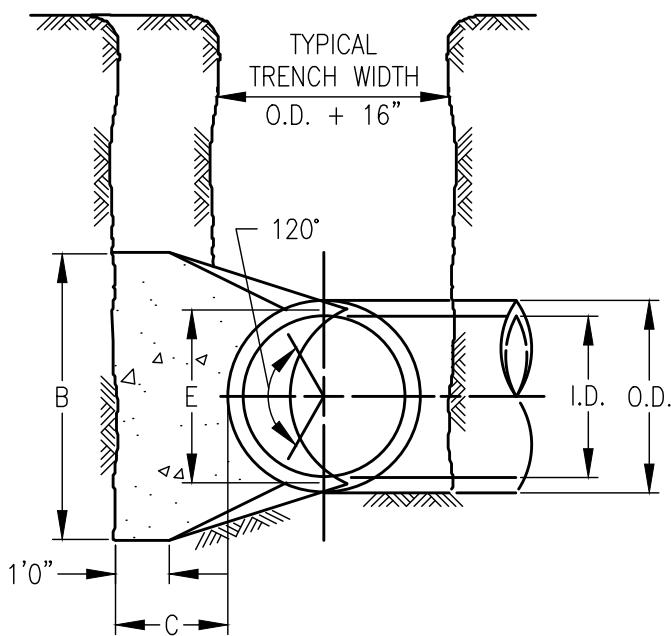


REFER TO  
STD. DETAILS W-02  
THROUGH W-04 FOR  
TABLE OF DIMENSIONS  
AND QUANTITIES AND  
W-06 FOR GENERAL  
NOTES



SECTION X-X

N.T.S.

SEPTEMBER 2022



TOWN OF WESTLAKE  
1500 SOLANA BOULEVARD  
BLDG. 7, SUITE 7200  
WESTLAKE, TEXAS 76262

HORIZONTAL  
THRUST BLOCK  
AT PIPE BEND  
W-01

I.D. (IN.)	T (IN.)	$\Delta =$ 11.25° (FT.)	$\Delta \geq$ 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
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.)	$\Delta = 11.25^\circ$							I.D. (IN.)	$\Delta = 22.50^\circ$								
	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.)				
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

SEPTEMBER 2022



TOWN OF WESTLAKE  
1500 SOLANA BOULEVARD  
BLDG. 7, SUITE 7200  
WESTLAKE, TEXAS 76262

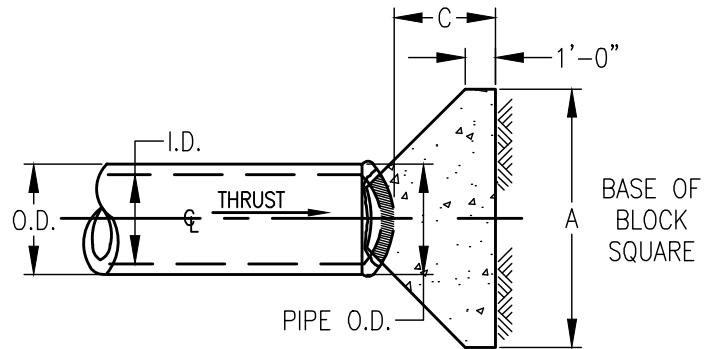
HORIZONTAL  
THRUST BLOCK  
AT PIPE BEND  
W-02

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

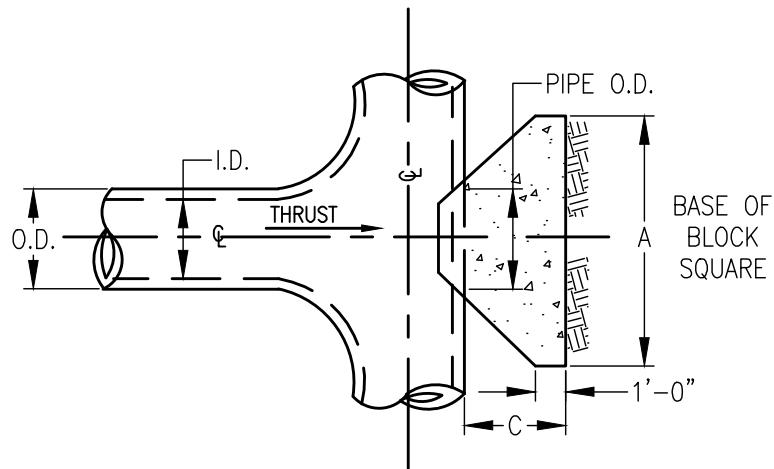
SEPTEMBER 2022	 <p><b>TOWN OF WESTLAKE</b> 1500 SOLANA BOULEVARD BLDG. 7, SUITE 7200 WESTLAKE, TEXAS 76262</p>	HORIZONTAL THRUST BLOCK AT PIPE BEND W-03
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### PLAN OF PLUG THRUST BLOCK

N.T.S.

REFER TO  
STD. DETAIL W-06  
FOR GENERAL NOTES



### PLAN OF TEE THRUST BLOCK

N.T.S.

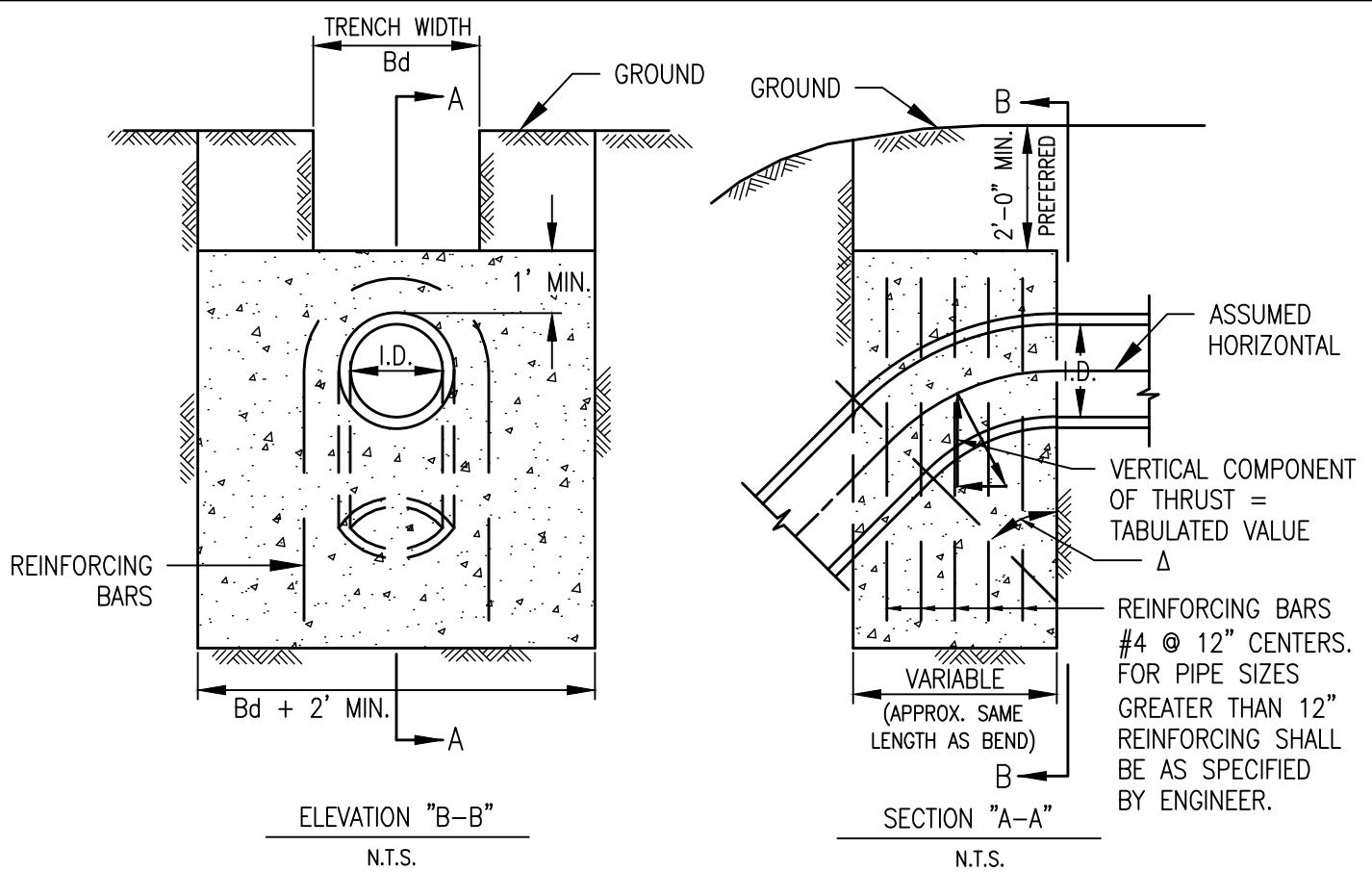
I.D. (IN.)	THRUST (TONS)	C (FT.)	EARTH		ROCK	
			A (FT.)	VOL. (C.Y.)	A (FT.)	VOL. (C.Y.)
4,6,8	5.1	1.5	2.5	0.3	2.0	0.2
10,12	11.3	1.5	3.5	0.6	2.5	0.3
16,18	25.5	2.0	5.5	1.6	4.0	0.9
20	31.5	2.0	6.0	1.9	4.0	0.9
24	45.2	2.5	7.0	3.1	5.0	1.7
30	53.0	3.0	7.5	4.1	5.5	2.4
36	76.3	4.0	9.0	7.3	6.5	4.2
42	104.0	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

SEPTEMBER 2022



TOWN OF WESTLAKE  
1500 SOLANA BOULEVARD  
BLDG. 7, SUITE 7200  
WESTLAKE, TEXAS 76262

HORIZONTAL  
THRUST BLOCK  
W-04



REFER TO  
STD. DETAIL W-06  
FOR GENERAL NOTES

$\Delta$ →	11.25°		22.50°		30°		45°		67.50°		90°		← $\Delta$
I.D. (IN.)	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

SEPTEMBER 2022



TOWN OF WESTLAKE  
1500 SOLANA BOULEVARD  
BLDG. 7, SUITE 7200  
WESTLAKE, TEXAS 76262

VERTICAL  
THRUST BLOCK  
AT PIPE BEND  
W-05

GENERAL NOTES FOR ALL THRUST BLOCKS:

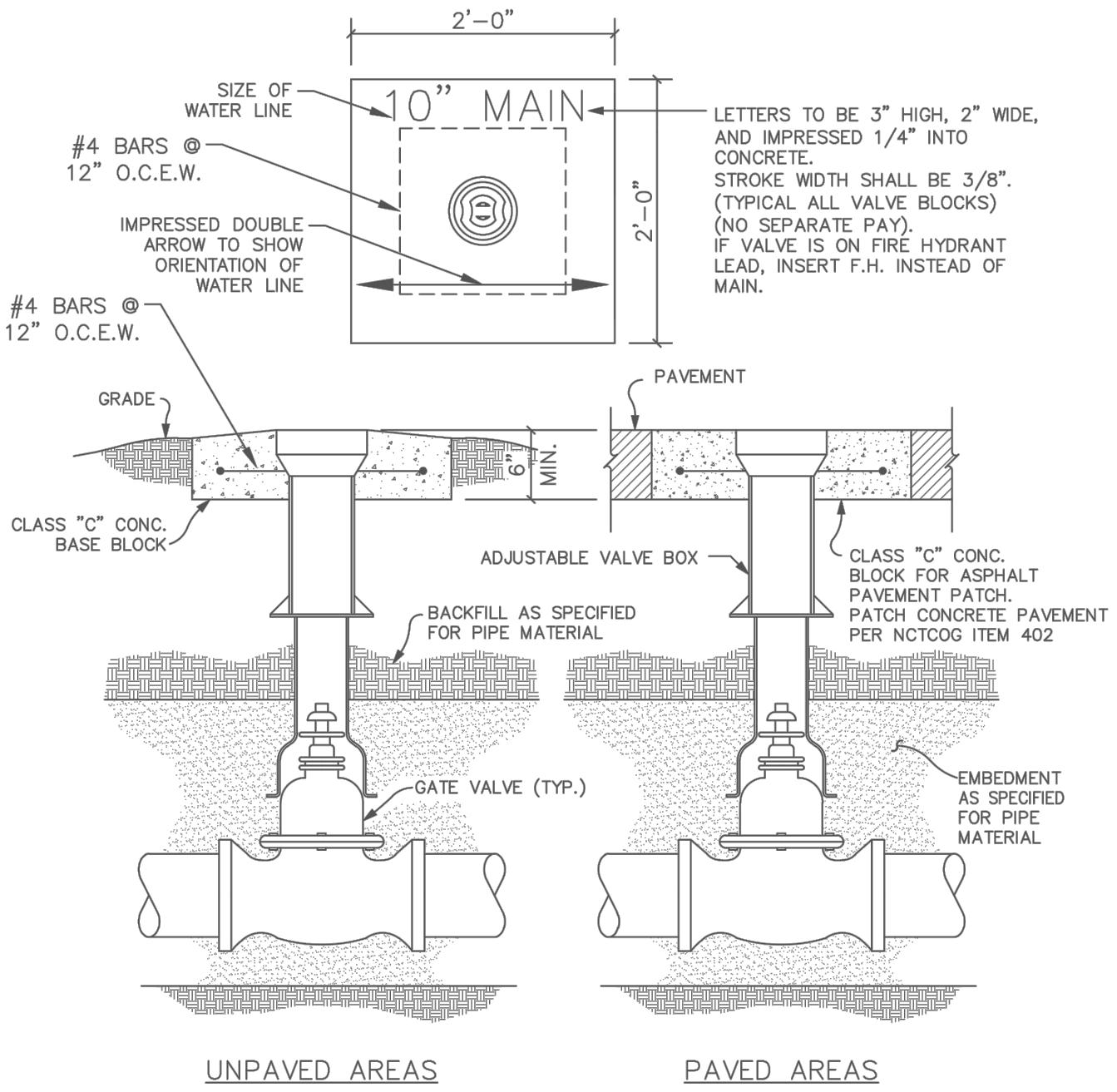
1. CONCRETE FOR BLOCKING SHALL BE CLASS "B".
2. ALL CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200 PSI FOR DUCTILE IRON, P.V.C., AND 150 PSI FOR CONCRETE PIPE.
3. VOLUMES OF THRUST BLOCKS ARE NET VOLUMES OF CONCRETE TO BE FURNISHED. THE CORRESPONDING WEIGHT OF THE CONCRETE (CLASS "B") IS EQUAL TO 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 BLOCK AGAINST UNDISTURBED EARTH.
6. 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.
7. THE SOIL BEARING PRESSURES ARE BASED ON 1000 LBS./S.F. IN SOIL AND 2000 LBS./S.F. IN ROCK.
8. USE 8 MIL POLYETHYLENE WRAP OR EQUAL BETWEEN CONCRETE AND BEND, TEE, OR PLUG TO PREVENT THE CONCRETE FROM STICKING TO IT.
9. CONCRETE SHALL NOT EXTEND BEYOND JOINTS.

SEPTEMBER 2022



TOWN OF WESTLAKE  
1500 SOLANA BOULEVARD  
BLDG. 7, SUITE 7200  
WESTLAKE, TEXAS 76262

THRUST BLOCK  
GENERAL  
NOTES  
W-06

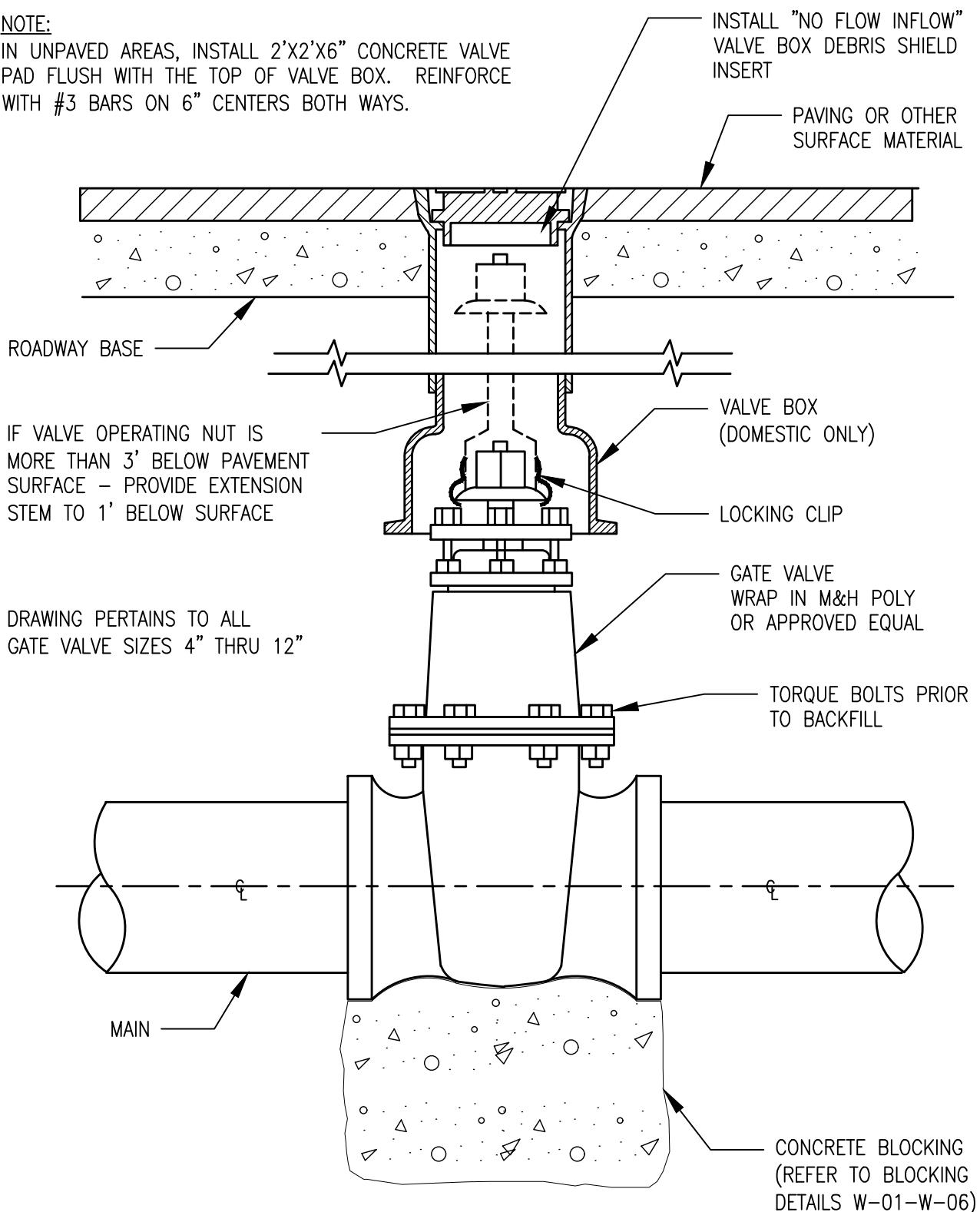


#### NOTES:

1. THE VALVE AND JOINT ASSEMBLIES SHALL BE WRAPPED IN POLYETHYLENE ACCORDING TO AWWA C105.
2. THE JOINT TYPE SHALL BE MECHANICAL JOINT UNLESS OTHERWISE SPECIFIED IN THE PLANS.
3. GATE VALVE SHALL BE RESILIENT SEAT TYPE WITH A NON RISING STEM AND A 2-INCH SQUARE OPERATOR. RESILIENT SEAT GATE VALVE SHALL CONFORM TO AWWA C509.
4. A PERMANENTLY ATTACHED VALVE EXTENSION STEM SHALL BE REQUIRED FOR ANY VALVE WITH AN OPERATING NUT LOCATED IN EXCESS OF 4 FEET BELOW THE TOP OF VALVE BOX. THIS EXTENSION SHALL BE SUFFICIENT LENGTH TO ENSURE THAT ITS TOP IS WITHIN 18" - 24" OF VALVE BOX LID.
5. 16" AND LARGER GATE VALVES REQUIRE CONCRETE BLOCK UNDER THE VALVE BODY.
6. ALL VALVE COVERS SHALL BE PAINTED BLUE.
7. A "V" SHALL BE SAW CUT IN THE CURB AT ALL VALVE LOCATIONS.

NOTE:

IN UNPAVED AREAS, INSTALL 2'X2'X6" 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.

