

General Notes:

- The entity with jurisdiction over the proposed water main distribution and sanitary sewer collection system is Galveston County Water Control and Improvement District No. 1 (Galveston County WCID #1). Water main and sanitary sewer construction shall be in accordance with the Texas Commission on Environmental Quality (TCEQ) Chapter 217 (Sanitary Sewer) and Chapter 290 (Water) Design Standards, the District's Water and Wastewater Regulations for Land Development and Standard Detail Drawings.
- Developer, Developer's Engineer, and Developer's Contractor shall include all of the following people from the District in project correspondence concerning existing and/or proposed water and sewer facilities:

General Manager - Ivan Langford - 281-534-8336, ilangford@gcwcid1tx.gov
W/WW Superintendent - Keith Morgan - 281-330-7340, kmorgan@gcwcid1tx.gov
District Engineer - Ryan Nokolby, P.E. - 832-206-5799, rnokelby@gcwcid1tx.gov
Construction Inspector - Emilio Renovato - 281-910-2950, erenovato@gcwcid1tx.gov
GIS Specialist - Rickie Williams - 346-603-0091, rwilliams@gcwcid1tx.gov
- Contractor shall contact 811 "CALL BEFORE YOU DIG" a minimum of 48 hours prior to excavation in an area in order for Galveston County WCID #1 to mark their existing water line and/or sanitary sewer facilities.
- It is the Contractor's responsibility to verify and determine the depth, location and existence of all existing surface or underground utilities and structures in the vicinity of the work to be performed which may or may not conflict with the proposed water line and/or sanitary sewer construction. It is the Contractor's responsibility to verify all the utilities and their elevations prior to construction. The Contractor shall notify the Galveston County WCID #1 of any conflicts found prior to commencing construction. The Contractor shall allow ample time to Galveston County WCID #1 to determine a resolution to the conflict in an expeditious manner, but it is recognized that the nature of the conflict may affect the time to determine a resolution.
- In the event the Contractor has to change the water line and/or sanitary sewer alignment or change any other aspect of the construction in the field during construction, the Contractor shall coordinate with Galveston County WCID #1 and obtain written concurrence of changes prior to proceeding with the construction of any altered alignment or construction change. Galveston County WCID #1 will make a concerted effort to expedite the review and concurrence process, but is not responsible for any claims and downtime resulting from the delays in the review and concurrence process. Galveston County WCID #1 has the right to change and add any alignment, or change the points of connection, or increase or decrease the amount of work at any project site.
- Contractor shall adequately protect existing Galveston County WCID #1 facilities. All costs for repairs or replacement of damage due to Contractor's performance will be paid by the Contractor at no additional cost to the project.
- Contractor shall not be allowed to operate any valves on the existing water line distribution system. Contractor shall notify Keith Morgan with Galveston County WCID #1 a minimum of 48 hours in order to request assistance.
- Contractor shall not use residents' water. Contractor shall obtain a temporary water meter from Galveston County WCID #1 prior to the start of construction.
- Existing pavements, curbs, sidewalks, driveways, and landscaped areas damaged during the water line and/or sanitary sewer construction by the Contractor shall be replaced by the Contractor to original or better condition at his expense, unless they are within areas designated for pavement removal and replacement as shown on the plans.
- Any area of grass which is disturbed or dug up during the construction shall be replaced with St. Augustine sod or grass which matches the grass removed unless otherwise noted on the plans.
- The Contractor shall maintain access to Residential and Commercial properties adjacent to work areas at all times.
- Iron rods disturbed during construction are to be replaced by a registered professional land surveyor for the original property owner at no separate pay.
- The Contractor shall conduct his operations in a manner such that trucks and other vehicles do not create a dirt or dust nuisance or safety hazard in any streets, public or private. Clean up of streets shall be done daily.
- Safety Standards: Contractor shall comply with all applicable OSHA safety standards. Further, said contractor shall comply with Galveston County WCID #1's confined space entry requirements.
- No excavations shall be left open overnight. All excavations which cannot be backfilled overnight for the installation of manholes, sanitary sewer lines, and other utilities shall be covered with steel sheeting when in paved areas; steel sheeting, wood planking or material approved by Galveston County WCID #1 and pertinent entity (TxDOT) in other areas. The excavation area shall be protected with traffic barricades equipped with flashing yellow lights. The excavation areas must be completely cordoned off with plastic construction fencing material meeting Galveston County WCID #1's and/or TxDOT's requirements. The excavation area must be adequately protected and made safe.
- When in a City or County maintained public right-of-way, all water and sewer lines shall be located no closer than five (5) feet to the right-of-way line and seven (7) feet to the edge of the existing pavement.
- When in a TxDOT maintained public right-of-way, all water and sewer lines shall be located in a separate restricted utility easement not less than fifteen (15) feet wide outside TxDOT's right-of-way.

Water Line Construction Notes:

- Materials: All pipe and fittings shall be approved by the American Water Works Association for carrying potable water. Water lines shall be constructed of the following materials.
 - Polyvinyl chloride (PVC) DR 18 (235 PSI) with restrained joints (either integral bell or bell and spigot joints restrained at fittings), and elastomeric gaskets conforming to the latest revision of AWWA C-900 and ASTM D-2241.
 - Ductile Iron (DI) Pressure Class 350 with restrained rubber gasket mechanical joints (either internally restrained or at fittings) and cement lining in accordance with AWWA C-104, NSF61 approved. DI Pipe shall conform to latest revisions of AWWA C-111 (Rubber Gasket Joints), C-115 (Flanged), C-150 (Thickness Design), and/or C-151 (Centrifugally Cast) and be double wrapped in 8-mil polyethylene conforming to latest revision of AWWA C-105 and in accordance with District's Standard Detail Drawings.
 - Mechanical joint ductile iron compact fittings conforming to AWWA C-153, pressure rating 250 psi. Cement lining in accordance with AWWA C-104 and interior/exterior coatings in accordance with AWWA C-104 and C-153, NSF61 approved.
 - Pipe restraints shall be MEGALUG by EBAA Iron, Inc. or approved equal in accordance with District's Standard Detail Drawings.
 - All nuts and bolts for below ground fittings and pipe restraints shall be 316 stainless steel.
 - The maximum deflection allowed for water line pipe and fittings shall be per the pipe and fitting manufacturer's requirements.
- Construction: Water lines shall be constructed according to the latest revision of TCEQ Chapter 290, applicable AWWA standards and District Standard Details as to trenching, bedding, alignment, grade, installation, backfill and compaction, but no less than four feet (4') of cover with six-inch sand wrap backfill. Water line separation with sanitary sewer lines and manholes shall follow TCEQ requirements.
- Size: All water mains shall be a minimum of six (6) inches in diameter unless in specific areas approved by the District.
- Pressure: Minimum pressure in the system shall be designed under a peak consumption to 55 pounds per square inch (PSI).
- Valves: All gate valves shall be resilient seated, non-rising stem, 2-inch square operating nut conforming to the latest revisions of AWWA C-509 and open left. Approved manufacturers are Mueller or American. All valves to include stainless steel nuts and bolts and shall be provided with an approved "A" Section valve box and cover. At intersections of water distribution lines, the number of valves will be one less than the number of radiating lines.
- Hydrants: Fire Hydrants shall be three-way with National Standard threading and include a 5" Kochek Storz connection coupling on the main pumper nozzle. Approved manufacturers are Mueller or American Darling. Hydrants shall be located on six inch (6") or larger lines and looped with six inch (6") or larger lines. Minimum District fire flow requirement for all Hydrants shall be 1,000 gpm in residential and 3,500 gpm in all non-residential. Hydrants shall be spaced every 300 feet along commercial corridors and every 500 feet along residential streets in a manner acceptable to the fire department. There shall be a gate valve between the main and fire hydrant.
- Looping and Flushing Valves: All water lines shall be looped whenever a dead end water line exceeds 250 feet. An automatic flushing device shall be provided at the end of all dead end lines greater than 250 feet and within 50 feet of a closed storm sewer for discharge of water.
- Services: Water service lines shall be polyethylene tubing, 200 PSI, with sizes as specified in the District's Standard Detail Drawings. Corporation stop shall be Ford model with compression fitting. Curb Stop shall be Ford model with locking wing nut. All taps, regardless of water line size, to use 304 stainless steel, type 354 single strap tap saddle.
- Meters: Water meters and boxes shall be provided by and installed by the District, with sizes, boxes and risers as specified in the District's Standard Detail Drawings. Proposed water meter sizes shall be approved by the District.
- Backflow Prevention Device: All commercial/industrial connections shall have an approved above ground backflow prevention device that is to be installed by a licensed plumber per state plumbing code and tested annually by the customer with results provided to the District via the BSI Online Portal.
- Testing: All water lines are to be hydrostatically tested by the Contractor at 125 PSI for 8 hours or 150 PSI for 4 hours with District representative notified 24 hours in advance. Bacterial analysis samples shall be taken and have 100% negative results by the District before the new water system is connected to existing district lines. All water lines shall be tested in accordance with TCEQ requirements. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{S * D * VP}{133,200}$$

in which L is allowable leakage, in gallons per hour; S is the length of pipeline tested; D is the nominal diameter of the pipe in inches; and P is the average test pressure during the leakage test in pounds per square inch gauge. Testing shall be in accordance with AWWA C-600, and C-651. The Contractor shall provide all materials, labor, and equipment necessary for testing. The District Inspector must be notified twenty-four (24) hours prior to test and shall observe all tests. All test results shall be submitted in writing to the District Engineer by the Contractor.
- In new developments, the Developer is required to install the service connections for water service. Service line installation by the Developer's Contractor shall be in accordance with the District's Standard Detail Drawings.
- Contractor shall salvage and return all fire hydrants removed during construction to the District at their Falco Warehouse Facility located at 2320 Falco Street, Dickinson, Texas 77539.
- Water lines to be abandoned in place shall be blocked off by manually forcing cement grout into and around all openings to provide a water-tight seal. Water valves to be abandoned shall have valve box removed. Asbestos cement pipe requires strict compliance with applicable OSHA standards.

Sanitary Sewer Construction Notes:

- Materials: Sanitary sewer lines shall be of the following materials:
 - Polyvinyl Chloride (PVC) SDR-26 heavy wall sewer pipe and fittings conforming to the latest revision of ASTM D-3034, ASTM D-2241, ASTM D-1784, STM D-2672, having a cell classification of 12454-B, and shall have flexible elastomeric gasket joints as approved by the District.
 - High Density Polyethylene (HDPE) Solid Wall pipe with plain ends for heat-joining (butt fusion) conforming to ASTM D2657 and minimum working pressure rating of 150 psi. Pipe material to meet the requirements of Type III, Class C, Category 5, Grade P34 as defined in ASTM D1248 or cell classification in accordance with ASTM D3350, with flexible elastomeric gasket joints.
 - Fiberglass Reinforced Polymer Mortar (FRPM) pipe manufactured by HOBAS Pipe USA, Inc. (slip-line application only). Pipe to be Type 1, Liner 1 or 2, Grade 1 or 3, per ASTM D3262 with fiberglass bell-spigot joints utilizing elastomeric sealing gaskets that meet the performance requirement of ASTM D4161.
- Construction: Sanitary sewers shall be constructed according to the latest revision of TCEQ Chapter 217, ASTM D-2321 (PVC) and District Standard Details as to trenching, bedding alignment, grade, installation, backfill, and compaction. Sanitary sewer and manhole separation with water lines shall follow TCEQ requirements.
- Manholes: Manholes shall be spaced a distance not to exceed 500 feet and shall conform to the District's Standard Detail Drawings, including a 32" diameter hinged ring and cover per detail. Manholes to be precast concrete and minimum 4-foot diameter. Concrete design mix to include XYPEX waterproofing admixture. No brick manholes allowed but FRP Manholes by HOBAS Pipe USA, Inc. may be approved on a case-by-case basis.
 - Rim elevations for sanitary sewer manholes shall be set flush with the finished grade for all manholes located in pavement. Rim elevations shall be 3 inches above natural ground or finished grading for all manholes located in other areas, unless otherwise shown. For manholes outside of pavement, sloped fill shall be added for storm water drainage away from manhole rim.
 - Manhole cones to be concentric unless the manhole is within a roadside ditch. Eccentric manholes cones are to be utilized in this situation in order to not impede drainage flow in the ditch.
 - The locking mechanisms for the hinged manholes to be provided with anti-sieze grease.
 - Composite manhole covers are to be provided with locking mechanism and are to be utilized in pavement areas or in areas where the top of the manhole is greater than 24" above natural ground.
- Force Mains: Force mains shall be constructed of the following materials:
 - Polyvinyl chloride (PVC) DR 18 (235 PSI) with restrained joints (either integral bell or bell and spigot joints restrained at fittings), and elastomeric gaskets conforming to the latest revision of AWWA C900 and ASTM D-2241.
 - Ductile Iron (DI) Pressure Class 350 with restrained rubber gasket mechanical joints (either internally restrained or at fittings) and polyurethane (Corro-pipe II) or ceramic epoxy (Protecto-401) lining. DI Pipe shall conform to latest revisions of AWWA C-111 (Rubber Gasket Joints), C-115 (Flanged), C-150 (Thickness Design), and/or C-151 (Centrifugally Cast) and be double wrapped in 8-mil polyethylene conforming to latest revision of AWWA C-105 and in accordance with District's Standard Detail Drawings.
 - Mechanical joint ductile iron fittings conforming to AWWA C-153, pressure rating 250 psi. Interior lining to match DI pipe interior lining material.
 - Pipe restraints shall be MEGALUG by EBAA Iron, Inc. or approved equal in accordance with District's Standard Detail Drawings.
 - All nuts and bolts for below ground fittings and pipe restraints shall be 316 stainless steel.
 - The maximum deflection allowed for force main pipe and fittings shall be per the pipe and fitting manufacturer's requirements.
- Size: All sanitary sewer mains shall be a minimum of eight (8) inches in diameter unless in specific areas approved by the District. All force mains must be a minimum of four (4) inches in diameter unless it is used in conjunction with a grinder pump.
- Velocities: All sanitary sewer mains must contain a slope sufficient to allow a velocity not less than 2.0 feet per second and not more than 8 feet per second when flowing at full capacity. All force mains must contain a minimum velocity of either 3.0 feet per second for duplex lift stations or 2.0 feet per second for triplex or larger lift stations. Triplex or larger lift station force mains will also require a minimum flushing velocity of 5.0 feet per second to occur at least two times a day.
- Lift Stations: Lift Stations shall be duplex, with non-clog Flygt submersible pumps manufactured by Xylem conforming to minimum design criteria of the TCEQ. An all-weather access road, three phase electrical service and potable water service shall be provided at the proposed lift station site. All structures located above ground shall be enclosed. Pumps and controls, including SCADA, shall conform to the District's requirements.
- Services: Sanitary sewer service lines shall be 6" SDR-26 PVC or 4" Schedule 40 PVC as specified in the District's Standard Detail Drawings. Cleanouts shall be installed for each service at the property line with a threaded plug adapter (cap) installed a minimum of two (2) feet above existing grade and reset to three (3) inches above finished grading. All taps to the sanitary sewer main shall either be a SDR-26 PVC tee or tap saddle with stainless steel straps. A SDR to DWV adapter shall also be provided when transitioning from SDR-26 PVC to Schedule 40 PVC.
- Grease Traps: Grease traps and a sampling well shall be installed for any commercial connection preparing food, or on any other connection responsible for waste discharges that include, but are not limited to, grease, oil, sand, or flammable waste. Design and capacity of grease trap shall be in accordance with latest version of International Plumbing Code (IPC) and be approved by the District. Grease traps shall be subject to periodic inspections by the Galveston County Health District. In addition, the connection may be subject to compliance with the District's latest Wastewater Pretreatment Ordinance.
- Testing: All sanitary sewer lines shall be tested in accordance with the TCEQ regulations, except that allowable leakage shall not be more than 50 gallons per inch of inside diameter per mile of pipe per twenty four hours for entire test section including manholes. The Contractor shall provide all material, labor, and equipment necessary for testing. The District's Inspector shall be notified twenty-four (24) hours prior to a test and shall observe all tests. All test results shall be submitted in writing to the District Engineer by the Contractor. All PVC sanitary sewers shall be mandrel tested for deflection and televised prior to acceptance by the District. The maximum deflection allowed for the pipe shall be 1" per joint while fittings shall be based on the pipe size (2"-4" = 8", 6" = 7", 8"-12" = 5", 14"-16" = 3.5", 18"-24" = 3", 30"-64" = 2"). One year from date of completion of construction and before final acceptance by the District, the Contractor shall provide for the televised inspection of all sanitary sewer mains.
- In new developments, the Developer is required to install service connections for sewer service. Service line installation by the Developer's Contractor shall be in accordance with the District's Standard Detail Drawings.

REV-1	January 2025	STANDARD WATER & SEWER GENERAL NOTES
ORIGINAL	January 2024	STANDARD WATER & SEWER GENERAL NOTES
ISSUE	DATE	DESCRIPTION

DICKINSON W.C.I.D.
STANDARD CONSTRUCTION DETAILS
DICKINSON, TEXAS



**STANDARD
WATER & SEWER
GENERAL NOTES
SHEET 1**

ENGINEER'S SEAL

NOTE:
THIS DETAIL SHEET HAS BEEN PREPARED FOR USE ON PROJECTS INCLUDING UTILITIES THAT FALL UNDER THE JURISDICTION OF GALVESTON COUNTY WCID #1.

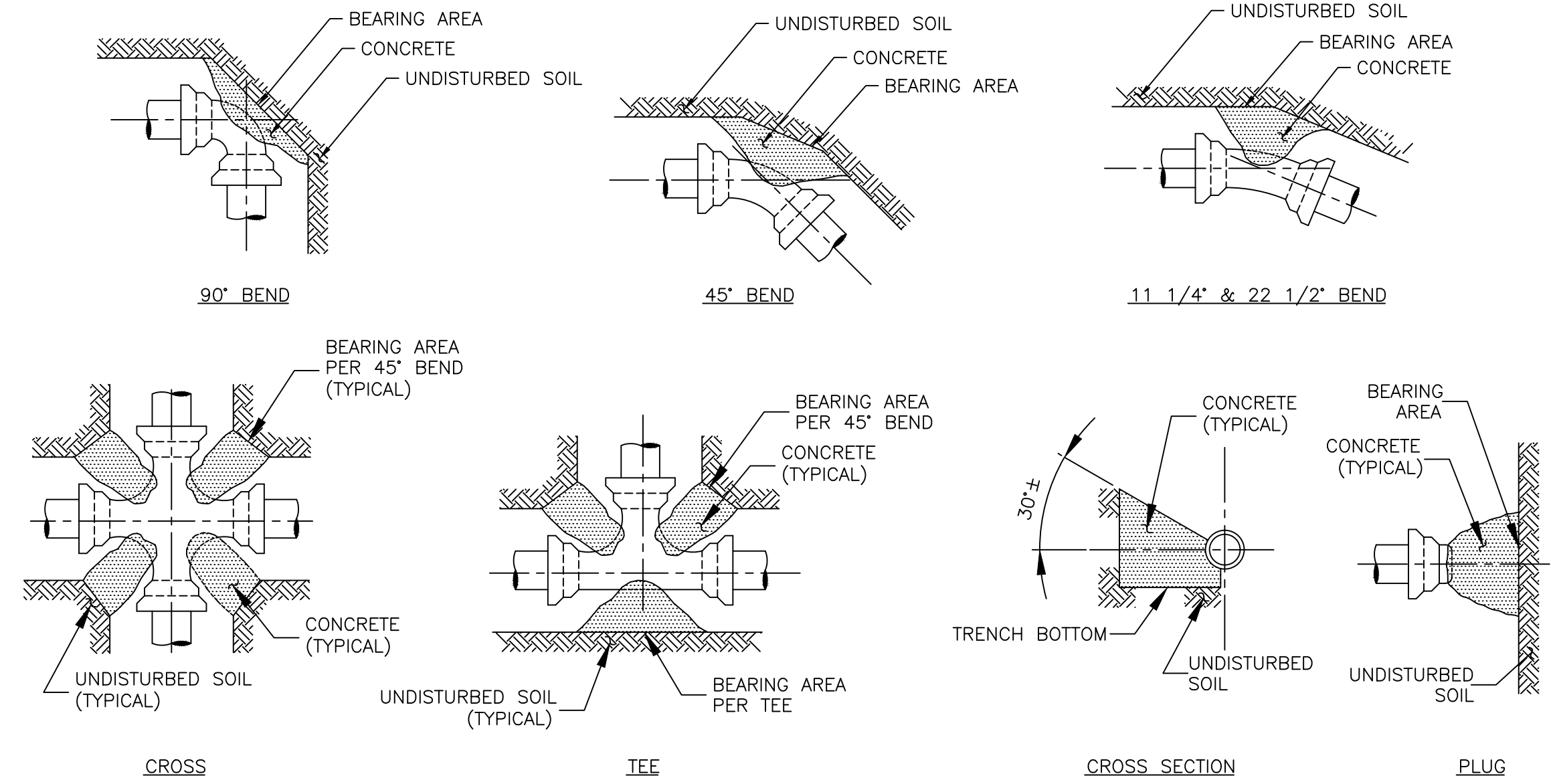
AN ENGINEER WHO INCORPORATES THE DETAILS ON THIS SHEET BECOMES RESPONSIBLE FOR ITS USE IN THE END PRODUCT IN ACCORDANCE WITH RULE 137.33 (b) AND (c) OF THE TEXAS STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS.

SCALE:
HORIZONTAL: NOT TO SCALE
VERTICAL: NOT TO SCALE

**DRAWN BY: M. DAUGHRITY
CHECKED BY: K. MORGAN**

SHEET:

OF



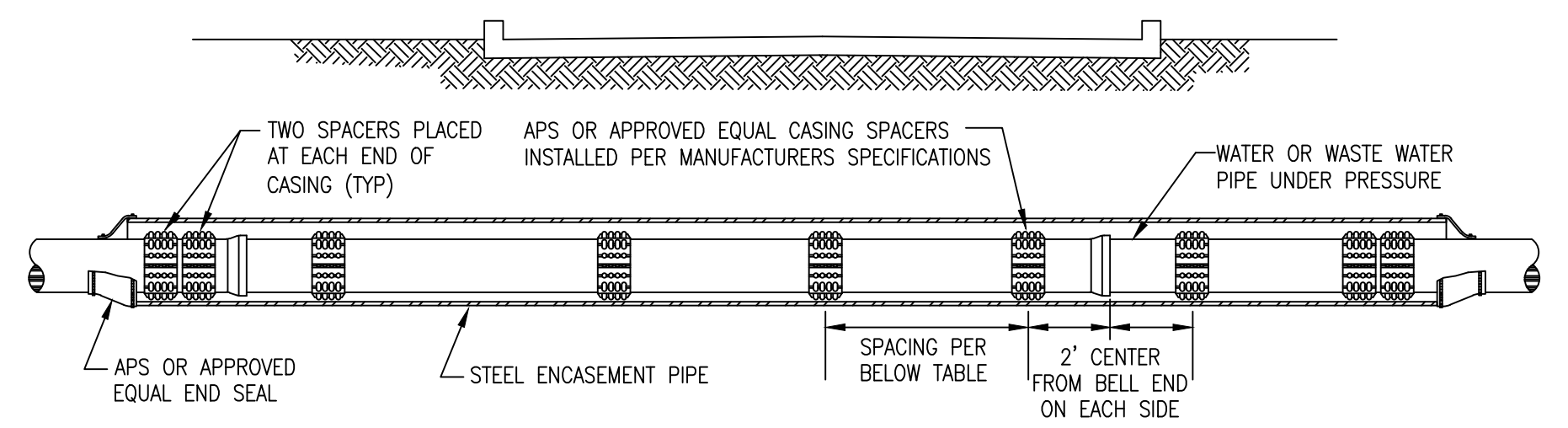
- NOTES:
1. PLACE CONCRETE AGAINST UNDISTURBED SOIL AND FITTING ONLY, CLEAR OF THE JOINT. CONCRETE TO BE FIVE SACK, 3,000 PSI AT 28 DAYS.
 2. DIMENSIONS ARE BASED ON 150 PSI TEST PRESSURE AND SAFE SOIL BEARING LOAD OF 1,100 PSI.
 3. ALL FITTINGS TO BE MECHANICAL JOINT WITH MEGA-LUG RESTRAINTS OR APPROVED EQUAL.
 4. ALL FITTINGS TO BE INSTALLED WITH POLYETHYLENE WRAP.

1 HORIZONTAL THRUST BLOCKING FOR WATER MAINS

90° BEND		45° BEND	
PIPE SIZE	BEARING AREA	PIPE SIZE	BEARING AREA
4"	2 S.F.	4"	1 S.F.
6"	4 S.F.	6"	3 S.F.
8"	8 S.F.	8"	4 S.F.
10"	12 S.F.	10"	6 S.F.
12"	16 S.F.	12"	9 S.F.
14"	22 S.F.	14"	12 S.F.
16"	29 S.F.	16"	16 S.F.
18"	36 S.F.	18"	20 S.F.
20"	44 S.F.	20"	24 S.F.
24"	64 S.F.	24"	36 S.F.
30"	100 S.F.	30"	54 S.F.
36"	103 S.F.	36"	72 S.F.

22 1/2° BEND		11 1/4° BEND	
PIPE SIZE	BEARING AREA	PIPE SIZE	BEARING AREA
4"	1 S.F.	4"	1 S.F.
6"	1 S.F.	6"	1 S.F.
8"	2 S.F.	8"	1 S.F.
10"	3 S.F.	10"	2 S.F.
12"	5 S.F.	12"	2 S.F.
14"	6 S.F.	14"	3 S.F.
16"	8 S.F.	16"	4 S.F.
18"	10 S.F.	18"	5 S.F.
20"	12 S.F.	20"	6 S.F.
24"	18 S.F.	24"	9 S.F.
30"	28 S.F.	30"	12 S.F.
36"	38 S.F.	36"	15 S.F.

TEE		PLUG	
PIPE SIZE	BEARING AREA	PIPE SIZE	BEARING AREA
4"	2 S.F.	4"	2 S.F.
6"	3 S.F.	6"	3 S.F.
8"	5 S.F.	8"	5 S.F.
10"	8 S.F.	10"	8 S.F.
12"	12 S.F.	12"	12 S.F.
14"	15 S.F.	14"	15 S.F.
16"	20 S.F.	16"	20 S.F.
18"	25 S.F.	18"	25 S.F.
20"	32 S.F.	20"	32 S.F.
24"	45 S.F.	24"	45 S.F.
30"	71 S.F.	30"	71 S.F.
36"	77 S.F.	36"	77 S.F.



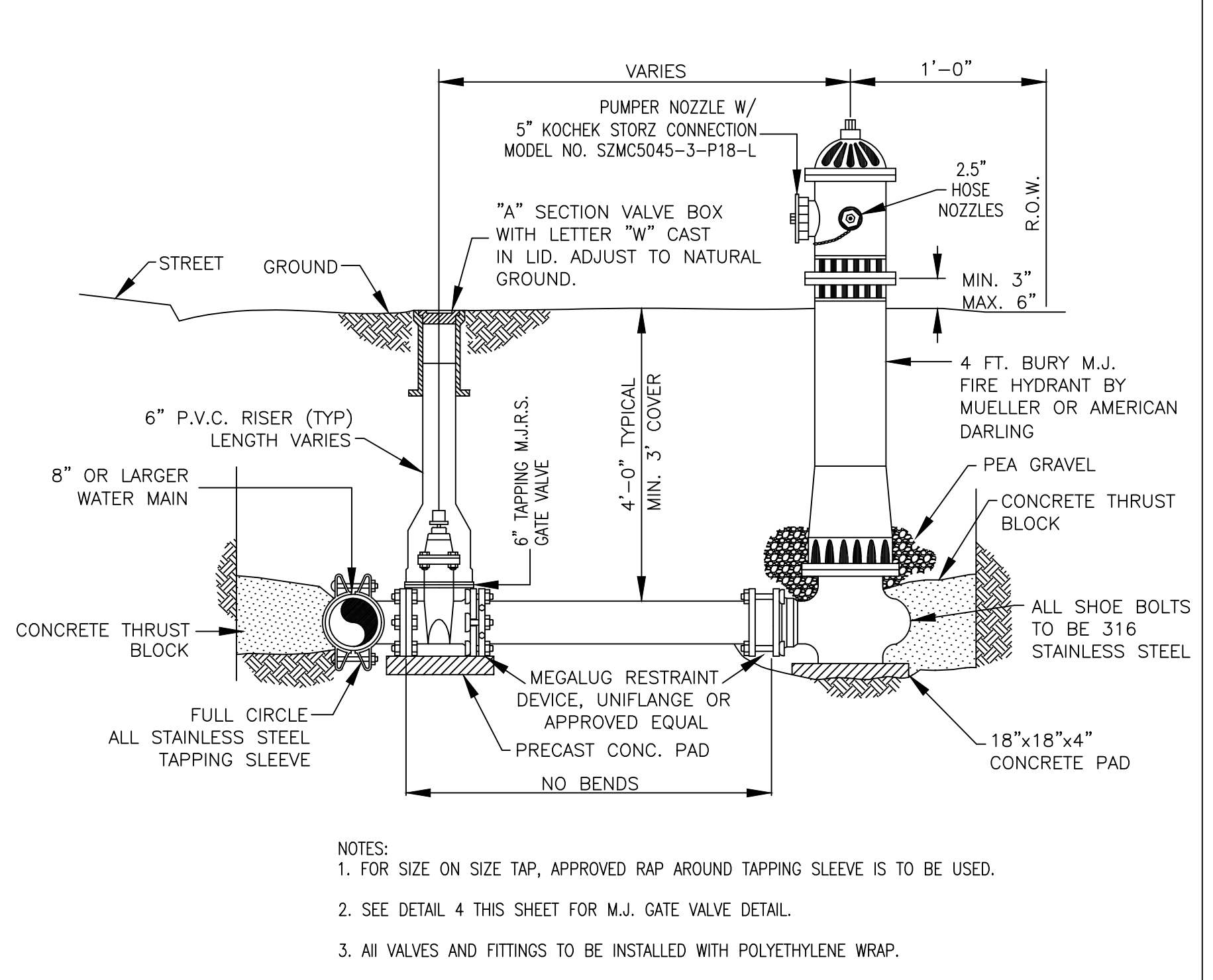
PIPE TYPE & SIZE	MAX. SPACING	CARRIER PIPE SIZE	MINIMUM CASING PIPE SIZE
PVC 4"-14"	10'	4"	8"
PVC 16"-30"	6'	6"	12"
Ductile Iron Pipe	6'	8"	16"
		10"	18"
		12"	20"
		16"	24"

CASING SPACERS SHALL BE USED TO INSTALL THE CARRIER PIPE INSIDE THE ENCASUREMENT PIPE. CASING SPACERS SHALL FASTEN TIGHTLY ONTO THE CARRIER PIPE SO THAT WHEN THE CARRIER PIPE IS BEING INSTALLED THE SPACERS WILL NOT MOVE ALONG THE CARRIER PIPE. CASING SPACERS SHALL BE DOUBLED ON EACH END OF THE ENCASUREMENT.

