFLOW	2" FLG	270°	12'-6"	---
H	VENT	2.5" FLG	270°	N/A	---

GENERAL NOTES:

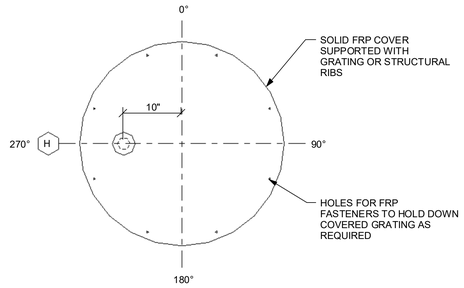
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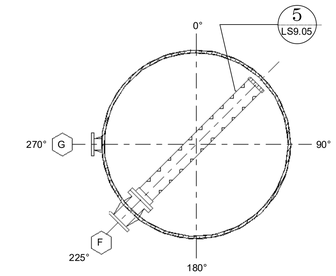
1 TOWER SECTION
SCALE: NONE



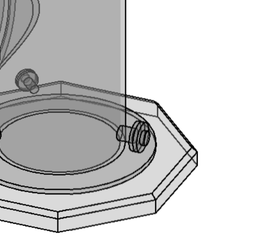
6 ISOMETRIC
SCALE: NONE

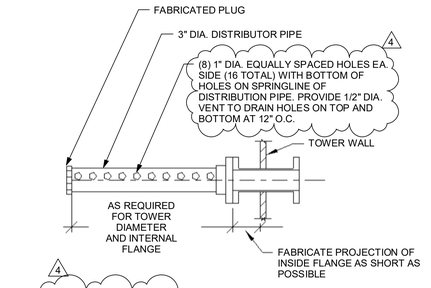


4 TOWER LID
SCALE: NONE

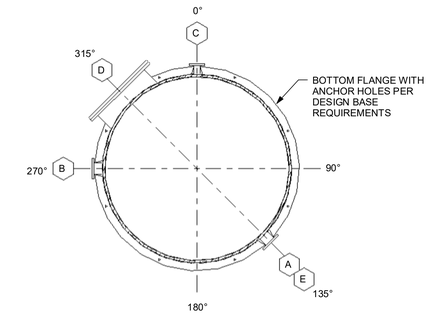


2 SECTION
SCALE: NONE





5 FILTERED DISTRIBUTOR PIPE
SCALE: NONE



3 SECTION
SCALE: NONE

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 31679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200H
BEND, OR 97707
TELE: 619.423.8700
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LICENSE # C-3005

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.963.8690
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5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
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MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0086

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10365 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
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11/10/2025

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PBA-DEA024-001 - DEAERATION TOWER FABRICATION

LS9.05

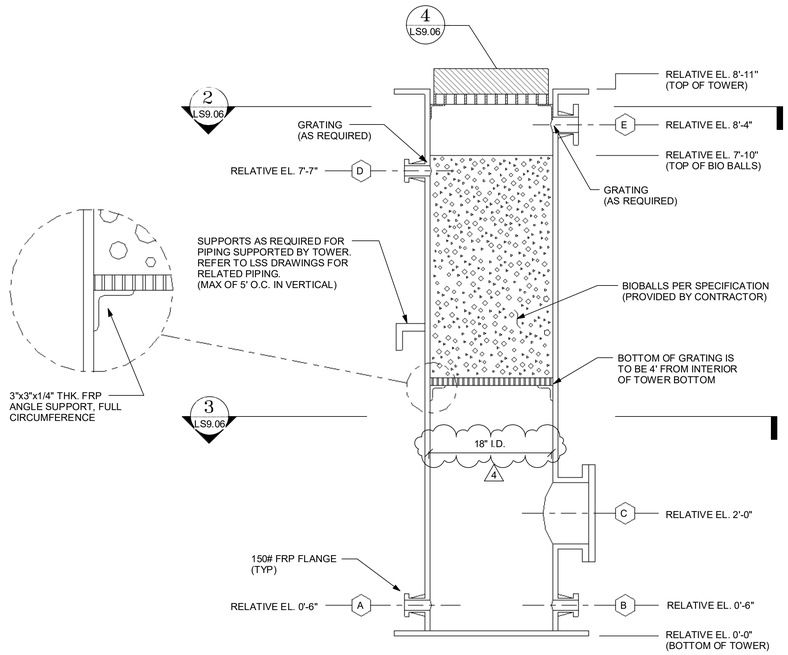
11/10/2025 5:06:18 PM Autodesk Docs://Fort Fisher Aquarium Renovation and Addition/TJP-LSS-NCA001-CENTRAL.rvt

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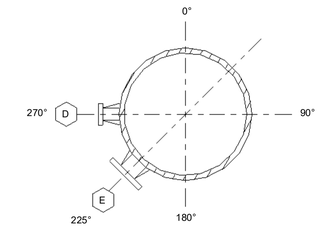
CTF-DEA018-001 PIPE CONNECTION SCHEDULE					
NOZZLE	DESCRIPTION	SIZE	ORIENTATION	ELEVATION	REMARKS
A	SIGHT GAUGE / DRAIN	2" FLG	180°	0'-6"	FABRICATOR TO PROVIDE SIGHT GAUGE AND FASTENERS PER LSS DRAWINGS.
B	OUTLET	2" FLG	90°	0'-6"	---
C	HANDWAY / VIEWPORT	12" FLG	0°	2'-0"	FABRICATOR TO PROVIDE WITH ACRYLIC BLIND FLANGE AND FASTENERS
D	INLET	2" FLG	270°	7'-7"	---
E	OVERFLOW	2.5" FLG	225°	8'-4"	---

GENERAL NOTES:

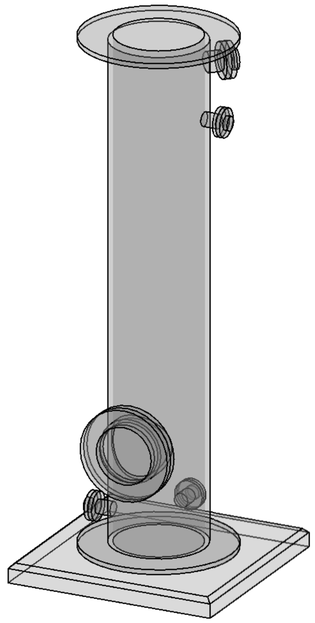
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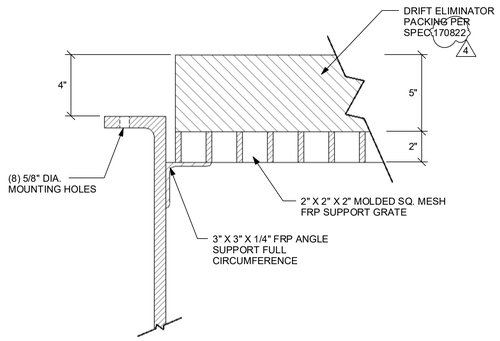
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SCALE: NONE



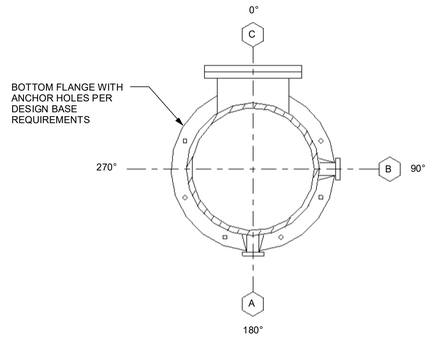
2 SECTION
SCALE: NONE



5 ISOMETRIC
SCALE: NONE



4 DRIFT ELIMINATOR
SCALE: NONE



3 SECTION
SCALE: NONE

SZOSTAK DESIGN

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WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9455
FAX: 910.343.9604
WWW.NTEN GINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.605.8952
WWW.PALACIOCOLLABORATIVE.COM

