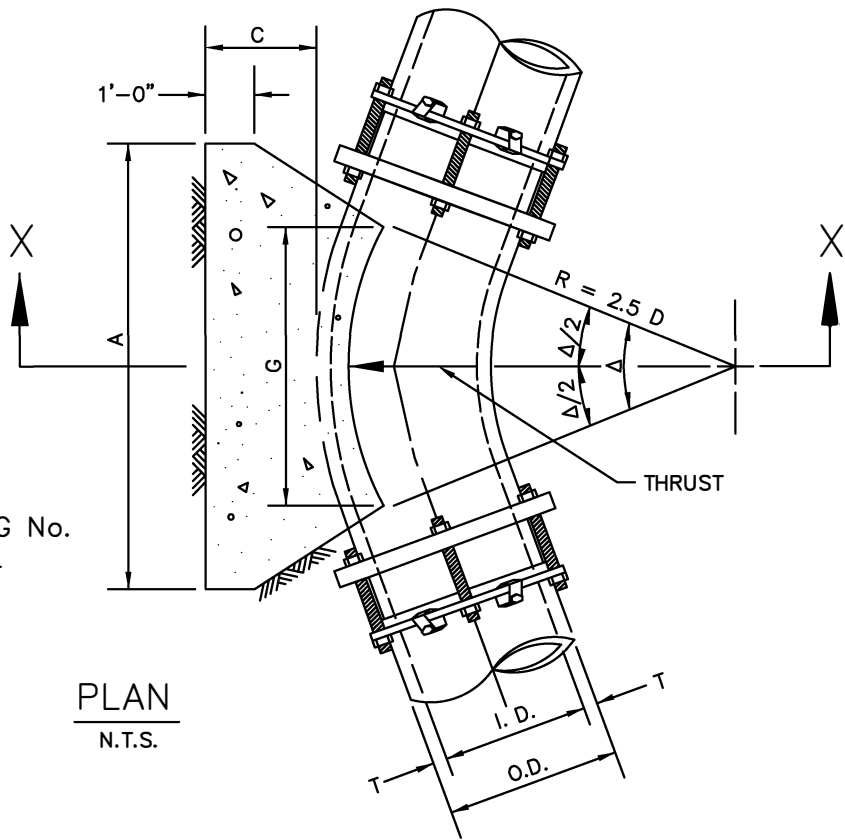


DIVISION 4000 WATER DISTRIBUTION

TABLE OF CONTENTS

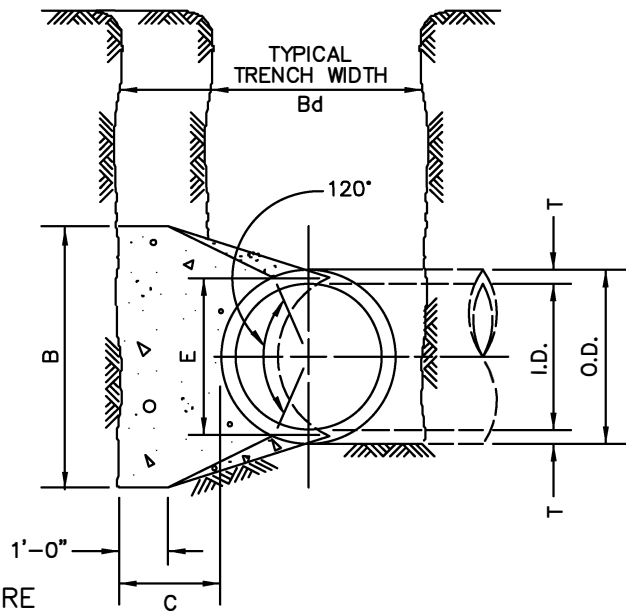
<u><i>Drawing #</i></u>	<u><i>Subject</i></u>	<u><i>Section I: Item #</i></u>
4010A	Horizontal Thrust Block At Pipe Bend	502.4. pages 502-10 to 502-11
4010B	Horizontal Thrust Block At Pipe Bend	502.4. pages 502-10 to 502-11
4010C	Horizontal Thrust Block At Pipe Bend	502.4. pages 502-10 to 502-11
4020	Horizontal Thrust Block At Tees and Plugs	502.4. pages 502-10 to 502-11
4030	Vertical Thrust Block At Pipe Bend	502.4. pages 502-10 to 502-11
4040	Thrust Block General Notes	502.4. pages 502-10 to 502-11
4050	Gate Valve 4" To 12" Box & Extension Stem	502.6.6 pages 502-19 to 502-20
4060A	Vault Construction Horizontal Gate Valve $\geq 16"$	702.5.8.8 page 702-14
4060B	Vault Construction Horizontal Gate Valve $\geq 16"$	702.5.8.8 page 702-14
4070A	Vault Construction Vertical Gate Valve $\geq 16"$	702.5.8.8 page 702-14
4070B	Vault Construction Vertical Gate Valve $\geq 16"$	702.5.8.8 page 702-14
4080A	Vault Construction Butterfly Valve $\geq 48"$	702.5.8.8 page 702-14
4080B	Vault Construction Butterfly Valve $\geq 48"$	702.5.8.8 page 702-14
4090	Combination Air Vacuum Valve Type "1"	502.6.6 pages 502-19 to 502-20
4100A	Combination Air Vacuum Valve Type "2"	502.6.6 pages 502-19 to 502-20
4100B	Air Vent Standard Dimension and Detail	502.6.6 pages 502-16 to 502-20
4110	Flush Point Installation Type "1"	502.10.3 page 502-26
4120	Fire Hydrant Installation	502.3 pages 502-8 to 502-10

4130	Water Service Installation 3/4" or 1" Line	502.10.3 page 502-26
4140	Water Service Installation 1 1/2" or 2" Line	502.10.3 page 502-26
4200	Water Main Lowering Below Stormwater Main	506 pages 506-1



REFER TO STD. DWG No.
4040 FOR GENERAL
NOTES

PLAN
N.T.S.

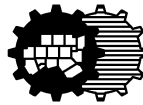


NOTE: ALL FITTINGS REQUIRE
A MEGALUG JOINT RESTRAINT
IN CONCERT WITH THRUST
BLOCKING OR IN REFERENCE
TO STANDARD DRAWING 4040
FOR GENERAL NOTES.

SECTION X-X
N.T.S.

HORIZONTAL THRUST BLOCK
AT PIPE BEND

North Central Texas Council of Governments



STANDARD SPECIFICATION REFERENCE

502.4

DATE

TBD

STANDARD DRAWING NO.

4010A

I.D. (IN.)	T (IN.)	$\Delta = 11.25'$ C (FT.)	$\Delta \geq 22.50'$ C (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
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	1.8	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.)	$\Delta = 11.25'$									I.D. (IN.)	$\Delta = 22.50'$								
	G (FT.)	THRUST (TONS)	EARTH			ROCK			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	1.5	0.1	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	1.0	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	1.5	2.0	0.2	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	1.5	3.0	0.3	20	1.8	12.3	3.5	3.5	0.7	2.0	3.0	0.4		
24	1.1	8.9	3.0	3.5	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		
30	1.4	10.4	3.0	3.5	0.6	2.0	3.5	0.4	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	2.0	4.0	0.5	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	2.5	5.0	0.8	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	2.5	6.0	1.1	48	4.4	52.9	8.0	7.0	5.7	4.5	6.0	2.8		
54	2.5	33.7	6.0	6.0	3.0	3.0	6.0	1.4	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	3.0	7.0	1.8	60	5.5	82.7	9.5	9.0	10.6	6.0	7.0	5.3		
66	3.0	50.3	6.5	8.0	5.1	3.5	8.0	2.7	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	4.0	8.0	3.3	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	4.0	9.0	3.9	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	4.5	10.0	5.3	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	5.0	10.0	6.3	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	5.0	11.0	7.4	96	8.7	211.7	15.0	14.5	41.2	10.0	11.0	21.8		

TABLES OF DIMENSIONS AND QUANTITIES

HORIZONTAL THRUST BLOCK
AT PIPE BEND

North Central Texas Council of Governments



STANDARD SPECIFICATION REFERENCE
502.4

DATE
TBD

STANDARD DRAWING NO.
4010B

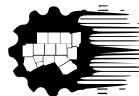
I.D. (IN.)	$\Delta = 30^\circ$									I.D. (IN.)	$\Delta = 45^\circ$								
	G (FT.)	THRUST (TONS)	EARTH			ROCK			G (FT.)		THRUST (TONS)	EARTH			ROCK				
			A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)				A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)		
4,6,8	1.0	2.6	2.0	1.5	0.2	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		
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		
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		
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		
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		
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		
36	4.4	39.5	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		
42	5.1	53.8	8.0	7.0	5.1	5.5	5.0	2.5	42	7.5	79.6	11.5	7.0	8.1	8.0	5.0	4.2		
48	5.8	70.3	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		
54	6.5	89.0	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		
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		
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		
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		
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		
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		
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	74.5	17.5	10.5	39.6		
96	11.6	281.2	18.0	16.0	55.5	12.5	11.5	28.9	96	17.1	415.6	26.0	16.0	89.5	18.5	11.5	48.5		

I.D. (IN.)	$\Delta = 67.50^\circ$									I.D. (IN.)	$\Delta = 90^\circ$								
	G (FT.)	THRUST (TONS)	EARTH			ROCK			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	2.1	5.6	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		
10,12	3.1	12.6	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		
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		
20	5.2	34.9	9.0	4.0	2.3	5.5	3.5	1.2	20	6.6	44.4	10.0	4.5	3.1	6.0	4.0	1.5		
24	6.2	50.3	11.5	4.5	3.5	6.5	4.0	1.6	24	7.9	64.0	14.5	4.5	5.0	8.0	4.0	2.1		
30	7.8	58.9	12.0	5.0	4.8	7.5	4.0	2.2	30	9.9	75.0	15.0	5.0	6.7	10.0	4.0	3.3		
36	9.4	84.9	14.5	6.0	8.2	9.5	4.5	3.8	36	11.9	108.0	18.0	6.0	11.4	12.0	4.5	5.3		
42	10.9	115.5	17.0	7.0	12.8	11.0	5.5	6.3	42	13.9	147.0	21.0	7.0	17.8	14.0	5.5	8.7		
48	12.5	150.9	19.0	8.0	18.4	13.0	6.0	9.2	48	15.9	192.0	24.0	8.0	26.2	16.0	6.0	12.4		
54	14.0	191.0	21.5	9.0	26.0	15.0	6.5	12.9	54	17.9	243.0	27.0	9.0	36.9	18.0	7.0	18.1		
60	15.6	235.8	24.0	10.0	35.6	16.0	7.5	17.6	60	19.9	299.8	30.0	10.0	50.3	20.0	7.5	24.0		
66	17.1	285.3	26.0	11.0	46.0	18.0	8.0	23.0	66	21.8	362.8	33.0	11.0	66.2	22.0	8.5	32.5		
72	18.7	339.5	28.5	12.0	57.8	19.0	9.0	28.4	72	23.8	431.8	36.0	12.0	85.6	24.0	9.0	41.0		
78	20.2	398.5	31.0	13.0	75.7	21.0	9.5	37.4	78	25.7	506.7	39.0	13.0	108.2	26.0	10.0	53.2		
84	21.8	462.1	33.5	14.0	94.7	22.0	10.5	46.5	84	27.7	587.7	42.0	14.0	134.4	28.0	10.5	64.8		
90	23.3	530.5	35.5	15.0	114.4	24.5	11.0	58.2	90	29.0	674.6	45.0	15.0	164.9	30.0	11.5	81.2		
96	24.9	603.6	38.0	16.0	138.9	25.5	12.0	70.0	96	31.6	767.5	48.0	16.0	199.0	32.0	12.0	95.1		

