CAROLINA BEACH LAKE PUMP HOUSE #1 & #2 REPLACEMENT

CAROLINA BEACH, NC

TOWN OF CAROLINA BEACH

1 VICINITY MAP
SCALE: 1"=250'

SCHEDULE OF DRAWINGS

SHEET	TITLE
COVER	VICINITY MAP AND SCHEDULE OF DRAWINGS
C-0.0	GENERAL NOTES, LEGEND, AND ABBREVIATIONS
C-0.1	SITE LOCATION
C-1.0	DEMOLITION SITE PLAN
C-1.1	OVERALL SITE PLAN & EC PLAN
C-1.2	BUILDING STAKING AND FORCE MAIN PLAN
ED-1.0	EROSION CONTROL DETAILS
ED-2.0	EROSION CONTROL DETAILS
MD-1.0	MISCELLANEOUS DETAILS
MD-2.0	MISCELLANEOUS DETAILS
MD-3.0	MISCELLANEOUS DETAILS
G-1.0	APPENDIX B & LIFE SAFETY PLAN
A-1.0	GROUND FLOOR PLAN
A-1.1	SECOND FLOOR & ROOF PLANS
A-1.2	ROOF PLAN
A-2.0	BUILDING ELEVATIONS
A-2.1	BUILDING SECTIONS & PERSPECTIVES
A-3.0	WALL SECTIONS
A-5.0	DETAILS
S-0.0	STRUCTURAL NOTES & ABBREVIATIONS
S-0.1	STRUCTURAL NOTES
S-1.0	PILE FOUNDATION PLAN
S-1.1	SLAB PLAN
S-1.2	SECOND FLOOR FRAMING PLAN
S-1.3	ROOF FRAMING PLAN
S-1.4	SECTIONS & DETAILS
S-1.5	SECTIONS & DETAILS
S-1.6	SECTIONS & DETAILS
S-1.7	FLOATING DOCK & PEIR
M-1.0	MECHANICAL NOTES, LEGEND, AND SPECIFICATIONS
M-1.1	MECHANICAL PLAN
P-1.1	PLUMBING PLAN
E-0.1	ELECTRICAL NOTES, LEGENDS, SCHEDULES, RISER
E-1.1	ELECTRICAL FIRST FLOOR PLAN
E-1.2	ELECTRICAL SECOND FLOOR PLAN
E-1.3	ELECTRICAL ROOF PLAN
E-5.1	ELECTRICAL DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 046286 04-21-25 ENGINEER JEFFREY B. RAY

ISSUED FOR CONSTRUCTION

HIGHFILL
Highfill Infrastructure Engineering, P.C.
3804 Park Avenue, Unit A
Wilmington, NC 28403
Tel 910-313-1516
NC Firm License No. C-2586

Engineering is our profession. Service is our passion.

HIGHFILL PROJ. NO. TCB2301
TOWN OF CAROLINA BEACH
APRIL 2025

CAROLINA BEACH LAKE PUMP HOUSE #1 & #2 REPLACEMENT (HIGHFILL PROJ. NO. TCB2301)

GENERAL NOTES:

1. EXISTING SURVEY DATA PROVIDED BY PARAMOUNTE ENGINEERING, INC. SURVEY FOR ENGINEERING PURPOSES ONLY, NOT FOR RECORDATION.
2. CONTRACTOR SHALL OBTAIN BUILDING PERMIT BEFORE ANY ON-SITE CONSTRUCTION COMMENCES.
3. THE CONTRACTOR SHALL HAVE A COMPLETE SET OF CONTRACT DOCUMENTS AS WELL AS ALL PERMIT APPROVALS AND EASEMENTS ON THE JOB SITE AT ALL TIMES.
4. AT LEAST TWO BUSINESS DAYS PRIOR TO COMMENCING CONSTRUCTION, CONTRACTOR SHALL NOTIFY ENGINEER AND APPLICABLE REGULATORY AGENCIES THAT THEY ARE PREPARED TO COMMENCE.
5. CONTRACTOR SHALL CALL NC ONE CALL FOR UTILITY LOCATIONS PRIOR TO DIGGING.
6. REASONABLE CARE HAS BEEN EXERCISED IN SHOWING THE LOCATION OF EXISTING UTILITIES ON THE PLANS. THE EXACT LOCATION OF ALL EXISTING UTILITIES IS NOT KNOWN IN ALL CASES. THE CONTRACTOR SHALL EXPLORE THE AREA AHEAD OF CONSTRUCTION ACTIVITIES BY OBSERVATION, ELECTRONIC DEVICES, HAND DIGGING, AND BY PERSONAL CONTACT WITH THE UTILITY COMPANIES TO DETERMINE THE ACTUAL LOCATION OF ALL EXISTING UTILITIES IN AN EFFORT TO AVOID INFLICTING DAMAGE TO THOSE UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR UTILITY RELOCATION COSTS IF REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS RESULTING FROM DAMAGE TO THE EXISTING UTILITIES ARISING FROM CONSTRUCTION. SUCH COSTS INCLUDE LOSS OF UTILITY REVENUES. IF NECESSARY, CONTRACTOR SHALL ARRANGE FOR RELOCATION OR TEMPORARY SUPPORT OF EXISTING UTILITIES SUCH AS POLES, CONDUITS, CABLES, WATER AND SEWER MAINS, STORM DRAINS, ETC.
7. CONTRACTOR SHALL MAKE EVERY EFFORT TO PRESERVE PROPERTY IRONS, MONUMENTS, OTHER PERMANENT POINTS AND LINES OF REFERENCE AND CONSTRUCTION STAKES. PROPERTY IRONS, MONUMENTS, AND OTHER PERMANENT POINTS OF REFERENCE DESTROYED BY THE CONTRACTOR SHALL BE REPLACED BY A PROFESSIONAL LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE.
8. CONTRACTOR SHALL CLEAR AND GRUB THE CONSTRUCTION CORRIDOR AND ALL UTILITY EASEMENTS ONLY TO THE EXTENT REQUIRED FOR PAVEMENT CONSTRUCTION. CONTRACTOR SHALL MAKE EVERY EFFORT TO PROTECT TREES THAT WILL NOT BE REMOVED DURING CONSTRUCTION.
9. BUILDING LOCATIONS ARE APPROXIMATE AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY. NOT ALL BUILDINGS ARE SHOWN.
10. ANY PAVEMENT OR CONCRETE DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED.
11. CONTRACTOR SHALL RESTORE/REPLACE ALL DISTURBED SIGNS.
12. DITCHES DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITION OR BETTER AND STABILIZED WITH STRAW AND NET MATTING UNLESS OTHERWISE INDICATED.
13. IRRIGATION LINES ARE LOCATED ON THE OUTSIDE OF THE EXISTING FENCE OF THE LAKE PUMP HOUSE SITE. ANY IMPACT TO THE IRRIGATION SYSTEM SHALL BE RESTORED BY THE CONTRACTOR.
14. ALL MATERIAL CLEARED OR DEMOLISHED BY THE CONTRACTOR IN ORDER TO CONSTRUCT THE PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE PROPERLY DISPOSED OF OFF SITE IN A LEGAL AND LAWFUL MANNER.
15. CONTRACTOR SHALL CONFINE WORK HOURS FROM 7:00 AM TO 6:00 PM MONDAY THROUGH FRIDAY UNLESS NOTED OTHERWISE.

PROJECT SPECIFIC NOTES:

1. REPAIR ALL DISTURBED PAVEMENT TO MATCH EXISTING PAVEMENT TYPE.
2. CONTRACTOR SHALL COORDINATE WITH THE TOWN OF CAROLINA BEACH PRIOR TO MODIFICATION TO AN EXISTING UTILITIES.
3. ALL APPLICABLE PERMITS SHALL BE OBTAINED PRIOR TO STARTING ANY PROPOSED WORK.
4. ALL NON-METALLIC PIPING SHALL BE INSTALLED WITH TRACING WIRE PER SPECIFICATIONS.

EROSION CONTROL NOTES:

1. CONTRACTOR SHALL SCHEDULE AN ON-SITE MEETING WITH ENGINEER, TOWN PROJECT MANAGER, AND TOWN STORMWATER CONTROL INSPECTOR AS FOLLOWS:
   A. PRIOR TO BEGINNING ANY LAND DISTURBING ACTIVITY AND BEFORE INSTALLATION OF EROSION CONTROL MEASURES.
   B. AFTER INSTALLATION OF PERMANENT AND TEMPORARY EROSION CONTROL MEASURES, BUT PRIOR TO CLEARING AND GRADING.
   C. AFTER SITE RESTORATION AND INSTALLATION OF PERMANENT EROSION CONTROL MEASURES, INCLUDING GROUND COVER, BUT PRIOR TO FINAL COMPLETION.
2. A RAIN GAUGE AND S&E PLAN ARE REQUIRED TO BE MAINTAINED ON SITE AND ACCESSIBLE DURING INSPECTION. IT IS RECOMMENDED THAT THESE ITEMS BE PLACED IN A PERMITS BOX AT THE BEGINNING OR ENTRANCE OF PROJECT.
3. ALL EROSION CONTROL DEVICES SHALL CONFORM WITH THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL AND GENERAL PERMIT NCG01.
4. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION CONTROL MEASURES AND PRACTICES PRIOR TO CONSTRUCTION.
5. CONTRACTOR SHALL UTILIZE A SILT BAG TO DE-WATER TRENCHES AND PITS DURING CONSTRUCTION.
6. CONTRACTOR SHALL USE EROSION CONTROL DEVICES SHOWN AND ANY ADDITIONAL DEVICES NECESSARY TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION.
7. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED.
8. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSPECTED EVERY SEVEN DAYS OR AFTER EACH RAINFALL EVENT THAT EXCEEDS ONE INCH. DAMAGED OR INEFFECTIVE DEVICES SHALL BE REPAIRED OR REPLACED, AS NECESSARY. ALL ESC MEASURES SHALL BE MAINTAINED AS SPECIFIED IN THE CONSTRUCTION PLANS.
9. CONTRACTOR SHALL PROVIDE A CONSTRUCTION ENTRANCE AND ADDITIONAL EROSION CONTROL DEVICES AS NEEDED, TO BE IMMEDIATELY INSTALLED, FOR ANY MATERIAL LAY DOWN, STAGING AREA, EXCAVATED MATERIAL STORAGE OR ANY OTHER AREAS DISTURBED BY CONSTRUCTION.

BY	DATE	REVISION
JBR	04/02/25	ISSUED FOR CONSTRUCTION
JBR	11/26/24	FOR BID
JBR	09/19/24	FOR PERMITTING
JBR	07/27/24	90% SUBMITTAL
YQ	04/12/24	60% DESIGN SUBMITTAL

ISSUED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 046286 ENGINEER JEFFREY B. RAY 09-12-25

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.
3804 Park Avenue, Unit A
Wilmington, NC 28403
Tel 910-313-1516
www.hiepc.com
Firm License No. C-2586

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CAROLINA BEACH LAKE PUMP HOUSE #1 & #2 REPLACEMENT
CAROLINA BEACH, NC

GENERAL NOTES, LEGEND, AND ABBREVIATIONS

PROJECT NO.
TCB2301

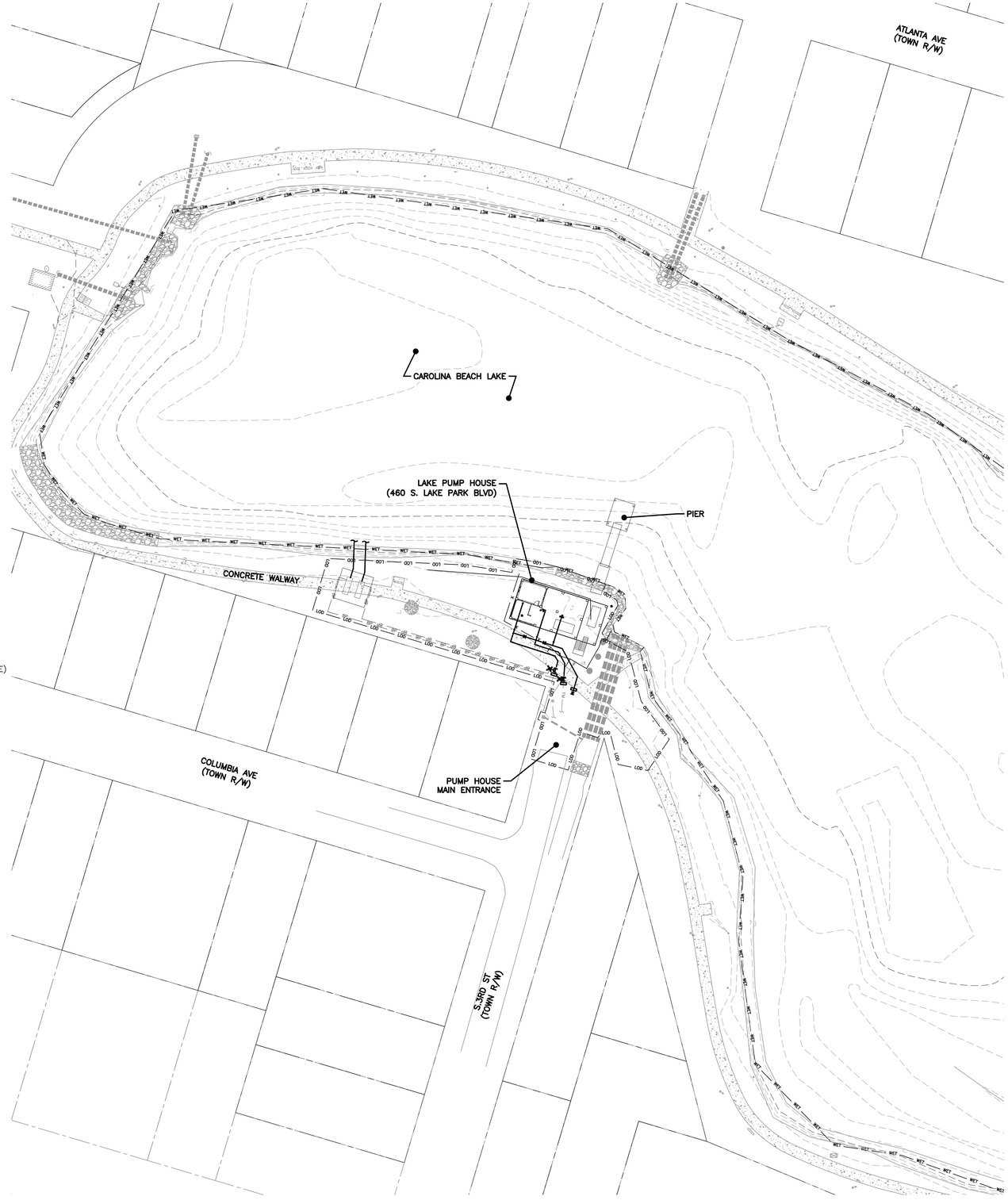
C-0.0

LEGEND

SYMBOL (NEW)	SYMBOL (EX.)	DESCRIPTION
		UTILITY PEDESTAL (SIZE/SHAPE VARIES)
		TREE/SHRUB (DIA. & TYPE SOMETIMES NOTED)
		SEWER CLEAN-OUT
100	100	CONTOUR
+ 100	+ 100	SPOT ELEVATION
CL		WOODS LINE, CLEARING LIMIT
S	S SD FO	SEWER, STORMWATER, & FIBER OPTIC MH
		CATCH BASIN/GRILL BASIN
	W	WELL
		POWER OR TELEPHONE POLE
		FIRE HYDRANT ASSEMBLY
	WV	GATE VALVE
	E OHE	UNDERGROUND / OVERHEAD POWER
	UT UT	UNDERGROUND TELEPHONE
	TEL TEL	OVERHEAD TELEPHONE
	G	GAS LINE
	W W	WATER LINE
	SS SS	SEWER LINE
	FM FM	SEWER FORCE MAIN
		STORMWATER PIPE
	FO FO	UNDERGROUND FIBER OPTIC LINE
x x	X X	FENCE
		PROPERTY LINE
		PERMANENT EASEMENT OR R/W
		STRUCTURE OUTLINE (SHAPES VARY)
		TEMPORARY BENCH MARK
		WATER METER
		SEWER ABANDONMENT
		LIGHT POLE
		PROPERTY OR R/W MONUMENT
		GUY WIRE
		SIGN
		PIPE CASING
		MAILBOX
		TEMPORARY CONSTRUCTION EASEMENT
		WETLANDS BOUNDARY
		SUBSURFACE TEST BORE
		ITEM TO BE REMOVED
		ASPHALT/CONCRETE REMOVAL & RESTORATION
LOD LOD		LIMITS OF DISTURBANCE LINE
TCA TCA	TCA TCA	TREE CONSERVATION AREA LINE
		PERMIT/RECORD BOX LOCATION
		CONCRETE WASHOUT
SF SF		SILT FENCE
TP TP		TREE PROTECTION FENCE
SF/TP SF/TP		PARALLEL SILT FENCE & TREE PROTECTION FENCE
		SILT FENCE OUTLET
		PIPE INLET PROTECTION
		CHECK DAM
		INLET PROTECTION
		WATTLE
		EROSION CONTROL MATTING
		TEMPORARY CONSTRUCTION ENTRANCE
		RIP-RAP BANK STABILIZATION
		STREAM STABILIZATION
	BFE BFE	BASE FLOOD ELEVATION
	FW FW	FLOODWAY EXTENTS

ABBREVIATIONS:

AWWA – AMERICAN WATER WORKS ASSOCIATION
BFE – BASE FLOOD ELEVATION
CL – CENTERLINE
CB – CATCH BASIN
CMP – CORRUGATED METAL PIPE
CONC – CONCRETE
C/O – CLEANOUT
CPP – CORRUGATED PLASTIC PIPE
CT – COURT
DI – DUCTILE IRON
DIP – DUCTILE IRON PIPE
DR – DRIVE
EX – EXISTING
EOP – EDGE OF PAVEMENT
FM – FORCE MAIN
FW – FLOODWAY
GV – GATE VALVE
HDPE – HIGH DENSITY POLYETHYLENE
INV – INVERT
IP – IRON PIPE
LOD – LIMITS OF DISTURBANCE
LSE – LANDSCAPE EASEMENT
LF – LINEAR FEET
MIN – MINIMUM
MH – MANHOLE
MJ – MECHANICAL JOINT
NIC – NOT IN CONTRACT
OC – ON CENTER
NTS – NOT TO SCALE
PE – PLAIN END
PJ – PUSH-ON JOINT
PL – PROPERTY LINE
PP – POWER POLE
PSI – POUNDS PER SQUARE INCH
PV – PLUG VALVE
PVC – POLYVINYL CHLORIDE
PVMT – PAVEMENT
R/W or ROW – RIGHT-OF-WAY
R or RAD – RADIUS
RCP – REINFORCED CONCRETE PIPE
REQ'D – REQUIRED
RD – ROAD
RJ – RESTRAINED JOINT
STA – STATION
SR – SECONDARY ROAD (STATE)
THK – THICK
TOS – TOP OF SLAB
TS&V – TAPPING SLEEVE AND VALVE
TYP. – TYPICAL
U/G – UNDERGROUND
U.N.O. – UNLESS NOTED OTHERWISE
UT – UNDERGROUND TELEPHONE
VERT. – VERTICAL
W/ – WITH
WL – WATER LINE
WWF – WELDED WIRE FABRIC OR FENCE
or LB – POUNDS
5/SD-1 – DETAIL CROSS-REFERENCE (DETAIL 5 ON SHEET SD-1 IN THIS EXAMPLE)



1 SITE LOCATION
SCALE: 1" = 40'

BY	ISSUED FOR CONSTRUCTION	DATE
JBR	ISSUED FOR CONSTRUCTION	04/02/25
JBR	FOR BID	11/26/24
JBR	FOR PERMITTING	09/19/24
JBR	90% SUBMITTAL	07/27/24
YQ	60% DESIGN SUBMITTAL	04/12/24
BY	REVISION	DATE

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NORTH CAROLINA PROFESSIONAL SEAL 046286 ENGINEER JEFFREY B. RAY 04-21-25

HIGHFILL
INFRASTRUCTURE
ENGINEERING, P.C.

3804 Park Avenue, Unit A
Wilmington, NC 28403
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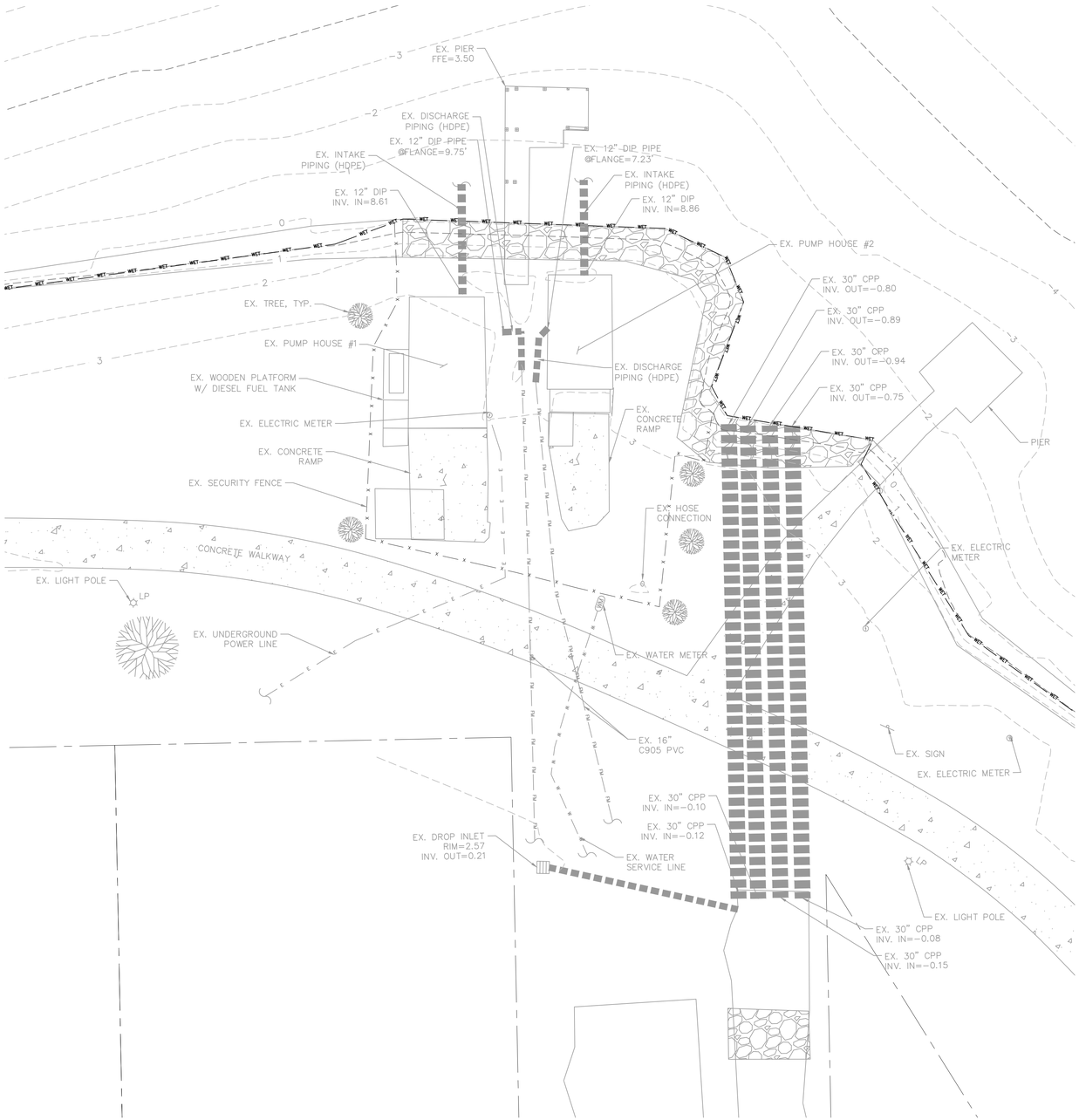
CAROLINA BEACH LAKE PUMP HOUSE #1 & #2 REPLACEMENT
CAROLINA BEACH, NC

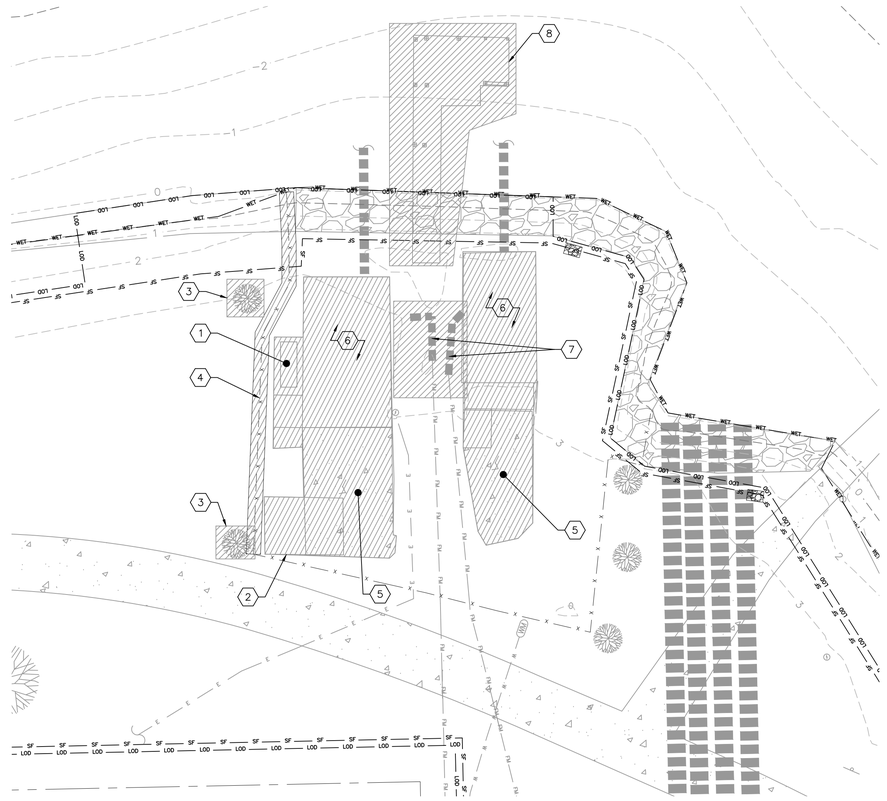
SITE LOCATION

PROJECT NO.
TCB2301

C-0.1



1 EXISTING SITE PLAN
SCALE: 1" = 10'



2 SITE DEMOLITION PLAN
SCALE: 1" = 10'

(#) DEMOLITION PLAN KEYNOTES:

1. REMOVE EX. RAISED PLATFORM AND DIESEL FUEL TANK. TANK TO BE SALVAGED.
2. REMOVE EX. SHELTER
3. REMOVE EX. TREE
4. REMOVE EX. 6' WOODEN FENCE
5. REMOVE EX. CONCRETE PAD
6. REMOVE EX. PUMP STATION HOUSE
7. REMOVE EX. DISCHARGE PIPING
8. REMOVE EX. DOCK. PILINGS SHALL BE FULLY REMOVED AND NOT CUT BELOW GRADE.

DEMOLITION PLAN NOTES:

1. REMOVE ALL PUMP STATION HOUSE COMPONENTS AS INDICATED IN SITE DEMOLITION PLAN ON THIS SHEET.
2. ITEMS TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF OFF SITE AND IN CONFORMANCE WITH ALL EXISTING APPLICABLE LAWS AND REGULATIONS.
3. CONTRACTOR IS RESPONSIBLE FOR DISPOSING ANY REMAINING FUEL IN FUEL TANK.
4. CONTRACTOR SHALL REMOVE FROM THE SITE ALL DEBRIS RESULTING FROM DEMOLITION AS IT ACCUMULATES. UPON COMPLETION OF THE WORK, ALL MATERIALS, EQUIPMENT, WASTE, AND DEBRIS OF EVERY SORT SHALL BE REMOVED AND THE PREMISES SHALL BE LEFT CLEAN, NEAT AND ORDERLY.
5. CONTRACTOR SHALL SECURE SITE UPON DEMOLITION OF EXISTING FENCE WITH TEMPORARY CHAIN LINK FENCING, 6' MINIMUM HEIGHT.

SALVAGE THE FOLLOWING ITEMS AND DELIVER TO:
ADDRESS
ADDRESS

1. DIESEL FUEL TANK
2. VENTILATION FANS AND ASSOCIATED SWITCHES
3. ALL EXPOSED VALVES AND FITTINGS (FLANGED OR MJ TYPE)
4. DAVIT CRANE
5. UNI-STRUT
6. ELECTRICAL DROP CORDS
7. EXTERIOR ELECTRICAL PANELS
8. EXTERIOR LIGHT FIXTURES
9. INTERIOR LIGHT FIXTURES

RELOCATED ITEMS:
1. OWNER SHALL REMOVE ALL ITEMS ASSOCIATED THE EXISTING STORM WATER PUMPS PRIOR TO DEMOLITION.

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 046286 04-21-25 JEFFREY B. RAY

HIGHFILL
INFRASTRUCTURE
ENGINEERING, P.C.

3804 Park Avenue, Unit A
Wilmington, NC 28403
Tel 910-313-1516
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CAROLINA BEACH LAKE PUMP HOUSE #1 & #2 REPLACEMENT
CAROLINA BEACH, NC

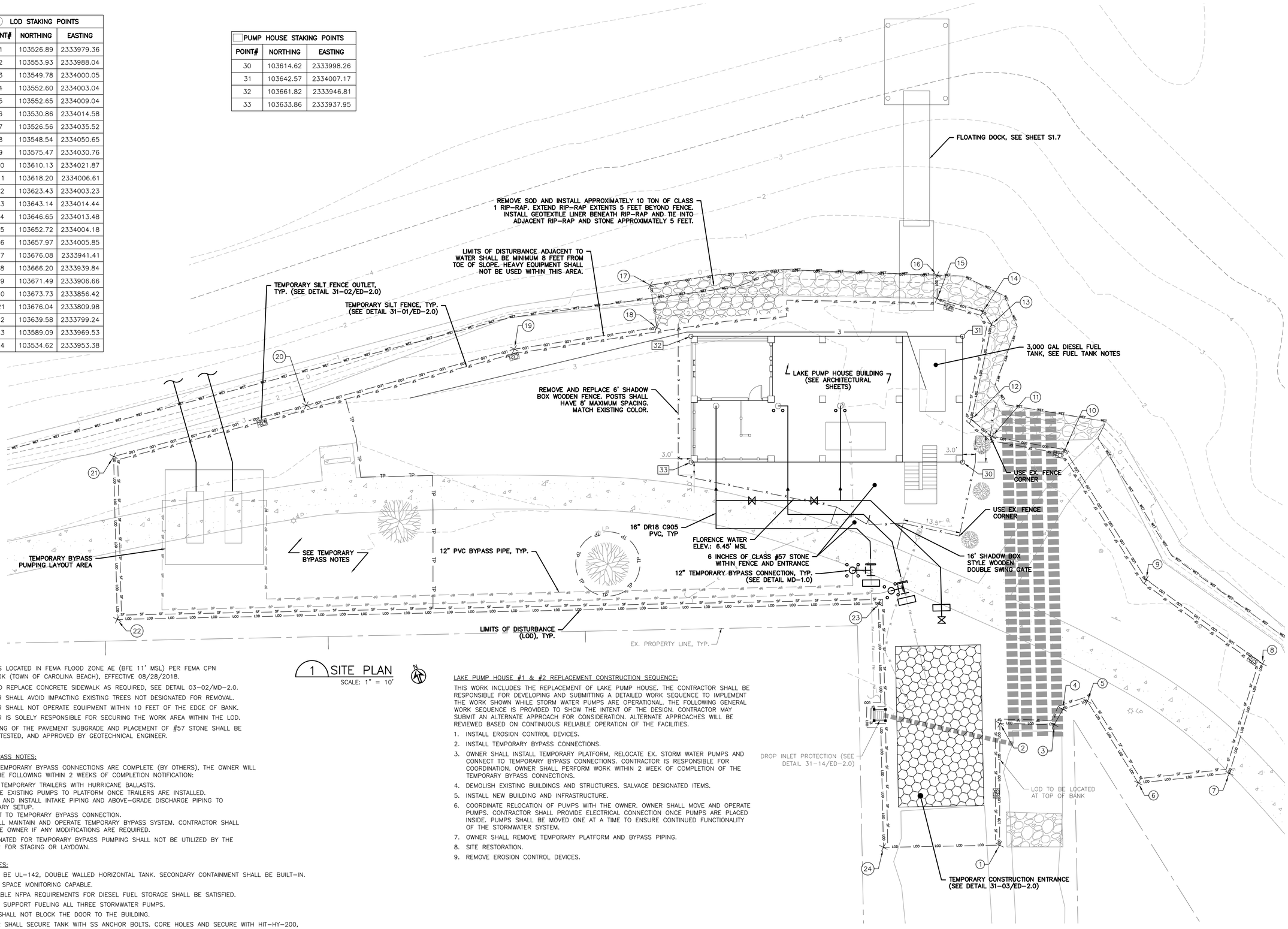
DEMOLITION SITE PLAN

PROJECT NO.
TCB2301

C-1.0

LOD STAKING POINTS		
POINT#	NORTHING	EASTING
1	103526.89	2333979.36
2	103553.93	2333988.04
3	103549.78	2334000.05
4	103552.60	2334003.04
5	103552.65	2334009.04
6	103530.86	2334014.58
7	103526.56	2334035.52
8	103548.54	2334050.65
9	103575.47	2334030.76
10	103610.13	2334021.87
11	103618.20	2334006.61
12	103623.43	2334003.23
13	103643.14	2334014.44
14	103646.65	2334013.48
15	103652.72	2334004.18
16	103657.97	2334005.85
17	103676.08	2333941.41
18	103666.20	2333939.84
19	103671.49	2333906.66
20	103673.73	2333856.42
21	103676.04	2333809.98
22	103639.58	2333799.24
23	103589.09	2333969.53
24	103534.62	2333953.38

PUMP HOUSE STAKING POINTS		
POINT#	NORTHING	EASTING
30	103614.62	2333998.26
31	103642.57	2334007.17
32	103661.82	2333946.81
33	103633.86	2333937.95



1 SITE PLAN
SCALE: 1" = 10'

NOTES:

1. THIS SITE IS LOCATED IN FEMA FLOOD ZONE AE (BFE 11' MSL) PER FEMA CPN 3720313000K (TOWN OF CAROLINA BEACH), EFFECTIVE 08/28/2018.
2. REMOVE AND REPLACE CONCRETE SIDEWALK AS REQUIRED, SEE DETAIL 03-02/MD-2.0.
3. CONTRACTOR SHALL AVOID IMPACTING EXISTING TREES NOT DESIGNATED FOR REMOVAL.
4. CONTRACTOR SHALL NOT OPERATE EQUIPMENT WITHIN 10 FEET OF THE EDGE OF BANK.
5. CONTRACTOR IS SOLELY RESPONSIBLE FOR SECURING THE WORK AREA WITHIN THE LOD.
6. PROOFROLLING OF THE PAVEMENT SUBGRADE AND PLACEMENT OF #57 STONE SHALL BE OBSERVED, TESTED, AND APPROVED BY GEOTECHNICAL ENGINEER.

TEMPORARY BYPASS NOTES:

1. ONCE THE TEMPORARY BYPASS CONNECTIONS ARE COMPLETE (BY OTHERS), THE OWNER WILL PERFORM THE FOLLOWING WITHIN 2 WEEKS OF COMPLETION NOTIFICATION:
   - 1.1. SET UP TEMPORARY TRAILERS WITH HURRICANE BALLASTS.
   - 1.2. RELOCATE EXISTING PUMPS TO PLATFORM ONCE TRAILERS ARE INSTALLED.
   - 1.3. PROVIDE AND INSTALL INTAKE PIPING AND ABOVE-GRADE DISCHARGE PIPING TO TEMPORARY SETUP.
   - 1.4. CONNECT TO TEMPORARY BYPASS CONNECTION.
2. OWNER SHALL MAINTAIN AND OPERATE TEMPORARY BYPASS SYSTEM. CONTRACTOR SHALL CONTACT THE OWNER IF ANY MODIFICATIONS ARE REQUIRED.
3. AREA DESIGNATED FOR TEMPORARY BYPASS PUMPING SHALL NOT BE UTILIZED BY THE CONTRACTOR FOR STAGING OR LAYDOWN.

FUEL TANK NOTES:

1. TANK SHALL BE UL-142, DOUBLE WALLED HORIZONTAL TANK. SECONDARY CONTAINMENT SHALL BE BUILT-IN.
2. INTERSTITIAL SPACE MONITORING CAPABLE.
3. ALL APPLICABLE NFPA REQUIREMENTS FOR DIESEL FUEL STORAGE SHALL BE SATISFIED.
4. TANK SHALL SUPPORT FUELING ALL THREE STORMWATER PUMPS.
5. TANK SIZE SHALL NOT BLOCK THE DOOR TO THE BUILDING.
6. CONTRACTOR SHALL SECURE TANK WITH SS ANCHOR BOLTS. CORE HOLES AND SECURE WITH HIT-HY-200, HIT-RE 500 V3, OR EQUIVALENT.
7. CONTRACTOR SHALL PROVIDE SECURING PLAN TO ENGINEER FOR REVIEW.

LAKE PUMP HOUSE #1 & #2 REPLACEMENT CONSTRUCTION SEQUENCE:

THIS WORK INCLUDES THE REPLACEMENT OF LAKE PUMP HOUSE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING AND SUBMITTING A DETAILED WORK SEQUENCE TO IMPLEMENT THE WORK SHOWN WHILE STORM WATER PUMPS ARE OPERATIONAL. THE FOLLOWING GENERAL WORK SEQUENCE IS PROVIDED TO SHOW THE INTENT OF THE DESIGN. CONTRACTOR MAY SUBMIT AN ALTERNATE APPROACH FOR CONSIDERATION. ALTERNATE APPROACHES WILL BE REVIEWED BASED ON CONTINUOUS RELIABLE OPERATION OF THE FACILITIES.

1. INSTALL EROSION CONTROL DEVICES.
2. INSTALL TEMPORARY BYPASS CONNECTIONS.
3. OWNER SHALL INSTALL TEMPORARY PLATFORM, RELOCATE EX. STORM WATER PUMPS AND CONNECT TO TEMPORARY BYPASS CONNECTIONS. CONTRACTOR IS RESPONSIBLE FOR COORDINATION. OWNER SHALL PERFORM WORK WITHIN 2 WEEK OF COMPLETION OF THE TEMPORARY BYPASS CONNECTIONS.
4. DEMOLISH EXISTING BUILDINGS AND STRUCTURES. SALVAGE DESIGNATED ITEMS.
5. INSTALL NEW BUILDING AND INFRASTRUCTURE.
6. COORDINATE RELOCATION OF PUMPS WITH THE OWNER. OWNER SHALL MOVE AND OPERATE PUMPS. CONTRACTOR SHALL PROVIDE ELECTRICAL CONNECTION ONCE PUMPS ARE PLACED INSIDE. PUMPS SHALL BE MOVED ONE AT A TIME TO ENSURE CONTINUED FUNCTIONALITY OF THE STORMWATER SYSTEM.
7. OWNER SHALL REMOVE TEMPORARY PLATFORM AND BYPASS PIPING.
8. SITE RESTORATION.
9. REMOVE EROSION CONTROL DEVICES.

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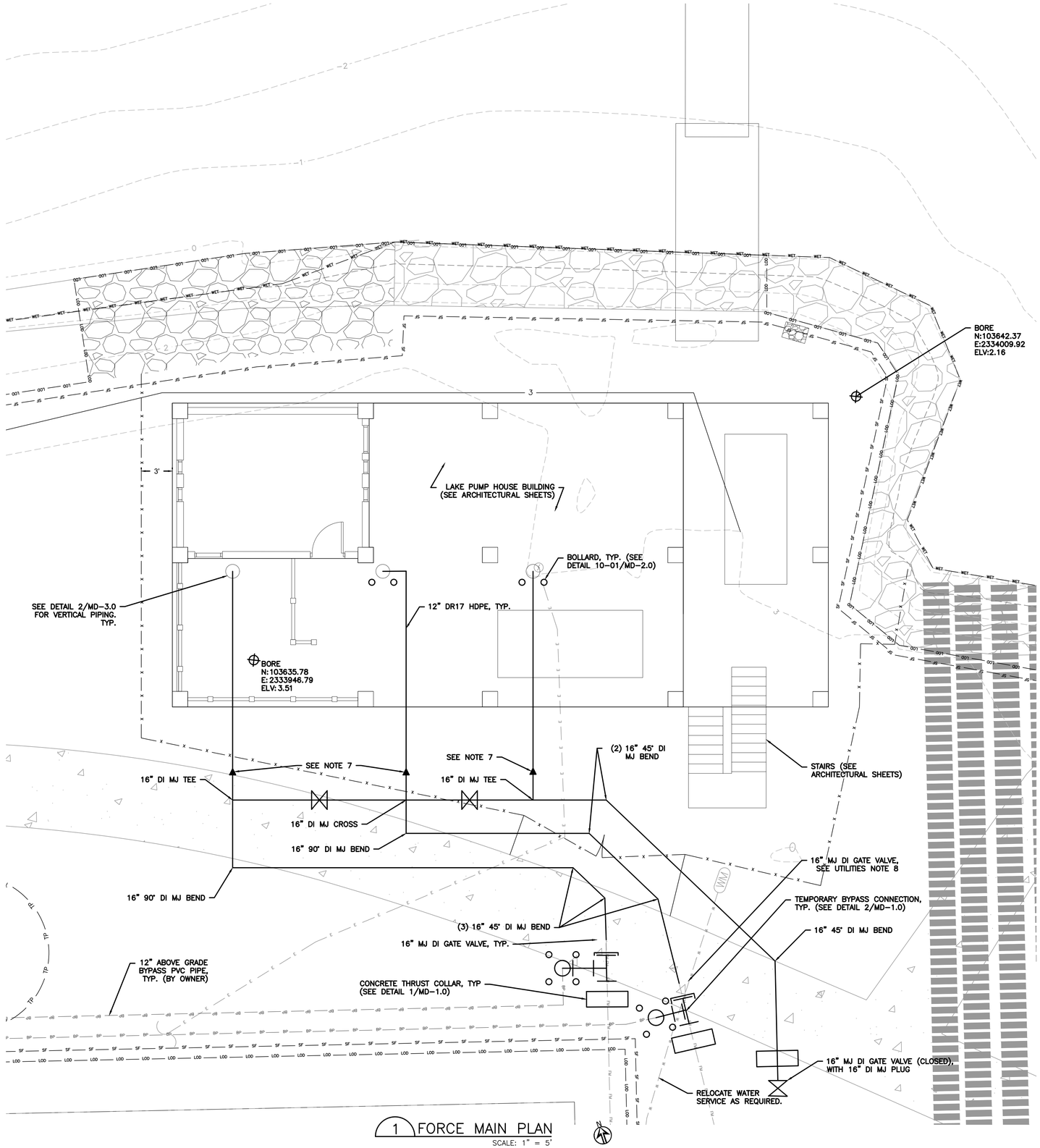
CAROLINA BEACH LAKE PUMP HOUSE #1 & #2 REPLACEMENT
CAROLINA BEACH, NC

OVERALL SITE PLAN & EC PLAN

PROJECT NO.
TCB2301

C-1.1

ISSUED FOR CONSTRUCTION



1 FORCE MAIN PLAN
SCALE: 1" = 5'

UTILITY NOTES:

1. ALL BURIED PIPING SHALL BE RESTRAINED TO THRUST COLLAR.
2. ALL NUTS, BOLTS AND RODDING SHALL BE STAINLESS STEEL.
3. INSTALL PIPE PER DEATIL 31-11/MD-2.0.
4. BURIED DIP FOR TEMPORARY BYPASS SHALL BE INSTALLED PER DETAIL 31-12/MD-2.0.
5. EXTERNAL FRICTION RESTRAINTS MAY BE UTILIZED FOR RESTRAINT.
6. SEE PLUMBING SHEETS FOR ON-SITE WATER SERVICE.
7. TRANSITION TO 16" DR18 C905 PVC PIPE W/ DI MJ CONCENTRIC REDUCER W/ FRICTION-TYPE RESTRAINT JOINT.

TEMPORARY CONNECTION SEQUENCE:

1. CUT AND INSTALL TEE FOR TEMPORARY BYPASS CONNECTION ON EXISTING 16" FORCE MAIN. TEE SHALL BE PLUGGED ON THE NORTH SIDE.
2. ROD TEMPORARY BYPASS CONNECTIONS TO CONCRETE THRUST COLLAR.
3. FOR THE SHARED STORMWATER FORCE MAIN, ONCE A PERMANENT PUMP IS INSTALLED, THE PLUG SHALL BE REMOVED AND THE FORCE MAIN SHALL BE RECONNECTED VIA A LONG SLEEVE.
4. TEES SHALL BE REMOVED AND PIPE TIED BACK IN WITH LONG SLEEVES ONCE TEMPORARY BYPASS CONNECTIONS ARE NO LONGER REQUIRED.

DATE	REVISION	BY
04/02/25	ISSUED FOR CONSTRUCTION	JBR
11/26/24	FOR BID	JBR
09/19/24	FOR PERMITTING	JBR
07/27/24	90% SUBMITTAL	JBR
04/12/24	60% DESIGN SUBMITTAL	YQ

ISSUED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 046286 04-21-25 ENGINEER JEFFREY B. RAY

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.
3804 Park Avenue, Unit A
Wilmington, NC 28403
Tel 910-313-1516
www.hiepc.com
Firm License No. C-2586

Engineering is our profession.
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CAROLINA BEACH LAKE PUMP HOUSE #1 & #2 REPLACEMENT
CAROLINA BEACH, NC

BUILDING STAKING AND FORCE MAIN PLAN

PROJECT NO.
TCB2301

C-1.2

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes		
Site Area Description	**Stabilize within this many calendar days after ceasing land disturbance**	**Timeframe variations**
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
• Temporary grass seed covered with straw or other mulches and tackifiers • Hydroseeding • Rolled erosion control products with or without temporary grass seed • Appropriately applied straw or other mulch • Plastic sheeting	• Permanent grass seed covered with straw or other mulches and tackifiers • Geotextile fabrics such as permanent soil reinforcement matting • Hydroseeding • Shrubs or other permanent plantings covered with mulch • Uniform and evenly distributed ground cover sufficient to restrain erosion • Structural methods such as concrete, asphalt or retaining walls • Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

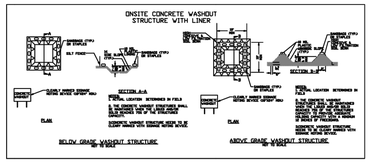
PORTABLE TOILETS

1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

NORTH CAROLINA Environmental Quality



CONCRETE WASHOUTS

1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 04/01/19

PERMANENT SEEDING

PLANTING PERIOD	SEED MIXTURE	PLANTING ZONE	SEED RATE (LB/AC)	FERT. RATE (LB/AC)
WELL-DRAINED SANDY LOAMS TO DRY SANDS; LOW MAINTENANCE				
APR. 1 – JULY 15	PENSACOLA	–	50	500
	COMMON BERMUDAGRASS	–	10	500
	GERMAN MILLET	–	10	500

SEEDBED PREPARATION (FOR AREAS NOT RECEIVING SOD):

1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, WITH STOCKPILED TOPSOIL. CONTRACTOR SHALL RESERVE SUFFICIENT TOPSOIL FOR SEEDBED PREPARATION.
2. RIP THE ENTIRE AREA TO 6 INCH DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPER-PHOSPHATE UNIFORMLY AND MIX WITH SOIL.
5. CONTINUE TILLAGE UNTIL A WELLOPULVERIZED, FIRM REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR SEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND IS LESS THAN 60% ESTABLISHED, THE ENTIRE AREA SHALL BE RESEEDED ACCORDING TO SPECIFICATIONS USING THE ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
9. CONSULT A CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

TEMPORARY SEEDING

PLANTING PERIOD	SEED MIXTURE	SEED RATE (LB/AC)	FERT. RATE (LB/AC)
APR. 15 – AUG. 15	GERMAN MILLET	40	750
AUG. 15 – DEC.30	RYE (GRAIN)	120	1000

CORDGRASS' CAN BE OBTAINED FROM GREENHOUSE-GROWN COMMERCIAL SOURCES. HAND PLANT IN HOLES 4-6 INCHES DEEP WITH A DIBBLE OR SHOVEL, INSERTING A SINGLE STEM, AND PACKING THE SOIL AROUND IT. FERTILIZE PER SUPPLIER RECOMMENDATIONS.