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NORTH CAROLINA PROFESSIONAL SEAL 049024 ENGINEER TERRI JOHNSON

11/10/2025

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
4	11-10-25	ADDENDUM #3

CTF-DEA018-001 - DEAERATION TOWER FABRICATION

LS9.06

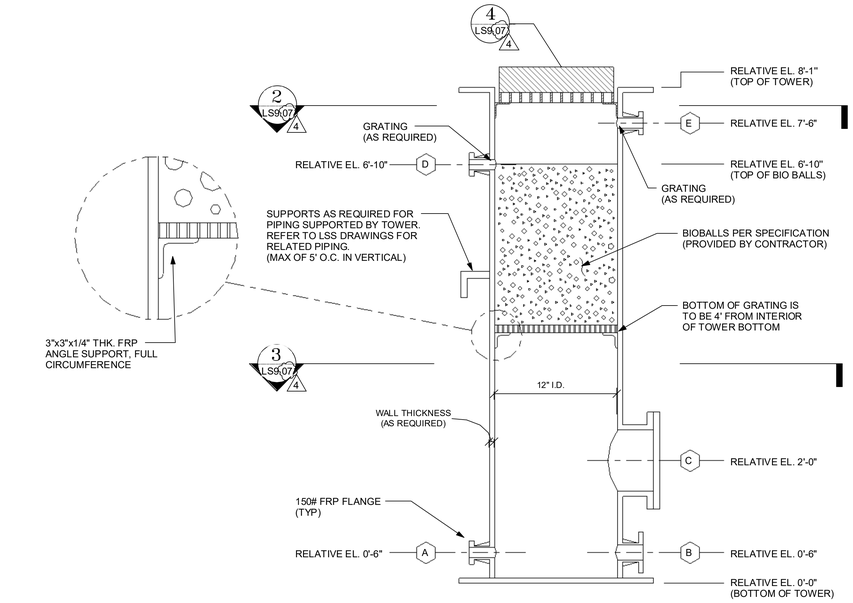
11/10/2025 5:06:21 PM Autodesk Docs://Fort Fisher Aquarium Renovation and Addition/TJP-LSS-NCA001-CENTRAL.rvt

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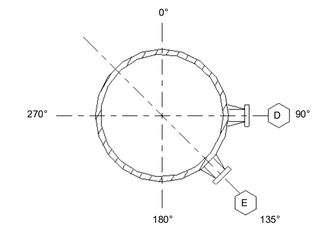
LPS-DEA012-001 PIPE CONNECTION SCHEDULE					
NOZZLE	DESCRIPTION	SIZE	ORIENTATION	ELEVATION	REMARKS
A	SIGHT GAUGE / DRAIN	2" FLG	270°	0'-6"	FABRICATOR TO PROVIDE SIGHT GAUGE AND FASTENERS PER LSS DRAWINGS.
B	OUTLET	2.5" FLG	135°	0'-6"	---
C	HANDWAY / VIEWPORT	12" FLG	0°	2'-0"	FABRICATOR TO PROVIDE WITH ACRYLIC BLIND FLANGE AND FASTENERS
D	INLET	2" FLG	90°	6'-10"	---
E	OVERFLOW	2" FLG	135°	7'-6"	---

GENERAL NOTES:

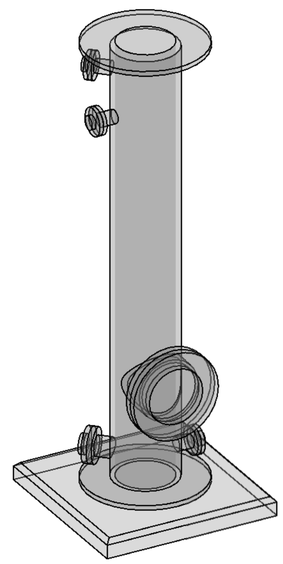
1. ALL FIBERGLASS RESIN, INCLUDING FLANGES, SUPPORTS, GRATING, ETC, SHALL BE PER LSS SPECIFICATIONS.
2. FABRICATOR TO PROVIDE ALL FASTENERS AS SERIES 316 SS UNLESS OTHERWISE NOTED.
3. FABRICATOR SHALL DESIGN TOWER TO WITHSTAND HYDROSTATIC FORCE (ASSUME VESSEL IS FULL OF EXHIBIT WATER).
4. HEIGHT DIMENSIONS ARE FROM BOTTOM OF VESSEL. CONTRACTOR TO INSTALL VESSEL ON CONCRETE HOUSEKEEPING PAD.
5. FABRICATOR TO DESIGN LIFTING LUGS FOR INSTALLATION.
6. PROVIDE COMPOSITE INSULATION PER SPEC FOR INTEGRAL CONSTRUCTION WITH FRP CYLINDER.



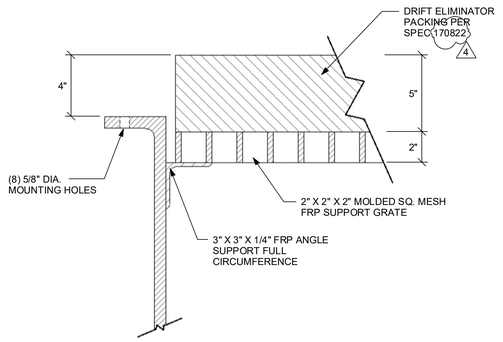
1 TOWER SECTION
SCALE: NONE



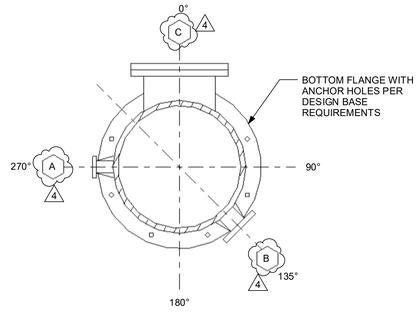
2 SECTION
SCALE: NONE



5 ISOMETRIC
SCALE: NONE



4 DRIFT ELIMINATOR
SCALE: NONE



3 SECTION
SCALE: NONE

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 31679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200H
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3005

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.765.8690
WWW.ROTO.COM

BENNETT & PLESS
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2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0086

LIGHTSWITCH
LIGHTING DESIGNER
10365 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

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LANDSCAPE ARCHITECT
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3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
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WWW.CHEATHAMFA.COM
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DURHAM, NC 27703
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NORTH CAROLINA PROFESSIONAL SEAL 049024 ENGINEER TERRI JOHNSON

11/10/2025

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
4	11-10-25	ADDENDUM #3

LPS-DEA012-001 - DEAERATION TOWER FABRICATION

LS9.07

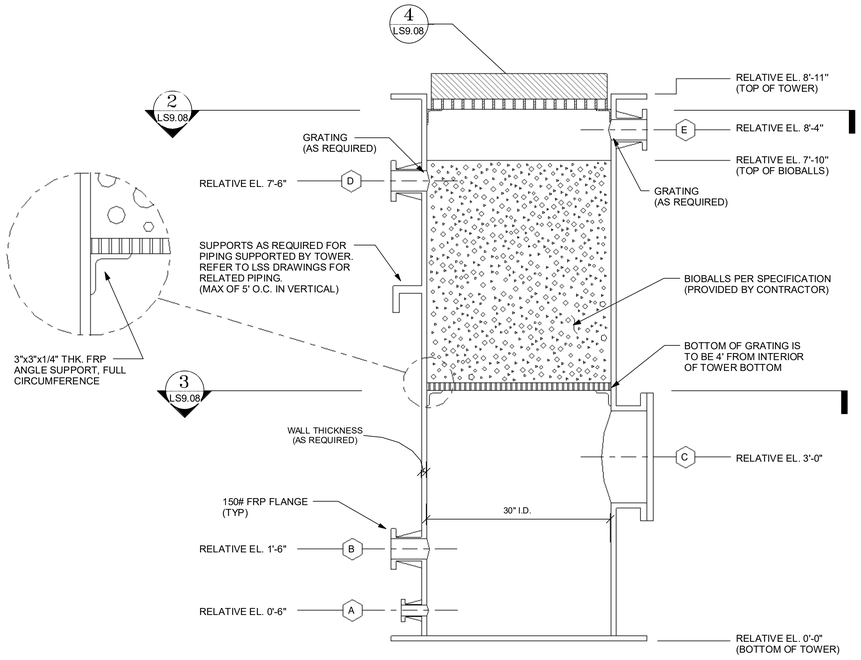
11/10/2025 5:06:25 PM Autodesk Docs://Fort Fisher Aquarium Renovation and Addition/TJP-LSS-NCA001-CENTRAL.rvt

