



Stantec
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TOWN OF SMITHFIELD

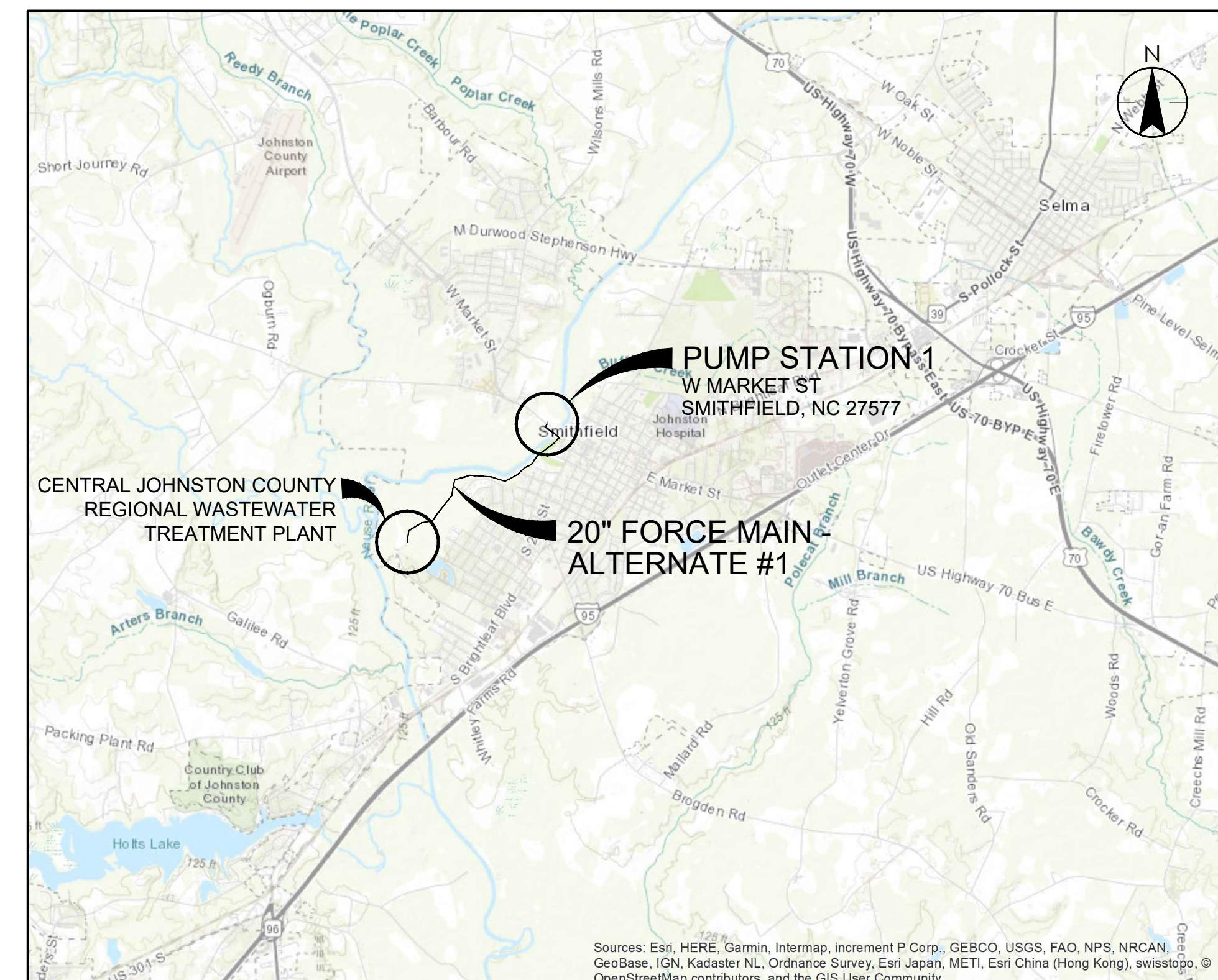
JOHNSTON COUNTY, NORTH CAROLINA



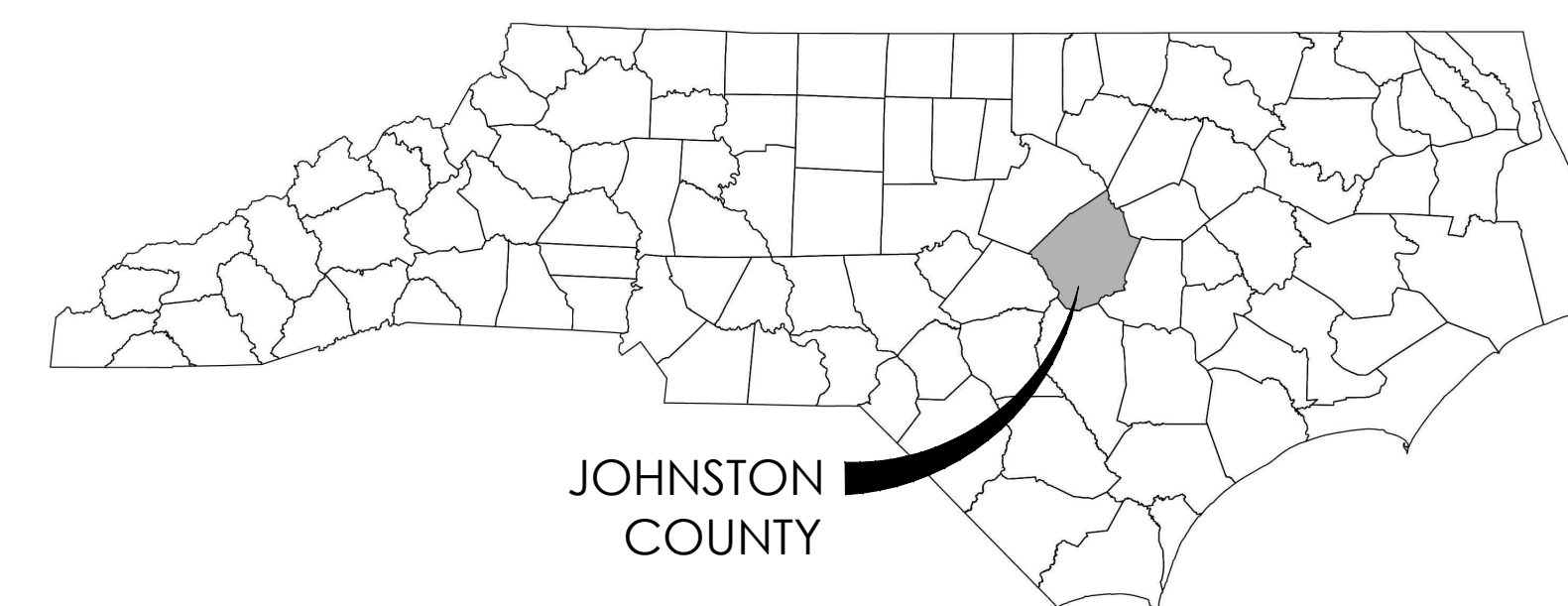
PUMP STATION #1 IMPROVEMENTS

FINAL DRAWINGS - FOR BIDDING

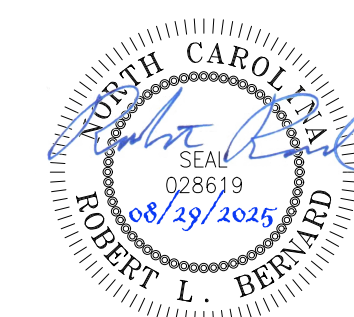
AUGUST 2025
DWI No.: SRP - W - ARP - 0063
STANTEC PROJECT No.: 175568555



VICINITY MAP
NOT TO SCALE



KEY MAP
NOT TO SCALE



Know what's below.
Call before you dig.

PROJECT GENERAL NOTES

1. **OWNER:** TOWN OF SMITHFIELD
ADDRESS: 350 EAST MARKET STREET SMITHFIELD NC 27577
PHONE: (919) 934-2116
2. **DESIGN ENGINEER:** STANTEC CONSULTING SERVICES, INC.
ADDRESS: 801 JONES FRANKLIN ROAD SUITE 300 RALEIGH NC 27606
PHONE: (919) 851-6866
3. **SURVEYOR:** STANTEC CONSULTING SERVICES, INC.
ADDRESS: 801 JONES FRANKLIN ROAD SUITE 300 RALEIGH NC 27606
PHONE: (919) 851-6866
4. **ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (N.A.V.D.) 1988.**

PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO REDUCE SANITARY SEWER OVERFLOWS AND ULTIMATELY PROTECT THE SAFETY AND HEALTH OF SMITHFIELD'S CITIZENS AND PROTECT THE ENVIRONMENT. THIS PROJECT WILL HELP PROVIDE ADDITIONAL CAPACITY AND UPDATED INFRASTRUCTURE ALONG THE NEUSE RIVER AND RESIDENTS IN THE PUMP STATION #1 SEWER BASIN.

THE PROJECT GOALS INCLUDE REMOVING FLOW FROM THE PUMP STATION 1 (PS1) IN SMITHFIELD, NC FROM THE JOHNSTON COUNTY FORCE MAIN. THIS PROJECT WOULD IMPROVE A SEWER PUMP STATION. THE PROJECT WILL DEMOLISH AND REPLACE THE PS1 SITE WITH A NEW CONSTRUCTION UPSIZED PUMP STATION.

GENERAL CONSTRUCTION NOTES

1. CONSTRUCTION AND MATERIAL SPECIFICATIONS SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND THE TOWN OF SMITHFIELD STANDARD SPECIFICATIONS.
2. THE CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.
3. ALL SHORING SHALL BE IN ACCORDANCE WITH OSHA TRENCHING STANDARDS PART 1926, SUBPART P, AS AMENDED TO DATE.
4. IF THE PROPOSED SEWER MAIN IS INSTALLED WITHIN 12" IN ANY DIRECTION (VERTICALLY OR HORIZONTALLY) FROM A GAS MAIN, THEN THE CONTRACTOR SHALL CALL THE LOCAL UTILITY DIRECTLY AND INFORM THE TOWN.
5. THE CONTRACTOR SHALL USE EROSION CONTROL MEASURES AS NEEDED PER NCDOT.
6. IF ADDITIONAL WORK SPACE IS NEEDED, AN ENCROACHMENT IS TO BE AGREED UPON BETWEEN THE CONTRACTOR AND THE PROPERTY OWNER IN WRITING.
7. CONTRACTOR SHALL LOCATE AND PROTECT ALL PROPERTY MONUMENTS. IF CORNERS ARE DISTURBED THEY SHALL BE REPLACED BY A NC PLS AT CONTRACTORS EXPENSE.

SAFETY

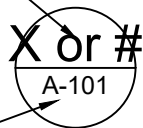
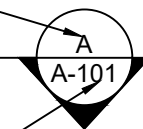
1. DURING THE CONSTRUCTION AND MAINTENANCE OF THIS PROJECT ALL SAFETY REGULATIONS SHALL BE ENFORCED. THE CONTRACTOR OR HIS REPRESENTATIVE SHALL BE RESPONSIBLE FOR THE CONTROL AND SAFETY OF THE TRAVELING PUBLIC AND THE SAFETY OF HIS PERSONNEL.
2. THE CONTRACTOR'S MAINTENANCE OF TRAFFIC CONTROL PLAN MUST BE SUBMITTED AND APPROVED BY THE NCDOT AND APPLICABLE LOCAL AGENCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION WITHIN STATE OR CITY RIGHT OF WAYS.
3. LABOR SAFETY REGULATIONS SHALL CONFORM TO THE PROVISIONS SET FORTH BY OSHA IN THE FEDERAL REGISTER OF THE DEPARTMENT OF TRANSPORTATION.
4. CONTRACTOR SHALL PROVIDE AND MAINTAIN HIS OWN SAFETY EQUIPMENT IN ACCORDANCE WITH HIS HEALTH AND SAFETY PROGRAM AND ALL OTHER APPLICABLE LEGAL AND HEALTH AND SAFETY REQUIREMENTS. THE CONTRACTOR IS ALSO RESPONSIBLE FOR PROVIDING ITS EMPLOYEES AND SUB CONTRACTORS WITH ADEQUATE INFORMATION AND TRAINING TO ENSURE THAT ALL EMPLOYEES AND SUB CONTRACTORS AND SUB CONTRACTOR'S EMPLOYEES COMPLY WITH ALL APPLICABLE REQUIREMENTS. CONTRACTOR SHALL REMAIN IN COMPLIANCE WITH ALL OCCUPATION SAFETY AND HEALTH REGULATIONS AS WELL AS THE ENVIRONMENTAL PROTECTION LAWS. THE FOLLOWING IS NOT TO BE PERCEIVED AS THE ENTIRE SAFETY PROGRAM BUT JUST BASIC REQUIREMENTS.
5. ALL EXCAVATIONS BY THE CONTRACTOR SHALL CONFORM TO THE REQUIREMENTS OF THE DEPARTMENT OF LABOR'S OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION RULES AND REGULATIONS. PARTICULAR ATTENTION MUST BE PAID TO THE CONSTRUCTION STANDARDS FOR EXCAVATIONS, 29 CFR PART 1926 SUBPART P.
6. THE MINIMUM STANDARDS SET FORTH IN THE CURRENT EDITION OF "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) BE FOLLOWED IN THE DESIGN APPLICATION, INSTALLATION, MAINTENANCE AND REMOVAL OF ALL TRAFFIC CONTROL DEVICES. WARNING DEVICES INCLUDING BARRIERS NECESSARY TO PROTECT THE PUBLIC AND WORK AREAS FROM TRAFFIC MUST BE USED.
7. ALL TRAFFIC CONTROL MARKINGS AND DEVICES SHALL CONFORM TO THE PROVISIONS SET FORTH IN THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PREPARED BY THE US DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION. ALL NORTH CAROLINA AMENDMENTS SHALL APPLY.
8. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO COMPLY AND ENFORCE ALL APPLICABLE SAFETY REGULATIONS. THE ABOVE INFORMATION HAS BEEN PROVIDED FOR THE CONTRACTORS INFORMATION ONLY AND DOES NOT IMPLY THAT THE OWNER OR ENGINEER WILL INSPECT AND/OR ENFORCE SAFETY REGULATION.
9. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN AREAS OF BURIED UTILITIES AND SHALL PROVIDE AT LEAST 72 HOURS NOTICE TO NC811 PRIOR TO CONSTRUCTION TO OBTAIN FIELD LOCATIONS OF EXISTING UNDERGROUND UTILITIES.
10. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO EXISTING FACILITIES, ABOVE OR BELOW GROUND, THAT MAY OCCUR AS A RESULT OF THE WORK PERFORMED BY THE CONTRACTOR CALLED FOR IN THIS CONTRACT AT NO ADDITIONAL COST TO THE OWNER.

ABBREVIATIONS

REAND	ABANDONED			REINF	REINFORCE (D) (ING) (MENT)
ABBRV	ABBREVIATION	GND	GROUND	REPL	REPLACE
ABC	AGGREGATE BASE COURSE	GR	GRADE	REQ	REQUIRE
ADDL	ADDITIONAL			REQD	REQUIRED
ADJ	ADJUSTABLE	HDPE	HIGH DENSITY POLYETHYLENE	REV	REVISION
AGGR	AGGREGATE	HDWL	HEADWALL	RT	RIGHT
ALT	ALTERNATE	HORIZ	HORIZONTAL	R/W	RIGHT OF WAY
ALUM	ALUMINUM	HT	HEIGHT		
AMT	AMOUNT			S	SOUTH
APPD	APPROVED	ID	INSIDE DIAMETER	SAN	SANITARY
APPROX	APPROXIMATE	IN	INCH	SECT	SECTION
ASPH	ASPHALT	INV	INVERT	SF	SQUARE FOOT
		INV EL	INVERT ELEVATION	SHT	SHEET
BDRY	BOUNDARY	IP	IRON PIPE	SIM	SIMILAR
BKGD	BACKGROUD			SPEC	SPECIFICATION
BL	BASE LINE	LB	POUND	SQ	SQUARE
BM	BENCHMARK	LF	LINEAR FOOT	SQ FT	SQUARE FOOT
BOC	BACK OF CURB	LFT	LEFT	SQ IN	SQUARE INCH
BOT	BOTTOM	LG	LONG, LENGTH	SQ YD	SQUARE YARD
BRG	BEARING	LIN	LINEAR	SSMH	SANITARY SEWER MANHOLE
BTVN	BETWEEN	LP	LIGHT POLE	SST, SSTL	STAINLESS STEEL
				STA	STATION
CB	CATCH BASIN	MATL	MATERIAL	STD	STANDARD
C/C	CENTER TO CENTER	MAX	MAXIMUM	STL	STEEL
CI	CAST IRON, CURB INLET	MFR	MANUFACTURER	STM	STORM
CL	CENTER LINE	MH	MANHOLE	STN	STONE
CMU	CONCRETE MASONRY UNIT	MIN	MINIMUM, MINUTE	STRUCT	STRUCTURAL
CO	CLEANOUT	MISC	MISCELLANEOUS	SWR	SEWER
CONC	CONCRETE			SYM	SYMBOL
CONN	CONNECTION	N	NORTH	SYMM	SYMMETRICAL
CONST	CONSTRUCTION	NA	NOT APPLICABLE		
CONT	CONTINUOUS	#, NO	NUMBER	TBA	TO BE ABANDONED
CTR	CENTER	NTS	NOT TO SCALE	TBM	TEMPORARY BENCHMARK
				TBR	TO BE REMOVED
				TCE	TEMPORARY CONSTRUCTION
D	DEPTH	OC	ON CENTER	TEMP	TEMPORARY, TEMPERATURE
DAT	DATUM	OD	OUTSIDE DIAMETER	THK	THICKNESS
D.B.	DEED BOOK	OPNG	OPENING	THRU	THROUGH
DBL	DOUBLE	ORIG	ORIGINAL	TOC, TC	TOP OF CONCRETE, TOP OF CURB
DEMO	DEMOLITION			TOW	TOP OF WALL
DET	DETAIL	P.B.	PLAT BOOK	TYP	TYPICAL
DI	DUCTILE IRON, DROP INLET	PERM	PERMANENT		
DIA	DIAMETER	PERP	PERPENDICULAR		
DIM	DIMENSION	PG	PAGE		
DIST	DISTANCE	PI	POINT OF INTERSECTION	UON	UNLESS OTHERWISE NOTED
DN	DOWN	PK	PK NAIL	UTIL	UTILITY
DR	DRAIN	PL	PROPERTY LINE		
DWG	DRAWING	PREFAB	PREFABRICATED	VAR	VARIES
		PRELIM	PRELIMINARY	VC	VITRIFIED CLAY PIPE
EA	EACH	PROJ	PROJECT	VERT	VERTICAL
ELEC	ELECTRIC (AL)	PROP	PROPERTY		
EL, ELEV	ELEVATION	PT	PRESSURE TREATED	W	WEST
ENGR	ENGINEER	PVC	POLYVINYL CHLORIDE	W/O	WITHOUT
EP	EDGE OF PAVEMENT				
EQ	EQUAL	QTY	QUANTITY		
ESMT	EASEMENT	QUAL	QUALITY		
EX, EXIST	EXISTING				
		R	RADIUS		
FF	FINISHED FLOOR	RC	REINFORCED CONCRETE		
FFE	FINISHED FLOOR ELEVATION	RCP	REINFORCED CONCRETE PIPE		
FLEX	FLEXIBLE	REBAR	REINFORCING STEEL BARS		
FT	FOOT, FEET	REF	REFERENCE		

SYMBOLS LEGEND

DRAFTING SYMBOLS

<u>SYMBOL</u>	<u>DESCRIPTION</u>
	NORTH ARROW
 DETAIL DESIGNATION SHEET ON WHICH DETAIL IS DRAWN	DETAIL CALLOUT
 SECTION DESIGNATION SHEET ON WHICH SECTION IS DRAWN	SECTION CALLOUT

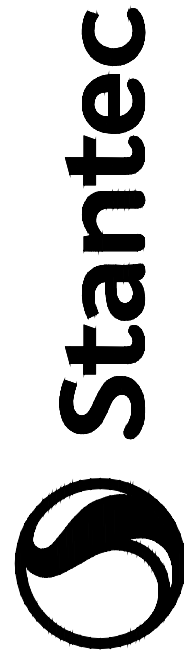
EXISTING FEATURES

	EXISTING IRON PIN
	FENCE (CHAINLINK)
	FIRE HYDRANT
	GAS LINE
	INDEX CONTOUR
	INTERMEDIATE CONTOUR
	LIGHT POLE
	OVERHEAD ELECTRIC
	POWER POLE
	PROPERTY/BOUNDARY PARK OUTER
	PROPERTY/BOUNDARY PARK INNER
	SANITARY SEWER LINE
	SANITARY SEWER MANHOLE
	SIGN
	TREE
	TREELINE
	WATER LINE
	WATER METER
	WATER VALVE
	MINIMUM SETBACK

PROPOSED FEATURES

	BASE LINE AND STATION
	INDEX CONTOUR
	INTERMEDIATE CONTOUR
	LIMITS OF DISTURBANCE
	PERMANENT SEWER EASEMENT
	SANITARY SEWER FORCE MAIN
	SILT FENCE
	SILT FENCE OUTLET
	ROCK CHECK DAM
	TEMPORARY CONSTRUCTION EASEMENT
	TEMPORARY CONSTRUCTION ENTRANCE

NOT ALL SYMBOLS AND
ABBREVIATIONS ARE USED

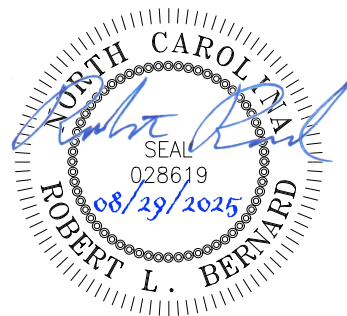


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Client/Project
TOWN OF SMITHFIELD

PUMP STATION #1 AND FORCE MAIN IMPROVEMENTS

Smithfield, NC

Project No.: 175568555

File Name: 68555_G003_SYMBOLS

Scale: AS NOTED

JR	JR	RLB	2025.08.29
Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

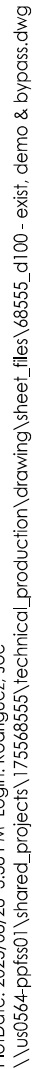
Title

GENERAL NOTES, SYMBOLS
AND ABBREVIATIONS

Revision: Sheet: of X

Drawing No.

