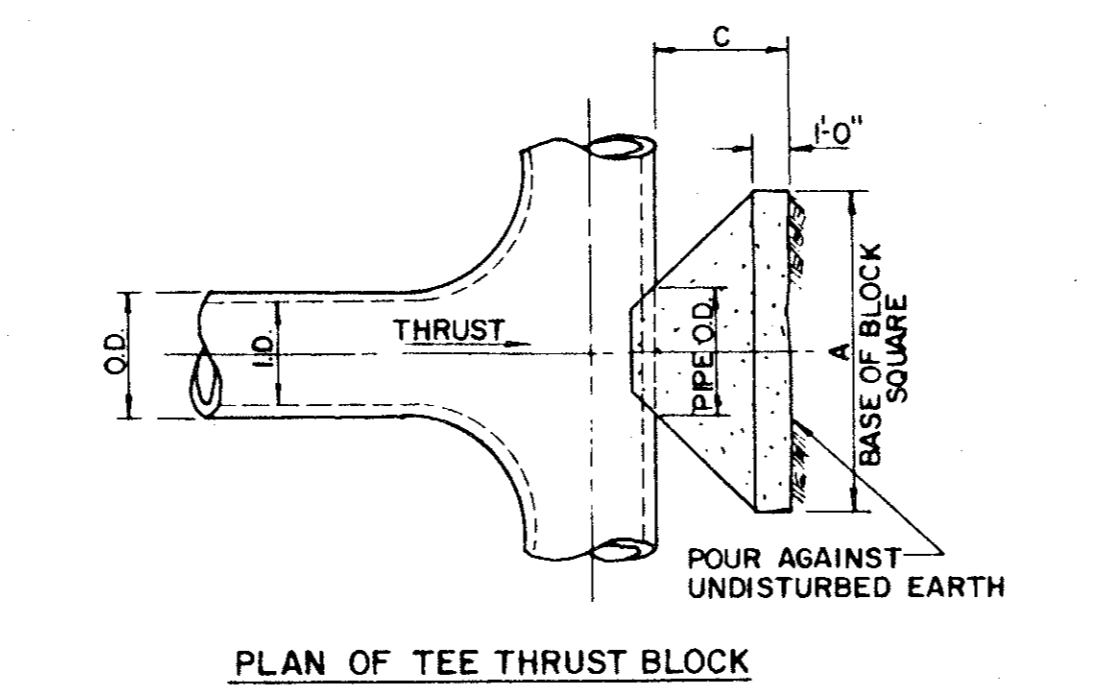
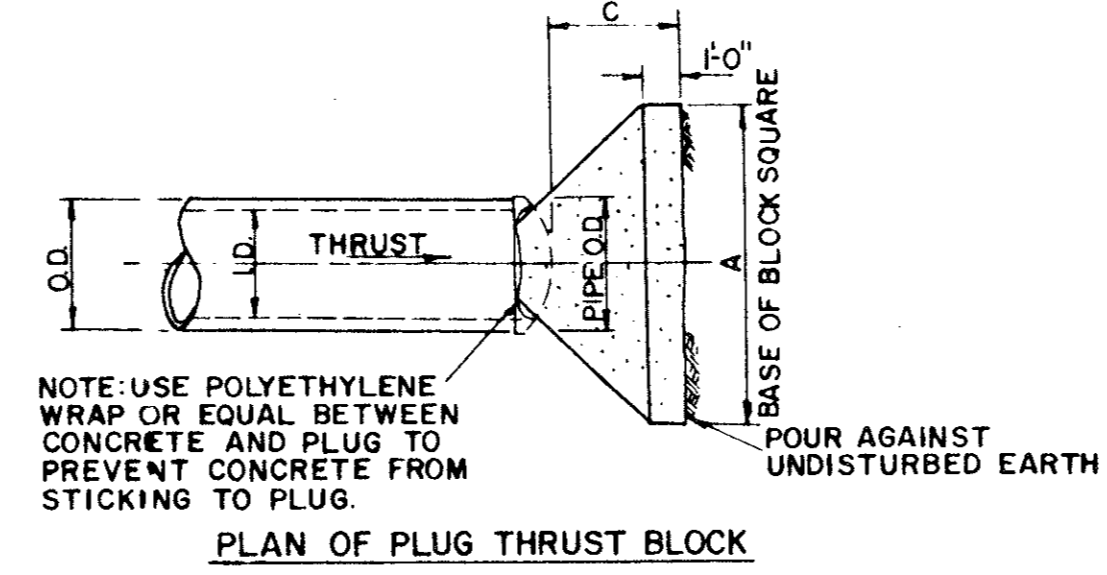
