

# NORTHUMBERLAND HIGH & MIDDLE SCHOOLS SANITARY TREATMENT MODIFICATIONS PROCUREMENT PACKAGE 3 SITE WORK, PIPING AND TANK INSTALLATION FOR REGULATORY REVIEW

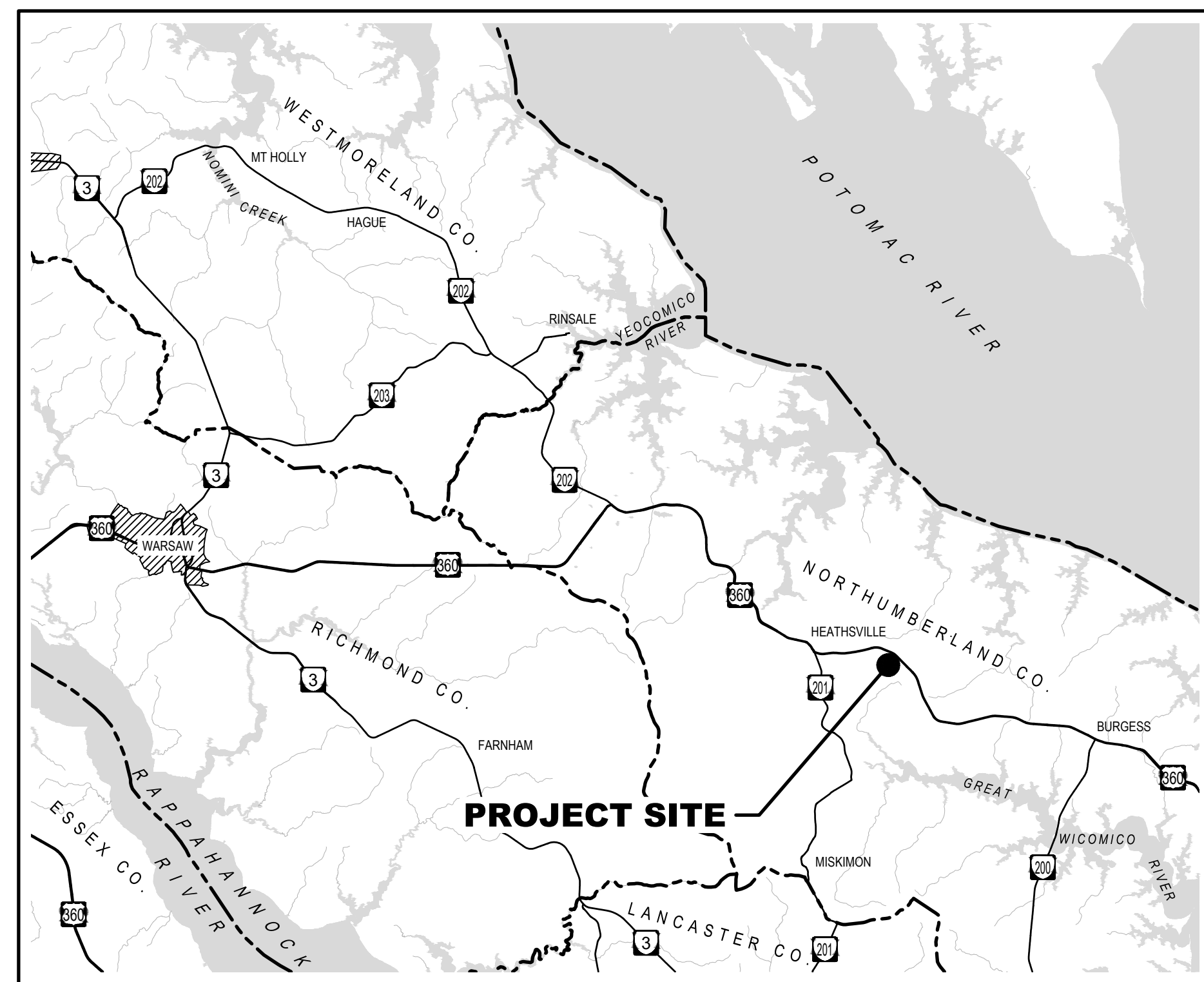


## NORTHUMBERLAND COUNTY HEATHSVILLE, VIRGINIA

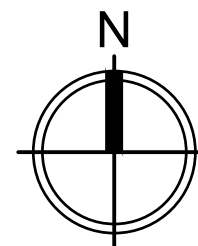
THIS PROJECT ENTAILS CONTRACTOR FURNISHED AND INSTALLATION REQUIREMENTS AND CONTRACTOR INSTALLATION OF OWNER FURNISHED ITEMS. SEE SHEET D-002 FOR COMPLETE LIST OF OWNER FURNISHED ITEMS FOR CONTRACTOR TO INSTALL. ANY ITEMS CALLED OUT ON THE DRAWINGS NOT LISTED ON D-002 SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR.



NORTHUMBERLAND HIGH & MIDDLE SCHOOLS  
SANITARY TREATMENT  
MODIFICATIONS PROCUREMENT  
PACKAGE 3 - SITE WORK, PIPING AND  
TANK INSTALLATION  
OWNER:  
NORTHUMBERLAND COUNTY  
HEATHSVILLE, VIRGINIA



**PROJECT VICINITY MAP**  
NOT TO SCALE



### INDEX OF DRAWINGS

- G-001 COVER SHEET
- C-101 OVERALL SITE LAYOUT
- C-102 E&S
- C-103 E&S DETAILS
- D-001 PROCESS SCHEMATIC
- D-002 GENERAL NOTES
- D-101 SEPTIC TANK AND PUMP STATION PLAN
- D-102 EQUALIZATION TANK SYSTEM PLAN AND SECTION
- D-301 SEPTIC TANK AND PUMP STATION SECTIONS
- D-501 DETAILS

### RESPONSIBLE LAND DISTURBER DESIGNATION

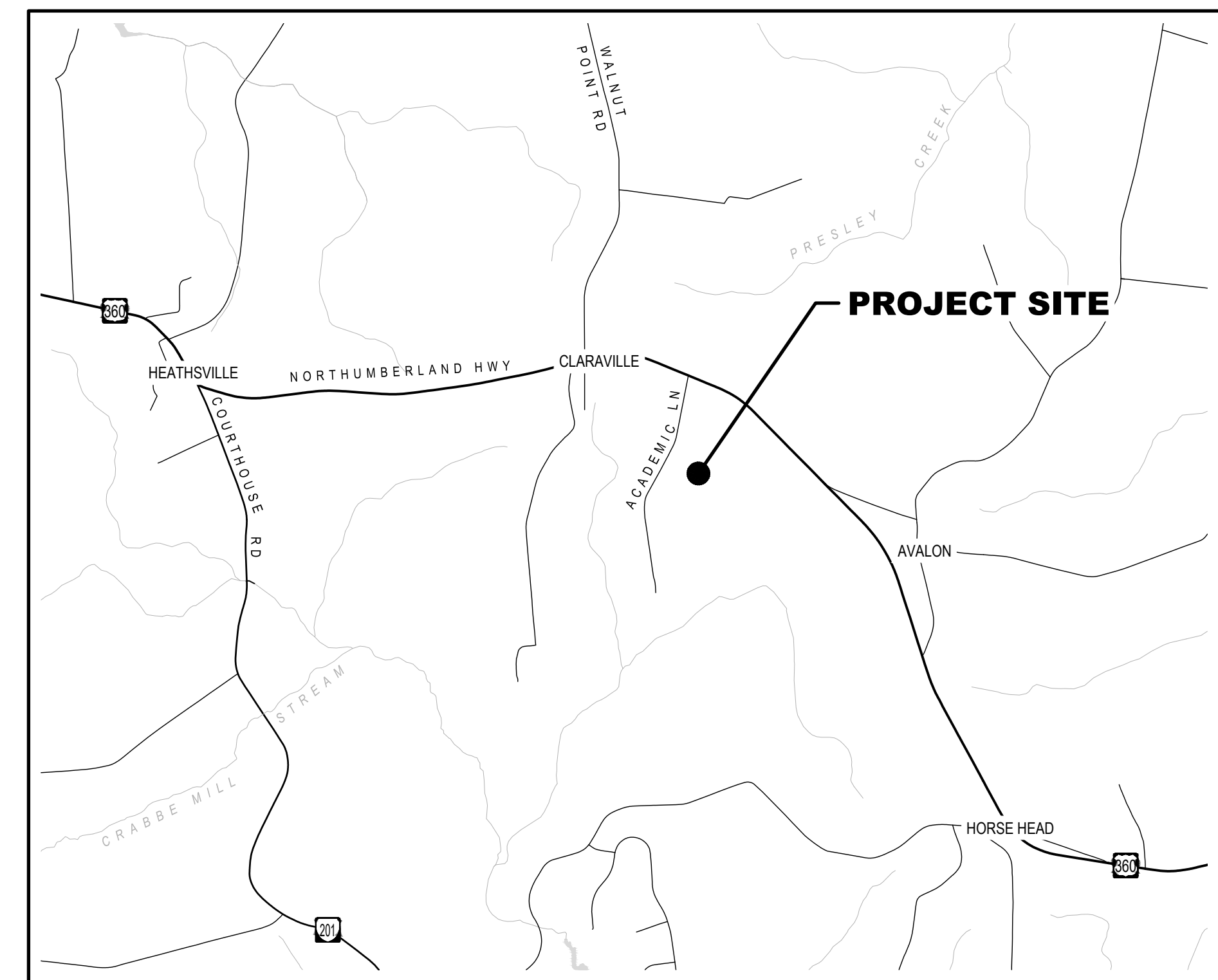
THE PERSON IDENTIFIED BELOW IS DESIGNATED AS THE RESPONSIBLE LAND DISTURBER WHO WILL BE IN CHARGE OF AND RESPONSIBLE FOR CARRYING OUT THE LAND-DISTURBING ACTIVITY ASSOCIATED WITH THIS PROJECT. THIS PERSON MEETS THE APPLICABLE REQUIREMENTS OF SECTION 62.1-44.15:52 AND 62.1-44.15:55 OF THE CODE OF VIRGINIA BY VIRTUE OF THE FOLLOWING.

- \_\_\_ RESPONSIBLE LAND DISTURBER CERTIFICATE
- \_\_\_ DCR/DEQ CERTIFICATION FOR COMBINED ADMINISTRATOR, PROGRAM ADMINISTRATOR, PLAN REVIEWER, OR INSPECTOR
- \_\_\_ VIRGINIA PROFESSIONAL ENGINEER, LAND SURVEYOR, LANDSCAPE ARCHITECT, OR ARCHITECT

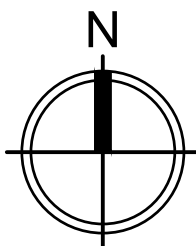
RESPONSIBLE LAND DISTURBER CONTACT INFORMATION:

NAME (SIGNATURE) \_\_\_\_\_ DATE: \_\_\_\_\_  
 NAME (PRINT) \_\_\_\_\_  
 CERTIFICATION / REGISTRATION NUMBER \_\_\_\_\_  
 COMPANY \_\_\_\_\_  
 MAILING ADDRESS \_\_\_\_\_  
 \_\_\_\_\_  
 TELEPHONE \_\_\_\_\_ FAX \_\_\_\_\_  
 E-MAIL \_\_\_\_\_

THIS DESIGNATION MAY ONLY BE CHANGED BY PROVIDING A LETTER WITH DOCUMENTATION IDENTIFYING THE NEW RLD TO THE DEPARTMENT OF PUBLIC WORKS - ENGINEERING FOR VERIFICATION AND APPROVAL.



