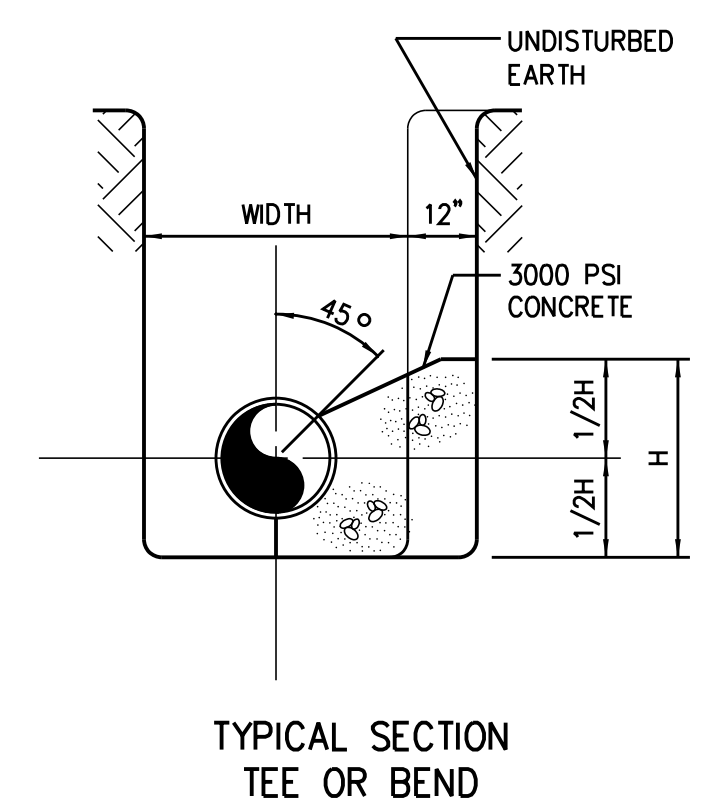


5/14/99

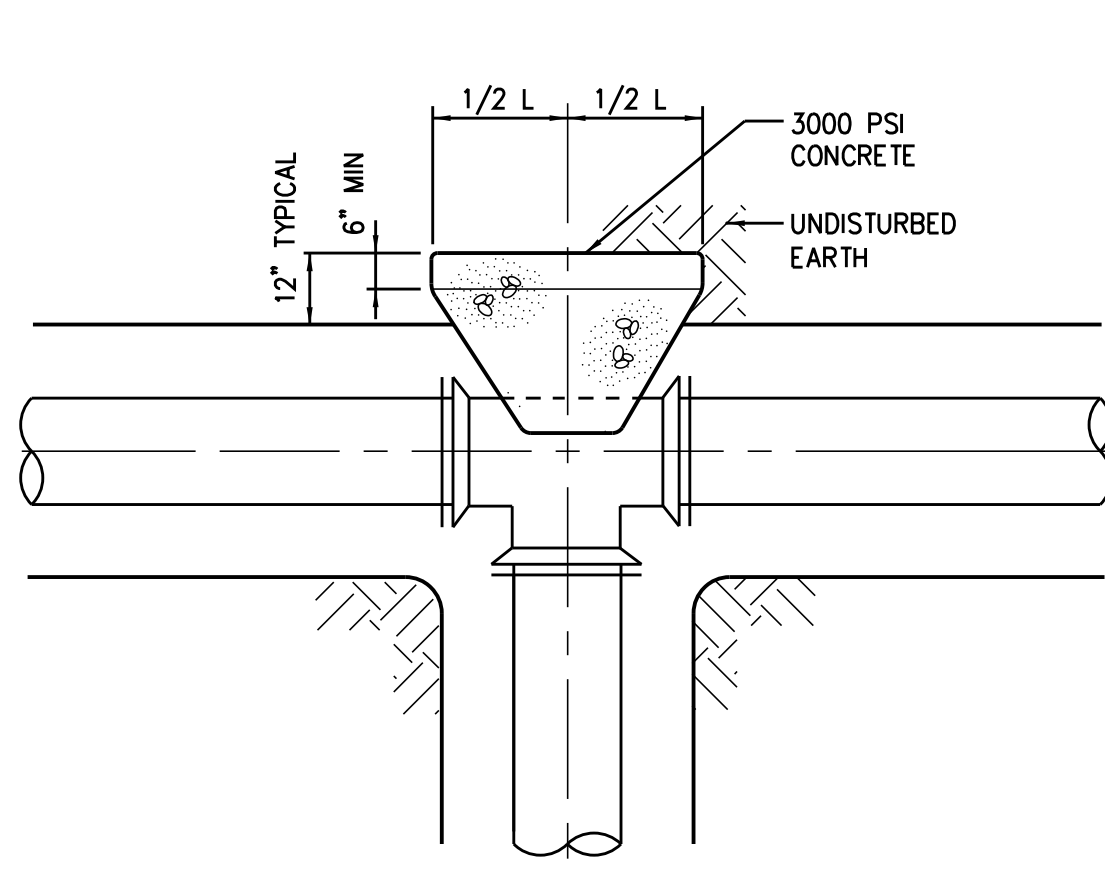


TYPICAL SECTION  
TEE OR BEND

PIPE SIZE (IN)	CONCRETE THRUST BLOCK SCHEDULE*										DESIGN PRESSURE (PSI)
	90° TEE					BEND					
	H	L	H	L	H	L	H	L	H	L	
6.0	2.6	5.3	1.9	3.9	1.4	2.8	1.0	2.0	1.0	2.0	350
8.0	3.5	7.0	2.5	5.1	1.8	3.7	1.3	2.6	1.3	2.6	350
10.0	4.2	8.5	3.1	6.3	2.2	4.5	1.6	3.2	1.6	3.2	350
12.0	5.0	10.1	3.7	7.5	2.6	5.3	1.9	3.8	1.9	3.8	350
14.0	5.8	11.7	4.3	8.6	3.1	6.2	2.2	4.4	2.2	4.4	350
16.0	6.6	13.3	4.9	9.8	3.5	7.0	2.5	5.0	2.5	5.0	350
18.0	7.4	14.9	5.5	11.0	3.9	7.9	2.8	5.6	2.8	5.6	350
20.0	8.2	16.5	6.1	12.2	4.3	8.7	3.1	6.2	3.1	6.2	350
24.0	9.9	19.8	7.2	14.5	5.2	10.4	3.7	7.4	3.7	7.4	350
30.0	12.2	24.5	9.0	18.0	6.4	12.9	4.5	9.1	4.5	9.1	350
36.0	14.6	29.3	10.8	21.6	7.7	15.4	5.4	10.9	5.4	10.9	350
42.0	17.0	34.0	12.5	25.0	8.9	17.9	6.3	12.7	6.3	12.7	350
48.0	19.4	38.8	14.3	28.6	10.2	20.4	7.2	14.5	7.2	14.5	350
54.0	22.0	44.0	16.2	32.4	11.5	23.1	8.2	16.4	8.2	16.4	350
60.0	23.5	47.1	17.3	34.7	12.4	24.8	8.8	17.6	8.8	17.6	350
64.0	25.1	50.2	18.4	36.9	13.2	26.4	9.3	18.7	9.3	18.7	350