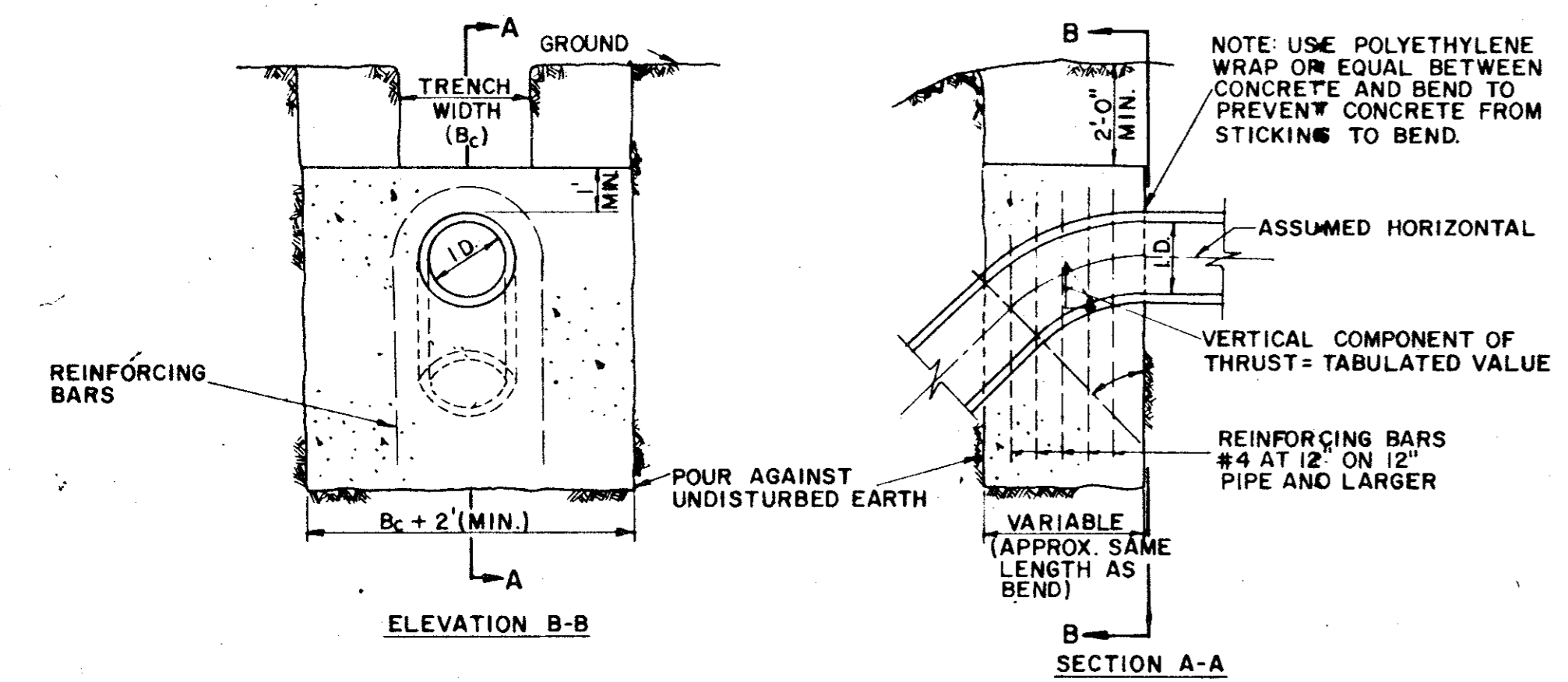


