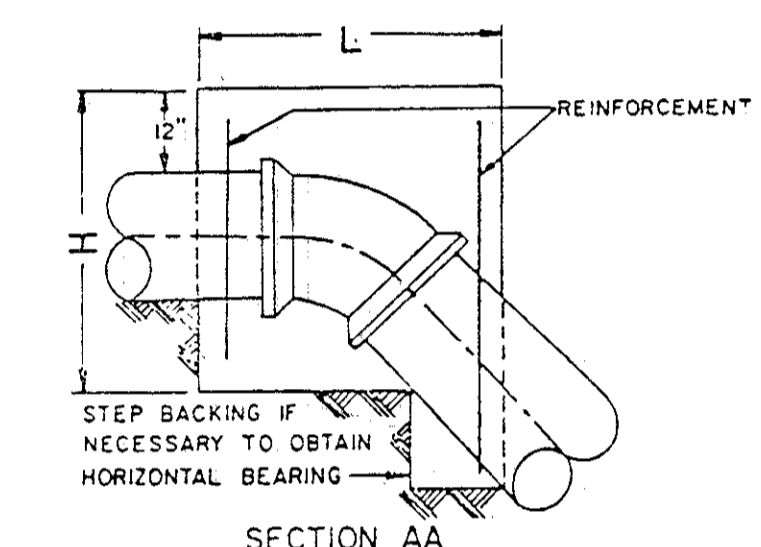
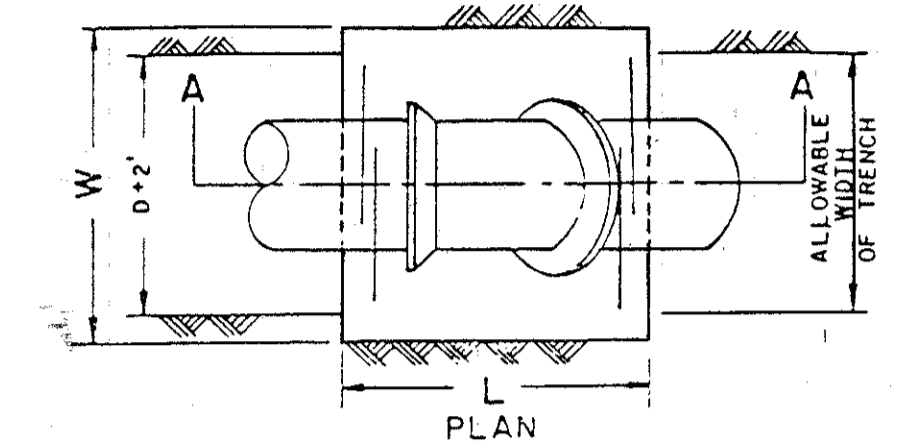
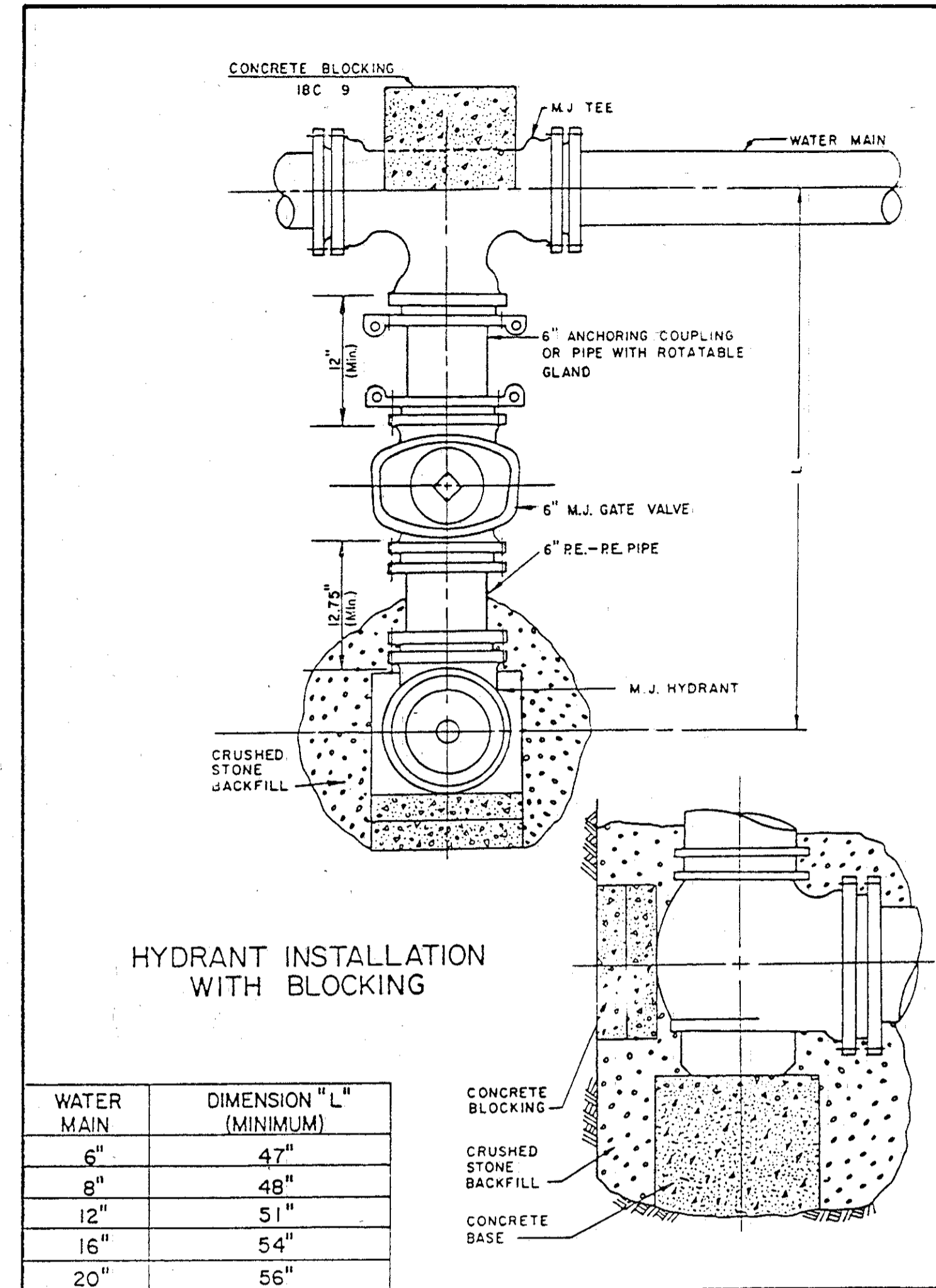


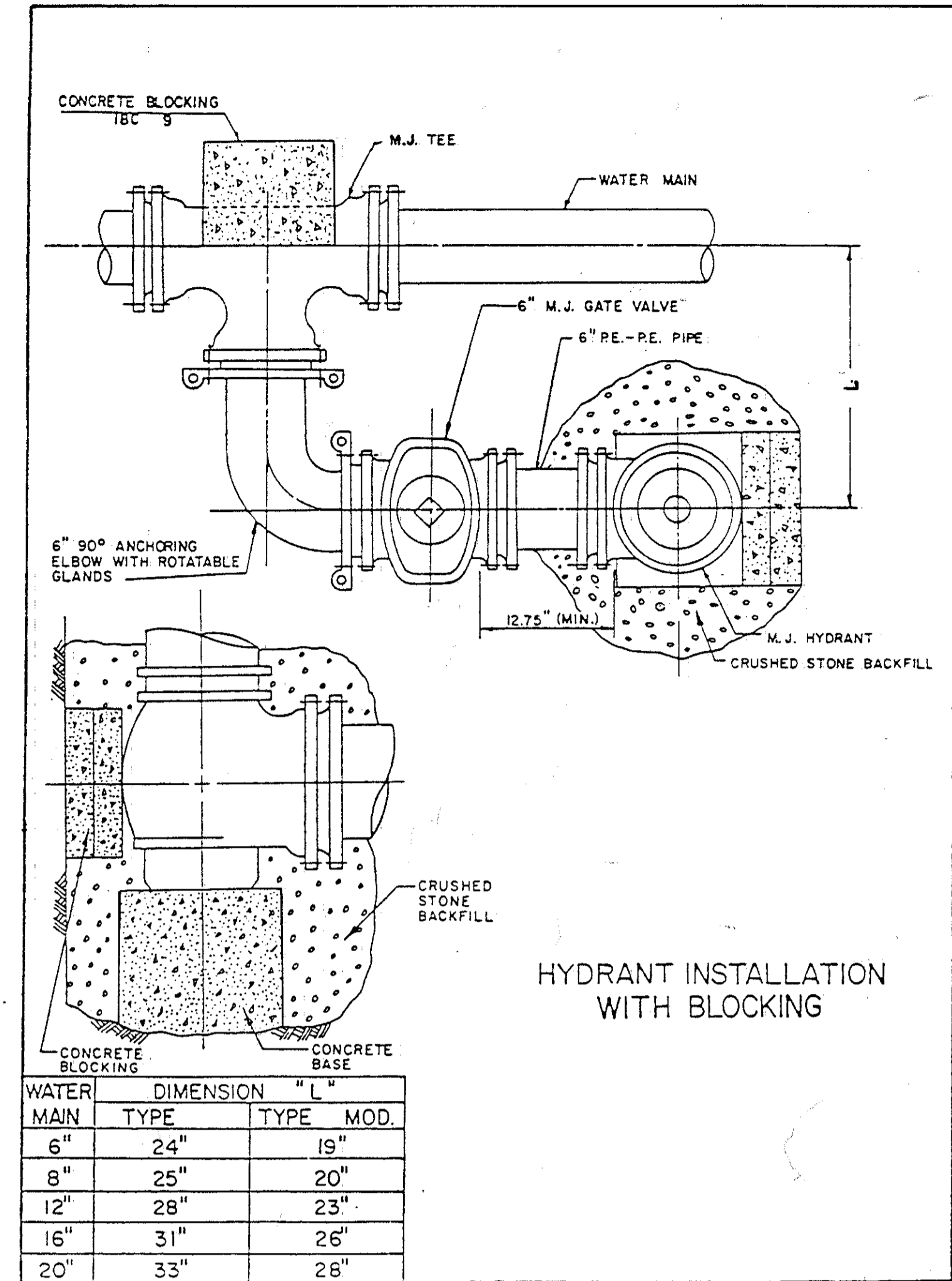
SIZE OF PIPE	DEGREE OF BEND								
	11 1/2°			22 1/2°			45°		
	L"	W"	H"	L"	W"	H"	L"	W"	H"
6"	12	48	18	15	43	36	30	55	24
8"	12	63	24	18	57	34	36	57	33
12"	20	56	36	37	62	37	48	62	51
16"	31	65	38	60	65	39	65	65	65
20"	45	70	40	56	70	60	72	77	78
24"	41	76	54	67	74	69	88	84	84



