

MSUD GENERAL NOTES:

- All construction shall be in accordance with the standard specifications of Mustang Special Utility District, which has also adopted the latest edition of the "Standard Specifications For Public Works Construction - North Central Texas" herein referred to as "NCTCOG" specifications. Copies may be obtained from the North Central Texas Council of Governments, 616 Six Flags Drive, Suite 200, Arlington, Texas 76011.
- Where specified name brands are indicated, products of equal or better may be considered for approval upon submittal of all supporting data to the MSUD Engineer for review.
- The contractor shall provide for temporary 3" Cold Mix Asphaltic Concrete as per NCTCOG Item 302.3 to be placed over all vehicular traveled areas until the final repairs/improvements are made.
- All newly installed pipes and fittings must conform to American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 61 and must be certified by an organization accredited by ANSI.
- The existence and locations of all underground utilities shown on the drawings were obtained from available records and are approximate. Neither the owner nor the engineer assumes any responsibility for utilities not shown or not in the location shown. The contractor shall determine the depth and location of existing underground utilities prior to trenching and shall be required to take any precautionary measures to protect all lines shown and/or any other underground utilities not of record or not shown on the plans.
- Any contractor/subcontractor performing work on this project shall familiarize himself with the site and shall be solely responsible for any damage to existing facilities resulting directly or indirectly from operations. Said existing improvements shall include but not be limited to berms, ditches, fences, plants, irrigation. Any removal or damage to existing improvements shall be replaced or repaired by the contractor at his expense and shall be approved by the engineer.
- Contractor shall shore all trenches and conduct all construction and operations in accordance with Occupation Safety and Health Administration (OSHA) requirements.
- All construction and materials shall comply with Mustang SUD specifications. Any construction and/or materials not covered in Mustang SUD specifications shall be in accordance with NCTCOG specifications or the AWWA.
- It shall be the contractor's responsibility to provide adequate record drawings to the engineer/Mustang SUD immediately after construction.
- It shall be contractor's responsibilities to verify location, elevation and dimensions of adjacent and/or conflicting utilities in advance of construction in order that adjustments can be made to provide adequate clearance, if required. The contractor shall preserve and protect public utilities at all times during construction. Any damage to utilities resulting from the contractor's operation shall be restored at his expense. The engineer shall be notified when proposed facility's grades conflict with existing utility's grades.
- All materials for water and wastewater shall be domestic. Any exceptions made will be at Mustang's or the Engineer's discretion.

MSUD WATER NOTES:

GENERAL:

- All water lines and appurtenances shall be constructed in accordance with TCEQ requirements Chapter 290.
- All water lines shall be designed, manufactured, and installed in accordance with current Mustang SUD water standards details.
- All pipes and appurtenances shall conform to American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 61 and must be certified by ANSI.
- All pipes and appurtenances shall be installed in accordance with manufacturer's instruction.
- Contractor to provide a curve in waterline to avoid storm drain inlets at all locations.
- Franchise Utility Note: Other utilities such as gas, electric, telephone, cable, etc. shall not be installed in the same trench as water service lines.

PIPE:

- All PVC water pipe shall be BLUE in color for potable and PURPLE in color for non-potable.
- All PVC pipe shall be installed with metallic detector tape.
- Water mains up to and including 12" diameter shall be AWWA C900-16 DR18 (Pressure Class 235), Mustang SUD reserves the right to require AWWA C900-16 DR14 (Pressure Class 305) for higher pressure applications as determined by Mustang SUD's Engineer. Water mains greater than 12" diameter may be AWWA C900-16 DR18 (Pressure Class 235) OR one of the following:
 - Reinforced Concrete Cylinder Pipe (RCCP) C303 pressure class 150 or greater as specified by the Engineer.
 - Ductile Iron pipe with Polywrap and cement mortar lining (AWWA C104), thickness class 51 or greater.
- Embedment: For Pipe sizes 12" and smaller, the Embedment shall be as per the MSUD "Pipe Embedment Detail".
- Cover
 - The following minimum covers over the waterline is required:
 - 48" of cover over waterlines up to and including 12" diameter.
 - 60" to 72" of cover over waterlines larger than 12" in diameter.
 - Water mains buried with over 72" of cover shall be approved by the MSUD Engineer.
 - The minimum cover over all Water mains is 4 feet, unless approved otherwise by the MSUD Engineer. Approved mains with less than 3.5 feet of cover shall be capped as per the MSUD "Cap Detail".
- Storage: PVC water pipe is allowed to be stored a maximum of six (6) months without cover. Thereafter all pipe should be covered or kept away from sunlight and to be protected from other elements.
- The Contractor is responsible to install the pipe in a way that the writing on the pipe is installed on the side up and is readable from the top of the ditch.
- All ductile iron pipe, fittings and restraints shall be manufactured domestically.
- All ductile iron pipe, fittings, valves, etc. shall be encased with polyethylene wrap 8 mils thick.
- The pipe shall have beveled or chamfered ends according to manufacturer recommendations when using in MJ fittings.
- When PVC water pipe is installed in casing, casing spacers must be used to prevent damage to the pipe and bell during installation. PVC pipe shall not rest on the Bells. Plastic spacers such as RACI or approved equal shall be used.
- Pipe shall be handled so as to protect pipe and pipe joints and carefully bedded to provide continuous bearing and prevent uneven settlement. Pipe shall be protected against flotation at all times. Open ends of installed pipe shall be sealed at all times when construction is not in progress.

FITTINGS:

- The Contractor shall use cast iron or ductile iron fittings, complete with Polywrap.
- All fittings shall be MJ unless specified otherwise.
- All fittings shall be blocked per the MSUD Water Standard Details.
- Tapping sleeves shall be ductile iron and manufactured by Mueller, Tyler Union or approved equal.
- Please also refer to NCTCOG Item 502.5.2 specifications.
- The use of 90° bends in water mains is prohibited without approval of MSUD Engineer. Two 45° bends are allowed.
- Install 12"x12"x3" concrete block under fittings installed on PVC pipe.
- Restrained joints such as Mega-Lug or equal are required at all fittings.
- All ductile iron fittings and restraints shall manufactured domestically.

VALVES:

- Valves installed on waterlines 12" in diameter or less shall be vertical gate valves.
- Valves installed on waterlines larger than 12" in diameter shall be butterfly valves. An offset vault shall be installed at the butterfly valve operator.
- All gate valves shall have non-rising stems and resilient sealed wedge.
- All potable-water pipe air release valve stabilization poles shall be painted blue in color.
- All valves and fire hydrants shall be in line with the property line, where possible.
- All valve locations shall be marked with "V" stamped or cut on the curb.
- Install 12"x12"x3" concrete block under valves installed on PVC pipe.
- Contractor to provide extensions for all valve stacks and fire hydrant leads/risers for all water lines deeper than 48" depth.

TESTING:

- Hydrostatic test as per NCTCOG Item 506.5 specifications shall be performed
- Water system shall be disinfected in accordance with American Water Works Association (AWWA) C651 (current edition) and then flushed and sampled before being placed in service. Samples shall be collected in accordance with Mustang SUD testing requirements.
- All temporary test points to have corporation stops at the main. All temporary testing & chlorination points shall be removed at the corporation stop prior to final acceptance.
- The Contractor shall take a sample of water from a tap on a sterilized main in the presence of a MSUD Representative and submit the sample(s) to an approved Testing Laboratory for analysis. After receiving approved sample, the Contractor, along with MSUD Representative, shall place sterilized lines into service.
- All fire hydrants shall be flow and pressure tested and marked (tag and color coded paint) in accordance with NFPA 291 "Recommended Practice for Fire Flow Testing and Marking of Hydrants", latest edition. Copies of each test report for each fire hydrant, including a map showing the location of the fire hydrant being flow tested and the location of the pressure hydrant, shall be provided to Mustang SUD prior to acceptance of the system and the beginning of service. See WATER STANDARD DETAILS (1 OF 2) for Fire Hydrant Flow Test Report form.

MSUD WASTEWATER NOTES:

GENERAL:

- All wastewater lines and appurtenances shall be constructed in accordance with TCEQ requirements Chapter 217.
- All wastewater lines shall be designed, manufactured, and installed per Mustang SUD wastewater standard details.
- All pipes and appurtenances shall be installed in accordance with manufacturer's instruction.
- Wastewater system shall be tested in accordance with TCEQ for allowable leakage and pipe deflection before being placed in service. Test results shall be provided to Mustang SUD.
- All wastewater manholes, drop manholes, wet wells, and force-main-to-gravity transition manholes shall be lined with SprayWall by SprayRoq. All external manhole joints shall be wrapped with Gator Wrap by Infi-Shield.
- All force main ductile iron pipe and fittings shall be lined with Protecto 401 (P401) ceramic epoxy or approved equal.
- All curvature shall be accomplished by the manual bending of the pipe lengths in the trench. Mechanical means will not be allowed to accomplish design radii. No deflection of joints will be allowed.
- All ductile iron pipe, fittings, valves, etc. shall be encased with polyethylene wrap 8 mils thick.
- All ductile iron pipe, fittings and restraints shall be manufactured domestically.
- All gravity main fittings shall be rubber gasket push on type.
- Franchise Utility Note: Other utilities such as gas, electric, telephone, cable, etc. may share the wastewater service line trench provided such utilities are offset a minimum of 5' from the wastewater service line.

PIPE:

- All PVC pipe shall be installed with metallic detector tape.
- All PVC gravity or pressure wastewater pipe shall be green in color.
- Wastewater mains shall be Polyvinyl Chloride PVC SDR-35 for depths of burial up to 11.5'. Wastewater mains placed deeper than 11.5' shall be PVC SDR-26 unless specified and approved otherwise by the MSUD Engineer.
- Nominal diameter for sanitary sewer pipeline shall be 8" minimum. Residential and commercial service lines are excluded from this requirement.
- Embedment shall be as per the "Wastewater Pipe Embedment Detail" on this sheet.
- The minimum cover over all Wastewater mains is 4 feet, unless approved otherwise by the MSUD Engineer. Approved mains with less than 3.5 feet of cover shall be capped as per the "Concrete Cap" Detail.
- Clay cut-off walls shall be constructed as per the "Clay Cut Off Wall" Detail.
- PVC wastewater pipe is allowed to be stored a maximum of six (6) months without cover. Thereafter all pipe should be covered or kept away from sunlight and protected from other elements.
- When PVC wastewater pipe is installed in casing, casing spacers shall be used to prevent damage to the pipe and bell during installation. PVC pipe shall not rest on the bells. Plastic spacers such as RACI or approved equal shall be used.
- Pipe shall be handled so as to protect pipe and pipe joints and carefully bedded to provide continuous bearing and prevent uneven settlement. Pipe shall be protected against flotation at all times. Open ends of installed pipe shall be sealed at all times when construction is not in progress.

WASTEWATER SERVICE NOTES:

- All property corners shall be staked with iron pins prior to the installation of any wastewater services. The locations of the wastewater service shall be staked according to the plans.
- Wastewater services to be marked with "W" stamped or cut in the curb and painted green.
- Contractor shall install locator pads or balls on the end of sewer services.

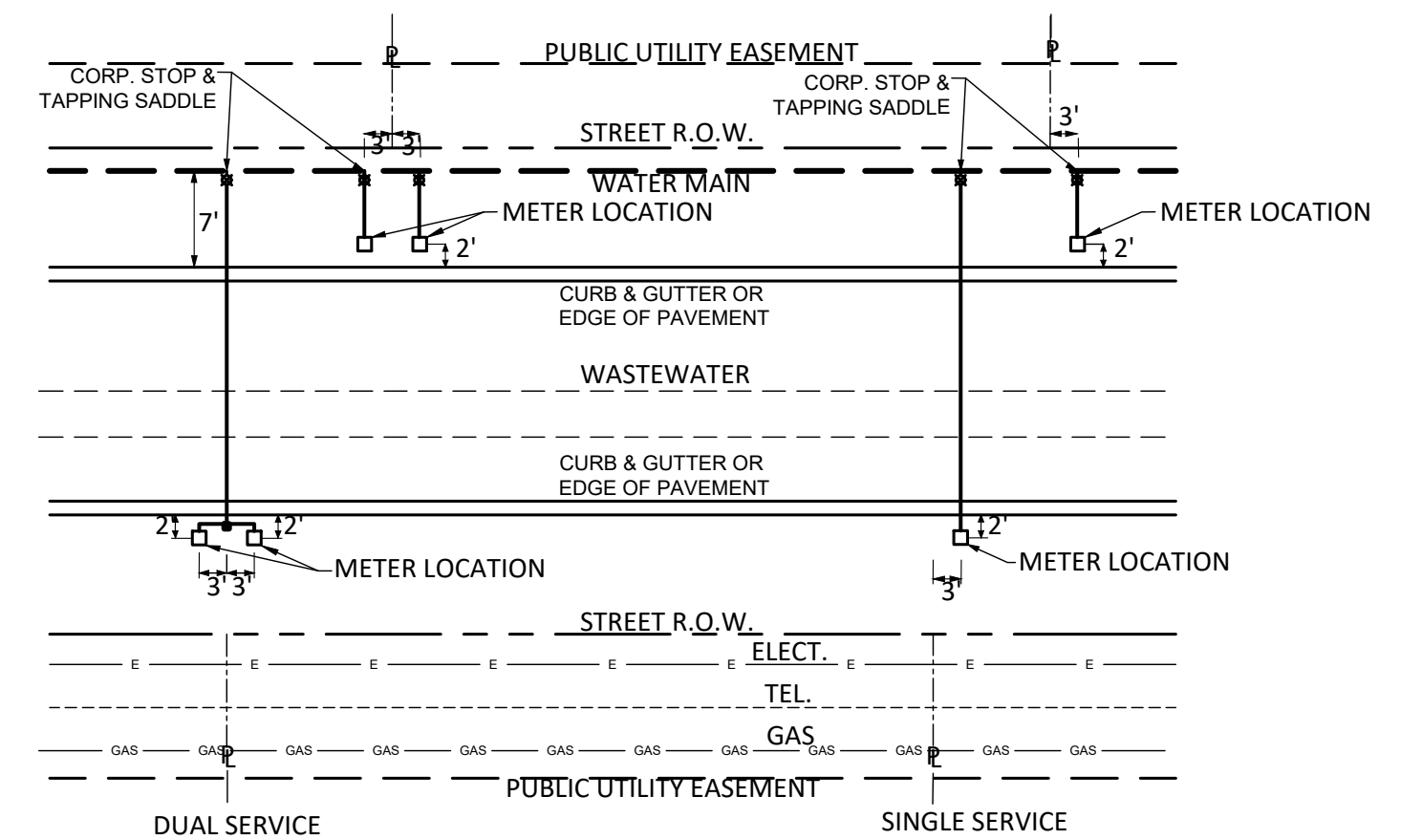
TESTING:

- The following tests shall be performed and a written report provided to Mustang SUD:
- Televising as per NCTCOG Item 507.5.2 specifications. Camera shall pan around to show service connections.
 - Low pressure air testing as per TCEQ 31 TAC 217.57.
 - Mandrel deflection test as per TCEQ 31 TAC 217.57
 - Infiltration/Exfiltration test as per TCEQ 31 TAC 217.57.
 - Manholes shall be tested per TCEQ 31 TAC 217.58.
 - Provide final air test and clean prior to project acceptance or final walk-through.