I.D. (IN.)	T (IN.)	C		E (FT.)
		11.25°	22.50°	
4.6, 8	0.4	1.5	1.5	0.9
10, 12	0.5	1.5	1.5	1.2
16, 18	0.6	1.5	1.5	1.6
20	0.7	1.5	1.5	1.8
24	0.9	1.5	1.5	2.1
30	2.9	1.5	1.9	2.6
36	4.5	1.5	2.3	3.3
42	5.0	1.6	2.6	3.8
48	5.5	2.0	3.0	4.3
54	6.0	2.3	3.4	4.8
60	6.5	2.5	3.8	5.3
66	6.8	2.8	4.1	5.7
72	7.5	3.0	4.5	6.3
78	7.5	3.3	4.9	6.7
84	8.0	3.5	5.3	7.2
90	8.5	3.8	5.6	7.7
96	9.0	4.0	6.0	8.2

I.D. (IN.)	G (FT.)	THRUST (TONS)	EARTH			ROCK			I.D. (IN.)	G (FT.)	THRUST (TONS)	EARTH			ROCK		
			A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)				A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)
4.6, 8	0.4	1.0	1.0	1.0	0.1	4.6, 8	0.8	2.0	1.5	1.5	0.1	1.0	1.0	0.1			
10, 12	0.6	2.2	1.5	1.5	0.1	10, 12	1.1	4.4	2.0	2.5	0.3	1.5	1.5	0.1			
16, 18	0.8	5.0	2.0	2.5	0.3	16, 18	1.6	9.9	3.0	3.5	0.6	2.0	2.5	0.3			
20	0.9	6.2	2.0	3.5	0.4	20	1.8	12.3	3.5	3.5	0.7	2.0	3.5	0.4			
24	1.1	8.9	3.0	3.0	0.5	24	2.2	17.7	4.0	4.5	1.0	3.0	3.0	0.5			
30	1.4	10.4	3.0	3.5	0.6	30	2.7	20.7	5.0	4.5	1.5	3.0	4.0	0.8			
36	1.7	15.0	3.5	4.5	0.9	36	3.3	29.8	5.5	5.5	2.3	4.0	4.0	1.3			
42	1.9	20.4	4.5	5.0	1.5	42	3.8	40.5	7.0	6.0	3.9	4.5	5.0	2.1			
48	2.2	26.6	4.5	6.0	2.0	48	4.4	52.9	8.0	7.0	5.7	4.8	6.0	2.8			
54	2.5	33.7	6.0	6.0	3.0	54	4.9	67.0	9.0	8.0	8.0	6.0	6.0	4.1			
60	2.7	41.6	6.0	7.0	3.8	60	5.5	82.7	9.5	9.0	10.6	6.0	7.0	5.5			
66	3.0	50.3	6.5	8.0	5.1	66	6.0	100.1	10.5	10.0	14.1	6.5	8.0	7.2			
72	3.3	59.9	7.5	8.0	6.3	72	6.6	119.1	11.0	11.0	17.6	7.5	8.0	9.1			
78	3.6	70.2	8.0	9.0	8.1	78	7.1	139.8	12.0	12.0	22.5	8.0	9.0	11.7			
84	3.8	81.5	8.5	10.0	10.3	84	7.6	162.1	13.0	12.5	27.2	8.5	10.0	14.8			
90	4.1	93.5	9.5	10.0	12.2	90	8.2	186.1	14.0	13.5	33.7	9.5	10.0	17.7			
96	4.4	106.4	10.0	11.0	15.0	96	8.7	211.7	15.0	14.5	41.2	10.0	11.0	21.8			

