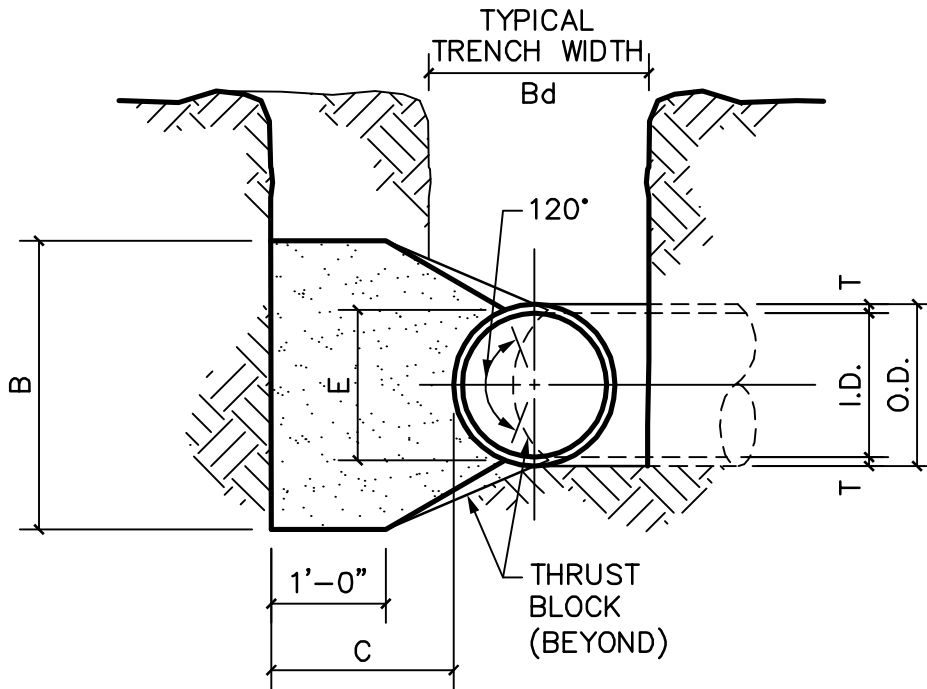


PLAN



SECTION X-X

NOTES:

1. REFER TO STANDARD DETAIL W02 AND W03 FOR TABLES OF DIMENSIONS AND QUANTITIES.
2. REFER TO STANDARD DETAIL W05 FOR GENERAL NOTES.