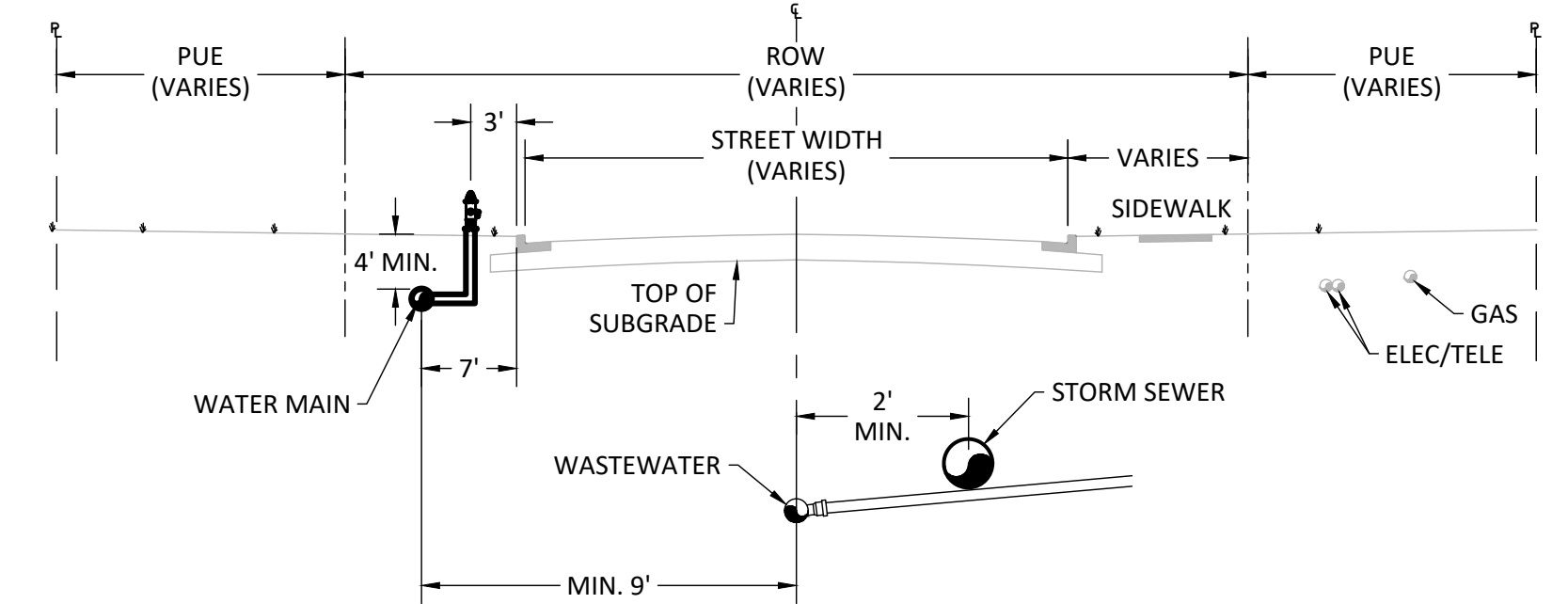
SYSTEM DESIGN VALUES:

WATER:
 Average Day Demand = 288 GPD/Connection
 Maximum Day Demand = 0.6 gpm
 Peak Hour Demand = 1.032 gpm
 Single-family Residential = 3.2 people per unit
 Multi-family Residential = 2.25 people per unit

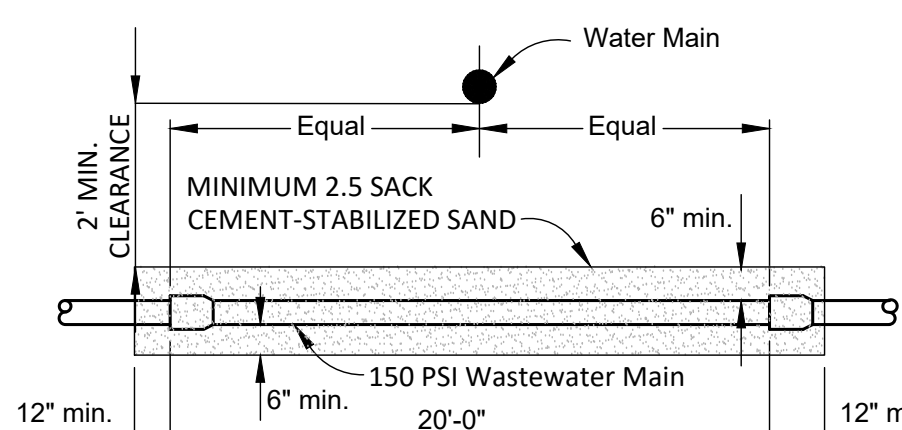
WASTEWATER:
 SF Average Day Generation = 250 gpd/connection
 MF Average Day Generation = 175 gpd/connection
 SF Maximum Day Generation = 1000 gpd/connection
 MF Maximum Day Generation = 700 gpd/connection
 Single-family Residential = 3.2 people per unit
 Multi-family Residential = 2.25 people per unit



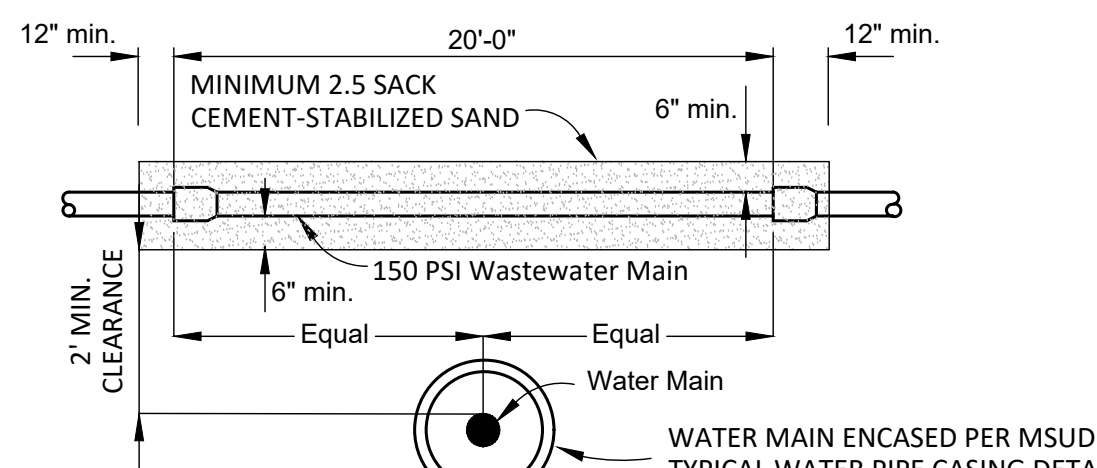
TYPICAL WATER LINE/SERVICE LOCATION LAYOUT DETAIL
N.T.S.



TYPICAL UTILITY PROFILE CURB & GUTTER ROAD SECTION
N.T.S.



WATER OVER WASTEWATER CROSSING
N.T.S.



WATER UNDER WASTEWATER CROSSING
N.T.S.

NOTES:

- WHERE A WATER MAIN CROSSES A WASTEWATER MAIN OR LATERAL AND NINE-FOOT SEPARATION CANNOT BE ACHIEVED, A FULL JOINT (20') OF PRESSURE-RATED PVC PIPE (150 PSI MIN.) SHALL BE USED ON THE WASTEWATER MAIN OR LATERAL, CENTERED ABOUT THE WATER MAIN.
- ADDITIONALLY, WHERE A WASTEWATER MAIN CROSSES OVER A WATER MAIN, AND NINE-FOOT SEPARATION CANNOT BE ACHIEVED, THE WATER MAIN SHALL BE ENCASED IN AN 18-FOOT (OR LONGER) SECTION OF PIPE CENTERED ABOUT THE WASTEWATER MAIN.

NO.	REVISION	BY	DATE

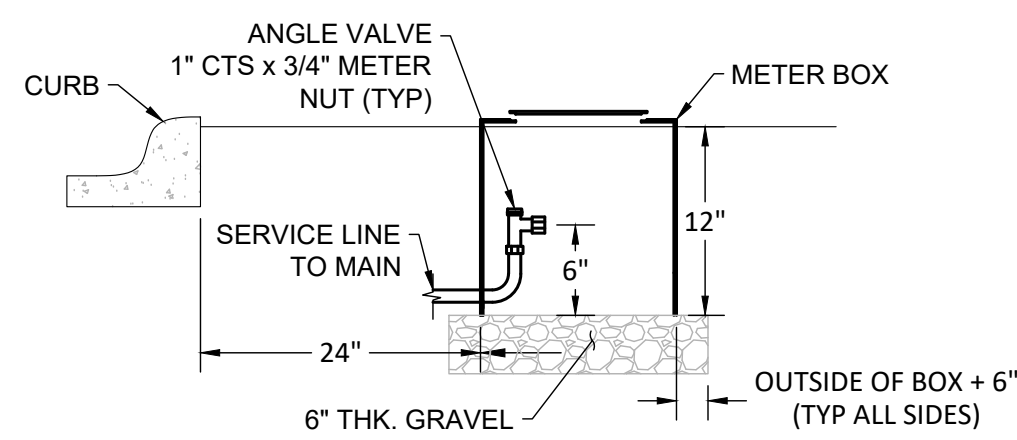


APPROVED BY MSUD GENERAL MANAGER: C. BOYD DATE: 2025-09-15

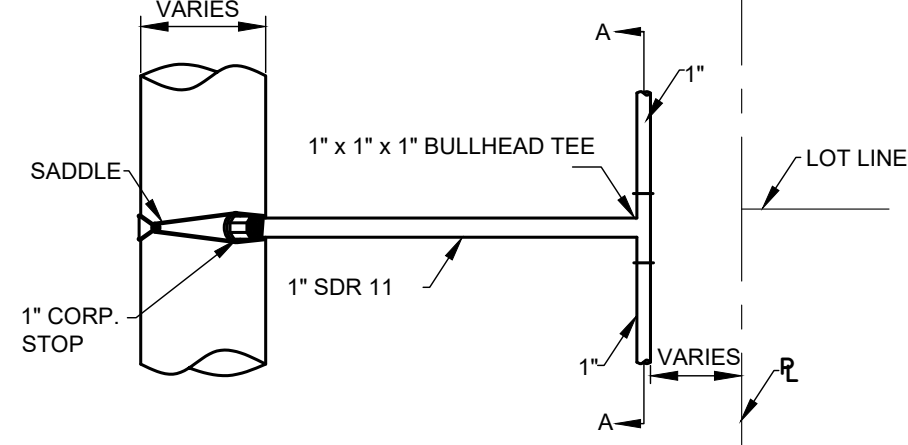
GENERAL NOTES

CERTIFICATION: THIS MUSTANG SPECIAL UTILITY DISTRICT STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. THIS ENGINEER IS ALSO CERTIFYING THAT THE CONTENT OF THE DETAILS AND NOTES ON THIS SHEET HAVE NOT BEEN ALTERED FROM THAT RECEIVED FROM MUSTANG SPECIAL UTILITY DISTRICT.

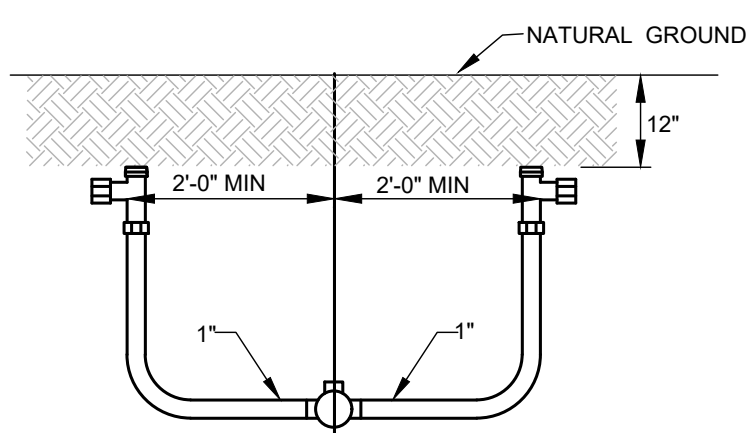
L:\PROJECTS\2006\21544 Mustang SUD General Engineering_Standard Details and General Notes\MSUD Standard Details\MSUD General Notes and Standard Detail 2024_Chris Updates 06-26-2024.dwg, 6/26/2024 3:20:35 PM



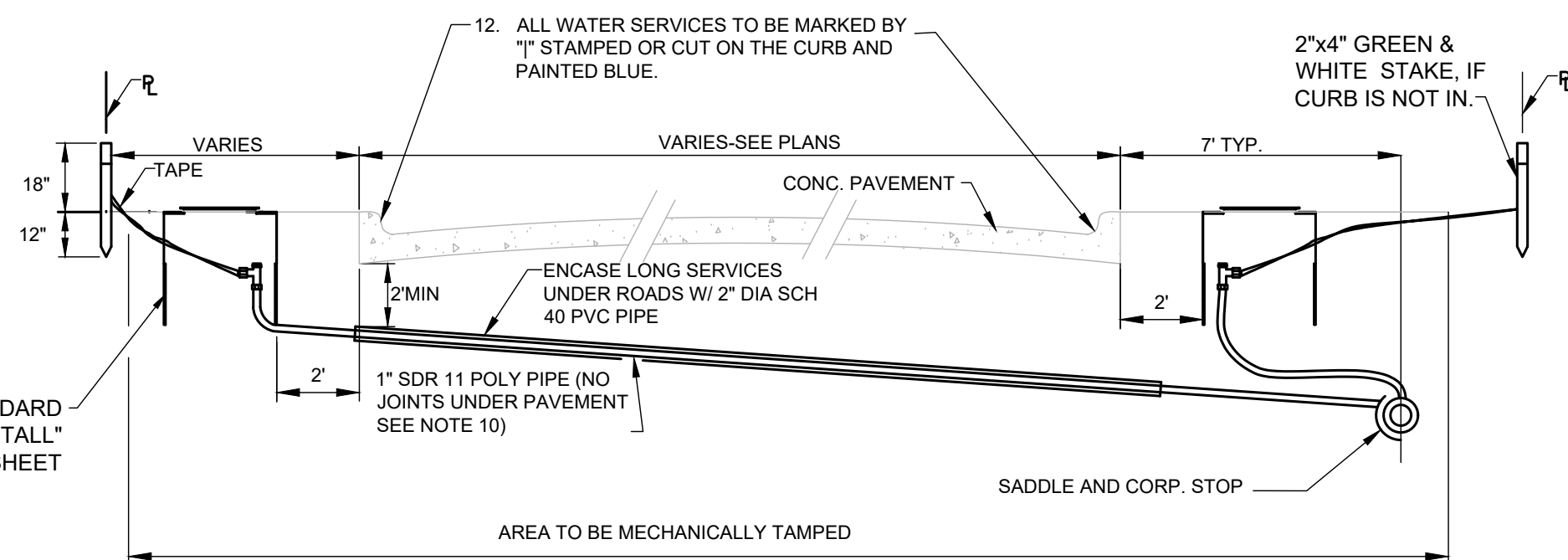
STANDARD METER BOX INSTALL
N.T.S.



1" SERVICE WITH BULLHEAD TEE



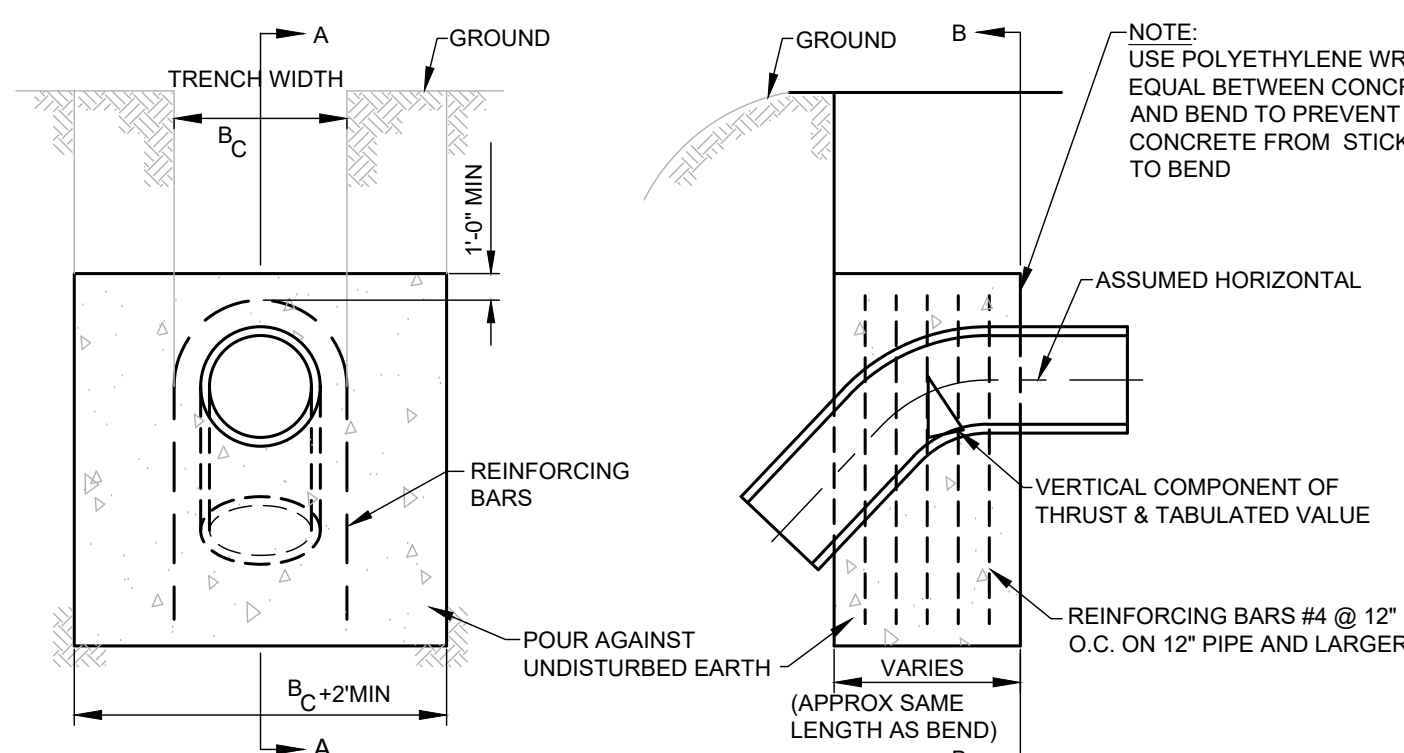
SECTION 'A - A' (ROTATED 90°)



WATER SERVICE DETAIL
N.T.S.