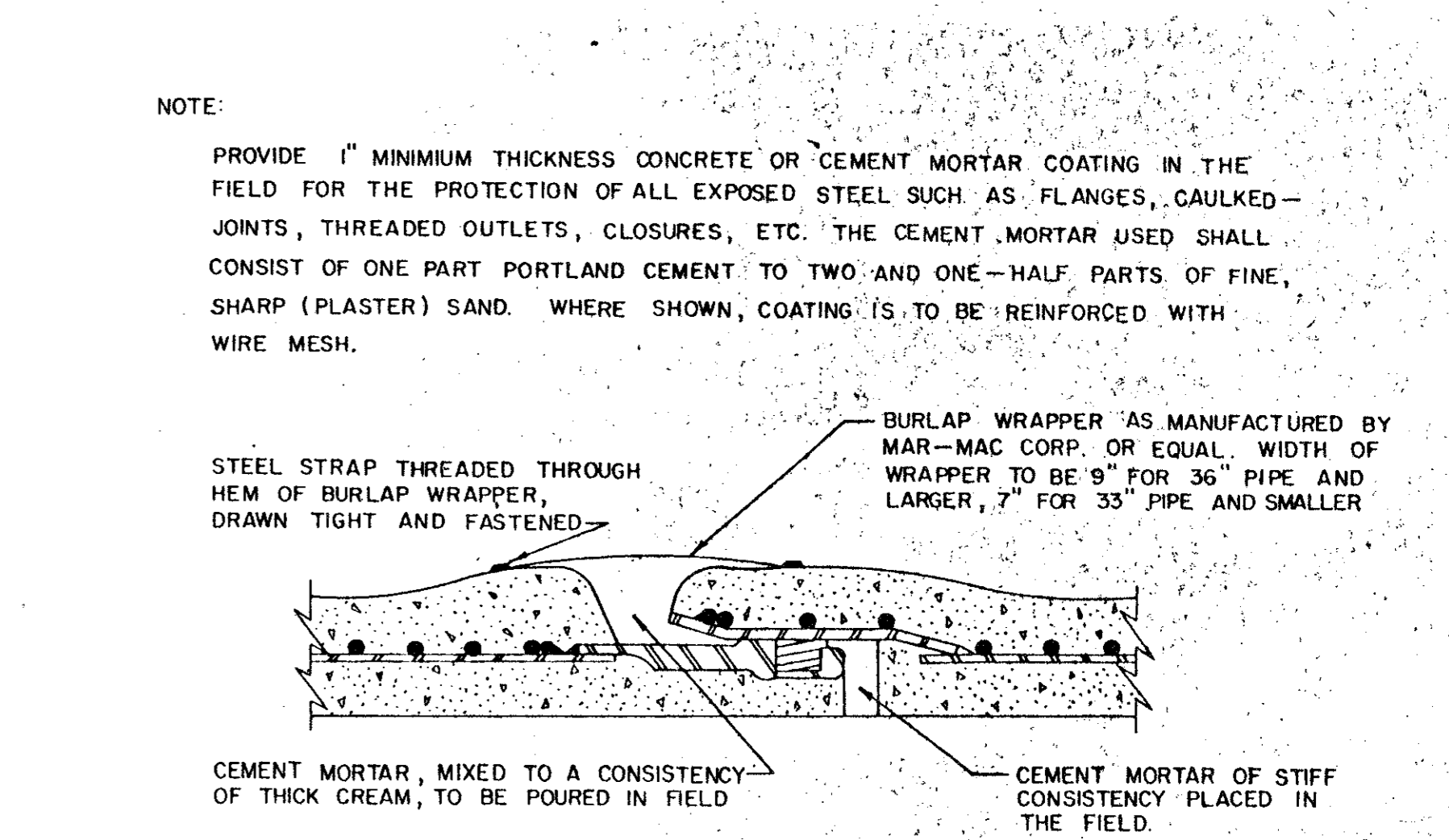