\* BASED ON AVERAGE SOIL PASSIVE BEARING STRENGTH OF 2000 PSF USING SF OF 1.5

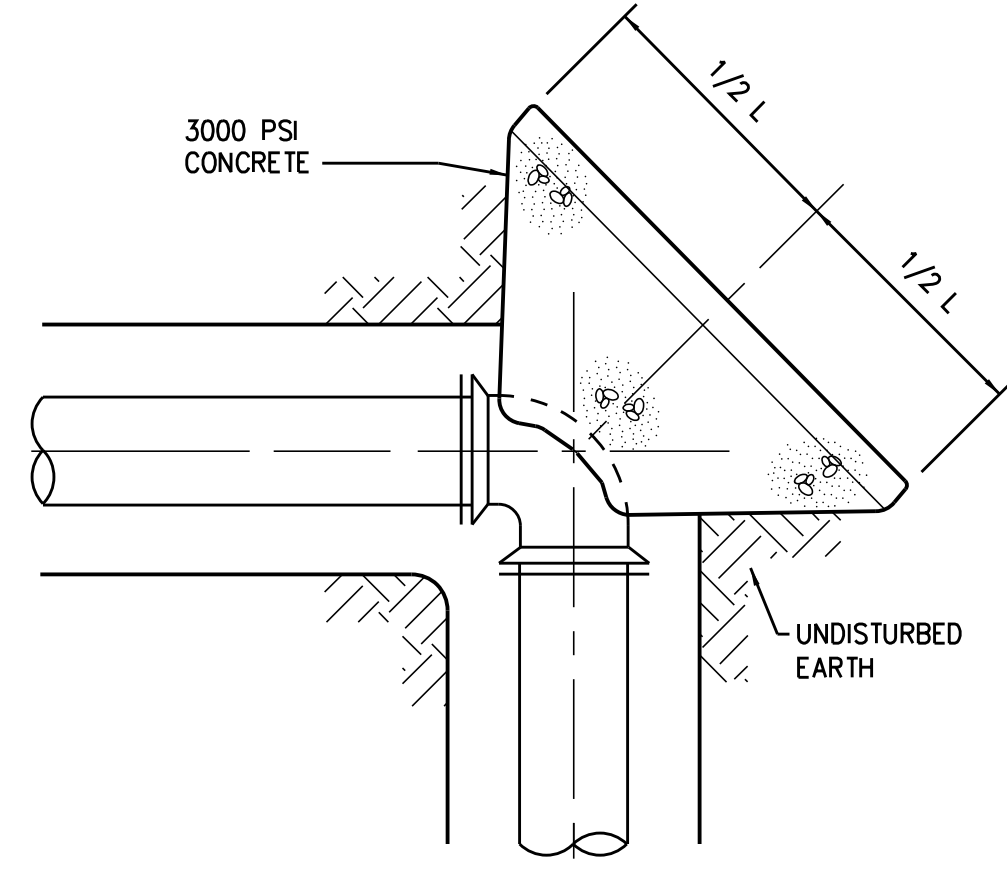
0222114R



PLAN - TEE

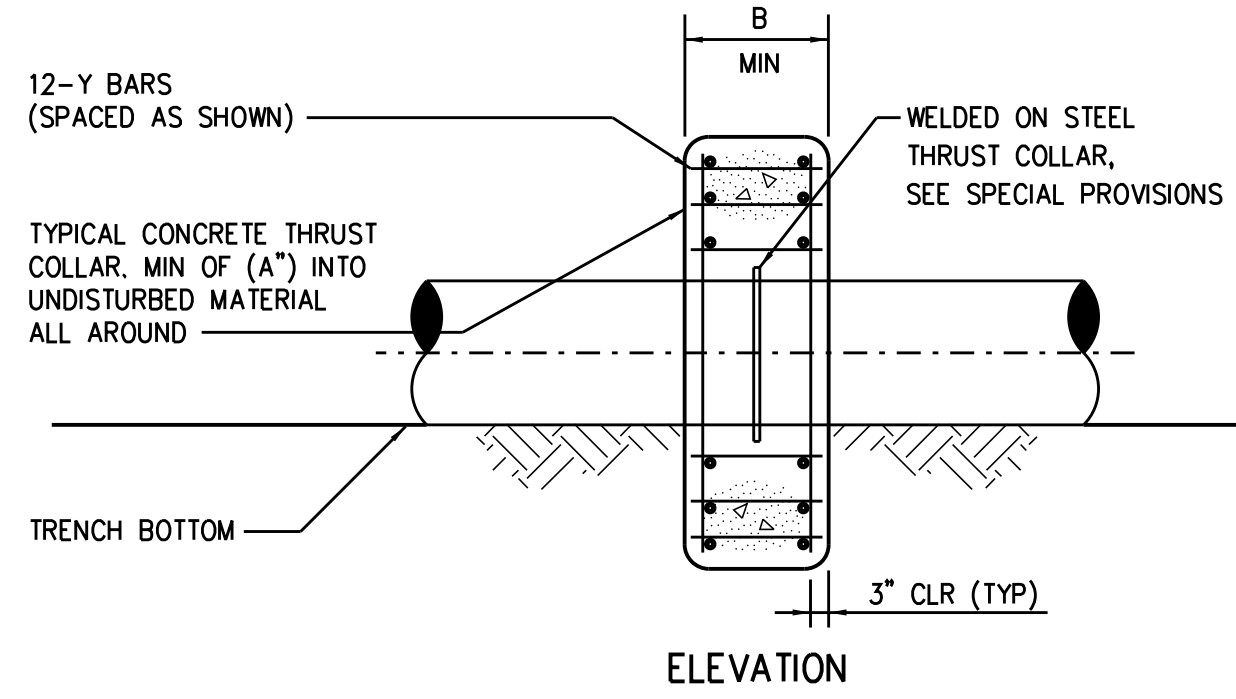
THRUST BLOCKS

0222108

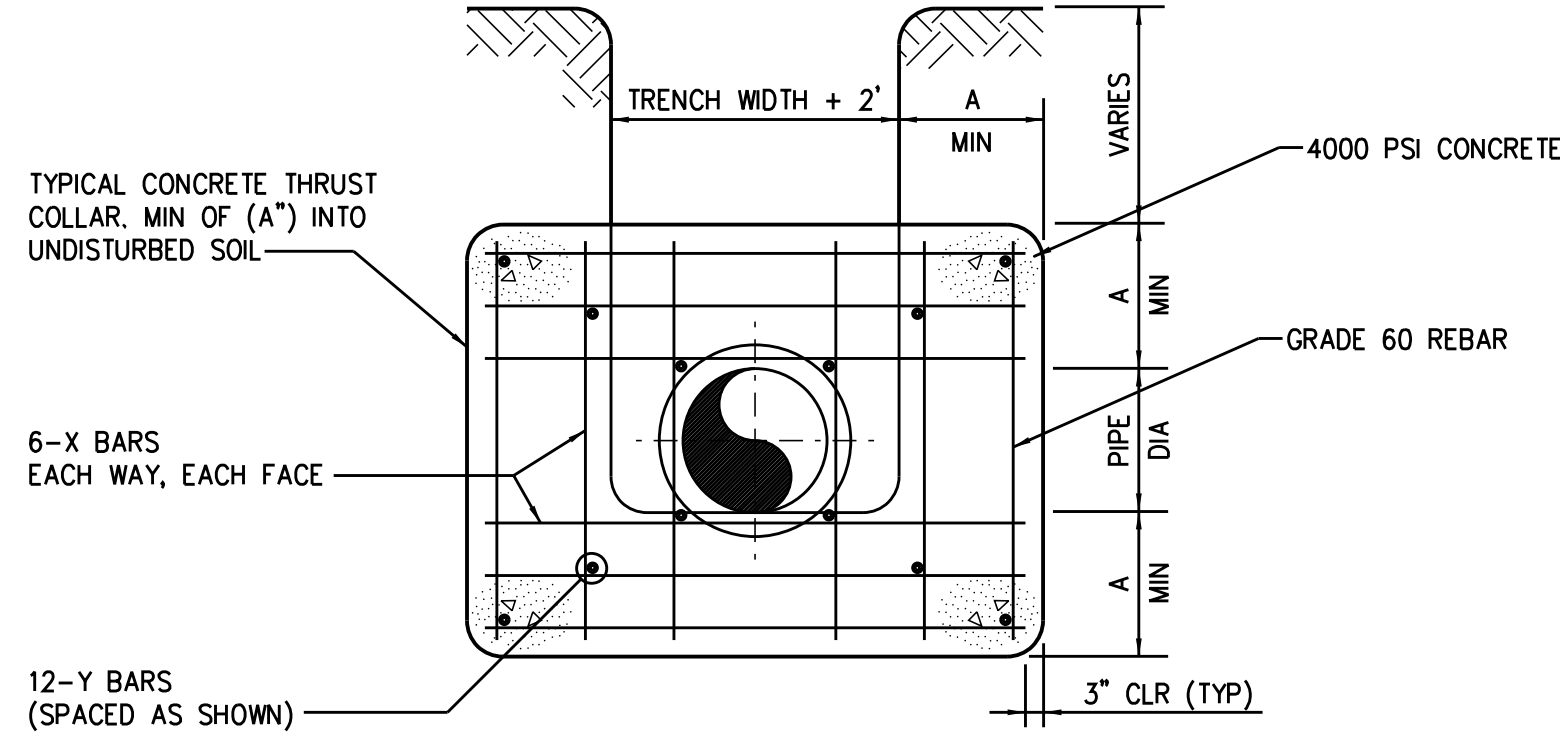


PLAN - BEND

- DETAIL NOTES:
1. CONCRETE THRUST BLOCKS, ARCH/ENCASEMENTS, ETC., SHALL BE FORMED USING PLYWOOD OR SAND BAGS TO PROVIDE REQUIRED SHAPE.
  2. CONCRETE THRUST BLOCKS SHALL ONLY BE USED IN LIEU OF RESTRAINED JOINT PIPE, NOT IN CONJUNCTION WITH.
  3. CONCRETE THRUST BLOCKING SHALL BE USED ONLY AS APPROVED BY THE ENGINEER.



