

FOR TRENCH CONSTRUCTED IN ROCK, INSTALL CRUSHED STONE OR WASHED GRAVEL, 3/4" TO 1/4", FROM 6" BELOW BOTTOM OF PIPE TO 6" ABOVE TOP OF PIPE.

FOR UNSTABLE TRENCH BOTTOM, PROVIDE MIN 8" OF 1 1/2" TO #4 SIZE CRUSHED STONE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.

* SEWER FORCEMAIN CONSTRUCTION REQUIRES TRACER WIRE (12 GAUGE) PLACED ABOVE PIPE

DISPOSE OF EXCESS EXCAVATED MATERIAL OFF SITE

SEWER MAIN TRENCH IN UNPAVED AREAS

N.T.S.



BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

SECTION:

SEWER DETAILS

DESCRIPTION:

SEWER TRENCH (NON-PAVED AREA)

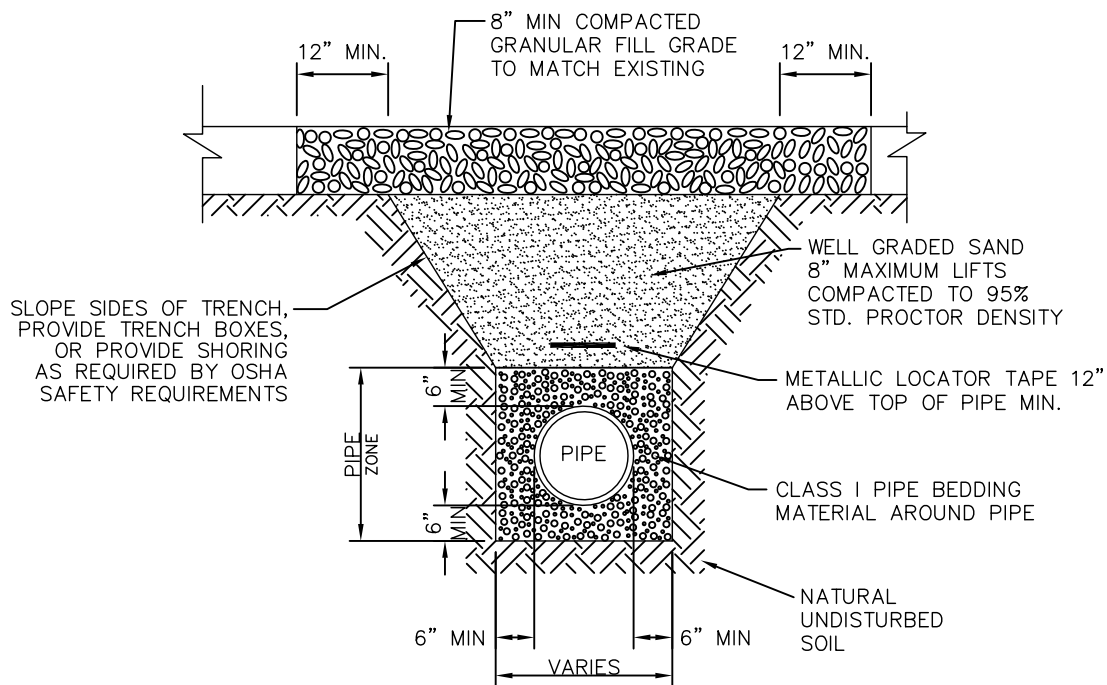
ISSUE DATE:

SEPTEMBER 2015

REVISION DATE:

SHEET:

S-1



FOR TRENCH CONSTRUCTED IN ROCK, INSTALL CRUSHED STONE OR WASHED GRAVEL, 3/4" TO 1/4", FROM 6" BELOW BOTTOM OF PIPE TO 6" ABOVE TOP OF PIPE.

FOR UNSTABLE TRENCH BOTTOM, PROVIDE MIN 8" OF 1 1/2" TO #4 SIZE CRUSHED STONE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.

* SEWER FORCEMAIN CONSTRUCTION REQUIRES TRACER WIRE (12 GAUGE) PLACED ABOVE PIPE

DISPOSE OF EXCESS EXCAVATED MATERIAL OFF SITE

SEWER MAIN TRENCH IN GRAVEL SHOULDER OR DRIVEWAY

N.T.S.



BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

SECTION:

SEWER DETAILS

DESCRIPTION:

SEWER TRENCH
(IN GRAVEL SHOULDER OR DRIVEWAY)

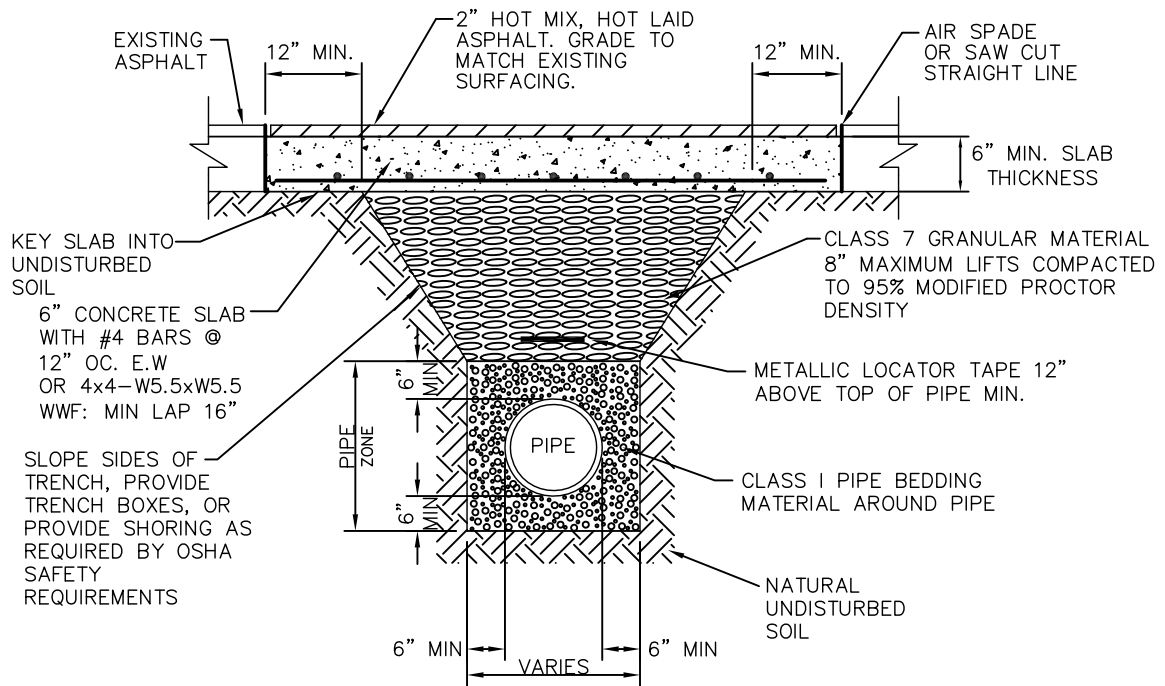
ISSUE DATE:

SEPTEMBER 2015

REVISION DATE:

SHEET:

S-2



FOR TRENCH CONSTRUCTED IN ROCK, INSTALL CRUSHED STONE OR WASHED GRAVEL, 3/4" TO 1/4", FROM 6" BELOW BOTTOM OF PIPE TO 6" ABOVE TOP OF PIPE.

FOR UNSTABLE TRENCH BOTTOM, PROVIDE MIN 8" OF 1 1/2" TO #4 SIZE CRUSHED STONE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.

* SEWER FORCEMAIN CONSTRUCTION REQUIRES TRACER WIRE (12 GAUGE) PLACED ABOVE PIPE

DISPOSE OF EXCESS EXCAVATED MATERIAL OFF SITE

SEWER MAIN TRENCH UNDER ASPHALT

N.T.S.



BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

SECTION:

SEWER DETAILS

DESCRIPTION:

SEWER TRENCH (UNDER ASPHALT)

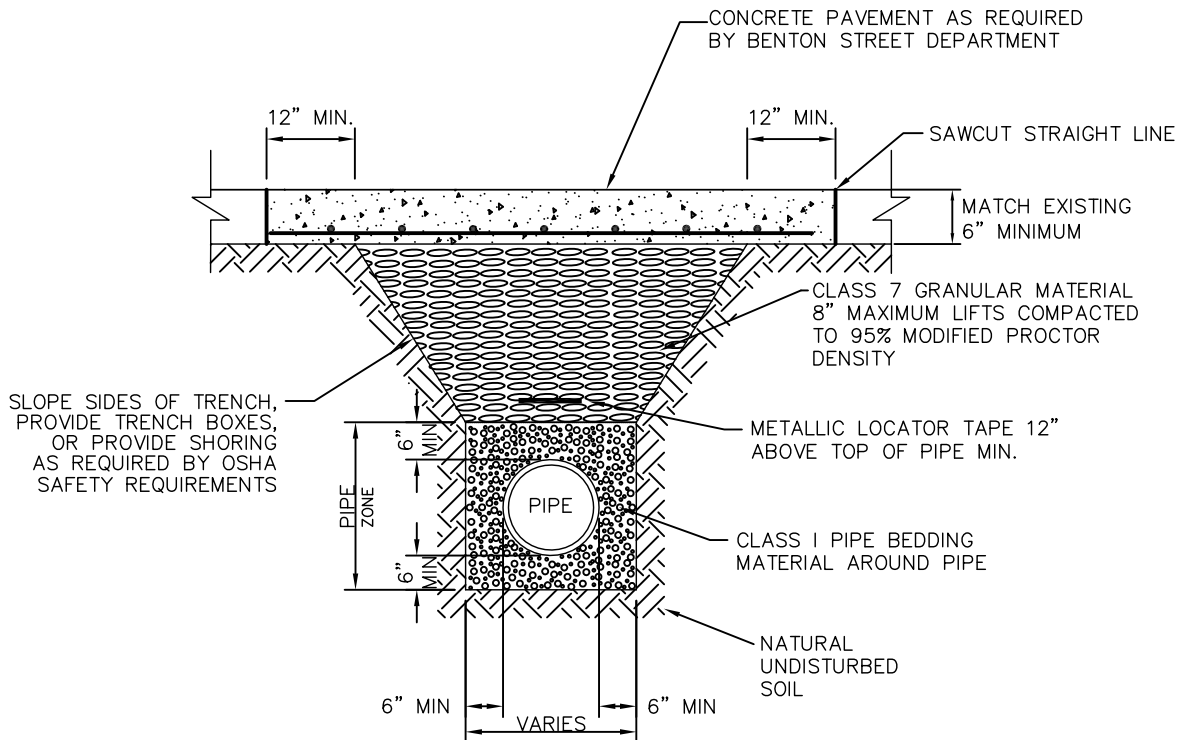
ISSUE DATE:

SEPTEMBER 2015

REVISION DATE:

SHEET:

S-3



FOR TRENCH CONSTRUCTED IN ROCK, INSTALL CRUSHED STONE OR WASHED GRAVEL, 3/4" TO 1/4", FROM 6" BELOW BOTTOM OF PIPE TO 6" ABOVE TOP OF PIPE.

FOR UNSTABLE TRENCH BOTTOM, PROVIDE MIN 8" OF 1 1/2" TO #4 SIZE CRUSHED STONE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.

* SEWER FORCEMAIN CONSTRUCTION REQUIRES TRACER WIRE (12 GAUGE) PLACED ABOVE PIPE

DISPOSE OF EXCESS EXCAVATED MATERIAL OFF SITE

SEWER MAIN TRENCH UNDER CONCRETE

N.T.S.



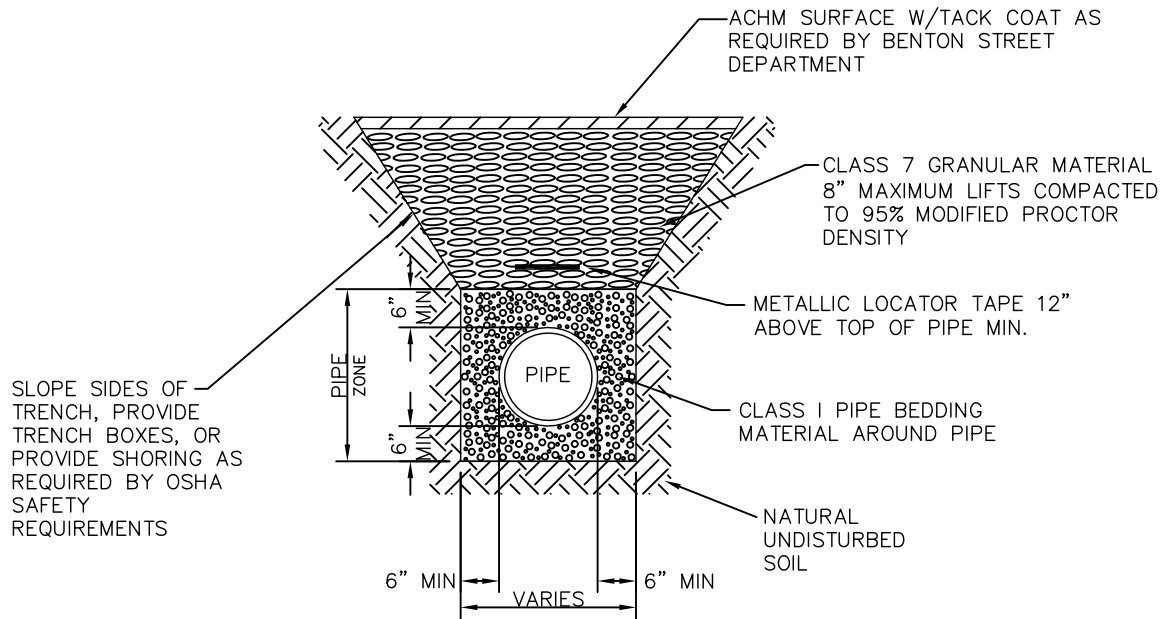
BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

SECTION: SEWER DETAILS
DESCRIPTION: SEWER TRENCH (UNDER CONCRETE)

ISSUE DATE: SEPTEMBER 2015
REVISION DATE:

SHEET:

S-4



FOR TRENCH CONSTRUCTED IN ROCK, INSTALL CRUSHED STONE OR WASHED GRAVEL, 3/4" TO 1/4", FROM 6" BELOW BOTTOM OF PIPE TO 6" ABOVE TOP OF PIPE.

FOR UNSTABLE TRENCH BOTTOM, PROVIDE MIN 8" OF 1 1/2" TO #4 SIZE CRUSHED STONE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.

* SEWER FORCEMAIN CONSTRUCTION REQUIRES TRACER WIRE (12 GAUGE) PLACED ABOVE PIPE

DISPOSE OF EXCESS EXCAVATED MATERIAL OFF SITE

SEWER MAIN TRENCH PRIOR TO ROADWAY CONSTRUCTION

N.T.S.



BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

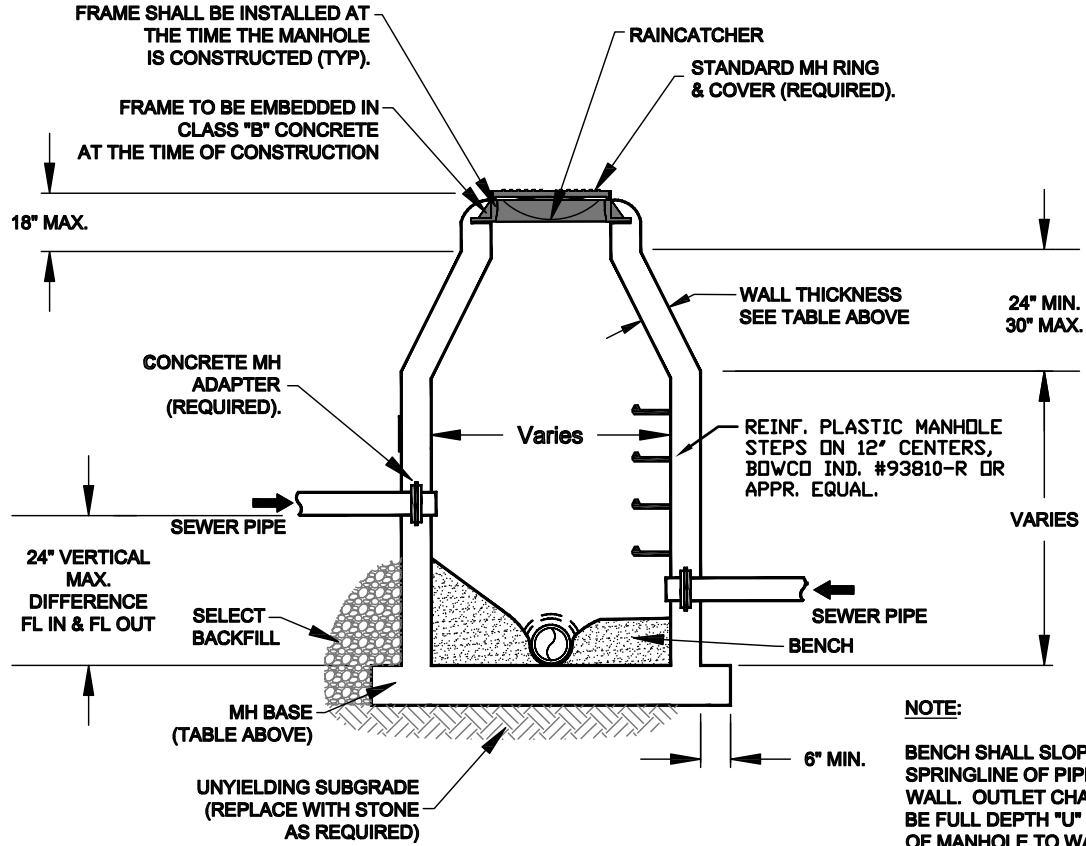
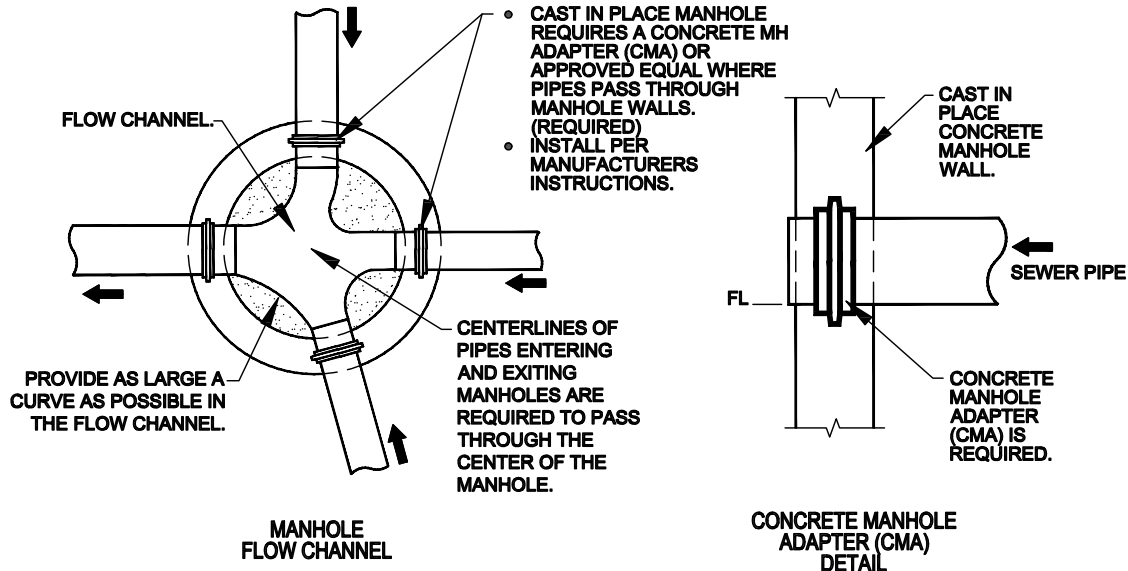
SECTION:	SEWER DETAILS
DESCRIPTION:	SEWER TRENCH (PRIOR TO ROADWAY CONSTRUCTION)