G-003



Client/Project
TOWN OF SMITHFIELD
PUMP STATION #1 AND
FORCE MAIN IMPROVEMENTS
Smithfield, NC

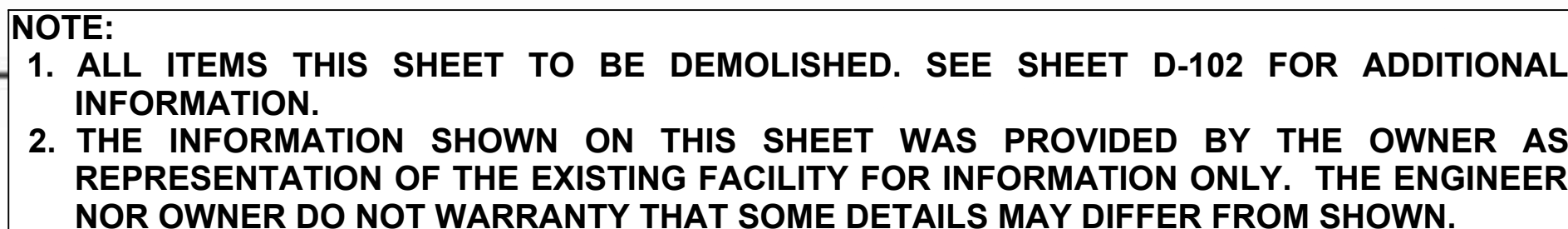
Project No.: 175568555
 File Name: 68555_D100 - EXIST, DEMO & BYPASS
 Scale: AS NOTED

JR	JR	RLB	2025.08.29
Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
 EXISTING PUMP STATION SITE
 PLAN

Revision: Sheet: of X
Drawing No.

D-100



D-101

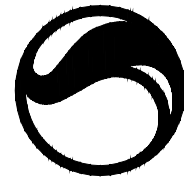
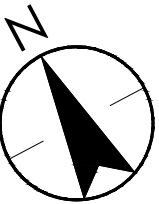
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ORIGINAL SHEET - ANSI D



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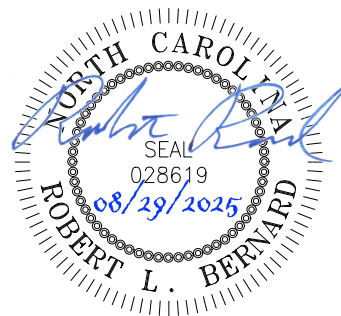
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PUMP STATION #1 AND FORCE MAIN IMPROVEMENTS

Smithfield, NC

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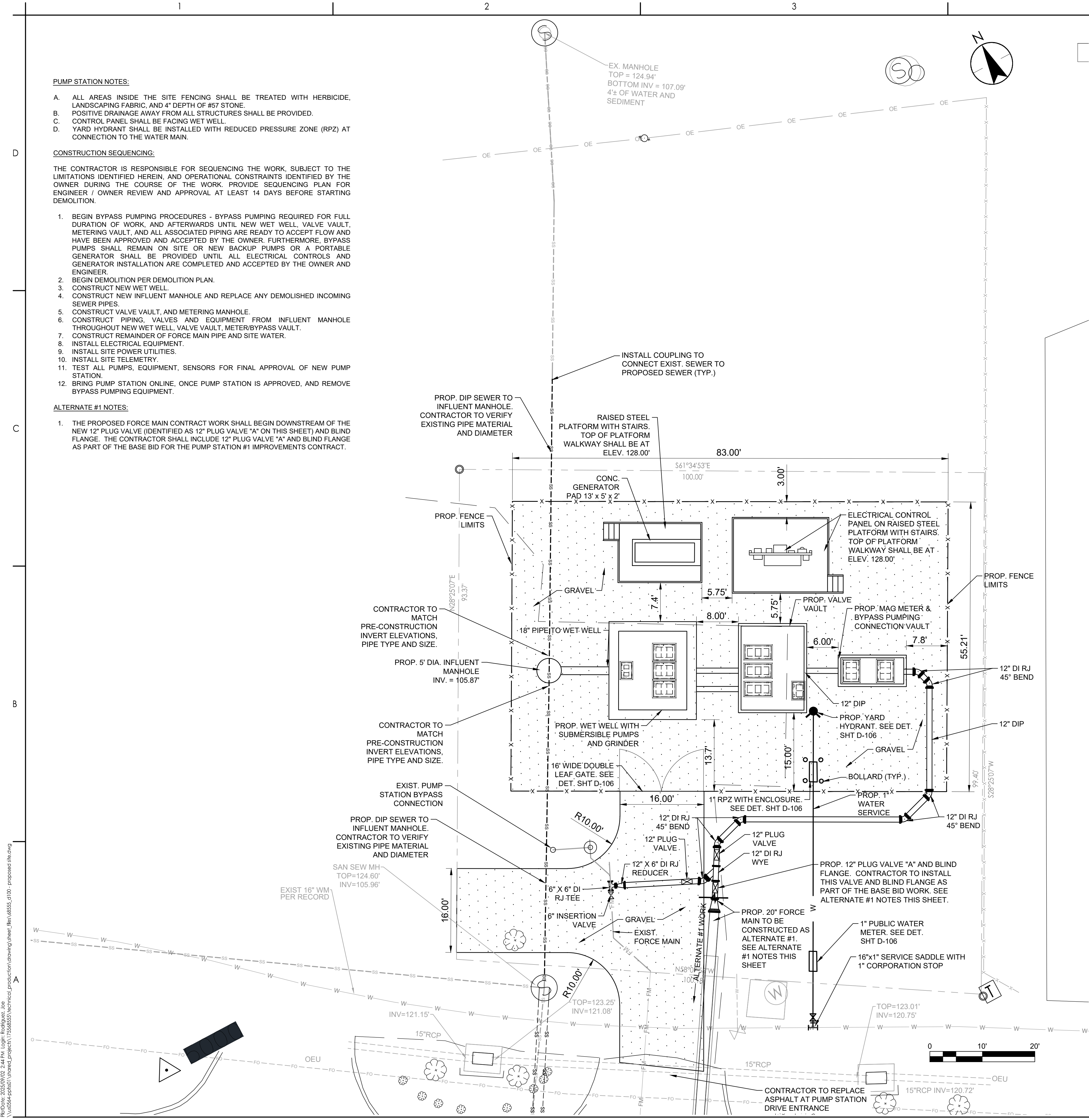
Title

SITE DEMOLITION & BYPASS PUMPING PLAN

Revision: Sheet: of X

Drawing No

D-102



PUMP STATION NOTES:

- ALL AREAS INSIDE THE SITE FENCING SHALL BE TREATED WITH HERBICIDE, LANDSCAPING FABRIC, AND 4" DEPTH OF #57 STONE.
- POSITIVE DRAINAGE AWAY FROM ALL STRUCTURES SHALL BE PROVIDED.
- CONTROL PANEL SHALL BE FACING WET WELL.
- YARD HYDRANT SHALL BE INSTALLED WITH REDUCED PRESSURE ZONE (RPZ) AT CONNECTION TO THE WATER MAIN.

CONSTRUCTION SEQUENCING:

THE CONTRACTOR IS RESPONSIBLE FOR SEQUENCING THE WORK, SUBJECT TO THE LIMITATIONS IDENTIFIED HEREIN, AND OPERATIONAL CONSTRAINTS IDENTIFIED BY THE OWNER DURING THE COURSE OF THE WORK. PROVIDE SEQUENCING PLAN FOR ENGINEER / OWNER REVIEW AND APPROVAL AT LEAST 14 DAYS BEFORE STARTING DEMOLITION.

- BEGIN BYPASS PUMPING PROCEDURES - BYPASS PUMPING REQUIRED FOR FULL DURATION OF WORK, AND AFTERWARDS UNTIL NEW WET WELL, VALVE VAULT, METERING VAULT, AND ALL ASSOCIATED PIPING ARE READY TO ACCEPT FLOW AND HAVE BEEN APPROVED AND ACCEPTED BY THE OWNER. FURTHERMORE, BYPASS PUMPS SHALL REMAIN ON SITE OR NEW BACKUP PUMPS OR A PORTABLE GENERATOR SHALL BE PROVIDED UNTIL ALL ELECTRICAL CONTROLS AND GENERATOR INSTALLATION ARE COMPLETED AND ACCEPTED BY THE OWNER AND ENGINEER.
- BEGIN DEMOLITION PER DEMOLITION PLAN.
- CONSTRUCT NEW WET WELL.
- CONSTRUCT NEW INFLUENT MANHOLE AND REPLACE ANY DEMOLISHED INCOMING SEWER PIPES.
- CONSTRUCT VALVE VAULT, AND METERING MANHOLE.
- CONSTRUCT PIPING, VALVES AND EQUIPMENT FROM INFLUENT MANHOLE THROUGHOUT NEW WET WELL, VALVE VAULT, METER/BYPASS VAULT.
- CONSTRUCT REMAINDER OF FORCE MAIN PIPE AND SITE WATER.
- INSTALL ELECTRICAL EQUIPMENT.
- INSTALL SITE POWER UTILITIES.
- INSTALL SITE TELEMTRY.
- TEST ALL PUMPS, EQUIPMENT, SENSORS FOR FINAL APPROVAL OF NEW PUMP STATION.
- BRING PUMP STATION ONLINE, ONCE PUMP STATION IS APPROVED, AND REMOVE BYPASS PUMPING EQUIPMENT.

ALTERNATE #1 NOTES:

- THE PROPOSED FORCE MAIN CONTRACT WORK SHALL BEGIN DOWNSTREAM OF THE NEW 12" PLUG VALVE (IDENTIFIED AS 12" PLUG VALVE "A" ON THIS SHEET) AND BLIND FLANGE. THE CONTRACTOR SHALL INCLUDE 12" PLUG VALVE "A" AND BLIND FLANGE AS PART OF THE BASE BID FOR THE PUMP STATION #1 IMPROVEMENTS CONTRACT.

TYPICAL PUMP STATION NOTES:

- ALL EXPOSED PLUG VALVES SHALL BE GEARED AND WHEEL OPERATED
- DESIGN SHOWN IS THE ACTUAL LAYOUT. ANY REVISION SHALL BE SUBMITTED TO THE OWNER AND ENGINEER FOR APPROVAL.
- ALL INTERNAL WET WELL AND VALVE VAULT PIPING SHALL BE CLASS 350 DIP (WITH LINING AND COATING AS INDICATED IN THE SPECIFICATIONS) AND FLANGES TO BE CLASS 125. PUMP GUIDE RAILS, RAIL GUIDES, AND TOP RAIL GUIDES ARE TO BE 304 STAINLESS STEEL. ALL FASTENERS ARE TO BE 316 STAINLESS STEEL.
- PUMP STATION SHALL MEET ALL CURRENT OWNER SPECIFICATIONS.
- ON-SITE GENERATOR SHALL BE FURNISHED AS SHOWN ON THE ELECTRICAL PLANS.
- NO WOOD SHALL BE USED FOR CONSTRUCTION OF THE CONTROL PANEL RACK, SUPPORTS FOR THE PANEL SHALL BE RGS CONDUIT WITH THREADED CAPS, CROSS BARS ARE TO BE STAINLESS STEEL UNI-STRUT. ALL MOUNTING IS TO BE WITH APPROVED STAINLESS STEEL HARDWARE CLAMPS.
- PANEL SHALL BE FURNISHED WITH BATTERY BACKUP AND LOSS OF POWER REPORTING.
- THE ELECTRICAL PLANS SHALL CONFORM TO THE STANDARD SPECIFICATIONS. CONTRACTOR TO SUBMIT SHOP DRAWING TO ENGINEER/OWNER FOR APPROVAL. ELECTRICAL PLANS MUST BE APPROVED BY THE JOHNSTON COUNTY BUILDING INSPECTIONS DEPARTMENT.
- THE ACCESS DRIVE TO THE PUMP STATION SHALL BE ACCESSIBLE BY THE OWNER'S MAINTENANCE DEPARTMENT CRANE TRUCKS.
- THE VALVE VAULT IS TO BE CONCRETE WITH A TAPERED FLOOR TO A SUMP PIT. THE SUMP IS TO BE LOCATED ON THE WET WELL SIDE BETWEEN THE DISCHARGE PIPING. A 2" DIA. STAINLESS STEEL SLEEVE SHALL BE INSTALL BETWEEN THE WET WELL AND VALVE VAULT FOR A FUTURE NO BENDS IN SLEEVE. SUMP PUMP DISCHARGE INSTALLED BY OTHERS.
- ALL EXTERIOR CONDUITS TO BE ALUMINUM WITH MYERS HUBS.
- ALL FASTENERS (BOLTS, NUTS AND ANCHORS) SHALL BE 316 STAINLESS STEEL.
- PUMP PRIMARY LEVEL CONTROLLER SUBMERSIBLE PRESSURE TRANSMITTER. WITH ANEROID BELLOWNS ON VENT LINE. (1) LEAD ON/OFF, (1) HIGH LEVEL, AND (1) LOW LEVEL. SEE NOTE 16.
- FLOATS ARE TO BE USED (1) SECONDARY HIGH LEVEL AND (1) LOW LEVEL ALARM. CONTACTS FOR FLOATS TO CONTROL EMERGENCY LOW LEVEL CUT OFF (WITH "TRUE OFF" ADJUSTABLE TIME DELAY) AND EMERGENCY HIGH LEVEL TO TURN ON OVERRIDE ARE TO BE INCLUDED.
- THE PRIMARY LEVEL SYSTEM IS TO BE A AUTOMATION-DIRECT PAC 2000 PLC WITH SUBMERSIBLE PRESSURE TRANSMITTER LEVEL PROBE.
- THE CONTROL PANEL SHALL BE STAINLESS STEEL TO HOURS (2) ELAPSED TIME METERS, SCFH REGULATOR, PURGE, SHUTOFF AND PSI REGULATOR CONTROLS ALONG WITH HOA SWITCHED, RESET EXTENSIONS, AND CUT OUTS FOR BREAKER SWITCHES. THE DOOR IS TO PROVIDE SEPARATION BETWEEN ALL CONTROLS AND "HOT" ELECTRICAL COMPONENTS.
- PROVIDE CONTROL PANEL WIRING DETAILS FOR REVIEW.
- WET WELL, VALVE VAULT AND METERING VAULT SHALL HAVE A SOLID ALUM. DIAMOND PLATE LIDS WITH SPRING ASSIST IF MORE THAN 50 LBS LIFT WEIGHT. LIDS SHALL INCLUDE A RECESSED LIFTING HANDLE AND SECURITY LIFT HANDLE AND SECURITY LATCH/LOCK AND FACTORY INSTALLED SAFETY SLIDE BARS TO HOLD LIDS VERTICALLY OPEN. LIDS TO BE COMPLETE WITH ALUMINUM FRAME AND MOUNTING IN CONCRETE TOP SLABS OF THE WET WELL, VALVE VAULT AND METERING MANHOLE. **LIDS/HATCHES SHALL BE FLOODTIGHT, 100% WATER-TIGHT.**
- ALL SETS OF LIDS ARE TO BE LARGE ENOUGH TO PULL PUMPS STRAIGHT OF OF THE WET WELL AND HAVE FULL VERTICAL ACCESS TO CHECK AND PLUG VALVES. LIDS FOR WET WELL, VALVE VAULT AND METERING VAULT TO OPEN AWAY FROM EACH OTHER.
- TOP OF SLABS FOR WET WELL AND VAULTS TO BE 8" MIN. ABOVE GRADE.
- CHECK VALVES ARE TO BE ARM WITH WEIGHT TYPE.
- THE VALVE VAULT AND METER/BYPASS VAULT, WALLS AND FLOOR TO BE PRECAST CONCRETE. THE VAULTS ARE TO BE LARGE ENOUGH TO PROVIDE A MINIMUM OF 12" CLEARANCE FROM VALVES TO WALLS AND APPROXIMATELY 24" CLEARANCE BETWEEN VALVES.
- WET WELL TO BE SEALED AT ALL JOINTS INSIDE AND OUT. THE WET WELL SHALL BE TESTED FOR LEAKAGE AND LEAKAGE SHALL NOT EXCEED 1-INCH OF WET WELL DEPTH LOST IN 24 HOURS.
- PUMP DISCHARGE PIPING AND SLIDE RAILS SHALL BE INSTALLED LEVEL AND PLUMB.
- A PUMP DRAW DOWN TEST SHALL BE CONDUCTED ON EACH PUMP IN PRESENCE OF ENGINEER AND OWNER. OPERATION OF ALL ELECTRICAL CONTROLS (INCLUDING THE STANDBY POWER AND ALARM SYSTEM) SHALL BE DEMONSTRATED IN THE PRESENCE OF THE ENGINEER AND OWNER. CONTRACTOR TO SCHEDULE START UP WITH EACH PUMP REMOVED AND REINSTALLED IN THE PRESENCE OF THE OWNER'S MAINTENANCE SUPERVISOR AT LEAST (3) WORKING DAYS IN ADVANCE.
- THE ENGINEER AND OWNER'S MAINTENANCE SUPERVISOR SHALL BE NOTIFIED OF CONSTRUCTION START DATE OF THE LIFT STATION. FINAL APPROVED PLANS SHALL BE PROVIDED TO BOTH BEFORE THE CONSTRUCTION START DATE.
- CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWINGS TO OWNER'S MAINTENANCE SUPERVISOR FOR APPROVAL ON THE FOLLOWING:
 - CAST-IN-PLACE: WETWELL, VALVE VAULT, METERING/BYPASS VAULT.
 - ELECTRICAL: CONTROL PANEL, SERVICE DISCONNECT, GENERATOR, TRANSFER SWITCH, CONDUIT AND FITTINGS.
 - MECHANICAL: PUMPS, VALVES, AIR RELEASE VALVE AND PIPING (STATION)
 - SUBMIT DETAILED DIMENSIONED PUMP STATION SHOP DRAWINGS INCLUDING PIPING, PUMPS, VALVES, COVERS, STRUCTURES AND O & M MANUALS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

GENERAL NOTES:

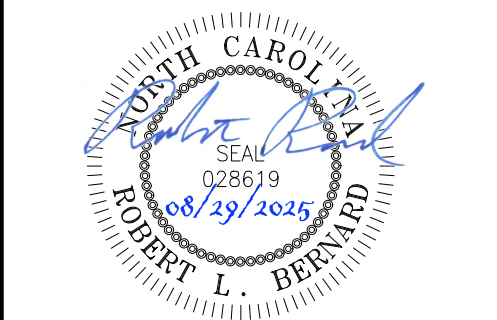
- ALL MATERIALS AND INSTALLATION SHALL CONFORM TO THE STANDARD SPECIFICATIONS.
- THE WATER METER SHALL CONFORM TO THE STANDARD DETAILS AND APPROVED EQUIPMENT MANUFACTURES AND MODELS. RP BACKFLOW PREVENTER AND YARD HYDRANT SHALL BE AS INDICATED ON THE DRAWINGS AND SPECIFICATIONS.
- NO GALVANIZED PIPE** IS TO BE USED IN CONJUNCTION WITH WATER APPURTENANCES INCLUDING METERS, BACKFLOW PREVENTERS , ETC. USE ONLY OWNER APPROVED PIPE MATERIALS. SEE ELECTRICAL PLAN FOR CLASS I, DIVISION I, GROUP D ZONES. PUMPS SHALL BE EXPLOSIVE PROOF.
- SERVICE PER NEC REQUIREMENTS AND CLASSIFIED ENVIRONMENTS.
- EACH BACK FLOW PREVENTER IS TO BE TESTED BY OWNER/UTILITY APPROVED CERTIFIED TESTER PRIOR TO PLACING SYSTEM IN SERVICE.
- CONTRACTOR TO SUPPLY AND INSTALL OSHA WARNING AND EMERGENCY NOTIFICATION SIGN PER OWNER REQUIREMENTS.

