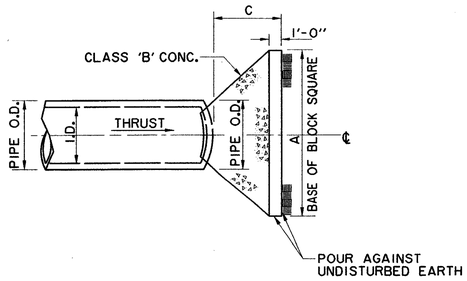
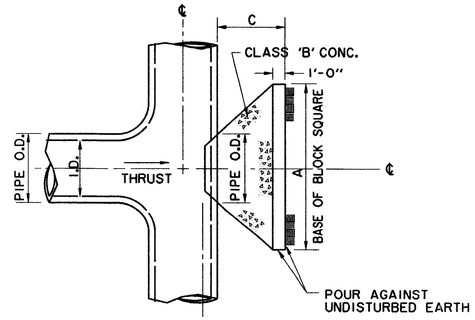


PLAN OF PLUG THRUST BLOCK

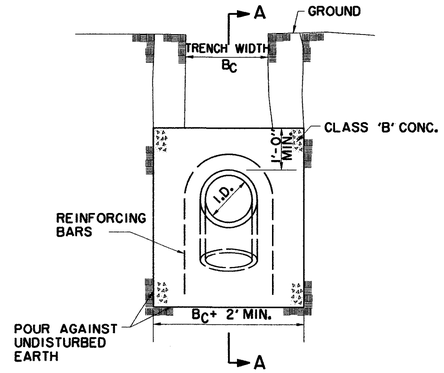
N.T.S.



PLAN OF TEE THRUST BLOCK

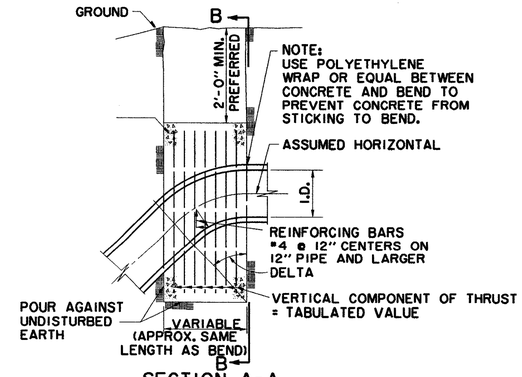
N.T.S.

			EARTH		ROCK	
I.D. (IN.)	THRUST TONS	C. FT.	A. FT.	VOL. C.Y.	A. FT.	VOL. C.Y.
4, 6, 8	5.1	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
24	45.2	2.5	7.0	3.1	5.0	1.7



ELEVATION B-B

N.T.S.



SECTION A-A

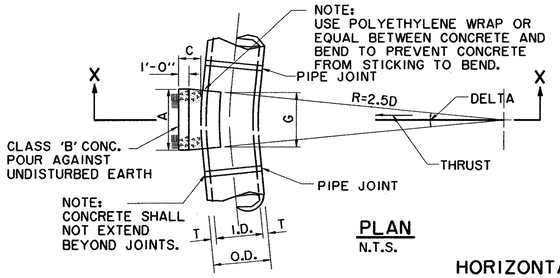
N.T.S.

VERTICAL BENDS

	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.	I.D. (IN.)
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	25.5	12.7	16, 18
24	8.2	4.4	17.3	8.7	22.6	11.3	32.0	16.0	41.9	20.9	45.2	22.6	24

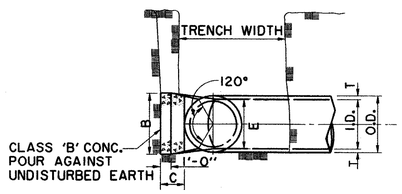
GENERAL NOTES FOR ALL THRUST BLOCKS

1. 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.
2. 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.
3. WALL THICKNESS (T) ASSUMED HERE FOR ESTIMATING PURPOSES ONLY.
4. CONCRETE FOR BLOCKING SHALL BE CLASS B CONCRETE.
5. DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD CONDITIONS AND AS DIRECTED BY THE ENGINEER. THE VOLUME OF CONCRETE BLOCKING SHALL NOT BE LESS THAN SHOWN HERE.
6. CONCRETE BLOCKING SHALL BE IN PLACE A MINIMUM OF 4 DAYS PRIOR TO TESTING THE PIPELINE.



PLAN

N.T.S.



SECTION X-X

N.T.S.

