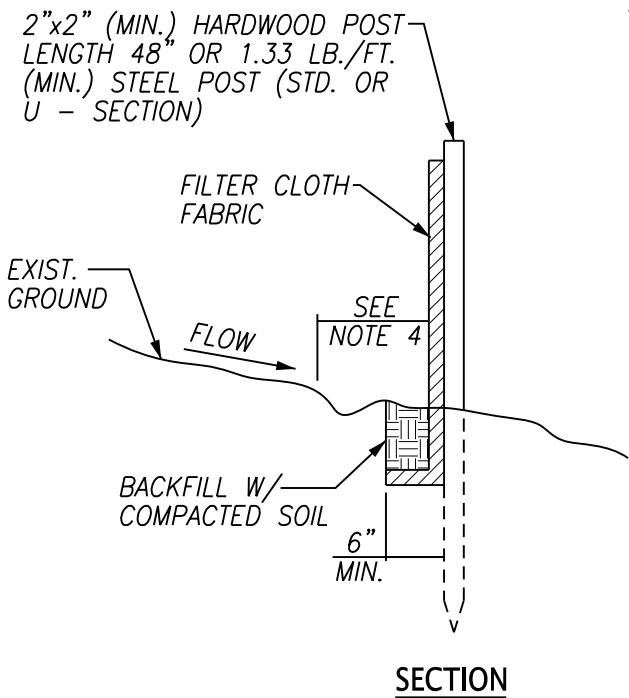


NOTES:

1. SILT FENCE SHALL BE PRE-ASSEMBLED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.
2. SILT FENCE SHALL HAVE AN APPROVED BACKING OR A BUILT-IN REINFORCED STRUCTURE AS RECOMMENDED BY THE MANUFACTURER TO SUPPORT THE GEOTEXTILE FABRIC.
3. ONCE PERMANENT VEGETATION IS ESTABLISHED, REMOVE THE SILT FENCE, BACKFILL TRENCH WITH TOPSOIL, AND APPLY SEED AND MULCH TO ALL DISTURBED AREAS. LEGALLY DISPOSE OF REMOVED FENCE OFF-SITE.
4. PLACE SILT FENCE AT LEAST 5 TO 7 FEET AWAY FROM STEEP OR LONG SLOPES TO IMPOUND STORMWATER RUNOFF.
5. POST SPACING SHALL BE 4 FEET MAXIMUM WITHIN A DRAINAGE CHANNEL.
6. TURN LAST 7 TO 10 FEET OF SILT FENCE UPHILL.



2328 LOVELL ROAD
KNOXVILLE, TN 37932
TELEPHONE 865.690.2521

APPROVED BY: WKUD	DRAWN BY: ARDURRA	Scale: NTS
SILT FENCE		Date: 04/22/24
		DRAWING NUMBER: G1

1/2" x 5" DIA
STEEL PLATE
DRILL FOR
PIPE SADDLE

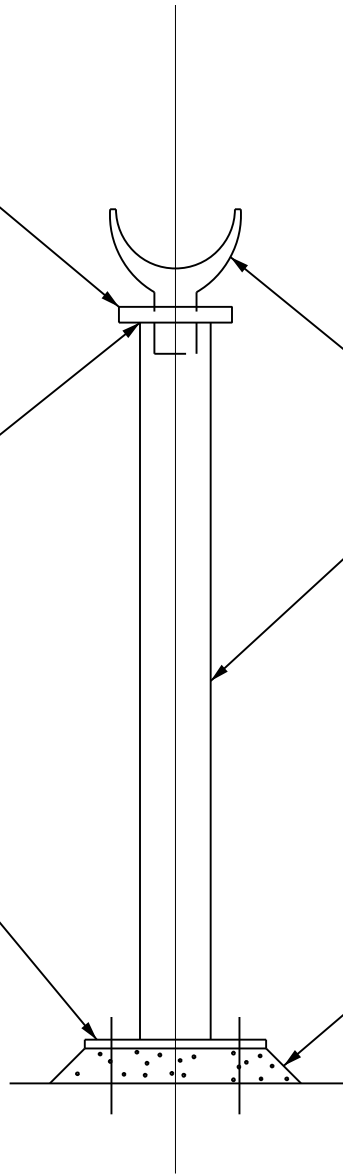
WELD

PIPE SADDLE, SELECT
TO FIT PIPE/FITTING
TO BE SUPPORTED

4" DIA STEEL PIPE
(ADJUST HEIGHT AS
REQUIRED- MAX. 3
FEET)

BASE PLATE
7"x7"x3/8"
W/(4) 3/4" DIA SS
EXPANSION BOLTS

1" GROUT (MIN)



2328 LOVELL ROAD
KNOXVILLE, TN 37932
TELEPHONE 865.690.2521

APPROVED BY: WKUD

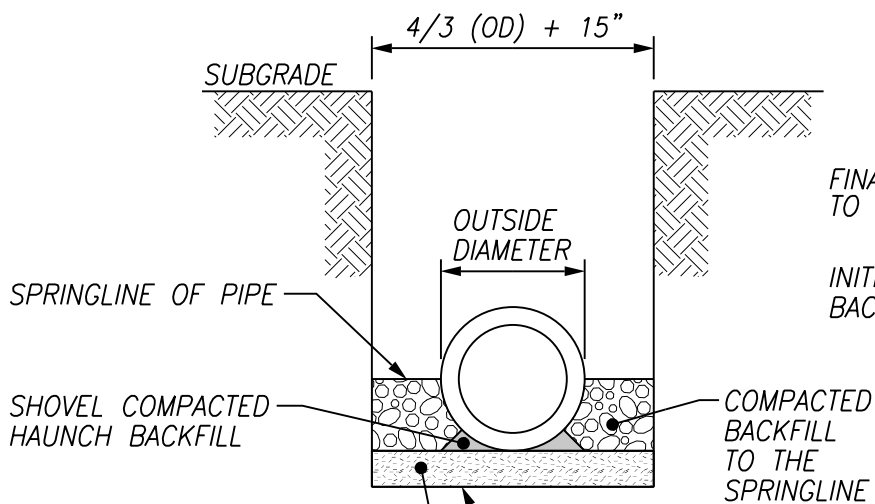
DRAWN BY: ARDURRA

Scale: NTS

PIPE SUPPORT DETAIL

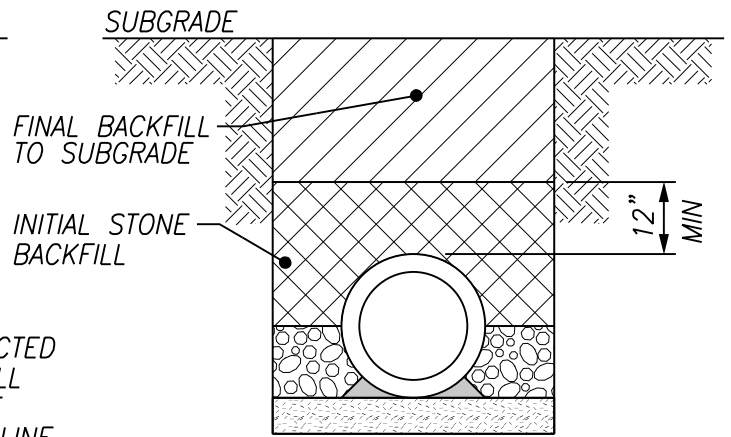
Date: 04/22/24

DRAWING NUMBER:
G2



COMPACTED BEDDING MATERIAL,
 4" DEEP FOR ≤15" DIAMETER
 6" DEEP FOR >15" & ≤36" DIAMETER
 8" DEEP FOR >36" DIAMETER

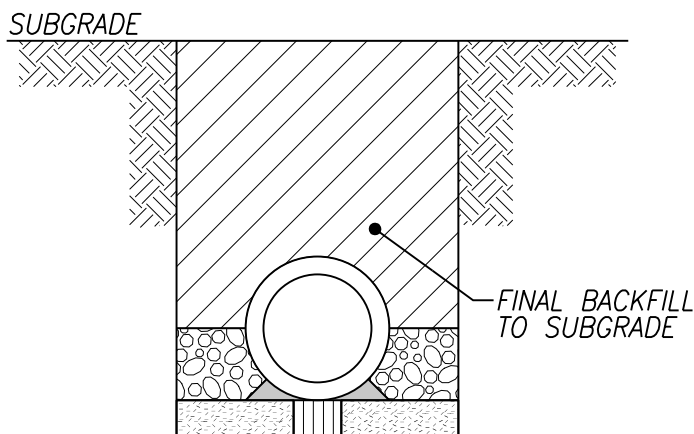
SMOOTH COMPACTED BOTTOM
 FREE OF LOOSE SOIL AND
 DEBRIS



BACKFILL FOR FLEXIBLE PIPE

NOTES:

1. TRENCH DESIGN AND SAFETY FOR PIPELINE CONSTRUCTION IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL CONFORM WITH ALL APPLICABLE LOCAL, STATE, AND OSHA REGULATIONS.
2. BEDDING MATERIAL AND BACKFILL MATERIAL UP TO THE SPRINGLINE SHALL BE #57 OR #67 STONE.
3. REGARDLESS OF BACKFILL MATERIAL OR PIPE MATERIAL, PLACE BACKFILL IN 8" LOOSE LIFTS AND COMPACT STONE TO 100% OF THE STANDARD PROCTOR DENSITY AT 2% LESS THAN THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY AASHTO T99 METHOD D. INITIAL BACKFILL SHALL BE #57 OR #67 STONE.
4. FINAL BACKFILL SHALL BE #57 OR #67 STONE UNDER PAVEMENTS & WITHIN 3' OF PAVEMENT.
5. FINAL BACKFILL BEYOND 3' OF PAVEMENT SHALL BE STRUCTURAL SOIL BACKFILL.

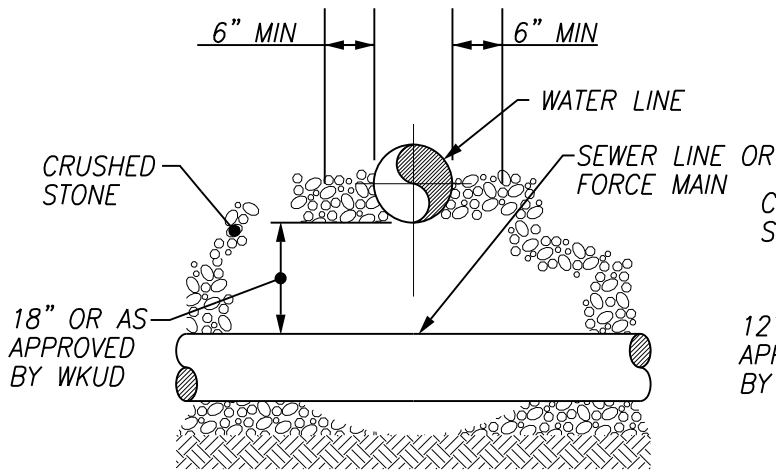


BACKFILL FOR RIGID PIPE

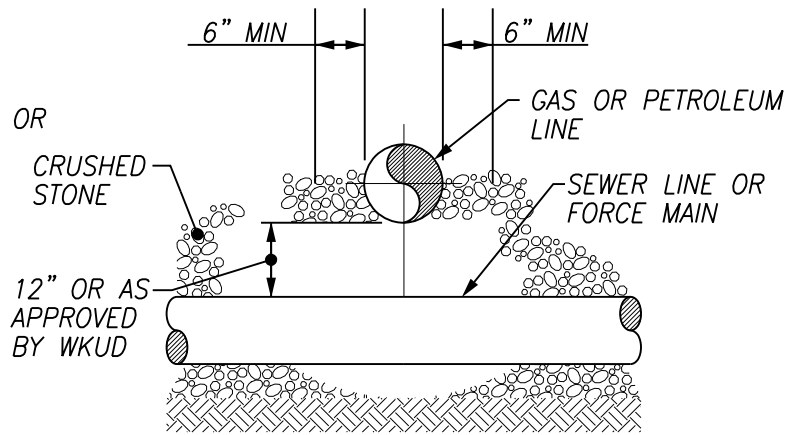


2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

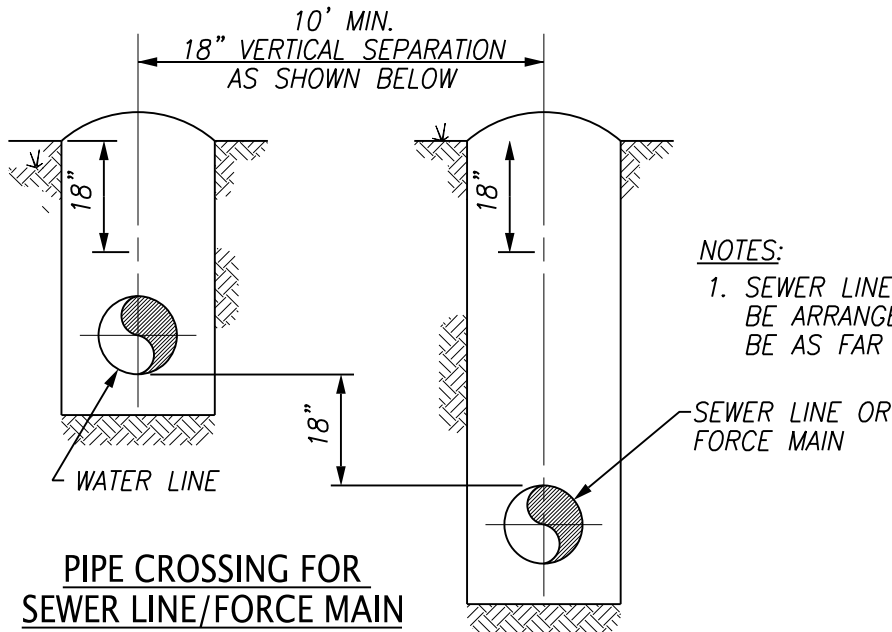
APPROVED BY: WKUD	DRAWN BY: ARDURRA	Scale: NTS
PIPE BEDDING AND BACKFILL		Date: 04/22/24
		DRAWING NUMBER: G3



SEWER LINE/FORCE MAIN
UNDER WATER LINE



SEWER LINE/FORCE MAIN UNDER
GAS TRANSMISSION LINE



NOTES:

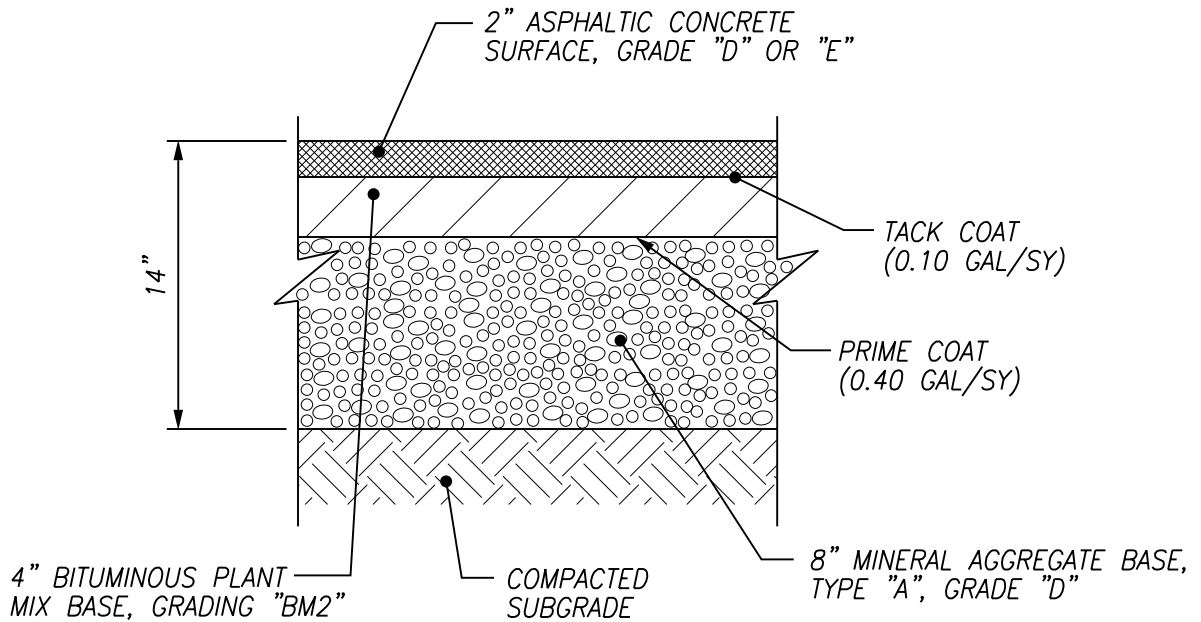
- SEWER LINES AT WATER MAIN CROSSING SHALL BE ARRANGED SO THAT THE SEWER JOINTS WILL BE AS FAR AS POSSIBLE FROM WATER MAIN JOINTS

PIPE CROSSING FOR
SEWER LINE/FORCE MAIN



2328 LOVELL ROAD
KNOXVILLE, TN 37932
TELEPHONE 865.690.2521

APPROVED BY:	WKUD	DRAWN BY:	ARDURRA	Scale:	NTS
PIPE SEPARATION				Date:	04/22/24
				DRAWING NUMBER:	G4



NOTES:

1. PAVEMENT HAS NOT BEEN DESIGNED FOR CONSTRUCTION TRAFFIC/ACTIVITIES. USE OF THESE SURFACES FOR CONSTRUCTION ACTIVITIES SHALL BE DONE AT THE CONTRACTOR'S CONVENIENCE AND RISK. DAMAGE TO PAVEMENT RESULTING FROM THESE ACTIVITIES SHALL BE REPAIRED IN CONFORMANCE WITH THE INITIAL PAVEMENT SPECIFICATIONS.



2328 LOVELL ROAD
KNOXVILLE, TN 37932
TELEPHONE 865.690.2521

APPROVED BY: WKUD

DRAWN BY: ARDURRA

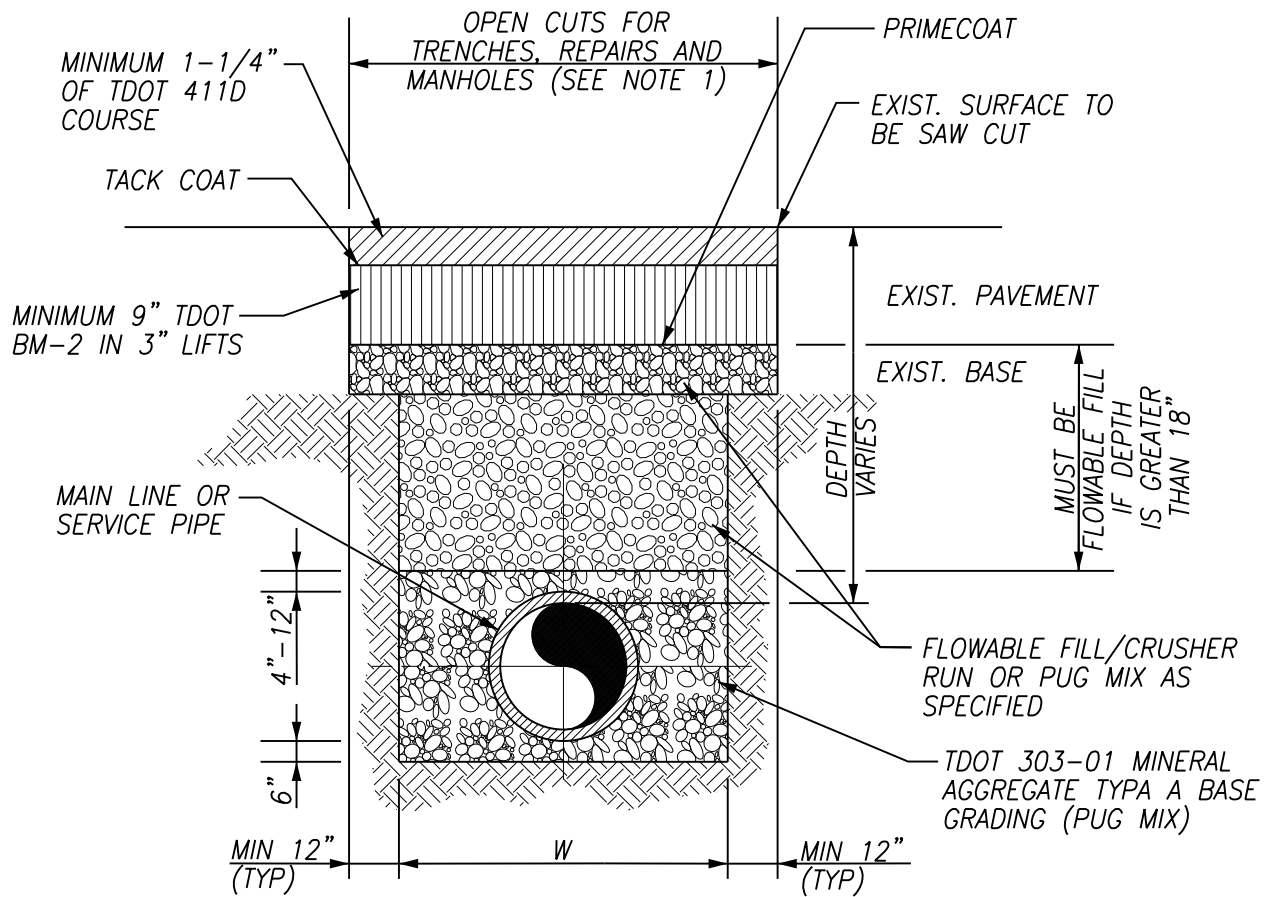
Scale: NTS

**ASPHALT PAVEMENT SECTION
(KNOX COUNTY ROADWAYS)**

Date: 04/22/24

DRAWING NUMBER:

G5



NOTES:

1. AT THE DISCRETION OF THE OWNER, WHEN TRENCH PARALLELS CENTERLINE OF ROADWAY AND WIDTH IS EQUAL TO OR GREATER THAN HALF THE LANE WIDTH, THEN THE PAVEMENT WIDTH FOR THE SURFACE COURSE SHALL BE FOR AN OVERLAY OF THE ROADWAY ENTIRE LANE WIDTH.
2. PAVEMENT REPAIRS/REPLACEMENT SHALL BE THERMALLY BONDED WITH THE EXISTING ASPHALT EDGES.
3. EDGE TO BE SAWED WTH CONCRETE SAW TO A NEAT SQUARED EDGE. BROOM CLEANED BEFORE TACK COAT APPLIED.
4. EDGES TO BE TACKED WITH CRS-1 OR CRS-2.
5. CONTRACTOR/UTILITY RESPONSIBLE FOR REPLACEMENT OF ANY PAVEMENT MARKINGS DISTURBED OR COVERED BY OVERLAY.
6. TO BE REPAIRED IN ACCORDANCE WITH TDOT RULES AND REGULATIONS FOR ACCOMMODATING UTILITIES WITHIN HIGHWAY RIGHTS-OF-WAY, APPENDIX 8.



