



TCRSD Standard Details

Helping to Preserve Our Natural Resources!

**TANEY COUNTY REGIONAL SEWER DISTRICT
STANDARD DETAILS**

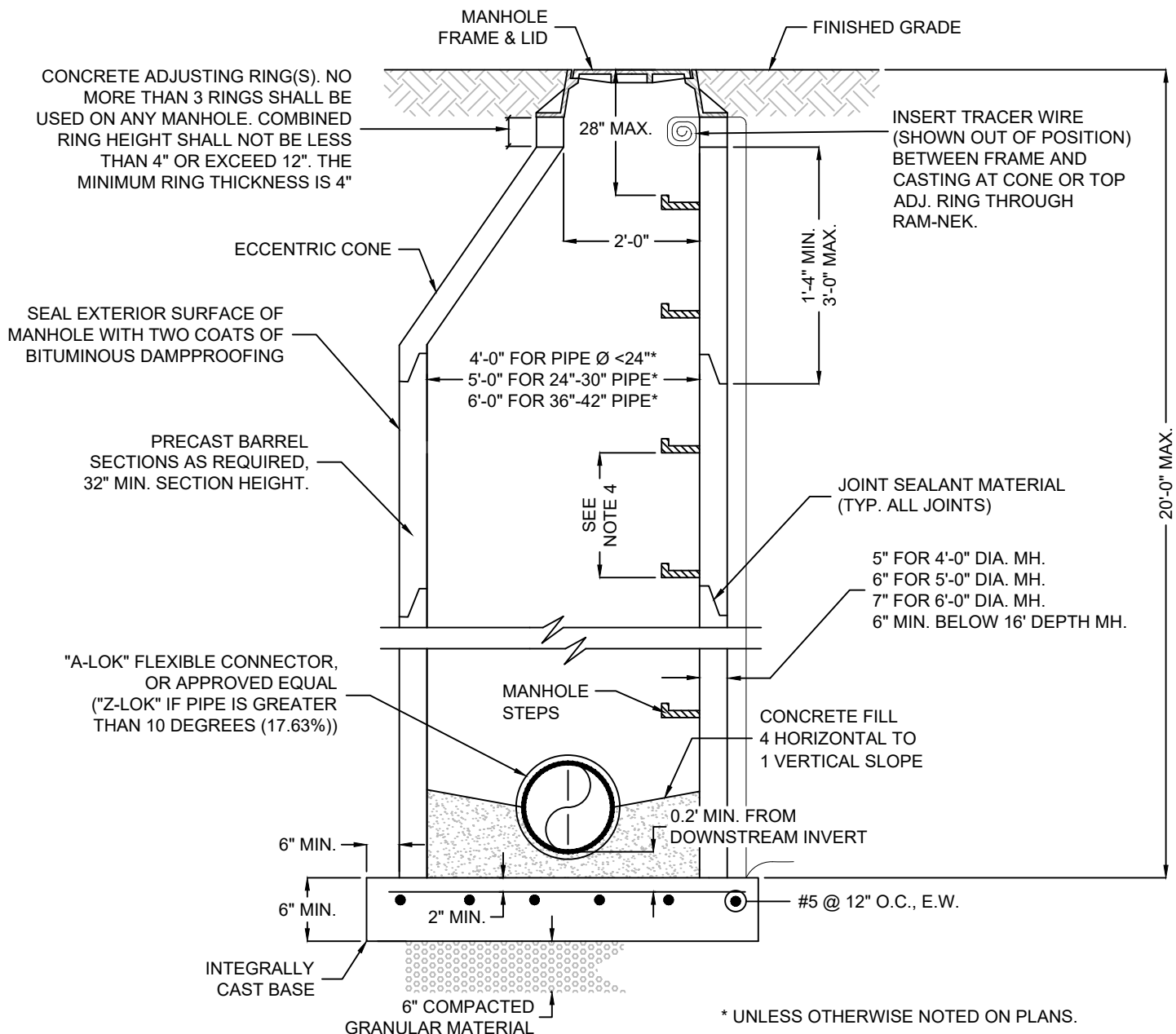
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**TANEY COUNTY REGIONAL SEWER DISTRICT
STANDARD DETAILS**

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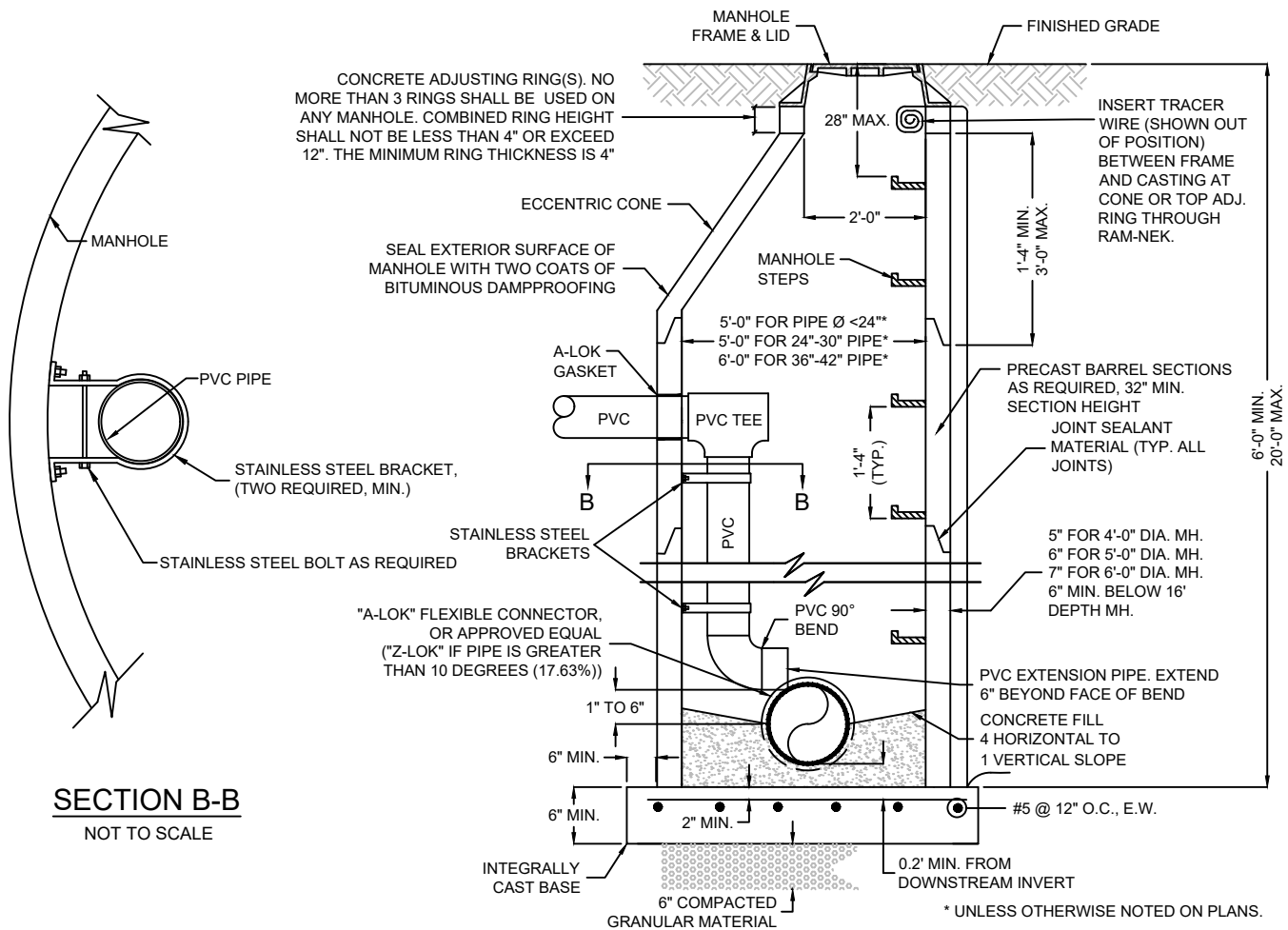
NOTES:

1. MANHOLE FLOW CHANNEL SHALL BE MADE TO CONFORM IN SHAPE AND SLOPE TO THAT OF THE SEWERS.
2. UNLESS OTHERWISE NOTED, ALL PRECAST CONCRETE MANHOLES SHALL CONFORM TO ASTM C-478 REQUIREMENTS.
3. GROUTED INVERT SHALL BE TROWELED SMOOTH.
4. MANHOLE STEPS SHALL BE ALIGNED SO AS TO FORM A CONTINUOUS LADDER WITH RUNGS EQUALLY SPACED VERTICALLY IN THE ASSEMBLED MANHOLE AT A MINIMUM DISTANCE OF 12 INCHES APART AND A MAXIMUM OF 16 INCHES APART.
5. TRACER WIRE SHALL BE INSTALLED PER SPECIFICATION 02537. TRACER WIRE SHALL BE COILED AROUND A 1" DIAMETER PVC PIPE AND STAGED AT TOP OF MANHOLE.

STANDARD PRECAST MANHOLE

SCALE: NONE

REV. DATE: 03/06/2023



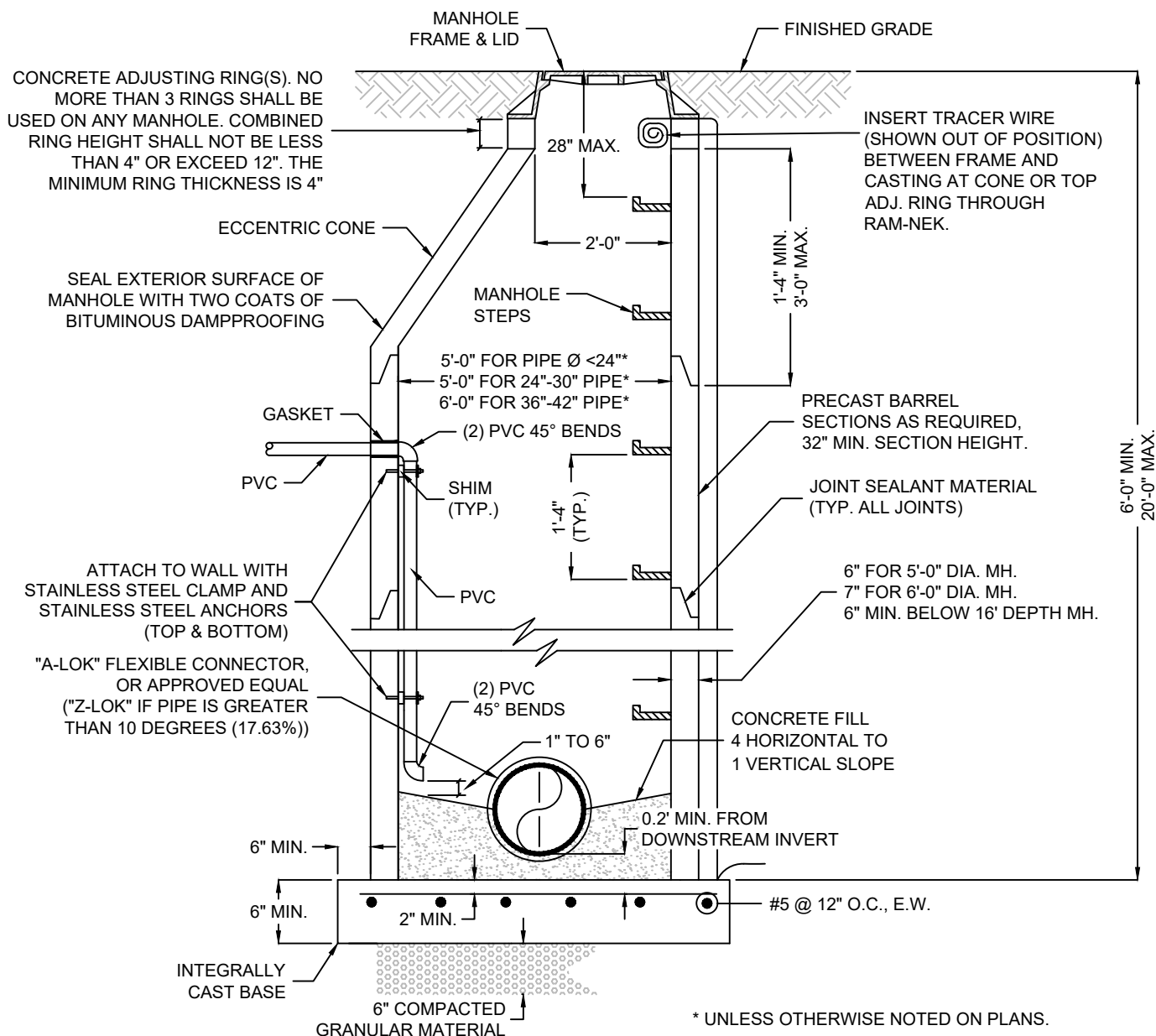
NOTES:

1. BITUMINOUS COAT ALL METAL SURFACES FOR ALL TYPES OF INTERIOR DROP MANHOLES.
2. CONFIGURATIONS SHOWN WILL ALSO BE UTILIZED FOR DROP ASSEMBLIES INSTALLED IN EXISTING MANHOLES.
3. MANHOLE FLOW CHANNEL SHALL BE MADE TO CONFORM IN SHAPE AND SLOPE TO THAT OF THE SEWERS.
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7. TRACER WIRE SHALL BE INSTALLED PER SPECIFICATION 02537. TRACER WIRE SHALL BE COILED AROUND A 1" DIAMETER PVC PIPE AND STAGED AT TOP OF MANHOLE.
8. ALL MOUNTING BRACKETS, BOLTS, AND CLAMPS SHALL BE 316 STAINLESS STEEL.

INSIDE DROP MANHOLE (GRAVITY)

SCALE: NONE

REV. DATE: 03/06/2023



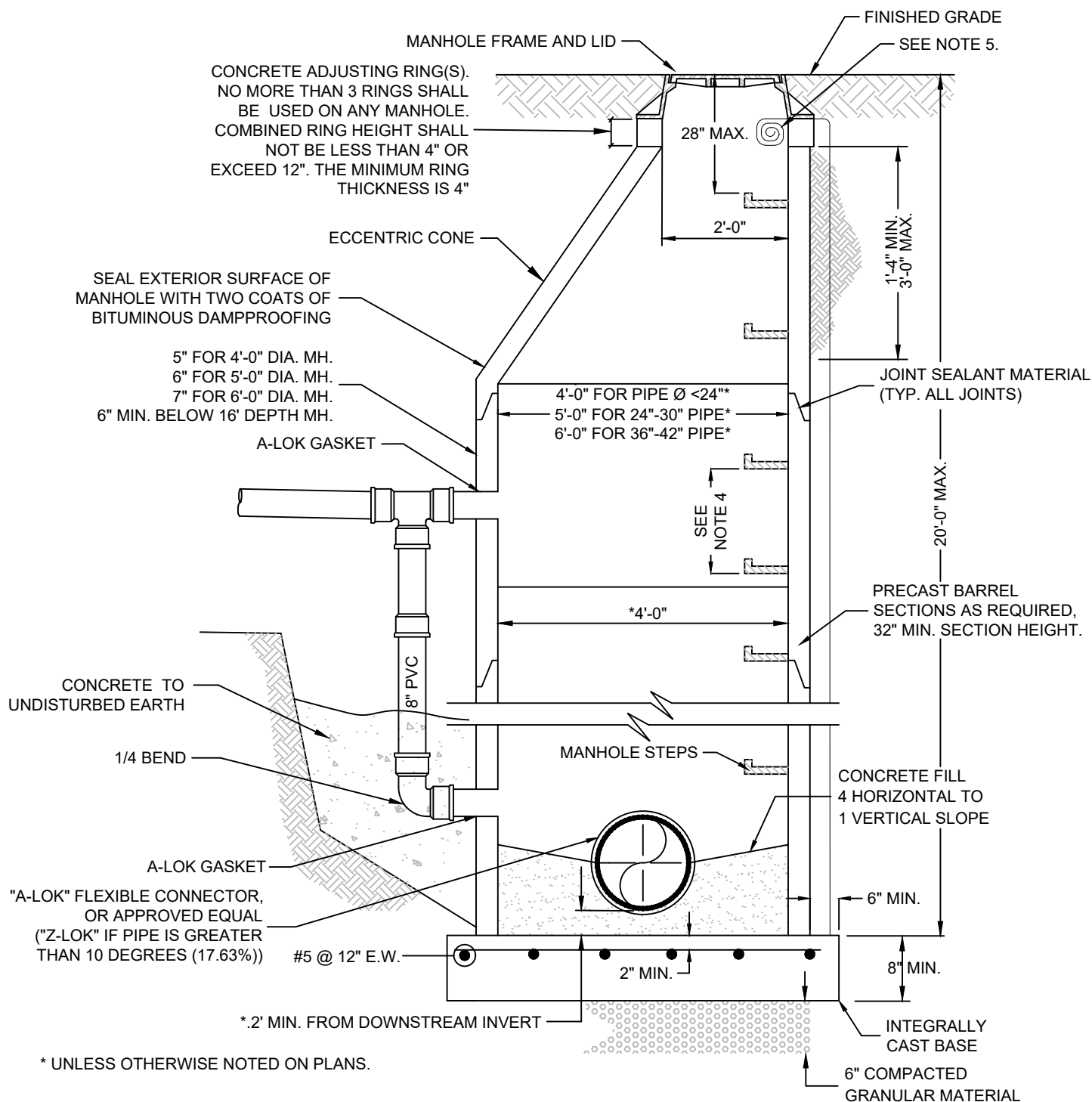
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INSIDE DROP MANHOLE (FORCEMAIN)

SCALE: NONE

REV. DATE: 03/06/2023



* UNLESS OTHERWISE NOTED ON PLANS.

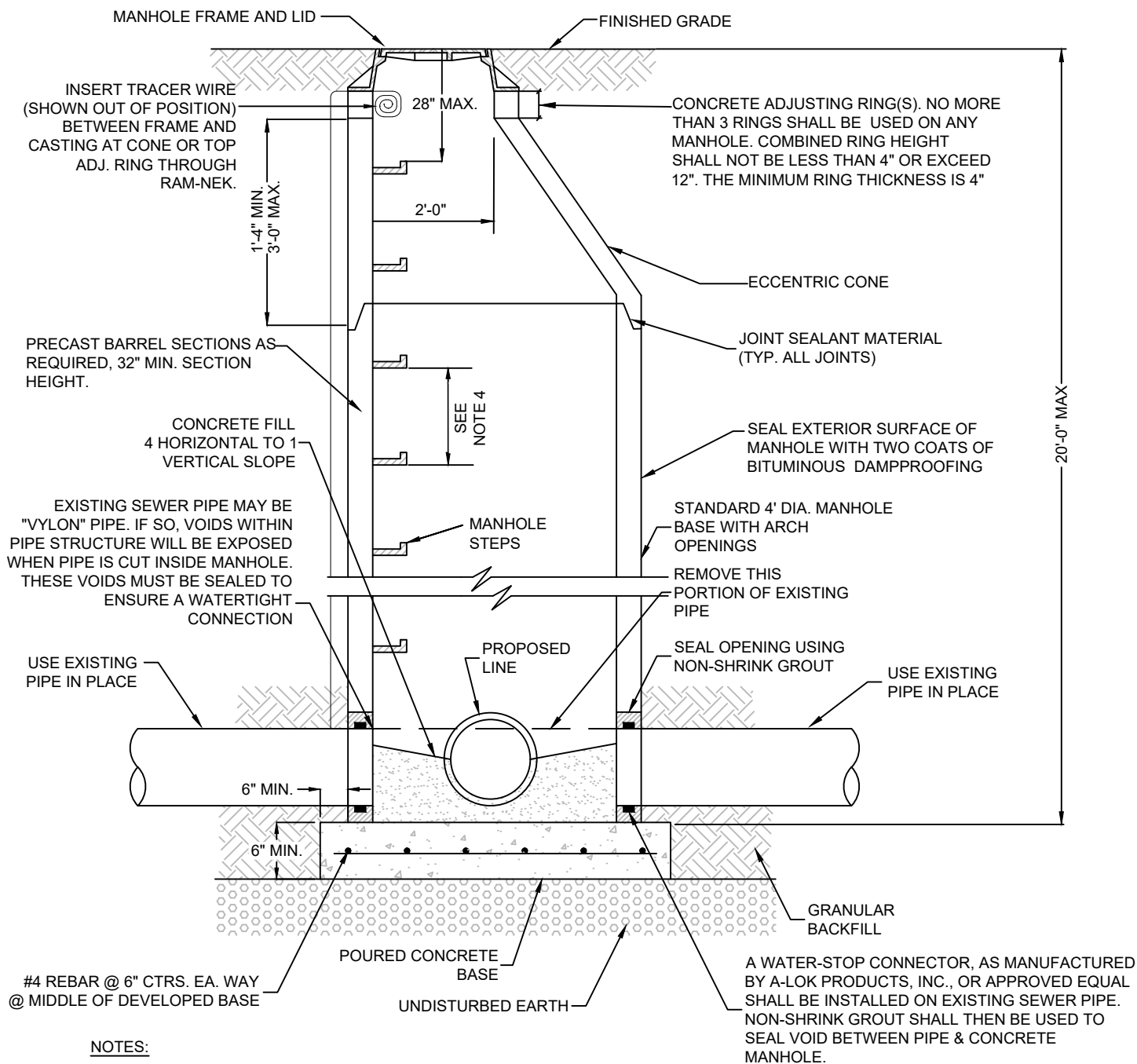
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OUTSIDE DROP

SCALE: NONE

REV. DATE: 03/06/2023



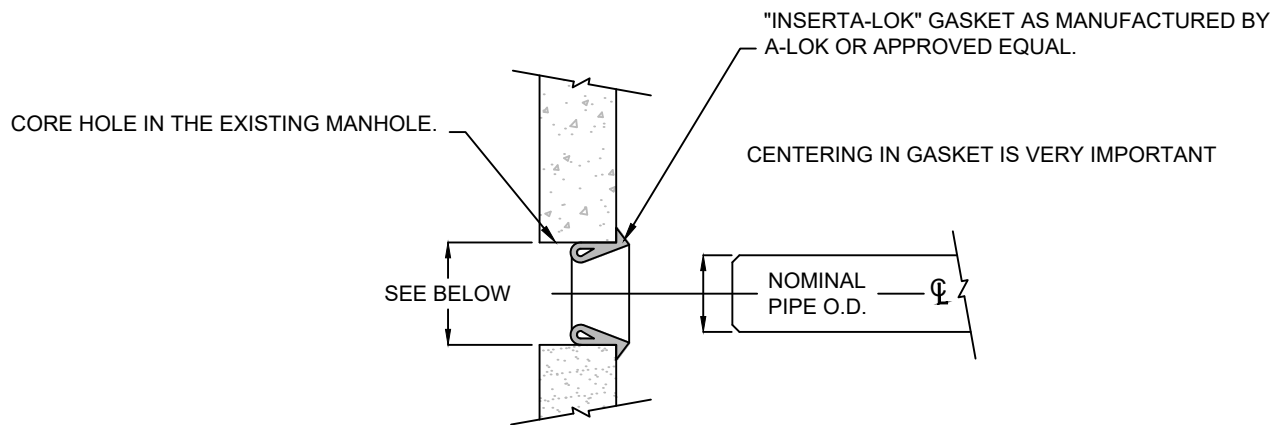
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STRADDLE MANHOLE

SCALE: NONE

REV. DATE: 03/06/2023



CORE HOLE EXAMPLES:

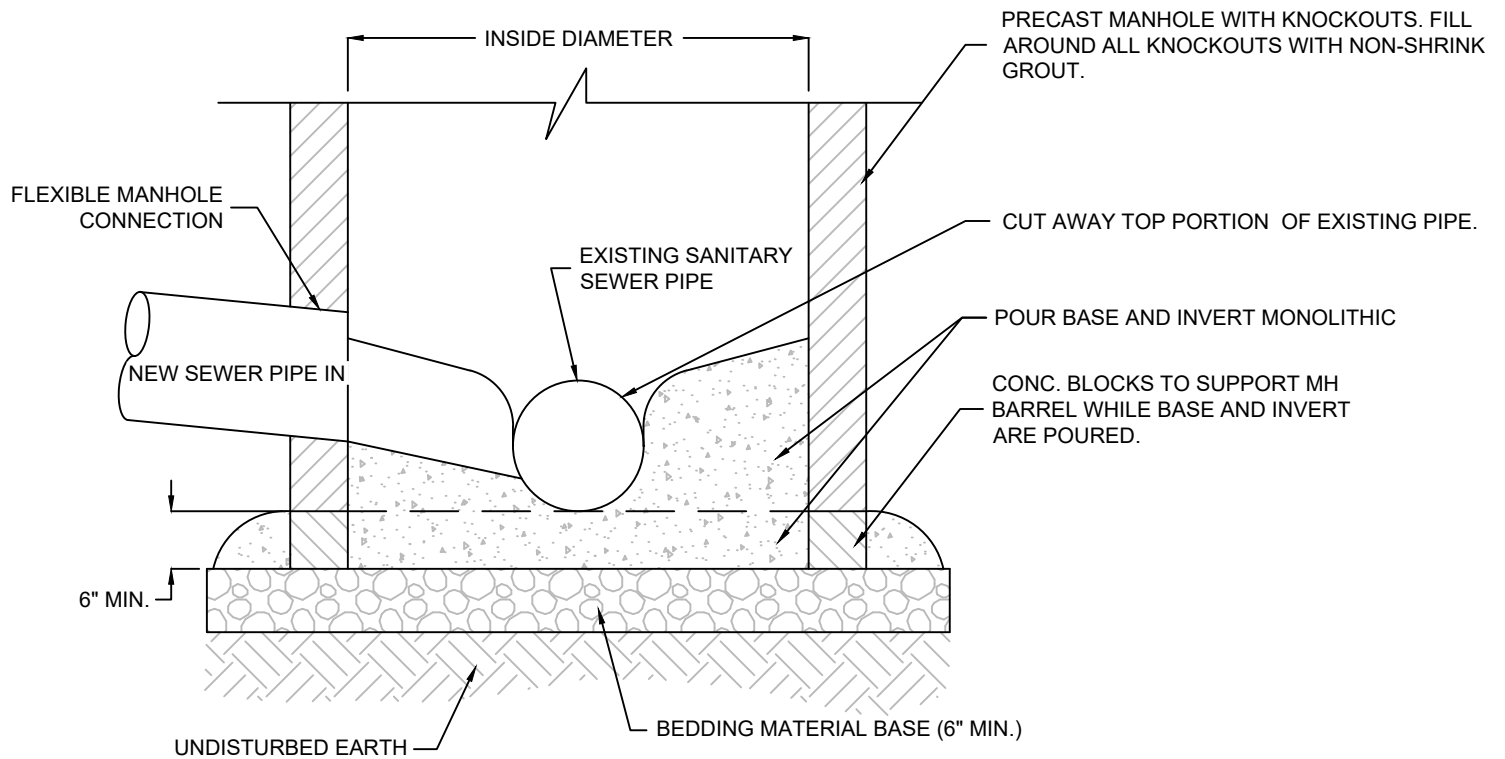
8"Ø PVC = 10"Ø HOLE
 10"Ø PVC = 12"Ø HOLE
 12"Ø PVC = 14"Ø HOLE

1. BEVEL PIPE WITH GRINDER
2. THEN LUBE PIPE
3. THEN LUBE INSERTA-LOK
4. THEN CENTER PIPE IN GASKET

CONNECTION TO EXISTING MANHOLE

NOT TO SCALE

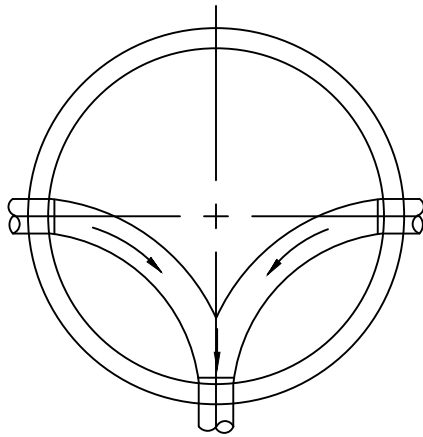
REV. DATE: 03/06/2023



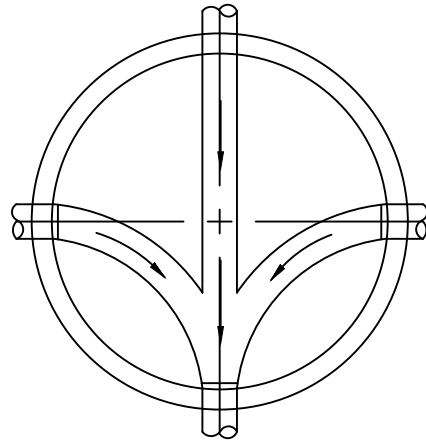
NEW MANHOLE ON EXISTING LINE

NOT TO SCALE

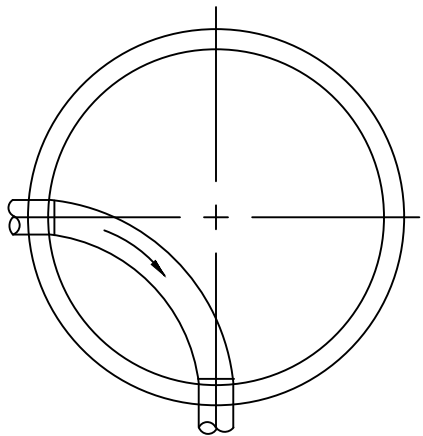
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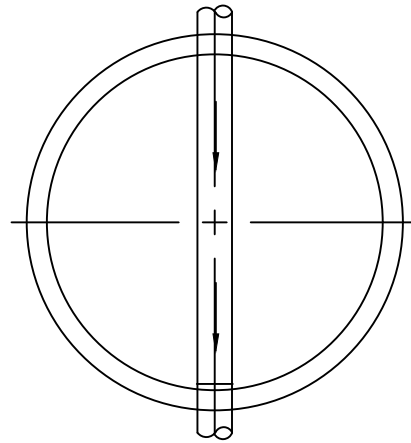
JUNCTION



JUNCTION



RIGHT ANGLE



STRAIGHT THRU

NOTES:

1. DEPTH OF CHANNELS TO BE 1/2 I.D. OF PIPE.
2. PROVIDE SMOOTH FLOW ACROSS BOTTOM OF MANHOLE.
3. FLOW CHANNEL SHALL HAVE TROWELED FINISH.

MANHOLE BOTTOM

NOT TO SCALE

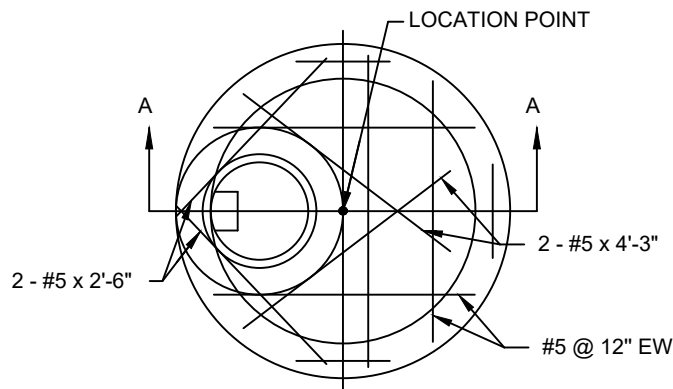
REV. DATE: 03/06/2023

NOTES:

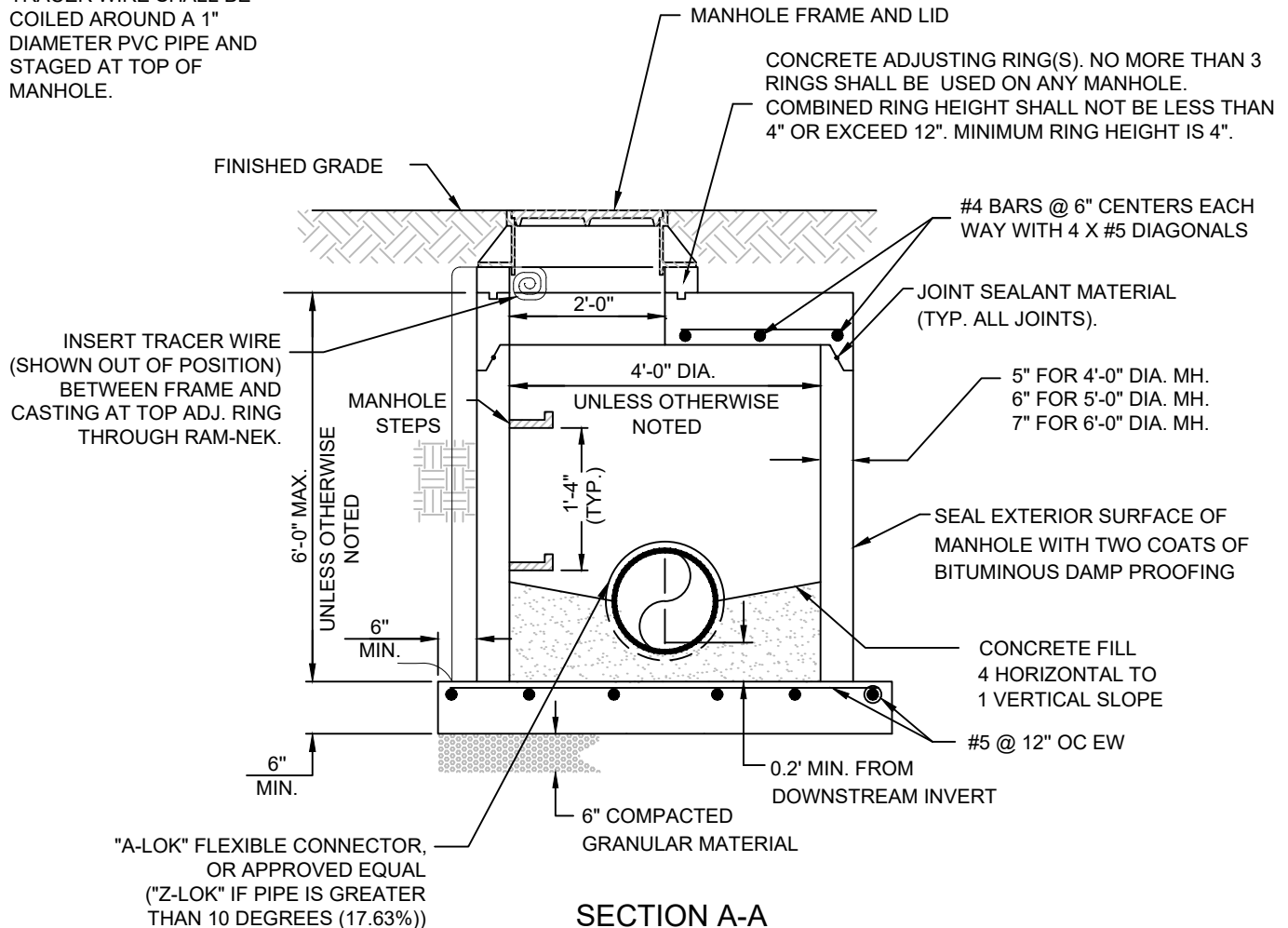
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PLAN VIEW

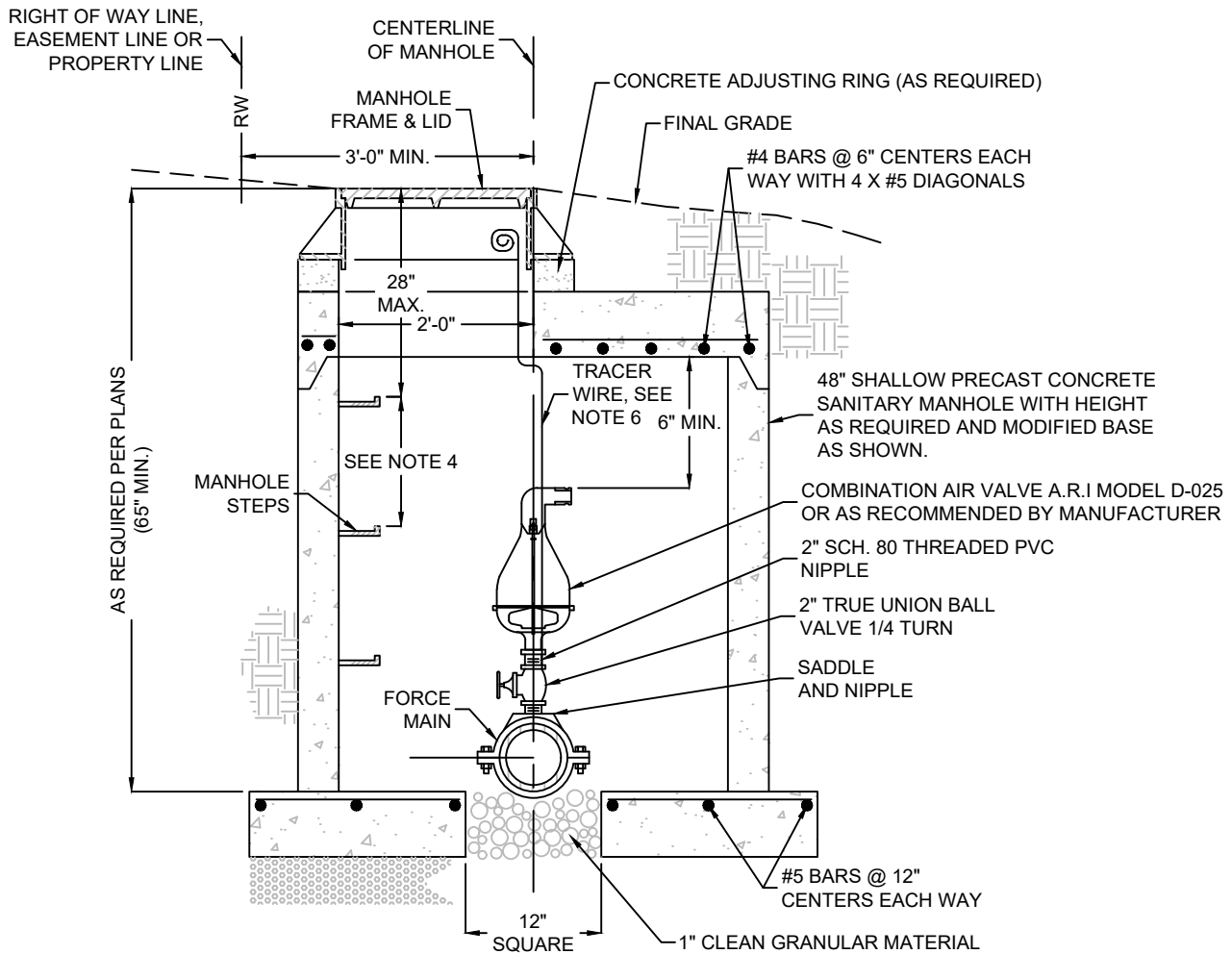


SECTION A-A

SHALLOW PRECAST CONCRETE SANITARY MANHOLE

NOT TO SCALE

REV. DATE: 09/06/2024



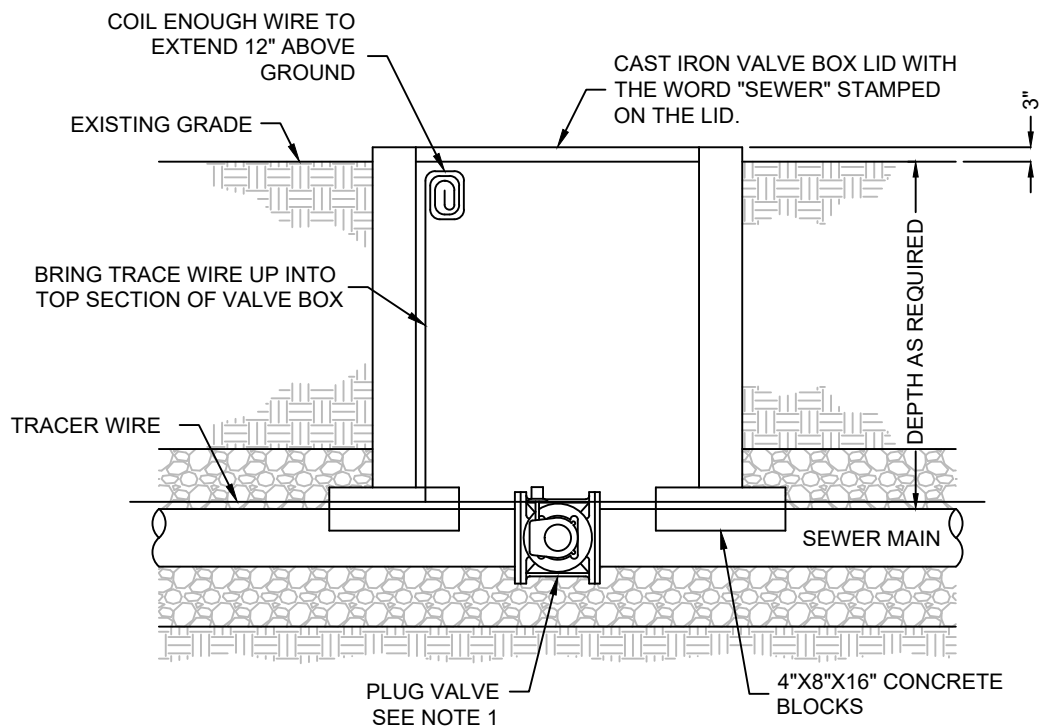
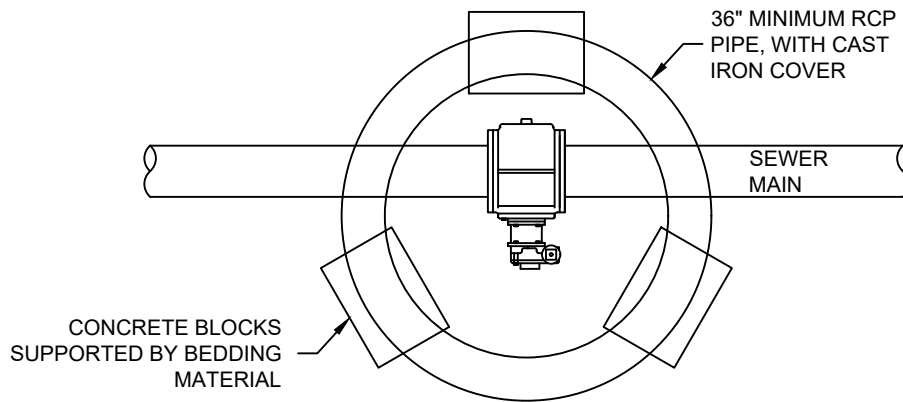
COMBINATION AIR RELEASE/VACUUM VALVE

