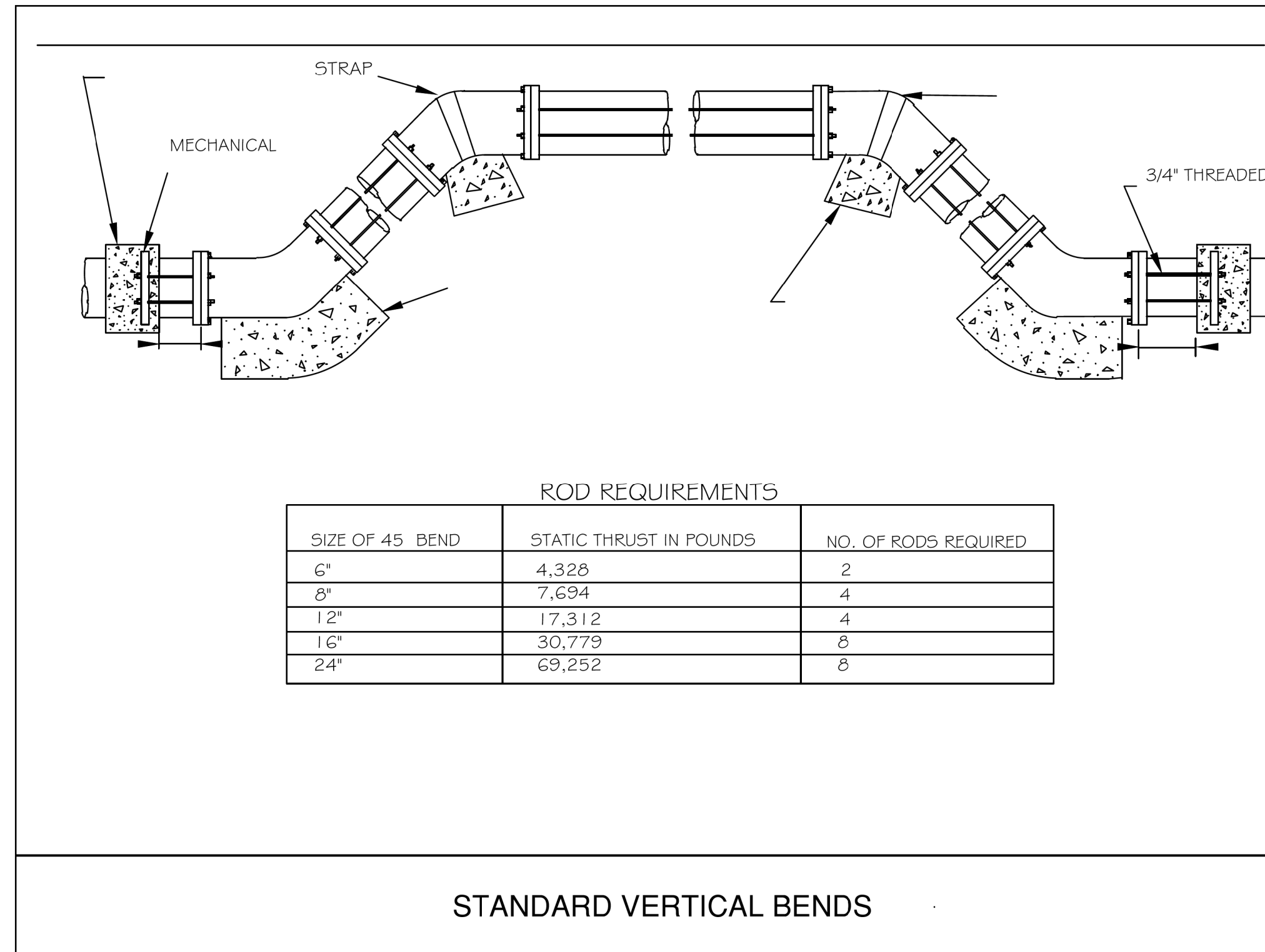


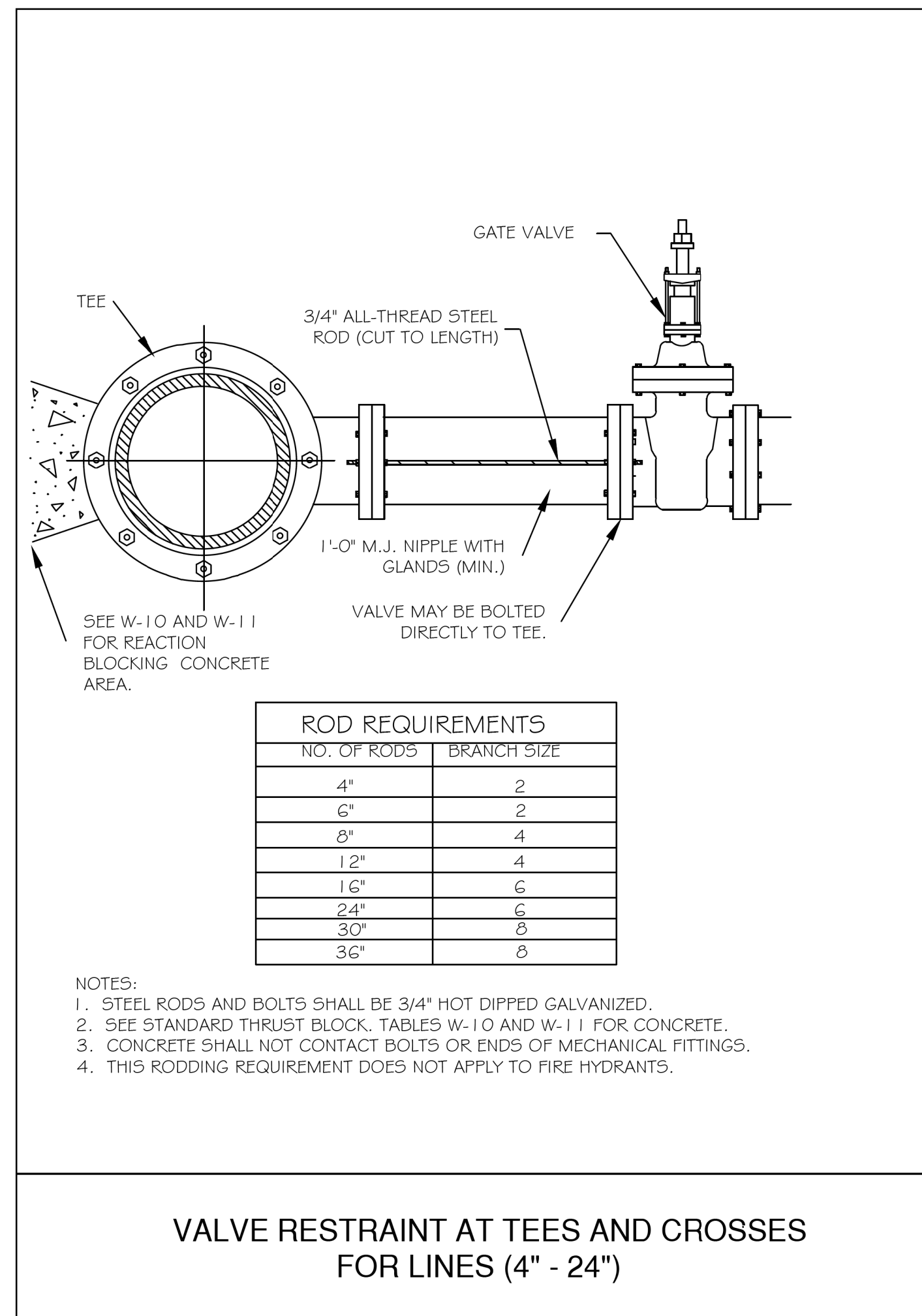
PROJECT REFERENCE NO. BR-0062	SHEET NO. UC-3B
DESIGNED BY: TWR	
DRAWN BY: TWR	
CHECKED BY: PKP	
APPROVED BY: SLK	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PROJECT TYPICAL DETAILS