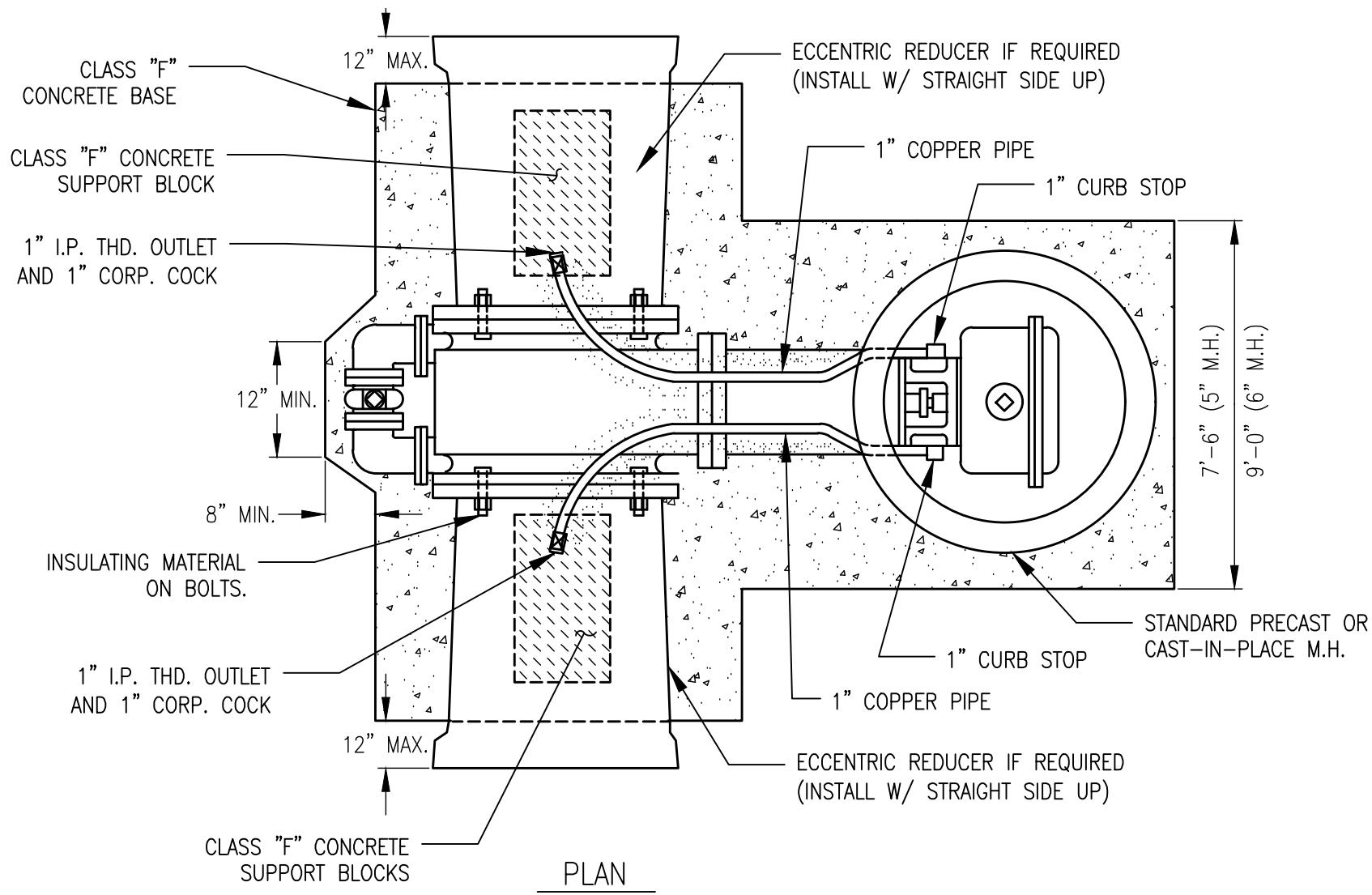
SEPTEMBER 2022



**TOWN OF WESTLAKE**  
1500 SOLANA BOULEVARD  
BLDG. 7, SUITE 7200  
WESTLAKE, TEXAS 76262

**GATE VALVE  
4" TO 12"  
W-08**

# HORIZONTAL GATE VALVE $\geq 16"$



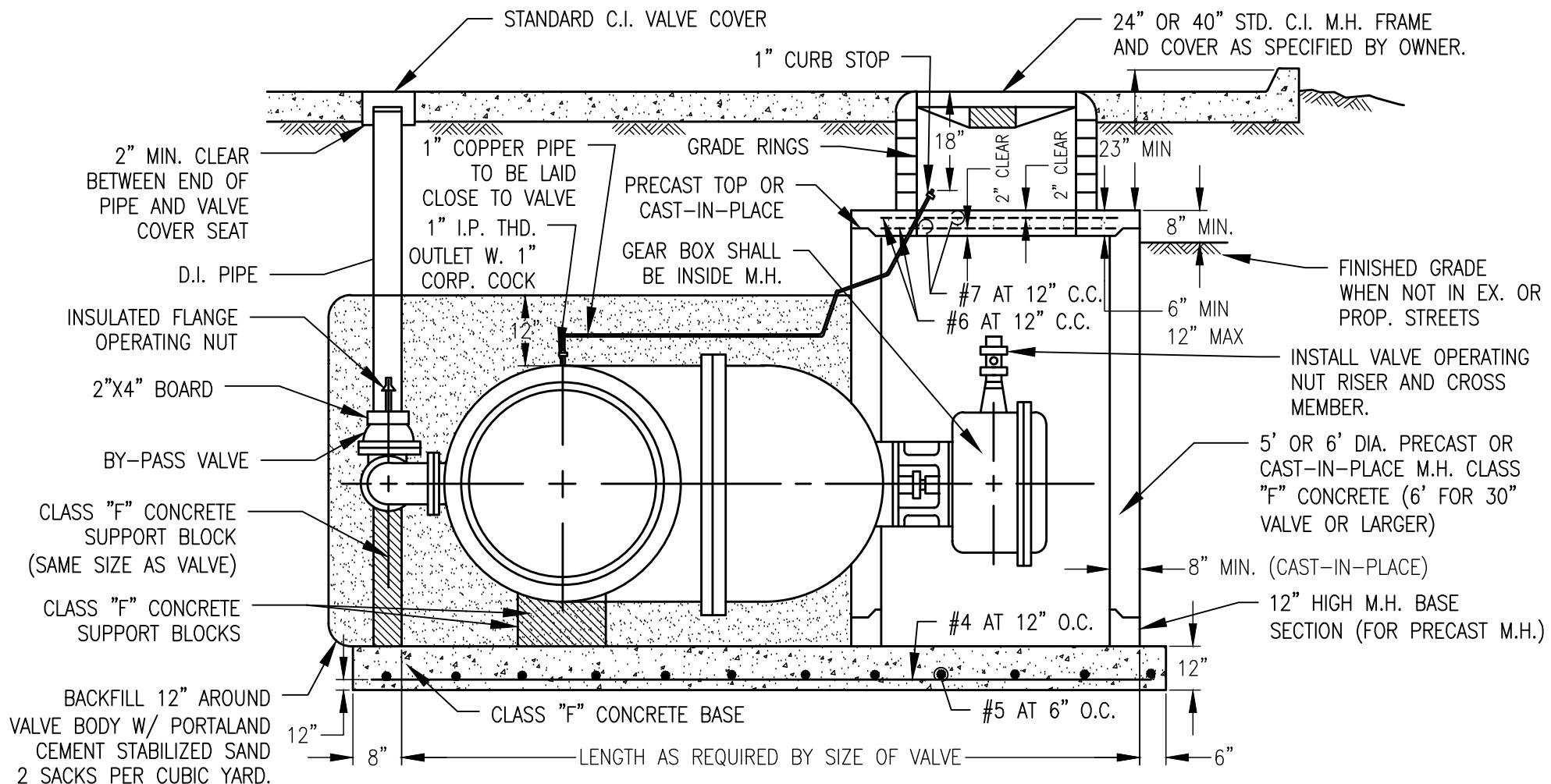
SEPTEMBER 2022



TOWN OF WESTLAKE  
1500 SOLANA BOULEVARD  
BLDG. 7, SUITE 7200  
WESTLAKE, TEXAS 76262

HORIZONTAL  
GATE VALVE  
W-09

## HORIZONTAL GATE VALVE ≥ 16"



### PROFILE

N.T.S.

SEPTEMBER 2022

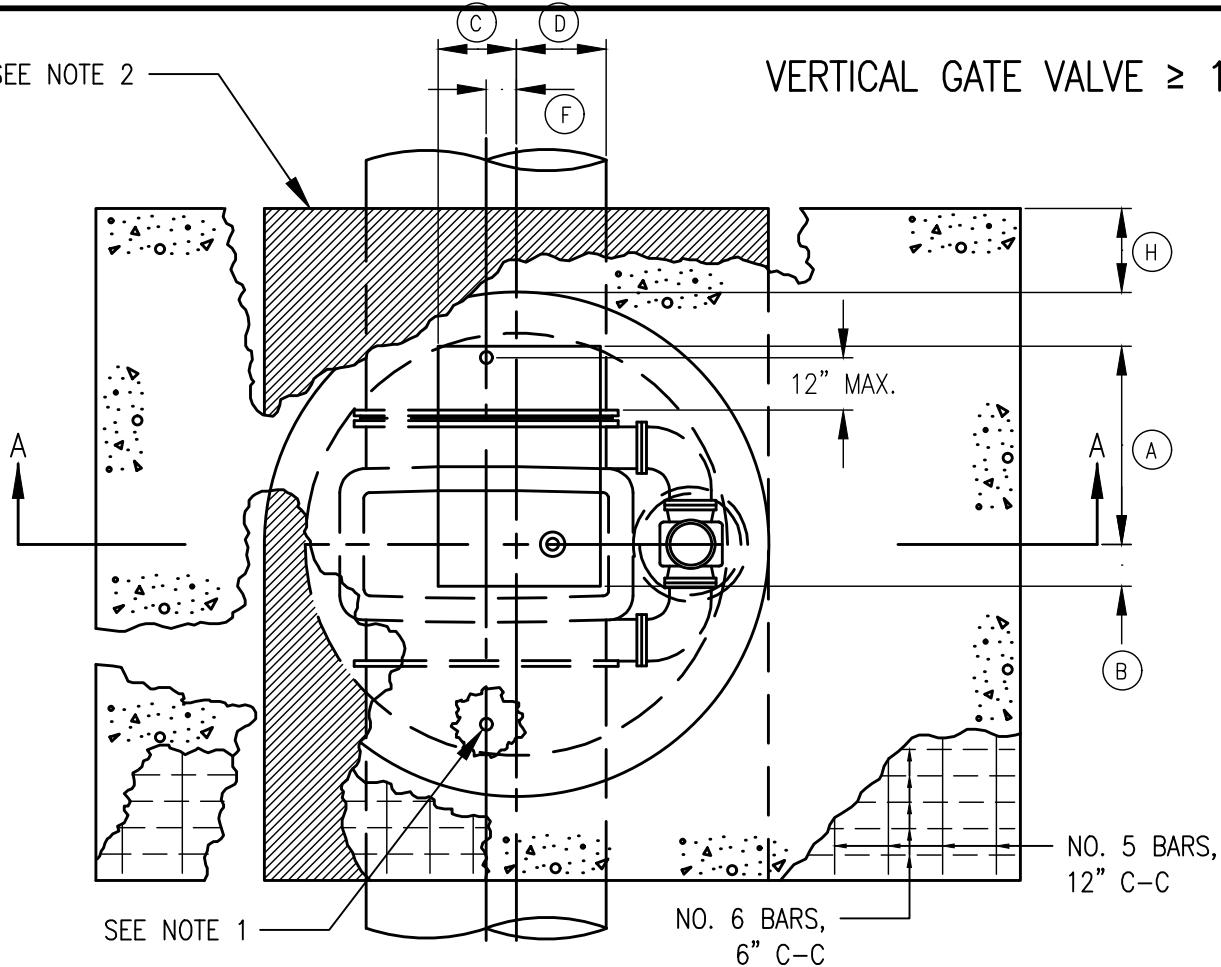


TOWN OF WESTLAKE  
1500 SOLANA BOULEVARD  
BLDG. 7, SUITE 7200  
WESTLAKE, TEXAS 76262

HORIZONTAL  
GATE VALVE  
W-10

SEE NOTE 2

VERTICAL GATE VALVE  $\geq 16''$



### PLAN VIEW

(LESS MANHOLE FRAME & COVER INSTALLATION)  
N.T.S.

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"	54"	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"	66"	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"	78"	24"	20"	36"	30"	42"
48"	36"	4"	14"	10"	121 5/8"	4"	90"	24"	26"	42"	36"	48"
54"	36"	4"	9"	15"	142 1/2"	3"	102"	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.