2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY: WKUD

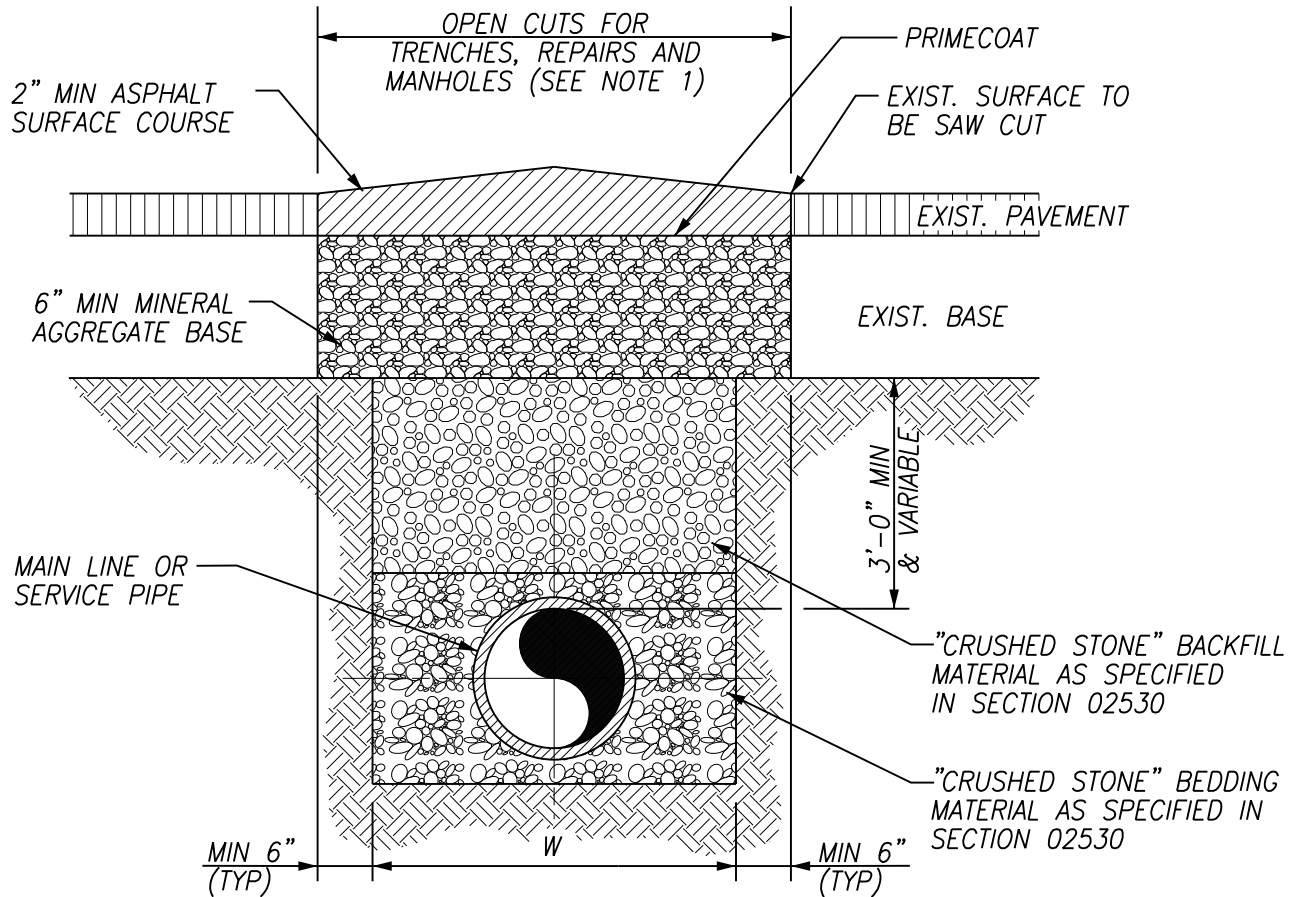
DRAWN BY: ARDURRA

Scale: NTS

**TYPICAL ASPHALT PAVEMENT
 REPLACEMENT TYPE "I"
 STATE HIGHWAYS**

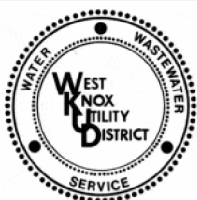
Date: 04/22/24

DRAWING NUMBER:
G6.1



NOTES:

1. AT THE DISCRETION OF THE OWNER, WHEN TRENCH PARALLELS CENTERLINE OF ROADWAY AND WIDTH IS EQUAL TO OR GREATER THAN HALF THE LANE OR ROADWIDTH WIDTH, THEN THE PAVEMENT WIDTH SHALL BE FOR AN OVERLAY OF THE ENTIRE LANE OR ROADWAY WIDTH.
2. PAVEMENT REPAIRS/REPLACEMENT SHALL BE THERMALLY BONDED WITH THE EXISTING ASPHALT EDGES.



2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY: WKUD

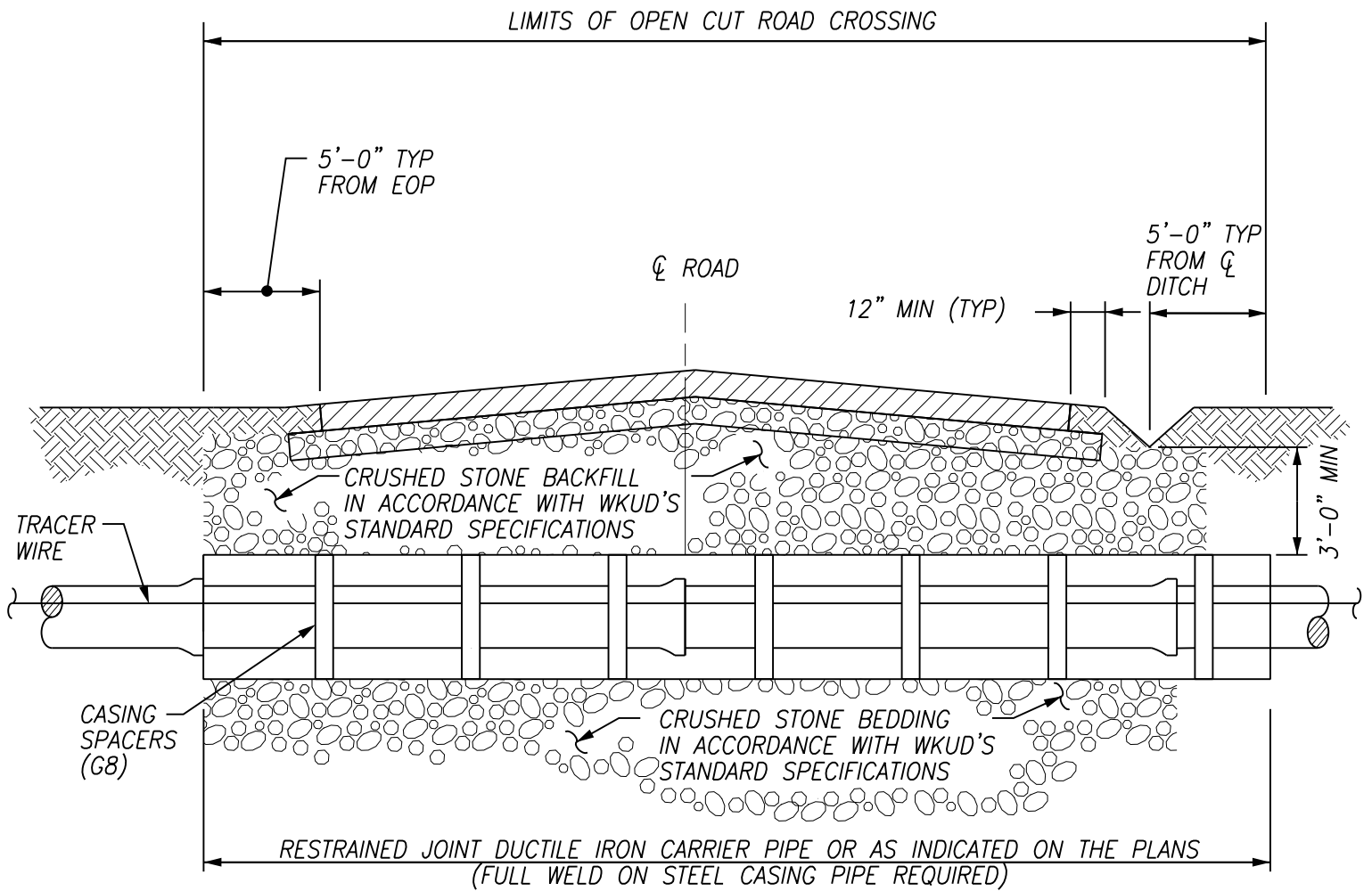
DRAWN BY: ARDURRA

Scale: NTS

TYPICAL ASPHALT PAVEMENT
 REPLACEMENT TYPE "II"
 OPEN CUT PARKING AREAS
 & DRIVEWAY CROSSING

Date: 04/22/24

DRAWING NUMBER:
G6.2



SECTION

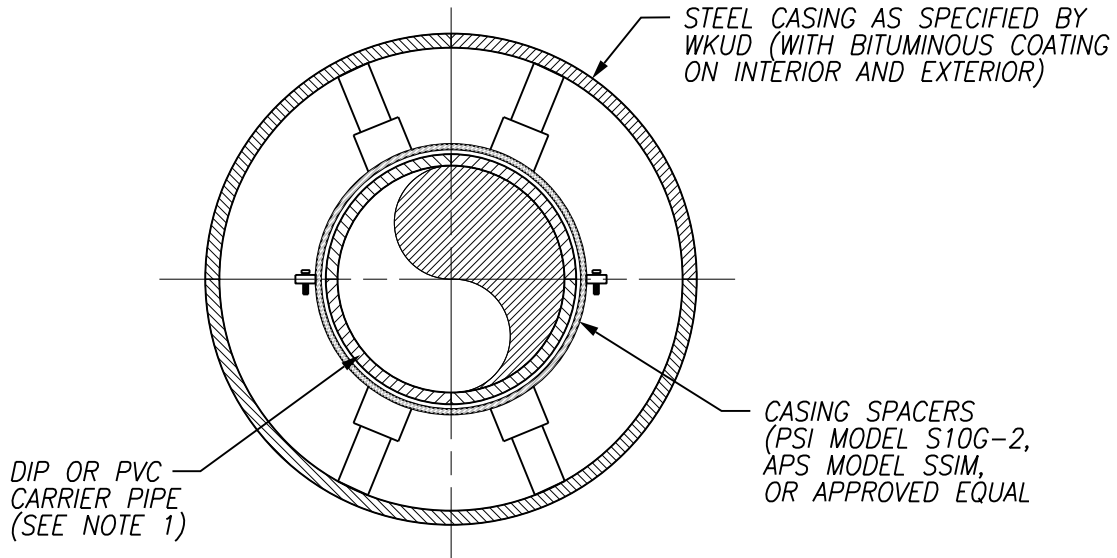
NOTES:

1. ALL PIPING WITHIN THE LIMITS OF THE OPEN CUT ROAD CROSSING SHALL BE DIP TO MATCH THE SIZE OF PIPING SHOWN ON THE PLANS.



2328 LOVELL ROAD
KNOXVILLE, TN 37932
TELEPHONE 865.690.2521

APPROVED BY:	WKUD	DRAWN BY:	ARDURRA	Scale:	NTS
TYPICAL OPEN CUT ROAD CROSSING				Date:	04/22/24
				DRAWING NUMBER:	G7



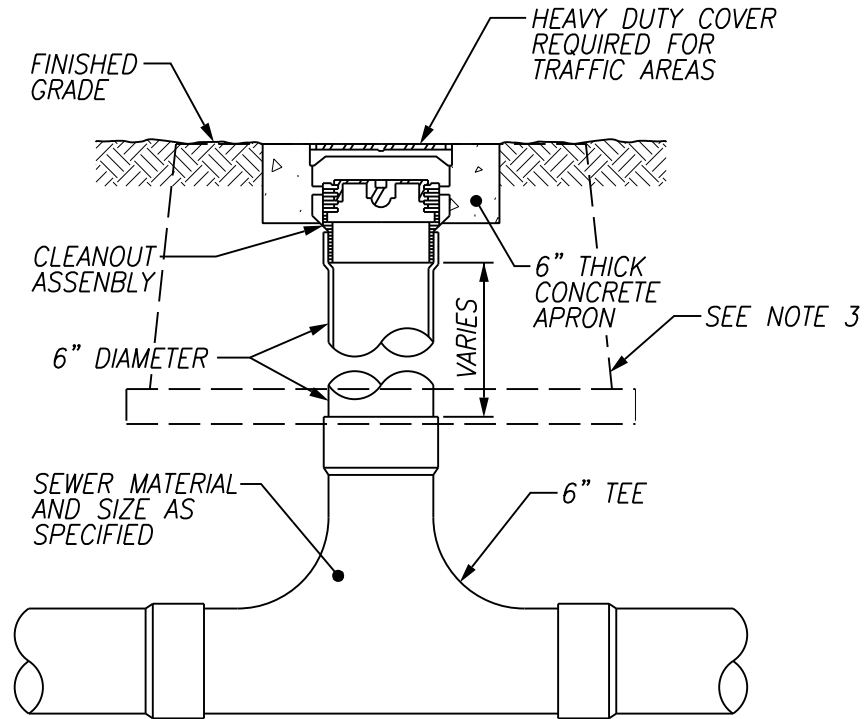
NOTES:

1. CARRIER PIPE SHALL BE CLASS 350 DUCTILE IRON PIPE (WATER) OR RJB CERTA-LOK DR18 PRESSURE PIPE (235 PSI) (SEWER).
2. INSTALL CASING SPACERS IN STRICT COMPLIANCE WITH THE WRITTEN MANUFACTURER'S INSTRUCTIONS.
3. PROVIDE CASING END SEALS IN ACCORDANCE WITH WKUD REQUIREMENTS.
4. CONTRACTOR TO CONFIRM THAT ALL CASING SPACERS WILL FIT INSIDE OF SPECIFIED STEEL CASING AS SHOWN ON THE PLANS PRIOR TO ORDERING MATERIALS.
5. TRACER WIRE SHALL BE INSTALLED WITH CASING PIPE.
6. SPACERS SHALL BE SPACED EVENLY AT NO GREATER THAN 6 FEET APART
7. ENDS OF CASING PIPES MUST BE FULLY ROUND TO ALLOW CONTINUOUS WELDS FOR SMOOTH INSTALLATION OF CASING SPACERS.



2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY:	WKUD	DRAWN BY:	ARDURRA	Scale:	NTS
CASING AND SPACER DETAIL				Date:	04/22/24
				DRAWING NUMBER:	G8



NOTES:

1. TRAFFIC RATED CLEANOUTS ARE REQUIRED FOR CLEANOUTS LOCATED WITHIN PAVEMENT, ROADWAYS, DRIVEWAYS OR ANY OTHER AREAS DEEMED NECESSARY BY THE OWNER OR OWNER'S REPRESENTATIVE.
2. PROVIDE CONCRETE APRON AROUND CLEANOUT AS SHOWN IN GRAVEL AREAS ONLY.
3. PROVIDE PLASTIC UTILITY BOX WITH LID MARKED "SEWER" FOR CLEANOUTS IN GRASS AREAS. UTILITY BOX SHALL BE MODEL DFW1300.12.4E AS MANUFACTURED BY "DWF PLASTICS, INC." OR APPROVED EQUAL.



2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY: WKUD

DRAWN BY: ARDURRA

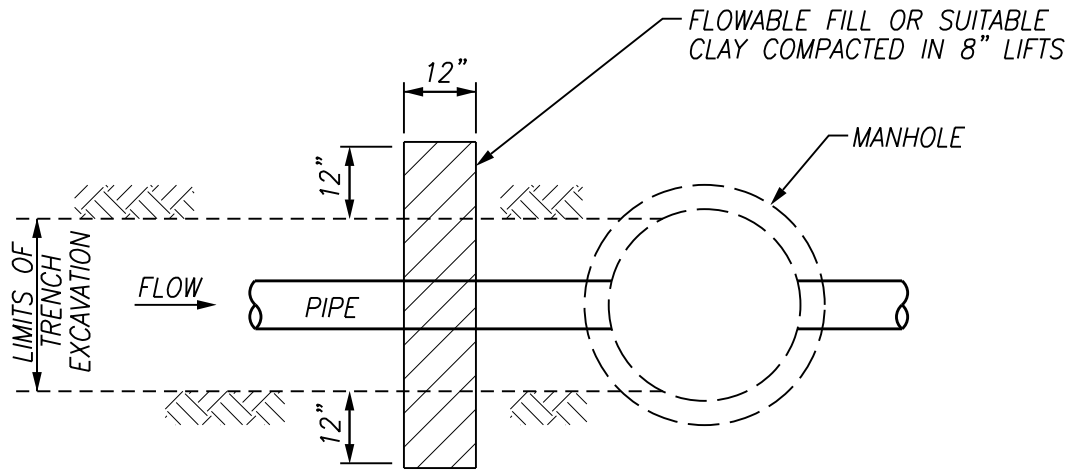
Scale: NTS

**2 WAY CLEANOUT
 DETAIL**

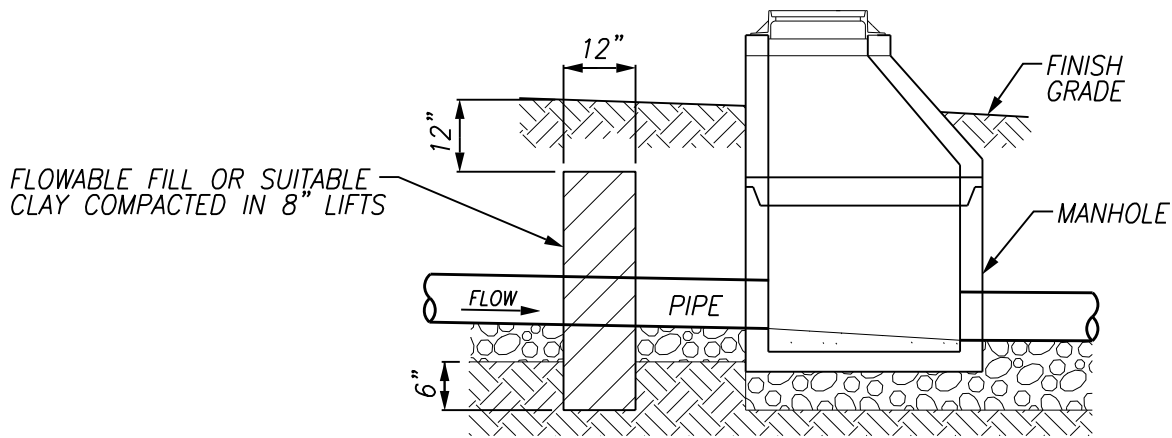
Date: 04/22/24

DRAWING NUMBER:

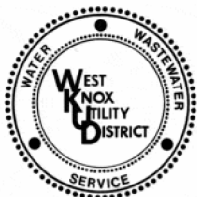
S1



PLAN



SECTION



2328 LOVELL ROAD
KNOXVILLE, TN 37932
TELEPHONE 865.690.2521

APPROVED BY: WKUD

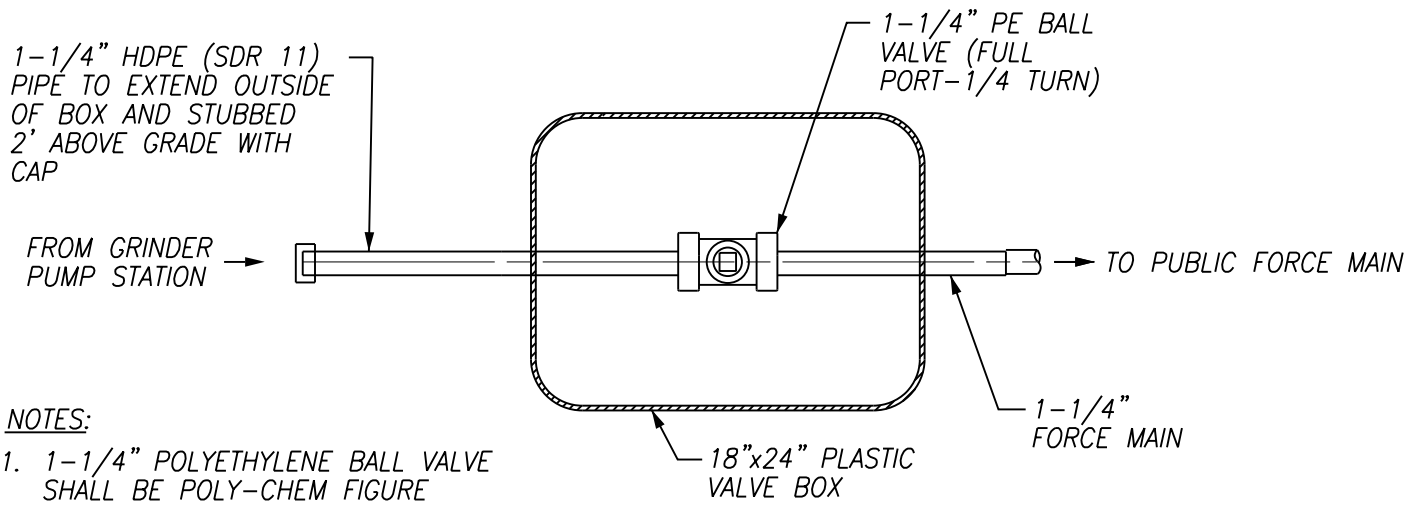
DRAWN BY: ARDURRA

Scale: NTS

SANITARY SEWER WATERSTOP

Date: 04/22/24

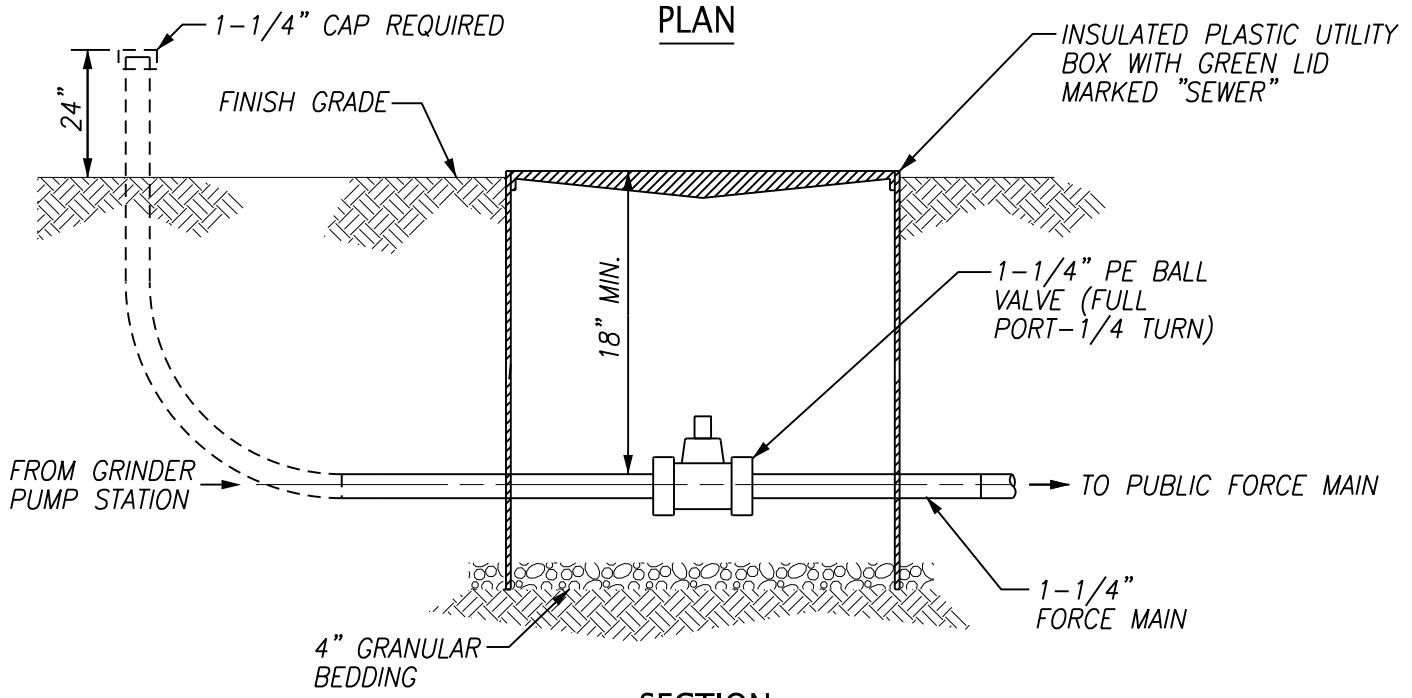
DRAWING NUMBER:
S2



NOTES:

1. 1-1/4" POLYETHYLENE BALL VALVE SHALL BE POLY-CHEM FIGURE 1.25-99111-C AS MANUFACTURED BY "POLYVALVE".

PLAN



SECTION

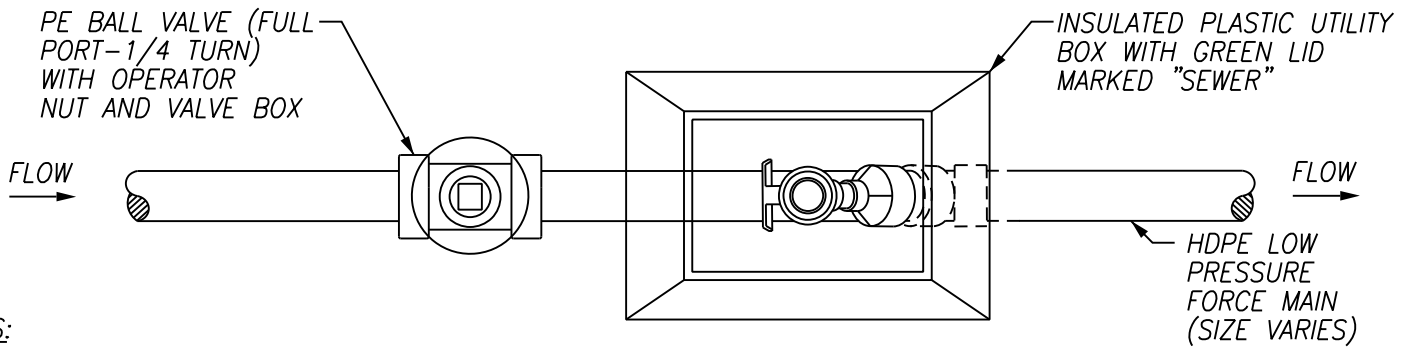
NOTES:

1. THE PURPOSE OF STUBBING THE 1 1/4-INCH FORCE MAIN OUT OF THE GROUND IS FOR THE HOME BUILDER'S ABILITY TO EASILY FIND AND GAIN ACCESS TO THE SERVICE LATERAL. IT IS INTENDED THAT THE HOME BUILDER SHALL REMOVE THE DASHED PORTION OF THE 1 1/4-INCH FORCE MAIN AND CONNECT THE BUILDING SEWER AT THE LOCATION OUTSIDE OF THE UTILITY BOX.



2328 LOVELL ROAD
KNOXVILLE, TN 37932
TELEPHONE 865.690.2521

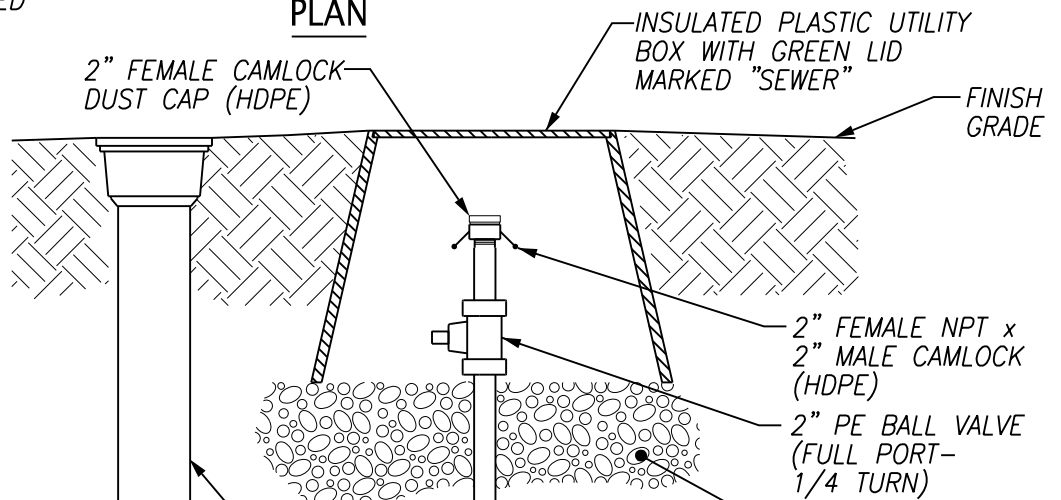
APPROVED BY: WKUD	DRAWN BY: ARDURRA	Scale: NTS
LOW PRESSURE SEWER SERVICE BOX		Date: 04/22/24
		DRAWING NUMBER: S3



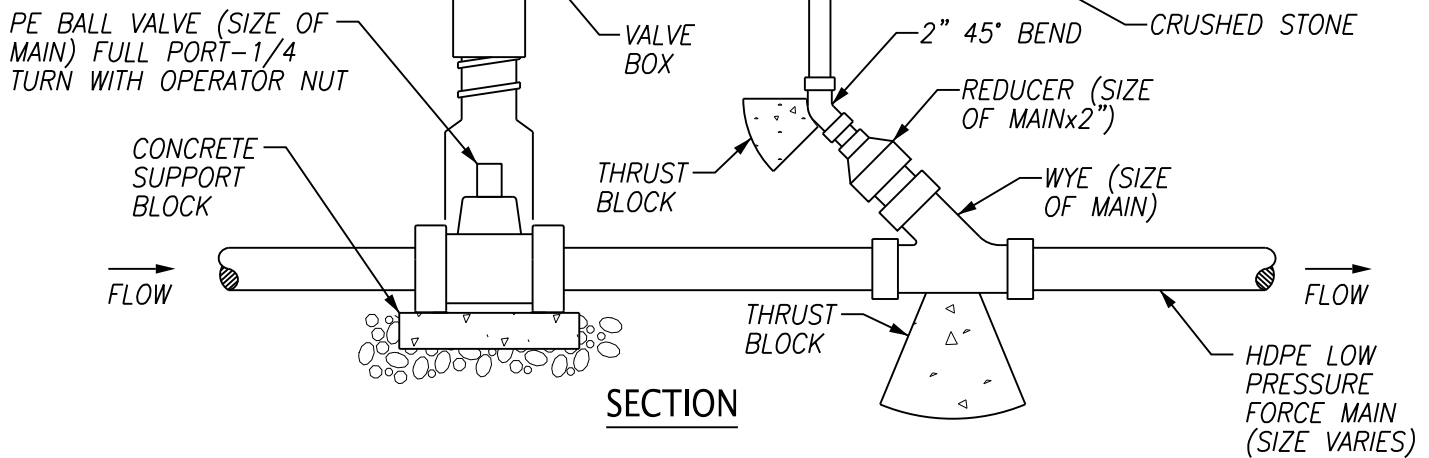
NOTES:

1. UTILITY BOXES TO BE LOCATED OUTSIDE OF PAVEMENT.
2. POLYETHYLENE BALL VALVES SHALL BE POLY-CHEM AS MANUFACTURED BY "POLYVALVE" WITH FIGURE NUMBERS AS FOLLOWS:
 - A. 1-1/4": 1.25-99111-C
 - B. 2": 2-99111-C
 - C. 3": 3-99111-C
 - D. 4": 4-99111-C

PLAN



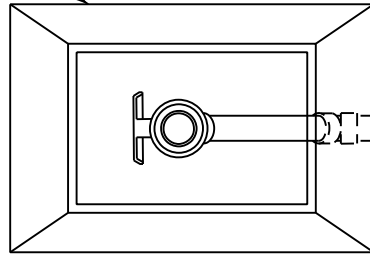
SECTION



2328 LOVELL ROAD
KNOXVILLE, TN 37932
TELEPHONE 865.690.2521

APPROVED BY: WKUD	DRAWN BY: ARDURRA	Scale: NTS
LOW PRESSURE IN-LINE FLUSHING STATION		Date: 04/22/24
		DRAWING NUMBER: S4

INSULATED PLASTIC UTILITY BOX WITH GREEN LID MARKED "SEWER"



2" PE BALL VALVE (FULL PORT-1/4 TURN) WITH 2" OPERATOR NUT AND VALVE BOX

FLOW

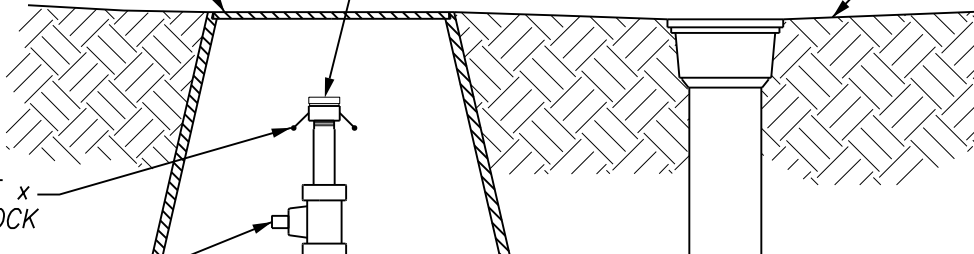
2" HDPE LOW PRESSURE FORCE MAIN

INSULATED PLASTIC UTILITY BOX WITH GREEN LID MARKED "SEWER"

PLAN

2" FEMALE CAMLOCK DUST CAP (HDPE)

FINISH GRADE



2" FEMALE NPT x 2" MALE CAMLOCK (HDPE)

2" PE BALL VALVE (FULL PORT-1/4 TURN)

VALVE BOX

CRUSHED STONE

2" PE BALL VALVE (FULL PORT-1/4 TURN) WITH 2" OPERATOR NUT

(2) 2" 45° BENDS

2" HDPE LOW PRESSURE FORCE MAIN

NOTES:

1. UTILITY BOXES TO BE LOCATED OUTSIDE OF PAVEMENT.
2. 2" POLYETHYLENE BALL VALVE SHALL BE POLY-CHEM FIGURE 2-99111-C AS MANUFACTURED BY "POLYVALVE".

THRUST BLOCKS

FLOW

SECTION

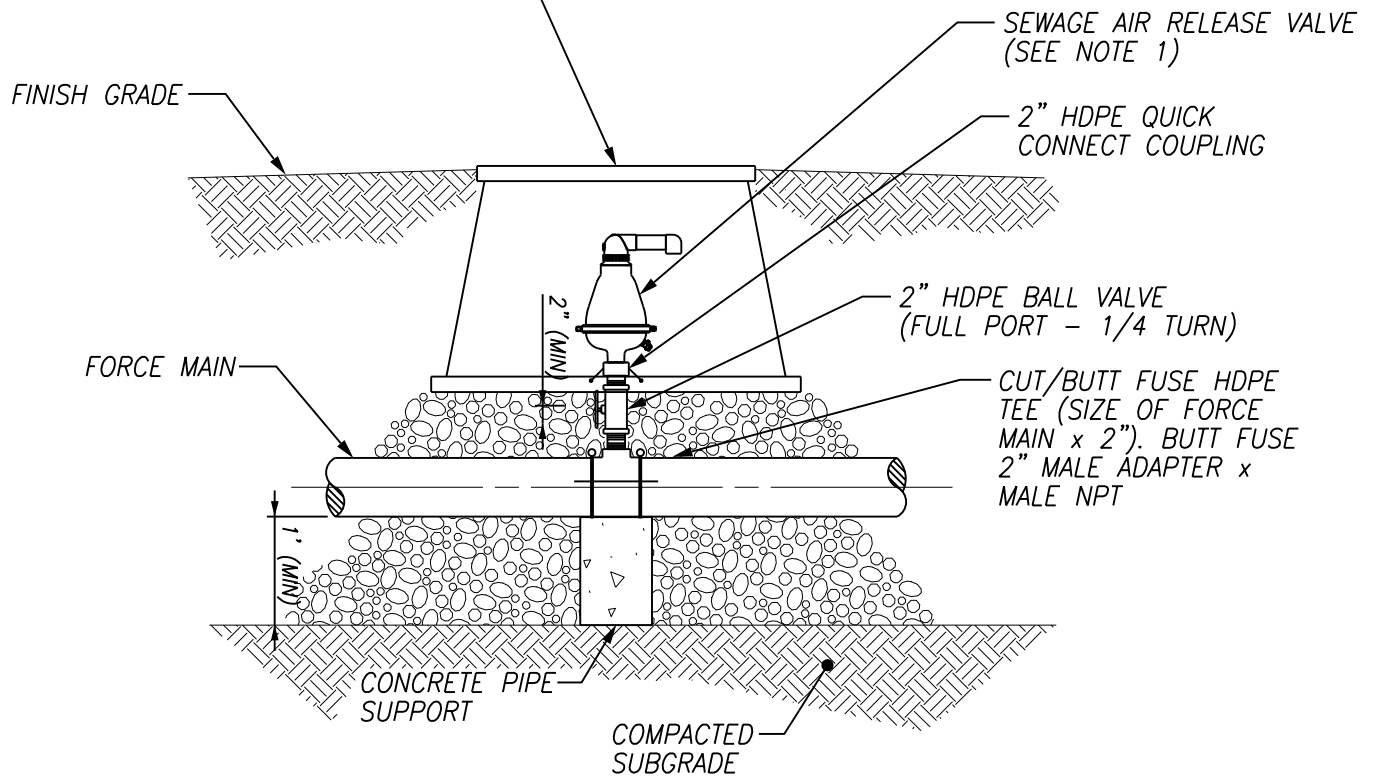
CONCRETE SUPPORT BLOCK



2328 LOVELL ROAD
KNOXVILLE, TN 37932
TELEPHONE 865.690.2521

APPROVED BY: WKUD	DRAWN BY: ARDURRA	Scale: NTS
LOW PRESSURE END-OF-LINE FLUSHING STATION		Date: 04/22/24
		DRAWING NUMBER: S5

MODEL 1730 XLUB SUPERFLEXION
IRRIGATION TURF BOX AS
MANUFACTURED BY "HIGHLINE
PRODUCTS" WITH GREEN LID



NOTES:

1. SARV SHALL BE 2-INCH D-025 COMBINATION SEWAGE AIR VACUUM VALVE AS MANUFACTURED BY A.R.I. OR APPROVED EQUAL.



2328 LOVELL ROAD
KNOXVILLE, TN 37932
TELEPHONE 865.690.2521

APPROVED BY: WKUD

DRAWN BY: ARDURRA

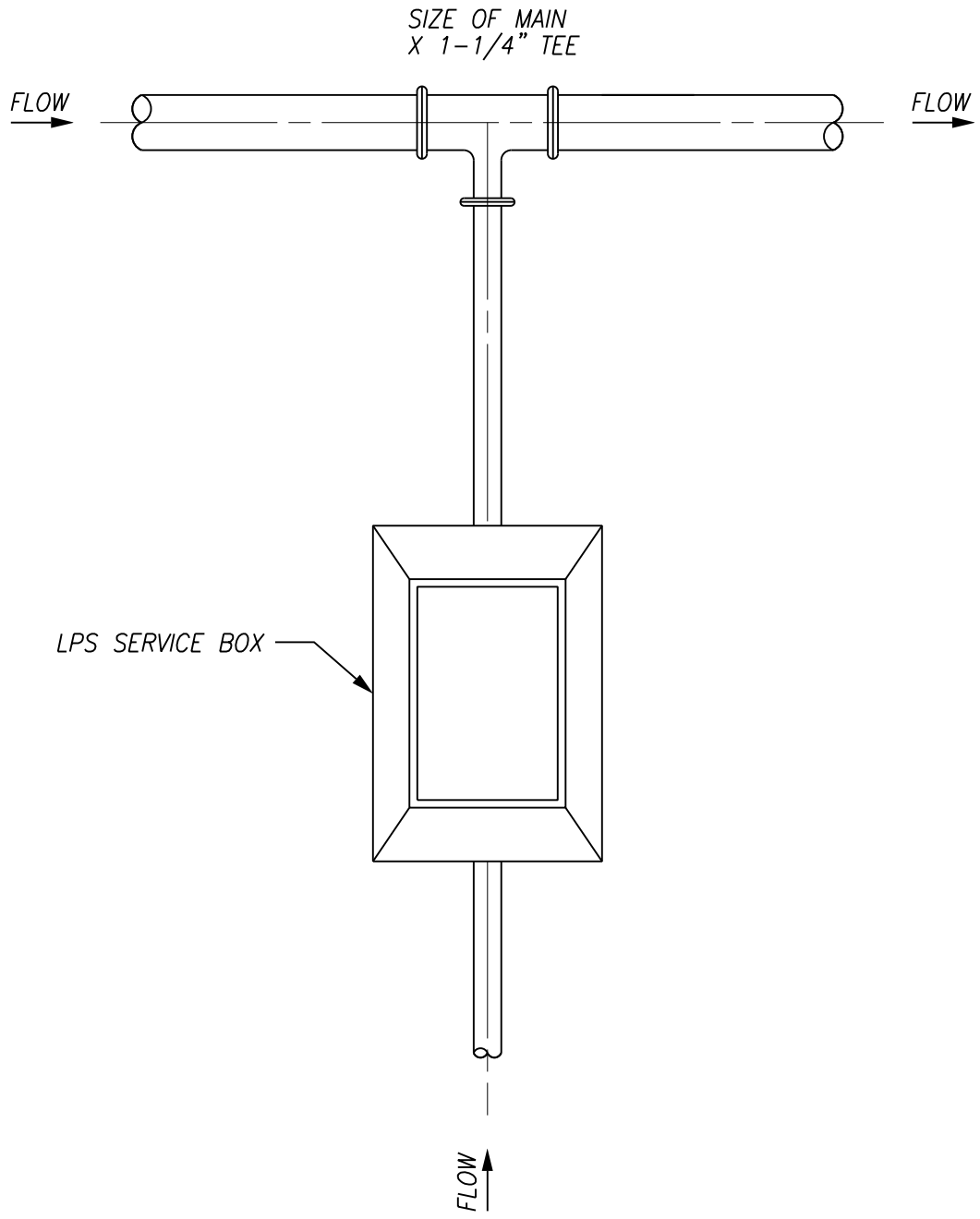
Scale: NTS

**LOW PRESSURE SEWER
AIR RELEASE VALVE**

Date: 04/22/24

DRAWING NUMBER:

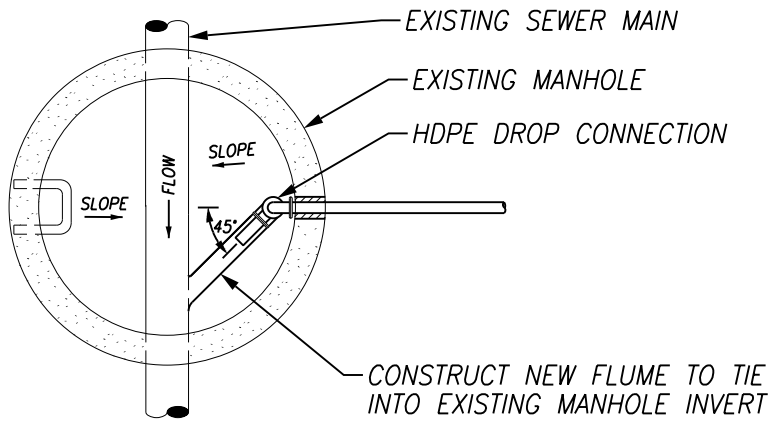
S6



2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

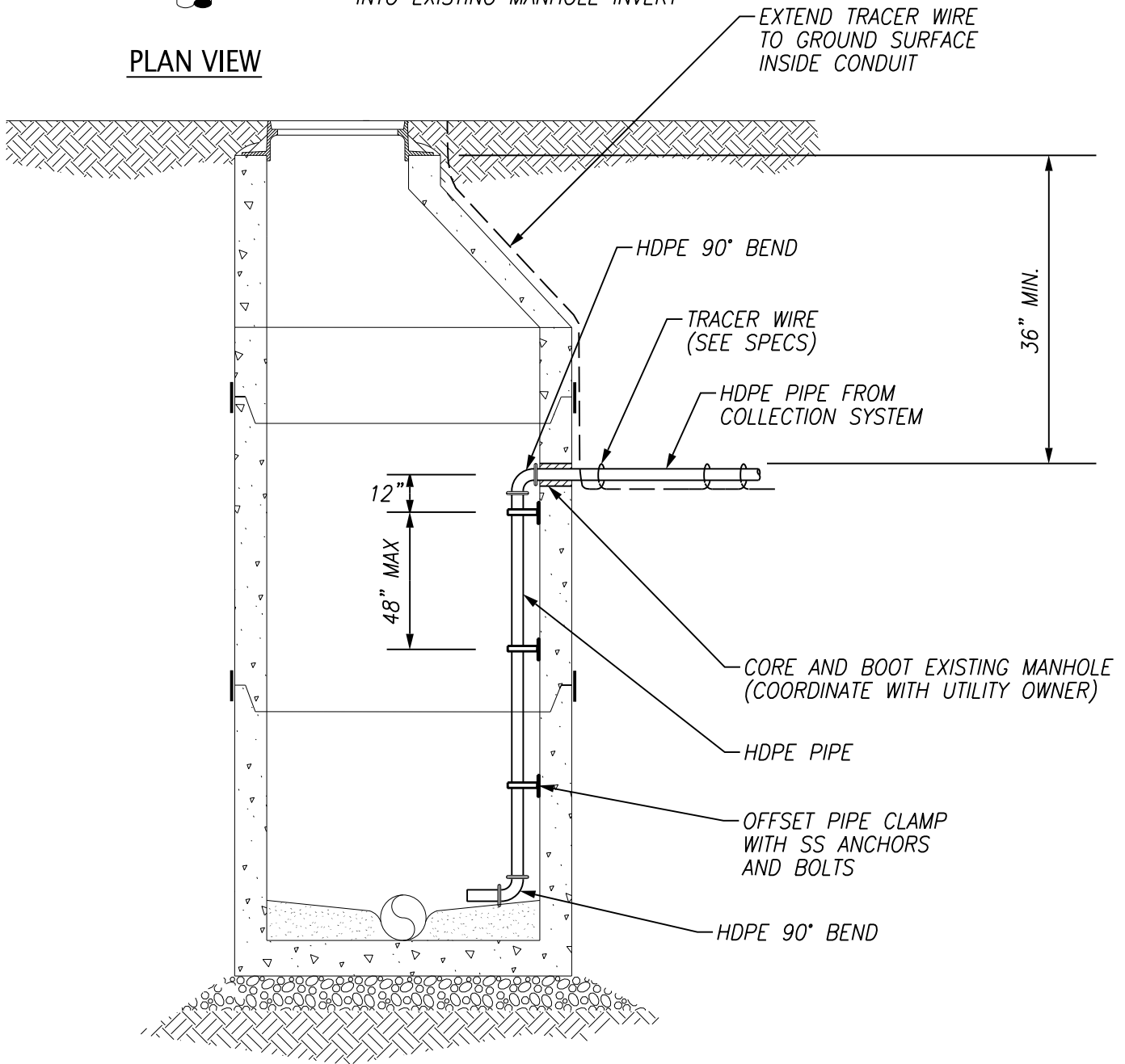
APPROVED BY:	WKUD	DRAWN BY:	ARDURRA	Scale:	NTS
--------------	------	-----------	---------	--------	-----

LOW PRESSURE SERVICE LATERAL TO MAIN	Date:	04/22/24
	DRAWING NUMBER:	S7



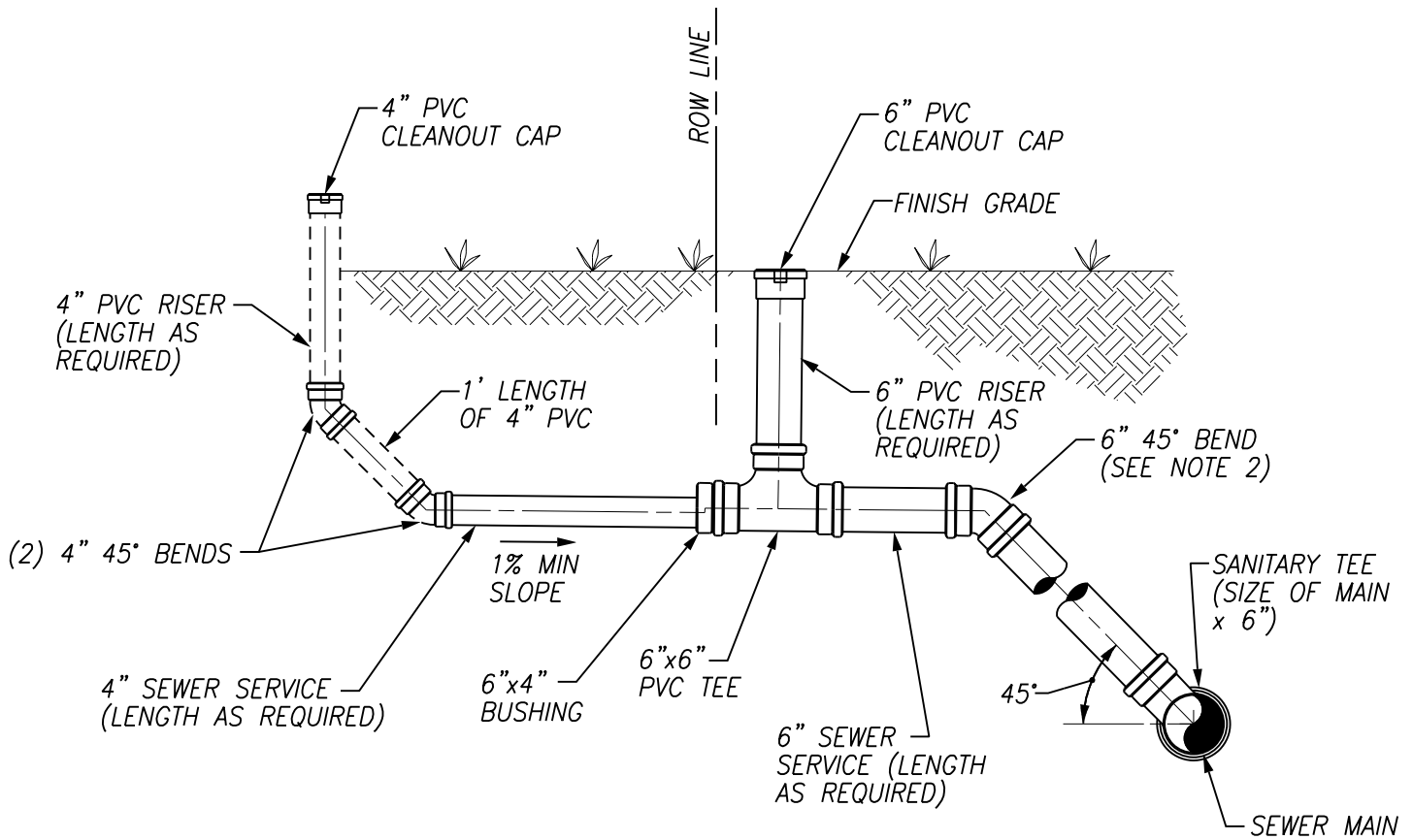
PLAN VIEW

NOTE:
 CONNECTION OF LOW PRESSURE SEWER SYSTEM TO GRAVITY SEWER REQUIRES THE APPLICATION OF OBIC MANHOLE COATING AT TIE-IN MANHOLE AND NEXT TWO MANHOLES DOWNSTREAM. APPLICATION TO BE PROVIDED BY A MANUFACTURER-CERTIFIED CONTRACTOR.



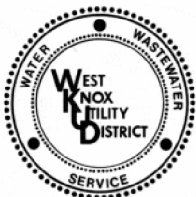
2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY: WKUD	DRAWN BY: ARDURRA	Scale: NTS
LOW PRESSURE SEWER DROP CONNECTION		Date: 04/22/24
		DRAWING NUMBER: S8



NOTES:

1. THE PURPOSE OF THE ADDITIONAL 4-INCH CLEANOUT IS FOR THE HOME BUILDER'S ABILITY TO EASILY FIND AND GAIN ACCESS TO THE SERVICE LATERAL. IT IS INTENDED THAT THE HOME BUILDER SHALL REMOVE THE DASHED PORTION OF THE 4-INCH SERVICE PIPE AND CONNECT THE BUILDING SEWER AT THE LOCATION OF THE LOWER 45° BEND.
2. 45° BEND ALLOWED FOR SEWER MAINS THAT ARE 6- FEET DEEP OR GREATER. SANITARY SERVICE LINES CONNECTING TO SEWER MAINS THAT ARE LESS THAN 6- FEET DEEP SHALL BE INSTALLED WITHOUT VERTICAL BENDS AT A 1.00% (MINIMUM) SLOPE.



2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY: WKUD

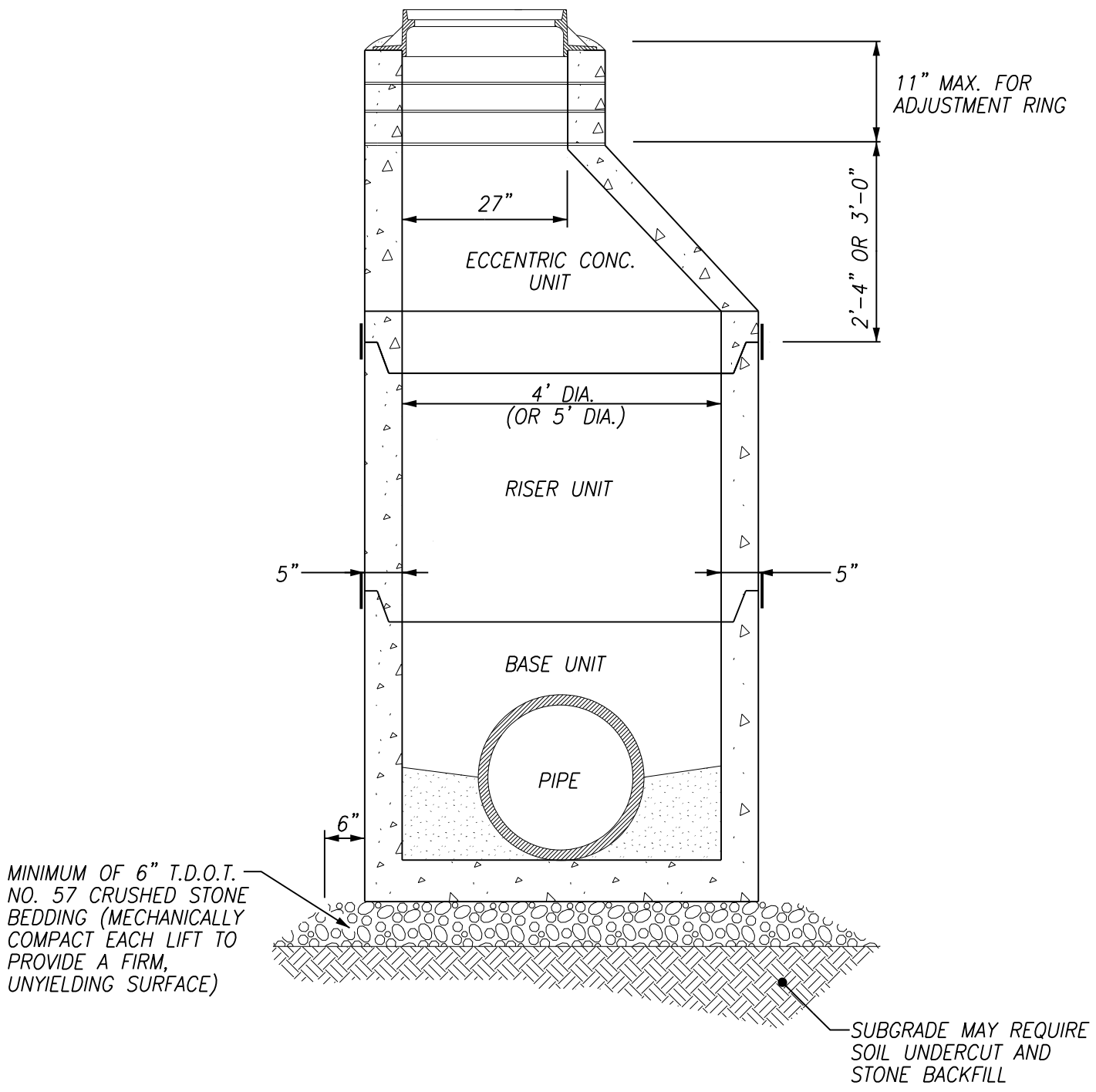
DRAWN BY: ARDURRA

Scale: NTS

**SANITARY SEWER
 SERVICE CONNECTION**

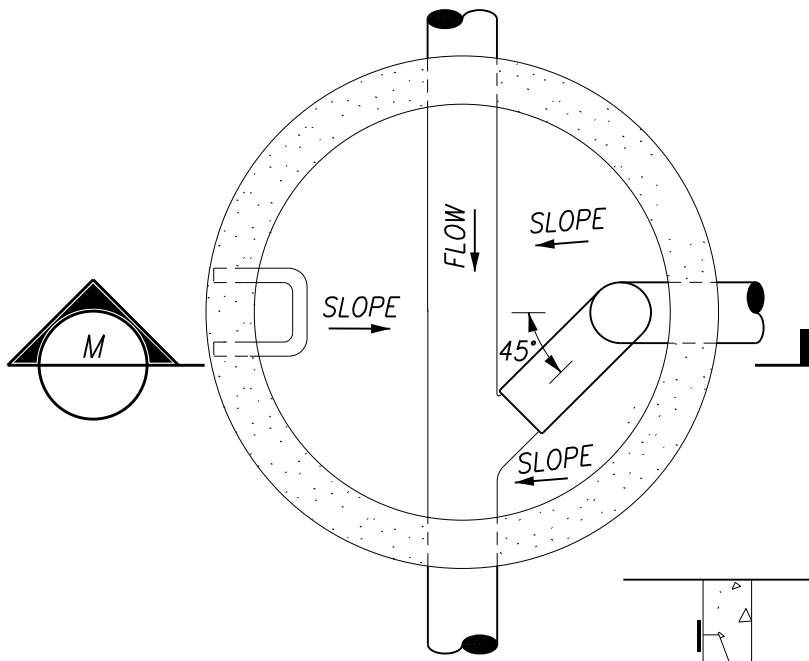
Date: 04/22/24

DRAWING NUMBER:
S9



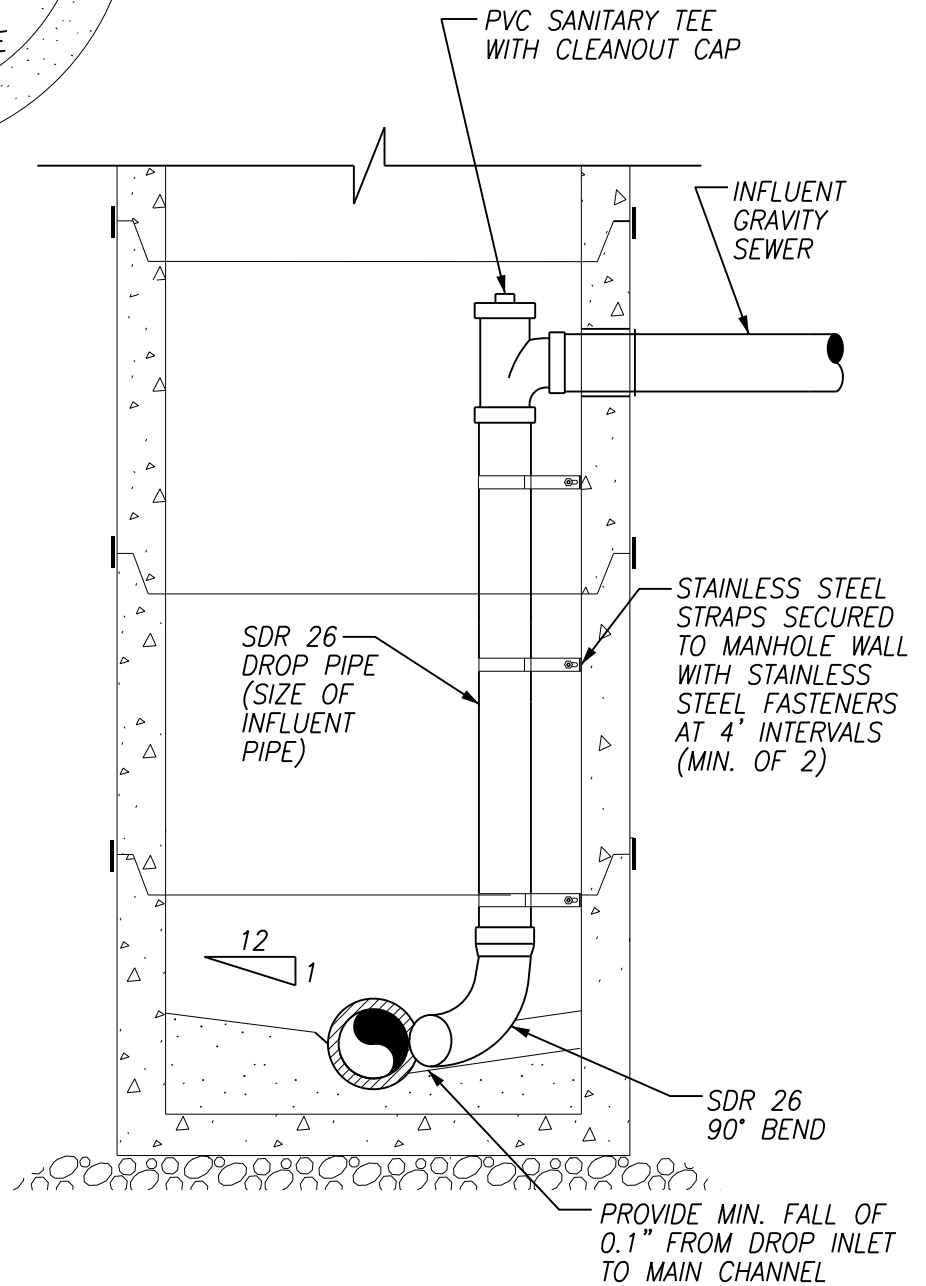
2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY: WKUD	DRAWN BY: ARDURRA	Scale: NTS
PRECAST SANITARY SEWER MANHOLE		Date: 04/22/24
		DRAWING NUMBER: S10