**PROJECT LOCATION MAP**  
NOT TO SCALE



MARK	DATE	DESCRIPTION
0	9/30/2024	FOR REGULATORY REVIEW

PROJECT NO: 2447  
 DATE: 9/30/2024  
 DRAWN BY: MCT  
 CHECKED BY: CRLM  
 SHEET TITLE

COVER SHEET

**G-001**

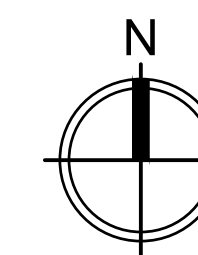
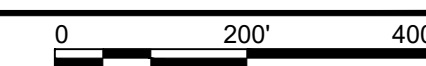
SHEET 1 OF 10

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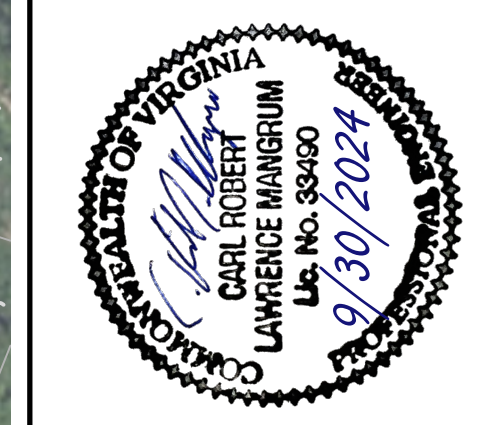


# 1 OVERALL SITE LAYOUT PLAN

SCALE: 1" = 200'




**MANGRUM**  
Consulting & Design  
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434.665.1515 Rob@MangrumConsulting.com



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OVERALL SITE LAYOUT

C-101  
SHEET 2 OF 10

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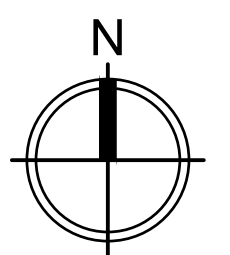
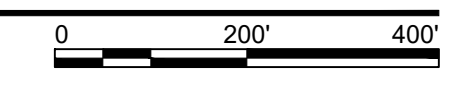
E&S

C-102

SHEET 3 OF 10

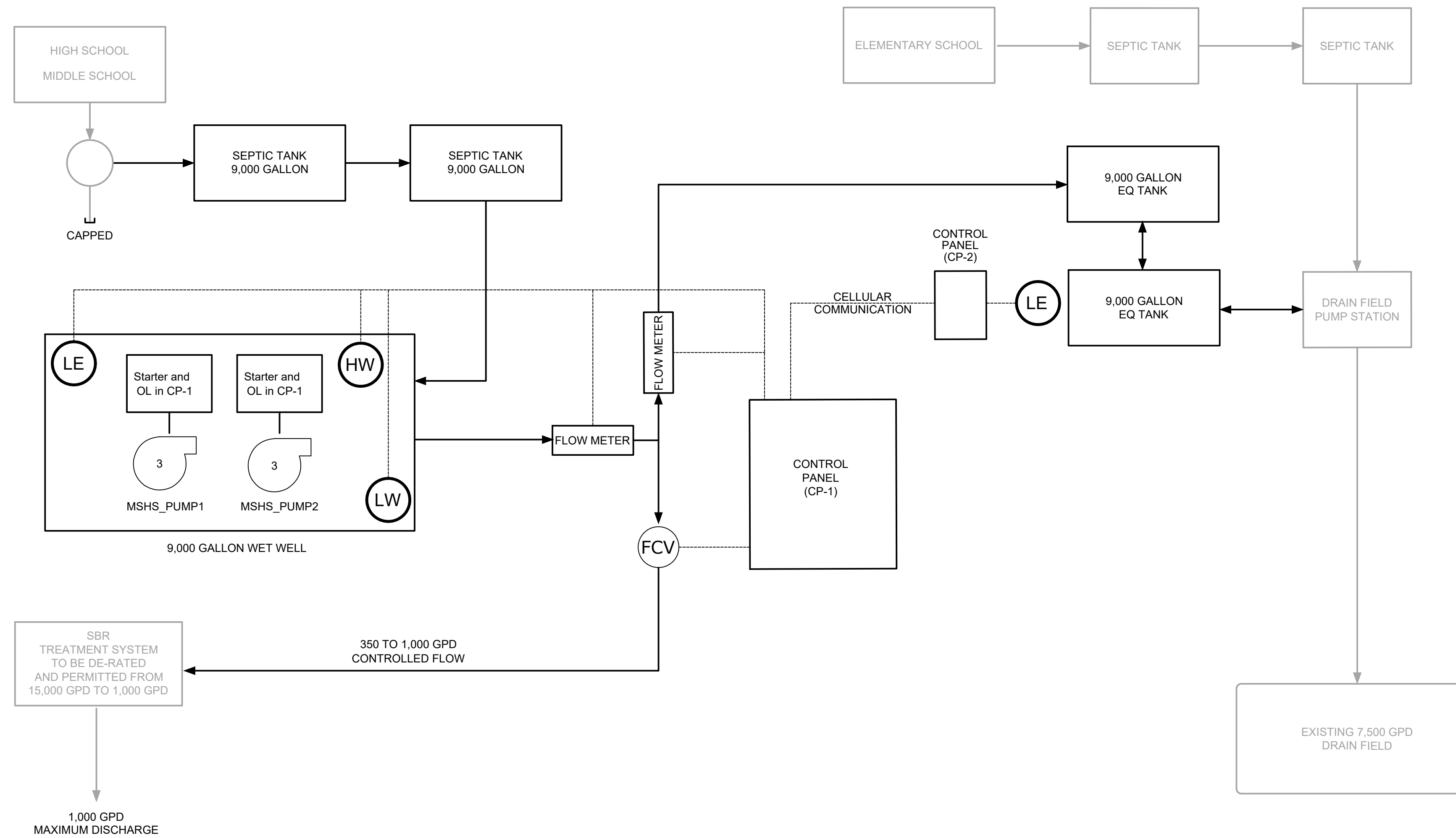
**EROSION AND SEDIMENT CONTROL LEGEND**

- SF SILT FENCE PER VESCH STD. & SPEC 3.05
- CE CONSTRUCTION ENTRANCE PER VESCH STD. & SPEC 3.02
- PS PERMANENT SEEDING PER VESCH STD. & SPEC. 3.32 (NOTE: ALL DISTURBED AREAS TO RECEIVE PERMANENT SEEDING)
- MU MULCHING PER VESCH STD. & SPEC 3.35





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# PROCESS SCHEMATIC

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PROCESS SCHEMATIC

**GENERAL NOTES:**

- A. STRUCTURES, INSTRUMENTS AND EQUIPMENT - OWNER FURNISHED CONTRACTOR TO INSTALL AND NOTES ON CONTRACTOR INSTALLATION REQUIREMENTS AND FURNISHING OF APPURTENANCES:
1. ZOELLER MODEL 840 GRINDER PUMPS - QUANTITY 2. CONTRACTOR TO FURNISH AND INSTALL BASE ELBOW AND RAILS FOR EACH PUMP IN ADDITION TO INSTALLING PUMP AND ACCESSORIES.
  2. CONERY 2900-B1-S1-C1-20 FLOATS - QUANTITY 2. CONTRACTOR TO MOUNT INSTRUMENT. WIRING AND CONDUIT TO BE PERFORMED UNDER SEPARATE CONTRACT.
  3. ROSEMOUNT 2408 RADAR LEVEL SENSOR/TRANSMITTER - QUANTITY 2. CONTRACTOR TO MOUNT INSTRUMENT. WIRING AND CONDUIT TO BE PERFORMED UNDER SEPARATE CONTRACT.
  4. ROSEMOUNT 8750 FLOW METER/TRANSMITTER - QUANTITY 2. CONTRACTOR TO PLACE FLOW METER TRANSMITTERS LOOSE AT METER VAULTS. INSTALLATION OF TRANSMITTERS AND CONDUITS WILL BE UNDER SEPARATE CONTRACT.
  5. AHASI MODULATING DIAPHRAGM CONTROL VALVE WITH ELECTRIC ACTUATOR - QUANTITY 1. CONTRACTOR TO MOUNT INSTRUMENT. WIRING AND CONDUIT TO BE PERFORMED UNDER SEPARATE CONTRACT.
  6. SEPTIC TANK 1: 9,000 GALLON TANK H20 BAFFLE WALL, PRECAST CONCRETE STRUCTURE - 16' X 9' X 9.5' ID - 2 X 8" BOOTS - 3 X 24" FRAME AND COVER LOCKABLE CAST-IN. CONTRACTOR TO CAULK PARTITION WALL TO STRUCTURE, 3 SIDES.
  7. SEPTIC TANK 2: 9,000 GALLON TANK H20 BAFFLE WALL, PRECAST CONCRETE STRUCTURE - 16' X 9' X 9.5' ID - 2 X 8" BOOTS - 3 X 24" FRAME AND COVER LOCKABLE CAST-IN. CONTRACTOR TO CAULK PARTITION WALL TO STRUCTURE, 3 SIDES.
  8. WET WELL: 9,000 GALLON TANK H20, PRECAST CONCRETE STRUCTURE -16' X 9' X 9.5' ID - 1 X 2" & 1 X 8" BOOTS - 2 X 24" FRAME AND COVER LOCKABLE X 4" CAST-IN.
  9. EQUALIZATION TANK 1: 9,000 GALLON TANK H20, PRECAST CONCRETE STRUCTURE - 16' X 9' X 9.5' ID - 2 X 8" BOOTS - 2 X 24" FRAME AND COVER LOCKABLE X 4".
  10. EQUALIZATION TANK 2: 9,000 GALLON TANK H20, PRECAST CONCRETE STRUCTURE - 16' X 9' X 9.5' ID - 2 X 8" BOOTS - 2 X 24" FRAME AND COVER LOCKABLE X 4".
  11. VALVE VAULT: VAULT 4' X 4 X 3' ID NO BASE, PRECAST CONCRETE STRUCTURE - 3 X 2" BOOTS. CONTRACTOR TO FURNISH AND INSTALL GRATING AND SUPPORT ANGLES PER DRAWINGS.
  12. METER VAULT 1: VAULT 4' X 4 X 3' ID NO BASE, PRECAST CONCRETE STRUCTURE - 2 X 2" BOOTS. CONTRACTOR TO FURNISH AND INSTALL GRATING AND SUPPORT ANGLES PER DRAWINGS.
  13. METER VAULT 2: VAULT 4' X 4 X 3' ID NO BASE, PRECAST CONCRETE STRUCTURE - 2 X 2" BOOTS. CONTRACTOR TO FURNISH AND INSTALL GRATING AND SUPPORT ANGLES PER DRAWINGS.
  14. CONTROL VAULT: VAULT 4' X 4 X 3' ID NO BASE, PRECAST CONCRETE STRUCTURE - 2 X 2" BOOTS. CONTRACTOR TO FURNISH AND INSTALL GRATING AND SUPPORT ANGLES PER DRAWINGS.
  15. SHOP DRAWINGS OF ALL OWNER FURNISHED PRECAST CONCRETE STRUCTURES WILL BE PROVIDED TO CONTRACTOR.
  16. CONTRACTOR TO BE RESPONSIBLE FOR COORDINATING DELIVERY AND UNLOADING AND APPROPRIATE STORAGE OF ALL OWNER FURNISHED LISTED.
- B. CONTRACTOR TO BE RESPONSIBLE FOR COORDINATING THE DELIVERY AND UNLOADING AND STORING AS APPROPRIATE ALL LISTED OWNER FURNISHED ITEMS.



