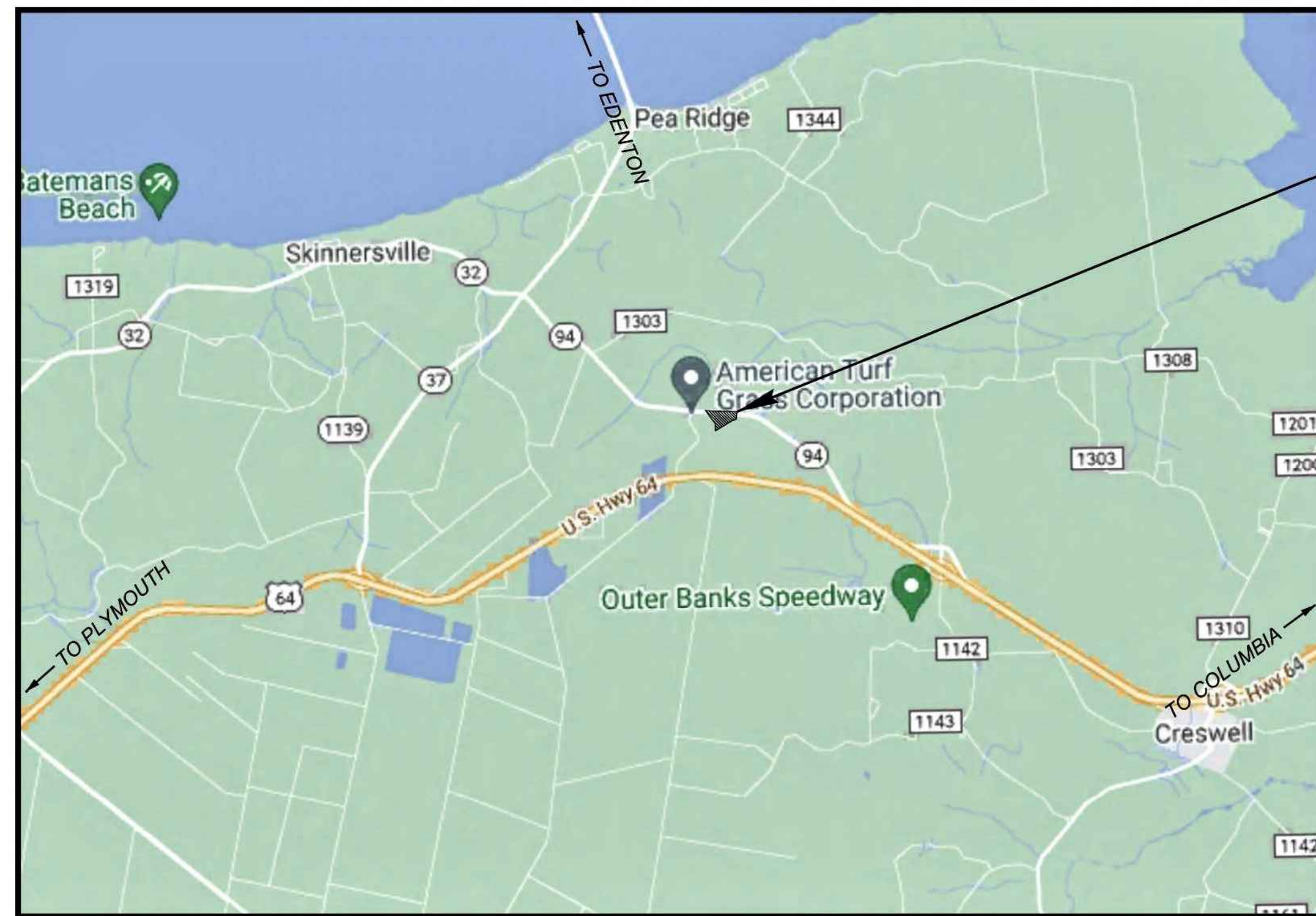


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WASHINGTON COUNTY CRESWELL MAINTENANCE YARD

ON SITE SEPTIC SYSTEM REPAIRS CONSTRUCTION DOCUMENTS



PROJECT SITE

CIVIL ENGINEER
VAUGHN & MELTON
1318-F PATTON AVE.
ASHEVILLE, NC 28806
828-253-2796

INDEX OF SHEETS

GENERAL

CS1.0 COVER SHEET

CIVIL

- C1.0 EXISTING SITE LAYOUT PLAN
- C2.0 CONTOURS
- C3.0 PROPOSED SITE LAYOUT PLAN
- C4.0 PROPOSED SEPTIC AND PUMP TANK LAYOUT PLAN
- C5.0 PROPOSED SEPTIC AND PUMP TANK DETAILS
- C6.0 PROPOSED DRAINFIELD PLAN VIEW
- C6.1 PROPOSED DRAINFIELD SECTION & DETAILS
- C7.0 PROPOSED FORCE MAIN NO.1 AND NO.2 PROFILES
- C8.0 CONSTRUCTION DETAILS

ELECTRICAL

- E1.0 ELECTRICAL SITE LAYOUT PLAN
- E2.0 ELECTRICAL DETAILS

THE PROJECT CONSISTS OF REPAIRS TO THE EXISTING ON-SITE WASTE WATER SYSTEM SERVING THE WASHINGTON COUNTY DOT MAINTENANCE YARD. A NEW SEPTIC TANK, PUMP TANK, FORCE MAINS AND A NEW LOW PRESSURE PIPE DRAINFIELD SYSTEM ARE PROPOSED TO REPLACE THE EXISTING ON SITE DISPOSAL SYSTEM.

NO.	DATE	DESCRIPTION
1	11/28/21	SURVEY UPDATE
2	11/28/21	PERMIT APPROVAL
3	11/18/22	SCO ELECTRICAL REVIEW COMMENTS
4	01/20/23	SCO 01/04/23 REVIEW COMMENTS
5	04/28/23	DESIGN MODIFICATIONS



**NCDOT MAINTENANCE FACILITY
CRESWELL SEPTIC SYSTEM**
SCO ID#22-25127-01A
WASHINGTON COUNTY, NORTH CAROLINA



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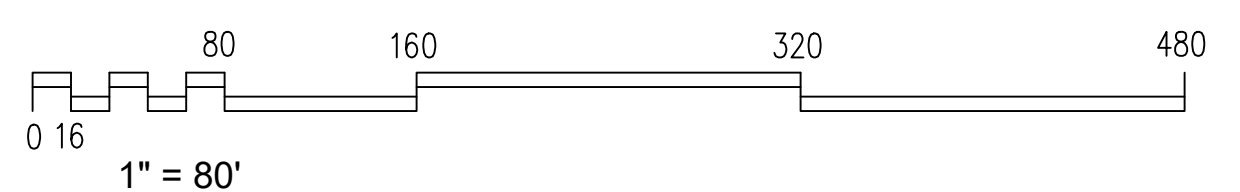
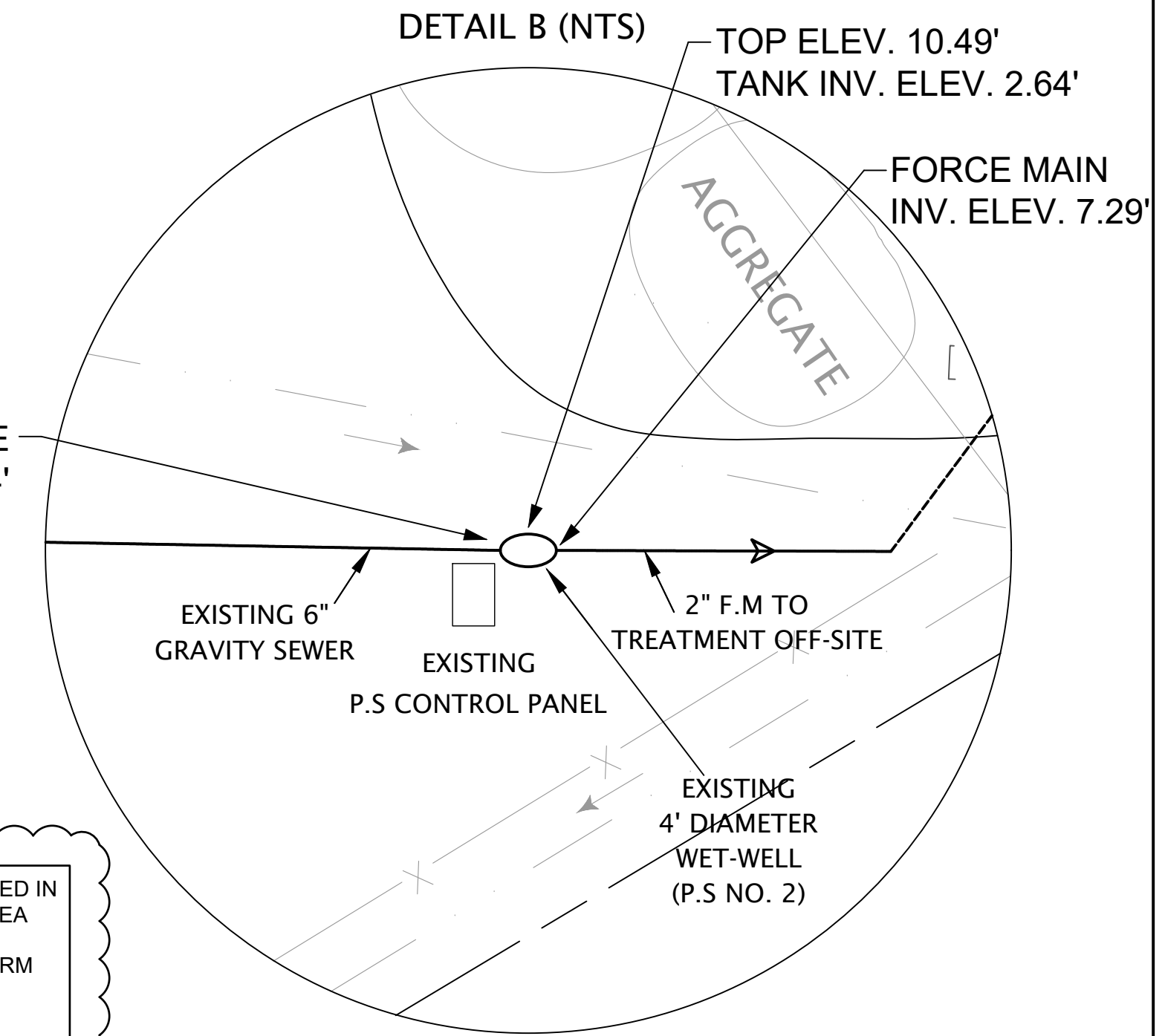
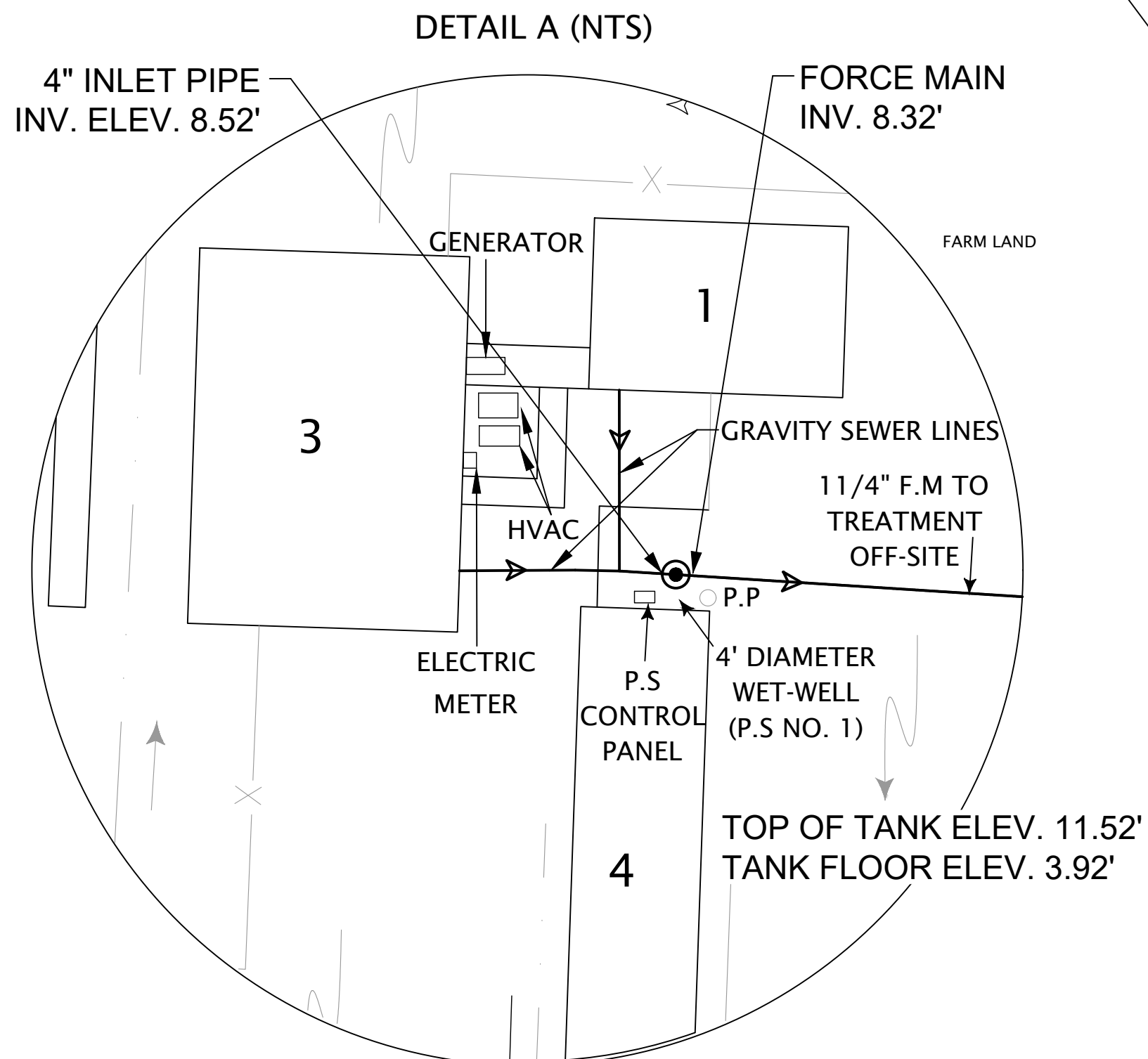
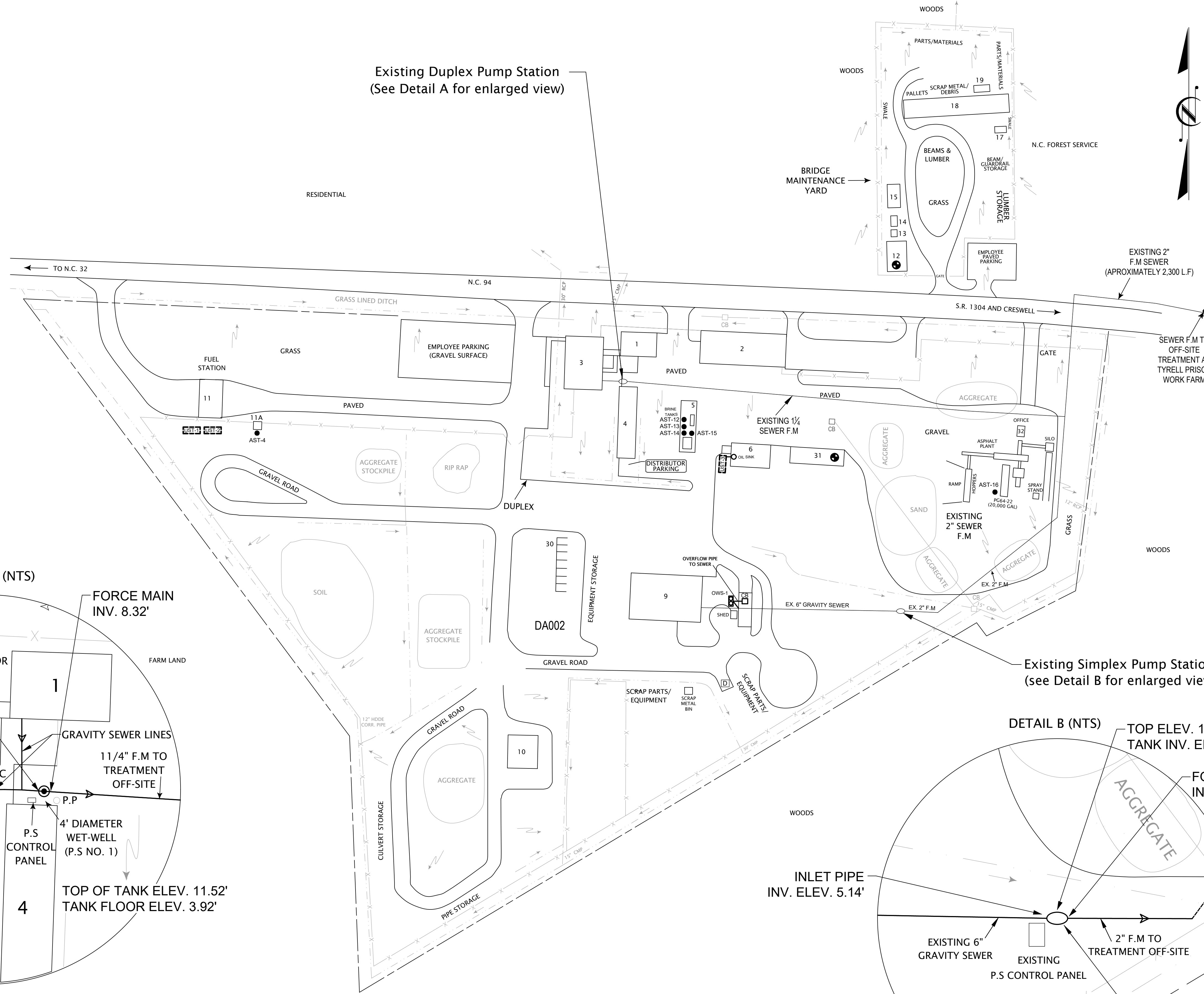


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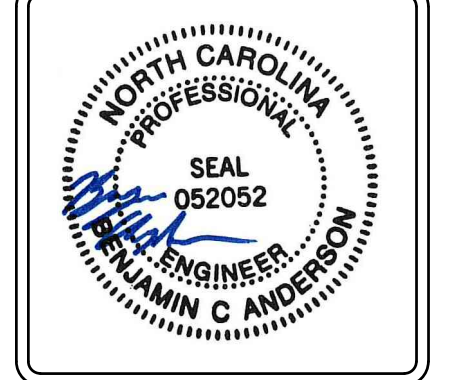
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- SDO-00X STORMWATER DISCHARGE OUTFALL
- SURFACE WATER BODY
- STORMWATER DRAINAGE PIPE
- STORMWATER DRAINAGE DITCH
- DI / CB STORMWATER DRAINAGE INLET/ CATCH BASIN
- SANITARY SEWER LINE
- SANITARY SEWER MANHOLE
- OWS-X OIL/ WATER SEPARATOR
- FD FLOOR DRAIN TO SANITARY
- SURFACE FLOW DIRECTION
- AST-X ABOVEGROUND STORAGE TANK
- UST-X UNDERGROUND STORAGE TANK
- D DUMPSTER
- G GENERATOR
- T TRANSFORMER
- ◆ DRUM STORAGE AREA
- SPILL KIT
- ▲ NON-STORMWATER DISCHARGE
- 9 EQUIPMENT SHOP BUILDING
- 3 MAIN OFFICE BUILDING
- 1 OFFICE BUILDING



1 EXISTING SITE LAYOUT PLAN
C1.0

THE PROJECT SITE IS NOT LOCATED IN A NY SPECIAL FLOOD HAZARD AREA OR FUTURE CONDITIONS FLOOD HAZARD AREAS, AS SHOWN ON FIRM MAP NUMBER 3702774800J FROM SEPTEMBER 19, 2007.