SEEDBED PREPARATION CONTINUED:

1. AGRICULTRUAL LIMESTONE: 2 TO 3 TONS/ACRE
2. FERTILIZER: SEE TABLE FOR RATE. 10-10-10 FERTILIZER
3. SUPER-PHOSPHATE: 500 LB/ACRE 20% ANALYSIS
4. MULCH: 2 TONS/ACRE – SMALL GRAIN STRAW
5. ANCHOR: ASPHALT EMULSION @ 400 GALS/ACRE

NOTES:

1. SEEDING RECOMMENDATION BASED ON NCDENR EROSION CONTROL MANUAL SECTION 6.10 (TEMPORARY SEEDING) AND 6.11 (PERMANENT SEEDING). PLANTING SHALL BE COORDINATED WITH TOWN OF CAROLINA BEACH.

1 TEMPORARY & PERMANENT SEEDING
NTS

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those un-attended days (anc this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDCs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Documentation Requirements
(a) Each E&SC measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC plan.	Initial and date each E&SC measure on a copy of the approved E&SC plan or complete, date and sign an inspection report that lists each E&SC measure shown on the approved E&SC plan. This documentation is required upon the initial installation of the E&SC measures or if the E&SC measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC plan.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC measures.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation to be Kept on Site

In addition to the E&SC plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

(a) This General Permit as well as the Certificate of Coverage, after it is received.

(b) Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

3. Documentation to be Retained for Three Years

All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:
- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.

(d) Anticipated bypasses and unanticipated bypasses.

(e) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframes [After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	• ***Within 24 hours,*** an oral or electronic notification. • ***Within 7 calendar days,*** a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	• ***Within 24 hours,*** an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	• ***A report at least ten days before the date of the bypass, if possible***. The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	• ***Within 24 hours,*** an oral or electronic notification. • ***Within 7 calendar days,*** a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment[40 CFR 122.41(l)(7)]	• ***Within 24 hours,*** an oral or electronic notification. • ***Within 7 calendar days,*** a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6). • Division staff may waive the requirement for a written report on a case-by-case basis.

PART II, SECTION G, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

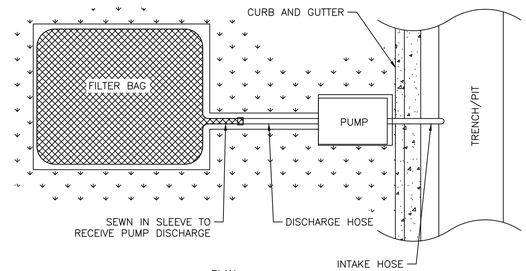
Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

(a) The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&SC plan authority has approved these items,
(b) The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit,
(c) Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems,
(d) Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,
(e) Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and
(f) Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

NORTH CAROLINA Environmental Quality

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19



NOTES:

1. DEWATERING BAG SHALL BE FABRICATED FROM NON-WOVEN, UV RESISTANT GEOTEXTILE MATERIAL THAT ALLOWS THE FILTERED WATER TO PASS THROUGH.
2. DEWATERING BAG SHALL BE INSTALLED ON 8-INCH THICK AGGREGATE, HAY BALES, OR OTHER HIGHLY PERMEABLE SURFACE TO MAXIMIZE WATER FLOW THROUGH THE ENTRIRE SURFACE AREA OF THE BAG.
3. TRANSPORT AND PLACE DEWATERING BAGS WITH CARE TO PREVENT RIPPING OR TEARING.
4. AVOID INSTALLING ON STEEP SLOPES AS THE BAG MAY ROLL AND FAIL.
5. DEWATERING BAG SHALL BE REPLACED WHEN 1/2 FULL OF SEDIMENT.
6. DEWATERING BAG SHALL NOT BE CLEANED AND REUSED AFTER THE VOIDS ARE CLOGGED WITH TRAPPED SEDIMENT.

2 DETAIL – SILT/DEWATERING BAG
NO SCALE

BY	DATE	REVISION
JBR	04/02/25	ISSUED FOR CONSTRUCTION
JBR	11/26/24	FOR BID
JBR	09/19/24	FOR PERMITTING
JBR	07/27/24	90% SUBMITTAL
YQ	04/12/24	60% DESIGN SUBMITTAL

ISSUED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 046286 ENGINEER JEFFREY B. RAY 04-21-25

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.
3804 Park Avenue, Unit A
Wilmington, NC 28403
Tel 910-313-1516
www.hiepc.com
Firm License No. C-2586

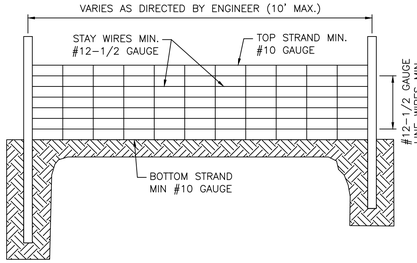
Engineering is our profession.
Service is our passion.

CAROLINA BEACH LAKE PUMP HOUSE #1 & #2 REPLACEMENT
CAROLINA BEACH, NC

EROSION CONTROL DETAILS

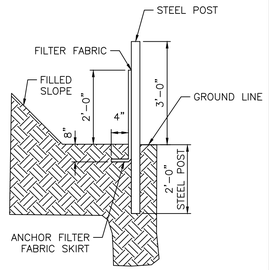
PROJECT NO.
TCB2301

ED-1.0

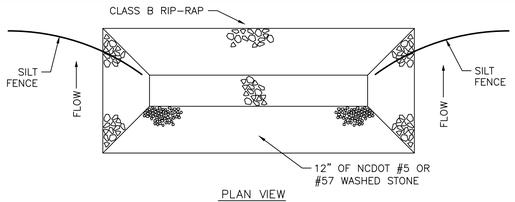


NOTES:
1. WIRE SHALL BE A MINIMUM OF 32" IN WIDTH AND SHALL HAVE A MINIMUM OF 6 LINE WIRES W/12" STAY SPACING.
2. FILTER FABRIC SHALL BE A MINIMUM OF 36" IN WIDTH AND SHALL BE FASTENED ADEQUATELY TO THE WIRE AS DIRECTED BY THE ENGINEER.
3. STEEL POST SHALL BE 5' 0" IN HEIGHT AND BE OF SELF FASTENER ANGLE TYPE.

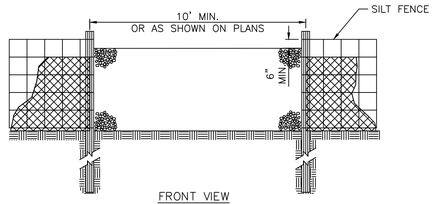
MAINTENANCE:
1. INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.
2. FABRIC WHICH COLLAPSES, TEARS, DECOMPOSES, OR BECOMES INEFFECTIVE WILL BE REPLACED IMMEDIATELY. REMOVE SEDIMENT DEPOSITS BEHIND FENCE WHEN SEDIMENT ACCUMULATES TO 6".
3. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.
4. REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.



31-01	TEMPORARY SILT FENCE	
HIEPC DETAIL I.D.	DETAIL TITLE	
	11/22/2021	NO SCALE
	REVISED DATE	SCALE

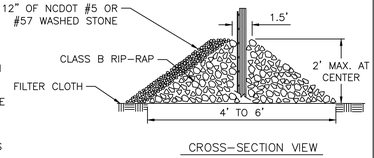


PLAN VIEW



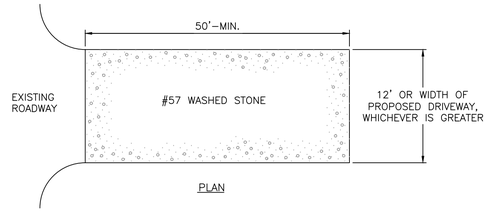
FRONT VIEW

MAINTENANCE:
1. INSPECT FOR SIGNIFICANT EROSION AROUND THE EDGES AND BETWEEN DAMS.
2. INSTALL PROTECTIVE RIP-RAP LINERS IN PORTIONS OF THE CHANNEL WHERE EROSION OCCURS.
3. REMOVE SEDIMENT FROM ACCUMULATED BEHIND THE DAMS AS REQUIRED TO PREVENT DAMAGE TO CHANNEL VEGETATION.
4. ADD STONES TO DAMS AS REQUIRED TO MAINTAIN DESIGN HEIGHT AND CROSS SECTION.
5. REMOVE SEDIMENT WHEN HALF OF THE STONE OUTLET IS COVERED.

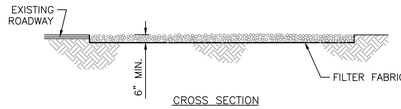


CROSS-SECTION VIEW

31-02	SILT FENCE STONE FILTER OUTLET	
HIEPC DETAIL I.D.	DETAIL TITLE	
	6/5/2020	NO SCALE
	REVISED DATE	SCALE



PLAN

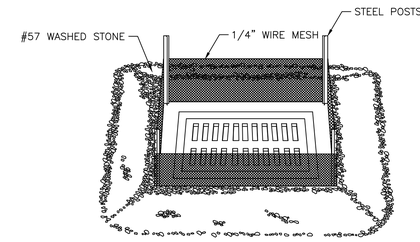


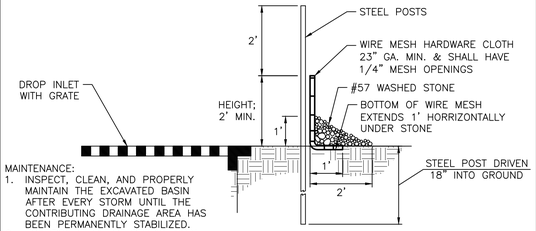
CROSS SECTION

NOTES:
ENTRANCE(S) SHALL BE LOCATED TO PROVIDE:
1. MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES. TURNING RADIUS SUFFICIENT TO ACCOMMODATE LARGE TRUCKS SHALL BE PROVIDED.
2. MAINTAIN IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF MUD ONTO STREETS.
3. PERIODIC TOP DRESSING WITH STONE WILL BE NECESSARY. CONTRACTOR SHALL MAINTAIN AS NECESSARY. ANY MATERIAL WHICH STILL MAKES IT ONTO THE ROAD SHALL BE CLEANED UP IMMEDIATELY.
4. FREQUENT CHECKS OF THE ENTRANCE(S) AND TIMELY MAINTENANCE SHALL BE PROVIDED.
5. NOTES ARE APPLICABLE AT ALL POINTS OF INGRESS AND EGRESS UNTIL SITE IS STABILIZED.
6. UTILIZE FILTER FABRIC IN CLAY SOILS.

MAINTENANCE:
1. MAINTAIN THE GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH 2" STONE.
2. AFTER EACH RAINFALL, INSPECT ANY STRUCTURE USED TO TRAP SEDIMENT AND CLEAN IT OUT AS NECESSARY.
3. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS.

31-03	TEMPORARY CONSTRUCTION ENTRANCE	
HIEPC DETAIL I.D.	DETAIL TITLE	
	6/5/2020	NO SCALE
	REVISED DATE	SCALE





MAINTENANCE:
1. INSPECT, CLEAN, AND PROPERLY MAINTAIN THE EXCAVATED BASIN AFTER EVERY STORM UNTIL THE CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED.
2. TO PROVIDE SATISFACTORY BASIN EFFICIENCY, REMOVE SEDIMENT WHEN VOLUME OF THE BASIN HAS BEEN REDUCED BY ONE-HALF. SPREAD ALL EXCAVATED MATERIAL EVENLY OVER THE SURROUNDING LAND AREA OR STOCKPILE AND STABILIZE IT APPROPRIATELY.
3. REMOVE SEDIMENT DEPOSITS WHEN SEDIMENT ACCUMULATES BEHIND STONE. REPLENISH STONE AS NEEDED.

31-14	DROP INLET PROTECTION	
HIEPC DETAIL I.D.	DETAIL TITLE	
	6/5/2020	NO SCALE
	REVISED DATE	SCALE

EROSION CONTROL MAINTENANCE PLAN

ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL. ALL NEEDED REPAIRS SHALL BE MADE IMMEDIATELY TO PREVENT FURTHER DAMAGE AND EROSION. STRUCTURES AND MEASURES THAT SHALL BE INSPECTED INCLUDE:

1. SEEDING, FERTILIZING, AND MULCHING: SEEDED AREAS SHALL BE INSPECTED FOR FAILURE AND NECESSARY REPAIRS SHALL BE MADE WITHIN THE SAME SEASON.
2. SILT FENCE: ANY FABRIC WHICH COLLAPSES, TEARS, DECOMPOSES, OR BECOMES INEFFECTIVE WILL BE REPLACED IMMEDIATELY. REMOVE SEDIMENT DEPOSITS BEHIND FENCE WHEN SEDIMENT ACCUMULATES TO 6".
3. SILT FENCE OUTLET: REMOVE SEDIMENT WHEN HALF OF STONE OUTLET IS COVERED. REPLACE STONE AS NEEDED TO ENSURE DEWATERING.
4. TREE PROTECTION: ANY FABRIC WHICH COLLAPSES, TEARS, DECOMPOSES, OR BECOMES INEFFECTIVE WILL BE REPLACED IMMEDIATELY.
5. COMBINATION SILT & TREE PROTECTION FENCE:ANY FABRIC WHICH COLLAPSES, TEARS, DECOMPOSES, OR BECOMES INEFFECTIVE WILL BE REPLACED IMMEDIATELY. REMOVE SEDIMENT DEPOSITS BEHIND FENCE WHEN SEDIMENT ACCUMULATES TO 6".
6. SILT BAG: ANY FABRIC WHICH COLLAPSES, TEARS, DECOMPOSES, OR BECOMES INEFFECTIVE WILL BE REPLACED IMMEDIATELY. REPLACE SILT BAG WHEN ONE HALF (½) FULL OF SEDIMENT.
7. STOCKPILES: STOCKPILES SHALL BE CHECKED FOR SEDIMENTATION AND STABILIZATION.
8. CONSTRUCTION ENTRANCE: MAINTAIN ENTRANCE IN A CONDITION TO PREVENT MUD OR SEDIMENT FORM LEAVING THE CONSTRUCTION SITE. PERIODICALLY TOPDRESS WITH 2-INCH STONE. AFTER EACH RAINFALL, IMMEDIATELY INSPECT STRUCTURE AND CLEAN OUT AS NECESSARY.
9. CURB INLET PROTECTION/YARD INLET PROTECTION: ANY FABRIC WHICH COLLAPSES, TEARS, DECOMPOSES, OR BECOME INEFFECTIVE WILL BE REPLACED IMMEDIATELY. REMOVE SEDIMENT DEPOSITS FROM SACK WHEN HALF OF THE CAPACITY IS USED.
10. COMPOST SOCK: INSPECT COMPOST SOCK WEEKLY AND AFTER EACH 1/2 INCH (OR GREATER) RAINFALL. REPLACE COMPOST SOCK IF CLOGGED OR TORN. REMOVE ACCUMULATED SEDIMENT OR DEBRIS. REPLACE SOCK IF EXCESSIVE PONDING OCCURS. REINSTALL SOCK IF UNDERMINED OR DISLODGED.
11. WATTLE: INSPECT WATTLE WEEKLY AND AFTER EACH 1/2 INCH (OR GREATER) RAINFALL. REPLACE WATTLE IF CLOGGED OR TORN. REMOVE ACCUMULATED SEDIMENT OR DEBRIS. REPLACE WATTLE IF EXCESSIVE PONDING OCCURS. REINSTALL WATTLE IF UNDERMINED OR DISLODGED.
12. CONCRETE WASHOUT: SEE SHEET ED-1.0.

1 EROSION CONTROL MAINTENANCE PLAN
NTS

BY	DATE	REVISION
JBR	04/02/25	ISSUED FOR CONSTRUCTION
JBR	11/26/24	FOR BID
JBR	09/19/24	FOR PERMITTING
JBR	07/27/24	90% SUBMITTAL
YQ	04/12/24	60% DESIGN SUBMITTAL

ISSUED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 046286 ENGINEER JEFFREY B. RAY 04-21-25

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.
3804 Park Avenue, Unit A
Wilmington, NC 28403
Tel 910-313-1516
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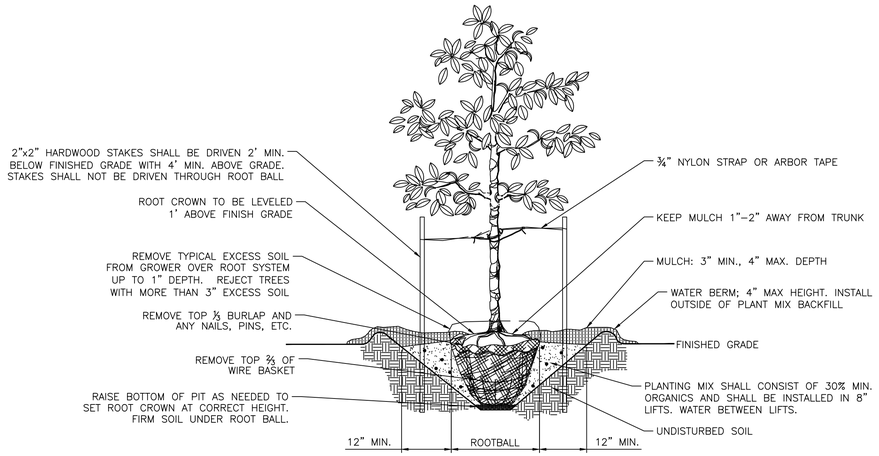
CAROLINA BEACH LAKE PUMP HOUSE #1 & #2 REPLACEMENT
CAROLINA BEACH, NC

EROSION CONTROL DETAILS

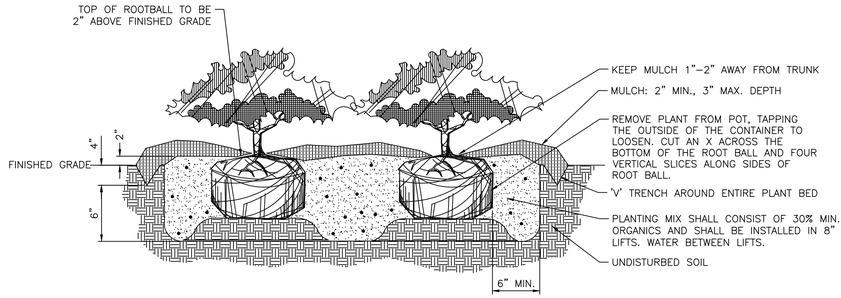
PROJECT NO.
TCB2301

ED-2.0



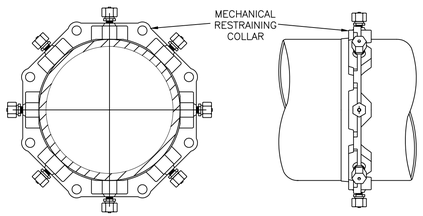
NOTES:
1. THE PLANT DEPTH SHOULD BE TWO TIMES AS WIDE AS THE CONTAINER, AND THE SAME DEPTH AS THE CONTAINER. THIS SHOULD ALL BE BASED ON CONTAINER SIZE, NOT PRE–SPECIFIED DEPTHS. CONTAINER SIZE IS BASED ON AVAILABILITY, WHICH IS SUBJECT TO CHANGE.
2. CONSTRUCT A 3" – 4" HIGH RIDGE OF SOIL AROUND THE OUTER EDGE OF THE PLANTING HOLE. THIS BERM WILL CREATE A BASIN TO HOLD IRRIGATION WATER AND CONCENTRATE IT OVER THE ROOTS.
3. IT IS RECOMMENDED TO LEAVE THE BACKFILL UNALTERED OR ADD MINIMAL AMENDMENTS. THIS ENCOURAGES ROOTS TO SPREAD OUT INTO THE NATIVE SOIL, RATHER THAN STAYING WITHIN THE CONFINES OF THE PLANTING HOLE.

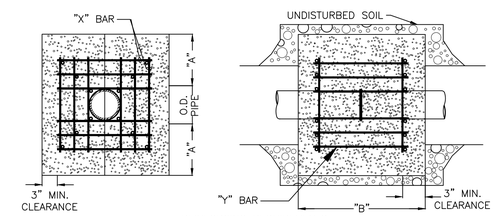
32–41	TREE PLANTING	
	DETAIL TITLE	
HIEPC DETAIL I.D.	11/1/2016 REVISED DATE	NO SCALE SCALE



NOTES:
1. THE PLANT DEPTH SHOULD BE TWO TIMES AS WIDE AS THE CONTAINER, AND THE SAME DEPTH AS THE CONTAINER. THIS SHOULD ALL BE BASED ON CONTAINER SIZE, NOT PRE–SPECIFIED DEPTHS. CONTAINER SIZE IS BASED ON AVAILABILITY, WHICH IS SUBJECT TO CHANGE.
2. CONSTRUCT A 3" – 4" HIGH RIDGE OF SOIL AROUND THE OUTER EDGE OF THE PLANTING HOLE. THIS BERM WILL CREATE A BASIN TO HOLD IRRIGATION WATER AND CONCENTRATE IT OVER THE ROOTS.
3. IT IS RECOMMENDED TO LEAVE THE BACKFILL UNALTERED OR ADD MINIMAL AMENDMENTS. THIS ENCOURAGES ROOTS TO SPREAD OUT INTO THE NATIVE SOIL, RATHER THAN STAYING WITHIN THE CONFINES OF THE PLANTING HOLE.

32–40	SHRUB PLANTING	
	DETAIL TITLE	
HIEPC DETAIL I.D.	11/1/2016 REVISED DATE	NO SCALE SCALE





REINFORCING REQUIREMENTS

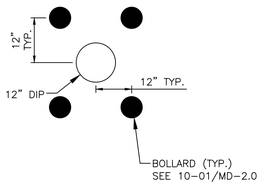
I.D. PIPE	REBAR SIZE	"X" BAR LENGTH	"X" BAR WEIGHT	"Y" BAR LENGTH	"Y" BAR WEIGHT	NO. REQUIRED
6" – 36"	#5	2'–2"+ O.D. PIPE	1.043 LBS/FT	1'–7"	1.1 LBS. EACH	X–24, Y–12
48" & greater	#6	3'–0"+ O.D. PIPE	1.502 LBS/FT	1'–3"	1.9 LBS. EACH	X–24, Y–12

THRUST COLLAR, AND THRUST SCHEDULE

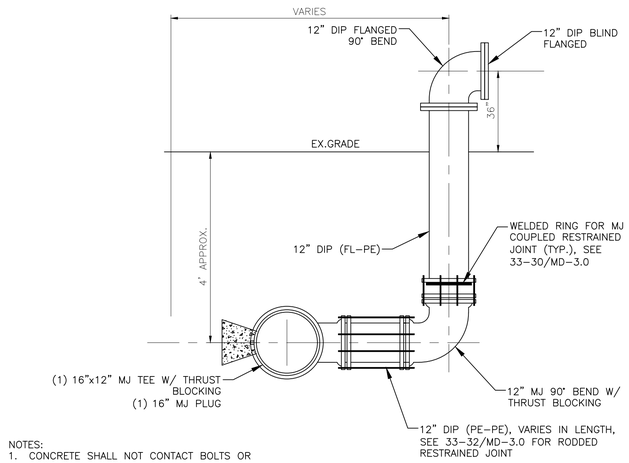
I.D. PIPE	"A"	"B"
6" – 16"	1'–4"	1'–7"
20" – 24"	1'–4"	1'–7"
30" – 36"	1'–4"	1'–7"
48" & greater	1'–8"	1'–9"

NOTES:
1. SEE SITE PLANS FOR THRUST BLOCK LOCATIONS.
2. CONCRETE SHALL BE 3000 PSI AND TRANSIT MIXED.
3. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
4. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM OF 48 INCHES.
5. BACKFILL TAMPED IN 6".
6. MECHANICAL RESTRAINING COLLAR SHALL BE FRICTION–TYPE AS MANUFACTURED BY MEGA–LUG OR EQUAL.

1 DETAIL – THRUST COLLAR
NO SCALE



PLAN



NOTES:
1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF FITTINGS.
2. SEE 33–33/MD–3.0 FOR THRUST BLOCKING.

SECTION

2 DETAIL – PERMANENT BYPASS PUMP CONNECTION
NO SCALE

BY	REVISION	DATE
YQ	60% DESIGN SUBMITTAL	04/12/24
JBR	90% SUBMITTAL	07/27/24
JBR	FOR PERMITTING	09/19/24
JBR	FOR BID	11/26/24
JBR	ISSUED FOR CONSTRUCTION	04/02/25

ISSUED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 046286 ENGINEER JEFFREY B. RAY 04-21-25

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.
3804 Park Avenue, Unit A
Wilmington, NC 28403
Tel 910-313-1516
www.hiepc.com
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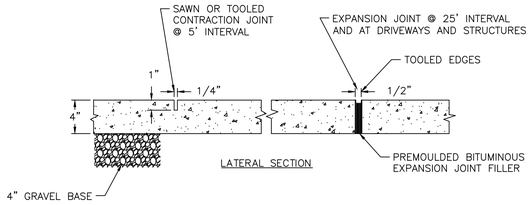
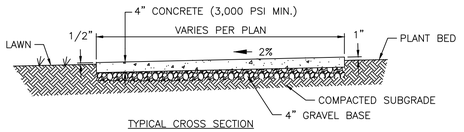
CAROLINA BEACH LAKE PUMP HOUSE #1 & #2 REPLACEMENT
CAROLINA BEACH, NC

MISCELLANEOUS DETAILS

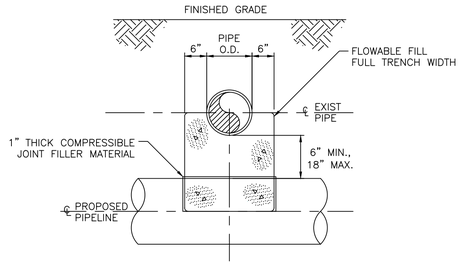
PROJECT NO.
TCB2301

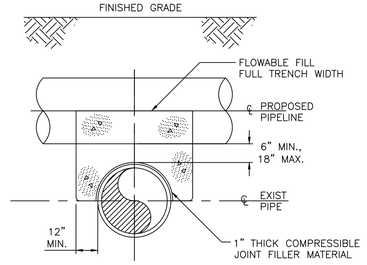
MD–1.0





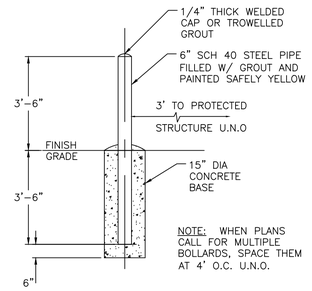
03-02	CONCRETE SIDEWALK	
HIEPC DETAIL I.D.	DETAIL TITLE	
	11/1/2016	NO SCALE
	REVISED DATE	SCALE





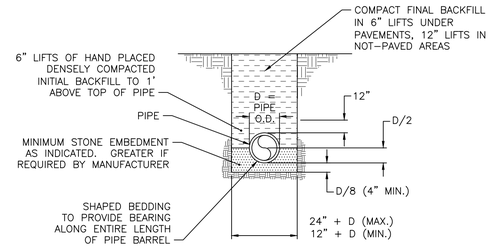
NOTE:
NO CRADLE REQUIRED FOR SPACE GREATER THAN 18" FOR WATER LINES

03-13	CONCRETE CRADLE PROTECTION FOR PIPELINE CROSSINGS	
HIEPC DETAIL I.D.	DETAIL TITLE	
	1/12/2016	NO SCALE
	REVISED DATE	SCALE



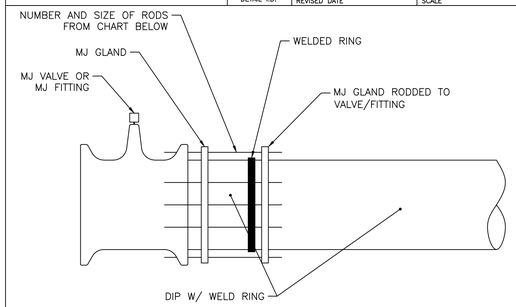
NOTE: WHEN PLANS CALL FOR MULTIPLE BOLLARDS, SPACE THEM AT 4' O.C. U.N.O.

10-01	SITE BOLLARD	
HIEPC DETAIL I.D.	DETAIL TITLE	
	1/12/2016	NO SCALE
	REVISED DATE	SCALE



NOTES:
1. BEDDING SHALL BE # 67 STONE.
2. BACKFILL SHALL BE FREE OF ROCK LARGER THAN 2" IN ANY DIRECTION (NO ROCK LARGER THAN ½" WITHIN 12" OF PIPE) AND FREE OF DEBRIS AND ORGANIC MATTER. COMPACT TO 95% MAXIMUM DRY DENSITY.
3. WHEN ROCK IS ENCOUNTERED, INCREASE BEDDING DEPTH UNDER PIPE TO 6".

31-11	PVC PRESSURE PIPE BEDDING	
HIEPC DETAIL I.D.	DETAIL TITLE	
	11/1/2016	NO SCALE
	REVISED DATE	SCALE

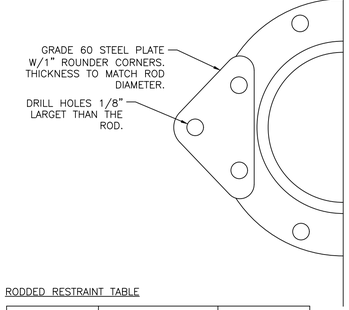


RODDED RESTRAINT TABLE

PIPE DIA.	ROD DIA.	NO. OF RODS
4"	3/4"	4
6"	3/4"	6
8"	3/4"	6
10"	3/4"	8
12"	3/4"	8
14"	3/4"	10
16"	3/4"	12
20"	3/4"	14
24"	3/4"	16
36"	1"	24

NOTE:
1. THREADED TIE RODS TO BE ASTM A307, GRADE B STEEL.
2. FOR 200 PSI MAX. TEST PRESSURE.
3. STEEL RODS AND BOLTS SHALL BE ¾" HOT DIPPED GALVINIZED. BURIED RODS SHALL BE BITUMASTIC COATED.

33-30	MJ COUPLED RESTRAINED JOINT	
HIEPC DETAIL I.D.	DETAIL TITLE	
	11/1/2016	NO SCALE
	REVISED DATE	SCALE

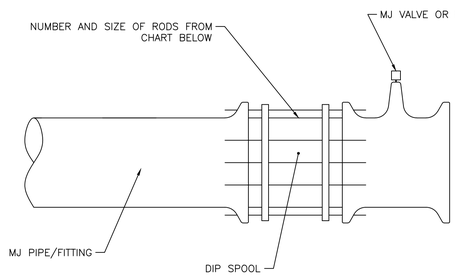


RODDED RESTRAINT TABLE

PIPE DIA.	ROD DIA.	NO. OF RODS
4"	1/2"	2
6"	3/4"	2
8"	3/4"	2
10"	7/8"	3
12"	7/8"	3
14"	1"	4
16"	1"	4
20"	1 1/4"	5
24"	1 1/2"	5
36"	1 1/2	10

NOTE
1. THREADED TIE RODS TO BE ASTM A307, GRADE B STEEL.
2. FOR 200 PSI MAX. TEST PRESSURE.

33-31	RODDED RESTRAINT	
HIEPC DETAIL I.D.	DETAIL TITLE	
	11/1/2016	NO SCALE
	REVISED DATE	SCALE



RODDED RESTRAINT TABLE

PIPE DIA.	ROD DIA.	NO. OF RODS
4"	3/4"	2
6"	3/4"	2
8"	3/4"	3
10"	3/4"	4
12"	3/4"	6
14"	3/4"	8
16"	3/4"	10
20"	3/4"	14
24"	3/4"	16
36"	1"	24

NOTE:
1. THREADED TIE RODS TO BE ASTM A307, GRADE B STEEL.
2. FOR 200 PSI MAX. TEST PRESSURE.
3. STEEL RODS AND BOLTS SHALL BE ¾" HOT DIPPED GALVINIZED. BURIED RODS SHALL BE BITUMASTIC COATED.

33-32	RODDED RESTRAINED JOINT	
HIEPC DETAIL I.D.	DETAIL TITLE	
	11/1/2016	NO SCALE
	REVISED DATE	SCALE

BY	DATE	REVISION
JBR	04/02/25	ISSUED FOR CONSTRUCTION
JBR	11/26/24	FOR BID
JBR	09/19/24	FOR PERMITTING
JBR	07/27/24	90% SUBMITTAL
YQ	04/12/24	60% DESIGN SUBMITTAL

ISSUED FOR CONSTRUCTION

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CAROLINA BEACH, NC

MISCELLANEOUS DETAILS

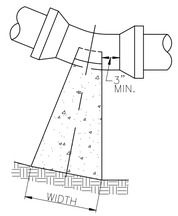
PROJECT NO.
TCB2301

MD-2.0

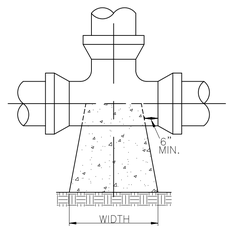
REACTION BEARING AREAS FOR HORIZONTAL PIPE BENDS

DIA. (IN)	FITTING	REACTION AREA (SF) 1000 #/SF	1600 #/SF	2000 #/SF	4000 #/SF	8000 #/SF	10000 #/SF
6	11.25	2	1	1	1	1	1
	22.5	3	2	2	1	1	1
	45	5	4	3	2	1	1
	90	9	6	5	3	2	1
	PLUG/TEE	7	4	4	2	1	1
8	11.25	3	2	2	1	1	1
	22.5	5	3	3	2	1	1
	45	9	6	5	3	2	1
	90	16	10	8	4	2	2
	PLUG/TEE	12	8	6	3	2	2
10	11.25	4	3	2	1	1	1
	22.5	7	5	4	2	1	1
	45	14	9	7	4	2	2
	90	25	16	13	7	4	3
	PLUG/TEE	18	12	9	5	3	2
12	11.25	5	4	3	2	1	1
	22.5	10	7	5	3	2	1
	45	20	13	10	5	3	2
	90	36	23	18	9	5	4
	PLUG/TEE	26	16	13	7	4	3
16	11.25	9	6	5	3	2	1
	22.5	18	12	9	5	3	2
	45	35	22	18	9	5	4
	90	64	40	32	16	8	7
	PLUG/TEE	46	29	23	12	6	5
24	11.25	20	13	10	5	3	2
	22.5	40	25	20	10	5	4
	45	78	49	39	20	10	8
	90	144	90	72	36	18	15
	PLUG/TEE	102	64	51	26	13	11
30	11.25	32	20	16	8	4	4
	22.5	63	39	32	16	8	7
	45	122	77	61	31	16	13
	90	225	141	113	57	29	23
	PLUG/TEE	160	100	80	40	20	16

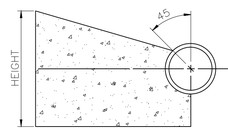
G:\Projects\z_Design Info\Restaint\Thrust Block Calculator.xls



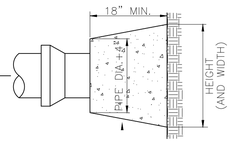
PLAN BENDS



PLAN TEES



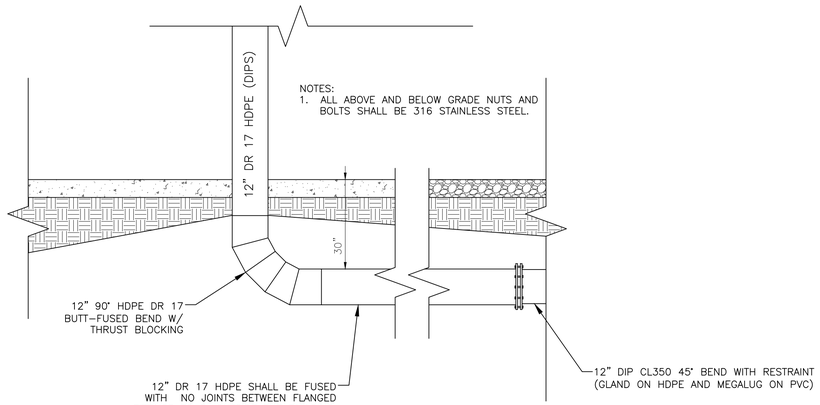
SECTION
BENDS & TEES



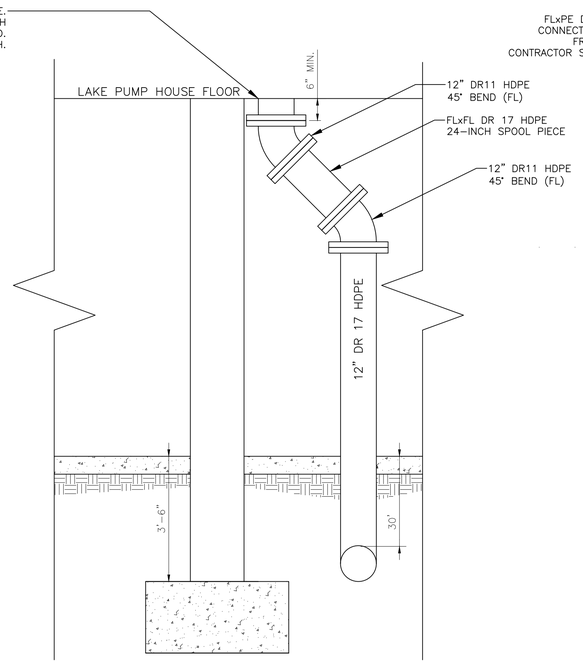
PLAN & ELEVATION PLUGS

NOTES:
1. REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.
2. REACTION AREA CALCULATED BASED ON 150 PSI TEST PRESSURE AND 1.5 SAFETY FACTOR.
3. GENERAL SOIL PROPERTIES: QUICKSAND = 1,000 #/SF; GRAVEL/COARSE SAND = 1,600 #/SF; SOFT CLAY = 2,000 #/SF; MODERATELY DRY CLAY, SAND–CLEAN DRY = 4,000 #/SF; DRY CLAY, SAND–COMPACT FIRM = 8,000 #/SF; ROCK = 10,000 #/SF.
4. USE 6" – 90° BEND VALUE FOR HYDRANTS.
5. WIDTH OF BLOCK SHOULD BE BETWEEN 1X AND 2X BLOCK HEIGHT.
6. CONSULT ENGINEER FOR FITTING OR SIZES NOT SHOWN.
7. CONCRETE SHALL BE 3000 PSI.
8. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
9. ALL FITTINGS SHALL HAVE CONCRETE THRUST BLOCKING UNLESS NOTED OTHERWISE.

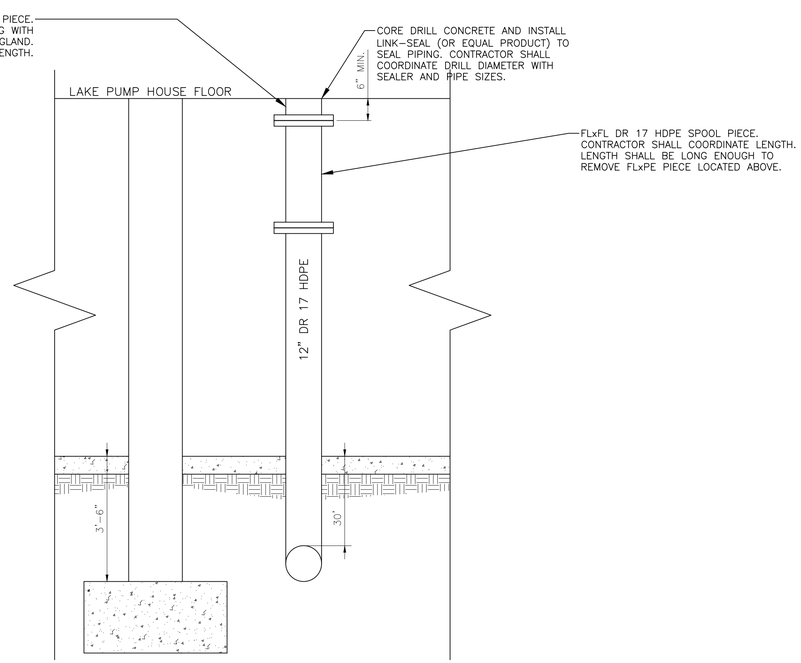
33–33	STANDARD THRUST BLOCKING
HIEPC DETAIL I.D.	DETAIL TITLE
1/12/2016	NO SCALE



1 DETAIL – HDPE TO FITTING
NO SCALE



VERTICAL PIPE – PUMP 2



VERTICAL PIPE – PUMP 1 & 3

NOTES:
1. ALL ABOVE AND BELOW GRADE NUTS AND BOLTS SHALL BE 316 STAINLESS STEEL.

2 DETAIL – VERTICAL PIPING
NO SCALE

BY	REVISION	DATE
JBR	ISSUED FOR CONSTRUCTION	04/02/25
JBR	FOR BID	11/26/24
JBR	FOR PERMITTING	09/19/24
JBR	90% SUBMITTAL	07/27/24
YQ	60% DESIGN SUBMITTAL	04/12/24

ISSUED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 046286 ENGINEER JEFFREY B. RAY 04-21-25

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.

3804 Park Avenue, Unit A
Wilmington, NC 28403
Tel 910-313-1516
www.hiepc.com
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Service is our passion.

CAROLINA BEACH LAKE PUMP HOUSE #1 & #2 REPLACEMENT
CAROLINA BEACH, NC

MISCELLANEOUS DETAILS

PROJECT NO.
TCB2301

MD–3.0

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
(Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: Carolina Beach Lake Pump House #1 & 2 Replacement
Address: 460 S. Lake Park Blvd., Carolina Beach, NC Zip Code 28428
Owner/Authorized Agent: Highfill Infrastructure Engineering, PC Phone # (910) 313-1516 E-Mail jray@hiepc.com
Owned By: City
Code Enforcement Jurisdiction: City

CONTACT:

DESIGNER	FIRM	NAME	LICENSE#	TELEPHONE #	EMAIL
Architectural	Sawyer Sherwood & Associate, PC	Douglas K. Sherwood	10075	(910)762-0892	dsug@ec2a3.com
Civil	Highfill Infrastructure Engineering, P.C.	Jeffrey Ray	046286	(919)481-4342	jray@hiepc.com
Electrical	Cheatham & Associates, PA	Mark Ciarrocca	13793	(910)452-4210	mciarrocca@cheathampa.com
Fire Alarm	N/A				
Plumbing	Cheatham & Associates, PA	Casey Gilman	43164	(910)452-4210	cgilman@cheathampa.com
Mechanical	Cheatham & Associates, PA	Kenneth Lynch	17655	(910)452-4210	klynch@cheathampa.com
Sprinkler	N/A				
Structural	Ardurra Group, Inc.	Mark Weiss	31432	(910)397-2929	mark.weiss@ardurra.com
Ret. Walls	N/A				
Other	N/A				

2018 NC BUILDING CODE: New Building
2018 NC EXISTING BUILDING CODE: N/A N/A N/A
CONSTRUCTED: (date) N/A **CURRENT OCCUPANCY(S)** (Ch. 3): _____
RENOVATED: (date) N/A **PROPOSED OCCUPANCY(S)** (Ch. 3): Utility and Misc.
RISK CATEGORY (Table 1604.5): **Current:** N/A **Proposed:** III

BASIC BUILDING DATA
Construction Type: II-B
Sprinklers: No N/A
Standpipes: No
Primary Fire District: No **Flood Hazard Area:** Yes
Special Inspections Required: Select one

Gross Building Area Table

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
3rd Floor			
2nd Floor		1448	1448
Mezzanine			
1st Floor		1858	1858
Basement			
TOTAL		3306	3306

ALLOWABLE AREA

Primary Occupancy Classification(s): Utility and Miscellaneous N/A N/A N/A N/A
N/A
Accessory Occupancy Classification(s): N/A
Incidental Uses (Table 509): N/A
Special Uses (Chapter 4 – List Code Sections): N/A
Special Provisions: (Chapter 5 – List Code Sections):
Mixed Occupancy: No Separation: Select one Exception: N/A
Select one

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$$

_____ + _____ + ... = _____ ≤ 1.00

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2[2] AREA	(C) AREA FOR FRONTAGE INCREASE[1,2]	(D) ALLOWABLE AREA PER STORY OR UNLIMITED[2]
1	Utility/Miscellaneous	1858	8500	N/A	8500
2	Utility/Miscellaneous	1448	8500	N/A	8500

[1] Frontage area increases from Section 506.3 are computed thus:
a. Perimeter which fronts a public way or open space having 20 feet minimum width = _____ (F)
b. Total Building Perimeter = _____ (P)
c. Ratio (F/P) = _____ (F/P)
d. W = Minimum width of public way = _____ (W)
e. Percent of frontage increase $I_f = 100[F/P - 0.25]$ x W/30 = _____ (%)
[2] Unlimited area applicable under conditions of Section 507.
[3] Maximum Building Area = total number of stories in the building x D (maximum 3 stories) (506.2).
[4] The maximum area of open parking garages must comply with Table 406.5.4.
[5] Frontage increase is based on the unsprinklered area value in Table 506.2

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE[1]
Building Height in Feet (Table 504.3)[2]	55'	31'-11"	
Building Height in Stories (Table 504.4)[2]	3	2	

[1] Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4.
[2] The maximum height of air traffic control towers must comply with Table 412.3.1.
[3] The maximum height of open parking garages must comply with Table 406.5.4.