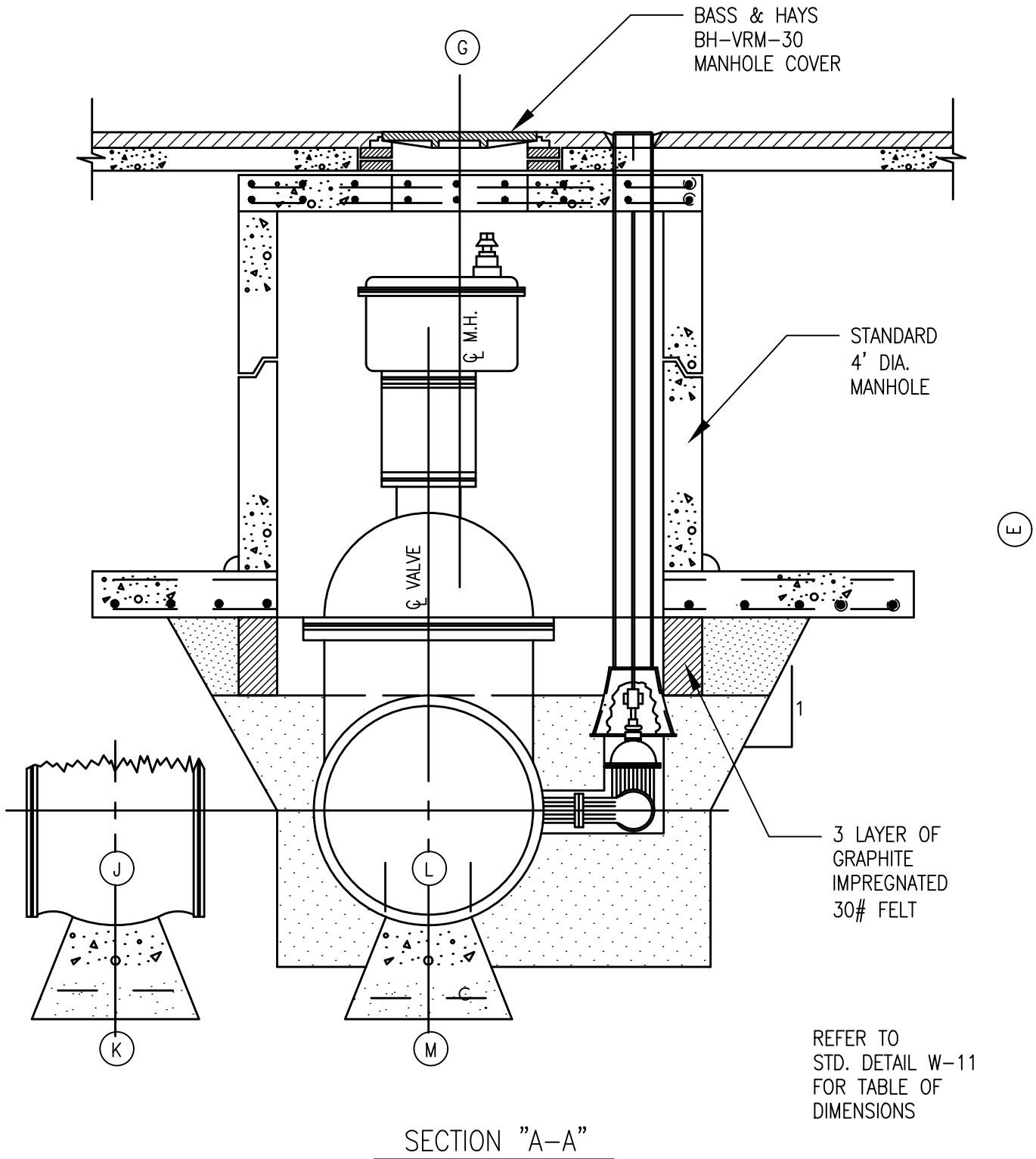
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TOWN OF WESTLAKE  
1500 SOLANA BOULEVARD  
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WESTLAKE, TEXAS 76262

VERTICAL  
GATE VALVE  
W-11

VERTICAL GATE VALVE  $\geq 16"$



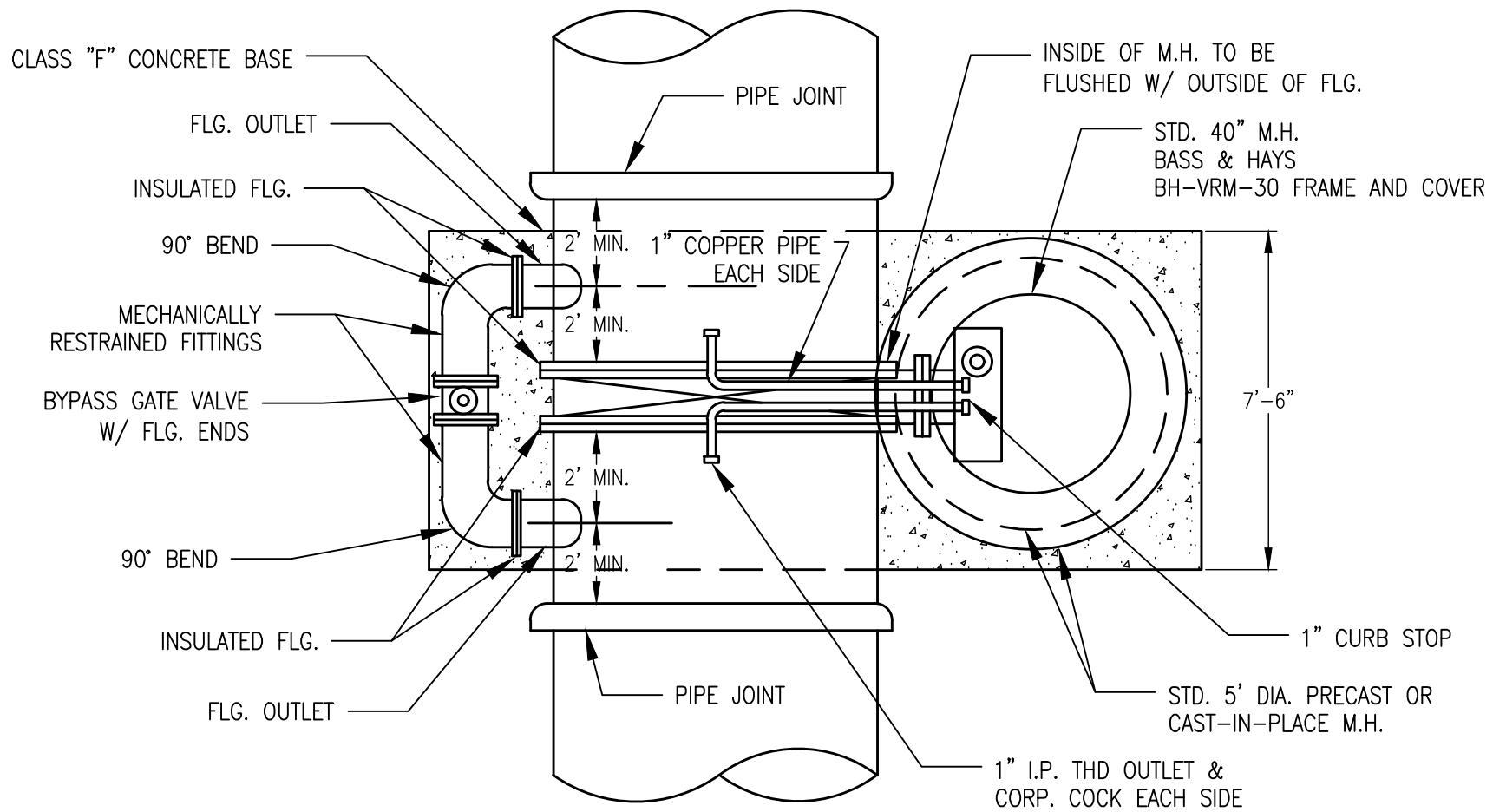
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1500 SOLANA BOULEVARD  
BLDG. 7, SUITE 7200  
WESTLAKE, TEXAS 76262

VERTICAL  
GATE VALVE  
W-12

## BUTTERFLY VALVE ≥ 48"



PLAN

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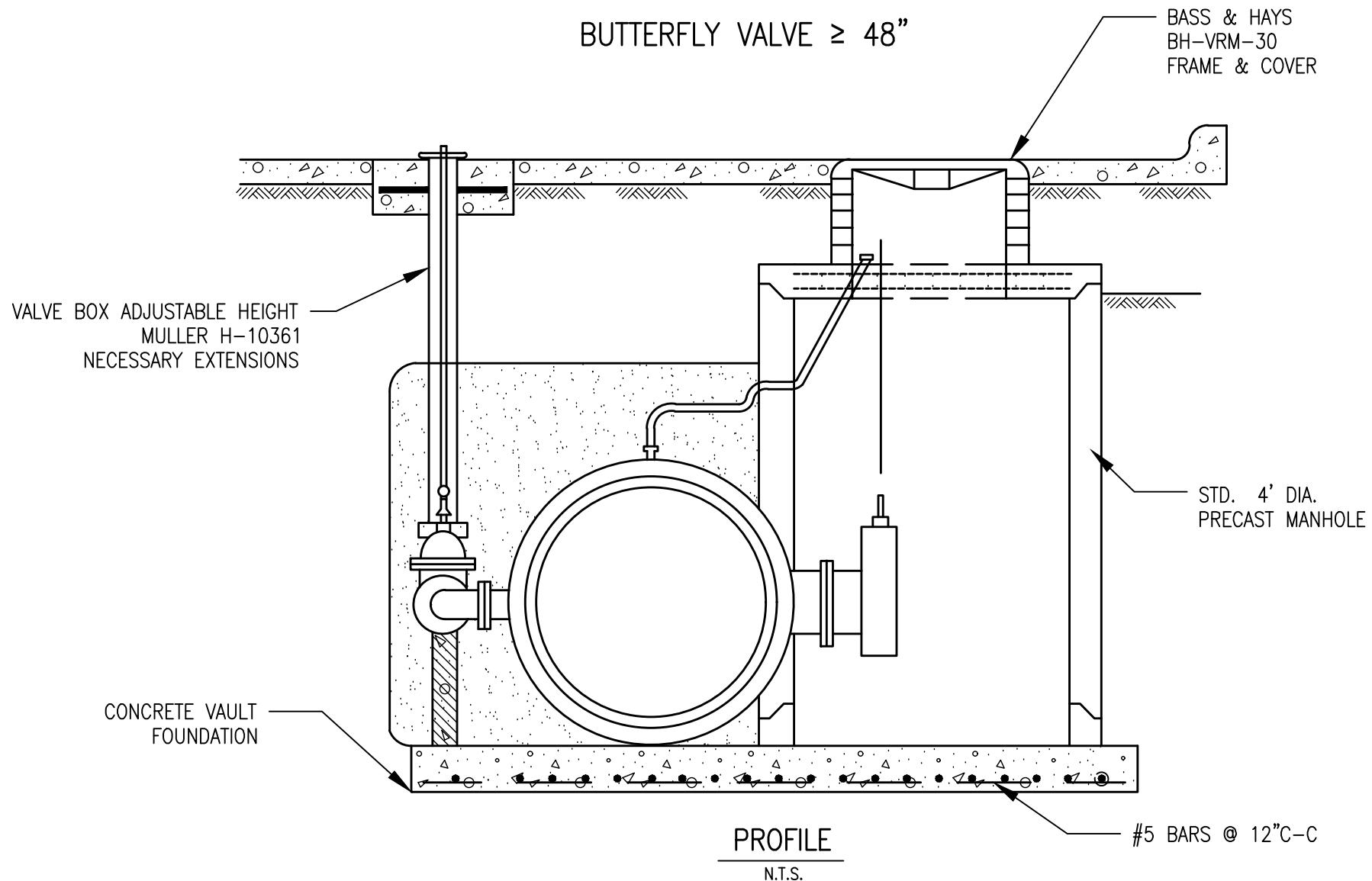
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WESTLAKE, TEXAS 76262