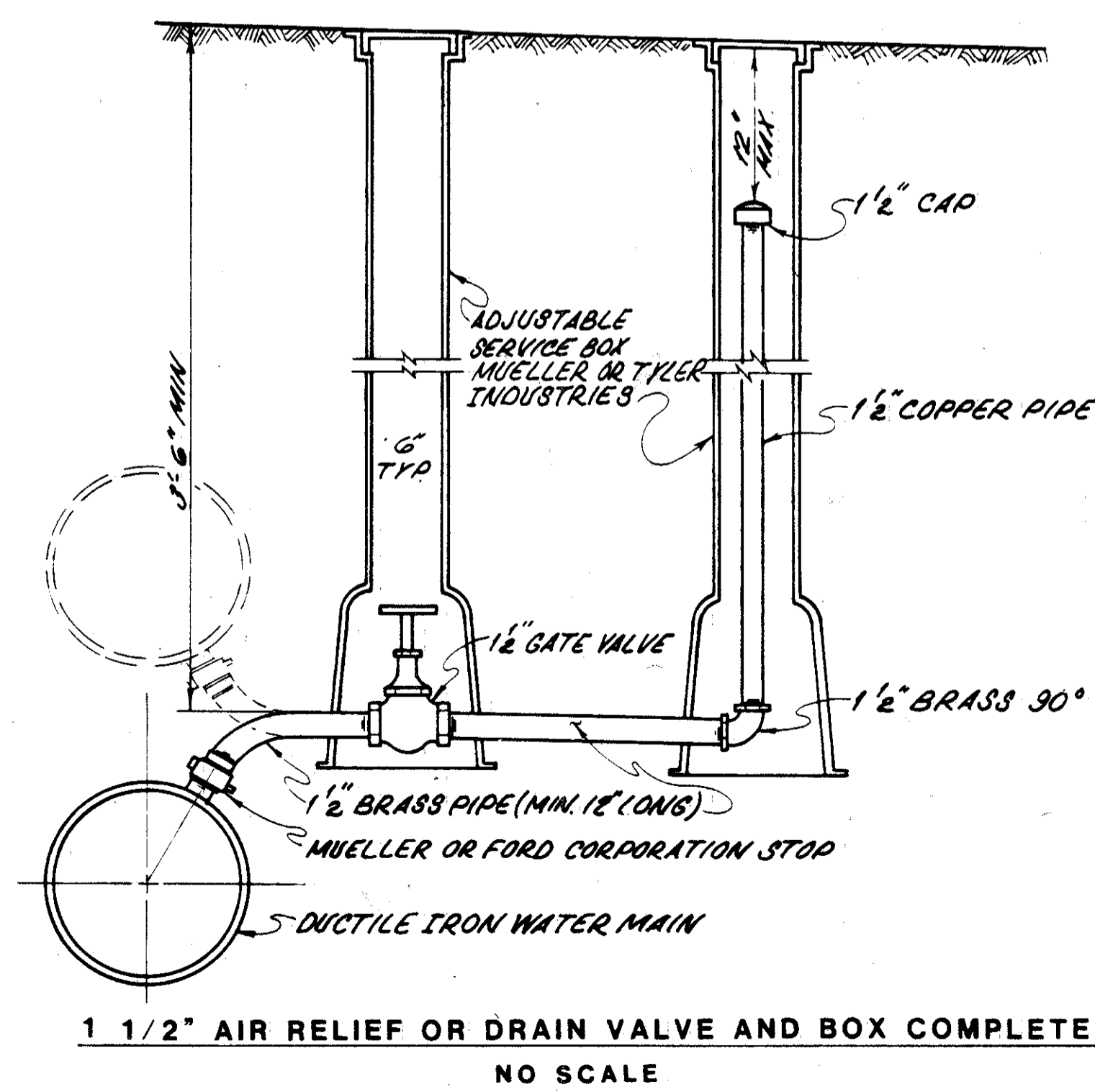
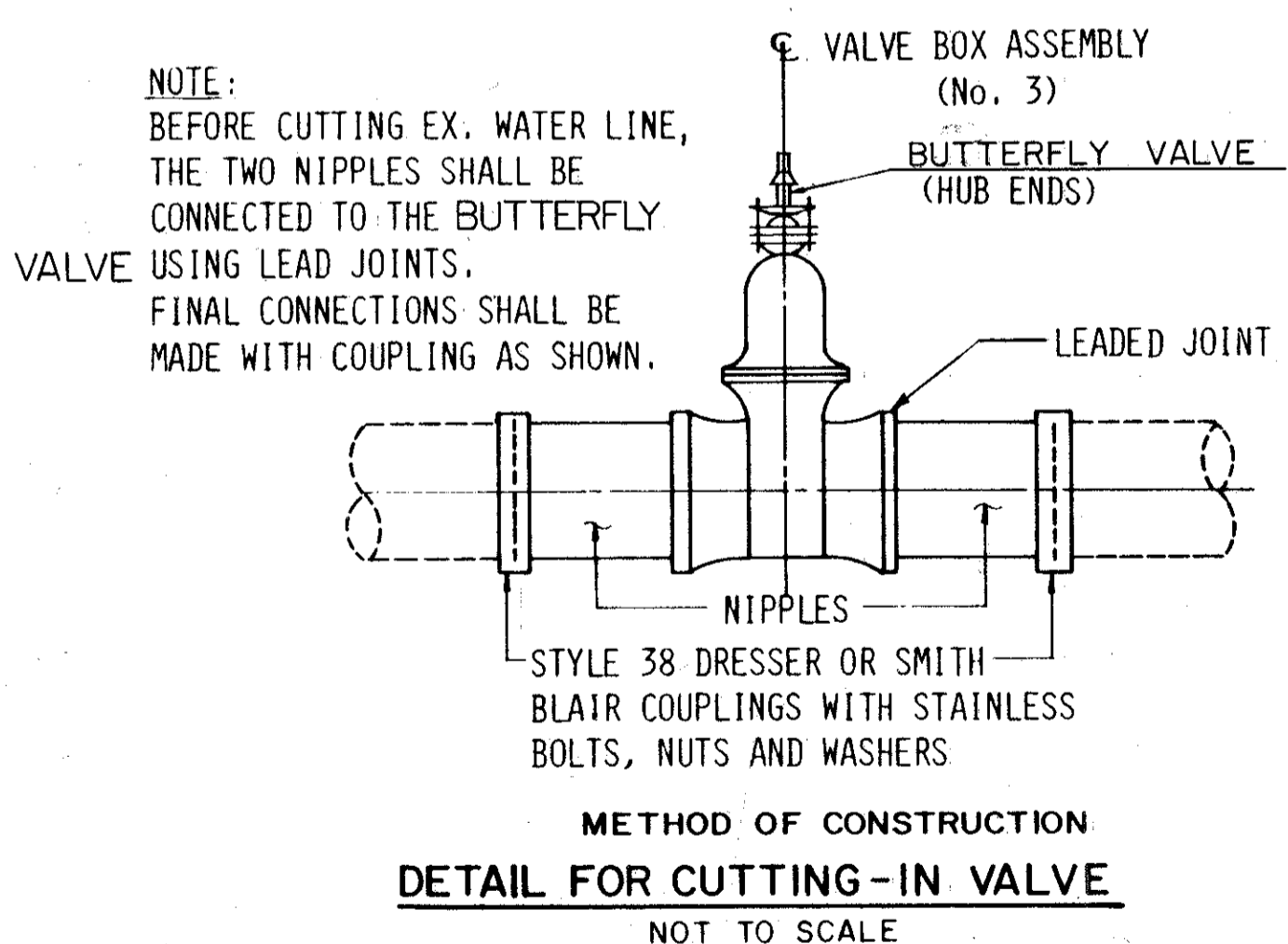
CONCRETE BACKING FOR VERTICAL BENDS
 1. BACKING DESIGNED FOR 3000 POUNDS PER SQUARE FOOT SOIL BEARING AND 150 POUNDS PER SQUARE INCH INTERNAL PRESSURE.
 2. PROVIDE MINIMUM CONCRETE REINFORCEMENT OF 2 PAIR OF TWO #5 "U" BARS AT 12" C/C.
 3. CENTER BACKING ON BEND.



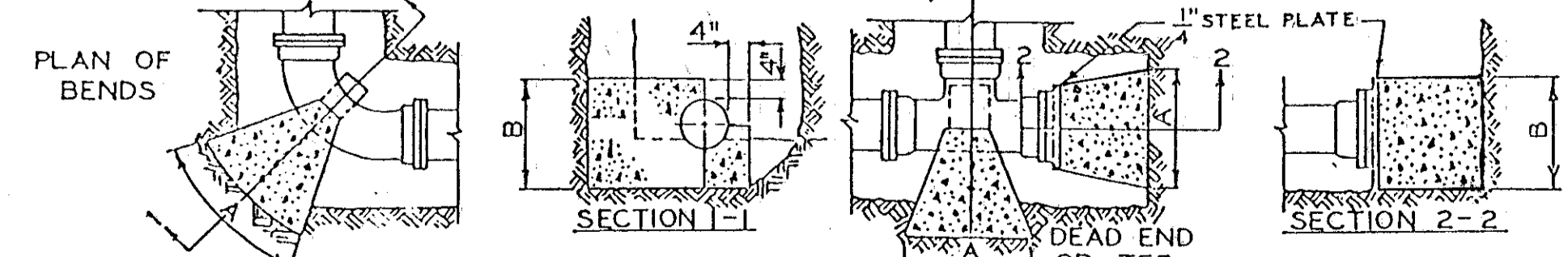
WATER MAIN	DIMENSION "L" (MINIMUM)
6"	47"
8"	48"
12"	51"
16"	54"
20"	56"



WATER MAIN	DIMENSION "L"		
TYPE	TYPE	MOD.	
6"	24"		19"
8"	25"		20"
12"	28"		23"
16"	31"		26"
20"	33"		28"



PIPE DIA. IN.	90° BEND			45° BEND			22 1/2° BEND			DEAD END OR T.E.E.		