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)
>30ft	No Limit		

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: Yes
Exit Signs: No
Fire Alarm: No
Smoke Detection Systems: No
Carbon Monoxide Detection: No

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: G1.0

- ☐ Fire and/or smoke rated wall locations (Chapter 7)
- ☒ Assumed and real property line locations (if not on the site plan)
- ☐ Exterior wall opening area with respect to distance to assumed property lines (705.8)
- ☒ Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2)
- ☒ Occupant loads for each area
- ☒ Exit access travel distances (1017)
- ☐ Common path of travel distances (Tables 1006.2.1 & 1006.3.2(1))
- ☐ Dead end lengths (1020.4)
- ☒ Clear exit widths for each exit door
- ☒ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
- ☒ Actual occupant load for each exit door
- ☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
- ☐ Location of doors with panic hardware (1010.1.10)
- ☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)
- ☐ Location of doors with electromagnetic egress locks (1010.1.9.9)
- ☐ Location of doors equipped with hold-open devices
- ☐ Location of emergency escape windows (1030)
- ☐ The square footage of each fire area (202)
- ☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
- ☒ Note any code exceptions or table notes that may have been utilized regarding the items above

ACCESSIBLE DWELLING UNITS
(SECTION 1107)

TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED
N/A							

ACCESSIBLE PARKING
(SECTION 1106)

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES		# OF ACCESSIBLE SPACES PROVIDED			TOTAL # ACCESSIBLE PROVIDED
	REQUIRED	PROVIDED	REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH 132" ACCESS AISLE	VAN SPACES WITH 8' ACCESS AISLE	
N/A						
TOTAL						

PLUMBING FIXTURE REQUIREMENTS
(TABLE 2902.1)

USE		WATER CLOSETS			URINALS		LAVATORIES			SHOWERS /TUBS	DRINKING FOUNTAINS	
		MALE	FEMALE	UNISEX			MALE	FEMALE	UNISEX		REGULAR	ACCESSIBLE
SPACE	EXIST'G											
	NEW											
	REQ'D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SPECIAL APPROVALS

Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, etc., describe below)
Town of Carolina Beach Inspecitons

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (w/ REDUCTION)*	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	SHEET # FOR RATED PENETRATION	SHEET # FOR RATED JOINTS
Structural Frame, including columns, girders, trusses							
Bearing Walls							
Exterior							
North	>30ft	N/A					
East	>30ft	N/A					
West	>30ft	N/A					
South	>30ft	N/A					
Interior	N/A						
Nonbearing Walls and Partitions							
Exterior walls							
North	>30ft	N/A					
East	>30ft	N/A					
West	>30ft	N/A					
South	>30ft	N/A					
Interior walls and partitions	N/A						
Floor Construction Including supporting beams and joists		N/A					
Floor Ceiling Assembly		N/A					
Columns Supporting Floors		N/A					
Roof Construction, including supporting beams and joists		N/A					
Roof Ceiling Assembly		N/A					
Columns Supporting Roof		N/A					
Shaft Enclosures - Exit		N/A					
Shaft Enclosures - Other		N/A					
Corridor Separation		N/A					
Occupancy/Fire Barrier Separation		N/A					
Party/Fire Wall Separation		N/A					
Smoke Barrier Separation		N/A					
Smoke Partition		N/A					
Tenant/Dwelling Unit/ Sleeping Unit Separation		N/A					
Incidental Use Separation		N/A					

* Indicate section number permitting reduction

ENERGY SUMMARY

DUE TO UTILITY OCCUPANCY, BUILDING IS EXEMPT PER NC ENERGY CONSERVATION CODE, SECTION C101.2, EXCEPTION 2

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
STRUCTURAL DESIGN
(PROVIDE ON THE STRUCTURAL SHEETS IF APPLICABLE)

SEE STRUCTURAL DRAWINGS

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
MECHANICAL DESIGN
(PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)

MECHANICAL SUMMARY

UTILITY OCCUPANCY, NATURAL AND POWER VENTILATION ONLY

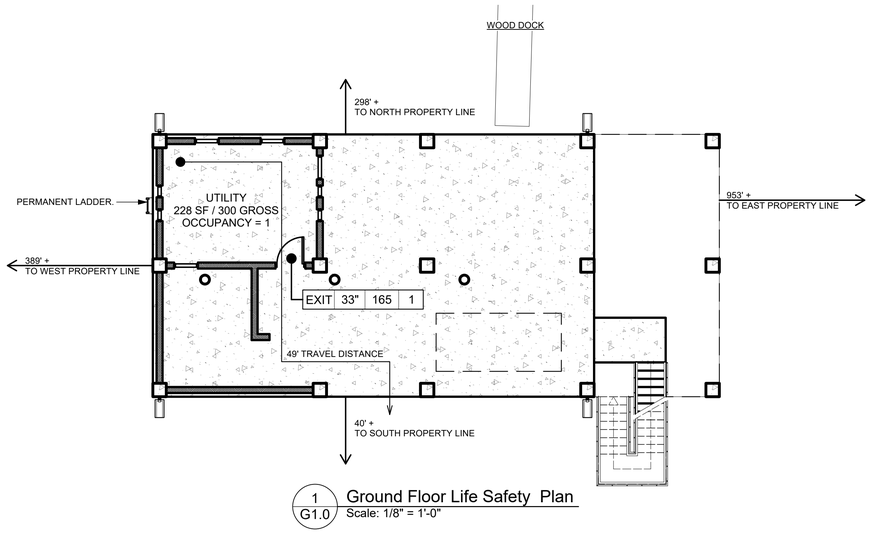
2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
ELECTRICAL DESIGN
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)

ELECTRICAL SUMMARY

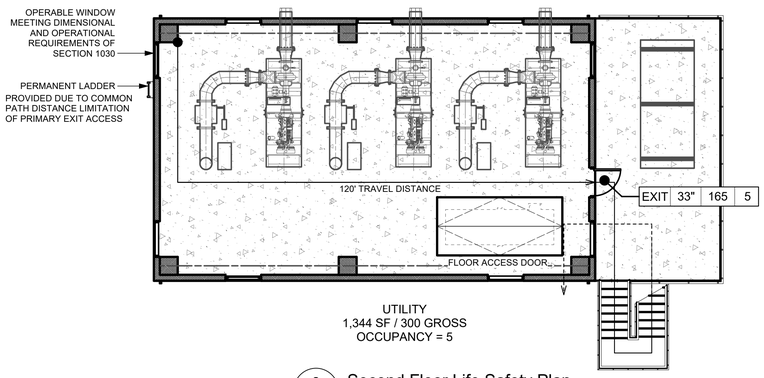
ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance: N/A

DUE TO UTILITY OCCUPANCY, BUILDING IS EXEMPT PER NC ENERGY CONSERVATION CODE, SECTION C101.2, EXCEPTION 2



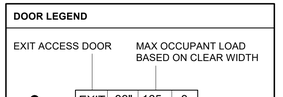
1 G1.0 **Ground Floor Life Safety Plan**
Scale: 1/8" = 1'-0"



2 G1.0 **Second Floor Life Safety Plan**
Scale: 1/8" = 1'-0"

GENERAL NOTES:
NCBC 1003.2.9 - EQUIPMENT SPACES NOT REQUIRED TO COMPLY WITH CHAPTER 11
NCBC 1011.2, EXCEPTION 1 - STAIRWAYS SERVING LESS THAN 50 OCCUPANTS SHALL HAVE A WIDTH NOT LESS THAN 36"
NCBC 1011.16, EXCEPTIONS 1 & 4 - PERMANENT LADDERS SHALL BE PERMITTED TO PROVIDE ACCESS TO SPACES FREQUENTED BY PERSONNEL FOR MAINTENANCE, REPAIR, OR MONITORING OF EQUIPMENT, AND ELEVATEDLEVELS IN GROUP U NOT OPEN TO THE GENERAL PUBLIC
NCBC 1017.2 - EXIT ACCESS CANNOT EXCEED 300'
NCBC 1006.3.2 - COMMON PATH CANNOT EXCEED 75'

DOOR LEGEND



-	SAS	ISSUED FOR CONSTRUCTION	04/01/25
-	SAS	FOR BID	10/23/24
-	SAS	FOR PERMITTING	09/26/24
-	SAS	90% SUBMITTAL	07/26/24
-	BY	REVISION	DATE

PLOT DATE: 04/01/2025

SAWYER SHERWOOD & ASSOCIATE PROFESSIONAL ARCHITECTURAL CORPORATION P.C. 52349 NORTH CAROLINA WILMINGTON, NC

DOUGLAS K. SHERWOOD Registered Architect 10075 NORTH CAROLINA WILMINGTON, NC 4-1-25

SAWYER SHERWOOD & ASSOCIATE ARCHITECTURE
124 Market Street
Wilmington, NC 28401
910 762-0892
52o3.com

HIGHFILL INFRASTRUCTURE ENGINEERING,P.C.
3804 Park Avenue, Unit A
Wilmington, NC 28403
Tel 910-313-1516
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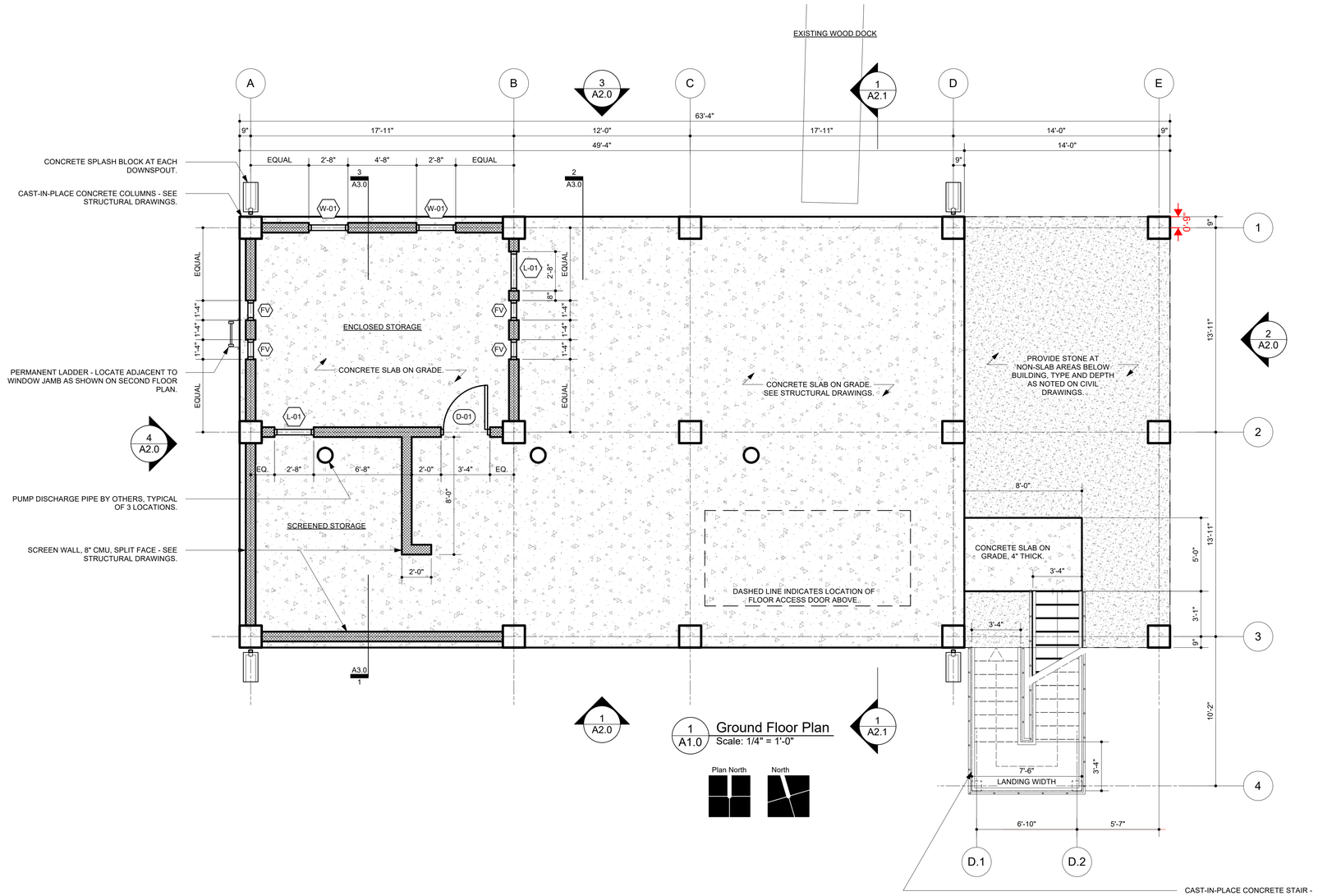
FINAL DESIGN - ISSUED FOR CONSTRUCTION

CAROLINA BEACH LAKE PUMP HOUSE #1 & 2 REPLACEMENT
460 S. LAKE PARK BLVD, CAROLINA BEACH, NC 28428
APPENDIX B & LIFE SAFETY PLAN

PROJECT NO.
TCB2301

G1.0



BY	DATE
SAS	04/01/25
SAS	11/26/24
SAS	10/23/24
SAS	09/26/24
SAS	07/26/24

ISSUED FOR CONSTRUCTION
FOR BID
FOR BID
FOR PERMITTING
90% SUBMITTAL
REVISION

PLOT DATE: 04/01/2025

FINAL DESIGN - ISSUED FOR CONSTRUCTION

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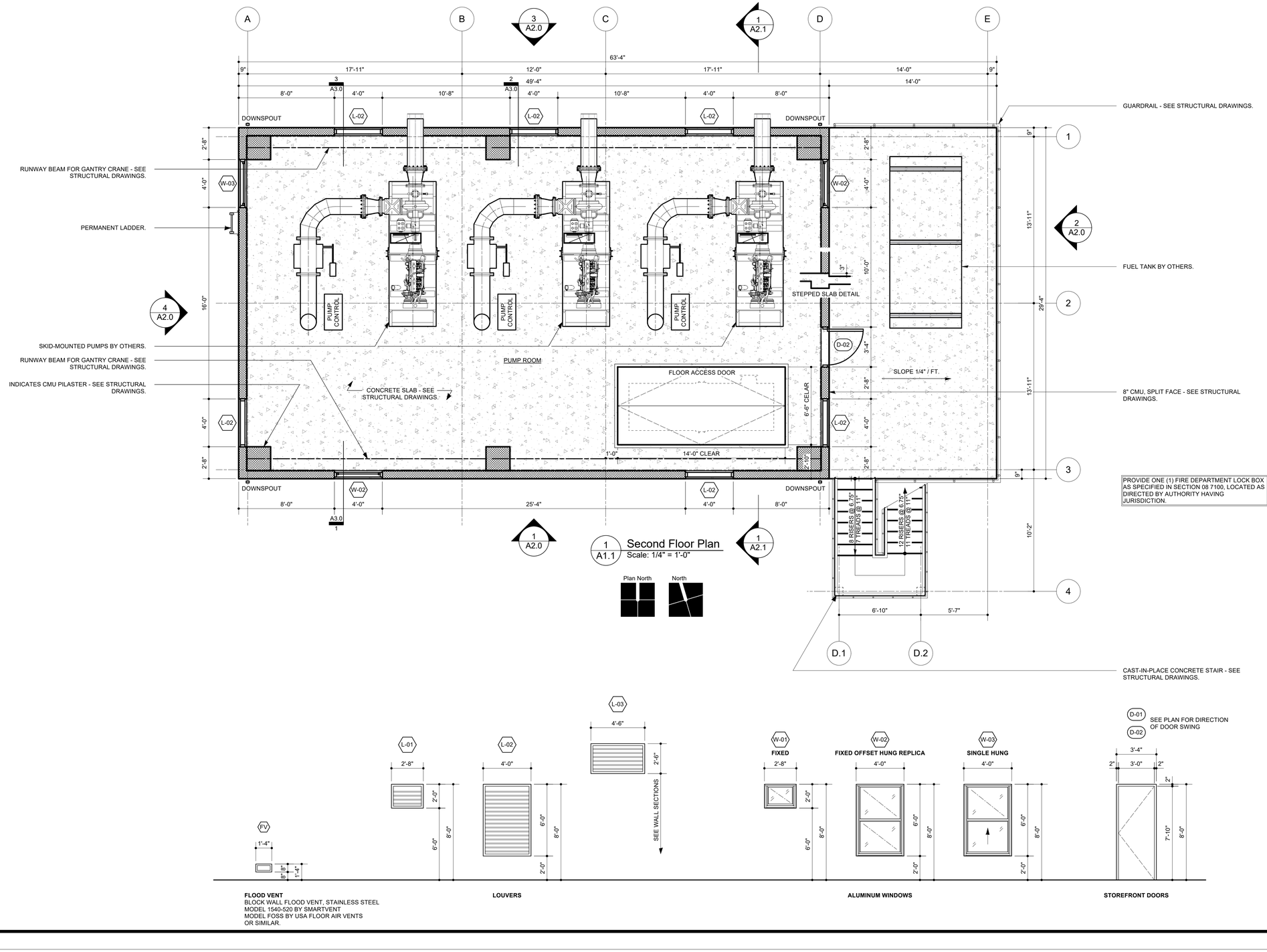
CAROLINA BEACH LAKE PUMP HOUSE #1 & 2 REPLACEMENT

460 S. LAKE PARK BLVD, CAROLINA BEACH, NC 28428

GROUND FLOOR PLAN

PROJECT NO.
TCB2301

A1.0



BY	DATE	REVISION
SAS	04/01/25	ISSUED FOR CONSTRUCTION
SAS	11/26/24	FOR BID
SAS	10/23/24	FOR BID
SAS	09/26/24	FOR PERMITTING
SAS	07/26/24	90% SUBMITTAL

PLOT DATE: 04/01/2025

FINAL DESIGN - ISSUED FOR CONSTRUCTION

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DOUGLAS K. SHERWOOD — Registered Architect — 10975 — NORTH CAROLINA — WILMINGTON, NC — 4.1.25

SAWYER SHERWOOD & ASSOCIATE ARCHITECTURE
124 Market Street
Wilmington, NC 28401
910.762-0892
52a3.com

HIGHFILL
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3804 Park Avenue, Unit A
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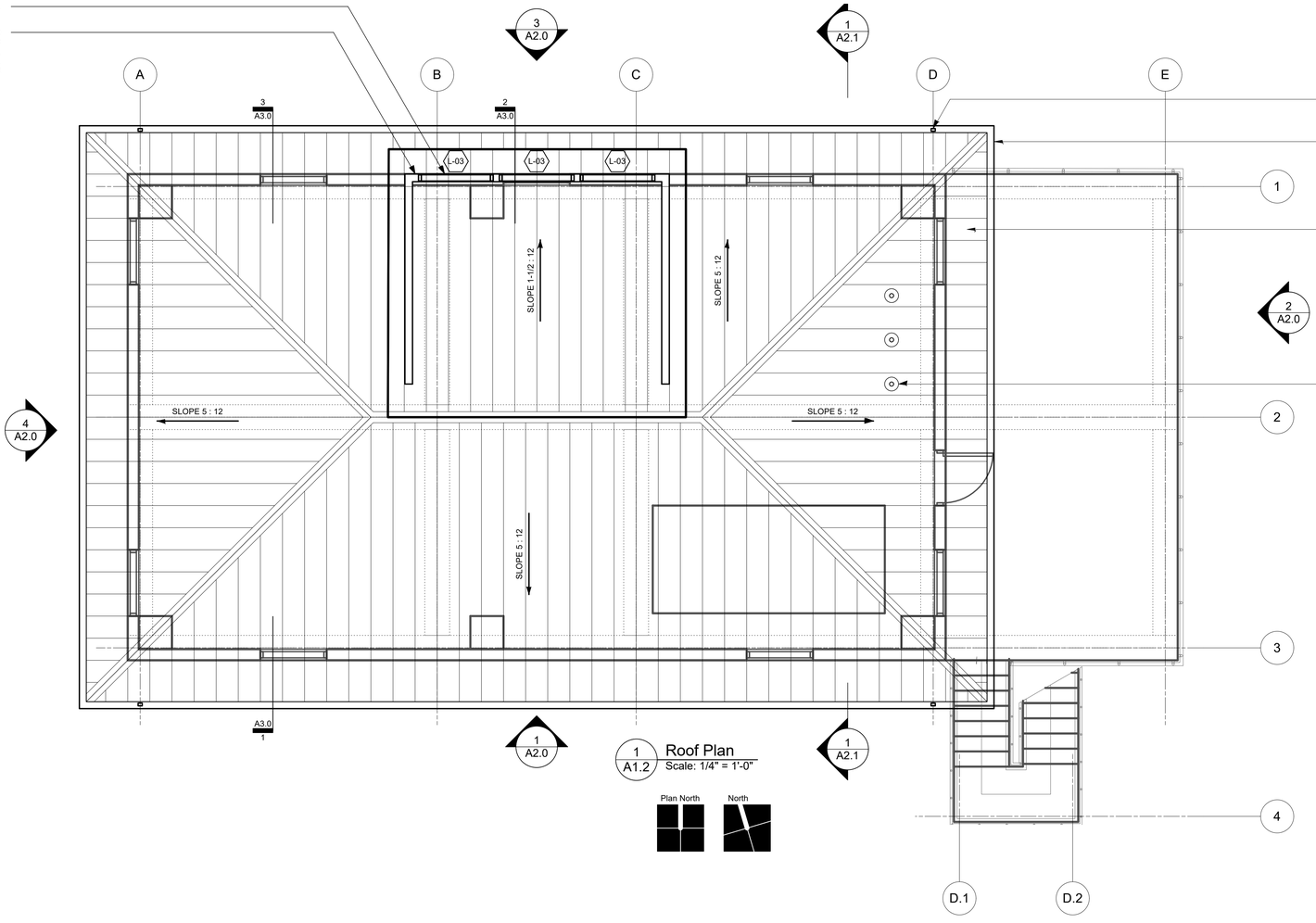
SECOND FLOOR PLAN

PROJECT NO.
TCB2301

A1.1

LOUVERS.

WOOD STUD DORMER FRAMED OVER LOW ROOF, PLYWOOD SHEATHING, WEATHER BARRIER, AND FLUSH METAL WALL PANELS. SEE STRUCTURAL DRAWINGS FOR ROOF FRAMING.



1 Roof Plan
A1.2 Scale: 1/4" = 1'-0"

Plan North North

TYPICAL NOTE FOR ROOF PERIMETER CONDITIONS:
IN ADDITION TO ANCHOR CLIPS LOCATED PER MANUFACTURER'S REQUIREMENTS TO MEET WIND LOADS, ALSO PROVIDE TWO CLIPS AT ALL EAVE, RIDGE, AND HIP CONDITIONS.

2"X3" DOWNSPOUTS AT LOCATIONS INDICATED.

5" GUTTER.

1

STANDING SEAM ROOF OVER SELF-ADHERING UNDERLAYMENT AND PLYWOOD SHEATHING. ROOF PANELS SHALL BE LAID OUT SYMMETRICALLY ON EACH ROOF FACE. COORDINATE LOCATIONS OF ROOF PENETRATIONS TO OCCUR ALONG CENTERLINES OF ROOF PANELS.

2

PUMP EXHAUST PIPE - TYPICAL OF THREE (3) LOCATIONS:
-EXHAUST PIPES (BY OTHERS) SHALL BE OFFSET TO CLEAR GANTRY CRANE AND LOCATE ROOF PENETRATIONS ALONG ROOF PANEL CENTERLINES.
-CUT CLEARANCE HOLES IN SHEATHING AND ROOFING TO PROVIDE 1" MIN. CLEARANCE FROM EXHAUST PIPE.
-PROVDE HIGH-TEMP SILICONE ROOF PENETRATION BOOT AT EACH EXHAUST PIPE, WITH STAINLESS DRAWBAND AT TOP EDGE.
-SET BOOT IN CONTINUOUS BEAD OF SEALANT AND SECURE BOTTOM OF BOOT TO ROOF PANEL ONLY, WITH GASKETED FASTENERS SIZED TO AVOID PENETRATING ROOF UNDERLAYMENT OR AFIXING BOOT TO ROOF SHEATHING.
-PROVIDE FABRICATED METAL COVER OVER SILICONE BOOT, COLOR TO MATCH ROOF.

3

ALL WOOD TRUSSES, FRAMING, BLOCKING, AND FURRING SHALL BE FIRE-RETARDANT TREATED. WOOD IN CONTACT WITH MASONRY SHALL BE FIRE-RETARDANT TREATED AND PRESERVATIVE TREATED. SEE STRUCTURAL DRAWINGS.

4

D.1 D.2

BY	DATE
SAS	04/01/25
SAS	11/26/24
SAS	10/23/24
SAS	09/26/24
SAS	07/26/24

ISSUED FOR CONSTRUCTION
FOR BID
FOR BID
FOR PERMITTING
90% SUBMITTAL
REVISION

PLOT DATE: 04/01/2025

FINAL DESIGN - ISSUED FOR CONSTRUCTION

SAWYER, SHERWOOD & ASSOCIATES, P.C. REGISTERED ARCHITECTURAL CORPORATION 52349 NORTH CAROLINA WILMINGTON, NC

DOUGLAS K. SHERWOOD Registered Architect 10075 NORTH CAROLINA WILMINGTON, NC 4-1-25

SAWYER SHERWOOD & ASSOCIATE ARCHITECTURE
124 Market Street
Wilmington, NC 28401
910.762-0892
52a3.com

HIGHFILL
INFRASTRUCTURE
ENGINEERING,P.C.
3804 Park Avenue, Unit A
Wilmington, NC 28403
Tel 910-313-1516
www.hiepc.com
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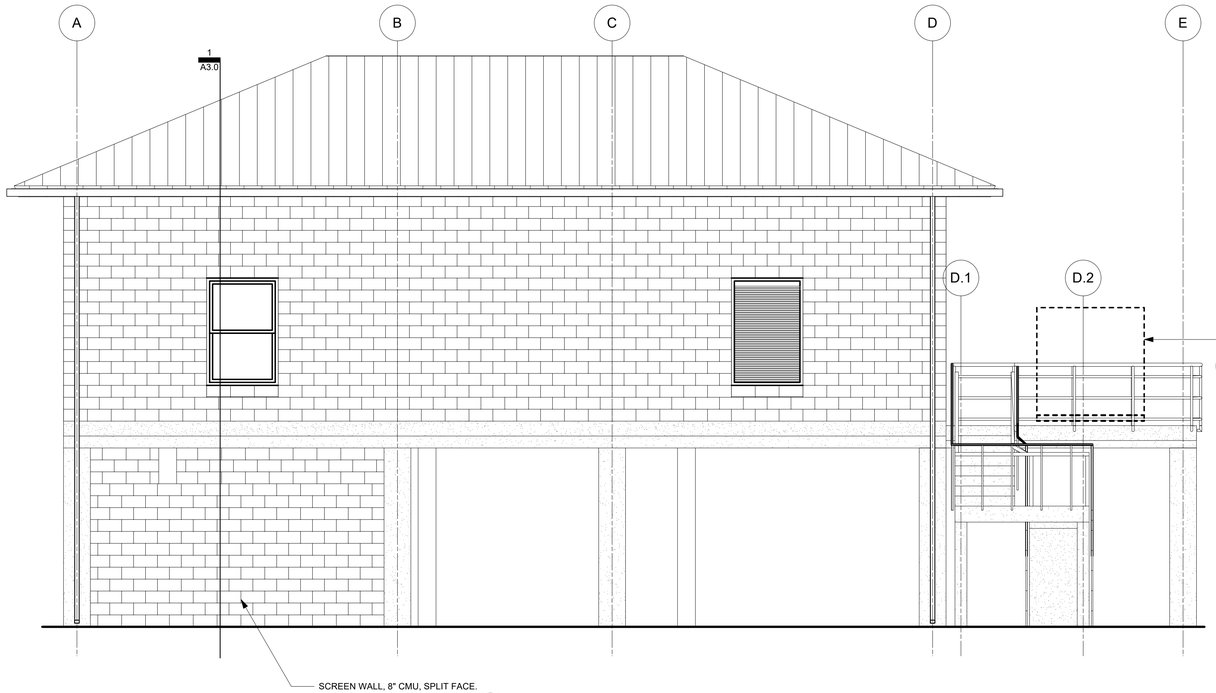
CAROLINA BEACH LAKE PUMP HOUSE #1 & 2 REPLACEMENT
460 S. LAKE PARK BLVD, CAROLINA BEACH, NC 28428

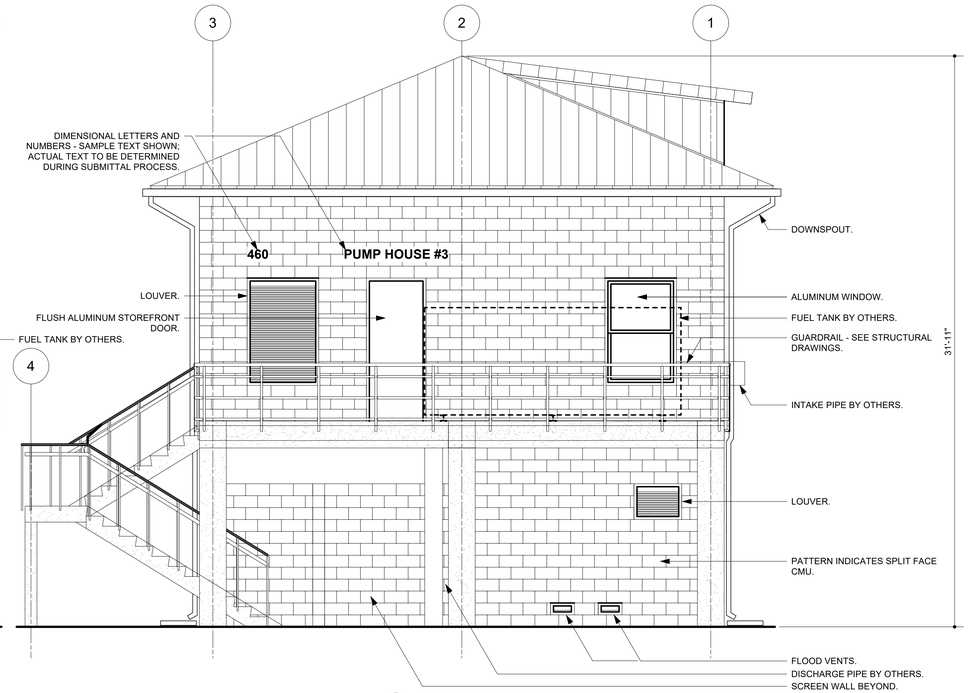
ROOF PLAN

PROJECT NO.
TCB2301

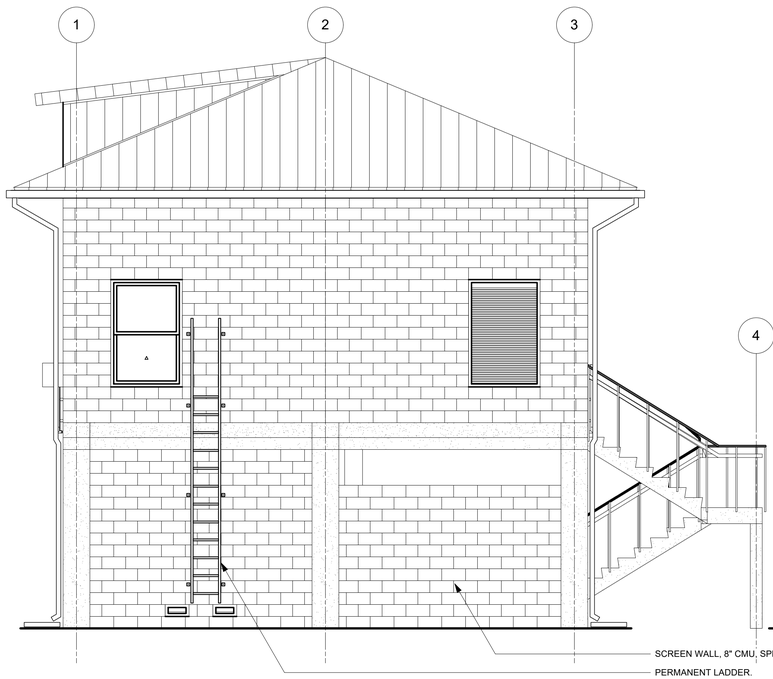
A1.2



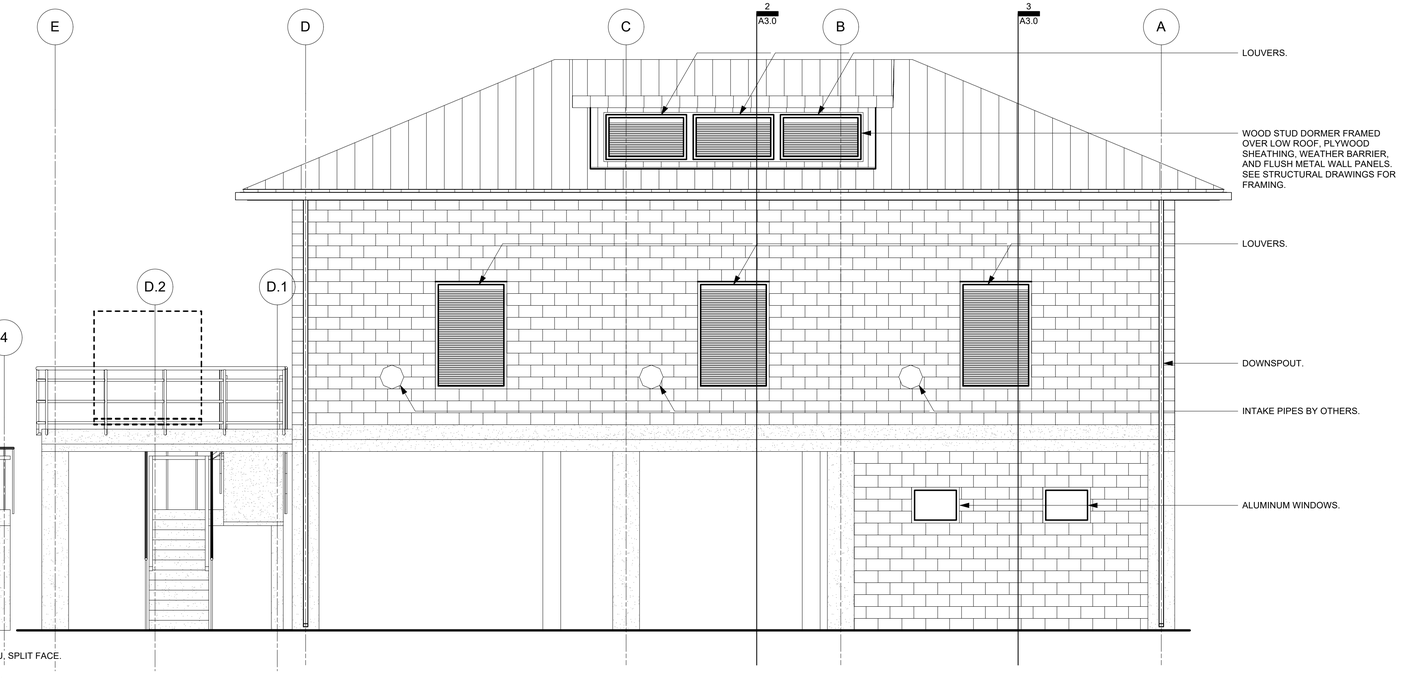
1 A2.0 **South Elevation**
Scale: 1/4" = 1'-0"



2 A2.0 **East Elevation**
Scale: 1/4" = 1'-0"



4 A2.0 **West Elevation**
Scale: 1/4" = 1'-0"



3 A2.0 **North Elevation**
Scale: 1/4" = 1'-0"

BY	DATE
SAS	04/01/25
SAS	11/26/24
SAS	10/23/24
SAS	09/26/24
SAS	07/26/24
SAS	

ISSUED FOR CONSTRUCTION
FOR BID
FOR BID
FOR PERMITTING
90% SUBMITTAL
REVISION

PLOT DATE: 04/01/2025

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DOUGLAS K. SHERWOOD — Registered Architect — 10075 — NORTH CAROLINA — WILMINGTON, NC — 4-1-25

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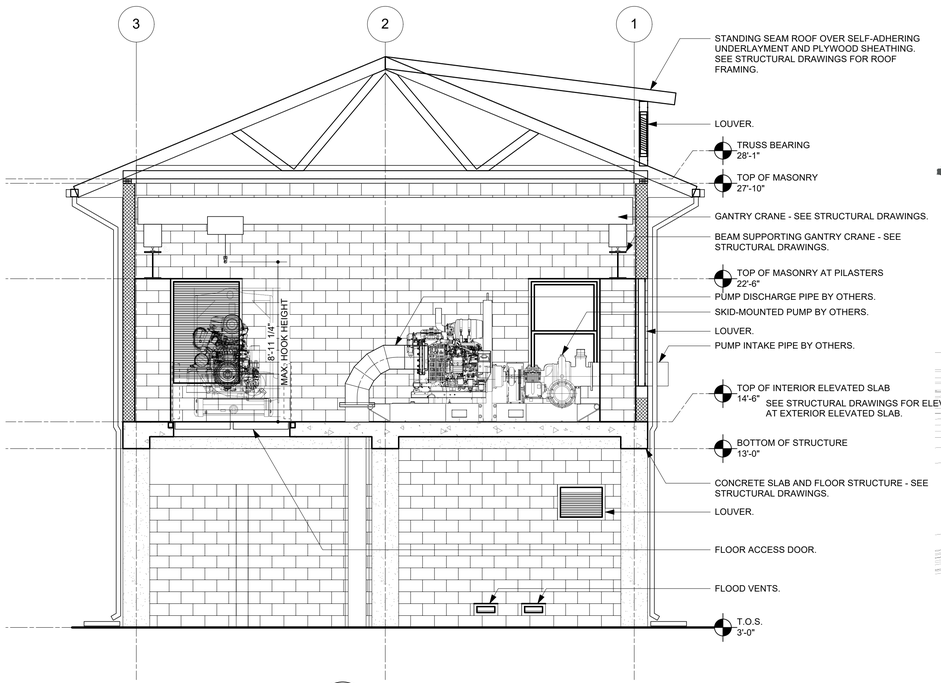
BUILDING ELEVATIONS

PROJECT NO.
TCB2301

A2.0



1 A2.1 Building Section
Scale: 1/4" = 1'-0"

2 A2.1 PERSPECTIVE LOOKING NORTHEAST
Scale: 3/8" = 1'-0"

3 A2.1 PERSPECTIVE LOOKING SOUTHWEST
Scale: 3/8" = 1'-0"

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SAS	09/26/24	FOR PERMITTING
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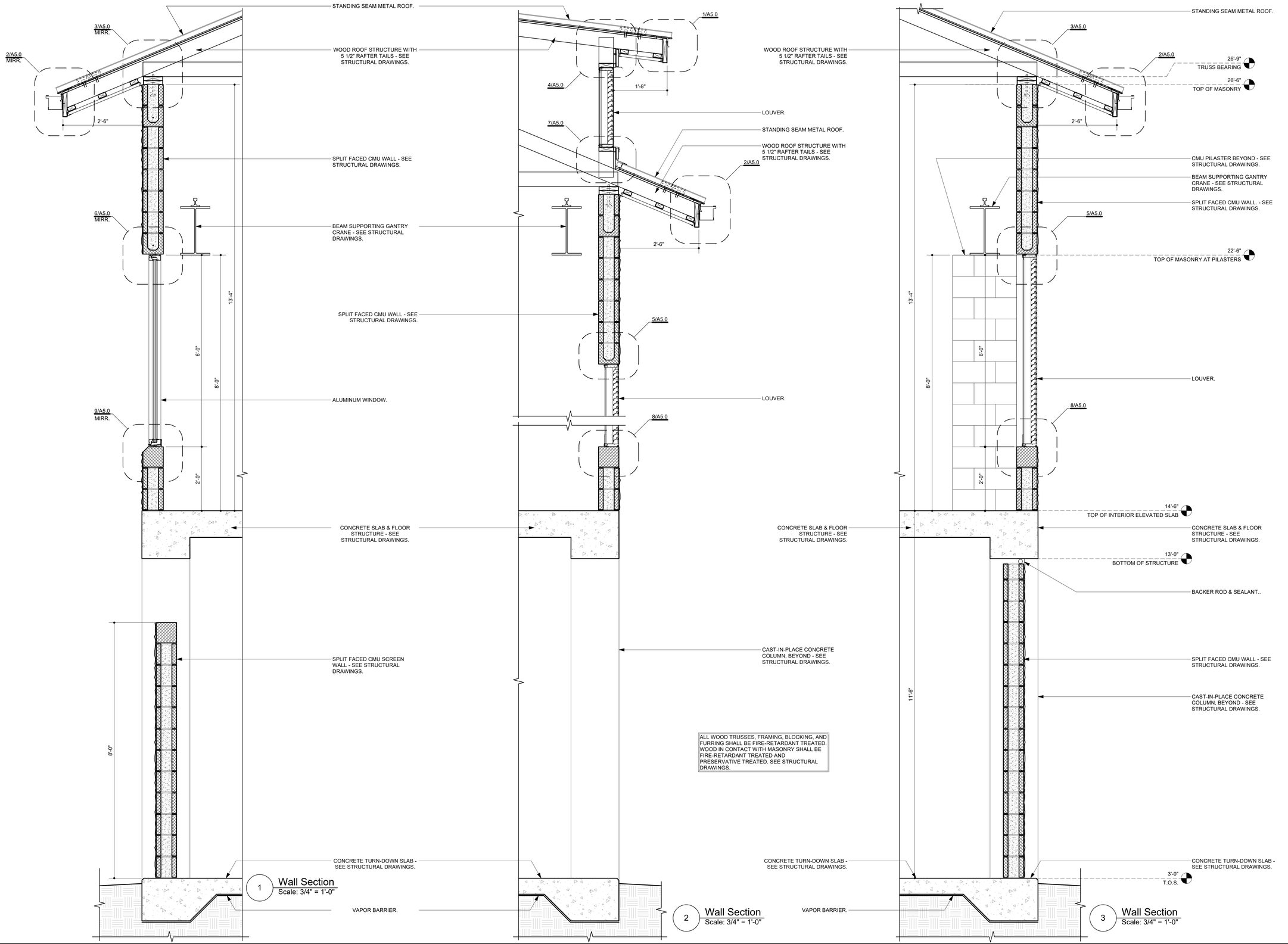
BUILDING SECTIONS & PERSPECTIVES

PROJECT NO.
TCB2301

A2.1



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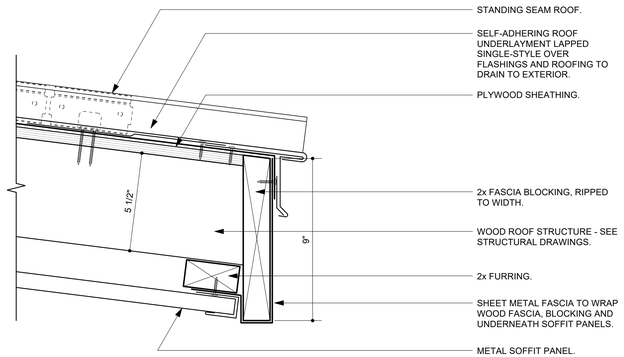
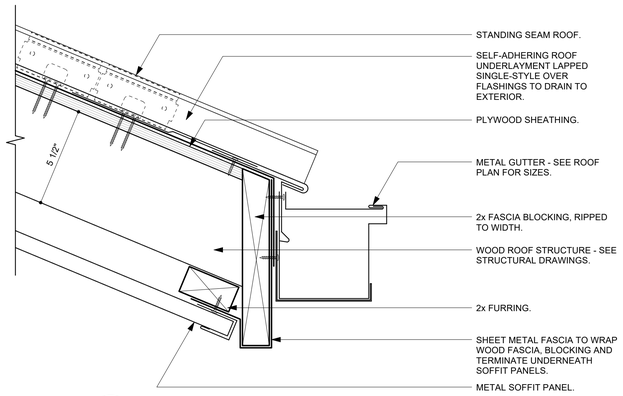
WALL SECTIONS

PROJECT NO.
TCB2301

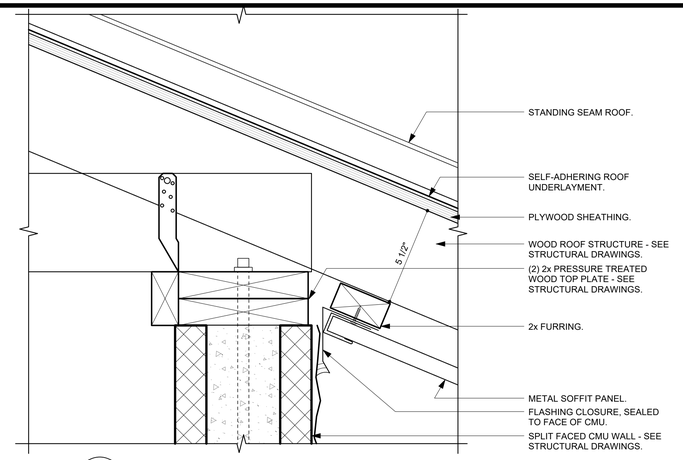
A3.0



1 A5.0 **Dormer Roof Eave Detail**
Scale: 3" = 1'-0"

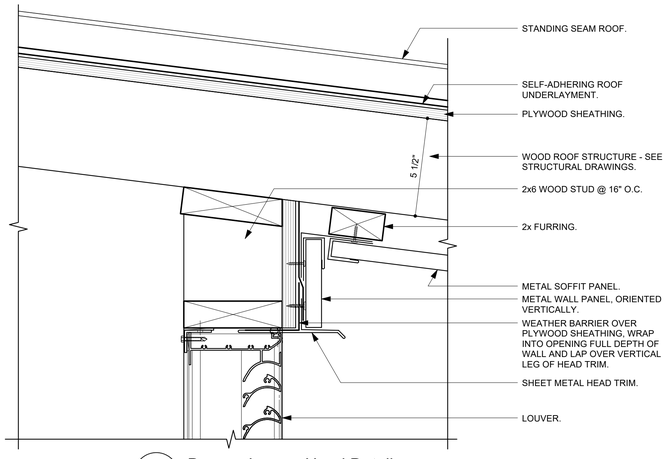


2 A5.0 **Roof Eave Detail**
Scale: 3" = 1'-0"

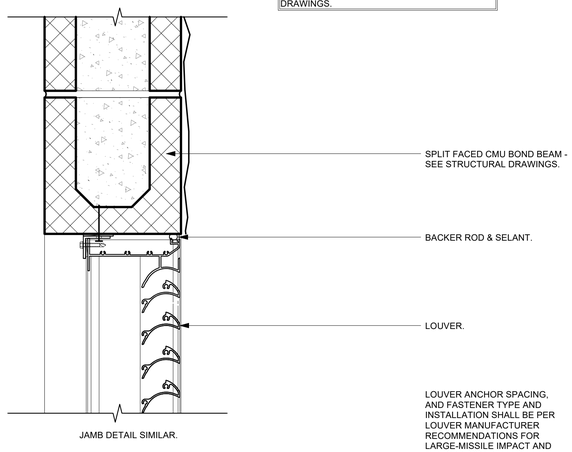


3 A5.0 **Split Faced CMU Wall to Soffit Detail**
Scale: 3" = 1'-0"

ALL WOOD TRUSSES, FRAMING, BLOCKING, AND FURRING SHALL BE FIRE-RETARDANT TREATED. WOOD IN CONTACT WITH MASONRY SHALL BE FIRE-RETARDANT TREATED AND PRESERVATIVE TREATED. SEE STRUCTURAL DRAWINGS.

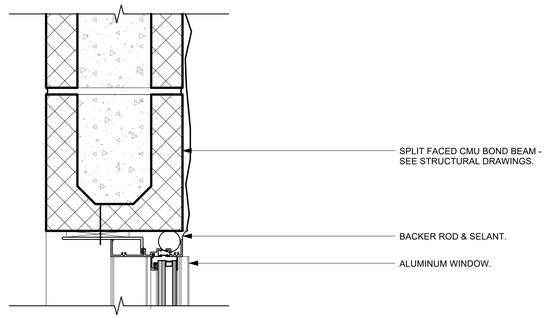


4 A5.0 **Dormer Louver Head Detail**
Scale: 3" = 1'-0"



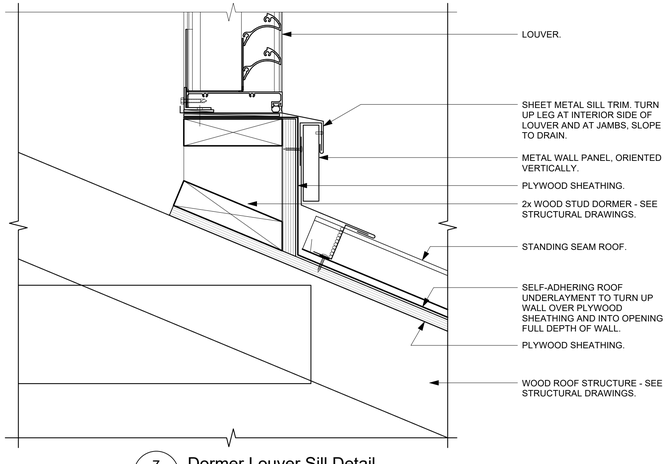
5 A5.0 **Louver Head Detail**
Scale: 3" = 1'-0"

LOUVER ANCHOR SPACING, AND FASTENER TYPE AND INSTALLATION SHALL BE PER LOUVER MANUFACTURER RECOMMENDATIONS FOR LARGE-MISSILE IMPACT AND WIND PRESSURE REQUIREMENTS.

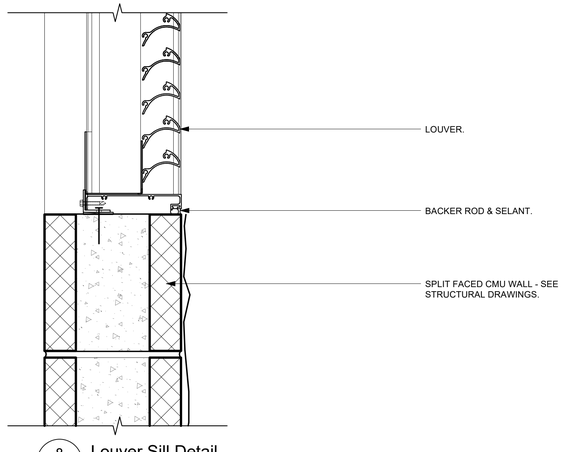


6 A5.0 **Window Head Detail**
Scale: 3" = 1'-0"

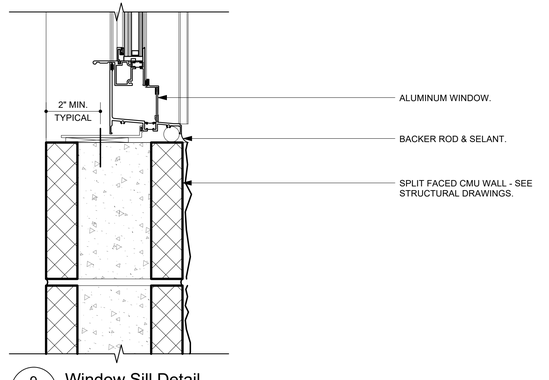
ALUMINUM WINDOW ANCHOR SPACING, AND FASTENER TYPE AND INSTALLATION SHALL BE PER WINDOW MANUFACTURER RECOMMENDATIONS FOR LARGE-MISSILE IMPACT AND WIND PRESSURE REQUIREMENTS.