WATER SERVICE NOTES:

- ALL PROPERTY CORNERS SHALL BE STAKED WITH IRON RODS PRIOR TO THE INSTALLATION OF WATER SERVICES. THE LOCATIONS OF SERVICES SHALL BE STAKED ACCORDING TO THE PLANS.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FURNISH AND INSTALL THE CORPORATION STOP, WATER SERVICE PIPE, ANGLE VALVE, CONNECTOR PIPE, AND METER BOX AS PER THE DETAILS ON THIS SHEET.
- DIRECT TAPS ARE NOT ALLOWED. STAINLESS STEEL EPOXY COATED TAP SADDLES WITH IP THREADS SHALL BE USED FOR 1" TO 2" TAPS.
- ALL TAPS LARGER THAN 2" SHALL BE MADE USING TAPPING TEES.
- CUTTER FOR TAPS TO BE OF THE DOUBLE SLOTTED TYPE.
- 1" TO 2" TAPS SHALL BE A MINIMUM OF 1' APART WITH TAPS NO CLOSER THAN 1' FROM THE END OF THE PIPE.
- HOUSE SERVICES ON COMMON LOT LINES SHALL BE 1" WITH BULLHEAD.
- CONTRACTOR MAY USE EITHER FLARED OR COMPRESSION FITTINGS WITH RESTRAINED UNIONS.
- NO SPLICES OF WATER SERVICES SHALL BE PERMITTED UNDER PAVEMENT UNLESS APPROVED BY THE MSUD ENGINEER.
- METER BOX SHALL BE SET 2 FT BEHIND CURB, OUTSIDE OF DRIVEWAYS AND PAVED AREAS.
- ALL METERS 2" AND SMALLER SHALL HAVE A BFP INSTALLED WITH THE METER ASSEMBLY. ALL WATER METER ASSEMBLIES ARE SUPPLIED BY MSUD.
- SERVICE TO BE STAKED BEFORE PAVING. METER BOX TO BE STAKED AFTER PAVING.
- ALL RESIDENTIAL METERS SHALL BE BADGER E SERIES.
- ALL SERVICE BRASS COMPONENTS SHALL BE SOIL WATER PRODUCTS (OR APPROVED EQUAL) AND 150-PSI PRESSURE RATED.
- ALL RESIDENTIAL METER BOXES SHALL BE DFW37C-12-1F.
- METER BOX REQUIREMENTS:
 - 3/4"-1" IN THE NEW STANDARD DFW37C-12-1F (METER BOX SUPPLIED AND INSTALLED BY DEVELOPER; METER SUPPLIED AND INSTALLED BY MSUD).
 - 1.5" IN A 1730C-18-1F (METER BOX SUPPLIED AND INSTALLED BY DEVELOPER; METER SUPPLIED AND INSTALLED BY MSUD).
 - 2"- IN A 5X5 VAULT UNLESS SPACE IS LIMITED. (2" METER SUPPLIED BY MSUD ANYTHING LARGER BY DEVELOPER, VAULT BY DEVELOPER).



ELEVATION B-B

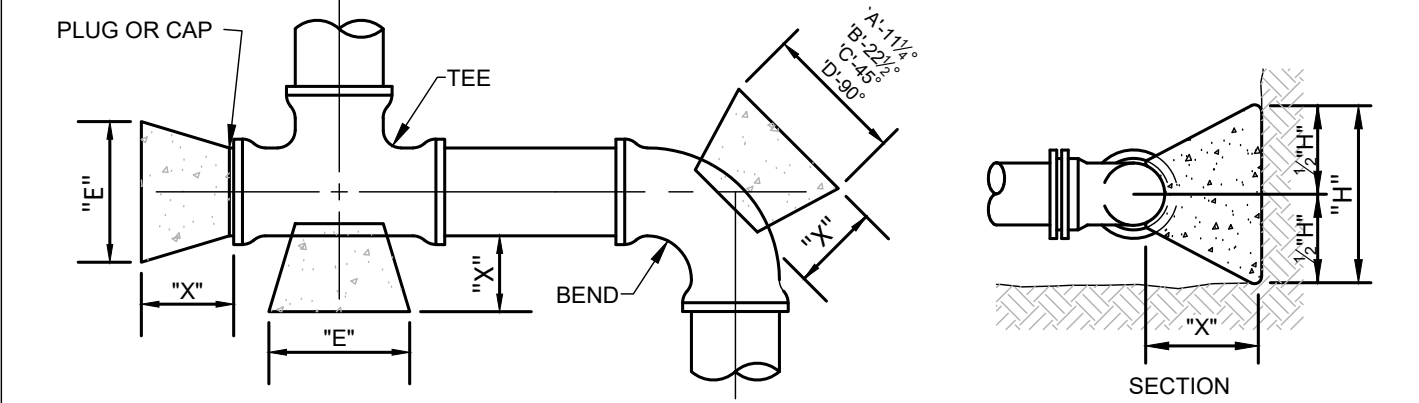
ELEVATION A-A

Δ	11 1/4"	22 1/2"	45"
I.D. (IN.)	11.5	22.5	45.0
VOL. C.Y.	0.3	0.5	1.0
4	0.6	1.1	2.1
8	1.0	2.0	3.6
10	1.5	2.9	5.4
12	2.1	4.2	7.7
14	2.8	5.6	10.3
16	3.7	7.2	13.3
18	4.6	9.1	16.8
20	5.7	11.1	20.6
24	8.1	15.9	29.3
30	9.3	18.3	33.9
36	13.4	26.2	48.5

VERTICAL THRUST BLOCKS AT FITTINGS

VERTICAL THRUST BLOCK NOTES:

- CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200 P.S.I. FOR 24" I.D. PIPE AND SMALLER AND 150 P.S.I. ON 30" I.D. AND LARGER.
- CALCULATIONS ARE BASED ON WEIGHT OF CONCRETE OF 140 LBS PER CUBIC FOOT. SAFETY FACTOR OF 1.5 AND AN ALLOWABLE SOIL BEARING VALUE OF 2,500 POUNDS PER SQUARE FOOT.
- VOLUMES OF VERTICAL BEND THRUST BLOCKS ARE NET VOLUMES OF CONCRETE TO BE FURNISHED. THE CORRESPONDING WEIGHT OF THE CONCRETE IS EQUAL TO OR GREATER THAN THE VERTICAL COMPONENT OF THRUST ON THE VERTICAL BEND.
- CONCRETE FOR BLOCKING SHALL BE 2500 P.S.I. CONCRETE AT 28 DAYS.
- DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD CONDITIONS WHERE AND AS DIRECTED BY THE ENGINEER. THE VOLUME OF CONCRETE BLOCKING SHALL NOT BE LESS THAN SHOWN HERE.
- ALL CONCRETE THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED TRENCH WALLS.
- KEEP CONCRETE CLEAR OF ALL JOINTS & ACCESSORIES. INSTALL 12 MIL POLYETHYLENE SHEETING AROUND FITTINGS. SECURE ENDS TO PREVENT INFILTRATION OF SOIL BETWEEN SHEETING AND PIPE FITTING PRIOR TO POURING THRUST BLOCK. PROTECT MECHANICAL JOINTS, FOLLOWERS, AND BOLTS FROM CONCRETE WITH TEMPORARY FORMS AND POLYETHYLENE.
- ALL CONCRETE THRUST BLOCKS SHALL CONSIST OF A MIXTURE OF 1:2:6 OF CEMENT TO WASHED SAND TO GRAVEL AND SHALL BE CURED A MINIMUM OF 24 HOURS.

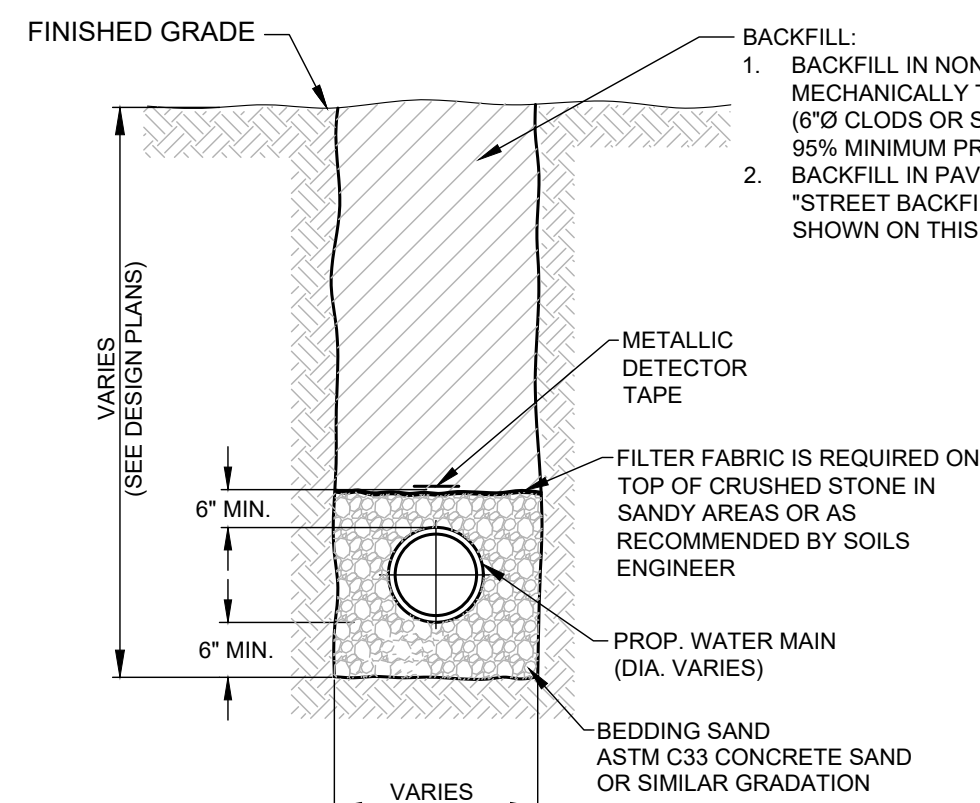


PIPE SIZE	"X" FT.	"H" FT.	11 1/4"		22 1/2"		45"		90"		TEE & PLUG	
			"A" FT.	MIN. AREA	"B" FT.	MIN. AREA	"C" FT.	MIN. AREA	"D" FT.	MIN. AREA	"E" FT.	MIN. AREA
4"	1.5	1.2	1.2	1.4	1.2	1.4	1.2	1.4	1.9	2.3	1.4	1.7
6"	1.5	1.3	1.3	1.7	1.3	1.7	2.0	2.6	3.7	4.8	2.6	3.4
8"	1.5	1.3	1.3	1.7	1.8	2.3	3.4	4.4	6.3	8.2	4.5	5.9
10"	1.5	1.4	1.4	2.0	2.4	3.4	4.8	6.7	8.8	12.3	6.2	8.7
12"	1.5	1.6	1.6	2.6	3.0	4.8	5.9	9.4	10.9	17.4	7.7	12.3
14"	1.5	1.8	1.8	3.2	3.6	6.5	7.1	12.8	13.0	23.4	9.2	16.5
16"	2.0	2.1	2.1	4.4	4.0	8.4	7.8	16.4	14.5	30.5	10.2	21.4
18"	2.0	2.3	2.3	5.3	4.6	10.6	9.0	20.7	16.5	38.0	11.7	26.9
20"	2.0	2.6	2.6	6.8	5.0	13.0	9.7	25.2	18.0	46.8	12.7	33.0
24"	2.0	3.1	3.1	9.6	6.0	18.6	11.6	36.0	21.2	65.7	15.2	47.1
30"	2.5	3.8	3.8	14.4	7.5	28.5	14.6	55.5	27.0	102.6	19.1	72.6
36"	2.5	4.5	4.5	20.3	9.0	40.5	17.7	79.7	32.6	146.7	23.1	104.0

HORIZONTAL THRUST BLOCK NOTES:

- RETAINER GLANDS OR OTHER RESTRAINING DEVICES MAY BE REQUIRED AS NEEDED.
- CALCULATIONS ARE BASED ON A TEST PRESSURE OF 150 PSI. WEIGHT OF CONCRETE OF 140 LBS PER CUBIC FOOT. SAFETY FACTOR OF 1.5 AND AN ALLOWABLE SOIL BEARING VALUE OF 2,500 POUNDS PER SQUARE FOOT. FOR OTHER PRESSURES AND SOIL STRENGTHS, AREAS AND VOLUMES MUST BE ADJUSTED ACCORDINGLY.
- 2500 PSI CONCRETE AT 28 DAYS SHALL BE USED FOR ALL BLOCKING.
- ALL MINIMUM AREAS ARE IN SQUARE FEET.
- ALL CONCRETE THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED TRENCH WALLS. THE DISTANCE FROM PIPE FITTINGS TO TRENCH WALL SHALL BE A MINIMUM OF 12" AT THRUST BLOCK.
- KEEP CONCRETE CLEAR OF ALL JOINTS & ACCESSORIES. INSTALL 12 MIL POLYETHYLENE SHEETING AROUND FITTINGS. SECURE ENDS TO PREVENT INFILTRATION OF SOIL BETWEEN SHEETING AND PIPE FITTING PRIOR TO POURING THRUST BLOCK. PROTECT MECHANICAL JOINTS, FOLLOWERS, AND BOLTS FROM CONCRETE WITH TEMPORARY FORMS AND POLYETHYLENE.
- ALL CONCRETE THRUST BLOCKS SHALL CONSIST OF A MIXTURE OF 1:2:6 OF CEMENT TO WASHED SAND TO GRAVEL AND SHALL BE CURED A MINIMUM OF 24 HOURS.
- ALL JOINTS SHALL BE TEMPORARILY JACKED WHEN POURING THRUST BLOCKS.
- CONCRETE THRUST BLOCKS SHALL APPLY TO ALL PIPE FITTINGS.

HORIZONTAL THRUST BLOCKS AT FITTINGS



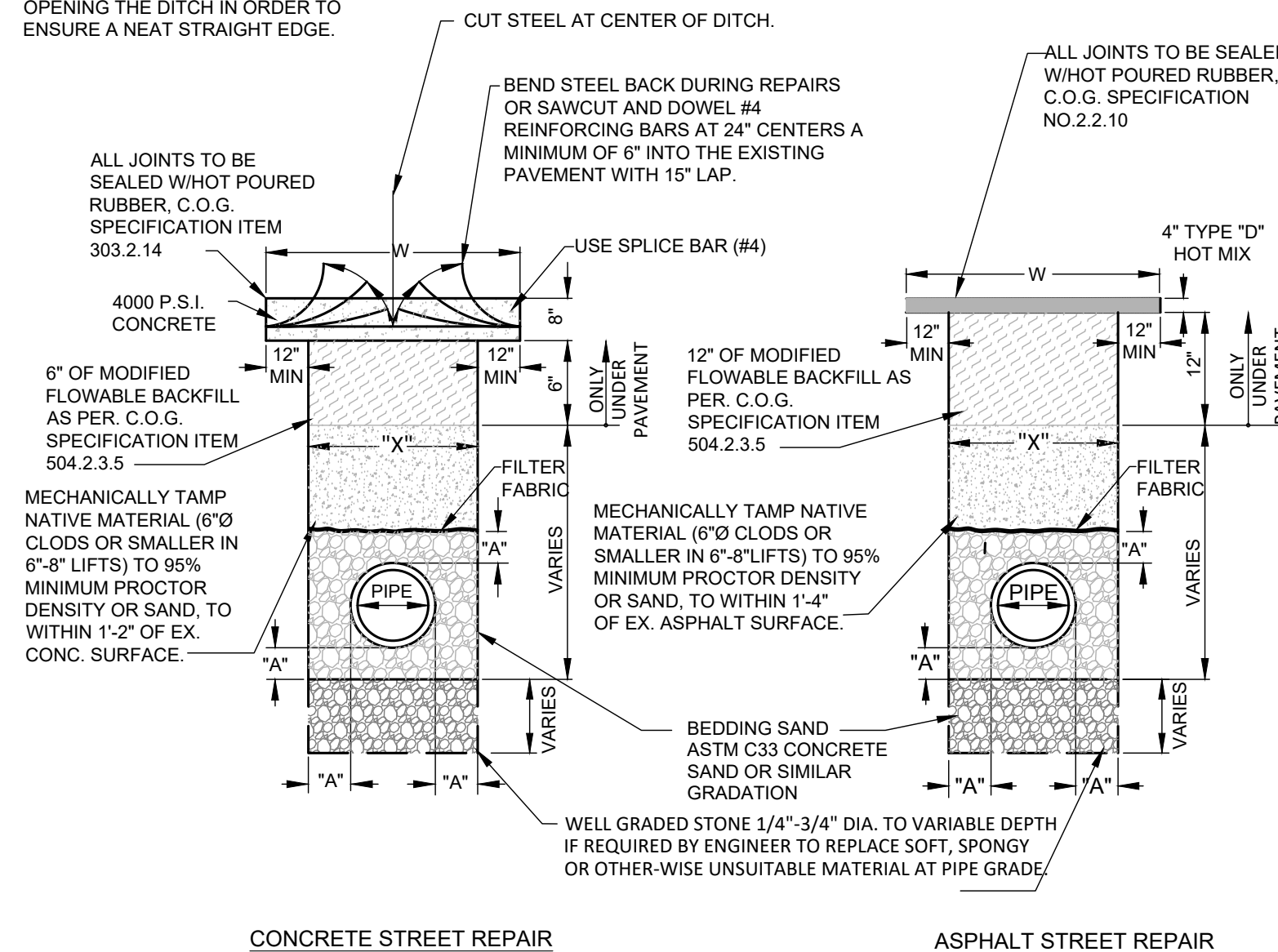
TYPICAL PIPE EMBEDMENT
N.T.S.

