



APEX

NORTH CAROLINA

BIG BRANCH 2 PUMP STATION

HAZEN CONTRACT NO. 32044-004
DATE: MARCH 2023



LOCATION PLAN
NOT TO SCALE

Hazen

HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

GENERAL

DRAWING NO SHEET NAME

- G0 COVER
- G1 INDEX OF DRAWINGS
- G2 ABBREVIATIONS AND LEGEND

CIVIL

DRAWING NO SHEET NAME

GENERAL

- C1 GENERAL NOTES AND LEGEND
- C2 NCG01 GROUND STABILIZATION AND MATERIALS HANDLING
- C3 NCG01 SELF-INSPECTION RECORD KEEPING AND REPORTING

SITE

- C4 EXISTING CONDITIONS PLAN
- C5 OVERALL SITE PLAN
- C6 PARTIAL SITE PLAN
- C7 YARD PIPING PLAN
- C8 GRADING AND DRAINAGE PLAN
- C9 ROADWAY PLAN - SHEET 1
- C10 ROADWAY PLAN - SHEET 2
- C11 ROADWAY PROFILE - SHEET 1
- C12 ROADWAY PLAN - SHEET 2
- C13 EROSION CONTROL PLAN

STANDARD DETAILS

- CD1 STANDARD DETAILS
- CD2 STANDARD DETAILS
- CD3 STANDARD DETAILS
- CD4 STANDARD DETAILS
- CD5 STANDARD DETAILS
- CD6 STANDARD DETAILS
- CD7 STANDARD DETAILS
- CD8 STANDARD DETAILS
- CD9 STANDARD DETAILS

MECHANICAL

DRAWING NO SHEET NAME

PUMP STATION

- M100 ISOMETRIC
- M101 BOTTOM PLAN
- M102 INTERMEDIATE PLAN
- M103 TOP PLAN
- M104 SECTION
- M105 SECTION
- M106 SECTION

METER VAULT

- M120 TOP PLAN AND SECTION

CHEMICAL FEED SYSTEM

- M130 CHEMICAL SCHEMATIC
- M131 PLAN AND ISOMETRICS
- M132 SECTION
- M133 SECTION AND DETAIL

CARBON FILTER

- M140 PLAN AND SECTION

STANDARD DETAILS

- MD1 STANDARD DETAILS-SHEET 1
- MD2 STANDARD DETAILS-SHEET 2
- MD3 STANDARD DETAILS-SHEET 3
- MD4 STANDARD DETAILS-SHEET 4
- MD5 STANDARD DETAILS-SHEET 5
- MD6 STANDARD DETAILS-SHEET 6
- MD7 STANDARD DETAILS-SHEET 7

STRUCTURAL

DRAWING NO SHEET NAME

GENERAL

- S1 GENERAL STRUCTURAL NOTES - SHEET 1
- S2 GENERAL STRUCTURAL NOTES - SHEET 2

PUMP STATION

- S100 BOTTOM PLAN
- S101 INTERMEDIATE PLAN
- S102 TOP PLAN
- S103 ROOF PLAN, SECTION AND DETAILS
- S104 FRAMING PLAN AND ELEVATION
- S105 SECTIONS I
- S106 SECTIONS II
- S107 SECTION, SCHEDULE & DETAILS
- S108 DETAILS I

CHEMICAL FEED SYSTEM

- S130 PLANS
- S131 ROOF PLAN
- S132 SECTIONS
- S133 SECTIONS AND DETAILS

CARBON FILTER

- S140 PLAN

ELECTRICAL BUILDING

- S150 PLANS
- S151 SECTIONS

STANDARD DETAIL

- SD1 STANDARD DETAILS
- SD2 STANDARD DETAILS
- SD3 STANDARD DETAILS
- SD4 STANDARD DETAILS
- SD5 STANDARD DETAILS
- SD6 STANDARD DETAILS

BUILDING

DRAWING NO SHEET NAME

BIG BRANCH PUMP STATION

- B1 NOTES, LEGENDS, AND SCHEDULES

PUMP STATION

- B100 LIFE SAFETY PLAN
- B101 TOP PLAN
- B102 ELEVATIONS & ROOF PLAN
- B103 SECTIONS
- B104 DETAILS

CHEMICAL FEED FACILITY

- B130 FLOOR, ROOF PLAN, AND ELEVATIONS
- B131 SECTIONS & DETAILS

ELECTRICAL BUILDING

- B150 LIFE SAFETY PLAN
- B151 FLOOR PLAN
- B152 ROOF PLAN
- B153 ELEVATIONS
- B154 SECTIONS
- B155 DETAILS

PLUMBING

DRAWING NO SHEET NAME

GENERAL

- P1 LEGEND & NOTES
- P2 DETAILS & SCHEDULES

CHEMICAL FEED BUILDING

- P130 FLOOR PLAN

ELECTRICAL BUILDING

- P150 TOP PLAN
- P151 RISER DIAGRAMS

HVAC

DRAWING NO SHEET NAME

GENERAL

- H1 LEGEND & NOTES
- H2 AIRFLOW DIAGRAMS & SCHEDULES
- H3 DETAILS

CHEMICAL FEED BUILDING

- H130 FLOOR PLAN

ELECTRICAL BUILDING

- H150 TOP PLAN

ELECTRICAL

DRAWING NO SHEET NAME

GENERAL

- E1 LEGEND AND SYMBOL
- E2 GENERAL NOTES AND ABBREVIATIONS
- E3 SITE PLAN
- E4 GROUNDING PLAN
- E5 DUCTBANK SCHEDULES
- E6 DUCTBANK SCHEDULES

PUMP STATION

- E100 AREA DESIGNATION AND CLASSIFICATION PLANS
- E101 BOTTOM POWER PLAN
- E102 INTERMEDIATE POWER PLAN
- E103 TOP POWER PLAN
- E104 INTERMEDIATE LIGHTING PLAN
- E105 TOP LIGHTING PLAN

CHEMICAL BUILDING

- E130 PLAN

ODOR CONTROL

- E140 AREA DESIGNATION AND CLASSIFICATION
- E141 PLAN

ELECTRICAL BUILDING

- E150 POWER, GROUNDING, AND LIGHTING PLAN
- E151 SWBD-BB2 SINGLE LINE DIAGRAM
- E152 PANEL SCHEDULES AND RISER
- E153 CONTROL ONE LINE DIAGRAM
- E154 ELEMENTARY CONTROL SCHEMATICS
- E155 CONDUIT AND WIRE SCHEDULES
- E156 CONDUIT AND WIRE SCHEDULES

STANDARD DETAILS

- ED1 STANDARD DETAILS
- ED2 STANDARD DETAILS
- ED3 STANDARD DETAILS
- ED4 STANDARD DETAILS

INSTRUMENTATION

DRAWING NO SHEET NAME

GENERAL

- I1 LEGEND
- I2 SYSTEM NETWORK ARCHITECTURE

PUMP STATION

- I100 INFLUENT,WET WELLS, AND PUMPING
- I101 MISCELLANEOUS SYSTEMS

STANDARD DETAILS

- ID1 STANDARD DETAILS
- ID2 STANDARD DETAILS

Autodesk_Docs/23044-004_Big Branch 2 Pump Station and Pipelines/23044-004-GENERAL_SHEETS.rvt 4/2/2023 9:19:22 AM

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	C. TROISI		
DRAWN BY:	C. TROISI		
CHECKED BY:	B. PORTER		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE			
REV	ISSUED FOR	DATE	BY

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

Hazen
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APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

GENERAL INDEX OF DRAWINGS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	G1

ABBREVIATIONS

GENERAL		DT	DAY TANK	I	IRON	PP	POWER PANEL OR POWER	VENT	VENTILATING OR	PIPING MATERIALS	
A/C	AIR CONDITIONER	DWG(S)	DRAWING(S)	I&C	INSTRUMENTATION AND	PREFAB	POLE	VERT	VERTICAL	CIP	CAST IRON PIPE
AB	ANCHOR BOLT	DWL	DOWEL	ID	CONTROLS	PROP	VENTILATION	VF	VANE AXIAL FAN	CMF	CORRUGATED METAL PIPE
AC	ASBESTOS CEMENT	EA	EACH	IF	INSIDE DIAMETER	PRVN	VENT VOLUME	VOL	VOLUME	CPP	CORRUGATED PLASTIC PIPE
ACP	AIR COMPRESSOR	ECC	ECCENTRIC	IN	INSIDE FACE	PSF	VENT THROUGH ROOF	VTR	VENT THROUGH ROOF	CU	COPPER PIPE
ACT-MR	ACOUSTICAL CEILING TILE.	ECH	ELECTRIC CABINET HEATER	INCL	INCLUDED	PSI	WEST OR WIDTH	W	WEST OR WIDTH	DIP	DUCTILE IRON PIPE
AD	MOISTURE RESISTANT	ED	EQUIPMENT DRAIN	INFL	INFLUENT	PSU	WITH	W/	WITH	ERCP	ELLIPTICAL REINFORCED CONCRETE PIPE
ADH	AREA DRAIN	EDH	ELECTRIC DUCT HEATER	INSUL	INSULATION	PVMT	WALL FAN	WF	WALL FAN	FRP	FIBERGLASS REINFORCED PIPE
ADJ	ADJUSTABLE	EDP	EMERGENCY DISTRIBUTION PANEL	INT	INTERIOR	QTY	WIRE GLASS	WG	WIRE GLASS	GSP	GALVANIZED STEEL PIPE
AFF	ABOVE FINISHED FLOOR	EE	EACH END	IPP	INVERT	RAD	WALL HYDRANT OR WALL HEATER	WH	WALL HYDRANT OR WALL HEATER	HDPE	HIGH DENSITY POLYETHYLENE
AGGR	AGGREGATE	EEW	EMERGENCY EYE WASH	J	JUNCTION BOX	RECIR	WATER LEVEL	WL	WATER LEVEL	PE LINING	POLYETHYLENE LINING
AH	AIR HEATER	EF	EACH FACE OR EXHAUST FAN	JCT	JUNCTION	RECT	WATER METER	WM	WATER METER	RCP	REINFORCED CONCRETE PIPE
AHU	AIR HANDLING UNIT	EFFL	EFFLUENT	JB	JOINT	RED	WITHOUT	W/O	WITHOUT	SSP	STAINLESS STEEL PIPE
AL	ALUMINUM	EHH	ELECTRICAL HANDHOLE	JT	JOINT	REF	WATERPROOF	WP	WATERPROOF	IPS	IRON PIPE SIZE
ALLOW	ALLOWANCE/ALLOWABLE	EL	ELEVATION	L	LENGTH/ANGLE	REG	WATER SURFACE ELEVATION	WPFGE	WATER SURFACE ELEVATION	PVC	POLYVINYLCHLORIDE
ALT	ALTERNATE	ELEC	ELECTRICAL	LA	LINE AHEAD	REIN	WEATHER STRIP	WSP	WEATHER STRIP	PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
APPROX	APPROXIMATE	ELP	EMERGENCY LIGHTING	LAB	LABORATORY	REINFC	WATER VALVE	WWT	WATER VALVE	VCP	VITRIFIED CLAY PIPE
AR	AIR RECEIVER	EMH	ELECTRICAL MANHOLE	LAM	LAMINATED	REM	WELDED WIRE FABRIC	WWF	WELDED WIRE FABRIC		
ARCH	ARCHITECTURAL	ENGR	ENGINEER	LAT	LATERAL	REOD	WASTEWATER TREATMENT PLANT	WWTP	WASTEWATER TREATMENT PLANT		
ASB	ASBESTOS	ENT	ENTRANCE	LAV	LAVATORY	REST	XFMR	TRANSFORMER	TRANSFORMER		
ASPH	ASPHALT	EOG	EDGE OF GRAVEL	LB	POUND OR LINE BACK	RFD	XMH	EXISTING MANHOLE	EXISTING MANHOLE		
ATF	AIR TERMINAL UNIT (FAN POWERED)	EOP	EDGE OF PAVEMENT	LD	COMBINATION LOUVER/DAMPER	RH	YH	YARD HYDRANT	YARD HYDRANT		
ATS	AUTOMATIC TRANSFER SWITCH	EPP	EMERGENCY POWER PANEL	LF	LINEAR FEET	RIO	YI	YARD INLET	YARD INLET		
ATU	AIR TERMINAL UNIT	EPX	EPOXY	LONG	LONG	RJ	YD	YARD	YARD		
B	BORING	EQ	EQUAL	LI	LEVEL INDICATOR	RM	YR	YEAR	YEAR		
BC	BOILER CHEMICALS	EQUPT	EQUIPMENT	LIP	LIGHTING INDICATING PANEL	RND					
BD	BOARD	ERH	ELECTRIC WIRE ROPE HOIST	LL	LIVE LOAD	RO					
BDD	BACKDRAFT DAMPER	ES	EMERGENCY SWITCH	LLH	LONG LEG HORIZONTAL	RPM					
BF	BLIND FLANGE	ES/EEW	EMERGENCY SHOWER AND EYEWASH	LLV	LONG LEG VERTICAL	RPZ					
BFE	BOTTOM OF FITTING ELEV	ET	EXPANSION TANK	LV	LONG LEG VERTICAL	RR					
BH	BASEBOARD HEATER	EUH	ELECTRIC UNIT HEATER	LVG	LONG LEG VERTICAL	RT					
BITUM	BITUMINOUS	EW	EACH WAY	LS	LEVEL SWITCH	RTO					
BL	BUILDING LINE	EWC	ELECTRIC WATER COOLER	LTG	LIGHTING	RTR					
BLDG	BUILDING	EWX	ELECTRIC WATER HEATER	LTV	LOW TENSION	R/W					
BLK	BLOCK	EXC	EXCAVATE	LWG	LOW WATER LEVEL	R/W OR ROW					
BLW	BLOWER	EXH	EXHAUST	S	SOUTH OR SLOPE	S					
BM	BENCH MARK	EXP	EXPANSION	SB	SOIL BORING	SB					
BOC	BACK OF CURB	EXP JT	EXPANSION JOINT	SBL	SURVEY BASELINE	SBL					
BOM	BOTTOM OF MASONRY	EXT	EXTERIOR	SBMP	SODIUM BISULFITE METERING PUMP	SCG					
BOT	BOTTOM	F	FAN	SCR	SCHEDULE	SDG					
BRC	BRIDGE CRANE	F&C	FRAME AND COVER	SDG	SLIDE GATE	SECT					
BRG	BEARING	F&G	FRAME AND GRATE	SECT	SECTION	SERV					
BRK	BRICK	FC	FLOOR CLEANOUT	SERV	SERVICE	SF					
BRL	BUILDING RESTRICTION LINE	FCO	FLOOR CLEANOUT	SG	SQUARE FEET	SG					
BRZ	BRONZE	FCU	FAN COIL UNIT	SHT(S)	SHEET(S)	SHT(S)					
BT	BOLT	FD	FLOOR DRAIN	SI	SQUARE INCH	SI					
CB	CATCH BASIN	FDN	FOUNDATION	SIL	SILENCER	SIL					
CBD	COUNTERBALANCE BACKDRAFT DAMPER	FE	FIRE EXTINGUISHER/FLOW COILING COIL	SIM	SIMILAR	SIM					
CC	CATCH BASIN	FEF	ELEMENT	SMH	STORM MANHOLE	SMH					
C/C	CENTER TO CENTER	FH	FIRE EXHAUST FAN	SPC	SPECIFICATION	SPC					
CCP	CIRCULATING PUMP	FIG	FIGURE	SQ	SQUARE	SQ					
CD	CONTROL DAMPER	FIN	FINISH	SPP	SUBMERSIBLE SUMP PUMP	SPP					
CDWP	CONDENSER WATER PUMP	FIX	FIXTURE	SST	STAINLESS STEEL	SST					
CE	CONSTRUCTION EASEMENT	FL	FLOOR	STA	STATION OR STACK	STA					
CEM	CEMENT	FLEX	FLEXIBLE	STD	STANDARD	STD					
CER	CERAMIC	FLG	FLANGE	STG	STORAGE OR STOP GATE	STG					
CF	CUBIC FEET	FLXC	FLEXIBLE CONNECTION	STIR	STIRRUP	STIR					
CFM	CUBIC FEET PER MINUTE	FM	FLOW METER	STL	STEEL	STL					
CL	CENTERLINE	FOC	FIBER OPTICS CABLE	STRU	STRUCTURAL	STRU					
CLKG	CAULKING	FRF	FIREPROOF	SUB	SUBSTITUTE	SUB					
CPLG	COUPLING	FS	FLOW SWITCH	SUCT	SUCTION	SUCT					
CLR	CLEAR	FSD	FIRE/SMOKE DAMPER	SUR	SURFACE	SUR					
CMU	CONCRETE MASONRY UNIT	FTG	FEET OR FIN TUBE HEATER	SUSP	SUSPENDED	SUSP					
CO	CLEANOUT	FURR	FITTING OR FURRED	SWD	SIDE WATER DEPTH	SWD					
COL	COLUMN	G	GATE	SYM	SYMMETRICAL	SYM					
CON	CONCENTRIC	GA	GAUGE	T&B	TOP AND BOTTOM	T&B					
CONC	CONCRETE	GAL	GALLON	T&G	TONGUE AND GROOVE	T&G					
CONST	CONSTRUCTION	GALV	GALVANIZED	TAN	TANGENT	TAN					
CONT	CONTINUOUS	GC	GENERAL CONTRACTOR	TBA	TO BE ABANDONED	TBA					
CONTR	CONTRACTOR	GEN	GENERATOR	TBCN	TRAVELING BRIDGE CRANE	TBCN					
CORP	CORPORATION	GIH	GAS INFRARED HEATER	TBM	TEMPORARY BENCH MARK	TBM					
CP	CONCRETE PLANK OR CONTROL PANEL OR CONTROL POINT	GPM	GALLONS PER MINUTE	TC	TOP OF CURB	TC					
CPT	CONTROL POWER TRANSFORMER	GR	GRATING	TCP	TEMPERATURE CONTROL PANEL	TCP					
CR	COURSE	GRTG	GRATING	TDH	TOTAL DYNAMIC HEAD	TDH					
CRS	COURSE	GUH	GAS UNIT HEATER	TECH	TECHNICAL	TECH					
CSP	CHEMICAL SERVICE PUMP	GW	GUY WIRE	TEL	TELEPHONE	TEL					
CSSP	CHEMICAL SERVICE SUMP PUMP	GWH	GAS WATER HEATER	TEMP	TEMPERATURE	TEMP					
CST	CHEMICAL STORAGE TANK	GYP	GYPSPUM	TG	TEMPERED GLASS	TG					
CT	CERAMIC TILE	HB	HOSE BIBB	THD	THREADED	THD					
CTJ	CONTROL JOINT	HC	HEATING COIL	THK	THICK	THK					
CU	COPPER OR CONDENSING UNIT	HCP	HORIZONTAL END SUCTION CENTRIFUGAL PUMP	THRU	THROUGH	THRU					
CY	CUBIC YARD	HDW	HARDWARE	TOC	TOP OF CONCRETE	TOC					
DAD	DESICCANT AIR DRYER	HE	HEAT EXCHANGER	TOD	TOP OF DECK	TOD					
DD	DESICCANT DRYER	HEX	HEXAGONAL	TOF	TOP OF FOOTING	TOF					
DEC	DECANT	HHRG	HYBRID HIGH RESISTANCE GROUNDING	TOM	TOP OF MASONRY/MANHOLE	TOM					
DEH	DEHUMIDIFIER	HORIZ	HORIZONTAL	TOS	TOP OF SLAB/ TOP OF STEEL	TOS					
DEM	DEMISTER	HP	HORSEPOWER OR HEAT PUMP	TOW	TOP OF WALL	TOW					
DET	DETAIL	HPT	HIGH POINT	TOL	TOLERANCE	TOL					
DF	DUCT FAN OR DRINKING FOUNTAIN	HRU	HEAT RECOVERY UNIT	TYP	TYPICAL	TYP					
DIA OR Ø	DIAMETER	HRG	HIGH RESISTANCE GROUNDING	UG	UNDERGROUND	UG					
DIAG	DIAGONAL	HSCP	HORIZONTAL SPLIT CASE PUMP	UGE	UNDERGROUND ELECTRIC	UGE					
DIM	DIMENSION	HUM	HUMIDIFIER	UGG	UNDERGROUND GAS	UGG					
DISC	DISCONNECT	HVAC	HEATING VENTILATION AND AIR CONDITIONING	UH	UNIT HEATER	UH					
DISCH	DISCHARGE	HWP	HEATING WATER PUMP	UNFIN	UNFINISHED	UNFIN					
DIST	DISTRIBUTION	HWB	HEATING WATER BOILER	UNO	UNLESS NOTED OTHERWISE	UNO					
DJ	DISMANTLING JOINT	HWCH	HEATING WATER CABINET HEATER	UPS	UNINTERRUPTIBLE POWER SUPPLY	UPS					
DKC	DOOR OPERATOR (ELECTRIC)	HWL	HIGH WATER LEVEL	UIS	UPSTREAM	UIS					
DL	DEAD LOAD	HWP	HEATING WATER PUMP	UTIL	UTILITY	UTIL					
DN	DOWN	HYD	HYDRAULIC	VAC	VACUUM	VAC					
DOZ	DOZEN			VACP	VACUUM PUMP	VACP					
DP	DISTRIBUTION PANEL			VAP	VAPORIZER	VAP					
DS	DISCONNECT SWITCH			VAV	VARIABLE AIR VOLUME UNIT	VAV					
DS	DOWNSTREAM			VCD	VOLUME CONTROL DAMPER	VCD					
DS				VEL	VELOCITY	VEL					

LEGEND

SYMBOLS		MATERIALS	
	BALL VALVE		GRADE OR EARTH
	BALL CHECK VALVE		ASPHALT PAVING
	BUTTERFLY VALVE		CAST IRON
	CHECK VALVE		STEEL
	SWING CHECK VALVE		INSULATION
	CONTROL VALVE		WATER SURFACE
	DIAPHRAGM VALVE		MECHANICAL COUPLING
	FLUSHING CONNECTION		WELDED JOINT
	GATE VALVE		FLANGED JOINT
	GLOBE VALVE		MECHANICAL PUSH-ON OR RESTRAINED JOINT
	MOTOR OPERATED VALVE		HARNESSED FLANGED ADAPTER
	NEEDLE VALVE		SLEEVE TYPE COUPLING
	PINCH VALVE		HARNESSED SLEEVE TYPE COUPLING
	PLUG VALVE		DISMANTLING JOINT
	PRESSURE GAUGE WITH/WITHOUT DIAPHRAGM SEAL		EXPANSION JOINT
	PRESSURE REDUCING VALVE		FIRE EXTINGUISHER
	PRESSURE RELIEF VALVE		ES/EEW
	PRESSURE RELIEF/VACUUM BREAKER VALVE		CONCRETE FILL OR GROUT
	QUICK CONNECT COUPLING		CONCRETE MASONRY UNIT
	SOLENOID VALVE		BRICK
	STRAINER		GRAVEL
	THREE WAY VALVE		CONCRETE
	UNION		
	HOSE BIBB		
	FLEXIBLE HOSE		
	SINGLE LINE DRAWINGS		
	DOUBLE LINE DRAWINGS		
	WALL PENETRATION		
	MECHANICAL COUPLING		
	WELDED JOINT		
	FLANGED JOINT		
	MECHANICAL PUSH-ON OR RESTRAINED JOINT		
	HARNESSED FLANGED ADAPTER		
	SLEEVE TYPE COUPLING		
	HARNESSED SLEEVE TYPE COUPLING		
	DISMANTLING JOINT		
	EXPANSION JOINT		
	FIRE EXTINGUISHER		
	ES/EEW		
	CONCRETE FILL OR GROUT		
	CONCRETE MASONRY UNIT		
	BRICK		
	GRAVEL		
	CONCRETE		
	PARTITION TYPE		
	DOOR SCHEDULE		
	LOUVER TYPE		

GENERAL NOTES:

- CONTRACTOR SHALL VERIFY FIELD CONDITIONS BEFORE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL VERIFY EXISTING ELEVATIONS AND DIMENSIONS WHERE NEW WORK WILL MATCH EXISTING. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION PRIOR TO THE COMMENCEMENT OF WORK.
- CONTRACTOR SHALL OBTAIN ALL THE NECESSARY PERMITS FROM THE APPROPRIATE AUTHORITIES, DEPARTMENTS, AND/OR AGENCIES HAVING JURISDICTION PRIOR TO COMMENCING WORK.
- CONTRACTOR SHALL TAKE CARE TO AVOID DAMAGE TO EXISTING PAVEMENT, TREES, VEGETATION, STRUCTURES, AND UTILITIES THAT ARE NOT INDICATED TO BE DEMOLISHED OR REMOVED. ANY DAMAGE TO EXISTING PAVEMENT, TREES, VEGETATION, STRUCTURES, AND UTILITIES NOT INDICATED TO BE DEMOLISHED OR REMOVED SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL CONTACT NORTH CAROLINA 811 AT PHONE NUMBER 811 OR 1-800-632-4949 TO REQUEST UNDERGROUND UTILITY LOCATION MARK-OUT AT LEAST THREE (3) WORKING DAYS BUT NO MORE THAN TEN (10) WORKING DAYS PRIOR TO BEGINNING EXCAVATION, INCLUDING SOIL DRILLING. THE CONTRACTOR SHALL ALSO CONTACT AND REQUEST UTILITY LOCATION MARK-OUT FROM BURIED UTILITY OWNERS WITH UTILITIES ON THE PROJECT SITE THAT ARE NOT PARTICIPANTS OF NORTH CAROLINA 811.
- WHERE PROPOSED WORK IS IN THE VICINITY OF UTILITY POLES, SUCH THAT SUPPORT OF THE POLE(S) WILL BE REQUIRED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE UTILITY OF THE WORK. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE UTILITY FOR SUPPORT OF THE POLE.
- WHERE OVERHEAD POWER LINES ARE PRESENT, CONTRACTOR MUST CONTACT THE UTILITY PRIOR TO CONSTRUCTION ACTIVITIES TO DETERMINE THE MINIMUM REQUIRED EQUIPMENT CLEARANCE (MEC) DISTANCE BASED UPON LINE STRENGTH.
- DURING EXCAVATION AND PLACEMENT OF UTILITIES THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY REGULATIONS AND SHALL SUBMIT TO THE ENGINEER FOR REVIEW SHEET PILING, SHORING AND/OR BRACING DESIGNS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER IN THE STATE OF NORTH CAROLINA AS MAY BE NECESSARY TO COMPLY WITH THESE REGULATIONS.
- ALL MATERIALS, CONSTRUCTION METHODS, AND WORKMANSHIP SHALL CONFORM WITH THE LATEST VERSION OF THE FOLLOWING STANDARDS:
 - TOWN OF CARY STANDARD SPECIFICATIONS
 - TOWN OF CARY LAND DEVELOPMENT ORDINANCE
- GROUNDWATER FROM ALL DE-WATERING OPERATIONS SHALL BE DISCHARGED THROUGH A SEDIMENT FILTERING DEVICE TO AN ENVIRONMENTALLY ACCEPTABLE LOCATION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, OR AS DIRECTED BY THE ENGINEER.
- ALL TEMPORARY FACILITIES ARE SUBJECT TO THE SAME HEALTH AND SAFETY REQUIREMENTS AS PERMANENT FACILITIES, AS SPECIFIED IN THE CONTRACT DOCUMENTS AND HEALTH SAFETY PLAN (HASP), IF PRESENT.
- THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL DEBRIS GENERATED DURING THE PROJECT OFF SITE AT A PROPERLY PERMITTED DISPOSAL FACILITY.
- CONTRACTOR SHALL MAKE EVERY EFFORT TO SAVE AND MAINTAIN ALL PROPERTY IRONS, MONUMENTS, OTHER PERMANENT POINTS AND LINES OF REFERENCE AND CONSTRUCTION STAKES. A STATE OF NORTH CAROLINA REGISTERED LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE SHALL REPLACE PROPERTY IRONS, MONUMENTS, AND OTHER PERMANENT POINTS OF REFERENCE DESTROYED BY THE CONTRACTOR.
- EXISTING UTILITIES ARE SHOWN FOR GENERAL INFORMATION ONLY AND MAY NOT BE ALL INCLUSIVE. CONTRACTOR IS TO DIG TEST PITS TO FIELD LOCATE ALL EXISTING UTILITIES THAT THE NEW SEWER MAIN AND APPURTENANCES CROSS OR COME IN CLOSE PROXIMITY TO WELL IN ADVANCE OF PIPE LAYING OR LINING OPERATIONS TO DETERMINE SIZE, ELEVATION AND LOCATION OF ALL UTILITIES. CONTRACTOR IS TO NOTIFY ENGINEER WITHIN 72 HOURS OF ANY CONFLICTS BETWEEN EXISTING UTILITIES AND PROPOSED ROUTE OF SEWER TO ALLOW ADEQUATE TIME FOR ENGINEER AND OWNER TO CONSIDER REALIGNMENT OR CHANGES THAT MAY BE REQUIRED.
- ALL SHORING WILL BE IN ACCORDANCE WITH OSHA TRENCHING STANDARDS PART 126, SUBPART P, AMENDED TO DATE. CONTRACTOR SHALL SUBMIT SHORING PLANS TO THE ENGINEER PRIOR TO EXCAVATION. SHORING PLANS SHALL BE SIGNED AND SEALED BY A NC PROFESSIONAL ENGINEER.
- FORCE MAIN TO BE LAID ON CONSTANT GRADE (UP OR DOWN) TO AVOID HIGH SPOTS BETWEEN AIR RELEASE VALVES. MIN 48 INCHES OF COVER UNLESS SHOWN OTHERWISE.
- DEFLECT PROPOSED FORCE MAIN AS NECESSARY. DO NOT EXCEED 75% OF MANUFACTURERS RECOMMENDED DEFLECTION.
- WHEN EXISTING UTILITY LINES ARE EXPOSED DURING CONSTRUCTION THE CONTRACTOR SHALL PROVIDE SUPPORT AS NECESSARY TO PREVENT DAMAGE TO THE EXISTING UTILITY. DAMAGE TO EXPOSED UTILITIES SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.
- WHERE MATERIAL IS PLACED ON ROADWAY PROVIDE SCREENINGS TO PREVENT DAMAGE TO PAVEMENT. CONTRACTOR SHALL REPAIR ANY PAVEMENT DAMAGED OUTSIDE THE DESIGNATED TRENCH AREA. ROADS IN WORK AREA TO BE CLEAN AT END OF EACH DAY.
- CONTRACTOR SHALL MAINTAIN ACCESS TO ALL AFFECTED PROPERTIES AT ALL TIMES DURING CONSTRUCTION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR IMMEDIATELY CLEANING ANY SOIL WHICH IS TRACKED OFF WORK SITE.

SEDIMENT AND EROSION CONTROL NOTES:

- DUE TO THE NATURE OF THE WORK REQUIRED BY THIS CONTRACT, IT IS ANTICIPATED THE LOCATION AND NATURE OF EROSION AND SEDIMENT CONTROL MEASURES WILL BE ADJUSTED AS CONSTRUCTION PROGRESSES TO REFLECT THE CURRENT PHASE OF WORK. THE CONSTRUCTION SCHEDULE ADOPTED BY THE CONTRACTOR WILL IMPACT THE PLACEMENT AND NEED FOR SPECIFIC DEVICES REQUIRED FOR THE CONTROL OF EROSION. THE LOCATION AND EXTENT OF EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REVISED AT EACH PHASE OF CONSTRUCTION RESULTING IN A CHANGE OF EITHER THE QUANTITY OR DIRECTION OF SURFACE RUNOFF FROM THE CONSTRUCTION AREAS. EROSION AND SEDIMENT CONTROL MEASURES SHALL REMAIN IN PLACE AT THE CONCLUSION OF THE PROJECT.
- CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM THE ENGINEER, OWNER, AND REGULATORY AGENCIES FOR DEVIATIONS FROM THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
- NO LAND DISTURBANCE, DEMOLITION OR CONSTRUCTION ACTIVITIES SHALL BEGIN UNTIL ALL PERIMETER EROSION AND SEDIMENT CONTROL MEASURES, INCLUDING, BUT NOT LIMITED TO, SILT FENCING, INLET PROTECTION, TEMPORARY DIVERSIONS, AND CONSTRUCTION ENTRANCE HAVE BEEN INSTALLED AS SHOWN ON THE CONTRACT DRAWINGS. IF CLEARING IS REQUIRED FOR INSTALLATION OF A PARTICULAR MEASURE, ALL MEASURES NOT REQUIRING CLEARING SHALL BE INSTALLED FIRST. CLEARING OF THE NECESSARY LAND FOR INSTALLATION OF THE PARTICULAR MEASURE MAY THEN PROCEED.
- CLEARING SHALL BE LIMITED AS MUCH AS POSSIBLE TO AREAS REQUIRED FOR CURRENT CONSTRUCTION ACTIVITIES. MASS CLEARING AND GRADING SHALL BE AVOIDED.
- ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WITHIN 24 HOURS FOLLOWING EVERY RAINFALL EVENT GREATER THAN 1-INCH BUT IN NO CASE LESS THAN ONCE EVERY SEVEN CALENDAR DAYS.
- EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REPAIRED OR REPLACED IMMEDIATELY AS REQUIRED TO MAINTAIN PERFORMANCE OF MEASURE. MEASURES SHALL BE CLEANED WHEN SEDIMENT VOLUME REACHES 1/2 OF TOTAL VOLUME OF MEASURE. REMOVED SEDIMENT SHALL BE DISPOSED OF IN SUCH A MANNER AND LOCATION AS TO INSURE FURTHER SEDIMENT TRANSPORT DOES NOT OCCUR.
- CONTRACTOR SHALL INITIATE STABILIZATION MEASURES AS SOON AS PRACTICABLE ON STOCKPILES AND IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 7 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. THIS REQUIREMENT DOES NOT APPLY IN THE FOLLOWING INSTANCES:
 - WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 7TH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASED IS PRECLUDED BY SNOW COVER OR FROZEN GROUND CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE;
 - WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH-DISTURBING ACTIVITIES WILL BE RESUMED WITHIN FOURTEEN (14) DAYS, TEMPORARY STABILIZATION MEASURES NEED NOT BE INITIATED ON THAT PORTION OF THE SITE.
- ALL DISTURBED AREAS SHALL DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBANCE ACTIVITIES AND UNTIL FINAL STABILIZATION IS ACHIEVED. SEDIMENT-LADEN GROUNDWATER ENCOUNTERED DURING TRENCHING, BORING, OR OTHER ACTIVITIES SHALL BE PUMPED INTO A SEDIMENT TRAPPING DEVICE PRIOR TO BEING DISCHARGED INTO A STREAM, POND, SWALE, OR CATCH BASIN.
- SOIL STOCKPILE AND LAYDOWN AREAS SHALL HAVE PERIMETER SEDIMENT CONTROL MEASURES AND TEMPORARY OR PERMANENT STABILIZATION MEASURES INSTALLED AS SOON AS POSSIBLE AND AT COMPLETION OF STOCKPIILING AND LAYDOWN ACTIVITIES. STOCKPILE SIDE SLOPES SHALL NOT EXCEED 3H:1V UNLESS APPROVED BY ENGINEER. TOP OF STOCKPILE SHALL BE GRADED WITH A MINIMUM 5% SLOPE TO INSURE PROPER DRAINAGE.
- ALL DISTURBED AREAS, EXCEPT FOR CONCRETE AND PAVED AREAS, SHALL BE FERTILIZED, SEEDED AND MULCHED IN ACCORDANCE WITH THE SPECIFICATIONS AND THE SEEDING SCHEDULE, AND RE-SEEDED AS NECESSARY, TO ESTABLISH AND MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER.
- ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS SHALL BE PROTECTED TO PREVENT THE DEPOSITION OF MATERIALS ONTO TRAVERSED OFFSITE ROADWAYS. IF MATERIAL IS TRACKED ONTO OFFSITE ROADWAYS, IT SHALL BE REMOVED IMMEDIATELY. DO NOT UTILIZE A WATER HOSE TO CLEAN ROADS UNLESS THE RUNOFF IS DIRECTED TO A PROPERLY DESIGNED AND FUNCTIONING SEDIMENT CONTROL DEVICE. PROPER PRECAUTIONS SHALL BE TAKEN TO ENSURE THAT MATERIALS DEPOSITED ONTO OFFSITE ROADWAYS ARE REMOVED SO THAT THEY DO NOT ENTER YARD INLETS, CATCH BASINS, SEWERS, WETLANDS, SURFACE WATER BODIES, OR ROADSIDE SWALES.
- WHERE CONCRETE EQUIPMENT WASHING IS REQUIRED, THIS MUST BE DONE IN AN APPROVED "CONCRETE CONTAINMENT AREA". CONTRACTOR SHALL NOT DISCHARGE ANY CONCRETE WASHOUT WATER INTO SEWERS, SURFACE WATER BODIES OR ONTO THE GROUND. ALL WASHOUT WATER MUST BE REMOVED FROM THE SITE(S) DAILY.
- EARTHEN-MATERIAL STOCKPILES MUST BE LOCATED A MINIMUM OF 50' FROM STORM DRAINS AND STREAMS UNLESS NO REASONABLE ALTERNATIVES ARE AVAILABLE.
- ALL EARTHEN STOCKPILES AND SURCHARGE MOUNDS GREATER THAN 10' IN HEIGHT OR HAVING SIDE SLOPES GREATER THAN 3H:1V MUST BE ENCAPSULATED BY A DOUBLE ROW OF SILT FENCE. THE FIRST ROW OF SILT FENCE SHALL BE SPACED NO GREATER THAN 10' FROM THE TOE OF THE MOUND. THE SECOND ROW OF SILT FENCE SHALL BE SPACED 5' FROM THE FIRST ROW. IN THE EVENT THE SITE DOES NOT HAVE PERIMETER EROSION AND SEDIMENT CONTROLS INSTALLED, THEN DOUBLE ROW SILT FENCING IS REQUIRED REGARDLESS OF THE STOCKPILE OR SURCHARGE HEIGHT.
- DEDICATED AREAS FOR DEMOLITION, CONSTRUCTION, AND OTHER WASTES MUST BE LOCATED A MINIMUM OF 50' FROM STORM DRAINS AND STREAMS UNLESS NO REASONABLE ALTERNATIVES ARE AVAILABLE.
- PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES. WATER SHALL NOT BE USED TO CLEAN ROADS UNLESS THE RUNOFF IS DIRECTED TO A PROPERLY DESIGNED AND FUNCTIONING SEDIMENT CONTROL DEVICE. WATER PUMPED OUT OF THE EXCAVATED AREAS CONTAINS SEDIMENTS THAT MUST BE REMOVED PRIOR TO DISCHARGING TO RECEIVING BODIES OF WATER USING REMOVABLE PUMPING STATIONS, SUMP PITS, PORTABLE SEDIMENTATION TANKS AND/OR SILT CONTROL BAGS.
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE, PERMANENT VEGETATION IS ESTABLISHED ON ALL DISTURBED AREAS, AND LOCAL AUTHORITIES HAVE GIVEN PERMISSION FOR REMOVAL.

EROSION CONTROL SEQUENCE OF CONSTRUCTION:

- EROSION AND SEDIMENT CONTROL (E&SC) PERMIT AND A CERTIFICATE OF COVERAGE (COC) MUST BE OBTAINED BEFORE ANY LAND DISTURBING ACTIVITIES OCCUR. A COPY OF THE E&SC PERMIT, THE COCO, AND A HARD COPY OF THE PLAN MUST BE KEPT ON SITE, PREFERABLY IN A PERMITS BOX, AND ACCESSIBLE DURING INSPECTION. THE COC SHALL BE OBTAINED BY COMPLETING THE ELECTRONIC NOTICE OF INTENT (E-NOT) FORM AT DEQ.NC.GOV/NCG01.
- THE CONTRACTOR SHALL SIGN AND IMPLEMENT THE REQUIREMENTS OF THE STATE-APPROVED EROSION CONTROL & SEDIMENTATION CONTROL PERMIT AND THE NORTH CAROLINA NPDES GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL ALSO POST THE APPROVED EROSION & SEDIMENTATION CONTROL PERMIT ON THE JOB SITE AND SHALL NOTIFY THE NORTH CAROLINA STATE LAND QUALITY SECTION AT (919) 791-4200 AT LEAST 72 HOURS PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES TO SCHEDULE A PRE-CONSTRUCTION MEETING.
- PRIOR TO ANY LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL ALL TEMPORARY PERIMETER EROSION CONTROL MEASURES, AS INDICATED ON THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL SPECIFICALLY INSTALL THE TEMPORARY GRAVEL CONSTRUCTION ENTRANCE, SILT FENCE, TREE PROTECTION FENCE, INLET PROTECTION AND FILTER FIBER TUBE (FFT) CHECK DAMS, WHERE APPLICABLE.
- ONCE ALL TEMPORARY PERIMETER EROSION CONTROL MEASURES HAVE BEEN INSTALLED, CONTRACTOR SHALL INSTALL CONSTRUCTION ENTRANCE TO ALLOW ACCESS TO CONSTRUCTION AREAS. GRADING, EXCAVATION, AND CONSTRUCTION ACTIVITIES MAY BEGIN.
- SELF-INSPECTIONS FOR EROSION AND SEDIMENTATION CONTROL MEASURES ARE TO BE PERFORMED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF EVERY RAIN EVEN OF GREATER THAN 1/2 INCH. ANY NEEDED REPAIRS SHALL BE MADE IMMEDIATELY TO MAINTAIN MEASURES AS DESIGNED. ALL ESC MEASURES SHALL BE MAINTAINED AS SPECIFIED IN THE CONSTRUCTION DETAILS IN THIS PLAN. A RAIN GAUGE SHALL BE INSTALLED AT THE PROJECT SITE FOR MONITORING.
- THE CONTRACTOR SHALL CONDUCT SELF-INSPECTIONS OF THE EROSION AND SEDIMENTATION CONTROL MEASURES AND COMPLETE THE FOLLOWING COMBINED SELF-INSPECTION FORM FOUND ON THE DEMLR WEBSITE (HTTP://DEQ.NC.GOV/ABOUT/DIVISIONS/ENERGY-MINERAL-LAND-RESOURCES/EROSION-SEDIMENT-CONTROL/FORMS). COMPLETE INSPECTION FORMS SHALL BE KEPT ON-SITE AND AVAILABLE FOR INSPECTION AT ALL TIMES. IT IS RECOMMENDED A COPY BE KEPT IN A PERMITS BOX.
- FOLLOWING THE INSTALLATION OF ALL TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES, THE CONTRACTOR MAY BEGIN EARTHWORK OPERATIONS. ALL STRIPPED TOPSOIL SHALL BE STOCKPILED IN THE DESIGNATED STOCKPILE/LAYDOWN AREAS AND TEMPORARY SEEDING MEASURES SHOULD BE EMPLOYED THROUGHOUT CONSTRUCTION. STOCKPILE LOCATIONS SHALL REMAIN MORE THAN 50 FT FROM STORM DRAINS AND/OR STREAMS. EARTHWORK, STORAGE OF MATERIAL, ETC IS PROHIBITED OUTSIDE THE DESIGNATED LIMITS OF DISTURBANCE. ANY SOILS TAKEN OFFSITE BECOME THE CONTRACTOR'S RESPONSIBILITY, AND DISPOSAL SHALL COMPLY WITH ALL REQUIRED STATE AND LOCAL REGULATIONS AND PERMITS.
- STOCKPILE AREAS SHALL BE STABILIZED WITH TEMPORARY VEGETATION OR SIMILAR MEASURES THROUGHOUT THE DURATION OF THE CONSTRUCTION ACTIVITIES. UPON COMPLETION OF CONSTRUCTION, STOCKPILE AREA SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND GRADE AND RECEIVE PERMANENT STABILIZATION AND SEEDING MEASURES.
- ALL DEWATERING FLOWS RESULTING FROM CONSTRUCTION EXCAVATION, ETC. SHALL PASS THROUGH A SILT BAG OR OTHER APPROVED DEWATERING DEVICE AS NOTED IN OVERALL EROSION AND SEDIMENT CONTROL NOTES. NO DEWATERING FLOW SHALL BE DISCHARGED DIRECTLY TO GRADE WITHOUT TREATMENT.
- TEMPORARY SEEDING MEASURES SHALL BE EMPLOYED THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITIES ON ANY AREA WHICH WILL REMAIN UNDISTURBED FOR MORE THAN 7 WORKING DAYS OR 14 CALENDAR DAYS, WHICHEVER IS SHORTER. ALL SLOPES STEEPER THAN 3H:1V SHALL BE PLANTED OR OTHERWISE PROVIDED WITH TEMPORARY OR PERMANENT GROUND COVER, DEVICES, OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION WITHIN 7 CALENDAR DAYS. ALL OTHER SLOPES OF 3H:1V OR FLATTER, EXCEPT THOSE GREATER THAN 50 FT IN LENGTH, SHALL BE PROVIDED WITH TEMPORARY OR PERMANENT GROUND COVER, DEVICES, OR OTHER STRUCTURES SUFFICIENT TO RESTRAIN EROSION WITHIN 14 CALENDAR DAYS.
- PERMANENT SEEDING SHALL BE INSTALLED, AT ANY TIME, FOR ALL AREAS REACHING FINAL GRADE WHICH WILL NOT BE DISTURBED AGAIN.
- UPON COMPLETION OF FINAL GRADING, PERMANENT STRUCTURAL OR VEGETATIVE STABILIZATION SHALL BE ESTABLISHED.
- ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITIES AND THE SITE HAS BEEN PERMANENTLY STABILIZED WITH STRUCTURAL AND/OR PERMANENT VEGETATIVE MEASURES.
- FOLLOWING PERMANENT STABILIZATION, TEMPORARY SEDIMENT BASIN SHALL BE CONVERTED TO PERMANENT DRY DETENTION BASIN.
- ONCE PERMANENT STABILIZATION HAS OCCURRED, TEMPORARY SEDIMENT CONTROL MEASURES MAY BE REMOVED UPON APPROVAL FROM NCDENR LAND QUALITY AND THE ENGINEER. ANY AREAS DISTURBED BY THE REMOVAL OF EROSION CONTROL MEASURES SHALL BE RETURNED TO THE ORIGINAL OR BETTER CONDITION BEFORE SEEDED, MULCHED, AND FERTILIZED. BAFFLES AND SKIMMER SHALL BE REMOVED FROM THE TEMPORARY SEDIMENT BASIN FOR CONVERSION TO A PERMANENT DETENTION BASIN.
- WHEN THE PROJECT IS COMPLETE, THE PERMITEES SHALL CONTACT DEMLR TO CLOSE OUT THE E&SC PLAN. AFTER DEMLR INFORMS THE PERMITEE OF THE PROJECT CLOSE OUT, VIA INSPECTION REPORT, THE PERMITEE SHALL VISIT DEQ.NC.GOV/NCG01 TO SUBMIT AN ELECTRONIC NOTICE OF TERMINATION (E-NOT).

SYMBOLS

	TEL PED		WATER METER		SILT FENCE
	POWER POLE		WATER MANHOLE		YARD INLET PROTECTION
	TB20 SOIL BORING		SANITARY SEWER MH		CONSTRUCTION ENTRANCE
	TP-1 TEST PIT		STORM MANHOLE		TEMPORARY SEEDING
	ROCK OUTLET PROTECTION		SANITARY SEWER CLEANOUT		PERMANENT SEEDING
	STORMWATER FLOW		SANITARY SEWER VALVE		
	YARD INLET PROTECTION		LIGHT POLE		
	GRAVEL CONSTRUCTION ENTRANCE		ELECTRIC BOX		
			ELEC STRU		
			EXISTING IRON PIPE		

ABBREVIATIONS

EOP	EDGE OF PAVEMENT	G	GAS
LOC	LIMITS OF CONSTRUCTION	SS	SANITARY SEWER
OHE	OVERHEAD ELECTRIC	W	WATER
FOC	FIBER OPTIC CABLE	ℙ	PROPERTY LINE
LP	LIGHT POLE	℄	CENTER LINE
UGE	UNDERGROUND ELECTRIC	RECM	ROLLED EROSION CONTROL MATTING
PP	POWER POLE		
CIPP	CURED-IN-PLACE-PIPE		

LINETYPES

	COUNTY BOUNDARY
	CREEK / DITCH
	100 YR 100 YR FLOODPLAIN BOUNDARY
	EASEMENT BOUNDARY
	RIGHT-OF-WAY
	50-FOOT JORDAN STREAM BUFFER

LEGEND

NEW	DEMO	EXISTING		NEW	EXISTING
			BUILDING/STRUCTURE		
			ASPHALT PAVEMENT		
			CONCRETE CURB AND GUTTER		
			CONCRETE PAD/PAVING		
			GRAVEL ROAD		
			BUFFER ZONE		
			WETLANDS		
			SLOPE MATTING		
			WATER LINE		
			SANITARY SEWER LINE		
			FORCE MAIN		
			FUTURE FORCE MAIN		
			EDGE OF PAVEMENT		
			GROUND PROFILE		
			CIPP PIPE		
			GUARDRAIL		

File: C:\USERS\SNASH\DRAWING\HAYEN AND SAWYER\32044-004_BIG BRANCH 2 PUMP STATION AND PIPELINE\PROJECT FILES\DWG\C1 Saved by: SNASH Save date: 3/31/2023 12:36 PM PLOT DATE: 3/31/2023 2:17 PM BY: SNASH

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
CIVIL GENERAL NOTES
AND LEGEND

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C1

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 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	TIME FRAME VARIATIONS
(A) PERIMETER DIKES, SWALES, DITCHES, AND PERIMETER SLOPES	7	NONE
(B) HIGH WATER QUALITY (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
<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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

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

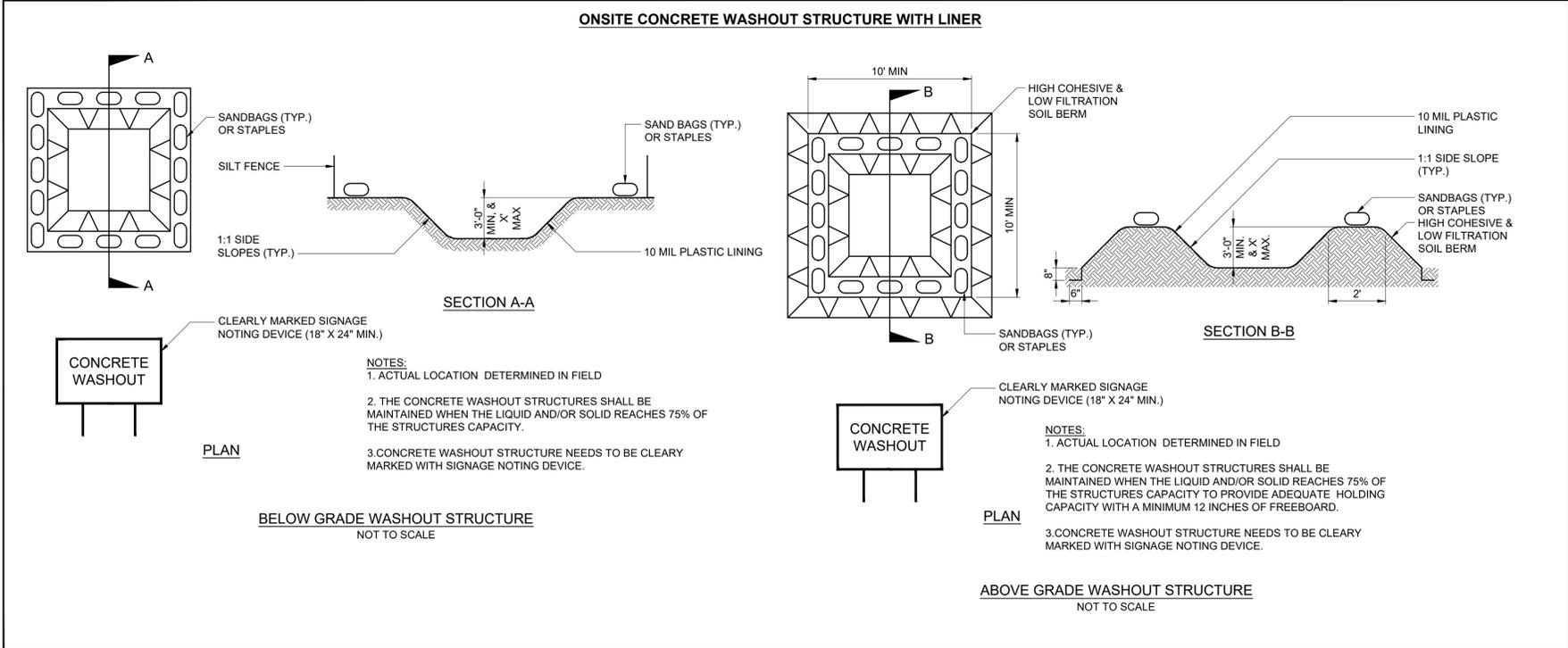
1. DO NOT DUMP PAINT AND OTHER LIQUID WASTE INTO STORM DRAINS, STREAMS OR WETLANDS.
2. LOCATE PAINT WASHOUTS AT LEAST 50 FEET AWAY FROM STORM DRAIN INLETS AND SURFACE WATERS UNLESS NO OTHER ALTERNATIVES ARE REASONABLY AVAILABLE.
3. CONTAIN LIQUID WASTES IN A CONTROLLED AREA.
4. CONTAINMENT MUST BE LABELED, 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.



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. 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.
9. 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.

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PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
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PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

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 HAZEN AND SAWYER
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 RALEIGH, NC 27607
 LICENSE No.: C-0381

APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

CIVIL
 NCG01 GROUND STABILIZATION
 AND MATERIALS HANDLING

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C2

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PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING		
SECTION A: SELF-INSPECTION		
<p>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.</p>		
REQUIRED GROUND STABILIZATION TIMEFRAMES		
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 (AND 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 (SDOS)	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.
(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	1. IF VISIBLE SEDIMENTATION IS FOUND OUTSIDE SITE LIMITS, THEN A RECORD OF THE FOLLOWING SHALL BE MADE: 2. ACTIONS TAKEN TO CLEAN UP OR STABILIZE THE SEDIMENT THAT HAS LEFT THE SITE LIMITS, 3. DESCRIPTION, EVIDENCE, AND DATE OF CORRECTIVE ACTIONS TAKEN, AND 4. 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	1. 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: 2. DESCRIPTION, EVIDENCE AND DATE OF CORRECTIVE ACTIONS TAKEN, AND 3. 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 DAY CALENDAR DAY INSPECTION REQUIREMENT

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING	
SECTION B: RECORDKEEPING	
<p>1. E&SC PLAN DOCUMENTATION</p> <p>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.</p>	
ITEM TO DOCUMENT	INSPECTION RECORDS MUST INCLUDE:
(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.
<p>2. ADDITIONAL DOCUMENTATION TO BE KEPT ON SITE</p> <p>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:</p> <p>(A) THIS GENERAL PERMIT AS WELL AS THE CERTIFICATE OF COVERAGE, AFTER IT IS RECEIVED.</p> <p>(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.</p>	
<p>3. DOCUMENTATION TO BE RETAINED FOR THREE YEARS</p> <p>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]</p>	

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING	
SECTION C: REPORTING	
<p>1. OCCURRENCES THAT MUST BE REPORTED</p> <p>PERMITTEES SHALL REPORT THE FOLLOWING OCCURRENCES:</p> <p>(A) VISIBLE SEDIMENT DEPOSITION IN A STREAM OR WETLAND</p> <p>(B) OIL SPILLS IF:</p> <ul style="list-style-type: none"> THEY ARE 25 GALLONS OR MORE, THEY ARE LESS THAN 25 GALLONS BUT CANNOT BE CLEANED UP WITHIN 24 HOURS, THEY CAUSE SHEET ON WATERS (REGARDLESS OF VOLUME), OR THEY ARE WITHIN 100 FEET OF SURFACE WATERS (REGARDLESS OF VOLUME). <p>(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.</p> <p>(D) ANTICIPATED BYPASSES AND UNANTICIPATED BYPASS</p> <p>(E) NONCOMPLIANCE WITH THE CONDITIONS OF THIS PERMIT THAT MAY ENDANGER HEALTH OR THE ENVIRONMENT.</p> <p>2. REPORTING TIMEFRAMES AND OTHER REQUIREMENTS</p> <p>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.</p>	
OCCURRENCE	REPORTING TIMEFRAME (AFTER DISCOVERY) AND OTHER REQUIREMENTS
(A) VISIBLE SEDIMENT DEPOSITION IN A STREAM OR WETLAND	<ul style="list-style-type: none"> 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 (B)-(C) ABOVE	<ul style="list-style-type: none"> 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)]	<ul style="list-style-type: none"> 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)]	<ul style="list-style-type: none"> 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)]	<ul style="list-style-type: none"> 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.

EROSION CONTROL MAINTENANCE NOTES:	
<p>ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH RAINFALL EVENT OF ½ INCH IN 24 HOURS. ANY NEEDED REPAIRS SHALL BE MADE IMMEDIATELY TO PREVENT FURTHER DAMAGE AND EROSION. STRUCTURES AND MEASURES THAT SHALL BE INSPECTED ARE OUTLINED IN THE FOLLOWING SECTION. THE PERSON WHO PERFORMS THE INSPECTION SHALL MAINTAIN AND MAKE AVAILABLE A RECORD OF THE INSPECTION AT THE SITE OF THE LAND-DISTURBING ACTIVITY. THE RECORD SHALL SET OUT ANY SIGNIFICANT DEVIATION FROM THE APPROVED EROSION CONTROL PLAN, IDENTIFY ANY MEASURES THAT MAY BE REQUIRED TO CORRECT DEVIATION, AND DOCUMENT THE COMPLETION OF THOSE MEASURES. THE RECORD SHALL BE MAINTAINED UNTIL PERMANENT GROUND COVER HAS BEEN ESTABLISHED AS REQUIRED BY THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN.</p>	<p>CONSTRUCTION ENTRANCE:</p> <ul style="list-style-type: none"> MAINTAIN GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE BY PERIODIC TOPDRESSING WITH 2-INCH STONE. <p>INLET PROTECTION:</p> <ul style="list-style-type: none"> INSPECT FOR SIGNIFICANT EROSION ROUND THE EDGES. REMOVE SEDIMENT ACCUMULATED AND REPLACE WATTLE AND FILTER FABRIC WITH TEARS OR IF IT BECOMES INEFFECTIVE. <p>SILT BAG:</p> <ul style="list-style-type: none"> ANY DAMAGE TO THE SILT BAG SHALL BE REPAIRED IMMEDIATELY. TEMPORARY SILT BAGS SHALL BE REPLACED WHEN 6 INCHES OF SEDIMENT HAS ACCUMULATED OR IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MONITOR SILT BAG REGULARLY FOR THE PRESENCE OF TURBID WATER BEING DISCHARGED. ANY TURBID WATER BEING DISCHARGED FROM THE BAG SHALL BE RESOLVED IMMEDIATELY. IF TEMPORARY BLOCKAGES ARE NOT FOUND, ASSUME THE BAG IS AT SEDIMENT CAPACITY AND REPLACE IMMEDIATELY. <p>SILT FENCE:</p> <ul style="list-style-type: none"> ANY FABRIC WHICH COLLAPSES, TEARS, DECOMPOSES, OR BECOMES INEFFECTIVE SHALL BE REPLACED IMMEDIATELY. ALL FABRIC SHALL BE REPLACED AFTER THE FIRST 6 MONTHS OF CONSTRUCTION ACTIVITY AND EVERY 6 MONTHS THEREAFTER UNTIL CONSTRUCTION ACTIVITIES ARE COMPLETE. REMOVED SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT. <p>STABILIZED OUTLET:</p> <ul style="list-style-type: none"> INSPECT AT LEAST WEEKLY AND WITHIN 24 HOURS AFTER ANY STORM EVEN GREATER THAN ½ INCH OF RAIN PER 24-HOUR PERIOD. REMOVE ACCUMULATED SEDIMENT AND REPLACE STONE IMPAIRED BY SEDIMENT AS NECESSARY. <p>TREE PROTECTION FENCE:</p> <ul style="list-style-type: none"> ANY FABRIC WHICH COLLAPSES, TEARS, DECOMPOSES, OR BECOMES INEFFECTIVE SHALL BE REPLACED IMMEDIATELY. ALL FABRIC SHALL BE REPLACED AFTER THE FIRST 6 MONTHS OF CONSTRUCTION ACTIVITY AND EVERY 6 MONTHS THEREAFTER UNTIL CONSTRUCTION ACTIVITIES ARE COMPLETE. REMOVED SEDIMENT DEPOSITS AS NECESSARY TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.
<p>CONSTRUCTION ENTRANCE:</p> <ul style="list-style-type: none"> MAINTAIN GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE BY PERIODIC TOPDRESSING WITH 2-INCH STONE. <p>INLET PROTECTION:</p> <ul style="list-style-type: none"> INSPECT FOR SIGNIFICANT EROSION ROUND THE EDGES. REMOVE SEDIMENT ACCUMULATED AND REPLACE WATTLE AND FILTER FABRIC WITH TEARS OR IF IT BECOMES INEFFECTIVE. <p>SILT BAG:</p> <ul style="list-style-type: none"> ANY DAMAGE TO THE SILT BAG SHALL BE REPAIRED IMMEDIATELY. TEMPORARY SILT BAGS SHALL BE REPLACED WHEN 6 INCHES OF SEDIMENT HAS ACCUMULATED OR IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MONITOR SILT BAG REGULARLY FOR THE PRESENCE OF TURBID WATER BEING DISCHARGED. ANY TURBID WATER BEING DISCHARGED FROM THE BAG SHALL BE RESOLVED IMMEDIATELY. IF TEMPORARY BLOCKAGES ARE NOT FOUND, ASSUME THE BAG IS AT SEDIMENT CAPACITY AND REPLACE IMMEDIATELY. <p>SILT FENCE:</p> <ul style="list-style-type: none"> ANY FABRIC WHICH COLLAPSES, TEARS, DECOMPOSES, OR BECOMES INEFFECTIVE SHALL BE REPLACED IMMEDIATELY. ALL FABRIC SHALL BE REPLACED AFTER THE FIRST 6 MONTHS OF CONSTRUCTION ACTIVITY AND EVERY 6 MONTHS THEREAFTER UNTIL CONSTRUCTION ACTIVITIES ARE COMPLETE. REMOVED SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT. <p>STABILIZED OUTLET:</p> <ul style="list-style-type: none"> INSPECT AT LEAST WEEKLY AND WITHIN 24 HOURS AFTER ANY STORM EVEN GREATER THAN ½ INCH OF RAIN PER 24-HOUR PERIOD. REMOVE ACCUMULATED SEDIMENT AND REPLACE STONE IMPAIRED BY SEDIMENT AS NECESSARY. <p>TREE PROTECTION FENCE:</p> <ul style="list-style-type: none"> ANY FABRIC WHICH COLLAPSES, TEARS, DECOMPOSES, OR BECOMES INEFFECTIVE SHALL BE REPLACED IMMEDIATELY. ALL FABRIC SHALL BE REPLACED AFTER THE FIRST 6 MONTHS OF CONSTRUCTION ACTIVITY AND EVERY 6 MONTHS THEREAFTER UNTIL CONSTRUCTION ACTIVITIES ARE COMPLETE. REMOVED SEDIMENT DEPOSITS AS NECESSARY TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT. 	<p>RISER-BARREL SEDIMENT BASIN (WITH SKIMMER):</p> <ul style="list-style-type: none"> INSPECT AT LEAST WEEKLY AND WITHIN 24 HOURS AFTER ANY STORM EVEN GREATER THAN ½ INCH OF RAIN PER 24-HOUR PERIOD. REMOVE ACCUMULATED SEDIMENT AND RESTORE BASIN TO ORIGINAL DIMENSIONS WHEN IT ACCUMULATES TO ONE-HALF THE DESIGN DEPTH. PLACE REMOVED SEDIMENT IN AN AREA WITH SEDIMENT CONTROLS. CHECK THE EMBANKMENT, SPILLWAYS, AND OUTLET FOR EROSION DAMAGE, AND INSPECT THE EMBANKMENT FOR PIPING AND SETTLEMENT. MAKE ALL NECESSARY REPAIRS IMMEDIATELY. REMOVE ALL TRASH AND OTHER DEBRIS FROM THE RISER AND POOL AREA. <p>SKIMMER:</p> <ul style="list-style-type: none"> PULL THE SKIMMER TO ONE SIDE SO THAT THE SEDIMENT UNDERNEATH IT CAN BE EXCAVATED. MAKE SURE VEGETATION GROWING IN THE BOTTOM OF THE BASIN DOES NOT HOLD DOWN THE SKIMMER. IF THE SKIMMER IS CLOGGED WITH TRASH, PULL THE SKIMMER OVER TO THE SIDE OF THE BASIN AND REMOVE DEBRIS. REMOVE DEBRIS FROM ORIFICE INSIDE THE SKIMMER IF NECESSARY. USE A PLUMBER'S SNAKE OR FLUSH WITH WATER IF SKIMMER ARM OR BARREL PIPE IS CLOGGED. <p>WATTLE:</p> <ul style="list-style-type: none"> INSPECT AT LEAST WEEKLY AND WITHIN 24 HOURS AFTER ANY STORM EVEN GREATER THAN ½ INCH OF RAIN PER 24-HOUR PERIOD. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. REPLACE WATTLE IF CLOGGED OR TORN, REINSTALL IF UNDERMINED OR DISLOGGED. <p>CHECK DAM:</p> <ul style="list-style-type: none"> INSPECT CHECK DAMS AND CHANNELS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENT AND REPAIR IMMEDIATELY. CLEAN OUT SEDIMENT, STRAW, LIMBS, OR OTHER DEBRIS THAT COULD CLOG THE CHANNEL WHEN NEEDED. ANTICIPATE SUBMERGENCE AND DEPOSITION ABOVE THE CHECK DAM AND EROSION FROM HIGH FLOWS AROUND THE EDGES OF THE DAM. CORRECT ALL DAMAGE IMMEDIATELY. IF SIGNIFICANT EROSION OCCURS BETWEEN DAMS, ADDITIONAL MEASURES CAN BE TAKEN SUCH AS, INSTALLING A PROTECTIVE RIPRAP LINER IN THAT PORTION OF THE CHANNEL.

PART II, SECTION G, ITEM (4) DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT	
<p>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:</p>	
(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.

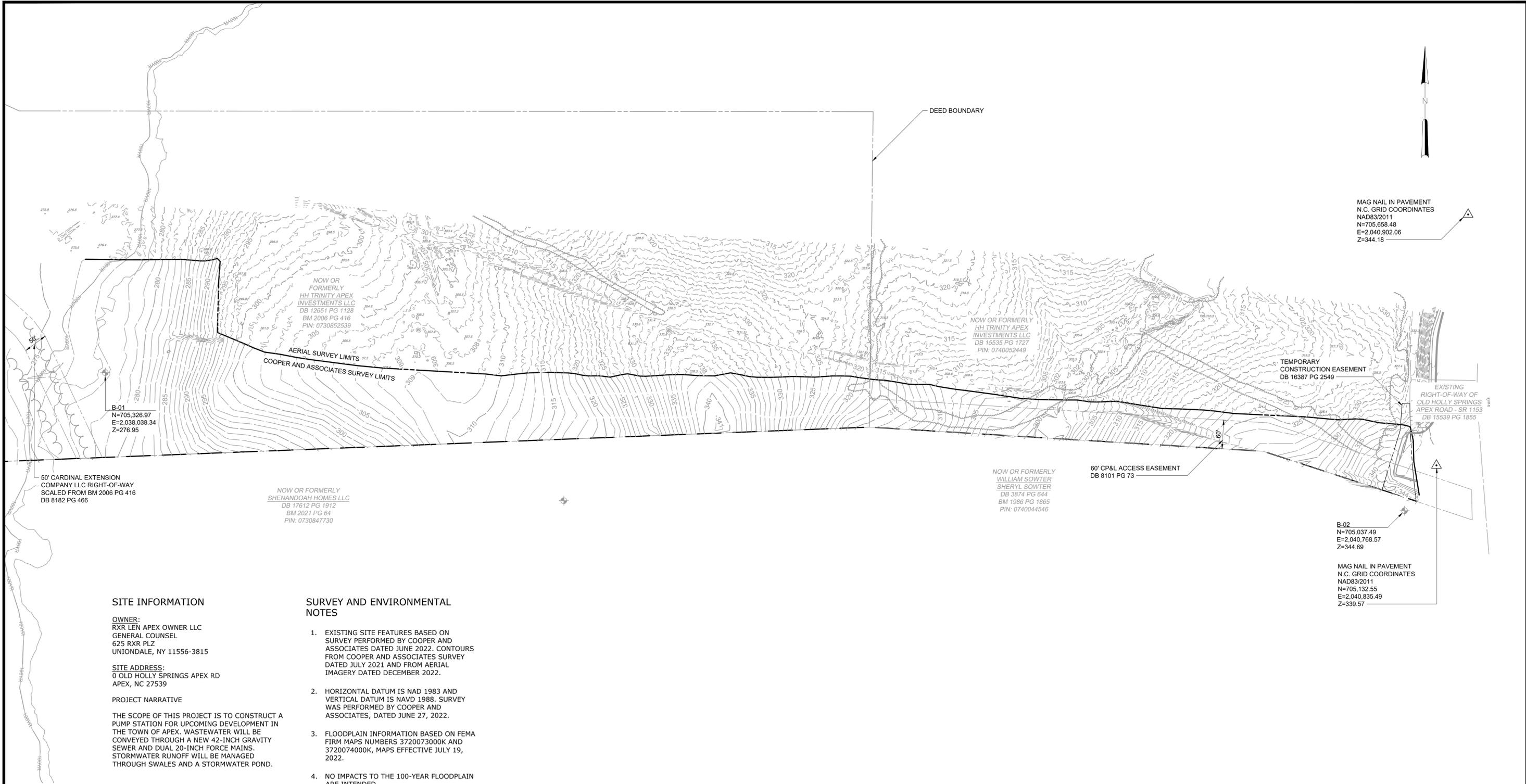
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DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

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4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL	
NCG01 SELF-INSPECTION RECORDKEEPING AND REPORTING	
DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C3



SITE INFORMATION

OWNER:
RXR LEN APEX OWNER LLC
GENERAL COUNSEL
625 RXR PLZ
UNIONDALE, NY 11556-3815

SITE ADDRESS:
0 OLD HOLLY SPRINGS APEX RD
APEX, NC 27539

PROJECT NARRATIVE

THE SCOPE OF THIS PROJECT IS TO CONSTRUCT A PUMP STATION FOR UPCOMING DEVELOPMENT IN THE TOWN OF APEX. WASTEWATER WILL BE CONVEYED THROUGH A NEW 42-INCH GRAVITY SEWER AND DUAL 20-INCH FORCE MAINS. STORMWATER RUNOFF WILL BE MANAGED THROUGH SWALES AND A STORMWATER POND.

SURVEY AND ENVIRONMENTAL NOTES

- EXISTING SITE FEATURES BASED ON SURVEY PERFORMED BY COOPER AND ASSOCIATES DATED JUNE 2022. CONTOURS FROM COOPER AND ASSOCIATES SURVEY DATED JULY 2021 AND FROM AERIAL IMAGERY DATED DECEMBER 2022.
- HORIZONTAL DATUM IS NAD 1983 AND VERTICAL DATUM IS NAVD 1988. SURVEY WAS PERFORMED BY COOPER AND ASSOCIATES, DATED JUNE 27, 2022.
- FLOODPLAIN INFORMATION BASED ON FEMA FIRM MAPS NUMBERS 3720073000K AND 3720074000K, MAPS EFFECTIVE JULY 19, 2022.
- NO IMPACTS TO THE 100-YEAR FLOODPLAIN ARE INTENDED.
- A DESIGN 100-YEAR FLOOD ELEVATION BETWEEN 275 AND 280 FEET IS ASSUMED. THIS ASSUMPTION IS BASED OFF THE 100-YEAR FLOOD ELEVATIONS FOR BIG BRANCH ADJACENT TO THIS SITE OBTAINED FROM FEMA FIRM MAP NUMBER 3720073000K EFFECTIVE 07/19/2022.

PLAN
SCALE: 1"=100'

SCALE: 1" = 100'

File: C:\USERS\SASHAD\CCDC\HAZEN AND SAWYER\32044-004_BIG BRANCH 2 PUMP STATION AND PIPELINE\PROJECT FILES\CIVIL\C4 Saved by SASHAD Save date: 3/31/2023 12:37 PM PLOT DATE: 3/31/2023 2:17 PM BY: SASHAD

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

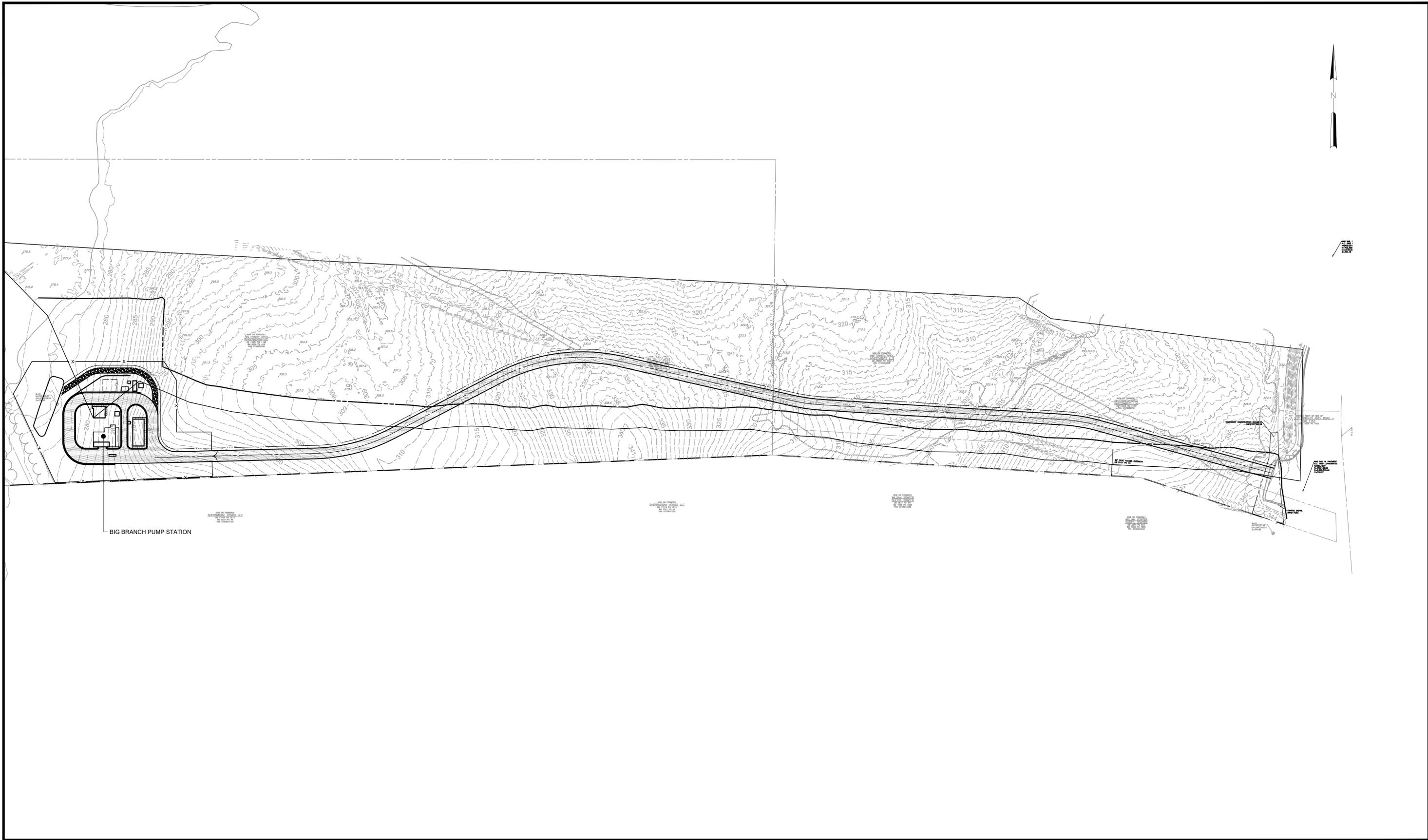
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RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
EXISTING CONDITIONS PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C4



BIG BRANCH PUMP STATION

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PLOT DATE: 3/31/2023 2:17 PM BY: SASH

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PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

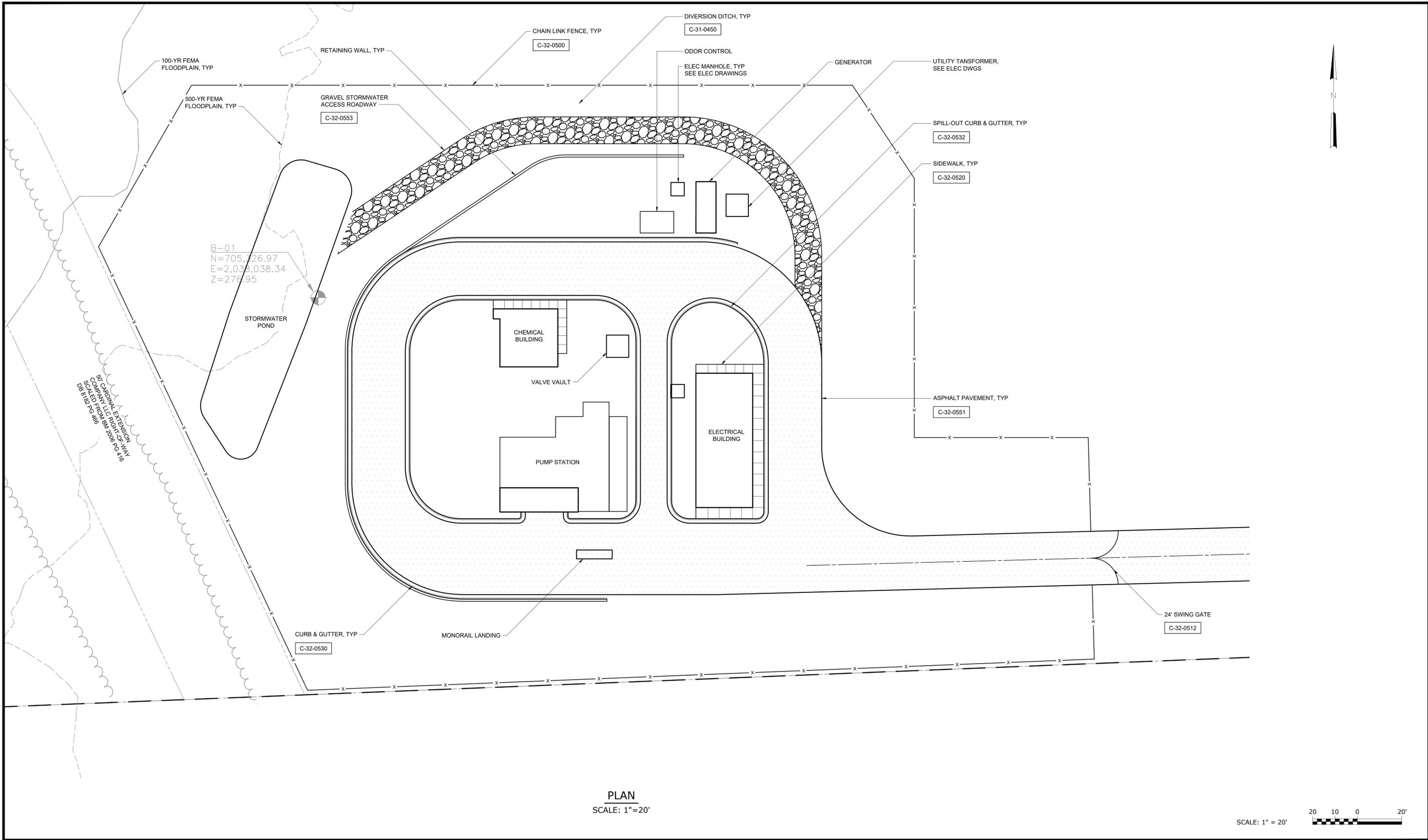
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CONSTRUCTION

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RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
OVERALL SITE PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C5



PLAN
SCALE: 1"=20'



File: C:\USERS\SNASH\DRAWINGS\HAZEN AND SAWYER\32044-004_BIG BRANCH 2 PUMP STATION AND PIPELINE\PROJECT FILES\CIVIL\C6 Saved by SNASH Save date: 3/31/2023 1:23 PM PLOT DATE: 3/31/2023 2:17 PM BY: SNASH

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PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

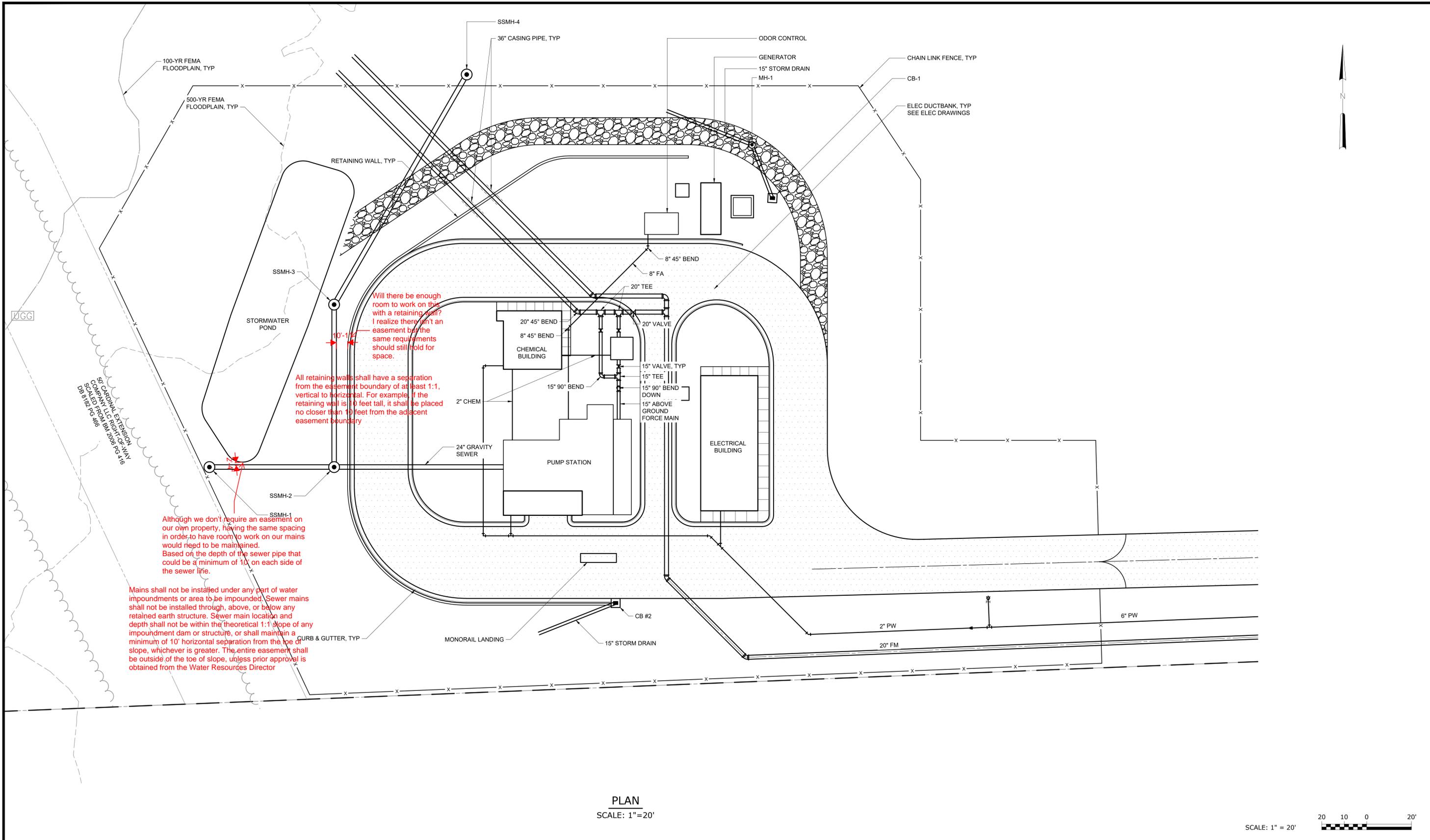
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RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
PARTIAL SITE PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C6



PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'

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PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

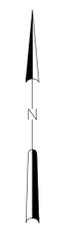
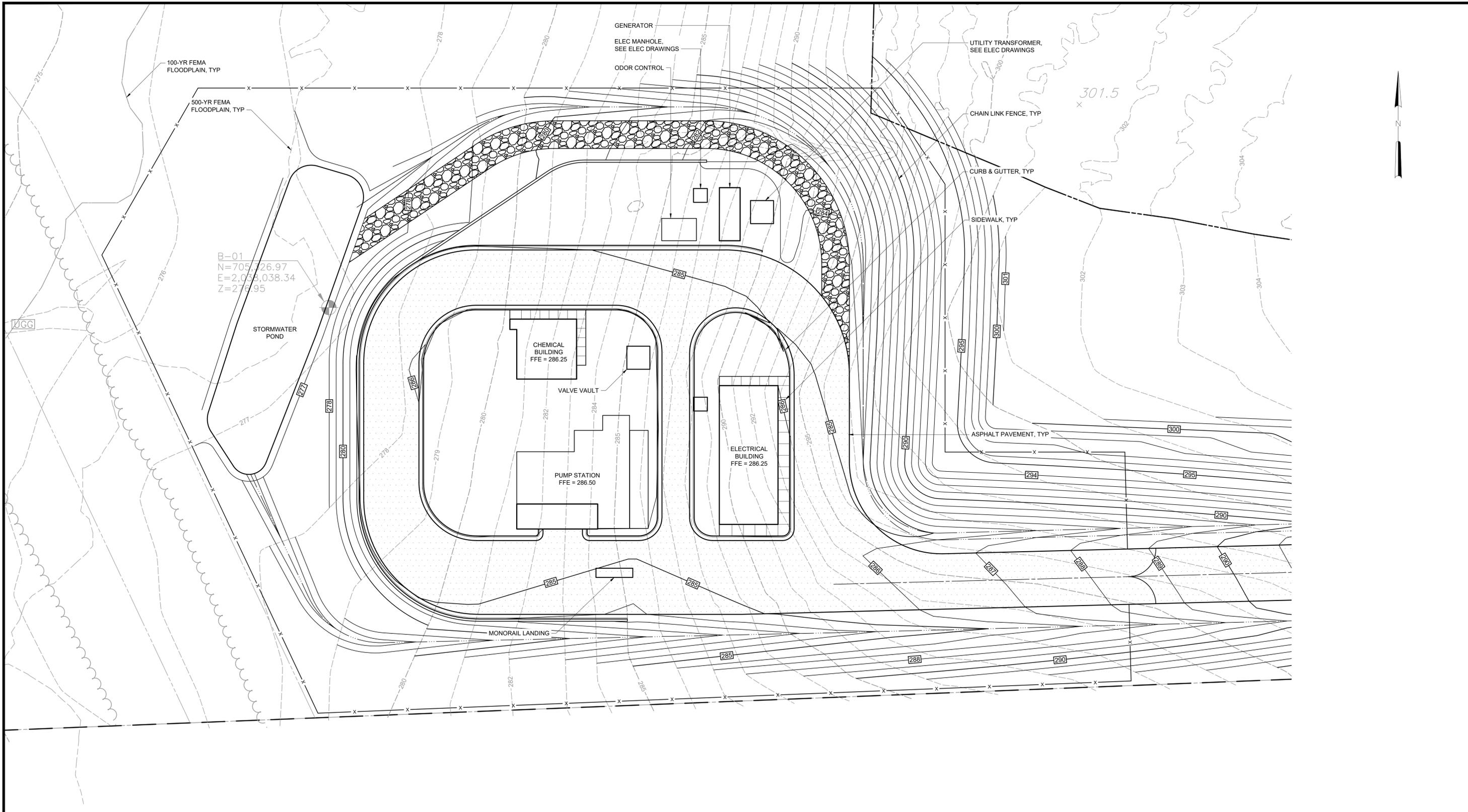
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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
YARD PIPING PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C7



PLAN
SCALE: 1"=20'

SCALE: 1" = 20'

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PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

PRELIMINARY DRAWING -
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CONSTRUCTION

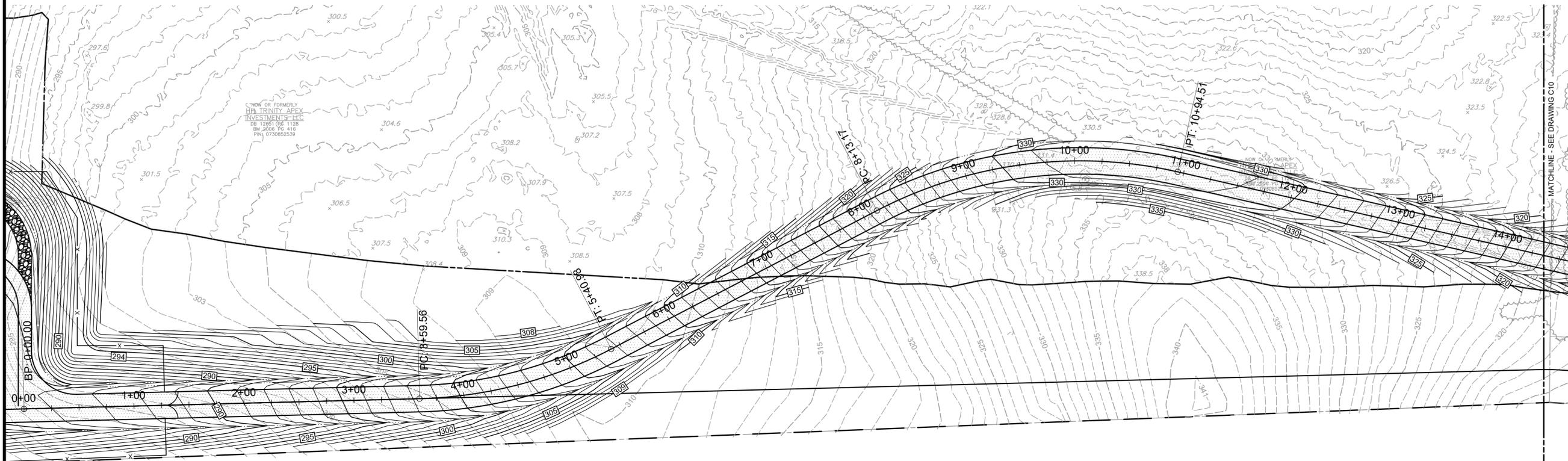
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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
GRADING AND DRAINAGE
PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C8

NOTES:
1. SEE DRAWINGS C11-C12 FOR ROADWAY PROFILE.



PLAN
SCALE: 1"=50'



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PLOT DATE: 3/31/2023 2:18 PM BY: SNASH

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PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

PRELIMINARY DRAWING -
DO NOT USE FOR
CONSTRUCTION

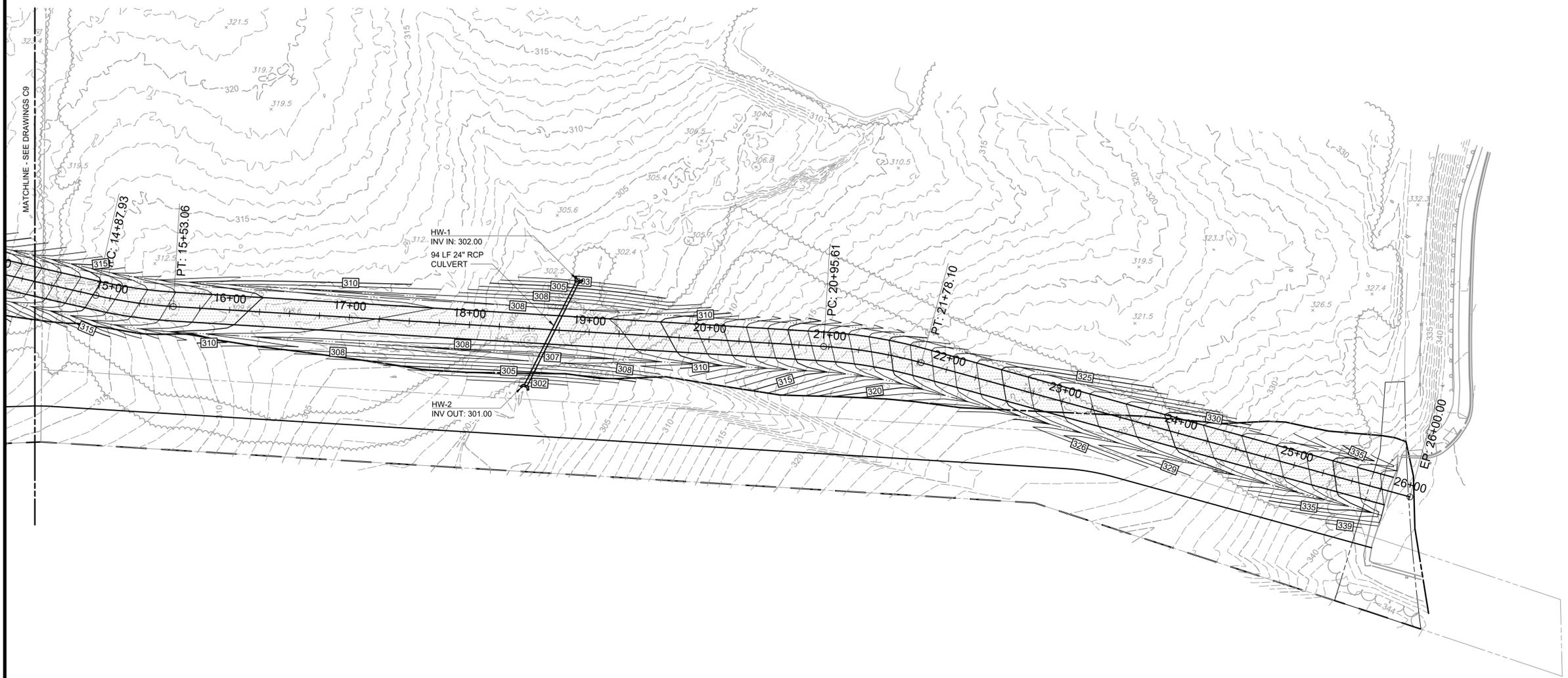
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4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
ROADWAY PLAN - SHEET 1

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C9

NOTES:
 1. SEE DRAWINGS C11-C12 FOR ROADWAY PROFILES.



PLAN
 SCALE: 1"=50'



File: C:\USERS\SNASH\DRAWINGS\HAZEN AND SAWYER\32044-004_BIG BRANCH 2 PUMP STATION AND PIPELINES\PROJECT FILES\CIVIL\C10 Saved by: SNASH Save date: 3/31/2023 12:38 PM
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

PRELIMINARY DRAWING -
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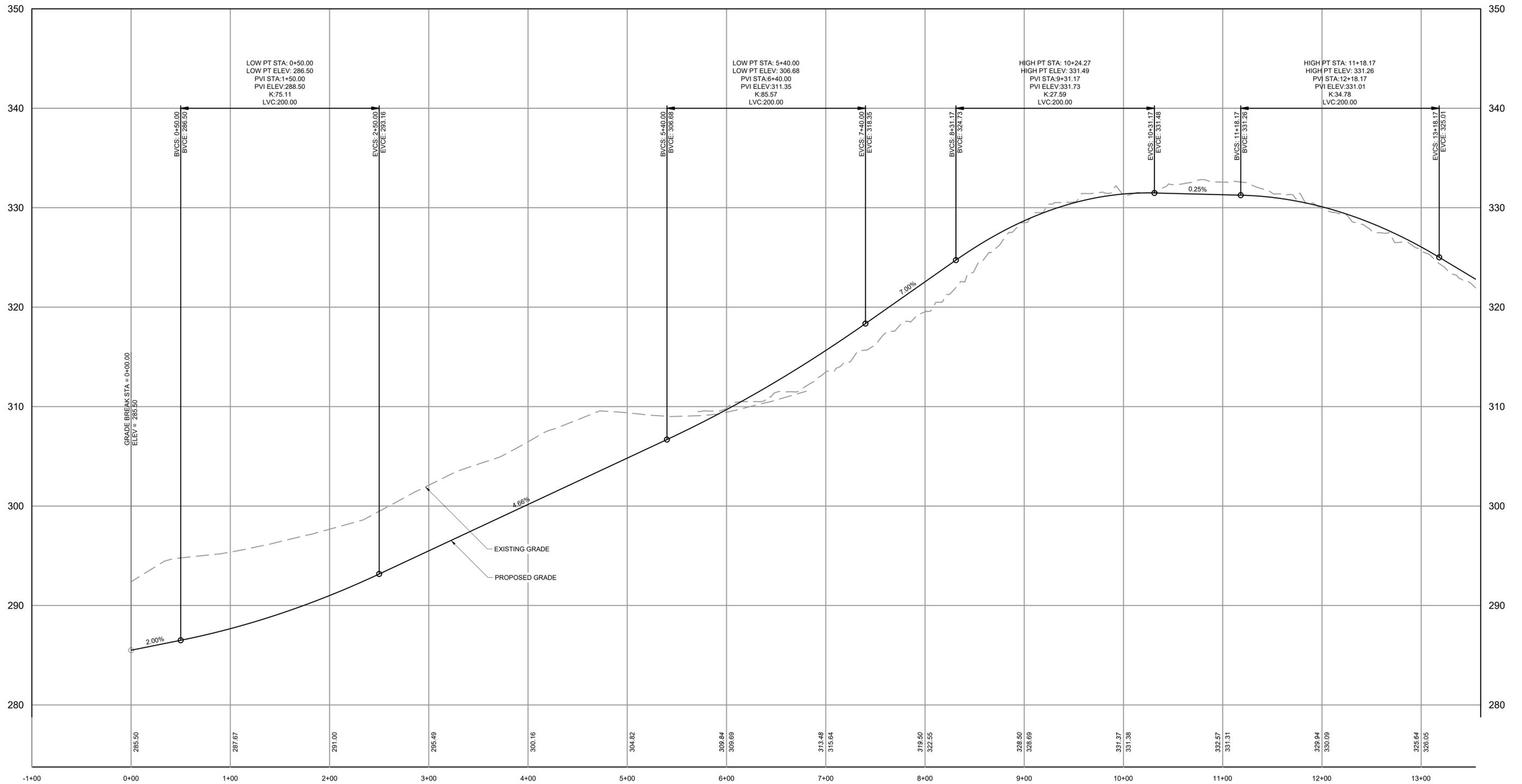
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APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

CIVIL
 ROADWAY PLAN - SHEET 2

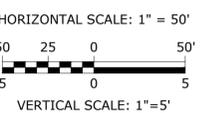
DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C10

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 PLOT DATE: 3/17/2023 2:18 PM BY: SNASH



PLAN
 SCALE: 1" = 50'

Will the water be designed with this project?
 Looking at this profile there will be some ARV's needed. Please provide profile for all water and sewer that you are proposing.



REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

PRELIMINARY DRAWING -
 DO NOT USE FOR
 CONSTRUCTION

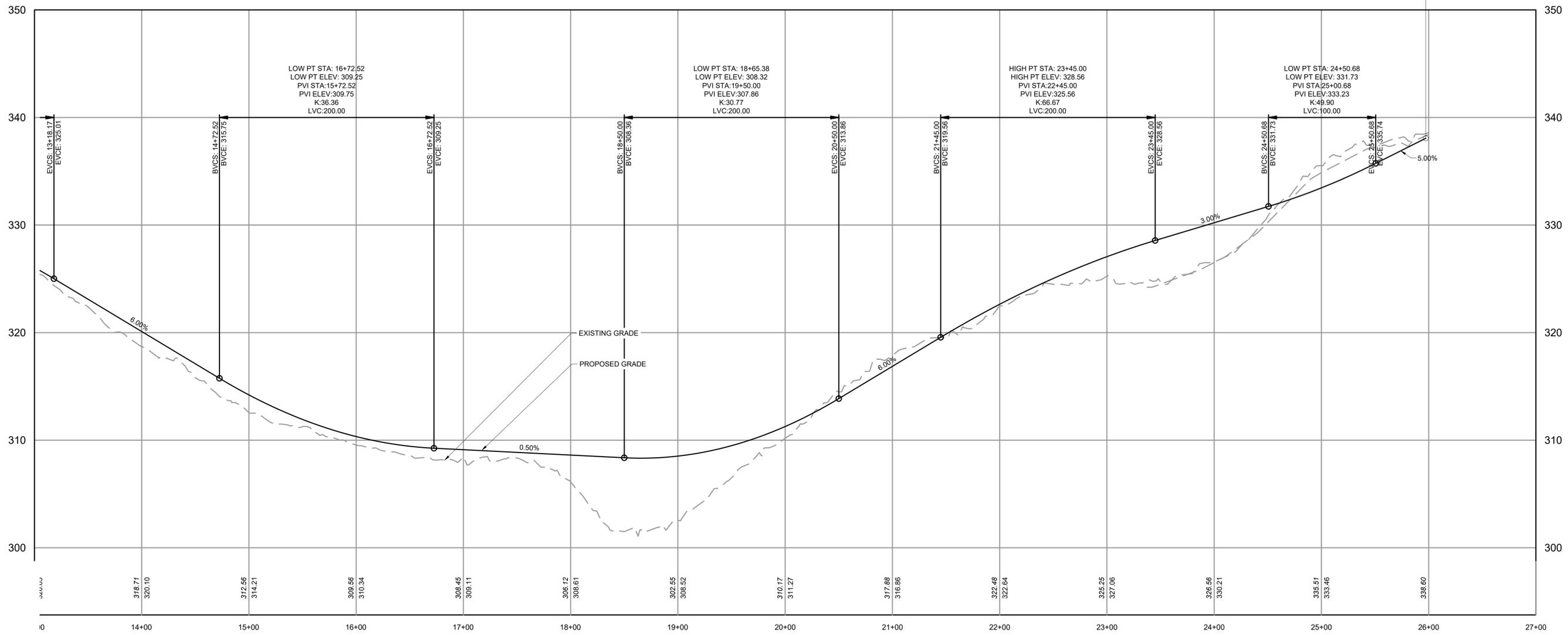
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APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

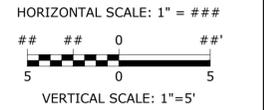
CIVIL
 ROADWAY PROFILE -
 SHEET 1

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C11

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PLAN
SCALE: 1" = 50'



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PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

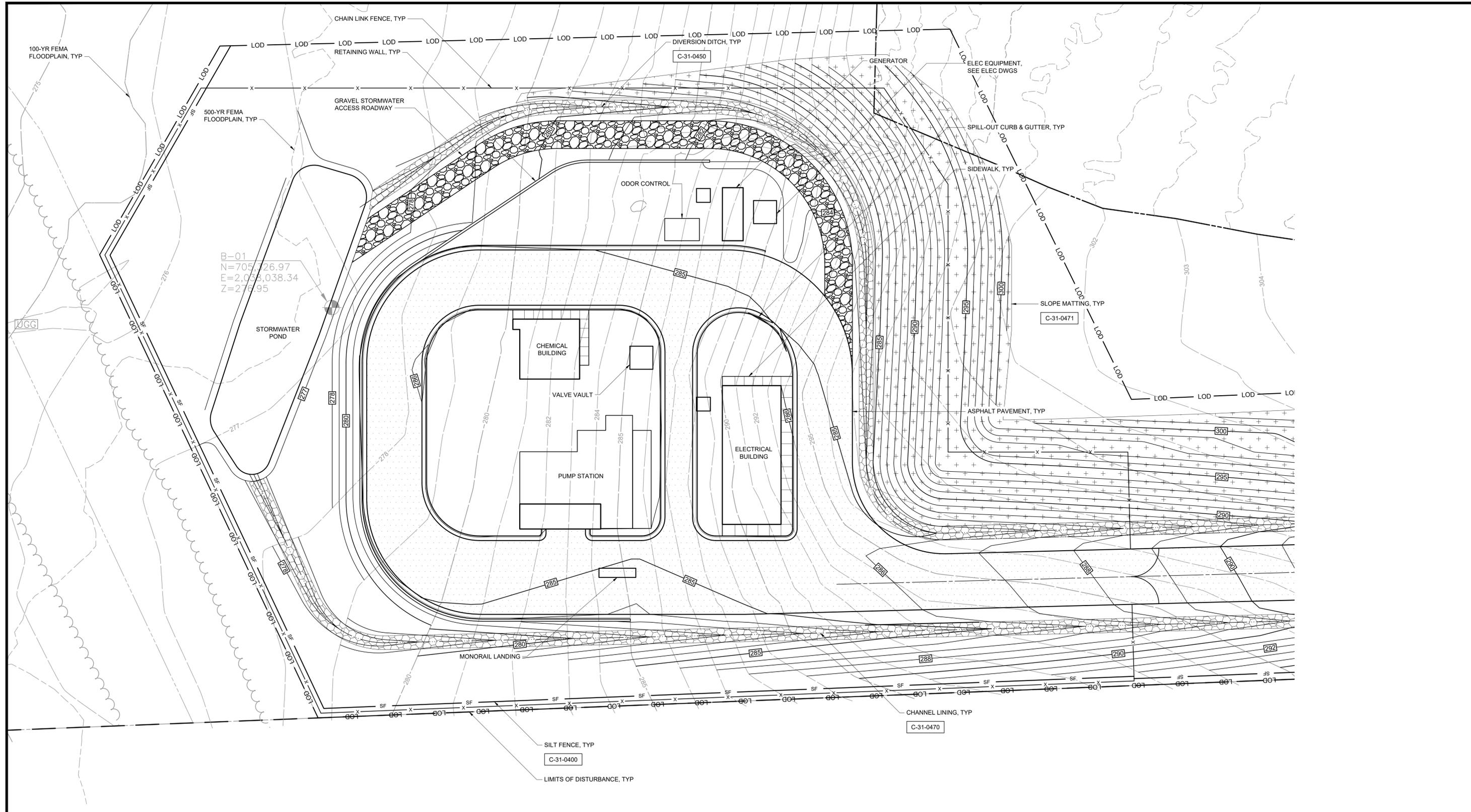
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LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
ROADWAY PROFILE -
SHEET 2

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C12



TOTAL AREA DISTURBED = 7.92 ACRES

PLAN
SCALE: 1"=20'

SCALE: 1" = 20'

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PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE			
REV	ISSUED FOR	DATE	BY

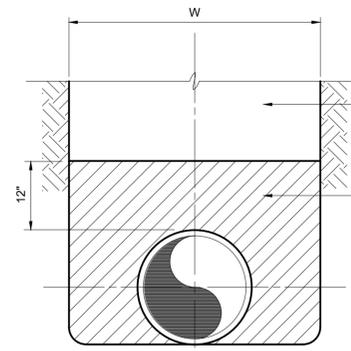
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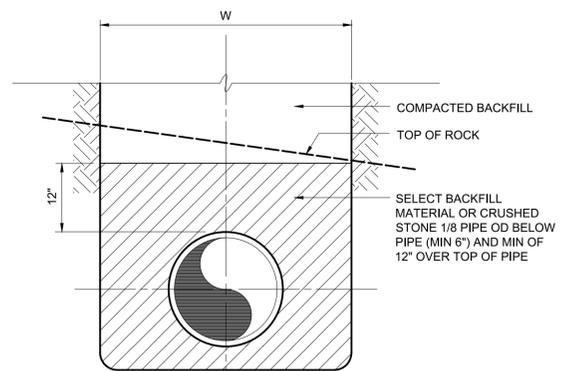
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
EROSION CONTROL PLAN

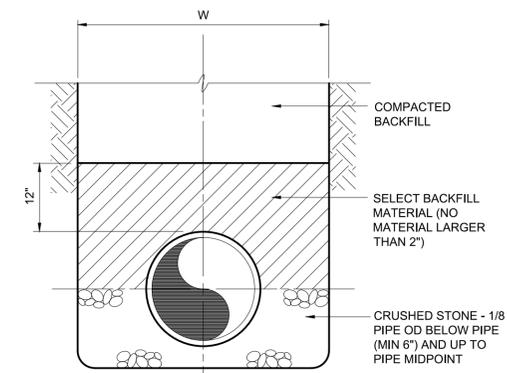
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HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	C13



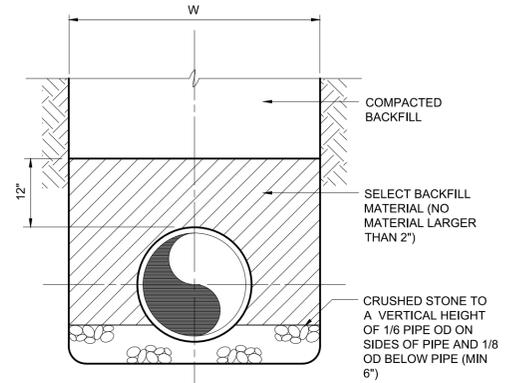
TYPE A
IN EARTH
C-01-0100



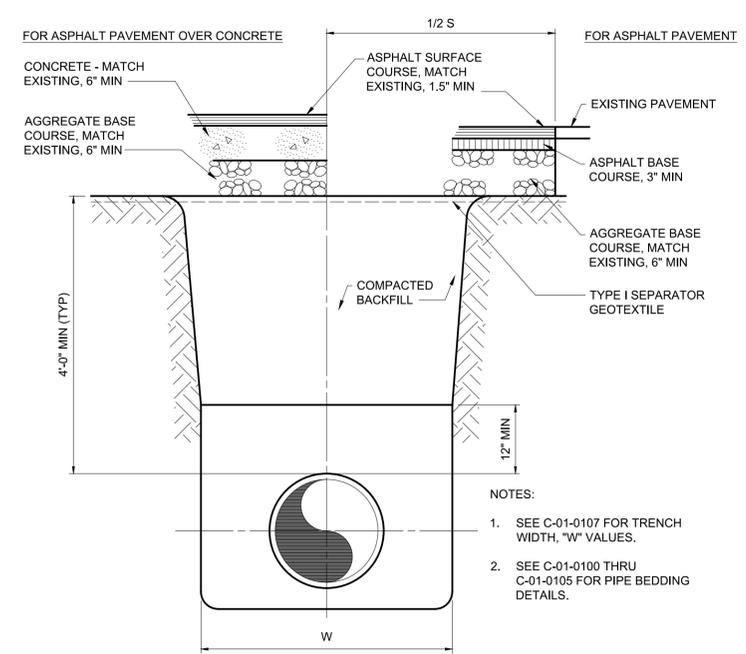
TYPE A
IN ROCK
C-01-0101



TYPE B
C-01-0102



TYPE C
C-01-0103



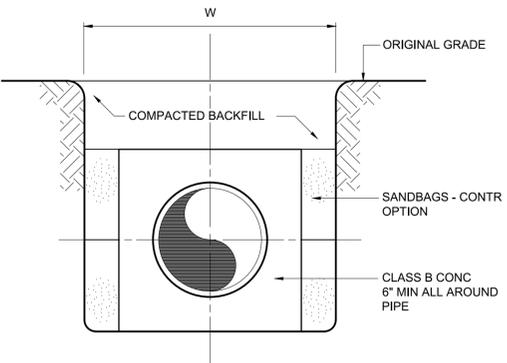
TYPICAL TRENCH
C-01-0106

- NOTES:
- SEE C-01-0107 FOR TRENCH WIDTH, "W" VALUES.
 - SEE C-01-0100 THRU C-01-0105 FOR PIPE BEDDING DETAILS.

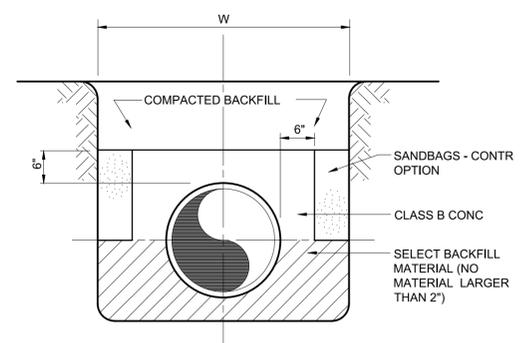
INTERNAL DIAMETER OF PIPE	TRENCH EXCAVATION LIMITS	
	WIDTH OF TRENCH MAX	W-MIN
4"-6"	3'-9"	2'-0"
8"-10"	3'-9"	2'-2"
12"	3'-9"	O.D.+2'
14"-16"	4'-2"	O.D.+2'
18"	4'-4"	O.D.+2'
20", 21"	4'-8"	O.D.+2'
24"	4'-11"	O.D.+2'
27"	5'-9"	O.D.+2'
30"	6'-7"	O.D.+2'
36"	7'-4"	O.D.+2'
42"	8'-2"	O.D.+2'
48"	8'-9"	O.D.+2'
54"	9'-4"	O.D.+2'
60"	9'-10"	O.D.+2'
72"	11'-0"	O.D.+2'
78"	11'-8"	O.D.+2'
84"	12'-0"	O.D.+2'
90"	12'-6"	O.D.+2'
96"	13'-0"	O.D.+2'
108"	14'-0"	O.D.+2'
DEPTH OF CUT	S MAXIMUM PAVEMENT REPLACEMENT WIDTH	
0'-6"	S=W+4'	
>6'-8"	S=W+8'	
>8'-10"	S=W+12'	
>10'-12"	S=W+16'	
>12'-14"	S=W+20'	
>14'-16"	S=W+24'	
>16'-18"	S=W+28'	
>18"	S=W+32'	

W = TRENCH WIDTH AT BOTTOM OF PIPE. TRENCH SIDE SLOPES SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.