EACH CASING SPACER SHALL BE CAPABLE OF PROVIDING SUPPORT FOR THE CARRIER PIPE IN SERVICE AT A MAXIMUM SPACING. CALCULATIONS SHALL BE PROVIDED TO THE ENGINEER BY THE CASING SPACER MANUFACTURER SHOWING THAT THE CASING SPACER WILL SUPPORT THE SERVICE LOAD AT THE RECOMMENDED SPACING, INCLUDING A FACTOR OF SAFETY OF TWO (2). CASING SPACERS USED UNDER THIS SPECIFICATION SHALL MEET OR EXCEED THE SPECIFICATIONS DESCRIBED HEREIN AS PROJECTION TYPE CASING SPACERS.

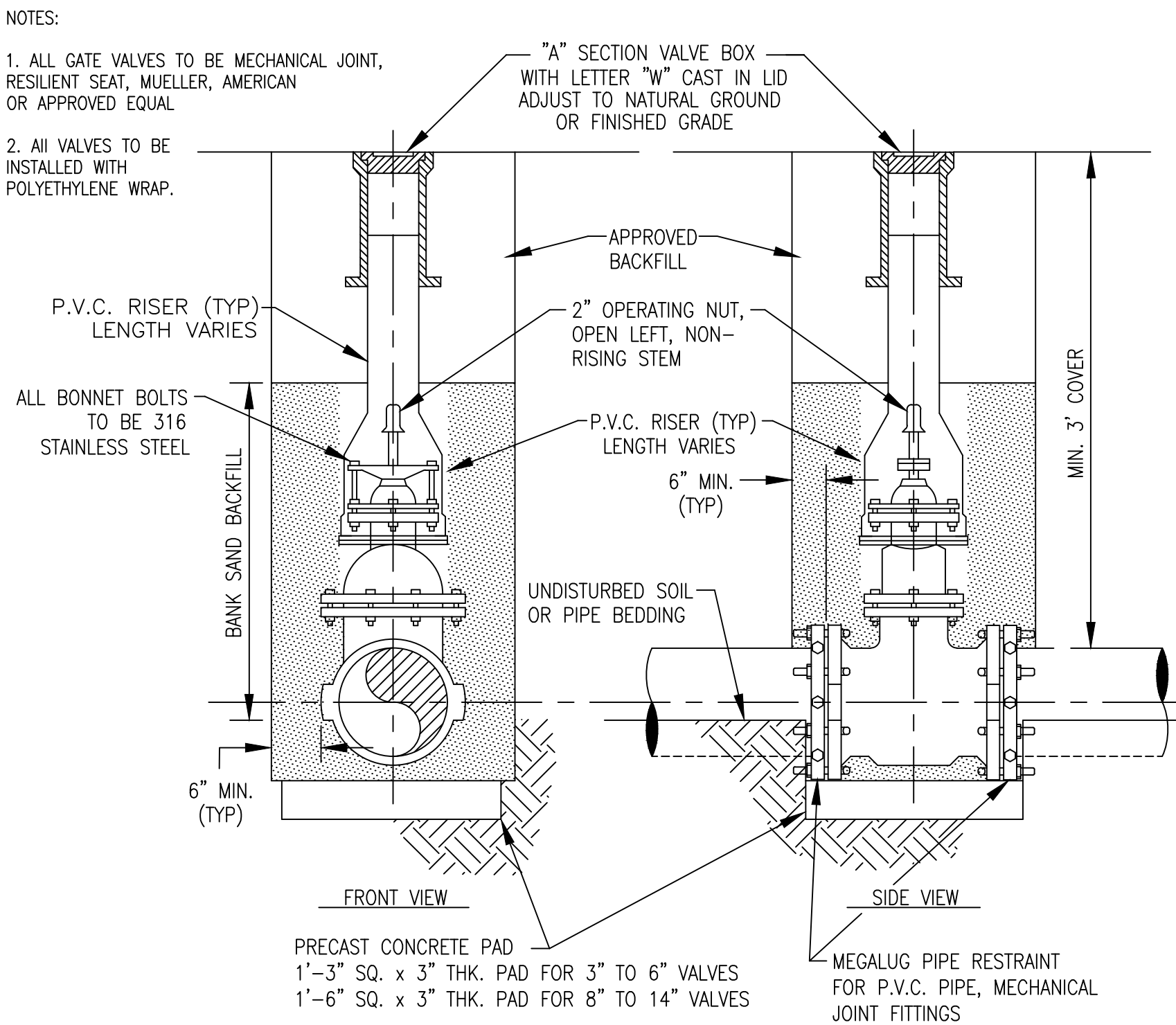
PROJECTION TYPE CASING SPACERS SHALL BE CONSTRUCTED OF PREFORMED SECTIONS OF HIGH DENSITY POLYETHYLENE. THE FLEXIBLE SECTIONS SHALL BE JOINED TOGETHER AROUND THE PIPE TO PROVIDE A MINIMUM OF 12 PLASTIC PROJECTIONS PER SPACER SECTION. PROJECTION TYPE CASING SPACERS SHALL BE "APS" TYPE PROJECTION SPACERS OR ENGINEER PRE-APPROVED EQUAL.

2 ENCASED CONSTRUCTION FOR HIGHWAY CROSSINGS



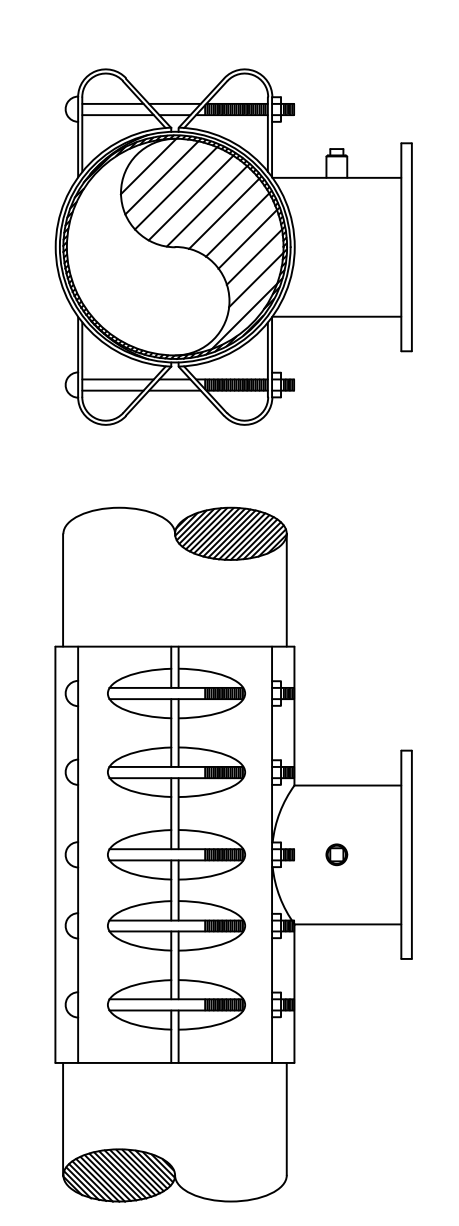
- NOTES:
1. FOR SIZE ON SIZE TAP, APPROVED RAP AROUND TAPPING SLEEVE IS TO BE USED.
 2. SEE DETAIL 4 THIS SHEET FOR M.J. GATE VALVE DETAIL.
 3. ALL VALVES AND FITTINGS TO BE INSTALLED WITH POLYETHYLENE WRAP.

3 FIRE HYDRANT + TAPPING VALVE DETAIL



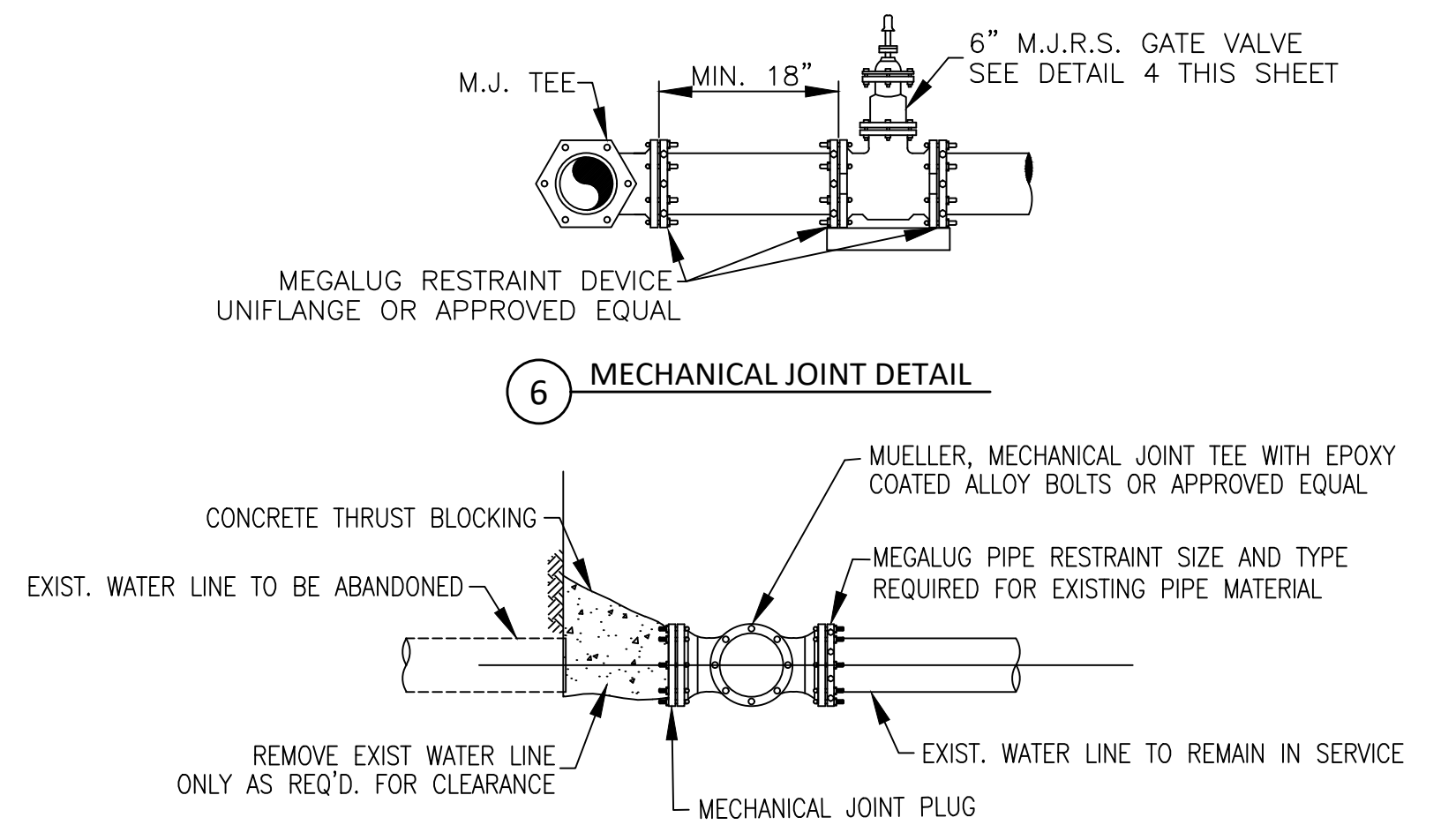
- NOTES:
1. ALL GATE VALVES TO BE MECHANICAL JOINT, RESILIENT SEAT, MUELLER, AMERICAN OR APPROVED EQUAL.
 2. ALL VALVES TO BE INSTALLED WITH POLYETHYLENE WRAP.

4 RESILIENT SEAT GATE VALVE INSTALLATION DETAIL

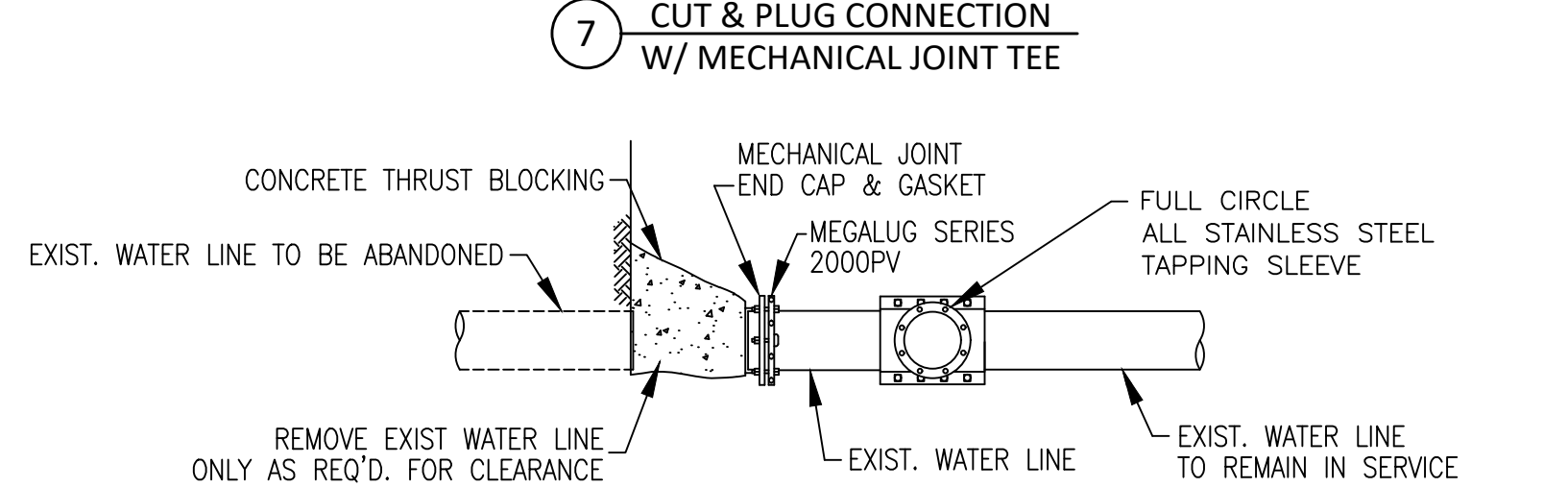


- NOTES:
1. FULL CIRCLE ALL 316 STAINLESS STEEL TAPPING SLEEVE BY JCM, SMITH-BLAIR OR APPROVED EQUAL TO BE USED ON ALL SIZE TAPS OR WHERE DESIGNATED BY WATER DISTRICT.

5 FULL CIRCLE TAPPING SLEEVE DETAIL



6 MECHANICAL JOINT DETAIL



7 CUT & PLUG CONNECTION W/ MECHANICAL JOINT TEE

8 CUT & PLUG CONNECTION W/ TAPPING SLEEVE

ISSUE	DATE	DESCRIPTION
REV-4	JANUARY 2025	STANDARD WATER DETAILS
REV-3	JANUARY 2024	STANDARD WATER DETAILS
REV-2	SEPTEMBER 2013	STANDARD WATER DETAILS
REV-1	AUGUST 2004	STANDARD WATER DETAILS
ORIGINAL	JULY 2003	STANDARD WATER DETAILS

DICKINSON W.C.I.D.
STANDARD CONSTRUCTION DETAILS
DICKINSON, TEXAS



STANDARD WATER DETAILS SHEET 1

NOTE: THIS DETAIL SHEET HAS BEEN PREPARED FOR USE ON PROJECTS INCLUDING UTILITIES THAT FALL UNDER THE JURISDICTION OF GALVESTON COUNTY WCID #1.

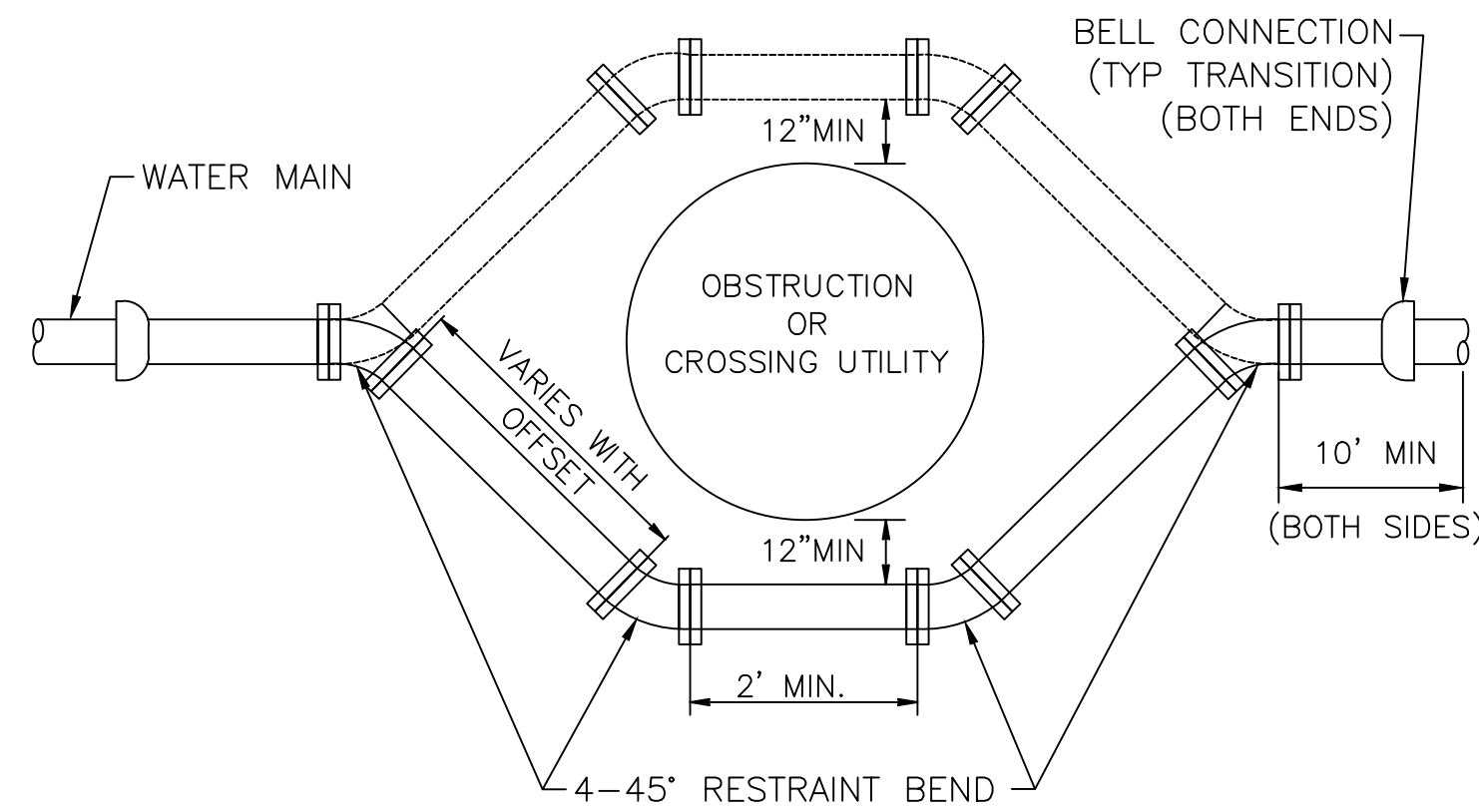
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SCALE: HORIZONTAL: NOT TO SCALE VERTICAL: NOT TO SCALE

DRAWN BY: M. DAUGHRITY CHECKED BY: K. MORGAN

SHEET: _____ OF _____

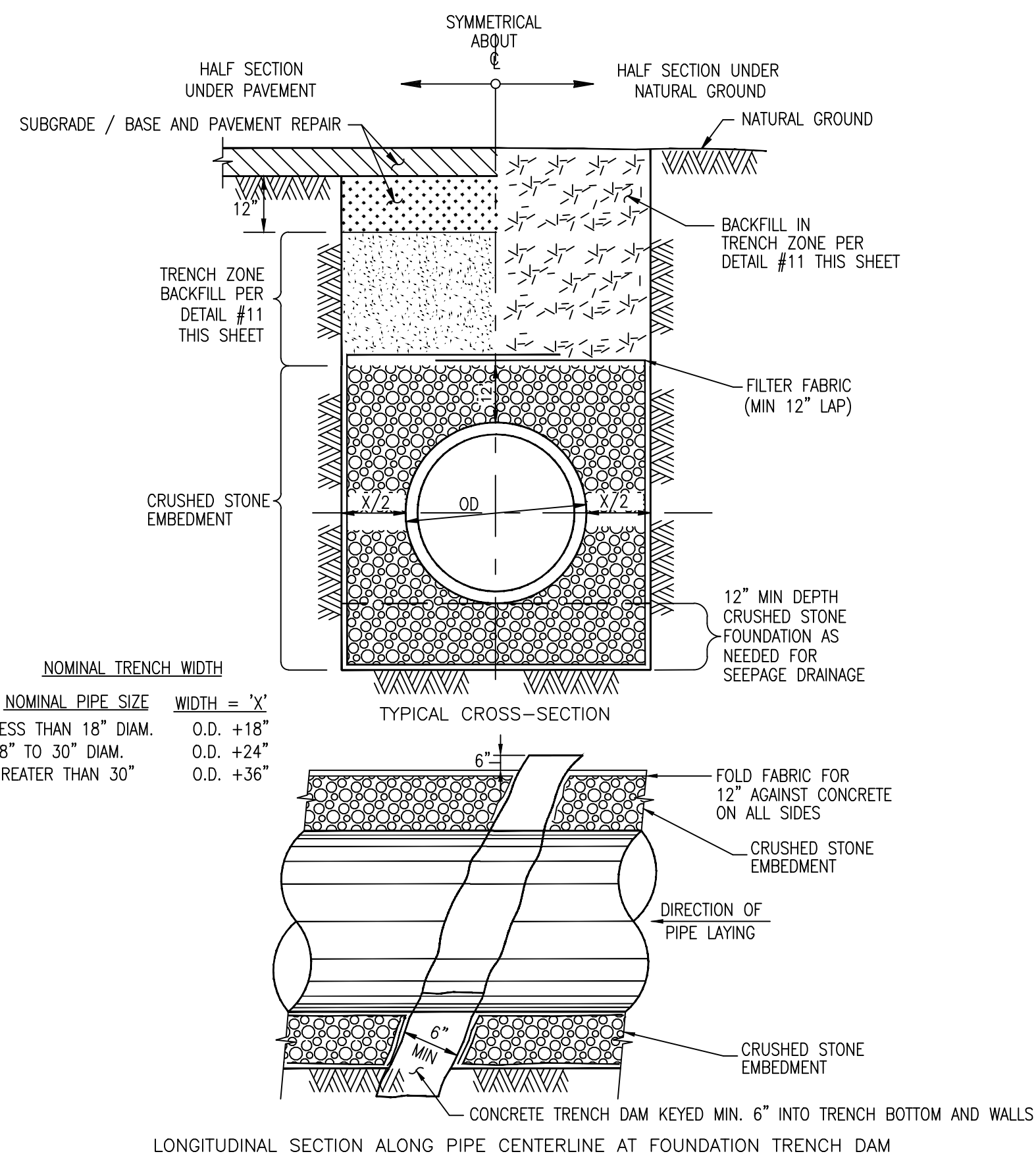
ENGINEER'S SEAL



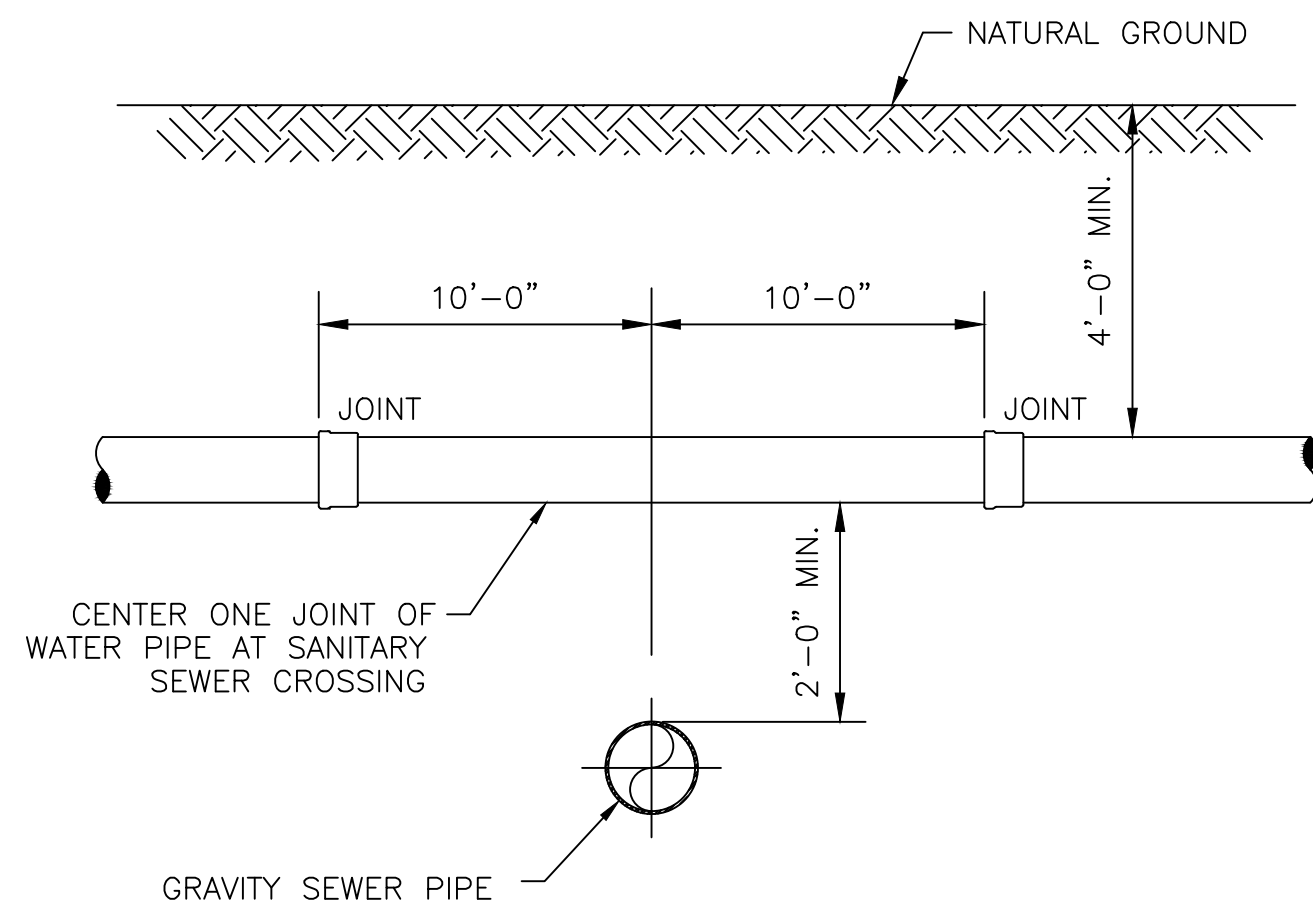
NOTES:

1. PIPE MATERIAL SHALL BE AWWA C900 PVC, DR-18, 235 PSI WITH INTEGRAL PVC RESTRAINED JOINTS (RJIB). FITTINGS SHALL BE AWWA C-153 MECHANICAL JOINT DUCTILE IRON COMPACT FITTINGS WITH PRESSURE RATING OF 250 PSI.
2. OFFSET ASSEMBLY CAN PASS OVER THE OBSTRUCTION AS LONG AS THE MINIMUM CLEARANCE OF 12 INCHES AND DEPTH OF COVER OF 4 FEET ARE MAINTAINED. CONTRACTOR WILL NEED TO OBTAIN APPROVAL FROM THE OWNER OF THE OBSTRUCTION OR CROSSING UTILITY PRIOR TO INSTALLATION AND ADHERE TO THEIR REQUIREMENTS IF MINIMUM CLEARANCE IS GREATER THAN 12 INCHES.
3. RESTRAIN EXISTING PIPING BEYOND OFFSET SECTION AS REQUIRED TO PREVENT MOVEMENT. RESTRAINTS TO BE MEGALUG BY EBAA IRON, INC.