TABLES OF DIMENSIONS AND QUANTITIES

HORIZONTAL THRUST BLOCK
AT PIPE BEND

North Central Texas Council of Governments



STANDARD SPECIFICATION REFERENCE

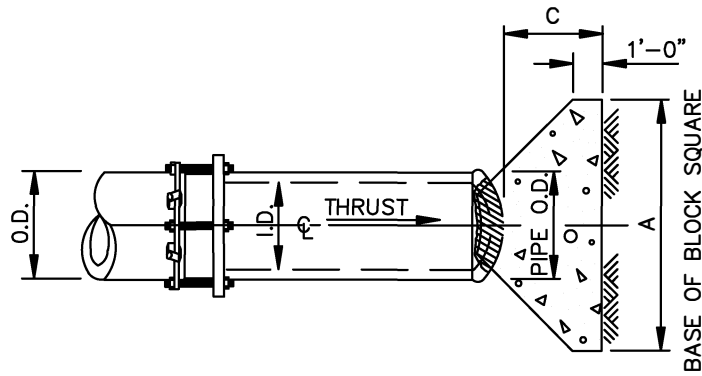
502.4

DATE

TBD

STANDARD DRAWING NO.

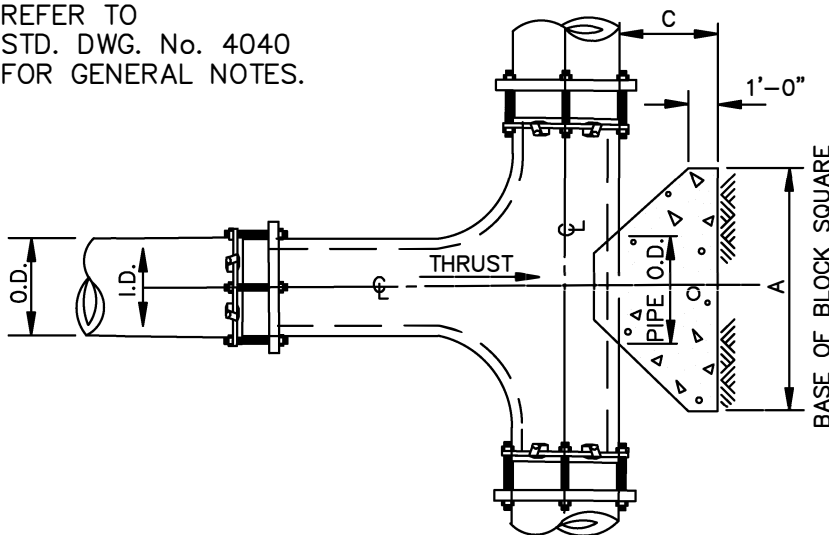
4010C



PLAN OF PLUG THRUST BLOCK

N.T.S.

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



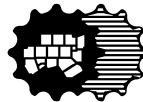
PLAN OF TEE THRUST BLOCK

N.T.S.

I.D. (IN.)	THRUST (TONS)	C (FT.)	EARTH		ROCK	
			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
20	31.5	2.0	6.0	1.9	4.0	0.9
24	45.2	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	7.5	17.5	47.2	12.5	27.2
78	358.0	8.0	19.0	58.9	13.5	33.7
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

HORIZONTAL THRUST BLOCK
AT TEES AND PLUGS

North Central Texas Council of Governments



STANDARD SPECIFICATION REFERENCE

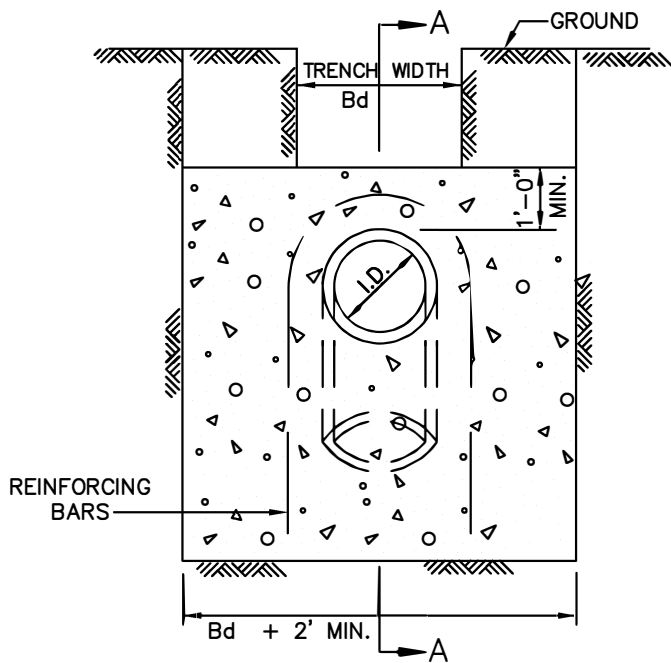
502.4

DATE

TBD

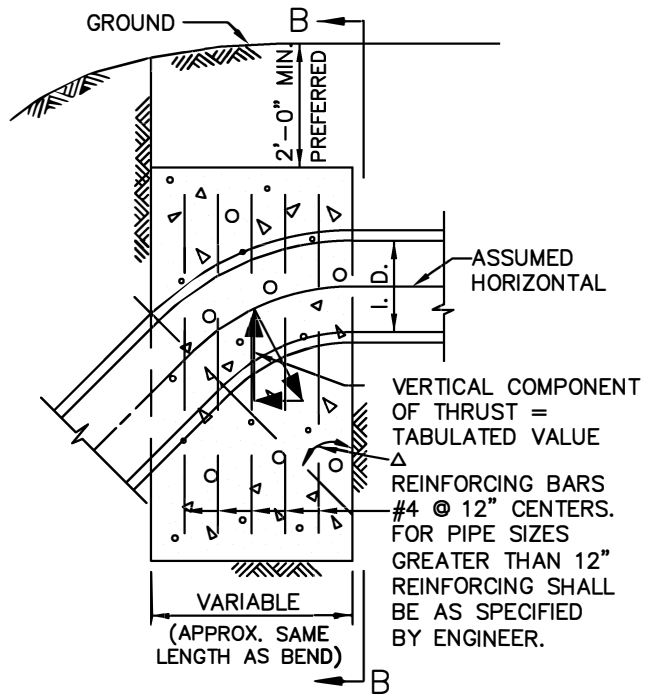
STANDARD DRAWING NO.

4020



ELEVATION "B-B"

N.T.S.



SECTION "A-A"

N.T.S.

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

Δ →	11.25°		22.50°		30°		45°		67.50°		90°		← Δ
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
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 THRUST BLOCK
AT PIPE BEND

North Central Texas Council of Governments



STANDARD SPECIFICATION REFERENCE


502.4

DATE
TBD

STANDARD DRAWING NO.
4030

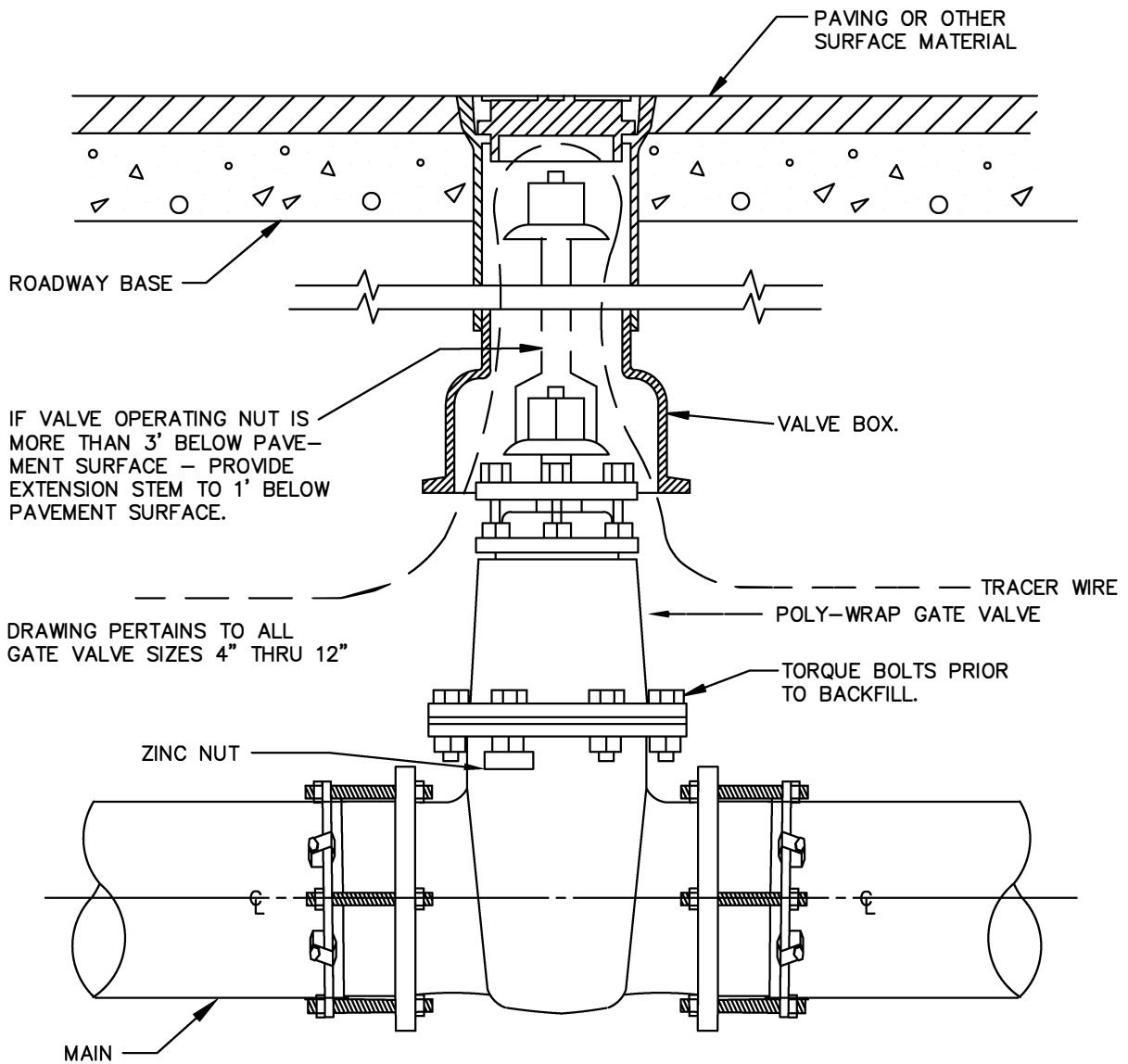
GENERAL NOTES FOR ALL THRUST BLOCKS:

1. CONCRETE FOR BLOCKING SHALL BE CLASS "B".
2. ALL CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200 PSI FOR DUCTILE IRON, P.V.V, AND 150 PSI FOR CONCRETE PIPE.
3. VOLUMES OF THRUST BLOCKS ARE NET VOLUMES OF CONCRETE TO BE FURNISHED. THE CORRESPONDING WEIGHT OF THE CONCRETE (CLASS "B") IS EQUAL TO OR GREATER THAN THE VERTICAL COMPONENT OF THE THRUST ON THE VERTICAL BEND.
4. WALL THICKNESS (T) ASSUMED HERE FOR ESTIMATING PURPOSES ONLY.
5. POUR CONCRETE FOR BLOCKS AGAINST UNDISTURBED EARTH.
6. DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD CONDITIONS WHRE AND AS DIRECTED BY THE ENGINEER. THE VOLUME OF CONCRETE BLOCKING SHALL NOT BE LESS THAN SHOWN HERE.
7. THE SOIL BEARING PRESSURES ARE BASED ON 1000 LBS./S.F. IN SOIL AND 2000 LBS./S.F. IN ROCK.
8. USE POLYETHYLENE WRAP OR EQUAL BETWEEN CONCRETE AND BEND, TEE, OR PLUG TO PREVENT THE CONCRETE FROM STICKING TO IT.
9. CONCRETE SHALL NOT EXPAND BEYOND JOINTS.
10. RESTRAINED JOINTS AND/OR THRUST BLOCKING SHALL BE USED TO RESIST THRUST FORCES AT ALL FITTINGS. IF USED IN LIEU OF THRUST BLOCKING, RESTRAINING LENGTH SHALL BE CALCULATED IN ACCORDANCE WITH AWWA M41 FOR DUCTILE IRON PIPES AND AWWA M23 FOR PVC PIPES.
11. IF ADDING ADDITIONAL SACRIFICIAL ANODE DETAIL: SACRIFICIAL ANODES CAN BE ADDED TO FITTINGS AS DIRECTED BY OWNER AND/OR ENGINEER.

THRUST BLOCK	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 502.4	
GENERAL NOTES		DATE TBD	STANDARD DRAWING NO. 4040

NOTE:

IN UNPAVED AREAS, INSTALL 2' x 2' x 6" CONCRETE VALVE PAD FLUSH WITH THE TOP OF VALVE BOX. REINFORCE WITH #3 BARS ON 6" CENTERS BOTH WAYS.

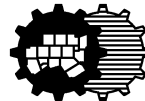


GATE VALVE BOX AND
EXTENSION STEM

N.T.S.

GATE VALVE 4" TO 12"
BOX & EXTENSION STEM

North Central Texas Council of Governments



STANDARD SPECIFICATION REFERENCE

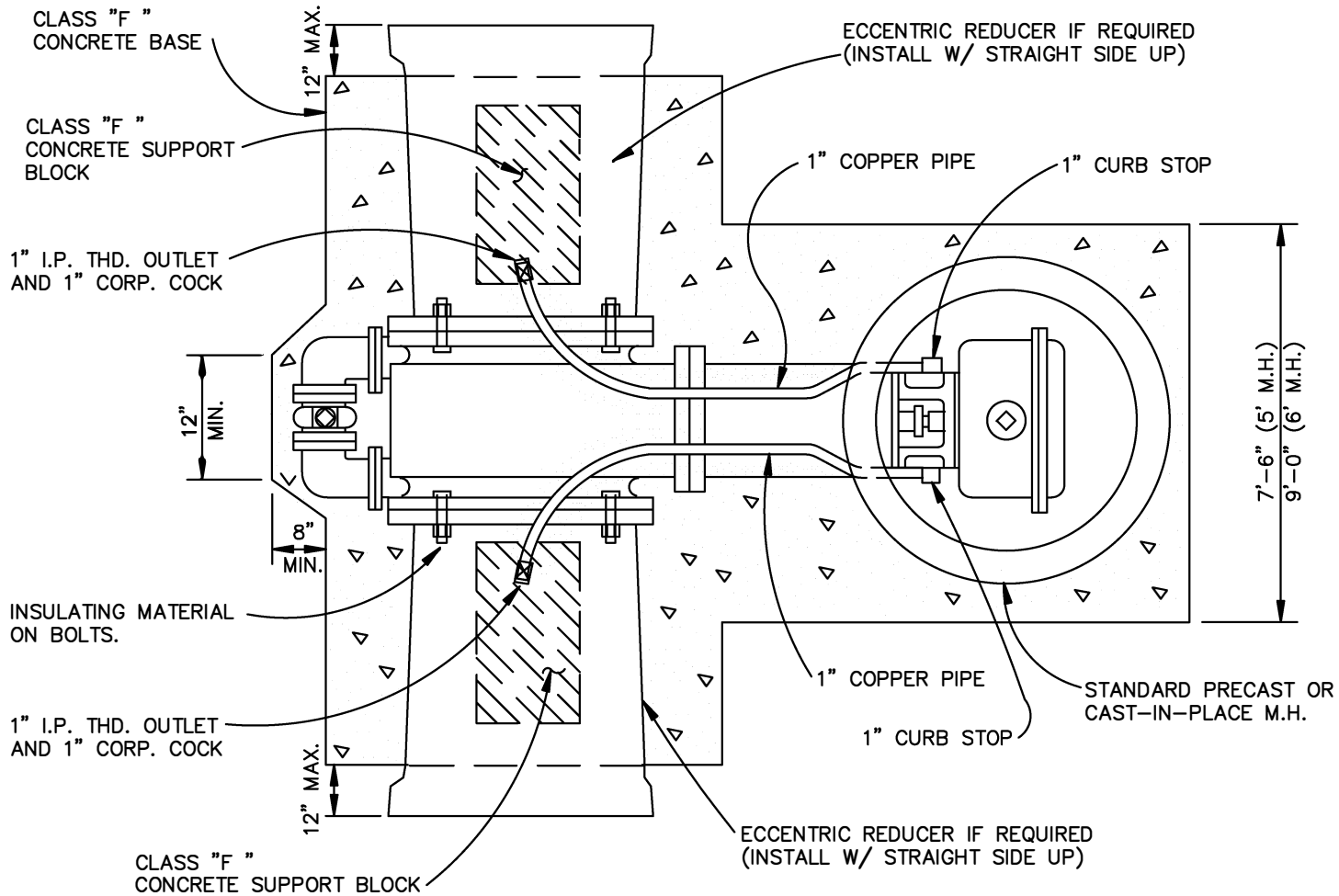
502.6

DATE

TBD

STANDARD DRAWING NO.

4050



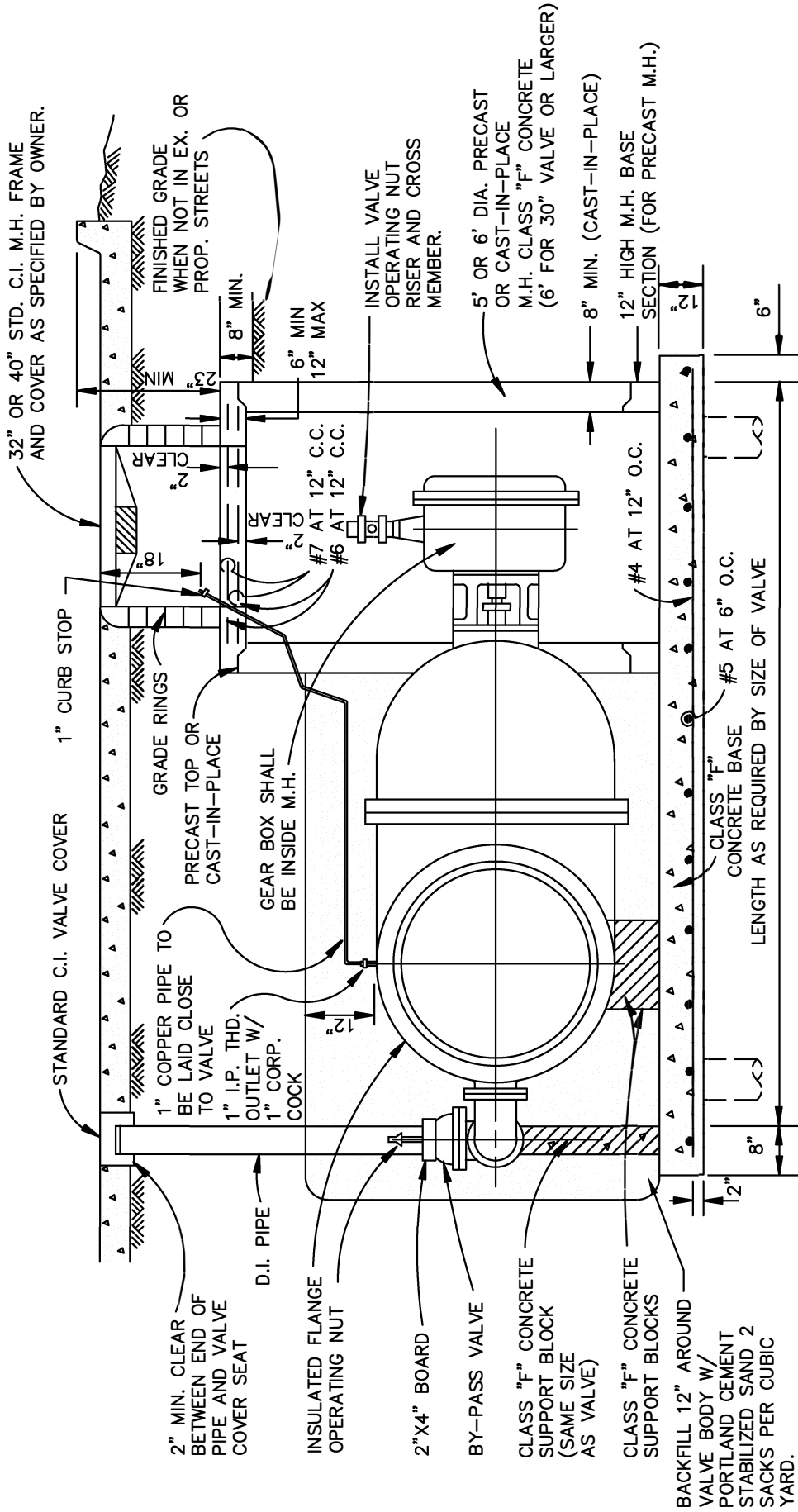
PLAN
N.T.S.