SIZE OF 45° BEND	STATIC THRUST IN POUNDS	NO. OF RODS REQUIRED
6"	4,328	2
8"	7,694	4
12"	17,312	4
16"	30,779	8
24"	69,252	8

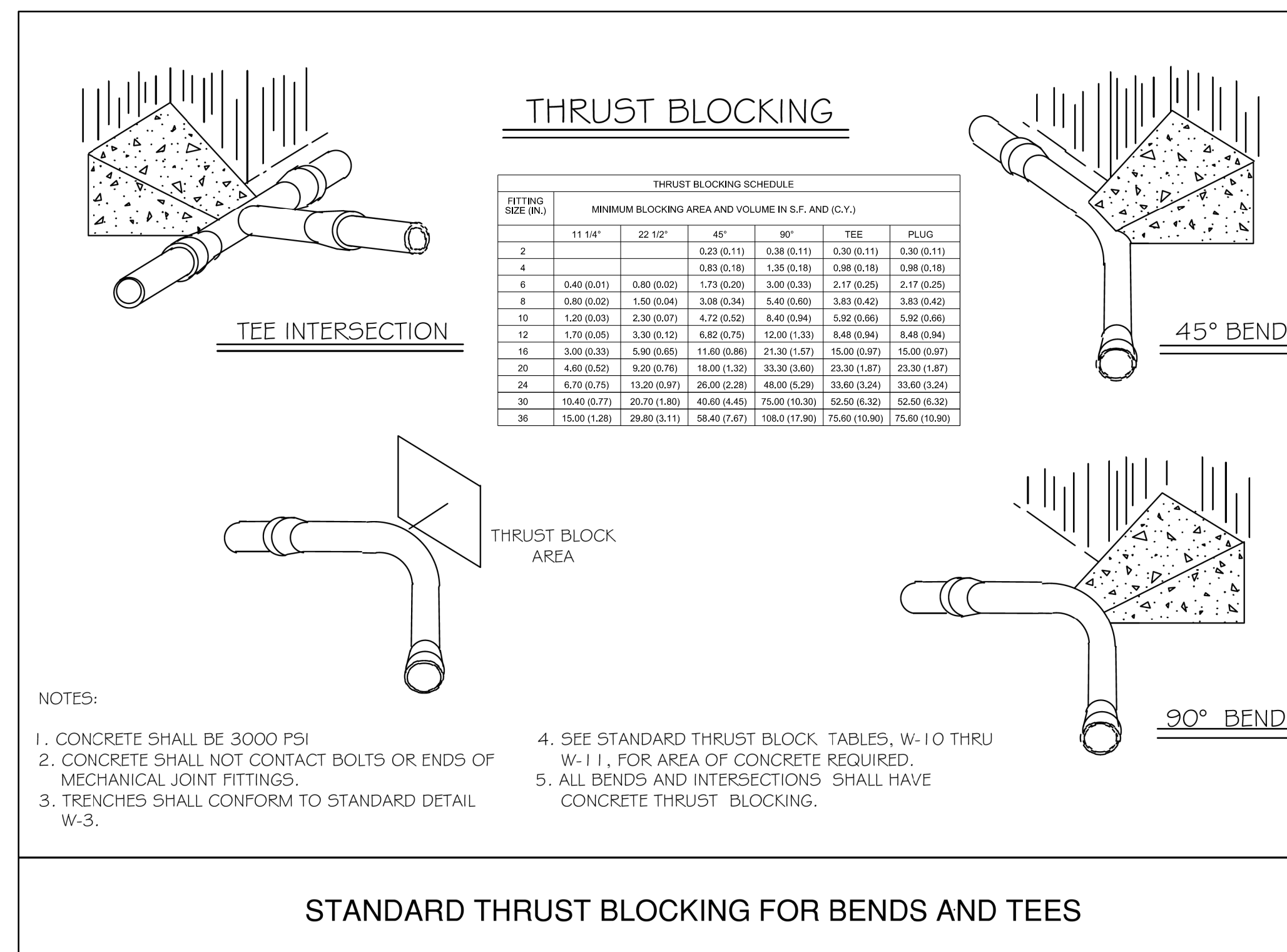
STANDARD VERTICAL BENDS



NO. OF RODS	BRANCH SIZE
2	4"
2	6"
4	8"
4	12"
6	16"
8	24"
8	30"
8	36"

- NOTES:
- STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
 - SEE STANDARD THRUST BLOCK, TABLES W-10 AND W-11 FOR CONCRETE.
 - CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL FITTINGS.
 - THIS RODDING REQUIREMENT DOES NOT APPLY TO FIRE HYDRANTS.

VALVE RESTRAINT AT TEES AND CROSSES FOR LINES (4" - 24")