	REQ'D THRUST BLOCKING AREA & VOL.		AREA-SQ. FT. VOL.-CU. YD.	REQ'D THRUST BLOCKING AREA & VOL.		AREA-SQ. FT. VOL.-CU. YD.	REQ'D THRUST BLOCKING AREA & VOL.		AREA-SQ. FT. VOL.-CU. YD.	REQ'D THRUST BLOCKING AREA & VOL.		AREA-SQ. FT. VOL.-CU. YD.
	1000 P.S.F.	3000 P.S.F.	5000 P.S.F.	1000 P.S.F.	3000 P.S.F.	5000 P.S.F.	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 0.14	1.63 0.09	0.98 0.08	2.70 0.12	0.90 0.08	0.54 0.06	1.40 0.14	0.48 0.09	0.28 0.06	3.50 0.12	1.16 0.08	0.70 0.06
6	10.20 0.22	3.40 0.14	2.04 0.09	5.50 0.15	1.83 0.10	1.10 0.07	2.80 0.15	0.93 0.10	0.56 0.07	7.20 0.17	2.40 0.11	1.44 0.07
8	17.70 0.35	5.54 0.23	3.54 0.15	9.60 0.23	3.20 0.15	1.92 0.09	4.80 0.20	1.60 0.13	0.96 0.09	12.50 0.25	4.18 0.18	2.50 0.14
10	28.90 0.54	9.60 0.35	5.78 0.23	15.70 0.34	5.23 0.20	3.14 0.13	7.90 0.53	2.63 0.34	1.58 0.22	20.40 0.38	6.80 0.25	4.08 0.18