SCALE: NONE

NOTES:

1. AIR-VACUUM VALVE INSTALLATIONS POSITION RING AND COVER ON AIR-VACUUM VALVE ASSEMBLY MANHOLES NEAREST TO RIGHT-OF-WAY LINE, EASEMENT LINE, OR PROPERTY LINE AS PRACTICABLE. INSTALL WARNING SIGN APPROXIMATELY 3" ON RIGHT-OF-WAY OR EASEMENT LINE ADJACENT TO MANHOLE. WARNING SIGN SHALL BE A MINIMUM 16 GAUGE, WHITE BACKGROUND WITH RED LETTER DENOTING "CAUTION SEWER". SIGN SHALL BE APPROXIMATELY 8" WIDE, 12" TALL, AND SHALL BE BOLTED TO A SUITABLE GALVANIZED POST A MINIMUM OF 6' IN LENGTH. SIGN SHALL BE POSITIONED WITH THE TOP OF THE SIGN APPROXIMATELY 42" ABOVE GRADE.
2. CONTRACTOR SHALL PROVIDE ADEQUATE PIPE BACKING AND SUPPORT.
3. CONTRACTOR SHALL PROVIDE ALL NECESSARY FITTINGS TO COMPLETE INSTALLATION TO DIFFERENT SIZE PRESSURE SEWER LINES.
4. MANHOLE STEPS SHALL BE ALIGNED SO AS TO FORM A CONTINUOUS LADDER WITH RUNGS EQUALLY SPACED VERTICALLY IN THE ASSEMBLED MANHOLE AT A MINIMUM DISTANCE OF 12 INCHES APART AND A MAXIMUM OF 16 INCHES APART.
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REV. DATE: 10/04/2023



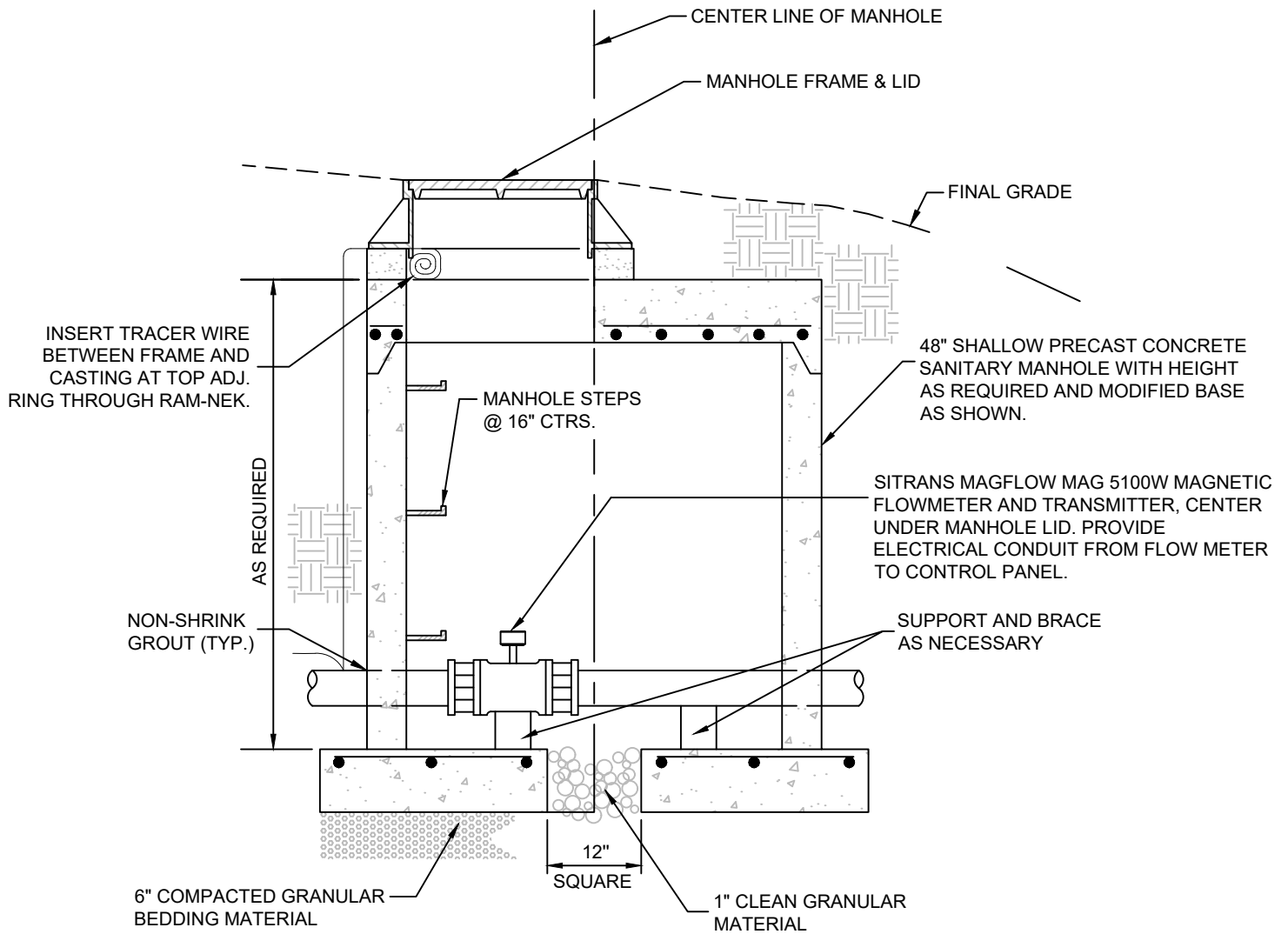
IN-LINE ISOLATION PLUG VALVE

NOT TO SCALE

NOTES:

1. PLUG VALVE SHALL BE VALMATIC BRAND WITH 2" OPERATIONAL NUT. ENSURE THAT VALVE IS POSITIONED FOR EASY ACCESS FORM GROUND SURFACE.

REV. DATE: 03/06/2023



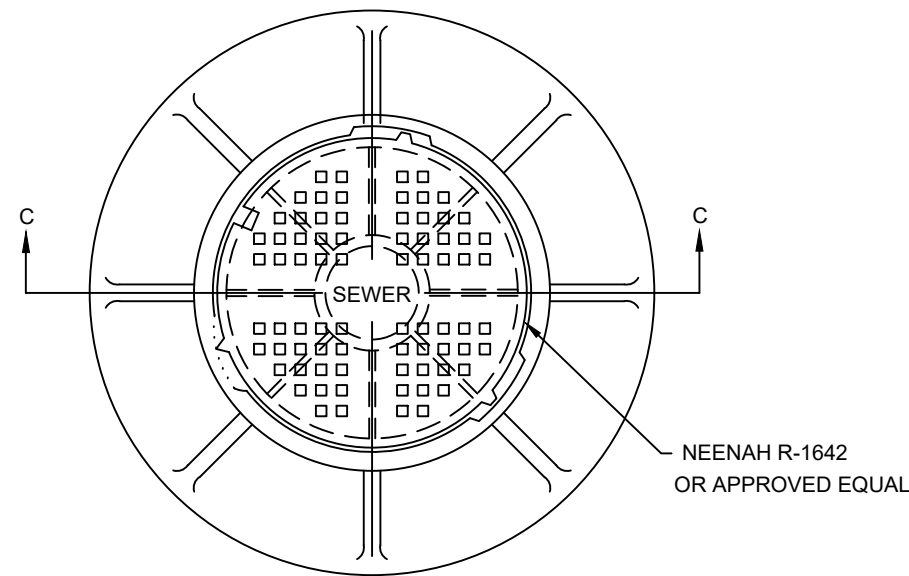
FLOWMETER DETAIL

NOT TO SCALE

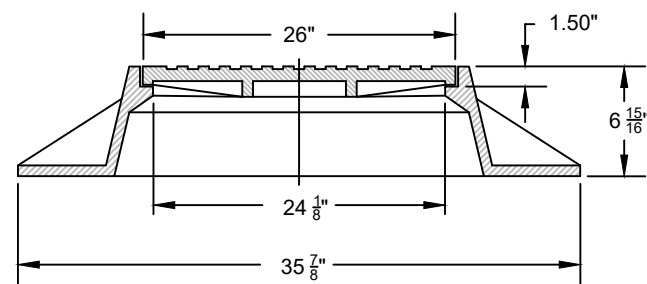
NOTES:

1. CONTRACTOR SHALL PROVIDE ADEQUATE PIPE BACKING AND SUPPORT.
2. CONTRACTOR SHALL PROVIDE ALL NECESSARY FITTINGS TO COMPLETE INSTALLATION TO DIFFERENT SIZE PRESSURE SEWER LINES.
3. STEEL REINFORCING SHALL BE PER PRECAST PROVIDER'S DESIGN AND IS SHOWN FOR REFERENCE ONLY.
4. INSTALL NEMA 4X STAINLESS STEEL ENCLOSURE INSIDE OF LIFT STATION FENCE TO TRANSMITTER. MOUNT ON GALVANIZED POLE OR RACK WITH CONCRETE FOUNDATION. SUPPLY CONDUIT FROM METER VAULT TO ENCLOSURE.
5. CONTRACTOR TO CONNECT FLOWMETER AND TRANSMITTER TO ELECTRICAL POWER SOURCE AT EXISTING LIFT STATION CONTROL PANEL. ALL ELECTRICAL WIRING SHALL BE CONTAINED IN CONDUIT.
6. TRACER WIRE SHALL BE INSTALLED PER SPECIFICATION 02537. TRACER WIRE SHALL BE COILED AROUND A 1" DIAMETER PVC PIPE AND STAGED AT TOP OF MANHOLE.

REV. DATE: 09/06/2024

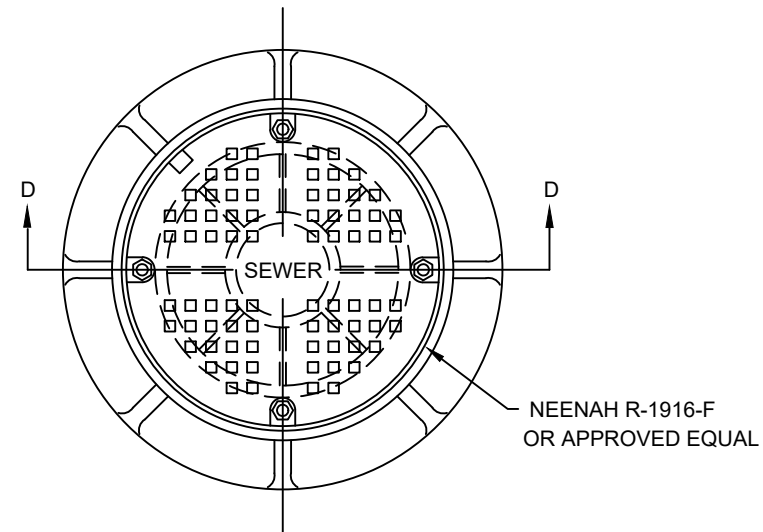


PLAN VIEW

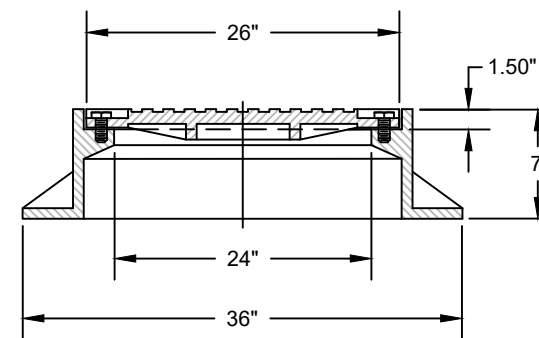


SECTION C-C

STANDARD MANHOLE
FRAME & LID
NOT TO SCALE

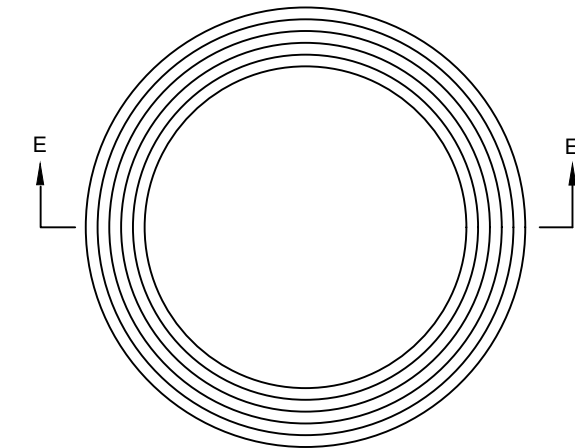


PLAN VIEW

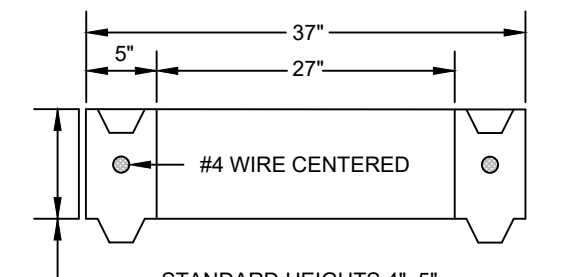


SECTION D-D

WATERTIGHT MANHOLE FRAME & LID
(BOLT DOWN)
NOT TO SCALE



PLAN VIEW



STANDARD HEIGHTS 4", 5",
6", 7", 8", 10", 12"
REINFORCEMENT: #4 WIRE, ASTM-8
CONCRETE: 4000 PSI
WEIGHT: 41 LBS PER VERTICAL INCH

SECTION E-E
CONCRETE GRADE RING
NOT TO SCALE

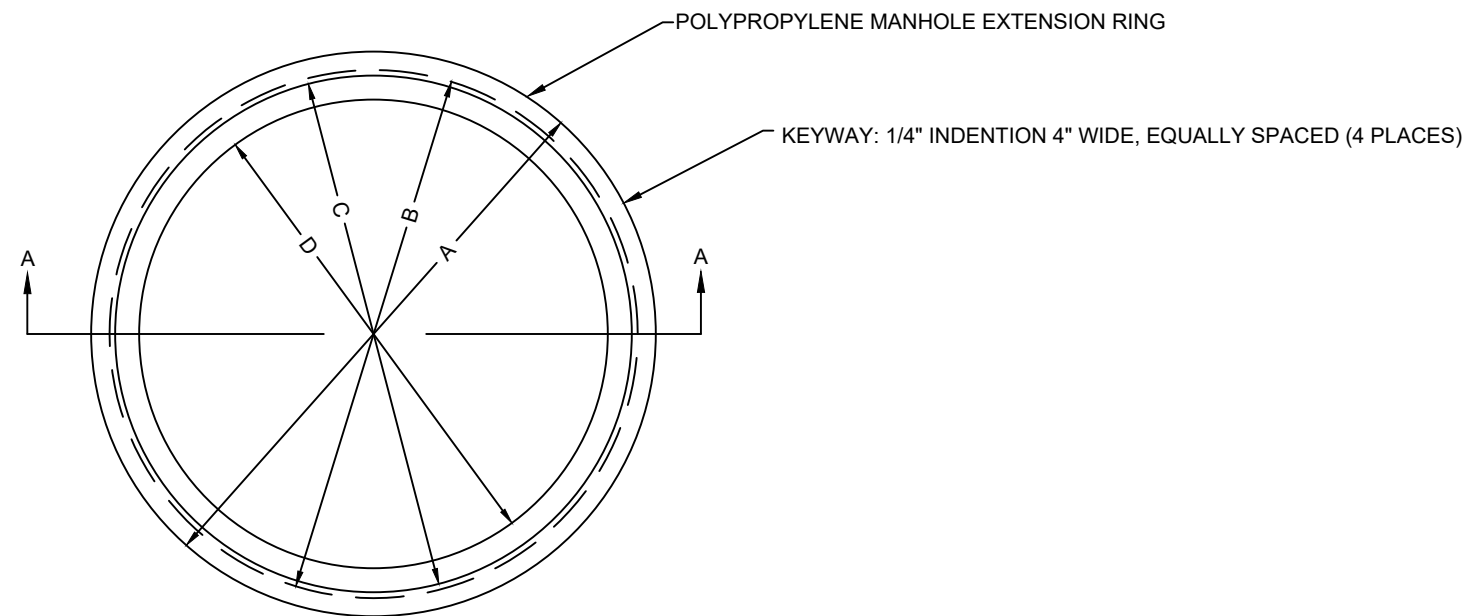
NOTES:

1. BOLT DOWN FRAMES SHALL BE ANCHORED A MINIMUM OF 5" DEEP INTO THE CONCRETE CONE. MINIMUM 4 STAINLESS STEEL ANCHORS PER FRAME SIZED TO MAXIMIZE BOLT HOLE DIAMETER.

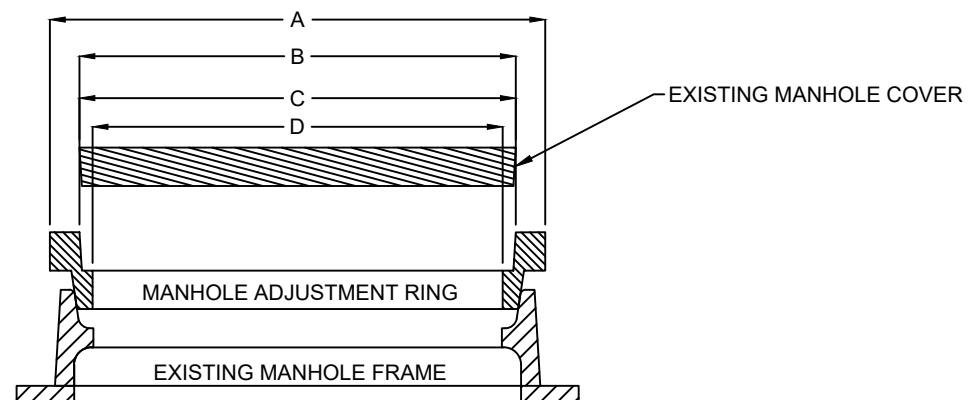
REV. DATE: 03/06/2023



TECHNICAL SPECIFICATIONS
STANDARD DETAIL 13
MANHOLE FRAME & LID VARIATIONS

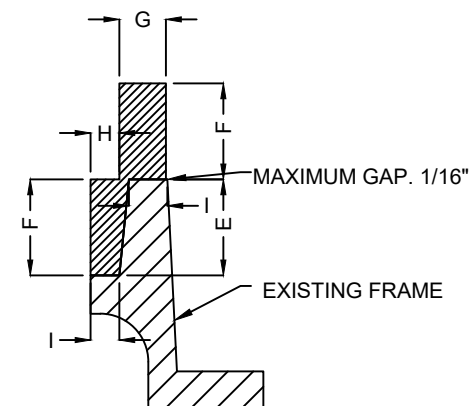


PLAN VIEW



SECTION A-A

**COMPOSITE
MANHOLE RISER**
NOT TO SCALE



SCHEDULE

A	B	C	D	E	F*	G	H	I	J
36	33 $\frac{1}{2}$	33	31	1 $\frac{3}{8}$	1	1 $\frac{1}{4}$	1 $\frac{5}{16}$	1 $\frac{5}{16}$	1 $\frac{5}{16}$
36	33 $\frac{1}{2}$	33	31	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{1}{4}$	1 $\frac{5}{16}$	1 $\frac{5}{16}$	1 $\frac{5}{16}$
34	32	31 $\frac{3}{4}$	30	1 $\frac{3}{8}$	1	1	1 $\frac{3}{4}$	1	1 $\frac{5}{8}$
34	32	31 $\frac{3}{4}$	30	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1	1 $\frac{3}{4}$	1	1 $\frac{5}{8}$
34	32	31 $\frac{3}{4}$	30	1 $\frac{3}{8}$	2	1	1 $\frac{3}{4}$	1	1 $\frac{5}{8}$
31	29	28 $\frac{3}{4}$	27	1 $\frac{3}{8}$	1	1 $\frac{7}{4}$	1 $\frac{3}{4}$	1	1 $\frac{5}{8}$
31	29	28 $\frac{3}{4}$	27	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{7}{3}$	1 $\frac{3}{4}$	1	1 $\frac{5}{8}$
31	29	28 $\frac{3}{4}$	27	1 $\frac{3}{8}$	2	1 $\frac{7}{3}$	1 $\frac{3}{4}$	1	1 $\frac{5}{8}$
MAX	36	34	33 $\frac{1}{2}$	31 $\frac{1}{2}$	2	3	1 $\frac{1}{4}$	1	1 $\frac{5}{16}$
MIN	22	20	19 $\frac{1}{2}$	17 $\frac{1}{2}$	1 $\frac{7}{8}$	1 $\frac{7}{3}$	1 $\frac{3}{4}$	1 $\frac{7}{8}$	1 $\frac{5}{8}$

(SIZES ARE IN INCHES) F* - DIMENSIONS TO BE IN INCREMENTS OF 1/6"

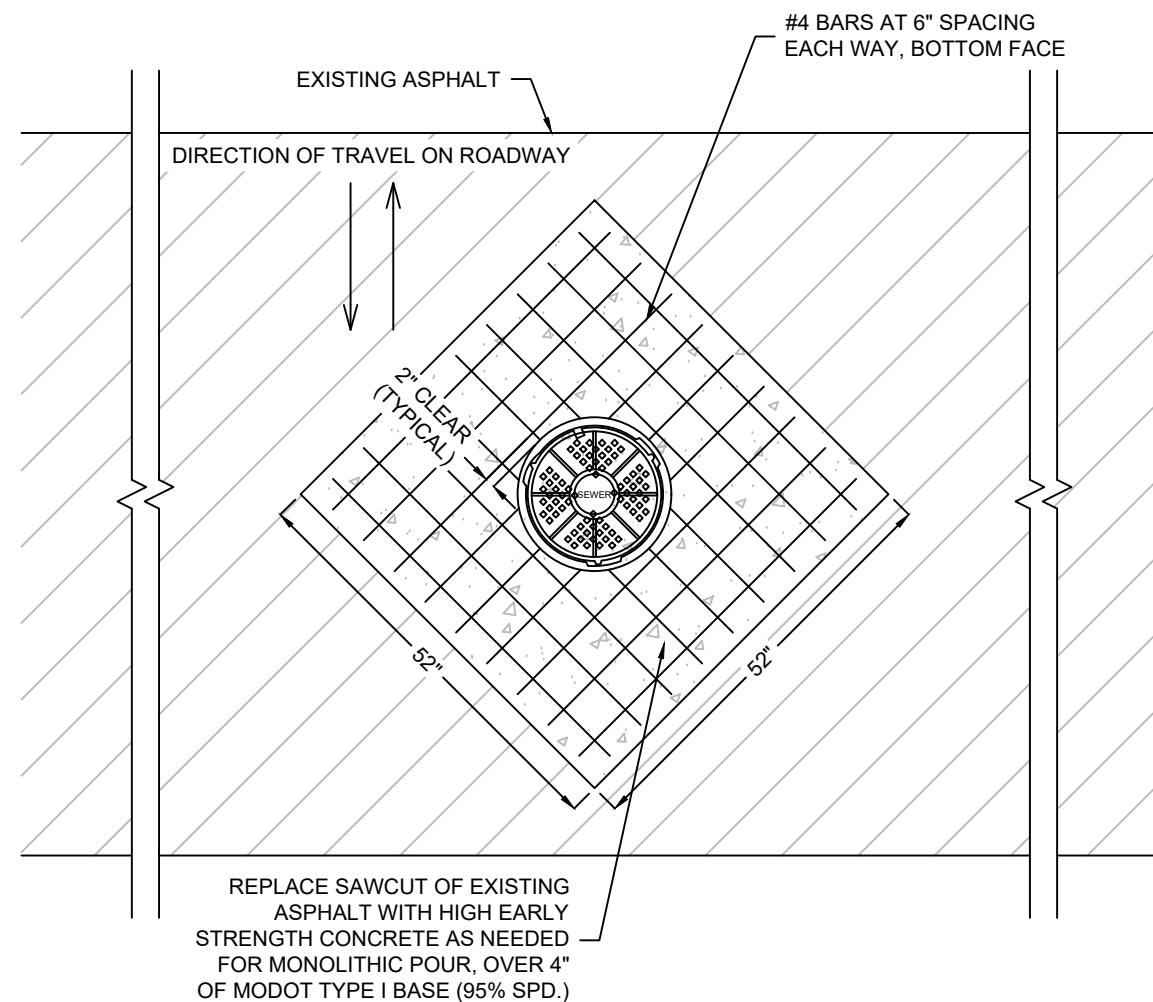
NOTE:

1. THE TABLE ABOVE REPRESENTS THE MOST COMMONLY AVAILABLE SIZES. IN ADDITION, RINGS ARE AVAILABLE IN OTHER CIRCUMFERENCES AND OVERLAY AND COVER THICKNESS AS REQUIRED. NOTE THE ABOVE MAXIMUM AND MINIMUM DIMENSIONS. CONSULT MANUFACTURE FOR ADDITIONAL SPECIFICATIONS.

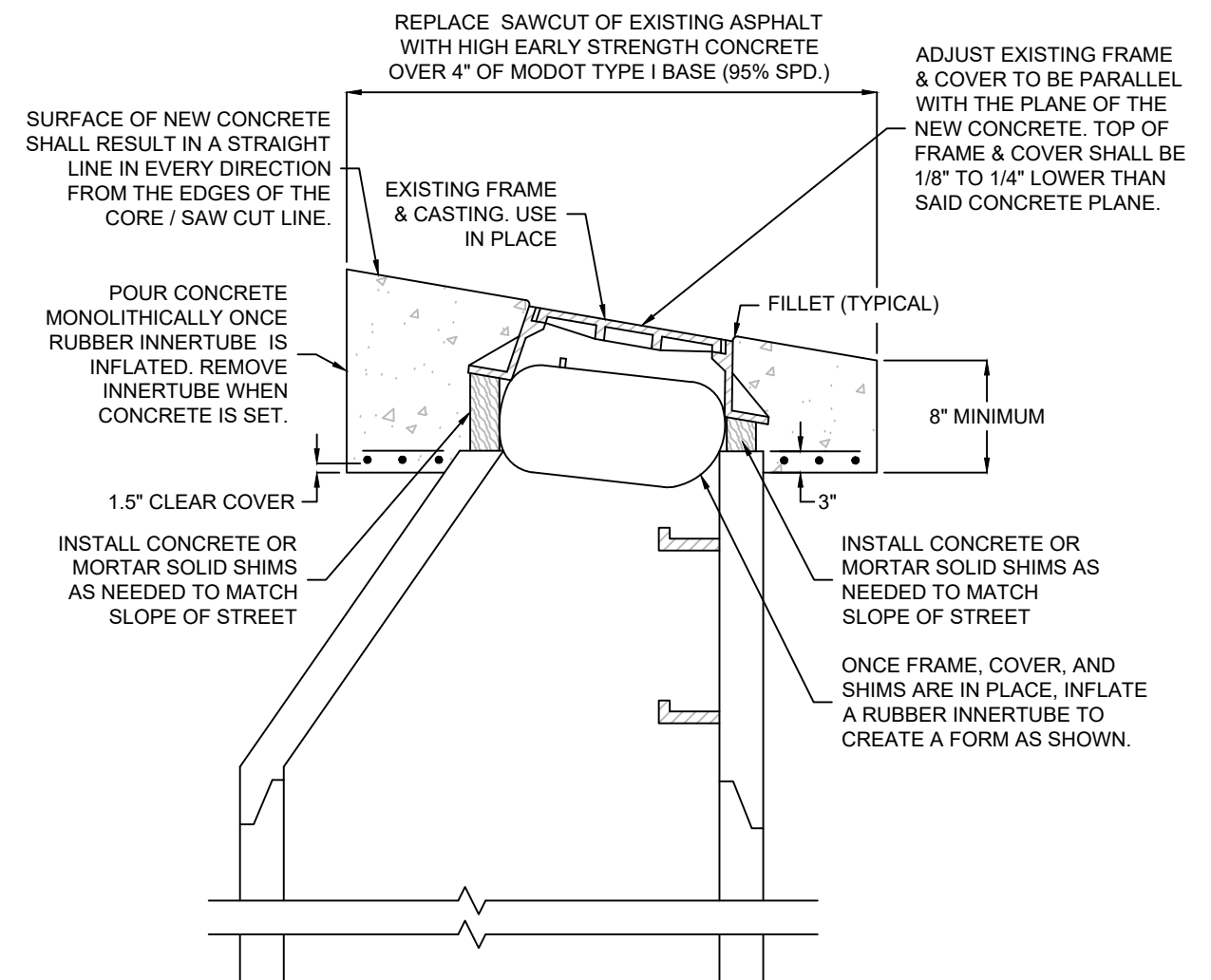
REV. DATE: 03/06/2023



TECHNICAL SPECIFICATIONS
STANDARD DETAIL 14
COMPOSITE MANHOLE RISER



PLAN VIEW

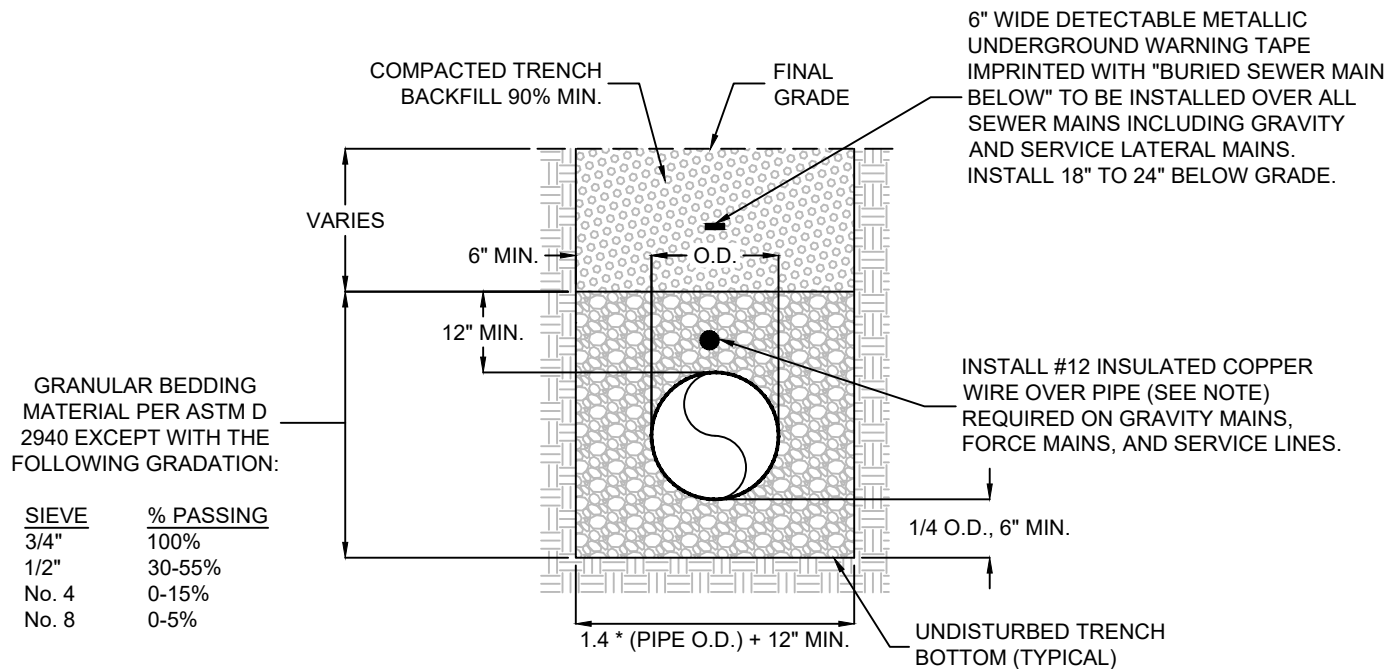


PROFILE VIEW

FRAME & COVER ADJUSTMENT

NOT TO SCALE

REV. DATE: 09/06/2024



SINGLE PIPE IN TRENCH

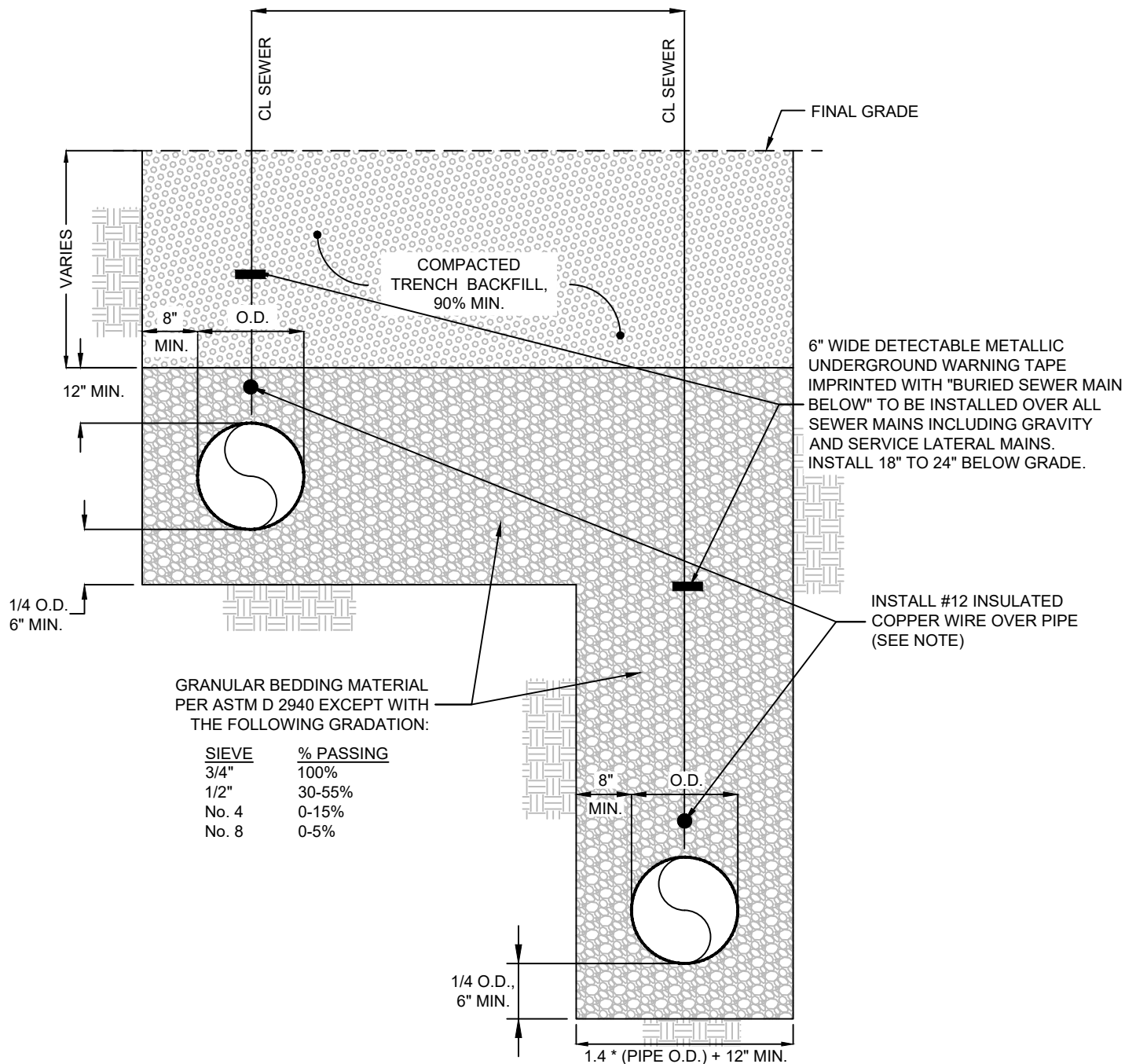
NOTE:
LOCATOR WIRE SHALL BE INSTALLED PER SPECIFICATION 02537.