9 PVC WATER PIPE OFFSET ASSEMBLY



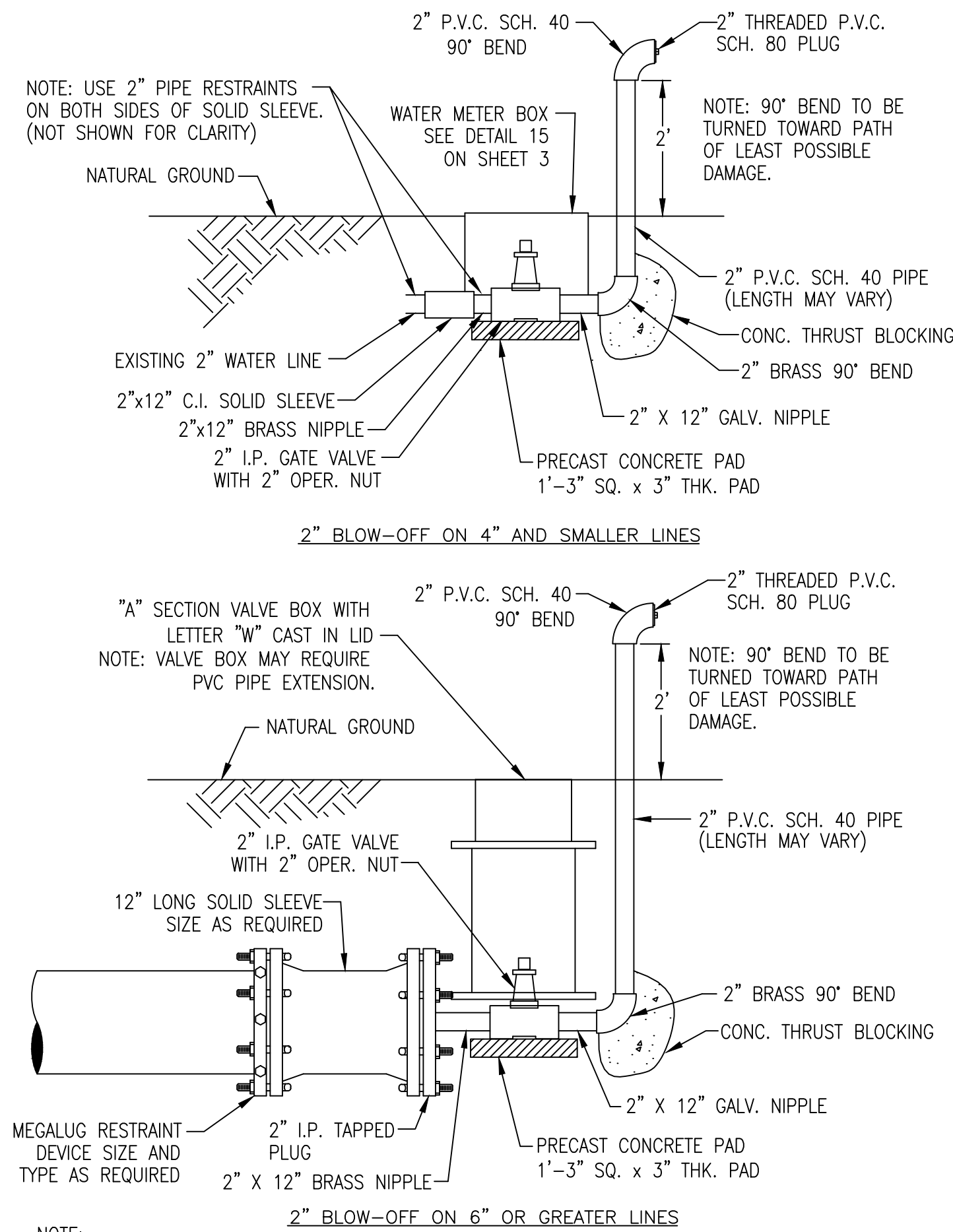
12 WET CONDITION BEDDING FOR PIPE DETAIL



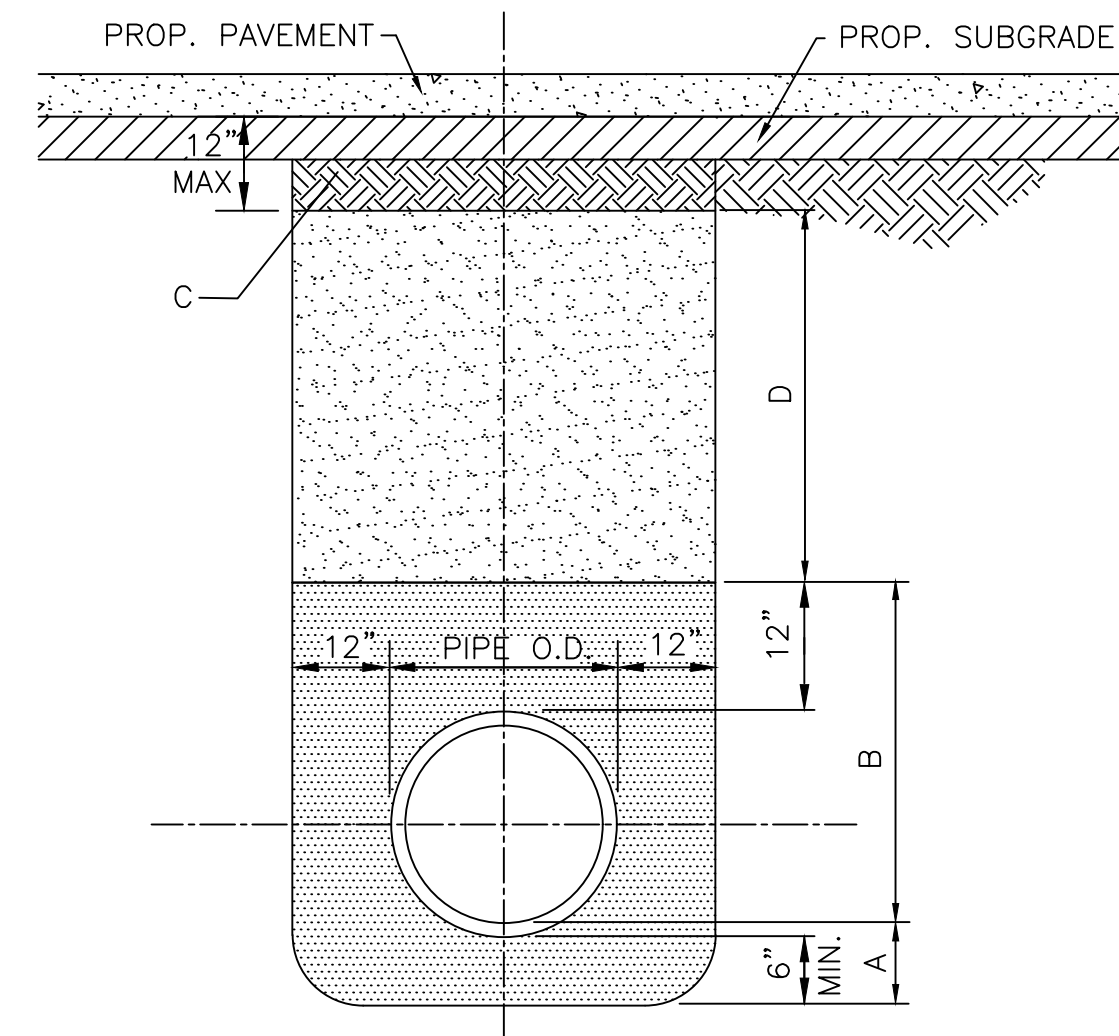
NOTES:

1. ALL WATER LINE CONSTRUCTION SHALL COMPLY WITH TCEQ SECTION 290.44 WATER DISTRIBUTION DESIGN, LATEST REVISION. WATER LINE SEPARATION WITH SANITARY SEWER LINES AND MANHOLES SHALL FOLLOW TCEQ REQUIREMENTS.

10 WATER LINE CROSSING AT EXISTING SANITARY SEWER



13 END OF LINE BLOW-OFF DETAILS

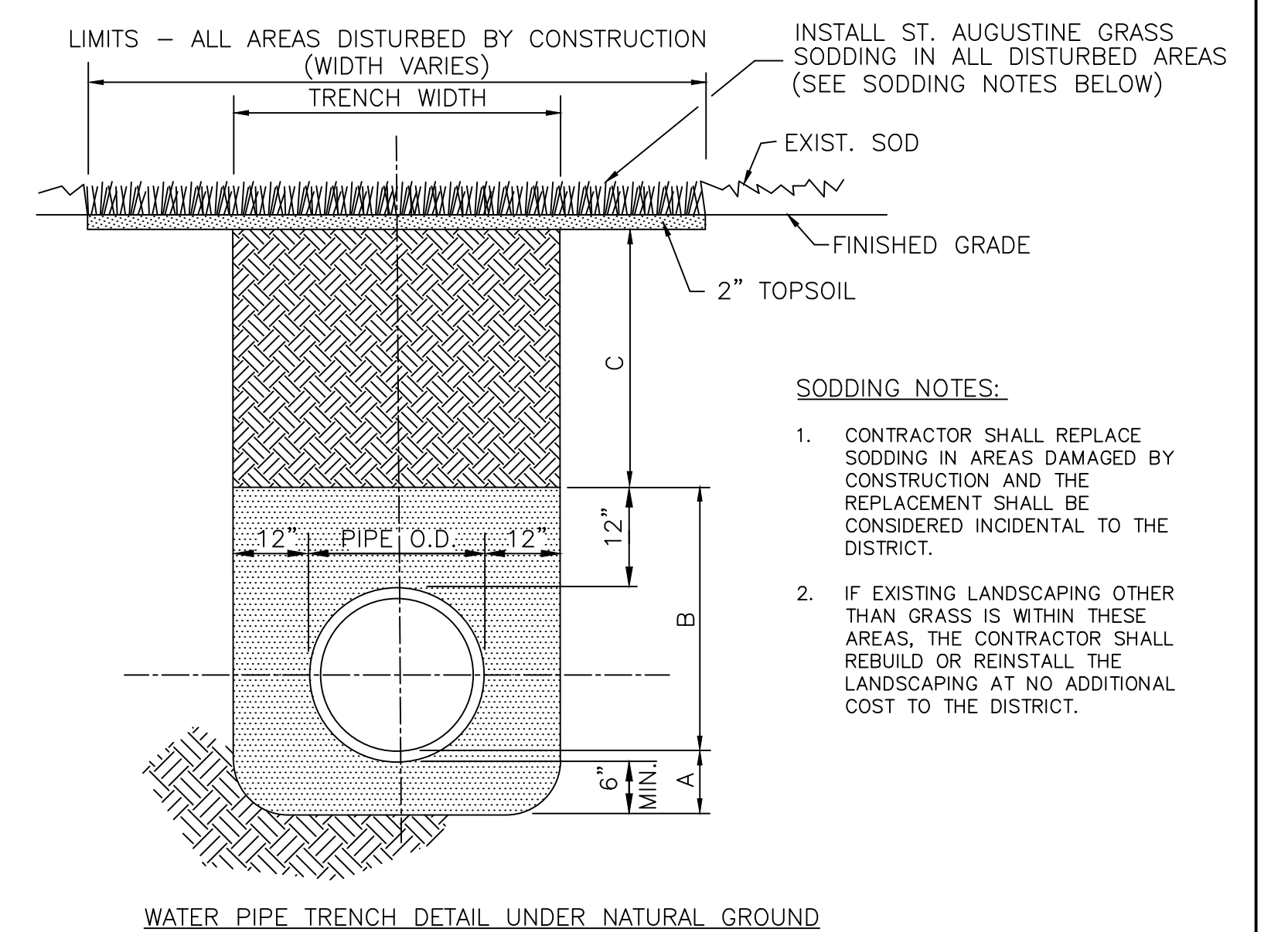


WATER PIPE TRENCH DETAIL UNDER PAVEMENT

BEDDING & BACKFILL LEGEND

- A. BANK SAND PLACED BEFORE PIPE IS LAID.
- B. BANK SAND PLACED AFTER PIPE IS LAID, THOROUGHLY RODDED AND MECHANICALLY TAMPED TO MIN 95% OF MAX. DRY DENSITY AS DETERMINED BY ASTM D-698.
- C. SELECT EARTH BACKFILL, MAX. LIQUID LIMIT 40 ASTM D4318, P.I. MIN 7, MAX 20 CONTAINING NO ROCKS OR OTHER DEBRIS NOR CONTAINING ANY DIRT CLODS EXCEEDING 6" IN ANY DIMENSION. PLACED IN 6" LAYERS AND COMPACTED TO AT LEAST 95% OF THE MAXIMUM STANDARD PROCTOR DRY DENSITY (ASTM D698) AND AT A MOISTURE CONTENT WITHIN TWO PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT. IN SITU SOILS MAY BE UTILIZED ONLY IF IT MEETS THIS CRITERIA.
- D. 1.5 SACK CEMENT STABILIZED SAND COMPACTED TO 95% MAX. DRY DENSITY W/ MIN. 100 PSI COMPRESSIVE STRENGTH.

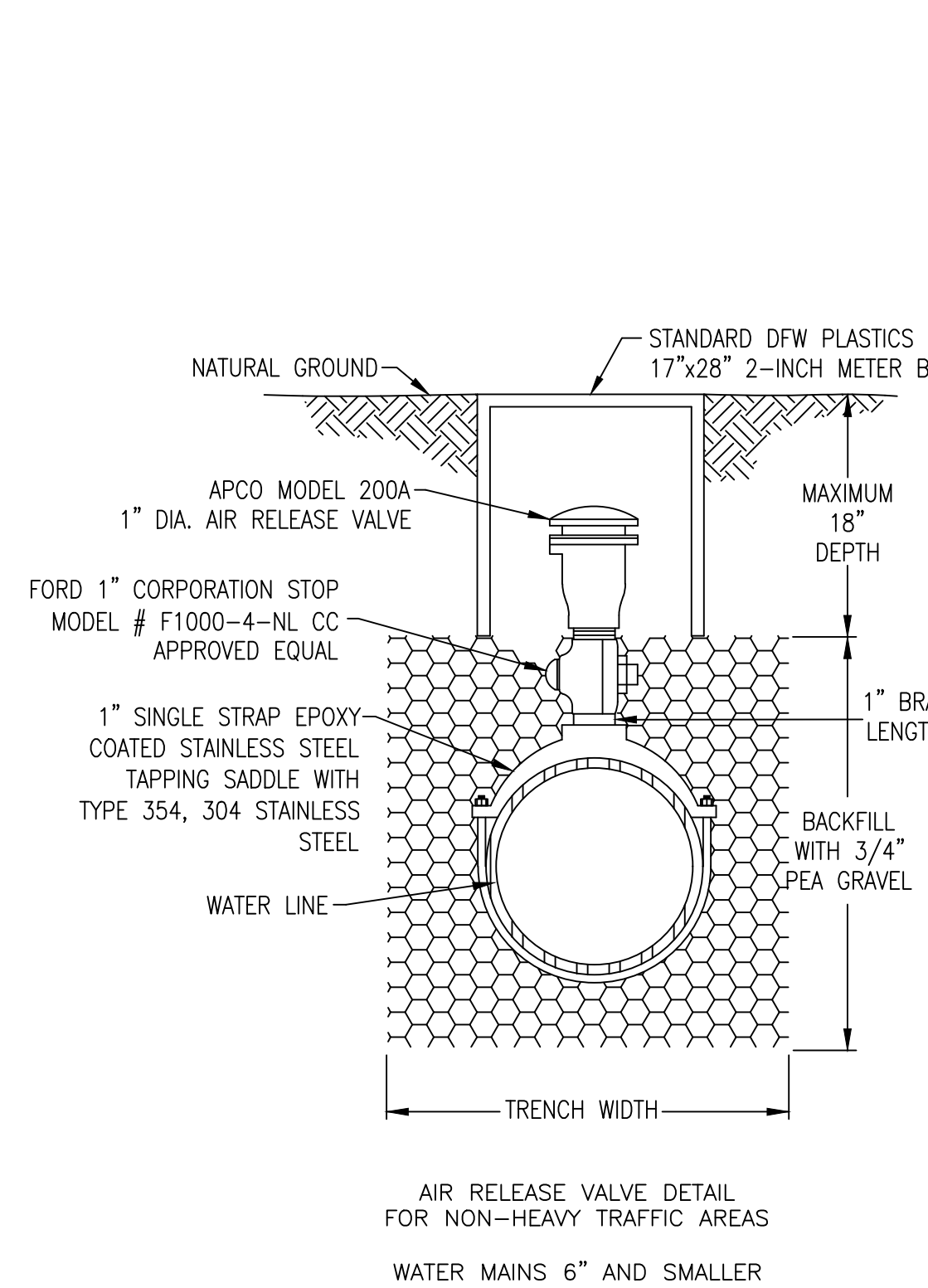
11 BEDDING, BACKFILL, & SODDING DETAIL FOR WATER LINE TRENCH



WATER PIPE TRENCH DETAIL UNDER NATURAL GROUND

SODDING NOTES:

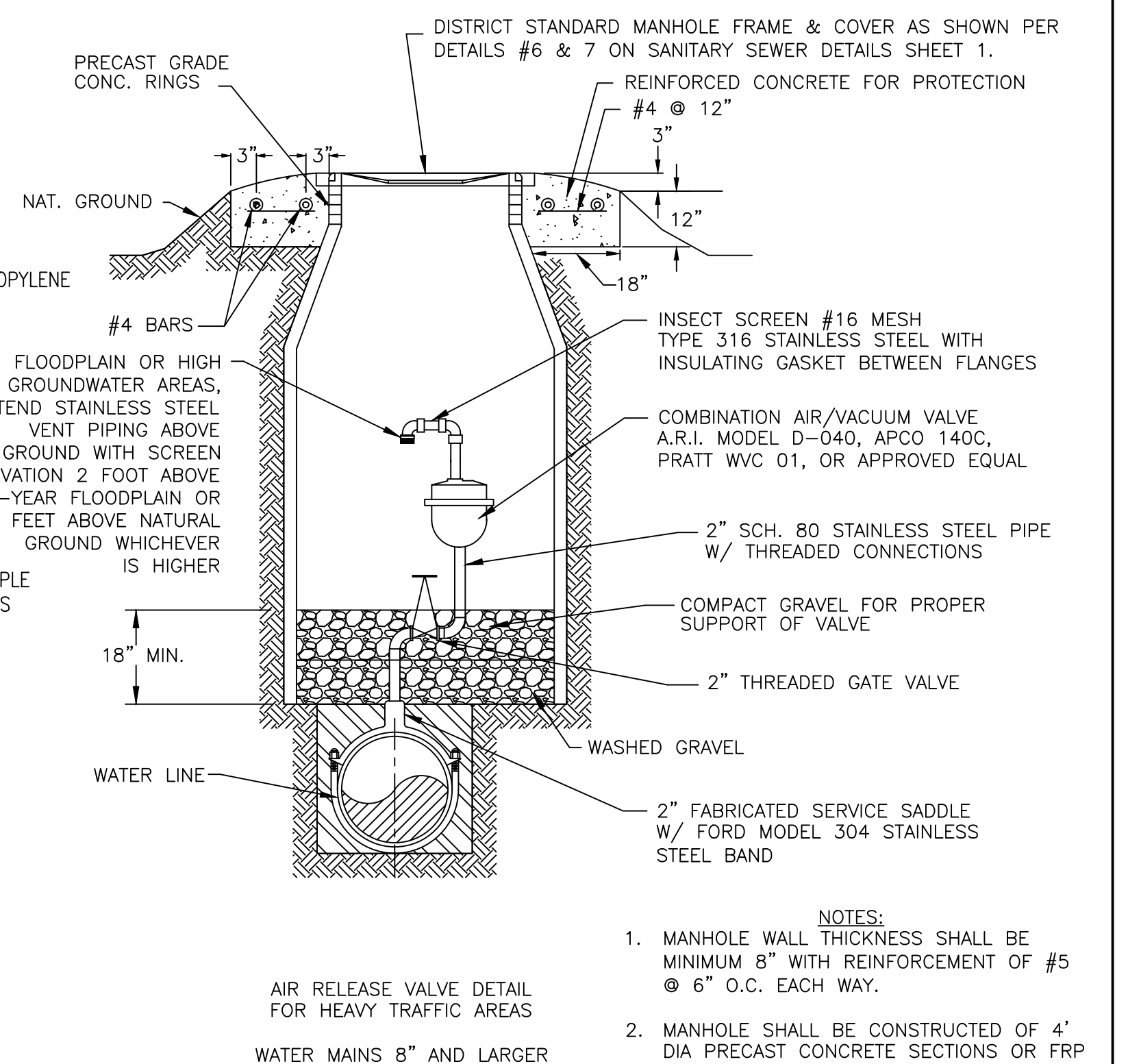
1. CONTRACTOR SHALL REPLACE SODDING IN AREAS DAMAGED BY CONSTRUCTION AND THE REPLACEMENT SHALL BE CONSIDERED INCIDENTAL TO THE DISTRICT.
2. IF EXISTING LANDSCAPING OTHER THAN GRASS IS WITHIN THESE AREAS, THE CONTRACTOR SHALL REBUILD OR REINSTALL THE LANDSCAPING AT NO ADDITIONAL COST TO THE DISTRICT.



AIR RELEASE VALVE DETAIL FOR NON-HEAVY TRAFFIC AREAS

WATER MAINS 6" AND SMALLER

14 AIR RELEASE VALVE FOR WATER LINES



AIR RELEASE VALVE DETAIL FOR HEAVY TRAFFIC AREAS

WATER MAINS 8" AND LARGER

NOTES:

1. MANHOLE WALL THICKNESS SHALL BE MINIMUM 8" WITH REINFORCEMENT OF #5 @ 6" O.C. EACH WAY.
2. MANHOLE SHALL BE CONSTRUCTED OF 4' DIA PRECAST CONCRETE SECTIONS OR FRP MANUFACTURED BY HOBAS PIPE USA, INC.
3. PRECAST CONCRETE RINGS SHALL BE PROVIDED FOR ADJUSTMENT OF HEIGHT OF AT LEAST 12". TOTAL HEIGHT OF THE ADJUSTMENT RINGS SHALL NOT EXCEED 1'-6".

ISSUE	DATE	DESCRIPTION
REV-4	JANUARY 2025	STANDARD WATER DETAILS
REV-3	JANUARY 2024	STANDARD WATER DETAILS
REV-2	SEPTEMBER 2013	STANDARD WATER DETAILS
REV-1	AUGUST 2004	STANDARD WATER DETAILS
ORIGINAL	JULY 2003	STANDARD WATER DETAILS

DICKINSON W.C.I.D.
STANDARD CONSTRUCTION DETAILS
DICKINSON, TEXAS



STANDARD WATER DETAILS SHEET 2

ENGINEER'S SEAL

NOTE: THIS DETAIL SHEET HAS BEEN PREPARED FOR USE ON PROJECTS INCLUDING UTILITIES THAT FALL UNDER THE JURISDICTION OF GALVESTON COUNTY WCID #1.

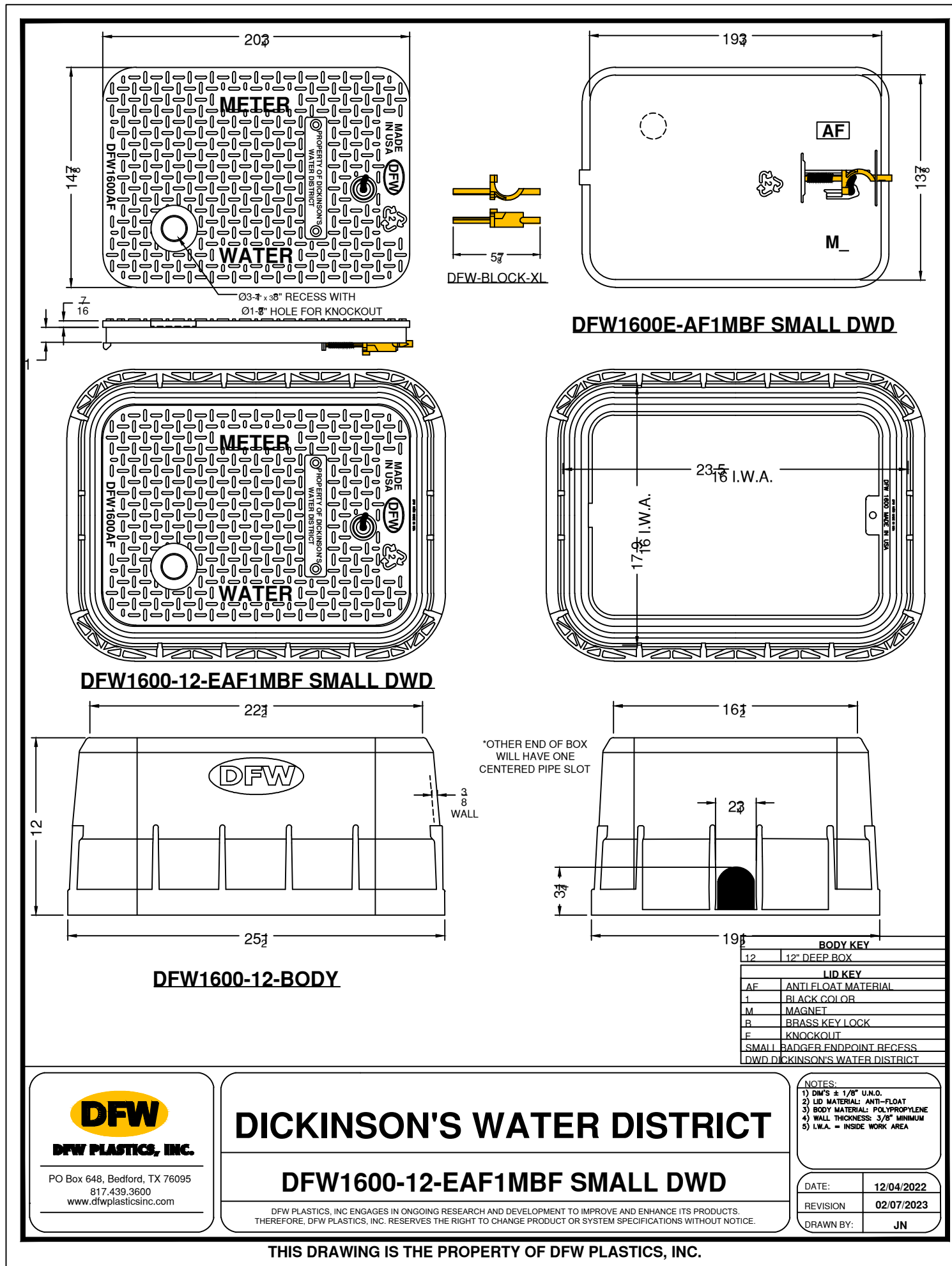
AN ENGINEER WHO INCORPORATES THE DETAILS ON THIS SHEET BECOMES RESPONSIBLE FOR ITS USE IN THE END PRODUCT IN ACCORDANCE WITH RULE 137.33 (b) AND (c) OF THE TEXAS STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS.

SCALE: HORIZONTAL: NOT TO SCALE VERTICAL: NOT TO SCALE

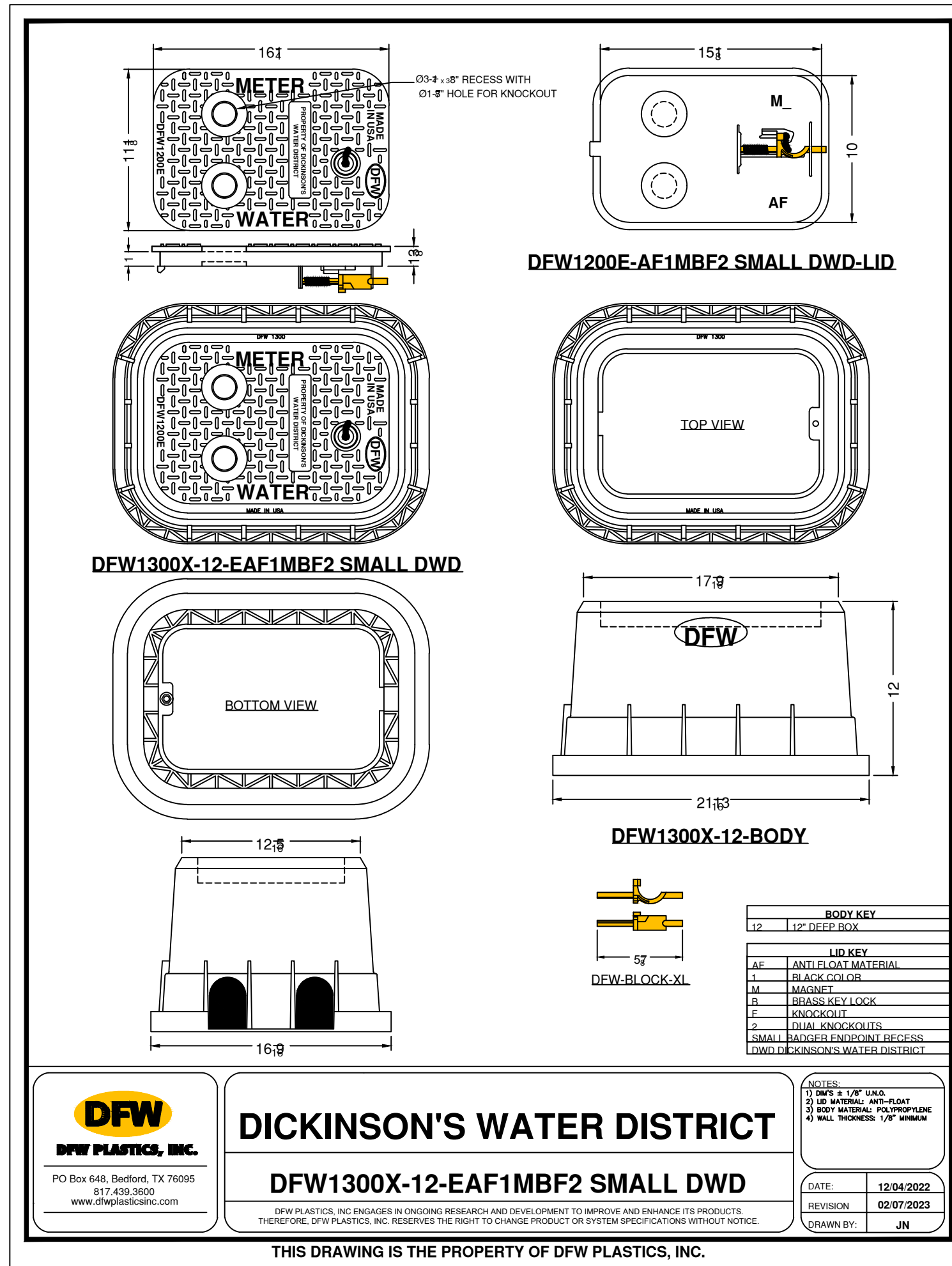
DRAWN BY: M. DAUGHRITY CHECKED BY: K. MORGAN

SHEET:

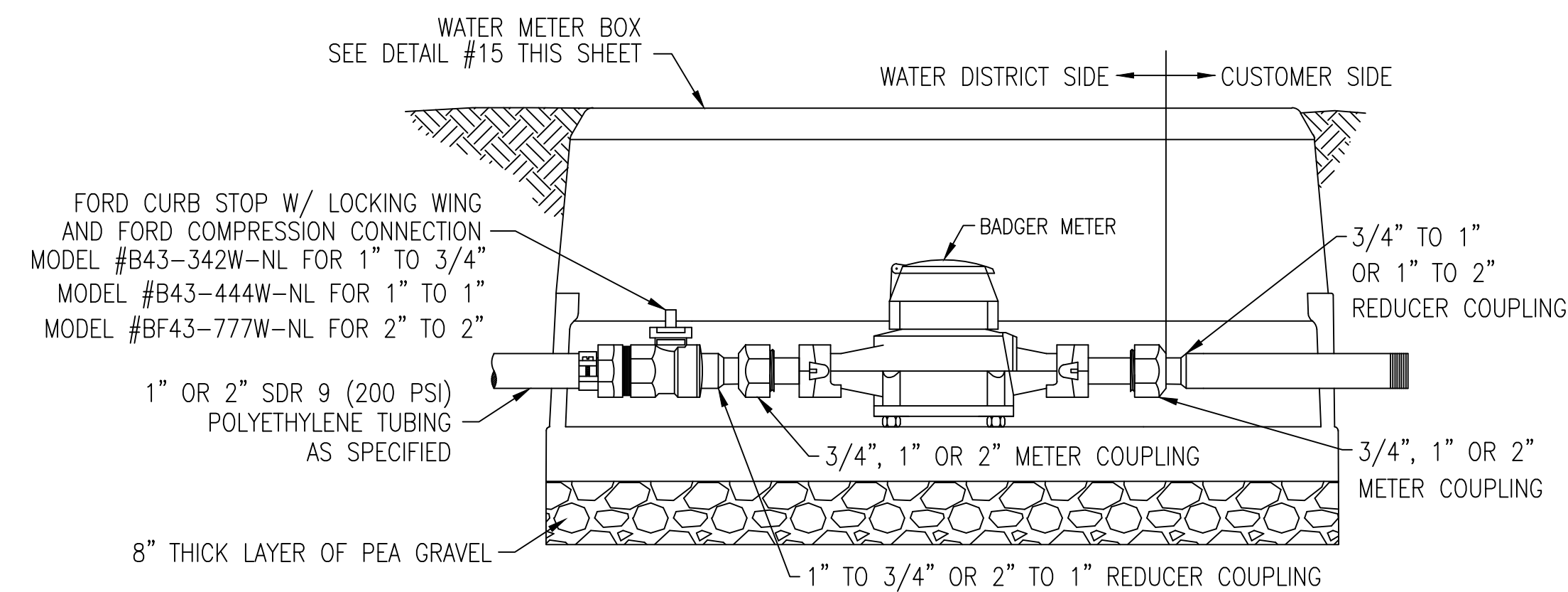
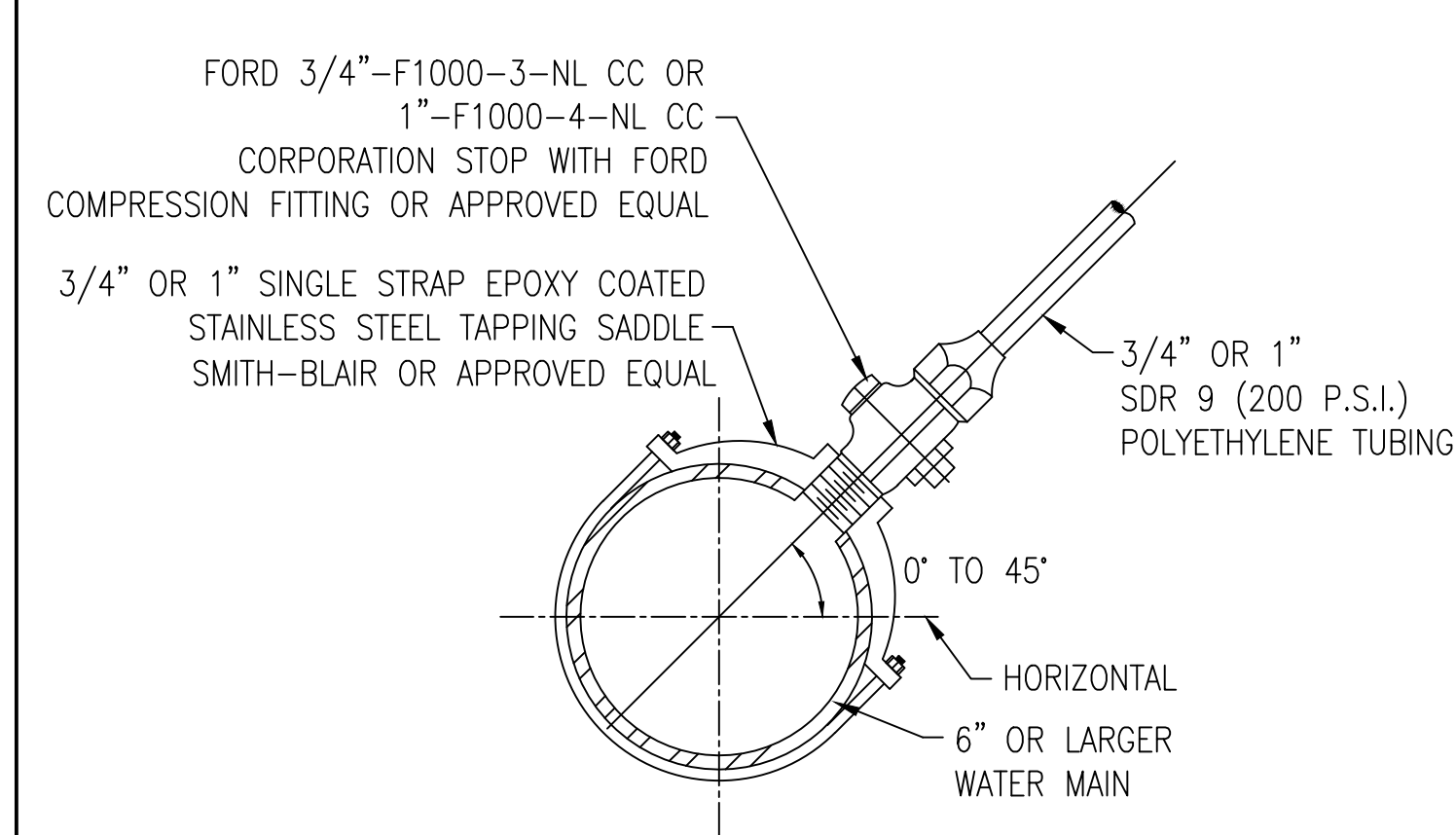
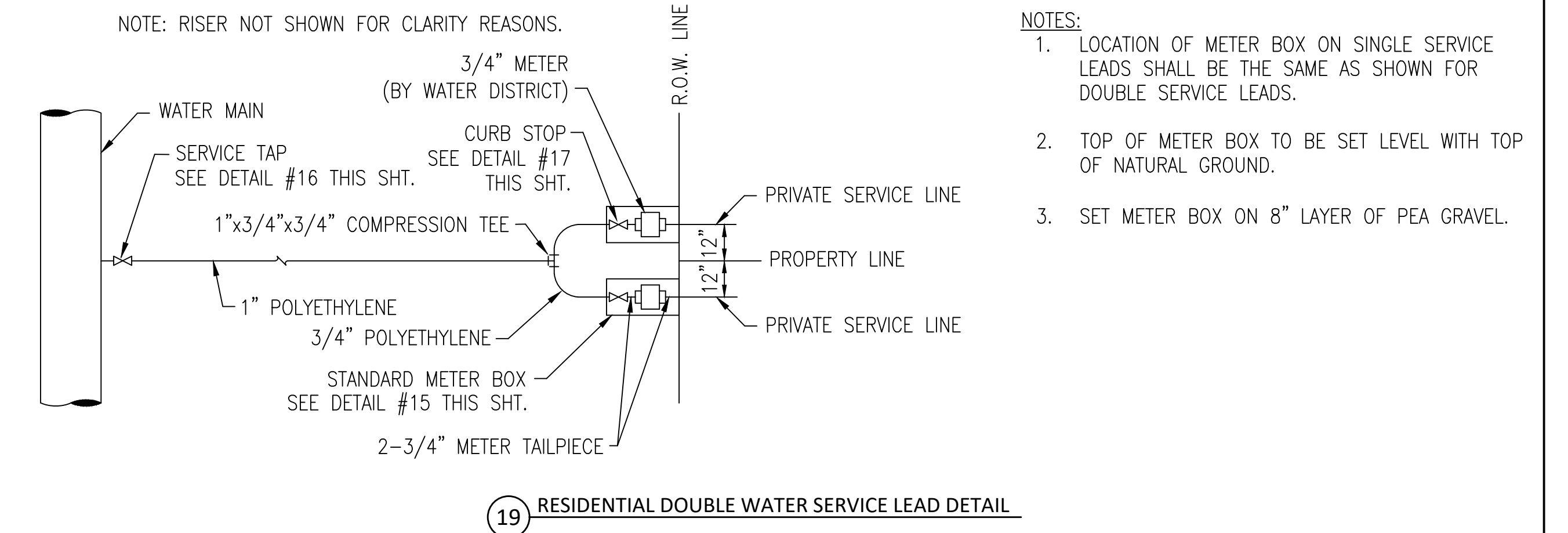
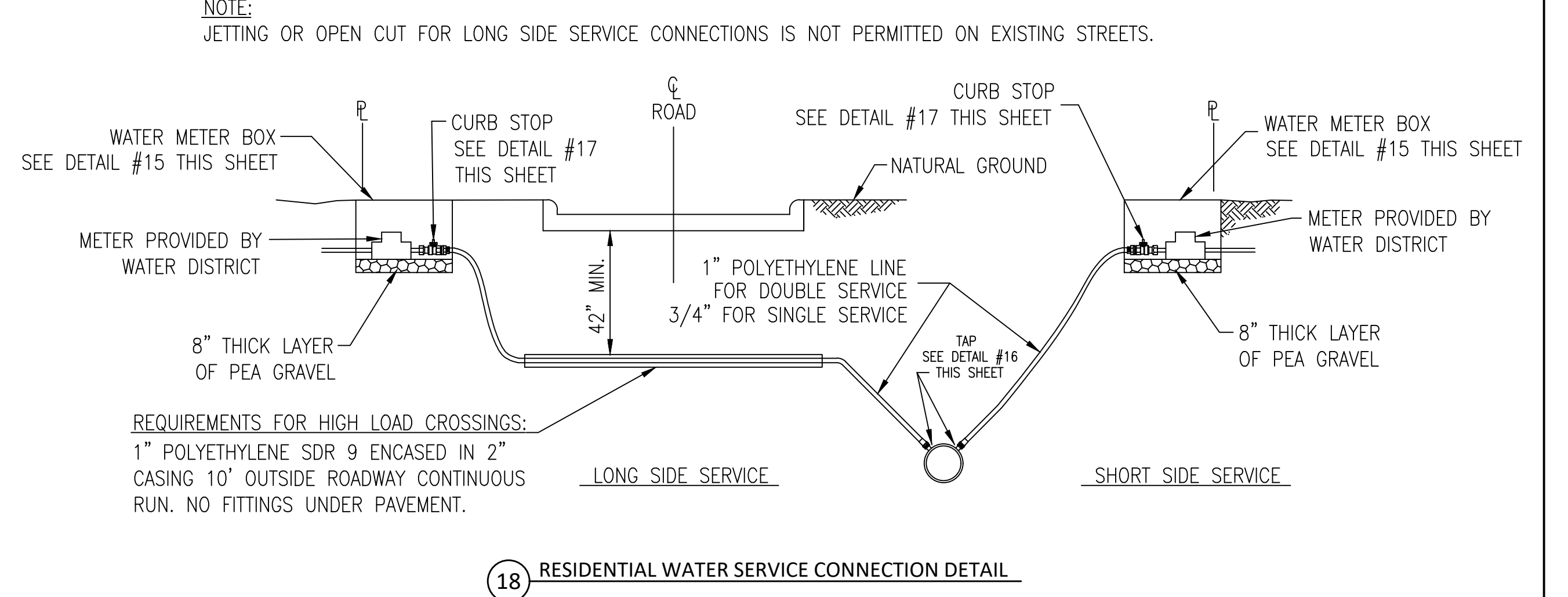
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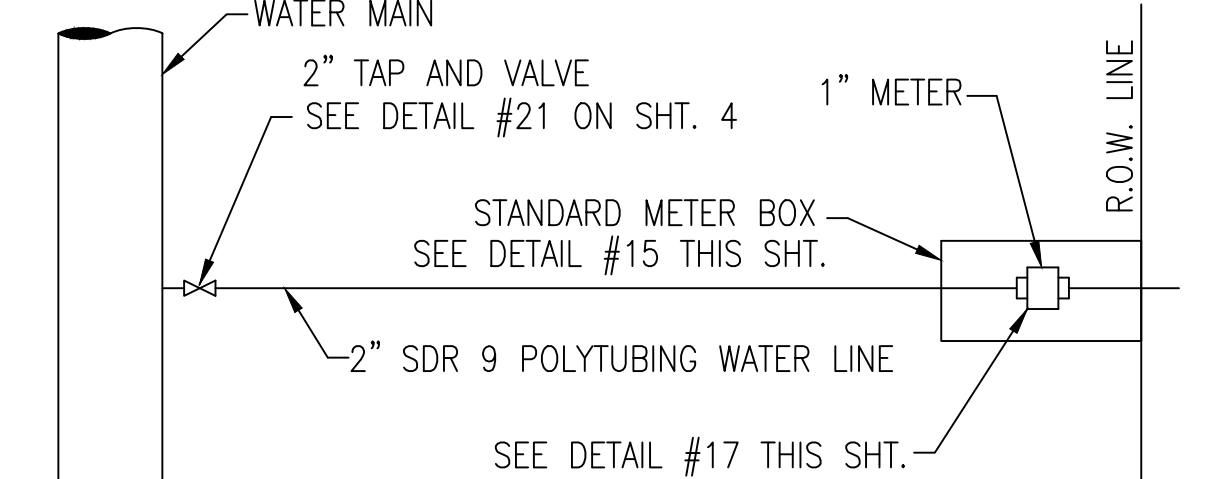
15 SINGLE AND DUAL WATER METER BOX DETAILS



16 2" AND SMALLER METER & CURB STOP DETAIL



- NOTES:**
1. A 2" METER WILL REQUIRE THE STANDARD DFW PLASTICS POLYPROPYLENE 17"x28" METER BOX.
 2. COMMERCIAL CUSTOMERS ARE RESPONSIBLE FOR INSTALLATION OF APPROVED TESTABLE BACKFLOW PREVENTION DEVICE AFTER THE METER TO BE INSTALLED BY A LICENSED PLUMBER PER STATE PLUMBING CODES AND TO REGISTER DEVICE AND UPLOAD PASSING TEST RESULTS TO DISTRICT'S BSI ONLINE PORTAL.
 3. REFER TO DETAIL 23 FOR COMMERCIAL METER INSTALLATIONS 3" AND LARGER.



- NOTES:**
1. LOCATION OF METER BOX SHALL BE THE SAME AS SHOWN FOR RESIDENTIAL SERVICE LEADS.
 2. TOP OF METER BOX TO BE SET LEVEL WITH TOP OF NATURAL GROUND.
 3. SET METER BOX ON 8" LAYER OF PEA GRAVEL.

ISSUE	DATE	DESCRIPTION
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ORIGINAL	JULY 2003	STANDARD WATER DETAILS

DICKINSON W.C.I.D.
STANDARD CONSTRUCTION DETAILS
DICKINSON, TEXAS



**STANDARD
WATER
DETAILS
SHEET 3**

ENGINEER'S SEAL

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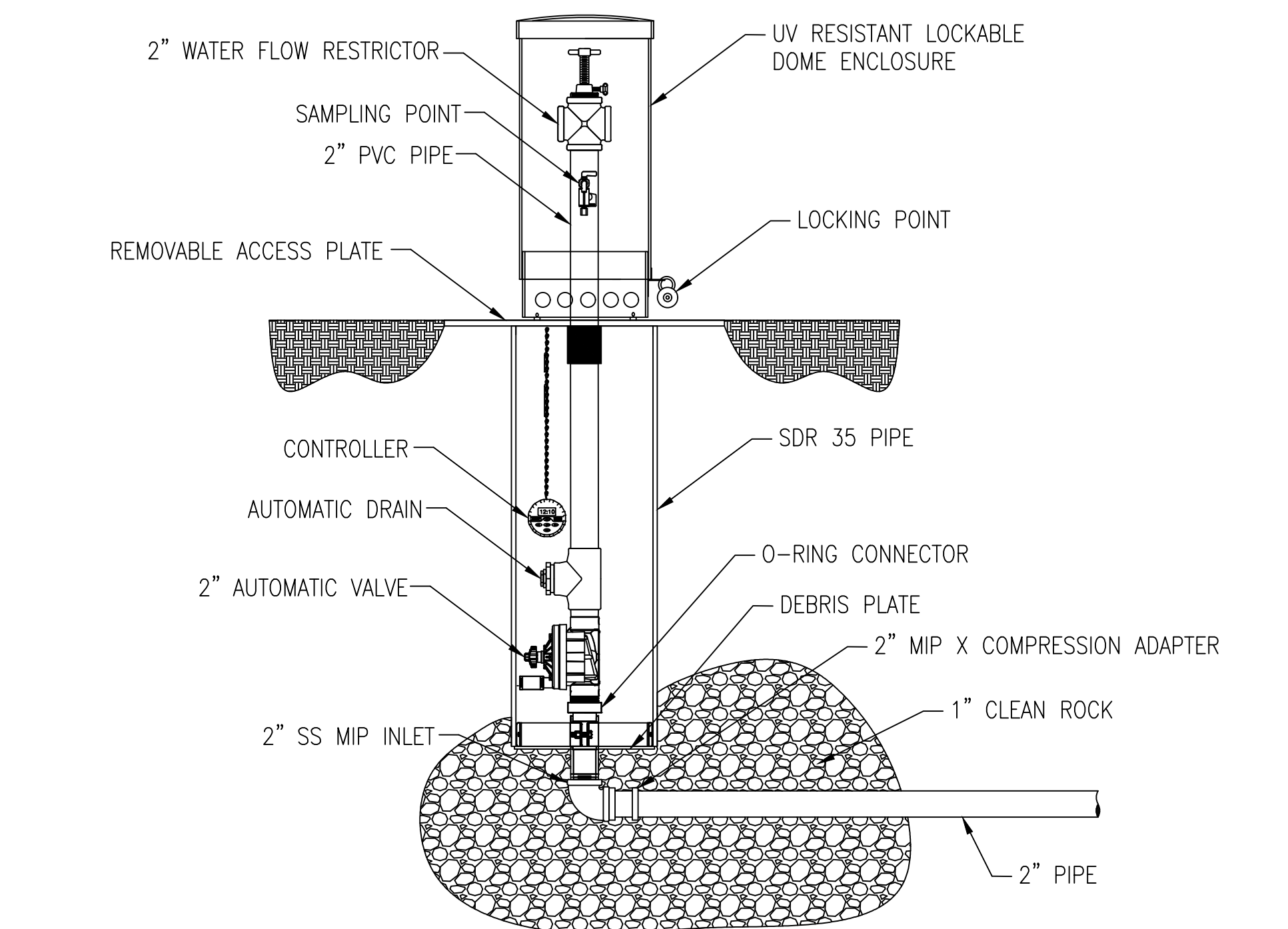
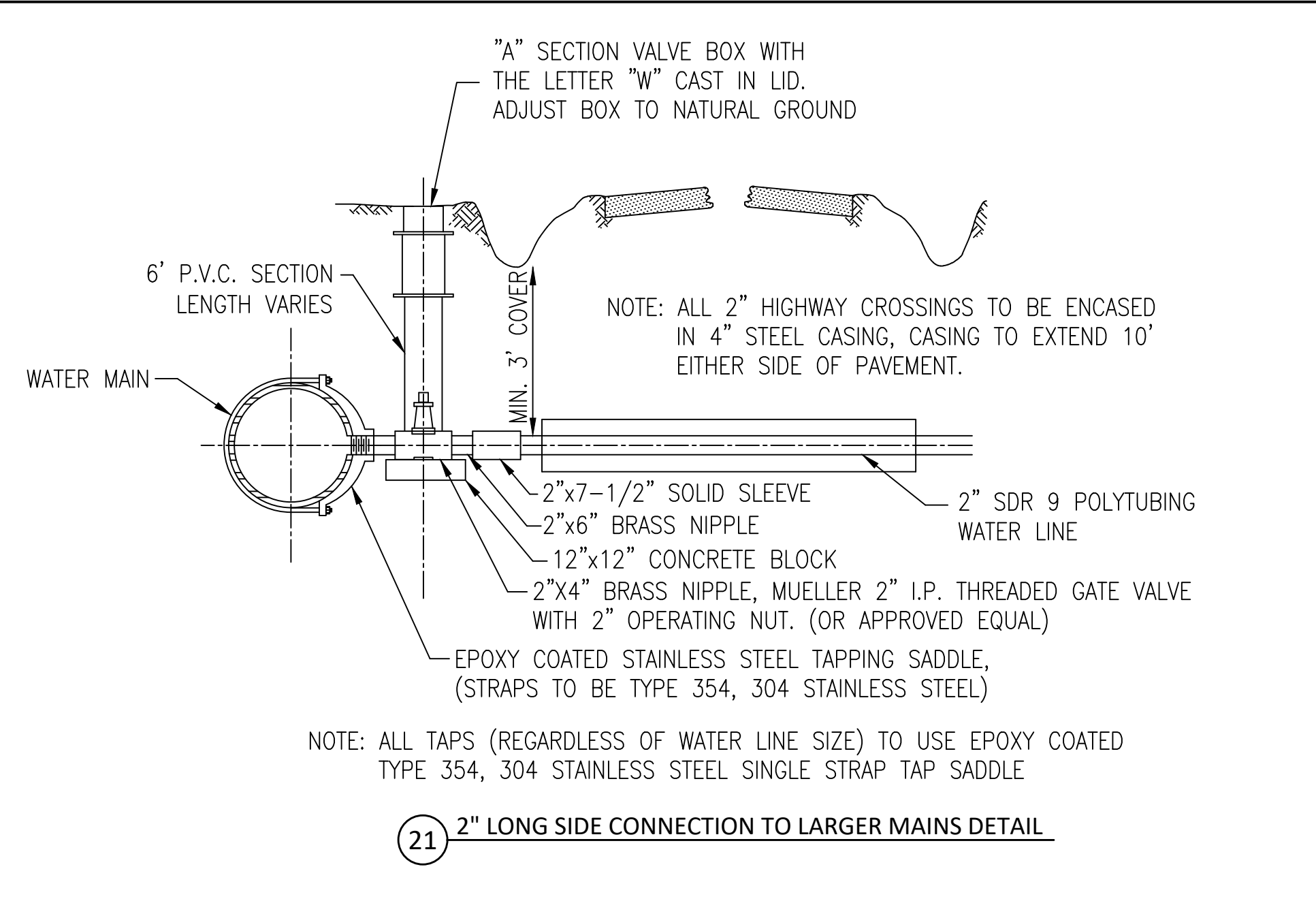
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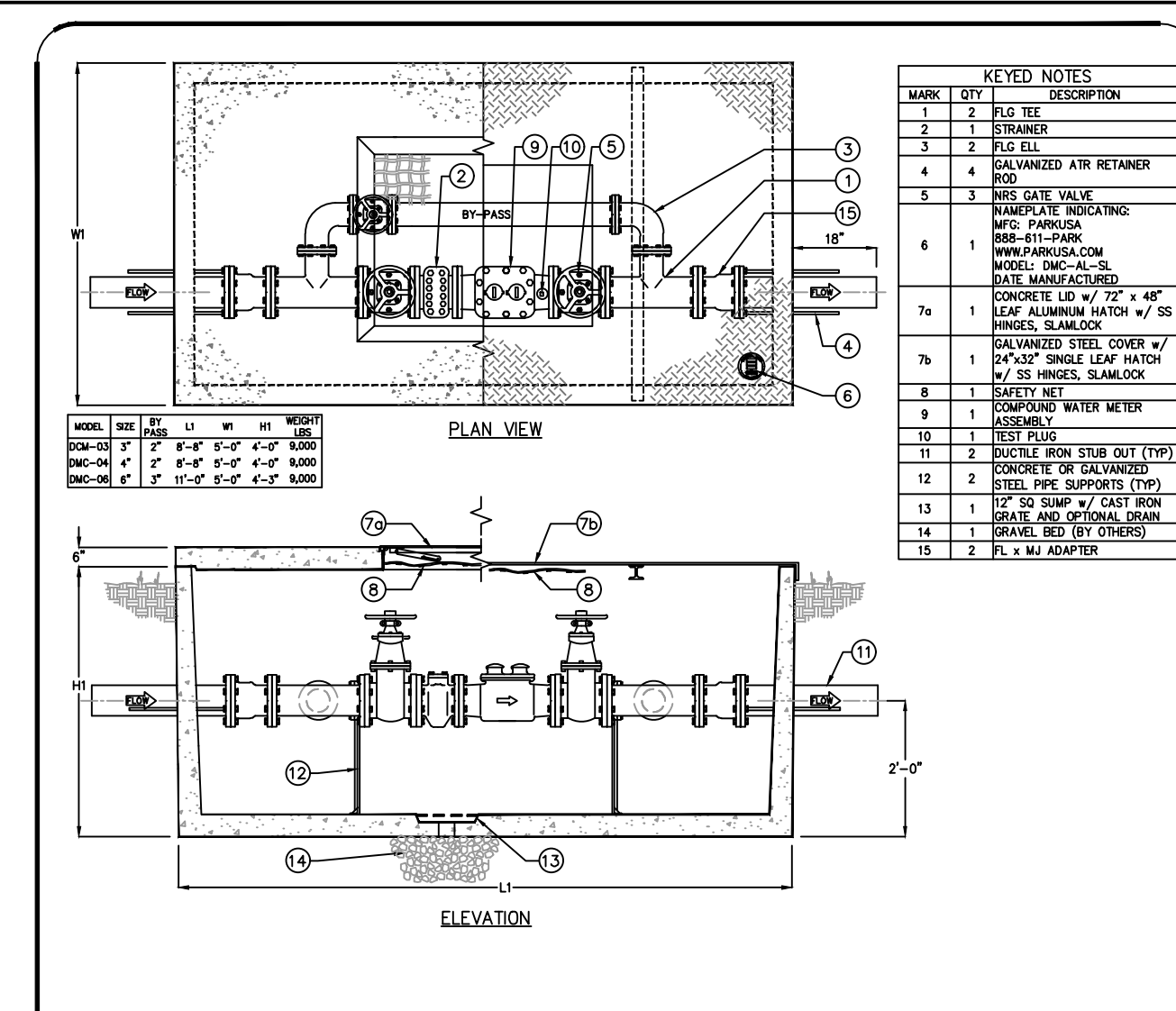
SHEET:

OF



- NOTES:
1. AUTOMATIC FLUSHING DEVICE SHALL BE MODEL #9400 AS MANUFACTURED BY KUPFERLE FOUNDRY COMPANY.
 2. AUTOMATIC FLUSHING DEVICE SHALL HAVE A 2\"/>

22 2\"/>



KEYED NOTES

MARK	QTY	DESCRIPTION
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KEYED NOTES

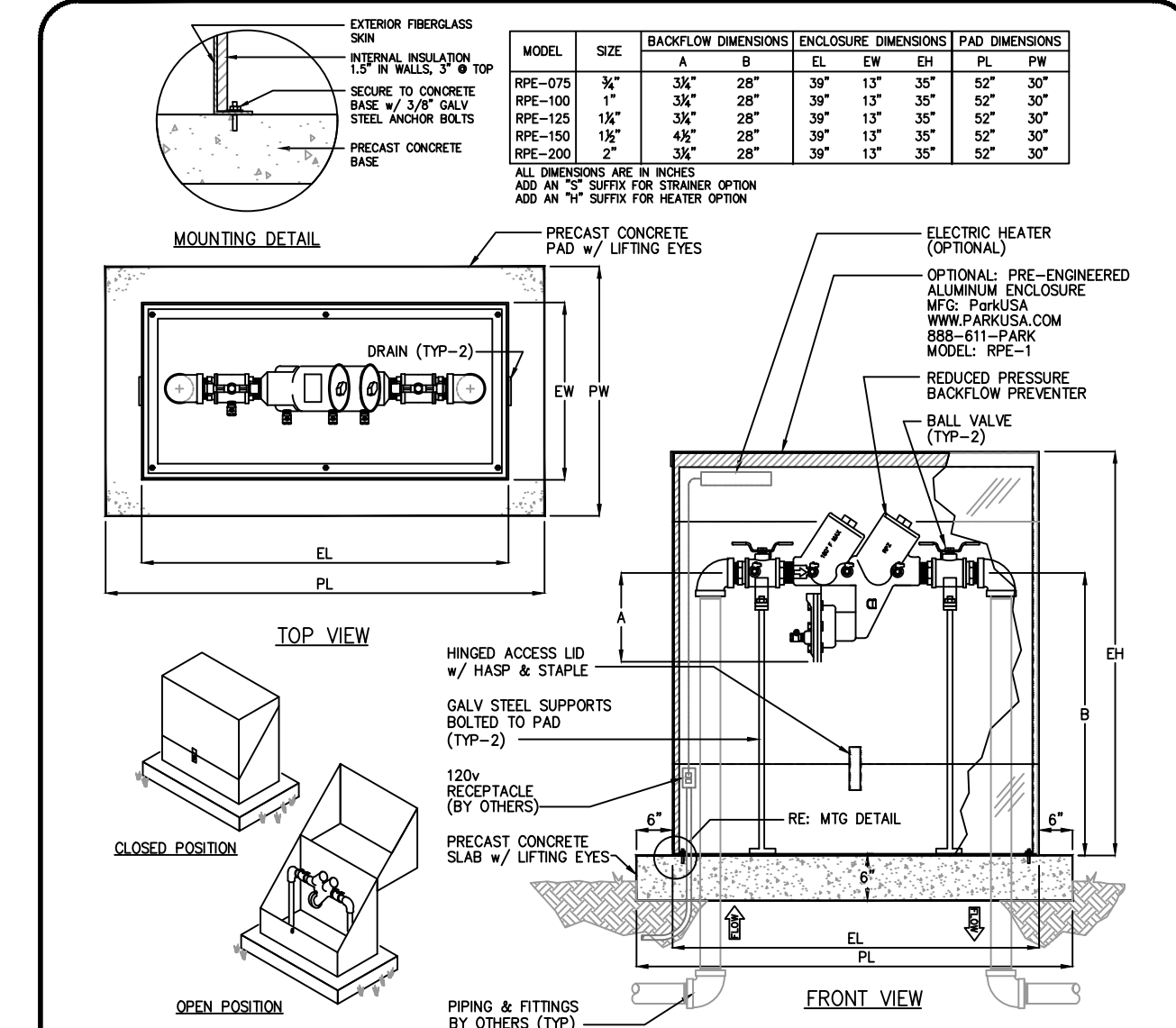
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KEYED NOTES