7 A5.0 **Dormer Louver Sill Detail**
Scale: 3" = 1'-0"



8 A5.0 **Louver Sill Detail**
Scale: 3" = 1'-0"



9 A5.0 **Window Sill Detail**
Scale: 3" = 1'-0"

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DETAILS

PROJECT NO.
TCB2301

A5.0

STRUCTURAL NOTES:

GENERAL:

1. THESE STRUCTURES HAVE BEEN DESIGNED IN ACCORDANCE WITH THE PROVISION OF THE 2018 NORTH CAROLINA STATE BUILDING CODE & ASCE/SEI 7-10. FOR SPECIAL INSPECTION REQUIREMENTS AND PROGRAM SEE THE PROJECT MANUAL.

2. DESIGN GRAVITY LOADS:

	UNIFORM
SECOND FLOOR:	
LIVE LOADS:	125 PSF
GANTRY CRANE	5 TON CAPACITY (UNO)
DEAD LOAD:	15 PSF
PUMP	177 PSF
FUEL TANK	291 PSF

3. DESIGN WIND LOAD (ASCE/SEI 7-10):
   1. ULTIMATE DESIGN WIND SPEED, Vult = 160 MPH
   2. RISK CATEGORY: IV
   3. WIND EXPOSURE CATEGORY: C
   4. INTERNAL PRESSURE COEFFICIENT (GCpi): +/- 0.18

4. DESIGN SEISMIC INFORMATION (ASCE/SEI 7-10):
   1. RISK CATEGORY: IV
   2. MAPPED SPECTRAL RESPONSE COEFFICIENT, Ss = 0.224g
   3. MAPPED SPECTRAL RESPONSE COEFFICIENT, S1 = 0.093g
   4. SPECTRAL RESPONSE COEFFICIENT, Sds = 0.239g
   5. SPECTRAL RESPONSE COEFFICIENT, Sd1 = 0.149g
   6. SITE CLASS: D
   7. SEISMIC DESIGN CATEGORY: D
   8. SEISMIC IMPORTANCE FACTOR, Ie = 1.50
   9. MAIN LATERAL FORCE RESISTING SYSTEM: SPECIAL REINFORCED MASONRY SHEAR WALL, R = 5

5. NO PROVISIONS HAVE BEEN MADE FOR FUTURE HORIZONTAL OR VERTICAL EXPANSION.

6. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND SHOP DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR SHALL VERIFY THE REQUIREMENTS OF OTHER TRADES AS TO SLEEVES, CHASES, HANGERS, INSERTS, ANCHORS, HOLES AND ADDITIONAL ITEMS TO BE PLACED OR SET IN THE STRUCTURAL WORK.

7. FOR DIMENSIONS NOT SHOWN ON THE DRAWINGS, REFER TO THE ARCHITECTURAL DRAWINGS. SEE ARCHITECTURAL FOR VERIFICATION OF ALL WALL LOCATIONS AND DIMENSIONS.

8. STRUCTURAL FRAME AND MASONRY WALLS (LOAD BEARING AND NON-LOAD BEARING) SHALL BE BRACED BY CONTRACTOR AGAINST WIND, CONSTRUCTION LOADS, AND OTHER TEMP. FORCES UNTIL ERECTION IS COMPLETE.

9. NO OPENING SHALL BE MADE IN ANY STRUCTURAL MEMBER WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.

10. NO CHANGES IN SIZE OR DIMENSION OF STRUCTURAL MEMBERS SHALL BE MADE WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.

11. OPENINGS 1'-4" AND LESS ON A SIDE ARE GENERALLY NOT SHOWN ON THE STRUCTURAL DRAWINGS. REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS FOR SUCH OPENINGS.

12. THE CONTRACTOR IS RESPONSIBLE FOR LIMITING THE AMOUNT OF CONSTRUCTION LOAD IMPOSED UPON STRUCTURAL FRAMING. CONSTRUCTION LOADS SHALL NOT EXCEED THE DESIGN CAPACITY OF THE AT THE TIME THE LOADS ARE IMPOSED.

13. CONTRACTOR SHALL PROVIDE ALL LAYOUT REQUIRED TO CONSTRUCT HIS WORK.

14. UNLESS OTHERWISE NOTED, FIRE PROOFING METHODS AND MATERIALS FOR STRUCTURAL MEMBERS ARE NOT SHOWN ON STRUCTURAL DRAWINGS. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR FIRE RATING REQUIREMENTS, FIRE PROOFING METHODS AND MATERIALS.

15. DO NOT SCALE THESE DRAWINGS, USE DIMENSIONS.

16. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL SAFETY PRECAUTIONS AND REGULATIONS DURING THE WORK. THE ENGINEER WILL NOT ADVISE ON, OR ISSUE DIRECTION AS TO SAFETY PRECAUTIONS AND PROGRAMS.

17. THE STRUCTURAL DRAWINGS HEREIN REPRESENT THE FINISHED STRUCTURE. CONTRACTOR SHALL PROVIDE ALL TEMPORARY GUYING AND BRACING REQUIRED TO ERECT AND HOLD THE STRUCTURE IN PROPER ALIGNMENT UNTIL ALL STRUCTURAL WORK AND CONNECTIONS HAVE BEEN COMPLETED. THE INVESTIGATION, DESIGN, SAFETY, ADEQUACY AND INSPECTION OF ERECTION BRACING, SHORING, TEMPORARY SUPPORTS, ETC. IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

18. FUTURE LOADS: UNLESS SPECIFICALLY NOTED, THERE ARE NO PROVISIONS MADE FOR FUTURE FLOOR, ROOFS, OR OTHER LOADS.

19. SHOP DRAWINGS AND OTHER ITEMS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION. ALL SHOP DRAWINGS SHALL BE REVIEWED BY THE CONTRACTOR BEFORE SUBMITTAL. THE ENGINEER'S REVIEW IS TO BE FOR CONFORMANCE WITH THE DESIGN CONCEPT AND GENERAL COMPLIANCE WITH RELEVANT CONTRACT DOCUMENTS. THE ENGINEER'S REVIEW DOES NOT RELIEVE THE CONTRACTOR OF THE SOLE RESPONSIBILITY TO REVIEW, CHECK AND COORDINATE THE SHOP DRAWINGS PRIOR TO SUBMISSION. THE CONTRACTOR REMAINS SOLELY RESPONSIBLE FOR ERRORS AND OMISSIONS ASSOCIATED WITH THE PREPARATION OF SHOP DRAWINGS AS THEY PERTAIN TO MEMBER SIZES, DETAILS, DIMENSIONS, ETC.

20. NO STRUCTURAL MEMBER MAY BE CUT, NOTCHES OR OTHERWISE REDUCED IN STRENGTH WITHOUT WRITTEN DIRECTION FROM THE ENGINEER OF RECORD.

FOUNDATION

1. FOUNDATION & SLAB-ON-GRADE RECOMMENDATIONS, BASED ON GEOTECHNICAL REPORT ENTITLED "GEOTECHNICAL ENGINEERING REPORT", BY ECS SOUTHEAST, LLP PROJECT NO. 22:33775, DATED 10/04/23
   A. COLUMN /WALL FOUNDATIONS:

ALLOWABLE BEARING PRESSURE:	2,000 PSF
MODULUS OF SUBGRADE REACTION:	150 PCI
COEFFICIENT OF FRICTION:	0.45

2. REMOVE TOPSOIL, ORGANICS, SOFT CLAY, AND OTHER UNSUITABLE MATERIALS UNDER ALL FLOOR SLABS, FOOTINGS AND 10'-0" BEYOND BUILDING WALLS. BACKFILL AS REQUIRED WITH CLEAN SELECTED FILL, COMPACTED IN 8-INCH TO 10-INCH LIFTS TO A MINIMUM OF 95 PERCENT OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT IN ALL LAYERS UP TO THE UPPER ONE FOOT. FILL TO BE PLACED WITHIN 12 INCHES OF THE DESIGN SUBGRADE ELEVATION IS TO BE COMPACTED TO 98 PERCENT OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT. COMPACT UPPER 8-INCH TO 12-INCH OF EXISTING SUBGRADE TO 95 PERCENT.

3. AFTER STRIPPING, DENSIFY EXPOSED SANDS BY PROOFROLLING WITH A FULLY-LOADED TANDEM-AXLED DUMP TRUCK OR SIMILAR EQUIPMENT. ANY SOFT, OR UNSUITABLE SURFACE CONDITIONS, WHICH PUMPS OR RUTS EXCESSIVELY, SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION. THESE UNSUITABLE SURFACES SHALL BE UNDERCUT & REPLACED WITH GRANULAR BACKFILL SUCH AS #57 STONE.

4. CLEAN SELECT SAND FILL SHALL MEET UNIFIED SOIL CLASSIFICATION OF SP, SP-SM OR SP-SC AND SHALL HAVE A MINIMUM MODIFIED PROCTOR DRY DENSITY OF 100 PCF.

5. CONTRACTOR SHALL NOTIFY ENGINEER FOR GEOTECHNICAL INSPECTION OF SUBGRADE PRIOR TO POURING ANY CONCRETE.

6. BEARING CAPACITY SHALL BE VERIFIED BY A REGISTERED GEOTECHNICAL ENGINEER PRIOR TO PLACING CONCRETE. WRITTEN REPORTS OF FINDINGS SHALL BE SUBMITTED TO THE ARCHITECT.

7. CONTRACTOR SHALL DEWATER AS NECESSARY PRIOR TO EXCAVATING. SEE GEOTECHNICAL REPORT FOR FURTHER RECOMMENDATIONS IN MAINTAINING WATER LEVEL BELOW EXCAVATION.

8. CONTRACTOR SHALL PROTECT ALL FOUNDATION EXCAVATIONS FROM DETERIORATION DUE TO EXPOSURE TO MOISTURE UNTIL FOUNDATIONS AND BACK FILLING HAVE BEEN COMPLETED.

CONCRETE

1. ALL CONCRETE DESIGNED IN ACCORDANCE TO ACI 318-14

2. CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS:
   FOUNDATIONS & SLAB-ON-GRADE: 4,000 PSI NORMAL WT.

3. REINFORCING STEEL: ASTM A775.

4. WELDED WIRE REINFORCEMENT: ASTM A1060 (FLAT SHEETS).

5. MINIMUM CLEAR CONCRETE COVER ON REINFORCING (PER ACI 318-14)

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH:	3 INCHES
CONCRETE EXPOSED TO EARTH OR WEATHER:	2 INCHES (U.N.O.)
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:	
SLABS WALLS JOISTS:	3/4 INCHES (U.N.O)
BEAMS, COLUMNS:	1 1/2 INCHES

6. DOWELS AND CONTINUOUS REINFORCING SHALL HAVE A MINIMUM LAP AS SHOWN ON S-0.1, BUT SHALL NOT BE LESS THAN 24 INCHES.

7. PROVIDE AIR ENTRAINMENT OF 4 TO 6 PERCENT.

8. CONCRETE FINISH: FLOORS - BROOM FINISH; WALLS - WOOD FLOAT; SEE SPECIFICATIONS.

9. CONCRETE SHALL BE WET CURED FOR 7 DAYS. USE OF A WET CURING COMPOUND SHALL BE REVIEWED AND APPROVED BY THE ENGINEER.

10. EXPANSION JOINT FILLER BOND BREAKER: SEE SPECIFICATIONS.

11. SHEET VAPOR BARRIER: SEE SPECIFICATIONS.

12. WATER SHOULD NOT BE ADDED TO CONCRETE AT THE JOB SITE BEYOND THE MIX DESIGN AMOUNT. ADDITIONAL WATER SERIOUSLY REDUCES CONCRETE STRENGTH AND INCREASES SHRINKAGE. REQUEST A "HIGH RANGE WATER REDUCER" (SUPERPLASTICIZER) FOR MORE WORKABLE CONCRETE.

13. CONTRACTOR SHALL CONFORM TO ALL APPLICABLE REQUIREMENTS OF ACI 305 "HOT WEATHER CONCRETING" AND ACI 306 "RECOMMENDED PRACTICE FOR COLD WEATHER CONCRETING".

14. UNLESS OTHERWISE NOTED, ALL DETAILING, FABRICATION AND PLACING OF REINFORCING STEEL SHALL CONFORM TO THE MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES-ACI 315.

15. ALL SPLICES SHALL BE CLASS "B" TENSION LAP SPLICES UNLESS OTHERWISE NOTED. REFERENCE ACI AND SCHEDULE ON SHEET S0.01.

16. WELDED WIRE REINFORCEMENT SHALL CONFORM TO ASTM A1064, LATEST REVISION. FURNISH IN FLATSHEETS OR MATS. ROLLS WILL NOT BE ALLOWED.

17. WELDED WIRE REINFORCING SHALL LAP 2 FULL MESHES AND BE SECURELY WIRED AT EACH SIDE AND END.

18. REINFORCING BARS AND WELDED WIRE REINFORCEMENT SHALL BE SUPPORTED WITH STANDARD BAR CHAIRS AND SPACERS AS REQUIRED TO MAINTAIN THE CONCRETE PROTECTION SPECIFIED.

19. UNLESS OTHERWISE NOTED, CHAMFER ALL EXPOSED CONCRETE CORNERS WITH A 3/4" x 45 DEGREE CHAMFER.

20. STEEL EMBEDMENTS SHOWN SHALL BE A36 STEEL AND SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A775.

21. REFER TO DRAWINGS OF OTHER TRADES AND VENDOR DRAWINGS FOR PENETRATIONS IN SLABS REQUIRING SLEEVES, EMBEDMENTS, AND RECESSED ITEMS NOT SHOWN.

22. CONTRACTOR SHALL VERIFY ALL SIZES AND LOCATIONS OF ALL MECHANICAL AND ELECTRICAL OPENINGS AND EQUIPMENT PADS WITH MECHANICAL AND ELECTRICAL EQUIPMENT DETAILS AND SHOP DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL OPENINGS AND SLEEVES FOR PROPER DISTRIBUTION FOR ALL UTILITY LINES THROUGHOUT THE BUILDING.

23. UNLESS NOTED OTHERWISE, SLABS SHALL BE FINISHED TO THE TOLERANCES IN ACCORDANCE WITH ASTM E1155 AS SHOWN IN THE SPECIFICATIONS.

24. ADHESIVE ANCHORING SYSTEM:
   A. MASONRY (HOLLOW): ADHESIVE ANCHORS INTO MASONRY SHALL BE THE HILTI HIT HY-70 INJECTION SYSTEM OR APPROVED EQUIVALENT USING GALVANIZED HILTI HAS RODS OR CARBON STEEL GALVANIZED THREADED RODS (ASTM F1554, 55 KSI) WITH SCREENS.
   B. CONCRETE & SOLID GROUTED MASONRY: ADHESIVE ANCHORS INTO CONCRETE SHALL BE THE HILTI HIT-HY-200 OR HILTI HIT-RE500 V3 INJECTABLE ADHESIVE ANCHORING SYSTEM OR APPROVED EQUIVALENT USING GALVANIZED HILTI HAS RODS OR CARBON STEEL GALVANIZED THREADED RODS (ASTM F1554, 55 KSI).
   C. ALL ADHESIVE ANCHORS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

26. PROVIDE 2 - #4 BARS X 3'-0" LONG DIAGONAL IN THE TOP FACE OF SLAB ON GRADE AT ALL RE-ENTRANT CORNERS. PLACE 1" CLEAR OF CORNER.

27. EXTEND REINFORCING BARS PAST RE-ENTRANT CORNERS A MINIMUM OF TENSION DEVELOPMENT LENGTH (LD).

28. PROVIDE 2- #4 BARS IN TOP OF WALL FOOTINGS SUPPORTING MASONRY WALLS WHERE OPENINGS OF DOORS OCCUR. EXTEND BARS 2'-0" BEYOND EDGE OF OPENINGS.

29. SAW CUT ALL SLABS ON GRADE AS SOON AS POSSIBLE AFTER FINISHING OPERATIONS HAVE BEEN COMPLETED WITHOUT DISLODGING AGGREGATES. CONSTRUCTION JOINTS MAY BE SUBSTITUTED FOR SAW CUT JOINTS.

30. LOCALLY DEPRESS BOTTOM OF FOOTINGS AS REQUIRED AT ANCHOR BOLTS TO PROVIDE 3 INCH MINIMUM COVER TO BOTTOM OF ANCHOR BOLTS.

31. REFER TO ELECTRICAL DRAWINGS FOR GROUNDING DETAILS.

STRUCTURAL MASONRY:

1. ALL MASONRY WALLS ARE CONSIDERED STRUCTURAL MASONRY.

2. COMPRESSIVE STRENGTH OF MASONRY UNITS:
   A. CONCRETE UNITS: (NORMAL WEIGHT) ASTM C90 TYPE II, f'm = 3000 PSI (MIN.).
      - PROVIDE INTEGRAL WATER REPELLANT FOR CMU'S AND MORTAR, WHEN TESTED ACCORDING TO ASTM E514

3. MASONRY GROUT: ASTM C476 GROUT, f'm = 3,000 psi, COARSE TYPE:"S" SLUMP: 8" TO 11".

4. PROVIDE FULL HEIGHT VERTICAL BARS OF SIZE SHOWN ON SECTION, EXTENDING FROM TOP OF SLAB/TOP OF EXISTING GROUT FILL TO THE TOP OF THE WALL WITH A STANDARD 90° HOOK (9") INTO THE NEW UPPER BOND BEAM AND INTO FOOTING. PROVIDE SAME SIZE VERTICAL BARS AT THE FOLLOWING LOCATIONS:
   A. TWO (2) ADD'L BARS WITHIN 4" OF ALL WALL CORNERS & CONTROL JOINTS.
   B. TWO (2) ADD'L BARS WITHIN 16" MAX OF EACH SIDE OF ALL WALL OPENINGS.
   C. TWO (2) ADD'L BARS WITHIN 8" MAX. OF ALL WALL ENDS.
   D. BARS AT SPACING OR QUANTITY AS SHOWN ON PLANS.

5. FILL ALL CORES CONTAINING REINFORCEMENT WITH MASONRY GROUT.

6. PIPE SLEEVES, MISCELLANEOUS OPENINGS, ETC., NOT SHOWN SHALL BE SIZED AND LOCATED AS NOTED ON DRAWINGS BY OTHER DISCIPLINES. COORDINATE ALL REINFORCING FOR ALL OPENINGS PRIOR TO CONSTRUCTION.

7. ALL MASONRY MATERIALS, CONSTRUCTION, INSPECTION, AND TESTING SHALL CONFORM TO THE NORTH CAROLINA STATE BUILDING CODE, BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (ACI 530-05/ASCE 5-13/TMS 402-13), AND SPECIFICATION FOR MASONRY STRUCTURES (ACI 530.1-13/ASCE 6-13/ TMS 602-13).

8. LAP SPLICES FOR BARS SHALL BE 50 BAR DIAMETERS MINIMUM.

9. PLACE GROUT IN LIFTS NOT EXCEEDING 5 FEET.

10. BOND BEAM REINFORCEMENT AND HORIZONTAL WALL REINFORCEMENT SHALL BE CONTINUOUS AT CORNERS. PROVIDE CORNER REINFORCEMENT TO LAP WITH TYPICAL REINFORCEMENT.

11. HORIZONTAL MASONRY REINFORCING, ASTM A580, TYPE 316:
   A. WIRE SIZE FOR SIDE RODS: 3/16-INCH DIAMETER.
   B. WIRE SIZE FOR CROSS RODS: 9 GA
   C. SPACING OF CROSS RODS NOT MORE THAN 16 INCHES ON CENTER.
   D. PROVIDE BUTT-WELDED, LADDER-BOX REINFORCING.

STRUCTURAL ABBREVIATIONS:

@	AT
>	GREATER THAN
<	LESS THAN
=	EQUALS
+/-	PLUS OR MINUS
AB	ANCHOR BOLT
ADDL	ADDITIONAL
ALT	ALTERNATE
ALUM	ALUMINUM
APPD	APPROVED
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
BF	BOTTOM FACE
BLDG	BUILDING
BM	BEAM
B.O.	BOTTOM OF
BOS	BOTTOM OF STEEL
BOSD	BOTTOM OF STEEL DECK
BOT	BOTTOM
BP	BASE PLATE
BRCG	BRACING
BRDG	BRIDGING
BRG	BEARING
C TO C	CENTER TO CENTER
CG	CENTER OF GRAVITY
CIP	CAST-IN-PLACE
CTLJ	CONTROL / CONTRACTION JOINT
CJP	COMPLETE JOINT PENETRATION
CL	CENTER LINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
C.O.	CONTRACTING OFFICER
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CTR	CENTER
D	DEPTH
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DL	DEAD LOAD
DN	DOWN
DWG	DRAWING
DWL	DOWEL
EA	EACH
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
EMBED	EMBEDMENT
EOD	EDGE OF DECK
EOS	EDGE OF SLAB
EQ	EQUAL
EQL SP	EQUALLY SPACED
EQUIP	EQUIPMENT
EW	EACH WAY
EXIST	EXISTING
EXT	EXTERIOR
FD	FLOOR DRAIN
FDN	FOUNDATION
FF	FINISHED FLOOR
FG	FINISHED GRADE
FL	FLOOR
FLG	FLANGE
FS	FAR SIDE
FT	FEET
FTG	FOOTING
GA	GAGE OR GAUGE
GALV	GALVANIZED
GB	GRADE BEAM
GDRL	GUARDRAIL
GR	GRADE
GRTG	GRATING

HAS	HEADED ANCHOR STUD
HDRL	HANDRAIL
HDG	HOT DIPPED GALVANIZED
HK	HOOK
HORIZ	HORIZONTAL
HP	HIGH POINT
HSS	HOLLOW STRUCTURAL SECTION
HT	HEIGHT
I.D.	INSIDE DIAMETER
I.F.	INSIDE FACE
IN	INCH
INFO	INFORMATION
INT	INTERIOR
JST	JOIST
JT	JOINT
K	KIPS
KSF	KIPS PER SQUARE FOOT
KSI	KIPS PER SQUARE INCH
L	LENGTH
LBS	POUNDS
LF	LINEAR FEET
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LNTL	LINTEL
LONG	LONGITUDINAL
LP	LOW POINT
LWT	LIGHTWEIGHT
MAS	MASONRY
MAX	MAXIMUM
MB	MACHINE BOLTS
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
mm	MILLIMETER(S)
MTL	METAL
MWFRS	MAIN WIND FORCE RESISTING SYSTEM
N/A	NOT APPLICABLE
NO.	NUMBER
NS	NEAR SIDE
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
O.F.	OUTSIDE FACE
OH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
OSL	OUTSTANDING LEG
PAF	POWDER ACTUATED FASTENER
PC	PRECAST
PCF	POUNDS PER CUBIC FOOT
PJF	PREMOLDED JOINT FILLER
PL	PLATE
PLF	POUNDS PER LINEAR FOOT
PROJ	PROJECTION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
QTY	QUANTITY
R	RISER
RAD	RADIUS
RC	REINFORCED CONCRETE
RD	ROOF DRAIN
RDAA	REBAR DOWEL ADHESIVE ANCHOR
RECT	RECTANGULAR
REF	REFER TO
REINF	REINFORCEMENT
REQD	REQUIRED

SC	SLIP-CRITCAL
SCHED	SCHEDULE
SECT	SECTION
SHT	SHEET SIMILAR
SIM	SLAB ON GRADE
SOG	SPACING
SPA	SPECIFICATION
SPEC	SQUARE STANDARD
SQ STD	STRINGER
STGR	STIFFENER
STIF	STIRRUP
STIR	STEEL
STL	STRUCTURAL
STRUCT	SYMMETRICAL
SYM	STAINLESS STEEL
SS	
	TREAD
T	TOP AND BOTTOM
T&B	TEMPERATURE
TEMP	TOP FACE
TF	THICKNESS
THK	TOP OF
T.O.	TOP OF CONCRETE
TOC	TOP OF FOOTING
TOF	TOP OF STEEL
TOS	TOP OF WALL
TOW	TRANSVERSE
TRANS	TYPICAL
TYP	
	UNLESS NOTES
UNO	OTHERWISE
VERT	VERTICAL
W/	WITH
W/O	WITHOUT
WL	WIND LOAD
WP	WORK POINT
WT	WEIGHT
WWF	WELDED WIRE FABRIC

DATE	REVISION	BY
04/01/25	FOR CONSTRUCTION	MFW
10/25/24	FOR BID	MFW
09/13/24	FOR PERMITTING	MFW
07/27/24	90% SUBMITTAL	MFW
04/12/24	60% DESIGN SUBMITTAL	MFW

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3809 Peachtree Avenue, Suite 102
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Phone: (910) 397-2929
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3804 Park Avenue, Unit A
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CAROLINA BEACH, NC

STRUCTURAL NOTES & ABBREVIATIONS

PROJECT NO. TCB2301

S0.0

REINFORCING STEEL:

1. ALL REINFORCING STEEL SHALL BE DETAILED, FABRICATED, AND PLACED IN ACCORDANCE WITH THE FOLLOWING, UNLESS OTHERWISE SPECIFIED:

   ACI SP-66; ACI DETAILING MANUAL - 2004
   CRSI MSP-1; MANUAL OF STANDARD PRACTICE, 28th EDITION, 2009

2. TYPICAL REINFORCING STEEL:

   DEFORMED BARS (NON-WELDABLE) ---------------------------ASTM A615, GRADE 60
   DEFORMED BARS (WELDABLE) ----------------------------------ASTM A706, GRADE 60

3. ALL REINFORCED BAR HOOKS INDICATED ON THE DRAWINGS SHALL BE ACI STANDARD HOOKS CONFORMING TO THE BEND DIMENSION REQUIREMENTS OF ACI 318, UNESS SPECIFICALLY NOTED OTHERWISE.

4. REINFORCING BARS SHALL BE COLD BENT. BARS EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT, EXCEPT WHEN SPECIFICALLY INDICATED ON THE DRAWINGS.

5. THE CONTRACTOR SHALL NOT CUT REINFORCEMENT UNLESS INDICATED BY SECTION OR DETAIL. AT LOCATIONS OF CONFLICT, SPREAD THE REINFORCEMENT TO ACCOMMODATE PLACEMENT. ADD ADDITIONAL BARS IF NECESSARY TO MAINTAIN SPACING REQUIREMENTS.

6. ALL WELDED REINFORCING SHALL BE IN ACCORDANCE WITH AWS D1.4. TACK WELDING IS NOT PERMITTED.

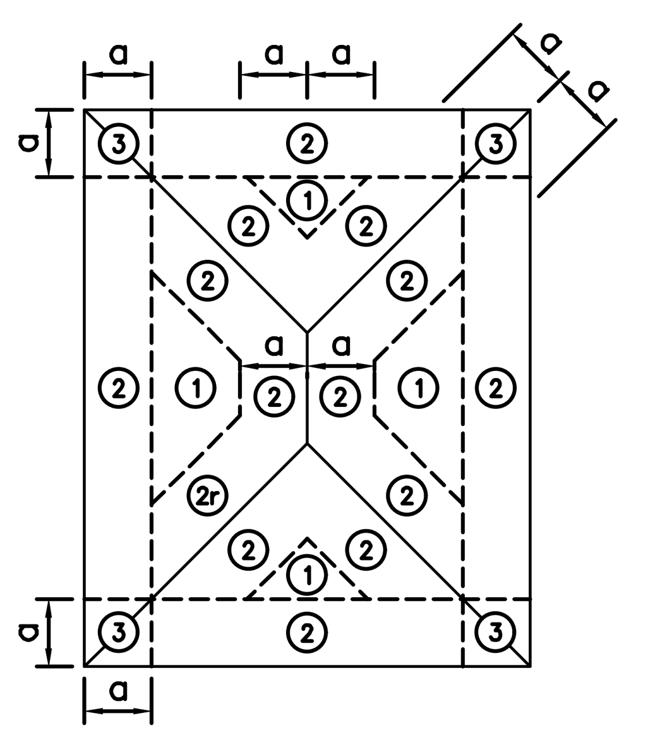
7. #11 AND SMALLER BARS MAY BE SPLICED USING MECHANICAL CONNECTIONS OR CONTACT LAP SPLICES. BAR LAPS SHALL BE SECURELY WIRED TOGETHER.

8. TENSION DEVELOPMENT AND REINFORCING BAR LAP SPLICES SHALL BE IN ACCORDANCE WITH THE FOLLOWING TABLES, UNLESS NOTED OTHERWISE. PROVIDE BENT CORNER BARS TO MATCH AND LAP WITH HORIZONTAL BARS AT CORNERS AND INTERSECTIONS OF FOOTINGS AND WALLS. PROVIDE CONTACT LAP SPLICES.

REBAR LAP SCHEDULE

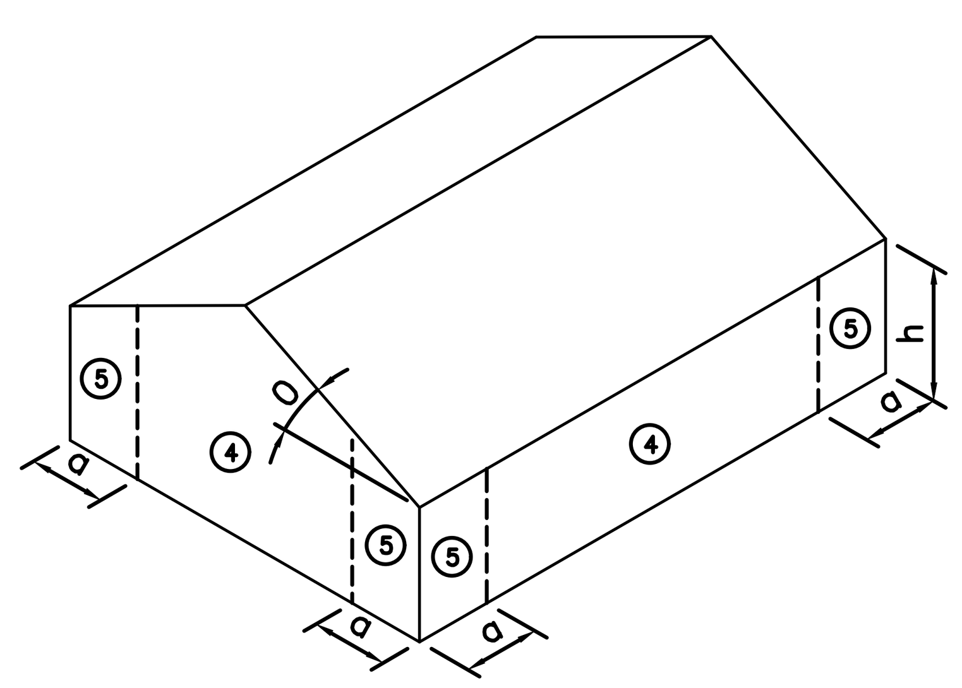
f 'c = 4,000 PSI (EPOXY - COATED BARS)				
	TENSION DEVELOPMENT		CLASS "B" LAP SPLICE	
BAR SIZE	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS
#3	19	15	24	19
#4	25	19	32	25
#5	31	24	40	31
#6	37	29	48	37
#7	54	42	70	54
#8	62	48	80	62
#9	70	54	91	70
#10	79	61	102	79
	ALL LENGTHS ARE IN INCHES			

NOTES:
A. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW.
B. REINFORCING BAR LENGTHS ARE BASED ON NORMAL-WEIGHT CONCRETE. REFER TO TENSION DEVELOPMENT VALUES FOR CLASS "A" LAP SPLICE LENGTHS.
C. WHEN REINFORCING BAR SPACING IS LESS THAN 2 db FOR BEAMS AND COLUMNS OR 3 db FOR ALL OTHER CONCRETE ELEMENTS, LENGTHS SHALL BE MULTIPLIED BY A FACTOR OF 1.5. (db = REINFORCING BAR DIAMETER).



ROOF PRESSURE DIAGRAM

a = 3'-0"
h = 25'-10"



WALL PRESSURE DIAGRAM

ZONE	PRESSURE (ASCE 7-10)	
1	+32.9,	-67.3 PSF
2	+32.9,	-94.7 PSF
3	+32.9,	-94.7 PSF
4	+60.4,	-67.3 PSF
5	+60.4,	-67.3 PSF

	ZONE	OVERHANG PRESSURE
OVERHANG:	2	-151.0 PSF
OVERHANG:	3	-151.0 PSF

WIND LOADING: COMPONENTS & CLADDING

(NEGATIVE INDICATES PRESSURE ACTING AWAY FROM THE BUILDING SURFACE)

WOOD TRUSSES:

1. FRAMING LUMBER SHALL BE MIXED SOUTHERN PINE, NO. 1 GRADE.

2. ALL TRUSS JOINT CONNECTIONS SHALL BE MADE USING FLEXIBLE CONNECTIONS OF SHEAR PLATES, AND IN ACCORDANCE WITH THE TRUSS PLATE INSTITUTE.

3. ALL WOOD TRUSSES SHALL BE DESIGNED IN ACCORDANCE WITH THE 2018 INTERNATIONAL BUILDING CODE FOR THE FOLLOWING LOADS AS NOTED.

   ROOF
   LIVE LOAD.. 20 PSF
   TOP CHORD DEAD LOAD.................................... 15 PSF
   BOTTOM CHORD DEAD LOAD .... 10 PSF
   SNOW DRIFT LOAD .... PER ASCE 7-10

4. SEE PLANS AND APPROPRIATE DETAILS FOR TRUSSES SUPPORTING ADDITIONAL LOADS.

5. DEAD LOADS INDICATED ARE IN ADDITION TO THE WEIGHT OF THE TRUSSES.

6. MAXIMUM DEFLECTION OF ROOF TRUSSES SHALL BE L/240 FOR DL+LL AND L/360 FOR LL.

7. TRUSSES SHALL BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF NORTH CAROLINA AND EMPLOYED FULL TIME BY THE TRUSS MANUFACTURER. SUBMIT SEALED CALCULATIONS AND SHOP DRAWINGS FOR REVIEW PRIOR TO TRUSS FABRICATION. SHOP DRAWINGS SHALL INDICATE ALL BRACING REQUIRED FOR ERECTION AND SHALL SHOW PERMANENT BRACING.

8. PROVIDE SIMPSON STRONG-TIE CONNECTIONS OR APPROVED EQUIVALENT. SHOW ALL CONNECTION MATERIAL ON SHOP DRAWINGS. DESIGN OF TRUSS CONNECTIONS SHALL BE BY TRUSS MANUFACTURER.

9. BOLT HOLES SHALL BE CAREFULLY CENTERED AND DRILLED NOT MORE THAT 1/16" LARGER THAT THE BOLT DIAMETER. BOLTED CONNECTIONS SHALL BE SNUG TIGHT BUT AVOID CRUSHING WOOD UNDER WASHERS.

10. WOOD TRUSSES ALONG A VERTICAL PLANE OF THE BUILDING SHALL BE CONTINUOUS. TRUSSES MAY BE SPLICED FOR SHIPPING PURPOSES AND CONNECTED IN THE FIELD WITH METAL CONNECTOR PLATES.

11. SPECIAL LOADS FROM MECHANICAL/PLUMBING OR OTHER EQUIPMENT HAVE NOT BEEN CONSIDERED AND SHALL BE COORDINATED BY THE TRUSS DESIGNER. TRUSSES SUPPORTING THESE SPECIAL LOADS SHALL BE DESIGNED FOR THESE LOADS IN ADDITION TO THE TYPICAL UNIFORM LOADS.

12. CONCENTRATED LOADS SHALL BE SUPPORTED AT PANEL POINTS ONLY.

13. MINIMUM TRUSS CHORDS SIZE SHALL BE 2x4.

14. ALL HARDWARE REQUIRED FOR TRUSS-TO-TRUSS CONNECTIONS SHALL BE DESIGNED AND SPECIFIED BY THE REGISTERED SPECIALTY TRUSS DESIGN ENGINEER AND SUBMITTED FOR REVIEW BY THE STRUCTURAL ENGINEER OF RECORD.

15. GENERAL CONTRACTOR SHALL NOT CUT OR ALTER ANY TRUSS MEMBER.

16. PRE-ENGINEERED WOOD TRUSSES SHALL BE BRACED IN ACCORDANCE WITH TRUSS PLATE INSTITUTE'S "HANDLING, INSTALLING AND BRACING METAL PLATE CONNECTED WOOD TRUSSES, HIB-91".

17. ALL WOOD IN CONTACT WITH CONCRETE, OR MASONRY, OR SOIL, EXPOSED TO WEATHER, OR AT OTHER LOCATIONS AS SHOWN ON STRUCTURAL DRAWINGS, SHALL BE PROTECTED OR PRESSURE TREATED IN ACCORDANCE WITH AWPA REQUIREMENTS. PRESSURE TREATMENT APPROPRIATE FOR LUMBER IN CONTACT WITH SOIL SHALL BE PROVIDED WHERE APPLICABLE.

18. WALL STUDS SHALL BE CAPPED WITH A DOUBLE PLATE, INSTALLED TO PROVIDE OVERLAPPING AT CORNERS AND INTERSECTIONS WITH BEARING PARTITIONS.

19. PLYWOOD FLOOR, WALL AND ROOF SHEATHING ARE DESIGNED AS DIAPHRAGMS AND SHALL COMPLY WITH 2018 INTERNATIONAL BUILDING CODE. UNLESS SHOWN OTHERWISE SPAN RATED PANELS SHALL BE FASTENED TO NOMINAL 2X SOUTHERN PINE FRAMING SPACED UP TO 24" 0C IN ACCORDANCE WITH THE FOLLOWING:

    PANELS UP TO 1/2" THICK: 8d NAILS AT 6" OC ALONG SUPPORTED PANEL EDGE, 6" OC ELSEWHERE.
    PANELS UP TO 5/8" THICK: IOd NAILS AT 6" OC ALONG SUPPORTED PANEL EDGE, 6" OC ELSEWHERE.
    PANELS UP TO 3/4" THICK: I2d NAILS AT 6" OC ALONG SUPPORTED PANEL EDGE, 6" OC ELSEWHERE.

    ROOF AND FLOOR SHEATHING SHALL BE INSTALLED LONG DIMENSION PERPENDICULAR TO FRAMING AND END JOINTS SHALL BE STAGGERED.

20. NAILING, JOIST BLOCKING, AND RAFTER BLOCKING SHALL MEET THE MINIMUM REQUIREMENTS OF 2018 INTERNATIONAL BUILDING CODE UNLESS MORE STRINGENT REQUIREMENTS ARE INDICATED ON THE PLANS.

21. ALL WOOD TRUSSES SHALL BE FIRE-RETARDANT. TRUSSES SHALL CONFORM TO ASTM D3201, D5664, D6841, & E84.

22. ALL STEEL TRUSS PLATES TO BE ASTM A240, TYPE 304.

STRUCTURAL STEEL NOTES:

1. UNLESS OTHERWISE NOTED, STRUCTURAL STEEL SHAPES SHALL CONFORM TO THE SPECIFIED STEEL GRADES AS FOLLOWS:

WIDE FLANGES	A992 (Fy =50 KSI MINIMUM)
CHANNELS	A992 (Fy =50 KSI MINIMUM) *OR* A36 (FY =36 KSI)
ANGLES	A572 (Fy =50 KSI MINIMUM) *OR* A36 (FY =36 KSI)
STEEL TUBING (NOTED “HSS”)	A500 GRADE C (Fy =50 KSI MINIMUM)
PIPES	A53 GRADE B (Fy =35 KSI MINIMUM)

2. ANCHOR RODS SHALL CONFORM TO ASTM F1554, GRADE 36.

3. UNLESS OTHERWISE NOTED, HOLES FOR COLUMN ANCHOR RODS SHALL BE OVERSIZED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE “AISC STEEL CONSTRUCTION MANUAL”.

4. ALL DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE ALLOWABLE STRESS DESIGN PROVISIONS OF AISC 360-10 "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS".

5. ALL CONNECTIONS SHALL BE WELDED OR HIGH-STRENGTH BOLTED. UNLESS NOTED OTHERWISE, BOLTS SHALL BE 3/4" DIAMETER A325-N BOLTS (THREADS IN SHEAR PLANE). OVERSIZED OR SLOTTED HOLES SHALL BE USED ONLY WHERE NOTED ON THE DESIGN DRAWINGS, UNLESS APPROVED BY THE ENGINEER PRIOR TO THE SUBMITTAL OF SHOP DRAWINGS. WELDS SHALL BE MADE WITH E70XX ELECTRODES (SMAW PROCESS) OR ER70S ELECTRODES (TIG OR GTAW PROCESS). VERIFY WELDING PROCEDURE WITH THE OWNER DURING THE BID PERIOD. ALL STRUCTURAL WELDS TO BE MADE BY AWS CERTIFIED WELDERS. SUBMIT WELDING CERTIFICATES FOR APPROVAL PRIOR TO CONSTRUCTION.

6. UNLESS OTHERWISE SHOWN, ALL BEAM CONNECTIONS SHALL BE STANDARD FRAMED OR SEATED CONNECTIONS AS SHOWN IN THE AISC "STEEL CONSTRUCTION MANUAL."

7. UNLESS HIGHER LOADS ARE NOTED ON THE DRAWINGS, ALL BOLTED CONNECTIONS SHALL BE DESIGNED AND DETAILED FOR A CONNECTION CAPACITY BASED ON A TWO-SIDED CLIP ANGLE CONNECTION WITH A MINIMUM NUMBER OF BOLTS IN DOUBLE SHEAR AS FOLLOWS:

NOMINAL MEMBER DEPTH	ROW OF BOLTS
4 TO 6 INCHES	2 ROWS OR 1 ROW OF 2 BOLTS
8 TO 10 INCHES	2 ROWS
12 TO 14 INCHES	3 ROWS
16 TO 18 INCHES	4 ROWS
21 INCHES	5 ROWS
24 INCHES	6 ROWS
27 INCHES	7 ROWS
30 INCHES	8 ROWS

   FOR WELDED CONNECTIONS, WELD SIZE AND LENGTH SHALL PROVIDE A CONNECTION CAPACITY GREATER THAN OR EQUAL TO THE BOLTED CONNECTION CAPACITY NOTED ABOVE. HOWEVER, IN NO CASE SHALL THE LENGTH OF A FRAMED CONNECTION BE LESS THAN ONE-HALF OF THE "T" DIMENSION OF THE BEAM WEB.

8. THE FABRICATOR IS RESPONSIBLE FOR THE DESIGN AND DETAILING OF ALL CONNECTIONS NOT FULLY DETAILED ON THE CONTRACT DOCUMENTS. TYPICAL CONNECTION DETAILS ARE INDICATED ON THE DRAWINGS FOR DESIGN INTENT ONLY. CONNECTIONS SHALL BE DESIGNED AND DETAILED IN ACCORDANCE WITH THE AISC "STEEL CONSTRUCTION MANUAL", LATEST EDITION.

9. CONTRACTOR SHALL ENGAGE A FABRICATOR WHO UTILIZES A QUALIFIED PROFESSIONAL ENGINEER DULY REGISTERED IN THE STATE OF NORTH CAROLINA TO PREPARE SHOP DRAWINGS, CALCULATIONS, AND OTHER STRUCTURAL DATA FOR STRUCTURAL STEEL CONNECTIONS. FABRICATOR'S ENGINEER SHALL AFFIX HIS SEAL TO THE DRAWINGS AND CALCULATIONS PRIOR TO THE SUBMITTAL OF SHOP DRAWINGS.

10. SHOP DRAWINGS SHALL BE SUBMITTED PRIOR TO THE START OF FABRICATION. SHOP DRAWINGS SHALL SHOW PLANS, SECTIONS, AND DETAILS OF THE WORK INDICATING BOLTS, WELDS, AND MATERIAL STRENGTH.

11. GUSSET PLATES SHALL BE 3/8" MINIMUM.

12. STEEL SHALL BE CLEANED IN ACCORDANCE WITH SSPC-SP3 (POWER TOOL CLEAN). STEEL SHALL PRIMED WITH ONE COAT OF KEM KROMIK UNIVERAL PRIMER AS MFG'D BY THE SHERWIN WILLIAMS CO. FOR A MINIMUM DRY FILM THICKNESS OF 3.5 MILS. STEEL SHALL BE "TOUCHED UP" AFTER ERECTION.

13. UNLESS NOTED OTHERWISE, ALL STEEL SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A123. SURFACES DAMAGED DURING HANDLING AND ERECTION SHALL BE TOUCHED UP WITH GALVANIZING REPAIR PAINT CONFORMING TO ASTM A780.

14. STEEL SHALL BE CLEANED IN ACCORDANCE WITH SSPC-SP3 (POWER TOOL CLEAN). UNLESS SCHEDULED TO RECEIVE CEMENTITIOUS FIREPROOFING, STEEL SHALL RECEIVE A MINIMUM DRY FILM THICKNESS OF 1.5 MILS OF SHOP APPLIED PRIMER PAINT COMPATIBLE WITH THE FINISH COAT. STEEL SHALL BE "TOUCHED UP" AFTER ERECTION. SEE ARCHITECTURAL DRAWINGS FOR PAINTING AND FIREPROOFING INFORMATION.

15. PRIOR TO WELDING TO EXISTING STEEL, EXISTING SURFACES SHALL BE POWER TOOL CLEANED (SSPC-SP3) IN ORDER TO REMOVE EXISTING CEMENTITIOUS FIREPROOFING, PAINT, DIRT, GREASE, AND ALL OTHER FOREIGN MATTER WITHIN 2 INCHES OF WELD LOCATION. UNLESS SCHEDULED TO RECEIVE FIREPROOFING, SURFACES SHALL BE TOUCHED UP WITH PRIMER AFTER WELDING HAS BEEN COMPLETED.

16. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT ACCIDENTAL FIRE DURING ALL FIELD WELDING. PRECAUTIONS MAY INCLUDE, BUT NOT BE LIMITED TO, POSTING A FIRE WATCH WITH A FIRE EXTINGUISHER, THE USE OF PROTECTIVE WELDING BLANKETS, OR ANY OTHER METHOD OR COMBINATION OF METHODS USED TO PREVENT FIRE.

17. BOLTED CONNECTIONS SHALL BE ASSEMBLED AND TIGHTENED BY ONE OF THE FOLLOWING METHODS IN ACCORDANCE WITH "SPECIFICATIONS FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS" BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC) (2020 EDITION):

    A. SNUG-TIGHTENED JOINTS:
       ALL CONNECTIONS EXCEPT AS NOTED BELOW OR ON THE DRAWINGS

    B. PRETENSIONS JOINTS:
       CONNECTIONS FOR MEMBERS WITH AXIAL LOADS, INCLUDING HORIZONTAL AND VERTICAL BRACING, DRAG STRUTS, AND COLLECTOR BEAMS; MOMENT CONNECTIONS

    C. SLIP CRITICAL JOINST(SC):
       ALL CONNECTIONS WITH SLOTTED HOLES, AND WHERE NOTED ON DRAWINGS.

    AFTER TIGHTENING ALL BOLTS TO A "SNUG TIGHT" CONDITION AS PER RCSC, COMPLETE THE TIGHTENING PROCESS FOR PRE-TENSIONED & SLIP CRITICAL JOINTS USING TWIST-OFF-TYPE TENSION-CONTROL BOLT TENSIONING OR DIRECT TENSION INDICATING (DTI) WASHERS. TIGHTENING AND POSITIONING OF WASHERS IN THE CONNECTION SHALL CONFORM TO RCSC REQUIREMENTS.