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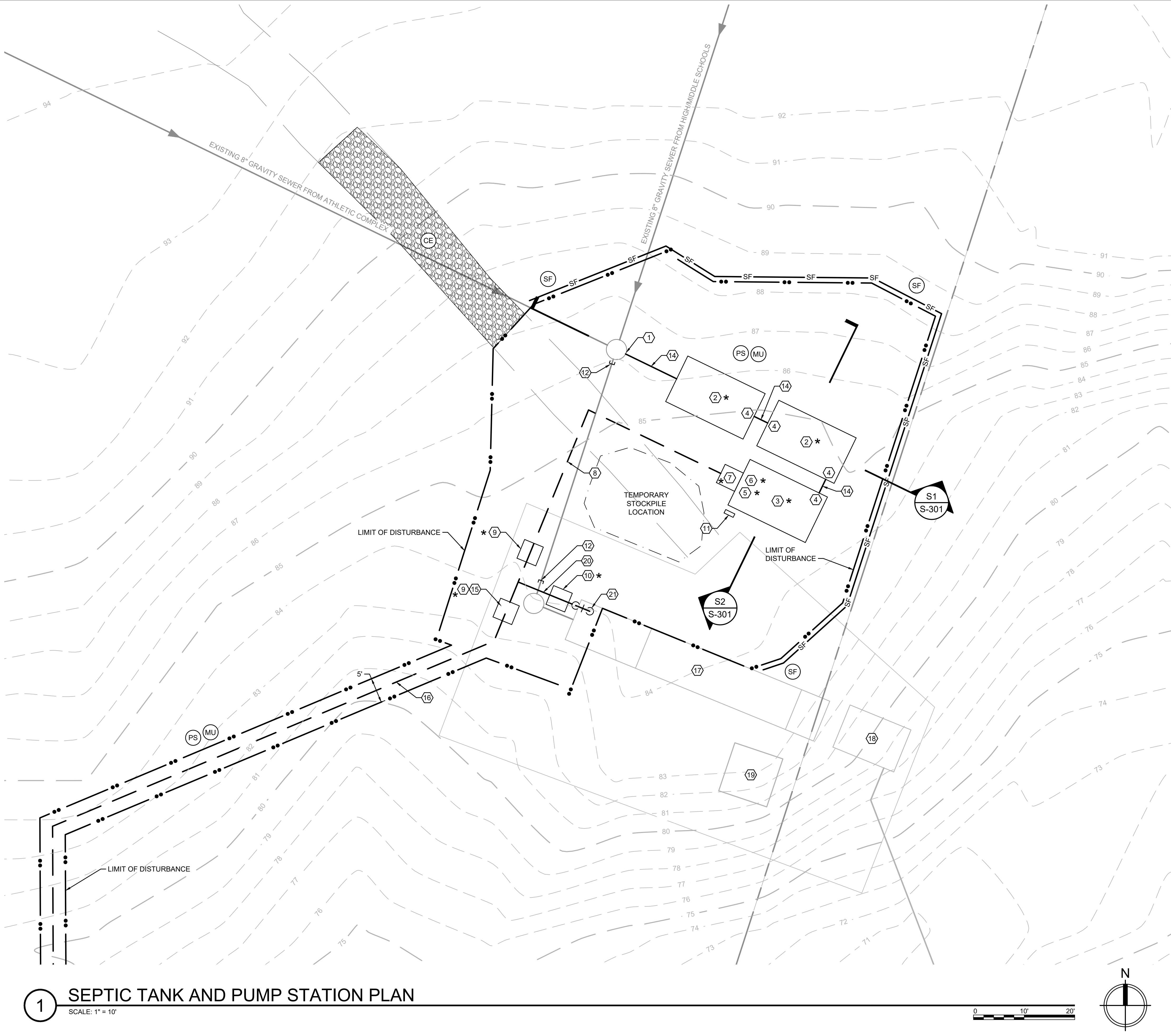
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**GENERAL NOTES**

**D-002**

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**1 SEPTIC TANK AND PUMP STATION PLAN**  
SCALE: 1" = 10'

**SHEET KEY NOTES**

- \* OWNER FURNISHED, CONTRACTOR TO INSTALL.  
SEE D-002 FOR ITEMIZED LIST OF OWNER FURNISHED CONTRACTOR TO INSTALL ITEMS
- 1. CORE DRILL EXISTING 4" MANHOLE FOR NEW 8" GRAVITY PVC. FURNISH AND INSTALL NSF RATED LINK SEAL MODEL "S61" LINK-SEAL® MODULAR SEALS FOR EACH CORE DRILL.
- \* 2. 9,000 GALLON SEPTIC TANK. SEE D-002 AND D1/D-301 FOR DETAILS.
- \* 3. 9,000 GALLON WET WELL. SEE D-002 AND D2/D-301 FOR DETAILS.
- 4. CORE DRILL AND LINK SEAL BOTH STRUCTURES AND CONNECT WITH 8" GRAVITY SEWER. SEE S1/D-301 AND S2/D-301 FOR DETAILS.
- \* 5. MSHS PUMP NO. 1. SEE D-002 AND D-301 FOR DETAILS.
- \* 6. MSHS PUMP NO. 2. SEE D-002 AND D-301 FOR DETAILS.
- \* 7. VALVE VAULT. SEE D-002 AND D1/D-501 FOR DETAILS.
- 8. 2" SCH. 40 CPVC.
- \* 9. FLOW METER VAULT. SEE D2/D-501 FOR DETAIL.
- \* 10. MODULATING CONTROL VALVE. SEE D-002 AND D3/D-501 FOR DETAIL.
- 11. CONTROL PANEL. SHOWN FOR REFERENCE ONLY. NOT PART OF THIS CONTRACT.
- 12. CUT EXISTING 8" SEWER AND PERMANENTLY CAP EACH END.
- 13. ABANDON IN PLACE EXISTING 8" SEWER.
- 14. 8" GRAVITY C-900.
- 15. 2" HDPE FORCEMAIN. SEE D-002 FOR SPECIFICATIONS. TRANSITION FROM CPVC TO HDPE WITHIN FLOW METER VAULT USING MECHANICAL COMPRESSION FITTINGS.
- 16. 2" HDPE TO EQ TANKS. SEE C-101 FOR CONTINUATION.
- 17. EXISTING SEWAGE TREATMENT PLANT.
- 18. EXISTING CHLORINE CONTACT TANK.
- 19. EXISTING POWER DISTRIBUTION BUILDING.
- 20. 1½" SCH. 40 CPVC.
- 21. ROUTE 1.5" CPVC ALONG EXISTING CONCRETE TANK WALL AND EXTEND VERTICALLY UP 18 INCHES ABOVE TOP OF STRUCTURE AND THEN EXTEND DOWN 7' INTO THE TANK. HEAT TRACE AND INSULATE PIPING. USE STAINLESS PVC FASTENERS TO SUPPORT PIPE TO EXISTING CONCRETE SURFACES EVERY 24" ALONG ENTIRE PIPE ROUTING. THE PURPOSE OF THE INVERTED U IS TO MAINTAIN A FULL PIPE UPSTREAM AT ALL TIMES WHICH IS A REQUIREMENT FOR THE MAGNETIC FLOW METER TO FUNCTION PROPERLY.

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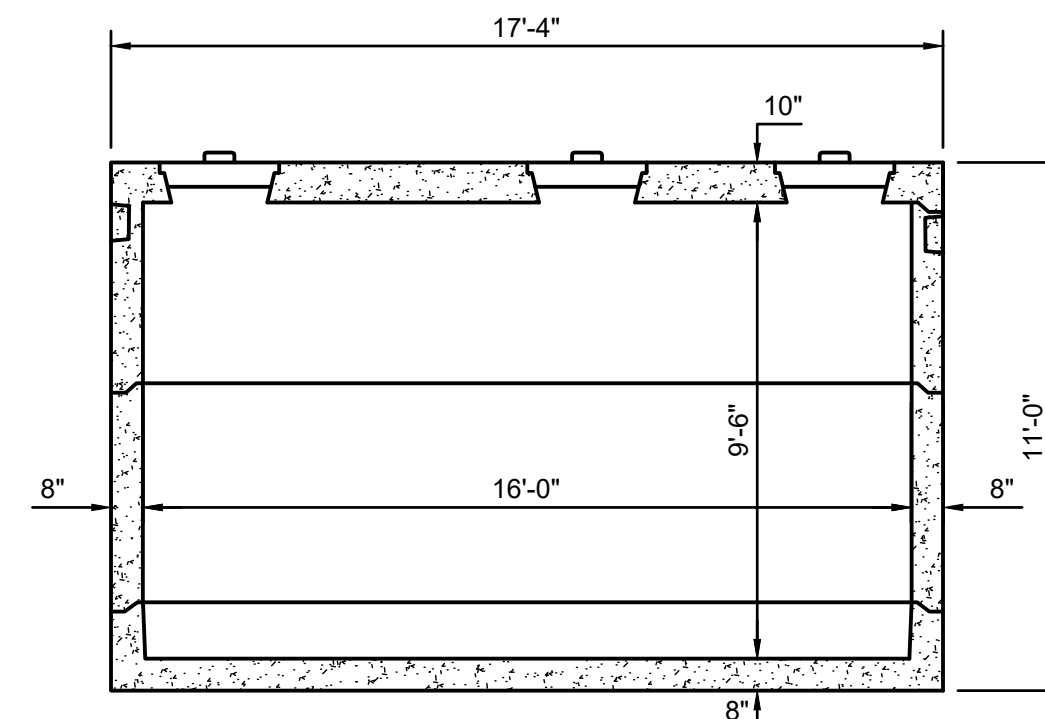
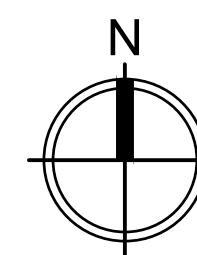
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SEPTIC TANK AND PUMP STATION PLAN

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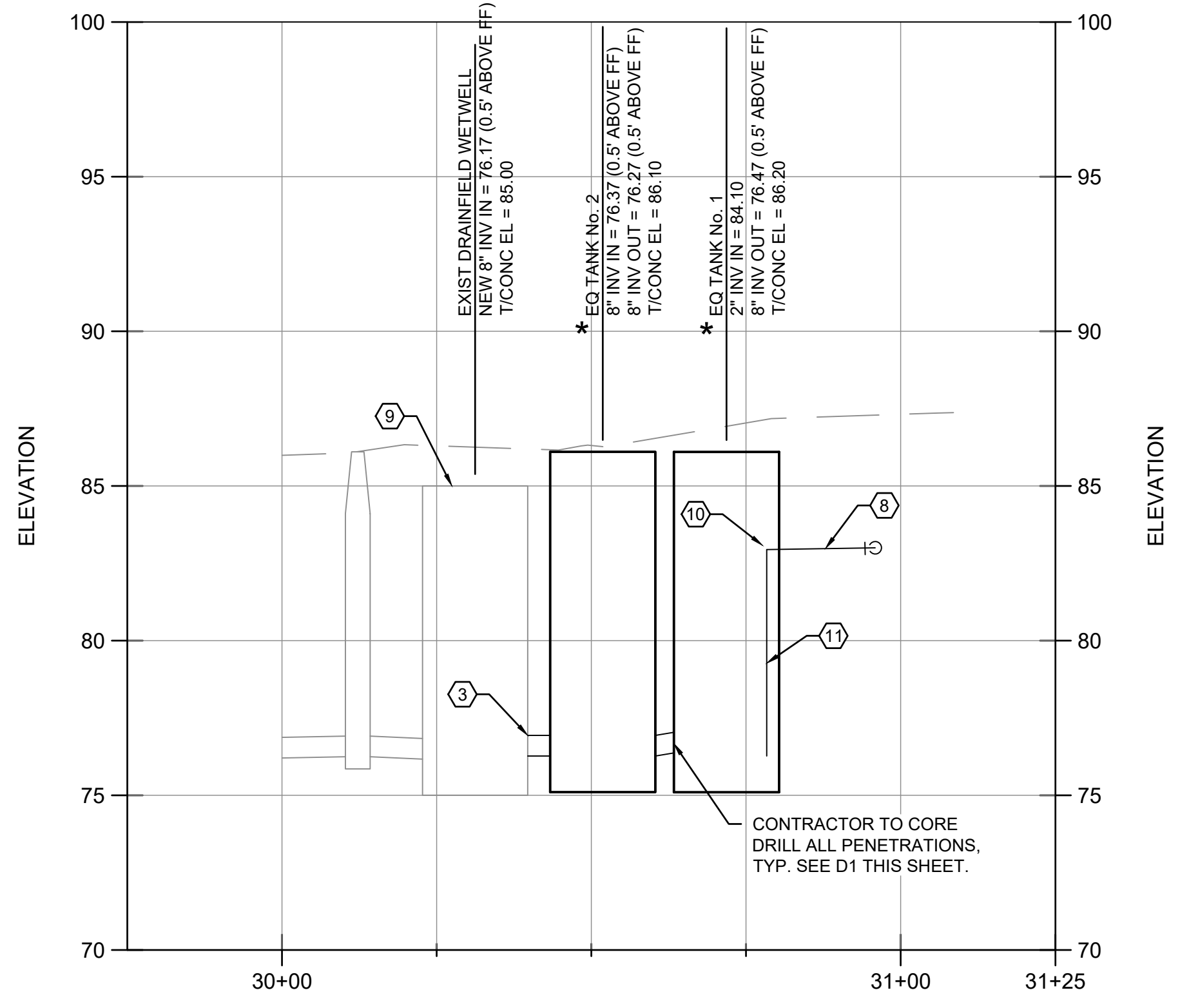
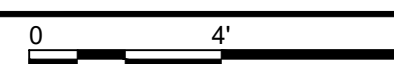