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KEYED NOTES

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KEYED NOTES

MARK	QTY	DESCRIPTION
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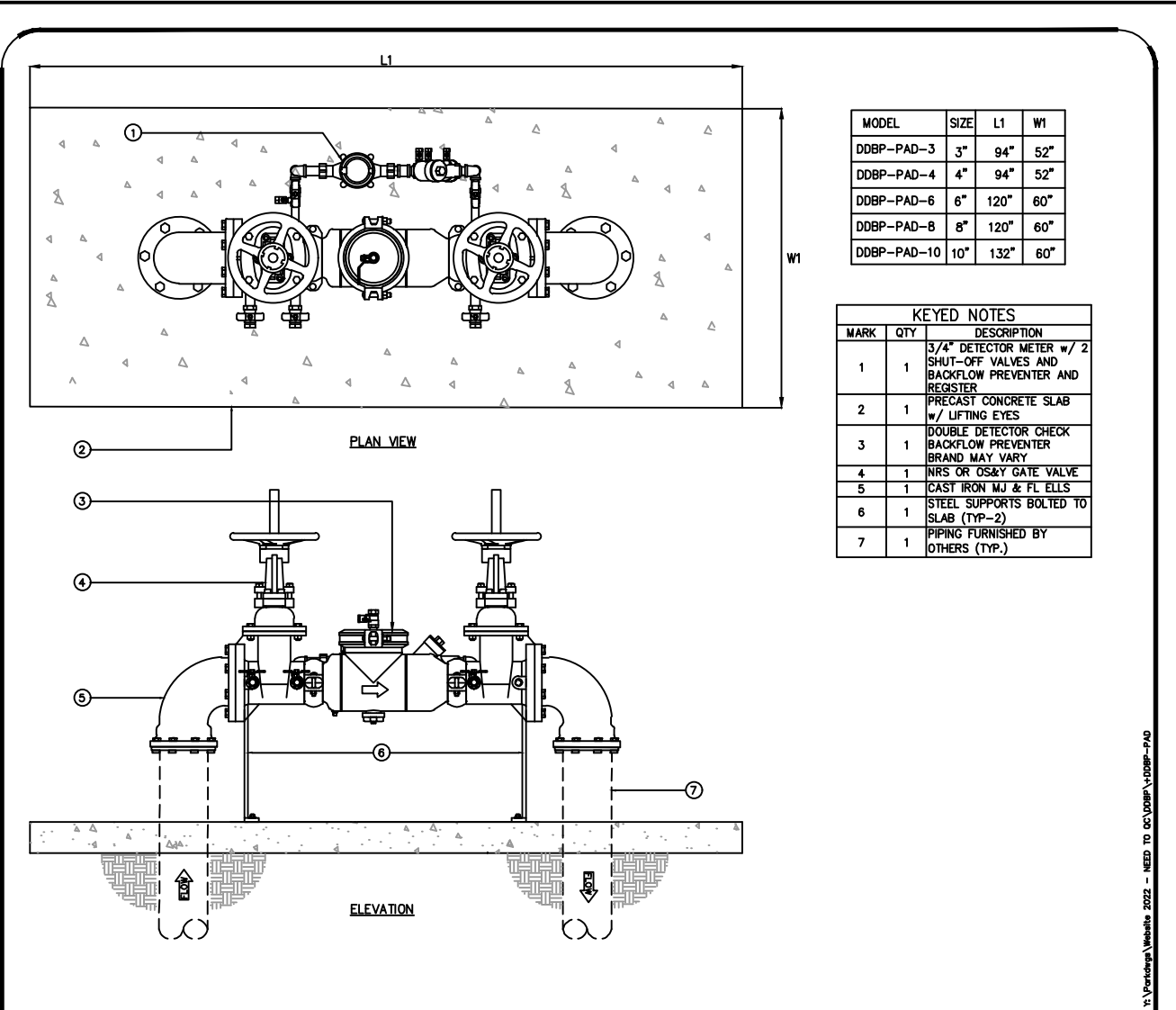
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KEYED NOTES

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KEYED NOTES

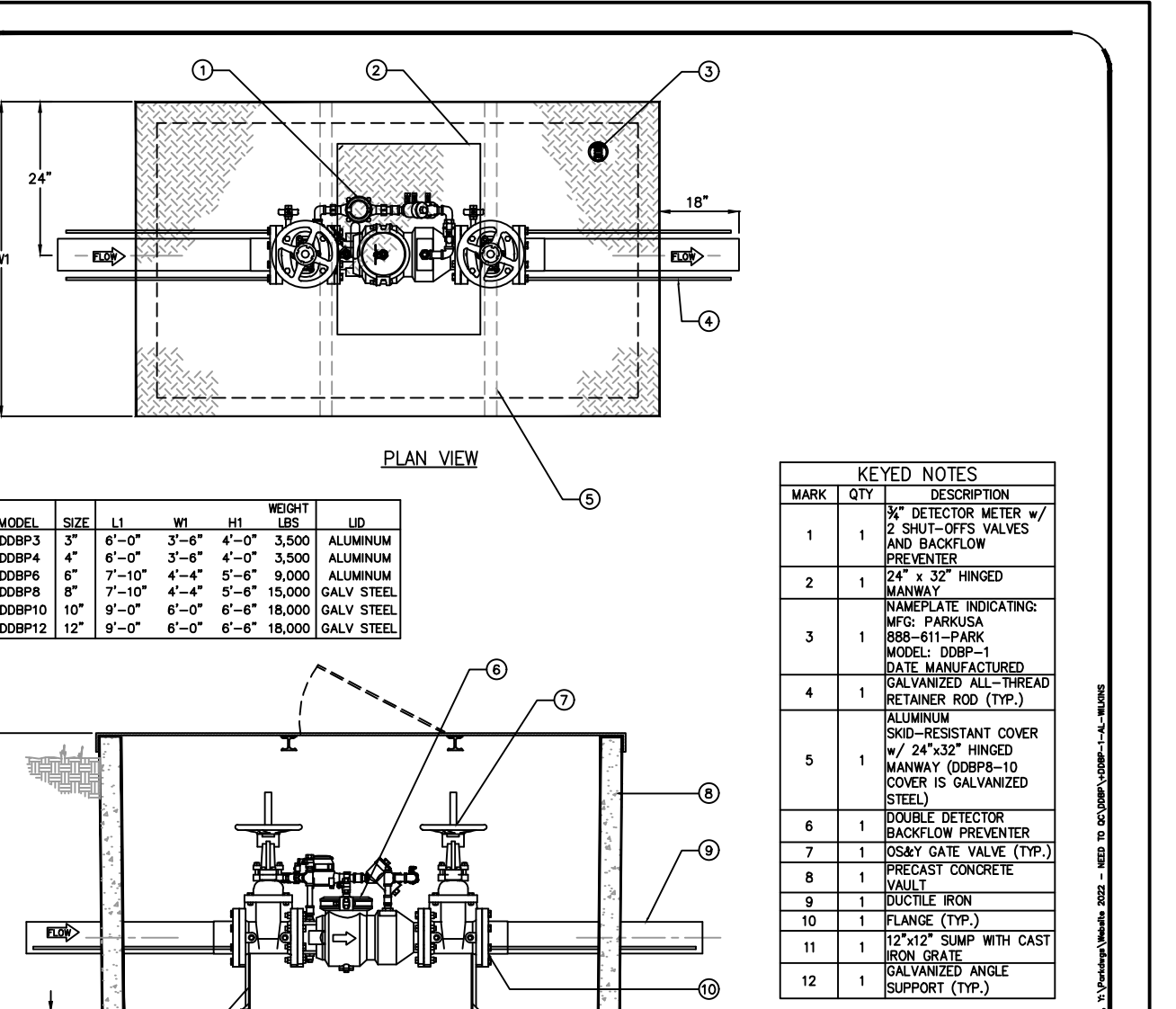
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KEYED NOTES

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KEYED NOTES

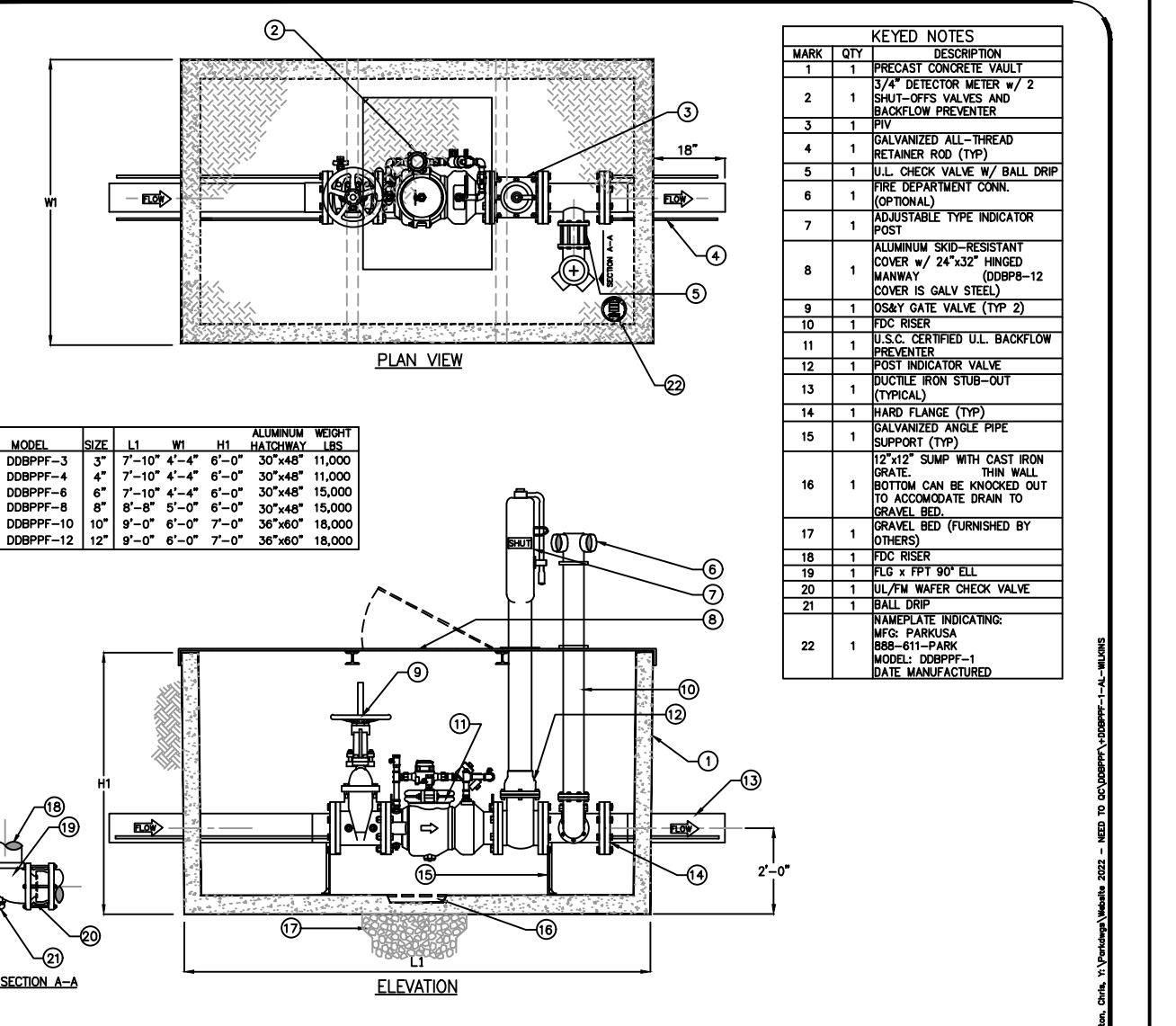
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KEYED NOTES

MARK	QTY	DESCRIPTION
1	1	1/4\"/>

REV	DATE	DESCRIPTION
REV-4	JANUARY 2025	STANDARD WATER DETAILS
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ISSUE	DATE	DESCRIPTION

DICKINSON W.C.I.D.
STANDARD CONSTRUCTION DETAILS
DICKINSON, TEXAS



STANDARD WATER DETAILS SHEET 4

ENGINEER'S SEAL

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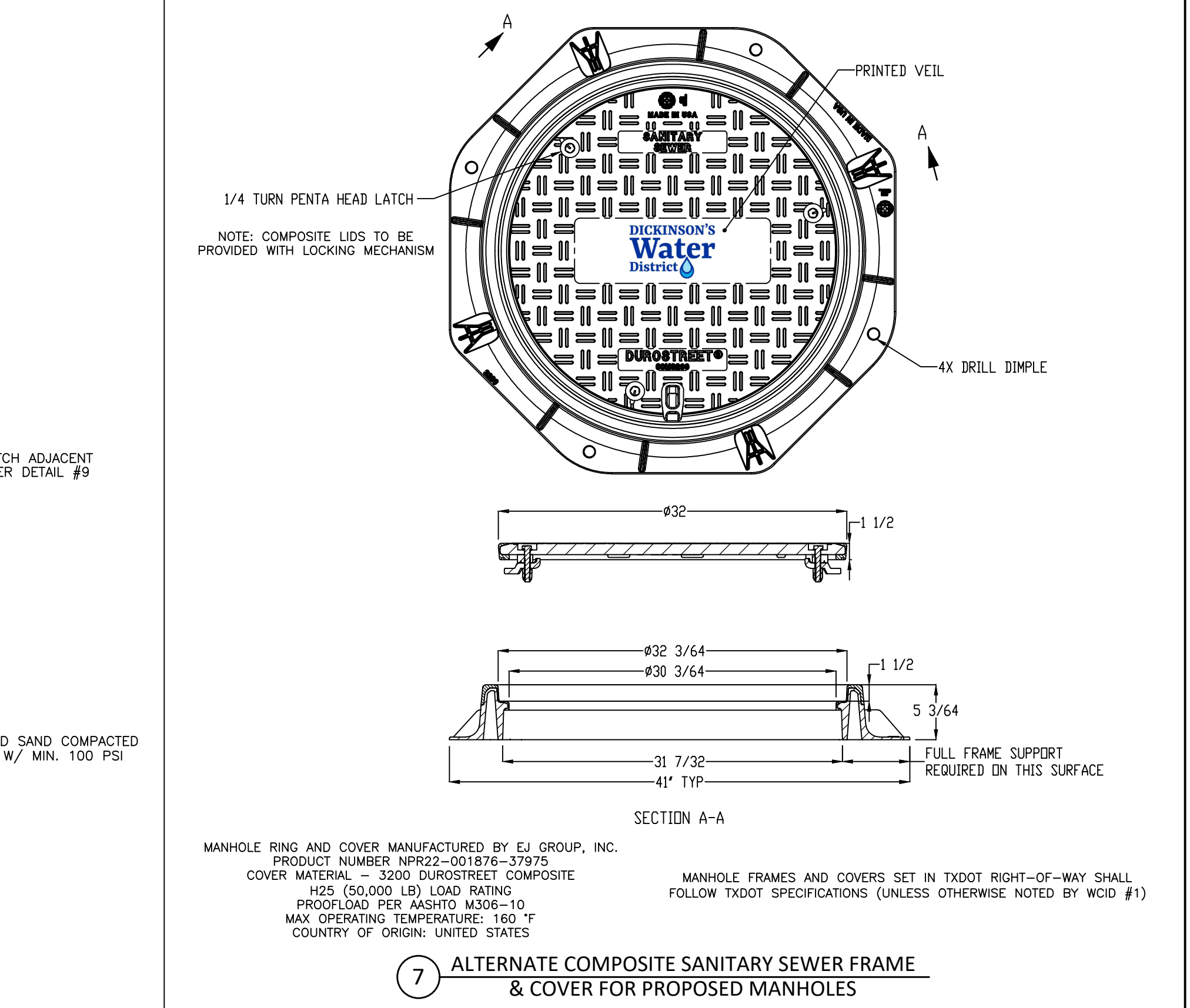
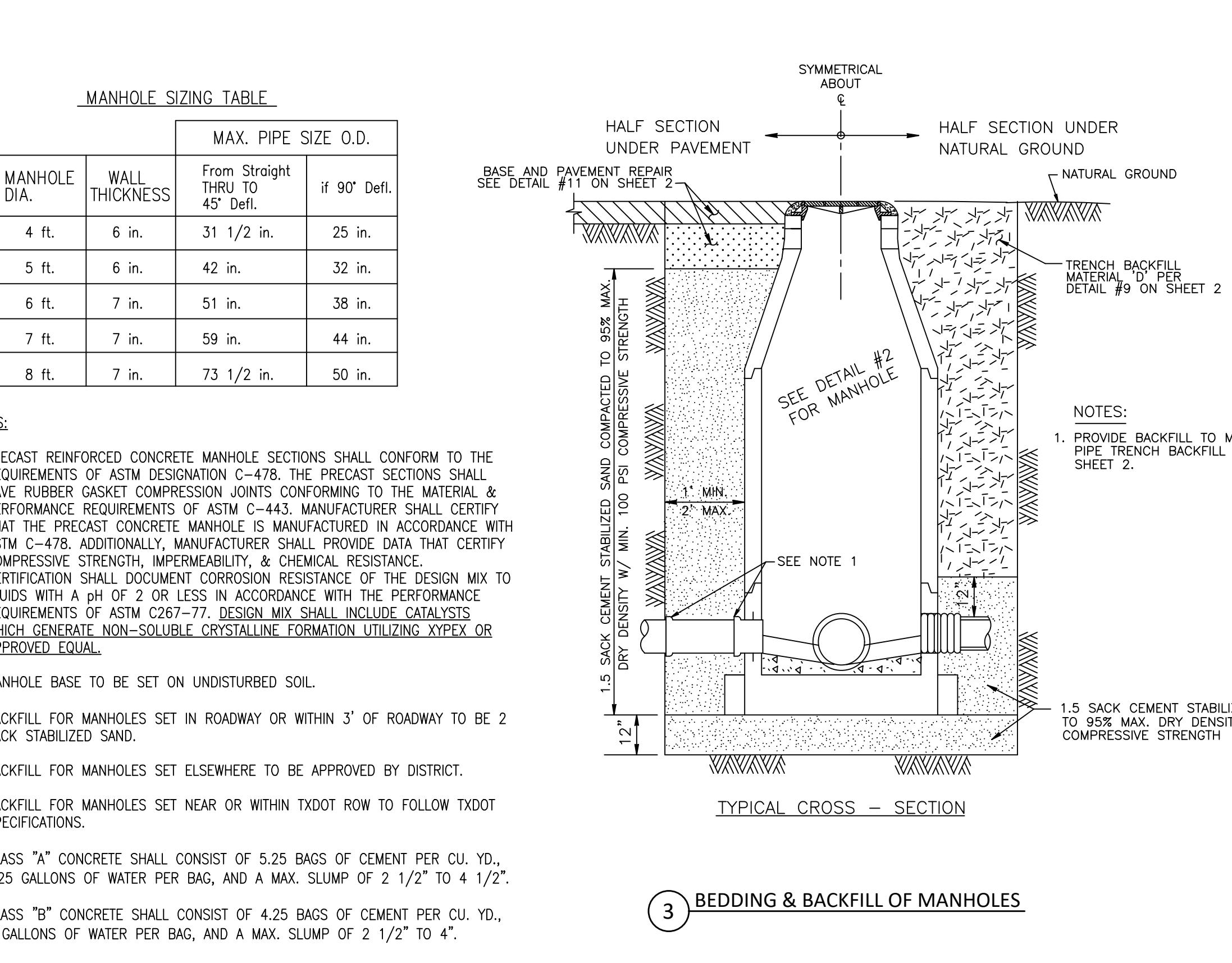
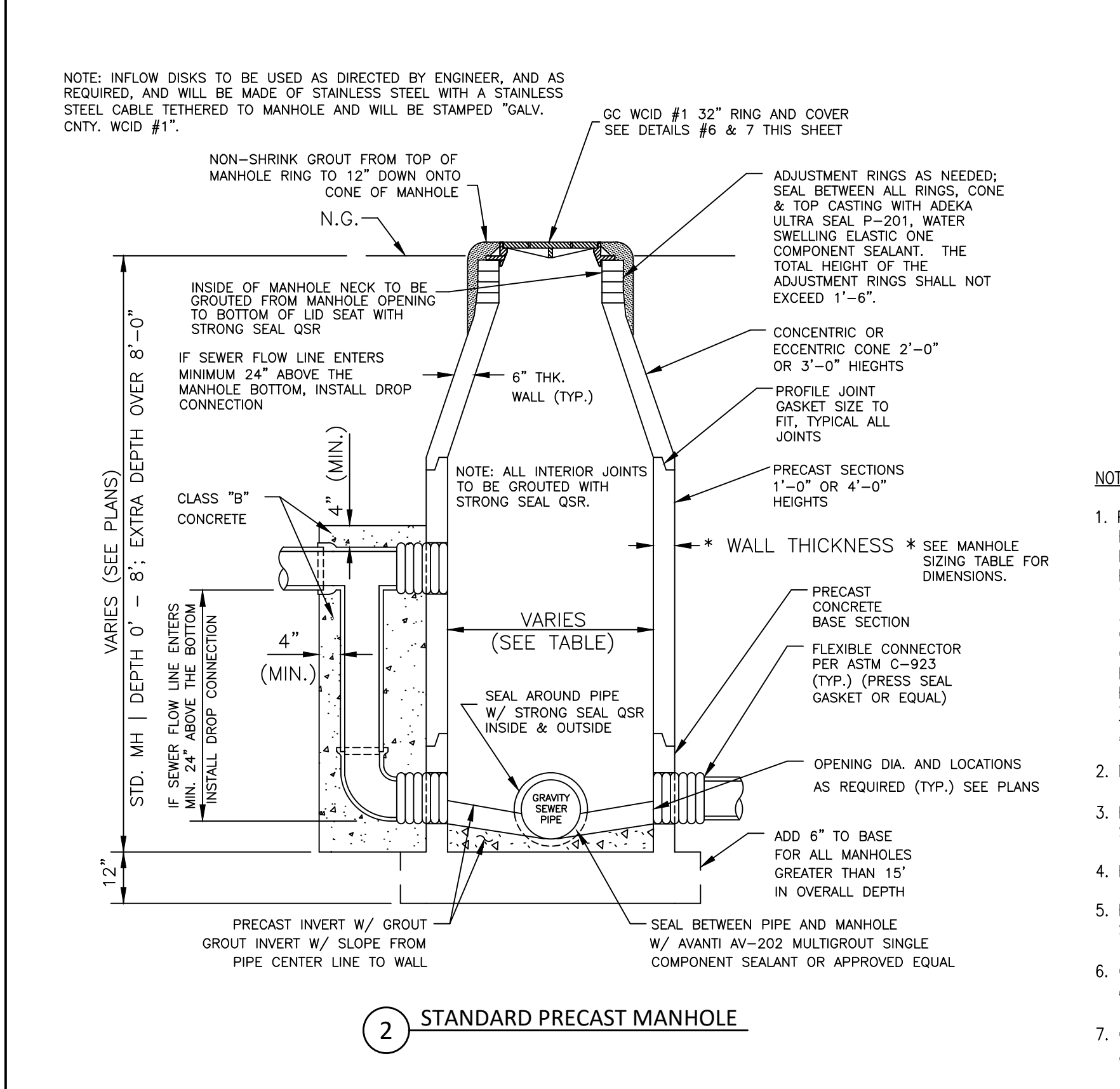
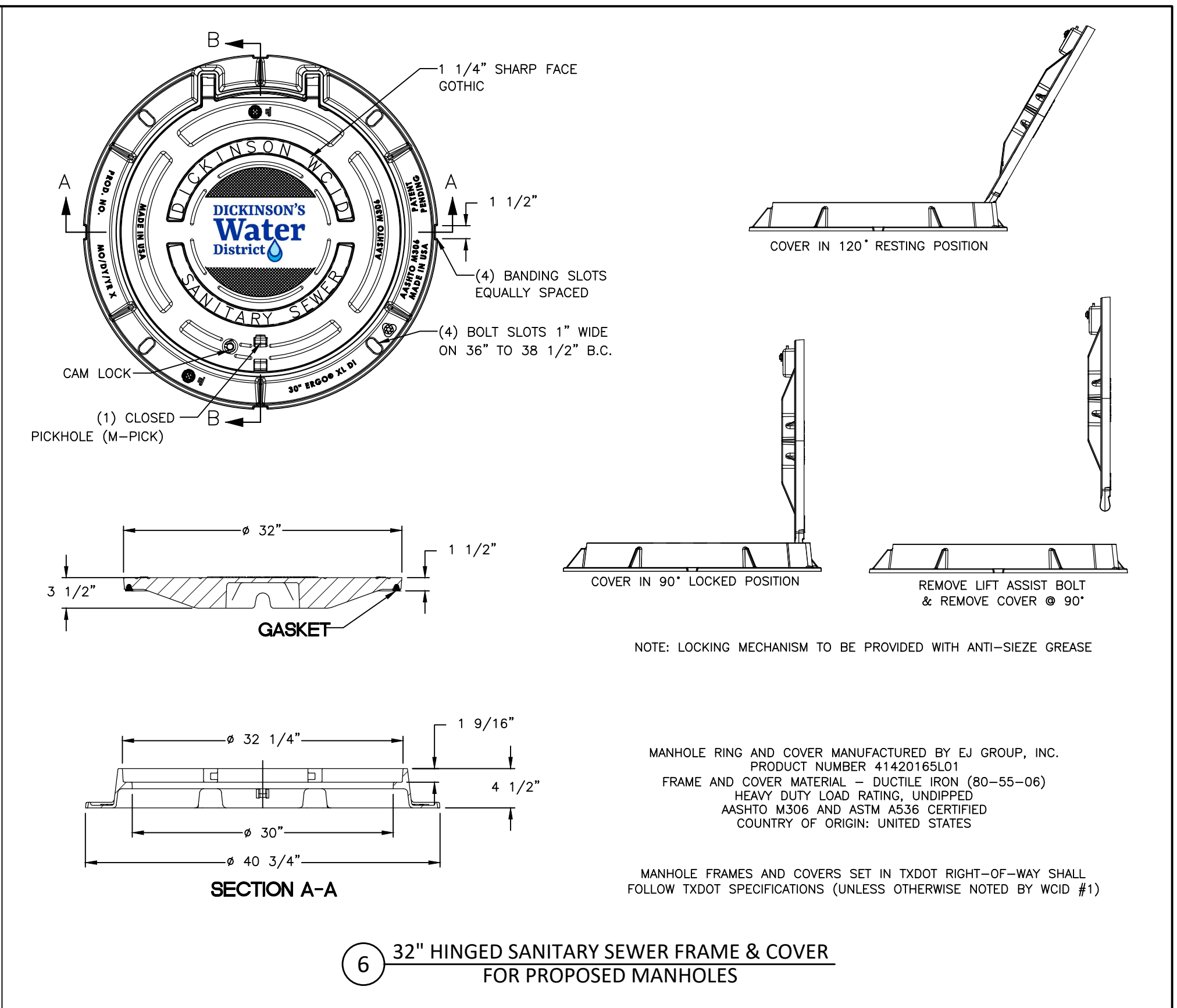
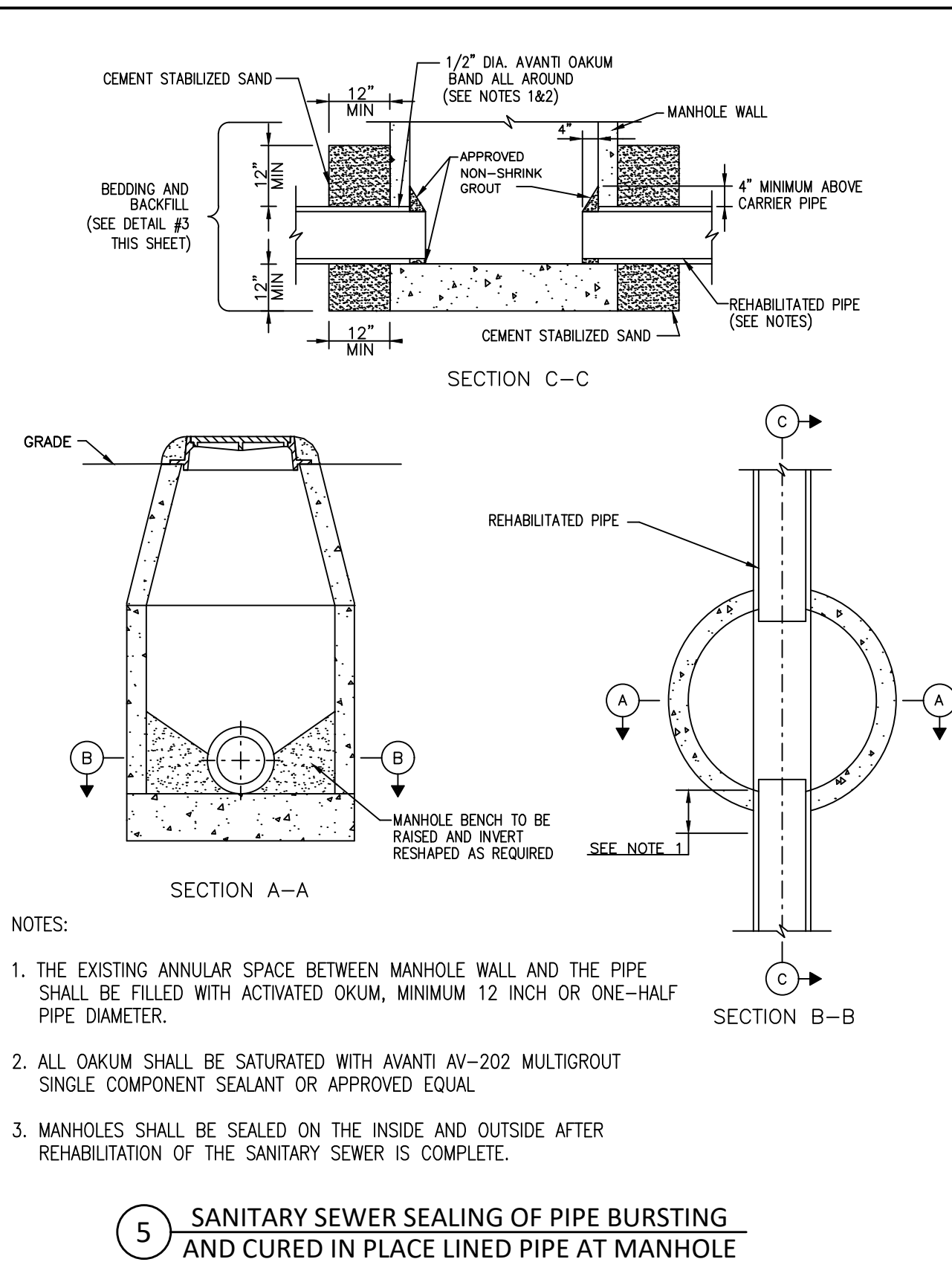
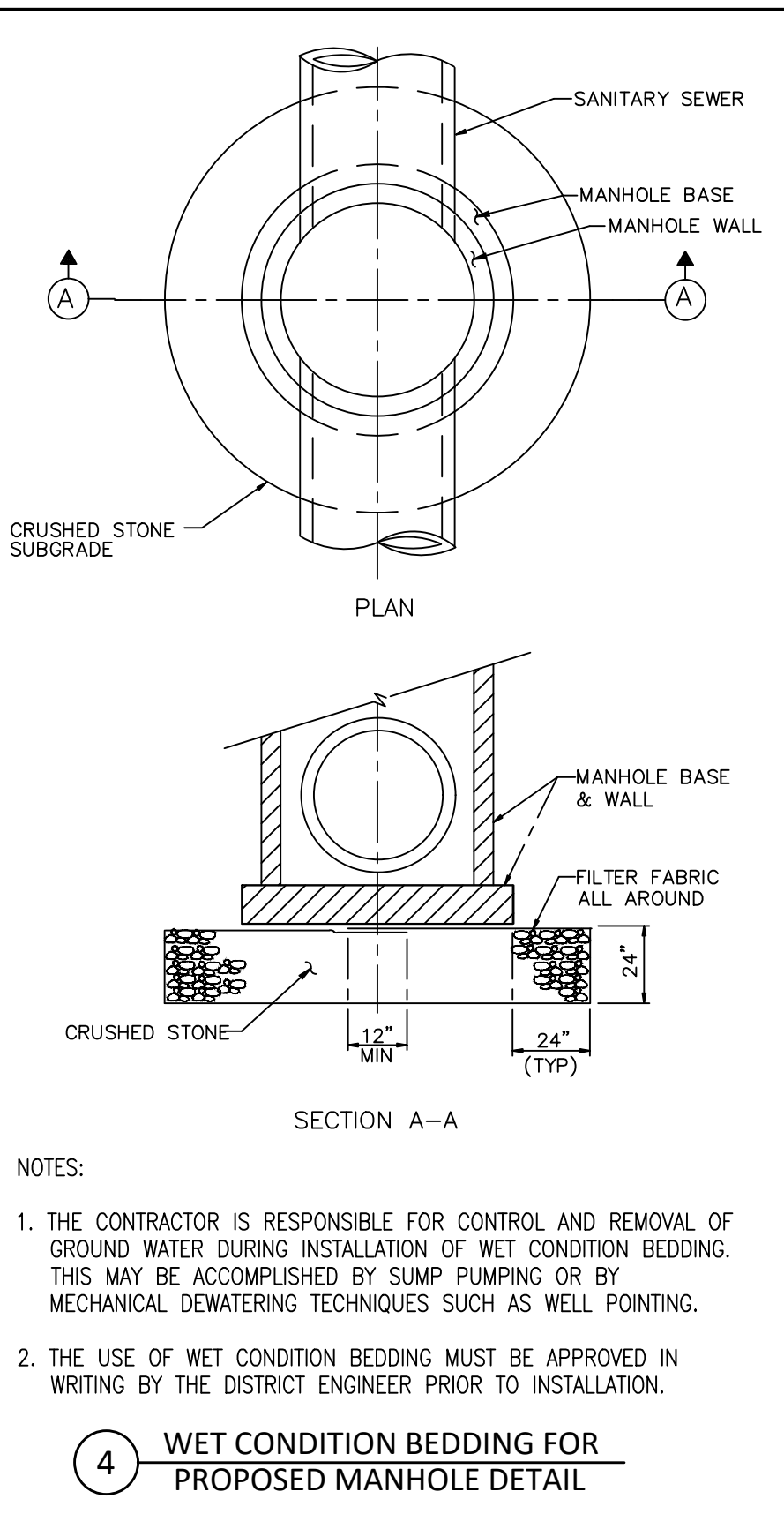
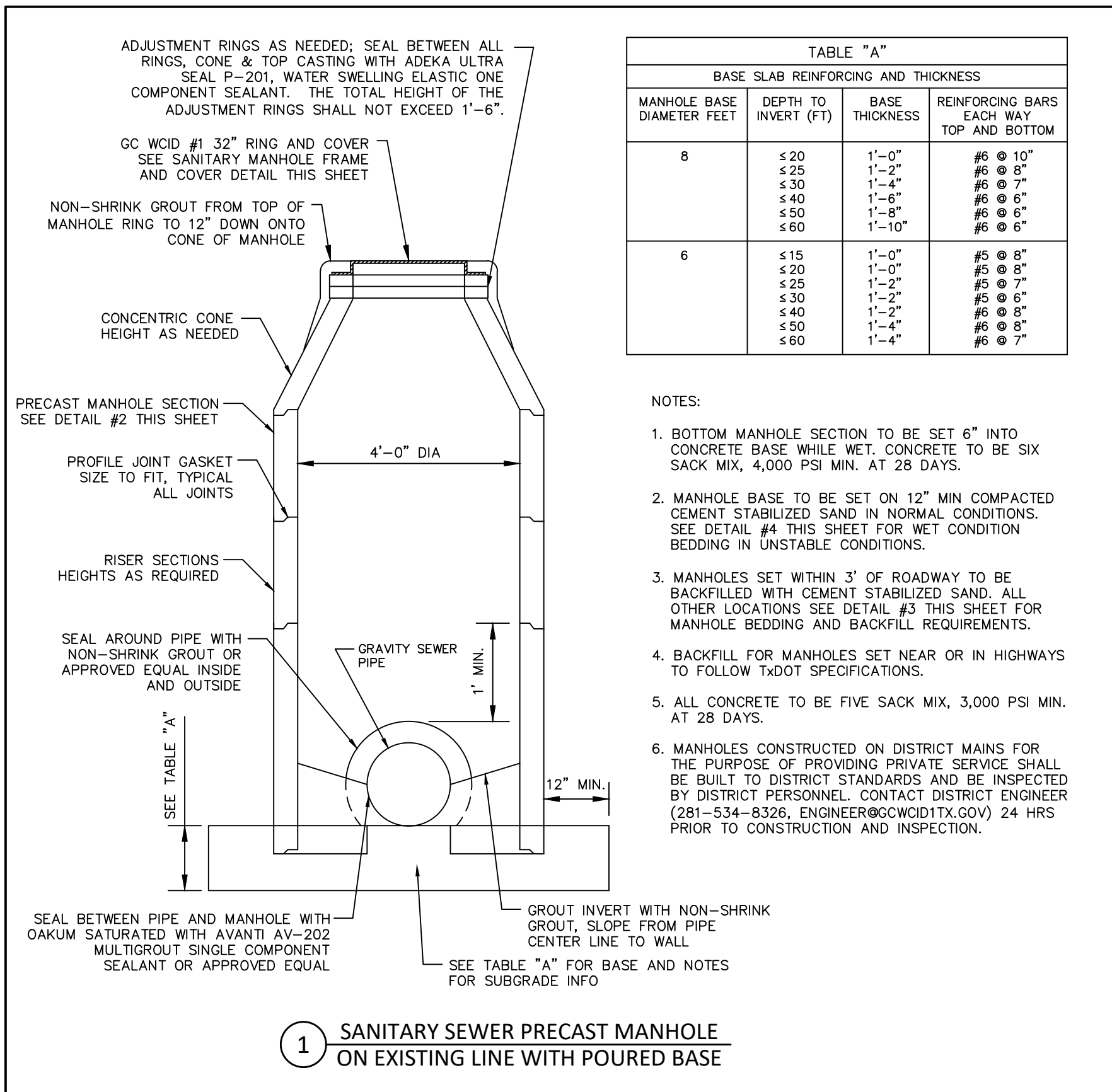
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DRAWN BY: M. DAUGHRITY
CHECKED BY: K. MORGAN