NO.	DATE	DESCRIPTION
1	11/28/21	SURVEY UPDATE
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SCO ID#22-25127-01A
WASHINGTON COUNTY, NORTH CAROLINA



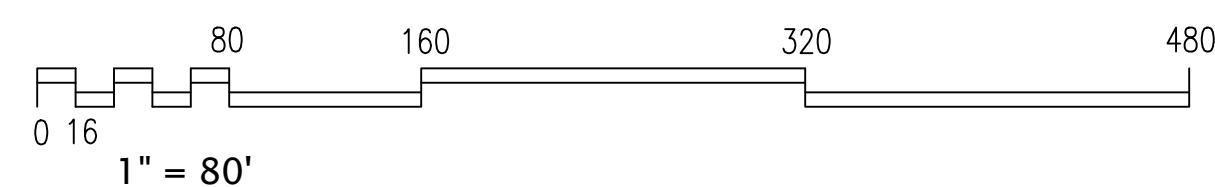
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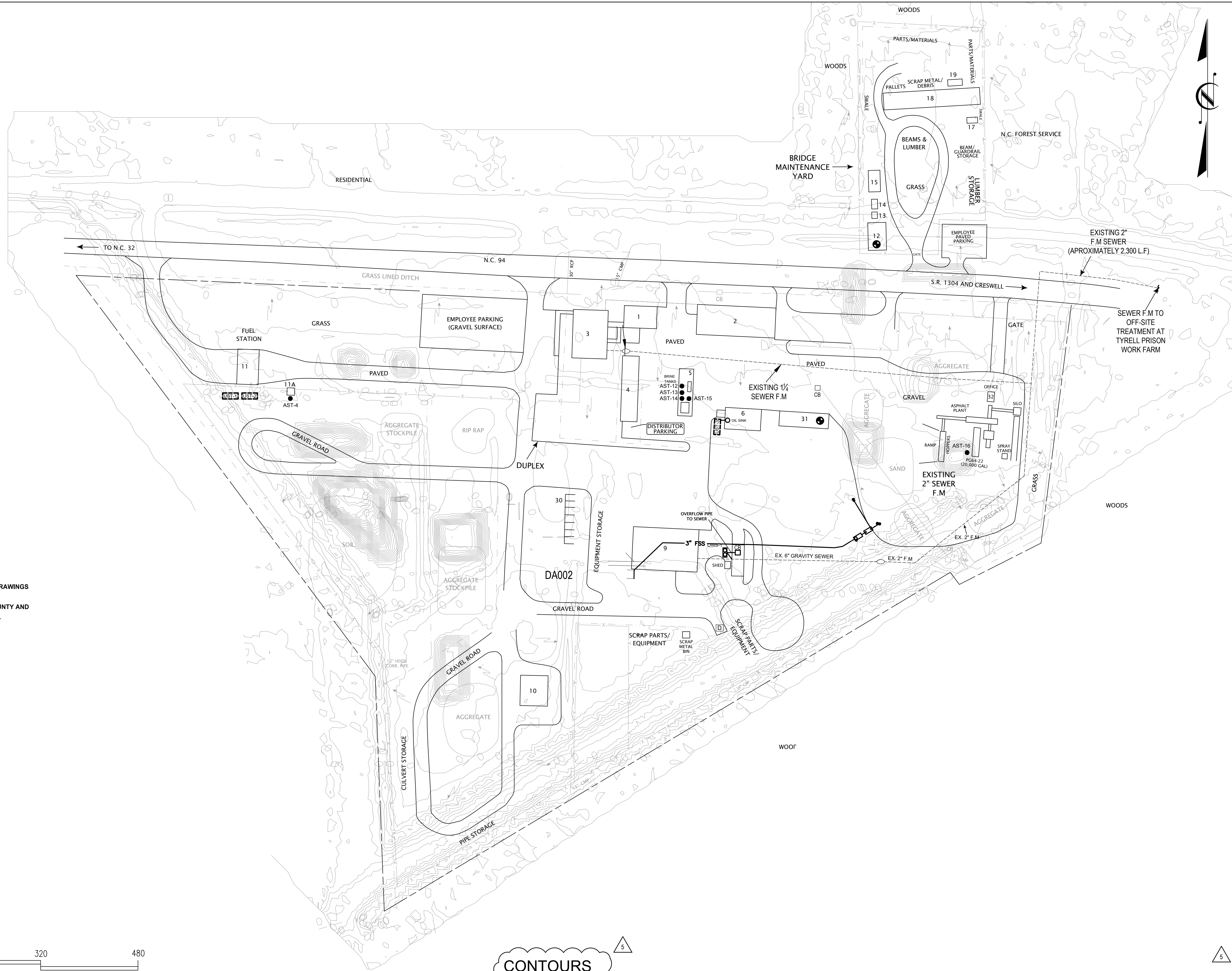
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- SDO-00X STORMWATER DISCHARGE OUTFALL
- SURFACE WATER BODY
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- SPILL KIT
- ▲ NON-STORMWATER DISCHARGE
- 9 EQUIPMENT SHOP BUILDING
- 3 MAIN OFFICE BUILDING
- 1 OFFICE BUILDING

NOTE:
THIS SITE PLAN IS A COMPILATION OF DRAWINGS OBTAINED FROM THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION COUNTY AND OTHER AVAILABLE MAPPINGS SOURCES.



1
C2.0

CONTOURS
EXISTING SITE LAYOUT PLAN
NOT TO SCALE



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DRAWING NO:
C2.0

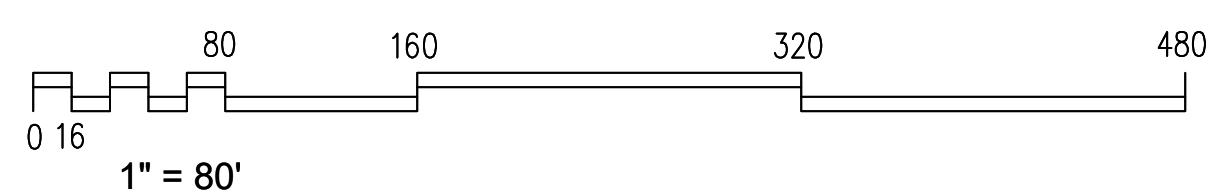
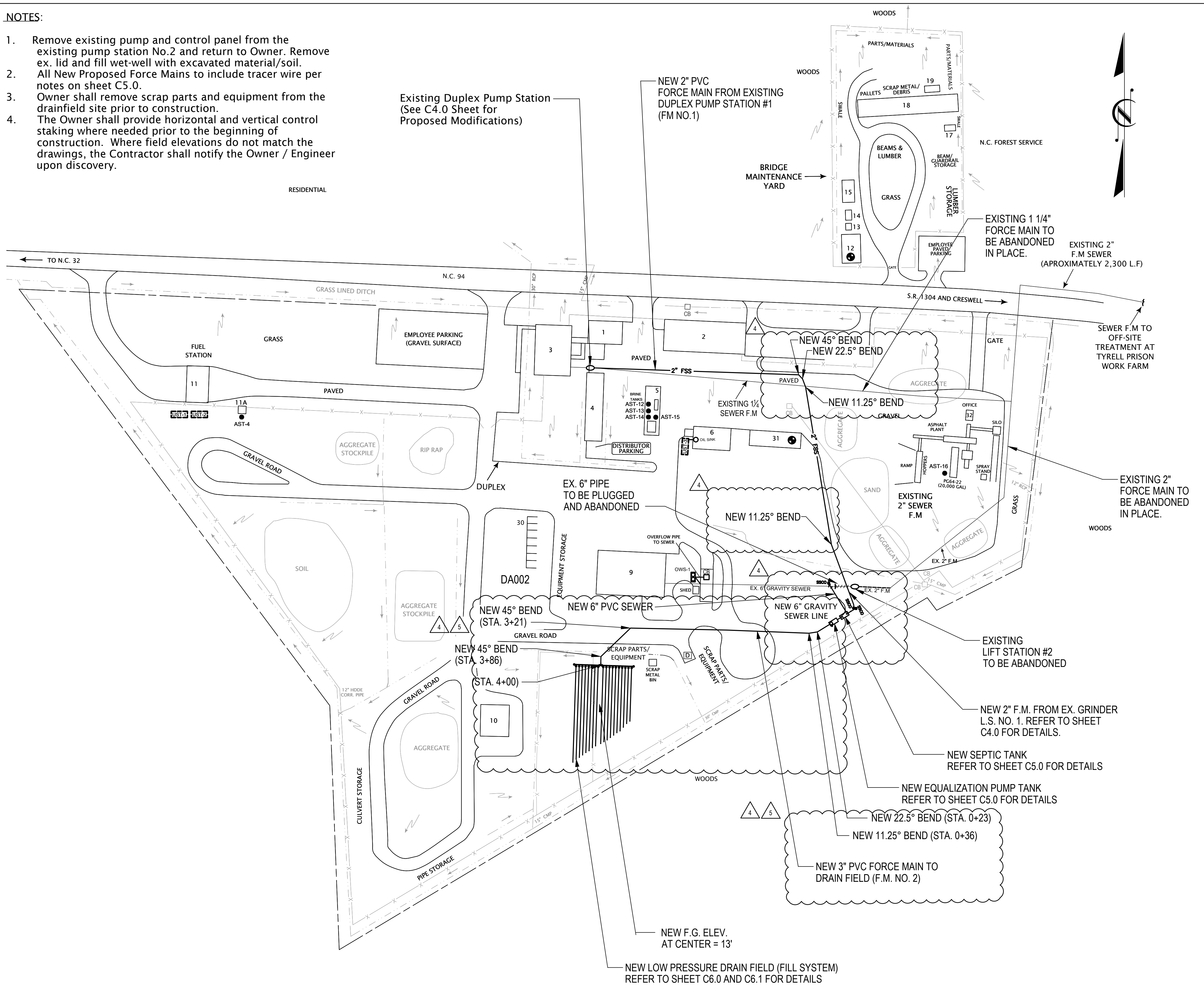
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LEGEND

- PROPERTY LINE
- x- FENCE LINE
- STORM DRAINAGE AREA BOUNDARY LINE
- SDO-00X STORMWATER DISCHARGE OUTFALL
- SURFACE WATER BODY
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- ▲ NON-STORMWATER DISCHARGE
- 9 EQUIPMENT SHOP BUILDING
- 3 MAIN OFFICE BUILDING
- 1 OFFICE BUILDING

NOTES:

1. Remove existing pump and control panel from the existing pump station No.2 and return to Owner. Remove ex. lid and fill wet-well with excavated material/soil.
2. All New Proposed Force Mains to include tracer wire per notes on sheet C5.0.
3. Owner shall remove scrap parts and equipment from the drainfield site prior to construction.
4. The Owner shall provide horizontal and vertical control staking where needed prior to the beginning of construction. Where field elevations do not match the drawings, the Contractor shall notify the Owner / Engineer upon discovery.



1
C3.0 PROPOSED SITE LAYOUT PLAN

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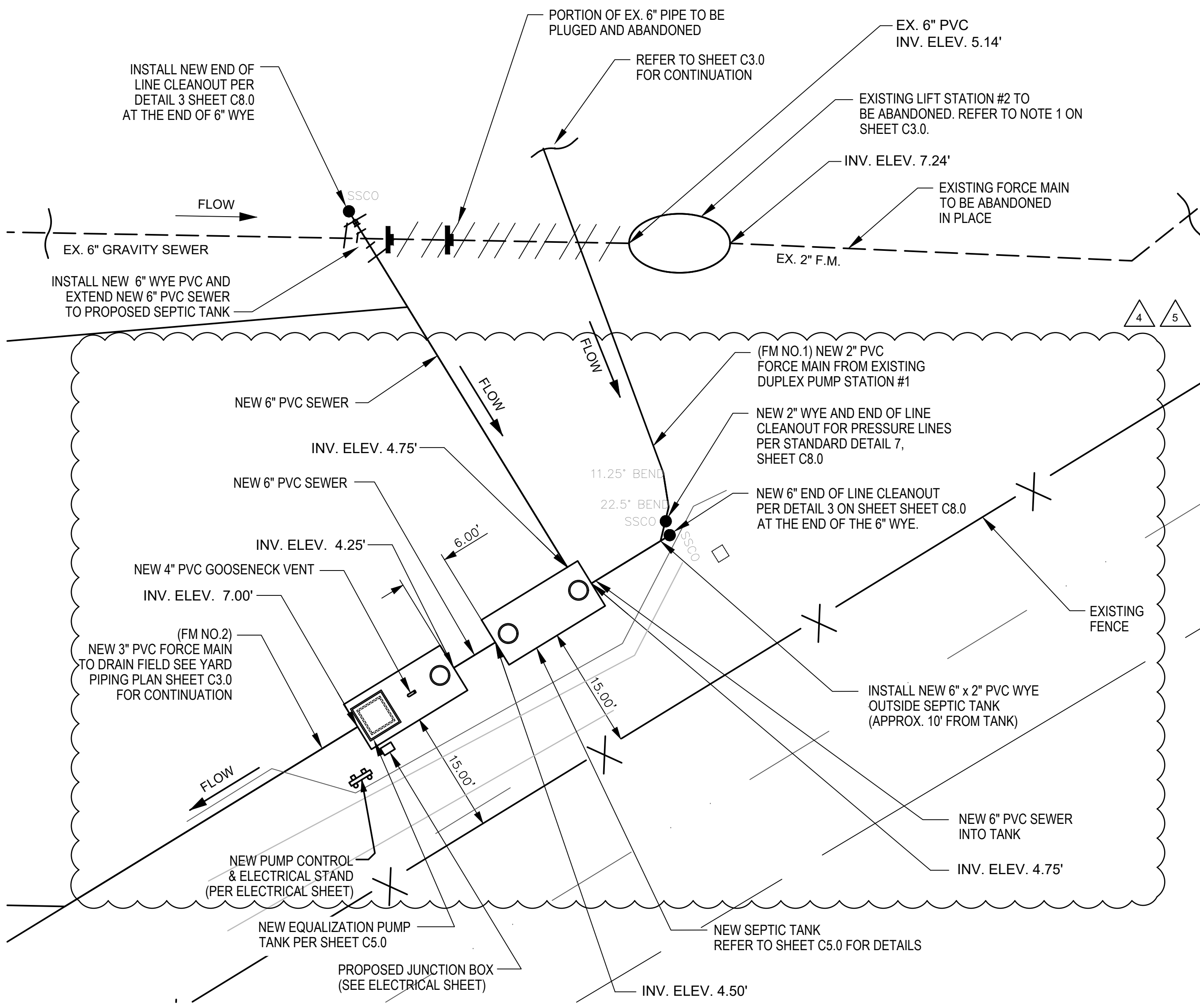
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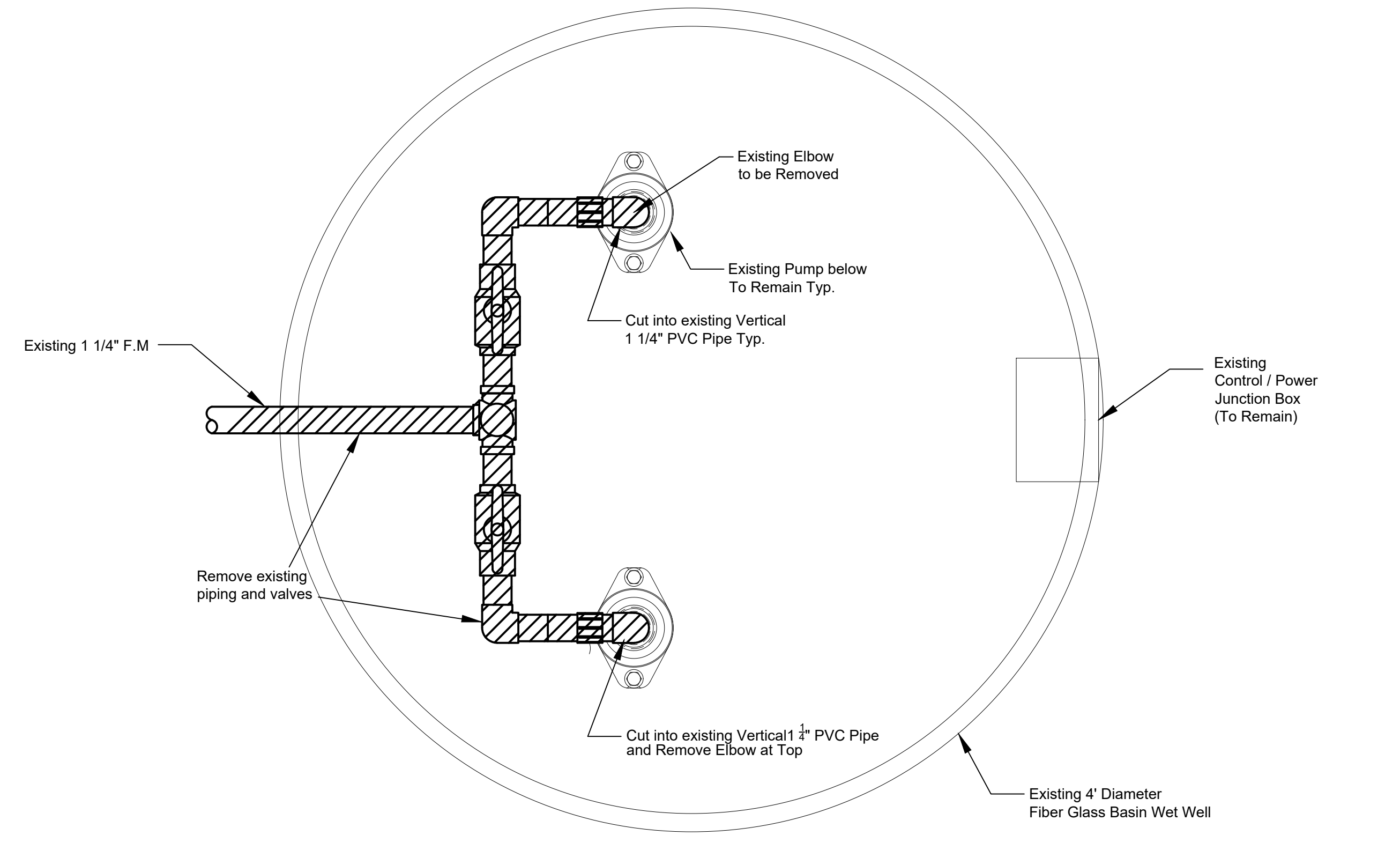
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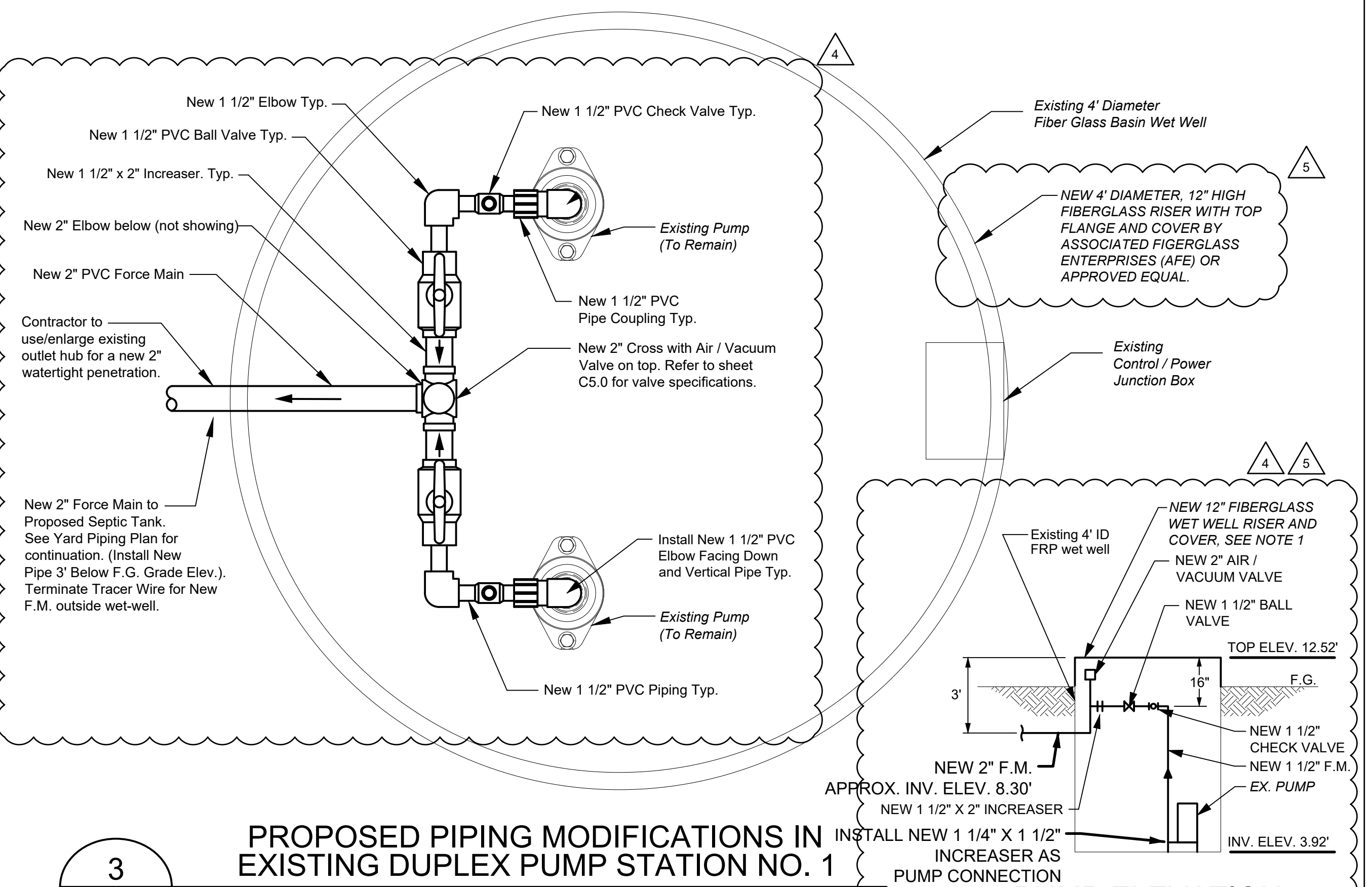
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1
C4.0 PROPOSED SEPTIC AND PUMP TANK LAYOUT PLAN
SCALE: 1"=10'