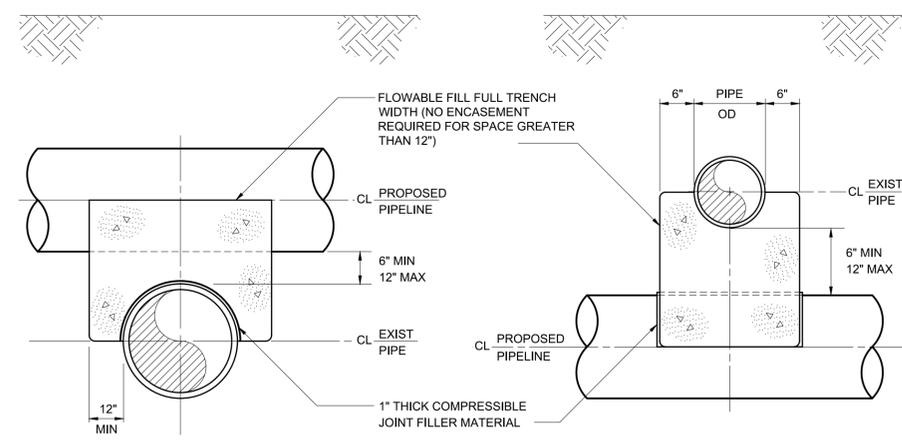
C-01-0107



CONCRETE ENCASEMENT
(SEE NOTE 1)
C-01-0104



CONCRETE ARCH
(SEE NOTE 1)
C-01-0105



PROPOSED PIPELINE OVER EXIST PIPE
PROPOSED PIPELINE UNDER EXIST PIPE
C-01-0120

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PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

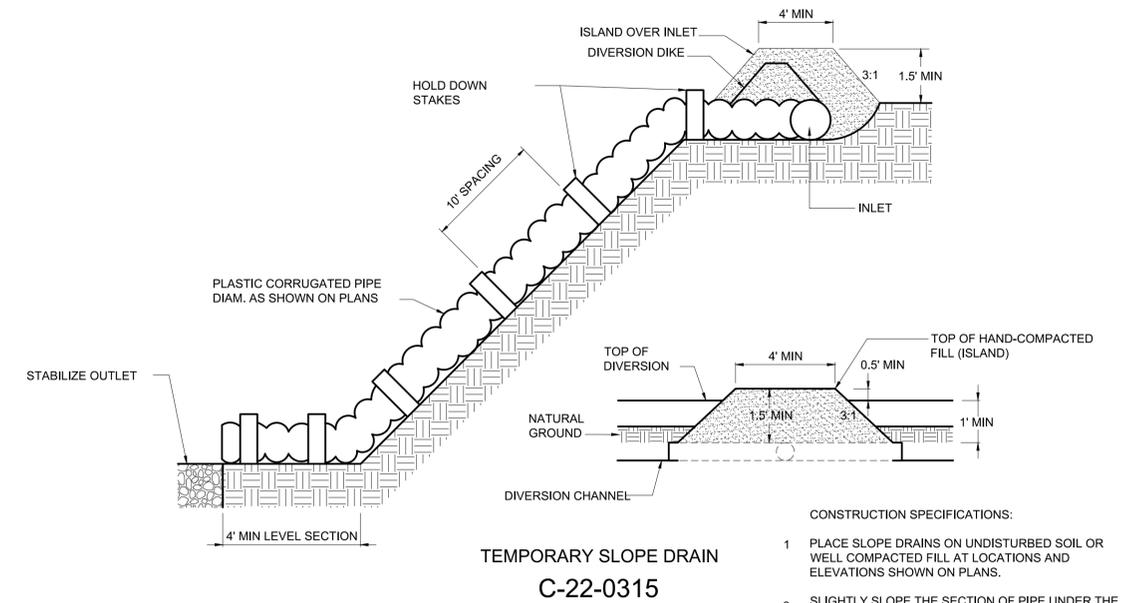
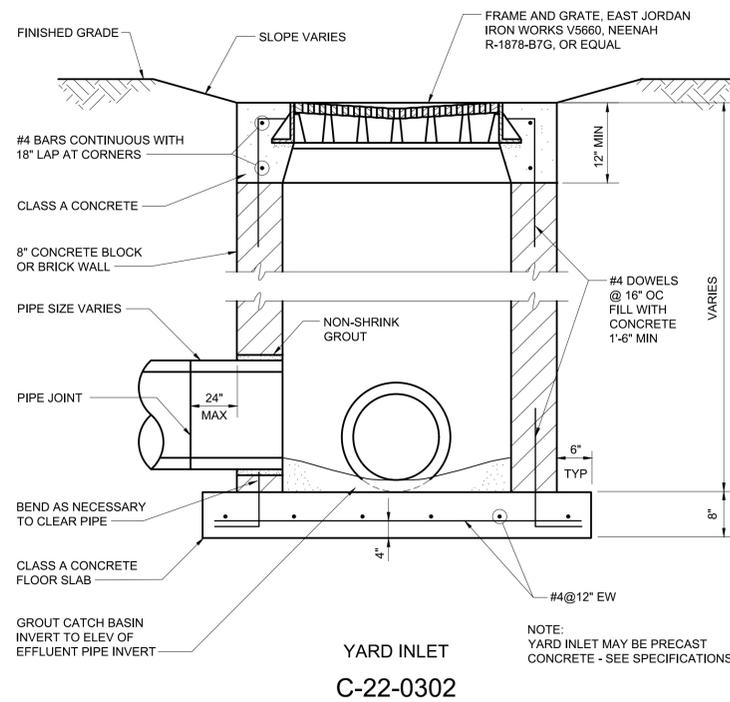
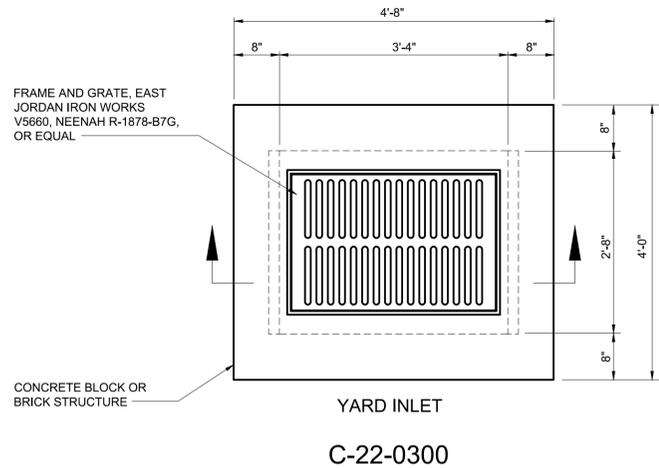
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RALEIGH, NC 27607
LICENSE No.: C-0381

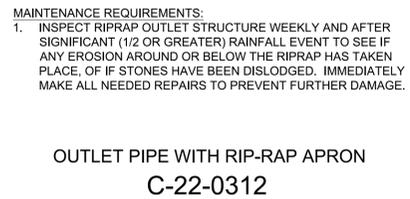
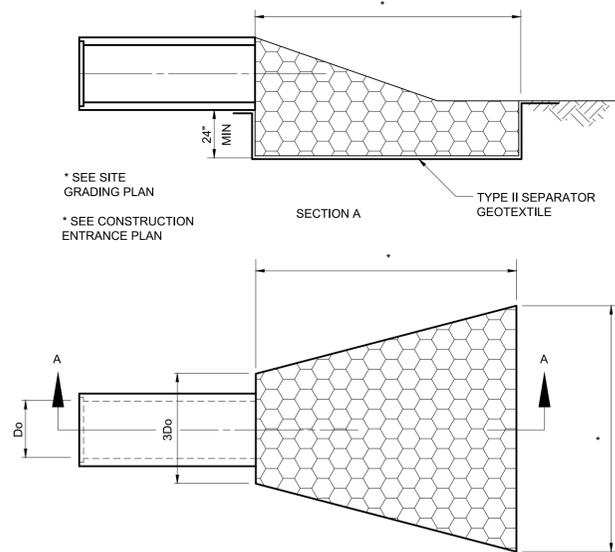
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
STANDARD DETAILS

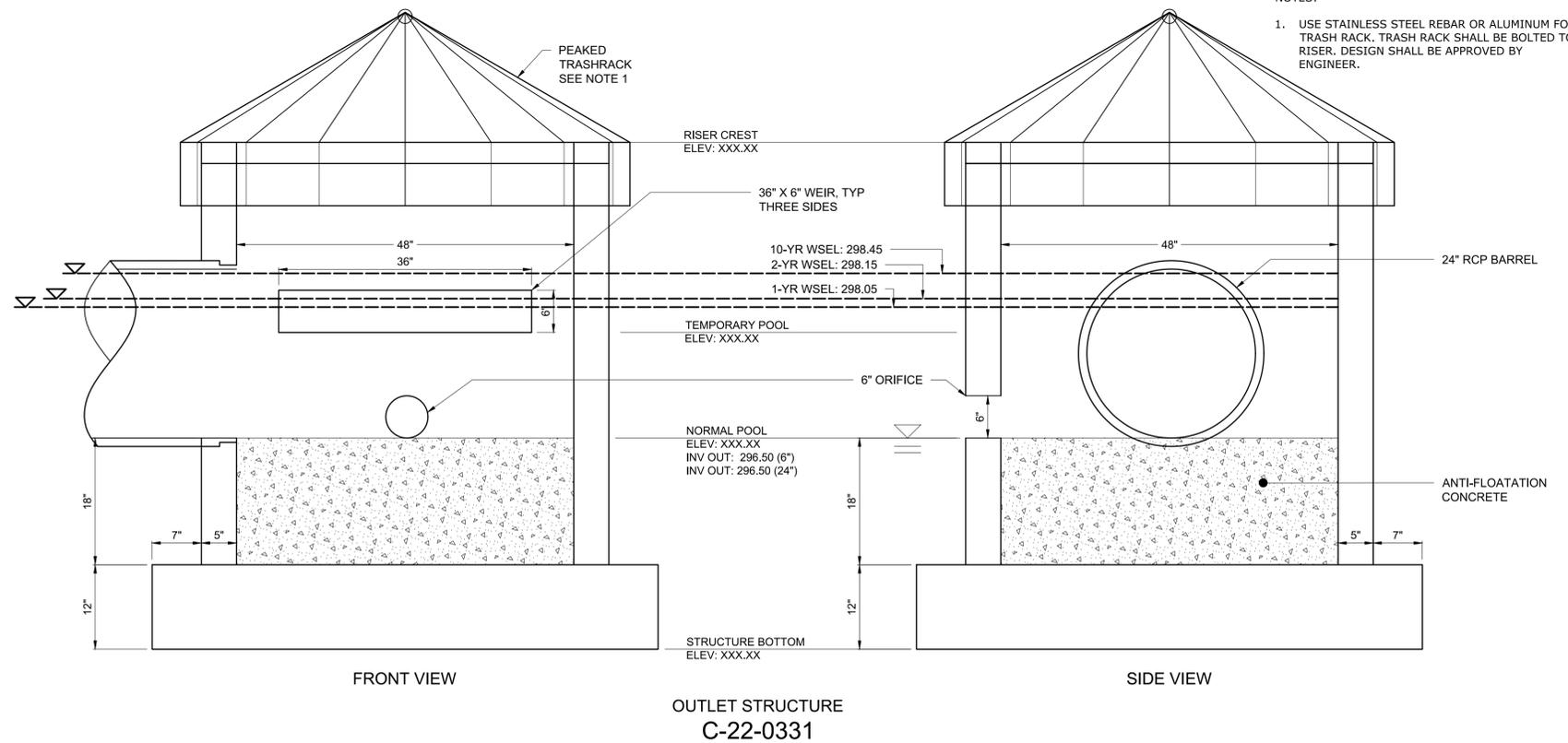
DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	CD1



- CONSTRUCTION SPECIFICATIONS:
- 1 PLACE SLOPE DRAINS ON UNDISTURBED SOIL OR WELL COMPACTED FILL AT LOCATIONS AND ELEVATIONS SHOWN ON PLANS.
 - 2 SLIGHTLY SLOPE THE SECTION OF PIPE UNDER THE DIKE TOWARD ITS OUTLET.
 - 3 HAND TAMP THE SOIL UNDER AND AROUND THE ENTRANCE SECTION IN LIFTS NOT TO EXCEED 6 INCHES.



- MAINTENANCE REQUIREMENTS:
1. INSPECT RIPRAP OUTLET STRUCTURE WEEKLY AND AFTER SIGNIFICANT (1/2 OR GREATER) RAINFALL EVENT TO SEE IF ANY EROSION AROUND OR BELOW THE RIPRAP HAS TAKEN PLACE. IF STONES HAVE BEEN DISLODGED, IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.
- CONSTRUCTION SPECIFICATIONS:
1. COMPACT ANY FILL REQUIRED FOR SUBGRADE TO DENSITY OF SURROUNDING MATERIAL. LOW AREAS IN SUBGRADE MAY BE FILLED BY INCREASING RIPRAP THICKNESS.
 2. FILTER CLOTH CONNECTION JOINTS SHOULD OVERLAP SO THAT TOP LAYER IS ABOVE DOWNSTREAM LAYER A MINIMUM OF 1 FOOT. ANY DAMAGED FILTER CLOTH SHOULD BE REPLACED WITH NEW.
 3. RIPRAP MAY BE PLACED BY EQUIPMENT, BUT TAKE CARE TO AVOID DAMAGING THE FILTER CLOTH.
 4. MAKE THE TOP OF RIPRAP AT DOWNSTREAM END LEVEL WITH RECEIVING AREA OR SLIGHTLY BELOW.
 5. ENSURE APRON IS PROPERLY ALIGNED WITH RECEIVING PIPE AND PREFERABLY STRAIGHT THROUGHOUT LENGTH.
 6. IMMEDIATELY AFTER CONSTRUCTION, STABILIZE ALL DISTURBED AREAS WITH VEGETATION.



- NOTES:
1. USE STAINLESS STEEL REBAR OR ALUMINUM FOR TRASH RACK. TRASH RACK SHALL BE BOLTED TO RISER. DESIGN SHALL BE APPROVED BY ENGINEER.

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PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

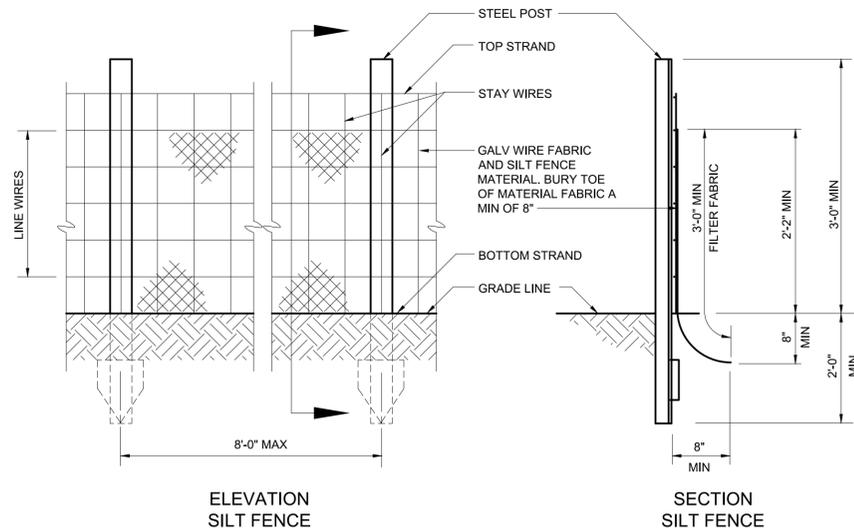
PRELIMINARY DRAWING -
DO NOT USE FOR
CONSTRUCTION

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HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
STANDARD DETAILS

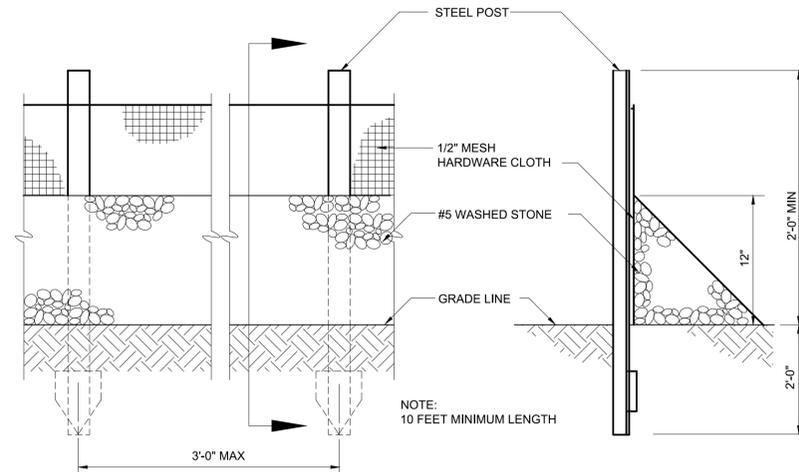
DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	CD2



ELEVATION SILT FENCE

- NOTE:
- EXTRA STRENGTH SILT FENCE MATERIAL (AS APPROVED BY ENGINEER) WITH 6'-0" POST SPACING DOES NOT REQUIRE MESH SUPPORT FENCE.
 - SILT FENCE MATERIAL SHALL BE WIRED DIRECTLY TO POST.

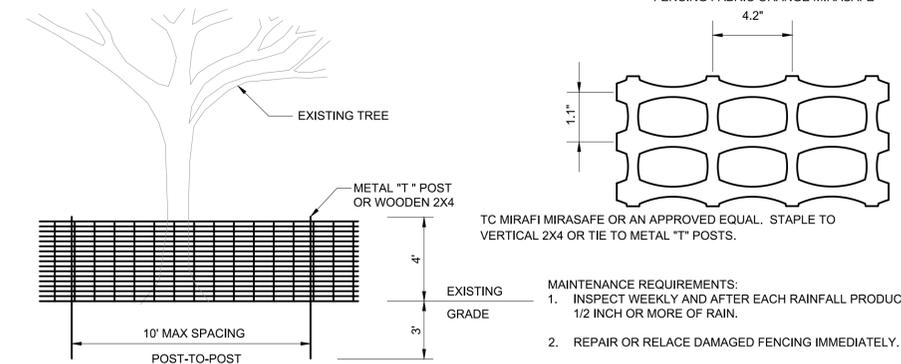
C-31-0400



ELEVATION STONE FILTER

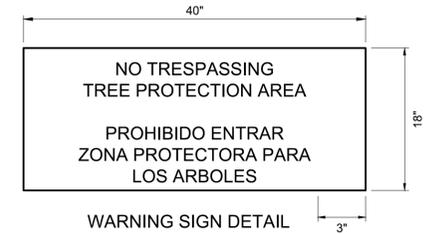
C-31-0402

SECTION STONE FILTER



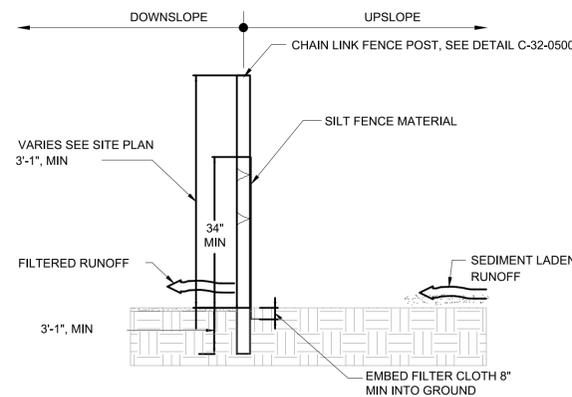
- NOTES:
- PLACE CONTINUOUS RUN OF FENCE MATERIAL ON BOTH SIDES OF IMMEDIATE WORK ZONE IN WOODED AREAS AS SHOWN ON THE PLANS. DO NOT ATTACH FENCE MATERIAL TO TREES.
 - TREE PROTECTION FENCING FABRIC TO BE PLACED AT THE DRIP LINE OF THE TREES THAT ARE TO BE PROTECTED.
 - "MIRASAFE" HIGH STRENGTH POLYMER GEOGRID FABRIC BY MIRAFI CONSTRUCTION PRODUCTS, PENDERGRASS, GEORGIA. FENCE MATERIAL TO BE WARNING AND BARRIER FENCE AS PER SPECIFICATION 31 10 00.
 - ONE SIGN PER 300' OF TREE PROTECTION FENCING SHALL READ, AS SHOWN TO THE RIGHT.

- MAINTENANCE REQUIREMENTS:
- INSPECT WEEKLY AND AFTER EACH RAINFALL PRODUCING 1/2 INCH OR MORE OF RAIN.
 - REPAIR OR RELACE DAMAGED FENCING IMMEDIATELY.
 - REPLACE ANY DAMAGED SIGNAGE IMMEDIATELY AS NEEDED.



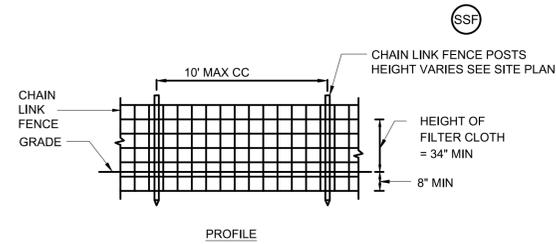
WARNING SIGN DETAIL

TREE PROTECTION BARRIER FENCE
C-31-0405



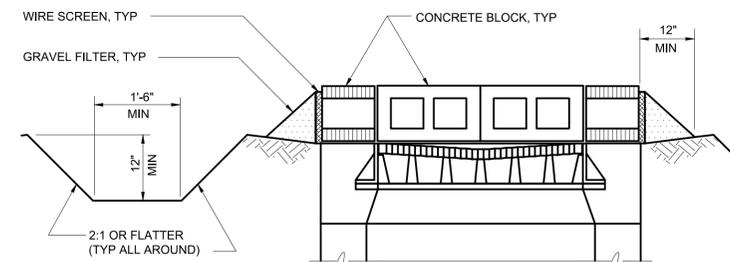
CROSS SECTION

SUPER SILT FENCE
C-31-0401



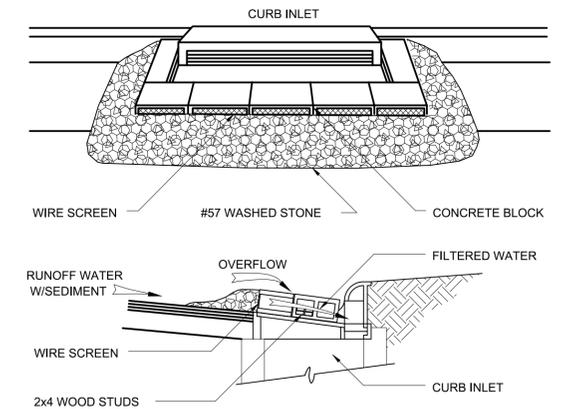
- NOTES:
- FENCING SHALL BE MINIMUM 42" IN HEIGHT AND CONSTRUCTED IN ACCORDANCE WITH FENCING DETAIL C-32-0500.
 - FILTER CLOTH TO BE FASTENED SECURELY TO CHAIN LINK FENCE WITH WIRE TIES SPACED EVERY 24" AT TOP AND MID SECTION.
 - WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
 - MAINTENANCE SHALL BE PERFORMED REGULARLY AND MATERIAL REMOVED AS SPECIFIED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
 - FILTER CLOTH SHALL BE FASTENED SECURELY TO EACH FENCE POST WITH WIRE TIES OR STAPLES AT TOP AND MID SECTION SHALL AND SHALL MEET THE FOLLOWING REQUIREMENTS FOR GEOTEXTILE CLASS F:

TENSILE STRENGTH D-4595	50 LB/IN (MIN)	ASTM TEST METHOD
TENSILE MODULUS D-4595	20 LB/IN (MIN)	ASTM TEST METHOD
FLOW RATE D-5141	0.3 GAL/CU.FT/MIN. (MAX)	ASTM TEST METHOD
FILTERING EFFICIENCY D-5141	75 PERCENT (MIN)	ASTM TEST METHOD



YARD INLET EROSION CONTROL

C-31-0410



CURB INLET SEDIMENT CONTROL

C-31-0413

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PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

PRELIMINARY DRAWING -
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CONSTRUCTION

Hazen

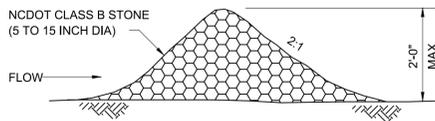
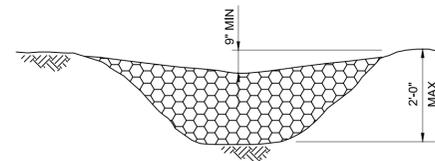
HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA

BIG BRANCH 2
PUMP STATION

CIVIL
STANDARD DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	CD3



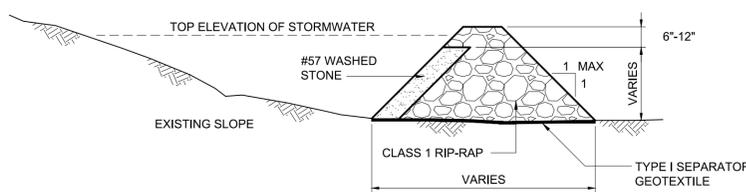
FOR LARGER CHANNELS USE NCDOT CLASS 1 RIP-RAP FACED WITH # 57 WASHED STONE.

STONE CHECK DAM
C-31-0420

DESIGN OF SPILLWAYS

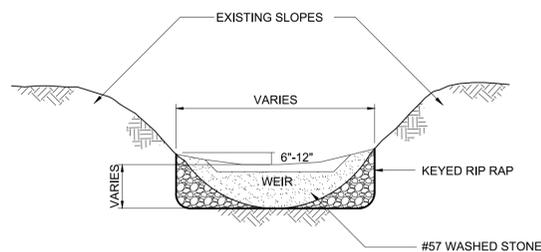
DRAINAGE AREA (ACRES)	WEIR LENGTH† (FT)
1	4.0
2	6.0
3	8.0
4	10.0
5	12.0

† DIMENSIONS SHOWN ARE MINIMUM

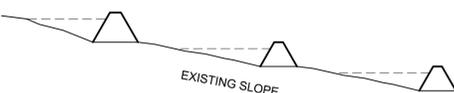


SIDE VIEW

- NOTES:
- HEIGHT & WIDTH DETERMINED BY EXISTING TOPOGRAPHY AND SEDIMENT STORAGE REQUIRED.
 - KEY RIP RAP INTO THE DAM FOR STABILIZATION.

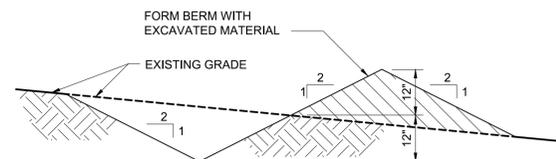


FRONT VIEW



STEP SEQUENCE

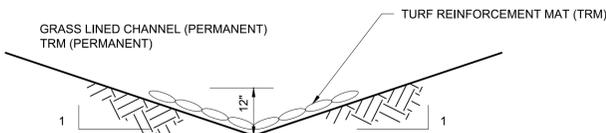
CHECK DAM
C-31-0423



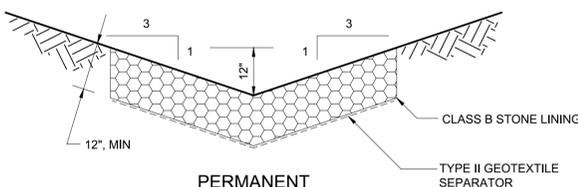
TEMPORARY DIVERSION SWALE
C-31-0440



TEMPORARY



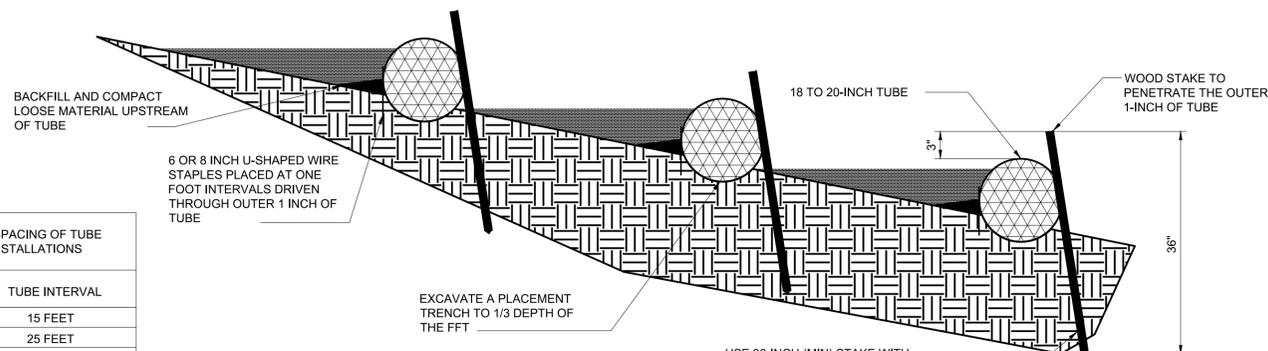
PERMANENT



**PERMANENT
TYPICAL DITCH DETAIL**

SEE DETAIL C-31-0470 FOR INSTALLATION DETAIL

C-31-0450



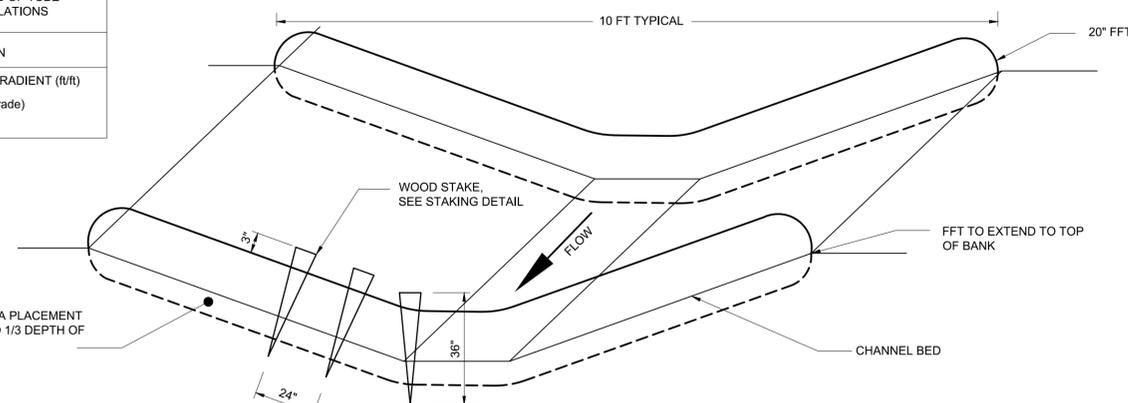
PROFILE VIEW - W/STAKING DETAIL

GENERAL GUIDELINES FOR SPACING OF TUBE TRENCHES FOR SLOPE INSTALLATIONS

SLOPE GRADIENT	TUBE INTERVAL
1H:1V	15 FEET
2H:1V	25 FEET
3H:1V	35 FEET
4H:1V	50 FEET

GENERAL GUIDELINES FOR SPACING OF TUBE TRENCHES FOR CHANNEL INSTALLATIONS

TUBE SPACING CALCULATION
TUBE HEIGHT (ft. above grade) / SLOPE GRADIENT (ft/ft) (eg. 20" tube w/ 1.416 ft. above grade) 1.416 / .01 = 142 ft. spacing



CHANNEL CROSS SECTION

FIBER FILTRATION TUBE (FFT)
CHANNEL PROTECTION

C-31-0424

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PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"
REV	ISSUED FOR
	DATE
	BY

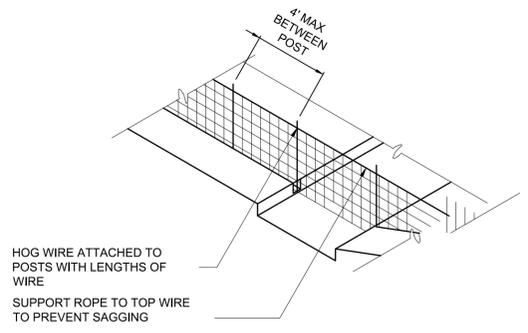
PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

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HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

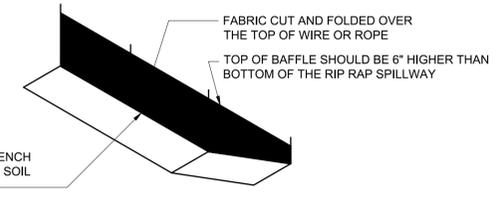
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
STANDARD DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	CD4



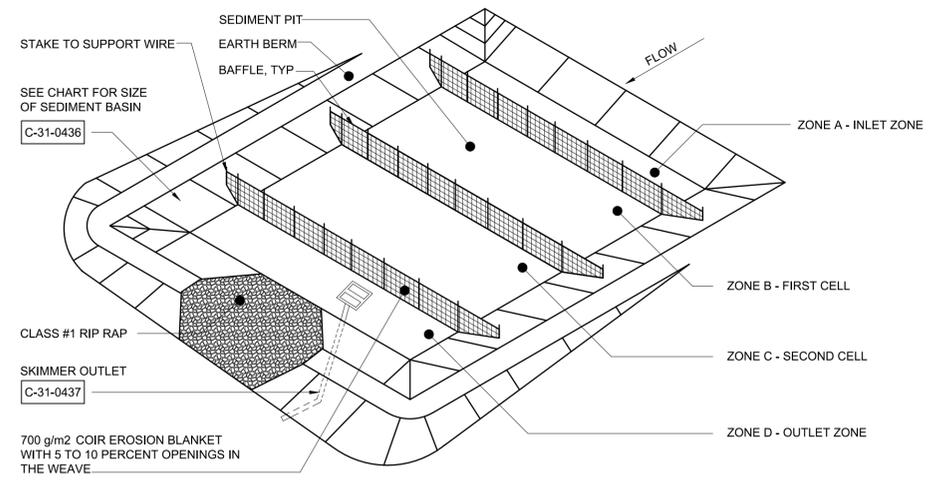
BAFFLE INSTALLATION - STEP 1



BAFFLE INSTALLATION - STEP 2

SEDIMENT BASIN DATA				
BASIN NUMBER	BASIN WIDTH (FT)	BASIN LENGTH (FT)	BASIN DEPTH (FT)	WEIR LENGTH (FT)
(A)				
(B)				
(C)				
(D)				
(E)				
(F)				
(G)				
(H)				

C-31-0432

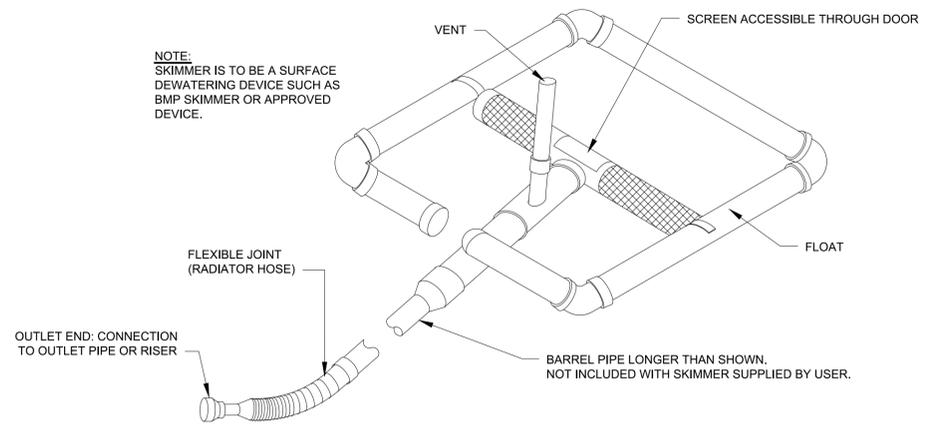


PERSPECTIVE VIEW

- NOTES:**
- DRIVE STEEL FENCE POST AT LEAST 18" INTO SOLID GROUND, SPACED A MINIMUM OF 4' APART, AND INSTALLED UP THE SIDES OF THE BASIN AS WELL.
 - THE TOP OF THE FABRIC SHOULD BE 6" HIGHER THAN THE INVERT OF THE RIP RAP SPILLWAY.
 - TOPS OF BAFFLES SHOULD BE 2" HIGHER THAN THE TOPS OF BERMS.
 - INSTALL AT LEAST 3 ROWS OF BAFFLES BETWEEN THE INLET AND OUTLET DISCHARGE POINT. BASINS LESS THAN 20' IN LENGTH MAY USE 2 BAFFLES.
 - ADD SUPPORT WIRE OR ROPE TO TOP OF POSTS TO PREVENT SAGGING.
 - WRAP COIR EROSION BLANKET OVER TOP WIRE OR ROPE AND ATTACH WITH ZIP TIES, WIRES, OR STAPLES.
 - DO NOT SPLICE THE FABRIC, BUT USE A CONTINUOUS PIECE ACROSS THE BASIN.
 - WOOD POSTS ARE NOT ACCEPTABLE.
 - USE STAPLES 12" APART TO ATTACH FABRIC TO "HOG WIRE".
 - BAFFLE SPACED AS PER TABLE - DETAIL C-31-0436.

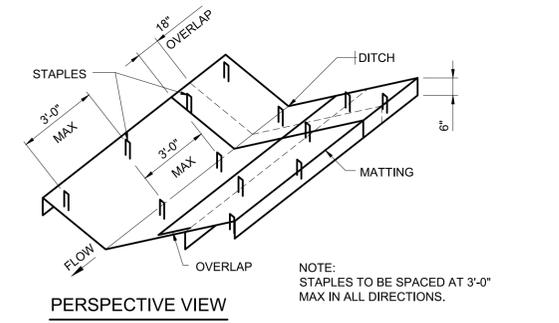
TEMPORARY SKIMMER SEDIMENT BASIN WITH BAFFLES

C-31-0434

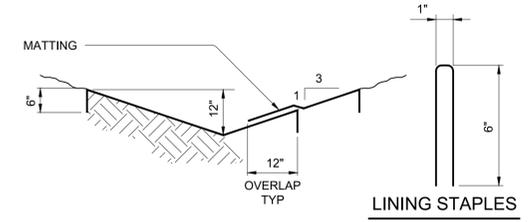


SKIMMER OUTLET

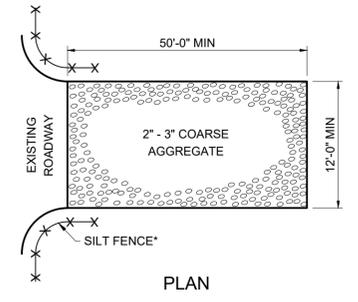
C-31-0437



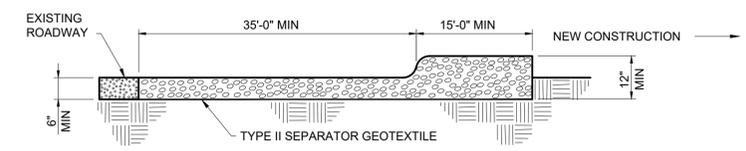
PERSPECTIVE VIEW



RECM AND TRM INSTALLATION
C-31-0470



PLAN

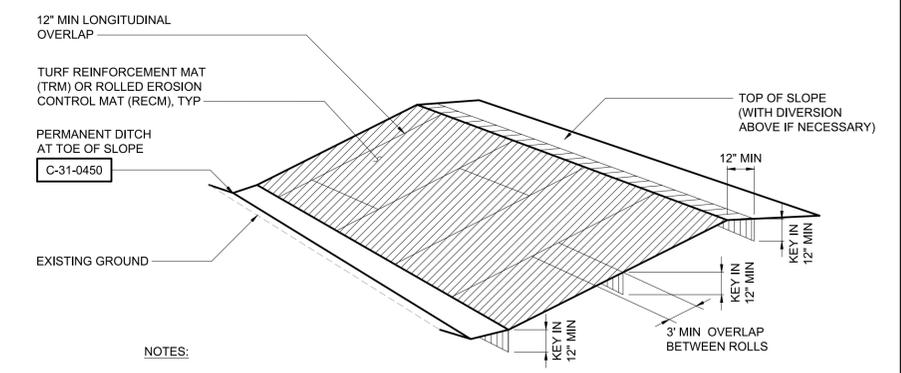


CROSS SECTION

GRAVEL ENTRANCE/EXIT
C-31-0490

- NOTES:**
- *SILT FENCE SHOULD BE INSTALLED TO ENSURE CONSTRUCTION ENTRANCE IS USED.
 - IF CONSTRUCTION ON THE SITES ARE SUCH THAT THE MUD IS NOT REMOVED BY THE VEHICLE TRAVELING OVER THE STONE, THEN THE TIRES OF THE VEHICLE MUST BE WASHED BEFORE ENTERING THE PUBLIC ROAD OR THE LENGTH OF THE CONSTRUCTION ENTRANCE EXTENDED.
 - MAINTENANCE: ADD ADDITIONAL STONE AND "LUFFF" TOP DRESSING WITH 2" STONE.

SEE N.C. DENR EROSION AND SEDIMENT CONTROL PLANNING and DESIGN MANUAL FOR CONDITIONS WHERE PRACTICE APPLIES; PLANNING CONSIDERATION & DESIGN CRITERIA.



- NOTES:**
- TRM OR RECM SHALL BE STAPLED TO SLOPE AS SPECIFIED BY MANUFACTURER.
 - PREPARE, SEED AND FERTILIZE SLOPE IMMEDIATELY PRIOR TO MAT INSTALLATION.

SLOPE MATTING
C-31-0471

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DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

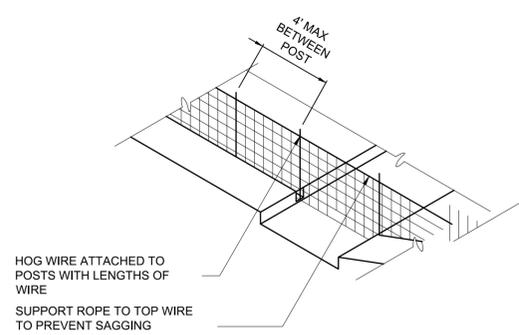
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LICENSE No.: C-0381

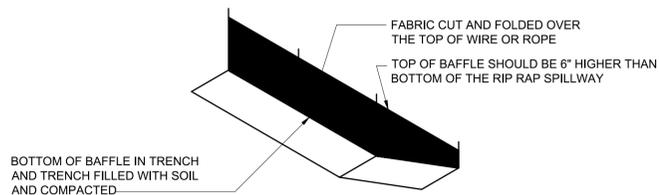
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
STANDARD DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	CD5



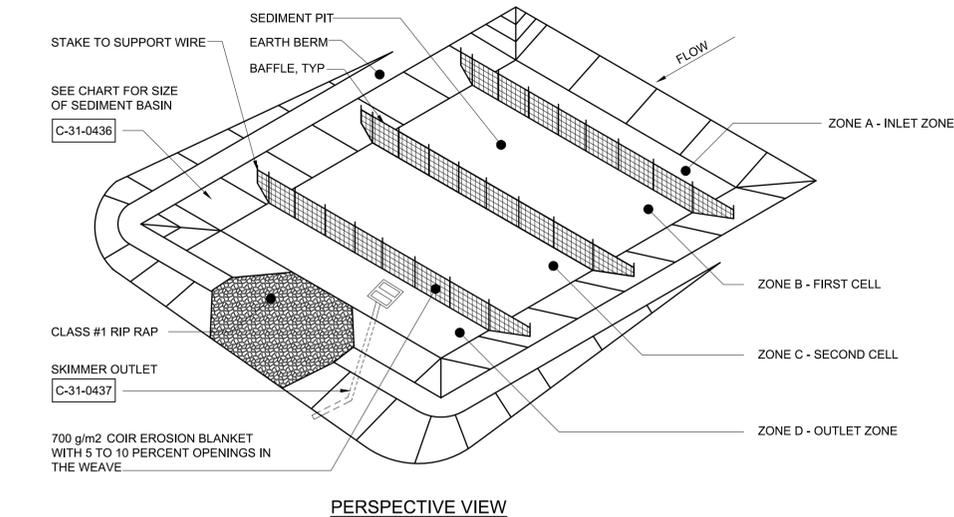
BAFFLE INSTALLATION - STEP 1



BAFFLE INSTALLATION - STEP 2

SEDIMENT BASIN DATA				
BASIN NUMBER	BASIN WIDTH (FT)	BASIN LENGTH (FT)	BASIN DEPTH (FT)	WEIR LENGTH (FT)
(A)				
(B)				
(C)				
(D)				
(E)				
(F)				
(G)				
(H)				

C-31-0432



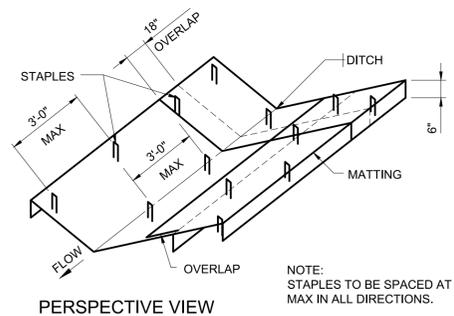
PERSPECTIVE VIEW

NOTES:

- DRIVE STEEL FENCE POST AT LEAST 18" INTO SOLID GROUND, SPACED A MINIMUM OF 4' APART, AND INSTALLED UP THE SIDES OF THE BASIN AS WELL.
- THE TOP OF THE FABRIC SHOULD BE 6" HIGHER THAN THE INVERT OF THE RIP RAP SPILLWAY.
- TOPS OF BAFFLES SHOULD BE 2" HIGHER THAN THE TOPS OF BERMS.
- INSTALL AT LEAST 3 ROWS OF BAFFLES BETWEEN THE INLET AND OUTLET DISCHARGE POINT. BASINS LESS THAN 20' IN LENGTH MAY USE 2 BAFFLES.
- ADD SUPPORT WIRE OR ROPE TO TOP OF POSTS TO PREVENT SAGGING.
- WRAP COIR EROSION BLANKET OVER TOP WIRE OR ROPE AND ATTACH WITH ZIP TIES, WIRES, OR STAPLES.
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- WOOD POSTS ARE NOT ACCEPTABLE.
- USE STAPLES 12" APART TO ATTACH FABRIC TO "HOG WIRE".
- BAFFLE SPACED AS PER TABLE - DETAIL C-31-0436.

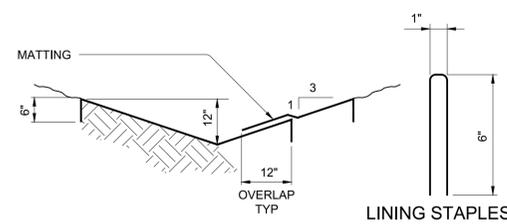
TEMPORARY SKIMMER SEDIMENT BASIN WITH BAFFLES

C-31-0434

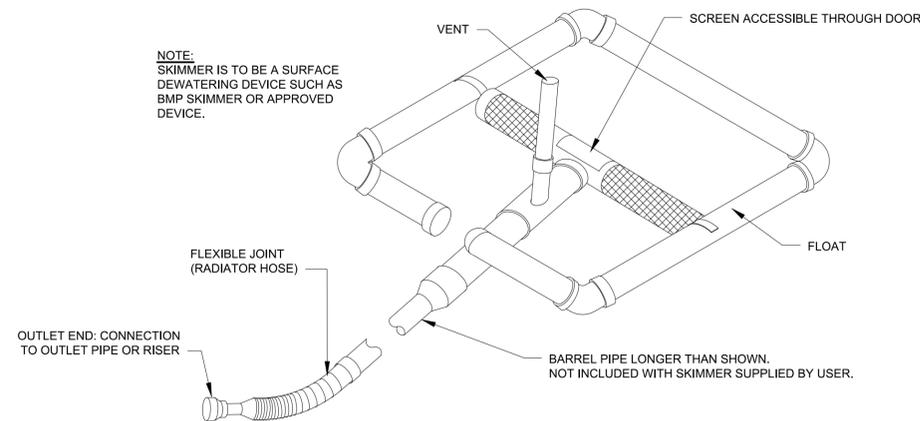


PERSPECTIVE VIEW

NOTE: STAPLES TO BE SPACED AT 3'-0" MAX IN ALL DIRECTIONS.



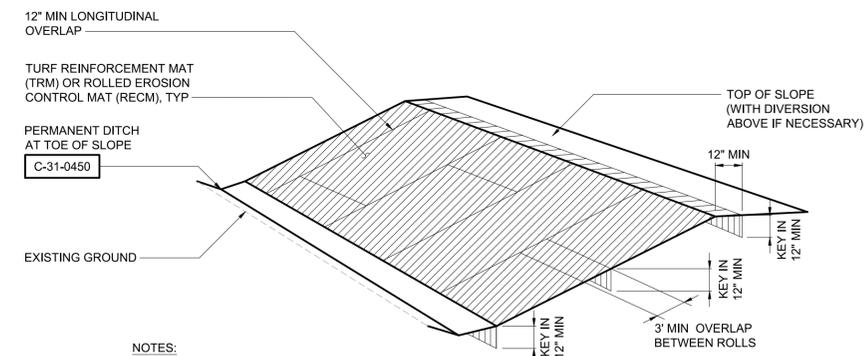
RECM AND TRM INSTALLATION
C-31-0470



NOTE: SKIMMER IS TO BE A SURFACE DEWATERING DEVICE SUCH AS BMP SKIMMER OR APPROVED DEVICE.

SKIMMER OUTLET

C-31-0437



NOTES:

- TRM OR RECM SHALL BE STAPLED TO SLOPE AS SPECIFIED BY MANUFACTURER.
- PREPARE, SEED AND FERTILIZE SLOPE IMMEDIATELY PRIOR TO MAT INSTALLATION.

SLOPE MATTING
C-31-0471

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PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
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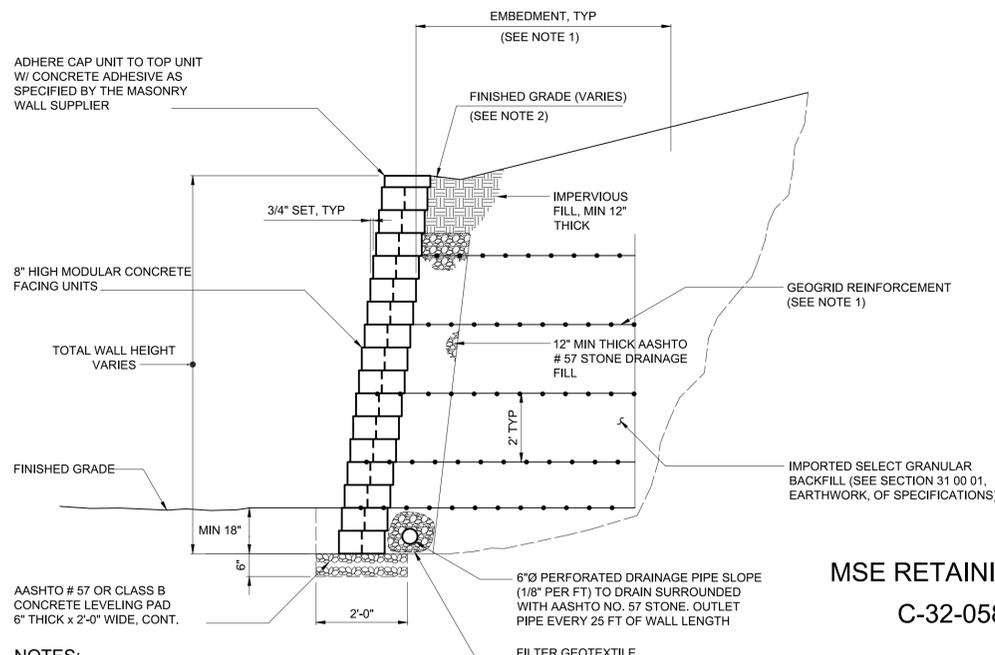
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RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

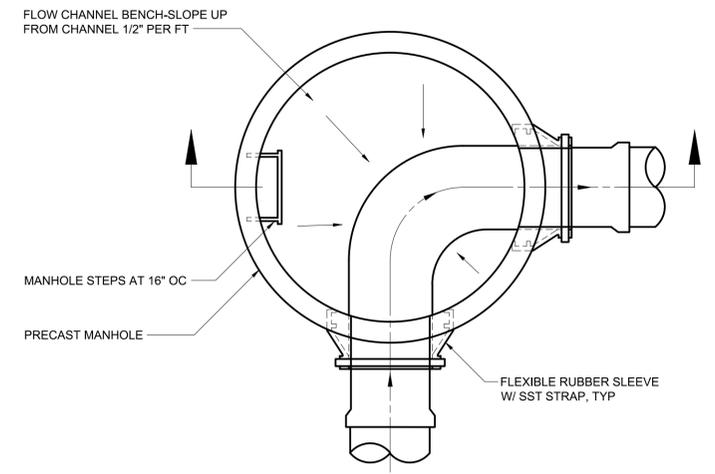
CIVIL
STANDARD DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
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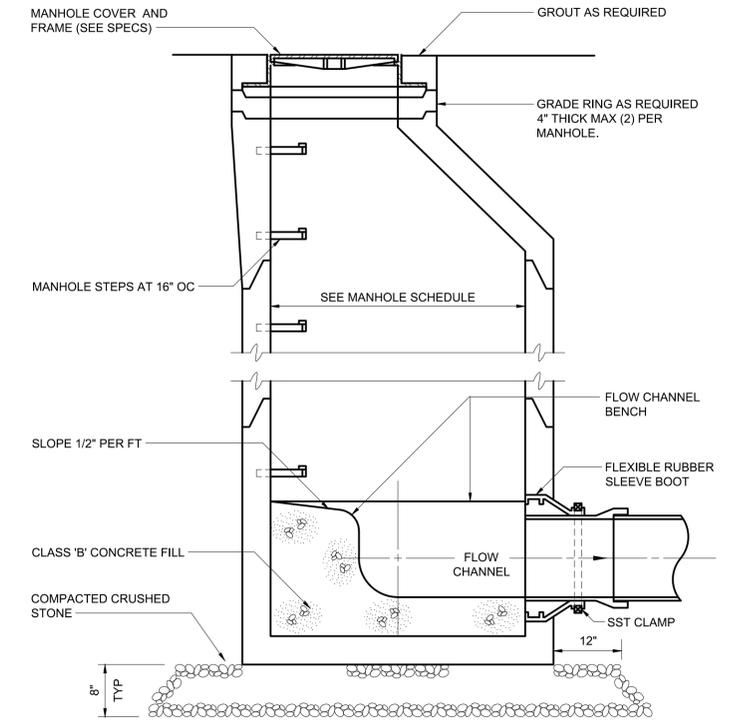


**MSE RETAINING WALL
C-32-0580**

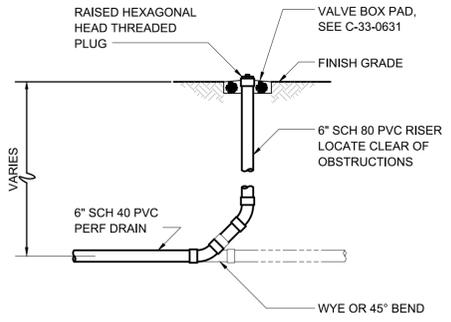
- NOTES:**
- GEOGRID REINFORCEMENT MATERIAL AND EMBEDMENT LENGTH TO BE ESTABLISHED BY PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA BASED UPON CURRENT AND PROJECTED LOADINGS AND PROPER DRAINAGE. MINIMUM GEOGRID LENGTH TO BE 0.75 TIMES THE MAXIMUM WALL HEIGHT AND TO BE UNIFORM FOR ALL LAYERS. SEE SPECIFICATION 31 34 19.13.
 - WALL BACKFILL MATERIAL USED IN DESIGN SHALL BE ON-SITE MATERIAL OR MATERIAL MATCHING WALL DESIGN PARAMETERS SHALL BE SUPPLIED BY CONTRACTOR AT NO ADDITIONAL COST. IT SHOULD BE ASSUMED BACKFILL MATERIAL IS NOT AVAILABLE ON SITE. SEE SPECIFICATION SECTION 32 32 35 FOR BACKFILL SPECIFICATIONS.
 - PROVIDE POSITIVE DRAINAGE AWAY FROM BACK OF WALL.
 - INCLUDE SUBGRADE LOADING FOR PARKING AREA WHERE APPLICABLE. DESIGN TO ACCOMMODATE H-20 LOADING AS MINIMUM.



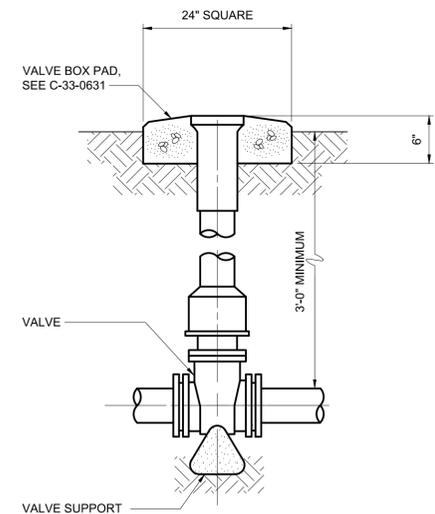
**MANHOLE PLAN
C-33-0600**



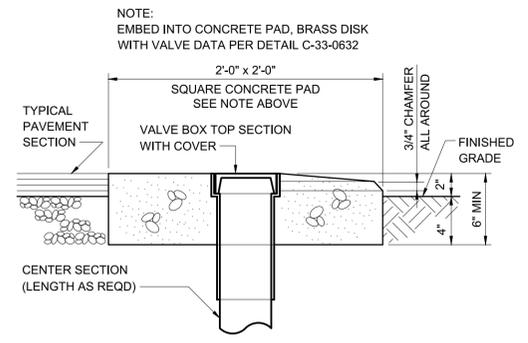
**MANHOLE SECTION
C-33-0601**



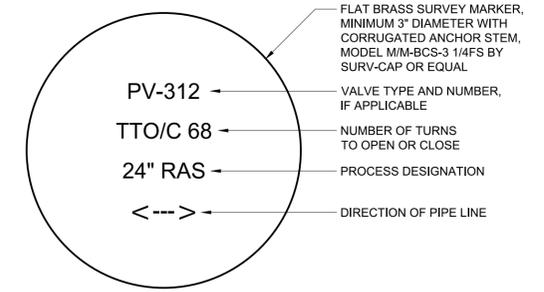
**CLEANOUT
C-33-0620**



**VALVE BOX
C-33-0630**



**VALVE BOX PAD
C-33-0631**



C-33-0632

- NOTES:**
- ENGRAVING SHALL BE MINIMUM 3/16" TALL CAPITAL LETTERS IN A BLOCK FONT SIMILAR TO ARIAL, CENTERED AND SPACED AS SHOWN.
 - ALL MARKINGS SHALL BE NEATLY MACHINE ENGRAVED.
 - ALTERNATELY, MARKINGS MAY BE HAND STAMPED, PROVIDED STAMPING IS DEEP ENOUGH TO WITHSTAND NORMAL TRAFFIC AND WEATHERING. STAMPING OF DISK SHALL BE ACCOMPLISHED PRIOR TO SETTING IN CONCRETE VALVE BOX PAD.
 - SUBMIT ONE SAMPLE FOR APPROVAL PRIOR TO ENGRAVING ALL MARKERS.
 - REGARDLESS OF ENGRAVING METHOD SELECTED, CONTRACTOR SHALL PROVIDE COMPATIBLE STAMP SET AND ANVIL TO OWNER UPON COMPLETION OF PROJECT FOR FUTURE REPAIR OF ENGRAVINGS.

File: C:\USERS\SNASH\DRAWINGS\PROJECT FILES\BIG BRANCH 2 PUMP STATION AND PIPELINE\PROJECT FILES\WUCDB Saved by: SNASH Save date: 3/31/2023 1:58 PM PLOT DATE: 3/31/2023 2:19 PM BY: SNASH

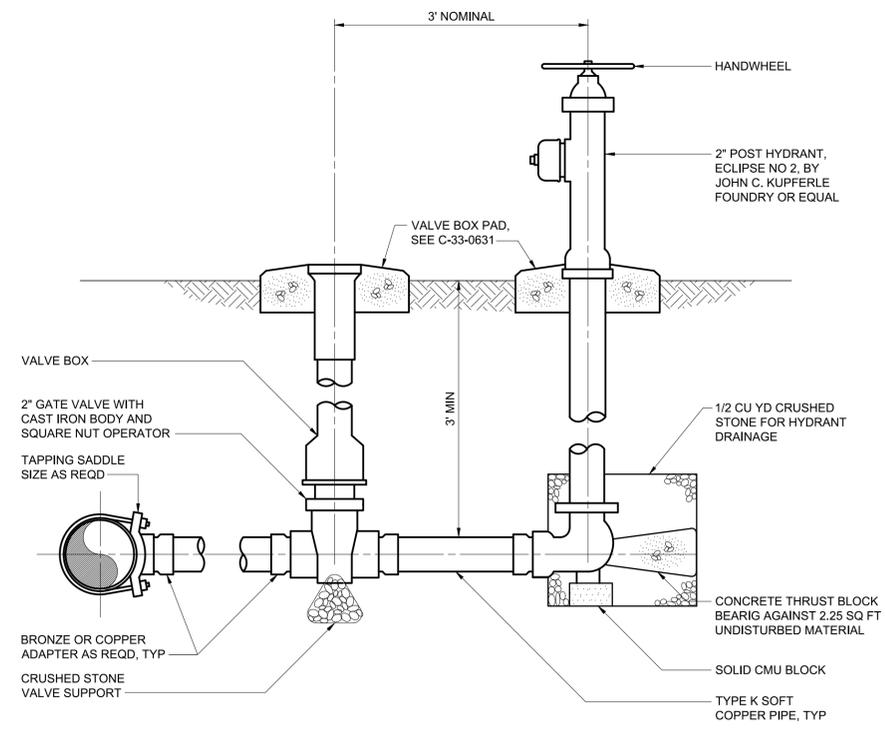
PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	S. NASH		
DRAWN BY:	S. NASH		
CHECKED BY:	M. SANTOWASSO		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

PRELIMINARY DRAWING -
DO NOT USE FOR
CONSTRUCTION

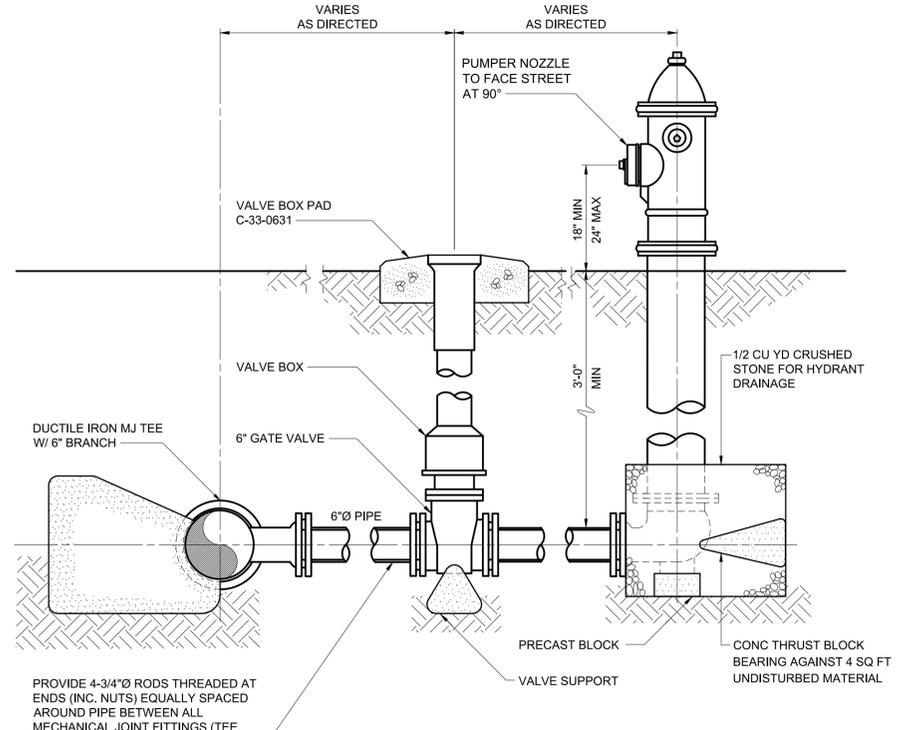
Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
STANDARD DETAILS
DATE: 2023
HAZEN NO.: 32044-004
CONTRACT NO.: 1
DRAWING NUMBER:
CD8



YARD HYDRANT
C-33-0641



FIRE HYDRANT
C-33-0642

File: C:\USERS\SNASH\DRAWINGS\HAZEN AND SAWYER\32044-004_BIG BRANCH 2 PUMP STATION AND PIPELINES\PROJECT FILES\CIVIL\CD9 Saved by: SNASH Save date: 3/31/2023 12:39 PM
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	S. NASH
DRAWN BY:	S. NASH
CHECKED BY:	M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

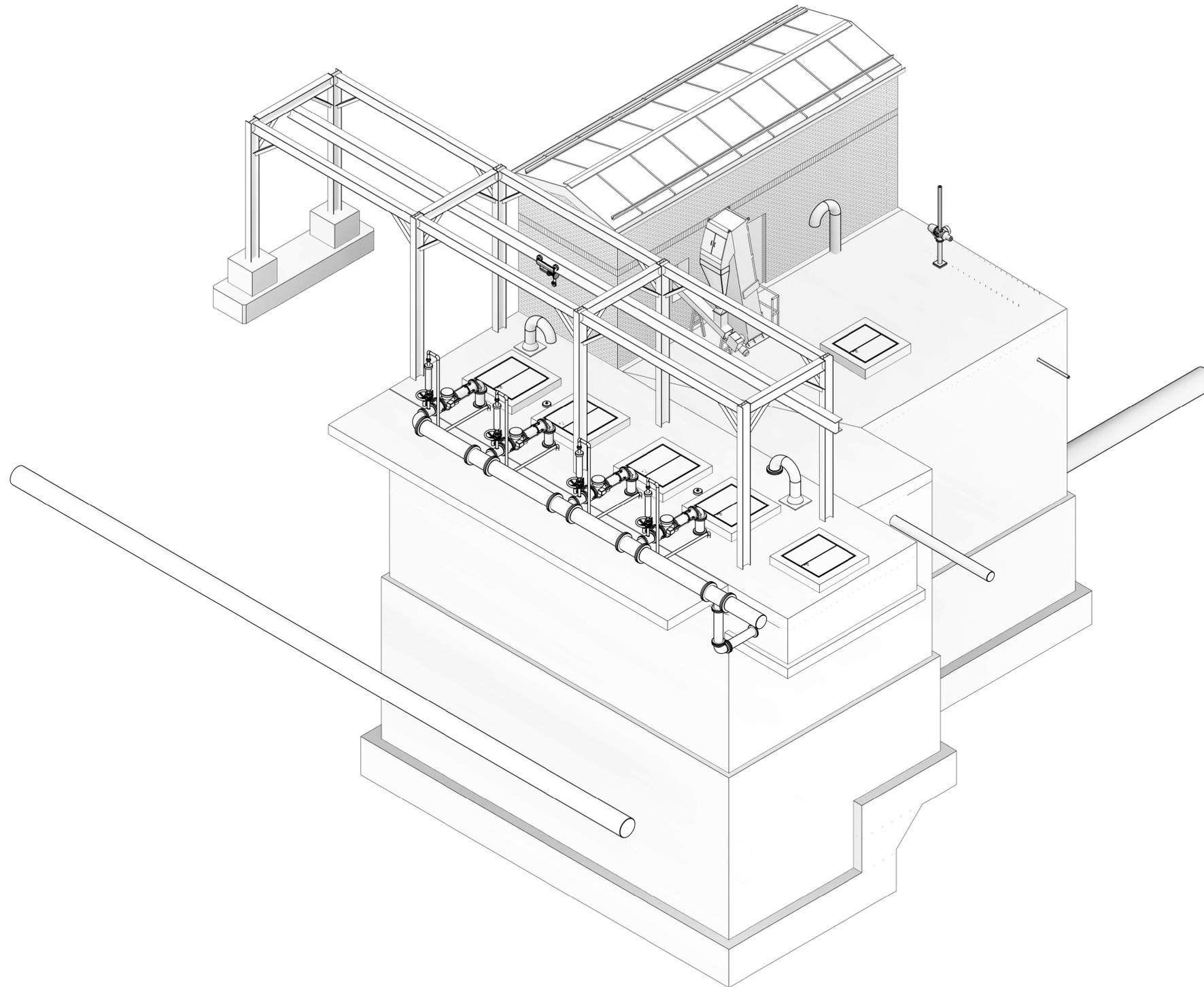
PRELIMINARY DRAWING -
DO NOT USE FOR
CONSTRUCTION

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HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CIVIL
STANDARD DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	CD9



ISOMETRIC - FOR ILLUSTRATION PURPOSES ONLY

Autodesk_Docs/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-100-PS-M100

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	F. MATAR
DRAWN BY:	C. TROISI
CHECKED BY:	B. PORTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

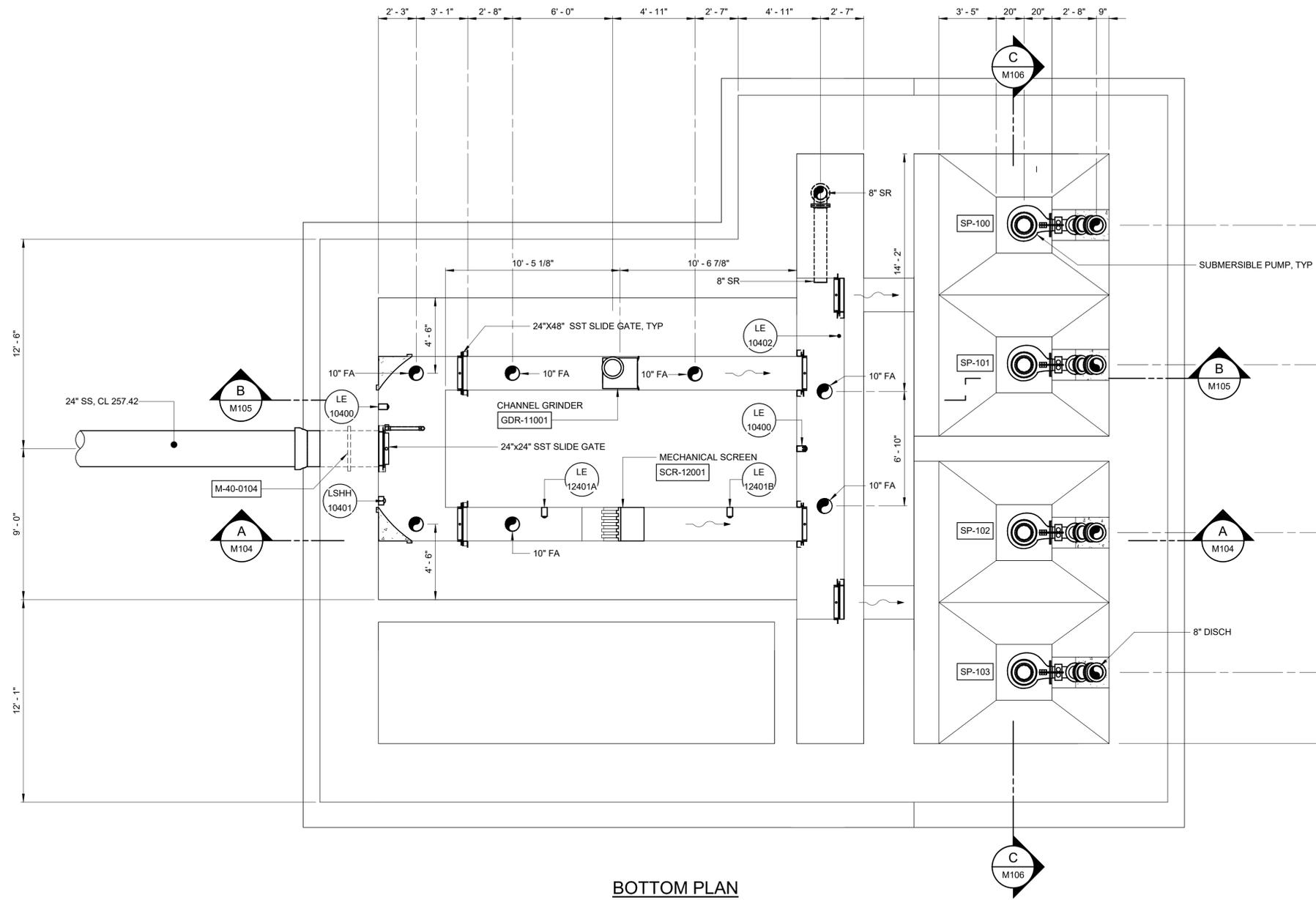
PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

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 HAZEN AND SAWYER
 4011 WESTCHASE BLVD. SUITE 500,
 RALEIGH, NC 27607
 LICENSE No.: C-0381

APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

PUMP STATION
 MECHANICAL
 ISOMETRIC

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	M100



BOTTOM PLAN
1/4" = 1'-0"

Autodesk_Docs/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-100-PS-M101.rvt
3/1/2023 9:51:17 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	F. MATAR
DRAWN BY:	C. TROISI
CHECKED BY:	B. PORTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

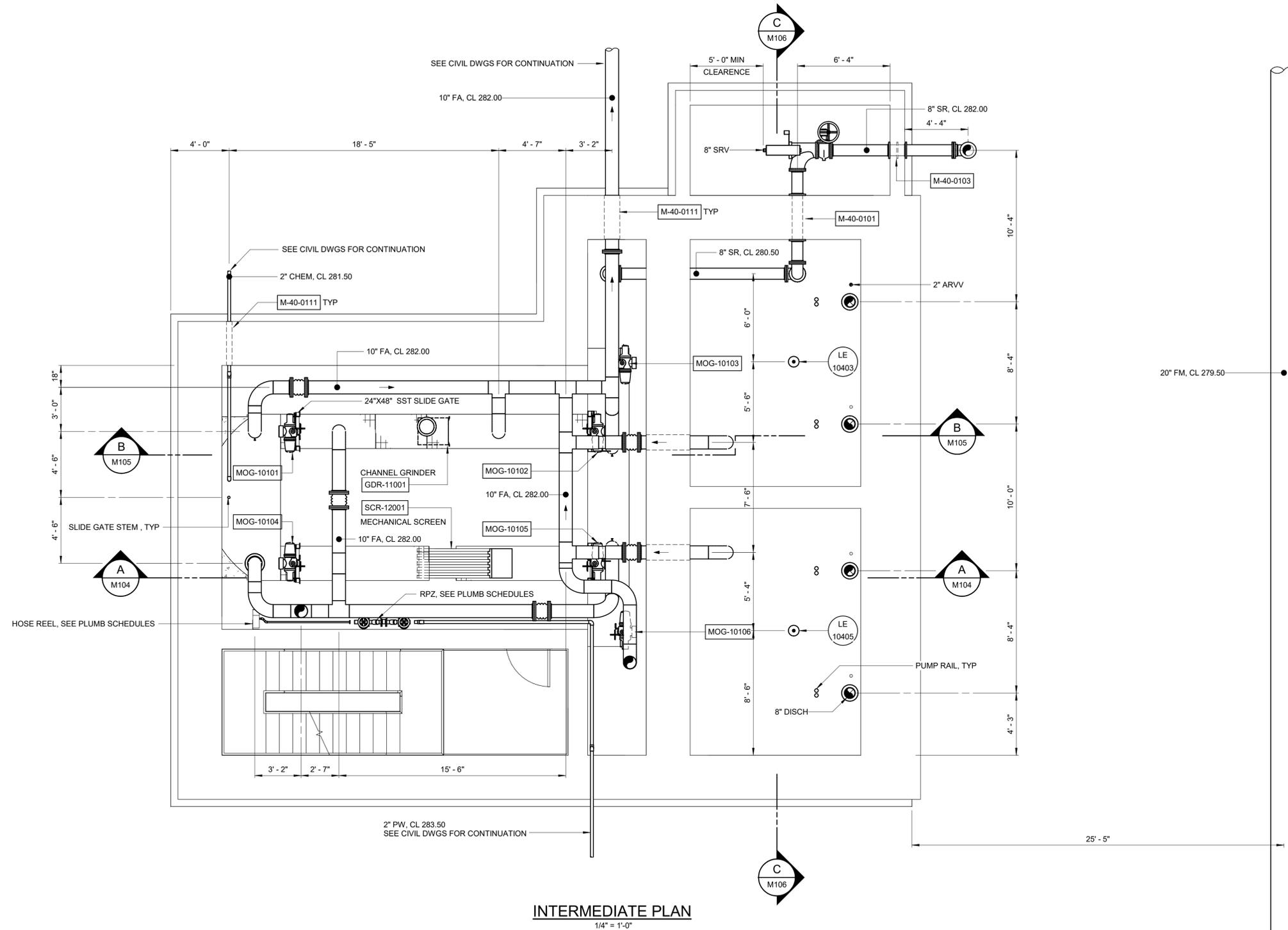
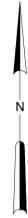
PRELIMINARY DRAWING -
DO NOT USE FOR
CONSTRUCTION

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HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

PUMP STATION
MECHANICAL
BOTTOM PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	M101



INTERMEDIATE PLAN
1/4" = 1'-0"

Autodesk Desc/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-100-PS-M102.dwg 3/21/2023 10:45:15 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	F. MATAR
DRAWN BY:	C. TROISI
CHECKED BY:	B. PORTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

PRELIMINARY DRAWING -
DO NOT USE FOR
CONSTRUCTION

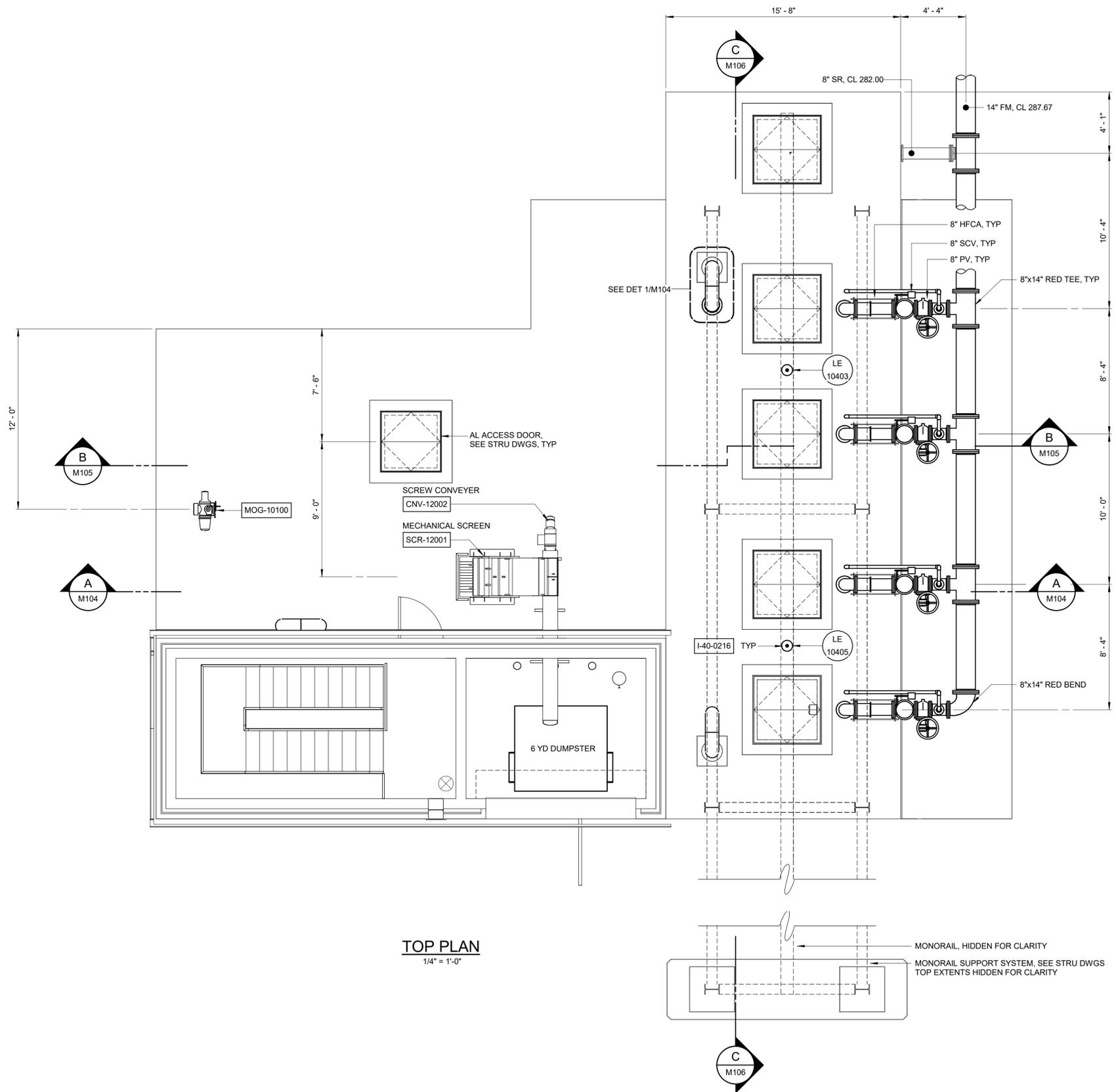
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HAZEN AND SAWYER
4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381



BIG BRANCH 2
PUMP STATION

PUMP STATION
MECHANICAL
INTERMEDIATE PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	M102



TOP PLAN
1/4" = 1'-0"

Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
**BIG BRANCH 2
PUMP STATION**

**PUMP STATION
MECHANICAL
TOP PLAN**

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	M103

Autodesk Docs/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-100-PS-M103
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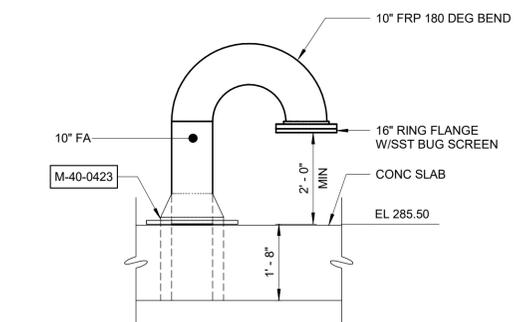
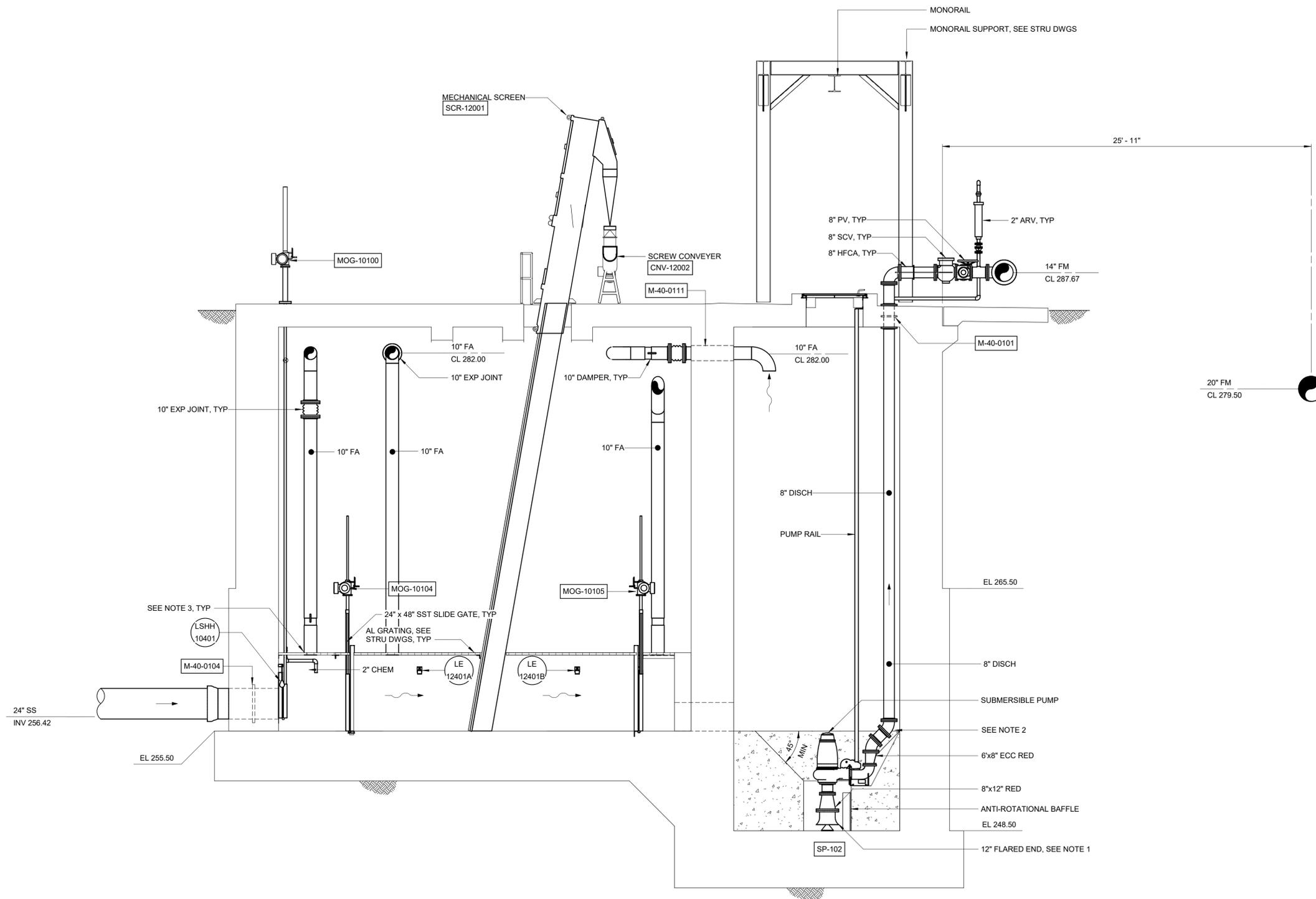
REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	F. MATAR
DRAWN BY:	C. TROISI
CHECKED BY:	B. PORTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

PRELIMINARY DRAWING -
DO NOT USE FOR
CONSTRUCTION

NOTES

1. PIPE FLARE SHALL BE D/4 DISTANCE FROM WET WELL FLOOR.
2. CONTRACTOR SHALL COORDINATE CONNECTION TO DISCHARGE PIPE WITH PUMP MANUFACTURER.
3. CONTRACTOR SHALL COORDINATE CONNECTION ODOR CONTROL PIPING WITH PLANK GRATING MANUFACTURER.



FA AIR INTAKE THROUGH SLAB

DETAIL	1
1/2" = 1'-0"	M103

SECTION A
1/4" = 1'-0"

Autodesk Doc/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-100-FS-M104
3/21/2023 9:51:19 AM

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	F. MATAR		
DRAWN BY:	C. TROISI		
CHECKED BY:	B. PORTER		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

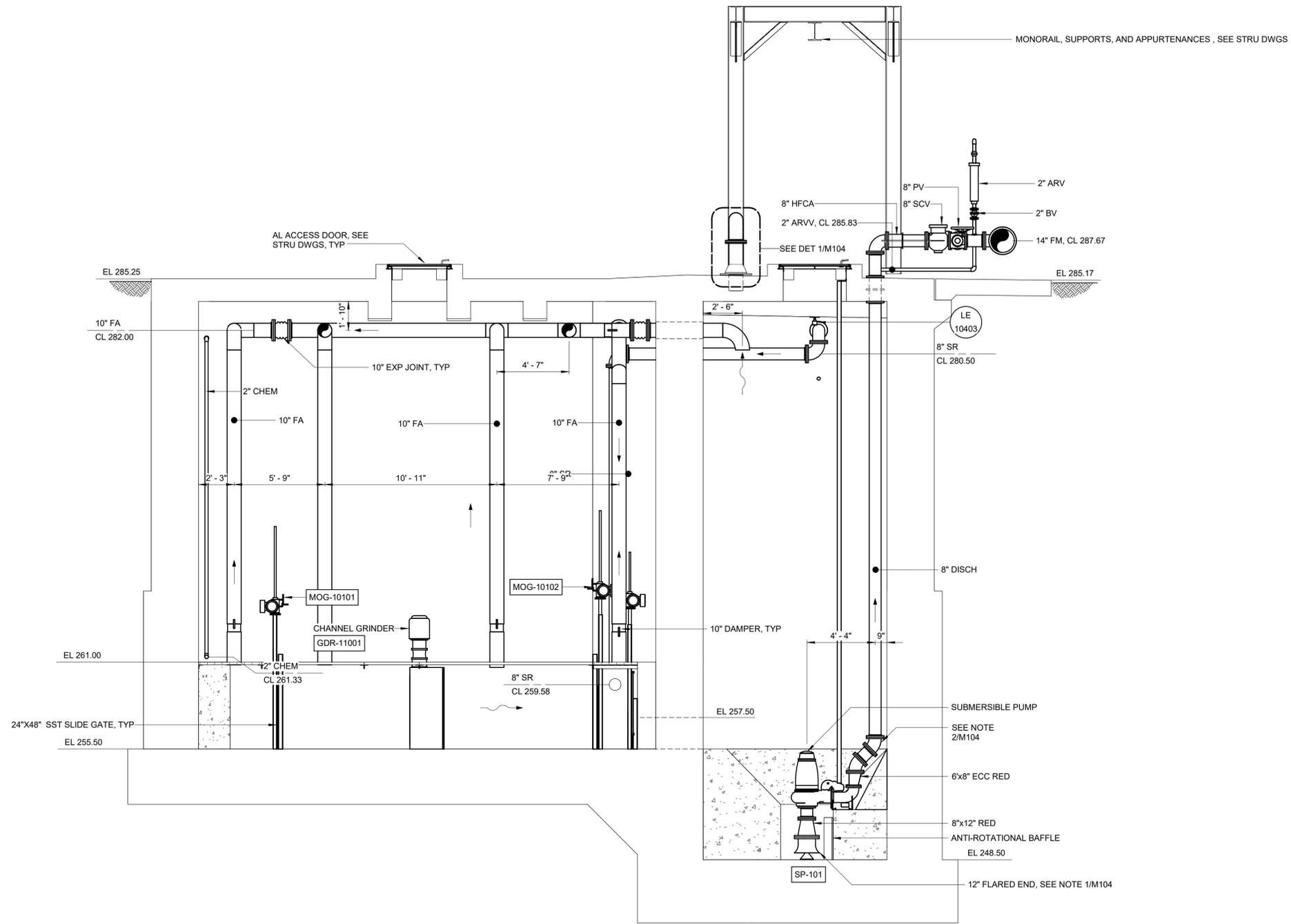
PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

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HAZEN AND SAWYER
4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

PUMP STATION
MECHANICAL
SECTION

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	M104



SECTION B
1/4" = 1'-0"

Autodesk_Docs/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-100-PS-M105

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	F. MATAR
DRAWN BY:	C. TROISI
CHECKED BY:	B. PORTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

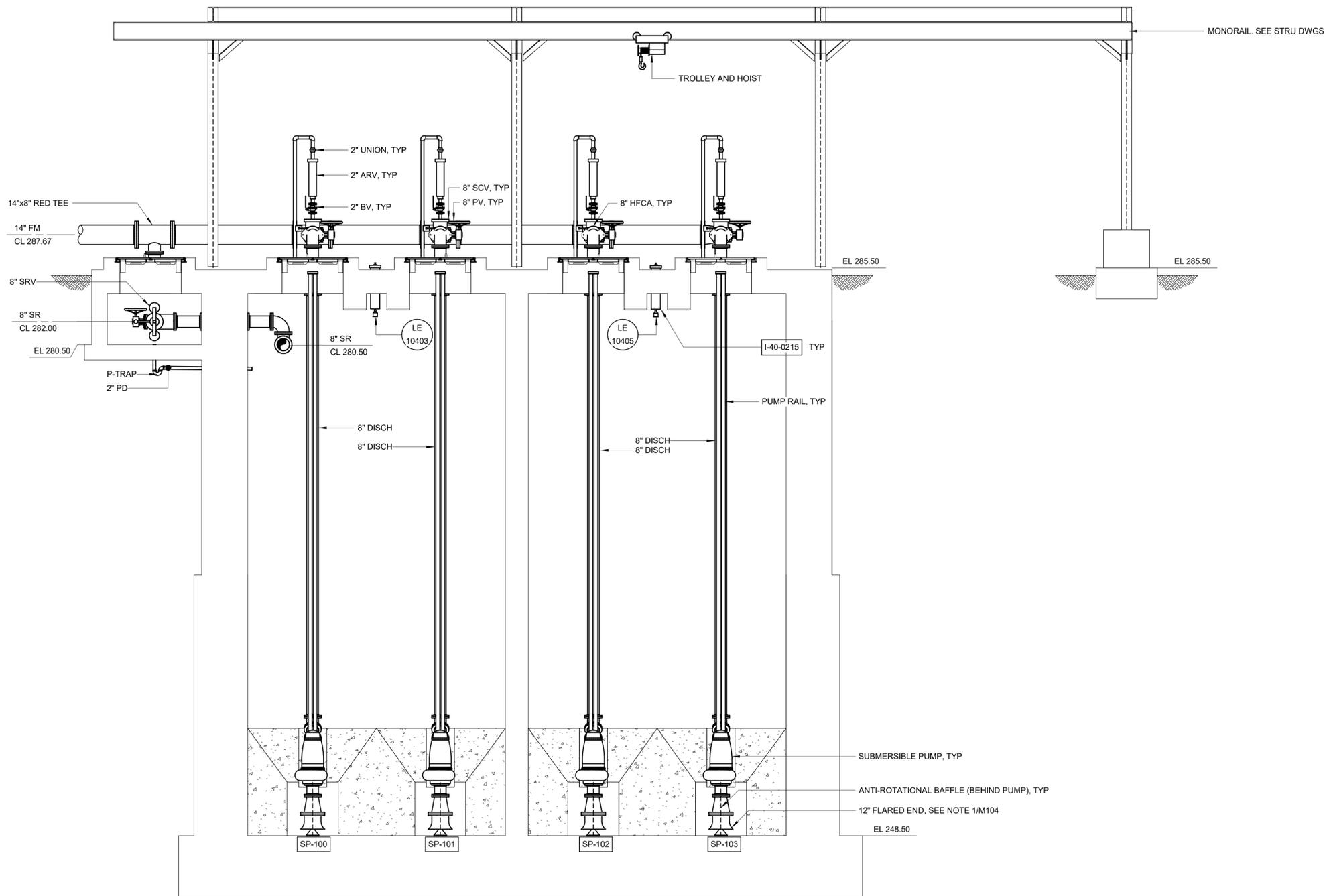
PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

PUMP STATION
MECHANICAL
SECTION

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	M105



SECTION C
1/4" = 1'-0" M101

Autodesk Desc: 32044-004_Big Branch 2 Pump Station and Pipelines 32044-004-100-FS-M101
3/1/2023 9:51:20 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	F. MATAR
DRAWN BY:	C. TROISI
CHECKED BY:	B. PORTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

PRELIMINARY DRAWING -
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CONSTRUCTION

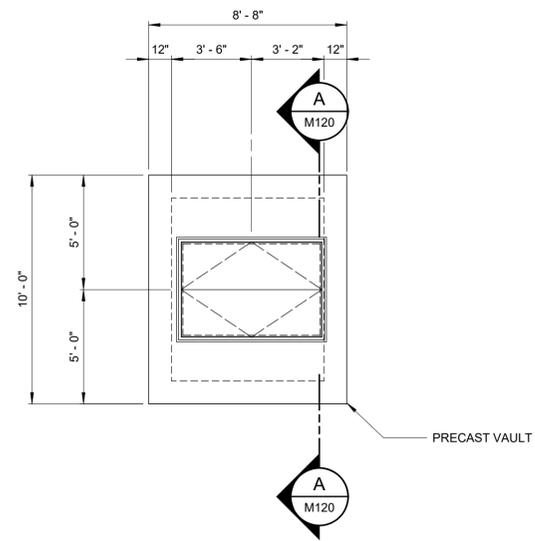
Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381



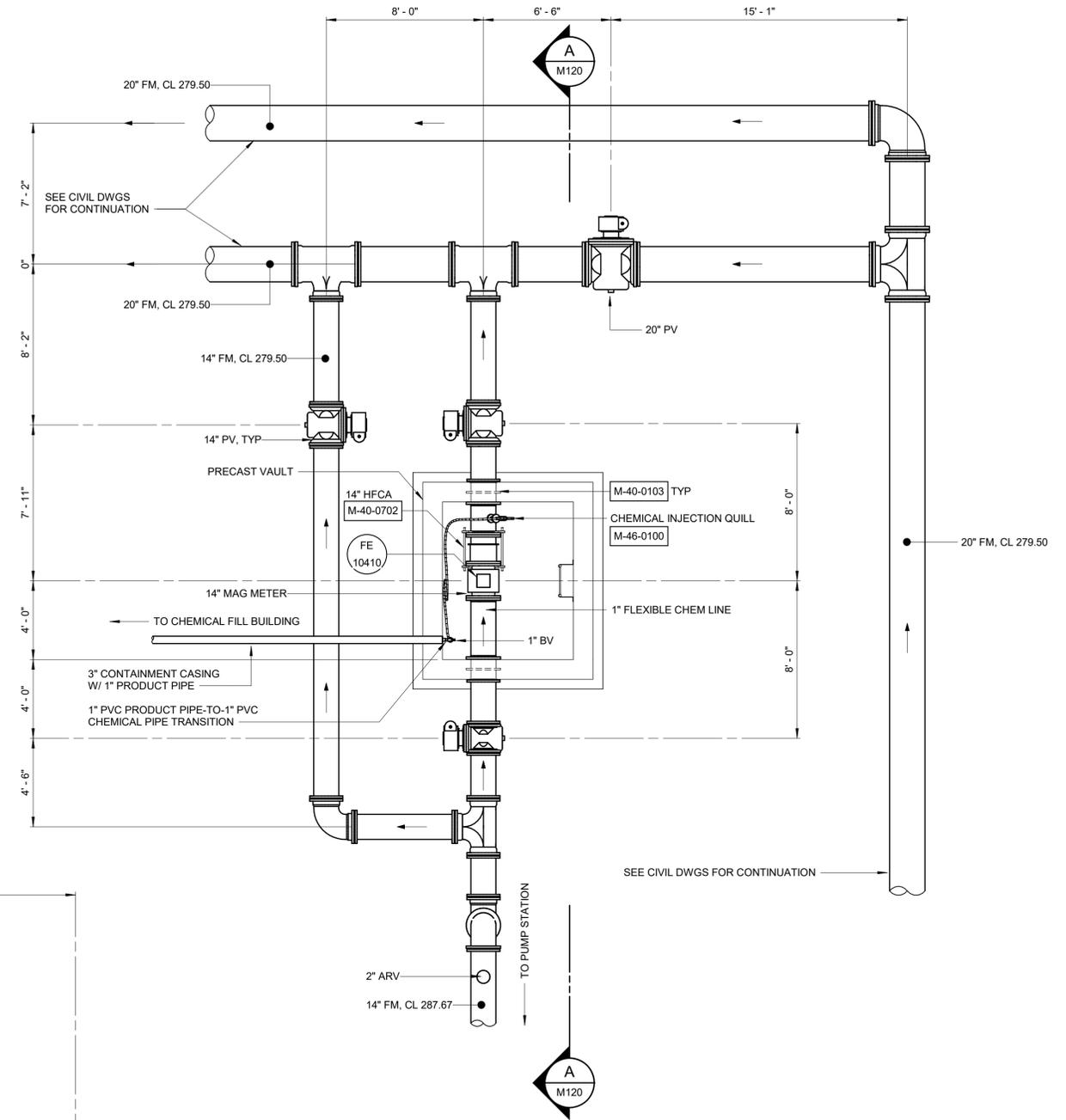
BIG BRANCH 2
PUMP STATION

PUMP STATION
MECHANICAL
SECTION

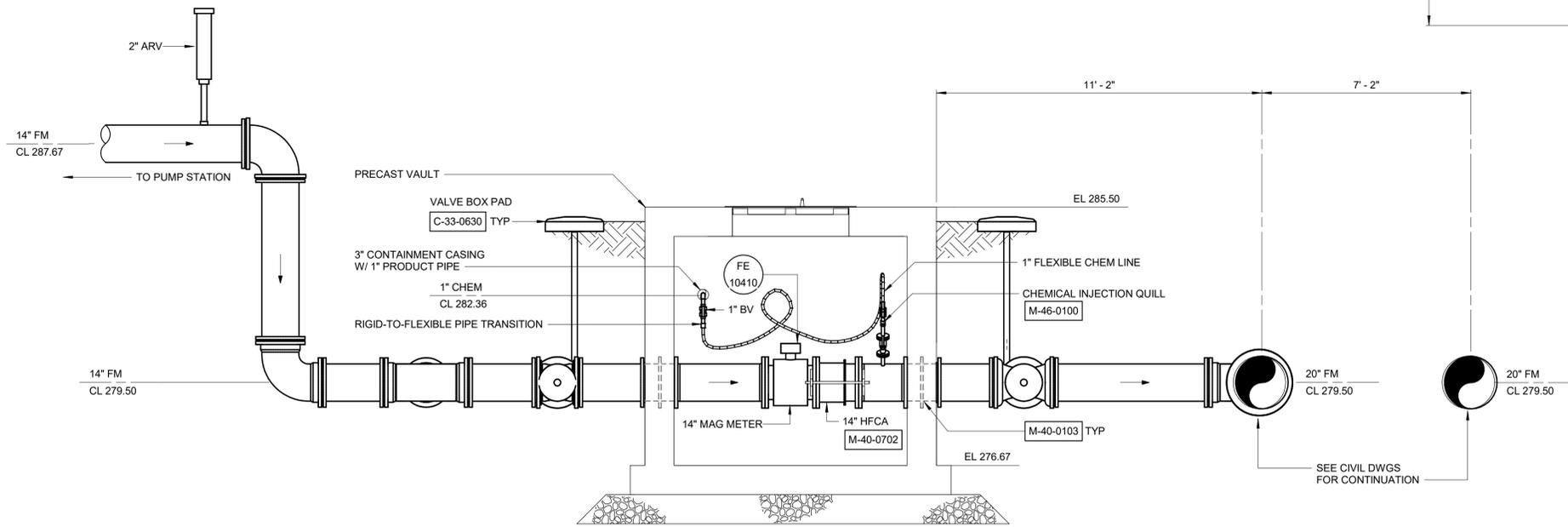
DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	M106



TOP PLAN
1/4" = 1'-0"



BOTTOM PLAN
1/4" = 1'-0"



SECTION A
3/8" = 1'-0"

Autodesk Docs/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-120/M120.rvt
3/1/2023 10:29:31 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	F. MATAR
DRAWN BY:	C. TROISI
CHECKED BY:	B. PORTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

PRELIMINARY DRAWING -
DO NOT USE FOR
CONSTRUCTION

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RALEIGH, NC 27607
LICENSE No.: C-0381



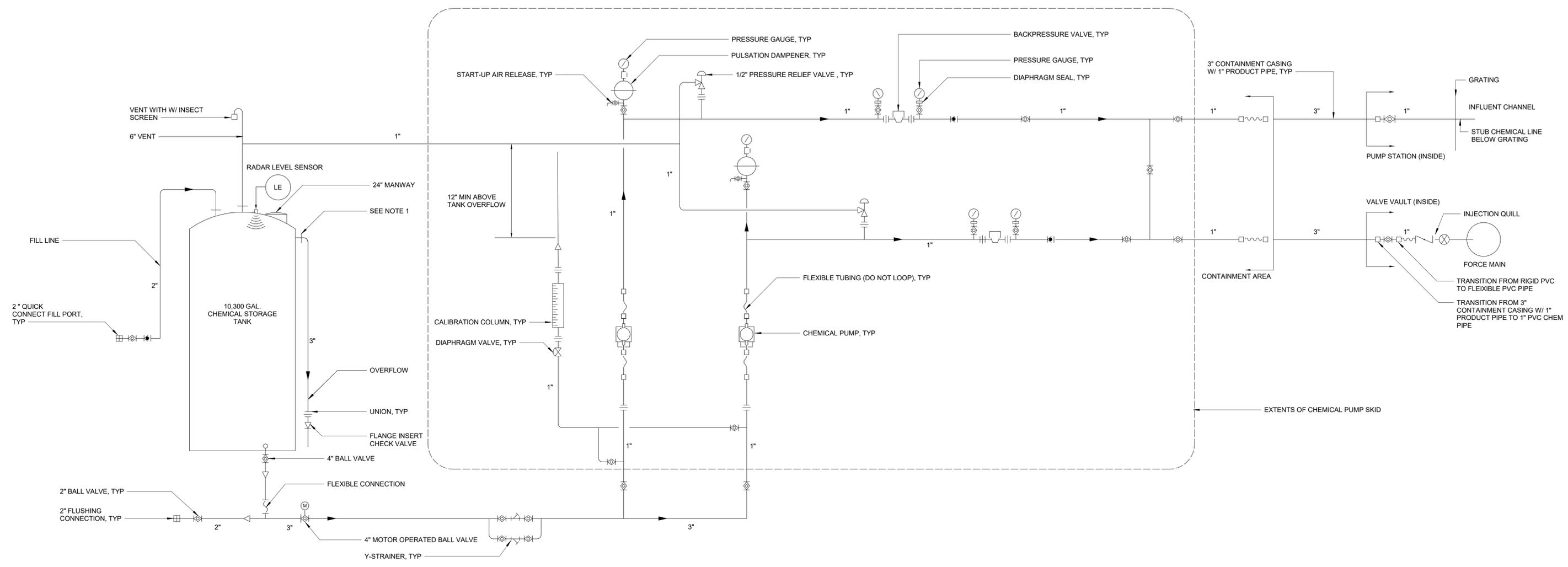
BIG BRANCH 2
PUMP STATION

METER VAULT
MECHANICAL
TOP PLAN AND SECTION

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	M120

M120

NOTES
 1. ALL TANK CONNECTIONS SHALL BE FLANGED.



CHEMICAL FEED SCHEMATIC
 12" = 1'-0"

Autodesk Docs://32044-004_Elig Branch 2 Pump Station and Pipelines/32044-004_130-CF-M.rvt
 4/2/2023 9:30:07 AM

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	F. MATAR		
DRAWN BY:	C. TROISI		
CHECKED BY:	B. PORTER		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE			
REV	ISSUED FOR	DATE	BY

PRELIMINARY DRAWING -
 DO NOT USE FOR
 CONSTRUCTION

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 LICENSE No.: C-0381

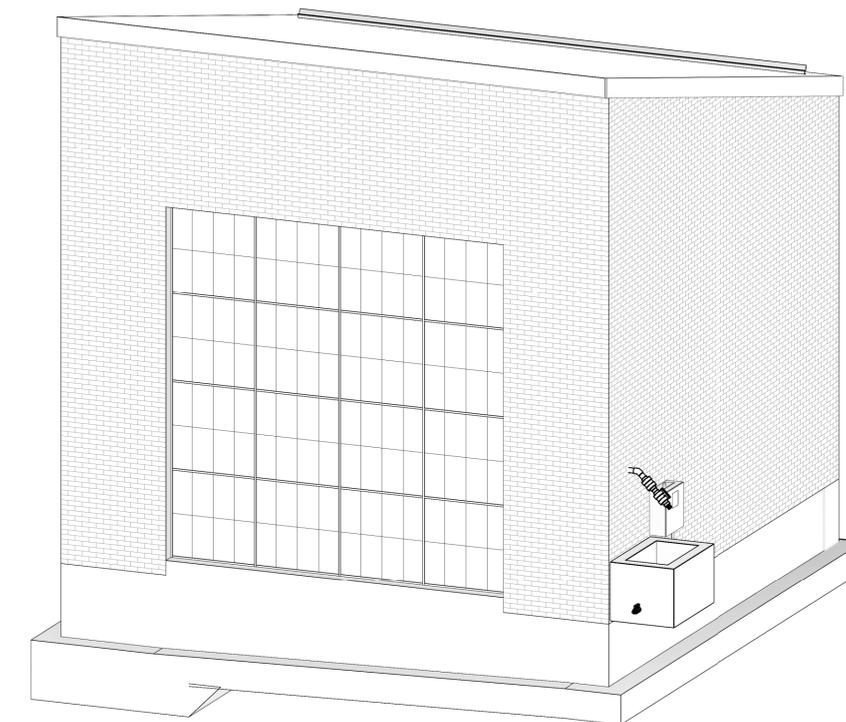
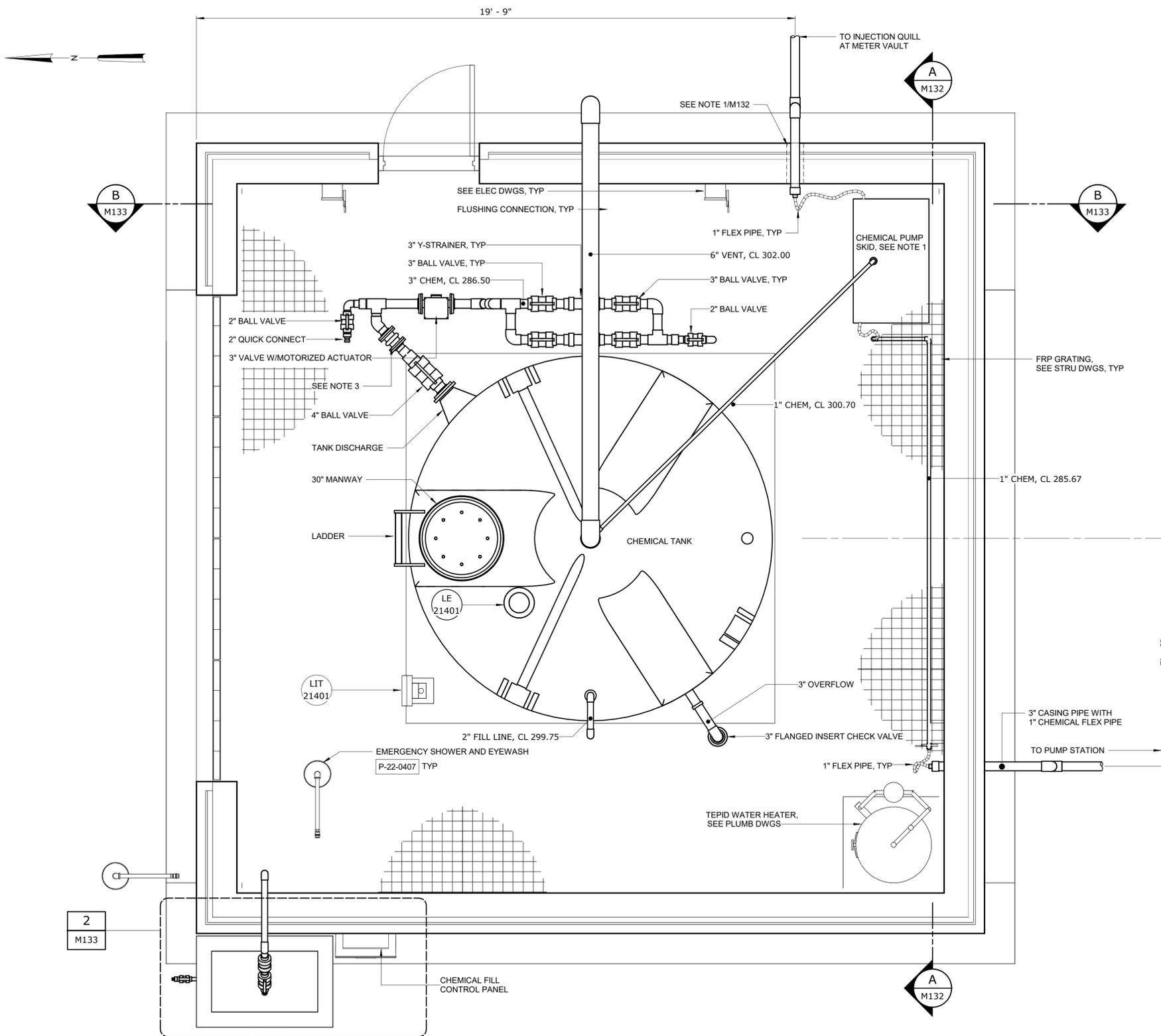
APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

CHEMICAL FEED SYSTEM
 MECHANICAL
 CHEMICAL SCHEMATIC

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	M130

NOTES:

1. MANUFACTURER SHALL PROVIDE COMPONENTS ON CHEMICAL PUMP SKID IN ACCORDANCE WITH THE SCHEMATIC ON SHEET M/130. CONTRACTOR SHALL INSTALL CHEMICAL SKID PER MANUFACTURER RECOMMENDATIONS.
2. SEE PLUMBING DRAWINGS FOR POTABLE WATER LINES.
3. CONTRACTOR SHALL COORDINATE FLEXIBLE CONNECTION WITH TANK MANUFACTURER.



