General Notes:

1. 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.

2. 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 Nokelby, P.E. - 832-206-5799, rnokelby@gcwcid1tx.gov
   Construction Inspector - Emilio Renovato - 281-910-2950, erenovato@gcwcid1tx.gov

3. 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.

4. 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.

5. 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.

6. 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.

7. 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.

8. Contractor shall not use residents' water. Contractor shall obtain a temporary water meter from Galveston County WCID #1 prior to the start of construction.

9. 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.

10. 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.

11. The Contractor shall maintain access to Residential and Commercial properties adjacent to work areas at all times.

12. Iron rods disturbed during construction are to be replaced by a registered professional land surveyor for the original property owner at no separate pay.

13. 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.

14. 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.

15. 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.

16. 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.

17. 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:

1. 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.

   a) 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.

   b) 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.

   c) 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.

   d) Pipe restraints shall be MEGALUG by EBAA Iron, Inc. in accordance with District's Standard Detail Drawings.

   e) The maximum deflection allowed for water line pipe and fittings shall be per the pipe and fitting manufacturer's requirements.

2. 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.

3. Size: All water mains shall be a minimum of six (6) inches in diameter unless in specific areas approved by the District.

4. Pressure: Minimum pressure in the system shall be designed under a peak consumption to 55 pounds per square inch (PSI).

5. Valves: All gate valves shall be resilient seated, non-rising stem, 2-inch square operating nut conforming to the latest revisions of AWWA C-500 and open left. Approved manufacturer is Mueller. All valves to include stainless steel 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.

6. Hydrants: Fire Hydrants shall be three-way with National Standard threading and include a 5" Hydro-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.

7. 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 and within 50 feet of a closed storm sewer for discharge of water.

8. 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.

9. 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.

10. 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.

11. 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 that that determined by the following formula:

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

   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.

12. 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.

13. 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.

14. 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:

1. Materials: Sanitary sewer lines shall be of the following materials:

   a) 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.

2. 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.

3. 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. No brick materials allowed. Concrete design mix to include XYPEX waterproofing admixture.

   a) 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.

5. Force Mains: Force mains shall be constructed of the following materials:

   a) 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.

   b) 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.

   c) Mechanical joint ductile iron fittings conforming to AWWA C-153, pressure rating 250 psi. Interior lining to match DI pipe interior lining material.

   d) Pipe restraints shall be MEGALUG by EBAA Iron, Inc. in accordance with District's Standard Detail Drawings.

   e) The maximum deflection allowed for force main pipe and fittings shall be per the pipe and fitting manufacturer's requirements.

6. 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.

7. 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 10 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.

8. 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.

9. 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.

10. 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.

11. 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.

12. 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.

ISSUE	DATE	DESCRIPTION
ORIGINAL	January 2024	STANDARD WATER & SEWER GENERAL NOTES

GALVESTON COUNTY W.C.I.D. #1
STANDARD CONSTRUCTION DETAILS
CITY OF DICKINSON, TEXAS

Galveston County WCID #1
DICKINSON'S Water District

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.

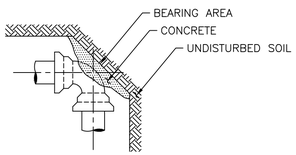
AN ENGINEER WHO INCORPORATES THE DETAILS ON THIS SHEET BECOMES RESPONSIBLE FOR ITS USE IN THE END PRODUCT IN ACCORDANCE WITH RULE 137.33 (b) AND (c) OF THE TEXAS STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS.

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

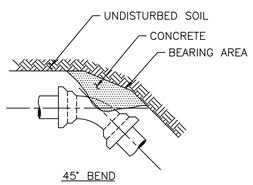
DRAWN BY: M. DAUGHRITY
CHECKED BY: K. MORGAN

SHEET:

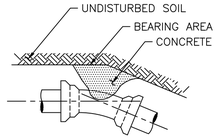
____ OF ____



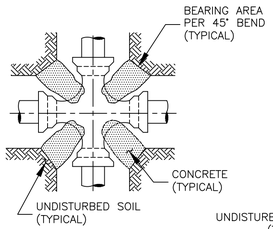
90° BEND



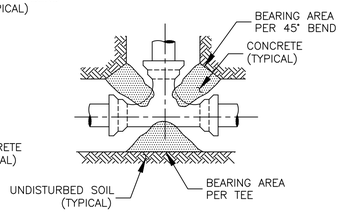
45° BEND



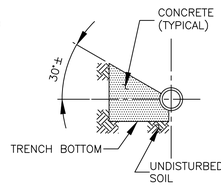
11 1/4" & 22 1/2" BEND



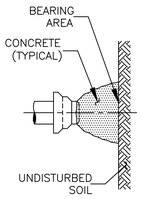
CROSS



TEE



CROSS SECTION



PLUG

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

45° BEND	
PIPE SIZE	BEARING AREA
4"	1 S.F.
6"	3 S.F.
8"	4 S.F.
10"	6 S.F.
12"	9 S.F.
14"	12 S.F.
16"	16 S.F.
18"	20 S.F.
20"	24 S.F.
24"	36 S.F.
30"	54 S.F.
36"	72 S.F.

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

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

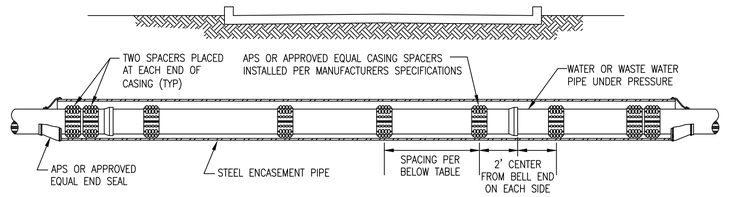
TEE	
PIPE SIZE	BEARING AREA
4"	2 S.F.
6"	3 S.F.
8"	5 S.F.
10"	8 S.F.
12"	12 S.F.
14"	15 S.F.
16"	20 S.F.
18"	25 S.F.
20"	32 S.F.
24"	45 S.F.
30"	71 S.F.
36"	77 S.F.

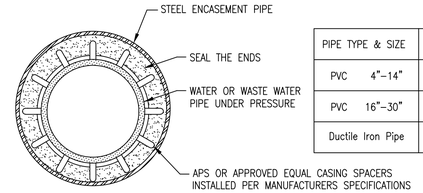
PLUG	
PIPE SIZE	BEARING AREA
4"	2 S.F.
6"	3 S.F.
8"	5 S.F.
10"	8 S.F.
12"	12 S.F.
14"	15 S.F.
16"	20 S.F.
18"	25 S.F.
20"	32 S.F.
24"	45 S.F.
30"	71 S.F.
36"	77 S.F.

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.

1 HORIZONTAL THRUST BLOCKING FOR WATER MAINS





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"

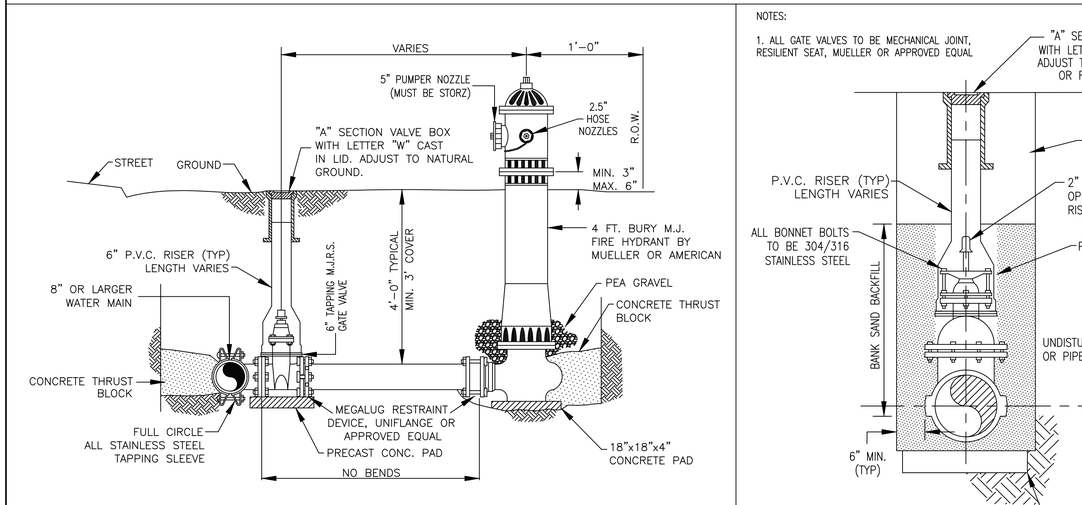
CASING SPACERS

CASING SPACERS SHALL BE USED TO INSTALL THE CARRIER PIPE INSIDE THE ENCASEMENT 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 ENCASEMENT.

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



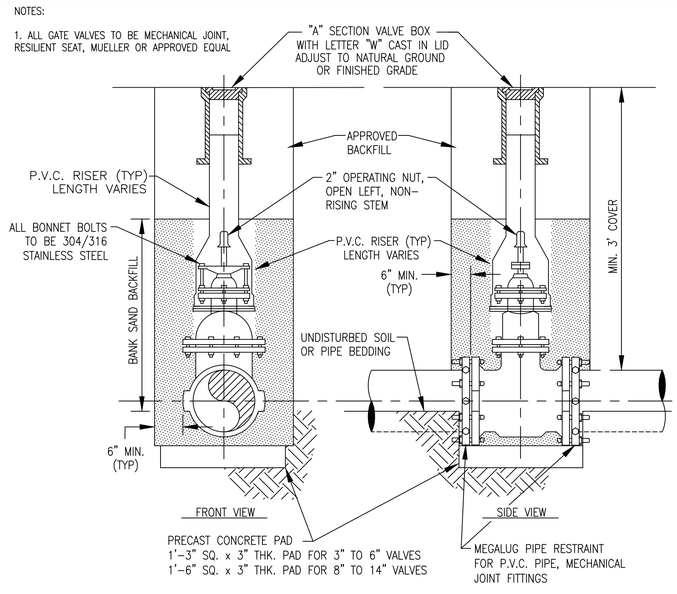
NOTES:

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.

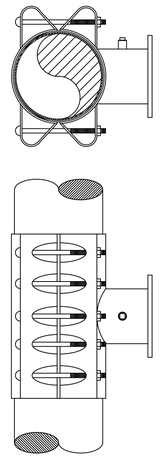
3 FIRE HYDRANT + TAPPING VALVE DETAIL

NOTES:

1. ALL GATE VALVES TO BE MECHANICAL JOINT, RESILIENT SEAT, MUELLER OR APPROVED EQUAL



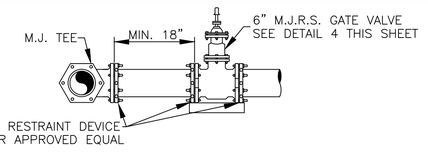
4 RESILIENT SEAT GATE VALVE INSTALLATION DETAIL



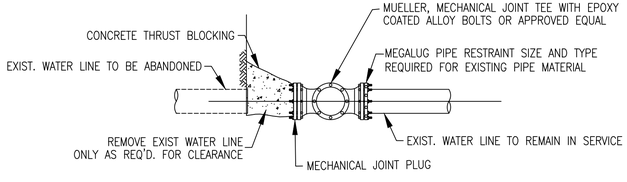
NOTES:

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

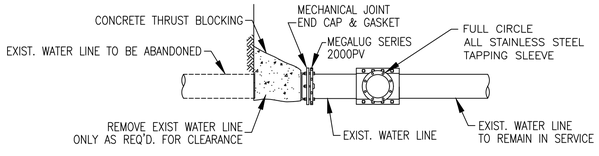
5 FULL CIRCLE TAPPING SLEEVE DETAIL



6 MECHANICAL JOINT DETAIL



7 CUT & PLUG CONNECTION W/ MECHANICAL JOINT TEE



8 CUT & PLUG CONNECTION W/ TAPPING SLEEVE

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
ISSUE	DATE	DESCRIPTION

GALVESTON COUNTY W.C.I.D. #1

STANDARD CONSTRUCTION DETAILS

CITY OF DICKINSON, TEXAS

Galveston County WCID #1
DICKINSON'S Water District

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.

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.