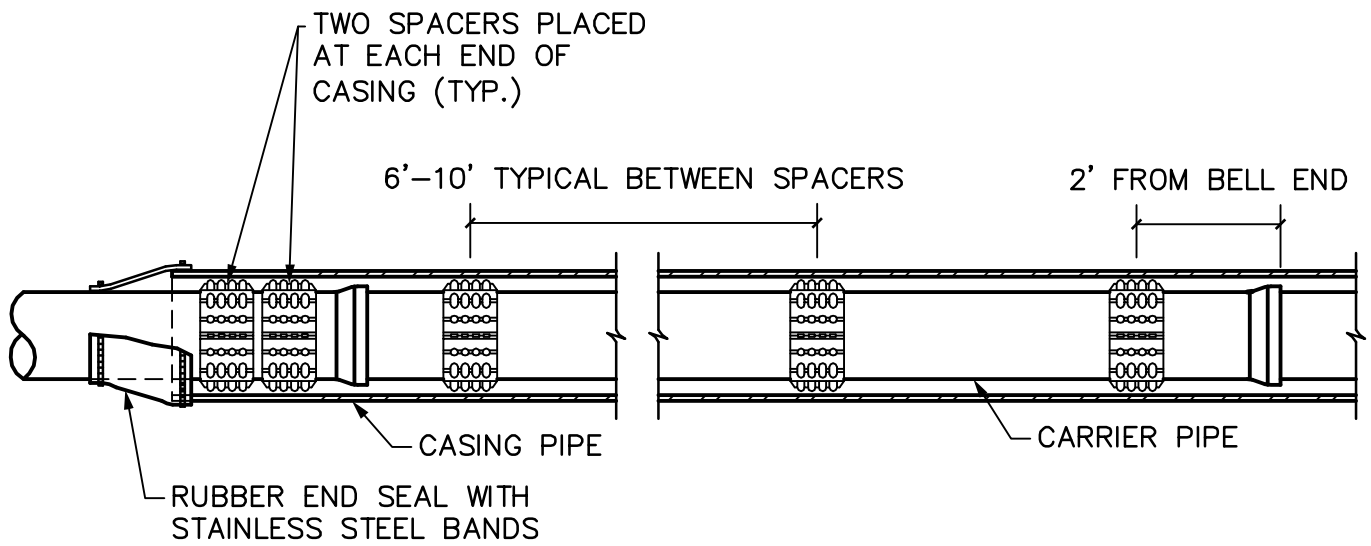


**STANDARD CONSTRUCTION DETAIL
HORIZONTAL THRUST BLOCK AT PIPE BEND
SHEET 1 OF 3**

SCALE: 3/4"=1'-0"

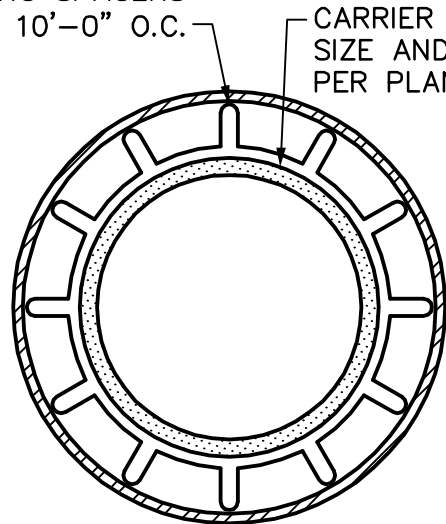
REVISED: NOV 2014

W01



CASING SPACER PROFILE

HIGH DENSITY POLYETHYLENE CASING SPACERS
 6'-0" TO 10'-0" O.C.



CASING SPACER



STANDARD CONSTRUCTION DETAIL

CASING SPACERS

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

REVISED: DEC 2014

W19

I.D. (IN.)	T (IN.)	$\Delta = 11.25^\circ$ C (IN.)	$\Delta \geq 22.50^\circ$ C (IN.)	E (IN.)
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.)	$\Delta = 11.25^\circ$							
	G (FT.)	THRUST (TONS)	EARTH			ROCK		
			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
10,12	0.6	2.2	1.5	1.5	0.1	1.0	1.5	0.1
16,18	0.8	5.0	2.0	2.5	0.3	1.5	2.0	0.2
20	0.9	6.2	2.0	3.5	0.4	1.5	3.0	0.3
24	1.1	8.9	3.0	3.5	0.5	1.5	3.0	0.3
30	1.4	10.4	3.0	3.5	0.6	2.0	3.5	0.4
36	1.7	15.0	3.5	4.5	0.9	2.0	4.0	0.5
42	1.9	20.4	4.5	5.0	1.5	2.5	5.0	0.8
48	2.2	26.6	4.5	6.0	2.0	2.5	6.0	1.1
54	2.5	33.7	6.0	6.0	3.0	3.0	6.0	1.4
60	2.7	41.6	6.0	7.0	3.8	3.0	7.0	1.8
66	3.0	50.3	6.5	8.0	5.1	3.5	8.0	2.7
72	3.3	59.9	7.5	8.0	6.3	4.0	8.0	3.3
78	3.6	70.2	8.0	9.0	8.1	4.0	9.0	3.9
84	3.8	81.5	8.5	10.0	10.3	4.5	10.0	5.3
90	4.1	93.5	9.5	10.0	12.2	5.0	10.0	6.3
96	4.4	106.4	10.0	11.0	15.0	5.0	11.0	7.4