BUTTERFLY  
VALVE  
W-13

BUTTERFLY VALVE  $\geq$  48"



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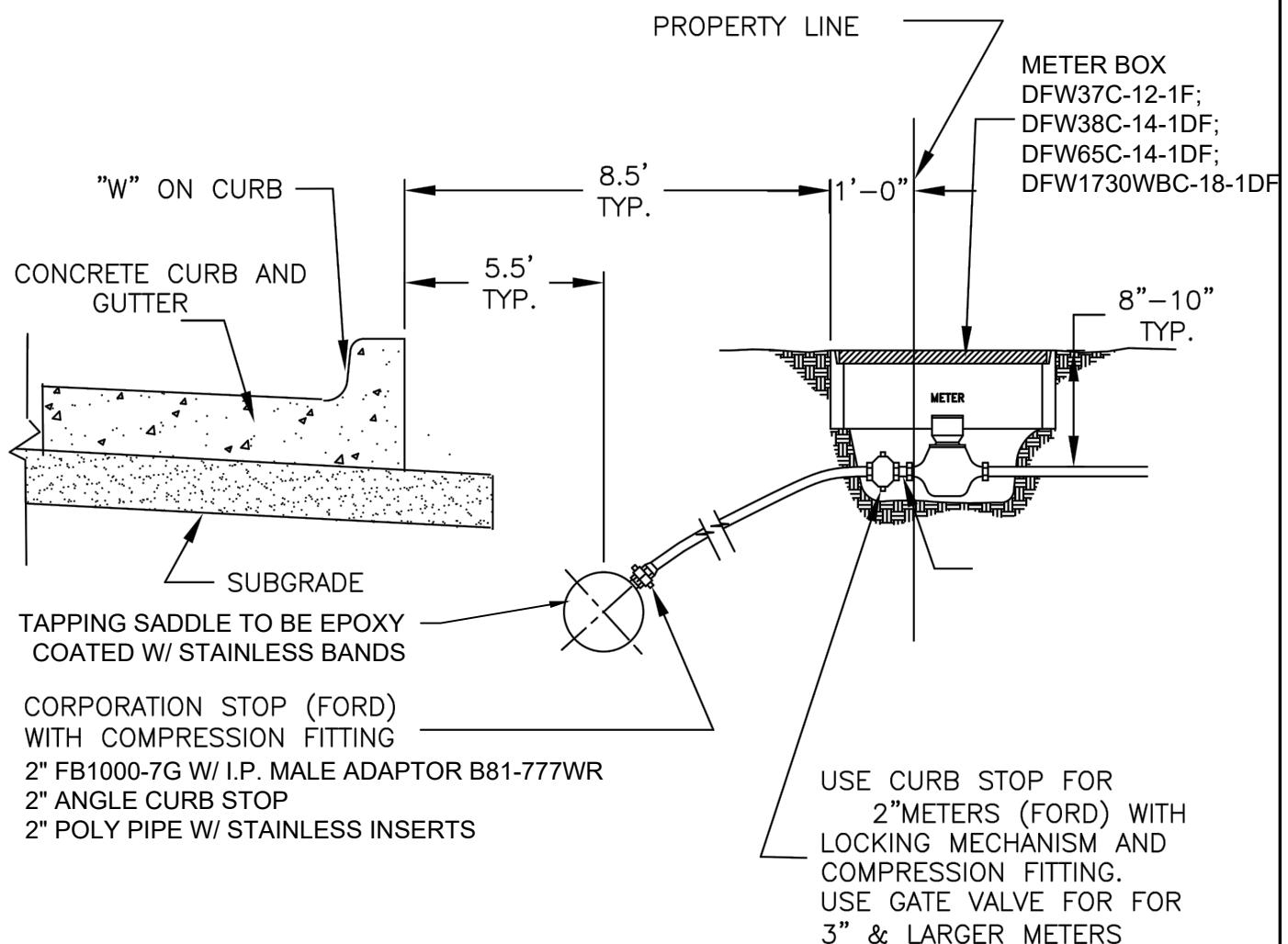


TOWN OF WESTLAKE  
1500 SOLANA BOULEVARD  
BLDG. 7, SUITE 7200  
WESTLAKE, TEXAS 76262

BUTTERFLY  
VALVE  
W-14

NOTES:

1. METER BOXES ON PROPERTY LINE, CLOSE TO SIDEWALK, BUT NO IN SIDEWALK. NOT TO BE SET IN DRIVE APPROACH.
2. SERVICE TAPS LOCATIONS SHALL BE MARKED WITH A "W" ENGRAVED (GROUND) INTO THE CURB.



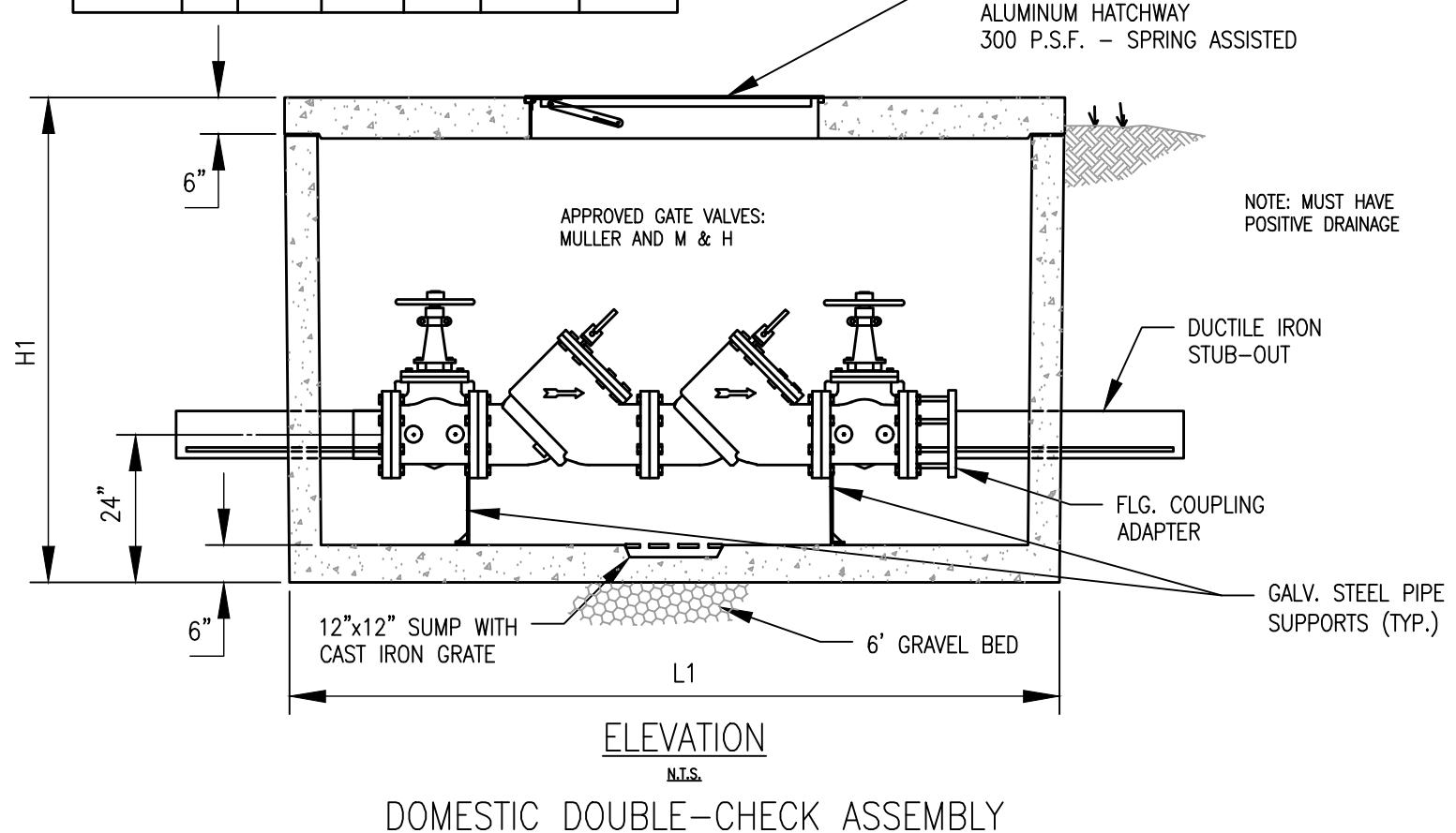
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TOWN OF WESTLAKE  
1500 SOLANA BOULEVARD  
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WESTLAKE, TEXAS 76262

WATER  
SERVICE  
CONNECTION  
W-15

MODEL	SIZE	L1	W1	H1	ALUM. HATCH	WEIGHT LBS
BP-MF3	3"	6'-0"	3'-6"	5'-0"	30"x36"	6,000
BP-MF4	4"	6'-0"	3'-6"	5'-0"	30"x36"	6,000
BP-MF6	6"	6'-0"	5'-0"	5'-0"	30"x48"	9,000
BP-MF8	8"	8'-8"	5'-0"	6'-6"	30"x48"	15,000
BP-MF10	10"	9'-0"	6'-0"	6'-6"	30"x48"	18,000



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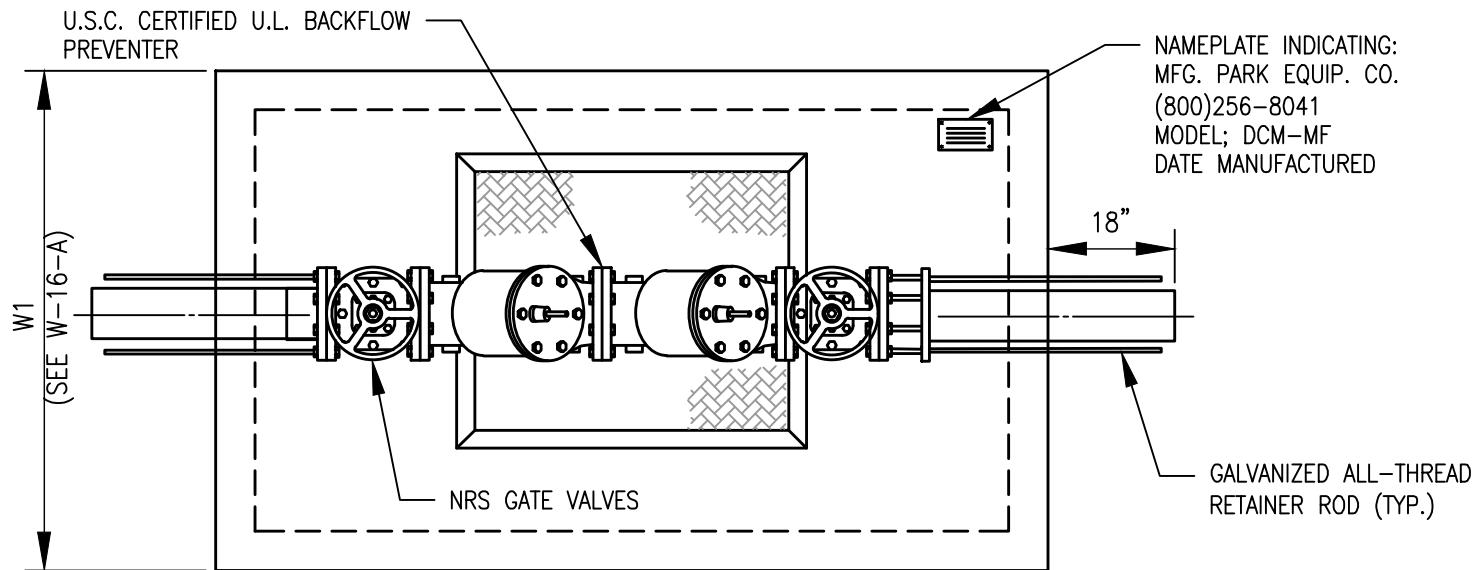