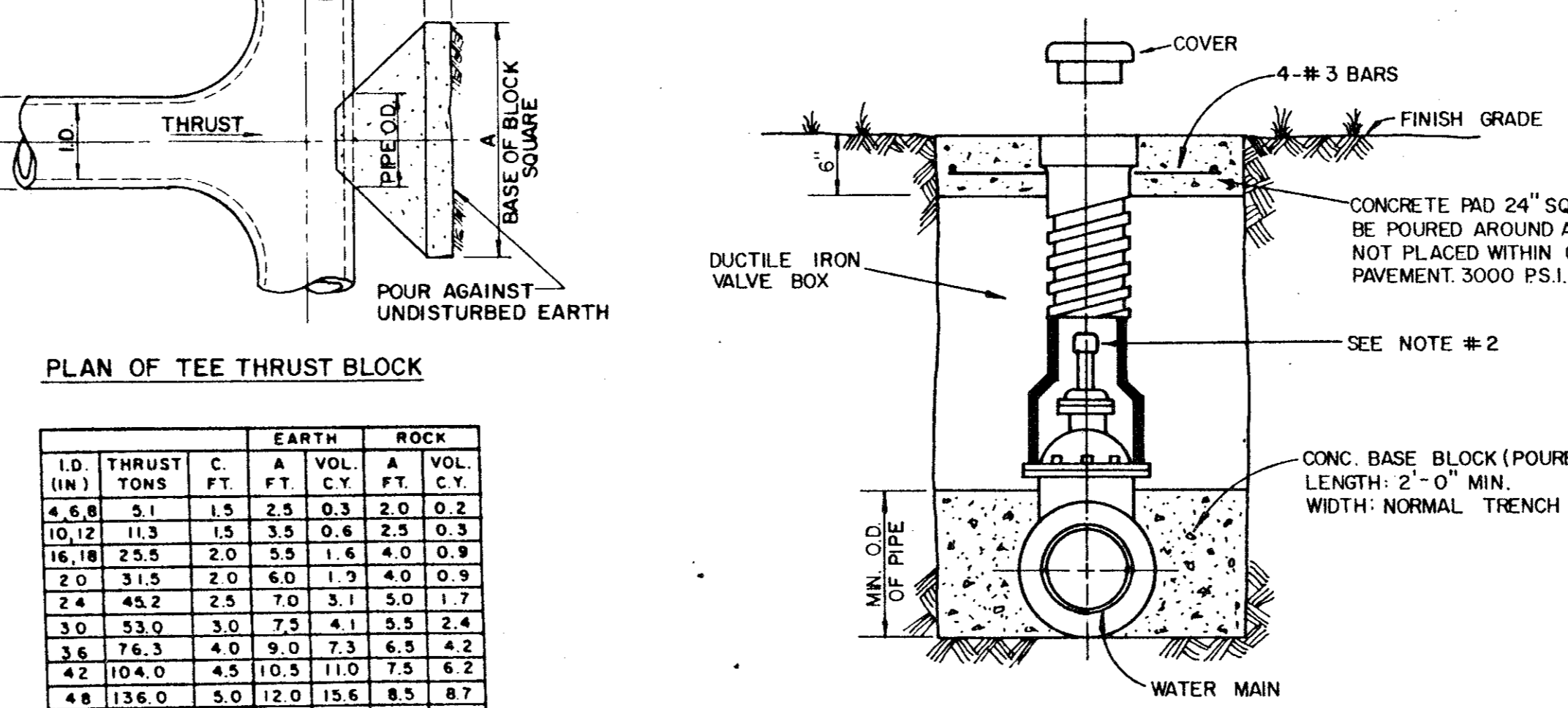
HORIZONTAL BEND THRUST BLOCK