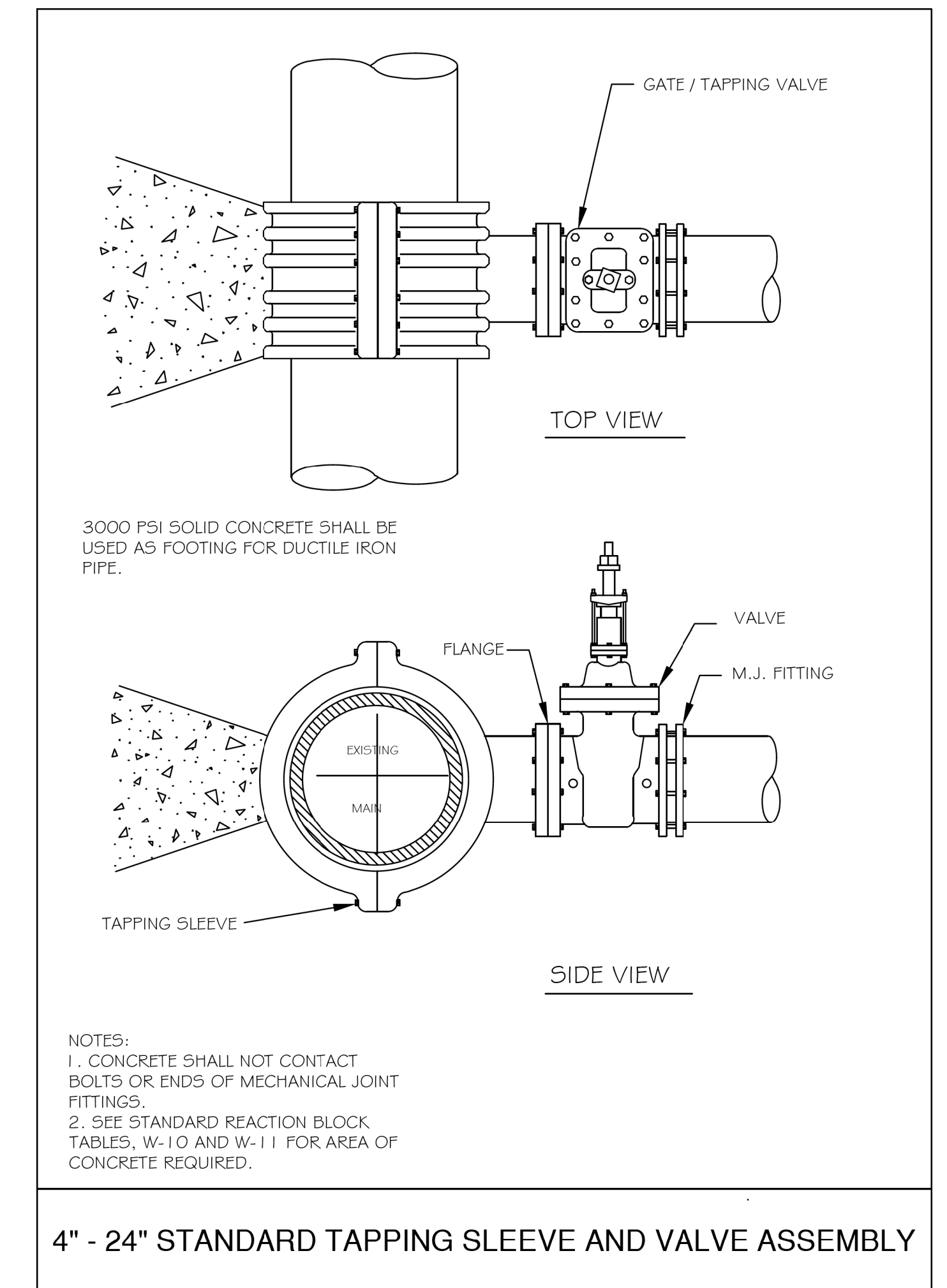


THRUST BLOCKING

FITTING SIZE (IN.)	MINIMUM BLOCKING AREA AND VOLUME IN S.F. AND (C.Y.)					
	11 1/4"	22 1/2"	45°	90°	TEE	PLUG
2			0.23 (0.11)	0.38 (0.11)	0.30 (0.11)	0.30 (0.11)
4			0.83 (0.16)	1.35 (0.16)	0.98 (0.16)	0.98 (0.16)
6	0.40 (0.01)	0.80 (0.02)	1.73 (0.20)	3.00 (0.33)	2.17 (0.25)	2.17 (0.25)
8	0.80 (0.02)	1.50 (0.04)	3.08 (0.34)	5.40 (0.60)	3.83 (0.42)	3.83 (0.42)
10	1.20 (0.03)	2.30 (0.07)	4.72 (0.52)	8.40 (0.94)	5.92 (0.66)	5.92 (0.66)
12	1.70 (0.05)	3.30 (0.12)	6.82 (0.75)	12.00 (1.33)	8.48 (0.94)	8.48 (0.94)
16	3.00 (0.33)	5.90 (0.65)	11.00 (0.96)	21.30 (1.57)	15.00 (0.97)	15.00 (0.97)
20	4.60 (0.52)	9.20 (0.76)	18.00 (1.32)	33.30 (3.65)	23.30 (1.87)	23.30 (1.87)
24	6.70 (0.75)	13.20 (0.97)	26.00 (2.28)	48.00 (5.29)	33.60 (3.24)	33.60 (3.24)
30	10.40 (0.77)	20.70 (1.80)	40.60 (4.45)	75.00 (10.30)	52.50 (8.32)	52.50 (8.32)
36	15.00 (1.28)	29.80 (3.11)	58.40 (7.67)	108.0 (17.90)	75.60 (10.90)	75.60 (10.90)

- NOTES:
- CONCRETE SHALL BE 3000 PSI
 - CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
 - TRENCHES SHALL CONFORM TO STANDARD DETAIL W-3.
 - SEE STANDARD THRUST BLOCK, TABLES, W-10 THRU W-11, FOR AREA OF CONCRETE REQUIRED.
 - ALL BENDS AND INTERSECTIONS SHALL HAVE CONCRETE THRUST BLOCKING.

STANDARD THRUST BLOCKING FOR BENDS AND TEES



3000 PSI SOLID CONCRETE SHALL BE USED AS FOOTING FOR DUCTILE IRON PIPE.

- NOTES:
- CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
 - SEE STANDARD REACTION BLOCK TABLES, W-10 AND W-11 FOR AREA OF CONCRETE REQUIRED.

4" - 24" STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY

REVISIONS