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OF



ISSUE	DATE	DESCRIPTION
REV-4	JANUARY 2025	STANDARD SANITARY SEWER DETAILS
REV-3	JANUARY 2024	STANDARD SANITARY SEWER DETAILS
REV-2	SEPTEMBER 2013	STANDARD SANITARY SEWER DETAILS
REV-1	AUGUST 2004	STANDARD SANITARY SEWER DETAILS
ORIGINAL	JULY 2003	STANDARD SANITARY SEWER DETAILS

DICKINSON W.C.I.D.
STANDARD CONSTRUCTION DETAILS
DICKINSON, TEXAS



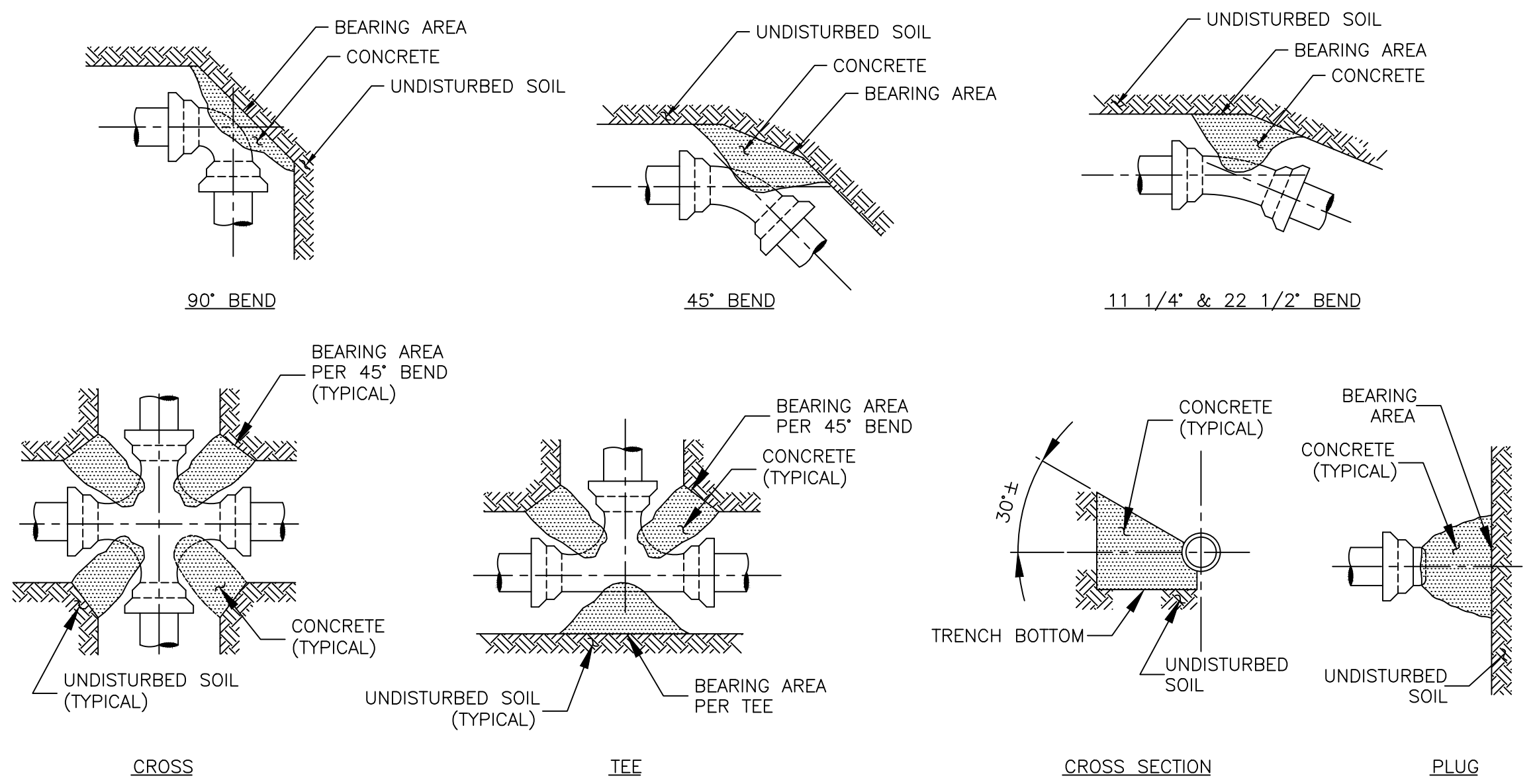
STANDARD
SANITARY SEWER
DETAILS
SHEET 1

ENGINEER'S SEAL

NOTE:
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SHEET:

OR



- NOTES:
1. PLACE CONCRETE AGAINST UNDISTURBED SOIL AND FITTING ONLY, CLEAR OF THE JOINT. CONCRETE TO BE FIVE SACK, 3,000 PSI AT 28 DAYS.
 2. DIMENSIONS ARE BASED ON 150 PSI TEST PRESSURE AND SAFE SOIL BEARING LOAD OF 1,100 PSI.
 3. ALL FITTINGS TO BE MECHANICAL JOINT WITH MEGA-LUG RESTRAINTS OR APPROVED EQUAL.

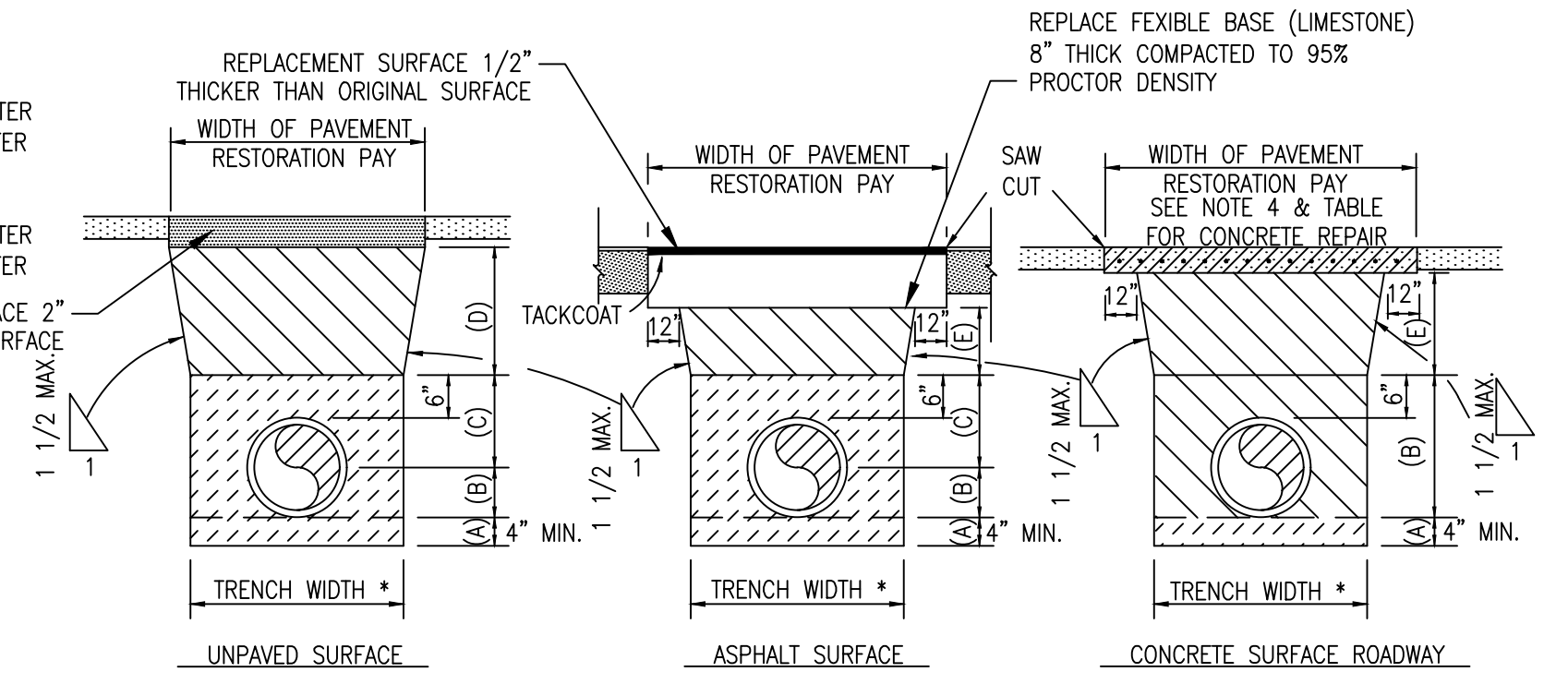
8 HORIZONTAL THRUST BLOCKING FOR SANITARY SEWER FORCE MAINS

90° BEND		45° BEND	
PIPE SIZE	BEARING AREA	PIPE SIZE	BEARING AREA
4"	2 S.F.	4"	1 S.F.
6"	4 S.F.	6"	3 S.F.
8"	8 S.F.	8"	4 S.F.
10"	12 S.F.	10"	6 S.F.
12"	16 S.F.	12"	9 S.F.
14"	22 S.F.	14"	12 S.F.
16"	29 S.F.	16"	16 S.F.
18"	36 S.F.	18"	20 S.F.
20"	44 S.F.	20"	24 S.F.
24"	64 S.F.	24"	36 S.F.
30"	100 S.F.	30"	54 S.F.
36"	103 S.F.	36"	72 S.F.

22 1/2° BEND		11 1/4° BEND	
PIPE SIZE	BEARING AREA	PIPE SIZE	BEARING AREA
4"	1 S.F.	4"	1 S.F.
6"	1 S.F.	6"	1 S.F.
8"	2 S.F.	8"	1 S.F.
10"	3 S.F.	10"	2 S.F.
12"	5 S.F.	12"	2 S.F.
14"	6 S.F.	14"	3 S.F.
16"	8 S.F.	16"	4 S.F.
18"	10 S.F.	18"	5 S.F.
20"	12 S.F.	20"	6 S.F.
24"	18 S.F.	24"	9 S.F.
30"	28 S.F.	30"	12 S.F.
36"	38 S.F.	36"	15 S.F.

TEE		PLUG	
PIPE SIZE	BEARING AREA	PIPE SIZE	BEARING AREA
4"	2 S.F.	4"	2 S.F.
6"	3 S.F.	6"	3 S.F.
8"	5 S.F.	8"	5 S.F.
10"	8 S.F.	10"	8 S.F.
12"	12 S.F.	12"	12 S.F.
14"	15 S.F.	14"	15 S.F.
16"	20 S.F.	16"	20 S.F.
18"	25 S.F.	18"	25 S.F.
20"	32 S.F.	20"	32 S.F.
24"	45 S.F.	24"	45 S.F.
30"	71 S.F.	30"	71 S.F.
36"	77 S.F.	36"	77 S.F.

* PIPE LESS THAN 30" MAX. 1'-6" + DIAMETER MIN. 1'-0" + DIAMETER
 PIPE 30" AND LARGER MAX. 2'-0" + DIAMETER MIN. 1'-4" + DIAMETER



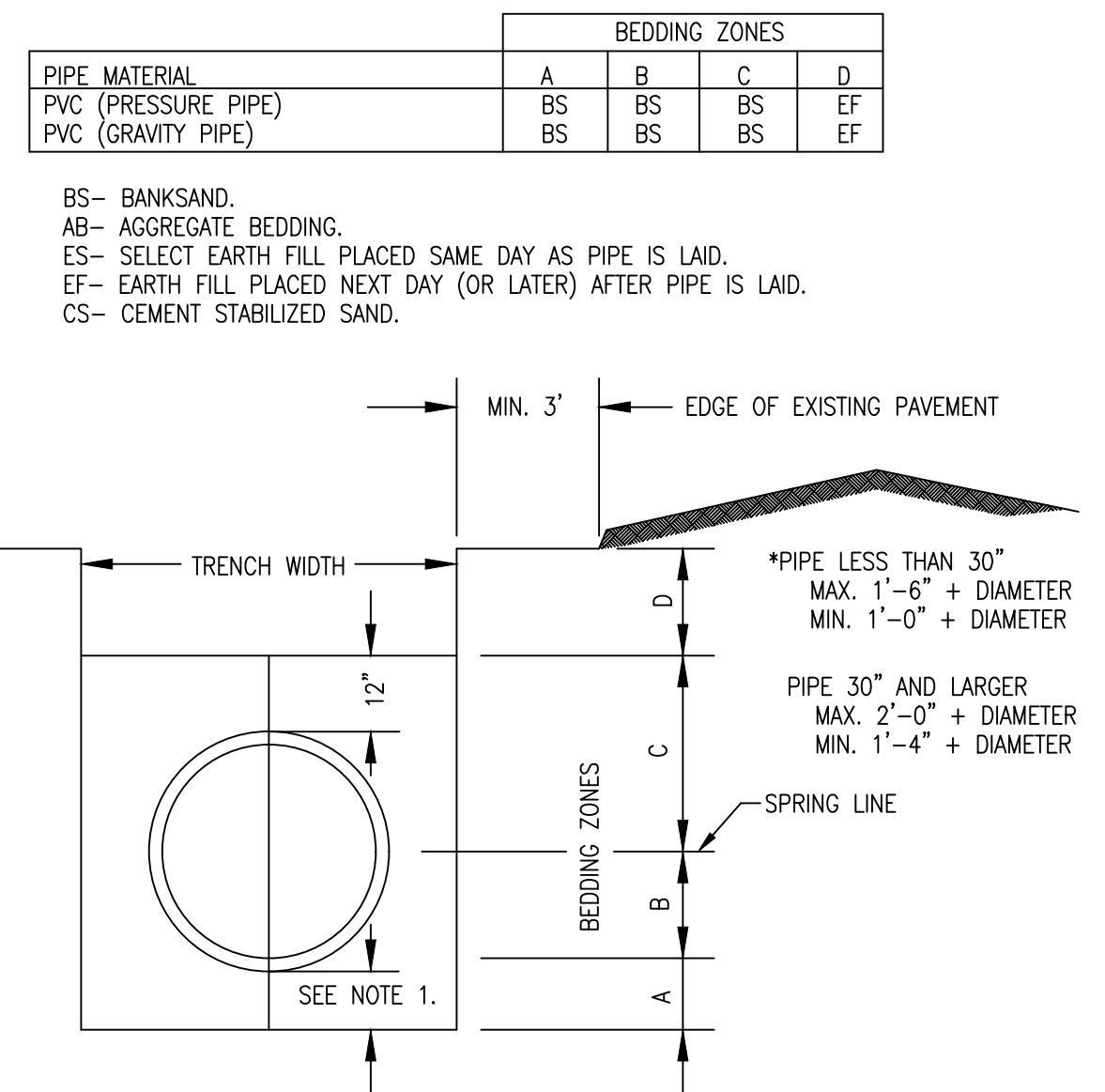
SPECIAL NOTE: ALL CONCRETE DRIVEWAY REPAIR TO BE A MINIMUM OF 6" THK. WITH #3 REBAR ON 12" CENTERS WITH PLASTIC CHAIRS AS PER CITY OF DICKINSON STANDARDS.

- NOTES:
1. PAVEMENT REPAIR SHALL BE MADE TO THE LIMITS OF EXISTING PAVEMENT SECTION WITH LIKE MATERIALS UNLESS NOTED OTHERWISE.
 2. UNPAVED DRIVEWAYS, NOT SURFACED WITH ASPHALT, SHALL BE REPAIRED WITH MINIMUM 6" CRUSHED LIMESTONE.
 3. NEW PAVEMENT SHALL BE SUPPORTED ON MINIMUM 12" EACH SIDE ON UNDISTURBED SOIL.
 4. SAW CUT EXISTING CONCRETE PAVEMENT; BEND STEEL BACK OUT OF THE WAY & CONSTRUCT TRENCH. BEND STEEL BACK TO ORIGINAL POSITION AND SPLICE; SEE "TABLE OF SLAB DEPTHS & REINFORCEMENT" FOR BAR SIZE AND SPACING. REPLACE CONCRETE 2-INCHES THICKER THAN ORIGINAL.
 5. ALL CONCRETE TO BE FIVE SACK MIX, 3,000 PSI MIN. AT 28 DAYS.
 6. ANY EXCAVATION WITHIN 3' OR LESS OF HIGHWAY PAVEMENT EDGE OR CITY STREET SHALL REQUIRE 2 SACK CEMENT STABILIZED BACKFILL IN ZONE "D" OR ZONE "E". ALL STABILIZED BACKFILL TO BE COMPACTED IN 8" LIFTS WITH VIBRATORY PLATE.

TABLE OF SLAB DEPTH & REINFORCEMENT

Min. Depth of Slab	Width of Trench	Size of Bar	Spacing	Length of Bar
8"	18"	4	9"	40"
8"	24"	4	8"	46"
8"	30"	4	7"	52"
8"	36"	4	6"	58"
10"	42"	4	8 1/2"	64"
10"	48"	4	7 1/2"	70"
10"	54"	4	7"	76"
10"	60"	4	6 1/2"	82"
10"	66"	5	9"	88"
10"	72"	6	8 1/2"	94"
10"	78"	6	8"	100"
10"	84"	6	7 1/2"	106"

11 PAVEMENT REPLACEMENT DETAIL FOR UTILITY CONSTRUCTION



BS- BANKSAND.
 AB- AGGREGATE BEDDING.
 ES- SELECT EARTH FILL PLACED SAME DAY AS PIPE IS LAID.
 EF- EARTH FILL PLACED NEXT DAY (OR LATER) AFTER PIPE IS LAID.
 CS- CEMENT STABILIZED SAND.

- NOTES:
1. BEDDING TO BE 1/4 OF PIPE DIAMETER OR 4", WHICHEVER IS GREATER.
 2. ANY EXCAVATION WITHIN 3' OR LESS OF HIGHWAY PAVEMENT TO BE 2 SACK STABILIZED MATERIAL; EXCAVATION WITHIN 3' OR LESS OF ANY CITY STREET SHALL BE 2 SACK STABILIZED SAND IN ZONE D. ALL STABILIZED SAND TO BE COMPACTED IN 12" LIFTS WITH VIBRATORY PLATE.

9 ORDINARY TRENCH EMBEDMENT & BACKFILL DETAIL

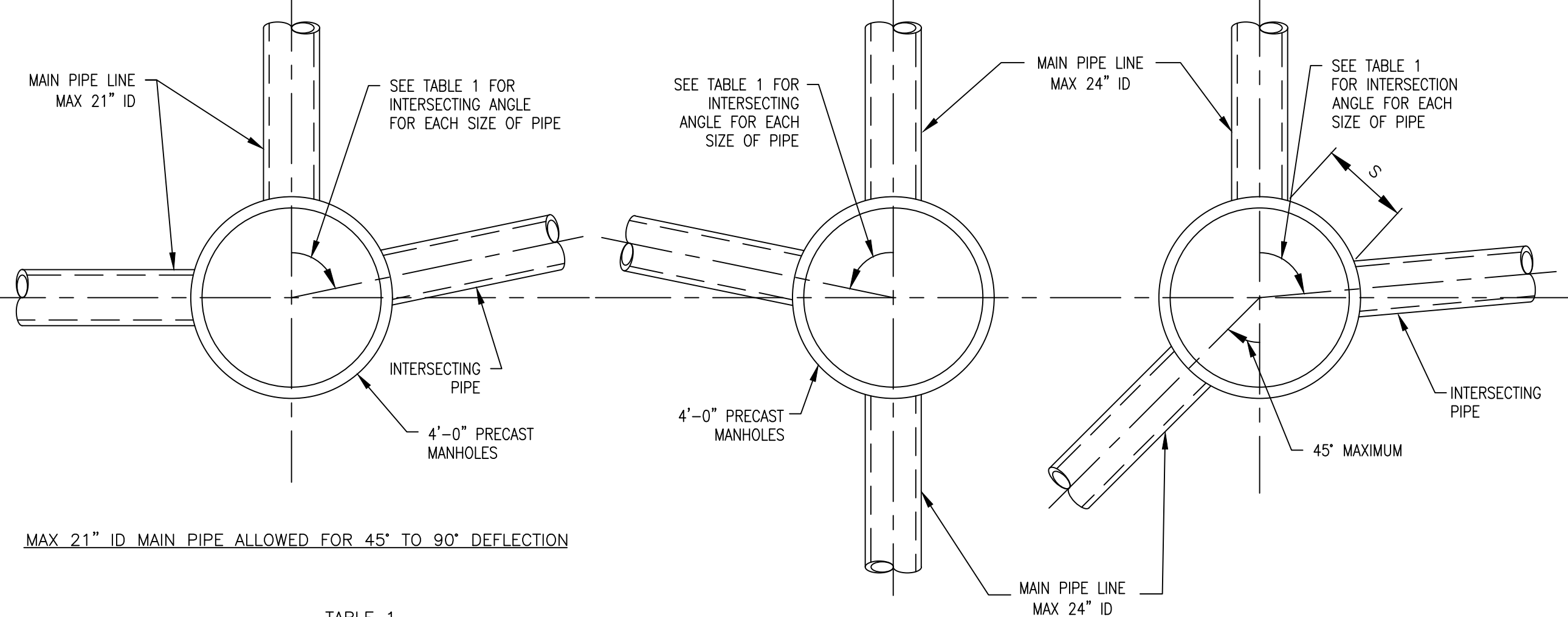
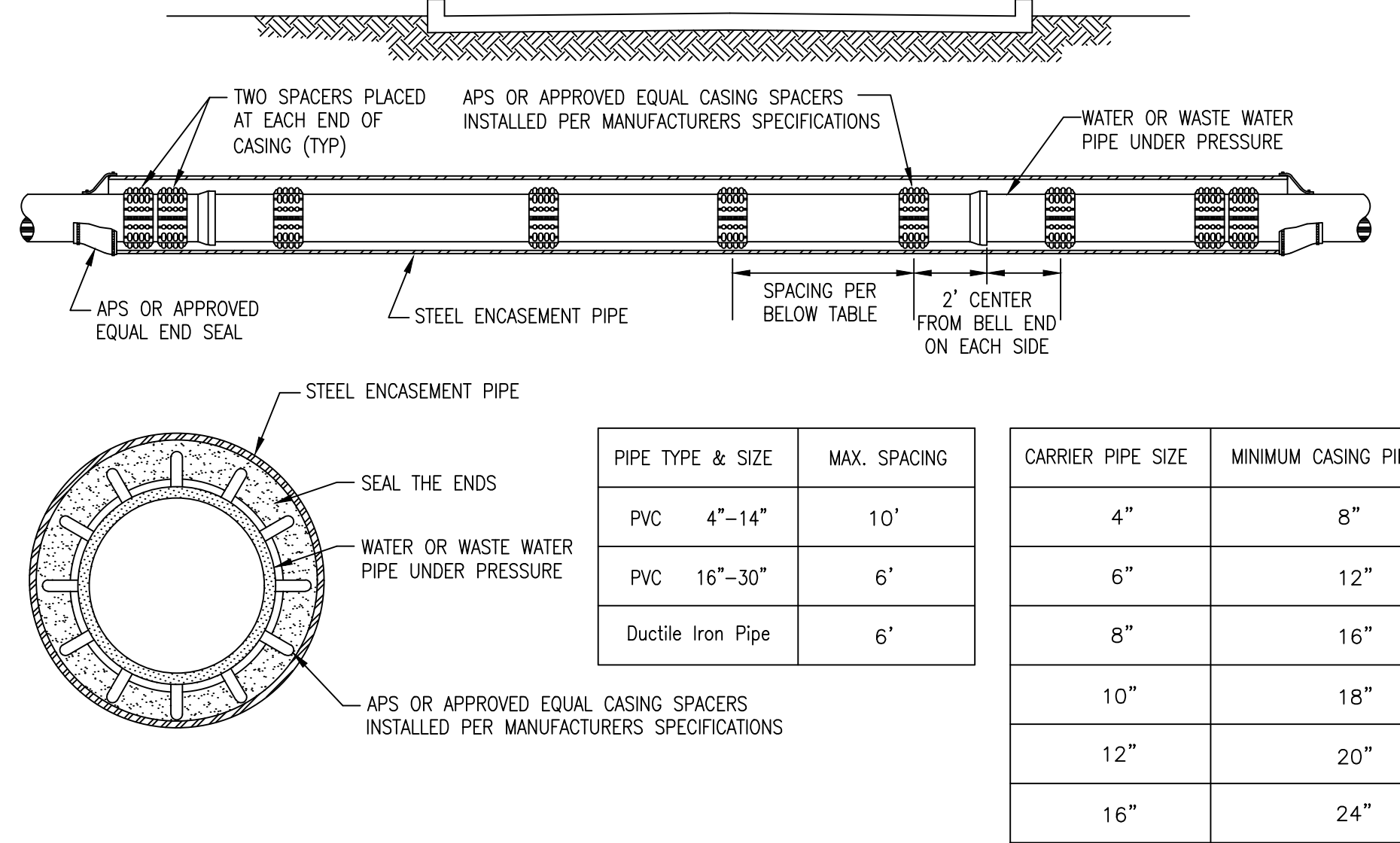


TABLE 1
 MIN ANGLE AND INTERSECTING PIPE SIZES FOR A 4'-0" DIA MANHOLE

INTERSECTING PIPE SIZE (INCHES)	MIN INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE SIZES INCHES						
	6"	8"	10"	12"	15"	18"	24"
6	55	58	60	65	70	75	80
8		60	63	68	73	77	82
10			66	71	75	80	85
12				75	80	85	90
15					85	90	-
18						-	-
21							-
24							-

- NOTES TO SPECIFIER:
1. "-" INDICATES THAT A SPECIAL DESIGN OR THE NEXT LARGER MANHOLE SIZE SHALL BE USED.
 2. TABLE 1 IS BASED ON A MIN SEPARATION DISTANCE "S" OF 15.5" OR INTERSECTING PIPE OD/2, WHICHEVER IS GREATER, BETWEEN MAIN AND INTERSECTING PIPES ALONG THE MANHOLE INSIDE WALL ARC.
 3. MANHOLE WALL THICKNESS SHALL BE A MIN. OF 6". MANHOLES OVER 12" IN DEPTH SHALL HAVE A WALL THICKNESS DETERMINED TO MEET LOAD CONDITIONS.