I.D. (IN.)	$\Delta = 22.50^\circ$							
	G (FT.)	THRUST (TONS)	EARTH			ROCK		
			A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)
4,6,8	0.8	2.0	1.5	1.5	0.1	1.0	1.0	0.1
10,12	1.1	4.4	2.0	2.5	0.3	1.5	1.5	0.1
16,18	1.6	9.9	3.0	3.5	0.6	2.0	2.5	0.3
20	1.8	12.3	3.5	3.5	0.7	2.0	3.0	0.4
24	2.2	17.7	4.0	4.5	1.0	3.0	3.5	0.5
30	2.7	20.7	5.0	4.5	1.5	3.0	4.0	0.8
36	3.3	29.8	5.5	5.5	2.3	4.0	4.0	1.3
42	3.8	40.5	7.0	6.0	3.9	4.5	5.0	2.1
48	4.4	52.9	8.0	7.0	5.7	4.5	6.0	2.8
54	4.9	67.0	9.0	8.0	8.0	6.0	6.0	4.1
60	5.5	82.7	9.5	9.0	10.6	6.0	7.0	5.3
66	6.0	100.1	10.5	10.0	14.1	6.5	8.0	7.2
72	6.6	119.1	11.0	11.0	17.6	7.5	8.0	9.1
78	7.1	139.8	12.0	12.0	22.5	8.0	9.0	11.7
84	7.6	162.1	13.0	12.5	27.2	8.5	10.0	14.8
90	8.2	186.1	14.0	13.5	33.7	9.5	10.0	17.7
96	8.7	211.7	15.0	14.5	41.2	10.0	11.0	21.8



STANDARD CONSTRUCTION DETAIL
HORIZONTAL THRUST BLOCK AT PIPE BEND
SHEET 2 OF 3

SCALE: N.T.S.
REVISED: NOV 2014
W02

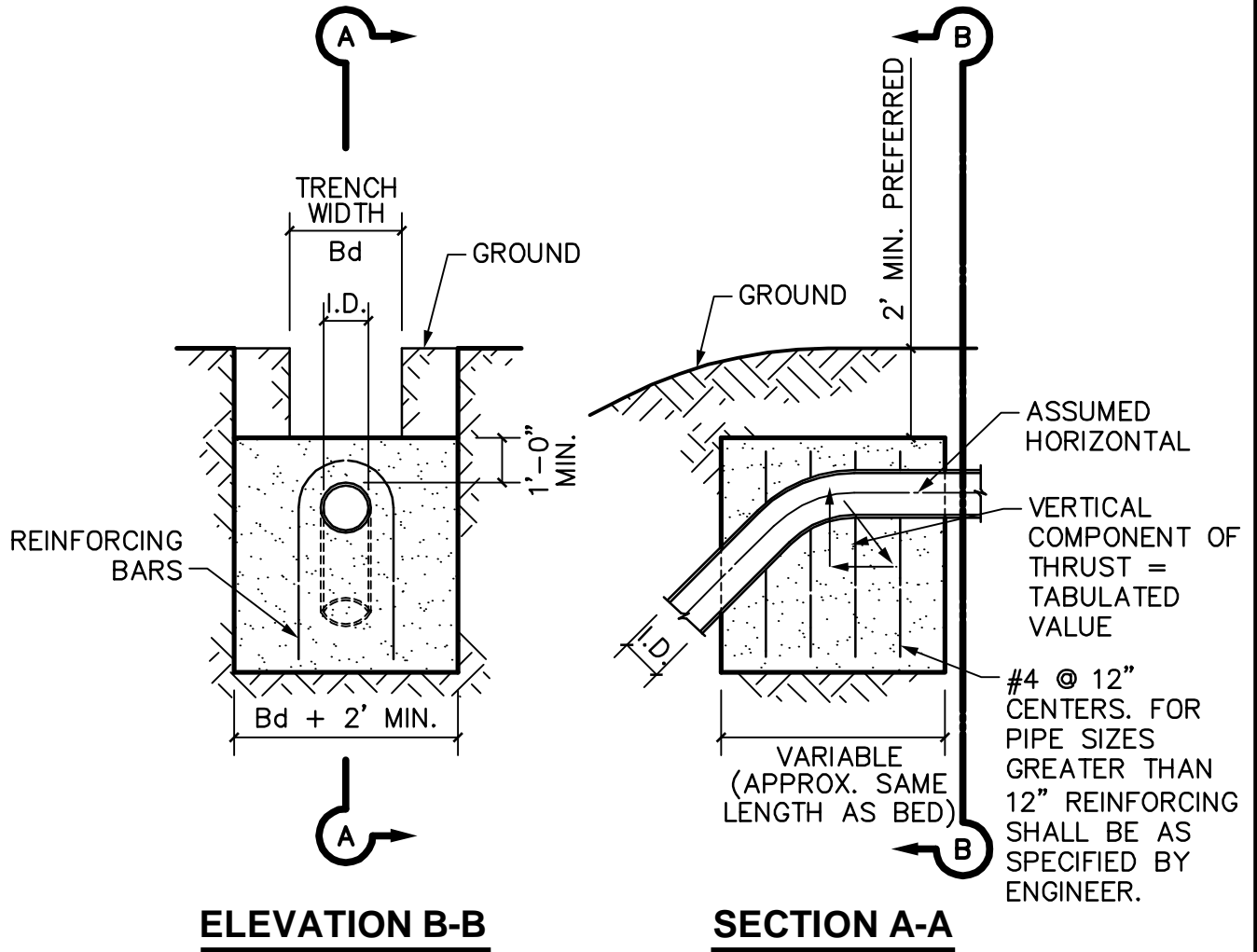
I.D. (IN.)	$\Delta = 30^\circ$									I.D. (IN.)	$\Delta = 45^\circ$								
	G (FT.)	THRUST (TONS)	EARTH			ROCK			G (FT.)		THRUST (TONS)	EARTH			ROCK				
			A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)				A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)		
4,6,8	1.0	2.6	2.0	1.5	0.2	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	158.6	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	27.00	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		