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PLAN
1/2" = 1'-0"

Autodesk Docs://32044-004_Elig Branch 2 Pump Station and Pipelines/32044-004-130-CF-M131
 2023/03/13 10:34:47 PM

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	F. MATAR		
DRAWN BY:	C. TROISI		
CHECKED BY:	B. PORTER		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE			
0	1/2" 1"		
REV	ISSUED FOR	DATE	BY

PRELIMINARY DRAWING -
DO NOT USE FOR
CONSTRUCTION

Hazen

HAZEN AND SAWYER
4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381



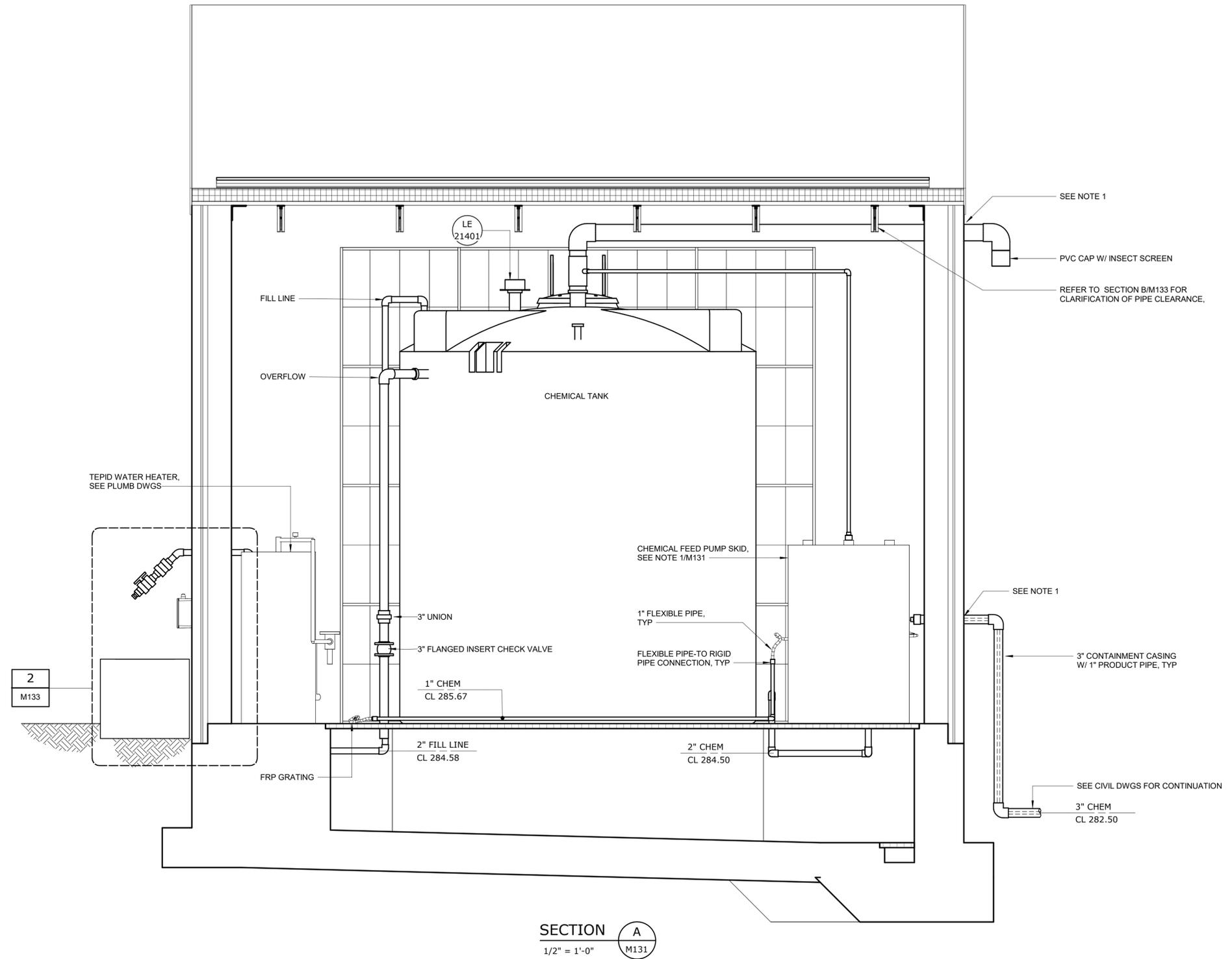
BIG BRANCH 2
PUMP STATION

CHEMICAL FEED SYSTEM
MECHANICAL
PLAN AND ISOMETRICS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	M131

NOTES:

1. SEE ARCHITECTURAL DWG FOR ALL ROOF AND WALL PENETRATIONS.



SECTION A
1/2" = 1'-0" M131

Autodesk Docs://32044-004_Elig Branch 2 Pump Station and Pipelines/32044-004-130-CF-M131
 3/3/2023 1:03:47 PM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	F. MATAR
DRAWN BY:	C. TROISI
CHECKED BY:	B. PORTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

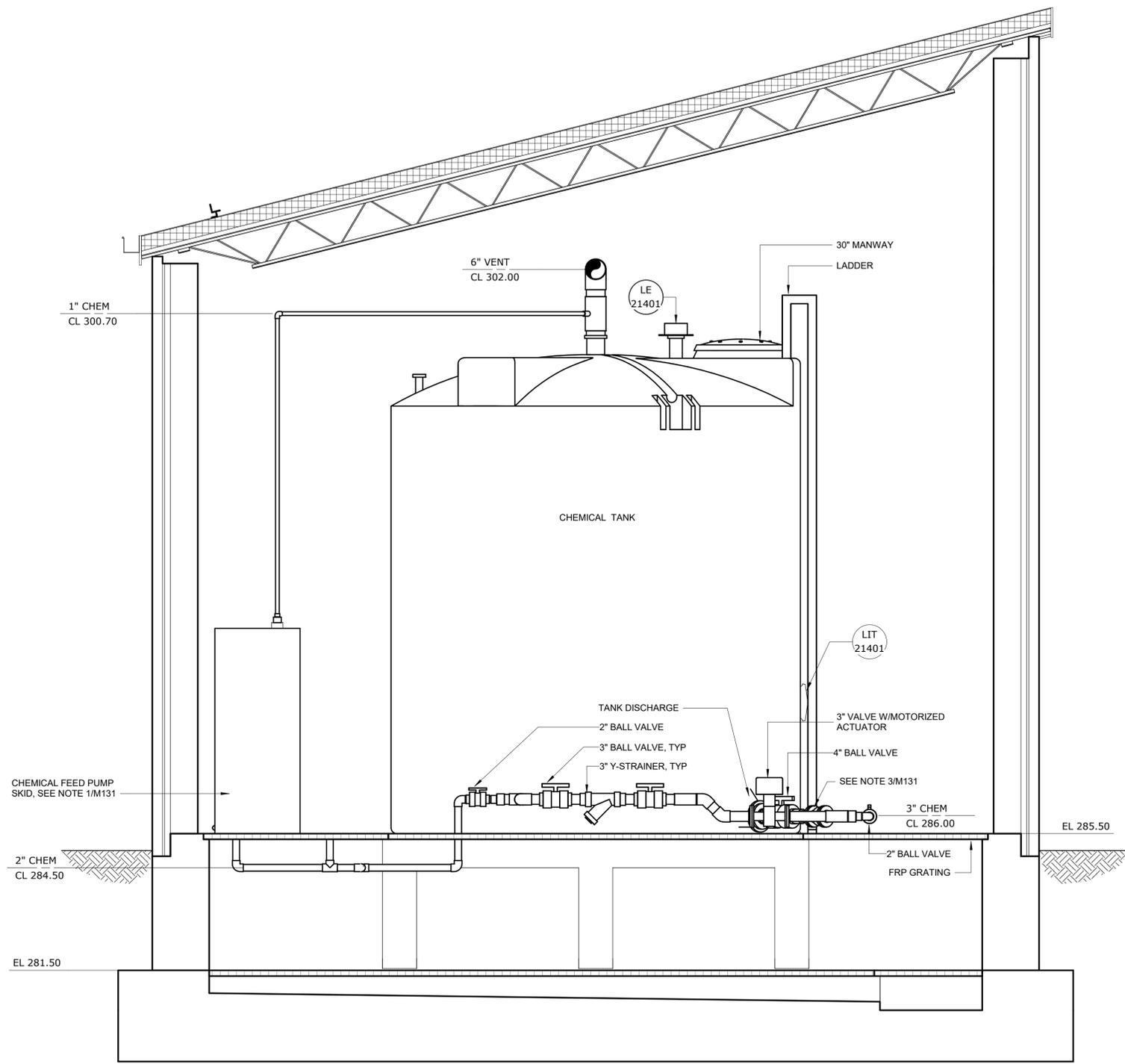
PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

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 HAZEN AND SAWYER
 4011 WESTCHASE BLVD, SUITE 500,
 RALEIGH, NC 27607
 LICENSE No.: C-0381

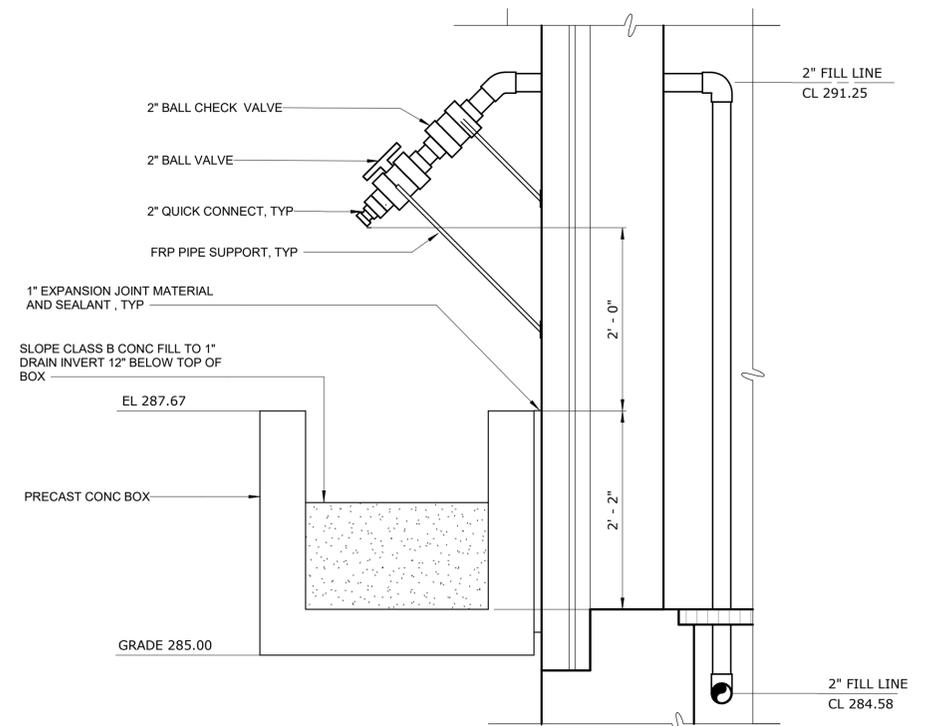
APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

CHEMICAL FEED SYSTEM
 MECHANICAL
 SECTION

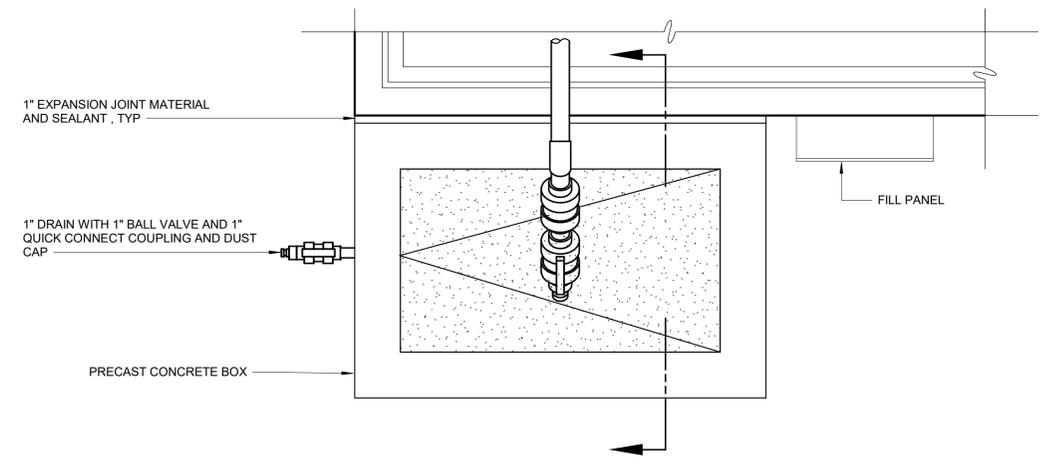
DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	M132



SECTION B
1/2" = 1'-0" M131



SECTION



PLAN

CHEMICAL FILL STATION
DETAIL 2
1" = 1'-0" M131

Autodesk Desc/23044-004_Big Branch 2 Pump Station and Pipelines/23044-004_130-CF-M131.dwg 3/23/2023 1:03:48 PM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	F. MATAR
DRAWN BY:	C. TROISI
CHECKED BY:	B. PORTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

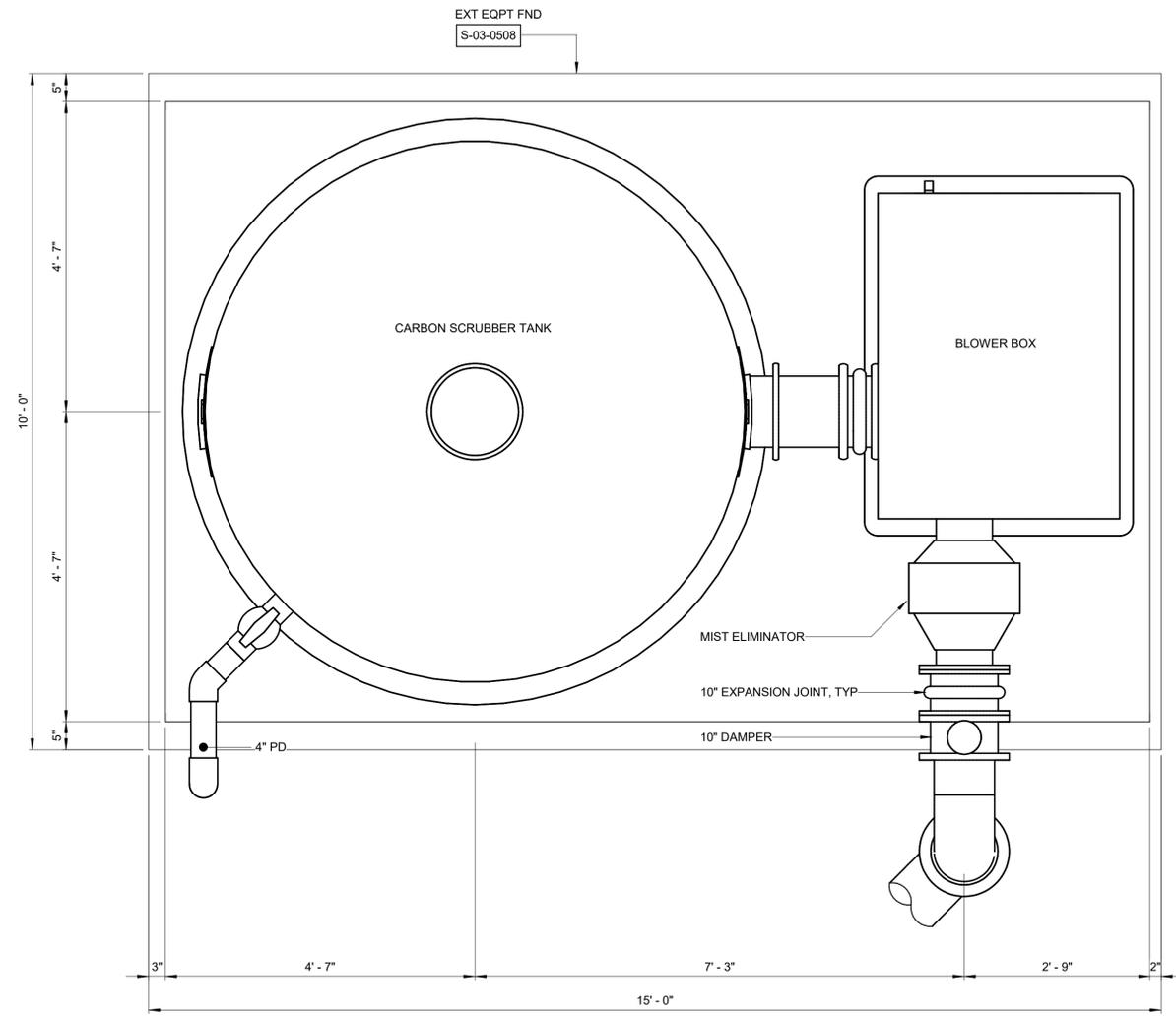
PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

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HAZEN AND SAWYER
4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

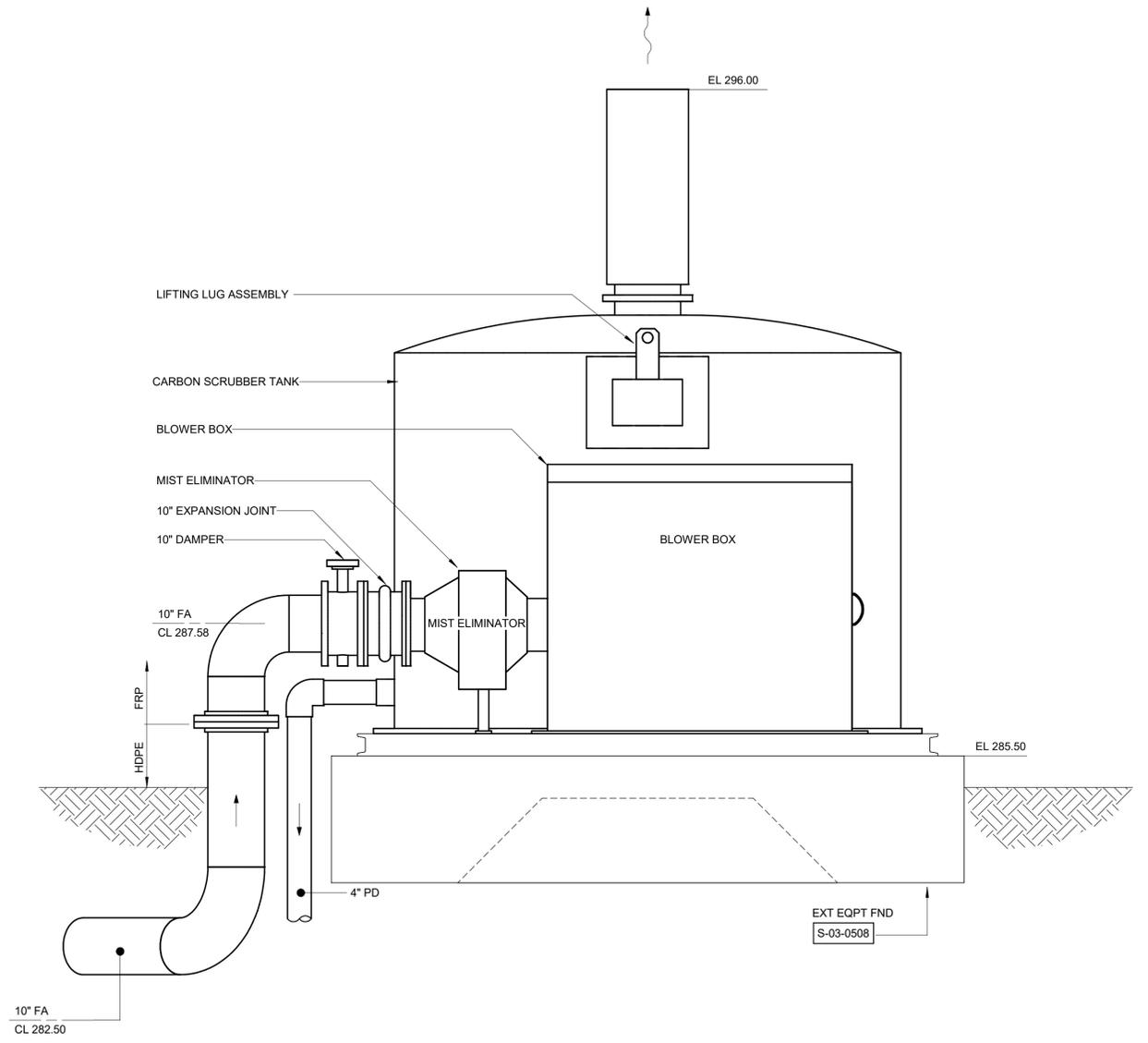
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CHEMICAL FEED SYSTEM
MECHANICAL
SECTION AND DETAIL

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	M133



PLAN
3/4" = 1'-0"



SECTION A
3/4" = 1'-0"

Autodesk Desc/23044-004_Big Branch 2 Pump Station and Pipelines/23044-004-110-00-M.rvt 3/23/2023 1:06:19 PM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	F. MATAR
DRAWN BY:	C. TROISI
CHECKED BY:	B. PORTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

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HAZEN AND SAWYER
4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

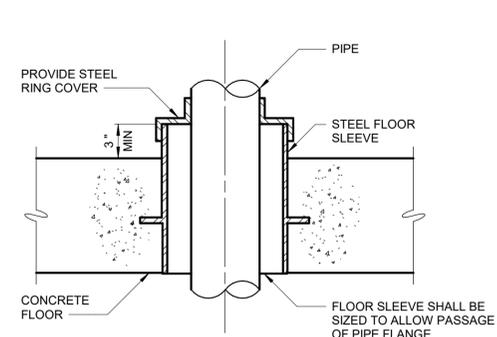
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CARBON FILTER
MECHANICAL
PLAN AND SECTION

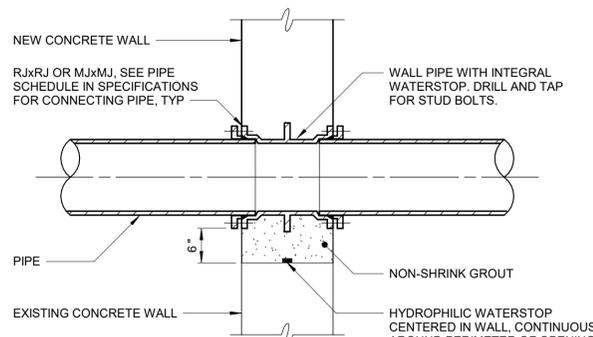
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HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	M140

NOTES:

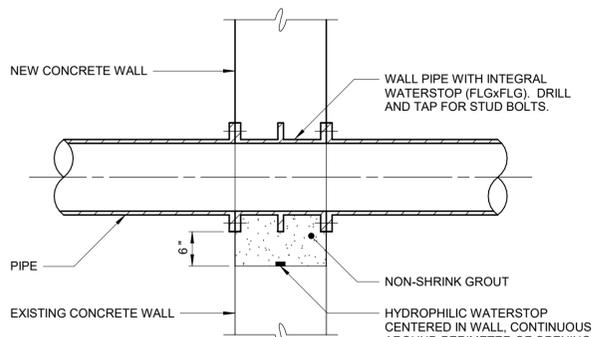
1. ALL WALL PIPES SHALL BE CAST UNLESS OTHERWISE NOTED.
2. PROVIDE PIPE JOINT WITHIN TWO (2) FEET OF EXTERIOR FACE OF WALL AT CONNECTION TO ALL NEW AND EXISTING STRUCTURES OR MANHOLES.
3. ALL NEW OPENINGS IN EXISTING CONCRETE WALLS AND SLABS SHALL BE SAWCUT OR CORE DRILLED. USE OF JACKHAMMERS OR STITCH DRILLING SHALL NOT BE PERMITTED. ANNULAR SURFACE SHALL BE SMOOTH. ANNULAR SURFACE SHALL BE ROUGHENED BY APPROVED METHODS WHEN INSTALLATION OF NONSHRINK GROUT IS REQUIRED AT EXISTING CONCRETE WALLS.



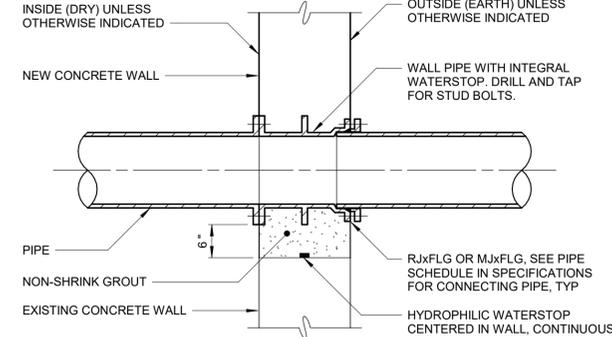
ELEVATED FLOOR PENETRATION
M-40-0100



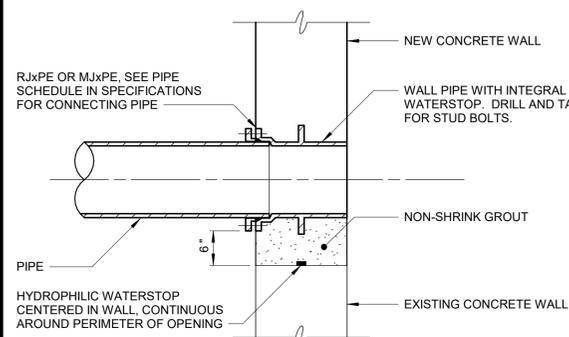
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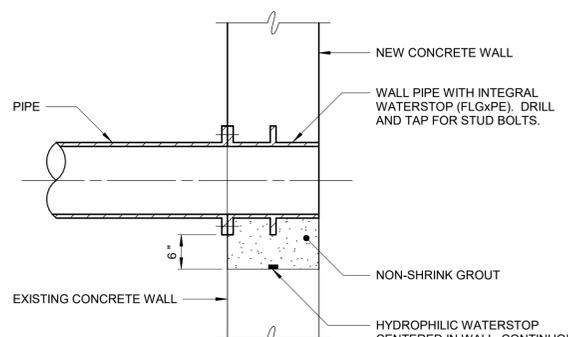
M-40-0101



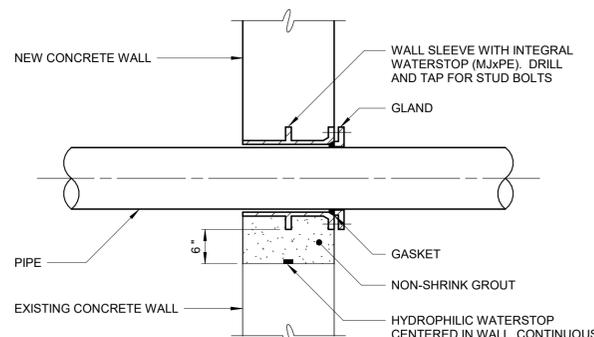
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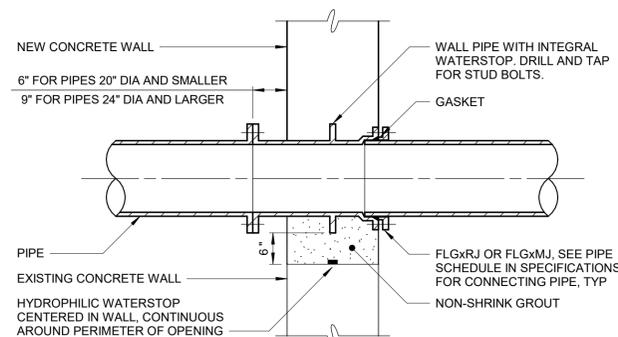
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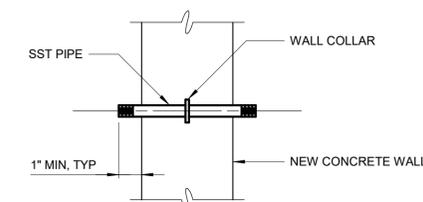
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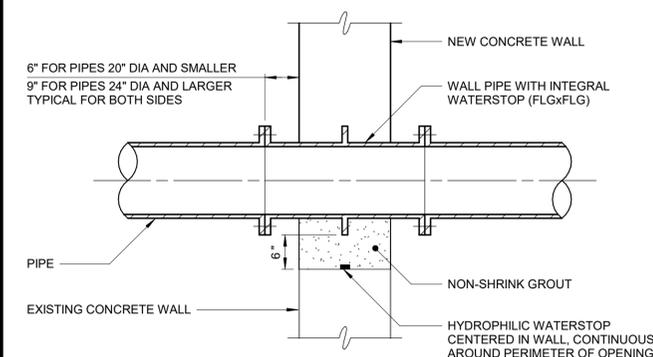
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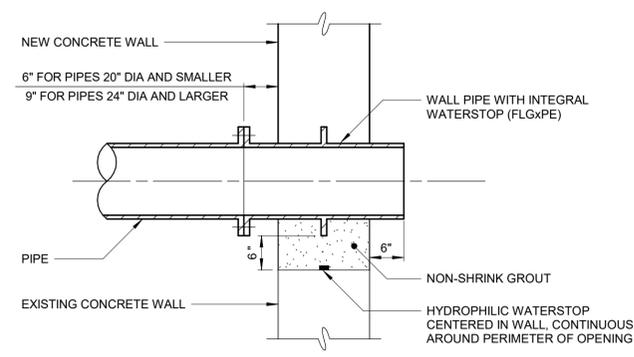
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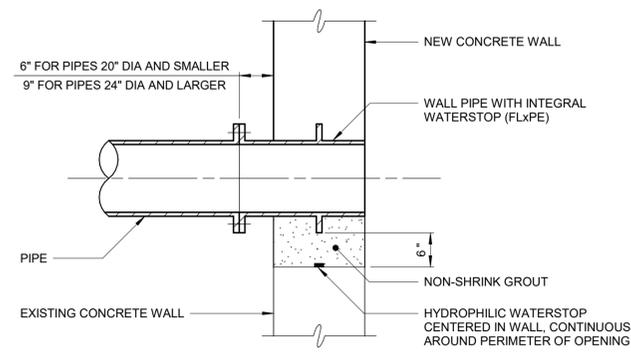
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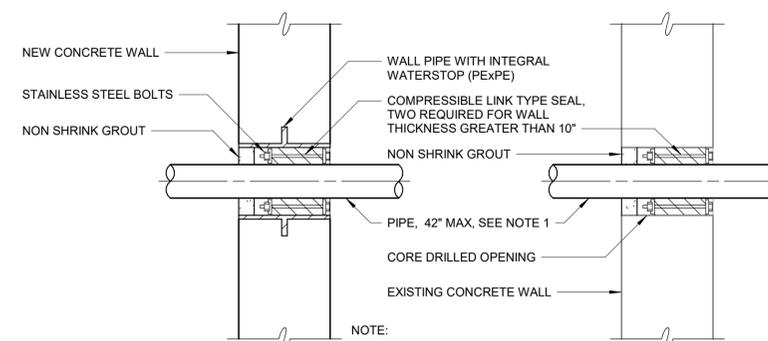
M-40-0108



M-40-0109



M-40-0110



- NOTE:**
1. THE USE OF COMPRESSIBLE TYPE LINK SEALS ON PIPES LARGER THAN 42\"/>
 2. PRIOR TO INSTALLATION OF LINK SEAL, BURN BACK REINFORCEMENT STEEL 1/2\"/>

M-40-0111

Autodesk Doc/22044_004_Big Branch 2 Pump Station and Pipelines/22044_004-STANDARD DETAILS-MECH-11 4/14/2023 10:17:45 AM

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	F. MATAR		
DRAWN BY:	C. TROISI		
CHECKED BY:	B. PORTER		
IF THIS BAR DOES NOT MEASURE 1\"/>	0 1/2\"/>		
REV	ISSUED FOR	DATE	BY

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

Hazen

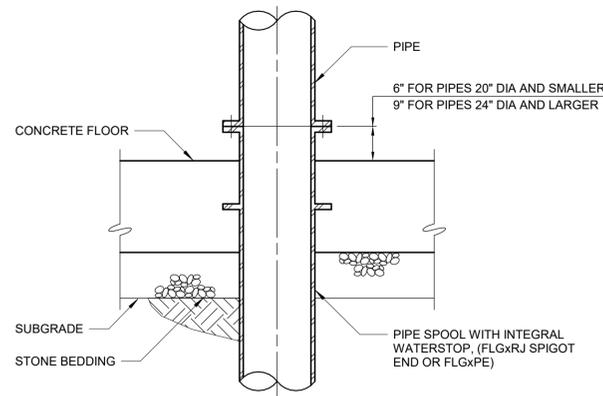
HAZEN AND SAWYER
4011 WESTCHASE BLVD. #500,
RALEIGH, NC 27607

APEX
NORTH CAROLINA

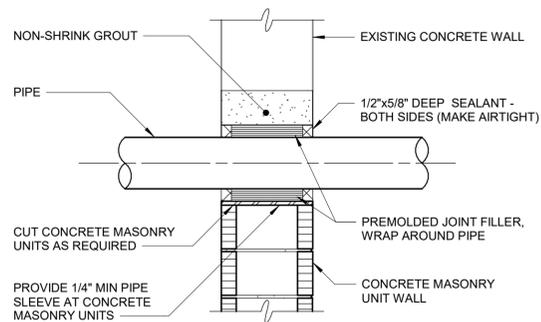
BIG BRANCH 2
PUMP STATION

STANDARD DETAILS
MECHANICAL
STANDARD DETAILS-SHEET 1

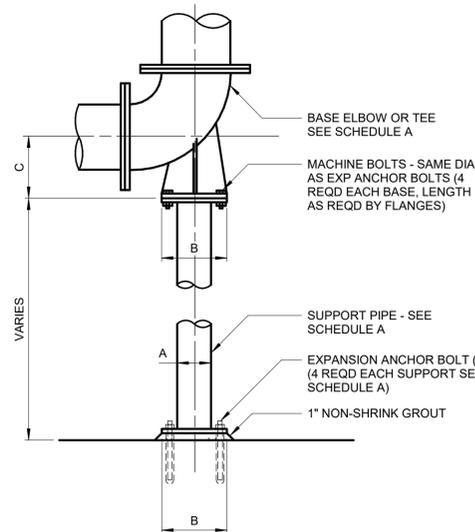
DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	MD1



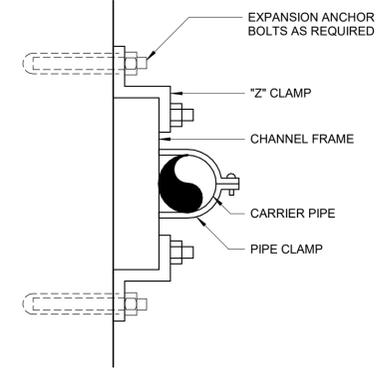
M-40-0113



CAULKED WALL PENETRATION
M-40-0114

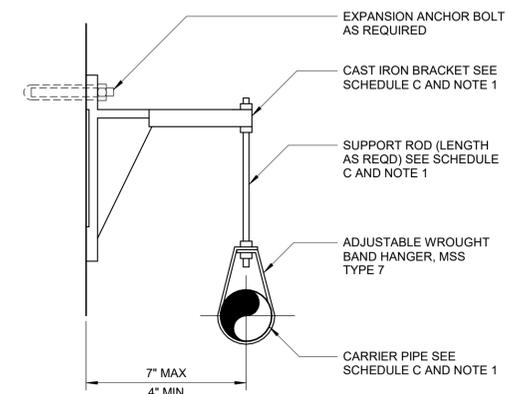


BASE ELBOW (TEE)
M-40-0300

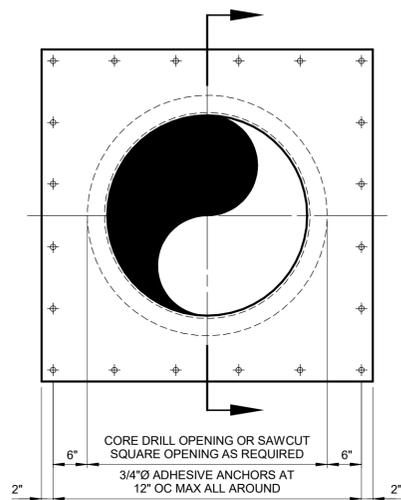


PIPE WALL SUPPORT AND SUPPORT RACK SHALL BE ASSEMBLED W/ CHANNEL FRAMES AND ACCESSORIES AS MANUFACTURED BY UNISTRUT CORP OR EQUAL

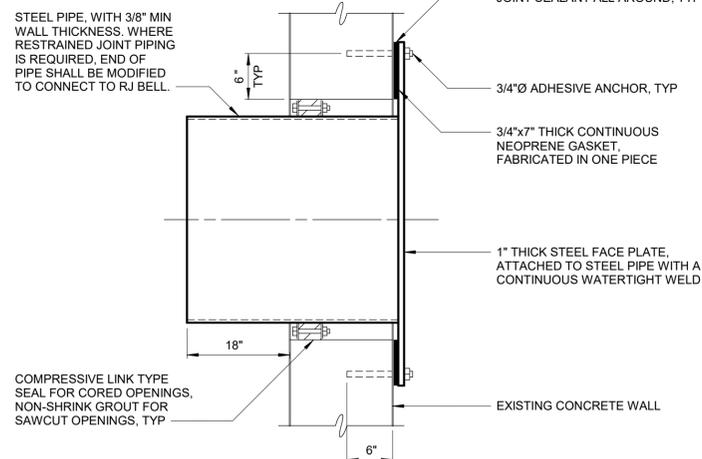
PIPE WALL SUPPORT
M-40-0301



PIPE SUPPORT BRACKET
M-40-0305

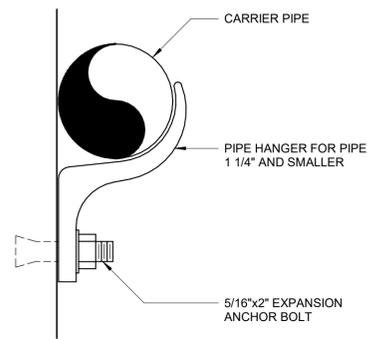


ELEVATION

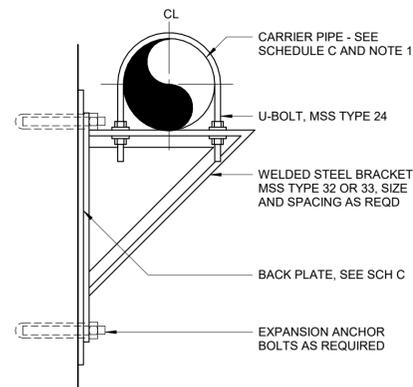


SECTION

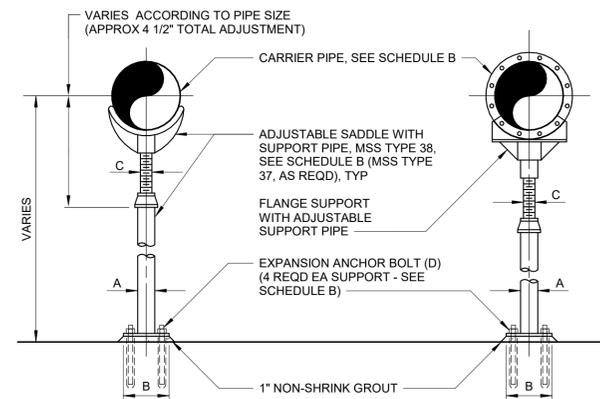
M-40-0115



WALL HANGER PIPE SUPPORT
M-40-0302



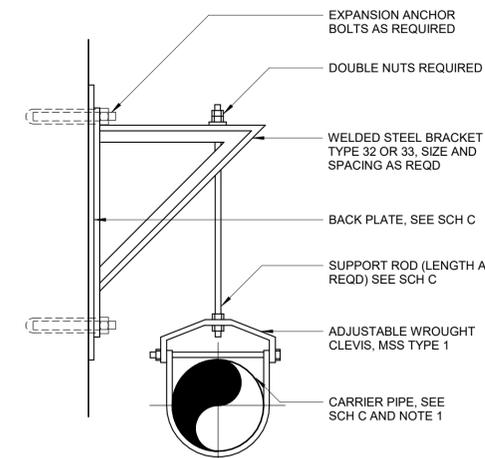
PIPE SUPPORT BRACKET
M-40-0303



ADJUSTABLE SADDLE

FLANGE SUPPORT

M-40-0304



PIPE SUPPORT BRACKET

M-40-0306

NOTES:

1. ALL WALL PIPES SHALL BE CAST UNLESS OTHERWISE NOTED.
2. PROVIDE PIPE JOINT WITHIN TWO (2) FEET OF EXTERIOR FACE OF WALL AT CONNECTION TO ALL NEW AND EXISTING STRUCTURES OR MANHOLES.
3. ALL NEW OPENINGS IN EXISTING CONCRETE WALLS AND SLABS SHALL BE SAWCUT OR CORE DRILLED. USE OF JACKHAMMERS OR STITCH DRILLING SHALL NOT BE PERMITTED. ANNULAR SURFACE SHALL BE SMOOTH. ANNULAR SURFACE SHALL BE ROUGHENED BY APPROVED METHODS WHEN INSTALLATION OF NONSHRINK GROUT IS REQUIRED AT EXISTING CONCRETE WALLS.

Autodesk Doc/22044-004_Big Branch 2 Pump Station and Pipelines/22044-004-STANDARD DETAILS-MECH-11

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	F. MATAR
DRAWN BY:	C. TROISI
CHECKED BY:	B. PORTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

Hazen

HAZEN AND SAWYER
4011 WESTCHASE BLVD. #500,
RALEIGH, NC 27607

APEX
NORTH CAROLINA

BIG BRANCH 2
PUMP STATION

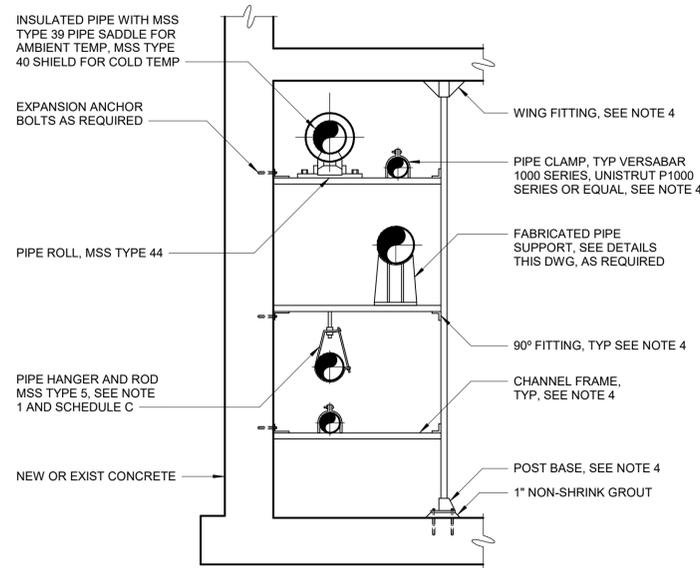
STANDARD DETAILS
MECHANICAL
STANDARD DETAILS-SHEET 2

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	MD2

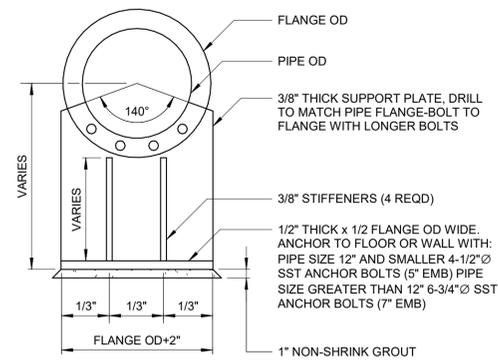
SCHEDULE A				
BASE ELBOW (TEE) (DIM IN INCHES)				
PIPE SIZE	A	B	C	D DIA x LG
3	1 1/2	5	4 7/8	1/2 x 5
4	2	6	5 1/2	5/8 x 5
5-6	2 1/2	7	VARIES	5/8 x 5
8-10	4	9	VARIES	5/8 x 5
12-16	6	11	VARIES	3/4 x 6
18-24	8	13 1/2	VARIES	3/4 x 6
30	10	16	23	7/8 x 7
36	12	19	26	7/8 x 7

SCHEDULE B				
ADJUSTABLE SADDLE (DIM IN INCHES)				
PIPE SIZE	A	B	C	D DIA x LG
3	2 1/2	7	1 1/2	5/8 x 5
4-12	3	7 1/2	2 1/2	5/8 x 5
14-16	4	9	3	5/8 x 5
18-20	6	11	3 1/2	3/4 x 6
24-48	6	11	4	3/4 x 6

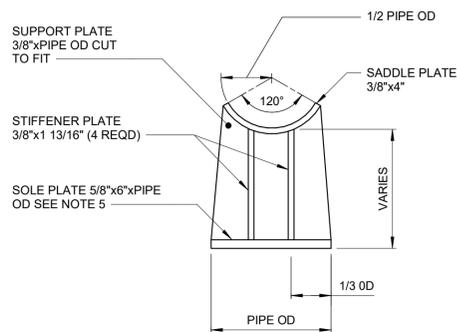
SCHEDULE C							
SUPPORT RODS AND BRACKET SPACING (FOR STANDARD WEIGHT PIPE)							
PIPE SIZE (INCHES)	BACK PLATE (INCHES)	MINIMUM ROD Ø (INCHES)			MAX SPAN IN FEET (SEE NOTE 8)		
		PROCESS PIPING	STEEL AIR PIPING	COPPER	PLASTIC	STEEL	DIP (SEE NOTE 7)
UP TO 1	SEE NOTE 4	3/8	3/8	5	5	6	-
1 1/4-2	"	3/8	3/8	8	5	10	-
2 1/2-3 1/2	"	3/8	3/8	8	5	12	6
4-5	"	1/2	3/8	-	5	14	8
6	"	5/8	3/8	-	5	15	9
8-12	"	3/4	1/2	-	5	15	9
14-16	"	7/8	1/2	-	5	15	9
18	"	1	1/2	-	5	18	10
20-24	"	1 1/4	5/8	-	5	18	10



PIPE SUPPORT RACK
M-40-0307

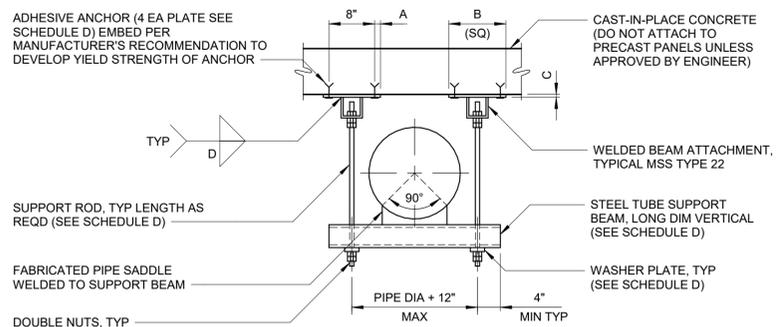


FABRICATED PIPE SUPPORT
(AT FLANGE)
M-40-0308

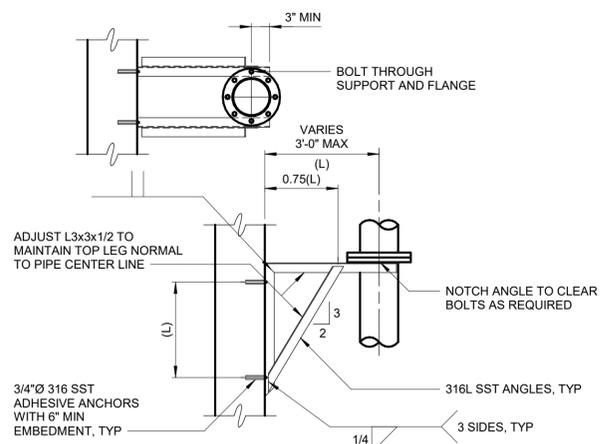


FABRICATED PIPE SUPPORT
(AT PIPE)
M-40-0309

SCHEDULE D												
TRAPEZE SUPPORT (DIM IN INCHES)												
PIPE SIZE	STEEL TUBE SUPPORT BEAM VERT x HOR	MINIMUM ROD Ø (INCHES)		WASHER PLATE	BASE PLATE				WELD	ADHESIVE ANCHOR DIA	MAX SUPPORT SPACING IN FEET (SEE NOTE 8)	
		PROCESS PIPING	STEEL AIR PIPING		A	B	C	D			PROCESS PIPING	STEEL AIR PIPING
12-14	4x4x3/8	1/2	1/2	4x4x1/4	1	10	3/8	3/16	1/2	10	15	
16-24	4x4x3/8	3/4	5/8	4x4x3/8	1	10	1/2	3/16	5/8	10	15	
30-36	6x4x3/8	1	3/4	4x4x1/2	2	12	1/2	1/4	3/4	10	20	
42	6x4x3/8	1 1/4	3/4	5x5x1/2	2	12	3/4	1/4	7/8	10	25	
48	8x4x3/8	1 1/2	1	5x5x3/4	2	12	1	1/4	1	10	30	



TRAPEZE
SUPPORT
M-40-0310



FLANGE TYPE SUPPORT
M-40-0311

NOTES:

- CONTRACTOR SHALL DESIGN THE SUPPORT SYSTEMS BASED ON ACTUAL WEIGHTS AND CONDITIONS AS SPECIFIED OR AS SHOWN ON THE CONTRACT DRAWINGS. PIPE HANGERS, SUPPORTS AND BRACKETS SHOWN HERE IN VARIOUS COMBINATIONS REPRESENT MINIMUM REQUIREMENTS FOR ACCEPTABLE SUPPORTS AS TO TYPES, MATERIALS, THICKNESSES, ORIENTATION, AND QUALITY. CONTRACTOR SHALL SUBMIT DESIGN CALCULATIONS AND DETAILS FOR PIPE SUPPORTS SEALED BY A PROFESSIONAL ENGINEER LICENSED BY THE STATE OR COMMONWEALTH WHERE THE PROJECT IS LOCATED WITH ALL PIPE HANGER AND SUPPORT SUBMISSIONS FOR REVIEW BY THE ENGINEER. WHEN SUBMITTING PROPOSED PIPE SUPPORTS AND SUPPORT LOCATIONS, THE CONTRACTOR SHALL USE APPROVED PIPING LAYOUT SUBMITTAL DRAWINGS TO SHOW PROPOSED PIPE SUPPORT TYPE AND LOCATION WITH ACCURATE DIMENSIONS TO DEMONSTRATE THAT SUPPORTS DO NOT EXCEED THE MAXIMUM SPACING REQUIREMENTS OF SECTION 4 05 07. THIS ENSURES THAT SUPPORTS HAVE BEEN COORDINATED WITH ACTUAL PIPE INSTALLATION DRAWINGS, AND THAT SPACING DOES NOT EXCEED MAXIMUM ALLOWABLE SPACING. THE PIPE SUPPORTS SHOWN AND REFERENCED UNDER SCHEDULES A, B & C ARE DESIGNED AND DETAILED FOR GRAVITY LOADING ONLY. RESULTING LATERAL LOADS FROM CONSTRUCTION CONDITIONS, DESIGN SEISMIC EVENT OR OTHER RELATED CONDITIONS SHALL BE APPLIED TO THE PIPE AND OTHER NON-STRUCTURAL COMPONENTS IN ACCORDANCE WITH THE GOVERNING BUILDING CODE. SUPPLEMENTAL LATERAL STIFFNESS, RESISTANCE AND MEMBERS (WHEN NECESSARY) SHALL BE PROVIDED ALONG PIPE OR AT GRAVITY SUPPORTS AND CONNECTIONS WHEN REQUIRED BY CALCULATIONS.
- TYPICALLY, REINFORCED CONCRETE SUPPORTS SHALL BE USED WHEN PIPE CENTERLINE IS LESS THAN 3- FEET ABOVE CONCRETE FLOOR OR FINISHED GRADE, AND AT A MINIMUM, SHALL CONFORM TO STANDARD DETAIL S-03-0505.
- MSS REFERS TO THE MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY, STANDARD PRACTICE SP-68 AND SP-69.
- PIPE WALL SUPPORT AND PIPE SUPPORT RACK SHALL BE ASSEMBLED WITH CHANNEL FRAMES AND ACCESSORIES AS MANUFACTURED BY UNISTRUT CORP, OR VERSABAR CORP, OR EQUAL.
- FABRICATED PIPE SUPPORT MAY BE USED AS SHOWN IN PIPE SUPPORT RACK DETAIL, OR TO SUPPORT PIPE FROM THE FLOOR.
- BACK PLATES SHALL BE DESIGNED BY THE CONTRACTOR ACCORDING TO WALL TYPES AND THE WEIGHTS INVOLVED. BACK PLATE TO BE SUPPLIED BY BRACKET MANUFACTURER.
- ALL INSULATED PIPES SHALL USE A SHIELD (MSS TYPE 40) WITH THE APPLICABLE PIPE SUPPORT.
- MINIMUM OF ONE HANGER PER PIPE SECTION, CLOSE TO JOINT, ON THE BARREL, ALSO AT CHANGE IN DIRECTION AND BRANCH CONNECTIONS.
- RODS AND SPACING ARE BASED ON STANDARD WEIGHT MATERIALS ACCORDING TO MSS SP-69, AND ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL SPACE HIS HANGERS BASED ON ACTUAL CONDITIONS.
- REFER TO THE APPROPRIATE AND RELATED SPECIFICATION SECTIONS AND DRAWINGS OF THE CONTRACT DOCUMENTS REGARDING SUPPLEMENTAL DESIGN REQUIREMENTS RELATING TO PERFORMANCE SUBMISSIONS BY CONTRACTOR. ALL NON-STRUCTURAL COMPONENTS, INCLUDING PIPING, HVAC DUCT, PLUMBING AND ELECTRICAL CONDUIT SUPPORT SYSTEMS SHALL BE ADEQUATELY DESIGNED AND INSTALLED UTILIZING SUFFICIENT CONNECTIONS AND MEMBERS TO ACCOMMODATE AND RESIST THE DESIGN LATERAL FORCES ASSOCIATED WITH A SPECIFIC COMPONENT'S DYNAMIC INERTIA DURING THE DESIGN SEISMIC EVENT. REFER TO THE CODE COMPLIANCE DRAWING FOR STRUCTURAL DESIGN INFORMATION FOR SPECIFIC SEISMIC DESIGN CRITERIA.

Autodesk Doc/202404_004_Big Branch 2 Pump Station and Pipedetails/202404_004-STANDARD DETAILS-MECH-11 4/14/2023 10:17:45 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	F. MATAR
DRAWN BY:	C. TROISI
CHECKED BY:	B. PORTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

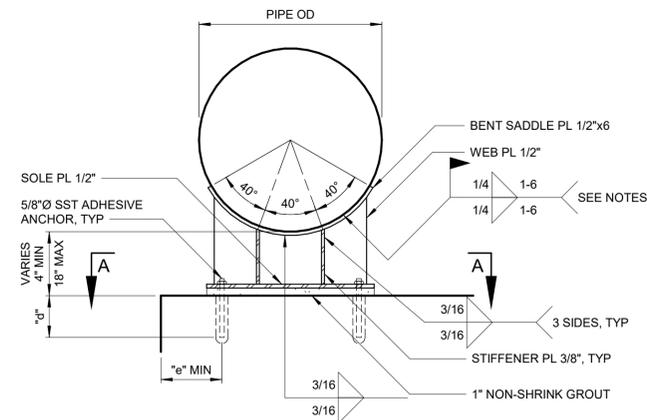
PRELIMINARY DRAWING -
DO NOT USE FOR
CONSTRUCTION

Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD. #500,
RALEIGH, NC 27607

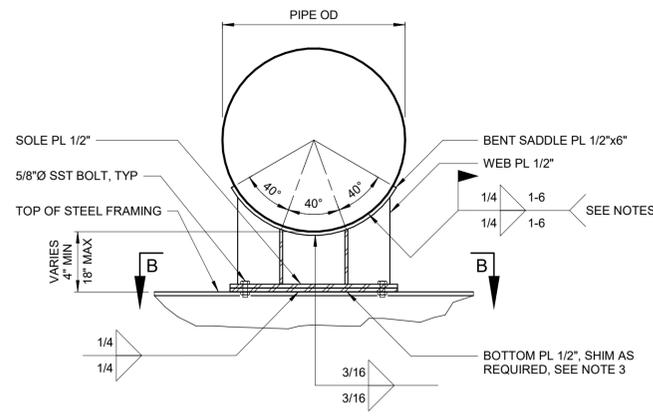
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

STANDARD DETAILS
MECHANICAL
STANDARD DETAILS-SHEET 3

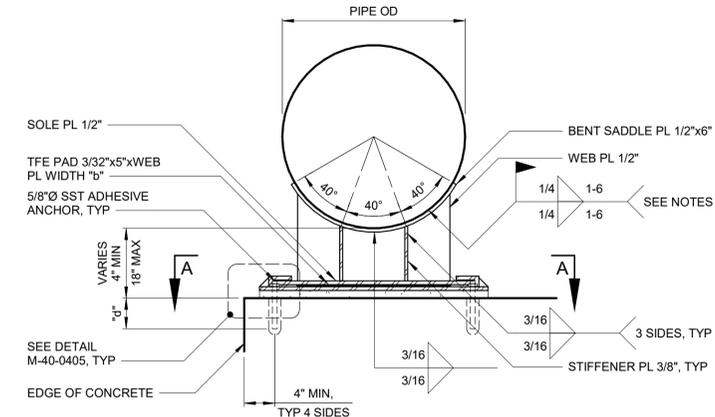
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HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	MD3



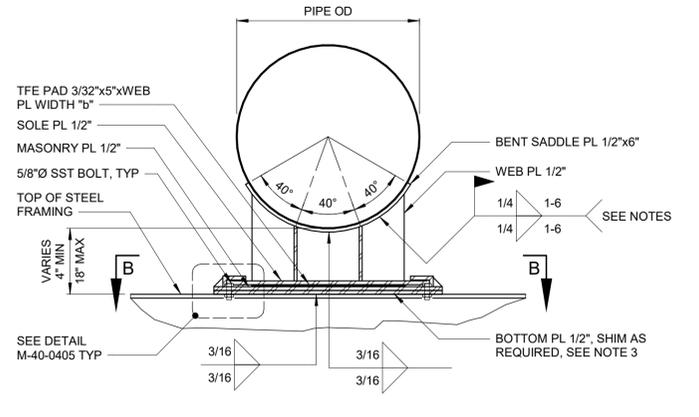
FIXED SUPPORT-CONCRETE



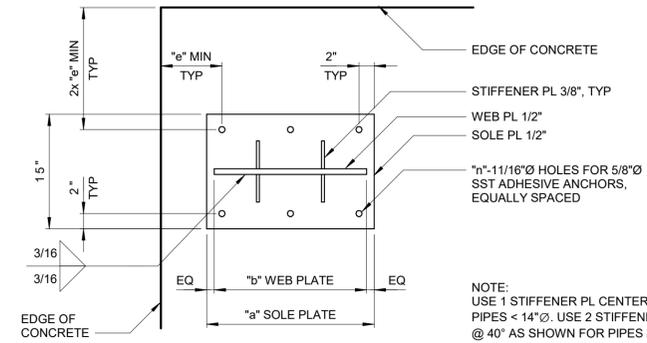
FIXED SUPPORT-STEEL



SLIDING SUPPORT-CONCRETE



SLIDING SUPPORT-STEEL



SECTIONAL PLAN A-A

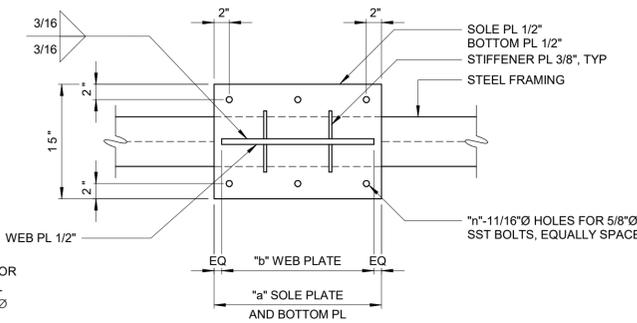
FIXED SUPPORT FOR 4"-24" PROCESS AIR PIPE MOUNTED ON CONCRETE

NOTE:
USE 1 STIFFENER PL CENTERED FOR PIPES < 14"Ø. USE 2 STIFFENER PL @ 40° AS SHOWN FOR PIPES ≥ 14"Ø

PIPE DIA	"a"	"b"	"n"	"d"	"e"
4"	8"	4"	4"	4"	4"
6"	10"	4"	4"	5"	6"
8"	12"	6"	4"	5"	6"
10"	12"	6"	4"	5"	6"
12"	12"	8"	4"	5"	7"
14"	12"	10"	4"	5"	8"
16"	14"	12"	4"	8"	8"
18"	16"	14"	4"	10"	8"
20"	18"	16"	6"	6"	8"
24"	22"	20"	6"	6"	8"

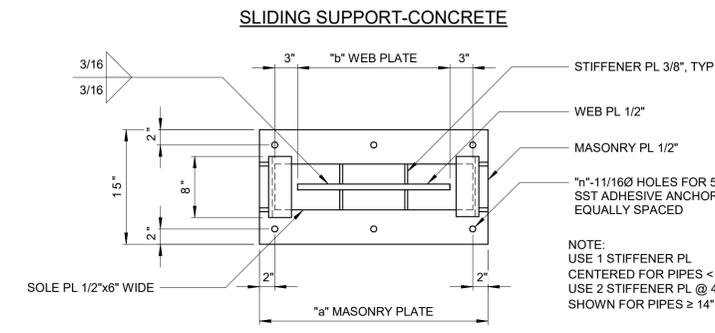
COMMENTS:
• FOR PIPE 18" AND SMALLER, THE PIPE SUPPORT WAS DESIGNED FOR LONGITUDINAL, TRANSVERSE, AND UPLIFT INTERNAL THRUST LOADS ACTING CONCURRENTLY.
• FOR PIPE 20" AND 20" MOUNTED ON CONCRETE, THE PIPE SUPPORT WAS DESIGNED FOR LONGITUDINAL AND UPLIFT INTERNAL THRUST LOAD ONLY.

M-40-0400



SECTIONAL PLAN B-B

FIXED SUPPORT FOR 4"-24" PROCESS AIR PIPE MOUNTED ON STEEL

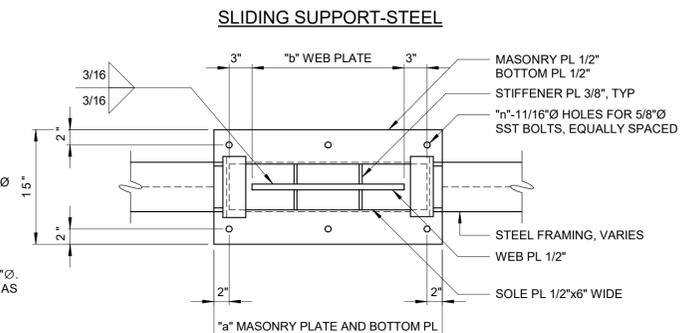


SECTIONAL PLAN A-A

SLIDING SUPPORT FOR 4"-24" PROCESS AIR PIPE MOUNTED ON CONCRETE

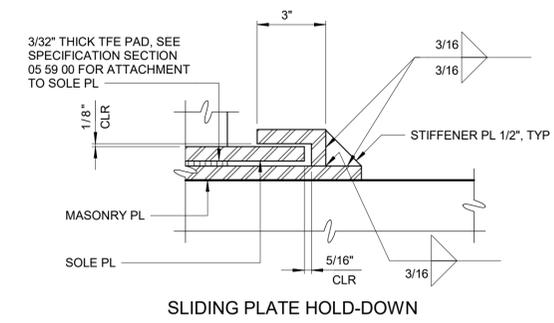
PIPE DIA	"a"	"b"	"n"	"d"
4"	12"	4"	4"	4"
6"	14"	4"	4"	4"
8"	16"	6"	4"	4"
10"	16"	6"	4"	4"
12"	18"	8"	4"	4"
14"	20"	10"	4"	4"
16"	22"	12"	4"	4"
18"	2'-0"	14"	4"	5"
20"	2'-2"	16"	6"	5"
24"	2'-6"	20"	6"	6"

M-40-0401



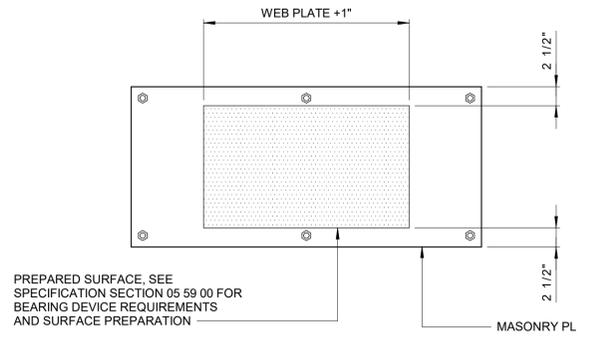
SECTIONAL PLAN B-B

SLIDING SUPPORT FOR 4"-24" PROCESS AIR PIPE MOUNTED ON STEEL



SLIDING PLATE HOLD-DOWN

M-40-0405



MASONRY PL BEARING SURFACE PREPARATION

M-40-0406

NOTE TO DESIGN TEAM:
IF YOU DO NOT USE THE DETAILS ON MD4 AND MD5 IN THEIR ENTIRETY, BE CERTAIN TO INCLUDE THE "PROCESS AIR PIPE SUPPORT NOTES" AND DETAILS M-40-0405 AND M-40-0406 WITH DETAILS THAT ARE UTILIZED.
REMOVE THIS NOTE BEFORE SUBMITTAL TO CLIENTS.

PROCESS AIR PIPE SUPPORT NOTES:

- MATERIAL OF SUPPORT FROM SOLE PLATE AND ABOVE SHALL MATCH MATERIAL OF PIPE.
- MATERIAL OF BOTTOM PLATE SHALL MATCH MATERIAL OF STEEL FRAMING BELOW.
- SHIM PLATE SHALL BE LOCATED ON TOP OF BOTTOM PLATE AND SHALL HAVE THE SAME DIMENSIONS AS BOTTOM PLATE.
- DISSIMILAR METALS SHALL BE ISOLATED PER 40 05 00.
- AIR PIPE SHALL BE FULLY INSTALLED PRIOR TO FIELD WELDING SADDLE PLATES TO PIPE.
- ALL WORK INCLUDING FIELD WELDS SHALL BE APPROVED BY ENGINEER PRIOR TO TESTING OF AIR PIPE.
- SOLE PLATE SHALL BE CENTERED ON MASONRY PLATE ON INITIAL INSTALLATION.

Autodesk Doc/22044_004_Big Branch 2 Pump Station and Pipelines/22044_004-STANDARD DETAILS-MECH-11 4/14/2023 10:17:55 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	F. MATAR
DRAWN BY:	C. TROISI
CHECKED BY:	B. PORTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD. #500,
RALEIGH, NC 27607

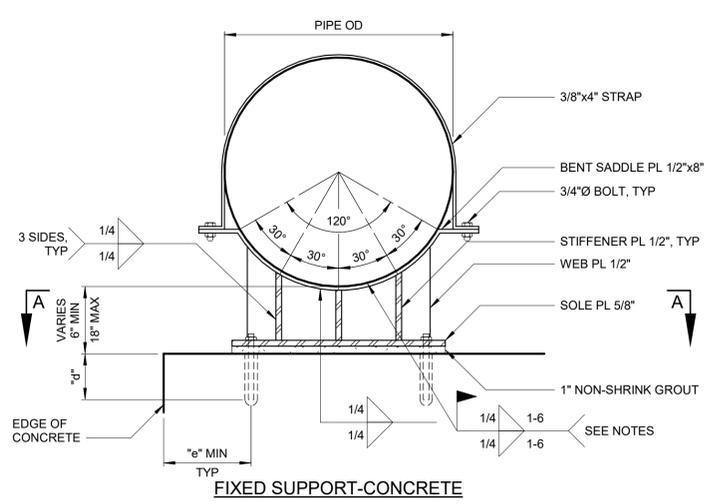
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

STANDARD DETAILS
MECHANICAL
STANDARD DETAILS-SHEET 4

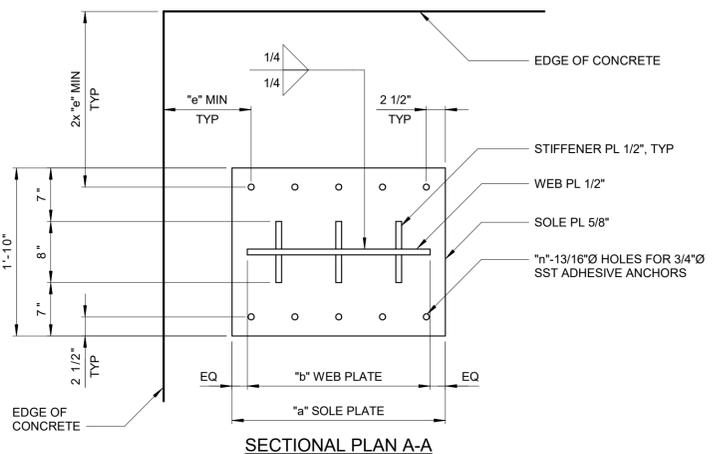
DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	MD4

PROCESS AIR PIPE SUPPORT NOTES:

1. MATERIAL OF SUPPORT FROM SOLE PLATE AND ABOVE SHALL MATCH MATERIAL OF PIPE.
2. MATERIAL OF BOTTOM PLATE SHALL MATCH MATERIAL OF STEEL FRAMING BELOW.
3. SHIM PLATE SHALL BE LOCATED ON TOP OF BOTTOM PLATE AND SHALL HAVE THE SAME DIMENSIONS AS BOTTOM PLATE.
4. DISSIMILAR METALS SHALL BE ISOLATED PER 40 05 00.
5. AIR PIPE SHALL BE FULLY INSTALLED PRIOR TO FIELD WELDING SADDLE PLATES TO PIPE.
6. ALL WORK INCLUDING FIELD WELDS SHALL BE APPROVED BY ENGINEER PRIOR TO TESTING OF AIR PIPE.
7. SOLE PLATE SHALL BE CENTERED ON MASONRY PLATE ON INITIAL INSTALLATION.



FIXED SUPPORT-CONCRETE



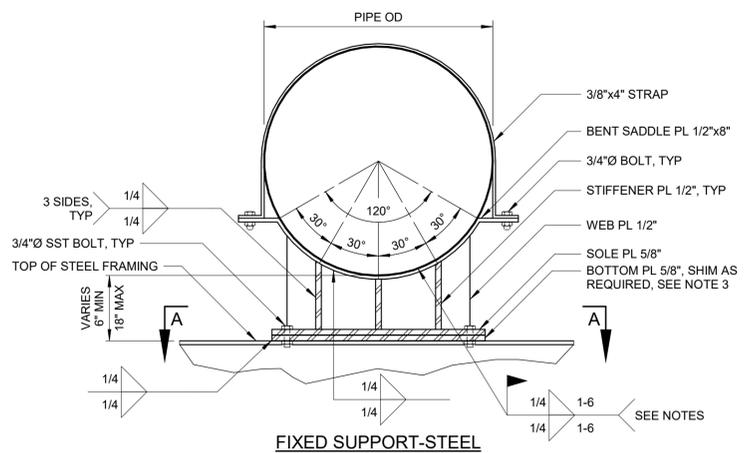
SECTIONAL PLAN A-A

PIPE DIA	"a"	"b"	"n"	"d"	"e"
30"	2'-4"	2'-0"	8	6"	11.5"
36"	2'-10"	2'-6"	10	10"	11.5"
42"	3'-4"	3'-0"	10	6"	11.5"
48"	3'-10"	3'-6"	10	6"	11.5"

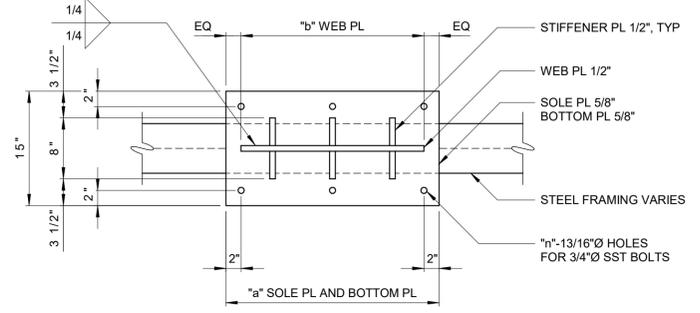
FIXED SUPPORT FOR 30"-48" PIPE MOUNTED ON CONCRETE

- COMMENTS:**
- FOR PIPE 30" AND 36", THE PIPE SUPPORT WAS DESIGNED FOR A LONGITUDINAL INTERNAL THRUST LOAD ONLY.
 - FOR PIPE 42" AND 48", THE PIPE SUPPORT WAS NOT DESIGNED TO TAKE ANY INTERNAL THRUST LOAD.

M-40-0402



FIXED SUPPORT-STEEL

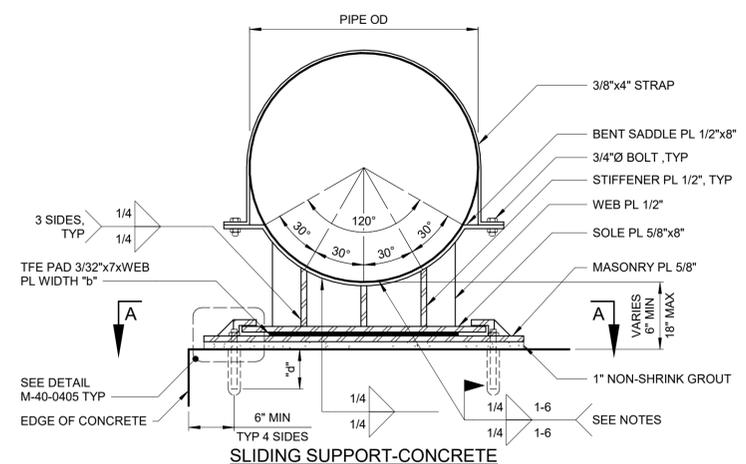


SECTIONAL PLAN A-A

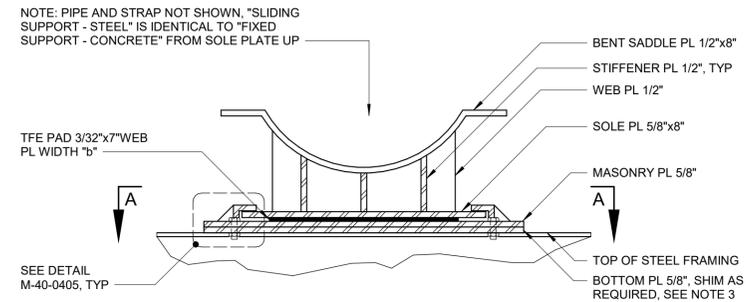
PIPE DIA	"a"	"b"	"n"
30"	2'-4"	2'-0"	6
36"	2'-10"	2'-6"	8
42"	3'-4"	3'-0"	8
48"	3'-9"	3'-6"	8

FIXED SUPPORT FOR 30"-48" PIPE MOUNTED ON STEEL

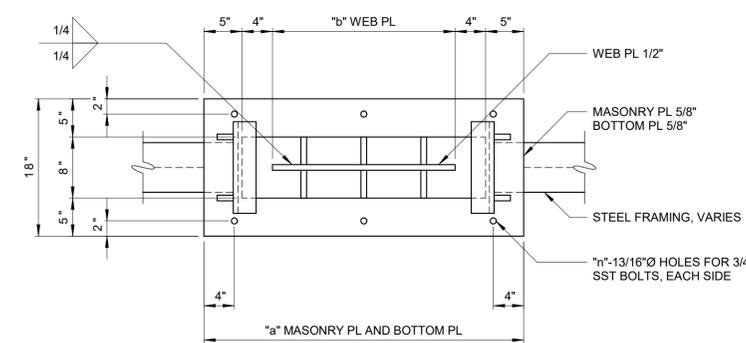
M-40-0403



SLIDING SUPPORT-CONCRETE



SLIDING SUPPORT-STEEL



SECTIONAL PLAN A-A

PIPE DIA	"a"	"b"	"n"	"d"
30"	3'-6"	2'-0"	3	4"
36"	4'-0"	2'-6"	4	5"
42"	4'-6"	3'-0"	4	6"
48"	5'-0"	3'-6"	4	7"

SLIDING SUPPORT FOR 30"-48" PIPE

M-40-0404

Autodesk_Docs/2204/04_004_Big Branch 2 Pump Station and Pipelines/2204-004-STANDARD DETAILS-MECH-11 4/14/2023 10:17:51 AM

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	F. MATAR
DRAWN BY:	C. TROISI
CHECKED BY:	B. PORTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

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RALEIGH, NC 27607

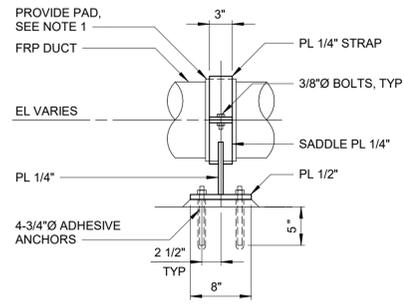
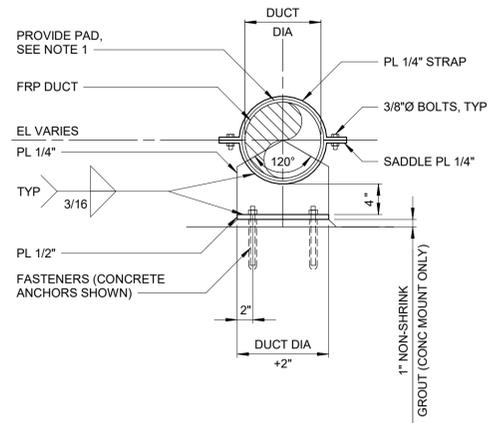
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

STANDARD DETAILS
MECHANICAL
STANDARD DETAILS-SHEET 5

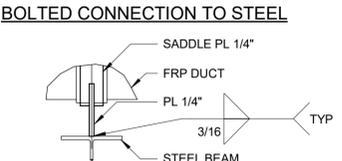
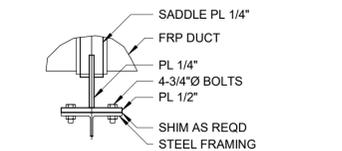
DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	MD5

NOTES:

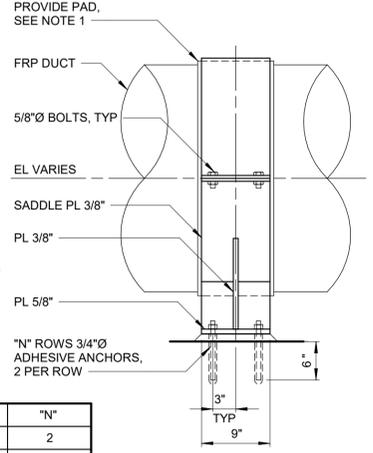
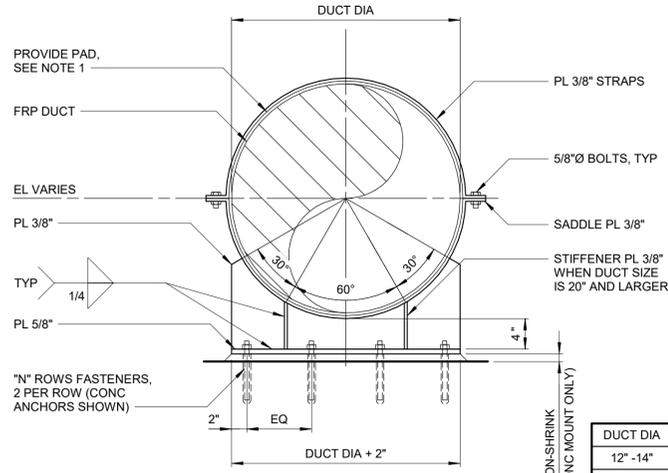
1. PROVIDE 1/4" NEOPRENE PAD (DUROMETER 50) CONTINUOUS BETWEEN FRP DUCT AND STRAPS/SADDLE PLATE.
2. PIPE SUPPORT STRUCTURAL MEMBERS, CONNECTING ELEMENTS AND SADDLE ASSEMBLY SHALL BE TYPE 304L STAINLESS STEEL.



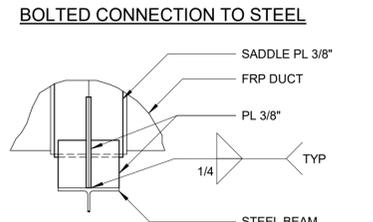
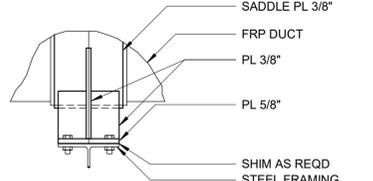
**BEARING ASSEMBLY FOR 4" TO 10" FA DUCT
M-40-0420**



BOLTED CONNECTION TO STEEL
WELDED CONNECTION TO STEEL

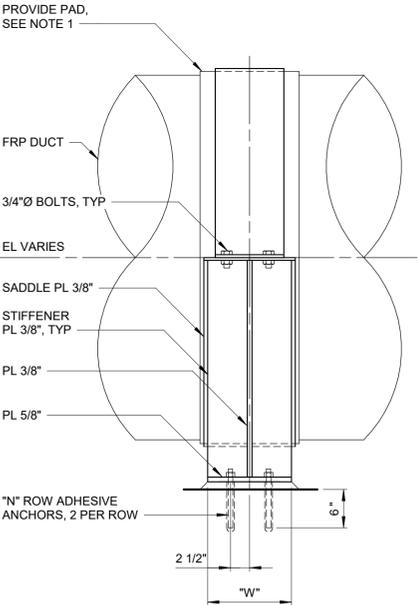
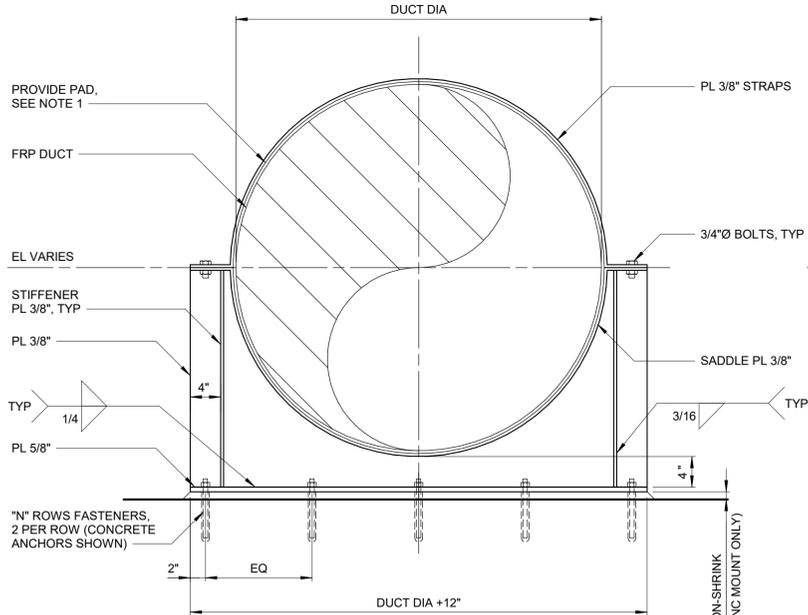


**BEARING ASSEMBLY FOR 12" TO 36" FA DUCT
M-40-0421**

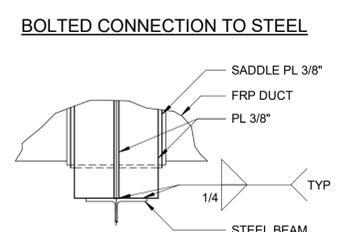
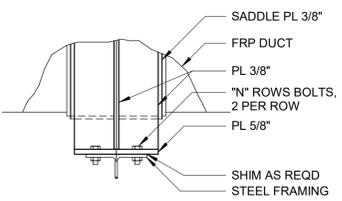


BOLTED CONNECTION TO STEEL
WELDED CONNECTION TO STEEL

DUCT DIA	"N"
12" - 14"	2
16" - 18"	3
20" - 36"	4

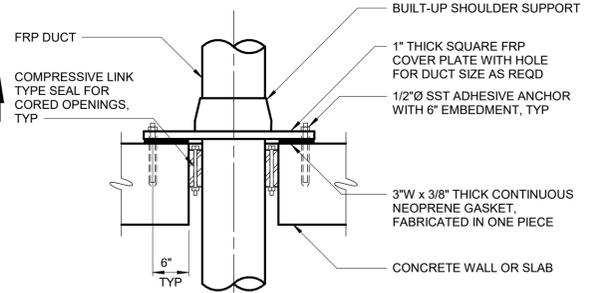
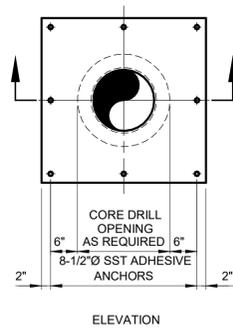


**BEARING ASSEMBLY FOR 42" TO 84" FA DUCT
M-40-0422**



BOLTED CONNECTION TO STEEL
WELDED CONNECTION TO STEEL

DUCT DIA	"N"	"W"
42" - 60"	5	11"
72" - 84"	6	13"



**DUCT PENETRATION THRU WALL OR SLAB
M-40-0423**

Autodesk Doc/22044_001_Big Branch 2 Pump Station and Pipelines/22044_004-STANDARD DETAILS-MECH-11 4/14/2023 10:17:51 AM

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	F. MATAR
DRAWN BY:	C. TROISI
CHECKED BY:	B. PORTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

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4011 WESTCHASE BLVD. #500,
RALEIGH, NC 27607

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

STANDARD DETAILS
MECHANICAL
STANDARD DETAILS-SHEET 6

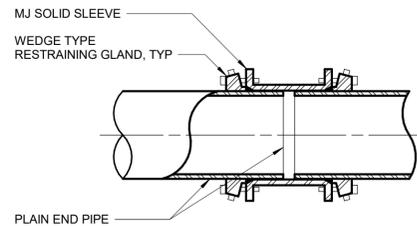
DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	MD6

THREADED ROD SCHEDULE

PIPE SIZE	REQUIRED TIE QUANTITY FOR DESIGN PRESSURE					THREADED ROD SIZE, INCHES	TAB THICKNESS, INCHES
	50 PSI	100 PSI	150 PSI	200 PSI	250 PSI		
3	2	2	2	2	2	5/8	1/2
4	2	2	2	2	2	5/8	1/2
6	2	2	2	2	2	5/8	3/4
8	2	2	2	3	3	5/8	3/4
10	2	2	2	3	3	3/4	1
12	2	2	2	3	3	7/8	1
14	2	2	2	3	3	1	1
16	2	2	2	3	4	1	1
18	2	2	3	4	5	1	1
20	2	3	4	5	6	1	1
24	2	3	5	6	9	1	1
30	2	3	5	6	9	1 1/4	1 1/4
36	3	5	7	9	12	1 1/4	1 1/4
42	3	6	9	12	16	1 1/4	1 1/4
48	3	6	8	11	15	1 1/2	1 3/4
54	4	7	10	14	18	1 1/2	1 3/4
60	5	9	13	17	23	1 1/2	1 3/4
64/66	4	8	11	15	20	1 3/4	2
72	5	9	13	18	24	1 3/4	2

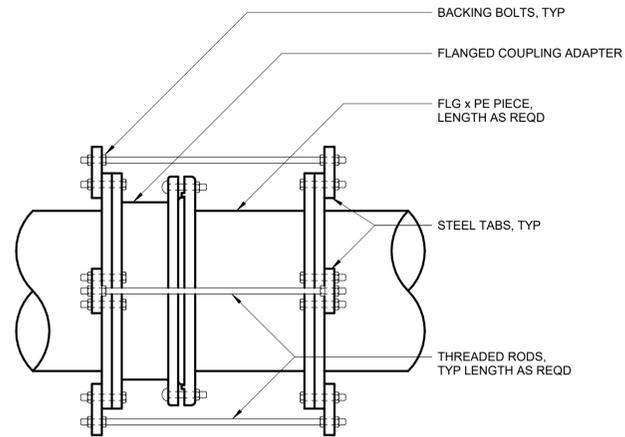
1. THREADED RODS FOR ALL PIPE DIAMETERS SHALL BE ASTM A193 (GRADE B7).
2. ALL TABS SHALL BE ASTM A36 STEEL.
3. ASTM A193 (GRADE B7) RODS SHALL BE LABELED AND BUNDLED SEPARATELY.
4. THIS SCHEDULE SHALL APPLY FOR HARNESSSED FLANGED ADAPTERS, HARNESSSED FLEXIBLE COUPLINGS AND ALL MECHANICAL JOINT COUPLINGS, SLEEVES ETC. THAT ARE REQUIRED TO BE HARNESSSED.
5. RODS THREADED AT ENDS (INCLUDING NUTS) SHALL BE EQUALLY SPACED AROUND PIPE BETWEEN ALL MECHANICAL JOINT FITTINGS (TEE, VALVES, BEND, PLUG, ETC.) OR AS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS. THREADED RODS SHALL BE AS SHOWN IN THE THREADED ROD SCHEDULE. SEE NOTE 6.
6. RODS, NUTS, ETC., IN CONTACT WITH SOIL SHALL BE PAINTED WITH TWO COATS COAL TAR (MIN 26 DRY MIL THICKNESS) TNE MEC 46-465 HI-BUILD OR EQUAL.

M-40-0780



NOTE:
CONTRACTOR MAY USE EBAA IRON 3800 MEGA-COUPLING IN LIEU OF COMPONENTS SHOWN. ALL RODS AND RESTRAINING HARDWARE SHALL BE PAINTED WITH TWO COATS COAL TAR (MIN 26 DRY MIL THICKNESS) TNE MEC 46-465 HI-BUILD OR EQUAL.

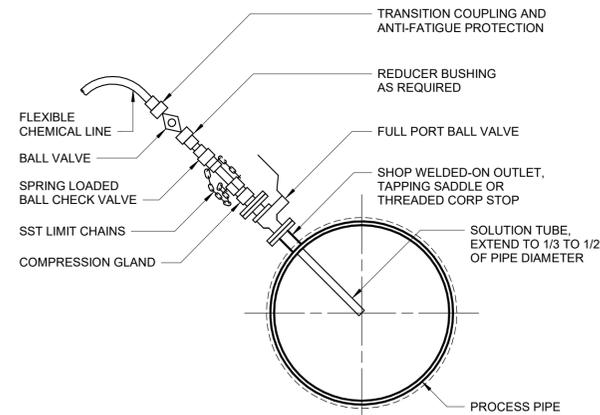
**RESTRAINED MJ SOLID SLEEVE
M-40-0700**



NOTE:
ALL FLANGED COUPLING ADAPTERS SHALL BE HARNESSSED AND BACK BOLTED TO PREVENT MOVEMENT IN EITHER DIRECTION. SEE THREADED ROD SCHEDULE FOR ROD DIAMETER, MATERIAL AND STEEL TAB THICKNESS.

HARNESSSED FLANGED COUPLING ADAPTER

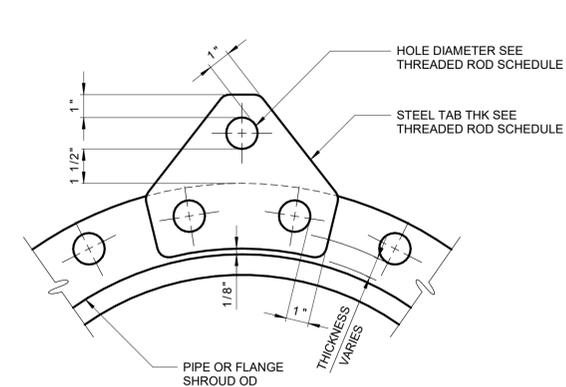
M-40-0702



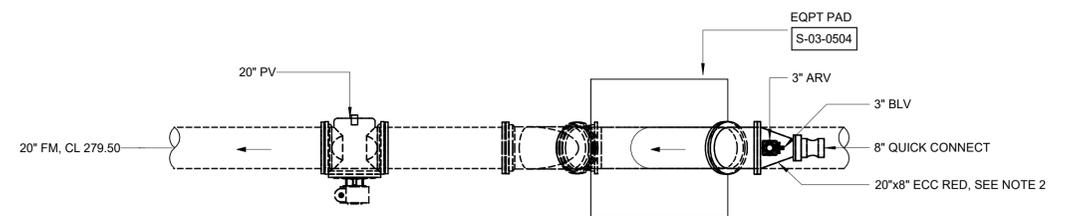
NOTES:

1. CHEMICAL INJECTION QUILL SHALL BE INSTALLED IN INTERIOR SPACES OR IN A MANHOLE BUILT AROUND THE PROCESS PIPE. ORIENTATION WILL VARY TO SUIT THE INSTALLATION, TAKING INTO ACCOUNT CHEMICAL CONSIDERATIONS AND REQUIRED CLEARANCE FOR RETRACTION AND INSERTION.
2. ALL WETTED COMPONENTS OF INJECTION QUILL SHALL BE COMPLETELY RESISTANT TO CORROSION BY THE SPECIFIED CHEMICAL.
3. CHEMICAL INJECTION QUILL SHALL BE PROVIDED AS SPECIFIED IN SPECIFICATION SECTION 46 41 42.

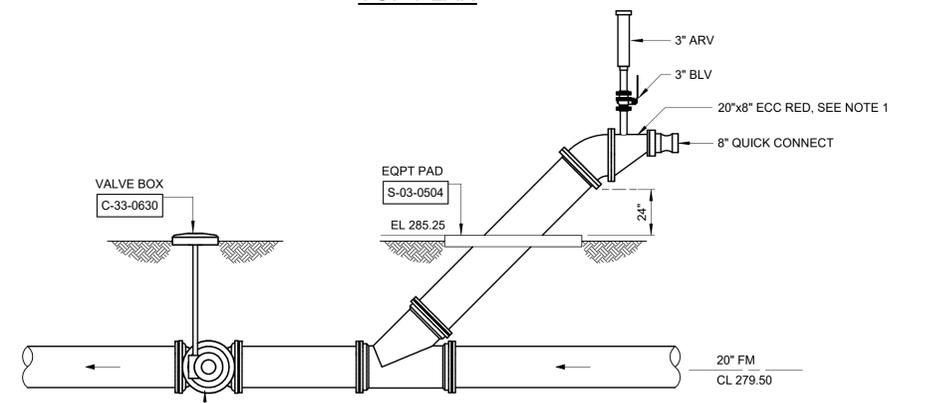
**CHEMICAL INJECTION QUILL
M-46-0100**



**STEEL TAB
M-40-0703**



TOP PLAN



Section AA

1. REFER TO CIVIL DRAWINGS FOR LOCATION PF BYPASS STATION ON SITE
2. CONTACTOR SHALL COORDINATE WITH PIPE MANUFACTURER LOCATION OF TAP FOR AIR RELEASE VALVE ASSEMBLY.

BYPASS DETAIL

DETAIL	1
1/4" = 1'-0"	

Autodesk Docs/22044_004_Big Branch 2 Pump Station and Pipelines/22044_004-STANDARD DETAILS-MECH-11 4/14/2023 10:17:51 AM

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	F. MATAR		
DRAWN BY:	C. TROISI		
CHECKED BY:	B. PORTER		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

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4011 WESTCHASE BLVD. #500,
RALEIGH, NC 27607

APEX
NORTH CAROLINA

BIG BRANCH 2
PUMP STATION

STANDARD DETAILS
MECHANICAL
STANDARD DETAILS-SHEET 7

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	MD7

GENERAL STRUCTURAL NOTES

- G-1 THESE NOTES ARE GENERAL AND SUPPLEMENT THE SPECIFICATIONS. THESE NOTES APPLY TO THE ENTIRE PROJECT UNLESS MODIFIED OR NOTED OTHERWISE IN THE CONTRACT DOCUMENTS.
- G-2 STANDARD DETAILS SHALL BE USED WHEN REFERRED TO OR WHEN NO MORE RESTRICTIVE OR DIFFERENT DETAILS ARE SHOWN ON THE DRAWINGS.
- G-3 DESIGN IS IN ACCORDANCE WITH AND CONSTRUCTION SHALL COMPLY WITH THE PROVISIONS OF THE '2018 NORTH CAROLINA STATE BUILDING CODE'. THE DESIGN LOADS AND OTHER DESIGN VALUES GIVEN IN NOTES G-4 THROUGH G-8 WERE USED FOR DESIGN OF STRUCTURES UNLESS NOTED OTHERWISE ON THE DRAWINGS.
- G-4 DEAD LOADS:

SELF-WEIGHT OF THE STRUCTURE
SUPERIMPOSED/COLLATERAL ROOF LOADS: SEE PLANS
- G-5 LIVE LOADS:

STRUCTURE \ LEVEL	ROOF	TOP / FIRST FLOOR	BOTTOM / GROUND FLOOR
PUMP STATION	20 PSF	150 PSF	250 PSF
ELECTRICAL BUILDING	20 PSF	N/A	250 PSF
CHEMICAL BUILDING	20 PSF	150 PSF	250 PSF

-ALL STAIRWAYS, LANDINGS AND PLATFORMS ARE DESIGNED FOR A LIVE LOAD = 100 PSF UNLESS NOTED OTHERWISE.
-25% OF THE LIVE LOAD IS CONSIDERED SUSTAINED FOR LONG-TERM DEFLECTIONS AND CONSIDERED AS SEISMIC WEIGHT.

- G-6 SNOW LOAD:

GROUND SNOW LOAD (Pg) = 15 PSF
FLAT-ROOF SNOW LOAD (Pf) = 17 PSF
SLOPED ROOF SNOW LOAD (Ps) = 17 PSF
ROOF SLOPE FACTOR (Cs) = 1.0
SNOW EXPOSURE FACTOR (Ce) = 1.2
SNOW LOAD IMPORTANCE FACTOR (Is) = 1.1
THERMAL FACTOR (Ct) = 1.2
GABLED ROOF UNBALANCED LOAD Pd = 9 PSF + Ps
WIDTH OF UNBALANCED LOAD (W) = 6' - 3"

- G-7 WIND DESIGN CRITERIA:

BASIC DESIGN WIND SPEED (V) = 123 MPH
ALLOWABLE STRESS DESIGN WIND SPEED (Vasd) = 95 MPH
RISK CATEGORY = III
WIND EXPOSURE = C

STRUCTURE \ PARAMETER	INTERNAL PRESSURE COEFFICIENT GCpi	MWFRS WIND NET (WW + LW) PRESSURE		MWFRS WIND BASE SHEAR		LATERAL LOAD RESISTING SYSTEM
		SHORT DIRECTION	LONG DIRECTION	SHORT DIRECTION	LONG DIRECTION	
PUMP STATION - SUPERSTRUCTURE	± 0.55	31 PSF	26 PSF	18 KIPS	5 KIPS	MASONRY SHEAR WALL
ELECTRICAL BUILDING	± 0.55	31 PSF	27 PSF	30 KIPS	12 KIPS	MASONRY SHEAR WALL
CHEMICAL BUILDING	± 0.18	33 PSF	33 PSF	18 KIPS	18 KIPS	MASONRY SHEAR WALL
PUMP STATION - CRANE	-	-	-	12 KIPS	8 KIPS	STEEL BRACED FRAME

SEE PLANS FOR COMPONENTS AND CLADDING WIND PRESSURES

- G-8 SEISMIC LOAD:

RISK CATEGORY = III
SEISMIC IMPORTANCE FACTOR (Ie) = 1.25
MAPPED SPECTRAL RESPONSE ACCELERATIONS (Ss/S1) = 0.165g/0.08g
SEISMIC DESIGN CATEGORY = B
PUMP STATION
SITE CLASS = C
SPECTRAL RESPONSE ACCELERATIONS (SMS/SM1) = 0.215g/0.120g
SPECTRAL RESPONSE COEFFICIENTS (SDS/SD1) = 0.143g/0.080g
ALL OTHER STRUCTURES
SITE CLASS = D
SPECTRAL RESPONSE ACCELERATIONS (SMS/SM1) = 0.264g/0.192g
SPECTRAL RESPONSE COEFFICIENTS (SDS/SD1) = 0.176g/0.128g

STRUCTURE \ PARAMETER	BASIC STRUCTURAL SYSTEM	DESIGN BASE SHEAR	SEISMIC RESPONSE COEFFICIENT Cs	RESPONSE MODIFICATION COEFFICIENT R	ANALYSIS PROCEDURE
PUMP STATION - SUPERSTRUCTURE	ORDINARY REINFORCED MASONRY SHEAR WALL	16 KIPS	0.09	2	EQUIVALENT LATERAL FORCE
ELECTRICAL BUILDING	ORDINARY REINFORCED MASONRY SHEAR WALL	49 KIPS	0.11	2	EQUIVALENT LATERAL FORCE
CHEMICAL BUILDING	ORDINARY REINFORCED MASONRY SHEAR WALL	33 KIPS	0.11	2	EQUIVALENT LATERAL FORCE
PUMP STATION - CRANE	STEEL SYSTEMS NOT SPECIFICALLY DESIGNED FOR SEISMIC	13 KIPS	0.07	3	EQUIVALENT LATERAL FORCE

CHEMICAL BUILDING: 27 KIP ADDITIONAL DESIGN BASE SHEAR FOR THE TANK SUPPORT

GENERAL STRUCTURAL NOTES, CONTINUED

- G-9 RAIN LOAD:
RAIN INTENSITY (i):
60-MIN/100-YEAR: 3.24 IN/HR
15-MIN/100-YEAR: 6.14 IN/HR
- G-10 CRANE LOADS:
RATED CAPACITY: 3 TONS
VERTICAL IMPACT LOAD = 0.25 (HOIST & TROLLEY WEIGHT + RATED CAPACITY)
HORIZONTAL LATERAL LOAD = 0.20 (HOIST & TROLLEY WEIGHT + RATED CAPACITY)
HORIZONTAL LONGITUDINAL LOAD = 0.10 (HOIST & TROLLEY WEIGHT + RATED CAPACITY)
STOP/BUMPER LOAD ≤ HORIZONTAL LONGITUDINAL LOAD
- G-11 ALL DIMENSIONS INDICATED FOR EXISTING STRUCTURES SHALL BE VERIFIED BY FIELD MEASUREMENT. ALL DIMENSIONS THAT ARE CONTROLLED BY OR RELATED TO EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR WITH THE MANUFACTURER SHOP DRAWINGS PRIOR TO CONSTRUCTION.
- G-12 THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING INFORMATION IN THE FIELD AS REQUIRED FOR NEW WORK.
- G-13 IF A CONFLICT IS FOUND BETWEEN DIFFERENT PORTIONS OF THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY. CONTINUED CONSTRUCTION OF THE AREA IN CONFLICT SHALL BE AT THE CONTRACTOR'S OWN RISK UNTIL THE CONFLICT IS RESOLVED.
- G-14 EQUIPMENT ANCHOR SIZES, TYPES, EMBEDMENT AND PATTERNS SHALL BE DESIGNED BY THE MANUFACTURER OF THE EQUIPMENT. IF EQUIPMENT MANUFACTURER IS UNABLE TO PROVIDE DESIGN OF ANCHOR EMBEDMENT, DESIGN SHALL BE BY ENGINEER RETAINED BY CONTRACTOR BASED ON LOADS PROVIDED BY EQUIPMENT MANUFACTURER. CONTRACTOR SHALL SUBMIT SIZE, PLACEMENT, AND EMBEDMENT REQUIREMENTS. ALL ANCHOR PATTERNS SHALL BE TEMPLATED TO ENSURE ACCURACY OF PLACEMENT.
- G-15 STRUCTURAL DRAWINGS SHALL BE USED IN COORDINATION WITH THE DRAWINGS OF ALL OTHER DISCIPLINES AND MANUFACTURER'S SHOP DRAWINGS.
- G-16 STRUCTURES HAVE BEEN DESIGNED FOR OPERATIONAL LOADS ON THE COMPLETED STRUCTURE. DURING CONSTRUCTION, THE STRUCTURES SHALL BE PROTECTED BY BRACING AND TEMPORARY SUPPORTS WHEREVER EXCESSIVE CONSTRUCTION LOADS MAY OCCUR. OVERSTRESSING OF ANY STRUCTURAL ELEMENT IS PROHIBITED.
- G-17 IF CONTRACTOR DESIRES TO TEMPORARILY PLACE OR MOVE LOADS ON OR ADJACENT TO EXISTING STRUCTURES OR UTILITIES DURING CONSTRUCTION PROCESS, CONTRACTOR IS EXCLUSIVELY RESPONSIBLE FOR MAINTAINING STRUCTURAL INTEGRITY AND AVOIDING OVERSTRESSING AND DAMAGING EXISTING STRUCTURES AND UTILITIES. CONTRACTOR SHALL SUBMIT STRUCTURAL CALCULATIONS AND DRAWINGS VERIFYING THAT PROPOSED CONSTRUCTION (INCLUDING APPLICATION OF TEMPORARY CONSTRUCTION LOADS) WILL NOT OVERSTRESS OR DAMAGE EXISTING STRUCTURES AND UTILITIES. DRAWINGS AND CALCULATIONS SHALL BE SEALED BY A PROFESSIONAL ENGINEER CURRENTLY REGISTERED IN THE STATE OF NORTH CAROLINA.
- G-18 NO BACKFILL SHALL BE PLACED AGAINST ANY SUBSTRUCTURE WALLS UNLESS ALL ADJACENT SUPPORTING ELEMENTS HAVE ACHIEVED DESIGN STRENGTH, OR WALLS HAVE BEEN PROPERLY BRACED, AND IN ANY CASE NOT SOONER THAN 28 DAYS AFTER THE PLACING OF CONCRETE UNLESS APPROVED BY THE ENGINEER. SUPPORTING ELEMENTS SHALL INCLUDE ADJACENT WALLS, SLABS, BEAMS AND COLUMNS.
- G-19 LEAKAGE TESTING OF HYDRAULIC STRUCTURES SHALL NOT BEGIN UNTIL ALL STRUCTURAL ELEMENTS HAVE REACHED THE SPECIFIED MINIMUM CONCRETE STRENGTH. BACKFILL SHALL NOT BE PLACED AROUND ANY HYDRAULIC STRUCTURE UNTIL THE LEAKAGE TEST HAS BEEN COMPLETED UNLESS APPROVED BY THE ENGINEER.

STRUCTURAL METALS

- M-1 DETAIL, FABRICATE, AND ERECT STRUCTURAL STEEL IN ACCORDANCE WITH ANSI/AISC 360 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, LATEST EDITION.
- M-2 STEEL MATERIAL:
A) STRUCTURAL HSS: ASTM A500, GRADE C (46/50 KSI) OR A1085 GRADE A (50 KSI)
B) STRUCTURAL PIPE: ASTM A53, GRADE B (35 KSI)
C) PLATES, BARS AND ANGLES: ASTM A36 UNO (36 KSI)
D) STRUCTURAL W. C. & MC SHAPES: ASTM A992 (50 KSI)
E) STRUCTURAL M & S SHAPES: ASTM A36 (36 KSI)
F) STRUCTURAL HP: ASTM A572 GRADE 50 (50 KSI)
G) ANCHOR RODS: ASTM F1554 GRADE 55 (55 KSI)
- M-3 PROVIDE MINIMUM 3/4" DIAMETER ASTM F3125 GRADE A325 TYPE 1 OR GRADE F1852 TYPE 1 HIGH STRENGTH BOLTS WITH SNUG TIGHTENED TYPE N CONNECTIONS FOR STRUCTURAL STEEL UNLESS NOTED OTHERWISE. HOLES FOR BOLTS SHALL BE STANDARD SIZE UNLESS NOTED OTHERWISE.
- M-4 PROVIDE TYPICAL STEEL BEAM CONNECTIONS FOR A CAPACITY OF NOT LESS THAN ONE HALF OF THE TOTAL UNIFORM LOAD CAPACITY TABULATED IN THE AISC TABLES FOR ALLOWABLE LOADS OF BEAMS UNLESS NOTED OTHERWISE.
- M-5 DO NOT PAINT STEEL SURFACES WHICH ARE TO BE WELDED OR ARE TO BE ENCASED IN CONCRETE.
- M-6 ALL STAINLESS STEEL FABRICATIONS EXPOSED TO UNDERWATER SERVICE SHALL BE TYPE 316. ALL OTHER STAINLESS STEEL FABRICATIONS SHALL BE TYPE 304 UNLESS NOTED OTHERWISE.
- M-7 ALUMINUM SHALL BE ALLOY 6061-T6 UNLESS NOTED OTHERWISE.
- M-8 ALL BOLTS, ANCHORS, AND CONCRETE ANCHORS CONNECTING ALUMINUM SHALL BE STAINLESS STEEL TYPE 316 FOR UNDERWATER APPLICATIONS AND TYPE 304 FOR ALL OTHER APPLICATIONS.
- M-9 ALUMINUM SHALL BE ISOLATED FROM CONTACT WITH CONCRETE AND DISSIMILAR METALS.
- M-10 ALL GROOVE AND BUTT WELDS SHALL BE FULL PENETRATION.
- M-11 FILLET WELD SIZES SHALL NOT BE LESS THAN THE MINIMUM SIZE REQUIRED BY AISC CODE FOR PLATE SIZES TO BE CONNECTED AND SHALL BE APPLIED TO THE ENTIRE JOINT CONTACT LENGTH, AND NOT LESS THAN 3/16".
- M-12 ALL WELDS SHALL BE PERFORMED IN THE SHOP UNLESS NOTED BY A FIELD WELD SYMBOL OR APPROVED BY ENGINEER.
- M-13 BOTTOM SURFACES OF BASE PLATES SHALL BE GROUTED TO ENSURE FULL BEARING CONTACT WITH CONCRETE SLAB.
- M-14 WHENEVER ONE MEMBER IS FASTENED TO ANOTHER WITH FASTENINGS (BOLTS, WELDS, ETC.) SET AT A UNIFORM SPACING, A MINIMUM OF TWO FASTENINGS PER PIECE SHALL BE CONNECTED AND THE FIRST AND LAST FASTENINGS SHALL BE LOCATED NOT TO EXCEED 0.25 OF FASTENER SPACING FROM EACH END.
- M-15 GRATING PANELS SHALL BE CONFINED TO PREVENT MOVEMENT PER STANDARD DETAIL S-05-0706. USE OF GRATING CLIP ATTACHMENT IS NOT ACCEPTABLE TO PREVENT GRATING MOVEMENT.
- M-16 STRUCTURAL WELDED JOINTS SHALL CONFORM TO THE PROVISIONS OF AWS D1.1, STRUCTURAL WELDING CODE BY AMERICAN WELDING SOCIETY. PROOF OF WELDER CERTIFICATE SHALL BE AVAILABLE AT THE JOB SITE DURING TIMES OF INSPECTION.

FOUNDATIONS

- F-1 CONCRETE (CAST-IN-PLACE) NOTES APPLY TO FOUNDATIONS.
- F-2 SOIL DESIGN PARAMETERS

PARAMETER \ STRUCTURE	SOIL TYPE	ALLOWABLE SOIL BEARING PRESSURE	FRICTION COEFFICIENT	SUBGRADE MODULUS
PUMP STATION MATS	PWR/ROCK	6000 PSF	0.50	2000 PCI
ALL OTHER FOUNDATIONS	TRIASSIC SOIL	2500 PSF	0.35	100 PCI

- F-3 MINIMUM DEPTH FROM ADJACENT FINISHED GRADE TO BOTTOM OF FOUNDATION = 18 INCHES.
- F-4 STRUCTURES ARE DESIGNED FOR THE 100-YEAR FLOOD ELEVATION OF 276.00 & 500-YEAR FLOOD ELEVATION OF 277.00.