2
C4.0 MODIFICATIONS TO EX. DUPLEX PUMP STATION NO. 1 PLAN VIEW
NOT TO SCALE



3
C4.0 PROPOSED PIPING MODIFICATIONS IN EXISTING DUPLEX PUMP STATION NO. 1
NOT TO SCALE

PUMP ELEVATION DETAIL TYP. OF 2
NOT TO SCALE

NOTES:
1. FIBERGLASS RISER INSTALLATION REQUIRES 1/8" FIBERGLASS AND RESIN ON THE INSIDE AND OUTSIDE OF WET WELL AT THE TRANSITION. CONTRACTOR SHALL INSTALL FIBERGLASS RISER IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS.

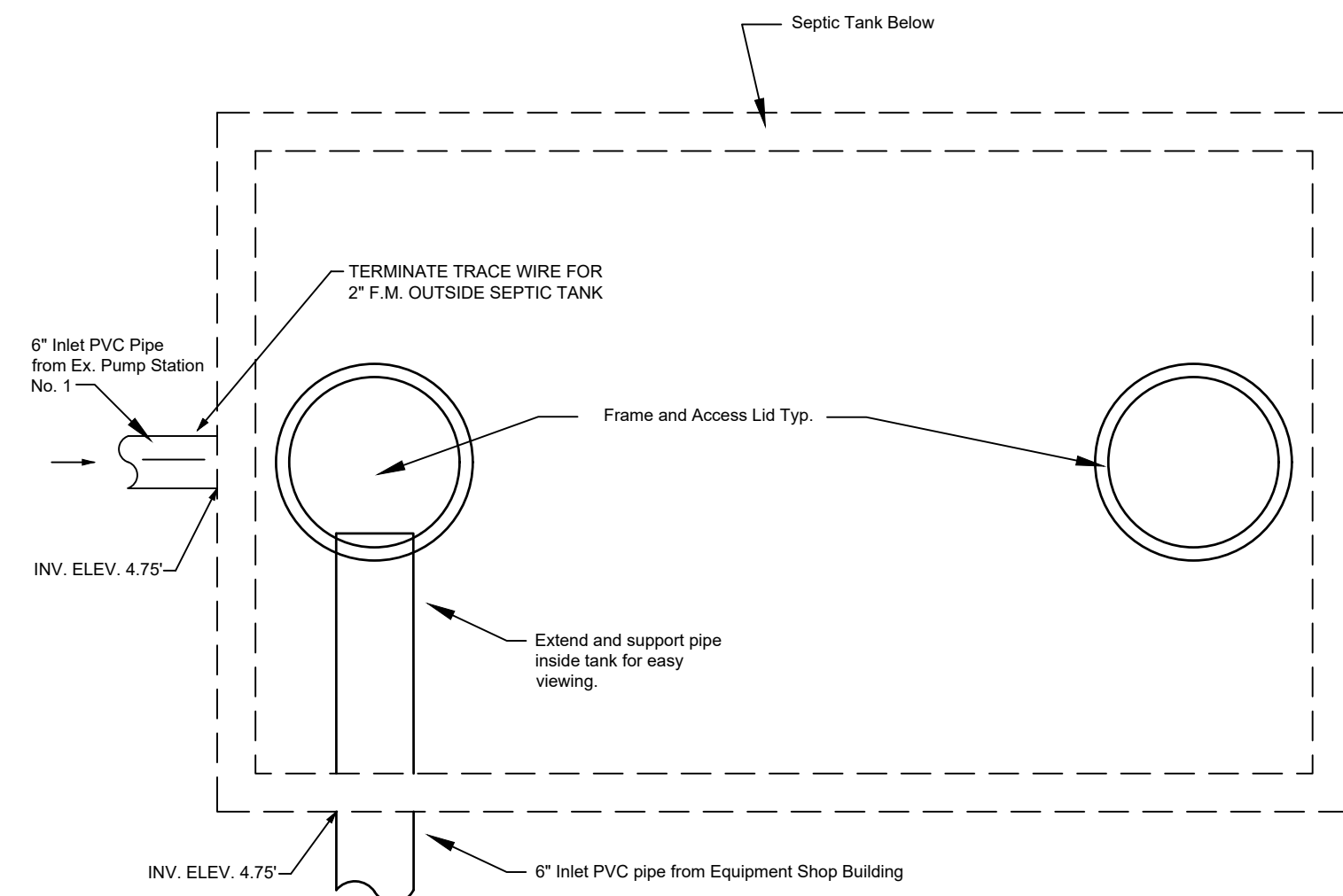
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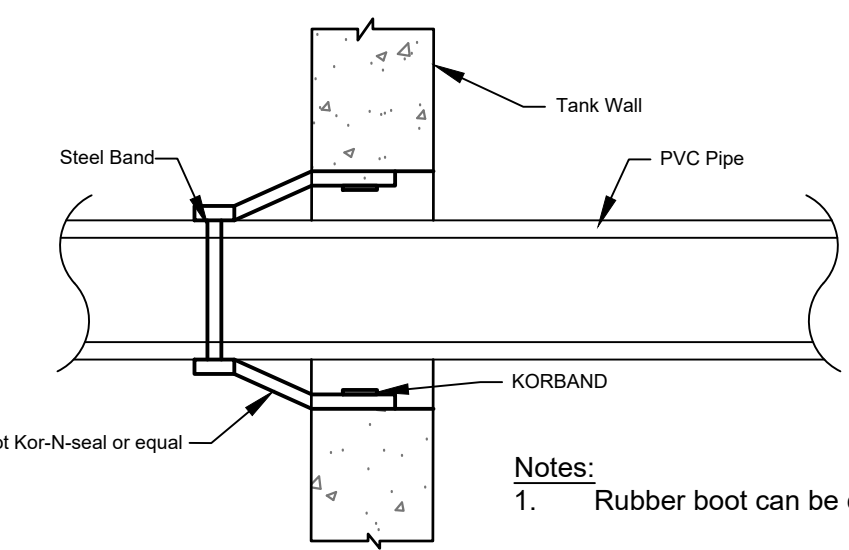
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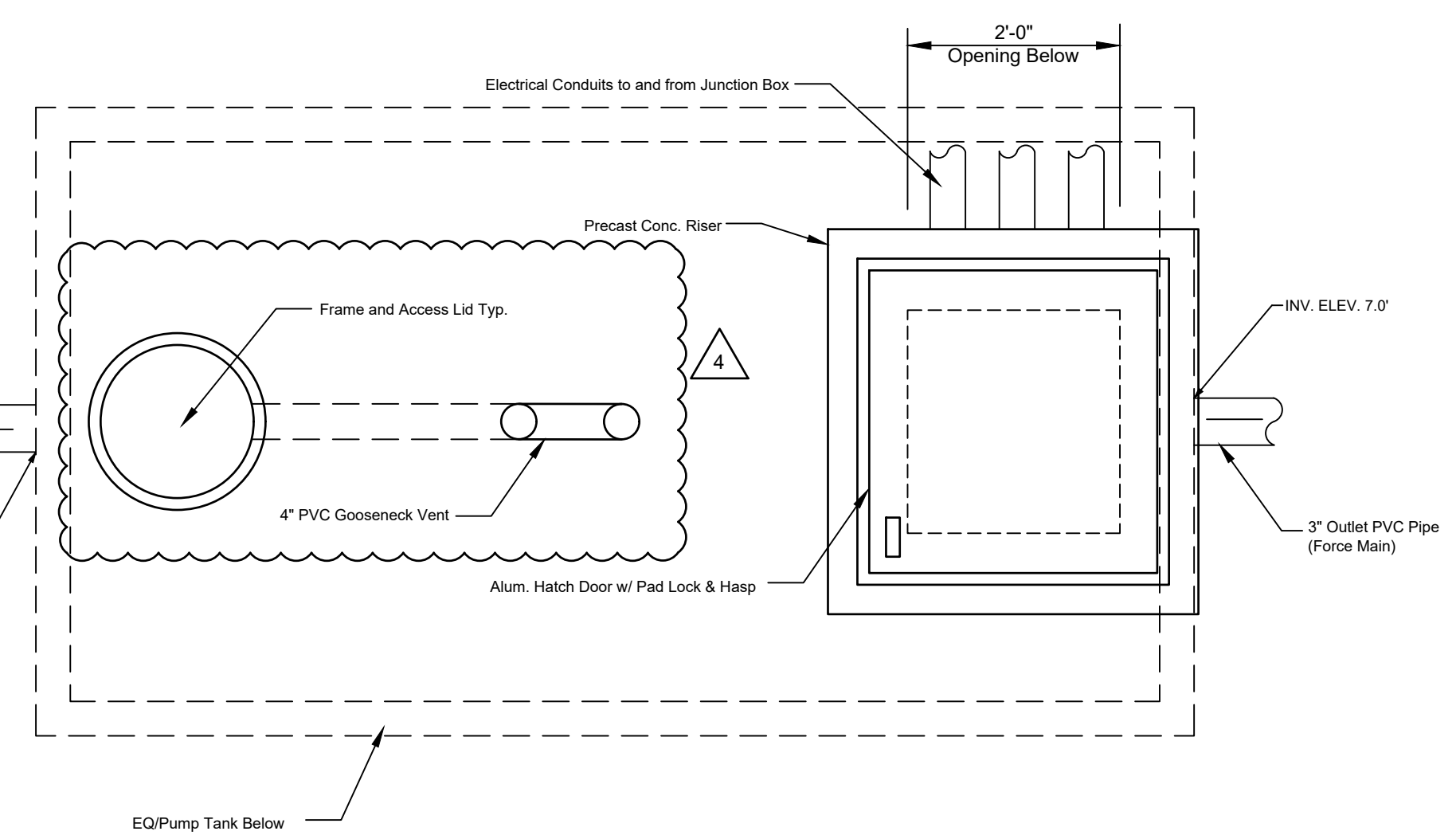
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DATE:	OCTOBER 2021
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DRAWING NO.:	C4.0



1
C5.0
SEPTIC TANK - PLAN
NOT TO SCALE

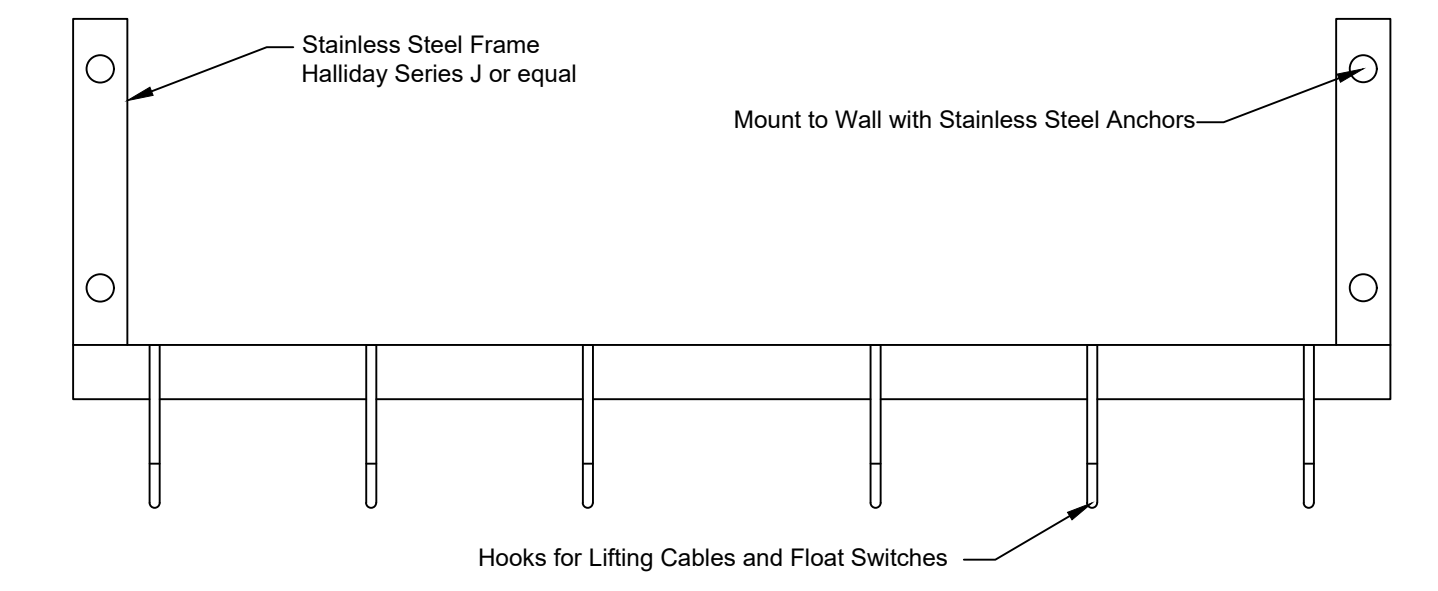


7
C5.0
TANK PIPE PENETRATION DETAIL
(TYP. AT ALL WALL PENETRATIONS)
NOT TO SCALE

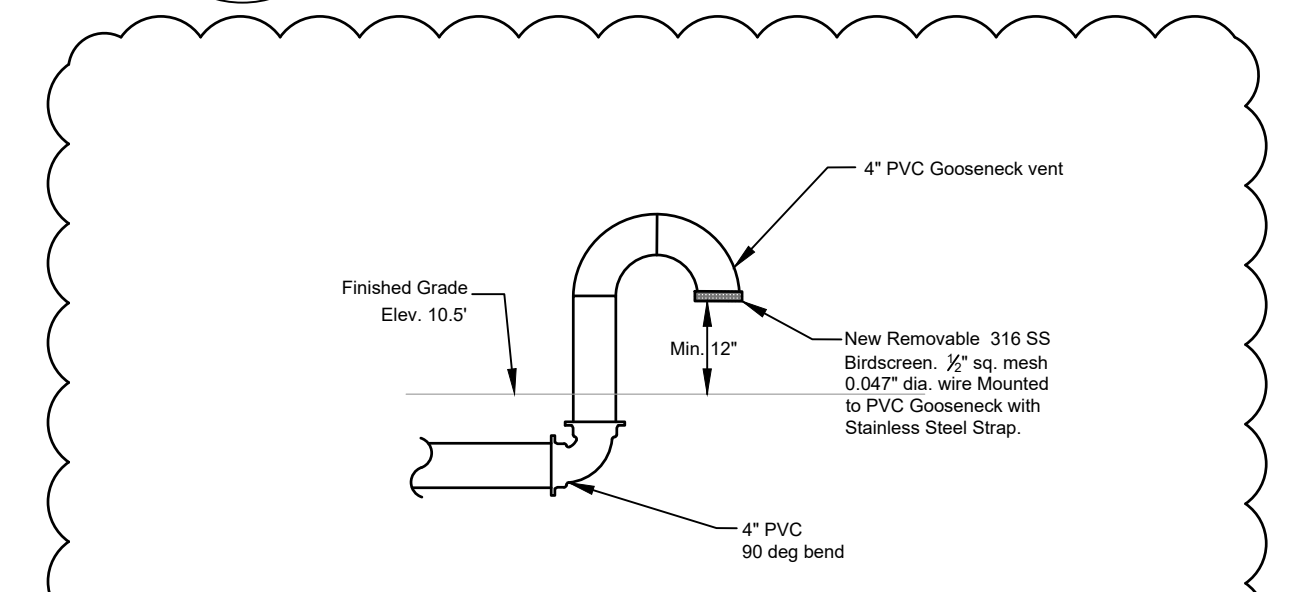


2
C5.0
EQUALIZATION/PUMP TANK - PLAN
NOT TO SCALE

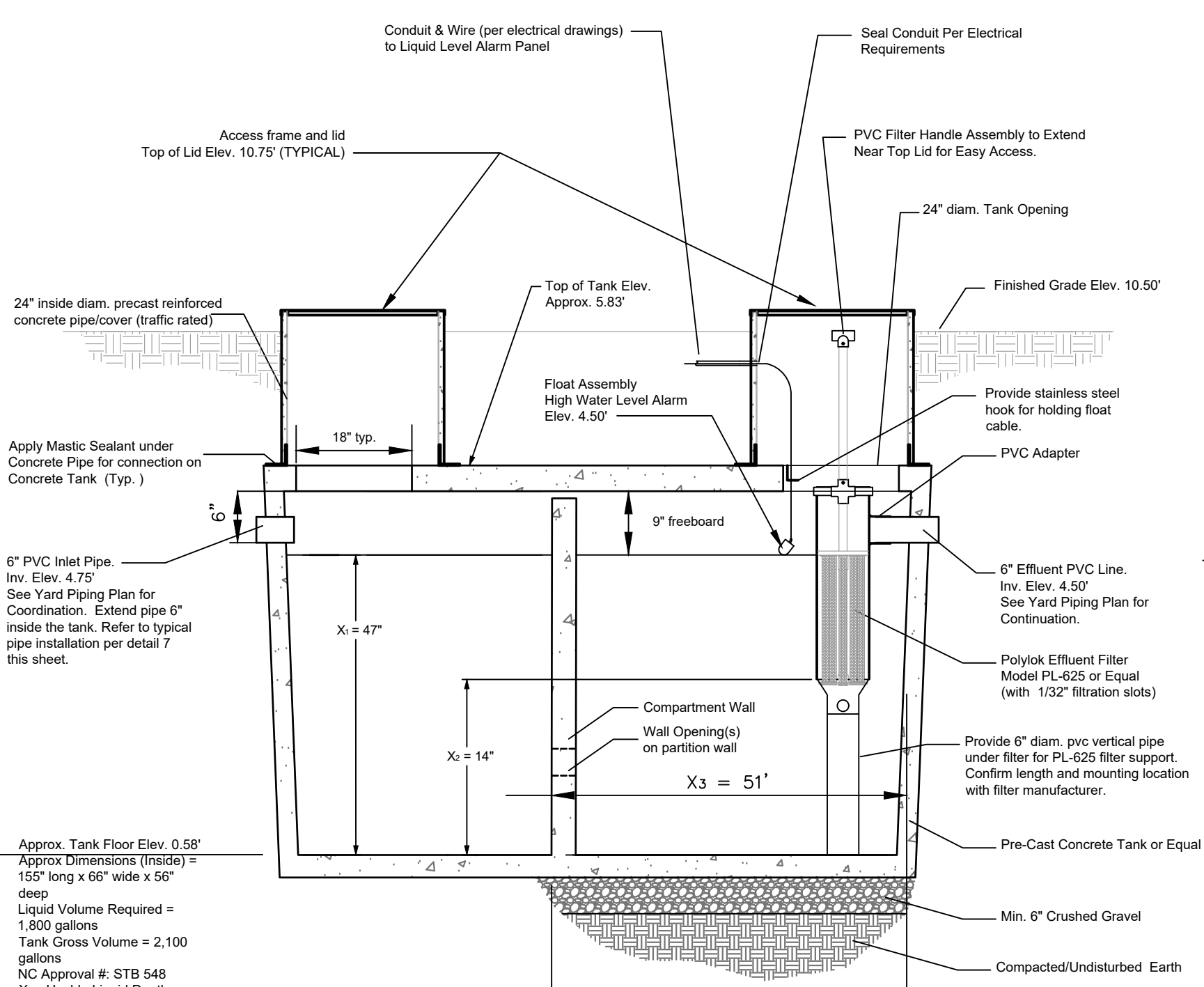
- Notes:
1. Pre-cast tanks by Shoaf Precast Septic Inc. or equal. Tanks shall be traffic rated.
 2. Access frames and lids shall be cast iron Neenan model R-5900-E or approved equal.
 3. Float assemblies at the septic and pump tanks shall include floats, float stem, float collar and stainless steel hardware as manufactured by Orenco, Model MF or approved equal.
 4. Contractor to install trace wire on new force main for future access and use. Trace wire shall be per #12 AWG HS-CCS high strength copper clad steel conductor, insulated with 30 mil of green HMWPE. Install wire a maximum of 2 feet from finished grade. Terminate trace wire on a rebar outside the proposed structures using Stainless Steel hardware.