PLAN

REQUIRED DROP PIPE SIZES	
INFLUENT PIPE	DROP PIPE
8"	6"
10"	8"
12"	10"



SECTION "M"

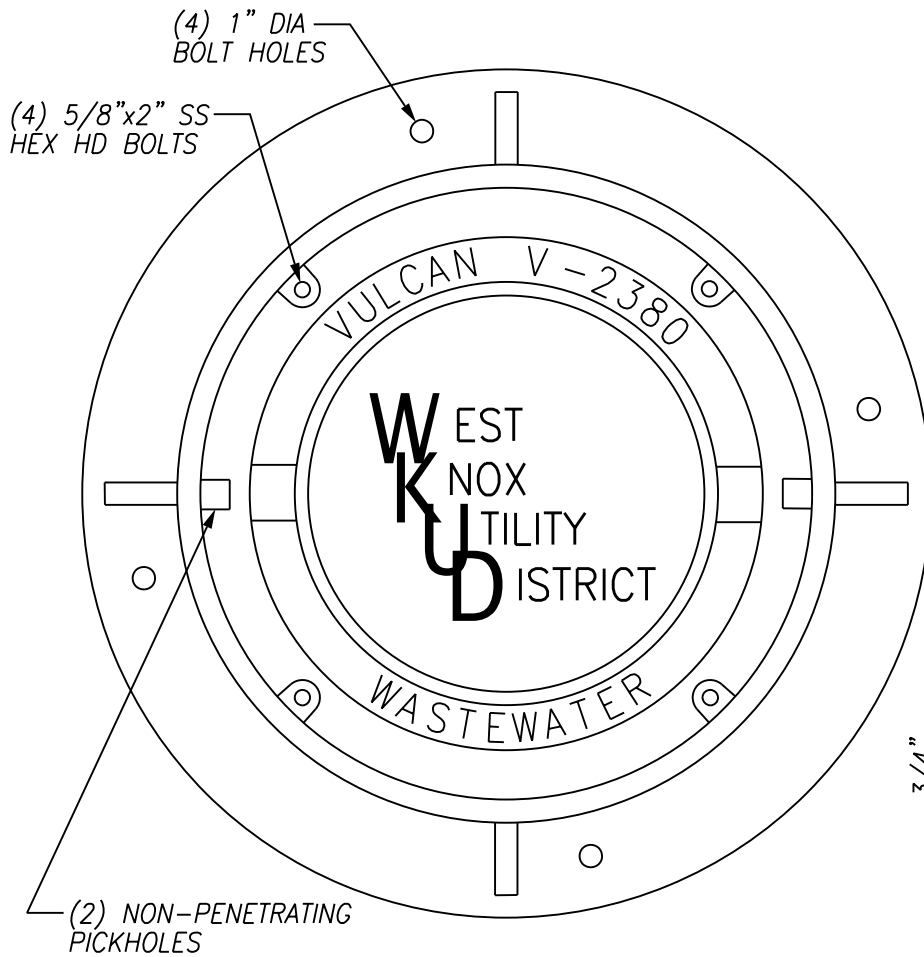
NOTES:

1. INSIDE DROP BOWL ASSEMBLY SHALL BE INSTALLED WITH 304 STAINLESS STEEL BRACKETS AND 18-8 STAINLESS STEEL FASTENERS IN ACCORDANCE WITH THE WRITTEN MANUFACTURER'S RECOMMENDATIONS.

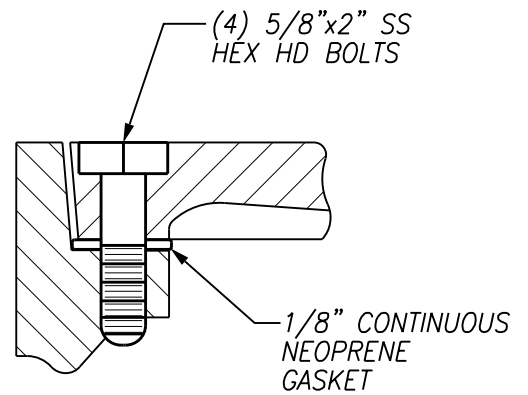


2328 LOVELL ROAD
KNOXVILLE, TN 37932
TELEPHONE 865.690.2521

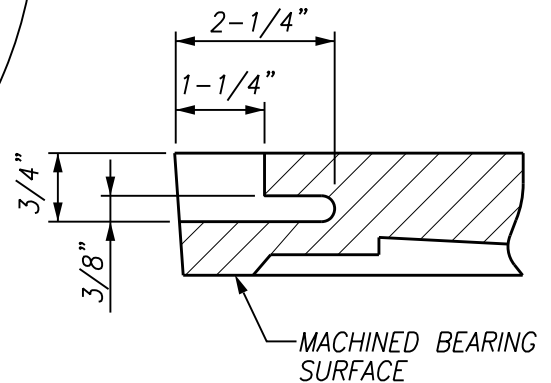
APPROVED BY: WKUD	DRAWN BY: ARDURRA	Scale: NTS
TYPICAL INSIDE DROP ASSEMBLY		Date: 04/22/24
		DRAWING NUMBER: S11



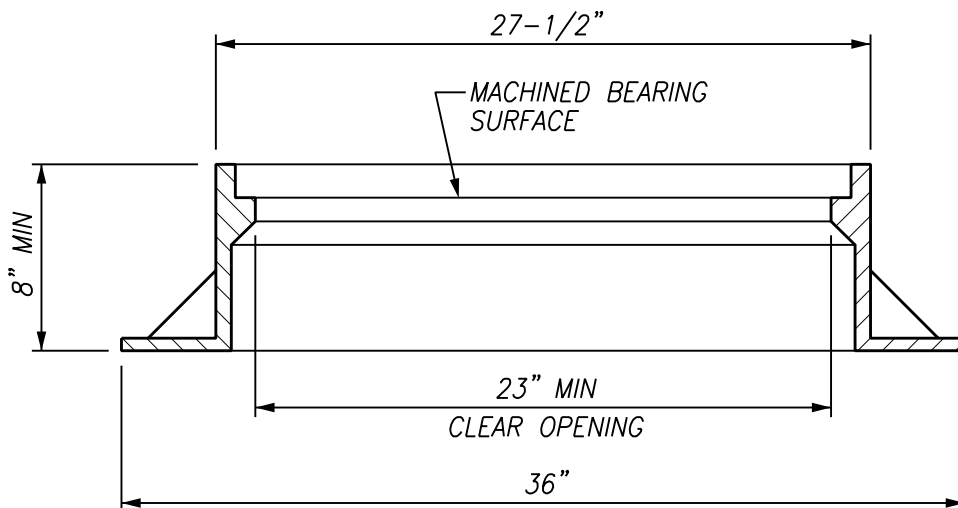
FRAME & COVER PLAN



WATERTIGHT DETAIL



PICKHOLE DETAIL



FRAME SECTION

NOTES:

1. LOAD RATING: HEAVY DUTY.
2. APPROX WEIGHT OF FRAME AND COVER SHALL NOT BE LESS THAN 364 LBS AS SPECIFIED.
3. COVER AND RING SHALL BE VULCAN CATALOG NUMBER V-2380.



2328 LOVELL ROAD
KNOXVILLE, TN 37932
TELEPHONE 865.690.2521

APPROVED BY: WKUD

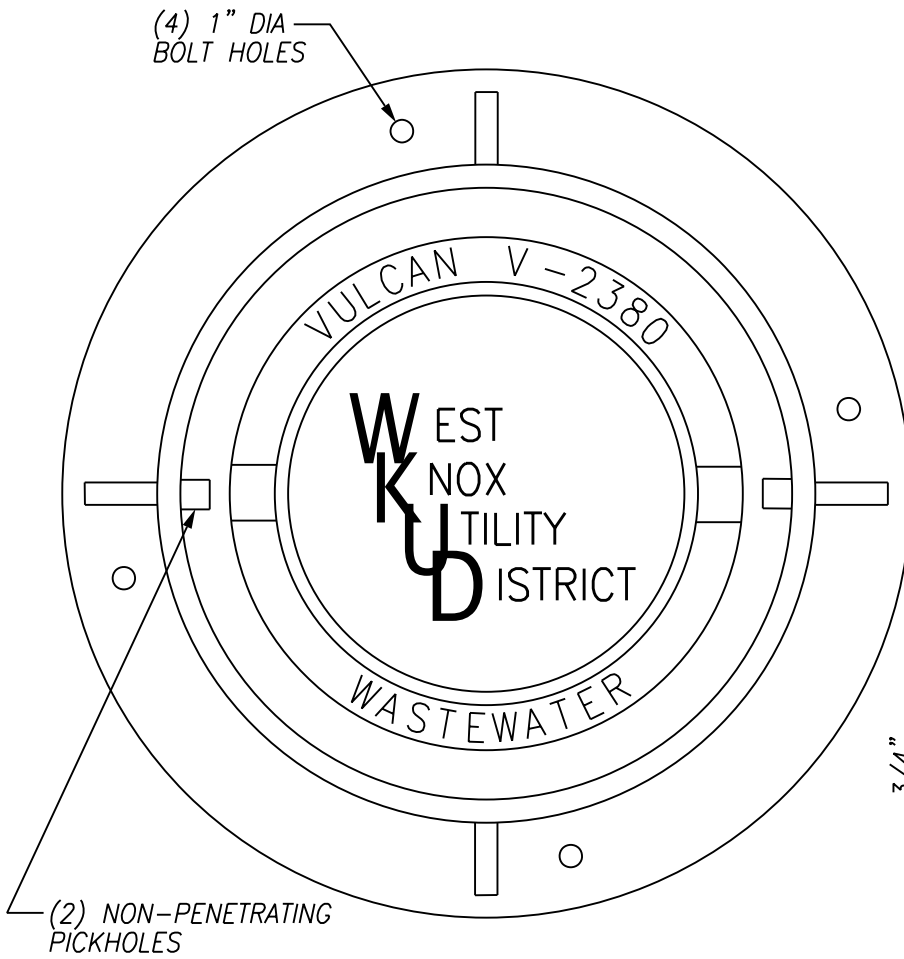
DRAWN BY: ARDURRA

Scale: NTS

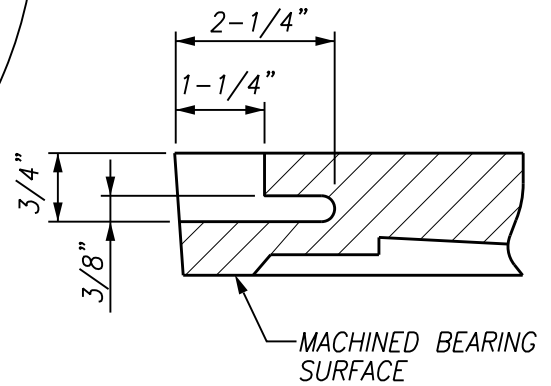
**HEAVY-DUTY WATERTIGHT
MANHOLE FRAME & COVER**

Date: 04/22/24

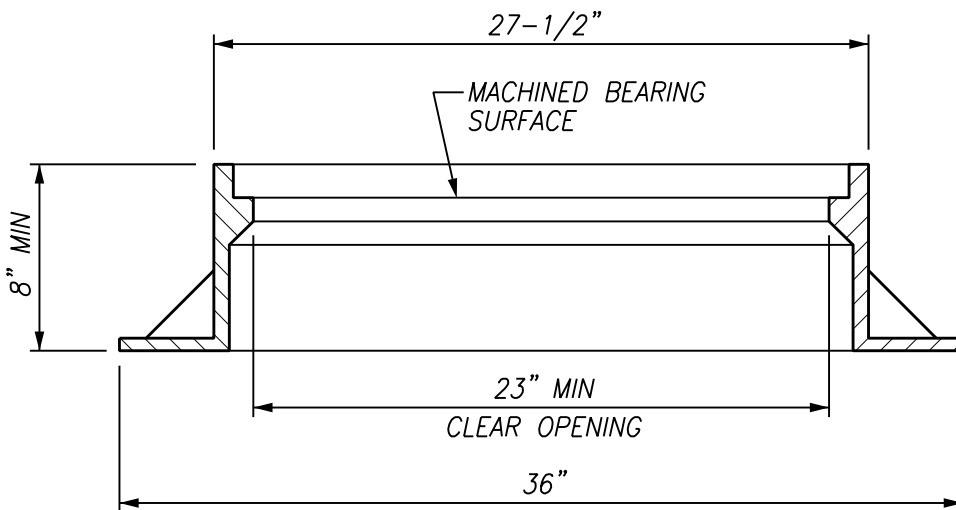
DRAWING NUMBER:
S12



FRAME & COVER PLAN



PICKHOLE DETAIL



FRAME SECTION

NOTES:

1. LOAD RATING: HEAVY DUTY.
2. APPROX WEIGHT OF FRAME AND COVER SHALL NOT BE LESS THAN 364 LBS AS SPECIFIED.
3. COVER AND RING SHALL BE VULCAN CATALOG NUMBER V-2380.



2328 LOVELL ROAD
KNOXVILLE, TN 37932
TELEPHONE 865.690.2521

APPROVED BY: WKUD

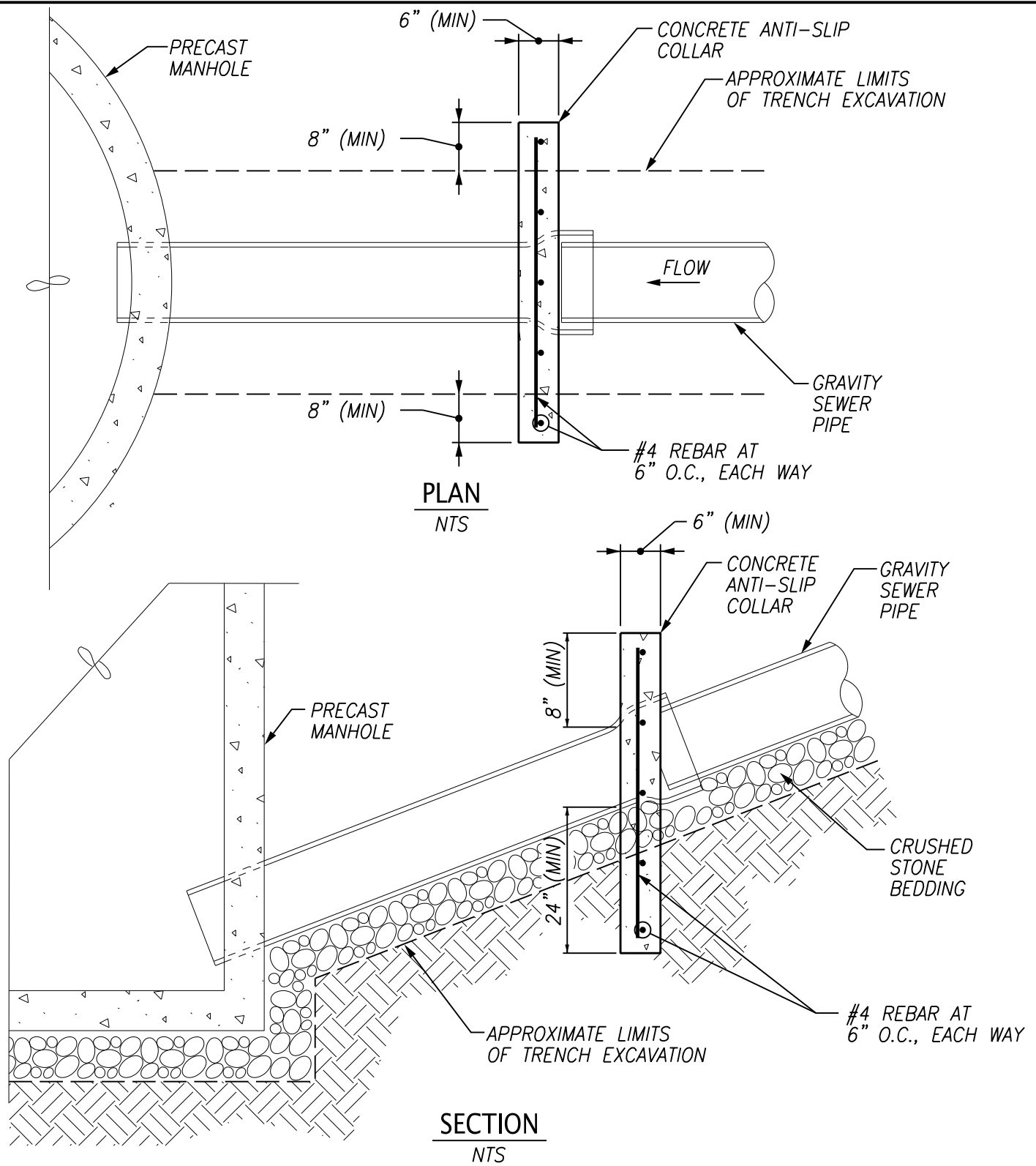
DRAWN BY: ARDURRA

Scale: NTS

**HEAVY-DUTY STANDARD
MANHOLE FRAME & COVER**

Date: 04/22/24

DRAWING NUMBER:
S13



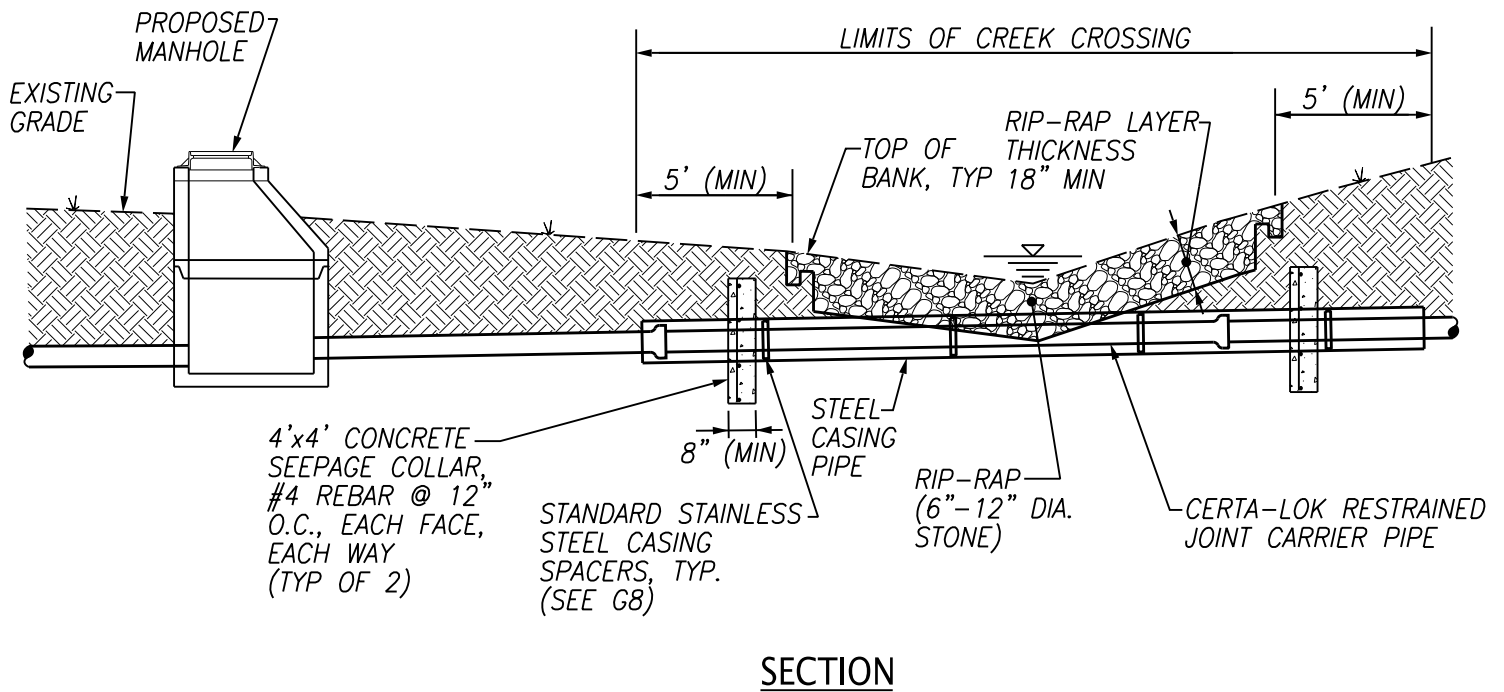
NOTES :

1. INSTALL CONCRETE ANTI-SLIP COLLARS AS SHOWN FOR SLOPES 18% OR GREATER. MAXIMUM COLLAR SPACING SHALL BE AS FOLLOWS:
 - A. 36 FEET CENTER TO CENTER FOR SLOPES 18%–25%
 - B. 24 FEET CENTER TO CENTER FOR SLOPES 25%–35%
 - C. 16 FEET CENTER TO CENTER FOR SLOPES 35% AND GREATER
2. FIELD LOK GASKETS AT EACH JOINT MAY BE USED IN LIEU OF COLLARS FOR DUCTILE IRON PIPE.
3. WHERE PRACTICAL, INSTALL ANTI-SLIP COLLARS AT THE PIPE JOINT LOCATED DOWNSTREAM OF THE BELL.