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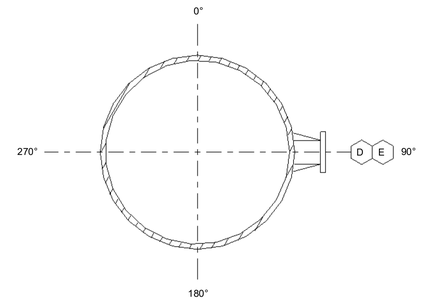
PRC-DEA030-001 PIPE CONNECTION SCHEDULE					
NOZZLE	DESCRIPTION	SIZE	ORIENTATION	ELEVATION	REMARKS
A	SIGHT GAUGE / DRAIN	2" FLG	270°	0'-6"	FABRICATOR TO PROVIDE SIGHT GAUGE AND FASTENERS PER LSS DRAWINGS.
B	OUTLET	4" FLG	270°	1'-6"	---
C	HANDWAY / VIEWPORT	12" FLG	0°	3'-0"	FABRICATOR TO PROVIDE WITH ACRYLIC BLIND FLANGE AND FASTENERS
D	INLET	4" FLG	90°	7'-6"	---
E	OVERFLOW	4" FLG	90°	8'-4"	---

GENERAL NOTES:

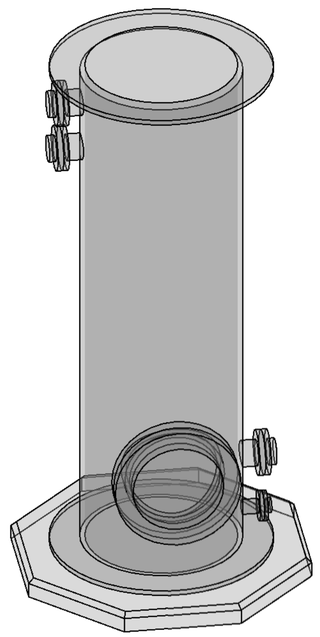
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6. PROVIDE COMPOSITE INSULATION PER SPEC FOR INTEGRAL CONSTRUCTION WITH FRP CYLINDER.



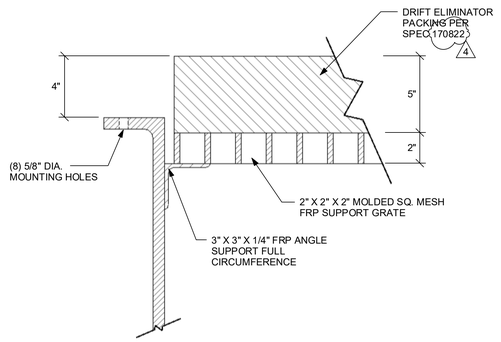
1 TOWER SECTION
SCALE: NONE



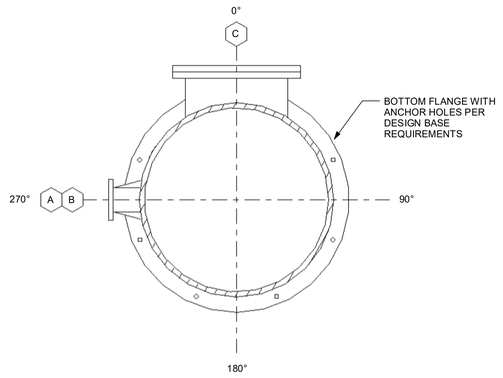
2 SECTION
SCALE: NONE



5 ISOMETRIC
SCALE: NONE



4 DRIFT ELIMINATOR
SCALE: NONE



3 SECTION
SCALE: NONE

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 31679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200M
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3005

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.765.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.852.5587
WWW.BENNETT-PLESS.COM
LICENSE # P-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5564
WWW.CBHFENGINEERS.COM
LICENSE # P-0086

LIGHTSWITCH
LIGHTING DESIGNER
10565 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9455
FAX: 910.343.9604
WWW.NTEN.GINEERS.COM
LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
WWW.SURFACE678.COM
LICENSE # C-098

CHEATHAM & ASSOCIATES, PA
FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.803.8952
WWW.PALACIOCOLLABORATIVE.COM

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NORTH CAROLINA PROFESSIONAL SEAL 049024 ENGINEER TERRI JOHNSON

11/10/2025

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
4	11-10-25	ADDENDUM #3

PRC-DEA030-001 - DEAERATION TOWER FABRICATION

LS9.08

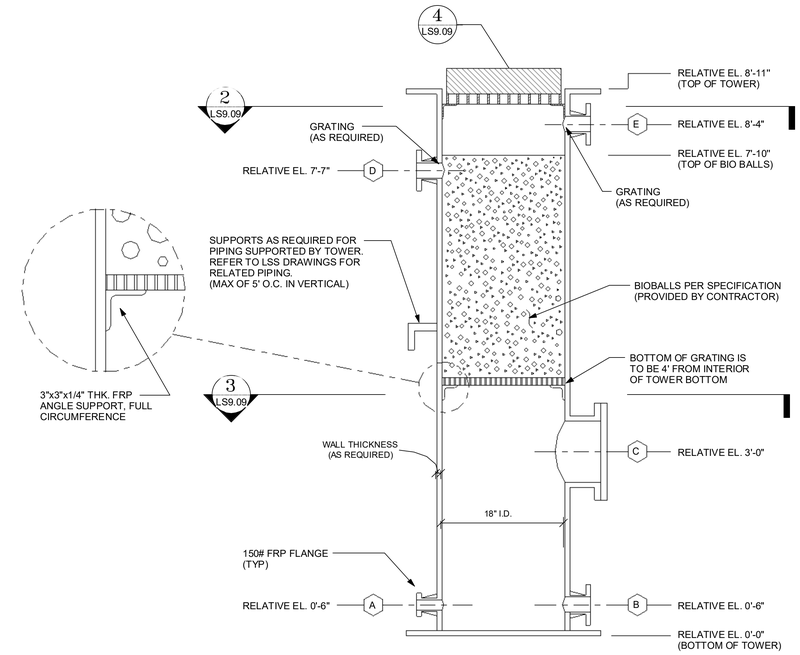
11/10/2025 5:06:28 PM Autodesk Docs://Fort Fisher Aquarium Renovation and Addition/TJP-LSS-NCA001-CENTRAL.rvt

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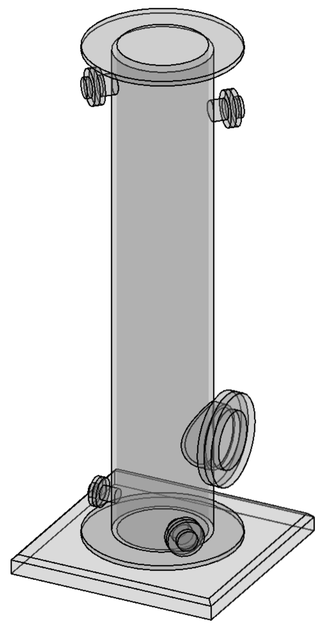
WSD-DEA018-001 PIPE CONNECTION SCHEDULE					
NOZZLE	DESCRIPTION	SIZE	ORIENTATION	ELEVATION	REMARKS
A	SIGHT GAUGE / DRAIN	2" FLG	180° (4)	0'-6"	FABRICATOR TO PROVIDE SIGHT GAUGE AND FASTENERS PER LSS DRAWINGS.
B	OUTLET	2.5" FLG	45°	0'-6"	---
C	HANDWAY / VIEWPORT	12" FLG	0°	3'-0"	FABRICATOR TO PROVIDE WITH ACRYLIC BLIND FLANGE AND FASTENERS
D	INLET	2.5" FLG	315° (4)	7'-7"	---
E	OVERFLOW	3" FLG	135°	8'-4"	---