ISSUE DATE:	SEPTEMBER 2015
REVISION DATE:	

SHEET:	S-5
--------	-----

Inside Diameter of Manhole	Minimum Wall Thickness	Base Thickness	Minimum Ring & Cover Size
4' DIA	6"	6"	24" (< or Equal to 24" Pipes)
5' DIA	8"	8"	
6' DIA	8"	12"	36" (> 24" Pipes)

MANHOLE INFORMATION TABLE



CAST-IN-PLACE MANHOLE



BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

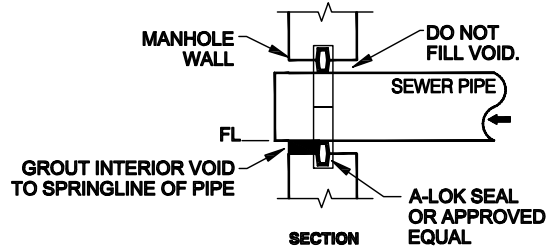
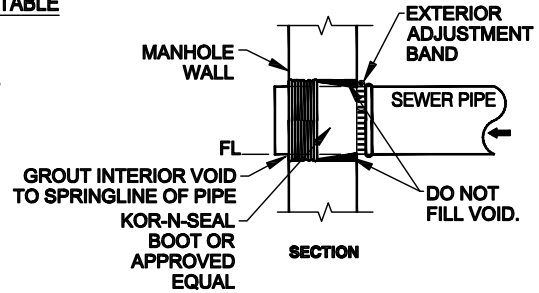
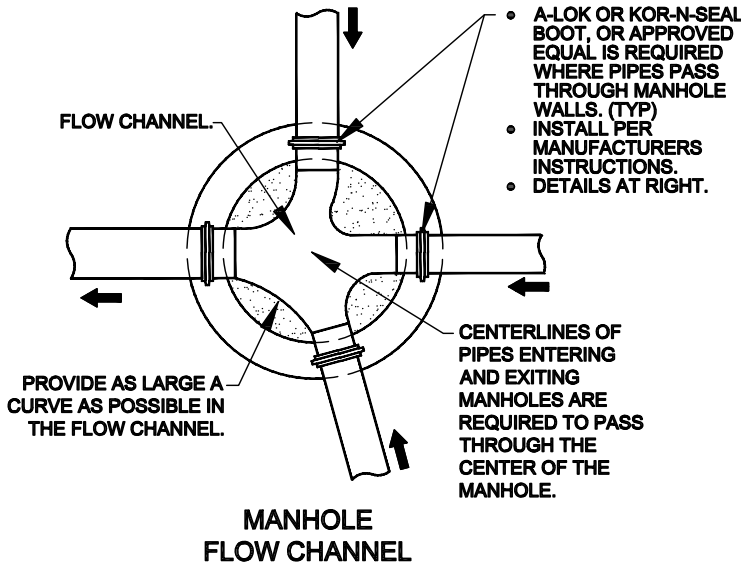
SECTION: SEWER DETAILS
DESCRIPTION: CAST-IN-PLACE MANHOLE

ISSUE DATE: SEPTEMBER 2015
REVISION DATE:

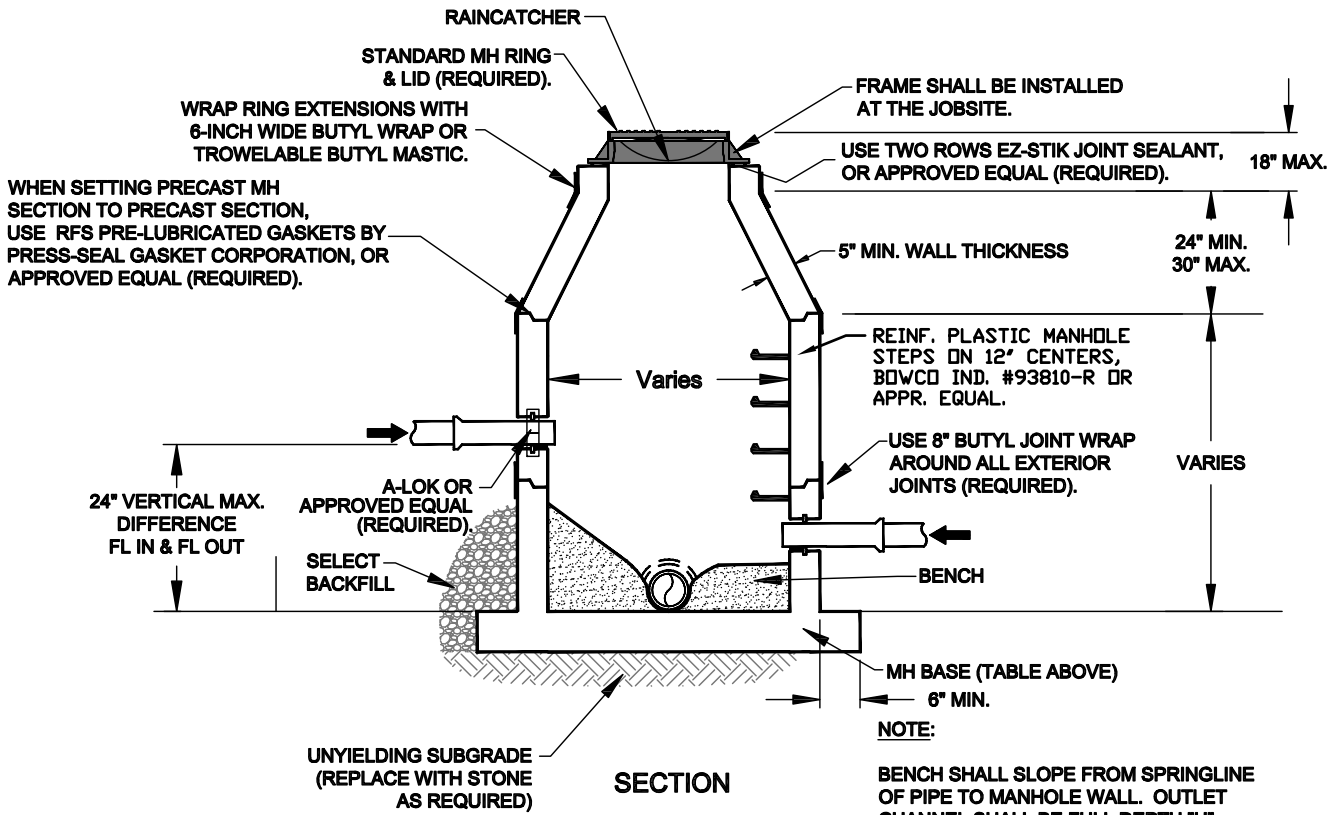
SHEET: S-6

Inside Diameter of Manhole	Minimum Wall Thickness	Base Thickness	Minimum Ring & Cover Size
4' DIA	5"	6"	24" (< or Equal to 24" Pipes)
5' DIA	7"	8"	
6' DIA	7"	8"	36" (> 24" Pipes)

MANHOLE INFORMATION TABLE



CONNECTION DETAILS



PRECAST MANHOLE



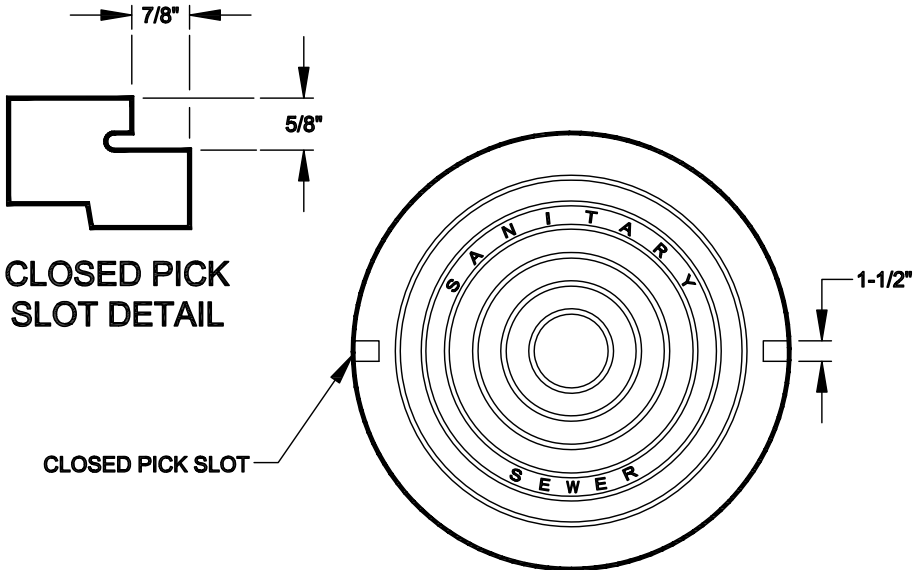
BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

SECTION: SEWER DETAILS
DESCRIPTION: PRECAST MANHOLE

ISSUE DATE: SEPTEMBER 2015
REVISION DATE:

SHEET: S-7

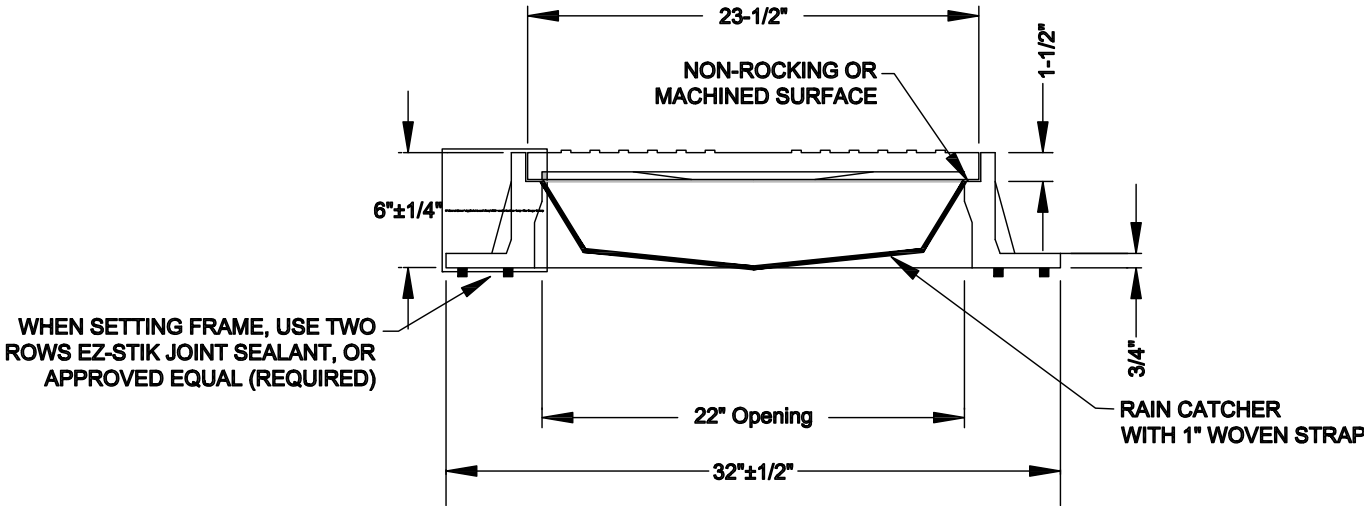
ALL CASTINGS SHALL BE "MADE IN USA"



COVER DETAIL

- 1. MINIMUM WEIGHT OF RING: 100 POUNDS
- 2. MINIMUM WEIGHT OF COVER: 110 POUNDS
- 3. COVERS ARE FURNISHED WITH TWO CLOSED PICK SLOTS.
- 4. CASTINGS SHALL BE "MADE IN USA"

* DIMENSIONAL TOLERANCES SHALL NOT EXCEED 1/16 INCH PER FOOT



FRAME AND COVER DETAIL

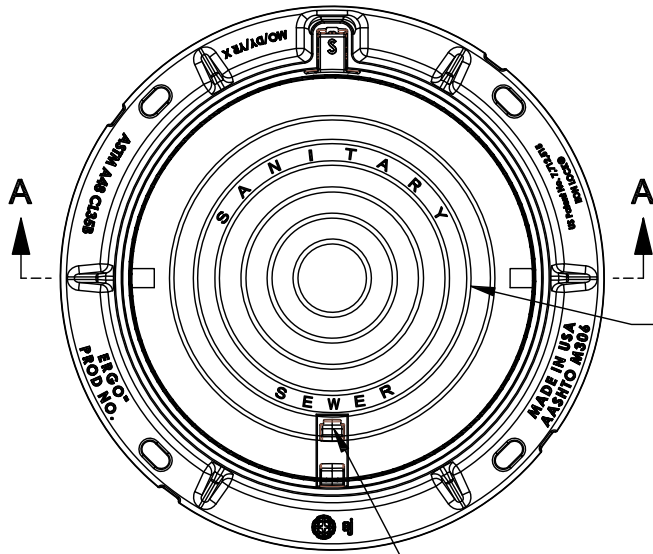


BENTON UTILITIES
 1827 Dale Ave.
 Benton, AR 72015
 Phone: (501) 776-5984

SECTION:	SEWER DETAILS
DESCRIPTION:	MANHOLE FRAME AND COVER

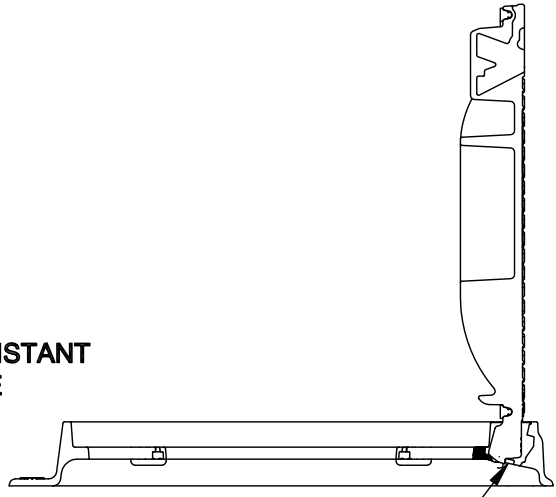
ISSUE DATE:	SEPTEMBER 2015
REVISION DATE:	

SHEET:
 S-8



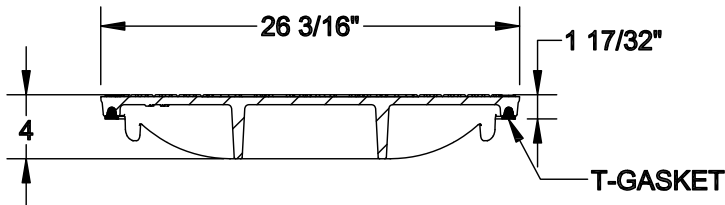
SLIP RESISTANT SURFACE

MPIC® MULTI-TOOL PICKBAR

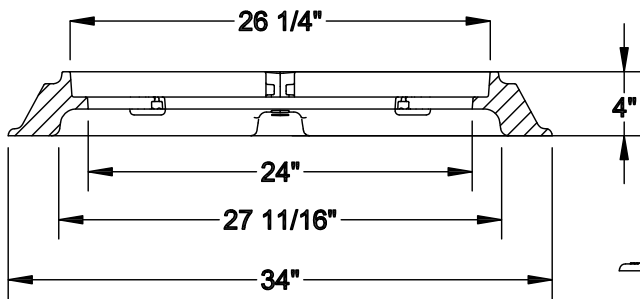


EPDM PLUG TO REDUCE INFILTRATION

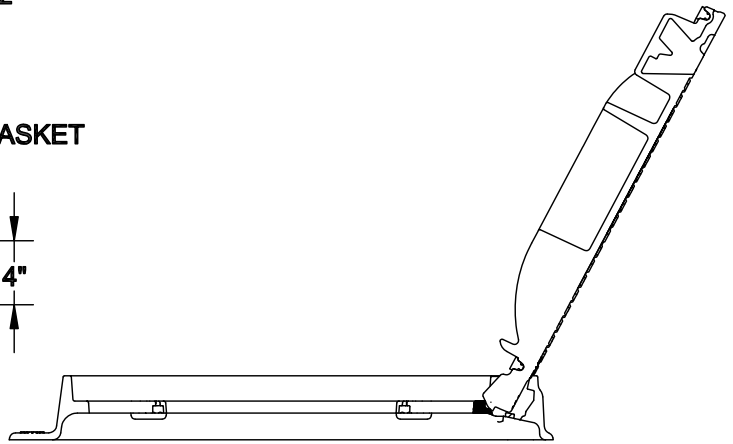
SAFETY LOCK@90°



T-GASKET



SECTION A-A



FULLY OPENED@120°

HINGED FRAME AND COVER DETAIL

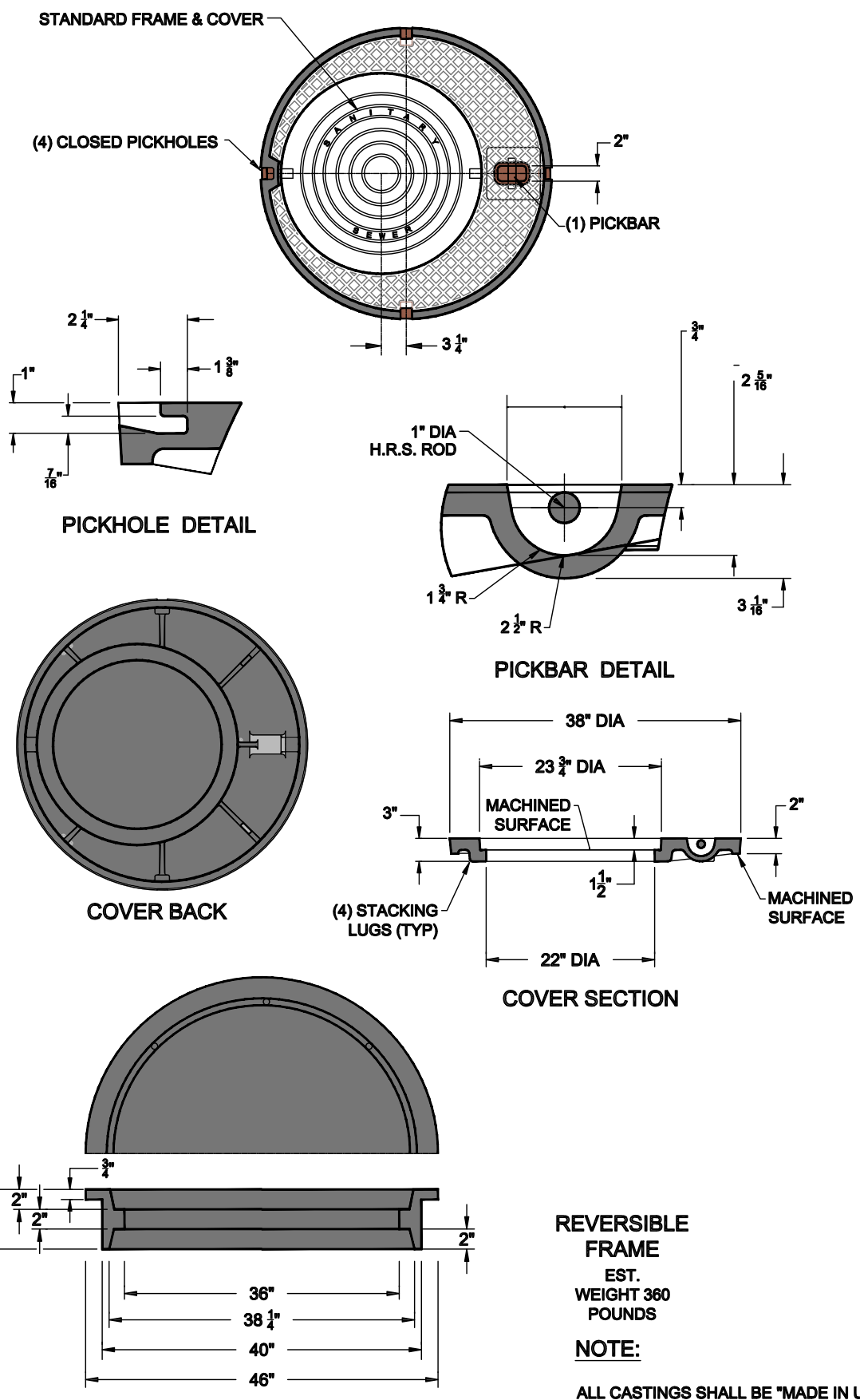


BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

SECTION: SEWER DETAILS
DESCRIPTION: HINGED MANHOLE FRAME AND COVER

ISSUE DATE: SEPTEMBER 2015
REVISION DATE:

SHEET: S-9



**REVERSIBLE
FRAME**
EST.
WEIGHT 360
POUNDS

NOTE:

ALL CASTINGS SHALL BE "MADE IN USA"

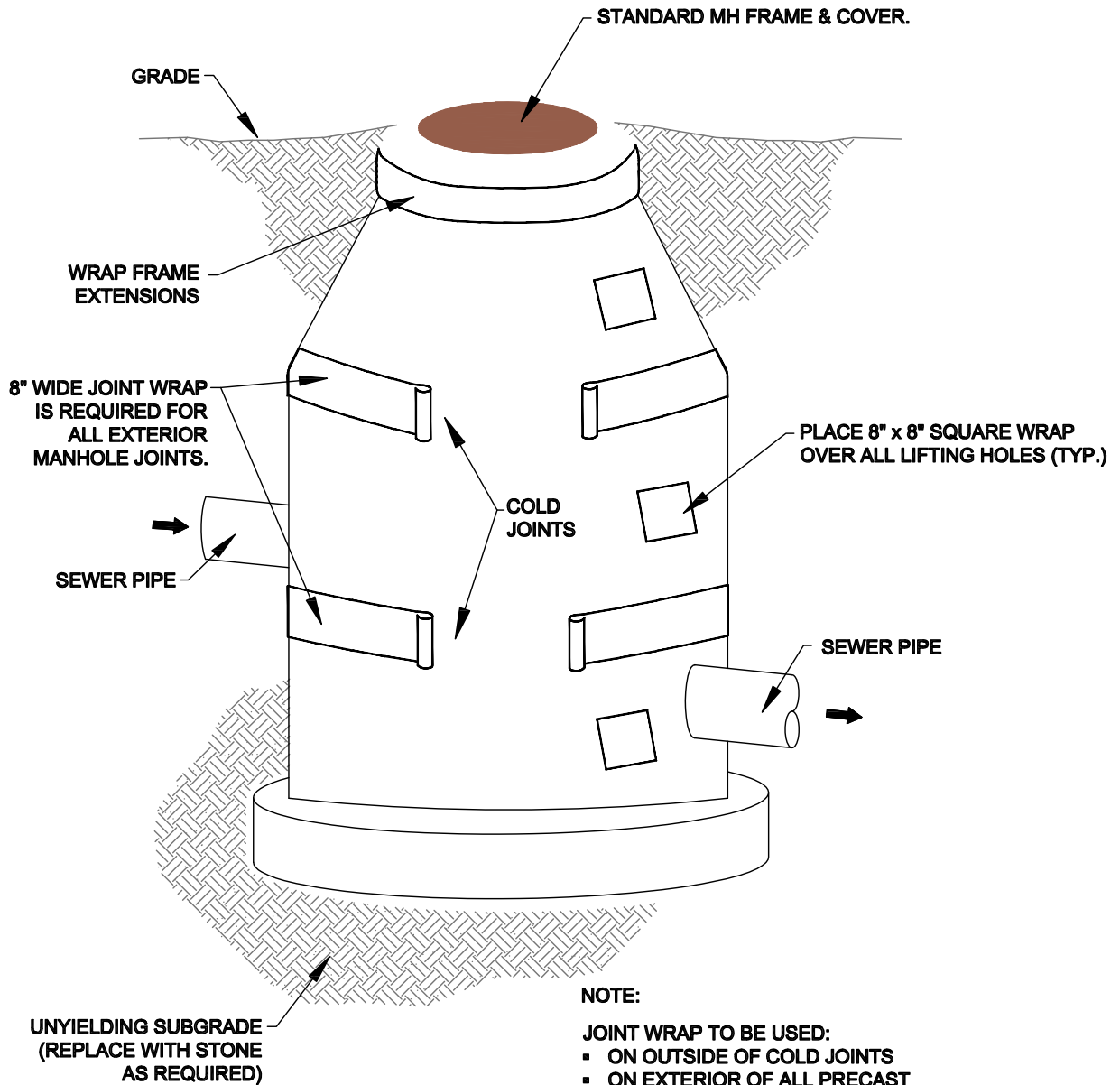


BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

SECTION: SEWER DETAILS
DESCRIPTION: 36-INCH MANHOLE FRAME AND COVER

ISSUE DATE:
SEPTEMBER 2015
REVISION DATE:

SHEET:
S-10



MANHOLE JOINT WRAP

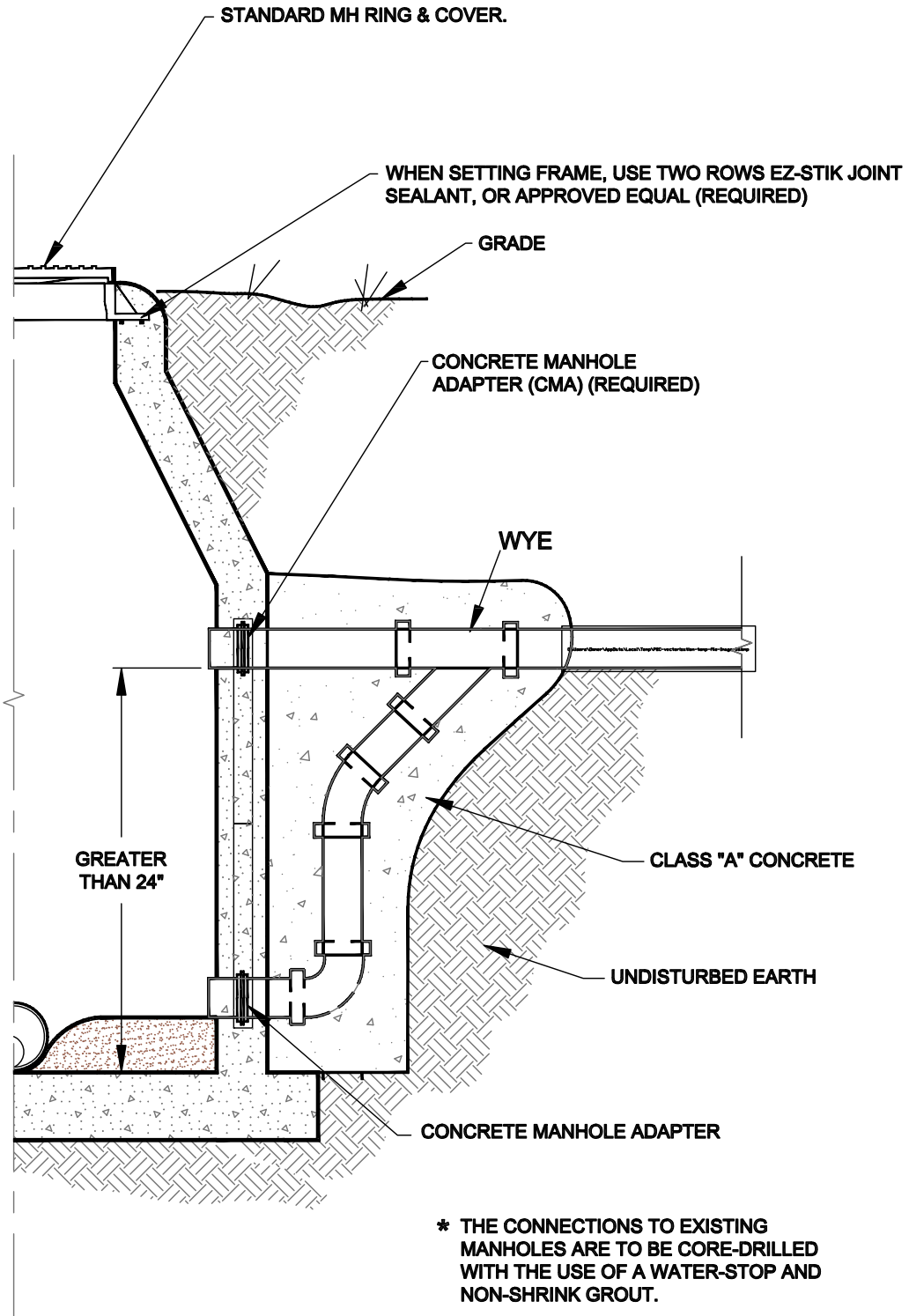


BENTON UTILITIES
 1827 Dale Ave.
 Benton, AR 72015
 Phone: (501) 776-5984

SECTION: SEWER DETAILS
 DESCRIPTION: MANHOLE JOINT WRAP

ISSUE DATE: SEPTEMBER 2015
 REVISION DATE:

SHEET: S-11



DROP MANHOLE



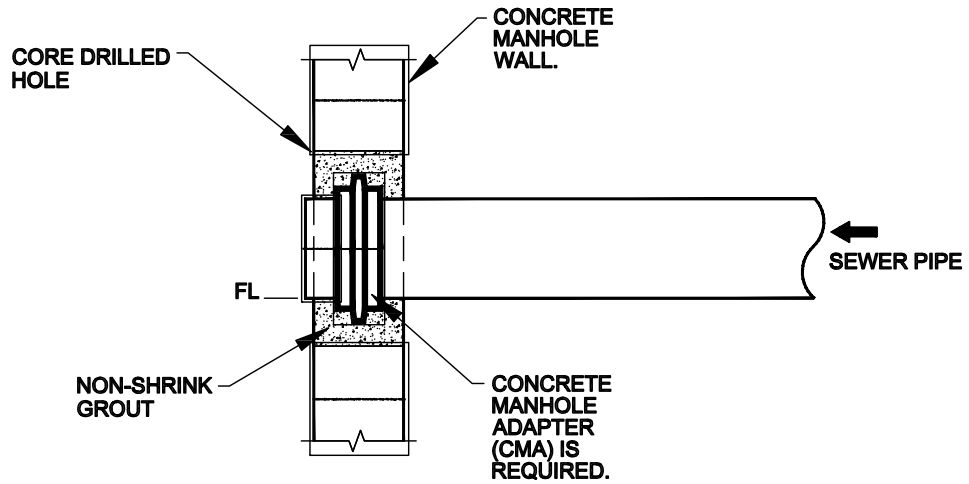
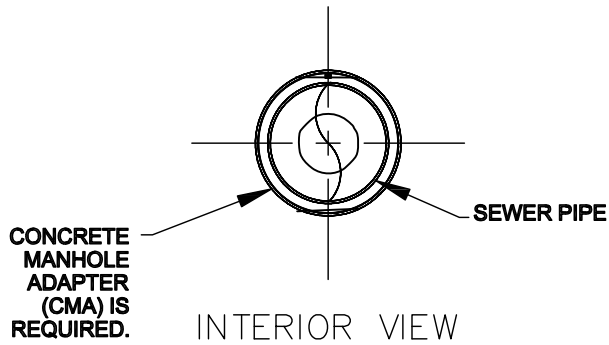
BENTON UTILITIES
 1827 Dale Ave.
 Benton, AR 72015
 Phone: (501) 776-5984

SECTION: SEWER DETAILS
 DESCRIPTION: DROP MANHOLE

ISSUE DATE: SEPTEMBER 2015
 REVISION DATE:

SHEET: S-12

THE INSTALLATION SHALL BE
DYE TESTED FOR ACCEPTANCE.



MANHOLE CORING DETAILS

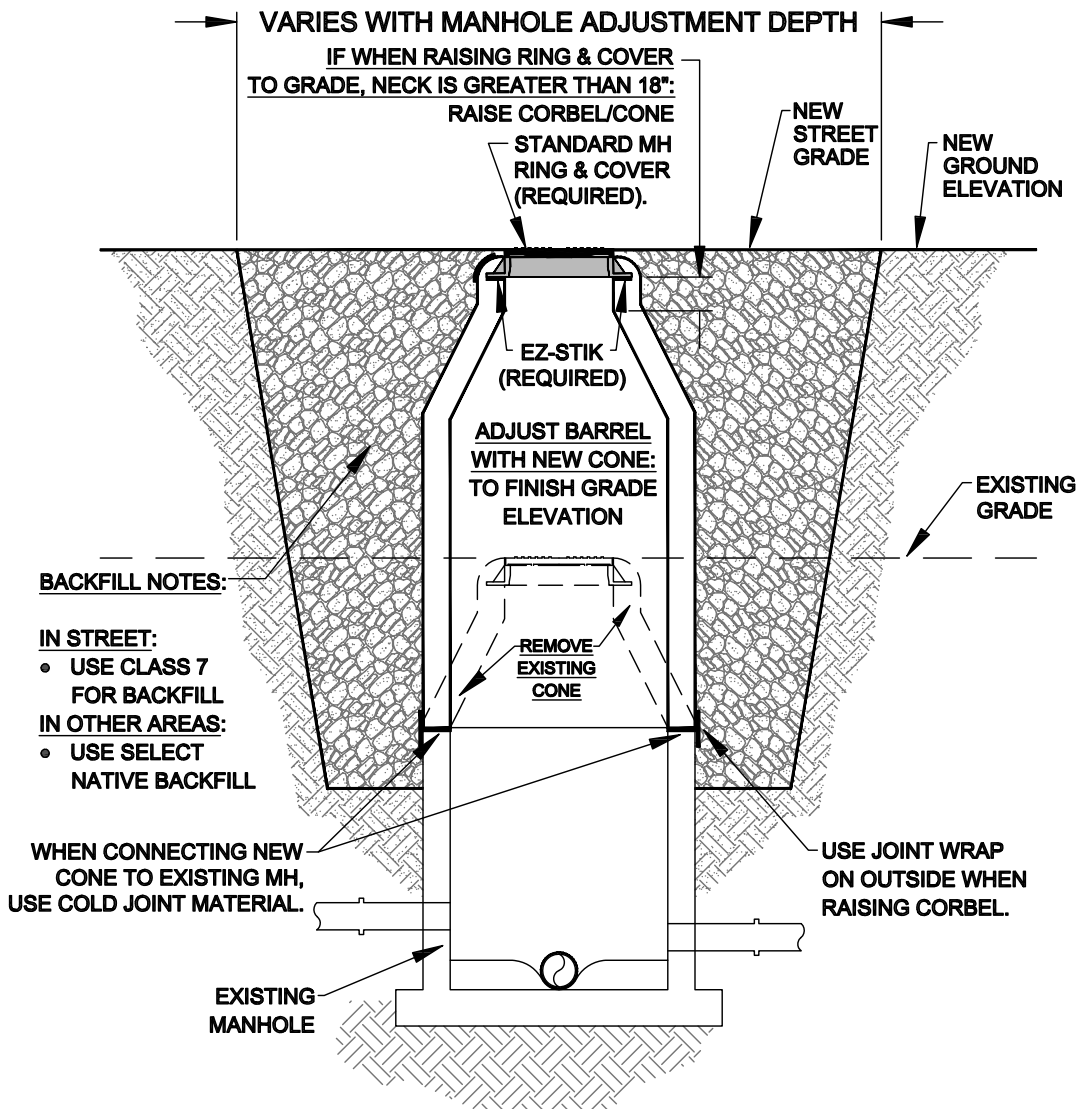


BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

SECTION: SEWER DETAILS
DESCRIPTION: MANHOLE CORING

ISSUE DATE:
SEPTEMBER 2015
REVISION DATE:

SHEET:
S-13

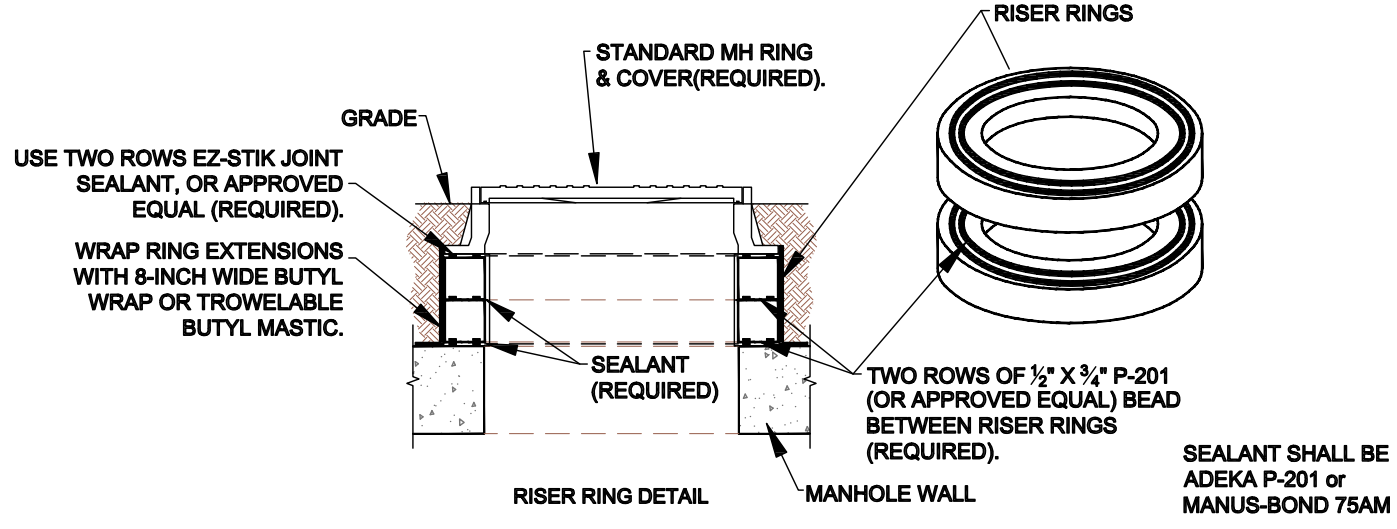


- BACKFILL NOTES:**
- IN STREET:**
- USE CLASS 7 FOR BACKFILL
- IN OTHER AREAS:**
- USE SELECT NATIVE BACKFILL

WHEN CONNECTING NEW CONE TO EXISTING MH, USE COLD JOINT MATERIAL.

EXISTING MANHOLE

USE JOINT WRAP ON OUTSIDE WHEN RAISING CORBEL.



TYPICAL MANHOLE ADJUST TO GRADE DETAIL



BENTON UTILITIES
 1827 Dale Ave.
 Benton, AR 72015
 Phone: (501) 776-5984

SECTION:	SEWER DETAILS
DESCRIPTION:	MANHOLE ADJUST TO GRADE

ISSUE DATE:	SEPTEMBER 2015
REVISION DATE:	

SHEET:
 S-14

REMOVE MH RING & COVER,
CONE AND/OR BARREL TO A
MIN. OF 2'-0" BELOW EXISTING
GRADE ELEVATION.

GRADE

2'-0" MIN.

FILL MANHOLE WITH
CLASS I BEDDING
MATERIAL

PLUG LINES
CONSTRUCT CONCRETE PLUG FROM
INSIDE OF THE EXISTING MANHOLE.
FILL BOTTOM OF MANHOLE WITH
CONCRETE TO 6" ABOVE THE CROWN
OF ALL PIPES.
NO EXCAVATION IS REQUIRED.

ABANDONED
(E) SS

ABANDONED
(E) SS

BACKFILL, REPAVE or RESURFACE
BACKFILL ABANDONMENT IN PAVED AREAS, AND
PERFORM PAVEMENT REPAIR AS PER STANDARD
SPECIFICATIONS APPROPRIATE DETAIL.

BACKFILL ABANDONMENT IN NONPAVED AREAS WITH
SELECT NATIVE MATERIAL, AND RESURFACE WITH
APPROPRIATE MATERIALS.

GRADE

GRADE

ABANDONED
(E) SS

CLASS 7 BACKFILL 95%
MODIFIED PROCTOR
(TYP).