CONCRETE (CAST-IN-PLACE)

- C-1 DESIGN OF CONCRETE ELEMENTS INCLUDING WALLS, FORMED SLABS, BEAMS, AND COLUMNS IS IN ACCORDANCE WITH ACI 318 (CODE REQUIREMENTS FOR STRUCTURAL CONCRETE) AND 350 (CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES).
- C-2 CONCRETE STRENGTH CLASSES (28-DAY COMPRESSIVE STRENGTH):
A) CLASS A1 CONCRETE (4,500 PSI): NORMAL WEIGHT STRUCTURAL CONCRETE TO BE USED IN ALL STRUCTURES QUALIFYING AS ENVIRONMENTAL CONCRETE STRUCTURES THAT ARE DESIGNED IN ACCORDANCE WITH ACI 350 INCLUDING PUMP STATIONS, TANKS, BASINS, PROCESS STRUCTURES, AND ANY STRUCTURES CONTAINING FLUID OR PROCESS CHEMICALS OR OTHER MATERIALS USED IN TREATMENT PROCESS.
B) CLASS A2 CONCRETE (4,000 PSI): NORMAL WEIGHT STRUCTURAL CONCRETE IN ALL STRUCTURES OTHER THAN STRUCTURES QUALIFYING AS ENVIRONMENTAL CONCRETE STRUCTURES AS DESCRIBED ABOVE, AND FOR ALL SIDEWALKS, CURB AND GUTTERS, AND PAVEMENT.
D) CLASS A4 CONCRETE (4,000 PSI): NORMAL WEIGHT STRUCTURAL CONCRETE TO BE USED WHERE SPECIFICALLY CALLED FOR ON CONTRACT DRAWINGS OR AREAS WHERE SPECIFICALLY REQUESTED BY CONTRACTOR AND APPROVED BY ENGINEER. CLASS A4 CONCRETE IS IDENTICAL TO CLASS A2 CONCRETE EXCEPT THAT COARSE AGGREGATE SHALL BE SIZE #8 IN ACCORDANCE WITH ASTM C33.
F) CLASS B CONCRETE (3,000 PSI): NORMAL WEIGHT STRUCTURAL CONCRETE USED FOR DUCT BANK ENCASEMENTS, CATCH BASINS, FENCE AND GUARD POST EMBEDMENT, CONCRETE FILL, AND OTHER AREAS WHERE SPECIFICALLY NOTED ON CONTRACT DRAWINGS.
- C-3 ALL BAR REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60 UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A1064.
- C-4 CONCRETE COVER FOR REINFORCING (UNLESS NOTED OTHERWISE ON THE DRAWINGS):
A) CONCRETE DEPOSITED DIRECTLY AGAINST SOIL: 3"
B) CONCRETE EXPOSED TO WEATHER (#5 OR SMALLER): 1 1/2"
C) CONCRETE EXPOSED TO WEATHER (#8 OR LARGER): 2"
C) SLABS, INCLUDING SURFACES CONTACTING FLUID: 2"
D) BEAMS AND COLUMNS (TO MAIN REINFORCEMENT): 2"
E) BEAMS AND COLUMNS (TO COLUMN TIES OR STIRRUPS): 1 1/2"
E) WALLS 12" OR MORE: 2"
WALLS LESS THAN 12" (#5 OR SMALLER): 1 1/2"
WALLS LESS THAN 12" (#8 OR LARGER): 2"
F) FOR SURFACES EXPOSED TO FLUID IN BEAMS, COLUMNS AND WALLS: ADD 1/2" TO ABOVE VALUES
- C-5 SPLICES SHALL BE CLASS "B" CONFORMING TO THE PROVISIONS OF ACI 318 UNLESS NOTED OTHERWISE. SPLICE LENGTH FOR TWO DIFFERENT SIZED BARS TO BE LAP SPliced TOGETHER SHALL BE THE LENGTH OF THE LARGER BAR UNLESS NOTED OTHERWISE.
- C-6 CONSTRUCTION JOINTS SHALL BE LOCATED AS SHOWN ON THE DRAWINGS. CONSTRUCTION JOINTS NOT SHOWN SHALL BE SUBMITTED BY THE CONTRACTOR FOR THE APPROVAL OF THE ENGINEER PRIOR TO SUBMITTING REBAR SHOP DRAWINGS. VERTICAL CONSTRUCTION JOINTS IN WALLS AND HORIZONTAL JOINTS IN SLABS SHALL BE PROVIDED AT A SPACING NOT GREATER THAN 45 FEET ON CENTER. FOR EXPOSED WALLS WITH FLUID OR EARTH ON THE OPPOSITE SIDE, THE SPACING BETWEEN VERTICAL AND HORIZONTAL JOINTS SHALL BE A MAXIMUM OF 25 FEET.
- C-7 ALL JOINTS WHICH ARE IN MEMBERS IN CONTACT WITH LIQUID OR BELOW GRADE SHALL HAVE A WATERSTOP. CONSTRUCTION JOINTS SHALL HAVE A 6" PVC RIBBED WATERSTOP. EXPANSION JOINTS SHALL HAVE A 9" PVC CENTER BULB RIBBED WATERSTOP. IN VERTICAL JOINTS, WATERSTOPS SHALL TERMINATE NO LESS THAN 18" ABOVE THE MAXIMUM WATER SURFACE OR 18" ABOVE GRADE, WHICHEVER IS HIGHER.
- C-8 ALL EXPOSED CORNERS SHALL HAVE A 3/4" CHAMFER.
- C-9 EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES AND REVEALS NOT SHOWN ON THE STRUCTURAL DRAWINGS BUT REQUIRED BY OTHER CONTRACT DOCUMENTS, SHALL BE INSTALLED PRIOR TO PLACING CONCRETE.
- C-10 REINFORCING BARS AND ACCESSORIES SHALL NOT BE IN CONTACT WITH ANY METAL PIPE, PIPE FLANGE, METAL CONDUIT, OR OTHER METAL PARTS EMBEDDED IN CONCRETE. A MINIMUM CLEARANCE OF 2" SHALL BE PROVIDED.
- C-11 CONDUITS AND OTHER SIMILAR ITEMS EMBEDDED IN OR PENETRATING THROUGH CONCRETE SHALL BE SPACED ON CENTER NOT LESS THAN 3 TIMES THEIR OUTSIDE DIMENSION, BUT NOT LESS THAN 2 1/2" CLEAR. WHEN SUCH ITEMS ARE EMBEDDED IN WALLS OR SLABS, THEY SHALL NOT OCCUPY MORE THAN 1/3 OF THE MEMBER THICKNESS.
- C-12 AT ALL TYPICAL CURBS, EQUIPMENT PADS, AND PIPE SUPPORT PIERS, REINFORCING DOWELS SHOWN MAY BE REPLACED WITH ADHESIVE DOWELS AS SPECIFIED. DOWELS LOCATED CLOSER THAN 3" FROM ANY EDGE OF CONCRETE SHALL NOT BE REPLACED WITH DRILLED DOWELS.
- C-13 ADJUST THE LOCATION OF DOWELS OR ANCHORS PLACED INTO HARDENED CONCRETE AS NEEDED TO AVOID DRILLING THROUGH ANY REINFORCING BARS. IF THE LOCATION NEEDS TO BE MODIFIED, CONTACT THE ENGINEER. CONTRACTOR SHALL USE NON-DESTRUCTIVE MEANS TO FIELD LOCATE REINFORCEMENT PRIOR TO DRILLING HOLES FOR DOWELS OR ANCHORS.
- C-14 CLEAR DISTANCE FROM ANCHOR RODS TO ANY CONCRETE EDGE SHALL BE 4" MINIMUM UNLESS NOTED OTHERWISE.

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PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	J. PAQUETTE		
DRAWN BY:	M. ROBLE		
CHECKED BY:	J. WAYCASTER		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

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Hazen

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BIG BRANCH 2
PUMP STATION

GENERAL
STRUCTURAL
GENERAL STRUCTURAL NOTES - SHEET 1

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	S1

COLD-FORMED STEEL TRUSSES

- ST-1 SEE SPECIFICATION SECTION 05 44 00 FOR COLD-FORMED STEEL TRUSSES. STEEL TRUSS ROOF SYSTEM DRAWINGS AND CALCULATIONS SHALL BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA.
- ST-2 COLD-FORMED STEEL TRUSSES SHALL BE DESIGNED PER THE NORTH CAROLINA STATE BUILDING CODE USING THE LOADS PROVIDED. LOAD COMBINATIONS SHALL BE AS REQUIRED BY ASCE 7.
- ST-3 COLD-FORMED STEEL TRUSS DESIGN ENGINEER SHALL DESIGN TRUSSES FOR LOADS AS SHOWN IN THE TRUSS LOADING DIAGRAM. TRUSS DESIGN ENGINEER SHALL DESIGN AND PROVIDE ALL CONNECTIONS FOR STEEL TRUSSES AND TRUSS BRACING TO THE STRUCTURE. THE NUMBER OF FASTENERS AND MATERIAL THICKNESS SHOWN IN THE CONTRACT DRAWINGS SHALL NOT BE REDUCED.
- ST-4 COLD-FORMED STEEL TRUSS FABRICATOR SHALL DESIGN AND PROVIDE TRUSS BLOCKING AND BRACING AS REQUIRED FOR LATERAL STABILITY OF TRUSSES AND TO TRANSFER ROOF DIAPHRAGM LOADS INDICATED ON THE DRAWINGS. PROVIDE BOTTOM CHORD BRACING AS REQUIRED FOR WIND UPLIFT. METAL DECKING PROVIDES LATERAL BRACING FOR TRUSS TOP CHORDS.
- ST-5 COORDINATE PIPE, LIGHTING, DUCT, AND OTHER UTILITY SUPPORTS ATTACHED TO TRUSSES WITH TRUSS FABRICATOR.

STEEL JOISTS

- SJ-1 SEE SPECIFICATION SECTION 05 21 00 FOR STEEL BAR JOISTS. STEEL BAR JOIST DRAWINGS AND CALCULATIONS, FOR MEMBERS, CONNECTIONS, BLOCKING, AND BRACING SHALL BE SEALED BY PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA.
- SJ-2 STEEL JOISTS SHALL BE DESIGNED PER THE 2018 NORTH CAROLINA STATE BUILDING CODE USING THE LOADS PROVIDED. LOAD COMBINATIONS SHALL BE AS REQUIRED BY ASCE 7.
- SJ-3 JOIST MANUFACTURER SHALL PROVIDE BLOCKING AND BRACING AS REQUIRED FOR LATERAL STABILITY OF JOISTS. PROVIDE BOTTOM CHORD BRACING AS REQUIRED FOR WIND UPLIFT. METAL DECKING PROVIDES LATERAL BRACING FOR JOIST TOP CHORDS.
- SJ-4 COORDINATE PIPE, LIGHTING, DUCT, AND OTHER UTILITY SUPPORTS ATTACHED TO JOIST WITH JOIST MANUFACTURER.

MASONRY

- MA-1 MASONRY MORTAR SHALL BE ASTM C 270 TYPE "S" AND MASONRY GROUT SHALL CONFORM TO REQUIREMENTS OF ASTM C 476.
- MA-2 CONCRETE MASONRY UNIT NET AREA COMPRESSIVE STRENGTH SHALL BE 2,000 PSI WHEN TESTED IN ACCORDANCE WITH ASTM C 140. COMPLETE TEST REPORTS SHALL BE SUBMITTED TO THE BUILDING INSPECTOR.
- MA-3 EXTERIOR CONCRETE MASONRY UNIT WALLS SHALL BE REINFORCED WITH #6 VERTICAL BARS AT 24" ON CENTER, CENTERED IN FULLY GROUTED CELLS, UNLESS SHOWN OTHERWISE ON THE DRAWINGS. INTERIOR CONCRETE MASONRY UNIT WALLS SHALL BE REINFORCED WITH #5 VERTICAL BARS AT 48 INCHES ON CENTER, CENTERED IN FULLY GROUTED CELLS, UNLESS SHOWN OTHERWISE ON DRAWINGS.
- MA-4 VERTICAL REINFORCEMENT SHALL BE PROVIDED AT WALL ENDS, CORNERS, AND INTERSECTIONS AND IMMEDIATELY ADJACENT TO ALL OPENINGS, CONTROL JOINTS, AND COLUMNS. SEE STANDARD DETAILS FOR MASONRY OPENINGS.
- MA-5 MASONRY REINFORCEMENT LAP SPLICES SHALL BE CONTACT SPLICES. UNLESS NOTED OTHERWISE, LENGTH OF SPLICE FOR SINGLE BARS IN CENTER OF CELLS OF 8" OR LARGER CMU SHALL BE A MINIMUM OF 25 INCHES FOR #4 BARS, 32 INCHES FOR #5 BARS, AND 50 INCHES FOR #6 BARS. LENGTH OF SPLICE FOR OTHER CONDITIONS SHALL BE AS SHOWN ON THE DRAWINGS.
- MA-6 BOND BEAM REINFORCEMENT SHALL BE CONTINUOUS AT ALL WALL INTERSECTIONS, SEE STANDARD DETAILS. WHERE BOND BEAM REINFORCEMENT IS INTERRUPTED BY OPENINGS REINFORCEMENT SHALL BE PROVIDED WITH 90° HOOKS AT EACH ENDS. BOND BEAM REINFORCEMENT SHALL BE 2-#5 BARS UNLESS OTHERWISE INDICATED.
- MA-7 DOWELS SHALL BE EITHER CAST INTO CONCRETE OR INSTALLED WITH A DOWEL ADHESIVE SYSTEM. IF CAST, DOWELS SHALL BE EMBEDDED IN STEM WALL OR FOUNDATION SLAB A MINIMUM 9" AND SHALL HAVE A STD 90° HOOK. IF INSTALLED WITH A DOWEL ADHESIVE SYSTEM DOWELS SHALL BE STRAIGHT BARS EMBEDDED A MINIMUM OF 10" INTO CONCRETE.
- MA-8 VENEER SUPPORT STEEL ANGLES SHALL BE GALVANIZED, L6x6x3/8 WITH 1/2" DIAMETER GALVANIZED ADHESIVE ANCHORS AT 24" ON CENTER AND 4" EMBEDMENT, MIN 3 ANCHORS PER ANGLE. ANGLE SHALL EXTEND 8" BEYOND OPENINGS.
- MA-9 MASONRY LINTELS SHALL BE EITHER PRECAST CONCRETE "U" SECTIONS OR CONCRETE MASONRY "U" BLOCKS UNLESS SHOWN OTHERWISE.
- MA-10 FOR CONCRETE MASONRY "U" BLOCK LINTELS SEE STANDARD DETAILS FOR MASONRY OPENINGS AND THE CMU OPENING REINFORCEMENT SCHEDULE, UNLESS OTHERWISE NOTED ON DRAWINGS.

PRECAST CONCRETE

- PC-1 PRECAST STRUCTURAL MEMBERS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA. OPENINGS TO ALLOW VENT PIPES, STRUCTURAL STEEL BRACING AND COLUMNS TO PASS THROUGH SHALL BE PROVIDED.
- PC-2 PRECAST VAULTS AND MANHOLES SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA. STRUCTURAL DRAWINGS SHALL INDICATE DESIGN IS IN COMPLIANCE WITH THE 2018 NORTH CAROLINA STATE BUILDING CODE.
- PC-3 PRECAST CONCRETE STAIRS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA. CONTRACTOR SHALL SUBMIT STAIR LAYOUT WITH ACCOMPANYING CALCULATIONS THAT HAVE BEEN SIGNED AND SEALED BY A CURRENTLY REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF NORTH CAROLINA.

NONSTRUCTURAL COMPONENT ANCHORAGE AND BRACING

- A-1 ANCHORAGE AND BRACING SHALL BE PROVIDED FOR NONSTRUCTURAL COMPONENTS IN ACCORDANCE WITH SPECIFICATION 01 73 23 - ANCHORAGE AND BRACING OF NONSTRUCTURAL COMPONENTS. "NONSTRUCTURAL COMPONENTS" INCLUDES ALL ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING ELEMENTS OR SYSTEMS (AND THEIR SUPPORTS OR ATTACHMENTS) WHICH ARE PERMANENTLY ATTACHED TO A SUPPORTING STRUCTURE. DESIGN OF ANCHORAGE AND BRACING SHALL BE PROVIDED BY CONTRACTOR'S ENGINEER UNLESS SPECIFICALLY DETAILED ON THE CONTRACT DRAWINGS.
- A-2 ANCHORAGE AND BRACING OF ALL NONSTRUCTURAL COMPONENTS SHALL BE DESIGNED AND INSTALLED TO RESIST THE CONTROLLING LOAD COMBINATION OF GRAVITY LOADS, OPERATIONAL FORCES, WIND FORCES, SEISMIC FORCES, AND ANY OTHER APPLICABLE FORCES IN ACCORDANCE WITH THE GOVERNING BUILDING CODE. WIND AND SEISMIC FORCES SHALL BE AS PER ASCE 7. COMPONENTS SHALL BE BOLTED, WELDED, OR OTHERWISE POSITIVELY FASTENED WITHOUT CONSIDERATION OF FRICTIONAL RESISTANCE PRODUCED BY THE EFFECTS OF GRAVITY. A CONTINUOUS LOAD PATH OF SUFFICIENT STRENGTH AND STIFFNESS TO RESIST REQUIRED FORCES SHALL BE PROVIDED BETWEEN THE COMPONENT AND THE SUPPORTING STRUCTURE. ANCHORAGE AND BRACING SHALL BE DESIGNED TO RESIST LOADS IN BOTH ORTHOGONAL DIRECTIONS (TRANSVERSE AND LONGITUDINAL) AND SHALL BE DESIGNED AND SEALED BY THE CONTRACTOR'S ENGINEER CURRENTLY REGISTERED IN THE STATE OF NORTH CAROLINA.
- A-3 COMPONENT REACTION FORCES AT THE POINT OF ATTACHMENT TO THE STRUCTURE SHALL BE SUBMITTED TO AND COORDINATED WITH THE ENGINEER FOR CONFIRMATION THAT SUPPORTING STRUCTURE IS ADEQUATE TO RESIST REQUIRED REACTION FORCES.

SPECIAL INSPECTIONS

- SI-1 SPECIAL PERIODIC AND CONTINUOUS INSPECTIONS SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND THE NORTH CAROLINA STATE BUILDING CODE. PERIODIC INSPECTION OF STRUCTURAL STEEL, WELDED STUDS, ROOF DECK, LIGHT GAGE STEEL FRAMING, ROOF TRUSSES, WELDED CONNECTIONS, AND REINFORCING STEEL ARE REQUIRED. CONTINUOUS INSPECTION OF WELDED REINFORCEMENT STEEL IS REQUIRED.

DELEGATED STRUCTURAL DESIGN ITEMS

- DSD-1 THE FOLLOWING ITEMS SHALL BE SUBMITTED AS DELEGATED STRUCTURAL DESIGNS DURING CONSTRUCTION, IN ACCORDANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS.
 - A. EXCAVATION SUPPORT SYSTEMS
 - D. PRECAST STRUCTURES
 - F. COLD-FORMED STEEL TRUSSES
 - G. STEEL JOISTS
 - H. ANCHORAGE AND BRACING OF NONSTRUCTURAL COMPONENTS NOT SPECIFICALLY DESIGNED AND DETAILED ON THE CONTRACT DRAWINGS (INCLUDING, BUT NOT LIMITED TO, PIPE SUPPORTS AND EQUIPMENT)
- DSD-2 DRAWINGS AND CALCULATIONS FOR EACH ITEM SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA.

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PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	J. PAQUETTE		
DRAWN BY:	M. ROBLE		
CHECKED BY:	J. WAYCASTER		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE			
REV	ISSUED FOR	DATE	BY

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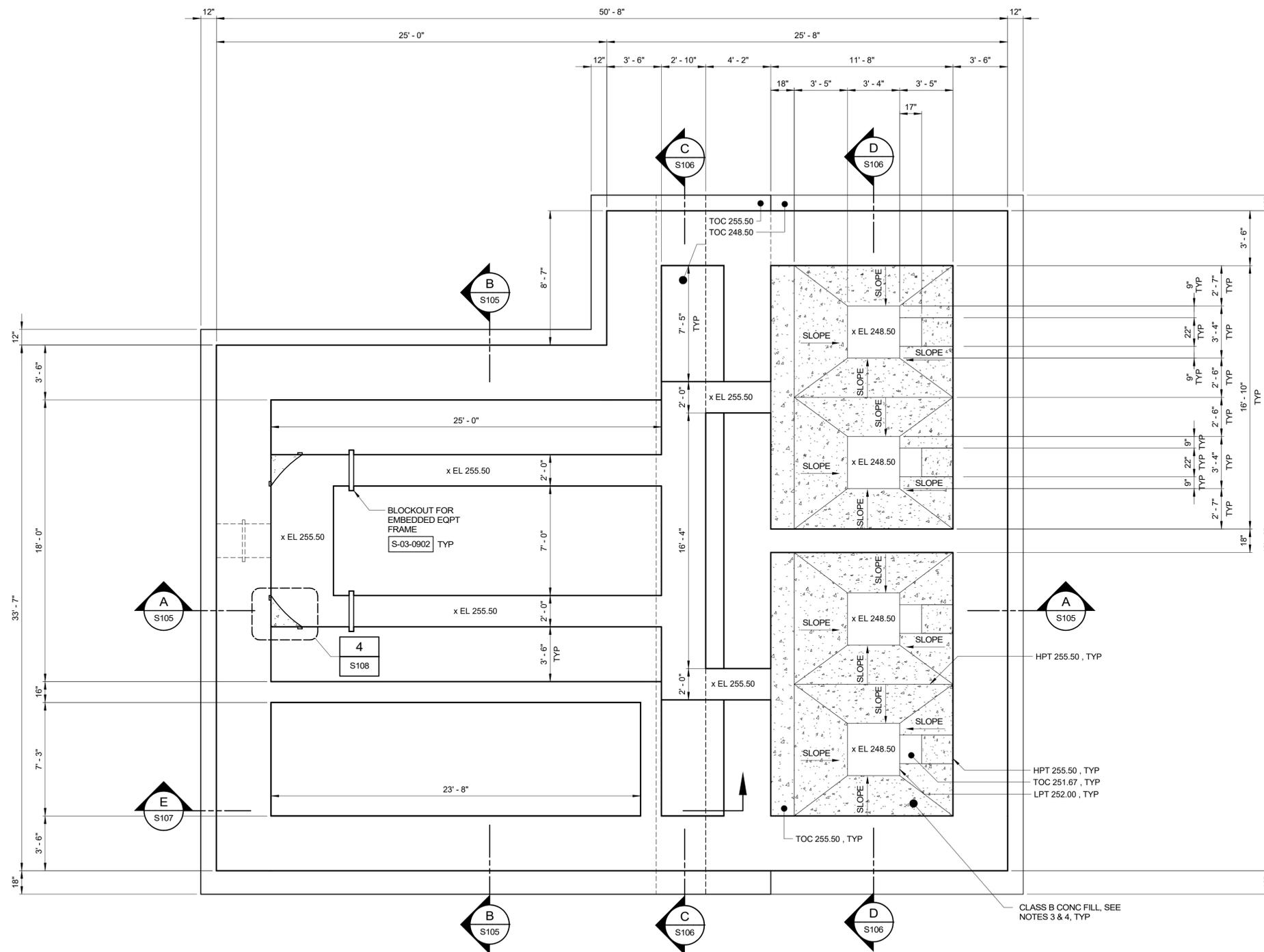
BIG BRANCH 2
PUMP STATION

GENERAL
STRUCTURAL
GENERAL STRUCTURAL NOTES - SHEET 2

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	S2

NOTES:

1. CONTRACTOR SHALL ANTICIPATE EXTENSIVE ROCK EXCAVATION AND DEWATERING FOR CONSTRUCTION OF THE BIG BRANCH PUMP STATION. SPECIFICATION SECTION 31 00 01- EARTHWORK; 31 23 16-EXCAVATION BY BLASTING FOR ADDITIONAL REQUIREMENTS.
2. CONTRACTOR SHALL COORDINATE SLAB BLOCKOUT WITH GATE MANUFACTURER AND REINFORCING SUBMITTAL. DIMENSIONS SHOWN SHALL BE CONSIDERED APPROXIMATE. SEE MECHANICAL FOR MORE INFORMATION.
3. CONTRACTOR SHALL PLACE CONCRETE FILLET IMMEDIATELY AFTER APPLICATION OF EPOXY BONDING AGENT WHILE STILL TACKY PER MANUFACTURER RECOMMENDATIONS WHICH INCLUDES STRICT ADHERENCE TO WORKING TIMES. PRIOR TO APPLYING EPOXY BONDING AGENT, CONTRACTOR SHALL ROUGHEN WALL SURFACES WHICH WILL ABUT CONCRETE FILLETS TO A MINIMUM AMPLITUDE OF 1/2 INCH. CONTRACTOR SHALL REFERENCE CONTRACT SPECIFICATION SECTION 03250-CONCRETE ACCESSORIES FOR EPOXY BONDING AGENT REQUIREMENTS.
4. CONCRETE FOR PUMP STATION SHALL BE CLASS A1. FILL CONCRETE SHALL BE CLASS B.



BOTTOM PLAN
1/4" = 1'-0"

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	J. PAQUETTE
DRAWN BY:	M. ROBLE
CHECKED BY:	J. WAYCASTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

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RALEIGH, NC 27607
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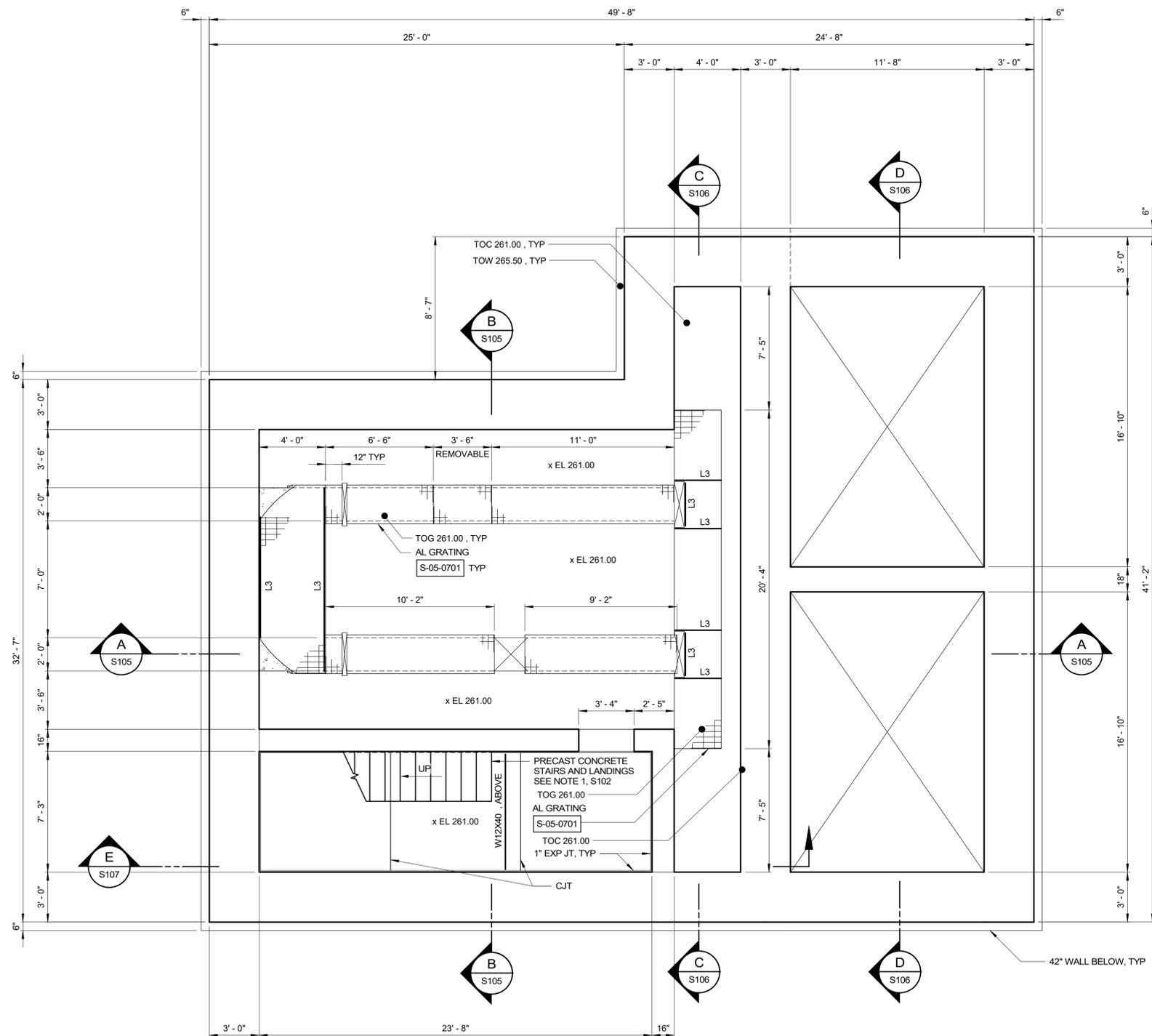
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BIG BRANCH 2 PUMP STATION

PUMP STATION STRUCTURAL BOTTOM PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	S100

NOTES:

1. CONTRACTOR SHALL PROVIDE PRECAST CONCRETE STAIRS AS SHOWN ON DRAWINGS. REFERENCE CONTRACT SPECIFICATION SECTION 03 41 23-PRECAST CONCRETE STAIRS FOR REQUIREMENTS. CONTRACTOR SHALL SUBMIT STAIR LAYOUT WITH ACCOMPANYING CALCULATIONS THAT HAVE BEEN SIGNED AND SEALED BY A CURRENTLY REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF NORTH CAROLINA.
2. CONTRACTOR SHALL COORDINATE ALL OPENINGS IN COVERS WITH PROVIDED EQUIPMENT. DIMENSIONS SHOWN SHALL BE CONSIDERED APPROXIMATE.



INTERMEDIATE PLAN
1/4" = 1'-0"

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3/1/2023 2:29:41 PM

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	J. PAQUETTE		
DRAWN BY:	M. ROBLE		
CHECKED BY:	J. WAYCASTER		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

PRELIMINARY DRAWING -
DO NOT USE FOR
CONSTRUCTION

Hazen

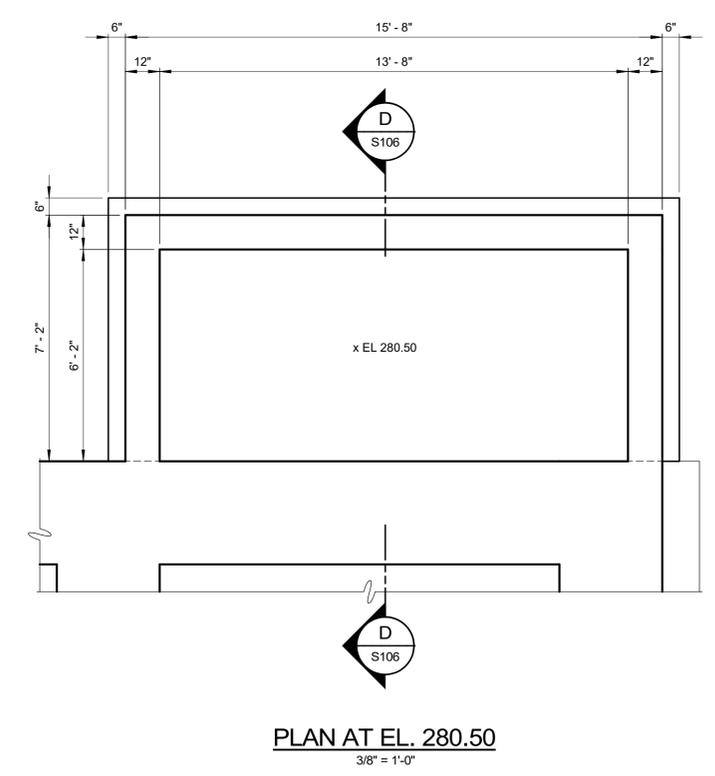
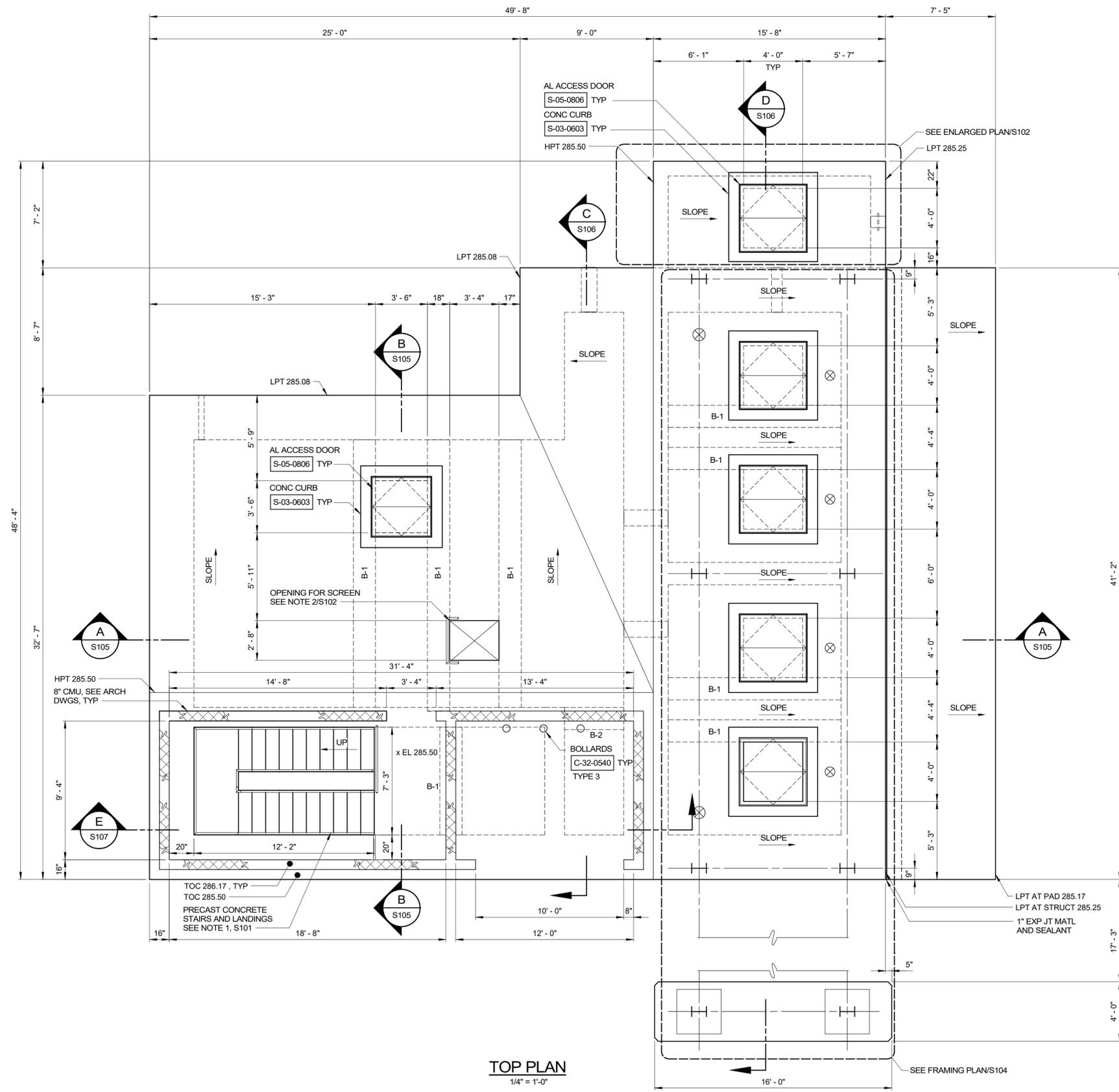
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4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381



BIG BRANCH 2
PUMP STATION

PUMP STATION
STRUCTURAL
INTERMEDIATE PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	S101



- NOTES:**
- CONTRACTOR SHALL COORDINATE OPENING IN SLAB WITH MECHANICAL DRAWINGS AND SCREENING EQUIPMENT. CONTRACTOR SHALL COORDINATE ENCLOSURE AROUND SCREEN AT TOP SLAB THAT IS WATERTIGHT AND AIRTIGHT AND CAN BE WALKED ON FOR A MINIMUM LIVE LOAD OF 150 PSF. CONTRACTOR SHALL SUBMIT ENCLOSURE SYSTEM TO ENGINEER.
 - CONTRACTOR SHALL PROVIDE WATERTIGHT ALUMINUM ACCESS DOORS AT LOCATIONS SHOWN. REFERENCE CONTRACT SPECIFICATION SECTION 05 53 00 FOR ACCESS DOOR REQUIREMENTS.
 - ALL COLUMN BASEPLATES SHALL BE TYPE-B SEE STANDARD DETAILS FOR MORE DETAILED INFORMATION.
 - CMU WALLS SHALL BE REINFORCED WITH #5 @24" ON CENTER DOWELS AND VERTICALS IN FULLY GROUTED CELLS MINIMUM LAP SPLICE = 45 INCHES. TWO VERTICAL BARS AND DOWELS SHALL BE PROVIDED AT ENDS OF WALLS ADJACENT TO ALL OPENINGS, CORNERS, AND BOTH SIDES OF CONTROL JOINTS, EXCEPT FOUR VERTICAL BARS ADJACENT TO THE ROLLUP DOOR OPENING. PROVIDE HORIZONTAL JOINTS REINFORCEMENT AT 16 INCHES ON CENTER FOR ALL MASONRY WALLS. BOND BEAM REINFORCING SHALL BE CONTINUOUS AND LOCATED AT ALL ELEVATIONS SHOWN. SEE BUILDING DRAWINGS FOR ADDITIONAL DETAILS.
 - CONTRACTOR SHALL INSTALL CRYSTALLINE WATERPROOFING ON ALL EXTERIOR CONCRETE SLAB SURFACES, SEE SPECIFICATION SECTION 07 16 16.

TOP PLAN
1/4" = 1'-0"

PLAN AT EL. 280.50
3/8" = 1'-0"

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PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	J. PAQUETTE		
DRAWN BY:	M. ROBLE		
CHECKED BY:	J. WAYCASTER		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE			
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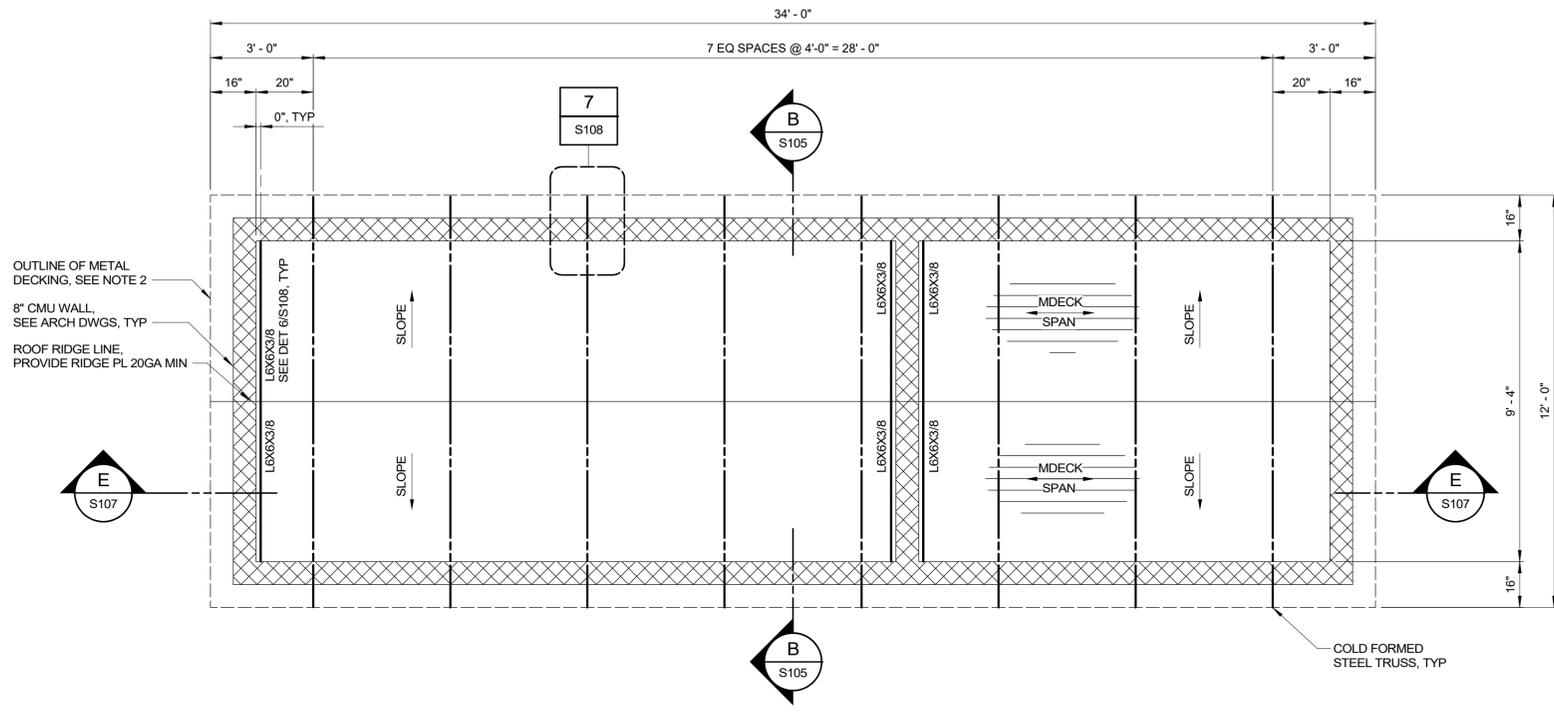
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

PUMP STATION
STRUCTURAL
TOP PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	S102

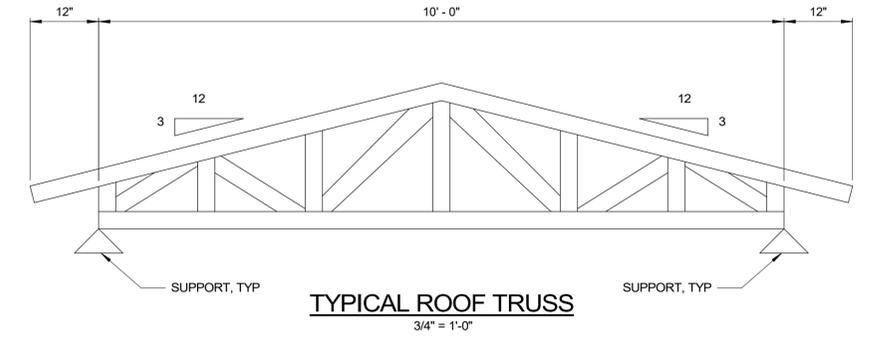
NOTES:

- ROOF DECK SHALL BE 1.5B20 METAL DECK, ATTACH TO TRUSSES USING #12 TEK SCREWS ON A 3G/5 PATTERN. SIDELAPS SHALL BE FASTENED WITH 7-#10 TEK SCREWS PER SPAN. TWO LINES OF FASTENERS ARE REQUIRED AT THE INTERIOR WALL - ONE AT EACH ANGLE.
- GABLE ROOF TRUSSES SHALL BE DESIGNED BY ROOF TRUSS MANUFACTURER AS DEFINED IN CONTRACT SPECIFICATION SECTION 05 44 00. CONTRACTOR SHALL SUBMIT CALCULATIONS AND ERECTION DRAWINGS SEALED BY A PROFESSIONAL ENGINEER CURRENTLY REGISTERED IN NORTH CAROLINA.

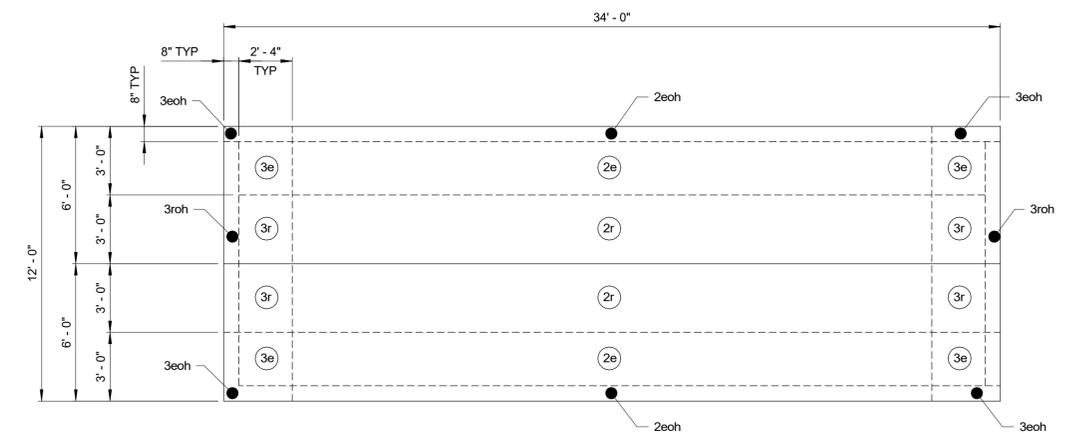


ROOF TRUSS PLAN
3/8" = 1'-0"

OUTLINE OF METAL DECKING, SEE NOTE 2
8" CMU WALL, SEE ARCH DWGS, TYP
ROOF RIDGE LINE, PROVIDE RIDGE PL 20GA MIN



TYPICAL ROOF TRUSS
3/4" = 1'-0"



ROOF LOAD DIAGRAM
1/4" = 1'-0"

TRUSS NOTES:

- UNIFORM LOAD ACTING ON JOIST:
DEAD LOAD: 20 PSF TOP CHORD
COLLATERAL LOAD: 10 PSF BOTTOM CHORD
LIVE LOAD: 20 PSF TOP CHORD
SNOW LOAD: 20 PSF TOP CHORD
- PER DEFINITIONS IN ASCE 7-16 FOR COMPONENTS AND CLADDING, WIND PRESSURE (PSF) IS INDICATED IN THE WIND PRESSURE ZONE OVER ROOF TABLE.
- FOR DETERMINING NET WIND UPLIFT, USE A DEAD LOAD OF 5 PSF.
- DEAD LOAD AND WIND LOAD SHALL BE APPLIED ALONG THE ENTIRE SLOPED LENGTH OF THE TRUSS JOIST. LIVE LOAD AND SNOW LOAD SHALL BE APPLIED ALONG THE HORIZONTAL PROJECTED LENGTH OF THE JOIST. LOAD COMBINATIONS SHALL BE AS REQUIRED BY ASCE 7-16.
- LOADS DO NOT INCLUDE SELF-WEIGHT OF JOIST.

COMPONENTS & CLADDING WIND PRESSURE (PSF)		
ROOF ZONE	(-) WIND * PRESSURE	(+) WIND * PRESSURE
2e	-72.6	28.9
2r	-88.8	28.9
3e	-88.8	28.9
3r	-102.8	28.9
2eoh	-86.9	28.9
3eoh	-116.5	28.9
3roh	-128.9	28.9
WALL ZONE	(-) WIND * PRESSURE	(+) WIND * PRESSURE
4	-43.7	40.9
5	-49.0	40.9

NOTES:
1. "" DENOTES DIRECTION OF WIND IS NORMAL TO TOP TRUSS CHORD.
2. REFER TO ASCE 7-16, FIG 30.3-2B. WIND PRESSURES ARE ULTIMATE PRESSURES.
3. WALL ZONE 5 APPLIES WITHIN 3 FT FROM CORNER EDGES. WALL ZONE 4 APPLIES FOR THE REMAINDER OF WALL.

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PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	J. PAQUETTE
DRAWN BY:	M. ROBLE
CHECKED BY:	J. WAYCASTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

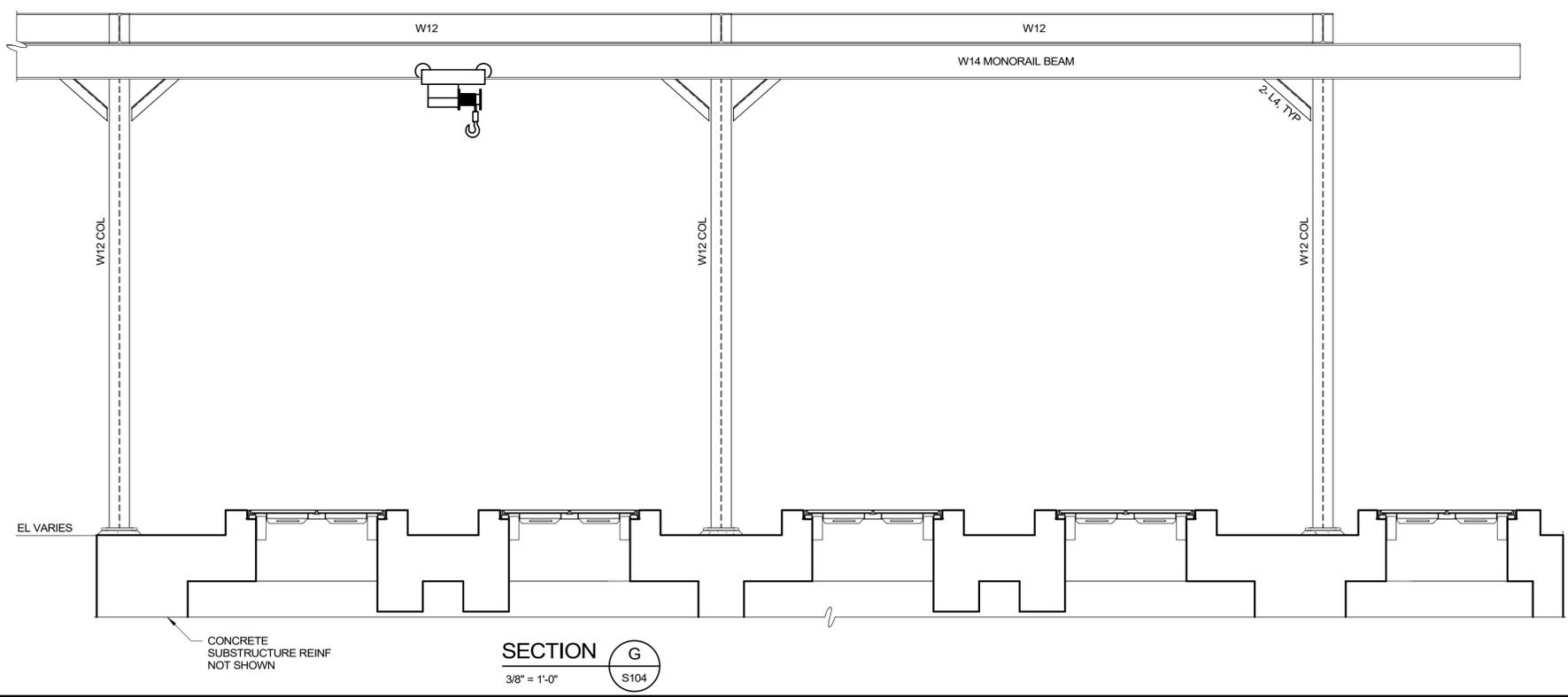
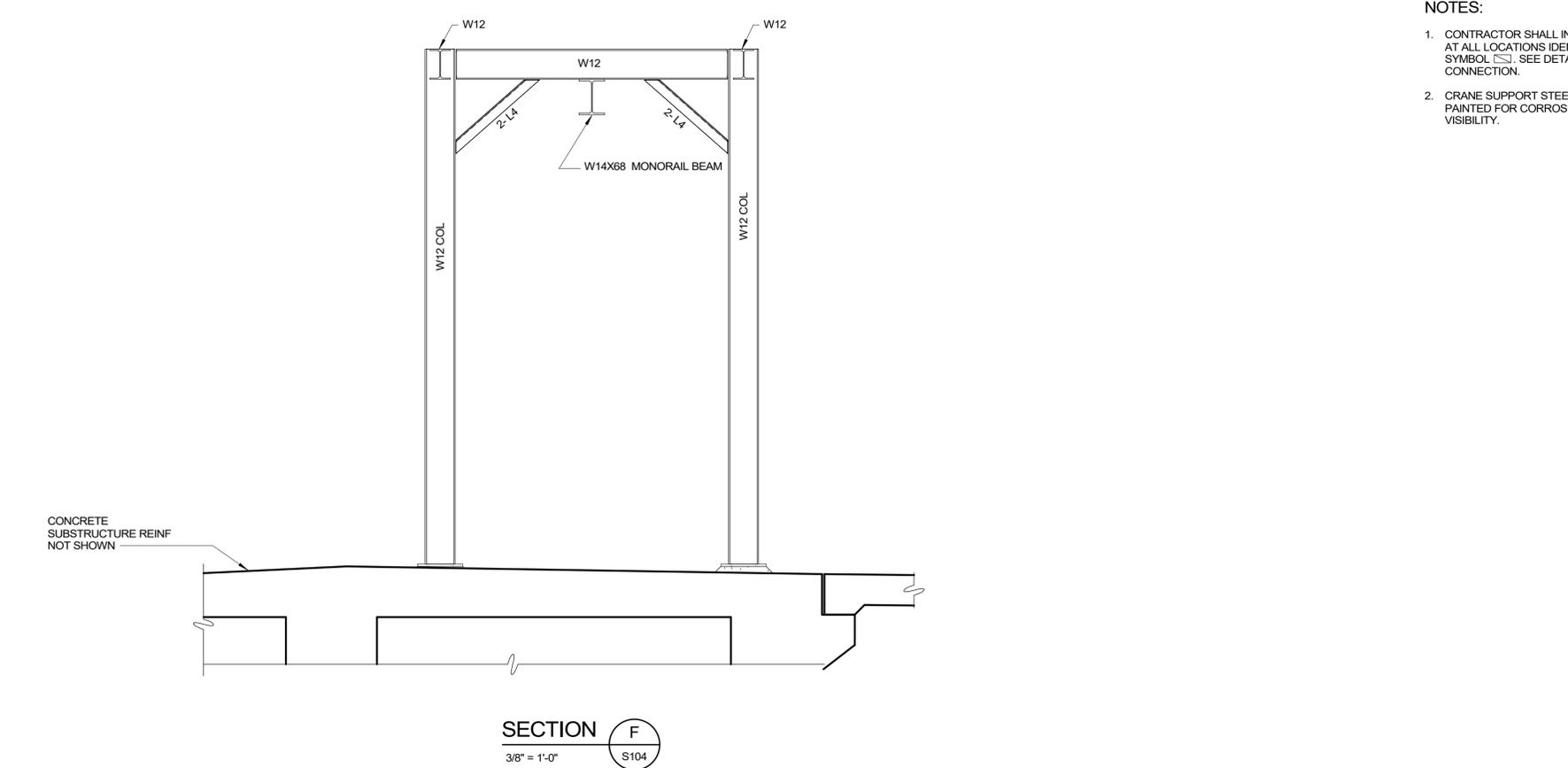
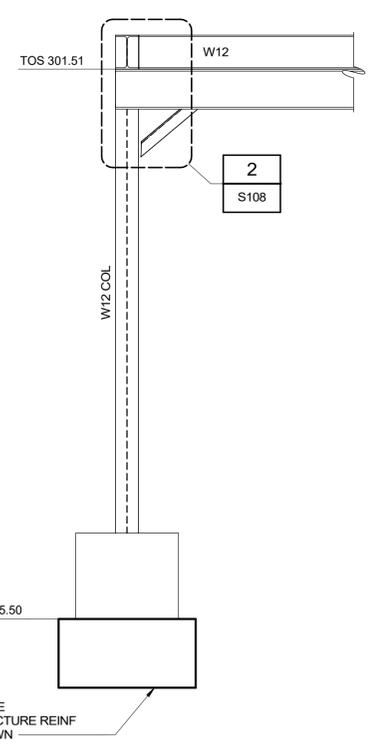
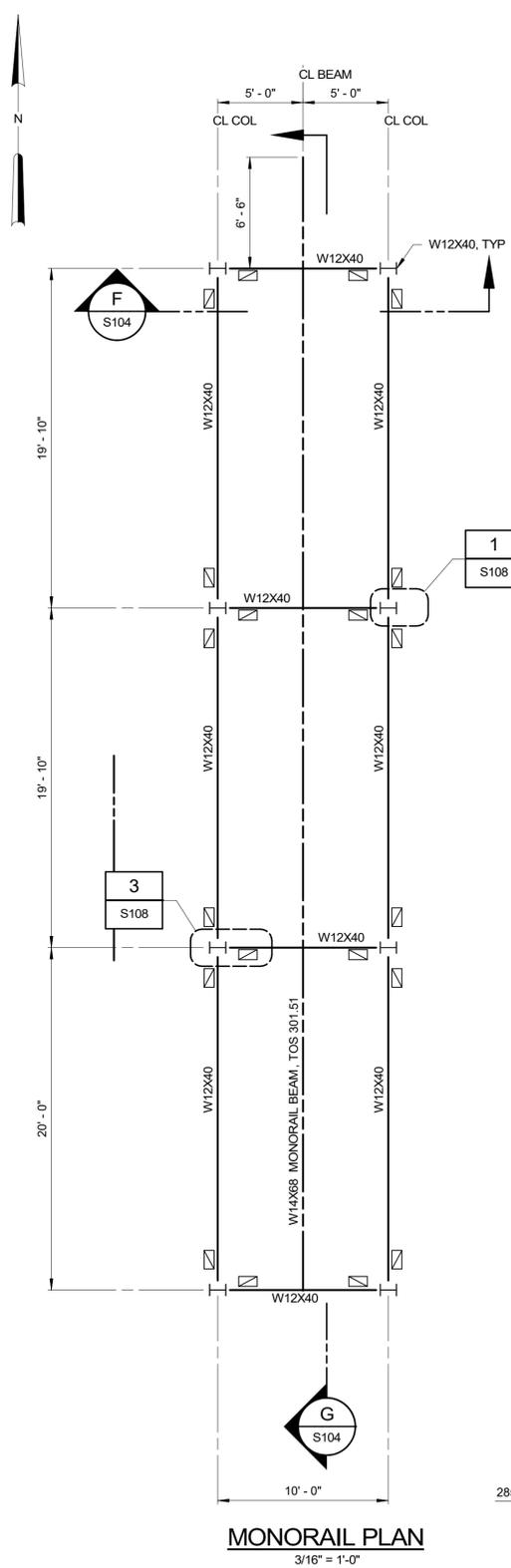
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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

PUMP STATION
STRUCTURAL
ROOF PLAN, SECTION AND DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	S103

- NOTES:**
- CONTRACTOR SHALL INSTALL KNEE BRACING AT ALL LOCATIONS IDENTIFIED WITH SYMBOL . SEE DETAIL 3/S109 FOR CONNECTION.
 - CRANE SUPPORT STEEL FRAMING SHALL BE PAINTED FOR CORROSION PROTECTION AND VISIBILITY.



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DRAWN BY:	M. ROBLE
CHECKED BY:	J. WAYCASTER
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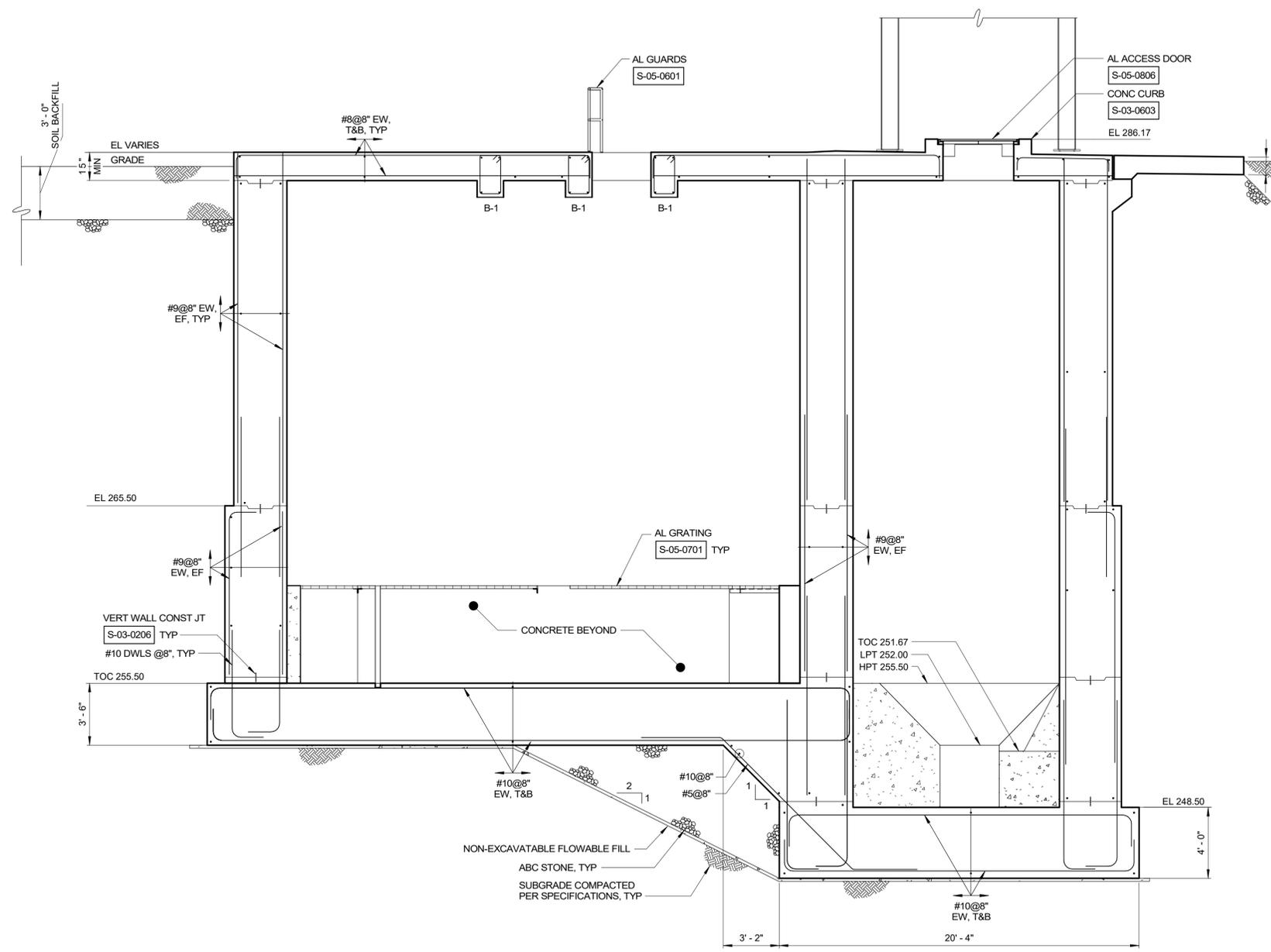
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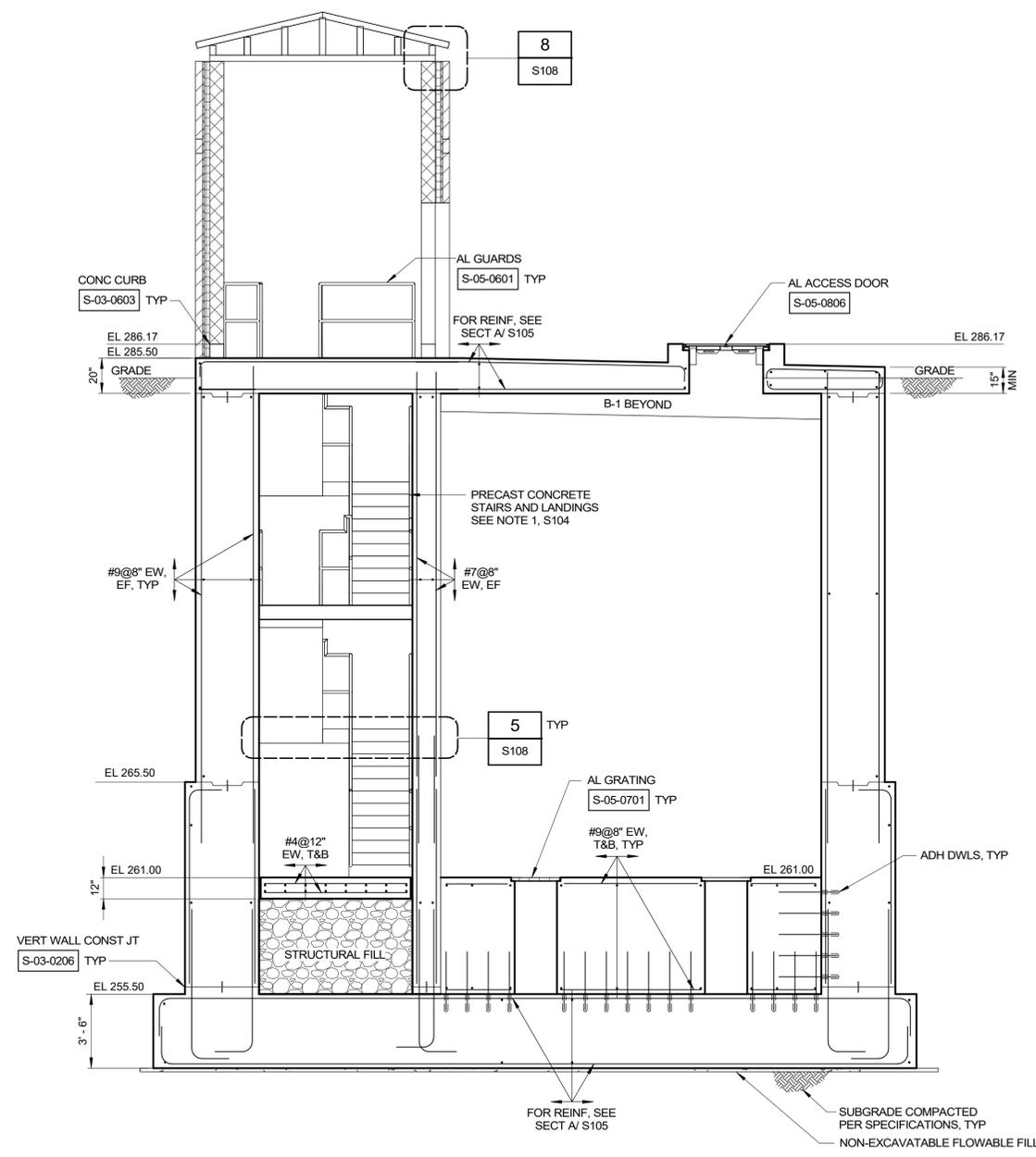
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

PUMP STATION
STRUCTURAL
FRAMING PLAN AND ELEVATION

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	S104



SECTION A
1/4" = 1'-0" S100



SECTION B
1/4" = 1'-0" S100

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DRAWN BY:	M. ROBLE
CHECKED BY:	J. WAYCASTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

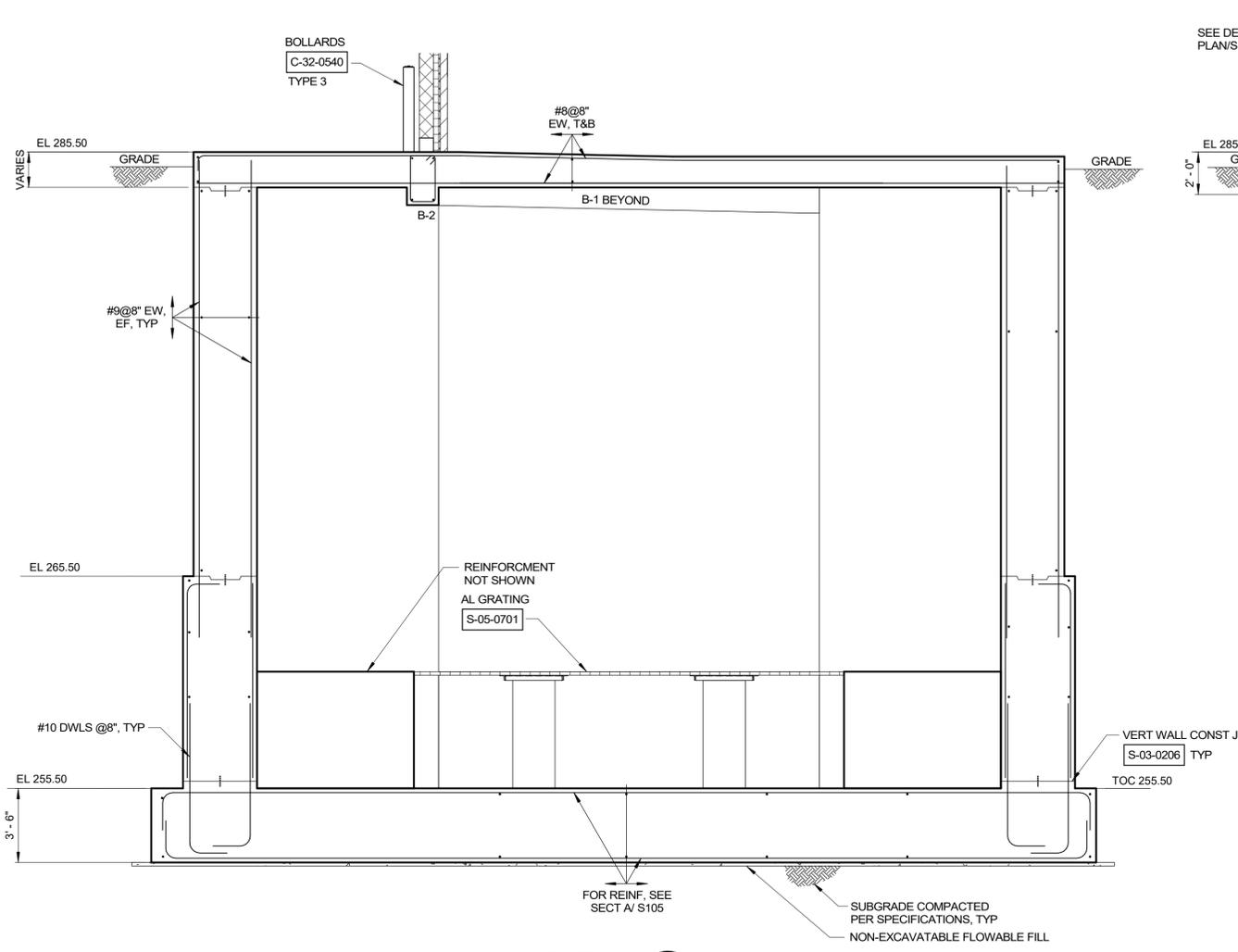
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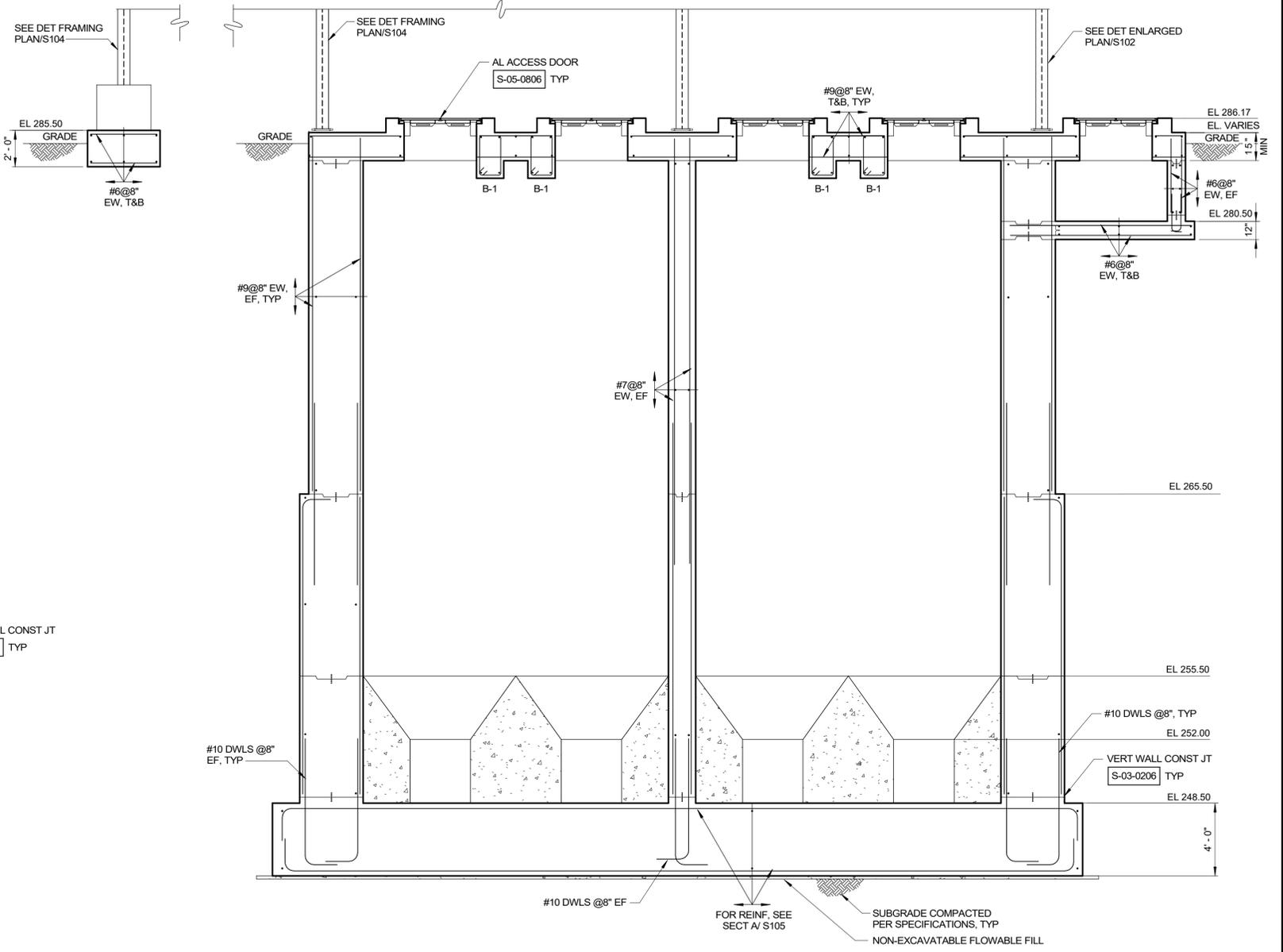
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

PUMP STATION
STRUCTURAL
SECTIONS I

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	S105



SECTION C
1/4" = 1'-0"
S100



SECTION D
1/4" = 1'-0"
S100

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DESIGNED BY:	J. PAQUETTE
DRAWN BY:	M. ROBLE
CHECKED BY:	J. WAYCASTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

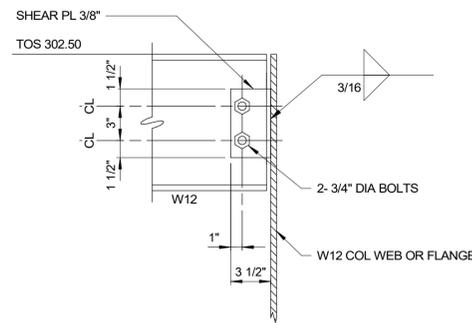
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LICENSE No.: C-0381

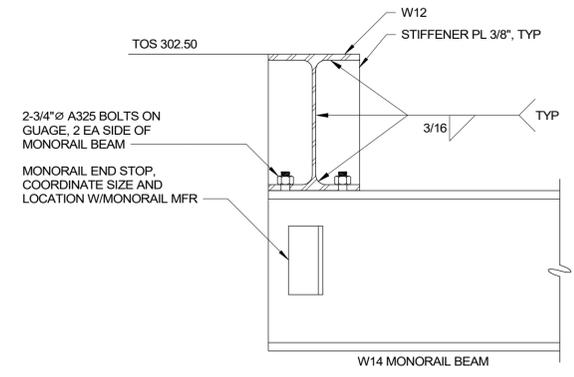
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

PUMP STATION
STRUCTURAL
SECTIONS II

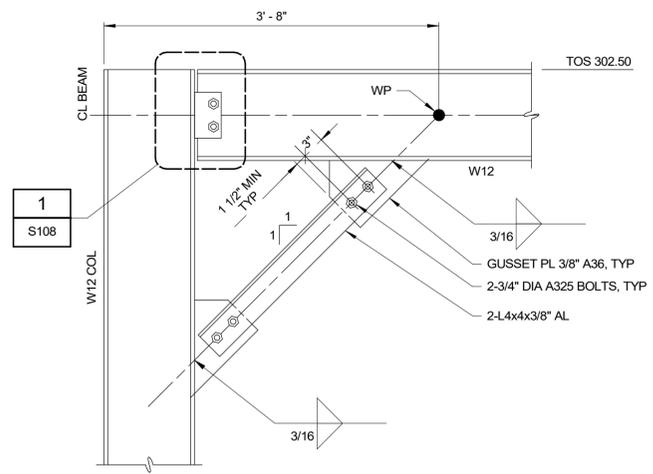
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HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	S106



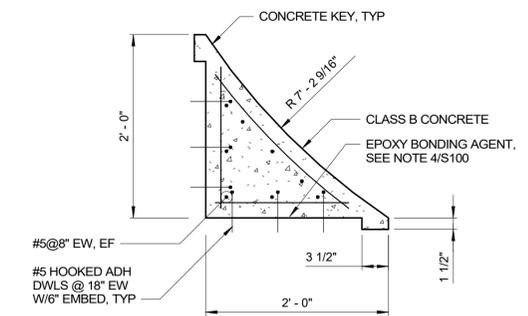
DETAIL 1
1 1/2" = 1'-0"
S104



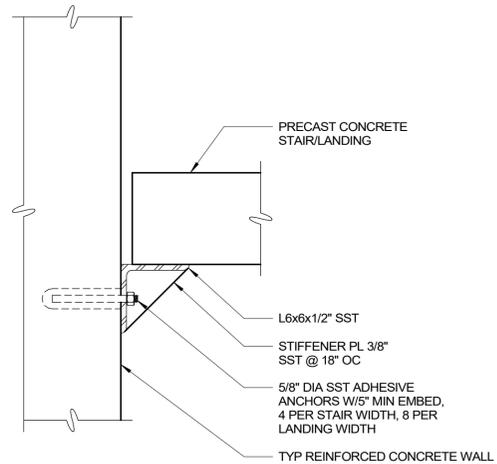
DETAIL 2
1 1/2" = 1'-0"
S104



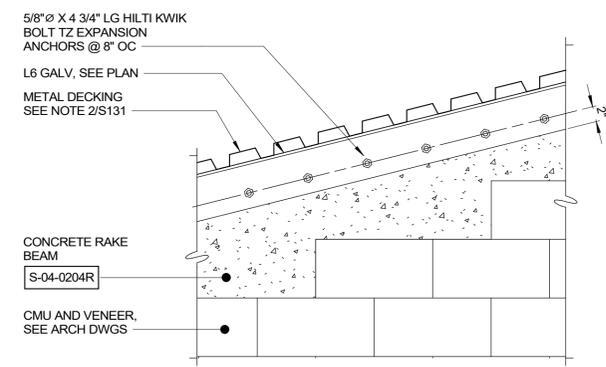
DETAIL 3
1" = 1'-0"
S104



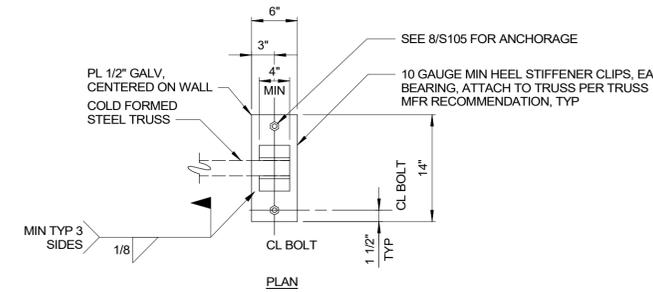
DETAIL 4
1" = 1'-0"
S100



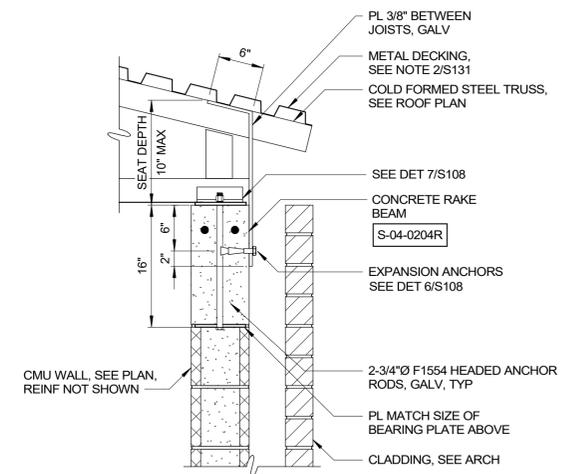
DETAIL 5
1 1/2" = 1'-0"
S105



DETAIL 6
1" = 1'-0"
S103



DETAIL 7
1" = 1'-0"
S103



DETAIL 8
1" = 1'-0"
S105

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DRAWN BY:	M. ROBLE
CHECKED BY:	J. WAYCASTER
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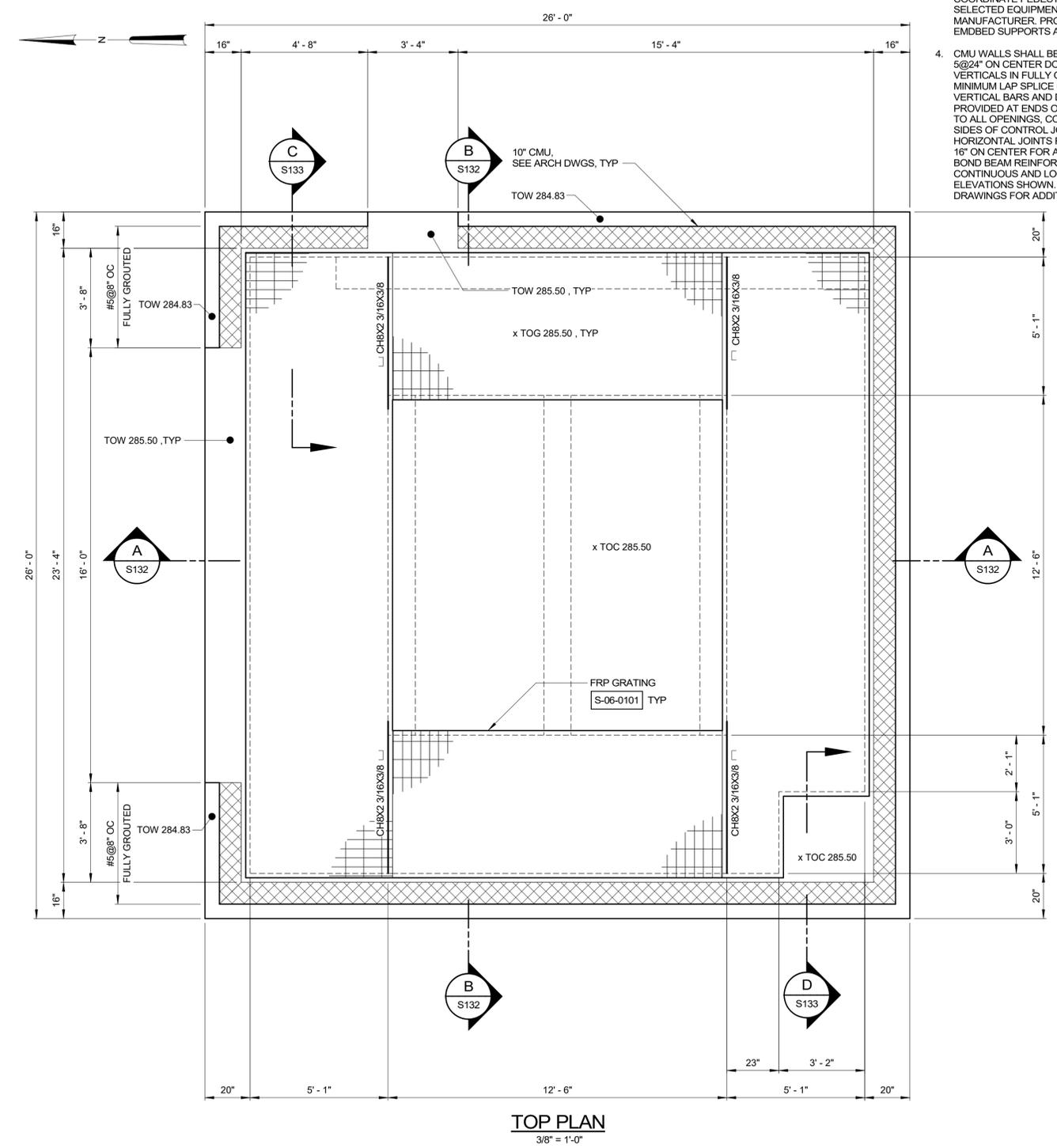
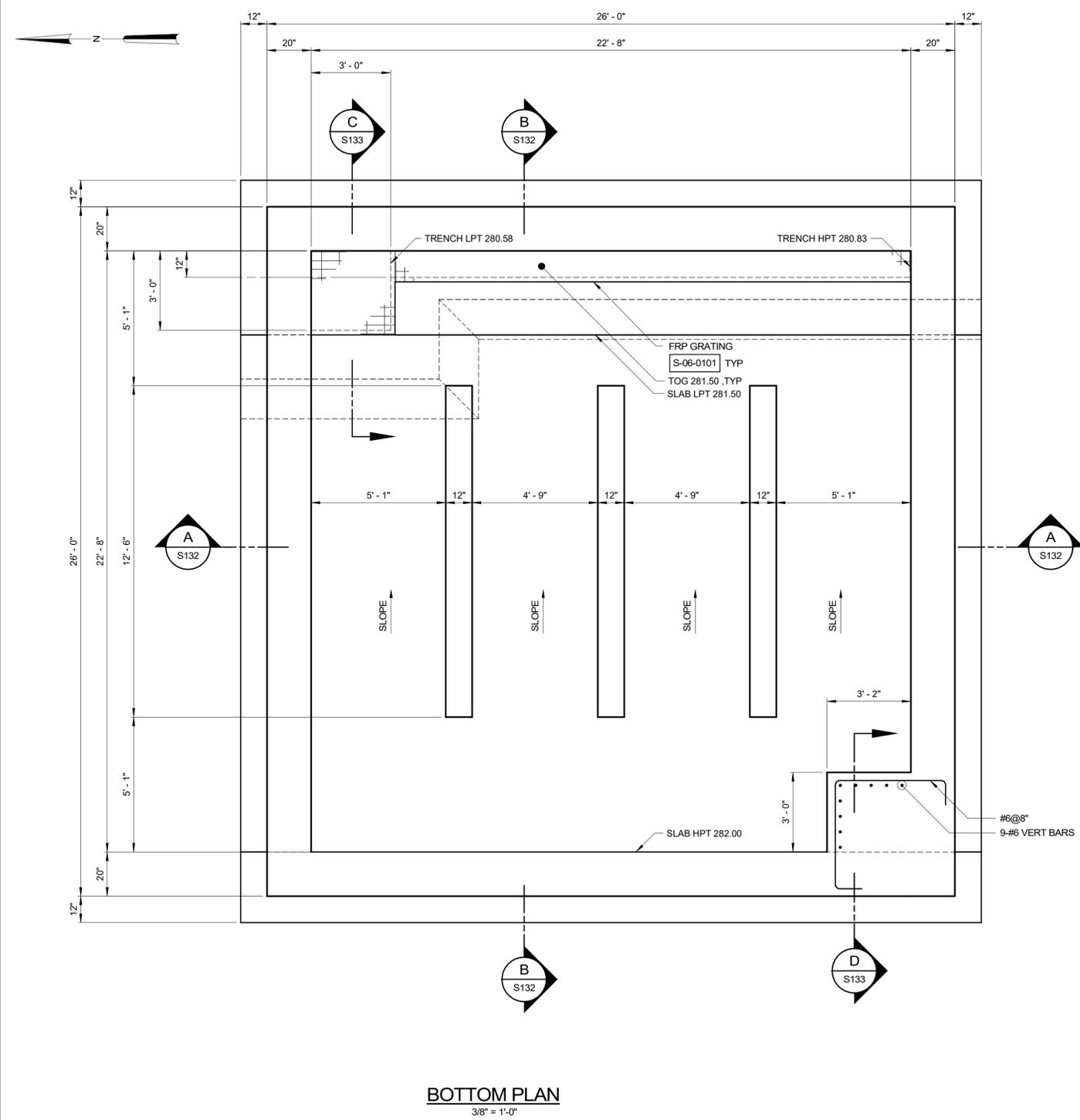
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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

PUMP STATION
STRUCTURAL
DETAILS I

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	S108

- NOTES:**
- FRP GRATING SHALL BE 2" MINIMUM THICKNESS AND PULTRUDED DESIGN FOR UNIDIRECTIONAL APPLICATIONS. CONTRACTOR SHALL REFERENCE SPECIFICATION SECTION 06 51 00 FOR GRATING REQUIREMENTS.
 - C8 DENOTES FRP 8X2 3/16X3/8 CHANNEL. REFERENCE SPECIFICATION SECTION 06 51 00 FOR STRUCTURAL SHAPE REQUIREMENTS.
 - CONTRACTOR SHALL PROVIDE PEDESTAL FOR SUPPORT OF WATER HEATER. COORDINATE PEDESTAL SIZE WITH SELECTED EQUIPMENT AND FRP GRATING MANUFACTURER. PROVIDE GRATING EMBEDD SUPPORTS AT PEDESTAL.
 - CMU WALLS SHALL BE REINFORCED WITH #5@24" ON CENTER DOWELS AND VERTICALS IN FULLY GROUTED CELLS. MINIMUM LAP SPLICE = 45 INCHES. TWO VERTICAL BARS AND DOWELS SHALL BE PROVIDED AT ENDS OF WALLS ADJACENT TO ALL OPENINGS, CORNERS, AND BOTH SIDES OF CONTROL JOINTS. PROVIDE HORIZONTAL JOINTS REINFORCEMENT AT 16" ON CENTER FOR ALL MASONRY WALLS. BOND BEAM REINFORCING SHALL BE CONTINUOUS AND LOCATED AT ALL ELEVATIONS SHOWN. SEE BUILDING DRAWINGS FOR ADDITIONAL DETAILS.



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CHECKED BY:	J. WAYCASTER
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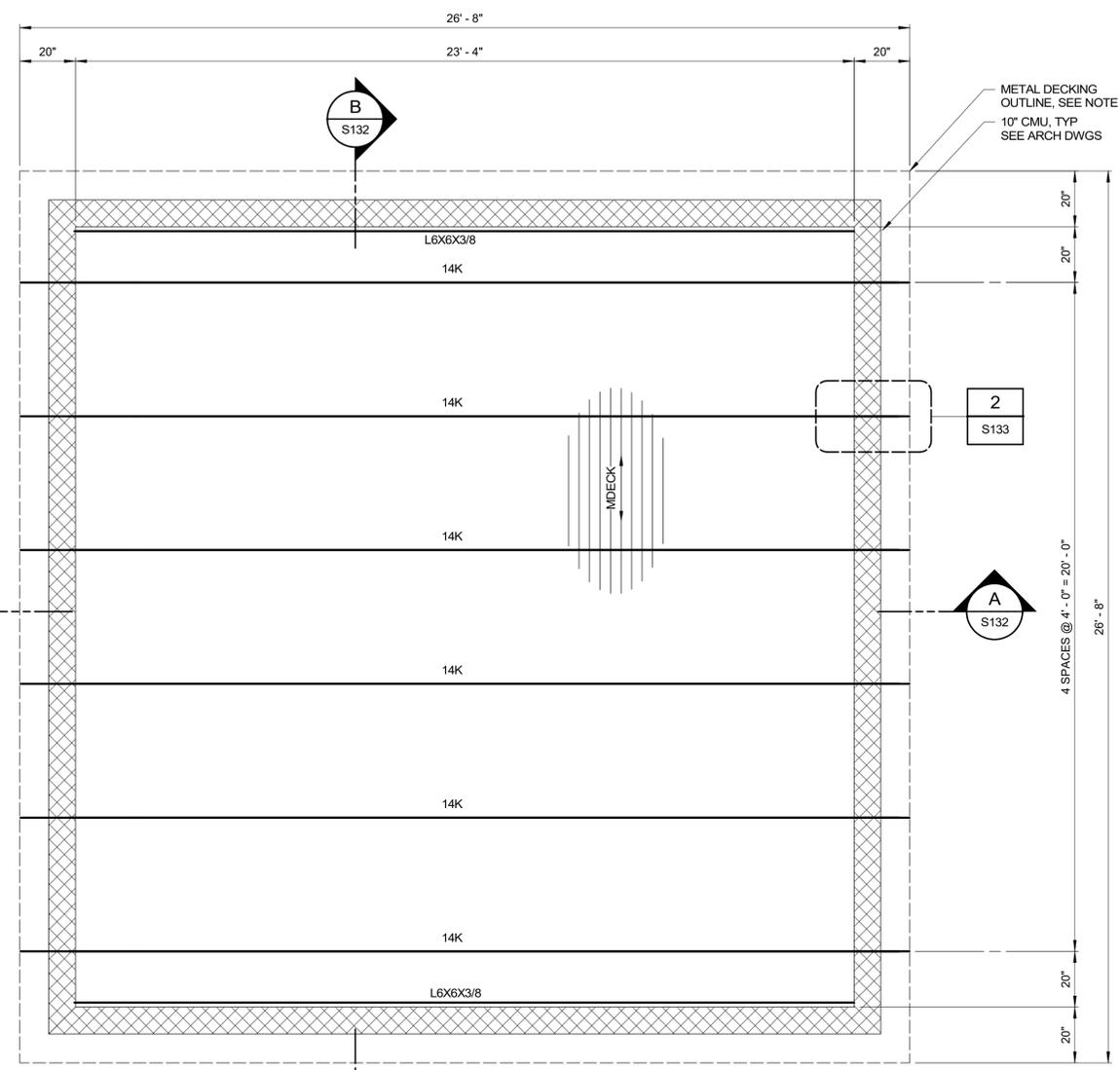
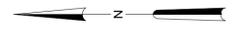


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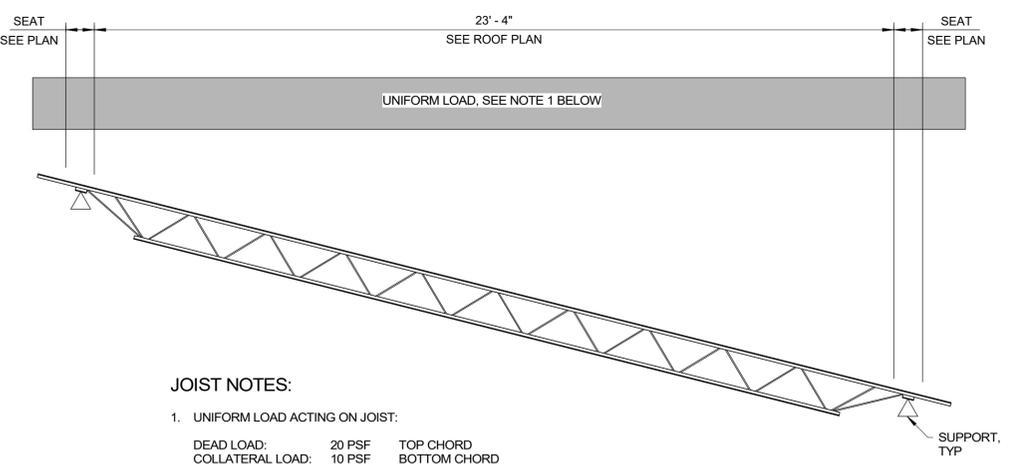
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CHEMICAL FEED SYSTEM
STRUCTURAL
PLANS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	S130



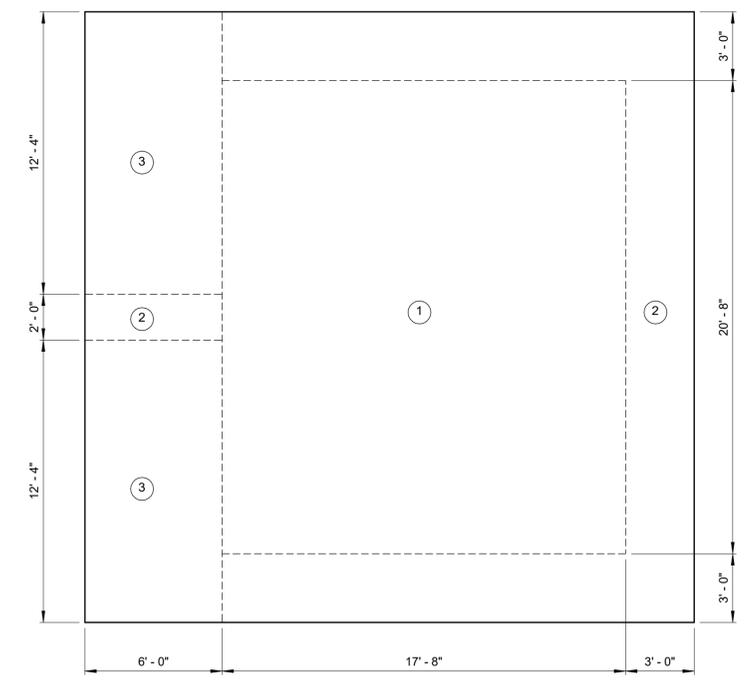
ROOF TRUSS PLAN
3/8" = 1'-0"



JOIST NOTES:

- UNIFORM LOAD ACTING ON JOIST:
DEAD LOAD: 20 PSF TOP CHORD
COLLATERAL LOAD: 10 PSF BOTTOM CHORD
LIVE LOAD: 30 PSF TOP CHORD
SNOW LOAD, (PS): 16.5 PSF TOP CHORD
- PER DEFINITIONS IN ASCE 7-10 FOR COMPONENTS AND CLADDING, WIND PRESSURE (PSF) IS INDICATED IN THE WIND PRESSURE ZONE OVER ROOF TABLE.
- FOR DETERMINING NET WIND UPLIFT, USE A DEAD LOAD OF 6 PSF.
- DEAD LOAD AND WIND LOAD SHALL BE APPLIED ALONG THE ENTIRE SLOPED LENGTH OF THE JOIST. LIVE LOAD AND SNOW LOAD SHALL BE APPLIED ALONG THE HORIZONTAL PROJECTED LENGTH OF THE JOIST. LOAD COMBINATIONS SHALL BE AS REQUIRED BY ASCE 7-10.
- LOADS DO NOT INCLUDE SELF-WEIGHT OF JOIST. DEAD LOAD, LIVE LOAD AND SNOW LOAD ACT VERTICALLY. WIND LOAD ACTS NORMAL TO ROOF. POSITIVE LOADS ACT DOWNWARD. NEGATIVE LOADS ACT UPWARDS.
- JOIST CONNECTION SHALL BE DESIGNED FOR A MINIMUM ALLOWABLE LOAD OF 1.1K UPLIFT AND 0.8K SHEAR IN N-S DIRECTION.

TYPICAL JOIST ELEVATION
3/8" = 1'-0"



ROOF LOAD DIAGRAM
1/4" = 1'-0"

NOTES:

- SIZE OF STEEL JOIST TO BE DETERMINED BY STEEL JOIST MANUFACTURER AND BASED ON THE JOIST SPACING AND LOADS PROVIDED ON DRAWINGS. CONTRACTOR SHALL SUBMIT TO THE ENGINEER, CALCULATIONS AND SHOP DRAWINGS SEALED AND SIGNED BY AN ENGINEER CURRENTLY REGISTERED IN THE STATE OF NORTH CAROLINA. SEE SPECIFICATION 05 21 00 FOR ADDITIONAL INFORMATION.
- METAL DECKING SHALL BE 1.5B22 AND SHALL BE ATTACHED TO ROOF FRAMING MEMBERS WITH #12 TEK SCREWS ON A 3B4 PATTERN WITH 2-#10 TEK SCREWS SIDELAP FASTENERS PER SPAN. PARALLEL ATTACHMENT TO COLLECTORS SHALL BE #12 TEK SCREWS AT 2'-0" MAX ON CENTER. WHERE DECK PANELS ARE INTERRUPTED BY OPENINGS, DECK SHALL BE ATTACHED TO STRUCTURAL MEMBERS ON ALL SIDES OF PENETRATIONS WITH #10 TEK SCREWS AT A MAXIMUM SPACING OF 9".

WIND PRESSURE ZONES OVER ROOF (PSF)

ZONE	(-) WIND * PRESSURE	(+) WIND * PRESSURE
1	-38.4	16.0
2	-47.4	21.0
3	-52.4	21.0

- NOTES:
1. *** DENOTES DIRECTION OF WIND IS NORMAL TO TOP TRUSS CHORD.
2. REFER TO ASCE 7-10, FIG 30.4-5A. WIND PRESSURES ARE ULTIMATE PRESSURES.

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DESIGNED BY:	J. PAQUETTE		
DRAWN BY:	M. ROBLE		
CHECKED BY:	J. WAYCASTER		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

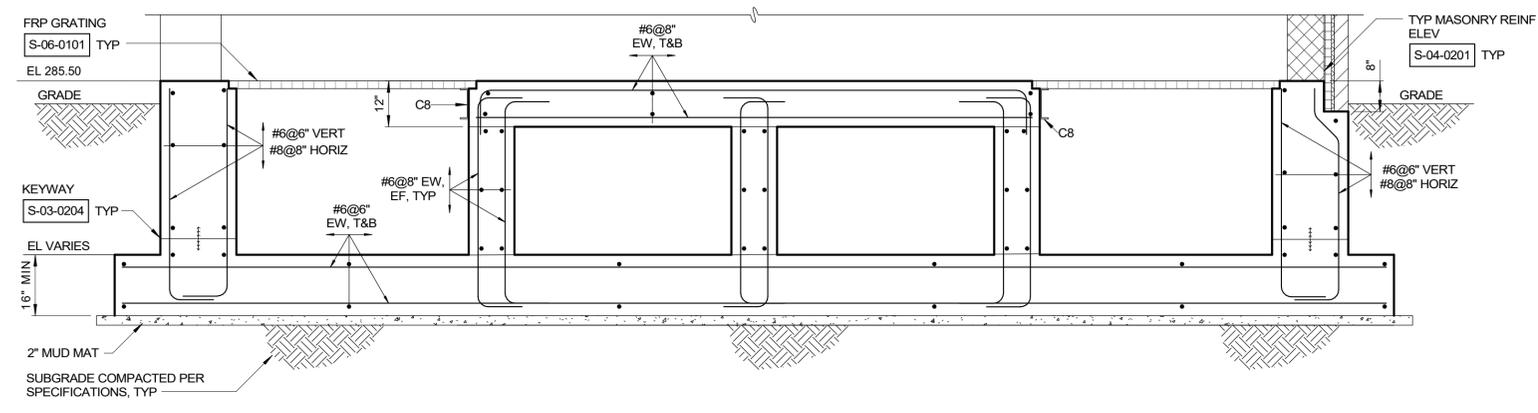
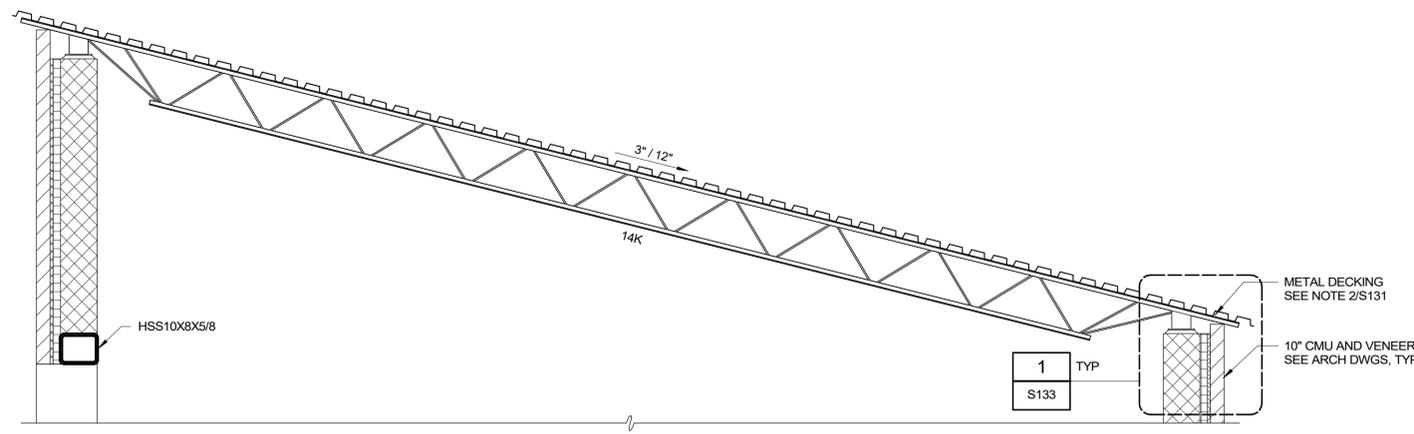
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RALEIGH, NC 27607
LICENSE NO.: C-0381

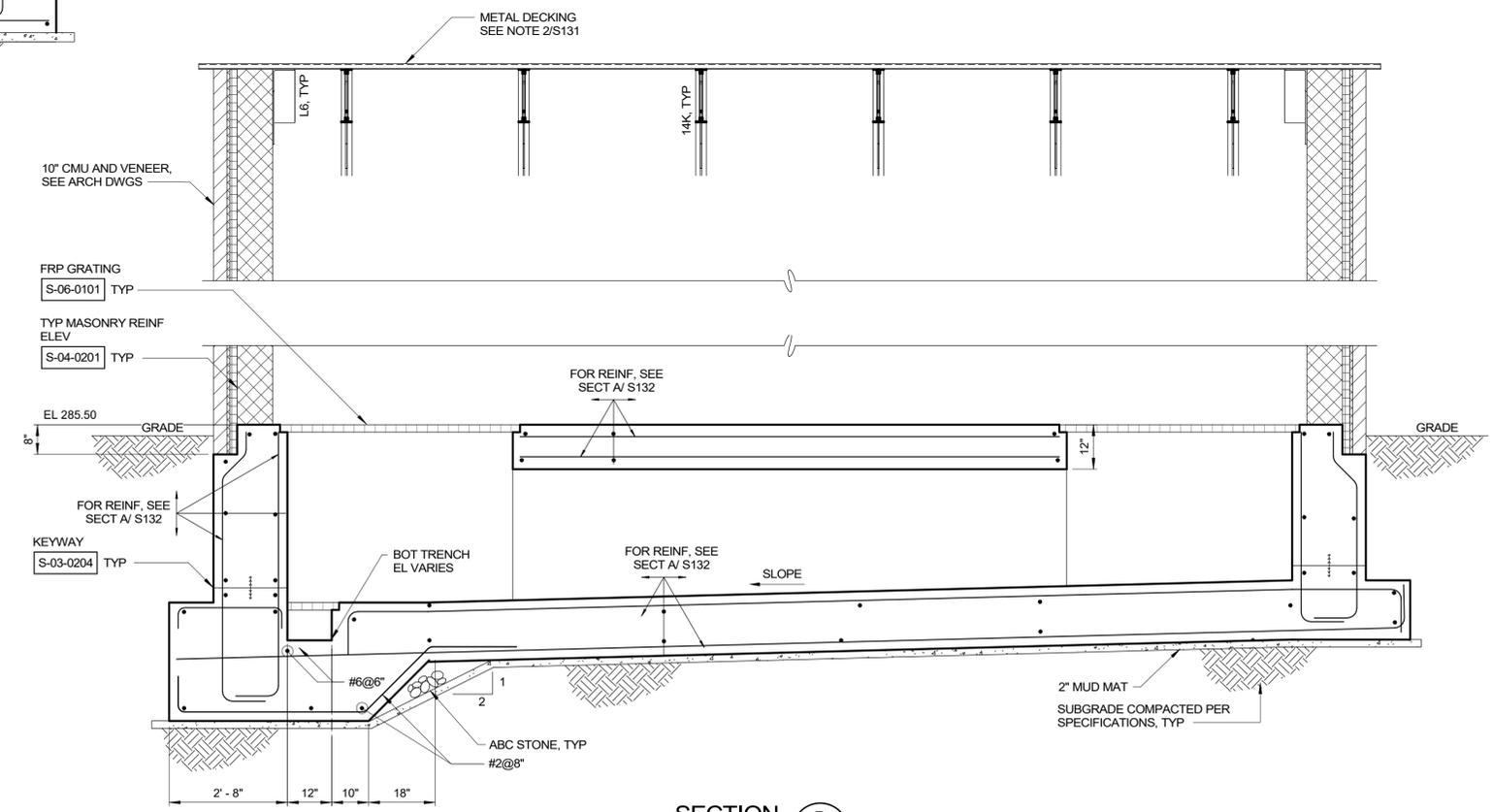
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CHEMICAL FEED SYSTEM
STRUCTURAL
ROOF PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	S131



SECTION A
1/2" = 1'-0"



SECTION B
1/2" = 1'-0"

Autodesk/Doc/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-130-CF-S.rvt
3/1/2023 10:57:40 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	J. PAQUETTE
DRAWN BY:	M. ROBLE
CHECKED BY:	J. WAYCASTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

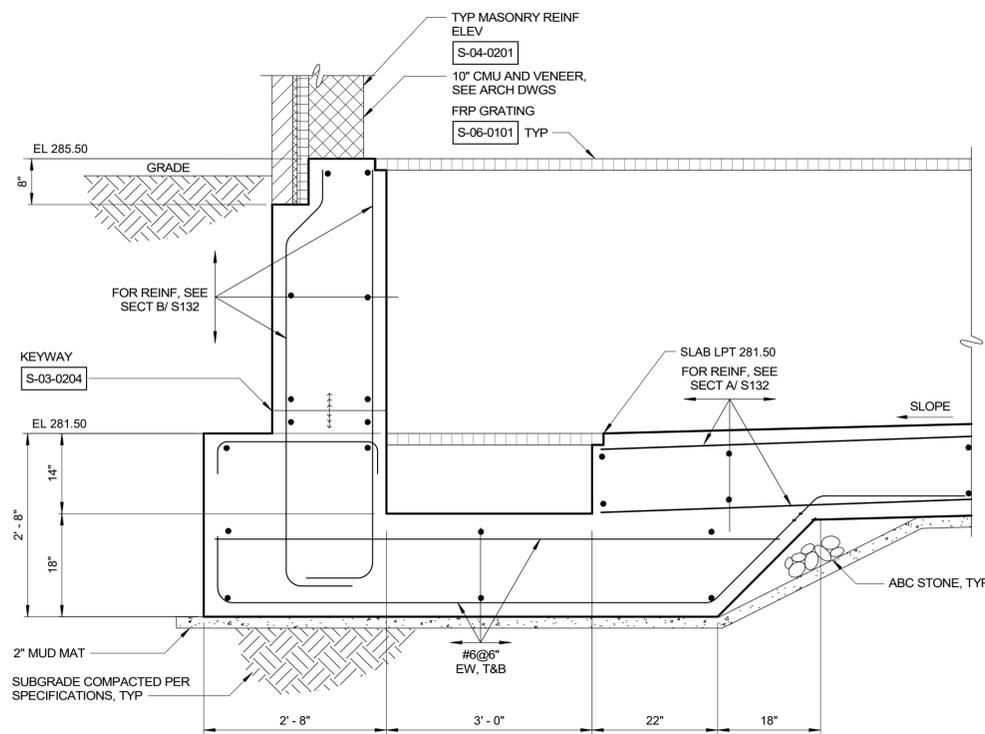
PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

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HAZEN AND SAWYER
4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

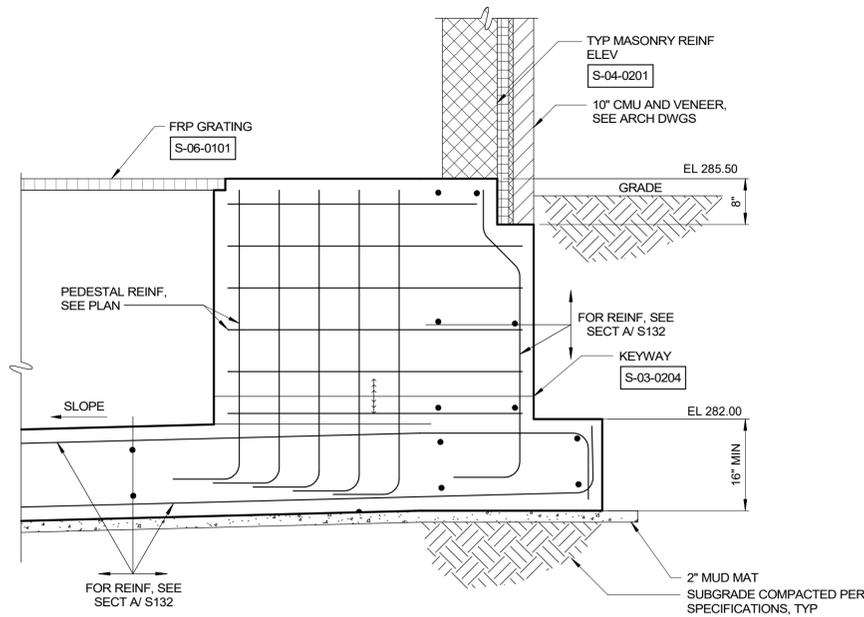
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CHEMICAL FEED SYSTEM
STRUCTURAL
SECTIONS

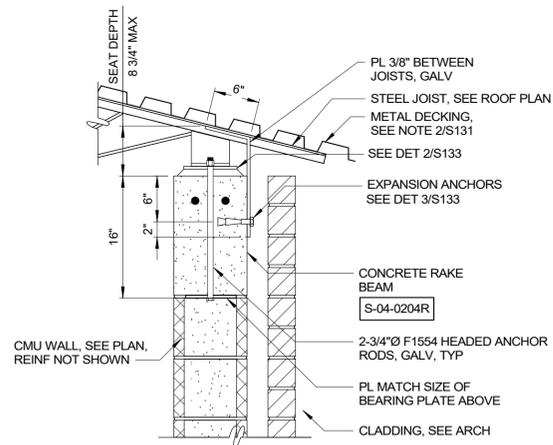
DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	S132



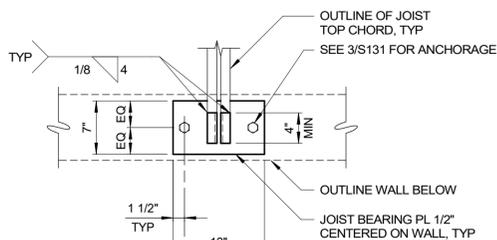
SECTION C
3/4" = 1'-0"
S130



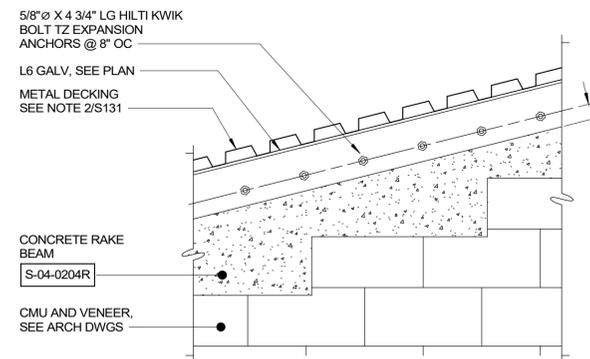
SECTION D
3/4" = 1'-0"
S130



DETAIL 1
1" = 1'-0"
S132



DETAIL 2
1" = 1'-0"
S131



DETAIL 3
1" = 1'-0"
S131

Autodesk_Docs/23044_004_Big Branch 2 Pump Station and Pipelines/23044-004-130-CF-S.rvt
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	J. PAQUETTE
DRAWN BY:	M. ROBLE
CHECKED BY:	J. WAYCASTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

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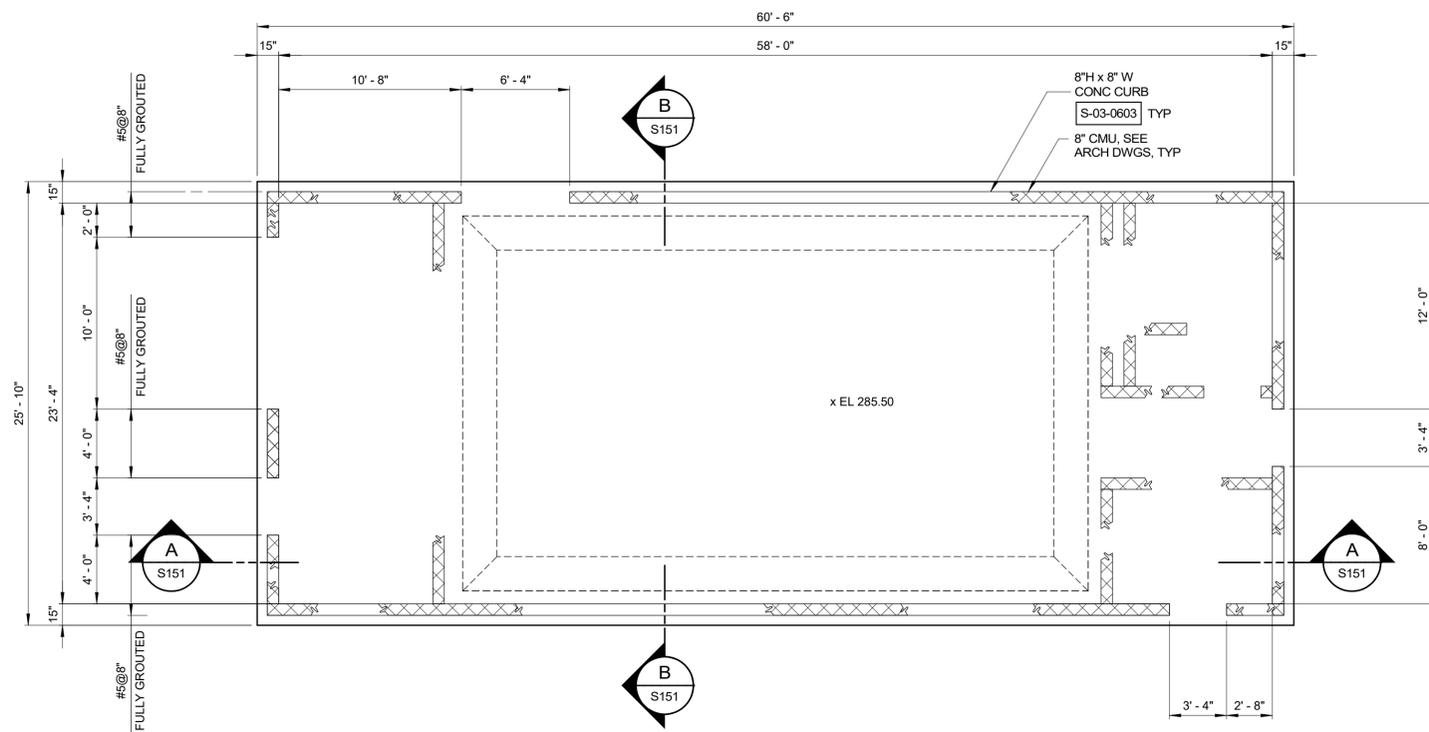
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CHEMICAL FEED SYSTEM
STRUCTURAL
SECTIONS AND DETAILS

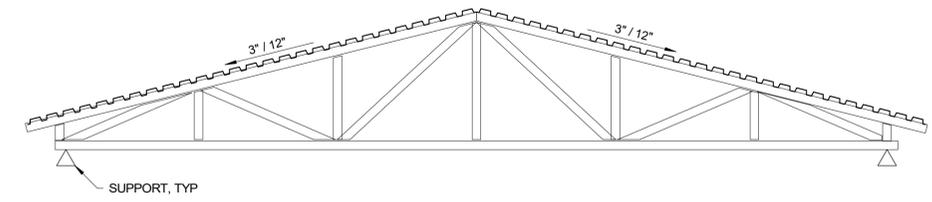
DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	S133

NOTES:

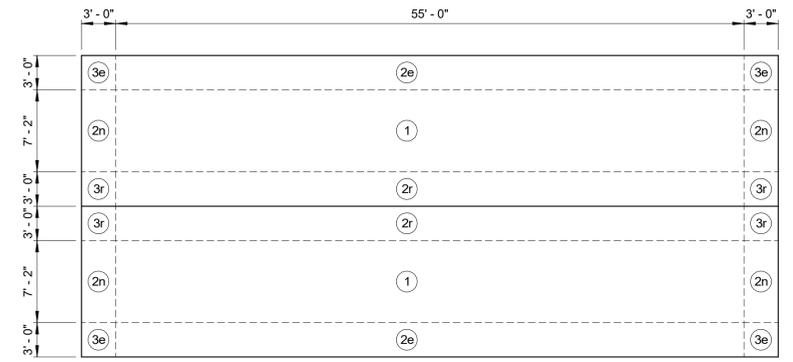
- ROOF DECK SHALL BE 1.5B20 METAL DECK, ATTACH TO TRUSSES USING #12 TEK SCREWS ON A 36/5 PATTERN. SIDELAPS SHALL BE FASTENED WITH 7-#10 TEK SCREWS PER SPAN.
- GABLE ROOF TRUSSES SHALL BE DESIGNED BY ROOF TRUSS MANUFACTURER AS DEFINED IN CONTRACT SPECIFICATION SECTION 05 44 00. CONTRACTOR SHALL SUBMIT CALCULATIONS AND ERECTION DRAWINGS SEALED BY A PROFESSIONAL ENGINEER CURRENTLY REGISTERED IN NORTH CAROLINA.
- CMU WALLS SHALL BE REINFORCED WITH #5 @24" ON CENTER DOWELS AND VERTICALS IN FULLY GROUTED CELLS MINIMUM LAP SPLICE = 45 INCHES. TWO VERTICAL BARS AND DOWELS SHALL BE PROVIDED AT ENDS OF WALLS ADJACENT TO ALL OPENINGS, CORNERS, AND BOTH SIDES OF CONTROL JOINTS. PROVIDE HORIZONTAL JOINTS REINFORCEMENT AT 16" ON CENTER FOR ALL MASONRY WALLS. BOND BEAM REINFORCING SHALL BE CONTINUOUS AND LOCATED AT ALL ELEVATIONS SHOWN. SEE BUILDING DRAWINGS FOR ADDITIONAL DETAILS.