GENERAL NOTES:

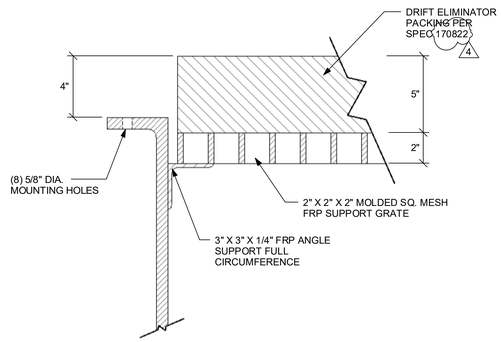
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2. FABRICATOR TO PROVIDE ALL FASTENERS AS SERIES 316 SS UNLESS OTHERWISE NOTED.
3. FABRICATOR SHALL DESIGN TOWER TO WITHSTAND HYDROSTATIC FORCE (ASSUME VESSEL IS FULL OF EXHIBIT WATER).
4. LATERAL PIPE SHALL BE SUPPORTED BY FABRICATOR.
5. HEIGHT DIMENSIONS ARE FROM BOTTOM OF VESSEL. CONTRACTOR TO INSTALL VESSEL ON CONCRETE HOUSEKEEPING PAD.
6. FABRICATOR TO DESIGN LIFTING LUGS FOR INSTALLATION.



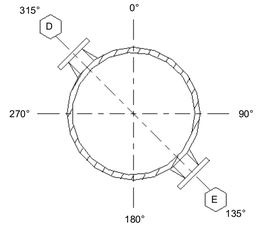
1 TOWER SECTION
SCALE: NONE



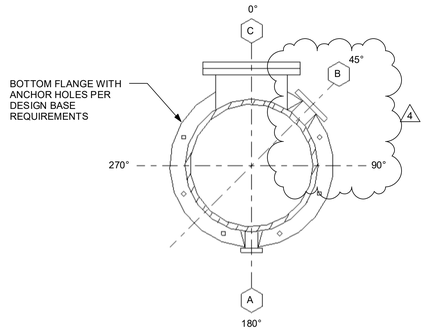
5 ISOMETRIC
SCALE: NONE



4 DRIFT ELIMINATOR
SCALE: NONE



2 SECTION
SCALE: NONE



3 SECTION
SCALE: NONE

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 31679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200H
BEND, OR 97707
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7001 DISCOVERY BOULEVARD
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RALEIGH, NC 27607
TELE: 919.852.5587
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2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5066
WWW.CBHFENGINEERS.COM
LICENSE # P-0806

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10065 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
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NORTH CAROLINA PROFESSIONAL SEAL 049024 ENGINEER TERRI JOHNSON

11/10/2025

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4	11-10-25	ADDENDUM #3

WSD-DEA018-001 - DEAERATION TOWER FABRICATION

LS9.09

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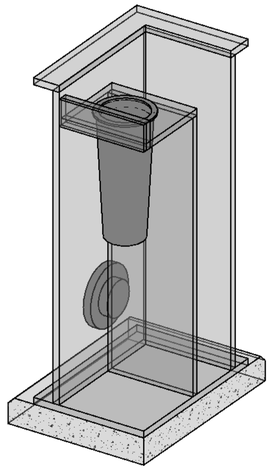
AQC RESERVOIR PIPE CONNECTION SCHEDULE

NOZZLE	DESCRIPTION	SIZE	CONNECTION TYPE	EXTERIOR PROJECTION
B	SALTWATER RETURN	4"	FLG	AS REQ'D
C	PRESSURE TRANSDUCER	1"	T X T	AS REQ'D
D	OVERFLOW	4"	FLG	AS REQ'D
E	SALTWATER SUPPLY	6"	FLG	AS REQ'D
F	DRAIN	2"	T X T	AS REQ'D
G	FRACTIONATOR	3"	T X T	AS REQ'D
H	FRACTIONATOR	3"	T X T	AS REQ'D
I	DRAIN	1"	T X T	AS REQ'D

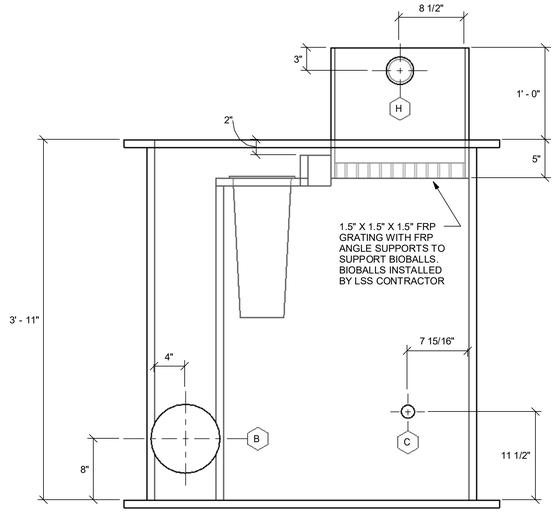
* T X T IS THREADED BY THREADED COUPLING

GENERAL NOTES:

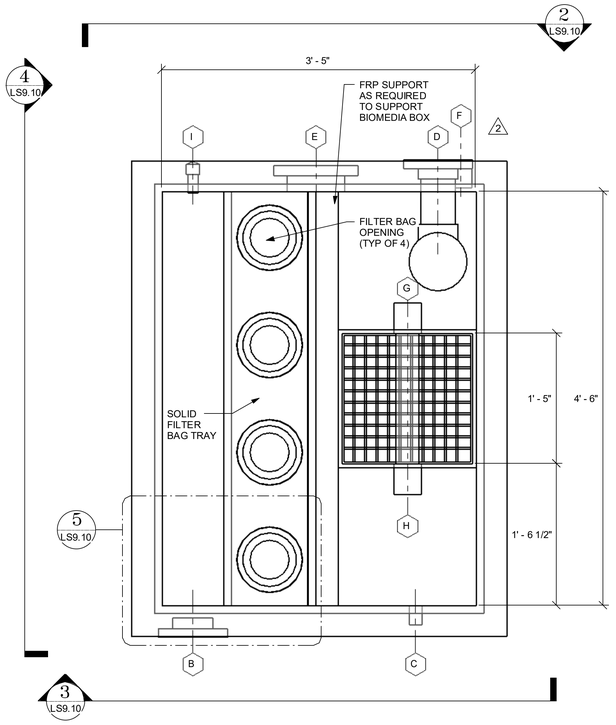
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3. CONTRACTOR TO INSTALL RESERVOIR ON CONCRETE HOUSEKEEPING PAD.
4. FABRICATOR TO DESIGN LIFTING LUGS FOR INSTALLATION.
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6. FABRICATION SHEET SHOWS OVERALL REQUIRED DIMENSIONS AND PIPING CONNECTIONS ONLY.
7. REFER TO SPECIFICATION 170845 "RECTANGULAR FIBERGLASS TANKS" FOR ADDITIONAL INFORMATION AND REQUIREMENTS



