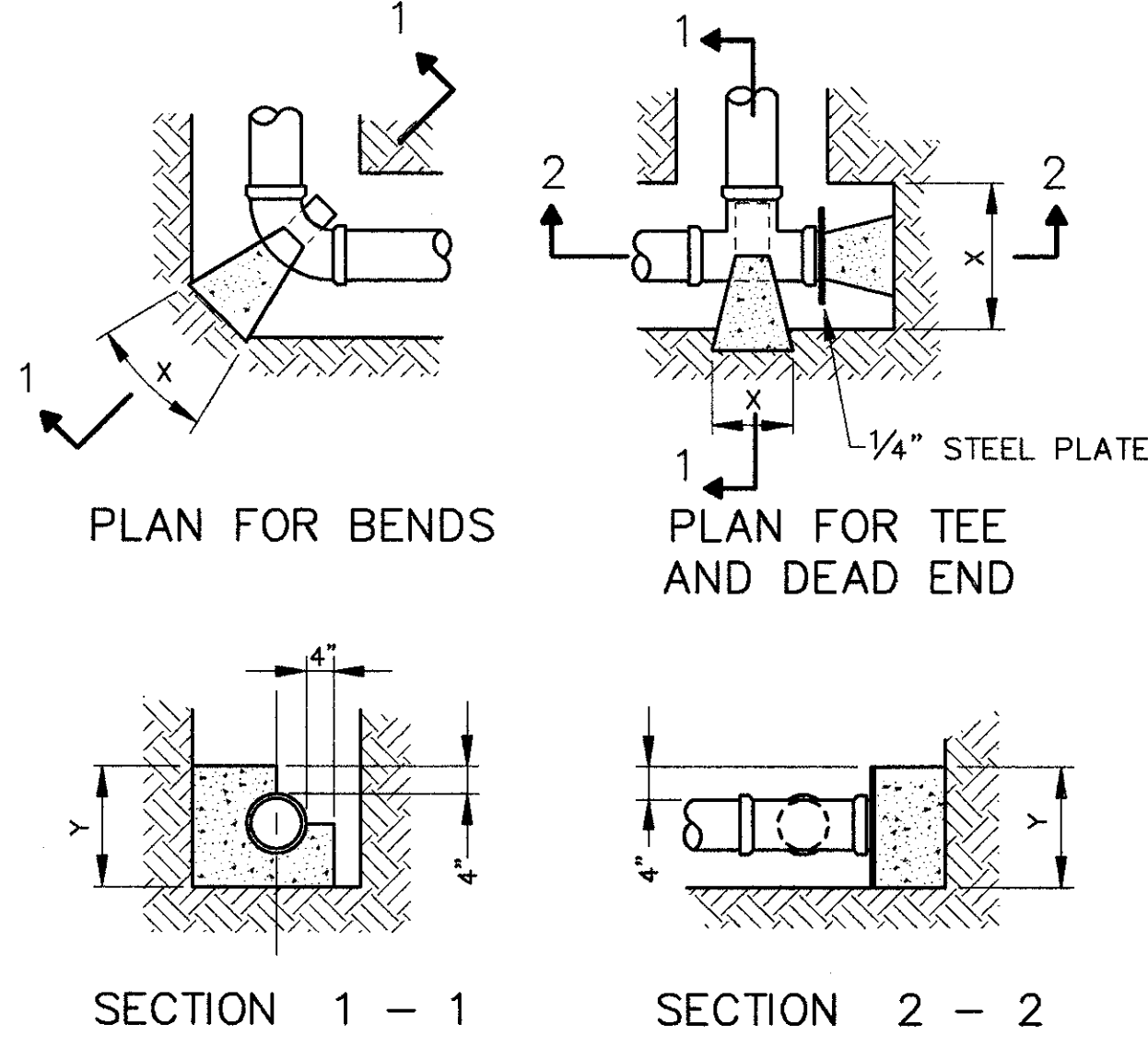


WATERWORKS DETAILS

PLAN NO. 271

PIPE SIZE	BEARING FACE (X Y) IN SQ. FT. CONCRETE VOLUME IN CU. FT.					
	22½° BEND			45° BEND		
	1000 P.S.F.	3000 P.S.F.	5000 P.S.F.	1000 P.S.F.	3000 P.S.F.	5000 P.S.F.
4	1.40	0.46	0.26	2.70	0.90	0.54
6	2.80	0.93	0.56	5.50	1.83	1.10
8	4.80	1.60	0.96	9.60	3.20	1.92
10	7.90	2.63	1.96	15.70	5.23	3.14
12	11.30	3.76	2.26	22.30	7.43	4.46
14	15.30	5.10	3.06	30.20	10.06	6.04
16	19.80	6.60	3.96	39.10	13.03	7.82
	1.17	0.76	0.49	1.21	0.79	0.51
PIPE SIZE	90° BEND			TEE OR DEAD END		
	1000 P.S.F.	3000 P.S.F.	5000 P.S.F.	1000 P.S.F.	3000 P.S.F.	5000 P.S.F.
	4	4.90	1.63	0.96	3.50	1.16
6	10.20	3.40	2.04	7.20	2.40	1.44
8	17.70	5.54	3.54	12.50	4.16	2.50
10	28.90	9.60	5.76	20.40	6.80	4.06
12	41.10	13.70	8.22	29.10	9.70	5.82
14	55.80	18.60	11.16	39.50	13.16	7.90
16	72.20	24.06	14.44	51.10	17.03	10.22
	2.14	1.39	0.90	1.54	1.00	0.65



ALL CONCRETE BLOCKING MUST HAVE ITS ENTIRE FACE (X & Y) BEARING SURFACE AGAINST UNDISTURBED SOIL AND ALL VERTICAL NON-BEARING SURFACES SHALL BE FORMED SO AS TO KEEP CONCRETE FROM JOINTS. BLOCKING DESIGN BASED ON COMBINED WORKING PRESSURE PLUS WATER HAMMER OF 240 PSI AND FOR BEARING CAPACITY FOR SAND - 1000 PSF, SAND AND GRAVEL - 3000 PSF, SHALE - 5000 PSF.