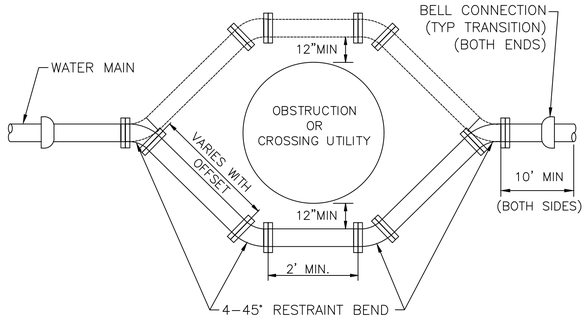
ENGINEER'S SEAL

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

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

SHEET:

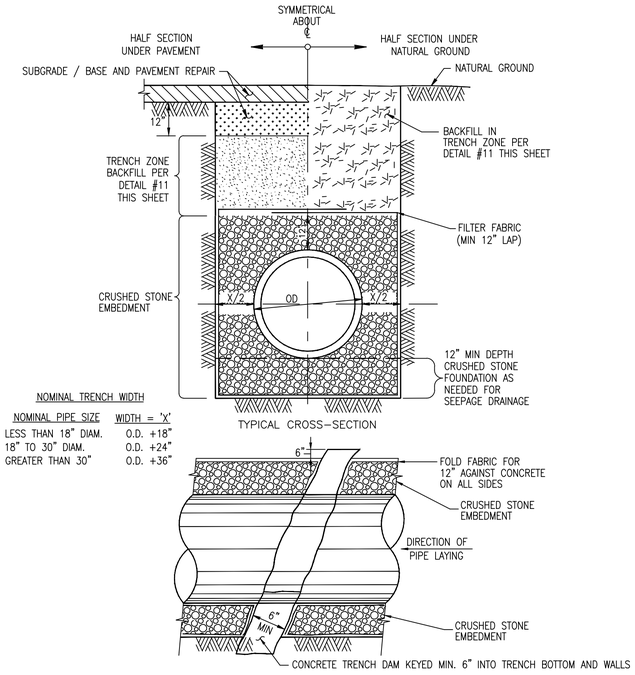
____ OF ____



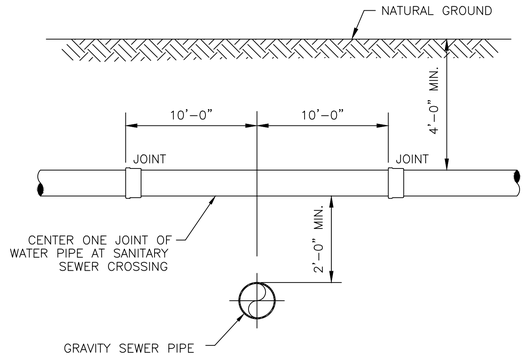
NOTES:

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



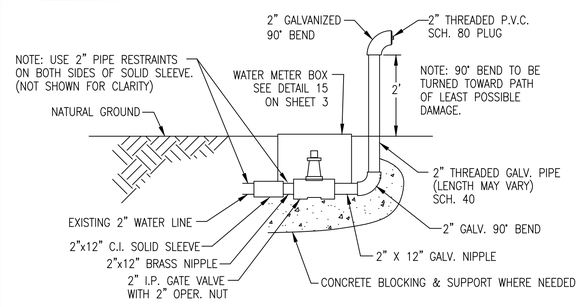
12 WET CONDITION BEDDING FOR PIPE DETAIL



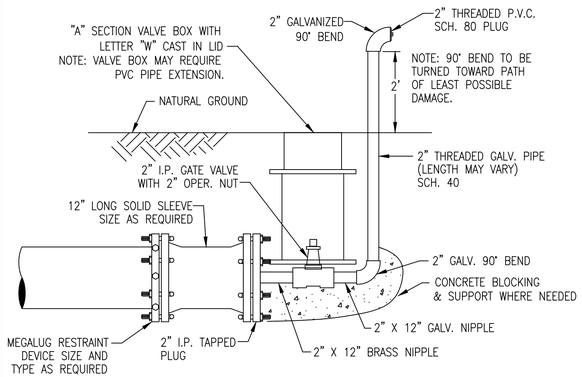
NOTES:

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



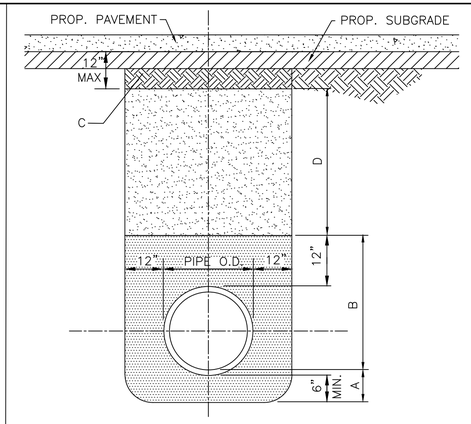
2" BLOW-OFF ON 4" AND SMALLER LINES



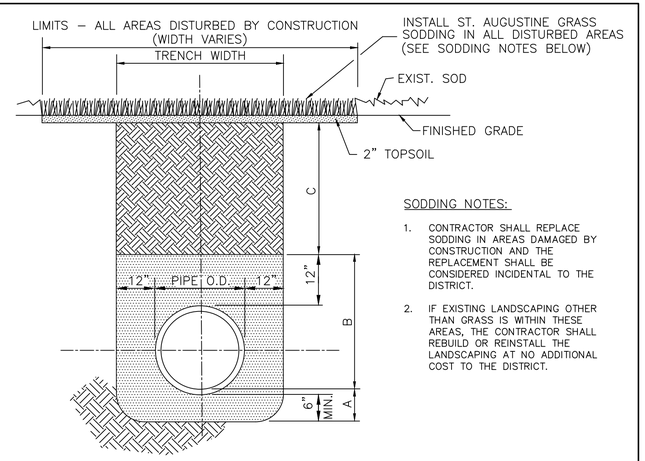
2" BLOW-OFF ON 6" OR GREATER LINES

NOTE:
2" WIDE VINYL TAPE TO BE WRAPPED AROUND ALL GALV. PIPE AND GALV. FITTINGS TO 6" ABOVE GROUND.

13 END OF LINE BLOW-OFF DETAILS



WATER PIPE TRENCH DETAIL UNDER PAVEMENT



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.

WATER PIPE TRENCH DETAIL UNDER NATURAL GROUND

BEDDING & BACKFILL LEGEND

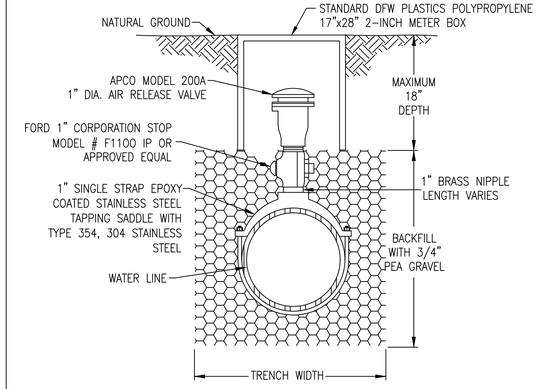
A. BANK SAND PLACED BEFORE PIPE IS LAID.

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.

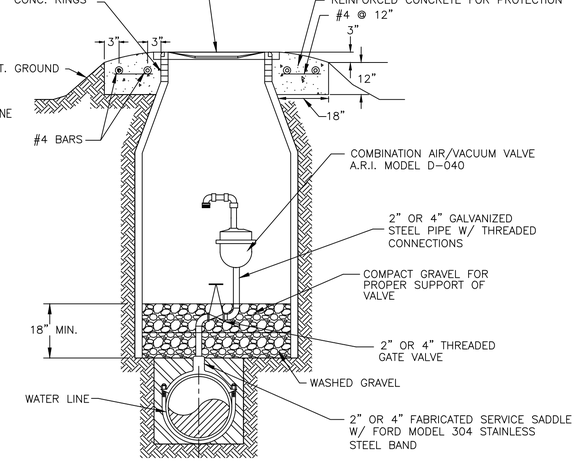
C. SELECT EARTH BACKFILL, MAX. LIQUID LIMIT 40 ASTM D4318, P.I. MIN 7, MAX 20 CONTAINING NO ROCKS OR OTHER DEBRIS NOR CONTAINING ANY DIRT CLODS EXCEEDING 6" IN ANY DIMENSION. PLACED IN 6" LAYERS AND COMPACTED TO AT LEAST 95% OF THE MAXIMUM STANDARD PROCTOR DRY DENSITY (ASTM D698) AND AT A MOISTURE CONTENT 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



AIR RELEASE VALVE DETAIL
FOR NON-HEAVY TRAFFIC AREAS



AIR RELEASE VALVE DETAIL
FOR HEAVY TRAFFIC AREAS

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.
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".

14 AIR RELEASE VALVE FOR WATER LINES

ISSUE	DATE	DESCRIPTION
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

GALVESTON COUNTY W.C.I.D. #1

STANDARD CONSTRUCTION DETAILS

CITY OF DICKINSON, TEXAS

Galveston County WCID #1
DICKINSON'S Water District

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.

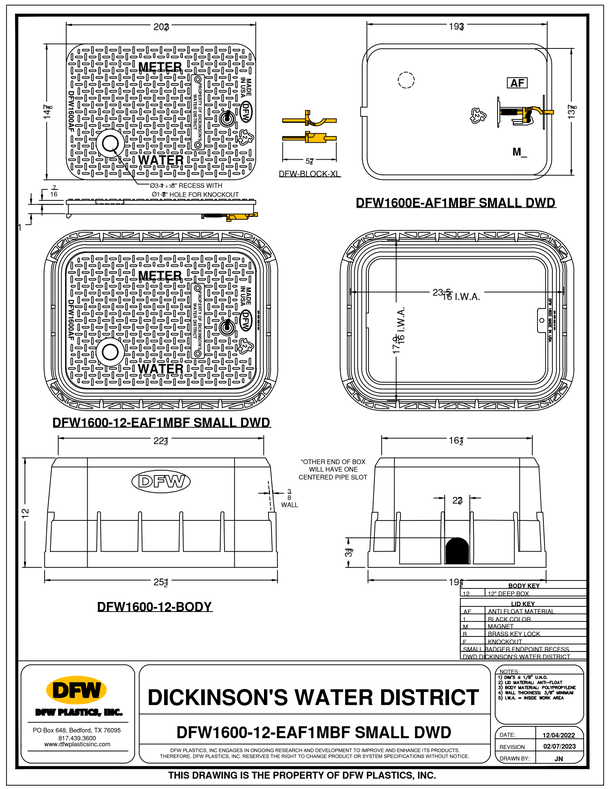
AN ENGINEER WHO INCORPORATES THE DETAILS ON THIS SHEET BECOMES RESPONSIBLE FOR ITS USE IN THE END PRODUCT IN ACCORDANCE WITH RULE 137.33 (b) AND (c) OF THE TEXAS STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS.

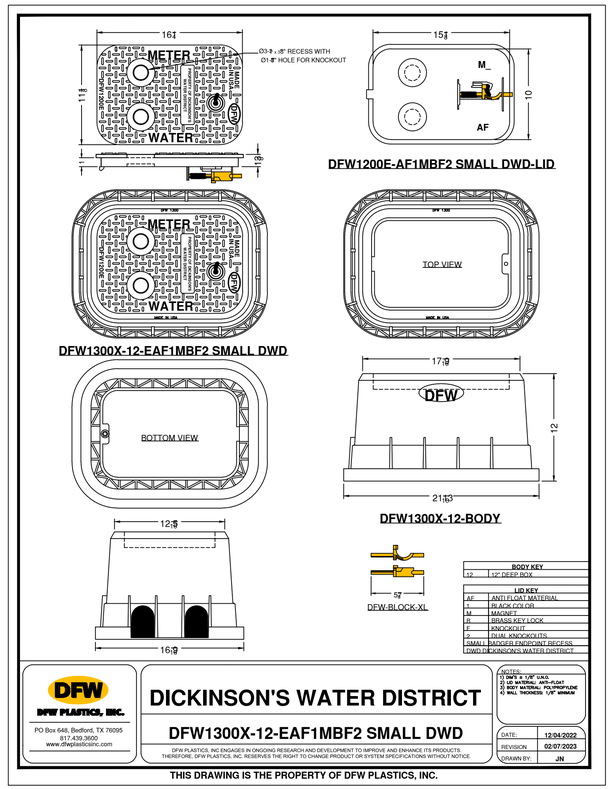
SCALE:
HORIZONTAL: NOT TO SCALE
VERTICAL: NOT TO SCALE

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

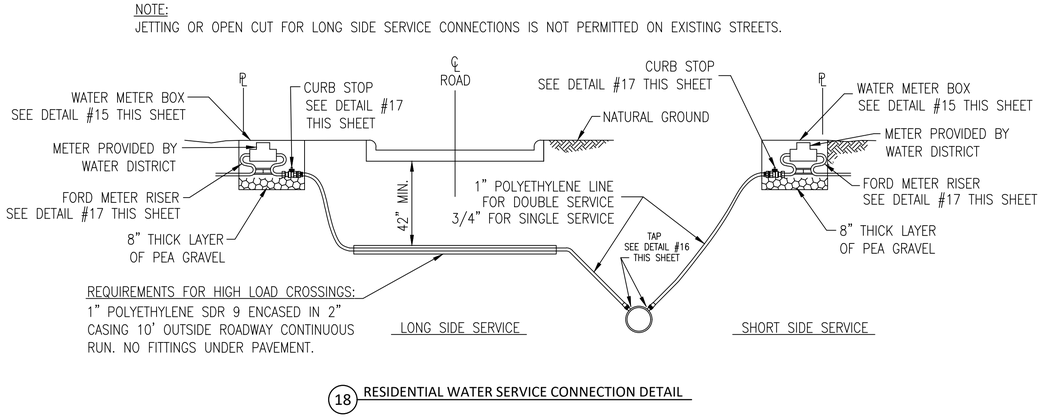
SHEET:

____ OF ____

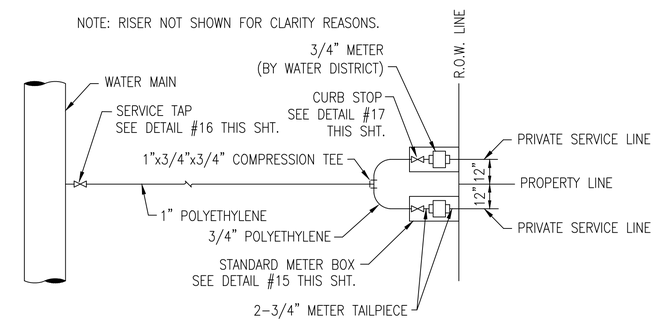




15 SINGLE AND DUAL WATER METER BOX DETAILS

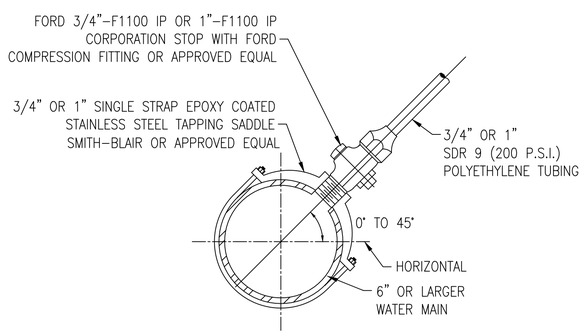


18 RESIDENTIAL WATER SERVICE CONNECTION DETAIL

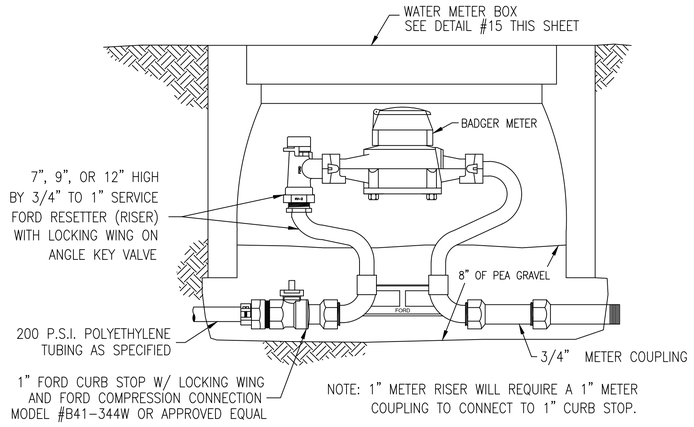


NOTES:
1. LOCATION OF METER BOX ON SINGLE SERVICE LEADS SHALL BE THE SAME AS SHOWN FOR DOUBLE SERVICE LEADS.
2. TOP OF METER BOX TO BE SET LEVEL WITH TOP OF NATURAL GROUND.
3. SET METER BOX ON 8" LAYER OF PEA GRAVEL.
4. METER RISERS SHALL BE PLACED AT ALL RESIDENTIAL SERVICE CONNECTIONS.

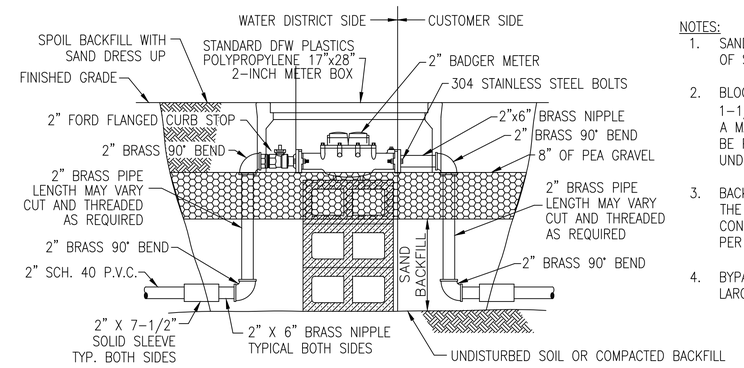
19 RESIDENTIAL DOUBLE WATER SERVICE LEAD DETAIL



16 3/4" OR 1" WATER SERVICE TAP DETAIL



17 METER RISER & CURB STOP DETAIL



NOTES:
1. SAND BEDDING TO BE WATER COMPACTED, DEPTH OF SAND WILL VARY WITH EACH INSTALLATION.
2. BLOCKING SUPPORT TO BE USED UNDER ALL 1-1/2" AND LARGER METERS. NOT TO EXCEED A MAXIMUM OF 3 CINDER BLOCKS. BLOCKING TO BE PLACED ON LEVEL COMPACTED OR UNDISTURBED SOIL.
3. BACKFLOW PREVENTION DEVICE REQUIRED ON THE CUSTOMER SIDE OF ALL COMMERCIAL CONNECTIONS INSTALLED BY LICENSED PLUMBER PER STATE CODES.
4. BYPASS PIPING REQUIRED ON ALL 3" AND LARGER INSTALLATIONS.

20 1-1/2" AND LARGER WATER METER DETAIL

ISSUE	DATE	DESCRIPTION
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

GALVESTON COUNTY W.C.I.D. #1
STANDARD CONSTRUCTION DETAILS
CITY OF DICKINSON, TEXAS

Galveston County WCID #1 DICKINSON'S Water District

STANDARD WATER DETAILS SHEET 3

ENGINEER'S SEAL

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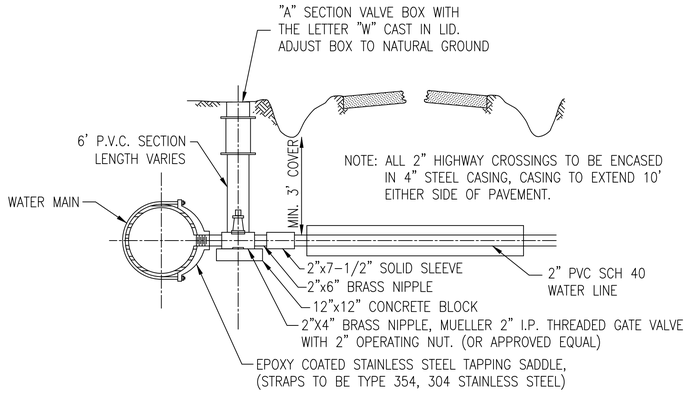
SCALE:
HORIZONTAL: NOT TO SCALE
VERTICAL: NOT TO SCALE

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

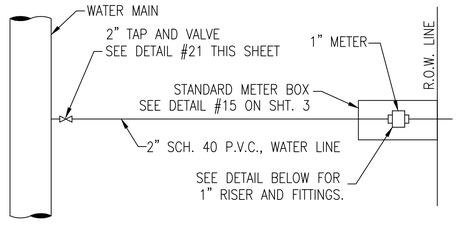
SHEET:

____ OF ____

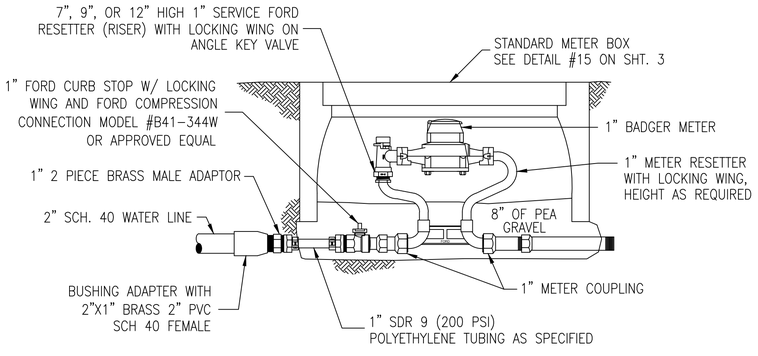


NOTE: ALL TAPS (REGARDLESS OF WATER LINE SIZE) TO USE EPOXY COATED TYPE 354, 304 STAINLESS STEEL SINGLE STRAP TAP SADDLE

(21) 2" LONG SIDE CONNECTION TO LARGER MAINS DETAIL

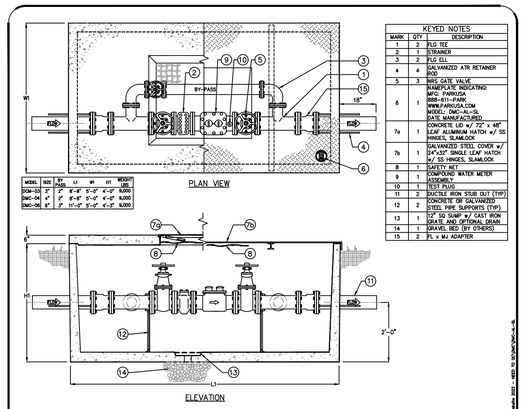


NOTES:
1. TOP OF METER BOX TO BE SET LEVEL WITH TOP OF NATURAL GROUND.
2. SET METER BOX ON 8" LAYER OF PEA GRAVEL.
3. METER RISERS TO BE PLACED AT ALL 2" TO 1" METER SET UPS.



SPECIAL NOTE: CUSTOMER/TENANT IS RESPONSIBLE FOR INSTALLATION OF APPROVED TESTABLE BACK FLOW PREVENTION DEVICE TO BE INSTALLED BY A LICENSED PLUMBER PER STATE PLUMBING CODE. CUSTOMER/TENANT WILL ALSO PROVIDE TEST RESULTS ANNUALLY TO THE WATER DISTRICT.

(22) 2" COMMERCIAL SERVICE CONNECTION W/ 1" METER DETAIL



MODEL	SIZE	L1	W1	H1	WEIGHT LBS
DCVA-06	6"	6'-4"	5'-0"	4'-0"	8,000
DMC-06	6"	5'-8"	5'-0"	4'-0"	9,000
DMC-08	8"	7'-10"	5'-0"	4'-0"	9,000

KEYED NOTES

MARK	QTY	DESCRIPTION
1	2	FLG TEE
2	1	STRAINER
3	2	FLG ELL
4	4	GALVANIZED ATR RETAINER ROD
5	3	300 GATE VALVE
6	1	NAMEPLATE INDICATING: MFG: PARKUSA 888-611-PARK WWW.PARKUSA.COM MODEL: DMC-AL-SL DATE MANUFACTURED
7a	1	CONCRETE LID w/ 72" x 48" LEAF ALUMINUM HATCH w/ SS HINGES, SLAMLOCK
7b	1	GALVANIZED STEEL COVER w/ 24"x32" SINGLE LEAF HATCH w/ SS HINGES, SLAMLOCK
8	1	SAFETY NET
9	1	COMPOUND WATER METER ASSEMBLY
10	1	TEST PLUG
11	2	DUCTILE IRON STEM OUT (TYP.)
12	2	CONCRETE OR GALVANIZED STEEL PIPE SUPPORTS (TYP)
13	1	12" SQ SUMP w/ CAST IRON GRATE AND OPTIONAL DRAIN
14	1	GRAVEL BED (BY OTHERS)
15	2	FL x M ADAPTER

SPECIFICATIONS

CONCRETE: CLASS I/II CONCRETE WITH DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR & FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.

REINFORCEMENT: GRADE 60 REINFORCED. STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL

ACCESS COVER: ¾" STEEL SKID-RESISTANT FLOOR PLATE WELDED TO 3" ANGLE FRAME WITH (2) 3"X2-⅜" I-BEAM SUPPORTS. HATCH TO BE FURNISHED WITH 316 STAINLESS STEEL BOLTS & HINGES

ACCESS HATCH/WAY: ¾" ALUMINUM DIAMOND PLATE COVER WITH EXTRUDED ALUMINUM FRAME. HATCH TO BE FURNISHED WITH 316 STAINLESS STEEL SLAM LOCK & HINGES.