18. ALL ANGLE AND WT FRAMING SHALL BE TOED DOWN (UNO).

DATE	REVISION	BY
04/01/25	FOR CONSTRUCTION	MFW
10/25/24	FOR BID	MFW
09/13/24	FOR PERMITTING	MFW
07/27/24	90% SUBMITTAL	MFW
04/12/24	60% DESIGN SUBMITTAL	MFW

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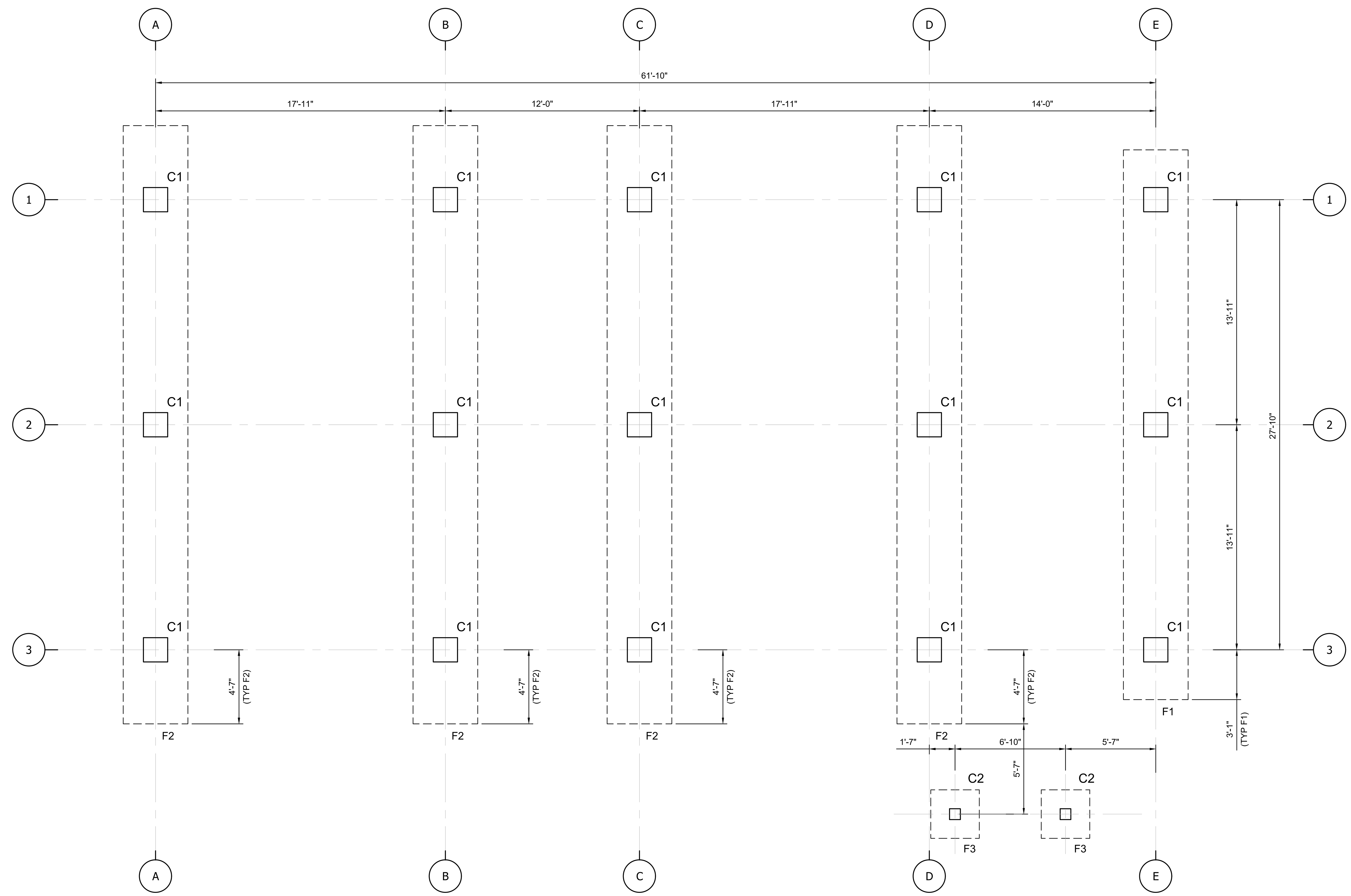
CAROLINA BEACH LAKE PUMP HOUSE #1 & #2
REPLACEMENT
CAROLINA BEACH, NC

STRUCTURAL NOTES

PROJECT NO.
TCB2301

S0.1



1 FOUNDATION PLAN

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

1. F# - INDICATES COLUMN FOOTING MARK - SEE FOOTING SCHEDULE.
2. C# - INDICATES COLUMN MARK - SEE DETAIL 2/S-9.5.
3. Px - INDICATES PIER MARK - SEE PIER SEE SCHEDULE & DETAILS.
4. TOP OF FOOTING ELEVATION (-1'-0") UNO.
5. FOR DIMENSIONS NOT SHOWN ON THE DRAWINGS, REFER TO THE ARCHITECTURAL DRAWINGS. SEE ARCHITECTURAL FOR VERIFICATION OF ALL WALL LOCATIONS AND DIMENSIONS.
6. COORDINATE SUMP LOCATION SIZE & DEPTH WITH FINAL VENDOR DRAWINGS.
7. ▭ DENOTES CONCRETE WALLS.

FOUNDATION SCHEDULE

FOOTING	T/FTG EL	SIZE	MIN. DEPTH	REINFORCING
F1	VARIES SEE PLAN	4'-0" x 34'-0"	1'-6"	#5@6" OC EA WAY TOP & BOTT
F2	SEE PLAN	4'-0" x 37'-0"	1'-6"	#5@6" OC EA WAY TOP & BOTT
F3	SEE PLAN	3'-0" x 3'-0"	1'-6"	(3)#5 EA WAY TOP & BOTT

COLUMN SCHEDULE

COLUMN	SIZE	REINFORCING
C1	18"x18"	SEE DETAIL 2/S1.4
C2	8"x8"	SEE DETAIL 2/S1.4

DATE	REVISION	BY
04/01/25	FOR CONSTRUCTION	MFW
10/25/24	FOR BID	MFW
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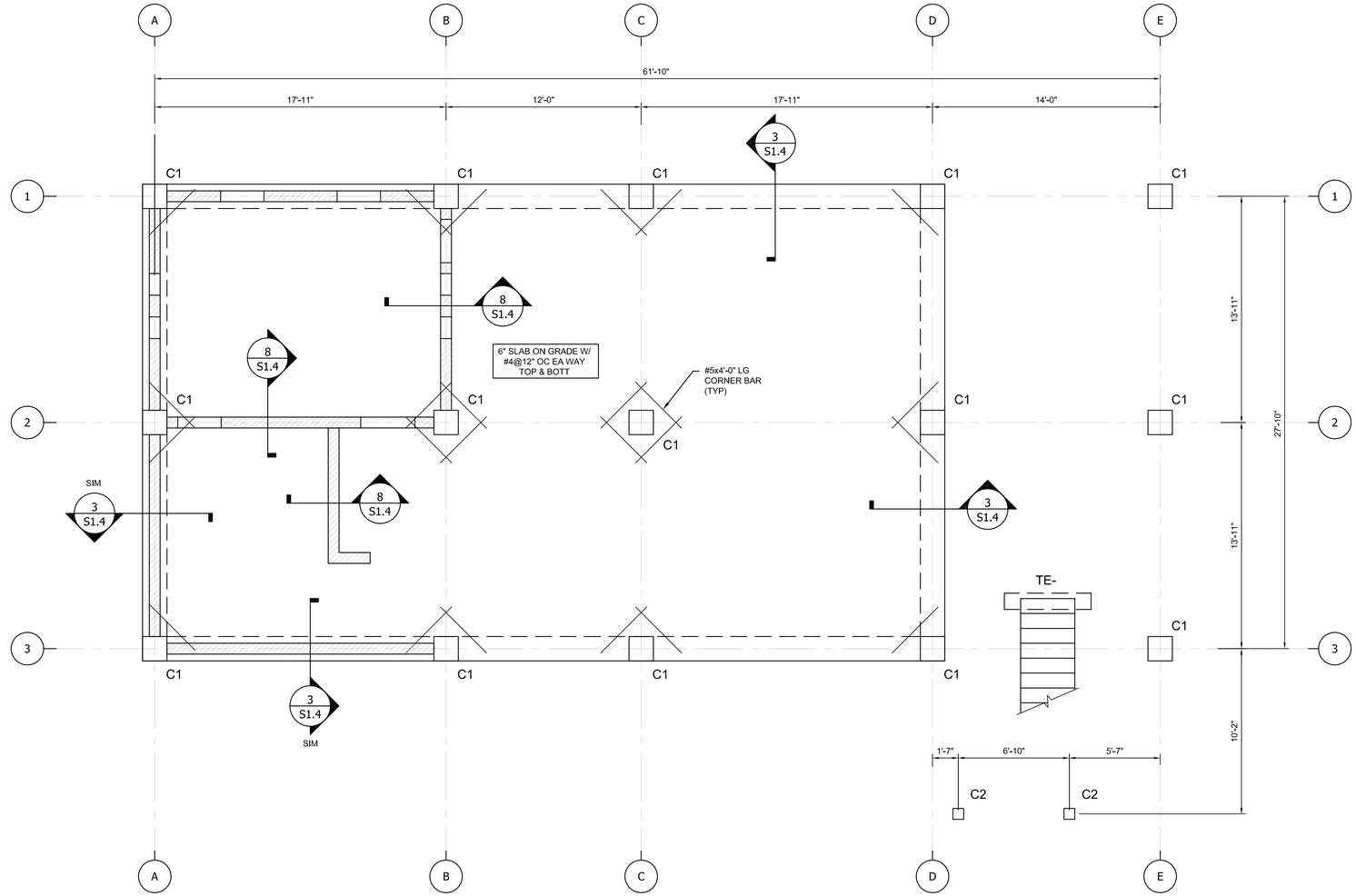
CAROLINA BEACH LAKE PUMP HOUSE #1 & #2 REPLACEMENT
CAROLINA BEACH, NC
FOUNDATION PLAN

PROJECT NO.
TCB2301

S1.0



NORTH

1 GROUND FLOOR SLAB PLAN

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

T/SLAB EL. (+) 3'-0" (SEE CIVIL).

1. 6" CONC. SLAB ON VAPOR BARRIER & COMPACTED FILL (SEE SPECIFICATIONS). REINFORCE WITH 6x6 W2.9xW2.9 WWR TOP, FLAT SHEETS.
2. PROVIDE CONTROL JOINTS USING SAWED JOINTS (S.J.) OR CONSTRUCTION JOINTS (C.J.) AS REQUIRED BY CONCRETE PLACEMENT, AND AS SHOWN ON THE SLAB PLAN, BUT SHALL NOT BE LOCATED MORE THAN 15' APART AND SHALL HAVE AREAS LIMITED TO A MAXIMUM LENGTH-TO-WIDTH RATIO OF 1.5 OR LESS, U.N.O. SAWCUT PER ACI SPECIFICATIONS.
3. REFER TO ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, AND OTHER DISCIPLINE DRAWINGS FOR OPENINGS AND DEPRESSIONS NOT SHOWN ON THESE DRAWINGS.
4. ▨ DENOTES NON-LOAD BEARING CMU WALLS WITH #5@48 OC, UNO.

BY	REVISION	DATE
MFW	FOR CONSTRUCTION	04/01/25
MFW	FOR BID	10/25/24
MFW	FOR PERMITTING	09/13/24
MFW	90% SUBMITTAL	07/27/24
MFW	60% DESIGN SUBMITTAL	04/12/24

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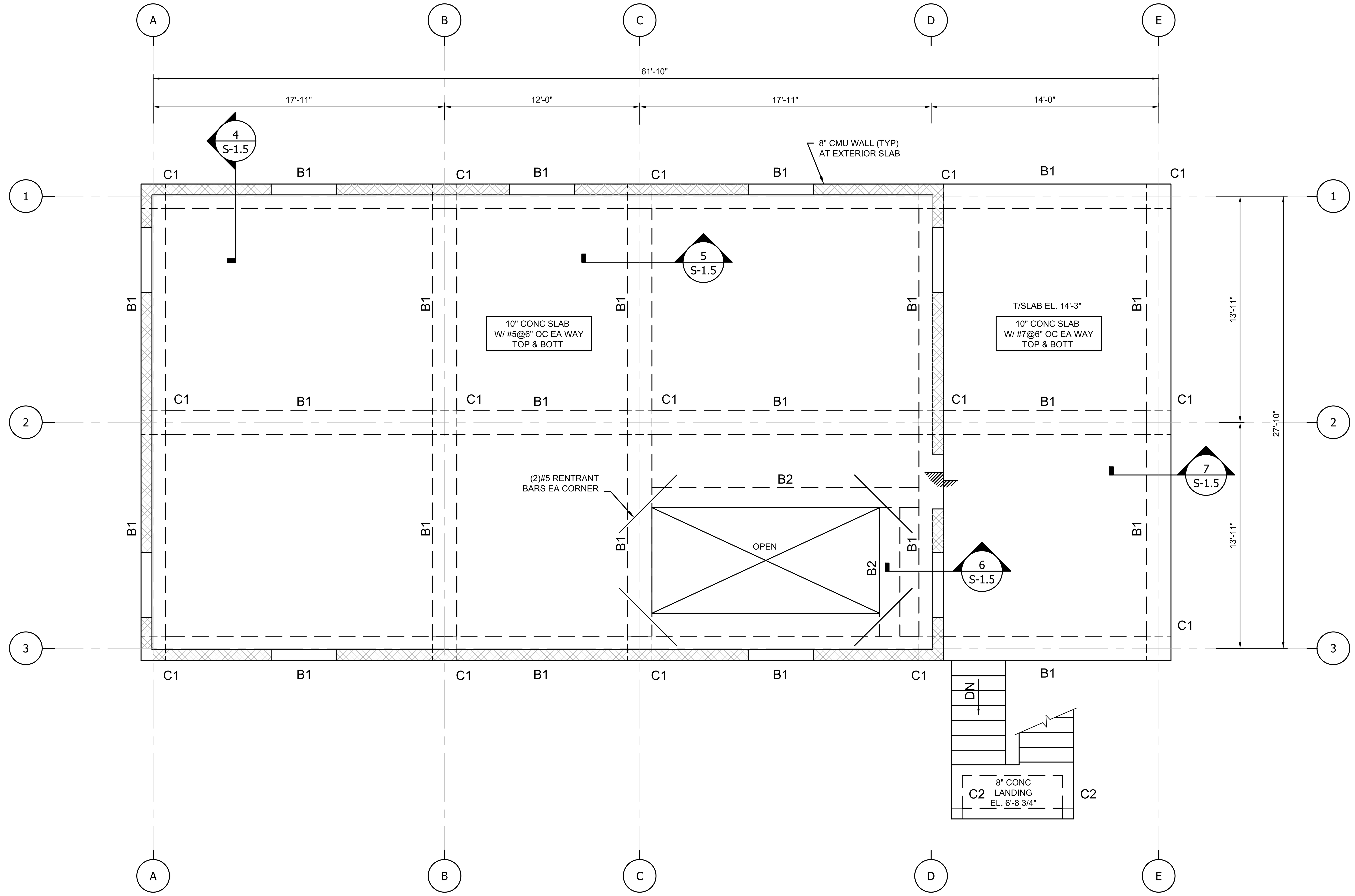
GROUND FLOOR SLAB PLAN

PROJECT NO.
TCB2301

S1.1



1 **SECOND FLOOR-SLAB PLAN**
SCALE: 1/4" = 1'-0"
T/SLAB EL. 14'-6" (UNO).

1. DENOTES NON-LOAD BEARING CMU WALLS.
2. DENOTES LOAD BEARING CMU WALLS W/#5@24" OC UNO.
3. DENOTES WALL OPENINGS SEE ARCHITECTURAL.

BEAM SCHEDULE

BEAM	WIDTH	DEPTH	LONGITUDINAL		STIRRUPS	REMARKS
			BOTTOM	TOP		
B1	18"	15"	(5)#8	(5)#8	#3 @ 4" OC	
B2	15"	10"	(3)#8	(3)#8	#3 @ 4" OC	

DATE	REVISION	BY
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07/27/24	90% SUBMITTAL	MFW
04/12/24	60% DESIGN SUBMITTAL	MFW

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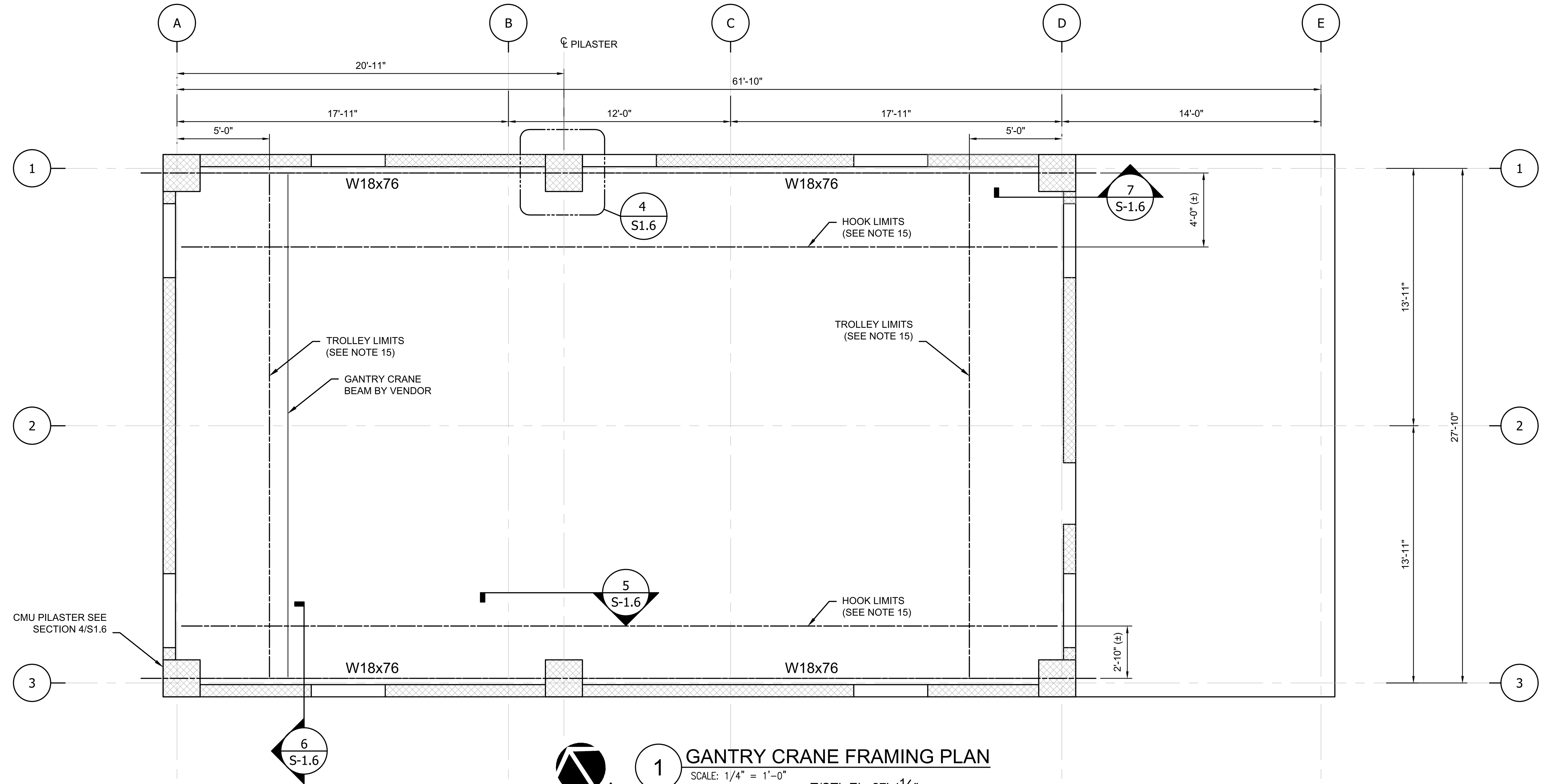
SECOND FLOOR FRAMING PLAN

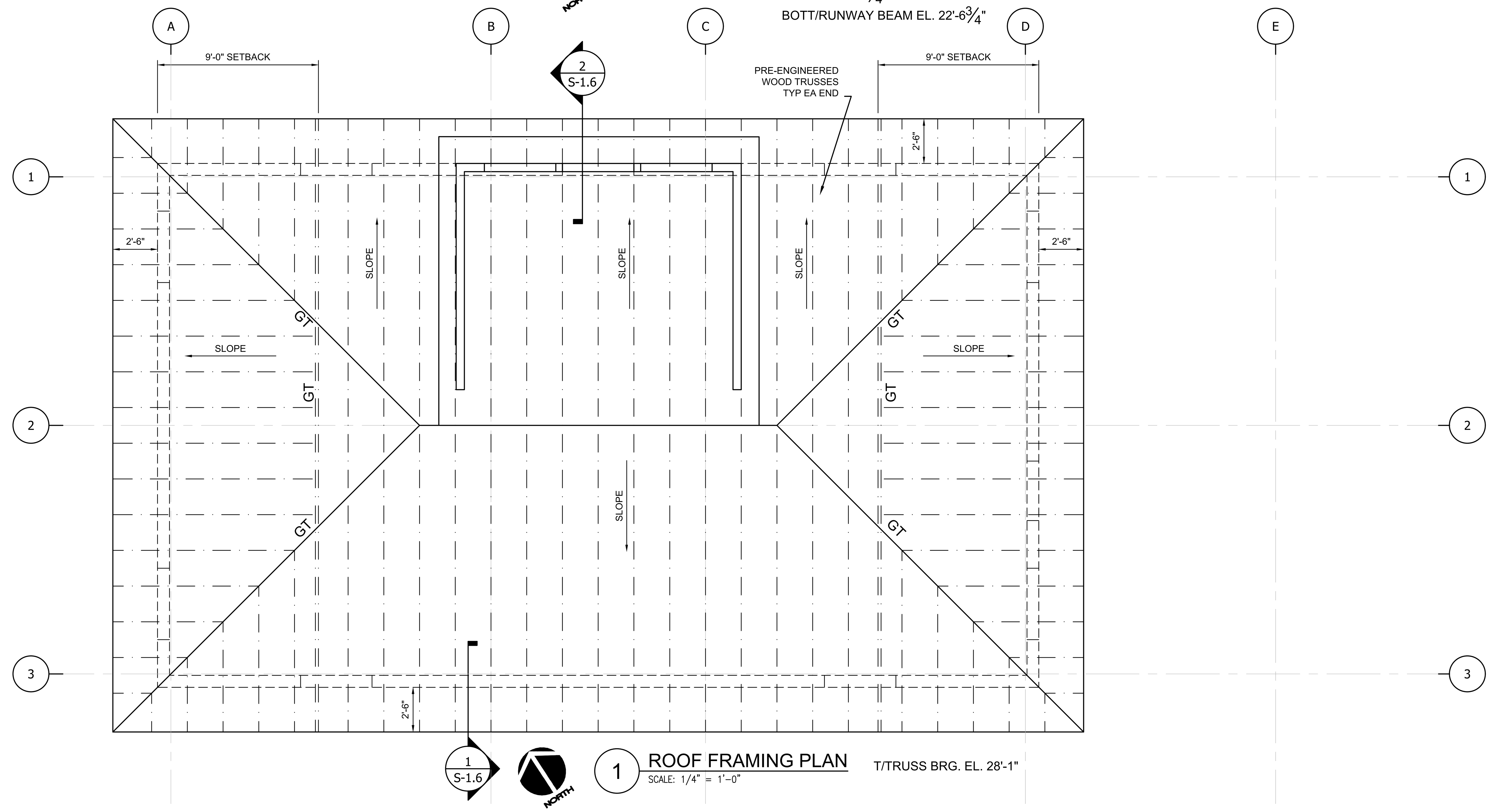
PROJECT NO.
TCB2301

S1.2



1 GANTRY CRANE FRAMING PLAN
SCALE: 1/4" = 1'-0"

T/STL EL. 27'-1¼"
BOTT/RUNWAY BEAM EL. 22'-6¾"



1 ROOF FRAMING PLAN
SCALE: 1/4" = 1'-0"

T/TRUSS BRG. EL. 28'-1"

TIMBER FRAMING NOTES :

1. FRAMING SHOWN IS FOR BID PURPOSES ONLY. FINAL LAYOUT & MEMBER SIZES SHALL BE BY TIMBER TRUSS SUPPLIER. DESIGN SHALL BE SEALED BY A REGISTER PROFESSIONAL ENGINEER IN THE STATE OF NC.
2. ALL STRUCTURAL STEEL, CONCRETE, MASONRY, AND TIMBER FRAMING SHALL CONFORM TO REQUIREMENTS LOCATED ON SHT. S0.0 & S0.1
3. ALL ELEVATIONS ARE ABOVE FINISHED FLOOR FOR THIS DRAWING.
4. ¾" APA RATED WOOD SHEATHING WITH A SPAN RATING OF 32/16 AND A BOND CLASSIFICATION OF EXPOSURE 1 (UNLESS NOTED OTHERWISE). ALL WOOD SHEATHING SHALL BE FIRE-RETARDANT. SHEATHING SHALL CONFORM TO ASTM D1556, D6305, & E84.
5. WORK THIS DRAWING WITH ARCHITECTURAL DRAWINGS.
6. (*) INDICATES PRE-ENGINEERED TIMBER TRUSSES AT 24" OC.
7. VS INDICATES VALLEY SETS AT 24" OC.
8. GT INDICATES GIRDER TRUSS.
9. FOR DIMENSIONS NOT SHOWN SEE FOUNDATION PLAN AND ARCHITECTURAL DRAWINGS.
10. B# DENOTES CONCRETE BEAM -SEE SCHEDULE ON S1.2.
11. ▭ DENOTES NON-LOAD BEARING CMU WALLS.
12. ▭ DENOTES LOAD BEARING CMU WALLS W/#5@24" OC UNO.
13. CARRYING = CARRYING TRUSS.
14. MH DENOTES MONORAIL HANGER = 12.6K.
15. HOOK AND TROLLEY LIMITS MAY VARY BASED ON MODEL OF CRANE SELECTED.

NO SUPERIMPOSED LOADS	8" LINTEL SCHEDULE		
	SYM	SECTION	DESCRIPTION
	L1	3"	8"X8" CMU LINTEL BLOCK W/(2)#5 BOTTOM, FILL W/ GROUT. M.O. TO 3'-4"

NOTES:
1. ALL U BLOCKS, BEAMS, & ANGLES SHALL SPAN OPENING + 8" EA. SIDE, U.N.O..
2. COORDINATE LOCATION, OPENING, AND WALL THK. W/ ARCHITECTURAL PLAN. SIZE LINTELS BY THIS SCHEDULE.
3. (+X.00) DENOTES BOTT OF MASONRY LINTEL.

DATE	REVISION	BY
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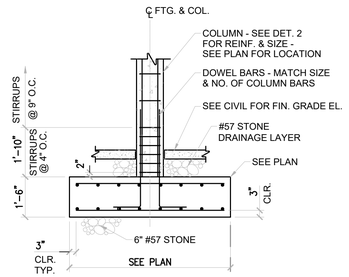
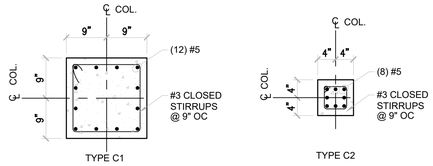
ROOF FRAMING PLAN

PROJECT NO.
TCB2301

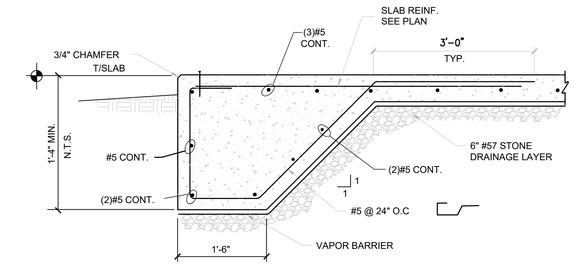
S1.3



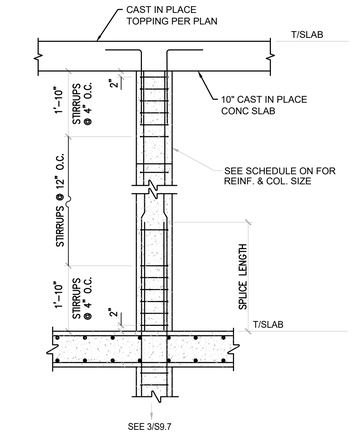
1 SECTION THRU FOUNDATION
SCALE: 3/8" = 1'-0"



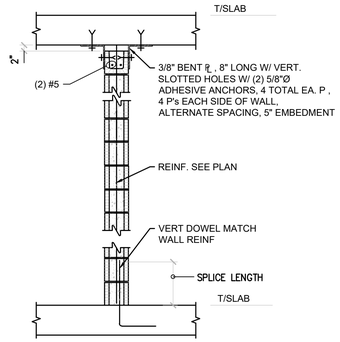
2 TYPICAL COLUMN DETAILS
SCALE: 3/4" = 1'-0"



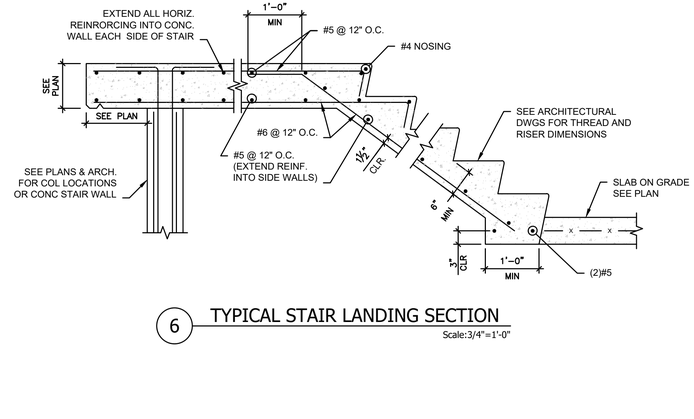
3 SECTION THRU TURNED DOWN EDGE
SCALE: 3/4" = 1'-0"



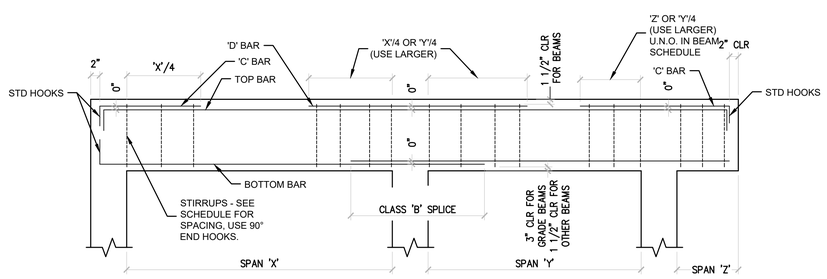
4 SECTION AT COLUMN
SCALE: 1/2" = 1'-0"



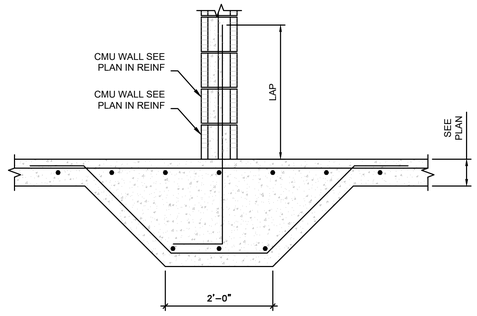
5 SECTION AT CMU WALL
SCALE: 1/2" = 1'-0"



6 TYPICAL STAIR LANDING SECTION
Scale:3/4"=1'-0"



7 TYPICAL BENDING DIAGRAM FOR BEAMS
SCALE: 3/4" = 1'-0"



8 TYPICAL THICKENED CMU FOOTING
SCALE: 3/4" = 1'-0"

BY	REVISION	DATE
MFW	FOR CONSTRUCTION	04/01/25
MFW	FOR BID	10/25/24
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CAROLINA BEACH, NC

SECTIONS & DETAILS

PROJECT NO.
TCB2301

S1.4

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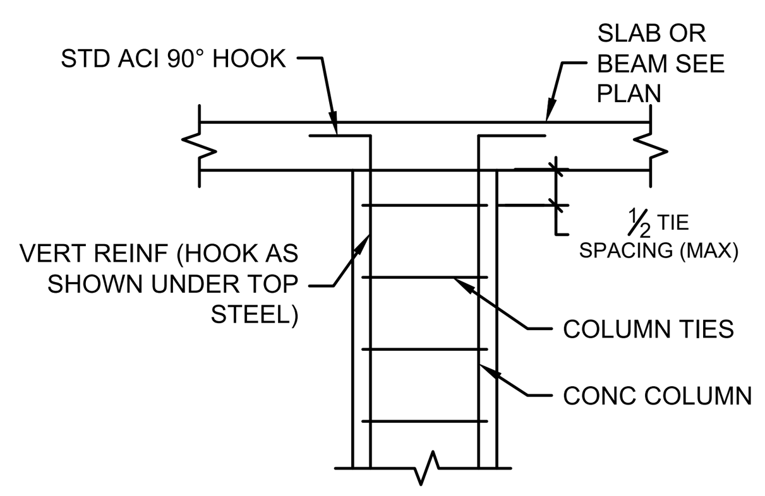
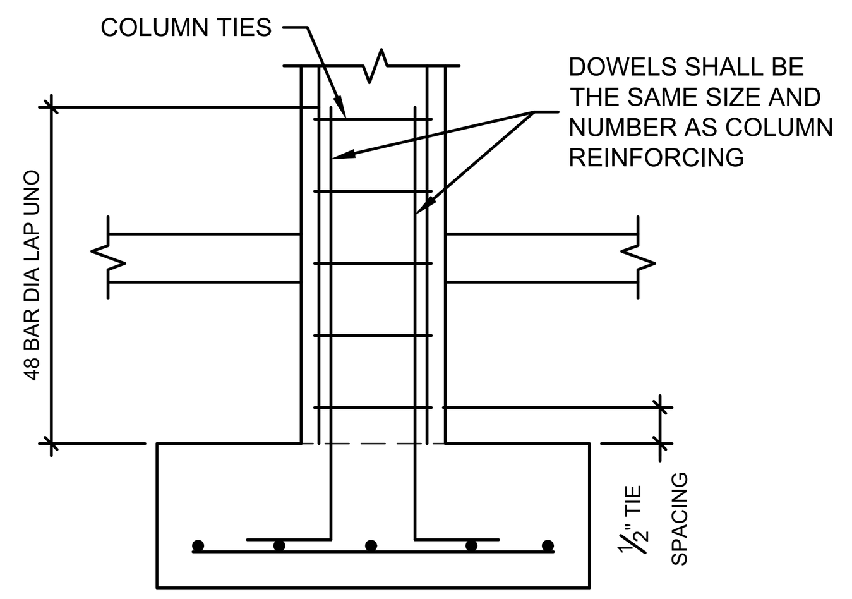
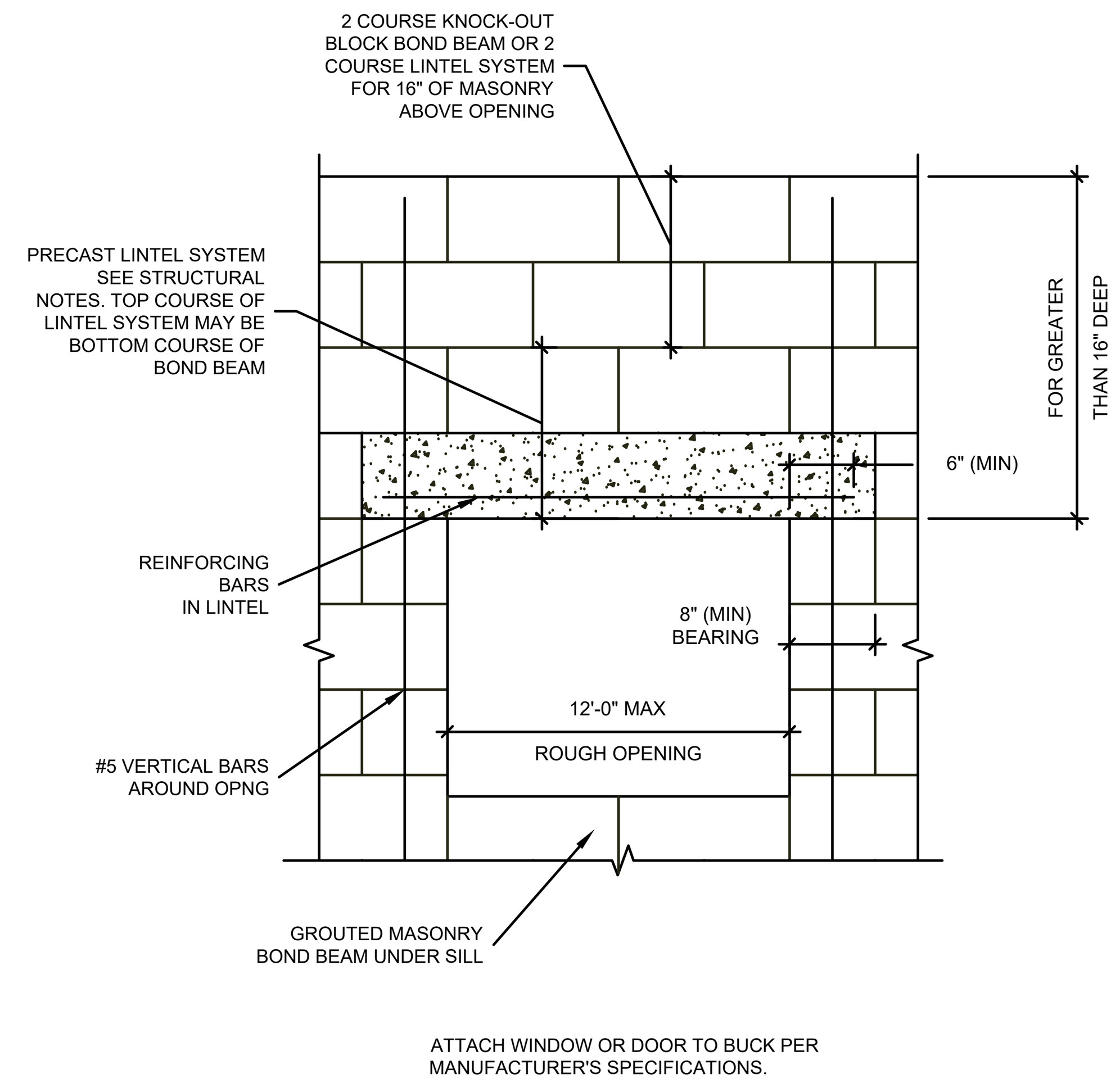


CONCRETE COLUMN TERMINATION



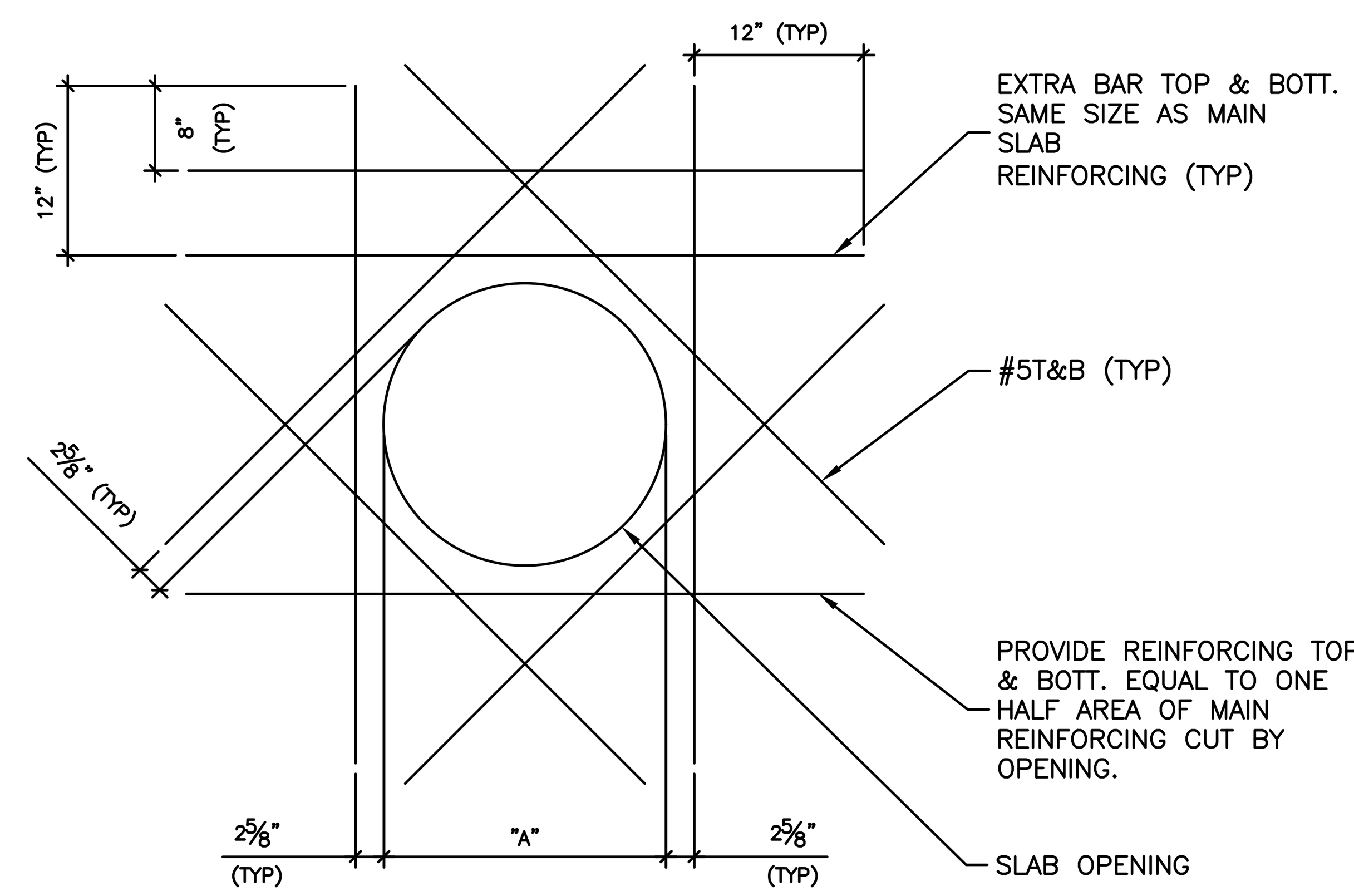
1 CONCRETE COLUMN BASE

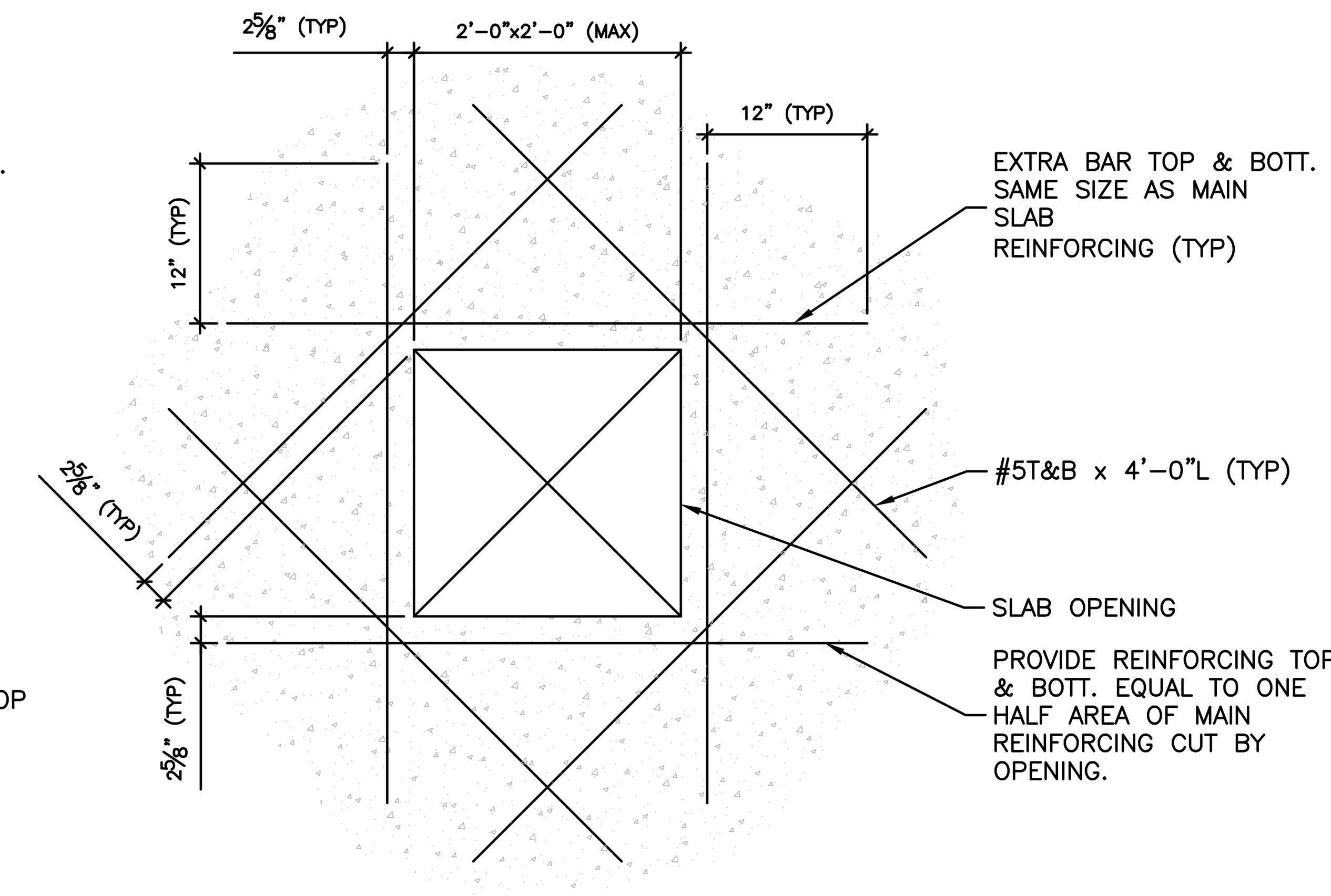
Scale: 3/4"=1'-0"