PIPE INSTALLATION

SCALE: NONE

REV. DATE: 03/06/2023

4'-0" MIN. BETWEEN 2 FORCE MAINS
 5'-0" MIN. BETWEEN GRAVITY LINE & FORCE MAINS
 7'-0" MIN. BETWEEN 2 GRAVITY LINES OR AS REQUIRED



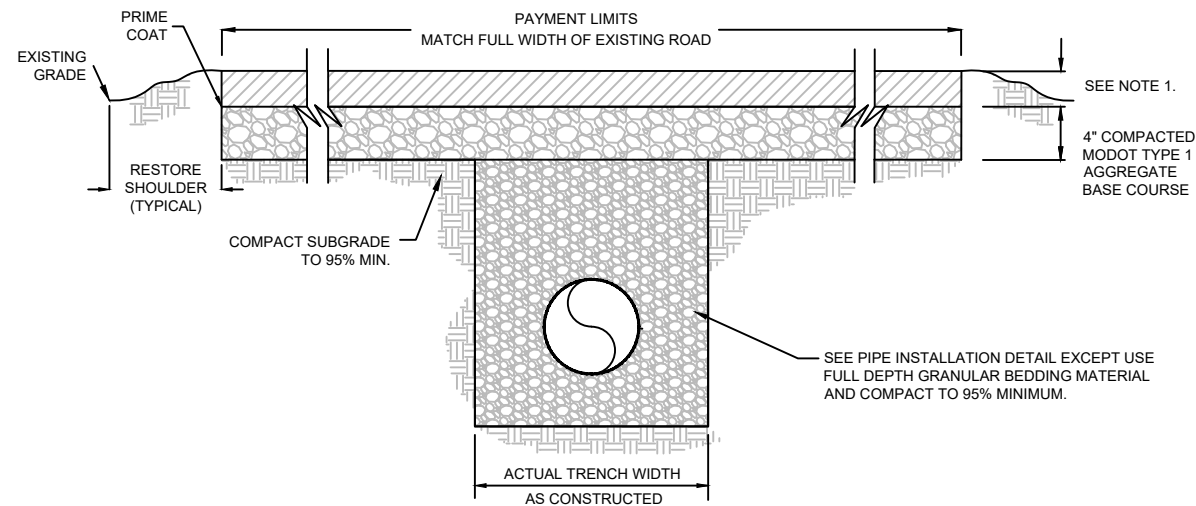
PARALLEL PIPES IN JOINT TRENCH

NOT TO SCALE

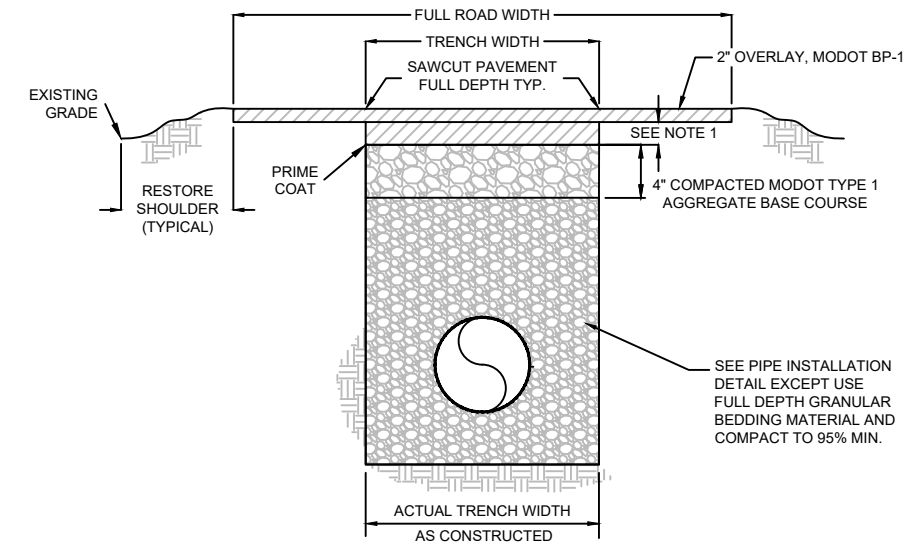
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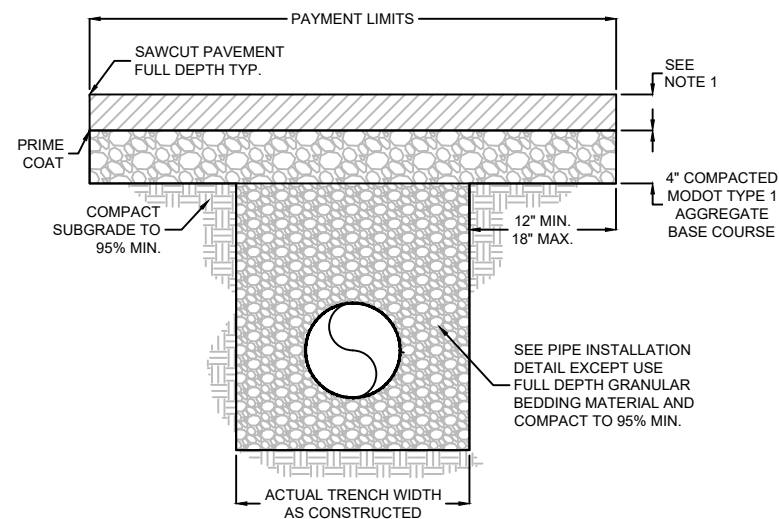
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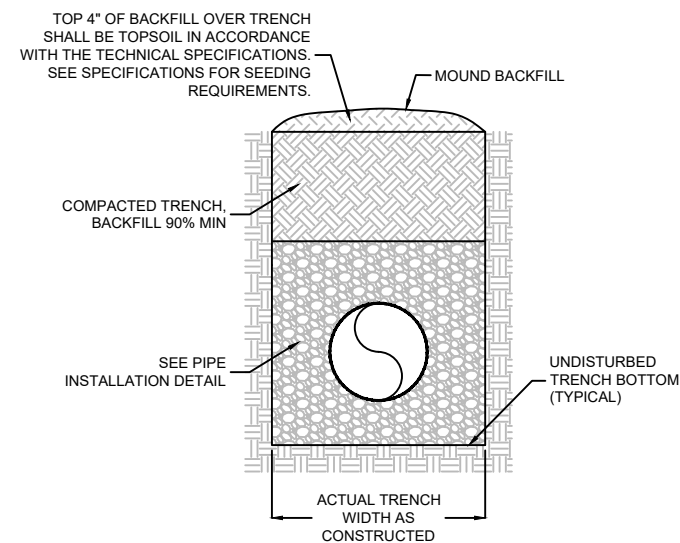
FULL WIDTH BITUMINOUS SURFACED AREA REPLACEMENT DETAIL



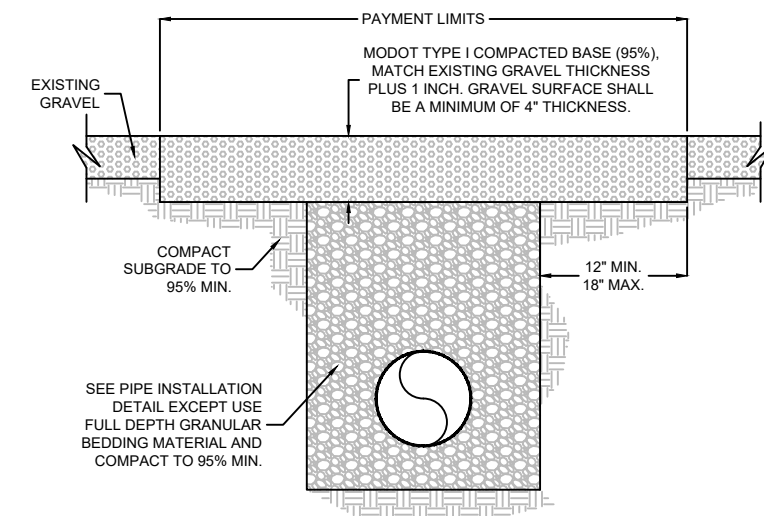
FULL WIDTH BITUMINOUS SURFACED AREA OVERLAY DETAIL



BITUMINOUS SURFACED AREA CROSSING



SEEDED AREA



GRAVEL SURFACE AREA CROSSING

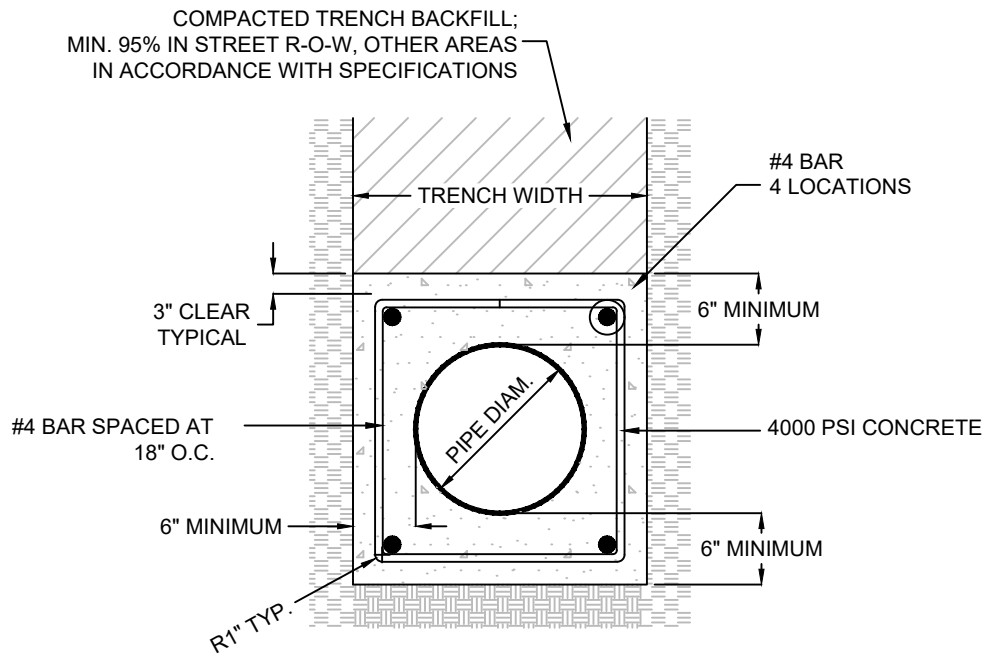
ROAD REPLACEMENT AND TRENCHING BACKFILL METHODS

SCALE: NONE

NOTES:

1. MODOT BP-1 PLANT MIX BITUMINOUS PAVEMENT, MATCH EXISTING ASPHALT THICKNESS PLUS 1 INCH. ASPHALT SHALL BE A MINIMUM OF 3" THICKNESS AND A MAXIMUM OF 6" THICKNESS. IF BITUMINOUS SURFACE THICKNESS IS 4 INCHES OR GREATER, THE TOP 2 INCHES OF PAVEMENT SHALL BE MODOT BP-1 PLANT MIX BITUMINOUS PAVEMENT AND THE REMAINING PAVEMENT THICKNESS SHALL BE MODOT BASE PLANT MIX BITUMINOUS PAVEMENT.
2. PAYMENT FOR ROAD CROSSING REPLACEMENT SHALL BE TO THE LIMITS SHOWN IN THE DETAILS. ANY AREA DISTURBED BEYOND PAYMENT LIMITS SHALL BE RESTORED IN ACCORDANCE WITH DETAILS AND SPECIFICATIONS AT THE CONTRACTOR'S EXPENSE.
3. CONTRACTOR TO RESHOULDER ROAD WITH TOPSOIL, SEED, AND MULCH OR MODOT TYPE 1 BASE AS REQUIRED TO MATCH EXISTING SHOULDER.
4. CONTRACTOR TO INSTALL FULL WIDTH BITUMINOUS SURFACE OVERLAY IN ALL AREAS REQUIRING FULL WIDTH ROAD REPLACEMENT UNLESS INSTALLING FULL WIDTH ROAD OVERLAY WILL CAUSE DRAINAGE ISSUES, THEN CONTRACTOR TO INSTALL FULL WIDTH ROAD REPLACEMENT PER DETAIL OR CAN USE COLD MILLING TO INSTALL OVERLAY TO ORIGINAL GRADE.

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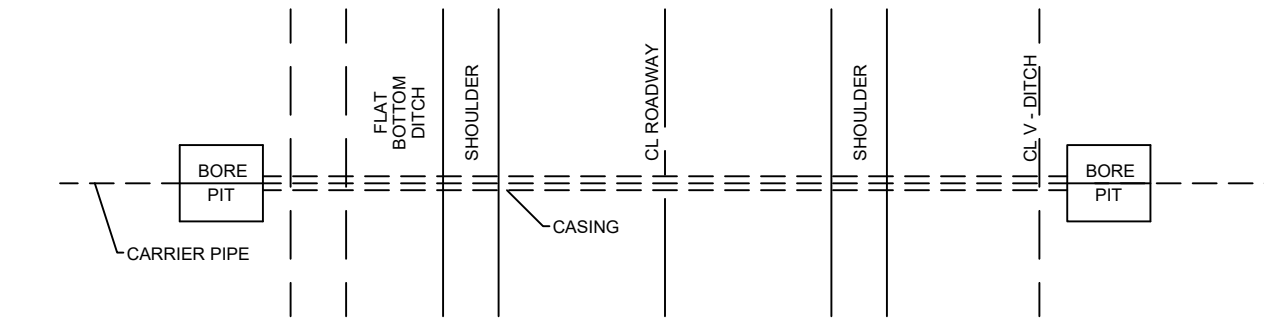
NOTES:

1. BLOCK UP PIPE TO PROVIDE MINIMUM CLEARANCE INDICATED.
2. CONTRACTOR SHALL INSTALL TIE DOWNS AS REQUIRED TO PREVENT FLOATING.

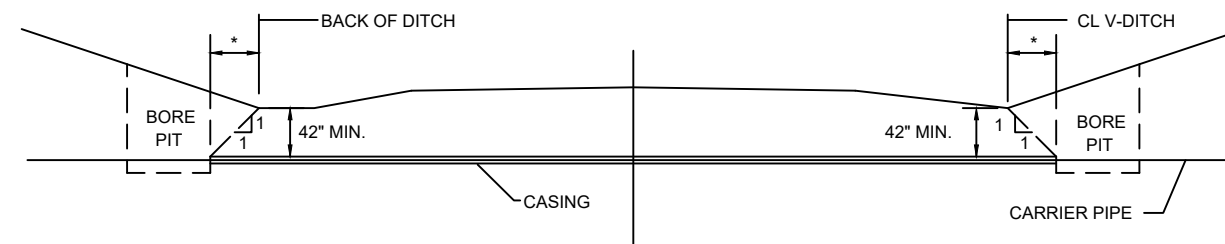
CONCRETE ENCASEMENT

NOT TO SCALE

REV. DATE: 03/06/2023

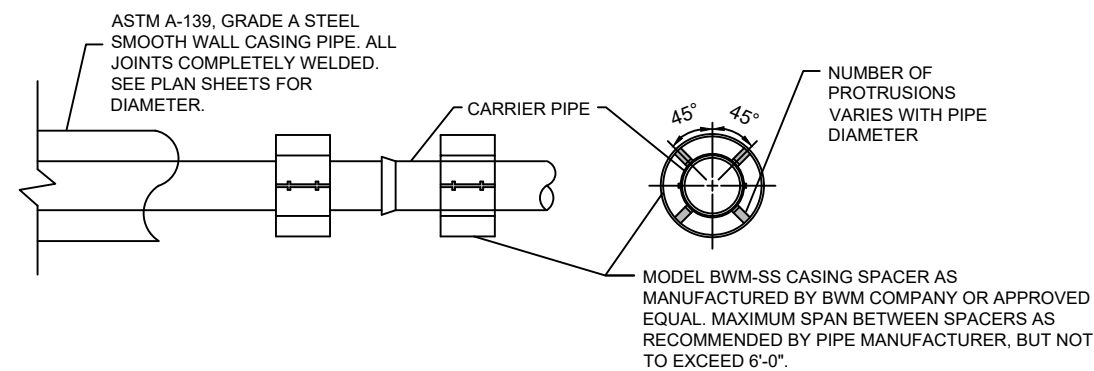


PLAN VIEW



CROSS SECTION

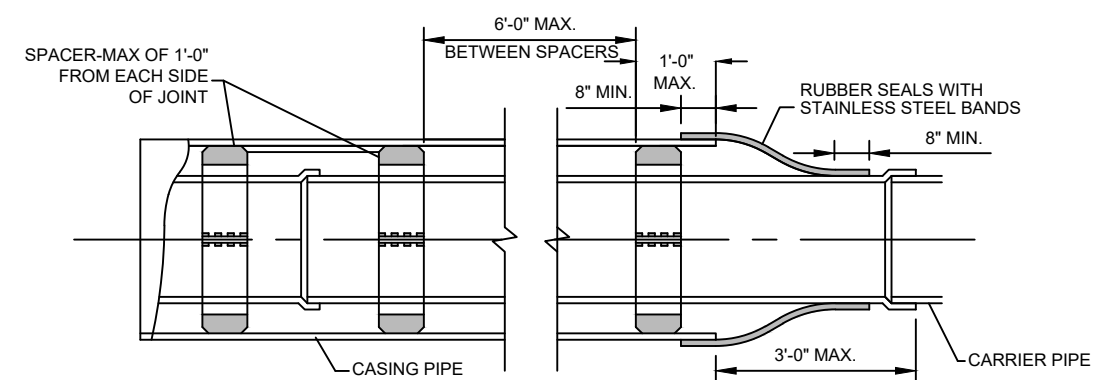
* CASING SHALL EXTEND BEYOND THE BACK OF DITCH FOR A DISTANCE EQUAL TO THE DEPTH OF THE CASING.



CARRIER PIPE DIA. (PVC)	CASING PIPE DIA. (STEEL)	MIN. WALL THICKNESS (IN.)
4"	10"	0.188
6"	12"	0.188
8"	14"	0.219
10"	16"	0.250
12"	20"	0.281

NOTES:

1. STEEL CASING REQUIRED.
2. EACH END OF CASING TO BE SEALED WITH END SEALS PROVIDED BY THE MANUFACTURER OF CASING SPACERS.
3. CASING SHALL BE INSTALLED SIMULTANEOUSLY W/ BORING OPERATION. ALL AREAS DISTURBED DURING CONSTRUCTION AND TRENCHES SHALL BE COMPACTED, AND RESTORED PER SPECIFICATIONS.



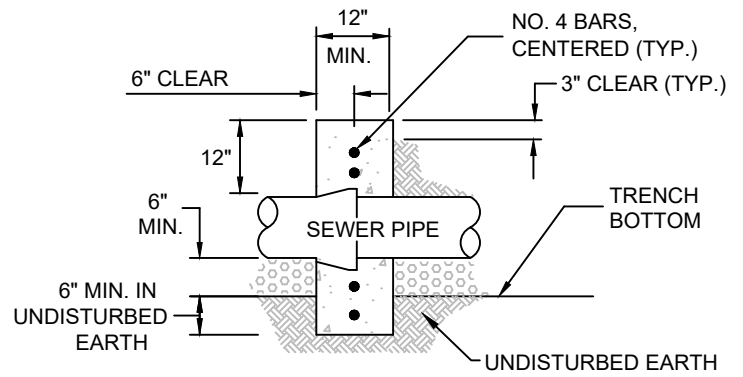
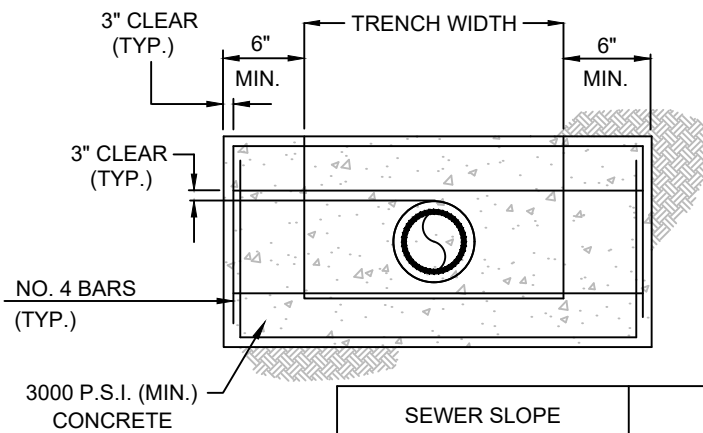
PROFILE
NOT TO SCALE

TYPICAL ROAD BORING

REV. DATE: 09/06/2024



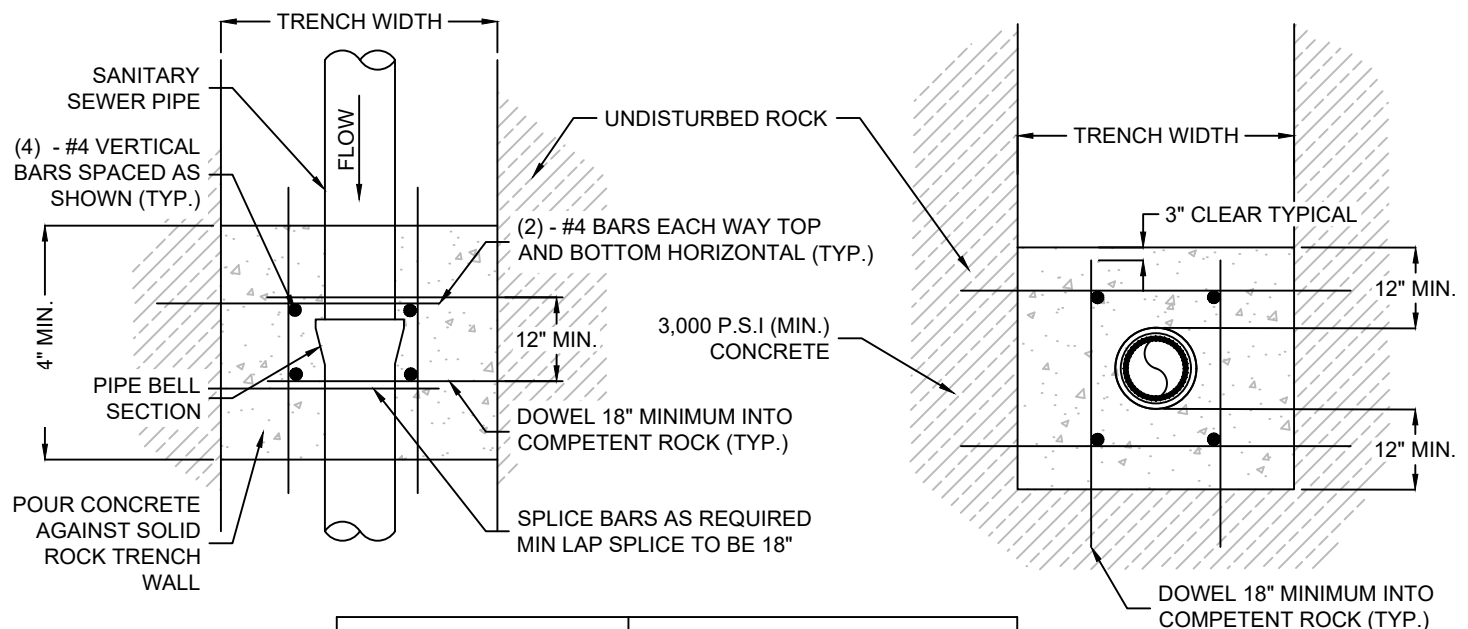
TECHNICAL SPECIFICATIONS
STANDARD DETAIL 20
TYPICAL ROAD BORING



SEWER SLOPE	MAX SPACING, FT
< 20%	NOT REQ'D
20% - 34.9%	36
35% - 49.9%	24
≥ 50%	16

SEWER CONCRETE SLOPE ANCHOR (SOILS TRENCH)

NOT TO SCALE

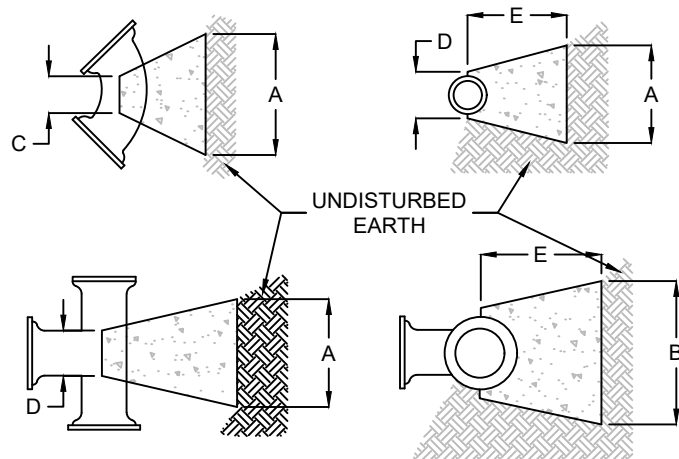


SEWER SLOPE	MAX SPACING, FT
< 20%	NOT REQ'D
20% - 34.9%	36
35% - 49.9%	24
≥ 50%	16

SEWER CONCRETE SLOPE ANCHOR (ROCK TRENCH)

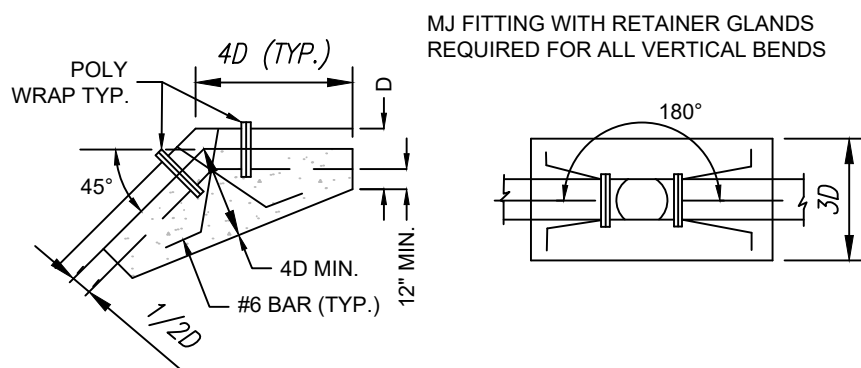
NOT TO SCALE

REV. DATE: 09/06/2024



CONCRETE THRUST BLOCK

SCALE: NONE



VERTICAL BEND THRUST BLOCK

SCALE: NONE

PIPE SIZE	FITTING	DISTANCE IN INCHES				
		A	B	C	D	E
4" AND SMALLER	11.25 & 22.5°	9	9	8	8	6
	45°	18	9	8	8	12
	90°	21	12	8	8	12
	TEE/PLUG	15	12	8	8	12
6"	11.25 & 22.5°	12	12	8	10	12
	45°	27	12	8	10	12
	90°	33	18	8	10	12
	TEE/PLUG	24	18	8	10	12
8"	11.25 & 22.5°	18	15	8	10	12
	45°	33	15	8	10	18
	90°	42	24	8	10	18
	TEE/PLUG	30	24	8	10	18
10" & 12"	11.25 & 22.5°	27	24	12	12	18
	45°	51	24	12	12	24
	90°	63	36	12	12	30
	TEE/PLUG	45	36	12	12	24
14" & 16"	11.25 & 22.5°	33	33	12	16	18
	45°	69	33	12	16	30
	90°	84	48	12	16	36
	TEE/PLUG	60	48	12	16	30

NOTES:

1. THRUST BLOCKS ARE BASED ON A WORKING PRESSURE OF 200 P.S.I., PLUS 0% SURGE & 2,000 P.S.F. ALLOWABLE SOIL BEARING PRESSURE.
2. FOR PIPE SIZES NOT SHOWN USE DIMENSIONS FOR NEXT LARGER SIZE.
3. USE 3/8" PLYWOOD SEPARATOR BETWEEN BLOCKS AND PLUGS TO PROVIDE FOR FUTURE REMOVAL.
4. WRAP ALL FITTINGS W/6 MIL POLY PRIOR TO PLACEMENT OF CONCRETE THRUST BLOCKING.
5. ALL THRUST BLOCKS TO BE INSPECTED BY OWNER BEFORE BACKFILLING.

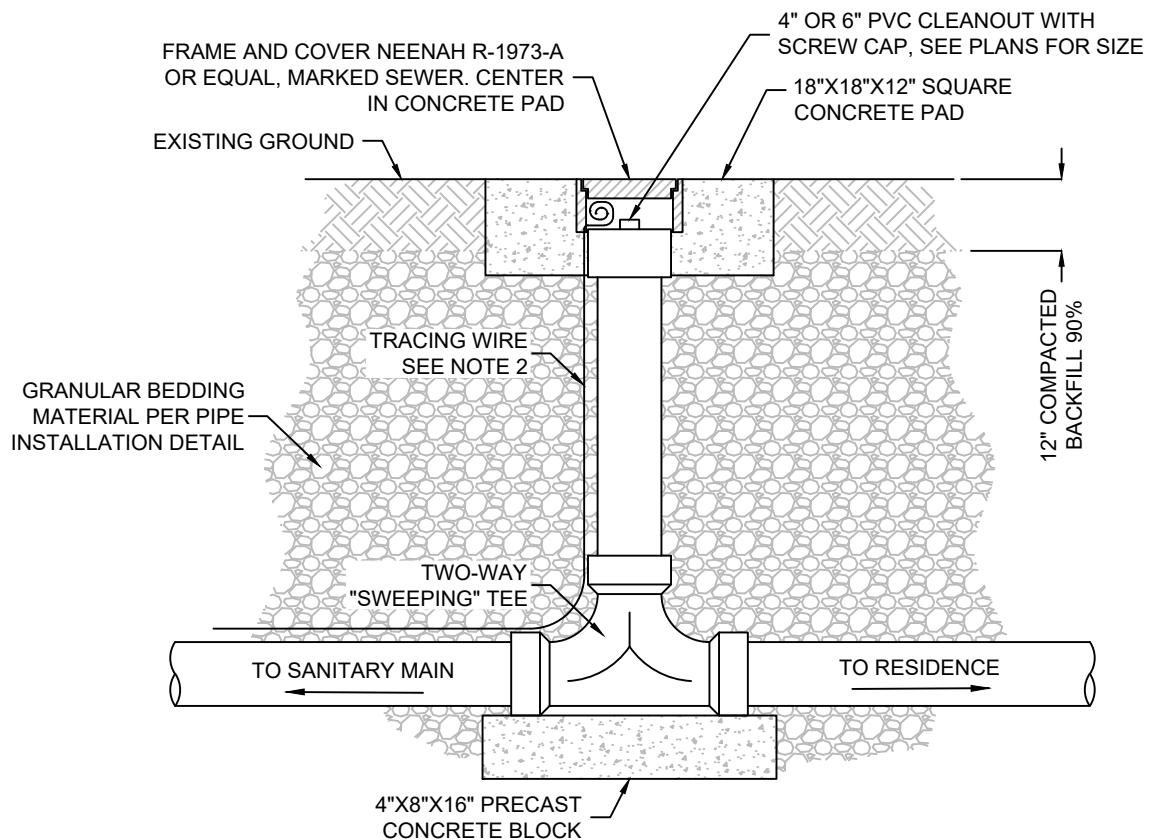
THRUST BLOCKING DETAIL

SCALE: NONE

REV. DATE: 03/06/2023



TECHNICAL SPECIFICATIONS
STANDARD DETAIL 22
THRUST BLOCKING DETAIL



SECTION VIEW

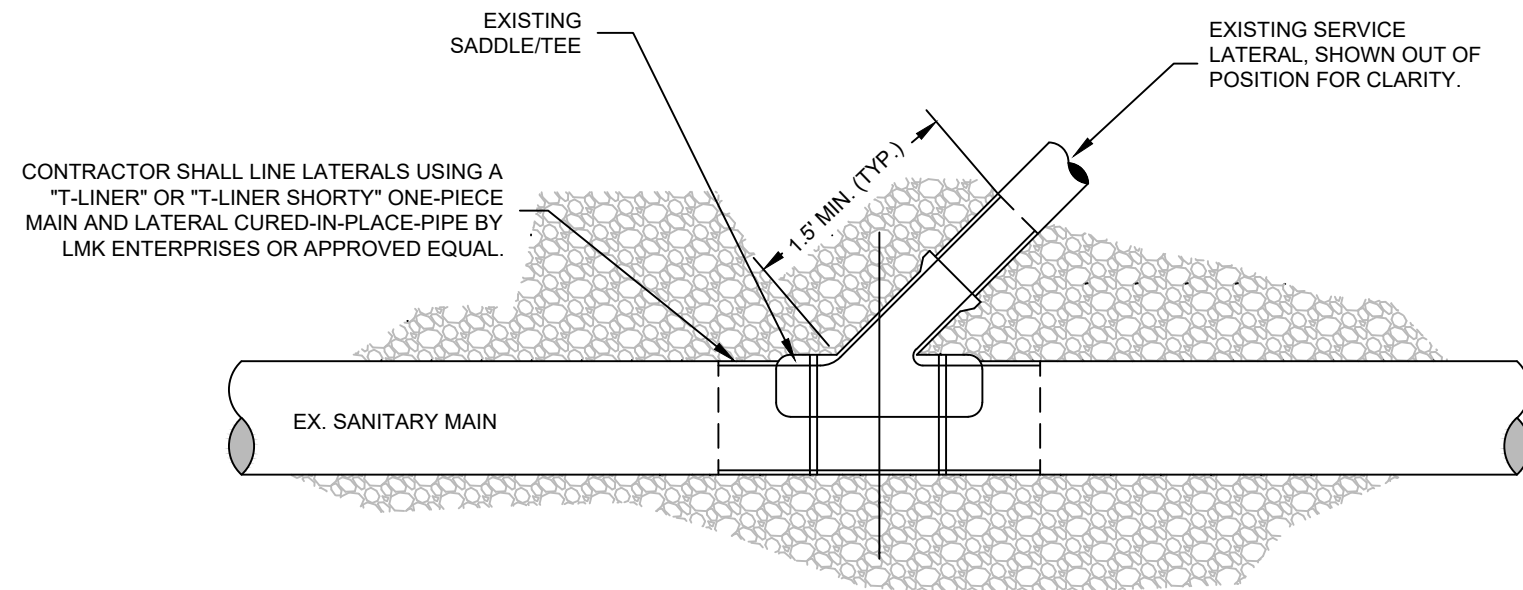
NOTE:

1. ALL FITTINGS ON SERVICE CLEAN OUT DETAIL SHALL BE SCHEDULE 40 PIPE AND JOINTS BE GLUED WITH AN APPROVED ADHESIVE.
2. TRACER WIRE SHALL BE INSTALLED PER SPECIFICATION 02537. TRACER WIRE SHALL BE COILED AROUND A 1" DIAMETER PVC PIPE AND STAGED AT TOP OF CLEANOUT.

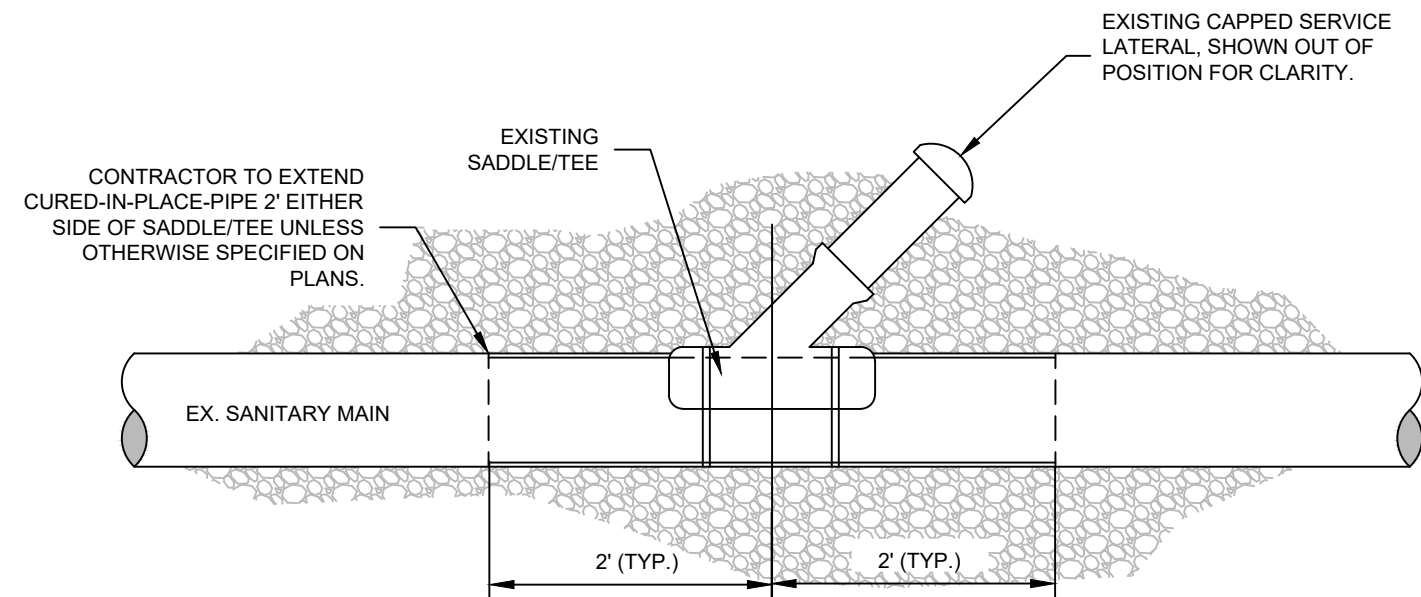
TWO-WAY SERVICE CLEANOUT INSTALLATION

SCALE: NONE

REV. DATE: 03/06/2023



EXISTING SERVICE LATERAL - IN USE
NOT TO SCALE



EXISTING SERVICE LATERAL - CAPPED
NOT TO SCALE

CURED-IN-PLACE LINER AT SERVICE LATERALS

NOT TO SCALE

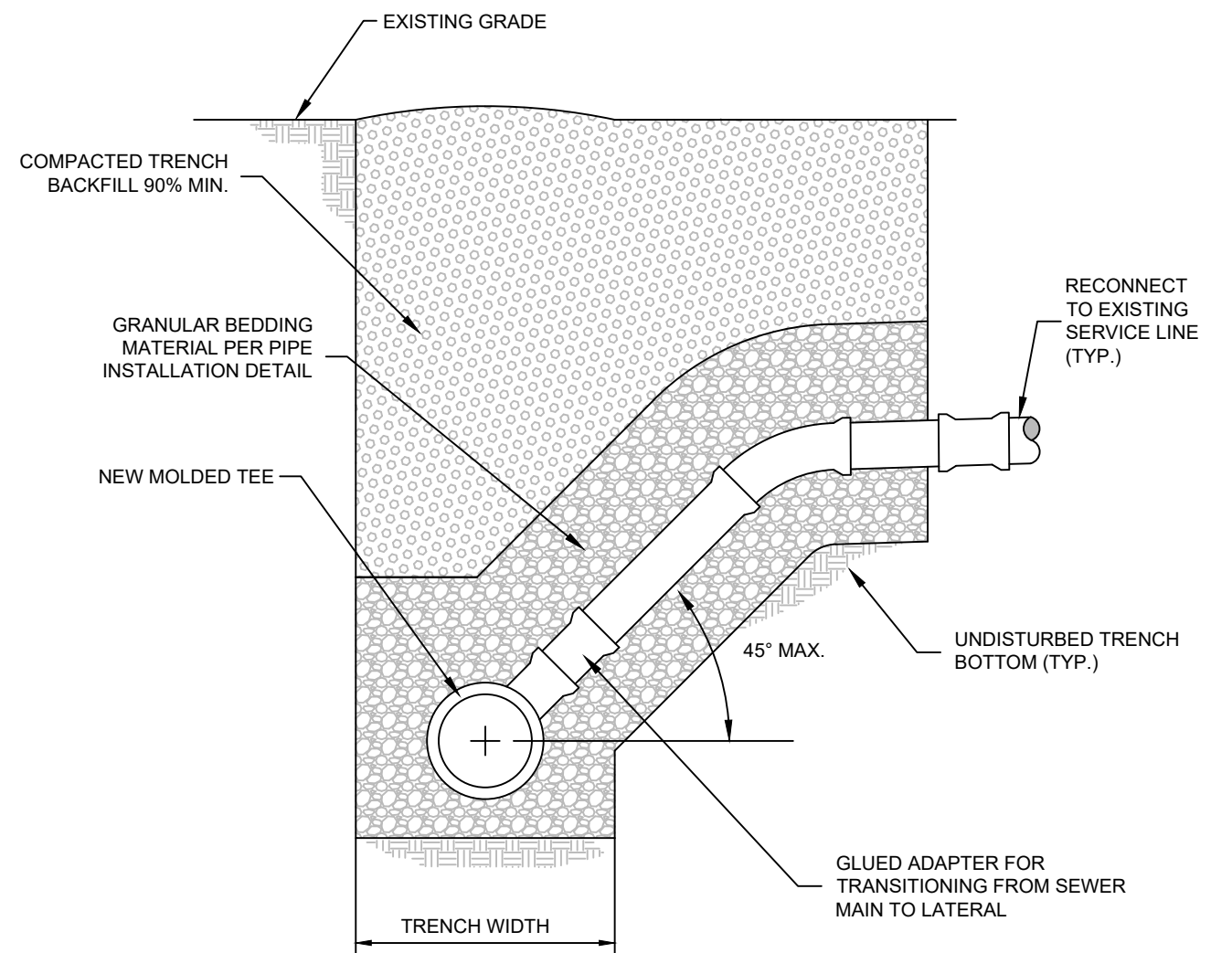
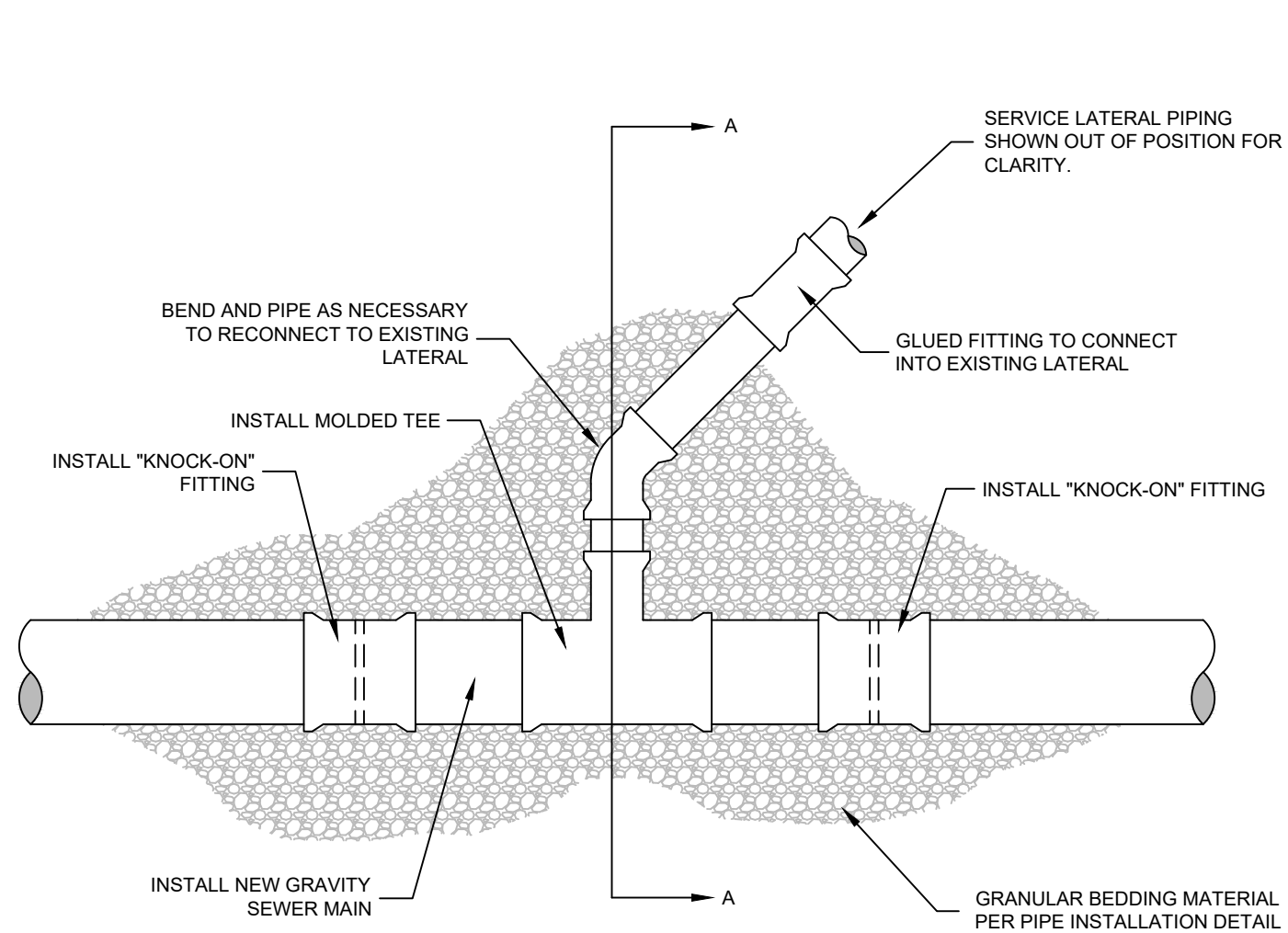
GENERAL NOTES:

1. LINING OF EXISTING SERVICE LATERALS IN USE USING CURED-IN-PLACE "T-LINER SHORTY" OR "T-LINER" PRODUCT OR APPROVED EQUAL ARE DESIGNATED BY THE SYMBOL ① ON THE REHABILITATION MAPS LOCATED IN THE CONSTRUCTION DRAWINGS.
2. CURED-IN-PLACE LINER FOR CAPPED SERVICE LATERALS ARE DESIGNATED BY THE SYMBOL ② ON THE REHABILITATION MAPS LOCATED IN THE CONSTRUCTION DRAWINGS.
3. WHERE ADDITIONAL CLEANOUTS ARE REQUIRED TO BE INSTALLED ON EXISTING SERVICE LATERALS FOR THE INSTALLATION OF THE "T-LINER SHORTY" OR "T-LINER" PRODUCT, OR APPROVED EQUAL, CLEANOUTS SHALL BE INSTALLED WITHIN THE TEMPORARY CONSTRUCTION EASEMENT LIMITS OR RIGHT-OF-WAY. IF ADDITIONAL CLEANOUTS ARE TO REMAIN IN PLACE AFTER COMPLETION OF CONSTRUCTION THEN LOCATION MUST BE COORDINATED AND APPROVED BY PROPERTY OWNER. CONTRACTOR MUST ALSO COORDINATE WITH PROPERTY OWNER THE ELEVATION OF THE TOP OF THE CLEANOUT. IF THE PROPERTY OWNER IS NOT AVAILABLE THEN CONTRACTOR WILL SET THE TOP OF THE CLEANOUT FLUSH WITH THE EXISTING GRADE. IF AN EXISTING CLEANOUT WILL BE UTILIZED, CONTRACTOR SHALL OBTAIN APPROVAL FROM THE PROPERTY OWNER PRIOR TO UTILIZING EXISTING CLEANOUTS.

