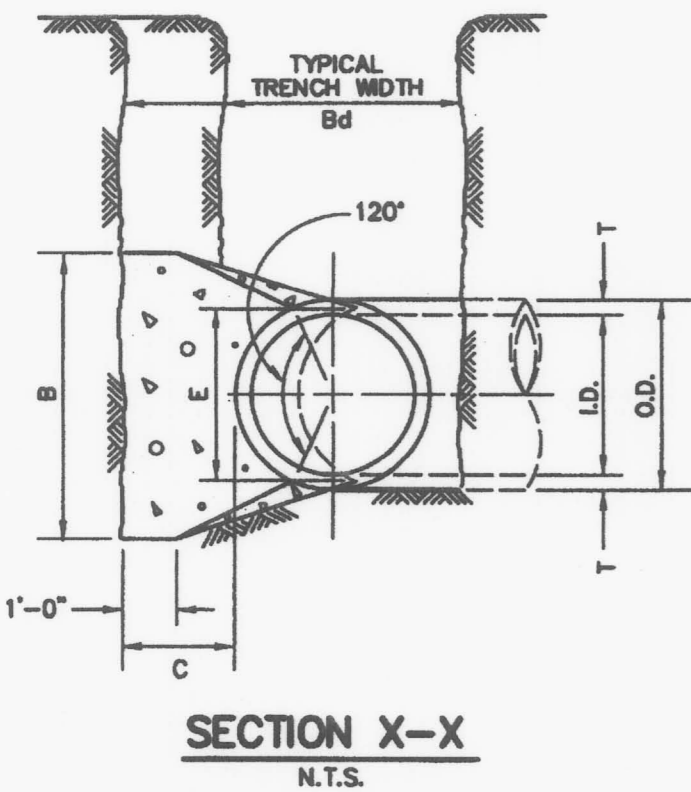


REFER TO
STD. DWG. No. 4040
FOR GENERAL NOTES.



**HORIZONTAL THRUST BLOCK
AT PIPE BEND**

North Central Texas Council of Governments
STANDARD SPECIFICATION REFERENCE
6.7.
DATE
NOV. '96
STANDARD DRAWING NO.
4010A

I.D. (IN.)	T (IN.)	Δ = 11.25° (FT.)		Δ = 22.50° (FT.)		E (FT.)
		A	B	A	B	
4,6,8	0.4	1.5	0.1	1.5	0.1	0.9
10,12	0.5	1.5	0.1	1.5	0.1	1.2
16,18	0.6	1.5	0.1	1.5	0.1	1.6
20	0.7	1.5	0.1	1.5	0.1	2.1
24	0.9	1.5	0.1	1.5	0.1	2.8
30	2.9	1.5	0.1	1.5	0.1	2.6
36	4.5	1.5	0.1	1.5	0.1	3.3
42	5.0	1.8	0.2	1.8	0.2	3.8
48	5.5	2.0	0.3	2.0	0.3	4.3
54	6.0	2.3	0.4	2.3	0.4	4.8
60	6.5	2.6	0.5	2.6	0.5	5.3
66	6.8	2.8	0.5	2.8	0.5	5.7
72	7.5	3.0	0.5	3.0	0.5	6.3
78	7.5	3.3	0.6	3.3	0.6	6.7
84	8.0	3.5	0.6	3.5	0.6	7.2
90	8.5	3.8	0.7	3.8	0.7	7.7
96	9.0	4.0	0.7	4.0	0.7	8.2