ENGINEERING DATA

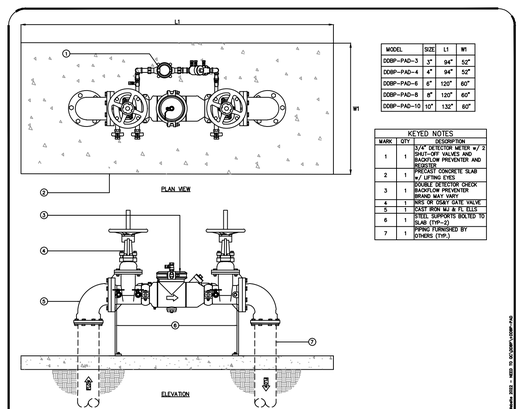
THE METER ASSEMBLY SHALL BE FACTORY ASSEMBLED IN VAULT & HYDROSTATICALLY TESTED PRIOR TO DELIVERY. FIELD EXCAVATION & PREPARATION SHALL BE COMPLETE PRIOR TO DELIVERY. PIPE, VALVES & FITTINGS OF THE ASSEMBLY SHALL BE APPROVED BY ONE OR MORE OF THE FOLLOWING ASSOCIATIONS:

PARK USA A Northwest Pipe Company

DOMESTIC COMPOUND WATER METER ASSEMBLY

PM	PC	DRN	ENG
-	-	-	-

DATE 04/2023 | DWG. NO. DMC-AL-SL | REV. A



MODEL	SIZE	L1	W1
DDBP-PAD-3	3"	84"	52"
DDBP-PAD-4	4"	94"	52"
DDBP-PAD-6	6"	120"	60"
DDBP-PAD-8	8"	120"	60"
DDBP-PAD-10	10"	132"	60"

KEYED NOTES

MARK	QTY	DESCRIPTION
1	1	3/4" DETECTOR METER w/ 2 SHUT-OFF VALVES AND BACKFLOW PREVENTER AND STRAINER
2	1	PRECAST CONCRETE SLAB w/ LIFTING EYES
3	1	DOUBLE DETECTOR CHECK BACKFLOW PREVENTER BRAND MAY VARY
4	1	NRS OR OSAY GATE VALVE
5	1	CAST IRON MJ & FL ELLS
6	1	STEEL SUPPORTS BOLTED TO SLAB (TYP-2)
7	1	PIPING FURNISHED BY OTHERS (TYP.)

SPECIFICATIONS

CONCRETE: CLASS I/II CONCRETE WITH DESIGN STRENGTH OF 4500 PSI AT 28 DAYS.

REINFORCEMENT: GRADE 60 REINFORCED. STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

TYPICAL APPLICATIONS

RP DEVICES ARE USED TO PROTECT AGAINST HIGH HAZARD (TOXIC) FLUIDS IN WATER SERVICES TO INDUSTRIAL PLANTS, HOSPITAL FACILITIES, MORGUES, MORTUARIES, AND CHEMICAL PLANTS. THEY ARE ALSO USED IN IRRIGATION SYSTEMS, BOILER FEED, WATER LINES AND OTHER INSTALLATIONS REQUIRING MAXIMUM PROTECTION.

ENGINEERING DATA

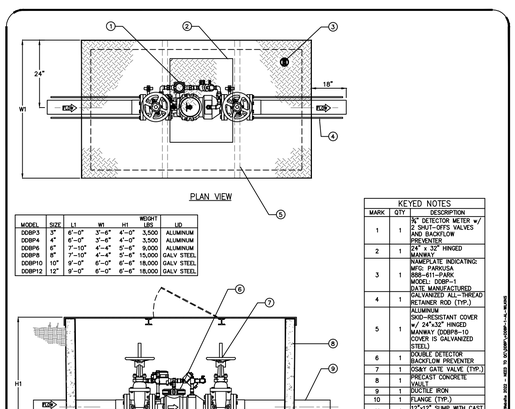
FIELD EXCAVATION AND PREPARATION SHALL BE COMPLETED PRIOR TO DELIVERY OF ASSEMBLY. USE DIMENSIONAL DATA AS SHOWN. PIPE, VALVES AND FITTINGS OF THE ASSEMBLY ARE APPROVED BY ONE OR MORE OF THE FOLLOWING ASSOCIATIONS:

PARK USA A Northwest Pipe Company

DOUBLE DETECTOR BACKFLOW PREVENTER ON PRECAST CONCRETE PAD

PM	PC	DRN	ENG
-	-	-	-

DATE 04/2023 | DWG. NO. DDBP-1-PAD | REV. A



MODEL	SIZE	L1	W1	H1	WEIGHT LBS	LID
DDBP-3	3"	6'-0"	3'-6"	4'-0"	3,500	ALUMINUM
DDBP-4	4"	6'-0"	3'-6"	4'-0"	3,500	ALUMINUM
DDBP-6	6"	7'-10"	4'-6"	5'-6"	9,000	ALUMINUM
DDBP-8	8"	7'-10"	4'-6"	5'-6"	15,000	GALV STEEL
DDBP-10	10"	8'-0"	6'-0"	6'-6"	18,000	GALV STEEL
DDBP-12	12"	9'-0"	6'-0"	6'-6"	18,000	GALV STEEL

KEYED NOTES

MARK	QTY	DESCRIPTION
1	1	¾" DETECTOR METER w/ 2 SHUT-OFFS VALVES AND BACKFLOW PREVENTER
2	1	24" x 32" HINGED MANWAY
3	1	NAMEPLATE INDICATING: MFG: PARKUSA 888-611-PARK MODEL: DDBP-1 DATE MANUFACTURED
4	1	GALVANIZED ALL-THREAD RETAINER ROD (TYP.)
5	1	ALUMINUM SKID-RESISTANT COVER w/ 24"x32" HINGED MANWAY (DDBP18-10 COVER IS GALVANIZED STEEL)
6	1	DOUBLE DETECTOR BACKFLOW PREVENTER
7	1	OS&Y GATE VALVE (TYP.)
8	1	PRECAST CONCRETE VAULT
9	1	DUCTILE IRON
10	1	FLANGE (TYP.)
11	1	12"x12" SUMP WITH CAST IRON GRATE
12	1	GALVANIZED ANGLE SUPPORT (TYP.)

SPECIFICATIONS

CONCRETE: DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.

REINFORCEMENT: GRADE 60 REINFORCED. STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

STEEL COVER: 1/4" STEEL SKID-RESISTANT FLOOR PLATE WELDED TO 3" ANGLE FRAME WITH (2) 3"X2-3/8" I BEAM SUPPORTS (300 PSF).

ENGINEERING DATA

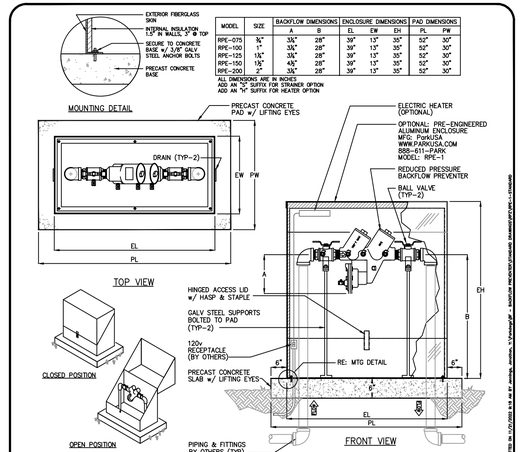
THE BACKFLOW ASSEMBLY SHALL BE FACTORY ASSEMBLED IN VAULT & HYDROSTATICALLY TESTED PRIOR TO DELIVERY. FIELD EXCAVATION & PREPARATION SHALL BE COMPLETE PRIOR TO DELIVERY. PIPE, VALVES AND FITTINGS OF THE ASSEMBLY SHALL BE APPROVED BY ONE OR MORE OF THE FOLLOWING ASSOCIATIONS:

PARK USA A Northwest Pipe Company

3"–10" DOUBLE DETECTOR BACKFLOW PREVENTER ASSEMBLY FOR FIRE SERVICE

PM	PC	DRN	ENG
-	-	-	-

DATE 2023 | DWG. NO. DDBP-1 | REV. A



MODEL	SIZE	BACKFLOW DIMENSIONS A	B	ENCLOSURE DIMENSIONS EL	EW	EH	PAD DIMENSIONS PL	PW
RPE-075	¾"	33¼"	28"	39"	13"	35"	52"	30"
RPE-100	1"	33¼"	28"	39"	13"	35"	52"	30"
RPE-125	1¼"	33¼"	28"	39"	13"	35"	52"	30"
RPE-150	1½"	49¼"	28"	39"	13"	35"	52"	30"
RPE-200	2"	33¼"	28"	39"	13"	35"	52"	30"

ALL DIMENSIONS ARE IN INCHES
ADD AN "S" SUFFIX FOR STRAINER OPTION
ADD AN "H" SUFFIX FOR HEATER OPTION

Specifications

CONCRETE: Class I/II concrete with design strength of 4500 PSI at 28 days.

REINFORCEMENT: Grade 60 reinforced. Steel rebar conforming to ASTM A615 on required centers or equal.

Typical Applications

RP devices are used to protect against high hazard (toxic) fluids in water services to industrial plants, hospital facilities, morgues, mortuaries, and chemical plants. They are also used in irrigation systems, boiler feed, water lines and other installations requiring maximum protection.

Engineering Data

The backflow assembly shall be factory assembled on pad & hydrostatically tested prior to delivery. Field excavation & preparation shall be complete prior to delivery. Pipe, valves and fittings of the assembly shall be approved by one or more of the following associations:

REV.	DATE	BY	DESCRIPTION
A	-	-	-

PROJECT: -
CUSTOMER: -
ENGINEER: -
ORDER #: - PROJ #: -
DATE: - LOCATION: -

PARK USA A Northwest Pipe Company

REDUCED PRESSURE BACKFLOW PREVENTER w/ INSULATED ENCLOSURE MODEL RPE-3/4" THRU 2"

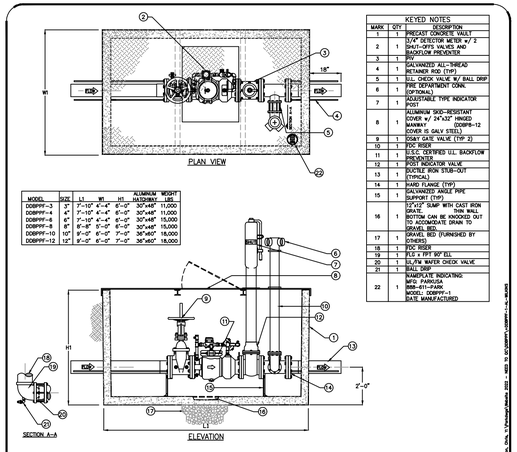
PM	PC	DRN	ENG
-	-	-	-

DATE - | DWG. NO. RPE-1 | REV. A

MARK: -
LINE: -
STA: -
SHEET: -
DATE: -

(23) COMMERCIAL WATER METER, BACKFLOW PREVENTOR, & FIRE SERVICE DETAILS

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.



MODEL	SIZE	L1	W1	H1	ALUMINUM WEIGHT HATCH/WAY	LBS.
DDBPPF-3	3"	7'-10"	4'-4"	6'-0"	30"x48"	11,000
DDBPPF-4	4"	7'-10"	4'-4"	6'-0"	30"x48"	11,000
DDBPPF-6	6"	7'-10"	5'-6"	6'-0"	30"x48"	15,000
DDBPPF-8	8"	8'-8"	5'-0"	6'-0"	30"x48"	15,000
DDBPPF-10	10"	8'-0"	5'-0"	7'-0"	36"x60"	18,000
DDBPPF-12	12"	8'-0"	6'-0"	7'-0"	36"x60"	18,000

KEYED NOTES

MARK	QTY	DESCRIPTION
1	1	PRECAST CONCRETE VAULT
2	1	3/4" DETECTOR METER w/ 2 SHUT-OFFS VALVES AND BACKFLOW PREVENTER
3	1	FDC
4	1	GALVANIZED ALL-THREAD RETAINER ROD (TYP.)
5	1	ULL CHECK VALVE W/ BALL DRIP
6	1	FIRE DEPARTMENT CONN. (OPTIONAL)
7	1	POST INDICATOR TYPE INDICATOR POST
8	1	ALUMINUM SKID-RESISTANT COVER w/ 24"x32" HINGED MANWAY (DDBPPF-12 COVER IS GALV STEEL)
9	1	OS&Y GATE VALVE (TYP 2)
10	1	FDC RISER
11	1	U.S.C. CERTIFIED ULL BACKFLOW PREVENTER
12	1	POST INDICATOR VALVE
13	1	DUCTILE IRON STUB-OUT (TYPICAL)
14	1	HARD FLANGE (TYP)
15	1	GALVANIZED ANGLE PIPE SUPPORT (TYP.)
16	1	12"x12" SUMP WITH CAST IRON GRATE AND OPTIONAL DRAIN BOTTOM CAN BE MODIFIED OUT TO ACCOMODATE DRAIN TO GRAVEL BED.
17	1	GRAVEL BED (FURNISHED BY OTHERS)
18	1	FDC RISER
19	1	FLX x TPT 90° ELL
20	1	UL/FM WAFER CHECK VALVE
21	1	BALL DRIP
22	1	NAMEPLATE INDICATING: MFG: PARKUSA 888-611-PARK MODEL: DDBPPF-1 DATE MANUFACTURED

SPECIFICATIONS

CONCRETE: CLASS I/II CONCRETE WITH DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.

REINFORCEMENT: GRADE 60 REINFORCED. STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

HATCHWAY: ¼" ALUMINUM DIAMOND PLATE COVER WITH EXTRUDED ALUMINUM FRAME. HATCH TO BE FURNISHED WITH 316 STAINLESS STEEL SNAP LOCK & BRASS HINGES.

