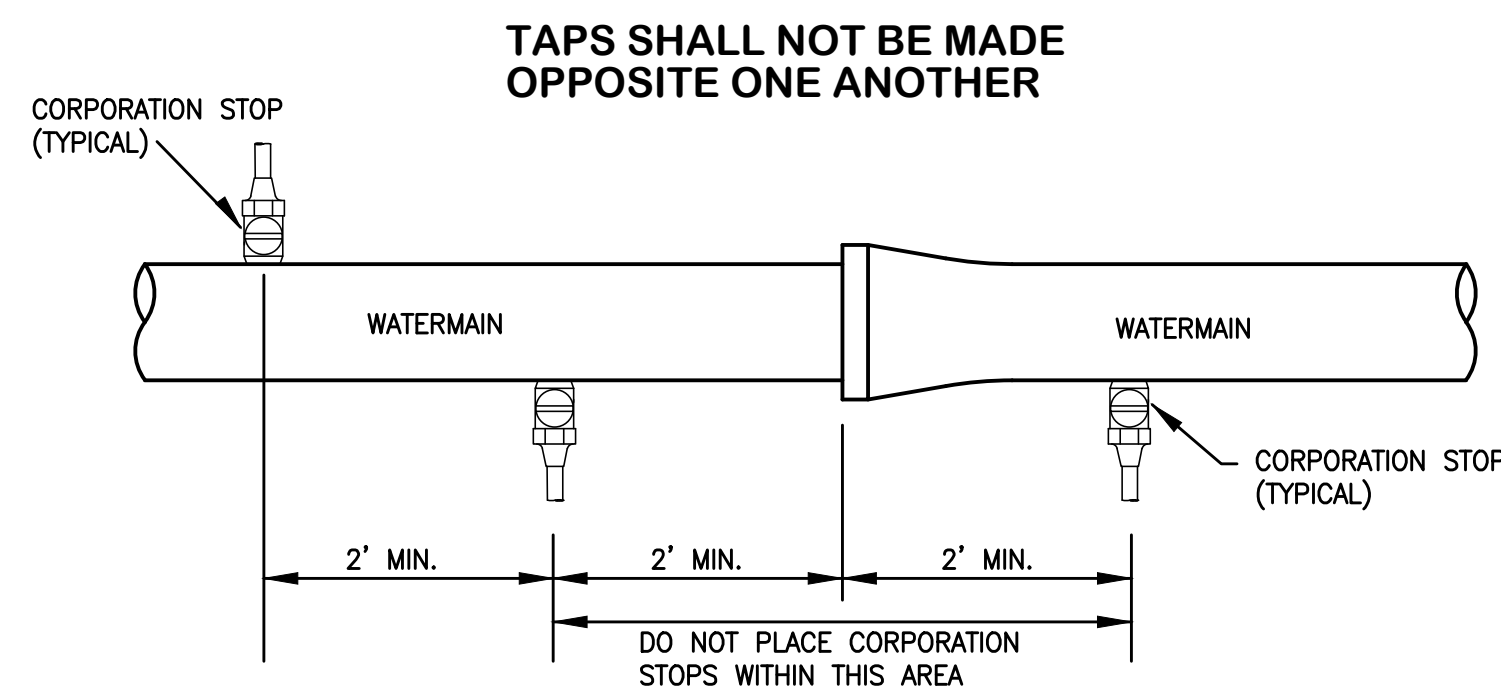


TAP SPACING ON WATERMAIN

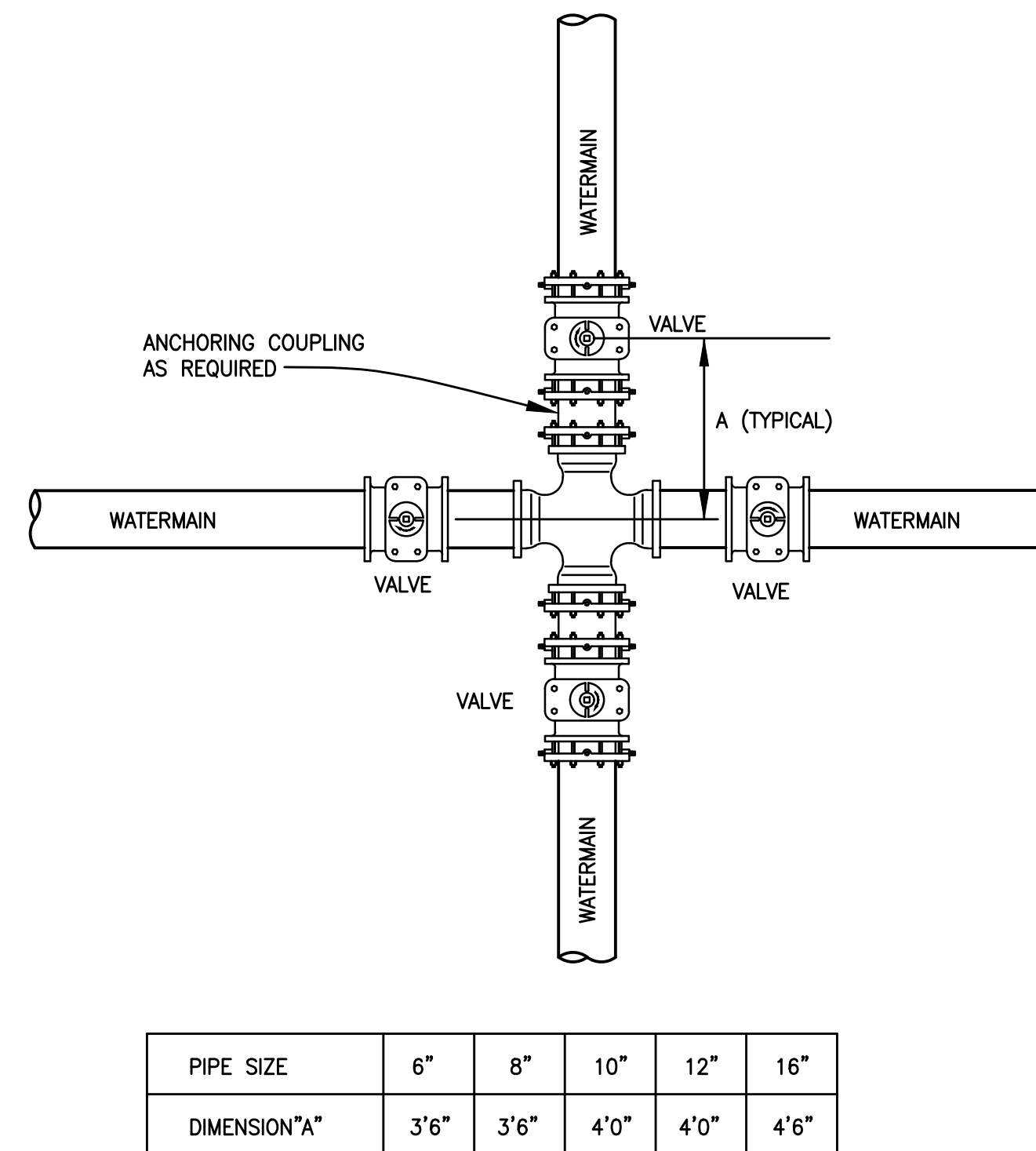


PIPE RESTRAINT SCHEDULE

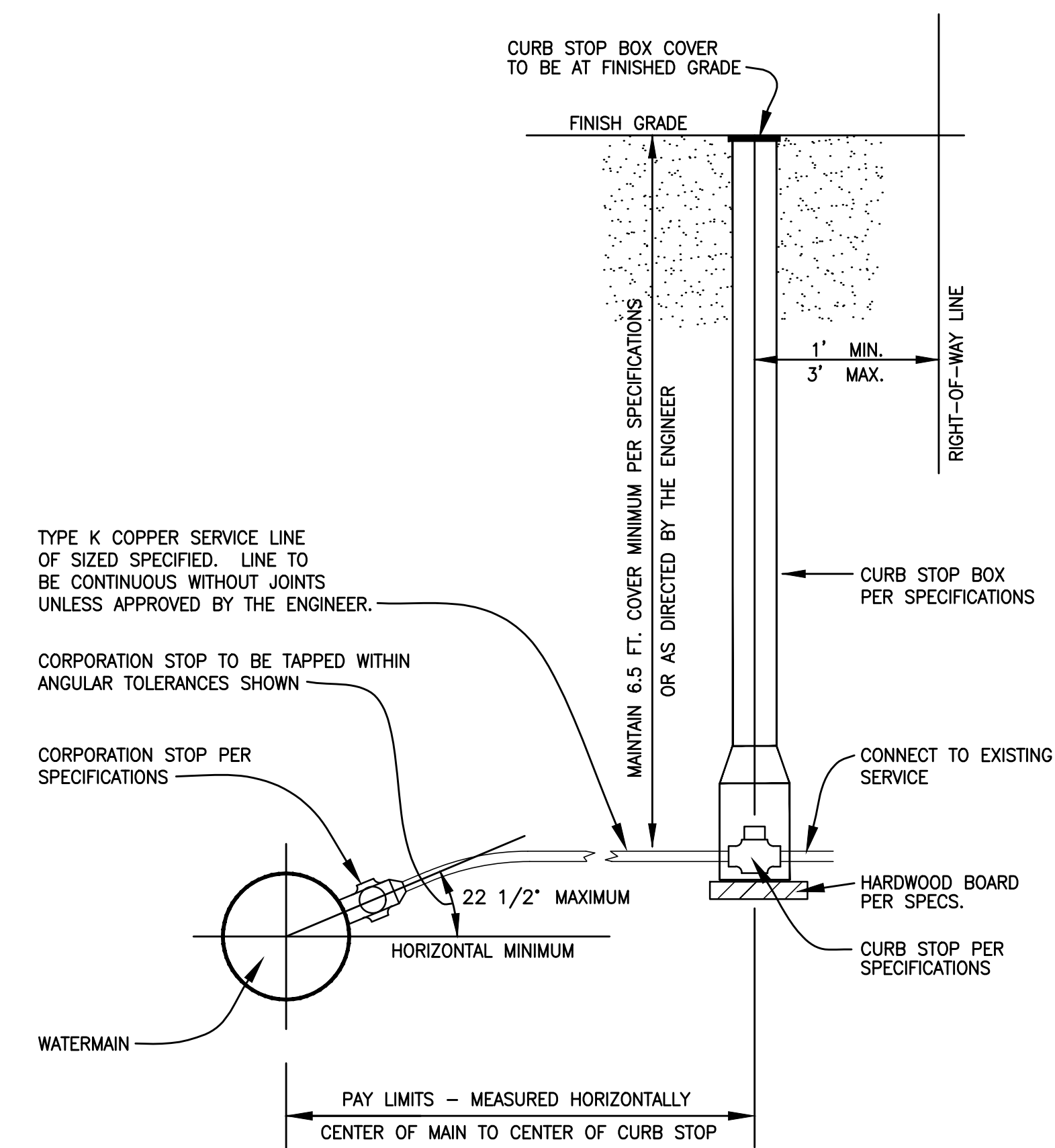
PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET (1)								
	HORIZONTAL BENDS				DEAD ENDS (2)	45° VERTICAL BENDS		REDUCER ONE SIZE REDUCTION	REDUCER TWO SIZE REDUCTION
	TEE, 90°	45°	22-1/2'	11-1/4'		UPPER	LOWER		
4	23	9	5	2	55	23	8	-	-
6	32	13	6	3	77	32	11	21	-
8	40	17	8	4	100	41	14	21	49
12	56	23	11	6	141	58	20	40	81
16	71	29	14	7	181	75	25	41	96
20	84	35	17	8	218	90	30	42	94
24	96	40	19	10	253	105	35	42	106
30	112	47	22	11	303	125	41	59	117

- RESTRAIN ALL PIPE JOINTS WITHIN THE DISTANCE SHOWN ON THE TABLES MEASURED FROM THE POINT OF CONNECTION.
- ISOLATION VALVES SHALL BE TREATED AS DEAD ENDS WITH RESTRAINT ON BOTH SIDES OF THE VALVE.