**1** EQUALIZATION TANK SYSTEM PLAN AND SECTION  
SCALE: 1" = 10'

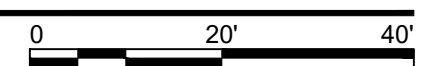


- NOTES FOR D1:
- CONSTRUCTION JOINT - SEALED WITH 1" DIA. BUTYL RUBBER OR EQUAL.
  - SIZE OF INFLUENT/EFFLUENT PIPING THAT PENETRATES WALLS SHALL BE AS SHOWN ON THE DRAWINGS. ALL INTERNAL PIPING SHALL MATCH THE INFLUENT/EFFLUENT PIPE SIZE SHOWN ON THE DRAWINGS.
  - INSTALLING CONTRACTOR SHALL CORE DRILL ALL PIPE PENETRATIONS AND SHALL FURNISH AND INSTALL NSF RATED LINK SEAL MODEL "S61" LINK-SEAL® MODULAR SEALS FOR EACH CORE DRILL.

**\*D1** EQUALIZATION TANK SYSTEM SECTION  
SCALE: 1/4" = 1'-0"



**S1** EQUALIZATION TANK SYSTEM SECTION  
SCALE: 1" = 20'



**SHEET KEY NOTES**

- \* OWNER FURNISHED, CONTRACTOR TO INSTALL**
- EXISTING DRAIN FIELD PUMP STATION WETWELL.
  - EXISTING DRAIN FIELD PUMP STATION, PUMP NO. 1 AND PUMP NO. 2.
  - CORE DRILL EXISTING DRAIN FIELD PUMP STATION WETWELL 6" ABOVE FINISHED FLOOR. UTILIZE NSF RATED LINK SEAL MODEL "S61" LINK-SEAL® MODULAR SEAL.
  - A MECHANICALLY INSERTED BOOT STYLE RUBBER CONNECTOR.
  - 8" C-900 GRAVITY SEWER.
  - 8" INVERT TO BE 6" ABOVE FINISHED FLOOR OF NEW STRUCTURE..
  - 9,000 GAL PRECAST EQ TANK/WETWELL NO. 1, SEE D-002 AND D1/D-102 FOR DETAILS.
  - 9,000 GAL PRECAST EQ TANK/WETWELL NO. 2, SEE D-002 AND D1/D-102 FOR DETAILS.
  - 2" HDPE FORCE MAIN. SEE C-101 FOR CONTINUATION.
  - CONTRACTOR TO VERIFY (A) COVER DEPTH OVER TANK; AND (B) DEPTH TO FINISHED FLOOR OF EXISTING PUMP STATION WETWELL AND NOTIFY ENGINEER IF DIFFERENT THAN SHOWN.
  - HDPE MECHANICAL COMPRESSION FITTING.
  - PVC OR SS PIPE SUPPORTS EVERY 4 VERTICAL FEET.
  - EXISTING FORCEMAIN TO EXISTING DRAIN FIELD.
  - NEW 12' WIDE MANUAL OPEN DOUBLE SWING GATE TO MATCH EXISTING FENCE COLOR AND MATERIAL OF CONSTRUCTION.
  - EXISTING FENCE.



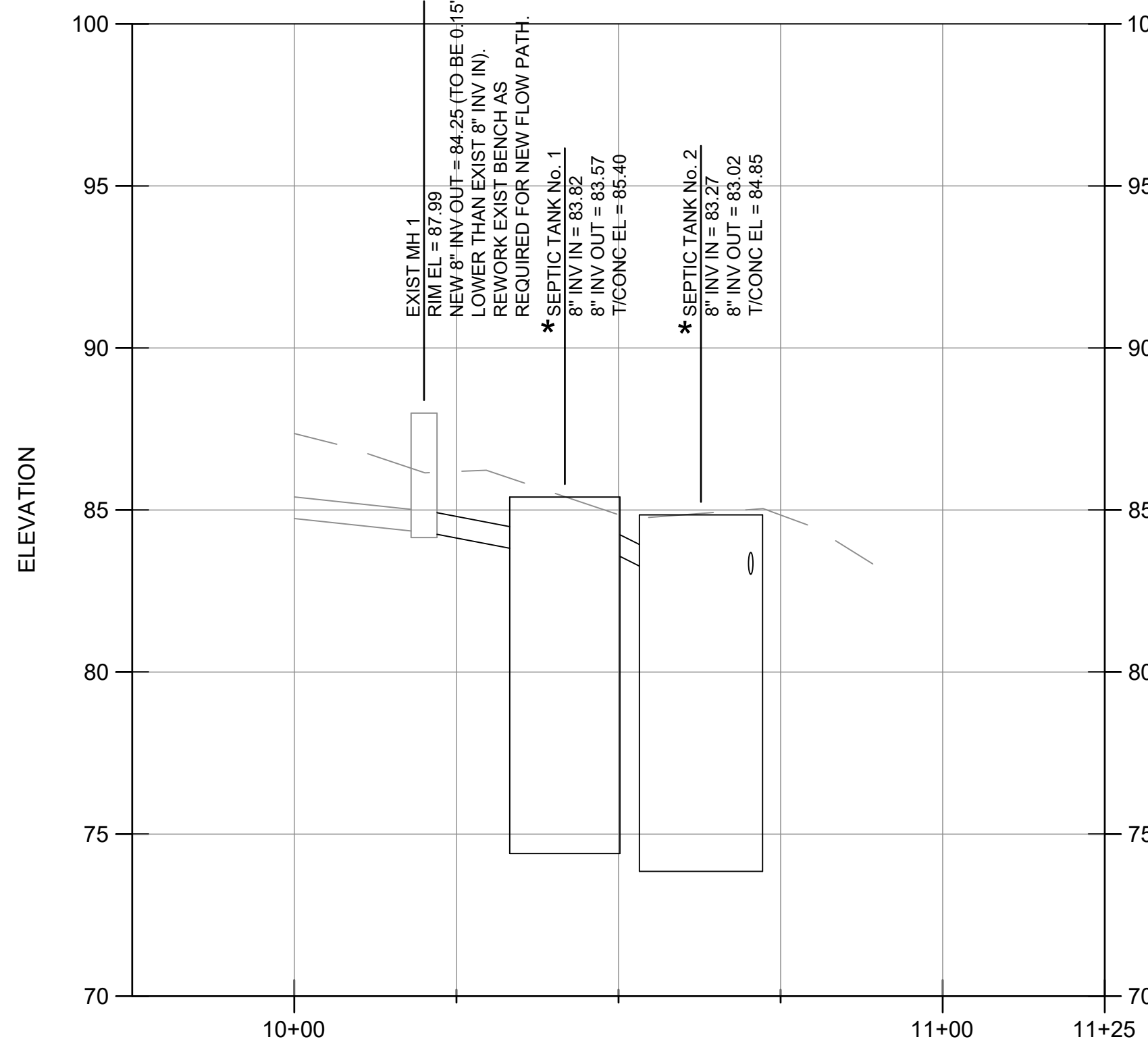
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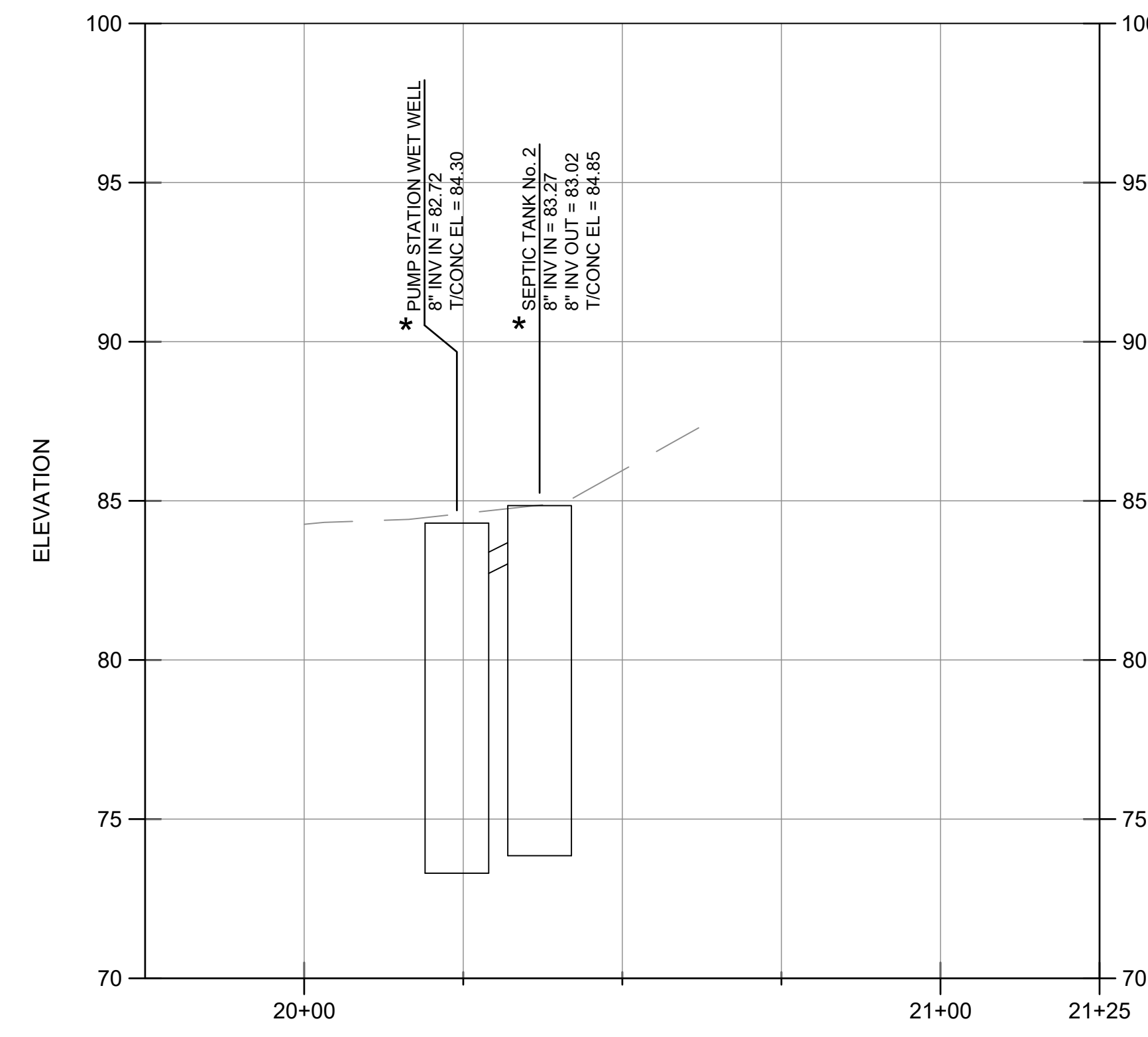
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EQUALIZATION  
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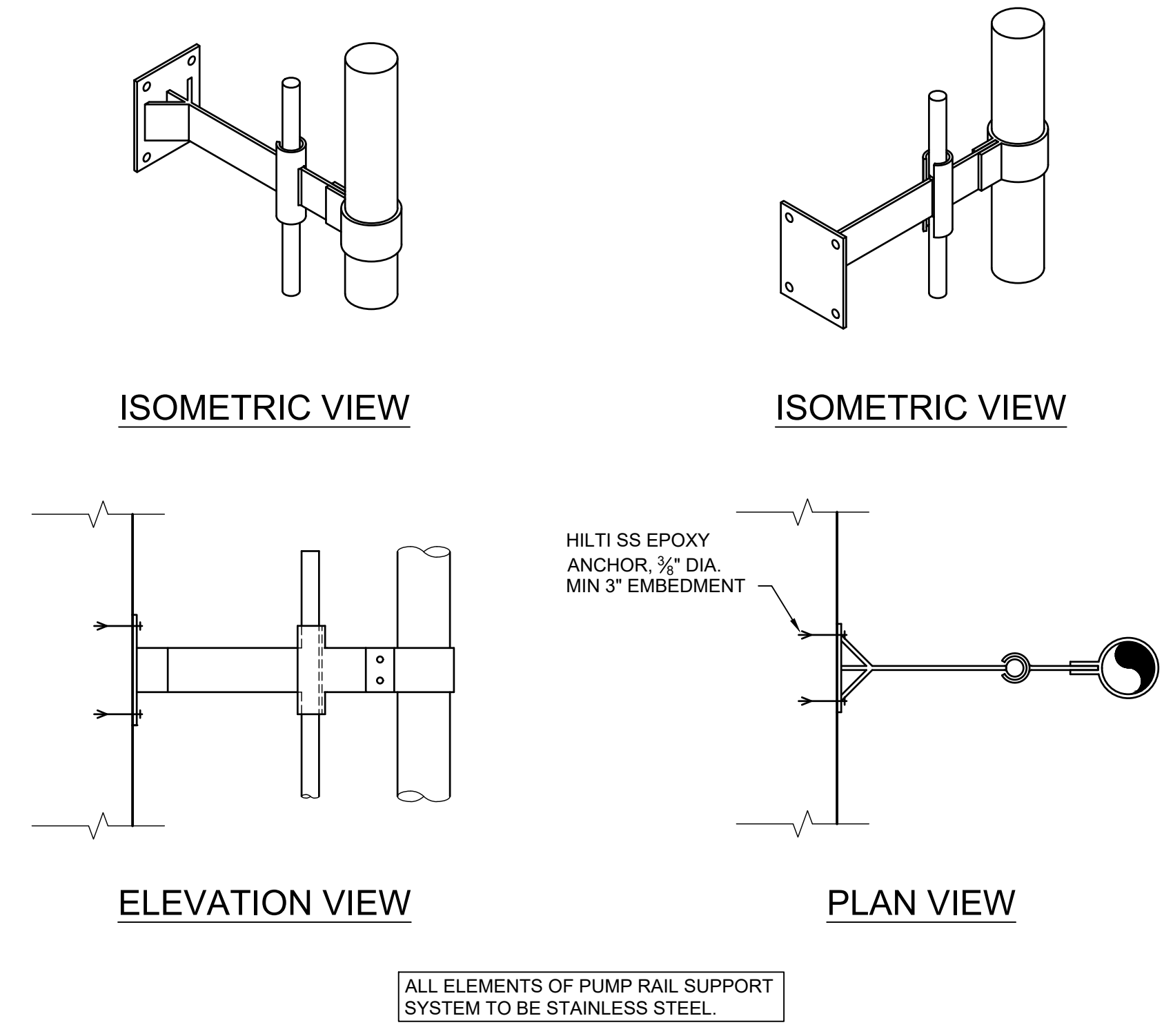