10 MINIMUM ANGLE AND INTERSECTION PIPE SIZES FOR A 4' DIAMETER MANHOLE



PIPE TYPE & SIZE	MAX. SPACING
PVC 4"-14"	10'
PVC 16"-30"	6'
Ductile Iron Pipe	6'

CARRIER PIPE SIZE	MINIMUM CASING PIPE SIZE
4"	8"
6"	12"
8"	16"
10"	18"
12"	20"
16"	24"

CASING SPACERS SHALL BE USED TO INSTALL THE CARRIER PIPE INSIDE THE ENCASUREMENT PIPE. CASING SPACERS SHALL FASTEN TIGHTLY ONTO THE CARRIER PIPE SO THAT WHEN THE CARRIER PIPE IS BEING INSTALLED THE SPACERS WILL NOT MOVE ALONG THE CARRIER PIPE. CASING SPACERS SHALL BE DOUBLED ON EACH END OF THE ENCASUREMENT.

EACH CASING SPACER SHALL BE CAPABLE OF PROVIDING SUPPORT FOR THE CARRIER PIPE IN SERVICE AT A MAXIMUM SPACING. CALCULATIONS SHALL BE PROVIDED TO THE ENGINEER BY THE CASING SPACER MANUFACTURER SHOWING THAT THE CASING SPACER WILL SUPPORT THE SERVICE LOAD AT THE RECOMMENDED SPACING, INCLUDING A FACTOR OF SAFETY OF TWO (2). CASING SPACERS USED UNDER THIS SPECIFICATION SHALL MEET OR EXCEED THE SPECIFICATIONS DESCRIBED HEREIN AS PROJECTION TYPE CASING SPACERS.

PROJECTION TYPE CASING SPACERS SHALL BE CONSTRUCTED OF PREFORMED SECTIONS OF HIGH DENSITY POLYETHYLENE. THE FLEXIBLE SECTIONS SHALL BE JOINED TOGETHER AROUND THE PIPE TO PROVIDE A MINIMUM OF 12 PLASTIC PROJECTIONS PER SPACER SECTION. PROJECTION TYPE CASING SPACERS SHALL BE "APS" TYPE PROJECTION SPACERS OR ENGINEER PRE-APPROVED EQUAL.

12 ENCASED CONSTRUCTION FOR HIGHWAY CROSSINGS

ISSUE	DATE	DESCRIPTION
REV-4	JANUARY 2025	STANDARD SANITARY SEWER DETAILS
REV-3	JANUARY 2024	STANDARD SANITARY SEWER DETAILS
REV-2	SEPTEMBER 2013	STANDARD SANITARY SEWER DETAILS
REV-1	AUGUST 2004	STANDARD SANITARY SEWER DETAILS
ORIGINAL	JULY 2003	STANDARD SANITARY SEWER DETAILS

DICKINSON W.C.I.D.
 STANDARD CONSTRUCTION DETAILS
 DICKINSON, TEXAS



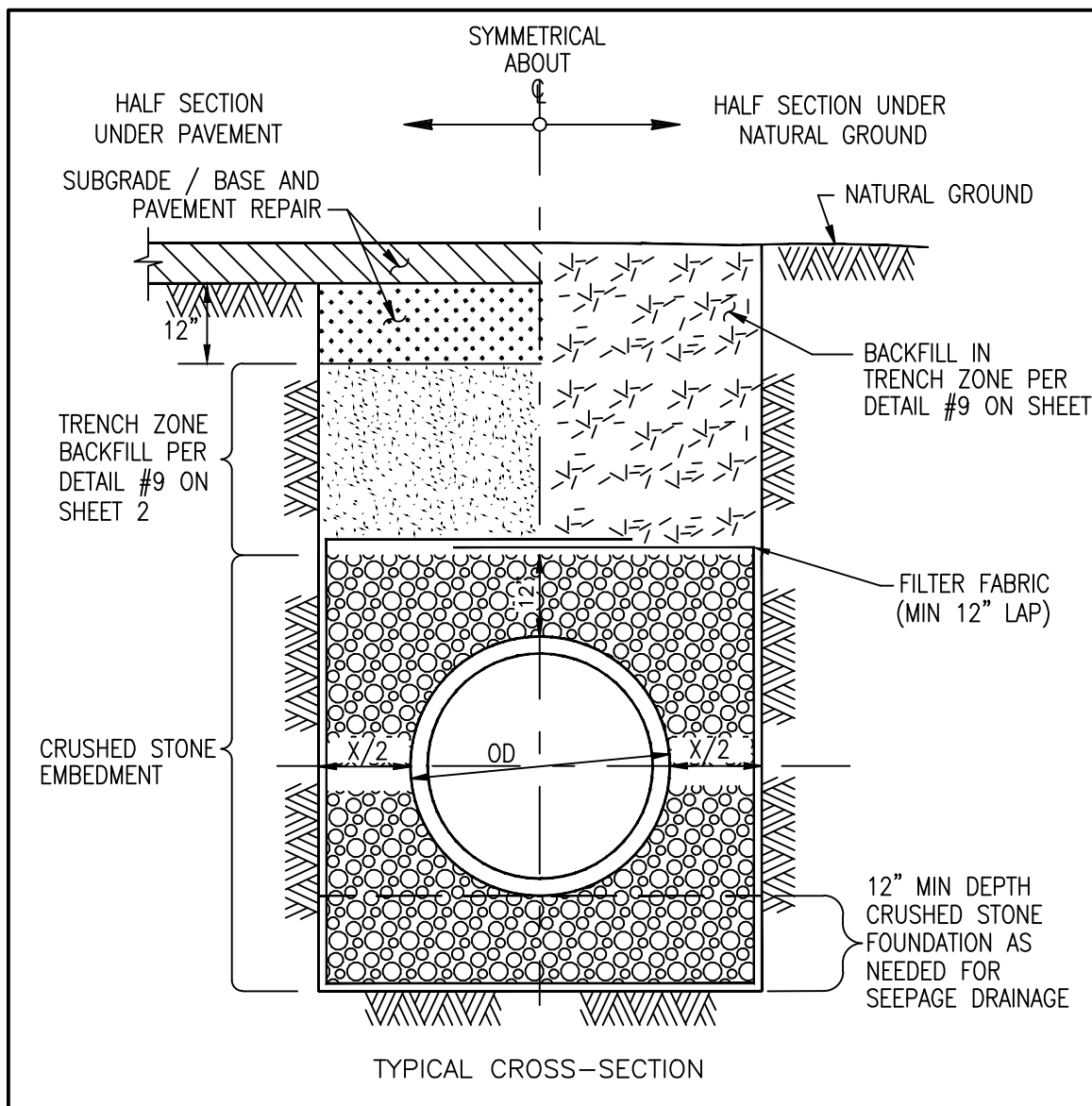
STANDARD
 SANITARY SEWER
 DETAILS
 SHEET 2

ENGINEER'S SEAL

NOTE: THIS DETAIL SHEET HAS BEEN PREPARED FOR USE ON PROJECTS INCLUDING UTILITIES THAT FALL UNDER THE JURISDICTION OF GALVESTON COUNTY WCID #1.
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HORIZONTAL: NOT TO SCALE
 VERTICAL: NOT TO SCALE
 DRAWN BY: M. DAUGHRITY
 CHECKED BY: K. MORGAN
 SHEET:

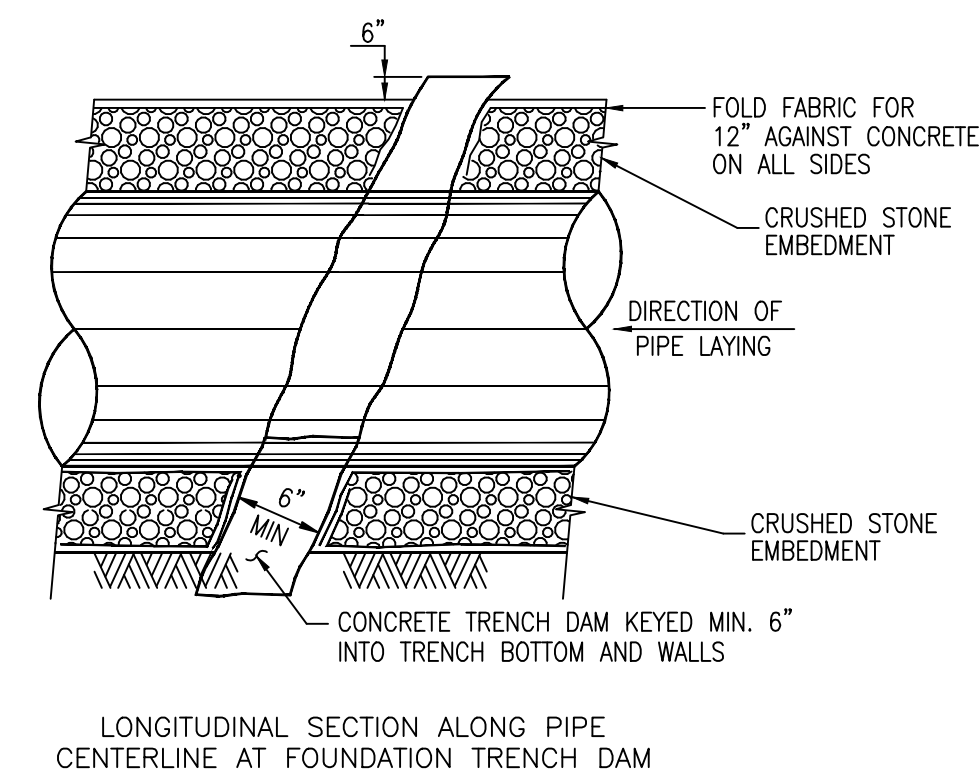
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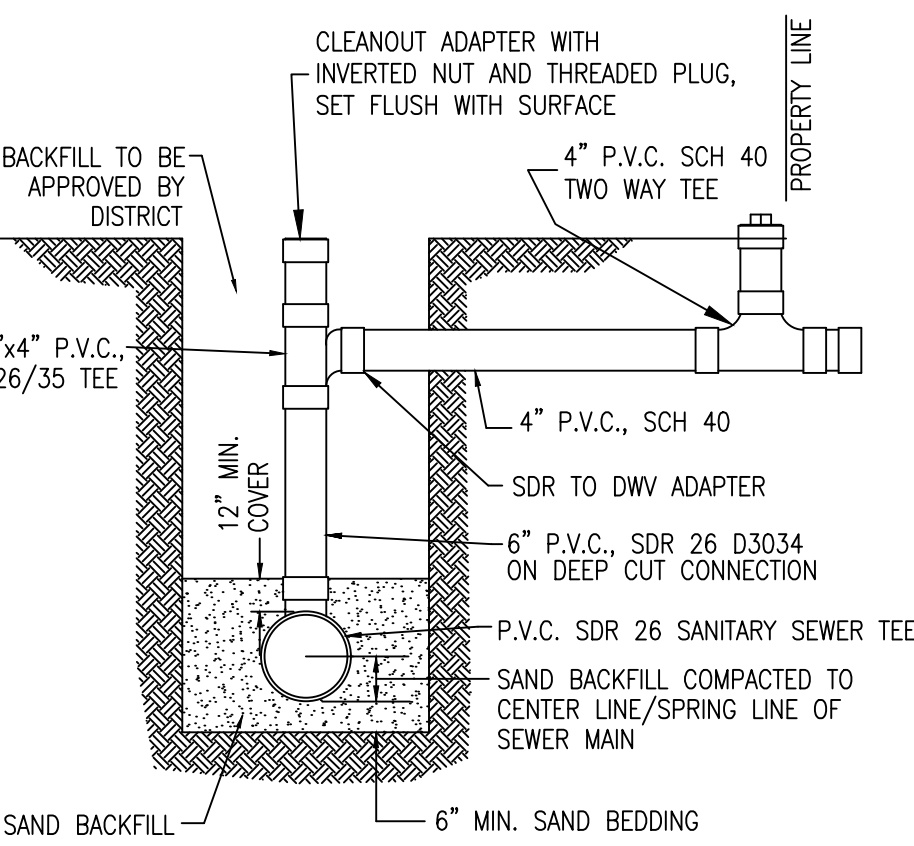
NOMINAL TRENCH WIDTH

NOMINAL PIPE SIZE	WIDTH = 'X'
LESS THAN 18\"/>	O.D. +18"
18\"/>	O.D. +24"
GREATER THAN 30\"/>	O.D. +36"

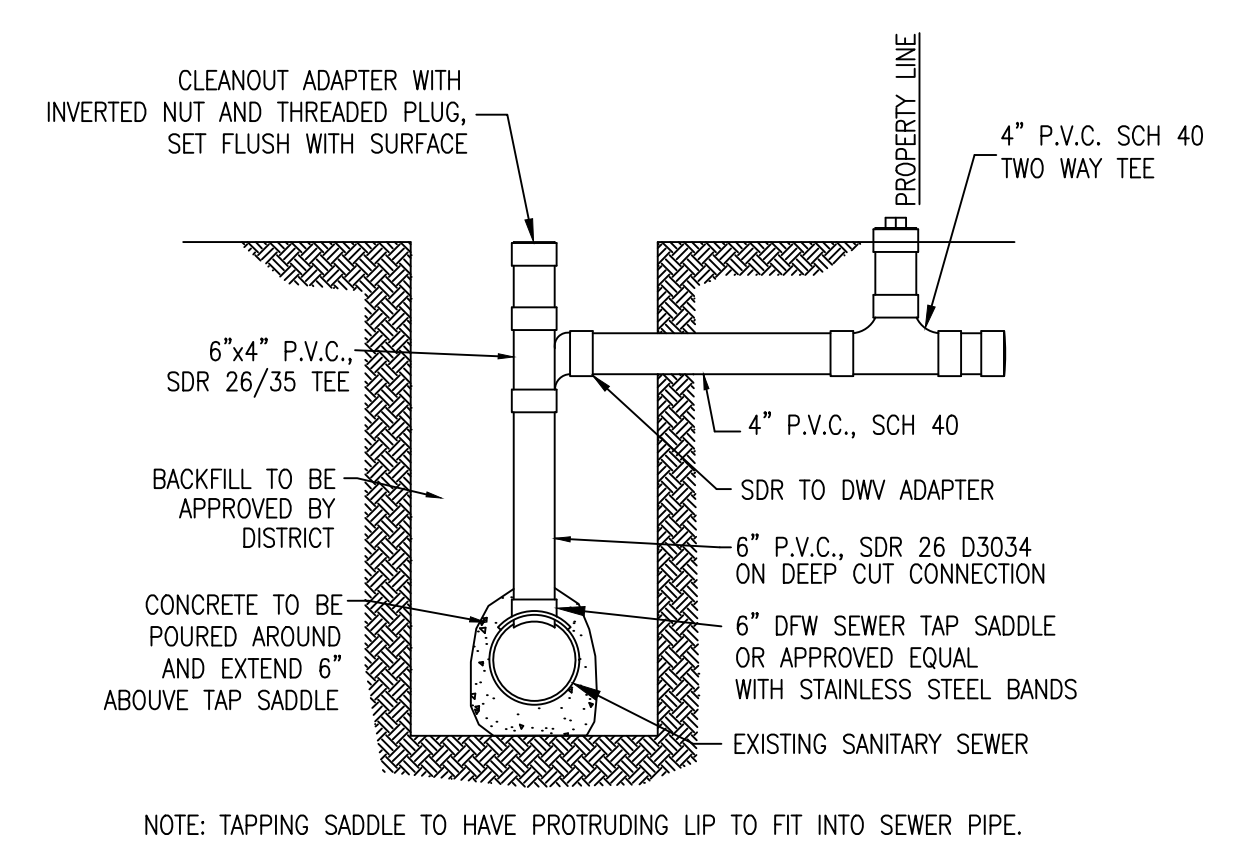
13 WET CONDITION BEDDING FOR PIPE DETAIL



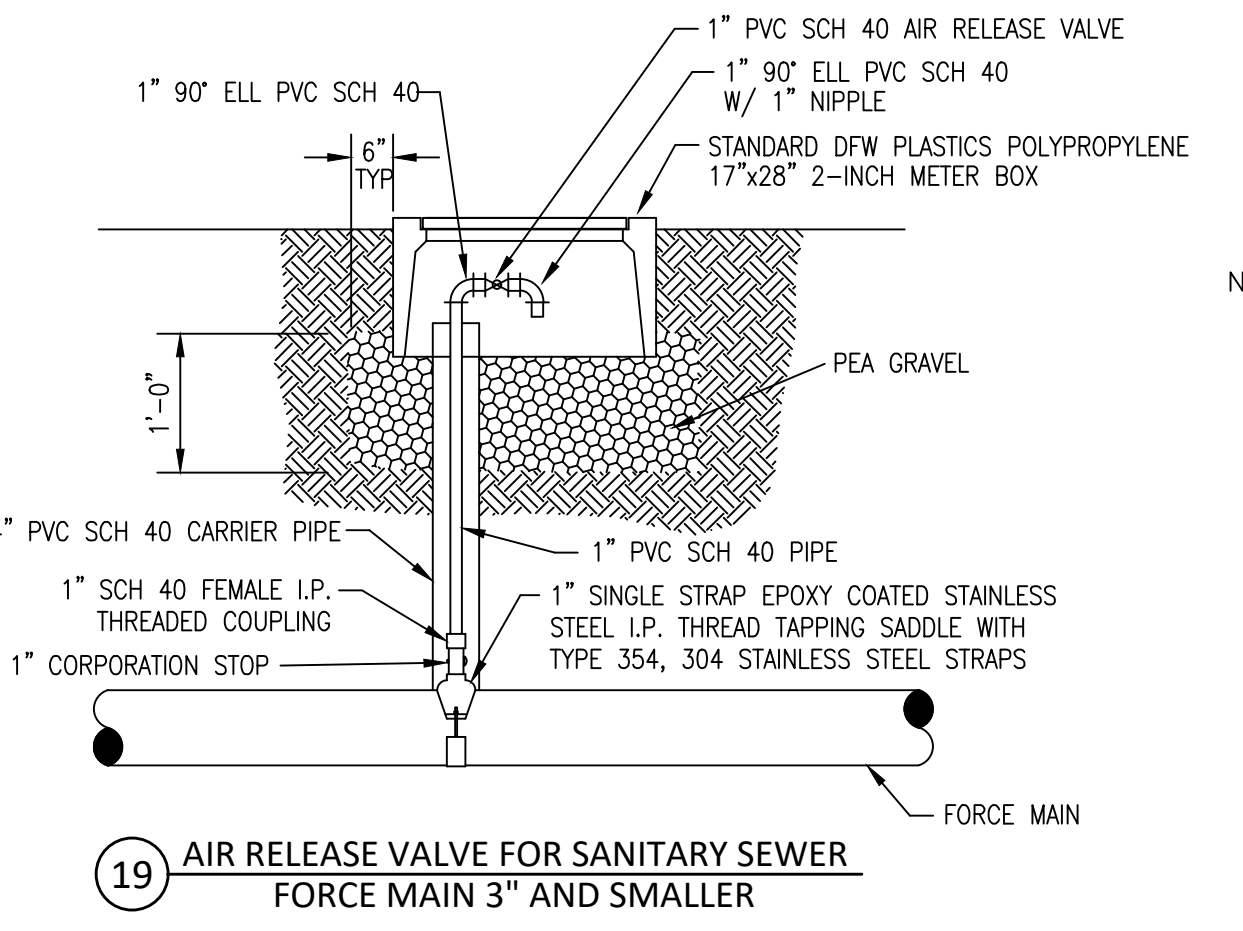
15 END OF SEWER MAIN CLEANOUT DETAIL



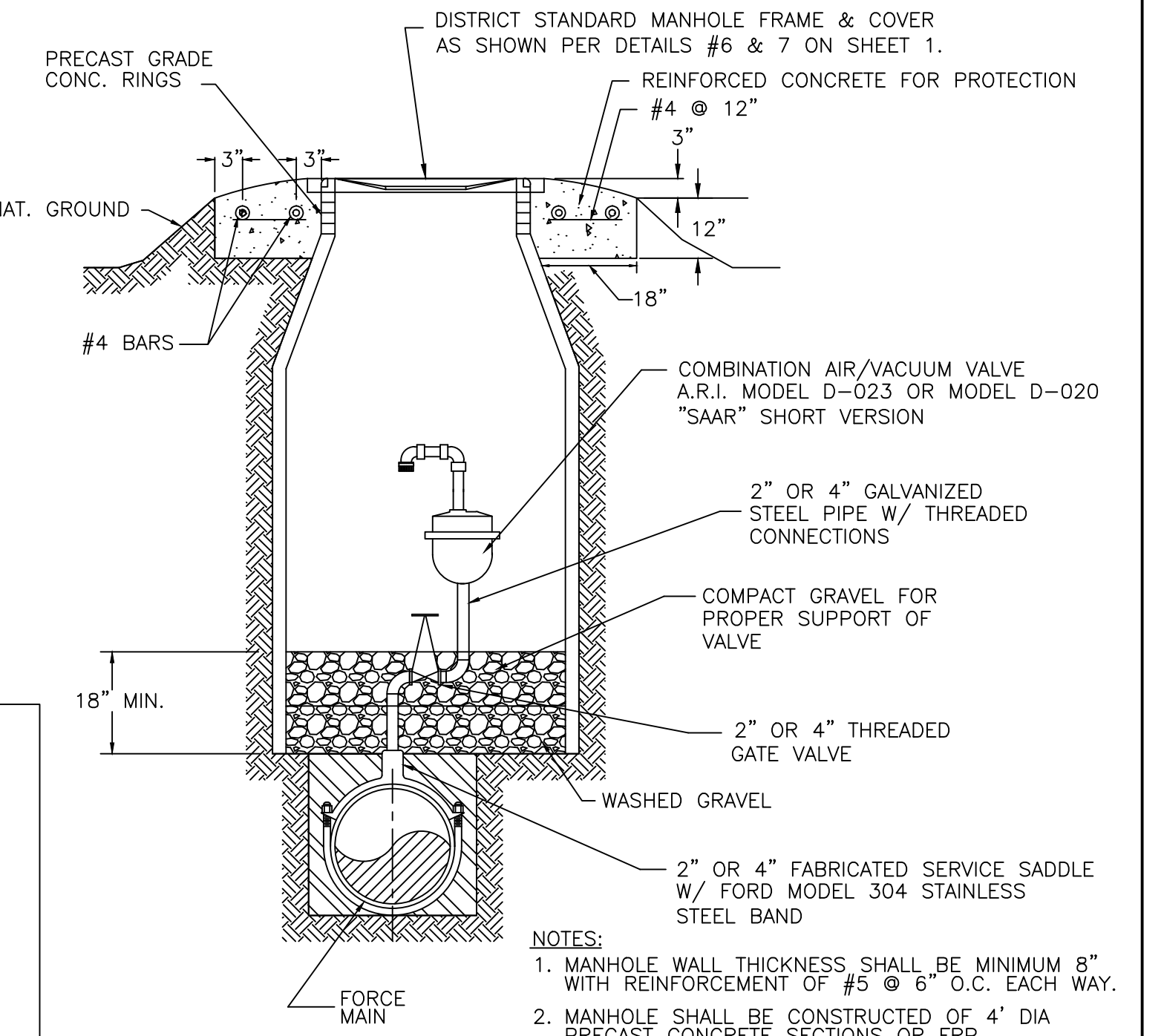
16 DEEP CUT CONNECTION FOR NEW CONSTRUCTION GREATER THAN 8' DEPTH



17 DEEP CUT CONNECTION FOR EXISTING CONSTRUCTION GREATER THAN 8' DEPTH



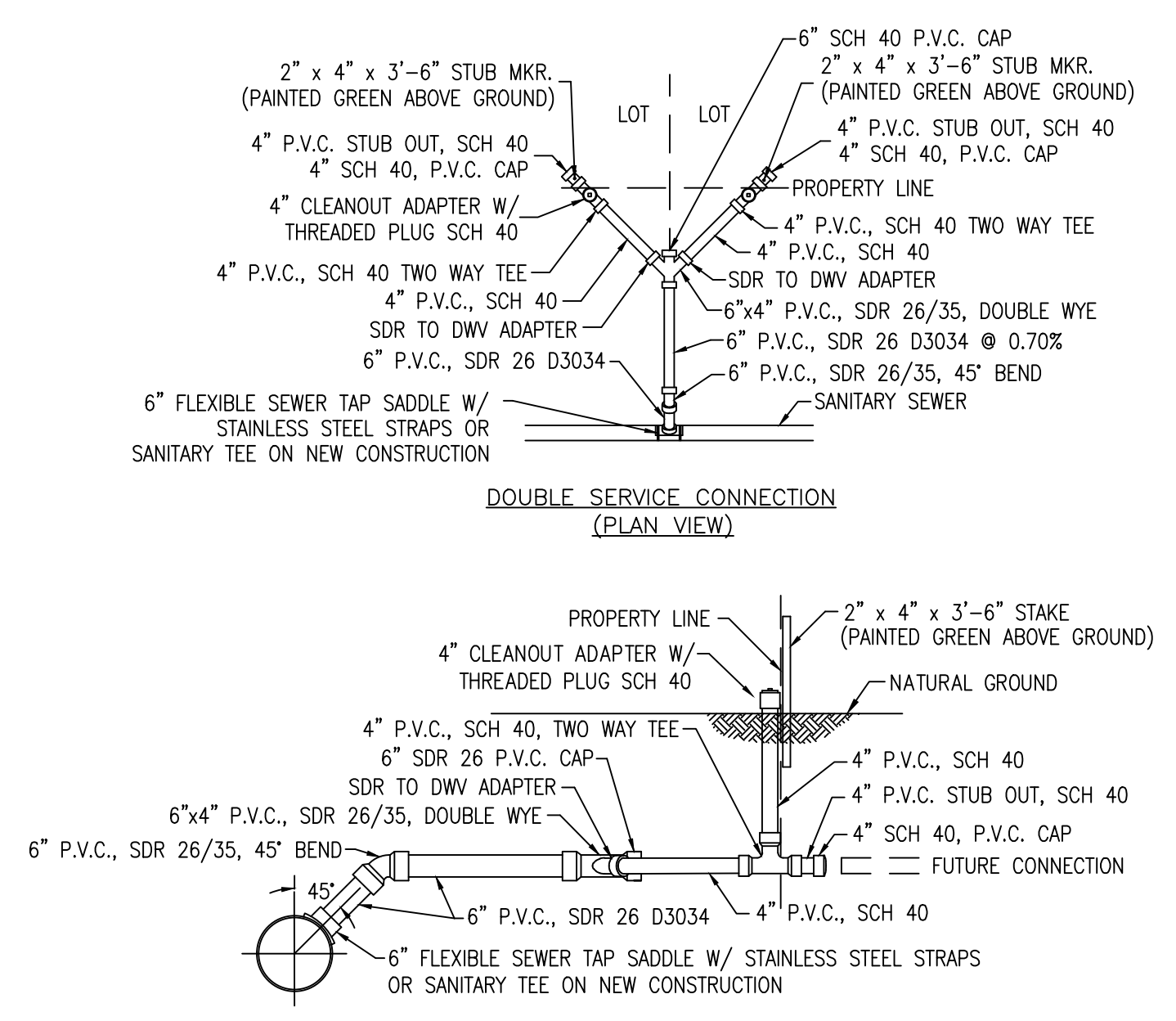
19 AIR RELEASE VALVE FOR SANITARY SEWER FORCE MAIN 3\"/>