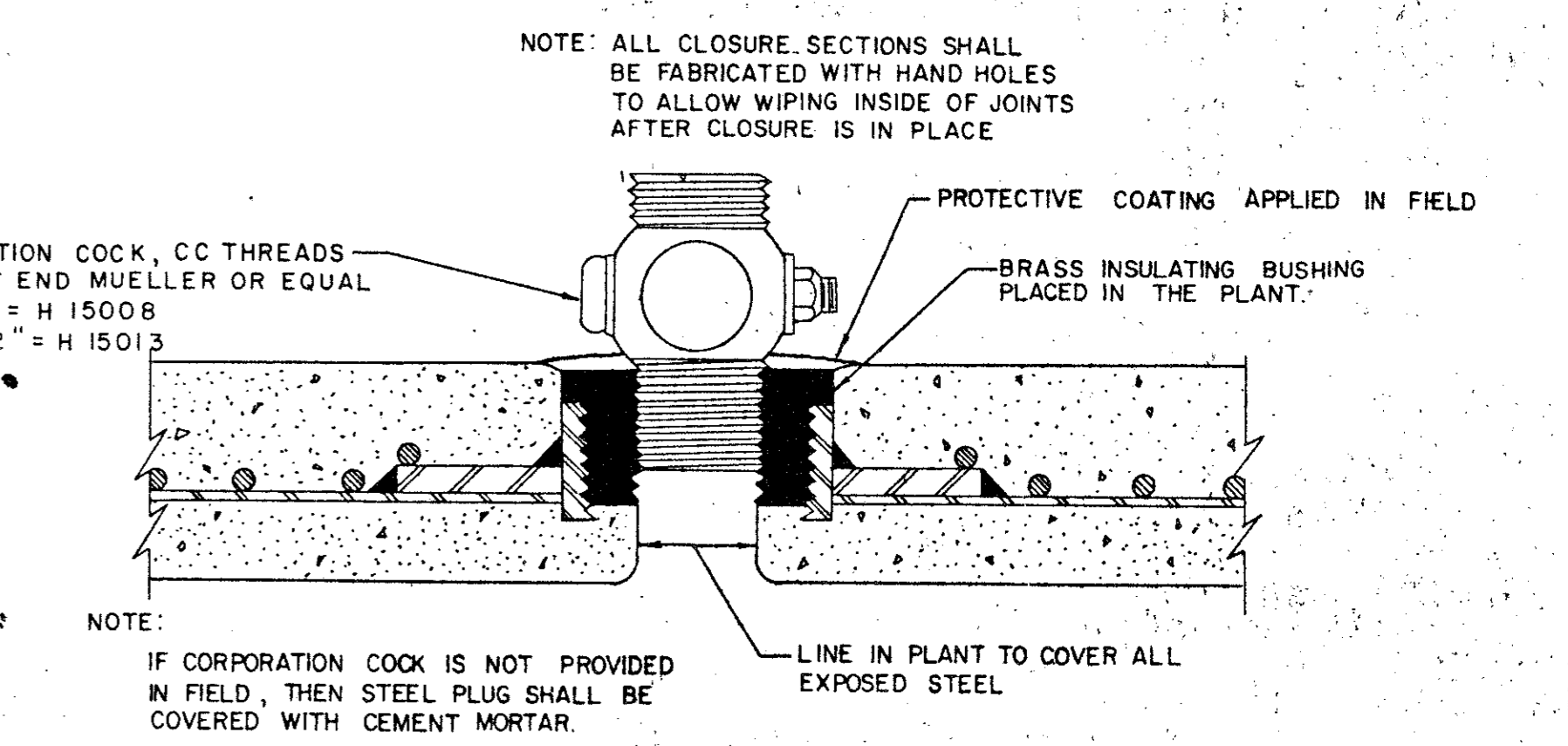
I.D. (IN.)	THRUST (TONS)	C (FT.)	EARTH		ROCK	
			A (FT.)	VOL. (C.Y.)	A (FT.)	VOL. (C.Y.)
4.6, 8	3.1	1.5	2.5	0.3	2.0	0.2
10, 12	11.3	1.5	3.5	0.6	2.5	0.3
16, 18	25.5	2.0	5.5	1.6	4.0	0.9
20	31.5	2.0	6.0	1.9	4.0	0.9
24	48.2	2.5	7.0	3.1	5.0	1.7
30	53.0	3.0	7.5	4.1	5.5	2.4
36	76.3	4.0	9.0	7.3	6.5	4.2
42	104.0	4.5	10.5	11.0	7.5	6.2
48	136.0	5.0	12.0	15.6	8.5	8.7
54	172.0	5.5	13.5	21.4	9.5	11.9
60	212.0	6.0	15.0	28.4	10.5	15.7
66	257.0	6.5	16.5	36.8	11.5	20.5
72	305.0	7.0	17.5	47.2	12.5	27.2
78	358.0	8.0	19.0	58.9	13.5	35.7
84	416.0	8.5	20.5	72.3	14.5	41.2
90	477.0	9.0	22.0	87.7	15.5	49.7
96	543.0	9.5	23.5	104.8	16.5	61.0