BOTTOM PLAN
3/16" = 1'-0"



TYPICAL ROOF TRUSS
3/8" = 1'-0"



ROOF LOAD DIAGRAM
1/8" = 1'-0"

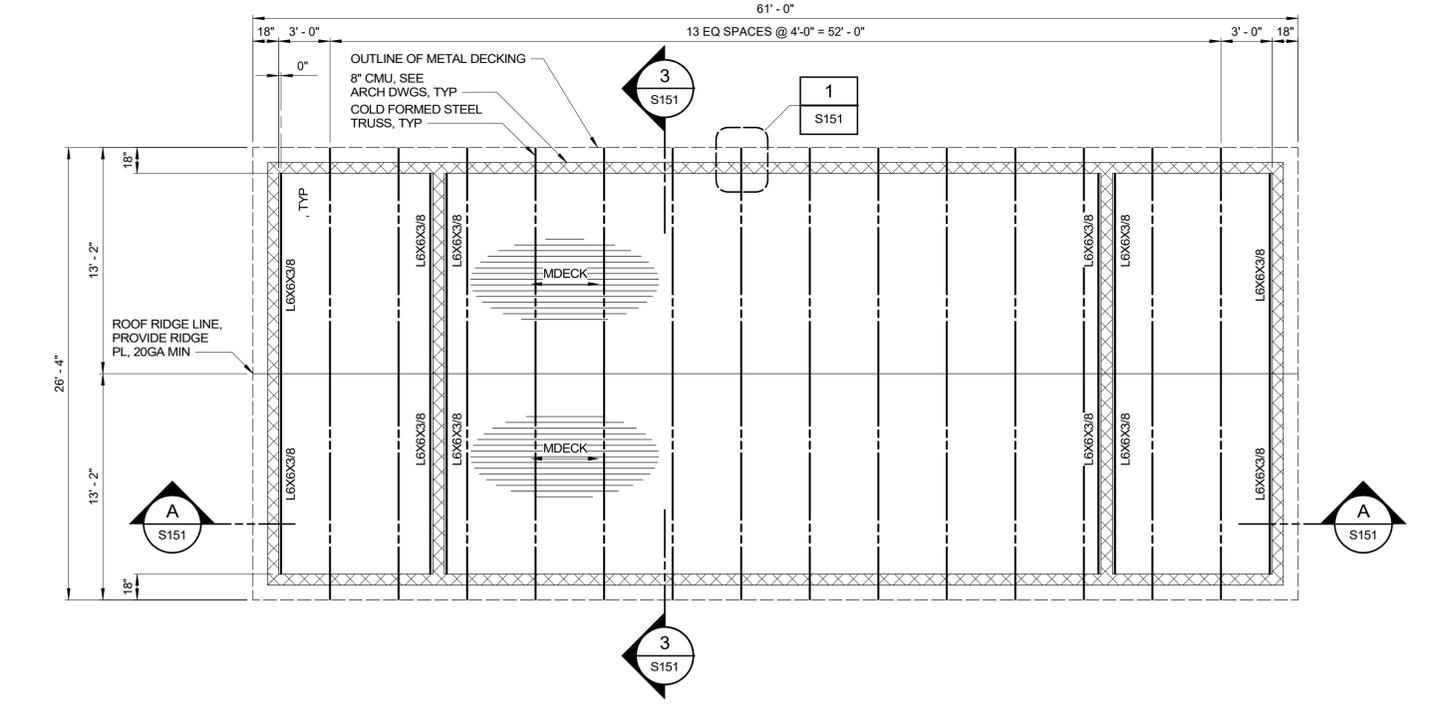
COMPONENTS & CLADDING WIND PRESSURE (PSF)

ROOF ZONE	(-) WIND * PRESSURE	(+) WIND * PRESSURE
1	-48.4	26.3
2e	-48.4	26.3
2n	-72.7	26.3
2r	-72.7	26.3
3e	-72.7	26.3
3r	-82.5	26.3
2eoh	-87.0	N/A
2noh	-115.5	N/A
3eoh	-132.6	N/A
3roh	-149.7	N/A
WALL ZONE	(-) WIND * PRESSURE	(+) WIND * PRESSURE
4	-43.5	40.7
5	-48.6	40.7

- NOTES:
 1. "" DENOTES DIRECTION OF WIND IS NORMAL TO TOP TRUSS CHORD.
 2. REFER TO ASCE 7-16, FIG 30.3-2B. WIND PRESSURES ARE ULTIMATE PRESSURES.
 3. WALL ZONE 5 APPLIES WITHIN 3 FT FROM CORNER EDGES. WALL ZONE 4 APPLIES FOR THE REMAINDER OF WALL

TRUSS NOTES:

- UNIFORM LOAD ACTING ON JOIST:
 DEAD LOAD: 20 PSF TOP CHORD
 COLLATERAL LOAD: 10 PSF BOTTOM CHORD
 LIVE LOAD: 20 PSF TOP CHORD
 SNOW LOAD: 20 PSF TOP CHORD
- PER DEFINITIONS IN ASCE 7-16 FOR COMPONENTS AND CLADDING, WIND PRESSURE (PSF) IS INDICATED IN THE WIND PRESSURE ZONE OVER ROOF TABLE.
- FOR DETERMINING NET WIND UPLIFT, USE A DEAD LOAD OF 5 PSF.
- DEAD LOAD AND WIND LOAD SHALL BE APPLIED ALONG THE ENTIRE SLOPED LENGTH OF THE TRUSS JOIST. LIVE LOAD AND SNOW LOAD SHALL BE APPLIED ALONG THE HORIZONTAL PROJECTED LENGTH OF THE JOIST. LOAD COMBINATIONS SHALL BE AS REQUIRED BY ASCE 7-16.
- LOADS DO NOT INCLUDE SELF-WEIGHT OF JOIST.



ROOF TRUSS PLAN
3/16" = 1'-0"

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PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	J. PAQUETTE		
DRAWN BY:	M. ROBLE		
CHECKED BY:	J. WAYCASTER		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

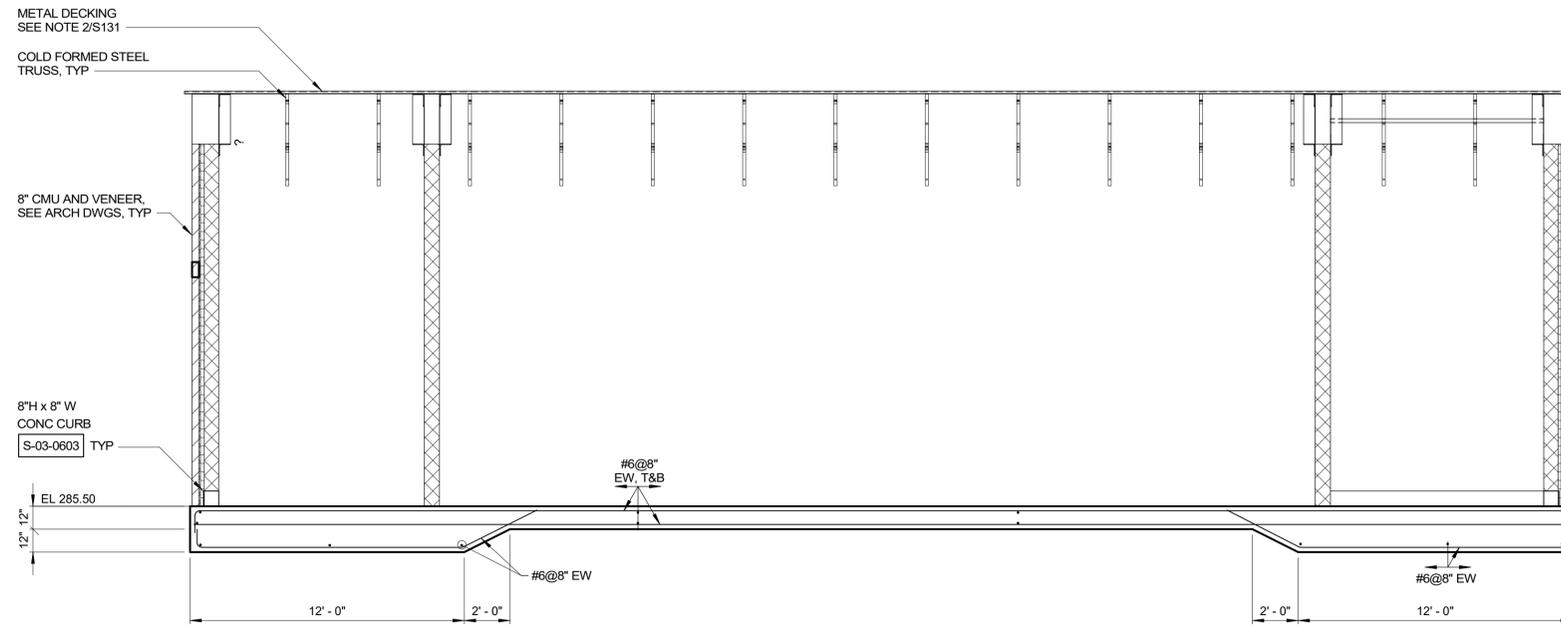
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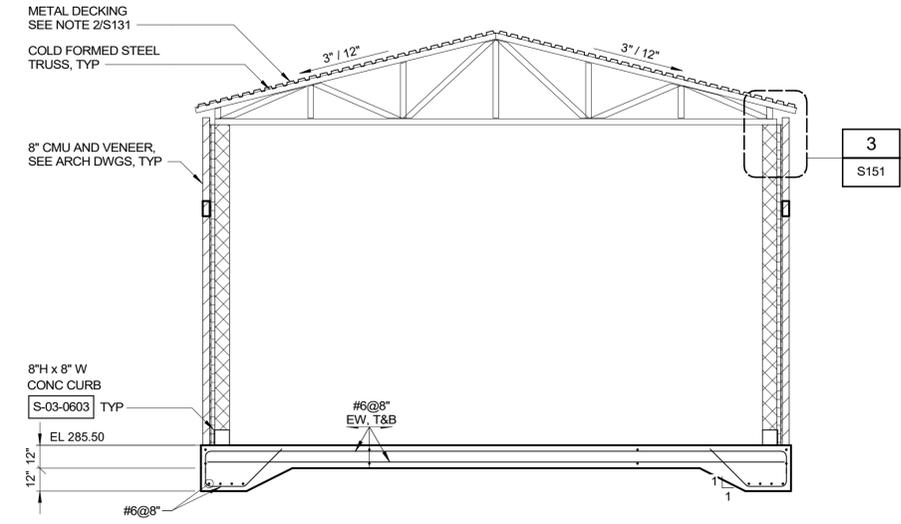
APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

ELECTRICAL BUILDING
 STRUCTURAL
 PLANS

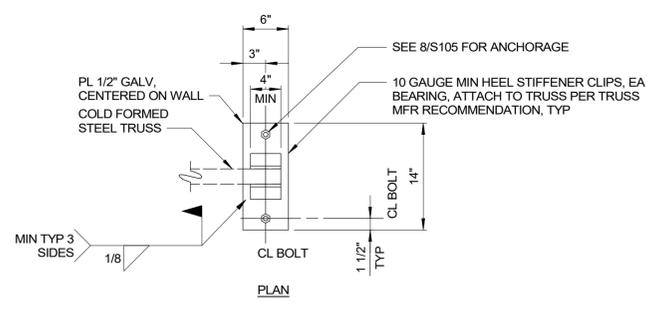
DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	S150



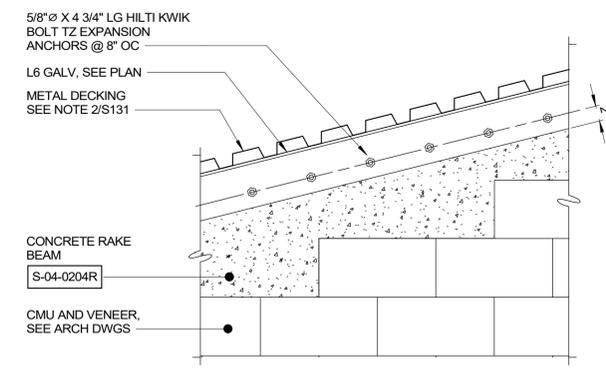
SECTION A
1/4" = 1'-0" S150



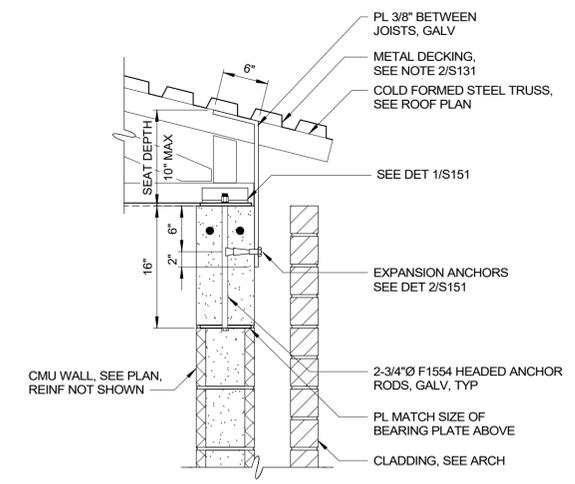
SECTION B
1/4" = 1'-0" S150



DETAIL 1
1" = 1'-0" S150



DETAIL 2
1" = 1'-0" S150



DETAIL 3
1" = 1'-0" S150

Autodesk/Doc/23044-004_Big Branch 2 Pump Station and Pipelines/23044-004-150-EB-S.rvt 3/1/2023 11:42:25 AM

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DRAWN BY:	M. ROBLE
CHECKED BY:	J. WAYCASTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

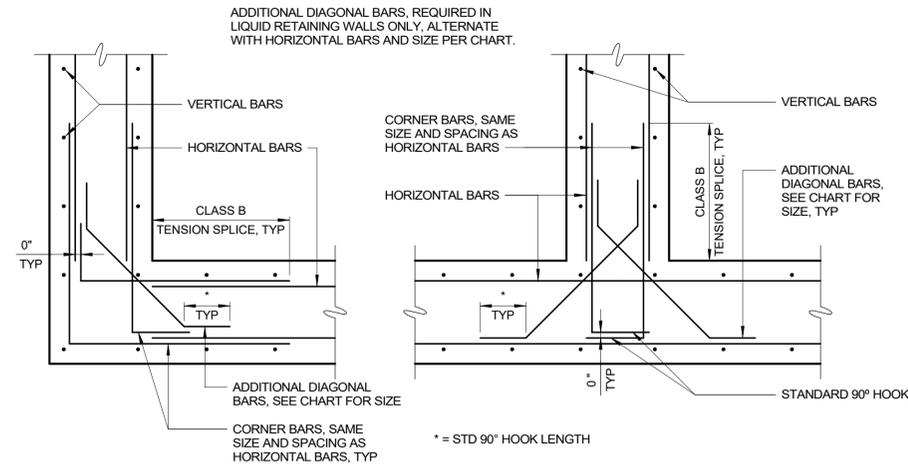
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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

ELECTRICAL BUILDING
STRUCTURAL
SECTIONS

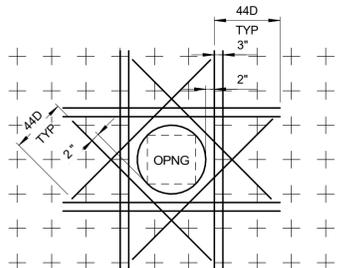
DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	S151



CORNER
INTERSECTION
WALL REINFORCING
S-03-0108

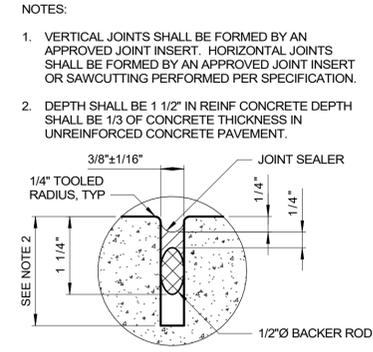
DIAGONAL BAR SIZE CHART	
BAR SIZE - HORIZONTAL REINFORCEMENT	BAR SIZE - DIAGONAL REINFORCEMENT
#3	#3
#4	#3
#5	#4
#6	#5
#7	#5
#8	#6
#9	#7
#10	#8
#11	#9

AT LOCATIONS WHERE DIFFERENT SIZE HORIZONTAL BARS CONVERGE, THE LARGER BAR SIZE SHALL CONTROL.



- NOTES:
- THIS DETAIL APPLIES FOR OPENINGS 8" Ø AND LARGER. FOR SMALLER OPENINGS, BEND BARS OR ADJUST SPACING OF REINFORCEMENT TO AVOID OPENING.
 - PLACE EXTRA BARS OF THE SAME SIZE AS THE INTERRUPTED BARS AT EACH SIDE OF OPENING. QUANTITY OF EXTRA BARS AT EACH SIDE SHALL EQUAL HALF THE QUANTITY OF INTERRUPTED BARS EXCEPT WHERE NOTED OTHERWISE.
 - PROVIDE ONE DIAGONAL BAR EACH SIDE OF OPENING WITH SIZE EQUAL TO MAIN REINFORCEMENT, TYPICAL EACH FACE.
 - WHERE INVERT OF OPENING IN WALL IS LESS THAN 44 BAR DIAMETERS FROM TOP OF SLAB, EXTRA REINFORCEMENT ON EACH SIDE SHALL INCLUDE DOWELS EMBEDDED INTO SLAB WITH STANDARD 90 DEGREE HOOKS TO SPLICE WITH EXTRA VERTICAL REINFORCEMENT. DOWELS SHALL ALSO STILL BE PROVIDED BELOW OPENING.
 - WHERE INVERT OF OPENING IN WALL OR SLAB IS CLOSER THAN 44 BAR DIAMETERS TO EDGE OF SLAB OR BOTTOM OF WALL, EXTRA DIAGONAL BARS MAY BE TERMINATED TWO INCHES FROM EDGE OF SLAB OR BOTTOM OF WALL. DOWELS DO NOT HAVE TO BE PROVIDED TO SPLICE WITH DIAGONAL BARS.

REINFORCING AT OPENINGS
S-03-0109



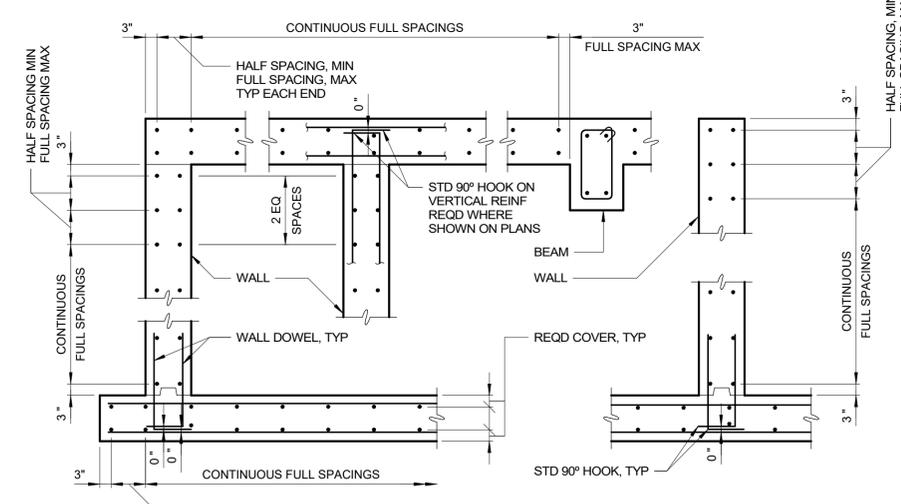
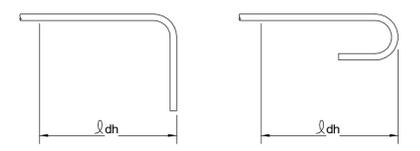
SEALED JOINT
S-03-0202

DEVELOPMENT LENGTH OF STANDARD HOOKS
FOR UNCOATED BARS IN TENSION

$f_y = 60,000 \text{ psi}$ $f'_c = 4000 \text{ psi OR GREATER}$

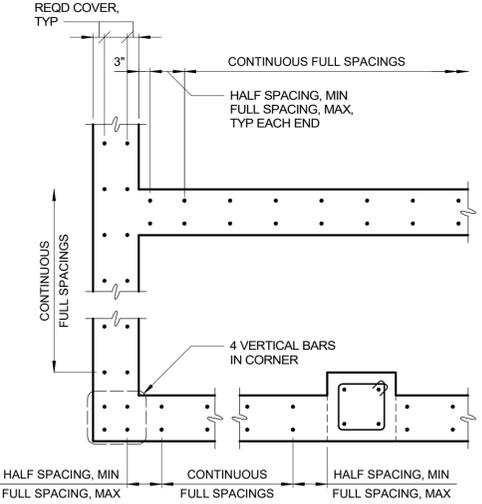
BAR SIZE	DEVELOPMENT LENGTH, l_d	
	BASIC	W/ CONC COVER *
#3	8"	6"
#4	10"	7"
#5	1'-0"	9"
#6	1'-3"	11"
#7	1'-5"	1'-0"
#8	1'-7"	1'-2"
#9	1'-10"	1'-4"
#10	2'-1"	1'-6"
#11	2'-3"	1'-7"

* SIDE COVER NORMAL TO PLANE OF HOOK AT LEAST 2 1/2"; AND FOR 90° HOOK, END COVER BEYOND OUTSIDE END OF HOOK AT LEAST 2".

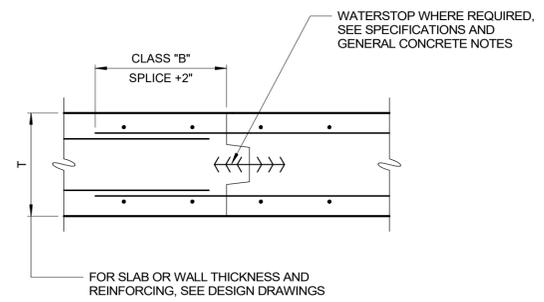


SECTION - WALLS AND SLABS
BAR PLACEMENT
S-03-0110

NOTE:
ORIENTATION OF OUTSIDE AND INSIDE LAYERS OF REINF SHALL BE AS SHOWN ON PLANS. "FULL SPACING" IS BAR SPACING CALLED OUT ON PLANS.

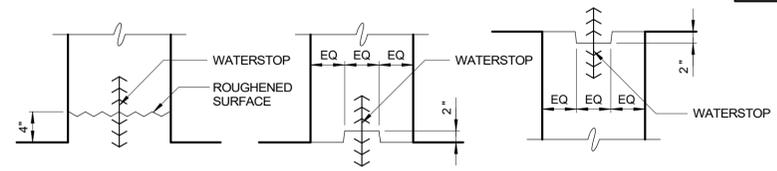


PLAN - WALLS



CONSTRUCTION JOINT
S-03-0203

NOTE:
THIS DETAIL APPLIES TO CONSTRUCTION JOINTS IN WALLS. FOR HORIZONTAL CONSTRUCTION JOINTS IN WALLS, SEE S-03-0204.



TYPE I - STARTER WALL TYPE II - KEYWAY TYPE III - INVERTED KEYWAY

- NOTES:
- TYPE I - STARTER WALL IS REQUIRED FOR ALL BASE OF WALLS 12 INCHES OR LESS IN THICKNESS WHERE WATERSTOPS ARE REQUIRED.
 - TYPE I - STARTER WALL IS PREFERRED, BUT TYPE II - KEYWAY IS ACCEPTABLE FOR BASE OF WALLS GREATER THAN 12 INCHES IN THICKNESS WHERE WATERSTOPS ARE REQUIRED.
 - TYPE III - INVERTED KEYWAY IS REQUIRED AT TOP OF WALLS WHERE WATERSTOPS ARE REQUIRED.

WALL HORIZONTAL CONSTRUCTION JOINTS
S-03-0204

BASIC DEVELOPMENT LENGTH AND SPLICE LENGTH
FOR UNCOATED BARS IN TENSION

** BASED ON MATERIALS AND CONDITIONS AS FOLLOWS:
 $f_y = 60,000 \text{ psi}$ $f'_c = 4000 \text{ psi OR GREATER}$
CLEAR COVER ≥ 1.5 INCHES NORMAL WEIGHT CONCRETE

BASIC DEVELOPMENT LENGTH l_d				BAR SIZE	CLASS B SPLICE LENGTH $1.3 \times l_d$			
CLEAR SPACING $\geq 3"$		CLEAR SPACING $< 3"$			CLEAR SPACING $\geq 3"$		CLEAR SPACING $< 3"$	
BASIC	TOP *	BASIC	TOP *	BASIC	TOP *	BASIC	TOP *	
1'-0"	1'-0"	1'-0"	1'-4"	#3	1'-0"	1'-3"	1'-4"	1'-8"
1'-0"	1'-3"	1'-7"	2'-1"	#4	1'-3"	1'-8"	2'-1"	2'-9"
1'-3"	1'-7"	2'-4"	3'-0"	#5	1'-7"	2'-0"	3'-0"	3'-11"
1'-6"	1'-11"	3'-1"	4'-0"	#6	1'-11"	2'-5"	4'-0"	5'-2"
2'-5"	3'-1"	4'-11"	6'-4"	#7	3'-1"	4'-0"	6'-4"	8'-3"
3'-0"	3'-11"	6'-0"	7'-9"	#8	3'-11"	5'-1"	7'-9"	10'-1"
3'-8"	4'-9"	6'-9"	8'-9"	#9	4'-9"	6'-3"	8'-9"	11'-4"
4'-6"	5'-10"	7'-7"	9'-10"	#10	5'-10"	7'-7"	9'-10"	12'-9"
5'-5"	7'-0"	8'-5"	10'-11"	#11	7'-0"	9'-1"	10'-11"	14'-2"

* TOP REINFORCEMENT IS ANY HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE REINFORCEMENT.

** FOR MATERIALS OR CONDITIONS DIFFERENT FROM THOSE STATED, LENGTHS SHOWN IN CHART SHALL BE MODIFIED TO CONFORM TO THE PROVISIONS OF ACI 318-14, SECTION 25.3.

Autodesk Doc/22044_004_Big Branch 2 Pump Station and Pipeline/22044_004-STANDARD DETAILS-STRU.rvt 3/21/2023 10:35:45 AM

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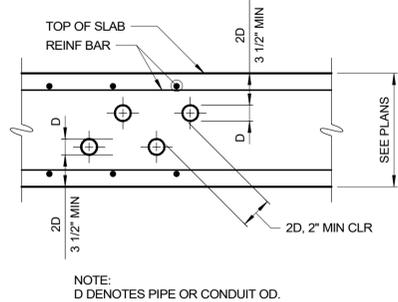
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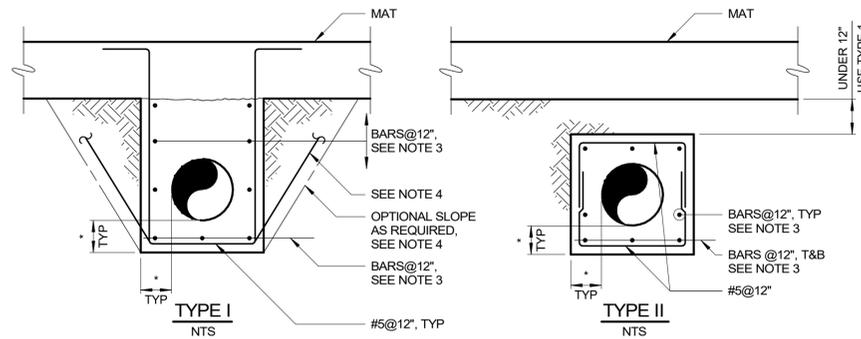
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

STANDARD DETAIL
STRUCTURAL
STANDARD DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	SD1



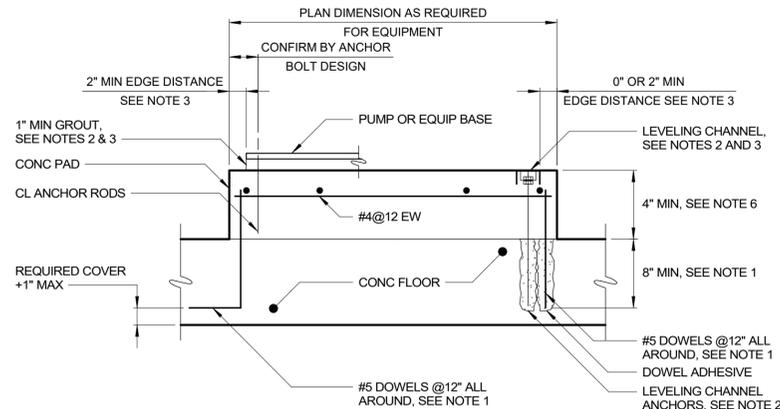
PIPE OR CONDUIT EMBEDDED IN SLAB
S-03-0403



- NOTES:
1. TIE IN ALL PIPES & CONDUITS BELOW GROUND FLOOR SLAB WHEN PILE FOUNDATION IS UTILIZED. USE TYPE I.
 2. * DENOTES 9\"/>

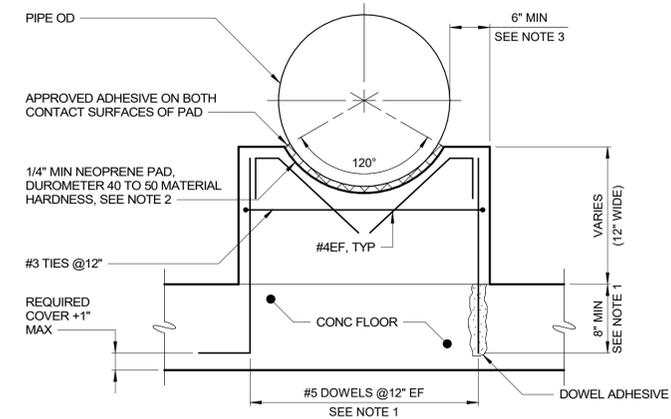
ALL PIPING AND CONDUITS BELOW SLABS ON EARTH TO BE ENCASED BY GENERAL CONTRACTOR UNLESS NOTED OTHERWISE.

PIPE ENCASUREMENTS
S-03-0404



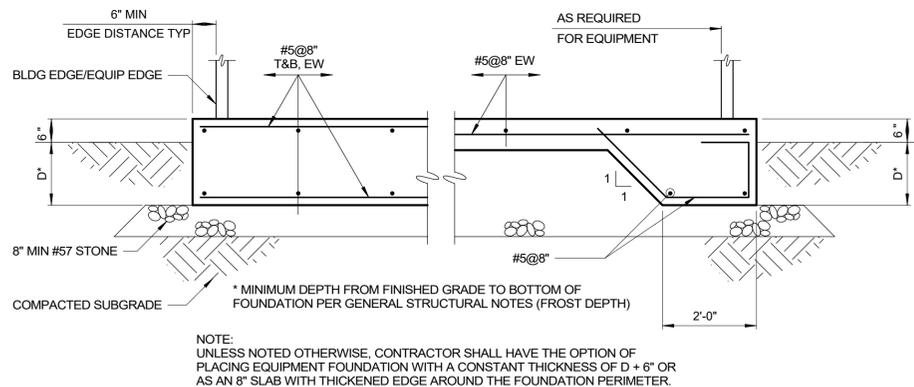
- NOTES:
1. DOWELS MAY BE CAST IN WITH 90° HOOK OR ANCHORED WITH DOWEL ADHESIVE AT CONTRACTORS OPTION. WHERE FLOOR IS LESS THAN 10\"/>

EQUIPMENT PAD
S-03-0504

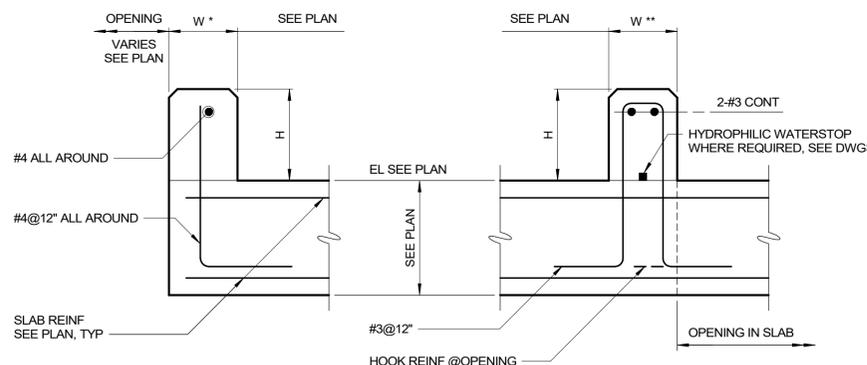


- NOTES:
1. DOWELS MAY BE CAST IN WITH 90° HOOK OR ANCHORED WITH DOWEL ADHESIVE AT CONTRACTORS OPTION. WHERE FLOOR IS LESS THAN 10\"/>

CRADLE PIPE SUPPORT
S-03-0505

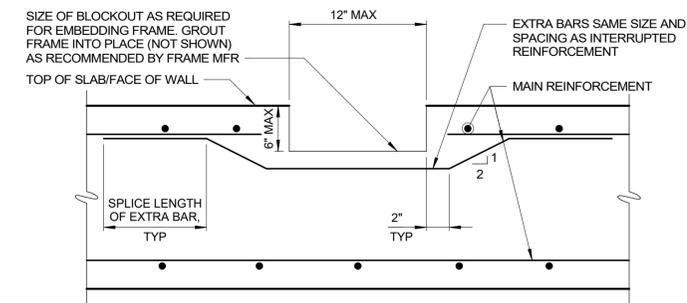


EXTERIOR EQUIPMENT FOUNDATION
S-03-0508



- NOTE:
W* DENOTES CURBS LESS THAN 8\"/>

CONCRETE CURB
S-03-0603



BLOCKOUT FOR EMBEDDED EQUIPMENT FRAME
S-03-0902

Autodesk Docs/23044_004_Big Branch 2 Pump Station and Pipelines/23044-004-STANDARD DETAILS-STRU-14 3/21/2023 10:35:56 AM

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DESIGNED BY:	J. PAQUETTE
DRAWN BY:	M. ROBLE
CHECKED BY:	J. WAYCASTER
IF THIS BAR DOES NOT MEASURE 1\"/>	0 1/2\"/>

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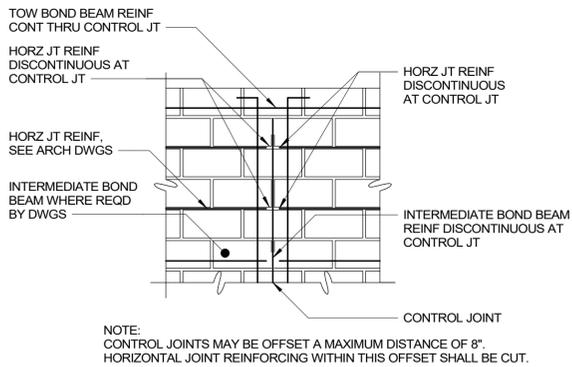
HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
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LICENSE No.: C-0381

APEX
NORTH CAROLINA

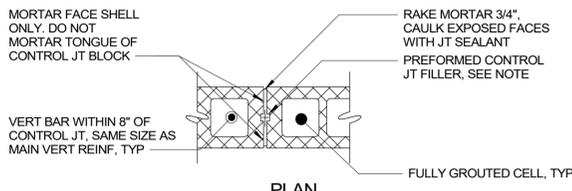
BIG BRANCH 2
PUMP STATION

STANDARD DETAIL
STRUCTURAL
STANDARD DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	SD2



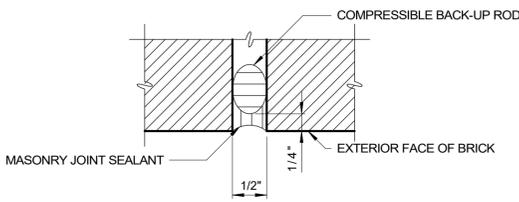
ELEVATION



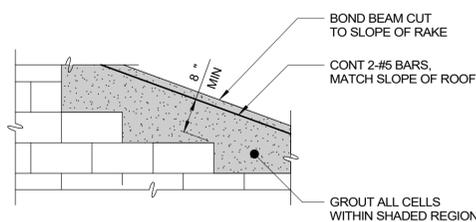
PLAN

NOTE: WIDE FLANGED PREFORMED CONTROL JOINT FILLER MAY BE USED.

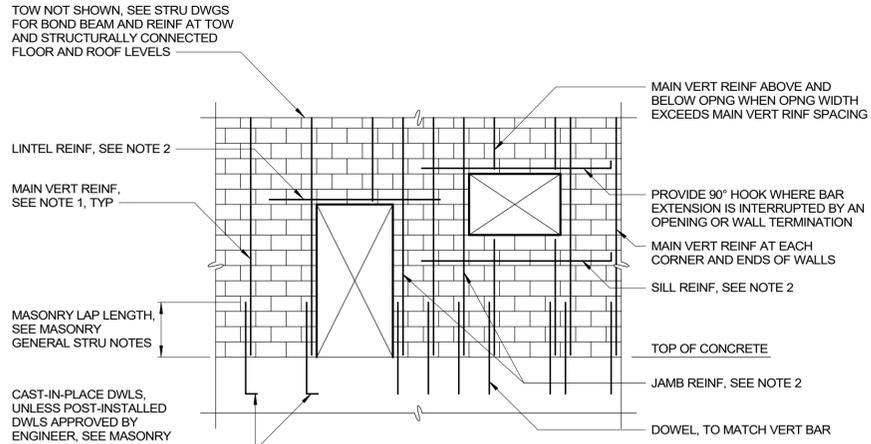
CONTROL JOINT BLOCK
S-04-0105



BRICK EXPANSION JOINT
S-04-0108

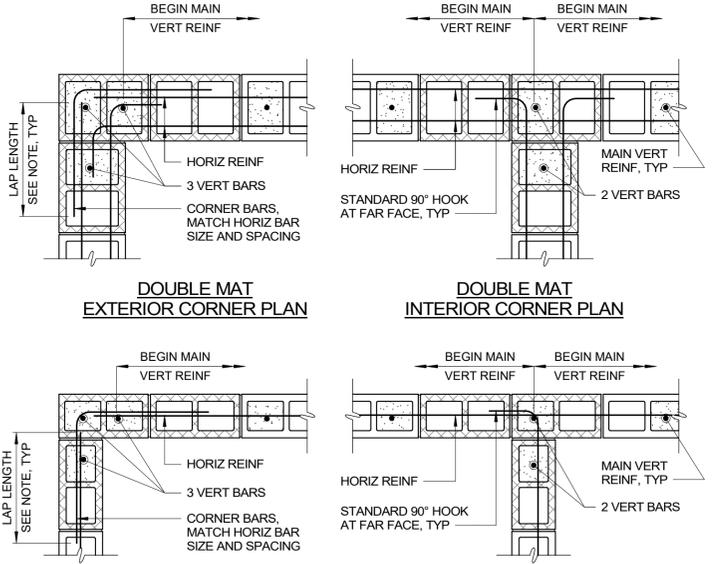


CMU WALL AT RAKE
S-04-0204R



TYPICAL MASONRY REINFORCING ELEVATION
S-04-0201

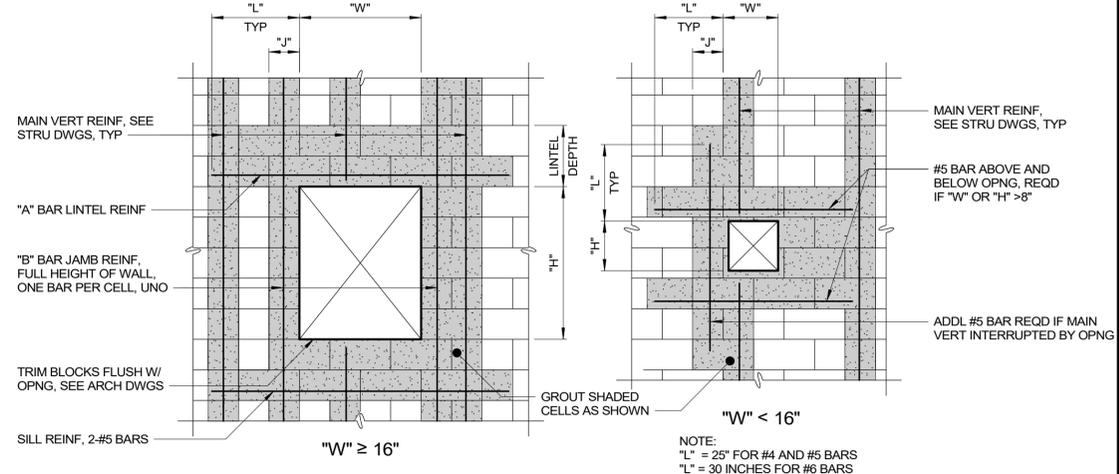
- NOTES:
- FOR MAIN VERTICAL REINFORCING, SEE STRUCTURAL DRAWINGS. PROVIDE 90 DEGREE HOOK AT TOP OF WALL UNLESS NOTED OTHERWISE.
 - FOR LINTEL AND REINFORCING AT OPENINGS, SEE DETAIL S-04-0202.
 - JOINT REINFORCING NOT SHOWN FOR CLARITY. SEE ARCHITECTURAL DRAWINGS.



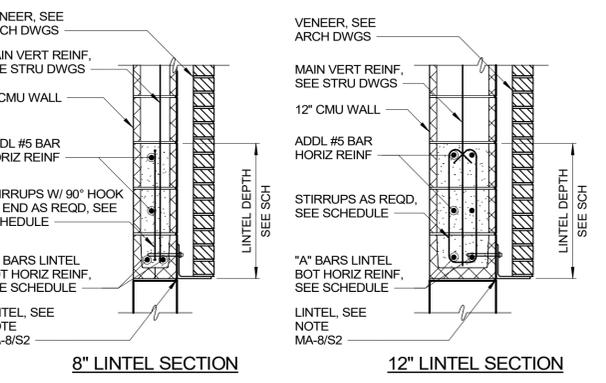
TYPICAL MASONRY WALL INTERSECTION REINFORCING
S-04-0203

- NOTES:
- SEE MASONRY GENERAL STRUCTURAL NOTES FOR LAP SPLICE LENGTH REQUIREMENTS.
 - DETAIL APPLIES TO BOND BEAM HORIZONTAL REINFORCING.

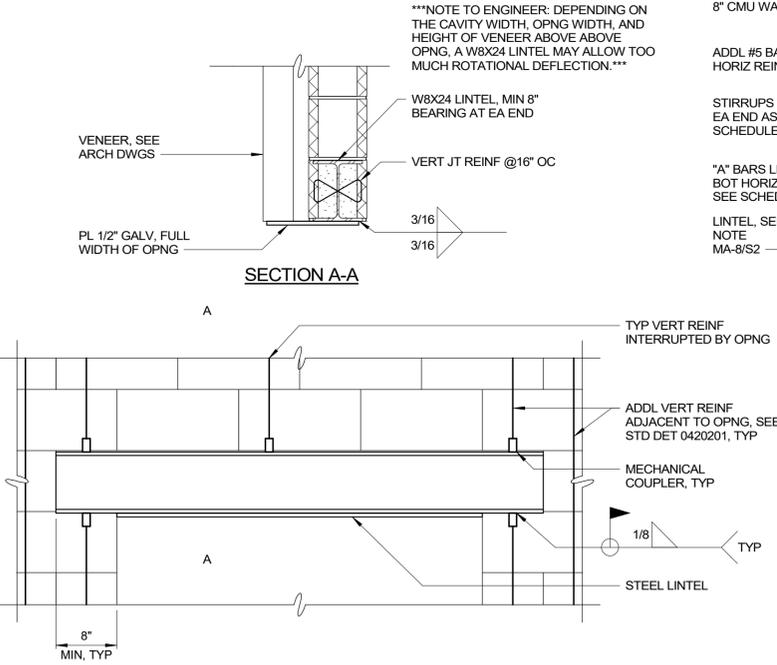
CMU OPENING REINFORCEMENT SCHEDULE					
"W" OPNG WIDTH	LINTEL DEPTH	LINTEL STIRRUP	"A" BAR LINTEL	"B" BAR JAMB	"J" MIN JAMB WIDTH
UP TO 2'-8"	8"	-	#5 BAR	1-#5 BAR EA JAMB	8"
>2'-8" <= 4'-0"	8"	-	2-#5 BARS	1-#5 BAR EA JAMB	8"
>4'-0" <= 6'-0"	16"	#3@8"	2-#5 BARS	2-#5 BAR EA JAMB	16"
>6'-0" <= 8'-0"	24"	#3@8"	2-#5 BARS	2-#5 BAR EA JAMB	16"
>8'-0"	SEE DRAWINGS			3-#5 BAR EA JAMB	24"



TYPICAL MASONRY OPENINGS
S-04-0202R



TYPICAL MASONRY OPENINGS
S-04-0202R



ELEVATION

STEEL LINTEL

DETAIL	7
1" = 1'-0"	

Autodesk Doc/23044_004_Big Branch 2 Pump Station and Pipeline/23044_004-STANDARD DETAILS-STRU.rvt 3/1/2023 10:35:56 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	J. PAQUETTE
DRAWN BY:	M. ROBLE
CHECKED BY:	J. WAYCASTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

STANDARD DETAIL
STRUCTURAL
STANDARD DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	SD3

NOTES TO ENGINEER (S-05-0102):
SHEAR CONNECTIONS PER AISC STEEL CONSTRUCTION MANUAL 14TH EDITION DESIGN TABLES 10-1, 10-2, AND 10-10a. CHECK DESIGN TABLE DISCUSSIONS BEFORE MAKING ANY CHANGES. LISTED CAPACITIES ARE CONSERVATIVE LOWER BOUND SHEARS FOR W SHAPES ONLY BASED ON THE FOLLOWING ASSUMPTIONS:

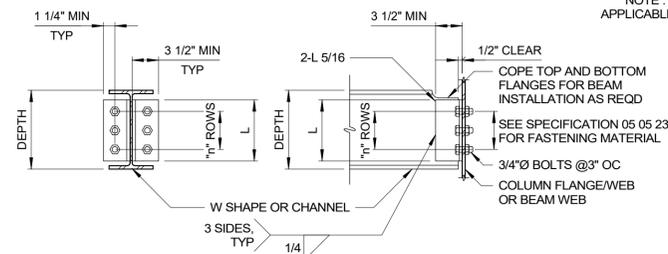
ALL 3/4" BOLTS ARE GROUP A THREAD CONDITION N AND STD HOLE TYPE CONNECTED BEAM IS COPED TOP AND BOTTOM THICKNESS OF SUPPORT STEEL IS AT LEAST 0.25" WEB THICKNESS OF CONNECTED BEAM IS SMALLEST TW FOR W SHAPES OF GIVEN DEPTH

AISC TABLE 10-1 DOES NOT CONSIDER LIMIT STATES OF FLEXURAL YIELDING AND LOCAL BUCKLING OF THE BEAM WEB FOR COPE MEMBERS. SEE AISC PART 9. PER AISC, BEAMS WITH SHORT COPE NO GREATER THAN THE LENGTH OF CONNECTION ANGLES OR PLATES GENERALLY ARE NOT SUSCEPTIBLE TO FLEXURAL LOCAL WEB BUCKLING.

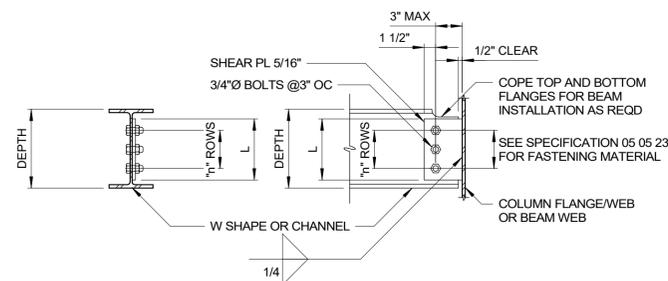
NOMINAL BEAM DEPTH, INCHES	(n) ROWS	L, INCHES
8-10	2	5 1/2"
12-15	3	8 1/2"
16-18	4	11 1/2"
21	5	1'-2 1/2"
24	6	1'-5 1/2"
27	7	1'-8 1/2"
30	8	1'-11 1/2"
33	9	2'-2 1/2"
36	10	2'-5 1/2"

W SHAPE LOWER BOUND CAPACITY (KIPS) SEE NOTES TO ENGINEER			
DOUBLE ANGLE		SINGLE PLATE	
ASD	LRFD	ASD	LRFD
12.4	18.7	12.4	18.7
23.0	34.4	23.0	34.4
39.0	58.5	39.0	58.5
69.0	103.6	54.1	81.3
94.4	141.4	59.3	89.1
128.8	193.2	72.1	108.0
151.3	227.0	84.7	127.0
185.0	278.0	94.8	142.0
205.0	308.0	105.0	157.0

NOTE: CHART NOT APPLICABLE TO CHANNELS



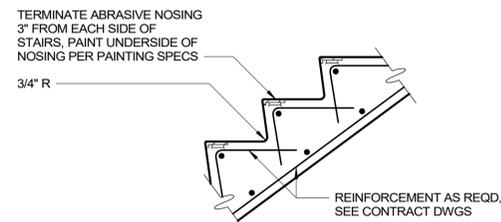
TYPE I DOUBLE ANGLE



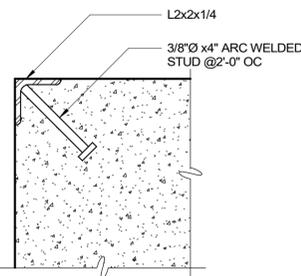
TYPE II SINGLE PLATE

NOTE: TYPE I DOUBLE ANGLE CONNECTION SHALL BE USED UNO ON DRAWINGS.

STEEL FRAMING CONNECTION
S-05-0102

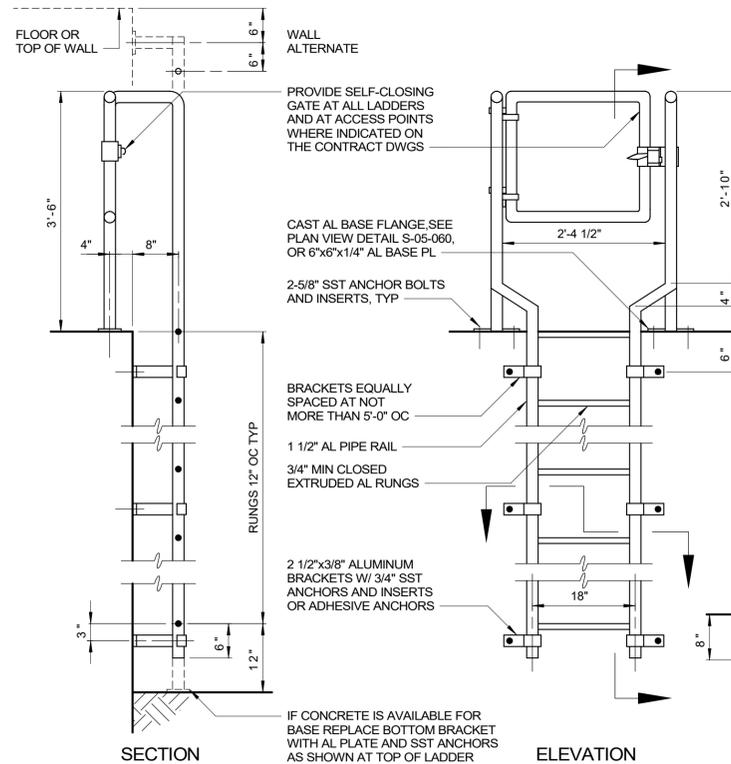


STAIR NOSING
S-05-0303

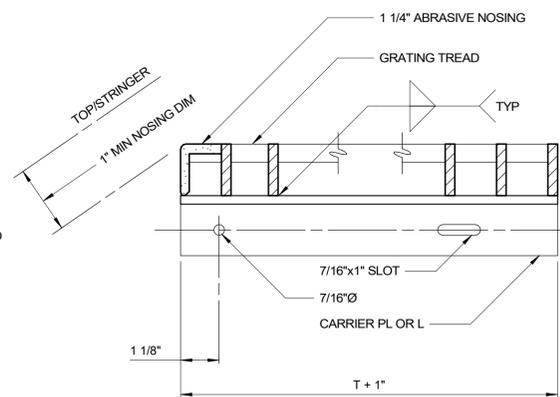


NOTE: CORNER GUARD REQUIRED ONLY WHERE SHOWN ON PLANS

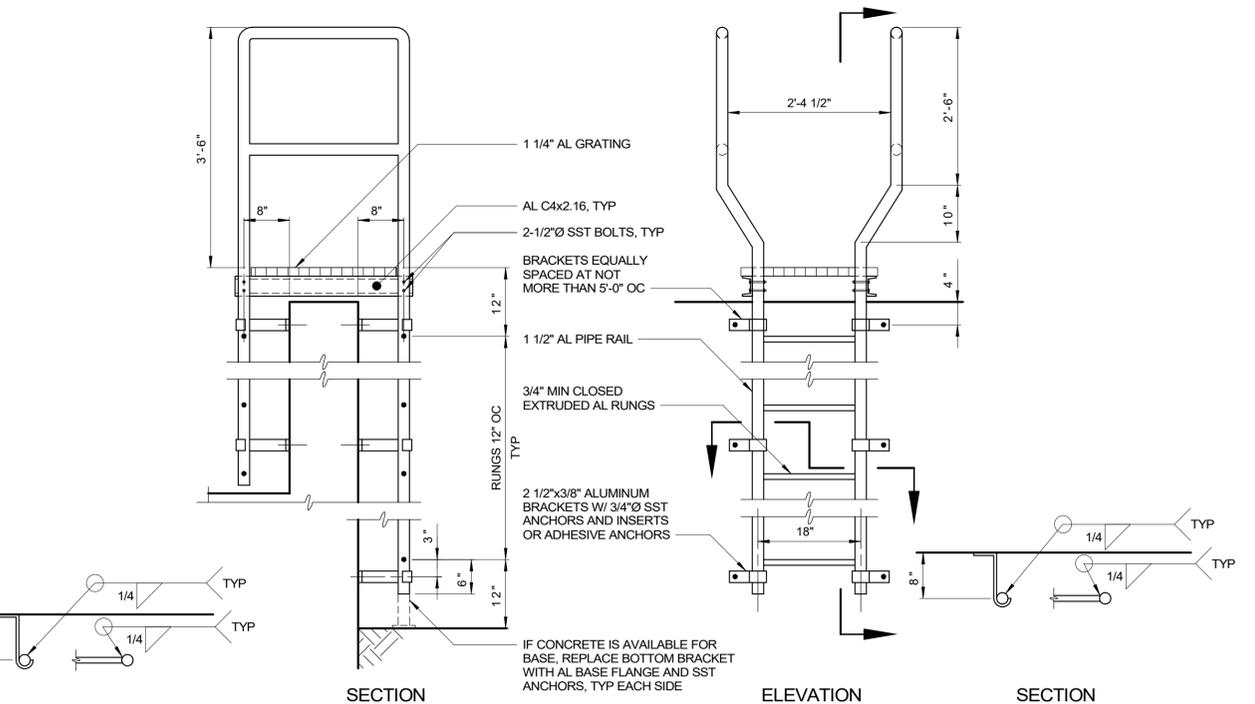
CORNER GUARD
S-05-0304



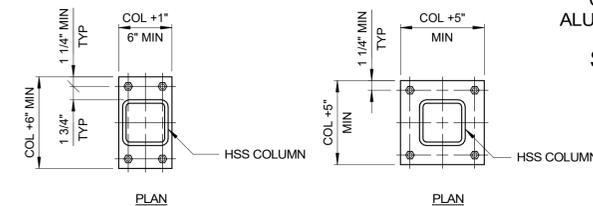
ALUMINUM LADDER
S-05-0501



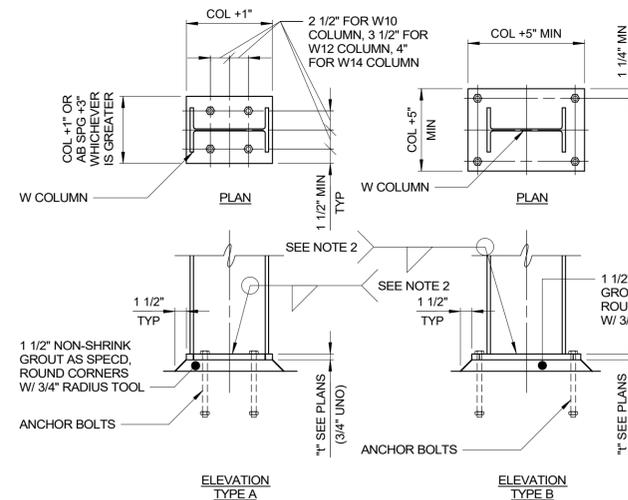
TREAD DETAIL
S-05-0511



CROSSOVER ALUMINUM LADDER
S-05-0506



COLUMN BASE - STEEL
S-05-0104



NOTES:
1. UNLESS OTHERWISE NOTED, ANCHOR BOLTS SHALL BE 3/4\"/>

Autodesk Doc/22044_001_Big Branch 2 Pump Station and Pipeline/22044-004-STANDARD DETAILS-STRU-14 3/21/2023 10:35:57 AM

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	J. PAQUETTE
DRAWN BY:	M. ROBLE
CHECKED BY:	J. WAYCASTER
IF THIS BAR DOES NOT MEASURE 1\"/>	

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

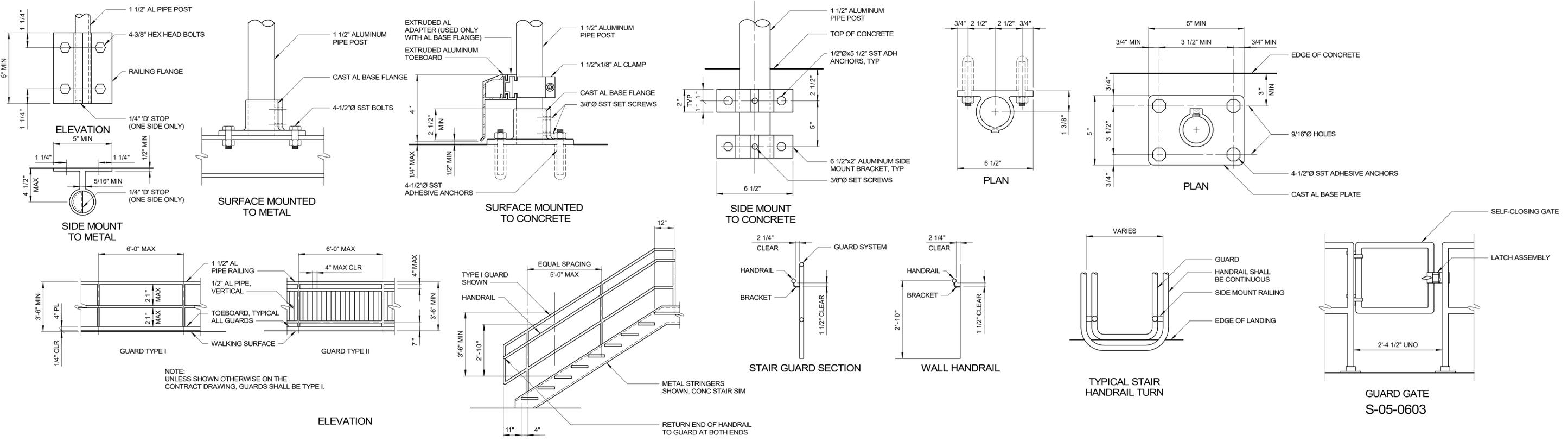
Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

STANDARD DETAIL
STRUCTURAL
STANDARD DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	

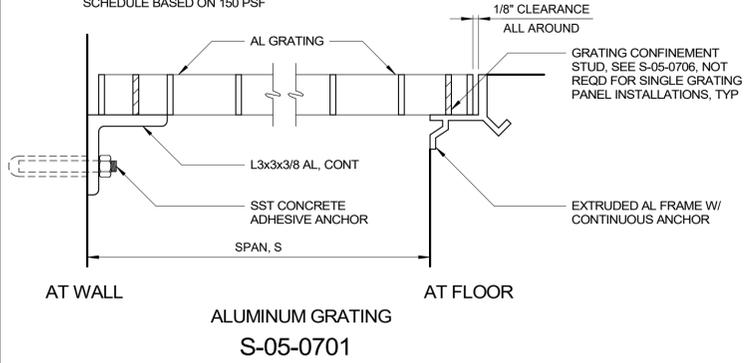
SD4



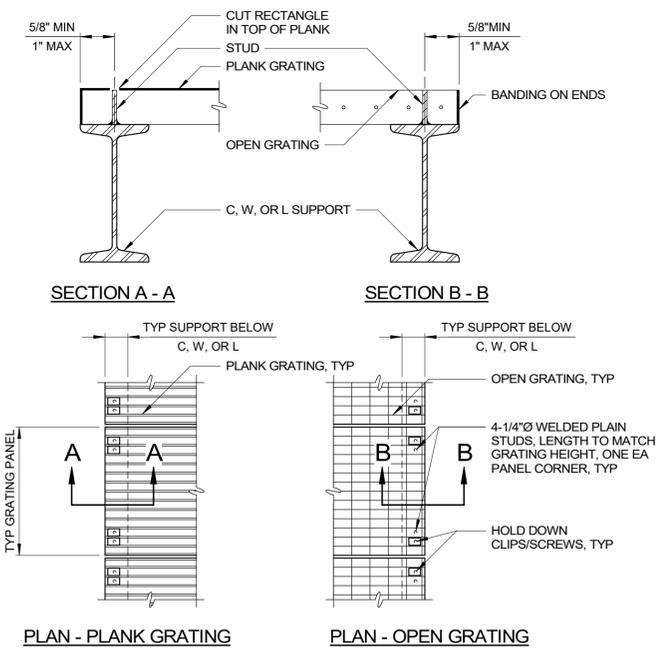
ALUMINUM GUARDS AND HANDRAILS
S-05-0601

SPAN, S	DEPTH (MIN)	CONCRETE ANCHOR (SIZE AND SPACING)
0'-0" < S ≤ 4'-0"	1 1/2"	1/2"Øx5 1/2" @ 18"
4'-0" < S ≤ 5'-0"	1 3/4"	
5'-0" < S ≤ 5'-6"	2"	5/8"Øx6" @ 18"
5'-6" < S ≤ 6'-0"	2 1/4"	
6'-0" < S ≤ 6'-6"	2 1/2"	

SCHEDULE BASED ON 150 PSF



ALUMINUM GRATING
S-05-0701



- NOTES:
- STUDS SHALL BE: METAL GRATING - 1/4" Ø WELDED PLAIN STUD OF SAME MATERIAL AS SUPPORT, WITH STUDS WELDED PER AWS REQUIREMENTS. FRP GRATING - #14 SST TEK SCREWS, SELF-DRILLED INTO THE BASE MATERIAL.
 - INSTALLED STUD SHALL MATCH GRATING HEIGHT.
 - STUD SHALL BE PLACED BETWEEN CROSS BAR(S) AND/OR BEARING BARS.

GRATING CONFINEMENT USING STUDS
S-05-0706

Autodesk Doc/22044_004_Big Branch 2 Pump Station and Pipelines/22044_004-STANDARD DETAILS-STRU.rvt 3/21/2023 10:35:55 AM

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	J. PAQUETTE		
DRAWN BY:	M. ROBLE		
CHECKED BY:	J. WAYCASTER		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

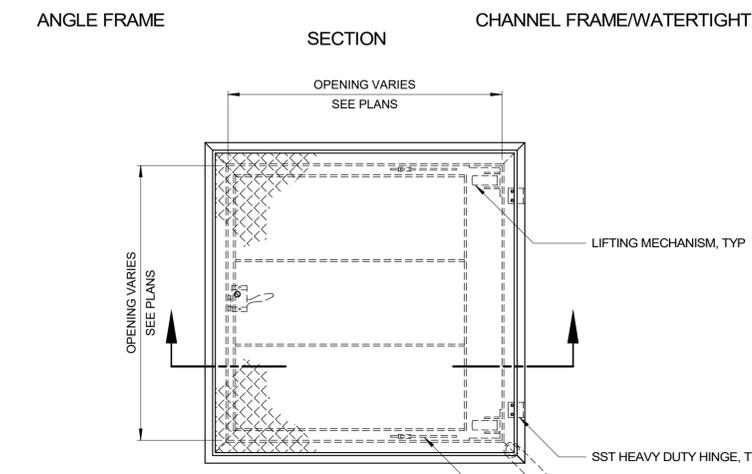
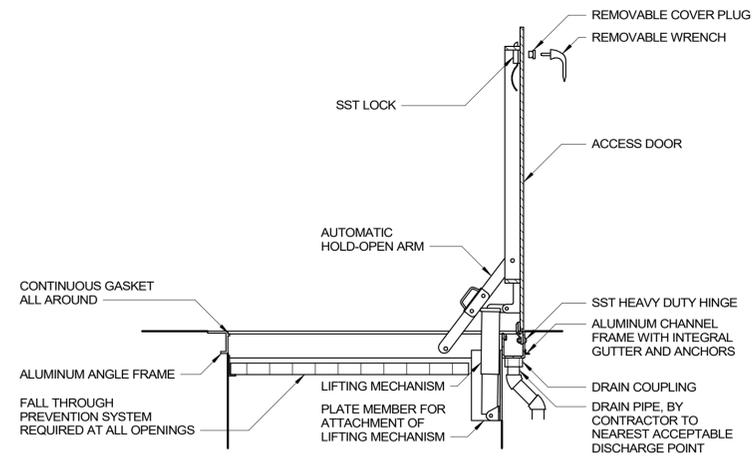
PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

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4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE NO.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

STANDARD DETAIL
STRUCTURAL
STANDARD DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	SD5

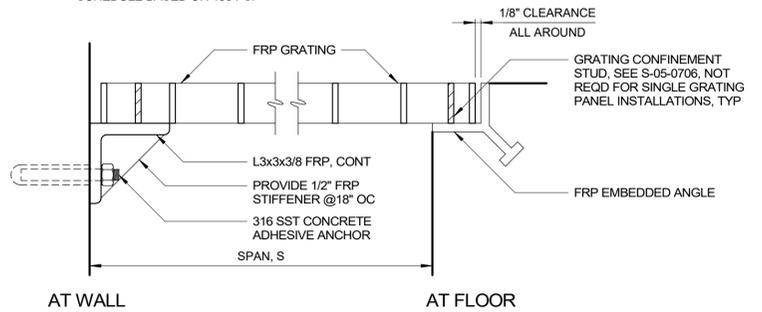


NOTE:
OPENINGS LARGER THAN 42 INCHES IN EITHER DIRECTION SHALL HAVE DOUBLE LEAF DOORS.

AL ACCESS DOOR
S-05-0806

SPAN, S	DEPTH (MIN)	CONCRETE ANCHOR (SIZE AND SPACING)
0'-0" < S ≤ 3'-6"	1 1/2"	1/2" Ø x 5 1/2" @ 18"
3'-6" < S ≤ 5'-0"	2"	5/8" Ø x 6" @ 18"

SCHEDULE BASED ON 150 PSF



FRP GRATING
S-06-0101

Autodesk Docs/22044-004_Big Branch 2 Pump Station and Pipelines/22044-004-STANDARD DETAILS-STRU-14 3/21/2023 10:03:55 AM

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DESIGNED BY:	J. PAQUETTE
DRAWN BY:	M. ROBLE
CHECKED BY:	J. WAYCASTER
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

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HAZEN AND SAWYER
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RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA

BIG BRANCH 2
PUMP STATION

STANDARD DETAIL
STRUCTURAL
STANDARD DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	SD6

ROOM FINISH SCHEDULE																	
NO.	DESCRIPTION	FLOOR		BASE		WALL-NORTH		WALL-EAST		WALL-SOUTH		WALL-WEST		CEILING			REMARKS
		SUBSTRATE	FINISH	SUBSTRATE	FINISH	SUBSTRATE	FINISH	SUBSTRATE	FINISH	SUBSTRATE	FINISH	SUBSTRATE	FINISH	SUBSTRATE	FINISH	HEIGHT	
100 - PUMP STATION																	
100	STAIR	CONC	SEALER	CONC	RUB	CMU	PT	CMU	PT	CMU	PT	CMU	PT	GWB	PT	12'-0"	
101	DUMPSTER ROOM	CONC	SEALER	CONC	RUB	CMU	PT	CMU	PT	CMU	PT	CMU	PT	GWB	PT	12'-0"	
130 - CHEMICAL BUILDING																	
130	CHEMICAL ROOM	CONC	CL	CONC	CL	CMU	PT	CMU	PT	CMU	PT	CMU	PT	ES	---	10'-0"	
150 - ELECTRICAL BUILDING																	
150	ELECTRICAL ROOM	CONC	SLR	CONC	RUB	CMU	PT	CMU	PT	CMU	PT	CMU	PT	GWB	PT	10'-0"	
150A	VESTIBULE	CONC	SLR	CONC	RUB	CMU	PT	CMU	PT	CMU	PT	CMU	PT	GWB	PT	10'-0"	
151	REST ROOM	CONC	SLR	CONC	RUB	CMU	PT	CMU	PT	CMU	PT	CMU	PT	GWB	PT	10'-0"	
152	PLUMBING CLOSET	CONC	SLR	CONC	RUB	CMU	PT	CMU	PT	CMU	PT	CMU	PT	GWB	PT	10'-0"	
153	STORAGE ROOM	CONC	SLR	CONC	RUB	CMU	PT	CMU	PT	CMU	PT	CMU	PT	GWB	PT	10'-0"	

ROOM FINISH LEGEND ROOM FINISH SCHEDULE NOTES:

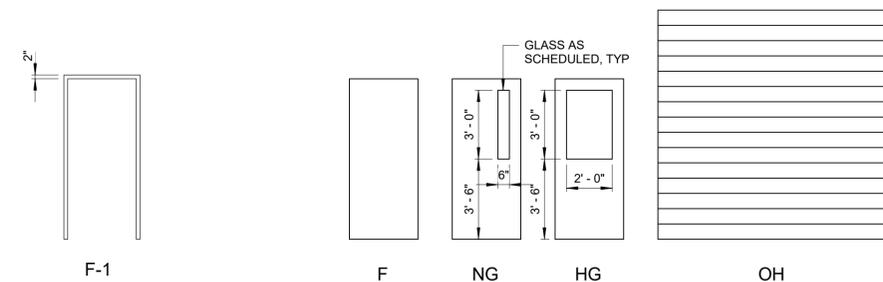
CL	CONTAINMENT LINER	GWB	GYPSUM WALLBOARD
CONC	CONCRETE	MB	METAL BUILDING
CMU	CONCRETE MASONRY UNITS	MFR	MANUFACTURER
ES	EXPOSED STRUCTURE	PT	PAINT

DOOR SCHEDULE																				
NO.	FRAME		DOOR					DETAILS			GLAZING		HARDWARE		THRESHOLD	REMARKS				
	TYPE	MATL	TYPE	MATL	ACTIVE WIDTH	INACTIVE WIDTH	HEIGHT	THICKNESS	HEAD	JAMB	SILL	FIRE RATING	TYPE	SIZE			FINISH	SECURITY WIRING	NO	NOTE
100 - PUMP STATION																				
100	F-1	FRP	HG	FRP	6'-0"		9'-2"	1"				---	LIG	24"x36"	MFR			PANIC	AL	
101	MFR	STEEL	OH	AL	10'-0"		9'-4"	3/4"	4/B1	4/B1	4/B1	---	---		MFR	---	1		AL	
130 - CHEMICAL BUILDING																				
130	F-1	FRP	HG	FRP	3'-0"		7'-2"	1 3/4"	1/A1	1/A1	1/A1		TG		MFR	---	6		AL	
150 - ELECTRICAL BUILDING																				
150A	F-1	FRP	HG	FRP	3'-0"		7'-2"	1 3/4"	1/B1	1/B1	1/B1	---	LIG		MFR	---	7		AL	NOTE 2
151	F-1	FRP	F	FRP	3'-0"		7'-2"	1 3/4"	1/B1	1/B1	1/B1	---	---		MFR	---	5	PANIC	AL	
152	F-1	FRP	F	FRP	3'-0"		7'-2"	1 3/4"	1/B1	1/B1	1/B1	---	IG		MFR	---	4	PANIC	AL	
153	MFR	STL	OH	AL	10'-0"		10'-0"	3/4"	5/B1	5/B1	5/B1	---			MFR	---	8	MOTOR		PREFINISHED INSULATED OVERHEAD DOOR, MOTORIZED
153A	F-1	FRP	F&F	FRP	3'-0"		7'-2"	1 3/4"	1/B1	1/B1	1/B1	---								

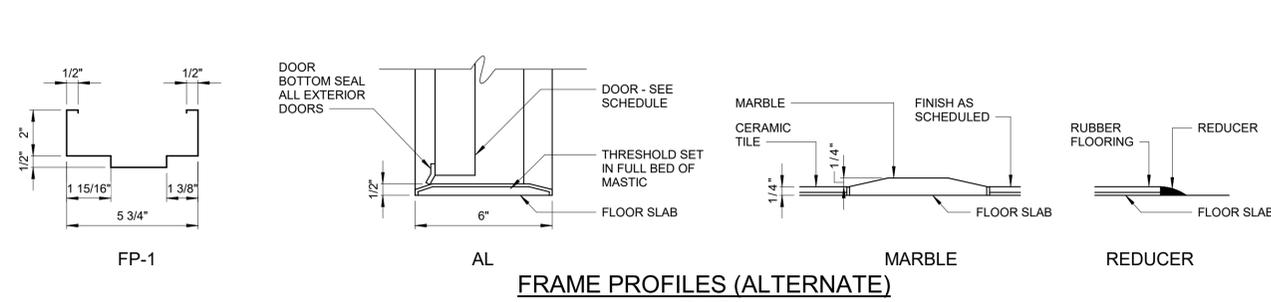
DOOR LEGEND DOOR SCHEDULE NOTES:

AL	ALUMINUM	MFR	MANUFACTURER
HM	HOLLOW METAL	PT	PAINT
IG	INSULATING GLAZING		

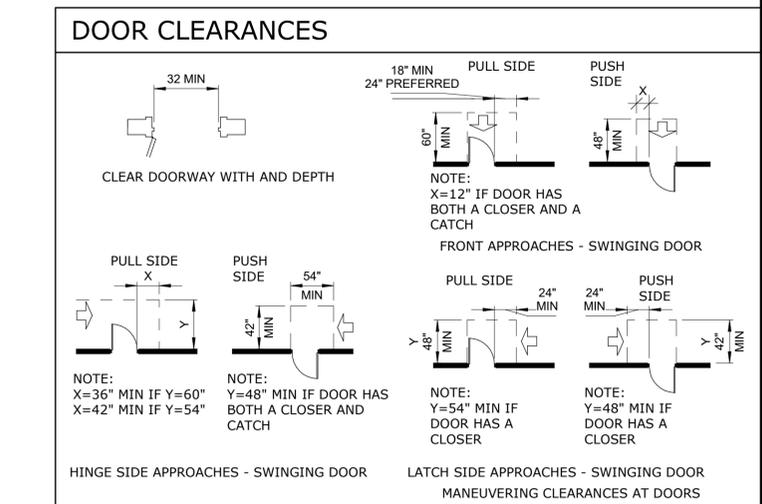
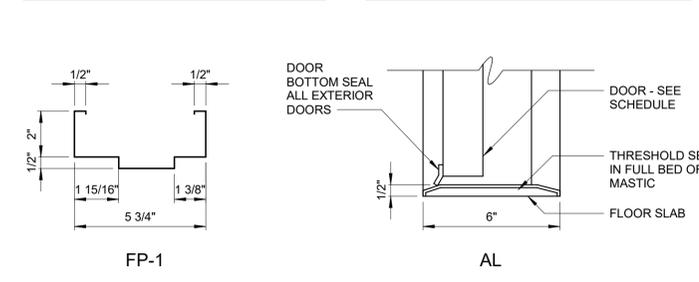
FRAME TYPES 1/4" = 1'-0" DOOR TYPES 1/4" = 1'-0"



FRAME PROFILES 3" = 1'-0" THRESHOLD TYPES 3" = 1'-0"



FRAME PROFILES 3" = 1'-0" THRESHOLD TYPES 3" = 1'-0"



Autodesk Docs/2304-004_Big Branch 2 Pump Station and Pipelines/2304-004-ARCH-GENERAL.rvt 3/21/2023 1:43:38 PM

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	H&S		
DRAWN BY:	H&S		
CHECKED BY:	H&S		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

PRELIMINARY DRAWING
DO NOT USE FOR
CONSTRUCTION

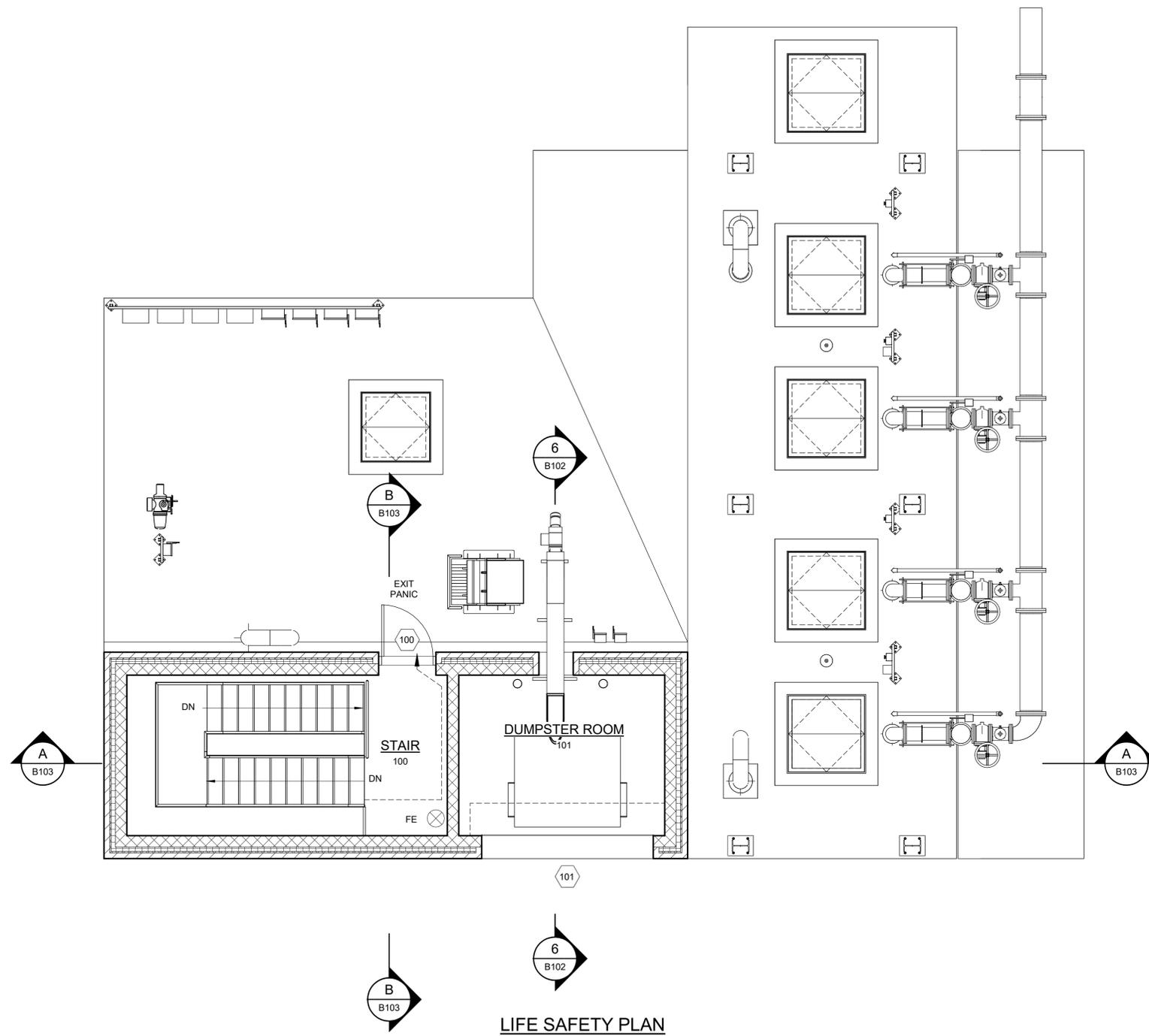
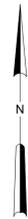
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RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

BIG BRANCH PUMP STATION
BUILDING
NOTES, LEGENDS, AND SCHEDULES

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	B1

- ARCHITECTURAL GENERAL NOTES:**
- FOR CONCRETE AND STEEL SIZES AND CONFIGURATIONS, SEE STRUCTURAL DRAWINGS.
 - FOR LOCATION OF EQUIPMENT PADS, SEE STRUCTURAL AND PROCESS MECHANICAL DRAWINGS.
 - FOR FINAL GRADING AND BUILDING LOCATION, SEE CIVIL DRAWINGS.
 - FOR FLOOR DRAIN LOCATIONS, SEE CIVIL, STRUCTURAL AND PLUMBING DRAWINGS.
 - ITEMS NOT NOTED ON DRAWINGS SHALL BE CONSIDERED THE SAME AS NOTED ITEMS WHICH ARE GRAPHICALLY REPRESENTED IN THE SAME MANNER.
 - SURFACES TO BE PAINTED ARE NOT COMPLETELY INDICATED ON DRAWINGS. SEE DETAILS SPECIFICATION 09900 PAINTING AND FINISH SCHEDULE.
 - INTERIOR WALLS SHALL EXTEND TO UNDERSIDE OF THE ROOF OR FLOOR SLAB ABOVE UNO.
 - PROVIDE TOP OF WALL ANCHORS FROM THE TOP COURSE OF ALL INTERIOR MASONRY WALLS TO THE BEAM OR SLAB ABOVE UNO. TOP OF METAL STUD WALLS TO RECEIVE DEFLECTION TRACK.
 - DOORS SHALL BE LOCATED 8" FROM THE CORNERS OF MASONRY WALLS, AND 6" FROM THE CORNERS OF METAL STUD WALLS UNLESS OTHERWISE DIMENSIONED ON THE PLAN.
 - WALL DIMENSIONS ARE TO FACE OF MASONRY OR FACE OF METAL STUD. SEE PARTITION SCHEDULE FOR ADDITIONAL INFORMATION.
 - DIMENSIONS REPRESENT MASONRY OPENINGS IN MASONRY WALLS, AND NOMINAL OPENINGS IN METAL FRAMED WALLS.
 - MASONRY WALL DIMENSIONS ARE NOMINAL MASONRY SIZES UNO.
 - INTERIOR MASONRY WALLS THAT ARE TO RECEIVE METAL FURRING ARE DIMENSIONED TO THE FACE OF THE METAL FURRING. SEE PARTITION SCHEDULE FOR METAL FURRING TYPE AND FINISH.
 - WHERE THE TERM "ALIGN" IS SHOWN ON THE DRAWING, IT SHALL MEAN THAT FINISH MATERIALS ON WALLS SHALL ALIGN. WHERE FINISHES HAVE DIFFERENT SUBSTRATES, PROVIDE A CONTROL JOINT IN THE FINISH MATERIAL WHERE THE DIFFERENT MATERIALS MEET.
 - VERTICAL MASONRY REINFORCING SHALL BE IN FULLY GROUTED CELLS, AND SPACED AS INDICATED ON DRAWINGS, ADJACENT TO ALL OPENINGS AND AT CORNERS.
 - INSTALL 20 GA METAL BLOCKING, BACKER PLATE, OR FIRE TREATED WOOD BLOCKING IN METAL STUD WALLS TO SUPPORT WALL MOUNTED EQUIPMENT. CONTRACTOR SHALL COORDINATE AND DESIGN BLOCKING TO FULLY SUPPORT EQUIPMENT AND CASEWORK WITHOUT DEFLECTION.
 - CONDUITS IN FINISHED AREAS SHALL BE CONCEALED IN MASONRY AND METAL STUD WALLS.
 - WHERE DISSIMILAR METALS ADJOIN, SEPARATE WITH BARRIER COATING TO PREVENT GALVANIC CORROSION.
 - FOR EXPOSED METAL DECK CEILINGS, ROOFING SCREWS TO BE CUT TO NOT EXTEND MORE THAN 1" THROUGH METAL DECK.
 - SEE DRAWINGS S-1 AND S-2 FOR STRUCTURAL LOADS, INCLUDING NON-STRUCTURAL COMPONENT ANCHORAGE TO RESIST SEISMIC FORCES.
 - PROVIDE APPROVED KNOX BOX AT EACH BUILDING MAIN ENTRANCE AND ENTRANCE GATE. WHERE NOT SHOWN ON DRAWINGS, COORDINATE LOCATION IN FIELD.
 - WHERE DISCREPANCIES ARE FOUND, NOTIFY THE ENGINEER IN ACCORDANCE WITH THE GENERAL CONDITIONS.
 - DRAWINGS ARE REPRESENTATIVE, AND DO NOT SUGGEST THE USE OF A PARTICULAR PRODUCT. NOTES AND SPECIFICATIONS SHALL DEFINE SPECIFIC PRODUCTS.



LIFE SAFETY PLAN
1/4" = 1'-0"

LEGEND:

- FE FIRE EXTINGUISHER - DRY CHEMICAL
- PANIC PROVIDE PANIC HARDWARE



Autodesk Docs/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-100-FSA.rvt 3/1/2023 1:32:53 PM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	W. RUSSELL
DRAWN BY:	W. DUNN
CHECKED BY:	W. RUSSELL
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

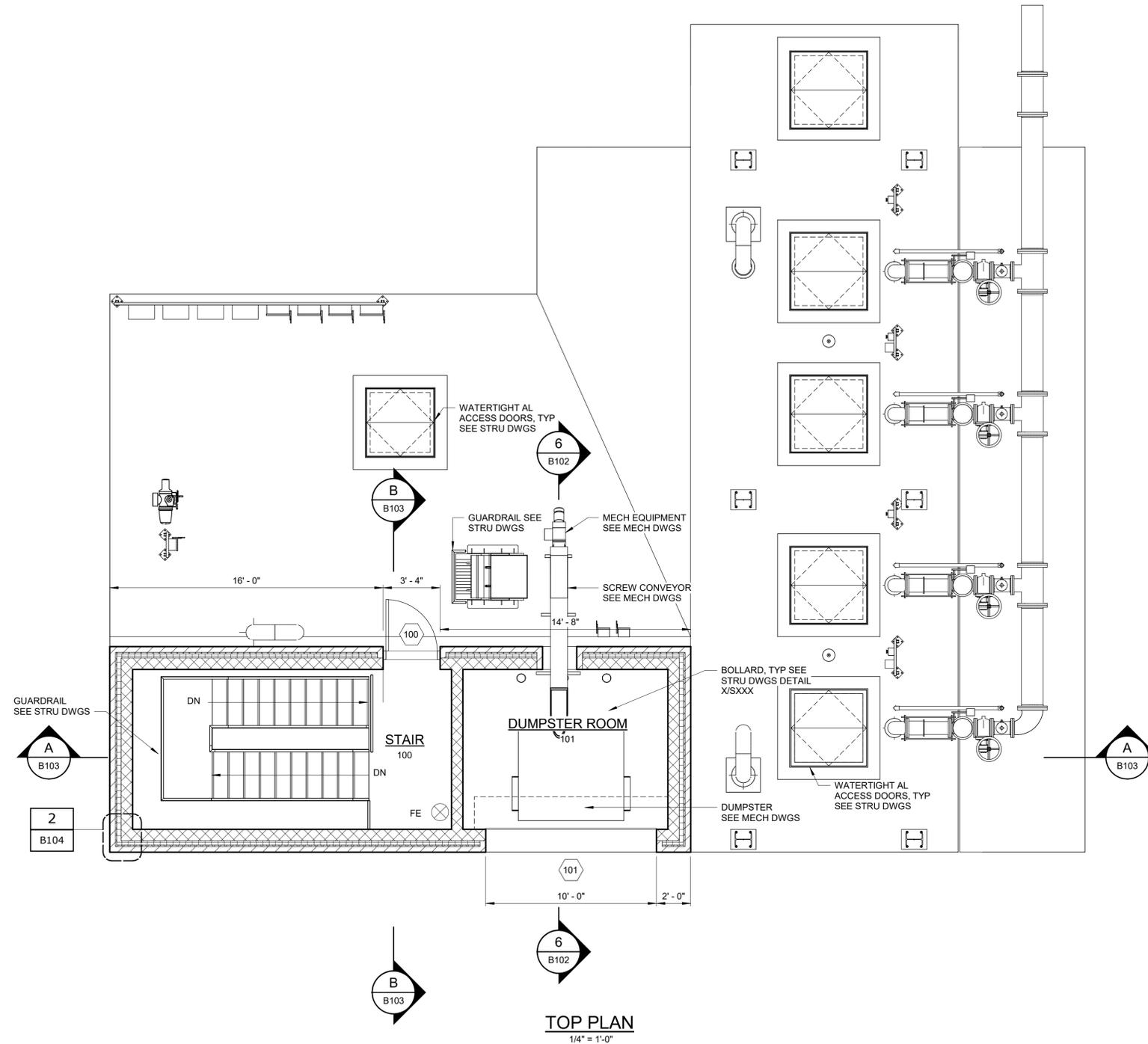
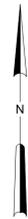
PRELIMINARY DRAWING
DO NOT USE FOR
CONSTRUCTION

Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

PUMP STATION
BUILDING
LIFE SAFETY PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	B100



TOP PLAN
1/4" = 1'-0"

LEGEND:

- DOOR NUMBER - SEE DRAWING B1
- FE FIRE EXTINGUISHER - DRY CHEMICAL
- CO₂ FIRE EXTINGUISHER - CARBON DIOXIDE
- DS DOWNSPOUT

Autodesk Docs/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-100-PS-A.rvt 3/1/2023 1:32:54 PM

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PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	W. RUSSELL
DRAWN BY:	W. DUNN
CHECKED BY:	W. RUSSELL
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

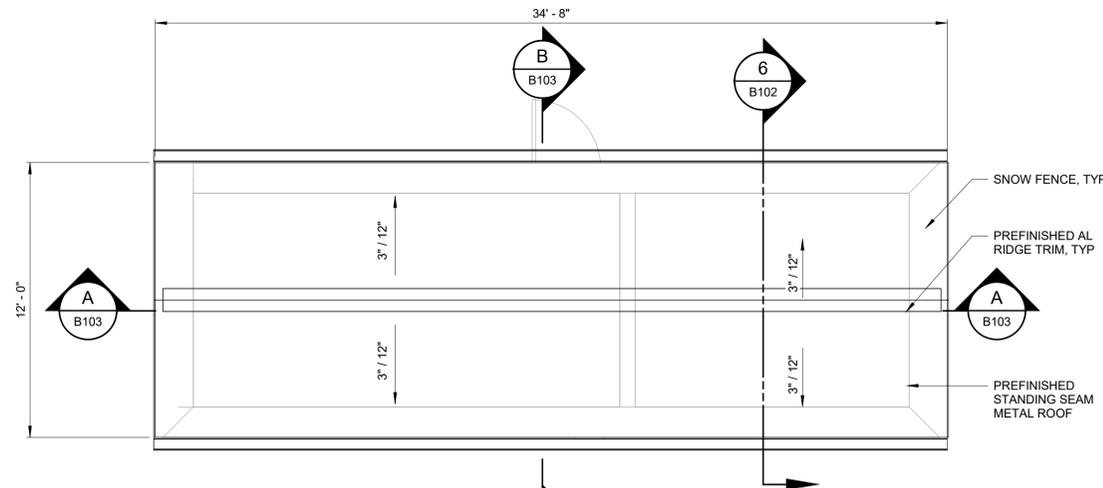
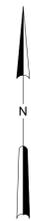
PRELIMINARY DRAWING
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4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

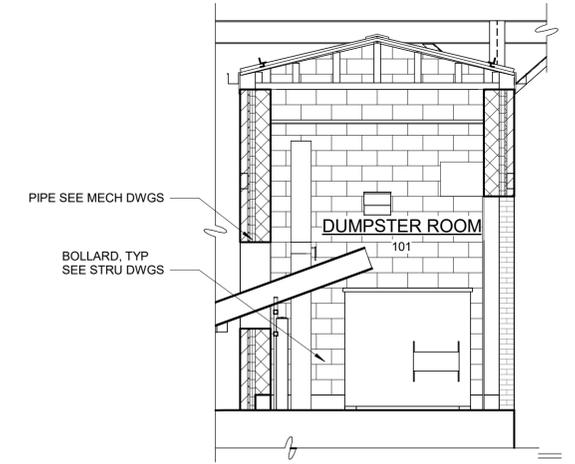
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

PUMP STATION
BUILDING
TOP PLAN

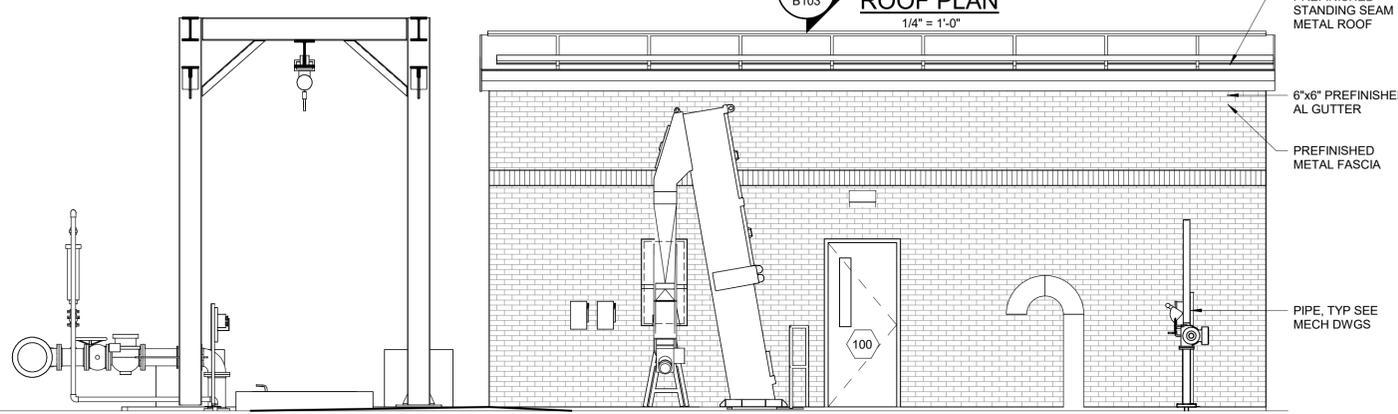
DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	B101



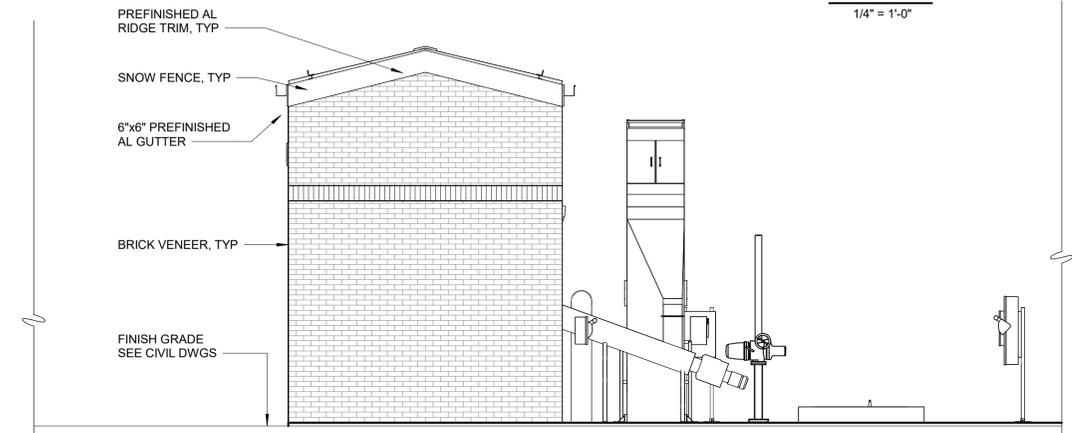
ROOF PLAN
1/4" = 1'-0"



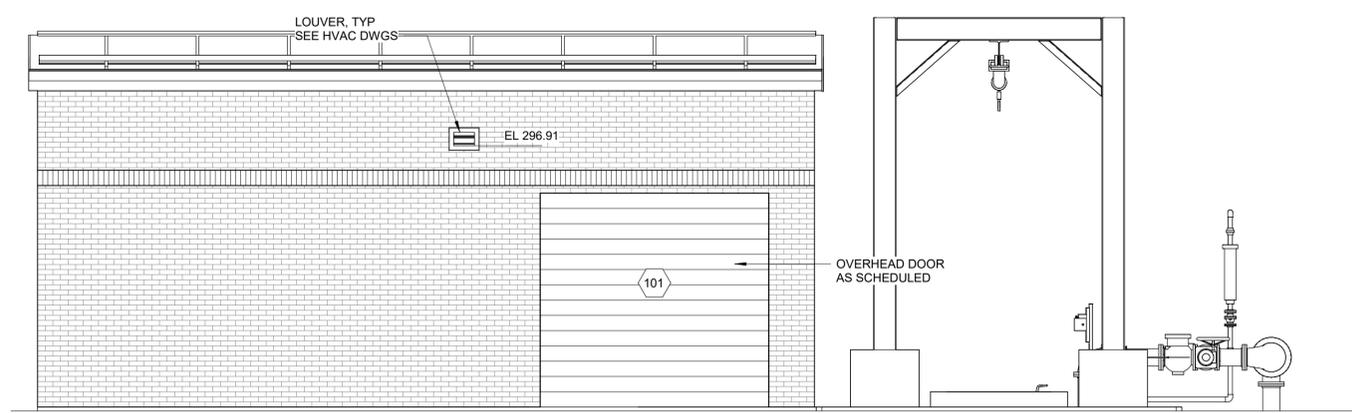
Section C
1/4" = 1'-0"



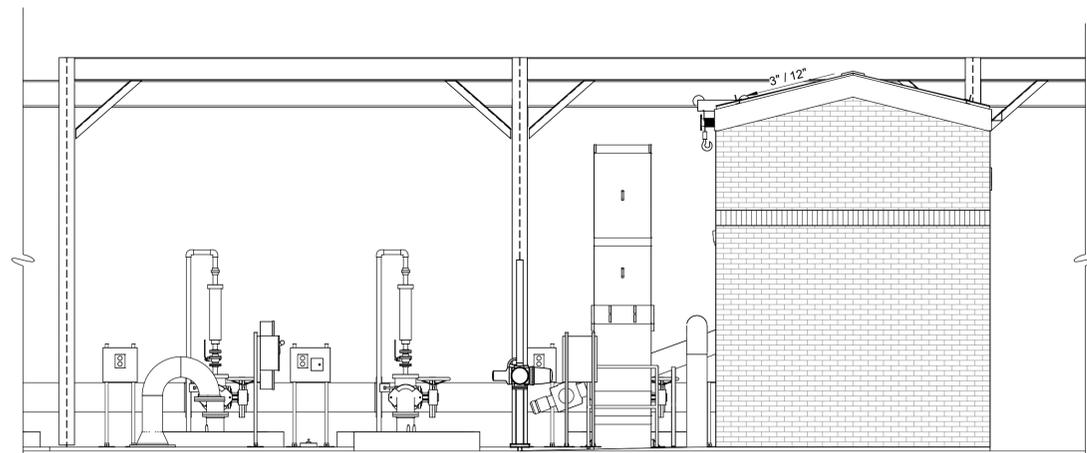
NORTH ELEVATION
1/4" = 1'-0"



EAST ELEVATION
1/4" = 1'-0"



SOUTH ELEVATION
1/4" = 1'-0"



WEST ELEVATION
1/4" = 1'-0"

LEGEND:
100 DOOR NUMBER - SEE DRAWING B1

Autodesk_Dwg/23044-004_Big Branch 2 Pump Station and Pipelines/23044-004-100-FS-A.rvt 3/21/2023 1:32:55 PM

REV	ISSUED FOR	DATE	BY

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DESIGNED BY:	W. RUSSELL
DRAWN BY:	W. DUNN
CHECKED BY:	W. RUSSELL
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

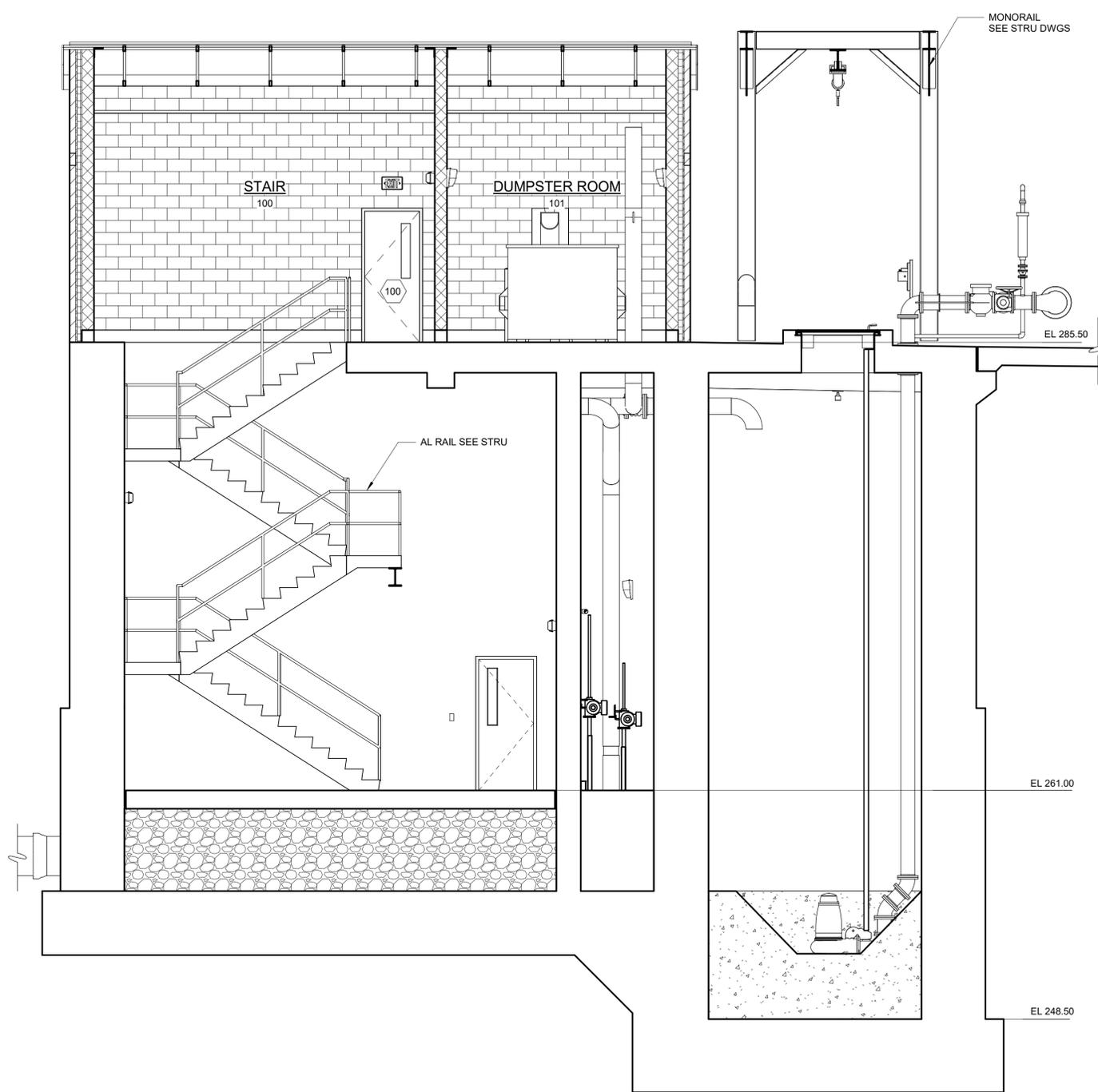
PRELIMINARY DRAWING
DO NOT USE FOR
CONSTRUCTION

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HAZEN AND SAWYER
4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

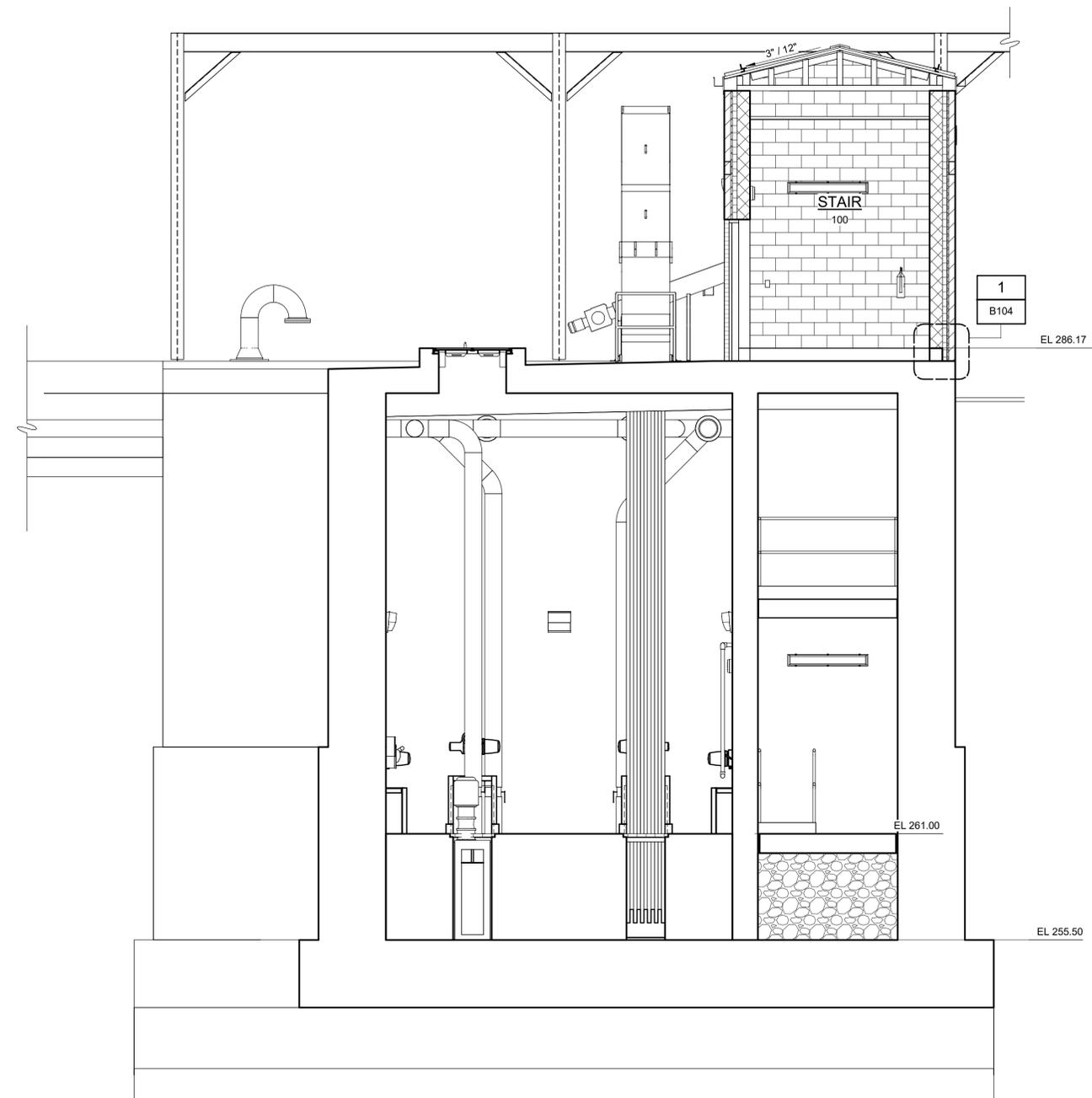
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