ABANDONED
(E) SS

EXISTING MANHOLE ABANDONMENT DETAIL

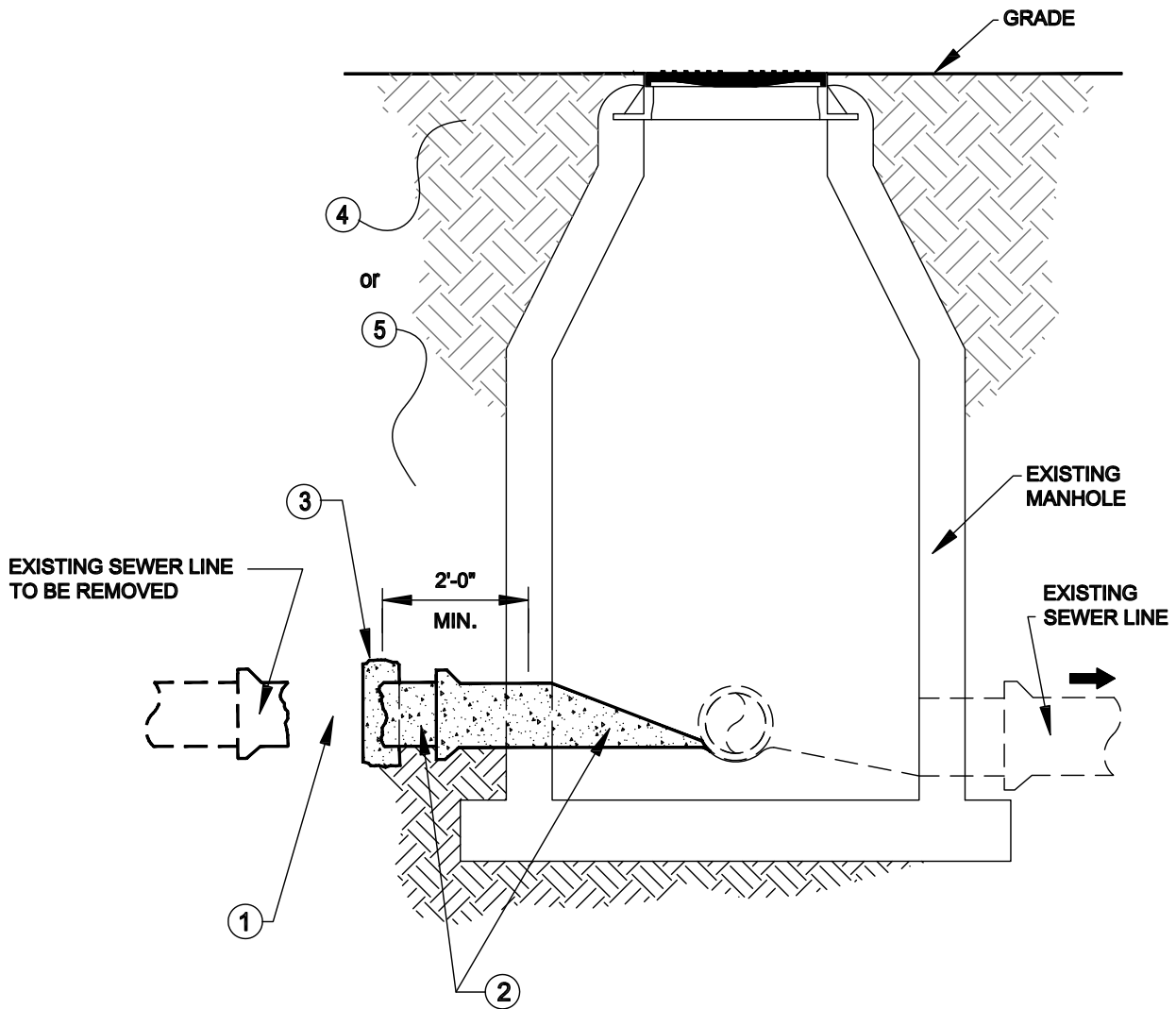


BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

SECTION: SEWER DETAILS
DESCRIPTION: MANHOLE ABANDONMENT

ISSUE DATE:
SEPTEMBER 2015
REVISION DATE:

SHEET:
S-15



1. EXPOSE EXISTING LINE AND PHYSICALLY DISCONNECT THE LINE SEGMENT TO BE REMOVED. (REQUIRED)
2. FILL REMAINING SEWER PIPE TO BE SEALED WITH CONCRETE AND REINFORCEMENT. (REQUIRED)
3. CONSTRUCT A CONCRETE CAP AROUND PIPE CONNECTED TO EXISTING MANHOLE. (REQUIRED)
4. IF THE MANHOLE IS LOCATED IN A PAVED AREA, BACKFILL THE EXCAVATED AREA AND PERFORM PAVEMENT REPAIR. (REQUIRED)
5. IF THE MANHOLE IS LOCATED IN A NON-PAVED AREA, BACKFILL THE EXCAVATED AREA WITH SELECT NATIVE MATERIAL, AND RESURFACE WITH THE APPROPRIATE MATERIALS. (REQUIRED)

SEWER LINE DISCONNECT & SEAL DETAIL



BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

SECTION:

SEWER DETAILS

DESCRIPTION:

SEWER LINE DISCONNECT AND SEAL

ISSUE DATE:

SEPTEMBER 2015

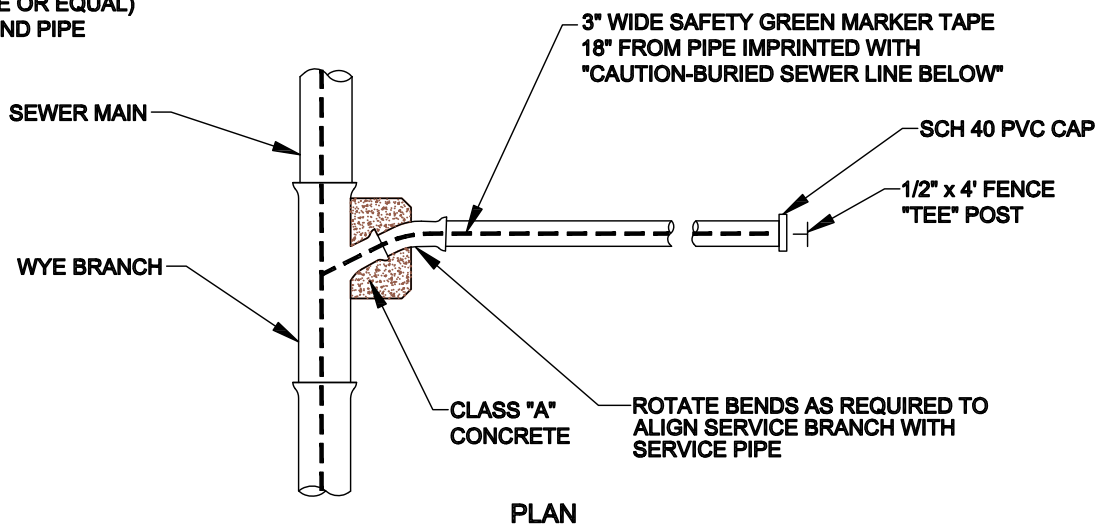
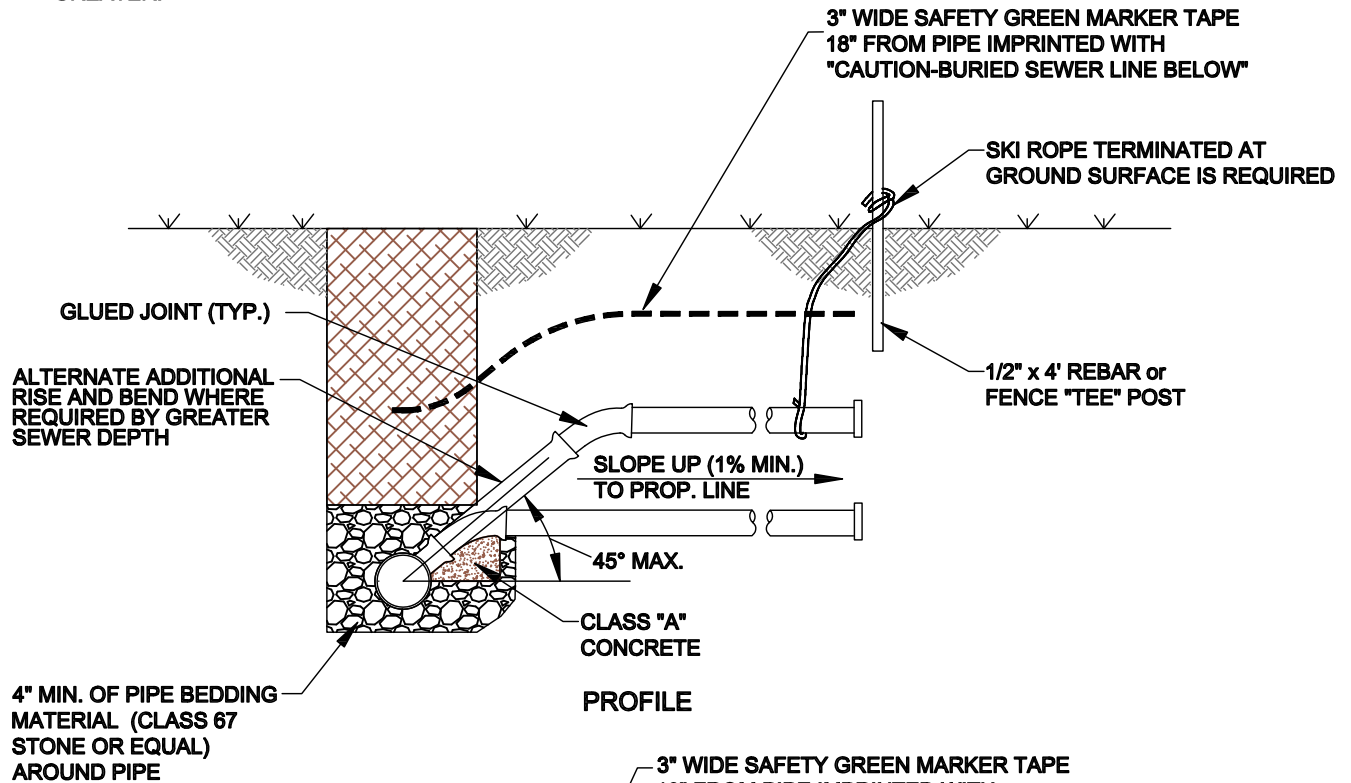
REVISION DATE:

SHEET:

S-16

NOTES:

1. MODIFIED RISER LATERAL SHALL BE USED WHEN DEPTH OF COVER EXCEEDS 7'-0"
2. PLACE CLASS "A" CONCRETE UNDER EACH WYE BRANCH TO PREVENT CRACKING OR TWISTING UNDER EARTH LOADS.
3. SERVICE LATERAL STUBS SHALL TERMINATE AT LEAST 2 FEET INSIDE THE PROPERTY LINE BUT IN NO CASE SHALL THE SERVICE LATERAL STUB TERMINATE AT A DISTANCE LESS THAN 8 FEET FROM THE SANITARY SEWER MAIN.
4. BURY A 1/2" x 4' STEEL TEE FENCE POST AT END OF SERVICE LATERAL STUB AND BACKFILL TO FINISHED GRADE OF PROPERTY.
5. 4" DUCTILE IRON PIPE, LINED FOR SANITARY SEWER AND 4" DUCTILE IRON M.J. FITTINGS, LINED FOR SANITARY SEWER, SHALL BE INSTALLED FOR SERVICES BURIED AT DEPTHS OF 14 FEET AND GREATER.



SEWER SERVICE LATERAL



BENTON UTILITIES
 1827 Dale Ave.
 Benton, AR 72015
 Phone: (501) 776-5984

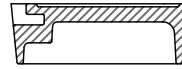
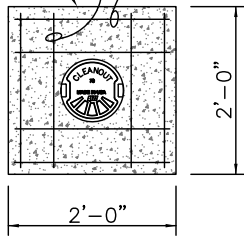
SECTION: SEWER DETAILS
 DESCRIPTION: SEWER SERVICE LATERAL

ISSUE DATE: SEPTEMBER 2015
 REVISION DATE:

SHEET: S-17

2'x 2'x 4" CONCRETE PAD AROUND VALVE (TYP.)

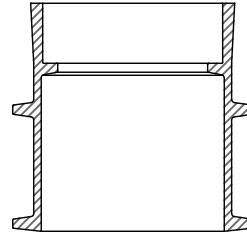
4-#4's EACH WAY CENTER IN SLAB (TYP.)



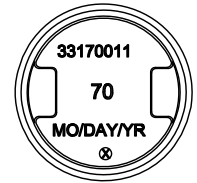
COVER SECTION



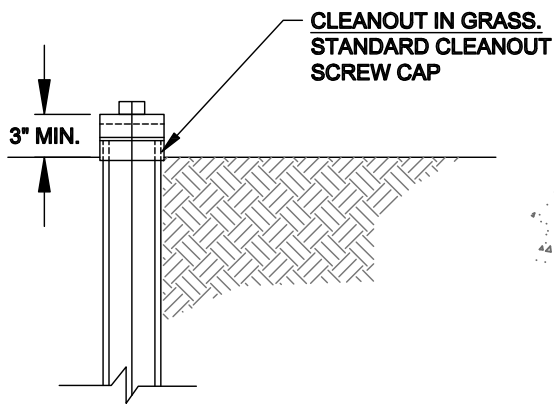
COVER TOP VIEW



VALVE BOX SECTION

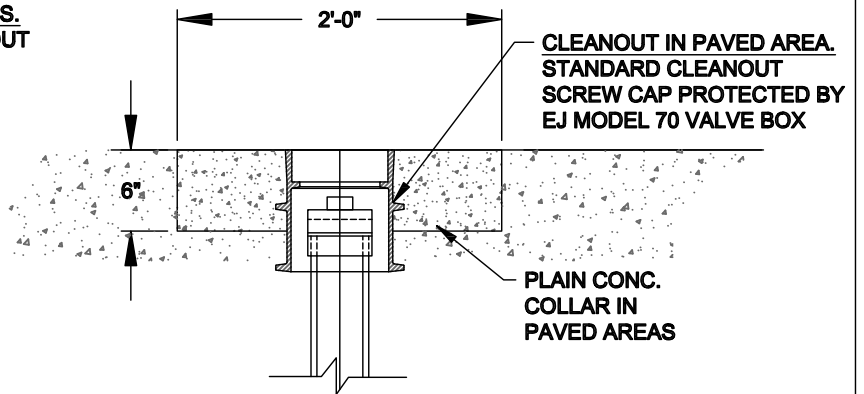


COVER BACK VIEW



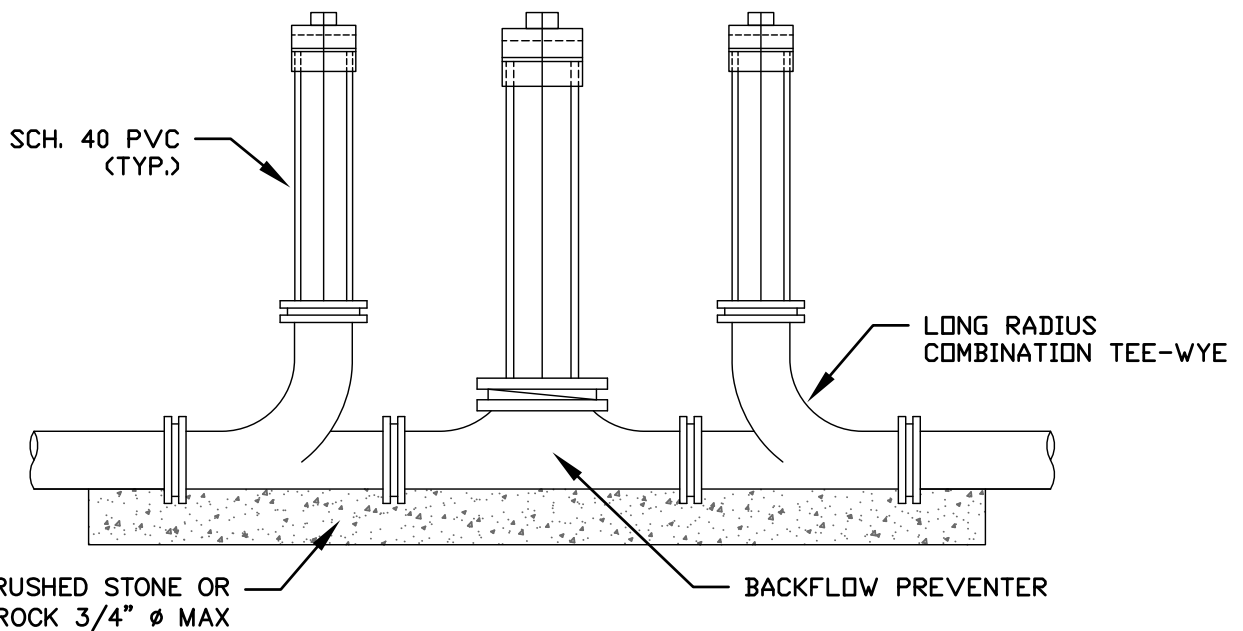
CLEANOUT IN GRASS. STANDARD CLEANOUT SCREW CAP

3" MIN.



CLEANOUT IN PAVED AREA. STANDARD CLEANOUT SCREW CAP PROTECTED BY EJ MODEL 70 VALVE BOX

PLAIN CONC. COLLAR IN PAVED AREAS



SCH. 40 PVC (TYP.)