PLUG & TEE THRUST BLOCK

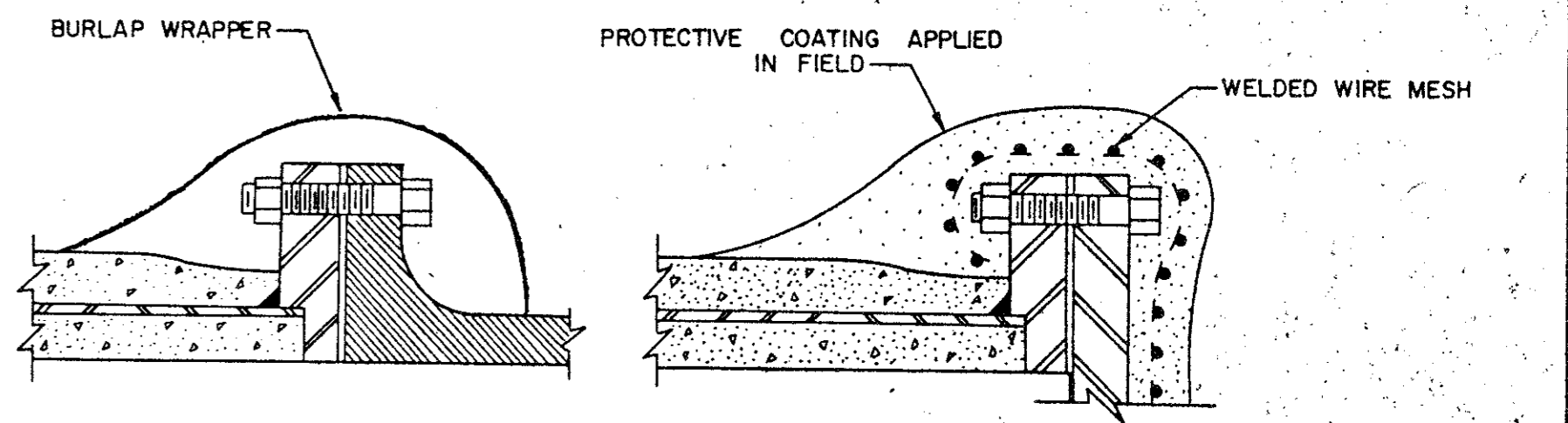
TYPICAL VALVE SETTING AND BOX



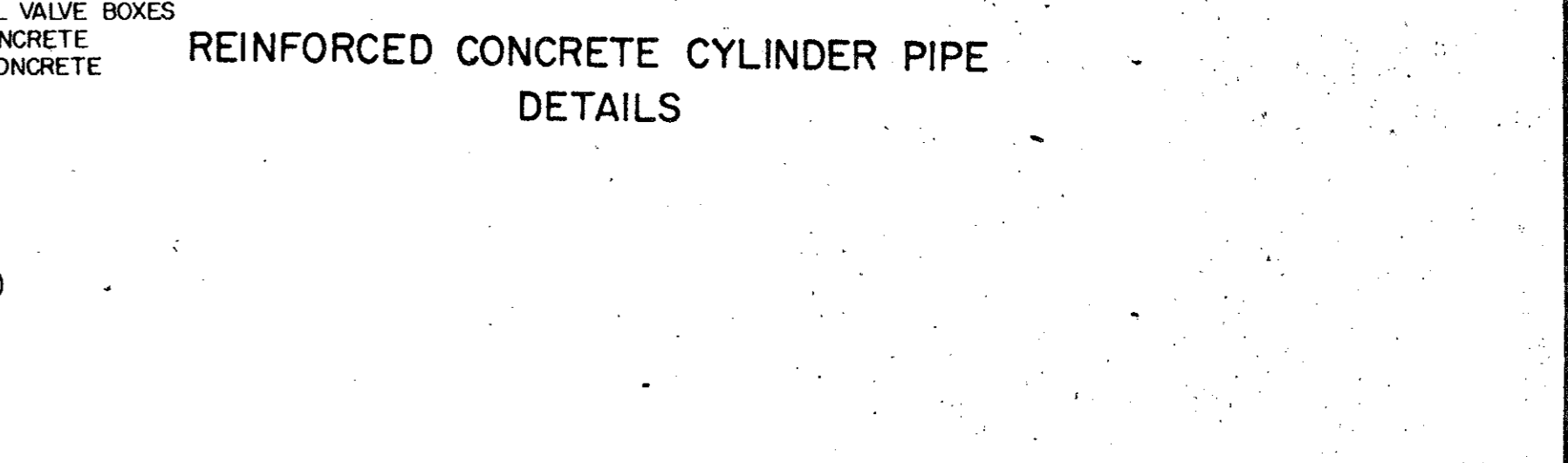
STANDARD RUBBER GASKET JOINT



THREADED CONNECTION



FLANGED CONNECTIONS



REINFORCED CONCRETE CYLINDER PIPE DETAILS

I.D. (IN.)	THRUST (TONS)	VOL. (C.Y.)	11.25°		22.50°		30°		45°		67.50°		90°		I.D. (IN.)
			THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	
4.6, 8	1.0	0.5	2.0	1.0	2.5	1.3	3.6	1.8	4.6	2.3	5.0	2.5	4.6, 8		
10, 12	2.2	1.1	4.3	2.2	5.7	2.8	8.0	4.0	10.5	5.2	11.3	5.7	10, 12		
16, 18	5.0	2.5	9.7	4.9	12.7	6.4	18.0	9.0	23.5	11.8	23.5	12.7	16, 18		
20	6.1	3.1	12.0	6.0	15.7	7.9	22.2	11.1	29.2	14.5	31.4	15.7	20		
24	8.2	4.4	17.3	8.7	22.6	11.3	32.0	16.0	41.8	20.9	45.2	22.6	24		
30	10.5	5.2	20.3	10.1	26.5	13.3	37.5	18.8	49.0	24.5	53.1	26.5	30		
36	14.9	7.5	29.2	14.6	38.2	19.1	54.0	27.0	70.5	35.3	76.4	38.2	36		
42	20.3	10.1	39.8	19.9	52.0	26.0	73.5	36.7	96.0	48.0	104.0	52.0	42		
48	26.5	13.2	51.9	26.0	67.9	33.9	96.0	48.0	126.0	62.7	136.0	67.9	48		
54	33.5	16.8	65.7	32.9	85.9	42.9	122.0	60.7	159.0	79.4	172.0	85.9	54		
60	41.4	20.7	81.2	40.6	106.0	53.0	150.0	75.0	196.0	98.0	212.0	106.0	60		
66	50.1	25.0	98.2	49.1	128.0	64.2	182.0	90.7	237.0	119.0	257.0	128.0	66		
72	59.6	29.8	117.0	58.4	153.0	76.3	216.0	108.0	282.0	141.0	305.0	153.0	72		