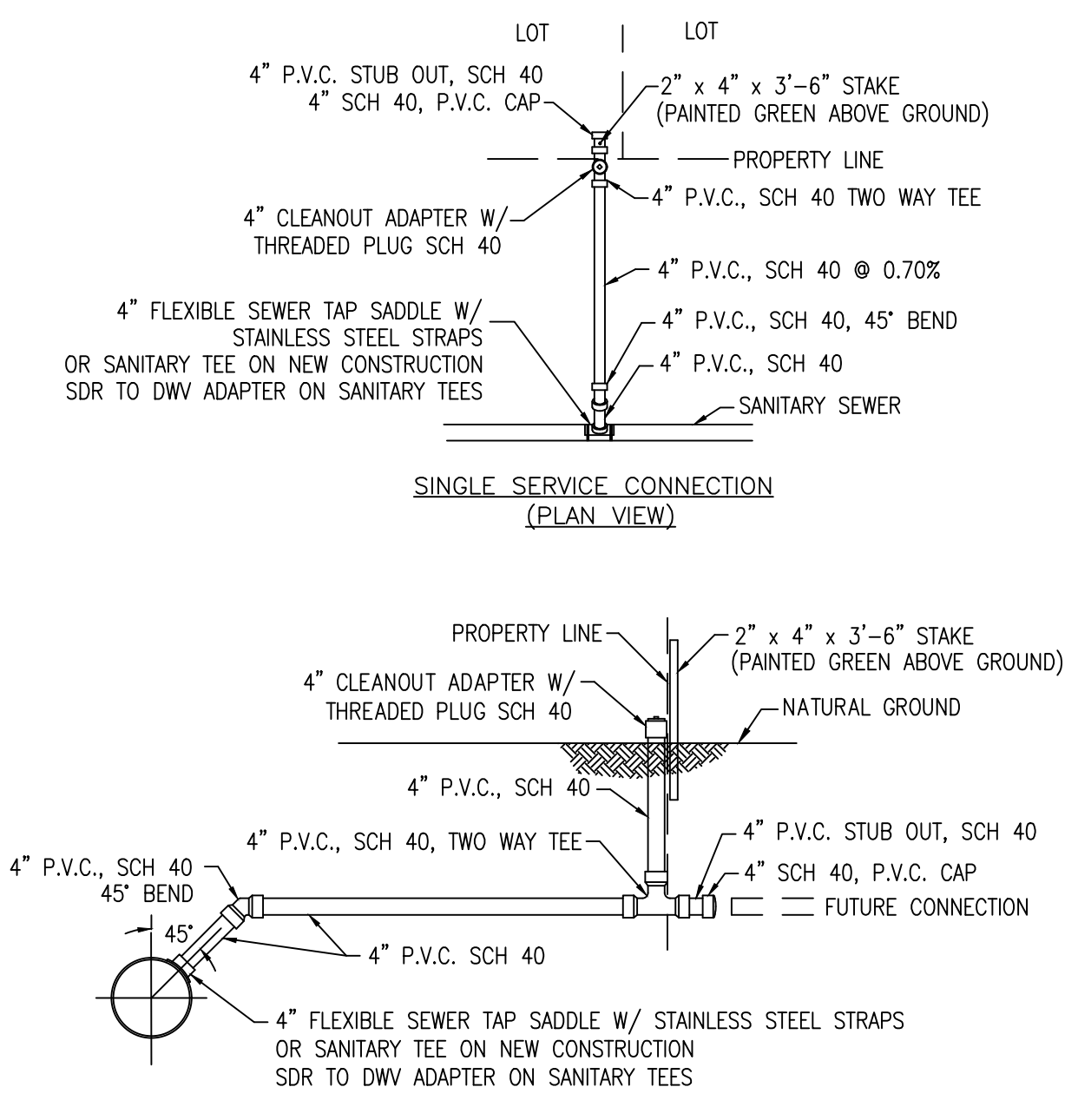
20 AIR RELEASE VALVE FOR SANITARY SEWER FORCE MAIN 4\"/>

- NOTES:**
1. MANHOLE WALL THICKNESS SHALL BE MINIMUM 8\"/>
 2. MANHOLE SHALL BE CONSTRUCTED OF 4\"/>
 3. PRECAST CONCRETE RINGS SHALL BE PROVIDED FOR ADJUSTMENT OF HEIGHT OF AT LEAST 12\"/>

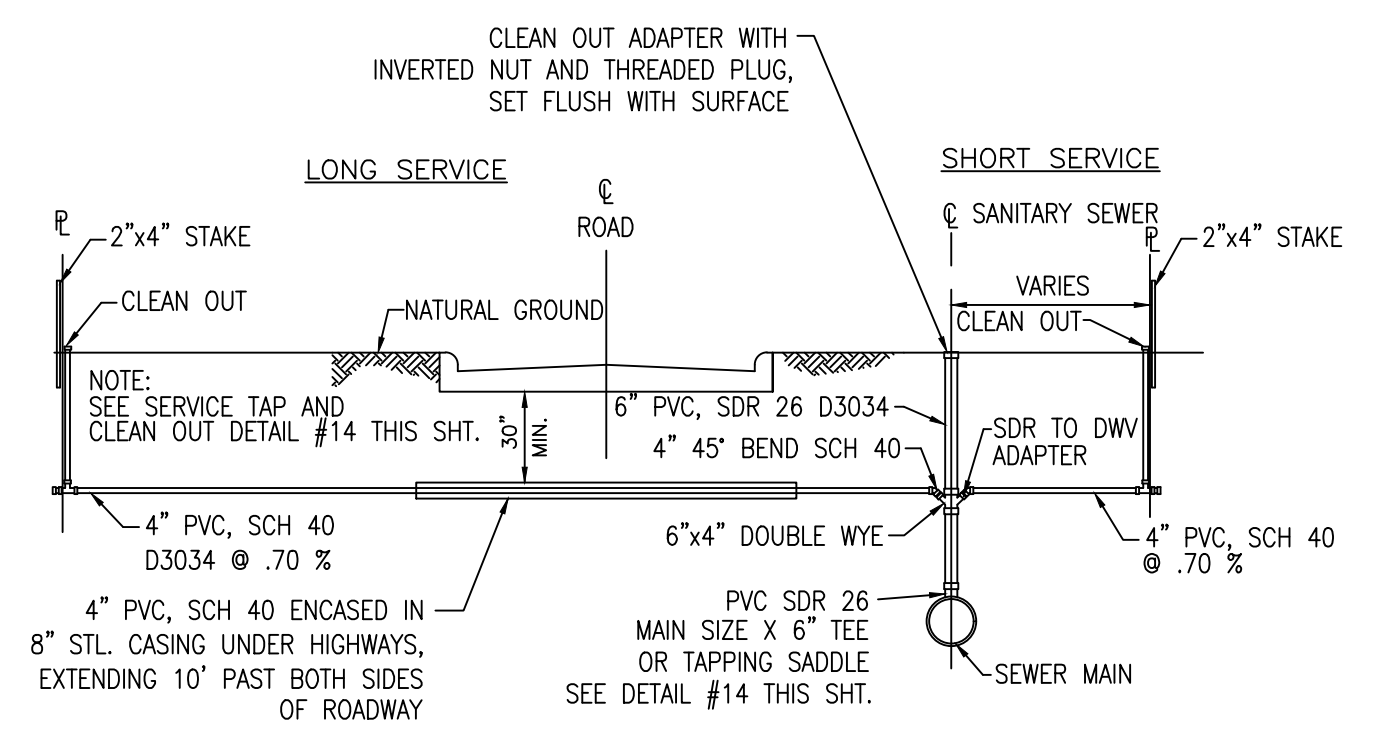
- NOTES:**
1. CONCRETE TO BE PLACED AROUND TAPPING SADDLES.
 2. CLEANOUTS TO BE EXTENDED TO JUST ABOVE NATURAL GROUND OR FINISHED GRADE AT PROPERTY LINE.
 3. 2\"/>
 4. ALL JOINTS TO BE GLUED, INCLUDING CAP. 4\"/>



14 SERVICE TAP & CLEANOUT DETAILS

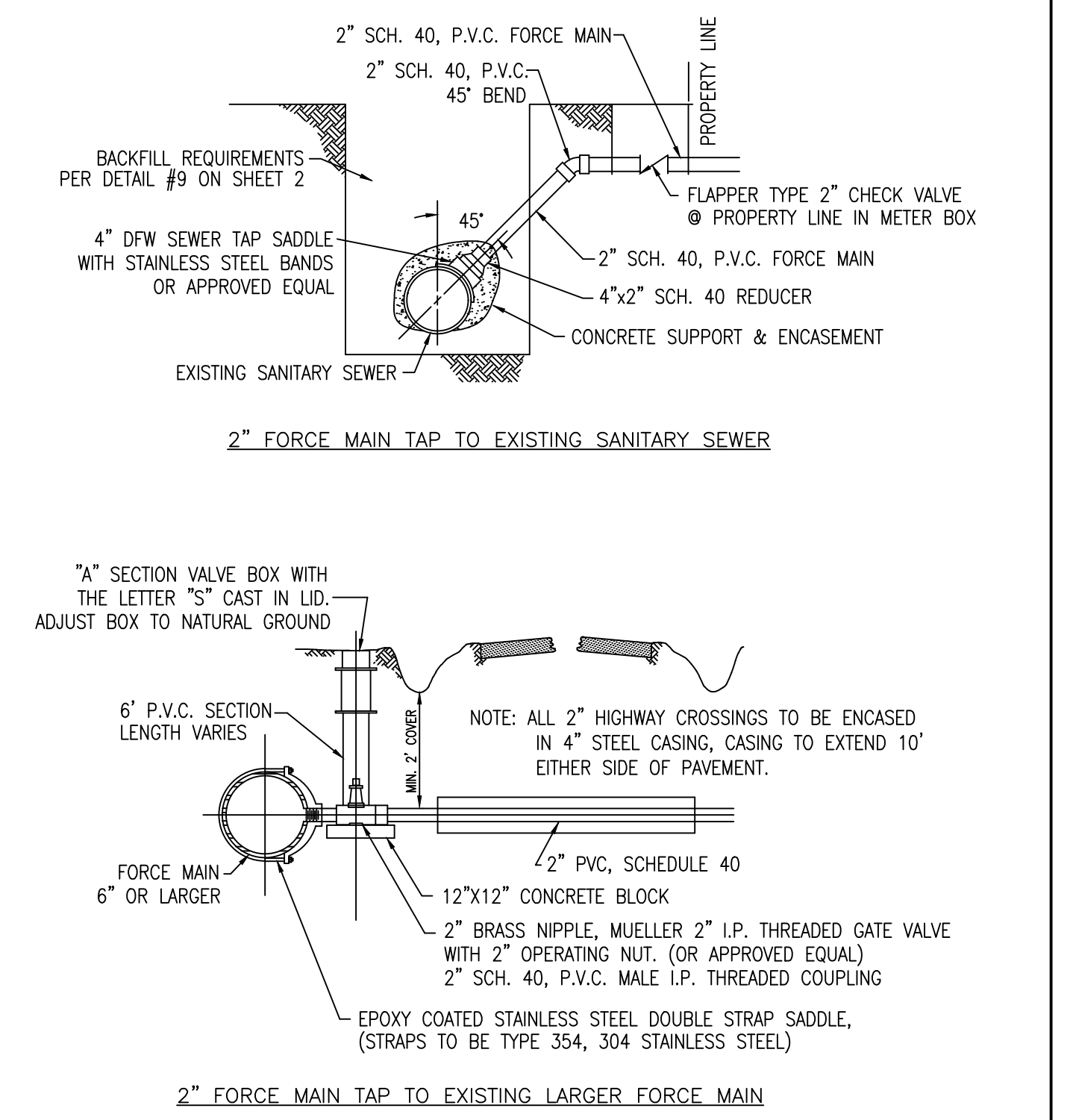


14 SINGLE SERVICE CONNECTION (PROFILE VIEW)



18 RESIDENTIAL SERVICE CONNECTION PROFILE VIEW

- NOTES:**
1. STEEL CASING REQUIRED UNDER ALL TxDOT MAINTAINED ROADWAYS. SIZE OF CASING REQUIRED TO BE PER DETAIL #12 ON SHEET 2.
 2. SEWER MAINS WITH A DEPTH OF 8' OR MORE WILL BE A CONSIDERED DEEP CUT CONNECTION TO BE INSTALLED PER DETAIL #16 & 17 ON THIS SHEET.
 3. REFER TO DETAIL #14 ON THIS SHEET FOR SERVICE LEAD CONNECTIONS.
 4. CONCRETE TO BE PLACED AROUND TAPPING SADDLES.
 5. IF SANITARY SEWER SERVICE IS TO BE EXPOSED IN ROADSIDE DITCH, SERVICE LINE IS TO BE ENCASED IN STEEL CASING OR SERVICE LINE MATERIAL IS TO BE GRIFFIN-20, AMSTED, H2SEWER SAFE, DUCTILE IRON SEWER PIPE, SEWPERCOAT LINED.



21 2\"/>

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DICKINSON W.C.I.D.
STANDARD CONSTRUCTION DETAILS
 DICKINSON, TEXAS



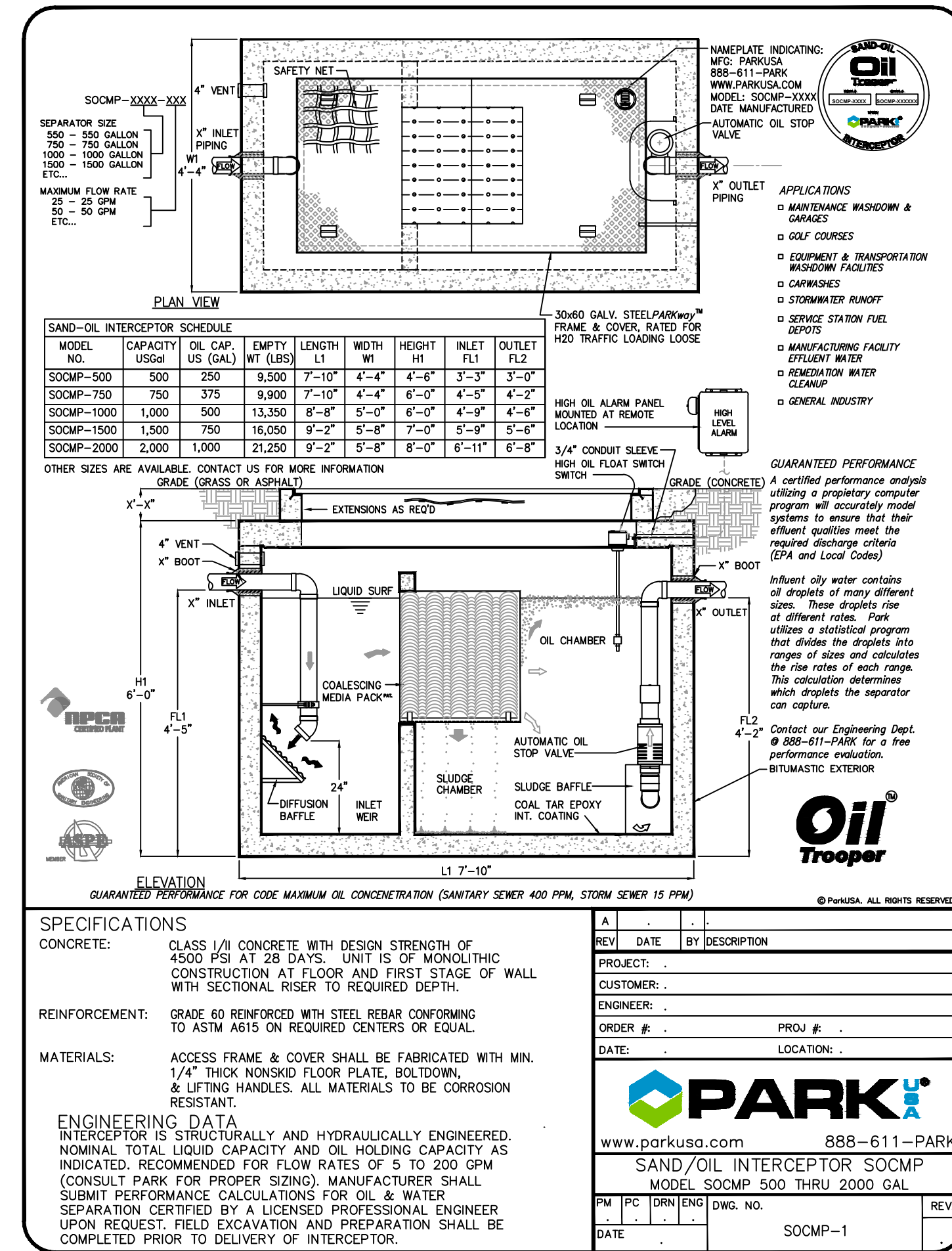
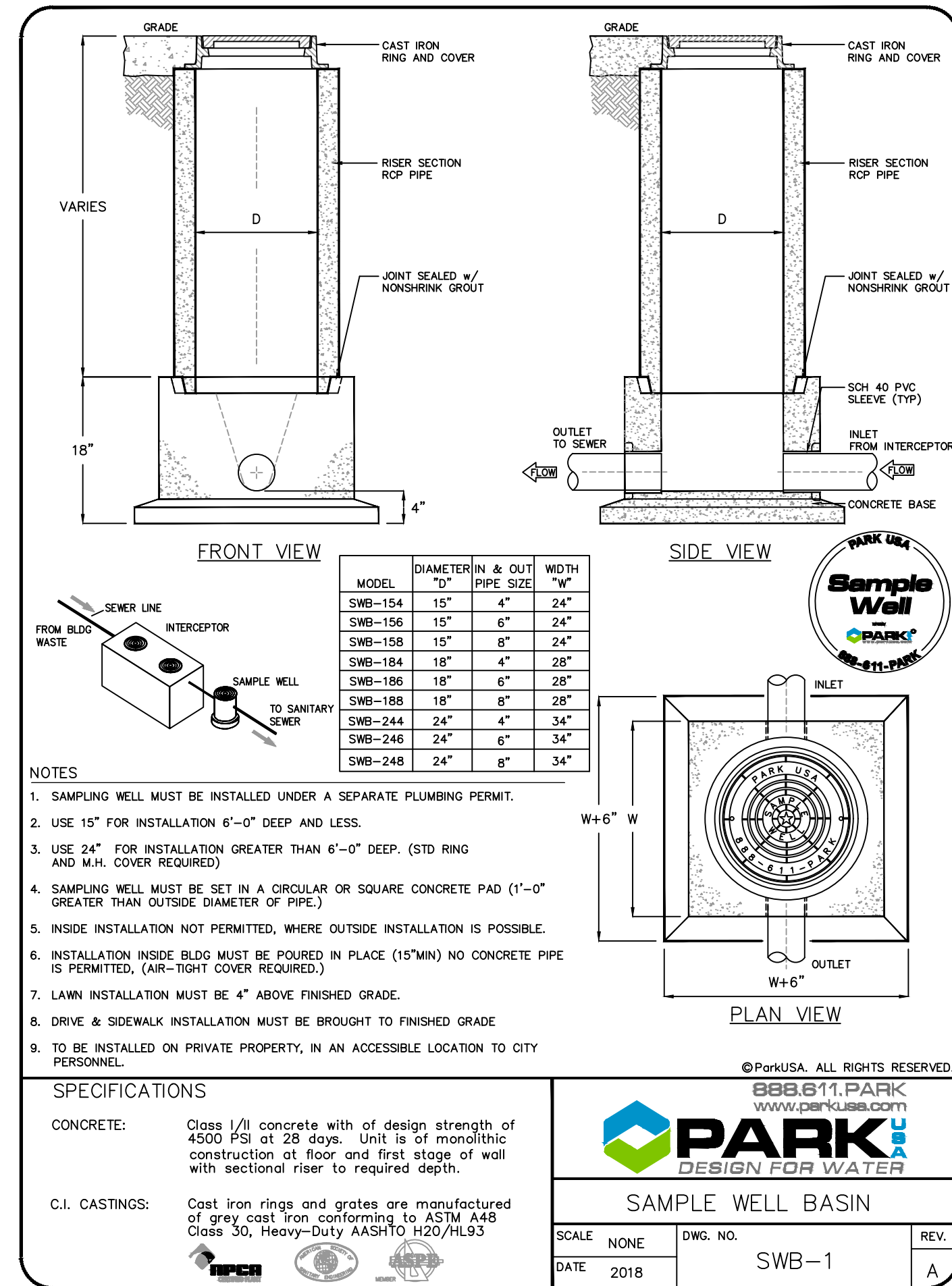
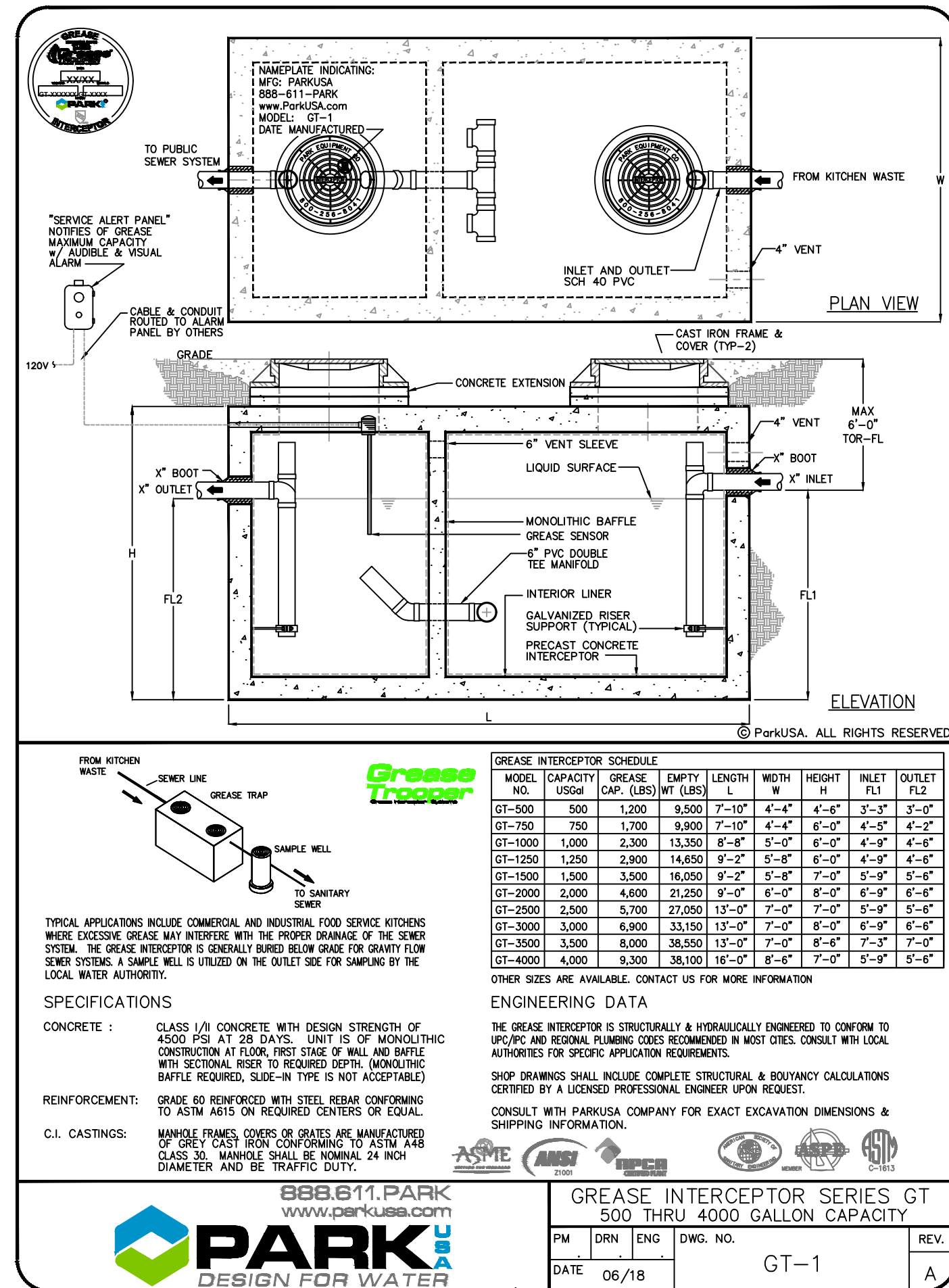
STANDARD SANITARY SEWER DETAILS SHEET 3

ENGINEER'S SEAL

NOTE:
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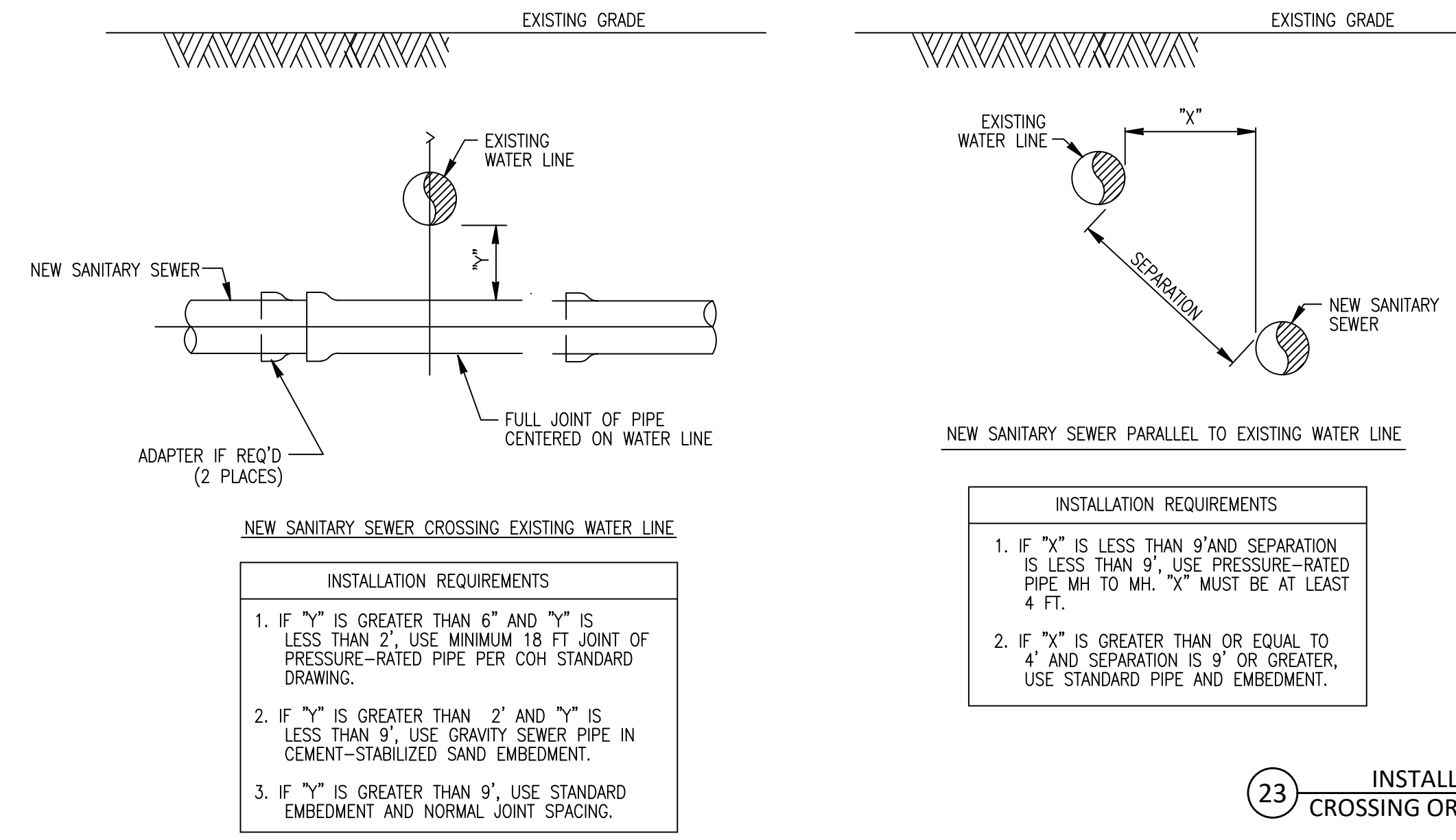
SCALE:
 HORIZONTAL: NOT TO SCALE
 VERTICAL: NOT TO SCALE
DRAWN BY: M. DAUGHRITY
CHECKED BY: K. MORGAN
SHEET:

OF



NOTE: THESE PARK EQUIPMENT DETAILS ARE A BASIC COLLECTION OF DESIGNS ALLOWED BY THE WATER DISTRICT. IF SPECIFIC DETAILS (NOT SHOWN HERE) ARE REQUIRED FOR THE CONSTRUCTION OF A PROJECT, THEY SHOULD BE OBTAINED FROM THE SUPPLYING EQUIPMENT COMPANY OR DESIGNED BY THE ENGINEER OF RECORD AND SUBMITTED TO THE WATER DISTRICT FOR APPROVAL.

22 GREASE TRAPS, SAMPLE WELLS, & SAND/OIL INTERCEPTORS



SEWER LINE CROSSING BELOW WATER LINE WITHIN 2 FT SEPARATION		
GRAVITY SANITARY SEWER PIPE SIZE	PRESSURE-RATED PIPE SIZE & TYPE (NOTE 2)	ADAPTERS REQUIRED
6" TO 12" (ASTM D3034)	SAME SIZE ASTM D2241, SDR 26 OR AWWA C900	ASTM D3034 TO D2665 (SEWER TO D.M.V.) ADAPTER COUPLING
15" (ASTM D3034)	14" LINED DUCTILE IRON OR AWWA C900, DR25	NONE REQUIRED
18" AND 24"	SAME SIZE AWWA C900, PRESSURE-RATED FRP, OR LINED DUCTILE IRON, MANHOLE TO MANHOLE	NONE REQUIRED
21" AND 27"	PRESSURE PIPE NOT AVAILABLE. SEE CASING ALTERNATIVE	NOT APPLICABLE
30" AND LARGER	SAME SIZE AWWA C900, PRESSURE-RATED FRP OR LINED DUCTILE IRON, MANHOLE TO MANHOLE	NOT APPLICABLE
CASING ALTERNATIVE:	INSTALL AS CASING PIPE MIN 18 FT JOINT OF PRESSURE PIPE AT LEAST 2 NOMINAL SIZES LARGER THAN SAN. SEWER CARRIER PIPE. GROUT ANNULAR SPACE WITH TUNNEL GROUT	NOT APPLICABLE
ANY SIZE AND TYPE		NOT APPLICABLE

- NOTES:
- SANITARY SEWER MUST BE BELOW WATER LINE WHEREVER POSSIBLE. WHEN WATER LINE IS BELOW THE SANITARY SEWER, PROVIDE MINIMUM 2 FT SEPARATION AND INSTALL PIPE SAME AS FOR SEWER BELOW WATER.
 - WHEN PRESSURE-RATED PIPE IS REQUIRED, PROVIDE PIPE WITH MINIMUM 150 PSI PRESSURE RATING.
 - ADAPTERS MUST BE FACTORY MOLDED OR FABRICATED, WITH RING STIFFNESS AT LEAST EQUAL TO THE ADJOINING SANITARY SEWER PIPE, AND USING RESILIENT GASKET OR SEAL MATERIAL. FLEXIBLE RUBBER "BOOT" TYPE ADAPTERS WILL NOT BE ACCEPTED.
 - INSTALL FORCE MAINS SAME AS FOR GRAVITY SEWER, USING SPECIFIED PRESSURE PIPE.
 - "Y" MUST ALWAYS BE GREATER THAN OR EQUAL 6".
 - "X" MUST BE GREATER THAN OR EQUAL TO 4 FT.
 - ALTERNATIVES MAY BE SHOWN ON THE DRAWINGS OR DESCRIBED IN THE SPECIFICATIONS.
 - SEPARATION REQUIREMENTS SHOWN HERE DO NOT APPLY TO SERVICE CONNECTIONS - REFER TO PLUMBING CODE FOR APPLICABLE REQUIREMENTS.

23 INSTALLING SANITARY SEWER CROSSING OR PARALLEL TO WATER LINES

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DICKINSON W.C.I.D.
STANDARD CONSTRUCTION DETAILS
DICKINSON, TEXAS



STANDARD
SANITARY SEWER
DETAILS
SHEET 4

ENGINEER'S SEAL

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HORIZONTAL: NOT TO SCALE
VERTICAL: NOT TO SCALE

DRAWN BY: M. DAUGHRITY
CHECKED BY: K. MORGAN

SHEET:

OF