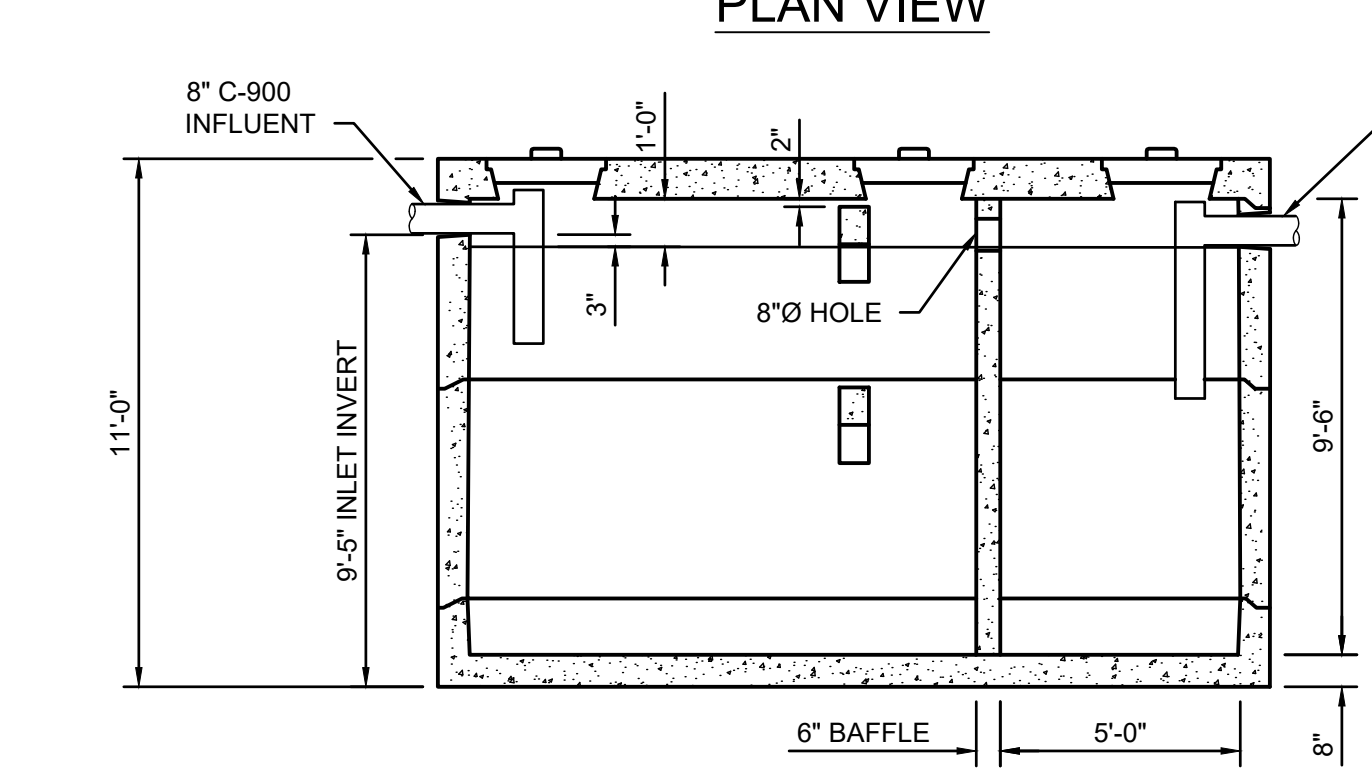
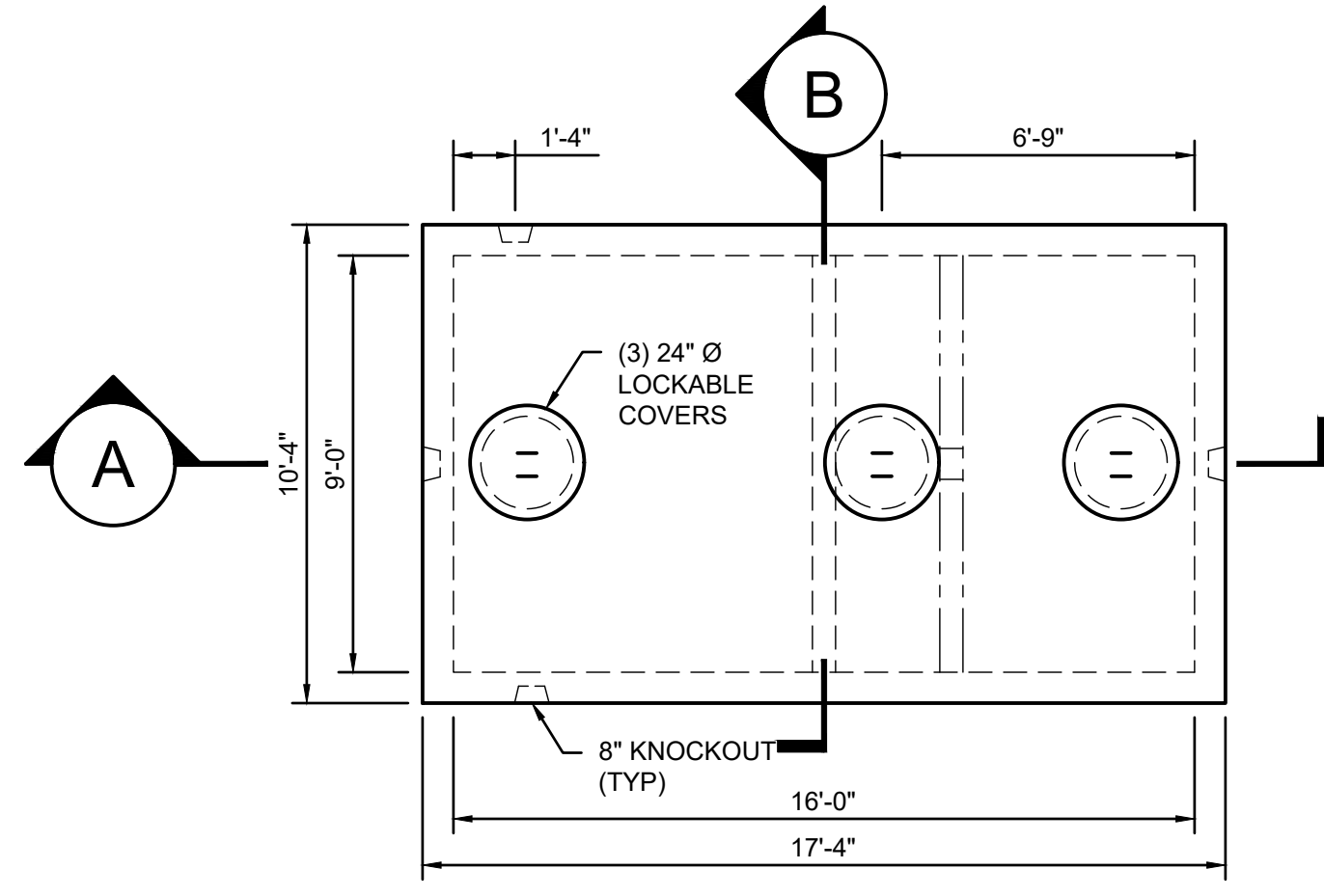
**S1 SEPTIC TANK SECTION**  
SCALE: 1" = 20' HORIZ : 1" = 4' VERT