LONG RADIUS COMBINATION TEE-WYE

CLEAN CRUSHED STONE OR WASHED ROCK 3/4" Ø MAX

BACKFLOW PREVENTER

TYPICAL CLEANOUT

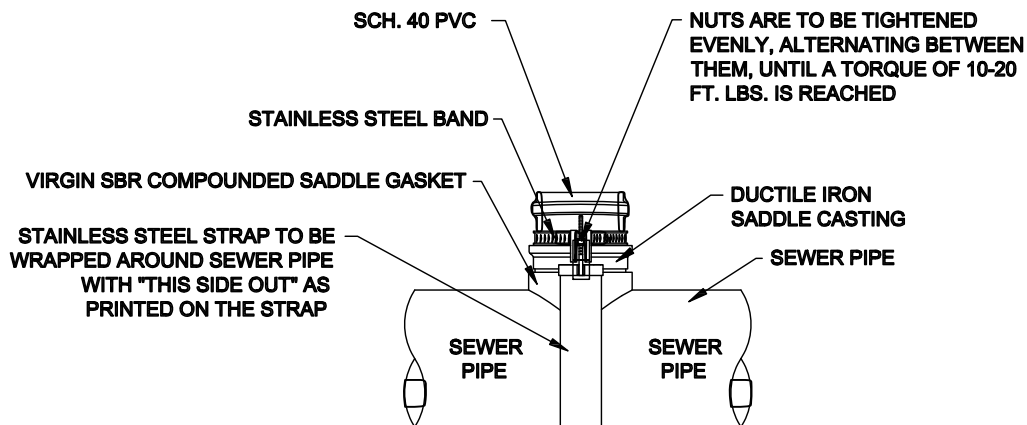
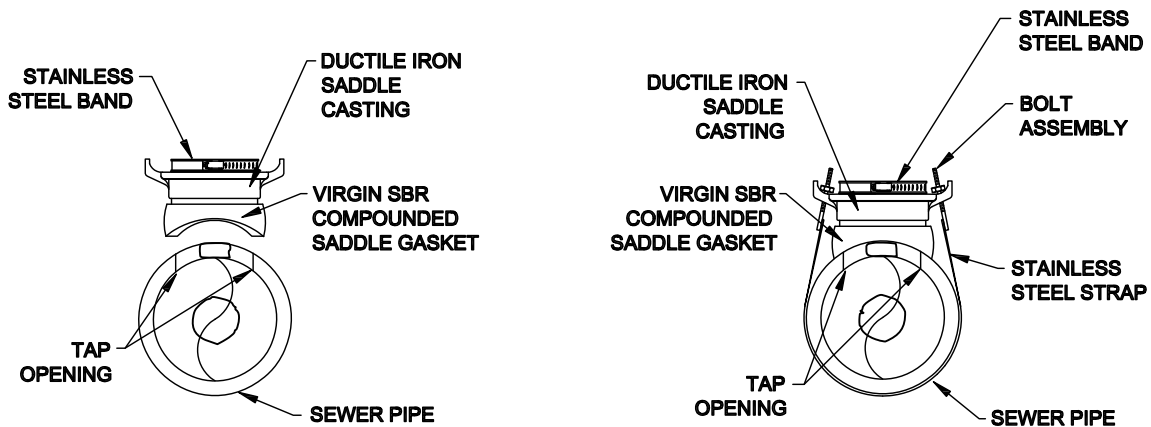


BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

SECTION: SEWER DETAILS
DESCRIPTION: TWO-WAY SERVICE CLEANOUT W/
BACKFLOW PREVENTER

ISSUE DATE: SEPTEMBER 2015
REVISION DATE:

SHEET: S-18



SEWER SERVICE SADDLE

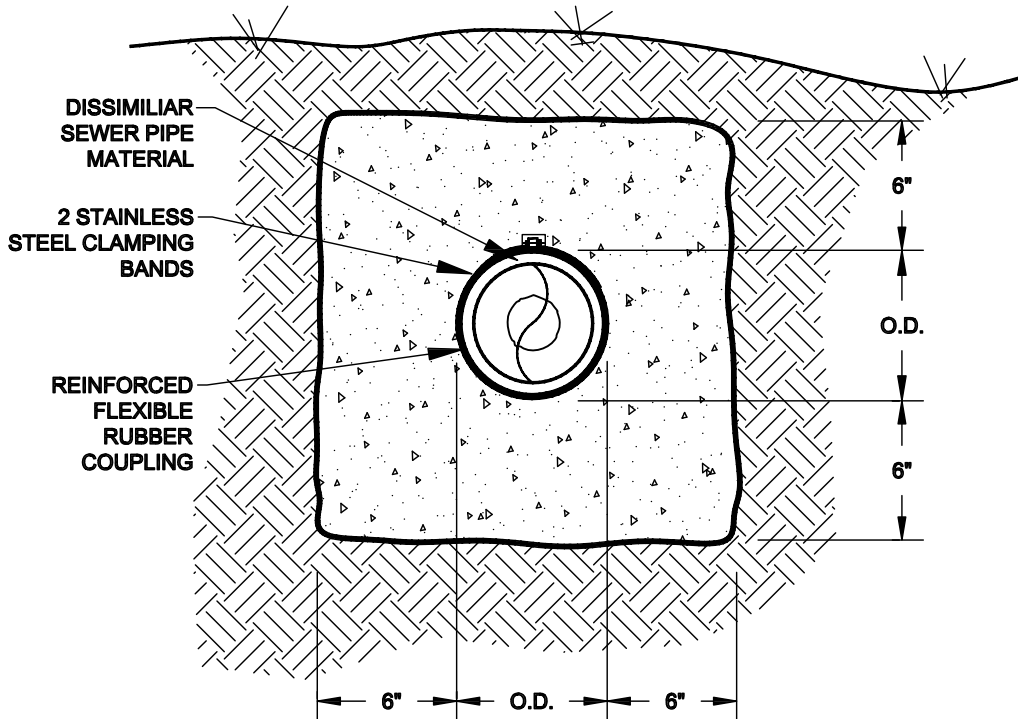
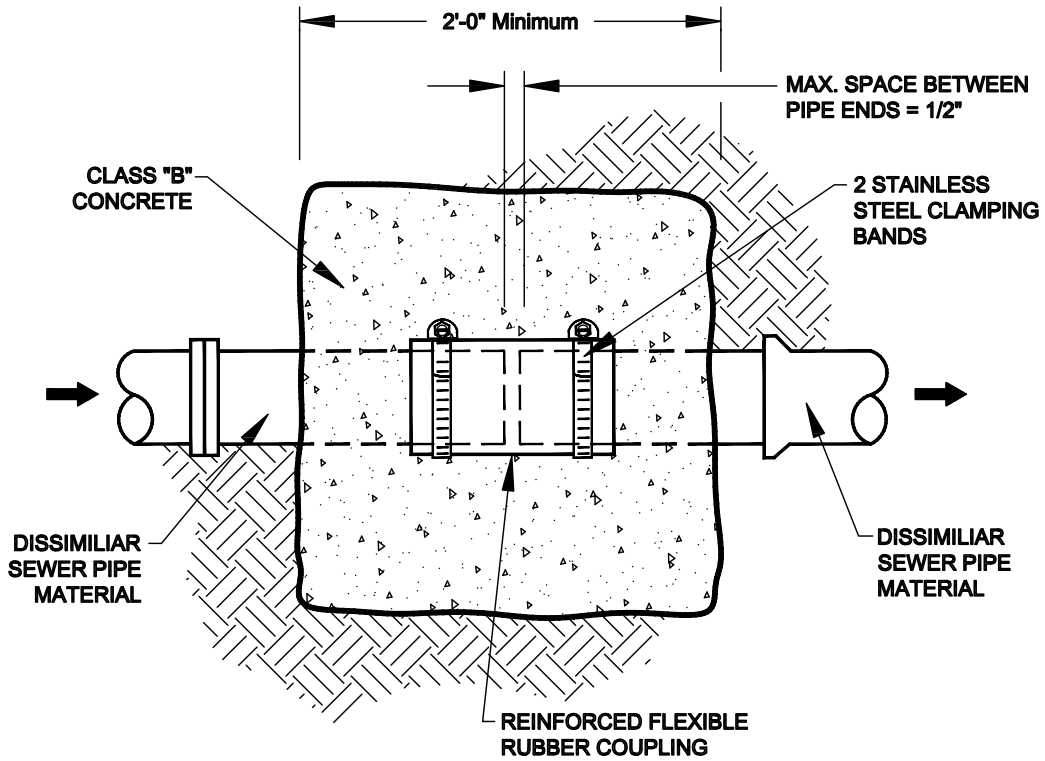


BENTON UTILITIES
 1827 Dale Ave.
 Benton, AR 72015
 Phone: (501) 776-5984

SECTION: SEWER DETAILS
 DESCRIPTION: SEWER SERVICE SADDLE

ISSUE DATE: SEPTEMBER 2015
 REVISION DATE:

SHEET: S-19



REINFORCE FLEXIBLE COUPLING

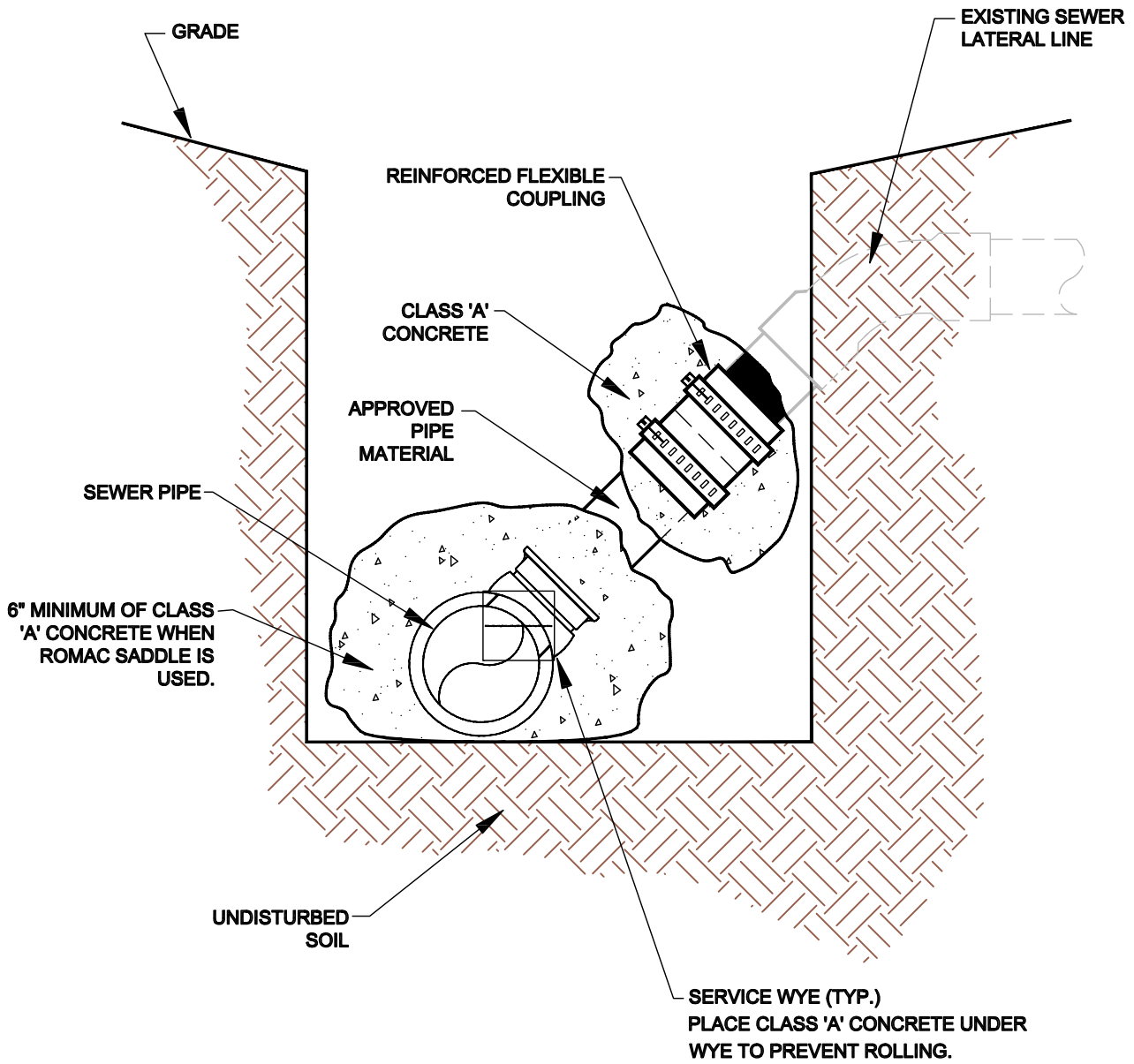


BENTON UTILITIES
 1827 Dale Ave.
 Benton, AR 72015
 Phone: (501) 776-5984

SECTION: SEWER DETAILS
 DESCRIPTION: REINFORCED FLEXIBLE COUPLING

ISSUE DATE: SEPTEMBER 2015
 REVISION DATE:

SHEET: S-20

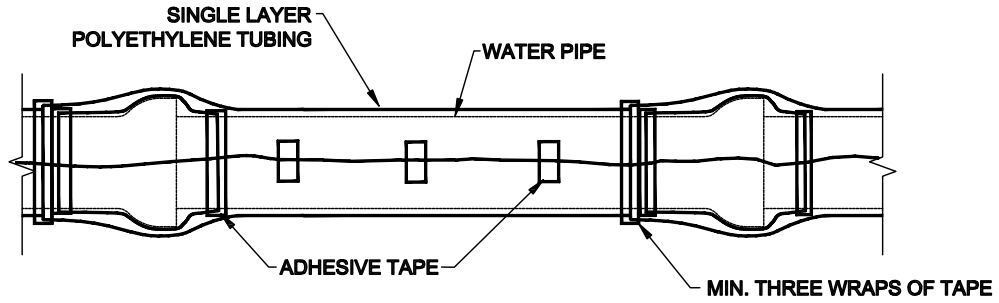


BENTON UTILITIES
 1827 Dale Ave.
 Benton, AR 72015
 Phone: (501) 776-5984

SECTION: SEWER DETAILS
 DESCRIPTION: CONNECT TO EXISTING SEWER SERVICE

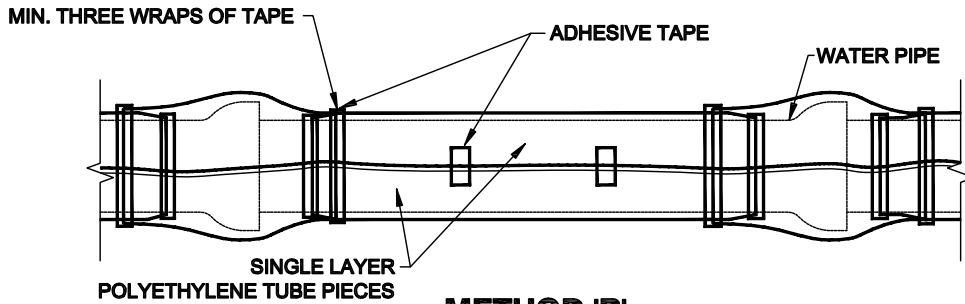
ISSUE DATE: SEPTEMBER 2015
 REVISION DATE:

SHEET: S-21



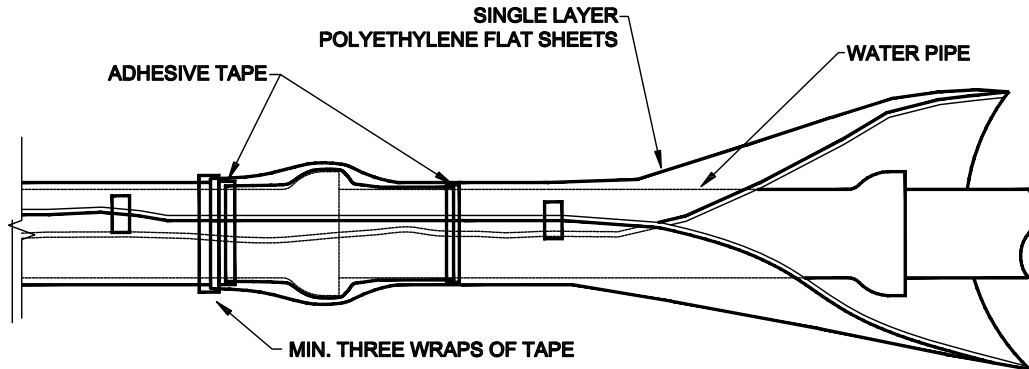
METHOD 'A'

METHOD 'A' USES ONE LENGTH OF POLYETHYLENE TUBE, OVERLAPPED AT THE JOINTS A MINIMUM OF 2 FEET.



METHOD 'B'

METHOD 'B' USES SEPARATE PIECES OF POLYETHYLENE TUBE FOR THE BARREL OF THE PIPE AND THE JOINTS. SHORT PIECES SHALL BE APPROXIMATELY 6' LONG AND OVERLAP BARREL SECTION BY A MINIMUM OF 2 FEET.



METHOD 'C'

METHOD 'C' - USED FOR PIPE-SHAPED AND ODD-SHAPED APPURTENANCES SUCH AS BENDS, REDUCERS, OFFSETS, VALVES, TEES, ETC.

ALL DUCTILE IRON PIPE AND FITTINGS SHALL BE POLY WRAPPED.

THE ANSI/AWWA C105/A21.5 STANDARD OUTLINES THREE METHODS OF INSTALLING POLYETHYLENE ENCASMENT/ SLEEVING.

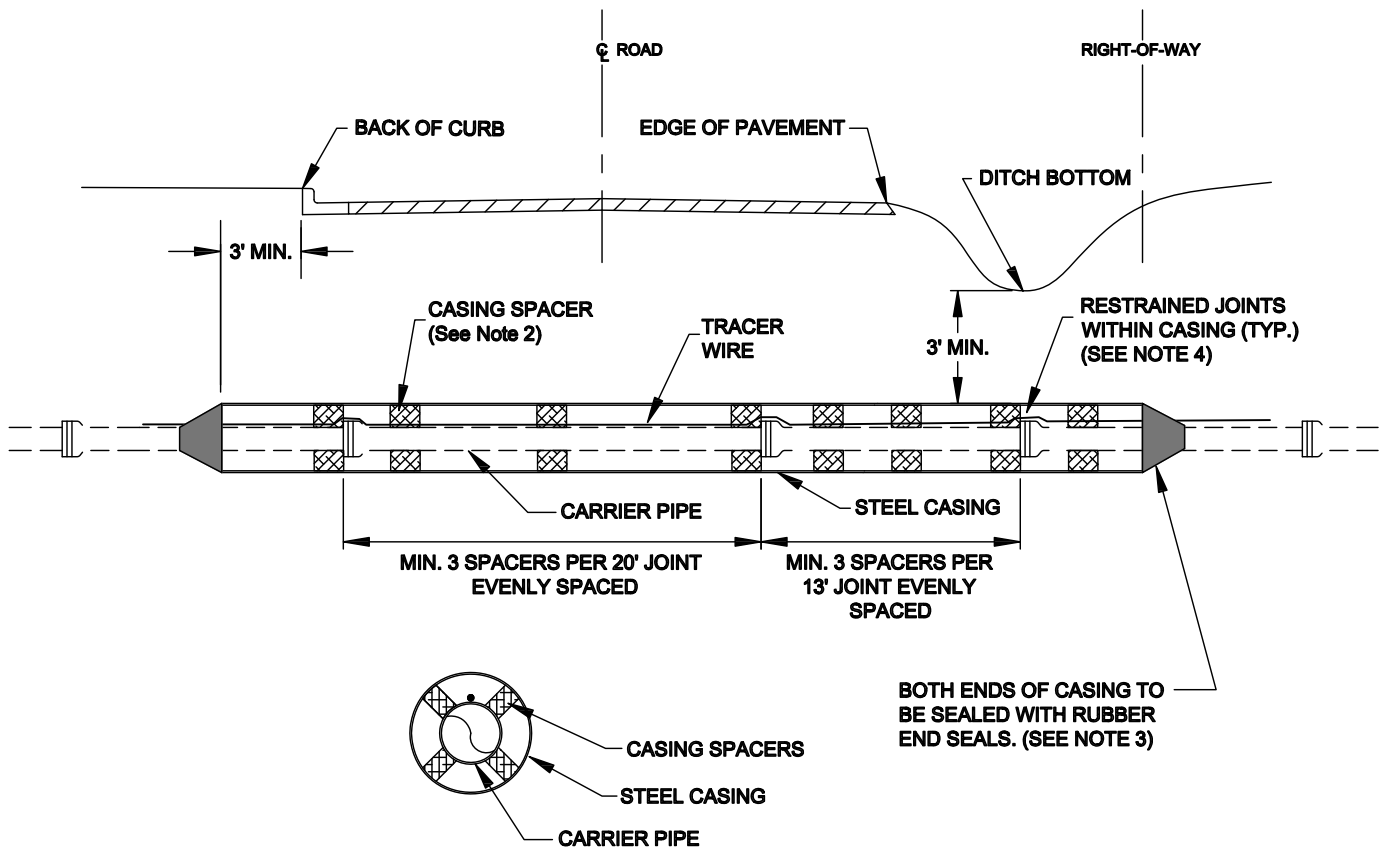


BENTON UTILITIES
 1827 Dale Ave.
 Benton, AR 72015
 Phone: (501) 776-5984

SECTION: SEWER DETAILS
 DESCRIPTION: POLYETHYLENE PROTECTION MATERIAL

ISSUE DATE: SEPTEMBER 2015
 REVISION DATE:

SHEET: S-22



NOTES:

1. STEEL CASING SHALL BE CONSTRUCTED OF SPIRAL OR STRAIGHT WELDED STEEL WITH A MINIMUM DIAMETER AND THICKNESS AS SHOWN BELOW (SEE TABLE).
2. PROVIDE CASING SPACERS BY CASCADE MODEL CCS AS MANUFACTURED BY CASCADE WATERWORKS MFG. CO., OR APPROVED EQUAL, MINIMUM 12-INCHES WIDE..
3. PROVIDE END SEALS BY CASCADE MODEL CCES AS MANUFACTURED BY CASCADE WATERWORKS MFG. CO., OR APPROVED EQUAL.
4. ONE CASING SPACER SHALL BE PLACED AT THE INSERTION STOP LINE TO RESIST OVER INSERTION.
5. ALL FORCE MAINS SHALL BE FULLY RESTRAINED WHERE ENCASEMENTS ARE GREATER THAN 25 FEET IN LENGTH, SELF-RESTRAINING GASKETS OR BELL RESTRAINTS SHALL BE USED FOR ALL JOINTS INSIDE THE ENCASEMENT PIPE AND FOR THE FIRST JOINT IN EACH DIRECTION OUTSIDE THE ENCASEMENT PIPE.
6. DIRECT BURY STEEL ENCASEMENT SHALL BE POLY WRAPPED.