THRUST BLOCKING DETAIL

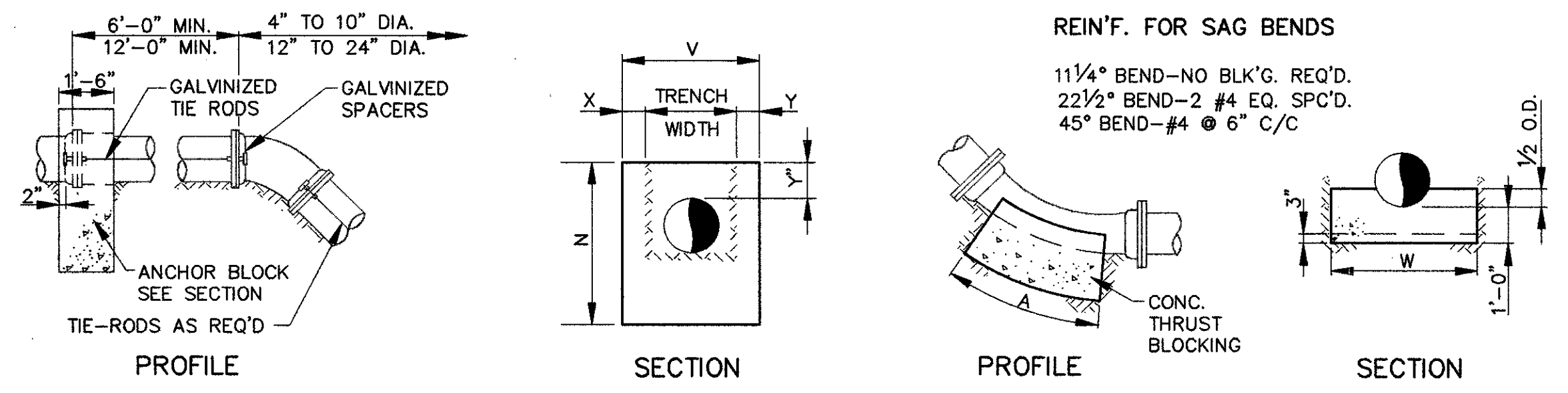


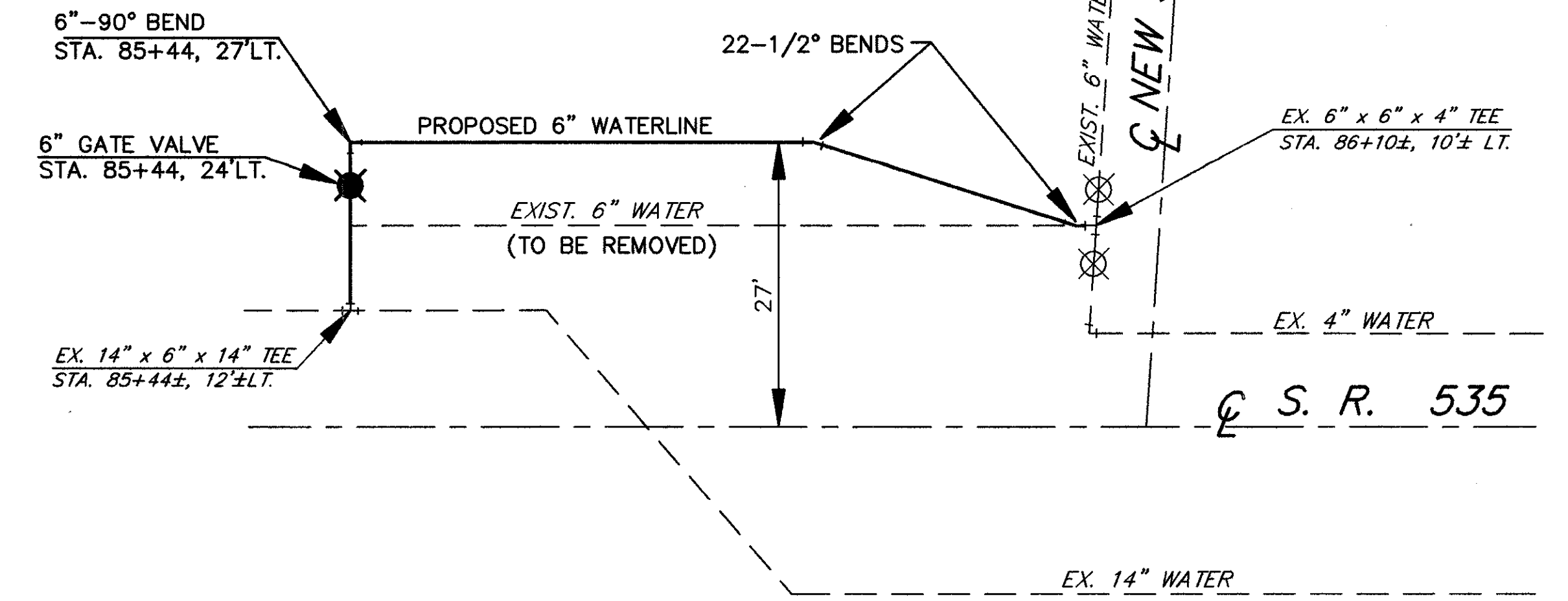
TABLE OF DIMENSIONS

PIPE SIZE	OVER BENDS					TIE RODS NO. & SIZE
	11¼°	22½°	45° BENDS			
	X	V	Y	N	C.Y.	
4"	1'-0"	4'-3"	1'-0"	2'-4"	.55	2-¾" DIA.
6"	1'-0"	4'-6"	1'-0"	2'-6"	.61	2-¾" DIA.