REV. DATE: 03/06/2023



TECHNICAL SPECIFICATIONS
STANDARD DETAIL 24
CURED-IN-PLACE LINER AT LATERALS



SECTION A-A

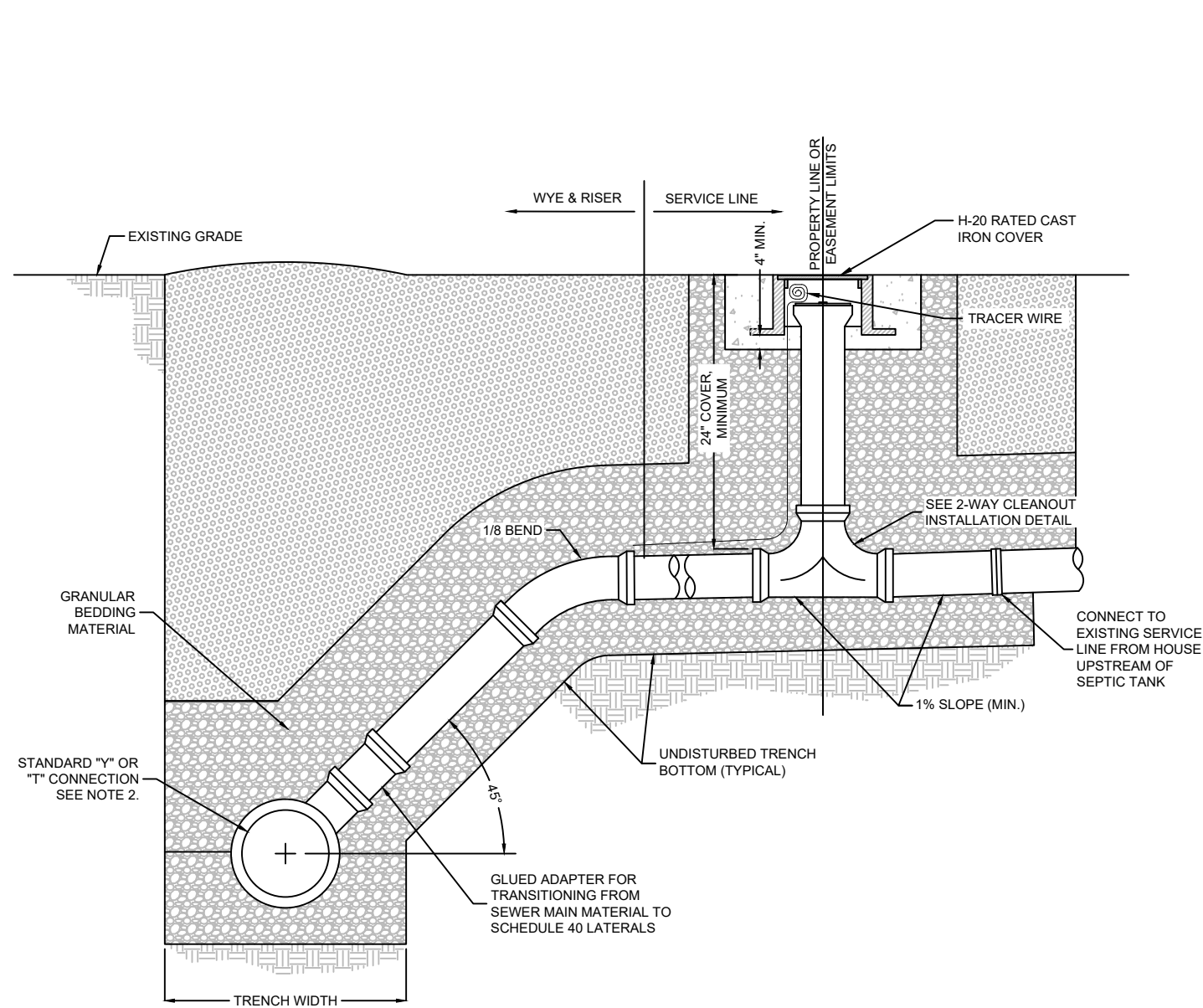
NOTE:

1. SERVICE TEE CONNECTIONS REQUIRED ON NEW MAIN INSTALLATION TO BE INSTALLED PER SECTION A-A DETAIL.

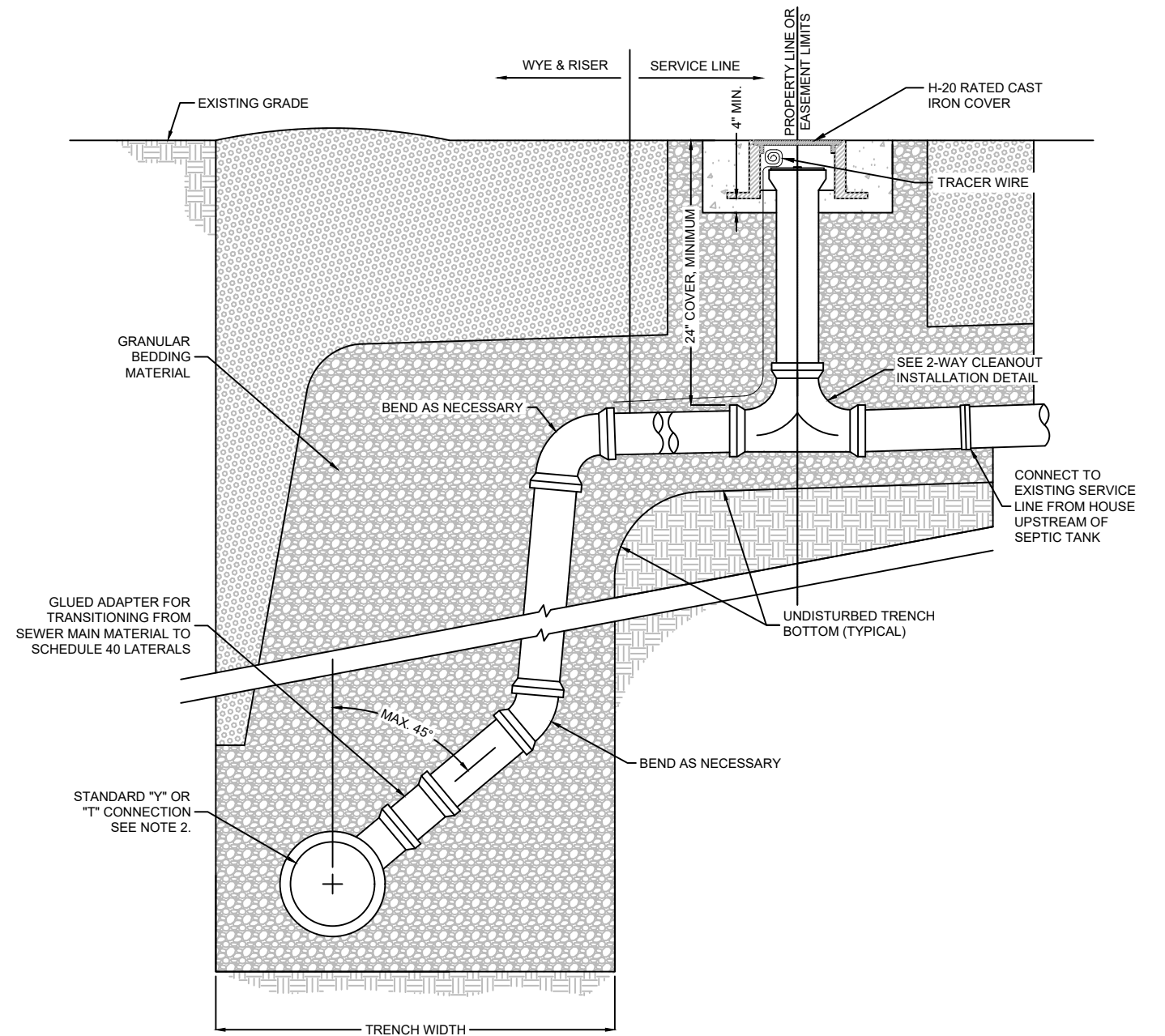
TEE REPLACEMENT ON EXISTING MAIN

NOT TO SCALE

REV. DATE: 03/06/2023



CONNECTIONS TO SEWERS LESS THAN
12' DEEP



CONNECTIONS TO SEWERS BETWEEN
12' AND 20' DEEP OR IN SOLID ROCK TRENCHES

NOTES:

1. UNLESS OTHERWISE NOTED, RESIDENTIAL SINGLE FAMILY SERVICE LINES AND RISERS SHALL BE 4" DIA. ALL OTHERS SHALL BE 6" DIA., UNLESS OTHERWISE NOTED.
2. MOLDED TEES OR WYES ARE REQUIRED FOR ALL SERVICE LINES ON NEW SEWER LINES. FOR CONNECTION TO EXISTING SEWER LINES, USE PIPECONX PCX SADDLE TEE OR APPROVED EQUAL.
3. ALL SERVICE LINES SHALL BE SCHEDULE 40 PIPE AND JOINTS BE GLUED WITH AN APPROVED ADHESIVE.
4. CONSTRUCT SERVICE LINE AT A DEPTH REQUIRED TO PROPERLY SERVE THE EXISTING HOUSE OR STRUCTURE.
5. INSTALL SERVICE LINES AS PER "PIPE INSTALLATION DETAILS"
6. TRACER WIRE SHALL BE INSTALLED PER SPECIFICATION 02537. TRACER WIRE SHALL BE COILED AROUND A 1" DIAMETER PVC PIPE AND STAGED AT TOP OF CLEANOUT.

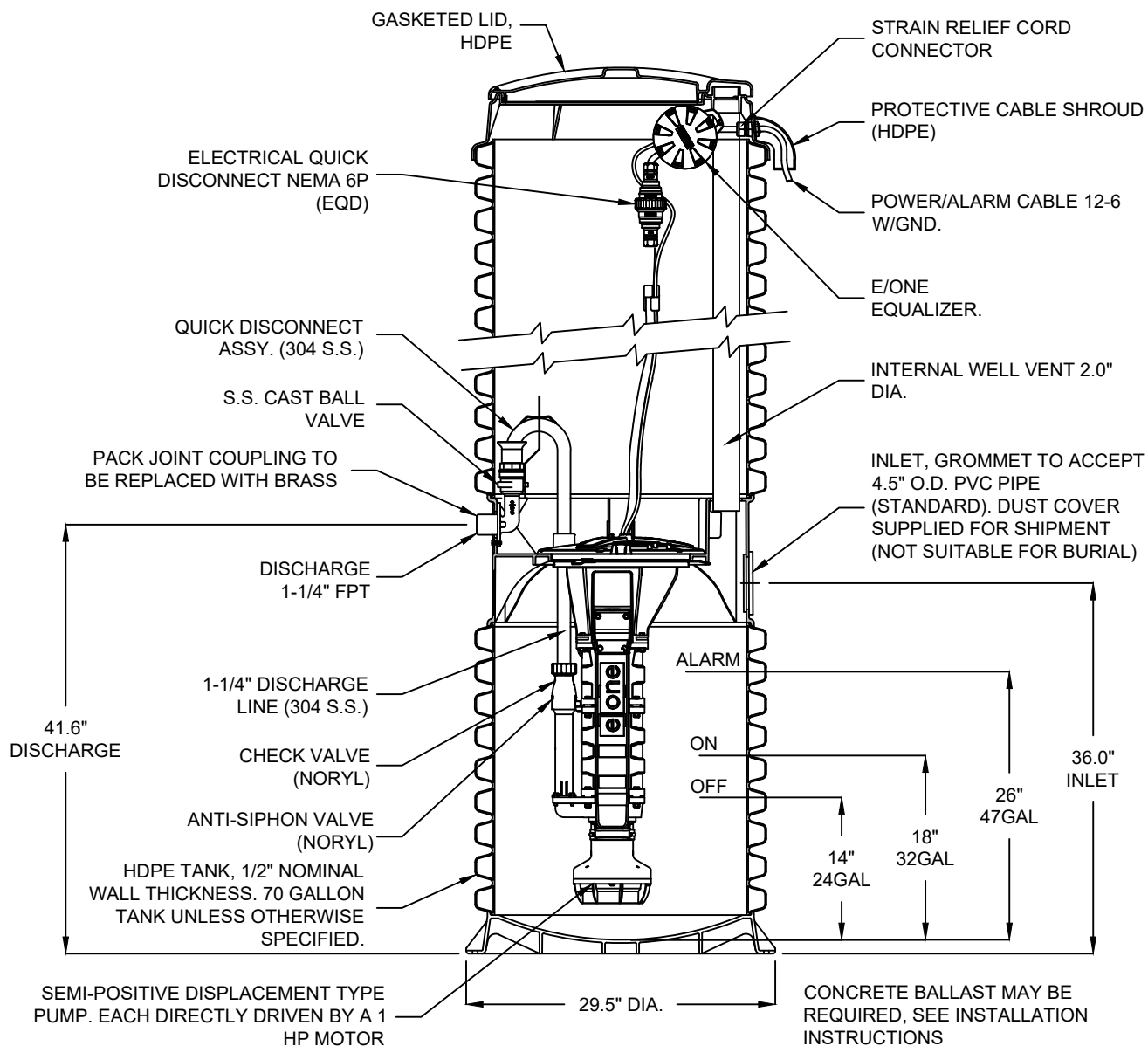
WYE, RISER AND GRAVITY SERVICE LINE

NOT TO SCALE

REV. DATE: 09/06/2024

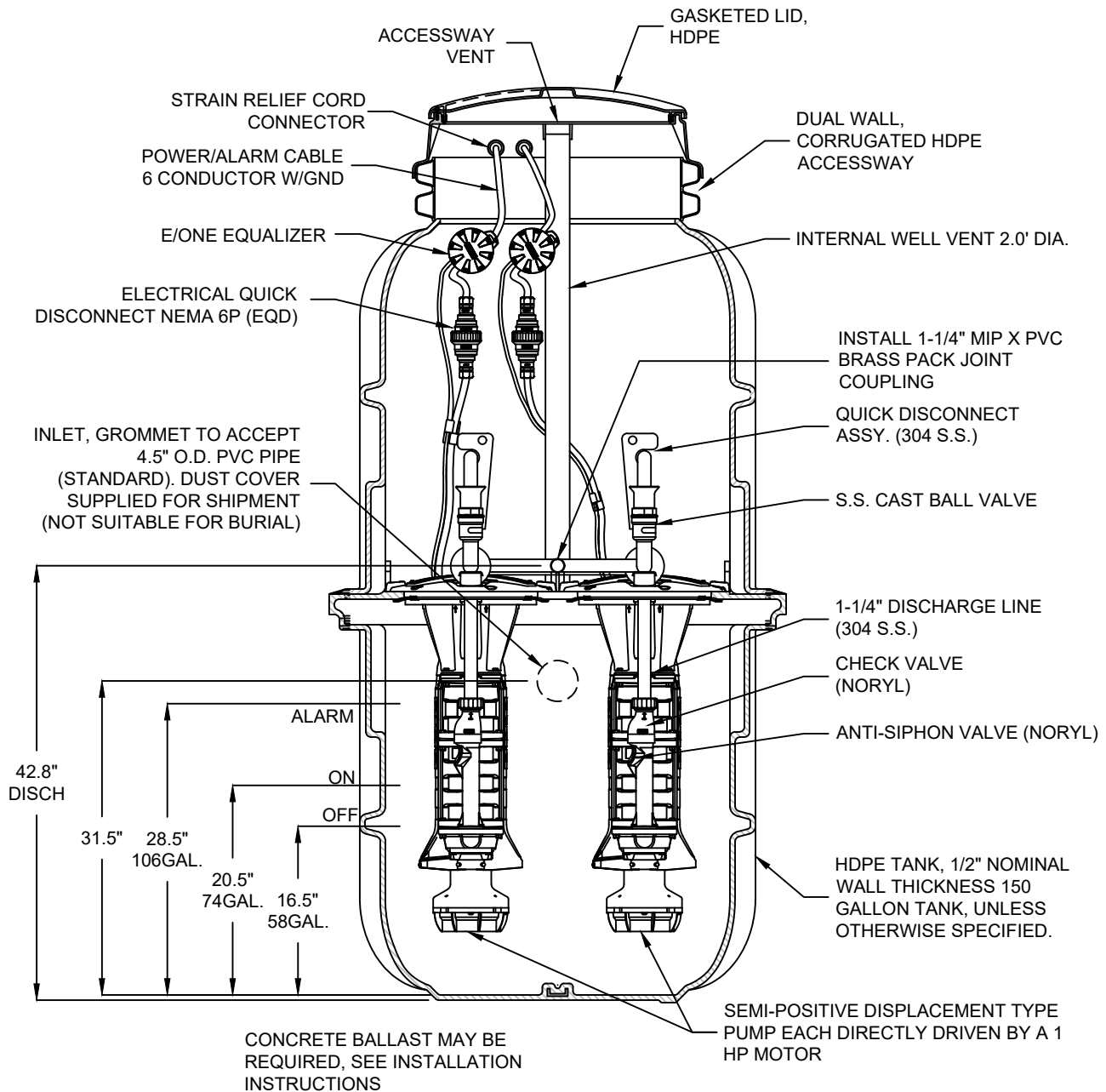


TECHNICAL SPECIFICATIONS
STANDARD DETAIL 26
WYE, RISER AND GRAVITY SERVICE LINE



TYPICAL SIMPLEX GRINDER PUMP STATION
NOT TO SCALE

REV. DATE: 03/06/2023

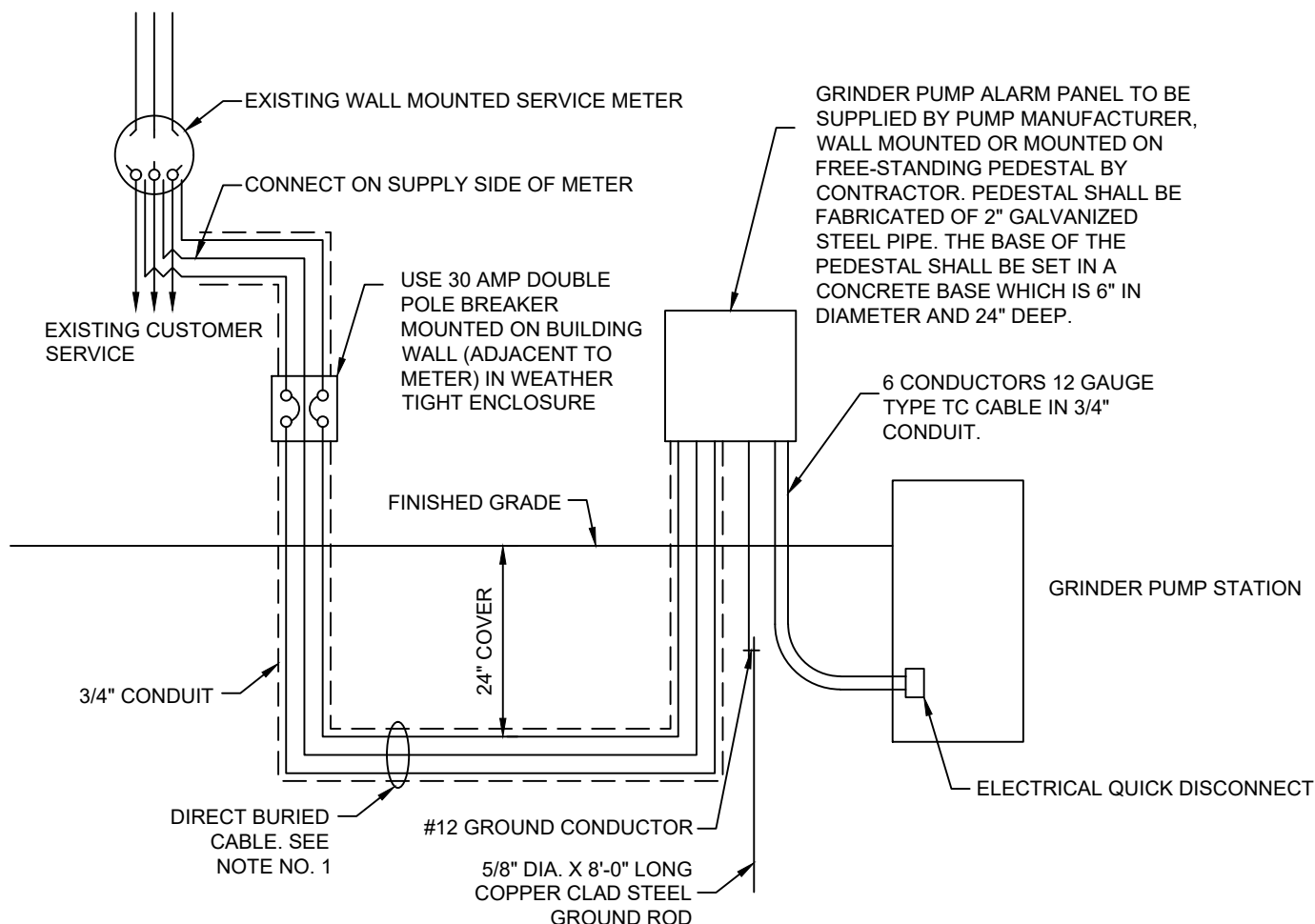


TYPICAL DUPLEX GRINDER PUMP STATION

NOT TO SCALE

REV. DATE: 03/06/2023

120/240 VOLT. SINGLE
PHASE ELECTRICAL
SERVICE FROM UTILITY



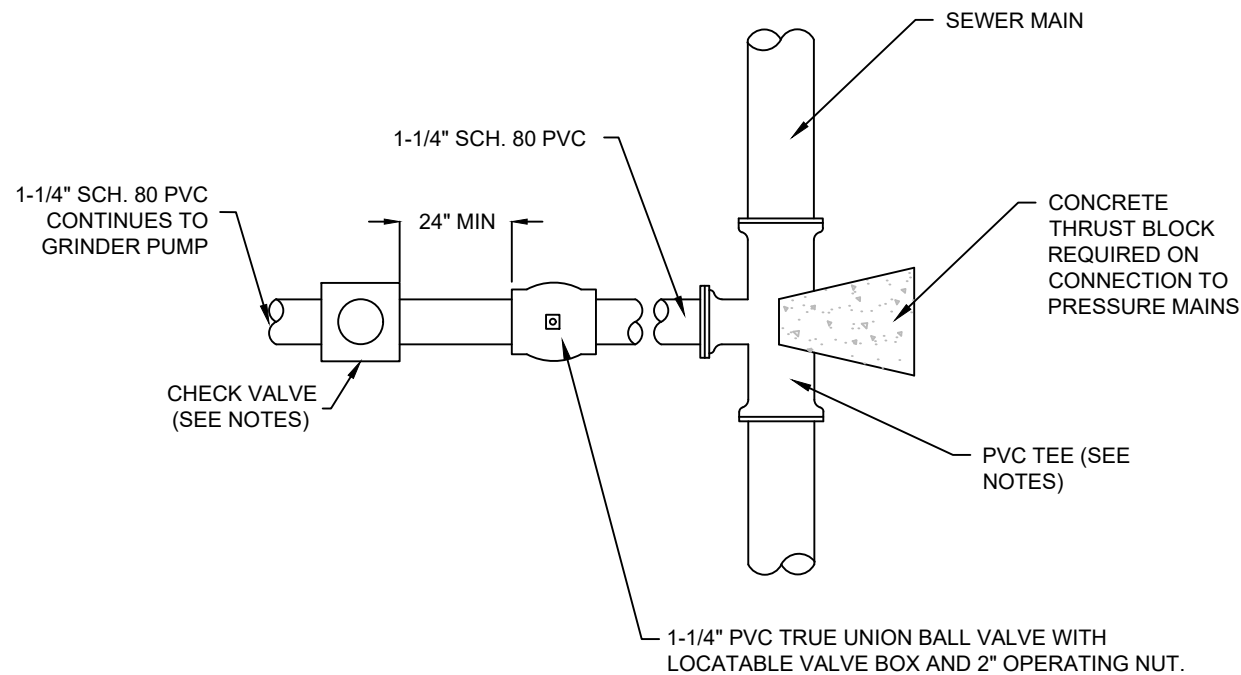
NOTES:

1. DIRECT BURIED CABLE SHALL BE 4 - #10 CONDUCTORS.
2. EACH SERVICE CONNECTION OF THIS TYPE SHALL REQUIRE THE TEMPORARY REMOVAL OF THE CUSTOMER ELECTRIC SERVICE METER. THE CONTRACTOR SHALL BE REQUIRED TO CONTACT THE LOCAL UTILITY COMPANY AND MAKE ARRANGEMENTS FOR THE TEMPORARY REMOVAL OF EACH SERVICE METER AND REINSTALLATION OF METER. THE CONTRACTOR SHALL ALSO COORDINATE WITH THE INDIVIDUAL ELECTRIC SERVICE CUSTOMERS TO MINIMIZE INCONVENIENCE TO THE CUSTOMERS.

TYPICAL GRINDER PUMP STATION ELECTRIC SERVICE DIAGRAM

NOT TO SCALE

REV. DATE: 03/06/2023

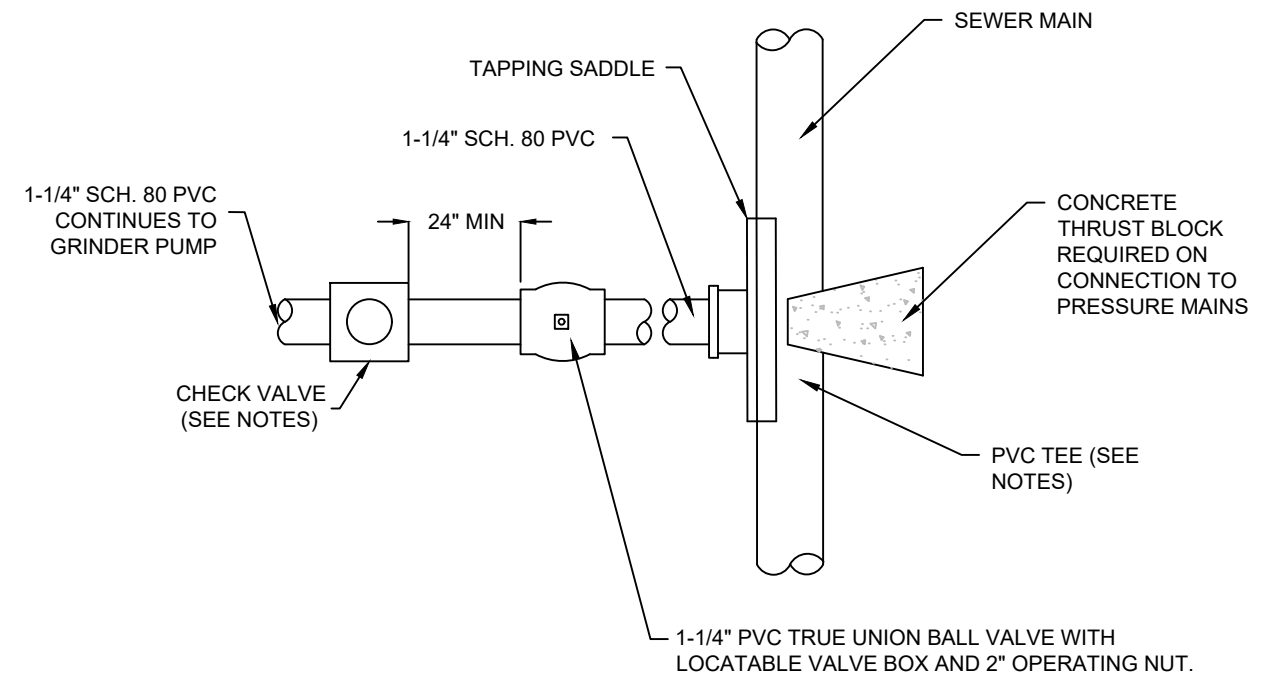


NOTES:

1. DISCHARGE PIPE SHALL BE SCHEDULE 80 PVC.
2. TEE SHALL BE AS REQUIRED FOR ALL NEW MAIN LINES.
3. CONTRACTOR SHALL COORDINATE LOCATION OF BALL VALVE WITH ENGINEER.
4. CONTRACTOR SHALL PROVIDE RECORD DRAWINGS SHOWING EXACT STATION OF LATERAL AND BALL VALVE.
5. DEPTH OF COVER FOR SERVICE LINES SHALL BE 24 INCHES MINIMUM, UNLESS OTHERWISE NOTED.
6. BEDDING AND INSTALLATIONS AS PER "PIPE INSTALLATION DETAIL."
7. INSTALL BRASS CHECK VALVE WITHIN 2' OF SHUTOFF IN LOCATABLE VALVE BOX ON ALL GRINDER SYSTEMS.

LOW PRESSURE LATERAL CONNECTION ON NEW MAIN

NOT TO SCALE



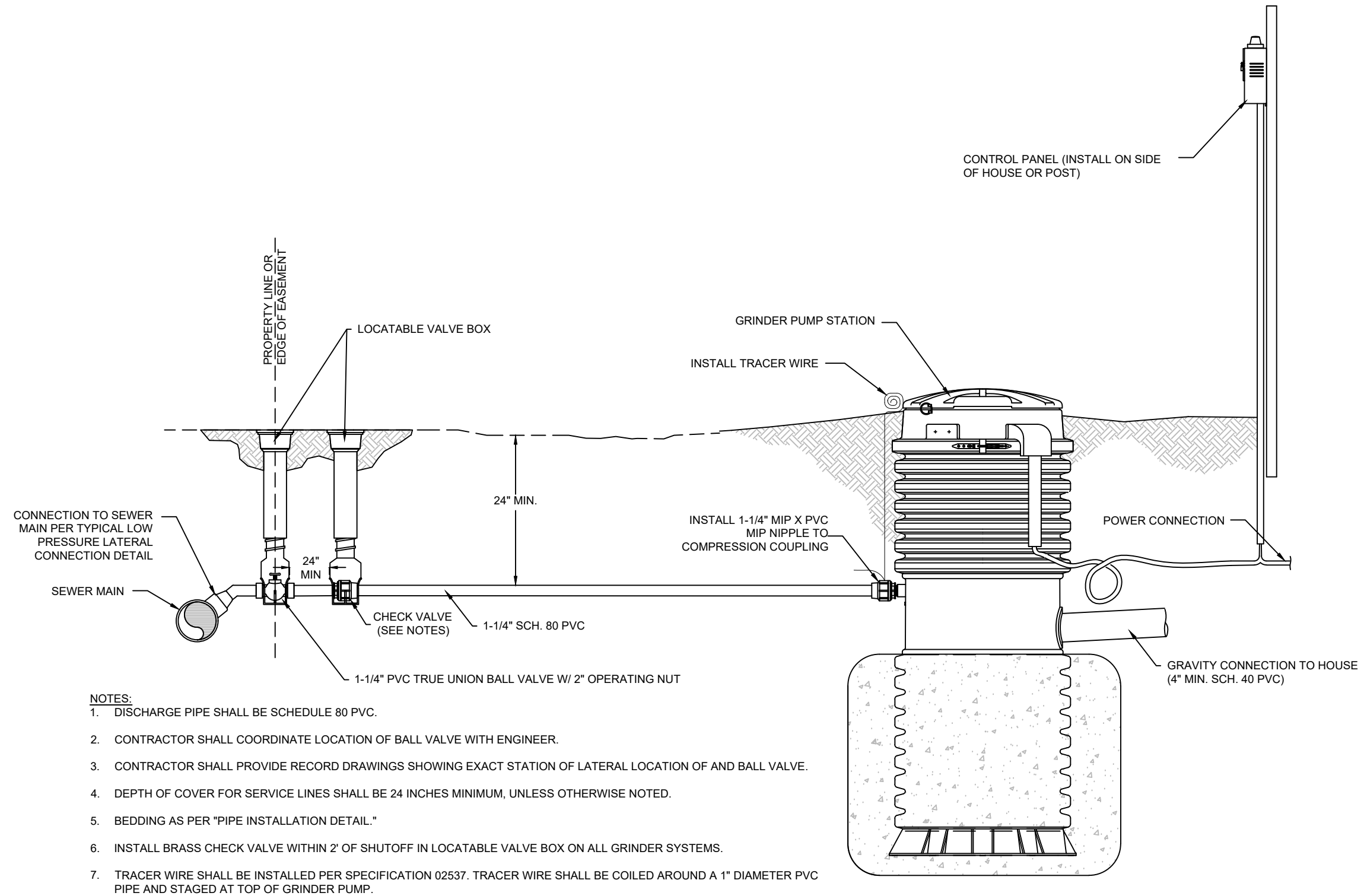
NOTES:

1. DISCHARGE PIPE SHALL BE SCHEDULE 80 PVC.
2. TAPPING SADDLE SHALL BE AS REQUIRED FOR ALL NEW MAIN LINES.
3. CONTRACTOR SHALL COORDINATE LOCATION OF BALL VALVE WITH ENGINEER.
4. CONTRACTOR SHALL PROVIDE RECORD DRAWINGS SHOWING EXACT STATION OF LATERAL AND BALL VALVE.
5. DEPTH OF COVER FOR SERVICE LINES SHALL BE 24 INCHES MINIMUM, UNLESS OTHERWISE NOTED.
6. BEDDING AND INSTALLATIONS AS PER "PIPE INSTALLATION DETAIL."
7. INSTALL BRASS CHECK VALVE WITHIN 2' OF SHUTOFF IN LOCATABLE VALVE BOX ON ALL GRINDER SYSTEMS.

LOW PRESSURE LATERAL CONNECTION ON EXISTING MAIN

NOT TO SCALE

REV. DATE: 09/06/2024



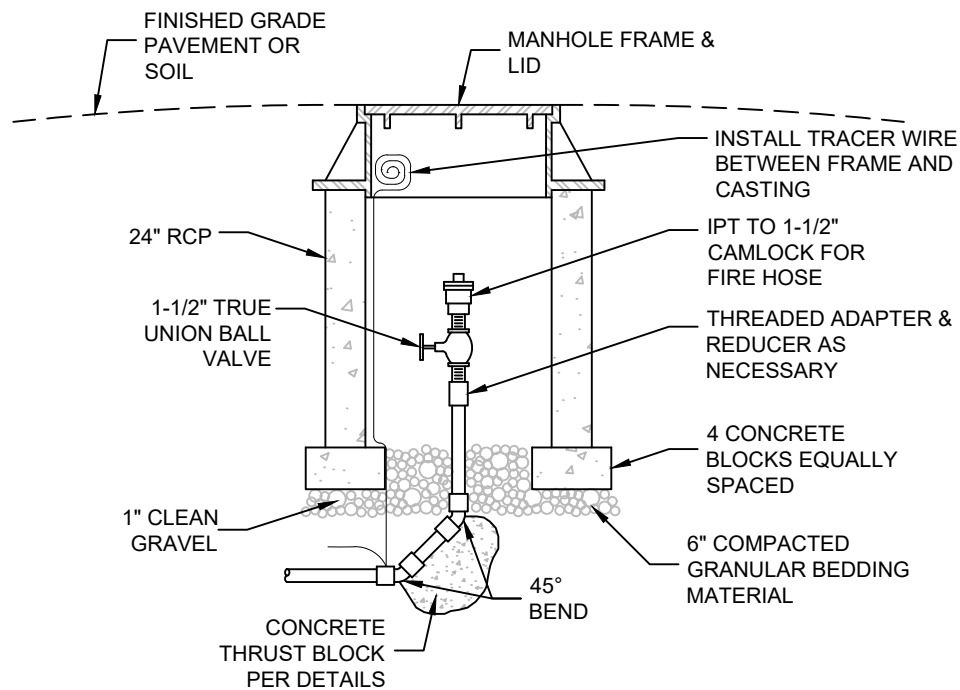
TYPICAL LOW PRESSURE LATERAL & GRINDER PUMP INSTALLATION

SCALE: NONE

REV. DATE: 09/06/2024



TECHNICAL SPECIFICATIONS
STANDARD DETAIL 32
LOW PRESSURE LATERAL & GRINDER PUMP



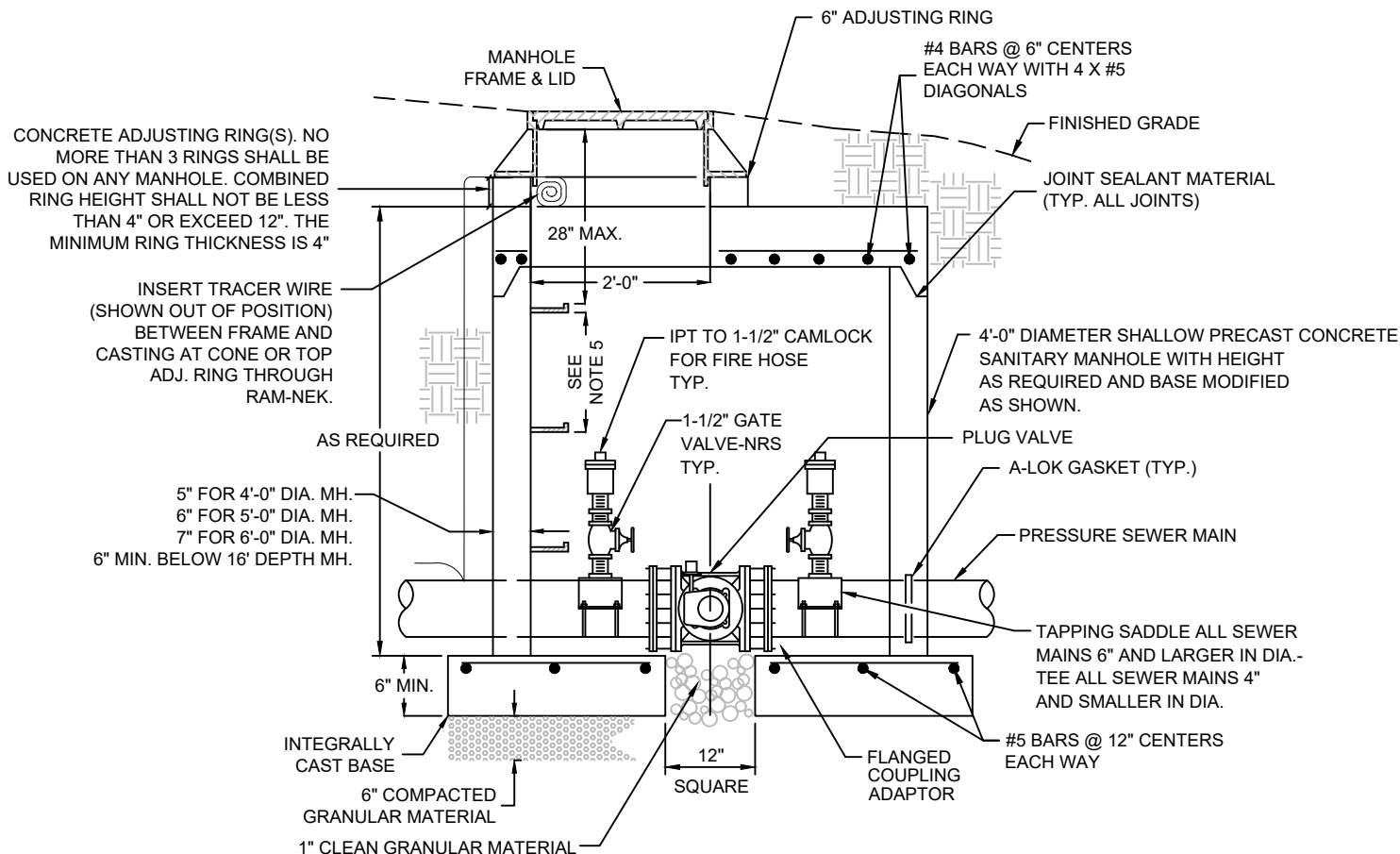
NOTES:

1. CONTRACTOR SHALL PROVIDE ADEQUATE PIPE BACKING AND SUPPORT.
2. CONTRACTOR SHALL PROVIDE ALL NECESSARY FITTINGS TO COMPLETE INSTALLATION TO DIFFERENT SIZE PRESSURE SEWER LINES.
3. TRACER WIRE SHALL BE INSTALLED PER SPECIFICATION 02537. TRACER WIRE SHALL BE COILED AROUND A 1" DIAMETER PVC PIPE AND STAGED AT TOP OF VAULT.