I.D. (IN.)	T. IN.	C 11.25° FT.	C 22.50°+ FT.	E. FT.
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
24	0.9	1.5	1.5	2.1

HORIZONTAL BENDS

DELTA	11.25°								22.50°								DELTA
			EARTH			ROCK					EARTH			ROCK			
I.D. (IN.)	G. FT.	THRUST TONS	A. FT.	B. FT.	VOL. C.Y.	A. FT.	B. FT.	VOL. C.Y.	G. FT.	THRUST TONS	A. FT.	B. FT.	VOL. C.Y.	A. FT.	B. FT.	VOL. C.Y.	I.D. (IN.)
4, 6, 8	0.4	1.0	1.0	1.5	0.1	1.0	1.0	0.1	0.8	2.0	1.5	1.5	0.1	1.0	1.0	0.1	4, 6, 8
10, 12	0.6	2.2	1.5	1.5	0.1	1.0	1.5	0.1	1.1	4.4	2.0	2.5	0.3	1.5	1.5	0.1	10, 12
16, 18	0.8	5.0	2.0	2.5	0.3	1.5	2.0	0.2	1.6	9.9	3.0	3.5	0.6	2.0	2.5	0.3	16, 18
24	1.1	8.9	3.0	3.5	0.5	1.5	3.0	0.3	2.2	17.7	4.0	4.5	1.0	3.0	3.5	0.5	24
DELTA	45°								90°								DELTA
4, 6, 8	0.4	3.9	2.0	2.0	0.2	1.5	1.5	0.1	0.4	5.0	5.0	1.5	0.4	2.0	2.0	0.2	4, 6, 8
10, 12	0.5	8.7	3.5	2.5	0.5	2.0	2.5	0.3	0.5	6.5	6.5	2.5	1.0	3.5	2.5	0.5	10, 12
16, 18	0.6	19.5	4.5	4.5	1.2	3.0	3.5	0.6	0.6	9.0	9.0	4.0	2.4	4.5	4.0	1.0	16, 18
24	0.9	34.6	8.0	4.5	2.3	4.5	4.0	1.1	0.9	14.5	14.5	4.5	5.0	8.0	4.0	2.1	24

GENERAL NOTES

1. UNPLASTICIZED POLYVINYL CHLORIDE (PVC) WATER PIPE SHALL MEET OR EXCEED REQUIREMENTS OF AWWA C909 ULTRA BLUE PIPE WITH CAST IRON OUTSIDE DIMENSIONS. PIPE SHALL BE LISTED BY UNDERWRITER LABORATORIES AND SHALL BE APPROVED FOR USE IN CITIES AND TOWNS OF THE STATE OF TEXAS BY THE STATE BOARD OF INSURANCE.

2. PVC WATER PIPE SHALL BE FURNISHED WITH A RUBBER RING AT EACH JOINT AND AN INTEGRAL THICKENED BELL AS A PART OF EACH JOINT. THE PIPE CLASS SHALL BE MINIMUM CLASS 150 DR 18 WHICH REFERS TO THE MAXIMUM HYDROSTATIC PRESSURE IN NORMAL OPERATIONS. LAYING LENGTHS SHALL BE 20 FEET+/-. PIPE AND FITTINGS MUST BE ASSEMBLED WITH A NONTOXIC LUBRICANT.

3. FITTINGS FOR PVC WATER PIPE SHALL BE GRAY IRON OR DUCTILE IRON OF THE BELL AND SPIGOT, OR MECHANICAL JOINT TYPE AND SHALL BE CLASS 250 IN ACCORDANCE WITH AWWA C110-77 (ANSI.10).

4. UNLESS OTHERWISE SPECIFIED ON PLANS OR SHOWN IN PROFILES, PVC WATER PIPE SHALL BE INSTALLED TO CLEAR ALL UTILITY LINES AND SHALL HAVE A MINIMUM COVER OF 36 INCHES BELOW THE LOWEST GRADE OF THE STREET AS PER CITY CODE.

5. 4''-12'' R S GATE VALVES SHALL BE IN ACCORDANCE WITH AWWA STANDARD C-500.

6. A PERMANENTLY ATTACHED VALVE EXTENSION STEM SHALL BE REQUIRED FOR ANY VALVE WHOSE OPERATING NUT IS LOCATED IN EXCESS OF 4 FEET BELOW THE TOP OF VALVE BOX. THIS EXTENSION SHALL BE OF SUFFICIENT LENGTH TO INSURE THAT ITS TOP IS WITHIN 4' OF VALVE BOX LID.

7. DUCTILE IRON OR C-900 PVC PIPE SHALL BE USED FOR VALVE STACKS WITH VALVE BOX CASTING.

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY DAVID E. MEYERS, P.E. 81512

STATE OF TEXAS
DAVID E. MEYERS
81512
REGISTERED
PROFESSIONAL ENGINEER
5/29/01

DATE	DESCRIPTION	REF NO.
4/20/01	ISSUED FOR BID	N/A

WATER DETAILS

MORRIS AVENUE EXTENSION

PUBLIC INFRASTRUCTURE

TOWN OF ADDISON, TEXAS

Huitt - Zollars, Inc.
3131 Mckinney Ave., Suite 600, Dallas, TX 75204
Phone (214) 871-3311/Fax (214) 871-0757

DESIGN	DRAWN	APPR.	SCALE	DATE	PROJECT NO.	NO.
HZI	HZI	DEM	N.T.S.	APR. 2001	01-3000-01	13

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