STANDARD DRAWING NO.
4060A

Vault Construction
Horizontal Gate Valve $\geq 16''$



STANDARD SPECIFICATION REFERENCE 702.5	
DATE TBD	STANDARD DRAWING NO. 4060A



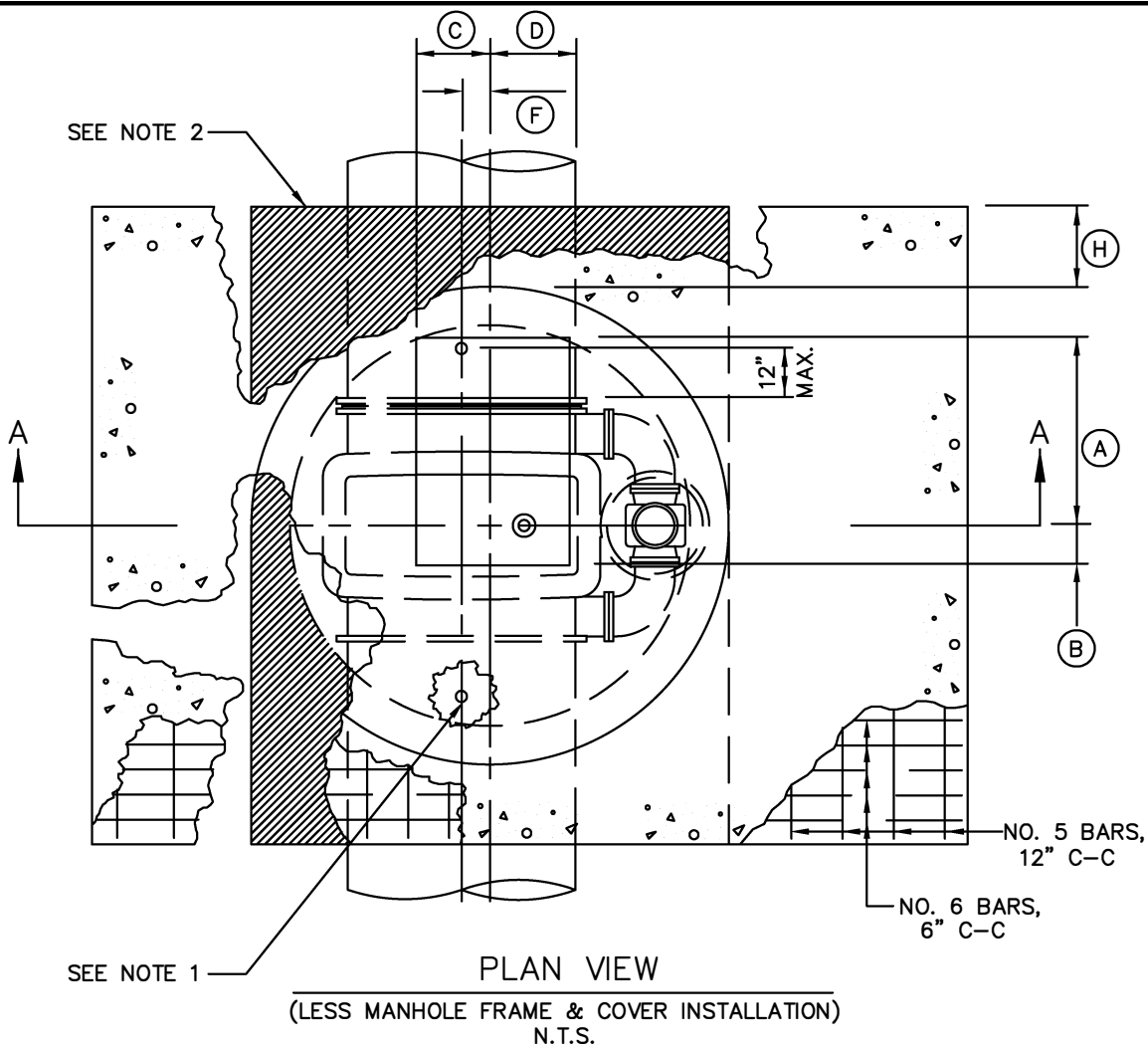
PROFILE
N.T.S.

STANDARD DRAWING NO.
4060B

VAULT CONSTRUCTION
HORIZONTAL GATE VALVE $\geq 16"$



North Central Texas Council of Governments
STANDARD SPECIFICATION REFERENCE
702.5
DATE
OCT. '04
STANDARD DRAWING NO.
4060B

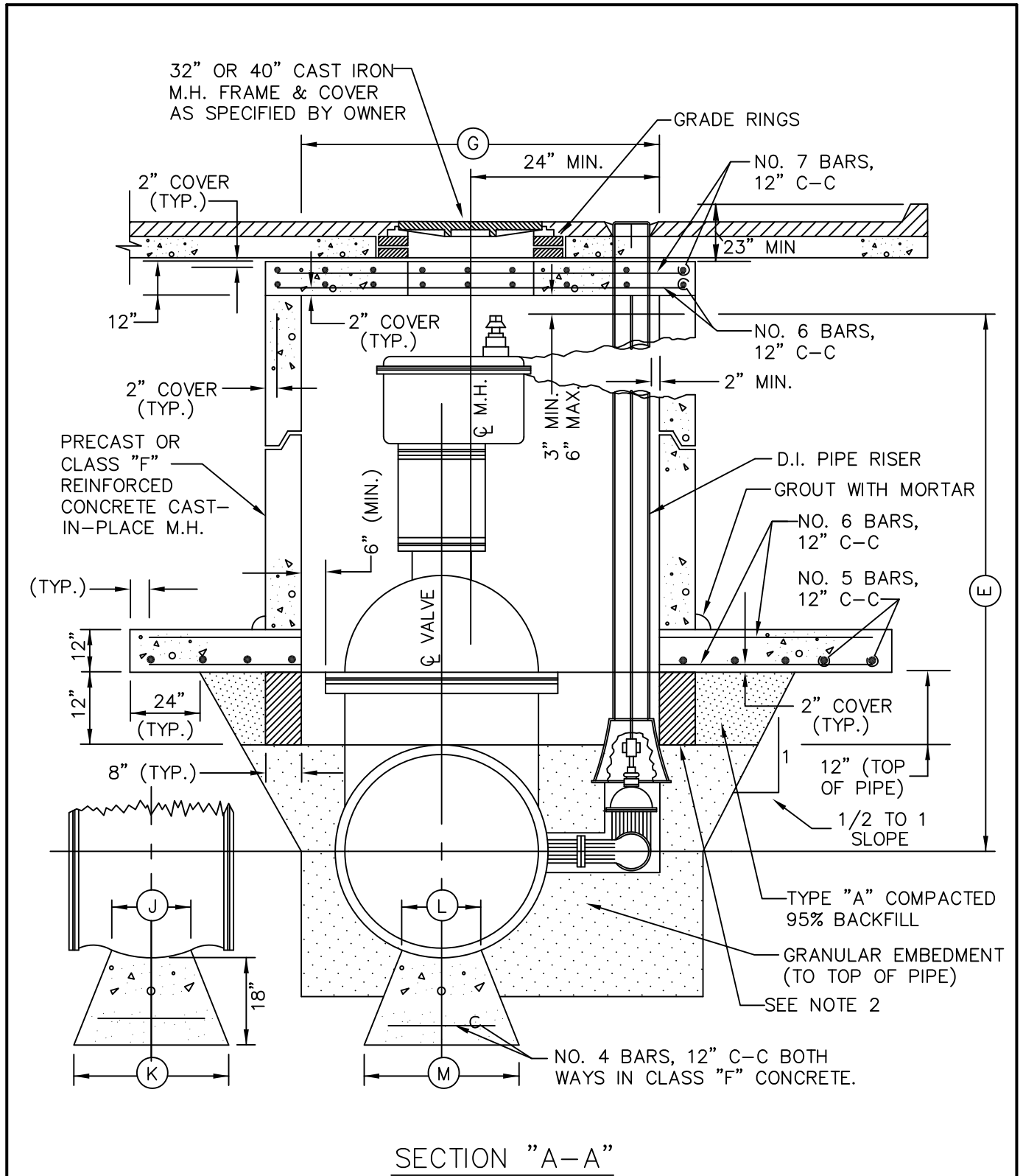


GATE VALVE SIZE	DIMENSION TABLE											
	A	B	C	D	E	F	G	H	J	K	L	M
16"	20"	20"	12"	12"	44 1/2"	1"	48"	12"	10"	24"	12"	16"
18"	20"	20"	12"	12"	51 3/8"	2"	48"	12"	12"	24"	12"	18"
20"	22"	18"	12"	12"	56 5/8"	1"	48"	12"	12"	24"	16"	20"
24"	26"	14"	12"	12"	64 3/8"	1"	60"	18"	14"	30"	18"	24"
30"	28"	12"	12"	12"	80 5/8"	3"	60"	18"	18"	30"	20"	30"
36"	32"	8"	12"	12"	90 1/16"	4"	72"	18"	18"	36"	24"	36"
42"	34"	6"	15"	9"	107 3/4"	5"	84"	24"	20"	36"	30"	42"
48"	36"	4"	14"	10"	121 5/8"	4"	96"	24"	26"	42"	36"	48"
54"	36"	4"	9"	15"	142 1/2"	3"	120"	24"	32"	46"	40"	54"

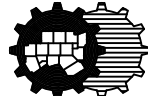
NOTES:

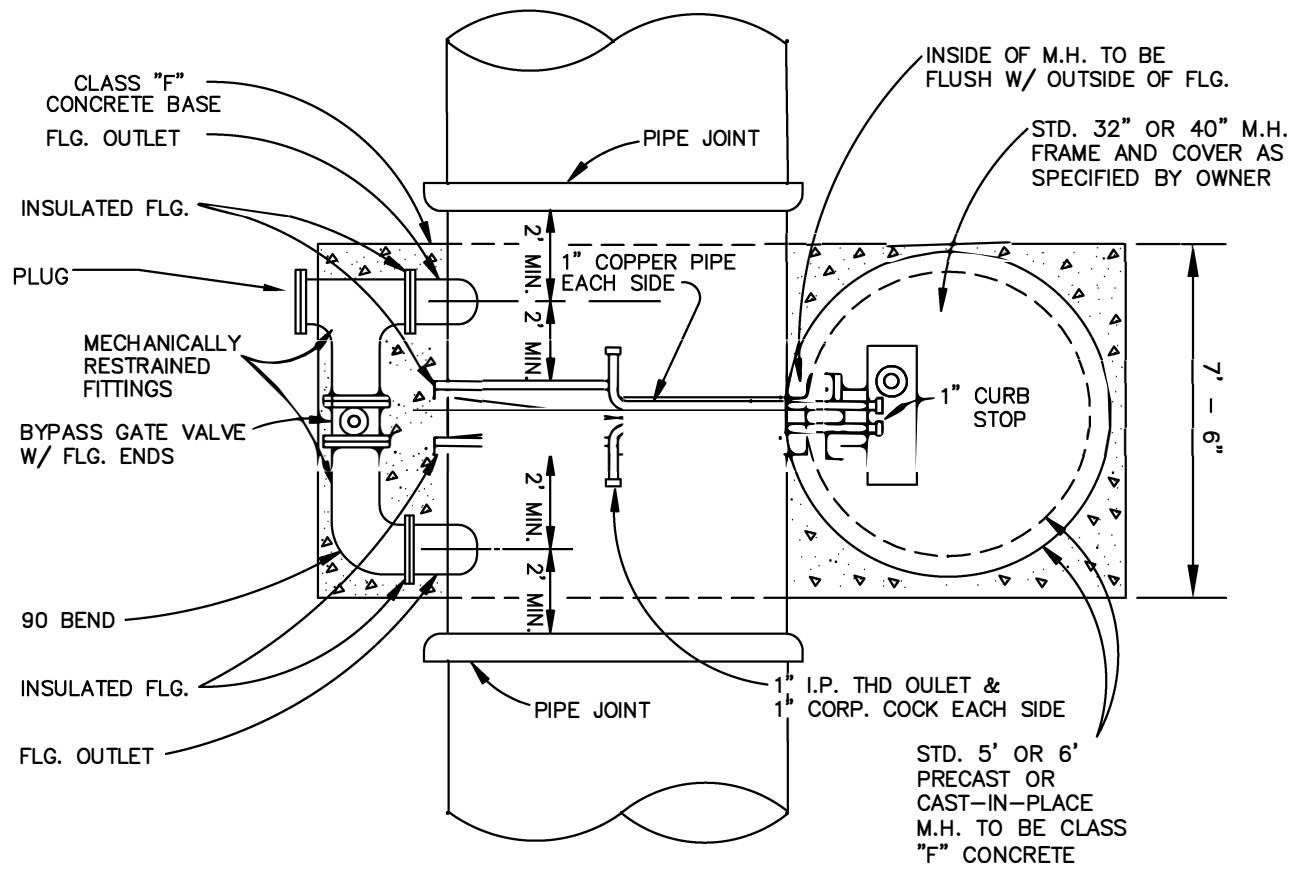
1. PROVIDE CORPORATION AND CURB STOPS A MAXIMUM OF 12" FROM EACH END OF GATE VALVE, AS SHOWN. CORPORATION AND CURB STOP SIZES SHALL BE 1" FOR 16", 20", AND 24" NOMINAL PIPE DIAMETERS; 2" FOR 30" AND LARGER DIAMETERS. 2" TAPS SHALL BE MADE AS A 2" FLANGED OUTLET WITH INSULATED ADAPTOR KIT. COPPER RISERS SHALL BE PROVIDED BETWEEN THE CORPORATION AND CURB STOPS. CURB STOPS SHALL BE INSTALLED AT AN ELEVATION 12" ABOVE THE TOP SURFACE OF VAULT BOTTOM SLAB.
2. POLYURETHANE CUSHION PAD.
3. STANDARD PRECAST DIMENSIONS MAY BE USED WITH APPROVAL OF THE OWNER AND MAY REQUIRE AN INCREASE IN SIZE TO THE NEXT READILY AVAILABLE PRECAST DIMENSION.

<h1 style="margin: 0;">VAULT CONSTRUCTION</h1>	<small>North Central Texas Council of Governments</small> 	<small>STANDARD SPECIFICATION REFERENCE</small> <h2 style="margin: 0;">702.5.8.8</h2>
<h2 style="margin: 0;">VERTICAL GATE VALVE ≥ 16"</h2>		<small>DATE</small> <h3 style="margin: 0;">OCT. '04</h3> <small>STANDARD DRAWING NO.</small> <h3 style="margin: 0;">4070A</h3>



REFER TO STD. DWG. 4070A FOR DIMENSION TABLE AND GENERAL NOTES.

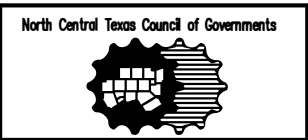
VAULT CONSTRUCTION VERTICAL GATE VALVE \cong 16"	North Central Texas Council of Governments 	STANDARD SPECIFICATION REFERENCE 702.4
	DATE OCT. '04	STANDARD DRAWING NO. 4070B



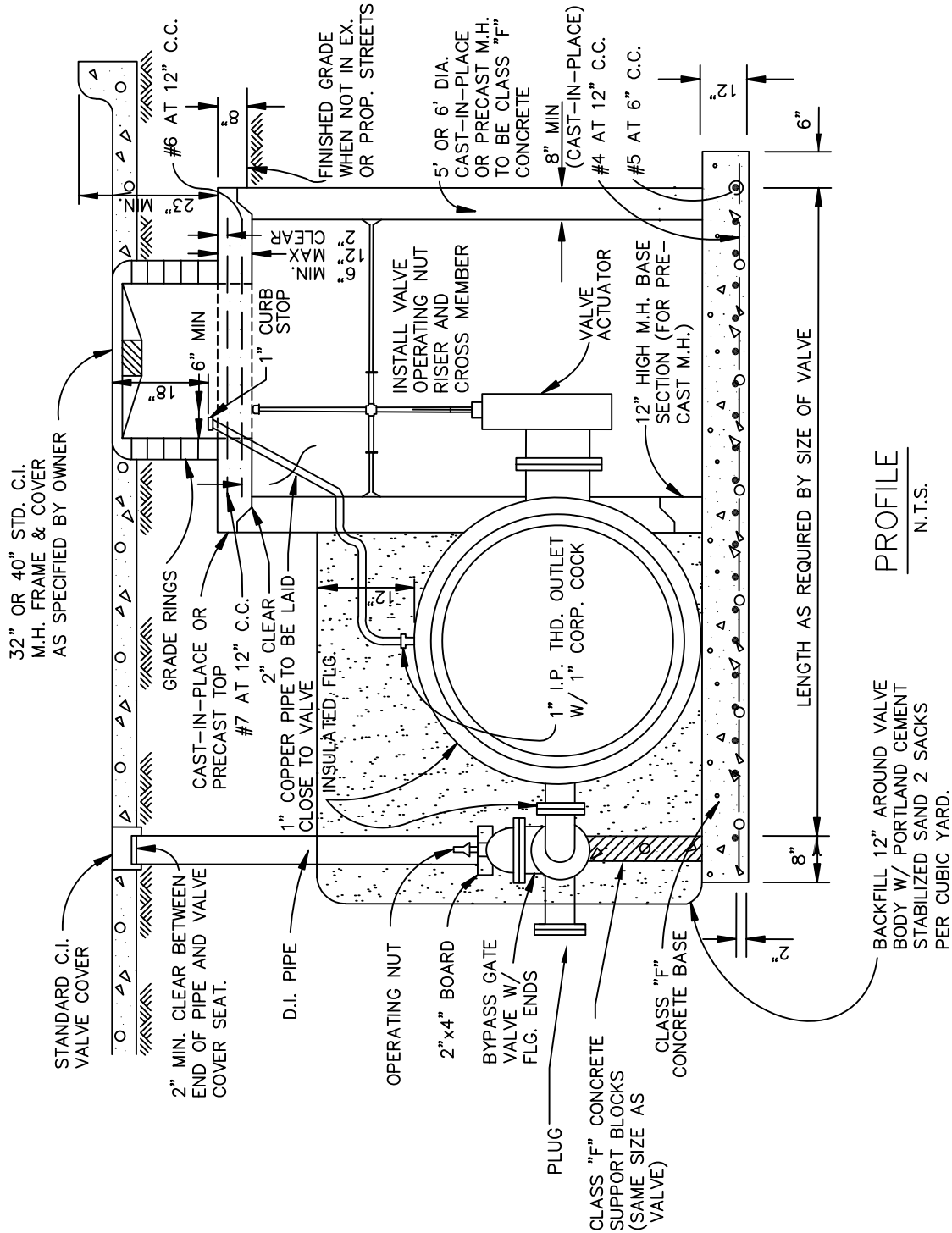
PLAN
N.T.S.

STANDARD DRAWING NO.
4080A

VAULT CONSTRUCTION
BUTTERFLY VALVE $\geq 48''$



STANDARD SPECIFICATION REFERENCE 702.5.8.8	
DATE OCT '04	STANDARD DRAWING NO. 4080A



PROFILE
N.T.S.

STANDARD SPECIFICATION REFERENCE	702.5.8.8
STANDARD DRAWING NO.	4080B
DATE	TBD

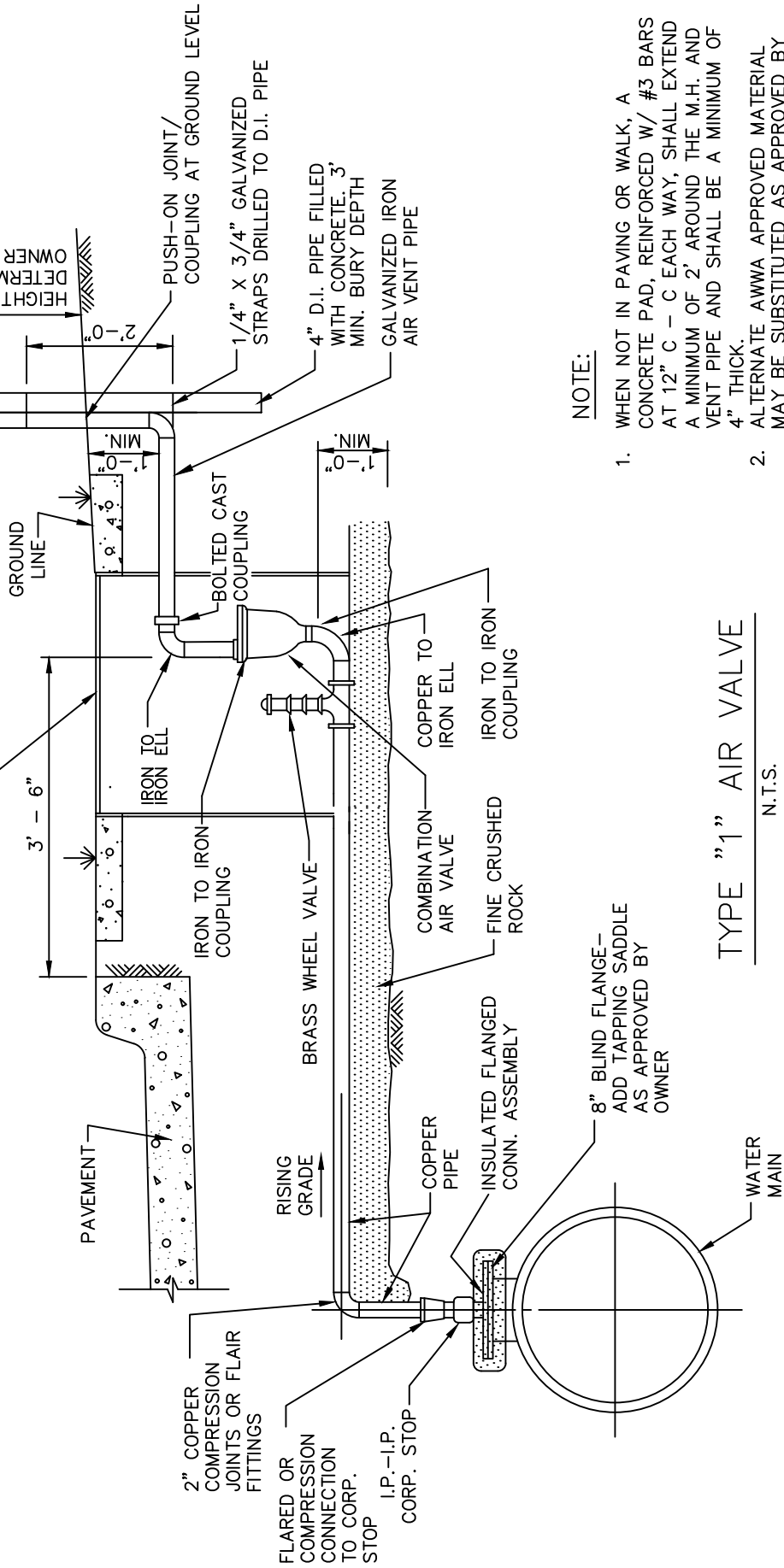


VAULT CONSTRUCTION
BUTTERFLY VALVE \cong 48"

SEE AIR VENT ON
STANDARD DRAWING NO. 4100B.