2 OPENING IN CMU

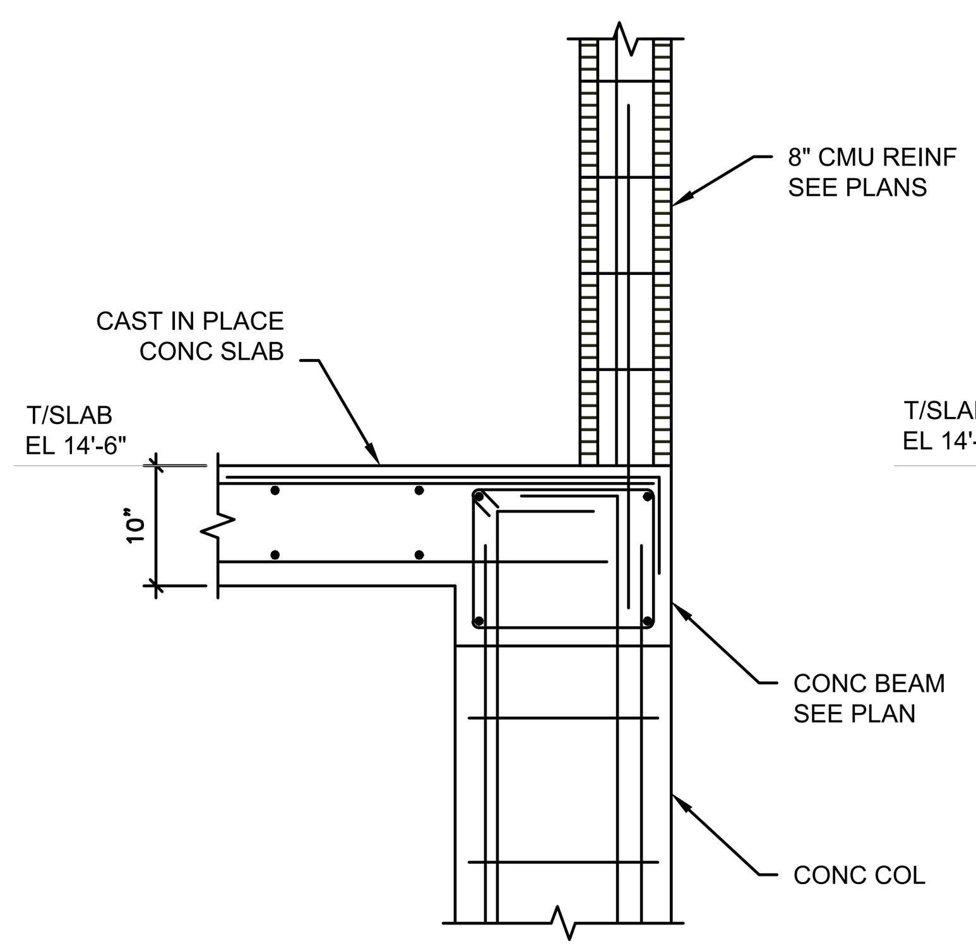
Scale: NTS





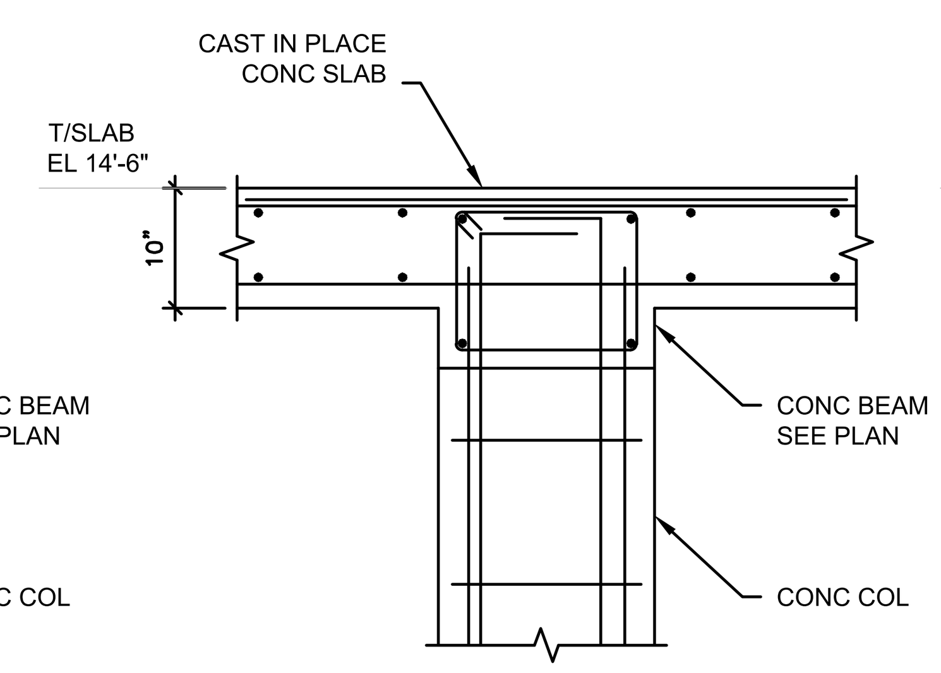
3 TYPICAL CONCRETE SLAB OPENING DETAIL

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



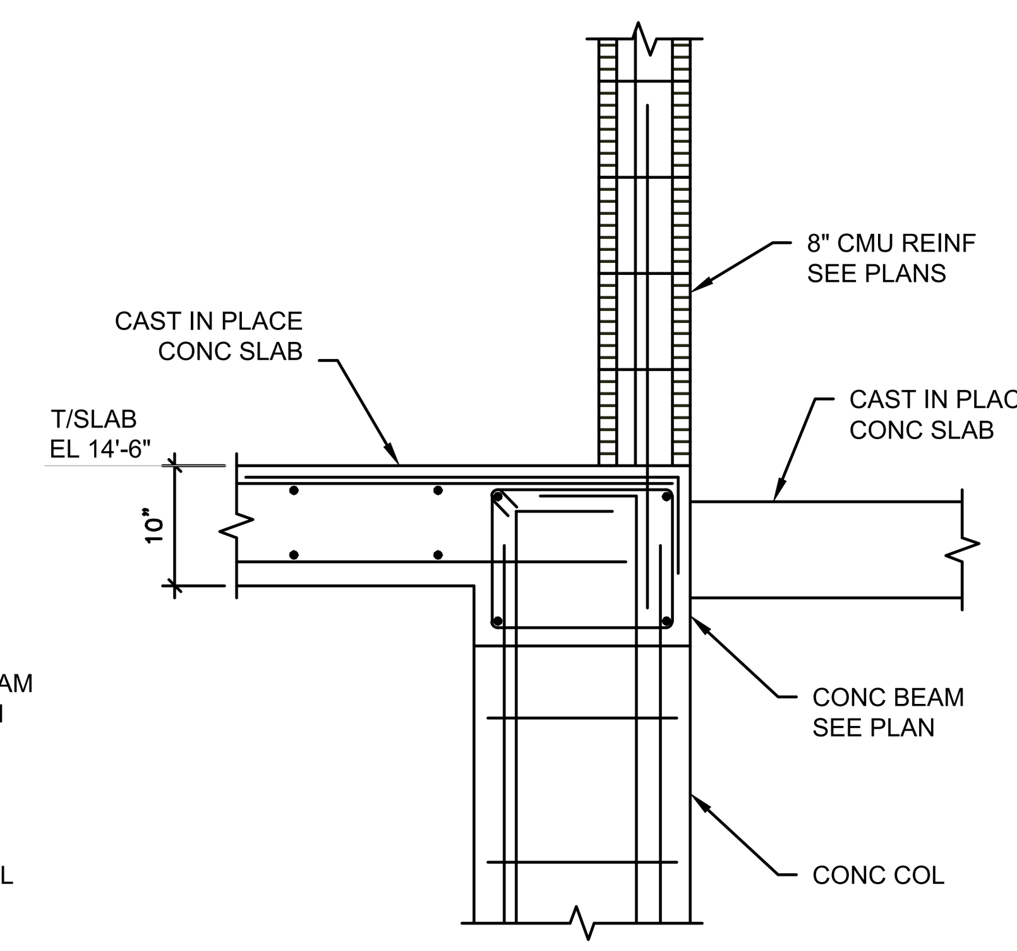
4 SECTION

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



5 SECTION

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



6 SECTION

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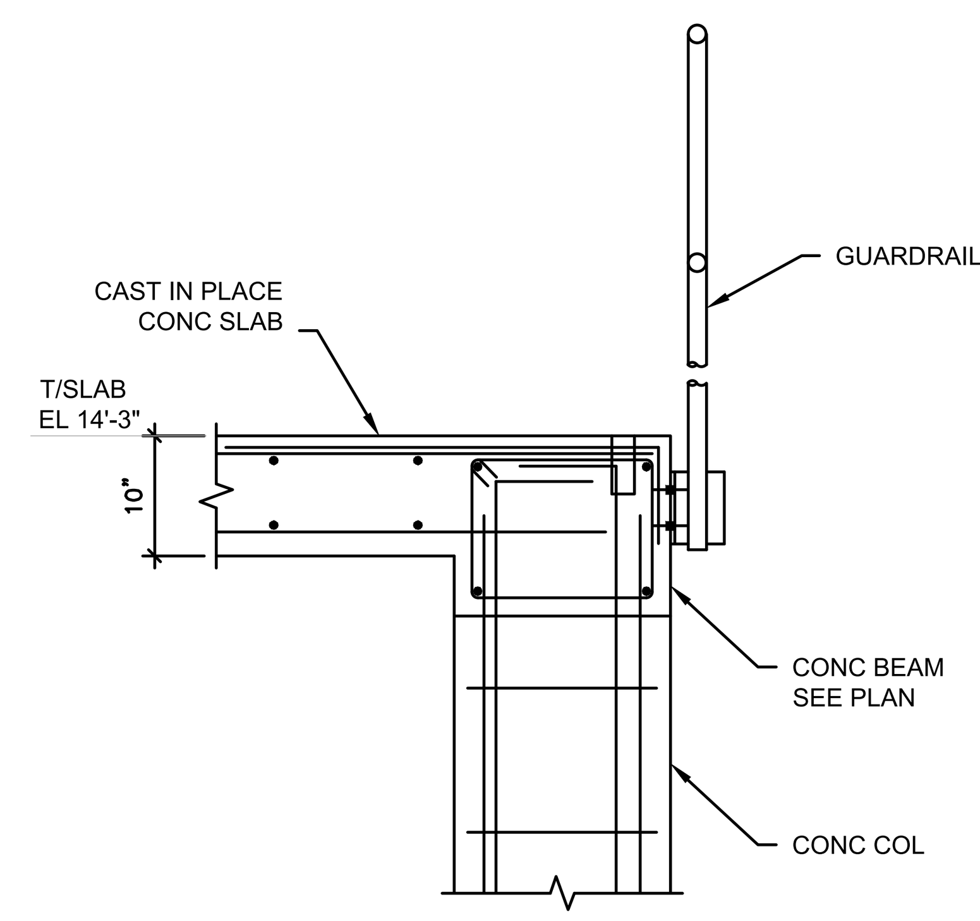

7 SECTION

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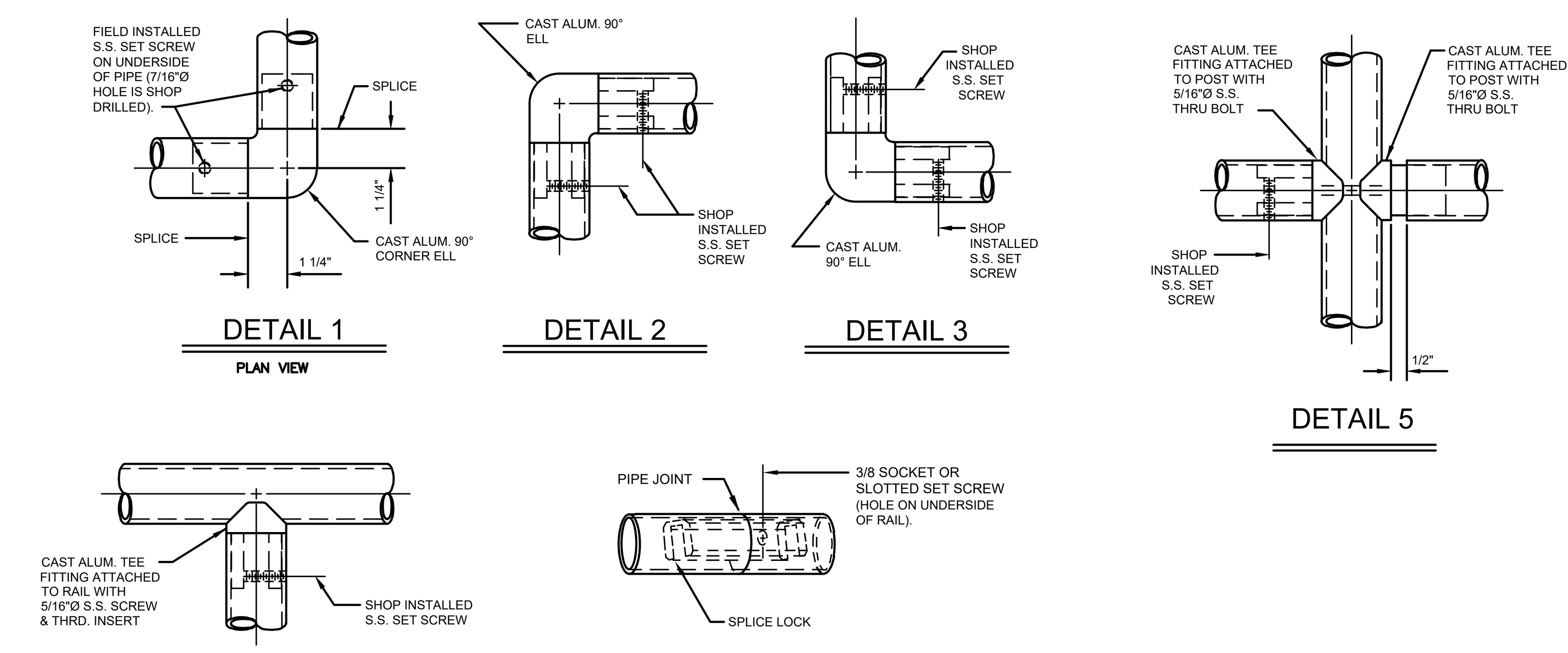
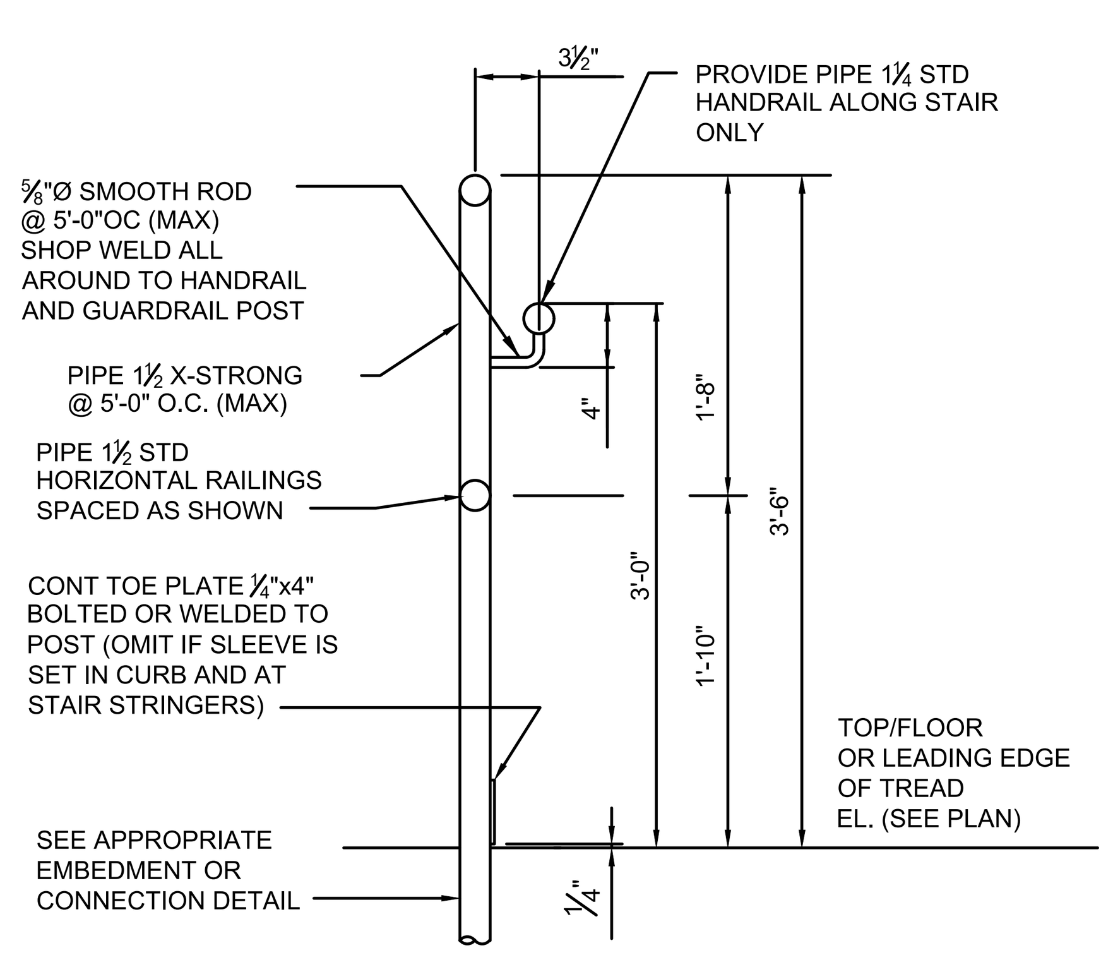
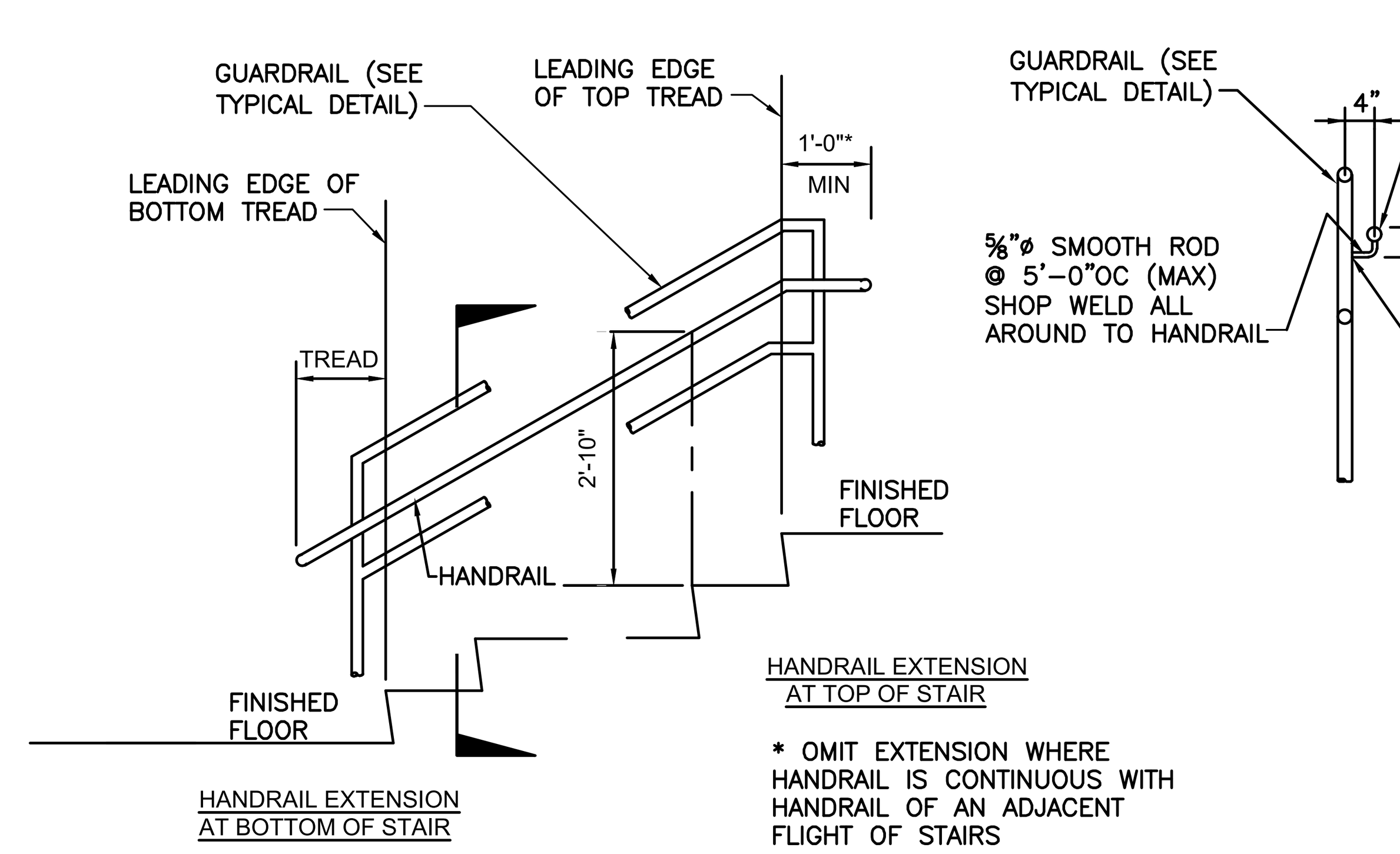




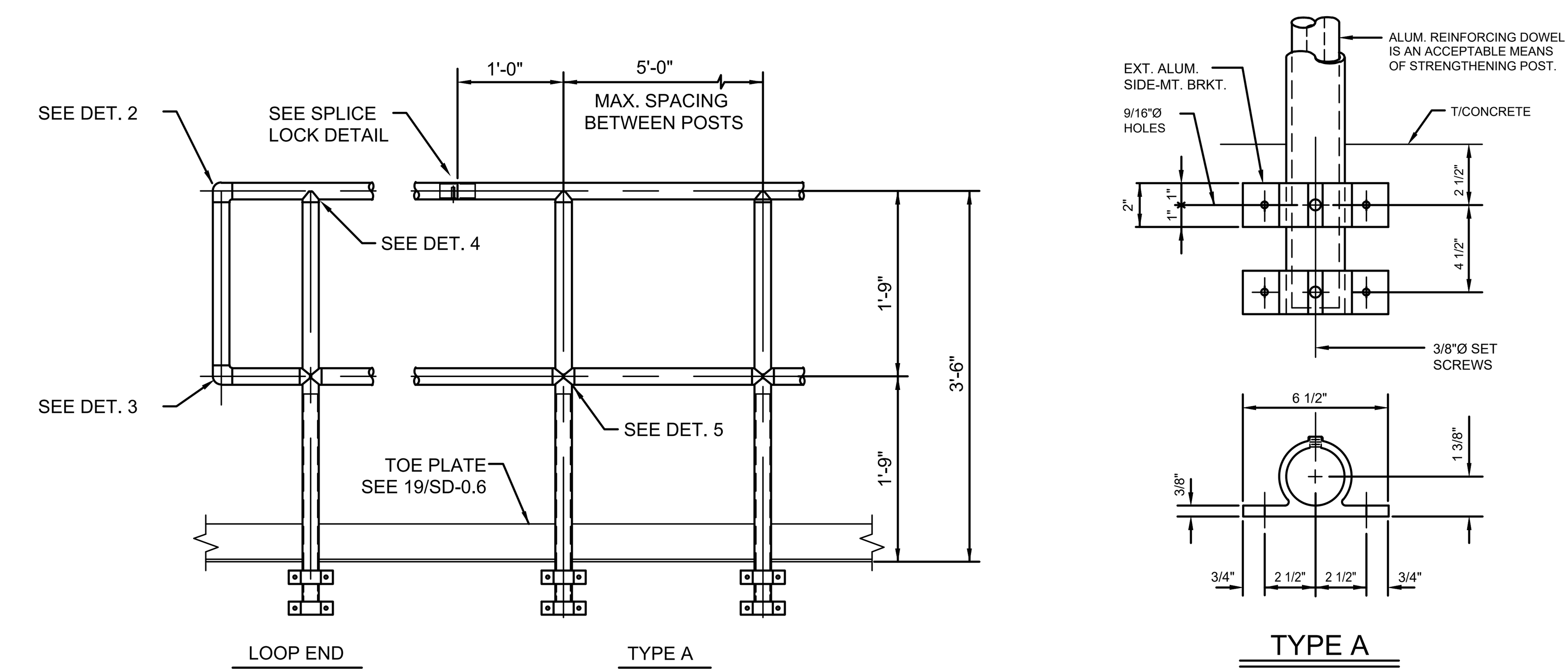
8 TYPICAL TWO-RAIL GUARDRAIL DETAIL

Scale:NTS



9 STAIR HANDRAIL DETAIL

Scale: NTS



10 TYPICAL GUARDRAIL CONNECTION DETAILS

DATE	REVISION	BY
04/01/25	FOR CONSTRUCTION	MFW
10/25/24	FOR BID	MFW
09/13/24	FOR PERMITTING	MFW
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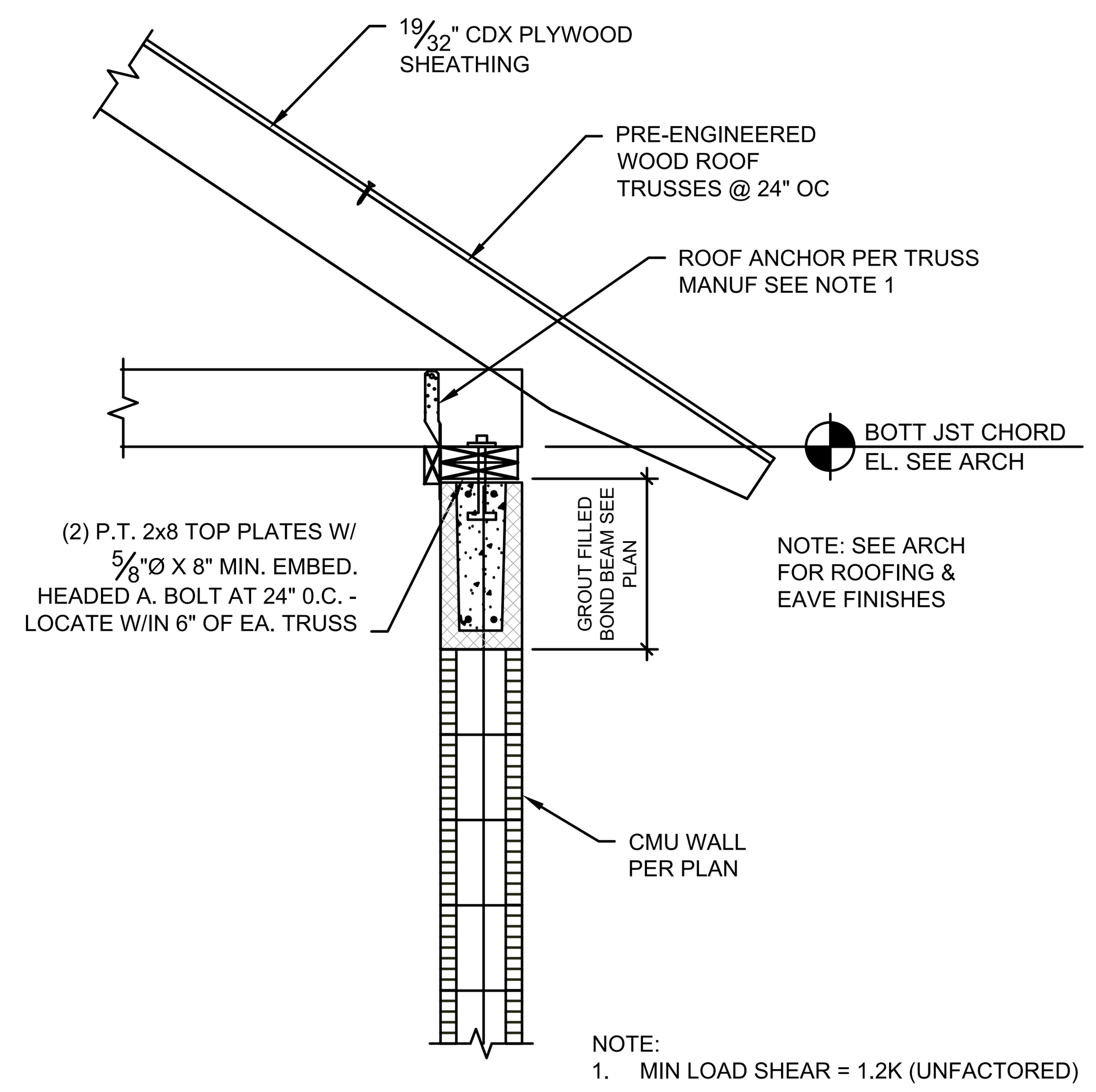
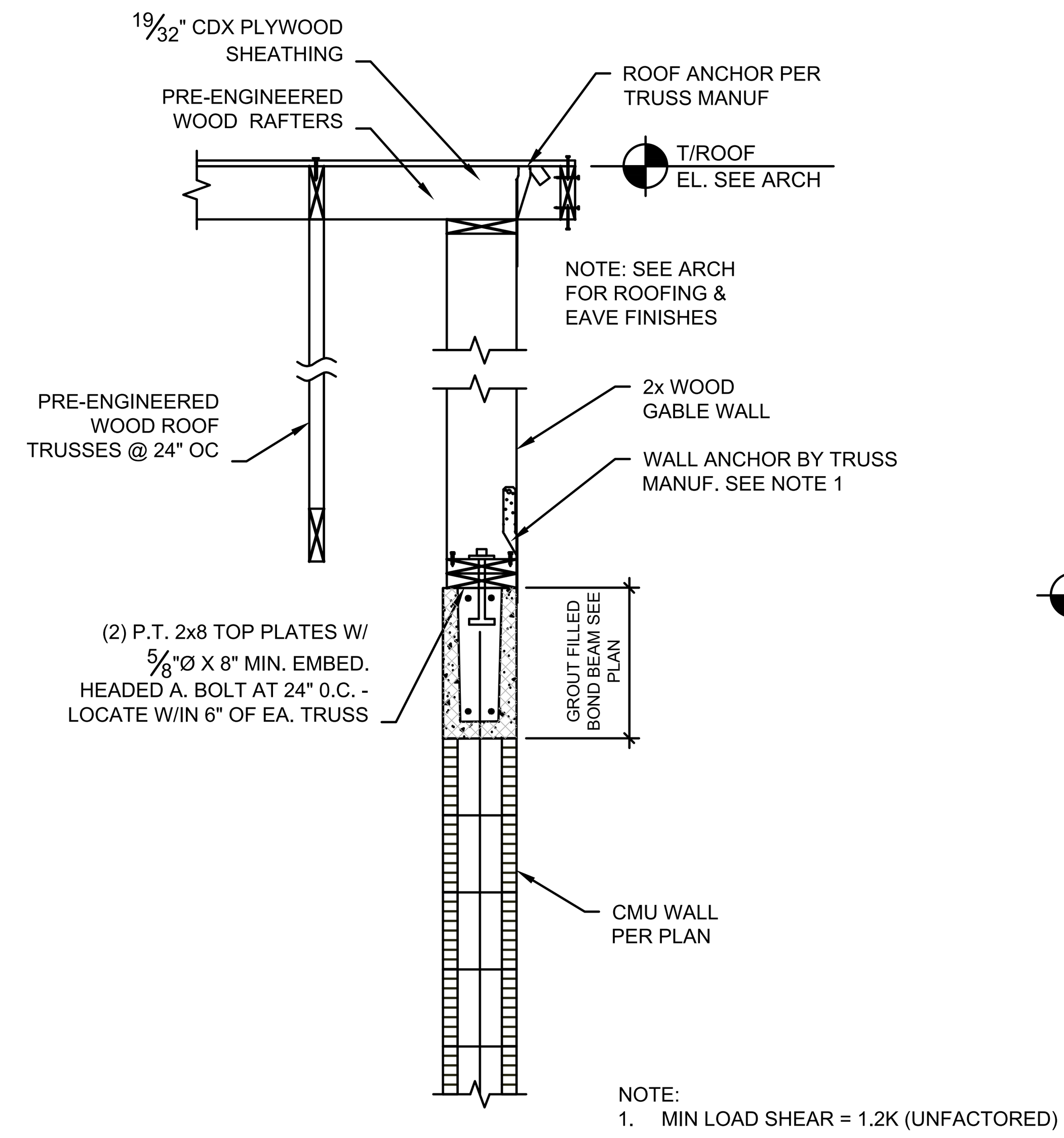
SECTIONS & DETAILS

PROJECT NO. TCB2301

S1.5



1 SECTION
Scale: 3/4"=1'-0"



2 SECTION
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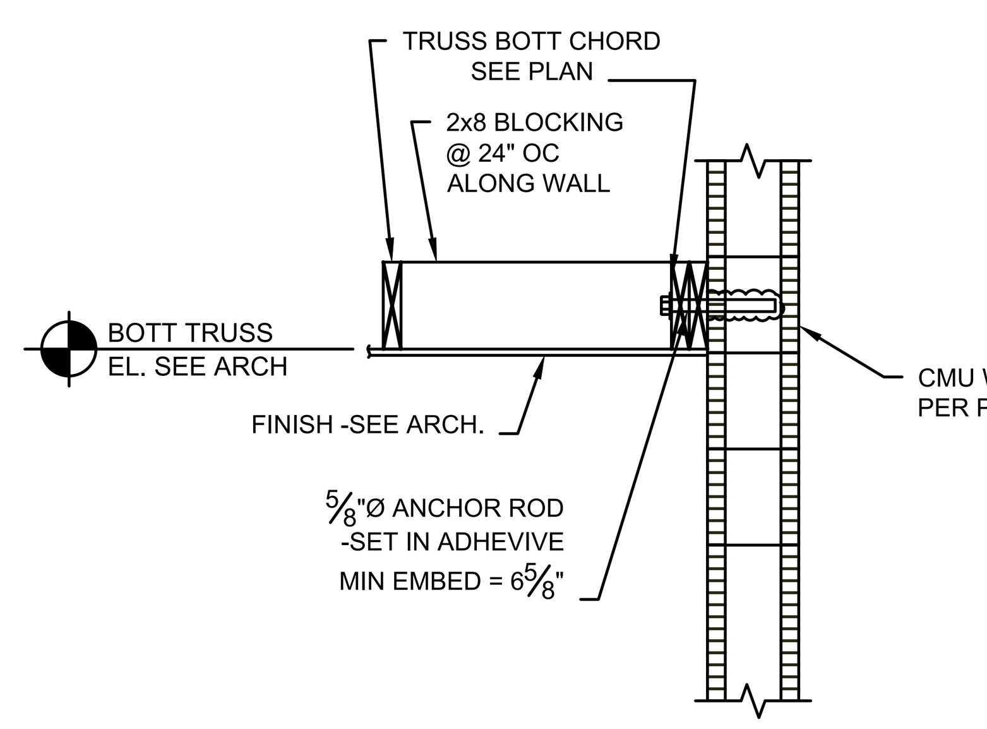

3 SECTION
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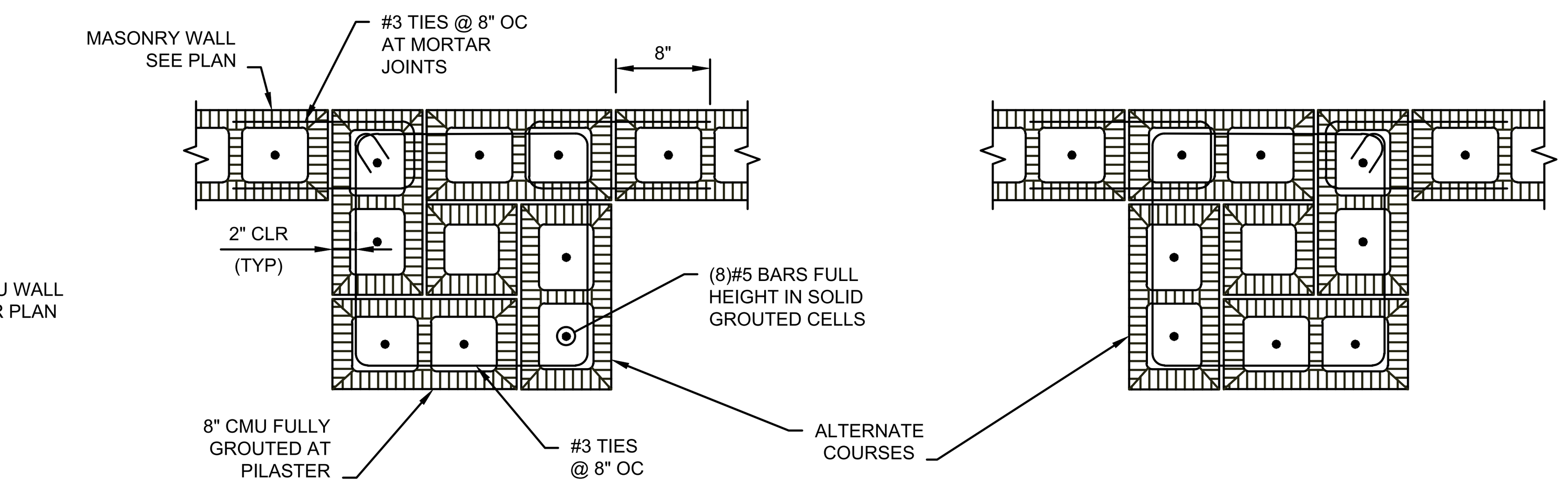
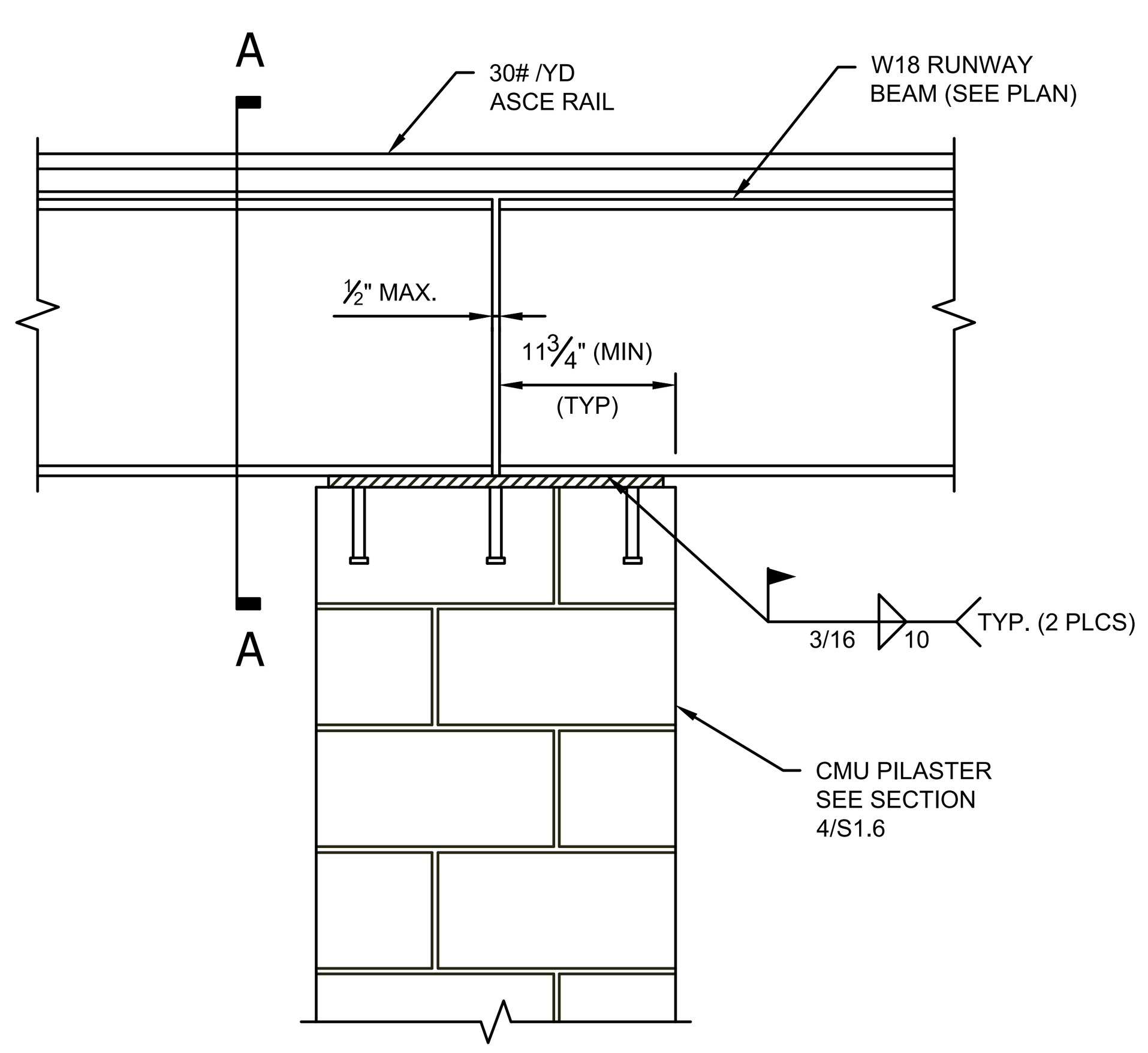
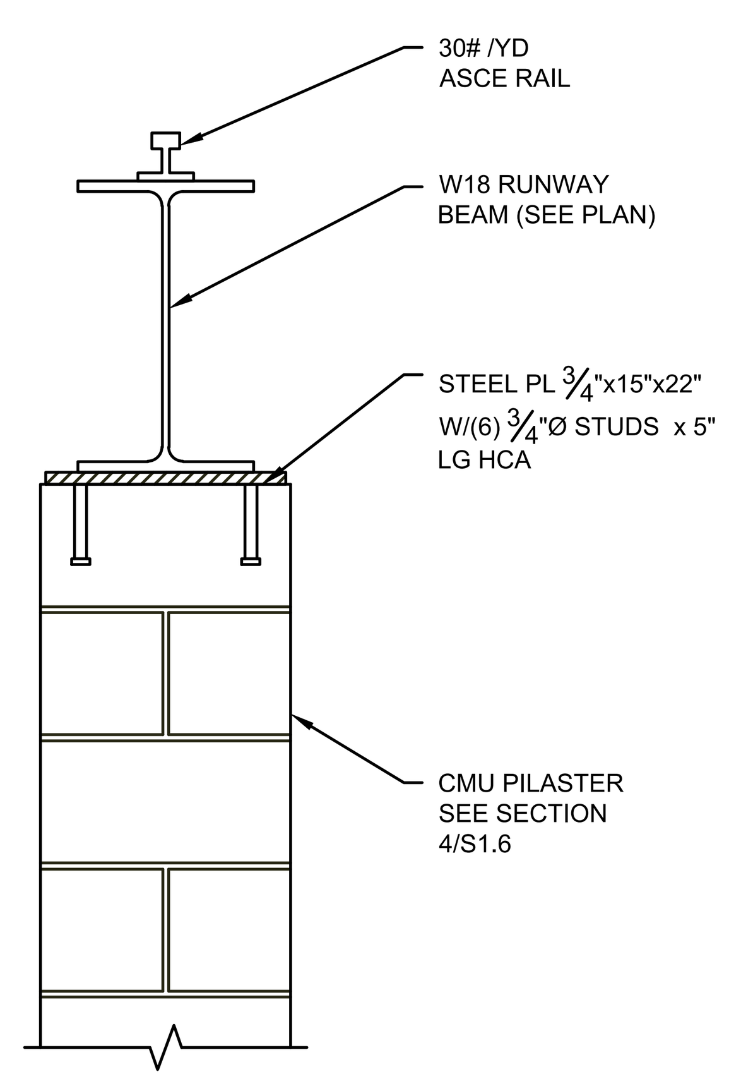


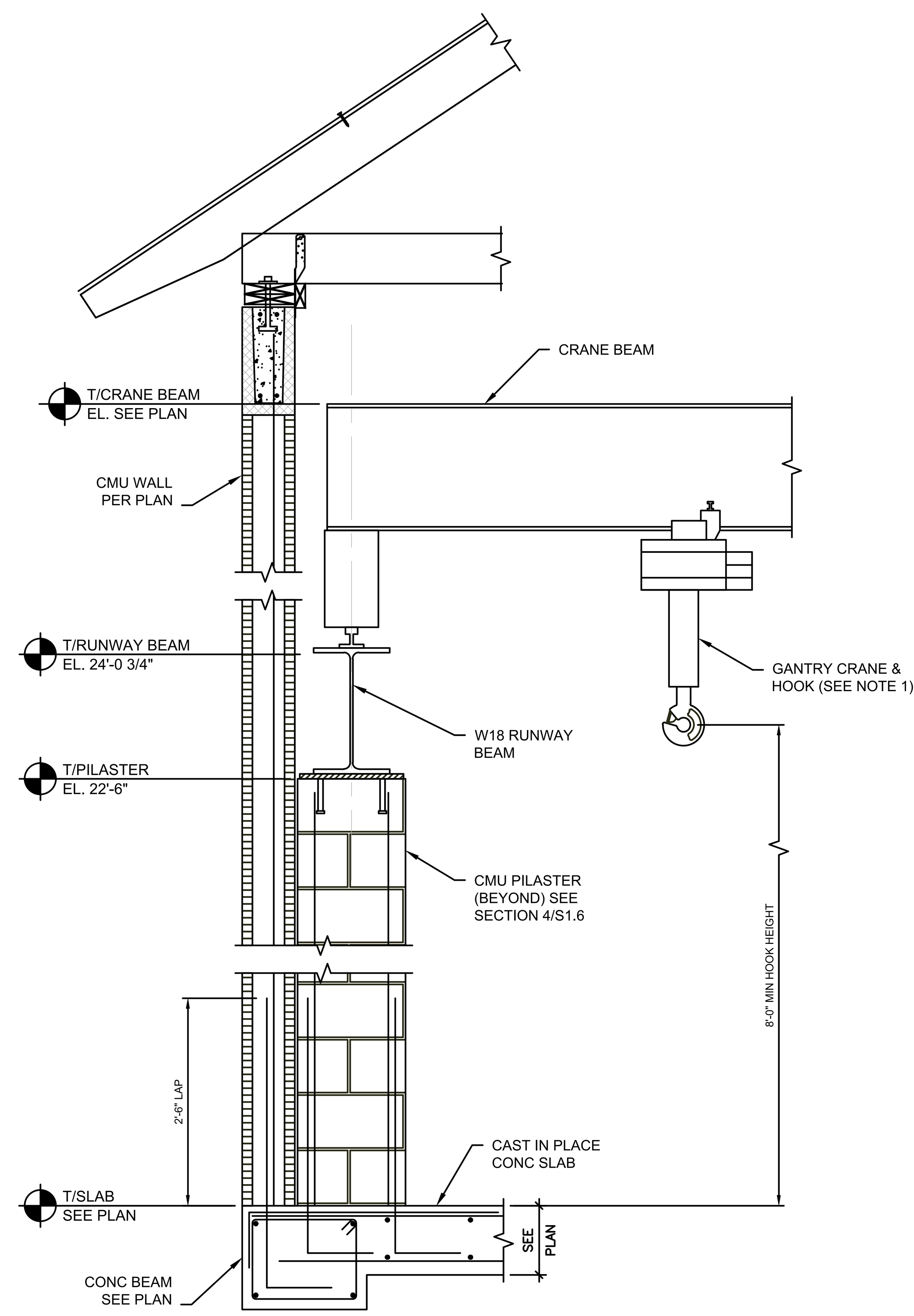
4 MASONRY PILASTER DETAIL
Scale: 1"=1'-0"





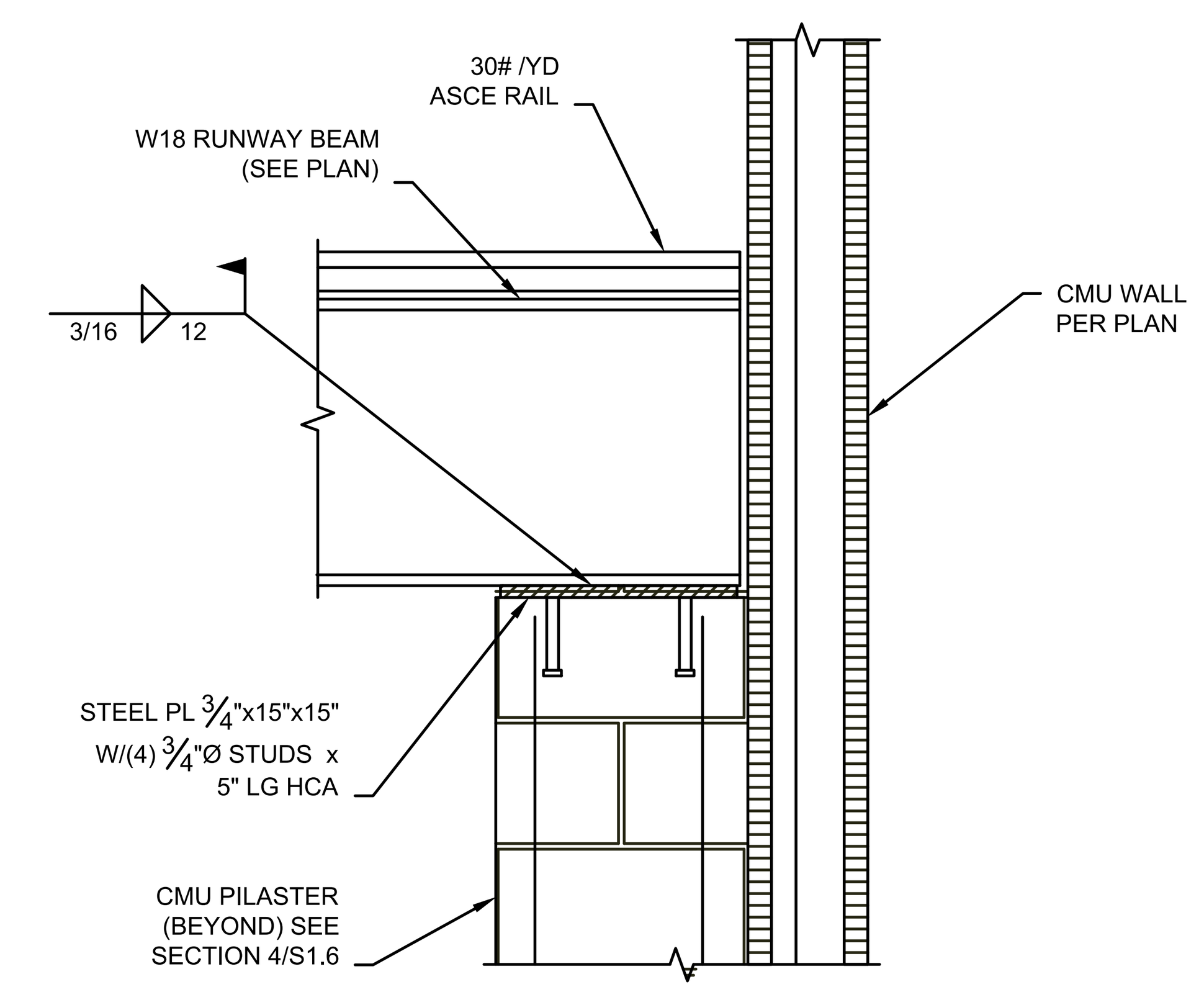
SECTION A-A

5 SECTION
Scale: 1"=1'-0"



6 SECTION
Scale: 3/4"=1'-0"

NOTE:
1. CRANE LIFT DISTANCE SHALL BE FROM SLAB ON GRADE AT ELEVATION (+) 3'-0".