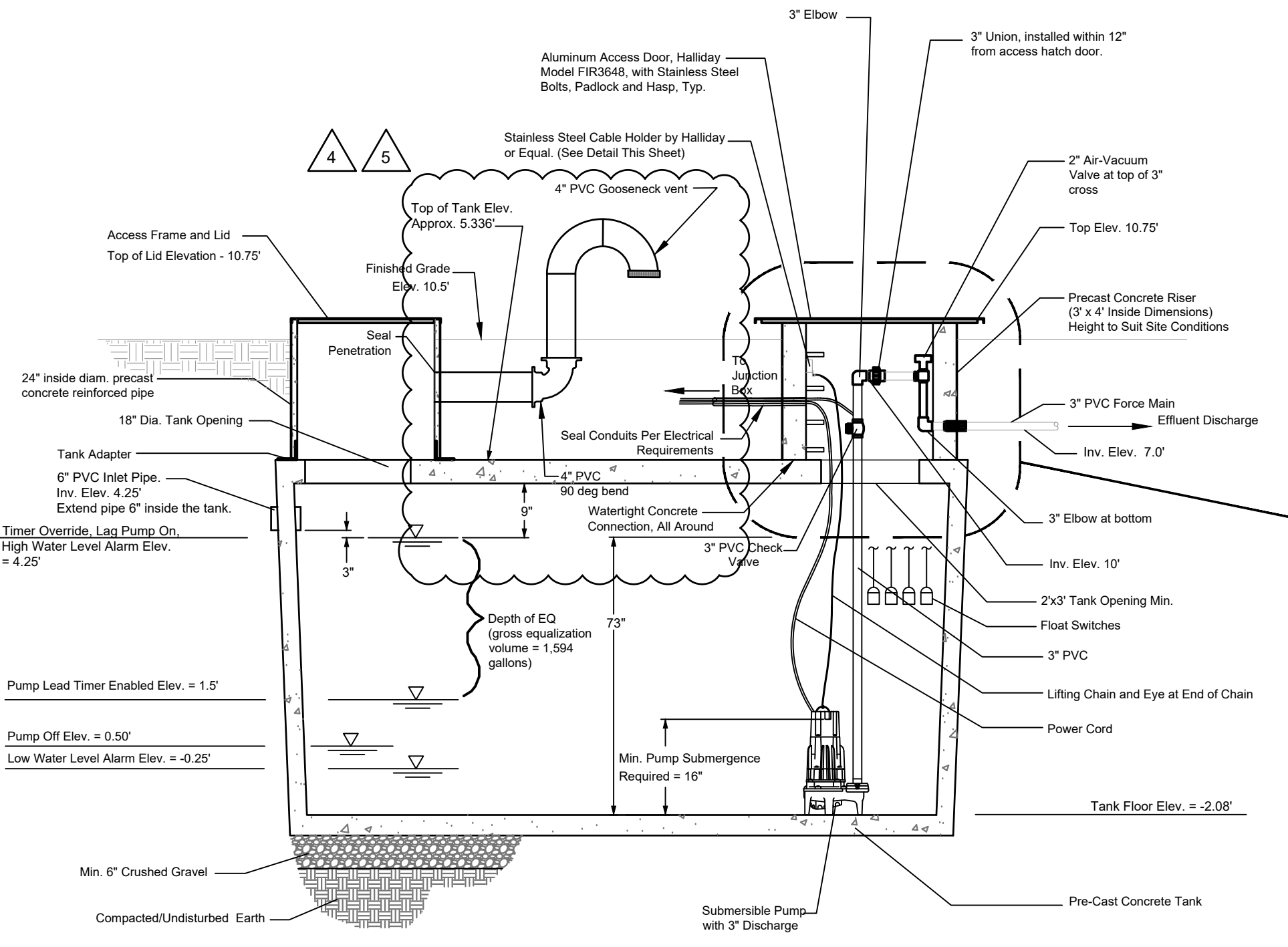
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C5.0
CABLE HOLDER DETAIL
NOT TO SCALE



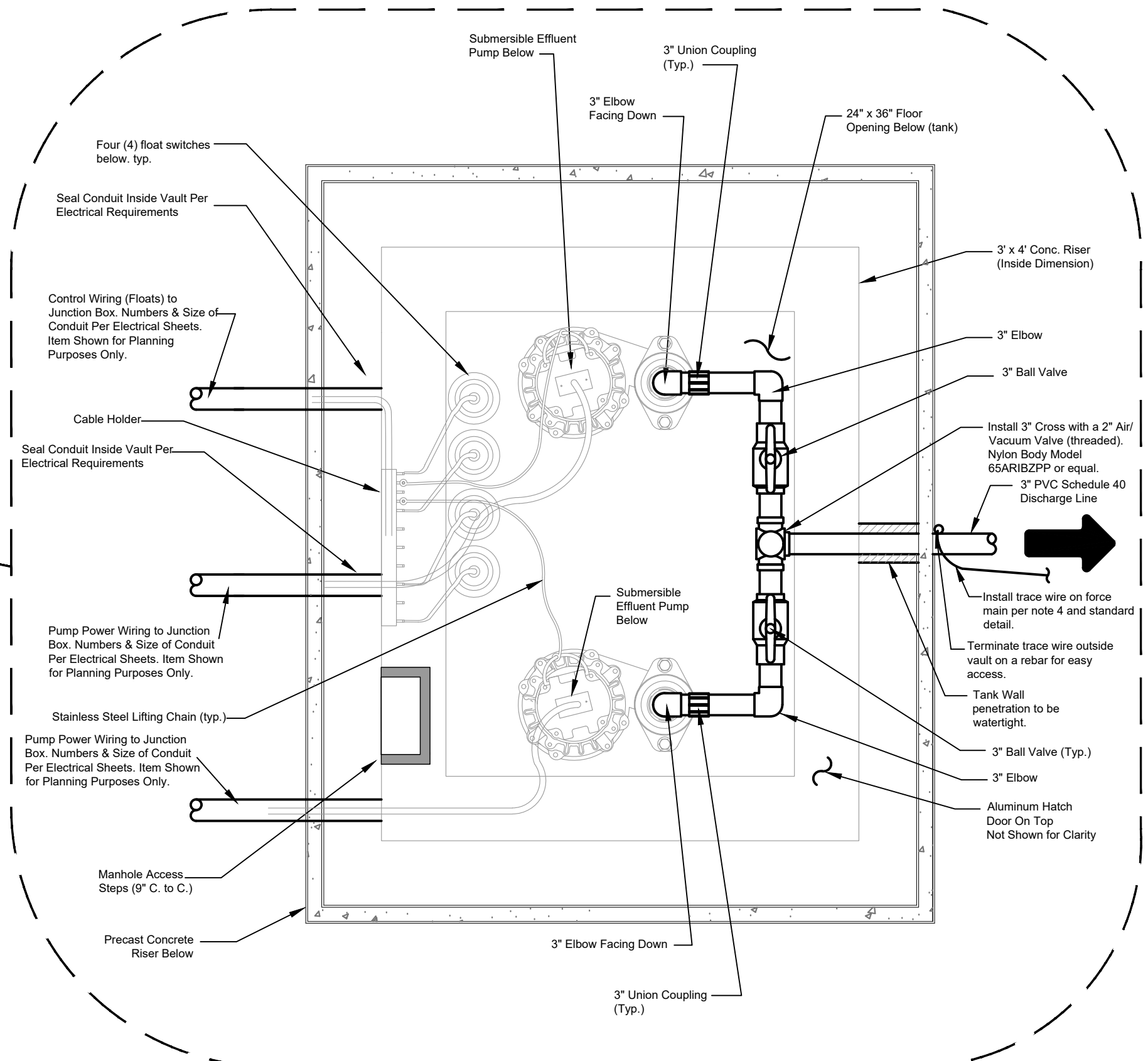
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C5.0
GOOSENECK VENT PIPE DETAIL
NOT TO SCALE



4
C5.0
SEPTIC TANK - SECTION
NOT TO SCALE



5
C5.0
EQUALIZATION/PUMP TANK - SECTION
NOT TO SCALE



6
C5.0
PUMP VAULT DETAIL - PLAN VIEW
NOT TO SCALE

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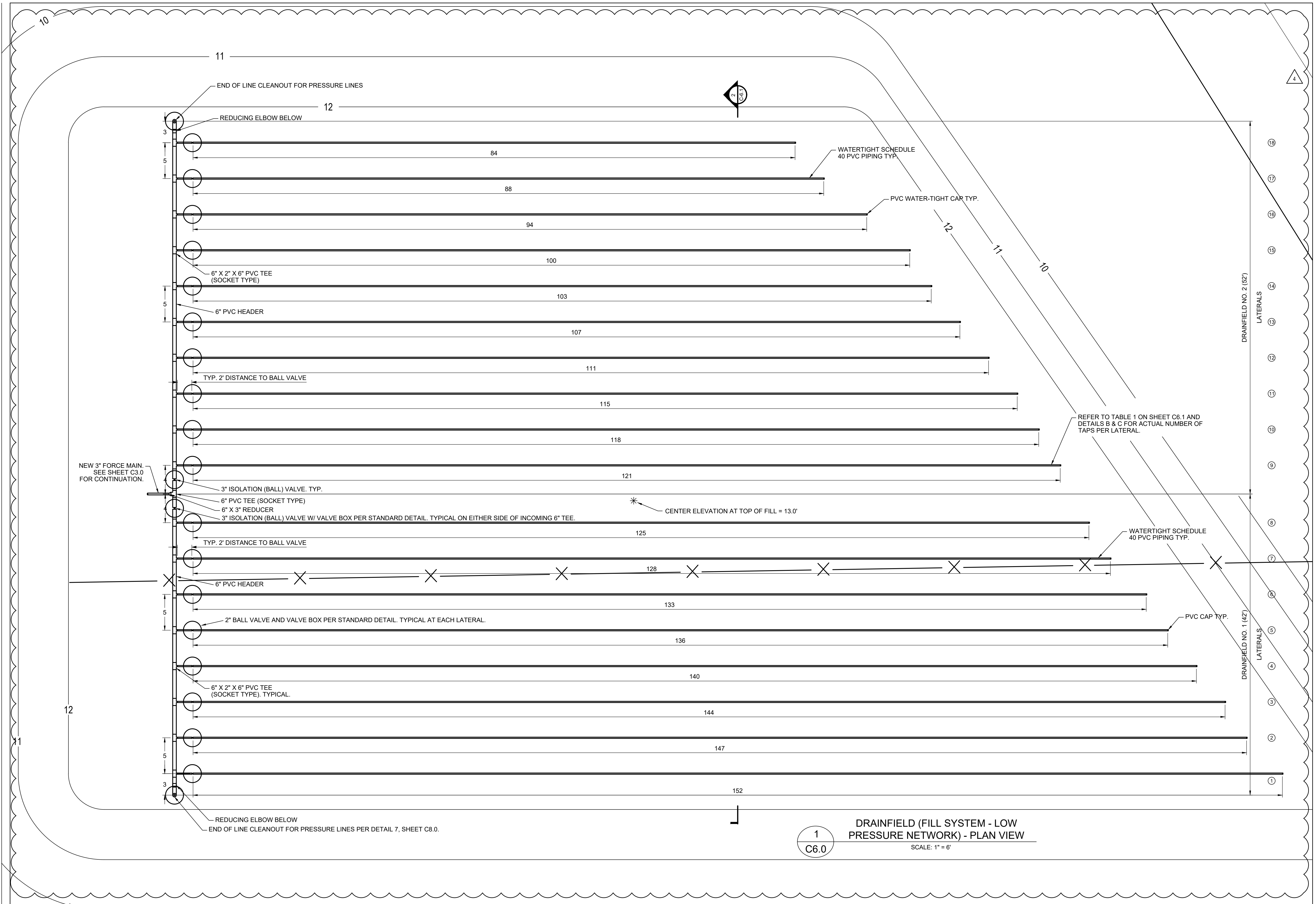
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1
C6.0

DRAINFIELD (FILL SYSTEM - LOW PRESSURE NETWORK) - PLAN VIEW

SCALE: 1" = 6'

NO.	DATE	DESCRIPTION
1	11/23/21	SURVEY UPDATE
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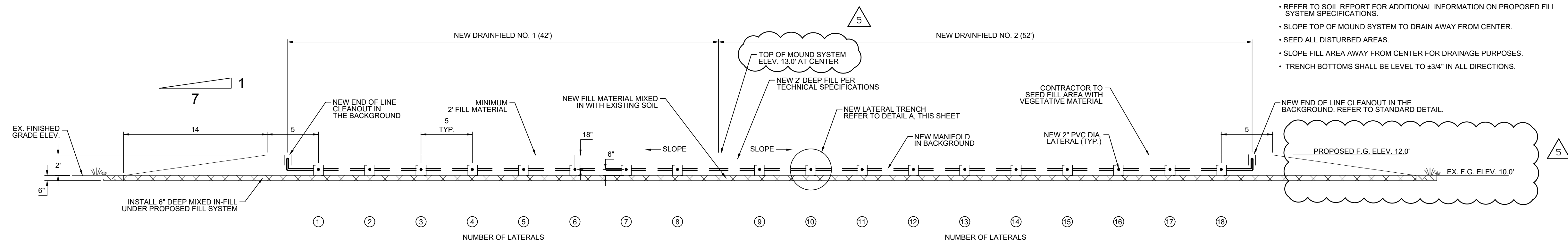