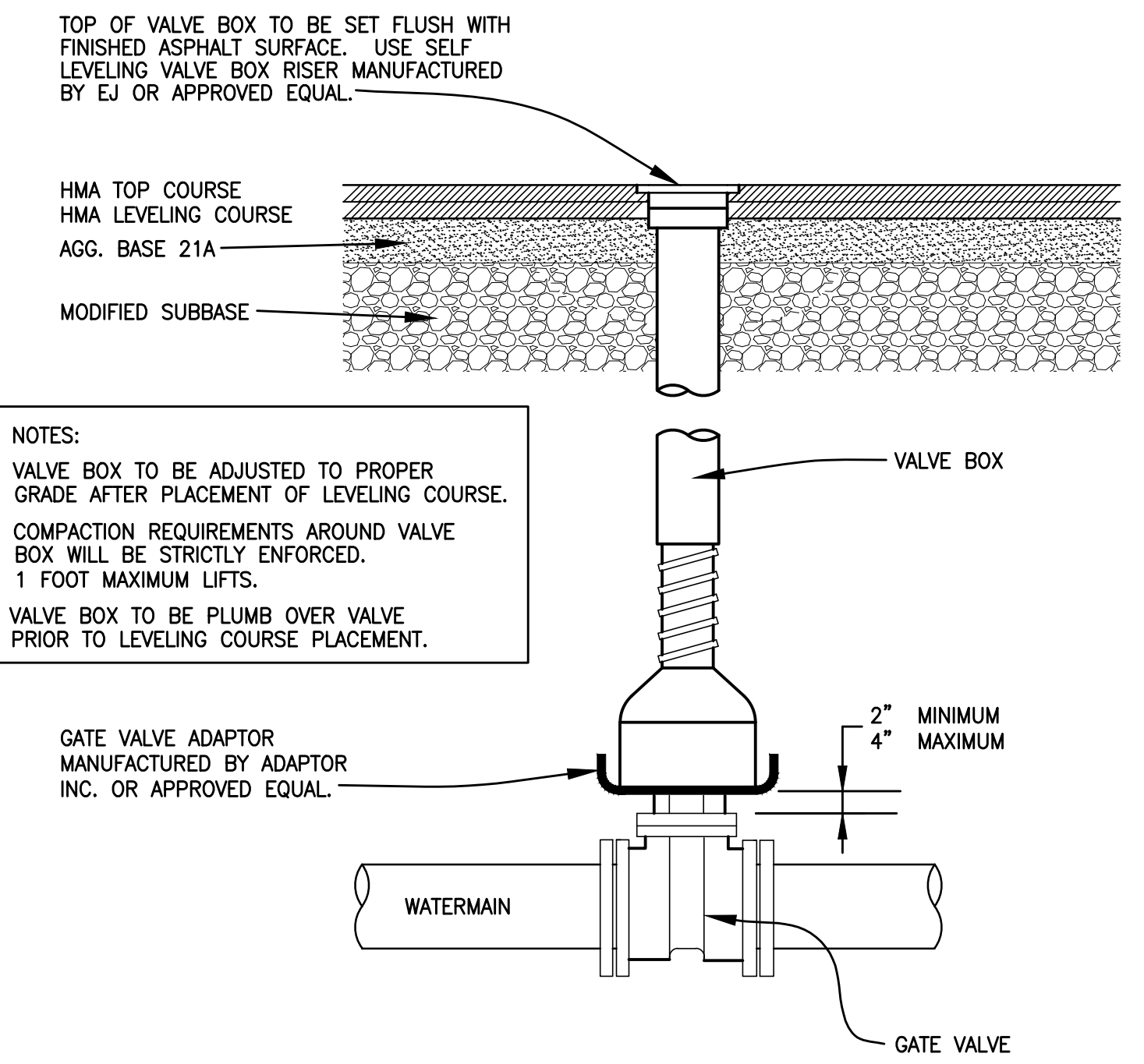
STANDARD VALVE LOCATION



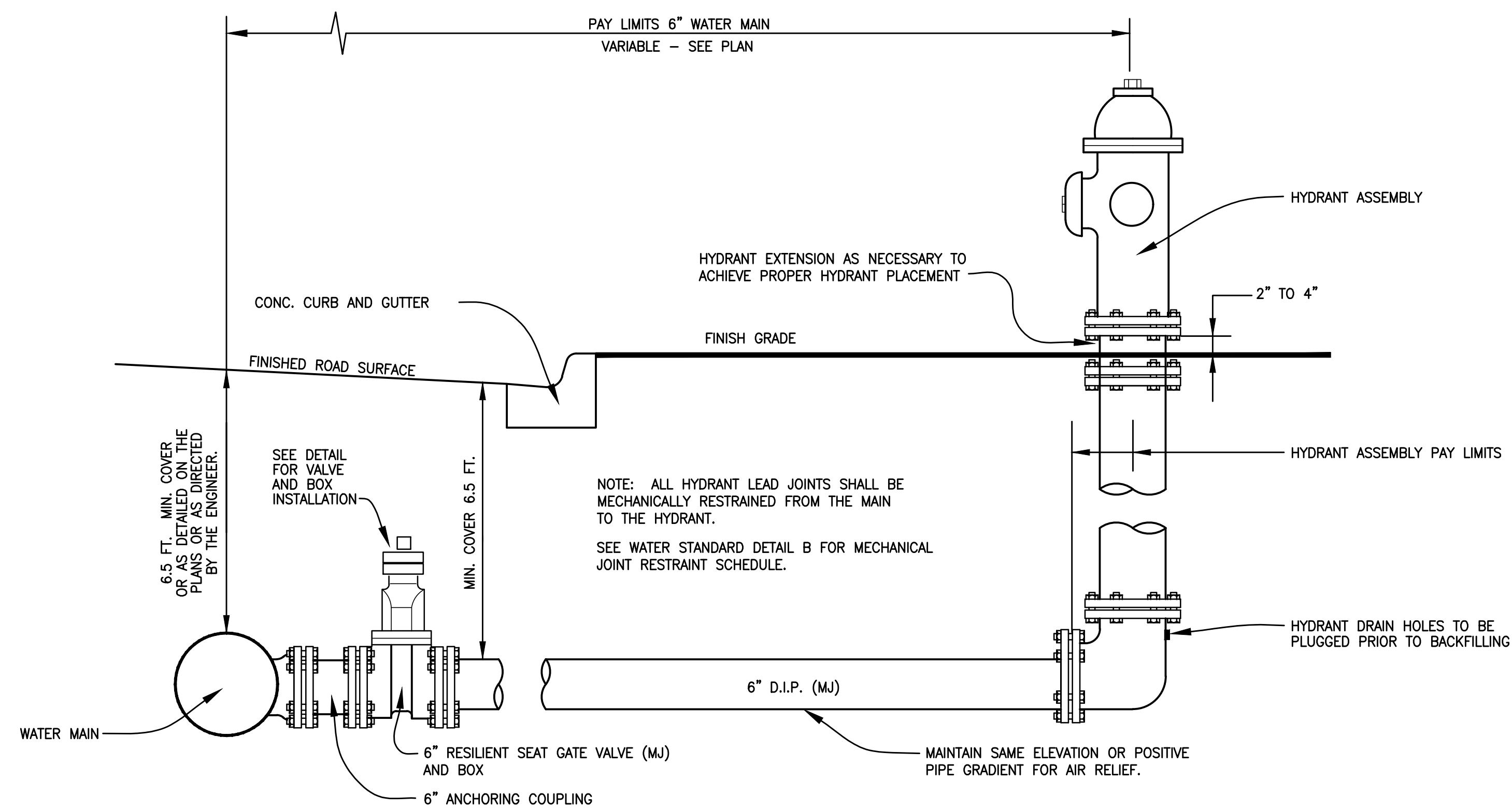
TYPICAL SERVICE CONNECTION



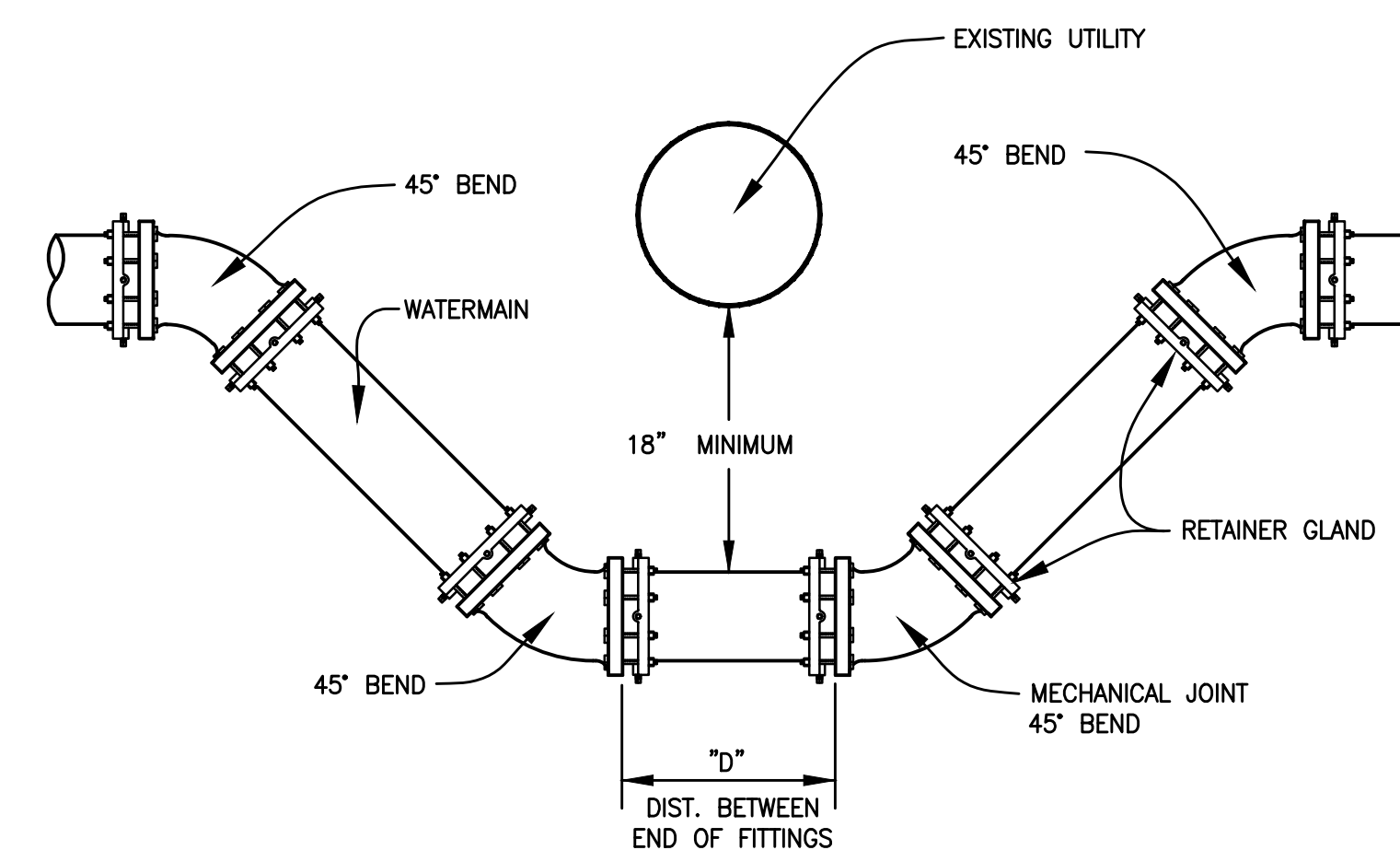