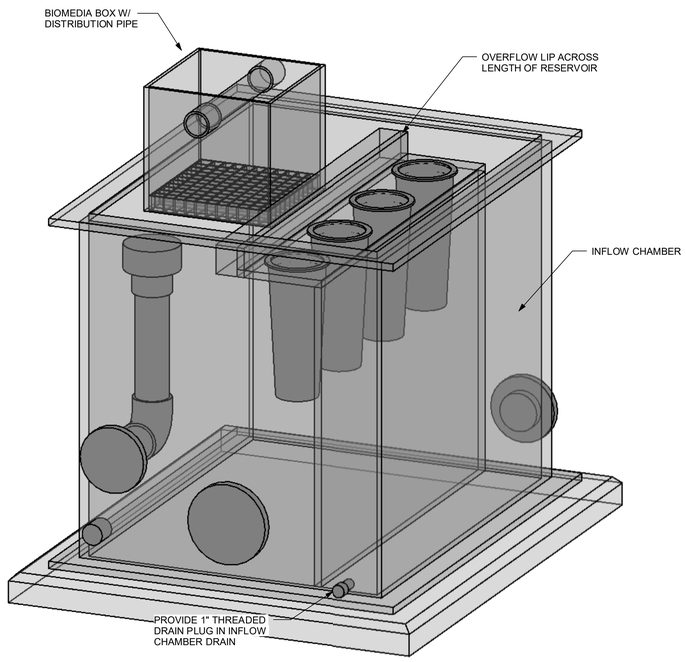
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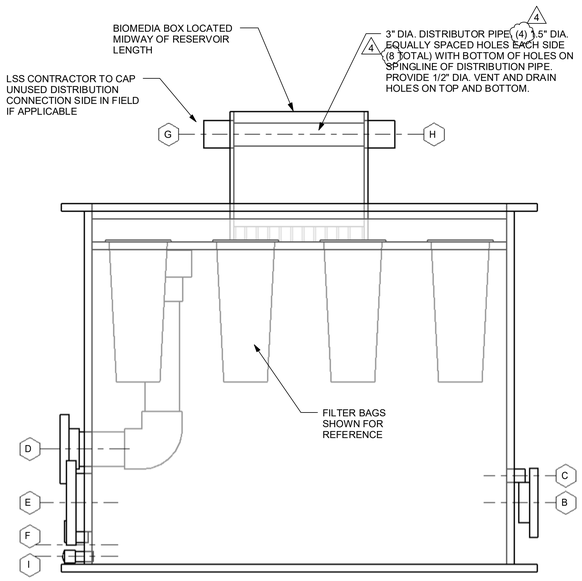
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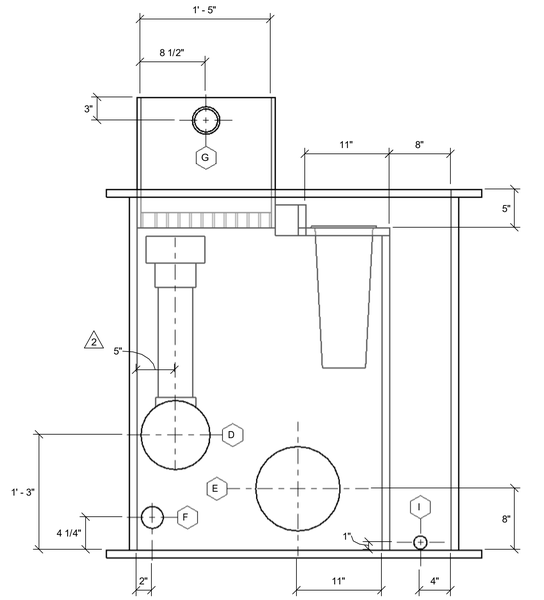
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6 ISOMETRIC
SCALE: NONE



4 SECTION
SCALE: NONE



2 SECTION
SCALE: NONE

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

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SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 31679

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LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200H
BEND, OR 97707
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MEP ENGINEER
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WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0086

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LIGHTING DESIGNER
10365 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

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2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
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LICENSE # P-3152

SURFACE 678, PA
LANDSCAPE ARCHITECT
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DURHAM, NC 27701
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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
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WWW.CHEATHAMPA.COM
LICENSE # C-1073

PALACIO COLLABORATIVE
COST ESTIMATOR
4819 EMPEROR BOULEVARD SUITE 400
DURHAM, NC 27703
TELE: 919.405.8952
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NORTH CAROLINA PROFESSIONAL SEAL 049024 ENGINEER TERRI JOHNSON

11/10/2025

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
4	11-10-25	ADDENDUM #3

AQC-RES001-001 - RESERVOIR FABRICATION

LS9.10

11/10/2025 5:06:35 PM Autodesk Docs://Fort Fisher Aquarium Renovation and Addition/TJP-LSS-NCA001-CENTRAL.rvt

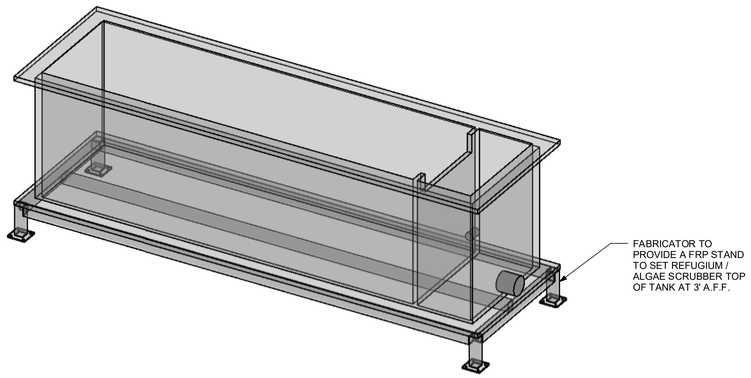
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LCR REFUGIUM / ALGAE SCRUBBER PIPE CONNECTION SCHEDULE				
NOZZLE	DESCRIPTION	SIZE	CONNECTION TYPE	EXTERIOR PROJECTION
A	OUTLET	3"	T X T	AS REQ'D
B	DRAIN	1"	T X T	AS REQ'D

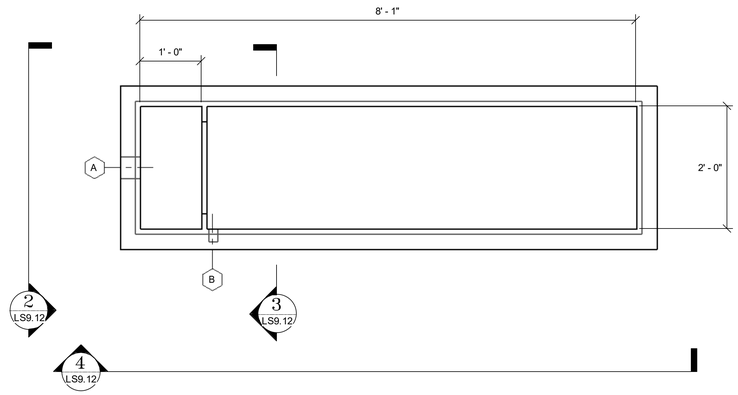
* T X T IS THREADED BY THREADED COUPLING

GENERAL NOTES:

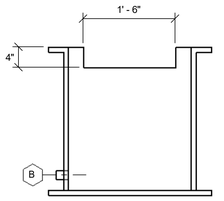
1. ALL FIBERGLASS RESIN, INCLUDING FLANGES, SUPPORTS, GRATING, ETC, SHALL BE PER LSS SPECIFICATIONS.
2. FABRICATOR SHALL DESIGN RESERVOIR TO WITHSTAND HYDROSTATIC FORCE (ASSUME VESSEL IS FULL OF EXHIBIT WATER).
3. CONTRACTOR TO INSTALL RESERVOIR ON FABRICATED FRP STAND.
4. FABRICATOR TO DESIGN LIFTING LUGS FOR INSTALLATION.
5. RESERVOIR TOP FLANGE, STIFFENING RIBS, OR OTHER ELEMENTS REQUIRED FOR STRUCTURAL INTEGRITY OF FRP TANK ARE NOT SHOWN FOR CLARITY. FABRICATOR SHALL PROVIDE STIFFENING ELEMENTS AS REQUIRED TO LIMIT DEFLECTION PER SPECIFICATION REQUIREMENTS. FRP FABRICATOR SHALL BE FULLY RESPONSIBLE FOR DESIGN OF FRP TANK AND INTEGRATING ANY REQUIRED STIFFENING ELEMENTS TO WHAT IS SHOWN.
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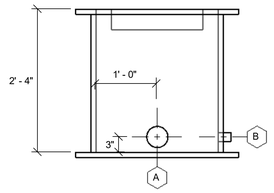
5 ISOMETRIC
SCALE: NONE