TOWN OF WESTLAKE  
1500 SOLANA BOULEVARD  
BLDG. 7, SUITE 7200  
WESTLAKE, TEXAS 76262

LARGE WATER  
SERVICE  
W-16-A

GENERAL NOTES:

1. ALL BACKFLOW PREVENTER VAULTS SHALL BE PRECAST AND DELIVERED AND DELIVERED WITH ALL INTERNAL PIPING AND PARTS COMPLETE.
2. ALL PIPE MUST BE DUCTILE IRON & ALL FITTINGS MUST BE FLANGED IN VAULT.
3. CONCRETE SHALL BE CLASS "F" WITH DESIGN STRENGTH OF 4200 PSI @ 28 DAYS (702.4.2). UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.
4. GRADE 60 REINFORCED, STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.
5. 1/4" ALUMINUM DIAMOND PLATE COVER WITH EXTRUDED ALUMINUM FRAME. HATCH TO BE FURNISHED WITH STAINLESS STEEL SNAP LOCK & STAINLESS HINGES.
6. BACKFLOW ASSEMBLY SHALL BE FACTORY ASSEMBLED IN VAULT & HYDROSTATICALLY TESTED PRIOR TO DELIVERY.
7. MODEL NUMBERS ARE FOR PARK EQUIPMENT COMPANY, MODELS ARE DMCBP-MF (FIRE SERVICE) OR BP-M (DOMESTIC). UNITS BY OTHER MANUFACTURES MUST BE SUBMITTED TO BE APPROVED AS EQUALS.



PLAN VIEW

N.T.S.

DOMESTIC DOUBLE-CHECK ASSEMBLY

SEPTEMBER 2022



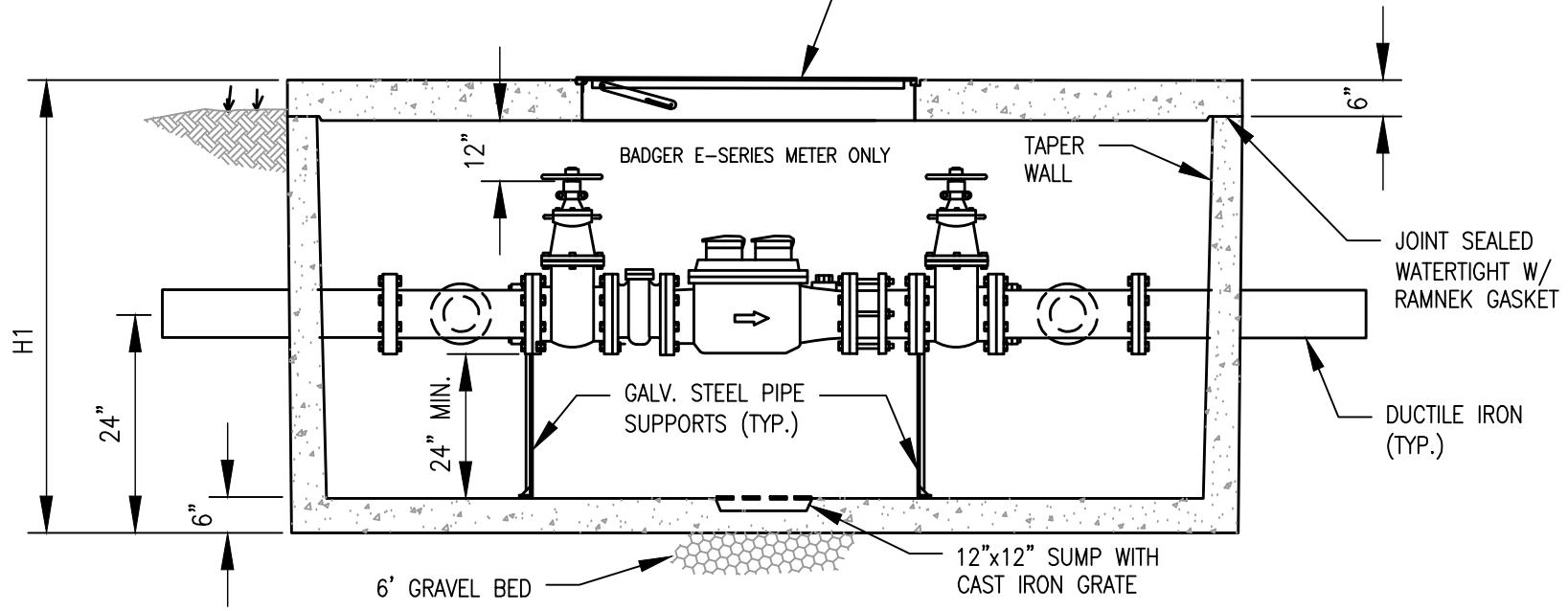
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1500 SOLANA BOULEVARD  
BLDG. 7, SUITE 7200  
WESTLAKE, TEXAS 76262

LARGE WATER  
SERVICE  
W-16-B

MODEL	SIZE	BY PASS	L1	W1	H1	WEIGHT LBS
DMC-MF3	3"	3"	8'-8"	5'-0"	5'-0"	14,000
DMC-MF4	4"	4"	8'-8"	5'-0"	5'-0"	14,000
DMC-MF6	6"	6"	11'-0"	6'-0"	5'-0"	19,000

NOTE: MUST HAVE POSITIVE DRAINAGE  
OR INSTALL A SUMP PUMP

- (CENTERED OF METER)  
36" x 48" ALUM. HATCHWAY  
300 P.S.F. - SPRING ASSISTED



APPROVED GATE VALVES:  
MULLER AND M & H

## ELEVATION

N.T.S.