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			FINAL DRAWINGS - FOR BIDDING

Permit/Seal



Client/Project
TOWN OF SMITHFIELD

PUMP STATION #1 AND
FORCE MAIN IMPROVEMENTS

Smithfield, NC

Project No.: 175568555

File Name: 68555_D100 - PROPOSED SITE

Scale: AS NOTED

JR

JR

RB

2025.08.29

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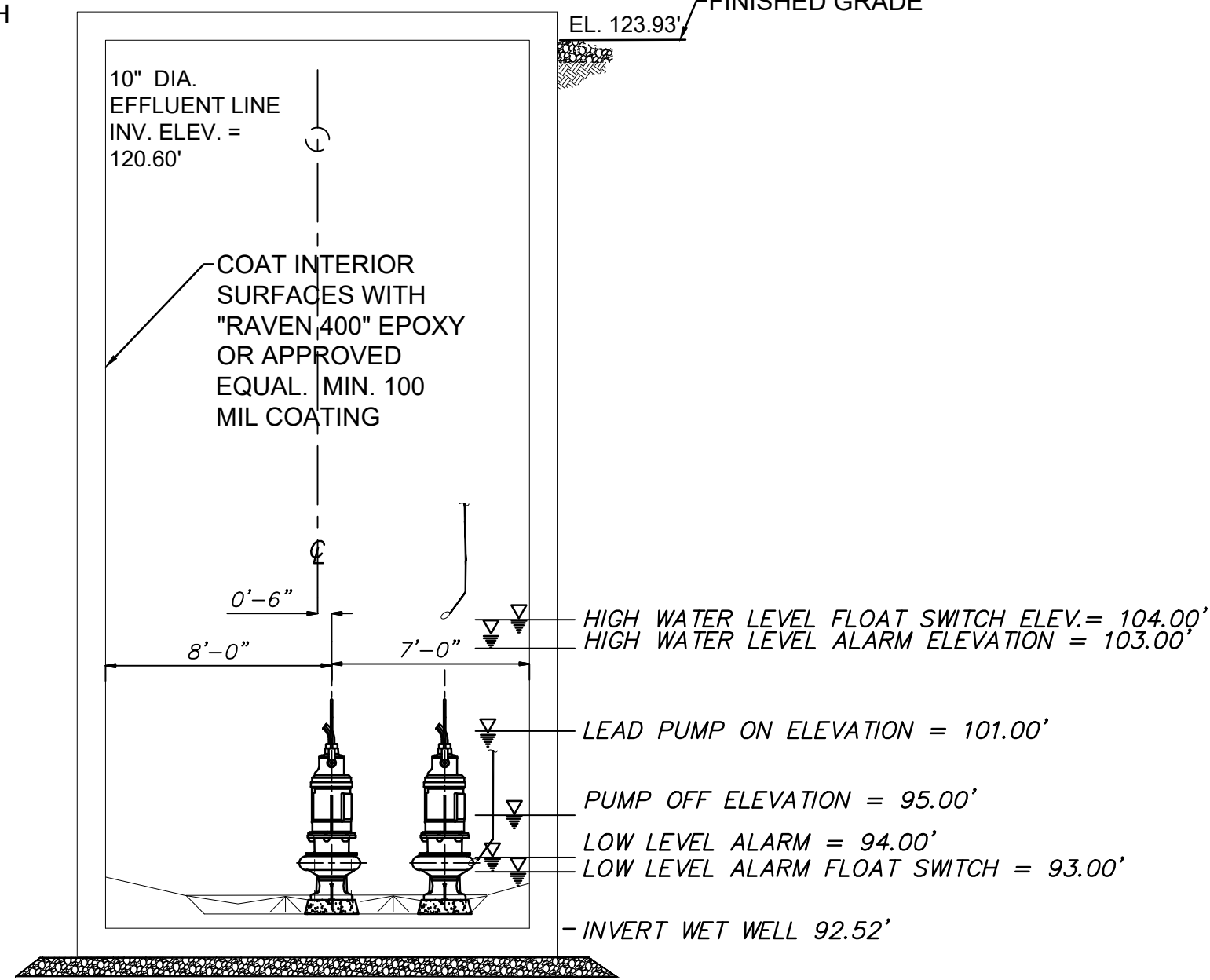
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Title
PROPOSED PUMP STATION
SITE PLAN

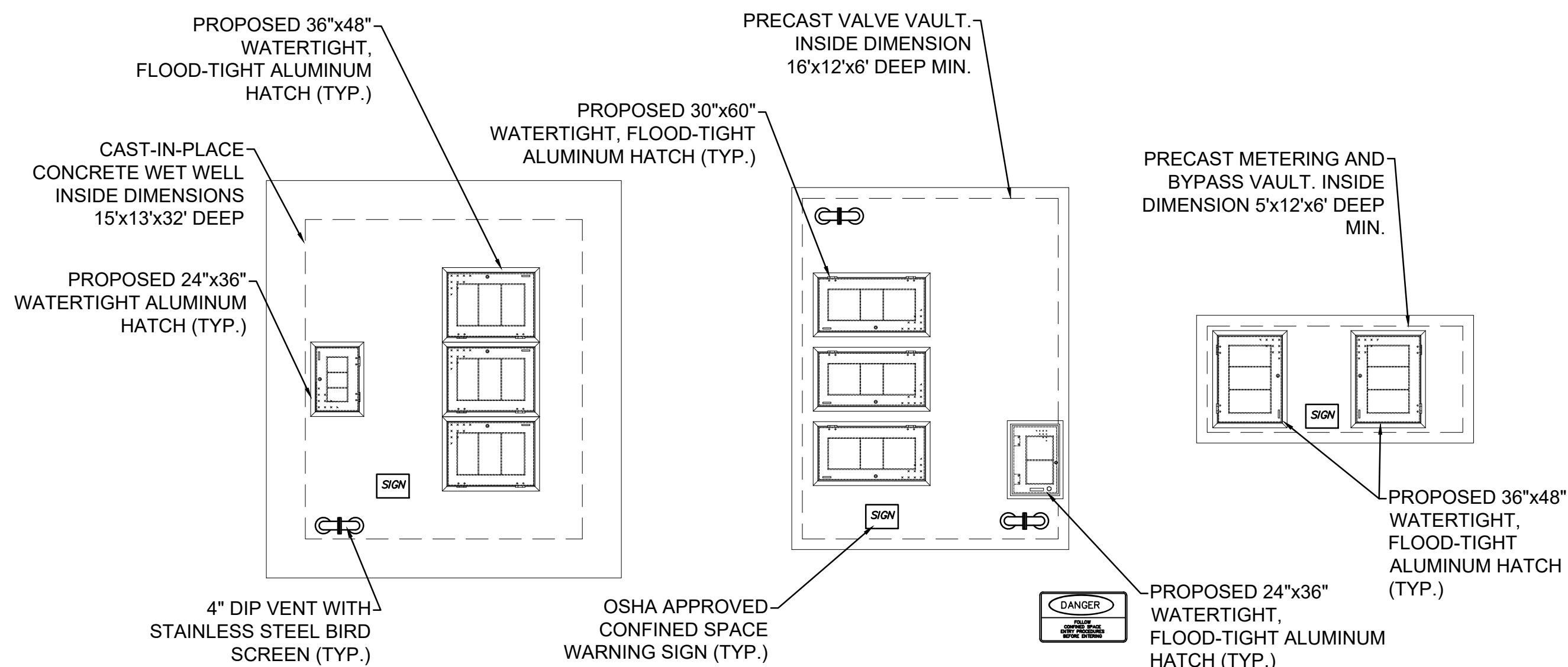
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Drawing No.

D-103



TYPICAL SECTION B - B
SCALE 3/16" = 1'-0"



SCALE 3/16" = 1'-0"

1. ALL WET WELL, VALVE VAULT AND METER VAULT PIPING (WITHIN STRUCTURES) TO BE FLANGED JOINT AND RESTRAINED JOINT.
2. PROVIDE MINIMUM 5 PIPE DIAMETERS (60") OF STRAIGHT PIPE UPSTREAM OF MAG METER AND MINIMUM 2 PIPE DIAMETERS (12") OF STRAIGHT PIPE DOWNSTREAM OF MAG METER.
3. ADD 3/4" CHAMFER TO ALL CAST-IN-PLACE AND PRECAST CONCRETE STRUCTURE TOPS.

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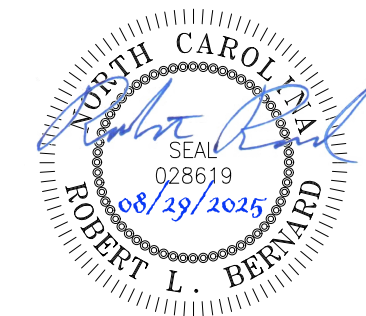
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Client/Project
TOWN OF SMITHFIELD

PUMP STATION #1 AND FORCE MAIN IMPROVEMENTS

Smithfield, NC

Project No.: 175568555

Scale: AS NOTED

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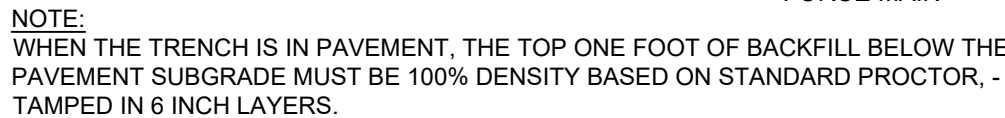
Title
PROPOSED PUMP STATION
DETAILS, PLANS &
SECTIONS

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Drawing No.		

D-104



1. CONCRETE VAULT STEEL OR ALUMINUM COVER/HATCH.
2. BLIND FLANGE (PROTECTO 401 LINED) WITH 1/4" BRASS OR SS BALL VALVE.
3. 4" CLEARANCE BETWEEN FLANGE AND COVER.
4. PLUG VALVE.
5. FLANGE BY FLANGE DIP SPOOL (PROTECTO 401 LINED).



PIPE BEDDING DETAIL

NOT TO SCALE



1. SLOPE GROUND AWAY FROM COVER (TYP.).
2. HINGED ACCESS OR REMOVABLE INSULATED ENCLOSURE MEETING ASSE 1060 SPECIFICATIONS. ENCLOSURE TO INCLUDE DRAIN PORT(S).
3. STRAINER RECOMMENDED EXCEPT ON FIRE SERVICE.
4. SHUT-OFF VALVE #1.
5. CHECK VALVE #1.
6. CHECK VALVE #2.
7. SHUT-OFF VALVE #2.
8. TYPE K OR L COPPER TUBING PIPE, 1 INCH MIN. GALVANIZED STEEL PIPE (CONSISTENT TO ASTM A53) OR SCH. 80 PVC PIPE WITH SCH. 80 PVC FITTINGS. SEE NOTE B.
9. LOWEST POINT OR RELIEF VALVE OUTLET.
10. TEST COCK #1.
11. MIN. 4" THICK #57 WASHED STONE OR CONCRETE PAD. SEE NOTE H.
12. IF USING PVC PIPE, HORIZONTAL BRACING IS RECOMMENDED.
13. IF USING PVC PIPE - VERTICAL BRACING IS REQUIRED.
14. ZONING SETBACK.
15. REQUIRED BPA ABOVE GROUND.
16. SEE NOTES D AND E.
17. OWNER/UTILITY METER.
18. PUBLIC WATER MAIN.
19. PROPERTY LINE OR R/W.

A. BACKFLOW PREVENTION ASSEMBLIES (BPA's) SHALL CONFORM TO OWNER/UTILITY SPECIFICATIONS. SHUT-OFF VALVES ARE SPECIFIC TO EACH BPA AND SHALL BE LOCATED AT THE POINT OF ENTRY TO THE PERMITTED PIPE MATERIAL AND FITTINGS SHALL BE AS SPECIFIED IN THE SPECIFICATIONS.

B. IF USING PVC PIPE/FITTINGS, VERTICAL SUPPORT IS REQUIRED AND HORIZONTAL BRACING SHALL BE PROVIDED.

C. INSULATED ENCLOSURE SHALL BE AS SPECIFIED IN THE SPECIFICATIONS AND COMPLY WITH ASSE 1060 ENCLOSURE REQUIREMENTS - HEATED INSULATED ENCLOSURE IS RECOMMENDED. NO INSULATION SHALL BE WRAPPED AROUND BPA.

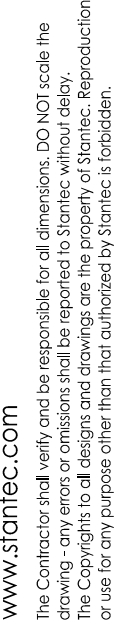
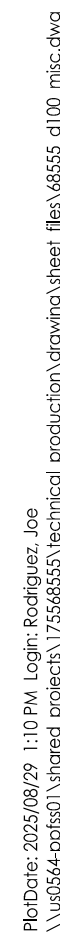
D. ALL LOCATIONS FOR BPA's REQUIRE UTILITY PROVIDER APPROVAL AND MUST BE OUTSIDE OF ZONING SET-BACK DIRECTLY BEHIND METER.

E. THERE SHALL BE NO CLOSING OR SHUTTING OFF OF BYPASS PIPES OR HYDRANTS, FIRE DEPT. CONNECTION POINTS, OR OTHER WATER - USING APPURTENANCES CONNECTED TO THE SUPPLY LINE BETWEEN ANY WATER METER AND ITS REQUIRED BACKFLOW PREVENTER.

F. BPA'S REQUIRED BY A CITY OR COUNTY SHALL BE INSTALLED BY AN APPROVED CERTIFIED TESTER PRIOR TO PLACING THE WATER SYSTEM IN SERVICE. TEST RESULTS SHALL BE SUBMITTED TO UTILITY PROVIDER WITHIN 30 DAYS.

G. INSURANCE POLICY MUST RECEIVE PRIOR APPROVAL FROM ALL APPLICABLE OWNER/UTILITY INSPECTORS.

H. PAD MUST BE NO LOWER THAN 100-YEAR FLOOD AND HAVE ADEQUATE GRAVITY DRAINAGE. BACKFLOW DEVICE CANNOT BE INSTALLED BELOW GRADE. IN ANY CASE, THE SUBJECT PROPERTY SHALL BE PROTECTED BY A GRAVITY DRAINAGE RELIEF VALVE OPENING. IF BPA MUST BE IN A FLOOD ZONE THEN THE BOTTOM OF BPA MUST BE AT LEAST 12 INCHES ABOVE THE FLOOD LEVEL AS MEASURED FROM THE BOTTOM OF THE REDUCED PRESSURE PRINCIPLE (RPP) RELIEF VALVE DISCHARGE PORT.



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Smithfield, NC

Project No.: 175568555

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MISCELLANEOUS DETAILS

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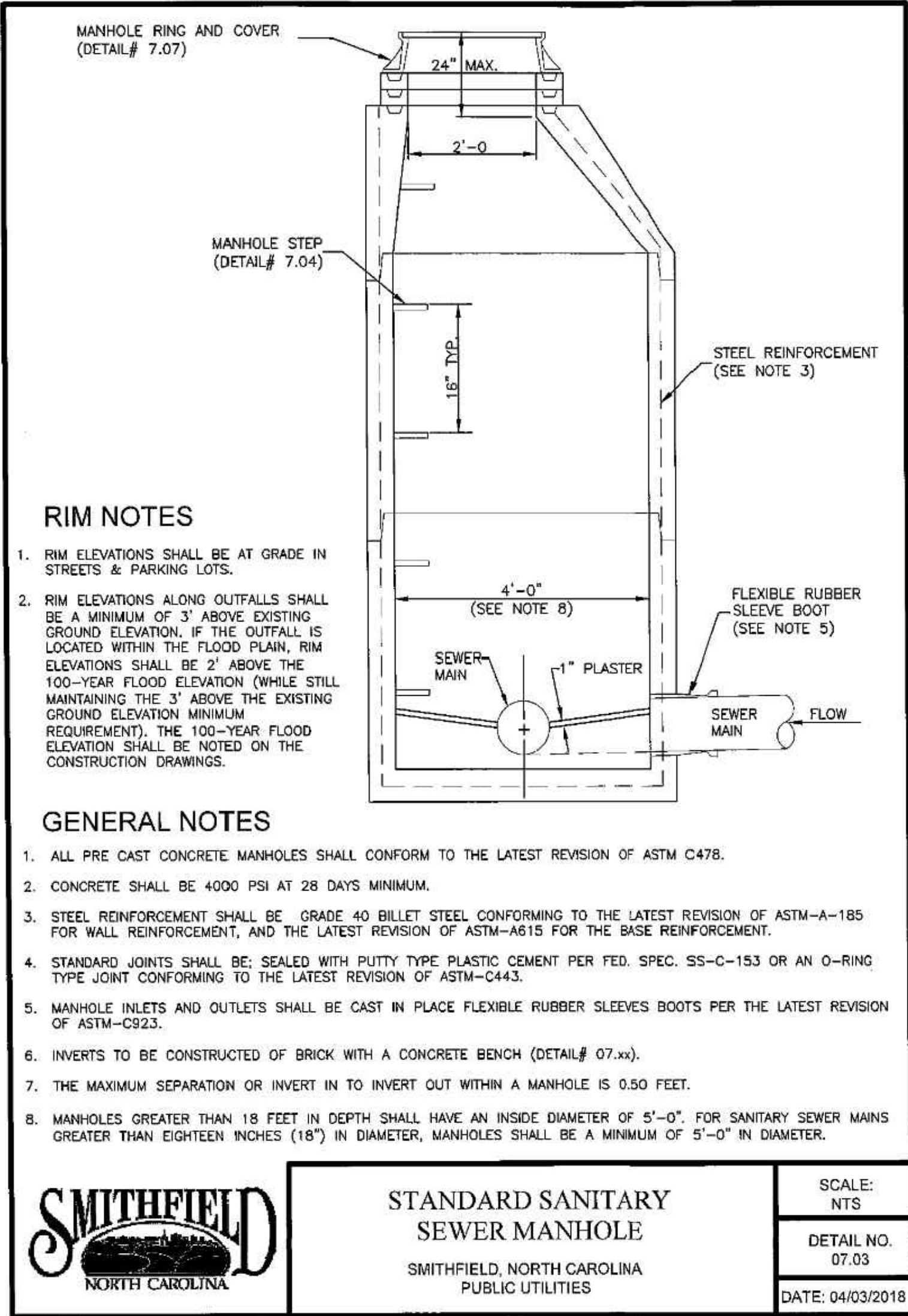
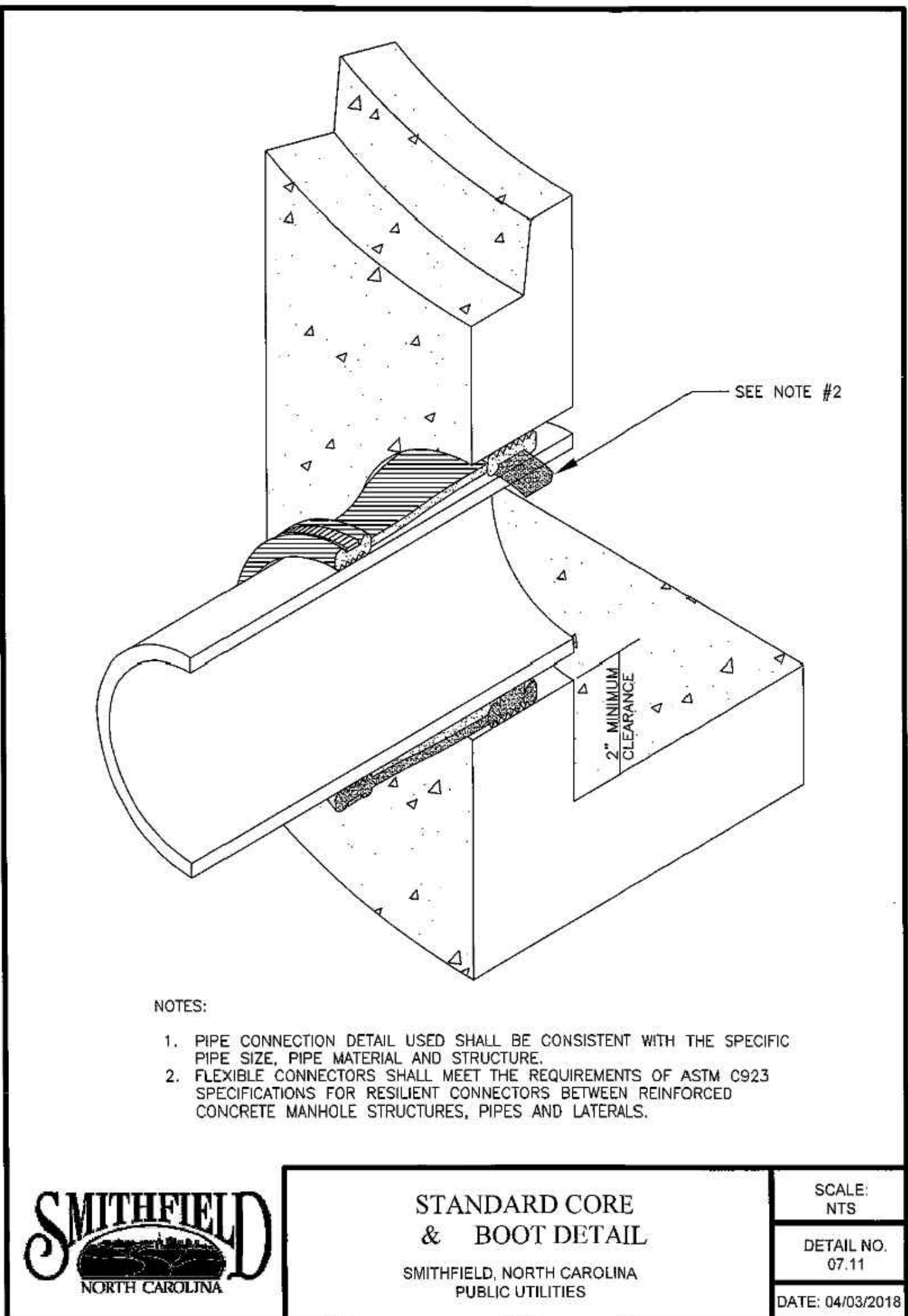
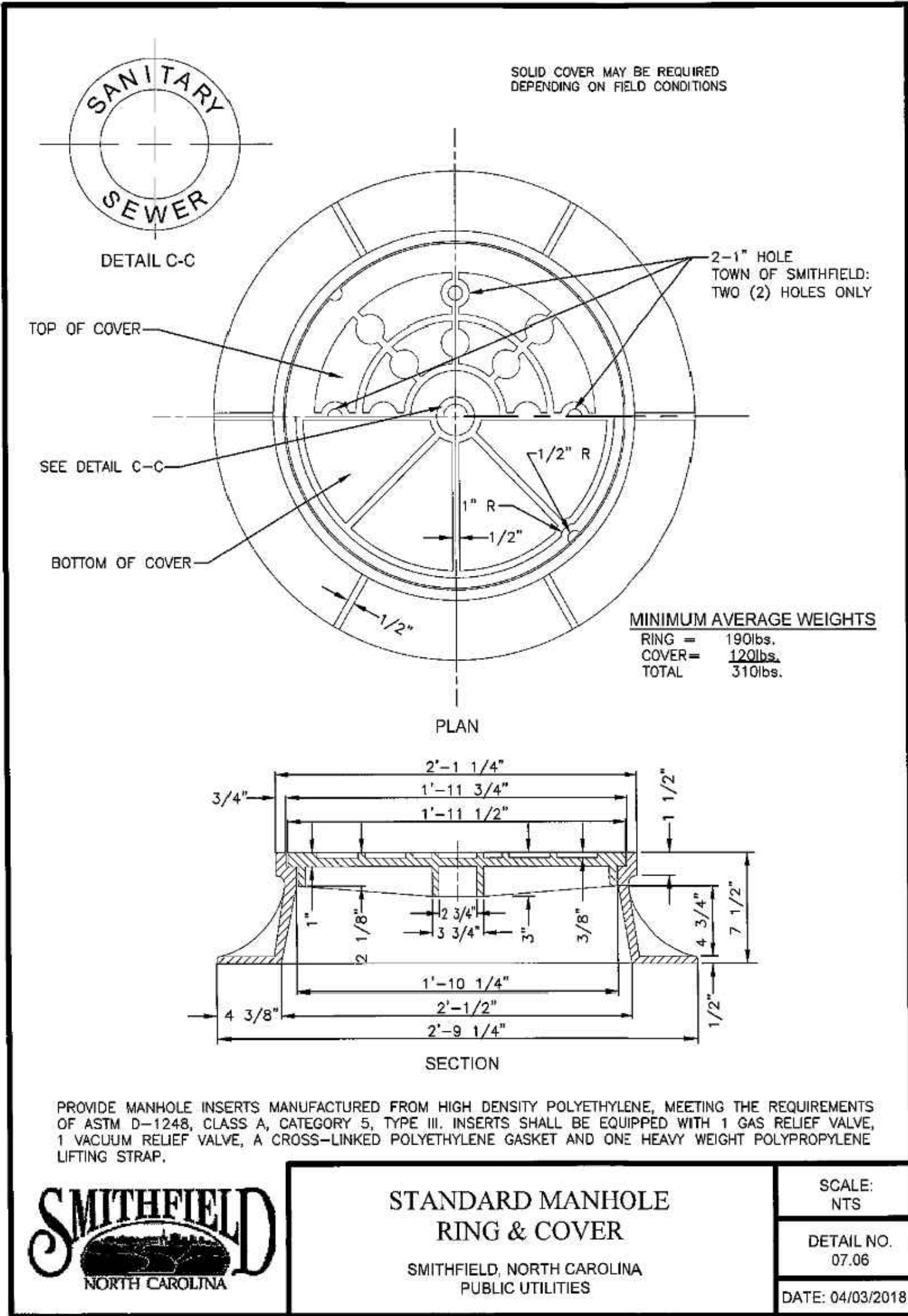
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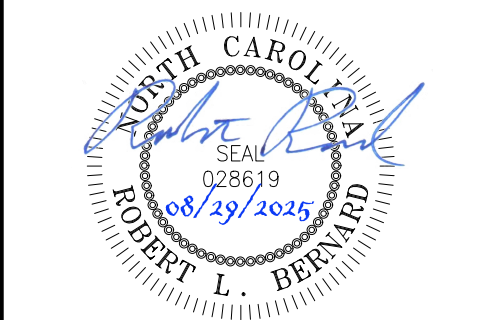