1 PLAN VIEW
SCALE: NONE



3 SECTION
SCALE: NONE



2 SECTION
SCALE: NONE



4 SECTION
SCALE: NONE

SZOSTAK DESIGN

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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
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BEND, OR 97707
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LICENSE # C-1073

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DURHAM, NC 27703
TELE: 919.405.8932
WWW.PALACIOCOLLABORATIVE.COM

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11/10/2025

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LCR-RES001-001 - RESERVOIR FABRICATION

LS9.12

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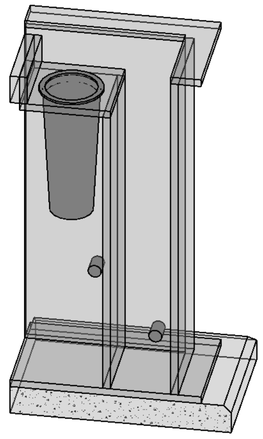
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PRC RESERVOIR PIPE CONNECTION SCHEDULE				
NOZZLE	DESCRIPTION	SIZE	CONNECTION TYPE	EXTERIOR PROJECTION
A	SALTWATER RETURN	4"	FLG	AS REQ'D
B	DRAIN	2"	T X T	AS REQ'D
C	OVERFLOW	2.5"	T X T	AS REQ'D
D	PRESSURE TRANSDUCER	1"	T X T	AS REQ'D
E	DRAIN	1"	T X T	AS REQ'D
F	FRACTIONATOR	2"	T X T	AS REQ'D
G	FRACTIONATOR	2"	T X T	AS REQ'D

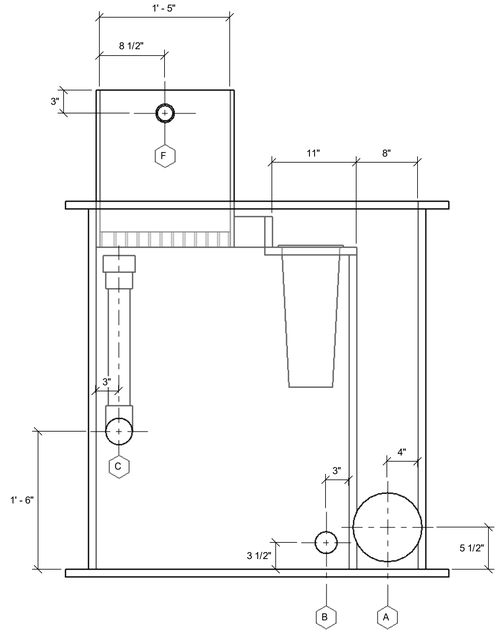
* T X T IS THREADED BY THREADED COUPLING

GENERAL NOTES:

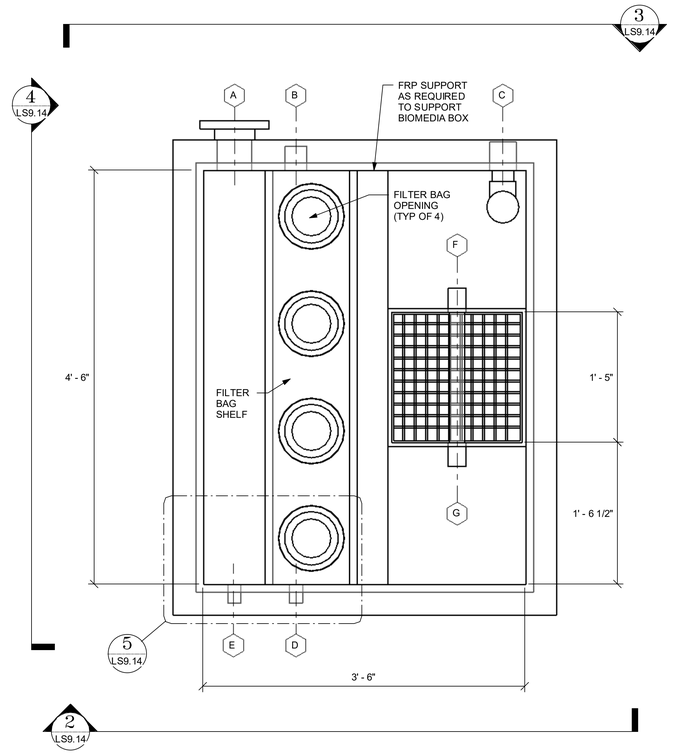
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3. CONTRACTOR TO INSTALL RESERVOIR ON CONCRETE HOUSEKEEPING PAD.
4. FABRICATOR TO DESIGN LIFTING LUGS FOR INSTALLATION.
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7. REFER TO SPECIFICATION 170845 "RECTANGULAR FIBERGLASS TANKS" FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
8. PROVIDE COMPOSITE INSULATION PER SPEC FOR INTEGRAL CONSTRUCTION WITH FRP RESERVOIR.



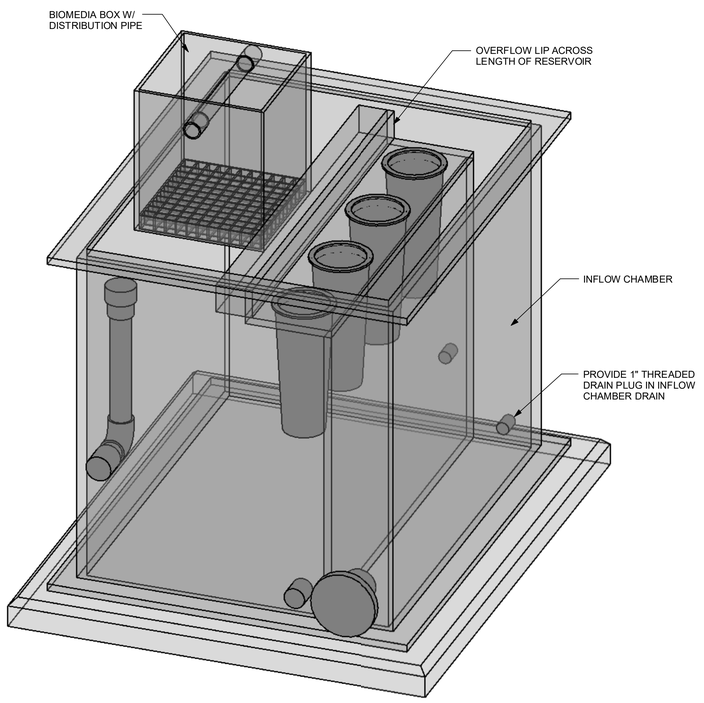
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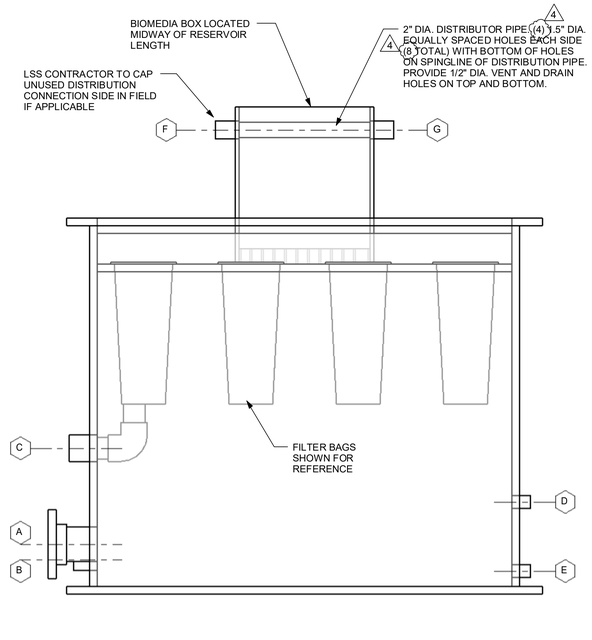
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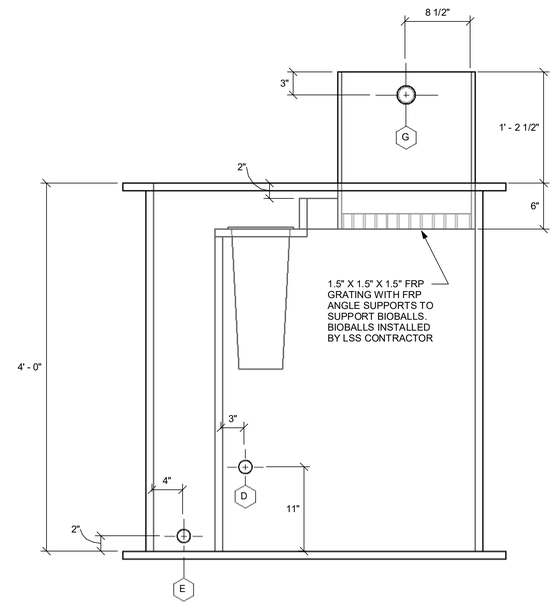
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6 ISOMETRIC
SCALE: NONE