8"	1'-0"	4'-8"	1'-0"	2'-8"	.67	2-¾" DIA.
10"	1'-0"	4'-10"	1'-0"	2'-10"	.72	4-¾" DIA.
12"	1'-0"	5'-0"	1'-0"	3'-0"	.78	4-¾" DIA.
14"	1'-0"	5'-2"	1'-0"	3'-3"	.87	6-¾" DIA.
16"	1'-0"	5'-4"	1'-0"	4'-4"	1.09	8-¾" DIA.
18"	1'-0"	5'-6"	1'-0"	4'-7"	1.34	8-¾" DIA.

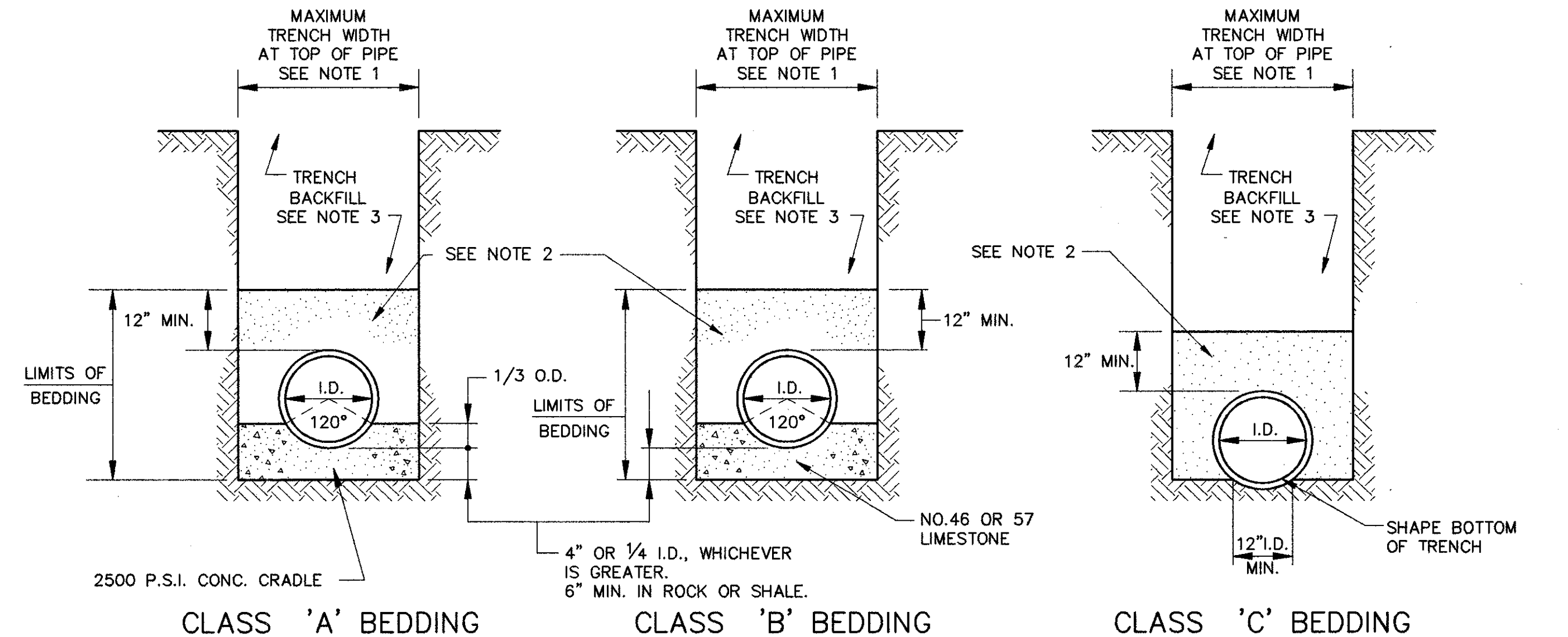
PIPE SIZE	22½° BEND			45° BEND		
	A	W	C.Y.	A	W	C.Y.
4"	—	—	—	—	—	—
6"	—	—	—	0'-8"	1'-8"	0.05
8"	0'-8"	1'-4"	0.04	0'-9"	2'-8"	0.10
10"	0'-8"	2'-0"	0.06	1'-2"	2'-10"	0.16
12"	0'-8"	2'-4"	0.08	1'-7"	3'-0"	0.24
14"	0'-8"	2'-9"	0.09	1'-8"	3'-2"	0.28
16"	0'-9"	3'-4"	0.14	2'-3"	3'-4"	0.41
18"	1'-0"	3'-6"	0.20	2'-9"	3'-6"	0.54