STANDARD CONSTRUCTION DETAIL
HORIZONTAL THRUST BLOCK AT PIPE BEND
SHEET 3 OF 3

SCALE: N.T.S.
 REVISED: NOV 2014
 W03



ELEVATION B-B

SECTION A-A

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

NOTE:

1. REFER TO STANDARD DETAIL W05 FOR GENERAL NOTES.



STANDARD CONSTRUCTION DETAIL
VERTICAL THRUST BLOCK AT PIPE BEND

SCALE: 1/4"=1'-0"

REVISED: NOV 2014

W04

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.
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 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. FOR STANDARD FITTINGS, CONCRETE SHALL NOT EXTEND BEYOND JOINTS.

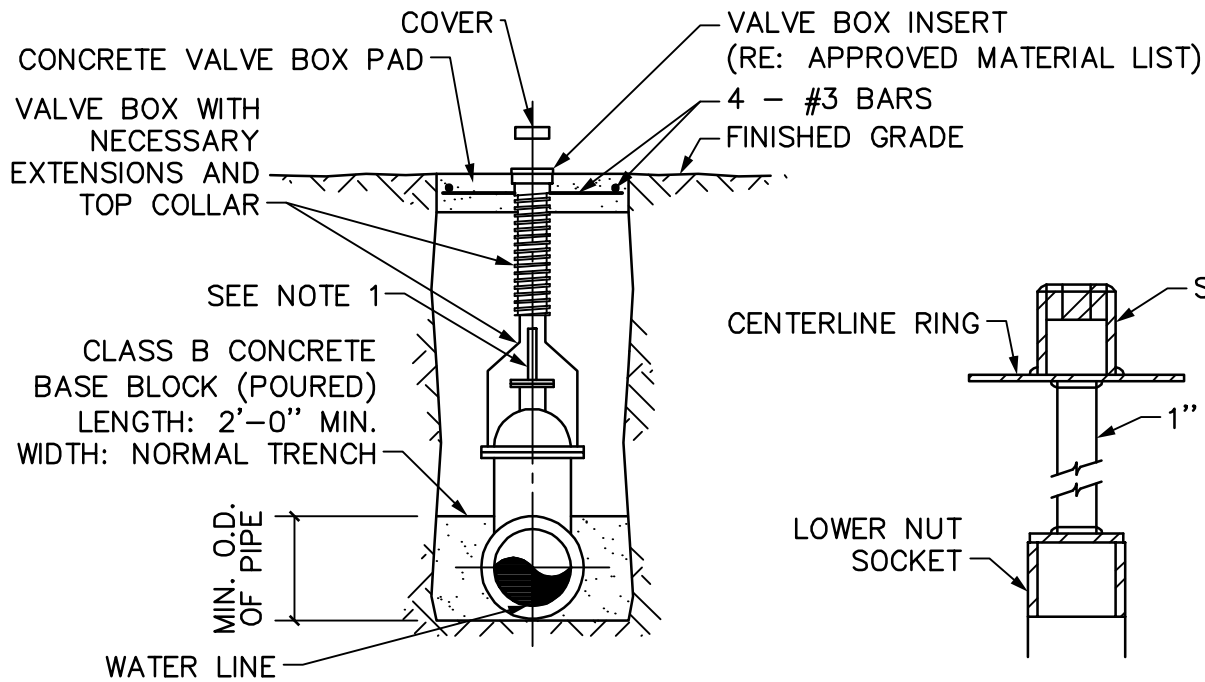


**STANDARD CONSTRUCTION DETAIL
THRUST BLOCK
GENERAL NOTES**

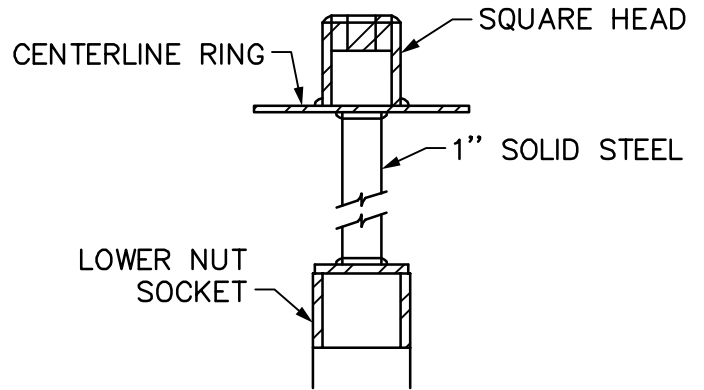
SCALE: N.T.S.

REVISED: NOV 2014