4 SECTION
SCALE: NONE



2 SECTION
SCALE: NONE

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
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ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
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RALEIGH, NC 27607
TELE: 919.852.5587
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WILMINGTON, NC 28401
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FAX: 910.791.5564
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11/10/2025

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PRC-RES001-001 - RESERVOIR FABRICATION

LS9.14

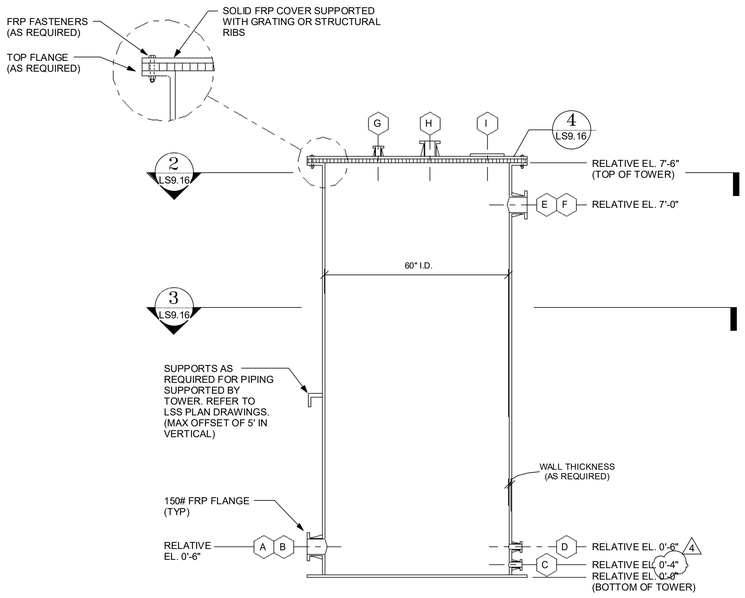
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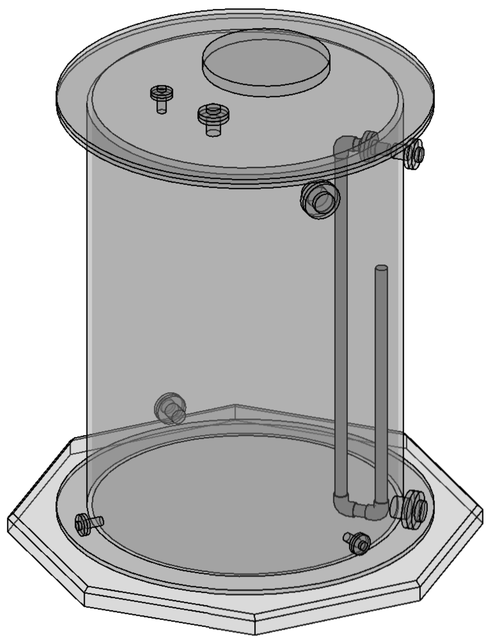
ROF-TNK060-001 PIPE CONNECTION SCHEDULE					
NOZZLE	DESCRIPTION	SIZE	ORIENTATION	ELEVATION	REMARKS
A	SIGHT GAUGE / DRAIN	2" FLG	135°	0'-6"	FABRICATOR TO PROVIDE SIGHT GAUGE AND FASTENERS PER LSS DRAWINGS.
B	OUTLET	3" FLG	270°	0'-6"	---
C	HEX INLET	1" FLG	45°	0'-4"	---
D	HEX OUTLET	1" FLG	300°	0'-6"	---
E	OVERFLOW	3" FLG	315°	7'-0"	---
F	INLET	2" FLG	270°	7'-0"	---
G	INLET	1" FLG	45°	N/A	---
H	VENT	2" FLG	0°	N/A	---
I	HATCH	18"	180°	N/A	---

GENERAL NOTES:

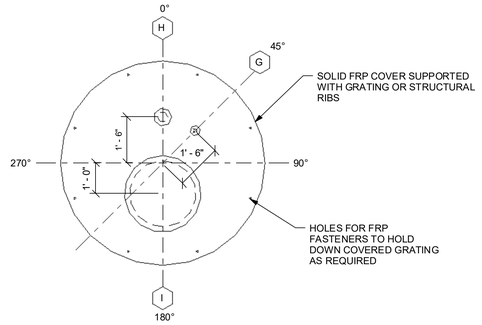
1. ALL FIBERGLASS RESIN, INCLUDING FLANGES, SUPPORTS, GRATING, ETC, SHALL BE PER LSS SPECIFICATIONS.
2. FABRICATOR TO PROVIDE ALL FASTENERS AS SERIES 316 SS UNLESS OTHERWISE NOTED.
3. FABRICATOR SHALL DESIGN TOWER TO WITHSTAND HYDROSTATIC FORCE (ASSUME VESSEL IS FULL OF EXHIBIT WATER).
4. INTERIOR PIPES SHALL BE SUPPORTED BY FABRICATOR.
5. HEIGHT DIMENSIONS ARE FROM BOTTOM OF VESSEL. CONTRACTOR TO INSTALL VESSEL ON CONCRETE HOUSEKEEPING PAD.
6. FABRICATOR TO DESIGN LIFTING LUGS FOR INSTALLATION.



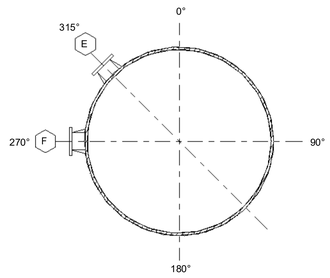
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SCALE: NONE



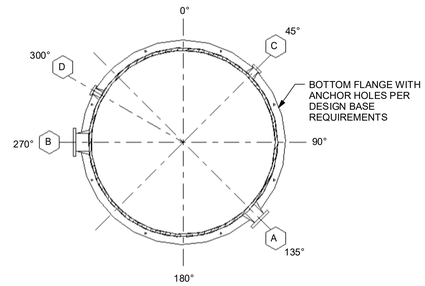
5 ISOMETRIC
SCALE: NONE



4 TOWER LID
SCALE: NONE



2 SECTION
SCALE: NONE



3 SECTION
SCALE: NONE

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LIGHTSWITCH
LIGHTING DESIGNER
10365 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
WWW.LIGHTSWITCH.NET

TUNSTALL CONSULTING ENGINEERS PLLC
CIVIL ENGINEER
2602 IRON GATE DRIVE SUITE 102
WILMINGTON, NC 28412
TELE: 910.343.9653
FAX: 910.343.9604
WWW.NTENGINEERS.COM
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LANDSCAPE ARCHITECT
215 MORRIS STREET SUITE 150
DURHAM, NC 27701
TELE: 919.419.1199
FAX: 919.419.1669
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LICENSE # C-098

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FIRE PROTECTION ENGINEER
3412 ENTERPRISE DRIVE
WILMINGTON, NC 28405
TELE: 910.452.4210
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DURHAM, NC 27703
TELE: 919.605.8952
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NORTH CAROLINA PROFESSIONAL SEAL 049024 ENGINEER TERRI JOHNSON