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TOWN OF SMITHFIELD

PUMP STATION #1 AND
FORCE MAIN IMPROVEMENTS

Smithfield, NC

Project No.: 175568555

File Name: 68555_D100_MSC

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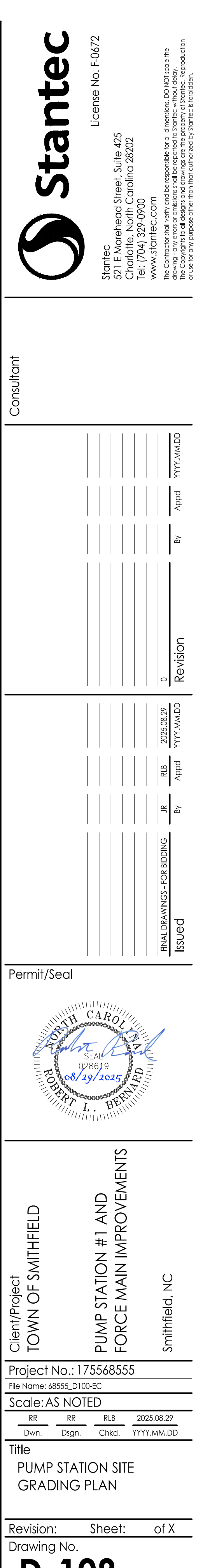
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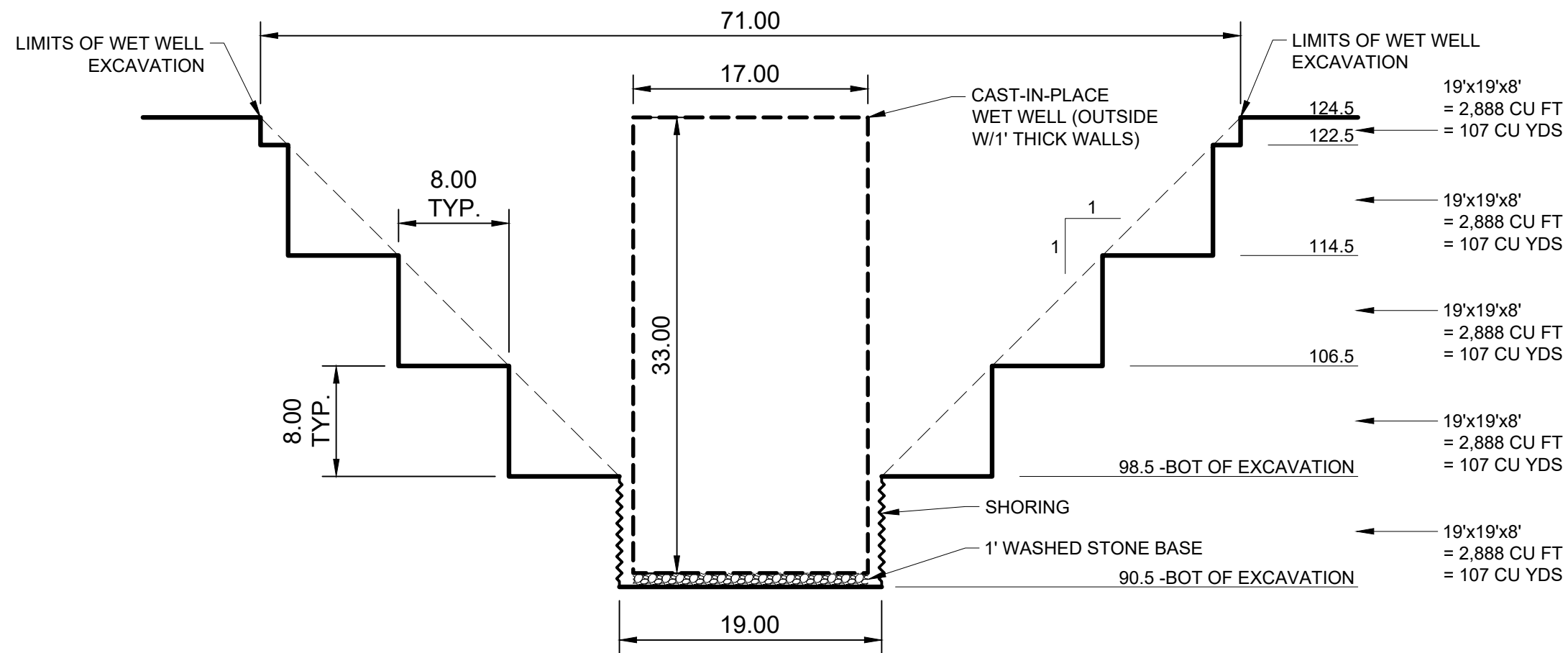
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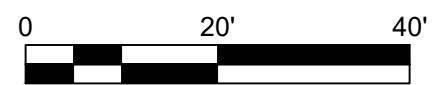
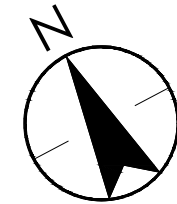
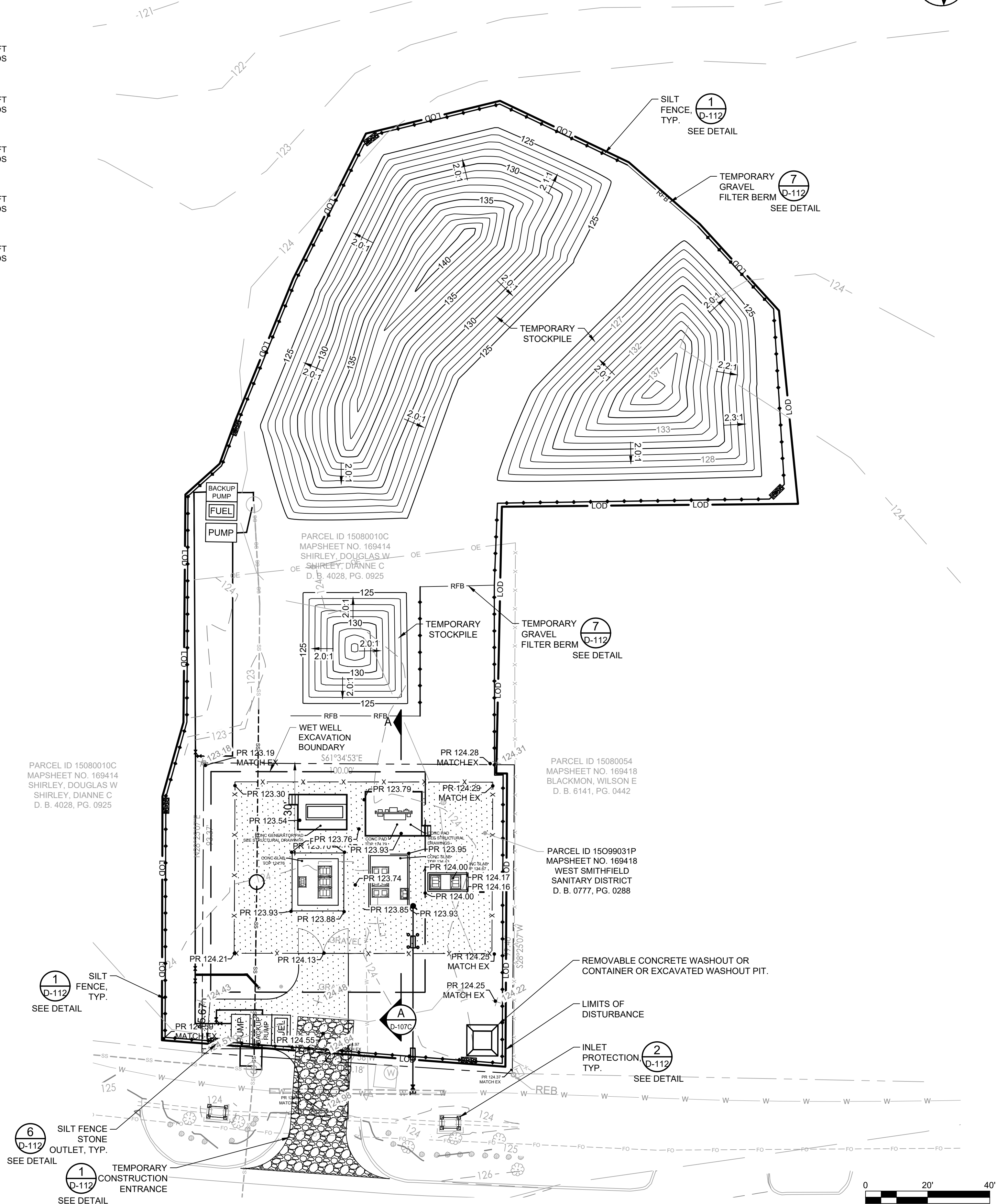
SECTION A-A
WET WELL EXCAVATION 1

EXCAVATION TOTAL
= 83,376 CU FT CUT
= 3,088 CU YDS CUT

LEGEND	
	UTILITY POLE WITH SITE LIGHT
	ELECTRIC METER
	TELEPHONE PEDESTAL/BOX
	MONUMENT FOUND (AS NOTED)
	WATER VALVE
	SANITARY SEWER MANHOLE
	TREE OR SHRUB AS NOTED
	WATER MANHOLE
123.45 +	EXISTING SPOT ELEVATION
PR 123.45	PROPOSED SPOT ELEVATION
	TREE PROTECTION FENCE
	SILT FENCE
	TEMPORARY EASEMENT
	PROPERTY / RIGHT-OF-WAY LINE
	TIE / ADJOINER PROPERTY LINE
	EXISTING EASEMENT (AS NOTED)
	WATER LINE
	FORCE MAIN SEWER
	SANITARY SEWER OUTFALL
	FIBER OPTIC TELECOM. LINE
	FENCE LINE
	STORM DRAIN LINE
	TREE LINE
	LIMITS OF DISTURBANCE
	CONTOUR EXISTING - MAJOR
	CONTOUR EXISTING - MINOR
	CONTOUR PROPOSED - MAJOR
	CONTOUR PROPOSED - MINOR

SITE NOTES:

- RIVER BASIN: NEUSE RIVER BASIN
- PUMP STATION SITE AREA OF DISTURBANCE = 0.85 ACRES
- NEAREST RECEIVING WATERBODY: NEUSE RIVER
- PREDOMINANT SOIL TYPE: WEHADKEE LOAM, BELONGING TO HYDROLOGIC SOIL GROUP B/D, PER USDA WEB SOIL SURVEY FOUND AT [HTTPS://WEBSOILSURVEY.SC.EGOV.USDA.GOV/](https://websoilsurvey.sc.egov.usda.gov/).
- FLOOD ZONE: LOCATED IN ZONE AE PER FEMA FLOOD MAPS 3720169400K EFFECTIVE 06/20/2018.



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EROSION AND SEDIMENT CONTROL GENERAL NOTES

1. PROVISIONS TO PREVENT EROSION OF THE SOIL FROM THE SITE SHALL CONFORM TO THE REQUIREMENTS OF THE "NORTH CAROLINA SEDIMENTATION POLLUTION CONTROL ACT OF 1973" AS SHOWN HEREIN AND STIPULATED IN THE "EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL" BY VARIOUS AGENCIES WITHIN THE STATE OF NORTH CAROLINA. INSTALLATION SHALL BE IN A MANNER SO AS TO MINIMIZE EROSION OF THE DISTURBED AREAS AND PREVENT SEDIMENT FROM LEAVING THE SITE.
2. TEMPORARY AND PERMANENT VEGETATIVE COVER SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 6, SECTIONS 10 AND 11 OF THE PLANNING AND DESIGN MANUAL AS DESCRIBED IN NOTE NO.1 ABOVE.
3. EROSION CONTROL DEVICES ARE TO BE INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS. THE PLANS AND DETAILS ARE BASED ON THE NC EROSION AND SEDIMENT PLANNING DRAWINGS, AND THE PROJECT SPECIFICATIONS.
4. ALL SEDIMENT AND EROSION CONTROL MEASURES ARE TO BE INSPECTED BY THE CONTRACTOR PER THE NCGO1 SELF-INSPECTION, RECORDKEEPING AND REPORTING" RULES OUTLINED ON SHEET D-114. CONTRACTOR SHALL HAVE 5 DAYS TO REPAIR AND/OR CORRECT DEFICIENCIES. DAMAGED OR INEFFECTIVE DEVICES SHALL BE REPAIRED OR REPLACED AS NECESSARY.
5. ALL DISTURBED AREAS WHERE CONSTRUCTION HAS TEMPORARILY OR PERMANENTLY CEASED SHALL BE STABILIZED WITH GRASSES PER SEEDING SCHEDULE AS SOON AS PRACTICABLE AND IN NO CASE EXCEED THE TIME AS DESCRIBE IN "SECTION E: GROUND STABILIZATION," ON SHEET D-113 (PER NPDES STORMWATER GENERAL PERMIT NCGO10000).
6. ALL CONSTRUCTION WORK SHALL BE IN COMPLIANCE WITH REGULATIONS OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER GENERAL PERMIT (NCGO10000). THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUCTING, RECORDING, AND SUBMITTING THE REQUIRED SELF-INSPECTION REPORTS TO THE APPROPRIATE AGENCIES. PERMIT DOCUMENTATION CAN BE FOUND IN THE PROJECT SPECIAL CONDITIONS.
7. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION, AS DETERMINED BY THE ENGINEER OR EROSION CONTROL INSPECTOR.
8. THE CONTRACTOR SHALL TAKE NECESSARY ACTION TO MINIMIZE TRACKING OF MUD ONTO PAVED ROADWAY SURFACE FROM CONSTRUCTION AREAS, INCLUDING BUT NOT LIMITED TO EXTENDING THE MUD MAT. THE CONTRACTOR SHALL REMOVE MUD AND SOIL FROM THE PAVEMENT ON A DAILY BASIS. ADDITIONAL PAYMENT WILL BE MADE TO THE CONTRACTOR FOR THE SCHEDULED AND PERFORMED CONTINUOUS CONSTRUCTION OPERATION AT ALL DRAINAGE DITCHES AND STREAM CROSSINGS IN ORDER TO MINIMIZE THE TIME WORKING IN THE DRAINAGE OR STREAM.
10. IF FILL MATERIALS ARE TO BE BROUGHT ON TO THIS PROJECT OR WASTE MATERIALS ARE TO BE TAKEN FROM THIS PROJECT, THIS INFORMATION MUST BE DISCLOSED TO THE ENGINEER AND SHOWN ON THE EROSION CONTROL AND GRADING PLAN. BORROWED AREAS AND DUMP SITES ARE CONSIDERED TO BE PART OF THIS PROJECT AND THE OWNER IS RESPONSIBLE FOR STABILIZATION AND EROSION CONTROL MEASURES AT THESE SITES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARATION AND APPROVAL OF THE EROSION CONTROL PLAN FOR ANY OFF SITE BORROW OR DUMP SITES.
11. THE ANGLE FOR GRADED SLOPES AND FILLS SHALL BE NO GREATER THAN THE ANGLE THAT CAN BE RETAINED BY VEGETATIVE COVER OR OTHER ADEQUATE EROSION CONTROL DEVICES STRUCTURES. IN ANY EVENT, SLOPES LEFT EXPOSED WILL, WITHIN 7 OR 14 CALENDAR DAYS OF COMPLETION OF ANY PHASE OF GRADING, BE PLANTED OR OTHERWISE PROVIDED WITH TEMPORARY GROUND COVER, DEVICES OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION. PERMANENT GROUND COVER WILL BE PROVIDED FOR ALL DISTURBED AREAS WITHIN 15 WORKING DAYS OR NO MORE THAN 90 CALENDAR DAYS (WHICHEVER IS SHORTER) FOLLOWING COMPLETION OF CONSTRUCTION.
12. SLOPES STEEPER THAN 3:1 SHALL BE STABILIZED AS NECESSARY WITH SYNTHETIC OR VEGETATIVE MATS IN ADDITION TO GRASSING/HYDRO SEEDING TO ENSURE THEIR INTEGRITY.
13. TEMPORARY DIVERSION BERMS/DITCHES SHALL BE PROVIDED AS NEEDED DURING CONSTRUCTION TO PROTECT WORK AREAS FROM UPSLOPE RUNOFF AND/OR TO DIVERT SEDIMENT LADEN WATER TO APPROPRIATE TRAPS OR STABLE OUTLETS.
14. SILT FENCE OUTLETS SHALL BE CONSTRUCTED IN LOW LYING AREAS AND AREAS OF CONCENTRATED FLOW ALONG THE LENGTH OF TEMPORARY SILT FENCING. IF LOCATIONS ARISE DURING THE COURSE OF CONSTRUCTION WHERE THE TEMPORARY SILT FENCE BECOMES OVERWHELMED WITH FLOW AND FAILS, THE CONTRACTOR SHALL REPAIR THESE AREAS WITH SILT FENCE OUTLETS.
15. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED IMMEDIATELY AND CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER.

CLEARING AND DEMOLITION

1. THE CONTRACTOR SHALL CLEAR AND GRUB ONLY THOSE PORTIONS OF THE SITE WITHIN THE LIMITS OF DISTURBANCE NECESSARY FOR CONSTRUCTION. DISTURBED AREAS WILL BE SEEDED, MULCHED, SODDED OR PLANTED WITH OTHER LANDSCAPE MATERIAL APPROVED BY THE ENGINEER IMMEDIATELY FOLLOWING CONSTRUCTION.
2. EXCESS GROUND REMOVED DURING CLEARING AND GRUBBING SHALL BE REMOVED FROM THE SITE TO AN OFF-SITE LOCATION, OR UNLESS OTHERWISE DIRECTED BY THE OWNER OR THE OWNER'S ENGINEER, THE CONTRACTOR IS RESPONSIBLE FOR ACQUIRING ANY PERMITS THAT ARE NECESSARY FOR REMOVING EXCESS EARTHWORK FROM THE SITE.
3. ALL CONSTRUCTION DEBRIS AND OTHER WASTE MATERIALS SHALL BE DISPOSED OF OFF-SITE IN ACCORDANCE WITH APPLICABLE REGULATORY AGENCY REQUIREMENTS OR AS DIRECTED BY THE OWNER.