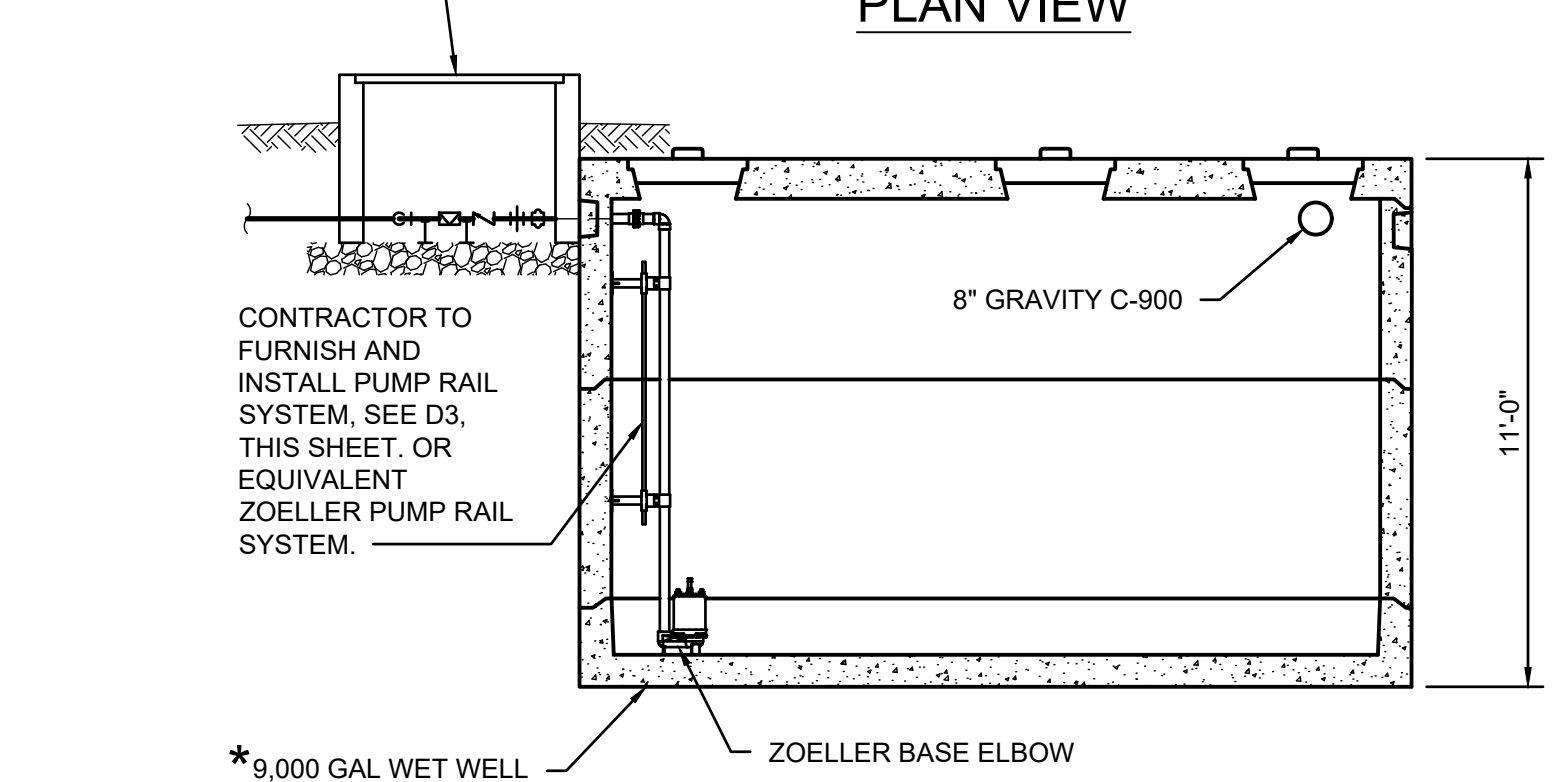
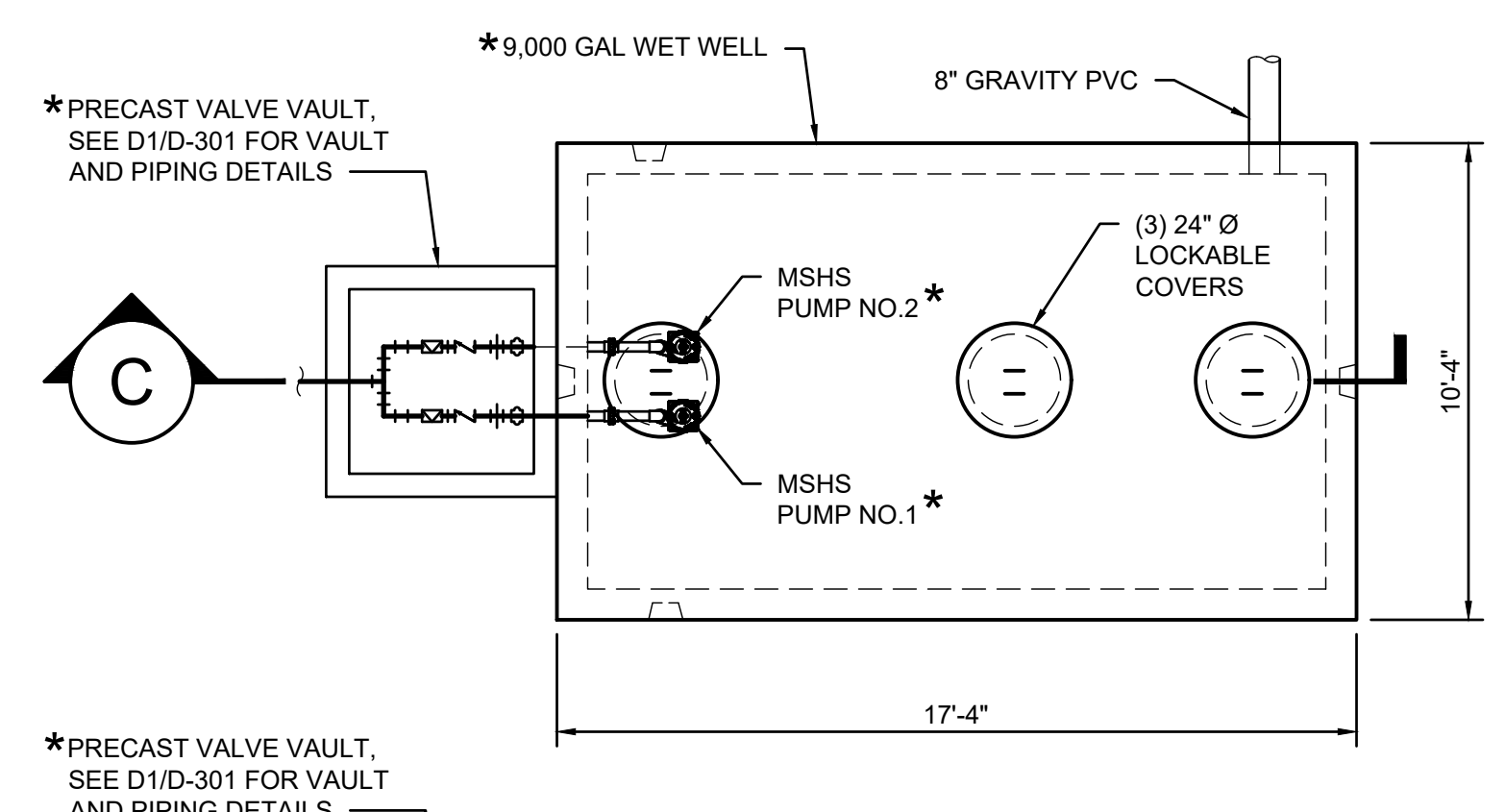
**S2 SEPTIC TANK AND PUMP STATION SECTION**  
SCALE: 1" = 20' HORIZ : 1" = 4' VERT



**D3 PUMP RAIL SYSTEM DETAILS** CONTRACTOR TO FURNISH AND INSTALL  
N.T.S.



- NOTES FOR D2 AND D3:
- CONSTRUCTION JOINT - SEALED WITH 1" DIA. BUTYL RUBBER OR EQ.
  - SIZE OF INFLUENT/EFFLUENT PIPING THAT PENETRATES WALLS SHAL DRAWINGS. ALL INTERNAL PIPING SHALL MATCH THE INFLUENT/EFFL ON THE DRAWINGS.
  - INSTALLING CONTRACTOR SHALL CORE DRILL ALL PIPE PENETRATIO AND INSTALL NSF RATED LINK SEAL MODEL "S61" LINK-SEAL® MODUL CORE DRILL.