PUMP STATION
BUILDING
ELEVATIONS & ROOF PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	B102



SECTION A
1/4" = 1'-0" B100



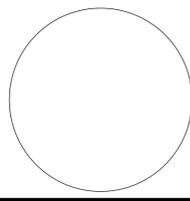
SECTION B
1/4" = 1'-0" B100

Autodesk Desc/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-100-FS-A.rvt 3/1/2023 1:32:56 PM

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PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	W. RUSSELL
DRAWN BY:	W. DUNN
CHECKED BY:	W. RUSSELL
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

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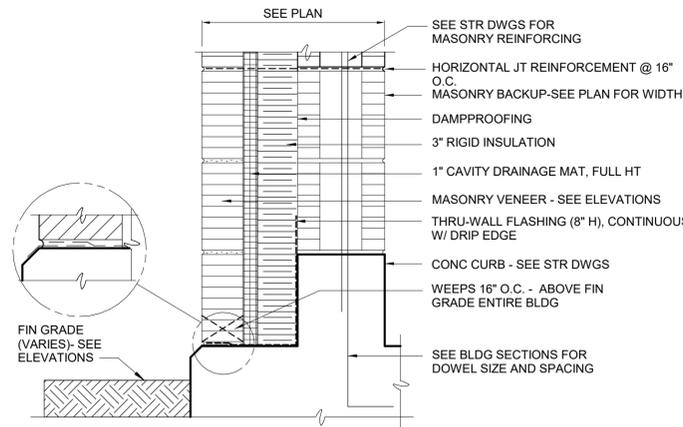
Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381



BIG BRANCH 2
PUMP STATION

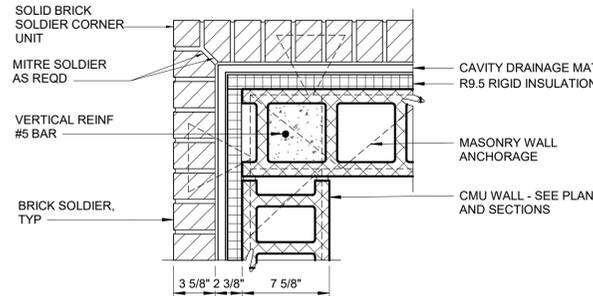
PUMP STATION
BUILDING
SECTIONS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	B103



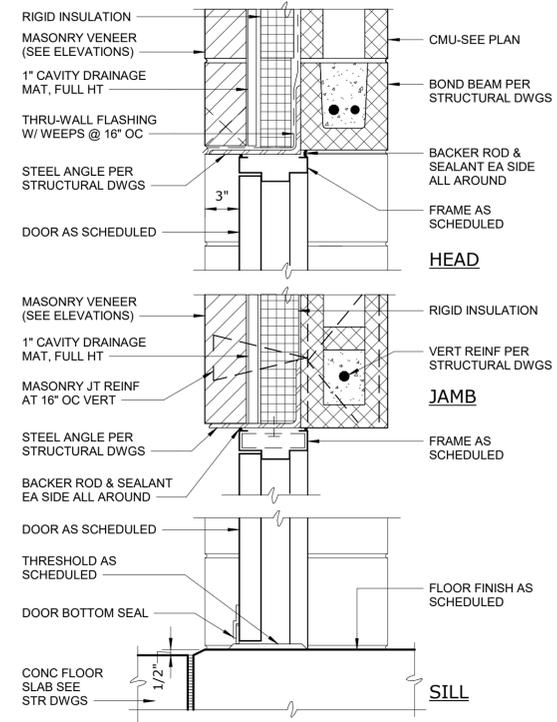
CAVITY WALL BOTTOM

DETAIL	1
1 1/2" = 1'-0"	B103



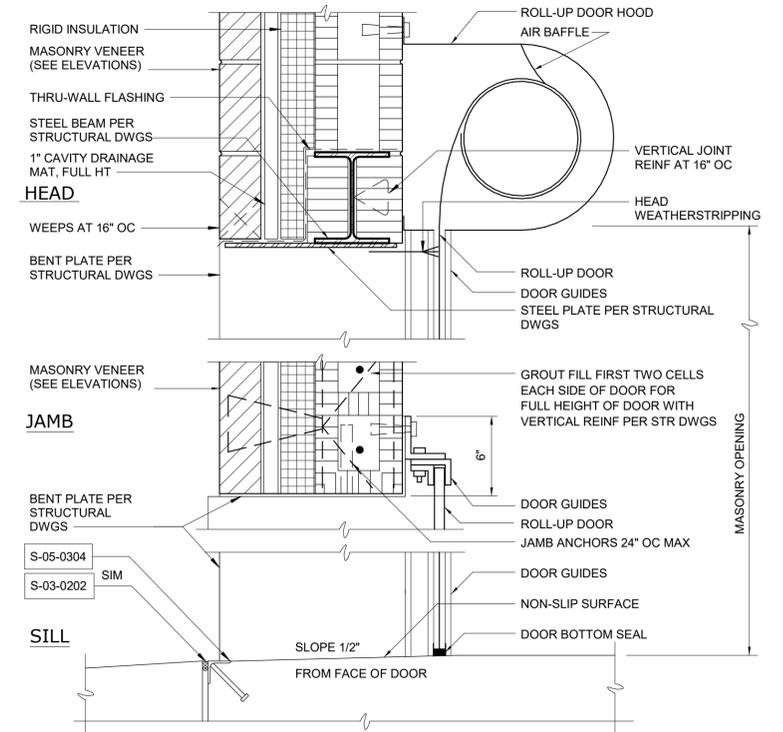
SOLDIER COURSE AT CORNER - CMU

DETAIL	2
1 1/2" = 1'-0"	B101



DOOR IN MASONRY CAVITY WALL - 8" CMU

DETAIL	3
1 1/2" = 1'-0"	B1



ROLL-UP DOOR IN MASONRY CAVITY WALL - 8" CMU

DETAIL	4
1 1/2" = 1'-0"	B1

Autodesk Doc/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-100/PSA.rvt 3/13/2023 1:32:56 PM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	W. RUSSELL
DRAWN BY:	W. DUNN
CHECKED BY:	W. RUSSELL
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

PRELIMINARY DRAWING
DO NOT USE FOR
CONSTRUCTION

Hazen

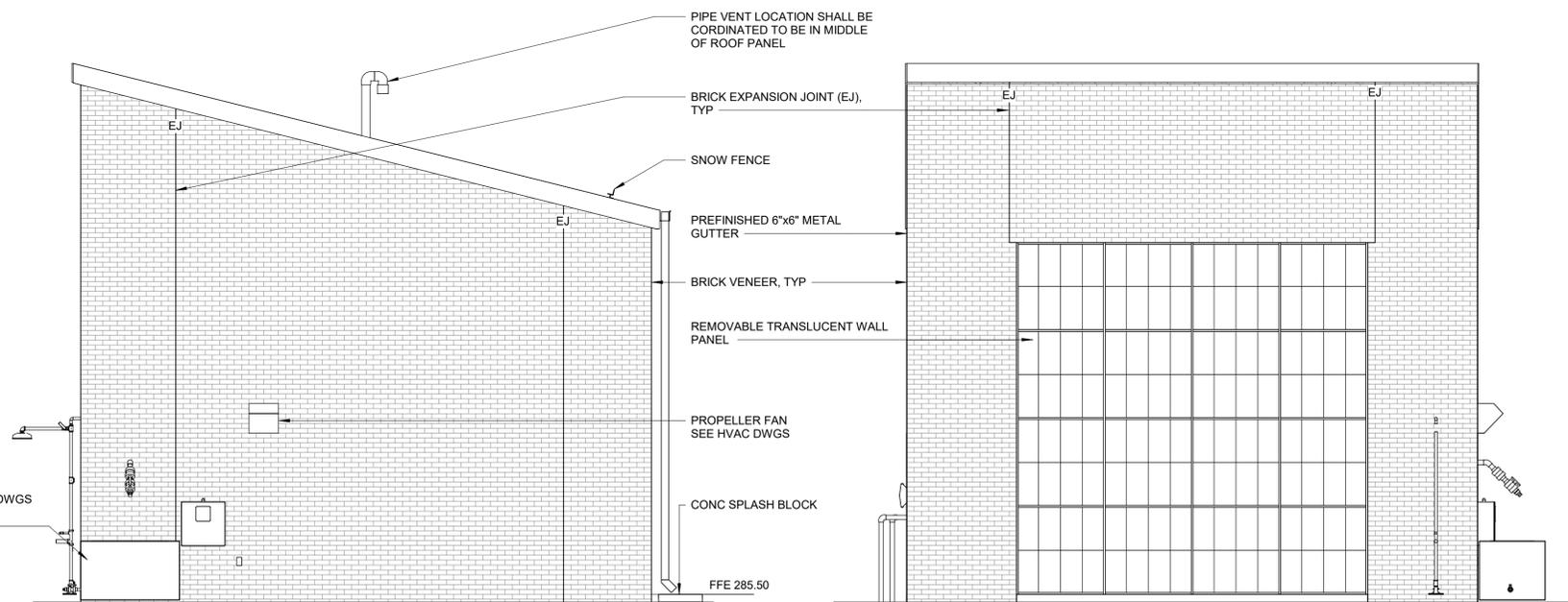
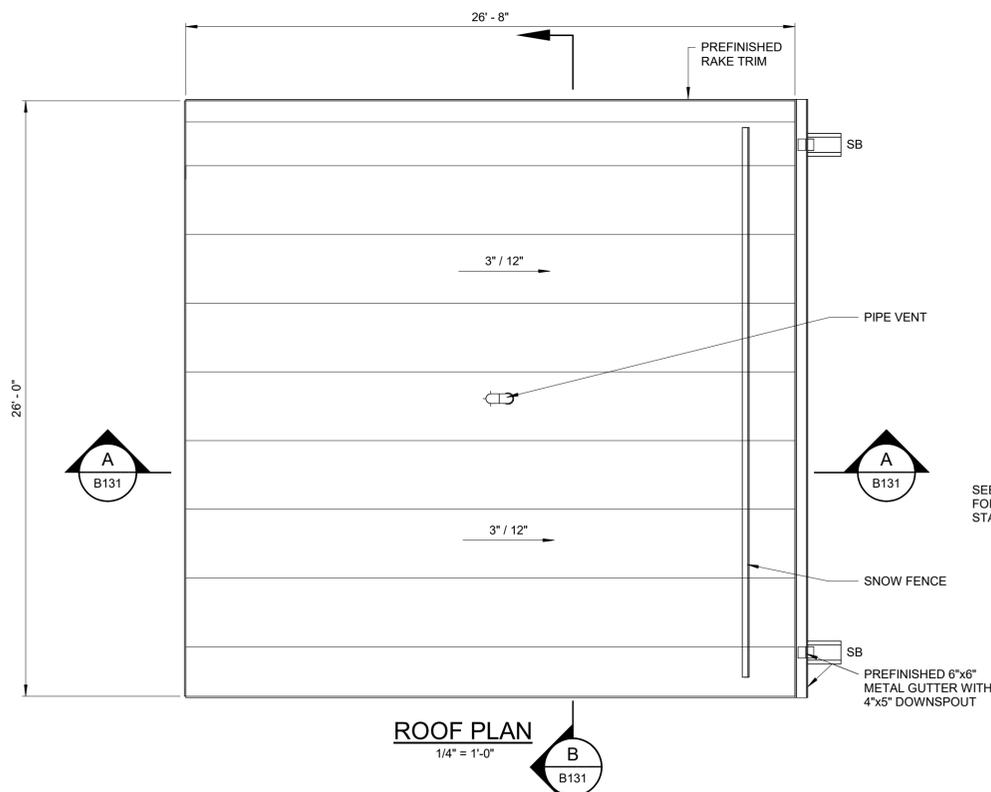
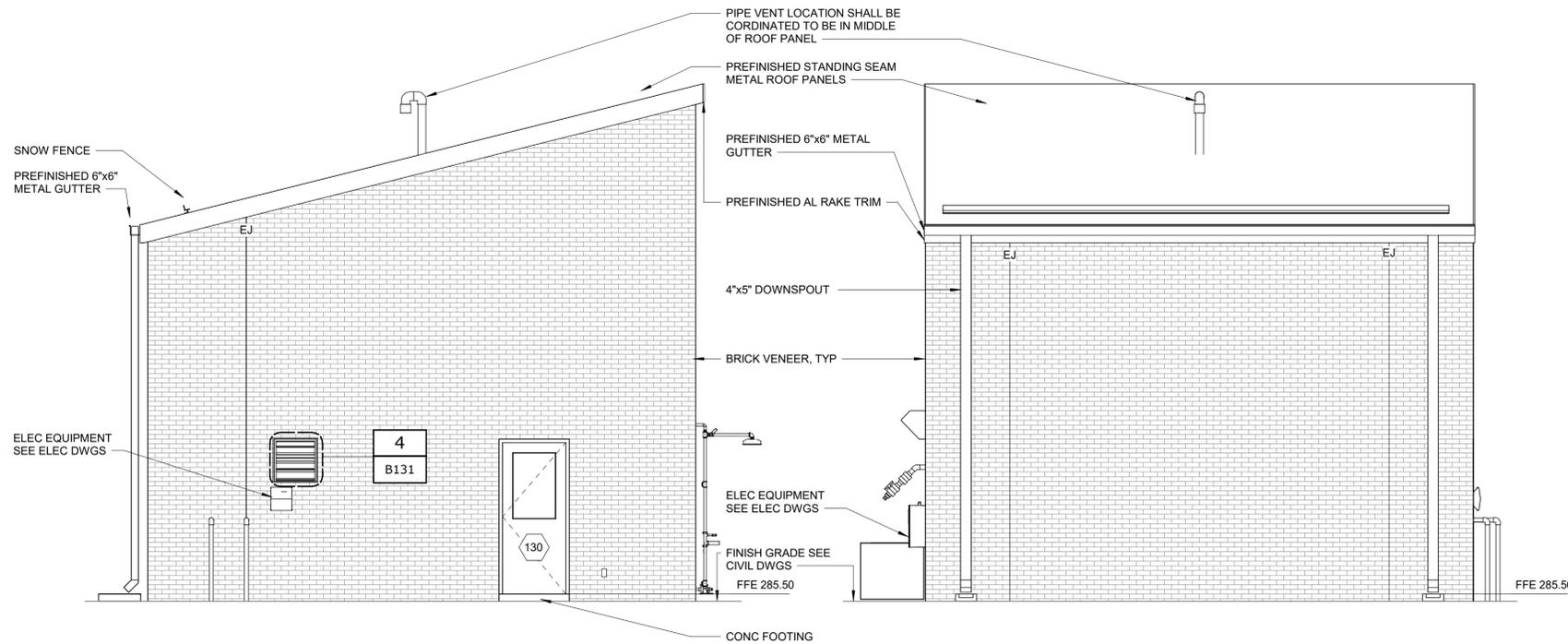
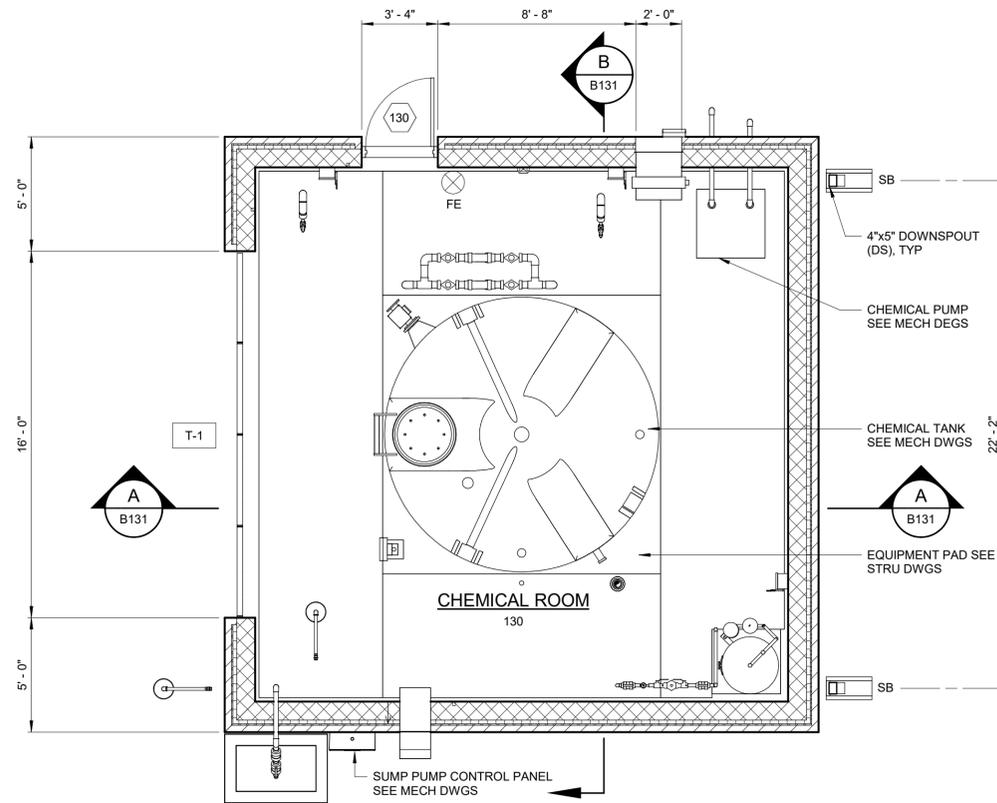
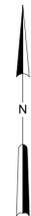
HAZEN AND SAWYER
4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA

BIG BRANCH 2
PUMP STATION

PUMP STATION
BUILDING
DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	B104



Autodesk Docs/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-130-CF-A.rvt 3/1/2023 1:26:08 PM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	W. RUSSELL
DRAWN BY:	W. DUNN
CHECKED BY:	W. RUSSELL
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

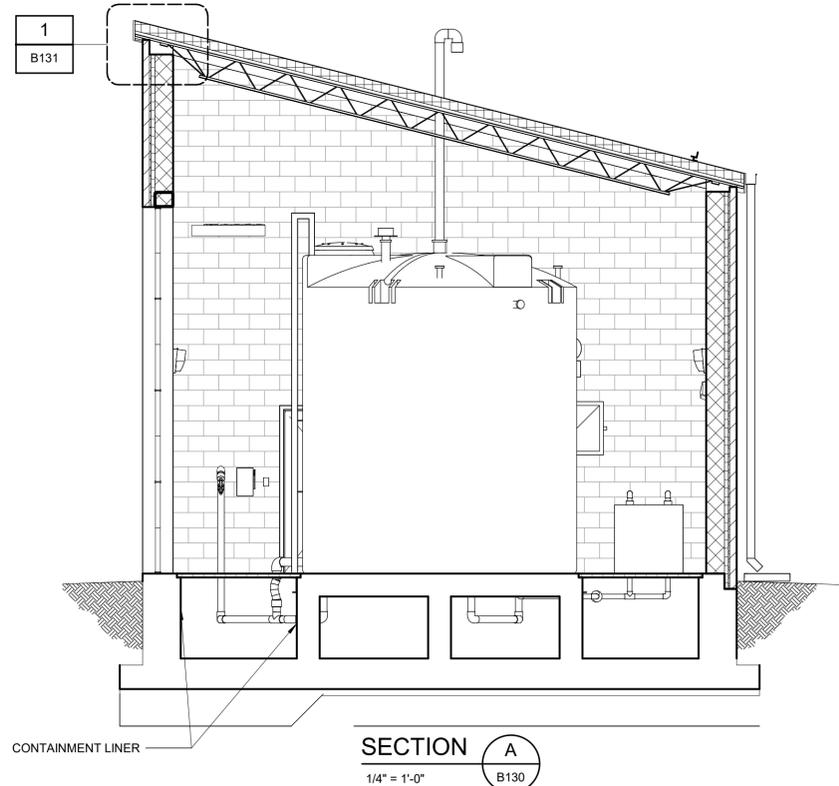
Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381



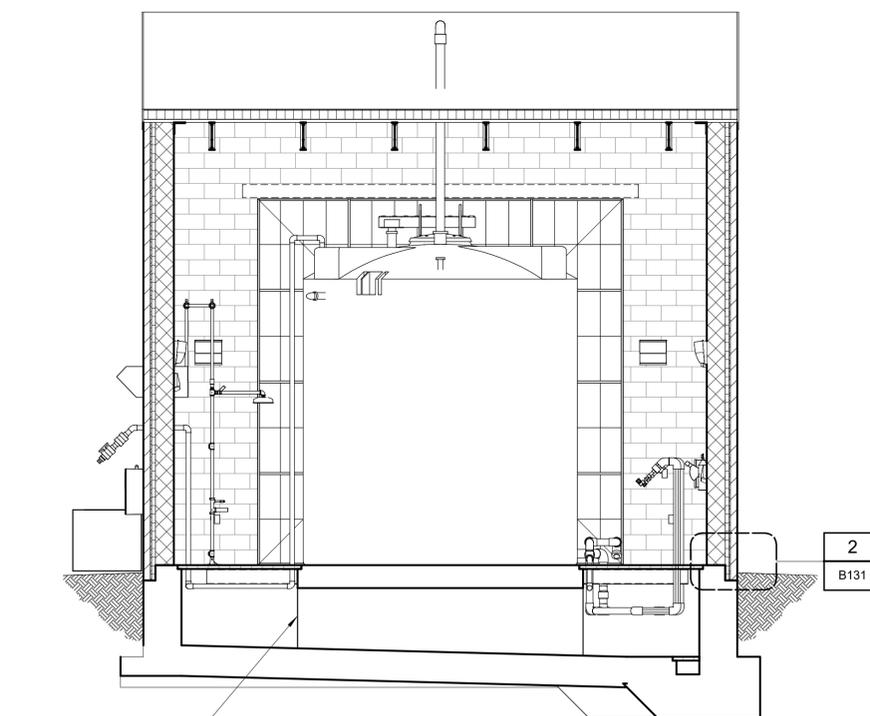
BIG BRANCH 2
PUMP STATION

CHEMICAL FEED FACILITY
BUILDING
FLOOR, ROOF PLAN, AND ELEVATIONS

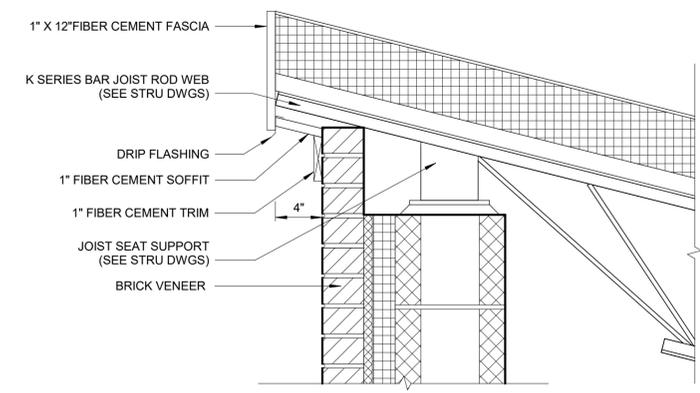
DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	B130



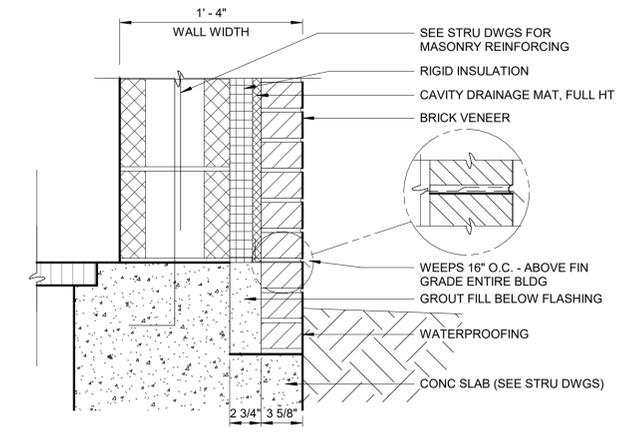
SECTION A
1/4" = 1'-0"
B130



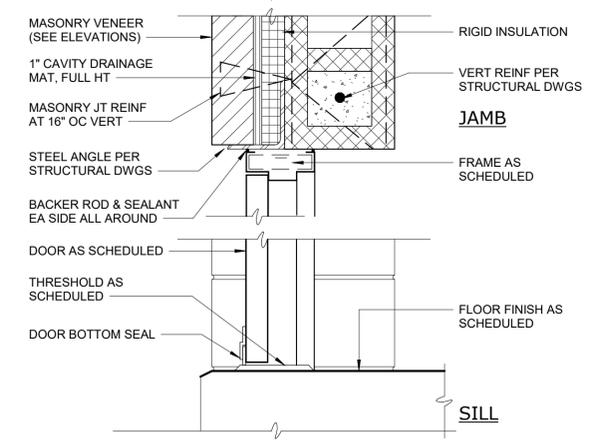
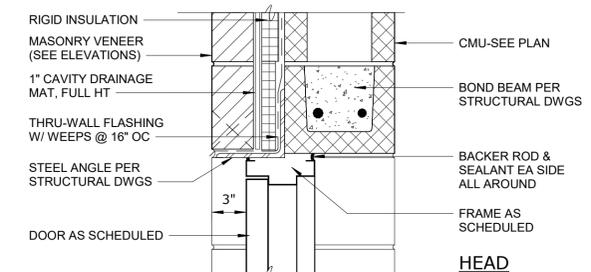
SECTION B
1/4" = 1'-0"
B130



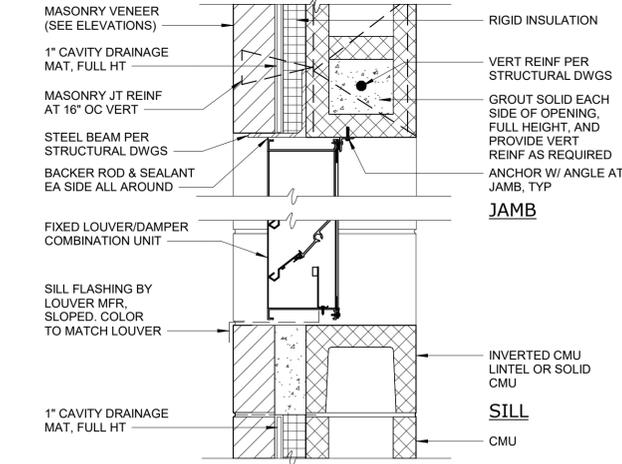
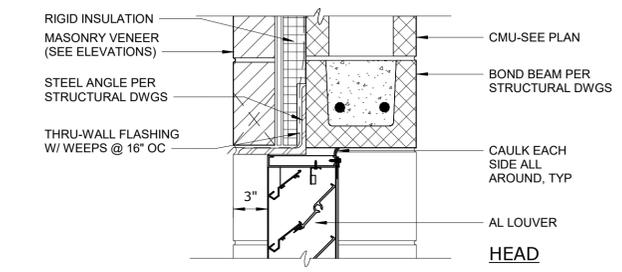
OVER HANG DETAIL
DETAIL 1
1 1/2" = 1'-0"
B131



CAVITY WALL BOTTOM - 10" CMU
DETAIL 2
1 1/2" = 1'-0"
B131



DOOR IN MASONRY CAVITY WALL - 12" CMU
DETAIL 3
1 1/2" = 1'-0"
B1



LOUVER IN MASONRY CAVITY WALL - 10" CMU
DETAIL 4
1 1/2" = 1'-0"
B130

Autodesk_Docs/23044-004_Big Branch 2 Pump Station and Pipelines/23044-004-130-CF-A.rvt 3/21/2023 1:26:03 PM

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	W. RUSSELL		
DRAWN BY:	W. DUNN		
CHECKED BY:	W. RUSSELL		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

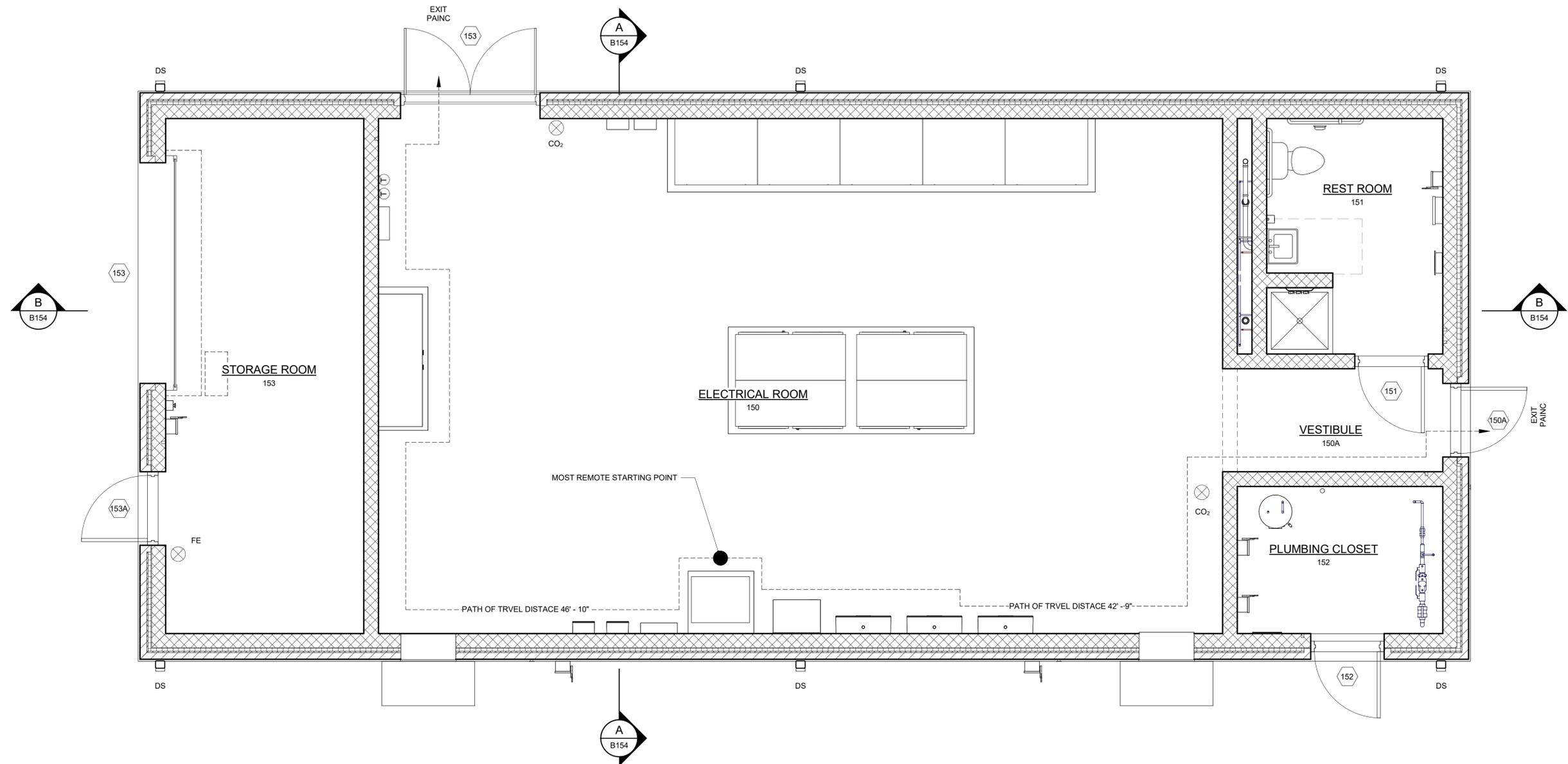
PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

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4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

CHEMICAL FEED FACILITY
BUILDING
SECTIONS & DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	B131



LIFE SAFETY
3/8" = 1'-0"

- LEGEND:**
- CO2 FIRE EXTINGUISHER - CARBON DIOXIDE
 - PANIC PROVIDE PANIC HARDWARE

Autodesk/Doc/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-150-EB-A.rvt
3/1/2023 1:40:23 PM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	W. RUSSELL
DRAWN BY:	W. DUNN
CHECKED BY:	W. RUSSELL
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

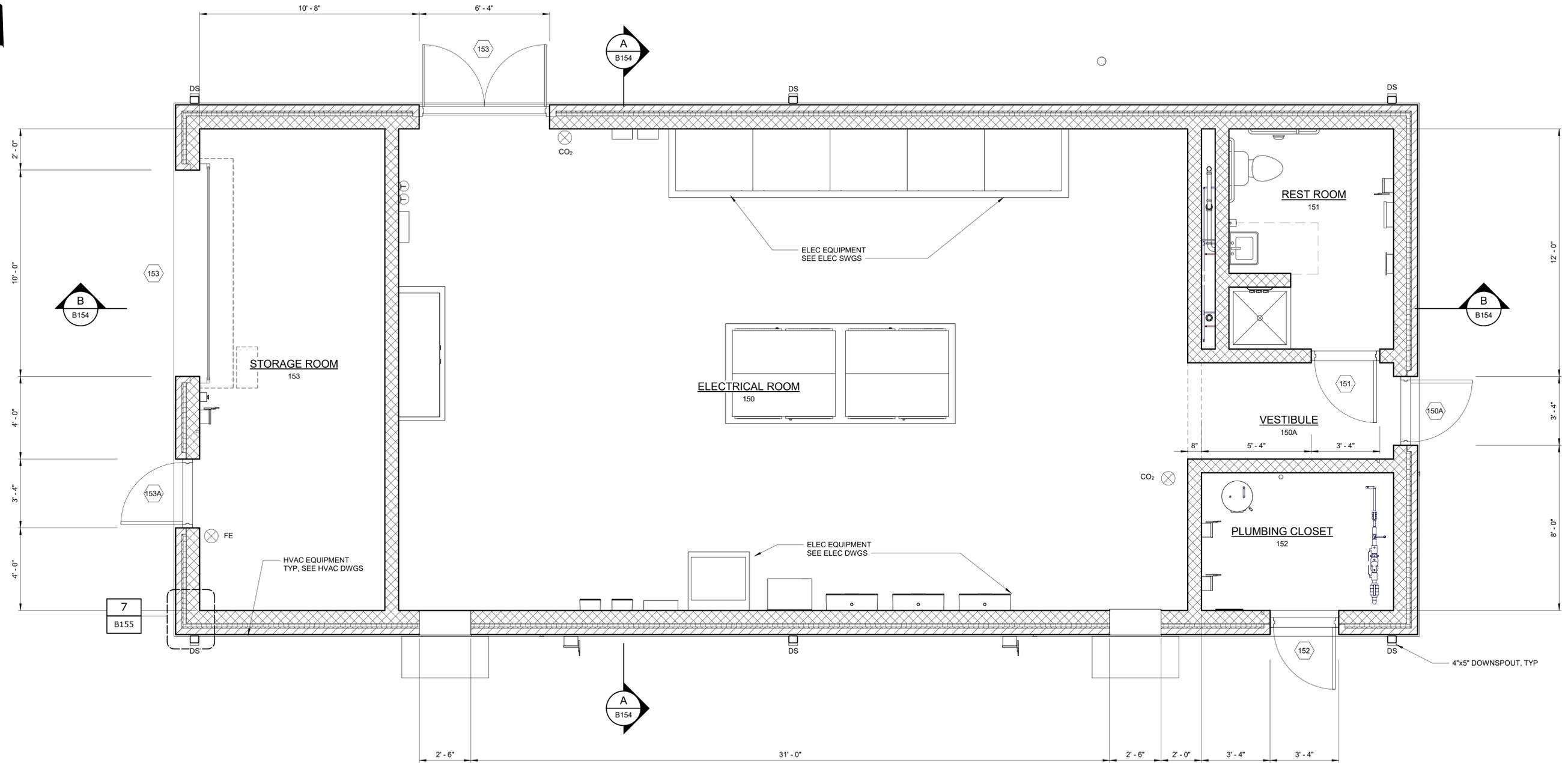
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LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

ELECTRICAL BUILDING
BUILDING
LIFE SAFETY PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	B150



FLOOR PLAN
3/8" = 1'-0"

- LEGEND:**
- DOOR NUMBER - SEE DRAWING B01
 - CO₂ FIRE EXTINGUISHER - CARBON DIOXIDE

Autodesk Desc/23044-004_Big Branch 2 Pump Station and Pipelines/23044-004-150-EB-A.rvt
3/31/2023 1:40:24 PM

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DRAWN BY:	W. DUNN
CHECKED BY:	W. RUSSELL
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

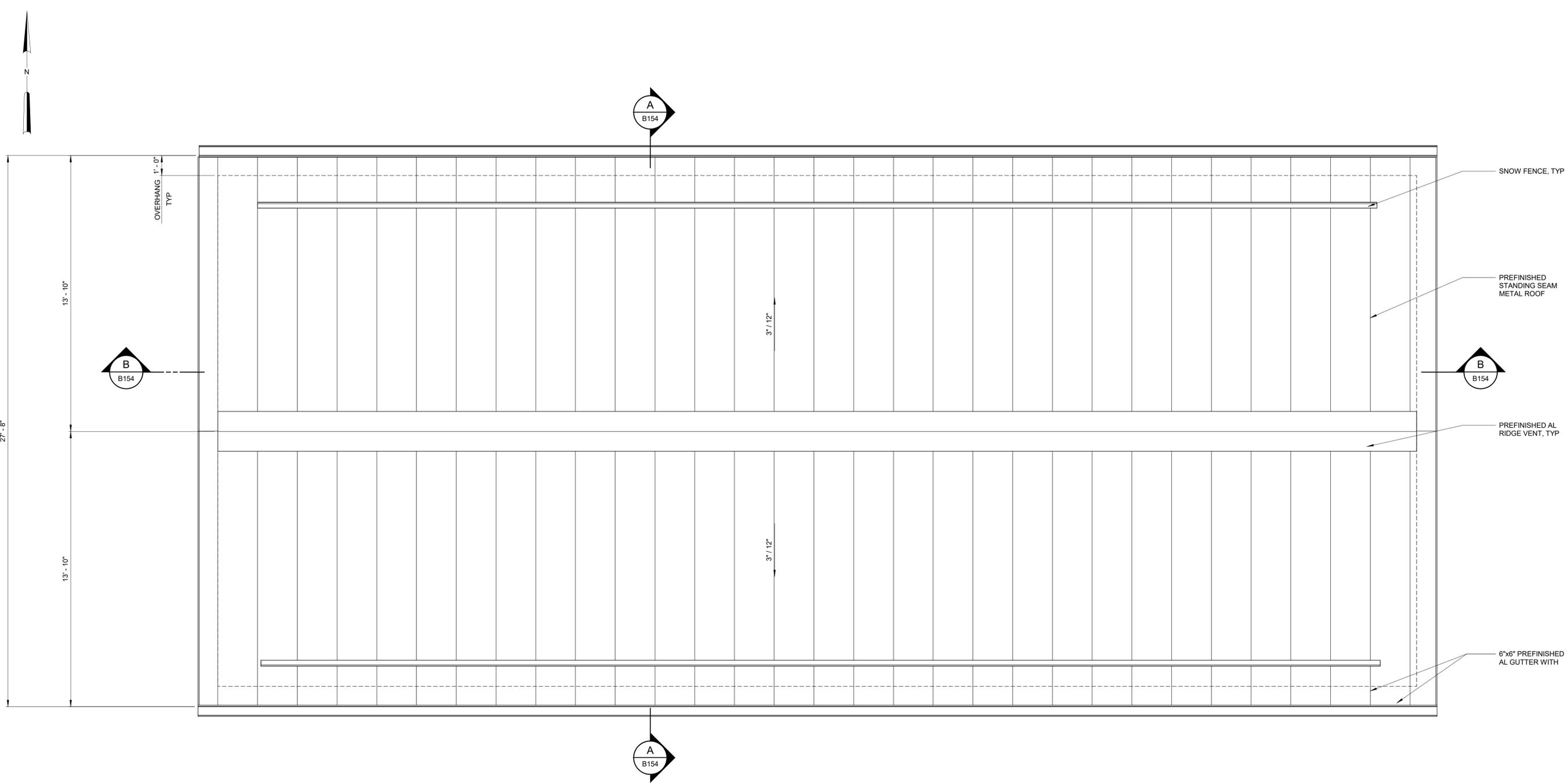
PRELIMINARY DRAWING -
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RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
**BIG BRANCH 2
PUMP STATION**

**ELECTRICAL BUILDING
BUILDING
FLOOR PLAN**

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	B151



ROOF PLAN
3/8" = 1'-0"

Autodesk Desc: 32044-004_Big Branch 2 Pump Station and Pipelines 32044-004-150EBA.rvt
3/13/2023 1:40:24 PM

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PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	W. RUSSELL
DRAWN BY:	W. DUNN
CHECKED BY:	W. RUSSELL
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

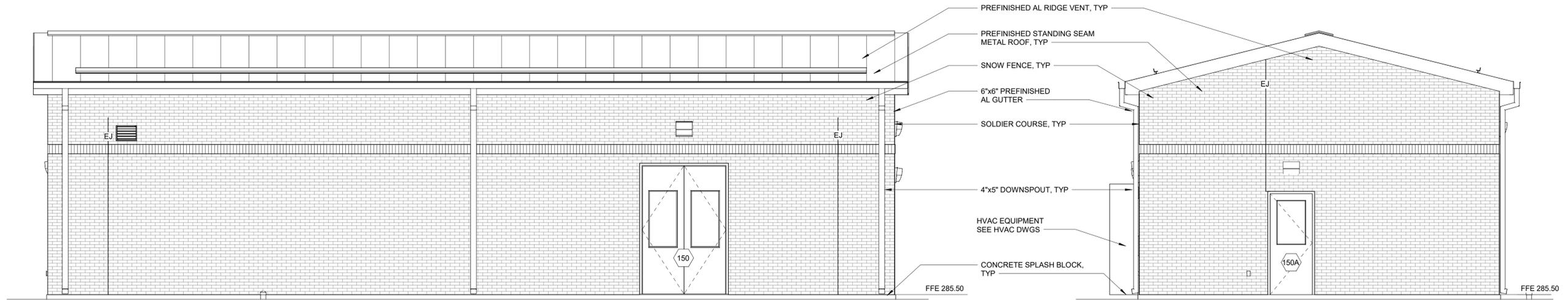
PRELIMINARY DRAWING -
DO NOT USE FOR
CONSTRUCTION

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4011 WESTCHASE BLVD. SUITE 500,
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LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

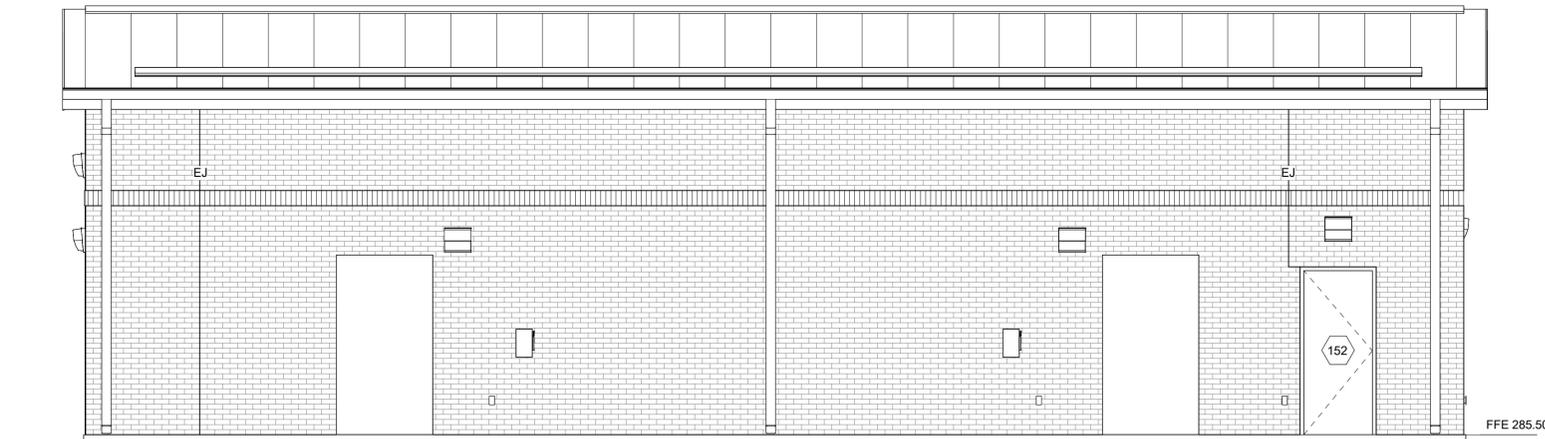
ELECTRICAL BUILDING
BUILDING
ROOF PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	B152

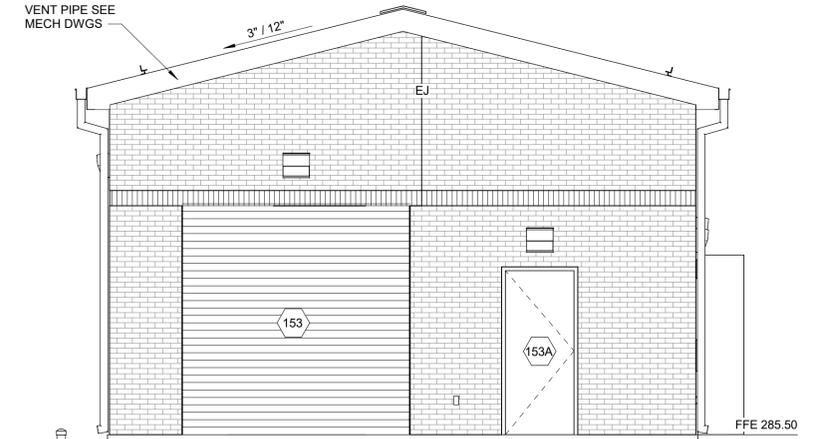


NORTH ELEVATION
1/4" = 1'-0"

EAST ELEVATION
1/4" = 1'-0"



SOUTH ELEVATION
1/4" = 1'-0"



WEST ELEVATION
1/4" = 1'-0"

LEGEND:

DOOR NUMBER - SEE DRAWING B01

Autodesk Docs/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-150-EB-A.rvt 3/23/2023 1:40:25 PM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	W. RUSSELL
DRAWN BY:	W. DUNN
CHECKED BY:	W. RUSSELL
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

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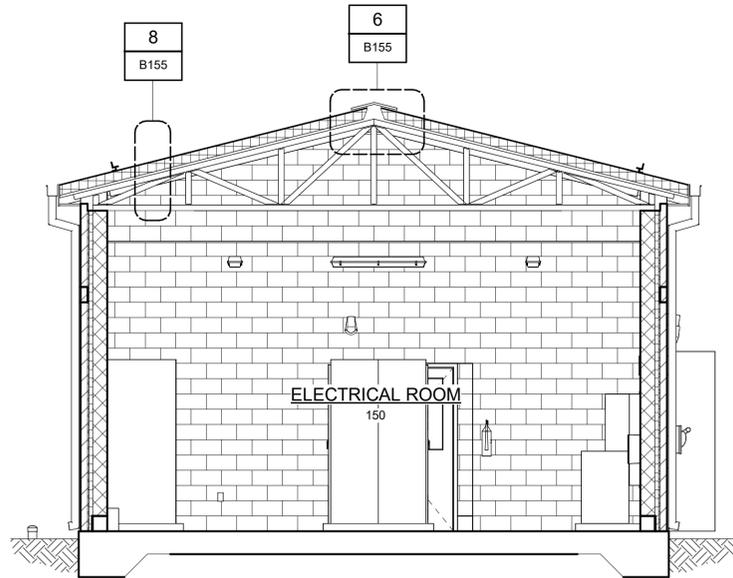
Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381



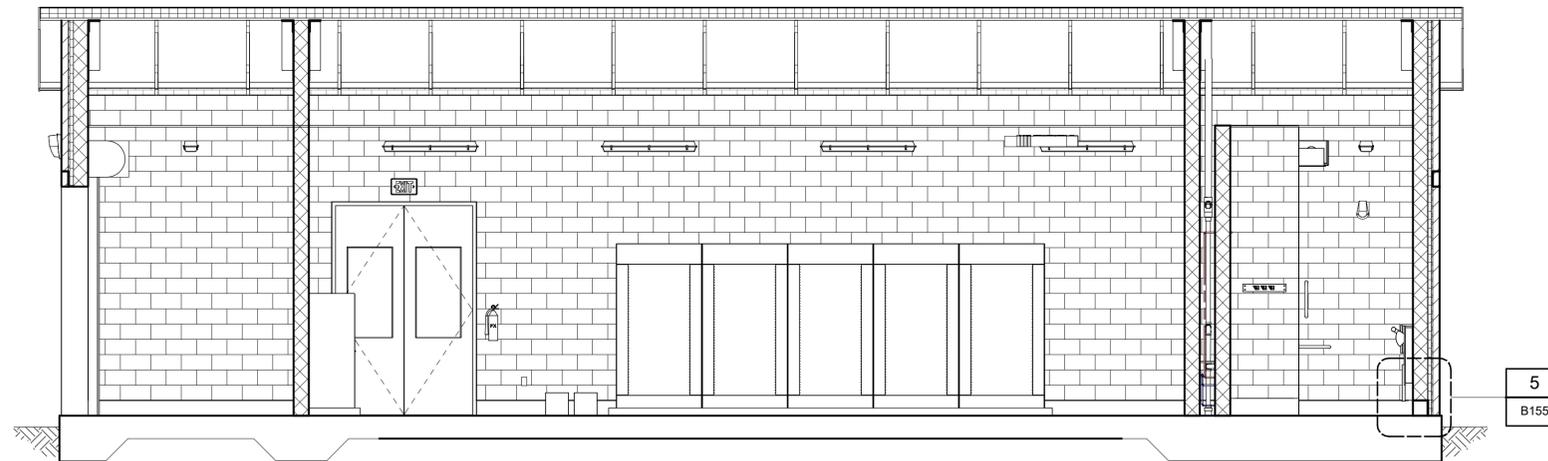
**BIG BRANCH 2
PUMP STATION**

**ELECTRICAL BUILDING
BUILDING
ELEVATIONS**

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	B153



SECTION A
1/4" = 1'-0" (B150)



SECTION B
1/4" = 1'-0" (B150)

Autodesk Docs/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-150-EB-A.rvt 3/1/2023 1:40:25 PM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	W. RUSSELL
DRAWN BY:	W. DUNN
CHECKED BY:	W. RUSSELL
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

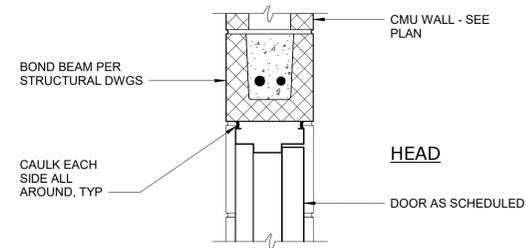
PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

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HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

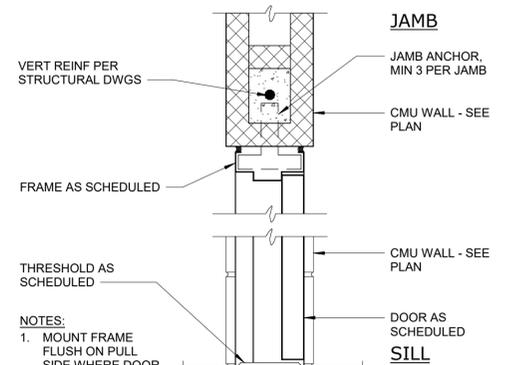
ELECTRICAL BUILDING
BUILDING
SECTIONS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	B154

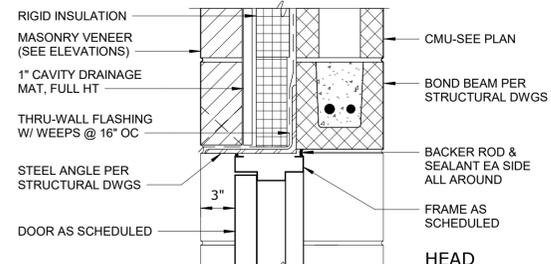


DOOR IN 8" CMU

DETAIL	1
1 1/2" = 1'-0"	B1

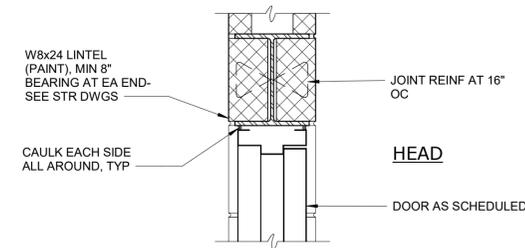
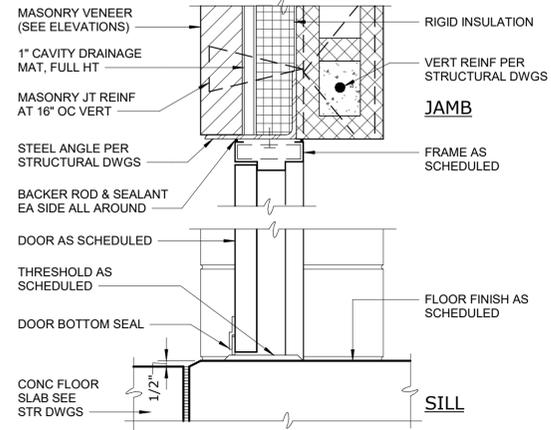


NOTES:
1. MOUNT FRAME FLUSH ON FULL SIDE WHERE DOOR IS OPEN 180°.



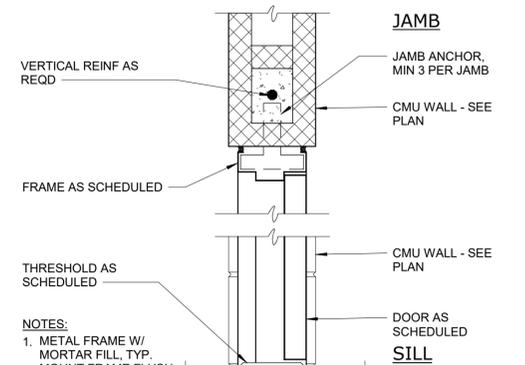
DOOR IN MASONRY CAVITY WALL - 8" CMU

DETAIL	2
1 1/2" = 1'-0"	B1

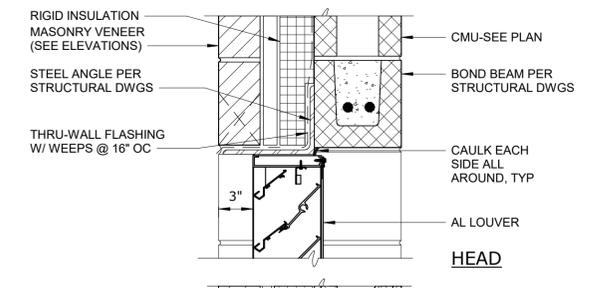


z (hold) DOUBLE DOOR IN 8" CMU

DETAIL	3
1 1/2" = 1'-0"	B1

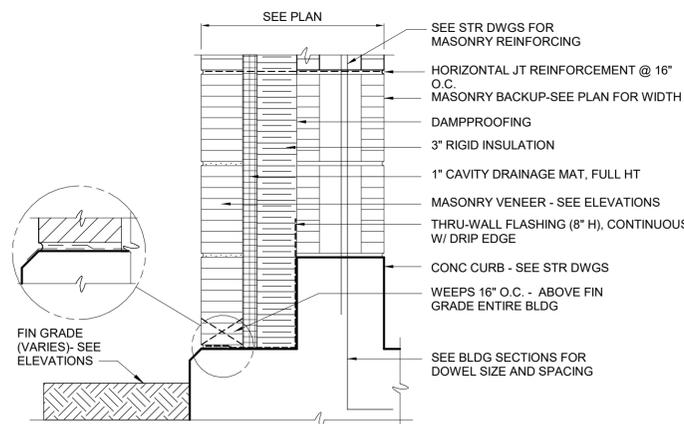
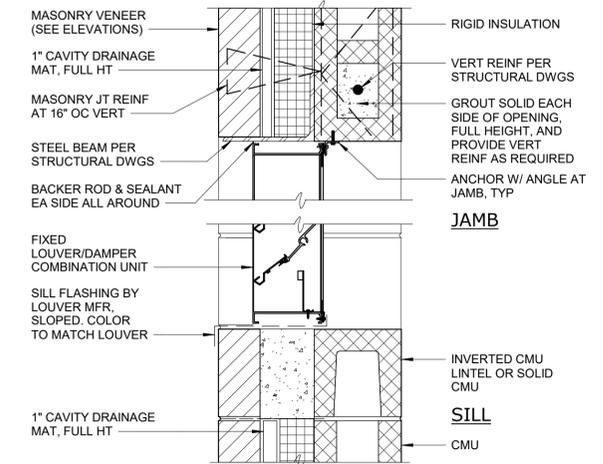


NOTES:
1. METAL FRAME W/ MORTAR FILL, TYP.
2. MOUNT FRAME FLUSH ON PULL SIDE WHERE DOOR IS OPEN 180°.



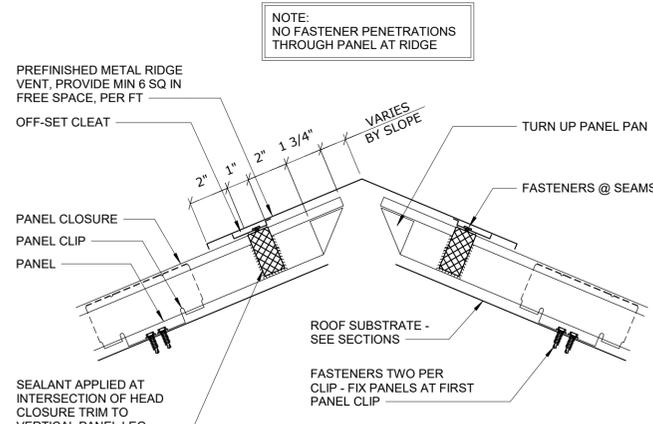
LOUVER IN MASONRY CAVITY WALL - 8" CMU

DETAIL	4
1 1/2" = 1'-0"	B1



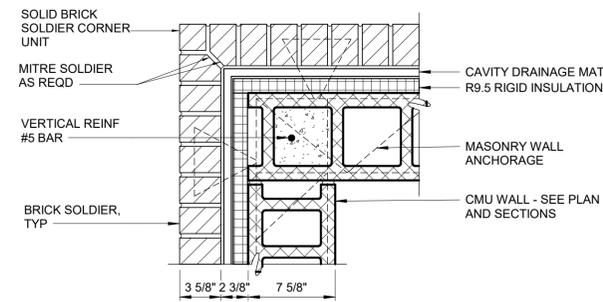
CAVITY WALL BOTTOM 2

DETAIL	5
1 1/2" = 1'-0"	B154



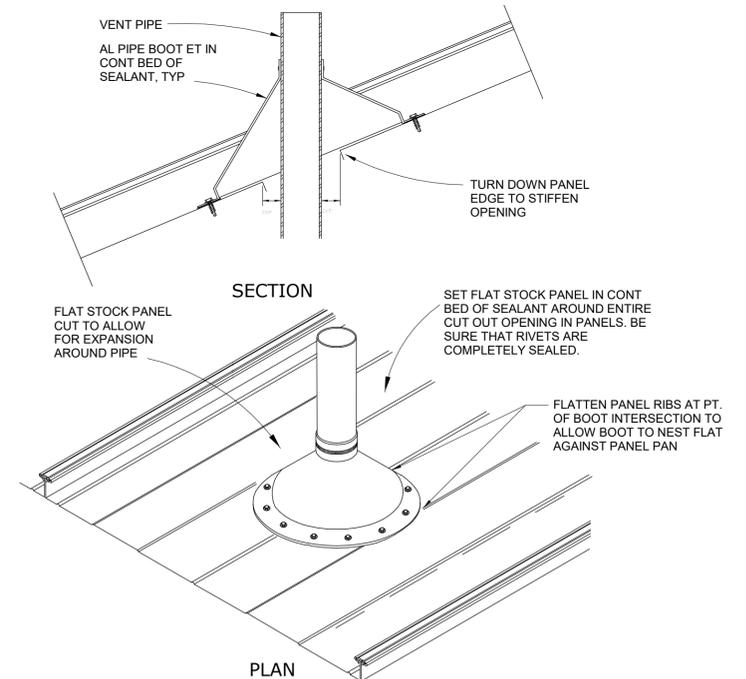
METAL ROOF RIDGE VENT

DETAIL	6
1 1/2" = 1'-0"	B154



SOLDIER COURSE AT CORNER - CMU

DETAIL	7
1 1/2" = 1'-0"	B151



METAL ROOF PIPE VENT

DETAIL	8
1" = 1'-0"	B154

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PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	W. RUSSELL
DRAWN BY:	W. DUNN
CHECKED BY:	W. RUSSELL
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4011 WESTCHASE BLVD, SUITE 500,
RALEIGH, NC 27607
LICENSE NO.: C-0381

APEX
NORTH CAROLINA

BIG BRANCH 2
PUMP STATION

ELECTRICAL BUILDING
BUILDING
DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	B155

ABBREVIATIONS

AC	ACETYLENE GAS	SAN	SANITARY
AD	AREA DRAIN	SCH	SCHEDULE
AR	ARGON GAS	SD	STORM DRAIN
AFF	ABOVE FINISHED FLOOR	SF	SQUARE FOOT
AV	ACID VENT	SPD	SUMP PUMP DISCHARGE
AW	ACID WASTE	SS	SANITARY SEWER/ SERVICE SINK
BFG	BELOW FINISHED GRADE	TYP	TYPICAL
BFP	BACKFLOW PREVENTER	TW	TEMPERED WATER
BFV	BUTTERFLY VALVE	TWS	TEMPERED WATER SUPPLY
BLDG	BUILDING	TWR	TEMPERED WATER RETURN
CA	COMPRESSED AIR	UON	UNLESS OTHERWISE NOTED
CC	CENTER TO CENTER	UP	UP TO FLOOR ABOVE
CFM	CUBIC FEET PER MINUTE	UL	UNDERWRITERS LABORATORY
CI	CAST IRON	UR	URINAL
CO	CLEAN OUT DECK PLATE	V	VENT
COL	COLUMN	VA	VALVE
CPLG	COUPLING	VAC	VACUUM
CF	CUBIC FEET	VB	VACUUM BREAKER
CLG	CEILING	VIV	VALVE IN VERTICAL
CU	COPPER	VTR	VENT THROUGH ROOF
CV	CHECK VALVE	W	WASTE
CW	COLD WATER	WC1	WATER CLOSET TYPE 1
DCH	DRY CREEK HEADWORKS	WCO	WALL CLEAN OUT
DFU	DRAINAGE FIXTURE UNIT	WFD	WATER FLOW DETECTOR
DI	DUCTILE IRON	WFO	WATER FLOW SWITCH
DIA	DIAMETER	WH	WALL HYDRANT
DN	DOWN TO FLOOR BELOW	WHA	WATER HAMMER ARRESTER
DR	DRAIN	WFS	WATER FLOW SWITCH
DWV	DRAIN, WASTE AND VENT	WT	WEIGHT
DROP	DROP IN EXISTING STORY		
EL	ELEVATION		
ESE	EMERGENCY SHOWER AND EYEWASH		
EW	EMERGENCY EYEWASH		
FAI	FRESH AIR INLET		
FC	FLOOR CLEAN OUT		
FD1	FLOOR DRAIN TYPE 1		
FLR	FLOOR		
FT	FEET		
FU	FIXTURE UNIT		
FIN	FINISHED		
FLG	FLANGE		
FM	FACTORY MUTUAL		
FS	FLOW SWITCH		
GPM	GALLONS PER MINUTE		
GAL	GALLON		
GC	GENERAL CONTRACTOR		
GCO	GRADE CLEAN OUT		
HB	HOSE BIBB		
HR	HOSE REEL		
HW	HOT WATER		
HWC	HOT WATER RECIRCULATION		
HWH	HOT WATER HEATER		
HPWW	HIGH PRESSURE WASH WATER		
GV	GATE VALVE		
HP	HORSEPOWER		
IE	INVERT ELEVATION		
IN	INCH		
IW	INDIRECT WASTE		
IWH	INSTANT WATER HEATER		
IRI	INDUSTRIAL RISK INSURANCE		
JST	JOIST		
LAV1	LAVATORY TYPE 1		
LB	POUND		
MAX	MAXIMUM		
MIN	MINIMUM		
MR	MOP RECEPTOR		
MSB	MOP SERVICE BASIN		
NFFPA	NATIONAL FIRE PROTECTION ASSOCIATION		
NG	NATURAL GAS		
NO	NITROUS OXIDE GAS		
NPW	NON POTABLE WATER		
NRS	NON RISING STEM		
NTS	NOT TO SCALE		
OD	OUTSIDE DIAMETER		
OI	OIL INTERSEPTOR		
OSY	OUTSIDE SCREW AND YOKE		
PIV	POST INDICATOR VALVE		
PSI	POUNDS PER SQUARE INCH		
PSIG	POUNDS PER SQUARE INCH GAGE		
PVC	POLY VINYL CHLORIDE		
PW	POTABLE WATER		
RD1	ROOF DRAIN TYPE 1		
RISE	RISE IN EXISTING STORY		
RPM	REVOLUTIONS PER MINUTE		

LINETYPES

	NEW - HVAC
	NEW - ALL ADDITIONAL DISCIPLINES
	NEW - HIDDEN
	VENT
	EXISTING - HIDDEN
	EXISTING - ALL DISCIPLINES

GENERAL NOTES

- THE ENTIRE PLUMBING SYSTEM SHALL BE IN ACCORDANCE WITH THE 2018 EDITION OF THE NORTH CAROLINA PLUMBING CODE REGULATIONS AND LOCAL PLUMBING INSPECTOR.
- THE PIPING INDICATED ON THESE PLANS ARE DIAGRAMMATIC. ALL WORK SHALL BE COORDINATED WITH ALL OTHER TRADES PRIOR TO INSTALLATION. CONTRACTOR SHALL COORDINATE ROUTING OF ALL PIPING WITH OTHER TRADES AND SHALL PROVIDE ANY NECESSARY OFFSETS, REROUTING, TEES, ELBOWS, ETC. REQUIRED FOR A COMPLETE AND COORDINATED INSTALLATION.
- THE CONTRACTOR SHALL OBTAIN AND PAY ALL FEES RELATED TO PERMITTING, AND INSPECTIONS.
- CONTRACTOR SHALL COORDINATE ANY PLUMBING OR PIPING SYSTEM SHUT DOWN WITH THE OWNER 48 HOURS IN ADVANCE.
- ALL PLUMBING AND PIPING SYSTEMS SHALL BE SUPPORTED AS REQUIRED BY CODE REQUIREMENTS AND PER MANUFACTURERS RECOMMENDATIONS.
- ALL PLUMBING FIXTURES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS WRITTEN INSTRUCTIONS. CONTRACTOR SHALL MAINTAIN ON-SITE THE WRITTEN INSTRUCTIONS FOR THE INSPECTOR'S REVIEW.
- ALL PIPING PENETRATIONS THROUGH WALLS, AND FLOORS SHALL BE SEALED TO EQUAL THE RATING OF THE WALL OR FLOOR.
- THE PLUMBING SYSTEM SHALL BE TESTED AS REQUIRED BY CODE OR BY THE REQUIREMENTS OF THE LOCAL PLUMBING INSPECTOR.
- THE ENTIRE DOMESTIC WATER SYSTEM SHALL BE DISINFECTED IN ACCORDANCE WITH THE LOCAL HEALTH DEPARTMENT REQUIREMENTS AND AS SPECIFIED.
- ROUTE ALL PIPING CONCEALED ABOVE CEILINGS, WITHIN WALLS OR IN CHASES EXCEPT AS SPECIFICALLY NOTED, OR IN MECHANICAL ROOMS.
- SEE ARCHITECTURAL DRAWINGS FOR FIXTURE LOCATIONS AND MOUNTING HEIGHTS.
- CONTRACTOR SHALL PROVIDE AND INSTALL WHEN REQUIRED BY CODE AN AIR GAP SERVING INDIVIDUAL FIXTURES, DEVICES, APPLIANCES OR APPARATUS.
- SEE SANITARY WASTE AND VENT RISER SCHEMATIC DIAGRAM FOR WASTE AND VENT PIPE SIZES.
- SEE DOMESTIC WATER RISER SCHEMATIC DIAGRAM FOR DOMESTIC WATER PIPE SIZES.
- CONTRACTOR SHALL PROVIDE WATER STOPS AT EACH FIXTURE.
- SIZE AND LOCATION OF CLEANOUTS (AS WELL AS ALL PLUMBING WORK) SHALL BE IN ACCORDANCE WITH THE PLUMBING CODE.
- PATCH ALL SURFACES DISTURBED DURING THE CONSTRUCTION OF PLUMBING COMPONENTS TO MATCH ADJACENT SURFACES. WORK SHALL BE DONE ONLY BY WORKMAN SKILLED IN THE TRADE INVOLVED AND TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE.
- ALL CONCEALED VALVES, WATER HAMMER ARRESTORS, CLEANOUTS, ETC., CONCEALED IN WALLS SHALL BE PROVIDED WITH AN ACCESS PANEL SUCH AS ZURN MODEL ZN-1460 OR APPROVED EQUAL.
- ALL CONCEALED PIPING IN CHASE AREAS SHALL BE SUPPORTED WITH A PIPING SUPPORT SYSTEM SUCH AS SUMNER POSIFIX, STAKFIX AND CHANNEL OR APPROVED EQUAL.
- PLUMBING WATER SUPPLY PIPING SHALL BE COPPER THROUGHOUT, UNLESS OTHERWISE NOTED.
- DO NOT ROUTE PLUMBING PIPE OVER OR IN FRONT OF ELECTRICAL PANELS, BREAKERS, ETC.
- MINIMUM SLOPE OF DRAIN PIPES SHALL BE 1/4" PER FOOT FOR PIPE SIZES EQUAL TO OR LESS THAN 2-1/2" AND 1/8" PER FOOT FOR 3" AND LARGER.
- PIPE HANGERS SHALL BE EPOXY COATED OR HOT DIPPED GALVANIZED.
- ALL HOSE BIBS SHALL BE PROVIDED WITH VACUUM BREAKER BFP.
- THE SYMBOLS AND ABBREVIATIONS LIST ON THIS SHEET IS A COMPREHENSIVE STANDARD GUIDE INTENDED FOR GENERAL USE ON ALL PROJECTS. THEREFORE NOT ALL THE SYMBOLS AND ABBREVIATIONS CONTAINED IN THIS LIST ARE NECESSARILY USED ON THIS PARTICULAR PROJECT AND SHOULD BE USED FOR CLARIFICATION ONLY.

SYMBOLS

	FD OR RD
	FLOOR OR ROOF DRAIN
	THERMOSTAT
	QUANTITY DESIGNATION
	EQUIPMENT DESIGNATION
	PIPE SIZE, SYSTEM ABBREVIATION
	CENTER LINE (CL) / INVERT (INV) FROM SEA LEVEL

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PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	C. JONES		
DRAWN BY:	P. GREER		
CHECKED BY:	H&S		
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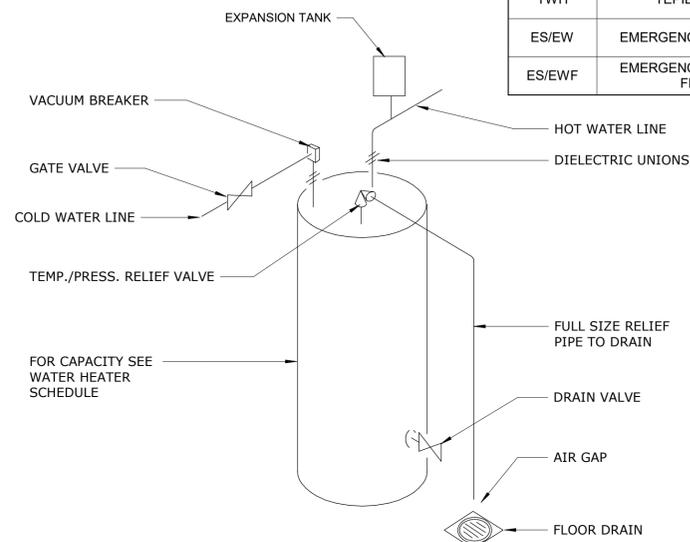
APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

GENERAL
 PLUMBING
 LEGEND & NOTES

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	P1

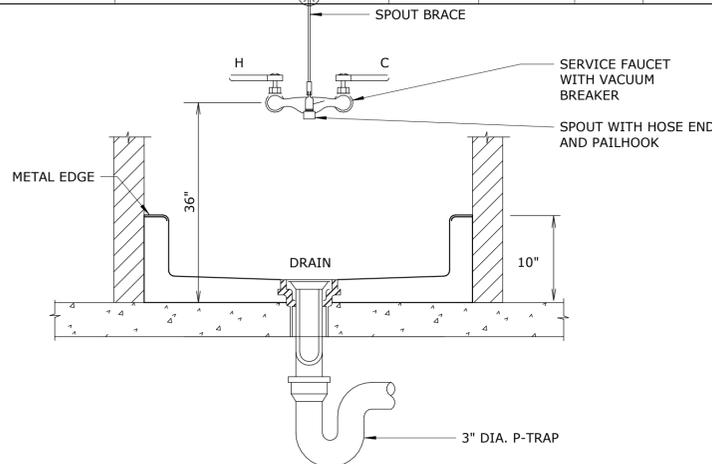
PLUMBING FIXTURES

TAG	FIXTURE	MANUFACTURER		CW (IN)	HW (IN)	TW (IN)	WASTE (IN)	VENT (IN)	ACCESSORIES	NOTES
		MAKE	MODEL							
WH	ELECTRIC WATER HEATER	STATE INDUSTRIES	ES6 20 SOMS K	1/2	1/2	-	-	-	THERMAL EXPANSION TANK AMTROL ST-5 OR EQUIVALENT	19 GALLON, 2.5 kW, 120/1/60
WC	WATER CLOSET	KOHLER	K-3999	1/2	-	-	3	2	K-4467 TANK, K-4199 BOWL, K-5588 SEAT, 1023457 WAX RING/HARDWARE KIT	1.28 GALLONS PER FLUSH
LAV	LAVATORY	AMERICAN STANDARD	LUCERNE 0356.028 FAUCET NEXGEN SELECTRONIC, AC, 6055.205	1/2	1/2	-	2	2	ADJUSTABLE P-TRAP, ANGLE SUPPLY, PPP INC. TAIL PEICE TRAP PRIMER ASSEMBLY LTP-1500	HANDICAP, POWER SUPPLY, WALL MOUNTED SINK
BFP	BACKFLOW PREVENTER	WATTS	LF909	1-1/2 OR 2	-	-	-	-	-	DRAIN RELEIF TO NEAREST FLOOR DRAIN
BFP-PS	BACKFLOW PREVENTER	WATTS	LF909	3/4	-	-	-	-	-	DRAIN RELEIF TO NEAREST FLOOR DRAIN
HB	HOSE BIB	WOODFORD	MODEL 24	3/4	-	-	-	-	NON-REMOVABLE ANTI-SIPHON VACUUM BREAKER	-
HR	HOSE REEL	REELCRAFT	86500 OLP	3/4	-	-	-	-	3/4" INLET HOSE CONNECTION	MOUNT TO WALL WITH EXPANSION ANCHORS
FD	FLOOR DRAIN	WATTS	FD-100-A	1/2	-	-	3	1-1/2	-	-
TP1	TRAP PRIMER	PRECISION PLUMBING PRODUCTS	PR-500	1/2	-	-	-	-	-	INSTALL PER MANUFACTURER DIRECTIONS
SB	SERVICE BASIN	FIAT	MSBD 2424; CHICAGO FAUCET 897-CCP	1/2	1/2	-	3	2	VACUUM BREAKER, PAIL HOOK, WALL BRACE, 3/4" HOSE OUTLET	-
TWH	TEPID WATER HEATER	HUBBELL	EMV-119-75-6-SL-T4	1-1/4	1-1/4	-	-	-	THERMAL EXPANSION TANK AMTROL ST-30VC OR EQUIVALENT	119 GALLON, 6kW, 480/3/60, 20.5 GPH RECOVERY @ 120° F. RISE
ES/EW	EMERGENCY SHOWER/EYEWASH	BRADLEY	S19314AH2EHHBO	-	-	1-1/4	-	-	-	STAINLESS STEEL CONSTRUCTION, STAINLESS HEAD AND BOWL
ES/EWF	EMERGENCY SHOWER/EYEWASH FREEZEPROOF	BRADLEY	S19-304GAT	-	-	1-1/4	-	-	-	HEAT TRACED AND INSULATED



ELECTRIC WATER HEATER

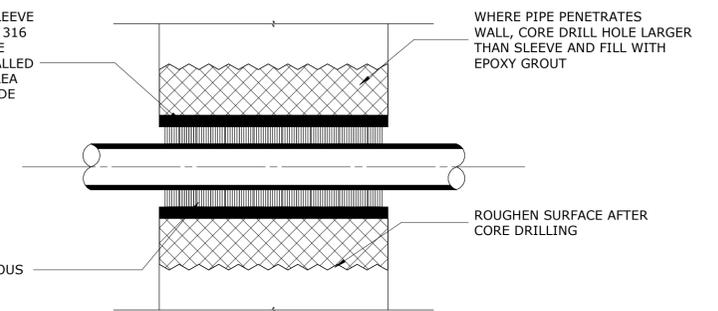
12" = 1'-0"



SERVICE SINK

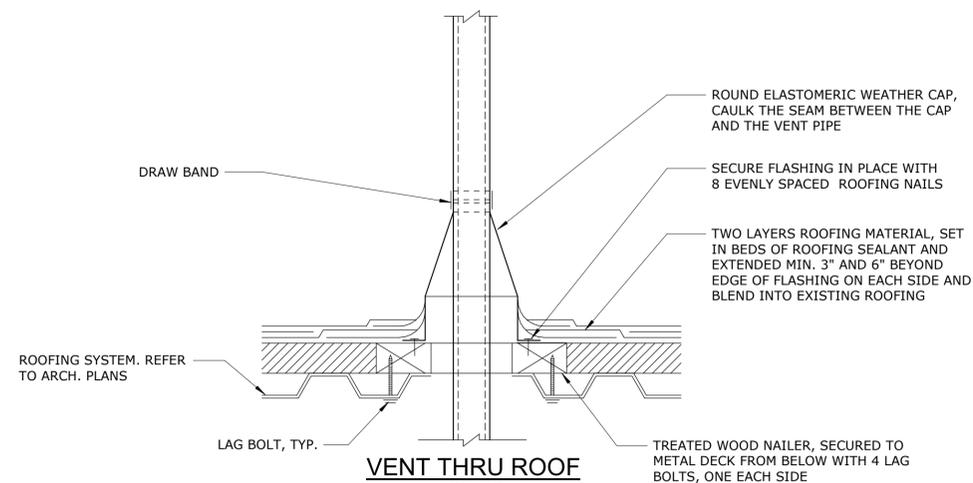
12" = 1'-0"

GALVANIZED CAST IRON PIPE SLEEVE IN NON-CORROSIVE AREAS AND 316 STAINLESS STEEL IN CORROSIVE AREAS. WHERE SLEEVE IS INSTALLED BETWEEN A NON-CORROSIVE AREA AND A CORROSIVE AREA, PROVIDE 316 S.S. SLEEVE



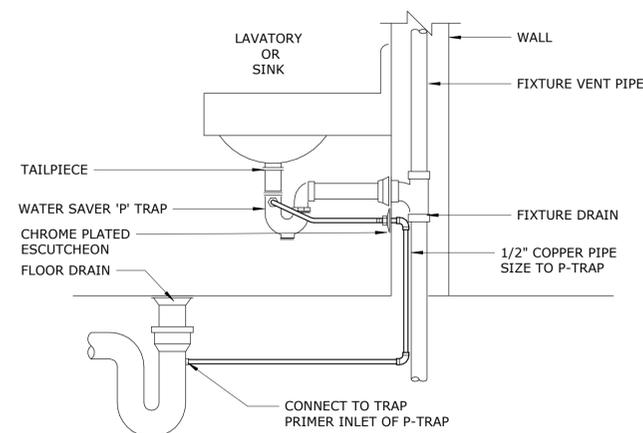
PIPE THROUGH WALL DETAIL

3" = 1'-0"



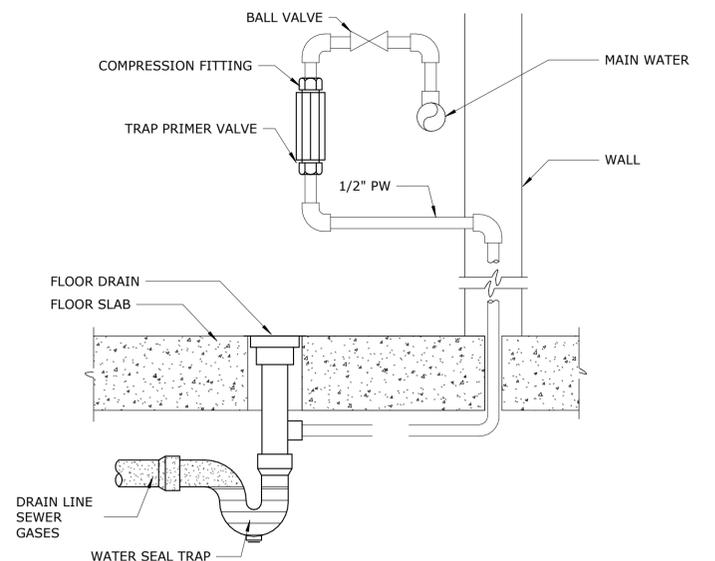
VENT THRU ROOF

12" = 1'-0"



WATER SAVER TRAP PRIMER (TP2)

12" = 1'-0"



TRAP PRIMER WITH PRIMER VALVE DETAIL (TP1)

12" = 1'-0"

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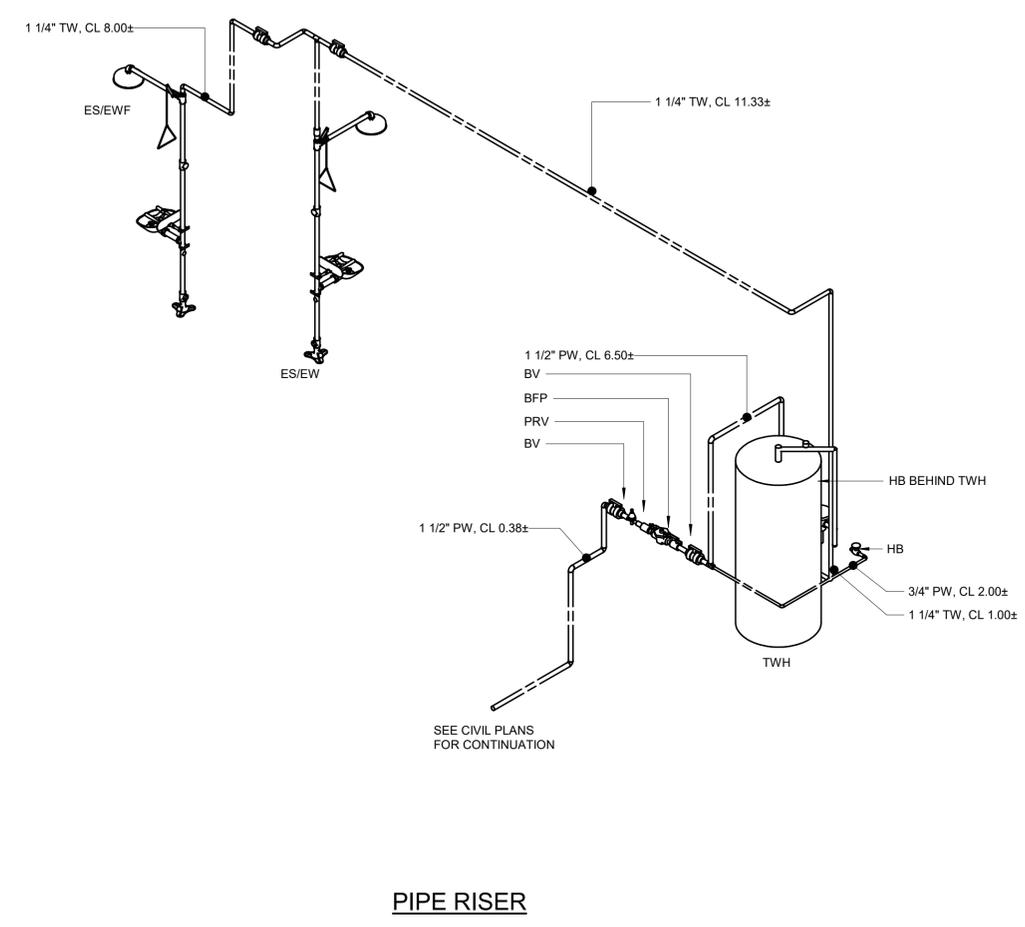
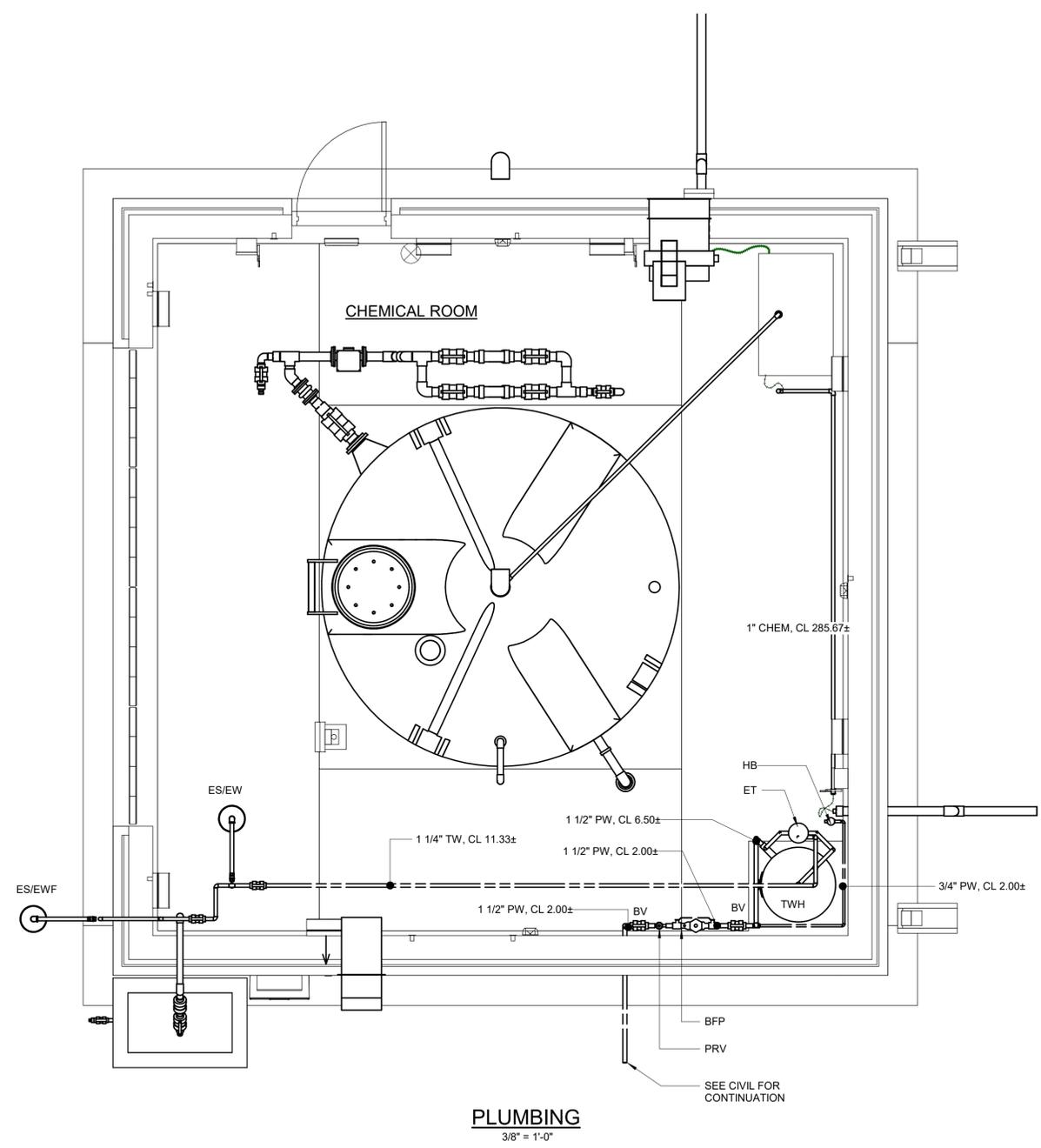
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RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

GENERAL
PLUMBING
DETAILS & SCHEDULES

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	P2

NOTES:
 1. REFER TO CIVIL PLANS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION ON POTABLE WATER PIPING.



PLUMBING
 3/8" = 1'-0"

PIPE RISER

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REV	ISSUED FOR	DATE	BY

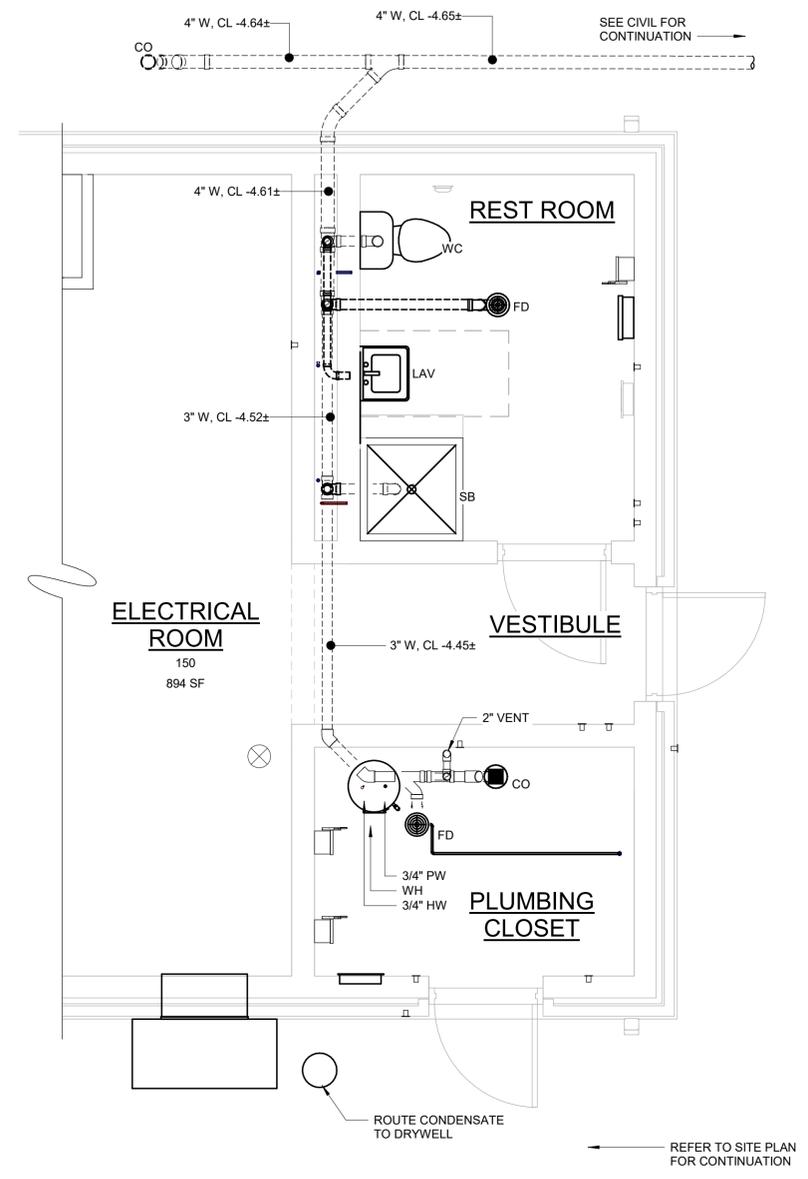
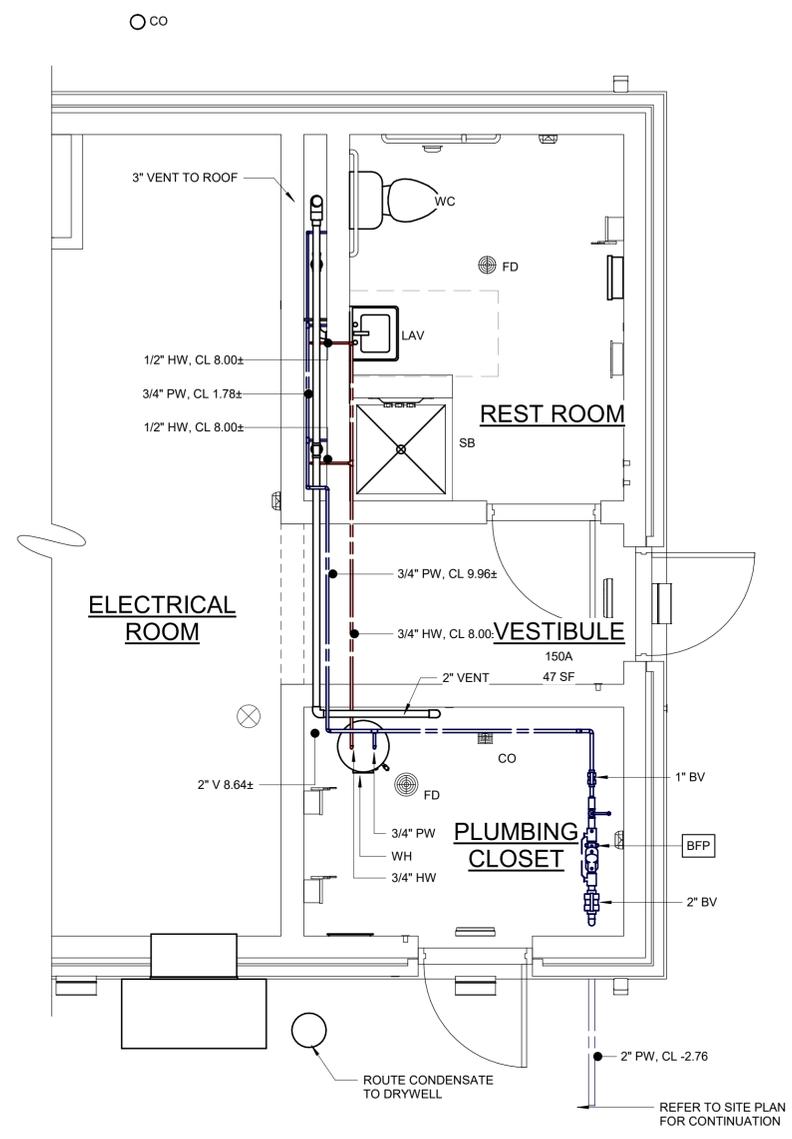
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APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

CHEMICAL FEED BUILDING
 PLUMBING
 FLOOR PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	P130



POTABLE WATER FLOOR PLAN
3/8" = 1'-0"

SANITARY FLOOR PLAN
3/8" = 1'-0"

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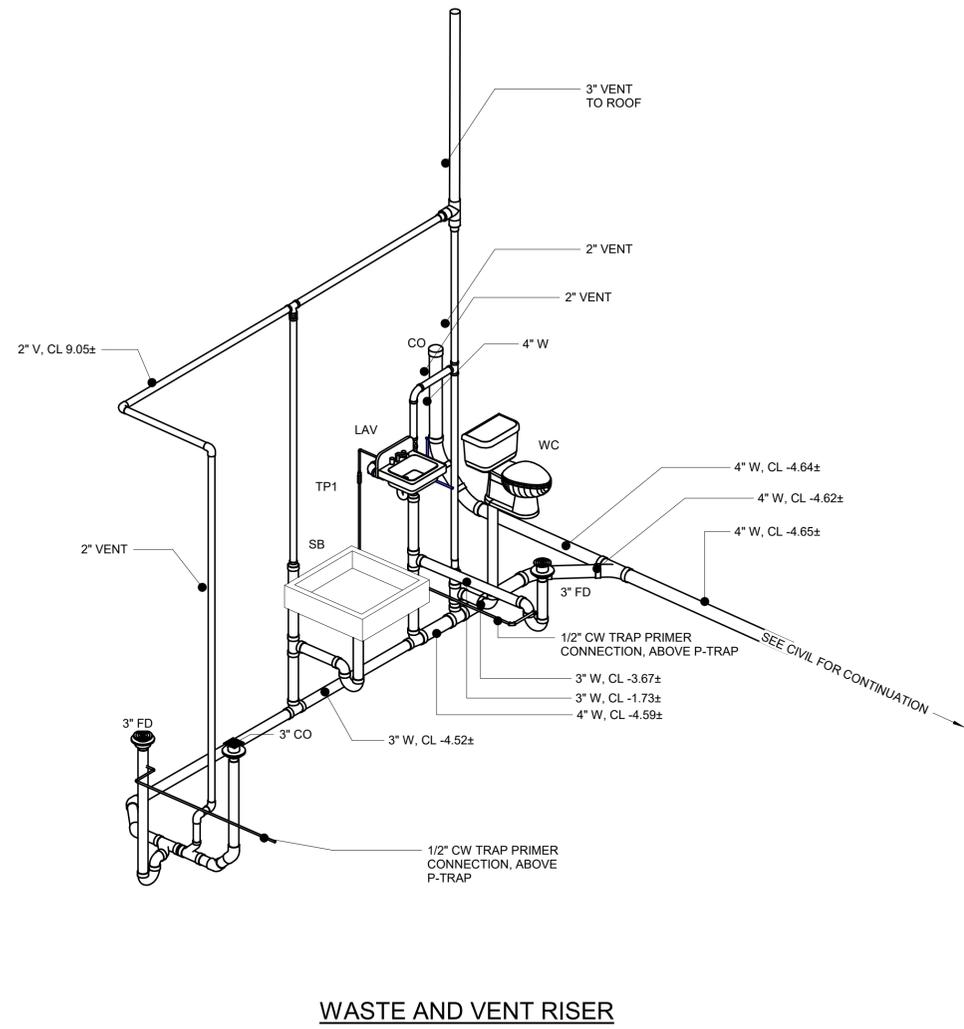
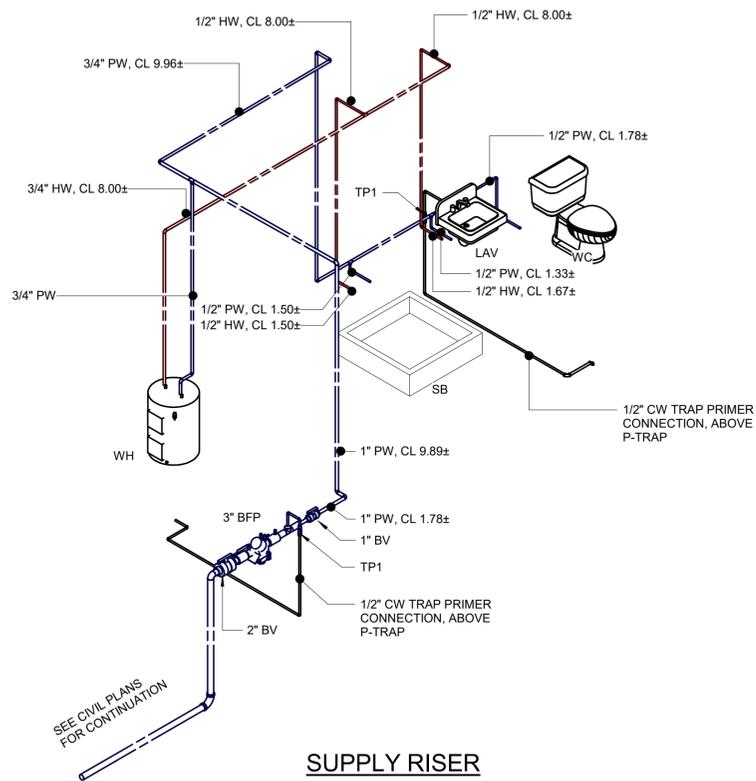


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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

ELECTRICAL BUILDING
PLUMBING
TOP PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	P150



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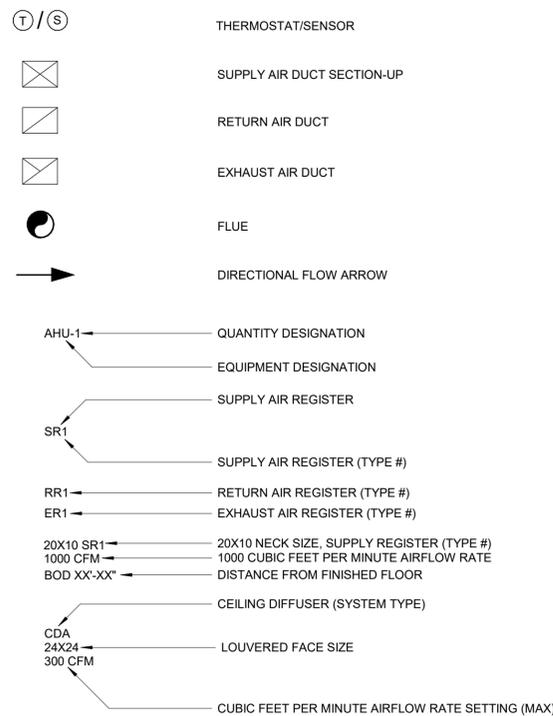


BIG BRANCH 2
 PUMP STATION

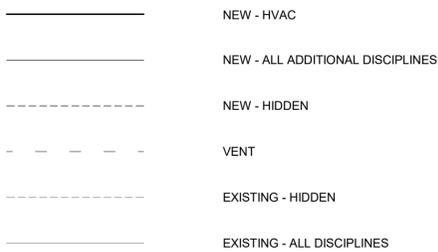
ELECTRICAL BUILDING
 PLUMBING
 RISER DIAGRAMS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	P151

SYMBOLS



LINETYPES



ABBREVIATIONS

AI	ANALOG INPUT	OA	OUTSIDE AIR
AC	AIR CONDITIONING, AIR CONDITIONING UNIT	OAI	OUTSIDE AIR INTAKE
ACCU	AIR COOLED CONDENSING UNIT	ORP	OXYGEN REDUCTION POTENTIAL
ACC	AIR COOLED CONDENSER	P	PUMP
AD	ACCESS DOOR	PC	PLUMBING CONTRACTOR
AFF	ABOVE FINISHED FLOOR	PD	PRESSURE DROP
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY	PF	PROPELLER FAN
AHU	AIR HANDLING UNIT	PH, Ø	PHASE
AO	ANALOG OUTPUT	PPU	POSITIVE PRESSURIZATION UNIT
APD	AIR PRESSURE DROP	PROP	PROPELLER
ATC	AUTOMATIC TEMPERATURE CONTROL	PRV	PRESSURE REGULATING VALVE
ATU	AIR TERMINAL UNIT	PTAC	PACKAGED TERMINAL AIR CONDITIONING UNIT
B	BOILER	PS	PRESSURE SENSOR
BD	GRAVITY BACKDRAFT DAMPER	PW	POTABLE WATER
BFP	BACKFLOW PREVENTER	RA	RETURN AIR
BHP	BRAKE HORSEPOWER	RH	RELATIVE HUMIDITY
BOD	BOTTOM OF DUCT	RL	REFRIGERANT LIQUID
BOR	BOTTOM OF REGISTER	RLA	RATED LINE AMPS
BOT	BOTTOM	RS	REFRIGERANT SUCTION
CB	CIRCUIT BREAKER	RPM	REVOLUTIONS PER MINUTE
CFM	CUBIC FEET OF STANDARD AIR PER MINUTE	SA	SUPPLY AIR
CH	CABINET UNIT HEATER	SD	SMOKE DETECTOR
CLG	CEILING	SF	SUPPLY AIR FAN
CONN	CONNECTION	SG	SUPPLY GRILLE
CWS	CHILLED WATER SUPPLY	SHR	SENSIBLE HEAT RATIO
CWR	CHILLED WATER RETURN	SP	STATIC PRESSURE
DI	DIGITAL INPUT	SPEC	SPECIFICATION
DB	DRY BULB	SS	STAINLESS STEEL
DDC	DIRECT DIGITAL CONTROL	SV	SOLENOID VALVE
DX	DIRECT EXPANSION REFRIGERANT	TEMP	TEMPERATURE
DIA, Ø	DIAMETER	TF	TRANSFER FAN
DM	DAMPER MOTOR	TH	TOTAL HEAT
DN	DOWN	TOD	TOP OF DUCT
DO	DIGITAL OUTPUT	TOU	TOP OF UNIT
EA	EXHAUST AIR	TOR	TOP OF REGISTER
EC	ELECTRICAL CONTRACTOR	TSP	TOTAL STATIC PRESSURE
EAT	ENTERING AIR TEMPERATURE	TS	TEMPERATURE SENSOR
EDH	ELECTRIC DUCT HEATER	TYP	TYPICAL
EG	EXHAUST GRILLE	UH	UNIT HEATER
EUH	ELECTRIC UNIT HEATER	V	VOLTS
EF	EXHAUST FAN	VAV	VARIABLE AIR VOLUME
EL/ELEV	ELEVATION	VD	VOLUME DAMPER
ES	ENTHALPY SENSOR	VEL	VELOCITY
ESP	EXTERNAL STATIC PRESSURE	VH	HEATING CONTROL VALVE
ET	EXPANSION TANK	VC	COOLING CONTROL VALVE
EWT	ENTERING WATER TEMPERATURE	VFD	VARIABLE FREQUENCY DRIVE
FA	FREE AREA	VVT	VARIABLE VOLUME AND VARIABLE TEMPERATURE
FC	FORWARD CURVED OR FAN COIL	WPD	WATER PRESSURE DROP
FD	FIRE DAMPER WITH ACCESS DOOR	W/	WITH
FLA	FULL LOAD AMPS	WB	WET BULB
FOR	FUEL OIL RETURN	WC	WATER COLUMN
FOS	FUEL OIL SUPPLY		
FOV	FUEL OIL VENT		
FPM	FEET PER MINUTE		
FTR	FINNED TUBE RADIATION		
GC	GENERAL CONTRACTOR		
GPM	GALLONS PER MINUTE		
HG	HOT GAS		
HP	HORSEPOWER OR HEAT PUMP		
HV	HEATING AND VENTILATING UNIT		
HWS	HOT WATER SUPPLY		
HWR	HOT WATER RETURN		
IDEC	INDIRECT EVAPORATIVE COOLING		
IN. WG	INCHES OF WATER GAGE		
KW	KILOWATT (1,000 WATTS)		
L1	LOUVER (TYPE 1)		
LAT	LEAVING AIR TEMPERATURE		
LD1	LINEAR DIFFUSER (TYPE 1)		
LF	LINEAR FEET		
LR	LINEAR RETURN		
LWT	LEAVING WATER TEMPERATURE		
MAU	MAKEUP AIR UNIT		
MBH	1,000 BTU PER HOUR		
MC	MECHANICAL CONTRACTOR		
MCA	MINIMUM CIRCUIT AMPACITY		
MD	MOTORIZED DAMPER		
MTD	MOUNTED		
NC	NORMALLY CLOSED, NOISE CRITERIA		
NK	NECK		
NO	NORMALLY OPEN		
NTS	NOT TO SCALE		

GENERAL NOTES

- THE SYMBOLS AND ABBREVIATIONS LIST ON THIS SHEET IS A COMPREHENSIVE STANDARD GUIDE INTENDED FOR GENERAL USE ON ALL PROJECTS. THEREFORE NOT ALL THE SYMBOLS AND ABBREVIATIONS CONTAINED IN THIS LIST ARE NECESSARILY USED ON THIS PARTICULAR PROJECT AND SHOULD BE USED FOR CLARIFICATION ONLY.
- ALL DUCT DIMENSIONS ARE CLEAR DIMENSIONS TO INSIDE OF DUCT. DIMENSIONS TO DUCTS FROM FLOOR OR WALL SHALL BE TO THE OUTSIDE OF DUCT/INSULATION. WHERE INTERNAL INSULATION IS REQUIRED THE DUCT SIZE SHALL BE INCREASED TO GIVE CLEAR INSIDE DIMENSIONS AS NOTED ON THE DRAWINGS.
- EQUIPMENT SIZES AND LOCATIONS ARE APPROXIMATE. ACTUAL DIMENSIONS TO BE DETERMINED BY EQUIPMENT FURNISHED. COORDINATE HVAC WORK WITH THE WORK OF ALL OTHER TRADES.
- FINAL OPENING DIMENSIONS, CONCRETE PAD SIZES, AND LOCATIONS MUST BE COORDINATED DURING CONSTRUCTION WITH APPROVED EQUIPMENT.
- FINAL SIZES OF FLOOR OPENINGS, DUCT PLENUMS, TRANSITIONS AND PIPING CONNECTIONS TO ALL EQUIPMENT SHALL BE DETERMINED BY EQUIPMENT FURNISHED.
- THE DRAWINGS ARE SCHEMATIC IN NATURE AND SHOW INTENDED GENERAL LOCATION OF HVAC EQUIPMENT AND SYSTEMS. NOT ALL OFFSETS AND REQUIRED FITTINGS FOR ACTUAL FIELD INSTALLATION ARE INTENDED TO BE SHOWN FOR INSTALLATION OF SYSTEMS IN THE SPACE AVAILABLE IN CONSIDERATION OF WORK OF OTHER TRADES AND FIELD CONDITIONS. CONTRACTOR SHALL PROVIDE ADDITIONAL OFFSETS IN DUCTWORK AND PIPING AS REQUIRED TO AVOID SUCH INTERFERENCES OR FIELD CONDITIONS AT NO ADDITIONAL COST TO THE ORIGINAL CONTRACT AMOUNT.
- FIRST FIGURE OF DUCT SIZE INDICATES DIMENSION OF FACE SHOWN OR INDICATED OR WIDTH OF DUCT IN PLAN VIEW.
- COORDINATE THE REQUIREMENTS FOR HVAC OPENINGS AND SLEEVES IN BUILDING ELEMENTS WITH THE GC.
- CONTRACTOR SHALL REFER TO SPECIFICATION SECTION 099000 FOR PAINTING REQUIREMENTS UNLESS OTHERWISE NOTED.
- REFER TO ELECTRICAL DRAWINGS OR SPECIFICATIONS FOR INTERLOCKING WIRING REQUIREMENTS.
- CONTRACTOR SHALL COORDINATE DUCTWORK INSTALLATION WITH OTHER TRADES.
- PROVIDE ADEQUATE SUPPORT, PER THE MANUFACTURER'S RECOMMENDATIONS, FOR ALL HVAC EQUIPMENT.
- CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING ELECTRICAL RATINGS FROM CERTIFIED DRAWINGS OF EQUIPMENT AND SHALL MAKE ANY BRANCH CIRCUIT DISTRIBUTION MODIFICATION REQUIREMENTS WITHOUT ANY ADDITIONAL COST TO OWNER. THE CONTRACTOR SHALL SUBMIT A SCHEDULE OF SUCH CHANGES FOR APPROVAL BY ENGINEER.
- WHEREVER THE REQUIREMENTS AND REGULATIONS OF STATE, FEDERAL AND LOCAL AUTHORITIES HAVING JURISDICTION DIFFER FROM THE DRAWINGS OR SPECIFICATIONS, THEY SHALL TAKE PRECEDENCE AND SHALL BE MADE PART OF THE CONTRACT (EXCEPT WHERE THE DRAWINGS OR SPECIFICATIONS ARE MORE STRINGENT).
- THE CONTRACTOR SHALL PROVIDE AND INSTALL FIRE AND SMOKE RATED DAMPERS IN HVAC DUCTS WHICH PENETRATE FIRE RATED BUILDING ASSEMBLIES AS SHOWN ON ARCHITECTURAL DRAWINGS.
- DUCTWORK AND PLENUM TO LOUVERS SHALL BE CONNECTED TO FRAMED OPENINGS AND, SEALED AIRTIGHT AND WEATHER RESISTANT.
- THERMOSTATS, SENSORS, AND/OR CONTROL PANEL LOCATIONS SHOWN ARE APPROXIMATE AND SHALL BE COORDINATED TO SUIT FIELD CONDITIONS.
- INSTALL WALL MTD SENSORS, CONTROLS AND THERMOSTATS 5'-0" AFF UNLESS OTHERWISE NOTED. ALIGN WITH OTHER NEARBY ITEMS SUCH AS LIGHT SWITCHES. DO NOT INSTALL CLOSER THAN 6-INCHES FROM EDGE OF DOOR FRAME OR CORNER OF WALL AS SHOWN ON ARCH PLANS. WHERE CONFLICTS MAY OCCUR WITH ITEMS SUCH AS LIGHT SWITCHES, MOUNT THE SENSOR OR CONTROL DEVICE 4'-6" AFF CENTERED ABOVE THE LIGHT SWITCH.
- PROVIDE ADEQUATE MEANS OF ACCESS CLEARANCE FOR ALL HVAC/MECHANICAL EQUIPMENT AND SYSTEMS THAT REQUIRE ACCESS FOR PROPER OPERATION, MAINTENANCE AND REPAIR PER RECOMMENDED MANUFACTURER CLEARANCES. PROVIDE ACCESS DOORS WHERE NECESSARY IN FINISHED WALLS OR DRYWALL CEILINGS FOR ACCESS TO VALVES, DAMPERS, OR CONTROL DEVICES.
- COORDINATE THE REQUIREMENTS OF HVAC HANGERS AND SUPPORTS W/ OTHER PRIME CONTRACTORS PROVIDING STRUCTURAL AND/OR ARCHITECTURAL BUILDING ELEMENTS WHICH HVAC SUPPORTS SHALL INTERFACE.
- HVAC CONTRACTOR SHALL PROVIDE ALL FIRESTOPPING AND PIPE SLEEVES FOR ALL PIPE AND DUCT PENETRATIONS THRU FIRE RATED BUILDING ASSEMBLIES.
- CONTRACTOR SHALL OBTAIN AND PAY ALL FEES RELATED TO PERMITTING, AND INSPECTIONS.
- ALL WORK SHALL COMPLY WITH 2018 NORTH CAROLINA MECHANICAL CODE.
- FOR ADDITIONAL REQUIREMENTS REFER TO SPECIFICATIONS.