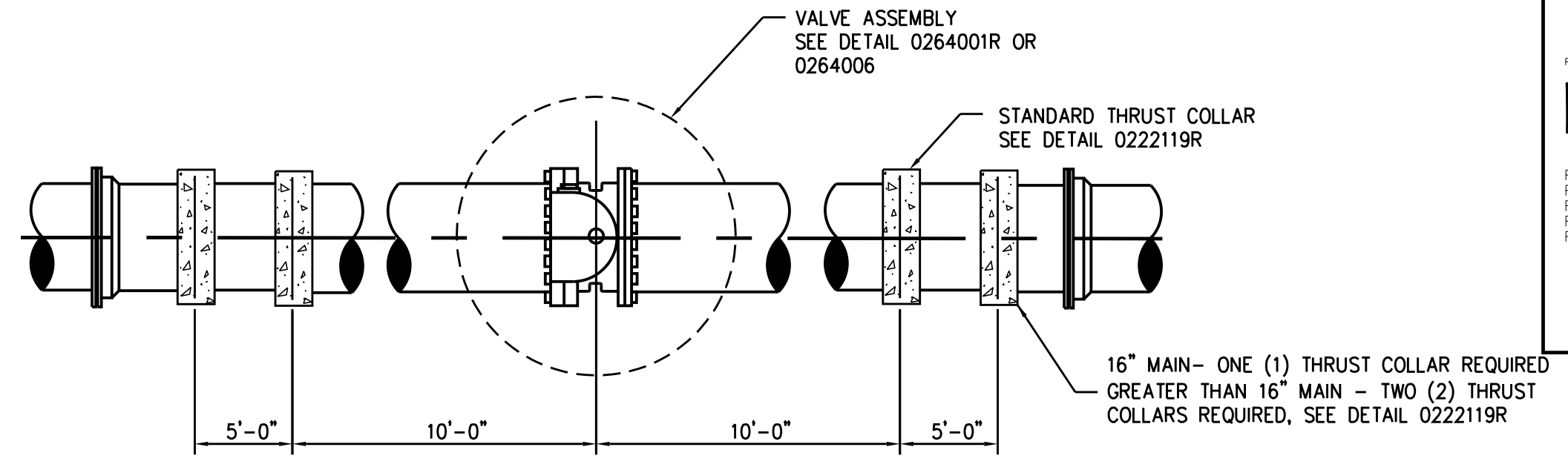
ELEVATION



THRUST COLLAR

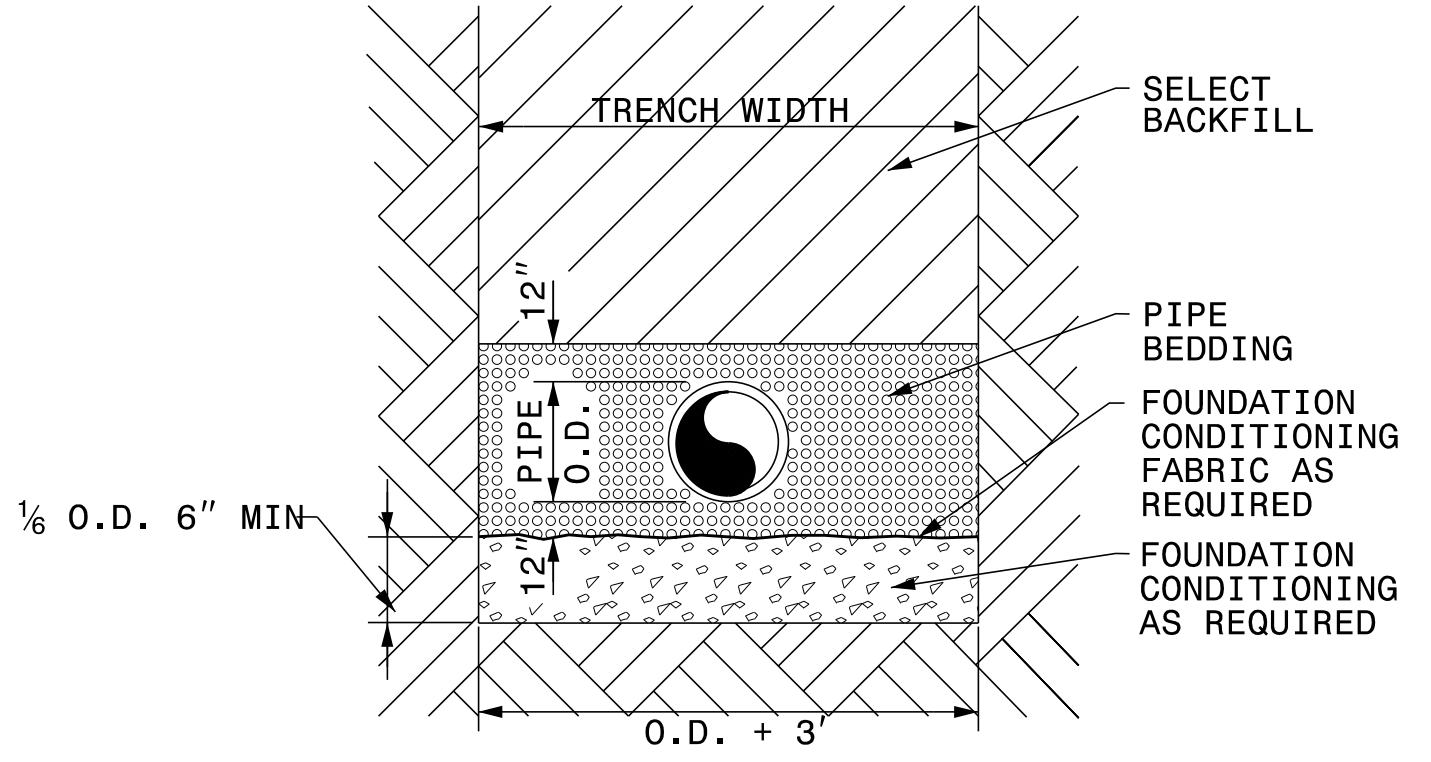
PIPE SIZE	X BARS	Y BARS	A	B
4"-36"	#5	#5	1'-4"	1'-7"
42"& >	#6	#6	1'-8"	1'-9"