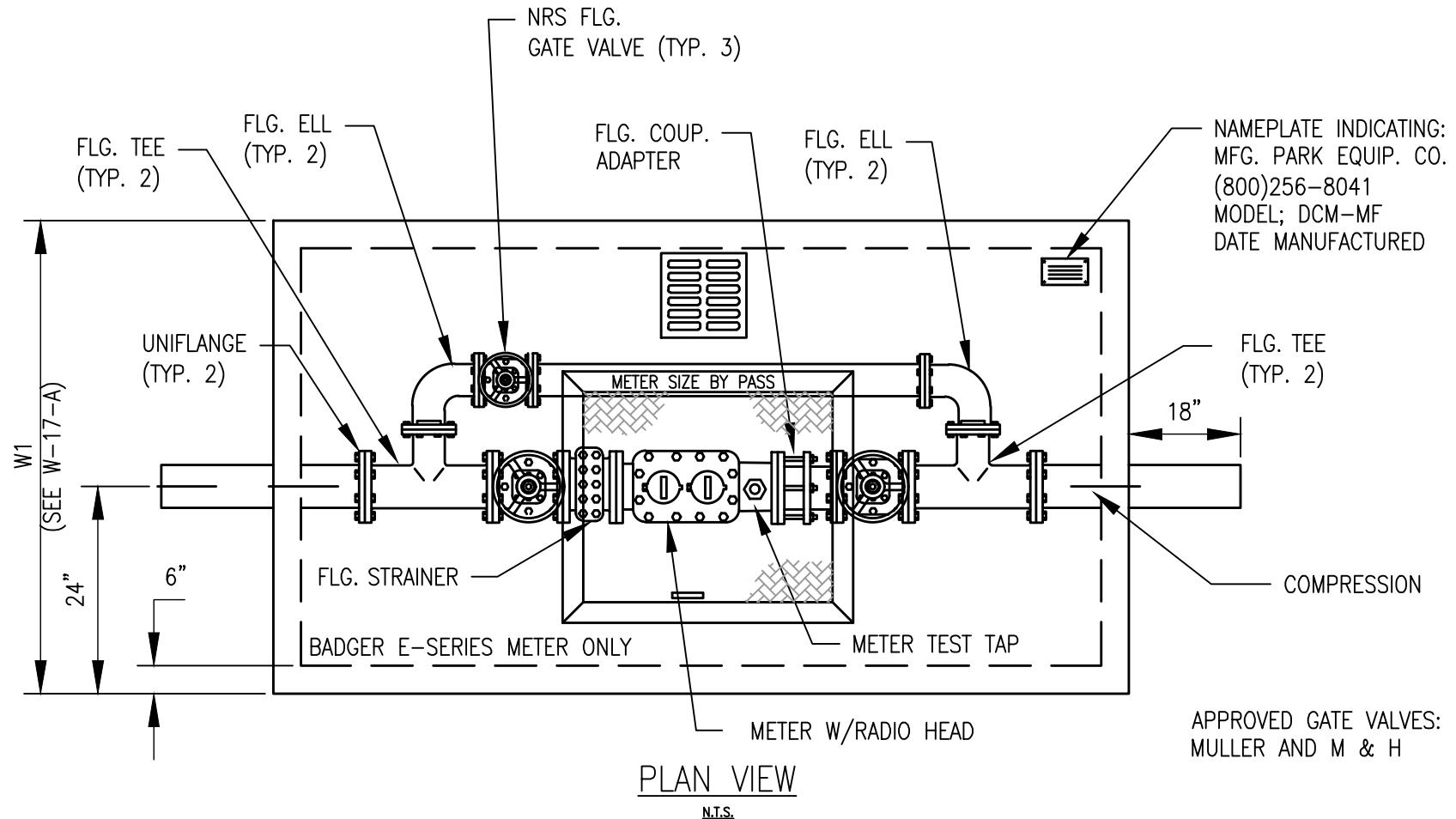
## 3", 4" & 6" DOMESTIC METER

SFPTFMBFR 2022



1500 SOLANA BOULEVARD  
BLDG. 7, SUITE 7200  
WESTLAKE, TEXAS 76262

LARGE WATER  
SERVICE  
W-17-A



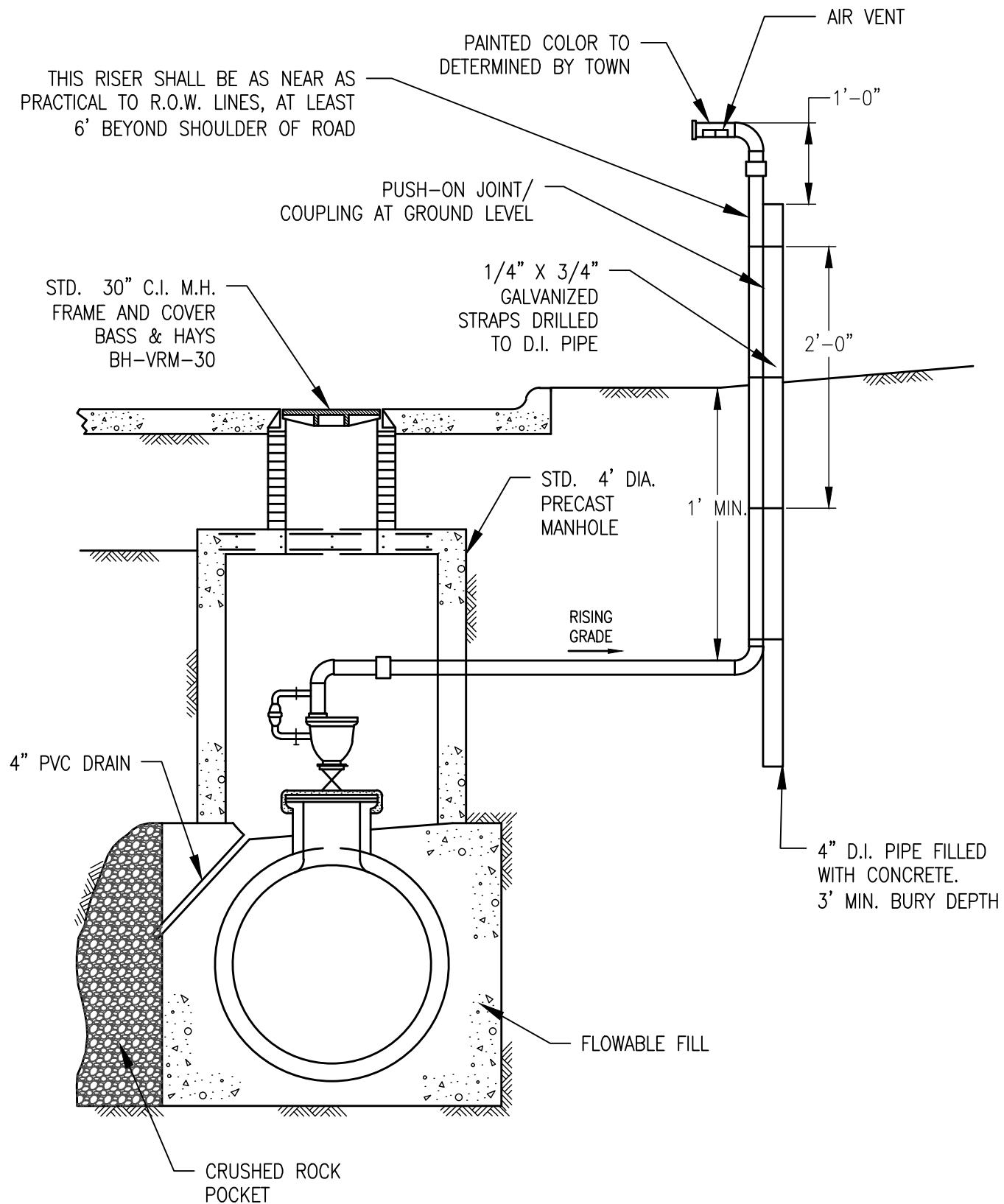
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1500 SOLANA BOULEVARD  
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LARGE WATER  
SERVICE  
W-17-B

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



TYPE "2" AIR VALVE

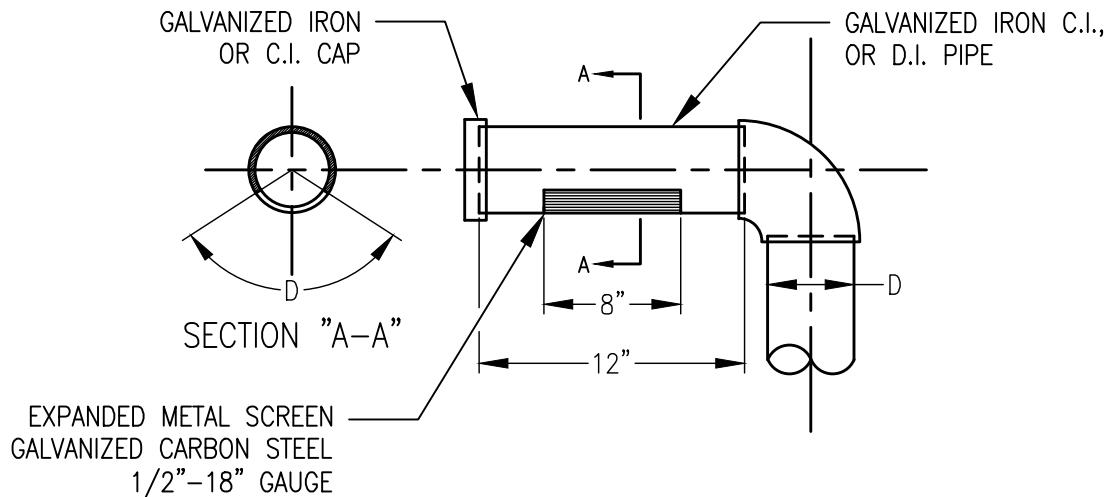
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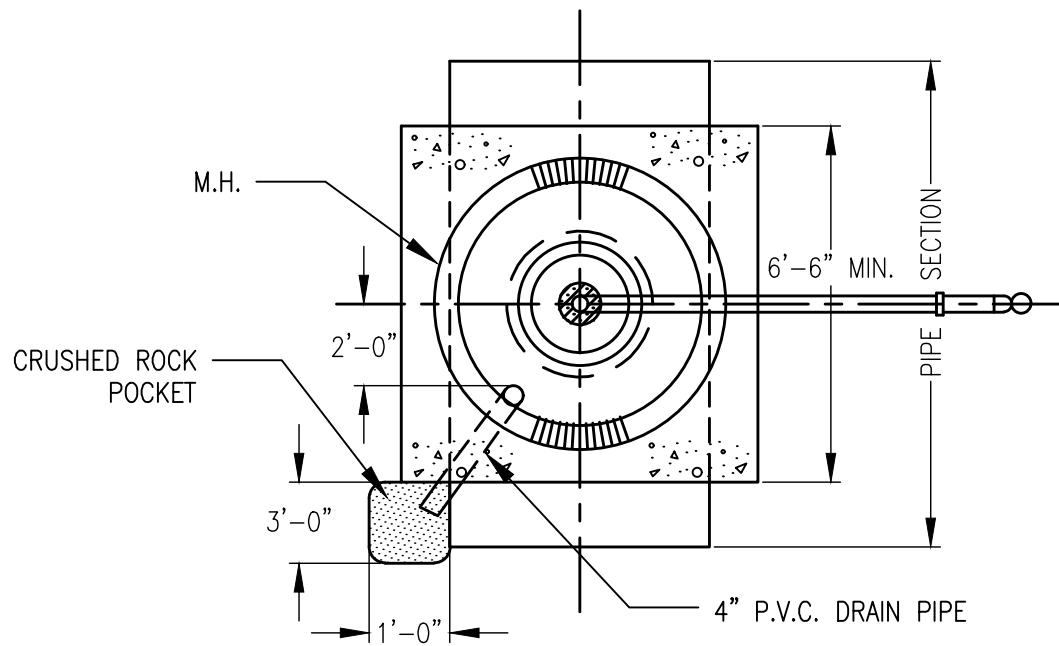
TYPE "2"  
AIR VALVE  
W-18



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

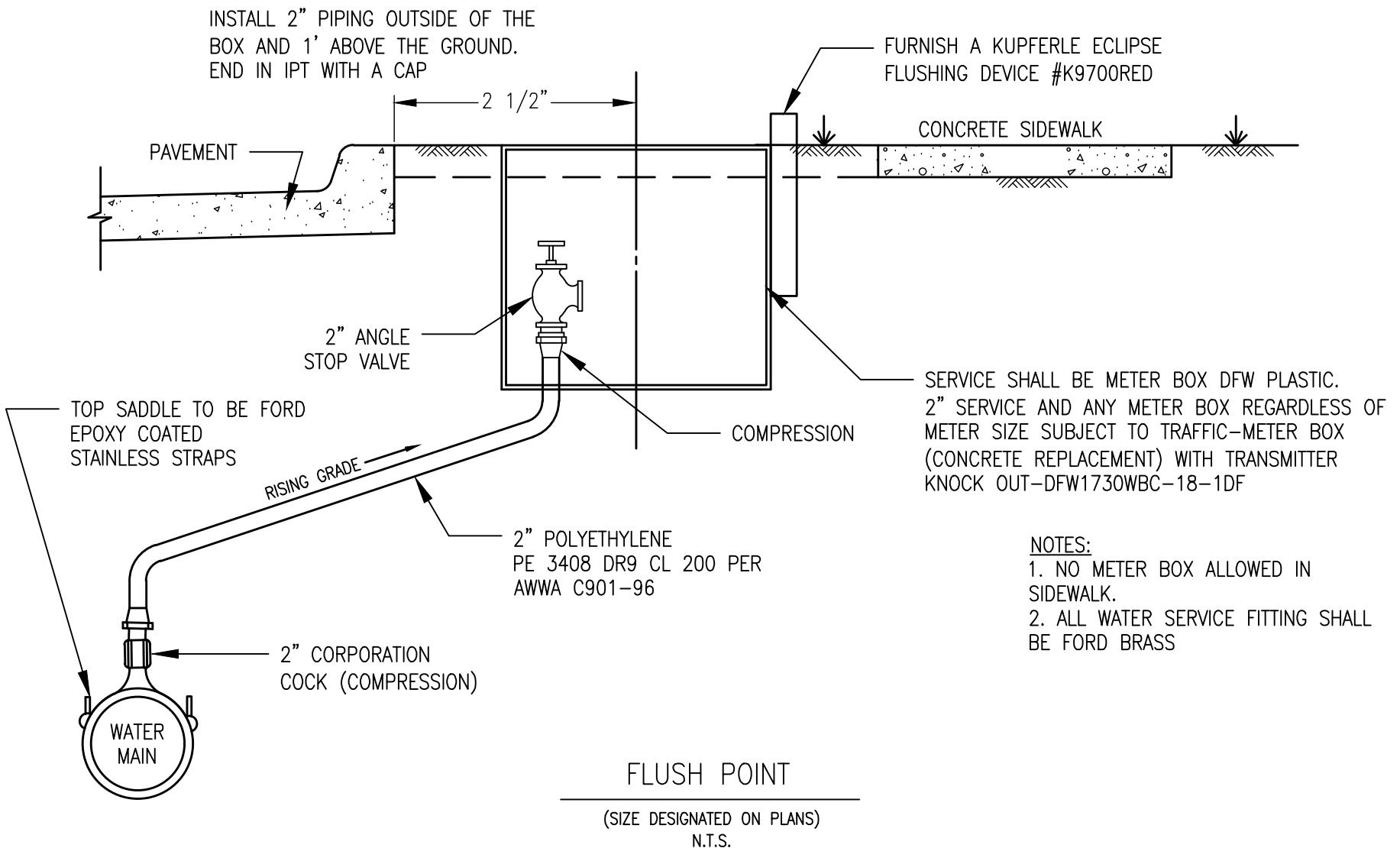
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AIR RELEASE  
VALVE  
TYPE "2"  
W-19