ENGINEERING DATA

FIELD EXCAVATION AND PREPARATION SHALL BE COMPLETED PRIOR TO DELIVERY OF ASSEMBLY. USE DIMENSIONAL DATA AS SHOWN. PIPE, VALVES AND FITTINGS OF THE ASSEMBLY ARE APPROVED BY ONE OR MORE OF THE FOLLOWING ASSOCIATIONS:

PARK USA A Northwest Pipe Company

3" THRU 12" DOUBLE DETECTOR BACKFLOW PREVENTER ASSEMBLY W/ PIV & FDC

PM	PC	DRN	ENG
-	CC	-	-

DATE 03/2023 | DWG. NO. DDBPPF-1 | REV. A

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
ISSUE	DATE	DESCRIPTION

GALVESTON COUNTY W.C.I.D. #1
STANDARD CONSTRUCTION DETAILS
CITY OF DICKINSON, TEXAS

Galveston County WCID #1
DICKINSON'S Water District

STANDARD WATER DETAILS SHEET 4

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 ____

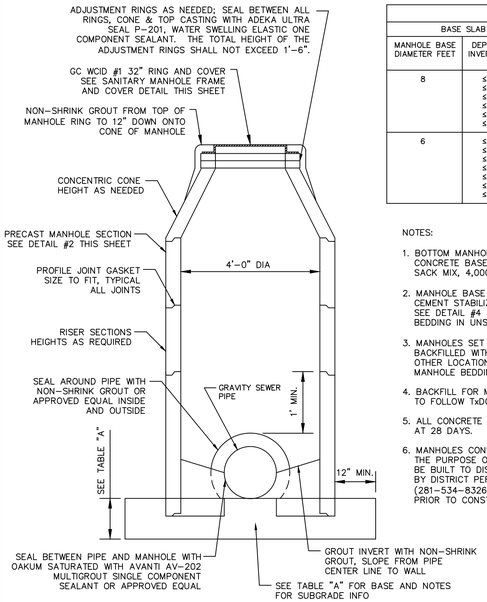
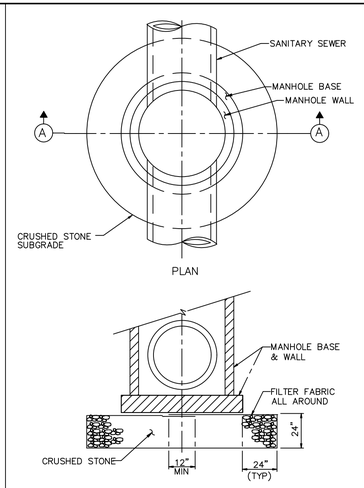


TABLE "A"			
BASE SLAB REINFORCING AND THICKNESS			
MANHOLE BASE DIAMETER FEET	DEPTH TO INVERT (FT)	BASE THICKNESS	REINFORCING BARS EACH WAY TOP AND BOTTOM
8	≤ 20	1'-0"	#6 @ 10"
	≤ 25	1'-2"	#6 @ 8"
	≤ 30	1'-4"	#6 @ 7"
	≤ 40	1'-6"	#6 @ 6"
	≤ 50	1'-8"	#6 @ 6"
	≤ 60	1'-10"	#6 @ 6"
6	≤ 15	1'-0"	#5 @ 8"
	≤ 20	1'-0"	#5 @ 8"
	≤ 25	1'-2"	#5 @ 7"
	≤ 30	1'-2"	#5 @ 6"
	≤ 40	1'-2"	#5 @ 8"
	≤ 50	1'-4"	#6 @ 8"
	≤ 60	1'-4"	#6 @ 7"

NOTES:

1. BOTTOM MANHOLE SECTION TO BE SET 6" INTO CONCRETE BASE WHILE WET. CONCRETE TO BE SIX SACK MIX, 4,000 PSI MIN. AT 28 DAYS.
2. MANHOLE BASE TO BE SET ON 12" MIN COMPACTED CEMENT STABILIZED SAND IN NORMAL CONDITIONS. SEE DETAIL #4 THIS SHEET FOR WET CONDITION BEDDING IN UNSTABLE CONDITIONS.
3. MANHOLES SET WITHIN 3' OF ROADWAY TO BE BACKFILLED WITH CEMENT STABILIZED SAND. ALL OTHER LOCATIONS SEE DETAIL #3 THIS SHEET FOR MANHOLE BEDDING AND BACKFILL REQUIREMENTS.
4. BACKFILL FOR MANHOLES SET NEAR OR IN HIGHWAYS TO FOLLOW TxDOT SPECIFICATIONS.
5. ALL CONCRETE TO BE FIVE SACK MIX, 3,000 PSI MIN. AT 28 DAYS.
6. MANHOLES CONSTRUCTED ON DISTRICT MAINS FOR THE PURPOSE OF PROVIDING PRIVATE SERVICE SHALL BE BUILT TO DISTRICT STANDARDS AND BE INSPECTED BY DISTRICT PERSONNEL. CONTACT DISTRICT ENGINEER (281-534-8326, ENGINEER@GCWCID1TX.GOV) 24 HRS PRIOR TO CONSTRUCTION AND INSPECTION.

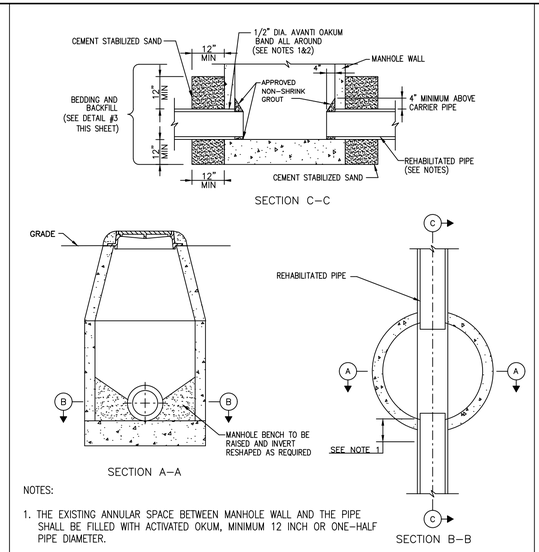
1 SANITARY SEWER PRECAST MANHOLE ON EXISTING LINE WITH POURED BASE



NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR CONTROL AND REMOVAL OF GROUND WATER DURING INSTALLATION OF WET CONDITION BEDDING. THIS MAY BE ACCOMPLISHED BY SUMP PUMPING OR BY MECHANICAL DEWATERING TECHNIQUES SUCH AS WELL POINTING.
2. THE USE OF WET CONDITION BEDDING MUST BE APPROVED IN WRITING BY THE DISTRICT ENGINEER PRIOR TO INSTALLATION.

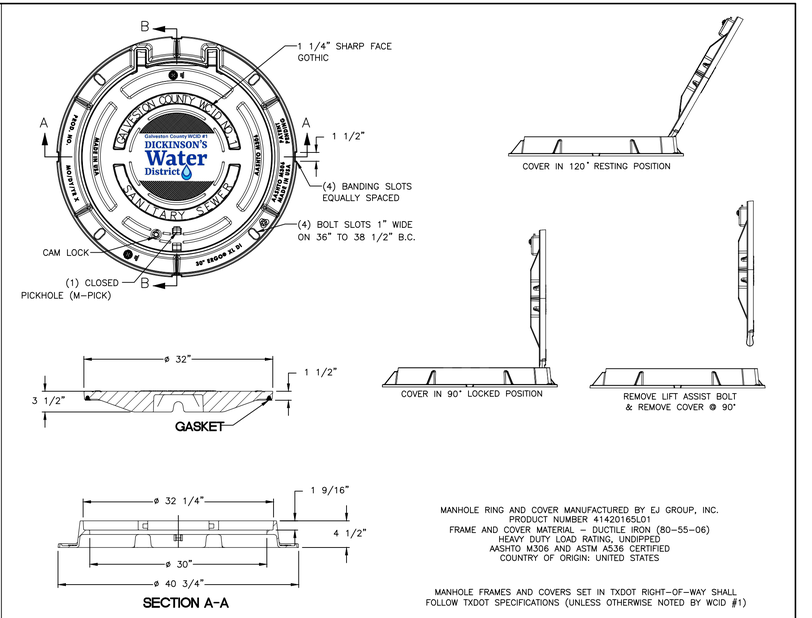
4 WET CONDITION BEDDING FOR PROPOSED MANHOLE DETAIL



NOTES:

1. THE EXISTING ANNULAR SPACE BETWEEN MANHOLE WALL AND THE PIPE SHALL BE FILLED WITH ACTIVATED OKUM, MINIMUM 12 INCH OR ONE-HALF PIPE DIAMETER.
2. ALL OAKUM SHALL BE SATURATED WITH AVANTI AV-202 MULTIGROUT SINGLE COMPONENT SEALANT OR APPROVED EQUAL
3. MANHOLES SHALL BE SEALED ON THE INSIDE AND OUTSIDE AFTER REHABILITATION OF THE SANITARY SEWER IS COMPLETE.

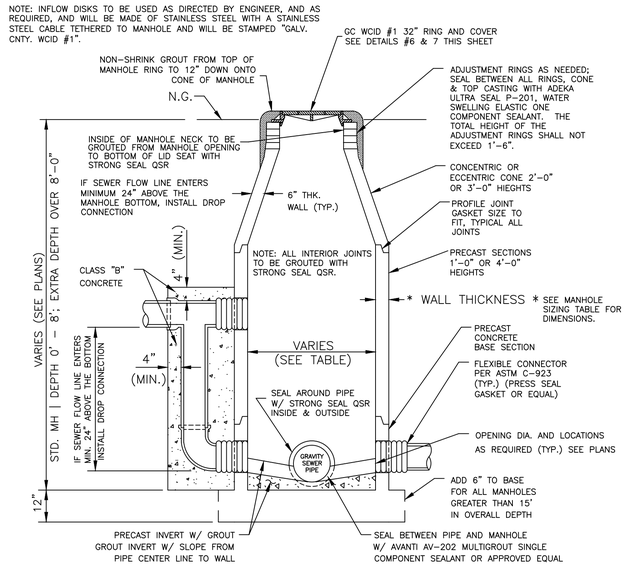
5 SANITARY SEWER SEALING OF PIPE BURSTING AND CURED IN PLACE LINED PIPE AT MANHOLE



MANHOLE RING AND COVER MANUFACTURED BY EJ GROUP, INC.
PRODUCT NUMBER 4142016SL01
FRAME AND COVER MATERIAL – DUCTILE IRON (80-55-06)
HEAVY DUTY LOAD RATING, UNDIPPED
AASHTO M306 AND ASTM A536 CERTIFIED
COUNTRY OF ORIGIN: UNITED STATES

MANHOLE FRAMES AND COVERS SET IN TXDOT RIGHT-OF-WAY SHALL FOLLOW TXDOT SPECIFICATIONS (UNLESS OTHERWISE NOTED BY WCID #1)

6 32" HINGED SANITARY SEWER FRAME & COVER FOR PROPOSED MANHOLES



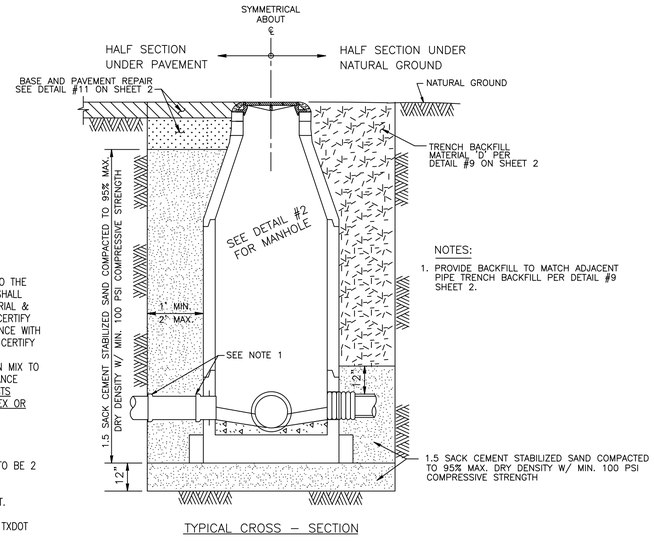
2 STANDARD PRECAST MANHOLE

MANHOLE SIZING TABLE

MANHOLE DIA.	WALL THICKNESS	MAX. PIPE SIZE O.D. From Straight THRU TO 45° Defl.	MAX. PIPE SIZE O.D. if 90° Defl.
4 ft.	6 in.	31 1/2 in.	25 in.
5 ft.	6 in.	42 in.	32 in.
6 ft.	7 in.	51 in.	38 in.
7 ft.	7 in.	59 in.	44 in.
8 ft.	7 in.	73 1/2 in.	50 in.