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JOB NO:	32120-05
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DATE:	OCTOBER 2021
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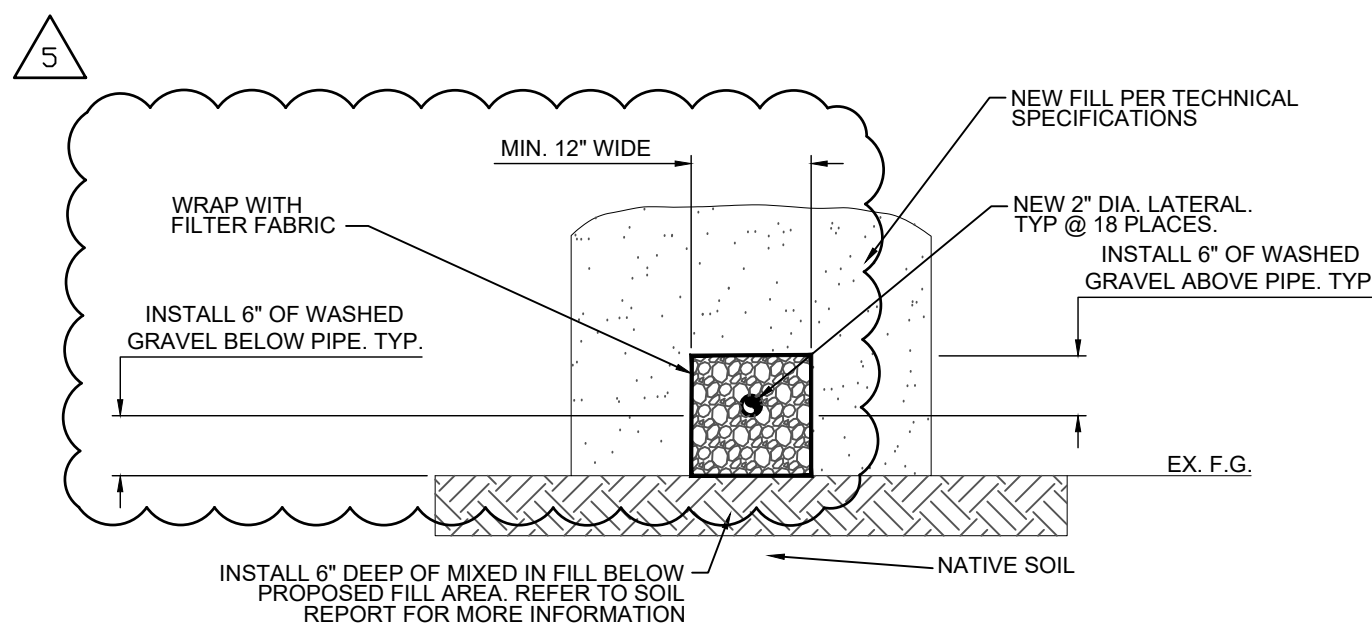
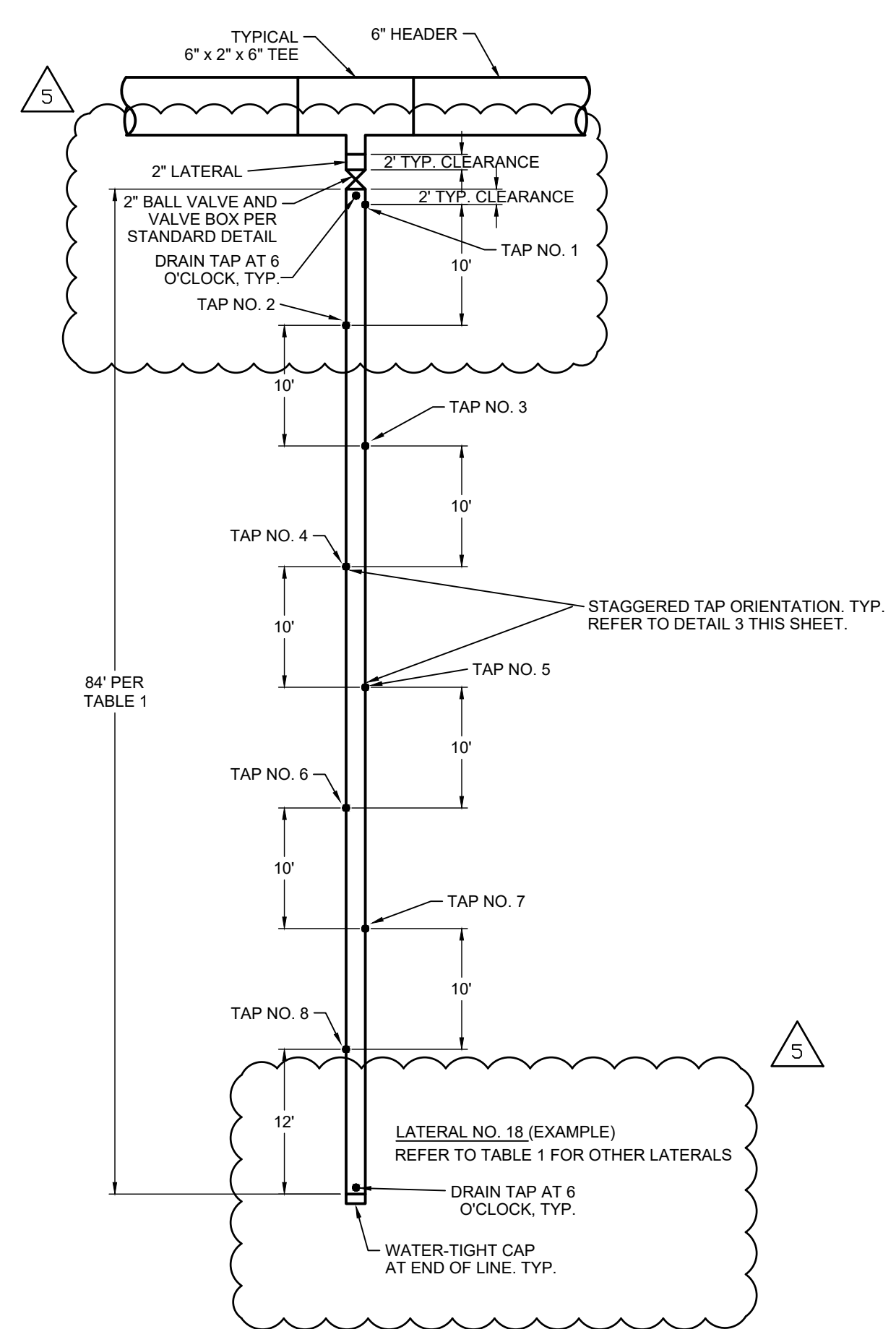
- NOTES:**
- FILL MATERIAL TO BE FREE OF VEGETATIVE COVER OR ORGANIC LITTER.
 - FILL MATERIAL SHALL BE CLASSIFIED AS SAND OR LOAMY SAND (SOIL GROUP I) UP TO THE TOP OF THE NITRIFICATION TRENCH. THE LAST SIX INCHES OF FILL SHALL HAVE A FINER TEXTURE (SUCH AS GROUP II, III) FOR ESTABLISHING A VEGETATIVE COVER.
 - REFER TO SOIL REPORT FOR ADDITIONAL INFORMATION ON PROPOSED FILL SYSTEM SPECIFICATIONS.
 - SLOPE TOP OF MOUND SYSTEM TO DRAIN AWAY FROM CENTER.
 - SEED ALL DISTURBED AREAS.
 - SLOPE FILL AREA AWAY FROM CENTER FOR DRAINAGE PURPOSES.
 - TRENCH BOTTOMS SHALL BE LEVEL TO ±3/4" IN ALL DIRECTIONS.

1
DRAINFIELD (FILL SYSTEM)
CROSS SECTION VIEW
SCALE: 1" = 6'

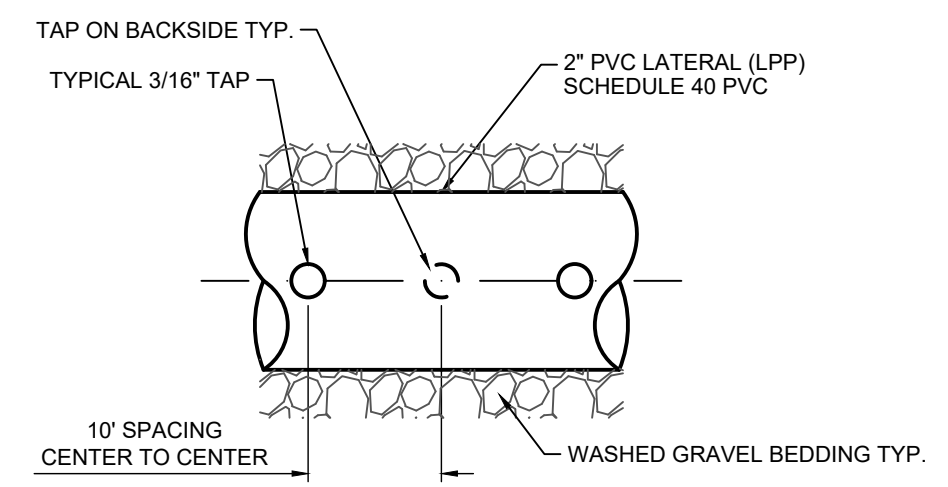
OPERATIONAL NOTES:

- ONE DRAIN FIELD WILL BE OPERATED AT A TIME. THE OTHER DRAIN FIELD WILL BE PLACED OFF-LINE BY CLOSING THE ISOLATION VALVE NEXT TO THE 6" TEE AT THE MANIFOLD.
- SYSTEM OPERATOR WILL ALTERNATE USE OF THE DRAIN FIELDS APPROXIMATELY EVERY SIX MONTHS.
- BALL VALVE AT THE BEGINNING OF EACH LATERAL SHALL BE USED TO ADJUST FLOW / HEAD TO EACH LATERAL DURING SYSTEM INSTALLATION / INSPECTION. DO NOT COVER DRAINFIELD PIPING UNTIL SYSTEM IS INSPECTED AND APPROVED BY LHD.

TABLE 1 - TAP SPACING AND FLOW INFORMATION PER DRAINFIELD					
ASSUME TAP DIAMETER = 3/16"		FLOW PER TAP = 0.646 gpm		ASSUME TAP SPACING, FT = 10'	
FIELD LINE	LENGTH OF LATERAL	DISTANCE TO FIRST TAP	NUMBER OF TAPS PER LATERAL	FLOW PER LATERAL	
DRAINFIELD NO. 1	1	152	2	15	9.69
	2	147	2	14	9.044
	3	144	2	14	9.044
	4	140	2	13	8.398
	5	136	2	13	8.196
	6	133	2	13	8.398
	7	128	2	12	7.6228
	8	125	2	12	7.429
DRAINFIELD NO. 2	9	121	2	11	7.106
	10	118	2	11	6.9768
	11	115	2	11	6.783
	12	111	2	10	6.5246
	13	107	2	10	6.2662
	14	103	2	10	6.46
	15	100	2	9	5.814
	16	94	2	9	5.814
	17	88	2	8	5.0388
	18	84	2	8	5.168
				TOTAL FLOW =	68.7654
				TOTAL FLOW =	61.9514



2
C6.1
DETAIL "A" - LATERAL TRENCH TYP.
NOT TO SCALE



3
C6.1
DETAIL "B" - LATERAL TAPS - ELEVATION
NOT TO SCALE

4
C6.1
DETAIL "C" - LATERAL TAPS - PLAN VIEW - TYPICAL
NOT TO SCALE

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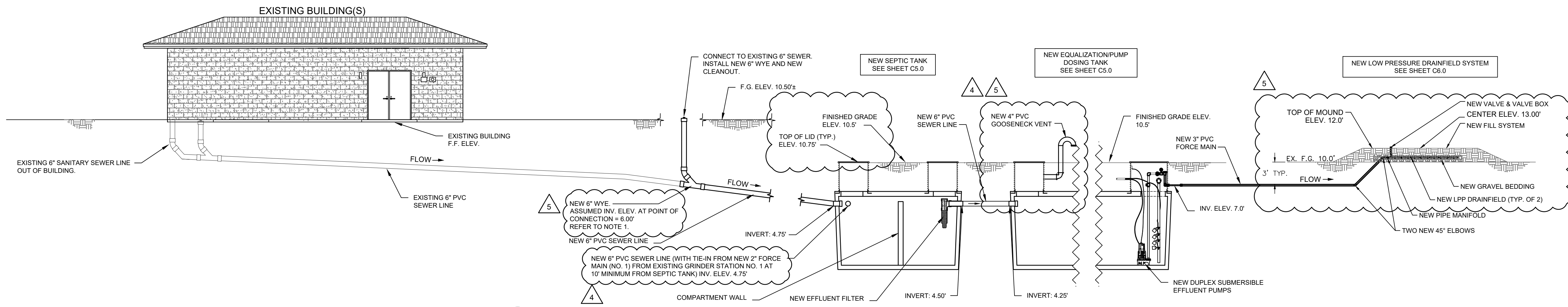
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CRESWELL SEPTIC SYSTEM**
SCO ID#22-25127-01A
WASHINGTON COUNTY, NORTH CAROLINA

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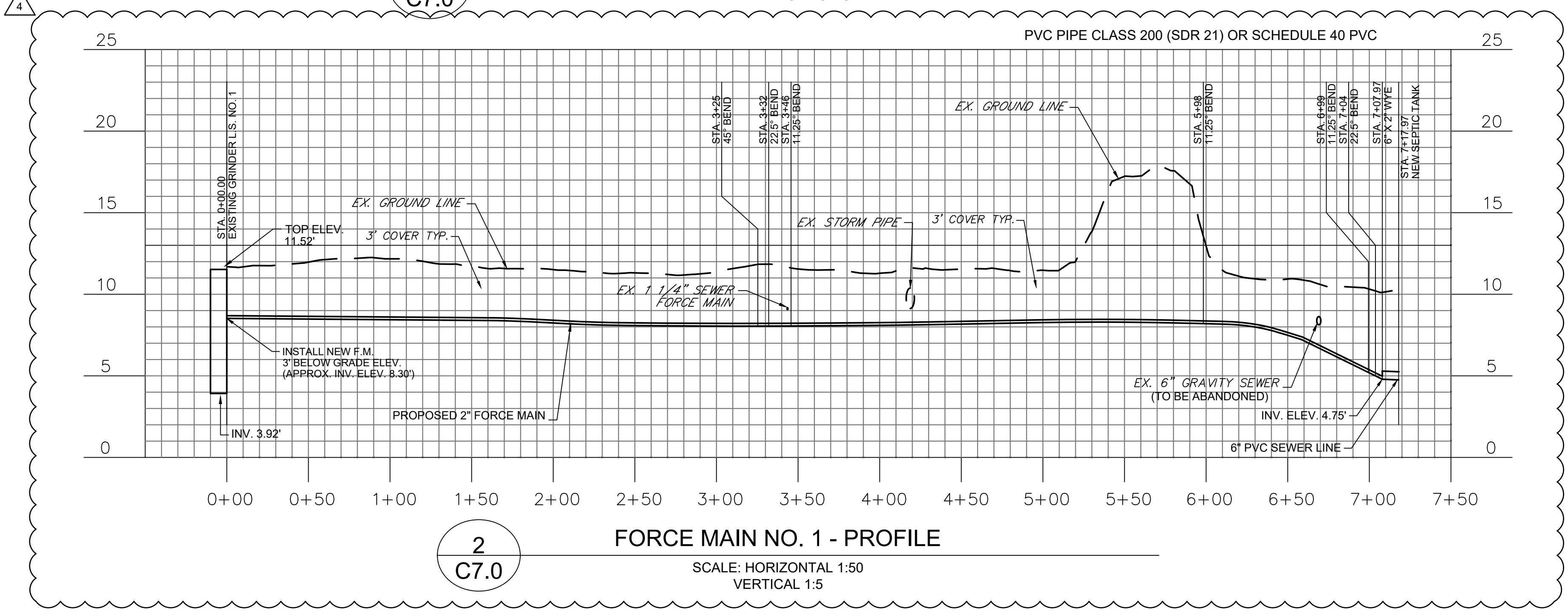
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JMT NO. 22-0374-001

DRAWN:	HEW
CHECKED:	DH
JOB NO.:	32120-05
SCALE:	A5 SHOWN
DATE:	OCTOBER 2021
FILE NAME:	Section 4 Details.dwg
DRAWING TITLE:	PROPOSED DRAINFIELD SECTION & DETAILS
DRAWING NO.:	C6.1

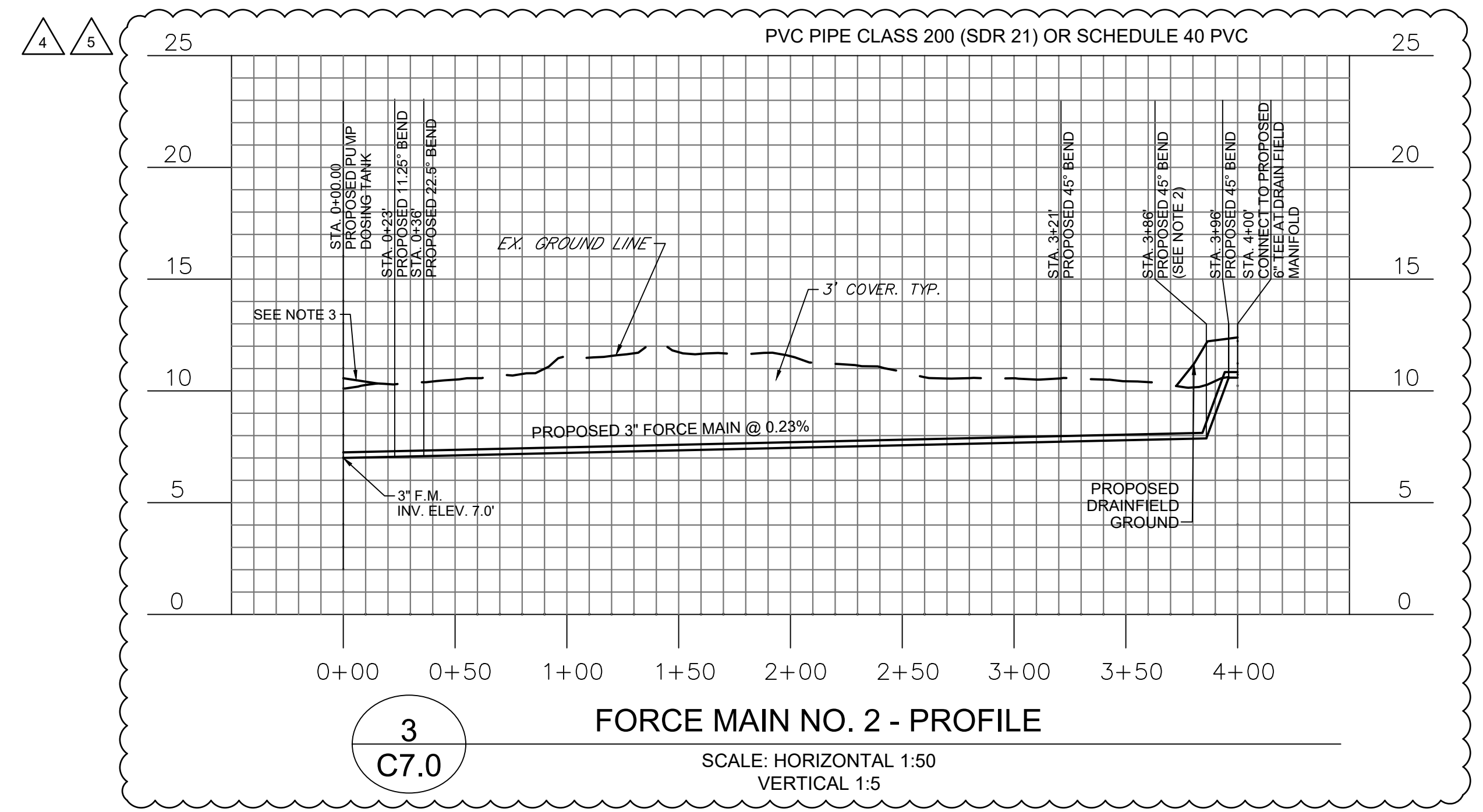
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1
C7.0
NOT TO SCALE



2
C7.0



3
C7.0

NOTES:

- IF INVERT ELEVATION OF EXISTING 6" GRAVITY LINE IS DIFFERENT THAN WHAT IS NOTED ON THE DRAWINGS, PLEASE NOTIFY ENGINEER. CONTRACTOR TO FIELD VERIFY EXISTING INVERT ELEVATION PRIOR TO SHOP DRAWING SUBMITTALS.
- ROTATE 45° BEND AS NEEDED.
- GRADE AWAY FROM PUMP AND SEPTIC TANKS.