78	69.9	35.0	137.0	68.6	179.0	90.0	254.0	127.0	331.0	166.0	358.0	179.0	78		
84	81.1	40.5	159.0	79.5	208.0	104.0	294.0	147.0	384.0	192.0	416.0	208.0	84		
90	93.1	46.5	183.0	91.3	239.0	119.0	337.0	169.0	441.0	221.0	477.0	239.0	90		
96	106.0	53.0	208.0	104.0	272.0	136.0	384.0	192.0	502.0	251.0	543.0	272.0	96		

VERTICAL BEND THRUST BLOCK

- GENERAL NOTES-FOR ALL THRUST BLOCKS
- All Calculations Are Based On Internal Pressure Of 200 P.S.I. For 24" I.D. Pipe And Smaller And 150 P.S.I. On 30" I.D. And Larger.
 - Volumes Of Vertical Bend Thrust Blocks Are Net Volumes Of Concrete To Be Furnished. The Corresponding Weight Of The Concrete (Class F) Is Equal To Or Greater Than The Vertical Component Of Thrust On The Vertical Bend.
 - Wall Thickness (T) Assumed Here For Estimating Purposes Only.
 - Concrete For Blocking Shall Be Class B Concrete.
 - Dimensions May Be Varied As Required By Field Conditions Where And As Directed By The Engineer. The Volume Of Concrete Blocking Shall Not Be Less Than Shown Here.

TOWN OF ADDISON, TEXAS
DEPARTMENT OF ENGINEERING

STANDARD CONSTRUCTION DETAILS

WATER

THRUST BLOCKS

Designed - _____ Drawn - _____ Date - AUGUST, 1991 Job No. - 90025-5
Approved - _____ Checked - _____ Scale - _____ Sheet D-9 OF