NOTES:

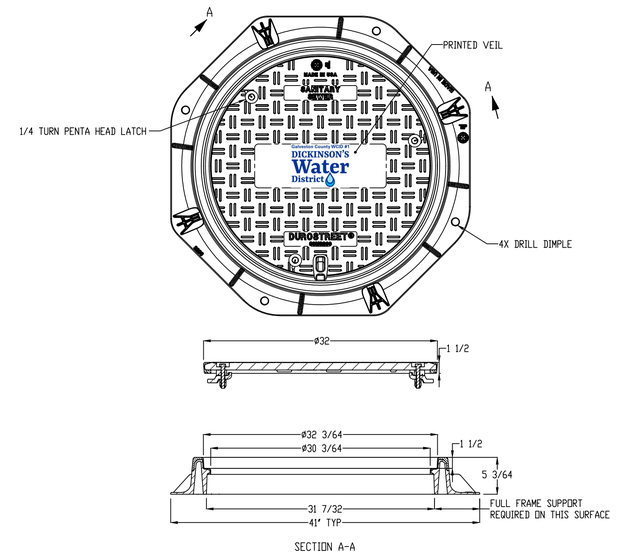
1. PRECAST REINFORCED CONCRETE MANHOLE SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF ASTM DESIGNATION C-478. THE PRECAST SECTIONS SHALL HAVE RUBBER GASKET COMPRESSION JOINTS CONFORMING TO THE MATERIAL & PERFORMANCE REQUIREMENTS OF ASTM C-443. MANUFACTURER SHALL CERTIFY THAT THE PRECAST CONCRETE MANHOLE IS MANUFACTURED IN ACCORDANCE WITH ASTM C-478. ADDITIONALLY, MANUFACTURER SHALL PROVIDE DATA THAT CERTIFY COMPRESSIVE STRENGTH, IMPERMEABILITY, & CHEMICAL RESISTANCE. CERTIFICATION SHALL DOCUMENT CORROSION RESISTANCE OF THE DESIGN MIX TO FLUIDS WITH A pH OF 2 OR LESS IN ACCORDANCE WITH THE PERFORMANCE REQUIREMENTS OF ASTM C267-77. DESIGN MIX SHALL INCLUDE CATALYSTS WHICH GENERATE NON-SOLUBLE CRYSTALLINE FORMATION UTILIZING XYPEX OR APPROVED EQUAL.
2. MANHOLE BASE TO BE SET ON UNDISTURBED SOIL.
3. BACKFILL FOR MANHOLES SET IN ROADWAY OR WITHIN 3' OF ROADWAY TO BE 2 SACK STABILIZED SAND.
4. BACKFILL FOR MANHOLES SET ELSEWHERE TO BE APPROVED BY DISTRICT.
5. BACKFILL FOR MANHOLES SET NEAR OR WITHIN TXDOT ROW TO FOLLOW TXDOT SPECIFICATIONS.
6. CLASS "A" CONCRETE SHALL CONSIST OF 5.25 BAGS OF CEMENT PER CU. YD., 6.25 GALLONS OF WATER PER BAG, AND A MAX. SLUMP OF 2 1/2" TO 4 1/2".
7. CLASS "B" CONCRETE SHALL CONSIST OF 4.25 BAGS OF CEMENT PER CU. YD., 8 GALLONS OF WATER PER BAG, AND A MAX. SLUMP OF 2 1/2" TO 4".



NOTES:

1. PROVIDE BACKFILL TO MATCH ADJACENT PIPE TRENCH BACKFILL PER DETAIL #9 SHEET 2.

3 BEDDING & BACKFILL OF MANHOLES



MANHOLE RING AND COVER MANUFACTURED BY EJ GROUP, INC.
PRODUCT NUMBER NPR22-001876-37975
COVER MATERIAL – 3200 DUROSTREET COMPOSITE
H25 (50,000 LB) LOAD RATING
PROOFLOAD PER AASHTO M306-10
MAX OPERATING TEMPERATURE: 160 °F
COUNTRY OF ORIGIN: UNITED STATES

MANHOLE FRAMES AND COVERS SET IN TXDOT RIGHT-OF-WAY SHALL FOLLOW TXDOT SPECIFICATIONS (UNLESS OTHERWISE NOTED BY WCID #1)

7 ALTERNATE COMPOSITE SANITARY SEWER FRAME & COVER FOR PROPOSED MANHOLES

ISSUE	DATE	DESCRIPTION
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

GALVESTON COUNTY W.C.I.D. #1
STANDARD CONSTRUCTION DETAILS
CITY OF DICKINSON, TEXAS

Galveston County WCID #1 DICKINSON'S Water District

STANDARD SANITARY SEWER DETAILS 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.

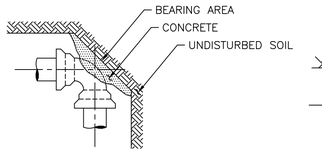
AN ENGINEER WHO INCORPORATES THE DETAILS ON THIS SHEET BECOMES RESPONSIBLE FOR ITS USE IN THE END PRODUCT IN ACCORDANCE WITH RULE 137.33 (b) AND (c) OF THE TEXAS STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS.

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

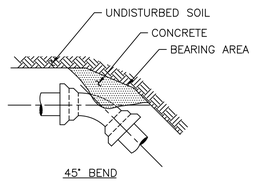
DRAWN BY: M. DAUGHRITY
CHECKED BY: K. MORGAN

SHEET:

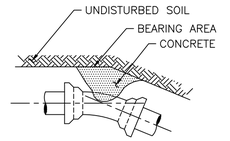
____ OF ____



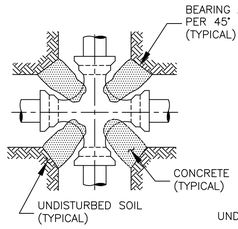
90° BEND



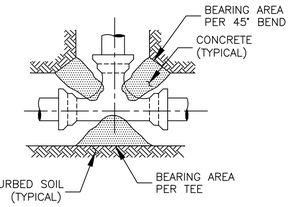
45° BEND



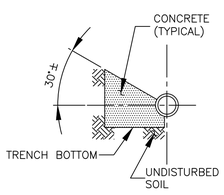
11 1/4° & 22 1/2° BEND



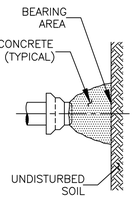
CROSS



TEE



CROSS SECTION



PLUG

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	
PIPE SIZE	BEARING AREA
4"	2 S.F.
6"	4 S.F.
8"	8 S.F.
10"	12 S.F.
12"	16 S.F.
14"	22 S.F.
16"	29 S.F.
18"	36 S.F.
20"	44 S.F.
24"	64 S.F.
30"	100 S.F.
36"	103 S.F.

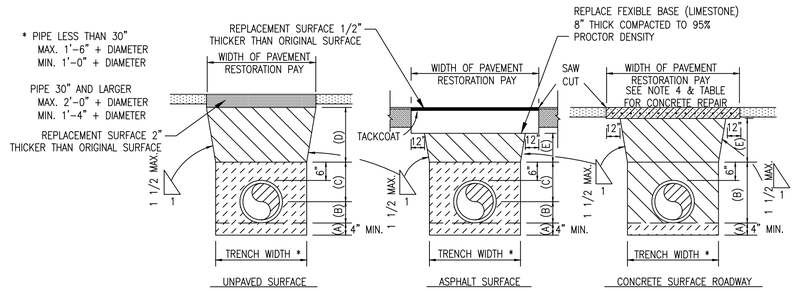
45° BEND	
PIPE SIZE	BEARING AREA
4"	1 S.F.
6"	3 S.F.
8"	4 S.F.
10"	6 S.F.
12"	9 S.F.
14"	12 S.F.
16"	16 S.F.
18"	20 S.F.
20"	24 S.F.
24"	36 S.F.
30"	54 S.F.
36"	72 S.F.

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

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

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

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



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"

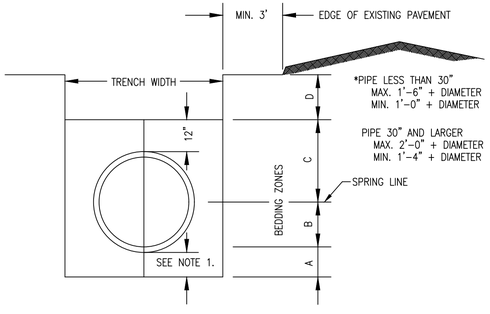
	BEDDING ZONES				
PIPE MATERIAL	A	B	C	D	E
PVC (PRESSURE PIPE)	BS	BS	BS	EF	CS
PVC (GRAVITY PIPE)	BS	AB	AB	EF	CS

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- 2 SACK CEMENT STABILIZED SAND ONLY.

11 PAVEMENT REPLACEMENT DETAIL FOR UTILITY CONSTRUCTION

	BEDDING ZONES			
PIPE MATERIAL	A	B	C	D
PVC (PRESSURE PIPE)	BS	BS	BS	EF
PVC (GRAVITY PIPE)	BS	BS	BS	EF

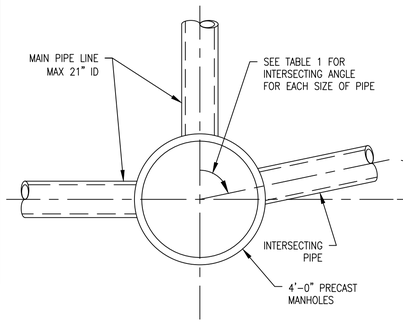
BS- BANKSAND.
AB- AGGREGATE BEDDING.
ES- SELECT EARTH FILL PLACED SAME DAY AS PIPE IS LAID.
EF- EARTH FILL PLACED NEXT DAY (OR LATER) AFTER PIPE IS LAID.
CS- CEMENT STABILIZED SAND.



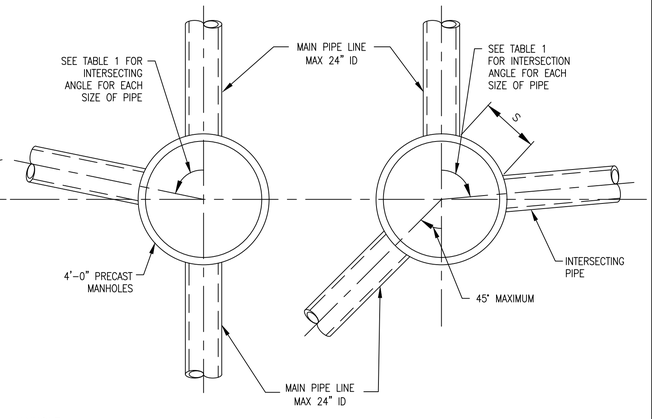
NOTES

1. BEDDING TO BE 1/4 OF PIPE DIAMETER OR 4", WHICHEVER IS GREATERST.
2. ANY EXCAVATION WITHIN 3' OR LESS OF HIGHWAY PAVEMENT TO BE 2 SACK STABILZED 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



MAX 21" ID MAIN PIPE ALLOWED FOR 45° TO 90° DEFLECTION



MAX 24" ID MAIN PIPE ALLOWED FOR STRAIGHT THROUGH TO 45° DEFLECTION

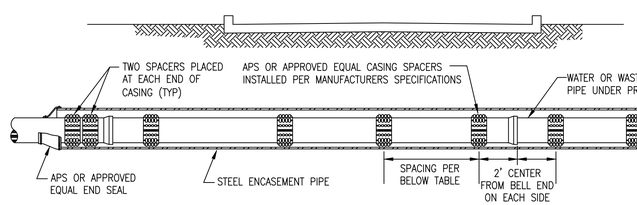
TABLE 1
MIN ANGLE AND INTERSECTING PIPE SIZES FOR A 4'-0" DIA MANHOLE

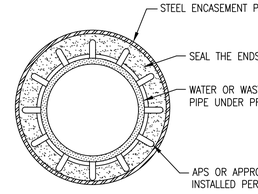
INTERSECTING PIPE SIZE (INCHES)	MIN INTERSECTING ANGLE IN DEGREES FOR VARIOUS MAIN PIPE SIZES INCHES							
	6"	8"	10"	12"	15"	18"	21"	24"
6	55	58	60	65	70	75	80	85
8		60	63	68	73	77	82	87
10			66	71	75	80	85	90
12				75	80	85	90	–
15					85	90	–	–
18						–	–	–
21							–	–
24								–

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

CASING SPACERS SHALL BE USED TO INSTALL THE CARRIER PIPE INSIDE THE ENCASEMENT 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 ENCASEMENT.