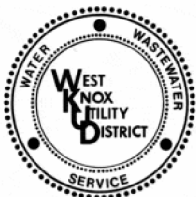
2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY:	WKUD	DRAWN BY:	ARDURRA	Scale:	NTS
GRAVITY SEWER ANTI-SLIP COLLAR				Date:	04/22/24
				DRAWING NUMBER:	S14



NOTES:

1. CONTRACTOR SHALL PERFORM PROPOSED SANITARY SEWER LINE CROSSING OF STREAMS IN STRICT ACCORDANCE WITH THE TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION AQUATIC RESOURCE ALTERATION (GENERAL) PERMIT FOR UTILITY LINE CROSSINGS OF STREAMS.
2. CONTRACTOR TO INSTALL SAND BAG BERM (OR OTHER METHOD TO DIVERT STREAM FLOW AS APPROVED BY THE TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION) FOR OPEN CUT INSTALLATION OF PROPOSED SANITARY SEWER LINE ACROSS STREAMS AS SHOWN ON THE PROJECT PLANS. PERFORM ONE-HALF OF CREEK CROSSING, BACKFILL, THEN RE-LOCATE SAND BAG BERM TO OPPOSITE SIDE OF CREEK AND REPEAT.
3. TRENCH BACKFILL SHALL BE CLEAN #57 OR #67 CRUSHED STONE UP TO WITHIN EIGHTEEN (18") INCHES OF CREEK BOTTOM. THE TOP EIGHTEEN (18") INCHES SHALL BE 8-12 INCH NOMINAL SIZE RIP-RAP OR RIVER ROCK.
4. ANY EXCAVATION OF THE STREAM CHANNEL AREA SHALL BE SEPARATED FROM FLOWING WATER, AND ACCOMPLISHED DURING LOW FLOW CONDITIONS. THIS SHALL BE ACCOMPLISHED BY THE USE OF FLUMES, LINED DIVERSION CHANNEL WITH SAND BAG BERM, DIVERSION PIPE INLET, OR IN SOME CASES, COFFER DAMS. COST TO BE INCLUDED IN OTHER ITEMS OF CONSTRUCTION.
5. THE SEEPAGE COLLAR SHALL NOT ENCASE A PIPE JOINT.
6. ALL RIP-RAP SHALL BE HAND PLACED IN A MANNER TO MINIMIZE VOIDS.



2328 LOVELL ROAD
KNOXVILLE, TN 37932
TELEPHONE 865.690.2521

APPROVED BY: WKUD

DRAWN BY: ARDURRA

Scale: NTS

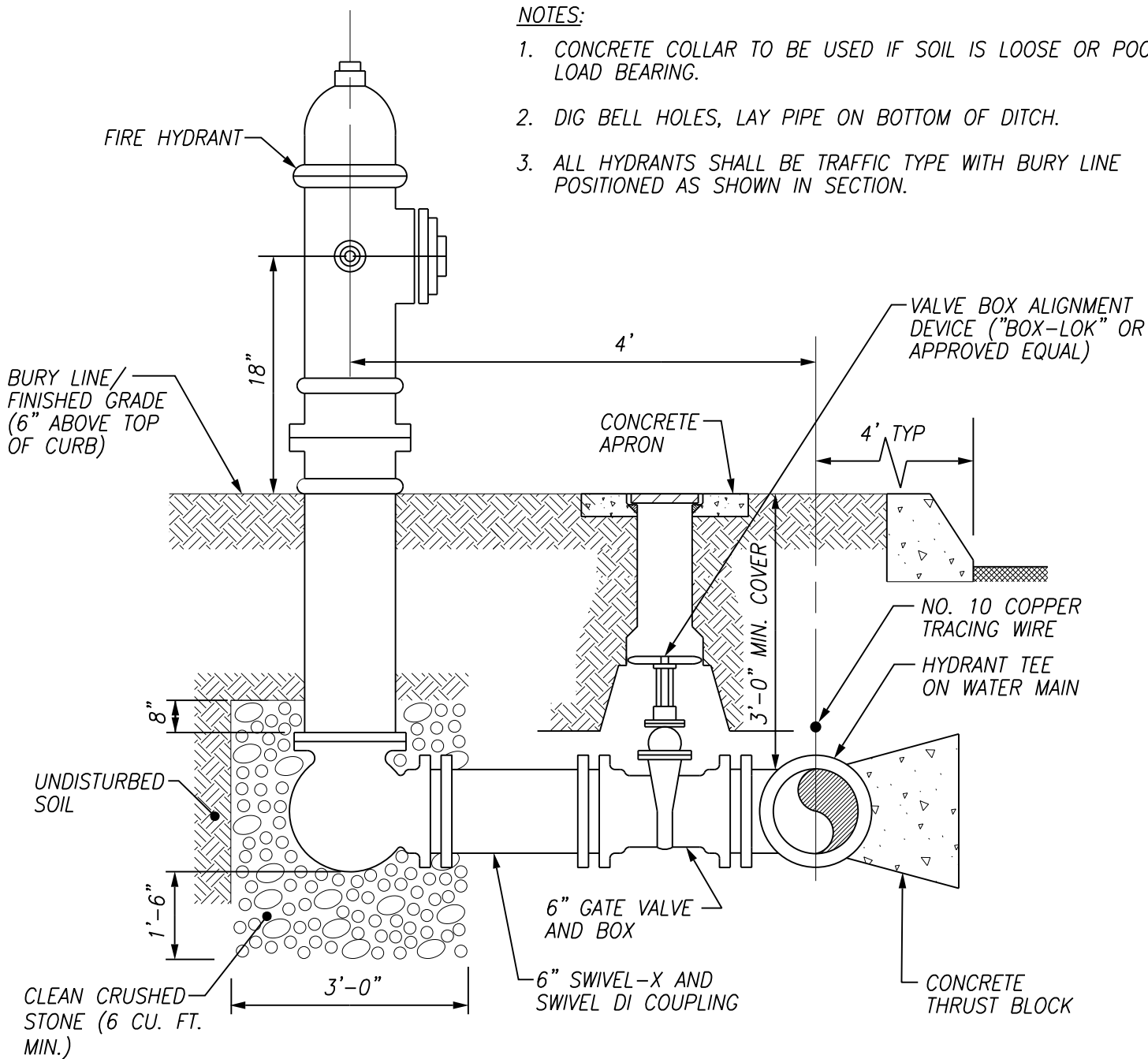
**TYPICAL OPEN CUT
STREAM CROSSING**

Date: 04/22/24

DRAWING NUMBER:
S15

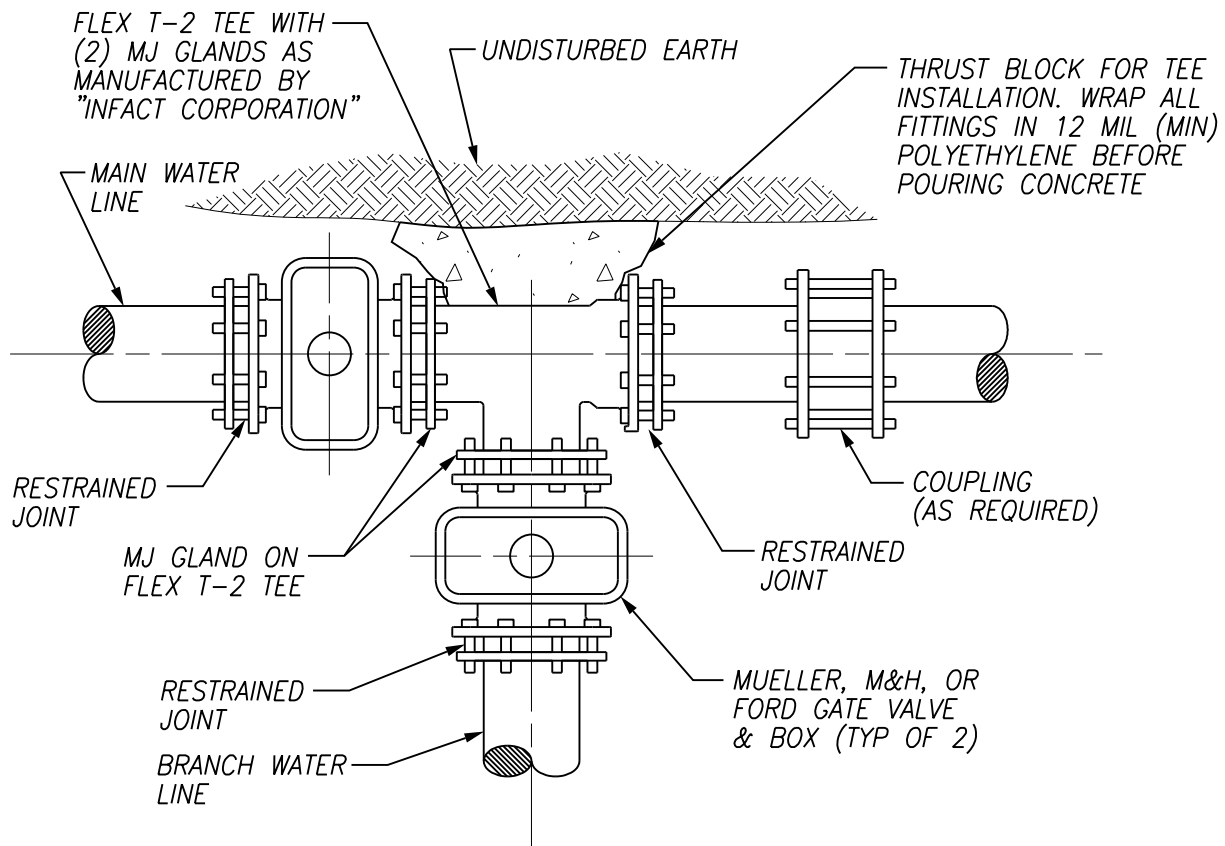
NOTES:

1. CONCRETE COLLAR TO BE USED IF SOIL IS LOOSE OR POOR LOAD BEARING.
2. DIG BELL HOLES, LAY PIPE ON BOTTOM OF DITCH.
3. ALL HYDRANTS SHALL BE TRAFFIC TYPE WITH BURY LINE POSITIONED AS SHOWN IN SECTION.



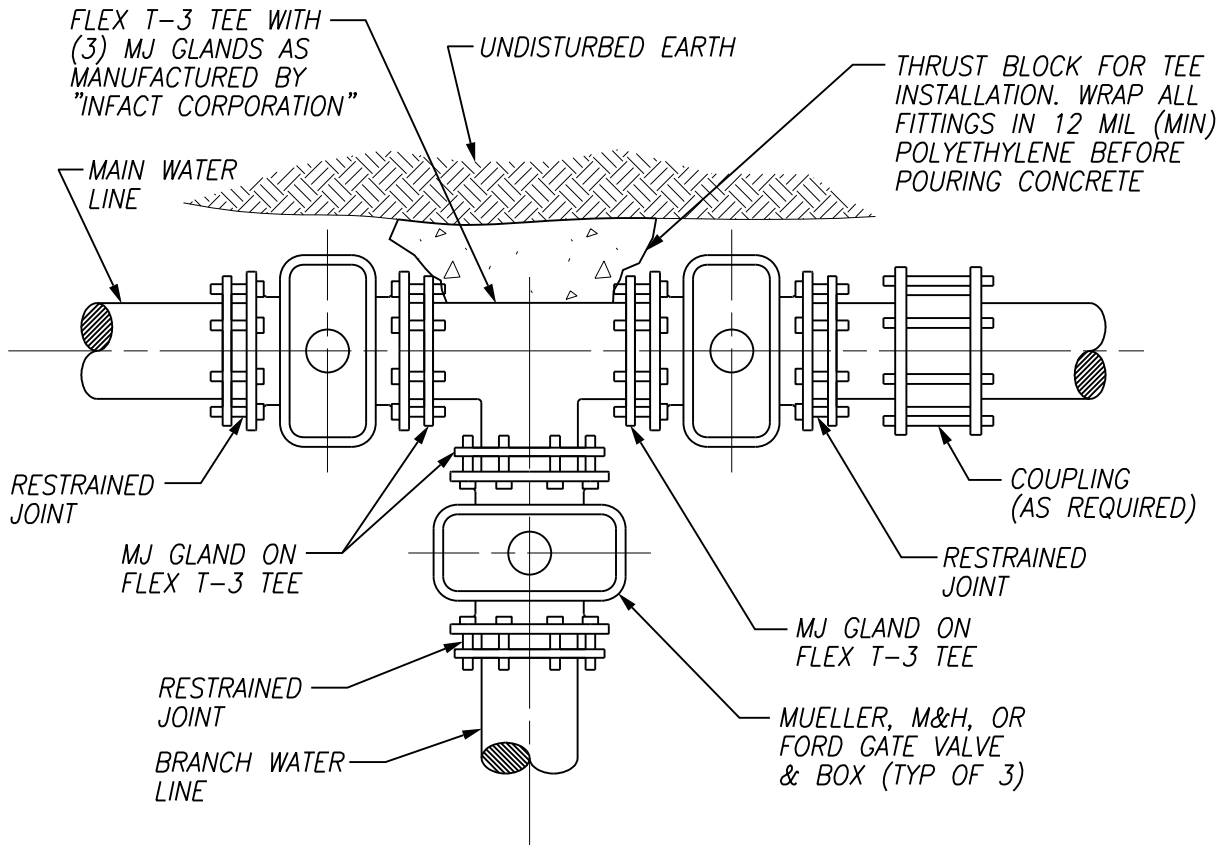
2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY: WKUD	DRAWN BY: ARDURRA	Scale: NTS
TYPICAL HYDRANT ASSEMBLY		Date: 04/22/24
		DRAWING NUMBER: W1



2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY:	WKUD	DRAWN BY:	ARDURRA	Scale:	NTS
TR-2 FLEX (GATE VALVE CLUSTER)				Date:	04/22/24
				DRAWING NUMBER:	W2.1



2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY: WKUD

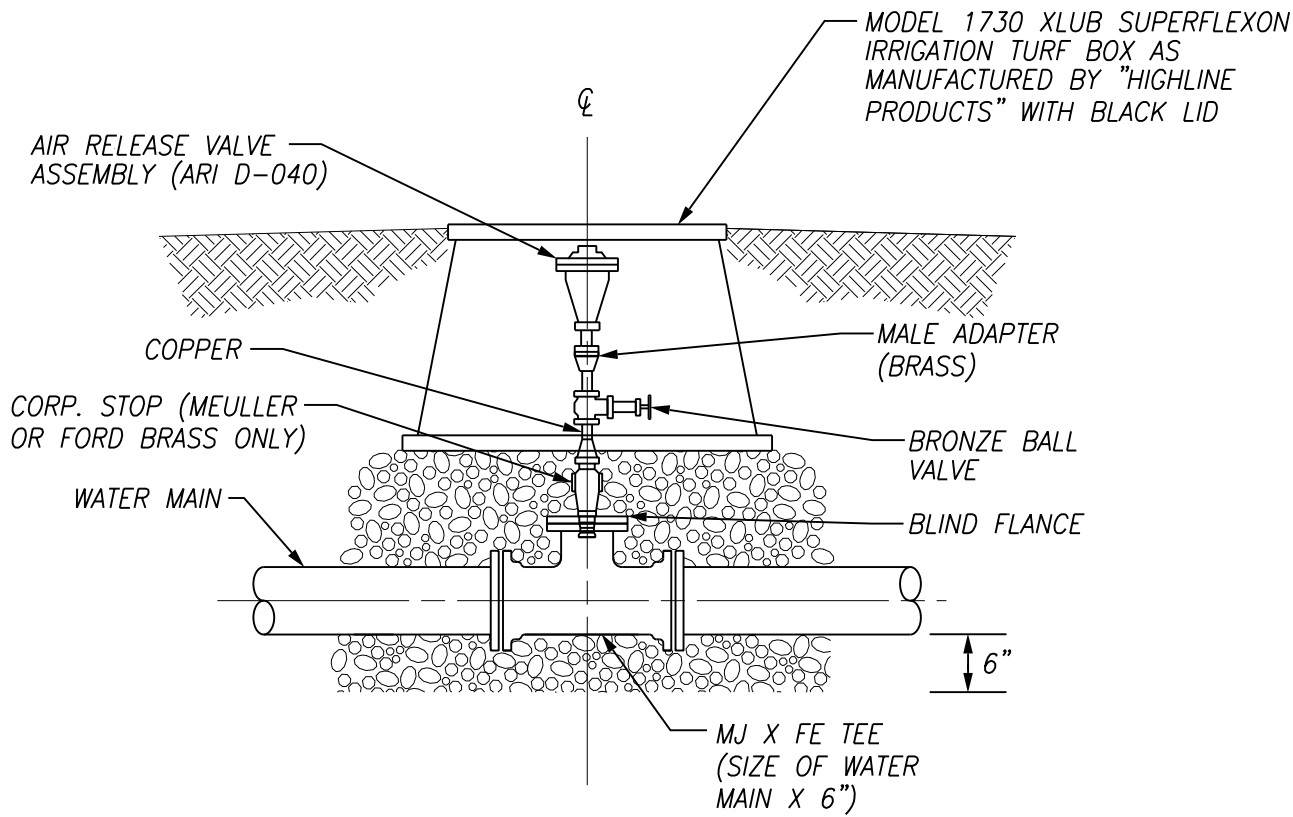
DRAWN BY: ARDURRA

Scale: NTS

**TR-3 FLEX (GATE
 VALVE CLUSTER)**

Date: 04/22/24

DRAWING NUMBER:
W2.2



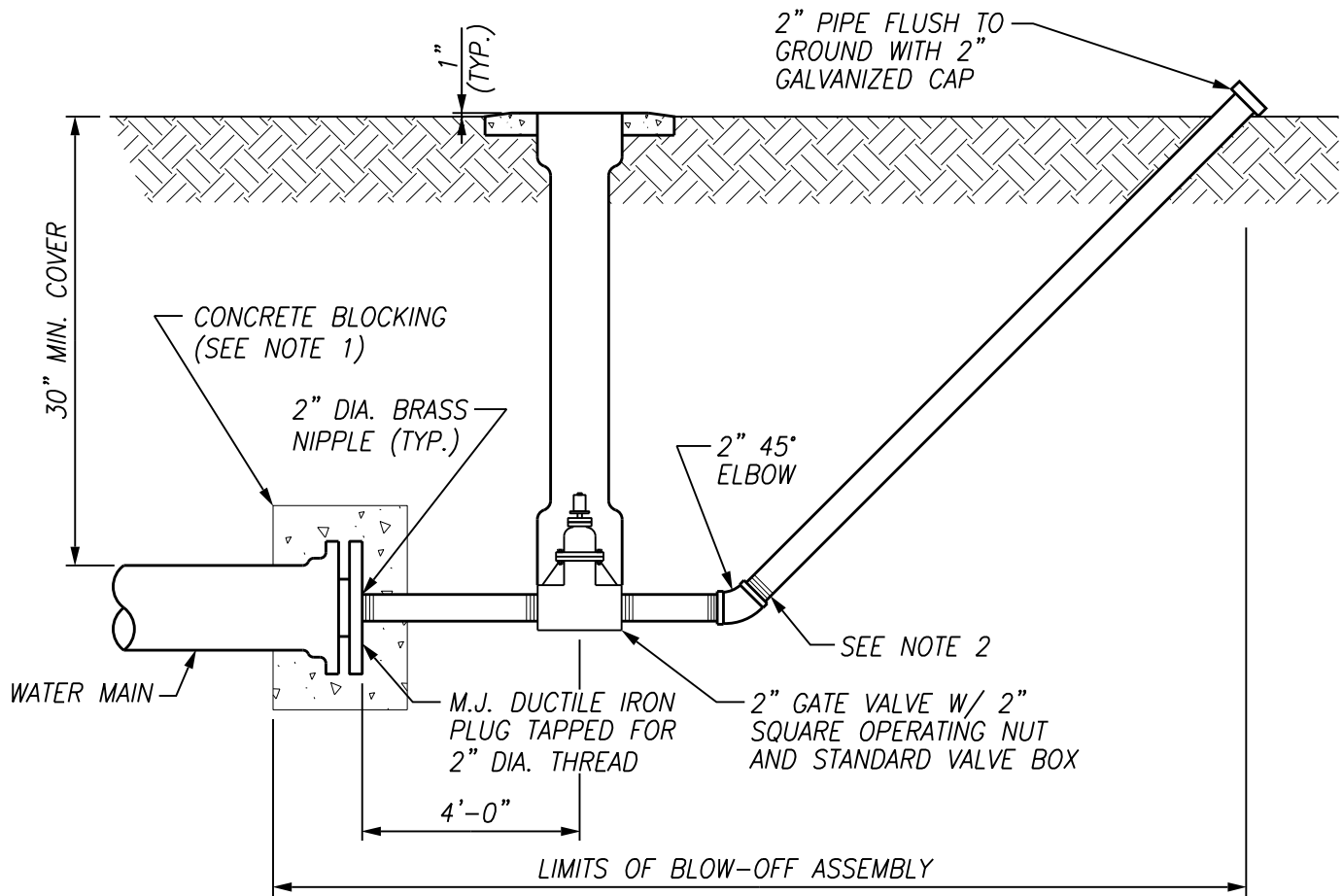
NOTES:

1. AIR RELEASE VALVES SHALL BE INSTALLED AT ALL HIGH POINTS ON WATER MAINS.
2. USE FOR 1" AND 2" AIR RELEASE VALVE INSTALLATIONS.



2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY:	WKUD	DRAWN BY:	ARDURRA	Scale:	NTS
AIR RELEASE VALVE ASSEMBLY				Date:	04/22/24
				DRAWING NUMBER:	W3



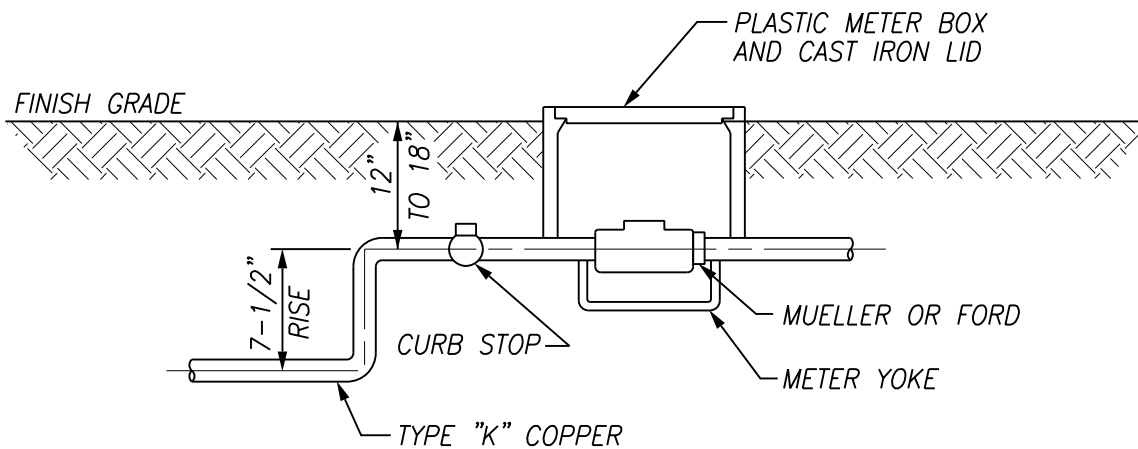
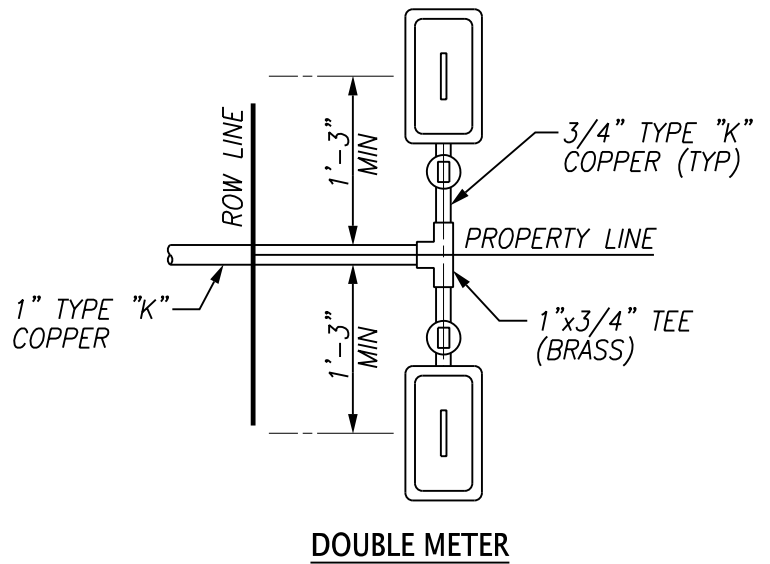
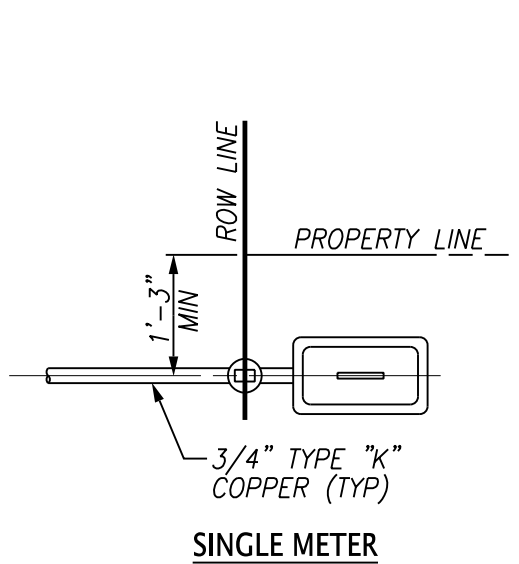
NOTES:

1. CONCRETE BLOCKING AT WATER MAIN PLUG FOR BLOW-OFF PIPE CONNECTION SHALL BE A MINIMUM OF 1'-6" THICK AND BE CUT A MINIMUM OF 1'-0" INTO UNDISTURBED SOIL ON EACH SIDE AND BELOW THE PIPE TRENCH.
2. ALL THREADED PIPE SHALL BE JOINTED USING RECTORSEAL. ALL EXPOSED THREADS AND ALL GALVANIZED IRON PIPE SHALL BE CLEANED OF ALL GREASE, OIL, DEBRIS & OTHER SOILING AND SHALL RECEIVE A HEAVY COAT OF COAL-TAR EPOXY COATING PRIOR TO BACKFILLING.



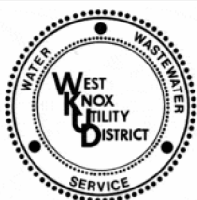
2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY:	WKUD	DRAWN BY:	ARDURRA	Scale:	NTS
BLOW-OFF ASSEMBLY				Date:	04/22/24
				DRAWING NUMBER:	W4



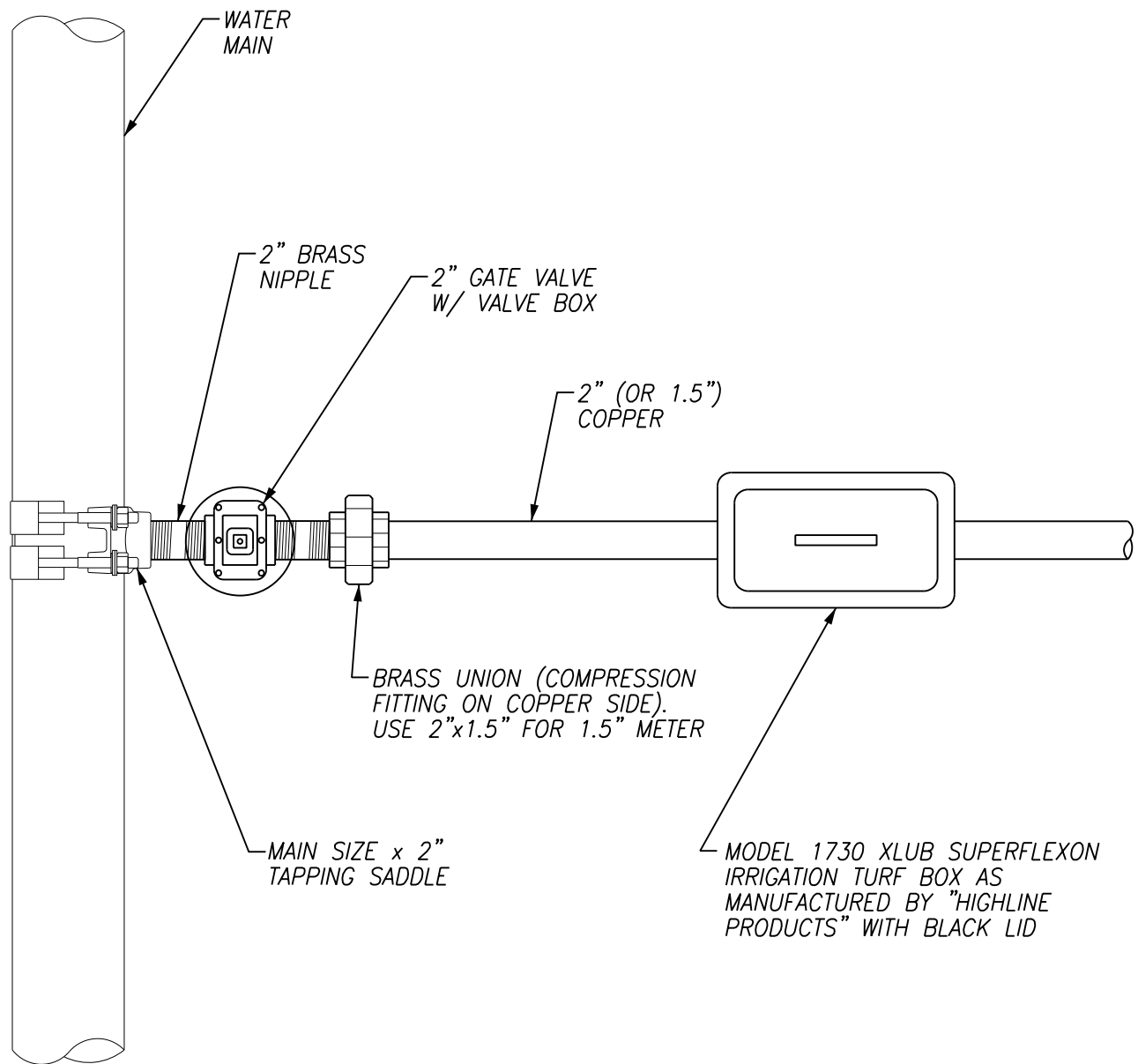
NOTES:

1. CONTRACTOR TO COORDINATE FIELD LOCATION OF PROPOSED WATER METERS WITH WKUD.
2. CONTRACTOR RESPONSIBLE FOR RE-CONNECTING TO EXISTING WATER SERVICE LINE.
3. USE ROLLED COPPER FOR SERVICE LINE DIRECTION CHANGES (NO FITTINGS FOR BENDS).



2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY: WKUD	DRAWN BY: ARDURRA	Scale: NTS
TYPICAL 3/4" METER SETTING DETAIL		Date: 04/22/24
		DRAWING NUMBER: W5.1



2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY: WKUD

DRAWN BY: ARDURRA

Scale: NTS

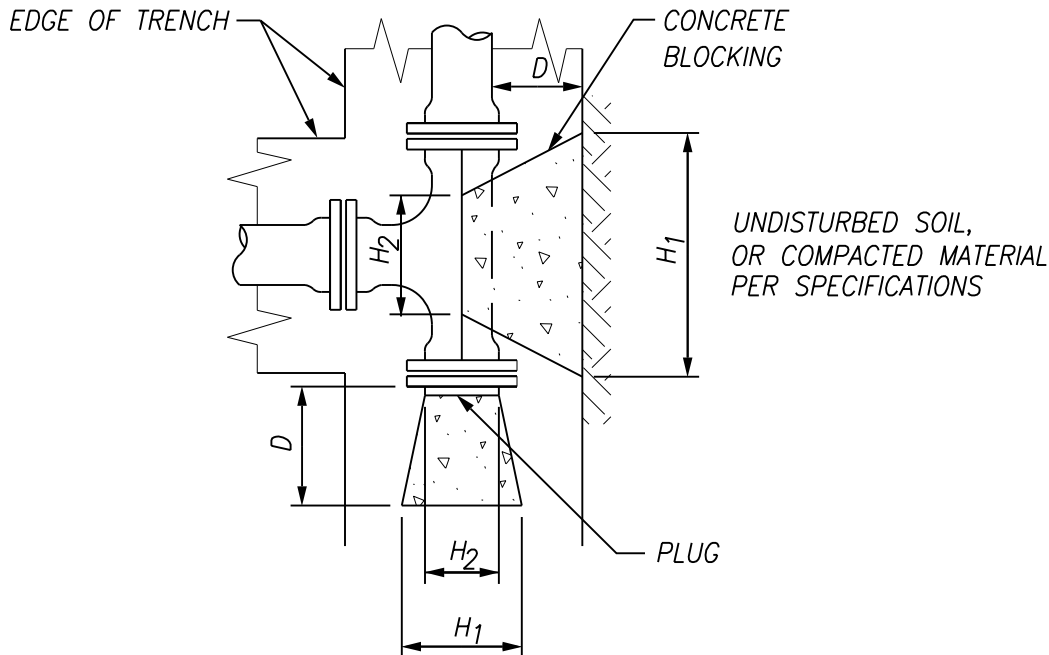
**TYPICAL 2" AND 1.5" METER
 SETTING DETAIL**

Date: 04/22/24

DRAWING NUMBER:
W5.2

TABLE OF DIMENSIONS FOR CONCRETE BLOCKING

SIZE PIPE (INCHES)	TEES, PLUGS, AND CROSSES				
	H ₁	H ₂	V	D	CU FT.
2&2-1/4	18	10	12	18	1.9
3 & 4	24	12	12	18	2.3
6	24	16	18	18	3.5
8	36	18	18	18	5.1
10	48	24	18	24	7.2
12	54	30	24	24	13.4



NOTES:

1. THRUST BLOCKING BASED UPON AN INTERNAL HYDROSTATIC PRESSURE OF 200 PSI AND AN ALLOWABLE SOIL BEARING CAPACITY OF 4000 POUNDS/SQUARE FOOT. SHOULD HYDROSTATIC PRESSURE BE GREATER AND/OR SOIL BEARING CAPACITY SHOULD BE LESS THAN THAT NOTED ABOVE, CONTRACTOR SHALL INCREASE SIZE AS REQUIRED AND PROVIDE CALCULATIONS TO SUPPORT SAID MODIFICATION.
2. WKUD SHALL APPROVE ALL THRUST BLOCKS.
3. WRAP ALL FITTINGS AND PIPE IN PLASTIC PRIOR TO PLACING CONCRETE.



2328 LOVELL ROAD
KNOXVILLE, TN 37932
TELEPHONE 865.690.2521

APPROVED BY: WKUD

DRAWN BY: ARDURRA

Scale: NTS

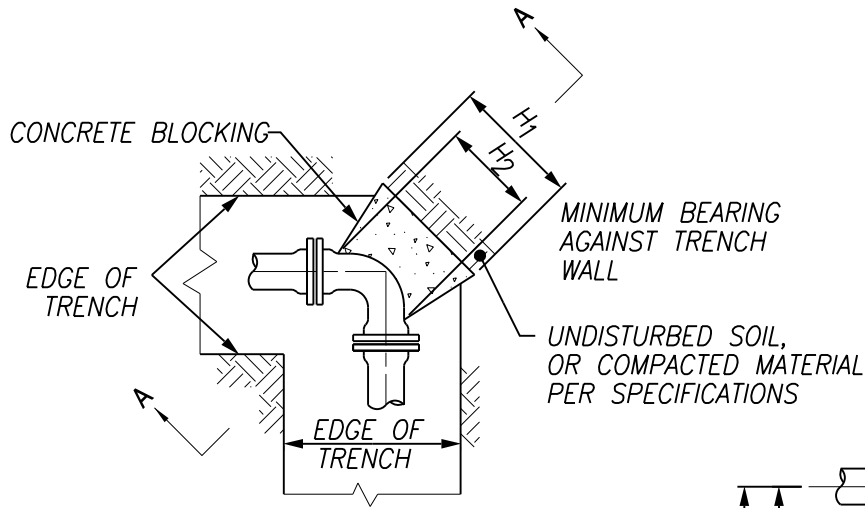
**TYPICAL THRUST BLOCKS
FOR TEES, PLUGS, AND CROSSES**

Date: 04/22/24

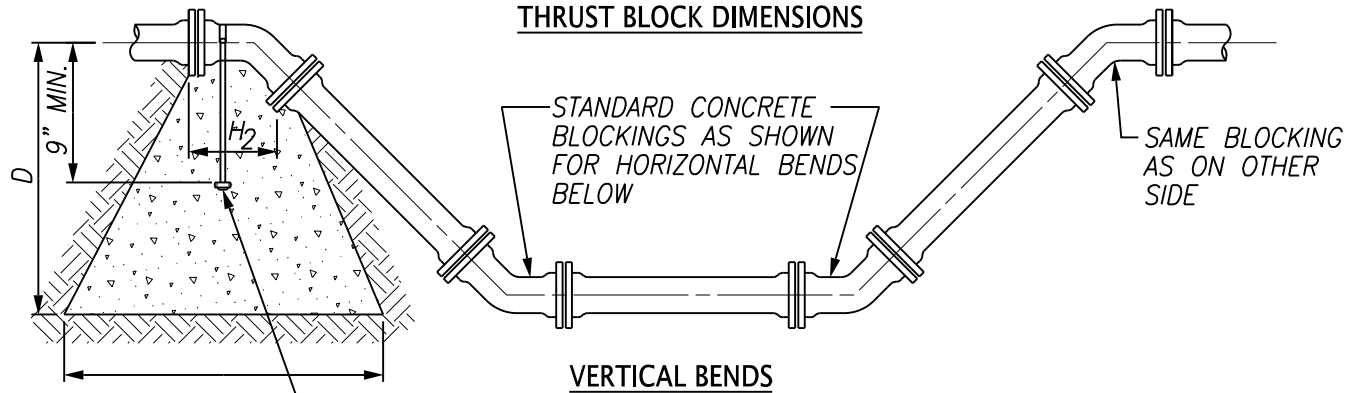
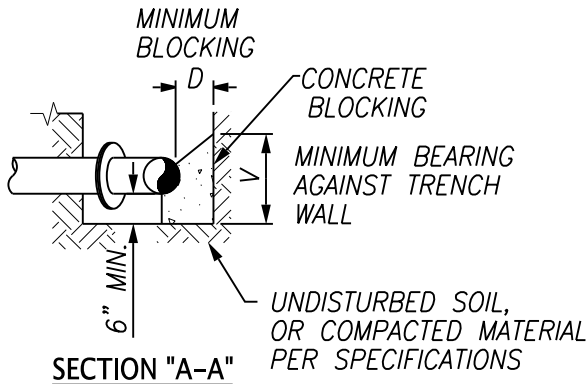
DRAWING NUMBER:
W6.1

TABLE OF DIMENSIONS FOR CONCRETE BLOCKING

SIZE PIPE (INCHES)	90° BENDS					45° BENDS					22 1/2° BENDS					11 1/4° BENDS					SIZE PIPE
	H ₁	H ₂	V	D	CU FT.	H ₁	H ₂	V	D	CU FT.	H ₁	H ₂	V	D	CU FT.	H ₁	H ₂	V	D	CU FT.	
2&2-1/4	18	10	12	18	1.9	18	6	12	18	1.5	18	6	12	18	1.5	18	6	12	18	1.5	2&2-1/4
3 & 4	24	12	12	18	2.3	18	8	12	18	1.6	18	8	12	18	1.6	18	8	12	18	1.6	3 & 4
6	30	16	18	18	4.1	24	10	16	18	3.2	24	10	16	18	3.2	24	10	16	18	3.2	6
8	39	18	24	18	7.3	30	11	18	18	4.0	24	11	18	18	3.5	24	11	16	18	3.4	8
10	54	32	24	18	10.3	24	18	21	18	4.6	24	18	21	18	4.6	24	18	21	18	4.6	10
12	54	32	36	24	18.2	42	18	24	24	9.6	24	18	24	24	6.6	24	18	21	24	6.1	12



HORIZONTAL BENDS



3/4" THREADED ROD
W/HEX NUTS
AND 4"x4"x1/4"
PLATE WASHER

NOTES:

- THRUST BLOCKING BASED UPON AN INTERNAL HYDROSTATIC PRESSURE OF 200 PSI AND AN ALLOWABLE SOIL BEARING CAPACITY OF 4000 POUNDS/SQUARE FOOT. SHOULD HYDROSTATIC PRESSURE BE GREATER AND/OR SOIL BEARING CAPACITY SHOULD BE LESS THAN THAT NOTED ABOVE, CONTRACTOR SHALL INCREASE SIZE AS REQUIRED AND PROVIDE CALCULATIONS TO SUPPORT SAID MODIFICATION.
- WKUD SHALL APPROVE ALL THRUST BLOCKS.
- WRAP ALL FITTINGS AND PIPE IN PLASTIC PRIOR TO PLACING CONCRETE.