NO.	DATE	DESCRIPTION
1	11/29/21	SURVEY UPDATE
2	11/29/21	PERMIT APPROVAL
3	11/19/22	SCO ELECTRICAL REVIEW COMMENTS
4	01/20/23	SCO 01/04/23 REVIEW COMMENTS
5	04/28/23	DESIGN MODIFICATIONS



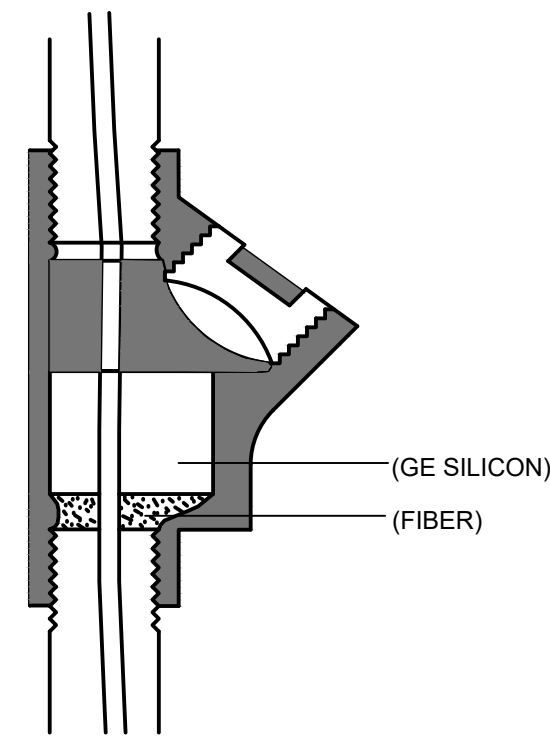
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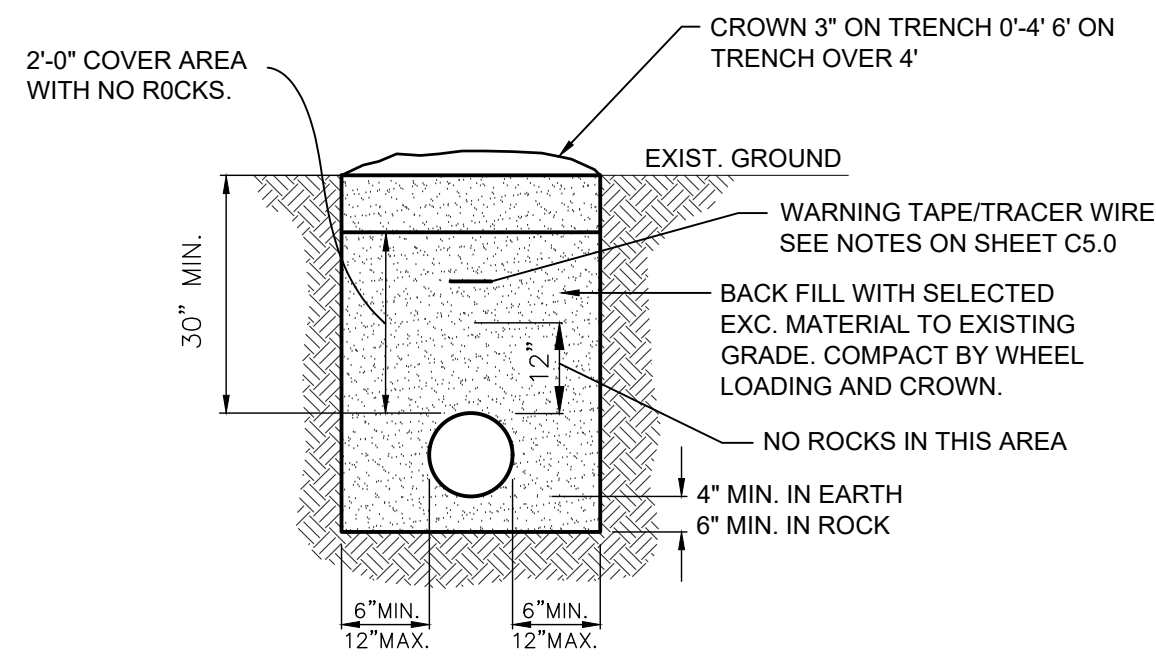
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DRAWN: HEW
CHECKED: DH
JOB NO: 32120-05
SCALE: AS SHOWN
DATE: OCTOBER 2021
FILE NAME: No. 1 and No. 2 Profiles.dwg
DRAWING TITLE: PROPOSED FORCE MAIN NO. 1 & NO. 2 PROFILES
DRAWING NO: C7.0

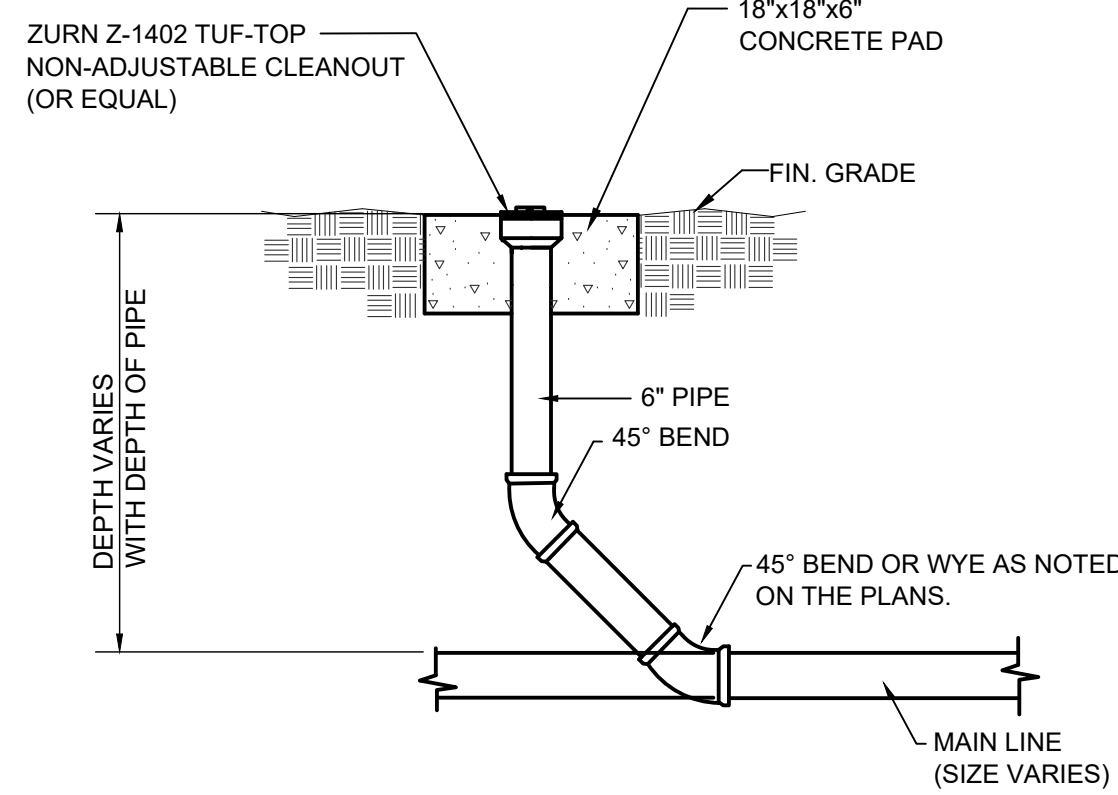
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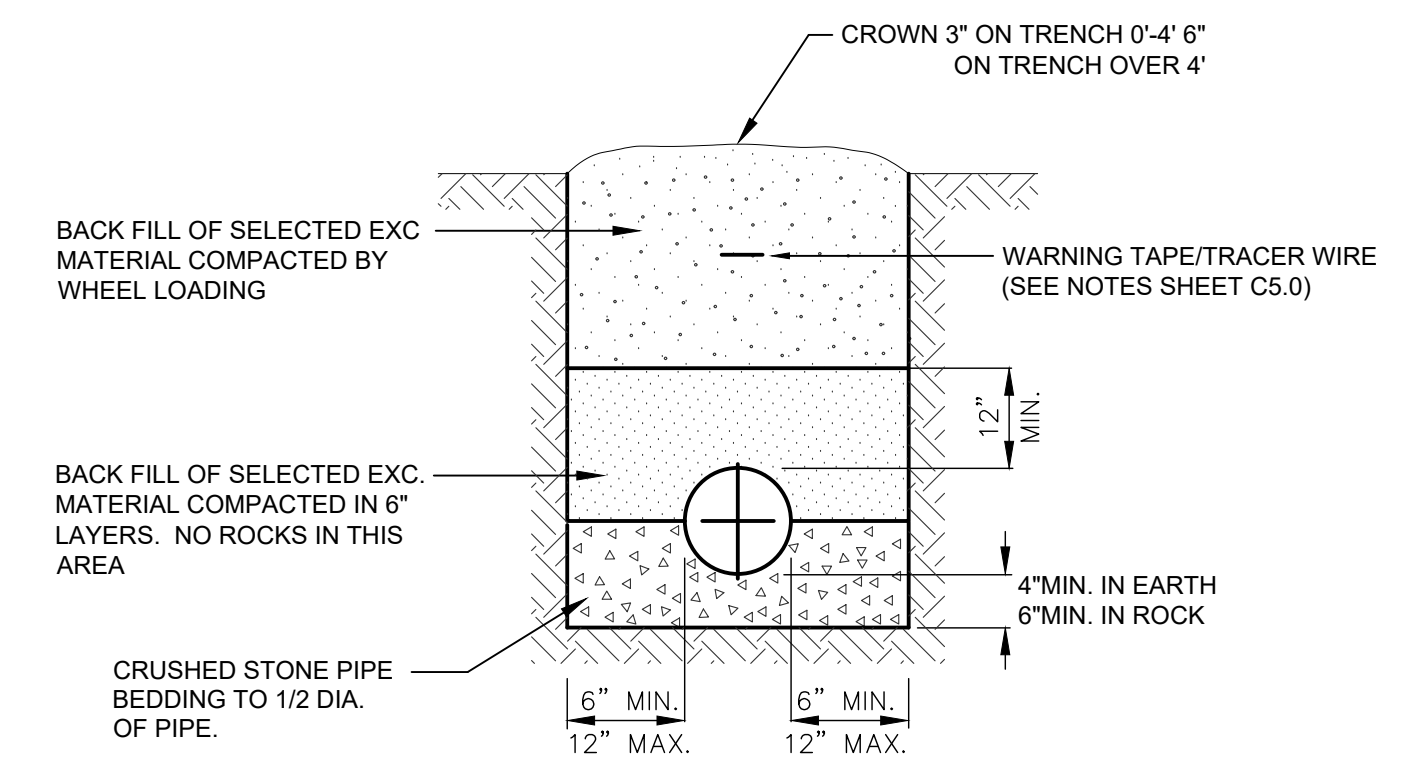
1
C8.0 CONDUIT SEAL DETAIL
NOT TO SCALE



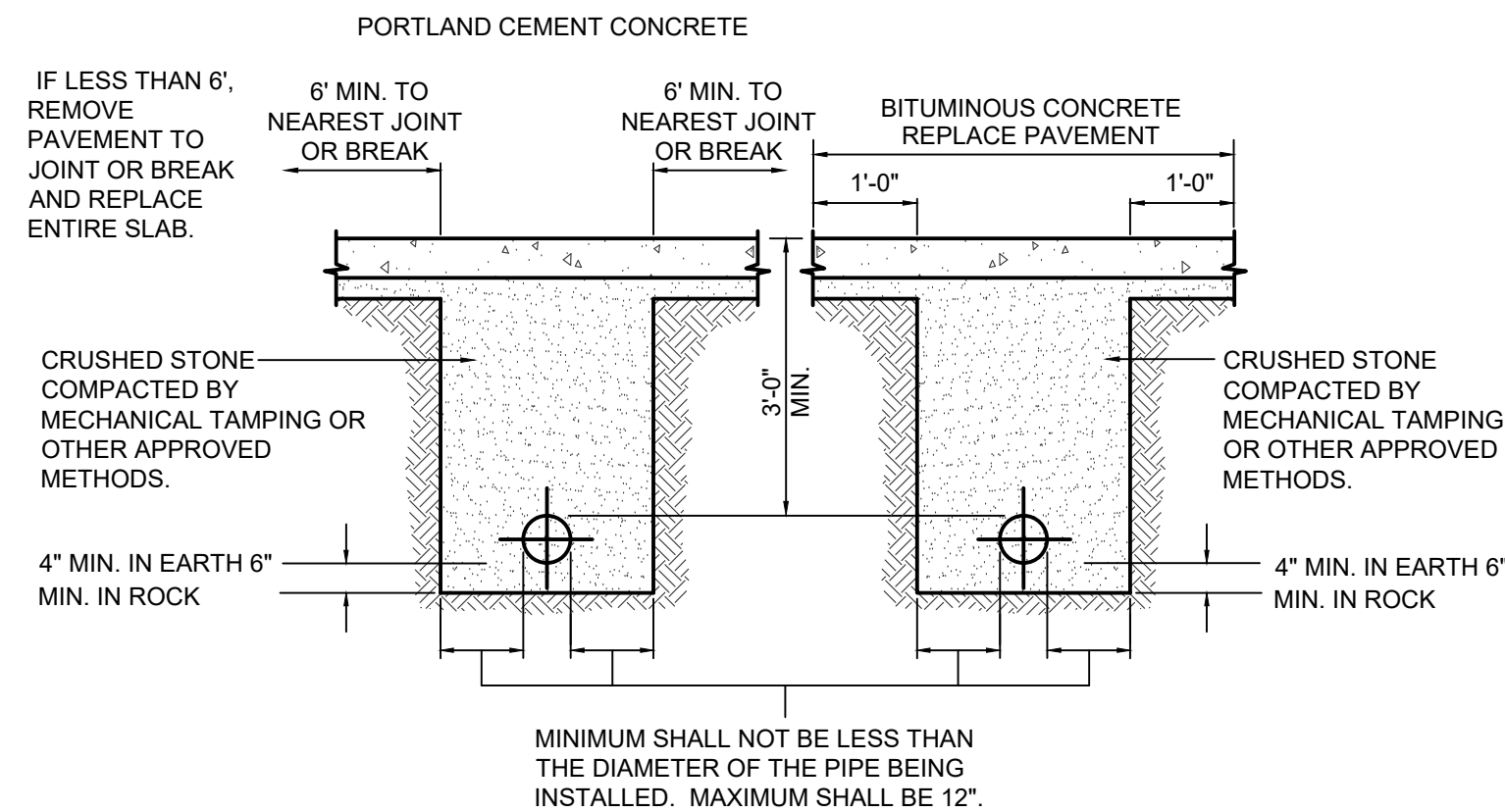
2
C8.0 TYPICAL FORCE MAIN TRENCH
NOT TO SCALE



3
C8.0 CLEANOUT FOR GRAVITY LINES
NOT TO SCALE

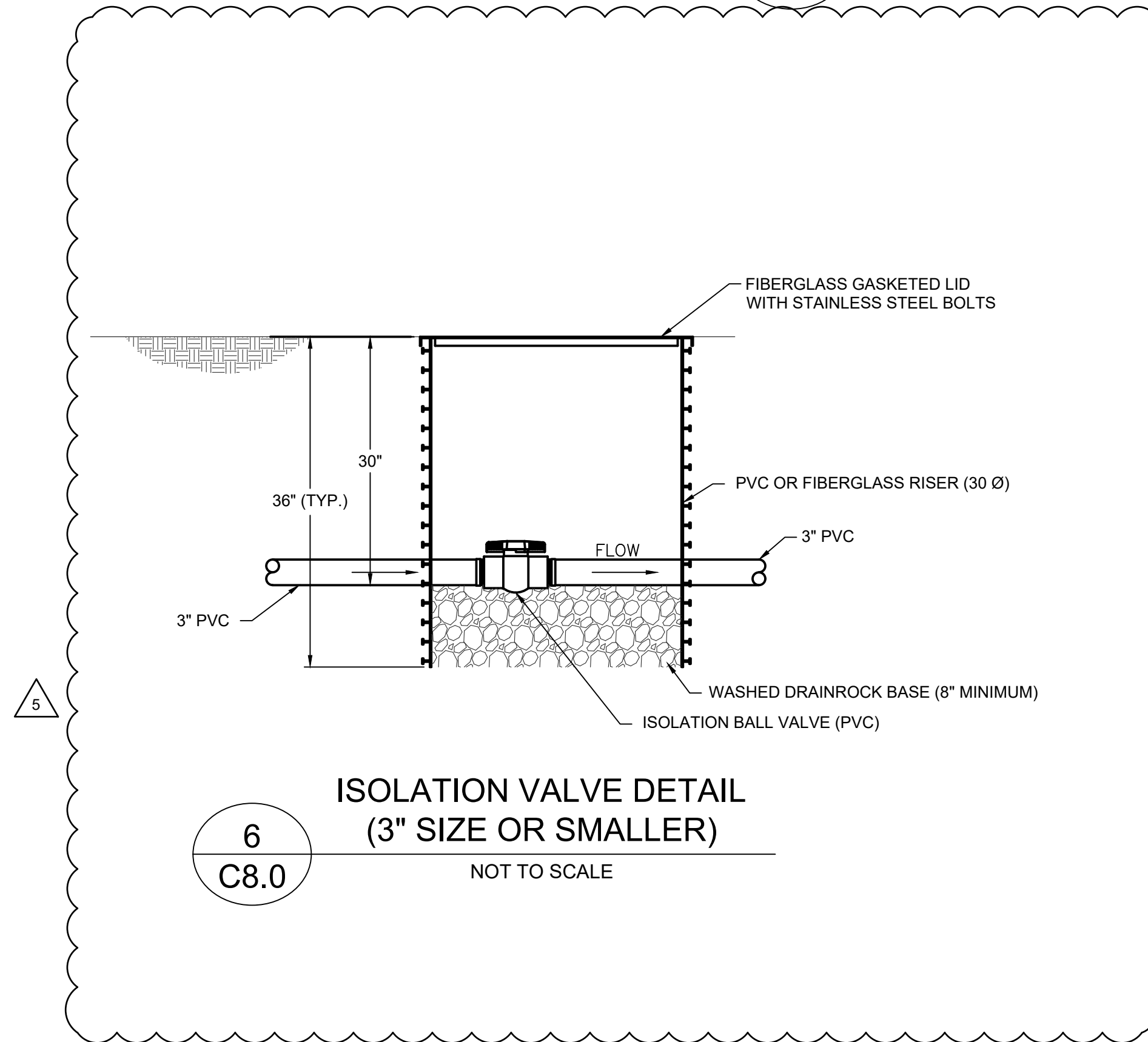


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C8.0 GRAVITY SEWER PIPE TRENCH
NOT TO SCALE

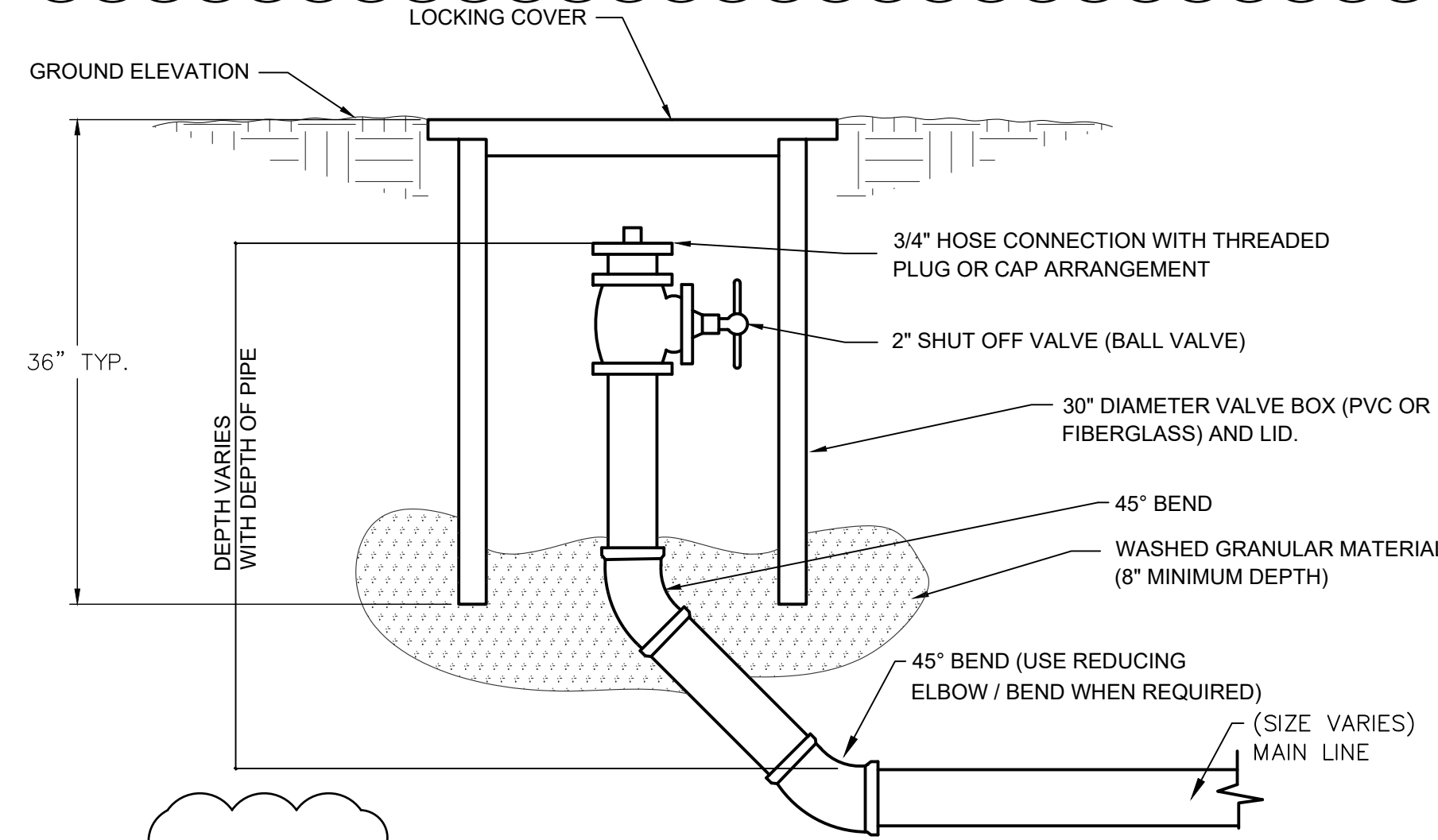


NOTES:
REPLACEMENT PAVEMENT SHALL BE A MINIMUM THICKNESS OF 2" OR SHALL BE THE SAME THICKNESS OF THE EXISTING PAVEMENT WHICHEVER IS GREATEST. PAVEMENT JOINTS SHALL BE SAWS OR OTHERWISE CUT IN NEAT VERTICAL LINES. REPLACEMENT PAVEMENT SHALL BE "HOT MIX" OF THE TYPE DIRECTED BY THE ENGINEER. TRENCHES WITHIN STATE R.O.W. SHALL BE INSTALLED IN ACCORDANCE WITH APPLICABLE SECTIONS OF N.C. D.O.T. STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