TABLE OF DIMENSIONS FOR WIDTH OF TRENCH AND PAVEMENT REPLACEMENT

NORMAL SIZE OF PIPE IN INCHES	O.D. OF PIPEBELL IN INCHES (PVC-DR18)	MINIMUM TRENCH WALL CLEARANCE "A" IN INCHES	WIDTH OF TRENCH (X) IN INCHES		WIDTH OF PWMT. REPLACEMENT *
			MAXIMUM ** IN INCHES	MINIMUM ** IN INCHES	(W) CONCR & ASPHALT **
6	6.9	6	24	19	48
8	9.05	6	24	21	48
10	11.10	6	28	24	48
12	13.20	6	30	26	50
16+	VARIES	8	*	*	*

NOTE: * REFER TO THE PLANS FOR SPECIFIED WIDTH OF REPLACEMENT.
** RECOMMENDED WIDTHS - VARIES BASED ON DEPTH AND SOIL MATERIAL.

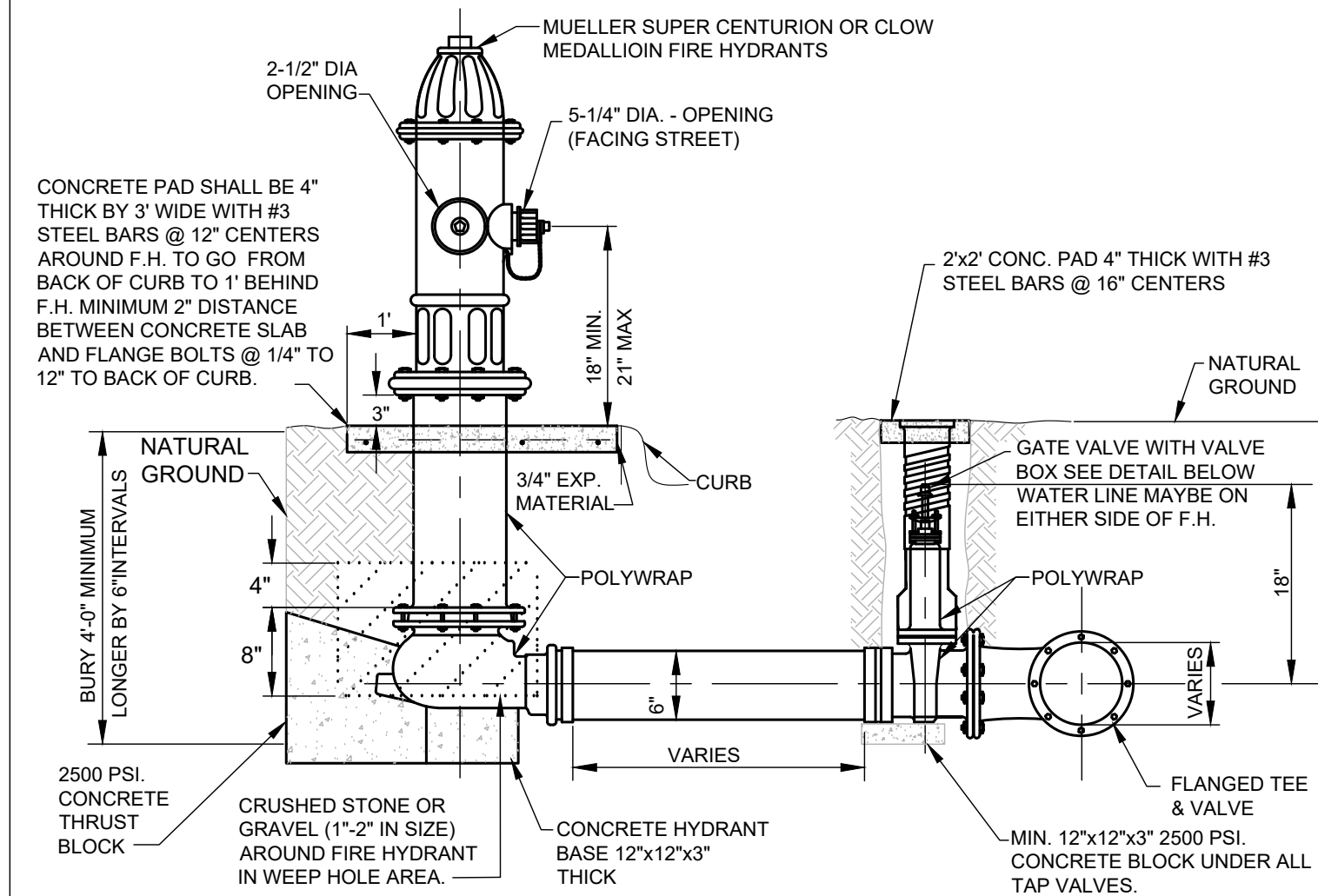
NOTE: SAWCUT TO REPAIR ASPHALT OR CONCRETE PAVEMENT PRIOR TO OPENING THE DITCH IN ORDER TO ENSURE A NEAT STRAIGHT EDGE.



CONCRETE STREET REPAIR

ASPHALT STREET REPAIR

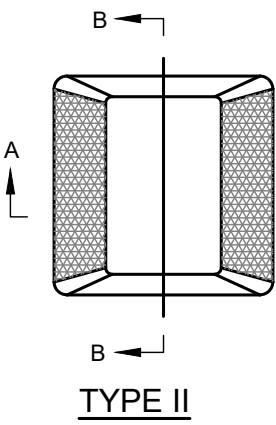
STREET BACKFILL AND REPAIR
N.T.S.



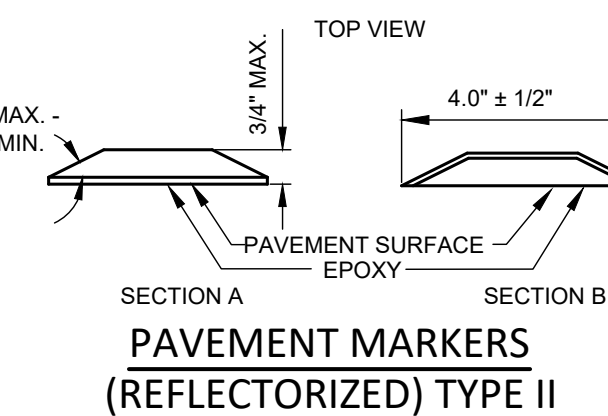
STANDARD FIRE HYDRANT DETAIL
N.T.S.

FIRE HYDRANT NOTES:

- FIRE HYDRANTS SHALL BE LOCATED 3' OFF BACK OF CURB IN RESIDENTIAL, & 4' OFF BACK OF CURB IN INDUSTRIAL.
- FIRE HYDRANTS SHALL BE COATED WITH KEM-LUSTRAL OR AN EQUIVALENT COATING.
- FIRE HYDRANT LOCATION WILL BE MARKED BY PLACING A TYPE II PAVEMENT MARKER REFLECTORIZED BLUE 4" OFF OF THE TRAFFIC LANE BUTTONS. THE MARKER WILL BE IN THE LANE NEAREST TO THE FIRE HYDRANT. ALL MARKERS AT INTERSECTIONS SHOULD BE 10 FEET BACK FROM THE INTERSECTION. HYDRANT MARKERS SHOULD BE PLACED 4" OFF THE CENTER STRIPE OR OTHER TRAFFIC BUTTONS AS PER DRAWINGS.
- FIRE HYDRANT LEAD SHALL BE NO LONGER THAN 10' IN LENGTH.
- FIRE HYDRANT SHALL BE POWDER COATED SILVER WITH THE EXCEPTION OF THE BONNET AND CAPS, WHICH SHALL BE PRIMER COATED BASED ON FLOW.
- FIRE HYDRANTS SHALL INCLUDE STORZ ADAPTER WITH CAP.
- FIRE HYDRANT FLOW TESTING TO BE COMPLETED BY THRD PARTY (NOT MUSTANG SUD).



TYPE II



PAVEMENT MARKERS (REFLECTORIZED) TYPE II

Sample Fire Hydrant Flow Test Report
Fire Hydrant Flow Test Report (NFPA 291)

Location _____ Date _____
 Test Performed By _____ Time _____ M.
 Representative of _____
 Mustang SUD Witness _____
 Purpose of Test _____
 If Pumps Affect Test, Indicate Pumps Operating _____

Fire Hydrant	A ₁	A ₂	A ₃	A ₄
Nozzle Size				
Pitot Reading				
Elev. Difference from Test Hydrant (B)				
Discharge Coeff. Flow (gpm)				

 Static B _____ psi Residual B _____ psi
 Projected Results @ 20 psi Residual _____ gpm; or @ _____ psi Residual _____ gpm
 Remarks _____

Location map: Show line sizes and distance to next distribution system intersection. Show valves and hydrant branch size. Indicate north. Show flowing hydrants - Label A₁, A₂, A₃, A₄. Show location of static and residual - Label B.

Indicate B Hydrant _____ Sprinkler _____ Other (identify) _____
 NOTE: Mail, hand-deliver or otherwise provide this completed report to the Mustang Special Utility District prior to acceptance of the system and beginning of service.

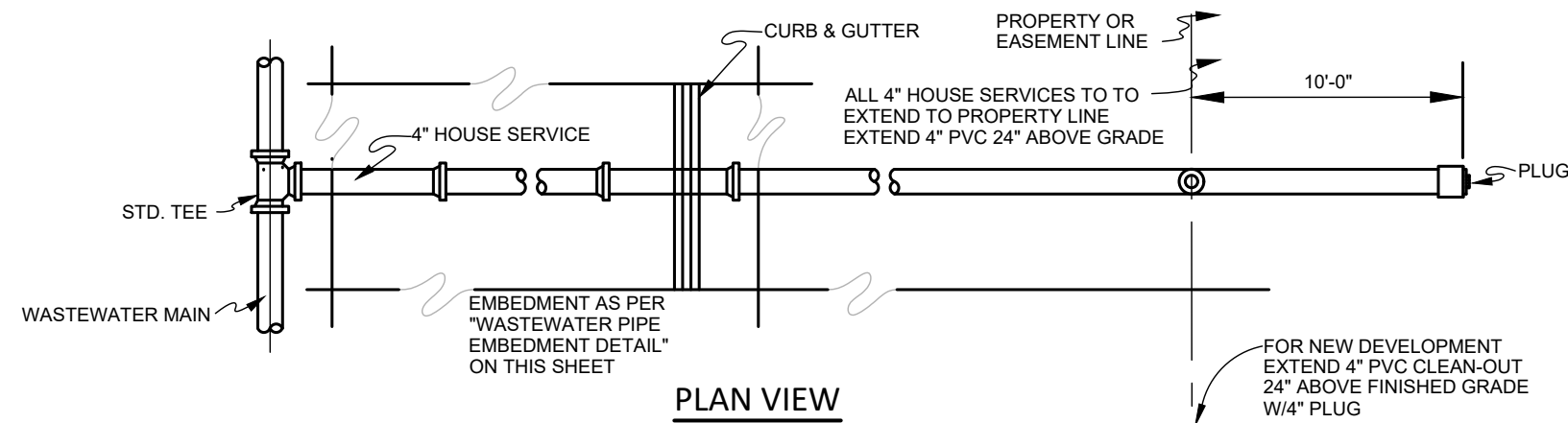
NO.	REVISION	BY	DATE



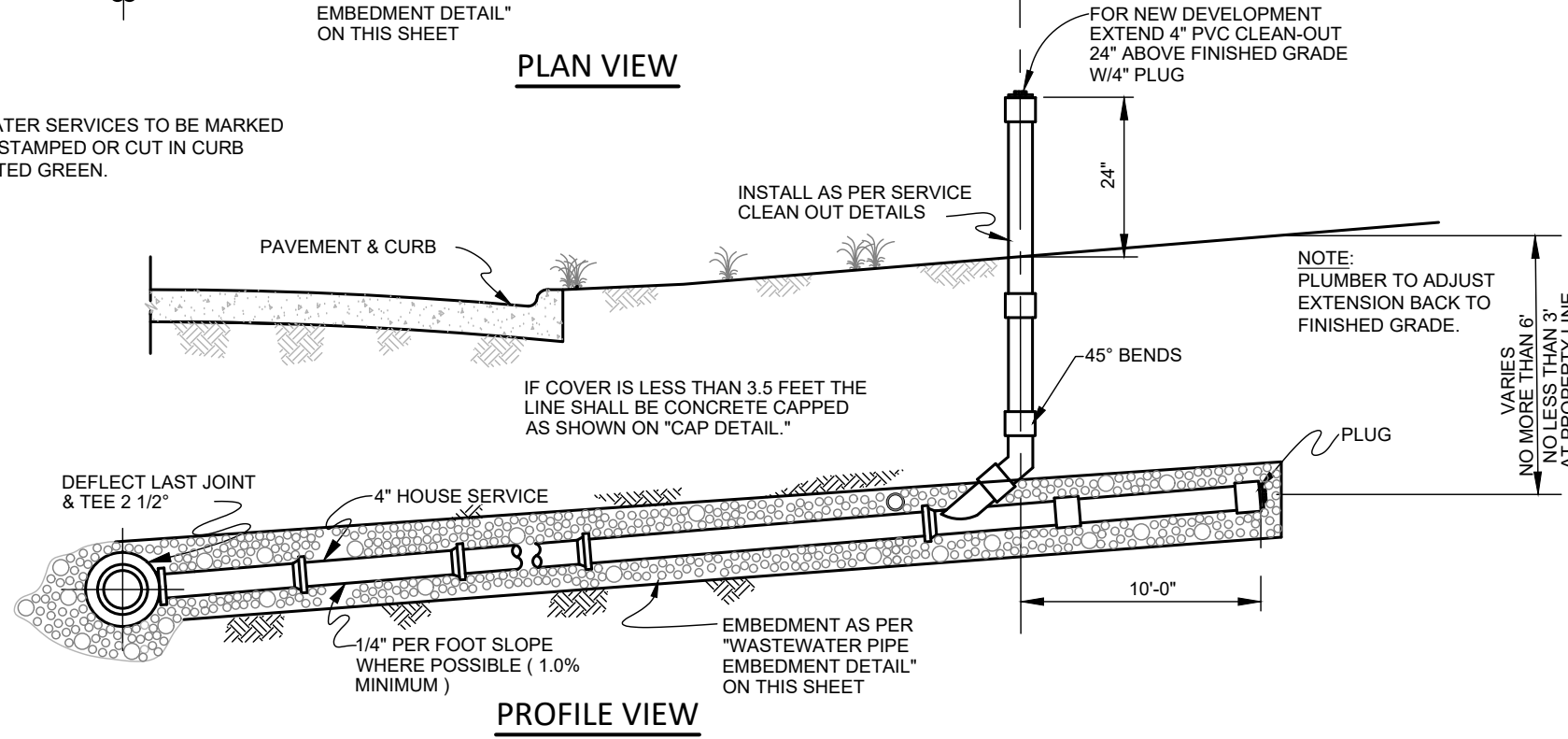
APPROVED BY MSUD GENERAL MANAGER: C. BOYD DATE: 2025-09-15

WATER DETAILS (1 OF 2)

CERTIFICATION: THIS MUSTANG SPECIAL UTILITY DISTRICT STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. THIS ENGINEER IS ALSO CERTIFYING THAT THE CONTENT OF THE DETAILS AND NOTES ON THIS SHEET HAVE NOT BEEN ALTERED FROM THAT RECEIVED FROM MUSTANG SPECIAL UTILITY DISTRICT.

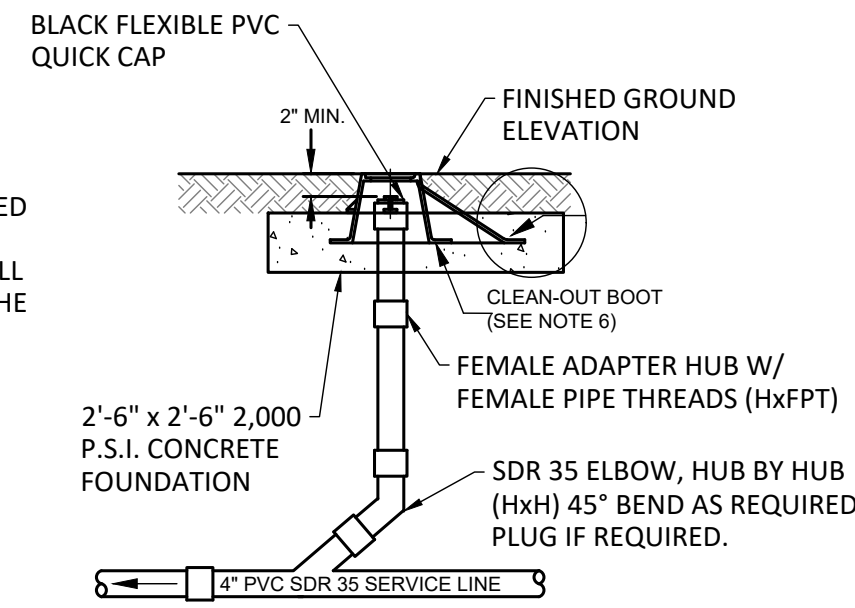


NOTE: WASTEWATER SERVICES TO BE MARKED WITH (||) STAMPED OR CUT IN CURB AND PAINTED GREEN.