LOW PRESSURE SEWER END-OF-LINE CLEANOUT

NOT TO SCALE

REV. DATE: 09/06/2024



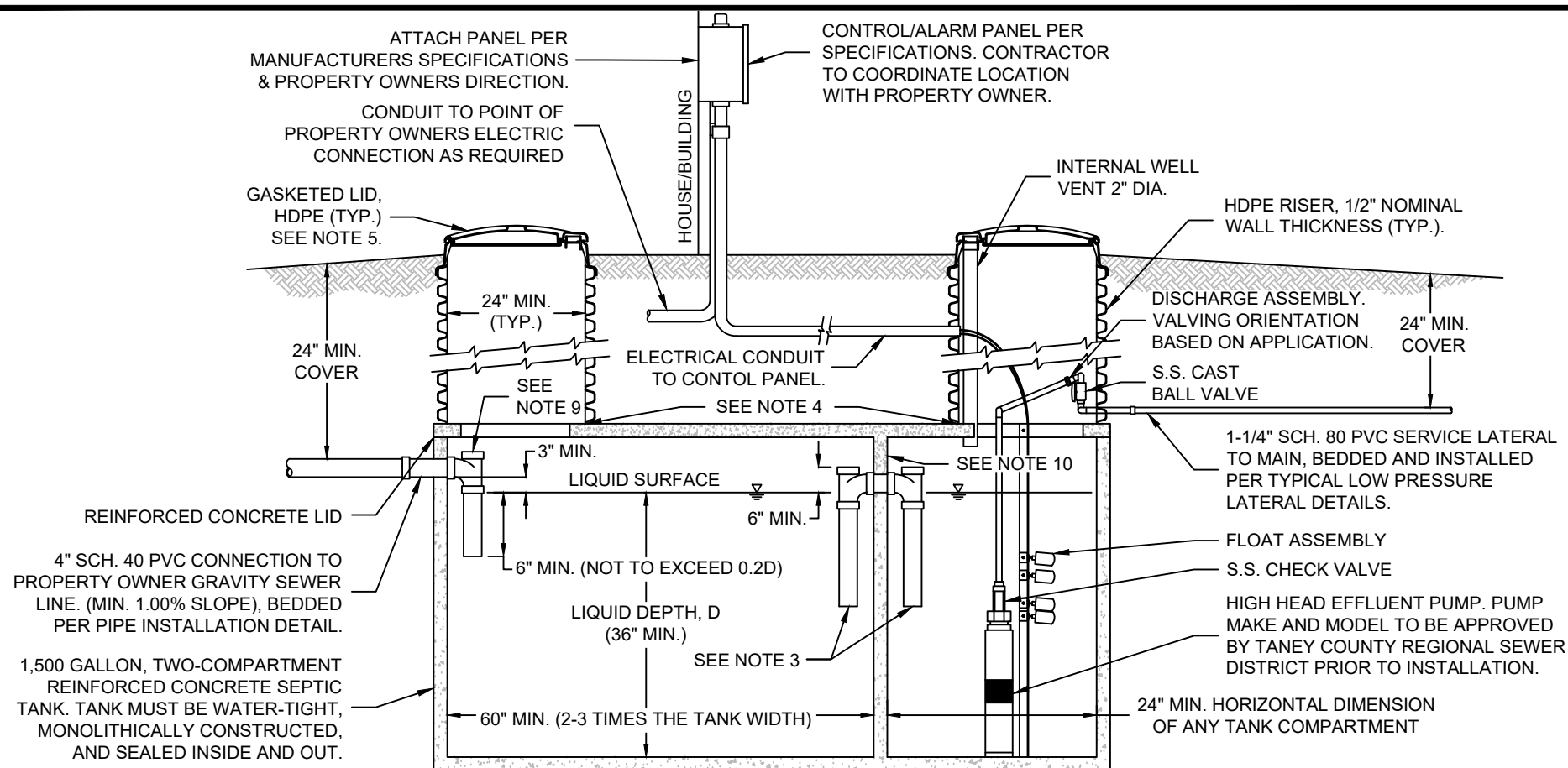
NOTES:

1. CONTRACTOR SHALL PROVIDE ADEQUATE PIPE BACKING AND SUPPORT.
2. CONTRACTOR SHALL PROVIDE ALL NECESSARY FITTINGS TO COMPLETE INSTALLATION TO DIFFERENT SIZE PRESSURE SEWER LINES.
3. UNLESS OTHERWISE NOTED, ALL PRECAST CONCRETE MANHOLES SHALL CONFORM TO ASTM C-478 REQUIREMENTS.
4. GROUTED INVERT SHALL BE TROWELED SMOOTH.
5. MANHOLE STEPS SHALL BE ALIGNED SO AS TO FORM A CONTINUOUS LADDER WITH RUNGS EQUALLY SPACED VERTICALLY IN THE ASSEMBLED MANHOLE AT A MINIMUM DISTANCE OF 12 INCHES APART AND A MAXIMUM OF 16 INCHES APART.
6. TRACER WIRE SHALL BE INSTALLED PER SPECIFICATION 02537. TRACER WIRE SHALL BE COILED AROUND A 1" DIAMETER PVC PIPE AND STAGED AT TOP OF MANHOLE.

IN-LINE FLUSHING ASSEMBLY

NOT TO SCALE

REV. DATE: 03/06/2023



NOTES:

1. ASSEMBLY, INSTALLATION, COMPONENTS, AND MATERIALS SHALL COMPLY WITH ALL TANEY COUNTY REGIONAL SEWER DISTRICT STANDARDS.
2. BEDDING MATERIAL SHALL BE A MINIMUM 6\" THICK USING 3/8\" CRUSHED ROCK.
3. THE BOTTOM OF THE RISER BETWEEN THE PRIMARY AND SECONDARY SIDES OF THE TANK SHALL BE AT A DISTANCE BELOW THE LIQUID SURFACE EQUAL TO 0.4D.
4. INSTALL RISER WITH BUTYL TAPE AND TANK ADAPTER PER RISER MANUFACTURER'S SPECIFICATIONS. ALL JOINTS MUST BE WATER TIGHT.
5. TRAFFIC RATED LIDS AND RISER REQUIRED FOR ALL TRAFFIC AREAS. COVER SHALL BE ADEQUATELY SEALED TO PREVENT ACCIDENTAL ACCESS OR SHALL HAVE AN EFFECTIVE LOCKING DEVICE.
6. SANITARY TEES SHALL BE AT LEAST FOUR INCHES (4\") IN DIAMETER AND SHALL BE AFFIXED TO THE INLET OR OUTLET PIPES WITH A PERMANENT WATERPROOF ADHESIVE.
7. THE SPACE IN THE TANK BETWEEN THE LIQUID SURFACE AND THE TOP OF THE INLET AND OUTLET SANITARY TEES SHALL NOT BE LESS THAN 20 PERCENT OF THE TOTAL REQUIRED CAPACITY.
8. THE INLET SANITARY TEE SHALL EXTEND AT LEAST ONE INCH (1\") ABOVE THE CROWN OF THE INLET SEWER.
9. THERE SHALL BE AT LEAST ONE INCH (1\") BETWEEN THE UNDERSIDE OF THE TOP OF THE TANK AND THE HIGHEST POINT OF THE INLET AND OUTLET SANITARY TEES.
10. ADEQUATE VENTING SHALL BE PROVIDED BETWEEN COMPARTMENTS BY AN OPENING OF AT LEAST 50 SQUARE INCHES NEAR THE TOP OF THE COMPARTMENT WALL.

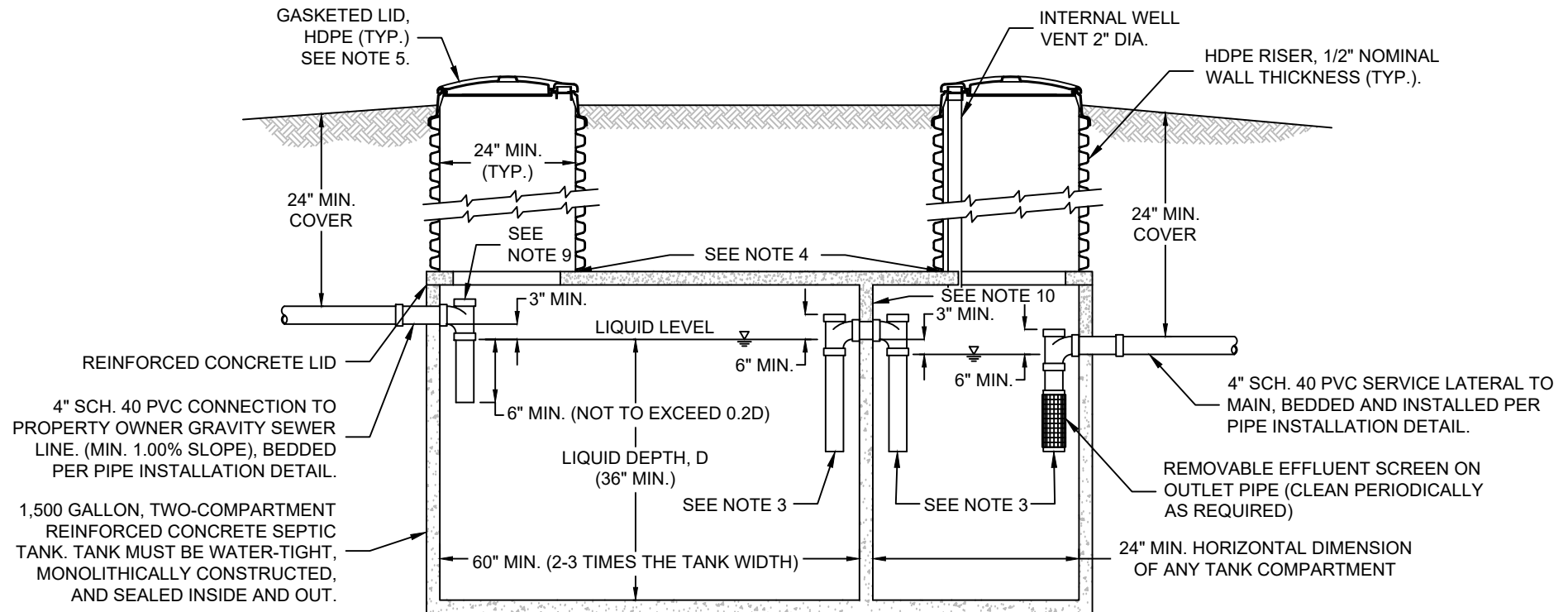
1,500 GALLON SEPTIC TANK WITH EFFLUENT PUMP (STEP) DETAIL

NOT TO SCALE

REV. DATE: 03/06/2023



TECHNICAL SPECIFICATIONS
STANDARD DETAIL 35
1,500 GALLON STEP DETAIL



NOTES:

1. ASSEMBLY, INSTALLATION, COMPONENTS, AND MATERIALS SHALL COMPLY WITH ALL TANEY COUNTY REGIONAL SEWER DISTRICT STANDARDS.
2. BEDDING MATERIAL SHALL BE A MINIMUM 6" THICK USING 3/8" CRUSHED ROCK.
3. THE BOTTOM OF THE RISER BETWEEN THE PRIMARY AND SECONDARY SIDES OF THE TANK SHALL BE AT A DISTANCE BELOW THE LIQUID SURFACE EQUAL TO 0.4D.
4. INSTALL RISER WITH BUTYL TAPE AND TANK ADAPTER PER RISER MANUFACTURER'S SPECIFICATIONS. ALL JOINTS MUST BE WATER TIGHT.
5. TRAFFIC RATED LIDS AND RISER REQUIRED FOR ALL TRAFFIC AREAS. COVER SHALL BE ADEQUATELY SEALED TO PREVENT ACCIDENTAL ACCESS OR SHALL HAVE AN EFFECTIVE LOCKING DEVICE.
6. SANITARY TEES SHALL BE AT LEAST FOUR INCHES (4") IN DIAMETER AND SHALL BE AFFIXED TO THE INLET OR OUTLET PIPES WITH A PERMANENT WATERPROOF ADHESIVE.
7. THE SPACE IN THE TANK BETWEEN THE LIQUID SURFACE AND THE TOP OF THE INLET AND OUTLET SANITARY TEES SHALL NOT BE LESS THAN 20 PERCENT OF THE TOTAL REQUIRED CAPACITY.
8. THE INLET SANITARY TEE SHALL EXTEND AT LEAST ONE INCH (1") ABOVE THE CROWN OF THE INLET SEWER.
9. THERE SHALL BE AT LEAST ONE INCH (1") BETWEEN THE UNDERSIDE OF THE TOP OF THE TANK AND THE HIGHEST POINT OF THE INLET AND OUTLET SANITARY TEES.
10. ADEQUATE VENTING SHALL BE PROVIDED BETWEEN COMPARTMENTS BY AN OPENING OF AT LEAST 50 SQUARE INCHES NEAR THE TOP OF THE COMPARTMENT WALL.

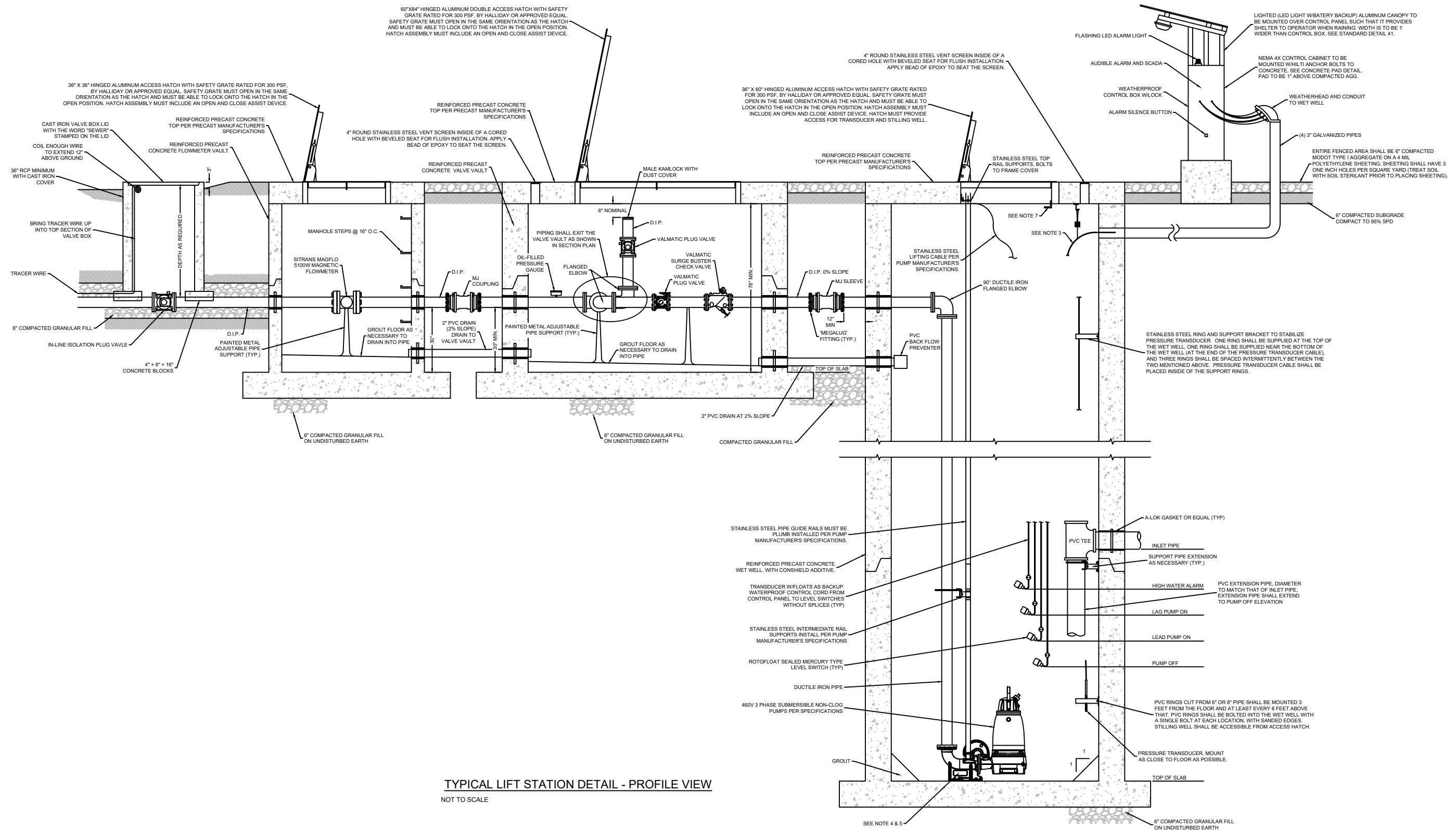
1,500 GALLON SEPTIC TANK WITH EFFLUENT GRAVITY FLOW (STEG) DETAIL

NOT TO SCALE

REV. DATE: 03/06/2023



**TECHNICAL SPECIFICATIONS
STANDARD DETAIL 36
1,500 GALLON STEG DETAIL**

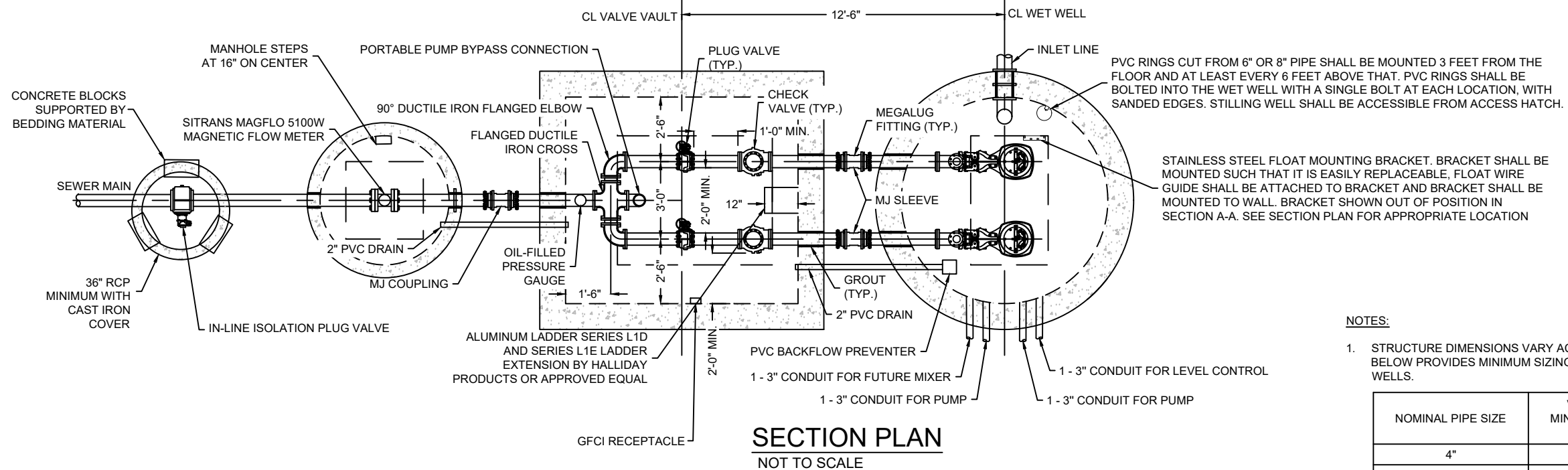
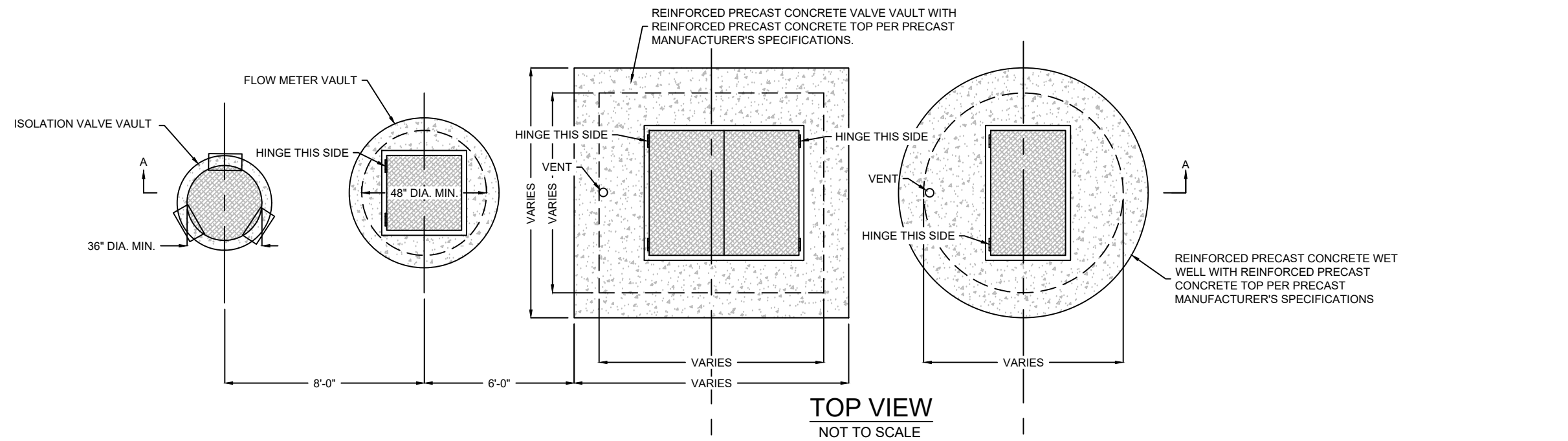


TYPICAL LIFT STATION DETAIL - PROFILE VIEW
NOT TO SCALE

REV. DATE: 09/06/2024



**TECHNICAL SPECIFICATIONS
STANDARD DETAIL 37
TYPICAL LIFT STATION DETAIL - PROFILE**



NOTES:

- STRUCTURE DIMENSIONS VARY ACCORDING TO SIZE OF PIPING. THE TABLE BELOW PROVIDES MINIMUM SIZING GUIDELINES FOR VALVE VAULTS AND WET WELLS.
- | NOMINAL PIPE SIZE | VALVE VAULT
MINIMUM INTERIOR
DIMENSIONS | WET WELL
MINIMUM INTERIOR
DIAMETER |
|-------------------|---|--|
| 4" | 8' X 9' | 8' |
| 6" | 8' X 9' | 8' |
| 8" | 9' X 9' | 8' |
- MINIMUM PUMP SPACING RECOMMENDED BY PUMP MANUFACTURER MAY REQUIRE GREATER DISTANCE BETWEEN PIPES THAN WHAT IS SHOWN. ENGINEER MAY INCREASE VALVE VAULT WIDTH BEYOND THE MINIMUMS IN THIS DETAIL AS NEEDED.

TYPICAL LIFT STATION DETAIL - PLAN VIEW
NOT TO SCALE

REV. DATE: 09/06/2023



**TECHNICAL SPECIFICATIONS
STANDARD DETAIL 38
TYPICAL LIFT STATION DETAIL - PLAN VIEW**

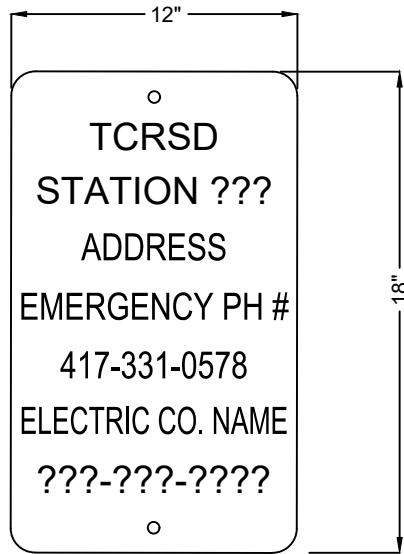
LIFT STATION CONSTRUCTION NOTES

1. PRECAST MANUFACTURER TO SUBMIT SHOP DRAWINGS ON ALL PRECAST STRUCTURES.
2. CERTIFIED TESTS OF THE SPECIFIC PUMPING UNITS SUPPLIED ARE REQUIRED, SEE SPECIFICATIONS.
3. PROVIDE SUFFICIENT CABLE (W/O SPLICES) TO ALLOW DISCONNECTION AND PUMP REMOVAL WITHOUT ENTERING WET WELL. SUPPORT POWER CORD W/STAINLESS STEEL 'J' BOLT AND CABLE SUPPORT MOUNTED IN TOP OF WET WELL.
4. ANCHOR BOLT ALIGNMENT AS SPECIFIED BY THE MANUFACTURER. PUMP SUPPORT ANCHOR BOLT, PUMP SPACING, CLEARANCE AND INSTALLATION DIMENSIONS DEPENDANT ON EQUIPMENT FURNISHED.
5. BOTTOM OF BASIN MUST HAVE SMOOTH TROWELED SURFACE FOR MOUNTING SUPPORT CASTING.
6. STAINLESS STEEL FLOAT MOUNTING BRACKET. BRACKET SHALL BE MOUNTED SUCH THAT IT IS EASILY REPLACEABLE, FLOAT WIRE GUIDE SHALL BE ATTACHED TO BRACKET AND BRACKET SHALL BE MOUNTED TO WALL. BRACKET SHOWN OUT OF POSITION IN SECTION A-A. SEE SECTION PLAN FOR APPROPRIATE LOCATION.
7. BACKFILL ALL STRUCTURES IN 8" LIFTS COMPACTED TO 95% STANDARD PROCTOR.
8. NO ROCK LARGER THAN 4" MAX. DIMENSION SHALL BE PLACED WITHIN 1' OF EXTERIOR SURFACE OF ANY STRUCTURE.
9. PROVIDE 4-3" PVC CONDUITS W/ GALVANIZED WEATHERHEADS. ONE CONDUIT FOR EACH PUMP, ONE FOR MIXER (FUTURE MIXER), ONE FOR LEVEL CONTROL (FLOATS AND TRANSDUCER).
10. ALL PUMP DISCHARGE PIPING WITHIN WET WELL AND VALVE VAULT SHALL BE FLANGED DUCTILE IRON PIPE; ALL BOLTS SHALL BE STAINLESS STEEL.
11. ALL EXTERIOR SURFACES OF WET WELL AND VALVE VAULT SHALL BE COATED WITH TWO COATS OF BITUMINOUS MATERIAL OR APPROVED EQUAL.
12. ALL ACCESS HATCHES TO BE PROVIDED WITH APPROVED LOCKING DEVICES WITH OPEN AND CLOSE ASSIST MECHANISM. HATCHES SHALL BE ALUMINUM, HALLIDAY OR EQUAL. HATCH SHOWN OPENING OUT OF POSITION IN SECTION A-A, SEE TOP VIEW FOR ACTUAL HINGE LOCATIONS. ACCESS HATCH OPENING LOCATION ON WET WELL SHALL BE RECOMMENDED BY PUMP MANUFACTURER. ACCESS HATCH OPENING LOCATIONS ON VALVE VAULT SHALL BE SITUATED TO PROVIDE CLEAR ACCESS TO VALVES AND LADDER AS SHOWN. SAFETY HATCHES TO BE PROVIDED AND SHALL OPEN ON SAME SIDE AS HATCH.
13. ALL PIPE FITTINGS SHALL BE INSTALLED WITH STAINLESS STEEL BOLTS. ALL POWER CORDS AND CONTROL CABLE HANGERS AND STRAIN RELIEF GRIPS SHALL BE STAINLESS STEEL.
14. CONSHIELD ADDITIVE TO BE ADDED TO WET-WELL AND VALVE VAULT CONCRETE MIXES PER SPECIFICATIONS.

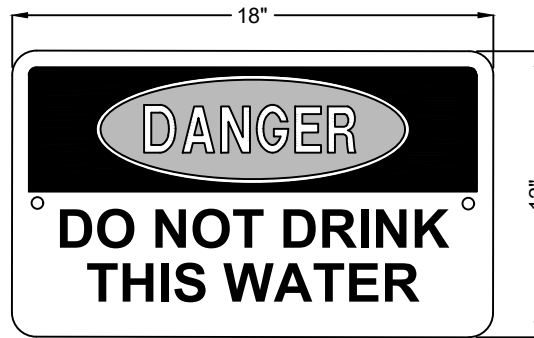
REV. DATE: 09/06/2024



TECHNICAL SPECIFICATIONS STANDARD DETAIL 39 LIFT STATION CONSTRUCTION NOTES



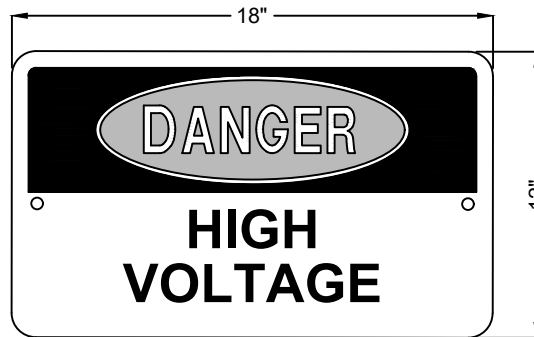
TYPE I SIGN



TYPE II SIGN



TYPE III SIGN



TYPE IV SIGN

WARNING SIGNS STANDARD NOTES:

- 1.) REQUIRED SIGNS TO BE PROVIDED BY OWNER AND INSTALLED BY CONTRACTOR.
- 2.) EACH PUMP STATION SHALL BE EQUIPPED WITH SIGNS PRIOR TO BEING PLACED IN OPERATION.
- 3.) ONE (1) TYPE I SIGN SHALL BE PLACED ON THE FACILITY GATE OR ON THE NEAREST PRACTICAL VERTICAL SURFACE IF NO GATE IS USED.
- 4.) ONE (1) TYPE II SIGN SHALL BE PLACED ON THE FACILITY GATE.
- 5.) ONE (1) TYPE III SIGN AND ONE (1) TYPE IV SIGN SHALL BE PLACED ON THE FACILITY GATE AND ON EACH EXTERIOR WALL OF THE FACILITY.
- 5.) SIGNS SHALL BE CONSTRUCTED OF ALUMINUM WITH A MINIMUM THICKNESS OF 0.080" AND SHALL BE SECURELY FASTENED TO WITHSTAND WIND. LETTERS AND SYMBOLS MAY BE PAINTED OR BAKED ENAMEL AND SHALL BE IN PROPORTION TO THOSE ON THE SIGNS SHOWN.
- 6.) SHADED AREA OF SIGN DETAIL REPRESENTS RED. BLACK AREA REPRESENTS BLACK. WHITE REPRESENTS WHITE.

TYPICAL PUMP STATION WARNING SIGNS

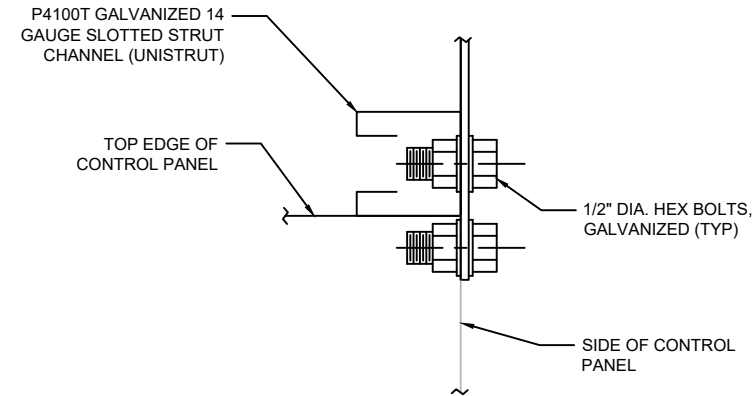
SCALE: NONE

REV. DATE: 09/06/2024

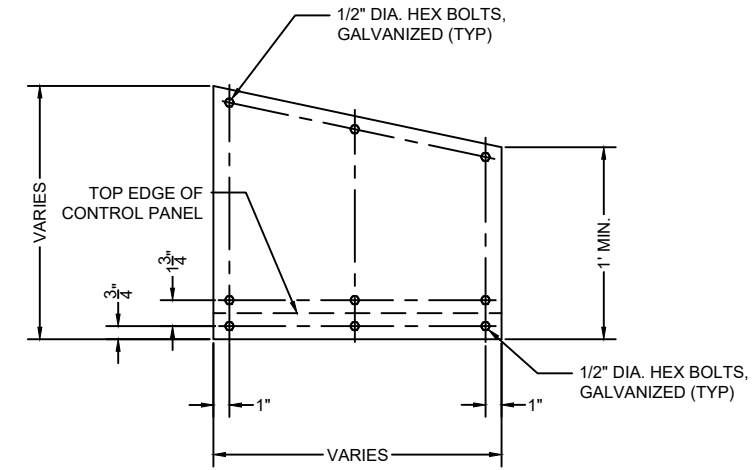


TECHNICAL SPECIFICATIONS
STANDARD DETAIL 40
TYPICAL PUMP STATION WARNING SIGNS

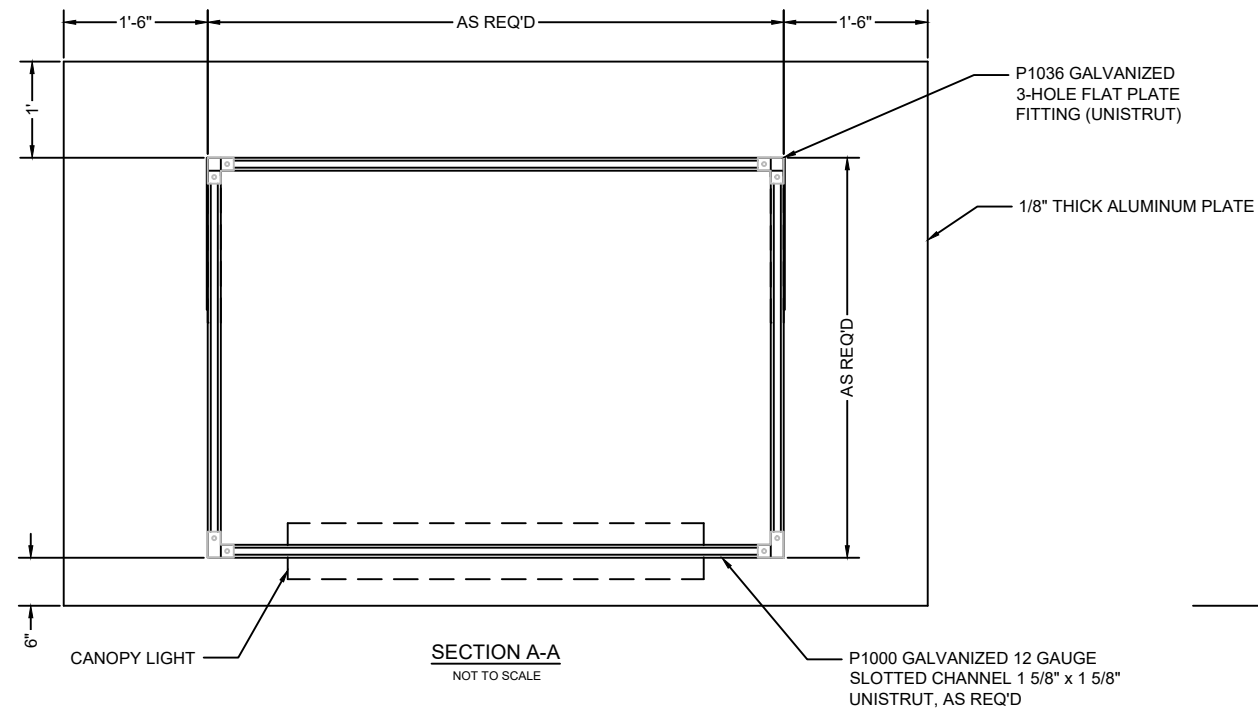
NOTES:
1. ALL HARDWARE TO BE GALVANIZED.