12	41.10 1.31	13.70 0.85	8.22 0.55	22.30 0.75	7.43 0.49	4.46 0.32	11.30 0.62	3.76 0.40	2.28 0.26	29.10 0.97	9.70 0.63	5.82 0.42
14	55.80 1.70	18.60 1.11	11.18 0.72	30.20 0.98	10.06 0.84	6.04 0.42	15.30 0.74	5.10 0.48	3.08 0.31	39.50 1.22	13.16 0.79	7.90 0.51
16	72.20 2.14	24.08 1.39	14.44 0.90	39.10 1.21	13.03 0.79	7.82 0.51	19.60 1.17	6.60 0.78	3.96 0.49	51.10 1.54	17.03 1.00	10.22 0.65



NOTE:
 ALL CONCRETE BLOCKING MUST HAVE ITS ENTIRE FACE-A&D-BEARING AGAINST UNDISTURBED SOIL. BLOCKING DESIGN BASED ON WORKING PRESSURE OF 90 P.S.I. + 100 P.S.I. WATER HAMMER. SAND --- 1000 P.S.F., SAND & GRAVEL --- 3000 P.S.F., SHALE --- 5000 P.S.F. (BEARING CAPACITY)

**THRUST BLOCKING DETAILS—
 FOR BENDS IN HORIZONTAL PLANE.**