EROSION CONTROL MAINTENANCE PLAN

1. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED CONTINUALLY, RELOCATED WHEN AND AS REQUIRED AND SHALL BE CHECKED AFTER EVERY RAINFALL. SEEDED AREAS SHALL BE CHECKED REGULARLY AND SHALL BE WATERED, FERTILIZED AND MULCHED AS REQUIRED TO OBTAIN A DENSE STAND OF GRASS. ANY REPAIRS WILL BE MADE IMMEDIATELY TO MAINTAIN ALL PRACTICES AS DESIGNED.
2. WHEN A CONSTRUCTION ENTRANCE HAS BEEN COVERED WITH SOIL OR HAS BEEN PUSHED INTO THE SOIL BY CONSTRUCTION TRAFFIC, IT SHALL BE REPLACED WITH A DEPTH OF STONE EQUAL TO THAT OF THE ORIGINAL APPLICATION OR OTHERWISE REINSTALLED PER THE ORIGINAL APPLICATION.
3. ALL DRAINAGE INLETS DOWN SLOPE OF THE CONSTRUCTION WORK AREA SHALL PROTECTED FROM SILTATION. INEFFECTIVE PROTECTION DEVICES SHALL BE LAID IN SUCH A WAY THAT GOOD CONTACT WITH THE GROUND IS ESTABLISHED. IF GOOD CONTACT IS NOT ESTABLISHED OR EROSION OCCURS UNDER THE COIR FIBER MATTING, THEN THE BANK SHALL BE REPAIRED AND THE MATTING RESECURED.
4. SEDIMENT SHALL BE REMOVED FROM BEHIND THE SILT FENCE WHEN IT REACHED 0.5 FEET DEEP AT THE SILT FENCE. SHOULD THE SILT FENCE FABRIC COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE. REPLACE IT PROMPTLY AND REMOVE SEDIMENT DEPOSITS AS NECESSARY TO REDUCE PRESSURE ON THE FENCE. AVOID UNDERMINING SILT FENCE DURING CLEAN OUT.
5. SEDIMENT REMOVED FOR ANY TEMPORARY SOIL EROSION AND SEDIMENT CONTROL MEASURE DURING REGULAR MAINTENANCE SHALL BE INCORPORATED BACK INTO THE EARTHWORK AS FILL ON THE SITE. SOIL SEDIMENT MATERIAL SHALL BE DISTURBED ON-SITE WITHOUT CHANGING DRAINAGE PATTERNS.
6. SEDIMENT SHALL BE REMOVED FROM A SEDIMENT TRAP WHEN THE CAPACITY HAS BEEN REDUCED BY 50% FROM THE DESIGN CAPACITY.
7. AFFECTED ROADS SHALL BE CLEANED DAILY OR MORE FREQUENTLY IF OTHERWISE REQUIRED BY THE ENGINEER OR OWNER.
8. CONSTRUCTION EQUIPMENT AND VEHICLES WITH THE WORK AREA SHALL BE PROPERLY MAINTAINED AND INSPECTED, PARTICULARLY FOR IDENTIFICATION AND REPAIR OF VEHICLES LEAKING PETROLEUM PRODUCTS THAT COULD ENTER ADJACENT STORMWATER DRAINAGE FACILITIES.
9. ALL SEEDED AREA SHALL BE FERTILIZED, RESEEDED, AND MULCHED AS NECESSARY TO MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER, THROUGH THE ONE-YEAR WARRANTY PERIOD.

SEEDING SCHEDULE

GENTLE SLOPES		STEEP SLOPES
SEEDING MIXTURE	40 LBS / ACRE GERMAN MILLET 80 LBS / ACRE TALL FESCUE	120 LBS / ACRE RYE (GRAIN) 80 LBS / ACRE TALL FESCUE
SEEDING DATES	MAY 1 - AUGUST 15 REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE APPLY 4000 LBS / ACRE STRAW OR EQUIVALENT HYDROSEEDING	OCTOBER 25 - DECEMBER 30 BETWEEN DECEMBER 30 - FEBRUARY 15, ADD 100 LBS / ACRE OF ANNUAL KOBE LESPEDEZA APPLY 4000 LBS / ACRE STRAW OR EQUIVALENT HYDROSEEDING
SEEDING AMENDMENTS	APPLY LIME AND FERTILIZER PER SOIL TESTS OR 2000 LBS / ACRE LIMESTONE AND 750 LBS / ACRE 10-10-10 FERTILIZER	APPLY LIME AND FERTILIZER PER SOIL TESTS OR 2000 LBS / ACRE LIMESTONE AND 750 LBS / ACRE 10-10-10 FERTILIZER

TEMPORARY SEEDING SCHEDULE

GENTLE SLOPES		STEEP SLOPES
SEEDING MIXTURE	40 LBS / ACRE GERMAN MILLET 80 LBS / ACRE TALL FESCUE	120 LBS / ACRE RYE (GRAIN) 80 LBS / ACRE TALL FESCUE
SEEDING DATES	MAY 1 - AUGUST 15 REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE APPLY 4000 LBS / ACRE STRAW OR EQUIVALENT HYDROSEEDING	OCTOBER 25 - DECEMBER 30 BETWEEN DECEMBER 30 - FEBRUARY 15, ADD 1000 LBS / ACRE OF ANNUAL KOBE LESPEDEZA APPLY 4000 LBS / ACRE STRAW OR EQUIVALENT HYDROSEEDING
SEEDING AMENDMENTS	APPLY LIME AND FERTILIZER PER SOIL TESTS OR 2000 LBS / ACRE LIMESTONE AND 750 LBS / ACRE 10-10-10 FERTILIZER	APPLY LIME AND FERTILIZER PER SOIL TESTS OR 2000 LBS / ACRE LIMESTONE AND 750 LBS / ACRE 10-10-10 FERTILIZER



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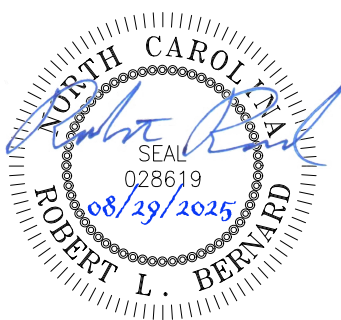
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TOWN OF SMITHFIELD

PUMP STATION #1 AND FORCE MAIN IMPROVEMENTS

Smithfield, NC

Project No.: 175568555

File Name: 68555_D100-EC

Scale: AS NOTED

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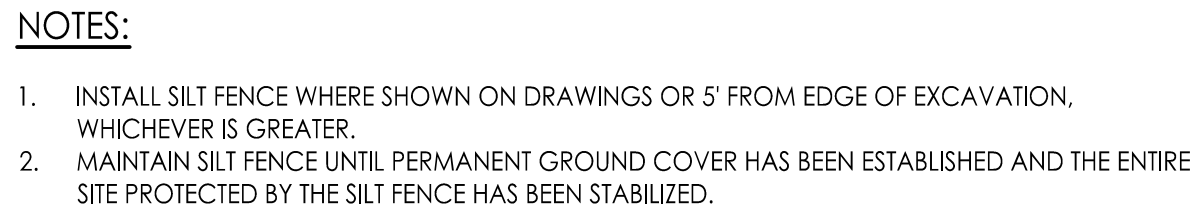
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EROSION CONTROL DETAILS

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Drawing No.

D-110



1
D-112

SILT FENCE
NTS



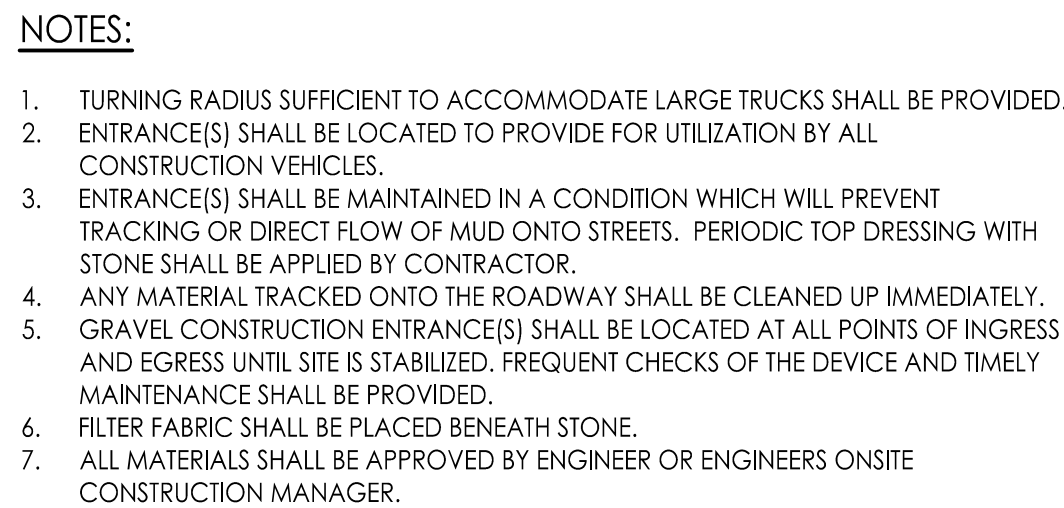
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D-112

CATCH BASIN INLET PROTECTION
NTS



3
D-112

SILT FENCE STONE OUTLET
NTS



 TEMPORARY CONSTRUCTION ENTRANCE
NTS



D

C

B

A

The weight of all permanent construction including walls, floors, ceilings, roof cladding to be included in addition to self-weight of members and structural slabs.

<u>Design Wind Loads</u>		
a.	Governing Code	ASCE 7-16
b.	Building Risk Category	III
c.	Ultimate Design Wind Speed	Vult = 127 mph (3 second gust)
d.	Nominal Design Wind Speed	Vasd = 97 mph (3 second gust)
e.	Directionality Factor	Kd = 0.85
f.	Topographic Factor	Kz = 1.0
g.	Exposure	C
h.	Enclosure Classification	Enclosed
i.	Internal Pressure Coefficient	GCPI = ± 0.18

Snow Load	
Flat Roof Snow Load	15 PSF
Snow Load Importance Factor	1.1
Thermal Factor	1.1
Snow Exposure Factor	0.9

SHOP DRAWINGS

- A. The Contractor may request CAD files of the Structural Drawings, which may be provided - at the Structural Engineer's discretion upon a written agreement between the Structural Engineer and the General Contractor.

- ## SHALLOW FOUNDATIONS

- ## SLAB ON GRADE

- ## REINFORCED CONCRETE

- Concrete shall have the following minimum 28-day compressive strengths:

2. Comply with ACI 301, ACI 350 and 318 and Specification Sections 033000.

5. In addition to the requirements above, the concrete elements in this project are categorized as follows

6. Provide ASTM A-615 Grade 60 reinforcing steel. Reinforcing shall be accurately placed, rigidly supported and firmly tied in place, with appropriate bar supports and spacers. Lap continuous reinforcing 48 bar dia. Provide cover over reinforcing as follows:

* If grade beam sides are unformed, excavate 2" wider (1" each side) than specified and increase cover to 3".

4

- ## POST-INSTALLED ANCHORS - GENERAL

- ## STRUCTURAL STEEL

- At the Contractor's option, slip-critical bolts may be installed in standard, oversize, or short slotted holes. Design of connections using slip critical bolts is based on a Class A faying surface and oversized holes.



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GENERAL NOTES

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8/29/2025

Client/Project
TOWN OF SMITHFIELD

PUMP STATION #1 AND
FORCE MAIN IMPROVEMENTS

SMITHFIELD, NC

Project No.: 175568555

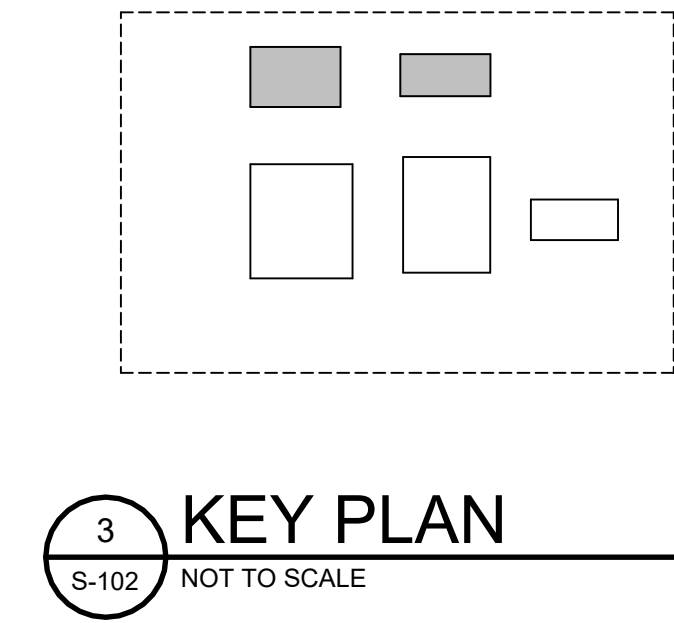
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BOTTOM OF VAULT WELLS			

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| Client/Project
TOWN OF SMITHFIELD | PUMP STATION #1 AND
FORCE MAIN IMPROVEMENTS | SMITHFIELD, NC |
| Project No.: 175568555 | | |

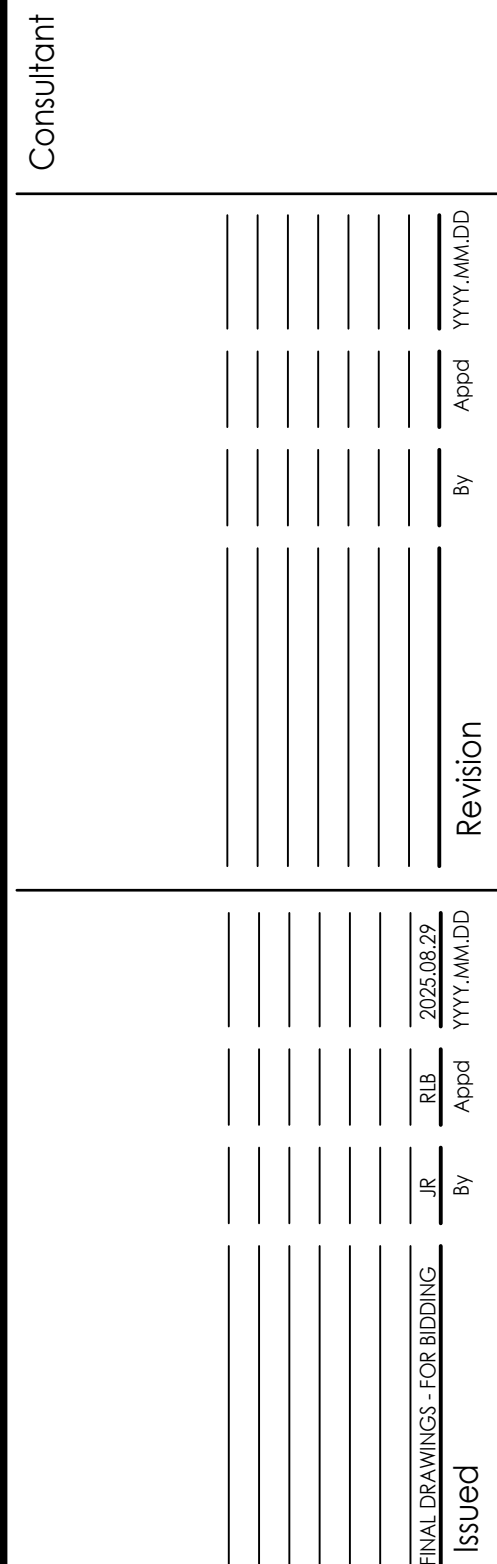
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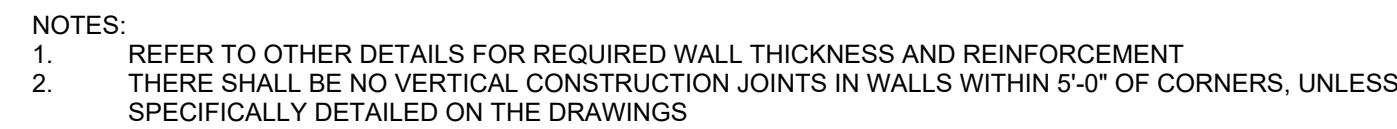
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Project No.: 175568555			
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CONCRETE VAULT WELL SECTIONS			
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Drawing No.			



2 TYPICAL REINFORCEMENT SPLICE AT CONCRETE WALL CORNER
S-501 1" = 1'-0"



- 3 TYPICAL HORIZONTAL CONSTRUCTION JOINT AT CONCRETE WALL
S-501 1" = 1'-0"

Permit/Seal

Client/Project
TOWN OF SMITHFIELD
PUMP STATION #1 AND
FORCE MAIN IMPROVEMENTS
SMITHFIELD, NC

Project No.: 175568555

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Title
STRUCTURAL DETAILS

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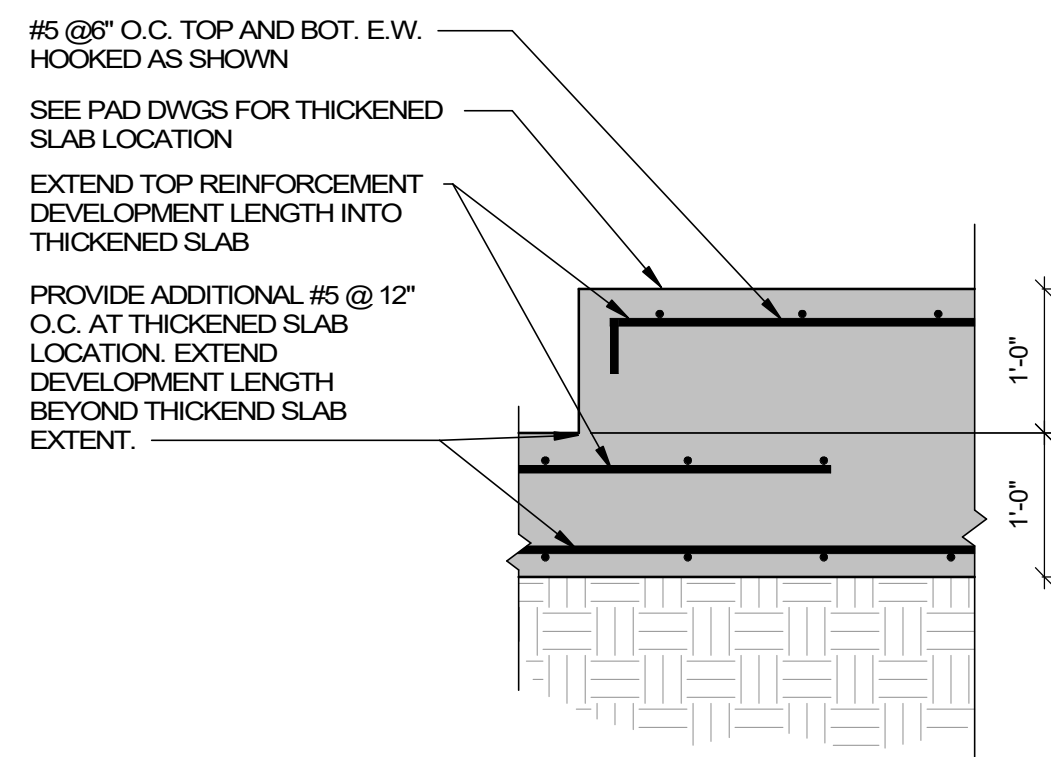
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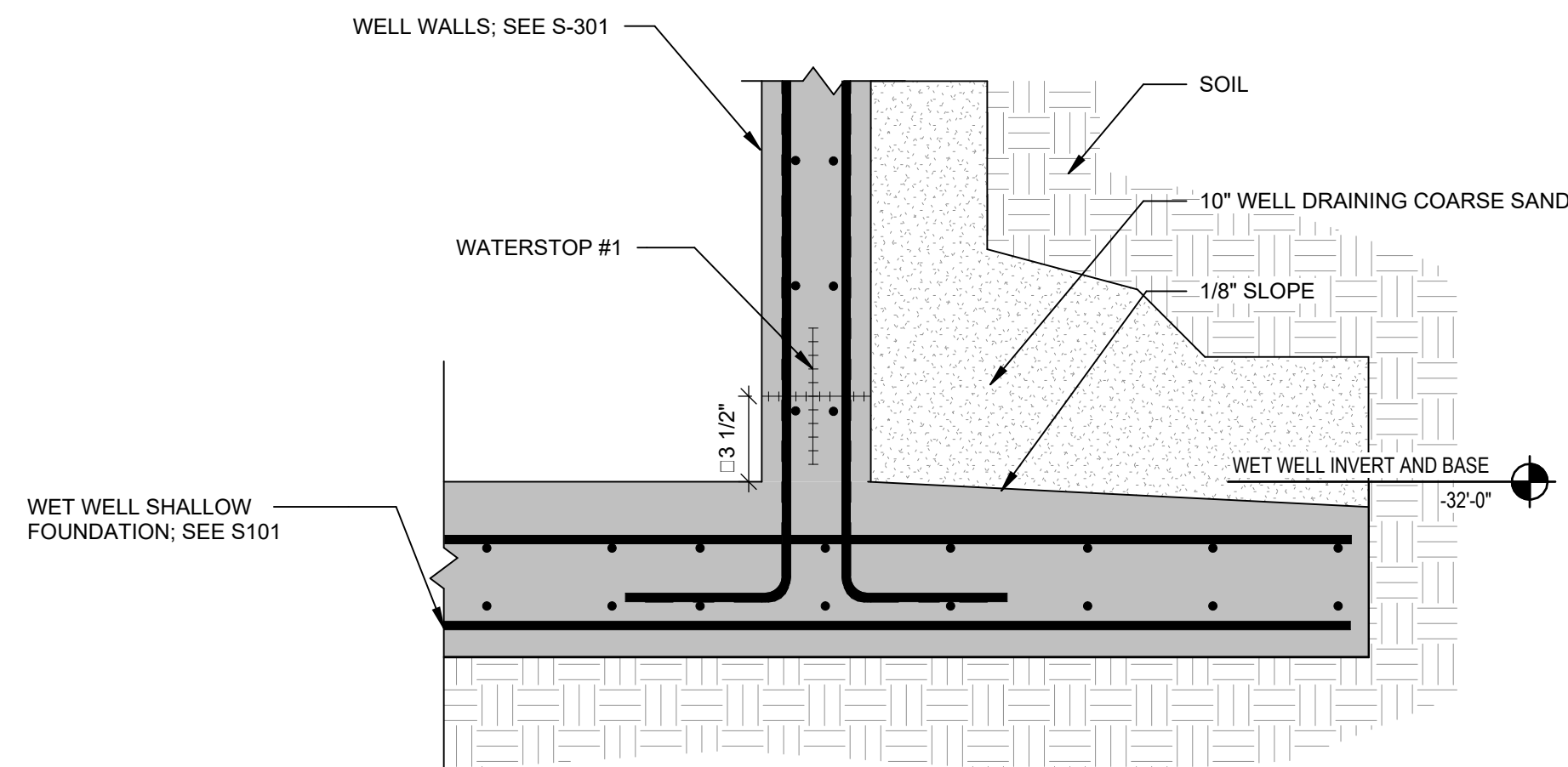
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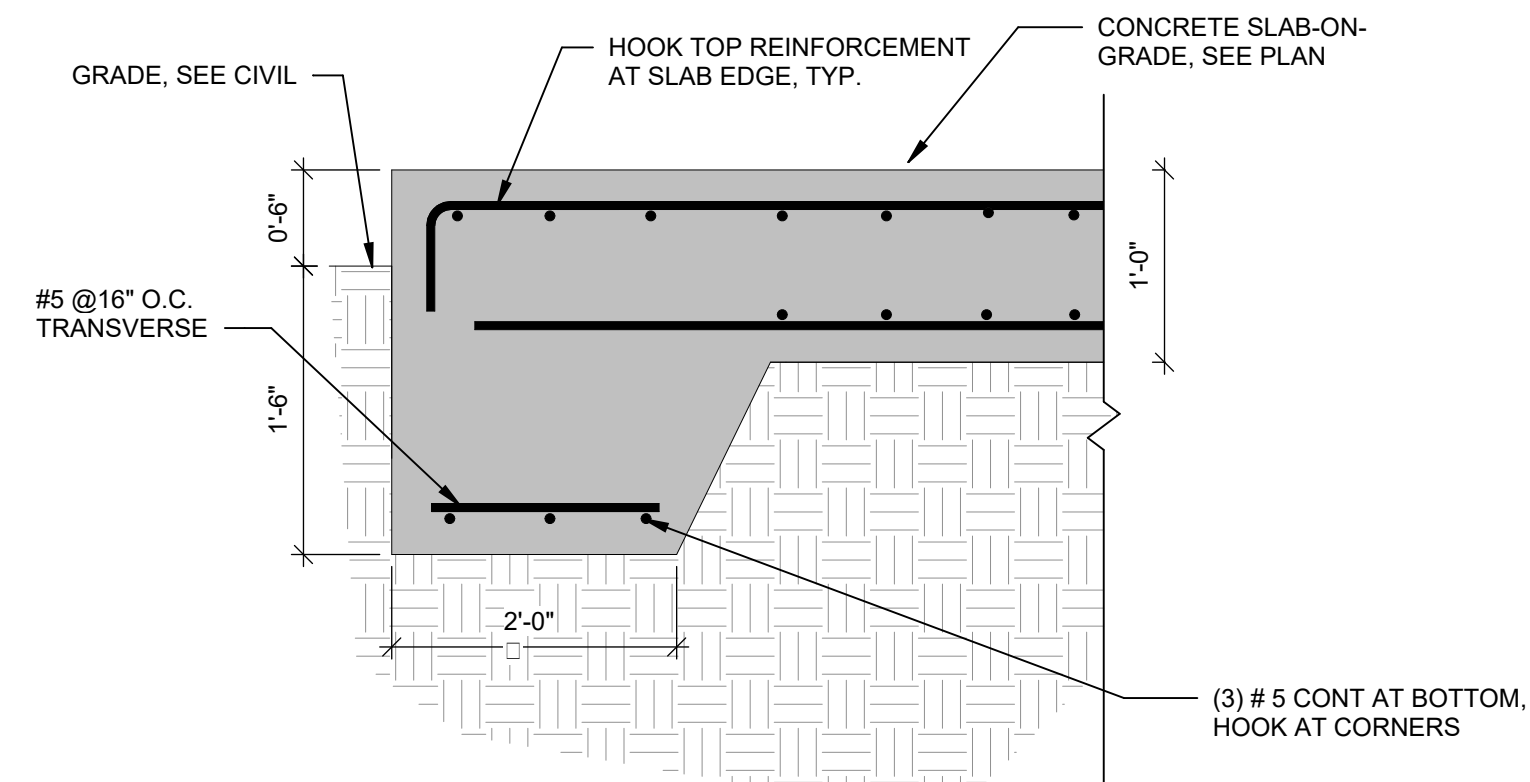
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1 THICKENED SLAB
S-502 3/4" = 1'-0"