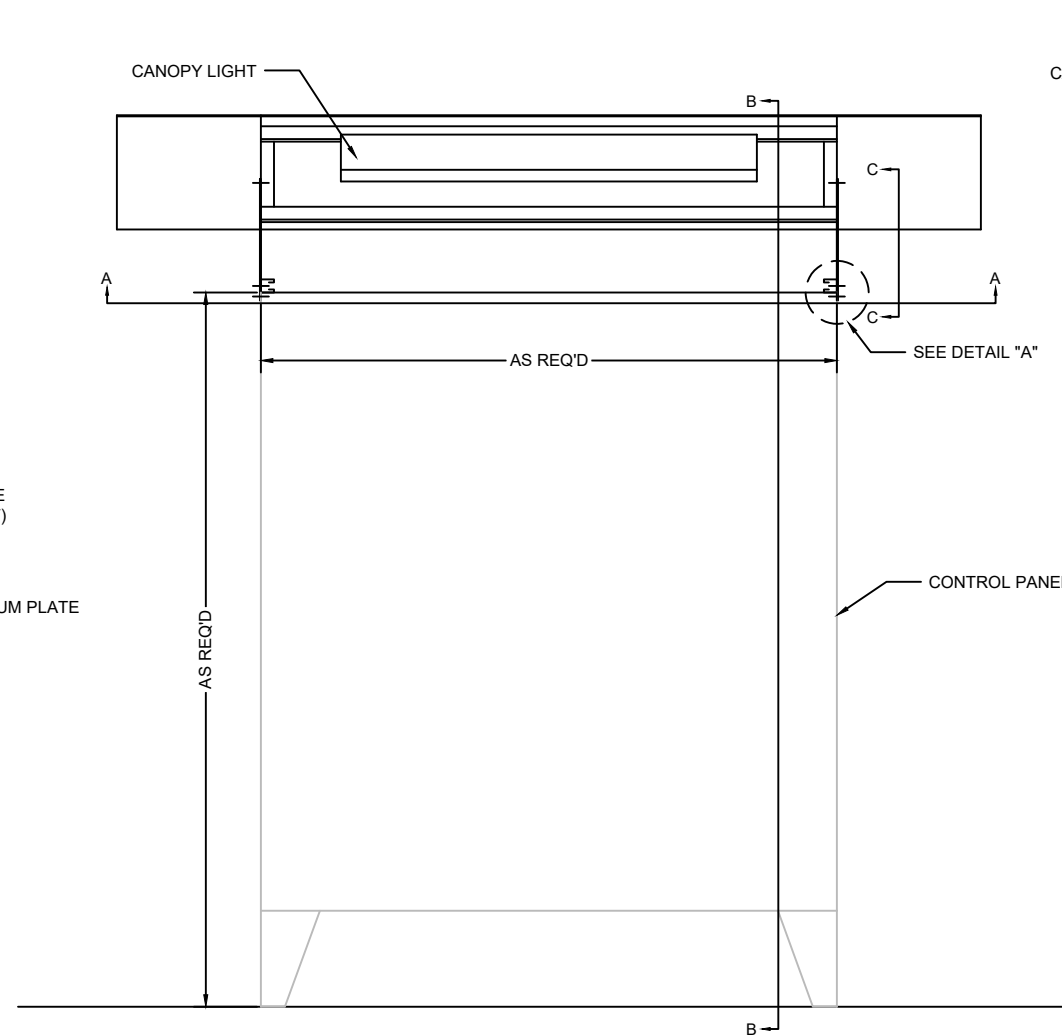
DETAIL "A"
NOT TO SCALE



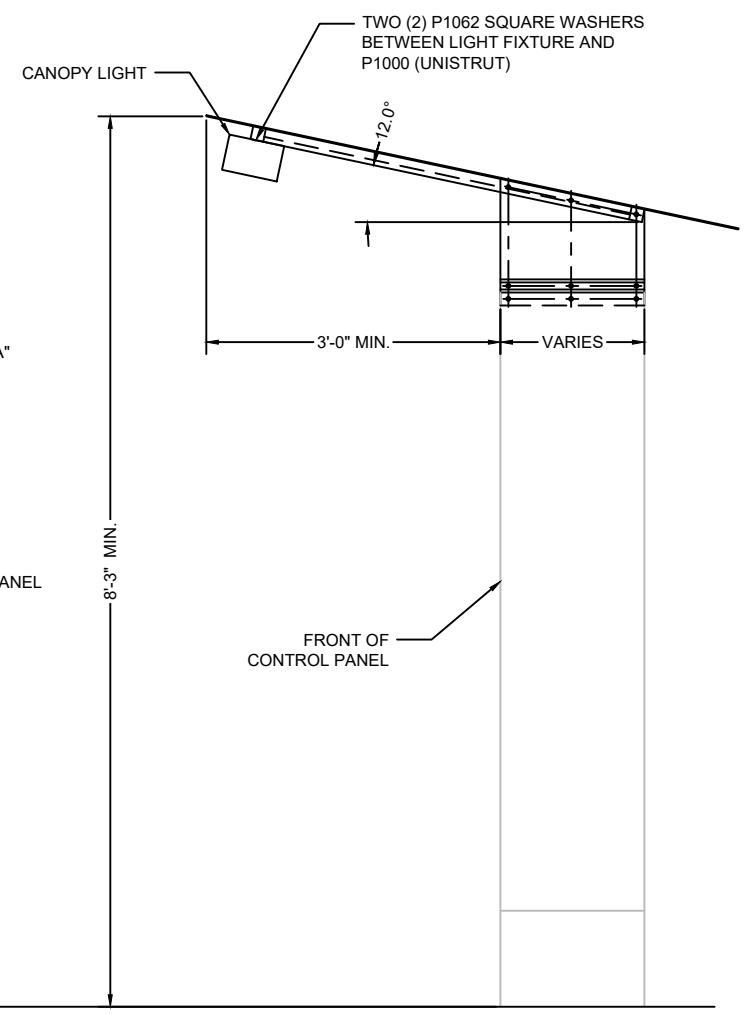
SECTION C-C
NOT TO SCALE



SECTION A-A
NOT TO SCALE



FRONT VIEW
NOT TO SCALE

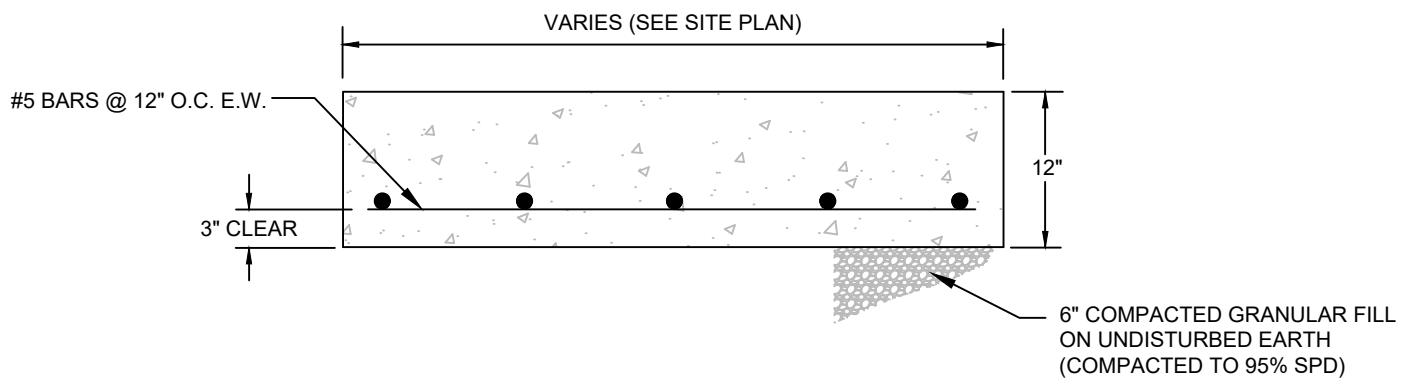


SECTION B-B
NOT TO SCALE



TECHNICAL SPECIFICATIONS
STANDARD DETAIL 41
CONTROL PANEL CANOPY

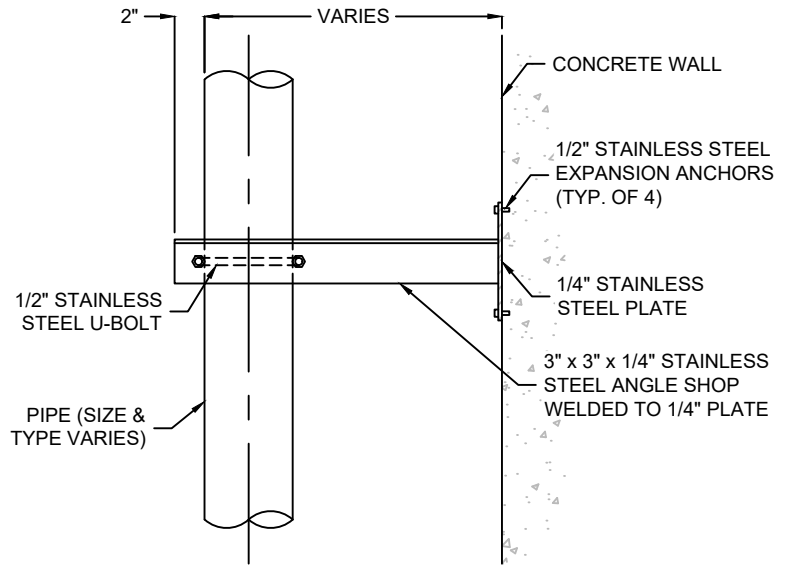
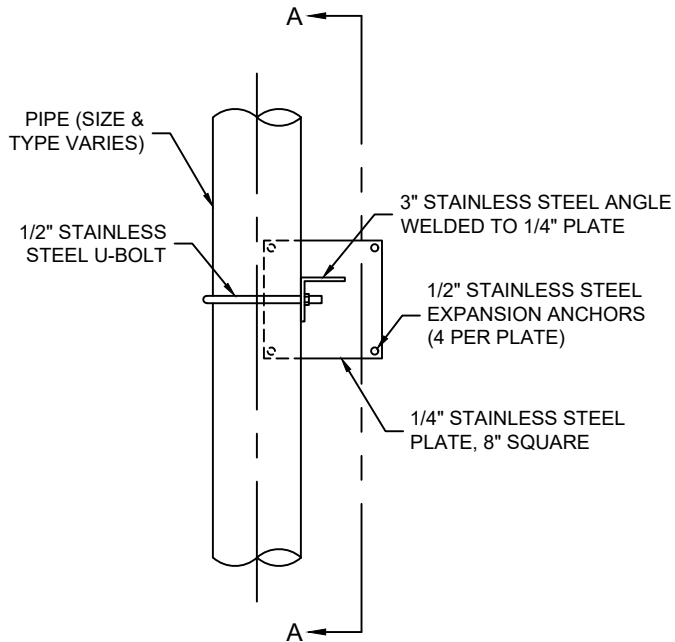
REV. DATE: 09/06/2024



CONCRETE GENERATOR PAD DETAIL

NOT TO SCALE

REV. DATE: 03/06/2023

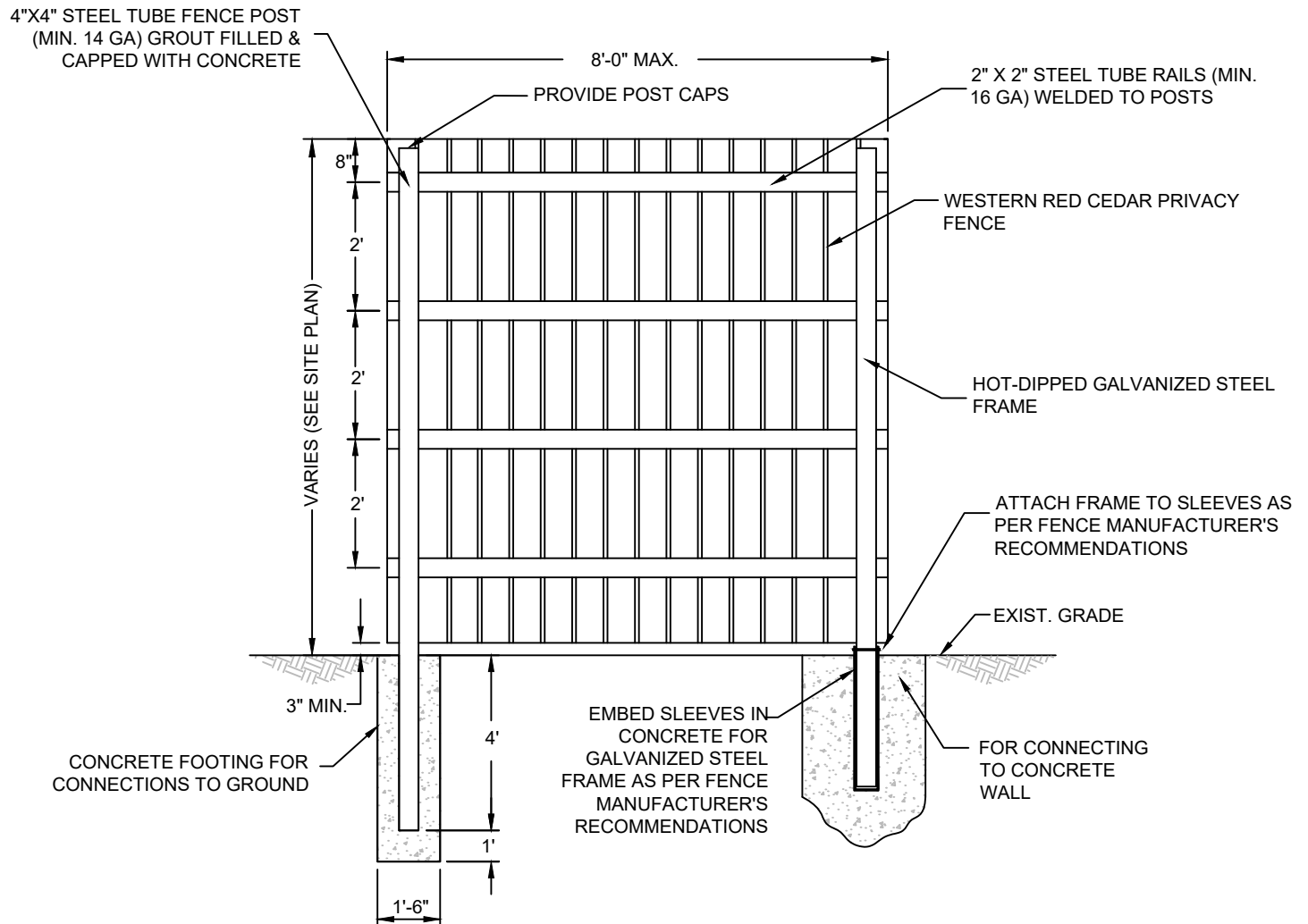


SECTION A-A

PIPE SUPPORT DETAIL

NOT TO SCALE

REV. DATE: 03/06/2023



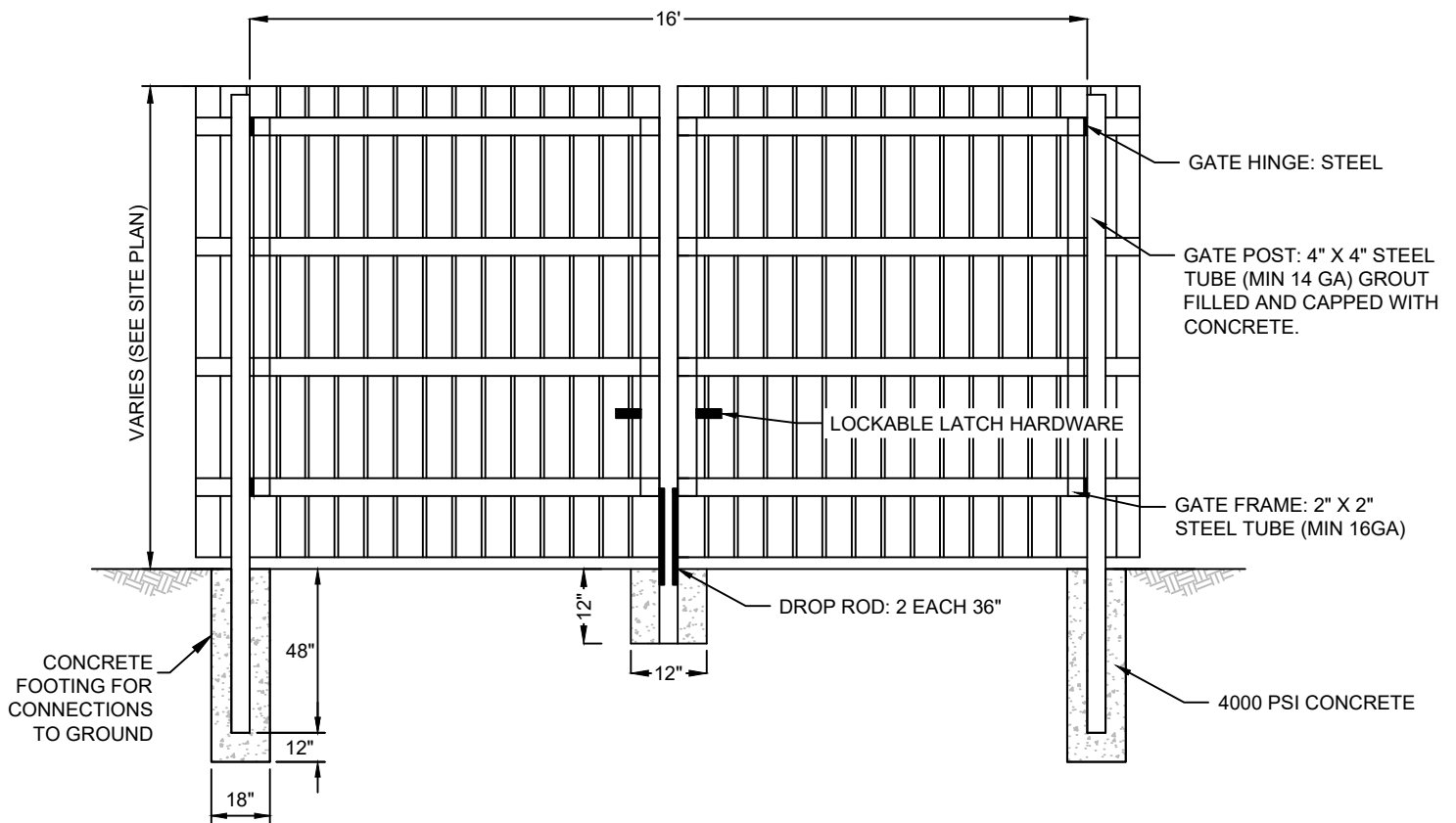
NOTES:

1. USE FOUR (4) RAILS FOR 8' FOOT HIGH FENCE, USE THREE (3) RAILS FOR 6' HIGH FENCE.
2. ALL STEEL SHALL BE HOT-DIPPED GALVANIZED.

WOOD FENCE DETAIL

NOT TO SCALE

REV. DATE: 03/06/2023



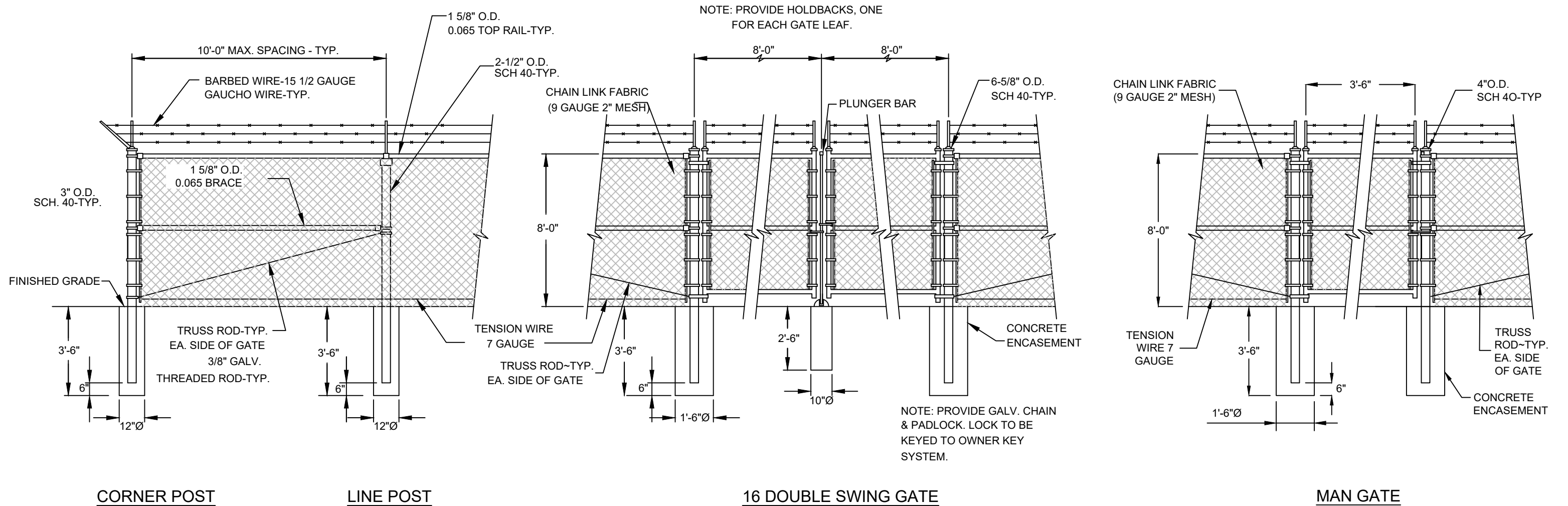
NOTES:

1. USE FOUR (4) RAILS FOR 8' FOOT HIGH FENCE, USE THREE (3) RAILS FOR 6' HIGH FENCE.
2. ALL STEEL SHALL BE HOT-DIPPED GALVANIZED.

WOOD FENCE DOUBLE GATE DETAIL

NOT TO SCALE

REV. DATE: 03/06/2023



NOTES:

1. PROVIDE GALVANIZED CHAIN & PADLOCK. LOCK TO BE KEYED TO OWNER KEY SYSTEM.

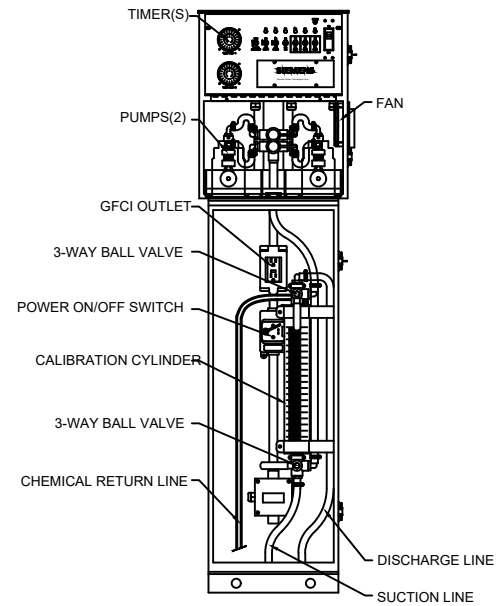
LIFT STATION CHAINLINK FENCE DETAIL

NOT TO SCALE

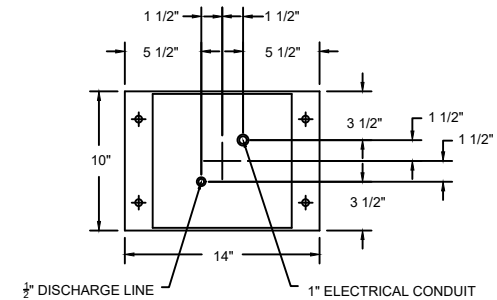
REV. DATE: 03/06/2023



TECHNICAL SPECIFICATIONS
STANDARD DETAIL 46
LIFT STATION CHAINLINK FENCE DETAIL



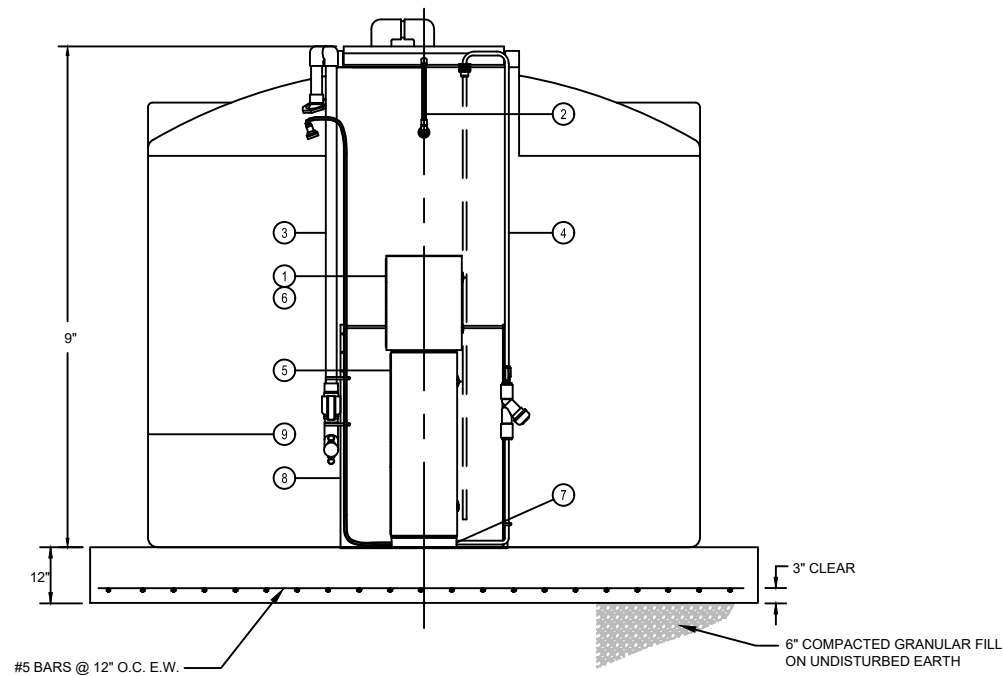
DETAIL VIEWS OF CHEMICAL CONTROL
STAND AND PANEL



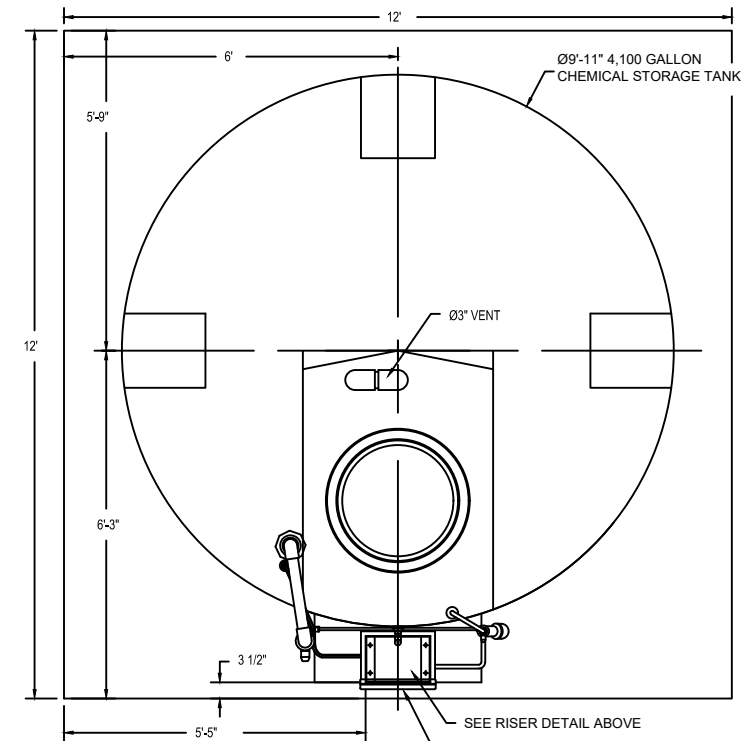
RISER/SLAB PENETRATION DETAIL

- 1 CONTROL BOX ASSEMBLY (W/PUMPS)
- 2 OVERFILL PIPING ASSEMBLY
- 3 Ø2" FILL PIPING ASSEMBLY
- 4 Ø1/2" SUCTION PIPING ASSEMBLY
- 5 CALIBRATION STAND ASSEMBLY
- 6 PUMP(S)
- 7 14" X 10" SS PIPE STAND RISER
- 8 36" X 24" X 48" SS TANK PIPE/UTIL STAND
- 9 4,100 GALLON TANK: 9'-10" DIAMETER, 9'-0" HIGH

NOMENCLATURE



ELEVATION



PLAN VIEW

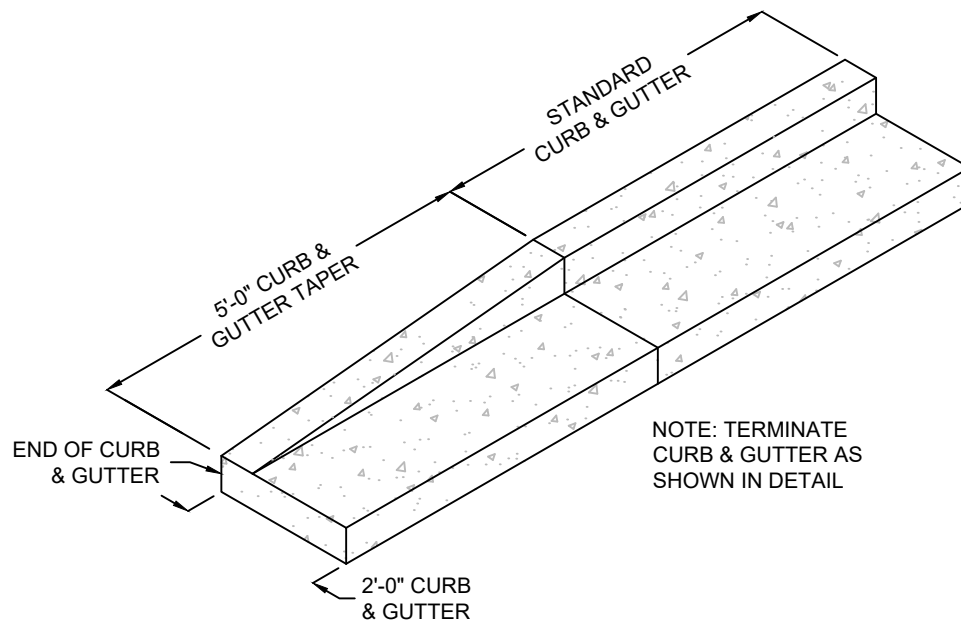
CONTRACTOR TO CONSTRUCT 2" PVC DISCHARGE LINE WITH 1/2" TYGON TUBING INSIDE FROM FEED SYSTEM TO CONCRETE WET WELL. CONTRACTOR SHALL AVOID USING 90 DEGREE FITTINGS ON 2" PVC LINE (45 DEGREE OR SWEEP IS ACCEPTABLE). PVC PIPE SHALL SLOPE BACK TO WET WELL TO ENSURE DRAINAGE.

ODOR CONTROL
CHEMICAL FEED AND STORAGE UNIT

REV. DATE: 03/06/2023



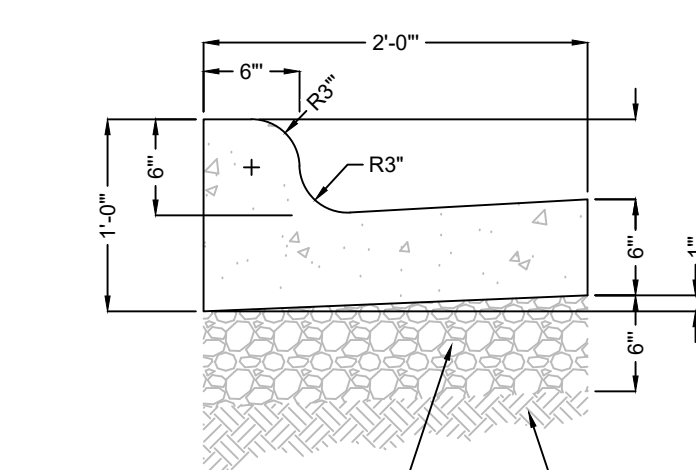
TECHNICAL SPECIFICATIONS
STANDARD DETAIL 47
ODOR CONTROL



CURB TRANSITION DETAIL

NOT TO SCALE

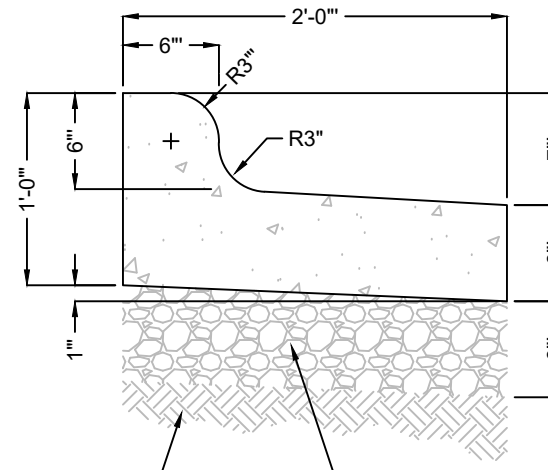
REV. DATE: 03/06/2023



MoDOT TYPE 5 AGGREGATE
BASE COMPACTED TO 100% SPD
AS DETERMINED BY ASTM D 698

SUBGRADE COMPACTED TO 95%
STANDARD PROCTOR DENSITY
AS DETERMINED BY ASTM D 698

CATCH CURB



MoDOT TYPE 5 AGGREGATE
BASE COMPACTED TO 100% SPD
AS DETERMINED BY ASTM D 698

SPILL CURB

NOTES:

1. EXPANSION JOINTS SHALL BE FORMED BY A ONE-HALF (1/2) INCH THICK PREFORMED JOINT FILLER, CUT TO THE CONFIGURATION OF THE FULL SIZE OF THE CURB AND GUTTER SECTION AND BEING SECURED SO THAT THEY ARE NOT MOVED BY DEPOSITING AND COMPACTING THE CONCRETE AT THESE JOINTS. THE EDGES OF THESE JOINTS SHALL BE ROUNDED WITH AN EDGING TOOL ONE-EIGHTH (1/8) INCH RADIUS.
2. EXPANSION JOINTS SHALL BE PLACED WHERE CURB AND GUTTER ABUTS OTHER STRUCTURES AND AT ALL TANGENT POINTS TO CURBS. EXPANSION JOINTS SHALL NOT BE SPACED MORE THAN 50 FEET APART ON STRAIGHT RUNS FOR HAND LAID CURBS AND NOT MORE THAN 100 FEET APART FOR MACHINE LAID CURB AND GUTTER PROVIDED THAT ONE-HALF (1/2) INCH THICK JOINT FILLER IS USED. ALL JOINTS SHALL BE FORMED AT RIGHT ANGLES TO THE ALIGNMENT OF THE CURB AND GUTTER.
3. CONTRACTION JOINTS SHALL BE CONSTRUCTED BY INSERTING A REMOVABLE METAL TEMPLATE IN THE FRESH CONCRETE, THEY SHALL NOT BE SAW CUT, CONTRACTION JOINTS SHALL BE TO A DEPTH OF NOT LESS THAN ONE AND ONE-FOURTH (1-1/4) INCHES BELOW THE SURFACE AND TO A WIDTH NOT TO EXCEED THREE-EIGHTHS (3/8) INCH. CONTRACTION JOINTS SHALL BE LOCATED APPROXIMATELY 10 FEET APART.

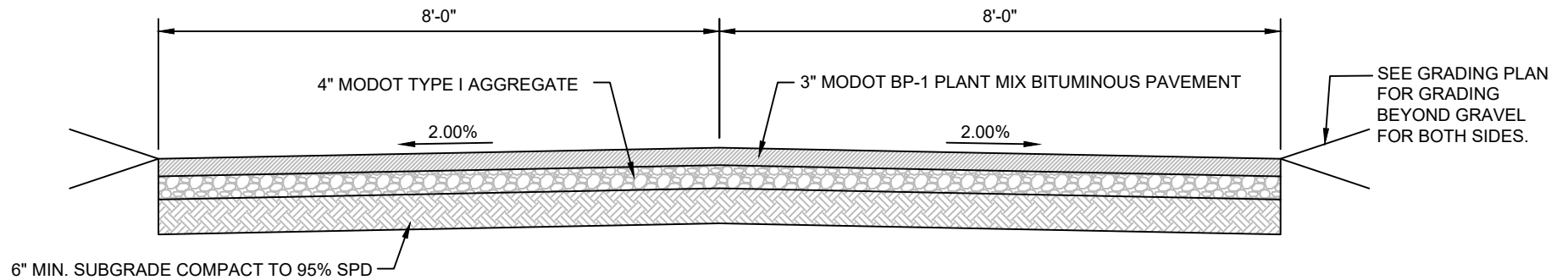
24" CONCRETE CURB AND GUTTER

NOT TO SCALE

REV. DATE: 03/06/2023

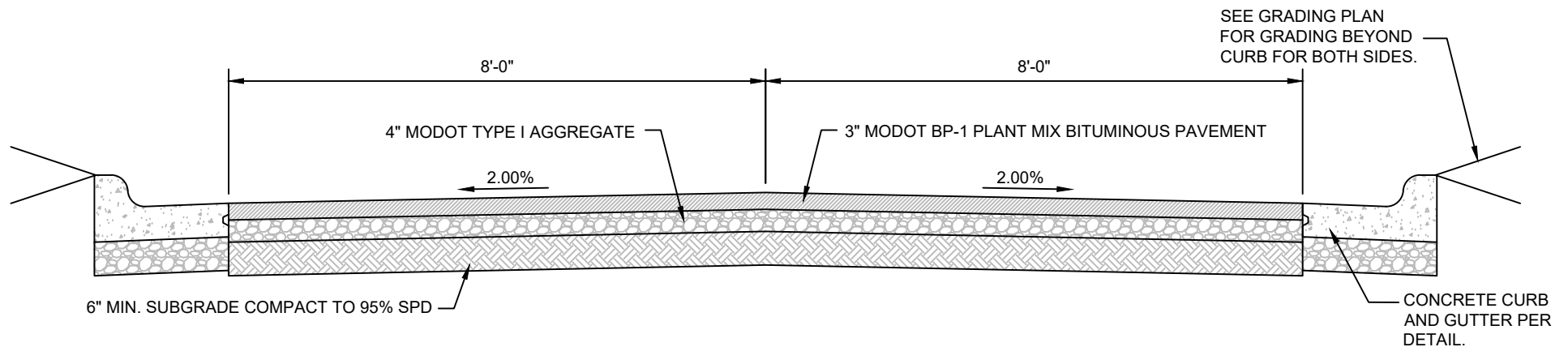


TECHNICAL SPECIFICATIONS
STANDARD DETAIL 50
24" CONCRETE CURB AND GUTTER



TYPICAL LIFT STATION ROAD CROSS SECTION WITHOUT CURB

NOT TO SCALE



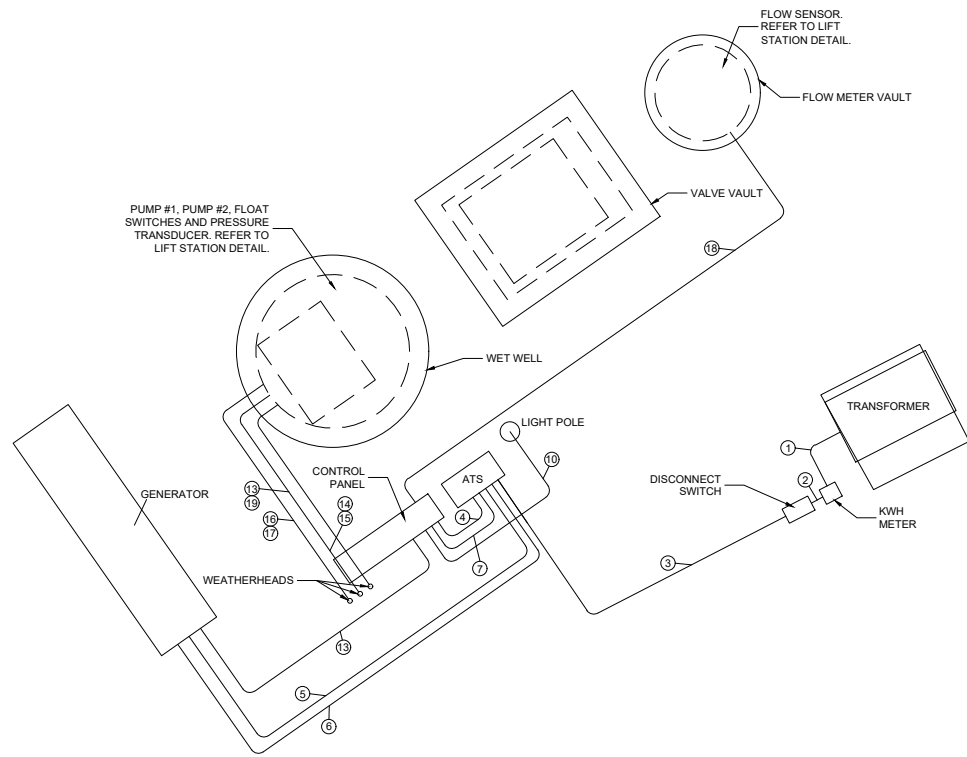
TYPICAL LIFT STATION ROAD CROSS SECTION WITH CURB