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DRAWN BY:	P. GREER		
CHECKED BY:	H&S		
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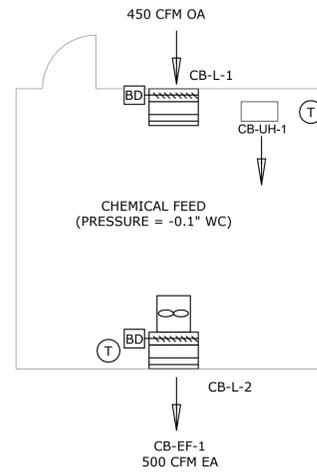
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APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

GENERAL
 HVAC
 LEGEND & NOTES

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	H1



CHEMICAL FEED AIRFLOW DIAGRAM

AIR HANDLING UNITS

TAG	LOCATION	MANUFACTURER		TYPE	AREA SERVED	AIR FLOW (CFM)	MIN. OA (CFM)	E.S.P. ("WG)	EFFICIENCY (EER)	MOTOR			HEATING COIL				COOLING COIL				WEIGHT (LBS)	POWER					NOTES			
		MAKE	MODEL							BHP	HP	VFD	TYPE	EAT (°F)	LAT (°F)	SENSIBLE CAPACITY (MBH)	TOTAL CAPACITY (MBH)	EAT (°F) DB	WB	LAT (°F) DB		WB	SENSIBLE CAPACITY (MBH)	TOTAL CAPACITY (MBH)	VOLT	PH		HZ	MCA	MOCP
ER-AHU-1	ELECTRICAL ROOM	BARD	W72AC-PC095PXX3J	WALL MOUNTED	ELECTRICAL ROOM	1,977	197	0.03	10		0.75	NO	ELECTRIC	70	83.2	28.3	30.7	86.7	67.6	62.7	55.9	51.3	73.6	582	460	3	60	18	25	1,2,3,4,5,6
ER-AHU-2	ELECTRICAL ROOM	BARD	W72AC-PC095PXX3J	WALL MOUNTED	ELECTRICAL ROOM	1,977	197	0.03	10		0.75	NO	ELECTRIC	70	83.2	28.3	30.7	86.7	67.6	62.7	55.9	51.3	73.6	582	460	3	60	18	25	1,2,3,4,5,6

- NOTES:
- REFER TO SPECIFICATION 23 84 00 FOR ADDITIONAL REQUIREMENTS.
 - 2-INCH MERV 8 PLEATED FILTERS.
 - SUPPLY WITH FULL FLOW ECONOMIZER AND 7" INTAKE HOODS.
 - T6 PRO TEMPERATURE/HUMIDITY PROGRAMABLE THERMOSTAT.
 - INTALL WITH MANUFACTURER'S RECOMMENDED SUPPLY & RETURN GRILLS.
 - TWO-UNIT LEAD/LAG CONTROLLER - MC4002-BC WITH ALARM & COMMUNICATION BOARD

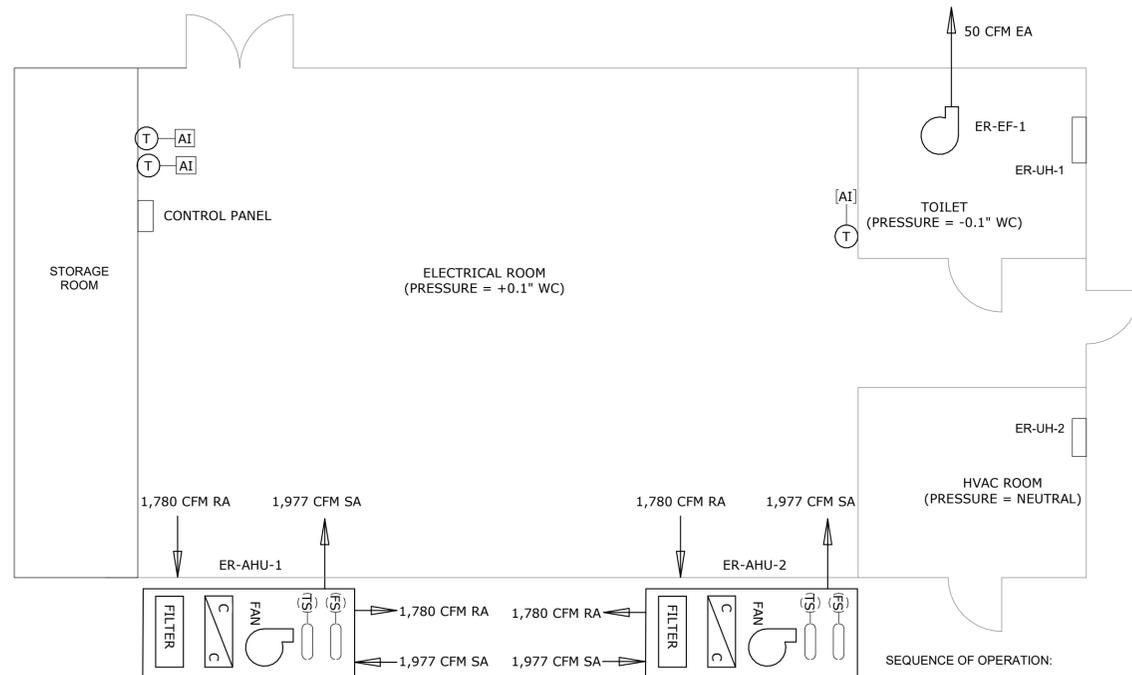
SEQUENCE OF OPERATION:

- EXHAUST FAN, CB-EF-1, TO BE CONTROLLED BY SINGLE WALL MOUNTED THERMOSTAT. FAN SHALL START BASED ON THERMOSTAT SETTING OF 100° F. (ADJUSTABLE)
- UNIT HEATER, CB-UH-1, TO BE CONTROLLED BY SINGLE WALL MOUNTED THERMOSTAT. HEATER SHALL RUN WHEN SPACE TEMPERATURE REACHES 50° F.

ELECTRIC UNIT HEATERS

TAG	LOCATION	AREA SERVED	MANUFACTURER		TYPE	CAPACITY (KW)	AIRFLOW (CFM)	DIMENSIONS			WEIGHT (LBS)	POWER			NOTES
			MAKE	MODEL				WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)		VOLT	PH	HZ	
ER-UH-1	ELECTRICAL ROOM	BATHROOM	INDEECO	WCI	FAN FORCED	1.5	160	14.5	20	4	24	120	1	60	1,2
ER-UH-2	ELECTRICAL ROOM	HVAC ROOM	INDEECO	WCI	FAN FORCED	1.5	160	14.5	20	4	24	120	1	60	1,2
CF-UH-1	CHEMICAL FEED	CHEMICAL FEED	INDEECO	TRIAD	WASHDOWN	12	1,575	13	21.5	15.5	56	480	3	60	1,3,4

- NOTES:
- REFER TO SPECIFICATION 23 82 16.14 FOR ADDITIONAL REQUIREMENTS
 - SUPPLY WITH WALL SURFACE MOUNTING KIT
 - SUPPLY WITH CEILING MOUNTING KIT
 - TO BE CONTROLLED BY WALL MOUNTED THERMOSTAT



ELECTRIC ROOM AIRFLOW DIAGRAM

SEQUENCE OF OPERATION:

- AIR HANDLING UNITS, ER-AHU-1,2, SHALL BE CONTROLLED BY WALL MOUNTED THERMOSTATS TO PROVIDE COOLING TO 55° F. AND HEATING TO 50° F. INTERLOCK THERMOSTATS TO LEAD/LAG CONTROLLER SUCH THAT ONLY ONE UNIT OPERATES AT A TIME. LEAD/LAG CONTROLLER SHALL BE PROGRAMMED TO BALANCE RUN TIME OF BOTH UNITS. ECONOMIZER MODE SHALL ENGAGE BASED ON THE DRY BULB AMBIENT TEMPERATURE BELOW 60° F

CONTROL SYMBOLS

- SMOKE DETECTOR
- THERMOSTAT
- HAND-OFF-REMOTE
- MOTOR OPERATED DAMPER
- R-RED
- G-GREEN
- B-BLUE
- W-WHITE
- BACKDRAFT DAMPER
- FLOW SWITCH
- DIFFERENTIAL PRESSURE SWITCH
- DX COOLING COIL
- ALARM HORN
- ALARM LIGHT

- NOTES:
- ALL ROOM PRESSURES ARE RELATIVE TO AMBIENT PRESSURE.

FANS

TAG	LOCATION	AREA SERVED	MANUFACTURER		AIRFLOW (CFM)	E.S.P. ("WG)	FAN		MAX. SPEED (RPM)	MOTOR			POWER			WEIGHT (LBS)	NOTES
			MAKE	MODEL			TYPE	DRIVE		BHP	HP	VFD	VOLT	PH	HZ		
ER-EF-1	ELECTRICAL BUILDING	BATHROOM	GREENHECK	SP-A70	50	0.25	CENT	DIRECT	790	1/20	0.05	NO	115	1	60	12	1,3
CF-EF-1	CHEMICAL FEED	CHEMICAL FEED	GREENHECK	SDPE-D-12G-1-DS	500	0.18	PROP	DIRECT	1,430	1/30	0.033	NO	115	1	60	20	1,2,4

- NOTES:
- REFER TO SPECIFICATION 23 34 00 FOR ADDITIONAL REQUIREMENTS
 - TO BE CONTROLLED BY WALL MOUNTED THERMOSTAT
 - SWITCH OPERATED
 - SUPPLY WITH WALL COLLAR AND FANMOTOR WIRE GUARD

LOUVERS

TAG	AREA SERVED	MANUFACTURER		TYPE	MATERIAL	AIRFLOW (CFM)	SIZE			FREE AREA (SQFT)	MAX FACE VEL. (FPM)	STATIC P.D. ("WG)	NOTES
		MAKE	MODEL				WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)				
CF-L-1	CHEMICAL FEED	RUSKIN	ELF6375DX	INTAKE, STATIONARY	ALUMINUM	450	24	24	6	1.89	239	0.01	1,2,4,5
CF-L-2	CHEMICAL FEED	RUSKIN	ELF6375DX	EXHUAUST, STATIONARY	ALUMINUM	500	16	16	6	1.78	685	0.06	1,2,3,4,5

- NOTES:
- REFER TO SPECIFICATION 23 31 13 FOR ADDITIONAL REQUIREMENTS
 - PROVIDE WITH RUSKIN CD-50 GRAVITY BACKDRAFT DAMPER
 - PROVIDE WITH WEATHER HOOD
 - ALUMINUM BIRD SCREEN
 - ARCHITECT TO SELECT COLOR

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DESIGNED BY:	C. JONES		
DRAWN BY:	P. GREER		
CHECKED BY:	H&S		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
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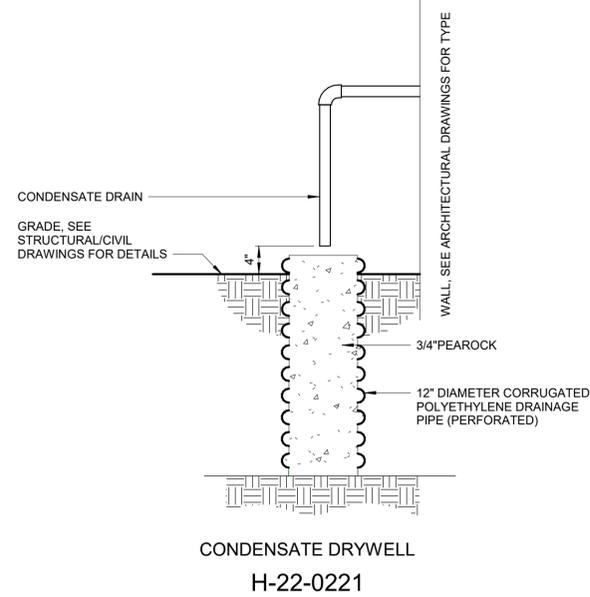
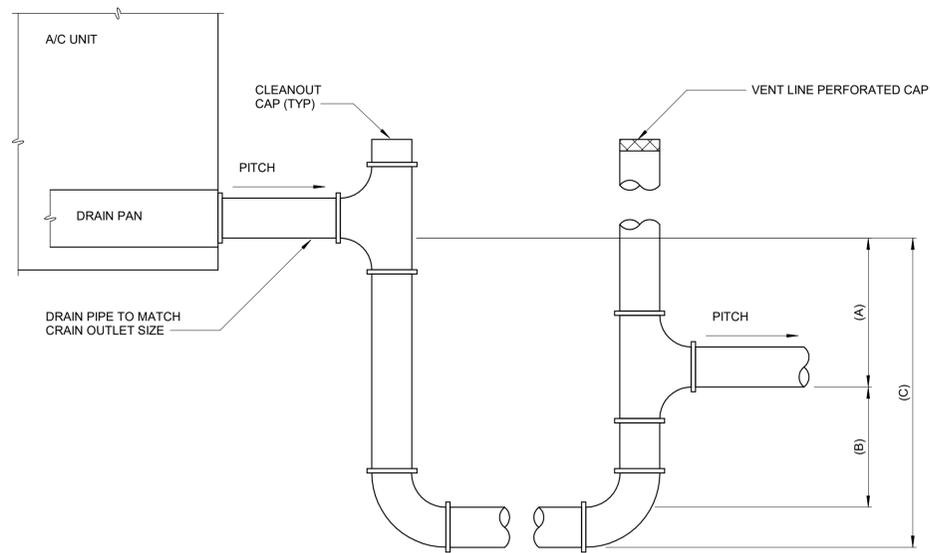
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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

GENERAL
HVAC
AIRFLOW DIAGRAMS & SCHEDULES

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	H2



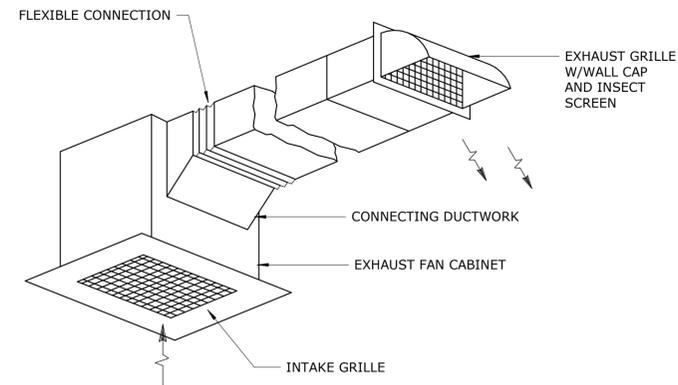
NOTES:

1. ALLOW SUFFICIENT SPACE BELOW DRAIN PAN FOR TRAP.
2. PITCH DRAIN FOR PROPER RUNOFF.
3. MANUALLY PRIME FILL TRAP BEFORE START-UP TO FORM INITIAL DRAIN SEAL. SUPPORT LENGTHY DRAIN LINES TO PREVENT SAG.

DRAW THROUGH COIL (NEGATIVE PRESSURE):

- A. 1 INCH FOR EACH OF NEGATIVE PRESSURE PLUS 1 INCH (NEGATIVE STATIC PRESSURE IN INCHES WG WITH DIRTY FILTERS, COILS, AND MAXIMUM AIR FLOW.)
- B. THIS DIMENSION IN INCHES MUST BE EQUAL TO MIN 1/2 OF THE (A) ABOVE.
- C. EQUALS (A) + (B) + PIPE DIAMETER + INSULATION

AIR
CONDITIONER
COIL TRAP
H-23-0401



CEILING EXHAUST FAN
H-23-0607

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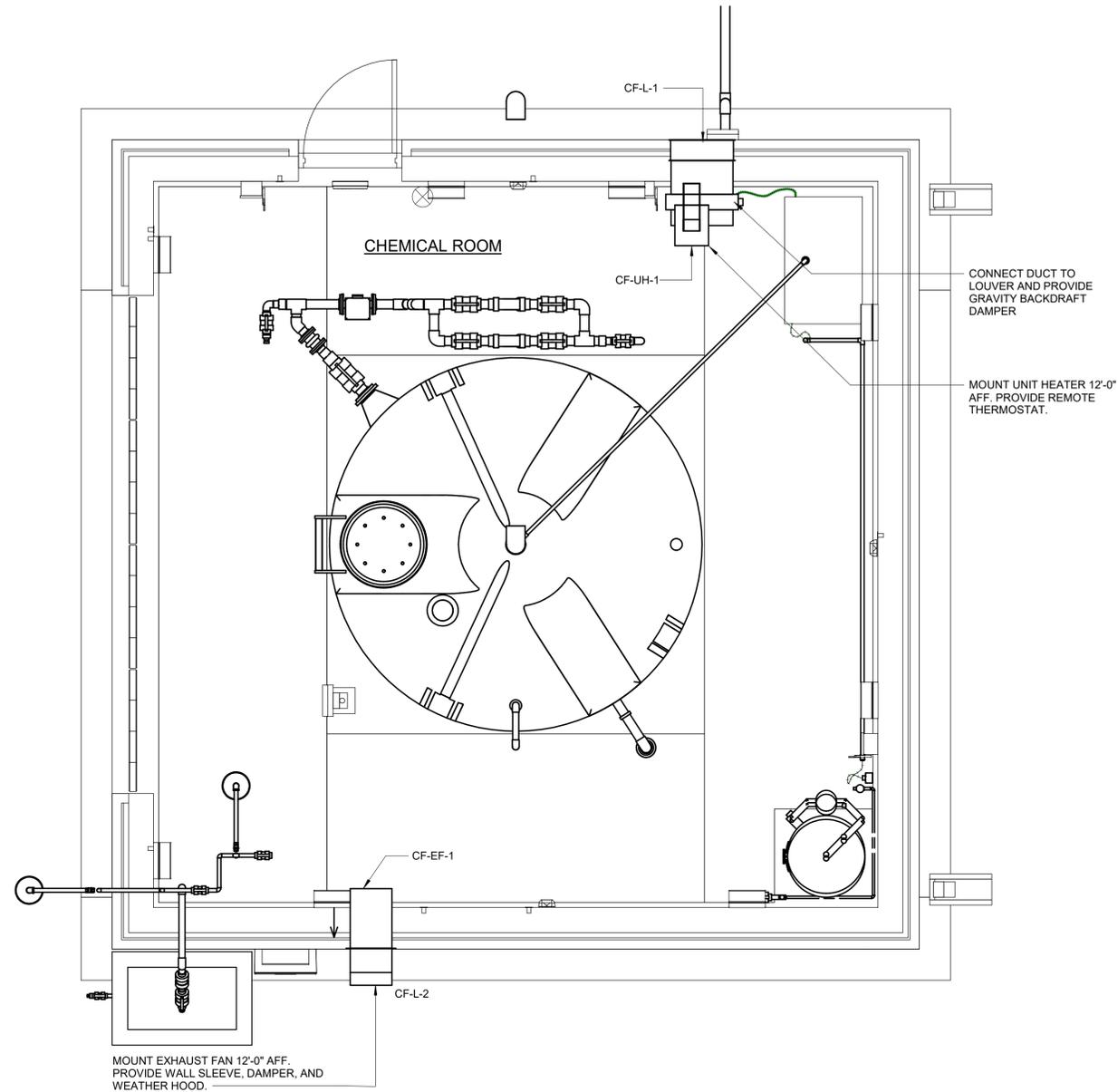
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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

GENERAL
HVAC
DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	H3

- NOTES:
1. REFER TO ARCHITECTURAL PLANS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION ABOUT LOUVERS.



HVAC
3/8" = 1'-0"

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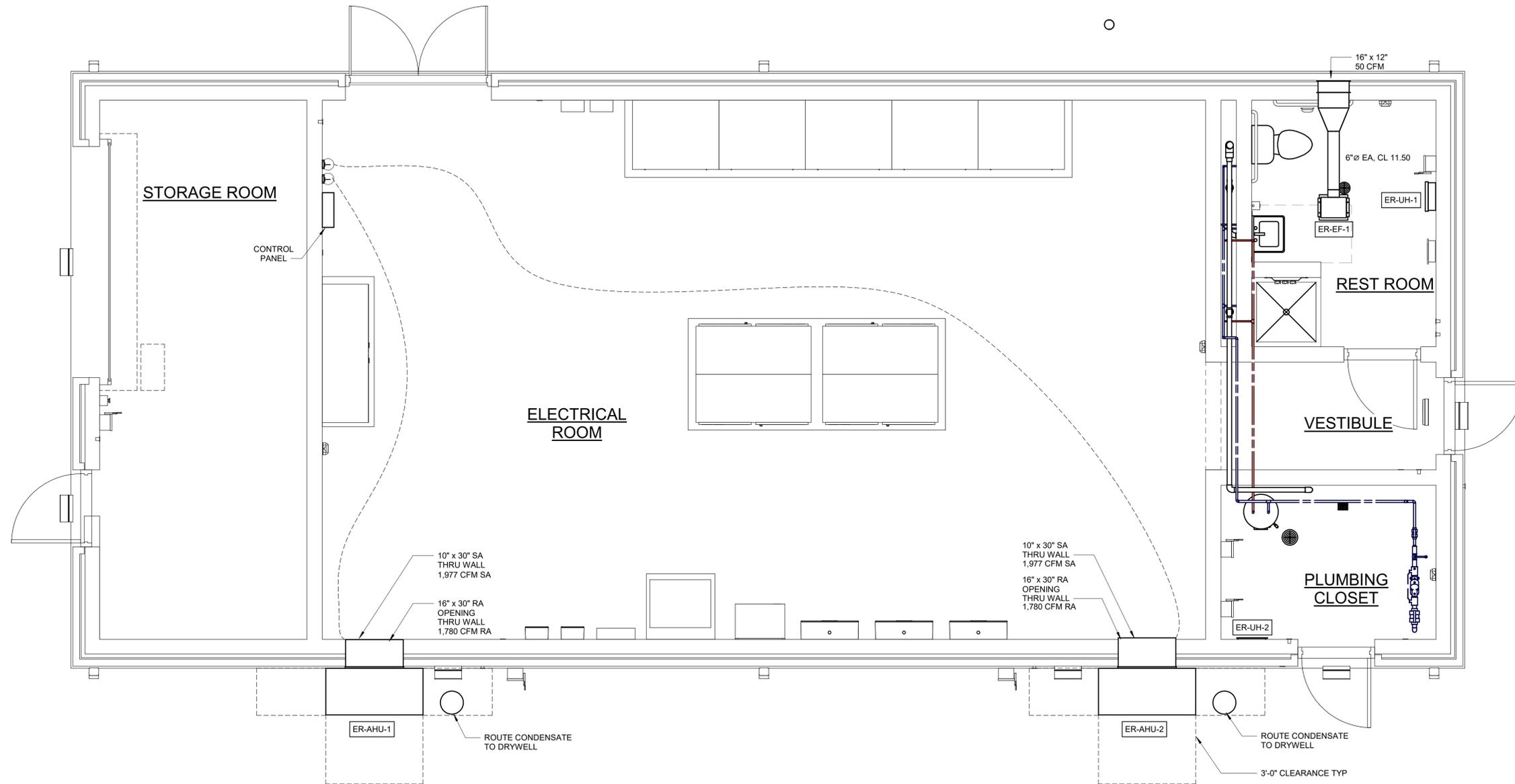


BIG BRANCH 2
PUMP STATION

CHEMICAL FEED BUILDING
HVAC/PLUMBING
FLOOR PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	H130

NOTES:
 1. REFER TO SEQUENCE OF OPERATION FOR CONTROL STRATEGY.



HVAC FLOOR PLAN
 3/8" = 1'-0"

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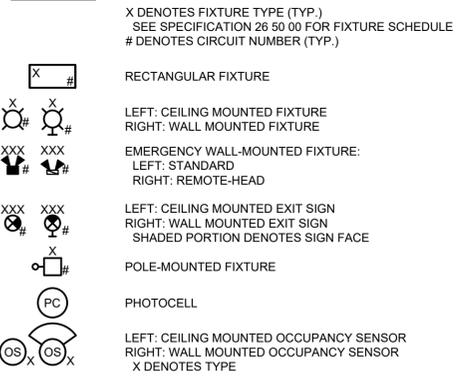


BIG BRANCH 2
 PUMP STATION

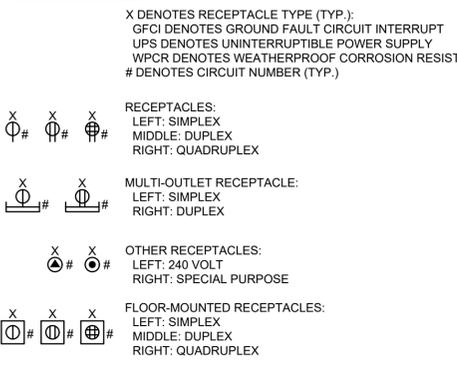
ELECTRICAL BUILDING
 HVAC
 TOP PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	H150

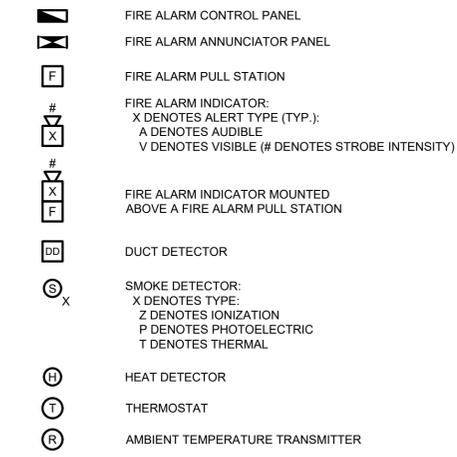
LIGHTING



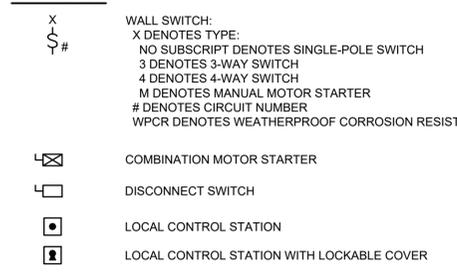
RECEPTACLES



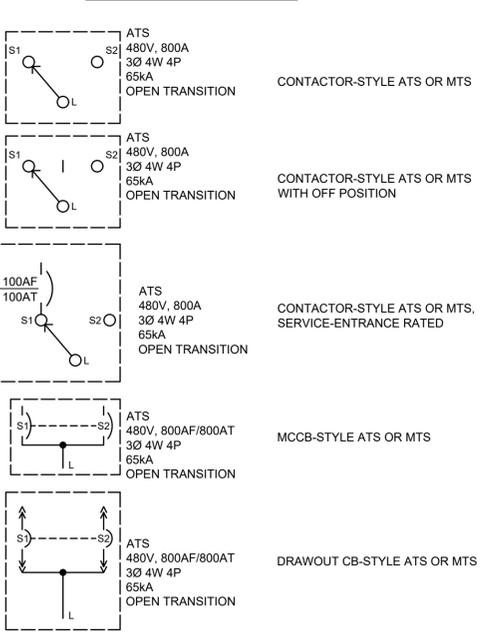
HVAC AND FIRE ALARM



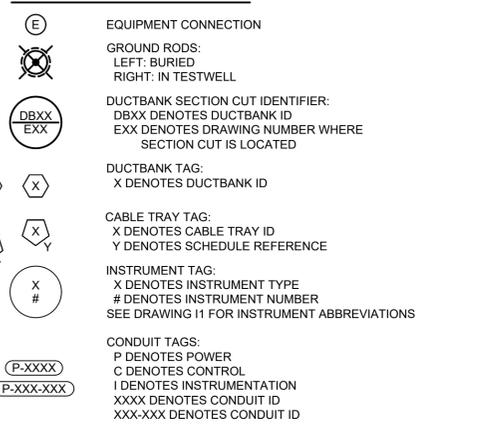
SWITCHES



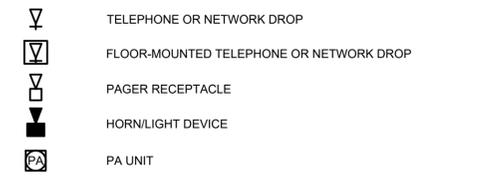
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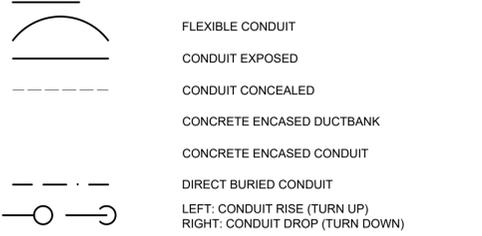
MISC PLAN VIEW SYMBOLS



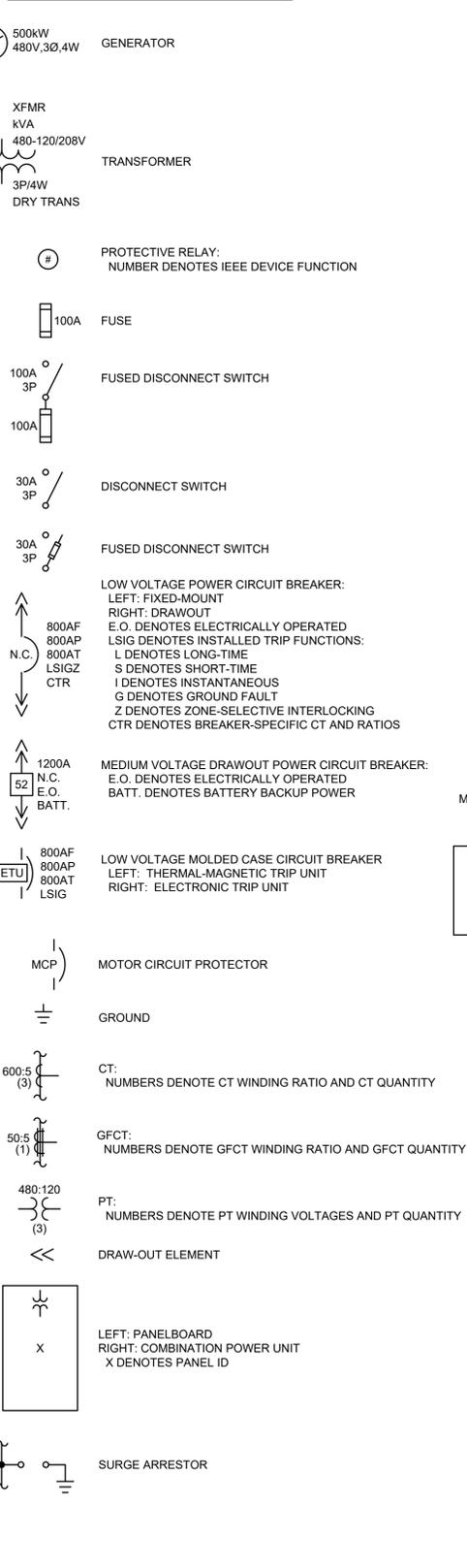
COMMUNICATIONS



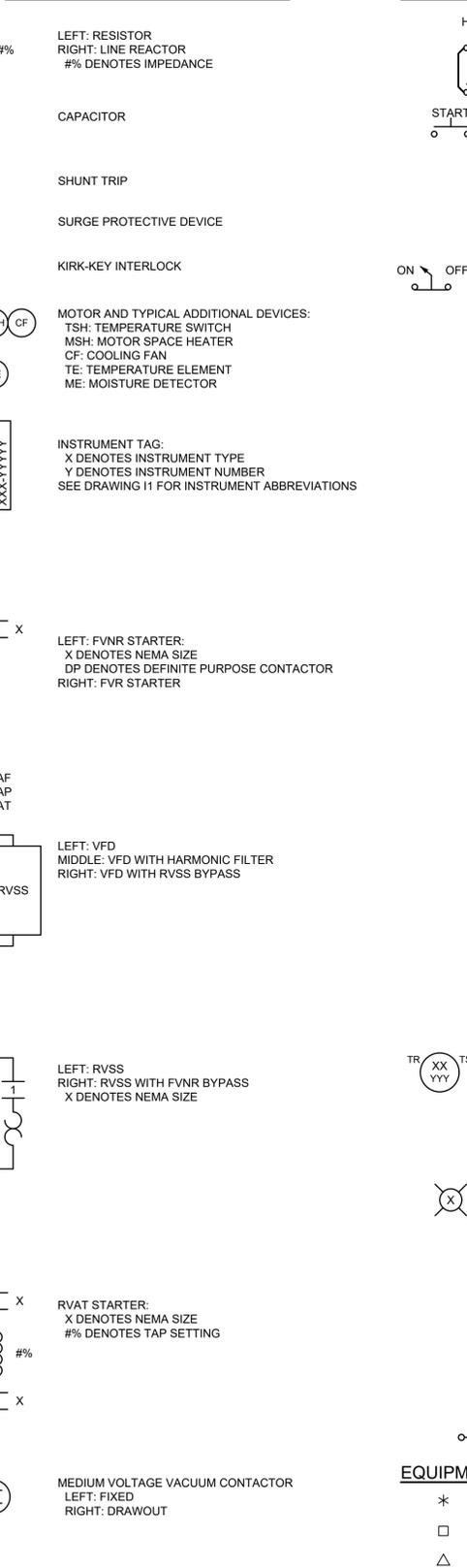
WIRING



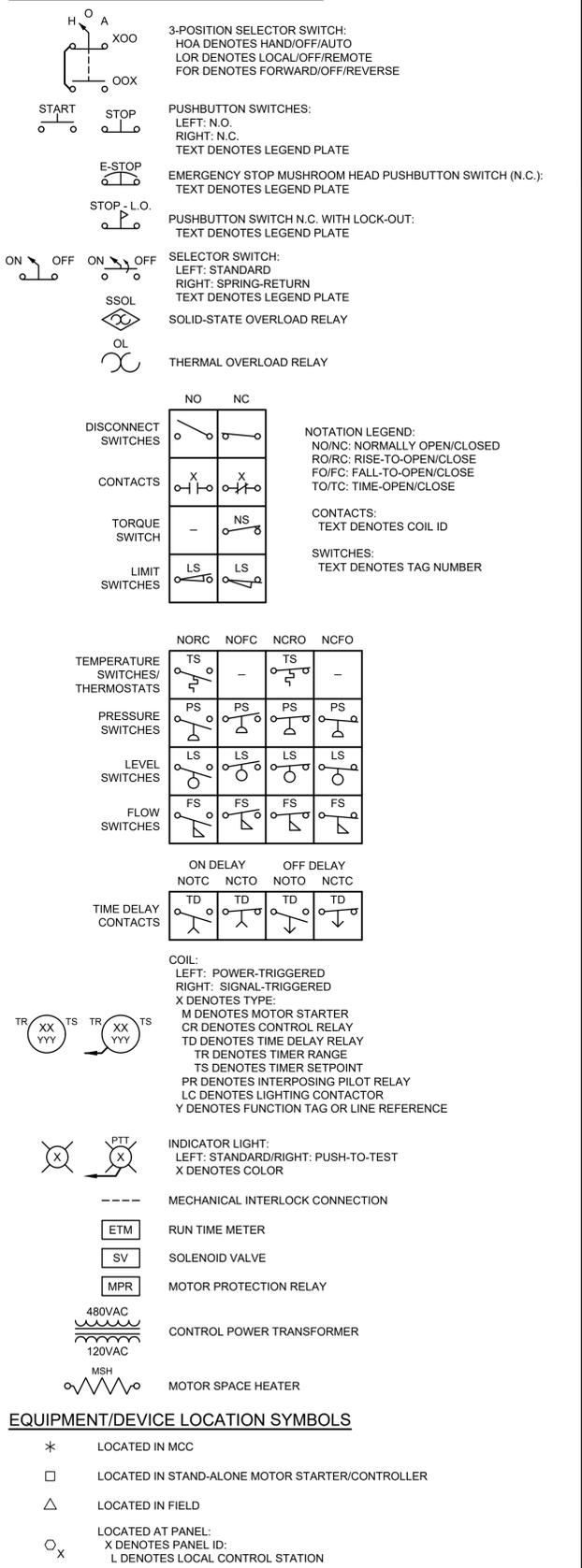
SINGLE-LINE DIAGRAMS, CONT'D.



SINGLE-LINE DIAGRAMS, CONT'D.



ELEMENTARY CONTROL SCHEMATICS



File: C:\USERS\BYBEE\ACCORDS\HAZEN AND SAWYER\32044-004_BIG BRANCH 2 PUMP STATION AND PIPELINES\PROJECT FILES\ELEC\CAD\001_Saved by LBYBEE Save date: 3/31/2023 12:21 PM PLOT DATE: 3/31/2023 12:23 PM BY: LBYBEE

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	T. MANGALAM		
DRAWN BY:	L. BYBEE		
CHECKED BY:	G. RATASKY		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

Hazen

HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA

BIG BRANCH 2
PUMP STATION

GENERAL NOTES AND ABBREVIATIONS
ELECTRICAL
LEGEND AND SYMBOLS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E1

ABBREVIATIONS

AE	ANALYSIS ELEMENT
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AIT	ANALYSIS INDICATING TRANSMITTER
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
AF	AMPERE FRAME
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
BC	BYPASS CONTACTOR
BKR	BREAKER
(L/V)CP	(LOCAL/VENDOR) CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
DB	DUCTBANK
DSW	DISCONNECT SWITCH
(*)HH	HAND HOLE*
(*)MH	MANHOLE*
EO	ELECTRICALLY OPERATED
ETM	ELAPSED TIME METER
ETU	ELECTRONIC TRIP UNIT
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FS	FLOW SWITCH
FSL	FLOW SWITCH LOW
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFCT	GROUND FAULT CURRENT TRANSFORMER
GNG	GO-NO GO
GND	GROUND
HOA	HAND-OFF-AUTO
HPU	HYDRAULIC POWER UNIT
IC	INPUT CONTACTOR
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
ISO	INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
(*)JB	JUNCTION BOX*
LCS	LOCAL CONTROL STATION
LP	LIGHTING PANEL
LS	LEVEL SWITCH
LSL	LEVEL SWITCH LOW
LSLL	LEVEL SWITCH LOW-LOW
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH-HIGH
LT	LEVEL TRANSMITTER
MFR	MULTI-FUNCTION RELAY
MH	MANHOLE
MOD	MOTOR OPERATED DAMPER
MOG	MOTOR OPERATED GATE
MOL	MOTOR OPERATED LOUVER
MOV	MOTOR OPERATED VALVE
MPR	MOTOR PROTECTION RELAY
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
MWTS	MOTOR WINDING TEMPERATURE SWITCH
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSN
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OC	OUTPUT CONTACTOR
OL	OVERLOAD

ABBREVIATIONS, CONT.

(*)PB	PULLBOX*
PC	PHOTOCELL
PCC	POINT OF COMMON COUPLING
PE	PRESSURE ELEMENT
PIT	PRESSURE INDICATING TRANSMITTER
PLC	PROGRAMMABLE LOGIC CONTROLLER
PP	POWER PANEL
PST	PHASE SHIFTING TRANSFORMER
PT	POTENTIAL TRANSFORMER
PTT	PUSH TO TEST
RCS	REMOTE CONTROL STATION
RECP	RECEPTACLE
RIO	REMOTE I/O
RM	ROOM
RTD	RESISTANCE THERMAL DEVICE
RTU	REMOTE TELEMETRY UNIT
RVAT	REDUCED VOLTAGE AUTO TRANSFORMER
RVSS	REDUCED VOLTAGE SOLID STATE
SA	SUPPLY AIR
S.E.	SERVICE ENTRANCE
SP. C.	SPARE CONDUIT
SPD	SURGE PROTECTIVE DEVICE
SSOL	SOLID STATE OVERLOAD
SST	STAINLESS STEEL
TB	TEST BLOCK
TC	TIMED CLOSE
TO	TIMED OPEN
TSH	TWISTED SHIELDED
TX	TRANSFORMER
TYP	TYPICAL
UPS	UNINTERRUPTIBLE POWER SUPPLY
VFD	VARIABLE FREQUENCY DRIVE
WPCR	WEATHER PROOF CORROSION RESISTANT
WT	WALK THROUGH
XFMR	TRANSFORMER

*DESIGNATED ABBREVIATIONS CAN HAVE THE FOLLOWING PREFIXES:

E	ELECTRIC
P	POWER
C	CONTROL
I	INSTRUMENTATION
F	FIBER

NOTES:

- UNLESS SPECIFICALLY NOTED OTHERWISE, ALL UNDERGROUND CONCRETE ENCASED ELECTRICAL CONDUITS SHALL BE PER STANDARD DETAIL E-33-0101.
- BOND ALL NEW CONCRETE ENCASED GROUND CONDUCTORS TO EXISTING GROUND CONDUCTORS IN ALL MANHOLES, PULL BOXES, CABLE TRAYS, AND SIMILAR LOCATIONS WHERE APPLICABLE.
- UNLESS OTHERWISE SPECIFIED OR NOTED, ALL WALL MOUNTED ELECTRICAL PANELS, ENCLOSURES, AND SIMILAR EQUIPMENT SHALL BE MOUNTED 6'-6" (MAX) FROM THE TOP OF THE PANEL TO FINISHED FLOOR OR GRADE.
- UNLESS OTHERWISE NOTED, ALL LIGHTING SWITCHES, CONTROL SWITCHES, AND SIMILAR EQUIPMENT SHALL BE MOUNTED WITH THEIR CENTERLINE APPROXIMATELY 4'-0" ABOVE FINISHED FLOOR, SLAB, OR GRADE.
- A SEPARATE EQUIPMENT GROUNDING CONDUCTOR SHALL BE PROVIDED FOR EACH CIRCUIT (SEPARATE CONDUCTOR IN THE CONDUIT). THE CONDUCTOR SHALL BE TERMINATED AT THE PROPER DEVICE, TERMINAL, OR LUG AT THE POWER SOURCE (MCC GROUND BUS, PANELBOARD GROUND BUS, ETC.). GROUND CONDUCTOR SIZE SHALL BE PER THE LATEST EDITION OF THE NEC.
- ELECTRICAL SYSTEMS INSTALLED IN HAZARDOUS LOCATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CHAPTER 5, ART. 500 OF THE LATEST EDITION OF THE NEC. CONTRACTOR SHALL SEAL ALL CONDUITS LEAVING HAZARDOUS AREAS. WALL AND FLOOR OPENINGS SHALL BE SEALED WITH FIREPROOF COMPOUND.
- ALL EQUIPMENT LOCATED IN HAZARDOUS AREAS SHALL BE SUITABLE FOR THE CLASS, DIVISION, AND GROUP RATING OF THE LOCATION.
- LIGHTNING PROTECTION SYSTEMS SHALL BE PROVIDED FOR THE STRUCTURES INDICATED ON THE DRAWINGS AND IN ACCORDANCE WITH SECTION 26 41 00.
- REFERENCE SECTION 01 14 00 FOR CONSTRUCTION SEQUENCING REQUIREMENTS.
- CONDUIT HOMERUNS ARE NOT SHOWN ON THE DRAWINGS. CONTRACTOR SHALL REFER TO CONDUIT AND WIRE SCHEDULES, RISER DIAGRAMS, SINGLE LINE DIAGRAMS, AND OTHER DRAWINGS FOR CONDUIT AND WIRE REQUIREMENTS.
- ALL ELECTRICAL NON-STRUCTURAL COMPONENTS ARE SUBJECT TO SEISMIC DESIGN CATEGORY 'B' AND ARE THEREFORE EXEMPT FROM SEISMIC ANCHORAGE AND BRACING AS STIPULATED IN SECTION 01 73 23 - ANCHORAGE AND BRACING OF NONSTRUCTURAL COMPONENTS.

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				PROJECT ENGINEER: B. PORTER
				DESIGNED BY: T. MANGALAM
				DRAWN BY: L. BYBEE
				CHECKED BY: G. RATASKY
				IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE
				0 1/2" 1"
REV	ISSUED FOR	DATE	BY	

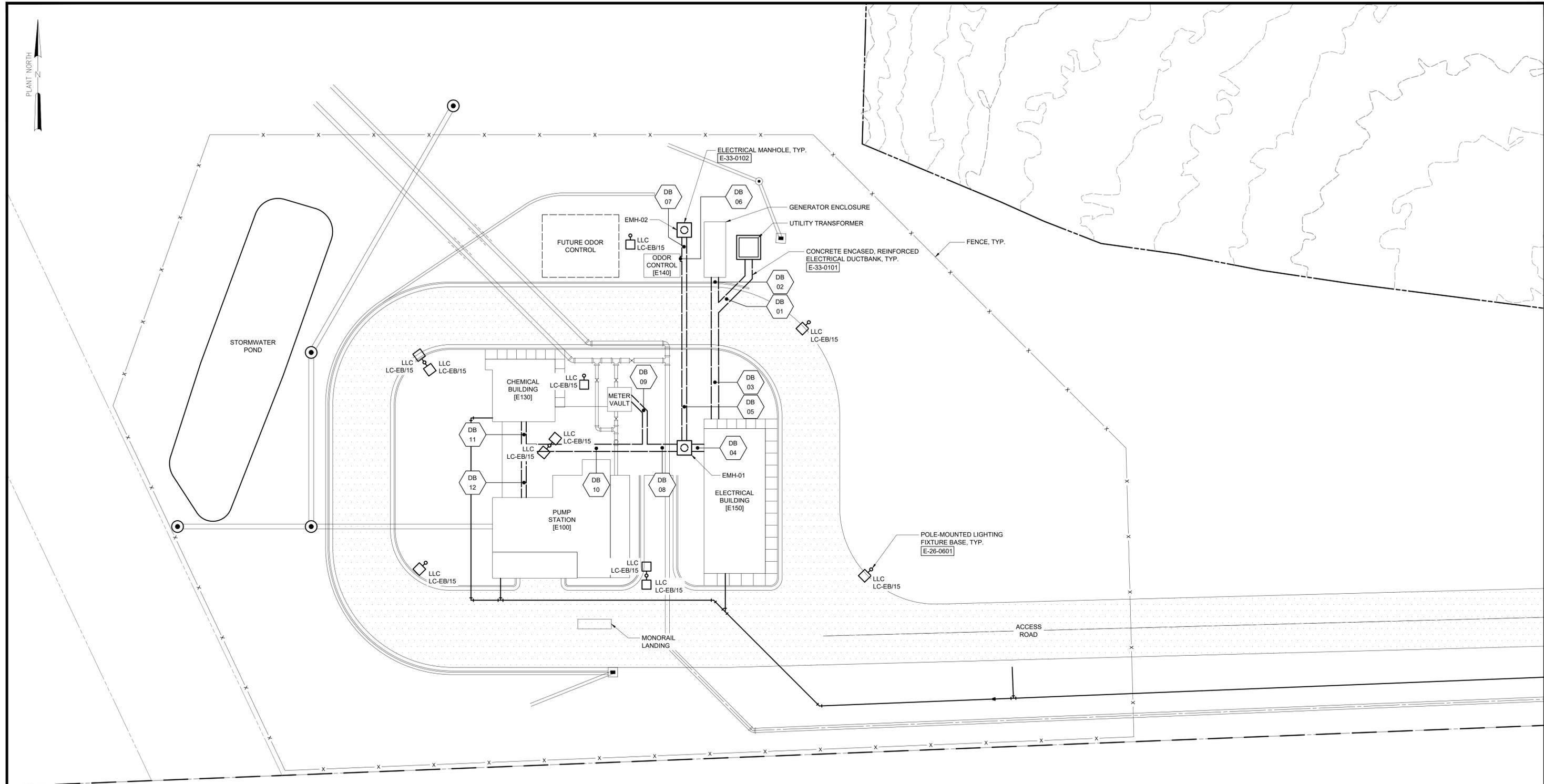
PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

GENERAL NOTES AND ABBREVIATIONS
ELECTRICAL
GENERAL NOTES AND ABBREVIATIONS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E2



SITE PLAN
1" = 20'

File: C:\USERS\BYBEE\ACCORDS\HAZEN AND SAWYER\32044-004_BIG BRANCH 2 PUMP STATION AND PIPELINES\PROJECT FILES\ELEC\CAD\E03 Saved by: LBYBEE Save date: 3/31/2023 12:22 PM
 PLOT DATE: 3/31/2023 12:24 PM BY: LBYBEE

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	T. MANGALAM
DRAWN BY:	L. BYBEE
CHECKED BY:	G. RATASKY
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

Hazen
 HAZEN AND SAWYER
 4011 WESTCHASE BLVD. SUITE 500,
 RALEIGH, NC 27607
 LICENSE No.: C-0381

BIG BRANCH 2 PUMP STATION

SITE ELECTRICAL SITE PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E3

File: C:\USERS\BYBEE\ACDC\DOCS\HAZEN AND SAWYER\32044-004_BIG BRANCH 2 PUMP STATION AND PIPELINES\PROJECT FILES\ELEC\CAD\E05 Saved by: LBYBEE Save date: 3/31/2023 12:22 PM
PLOT DATE: 3/31/2023 12:25 PM BY: LBYBEE

DUCTBANK ID	CONDUIT	SIZE	FROM	TO	
DB-01	P-0003	4"	UTILITY TRANSFORMER	SWBD-BB2-A	
	P-0004	4"	UTILITY TRANSFORMER	SWBD-BB2-A	
	P-0005	4"	UTILITY TRANSFORMER	SWBD-BB2-A	
	P-0006	4"	UTILITY TRANSFORMER	SWBD-BB2-A	
	P-0007	4"	UTILITY TRANSFORMER	SWBD-BB2-A	
DB-02	P-0010	4"	GEN-BB2	SWBD-BB2-B	
	P-0011	4"	GEN-BB2	SWBD-BB2-B	
	P-0012	4"	GEN-BB2	SWBD-BB2-B	
	P-0013	4"	GEN-BB2	SWBD-BB2-B	
	P-0014	4"	GEN-BB2	SWBD-BB2-B	
	P-0016	1"	GEN-BB2	GENERATOR REMOTE ANNUNCIATOR	
	P-0017	1"	GEN-BB2	GENERATOR REMOTE ANNUNCIATOR	
	P-0036	1"	SWBD-BB2-A	GENERATOR COMBINATION POWER UNIT	
	C-0001	1"	PLC-100	GEN-BB2	
	C-0002	1"	GEN-BB2 REMOTE ANNUNCIATOR	GEN-BB2	
	I-0000	1"	PLC-100	GEN-BB2	
	I-0002	1"	GEN-BB2	GEN-BB2 REMOTE ANNUNCIATOR	
	I-0003	1"	GEN-BB2	GEN-BB2 REMOTE ANNUNCIATOR	
	DB-03	P-0003	4"	UTILITY TRANSFORMER	SWBD-BB2-A
		P-0004	4"	UTILITY TRANSFORMER	SWBD-BB2-A
P-0005		4"	UTILITY TRANSFORMER	SWBD-BB2-A	
P-0006		4"	UTILITY TRANSFORMER	SWBD-BB2-A	
P-0007		4"	UTILITY TRANSFORMER	SWBD-BB2-A	
P-0010		4"	GEN-BB2	SWBD-BB2-B	
P-0011		4"	GEN-BB2	SWBD-BB2-B	
P-0012		4"	GEN-BB2	SWBD-BB2-B	
P-0013		4"	GEN-BB2	SWBD-BB2-B	
P-0014		4"	GEN-BB2	SWBD-BB2-B	
P-0016		1"	GEN-BB2	GENERATOR REMOTE ANNUNCIATOR	
P-0017		1"	GEN-BB2	GENERATOR REMOTE ANNUNCIATOR	
P-0036		1"	SWBD-BB2-A	GENERATOR COMBINATION POWER UNIT	
C-0001		1"	PLC-100	GEN-BB2	
C-0002		1"	GEN-BB2 REMOTE ANNUNCIATOR	GEN-BB2	
I-0000	1"	PLC-100	GEN-BB2		
I-0002	1"	GEN-BB2	GEN-BB2 REMOTE ANNUNCIATOR		
I-0003	1"	GEN-BB2	GEN-BB2 REMOTE ANNUNCIATOR		
DB-04	P-0024	1"	VCP-12001	MECHANICAL SCREEN DRIVE	
	P-0025	1"	VCP-12001	SCREW CONVEYOR DRIVE	
	P-0028	3"	VFD/RVSS-HFP-13001	PJB-1	
	P-0033	3"	VFD/RVSS-HFP-13003	PJB-3	
	P-0038	1"	SWBD-BB2-A	MOG-10101	
	P-0039	1"	SWBD-BB2-A	MOG-10103	
	P-0040	1"	SWBD-BB2-A	MOG-10105	
	P-0042	1"	SWBD-BB2-A	CF-UH-1	
	P-0043	1"	SWBD-BB2-A	TEPID WATER HEATER (TWH)	
	P-0048	1"	VCP-11001	CHANNEL GRINDER DRIVE	
	P-0050	1"	SWBD-BB2-B	CARBON SCRUBBER CP	
	P-0051	1"	SWBD-BB2-B	EMH-02	
	P-0054	3"	VFD/RVSS-HFP-13002	PJB-2	
	P-0059	3"	VFD/RVSS-HFP-13004	PJB-4	
	P-0062	1"	SWBD-BB2-B	MOG-10100	
	P-0063	1"	SWBD-BB2-B	MOG-10102	
	P-0064	1"	SWBD-BB2-B	MOG-10104	
	P-0065	1"	SWBD-BB2-B	MOG-10106	
	P-0067	1"	SWBD-BB2-B	MONORAIL CRANE & HOIST	
	P-0074	1"	LP-EB	CF-EF-1	
	P-0078	1"	LP-EB	LCP-21001	
	P-0081	1"	LP-EB	DUPLEX CHEMICAL PUMP SKID	
	P-0082	1"	LP-EB	MOV-21201	
	P-0083	1"	LP-EB	LIT-10400(A)	
	P-0084	1"	LP-EB	LIT-10400(B)	
P-0085	1"	LP-EB	LIT-10401		
P-0086	1"	LP-EB	LIT-10403		
P-0087	1"	LP-EB	LIT-10405		
P-0088	1"	LP-EB	FIT-10410		
P-0093	1"	LP-EB	LC-EB - PUMP STATION - EXTERIOR		
P-0096	1"	LP-EB	LTG - PUMP STATION - BOTTOM		
P-0097	1"	LP-EB	LTG - PUMP STATION - TOP/STAIRS		
P-0098	1"	LP-EB	LTG - CHEMICAL BUILDING		
P-0099	1"	LP-EB	RECPT. - PUMP STATION		
P-0100	1"	LP-EB	RECPT. - CHEMICAL BUILDING		

DUCTBANK ID	CONDUIT	SIZE	FROM	TO
DB-04	P-0101	1"	LP-EB	RECPT. - CHEMICAL BUILDING SUMP PUMP
	P-0102	1"	LP-EB	RECPT. - METER VAULT
	C-0012	1"	VCP-12001	CPB-12001
	C-0022	1"	VCP-11001	CPB-11001
	C-0027	1"	PLC-100	LCS-10100
	C-0029	1"	PLC-100	MOG-10101
	C-0030	1"	PLC-100	MOG-10102
	C-0031	1"	PLC-100	MOG-10103
	C-0032	1"	PLC-100	MOG-10104
	C-0033	1"	PLC-100	MOG-10105
	C-0034	1"	PLC-100	MOG-10106
	C-0037	1"	BACKUP CONTROL PANEL (LCP-10400)	PBX
	C-0041	1"	PLC-100	AIT-29401
	C-0042	1"	PLC-100	AIT-29402
	C-0044	1"	PLC-100	LCP-21001
	C-0047	1"	PLC-100	DUPLEX CHEMICAL PUMP SKID
	C-0049	1"	PLC-100	ESEW-1
	C-0050	1"	PLC-100	ESEW-2
	C-0052	1"	PLC-100	CARBON SCRUBBER CP
	C-0053	1"	PLC-100	EMH-02
	C-0055	1"	VFD/RVSS-SP-13001	PJB-1
	C-0058	1"	VFD/RVSS-SP-13002	PJB-2
	C-0061	1"	VFD/RVSS-SP-13003	PJB-3
	C-0064	1"	VFD/RVSS-SP-13004	PJB-4
	I-0017	1"	PLC-100	LIT-10400(A)
I-0020	1"	PLC-100	LIT-10400(B)	
I-0023	1"	PLC-100	LIT-10403	
I-0026	1"	PLC-100	LIT-10405	
I-0029	1"	PLC-100	FIT-10410	
I-0032	1"	PLC-100	AIT-29401	
I-0036	1"	PLC-100	AIT-29402	
I-0039	1"	PLC-100	LCP-21001	
I-0043	1"	PLC-100	DUPLEX CHEMICAL PUMP SKID	
I-0045	1"	VCP-12001	LIT-10401	
I-0049	1"	PLC-100	EMH-02	
DB-05	P-0050	1"	SWBD-BB2-B	CARBON SCRUBBER CP
	P-0051	1"	SWBD-BB2-B	EMH-02
	C-0052	1"	PLC-100	CARBON SCRUBBER CP
C-0053	1"	PLC-100	EMH-02	
I-0049	1"	PLC-100	EMH-02	
DB-06	P-0050	1"	SWBD-BB2-B	CARBON SCRUBBER CP
	C-0052	1"	PLC-100	CARBON SCRUBBER CP
DB-07	P-0051	1"	SWBD-BB2-B	EMH-02
	C-0053	1"	PLC-100	EMH-02
	I-0049	1"	PLC-100	EMH-02
DB-08	P-0024	1"	VCP-12001	MECHANICAL SCREEN DRIVE
	P-0025	1"	VCP-12001	SCREW CONVEYOR DRIVE
	P-0028	3"	VFD/RVSS-HFP-13001	PJB-1
	P-0033	3"	VFD/RVSS-HFP-13003	PJB-3
	P-0038	1"	SWBD-BB2-A	MOG-10101
	P-0039	1"	SWBD-BB2-A	MOG-10103
	P-0040	1"	SWBD-BB2-A	MOG-10105
	P-0042	1"	SWBD-BB2-A	CF-UH-1
	P-0043	1"	SWBD-BB2-A	TEPID WATER HEATER (TWH)
	P-0048	1"	VCP-11001	CHANNEL GRINDER DRIVE
	P-0050	1"	SWBD-BB2-B	CARBON SCRUBBER CP
	P-0059	3"	VFD/RVSS-HFP-13004	PJB-4
	P-0062	1"	SWBD-BB2-B	MOG-10100
	P-0063	1"	SWBD-BB2-B	MOG-10102
	P-0064	1"	SWBD-BB2-B	MOG-10104
	P-0065	1"	SWBD-BB2-B	MOG-10106
	P-0067	1"	SWBD-BB2-B	MONORAIL CRANE & HOIST
	P-0074	1"	LP-EB	CF-EF-1
	P-0078	1"	LP-EB	LCP-21001
	P-0081	1"	LP-EB	DUPLEX CHEMICAL PUMP SKID
	P-0082	1"	LP-EB	MOV-21201
	P-0083	1"	LP-EB	LIT-10400(A)

DUCTBANK ID	CONDUIT	SIZE	FROM	TO
DB-08	P-0084	1"	LP-EB	LIT-10400(B)
	P-0085	1"	LP-EB	LIT-10401
	P-0086	1"	LP-EB	LIT-10403
	P-0087	1"	LP-EB	LIT-10405
	P-0088	1"	LP-EB	FIT-10410
	P-0093	1"	LP-EB	LC-EB - PUMP STATION - EXTERIOR
	P-0096	1"	LP-EB	LTG - PUMP STATION - BOTTOM
	P-0097	1"	LP-EB	LTG - PUMP STATION - TOP/STAIRS
	P-0098	1"	LP-EB	LTG - CHEMICAL BUILDING
	P-0099	1"	LP-EB	RECPT. - PUMP STATION
	P-0100	1"	LP-EB	RECPT. - CHEMICAL BUILDING
	P-0101	1"	LP-EB	RECPT. - CHEMICAL BUILDING SUMP PUMP
	P-0102	1"	LP-EB	RECPT. - METER VAULT
	C-0012	1"	VCP-12001	CPB-12001
	C-0022	1"	VCP-11001	CPB-11001
	C-0027	1"	PLC-100	LCS-10100
	C-0029	1"	PLC-100	MOG-10101
	C-0030	1"	PLC-100	MOG-10102
C-0031	1"	PLC-100	MOG-10103	
C-0032	1"	PLC-100	MOG-10104	
C-0033	1"	PLC-100	MOG-10105	
C-0034	1"	PLC-100	MOG-10106	
C-0037	1"	BACKUP CONTROL PANEL (LCP-10400)	PBX	
C-0041	1"	PLC-100	AIT-29401	
C-0042	1"	PLC-100	AIT-29402	
C-0044	1"	PLC-100	LCP-21001	
C-0047	1"	PLC-100	DUPLEX CHEMICAL PUMP SKID	
C-0049	1"	PLC-100	ESEW-1	
C-0050	1"	PLC-100	ESEW-2	
C-0052	1"	PLC-100	CARBON SCRUBBER CP	
C-0053	1"	PLC-100	EMH-02	
C-0055	1"	VFD/RVSS-SP-13001	PJB-1	
C-0058	1"	VFD/RVSS-SP-13002	PJB-2	
C-0061	1"	VFD/RVSS-SP-13003	PJB-3	
C-0064	1"	VFD/RVSS-SP-13004	PJB-4	
I-0017	1"	PLC-100	LIT-10400(A)	
I-0020	1"	PLC-100	LIT-10400(B)	
I-0023	1"	PLC-100	LIT-10403	
I-0026	1"	PLC-100	LIT-10405	
I-0029	1"	PLC-100	FIT-10410	
I-0032	1"	PLC-100	AIT-29401	
I-0036	1"	PLC-100	AIT-29402	
I-0039	1"	PLC-100	LCP-21001	
I-0043	1"	PLC-100	DUPLEX CHEMICAL PUMP SKID	
I-0045	1"	VCP-12001	LIT-10401	
I-0049	1"	PLC-100	EMH-02	
DB-09	P-0102	1"	LP-EB	RECPT. - METER VAULT
	I-0029	1"	PLC-100	FIT-10410
DB-10	P-0024	1"	VCP-12001	MECHANICAL SCREEN DRIVE
	P-0025	1"	VCP-12001	SCREW CONVEYOR DRIVE
	P-0028	3"	VFD/RVSS-HFP-13001	PJB-1
	P-0033	3"	VFD/RVSS-HFP-13003	PJB-3
	P-0038	1"	SWBD-BB2-A	MOG-10101
	P-0039	1"	SWBD-BB2-A	MOG-10103
	P-0040	1"	SWBD-BB2-A	MOG-10105
	P-0042	1"	SWBD-BB2-A	CF-UH-1
	P-0043	1"	SWBD-BB2-A	TEPID WATER HEATER (TWH)
	P-0048	1"	VCP-11001	CHANNEL GRINDER DRIVE
	P-0050	1"	SWBD-BB2-B	CARBON SCRUBBER CP
	P-0059	3"	VFD/RVSS-HFP-13004	PJB-4
	P-0062	1"	SWBD-BB2-B	MOG-10100
	P-0063	1"	SWBD-BB2-B	MOG-10102
	P-0064	1"	SWBD-BB2-B	MOG-10104
	P-0065	1"	SWBD-BB2-B	MOG-10106
	P-0067	1"	SWBD-BB2-B	MONORAIL CRANE & HOIST
	P-0074	1"	LP-EB	CF-EF-1
P-0078	1"	LP-EB	LCP-21001	
P-0081	1"	LP-EB	DUPLEX CHEMICAL PUMP SKID	
P-0082	1"	LP-EB	MOV-21201	
P-0083	1"	LP-EB	LIT-10400(A)	
P-0084	1"	LP-EB	LIT-10400(B)	
P-0085	1"	LP-EB	LIT-10401	
P-0086	1"	LP-EB	LIT-10403	
P-0087	1"	LP-EB	LIT-10405	
P-0088	1"	LP-EB	FIT-10410	
P-0093	1"	LP-EB	LC-EB - PUMP STATION - EXTERIOR	

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	T. MANGALAM		
DRAWN BY:	L. BYBEE		
CHECKED BY:	G. RATASKY		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381



BIG BRANCH 2
PUMP STATION

SITE
ELECTRICAL
DUCTBANK SCHEDULES

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E5

File: C:\USERS\BYBEE\ACDCDOCS\HAZEN AND SAWYER\32044-004_BIG BRANCH 2 PUMP STATION AND PIPELINES\PROJECT FILES\ELEC\CAD\E06 Saved by: LBYBEE Save date: 3/31/2023 12:22 PM
PLOT DATE: 3/31/2023 12:25 PM BY: LBYBEE

DUCTBANK ID	CONDUIT	SIZE	FROM	TO
DB-10	P-0096	1"	LP-EB	LTG - PUMP STATION - BOTTOM
	P-0097	1"	LP-EB	LTG - PUMP STATION - TOP/STAIRS
	P-0098	1"	LP-EB	LTG - CHEMICAL BUILDING
	P-0099	1"	LP-EB	RECPT. - PUMP STATION
	P-0100	1"	LP-EB	RECPT. - CHEMICAL BUILDING
	P-0101	1"	LP-EB	RECPT. - CHEMICAL BUILDING SUMP PUMP
	C-0012	1"	VCP-12001	CPB-12001
	C-0022	1"	VCP-11001	CPB-11001
	C-0027	1"	PLC-100	LCS-10100
	C-0029	1"	PLC-100	MOG-10101
	C-0030	1"	PLC-100	MOG-10102
	C-0031	1"	PLC-100	MOG-10103
	C-0032	1"	PLC-100	MOG-10104
	C-0033	1"	PLC-100	MOG-10105
	C-0034	1"	PLC-100	MOG-10106
	C-0037	1"	BACKUP CONTROL PANEL (LCP-10400)	PBX
	C-0041	1"	PLC-100	AIT-29401
	C-0042	1"	PLC-100	AIT-29402
	C-0044	1"	PLC-100	LCP-21001
	C-0047	1"	PLC-100	DUPLEX CHEMICAL PUMP SKID
	C-0049	1"	PLC-100	ESEW-1
	C-0050	1"	PLC-100	ESEW-2
	C-0055	1"	VFD/RVSS-SP-13001	PJB-1
	C-0058	1"	VFD/RVSS-SP-13002	PJB-2
	C-0061	1"	VFD/RVSS-SP-13003	PJB-3
	C-0064	1"	VFD/RVSS-SP-13004	PJB-4
	I-0017	1"	PLC-100	LIT-10400(A)
	I-0020	1"	PLC-100	LIT-10400(B)
	I-0023	1"	PLC-100	LIT-10403
	I-0026	1"	PLC-100	LIT-10405
	I-0032	1"	PLC-100	AIT-29401
	I-0036	1"	PLC-100	AIT-29402
I-0039	1"	PLC-100	LCP-21001	
I-0043	1"	PLC-100	DUPLEX CHEMICAL PUMP SKID	
I-0045	1"	VCP-12001	LIT-10401	
DB-11	P-0042	1"	SWBD-BB2-A	CF-UH-1
	P-0043	1"	SWBD-BB2-A	TEPID WATER HEATER (TWH)
	P-0074	1"	LP-EB	CF-EF-1
	P-0078	1"	LP-EB	LCP-21001
	P-0081	1"	LP-EB	DUPLEX CHEMICAL PUMP SKID
	P-0082	1"	LP-EB	MOV-21201
	P-0098	1"	LP-EB	LTG - CHEMICAL BUILDING
	P-0100	1"	LP-EB	RECPT. - CHEMICAL BUILDING
	P-0101	1"	LP-EB	RECPT. - CHEMICAL BUILDING SUMP PUMP
	C-0044	1"	PLC-100	LCP-21001
	C-0047	1"	PLC-100	DUPLEX CHEMICAL PUMP SKID
	C-0049	1"	PLC-100	ESEW-1
	C-0050	1"	PLC-100	ESEW-2
I-0039	1"	PLC-100	LCP-21001	
I-0043	1"	PLC-100	DUPLEX CHEMICAL PUMP SKID	
DB-12	P-0024	1"	VCP-12001	MECHANICAL SCREEN DRIVE
	P-0025	1"	VCP-12001	SCREW CONVEYOR DRIVE
	P-0028	3"	VFD/RVSS-HFP-13001	PJB-1
	P-0033	3"	VFD/RVSS-HFP-13003	PJB-3
	P-0038	1"	SWBD-BB2-A	MOG-10101
	P-0039	1"	SWBD-BB2-A	MOG-10103
	P-0040	1"	SWBD-BB2-A	MOG-10105
	P-0048	1"	VCP-11001	CHANNEL GRINDER DRIVE
	P-0050	1"	SWBD-BB2-B	CARBON SCRUBBER CP
	P-0059	3"	VFD/RVSS-HFP-13004	PJB-4
	P-0062	1"	SWBD-BB2-B	MOG-10100
	P-0063	1"	SWBD-BB2-B	MOG-10102
	P-0064	1"	SWBD-BB2-B	MOG-10104
	P-0065	1"	SWBD-BB2-B	MOG-10106
	P-0067	1"	SWBD-BB2-B	MONORAIL CRANE & HOIST
	P-0083	1"	LP-EB	LIT-10400(A)
	P-0084	1"	LP-EB	LIT-10400(B)
	P-0085	1"	LP-EB	LIT-10401
	P-0086	1"	LP-EB	LIT-10403
	P-0087	1"	LP-EB	LIT-10405
	P-0088	1"	LP-EB	FIT-10410
	P-0093	1"	LP-EB	LC-EB - PUMP STATION - EXTERIOR
	P-0096	1"	LP-EB	LTG - PUMP STATION - BOTTOM

DUCTBANK ID	CONDUIT	SIZE	FROM	TO
DB-12	P-0097	1"	LP-EB	LTG - PUMP STATION - TOP/STAIRS
	P-0099	1"	LP-EB	RECPT. - PUMP STATION
	C-0012	1"	VCP-12001	CPB-12001
	C-0022	1"	VCP-11001	CPB-11001
	C-0027	1"	PLC-100	LCS-10100
	C-0029	1"	PLC-100	MOG-10101
	C-0030	1"	PLC-100	MOG-10102
	C-0031	1"	PLC-100	MOG-10103
	C-0032	1"	PLC-100	MOG-10104
	C-0033	1"	PLC-100	MOG-10105
	C-0034	1"	PLC-100	MOG-10106
	C-0037	1"	BACKUP CONTROL PANEL (LCP-10400)	PBX
	C-0041	1"	PLC-100	AIT-29401
	C-0042	1"	PLC-100	AIT-29402
	C-0044	1"	PLC-100	LCP-21001
	C-0055	1"	VFD/RVSS-SP-13001	PJB-1
	C-0058	1"	VFD/RVSS-SP-13002	PJB-2
	C-0061	1"	VFD/RVSS-SP-13003	PJB-3
	C-0064	1"	VFD/RVSS-SP-13004	PJB-4
	I-0017	1"	PLC-100	LIT-10400(A)
	I-0020	1"	PLC-100	LIT-10400(B)
	I-0023	1"	PLC-100	LIT-10403
	I-0026	1"	PLC-100	LIT-10405
	I-0032	1"	PLC-100	AIT-29401
	I-0036	1"	PLC-100	AIT-29402
	I-0045	1"	VCP-12001	LIT-10401

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	T. MANGALAM		
DRAWN BY:	L. BYBEE		
CHECKED BY:	G. RATASKY		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

PRELIMINARY DRAWING -
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CONSTRUCTION



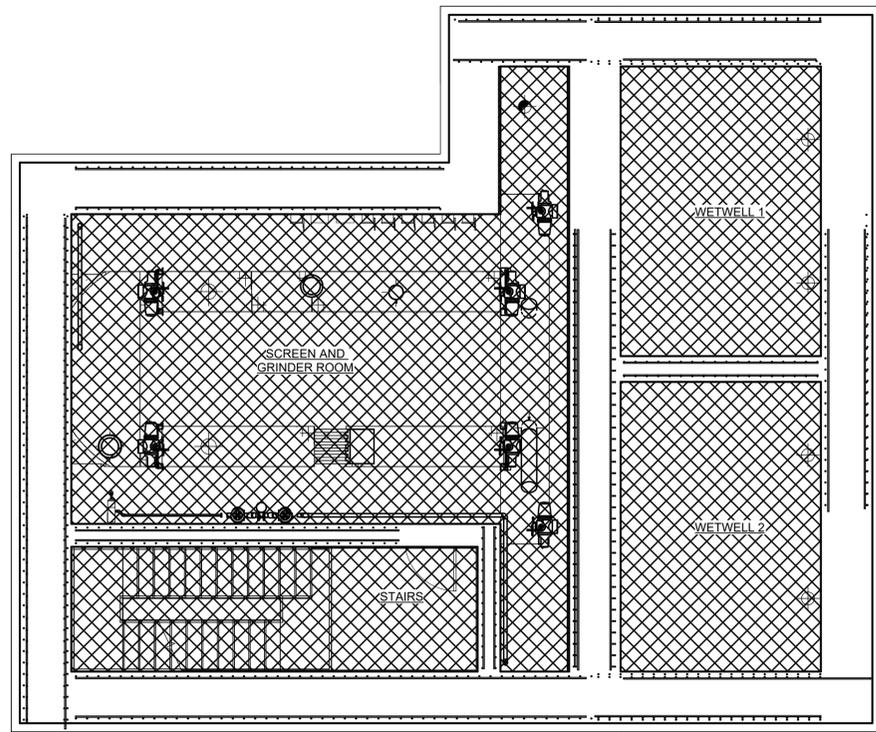
HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381



BIG BRANCH 2
PUMP STATION

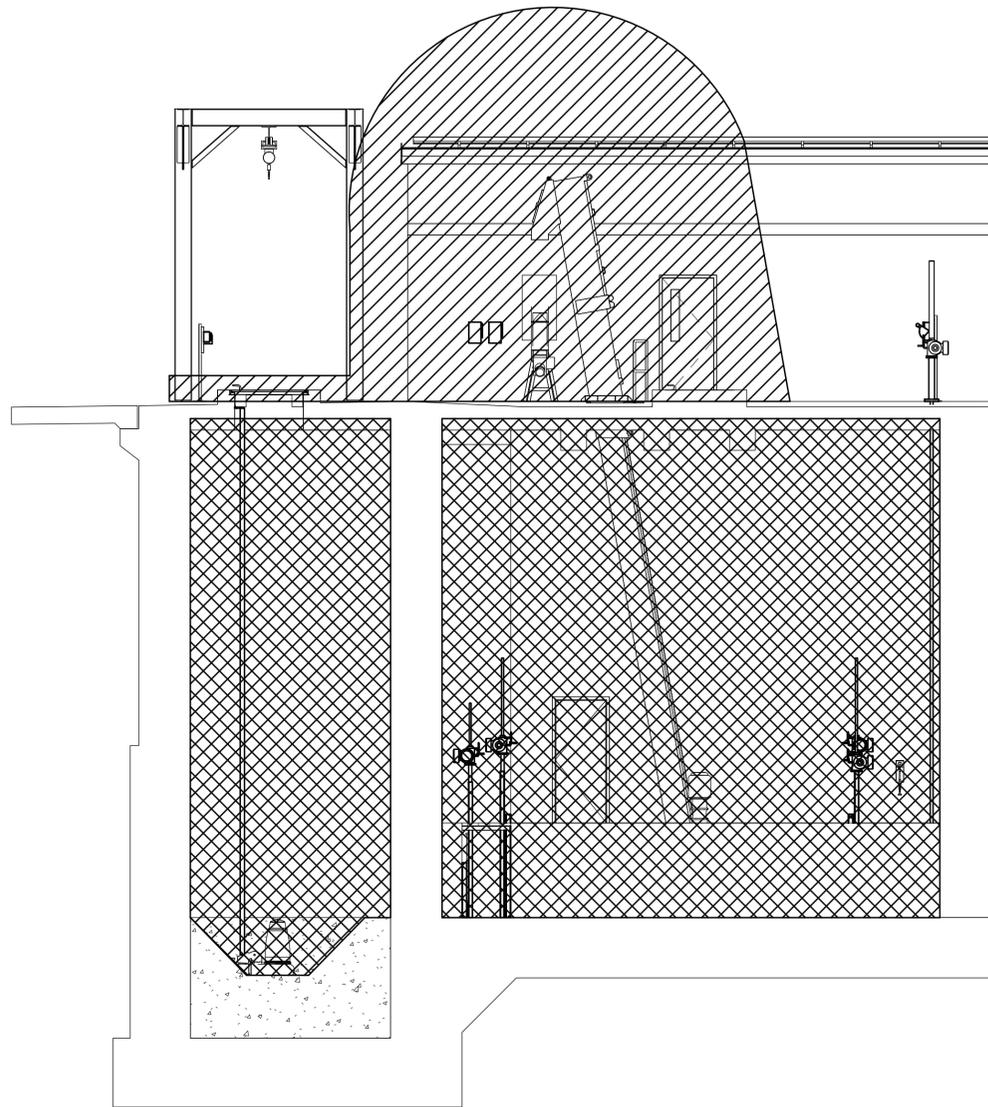
SITE
ELECTRICAL
DUCTBANK SCHEDULES

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E6



AREA DESIGNATION AND CLASSIFICATION INTERMEDIATE PLAN

3/16" = 1'-0"



SECTION A
3/16" = 1'-0"

HAZARDOUS AREAS:

SPACE CLASSIFIED PER NFPA-820-2016 EDITION AS FOLLOWS:

CLASS I, DIVISION 1 AREAS:

- 1. WET WELLS
 - TABLE 4.2.2, ROW 14a
- 2. SCREENING ROOM & STAIRWELL
 - TABLE 5.2.2, ROW 2a
- 3. INFLUENT & SCREENINGS CHANNELS
 - TABLE 5.2.2, ROW 1a
- 4. 3' ENVELOPE AROUND VENT PIPE OPENINGS INTO CLASS I DIVISION 1 AREA
 - ANNEX FIGURE A.4.2(b)

CLASS I, DIVISION 2 AREAS:

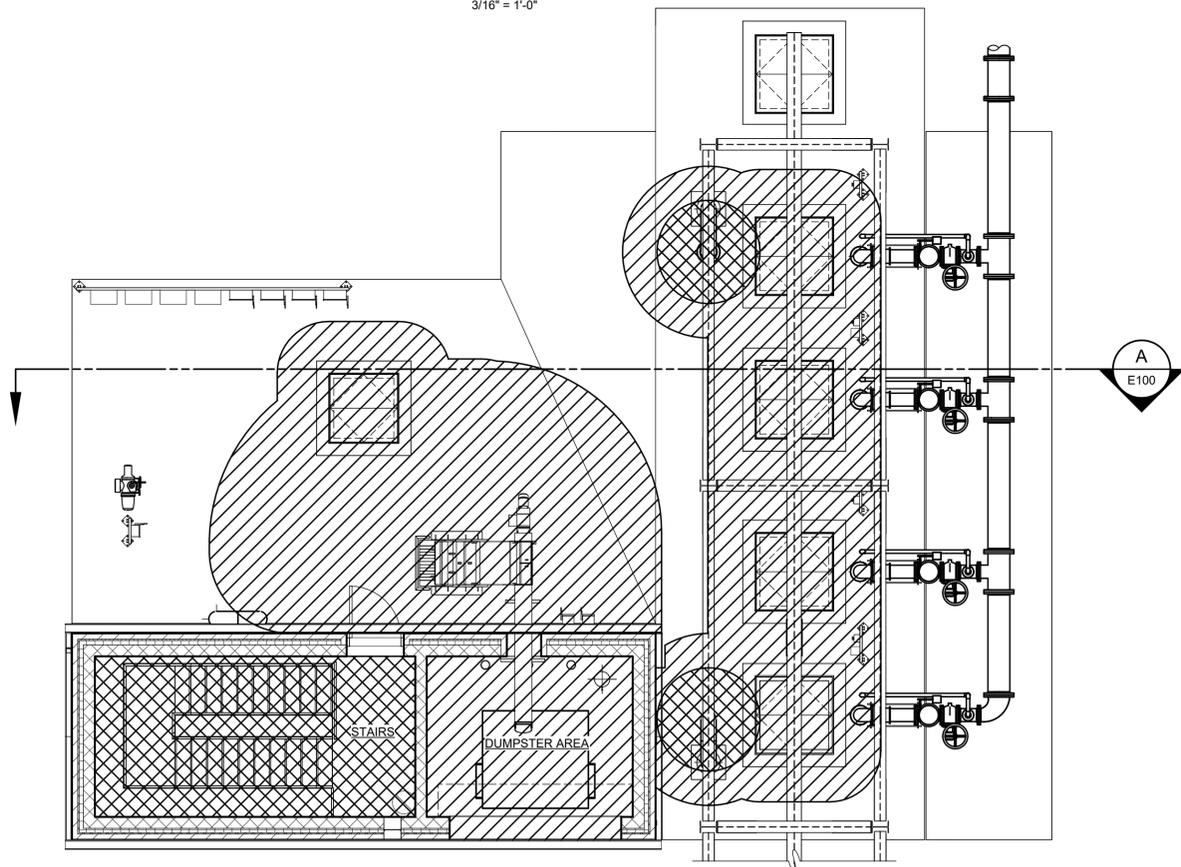
- 1. 10' ENVELOPE AROUND SCREENING EQUIPMENT
 - TABLE 5.2.2 ROW 2c
- 2. ENVELOPE 18" ABOVE & 3' BEYOND ANY CLASS I DIVISION 1 OPENINGS & LEAKAGE SOURCES
 - ANNEX FIGURE A.4.2(b)
- 3. ENVELOPE 2' BEYOND THE 3' RADIUS OF ANY CLASS I DIVISION 1 VENT PIPE OPENINGS
 - ANNEX FIGURE A.4.2(b)

UNCLASSIFIED AREAS (WITH NFPA 820 REQUIREMENTS):

- 1. DUMPSTER ROOM
 - TABLE 6.2.2(a) ROW 1

AREA DESIGNATION:

- CLASS I, DIV 1
- CLASS I, DIV 2



AREA DESIGNATION AND CLASSIFICATION TOP PLAN

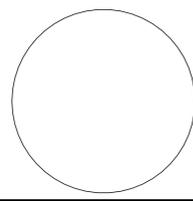
3/16" = 1'-0"

Autodesk Docs/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-100-PS-E.dwg 3/1/2023 11:35:59 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	T. MANGALAM
DRAWN BY:	L. BYBEE
CHECKED BY:	G. RATASKY
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

PRELIMINARY DRAWING
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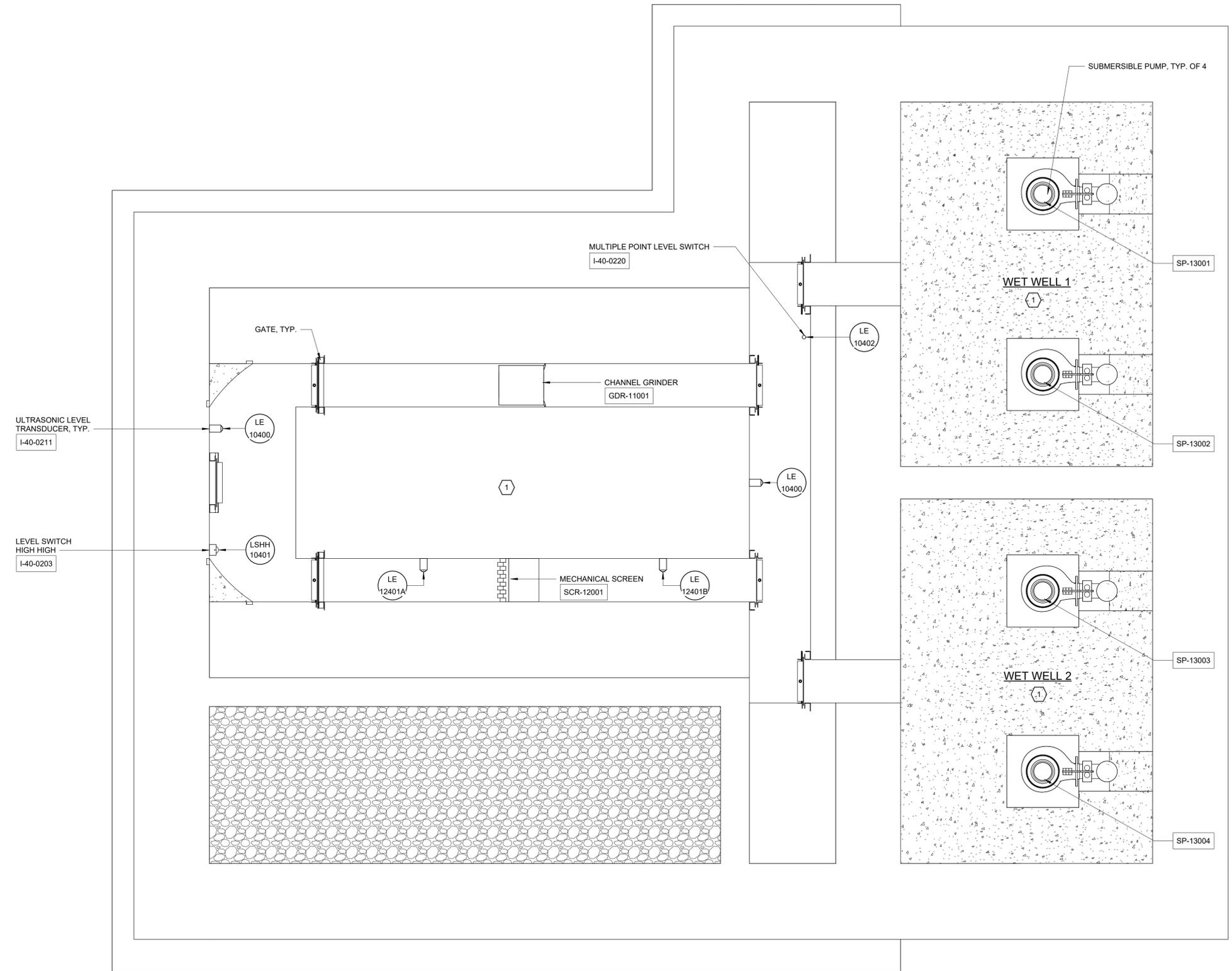
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RALEIGH, NC 27607
LICENSE No.: C-0381



BIG BRANCH 2
PUMP STATION

PUMP STATION
ELECTRICAL
AREA DESIGNATION AND CLASSIFICATION PLANS

DATE:	2022
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E100



BOTTOM POWER PLAN
3/8" = 1'-0"

- AREA DESIGNATION:**
- 1 INDOOR WET PROCESS AREA
 - 2 INDOOR DRY PROCESS AREA
 - 3 INDOOR DRY NON-PROCESS AREA

Autodesk Docs/32044-004_Big Branch 2 Pump Station and Pipeline/32044-004-100-PS-E-01
3/1/2023 11:36:03 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	T. MANGALAM
DRAWN BY:	L. BYBEE
CHECKED BY:	G. RATASKY
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

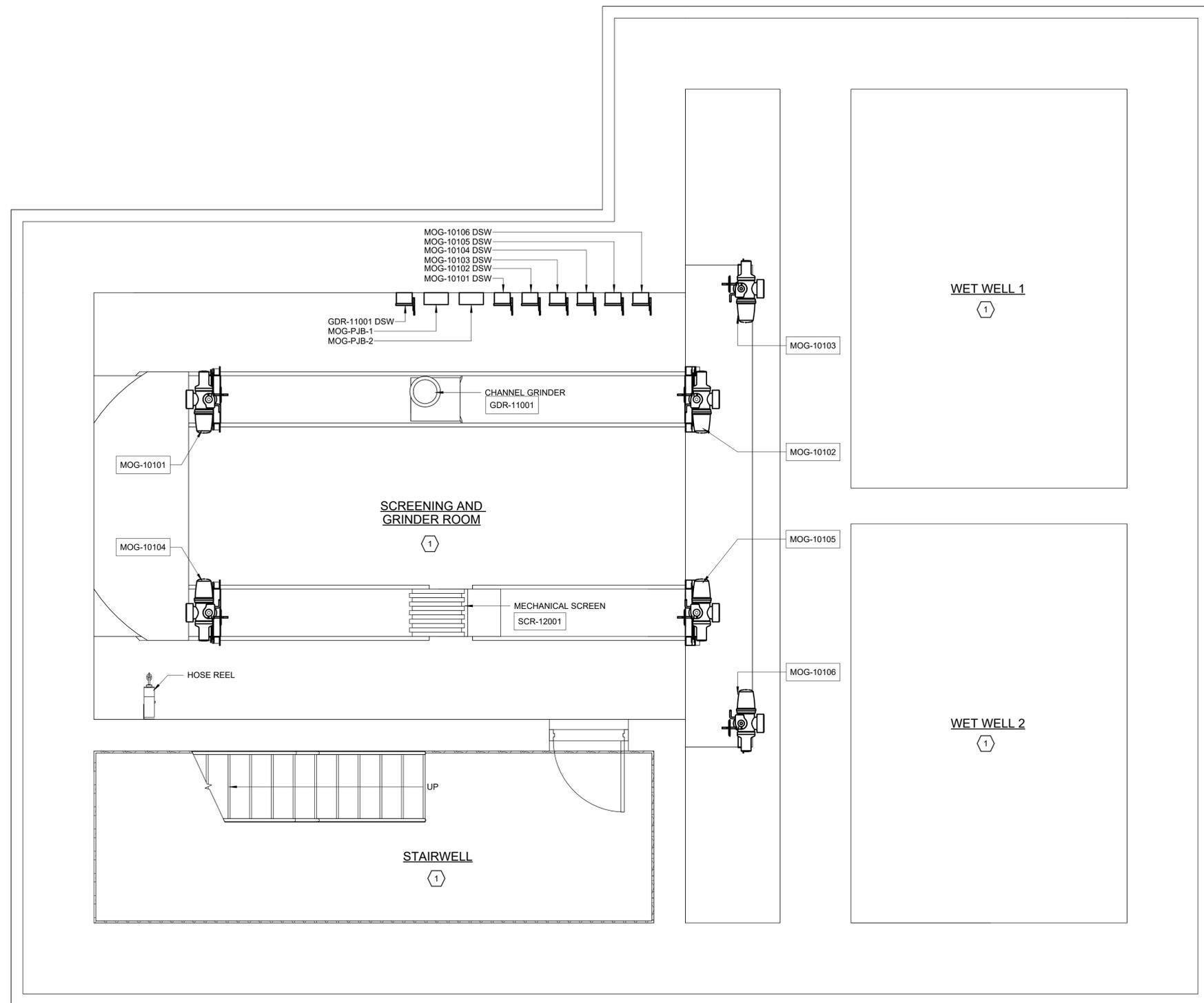
PRELIMINARY DRAWING
DO NOT USE FOR
CONSTRUCTION

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4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

PUMP STATION
ELECTRICAL
BOTTOM POWER PLAN

DATE:	2022
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E101



INTERMEDIATE POWER PLAN
3/8" = 1'-0"

- AREA DESIGNATION:**
- 1 INDOOR WET PROCESS AREA
 - 2 INDOOR DRY PROCESS AREA
 - 3 INDOOR DRY NON-PROCESS AREA

Autodesk Docs/32044-004_Big Branch 2 Pump Station and Pipeline/32044-004-100-PS-E-01
 3/1/2023 11:36:03 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	T. MANGALAM
DRAWN BY:	L. BYBEE
CHECKED BY:	G. RATASKY
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

PRELIMINARY DRAWING
DO NOT USE FOR
CONSTRUCTION

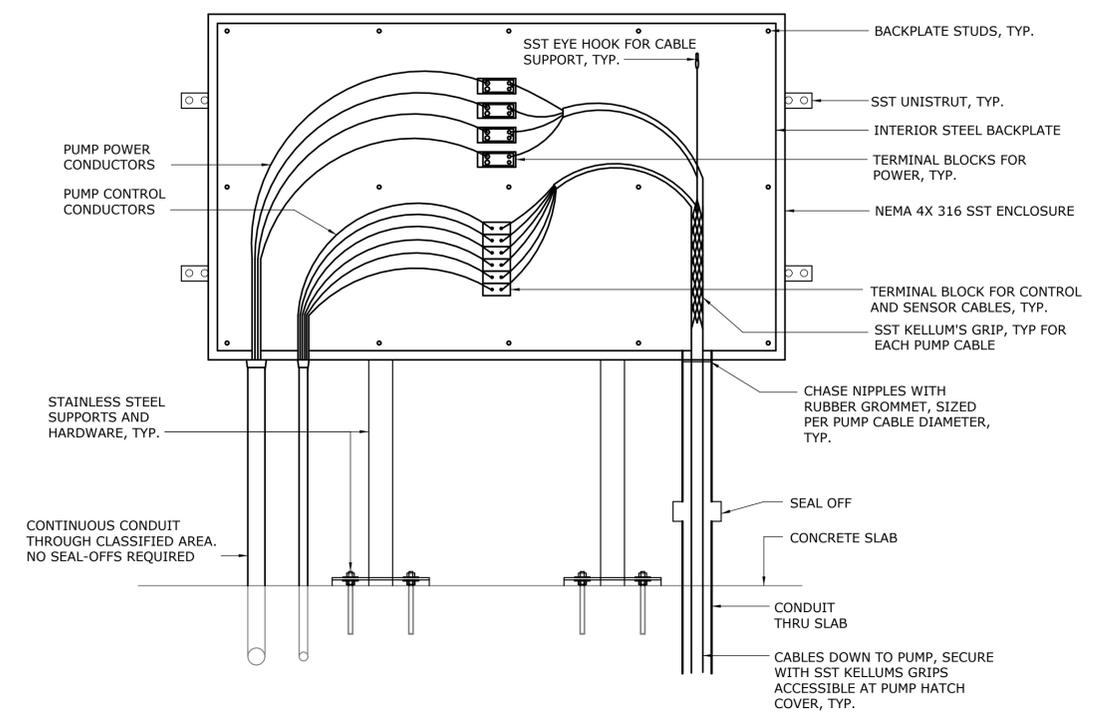
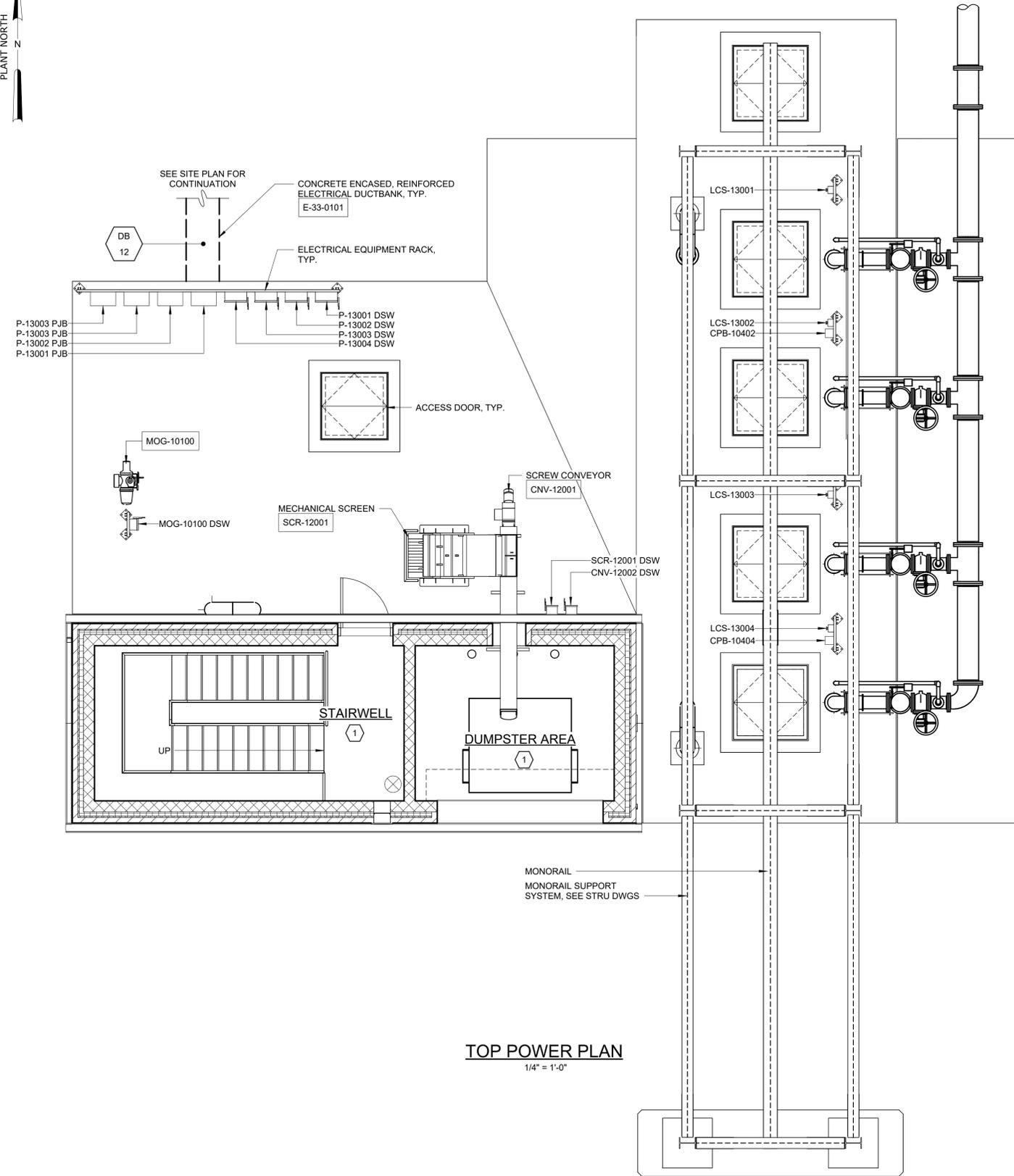
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4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

PUMP STATION
ELECTRICAL
INTERMEDIATE POWER PLAN

DATE:	2022
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E102

NOTES:
 1. SEE DRAWING E004 FOR GROUNDING PLAN.



- AREA DESIGNATION:**
- ① INDOOR WET PROCESS AREA
 - ② INDOOR DRY PROCESS AREA
 - ③ INDOOR DRY NON-PROCESS AREA

Autodesk Docs/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-100-PS-E.rvt
 3/1/2023 11:36:01 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	T. MANGALAM
DRAWN BY:	L. BYBEE
CHECKED BY:	G. RATASKY
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

PRELIMINARY DRAWING
 DO NOT USE FOR
 CONSTRUCTION

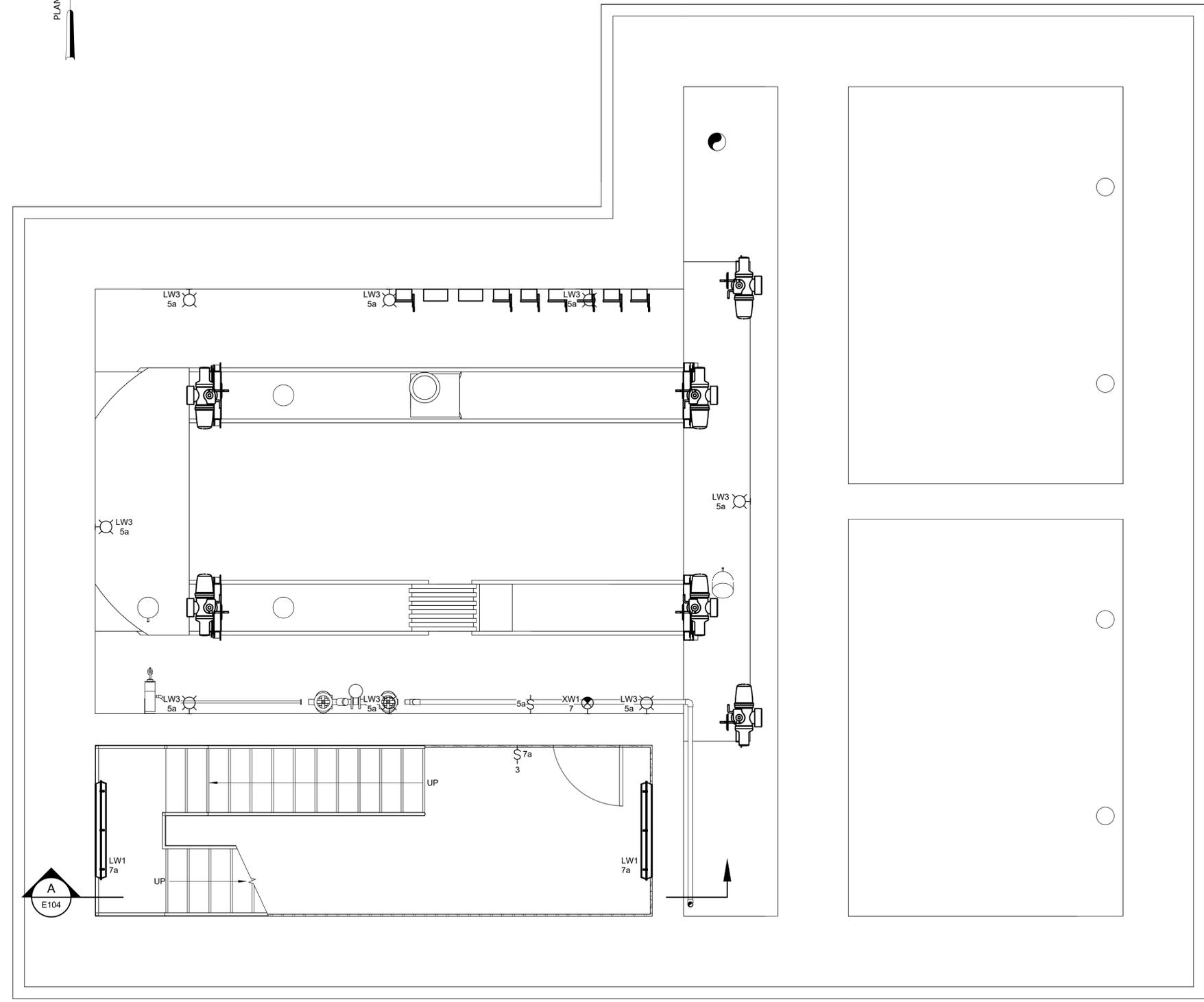
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 4011 WESTCHASE BLVD. SUITE 500,
 RALEIGH, NC 27607
 LICENSE No.: C-0381

APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

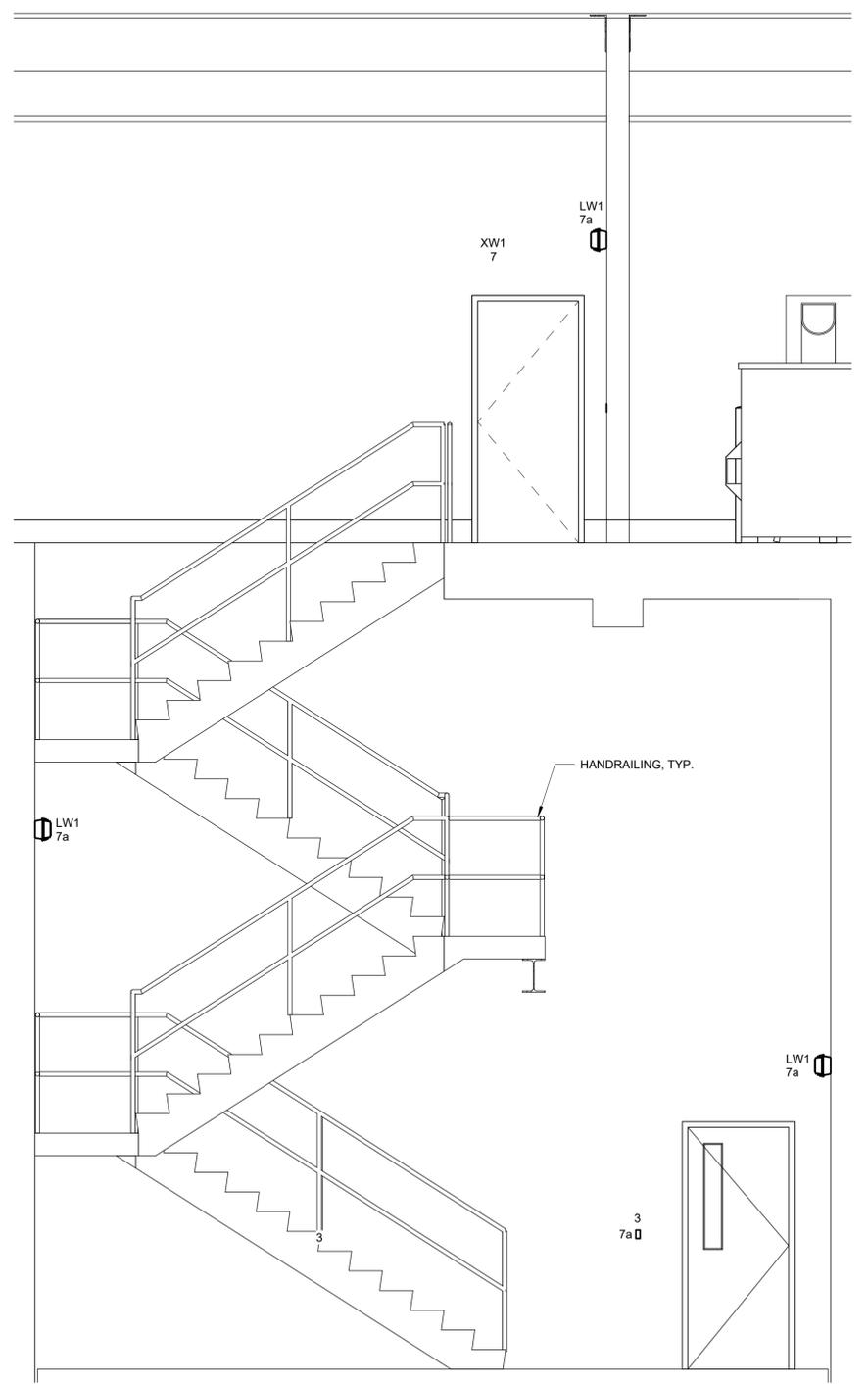
PUMP STATION
 ELECTRICAL
 TOP POWER PLAN

DATE:	2022
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E103

- NOTES:**
1. MOUNT FIXTURE TYPE 'XW1' WITH THE BOTTOM OF THE FIXTURE 12" ABOVE TOP OF THE RESPECTIVE DOOR FRAME.
 2. MOUNT FIXTURE TYPE 'LW1' 9'-0" AFF.
 3. MOUNT FIXTURE TYPE 'LW3' 11'-0" AFF



INTERMEDIATE LIGHTING PLAN
3/8" = 1'-0"



SECTION A
3/8" = 1'-0"

Autodesk Docs/32044-004_Big Branch 2 Pump Station and Pipeline/32044-004-100-PS-E-01
3/1/2023 11:36:02 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	T. MANGALAM
DRAWN BY:	L. BYBEE
CHECKED BY:	G. RATASKY
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

PRELIMINARY DRAWING
DO NOT USE FOR
CONSTRUCTION

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HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

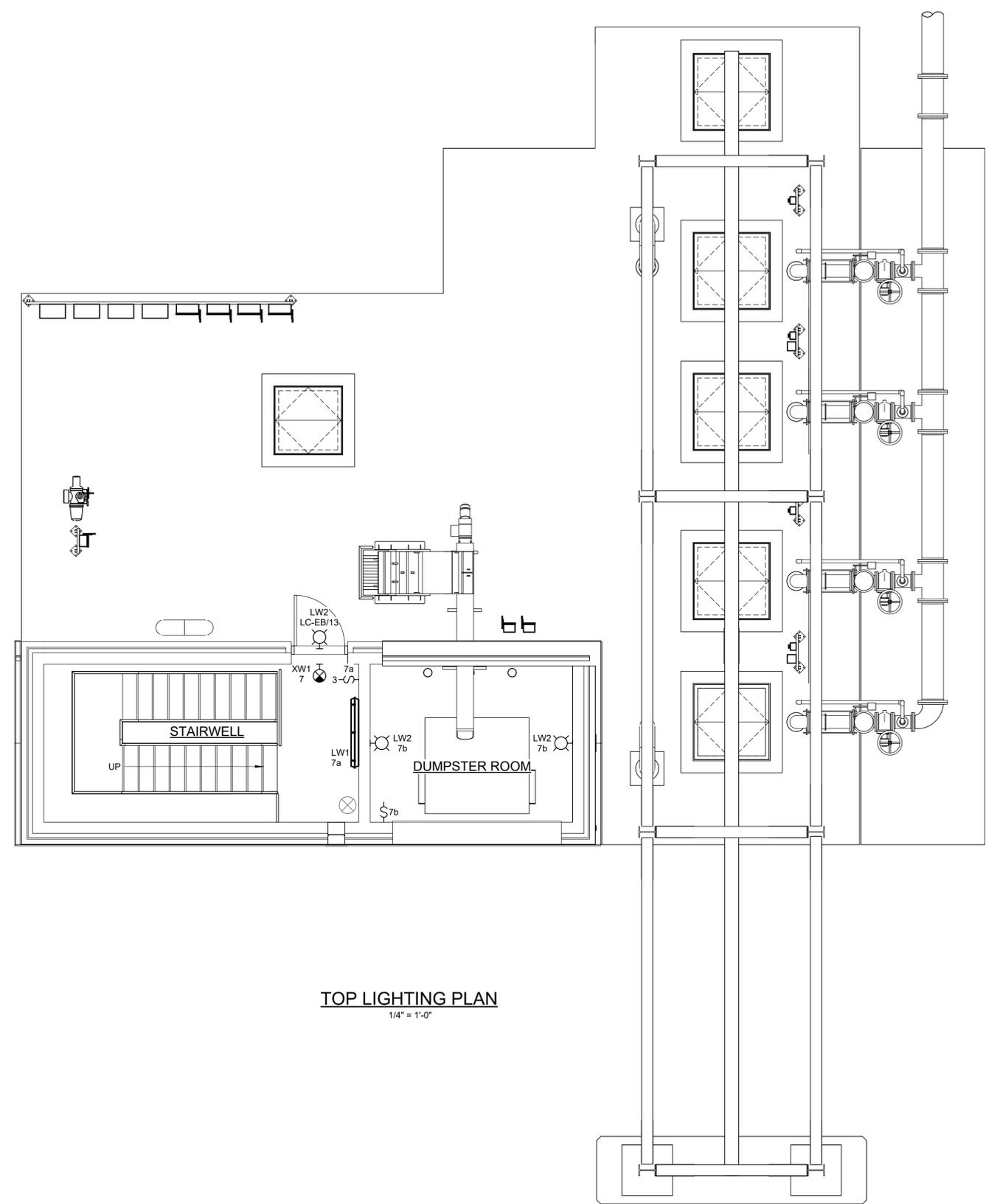
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

PUMP STATION
ELECTRICAL
INTERMEDIATE LIGHTING PLAN

DATE:	2022
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E104



- NOTES:**
1. MOUNT FIXTURE TYPE 'XW1' WITH THE BOTTOM OF THE FIXTURE 12" ABOVE TOP OF THE RESPECTIVE DOOR FRAME.
 2. MOUNT FIXTURE TYPE 'LW1', 'LW2', AND EW1 9'-0" AFF.