THIS RISER SHALL BE AS
NEAR AS PRACTICAL TO
R.O.W. LINES, AT LEAST
6' BEYOND SHOULDER
OF ROAD

28" x 18" METER BOX OR 30"
MANHOLE FRAME AND COVER AS
APPROVED BY OWNER



NOTE:

1. WHEN NOT IN PAVING OR WALK, A CONCRETE PAD, REINFORCED W/ #3 BARS AT 12" C - C EACH WAY, SHALL EXTEND A MINIMUM OF 2' AROUND THE M.H. AND VENT PIPE AND SHALL BE A MINIMUM OF 4" THICK.
2. ALTERNATE AWWA APPROVED MATERIAL MAY BE SUBSTITUTED AS APPROVED BY OWNER FOR FITTINGS.

TYPE "1" AIR VALVE

N.T.S.

STANDARD DRAWING NO.
4090

North Central Texas Council of Governments



COMBINATION AIR VACUUM VALVE

TYPE "1"

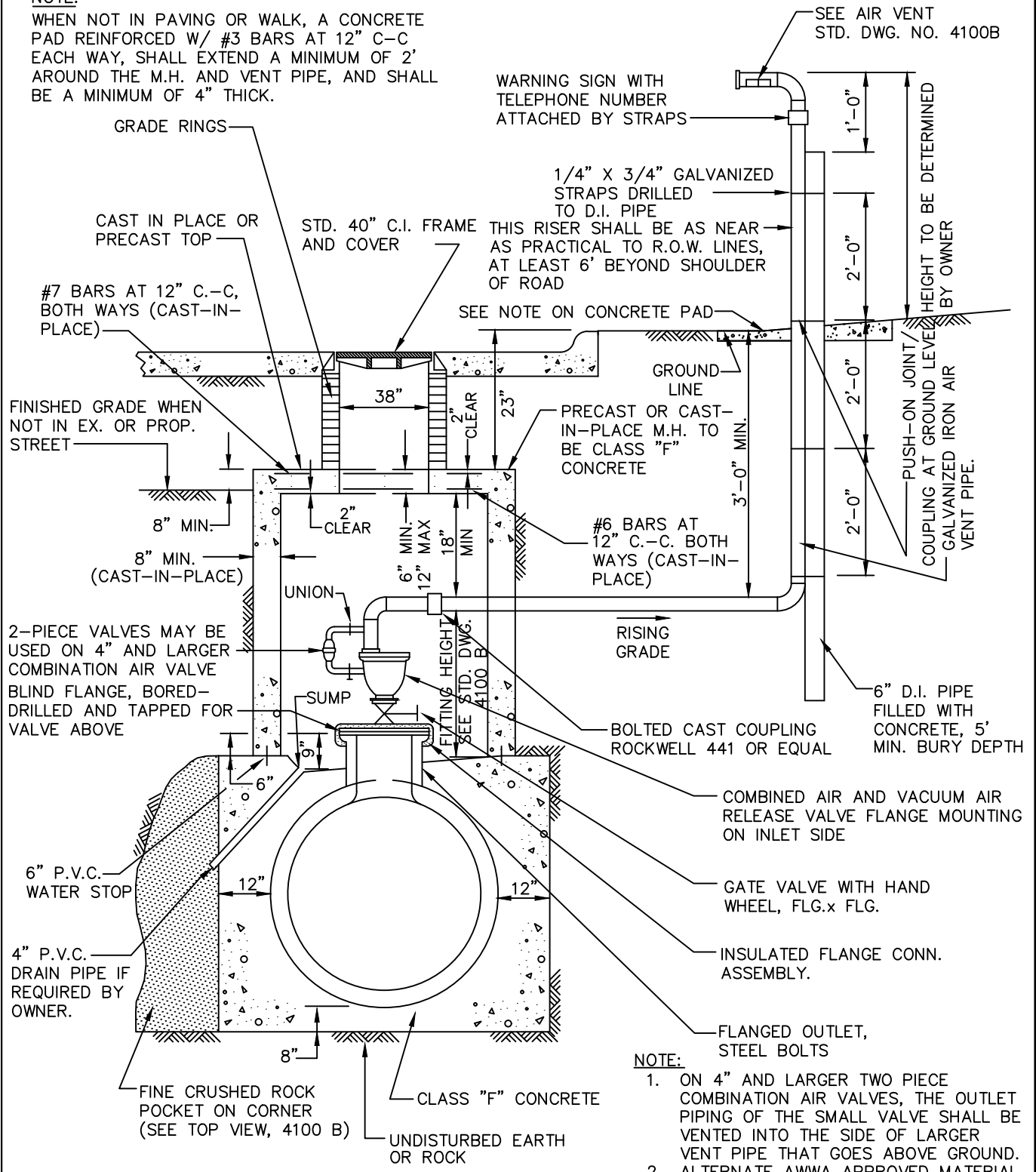
STANDARD SPECIFICATION REFERENCE
502.6

DATE
OCT. '04

STANDARD DRAWING NO.
4090

NOTE:

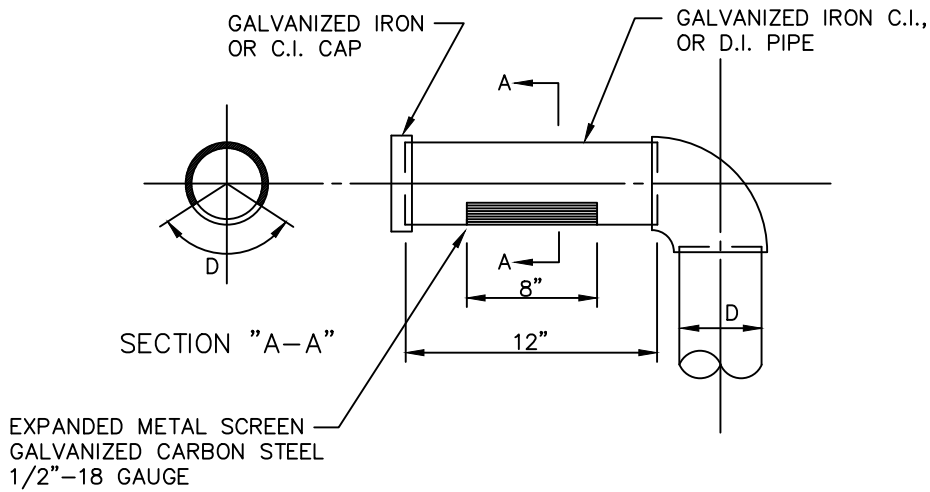
WHEN NOT IN PAVING OR WALK, A CONCRETE PAD REINFORCED W/ #3 BARS AT 12" C-C EACH WAY, SHALL EXTEND A MINIMUM OF 2' AROUND THE M.H. AND VENT PIPE, AND SHALL BE A MINIMUM OF 4" THICK.



TYPE "2" AIR VALVE
N.T.S.

- NOTE:**
- ON 4" AND LARGER TWO PIECE COMBINATION AIR VALVES, THE OUTLET PIPING OF THE SMALL VALVE SHALL BE VENTED INTO THE SIDE OF LARGER VENT PIPE THAT GOES ABOVE GROUND.
 - ALTERNATE AWWA APPROVED MATERIAL MAY BE SUBSTITUTED AS APPROVED BY OWNER FOR FITTINGS.

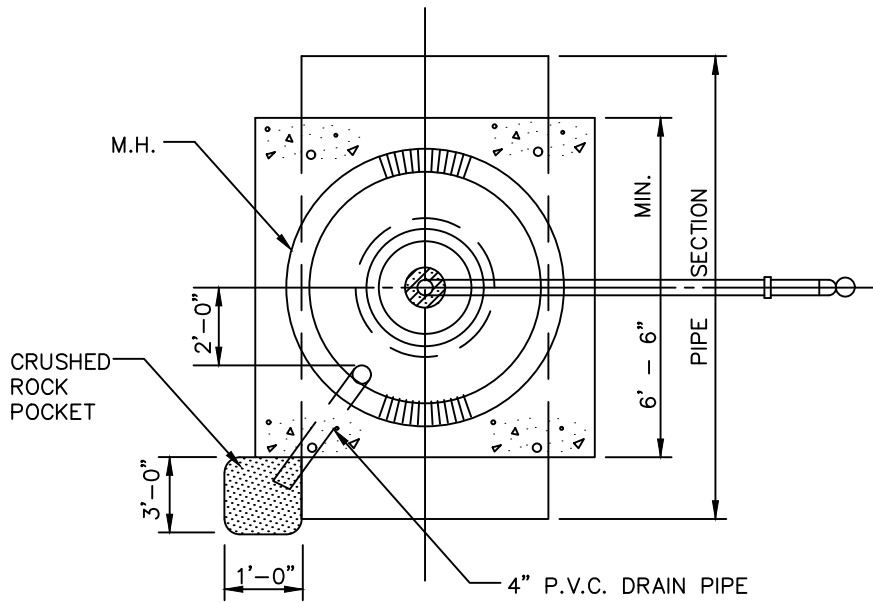
COMBINATION AIR VACUUM VALVE TYPE "2"	North Central Texas Council of Governments 	STANDARD SPECIFICATION REFERENCE 502.6
		DATE OCT. '04



AIR VENT

N.T.S.

AIR VALVE	GATE VALVE	FLG. OUTLET	MIN. FITTING HEIGHT	VENT PIPE D	M.H. DIA.
2"	2"	8"	26"	2"	5'
3"	3"	18"	31"	3"	5'
4"	4"	18"	38"	4"	5'
6"	6"	18"	46"	6"	5'
8"	8"	18"	53"	8"	6'
10"	10"	20"	62"	10"	6'
12"	12"	24"	72"	12"	6'

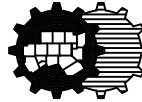


PLAN VIEW

N.T.S.