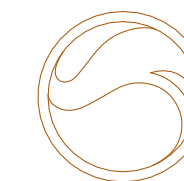


2 WET WELL SHALLOW FOUNDATION
S-502 1" = 1'-0"



3 TYP TURNDOWN SLAB EDGE DETAIL
S-502 1" = 1'-0"

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TOWN OF SMITHFIELD

PUMP STATION #1 AND FORCE MAIN IMPROVEMENTS

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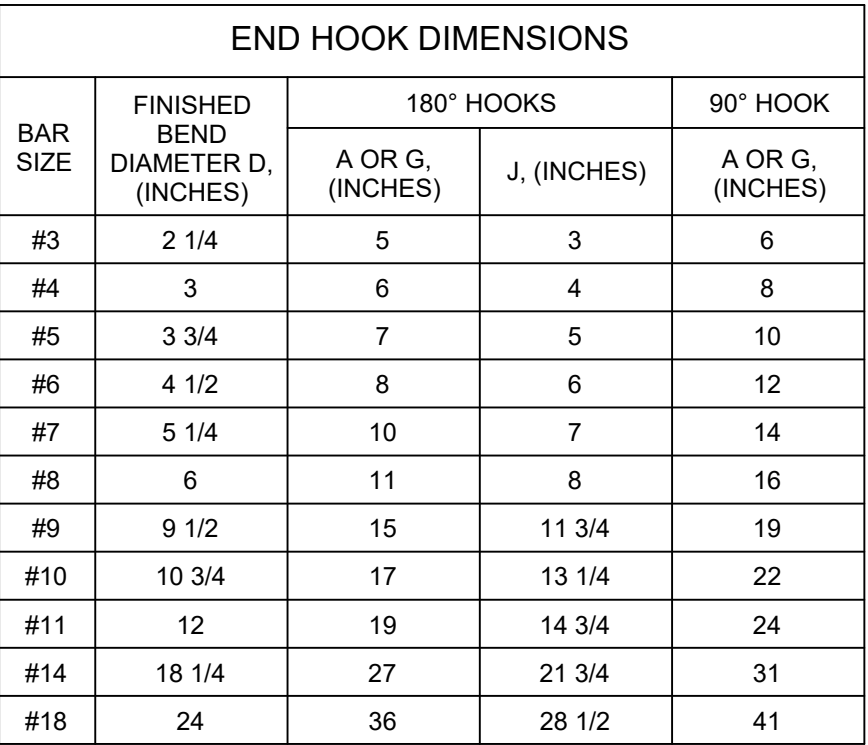
STRUCTURAL DETAILS

Revision: Sheet: of

Drawing No

S-502

1. **NOTES:**
2. ALL SPLICE LENGTHS ARE IN INCHES. THIS TABLE SHALL BE USED FOR WALL VERTICAL BARS ONLY. REFER TO OTHER DEVELOPMENT LENGTH TABLES FOR WALL HORIZONTAL BARS AND OTHER MEMBERS.
3. THE TENSION DEVELOPMENT LENGTH (L_d) IS EQUAL TO THE SCHEDULED "CLASS A" LAP SPLICE LENGTH.
4. FOR DETERMINING THE BAR CATEGORY, "db" IS DEFINED AS THE DIAMETER OF THE LAP BAR BEING SPLICED.
5. THE "CATEGORY 1" LAP LENGTH SHALL BE USED WHEN THE CLEAR SPACING BETWEEN BARS AT THE SPLICE IS EQUAL TO OR GREATER THAN $3db$.
6. THE "CATEGORY 2" LAP LENGTH SHALL BE USED WHEN THE CLEAR SPACING BETWEEN BARS AT THE SPLICE IS LESS THAN $3db$ AND THE CLEAR SPACING WHEN THE CLEAR SPACING BETWEEN BARS AT THE SPLICE IS EQUAL TO OR LESS THAN $2db$, SPLICES SHALL BE STAGGERED SO THAT NO MORE THAN 50% OF BARS ARE SPLICED AT ANY GIVEN LOCATION. REFER TO "TYPICAL CLEAR SPACING BETWEEN STAGGERED SPLICES" FOR CRITERIA TO DETERMINE CLEAR SPACING "S" FOR BARS AT STAGGERED SPLICES.
7. FOR EPOXY-COATED BARS, MULTIPLY THE TABULATED SPLICE LENGTHS BY 1.5.
8. WHEN LAP SPLICING BARS OF DIFFERENT SIZES, THE LAP LENGTH IS DETERMINED BY THE SMALLER BAR BUT MAY NOT BE LESS THAN THE "CLASS A" SPLICE LENGTH OF THE LARGER BAR.



2 TYPICAL END HOOK TYPES

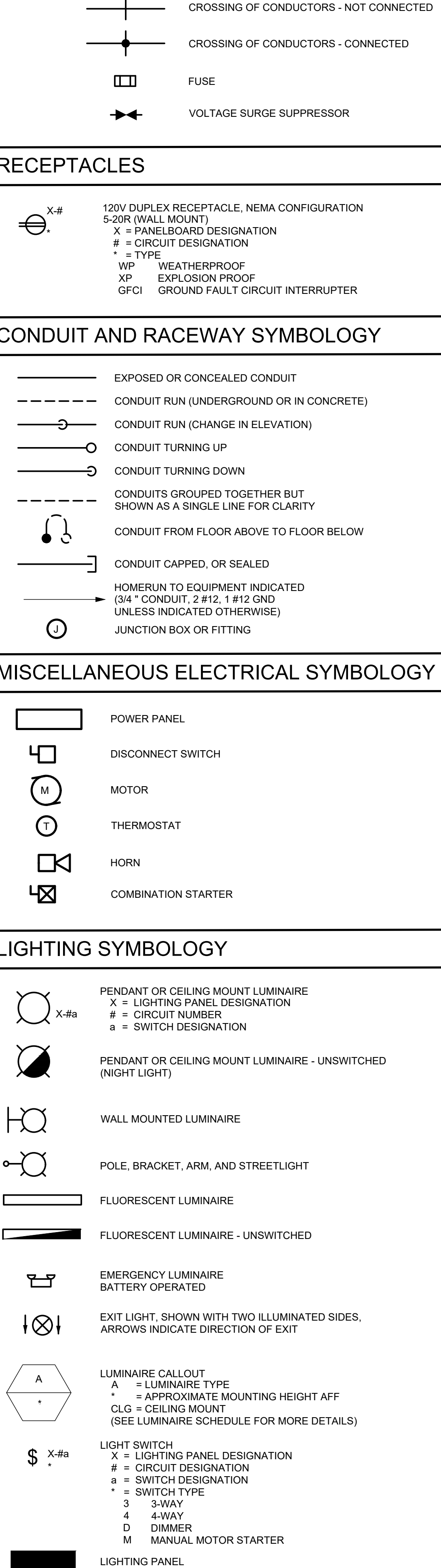
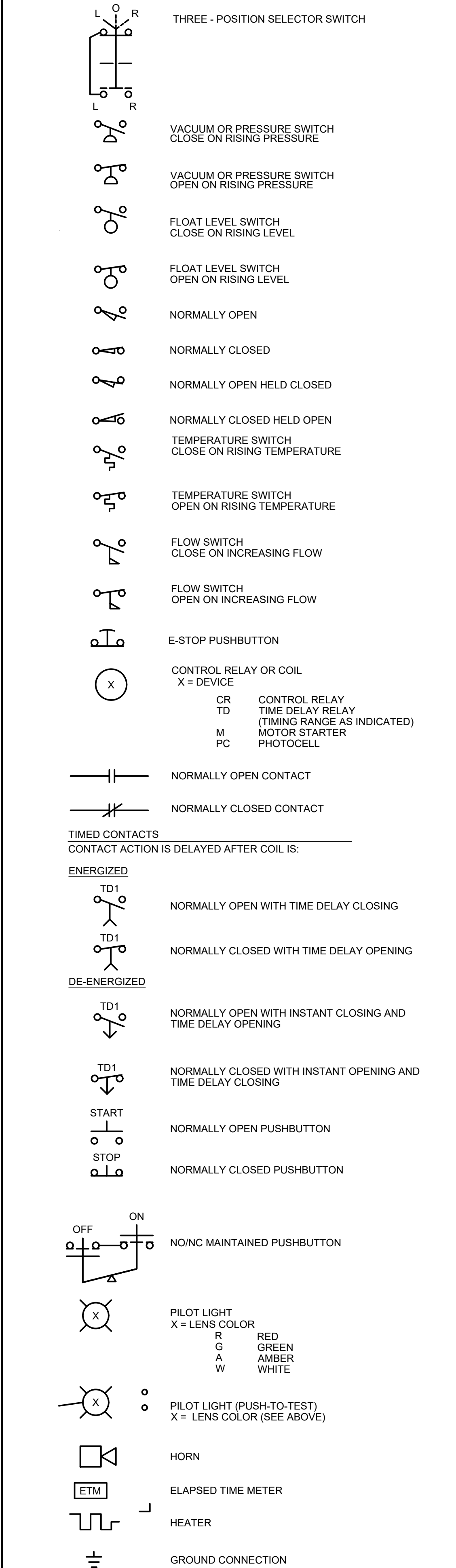
NOTES:

1. ALL SPLICE LENGTHS ARE IN INCHES.
2. THIS TABLE SHALL BE USED FOR SLABS ONLY. REFER TO OTHER DEVELOPMENT LENGTH TABLES FOR OTHER MEMBERS.
3. THE TENSION DEVELOPMENT LENGTH (l_{d1}) IS EQUAL TO THE SCHEDULED "CLASS A" LAP SPICE LENGTH.
4. A BOTTOM BAR IS DEFINED AS ANY BAR THAT DOES NOT HAVE MORE THAN 12" OF FRESH CONCRETE BELOW THE BAR.
5. OTHER BARS INCLUDE TOP BARS AND ALL OTHER BARS THAT HAVE MORE THAN 12" OF FRESH CONCRETE BELOW THE BAR. FOR TOP REINFORCEMENT IN SLABS THAT ARE 12" THICK OR LESS, TABULATED SPLICE LENGTHS FOR BOTTOM BARS SHALL BE USED.
6. FOR EPOXY-COATED BARS, MULTIPLY THE TABULATED SPLICE LENGTHS OF BOTTOM BARS BY 1.5 AND THE TABULATED SPLICE LENGTHS OF OTHER BARS BY 1.3.
7. WHEN LAP SPlicing BARS OF DIFFERENT SIZES, THE LAP LENGTH IS DETERMINED BY THE SMALLER BAR BUT MAY NOT BE LESS THAN THE "CLASS A" LAP SPICE LENGTH OF THE LARGER BAR.

NOTES:

1. ALL SPICE LENGTHS ARE IN INCHES.
2. DEVELOPMENT LENGTHS LISTED ABOVE SHALL ONLY BE USED FOR BAR END TERMINATIONS (NOT LAPs) SPECIFICALLY DESIGNATED AS COMPRESSION BARS.
3. LAP LENGTHS LISTED ABOVE SHALL ONLY BE USED FOR BAR LAP SPICES SPECIFICALLY DESIGNATED AS COMPRESSION SPICES.
4. IF BAR TERMINATIONS OR SPICES ARE NOT SPECIFICALLY DESIGNATED AS COMPRESSION, THE APPROPRIATE TENSION DEVELOPMENT LENGTH SHALL BE USED.
5. WHEN BARS OF DIFFERENT SIZE ARE LAP SPLICED, THE SPICE LENGTH SHALL BE THE LARGER OF EITHER THE DEVELOPMENT LENGTH OF THE LARGER BAR OR THE LAP LENGTH OF THE SMALLER BAR.
6. LENGTHS LISTED ARE VALID FOR BOTH NORMAL WEIGHT AND LIGHTWEIGHT CONCRETE.

4 TYPICAL COMPRESSION DEVELOPMENT AND LAP SPLICE LENGTHS



- # GROUNDING SYMBOLS
- | | |
|---|--|
|  | GROUND ROD AND GROUND WELL |
|  | GROUND ROD (3/4" X 10'-0") |
|  | GROUND CONNECTION - BOLTED TYPE |
|  | GROUND CONNECTION - EXOTHERMIC TYPE |
|  | BARE COPPER GROUND TO GROUND WIRE IN SLAB, OR UNDERGROUND GROUND GRID, SIZE AS NOTED |
|  | EARTH GROUNDING |

1. ALL RACEWAYS AND EQUIPMENT SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE 2023 EDITION OF THE NATIONAL ELECTRICAL CODE AND APPLICABLE LOCAL CODES.
2. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF TERMINAL BOXES AND CONDUIT ENTRANCES OF ALL EQUIPMENT AGAINST APPROVED SHOP DRAWINGS BEFORE STUBBING UP CONDUITS.
3. CONDUIT RUNS ARE SHOWN DIAGRAMMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT OR STRUCTURAL CONDITIONS. EXPOSED CONDUIT SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO BEAMS AND WALLS.
4. CONDUIT STUB-UPS SHALL NOT BE MORE THAN 6 INCHES FROM THE CENTERLINE OF TERMINAL BOXES.
5. IN THE EVENT OF INTERFERENCE BETWEEN ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS AND OTHER EQUIPMENT, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING AND THE ENGINEER SHALL APPROVE PROPOSED CHANGES BEFORE THEY ARE MADE.
6. ALL SURFACE MOUNTED PANELS AND PANELBOARDS ON THE INTERIOR OF EXTERIOR WALLS ABOVE GRADE OR IN OTHER LOCATIONS CONSIDERED DAMP OR WET SHALL BE MOUNTED SO AS TO MAINTAIN A 1/4 INCH (MINIMUM) AIR SPACE BETWEEN THE ENCLOSURE AND THE WALL.
7. LOCATION OF PULL BOXES ARE APPROXIMATE. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION WITH OTHER EQUIPMENT AND SHALL BE 6 INCHES (MINIMUM) AWAY FROM MECHANICAL PIPING FLOW LINES.
8. ONLY MAJOR PULL BOXES ARE SHOWN. THE CONTRACTOR SHALL PROVIDE ADDITIONAL PULL BOXES WHERE REQUIRED TO MAKE A WORKABLE INSTALLATION.
9. THE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE DETAILS WHETHER OR NOT THEY ARE REFERENCED ON THE DRAWINGS.
10. ALL CONDUIT RUNS CROSSING EXPANSION JOINTS SHALL HAVE EXPANSION OR EXPANSION AND DEFLECTION TYPE FITTINGS. FOR LOCATIONS OF EXPANSION JOINTS, REFER TO THE STRUCTURAL DWGS.
11. LUMINAIRES SHALL BE MOUNTED ACCORDING TO THE MOUNTING HEIGHT GIVEN ON THE DRAWINGS. WITH THE DISTANCE BEING MEASURED FROM THE BOTTOM OF THE LUMINAIRE TO THE FINISHED FLOOR. THE APPROPRIATE MOUNTING BRACKETS AND HARDWARE SHALL BE SUPPLIED.
12. ALL PANELBOARDS SHALL BE MOUNTED SO THAT THE DISTANCE FROM THE CENTERLINE OF THE TOP CIRCUIT BREAKER OPERATING HANDLE IN THE UPPERMOST POSITION TO THE FINISHED FLOOR SHALL NOT EXCEED 6'-7".
13. THE WIRING DIAGRAMS, QUANTITY AND SIZE OF WIRES AND CONDUIT REQUIRED ARE A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED. THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFICATIONS.
14. CONNECTIONS BETWEEN RIGID CONDUIT AND MOTOR TERMINAL BOXES OR SIMILAR EQUIPMENT SUBJECT TO VIBRATION SHALL BE FLEXIBLE LIQUID-TIGHT CONDUIT.
15. CONDUITS SHALL BE TERMINATED SO AS TO PERMIT NEAT CONNECTION TO MOTORS AND OTHER EQUIPMENT.
16. CONDUITS FOR FUTURE EQUIPMENT OR EXTENSIONS SHALL BE TERMINATED AS SHOWN IN DETAIL OR AS SPECIFIED.
17. ALL MOTOR STARTER CONTROL POWER TRANSFORMERS SHALL BE SIZED TO PROVIDE SUFFICIENT VOLT-AMPERE CAPACITY FOR OPERATING ALL LOCAL AND REMOTE ELECTRICAL DEVICES ASSOCIATED WITH CONTROL OF THE MOTOR IN ADDITION TO THE STARTER COIL.
18. MOTOR CONTROL CENTERS AND ALL FREE STANDING PANELS SHALL BE SET ON CONCRETE HOUSEKEEPING PADS WITH LEVELING CHANNELS EMBEDDED IN THE PAD.
19. ALL RECEPTACLES IN OUTDOOR AND ANTICIPATED WET AREAS SHALL BE GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLES WITH WEATHERPROOF COVERS.
20. ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING THE PROJECT TO VERIFY THE SCOPE OF WORK WITH FIELD CONDITIONS. PARTICULAR ATTENTION SHOULD BE GIVEN TO NEW CONDUIT RUNS IN EXISTING BUILDINGS.
21. EQUIPMENT LOCKOUTS SHALL BE IN STRICT ACCORDANCE WITH OWNER'S REQUIREMENTS.
22. FOR LIGHTING AND RECEPTACLE SYSTEMS, ONLY CIRCUIT NUMBERS ARE SHOWN. CONTRACTOR SHALL PROVIDE ALL NECESSARY CONDUITS, WIRES, FITTINGS, JUNCTION BOXES AND ALL NECESSARY COMPONENTS SHOWN OR NOT SHOWN ON THE DRAWINGS, TO MAKE THE ELECTRICAL INSTALLATION COMPLETE AND OPERATIONAL. ALL CONDUIT RUNS SHALL BE CONCEALED UNLESS INDICATED OTHERWISE. CIRCUIT LOADING SHALL BE AS INDICATED IN THE PANEL SCHEDULES. ALL LIGHTING AND RECEPTACLE CIRCUITS SHALL INCLUDE GROUND WIRE.