I.D. (IN.)	C (FT.)	EARTH				ROCK				I.D. (IN.)	C (FT.)	EARTH				ROCK									
		THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)			THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)						
4,6,8	0.4	1.0	1.5	0.1	1.0	1.0	0.1	4,6,8	0.8	2.0	1.5	0.1	1.0	1.0	0.1	4,6,8	0.8	2.0	1.5	0.1	1.0	1.0	0.1		
10,12	0.8	2.2	1.5	0.1	1.0	1.5	0.1	10,12	1.1	4.4	2.0	2.5	0.3	1.5	1.5	0.1	10,12	3.1	12.8	5.5	2.5	0.8	3.5	2.0	0.4
16,18	0.8	5.0	2.0	0.3	1.5	2.0	0.2	16,18	1.6	9.9	3.0	3.5	0.6	2.0	2.5	0.3	16,18	4.7	28.3	7.5	4.0	1.9	5.5	3.0	0.9
20	0.9	6.2	2.0	0.3	1.5	3.0	0.3	20	1.8	12.3	3.5	3.5	0.7	2.0	3.0	0.4	20	5.2	34.9	9.0	4.0	2.3	5.5	3.5	1.2
24	1.1	8.9	3.0	0.5	1.5	3.0	0.3	24	2.2	17.7	4.0	4.5	1.0	3.0	3.5	0.5	24	8.2	50.3	11.5	4.5	3.5	6.5	4.0	1.6
30	1.4	10.4	3.0	0.5	1.5	3.0	0.3	30	2.7	20.7	5.0	4.5	1.5	3.0	4.0	0.8	30	7.8	58.9	12.0	5.0	4.8	7.5	4.0	2.2
36	1.7	15.0	3.5	0.5	1.5	3.0	0.3	36	3.3	29.8	5.5	5.5	2.3	4.0	4.0	1.3	36	9.4	84.9	14.5	6.0	8.2	9.5	4.5	3.6
42	1.9	20.4	4.5	0.5	1.5	2.5	0.8	42	3.8	40.5	7.0	6.0	3.9	4.5	5.0	2.1	42	10.9	115.5	17.0	7.0	12.8	11.0	5.5	6.3
48	2.2	26.6	4.5	0.5	1.5	2.5	0.8	48	4.4	52.9	8.0	7.0	5.7	4.5	6.0	2.8	48	12.5	150.9	19.0	8.0	18.4	13.0	6.0	9.2
54	2.5	33.7	6.0	0.6	1.4	3.0	0.6	54	4.9	67.0	9.0	8.0	6.0	6.0	6.0	4.1	54	14.0	191.0	21.5	9.0	26.0	15.0	6.5	12.9
60	2.7	41.6	6.0	0.6	1.4	3.0	0.6	60	5.5	82.7	9.5	9.0	10.6	6.0	7.0	5.3	60	15.6	235.8	24.0	10.0	35.6	16.0	7.5	17.6
66	3.0	50.3	6.5	0.5	1.1	3.5	0.8	66	6.0	100.1	10.5	10.0	14.1	6.5	8.0	7.2	66	17.1	285.3	26.0	11.0	46.0	18.0	8.0	23.0
72	3.3	59.9	7.5	0.6	1.3	4.0	0.8	72	6.6	119.1	11.0	11.0	17.8	7.5	9.0	9.1	72	18.7	339.5	28.5	12.0	57.8	18.0	9.0	28.4
78	3.6	70.2	8.0	0.6	1.4	4.0	0.9	78	7.1	139.8	12.0	12.0	22.5	8.0	9.0	11.7	78	20.2	398.5	31.0	13.0	75.7	21.0	9.5	37.4
84	3.8	81.5	8.5	1.0	1.3	4.5	1.0	84	7.6	162.1	13.0	12.5	27.2	8.5	10.0	14.8	84	21.8	462.1	33.5	14.0	94.7	22.0	10.5	46.5
90	4.1	93.5	9.5	1.0	1.2	5.0	1.0	90	8.2	186.1	14.0	13.5	33.7	9.5	10.0	17.7	90	23.3	530.5	35.5	15.0	114.4	24.5	11.0	58.2
96	4.4	108.4	10.0	1.1	1.0	5.0	1.1	96	8.7	211.7	15.0	14.5	41.2	10.0	11.0	21.8	96	24.9	603.6	38.0	16.0	138.9	25.5	12.0	70.0

**HORIZONTAL THRUST BLOCK
AT PIPE BEND**

North Central Texas Council of Governments
STANDARD SPECIFICATION REFERENCE
6.7.
DATE
NOV. '96
STANDARD DRAWING NO.
4010B