STANDARD WASTEWATER SERVICE CONNECTION
N.T.S.

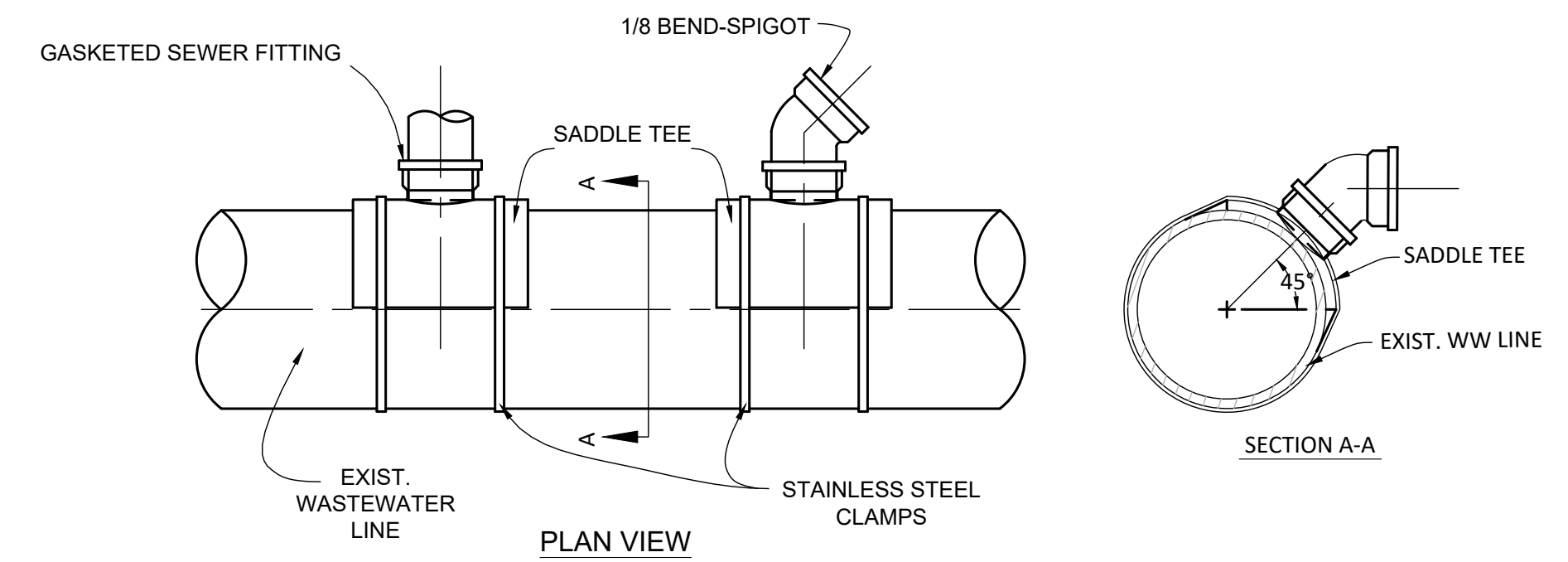
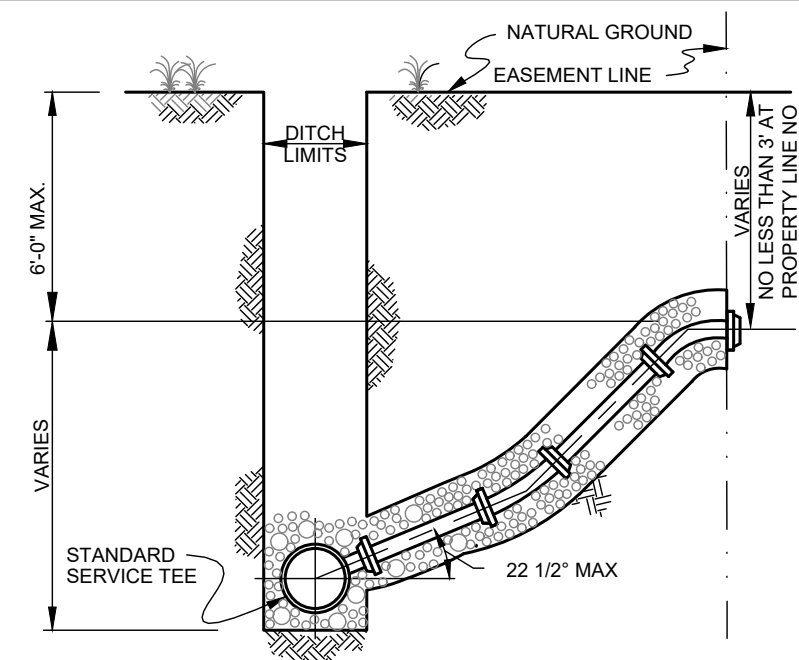
- WASTEWATER SERVICE CLEAN-OUT NOTES:**
- FOR NEW DEVELOPMENT EXTEND 4" PVC CLEAN-OUT 24" ABOVE FINISHED GRADE WITH 4" PLUG.
 - AT THE TIME OF SERVICE CONNECTION THE CLEAN-OUT EXTENSION SHALL BE ADJUSTED AND THE APPROPRIATE CLEAN-OUT BOOT INSTALLED AT THE FINISHED GROUND ELEVATION.
 - ALL FITTINGS SHALL BE SOLVENT WELD
 - ALL FITTINGS SHALL BE PVC SDR 35 OR SCHEDULE 40
 - CENTER LINE OF CLEAN-OUTS TO BE PLACED 6 INCHES INSIDE CITY RIGHT-OF-WAY LINE UNLESS SPECIFIED OTHERWISE.
 - USE CAST IRON SANITARY CLEAN-OUT BOOT UNDER PAVED SURFACES ONLY. USE POLYPROPYLENE CLEAN-OUT BOOT UNDER UNPAVED AREAS.



WASTEWATER SERVICE CLEAN-OUT DETAIL
N.T.S.

NOTE:
THE EXTENSION TO THE PROPERTY/EASEMENT LINE SHALL BE AS PER THE STANDARD "WASTEWATER SERVICE CONNECTION" DETAIL ON THIS SHEET.

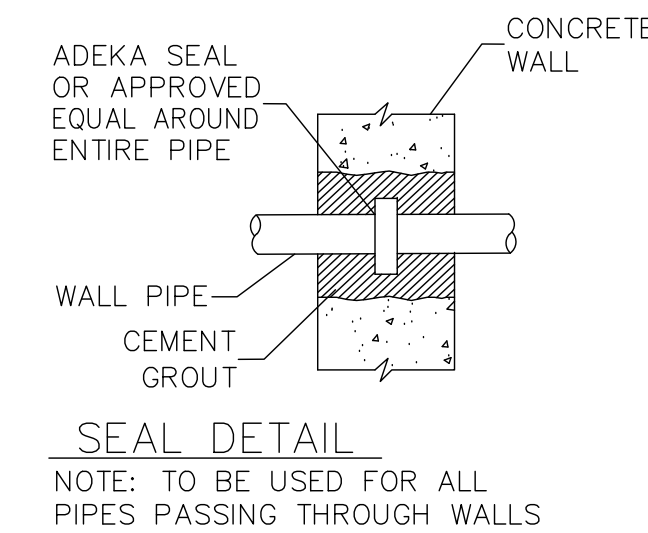
STANDARD DEEP CUT CONNECTION
N.T.S.



NOTES:

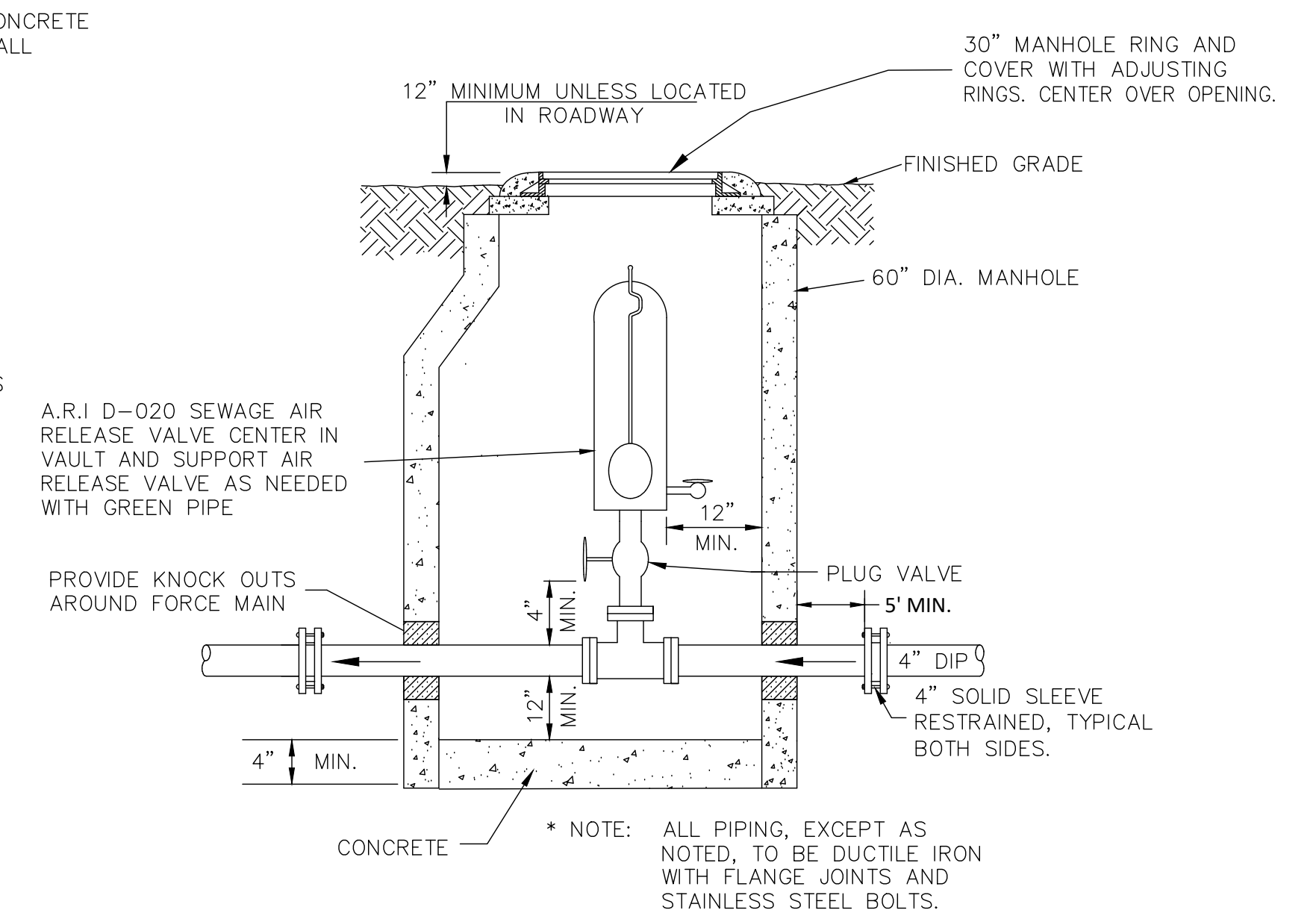
- FLEXIBLE SADDLE TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
- SADDLE TEE SHALL BE ORIENTATED 45° TO MAIN.
- EXCAVATE AROUND EXISTING 8-INCH PIPE, EXPOSING SUFFICIENT ROOM FOR S.S. CLAMPS.
- THOROUGHLY CLEAN AND DRY THE MATING SURFACE WITH RAG OR PAPER TOWEL MAKE SURE THEY ARE FREE OF DUST AND MOISTURE.
- MARK THE SIZE OF THE HOLE TO BE CUT USING THE GASKET SKIRT OR THE SADDLE ITSELF AS THE TEMPLATE.
- SAW OUT THE SECTION OF THE PIPE WHERE THE SADDLE WILL BE LOCATED, WITH A SABER OR KEY HOLE SAW.
- TEST TO MAKE SURE SADDLE FITS HOLE PROPERLY.
- SERVICE PIPE SHALL NOT EXTEND MORE THAN ONE-HALF INCH INTO THE MAIN.
- PLACE GASKET SKIRT AND SADDLE OVER OPENING AND TIGHTEN BAND CLAMPS EVENLY UNTIL SADDLE IS FIRMLY ATTACHED TO THE PIPE
- APPLY PRESSURE ON THE SADDLE AGAINST THE PIPE WHILE TIGHTENING THE CLAMPS AS INDICATED ABOVE. DO NOT OVER TIGHTEN, DO NOT STRIP THREAD.
- REPLACE THE BEDDING AND BACKFILL IN ACCORDANCE WITH THE TRENCH EMBEDMENT DETAIL.

GASKETED SEWER FITTING FOR SEWER SERVICE CONNECTIONS TO EXISTING MAINS
N.T.S.

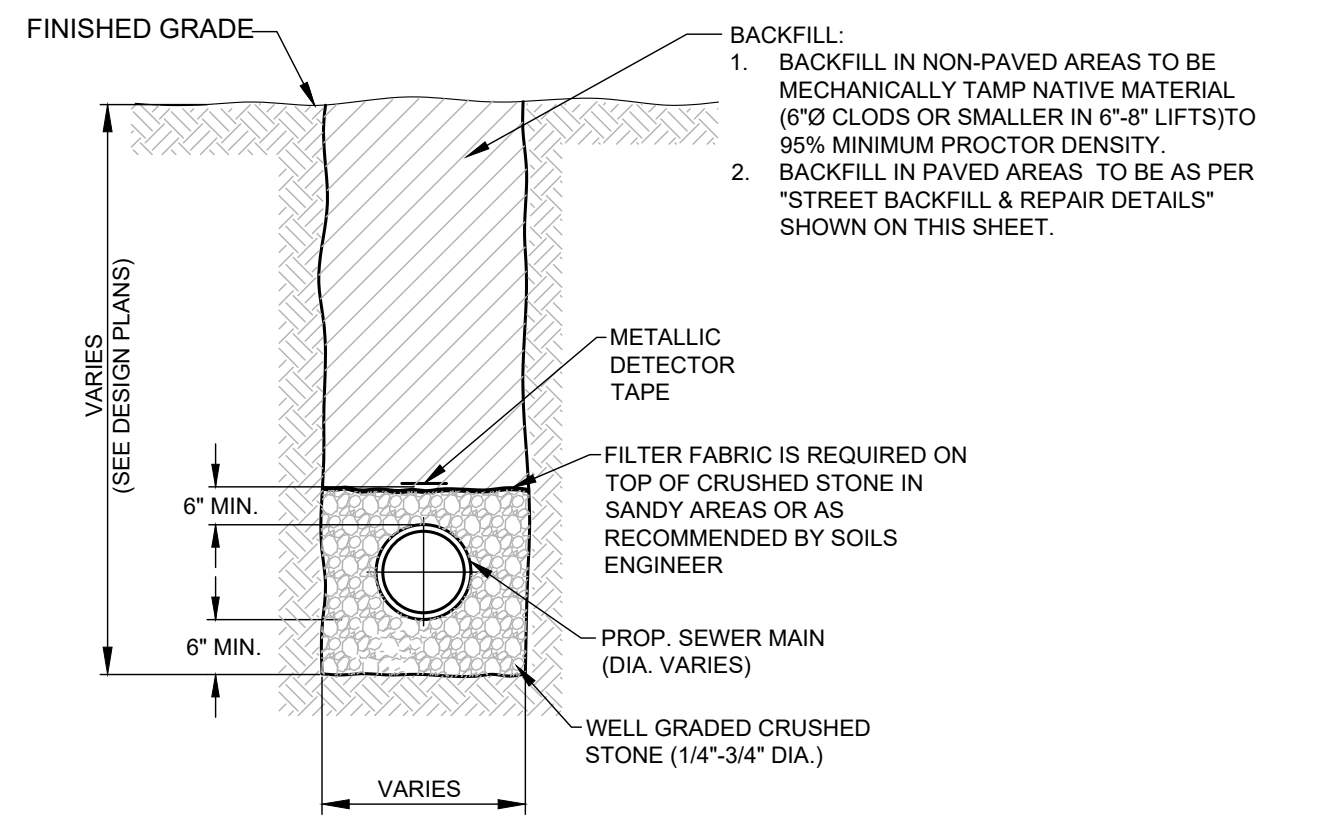


SEAL DETAIL

NOTE: TO BE USED FOR ALL PIPES PASSING THROUGH WALLS



SEWER AIR RELEASE VALVE
N.T.S.