0222119R



THRUST COLLARS AT VALVES  
16" AND LARGER


0222125R



PLACE FOUNDATION CONDITIONING MATERIAL BELOW BEDDING IF REQUIRED, AS DIRECTED BY ENGINEER. PIPE BEDDING IS SELECT MATERIAL, CLASS II (TYPE 1) OR CLASS III. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, WATER, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROXIMATELY 95% STD. PROCTOR DENSITY IN AREAS NOT UNDER PAVEMENT AND 98% IN AREAS UNDER PAVEMENT IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE NC DEPARTMENT OF TRANSPORTATION.

TYPICAL TRENCH DETAIL

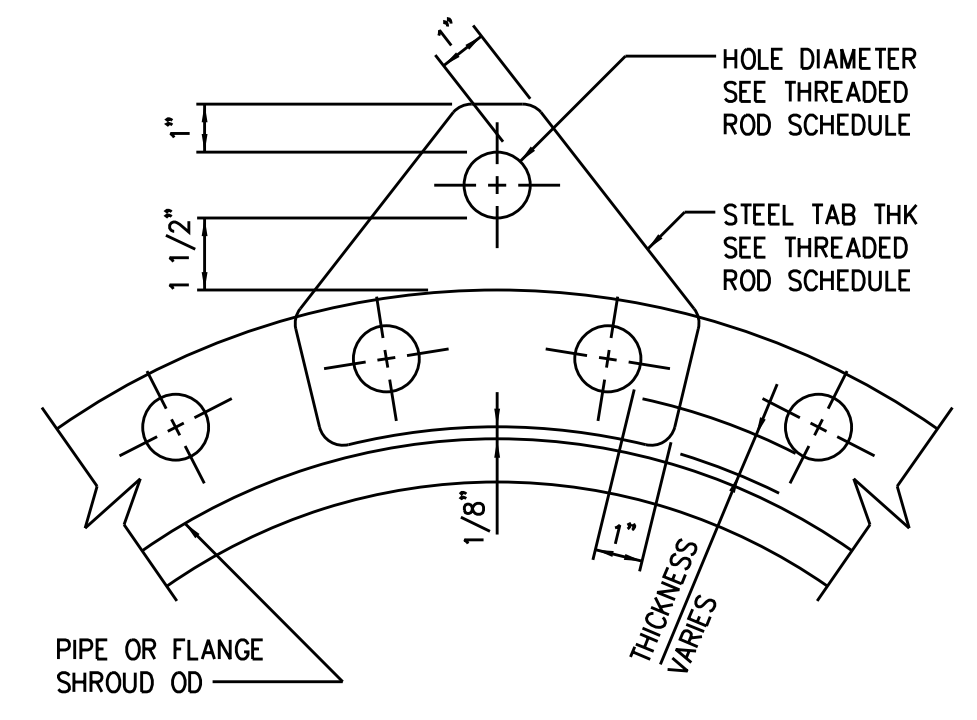
0222132

PROJECT REFERENCE NO. <b>U-3308</b>	SHEET NO. <b>UC-3D</b>
DESIGNED BY: <b>KFC</b>	
DRAWN BY: <b>JGB</b>	
CHECKED BY: <b>DGB</b>	
APPROVED BY: <b>JJW</b>	
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151