I.D. (IN.)	C (FT.)	EARTH				ROCK				I.D. (IN.)	C (FT.)	EARTH				ROCK																			
		THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)			THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)																
4,6,8	1.0	2.6	2.0	1.5	0.2	1.0	1.5	0.1	4,6,8	1.5	3.9	2.0	2.0	0.2	1.5	1.5	0.1	4,6,8	2.2	13.2	3.5	4.0	0.8	2.5	3.0	0.4	16,18	3.2	19.5	4.5	4.5	1.2	3.0	3.5	0.6
10,12	1.5	5.9	2.5	2.5	0.3	2.0	1.5	0.2	10,12	2.2	8.7	3.5	2.5	0.5	2.0	2.5	0.3	10,12	2.4	16.3	4.5	4.0	1.0	3.0	3.0	0.5	20	3.6	24.1	5.5	4.5	1.5	3.5	3.5	0.7
16,18	2.2	13.2	3.5	4.0	0.8	2.5	3.0	0.4	16,18	3.2	19.5	4.5	4.5	1.2	3.0	3.5	0.6	16,18	2.4	23.4	6.0	4.0	1.4	3.5	3.5	0.7	24	4.3	34.6	8.0	4.5	2.3	4.5	4.0	1.1
20	2.4	16.3	4.5	4.0	1.0	3.0	3.0	0.5	20	3.6	24.1	5.5	4.5	1.5	3.5	3.5	0.7	20	2.4	29.9	6.5	5.0	1.9	3.5	4.0	0.9	30	5.4	40.6	8.5	5.0	3.2	5.5	4.0	1.6
24	2.9	23.4	6.0	4.0	1.4	3.5	3.5	0.7	24	4.3	34.6	8.0	4.5	2.3	4.5	4.0	1.1	24	2.9	37.5	7.0	6.0	3.4	4.5	4.5	1.6	36	6.5	58.5	10.0	6.0	5.3	6.5	4.5	2.6
30	3.6	27.5	6.5	5.0	1.9	3.5	4.0	0.9	30	5.4	40.6	8.5	5.0	3.2	5.5	4.0	1.6	30	3.6	39.9	8.0	7.0	5.1	5.5	5.0	2.5	42	7.5	78.6	11.5	7.0	8.1	8.0	5.0	4.2
36	4.4	36.5	7.0	6.0	3.4	4.5	4.5	1.6	36	6.5	58.5	10.0	6.0	5.3	6.5	4.5	2.6	36	4.4	43.5	9.0	8.0	7.4	6.0	6.0	3.7	48	8.6	104.0	13.0	8.0	11.9	9.0	6.0	6.3
42	5.1	43.8	8.0	7.0	5.1	5.5	5.0	2.5	42	7.5	78.6	11.5	7.0	8.1	8.0	5.0	4.2	42	5.1	53.8	9.0	10.3	7.0	6.5	5.3	5.4	60	9.7	131.5	15.0	9.0	17.1	10.5	6.5	8.9
48	5.8	50.3	9.0	8.0	7.4	6.0	6.0	3.7	48	8.6	104.0	13.0	8.0	11.9	9.0	6.0	6.3	48	5.8	60.3	10.0	10.3	7.0	6.5	5.3	5.4	60	10.7	162.4	16.5	10.0	23.1	11.0	7.5	12.0
54	6.5	58.0	10.0	9.0	10.3	7.0	6.5	5.3	54	9.7	131.5	15.0	9.0	17.1	10.5	6.5	8.9	54	6.5	68.0	11.0	11.0	8.5	8.0	9.6	66	11.8	196.5	18.0	11.0	30.1	12.0	8.5	16.2	
60	7.3	110.0	11.0	10.0	13.9	7.5	7.5	7.3	60	10.7	162.4	16.5	10.0	23.1	11.0	7.5	12.0	60	7.3	110.0	12.0	12.0	9.0	9.0	10.0	11.0	72	12.9	233.9	19.5	12.0	38.6	14.0	8.5	20.7
66	8.0	132.9	12.5	11.0	18.9	8.5	8.0	9.6	66	11.8	196.5	18.0	11.0	30.1	12.0	8.5	16.2	66	8.0	132.9	13.0	13.0	10.0	9.5	15.6	78	13.9	274.5	21.5	13.0	49.8	14.5	9.5	25.9	
72	8.7	158.2	13.5	12.0	24.0	9.0	9.0	12.3	72	12.9	233.9	19.5	12.0	38.6	14.0	8.5	20.7	72	8.7	158.2	14.0	14.0	11.0	10.5	19.5	84	15.0	318.4	23.0	14.0	61.2	15.5	10.5	32.6	
78	9.4	185.6	14.5	13.0	30.0	10.0	9.5	15.6	78	13.9	274.5	21.5	13.0	49.8	14.5	9.5	25.9	78	9.4	185.6	15.0	15.0	11.0	11.0	23.9	90	16.1	365.5	24.5	15.0	74.5	17.5	10.5	39.6	
84	10.1	215.3	15.5	14.0	37.1	10.5	10.5	19.5	84	15.0	318.4	23.0	14.0	61.2	15.5	10.5	32.6	84	10.1	215.3	16.0	16.0	12.0	12.0	28.9	96	17.1	415.6	26.0	16.0	89.5	18.5	11.5	48.5	
90	10.9	247.1	16.5	15.0	45.0	11.5	11.0	23.9	90	16.1	365.5	24.5	15.0	81.2	16.5	11.5	39.6	90	10.9	247.1	17.0	17.0	13.0	13.0	33.9	96	17.1	415.6	26.0	16.0	89.5	18.5	11.5	48.5	

I.D. (IN.)	C (FT.)	EARTH				ROCK				I.D. (IN.)	C (FT.)	EARTH				ROCK																			
		THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)			THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)	THRUST (TONS)	A (FT.)	B (FT.)	VOL. (C.Y.)																
4,6,8	2.1	5.8	3.0	2.0	0.3	2.0	1.5	0.2	4,6,8	2.7	7.1	5.0	1.5	0.4	2.0	2.0	0.2	4,6,8	2.1	12.8	5.5	2.5	0.8	3.5	2.0	0.4	10,12	4.0	16.0	6.5	2.5	1.0	3.5	2.5	0.5
10,12	3.1	12.8	5.5	2.5	0.8	3.5	2.0	0.4	10,12	4.0	16.0	6.5	2.5	1.0	3.5	2.5	0.5	10,12	3.1	28.3	7.5	4.0	1.9	5.5	3.0	0.9	16,18	6.0	36.0	9.0	4.0	2.4	4.5	4.0	1.0
16,18	4.7	28.3	7.5	4.0	1.9	5.5	3.0	0.9	16,18	6.0	36.0	9.0	4.0	2.4	4.5	4.0	1.0	16,18	4.7	34.9	9.0	4.0	2.3	5.5	3.5	1.2	20	6.8							