5
C8.0 METHODS OF PAVEMENT RESTORATION
NOT TO SCALE



6
C8.0 ISOLATION VALVE DETAIL (3" SIZE OR SMALLER)
NOT TO SCALE



7
C8.0 CLEANOUT DETAIL FOR PRESSURE LINES
NOT TO SCALE

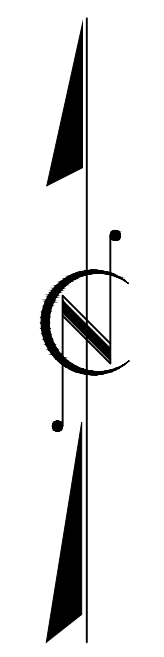
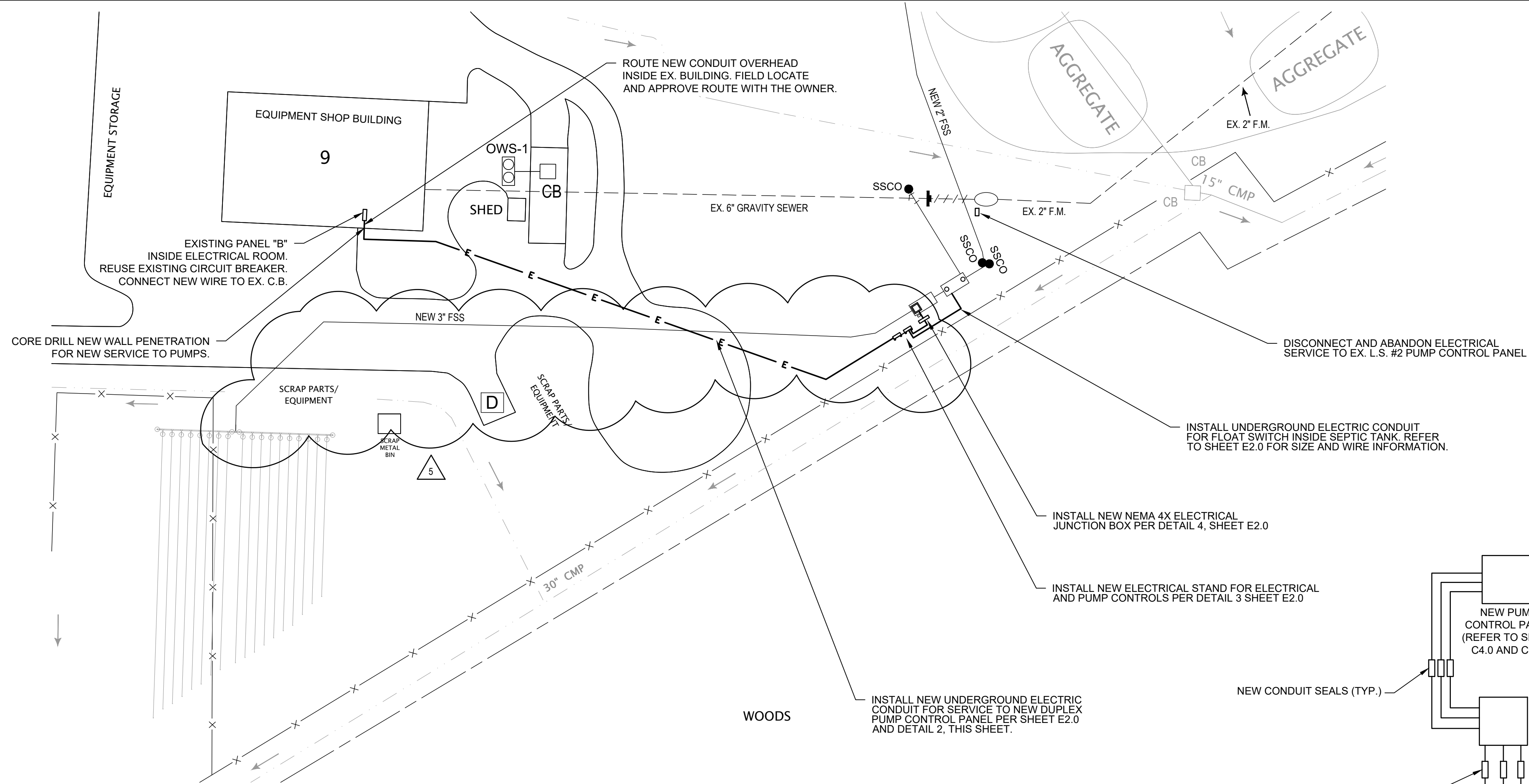
NO.	DATE	DESCRIPTION
1	11/28/21	SURVEY UPDATE
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JOB NO: 32120-05
SCALE: AS SHOWN
DATE: OCTOBER 2021
FILE NAME: C8_0_Const Details.dwg
DRAWING TITLE: CONSTRUCTION DETAILS
DRAWING NO: C8.0

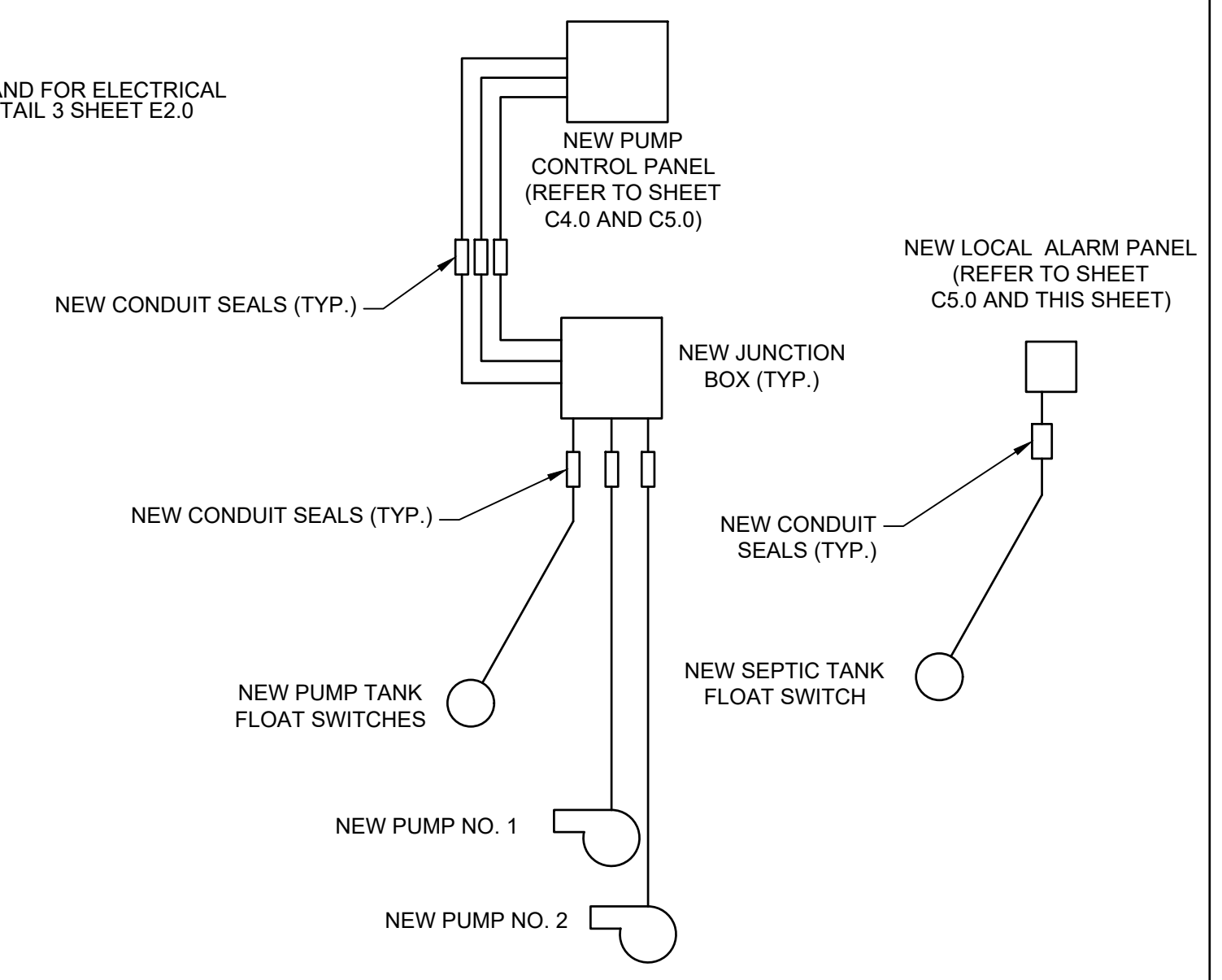


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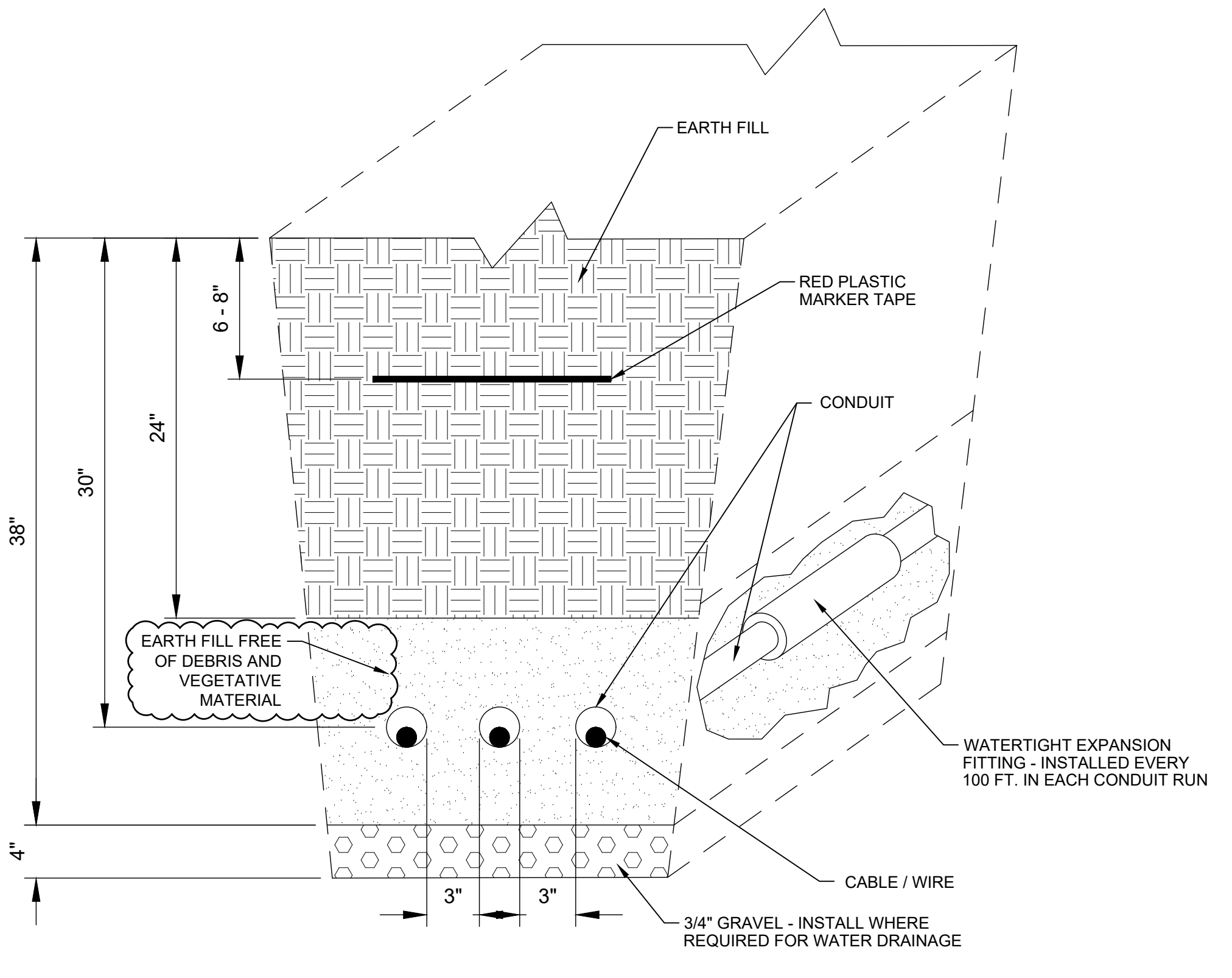


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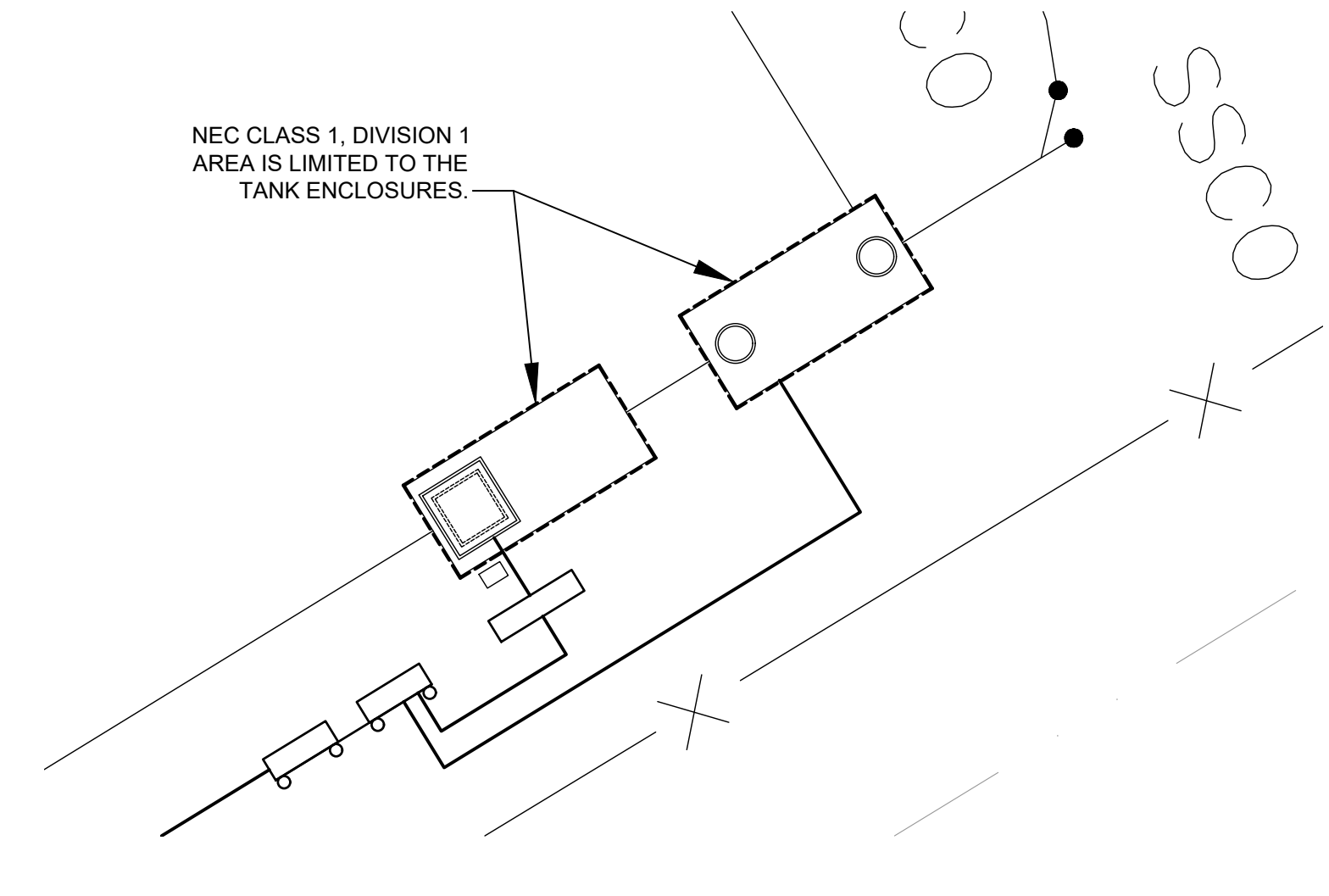
1 ELECTRICAL SITE LAYOUT PLAN
 SCALE: 1" = 40'
 E1.0



4 NEW SEPTIC SYSTEM CONTROL SCHEMATIC
 NOT TO SCALE
 E1.0



2 INSTALLATION OF UNDERGROUND CONDUITS - TYPICAL
 SCALE: NOT TO SCALE
 E1.0



3 NEC 500.4 AREA CLASSIFICATION PLAN
 SCALE: 1" = 10'
 E1.0

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JOB NO:	32120-05
SCALE:	A5 SHOWN
DATE:	OCTOBER 2021
FILE NAME:	E1.0_Elec_Site_Plan.dwg
DRAWING TITLE:	ELECTRICAL SITE LAYOUT PLAN
DRAWING NO:	E1.0

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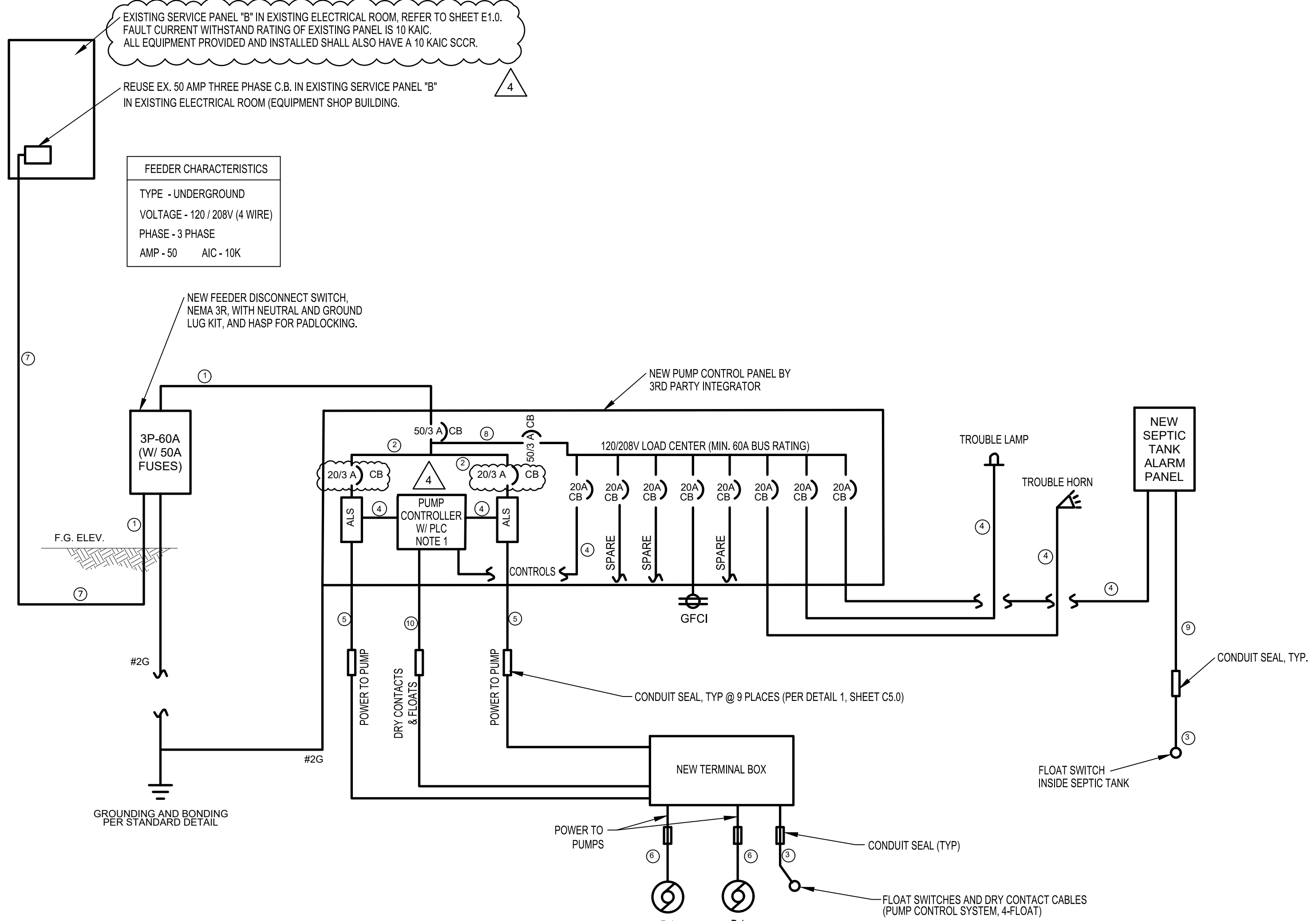
PUMP DATA	
GPM 20 AT 45 FT HEAD	
GPM 60 AT 37 FT HEAD	
GPM 100 AT 25 FT HEAD	
RPM 3500	
TYPE EFFLUENT CASING CAST IRON	
HP 1	
VOLTS 208 PHASE: 3	
AMPS 15 (START) , 6.0 (RUN)	
SERVICE FACTOR: 1.0	
MANUFACTURER: MYER MODEL WHRIOH OR EQUAL	