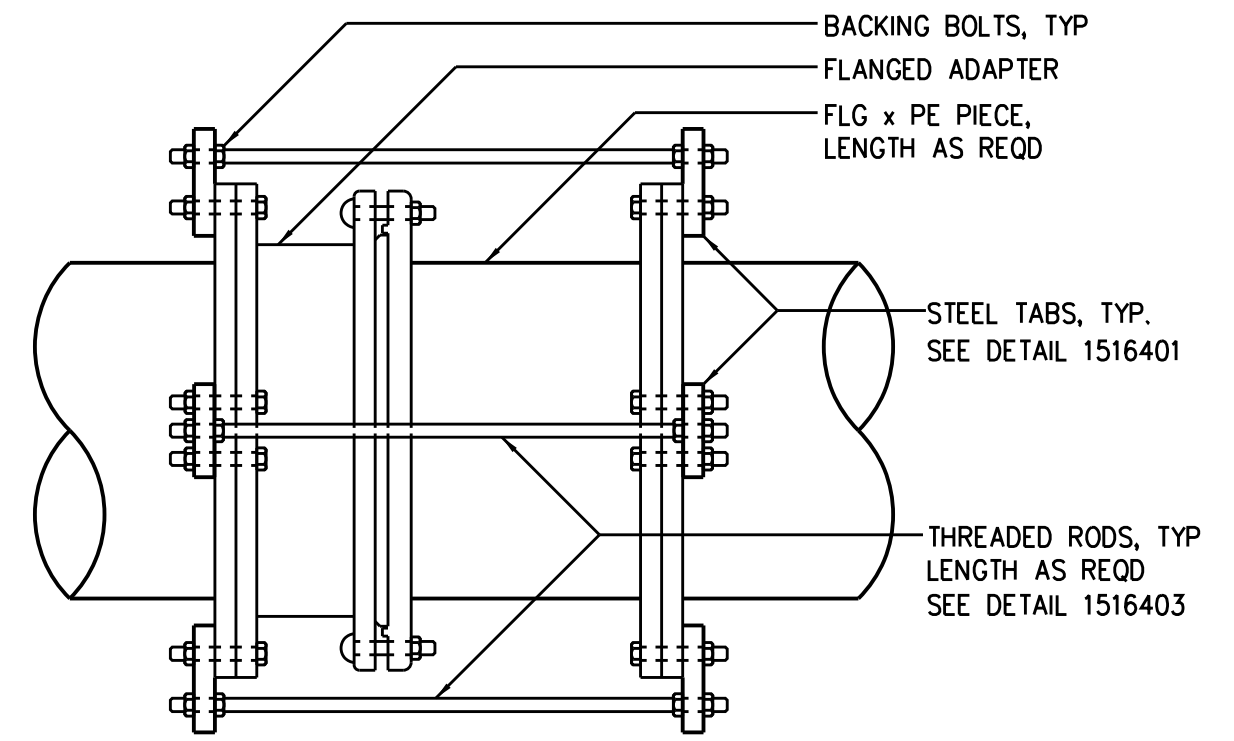
PREPARED IN THE OFFICE OF:  
**Kimley»Horn**  
P.O. BOX 33068  
RALEIGH, NORTH CAROLINA 27636-3068  
PHONE: (919) 677-2000  
FAX: (919) 677-2050  
PE NO. F-0102