AIR VENT STANDARD
DIMENSION AND DETAIL

North Central Texas Council of Governments



STANDARD SPECIFICATION REFERENCE

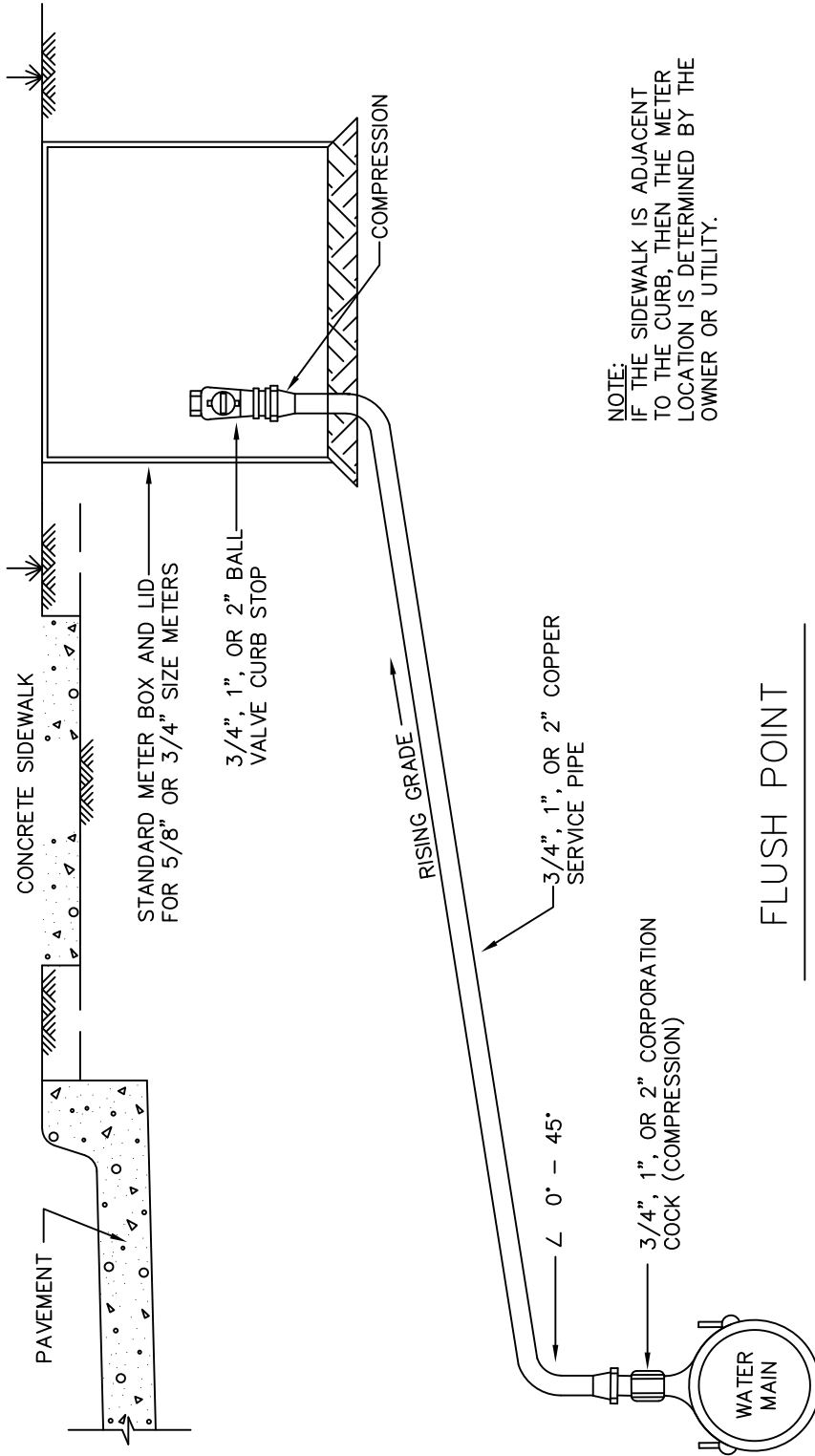
502.6

DATE

OCT. '04

STANDARD DRAWING NO.

4100B



NOTE:
IF THE SIDEWALK IS ADJACENT
TO THE CURB, THEN THE METER
LOCATION IS DETERMINED BY THE
OWNER OR UTILITY.

FLUSH POINT

(SIZE DESIGNATED ON PLANS)
N.T.S.

FLUSH POINT INSTALLATION

TYPE "1"

North Central Texas Council of Governments



STANDARD SPECIFICATION REFERENCE
502.10

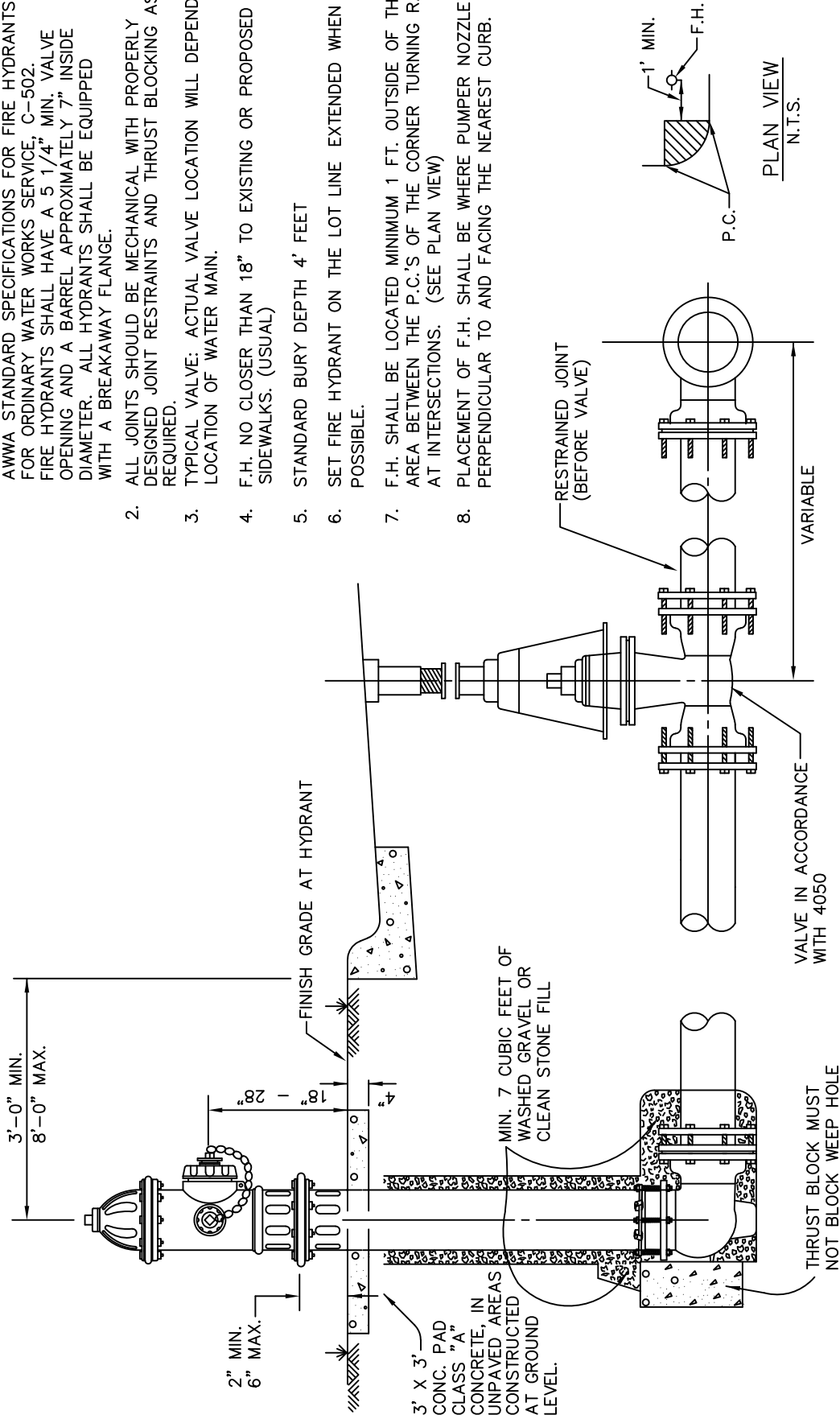
DATE
OCT., 04

STANDARD DRAWING NO.
4110

STANDARD DRAWING NO.
4110

NOTES:

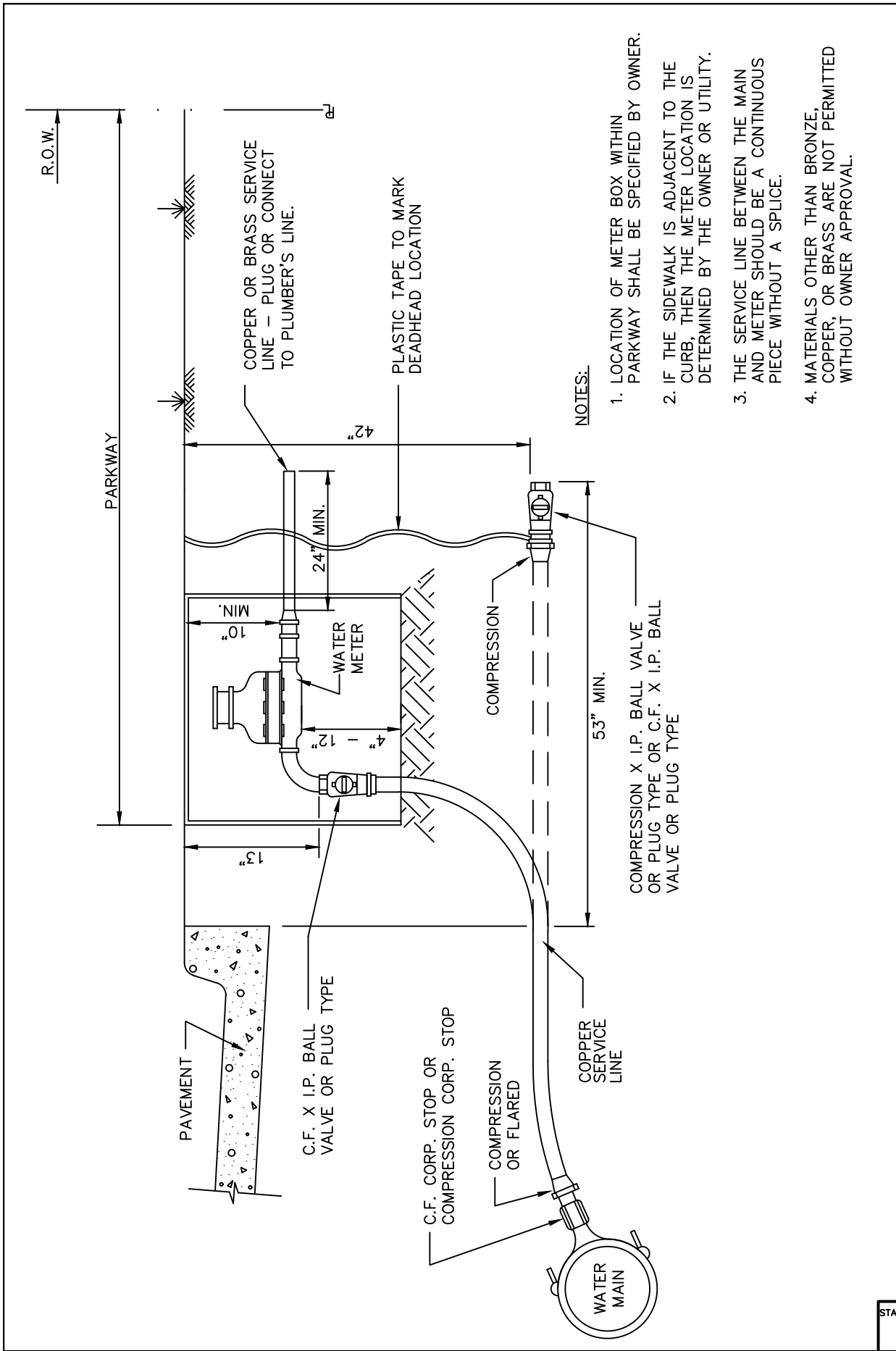
1. IN GENERAL, ALL FIRE HYDRANTS SHALL CONFORM TO AWWA STANDARD SPECIFICATIONS FOR FIRE HYDRANTS FOR ORDINARY WATER WORKS SERVICE, C-502. FIRE HYDRANTS SHALL HAVE A 5 1/4" MIN. VALVE OPENING AND A BARREL APPROXIMATELY 7" INSIDE DIAMETER. ALL HYDRANTS SHALL BE EQUIPPED WITH A BREAKAWAY FLANGE.
2. ALL JOINTS SHOULD BE MECHANICAL WITH PROPERLY DESIGNED JOINT RESTRAINTS AND THRUST BLOCKING AS REQUIRED.
3. TYPICAL VALVE: ACTUAL VALVE LOCATION WILL DEPEND ON LOCATION OF WATER MAIN.
4. F.H. NO CLOSER THAN 18" TO EXISTING OR PROPOSED SIDEWALKS. (USUAL)
5. STANDARD BURY DEPTH 4' FEET
6. SET FIRE HYDRANT ON THE LOT LINE EXTENDED WHEN POSSIBLE.
7. F.H. SHALL BE LOCATED MINIMUM 1 FT. OUTSIDE OF THE AREA BETWEEN THE P.C.'S OF THE CORNER TURNING RADII AT INTERSECTIONS. (SEE PLAN VIEW)
8. PLACEMENT OF F.H. SHALL BE WHERE PUMPER NOZZLE IS PERPENDICULAR TO AND FACING THE NEAREST CURB.