**D1 9,000 GALLON CAPACITY SEPTIC TANK**  
N.T.S.

**D2 9,000 GALLON SUBMERSIBLE PUMP STATION/WETWELL**  
N.T.S.

\* OWNER FURNISHED, CONTRACTOR TO INSTALL



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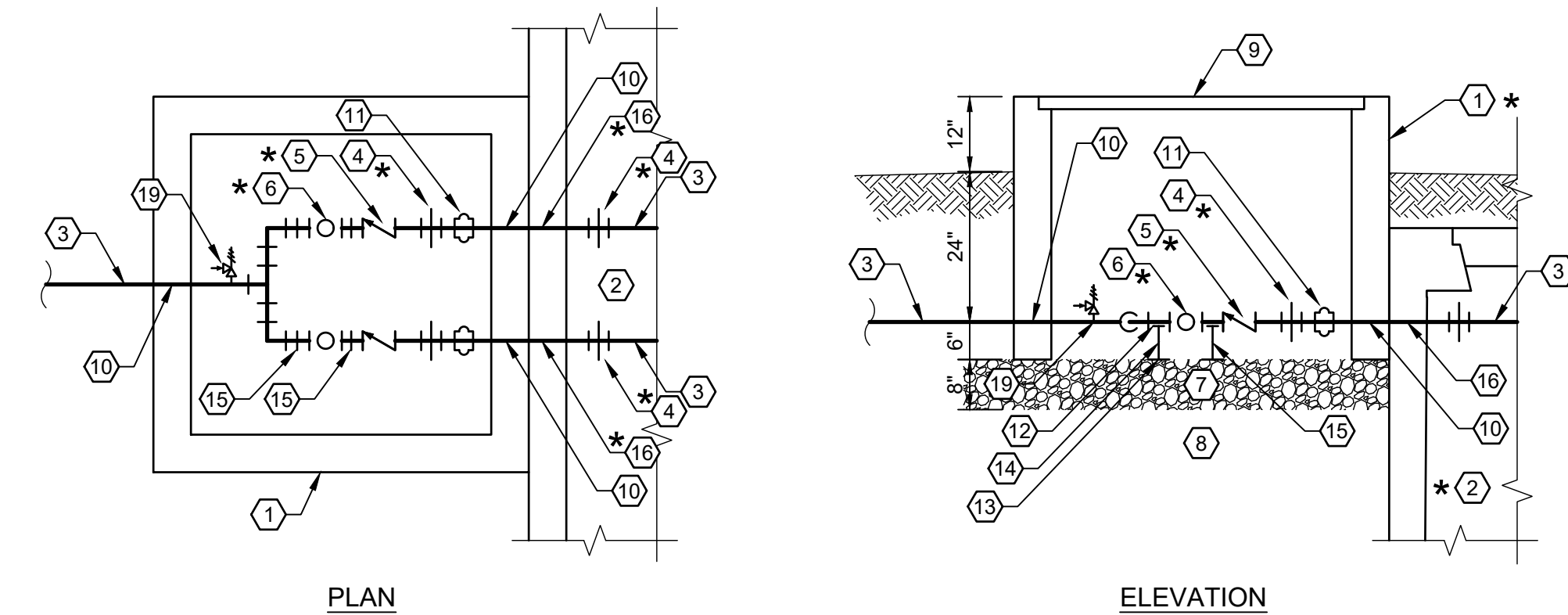
SEPTIC TANK AND  
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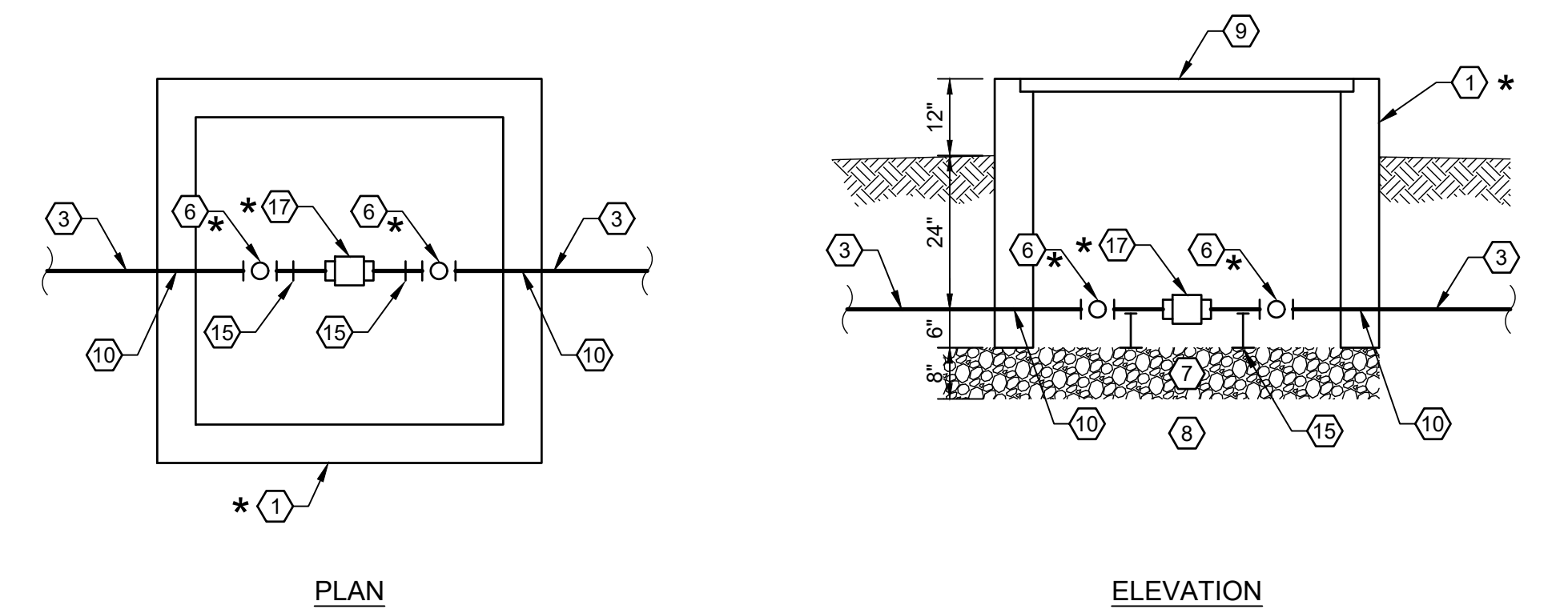
**SPECIFICATIONS:**

1. PIPE BEDDING
  - A. PIPE BEDDING MATERIAL: PIPE BEDDING SHALL BE GRANULAR MATERIAL CONSISTING OF SAND, GRAVEL OR CRUSHED STONE MEETING THE REQUIREMENTS OF ASTM DESIGNATION C33, GRADATION 67 (3/4 INCH TO NO. 4).
  - B. FOUNDATION IN POOR SOIL: WHENEVER THE SOIL AT THE TRENCH SUB-GRADE ELEVATION IS SOFT, UNSTABLE, OR SATURATED WITH WATER, SUCH UNSUITABLE MATERIAL WILL BE REMOVED AND THE TRENCH SUB-GRADE STABILIZED WITH A GRANULAR STABILIZATION MATERIAL. MAXIMUM SIZE OF GRANULAR MATERIAL SHALL BE TWO (2) INCHES. DEPTH OF STABILIZATION SHALL BE AS REQUIRED TO CONSTRUCT A FIRM SUB-GRADE FOR PIPE BEDDING MATERIAL.
  - C. STONES AND ROCKS SHALL BE REMOVED AT LEAST 6 INCHES BELOW THE PIPE BOTTOM AND SELECTED BEDDING PROVIDED.
2. BACKFILL
  - A. ALL MATERIAL USED FOR BACKFILL OF TRENCHES SHALL BE FREE OF EXCESSIVE AMOUNTS OF DELETERIOUS MATERIALS SUCH AS ALL ORGANIC MATTER, FROZEN CLODS AND STICKY MASSES OF CLAY AND GUMBO WHICH ARE DIFFICULT TO PROPERLY COMPACT. BACKFILL TO BE PLACED WITHIN 12 INCHES OF THE INSTALLED PIPE IN ANY DIRECTION SHALL NOT CONTAIN EARTH CLODS OR ROCK MATERIAL GREATER THAN ONE (1) INCH IN GREATEST DIMENSION. BACKFILL TO BE PLACED GREATER THAN 12 INCHES FROM THE TOP OF PIPE SHALL NOT CONTAIN EARTH CLODS OR ROCK MATERIAL GREATER THAN FOUR (4) INCHES IN GREATEST DIMENSION. MATERIAL AS SPECIFIED FOR PIPE BEDDING MAY BE SUBSTITUTED FOR BACKFILL MATERIAL DEFINED ABOVE FROM TOP OF PIPE BEDDING TO 12 INCHES ABOVE TOP OF PIPE.
  - B. BACKFILL SHALL BE PLACED IN ACCORDANCE WITH LAYING CONDITION TYPE 4 AS ILLUSTRATED ON THE DETAILS DRAWING. BACKFILL SHALL BE DEPOSITED IN LAYERS OF A THICKNESS THAT WILL PERMIT COMPACTION TO A DENSITY AS SPECIFIED HEREINAFTER.
  - C. THE LAYERS OF MATERIAL SHALL BE COMPACTED TO A DENSITY OF AT LEAST 90 PERCENT (90%) OF THE MAXIMUM DENSITY AS DETERMINED BY THE AASHTO STANDARD TEST (AASHTO DESIGNATION T99) WHEREVER THE PIPE IS INSTALLED IN OPEN FIELDS OR AREAS WHICH CARRY NO VEHICULAR TRAFFIC. THE TOP PORTION OF THE BACKFILL AREAS THAT ARE TO BE RE-SODDED SHALL BE COMPOSED OF TOPSOIL AT LEAST SIX (6) INCHES IN DEPTH AND CORRESPONDING TO THAT OF THE ADJOINING SODDED AREAS.
  - D. THE LAYERS OF MATERIAL SHALL BE COMPACTED TO A DENSITY OF AT LEAST 95 PERCENT (95%) OF THE MAXIMUM DENSITY AS DETERMINED BY THE AASHTO STANDARD TEST (AASHTO DESIGNATION T99) FOR ALL PIPE PLACED WITHIN 10 LINEAR FEET OF A ANY ROADWAY AND UNDER ALL PAVEMENTS AND INDICATED FUTURE PAVEMENTS. PAVEMENT SHALL NOT BE RESTORED OVER TRENCHES UNTIL THE BACKFILL MATERIAL HAS BEEN TESTED AND DETERMINED AS SATISFACTORY ACCORDING TO PROJECT TESTING REQUIREMENTS.
  - E. REMOVE AND DISPOSE OF ANY MATERIAL NOT USED FOR BACKFILL.
  - F. BACKFILL MATERIALS SHALL BE PLACED EVENLY ADJACENT TO PIPING TO REQUIRED ELEVATIONS.
  - G. EXISTING PAVEMENT WHICH HAS BEEN CUT, DAMAGED, OR REMOVED DURING CONSTRUCTION SHALL BE RESTORED TO EQUAL OR BETTER THAN ORIGINAL CONDITIONS. CONTRACTOR SHALL SAW CUT PERIMETER OF PATCH AND EXCAVATE EXISTING PAVEMENT SECTION TO SOUND BASE. RE-COMPACT NEW SUBGRADE, EXCAVATE TRIANGULAR PATCHES EXTENDING 12 INCHES INTO EXISTING SOUND PAVEMENT, TRACK COAT FACES OF PAVEMENT, AND ALLOW TO CURE PRIOR TO PAVEMENT. FILL EXCAVATIONS WITH DENSE GRADED HOT MIX ASPHALT MATCHING EXISTING PAVEMENT DEPTHS.
3. PIPE SHALL BE LAID TO A TRUE, UNIFORM LINE AND GRADE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING PIPELINE ALIGNMENT AS INDICATED ON THE DRAWINGS.
4. ALL BURIED PIPE (TO INCLUDE PROCESS, DRAIN AND CHEMICAL LINES) SHALL HAVE METALLIC BLUE WARNING TAPE AFFIXED TO THE TOP OF THE PIPE.