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-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

GALVESTON COUNTY W.C.I.D. #1
STANDARD CONSTRUCTION DETAILS
CITY OF DICKINSON, TEXAS

Galveston County WCID #1
DICKINSON'S Water District

STANDARD SANITARY SEWER DETAILS SHEET 2

ENGINEER'S SEAL

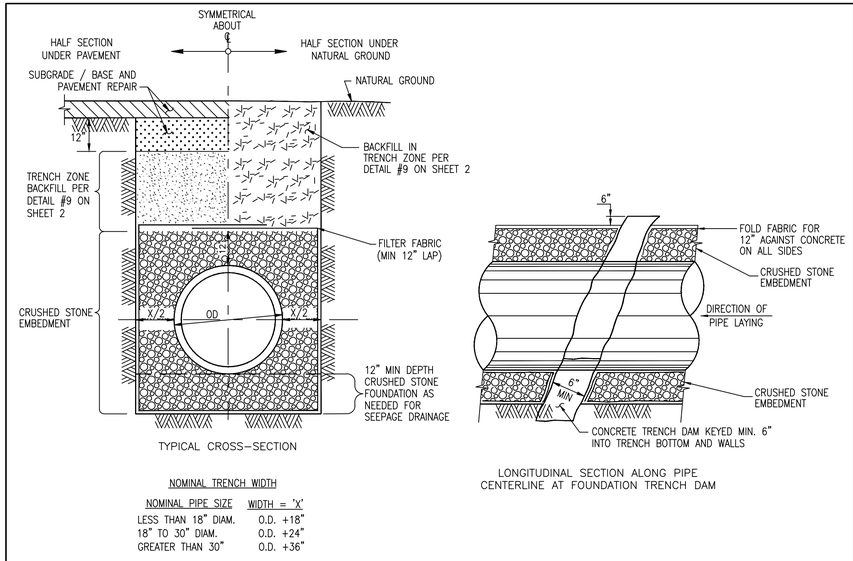
NOTE:
THIS DETAIL SHEET HAS BEEN PREPARED FOR USE ON PROJECTS INCLUDING UTILITIES THAT FALL UNDER THE JURISDICTION OF GALVESTON COUNTY WCID #1.

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.

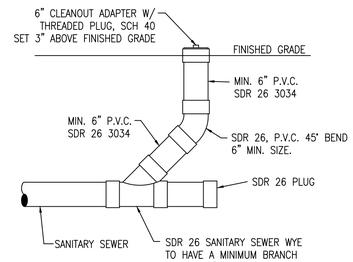
HORIZONTAL: NOT TO SCALE
VERTICAL: NOT TO SCALE

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

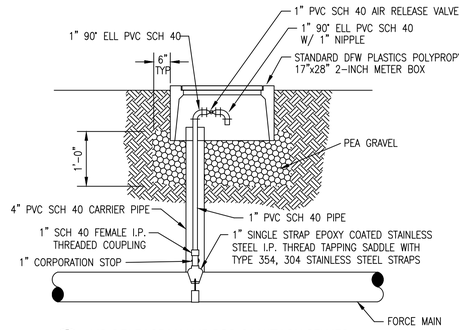
SHEET: ____ OF ____



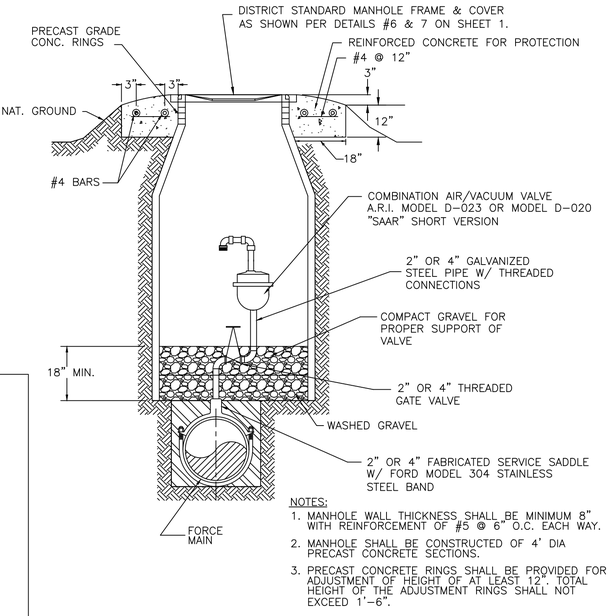
13 WET CONDITION BEDDING FOR PIPE DETAIL



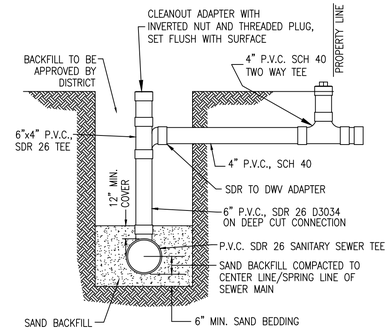
15 END OF SEWER MAIN CLEANOUT DETAIL



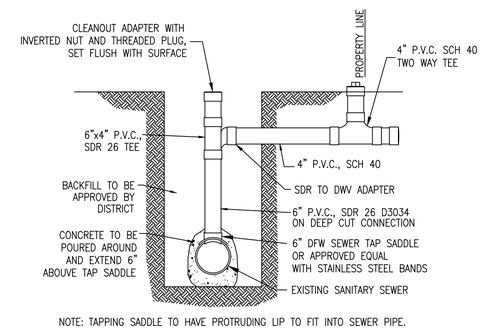
19 AIR RELEASE VALVE FOR SANITARY SEWER FORCE MAIN 3" AND SMALLER



20 AIR RELEASE VALVE FOR SANITARY SEWER FORCE MAIN 4" AND LARGER



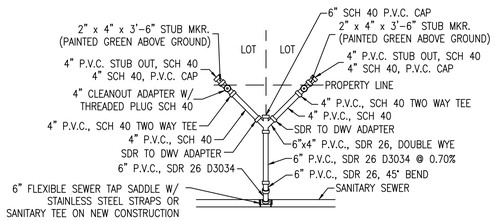
16 DEEP CUT CONNECTION FOR NEW CONSTRUCTION GREATER THAN 8' DEPTH



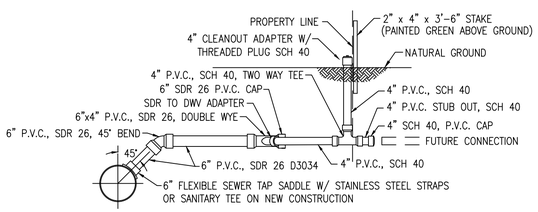
NOTE: TAPPING SADDLE TO HAVE PROTRUDING LIP TO FIT INTO SEWER PIPE.

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

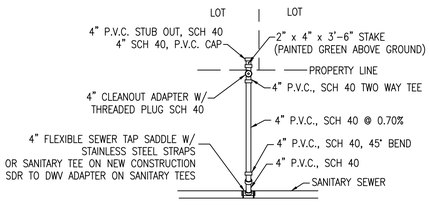
NOTES:
1. CONCRETE TO BE PLACED AROUND TAPPING SADDLES.
2. CLEANOUTS TO BE EXTENDED TO JUST ABOVE NATURAL GROUND OR FINISHED GRADE AT PROPERTY LINE.
3. 2"x4" GREEN STAKE ONLY REQUIRED WHEN CONNECTION IS NOT TO BE MADE WITHIN 30 DAYS.
4. ALL JOINTS TO BE GLUED, INCLUDING CAP. 4" CAP PLUG MAY BE OMITTED IF HOUSE SERVICE IS READY FOR CONNECTION.



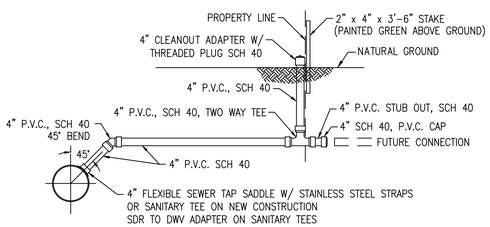
DOUBLE SERVICE CONNECTION (PLAN VIEW)



DOUBLE SERVICE CONNECTION (PROFILE VIEW)

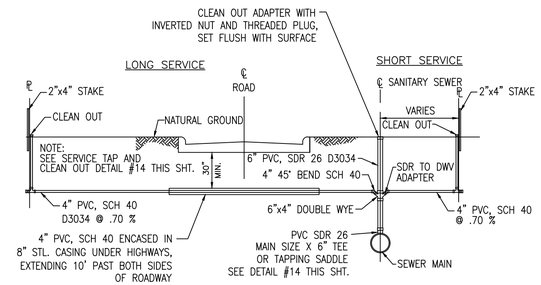


SINGLE SERVICE CONNECTION (PLAN VIEW)



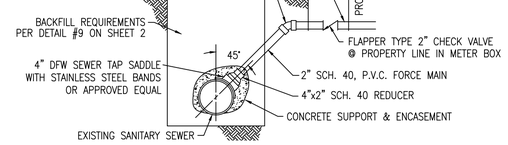
SINGLE SERVICE CONNECTION (PROFILE VIEW)

14 SERVICE TAP & CLEANOUT DETAILS

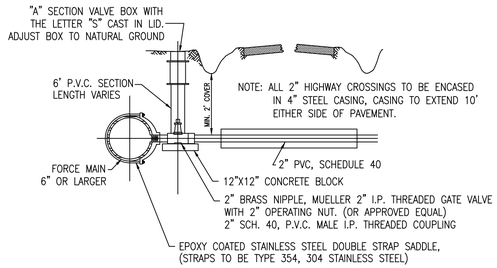


NOTES:
1. STEEL CASING REQUIRED UNDER ALL TXDOT MAINTAINED ROADWAYS. SIZE OF CASING REQUIRED TO BE PER DETAIL #12 ON SHEET 2.
2. SEWER MAINS WITH A DEPTH OF 8' OR MORE WILL BE A CONSIDERED DEEP CUT CONNECTION TO BE INSTALLED PER DETAIL #16 & 17 ON THIS SHEET.
3. REFER TO DETAIL #14 ON THIS SHEET FOR 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.

18 RESIDENTIAL SERVICE CONNECTION PROFILE VIEW



2" FORCE MAIN TAP TO EXISTING SANITARY SEWER



2" FORCE MAIN TAP TO EXISTING LARGER FORCE MAIN

21 2" FORCE MAIN TAP TO EXISTING SANITARY SEWER OR EXISTING LARGER FORCE MAIN

ISSUE	DATE	DESCRIPTION
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

GALVESTON COUNTY W.C.I.D. #1
STANDARD CONSTRUCTION DETAILS
CITY OF DICKINSON, TEXAS

Galveston County WCID #1
DICKINSON'S Water District

STANDARD SANITARY SEWER DETAILS SHEET 3

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.

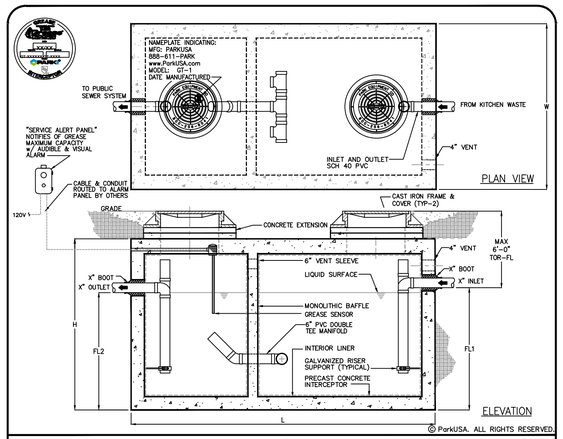
AN ENGINEER WHO INCORPORATES THE DETAILS ON THIS SHEET BECOMES RESPONSIBLE FOR ITS USE IN THE END PRODUCT IN ACCORDANCE WITH RULE 137.33 (b) AND (c) OF THE TEXAS STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS.

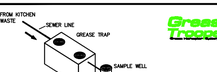
SCALE:
HORIZONTAL: NOT TO SCALE
VERTICAL: NOT TO SCALE

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

SHEET:

____ OF ____





TYPICAL APPLICATIONS INCLUDE COMMERCIAL AND INDUSTRIAL FOOD SERVICE KITCHENS WHERE EXCESSIVE GREASE MAY INTERFERE WITH THE PROPER DRAINAGE OF THE SEWER SYSTEM. THE GREASE INTERCEPTOR IS GENERALLY BURIED BELOW GRADE FOR GRAVITY FLOW SEWER SYSTEMS. A SAMPLE WELL IS UTILIZED ON THE OUTLET SIDE FOR SAMPLING BY THE LOCAL WATER AUTHORITY.

GREASE INTERCEPTOR SCHEDULE

MODEL NO.	CAPACITY USGal	GREASE CAP. (LBS)	EMPTY WT (LBS)	LENGTH L	WIDTH W	HEIGHT H	INLET FL1	OUTLET FL2
GT-500	500	1,200	9,500	7'-10"	4'-4"	4'-6"	3'-3"	3'-0"
GT-750	750	1,700	9,900	7'-10"	4'-4"	5'-0"	4'-5"	4'-2"
GT-1000	1,000	2,300	13,350	8'-8"	5'-0"	6'-0"	4'-9"	4'-6"
GT-1250	1,250	2,900	14,650	9'-2"	5'-8"	6'-0"	4'-9"	4'-6"
GT-1500	1,500	3,500	16,050	9'-2"	5'-8"	7'-0"	5'-9"	5'-6"
GT-2000	2,000	4,600	21,250	9'-0"	6'-0"	8'-0"	5'-9"	6'-6"
GT-2500	2,500	5,700	27,050	13'-0"	7'-0"	7'-0"	5'-9"	5'-6"
GT-3000	3,000	6,800	33,150	13'-0"	7'-0"	8'-0"	6'-9"	6'-6"
GT-3500	3,500	8,000	38,550	13'-0"	7'-0"	8'-6"	7'-3"	7'-0"
GT-4000	4,000	9,300	38,100	16'-0"	8'-6"	7'-0"	5'-9"	5'-6"

OTHER SIZES ARE AVAILABLE. CONTACT US FOR MORE INFORMATION

SPECIFICATIONS

CONCRETE : CLASS I/II CONCRETE WITH DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR, FIRST STAGE OF WALL AND BAFFLE WITH SECTIONAL RISER TO REQUIRED DEPTH. (MONOLITHIC BAFFLE REQUIRED, SLIDE-IN TYPE IS NOT ACCEPTABLE)

REINFORCEMENT: GRADE 60 REINFORCED WITH STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

C.I. CASTINGS: MANHOLE FRAMES, COVERS OR GRATES ARE MANUFACTURED OF GREY CAST IRON CONFORMING TO ASTM A48 CLASS 30. MANHOLE SHALL BE NOMINAL 24 INCH DIAMETER AND BE TRAFFIC DUTY.