- NOTES:**
- TABLE PORTION FOR NO. AND SIZE OF TIE RODS IS APPLICABLE TO ALL TIE-IN PIPING REQUIRING SUCH REINFORCEMENT.
 - USE OF ANCHOR BLOCKS AND OR THRUST BLOCKS NEEDED ONLY IF A TIE-RODDED EXTENSION PIECE EQUALS OR EXCEEDS A STANDARD PIPE LENGTH.
 - BLOCKING DESIGN BASED ON COMBINED WORKING PRESSURE OF WATER HAMMER AND SOIL BEARING AT 3000 P.S.I.

OVER & SAG BEND THRUST BLOCKING DETAILS



NEW STREET INTERSECTION WATERLINE DETAIL



CLASS 'A' BEDDING CLASS 'B' BEDDING CLASS 'C' BEDDING

- NOTES:**
- MAXIMUM TRENCH AT TOP OF PIPE SHALL BE O.D.+24" FOR ALL PIPES UP TO AND INCLUDING 24" I.D.; O.D.+30" FOR PIPE LARGER THAN 24" I.D.
 - PIPE BACKFILL UNDER PAVEMENT AND STRUCTURES SHALL BE NO.46 OR NO. 57 LIMESTONE COMPACTED TO TOP OF TRENCH. THE BACKFILL MATERIAL SHALL EXTEND A MINIMUM OF 3 FEET BEYOND EACH EDGE OF PAVEMENT OR STRUCTURE. IN AREAS OUTSIDE OF PAVEMENT, SELECT ON-SITE GRANULAR MATERIAL APPROVED BY THE VILLAGE ENGINEER MAY BE USED
 - REMAINING TRENCH BACKFILL UNDER PAVEMENT AND STRUCTURES SHALL BE ODOT ITEM 304 LIMESTONE COMPACTED IN 4" LIFTS TO TOP OF TRENCH. (ODOT ITEM 310 GRAVEL MAY BE USED AS APPROVED BY THE ENGINEER.) THE BACKFILL MATERIAL SHALL EXTEND A MINIMUM OF 3 FEET BEYOND EACH EDGE OF PAVEMENT OR STRUCTURE. IN AREAS OUTSIDE OF PAVEMENT, SELECT ON SITE MATERIAL APPROVED BY THE ENGINEER MAY BE USED IN 6" COMPACTED LIFTS TO TOP OF TRENCH.
 - ALL BEDDING SHALL BE CLASS "B" UNLESS OTHERWISE NOTED ON THE PLANS OR AUTHORIZED BY THE ENGINEER.
 - SLAG BEDDING SHALL NOT BE USED.
 - WATER LINE BEDDING SHALL BE CLASS "C".
 - CLAY DAMS SHALL BE REQUIRED WHEN AND WHERE NECESSARY PER THE SOLE DISCRETION OF THE VILLAGE ENGINEER.

TRENCH & BEDDING DETAILS