11/10/2025

NO.	DATE	DESCRIPTION
1	9-8-25	BID SET
2	10-17-25	ADDENDUM #1
4	11-10-25	ADDENDUM #3

ROF-TNK060-001 - TANK FABRICATION

LS9.16

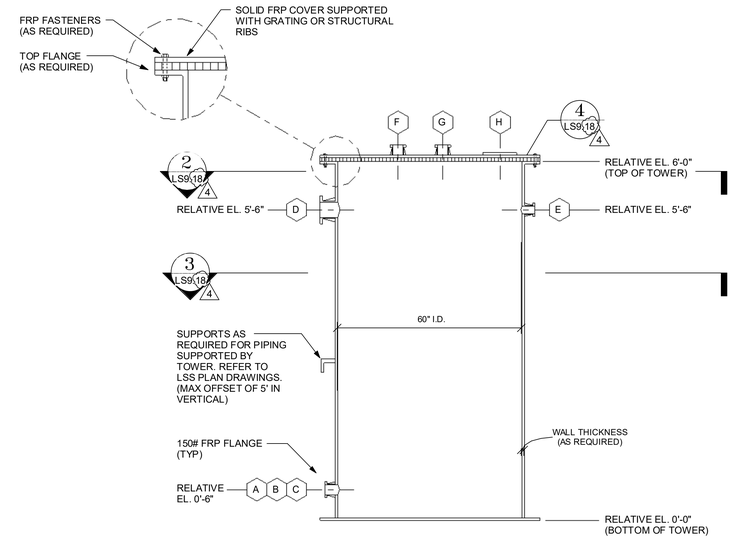
11/10/2025 5:06:43 PM Autodesk Docs://Fort Fisher Aquarium Renovation and Addition/TJP-LSS-NCA001-CENTRAL.rvt

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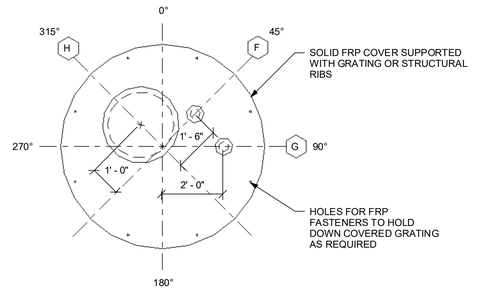
CRO-TNK060-001 PIPE CONNECTION SCHEDULE					
NOZZLE	DESCRIPTION	SIZE	ORIENTATION	ELEVATION	REMARKS
A	SIGHT GAUGE / DRAIN	2" FLG	45°	0'-6"	FABRICATOR TO PROVIDE SIGHT GAUGE AND FASTENERS PER LSS DRAWINGS.
B	HEX INLET	2" FLG	135°	0'-6"	---
C	HEX OUTLET	2" FLG	270°	0'-6"	---
D	OVERFLOW	3" FLG	45°	5'-6"	---
E	INLET	1.5" FLG	270°	5'-6"	---
F	INLET	2" FLG	45°	N/A	---
G	VENT	2" FLG	90°	N/A	---
H	HATCH	18"	315°	N/A	---

GENERAL NOTES:

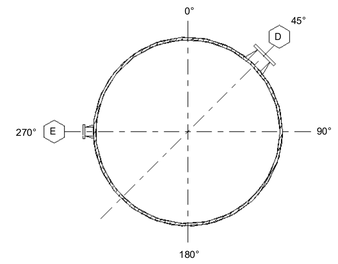
1. ALL FIBERGLASS RESIN, INCLUDING FLANGES, SUPPORTS, GRATING, ETC, SHALL BE PER LSS SPECIFICATIONS.
2. FABRICATOR TO PROVIDE ALL FASTENERS AS SERIES 316 SS UNLESS OTHERWISE NOTED.
3. FABRICATOR SHALL DESIGN TOWER TO WITHSTAND HYDROSTATIC FORCE (ASSUME VESSEL IS FULL OF EXHIBIT WATER).
4. INTERIOR PIPES SHALL BE SUPPORTED BY FABRICATOR.
5. HEIGHT DIMENSIONS ARE FROM BOTTOM OF VESSEL. CONTRACTOR TO INSTALL VESSEL ON CONCRETE HOUSEKEEPING PAD.
6. FABRICATOR TO DESIGN LIFTING LUGS FOR INSTALLATION.
7. PROVIDE COMPOSITE INSULATION PER SPEC FOR INTEGRAL CONSTRUCTION WITH FRP CYLINDER.



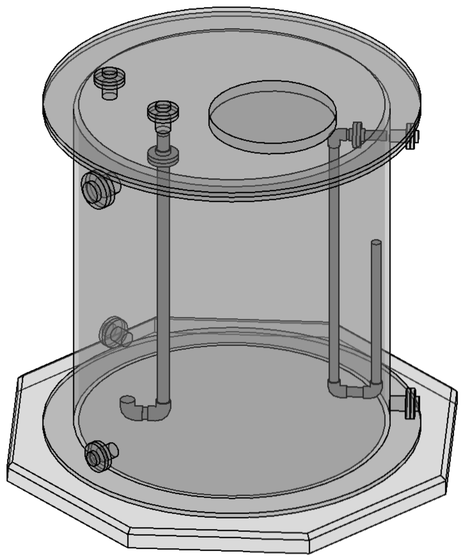
1 TOWER SECTION
SCALE: NONE



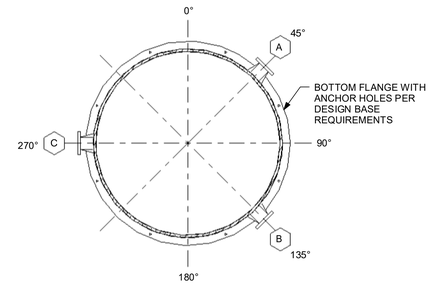
4 TOWER LID
SCALE: NONE



2 SECTION
SCALE: NONE



5 ISOMETRIC
SCALE: NONE



3 SECTION
SCALE: NONE

SZOSTAK DESIGN

FORT FISHER AQUARIUM RENOVATION & EXPANSION: PHASE 1

SCO #17-18042-02A
CODE: 42014-4G02
ITEM: 41414-4Y4A

900 LOGGERHEAD RD,
KURE BEACH, NC 28449

NORTH CAROLINA DEPT. OF NATURAL & CULTURAL RESOURCES

SZOSTAK DESIGN, INC.
ARCHITECT
310 1/2 WEST FRANKLIN STREET
CHAPEL HILL, NORTH CAROLINA 27516
TELE: 919.929.5244
FAX: 919.960.7967
WWW.SZOSTAKDESIGN.COM
LICENSE # 31679

TJP ENGINEERING, INC.
LIFE SUPPORT SYSTEMS ENGINEER
56880 VENTURE LANE SUITE 200H
BEND, OR 97707
TELE: 619.423.8700
WWW.TJPENGINEERING.COM
LICENSE # C-3005

ROTO GROUP, LLC.
EXHIBIT DESIGNER
7001 DISCOVERY BOULEVARD
DUBLIN, OHIO 43017
TELE: 617.765.8690
WWW.ROTO.COM

BENNETT & PLESS
STRUCTURAL ENGINEER
5430 WADE PARK BOULEVARD SUITE 400
RALEIGH, NC 27607
TELE: 919.852.5587
WWW.BENNETT-PLESS.COM
LICENSE # F-1105

CBHF ENGINEERS, PLLC
MEP ENGINEER
2246 YAUPON DRIVE
WILMINGTON, NC 28401
TELE: 910.791.4000
FAX: 910.791.5266
WWW.CBHFENGINEERS.COM
LICENSE # P-0086

LIGHTSWITCH
LIGHTING DESIGNER
10565 INDIANA COURT
RANCHO CUCAMONGA, CA 91730
TELE: 909.360.2900
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