ENGINEERING DATA

THE GREASE INTERCEPTOR IS STRUCTURALLY & HYDRAULICALLY ENGINEERED TO CONFORM TO UPC/IPC AND REGIONAL PLUMBING CODES RECOMMENDED IN MOST CITIES. CONSULT WITH LOCAL AUTHORITIES FOR SPECIFIC APPLICATION REQUIREMENTS.

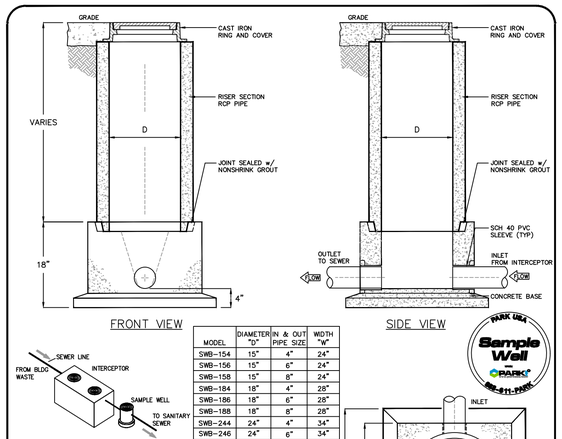
SHOP DRAWINGS SHALL INCLUDE COMPLETE STRUCTURAL & BOUYANCY CALCULATIONS CERTIFIED BY A LICENSED PROFESSIONAL ENGINEER UPON REQUEST.

CONSULT WITH PARKUSA COMPANY FOR EXACT EXCAVATION DIMENSIONS & SHIPPING INFORMATION.

888.611.PARK
www.parkusa.com
PARK USA
DESIGN FOR WATER

GREASE INTERCEPTOR SERIES GT
500 THRU 4000 GALLON CAPACITY

PM	DRN	ENG	DWG. NO.	REV.
DATE 06/18			GT-1	A



MODEL	DIAMETER "D"	IN & OUT PIPE SIZE	WIDTH "W"
SWB-154	15"	4"	24"
SWB-156	15"	6"	24"
SWB-158	15"	8"	24"
SWB-184	18"	4"	28"
SWB-186	18"	6"	28"
SWB-188	18"	8"	28"
SWB-244	24"	4"	34"
SWB-246	24"	6"	34"
SWB-248	24"	8"	34"

NOTES

1. SAMPLING WELL MUST BE INSTALLED UNDER A SEPARATE PLUMBING PERMIT.
2. USE 15" FOR INSTALLATION 6'-0" DEEP AND LESS.
3. USE 24" FOR INSTALLATION GREATER THAN 6'-0" DEEP. (STD RING AND M.H. COVER REQUIRED)
4. SAMPLING WELL MUST BE SET IN A CIRCULAR OR SQUARE CONCRETE PAD (1'-0" GREATER THAN OUTSIDE DIAMETER OF PIPE.)
5. INSIDE INSTALLATION NOT PERMITTED, WHERE OUTSIDE INSTALLATION IS POSSIBLE.
6. INSTALLATION INSIDE BLDG MUST BE POURED IN PLACE (15"MIN) NO CONCRETE PIPE IS PERMITTED, (AIR-TIGHT COVER REQUIRED.)
7. LAWN INSTALLATION MUST BE 4" ABOVE FINISHED GRADE.
8. DRIVE & SIDEWALK INSTALLATION MUST BE BROUGHT TO FINISHED GRADE
9. TO BE INSTALLED ON PRIVATE PROPERTY, IN AN ACCESSIBLE LOCATION TO CITY PERSONNEL.

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SPECIFICATIONS

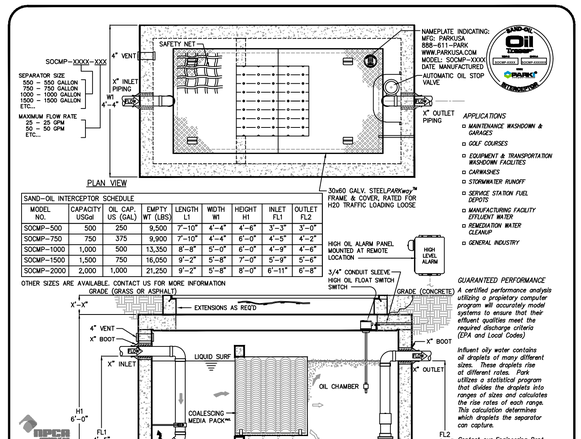
CONCRETE: Class I/II concrete with of design strength of 4500 PSI at 28 days. Unit is of monolithic construction at floor and first stage of wall with sectional riser to required depth.

C.I. CASTINGS: Cast iron rings and grates are manufactured of grey cast iron conforming to ASTM A48 Class 30, Heavy-Duty AASHTO H20/HL93

888.611.PARK
www.parkusa.com
PARK USA
DESIGN FOR WATER

SAMPLE WELL BASIN

SCALE NONE	DWG. NO.	REV.
DATE 2018	SWB-1	A



SAND-OIL INTERCEPTOR SCHEDULE

MODEL NO.	CAPACITY USGal	OIL CAP. US (GAL)	EMPTY WT (LBS)	LENGTH L1	WIDTH W1	HEIGHT H1	INLET FL1	OUTLET FL2
SOCMP-500	500	250	9,500	7'-10"	4'-4"	4'-6"	3'-3"	3'-0"
SOCMP-750	750	375	9,900	7'-10"	4'-4"	6'-0"	4'-5"	4'-2"
SOCMP-1000	1,000	500	13,350	8'-8"	5'-0"	6'-0"	4'-9"	4'-6"
SOCMP-1500	1,500	750	16,050	9'-2"	5'-8"	7'-0"	5'-9"	5'-6"
SOCMP-2000	2,000	1,000	21,250	9'-2"	5'-8"	8'-0"	6'-11"	6'-8"

OTHER SIZES ARE AVAILABLE. CONTACT US FOR MORE INFORMATION

GUARANTEED PERFORMANCE FOR CODE MAXIMUM OIL CONCENTRATION (SANITARY SEWER 400 PPM, STORM SEWER 15 PPM)

APPLICATIONS
- MAINTENANCE WASHDOWN & GARAGES
- GOLF COURSES
- EQUIPMENT & TRANSPORTATION WASHDOWN FACILITIES
- CARWASHES
- STORMWATER RUNOFF
- SERVICE STATION FUEL DEPOTS
- MANUFACTURING FACILITY EFFLUENT WATER
- REMEDIATION WATER CLEANUP
- GENERAL INDUSTRY

GUARANTEED PERFORMANCE
A certified performance analysis utilizing a proprietary computer program will accurately model systems to ensure that their effluent qualities meet the required discharge criteria (EPA and Local Codes)

Influent oily water contains all droplets of many different sizes. These droplets rise at different rates. Park utilizes a statistical program that divides the droplets into ranges of sizes and calculates the rise rates of each range. This calculation determines which droplets the separator can capture.

Contact our Engineering Dept. @ 888-611-PARK for a free performance evaluation.

- BITUMASTIC EXTERIOR

Oil Trooper

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SPECIFICATIONS

CONCRETE: CLASS I/II CONCRETE WITH DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.

REINFORCEMENT: GRADE 60 REINFORCED WITH STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

MATERIALS: ACCESS FRAME & COVER SHALL BE FABRICATED WITH MIN. 1/4" THICK NONSKID FLOOR PLATE, BOLTDOWN, & LIFTING HANDLES. ALL MATERIALS TO BE CORROSION RESISTANT.

ENGINEERING DATA

INTERCEPTOR IS STRUCTURALLY AND HYDRAULICALLY ENGINEERED. NOMINAL TOTAL LIQUID CAPACITY AND OIL HOLDING CAPACITY AS INDICATED. RECOMMENDED FOR FLOW RATES OF 5 TO 200 GPM (CONSULT PARK FOR PROPER SIZING). MANUFACTURER SHALL SUBMIT PERFORMANCE CALCULATIONS FOR OIL & WATER SEPARATION CERTIFIED BY A LICENSED PROFESSIONAL ENGINEER UPON REQUEST. FIELD EXCAVATION AND PREPARATION SHALL BE COMPLETED PRIOR TO DELIVERY OF INTERCEPTOR.

REV	DATE	BY	DESCRIPTION
A			

PROJECT: .
CUSTOMER: .
ENGINEER: .
ORDER #: . PROJ #: .
DATE: . LOCATION: .

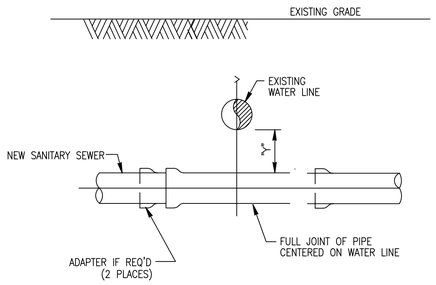
www.parkusa.com 888-611-PARK

SAND/OIL INTERCEPTOR SOCMP
MODEL SOCMP 500 THRU 2000 GAL

PM PC	DRN	ENG	DWG. NO.	REV.
DATE .			SOCMP-1	.

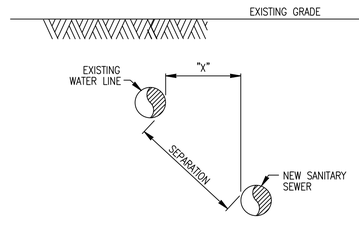
NOTE:
THESE PARK EQUIPMENT DETAILS ARE A BASIC COLLECTION OF DESIGNS ALLOWED BY THE WATER DISTRICT. IF SPECIFIC DETAILS (NOT SHOWN HERE) ARE REQUIRED FOR THE CONSTRUCTION OF A PROJECT, THEY SHOULD BE OBTAINED FROM THE SUPPLYING EQUIPMENT COMPANY OR DESIGNED BY THE ENGINEER OF RECORD AND SUBMITTED TO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

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



NEW SANITARY SEWER CROSSING EXISTING WATER LINE

INSTALLATION REQUIREMENTS
1. IF "Y" IS GREATER THAN 6" AND "Y" IS LESS THAN 2', USE MINIMUM 18 FT JOINT OF PRESSURE-RATED PIPE PER COH STANDARD DRAWING.
2. IF "Y" IS GREATER THAN 2' AND "Y" IS LESS THAN 9', USE GRAVITY SEWER PIPE IN CEMENT-STABILIZED SAND EMBEDMENT.
3. IF "Y" IS GREATER THAN 9', USE STANDARD EMBEDMENT AND NORMAL JOINT SPACING.



NEW SANITARY SEWER PARALLEL TO EXISTING WATER LINE

INSTALLATION REQUIREMENTS
1. IF "X" IS LESS THAN 9'AND SEPARATION IS LESS THAN 9', USE PRESSURE-RATED PIPE MH TO MH. "X" MUST BE AT LEAST 4 FT.
2. IF "X" IS GREATER THAN OR EQUAL TO 4' AND SEPARATION IS 9' OR GREATER, USE STANDARD PIPE AND EMBEDMENT.

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.W.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: ANY SIZE AND TYPE	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

NOTES:
1. 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.
2. WHEN PRESSURE-RATED PIPE IS REQUIRED, PROVIDE PIPE WITH MINIMUM 150 PSI PRESSURE RATING.
3. 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.
4. INSTALL FORCE MAINS SAME AS FOR GRAVITY SEWER, USING SPECIFIED PRESSURE PIPE.
5. "Y" MUST ALWAYS BE GREATER THAN OR EQUAL 6".
6. "X" MUST BE GREATER THAN OR EQUAL TO 4 FT.
7. ALTERNATIVES MAY BE SHOWN ON THE DRAWINGS OR DESCRIBED IN THE SPECIFICATIONS.
8. 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

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
ISSUE	DATE	DESCRIPTION

GALVESTON COUNTY W.C.I.D. #1
STANDARD CONSTRUCTION DETAILS
CITY OF DICKINSON, TEXAS

Galveston County WCID #1
DICKINSON'S Water District

STANDARD SANITARY SEWER DETAILS
SHEET 4

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.

HORIZONTAL: NOT TO SCALE
VERTICAL: NOT TO SCALE

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

SHEET: ____ OF ____