CARRIER AND CASING SIZES							
CARRIER (ID)	2"	3"	4"	6"	8"	10"	12"
CASING (ID)	5"	6"	8"	12"	16"	20"	24"
CASING WALL THICKNESS	0.250	0.250	0.250	0.250	0.250	0.250	0.375
CARRIER (ID)	14" - 16"	18" - 20"	24"	30"	36"	42"	48"
CASING (ID)	30"	36"	42"	48"	54"	60"	72"
CASING WALL THICKNESS	0.375	0.500	0.625	0.625	0.625	0.625	0.750

STEEL ENCASEMENT

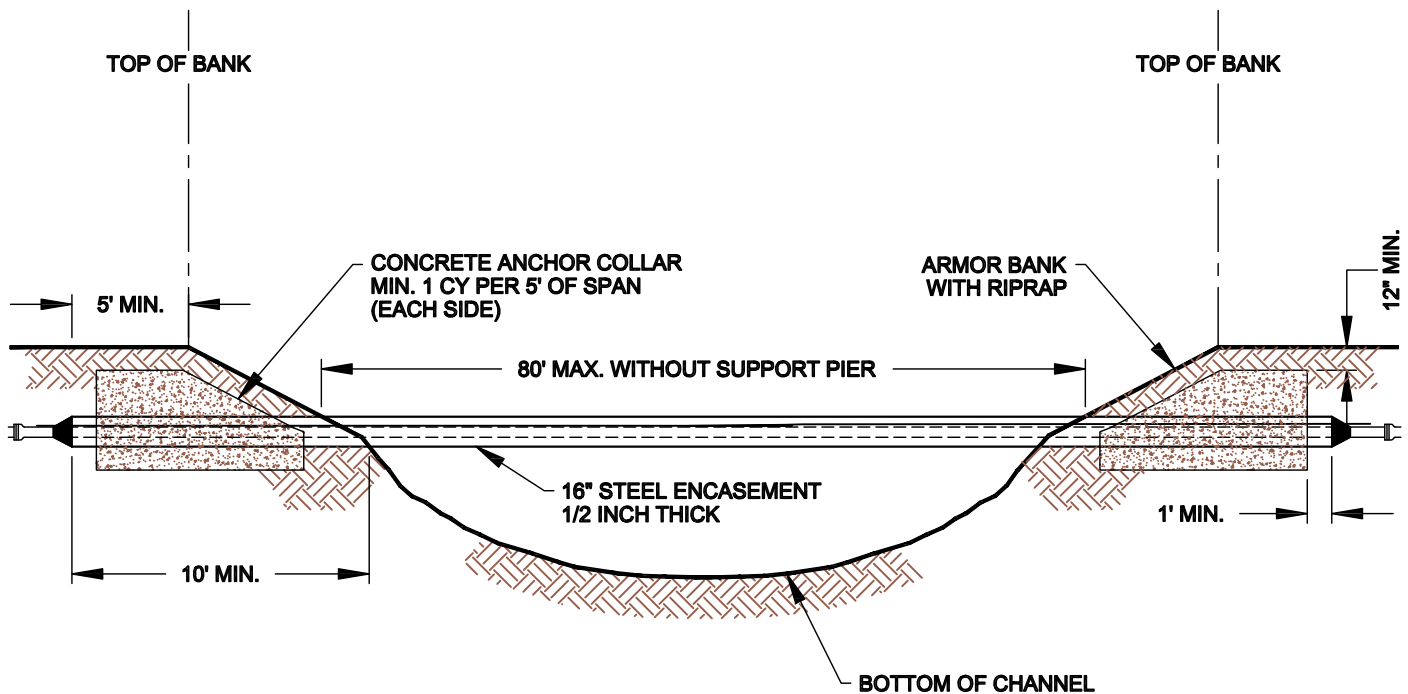


BENTON UTILITIES
 1827 Dale Ave.
 Benton, AR 72015
 Phone: (501) 776-5984

SECTION: SEWER DETAILS
 DESCRIPTION: STEEL ENCASEMENT

ISSUE DATE: SEPTEMBER 2015
 REVISION DATE:

SHEET: S-23



NOTES:

1. DETAIL SHOWN IS FOR 16" ENCASEMENT WITH 8" SEWER PIPE AT 0.50% GRADE. OTHER SIZES WILL REQUIRE A DETAILED DESIGN WITH A MAXIMUM DEFLECTION OF $L/360$.
2. REFER TO STEEL ENCASEMENT DETAIL FOR ADDITIONAL INSTALLATION REQUIREMENTS.
3. STEEL CASING SHALL BE CONSTRUCTED OF SPIRAL OR STRAIGHT WELDED STEEL.
4. PROVIDE CASING SPACERS BY CASCADE MODEL CCS AS MANUFACTURED BY CASCADE WATERWORKS MFG. CO., OR APPROVED EQUAL, MINIMUM 12-INCHES WIDE.
5. PROVIDE END SEALS BY CASCADE MODEL CCES AS MANUFACTURED BY CASCADE WATERWORKS MFG. CO., OR APPROVED EQUAL.
6. ONE CASING SPACER SHALL BE PLACED AT THE INSERTION STOP LINE TO RESIST OVER INSERTION.
7. ALL FORCE MAINS SHALL BE FULLY RESTRAINED WHERE ENCASEMENTS ARE GREATER THAN 25 FEET IN LENGTH, SELF-RESTRAINING GASKETS OR BELL RESTRAINTS SHALL BE USED FOR ALL JOINTS INSIDE THE ENCASEMENT PIPE AND FOR THE FIRST JOINT IN EACH DIRECTION OUTSIDE THE ENCASEMENT PIPE.
8. BELL RESTRAINTS FOR PVC SHALL BE SERIES 1900 RESTRAINT HARNESS AND BELL RESTRAINTS FOR DIP SHALL BE SERIES 1700 RESTRAINT HARNESS BY EBAA IRON INC., OR APPROVED EQUAL.
9. DIRECT BURY STEEL ENCASEMENT SHALL BE POLY WRAPPED.

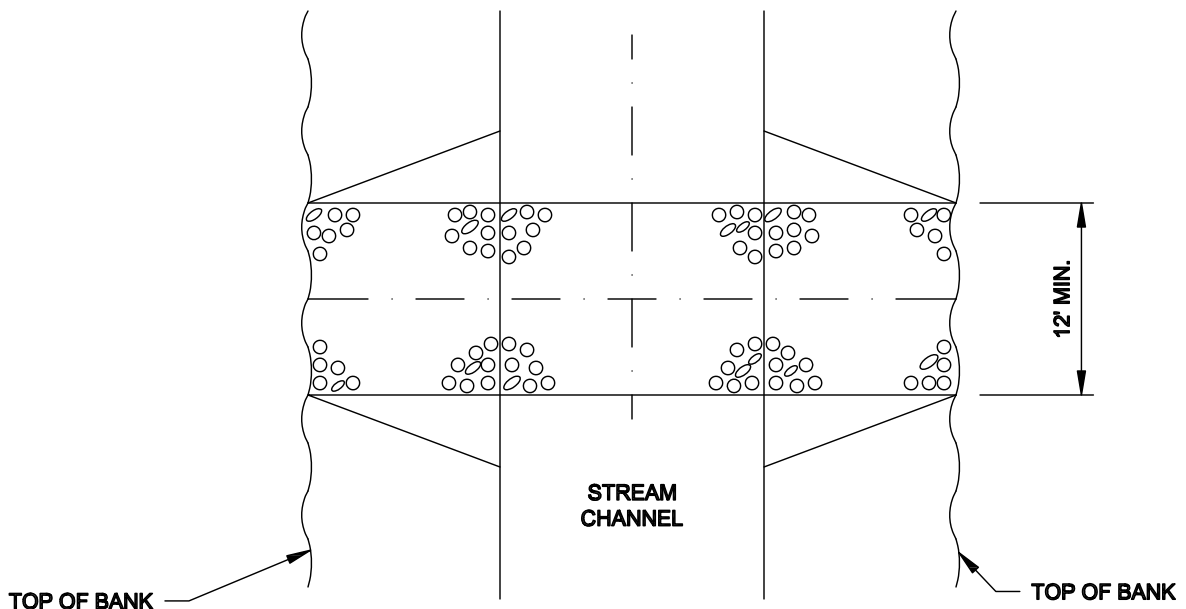


BENTON UTILITIES
 1827 Dale Ave.
 Benton, AR 72015
 Phone: (501) 776-5984

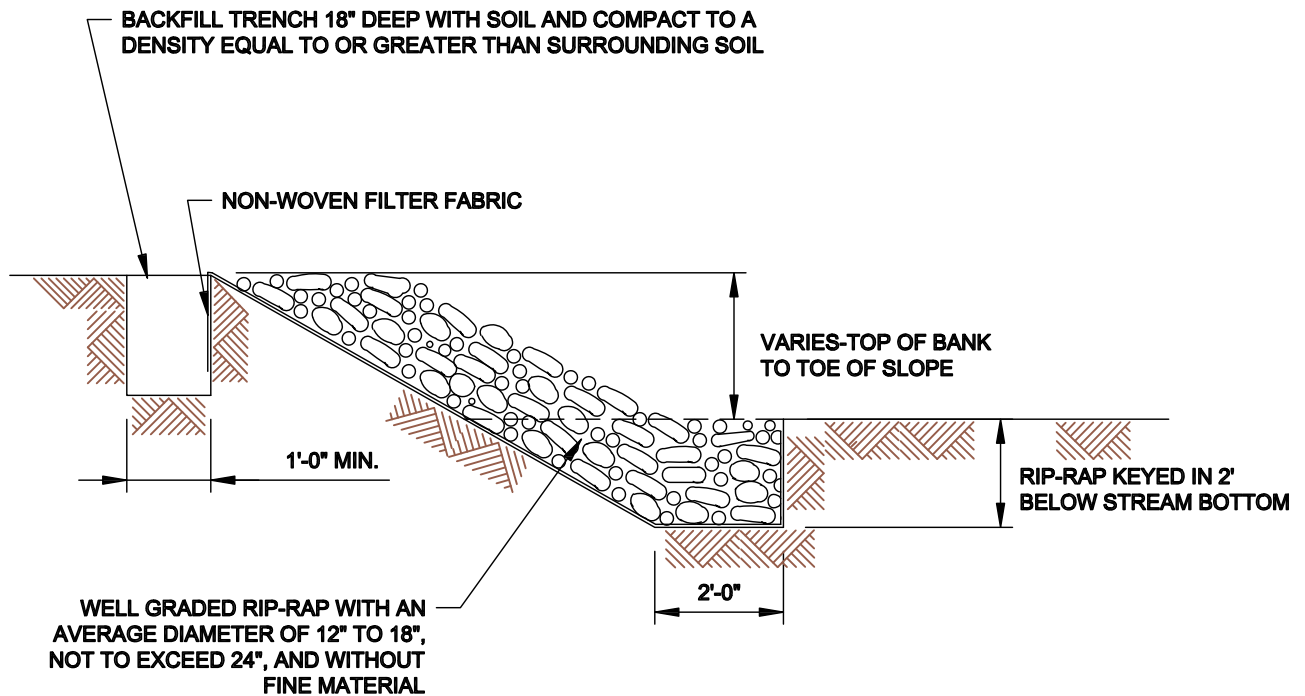
SECTION: SEWER DETAILS
 DESCRIPTION: STEEL ENCASEMENT
 AERIAL CROSSING

ISSUE DATE:
 SEPTEMBER 2015
 REVISION DATE:

SHEET:
 S-24



PLAN VIEW



SECTION

NOTE:

1. ALL DISTURBED STREAMBANKS SHALL BE STABILIZED AS SHOWN AND RESTORED TO PRE-CONSTRUCTION GRADES.
2. MINIMUM WIDTH OF RESTORATION SHALL BE 12 FEET.

BANK STABILIZATION



BENTON UTILITIES
 1827 Dale Ave.
 Benton, AR 72015
 Phone: (501) 776-5984

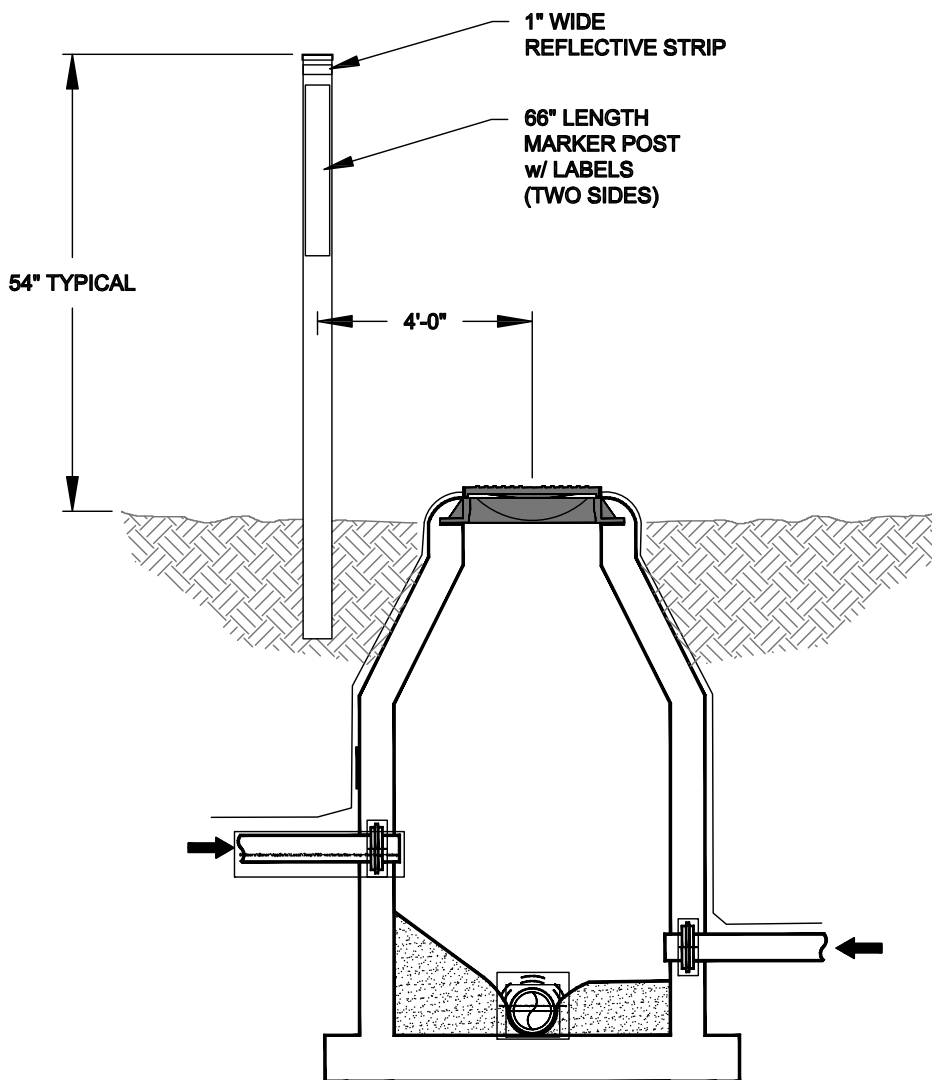
SECTION: SEWER DETAILS
 DESCRIPTION: BANK STABILIZATION

ISSUE DATE: SEPTEMBER 2015
 REVISION DATE:

SHEET: S-25

NOTES:

1. SEWER LINE MARKERS SHALL BE TRI-VIEW MARKING SYSTEM BY RHINO MARKING AND PROTECTION SYSTEMS OR CARSONITE INTERNATIONAL DUAL-SIDED UTILITY MARKER (CIB-380).
2. THE UPPERMOST PORTION OF THE CARSONITE MARKER SHALL BE MADE OF VISIBILITY ENHANCER (CVE-360).
3. TRI-VIEW MARKERS DO NOT REQUIRE VISIBILITY ENHANCERS.
4. AN ADDITIONAL WHITE 1" WIDE REFLECTIVE TAPE (3M OR EQUAL) SHALL BE PLACED AROUND THE FULL CIRCUMFERENCE OF THE TOP OF THE MARKER.



SEWER MARKER

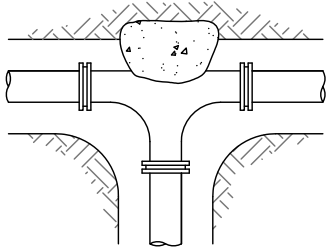


BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

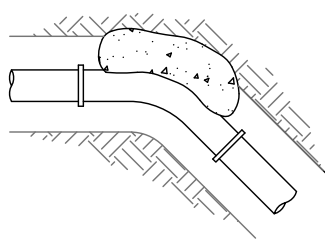
SECTION: SEWER DETAILS
DESCRIPTION: SEWER MARKER

ISSUE DATE: SEPTEMBER 2015
REVISION DATE:

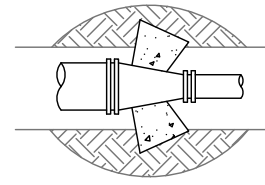
SHEET: S-26



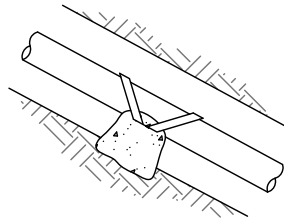
TEE



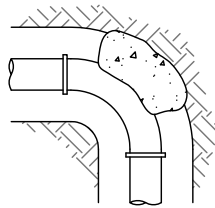
**11 1/4°, 22 1/2°
AND/OR 45° BEND**



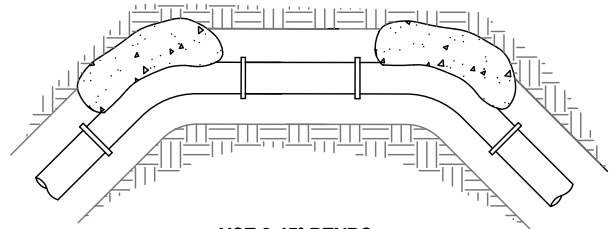
REDUCER



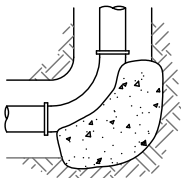
HORIZONTAL RUN



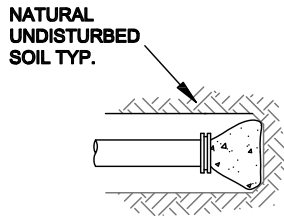
90° BEND *



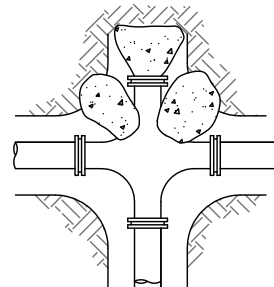
**USE 2-45° BENDS
IN PLACE OF 90° BEND**



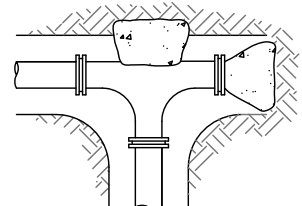
**VERTICAL RUN
SEE SHEET W18 FOR
VERTICAL TIE-DOWN BLOCKING**



**END PLUG, CAP
OR BLIND FLANGE**



CROSS WITH PLUG



TEE WITH PLUG

THRUST BLOCK SCHEDULE												
(2000 PSF SOIL, 200 PSI WATER PRESSURE, 100 PSI WATER HAMMER)												
BEARING AREA OF THRUST BLOCKS IN SQ. FT. (HORIZONTAL BENDS)						VOLUME OF THRUST BLOCK IN CU. FEET (VERTICAL BENDS)						
FITTING SIZE	PLUG TEE OR CAP	BEND ANGLE				FITTING SIZE	BEND ANGLE				ROD DIAM.	EMBED-MENT
		90°*	45°	22 1/2°	11 1/4°		90°*	45°	22 1/2°	11 1/4°		
2, 3, & 4	1.9	2.7	1.4	0.7	0.4	2, 3, & 4	35.5	19.2	9.8	4.9	.50"	30"
6	5.6	7.9	4.3	2.2	1.1	6	105.8	57.2	29.2	14.7	.75"	30"
8	9.6	13.6	7.4	3.8	1.9	8	181.9	98.5	50.2	25.2	.76"	30"
12	20.5	29.0	15.7	8.0	4.0	12	387.1	209.5	106.8	53.7	1.0"	30"
16	35.7	50.4	27.3	13.9	7.0	16	672.6	364.0	185.6	93.2	1.0"	36"
18	44.8	63.4	34.3	17.5	8.8	18	844.7	457.2	233.1	117.1	1.0"	36"
24	78.4	110.9	60.0	30.6	15.4	24	1478.7	800.3	408.0	205.0	1.5"	36"

* 90 DEGREE BENDS SHALL ONLY BE USED ON A BY-EXCEPTION BASIS, AND MUST EACH BE SPECIFICALLY APPROVED BY CITY.