2328 LOVELL ROAD
KNOXVILLE, TN 37932
TELEPHONE 865.690.2521

APPROVED BY: WKUD

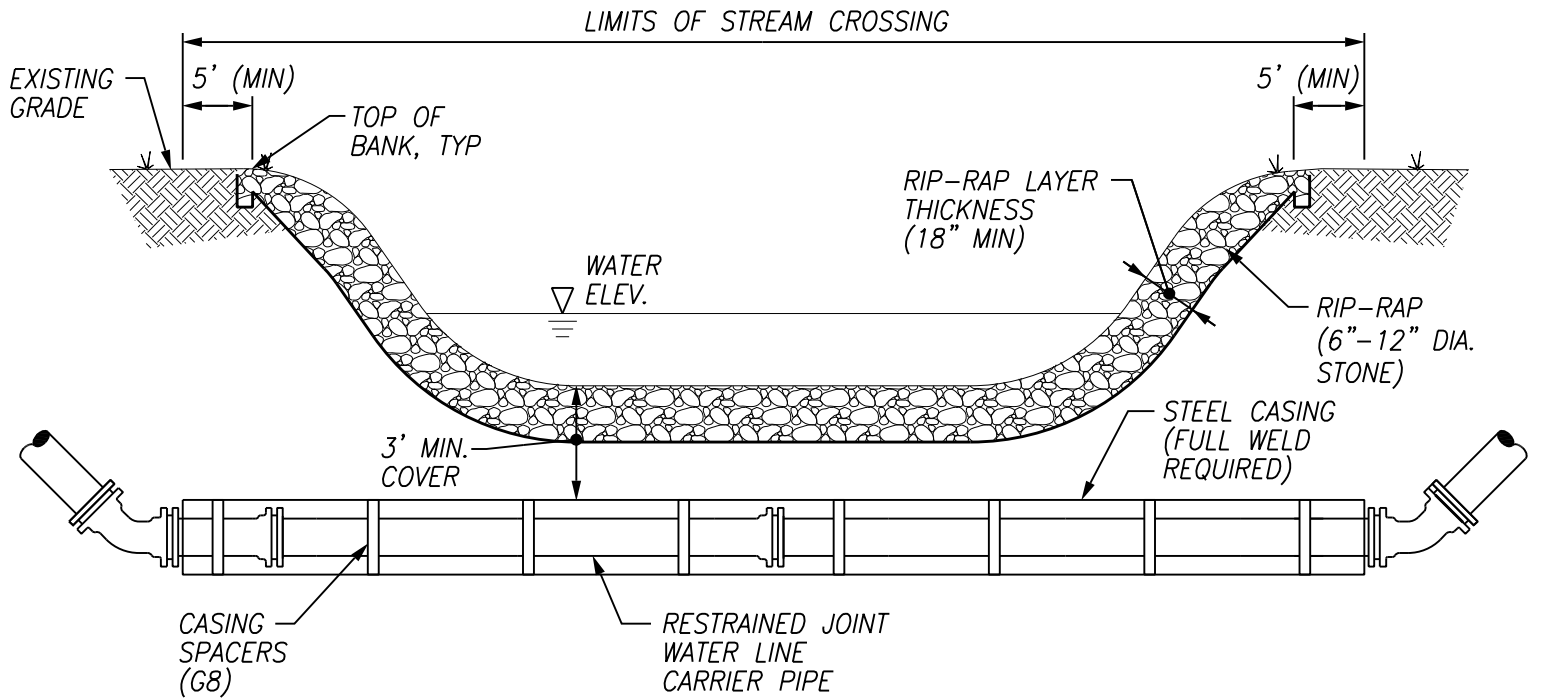
DRAWN BY: ARDURRA

Scale: NTS

Date: 04/22/24

THRUST BLOCK AND ANCHOR BLOCK FOR BENDS

DRAWING NUMBER:
W6.2



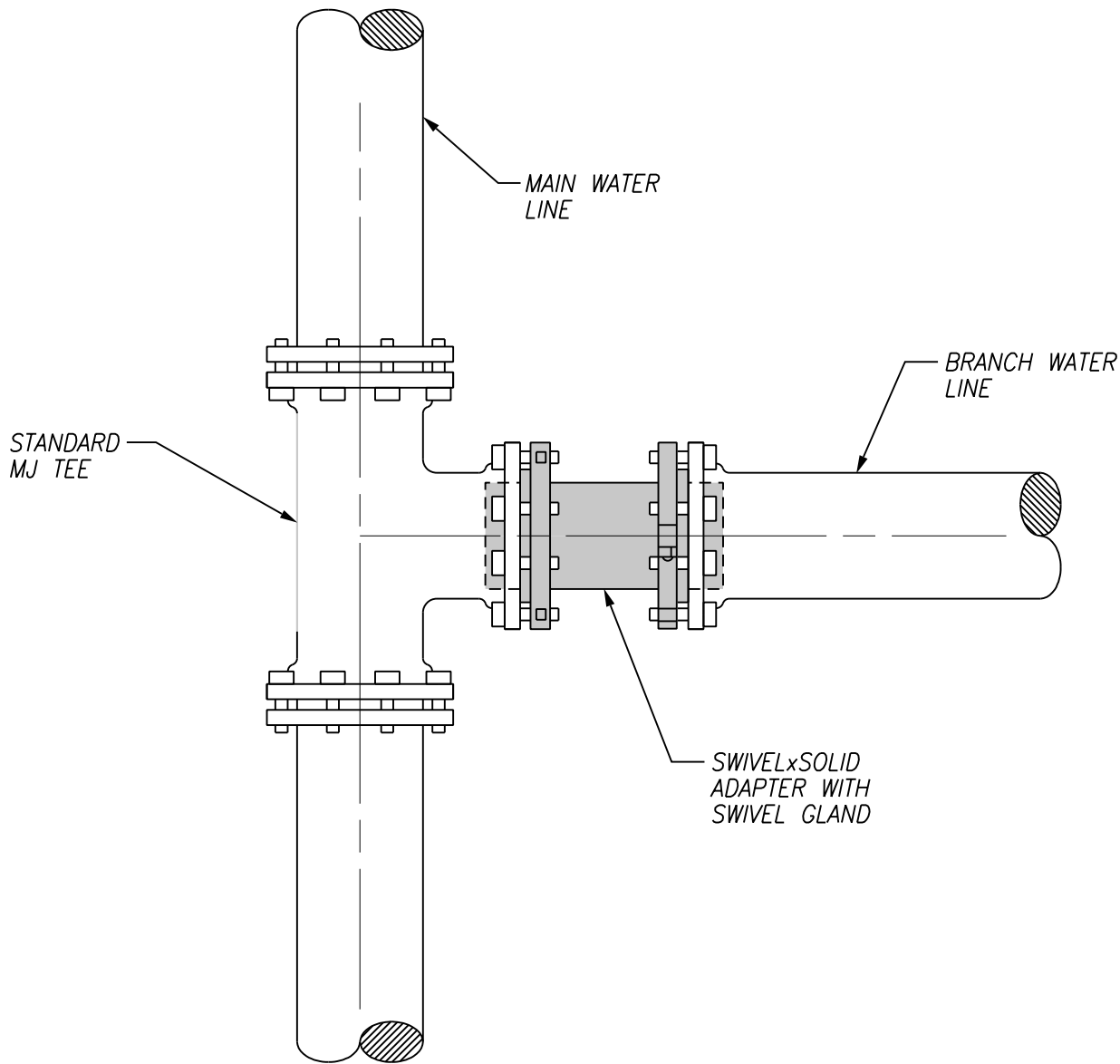
NOTES:

1. ALL PIPE AND FITTINGS SHALL BE RESTRAINED JOINT DUCTILE IRON WITHIN LIMITS OF THE STREAM CROSSING. RESTRAINING GASKETS SHALL BE "FIELD LOK 350" AS MANUFACTURED BY U.S. PIPE OR APPROVED EQUAL. MJ RESTRAINTS SHALL BE MEGALUG BY EBAA IRON, ROMAC INDUSTRIES, OR APPROVED EQUAL.
2. CONTRACTOR SHALL PERFORM PROPOSED WATER LINE CROSSING OF STREAMS IN STRICT ACCORDANCE WITH THE TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION AQUATIC RESOURCE ALTERATION (GENERAL) PERMIT FOR UTILITY LINE CROSSINGS OF STREAMS
3. CONTRACTOR TO INSTALL SAND BAG BERM (OR OTHER METHOD TO DIVERT STREAM FLOW AS APPROVED BY THE TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION) FOR OPEN CUT INSTALLATION OF PROPOSED WATER LINE ACROSS STREAMS AS SHOWN ON THE PROJECT PLANS. PERFORM ONE-HALF OF CREEK CROSSING, BACKFILL, THEN RE-LOCATE SAND BAG BERM TO OPPOSITE SIDE OF CREEK AND REPEAT
4. TRENCH BACKFILL SHALL BE CLEAN #57 OR #67 CRUSHED STONE UP TO WITHIN EIGHTEEN (18") INCHES OF CREEK BOTTOM. THE TOP EIGHTEEN (18") INCHES SHALL BE 6-12 INCH NOMINAL SIZE RIP-RAP OR RIVER ROCK.
5. ANY EXCAVATION OF THE STREAM CHANNEL AREA SHALL BE SEPARATED FROM FLOWING WATER, AND ACCOMPLISHED DURING LOW FLOW CONDITIONS. THIS SHALL BE ACCOMPLISHED BY THE USE OF FLUMES, LINED DIVERSION CHANNEL WITH SAND BAG BERM, DIVERSION PIPE INLET, OR IN SOME CASES, COFFER DAMS. COST TO BE INCLUDED IN OTHER ITEMS OF CONSTRUCTION.
6. ALL RIP-RAP SHALL BE HAND PLACED IN A MANNER TO MINIMIZE VOIDS.
7. TWO IN-LINE GATE VALVES (ONE ON EACH SIDE OF THE STREAM) SHALL BE REQUIRED FOR WATER DISTRIBUTION AREAS THAT ARE PART OF A LOOP-FED SYSTEM (COORDINATE WITH WKUD).



2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY: WKUD	DRAWN BY: ARDURRA	Scale: NTS
TYPICAL OPEN CUT STREAM CROSSING		Date: 04/22/24
		DRAWING NUMBER: W7

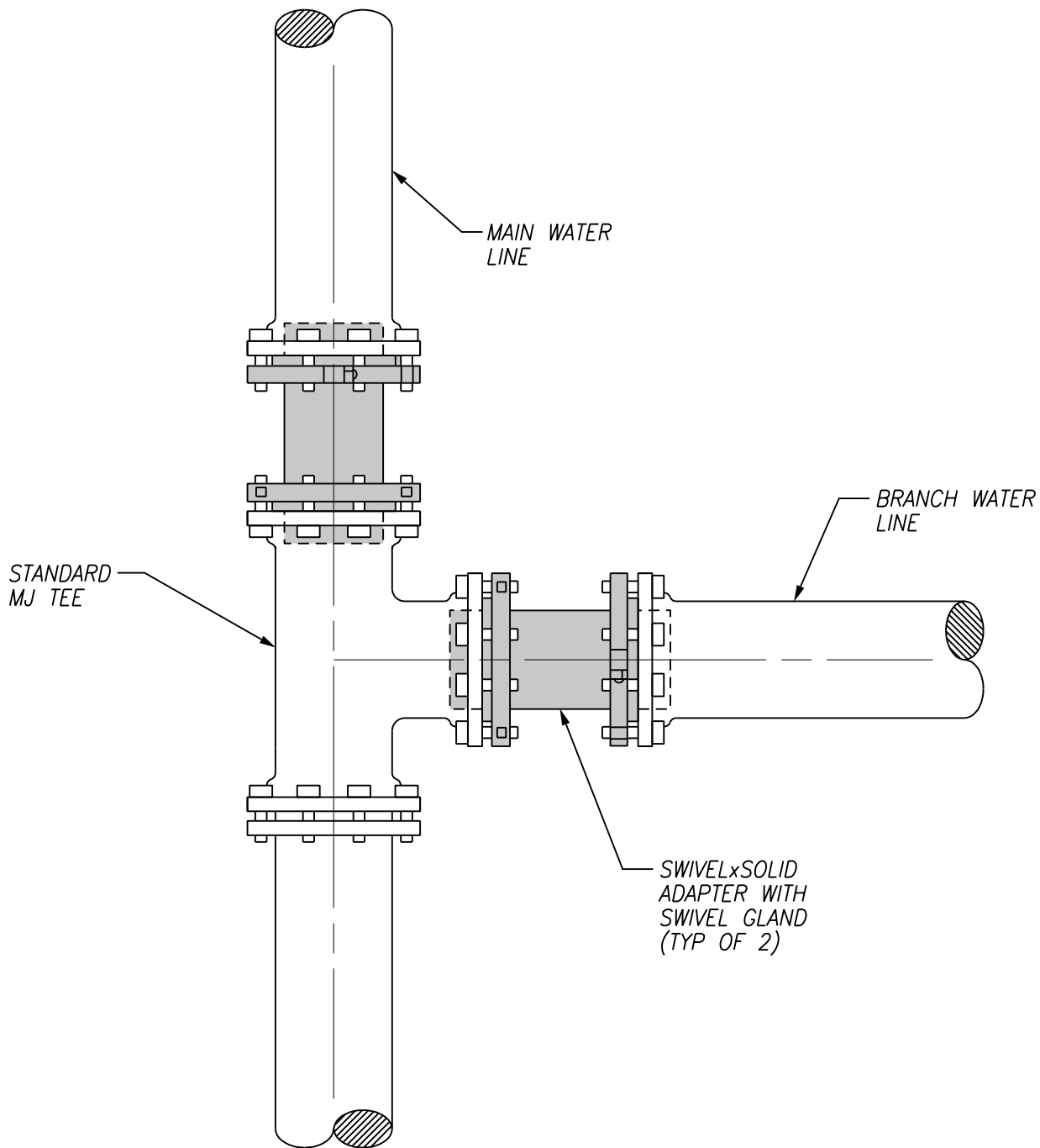


2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY: WKUD	DRAWN BY: ARDURRA	Scale: NTS
-------------------	-------------------	------------

**SWIVEL X SOLID ADAPTER
 ON MJ TEE
 (1-WAY)**

Date: 04/22/24
DRAWING NUMBER: W8.1



2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY: WKUD

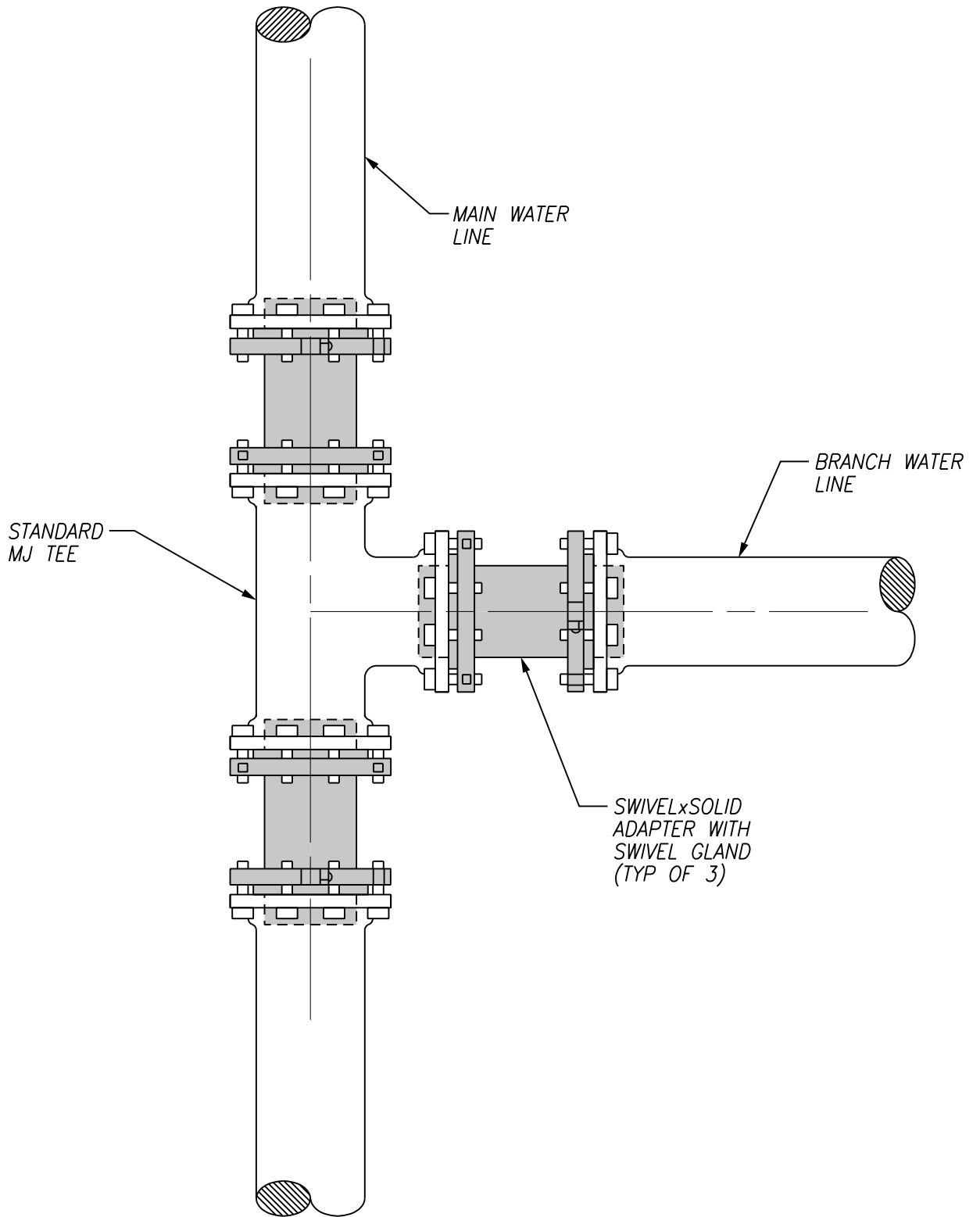
DRAWN BY: ARDURRA

Scale: NTS

**SWIVEL X SOLID ADAPTER
 ON MJ TEE
 (2-WAY)**

Date: 04/22/24

DRAWING NUMBER:
W8.2



2328 LOVELL ROAD
 KNOXVILLE, TN 37932
 TELEPHONE 865.690.2521

APPROVED BY: WKUD

DRAWN BY: ARDURRA

Scale: NTS

**SWIVEL X SOLID ADAPTER
 ON MJ TEE
 (3-WAY)**

Date: 04/22/24

DRAWING NUMBER:
W8.3