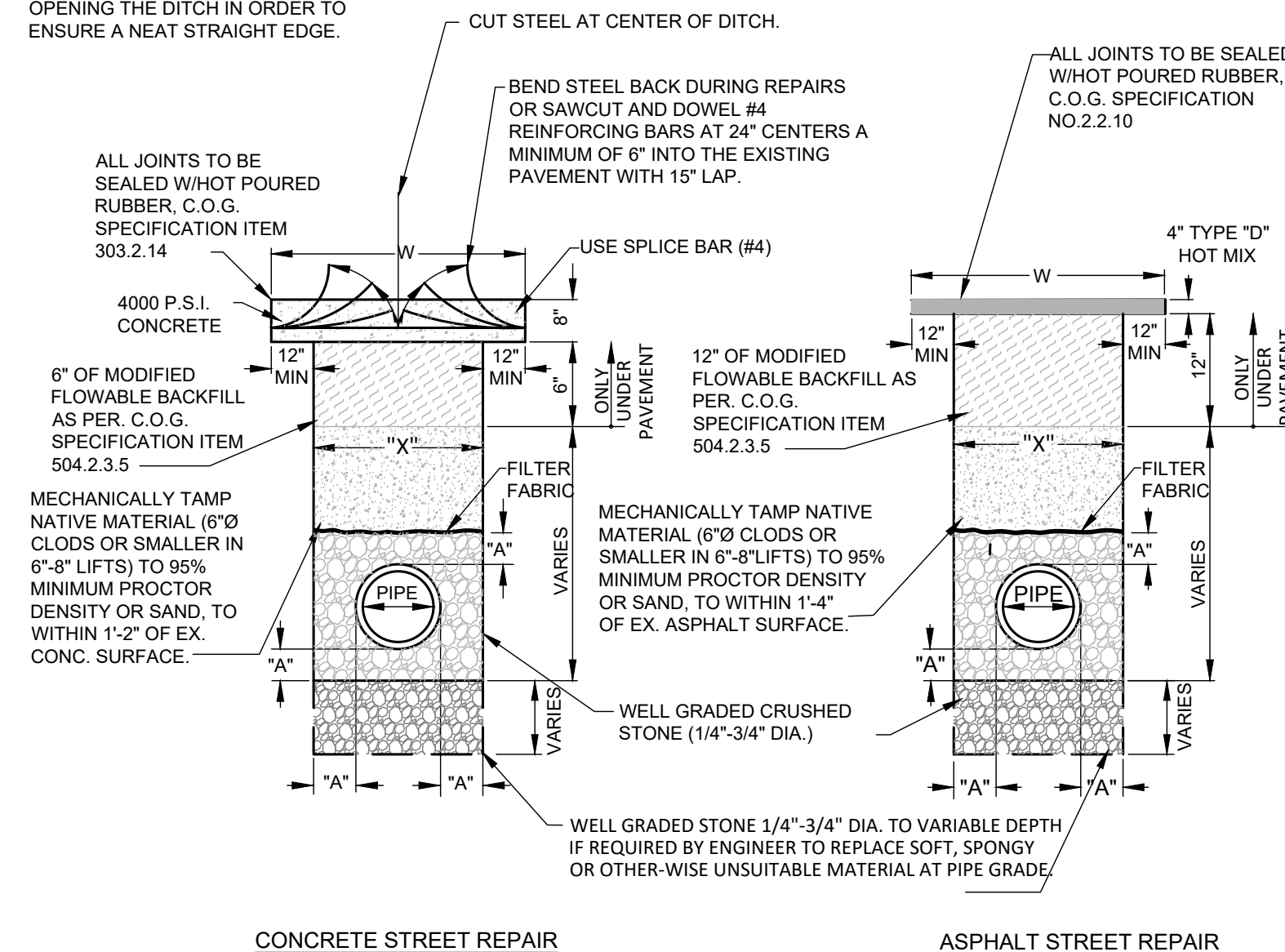
TYPICAL PIPE EMBEDMENT
N.T.S.

TABLE OF DIMENSIONS FOR WIDTH OF TRENCH AND PAVEMENT REPLACEMENT

NORMAL SIZE OF PIPE IN INCHES	O.D. OF PIPEBELL IN INCHES (PVC-DR18)	MINIMUM TRENCH WALL CLEARANCE "A" IN INCHES	WIDTH OF TRENCH (X) IN INCHES		WIDTH OF P.V.M.T. REPLACEMENT * IN INCHES (W) CONC & ASPHALT **
			MAXIMUM **	MINIMUM **	
6	6.9	6	24	19	48
8	9.05	6	24	21	48
10	11.10	6	28	24	48
12	13.20	6	30	26	50
16+	VARIES	8	*	*	*

NOTE: * REFER TO THE PLANS FOR SPECIFIED WIDTH OF REPLACEMENT.
** RECOMMENDED WIDTHS - VARIES BASED ON DEPTH AND SOIL MATERIAL.

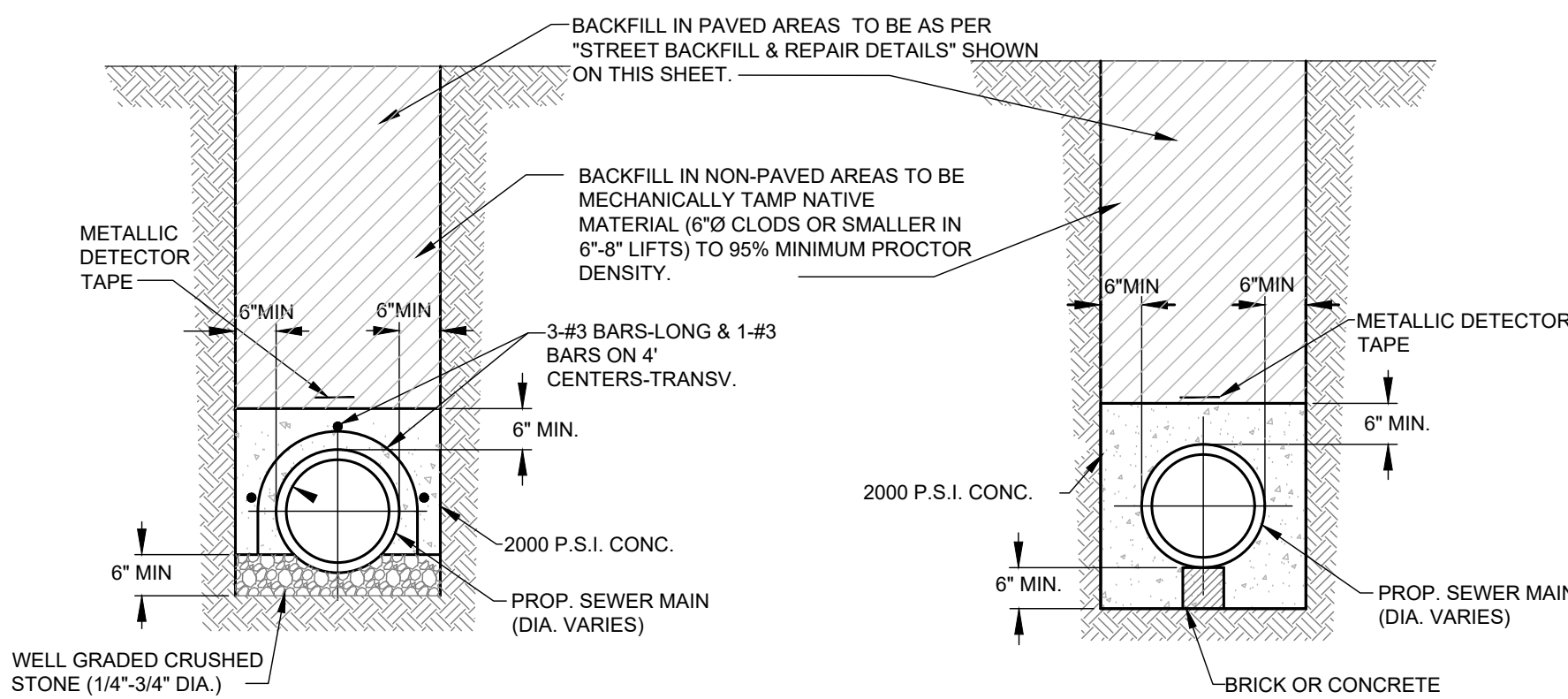
NOTE:
SAWCUT TO REPAIR ASPHALT OR CONCRETE PAVEMENT PRIOR TO OPENING THE DITCH IN ORDER TO ENSURE A NEAT STRAIGHT EDGE.



CONCRETE STREET REPAIR

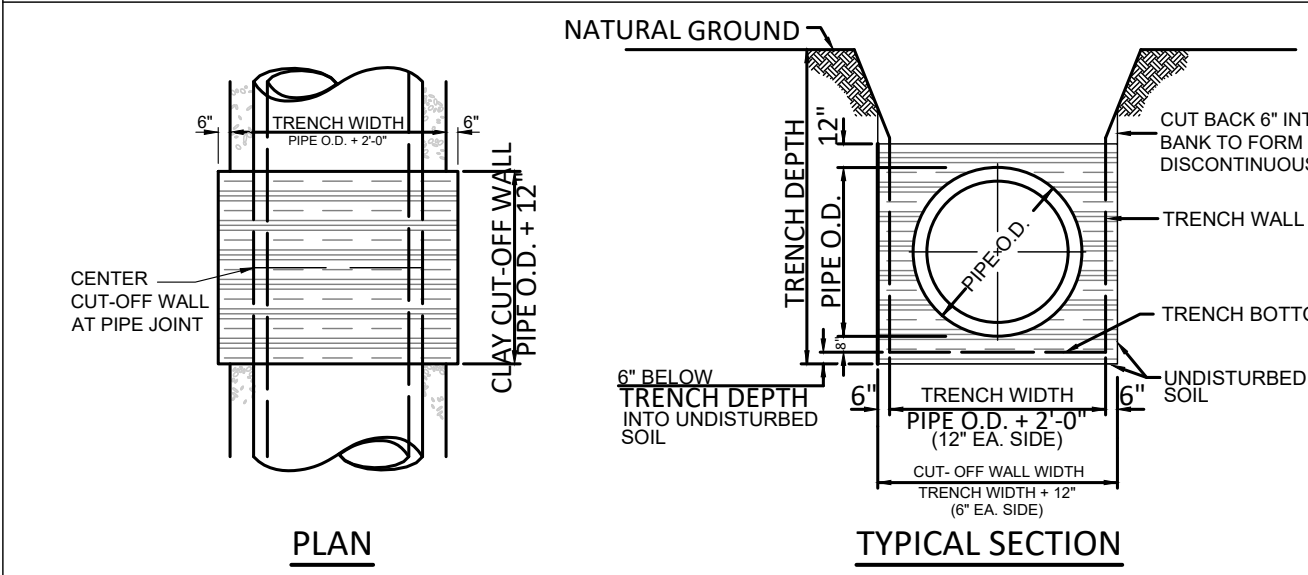
ASPHALT STREET REPAIR

STREET BACKFILL AND REPAIR
N.T.S.



CONCRETE CAP DETAIL
N.T.S.

CONCRETE ENCASEMENT DETAIL
N.T.S.



CLAY CUT-OFF WALL
N.T.S.

CLAY CUT-OFF WALL NOTES:

- CLAY CUT-OFF WALLS SHALL BE CONSTRUCTED AT 250 FOOT INTERVALS ALONG ALL WASTEWATER MAIN INSTALLATIONS BETWEEN MANHOLES.
- THE CLAY CUT-OFF WALL SHALL BE PLACED AT THE MID POINT OF THE LENGTH OF THE PIPE BEING PLACED, BUT NOT AT A LOCATION WHERE A LATERAL OR SERVICE CONNECTS TO THE MAIN. THE MINIMUM CLEARING IS 10 FEET.
- MATERIAL FOR CLAY CUT-OFF WALL TO BE CLEAN MATERIAL WITH NO LUMPS LARGER THAN 3". CLAY TO HAVE P.I. OF 30 TO 40. MATERIAL TO BE PLACED IN 6" LIFTS, MOISTENED TO OPTIMUM MOISTURE CONTENT AND COMPACTED WITH HAND HELD MECHANICAL TAMPERS, WITHOUT DAMAGING THE PIPE.