1. THE ENTIRE PUMP STATION WILL BE DEMOLISHED AND REPLACED WITH NEW. REMOVE AND DISPOSE OF ALL EXISTING ELECTRICAL EQUIPMENT.
2. REMOVE ALL EXPOSED AND UNDERGROUND RACEWAYS INCLUDING BOTH CONDUIT AND CONDUCTORS IN THEIR ENTIRETY.
3. THE CONTRACTOR SHALL PLACE THE STATION IN BYPASS OPERATION AND COORDINATE WITH THE OWNER PRIOR TO DE-ENERGIZING THE PUMP STATION.
4. THE CONTRACTOR SHALL COORDINATE WITH THE ELECTRIC UTILITY FOR DISCONNECTION OF PUMP STATION SERVICE AND WORK RELATED TO MODIFICATIONS TO THE EXISTING ELECTRIC UTILITY INFRASTRUCTURE.

SHEET KEYNOTES

- A. COORDINATE WITH THE ELECTRIC UTILITY FOR DISCONNECTION OF THE EXISTING SERVICE, AND REMOVAL OF THE POLE MOUNTED TRANSFORMERS. AFTER DISCONNECTION, THE CONTRACTOR SHALL DEMOLISH THE EXISTING SERVICE CONDUCTORS, CONDUITS, AND METER SOCKET.
- B. THE CONTRACTOR SHALL DEMOLISH ALL ELECTRICAL PANELS, BOXES, INSTRUMENTATION, RACEWAYS AND APPURTENANCES FOR THE EXISTING PUMP STATION. NONE OF THE EXISTING EQUIPMENT IS TO BE RE-USED FOR THE NEW PUMP STATION.



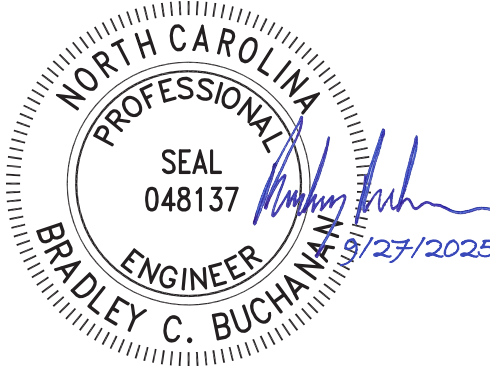
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Client/Project
TOWN OF SMITHFIELD

PUMP STATION #1 AND FORCE MAIN IMPROVEMENTS

Smithfield, NC

Project No.: 175568555

File Name: 68555_E10

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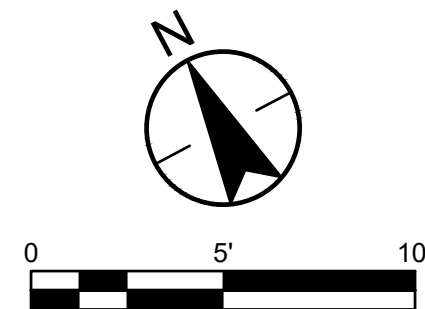
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ELECTRICAL
DEMOLITION PLAN

Revision:0

Drawing No

E-101



1. CONDUIT ROUTING IS DIAGRAMMATIC. MULTIPLE CONDUITS ROUTED IN THE SAME TRENCH ARE REPRESENTED WITH A SINGLE LINE FOR CLARITY. CONDUITS BETWEEN TWO ADJACENT PANELS OR PANELS ON THE SAME EQUIPMENT RACK ARE NOT SHOWN. REFER TO THE ONE-LINE DRAWING E-601 FOR CONNECTIONS BETWEEN PANELS AS WELL AS CONDUIT AND CONDUCTOR QUANTITIES AND SIZING. LOCATIONS OF CONDUIT IS SUGGESTIVE. FINAL ROUTING BY CONTRACTOR.
2. CLASSIFIED HAZARDOUS LOCATIONS PRESENT. REFER TO DETAIL E-937 ON DRAWING E-501 FOR IDENTIFIED HAZARDOUS LOCATIONS AND BOUNDARIES. CLASSIFICATIONS ARE IN ACCORDANCE WITH NFPA 820, 2024 EDITION. ALL ELECTRICAL WORK IN HAZARDOUS LOCATIONS SHALL BE IN ACCORDANCE WITH CHAPTER 5 OF THE NEC.

- A. DIESEL GENERATOR WITH 24-HOUR SUB-BASE FUEL TANK.
- B. FURNISH AND INSTALL SUBMERGENCE AND CLASS I, DIV 2 LOCATION RATED MAGNETIC FLOW METER WITH GROUNDING RINGS IN THE METERING VALVE. LOCATE REMOTE MOUNTED TRANSMITTER ON THE EQUIPMENT RACK. INCLUDE STAINLESS STEEL OR ALUMINUM SUN SHIELD OVER TRANSMITTER.
- C. LIGHT POLE WITH FIXTURE(S) ARRANGED AS SHOWN. SEE DETAIL E-973 ON SHEET E-501. LITHONIA DSI LEX P4 40K T4M (OR EQUAL) WITH PHOTOCELL AND NATURAL ALUMINUM FINISH OR EQUAL.
- D. SCADA ANTENNA AND COAXIAL CABLE FURNISHED AND INSTALLED BY RTU SUPPLIER. CONTRACTOR SHALL FURNISH AND INSTALL 2" TO BASE OF LIGHT POLE. STUB UP, AND TERMINATE CONDUIT AT TOP OF POLE FOUNDATION.
- E. #4/0 AWG BARE TINNED COPPER BURIED GROUND LOOP.
- F. #4 AWG BARE TINNED COPPER. BOND TO REBAR (TYP). DO NOT CHIP AWAY CONCRETE TO MAKE BOND UNLESS BONDING IS OTHERWISE REQUIRED PER NEC.
- G. #6 AWG COPPER. BOND TO FLOW METER HOUSING AND GROUNDING RINGS.
- H. MIN 3/4" x 10" GROUND ROD.
- I. MIN 3/4" x 10" GROUND ROD IN TEST WELL. SEE DETAIL E-303 ON DRAWING E-501.
- J. BARE TINNED COPPER. REFER TO ONE-LINE DRAWING FOR SIZE AND CONNECTION.
- K. #1/0 BARE TINNED COPPER. BOND EQUIPMENT RACK, PLATFORM, AND HANDRAILS TO GROUND.
- L. THE TOP OF THE ELECTRICAL PANELS SHALL BE NO HIGHER THAN 6'-7" ABOVE THE PLATFORM, AND THE BOTTOM OF THE PANELS SHALL BE NOW LOWER THAN 1'-0" ABOVE THE PLATFORM (EL 128').
- M. SERVICE CONDUIT TO UTILITY TRANSFORMER. COORDINATE WITH THE ELECTRIC UTILITY FOR FINAL LOCATION (WITHIN 200FT OF METER UM-1).
- N. LIGHT SWITCH FOR AREA LIGHTING WITH NEMA 4X COVER.

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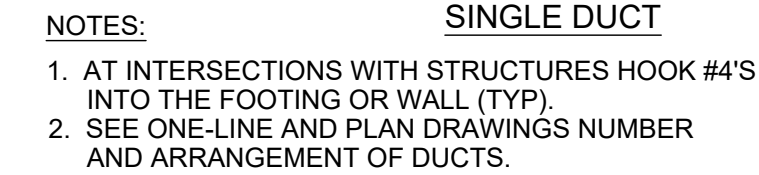
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Smithfield NC

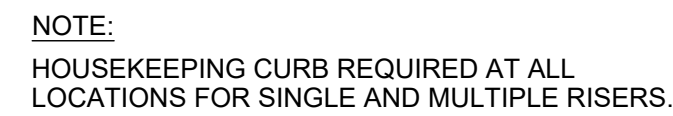
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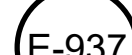
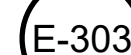
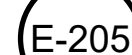
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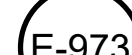
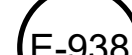
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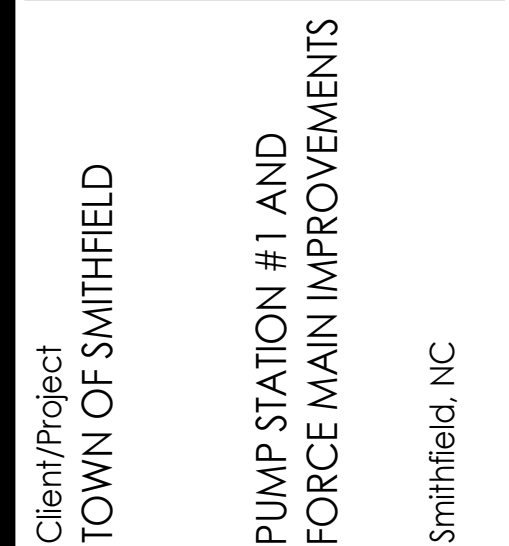


(F-937)



NOTES:

1. PROVIDE SHOP DRAWINGS SEALED BY A STRUCTURAL PROFESSIONAL ENGINEER LICENSED IN NORTH CAROLINA FOR THE LIGHT POLE FOUNDATION AND STRUCTURE.

Permit/Seal

Revision:0

Drawing No.

E-501



- A. POLE POWER INSULATED TERM BLOCK PANEL MOUNT ALLEN BRADLEY BULLETIN (OR EQUAL) 1492 SIZED AS REQUIRED.
- B. CONTROL CIRCUIT INSULATED TERM BLOCK PANEL MOUNT ALLEN BRADLEY BULLETIN (OR EQUAL) 1492.
- C. CABLE CORD FITTING WITH GLAND NUT & NEOPRENE BUSHING EQUAL TO CROUSE HINDS CGFP (OR EQUAL) SIZE OR AS REQUIRED FOR CABLE O.D.
- D. 1/8" DRAIN AND VENTILATION HOLES.
- E. CONDUIT SEAL SUITABLE FOR CLASS I, DIV. 1, GROUP D HAZ. LOCATION.
- F. CONDUIT HOUSEKEEPING CURB. SEE ELECTRICAL DETAIL E-203.
- G. COAT WITH CLEAR URETHANE SEAL ELECTRICAL-ELECTRONIC INSULATOR AS CRC 'U' 02049 (OR EQUAL).
- H. SEE ELECTRICAL EQUIPMENT SUPPORT DETAIL E-938.

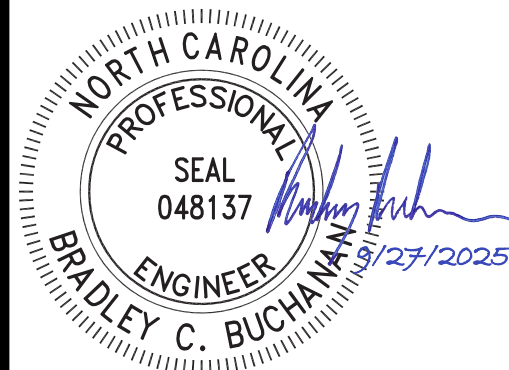
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TOWN OF SMITHFIELD
PUMP STATION #1 AND
FORCE MAIN IMPROVEMENTS
Smithfield, NC

Project No.: 175568555

File Name: 68555_E502
Scale: AS NOT

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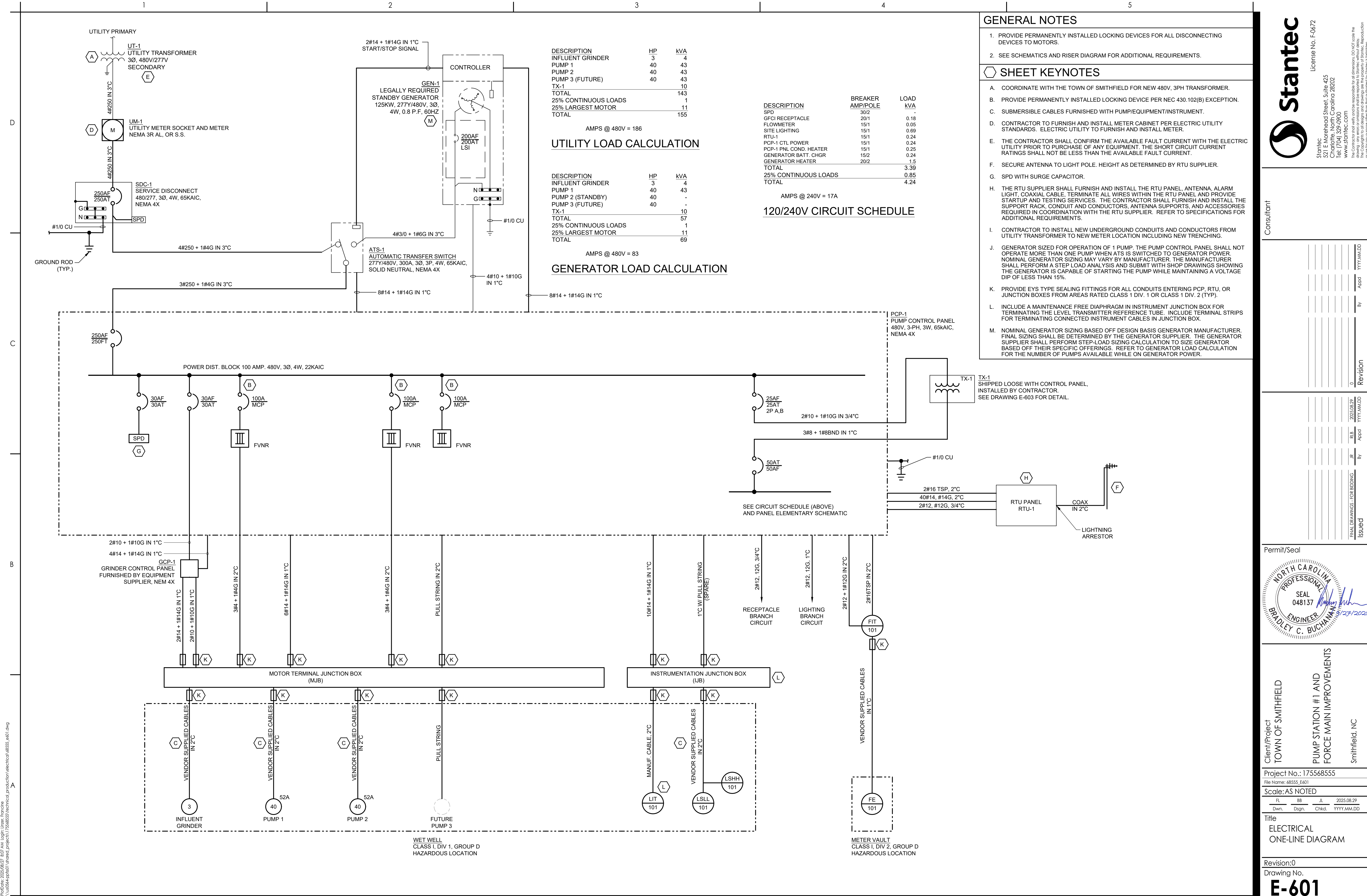
Title
ELECTRICAL
DETAILS II

Revision:0

Drawing No

E-502

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DESCRIPTION	HP	KVA
INFLUENT GRINDER	3	4
PUMP 1	40	43
PUMP 2	40	43
PUMP 3 (FUTURE)	40	43
TX-1		10
TOTAL		143
25% CONTINUOUS LOADS		1
25% LARGEST MOTOR		11
TOTAL		155

AMPS @ 480V = 186

UTILITY LOAD CALCULATION

DESCRIPTION	HP	KVA
INFLUENT GRINDER	3	4
PUMP 1	40	43
PUMP 2 (STANDBY)	40	-
PUMP 3 (FUTURE)	40	-
TX-1		10
TOTAL		57
25% CONTINUOUS LOADS		1
25% LARGEST MOTOR		11
TOTAL		69

AMPS @ 480V = 83

GENERATOR LOAD CALCULATION

DESCRIPTION	BREAKER AMP/POLE	LOAD kVA
SPD	30/2	-
GFCI RECEPTACLE	20/1	0.18
FLOWMETER	15/1	0.05
SITE LIGHTING	15/1	0.69
RTU-1	15/1	0.24
PCP-1 CTL POWER	15/1	0.24
PCP-1 PNL COND. HEATER	15/1	0.25
GENERATOR BATT. CHGR	15/2	0.24
GENERATOR HEATER	20/2	1.5
TOTAL		3.39
25% CONTINUOUS LOADS		0.85
TOTAL		4.24

AMPS @ 240V = 17A

120/240V CIRCUIT SCHEDULE

GENERAL NOTES

- PROVIDE PERMANENTLY INSTALLED LOCKING DEVICES FOR ALL DISCONNECTING DEVICES TO MOTORS.
- SEE SCHEMATICS AND RISER DIAGRAM FOR ADDITIONAL REQUIREMENTS.

SHEET KEYNOTES

- COORDINATE WITH THE TOWN OF SMITHFIELD FOR NEW 480V, 3PH TRANSFORMER.
- PROVIDE PERMANENTLY INSTALLED LOCKING DEVICE PER NEC 430.102(B) EXCEPTION.
- SUBMERSIBLE CABLES FURNISHED WITH PUMP/EQUIPMENT/INSTRUMENT.
- CONTRACTOR TO FURNISH AND INSTALL METER CABINET PER ELECTRIC UTILITY STANDARDS. ELECTRIC UTILITY TO FURNISH AND INSTALL METER.
- THE CONTRACTOR SHALL CONFIRM THE AVAILABLE FAULT CURRENT WITH THE ELECTRIC UTILITY PRIOR TO PURCHASE OF ANY EQUIPMENT. THE SHORT CIRCUIT CURRENT RATINGS SHALL NOT BE LESS THAN THE AVAILABLE FAULT CURRENT.
- SECURE ANTENNA TO LIGHT POLE. HEIGHT AS DETERMINED BY RTU SUPPLIER.
- SPD WITH SURGE CAPACITOR.
- THE RTU SUPPLIER SHALL FURNISH AND INSTALL THE RTU PANEL, ANTENNA, ALARM LIGHT, COAXIAL CABLE, TERMINATE ALL WIRES WITHIN THE RTU PANEL AND PROVIDE STARTUP AND TESTING SERVICES. THE CONTRACTOR SHALL FURNISH AND INSTALL THE SUPPORT RACK, CONDUIT AND CONDUCTORS, ANTENNA SUPPORTS, AND ACCESSORIES REQUIRED IN COORDINATION WITH THE RTU SUPPLIER. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- CONTRACTOR TO INSTALL NEW UNDERGROUND CONDUITS AND CONDUCTORS FROM UTILITY TRANSFORMER TO NEW METER LOCATION INCLUDING NEW TRENCHING.
- GENERATOR SIZED FOR OPERATION OF 1 PUMP. THE PUMP CONTROL PANEL SHALL NOT OPERATE MORE THAN ONE PUMP WHEN ATS IS SWITCHED TO GENERATOR POWER. NOMINAL GENERATOR SIZING MAY VARY BY MANUFACTURER. THE MANUFACTURER SHALL PERFORM A STEP LOAD ANALYSIS AND SUBMIT WITH SHOP DRAWINGS SHOWING THE GENERATOR IS CAPABLE OF STARTING THE PUMP WHILE MAINTAINING A VOLTAGE DIP OF LESS THAN 15%.
- PROVIDE EYS TYPE SEALING FITTINGS FOR ALL CONDUITS ENTERING PCP, RTU, OR JUNCTION BOXES FROM AREAS RATED CLASS 1 DIV. 1 OR CLASS 1 DIV. 2 (TYP).
- INCLUDE A MAINTENANCE FREE DIAPHRAGM IN INSTRUMENT JUNCTION BOX FOR TERMINATING THE LEVEL TRANSMITTER REFERENCE TUBE. INCLUDE TERMINAL STRIPS FOR TERMINATING CONNECTED INSTRUMENT CABLES IN JUNCTION BOX.
- NOMINAL GENERATOR SIZING BASED OFF DESIGN BASIS GENERATOR MANUFACTURER. FINAL SIZING SHALL BE DETERMINED BY THE GENERATOR SUPPLIER. THE GENERATOR SUPPLIER SHALL PERFORM STEP-LOAD SIZING CALCULATION TO SIZE GENERATOR BASED OFF THEIR SPECIFIC OFFERINGS. REFER TO GENERATOR LOAD CALCULATION FOR THE NUMBER OF PUMPS AVAILABLE WHILE ON GENERATOR POWER.