NOT TO SCALE

REV. DATE: 03/06/2023



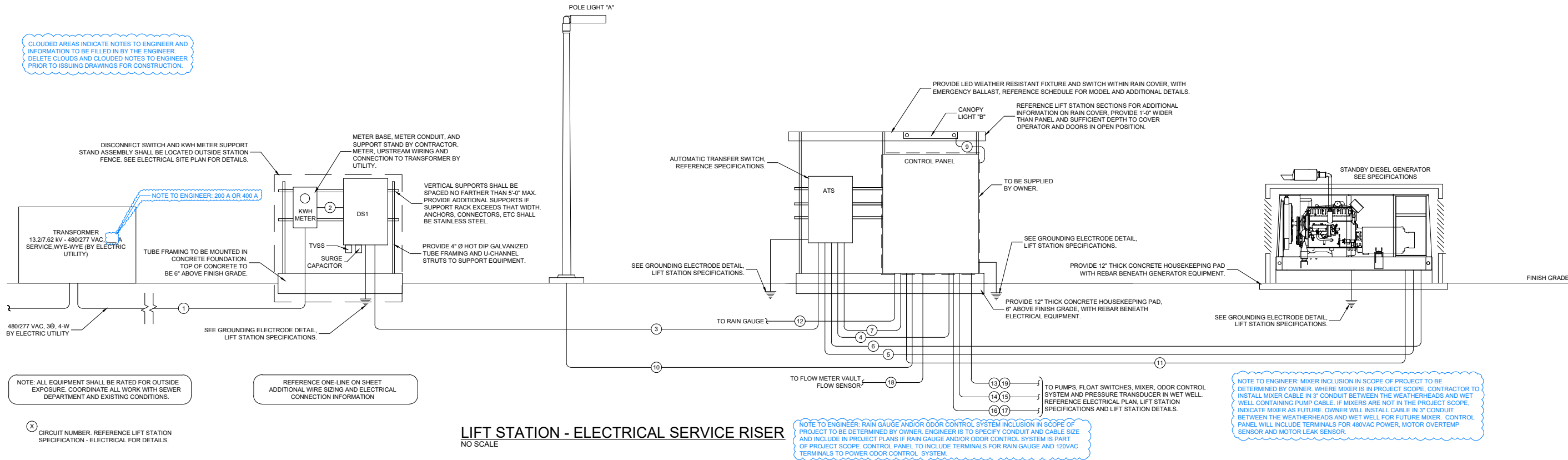
TECHNICAL SPECIFICATIONS
STANDARD DETAIL 51
LIFT STATION ROAD CROSS SECTION



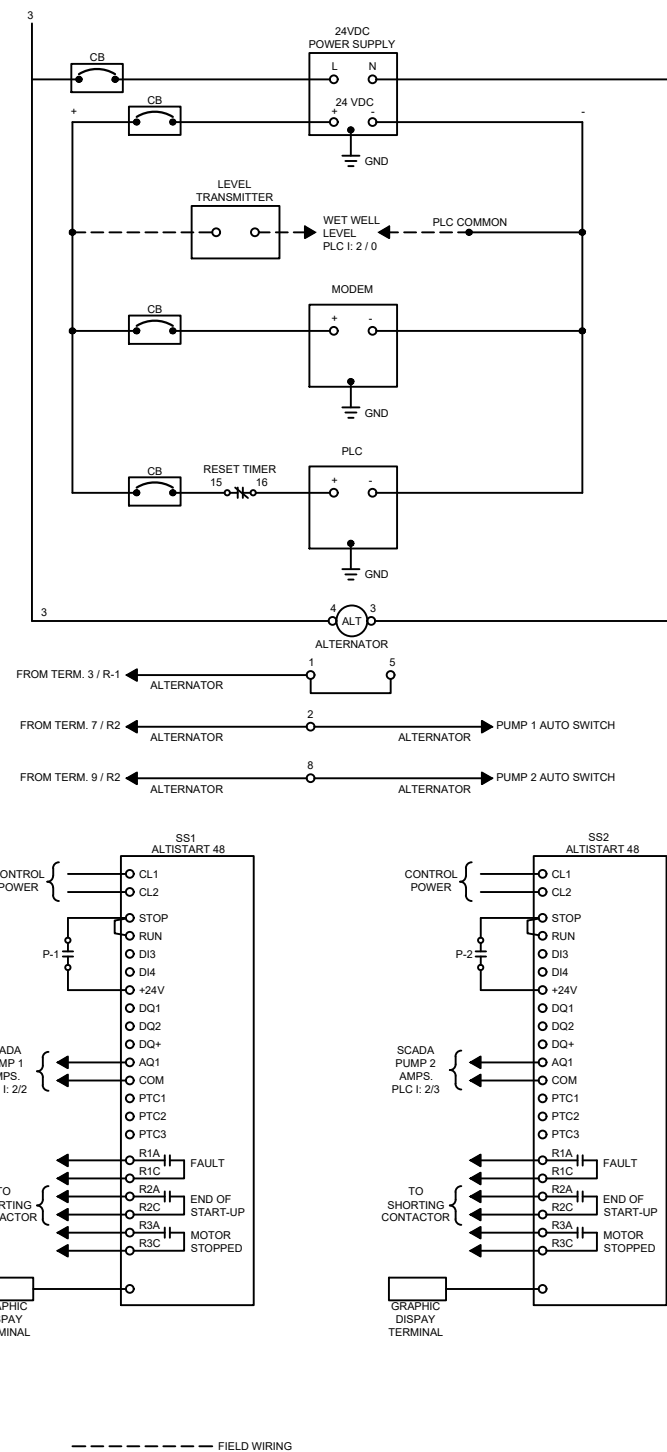
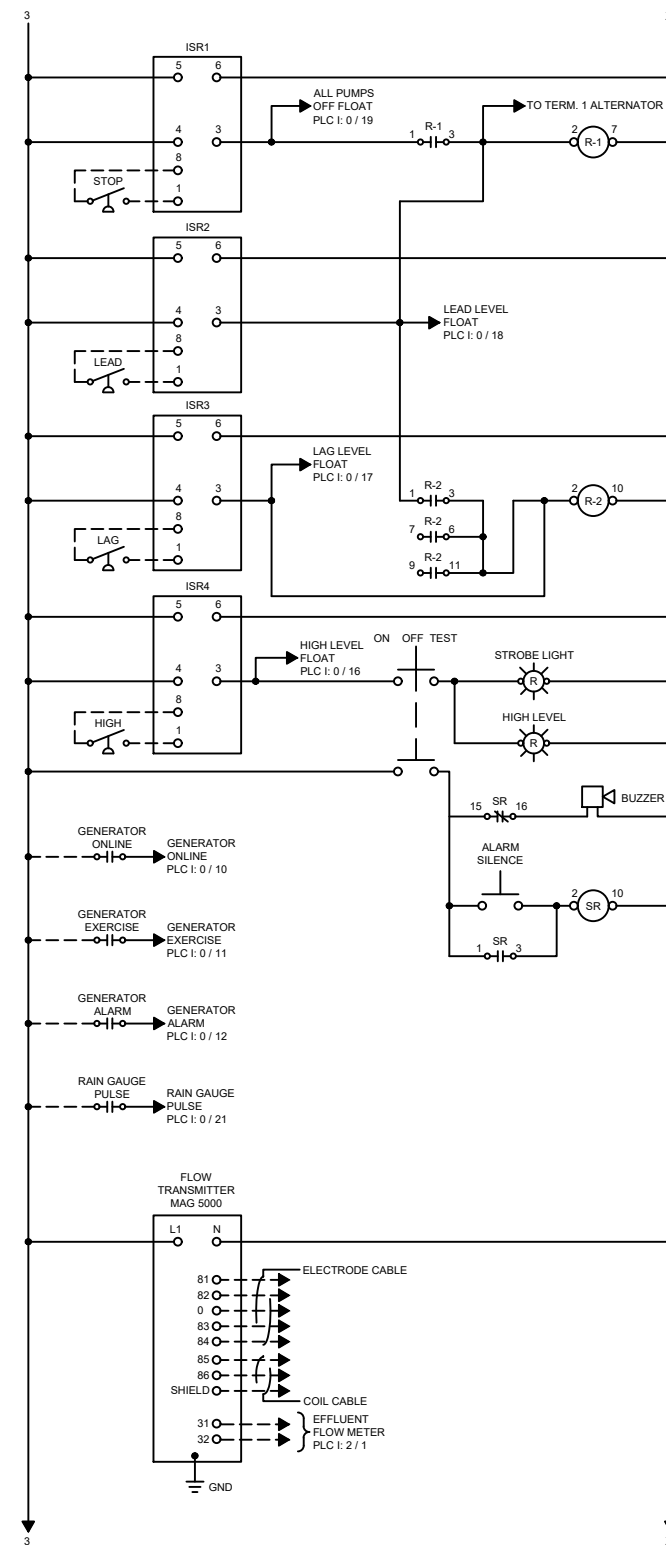
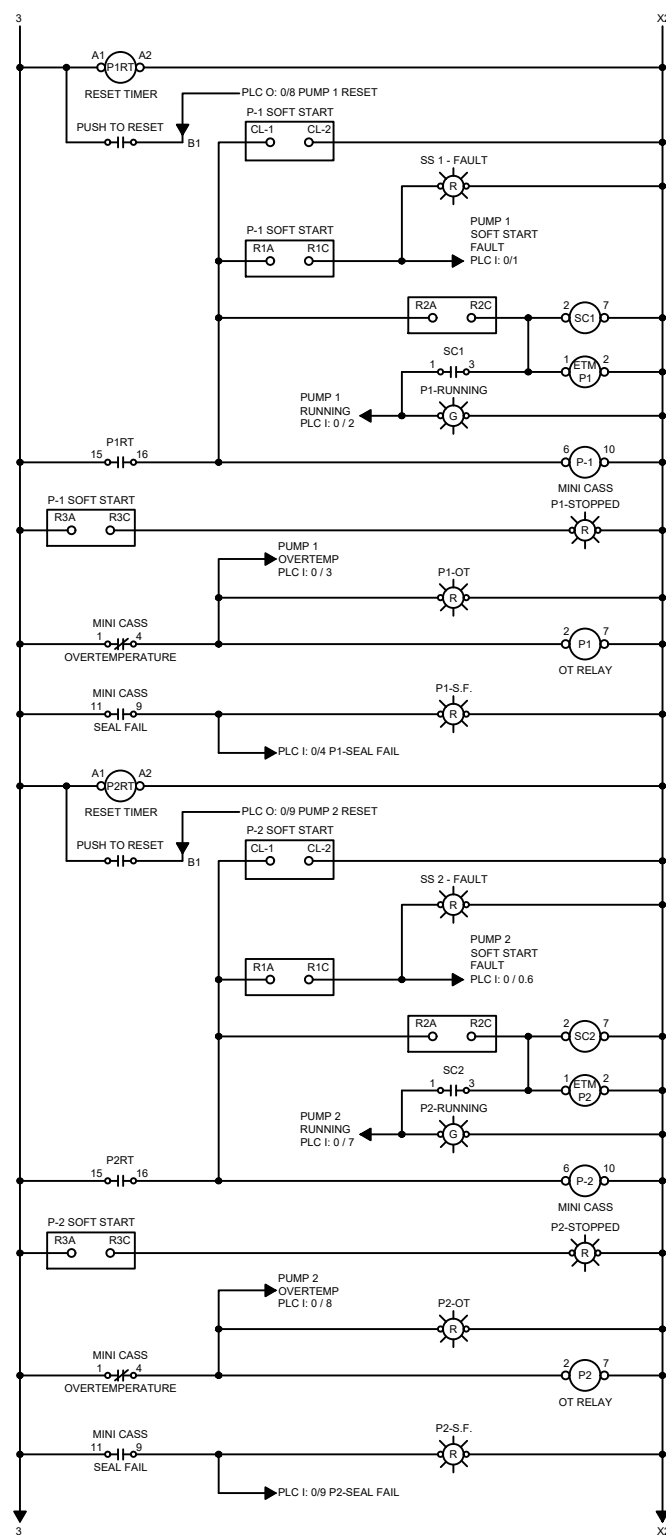
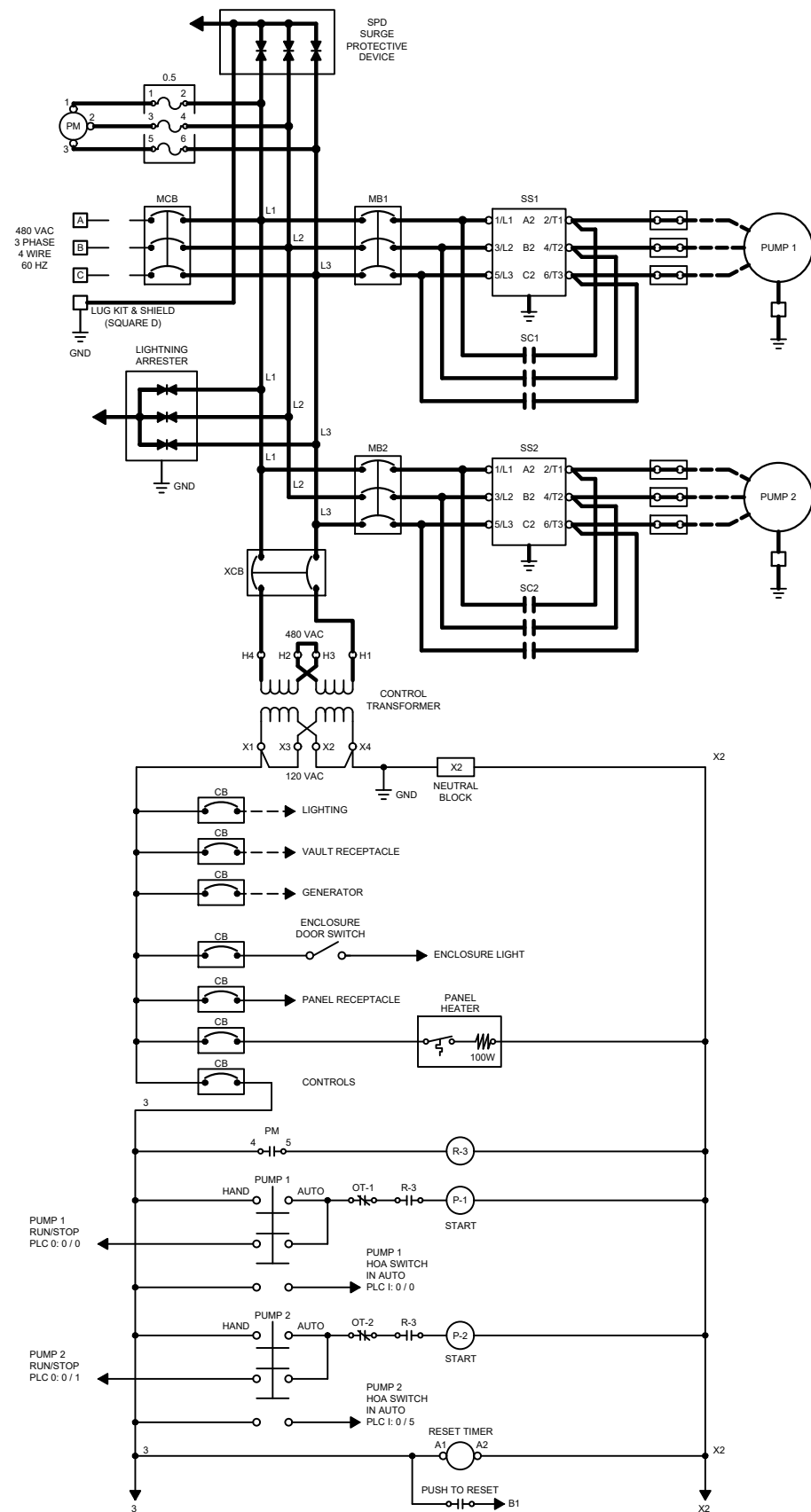
LIFT STATION - ELECTRICAL PLAN
NO SCALE

- GENERAL ELECTRICAL NOTES:**
1. ELECTRICAL UTILITIES SHOWN ON THESE PLANS ARE INTENDED TO INDICATE EXISTING ELECTRICAL EQUIPMENT SERVING THE AFFECTED AREA AND ARE NOT INTENDED TO BE A COMPLETE SCHEMATIC OF ALL EXISTING ELECTRICAL EQUIPMENT. UTILITIES SHOWN ARE BASED ON A SITE UTILITY SURVEY AND FIELD OBSERVATIONS. ALL ELECTRICAL EQUIPMENT NOT SHOWN TO BE REMOVED OR RELOCATED IS ASSUMED TO REMAIN.
 2. CONTRACTOR SHALL CONTACT THE LOCAL ELECTRICAL UTILITY COMPANY AND ARRANGE FOR ELECTRIC SERVICE AS INDICATED ON DRAWINGS. SEWER DISTRICT SHALL PAY ALL UTILITY COSTS, CHARGES, FEES, ETC. DIRECTLY TO THE UTILITY COMPANY. PROVIDE ALL MATERIALS AS REQUIRED BY LOCAL AUTHORITIES FOR ELECTRIC SERVICE INSTALLATION. ALL WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF LOCAL AUTHORITIES.
 3. PLANS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO CIVIL DRAWINGS FOR DIMENSIONS.
 4. ALL HOMERUNS SHALL BE INSTALLED IN PVC CONDUIT BELOW GRADE, RIGID STEEL CONDUIT ABOVE GRADE. TRANSITION TO STEEL CONDUIT SHALL BE MADE PRIOR TO COMING UP FROM BELOW GRADE.
 5. ALL WIRING SHALL BE IN CONDUIT AND SHALL BE CONCEALED. CONDUITS SHALL BE INSTALLED BELOW GRADE BETWEEN BOXES, LIGHTS, RECEPTACLES, ETC. UNLESS OTHERWISE NOTED. CONCEAL ALL TERMINATIONS AND CONDUIT UNLESS OTHERWISE NOTED.
 6. REFERENCE SCHEDULES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION REGARDING EQUIPMENT SHOWN ON THIS SHEET.
 7. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE 2014 NATIONAL ELECTRICAL CODE (NEC) AS ADOPTED BY TANEY COUNTY, MISSOURI. CONTRACTOR SHALL ARRANGE FOR ALL PERMITS AS REQUIRED.
 8. CONTRACTOR TO COORDINATE CONTROL PANEL CONDUIT ENTRY LOCATIONS WITH CONTROL PANEL MANUFACTURER.

CLOUDED AREAS INDICATE NOTES TO ENGINEER AND INFORMATION TO BE FILLED IN BY THE ENGINEER. DELETE CLOUDS AND CLOUDED NOTES TO ENGINEER PRIOR TO ISSUING DRAWINGS FOR CONSTRUCTION.

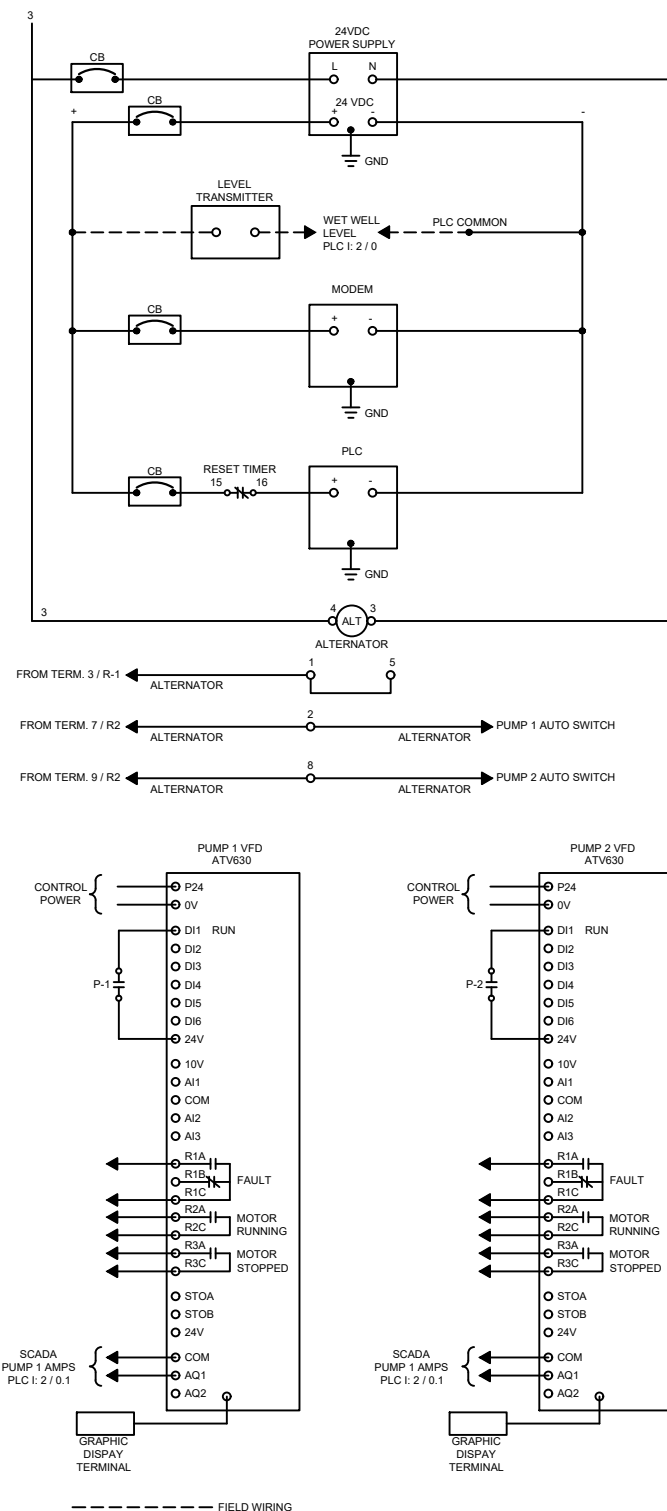
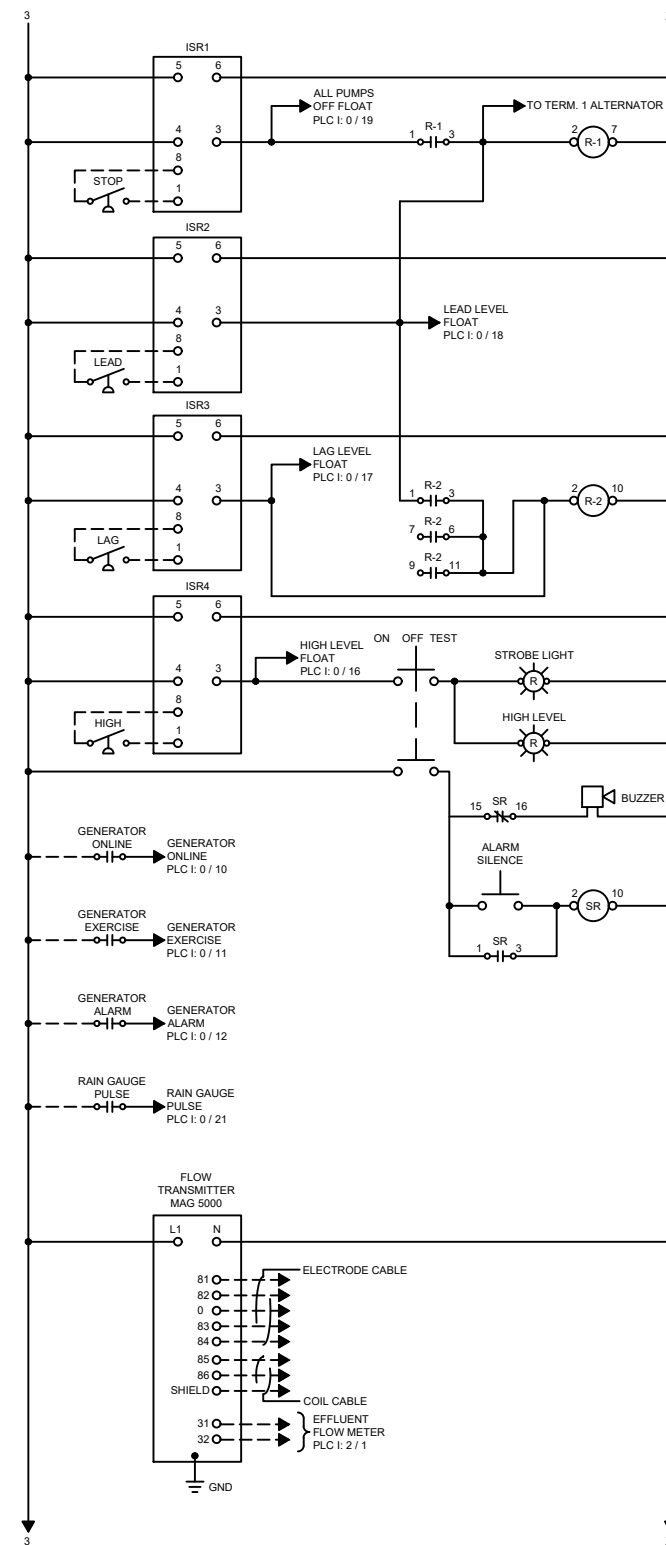
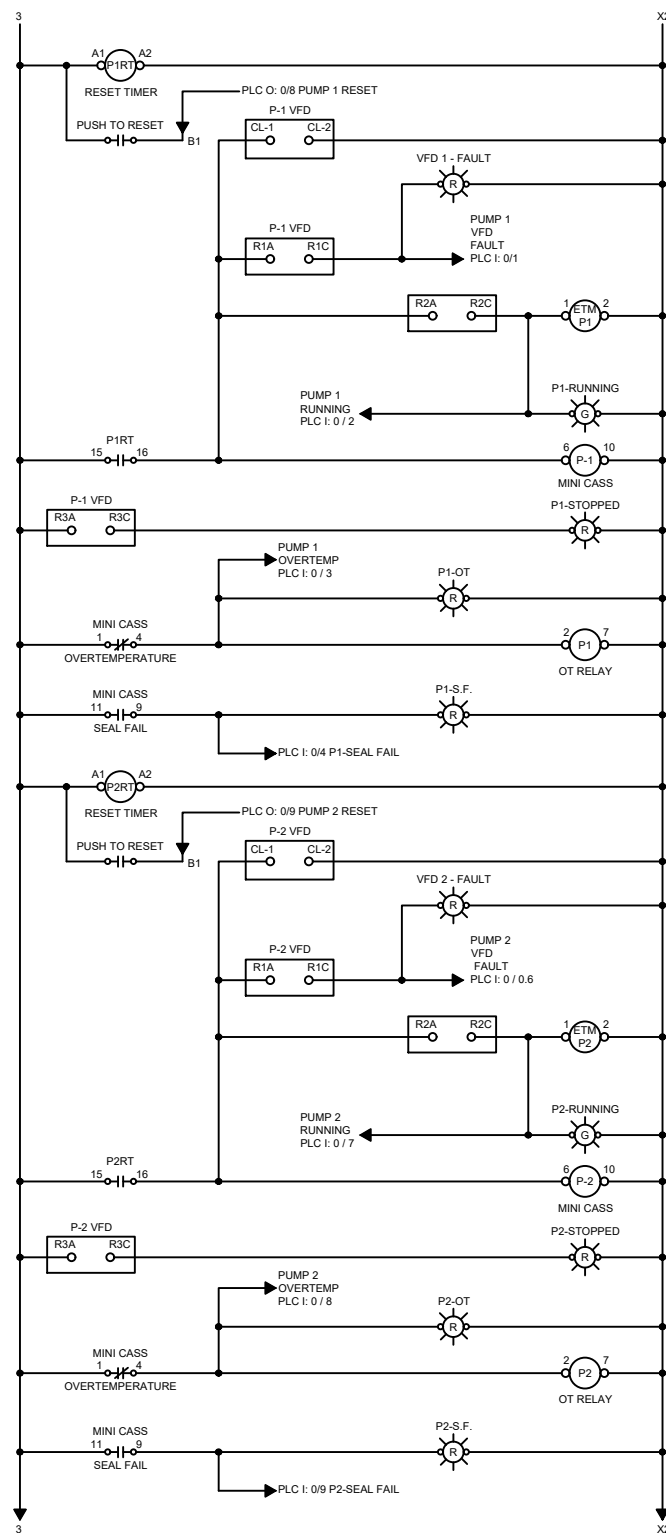
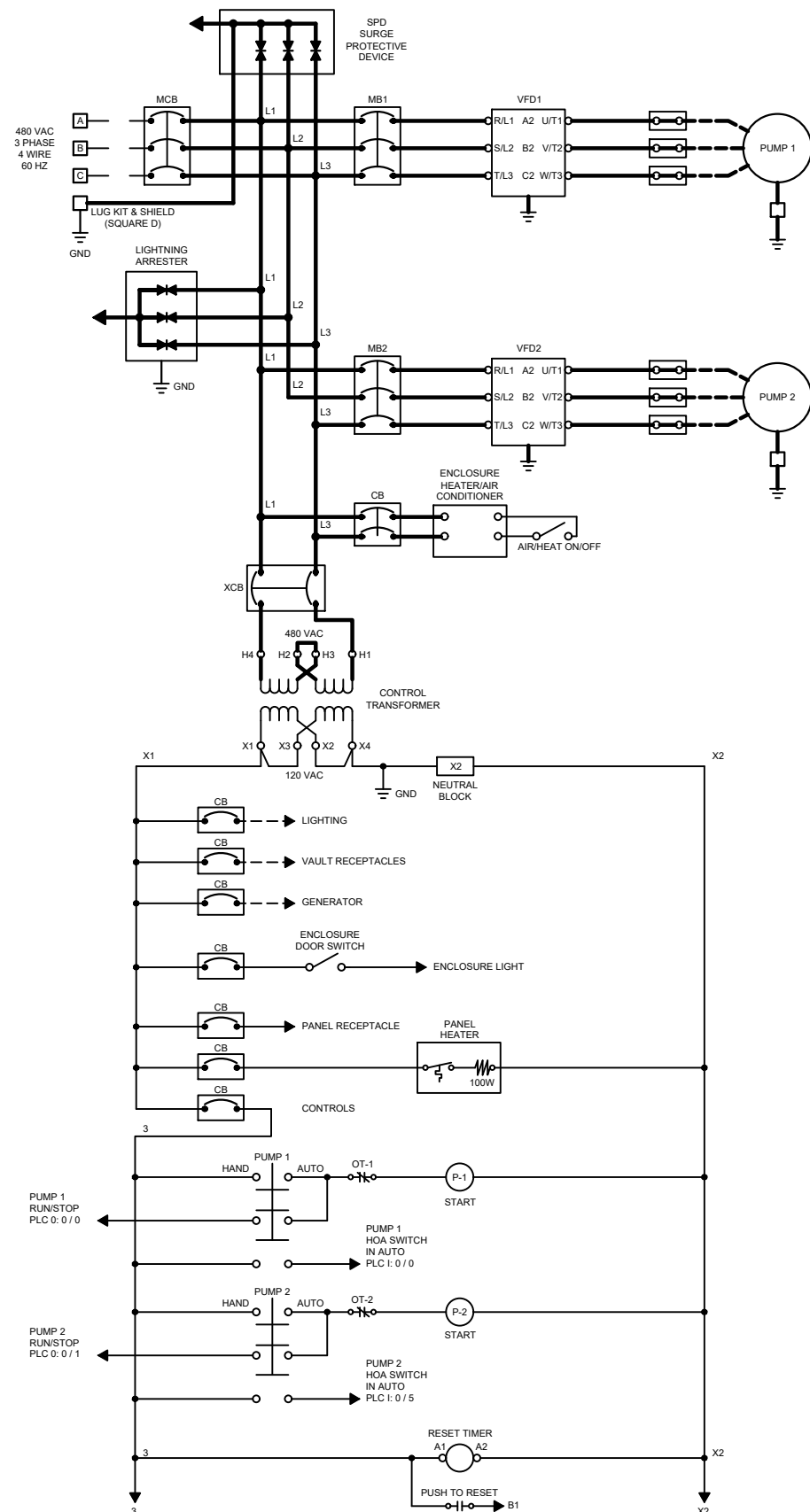


LIFT STATION - ELECTRICAL SERVICE RISER
NO SCALE



GENERIC LIFT STATION SCHEMATIC - SOFT STARTER

REV. DATE: 09/06/2024

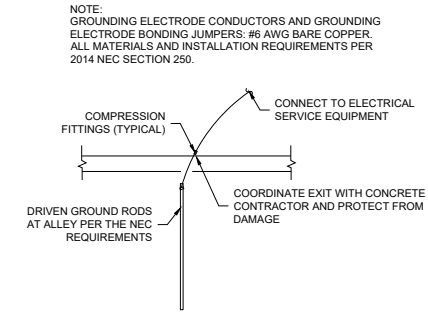


GENERIC LIFT STATION SCHEMATIC - VFD

REV. DATE: 09/06/2024

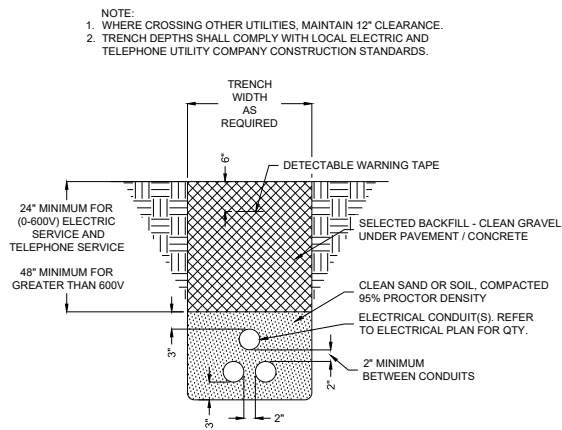


TECHNICAL SPECIFICATIONS
STANDARD DETAIL 54
GENERIC LIFT STATION SCHEMATIC
- VFD CONTROL PANEL



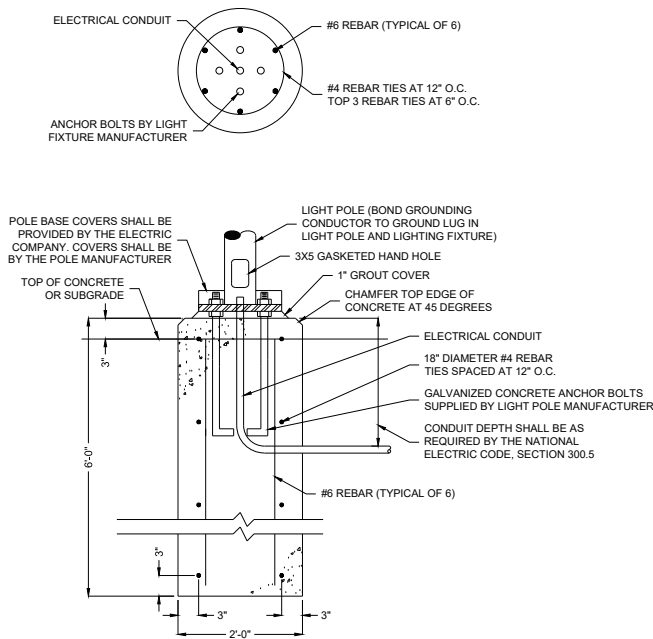
GROUNDING ELECTRODE DETAIL

NO SCALE



UNDERGROUND ELECTRICAL CONDUITS

NO SCALE



LIGHT POLE BASE DETAIL

NO SCALE

GENERAL ELECTRICAL NOTES:

- ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE 2014 NATIONAL ELECTRIC CODE AS ADOPTED BY TANEY COUNTY, MISSOURI. CONTRACTOR SHALL ARRANGE FOR ALL PERMITS AS REQUIRED.
- PROVIDE CONDUCTORS FOR LISTED APPLICATIONS AS FOLLOWS:

LIGHTING AND RECEPTACLE CIRCUITS: TYPE THHN, 600 VOLT, 75 DEGREE C (194 DEGREES F) THERMOPLASTIC INSULATED BUILDING CONDUCTOR.

POWER CIRCUITS AND FEEDERS: TYPE THHN, 600 VOLT, 75 DEGREE C (194 DEGREES F) THERMOPLASTIC INSULATED BUILDING CONDUCTOR.

LOW VOLTAGE AND LINE VOLTAGE CONDUCTORS SIZES NO. 16 AND NO. 18 AWG: TYPE TFFN, 600 VOLT 90 DEGREES C (194 DEGREE F) THERMOPLASTIC INSULATED BUILDING CONDUCTOR.

UNDERGROUND POWER CIRCUITS AND FEEDERS: TYPE THHN/TWHN, 600 VOLT, 75 DEGREE C (167 DEGREES F) WET RATING AND 90 DEGREES C (194 DEGREES F) DRY RATED THERMOSETTING FILLED INSULATING CABLE.
- ALL WIRING SHALL BE IN CONDUIT AND SHALL BE CONCEALED. CONDUITS SHALL BE INSTALLED BELOW GRADE BETWEEN BOXES, LIGHTS, RECEPTACLES, ETC. UNLESS OTHERWISE NOTED. CONCEAL ALL TERMINATIONS AND CONDUIT UNLESS OTHERWISE NOTED.
- ALL POWER CIRCUITS SHALL HAVE A GROUNDING CONDUCTOR. BOND VALVE PIT STEEL AND CONTROL PANEL MOUNTING FRAME TO SERVICE ENTRANCE GROUND PER NEC REQUIREMENTS.
- DUPLEX RECEPTACLES SHALL BE HUBBELL MODEL GF5352 SERIES GFCI 20A, 125V, NEMA CONFIGURATION 5-20R DUPLEX RECEPTACLE. WEATHER PROOF RECEPTACLES SHALL BE GFI TYPE MOUNTED IN APPROPRIATE WEATHERPROOF BOX WITH LIFT COVER PLATE.
- SWITCHES SHALL BE RATED FOR 20A, 120-277V, GRAY IN COLOR, WEATHERPROOF, AND SHALL BE AS FOLLOWS:

SINGLE POLE HUBBELL 1221-GY

THREE WAY HUBBELL 1223-GY
- ALL DEVICES AND COVER PLATES SHALL BE GRAY PLASTIC.
- ALL WIRES SHALL BE IDENTIFIED ON EACH END. ALL EXTERIOR LABELS SHALL BE ON PHENOLIC MATERIAL. ALL INTERIOR LABELS SHALL BE LAMINATED OR SIMILARLY PROTECTED AGAINST WATER EXPOSURE.
- PROVIDE ROT PROOF PULL WIRE IN ALL EMPTY CONDUITS.
- ALL HOME RUNS SHALL BE INSTALLED IN PVC CONDUIT BELOW GRADE, RIGID METALLIC CONDUIT (RMC) ABOVE GRADE. TRANSITION TO RMC CONDUIT SHALL BE MADE PRIOR TO COMING UP FROM BELOW GRADE.

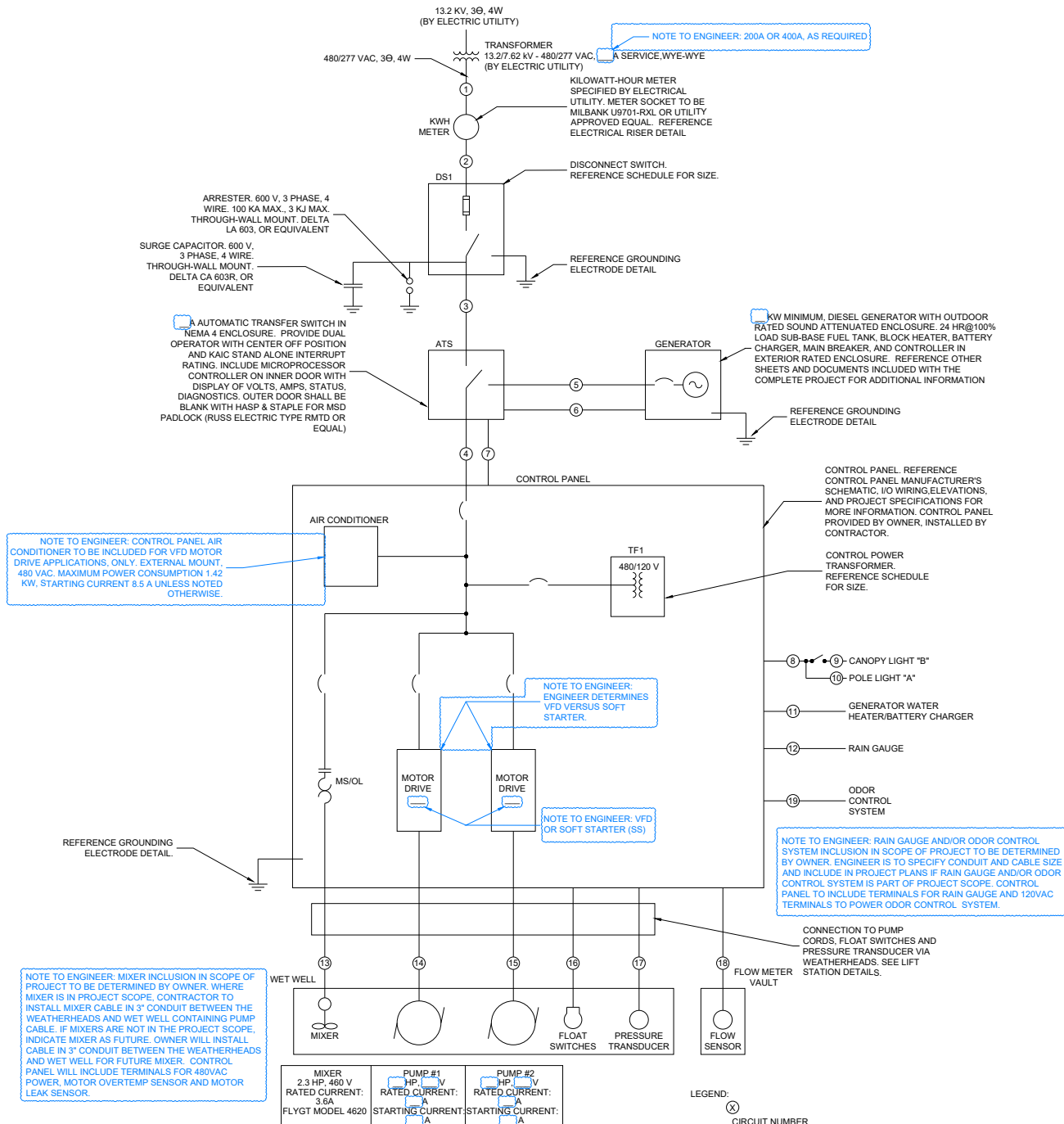
TRANSFORMER SCHEDULE								
MARK	RATING		MOUNTING	TEMP RISE (°C)	PRIMARY		SECONDARY	
	KVA	PHASE			VOLTAGE	CONNECTION	VOLTAGE	CONNECTION
TF1	5	1	WALL*	150	480	-	120	
*PROVIDE WITH NEMA 3R RATED ENCLOSURE								

DISCONNECT SWITCH SCHEDULE									
MARK	LOAD		SWITCH		FUSE		ENCLOSURE	NOTES	
	EQUIPMENT SERVED	VOLTS	DUTY	AMP	POLE	AMP			
DS1	SERVICE, LIFT STATION	480	HD		3		FRS-R	3R	LD, SER, SN

ABBREVIATIONS:
GD-GENERAL DUTY
HD-HEAVY DUTY
LK-LOCKABLE
SER-SERVICE ENTRANCE DUTY
SN-SOLID NEUTRAL

LIGHTING FIXTURE SCHEDULE							
MARK	MFG	CATALOG #/DESCRIPTION	MTG	FINISH	LAMPS		
					TYPE	CODE	QTY.
A	AMERICAN ELECTRIC LIGHTING	ACP1LED10MVOLT65TMPCLL 120V-277V, SOLID STATE PHOTOCONTROL	TENON SLIPFITTER KNUCKLE	GRAY PAINT	LED	38,000 LUMENS, 4000K CCT, WIDE FLOOD RECTANGULAR (6 x 5)	1
B	WILLIAMS	96-4-L62-8-30-HIAFR-EM/10W-WET/1 -UNV 4' LONG, 10W EMER BATTERY, 120V-277V	SURFACE		LED	6,200 LUMENS, 3000K	1

SCHEDULE NOTES:
1. LIGHT POLE TO BE 20' HIGH, ROUND TAPERED ALUMINUM, HOLOPHANE RTA SERIES, SATIN BRUSH FINISH, BASE POLE NUMBER RTA2060G, 9.5" BOLT CIRCLE DIAMETER WITH B04 TENON, 2.38 O.D. X 4" LONG POLE TOP. INCLUDES 3/4" X 20" GALVANIZED ANCHOR BOLTS WITH NUTS AND WASHERS, COVERED HAND HOLE AND GROUND PROVISIONS.
2. CONFIRM ORIENTATION OF TYPE "A" FIXTURE WITH CIVIL ENGINEER BEFORE FIXTURE INSTALLATION.



ONE-LINE DIAGRAM

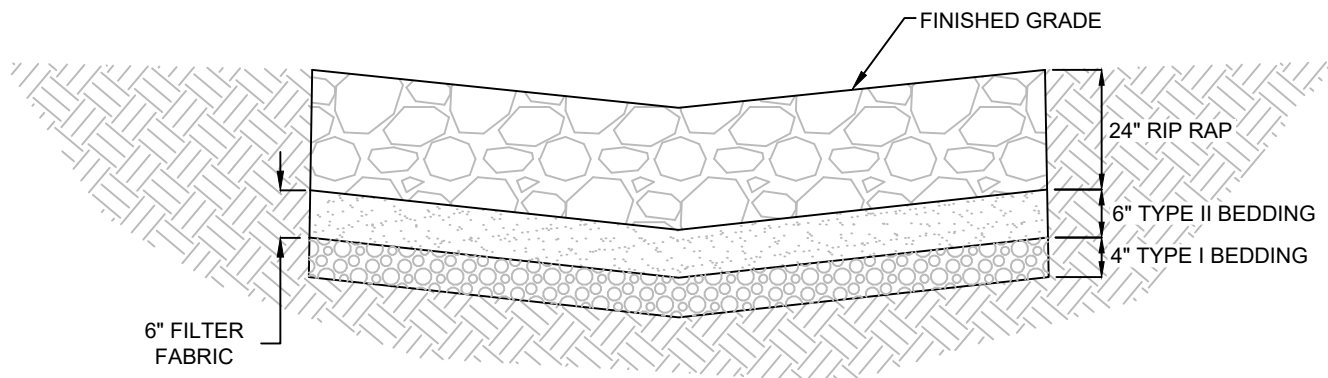
NO SCALE

LEGEND:
X
CIRCUIT NUMBER, REFERENCE CIRCUIT SCHEDULE



TECHNICAL SPECIFICATIONS STANDARD DETAIL 55 LIFT STATION SPECIFICATIONS-ELECTRICAL

REV. DATE: 09/06/2023



NOTES:

1. RIP RAP AND FILTER BLANKET SHALL BE A MINIMUM 34" DEPTH AT ALL AREAS NOTED.
2. WHERE CONCRETE IS SHALLOW, PROVIDE A MINIMUM 18" DEPTH OF RIP RAP OVER TOP OF CONCRETE. MINIMUM 24" DEPTH SHALL RESUME ON EITHER SIDE OF CONCRETE ENCASEMENT.
3. RIP RAP SHALL EXTEND 5' UPSTREAM AND 5' DOWNSTREAM OF CENTERLINE OF TRENCH.
4. MINIMUM ROCK DIAMETER SHALL BE 6", $D_{50} = 18"$, MAXIMUM ROCK DIAMETER SHALL BE 24".
5. GRANULAR BEDDING GRADATION PER TABLE BELOW.