THRUST BLOCK NOTES:

1. CONCRETE FOR THRUST BLOCKS - CLASS A CONCRETE SHALL DEVELOP NOT LESS THAN 3000 P.S.I. COMPRESSIVE STRENGTH AT 28 DAYS AND BE PLACED AGAINST UNDISTURBED SOIL.
2. ALL BENDS, BOTH HORIZONTAL AND VERTICAL, SHALL BE BACKED WITH CONCRETE. VERTICAL BENDS SHALL BE PLACED ON CONCRETE PADS WHERE BENDS TURN UP, OR LOADED WHERE BENDS TURN DOWN.
3. WRAP PIPE JOINTS IN 8 MIL "POLYETHYLENE" BEFORE PLACING CONCRETE.
4. BEARING AREA SHOWN IN TABLE, IS BASED UPON A 2000 LB/SF. SOIL BEARING, AND UPON A PIPELINE PRESSURE OF 200 psi. PLUS 100 psi. WATER HAMMER. AREAS SHOWN SHALL BE ADJUSTED, SHOULD FIELD CONDITIONS VARY.
5. MJ RESTRAINTS ARE REQUIRED FOR ALL FITTINGS.
6. USE LONG-RADIUS FITTINGS WHEREVER POSSIBLE.
7. ALL BOLTS FOR FITTINGS SHALL BE 316 STAINLESS STEEL.
8. ALL DUCTILE IRON FITTINGS SHALL BE FUSION-BONDED EPOXY COATED INSIDE AND OUTSIDE IN ACCORDANCE WITH ANSI/AWWA C116/A21.16.
9. UNIT WEIGHT OF CONCRETE FOR VERTICAL THRUST BLOCKS IS 150 LBS/CU. FT.

THRUST BLOCKING



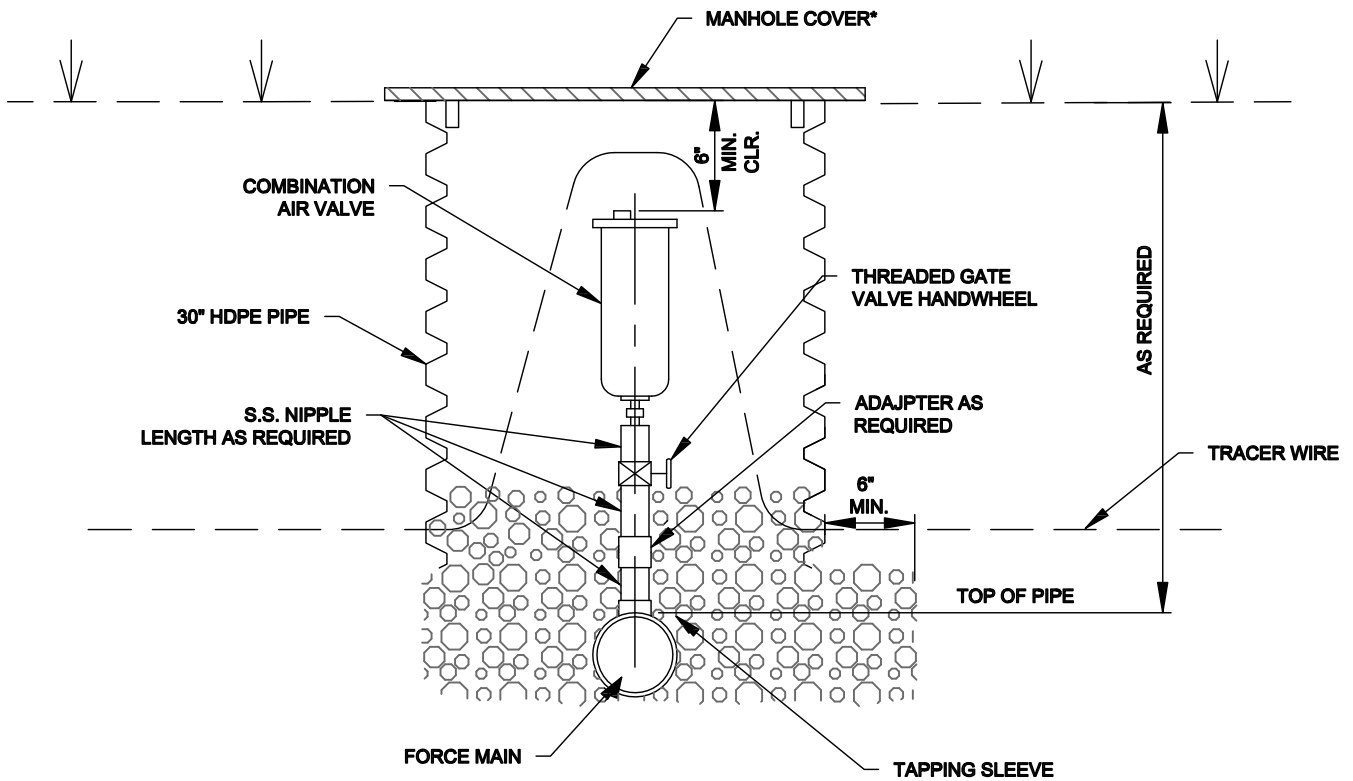
BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

SECTION: SEWER DETAILS
DESCRIPTION: FORCE MAIN THRUST BLOCKING

ISSUE DATE: SEPTEMBER 2015
REVISION DATE:

SHEET: S-27

* CONTRACTOR TO DRILL
2-1" HOLES IN COVER FOR
VENTING.



AIR RELEASE VALVE

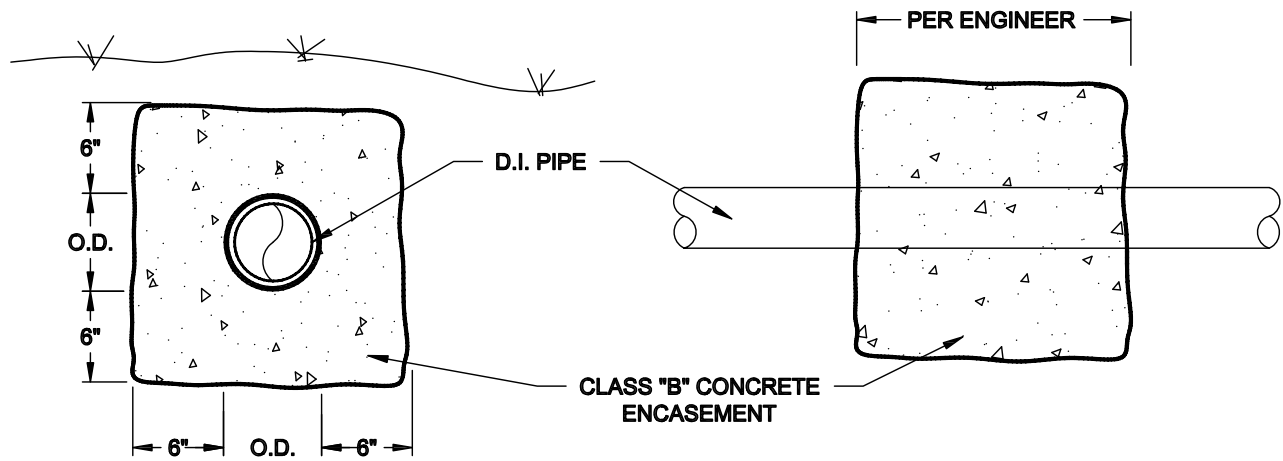


BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

SECTION: SEWER DETAILS
DESCRIPTION: AIR RELEASE VALVE

ISSUE DATE: SEPTEMBER 2015
REVISION DATE:

SHEET: S-28



CONCRETE ENCASEMENT

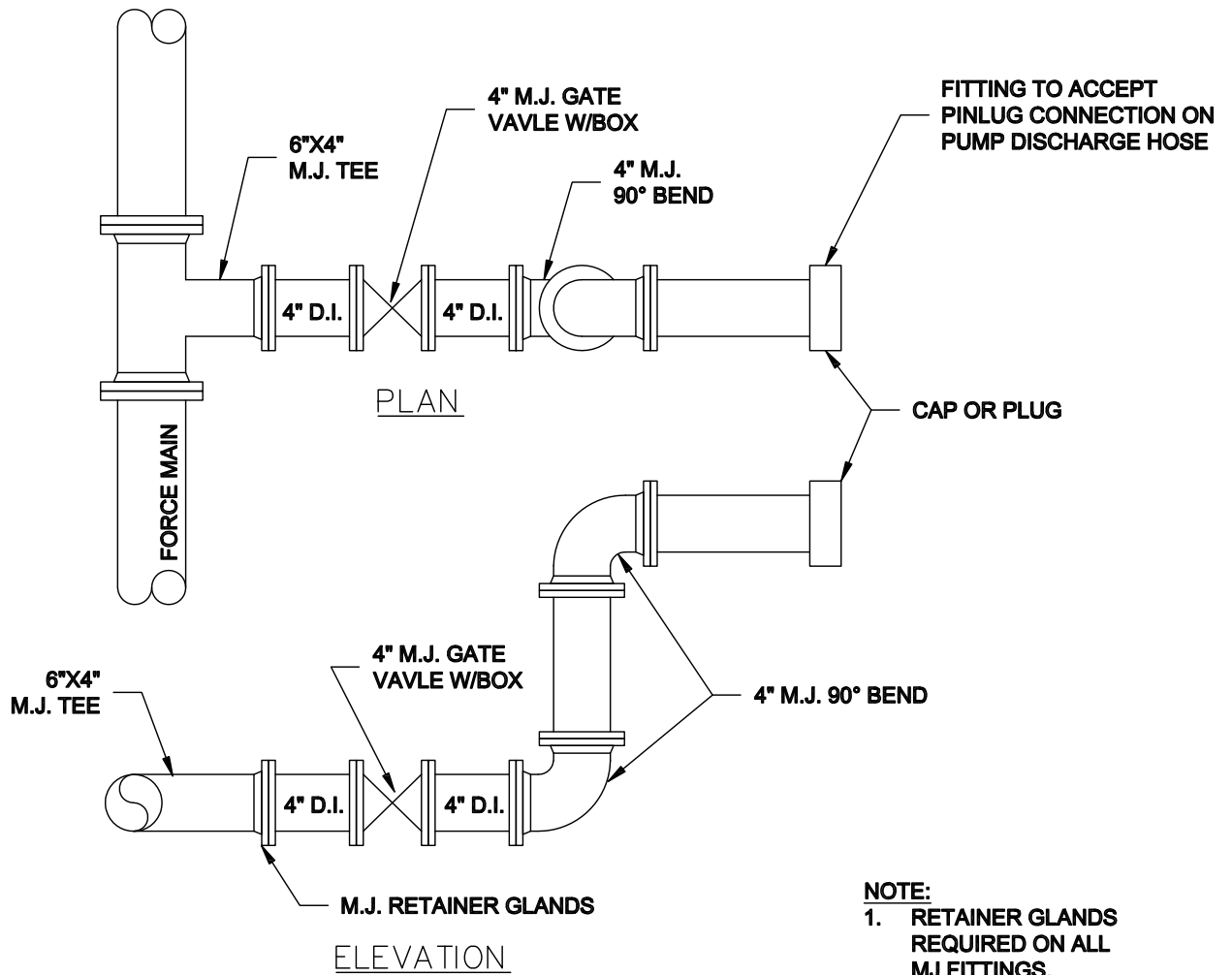


BENTON UTILITIES
 1827 Dale Ave.
 Benton, AR 72015
 Phone: (501) 776-5984

SECTION: SEWER DETAILS
 DESCRIPTION: CONCRETE ENCASEMENT DETAIL

ISSUE DATE: SEPTEMBER 2015
 REVISION DATE:

SHEET: S-29



EMERGENCY PUMP CONNECTION DETAILS



BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

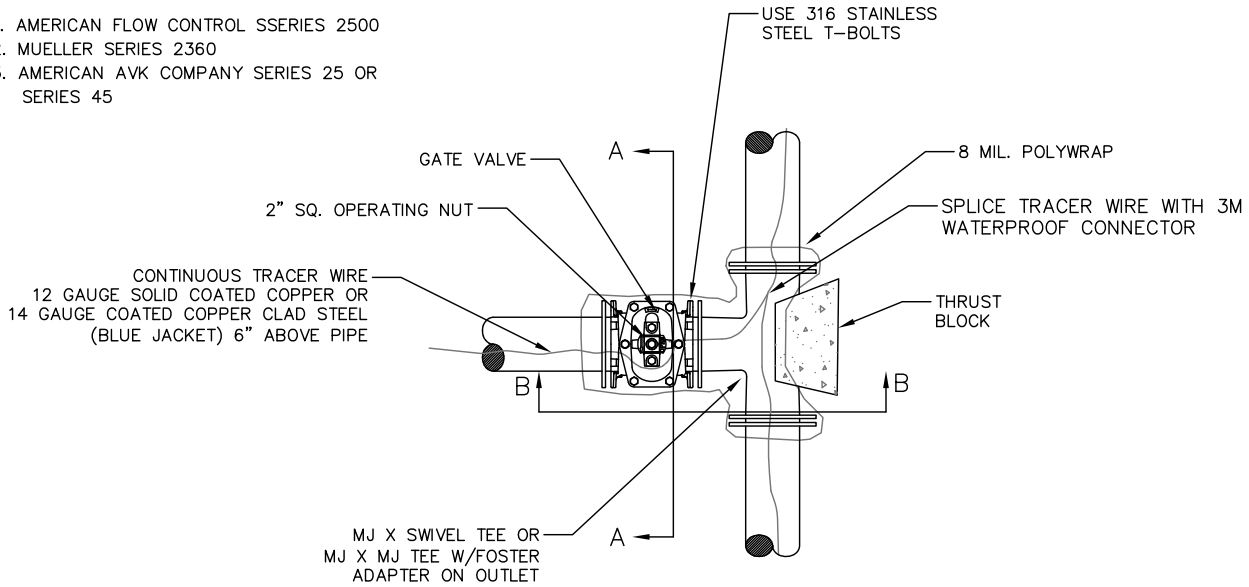
SECTION: SEWER DETAILS
DESCRIPTION: EMERGENCY PUMP CONNECTION

ISSUE DATE: SEPTEMBER 2015
REVISION DATE:

SHEET: S-30

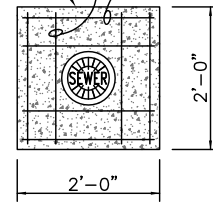
PERMITTED VALVES

1. AMERICAN FLOW CONTROL S SERIES 2500
2. MUELLER SERIES 2360
3. AMERICAN AVK COMPANY SERIES 25 OR SERIES 45

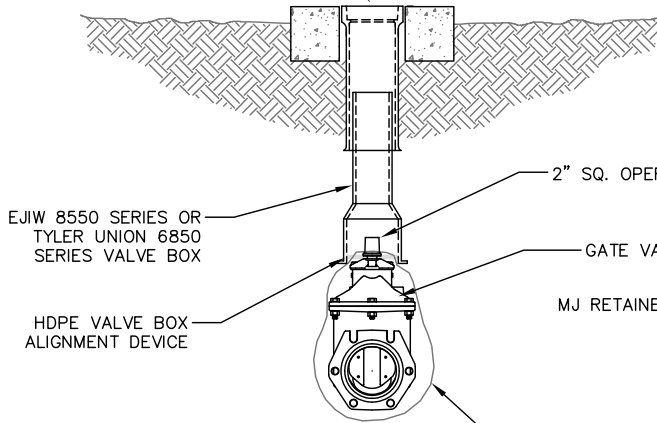


PLAN

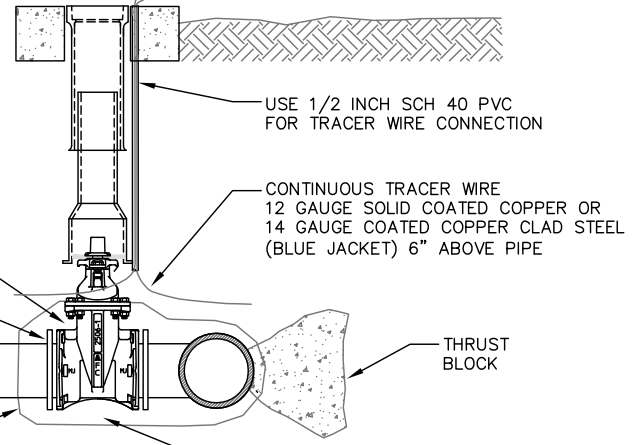
2'x 2'x 4" CONCRETE PAD AROUND VALVE (TYP.)
4-#4's EACH WAY CENTER IN SLAB (TYP.)



WORD "SEWER" ON COVER



SECTION A-A



SECTION B-B

SUPPORT PIPE AND VALVE WITH MIN. 6" CRUSHED STONE

NOTES:

1. ALL VALVES SHALL BE SECURELY ANCHORED TO THE TEE.
2. ALL HARDWARE SHALL BE 316 STAINLESS STEEL.
3. IF DEPTH OF BURRY EXCEEDS 4 FT., A VALVE STEM EXTENSION SHALL BE REQUIRED. THE VALVE STEM EXTENSION NUT SHALL BE WITHIN 24-INCHES TO 12-INCHES OF THE FINISHED GRADE.



BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

SECTION:	WATER DETAILS
DESCRIPTION:	GATE VALVE DETAIL (2"-12")

ISSUE DATE:	SEPTEMBER 2015
REVISION DATE:	

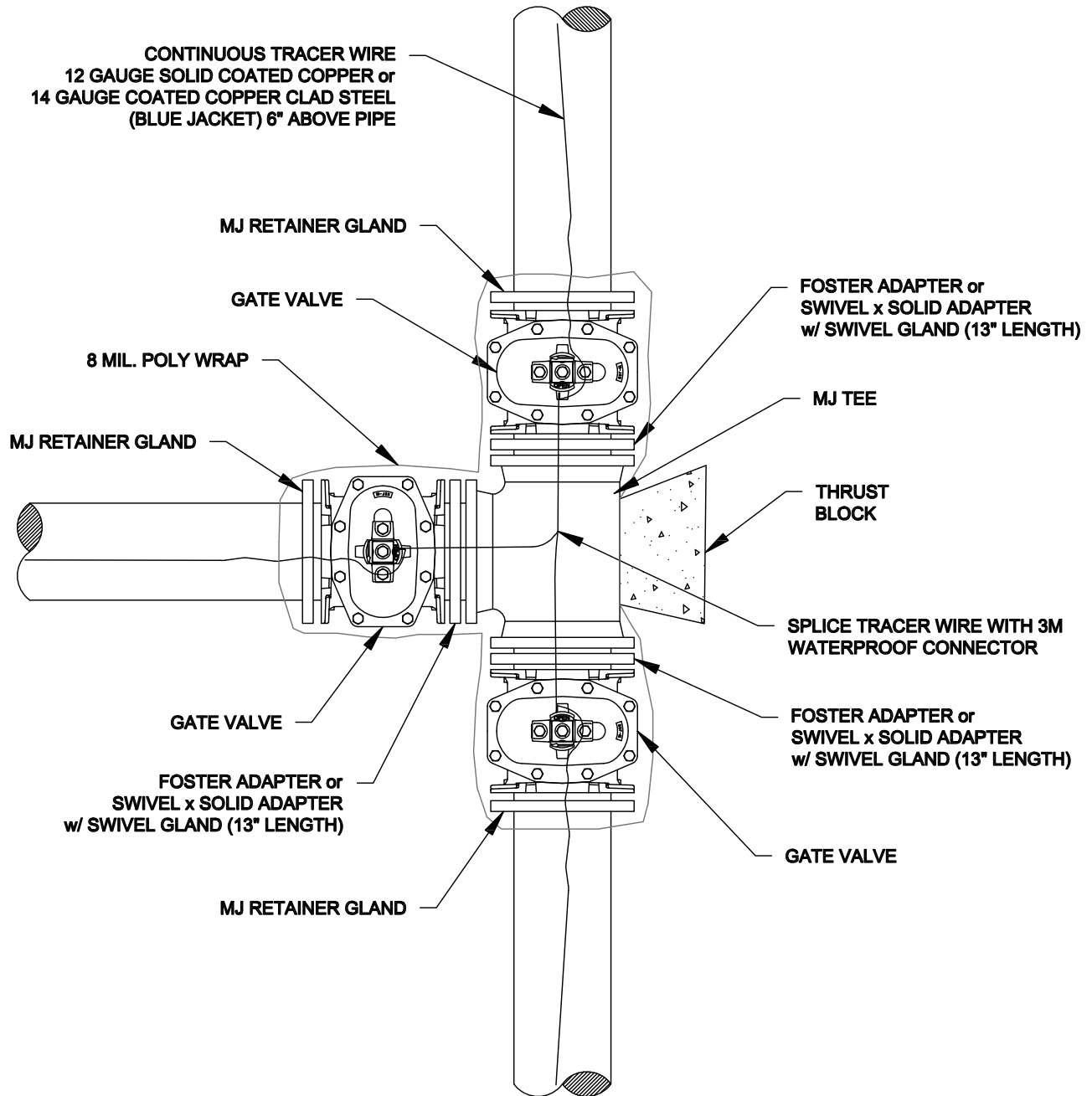
SHEET:
S-31

PERMITTED VALVES

1. AMERICAN FLOW CONTROL SERIES 2500
2. MUELLER SERIES 2360
3. AMERICAN AVK COMPANY SERIES 25 OR SERIES 45

NOTES:

1. ALL VALVES SHALL BE SECURELY ANCHORED TO THE TEE.
2. ALL HARDWARE SHALL BE 316 STAINLESS STEEL.
3. IF DEPTH OF BURY EXCEEDS 4 FT., A VALVE STEM EXTENSION SHALL BE REQUIRED. THE VALVE STEM EXTENSION NUT SHALL BE WITHIN 24-INCHES TO 12-INCHES OF THE FINISHED SURFACE.
4. A FLEX T-3 AS MANUFACTURED BY INFACCT CORPORATION MAY BE USED IN LIEU OF MJ TEE W/ FOSTER ADAPTERS.



BENTON UTILITIES
 1827 Dale Ave.
 Benton, AR 72015
 Phone: (501) 776-5984

SECTION:

SEWER DETAILS

DESCRIPTION:

3-WAY GATE VALVES

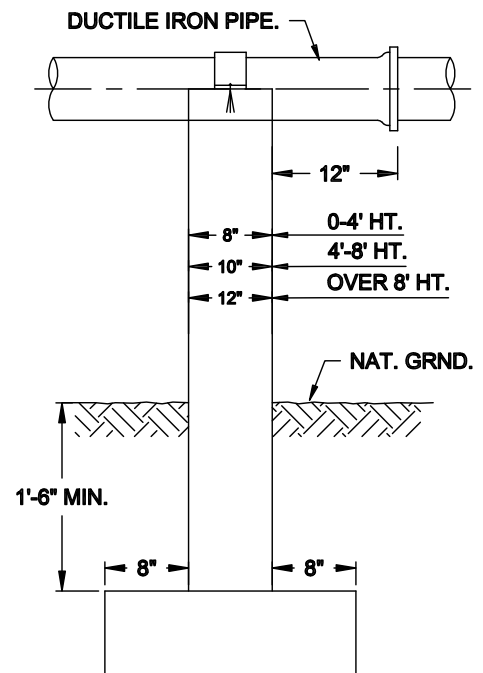
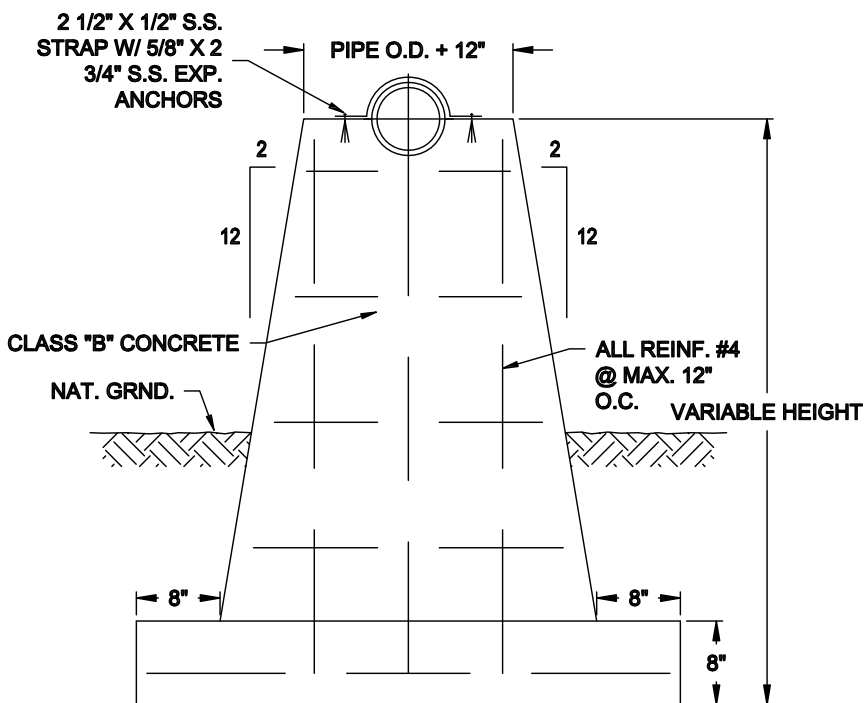
ISSUE DATE:

SEPTEMBER 2015

REVISION DATE:

SHEET:

S-32



CONCRETE PIER

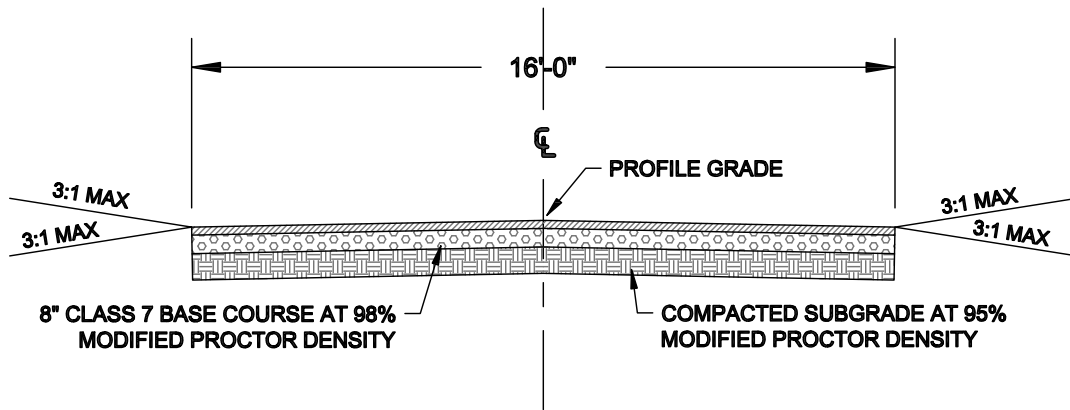


BENTON UTILITIES
 1827 Dale Ave.
 Benton, AR 72015
 Phone: (501) 776-5984

SECTION: SEWER DETAILS
 DESCRIPTION: CONCRETE PIER

ISSUE DATE: SEPTEMBER 2015
 REVISION DATE:

SHEET: S-33



GRAVEL DRIVE FOR SEWAGE PUMP STATION

GENERAL NOTES

1. CRUSHED STONE - MATERIAL IN EACH COURSE SHALL BE COMPACTED TO A DENSITY OF 98% MAXIMUM MODIFIED DENSITY.



BENTON UTILITIES
 1827 Dale Ave.
 Benton, AR 72015
 Phone: (501) 776-5984

SECTION:

SEWER DETAILS

DESCRIPTION:

GRAVEL DRIVE
 FOR SEWAGE PUMP STATION

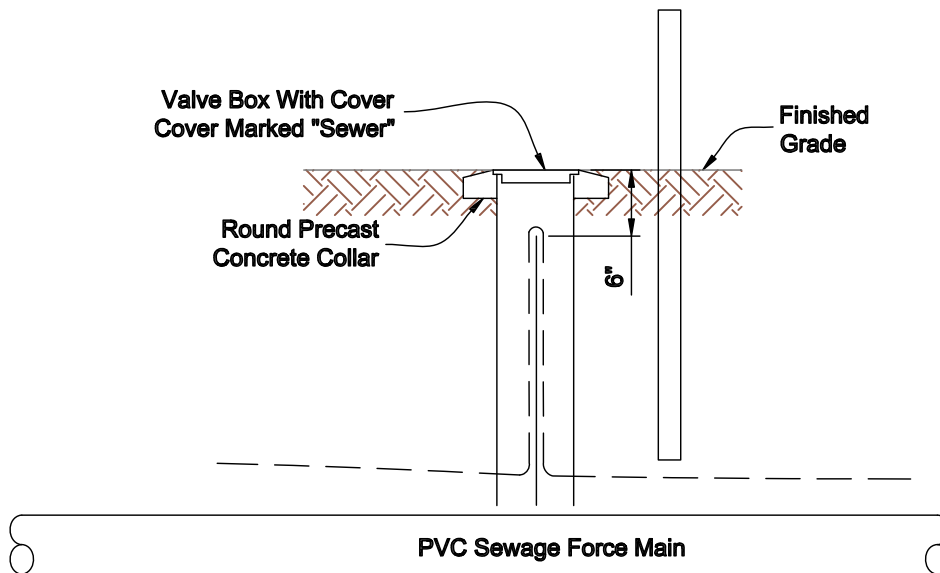
ISSUE DATE:

SEPTEMBER 2015

REVISION DATE:

SHEET:

S-34



Notes:

1. Tracer Wire Test Station Shall Be Installed Every 1,000 Ft. Minimum And At Every Fiberglass Post Utility Marker.
2. Do Not Install Test Stations At Posts Located At Valves, Clean-out Stations Or Air Release Valves That Have Ground Rod Inside Access Vault

TRACER WIRE TEST STATION



BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

SECTION: SEWER DETAILS

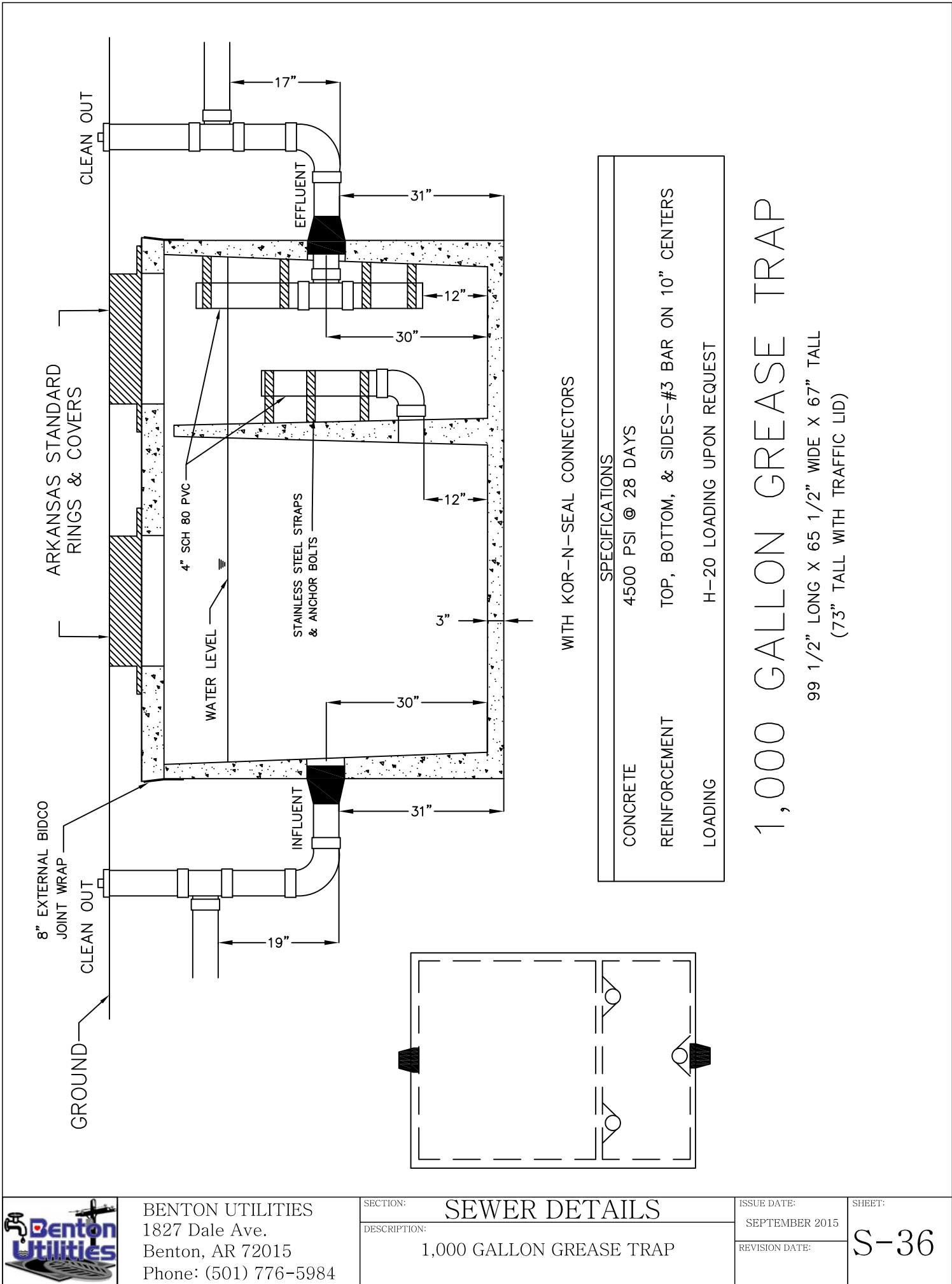
DESCRIPTION:
TRACER WIRE TEST STATION

ISSUE DATE:
SEPTEMBER 2015

REVISION DATE:

SHEET:

S-35



SPECIFICATIONS	
CONCRETE	4500 PSI @ 28 DAYS
REINFORCEMENT	TOP, BOTTOM, & SIDES—#3 BAR ON 10" CENTERS
LOADING	HI-20 LOADING UPON REQUEST

1,000 GALLON GREASE TRAP

99 1/2" LONG X 65 1/2" WIDE X 67" TALL
(73" TALL WITH TRAFFIC LID)

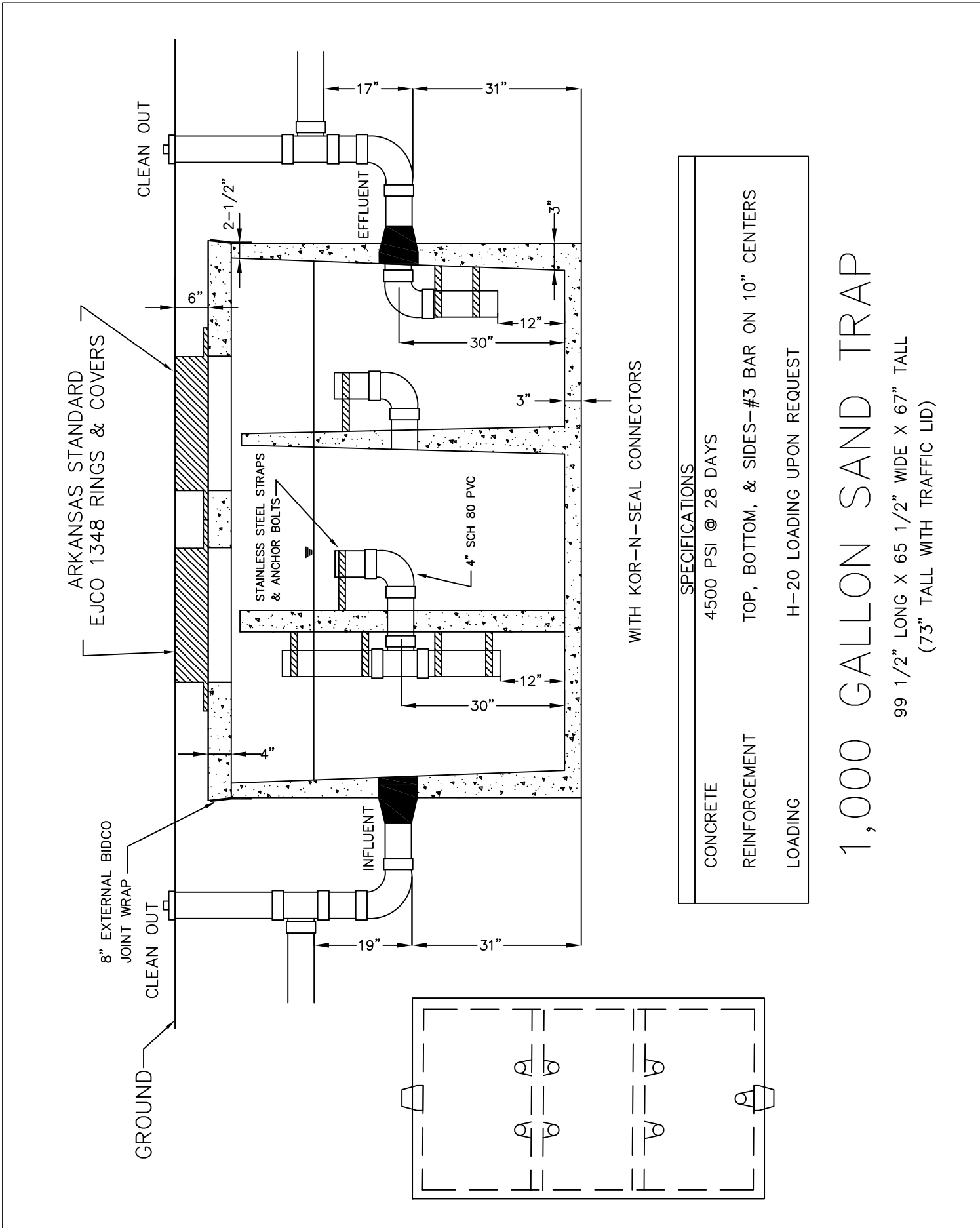


BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

SECTION:	SEWER DETAILS
DESCRIPTION:	1,000 GALLON GREASE TRAP

ISSUE DATE:	SEPTEMBER 2015
REVISION DATE:	

SHEET:
S-36



SPECIFICATIONS	
CONCRETE	4500 PSI @ 28 DAYS
REINFORCEMENT	TOP, BOTTOM, & SIDES-#3 BAR ON 10" CENTERS
LOADING	H-20 LOADING UPON REQUEST

1,000 GALLON SAND TRAP

99 1/2" LONG X 65 1/2" WIDE X 67" TALL
(73" TALL WITH TRAFFIC LID)



BENTON UTILITIES
1827 Dale Ave.
Benton, AR 72015
Phone: (501) 776-5984

SECTION:	SEWER DETAILS
DESCRIPTION:	1,000 GALLON SAND TRAP

ISSUE DATE:	SEPTEMBER 2015
REVISION DATE:	

SHEET:
S-37