STANDARD SPECIFICATION REFERENCE	
502.3	
DATE	STANDARD DRAWING NO.
OCT. '04	4120




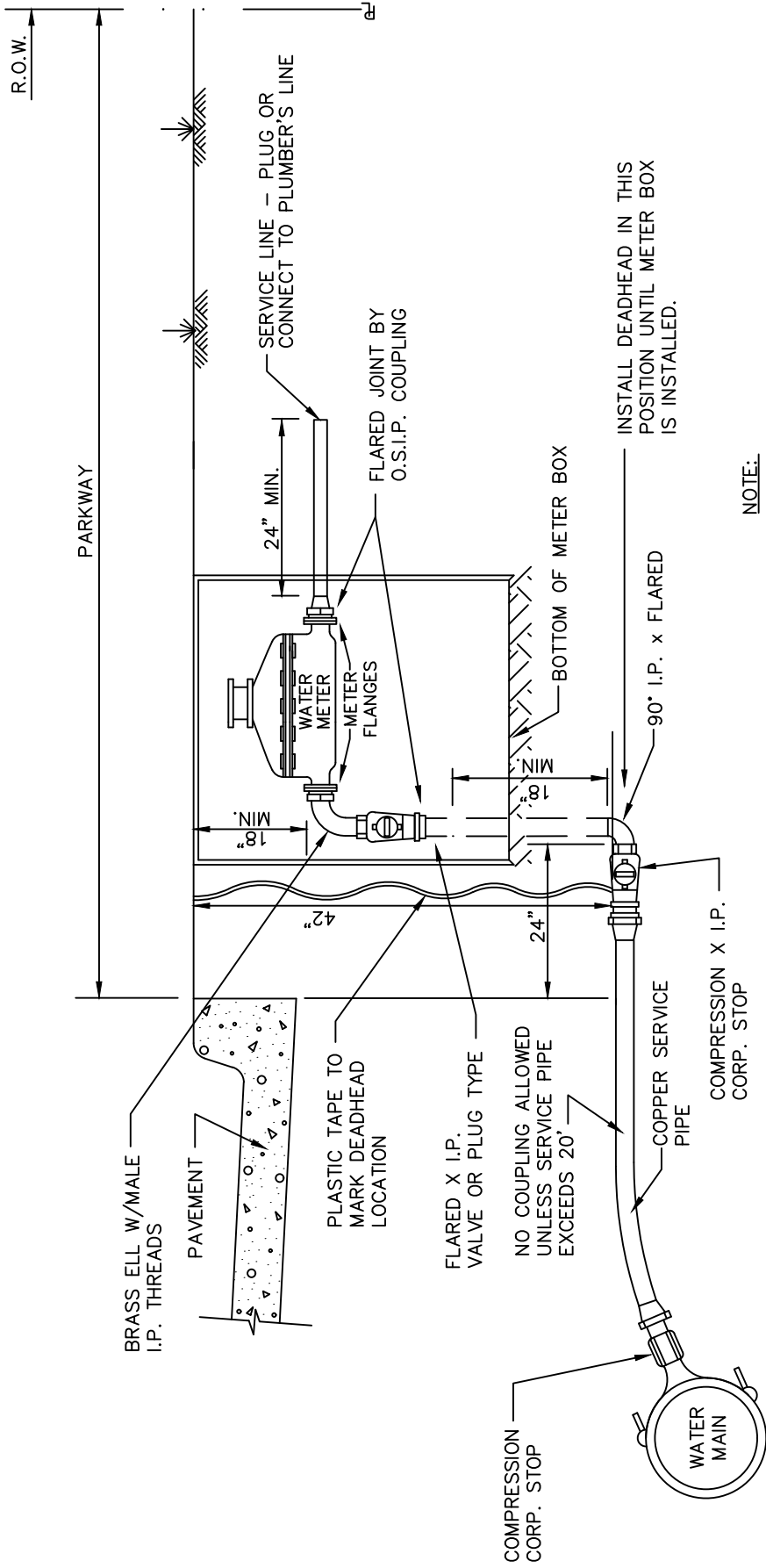
FIRE HYDRANT INSTALLATION



NOTES:

1. LOCATION OF METER BOX WITHIN PARKWAY SHALL BE SPECIFIED BY OWNER.
2. IF THE SIDEWALK IS ADJACENT TO THE CURB, THEN THE METER LOCATION IS DETERMINED BY THE OWNER OR UTILITY.
3. THE SERVICE LINE BETWEEN THE MAIN AND METER SHOULD BE A CONTINUOUS PIECE WITHOUT A SPLICE.
4. MATERIALS OTHER THAN BRONZE, COPPER, OR BRASS ARE NOT PERMITTED WITHOUT OWNER APPROVAL.

North Central Texas Council of Governments 		STANDARD SPECIFICATION REFERENCE	502.10
		DATE	OCT., 04
WATER SERVICE INSTALLATION 3/4" OR 1" LINE		STANDARD DRAWING NO.	4130
		STANDARD DRAWING NO. 4130	



NOTE:

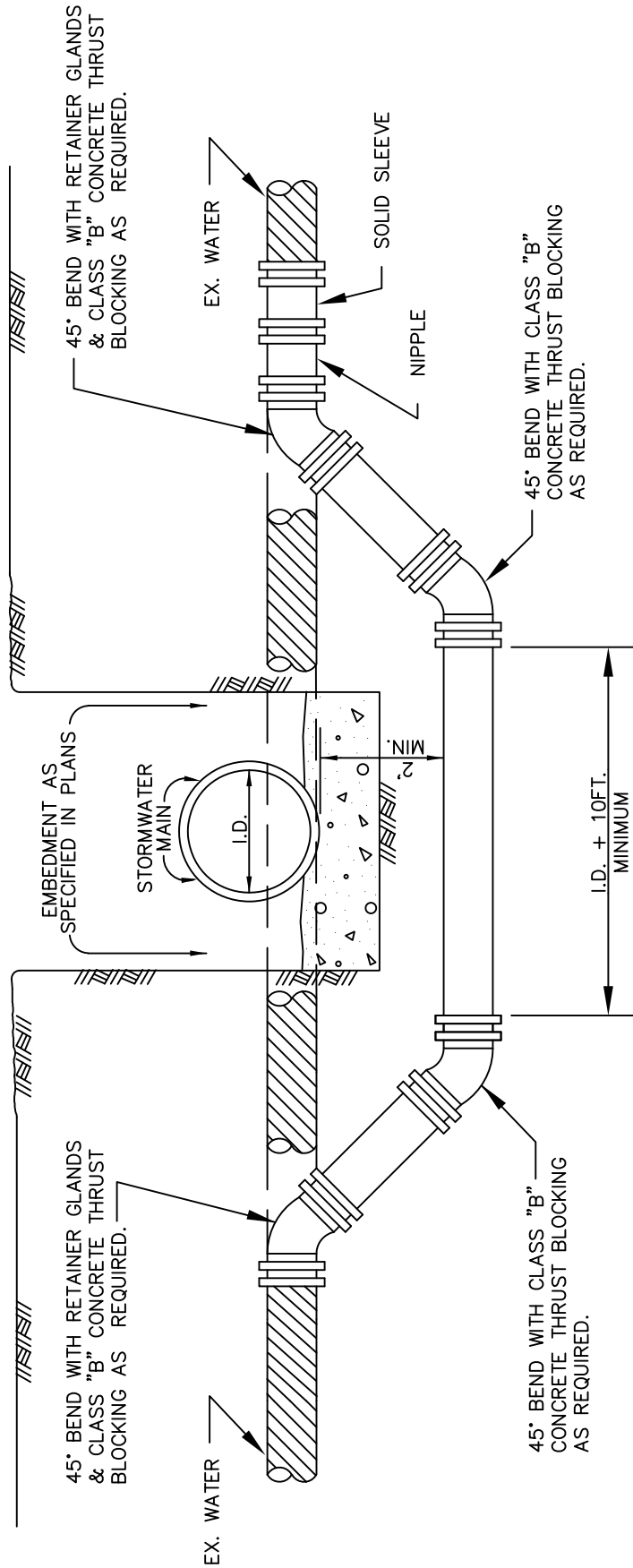
1. LOCATION OF METER BOX WITHIN THE AVAILABLE PARKWAY SHALL BE SPECIFIED BY OWNER.
2. IF THE SIDEWALK IS ADJACENT TO THE CURB, THEN THE METER LOCATION IS DETERMINED BY THE OWNER OR UTILITY.

STANDARD SPECIFICATION REFERENCE	
502.10	
DATE	STANDARD DRAWING NO.
OCT. '04	4140



WATER SERVICE INSTALLATION

1 1/2" OR 2" LINE



NOTES:
 1. IF THE WATER MAIN IS BEING LOWERED UNDER WASTEWATER, THEN IT MUST COMPLY WITH TCEQ REQUIREMENTS

STANDARD SPECIFICATION REFERENCE	506.6
DATE	OCT. '04
STANDARD DRAWING NO.	4200



WATER MAIN LOWERING
 BELOW STORMWATER MAIN