7 SECTION
Scale: 1"=1'-0"

DATE	REVISION	BY
04/01/25	FOR CONSTRUCTION	MFW
10/25/24	FOR BID	MFW
09/13/24	FOR PERMITTING	MFW
07/27/24	90% SUBMITTAL	MFW
04/12/24	60% DESIGN SUBMITTAL	MFW

ARDURRA
ARDURRA GROUP NORTH CAROLINA
3809 Peachtree Avenue, Suite 102
Wilmington, North Carolina 28403
Phone: (910) 397-2929
www.Ardurra.com
NC Firm License #0374
Project No. 2023-1146-00

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 31432 MARK F. WEISS 4/1/2025

SEAL NOT VALID UNLESS SIGNED AND DATED

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.
3804 Park Avenue, Unit A
Wilmington, NC 28403
Tel 910-313-1516
www.hiepc.com
Firm License No. C-2586

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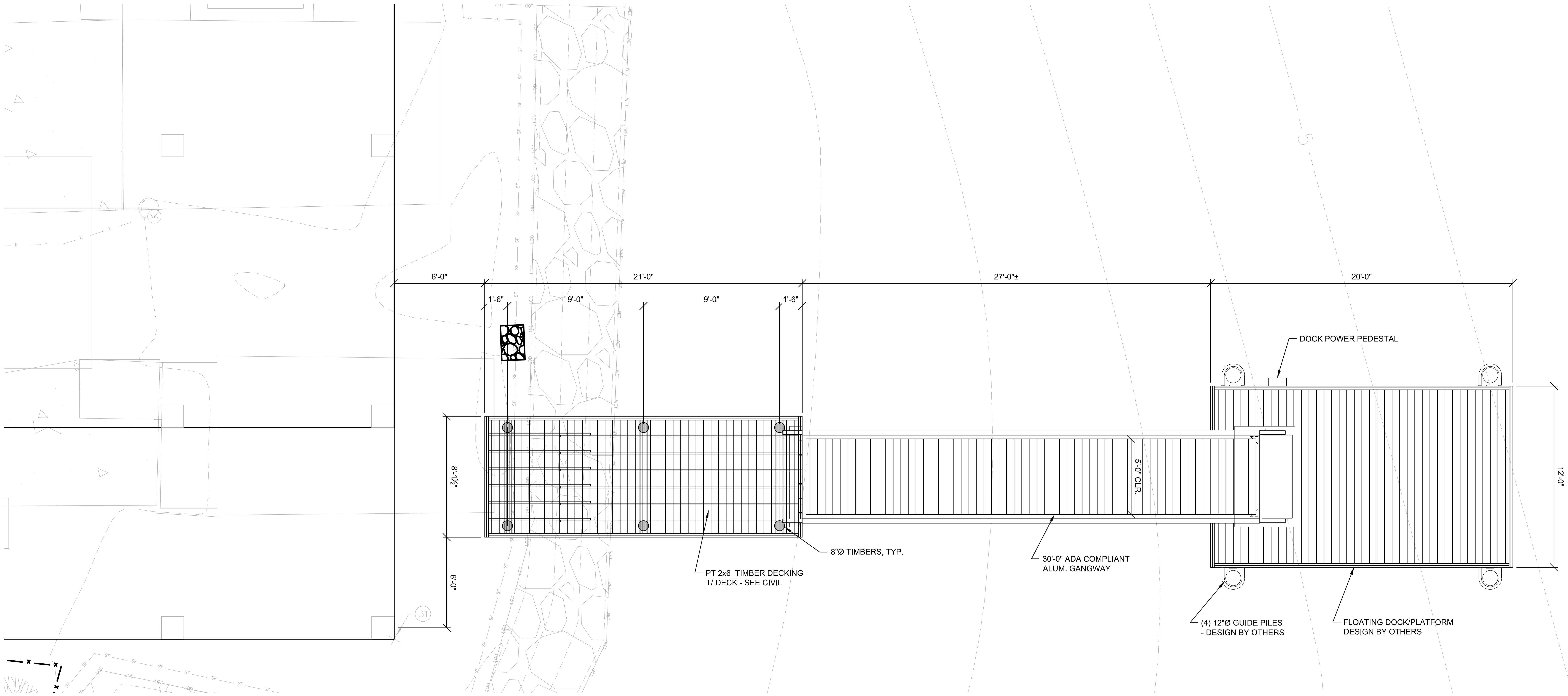
CAROLINA BEACH LAKE PUMP HOUSE #1 & #2 REPLACEMENT
CAROLINA BEACH, NC

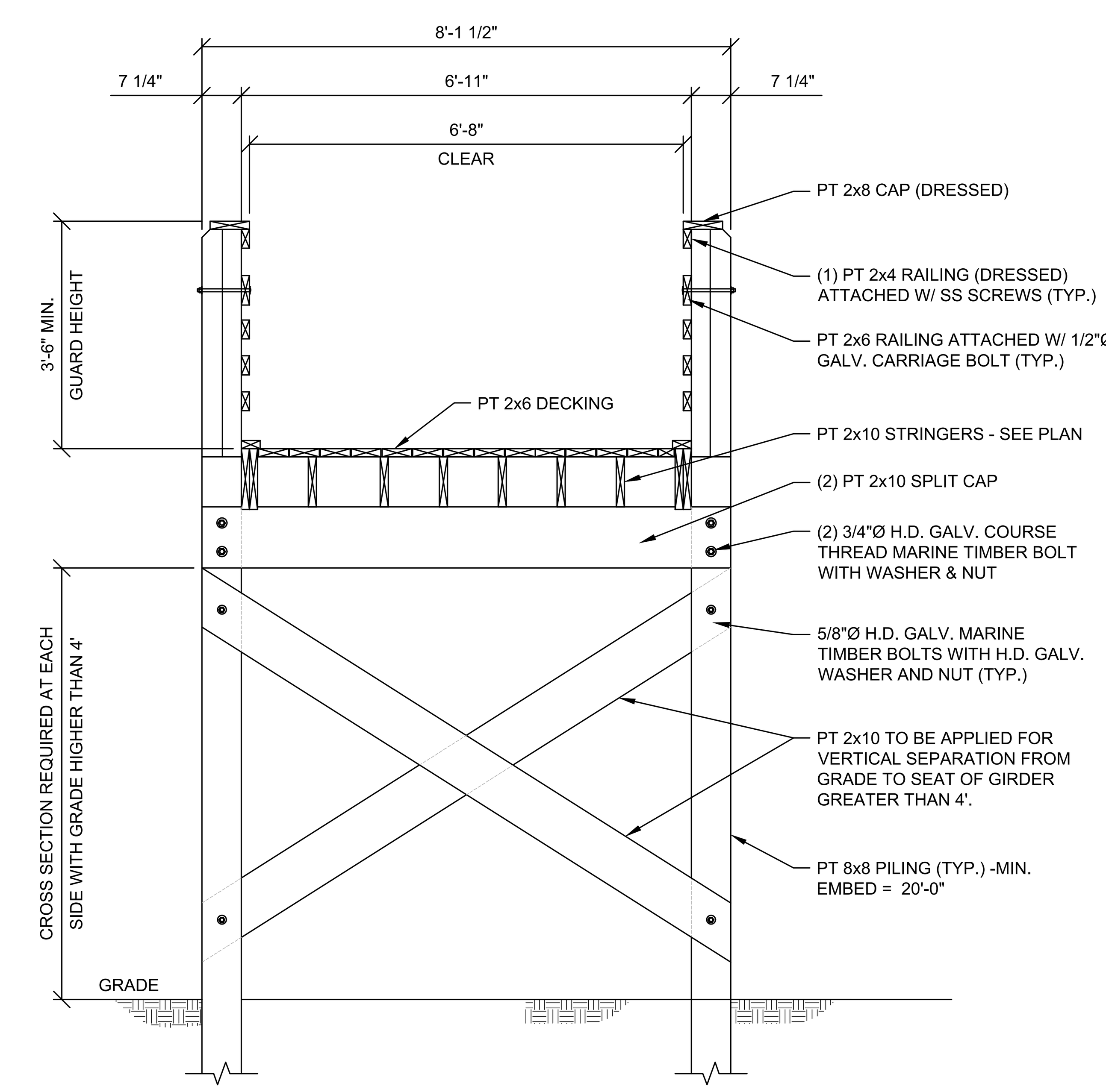
SECTIONS & DETAILS

PROJECT NO. TCB2301

S1.6



1 FLOATING DOCK LAYOUT
SCALE: 1/4" = 1'-0"



2 FLOATING DOCK LAYOUT
SCALE: 1/2" =1'-0"

DATE	REVISION	BY
04/01/25	FOR CONSTRUCTION	MFW
10/25/24	FOR BID	MFW
09/13/24	FOR PERMITTING	MFW
07/27/24	90% SUBMITTAL	MFW
04/12/24	60% DESIGN SUBMITTAL	MFW

ARDURRA
ARDURRA GROUP NORTH CAROLINA
3809 Peachtree Avenue, Suite 102
Wilmington, North Carolina 28403
Phone: (910) 397-2929
www.Ardurra.com
NC Firm License #0374
Project No. 2023-1146-00

NORTH CAROLINA PROFESSIONAL SEAL 31432 ENGINEER MARK F. WEISS
Docusigned by: Mark Weiss
4/1/2025
SEAL NOT VALID UNLESS SIGNED AND DATED

HIGHFILL
INFRASTRUCTURE
ENGINEERING, P.C.
3804 Park Avenue, Unit A
Wilmington, NC 28403
Tel 910-313-1516
www.hiepc.com
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REPLACEMENT
CAROLINA BEACH, NC

FLOATING DOCK LAYOUT

PROJECT NO.
TCB2301

S1.7

SECTION 230500 – HEATING AND AIR CONDITIONING SPECIFICATIONS

230501 GENERAL

A. THE HEATING AND AIR CONDITIONING CONTRACTOR SHALL INSTALL ALL WORK IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST EDITION OF THE NORTH CAROLINA STATE BUILDING CODE.

B. PERMITS AND INSPECTION FEES: THE HEATING AND AIR CONDITIONING CONTRACTOR SHALL SECURE ALL NECESSARY REQUIRED PERMITS AND INSPECTIONS FOR HIS WORK. INSPECTION BY LOCAL AUTHORITIES WILL BE REQUIRED.

C. THE DRAWINGS ACCOMPANYING THESE SPECIFICATIONS INDICATE DIAGRAMMATICALLY THE GENERAL LOCATION OF THE DUCTS, PIPING, AND EQUIPMENT AND DO NOT SHOW ALL OFFSETS, FITTINGS, BOLTS, CONNECTIONS, SUPPORTS, ETC., REQUIRED FOR A COMPLETE SYSTEM. WHILE THE DRAWINGS ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE, IF IT IS FOUND NECESSARY TO CHANGE THE LOCATION OF SAME TO ACCOMMODATE THE CONDITIONS AT THE BUILDING, SUCH CHANGES SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER, AND AS DIRECTED BY THE ENGINEER. ANY DETAIL WHICH IS OMITTED, AND WHICH IS NECESSARY FOR THE PROPER OPERATION OF ANY SYSTEM INCLUDED UNDER THE CONTRACT, SHALL BE SUPPLIED AND INSTALLED BY THE HEATING AND AIR CONDITIONING CONTRACTOR WITHOUT EXTRA COST TO THE OWNER. ALL PIPES AND DUCTS SHALL BE RUN AS HIGH AS POSSIBLE TO MAINTAIN CEILING AND HEAD CLEARANCE. ALL EQUIPMENT SHALL BE INSTALLED IN SUCH A MANNER AS TO ALLOW PROPER MAINTENANCE ACCESS.

D. CONDITIONS SHALL BE CHECKED AT THE BUILDING BEFORE FABRICATING OR PLACING ORDERS FOR APPARATUS AND SUCH APPARATUS SHALL BE OF SUCH DIMENSIONS AS TO FIT THE SPACES ALLOTTED. THE HEATING AND AIR CONDITIONING CONTRACTOR SHALL NOT SCALE MECHANICAL PLANS, BUT RATHER REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS.

E. GUARDS SHALL BE PROVIDED FOR ALL MOVING EQUIPMENT, MOTOR COUPLINGS, PUMP SHAFTS, BELT DRIVES AND SIMILAR EXPOSED RECIPROCATING OR ROTATING COMPONENTS.

F. ALL NEW HVAC AND REFRIGERATION EQUIPMENT SHALL BE LABELED IN ACCORDANCE WITH SECTION 301 OF THE NORTH CAROLINA STATE BUILDING CODE AND AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION. LABELING SHALL BE A PERMANENT FACTORY_APPLIED NAMEPLATE AFFIXED TO THE EQUIPMENT ON WHICH SHALL APPEAR IN LEGIBLE LETTERING, THE MANUFACTURER'S NAME OR TRADEMARK, THE MODEL, SERIAL NUMBER, AND THE SEAL OR MARK OF THE TESTING AGENCY.

230502 SCOPE

THE HEATING AND AIR CONDITIONING CONTRACTOR SHALL PROVIDE LABOR AND MATERIALS REQUIRED FOR A COMPLETE SYSTEM READY FOR OPERATION AS SHOWN ON THE DRAWINGS AND HEREINAFTER SPECIFIED. THIS INCLUDES ALL EQUIPMENT, DUCTWORK, PIPING AND ALL OTHER SERVICES NECESSARY WHETHER THEY ARE SPECIFICALLY MENTIONED HEREIN OR NOT. THE ENTIRE INSTALLATION SHALL BE INSTALLED IN A FIRST_CLASS, NEAT, PROFESSIONAL MANNER TO THE SATISFACTION OF THE ENGINEER AND SHALL CONFORM TO ALL APPLICABLE CODES AND LAWS.

230503 SHOP DRAWINGS AND SUBMITTAL DATA

THE HEATING AND AIR CONDITIONING CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING THE DETAILED ARRANGEMENT OR CONNECTIONS THAT ARE SHOWN SCHEMATICALLY ON THE DRAWINGS. DATA CERTIFIED FOR THE SPECIFIED PROJECT AND INDICATED MANUFACTURER, TYPE, OR SIZE, CAPACITY, ETC., SHALL BE SUBMITTED FOR THE FOLLOWING EQUIPMENT ITEMS:

A. POWER VENTILATORS

B. MANUAL AND MOTORIZED DAMPERS

230504 APPROVED EQUAL EQUIPMENT, ETC.

MANUFACTURERS LISTED ARE TO ESTABLISH A STANDARD OF QUALITY AND NOT INTENDED TO LIMIT THE SELECTION TO THESE MANUFACTURERS. ALL MATERIALS AND EQUIPMENT WHICH ARE ESSENTIAL AND HAVE NOT BEEN SPECIFIED OR SHOWN SHALL BE NEW AND OF THE HIGHEST GRADE AND QUALITY, FREE FROM DEFECT OR OTHER IMPERFECTIONS. IT SHOULD BE UNDERSTOOD THAT WHERE THE WORD PROVIDE IS USED, IT IS INTENDED THAT THE HEATING AND AIR CONDITIONING CONTRACTOR SHALL PURCHASE AND INSTALL ALL MATERIALS REQUIRED. APPROVAL OF EQUIPMENT WILL NOT RELIEVE THE CONTRACTOR OF COMPLIANCE WITH THE SPECIFICATIONS EVEN IF SUCH APPROVAL IS MADE IN WRITING, UNLESS THE ATTENTION OF THE ENGINEER IS CALLED TO THE NON_COMPLYING FEATURES BY LETTER ACCOMPANYING THE SUBMITTAL DATA. APPROVAL OF SUBMITTAL DATA BY THE ENGINEER SHALL NOT BE CONSTRUED AS A COMPLETE CHECK OR APPROVAL OF DETAILED DIMENSIONS, WEIGHTS, GAUGES, AND SIMILAR DETAILS WITH THE PROPOSED ARTICLES. THE CONFORMANCE WITH THE NECESSARY COORDINATION BETWEEN THE VARIOUS OTHER CONTRACTORS AND SUPPLIERS SHALL BE SOLELY THE RESPONSIBILITY OF THE HEATING AND AIR CONDITIONING CONTRACTOR.

230505 POWER VENTILATORS

A. POWER VENTILATORS SHALL BE TESTED AND RATED IN ACCORDANCE WITH THE STANDARDS OF AMCA 210 AND SHALL CARRY THE AMCA SEAL. ALL FANS SHALL BE UL LABELED. FANS SHALL BE COOK, GREENHECK, CARNES, TWIN CITY, PENNBARRY, OR APPROVED EQUAL.

B. WALL MOUNTED FAN SHALL BE HEAVY DUTY BELT DRIVEN WITH EXTRUDED ALUMINUM PROPELLER, EXHAUST OR SUPPLY AS INDICATED ON THE DRAWINGS. FAN SHALL BE MANUFACTURED AT AN ISO 9001 CERTIFIED FACILITY, SHALL BE UL LISTED AND BEAR THE AMCA CERTIFIED RATING FOR SOUND AND AIR PERFORMANCE. THE FAN SHALL BE BOLTED AND WELDED CONSTRUCTION WITH THE MOTOR, BEARINGS AND DRIVE MOUNTED ON A TUBULAR STEEL POWER ASSEMBLY. ALL STEEL COMPONENTS SHALL HAVE AN ELECTROSTATICALLY APPLIED BAKED POLYESTER POWDER COATING. PROPELLER SHALL BE STEEL AND SHALL BE BALANCED IN ACCORDANCE WITH AMCA STANDARD 204–96. MOTOR SHALL BE HEAVY DUTY PERMANENTLY LUBRICATED SEALED BALL BEARINGS IN A CAST IRON PILLOWBLOCK HOUSING FOR A MINIMUM L 50 LIFE OF 200,000 HOURS. DRIVES SHALL BE VARIABLE PITCH AND SIZED FOR 150% OF INSTALLED MOTOR HORSE POWER. FAN SHALL BE COMPLETE WITH WIRE GUARD, ALUMINUM BACKDRAFT DAMPER, SPARE BELTS, AUTO BELT TENSIONER, AND DISCONNECT SWITCH IN NEMA 3R ENCLOSURE.

230506 MANUAL AND MOTOR OPERATED DAMPERS

A. MANUAL AND MOTOR OPERATED DAMPERS SHALL BE LOW LEAKAGE TYPE PROVIDED IN THE DUCT SYSTEMS AS INDICATED ON THE DRAWINGS IN ACCORDANCE WITH NFPA STANDARD NO. 90A AND SHALL CONFORM TO NFPA STANDARD NO. 90A FOR MATERIALS AND WORKMANSHIP.

B. DAMPERS SHALL BE TAMCO SERIES 1500 SW OR APPROVED EQUAL BY RUSKIN, POTTORFF, PREFCO, AIR BALANCE, OR UNITED ENERTECH.

C. DAMPER FRAME SHALL BE EXTRUDED ALUMINUM NOT LESS THAN 0.080" IN THICKNESS, 4" DEEP X 1", WITH DUCT MOUNTING FLANGES ON BOTH SIDES OF FRAME. FRAME SHALL BE CLEAR ANODIZED TO A MINIMUM THICKNESS OF 0.7 MIL (18 MICRONS) DEEP. FRAME SHALL BE ASSEMBLED USING STAINLESS STEEL SCREWS. WELDED FRAMES SHALL NOT BE ACCEPTABLE.

D. BLADES SHALL BE MAXIMUM 6" DEEP EXTRUDED ALUMINUM AIR–FOIL PROFILES WITH A MINIMUM WALL THICKNESS OF 0.06", CLEAR ANODIZED TO A MINIMUM THICKNESS OF 0.7 MIL (18 MICRONS) DEEP. ALUMINUM END CAPS SHALL BE PRESS FITTED TO BLADE ENDS TO SEAL HOLLOW INTERIOR AND REDUCE AIR LEAKAGE RATES. END CAPS SHALL BE CLEAR ANODIZED. ALL BLADES SHALL BE SYMMETRICALLY PIVOTED.

E. BLADE AND FRAME SEALS SHALL BE EXTRUDED SILICONE, SECURED IN AN INTEGRAL SLOT WITHIN THE ALUMINUM BLADE AND FRAME EXTRUSIONS MECHANICALLY FASTENED TO PREVENT SHRINKAGE AND MOVEMENT OVER THE LIFE OF THE DAMPER. ADHESIVE OR CLIP–ON TYPE BLADE SEALS OR METALLIC COMPRESSION TYPE JAMB SEALS WILL NOT BE APPROVED.

F. HEXAGONAL CONTROL SHAFT SHALL BE 7/16", SHALL HAVE AN ADJUSTABLE LENGTH, AND SHALL BE AN INTEGRAL PART OF THE BLADE AXLE. A FIELD–APPLIED CONTROL SHAFT SHALL NOT BE ACCEPTABLE. ALL PARTS SHALL BE STAINLESS STEEL.

G. LINKAGE HARDWARE SHALL BE ALUMINUM AND STAINLESS STEEL, INSTALLED IN THE FRAME SIDE, OUT OF THE AIRSTREAM, AND ACCESSIBLE AFTER INSTALLATION. LINKAGE HARDWARE SHALL BE COMPLETE WITH STAINLESS STEEL CUP–POINT TRUNNION SCREWS TO PREVENT LINKAGE SLIPPAGE AND A CELCON BEARING BETWEEN MOVING PARTS TO REDUCE WEAR AND INCREASE LONGEVITY. LINKAGE THAT CONSISTS OF METAL RUBBING METAL WILL NOT BE APPROVED.

H. WHERE EXPOSED ON A LOUVER, PROVIDE ALUMINUM GUARDS OVER DAMPERS OF SIZE TO PROTECT BLADES WHEN THEY ARE IN FULLY OPEN POSITION.

I. DAMPERS SHALL BE AMCA RATED FOR LEAKAGE CLASS 1A FOR MAXIMUM LEAKAGE AT 1.0 IN W.G. SHALL BE 3 CFM/SF OF DAMPER AREA IN ACCORDANCE WITH AMCA STANDARD 500–D.

J. MOTOR OPERATED DAMPERS SHALL HAVE 120V ELECTRIC OPERATORS AND SHALL FAIL WHEN NOT POWERED TO POSITION INDICATED ON THE DRAWINGS.

230507 CONTROLS

A. FURNISH AND INSTALL AN ELECTRIC CONTROL SYSTEM TO FULFILL THE INTENT OF THE DRAWINGS AND SPECIFICATIONS. THE SYSTEMS SHALL INCLUDE ALL NECESSARY LABOR, ELECTRICAL WIRING. ALL EQUIPMENT, UNLESS SPECIFIED TO THE CONTRARY, SHALL BE FULLY PROPORTIONAL AND SHALL BE THE PRODUCT OF THE CONTROL MANUFACTURER.

B. ROOM COOLING TEMPERATURE SENSORS SHALL BE LINE VOLTAGE AUTOMATIC CHANGEOVER, DUAL SETPOINT TYPE WITH BATTERY BACKUP, KEY PAD LOCKOUT, TEMPORARY PROGRAM OVERRIDE, TEMPERATURE WARMER/COOLER ADJUSTMENT, RELATIVE HUMIDITY ADJUSTMENT, AND UNOCCUPIED TEMPERATURE AND RELATIVE HUMIDITY SETBACK CONTROL. SENSORS SHALL HAVE HEAT ANTICIPATION, FAN ON–OFF CONTROL, MULTI–STAGE COOLING CONTROL AND MULTI–STAGE HEATING CONTROL TO MATCH UNITS CONTROLLED, AND ALL CAPABILITIES TO SATISFY THE SEQUENCES OF OPERATION AS SPECIFIED.

C. ALL CONTROL WIRING SHALL BE INSTALLED IN ACCORDANCE WITH THE ELECTRICAL DRAWINGS AND DIVISION 26 ELECTRICAL SPECIFICATIONS.

D. AFTER COMPLETION AND TESTING OF THE INSTALLATION, REGULATE, ADJUST AND SERVICE AS NECESSARY ALL CONTROL DEVICES IN THE SYSTEMS, PLACING EACH ITEM IN COMPLETE AND PROPER OPERATION.

23058 ELECTRICAL

A. ELECTRICAL CIRCUIT SIZES ARE BASED ON CAPACITIES OF THE DRAWINGS AND IT SHALL BE THE RESPONSIBILITY OF HEATING AND AIR CONDITIONING CONTRACTOR TO CHANGE ANY AND ALL ELECTRICAL WORK IN ORDER TO FIT MECHANICAL EQUIPMENT. HEATING AND AIR CONDITIONING CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR TO ASSURE THAT ALL UNITS ARE PROPERLY CONNECTED AND SHALL CHECK WIRING PRIOR TO STARTING UNITS. ANY DAMAGE TO UNITS RESULTING FROM IMPROPER WIRING OR CONNECTIONS SHALL BE THE RESPONSIBILITY OF HEATING AND AIR CONDITIONING CONTRACTOR. FLEXIBLE ELECTRICAL CONDUITS SHALL BE 18 INCHES IN LENGTH MAXIMUM. ALL ELECTRICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH CODES HAVING JURISDICTION, THE ELECTRICAL DRAWINGS, AND DIVISION 26 ELECTRICAL SPECIFICATIONS.

230509 DUCTWORK

A. MECHANICAL DRAWINGS ARE SCHEMATIC ONLY AND DO NOT SHOW ALL OFFSETS ETC. REQUIRED. HEATING AND AIR CONDITIONING CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE COMPLETE CONTRACT DOCUMENTS AND SITE CONDITIONS BEFORE FABRICATING DUCTWORK. ANY CHANGES TO DUCTWORK FOUND NECESSARY TO ACCOMMODATE THE CONDITIONS AT THE BUILDING SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER, AND AS DIRECTED BY THE ENGINEER.

B. ALL DIMENSIONS ON THE DRAWINGS ARE FREE INSIDE DIMENSIONS.

C. DUCTWORK SHALL BE OF ALUMINUM WITH STANDARD GAUGES AND CONSTRUCTION IN ACCORDANCE WITH THE RECOMMENDATIONS OF SMACNA HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE, THIRD ADDITION, 2005 FOR APPROPRIATE PRESSURE CLASS. DUCTWORK SHALL BE CROSS BROKEN ON ALL SIDES AND SHALL BE SUPPORTED AT BOTH ENDS OF EACH JOINT AND AT 10'–0" INTERVALS MAXIMUM WITH ANGLES SUPPORTED BY ALUMINUM THREADED RODS OF SIZES AND SPACING IN ACCORDANCE WITH SMACNA. DUCTWORK TO BE EXPOSED SHALL BE CONSTRUCTED IN A FIRST CLASS, NEAT, PROFESSIONAL MANNER AND EXPOSED DUCTWORK WITH EXCESSIVE HAMMER MARKS SHALL BE REPLACED.

D. ALL COMPONENTS OF THE AIR DISTRIBUTION SYSTEM SHALL BE MECHANICALLY FASTENED WITH AT LEAST THREE EQUALLY SPACED SHEET METAL SCREWS WITH SCREWS NOT MORE THAN ON 12" CENTERS. ALL DUCT JOINTS SHALL BE SEALED IN ACCORDANCE WITH SMACNA SEAL CLASS A BEFORE INSULATION IS APPLIED. ALL SEALANTS SHALL MEET THE PROVISIONS OF UL181.

230510 TESTING AND BALANCING

A. TESTING AND BALANCING OF THE HEATING, VENTILATING, AND AIR CONDITIONING SYSTEMS SHALL BE PERFORMED BY AN AABC CERTIFIED TEST AND BALANCE COMPANY AS A SUBCONTRACTOR TO THE HEATING AND AIR CONDITIONING CONTRACTOR. ALL INSTRUMENTS USED SHALL BE ACCURATELY CALIBRATED AND IN GOOD WORKING ORDER. THE TESTS SHALL BE IN STRICT ACCORDANCE TO THE STANDARDS OF AABC.

B. AIR BALANCE AND TESTING SHALL NOT BEGIN UNTIL THE SYSTEMS HAVE BEEN INSTALLED IN FULL WORKING ORDER AND SHOWN TO BE OPERATING SATISFACTORY ON BOTH HEATING AND COOLING. THE ARCHITECT AND ENGINEER SHALL BE GIVEN TWO WEEKS ADVANCE NOTICE OF WHEN TESTS ARE TO BE MADE.

C. UPON COMPLETION OF THE HEATING, VENTILATING, AND AIR CONDITIONING SYSTEMS, THE TEST AND BALANCE CONTRACTOR SHALL COMPILE THE TEST DATA AND SUBMIT THE COMPLETED TEST DATA TO THE ENGINEER FOR EVALUATION AND APPROVAL.

D. TESTING PROCEDURE (AIR):

1. TEST AND RECORD MOTOR FULL LOAD AMPERES ON ALL MOTORS.
2. EXHAUST FANS SHALL BE TESTED AND BALANCED FOR THE REQUIREMENT AS SHOWN ON THE PLANS. RECORD ALL DATA.
3. THE HEATING AND AIR CONDITIONING CONTRACTOR SHALL MAKE ANY CHANGES IN THE PULLEYS, BELTS, FILTERS, DAMPERS, OR VALVES NECESSARY OR AS RECOMMENDED BY THE ENGINEER FOR CORRECT BALANCE AT NO ADDITIONAL COST TO THE OWNER.

230511 AS BUILT DRAWINGS

THE HEATING AND AIR CONDITIONING CONTRACTOR SHALL MAINTAIN "DURING THE COURSE OF THE WORK" A SET OF DRAWINGS MARKED UP TO SHOW THE WORK AS INSTALLED, INCLUDING DIMENSIONS TO INDICATED LOCATIONS AND ELEVATIONS OF BURIED WORK. UPON COMPLETION OF THE WORK, RETURN THIS SET OF DRAWINGS TO THE ARCHITECT.

230512 INSTRUCTIONS/TRAINING

THE HEATING AND AIR CONDITIONING CONTRACTOR SHALL GIVE AN INSTRUCTION AND TRAINING PERIOD IN THE OPERATION OF THE APPARATUS TO THE PERSONS WHO WILL BE IN CHARGE OF THE SYSTEM.

230513 GUARANTEE

THE HEATING AND AIR CONDITIONING CONTRACTOR SHALL GUARANTEE THE ENTIRE HEATING AND AIR CONDITIONING SYSTEM SUBJECT TO THE GENERAL CONDITIONS OF THE PROJECT.

END OF SECTION 230500

GENERAL NOTES:

1. HVAC CONTRACTOR SHALL FIELD VERIFY ALL RELEVANT DIMENSIONS, CLEARANCES, LOCATIONS AND ELEVATIONS PRIOR TO ORDERING, FABRICATION, AND INSTALLATION OF HIS WORK. DISCREPANCIES OR INTERFERENCE'S SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER AS SOON AS POSSIBLE. THE DRAWINGS DIAGRAMMATICALLY INDICATE THE GENERAL LOCATION OF DUCTS, PIPING AND EQUIPMENT AND DO NOT SHOW ALL SUPPORTS, OFFSETS, FITTINGS, BOLTS, CONNECTIONS, ETC. REQUIRED FOR A COMPLETE SYSTEM. WHILE THE DRAWINGS ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE, IF IT IS FOUND NECESSARY TO CHANGE THE LOCATION OF ANY WORK TO ACCOMMODATE THE CONDITIONS AT THE BUILDING, SUCH CHANGES SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER, AND AS DIRECTED BY THE ARCHITECT/ENGINEER.

2. HVAC CONTRACTOR/ CONTROLS CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR FOR PROVISIONS OF POWER TO CONTROL SYSTEM NOT SHOWN ON M OR E DRAWINGS. ELECTRICAL CONTRACTOR WILL PROVIDE POWER TO GENERAL POINTS, JUNCTION BOXES, ETC., AND POWER WIRING FROM THOSE POINTS TO EQUIPMENT SHALL BE BY THE HVAC CONTRACTOR/CONTROL CONTRACTOR.

3. ALL THERMOSTATS AND SWITCHES FOR MECHANICAL SYSTEMS SHALL BE MOUNTED 44" AFF.

LEGEND

(duct symbol)	RECTANGULAR DUCTWORK
TS C	COOLING THERMOSTAT
(1)	KEYED NOTE SYMBOL
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
MD	MANUAL DAMPER
MOD	MOTOR OPERATED DAMPER

–	–	–	–
03/25/25	ISSUED FOR CONSTRUCTION	KL	
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07/26/24	90% SUBMITTAL	KL	
DATE	REVISION	BY	

CHEATHAM & ASSOCIATES, P.A.
CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA 28405
(910) 452–4210
FAX: (910) 452–4211
OFFICE@CHEATHAMPA.COM
NC LICENSE# C–1073

JOB # 23060

NORTH CAROLINA PROFESSIONAL SEAL 17655 ENGINEER KENNETH LYNCH

ISSUED FOR CONSTRUCTION

HIGHFILL
INFRASTRUCTURE
ENGINEERING, P.C.
3804 Park Avenue, Unit A
Wilmington, NC 28403
Tel 910-313-1516
www.hiepc.com
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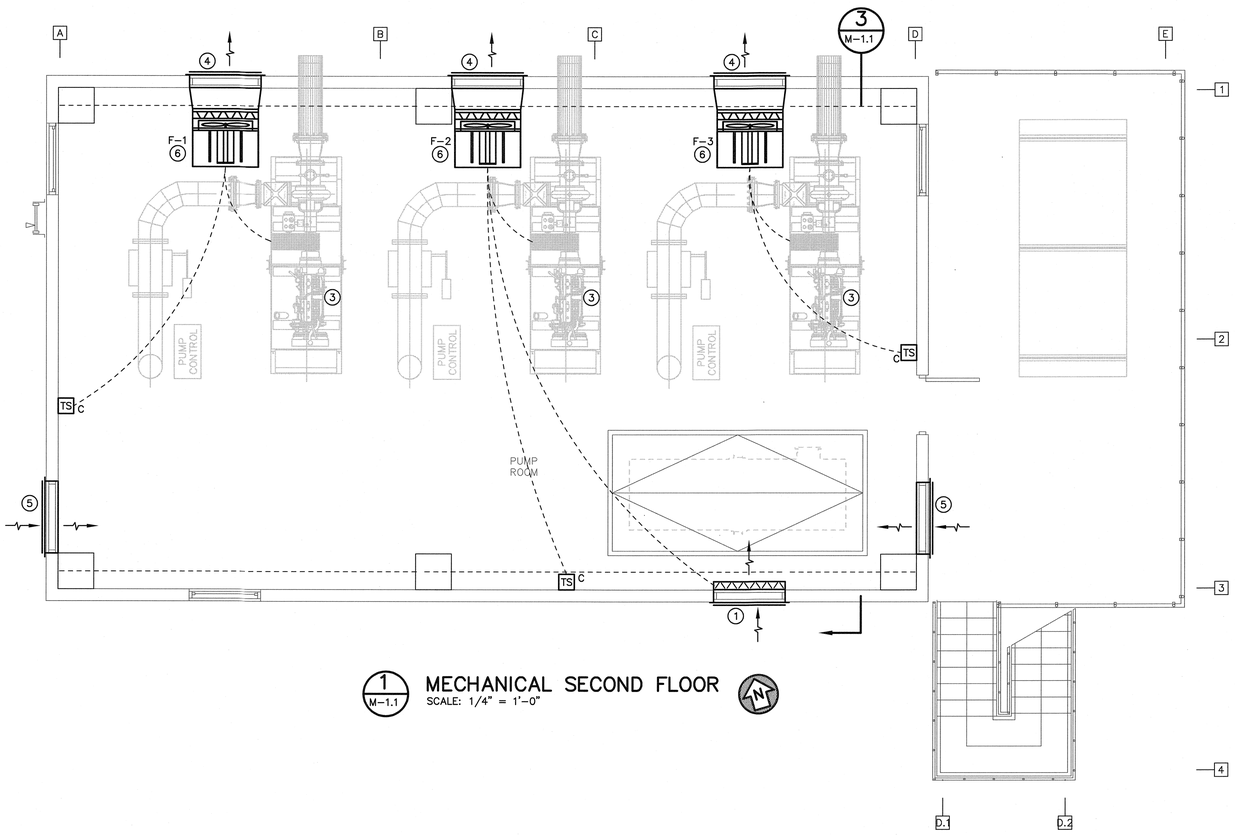
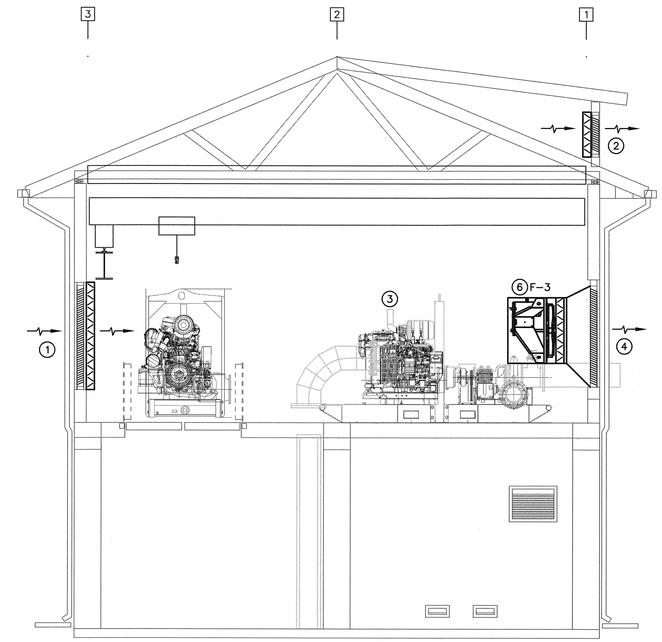
MECHANICAL NOTES, LEGEND AND SPECIFICATIONS

PROJECT NO.
TCB2301

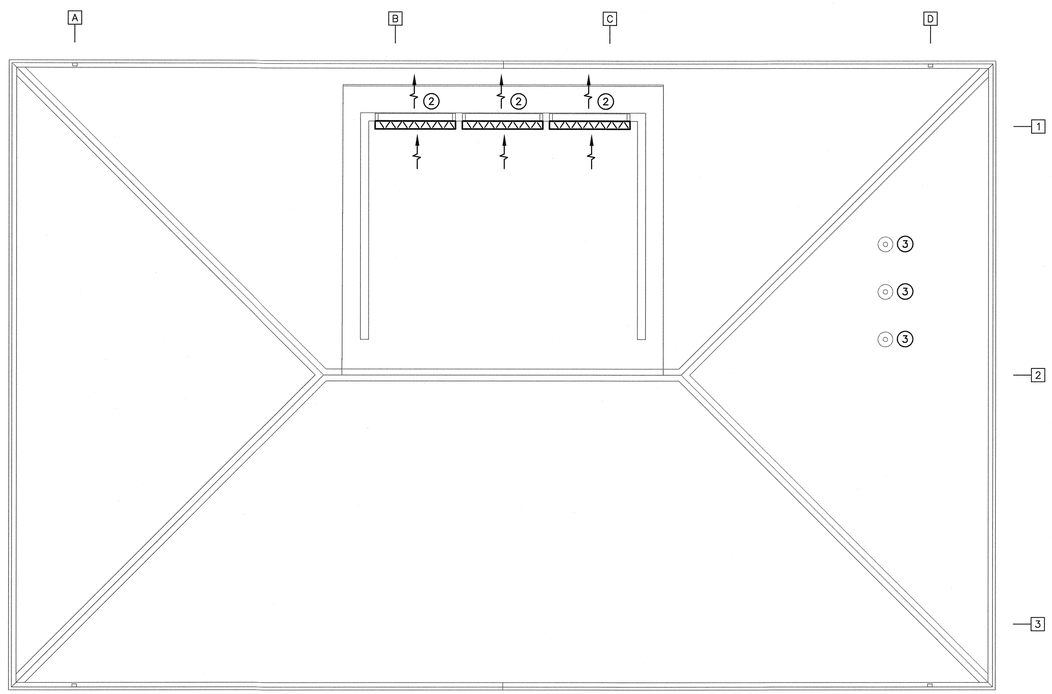
M–1.0



1 M-1.1 MECHANICAL SECOND FLOOR
SCALE: 1/4" = 1'-0"



3 M-1.1 MECHANICAL SECTION
SCALE: 1/4" = 1'-0"



2 M-1.1 MECHANICAL ROOF PLAN
SCALE: 1/4" = 1'-0"

POWER VENTILATOR SCHEDULE

SYMBOL	CFM	ESP	RPM	MAX SONES	ELECTRICAL HP	ELECTRICAL VOLTAGE	TYPE	DRIVE	CONTROL	REMARKS
F-1	11,450	0.875"	1340	55	5	460V-3ø	SIDEWALL PROPELLER EXHAUST FAN	BELT	(1)	PUMP ROOM (2)(3)
F-2	11,450	0.875"	1340	55	5	460V-3ø	SIDEWALL PROPELLER EXHAUST FAN	BELT	(1)(4)	PUMP ROOM (2)(3)
F-3	11,450	0.875"	1340	55	5	460V-3ø	SIDEWALL PROPELLER EXHAUST FAN	BELT	(1)	PUMP ROOM (2)(3)

(1) INTERLOCK WITH RELAY IN ENGINE CONTROLLER TO BE ON WHEN PUMP ENGINE IS ON IN PARALLEL WITH COOLING THERMOSTAT.

(2) PROVIDE WITH OSHA MOTOR SIDE GUARD, GRAVITY BACKDRAFT DAMPER, SPARE BELTS AND DISCONNECT SWITCH.

(3) BASIS OF DESIGN GREENHECK BAER-36 AND COOK 36EWB.

(4) WHEN FAN F-2 IS ON, MOTOR OPERATED DAMPER IN LOUVER (1) SHALL BE OPEN. SEE PLAN FOR CONNECTED LOUVER DAMPER.

KEYED NOTES: (THIS SHEET ONLY)

(1) 48"W x 72"H INTAKE LOUVER WITH BIRDSCREEN BY GC. PROVIDE MOTOR OPERATED DAMPER WITH GUARD ON BACKSIDE OF LOUVER. DAMPER SHALL BE OPEN WHEN FAN F-2 IS ON AND SHALL FAIL OPEN UPON LOSS OF POWER.

(2) 54"W x 30"H EXHAUST LOUVER IN DORMER WITH BIRDSCREEN BY GC. PROVIDE MOTOR OPERATED DAMPER WITH GUARD ON BACKSIDE OF LOUVER. DAMPER SHALL FAIL OPEN UPON LOSS OF POWER.

(3) PUMP ENGINE EXHAUST TO BE THROUGH THE ROOF FULL SIZE OF ENGINE CONNECTION WITH FACTORY SILENCER AND HINGED CAP ON OUTLET. ROUTE EXHAUST FROM ENGINE CONNECTION TO EAST SIDE OF ROOM TO BE OUTSIDE THE GANTRY CRANE'S TROLLEY LIMITS AND THEN TURN UP TO THE ROOF. IF LENGTH AND/OR BACKPRESSURE OF EXTENDED LENGTH OF EXHAUST EXCEEDS PUMP ENGINE'S REQUIREMENTS, UPSIZE EXHAUST AS NECESSARY. INSIDE ROOM INSULATE EXHAUST PIPE AND MUFFLER TO ROOF PENETRATION. MAINTAIN CLEARANCE TO COMBUSTIBLES THROUGH STRUCTURE AND ROOF.

(4) 48"W x 72"H EXHAUST LOUVER WITH BIRDSCREEN BY GC. PROVIDE DUCT TRANSITION FROM FAN TO LOUVER.

(5) 48"W x 72"H INTAKE LOUVER WITH BIRDSCREEN BY GC.

(6) SUPPORT FAN AND DUCTWORK FROM STRUCTURE ABOVE.

GRAPHIC SCALE
4' 2' 0 4' 8'
SCALE: 1/4"=1'-0"

-	KL	03/25/25
-	ISSUED FOR CONSTRUCTION	
-	KL	11/26/24
-	FOR BID	
-	KL	09/06/24
-	FOR PERMITTING	
-	KL	07/26/24
-	90% SUBMITTAL	
-	BY	DATE
	REVISION	

CHEATHAM & ASSOCIATES, P.A.
CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA 28405
(910) 452-4210
FAX: (910) 452-4211
OFFICE@CHEATHAMPA.COM
NC LICENSE # C-1073

JOB # 23060

NORTH CAROLINA PROFESSIONAL SEAL 17655 ENGINEER KENNETH LYNCH

HIGHFILL
INFRASTRUCTURE
ENGINEERING, P.C.
3804 Park Avenue, Unit A
Wilmington, NC 28403
Tel 910-313-1516
www.hiepc.com
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CAROLINA BEACH LAKE PUMP HOUSE #1 & 2 REPLACEMENT
CAROLINA BEACH, NC

MECHANICAL PLANS

PROJECT NO.
TCB2301

M-1.1

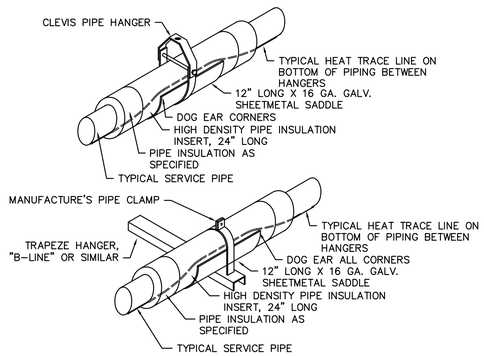
ISSUED FOR CONSTRUCTION

LEGEND

ECW	EXISTING COLD WATER PIPING TO REMAIN
CW	COLD WATER PIPING
	PIPE ELBOW TURNED DOWN
	PIPE ELBOW TURNED UP
	PIPE TEE TURNED DOWN
	PIPE TEE TURNED UP
BFG	BELOW FINISHED GRADE
AFG	ABOVE FINISHED GRADE
INV.	INVERT ELEVATION

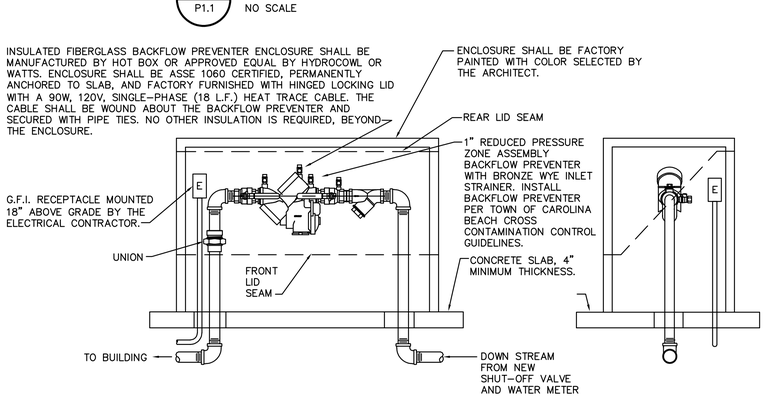
PLUMBING FIXTURE SCHEDULE

SYMBOL	DESCRIPTION	ROUGH-IN SIZES			REMARKS
		WASTE	C.W.	H.W.	
HB-1	HOSE BIBB	–	1/2"	–	MOUNT 12" AFF, INTEGRAL BACKFLOW PROTECTION

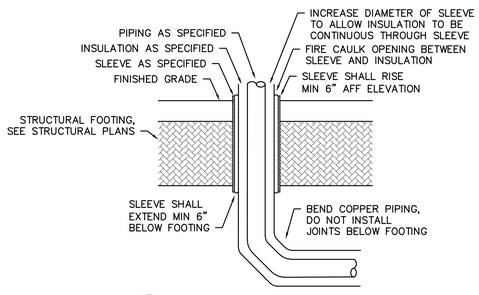


A P1.1 **PIPE HANGER DETAILS**
NO SCALE

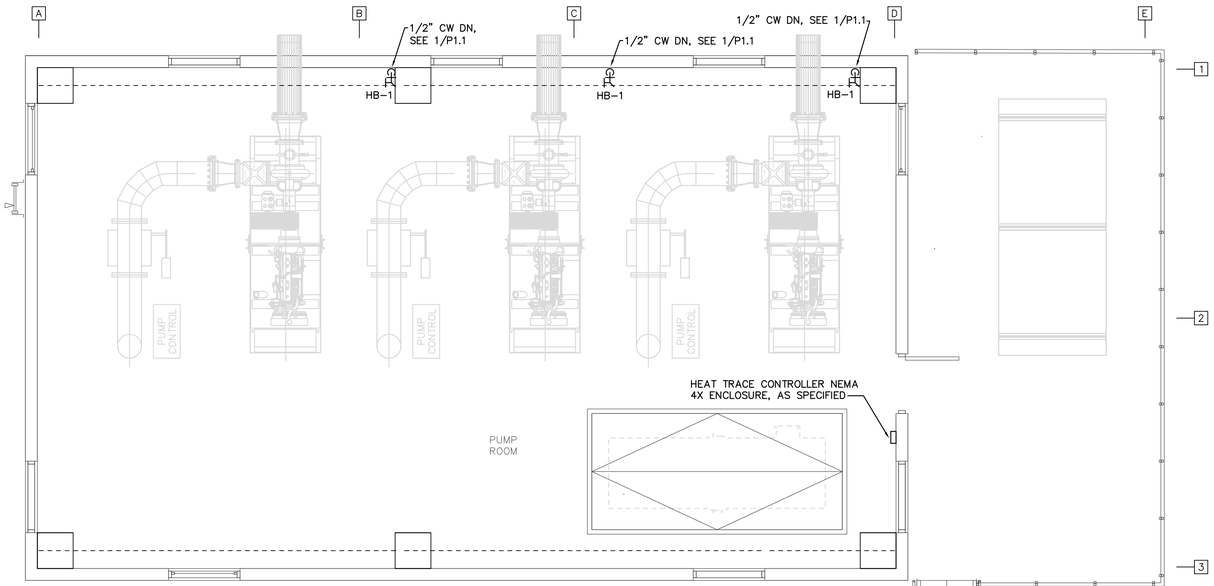
INSULATED FIBERGLASS BACKFLOW PREVENTER ENCLOSURE SHALL BE MANUFACTURED BY HOT BOX OR APPROVED EQUAL BY HYDROCOWL OR WATTS. ENCLOSURE SHALL BE ASSE 1060 CERTIFIED, PERMANENTLY ANCHORED TO SLAB, AND FACTORY FURNISHED WITH HINGED LOCKING LID WITH A 90W, 120V, SINGLE-PHASE (18 L.F.) HEAT TRACE CABLE. THE CABLE SHALL BE WOUND ABOUT THE BACKFLOW PREVENTER AND SECURED WITH PIPE TIES. NO OTHER INSULATION IS REQUIRED, BEYOND THE ENCLOSURE.