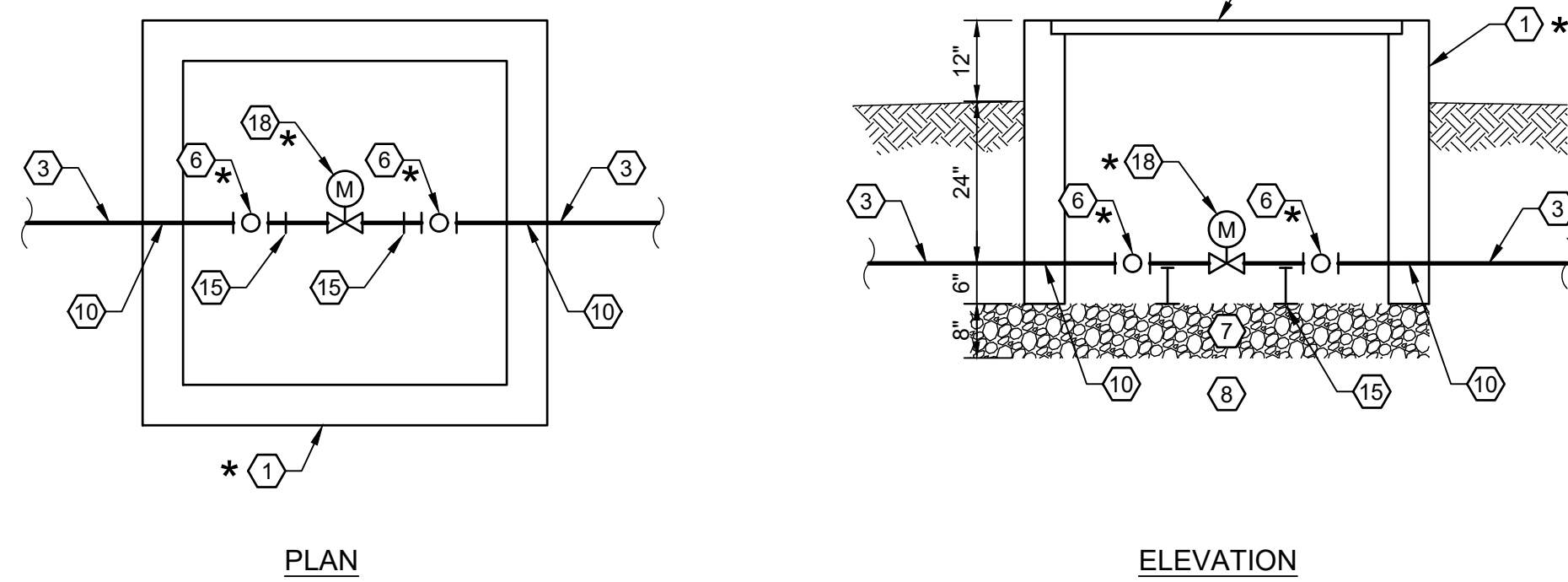
5. SEPARATION OF WATER AND SEWER LINES
  - A. PARALLEL INSTALLATION:
    1. NORMAL CONDITIONS: WATER LINES SHALL BE AT LEAST 10 FEET HORIZONTALLY FROM A SEWER OR SEWER MANHOLE WHENEVER POSSIBLE, AND THE DISTANCE SHALL BE MEASURED EDGE TO EDGE.
    2. UNUSUAL CONDITIONS: WHEN LOCAL CONDITIONS PREVENT A HORIZONTAL SEPARATION OF AT LEAST 10 FEET, THE WATER LINE MAY BE CLOSER TO A SEWER OR SEWER MANHOLE PROVIDED THAT:
      - a. THE BOTTOM OF THE WATER LINE IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER.
      - b. WHERE THIS VERTICAL SEPARATION CANNOT BE OBTAINED, THE SEWER SHALL BE CONSTRUCTED OF AWWA APPROVED WATER PIPE PRESSURE-TESTED IN PLACE TO 50 PSI WITHOUT LEAKAGE PRIOR TO BACKFILLING. THE SEWER MANHOLE SHALL BE OF WATERTIGHT CONSTRUCTION AND TESTED IN PLACE.
  - B. CROSSINGS:
    1. NORMAL CONDITIONS: WATER LINES CROSSING OVER SEWERS SHALL BE AT LEAST 18 INCHES BETWEEN THE BOTTOM OF THE WATER LINE AND THE TOP OF THE SEWER.
    2. UNUSUAL CONDITIONS: WHEN LOCAL CONDITIONS PREVENT A VERTICAL SEPARATION DESCRIBED IN CROSSING, NORMAL CONDITIONS, PARAGRAPH ABOVE, THE FOLLOWING CONSTRUCTION SHALL BE USED:
      - a. SEWERS PASSING OVER OR UNDER WATER LINES SHALL BE CONSTRUCTED OF THE MATERIALS DESCRIBED IN PARALLEL INSTALLATION, UNUSUAL CONDITIONS, PARAGRAPH ABOVE.
      - b. WATER LINES PASSING UNDER SEWERS SHALL, IN ADDITION, BE PROTECTED BY PROVIDING:
        - i) A VERTICAL SEPARATION OF AT LEAST 18 INCHES BETWEEN THE BOTTOM OF THE SEWER AND THE TOP OF THE WATER LINE.
        - ii) ADEQUATE STRUCTURE SUPPORT FOR THE SEWERS TO PREVENT EXCESSIVE DEFLECTION OF THE JOINTS AND SETTLING ON THE WATER LINE.
        - iii) THAT THE LENGTH OF THE WATER LINE BE CENTERED AT THE POINT OF THE CROSSING SO THAT JOINTS SHALL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER.
        - iv) WATER LINES SHALL NOT BE INSTALLED TO PASS THROUGH SEWER MANHOLES.
6. FORCE MAIN SHALL BE 2-INCH HDPE IPS SIZE (INNER DIAMETER CONTROLLED), PE4710, DR 11.5, NSF 61 APPROVED, MINIMUM 2% CARBON BLACK FOR UV RAY PROTECTION, AND SHALL MEET ASTM D2239. THE FORCE MAIN SHALL BE ELECTRO-FUSION SOCKET WELDED WITH PIPE BEDDING MATERIAL AS SHOWN ON D-501. TRANSITION FITTINGS FROM PVC/PVC TO HDPE SHALL NOT BE BURIED AND SHALL BE NSF APPROVED PE OR HDPE COMPRESSION TYPE FITTINGS FOR HDPE PIPE MEETING OR EXCEEDING PIPE SPECIFICATIONS, ASTM D2239, AND SPECIFICALLY RATED FOR IPS SIZED (INNER DIAMETER CONTROLLED) HDPE PIPE.
7. GRAVITY SEWER PIPE SHALL BE ANSIIAWWA C900-16; SDR 32.5 (125 PSI); PIPE COMPOUND: ASTM D1784 CELL CLASS 12454; GASKET: ASTM F477; INTEGRAL BELL JOINT: ASTM D3139; ANSINSF 61 CERTIFIED.
8. ALL SOLVENT WELDED PLASTIC PIPE SHALL BE CPVC SCH. 40 AND CPVC PIPE SMALLER THAN 4 INCHES SHALL BE SOLVENT WELDED WITH IPS WELDON 724 INDUSTRIAL GRADE ALKALINE CHEMICAL RESISTANT SOLVENT CEMENT.



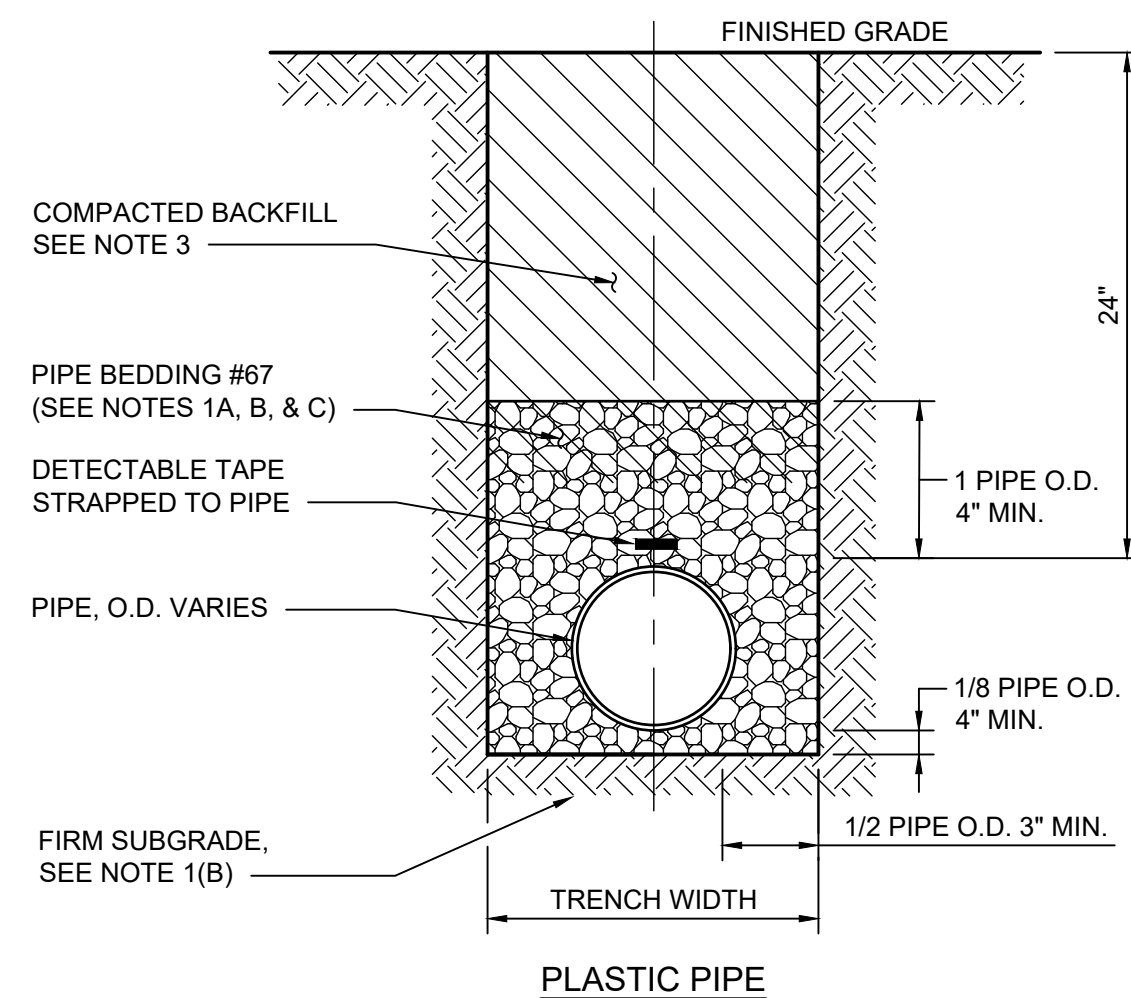
**D1 VALVE VAULT DETAIL AND ELEVATION**  
SCALE: 1/2" = 1'-0"



**D2 FLOW METER VAULT DETAIL AND ELEVATION**  
SCALE: 1/2" = 1'-0"



**D3 CONTROL VALVE VAULT DETAIL AND ELEVATION**  
SCALE: 1/2" = 1'-0"



**D4 PIPE BEDDING DETAIL**  
N.T.S.

**SHEET KEY NOTES**

\* OWNER FURNISHED, CONTRACTOR TO INSTALL

- \*1. 4'x4' SQUARE PRECAST UTILITY VAULT SECTION MEETING ASTM WITH OPEN TOP AND OPEN BOTTOM.
- \*2. 9,000 GALLON WETWELL.
3. 2" CPVC SCH. 40 PIPE.
- \*4. 2" CPVC TRU-UNION.
- \*5. 2" COUNTER WEIGHTED CHECK VALVE, ANSI FLANGED. SEE D-002, TYP OF 2.
- \*6. 2" CPVC BALL VALVE, TRU-UNION. SEE D-002.
7. #67 STONE.
8. COMPACTED SUBGRADE.
9. GRATING SHALL BE REMOVABLE FIBERGLASS NON-SLIP TYPE. GRATING SHALL BE AMERICAN PULTRUDED FIBERGLASS GRATING PT-20-33. RESIN = ISO. COLOR = YELLOW. GRATING SHALL BE CONTINUOUSLY PERIMETER SUPPORTED BY FIBERGLASS OR STAINLESS STEEL ANGLE MEMBERS. ALL HARDWARE ASSOCIATED WITH THE GRATING SYSTEM SHALL BE STAINLESS STEEL. TOP OF GRATING TO BE FLUSH WITH TOP OF STRUCTURE.
10. MECHANICALLY INSTALLED RUBBER BOOT STYLE CONNECTOR MEETING ASTM C923. STRUCTURE TO BE CORE DRILLED.
11. PROCO 240-AV/EE FLANGED SINGLE ARCH EXPANSION JOINT SETUP TO ALLOW EXPANSION AND CONTRACTION.
12. CORROSION RESISTANT ADJUSTABLE PIPE SUPPORT TOP UNIT THREADED TO VERTICAL SUPPORT.
13. 3" MIN. O.D. BASE FLANGE THREADED OR WELDED TO VERTICAL SUPPORT PIPE.
14. 1 1/2" SCH. 40 STEEL PIPE.
15. PIPE SUPPORT ASSEMBLY, TYP OF 4.
16. BOOT CONNECTOR, SEE D-002.
17. CONTRACTOR SHALL CORE DRILL PIPE PENETRATION AND SHALL FURNISH AND INSTALL NSF RATED LINK SEAL MODEL "S61" LINK-SEAL® MODULAR SEALS FOR EACH CORE DRILL.
- \*18. ELECTRICALLY ACTUATED CONTROL VALVE. SEE D-002.
- \*19. 1" PVC AIR RELEASE AND VACUUM VALVE.



NORTHUMBERLAND HIGH & MIDDLE SCHOOLS  
SANITARY TREATMENT  
MODIFICATIONS PROCUREMENT  
PACKAGE 3 - SITE WORK, PIPING AND  
TANK INSTALLATION  
OWNER:  
NORTHUMBERLAND COUNTY  
HEATHSVILLE, VIRGINIA

MARK	DATE	DESCRIPTION
0	9/30/2024	FOR REGULATORY REVIEW

PROJECT NO:	2447
DATE:	9/30/2024
DRAWN BY:	MCT
CHECKED BY:	CRLM
SHEET TITLE	

DETAILS

D-501

SHEET 10 OF 10