TYPICAL VALVE BOX INSTALLATION



TYPICAL HYDRANT CONNECTION



WATER MAIN CROSSING DETAIL



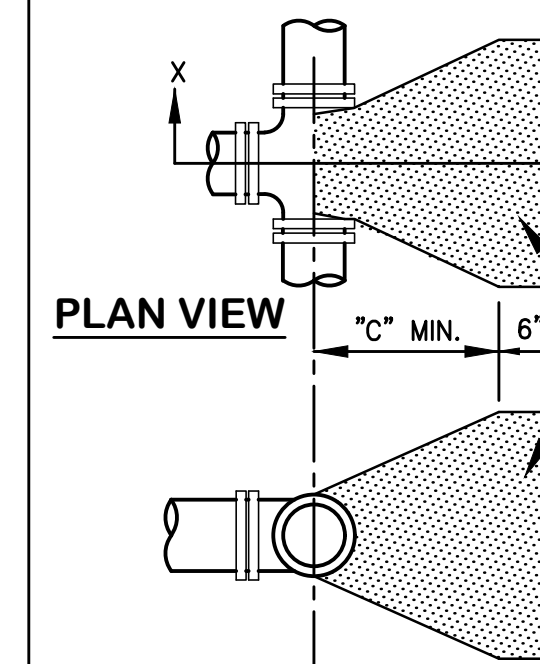
ALL JOINTS TO BE MADE UP USING MECHANICAL JOINT FITTING WITH RETAINER GLANDS. THE ENGINEER MAY ALLOW OTHER TYPES OF JOINT RESTRAINTS IF CIRCUMSTANCES WARRANT.

SEE WATER VALVE STANDARD LOCATION DETAIL (ABOVE) FOR MECHANICAL JOINT RESTRAINT SCHEDULE.