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Revision

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BRADLEY C. BUCHANAN
2/27/2025

Client/Project
TOWN OF SMITHFIELD

PUMP STATION #1 AND
FORCE MAIN IMPROVEMENTS

Smithfield, NC

Project No.: 175568555

File Name: 68555_E601

Scale: AS NOTED

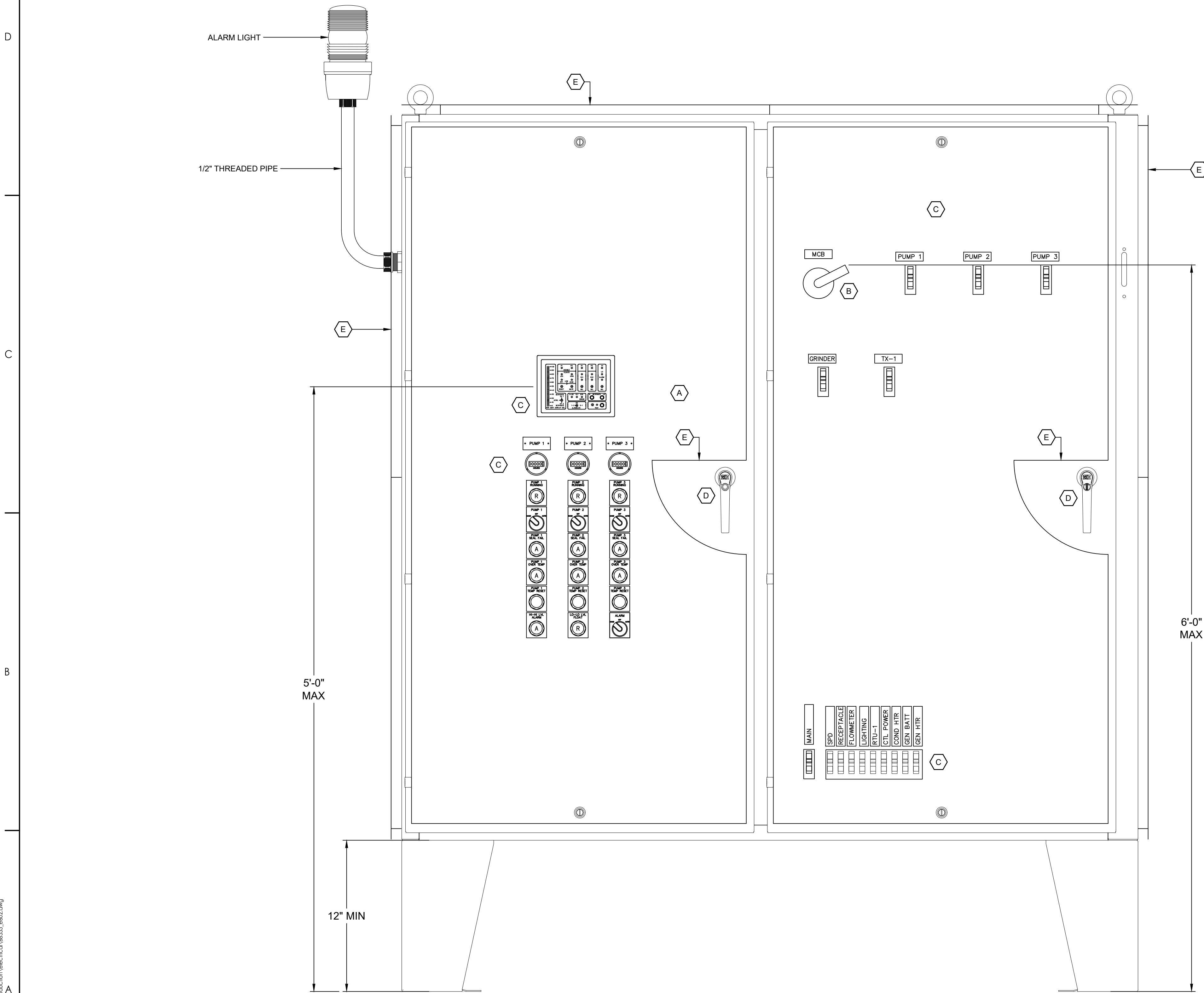
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Title
ELECTRICAL
ONE-LINE DIAGRAM

Revision:0
Drawing No.

E-601

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Rev: 01/25/2025 09:07 01/25/2025
User: jfrancis



GENERAL NOTES

- THE CONTROL PANEL DETAILS HEREIN ARE DIAGRAMMATIC IN NATURE FOR THE PURPOSE OF ILLUSTRATING GENERAL REQUIREMENTS. THE CONTROL PANEL MANUFACTURER SHALL PROVIDE COMPLETE SHOP DRAWINGS AND IS RESPONSIBLE FOR A FULLY FUNCTIONAL CONTROL PANEL IN ACCORDANCE WITH THE REQUIREMENTS PROVIDED IN DESIGN DRAWINGS AND SPECIFICATIONS.
- THE CONTROL PANEL SHALL BE ASSEMBLED BY A UL-698A PANEL SHOP AND SHALL BEAR THE UL LABEL.
- THE CONTROL PANEL ENCLOSURE SHALL INCLUDE SUNSHIELDS. THE SUNSHIELDS SHALL BE AFFIXED TO THE PANEL DOORS, AND ALL FACES THAT RECEIVE DIRECT SUNLIGHT EXPOSURE.
- EACH CONTROL PANEL SECTION SHALL BE OPEN TO ADJACENT SECTIONS TO ALLOW AIRFLOW THROUGHOUT PANEL.

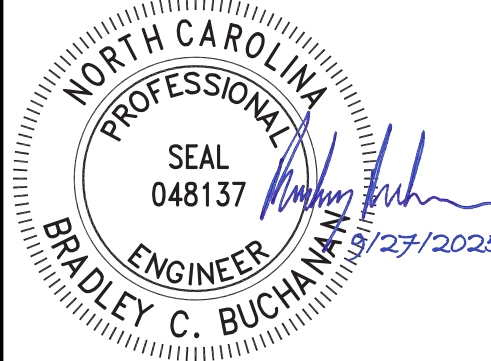
SHEET KEYNOTES

- A. FURNISH AND INSTALL THE FOLLOWING ELECTRICAL WARNING LABELS ON EACH INNER DOOR PANEL:
- ARC FLASH HAZARD LABEL IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
 - OSHA DANGER SAFETY LABEL INDICATING "480 VOLTS".
 - A LABEL INDICATING THE PANEL RECEIVES POWER FROM MULTIPLE SOURCES WITH THE 120V BREAKER IN PB-1 AND 480V BREAKER IN SWBD-1 LISTED.
 - A LABEL INDICATING UPS VOLTAGE IS PRESENT WHEN POWER IS OFF.
- B. PROVIDE A REMOTE MOUNT BREAKER OPERATOR HANDLE ON INNER DOOR FOR BREAKER. INCLUDE DEFEATABLE MECHANICAL INTERLOCK THAT PREVENTS OPENING THE INNER DOORS WHEN THE BREAKER IS IN THE ON POSITION. STARTER AND MAIN BREAKERS SHALL BE PADLOCKABLE IN THE OFF POSITION.
- C. INDICATORS, SWITCHES, CONTROLLER, AND BREAKER HANDLES MOUNTED TO OR ACCESSIBLE FROM DEADFRONT INSIDE EXTERIOR PANEL DOOR.
- D. LOCKABLE 3-POINT LATCH.
- E. STAINLESS STEEL SUNSHIELD WITH 1" STAND-OFFS.

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Revision	By	Appd	YYY.MM.DD
0			YYY.MM.DD

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Client/Project
TOWN OF SMITHFIELD

PUMP STATION #1 AND
FORCE MAIN IMPROVEMENTS

Smithfield, NC

Project No.: 175568555

File Name: 68555_E602

Scale: AS NOTED

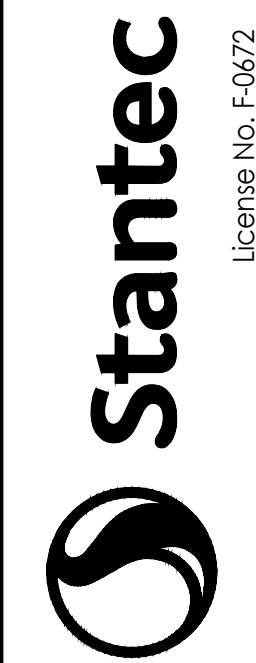
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Title
ELECTRICAL
CONTROL PANEL

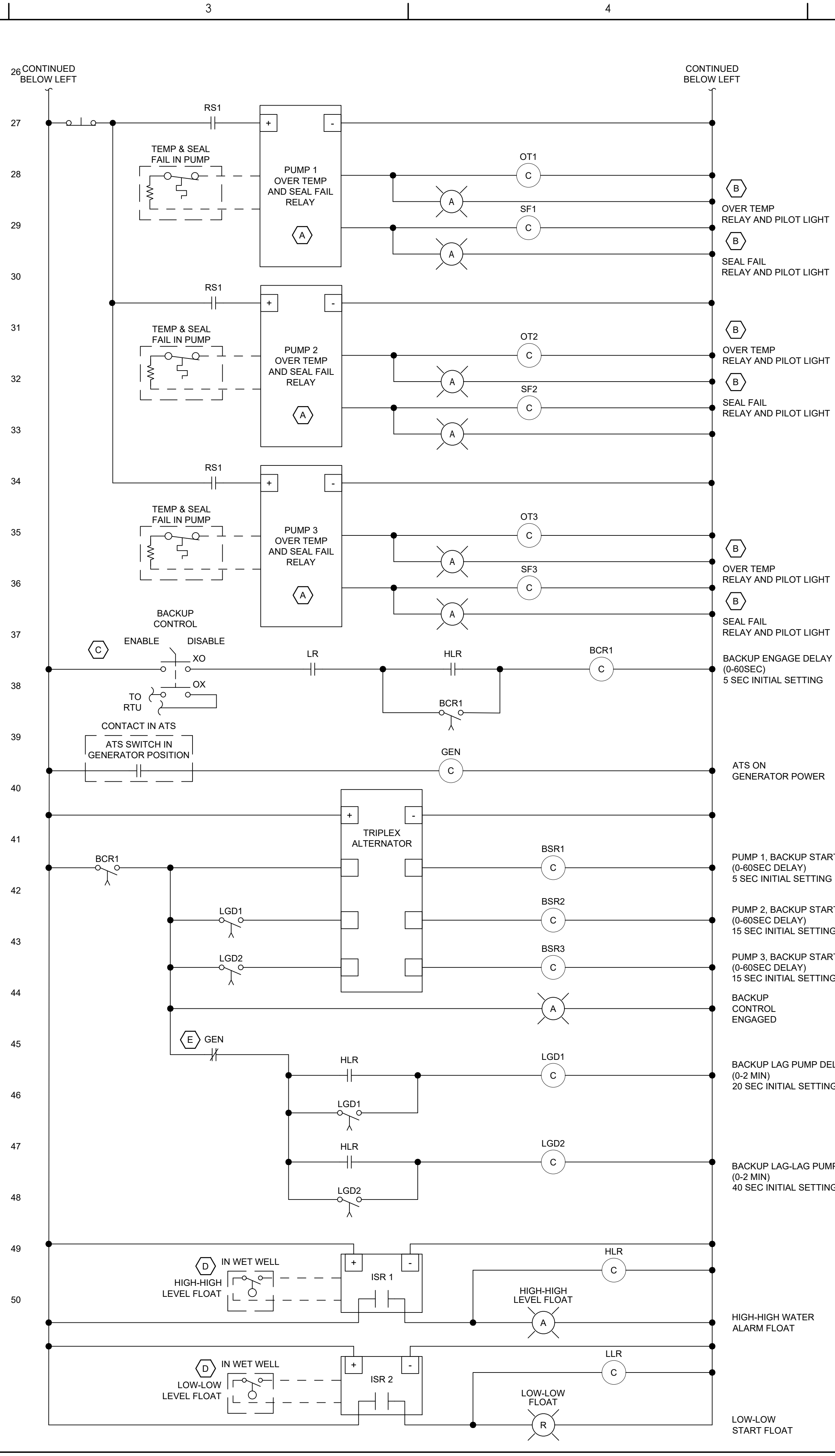
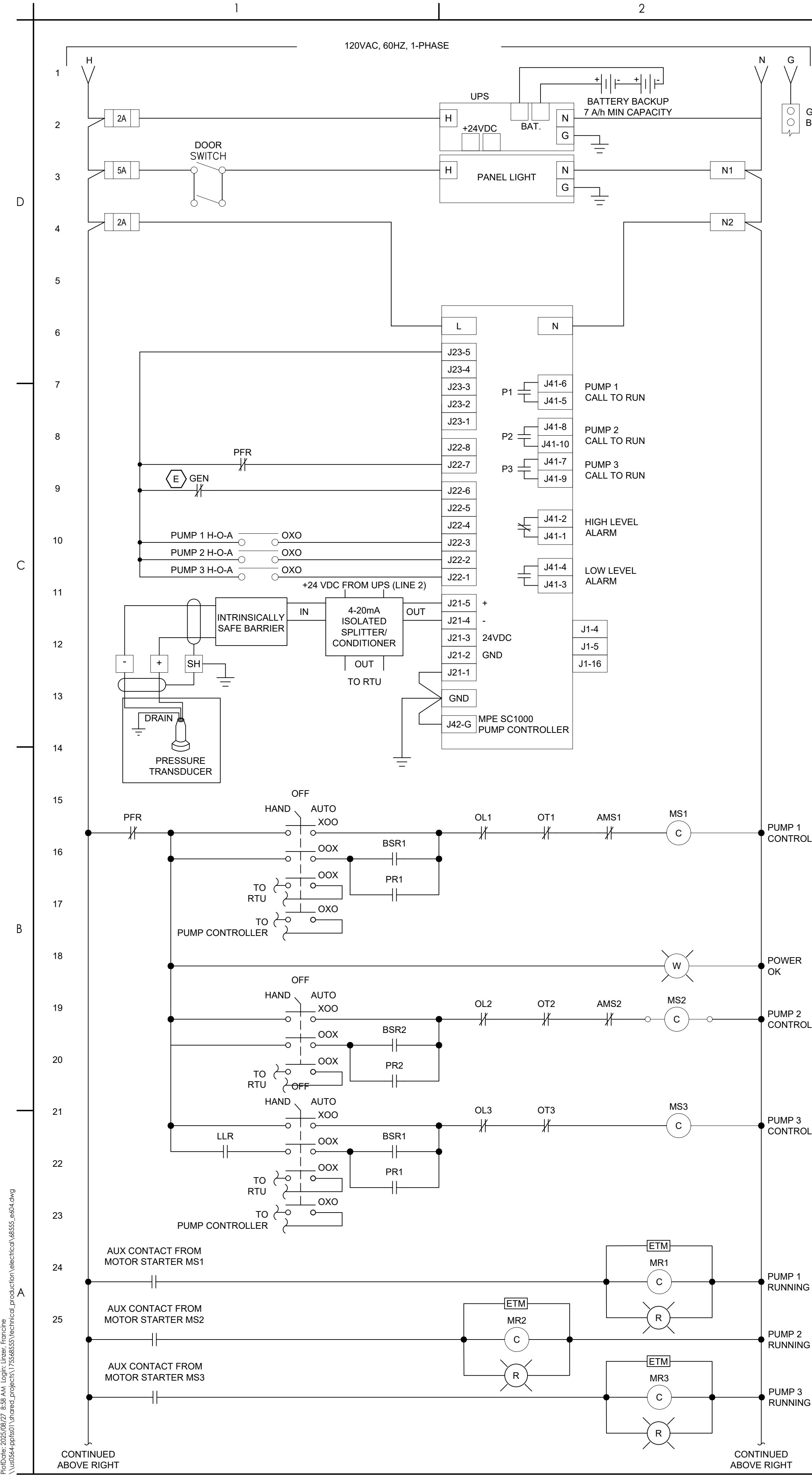
Revision:0

Drawing No.

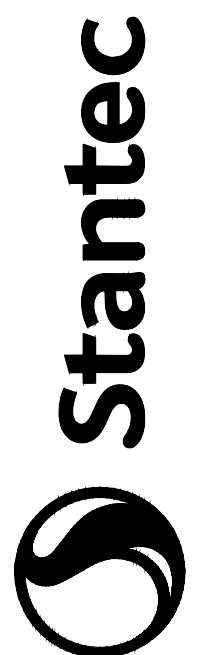
E-602



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- ### SHEET KEYNOTES
- A. OVER-TEMP AND SEAL FAIL DETECTION AS REQUIRED BY PUMP MANUFACTURER.
 - B. SEPARATE PILOT LIGHTS ARE NOT REQUIRED IF THEY ARE INTEGRAL TO PUMP PROTECTION RELAY MOUNTED ON THE CONTROL PANEL INNER DOOR.
 - C. THE BACKUP PUMP CONTROL SHALL WORK AS FOLLOWS:
 - C.A. INITIAL BACKUP CONTROL IS PROVIDED PUMP CONTROLLER USING SUBMERSIBLE LEVEL TRANSMITTER.
 - C.B. LOCAL BACKUP CONTROL IS ENGAGED WHEN WATER LEVEL REACHES THE HIGH-HIGH LEVEL FLOAT. AN ALTERNATING RELAY WILL START THE LEAD PUMP.
 - C.C. AFTER TIME DELAY IF LEVEL STILL EXCEEDS HIGH-HIGH LEVEL FLOAT, THE NEXT PUMP WILL BE CALLED TO RUN. THIS STEP REPEATS UNTIL ALL PUMPS ARE RUNNING OR WATER DROPS BELOW HIGH-HIGH LEVEL FLOAT.
 - C.D. PUMP(S) WILL CONTINUE TO RUN UNTIL LEVEL DROPS BELOW THE PUMPS LOW-LOW LEVEL FLOAT.
 - C.E. AFTER PUMPS STOP, THE ALTERNATING RELAY WILL ROTATE LEAD AND LAG PUMPS.
 - D. INTRINSICALLY SAFE CIRCUIT SHALL BE IN ACCORDANCE WITH NEC ARTICLE 504.
 - E. LIMIT (1) PUMP MAY OPERATE WHILE STATION IS ON GENERATOR.



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Client/Project
TOWN OF SMITHFIELD

Project No.: 175568555
File Name: 68555_E604
Scale: NO SCALE

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Title
ELECTRICAL
CONTROL PANEL

Revision: 0
Drawing No.
E-604

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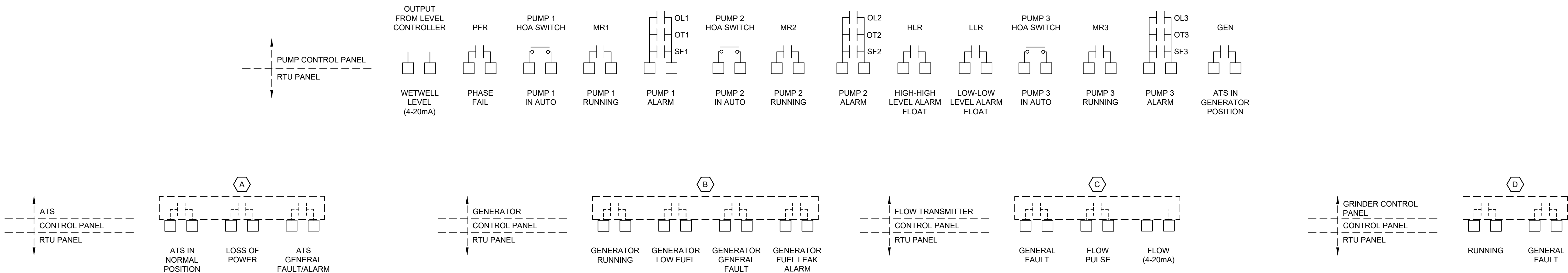
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TELEMETRY TERMINAL STRIP

NO SCALE

GENERAL NOTES

1. INCLUDE A TERMINAL STRIP, SEPARATED FROM OTHER TERMINAL STRIPS WITH THE CONNECTIONS SHOWN ON THIS DRAWING. THESE TERMINALS ARE RESERVED FOR CONNECTIONS BETWEEN THE CONTROL PANEL AND THE REMOTE TELEMETRY UNIT.

SHEET KEYNOTES

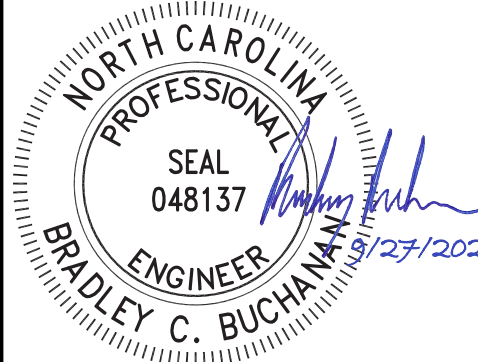
- A. RESERVED FOR CONNECTIONS TO THE ATS. THE CONTRACTOR WILL TERMINATE THE SIGNAL WIRING BETWEEN THE ATS AND CONTROL PANEL. THE RTU SUPPLIER WILL TERMINATE THE SIGNAL WIRING BETWEEN THE CONTROL PANEL AND RTU UNIT.
- B. RESERVED FOR CONNECTIONS TO THE GENERATOR. THE CONTRACTOR WILL TERMINATE THE SIGNAL WIRING BETWEEN THE GENERATOR CONTROLLER AND THE CONTROL PANEL. THE RTU SUPPLIER WILL TERMINATE THE SIGNAL WIRING BETWEEN THE CONTROL PANEL AND RTU UNIT.
- C. RESERVED FOR CONNECTIONS TO THE FLOWMETER. THE CONTRACTOR WILL TERMINATE THE SIGNAL WIRING BETWEEN THE FLOW TRANSMITTER AND THE CONTROL PANEL. THE RTU SUPPLIER WILL TERMINATE THE SIGNAL WIRING BETWEEN THE CONTROL PANEL AND RTU UNIT.
- D. RESERVED FOR CONNECTIONS TO THE GRINDER CONTROL PANEL. THE CONTRACTOR WILL TERMINATE THE SIGNAL WIRING BETWEEN THE GRINDER CONTROL PANEL AND THE CONTROL PANEL. THE RTU SUPPLIER WILL TERMINATE THE SIGNAL WIRING BETWEEN THE CONTROL PANEL AND RTU UNIT.

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Revision	By	Appd	YTY/MM/DD
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FINAL DRAWINGS FOR BIDDING	JL	RLE	2025.08.29

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Client/Project
TOWN OF SMITHFIELD
PUMP STATION #1 AND
FORCE MAIN IMPROVEMENTS
Smithfield, NC

Project No.: 175568555
File Name: 68555_E605
Scale: NO SCALE
Dwn. B8 JL 2025.08.29
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Title
ELECTRICAL
CONTROL PANEL

Revision: 0
Drawing No.

E-605

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