- | ELECTRICAL NOTES | |
|------------------|--|
| 1) | All Control Panels shall be Deadfront type construction. |
| 2) | Panel Wiring Shall be NEMA Type C wiring for controls with direct cable connection to the motor controller. |
| 3) | Thermal Overload relay shall be melting alloy type sized per nameplate rating of the motor. |
| 4) | Control Voltage shall be 120 volts. |
| 5) | Provide GFI receptacle at pump control panel. Provide cast aluminum in-use coverplate, Hubbell or equal. |
| 6) | All wiring inside control panel type THHN (90°C) or equal, unless noted otherwise. All other wire shall be THHN-2 or XHHW-2. |
| 7) | All outdoor Electrical Enclosures shall be NEMA 4X Stainless Steel with Stainless Steel hasp for padlocking. |
| 8) | Refer to Site Plan for actual orientation of Conduit Runs. |
| 9) | Provide ALS (across the line starter) with each Pump. |

PUMP CONTROL PANEL	
MAIN BRK.	50 amp 3 phase
Motor BRK.	20 amp 3 phase
Breaker (each)	20 amp
Motor Controller NEMA size (TYP.)	1 HP
Motor Size	1 HP
Actual Hp.	
Design Hp.	
Thermal OL type	Melting alloy
size	Per nameplate rating
120 volt outlet	Power from Service.
NEMA 5-15R	same
Junction Box	3/4", 1", 1.5"
Conduit	3/4", 1", 1.5"
Seals	
Control wire	#12Z
Type	SJO
Pump power cord	3-#10
Type	SOOW
Seal Failure	3-#12
Thermal overload	3-#12
N/A - Not Applicable	N/R - Not Required

FEEDER & BRANCH CIRCUIT SCHEDULE				
MARK	AMPERE	CONDUCTORS	CONDUIT SIZE*	NOTE
①	50	4 - #6 AWG - 1-#10G	2" RMC	
②	25	4 - #10 AWG AND 1-#10G		
③	20	CONTROL WIRING FOR LEVEL SWITCHES #12Z SJO CORD	2" PVC	
④	20	120 VOLT 1 PHASE 3 - #12	3/4" PVC	
⑤	20	PUMP LEADS - #10 WITH #10 EGC	1 1/2" PVC	PER PUMP
⑥	20	PUMP LEADS - SOOW CORD WITH #10 EGC	1 1/2" PVC	
⑦	50	4 - #4 AWG AND 1-#8G	2" PVC	
⑧	50	4 - #6 AWG AND 1-#10G		
⑨	20	CONTROL WIRING FOR LEVEL SWITCHES 2 - #12	3/4" PVC	
⑩	20	CONTROL WIRING FOR LEVEL SWITCHES AND DRY CONTACTS 14 - #12	2" PVC	

*NOTE 1 THIS SHEET SHALL APPLY TO ALL ELECTRICAL CONDUIT INSTALLATIONS.

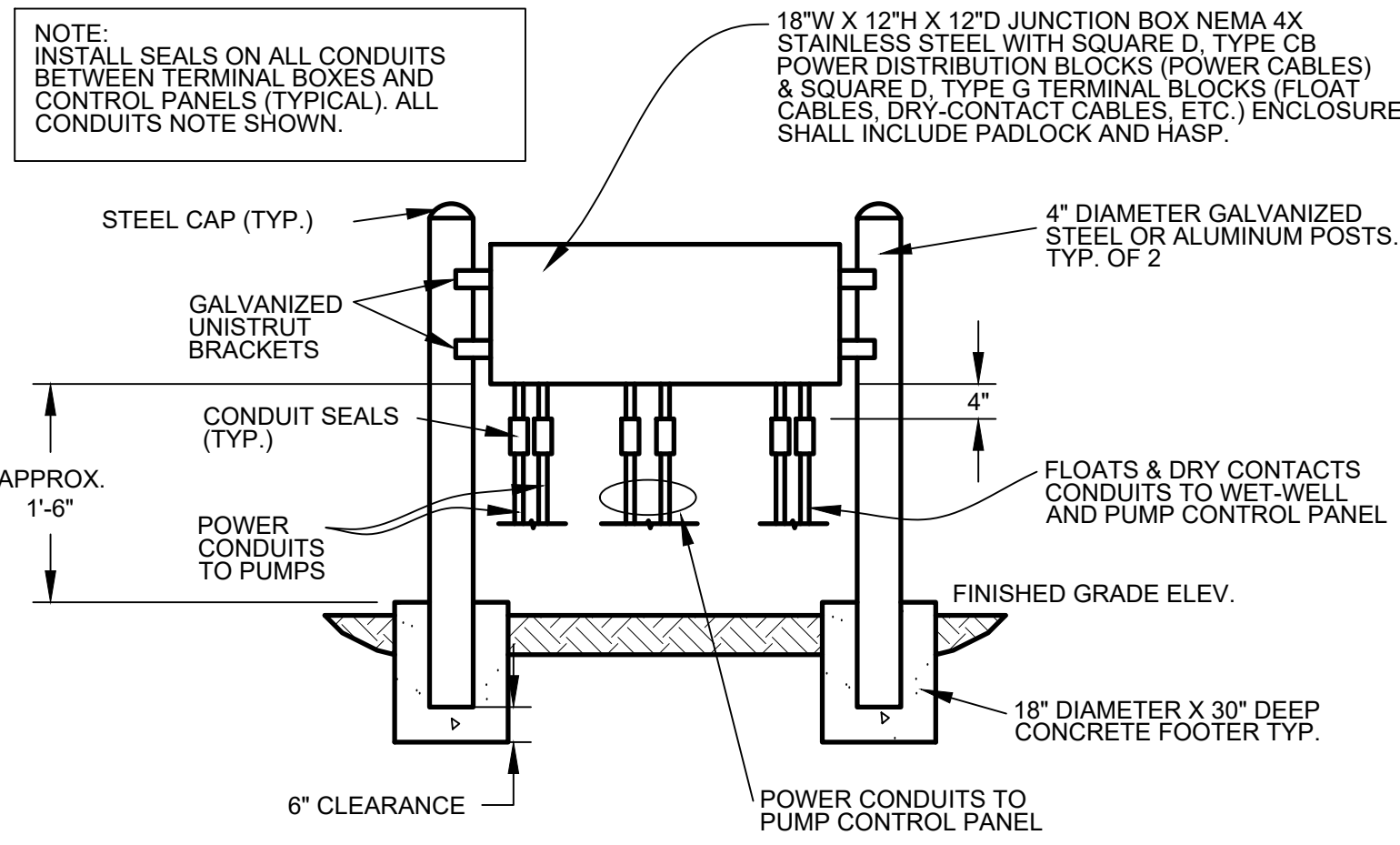


1
E2.0

SINGLE LINE DIAGRAM

NOT TO SCALE

- NOTE:
- PLC CONTROLLER SHALL HAVE BATTERY BACKUP INTEGRAL TO CONTROLLER CABINET. CONTRACTOR TO INSTRUCT OWNER ON BATTERY TESTING AND REPLACEMENT REQUIREMENTS.

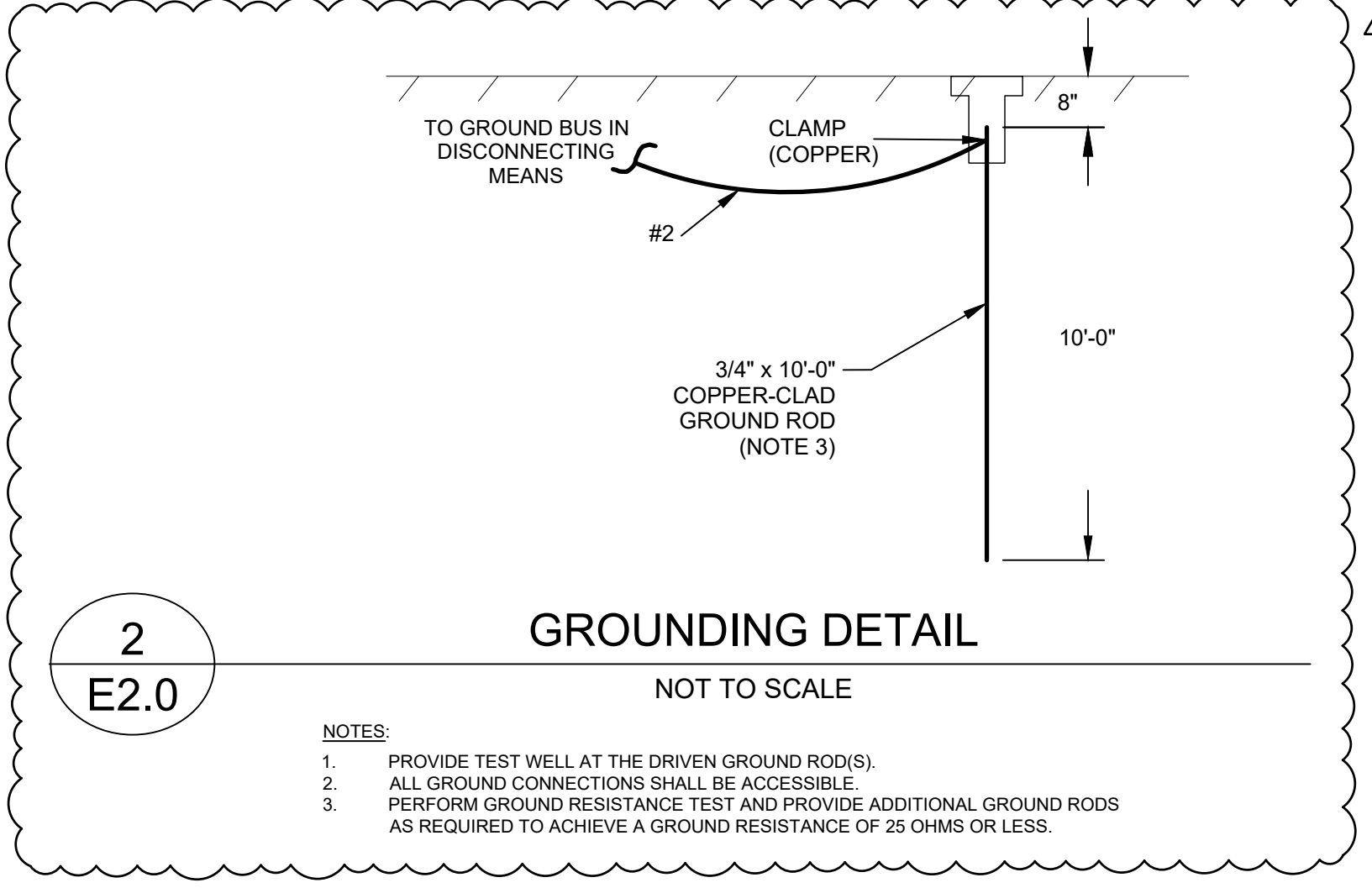


4
E2.0

JUNCTION BOX DETAIL

NOT TO SCALE

- NOTES:
- INSTALL RMC CONDUIT IN EXPOSED AREAS AND FOR ALL UNDERGROUND ELBOWS THAT TRANSITION TO PVC. USE PVC CONDUIT BELOW GROUND AND INSIDE PRE-CAST TANKS.
 - SEAL GAS-TIGHT ALL ELECTRICAL CONDUIT OPENINGS INSIDE A WET-WELL/TANK.
 - ALL AREAS INSIDE THE WETWELL/TANKS IS CLASSIFIED ACCORDING TO NEC TO CLASS I, DIVISION 1, GROUP D. ALL PROPOSED CONSTRUCTION SHALL COMPLY WITH APPLICABLE CODE REQUIREMENTS.
 - CONTRACTOR TO PROVIDE PADLOCKS FOR THE NEW SERVICE ENTRANCE DISCONNECT, JUNCTION BOX, AND NEW PUMP CONTROL PANEL. PADLOCKS SHALL MEET OWNER'S SPECIFICATIONS.

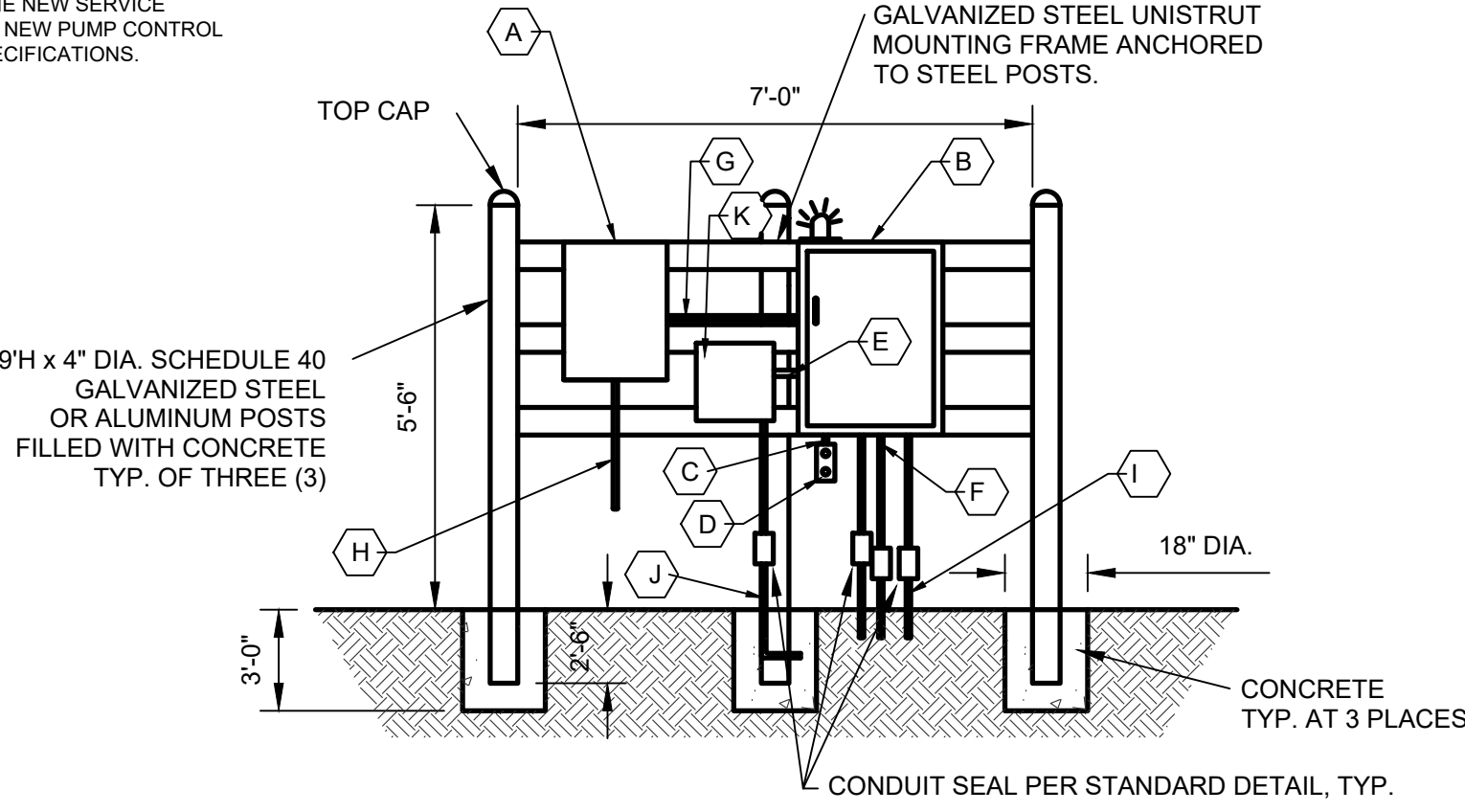


2
E2.0

GROUNDING DETAIL

NOT TO SCALE

- NOTES:
- PROVIDE TEST WELL AT THE DRIVEN GROUND ROD(S).
 - ALL GROUND CONNECTIONS SHALL BE ACCESSIBLE.
 - PERFORM GROUND RESISTANCE TEST AND PROVIDE ADDITIONAL GROUND RODS AS REQUIRED TO ACHIEVE A GROUND RESISTANCE OF 25 OHMS OR LESS.



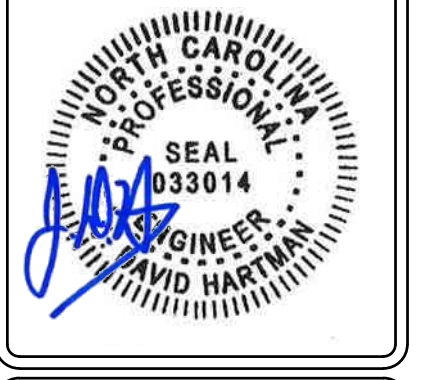
3
E2.0

ELECTRICAL AND PUMP CONTROL PANEL MOUNTING DETAIL

NOT TO SCALE

- TANK SITE - DRAWING NOTES
- A SERVICE DISCONNECT. LABEL WITH ARC FLASH POTENTIAL, 10 KAIC FAULT CURRENT WITHSTAND RATING AND AS THE SERVICE DISCONNECT FOR SEPTIC TANK SYSTEM.
 - B PUMP CONTROL PANEL WITH PADLOCKING HASP. LABEL WITH ARC FLASH POTENTIAL AND 10 KAIC RATING.
 - C 3/4" C. RMC FOR RECEPTACLE
 - D 120V, 20A GFCI DUPLEX RECEPTACLE. PROVIDE CAST ALUMINUM IN-USE COVERPLATE, HUBBELL OR EQUAL.
 - E RMC FEEDER FOR SEPTIC ALARM PANEL
 - F CONDUITS FOR POWER TO PUMPS, RMC
 - G RMC FEEDER FOR CONTROL PANEL
 - H INCOMING SERVICE CONDUIT AND CONDUCTORS, RMC
 - I CONDUIT FLOAT SWITCHES, RMC
 - J RMC CONDUIT TO SEPTIC TANK FLOAT SWITCH
 - K SEPTIC TANK ALARM PANEL

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DRAWING TITLE: ELECTRICAL DETAILS
DRAWING NO: E2.0

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