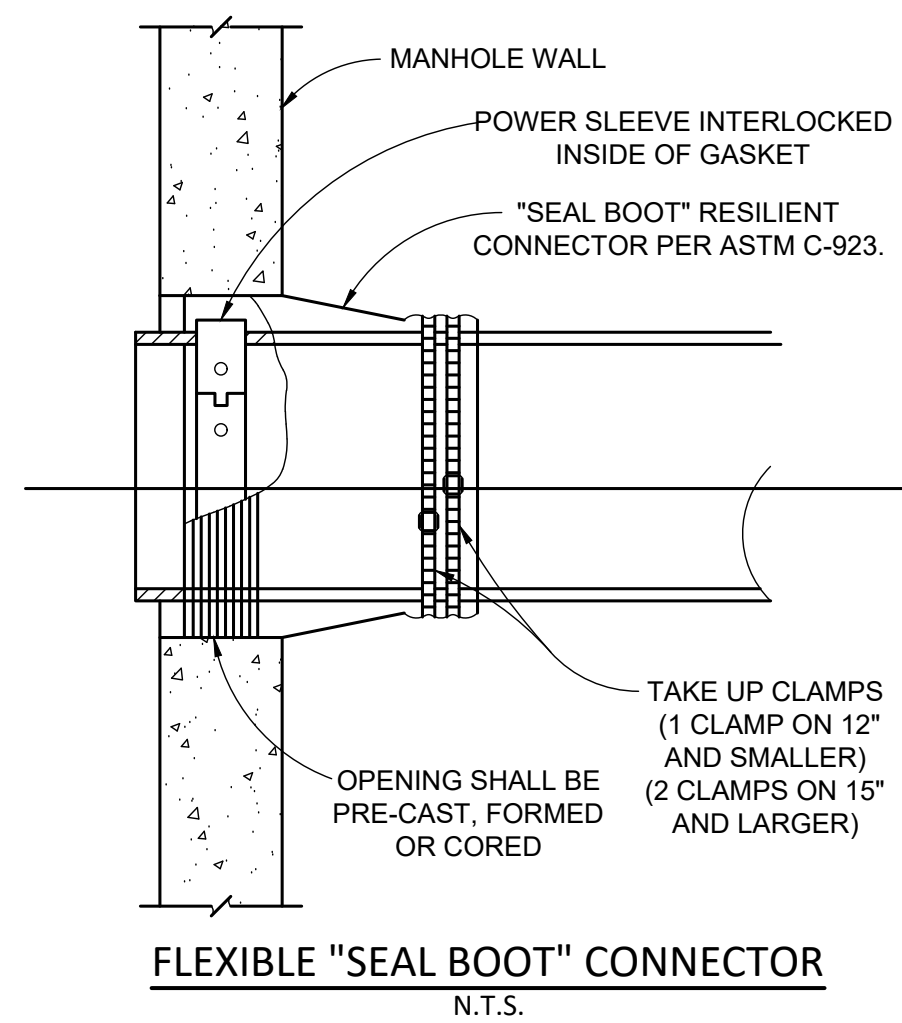
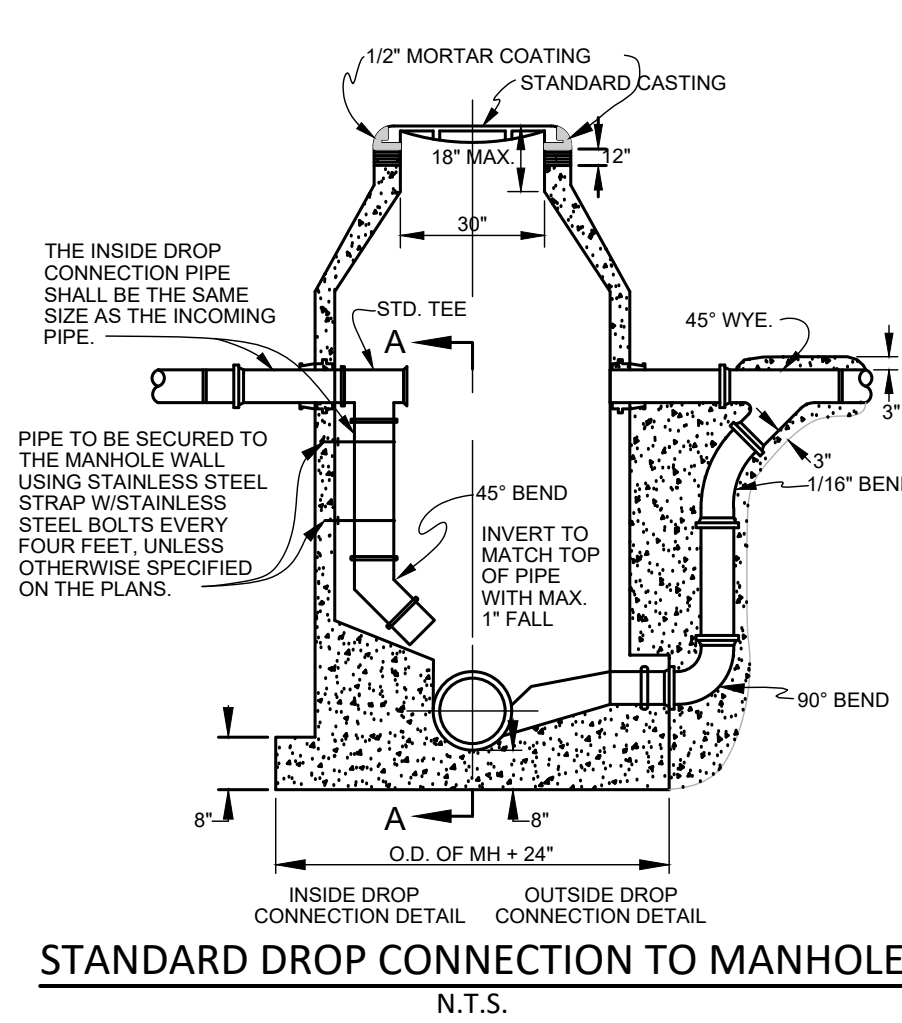
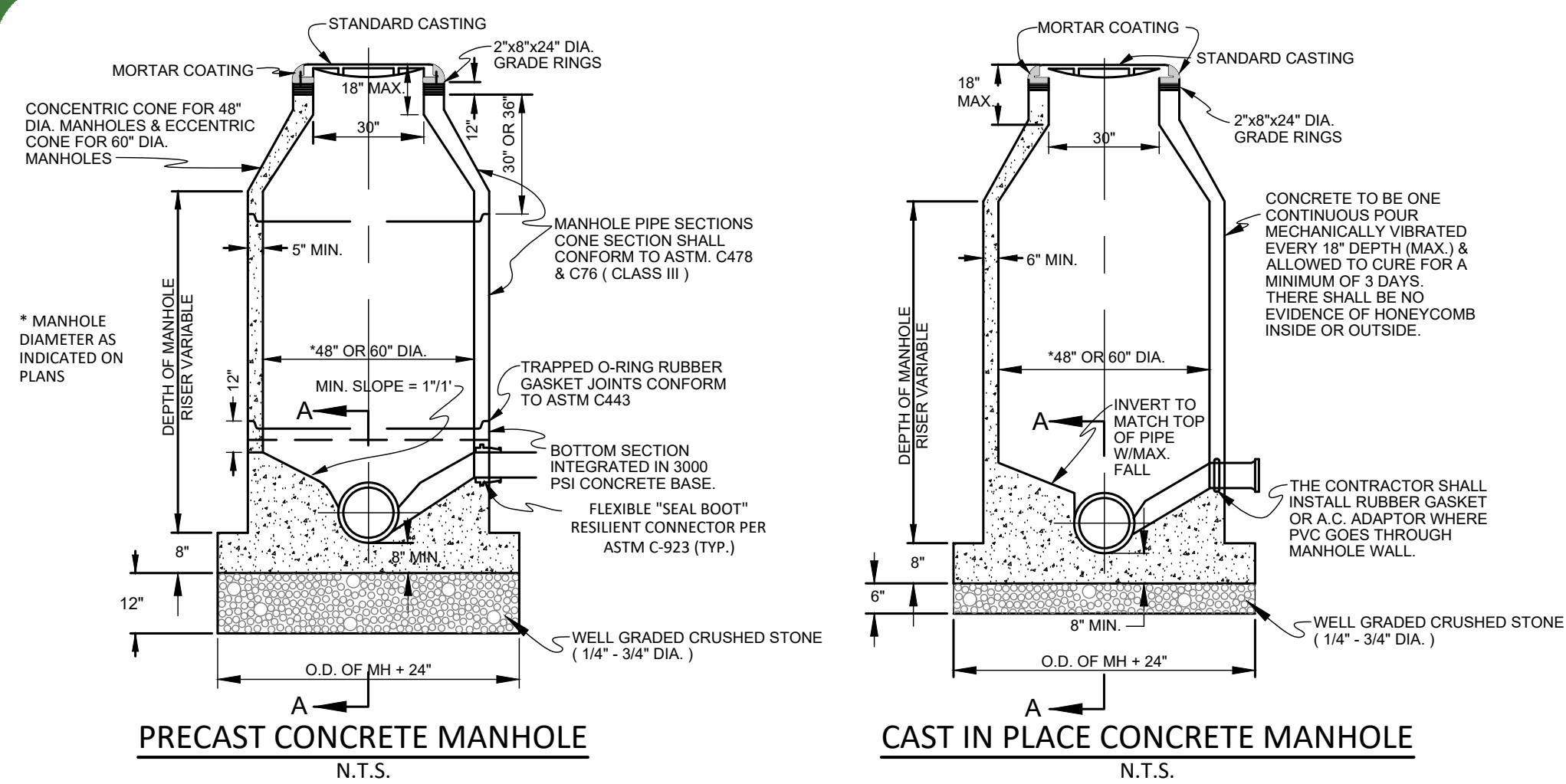
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APPROVED BY MSUD GENERAL MANAGER: C. BOYD DATE: 2025-09-15

WASTEWATER DETAILS (1 OF 2)