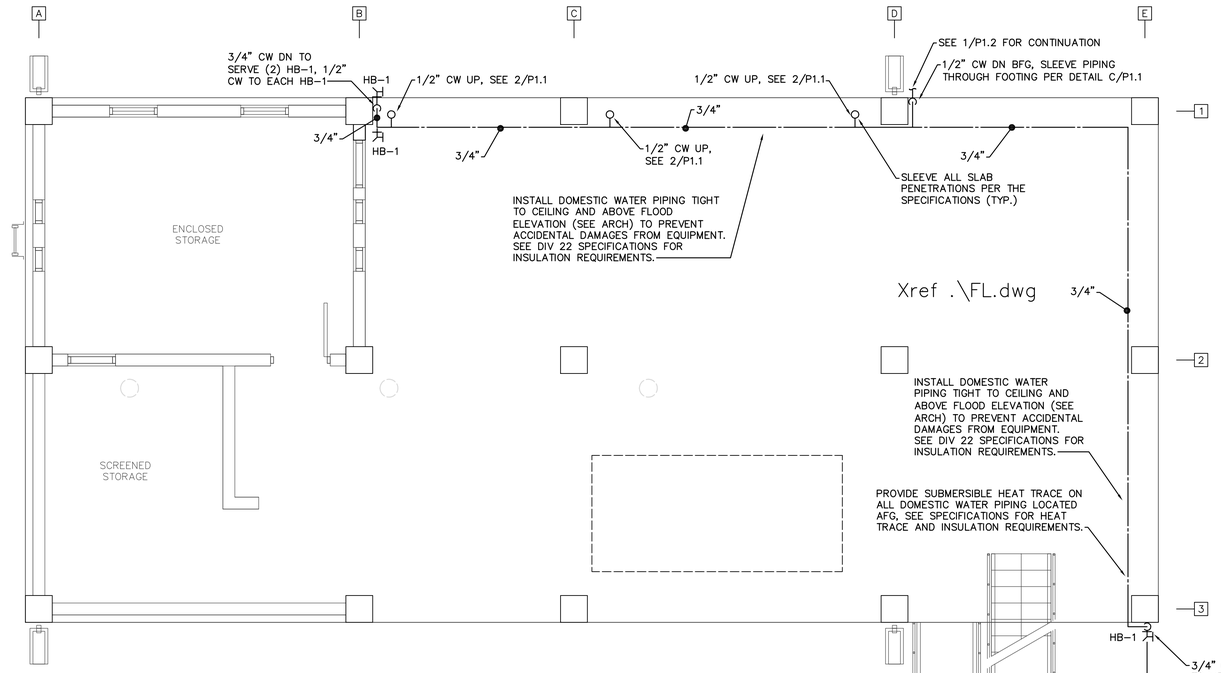
B P1.1 **BACKFLOW PREVENTER WITH ENCLOSURE**
NO SCALE



C P1.1 **STRUCTURAL FOOTING PENETRATION DETAIL**
NO SCALE



2 P1.1 **SECOND FLOOR PLUMBING PLANS**
SCALE: 1/4" = 1'-0"



1 P1.1 **GROUND FLOOR PLUMBING PLANS**
SCALE: 1/4" = 1'-0"

GRAPHIC SCALES
4' 2' 0 4' 8'
SCALE: 1/4"=1'-0"

BY	REVISION	DATE
CDG	ISSUED FOR CONSTRUCTION	03/25/25
CDG	FOR BID	11/26/24
CDG	FOR PERMITTING	09/06/24
CDG	90% SUBMITTAL	07/26/24

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CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA 28405
(910) 452-4210
FAX: (910) 452-4211
OFFICE@CHEATHAMPA.COM
NC LICENSE # C-1073

JOB # 23060

NORTH CAROLINA SEAL 043164 ENGINEER CASEY D. GILMAN

Digitally signed by Casey Gilman
Date: 2025.03.24 13:01:43-04'00'

ISSUED FOR CONSTRUCTION

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.
3804 Park Avenue, Unit A
Wilmington, NC 28403
Tel 910-313-1516
www.hiepc.com
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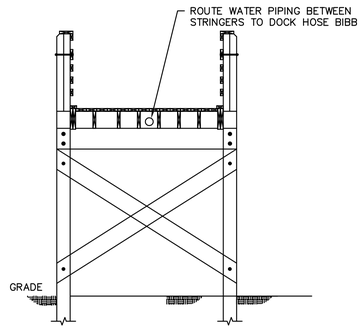
CAROLINA BEACH LAKE PUMP HOUSE #1 & 2 REPLACEMENT
CAROLINA BEACH, NC

PLUMBING PLANS

PROJECT NO. TCB2301

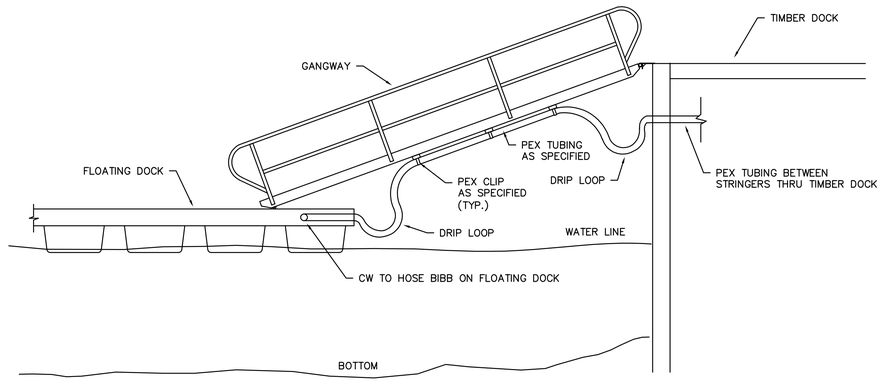
P1.1



B / P1.2

TIMBER DECK ELEVATION DETAIL

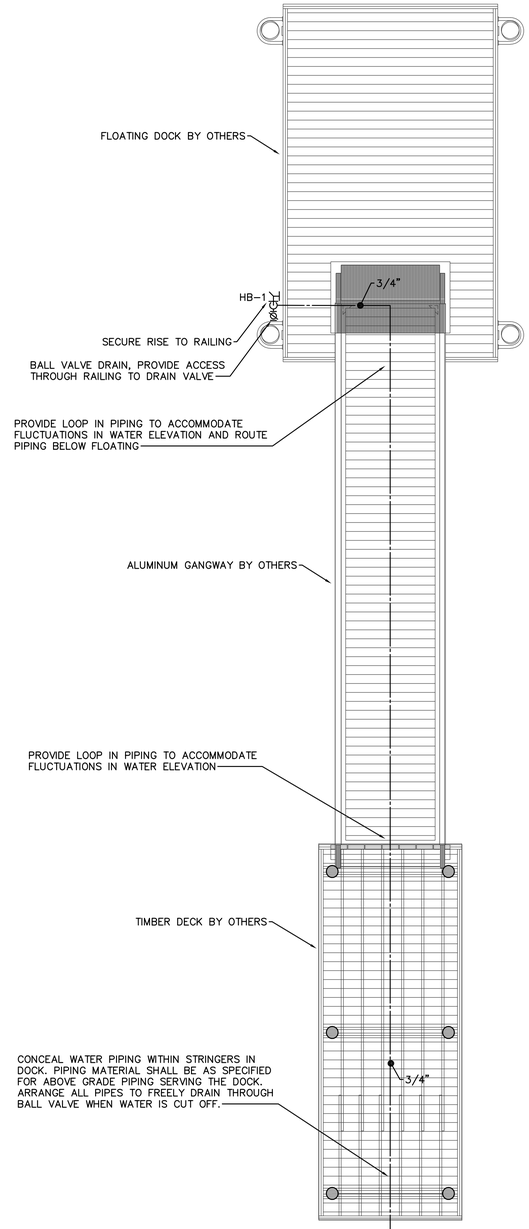
NO SCALE



A / P1.2

GANGWAY ELEVATION DETAIL

NO SCALE



1 / P1.2

PLUMBING DOCK PLAN

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

GRAPHIC SCALES

4' 2' 0 4' 8'

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

BY	DESCRIPTION	DATE
CDG	ISSUED FOR CONSTRUCTION	03/25/25
CDG	FOR BID	11/26/24
CDG	FOR PERMITTING	09/06/24
CDG	90% SUBMITTAL	07/26/24
BY	REVISION	DATE

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CAROLINA BEACH, NC

PLUMBING DOCK PLANS

PROJECT NO. TCB2301

P1.2

ISSUED FOR CONSTRUCTION

ELECTRICAL NOTES

1. ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
2. PERMITS FOR ELECTRICAL WORK SHALL BE OBTAINED BY AND PAID BY THE ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL PAY FOR ANY ADDITIONAL FEES FOR INSPECTIONS, TESTS, AND OTHER SERVICES AS REQUIRED FOR THE COMPLETION OF THE WORK.
3. THE ELECTRICAL CONTRACTOR AND ANY OF HIS SUBCONTRACTORS SHALL VISIT THE PROJECT SITE TO WITNESS EXISTING CONDITIONS AND BECOME FAMILIAR WITH THE SCOPE OF THE WORK REQUIRED PRIOR TO SUBMITTING PROPOSALS. WORK REQUIRED BY EXISTING JOB CONDITIONS NOT INDICATED ON DRAWINGS SHALL BE INCLUDED IN THE PROPOSALS.
4. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO RESULT IN THE PRODUCTION OF A COMPLETE AND FUNCTIONAL ELECTRICAL SYSTEM. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL MATERIAL, LABOR, EQUIPMENT, AND OTHER SERVICES AS NECESSARY TO COMPLETE THE WORK.
5. DISCREPANCIES IN THE DRAWINGS AND SPECIFICATIONS THAT WILL AFFECT THE WORK SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT, ENGINEER, AND/OR OWNER PRIOR TO SUBMITTING PROPOSALS.
6. UNLESS NOTED OTHERWISE, ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND INCLUDE A 3RD PARTY LABEL (I.E.: UL, CSA, ETL, ETC.) LISTING APPROVAL FOR ITS INSTALLED APPLICATION.
7. REVIEW PLANS OF OTHER TRADES FOR COORDINATION OF WORK AND FOR RELATED AND ADJOINING WORK.
8. REVIEW COMPLETE PLAN SET FOR CONSTRUCTION TYPE, FINISHES, HEADROOM, ROOF FINISHES, CEILINGS, ETC. REVIEW COMPLETE PLAN SET FOR PROJECT PHASING AND STAGING. REVIEW COMPLETE PLAN SET FOR WORK COVERED BY ALTERNATE BID ITEMS.
9. COORDINATE DEVICE AND EQUIPMENT MOUNTING HEIGHTS WITH OTHER DISCIPLINE DRAWINGS, CASEWORK DETAILS & SUBMITTALS, EQUIPMENT DETAILS & SUBMITTALS, ETC.
10. PENETRATIONS OF EXTERIOR BUILDING WALLS, FLOORS, OR ROOFS SHALL BE SEALED WATERTIGHT. INTERIORS OF RACEWAY PENETRATIONS THROUGH EXTERIOR WALLS SHALL BE SEALED WITH NON-HARDENING ELECTRICAL PUTTY.
11. CUTTING AND PATCHING TO INSTALL DEVICES AND EQUIPMENT SHALL BE PERFORMED WITH FINISHES RESTORED TO THEIR ORIGINAL CONDITION. SUCH WORK SHALL BE COMPLETED TO A DEGREE THAT IS ACCEPTABLE TO THE ARCHITECT, ENGINEER, AND/OR OWNER.
12. PROVIDE NATIONAL ELECTRICAL CODE REQUIRED CLEARANCES FOR ALL ELECTRICAL EQUIPMENT. COORDINATE RESOLUTION OF CONFLICTS WITH OTHER TRADES.
13. PRIOR TO ORDERING LIGHT FIXTURES, CONTRACTOR SHALL VERIFY TYPE OF CEILING OR WALL BY REVIEW OF ARCHITECTURAL FINISH SCHEDULES AND PROVIDE SUITABLE TRIM AND APPURTENANCES TO MOUNT FIXTURES IN TYPE OF CEILING OR WALL INDICATED.
14. EXIT AND EMERGENCY LIGHTS SHALL BE CONNECTED TO THE NEAREST UNSWITCHED CIRCUIT THAT SERVES LIGHT FIXTURES WITHIN THE SAME SPACE.
15. NO MOUNTING HARDWARE SHALL BE ATTACHED TO ROOF DECKS. ATTACHMENTS SHALL BE MADE TO THE ROOF SUPPORTING STRUCTURE.
16. PANEL BUS MATERIAL: COPPER.
17. SHARED NEUTRAL CONDUCTORS SHALL NOT BE USED UNLESS SPECIFICALLY INDICATED SO ON HOMERUN CIRCUITRY DESIGNATIONS.
18. PANEL BREAKER CONFIGURATIONS SHALL BE INSTALLED AS INDICATED ON THE PANEL SCHEDULES OR AS NOTED. BREAKER POSITION REVISIONS WILL NOT BE ACCEPTED UNLESS APPROVED IN WRITING BY THE ENGINEER.
19. LOAD CIRCUITS SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS. CIRCUITRY REVISIONS WILL NOT BE ACCEPTED UNLESS APPROVED IN WRITING BY THE ENGINEER.

ABBREVIATIONS

ADA	AMERICAN DISABILITIES ACT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPS INTERRUPTING CAPABILITY
BKR	BREAKER
C	CONDUIT
C/B	CIRCUIT BREAKER
CLG	CEILING
CKT	CIRCUIT
CU	COPPER
DIA	DIAMETER
DWG	DRAWING
ENCL	ENCLOSED
EXSTG	EXISTING
G	EQUIPMENT GROUND
GEC	GROUNDING ELECTRODE CONDUCTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
HP	HORSEPOWER
K	KILO (THOUSAND)
LED	LIGHT EMITTING DIODE
LTG	LIGHTING
MCB	MAIN CIRCUIT BREAKER
MFR	MANUFACTURER
MLO	MAIN LUG ONLY
N/A	NOT APPLICABLE
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
NTS	NOT TO SCALE
P	PHASE OR POLE
PH	PHASE
PNL	PANEL
REC	RECEPTACLE
RECPT	RECEPTACLE
REQ.	REQUIRED
SYS	SYSTEM
S/N	SOLID NEUTRAL
TYP	TYPICAL
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
V	VOLTS
VA	VOLT-AMPS
W	WATTS
W	WIRE
W/	WITH
WP	WEATHERPROOF
XFMR	TRANSFORMER

MISC. ELECTRICAL SYMBOL LEGEND

- ENCLOSED CIRCUIT BREAKER, NEMA 4X S.S. (UNO), AMPERAGE AS INDICATED OR BASED ON SUPPLY CIRCUIT RATING.
- EQUIPMENT CONNECTION
- PANELBOARD, SEE PANEL SCHEDULE
- GROUND ROD, 3/4" X 10' COPPER CLAD. WHERE TWO RODS ARE INDICATED, SPACE A MINIMUM OF 22' APART.

HOMERUN DESIGNATION, #12 CONDUCTORS UNLESS NOTED OTHERWISE.
- EQUIPMENT GROUND CONDUCTOR
- PHASE CONDUCTOR
- NEUTRAL CONDUCTOR

A / E-508
- LETTER INDICATES ELEVATION OR DETAIL; NUMBER INDICATES PLAN OR SECTION
- SHEET NUMBER WHERE PLAN, SECTION, ELEVATION OR DETAIL IS DRAWN

LUMINAIRE SCHEDULE

CALLOUT	SYMBOL	DESCRIPTION	LAMP	BALLAST	VOLTS	MOUNTING	MANUFACTURER / MODEL	NOTES	CALLOUT
EG		EMERGENCY EGRESS, BATTERY	(2) 7W MR 16 LED	BATTERY	120V 1P 2W	WALL; MTD 8'-0" AFF	EMERGILITE #COMPACT PREMIER SERIES BEGHELLI #ECCO LUNA LED SERIES LIGHTALARMS #COMPACT GRANDE SERIES	THESE FIXTURES ARE NOT TAGGED WITH "EG" ON THE DRAWINGS; ONLY THE SYMBOL IS USED.	EG
IL		4' INDUSTRIAL	(1) 30W LED	LED DRIVER	120V 1P 2W	PENDANT/SURFACE	COLUMBIA #LCL SERIES DAYBRITE #FSS SERIES METALUX #SNLED SERIES	3700 NOMINAL LUMENS. 4000K COLOR TEMPERATURE. WIRE GUARD. FROSTED LENS.	IL
S		VAPORTIGHT W/ GLOBE	(1) 23W LED	LED DRIVER	120V 1P 2W	SURFACE, CEILING BOX; FIXTURE MOUNTED HORIZONTALLY	LUMARK #LVL20UG SERIES RAB #VXLED26DG SERIES STONCO #VCXL SERIES	1500 NOMINAL LUMENS, 4000K COLOR TEMPERATURE, CAST ALUMINUM BODY & GUARD, FROSTED GLASS LENS.	S
W		WALL PACK, TRAPEZOID SHAPE	(1) 55W LED	LED DRIVER	120V 1P 2W	WALL	HUBBELL #TRP2 SERIES GARDCO #101L SERIES MCGRAW-EDISON #IST SERIES	5200 NOMINAL LUMENS. 3000K COLOR TEMPERATURE. TYPE II DISTRIBUTION.DOWNLIGHT ONLY. FINISH SELECTION BY ARCHITECT. MOUNT CENTERED 8'-6" ABOVE 2ND LEVEL LANDING.	W

MDP

ROOM:
MOUNTING: SURFACE
FED FROM: SERVICE DISCONNECT
NOTE: NEMA 4X

VOLTS: 480Y/277V 3P 4W
BUS AMPS: 125
NEUTRAL: 100%

AIC: 10,000
MAIN BKR: MLO
LUGS: STANDARD

CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C
1	20/1	SPARE	0			2	70/2	XFMR TP1	18.3		
3	20/1	SPARE		0		4	|			16	
5	20/1	SPARE			0	6	20/1	SPARE			0
7	20/1	SPARE	0			8	20/1	SPARE	0		
9	20/1	SPARE		0		10	20/1	SPARE		0	
11	20/1	SPARE			0	12	20/1	SPARE			0
13	20/1	SPARE	0			14	20/1	SPARE	0		
15	20/1	SPARE		0		16	20/1	SPARE		0	
17	20/1	SPARE			0	18	20/1	SPARE			0
19	20/1	SPARE	0			20	20/1	SPARE	0		
21	20/1	SPARE		0		22	20/1	SPARE		0	
23	20/1	SPARE			0	24	20/1	SPARE			0
25	20/1	SPARE	0			26	20/1	SPARE	0		
27	20/1	SPARE		0		28	20/1	SPARE		0	
29	20/1	SPARE			0	30	20/1	SPARE			0
								TOTAL CONNECTED KVA BY PHASE	18.3	16	0
								TOTAL CONNECTED AMPS BY PHASE	70.7	63.1	0

	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
LIGHTING	1	1.25	(125%)	RECEPTACLES	1.62	1.62	(50%>10)
LARGEST MOTOR	6.72	1.68	(25%)	CONTINUOUS	7	8.75	(125%)
MOTORS	20.2	20.2	(100%)	NONCONTINUOUS	4.55	4.55	(100%)
				TOTAL LOAD		38	
				BALANCED 3-PHASE LOAD		45.7 A	

P1

ROOM: CAROLINA BEACH PUMP HOUSE
MOUNTING: SURFACE
FED FROM: TP1
NOTE: NEMA 4X

VOLTS: 240/120V 2P 3W
BUS AMPS: 200
NEUTRAL: 100%

AIC: 10,000
MAIN BKR: 150
LUGS: STANDARD

CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B
1	20/1	PUMP 1 CONTROL PANEL	1.5		2	20/2	240V OUTLET	1	
3	20/1	PUMP 2 CONTROL PANEL		1.5	4	|			1
5	20/1	PUMP 3 CONTROL PANEL	1.5		6	20/2	240V OUTLET	1	
7	20/1	LOUVER		0.4	8	|			1
9	20/1	EGRESS, LTG	0.41		10	60/2	EXH FAN	3.36	
11	20/1	REC-GFCI		0.9	12	|			3.36
13	20/1	REC-GFCI	0.72		14	60/2	EXH FAN	3.36	
15	20/1	COMM BOX		0.15	16	|			3.36
17	20/1	LTG-WALLPACK	0.59		18	60/2	EXH FAN	3.36	
19	20/1	(*) REC-HEAT TRACE		1	20	|			3.36
21	20/1	(*) REC-HOT BOX	1.5		22	20/1	SPARE	0	
23	20/1	SPARE		0	24	20/1	SPARE		0
25	20/1	SPARE	0		26	20/1	SPARE	0	
27	20/1	SPARE		0	28	20/1	SPARE		0
29	20/1	SPARE	0		30	20/1	SPARE	0	
31	20/1	SPARE		0	32	20/1	SPARE		0
33	20/1	SPARE	0		34	20/1	SPARE	0	
35	20/1	SPARE		0	36	20/1	SPARE		0
37	20/1	SPARE	0		38	20/1	SPARE	0	
39	20/1	SPARE		0	40	20/1	SPARE		0
41	20/1	SPARE	0		42	20/1	SPARE	0	
							TOTAL CONNECTED KVA BY PHASE	18.3	16
							TOTAL CONNECTED AMPS BY PHASE	153	134

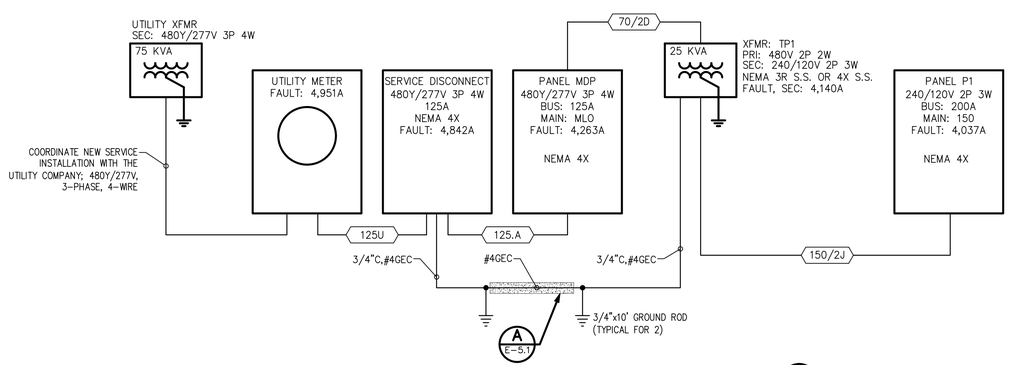
	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
LIGHTING	1	1.25	(125%)	RECEPTACLES	1.62	1.62	(50%>10)
LARGEST MOTOR	6.72	1.68	(25%)	CONTINUOUS	7	8.75	(125%)
MOTORS	20.2	20.2	(100%)	NONCONTINUOUS	4.55	4.55	(100%)
				TOTAL LOAD		38	
				BALANCED LOAD		158 A	

RECEPTACLE LEGEND

SYMBOL	NEMA	VOLTS	DESCRIPTION
240V	TBD	240/120V 2P 3W	MTD 30" AFF UNO. CONFIRM NEMA CONFIGURATION WITH THE OWNER.
G	5-20R	120V 1P 2W	DUPLEX GFCI, MTD 18" AFF UNO
HB	5-20R	120V 1P 2W	DUPLEX FOR HOT BOX HEATER; LISTED WEATHER-RESISTANT TYPE; PROVIDE CAST ALUMINUM WEATHERPROOF IN-USE COVER WITH CAST ALUMINUM FD WEATHERPROOF BOX. COORDINATE MTG HEIGHT WITH ENCLOSURE PROVIDED; SUPPLY FROM GFEP C/B (30mA).
CM		120V 1P 2W	POWER FOR FUEL TANK COMMUNICATION BOX.
HT		120V 1P 2W	POWER FOR HEAT TRACE; LISTED WEATHER-RESISTANT TYPE BOX W/CAST ALUMINUM WEATHERPROOF COVER BOX. SUPPLY FROM GFEP 30mA BREAKER.
L		120V 1P 2W	POWER FOR LOUVER

SWITCH LEGEND

SYMBOL	DESCRIPTION	NOTES
OS	OCCUPANCY SENSOR, LOW VOLTAGE, INFRARED; CEILING MTD	INCORPORATE POWER PACK FOR CIRCUITRY SWITCHING
PC	PHOTOCELL, EXTERIOR	MOUNT ON NORTH FACE OF BLDG, FACING NORTH
$	TOGGLE SWITCH, SINGLE POLE	RATED FOR VOLTAGE WHERE APPLIED, 20A; MTD 42" AFF UNO.
$ WP	CAST ALUMINUM WEATHERPROOF BOX WITH IN-USE COVER	RATED FOR VOLTAGE WHERE APPLIED, 20A; MTD 42" AFF UNO;



1 / E-0.1 ELECTRICAL POWER RISER
NO SCALE

FEEDER SCHEDULE

ID	FEEDER AMPS	CONDUIT AND FEEDER	FEEDING THESE DEVICES
70/2D	70	3/4"C,2#4,#8G	TP1
125.A	125	1-1/2"C,3#1,#1N,#6G	MDP
125U	125	1-1/2"C,3#1,#1N	SERVICE DISCONNECT
150/2J	150	1-1/2"C,2#1/0,#1/0N,#6G	P1

SIZING METHOD: COPPER, 60°C #12 THROUGH #1, 75°C #1/0 AND ABOVE

1	MAC	ISSUED FOR CONSTRUCTION	03/25/25
1	MAC	FOR BID	11/26/24
1	MAC	FOR PERMITTING	09/06/24
1	MAC	90% SUBMITTAL	07/26/24
	BY	REVISION	DATE

ISSUED FOR CONSTRUCTION

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WILMINGTON, NORTH CAROLINA 28405
(910) 452-4210
FAX: (910) 452-4211
OFFICE@CHEATHAMPA.COM
NC LICENSE# C-1073

JOB # 23060

Digitally signed by Mark A. Ciarrocca
Date: 2025.03.27 12:02:02-04'00'

NORTH CAROLINA PROFESSIONAL SEAL 17593 ENGINEER MARK A. CIARROCCA

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.
3804 Park Avenue, Unit A
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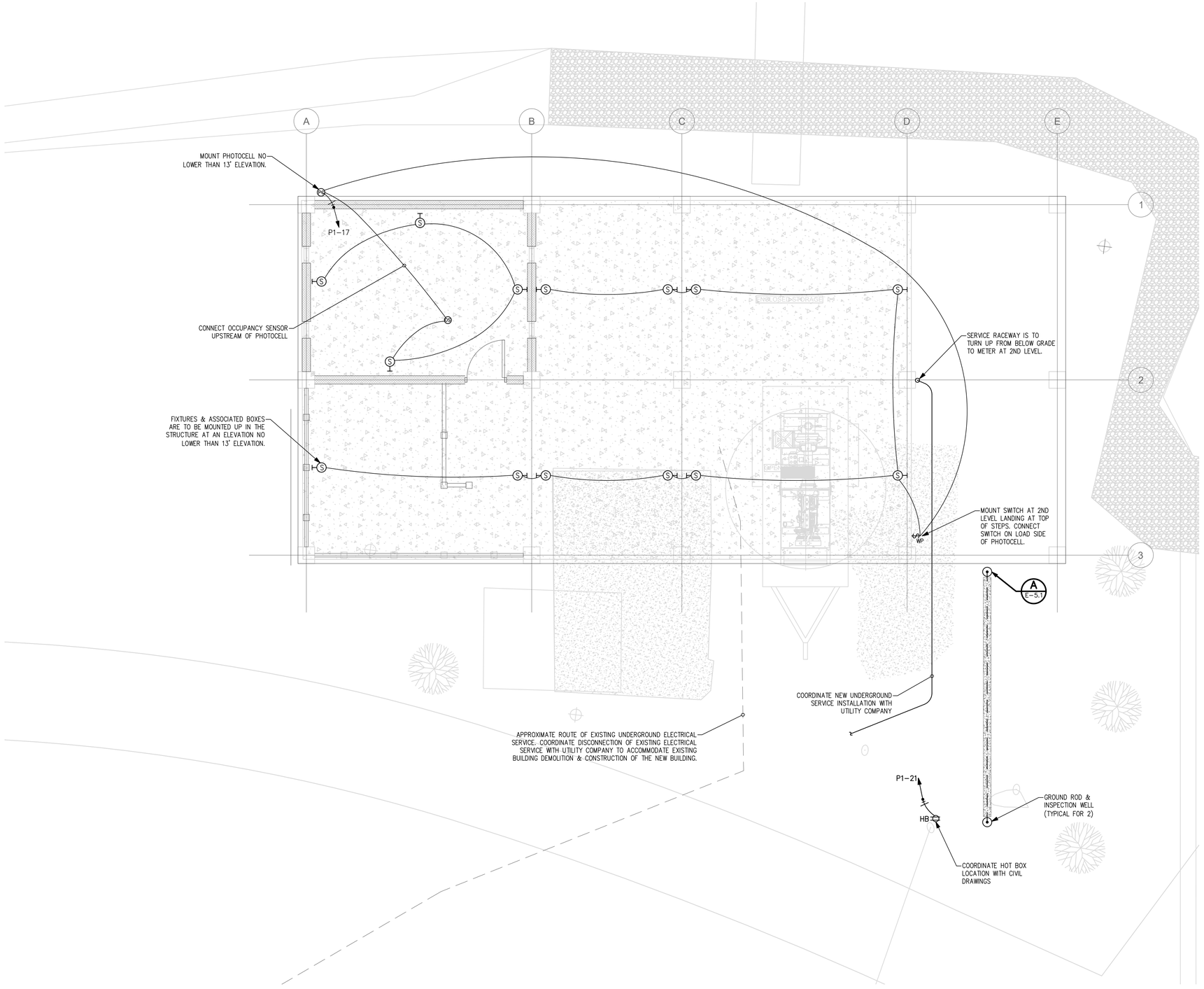
CAROLINA BEACH LAKE PUMP HOUSE #1 & 2 REPLACEMENT
CAROLINA BEACH, NC

ELECTRICAL
NOTES, LEGENDS, SCHEDULES, RISER

PROJECT NO.
TCB2301

E-0.1



1 E-1.1 **ELECTRICAL FIRST FLOOR PLAN**
SCALE: 1/4" = 1'-0"

GRAPHIC SCALE: 1"=1'-0"
0 1 2 4 8

TRUE NORTH

-	-	BY
MAC	ISSUED FOR CONSTRUCTION	MAC
MAC	FOR BID	MAC
MAC	FOR PERMITTING	MAC
MAC	90% SUBMITTAL	MAC
BY	REVISION	BY
-	03/25/25	-
-	11/26/24	-
-	09/06/24	-
-	07/26/24	-
-	DATE	-

ISSUED FOR CONSTRUCTION

CHEATHAM & ASSOCIATES, P.A.
CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA 28405
(910) 452-4210
FAX: (910) 452-4211
OFFICE@CHEATHAMPA.COM
NC LICENSE# C-1073

JOB # 23060

Digitally signed by Mark A. Ciarrocca
Date: 2025.03.27 12:02:03-04'00'

NORTH CAROLINA PROFESSIONAL SEAL 17593 ENGINEER MARK A. CIARROCCA

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.
3804 Park Avenue, Unit A
Wilmington, NC 28403
Tel 910-313-1516
www.hiepc.com
Firm License No. C-2586

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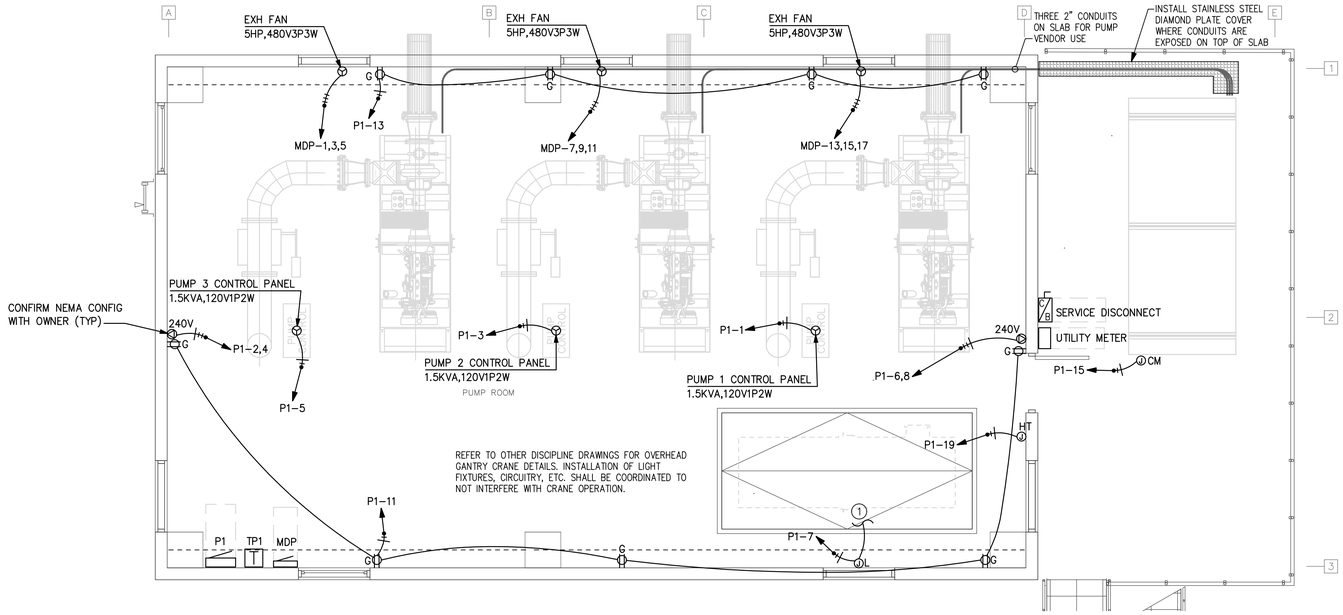
CAROLINA BEACH LAKE PUMP HOUSE #1 & 2 REPLACEMENT
CAROLINA BEACH, NC

ELECTRICAL
FIRST FLOOR PLAN

PROJECT NO.
TCB2301

E-1.1



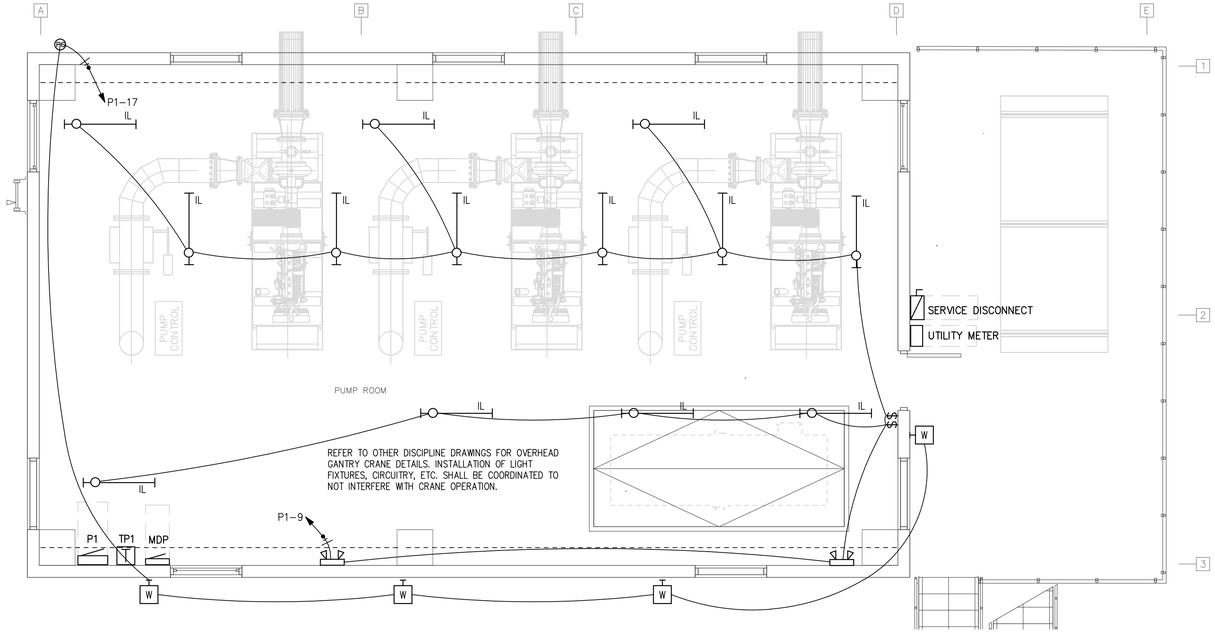
1 E-1.2 **ELECTRICAL SECOND FLOOR POWER PLAN**
SCALE: 1/4" = 1'-0"

GRAPHIC SCALE: 1/4"=1'-0"
0 1 2 4 8

TRUE NORTH

KEYED NOTES:

1. EXTEND CIRCUIT P1-7 TO LOUVERS SHOWN ON ROOF POWER PLAN 1/E-1.3.



2 E-1.2 **ELECTRICAL SECOND FLOOR LIGHTING PLAN**
SCALE: 1/4" = 1'-0"

GRAPHIC SCALE: 1/4"=1'-0"
0 1 2 4 8

TRUE NORTH

-	-	-
MAC	ISSUED FOR CONSTRUCTION	03/25/25
MAC	FOR BID	11/26/24
MAC	FOR PERMITTING	08/06/24
MAC	90% SUBMITTAL	07/26/24
BY	REVISION	DATE

ISSUED FOR CONSTRUCTION

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CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA 28405
(910) 452-4210
FAX: (910) 452-4211
OFFICE@CHEATHAMPA.COM
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HIGHFILL
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ENGINEERING, P.C.

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Wilmington, NC 28403
Tel 910-313-1516
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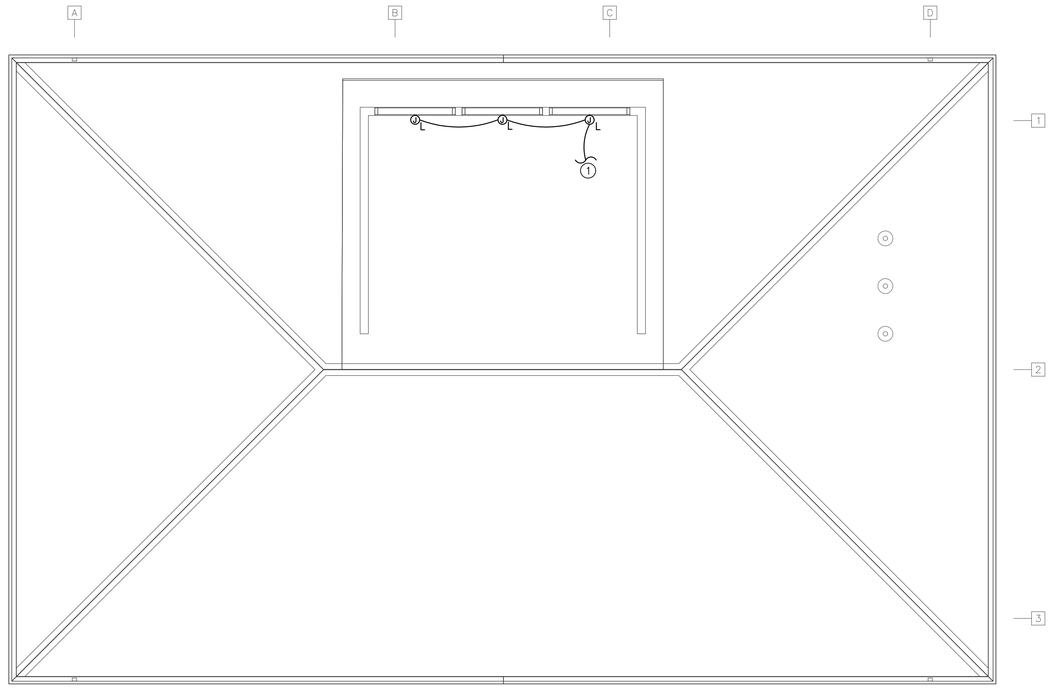
CAROLINA BEACH LAKE PUMP HOUSE #1 & 2 REPLACEMENT
CAROLINA BEACH, NC

ELECTRICAL
SECOND FLOOR PLANS

PROJECT NO.
TCB2301

E-1.2



1 / E-1.2 ELECTRICAL ROOF POWER PLAN
SCALE: 1/4" = 1'-0"

GRAPHIC SCALE: 1"=1'-0"
0 1 2 4 8

TRUE NORTH

KEYED NOTES:

(1) CONNECT TO CIRCUIT P1-7 SHOWN ON SECOND FLOOR POWER PLAN 1/E-1.2.

-	MAC	-
-	ISSUED FOR CONSTRUCTION	03/25/25
	FOR BID	11/26/24
	FOR PERMITTING	08/06/24
	90% SUBMITTAL	07/26/24
BY	REVISION	DATE

ISSUED FOR CONSTRUCTION

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CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
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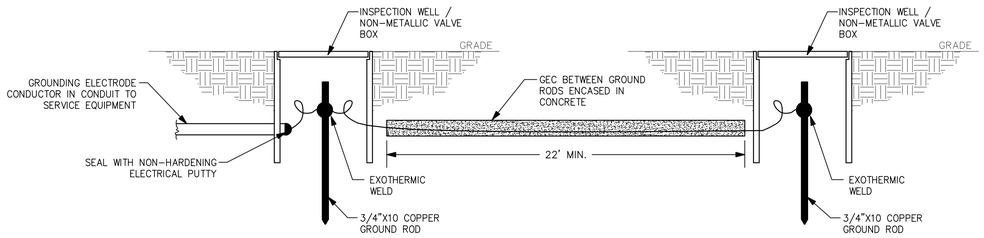
CAROLINA BEACH LAKE PUMP HOUSE #1 & 2 REPLACEMENT
CAROLINA BEACH, NC

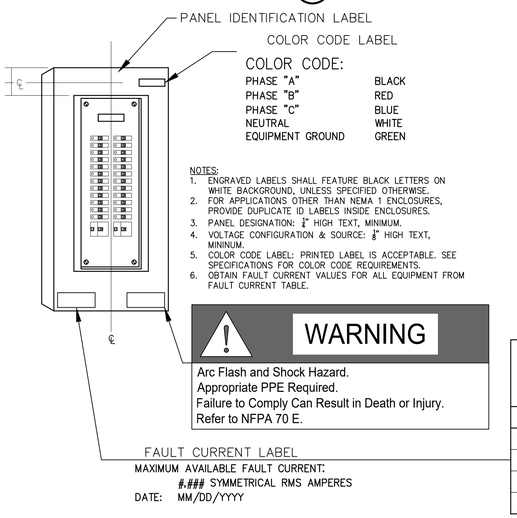
ELECTRICAL ROOF PLAN

PROJECT NO.
TCB2301

E-1.3



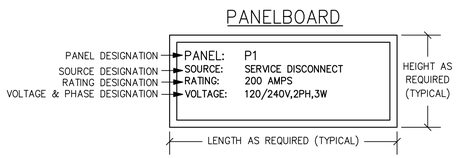
A E-5.1 **GROUND ROD & INSPECTION WELL**
NO SCALE



C E-5.1 **TYPICAL PANELBOARD IDENTIFICATION**
NO SCALE

FAULT CURRENT SCHEDULE

DEVICE	*L-L FAULT*
SERVICE DISCONNECT	4,751
MDP	4,196
TP1	3,823
P1	3,689



NOTES:
1. ENGRAVED PLASTIC FOR NAMEPLATE.
2. HIGH PERFORMANCE, DOUBLE COATED TAPE WITH ADHESIVE TO ATTACH LABELS. DESIGN BASIS: 3M #06383 OR APPROVED EQUIVALENT.
3. 3/8" ENGRAVED LETTERS EQUIPMENT NAME DESIGNATION AND 1/4" ENGRAVED LETTERS ON ALL OTHER DESIGNATIONS.

C E-5.1 **TYPICAL NAMEPLATE DETAILS**
NO SCALE

WARNING
Maximum Available Fault Current:
4,842 Symmetrical RMS Amperes
Date: 12/05/2024
Based on :
Utility Transformer: 75 kVA (Maxiumum)
Utility Transformer: 1.5% Impedance (Minimum)
Service Feeder: #1 (Maximum) Copper
Service Feeder Length: 10' (Minimum)

NOTE
THE CONTRACTOR SHALL OBTAIN INSTALLED SERVICE TRANSFORMER DATA AND AVAILABLE FAULT CURRENT DATA FROM THE UTILITY COMPANY. FORWARD INFORMATION TO THE ENGINEER FOR ASSESSMENT OF REVISIONS TO THE LABEL DATA.

D E-5.1 **FAULT CURRENT LABEL FOR SERVICE EQUIPMENT**
NO SCALE

BY	DATE	REVISION
MAC	03/25/25	ISSUED FOR CONSTRUCTION
MAC	11/26/24	FOR BID
MAC	09/06/24	FOR PERMITTING
MAC	07/26/24	90% SUBMITTAL

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CAROLINA BEACH LAKE PUMP HOUSE #1 & 2 REPLACEMENT
CAROLINA BEACH, NC

ELECTRICAL DETAILS

PROJECT NO.
TCB2301

E-5.11