WATERMAIN DIA.	MINIMUM DIMENSION (INCH)	I.D. EXISTING UTILITY			
		≤12"	≤24"	≤36"	≤48"
6"	D	13"	17"	22"	28"
8"	D	14"	14"	19"	25"
10"	D	14"	14"	16"	22"
12"	D	15"	15"	15"	19"
16"	D	15"	15"	15"	19"

THRUST BLOCK DETAIL

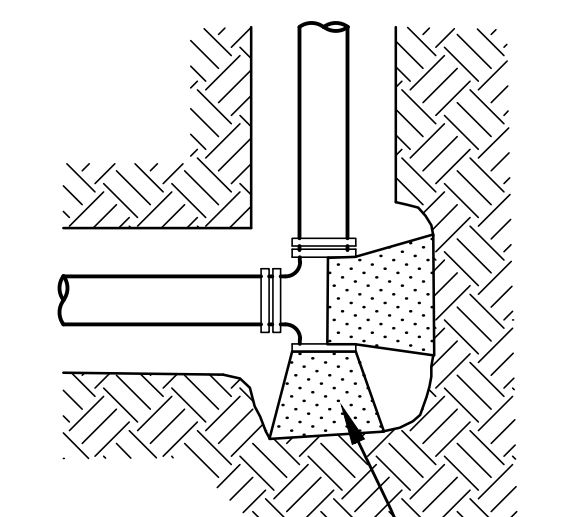
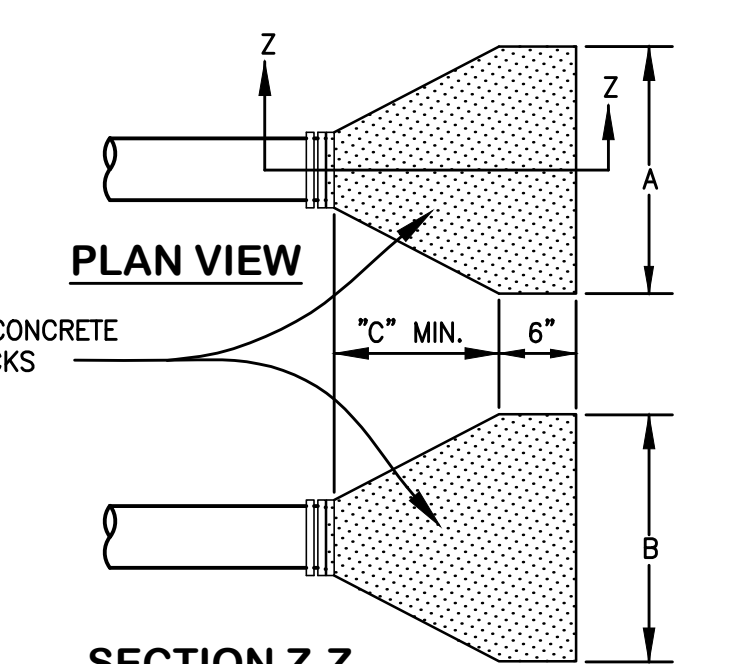
THRUST BLOCK FOR TEES



SECTION X-X

W.M. SIZE	SCHEDULE FOR TEES AND/OR PLUGS				BEARING SQ.FT.
	MIN. THRUST BLOCK DIM. A (MIN)	B (MIN)	C (MIN)		
6"	1'6"	1'6"	12"	2.2	
8"	2'3"	2'3"	1'3"	5.1	
10"	2'6"	2'6"	1'6"	6.3	
12"	3'0"	3'0"	1'9"	9.0	
16"	4'0"	4'0"	2'10"	16.0	

THRUST BLOCK FOR PLUG AND 90° BEND



- THE SHAPE OF THE BACK OF THE BLOCK MAY VARY AS LONG AS THE BEARING AREA IS NO LESS THAN THE AREA SHOWN IN THE TABLES AND THE POUR IS AGAINST FIRM UNDISTURBED EARTH.
- JOINTS SHALL BE KEPT FREE OF CONCRETE AND A NON-ABRASIVE BARRIER APPROVED BY THE ENGINEER SHALL BE PLACED BETWEEN THE THRUST BLOCK AND ALL MECHANICAL JOINTS.
- DIMENSIONS ARE BASED ON A SURGE PRESSURE OF 150 PSI AND SAFE BEARING LOADS OF 2 TONS PER SQ. FT. IN CLEAN DRY SAND