TOP LIGHTING PLAN
1/4" = 1'-0"

Autodesk Docs/32044-004_Big Branch 2 Pump Station and Pipeline/32044-004-100-PS-E.rvt 3/1/2023 11:36:03 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	T. MANGALAM
DRAWN BY:	L. BYBEE
CHECKED BY:	G. RATASKY
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

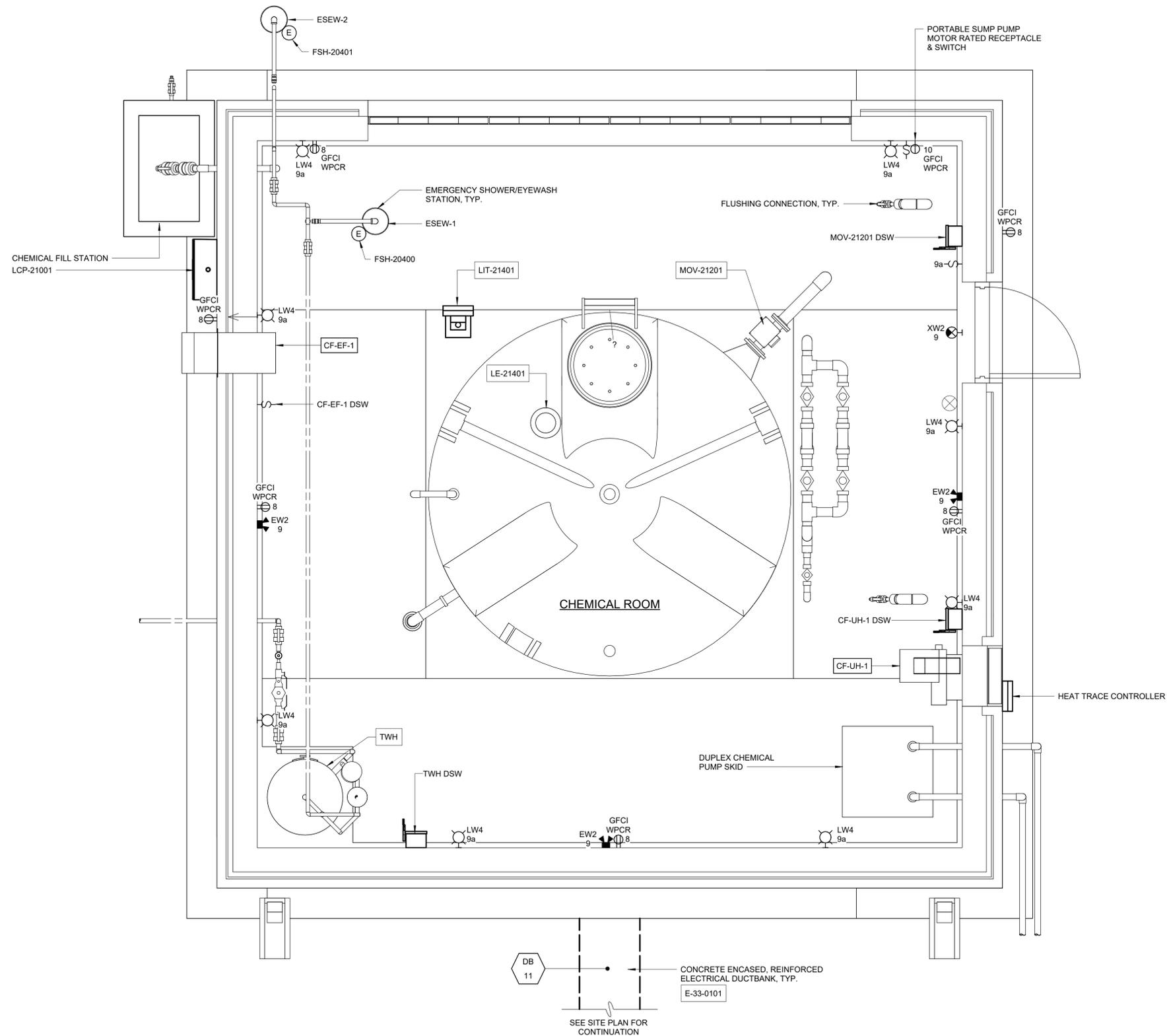
PRELIMINARY DRAWING
DO NOT USE FOR
CONSTRUCTION

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4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

PUMP STATION
ELECTRICAL
TOP LIGHTING PLAN

DATE:	2022
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E105



DB 11
 CONCRETE ENCASED, REINFORCED ELECTRICAL DUCTBANK, TYP. E-33-0101
 SEE SITE PLAN FOR CONTINUATION

PLAN
 1/2" = 1'-0"

- NOTES:
1. SEE DRAWING E004 FOR GROUNDING PLAN.
 2. MOUNT FIXTURE TYPE XW2 WITH THE BOTTOM OF THE FIXTURE 12" ABOVE TOP OF THE RESPECTIVE DOOR FRAME.
 3. MOUNT FIXTURE TYPE EW2 8'-0" AFF.
 4. MOUNT FIXTURE LW4 8'-0" AFF.

Autodesk Docs/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-130-CF-E-PL
 3/28/2023 10:29:36 AM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	T. MANGALAM
DRAWN BY:	L. BYBEE
CHECKED BY:	G. RATASKY
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

PRELIMINARY DRAWING
 DO NOT USE FOR
 CONSTRUCTION

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 4011 WESTCHASE BLVD. SUITE 500,
 RALEIGH, NC 27607
 LICENSE No.: C-0381

APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

CHEMICAL BUILDING
 ELECTRICAL
 PLAN

DATE:	2022
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E130



HAZARDOUS AREAS:

SPACE CLASSIFIED PER NFPA-820-2020 EDITION AS FOLLOWS:

CLASS I, DIVISION 1 AREAS:

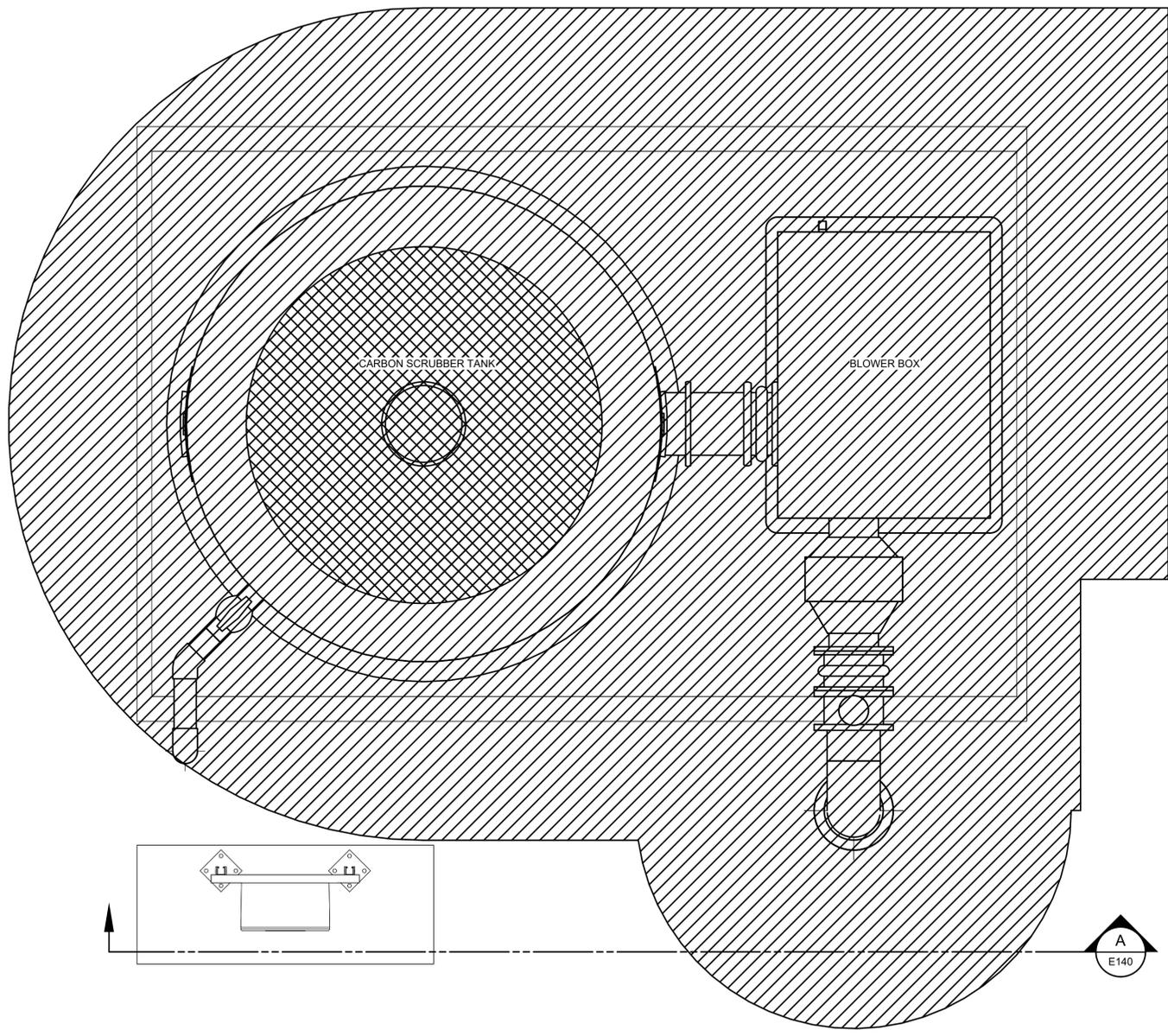
1. 3' RADIUS FROM VENT/EXHAUST
2. INTERIOR OF ODOR CONTROL VESSELS, PIPING, AND FANS

CLASS I, DIVISION 2 AREAS:

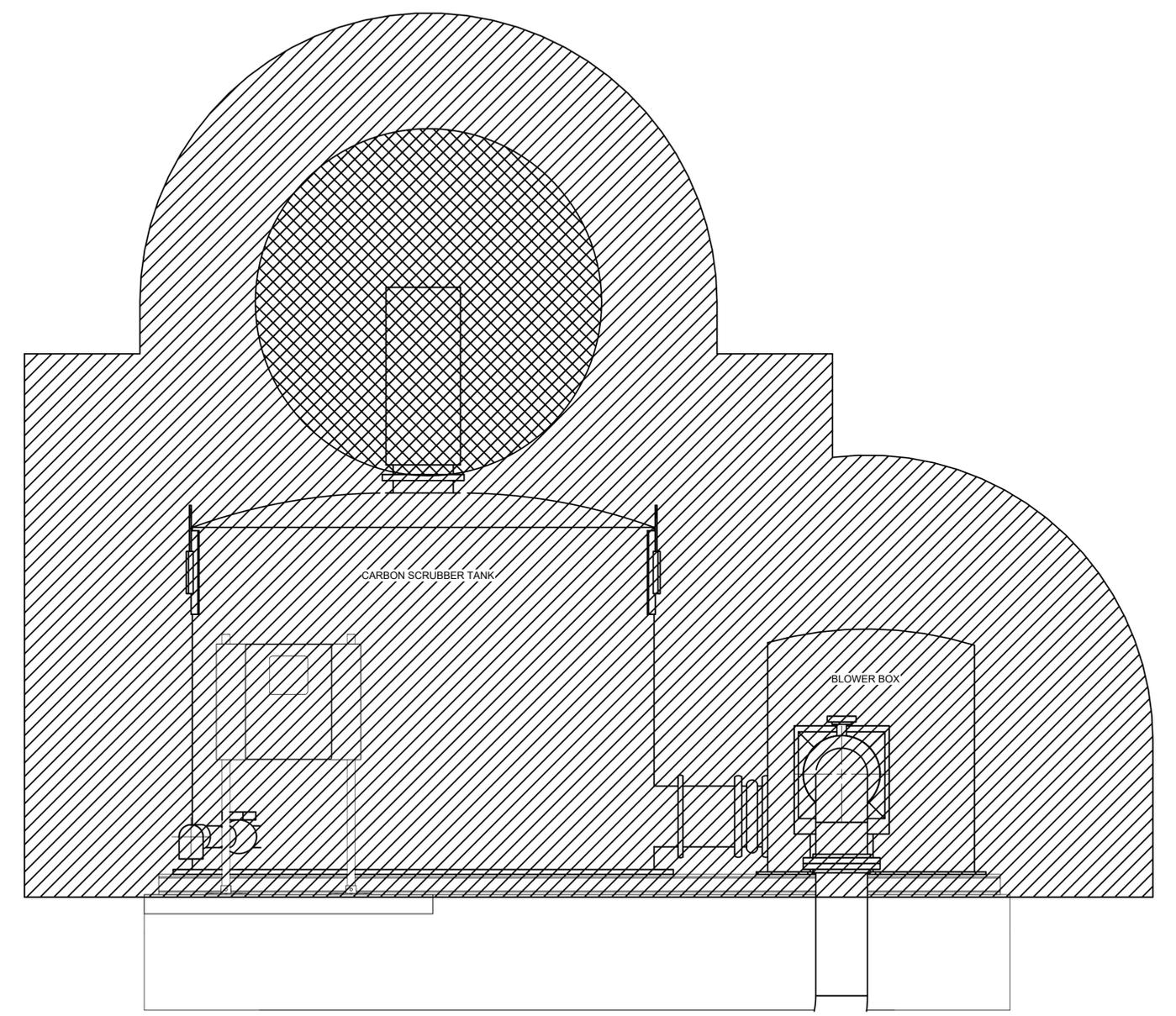
1. 5' RADIUS FROM VENT/EXHAUST (2' BEYOND CLASS I, DIVISION 1 RADIUS)
2. AREA WITHIN 3' OF LEAKAGE SOURCES SUCH AS FANS, DAMPERS, FLEXIBLE CONNECTIONS, FLANGES, PRESSURIZED UNWELDED DUCTWORK, AND ODOR-CONTROL VESSELS.

LEGEND:

- CLASS I, DIV 1
- CLASS I, DIV 2



AREA DESIGNATION & CLASSIFICATION
3/4" = 1'-0"



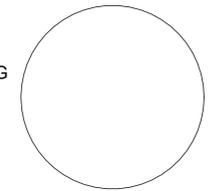
SECTION A
3/4" = 1'-0"

Autodesk Docs/32044-004_Big Branch 2 Pump Station and Pipeline/32044-004-140-OC-E.dwg 3/1/2023 12:28:19 PM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	T. MANGALAM
DRAWN BY:	L. BYBEE
CHECKED BY:	G. RATASKY

PRELIMINARY DRAWING
DO NOT USE FOR
CONSTRUCTION



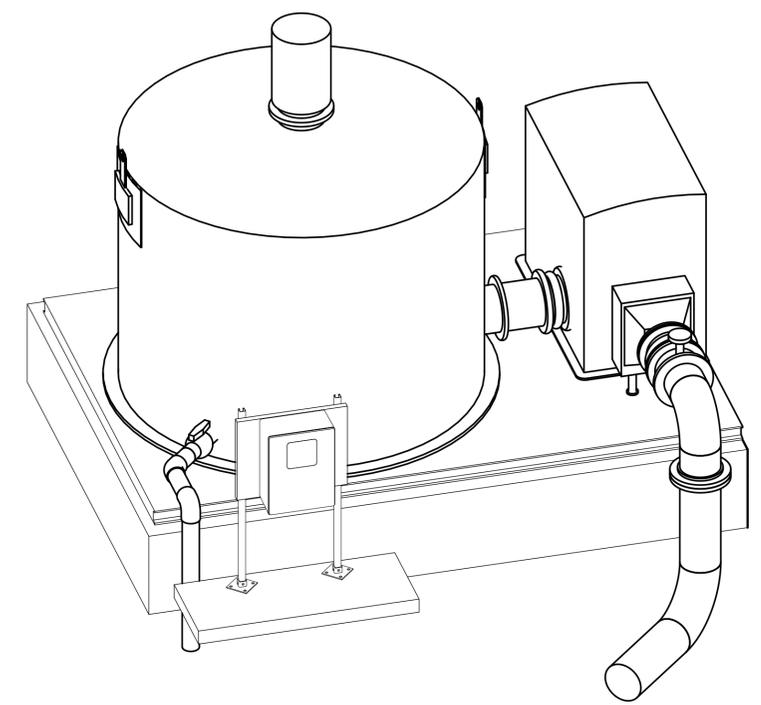
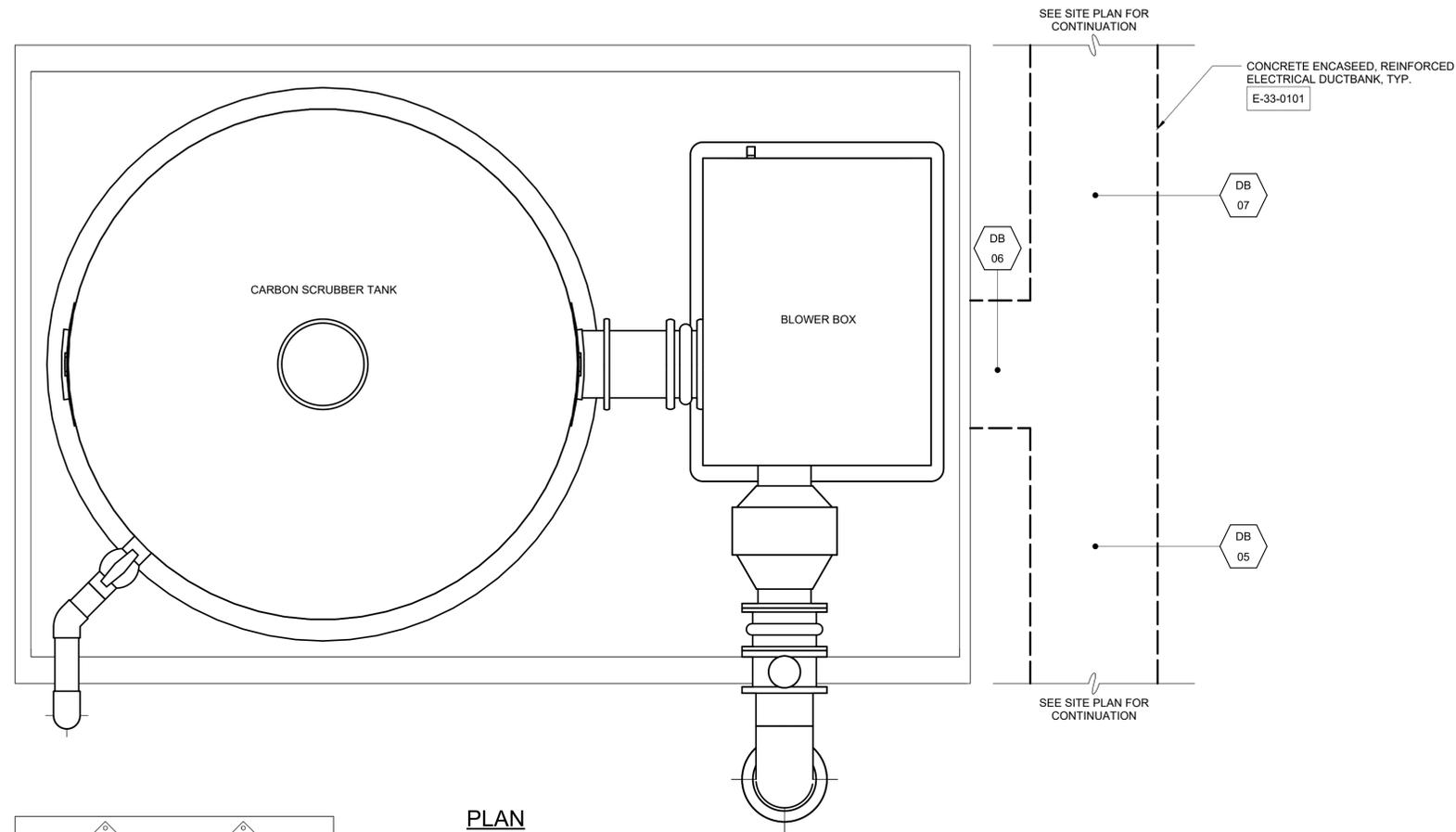
Hazen
HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
**BIG BRANCH 2
PUMP STATION**

**ODOR CONTROL
ELECTRICAL
AREA DESIGNATION AND CLASSIFICATION**

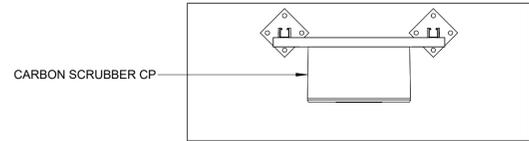
DATE:	2022
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E140

NOTES:
 1. SEE DRAWING E004 FOR GROUNDING PLAN.



PLAN
 3/4" = 1'-0"

ISOMETRIC



Autodesk Docs/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-140-OC-E.dwg
 3/1/2023 12:28:13 PM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	T. MANGALAM
DRAWN BY:	L. BYBEE
CHECKED BY:	G. RATASKY
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

PRELIMINARY DRAWING
 DO NOT USE FOR
 CONSTRUCTION

Hazen
 HAZEN AND SAWYER
 4011 WESTCHASE BLVD. SUITE 500,
 RALEIGH, NC 27607
 LICENSE No.: C-0381

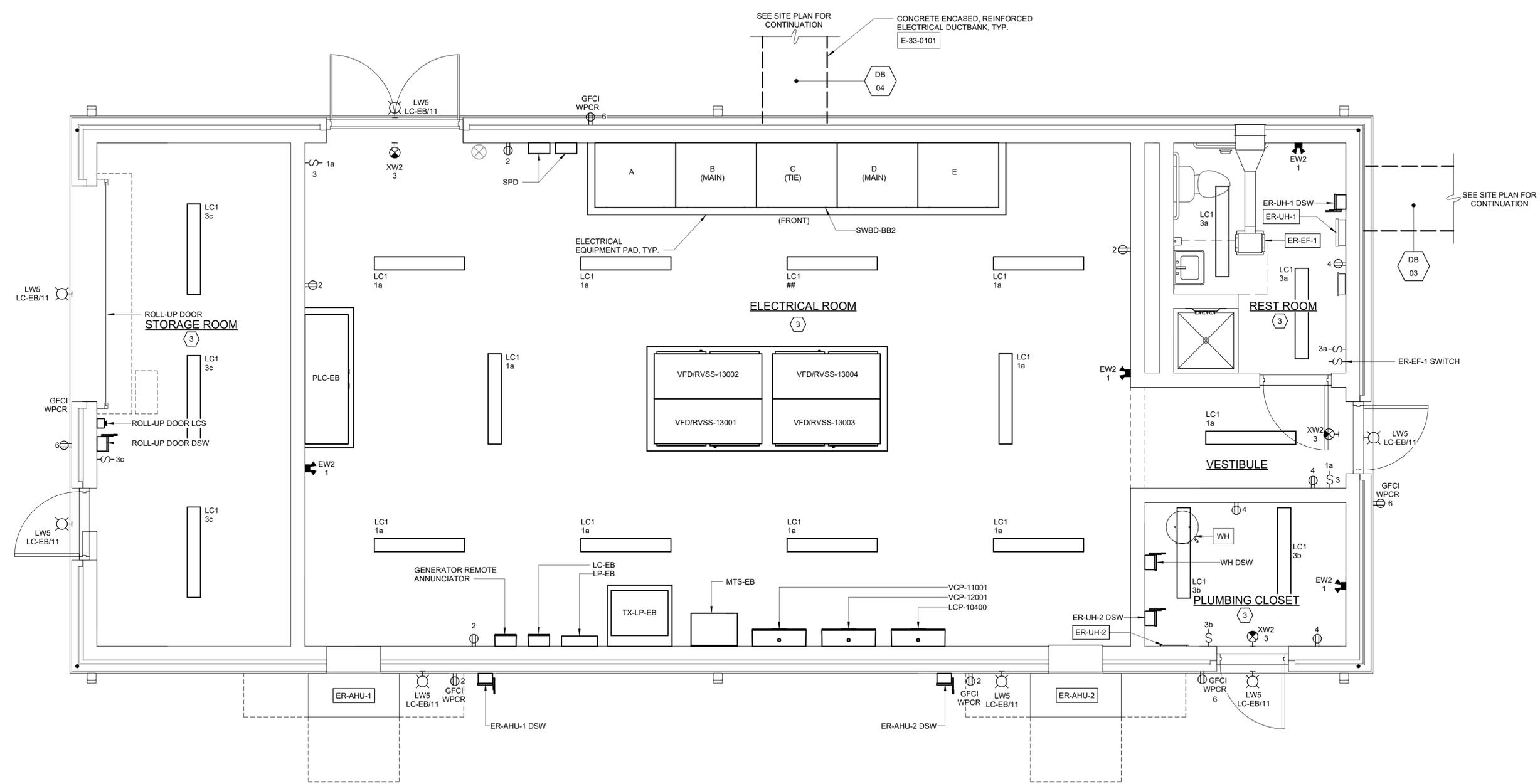
APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

ODOR CONTROL
 ELECTRICAL
 PLAN

DATE:	2022
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E141

NOTES:

1. SEE DRAWING E004 FOR GROUNDING PLAN.
2. COORDINATE GROUND SYSTEM INSTALLATION WITH INSTALLATION OF THE LIGHTNING PROTECTION SYSTEM.
3. ALL MATERIALS OF CONSTRUCTION AND ENCLOSURE TYPES SHALL BE PROVIDED IN ACCORDANCE WITH THE DESIGNATION OF THE AREAS IN WHICH THEY ARE INSTALLED. REFERENCE THE AREA DESIGNATION TABLES IN THE APPROPRIATE DIVISION 26 SPECIFICATION SECTIONS.
4. THE MAJORITY OF CONDUIT ROUTING SHALL BE INSTALLED CONCEALED IN WALLS OR FLOORS UNLESS AN EXPOSED ROUTE IS APPROVED BY THE ENGINEER OR UNLESS OTHERWISE NOTED.
5. CONTRACTOR SHALL COORDINATE ALL CONDUIT STUB-UPS AND EQUIPMENT PAD SIZES WITH MANUFACTURER PROVIDED INSTALLATION MANUALS.
6. MOUNT FIXTURE TYPE XW2 WITH THE BOTTOM OF THE FIXTURE 12" ABOVE TOP OF THE RESPECTIVE DOOR FRAME.
7. MOUNT FIXTURE TYPE EW2 8'-0" AFF.
8. MOUNT FIXTURE TYPE LC1 TO CEILING.
9. MOUNT FIXTURE TYPE LW5 9'-0" ABOVE GRADE OR WITH THE BOTTOM OF THE FIXTURE 12" ABOVE TOP OF THE RESPECTIVE DOOR FRAME.
10. SEE HVAC AND PLUMBING SERIES FOR ADDITIONAL INFORMATION REGARDING PIPING FIXTURES, EQUIPMENT, ETC.



POWER, GROUNDING, AND LIGHTING PLAN
3/8" = 1'-0"

AREA DESIGNATION:

- ① INDOOR WET PROCESS AREA
- ② INDOOR DRY PROCESS AREA
- ③ INDOOR DRY NON-PROCESS AREA

Autodesk Docs/32044-004_Big Branch 2 Pump Station and Pipelines/32044-004-150-EB-E-01 3/1/2023 12:08:13 PM

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	T. MANGALAM
DRAWN BY:	L. BYBEE
CHECKED BY:	G. RATASKY
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

PRELIMINARY DRAWING
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HAZEN AND SAWYER
4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

ELECTRICAL BUILDING
ELECTRICAL
POWER, GROUNDING, AND LIGHTING PLAN

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E150

NOTES:

- CONTRACTOR SHALL FURNISH AND INSTALL 2#12, #12GND IN 3/4" CONDUIT UNLESS OTHERWISE NOTED.
- CONDUITS FOR SITE LIGHTING SHALL BE DIRECT BURIED IN ACCORDANCE WITH STANDARD DETAIL E-33-0104.

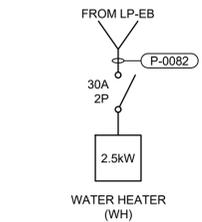
208/120 VOLTS 3 PHASE, 4 WIRE				LP-EB MAIN BREAKER 100A 3P				TYPE: NEMA 1 MOUNT: SURFACE						
MODS	DESCRIPTION	WIRE	TRIP	POLE	CKT No.	VOLT-AMPERES			CKT No.	POLE	TRIP	WIRE	DESCRIPTION	MODS
						A	B	C						
-	LTG - ELEC BLDG - ELEC RM	SEE NOTE 1	20	1	1	700			2	1	20	SEE NOTE 1	RECPT. - ELEC BLDG - ELEC RM	-
-	LTG - ELEC BLDG - MECH/TLT	SEE NOTE 1	20	1	3		200		4	1	20	SEE NOTE 1	RECPT. - ELEC BLDG - MECH/TLT	-
-	LTG - PUMP STATION - BOTTOM	P-0096	20	1	5		600		6	1	20	P-0099	RECPT. - PUMP STATION	-
-	LTG - PUMP STATION TOP/STAIRS	P-0097	20	1	7	600			8	1	20	P-0100	RECPT. - CHEMICAL BUILDING	-
-	LTG - CHEMICAL BUILDING	P-0098	20	1	9		600		10	1	20	P-0101	RECPT. - CHEMICAL BUILDING SUMP	-
-	LC-EB - ELEC BLDG - EXT	SEE RISER	20	1	11		600		12	1	20	P-0102	RECPT. - METER VAULT	-
-	LC-EB - PUMP STATION - EXT	SEE RISER	20	1	13	600			14	1	20	SEE RISER	ER-UH-1	-
-	LC-EB - SITE LTG	SEE RISER	20	1	15		600		16	1	20	SEE RISER	ER-UH-2	-
-	LC-EB	SEE RISER	20	1	17				18	1	20		SPARE	-
-	ER-EF-1	SEE RISER	20	1	19	100			20	1	20	P-0083	LIT-10400(A)	-
-	CF-EF-1	SEE RISER	20	1	21		100		22	1	20	P-0084	LIT-10400(B)	-
-	SPARE		20	1	23				24	1	20	P-0085	LIT-10401	-
-	LCP-21001	P-0078	20	1	25	500			26	1	20	P-0086	LIT-10403	-
-	BACKUP FLOAT CONTROL PANEL	P-0079	20	1	27		800		28	1	20	P-0087	LIT-10405	-
-	WATER HEATER (WH)	SEE RISER	20	1	29			2,500	30	1	20	P-0098	FIT-10410	-
-	DUPLEX CHEMICAL PUMP SKID	P-0081	20	1	31	1,000			32	1	20		SPARE	-
-	MOV-21201	SEE RISER	20	1	33		500		34	1	20		SPARE	-
-	ROLL-UP DOOR	SEE RISER	20	1	35			1,000	36	1	20	P-0104	GEN REMOTE ANNUNCIATOR	-
-	SPARE		20	1	37				38					-
-	SPARE		20	1	39				40	3	60		SPD	-
-	PLC-EB	P-0090	20	1	41			500	42					-

TOTAL	3,500	2,800	5,300
PHASE TOTAL			
	7,000	5,220	6,320

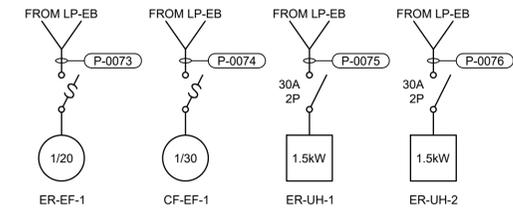
3,500	2,420	1,020	TOTAL
TOTAL LOAD (VA)			
18,540			
TOTAL LOAD (A)			
51			

MODIFICATION (MODS) LEGEND:
 EPD - GROUND FAULT CIRCUIT INTERRUPTER (30mA)
 GFCI - GROUND FAULT CIRCUIT INTERRUPTER (5mA)
 LOD - LOCK-ON DEVICE
 LFD - LOCK-OFF DEVICE

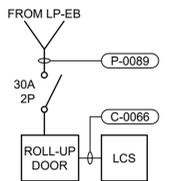
NOTES:
 14KAIC
 100kA SPD
 EXTERNALLY MOUNTED



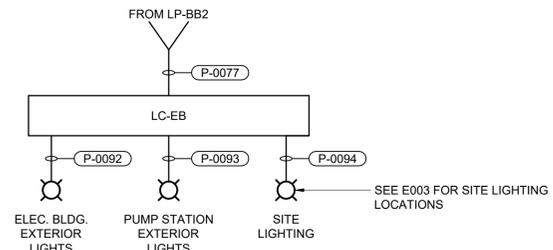
WATER HEATER
RISER DIAGRAMS



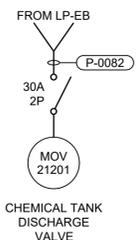
HVAC
RISER DIAGRAMS



ROLL-UP DOOR
RISER DIAGRAM



LIGHTING CONTACTOR (LC-EB)
RISER DIAGRAM



MOTOR OPERATED VALVE
RISER DIAGRAM

File: C:\USERS\BYBEE\PROJECT FILES\ELEC\CAD\192_SAVED BY: LBYBEE Save date: 3/31/2023 12:00 PM PLOT DATE: 3/31/2023 12:00 PM BY: LBYBEE

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	T. MANGALAM
DRAWN BY:	L. BYBEE
CHECKED BY:	G. RATASKY
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"
REV	ISSUED FOR
	DATE
	BY

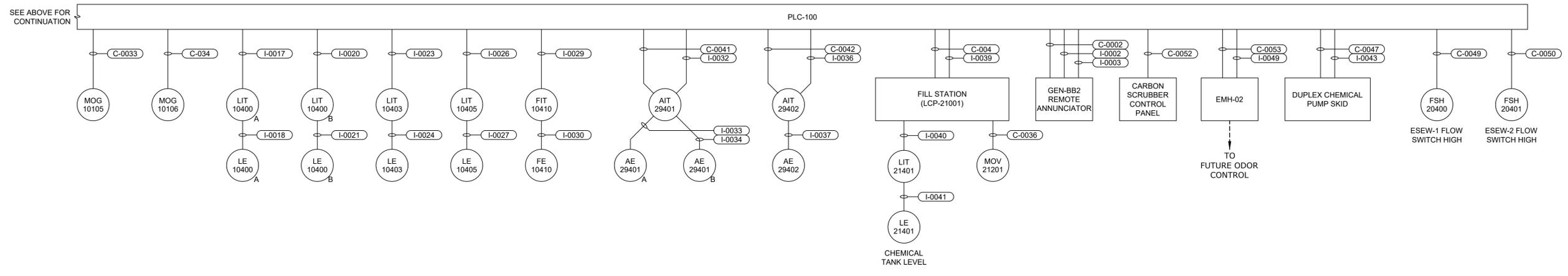
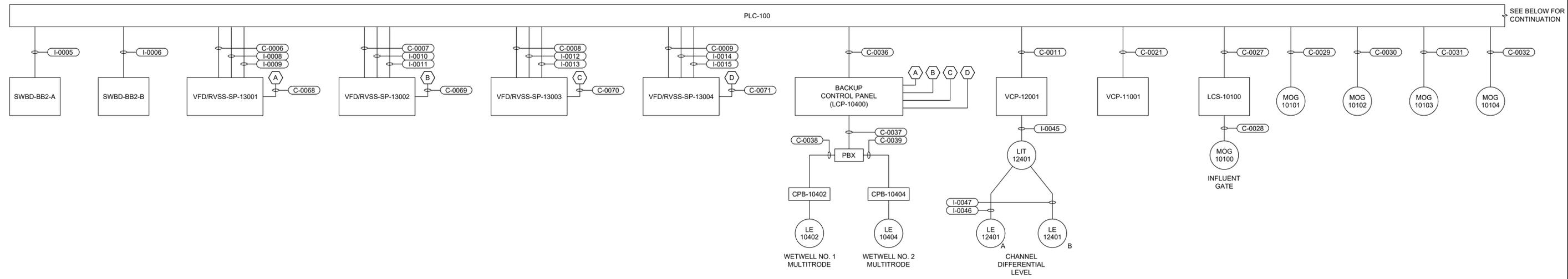
PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

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 HAZEN AND SAWYER
 4011 WESTCHASE BLVD. SUITE 500,
 RALEIGH, NC 27607
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APEX
 NORTH CAROLINA
 BIG BRANCH 2
 PUMP STATION

ELECTRICAL BUILDING
 ELECTRICAL
 PANEL SCHEDULES AND RISER DIAGRAMS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E152



PLC-100
CONTROL ONE LINE DIAGRAM

File: C:\USER\BYBEE\PROJECTS\HAZEN AND SAWYER\32044-004_BIG BRANCH 2 PUMP STATION AND PIPELINES\PROJECT FILES\ELECTRICAL\E153 Saved by: LBYBEE Save date: 3/24/2023 2:02 PM PLOT DATE: 3/31/2023 12:01 PM BY: LBYBEE

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	T. MANGALAM		
DRAWN BY:	L. BYBEE		
CHECKED BY:	G. RATASKY		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

PRELIMINARY DRAWING - DO NOT USE FOR CONSTRUCTION

Hazen
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4011 WESTCHASE BLVD. SUITE 500,
RALEIGH, NC 27607
LICENSE No.: C-0381

APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

ELECTRICAL BUILDING
ELECTRICAL
CONTROL ONE LINE DIAGRAM

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E153

File: C:\USERS\BYBEE\ACC\DOCS\HAZEN AND SAWYER\32044-004_BIG BRANCH 2 PUMP STATION AND PIPELINES\PROJECT FILES\ELC\CAD\FILES Saved by: LBYBEE Save date: 3/31/2023 11:47 AM
PLOT DATE: 3/31/2023 12:01 PM BY: LBYBEE

CONDUIT NO.	SIZE	FROM	TO	CONDUCTORS	REMARKS
P-0000	5"	UTILITY POLE	UTILITY TRANSFORMER	CABLE BY UTILITY	
P-0001	5"	UTILITY POLE	UTILITY TRANSFORMER	CABLE BY UTILITY	
P-0002				NOT USED	
P-0003	4"	UTILITY TRANSFORMER	SWBD-BB2-A	3#500kcmil, 3/0GND	
P-0004	4"	UTILITY TRANSFORMER	SWBD-BB2-A	3#500kcmil, 3/0GND	
P-0005	4"	UTILITY TRANSFORMER	SWBD-BB2-A	3#500kcmil, 3/0GND	
P-0006	4"	UTILITY TRANSFORMER	SWBD-BB2-A	3#500kcmil, 3/0GND	
P-0007	4"	UTILITY TRANSFORMER	SWBD-BB2-A	EMPTY W/ PULLSTRING	
P-0008				NOT USED	
P-0009				NOT USED	
P-0010	4"	GEN-BB2	SWBD-BB2-B	3#500kcmil, 3/0GND	
P-0011	4"	GEN-BB2	SWBD-BB2-B	3#500kcmil, 3/0GND	
P-0012	4"	GEN-BB2	SWBD-BB2-B	3#500kcmil, 3/0GND	
P-0013	4"	GEN-BB2	SWBD-BB2-B	3#500kcmil, 3/0GND	
P-0014	4"	GEN-BB2	SWBD-BB2-B	EMPTY W/ PULLSTRING	
P-0015				NOT USED	
P-0016				NOT USED	
P-0017				NOT USED	
P-0018				NOT USED	
P-0019	3"	SWBD-BB2-A	MTS-EB	3#2, #8GND	
P-0020	3"	SWBD-BB2-B	MTS-EB	3#2, #8GND	
P-0021				NOT USED	
P-0022				NOT USED	
P-0023	1"	SWBD-BB2-A	VCP-12001	3#12, #12GND	
P-0024	1"	VCP-12001	MECHANICAL SCREEN DRIVE	3#12, #12GND	
P-0025	1"	VCP-12001	SCREW CONVEYOR DRIVE	3#12, #12GND	
P-0026				NOT USED	
P-0027	2"	SWBD-BB2-A	VFD/RVSS-HFP-13001	3#3/0, #4GND	
P-0028	3"	VFD/RVSS-HFP-13001	PJB-1	3#3/0 [VFD CABLE], #4GND	
P-0029	3"	PJB-1	SUBMERSIBLE PUMP NO. 1	CABLE BY MFR	
P-0030				NOT USED	
P-0031				NOT USED	
P-0032	2"	SWBD-BB2-A	VFD/RVSS-HFP-13003	3#3/0, #4GND	
P-0033	3"	VFD/RVSS-HFP-13003	PJB-3	3#3/0 [VFD CABLE], #4GND	
P-0034	3"	PJB-3	SUBMERSIBLE PUMP NO. 3	CABLE BY MFR	
P-0035				NOT USED	
P-0036	1"	SWBD-BB2-A	GENERATOR COMBINATION POWER UNIT	3#12, #12GND	
P-0037	1"	SWBD-BB2-A	MOG-PJB-1	3#12, #12GND	
P-0038	3/4"	MOG-PJB-1	MOG-10101	3#12, #12GND	
P-0039	3/4"	MOG-PJB-1	MOG-10102	3#12, #12GND	
P-0040	3/4"	MOG-PJB-1	MOG-10103	3#12, #12GND	
P-0041	3/4"	SWBD-BB2-A	ER-AHU-1	3#12, #10GND	
P-0042	1"	SWBD-BB2-A	CF-UH-1	3#12, #12GND	
P-0043	1"	SWBD-BB2-A	TEPID WATER HEATER (TWH)	3#12, #12GND	
P-0044	3/4"	SWBD-BB2-A	SPD	3#4, #10GND	
P-0045				NOT USED	
P-0046				NOT USED	
P-0047	1"	SWBD-BB2-B	VCP-11001	3#12, #12GND	
P-0048	1"	VCP-11001	CHANNEL GRINDER DRIVE	3#12, #12GND	
P-0049				NOT USED	
P-0050	1"	SWBD-BB2-B	CARBON SCRUBBER CP	3#12, #12GND	
P-0051	1"	SWBD-BB2-B	EMH-02	EMPTY W/ PULLSTRING	FUTURE ODOR CONTROL
P-0052				NOT USED	
P-0053	2"	SWBD-BB2-B	VFD/RVSS-HFP-13002	3#3/0, #4GND	
P-0054	3"	VFD/RVSS-HFP-13002	PJB-2	3#3/0 [VFD CABLE], #4GND	
P-0055	3"	PJB-2	SUBMERSIBLE PUMP NO. 2	CABLE BY MFR	
P-0056				NOT USED	
P-0057				NOT USED	
P-0058	2"	SWBD-BB2-B	VFD/RVSS-HFP-13004	3#3/0, #4GND	
P-0059	3"	VFD/RVSS-HFP-13004	PJB-4	3#3/0 [VFD CABLE], #4GND	
P-0060	3"	PJB-4	SUBMERSIBLE PUMP NO. 4	CABLE BY MFR	
P-0061				NOT USED	
P-0062	1"	SWBD-BB2-B	MOG-10100	3#12, #12GND	
P-0063	1"	SWBD-BB2-B	MOG-PJB-2	3#12, #12GND	
P-0064	3/4"	MOG-PJB-2	MOG-10104	3#12, #12GND	
P-0065	3/4"	MOG-PJB-2	MOG-10105	3#12, #12GND	
P-0066	3/4"	MOG-PJB-2	MOG-10106	3#12, #12GND	
P-0067	3/4"	SWBD-BB2-B	ER-AHU-2	3#12, #10GND	
P-0068	1"	SWBD-BB2-B	MONORAIL CRANE & HOIST	3#12, #12GND	
P-0069	3/4"	SWBD-BB2-B	SPD	3#4, #10GND	
P-0070	2"	MTS-EB	TX-LP-EB	3#2, #8GND	
P-0071				NOT USED	
P-0072	2"	TX-LP-EB	LP-EB	4#1, #6GND	
P-0073	1"	LP-EB	ER-EF-1	2#12, #12GND	
P-0074	1"	LP-EB	CF-EF-1	2#12, #12GND	
P-0075	1"	LP-EB	ER-UH-1	2#12, #12GND	
P-0076	1"	LP-EB	ER-UH-2	2#12, #12GND	
P-0077	1"	LP-EB	LIGHTING CONTACTOR (LC-EB)	2#12, #12GND	
P-0078	1"	LP-EB	LCP-21001	2#12, #12GND	
P-0079	1"	LP-EB	BACKUP CONTROL PANEL (LCS-10400)	2#12, #12GND	
P-0080	1"	LP-EB	WATER HEATER (WH)	2#12, #12GND	
P-0081	1"	LP-EB	DUPLEX CHEMICAL PUMP SKID	2#10, #10GND	
P-0082	1"	LP-EB	MOV-21201	2#12, #12GND	

CONDUIT NO.	SIZE	FROM	TO	CONDUCTORS	REMARKS
P-0083	1"	LP-EB	LIT-10400(A)	2#12, #12GND	
P-0084	1"	LP-EB	LIT-10400(B)	2#12, #12GND	
P-0085	1"	LP-EB	LIT-10401	2#12, #12GND	
P-0086	1"	LP-EB	LIT-10403	2#12, #12GND	
P-0087	1"	LP-EB	LIT-10405	2#12, #12GND	
P-0088	1"	LP-EB	FIT-10410	2#12, #12GND	
P-0089	3/4"	LP-EB	ROLL-UP DOOR	2#12, #12GND	
P-0090	3/4"	LP-EB	PLC-EB	2#12, #12GND	
P-0091				NOT USED	
P-0092	1"	LP-EB	LC-EB - ELEC BUILDING - EXTERIOR	2#12, #12GND	
P-0093	1"	LP-EB	LC-EB - PUMP STATION - EXTERIOR	2#12, #12GND	
P-0094	1"	LP-EB	LC-EB - SITE LTG	2#10, #12GND	
P-0095				NOT USED	
P-0096	1"	LP-EB	LTG - PUMP STATION - BOTTOM	2#12, #12GND	
P-0097	1"	LP-EB	LTG - PUMP STATION - TOP/STAIRS	2#12, #12GND	
P-0098	1"	LP-EB	LTG - CHEMICAL BUILDING	2#12, #12GND	
P-0099	1"	LP-EB	RECPT. - PUMP STATION	2#12, #12GND	
P-0100	1"	LP-EB	RECPT. - CHEMICAL BUILDING	2#12, #12GND	
P-0101	1"	LP-EB	RECPT. - CHEMICAL BUILDING SUMP PUMP	2#12, #12GND	
P-0102	1"	LP-EB	RECPT. - METER VAULT	2#12, #12GND	
P-0103				NOT USED	
P-0104	3/4"	LP-EB	GENERATOR REMOTE ANNUNCIATOR	2#12, #12GND	

CONDUIT NO.	SIZE	FROM	TO	CONDUCTORS	REMARKS
C-0000				NOT USED	
C-0001	1"	PLC-100	GEN-BB2	12#14, #14GND	
C-0002	1"	GEN-BB2 REMOTE ANNUNCIATOR	GEN-BB2	12#14, #14GND	
C-0003				NOT USED	
C-0004	1"	PLC-100	SWBD-BB2 ATC	8#14, #14GND	
C-0005				NOT USED	
C-0006	1"	PLC-100	VFD/RVSS-HFP-13001	30#14, #14GND	
C-0007	1"	PLC-100	VFD/RVSS-HFP-13002	30#14, #14GND	
C-0008	1"	PLC-100	VFD/RVSS-HFP-13003	30#14, #14GND	
C-0009	1"	PLC-100	VFD/RVSS-HFP-13004	30#14, #14GND	
C-0010				NOT USED	
C-0011	3/4"	PLC-100	VCP-12001	4#14, #14GND	
C-0012	1"	VCP-12001	CPB-12001	REQ'D BY MFR	
C-0013	1"	CPB-12001	SCR-12001	REQ'D BY MFR	MSH, TSH
C-0014	1"	CPB-12001	HS-12001	REQ'D BY MFR	
C-0015	1"	CPB-12001	CNV-12002	REQ'D BY MFR	
C-0016	1"	CPB-12001	HS-12001	REQ'D BY MFR	
C-0017				NOT USED	
C-0018				NOT USED	
C-0019				NOT USED	
C-0020				NOT USED	
C-0021	3/4"	PLC-100	VCP-11001	10#14, #14GND	
C-0022	1"	VCP-11001	CPB-11001	REQ'D BY MFR	
C-0023	1"	CPB-11001	GDR-11001	REQ'D BY MFR	ME, TSH
C-0024	1"	CPB-11001	HS-11001	REQ'D BY MFR	
C-0025				NOT USED	
C-0026				NOT USED	
C-0027	1"	PLC-100	LCS-10100	6#14, #14GND	
C-0028	1"	LCS-10100	MOG-10100	6#14, #14GND	
C-0029	1"	PLC-100	MOG-10101	12#14, #14GND	
C-0030	1"	PLC-100	MOG-10102	12#14, #14GND	
C-0031	1"	PLC-100	MOG-10103	12#14, #14GND	
C-0032	1"	PLC-100	MOG-10104	12#14, #14GND	
C-0033	1"	PLC-100	MOG-10105	12#14, #14GND	
C-0034	1"	PLC-100	MOG-10106	12#14, #14GND	
C-0035				NOT USED	
C-0036	1"	PLC-100	BACKUP CONTROL PANEL (LCP-10400)	18#14, #14GND	
C-0037	1"	BACKUP CONTROL PANEL (LCP-10400)	PBX	20#14, #14GND	
C-0038	1"	PBX	LE-10402	10#14, #14GND	VIA CPB
C-0039	1"	PBX	LE-10404	10#14, #14GND	VIA CPB
C-0040				NOT USED	
C-0041	1"	PLC-100	AIT-29401	4#14, #14GND	
C-0042	1"	PLC-100	AIT-29402	4#14, #14GND	
C-0043				NOT USED	
C-0044	1"	PLC-100	LCP-21001	12#14, #14GND	
C-0045		LCP-21001	MOV-21201	12#14, #14GND	
C-0046				NOT USED	
C-0047	1"	PLC-100	DUPLEX CHEMICAL PUMP SKID	12#14, #14GND	
C-0048				NOT USED	
C-0049	1"	PLC-100	ESEW-1	4#14, #14GND	
C-0050	1"	PLC-100	ESEW-2	4#14, #14GND	
C-0051				NOT USED	
C-0052	1"	PLC-100	CARBON SCRUBBER CP	4#14, #14GND	
C-0053	1"	PLC-100	EMH-02	EMPTY W/ PULLSTRING	FUTURE ODOR CONTROL
C-0054				NOT USED	
C-0055	1"	VFD/RVSS-SP-13001	PJB-1	14#14, #14GND	TSH(A), TSH(B), ME
C-0056	1"	PJB-1	LCS-13001	8#14, #14GND	
C-0057				NOT USED	
C-0058	1"	VFD/RVSS-SP-13002	PJB-2	14#14, #14GND	TSH(A), TSH(B), ME

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	T. MANGALAM		
DRAWN BY:	L. BYBEE		
CHECKED BY:	G. RATASKY		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE			
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APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

ELECTRICAL BUILDING
ELECTRICAL
CONDUIT AND WIRE SCHEDULES

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E155

CONDUIT NO.	SIZE	FROM	TO	CONDUCTORS	REMARKS
C-0059	1"	PJB-2	LCS-13002	8#14, #14GND	
C-0060				NOT USED	
C-0061	1"	VFD/RVSS-SP-13003	PJB-3	14#14, #14GND	TSH(A), TSH(B), ME
C-0062	1"	PJB-3	LCS-13003	8#14, #14GND	
C-0063				NOT USED	
C-0064	1"	VFD/RVSS-SP-13004	PJB-4	14#14, #14GND	TSH(A), TSH(B), ME
C-0065	1"	PJB-4	LCS-13004	8#14, #14GND	
C-0066				NOT USED	
C-0075	3/4"	ROLL-UP DOOR	ROLL-UP DOOR LCS	2#14, #14GND	
C-0076				NOT USED	
C-0077	1"	BACKUP CONTROL PANEL (LCS-10400)	VFD/RVSS-SP-13001	4#14, #14GND	
C-0078	1"	BACKUP CONTROL PANEL (LCS-10400)	VFD/RVSS-SP-13002	4#14, #14GND	
C-0079	1"	BACKUP CONTROL PANEL (LCS-10400)	VFD/RVSS-SP-13003	4#14, #14GND	
C-0080	1"	BACKUP CONTROL PANEL (LCS-10400)	VFD/RVSS-SP-13004	4#14, #14GND	
C-0081				NOT USED	

CONDUIT NO.	SIZE	FROM	TO	CONDUCTORS	REMARKS
I-0000	1"	PLC-100	GEN-BB2	2(CAT-6), #14GND	
I-0001				NOT USED	
I-0002	1"	GEN-BB2	GEN-BB2 REMOTE ANNUNCIATOR	2(CAT-6), #14GND	
I-0003	1"	GEN-BB2	GEN-BB2 REMOTE ANNUNCIATOR	2(2/C#16TSH), #14GND	
I-0004				NOT USED	
I-0005	3/4"	PLC-100	SWBD-BB2-A	2(CAT-6), #14GND	
I-0006	3/4"	PLC-100	SWBD-BB2-B	2(CAT-6), #14GND	
I-0007				NOT USED	
I-0008	3/4"	PLC-100	VFD/RVSS-HFP-13001	2(CAT-6), #14GND	
I-0009	3/4"	PLC-100	VFD/RVSS-HFP-13001	3(2/C#16TSH), #14GND	
I-0010	3/4"	PLC-100	VFD/RVSS-HFP-13002	2(CAT-6), #14GND	
I-0011	3/4"	PLC-100	VFD/RVSS-HFP-13002	3(2/C#16TSH), #14GND	
I-0012	3/4"	PLC-100	VFD/RVSS-HFP-13003	2(CAT-6), #14GND	
I-0013	3/4"	PLC-100	VFD/RVSS-HFP-13003	3(2/C#16TSH), #14GND	
I-0014	3/4"	PLC-100	VFD/RVSS-HFP-13004	2(CAT-6), #14GND	
I-0015	3/4"	PLC-100	VFD/RVSS-HFP-13004	3(2/C#16TSH), #14GND	
I-0016				NOT USED	
I-0017	1"	PLC-100	LIT-10400(A)	2(2/C#16TSH), #14GND	
I-0018	3/4"	LIT-10400(A)	LE-10400(A)	CABLE BY MFR	
I-0019				NOT USED	
I-0020	1"	PLC-100	LIT-10400(B)	2(2/C#16TSH), #14GND	
I-0021	3/4"	LIT-10400(B)	LE-10400(B)	CABLE BY MFR	
I-0022				NOT USED	
I-0023	1"	PLC-100	LIT-10403	2(2/C#16TSH), #14GND	
I-0024	3/4"	LIT-10403	LE-10403	CABLE BY MFR	
I-0025				NOT USED	
I-0026	1"	PLC-100	LIT-10405	2(2/C#16TSH), #14GND	
I-0027	3/4"	LIT-10405	LE-10405	CABLE BY MFR	
I-0028				NOT USED	
I-0029	1"	PLC-100	FIT-10410	2(2/C#16TSH), #14GND	
I-0030	3/4"	FIT-10410	FE-10410	CABLE BY MFR	
I-0031				NOT USED	
I-0032	1"	PLC-100	AIT-29401	3(2/C#16TSH), #14GND	
I-0033	3/4"	AIT-29401	AE-29401(A)	CABLE BY MFR	
I-0034	3/4"	AIT-29401	AE-29401(B)	CABLE BY MFR	
I-0035				NOT USED	
I-0036	1"	PLC-100	AIT-29402	2(2/C#16TSH), #14GND	
I-0037	3/4"	AIT-29402	AE-29402	CABLE BY MFR	
I-0038				NOT USED	
I-0039	1"	PLC-100	LCP-21001	2(2/C#16TSH), #14GND	
I-0040	3/4"	LCP-21001	LIT-21401	2(2/C#16TSH), #14GND	
I-0041	3/4"	LIT-21401	LE-21401	CABLE BY MFR	
I-0042				NOT USED	
I-0043	1"	PLC-100	DUPLEX CHEMICAL PUMP SKID	3(2/C#16TSH), #14GND	
I-0044				NOT USED	
I-0045	1"	VCP-12001	LIT-10401	2(2/C#16TSH), #14GND	
I-0046	1"	LIT-10401	LE-12401(A)	CABLE BY MFR	
I-0047	1"	LIT-10401	LE-12401(B)	CABLE BY MFR	
I-0048				NOT USED	
I-0049	1"	PLC-100	EMH-02	EMPTY W/ PULLSTRING	FUTURE ODOR CONTROL
I-0050				NOT USED	

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PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	T. MANGALAM		
DRAWN BY:	L. BYBEE		
CHECKED BY:	G. RATASKY		
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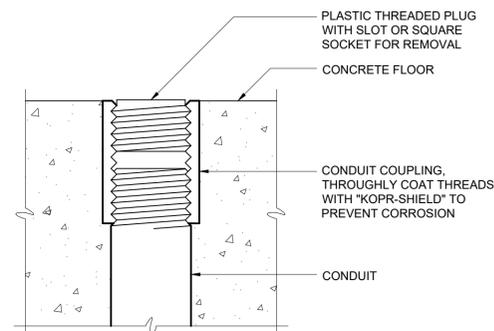
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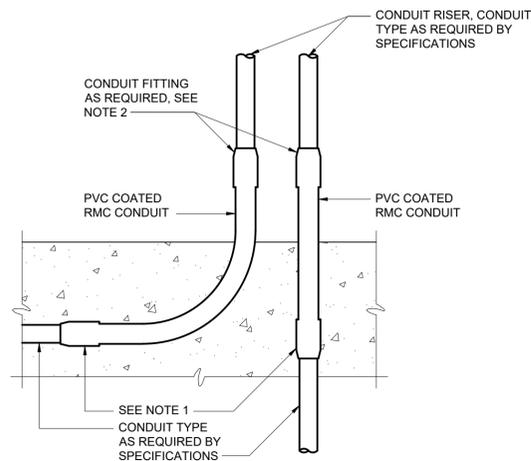
APEX
NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

ELECTRICAL BUILDING
ELECTRICAL
CONDUIT AND WIRE SCHEDULES

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	E156



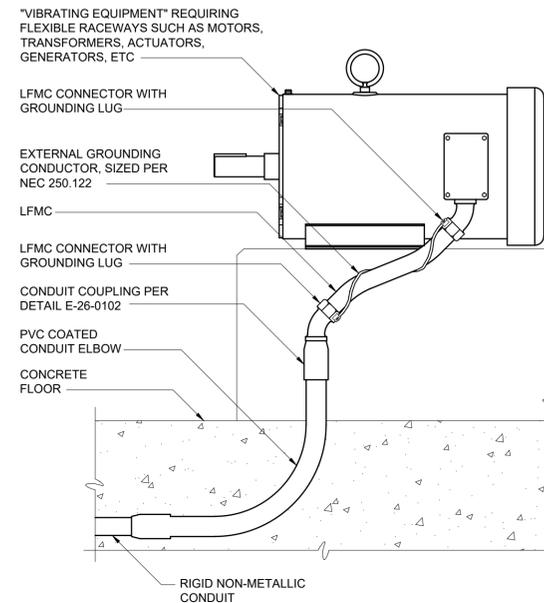
FLOOR STUB-UP FOR FUTURE CONDUIT
E-26-0101



NOTES:

1. FOR ENCASED PVC CONDUIT USE PVC TERMINAL ADAPTER. FOR ALL OTHER CONDUIT TYPES, USE PVC COATED RMC COUPLINGS.
2. IF ANY THREADS OF THE PVC COATED RMC CONDUIT ARE EXPOSED AFTER INSTALLATION OF THE CONDUIT FITTING, THE CONDUIT FITTING SHALL BE PVC COATED TYPE WITH APPROPRIATE PVC SKIRTS. IF THE THREADS OF THE PVC COATED RMC CONDUIT ARE PROPERLY CUT SO THAT THEY ARE NOT EXPOSED AFTER INSTALLATION OF THE CONDUIT FITTING, THE CONDUIT MATERIAL SHALL BE AS REQUIRED BY THE SPECIFICATIONS, BASED ON THE MATERIAL OF THE CONDUIT RISER.

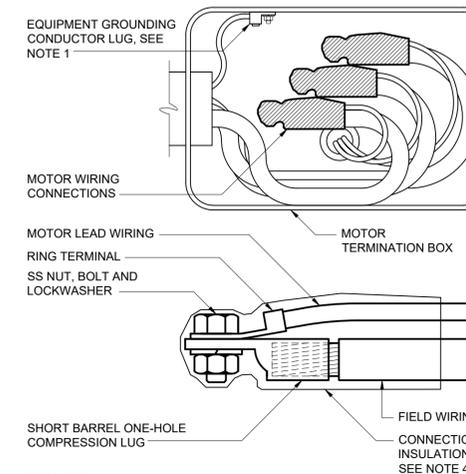
CONDUIT EXITING CONCRETE ENCASEMENT
E-26-0102



NOTES:

1. WHERE NON-METALLIC CONDUIT TRANSITIONS TO RIGID METALLIC CONDUIT AND / OR LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT, (LFMC), TO FEED VIBRATING TYPE LOADS, THE CONTRACTOR SHALL FURNISH AND INSTALL AN EXTERNAL BARE COPPER GROUNDING CONDUCTOR AND APPROVED GROUNDING LFM CONNECTORS TO ENSURE GROUND CONTINUITY TO THE RIGID METALLIC CONDUIT AS SHOWN. THE GROUNDING CONDUCTOR SHALL BE SIZED ACCORDING TO NEC 250.122 AND BE NEATLY WRAPPED AROUND LFM AS SHOWN. LFM INSTALLED IN THIS MANNER CANNOT BE USED FOR A CONTINUOUS GROUND PATH PER NEC 350.60.

LFMC CONDUIT GROUND STRAP
E-26-0104



NOTES:

1. EQUIPMENT GROUNDING CONDUCTOR LUG SHALL BE ATTACHED WITH NUT AND LOCKWASHER TO THE MOTOR GROUNDING STUD. WHERE PROVIDED, FACTORY INSTALLED EQUIPMENT GROUNDING CONDUCTOR LUGS ARE ACCEPTABLE IN LIEU OF THE FIELD INSTALLED EQUIPMENT GROUNDING CONDUCTOR LUG.
2. RING TERMINALS ON MOTOR LEADS SHALL BE FACTORY INSTALLED BY THE MOTOR MANUFACTURER.
3. INSTALL SHORT BARREL COMPRESSION CONNECTOR ON FIELD WIRING WITH MANUFACTURER'S RECOMMENDED COMPRESSION TOOL AND CRIMPING DIE. CONNECTORS SHALL HAVE SMOOTHLY ROUNDED EDGES.
4. HEAT SHRINK OR COLD APPLIED CONNECTOR INSULATION LISTED FOR THE PURPOSE AND AS SPECIFIED.

LOW VOLTAGE MOTOR TERMINATION
E-26-0301

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DESIGNED BY:	T. MANGALAM
DRAWN BY:	L. BYBEE
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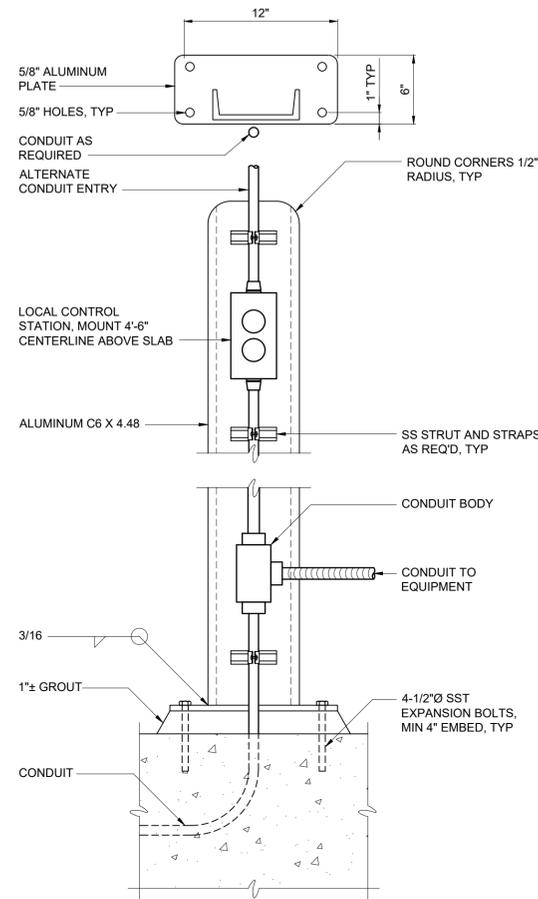


BIG BRANCH 2
PUMP STATION

STANDARD DETAILS
ELECTRICAL
STANDARD DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	

ED1

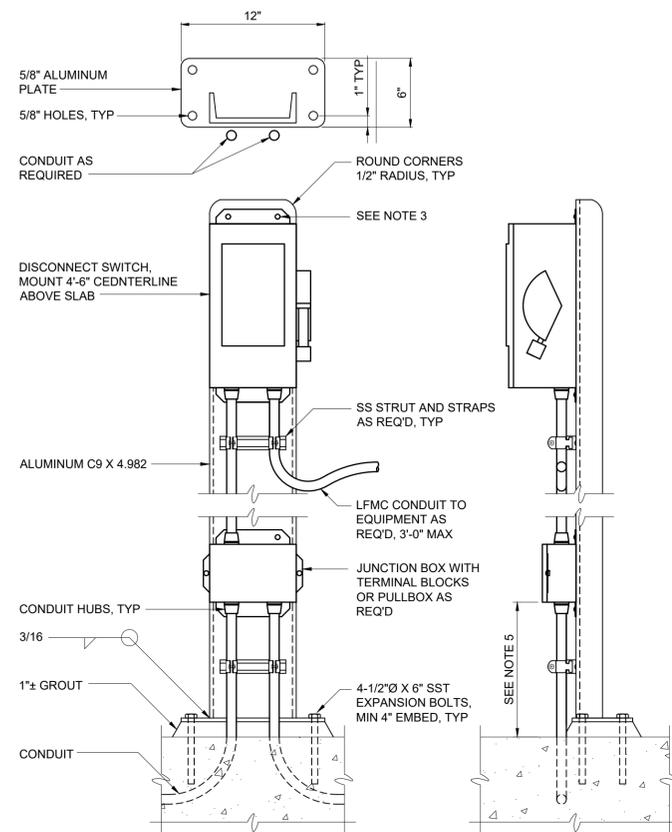


ELEVATION

NOTES:

1. COAT ALUMINUM SURFACES IN CONTACT WITH CONCRETE PER SPECIFICATIONS.
2. CONSTRUCT 1'-2" DIAMETER X 2'-6" DEEP FOUNDATION WHERE MOUNTING SURFACE IS NOT AVAILABLE.
3. USE SST WASHERS, NUTS AND BOLTS FOR MOUNTING DEVICES.

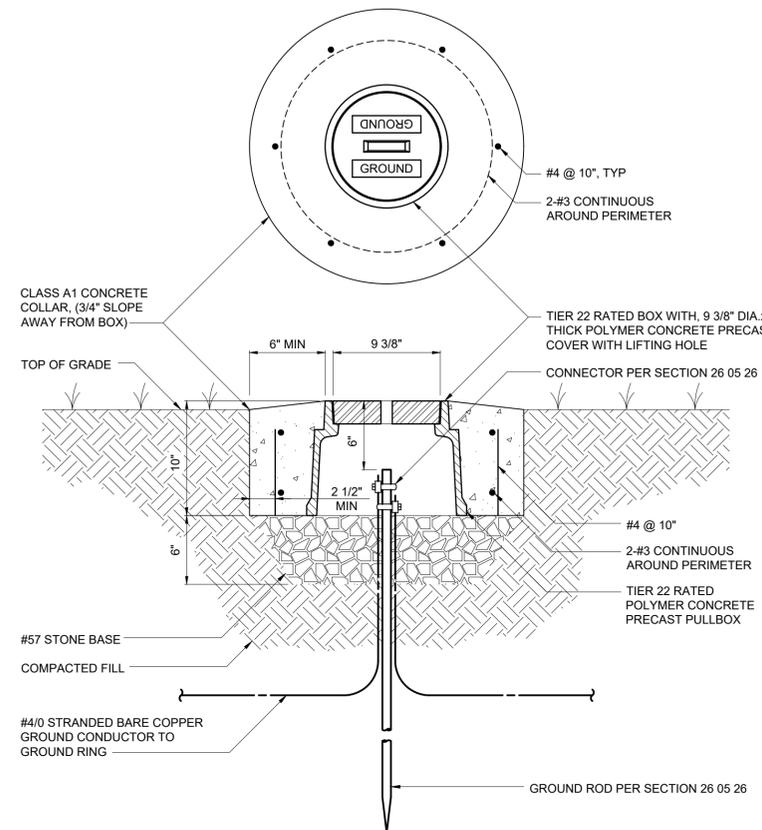
TYPICAL LOCAL CONTROL STATION
E-26-0401



NOTES:

1. COAT ALUMINUM SURFACES IN CONTACT WITH CONCRETE PER SPECIFICATIONS.
2. CONSTRUCT 1'-2" DIAMETER X 2'-6" DEEP FOUNDATION WHERE MOUNTING SURFACE IS NOT AVAILABLE.
3. USE SST WASHERS, LOCKWASHERS, NUTS AND BOLTS FOR MOUNTING EQUIPMENT AND STRUT SUPPORTS TO CHANNEL. DRILL EQUIPMENT MOUNTING TABS AS NECESSARY TO COORDINATE WITH CHANNEL WIDTH.
4. REFERENCE STANDARD DETAIL E-26-0102 WHERE CONDUIT EMERGES FROM CONCRETE.
5. COORDINATE MOUNTING HEIGHT ABOVE CONCRETE WITH AREA CLASSIFICATION REQUIREMENTS.

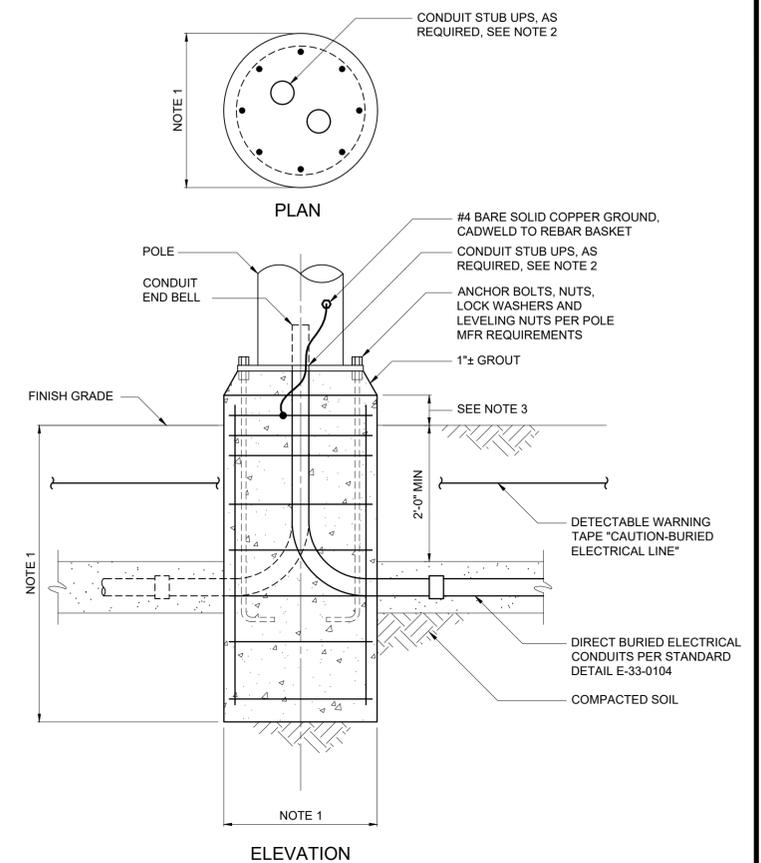
30 AND 60 AMP DISCONNECT SWITCH
E-26-0403



NOTES:

1. PRECAST PULLBOX AND COVER SHALL BE OLDCASTLE PART NUMBER 09101187, OR APPROVED EQUAL.

GROUND ROD TEST WELL
E-26-0501



NOTES:

1. DIAMETER, DEPTH AND REINFORCEMENT SHALL BE DETERMINED BY POLE MANUFACTURER IN ACCORDANCE WITH SECTION 26 50 00. LOADING SHALL BE IN ACCORDANCE WITH SECTION 26 50 00.
2. CONTRACTOR SHALL CAREFULLY COORDINATE LOCATION AND QUANTITY OF CONDUITS IN THE BASE SO THAT WHEN POLE IS INSTALLED, IT WILL FIT OVER THE CONDUITS.
3. PROJECTED HEIGHT ABOVE GRADE SHALL BE AS DESCRIBED IN THE POLE SCHEDULE IN 26 50 00.

POLE-MOUNTED LIGHTING FIXTURE BASE
E-26-0601

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PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	T. MANGALAM
DRAWN BY:	L. BYBEE
CHECKED BY:	G. RATASKY
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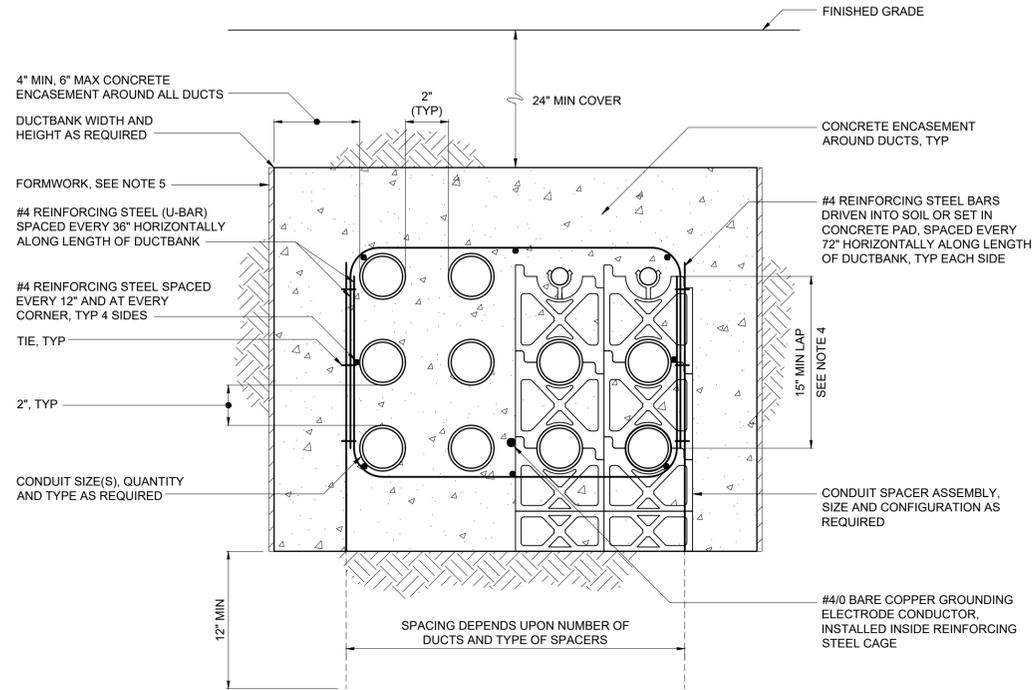
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BIG BRANCH 2
PUMP STATION

STANDARD DETAILS
ELECTRICAL
STANDARD DETAILS

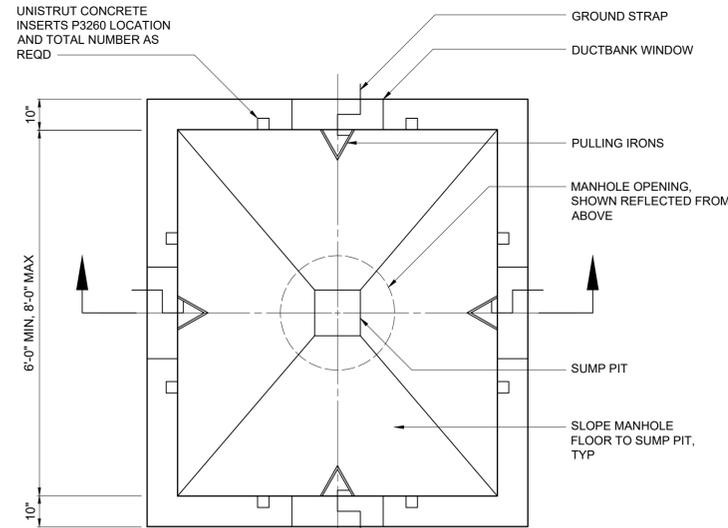
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HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	ED2



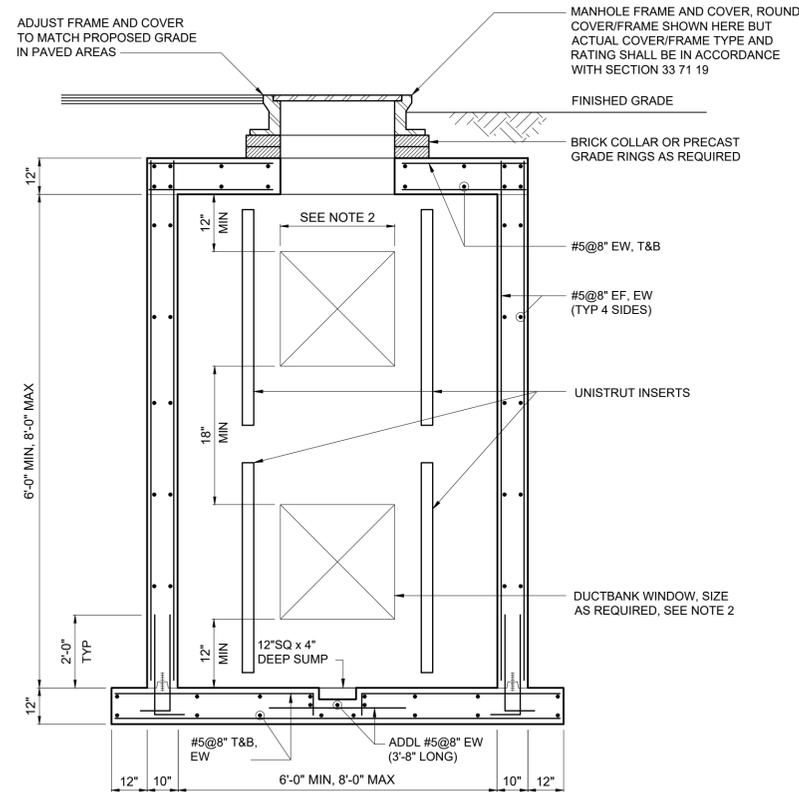
- NOTES:**
- CONCRETE SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH SPECIFICATION SECTION 03 30 00.
 - REINFORCING STEEL AND TIES SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH SPECIFICATION SECTION 03 21 00. OVERLAP FOR REINFORCING STEEL SPLICES ALONG THE DUCTBANK LENGTH SHALL BE 15", MINIMUM.
 - CONDUIT SPACERS ARE REQUIRED IN ACCORDANCE WITH SPECIFICATION SECTION 33 71 19. HORIZONTAL SPACING OF CONDUIT SPACER ASSEMBLIES ALONG LENGTH OF DUCTBANK SHALL BE AS SHOWN IN THE TABLE.
 - FOR DUCTBANKS LESS THAN 15" IN HEIGHT, THE LAP SHALL BE THE HEIGHT OF THE DUCTBANK.
 - IN POOR SOIL CONDITIONS, DUCTBANKS SHALL BE FORMED WITH FORMING MATERIALS TO MAINTAIN 4" MINIMUM ENCASEMENT. WHERE SOIL CONDITIONS PERMIT AND THE EXCAVATION IS MAINTAINED FOR A 4" MINIMUM TO 10" MAXIMUM ENCASEMENT, THE FORMWORK CAN BE OMITTED.

MAX SPACING BETWEEN CONDUIT SPACER ASSEMBLIES	
CONDUIT SIZE	SPACING
1"	3 FT
1 1/4-2"	5 FT
2 1/2-3"	6 FT
3 1/2-5"	7 FT
6"	8 FT

TYPICAL DUCTBANK SECTION
E-33-0101

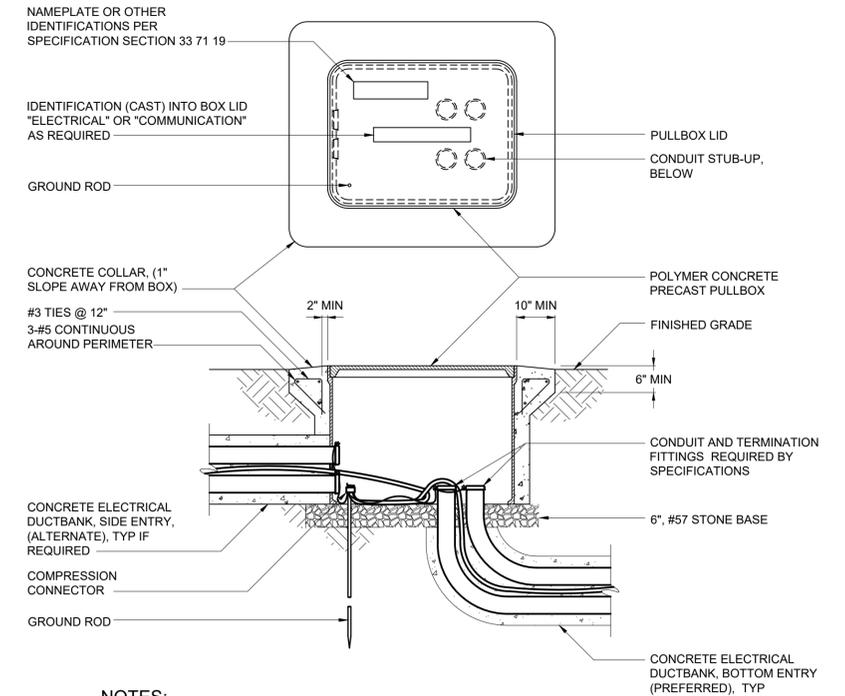


CAST-IN-PLACE ELECTRICAL MANHOLE - PLAN



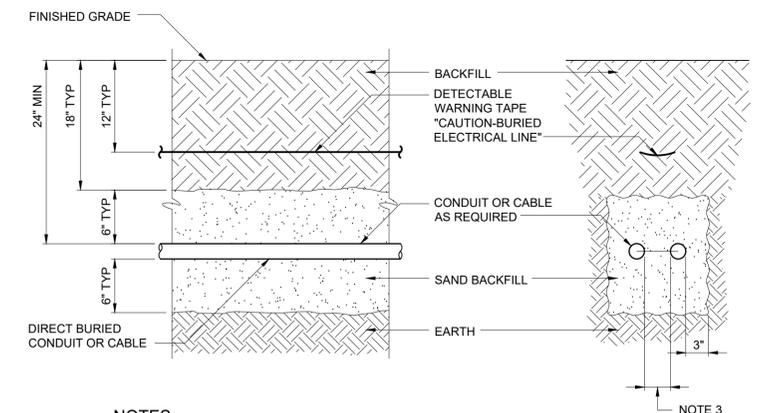
- NOTES:**
- DUCTBANK WINDOW WIDTH SHALL BE LIMITED TO ONE-THIRD (1/3) OF THE WALL WIDTH, I.E. 2'-0" FOR A 6'-0" WALL.
 - CAST-IN-PLACE OR PRE-CAST MANHOLES MAY BE USED AT THE CONTRACTOR'S OPTION. THIS DETAIL IS REPRESENTATIVE OF CAST-IN-PLACE MANHOLE CONSTRUCTION. IN EITHER CASE, MANHOLES SHALL BE FURNISHED AND/OR CONSTRUCTED IN ACCORDANCE WITH SECTION 33 71 19.

CAST-IN-PLACE ELECTRICAL MANHOLE - SECTION
E-33-0102



- NOTES:**
- FOR SIDE ENTRY, CONDUIT DUCTBANK SHALL ENTER PULLBOX AT LOWEST POINT.
 - GROUND CONDUCTORS WITHIN DUCTBANK SHALL BE BONDED TOGETHER AND TO GROUND ROD.
 - CONDUIT BONDING BUSHINGS (IF REQUIRED) SHALL BE BONDED TO GROUND ROD.
 - FOR SIDE ENTRY, CONDUIT SHALL ENTER IN INDIVIDUAL CIRCULAR HOLES APPROPRIATELY SIZED FOR THE CONDUIT. LARGE SINGLE RECTANGULAR OPENINGS FOR MULTIPLE CONDUITS ARE NOT ACCEPTABLE.
 - DUCTBANK REINFORCING REBAR SHALL PENETRATE THE SIDEWALLS OF THE BOX NO LONGER THAN 1".

POLYMER CONCRETE ELECTRICAL HANDHOLE
E-33-0103



- NOTES:**
- CONDUIT SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH SPECIFICATION SECTION 26 05 33.13.
 - BACKFILL THAT CONTAINS LARGE ROCKS, PAVING MATERIALS, CINDERS, LARGE OR SHARPLY ANGULAR SUBSTANCES, OR CORROSIVE MATERIAL SHALL NOT BE USED.
 - MAINTAIN A MINIMUM OF 2" BETWEEN POWER, CONTROL, AND INSTRUMENTATION CONDUITS OR CONDUCTORS.

TYPICAL DIRECT BURIED CONDUIT & CABLE
E-33-0104

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DESIGNED BY:	T. MANGALAM		
DRAWN BY:	L. BYBEE		
CHECKED BY:	G. RATASKY		
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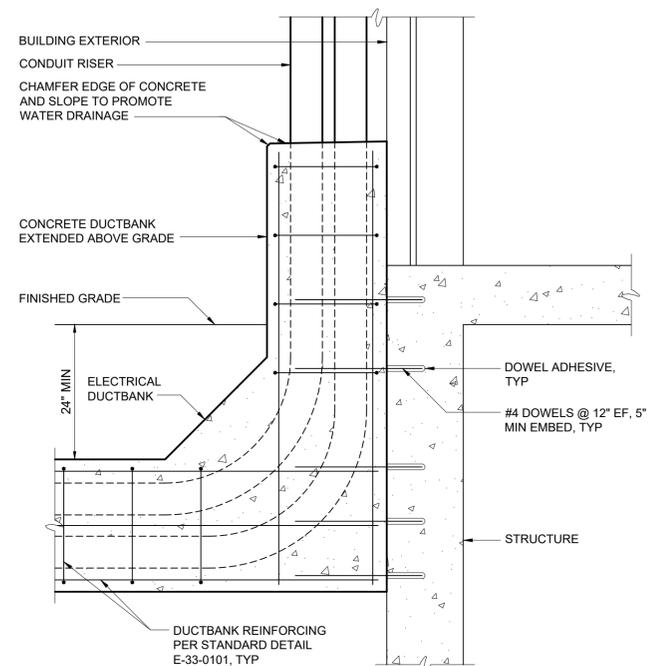
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BIG BRANCH 2
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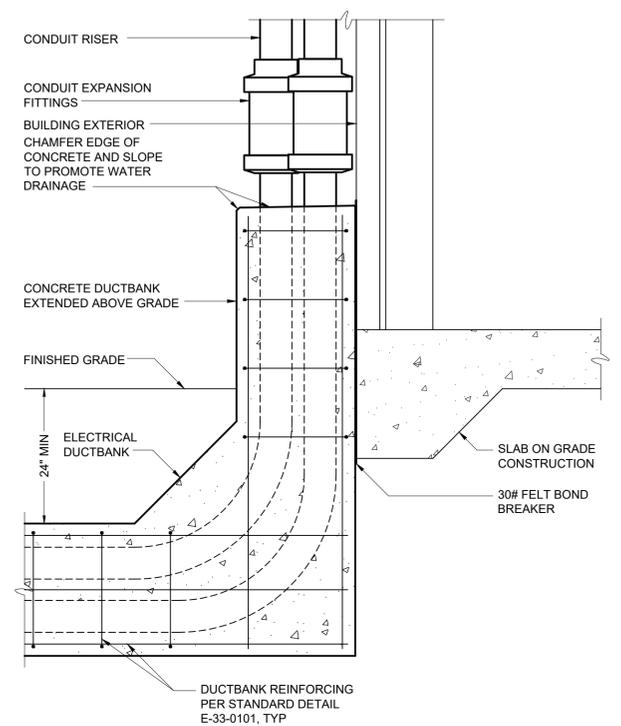
STANDARD DETAILS
ELECTRICAL
STANDARD DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	ED3



- NOTES:
1. PROVIDE DOWEL ADHESIVE AS REQUIRED BY SPECIFICATION SECTION 03 21 00.

DUCTBANK ATTACHMENT TO STRUCTURE
E-33-0107



DUCTBANK ABUTMENT (FLOATING) TO STRUCTURE
E-33-0108

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PROJECT ENGINEER:	B. PORTER
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DRAWN BY:	L. BYBEE
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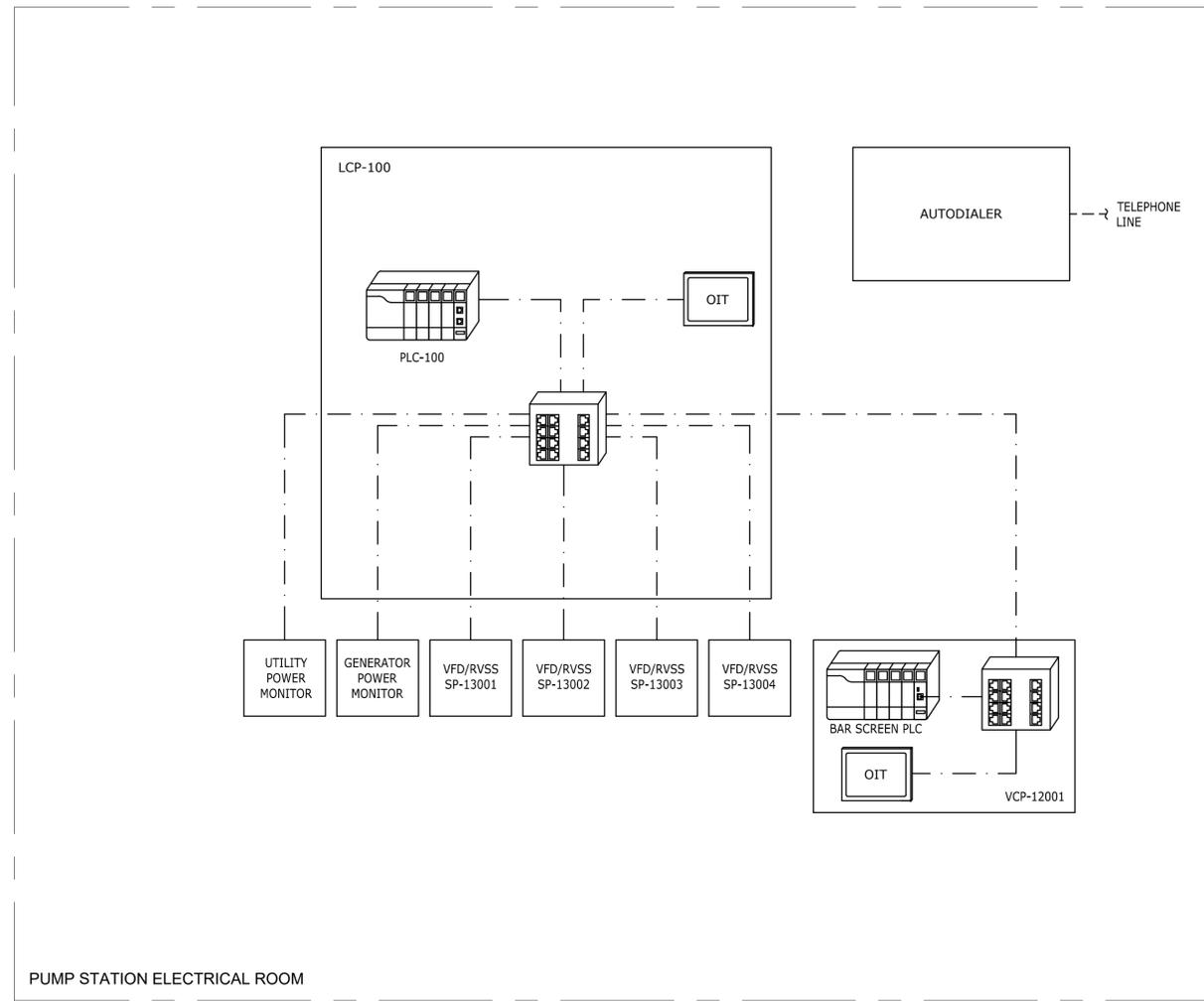
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NORTH CAROLINA
BIG BRANCH 2
PUMP STATION

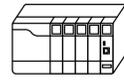
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HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	ED4

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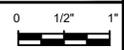
SYMBOLS

-  ETHERNET SWITCH
-  OPERATOR INTERFACE TERMINAL (OIT)
-  PROGRAMMABLE LOGIC COMPUTER (PLC)

LINES

-  COPPER (CAT6) ETHERNET

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	N. DERRY
DRAWN BY:	J. VARELAS
CHECKED BY:	D. EDWARDS
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	

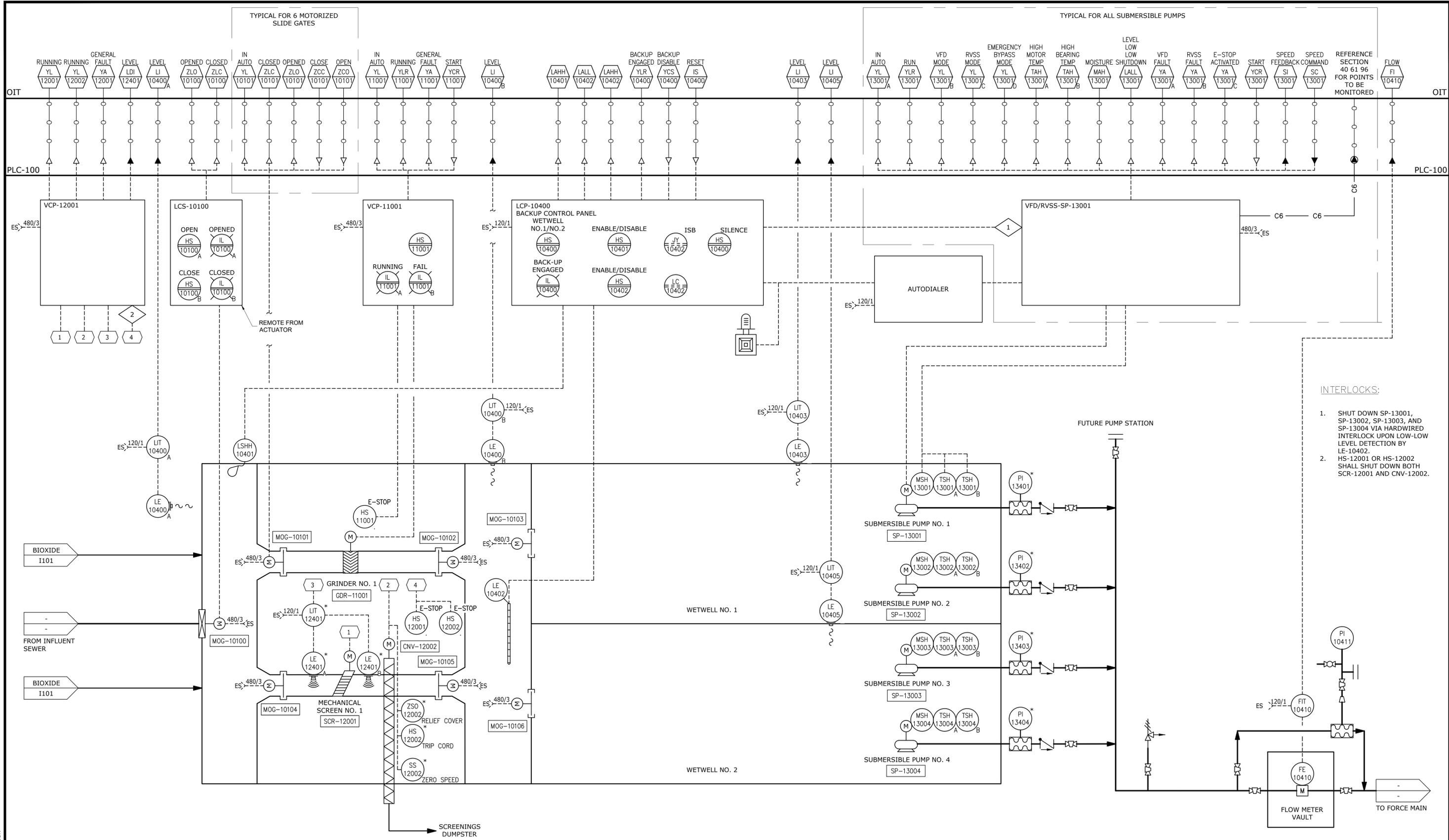
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 HAZEN AND SAWYER
 498 SEVENTH AVENUE, 11TH FLOOR
 NEW YORK, NEW YORK 10018


 BIG BRANCH
 PUMP STATION

INSTRUMENTATION
 SYSTEM NETWORK ARCHITECTURE

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	1002



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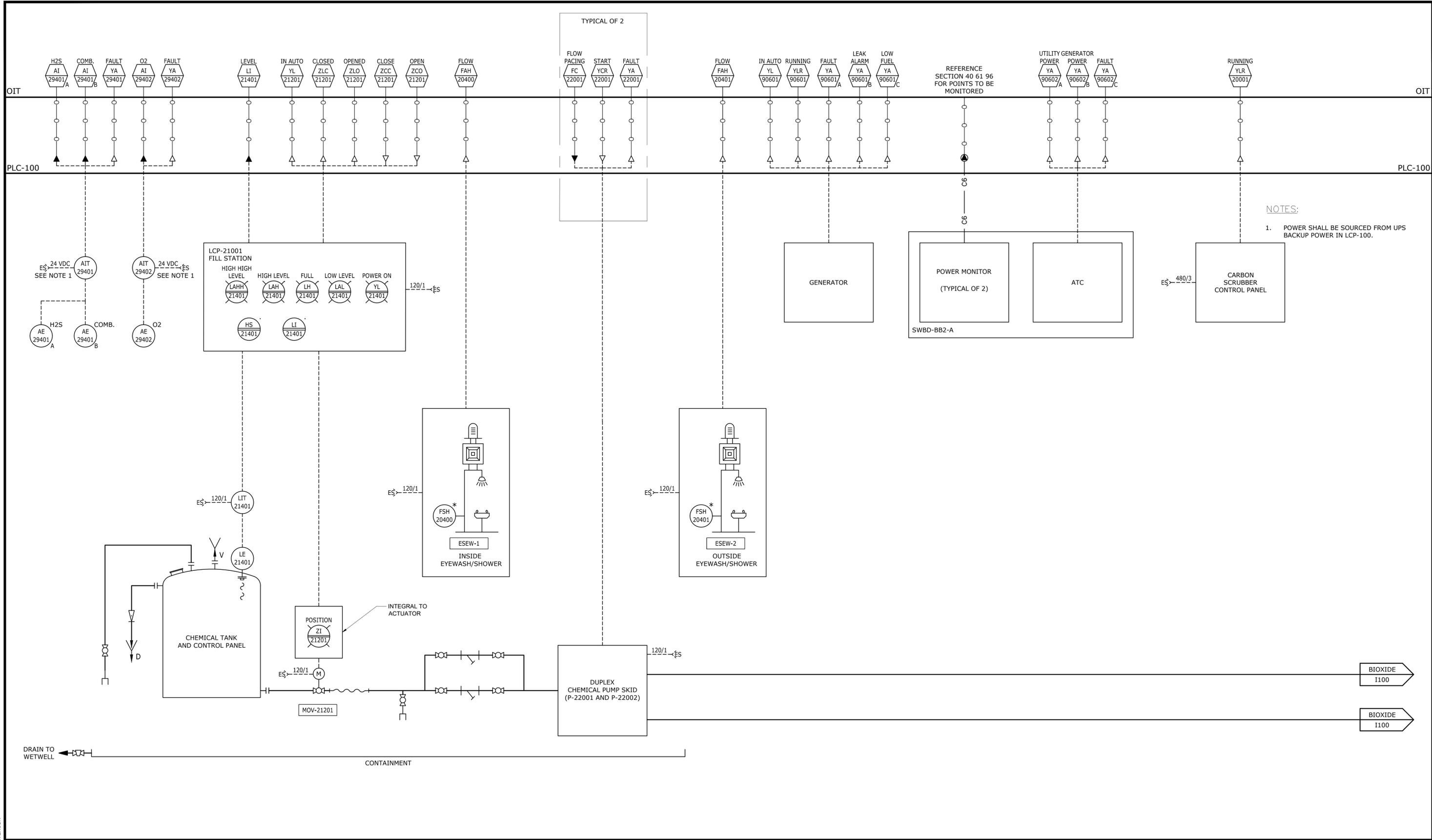
PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	N. DERRY		
DRAWN BY:	J. VARELAS		
CHECKED BY:	D. EDWARDS		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE			
REV	ISSUED FOR	DATE	BY

PRELIMINARY DRAWING
DO NOT USE FOR CONSTRUCTION



INSTRUMENTATION
INFLUENT, WETWELLS, AND PUMPING

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	1100



NOTES:
 1. POWER SHALL BE SOURCED FROM UPS BACKUP POWER IN LCP-100.

File: C:\USERS\ISTEVENSON\APPDATA\LOCAL\AUTOCAD\DESKAUTCAD\PLANT 3D\COLLABORATION\CACHE\32044-004-BIGBRANCHPID.DWG(1) Saved by: ISTEVENSON Save date: 3/17/2023 8:45 AM PLOT DATE: 3/17/2023 10:14 AM BY: ISTEVENSON

PROJECT ENGINEER:	B. PORTER		
DESIGNED BY:	N. DERRY		
DRAWN BY:	J. VARELAS		
CHECKED BY:	D. EDWARDS		
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"		
REV	ISSUED FOR	DATE	BY

PRELIMINARY DRAWING
 DO NOT USE FOR
 CONSTRUCTION

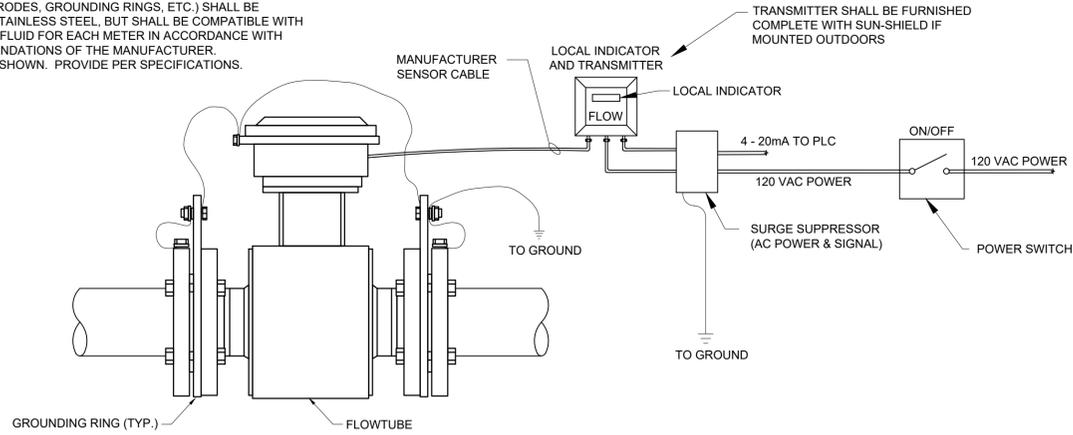


INSTRUMENTATION
 MISCELLANEOUS SYSTEMS

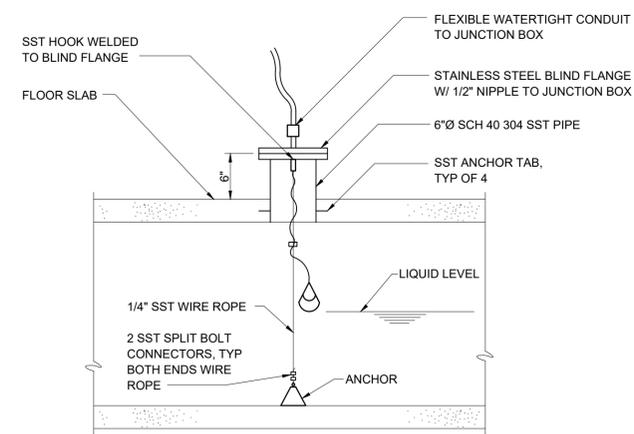
DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	I101

NOTES:

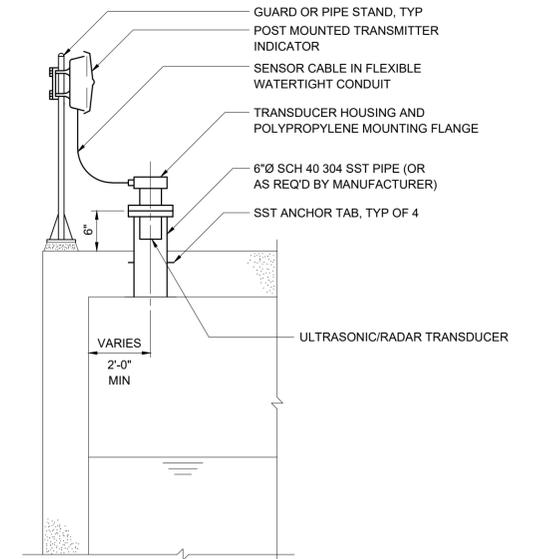
1. ALL MATERIALS OF CONSTRUCTION FOR METALLIC WETTED PARTS (ELECTRODES, GROUNDING RINGS, ETC.) SHALL BE MINIMUM 316 STAINLESS STEEL, BUT SHALL BE COMPATIBLE WITH THE PROCESS FLUID FOR EACH METER IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER.
2. GASKETS NOT SHOWN. PROVIDE PER SPECIFICATIONS.



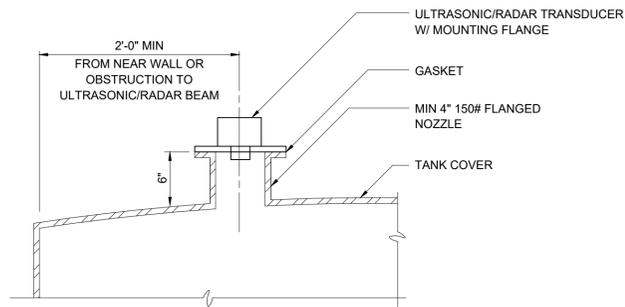
MAGNETIC FLOW METER
I-40-0106



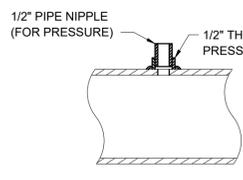
HIGH WATER ALARM LEVEL SWITCH
MOUNTING DETAIL
I-40-0203



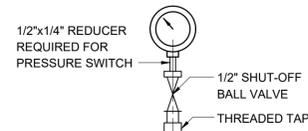
ULTRASONIC/RADAR LEVEL
TRANSDUCER DETAIL
I-40-0211



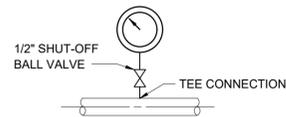
ULTRASONIC/RADAR LEVEL TRANSDUCER
TANK MOUNTING DETAIL
I-40-0215



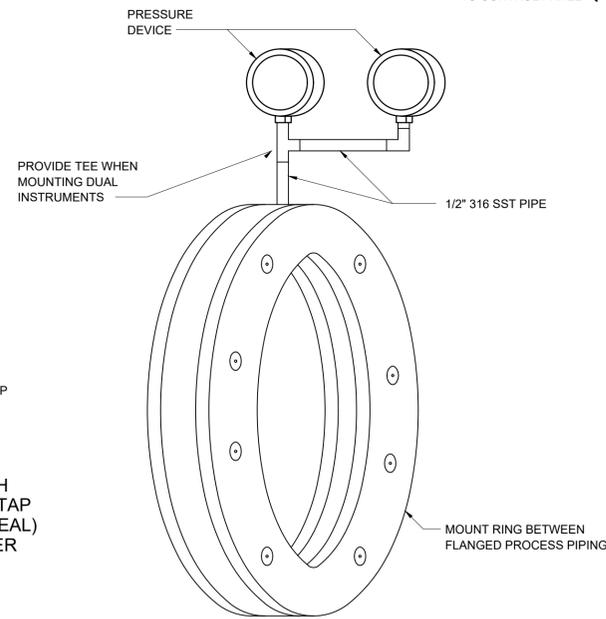
PRESSURE TAP
I-40-0301



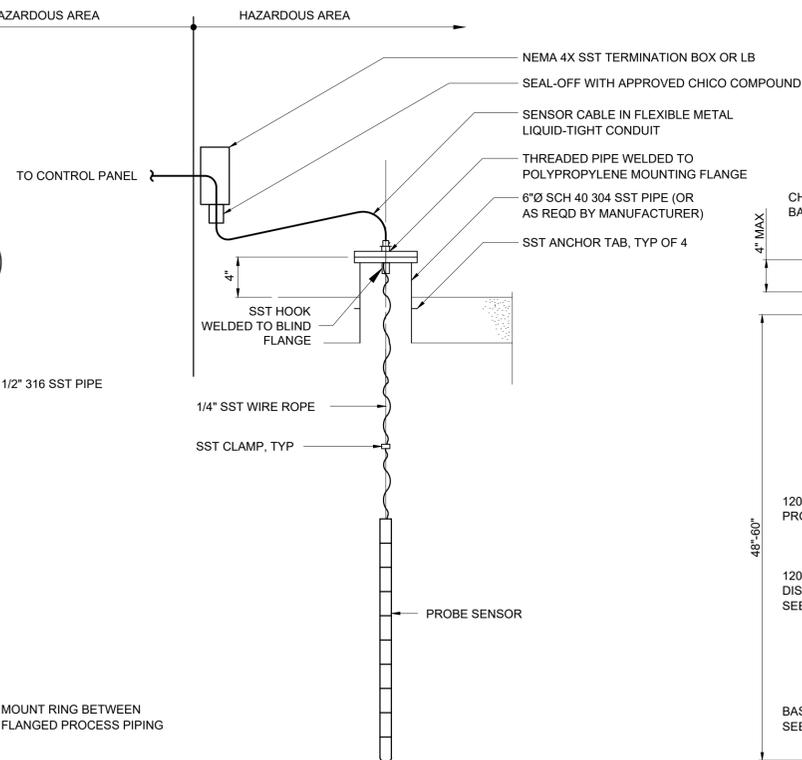
PRESSURE GAUGE OR SWITCH
INSTALLATION WITH THREADED TAP
(SHOWN WITHOUT DIAPHRAGM SEAL)
USED FOR PIPES 2" AND LARGER
I-40-0302



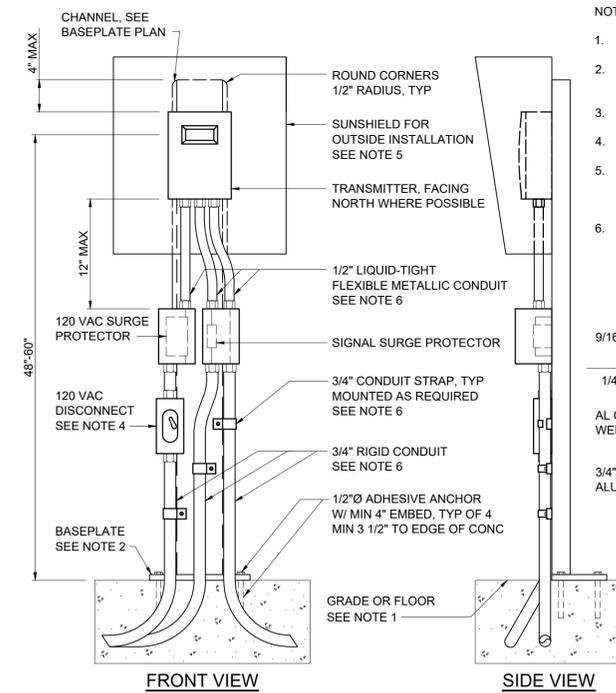
PRESSURE GAUGE OR SWITCH
INSTALLATION WITH TEE CONNECTION
(SHOWN W/O DIAPHRAGM SEAL)
USED FOR PIPES UNDER 2"
I-40-0303



IN-LINE ISOLATING RING DETAIL
FOR HEAVY SOLIDS/SLURRY SERVICE
I-40-0801



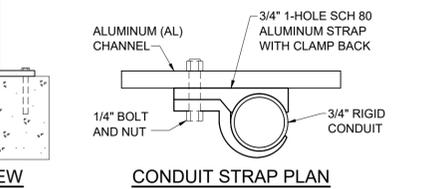
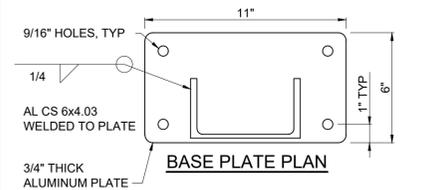
MULTIPLE POINT LEVEL SWITCH
MOUNTING DETAIL
I-40-0220



4-WIRE TRANSMITTER
MOUNTED IN CONCRETE SLAB
I-40-0901

NOTES:

1. WHEN NO CONCRETE IS AVAILABLE, POUR CLASS "B" CONCRETE SLAB, 30"x30"x18" MINIMUM.
2. COAT ALUMINUM SURFACES IN CONTACT WITH CONCRETE IN ACCORDANCE WITH DIVISION 9 REQUIREMENTS.
3. ALL BOLTS, NUTS, AND WASHERS SHALL BE TYPE 316 STAINLESS STEEL.
4. APPLETON FSC CAST ALUMINUM BOX WITH FSK-1VS COVER, OR EQUAL.
5. REFER TO DETAIL I-40-1003 FOR SUNSHIELD DIMENSION REQUIREMENTS. IF TRANSMITTER REQUIRES SIDE ACCESS, CUT 6" HOLE IN SUNSHIELD WHERE NECESSARY TO PROVIDE ADEQUATE ACCESS.
6. CONDUIT TYPE AND MATERIALS OF CONSTRUCTION FOR SUPPORTS AND HARDWARE SHALL BE AS REQUIRED FOR THE AREA IN WHICH IT IS INSTALLED.



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PLOT DATE: 3/31/2023 8:51 AM BY: JSTEVENSON

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	B. PORTER
DESIGNED BY:	N. DERRY
DRAWN BY:	J. VARELAS
CHECKED BY:	D. EDWARDS
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

PRELIMINARY DRAWING
DO NOT USE FOR
CONSTRUCTION

Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11TH FLOOR
NEW YORK, NEW YORK 10018

APEX
NORTH CAROLINA
BIG BRANCH
PUMP STATION

INSTRUMENTATION
STANDARD DETAILS

DATE:	2023
HAZEN NO.:	32044-004
CONTRACT NO.:	1
DRAWING NUMBER:	ID1