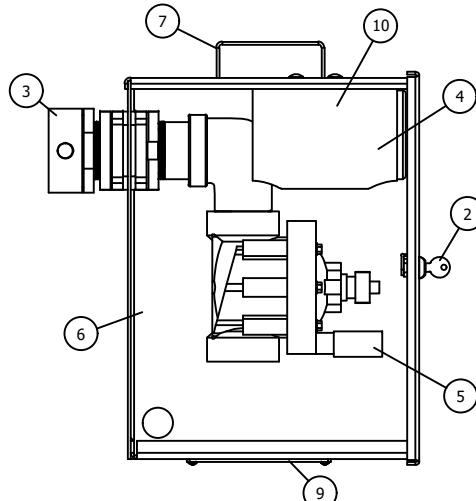


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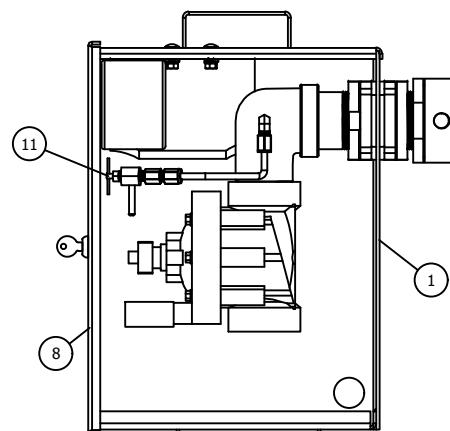
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FLUSH POINT  
INSTALLATION  
TYPE "1"  
W-20



1 STANDARD FLUSHER

Scale: 1-1/2"=1'-0"



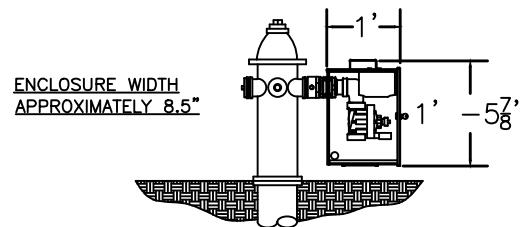
2 FLUSHER WITH SAMPLING

Scale: 1-1/2"=1'-0"

A 2-1/2" NST SWIVEL CONNECTION SHALL LEAD INTO A 2" AUTOMATIC FLUSHING VALVE. THE AUTOMATIC FLUSHING VALVE SHALL CONTROL THE FLOW OF WATER THROUGH THE HYDRANT AND ITS DIAPHRAGM WITH THE EXTENSION AND RETRACTION OF A DC LATCHING SOLENOID AND HAVE A 220 PSI RATING. EACH UNIT SHALL BE FURNISHED WITH A STAND-ALONE VALVE CONTROLLER. THE VALVE CONTROLLER WILL NOT REQUIRE A SECOND HAND-HELD DEVICE FOR PROGRAMMING. CONTROLLER MUST HAVE MINIMUM OF 12 POSSIBLE FLUSHING CYCLES PER DAY. CONTROLLER SHALL BE SUBMERSIBLE TO 12 FEET, OPERATE WITH A 9 VOLT BATTERY, AND HAVE RESIN-SEALED ELECTRICAL COMPONENTS. THE SOLENOID SHALL HAVE NO LOOSE PARTS WHEN REMOVED FROM THE VALVE. ALL COMPONENTS SHALL BE HOUSED IN A LOCKABLE POWDER COATED RED ALUMINUM ENCLOSURE, WITH 3/4" PERFORATIONS IN THE FLOOR TO DIFFUSE DISCHARGED WATER.

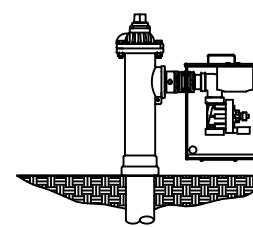
UNIT MODEL # SHALL BE 9700 AS MANUFACTURED BY KUPFERLE FOUNDRY COMPAY, ST. LOUIS MO, OR APPROVED EQUAL.

ITEM	ITEM / DESCRIPTION	NOTES
1	POWDER COATED ALUMINUM ENCLOSURE	
2	KEY & LOCK	
3	2-1/2" NST BRASS SWIVEL	
4	VALVE CONTROLLER	
5	DC LATCHING SOLENOID	
6	2" ICV VALVE	
7	HANDLE	
8	ACCESS DOOR	
9	REMOVABLE PLATE	
10	STANDARD CONTROLLER HOLDER	
11	SAMPLING VALVE	OPTIONAL
12	WATER DIFFUSER FLOOR	NOT SHOWN



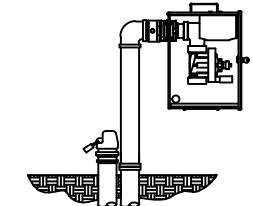
A FIRE HYDRANT

Scale: 3/8"=1'-0"



B #2 POST HYDRANT

Scale: 3/8"=1'-0"



C #77 BLOW-OFF

Scale: 3/8"=1'-0"

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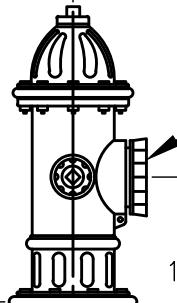
AUTOMATIC  
FLUSHING  
DEVICE  
W-21

3'X3' CONC.  
PAD CLASS "A"  
CONCRETE, IN  
UNPAVED AREAS  
CONSTRUCTED  
AT GROUND  
LEVEL OR NO  
MORE THAN  
12" BELOW

2" MIN.  
6" MAX.

3'-0" MIN.

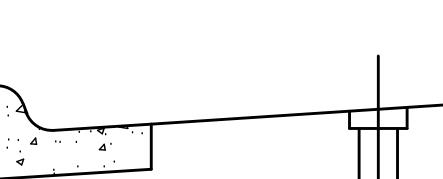
3'-0" MIN.  
8'-0" MAX.



NOTE:  
DEPTH OF HYDRANT LEAD AND  
BURY OF HYDRANT SHALL  
CONFORM TO COVER OF PIPE AS  
SPECIFIED

HYDRA-STORZ QUICK CONNECT  
HYDRANT SYSTEM OR APPROVED  
EQUAL

FINISH GRADE  
AT HYDRANT



MIN. 7 CUBIC FEET OF  
WASHED GRAVEL OR  
CLEAN STONE FILL

M&H VALVE

MJ RESTRAINTS WITH  
CORE BLUE BOLTS

PRECAST CONCRETE  
BLOCK BRICK  
BASE SLAB

POURED CONCRETE THRUST BLOCK  
MUST NOT BLOCK WEEP HOLE

#### NOTES

1. FIRE HYDRANTS SHALL NOT BE INSTALLED IN EXISTING OR PROPOSED SIDEWALKS.
2. FIRE HYDRANT SHALL BE LOCATED OUTSIDE OF CURB RETURNS AND A MINIMUM OF 4' FROM DRIVEWAYS APPROACH RADIUS.
3. OUT-OF-SERVICE FIRE HYDRANTS SHALL BE COMPLETELY COVERED WITH BLACK PLASTIC.
4. FIRE HYDRANT BURY DEPTH SHALL BE NO MORE THAN 6'. OFFSETS, BENDS, AND FITTINGS SHALL BE USED AS NEEDED TO ACHIEVE BURY DEPTH OF 4' TO 6'.
5. FOR BURY DEPTHS BETWEEN 4' AND 6' GRADELOCK, DUCTILE IRON FITTINGS, OR EXTENSIONS SHALL BE USED FOR GRADE ADJUSTMENTS. NO MORE THAN ONE EXTENSION KIT SHALL BE USED.
6. GATE VALVE SHALL BE INSTALLED PER GATE VALVE DETAIL AND RESTRAINED TO NEAREST FITTING UNLESS OTHERWISE SHOWN ON THE PLANS.
7. FIRE HYDRANTS SHALL INDICATE MANUFACTURE DATE AND BE MANUFACTURED IN THE SAME YEAR AS INSTALLATION.
8. SERVICE LINES ON FIRE HYDRANT LEADS ARE PROHIBITED.
9. FIRE HYDRANTS SHALL BE SET ON CONCRETE SLAB PRIOR TO POURING THRUST BLOCK.

RESTRAINED JOINT  
(BEFORE VALVE)

STANDARD M&H GATE  
VALVE MJ x FLANGE

VARIABLE

P.C.

1" MIN  
F.H.

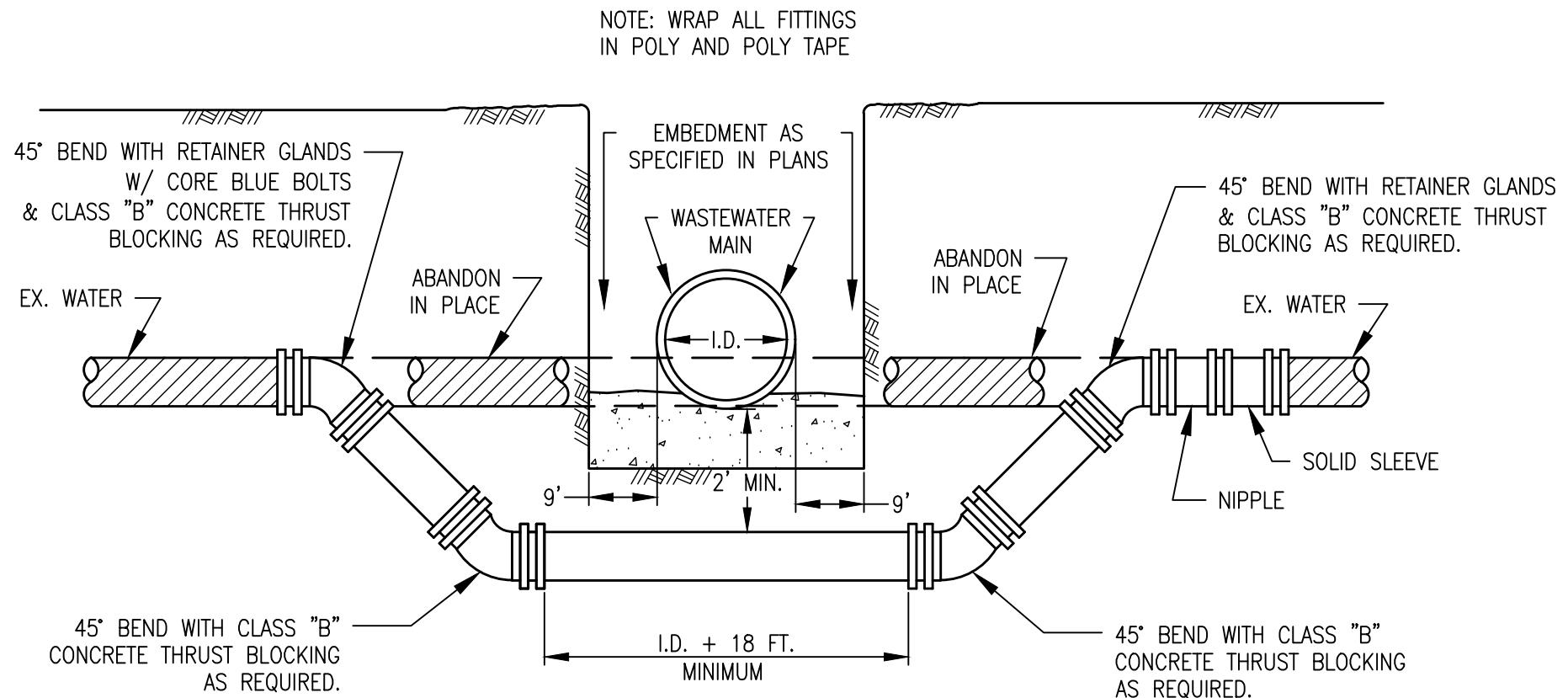
PLAN VIEW  
N.T.S.

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FIRE HYDRANT  
INSTALLATION  
W-22



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WATER MAIN  
LOWERING  
W-23