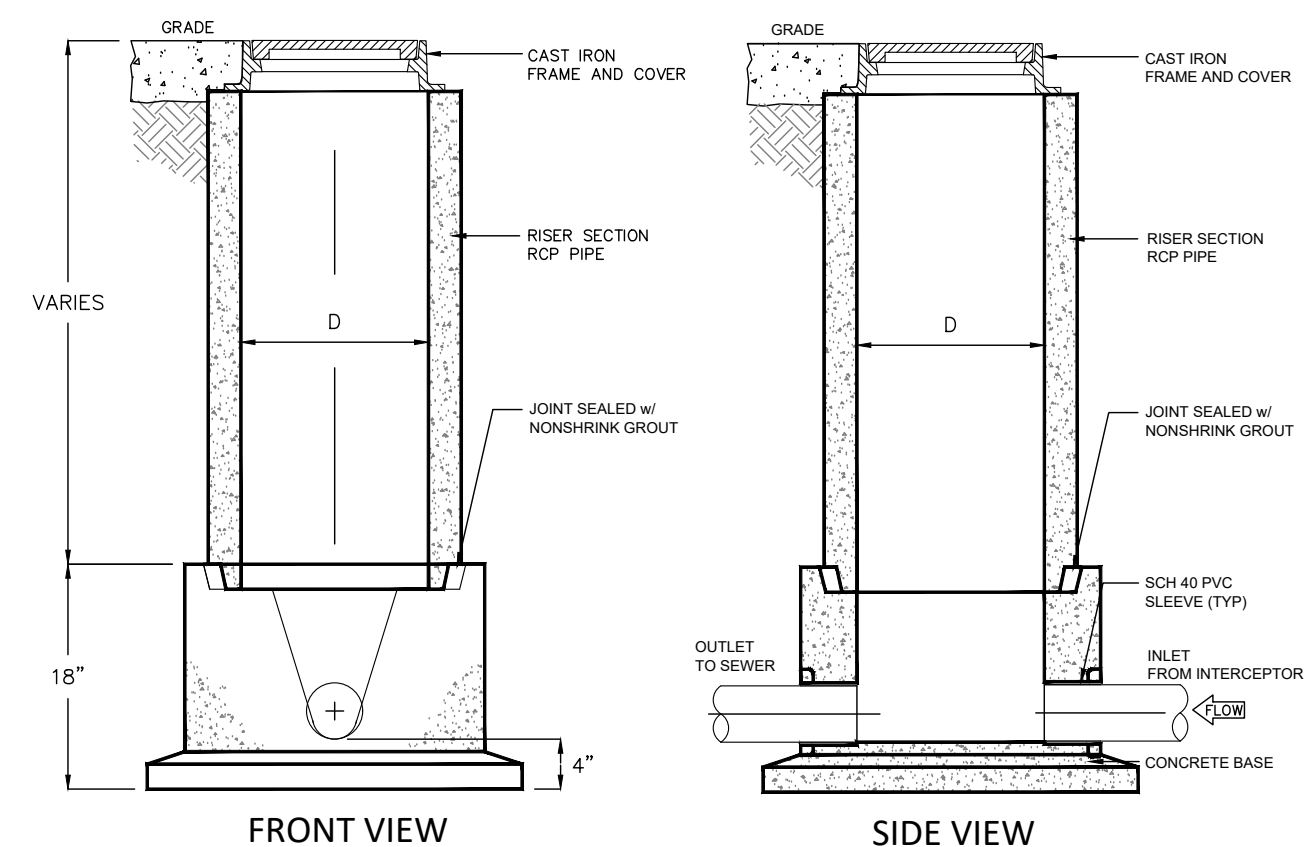
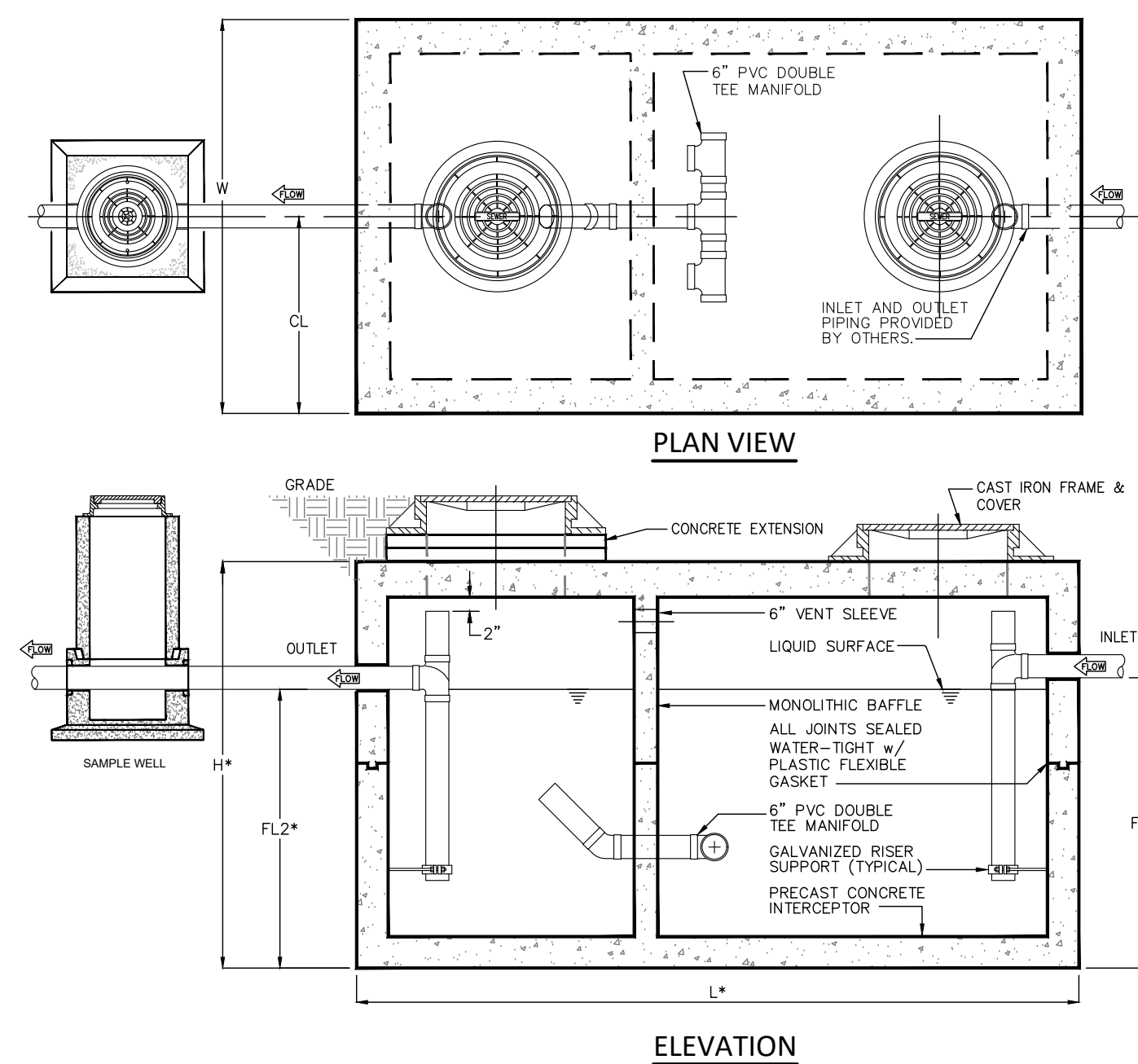
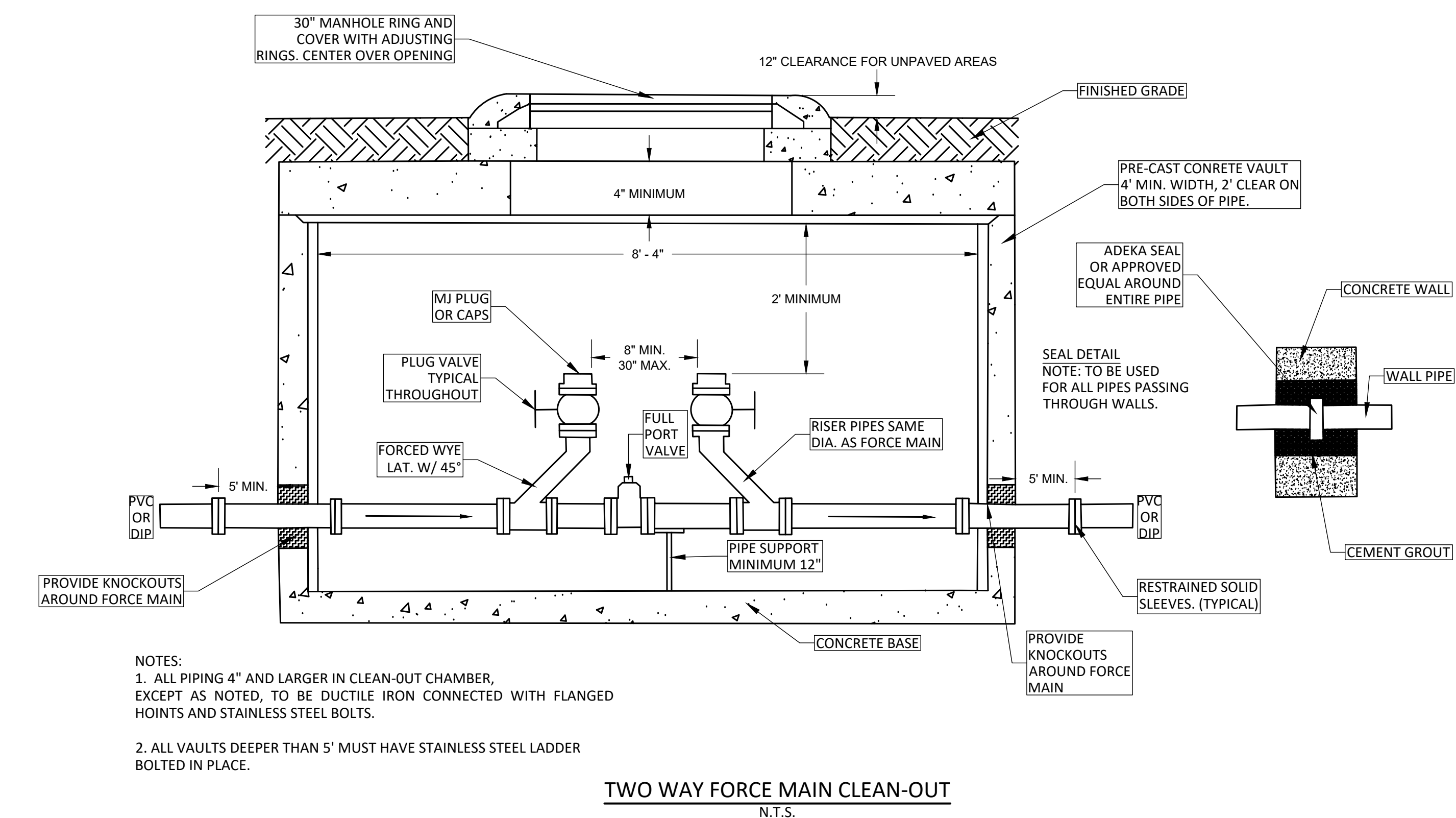
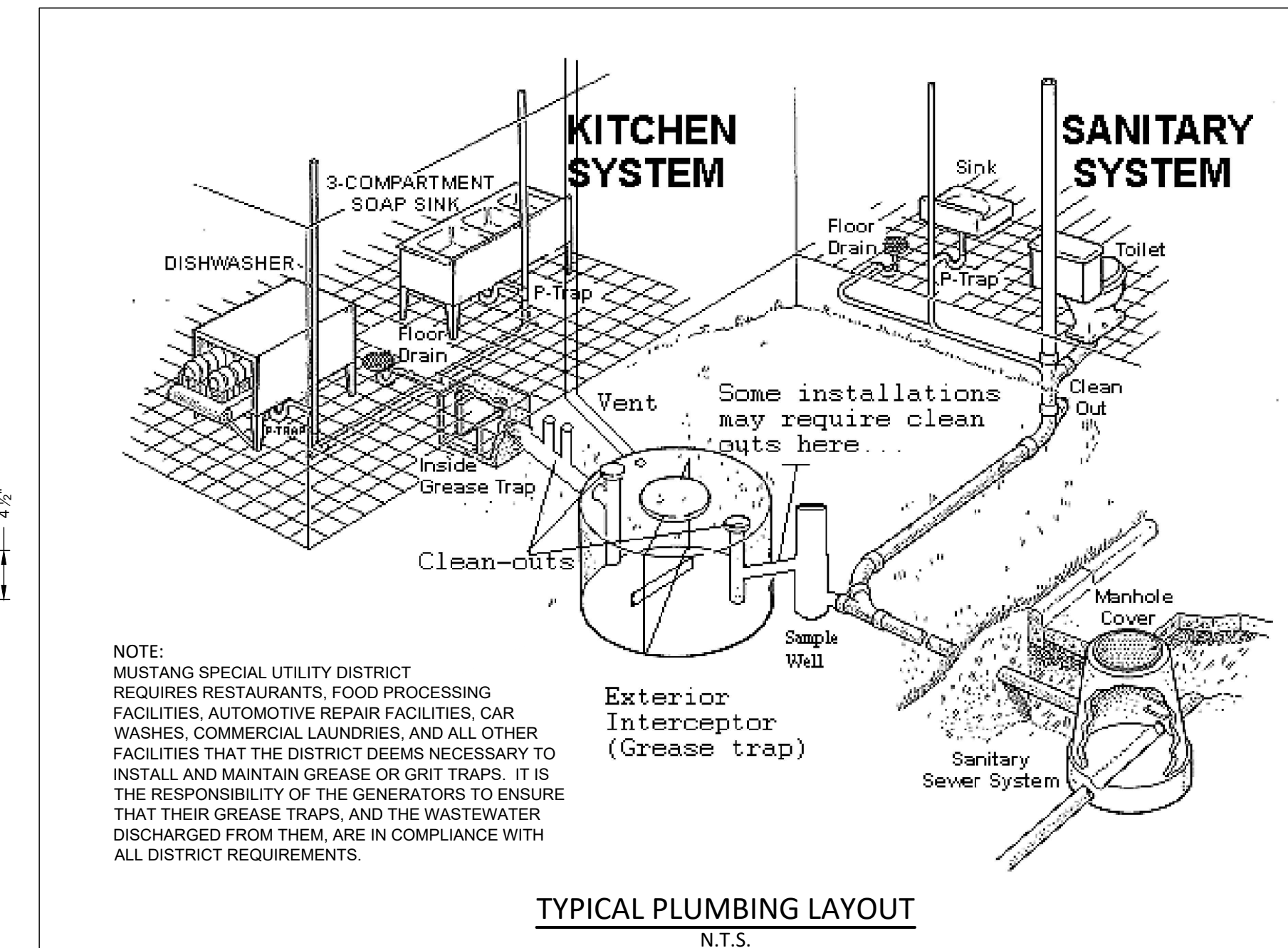
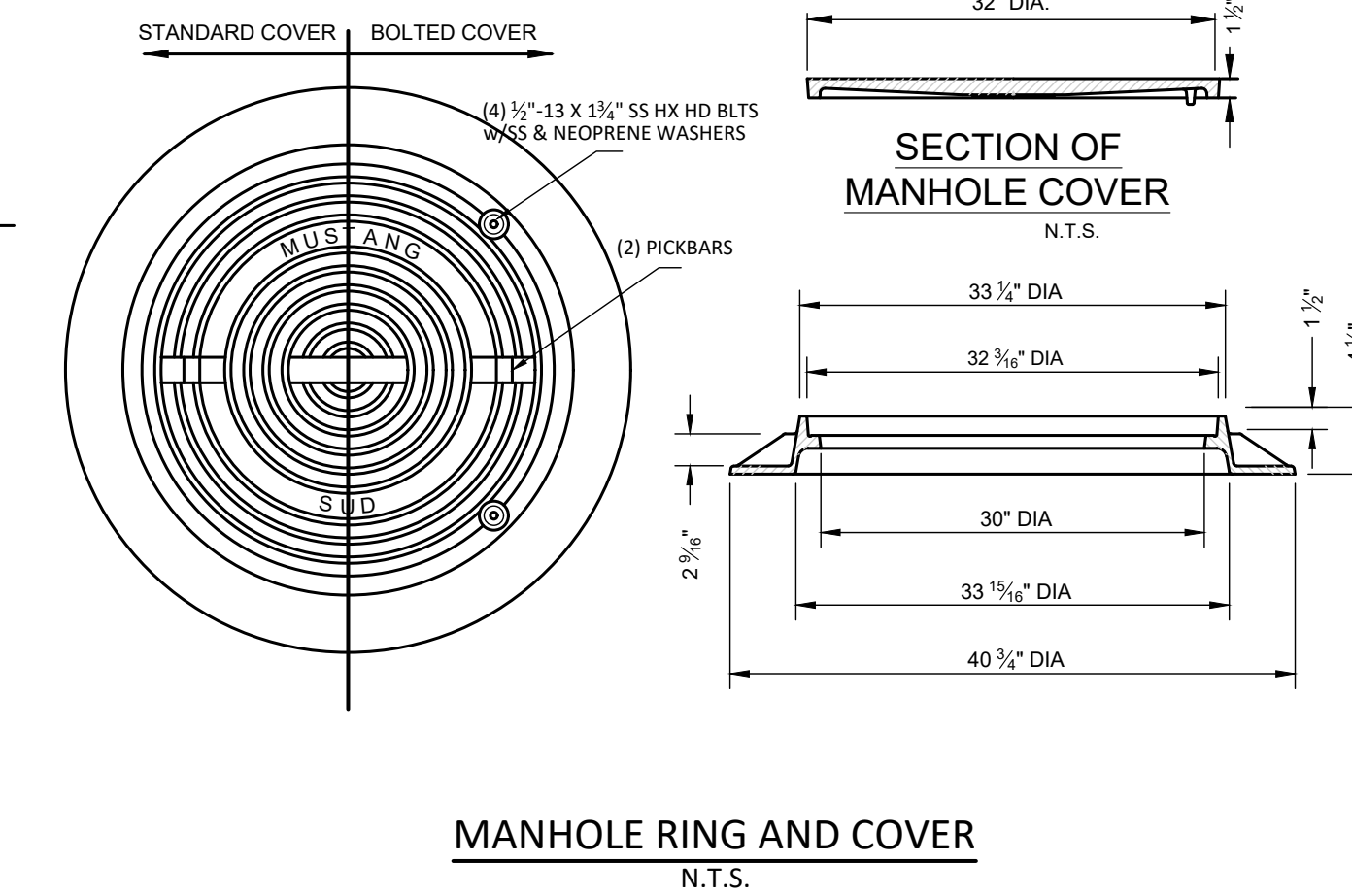
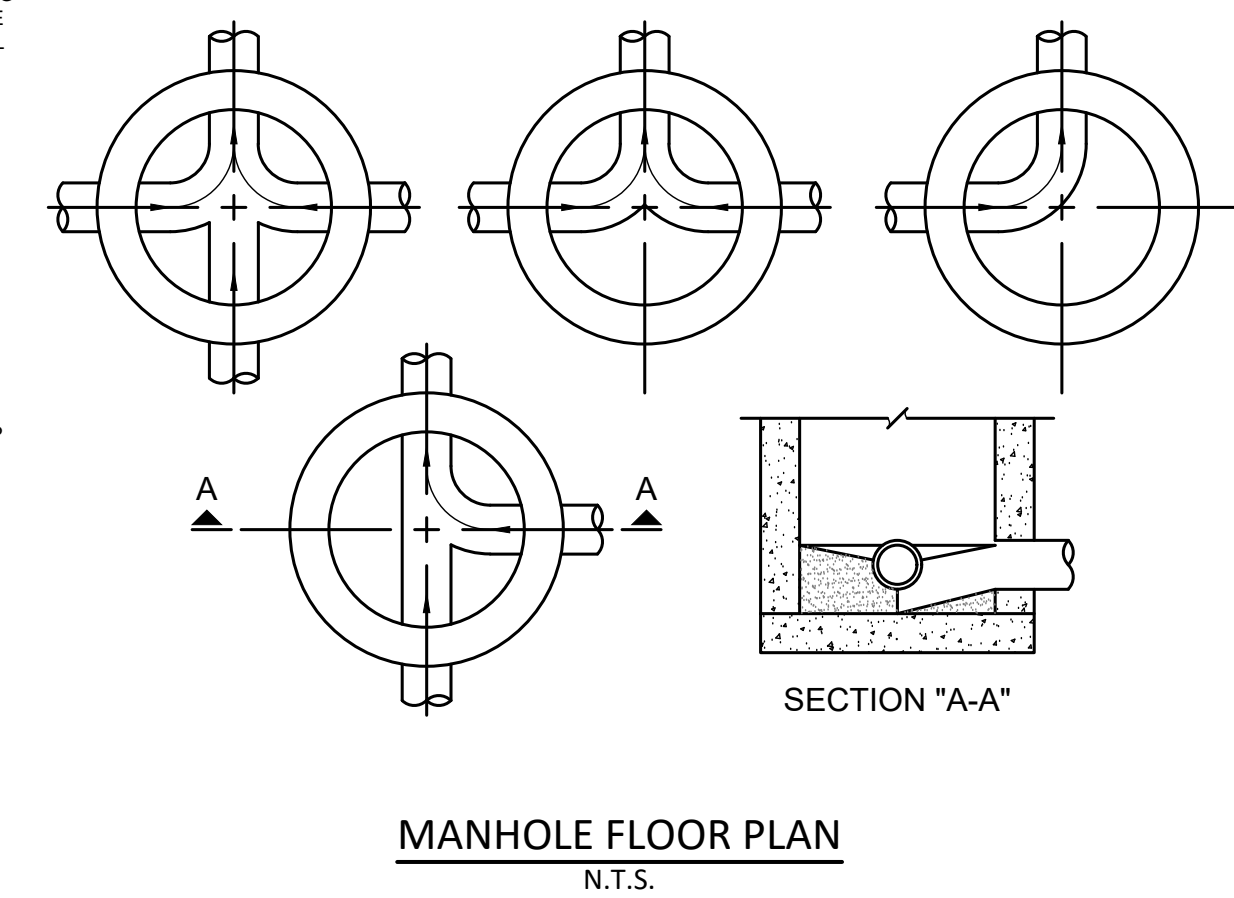
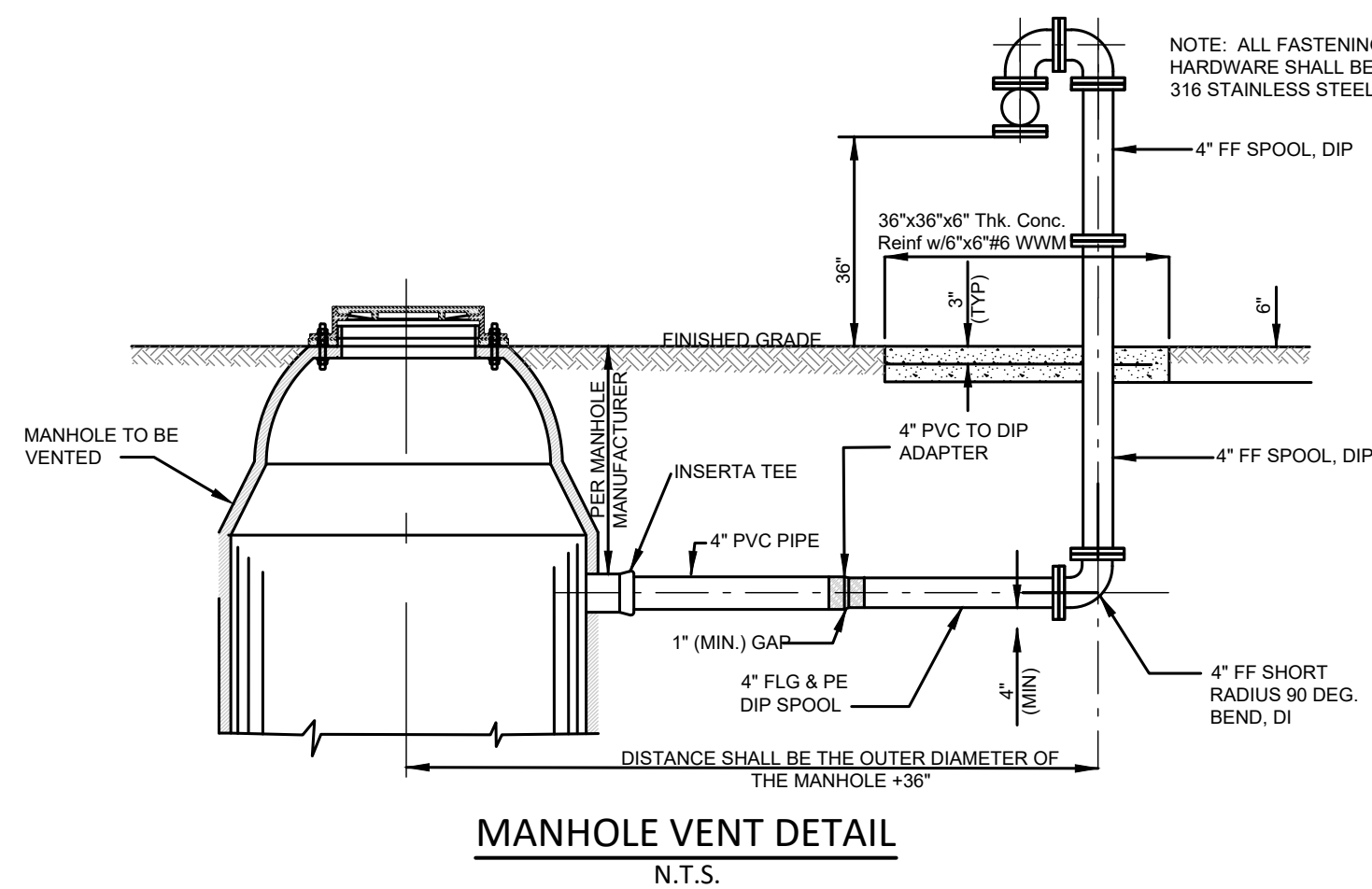
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- CONCRETE MANHOLE:**
1. CONCRETE FOR ALL PRECAST AND POURED IN PLACE MANHOLES SHALL BE 6.5 SACK, 4200 P.S.I. SULPHATE RESISTANT CONCRETE.
 2. THE DIAMETER OF THE CONCRETE BASE SHALL NOT BE LESS THAN THE OUTSIDE DIAMETER OF THE MANHOLE PLUS 2 FT.
 3. STEPS SHALL NOT BE INSTALLED IN MANHOLE.
 4. ALL NEW MANHOLES SHALL BE MARKED WITH "MH" STAMPED OR CUT IN THE CURB.
 5. USE DROP CONNECTIONS WHEN CONNECTING LINE EXCEEDS 24" ABOVE THE MANHOLE FLOWLINE.
 6. USE OUTSIDE DROP CONNECTIONS ON ALL NEW MANHOLES.
 7. USE INSIDE DROP CONNECTION ON EXISTING MANHOLES ONLY.
 8. PROVIDE RAIN PANS INTEGRATED WITH RIM.
 9. MANHOLES IN OFFSITE/UNPAVED AREAS SHALL BE SET WITH TOP OF MANHOLE 12" ABOVE FINISHED GRADE (CANNOT BE ACHIEVED WITH GRADE RINGS)
 10. MANHOLES IN OFFSITE/UNPAVED AREAS ALL SHALL HAVE SEALED RING AND COVER AND MAINTAIN MINIMUM 12" CLEARANCE WITHOUT GRADE RINGS.

- MANHOLE INVERT:**
1. INVERT CHANNELS TO BE CONSTRUCTED FOR SMOOTH FLOW WITH NO OBSTRUCTIONS.
 2. SPILLWAYS SHALL BE CONSTRUCTED BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS PROVIDING FOR SMOOTH FLOW.
 3. CHANNELS FOR FUTURE CONSTRUCTIONS (STUBS) SHALL BE CONSTRUCTED, FILLED WITH SAND, AND COVERED WITH 1" OF MORTAR.
 4. SLOPE MANHOLE ITSELF WITH A 1:2 SLOPE FROM MANHOLE WALL TO CHANNEL.
 5. INVERT SHALL BE A MINIMUM OF 1/2 THE DIAMETER OF THE LARGEST PIPE OR 4" DEEP.

- MANHOLE RING AND COVER:**
1. MANHOLE LIDS SHALL HAVE PICK SLOTS ONLY.
 2. MH RING & COVERS SHALL BE HEAVY DUTY LOAD RATED CONFORMING TO AASHTO M-306.



NO.	REVISION	BY	DATE

MUSTANG SPECIAL UTILITY DISTRICT

APPROVED BY MSUD GENERAL MANAGER: C. BOYD DATE: 2025-09-15

WASTEWATER DETAILS (2 OF 2)

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