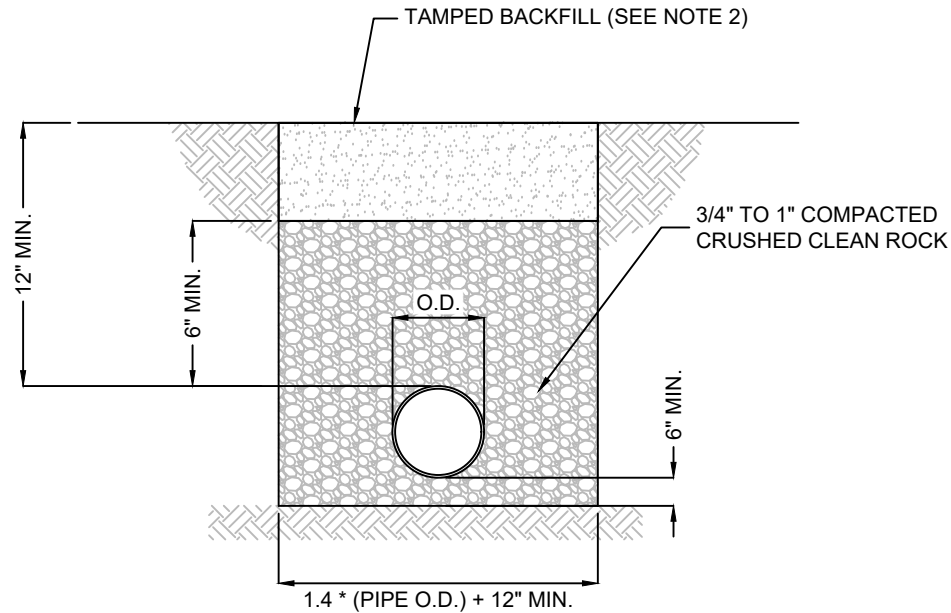
U.S. STANDARD SIEVE SIZE	PERCENT (%) PASSING GIVEN BY WEIGHT	
	TYPE I	TYPE II
3 INCHES	---	90 - 100
3/4 INCHES	---	20 - 90
3/8 INCHES	100	---
#4	95 - 100	0 - 20
#16	45 - 80	---
#50	10 - 30	---
#100	2 - 10	---
#200	0 - 2	0 - 3

GRADATION REQUIREMENTS FOR GRANULAR BEDDING

RIP RAP DETAIL

NOT TO SCALE

REV. DATE: 09/06/2024



NOTES:

1. PIPE SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
2. TAMPED BACKFILL IN ALL NON STREET CROSSING AREAS SHALL BE FINELY DIVIDED JOB EXCAVATED MATERIAL FREE FROM DEBRIS, ORGANIC MATERIAL AND STONES, TO 95% MAXIMUM DENSITY AS DETERMINED BY AASHTO STANDARD, METHOD T-99.

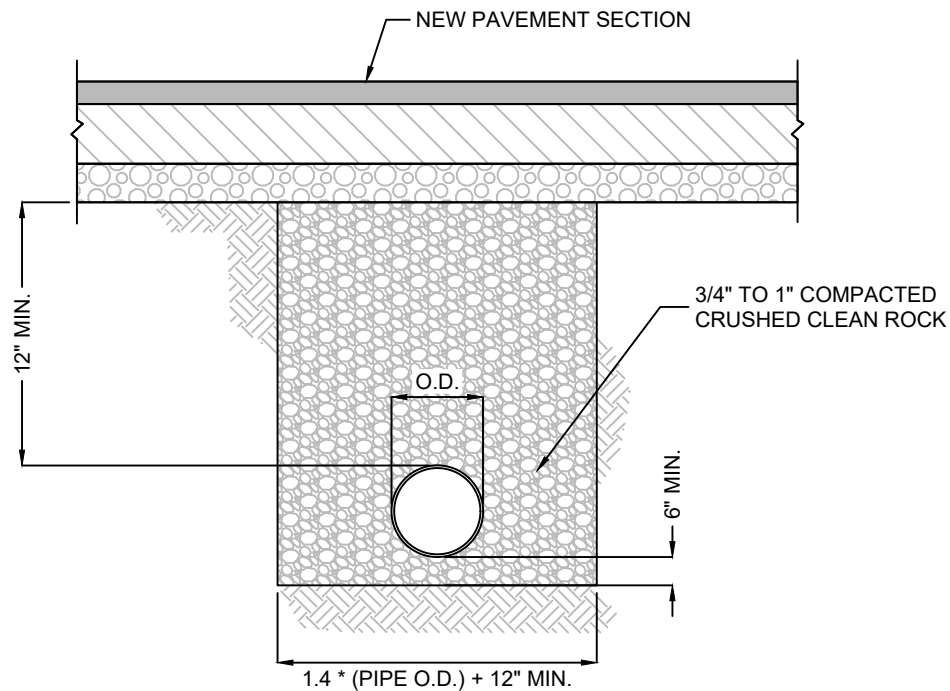
STORM SEWER TRENCH DETAIL NOT UNDER STREETS

SCALE: NONE

REV. DATE: 09/06/2024



TECHNICAL SPECIFICATIONS
STANDARD DETAIL 57
STORM TRENCH DETAIL - UNPAVED

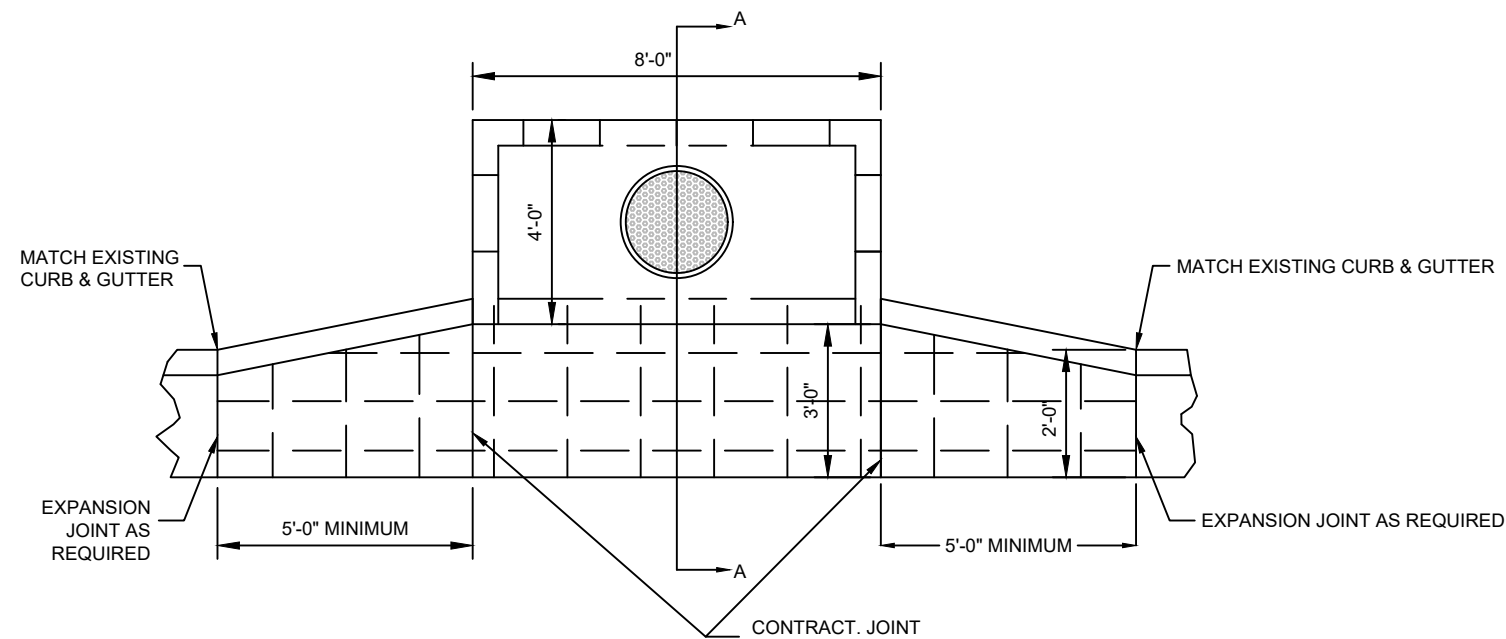


NOTE:
PIPE SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

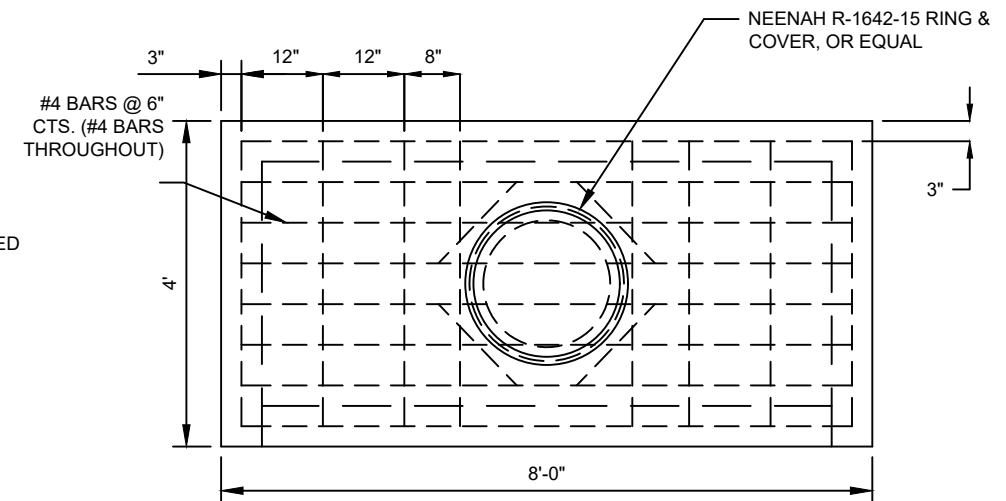
STORM SEWER TRENCH DETAIL UNDER STREETS

SCALE: NONE

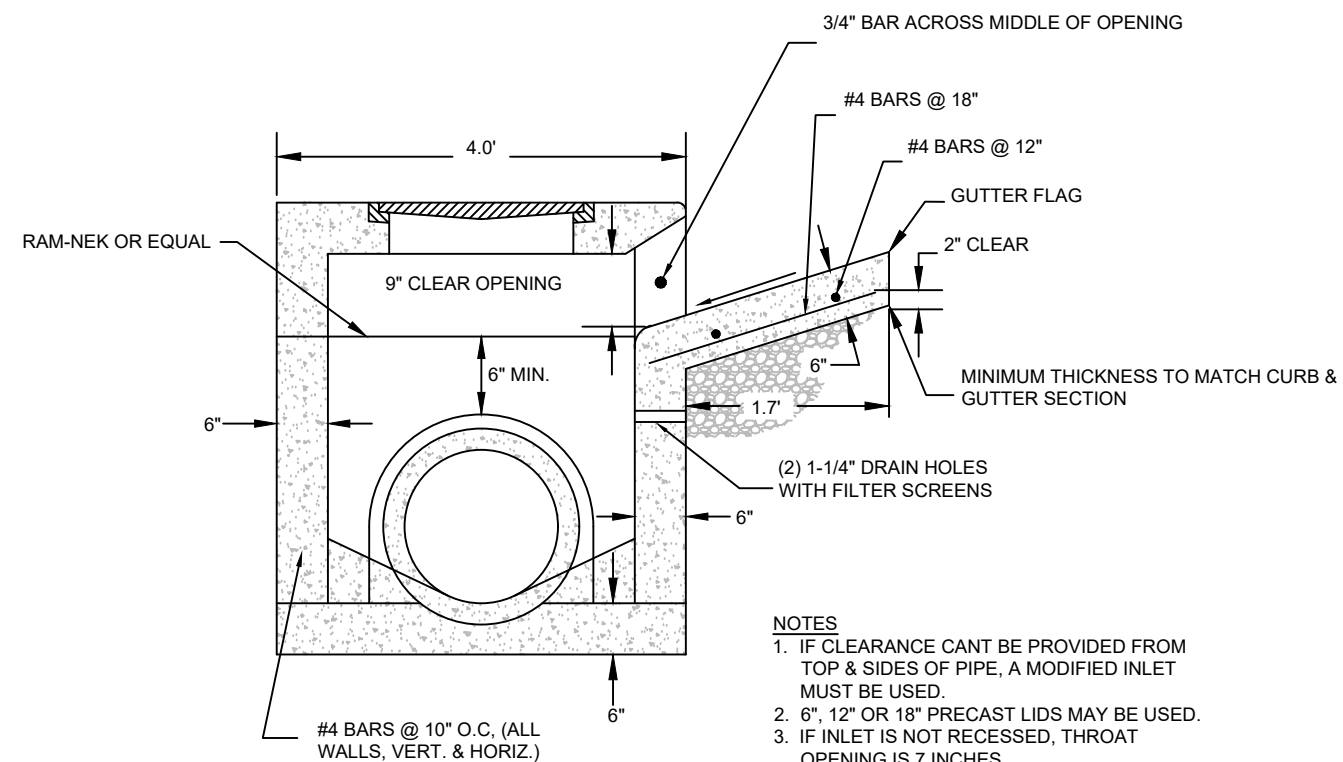
REV. DATE: 09/06/2024



4' X 8' RECESSED CURB INLET
NO SCALE



TOP REINFORCEMENT



SECTION "A-A"

- NOTES:**
1. BOTTOM TO BE CAST IN PLACE.
 2. PIPE TO BE ON GRADE BEFORE BOTTOM IS CONSTRUCTED.
 3. FOR 6" TOP USE 4 - #4 Ø DOWELS; ONE IN EACH CORNER W/ RAM-NEK OR EQUAL.
 4. RAM-NEK ALL JOINTS (OR EQUAL).
 5. 6" INVERT REQUIRED TO PREVENT SEDIMENTATION.
 6. #4 Ø @ 10" C.C. (ALL WALLS, VERT. & HOR.) SEE DETAIL FOR TOP SLAB REINFORCEMENT

INLET TOP
NO SCALE

REV. DATE: 09/06/2024

GENERAL NOTE FOR SEDIMENTATION & EROSION CONTROL:

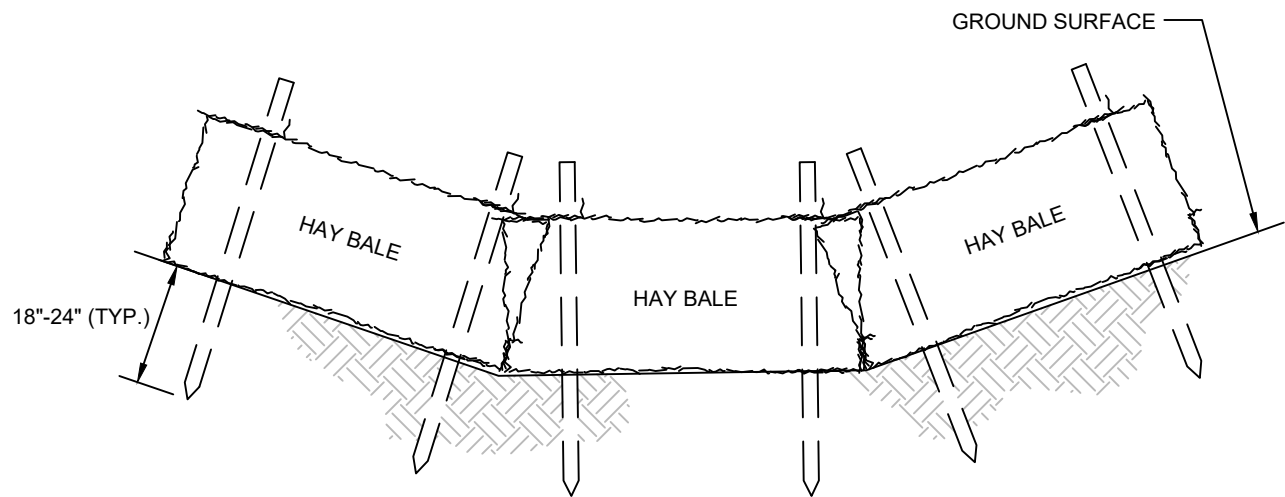
1. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING EROSION AND DISCHARGE OF SEDIMENT FROM THE SITE AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE NECESSARY MEASURES DURING ALL PHASES OF HIS OPERATIONS REGARDLESS OF WHETHER THEY ARE SPECIFICALLY NOTED ON THIS PLAN AND SHALL MAINTAIN AND REPLACE CONTROLS AS NECESSARY DURING THE COURSE OF HIS OPERATIONS.
2. SILT SOXX, SILT FENCE, AND OTHER INITIAL SEDIMENT CONTROLS SHOWN ON THIS PLAN MUST BE INSTALLED PRIOR TO ANY OTHER WORK.
3. SILT SOXX OR SILT FENCE SHALL BE INSTALLED ON THE DOWNSTREAM SIDE OF ALL SANITARY SEWER MAINS AND/OR EASEMENTS. THIS DOES NOT INCLUDE INSTALLATION ALONG SANITARY SEWER LATERALS.
4. THE CONTRACTOR SHALL CLEAN STREETS AND PARKING LOTS BOTH INTERIOR AND ADJACENT TO THE SITE, AS NEEDED AFTER EACH RAINFALL, AND AT THE END OF CONSTRUCTION.
5. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST DURING CONSTRUCTION AND SHALL WATER CONSTRUCTION AREAS WHENEVER CONDITIONS WARRANT.
6. ALL DISTURBED AREAS NOT RECEIVING OTHER PERMANENT STABILIZATION SUCH AS PAVEMENT, ROOF, SOD, ETC., SHALL BE SEEDED AND MULCHED IN ACCORDANCE WITH SPECIFICATIONS BEFORE TEMPORARY SEDIMENT CONTROLS CAN BE REMOVED AND PRIOR TO FINAL APPROVAL OF CONSTRUCTION.
7. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING AND REVISING THE PROJECT STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AS SITE CONDITIONS CHANGE OR AS REQUIRED. CONTRACTOR WILL PROVIDE UPDATES FOR THE SWPPP TO ENGINEERS OR ENGINEER'S REPRESENTATIVE FOR THE DURATION OF THE PROJECT. THE CONTRACTOR IS TO HAVE SWPPP AVAILABLE ON SITE DURING WORKING HOURS.

GENERAL NOTES FOR SEDIMENTATION & EROSION CONTROL

REV. DATE: 09/06/2024



TECHNICAL SPECIFICATIONS
STANDARD DETAIL 61
EROSION CONTROL GENERAL NOTES



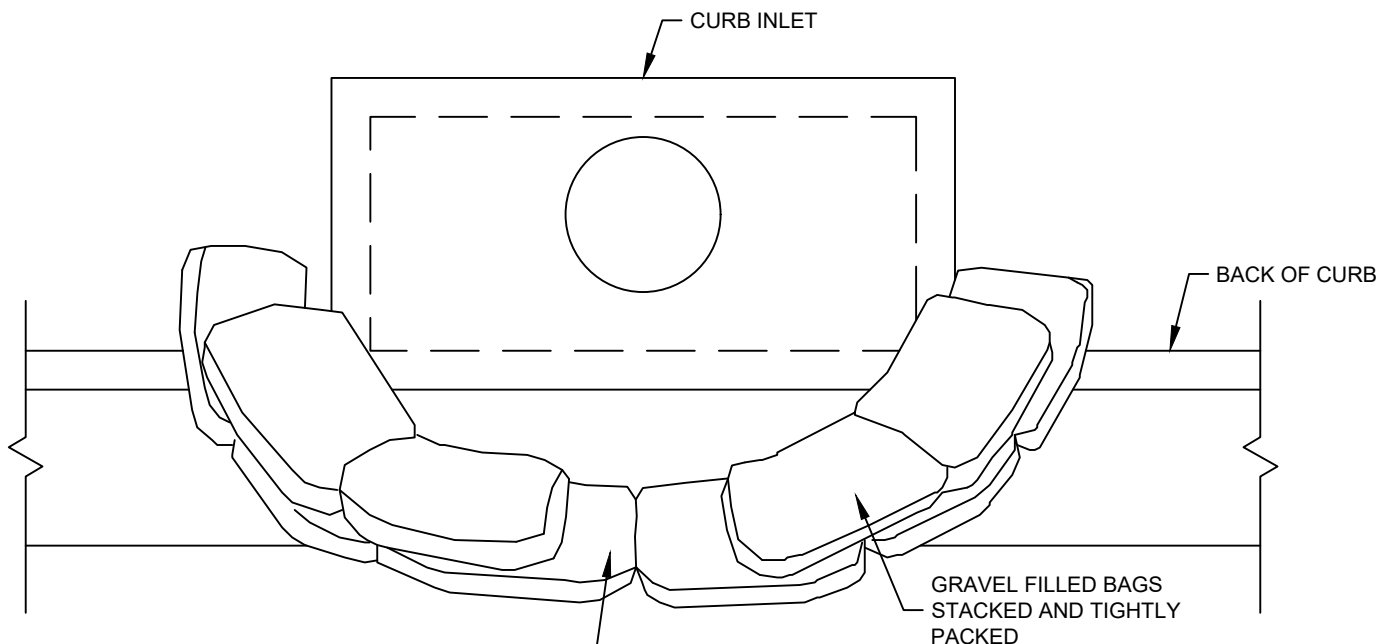
NOTES:

1. IN ADDITION TO SPECIFIC AREAS INDICATED ON PLANS, CONTRACTOR SHALL PLACE HAY BALE DAMS AS NECESSARY TO CONTROL EROSION AND DISCHARGE OF SEDIMENT FROM THE SITE.

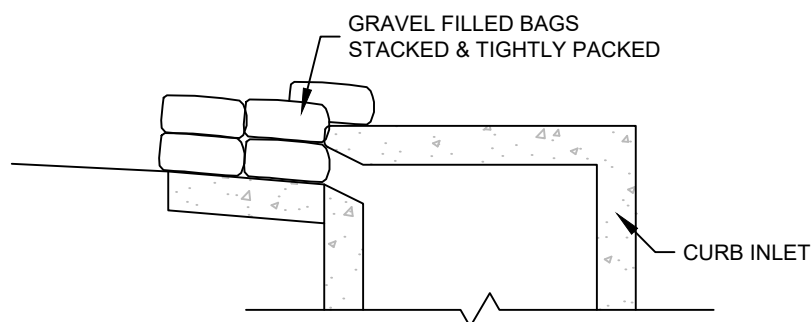
HAY BALE DAM DETAIL

NOT TO SCALE

REV. DATE: 09/06/2024



SPILLWAY LOCATION FOR CURB INLETS IN SUMPS,
FOR ON GRADE CURB INLETS PLACE SPILLWAY ON
THE UP STREAM SIDE OF CURB INLET.



CROSS SECTION

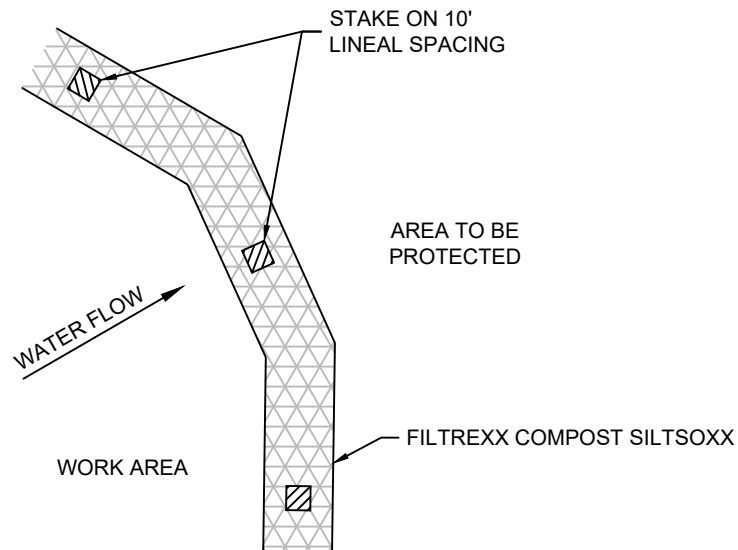
NOTES:

1. PLACE CURB INLET SEDIMENT BARRIERS ON GENTLY SLOPING STREET SEGMENTS OR IN SUMPS WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE FROM RUNOFF.
2. BAGS, OF EITHER BURLAP OR WOVEN GEOTEXTILE FABRIC, ARE FILLED WITH GRAVEL, LAYERED AND PACKED TIGHTLY.
3. LEAVE ONE BAG GAP IN THE TOP ROW TO PROVIDE A SPILLWAY FOR OVERFLOW.
4. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH RAINFALL EVENT. SEDIMENT AND GRAVEL MUST BE REMOVED FROM THE TRAVELED WAY IMMEDIATELY.

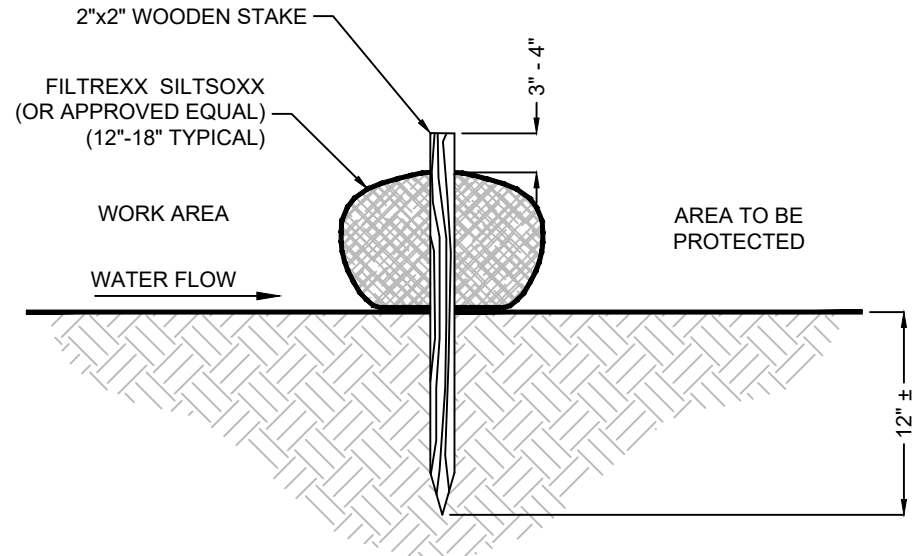
CURB INLET SEDIMENT BARRIER DETAIL

SCALE: NONE

REV. DATE: 09/06/2024



PLAN VIEW



SECTION VIEW

NOTES:

1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS (OR APPROVED EQUAL).
2. SILT SOXX COMPOST/SOIL/ROCK/SEED FILL TO MEET APPLICATION REQUIREMENTS.
3. SILT SOXX DEPICTED IS FOR MINIMUM SLOPES. GREATER SLOPES MAY REQUIRE LARGER SOCKS PER THE ENGINEER.
4. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY THE ENGINEER.
5. SILT SOXX TO BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

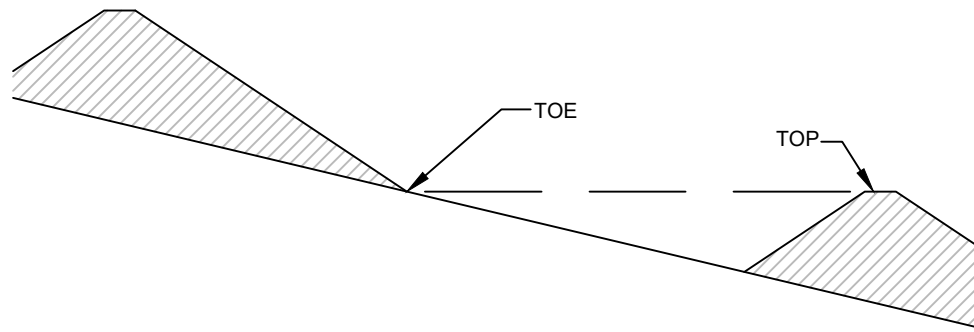
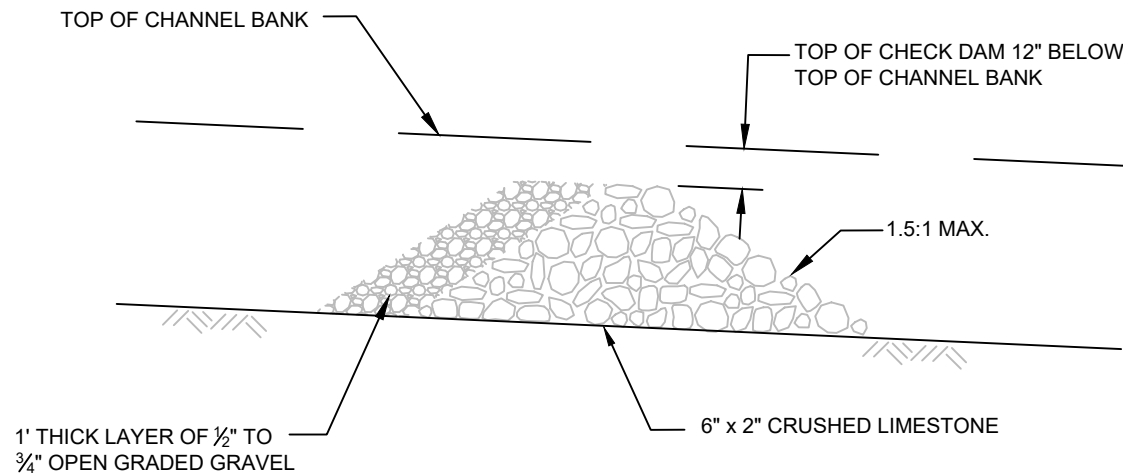
SILT SOXX EROSION CONTROL

SCALE: NONE

REV. DATE: 09/06/2024



TECHNICAL SPECIFICATIONS
STANDARD DETAIL 64
SILT SOXX EROSION CONTROL



NOTES:

1. IN ADDITION TO SPECIFIC AREAS INDICATED ON PLANS, CONTRACTOR SHALL PLACE ROCK CHECK DAMS AS NECESSARY TO CONTROL EROSION AND DISCHARGE OF SEDIMENT FROM THE SITE.

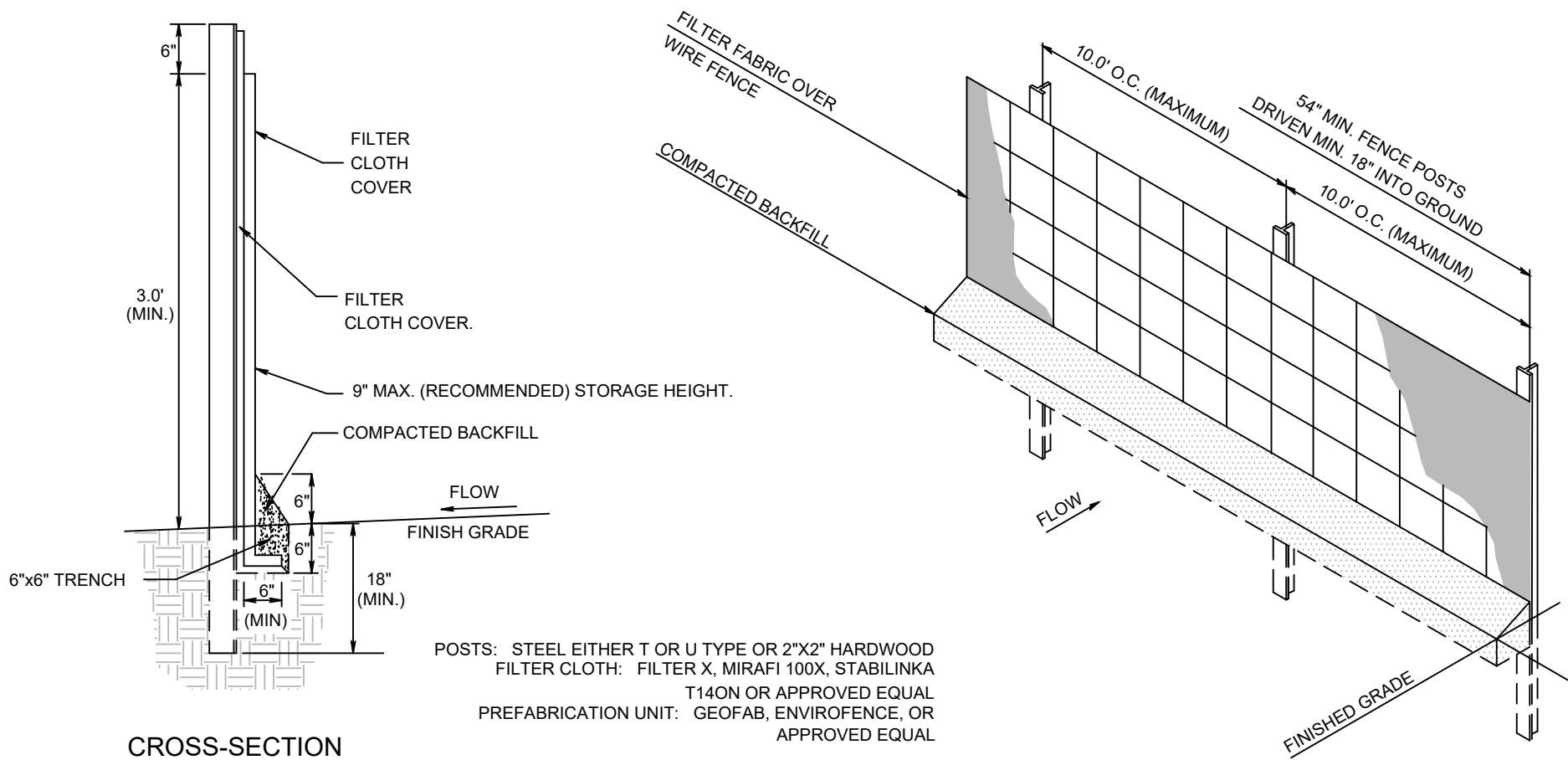
TYPICAL ROCK CHECK DAM

NOT TO SCALE

REV. DATE: 09/06/2024



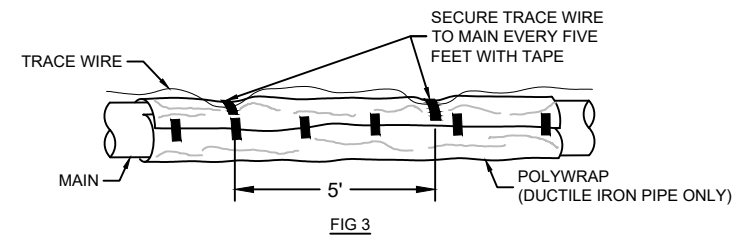
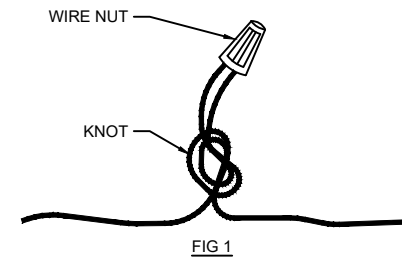
TECHNICAL SPECIFICATIONS
STANDARD DETAIL 65
TYPICAL ROCK CHECK DAM



REV. DATE: 09/06/2024

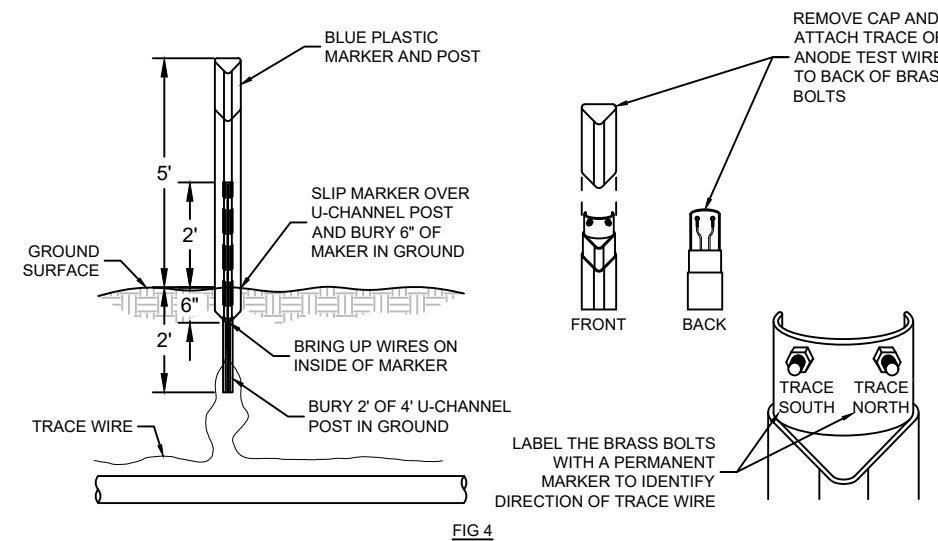
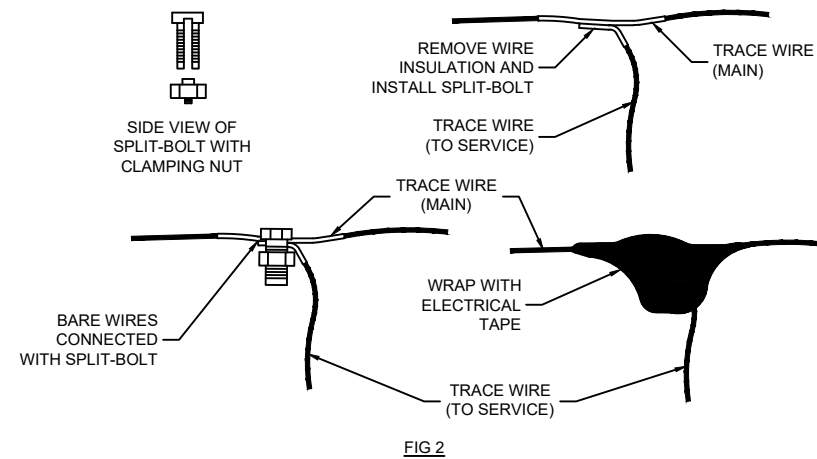


TECHNICAL SPECIFICATIONS
STANDARD DETAIL 66
POST MESH SILT-FENCE



TRACER WIRE NOTES:

1. TRACE WIRE TO BE INSTALLED PER TECHNICAL SPECIFICATION 02537 INSTALLATION OF TRACE WIRE.
2. TRACE WIRE SHALL BE #12 TW SOLID, COATED COPPER WIRE.
3. FIGURE 1 SHOWS A TYPICAL SPLICE USING A PLASTIC WIRE NUT AND TYING THE WIRE IN A KNOT TO STRENGTHEN THE CONNECTION.
4. FIGURE 2 SHOWS A CONNECTION FOR A LEAD TO A MAIN RUN. A SPLIT-BOLT CONNECTION OR A 3M SCOTCHLOK ELECTRICAL IDC 562 (OR APPROVED EQUAL) MAY BE UTILIZED.
5. TRACER WIRE SHALL BE INSTALLED ON TOP OF ALL MAINS AND SERVICES, SECURED TO THE PIPE EVERY FIVE (5) FEET WITH TAPE AS SHOWN IN FIGURE 3.
6. BRING TRACE WIRE TO THE SURFACE AT A MAXIMUM OF ONE THOUSAND (1,000) FEET. TRACE WIRE SHALL BE BROUGHT TO THE SURFACE IN A VAULT, BLUE PLASTIC MARKER, VALVE BOX TOP SECTION, OR IN TEST BOX.
7. FIGURE 4 SHOWS INSTALLATION OF TRACE WIRE UTILIZING A BLUE PLASTIC MARKER.
8. WHEN INSTALLING TRACE WIRE IN A VAULT, INSTALLATION LOCATIONS CAN BE FOUND IN VARIOUS STANDARD VAULT DETAILS AND SPECIFICATION 02537.
9. TRACE WIRE MARKER LOCATIONS SHALL BE NOTED ON AS-BUILT DRAWINGS.



INSTALLATION OF TRACE WIRE

NOT TO SCALE

REV. DATE: 09/06/2024



TECHNICAL SPECIFICATIONS
STANDARD DETAIL 67
INSTALLATION OF TRACE WIRE