10/12/2015  
UTILITY CONSTRUCTION  
PLANS ONLY

UTILITY CONSTRUCTION

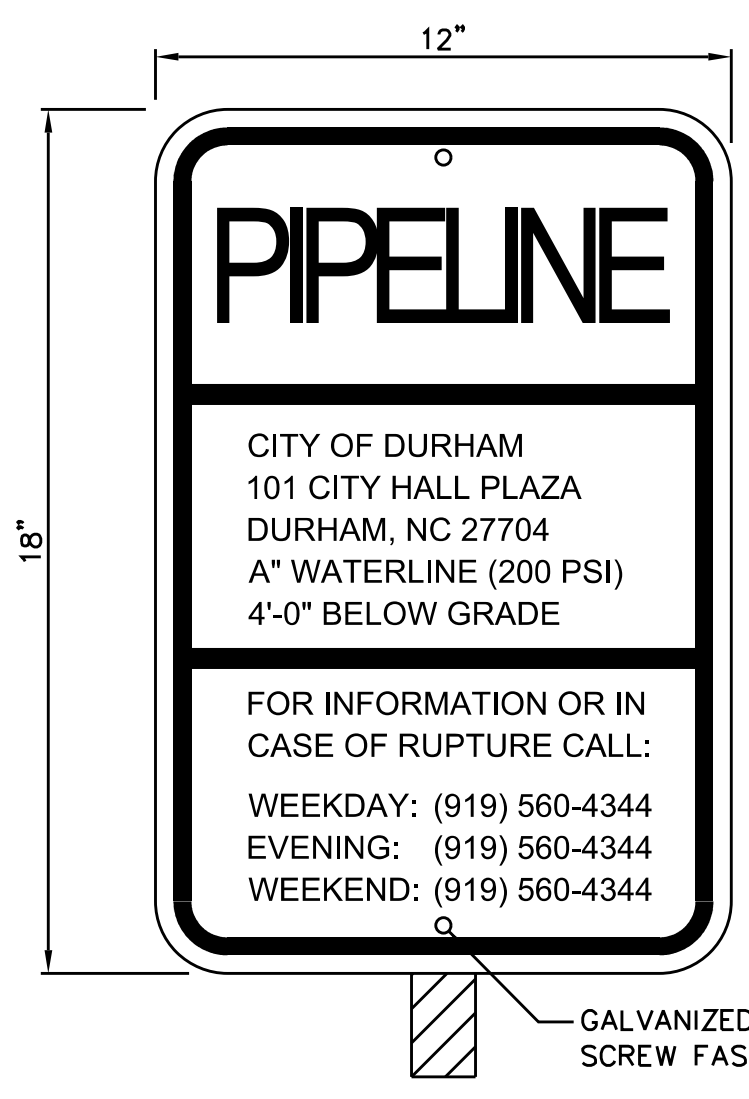


STEEL TAB  
1516401



NOTE: ALL FLANGED ADAPTERS SHALL BE HARNESSED AND BACK BOLTED TO PREVENT MOVEMENT IN EITHER DIRECTION. SEE THREADED ROD SCHEDULE FOR ROD DIAMETER, MATERIAL AND STEEL TAB THICKNESS.

HARNESSED FLANGED ADAPTER  
1516402



RAILROAD RIGHT OF WAY MARKER SIGN

0281000

- SIGN DATA:
- 1/8" ALUMINUM PANEL
  - 3M SCOTCH LITE "ENGINEER GRADE" SHEETING OR EQUAL
  - RED COPY ON WHITE BACKGROUND
  - MOUNT SIGN PANEL 5' ABOVE GRADE (MIN.)
  - USE 2 LB/FT U-CHANNEL POST (MIN.)
  - MOUNT SIGNS BACK-TO-BACK ON POST
  - "A" = WATERLINE SIZE

PIPE SIZE	THREADED ROD SCHEDULE													
	DESIGN PRESSURE (DIMENSIONS IN INCHES)													
	50 PSI		100 PSI		150 PSI		200 PSI		250 PSI		300 PSI		350 PSI	
BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	BOLTS NO-DIA	TAB THK	
4,6	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1	2-3/4	1
8	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4
10	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4
12	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4	2-3/4	1 1/4
14	2-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2
16	2-3/4	1 1/2	4-3/4	1 1/2	6-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	4-3/4	1 1/2	6-3/4	1 1/2
18	2-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	6-3/4	1 3/4
20	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	4-3/4	1 3/4	6-3/4	1 3/4	6-3/4	1 3/4	8-3/4	1 3/4
24	4-3/4	2	4-3/4	2	6-3/4	2	6-3/4	2	8-3/4	2	10-3/4	2	10-3/4	2
30	4-1	2 1/4	4-1	2 1/4	4-1	2 1/4	6-1	2 1/4	6-1	2 1/4	10-1	2 1/4	10-1	2 1/4
36	4-1	2 1/2	4-1	2 1/2	6-1	2 1/2	8-1	2 1/2	10-1	2 1/2	12-1	2 1/2	14-1	2 1/2
42	4-1 1/4	2 3/4	4-1 1/4	2 3/4	6-1 1/4	2 3/4	8-1 1/4	2 3/4	10-1 1/4	2 3/4	12-1 1/4	2 3/4	14-1 1/4	2 3/4
48	6-1 1/4	2 3/4	4-1 1/4	2 3/4	6-1 1/4	2 3/4	8-1 1/4	2 3/4	10-1 1/4	2 3/4	12-1 1/4	2 3/4	14-1 1/4	2 3/4
54	6-1 1/4	3	6-1 1/4	3	8-1 1/4	3	12-1 1/4	3	14-1 1/4	3	16-1 1/4	3	18-1 1/4	3

1. THREADED RODS FOR ALL PIPE DIAMETERS IN THE SHADED AREA SHALL BE ASTM A193 (GRADE B7).
2. ALL OTHER THREADED RODS SHALL BE ASTM A36. ALL TABS SHALL BE ASTM A572 GR50.
3. ASTM A193 (GRADE B7) RODS SHALL BE LABELED AND BUNDLED SEPARATELY.
4. THIS SCHEDULE SHALL APPLY FOR HARNESSED FLANGED ADAPTERS, HARNESSED FLEXIBLE COUPLINGS AND ALL MECHANICAL JOINT COUPLINGS, SLEEVES ETC. THAT ARE REQUIRED TO BE HARNESSED.
5. RODS THREADED AT ENDS (INCLUDING NUTS) SHALL BE EQUALLY SPACED AROUND PIPE BETWEEN ALL MECHANICAL JOINT FITTINGS (TEE, VALVES, BEND, PLUG, ETC.) OR AS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS. THREADED RODS SHALL BE AS SHOWN IN THE THREADED ROD SCHEDULE. SEE NOTE 6.
6. RODS, NUTS, ETC., IN CONTACT WITH SOIL SHALL BE PAINTED WITH TWO COATS COAL TAR (MIN 26 DRY MIL THICKNESS) TNEMEC 46-465 HI-BUILD OR EQUAL.

1516403