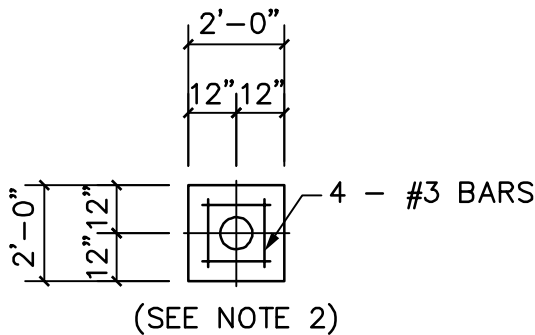
W05



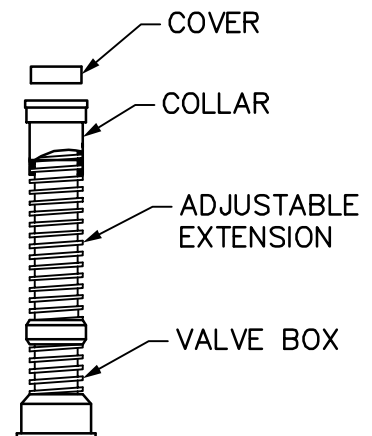
VALVE SETTING & BOX



VALVE EXTENSION



VALVE BOX PAD PLAN



VALVE BOX WITH EXTENSION

NOTES:

1. A VALVE EXTENSION STEM SHALL BE REQUIRED FOR ANY VALVE WHOSE OPERATING NUT IS LOCATED IN EXCESS OF 4' BELOW THE TOP OF VALVE BOX. THIS EXTENSION SHALL BE OF SUFFICIENT LENGTH TO INSURE THAT ITS TOP IS WITHIN 12" OF THE VALVE BOX COVER.
2. CONCRETE PAD 24" SQUARE SHALL BE POURED AROUND ALL VALVE BOXES NOT PLACED WITHIN CONCRETE PAVEMENT. CLASS A CONCRETE, 6" THICK.
3. MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH NCTCOG ITEM 502.6.
4. FOR VALVES DEEPER THAN 5' (OR AS DIRECTED BY CITY STAFF), A BELL END OF C900 PIPE MAYBE REQUIRED TO PREVENT MAINTENANCE ISSUES.



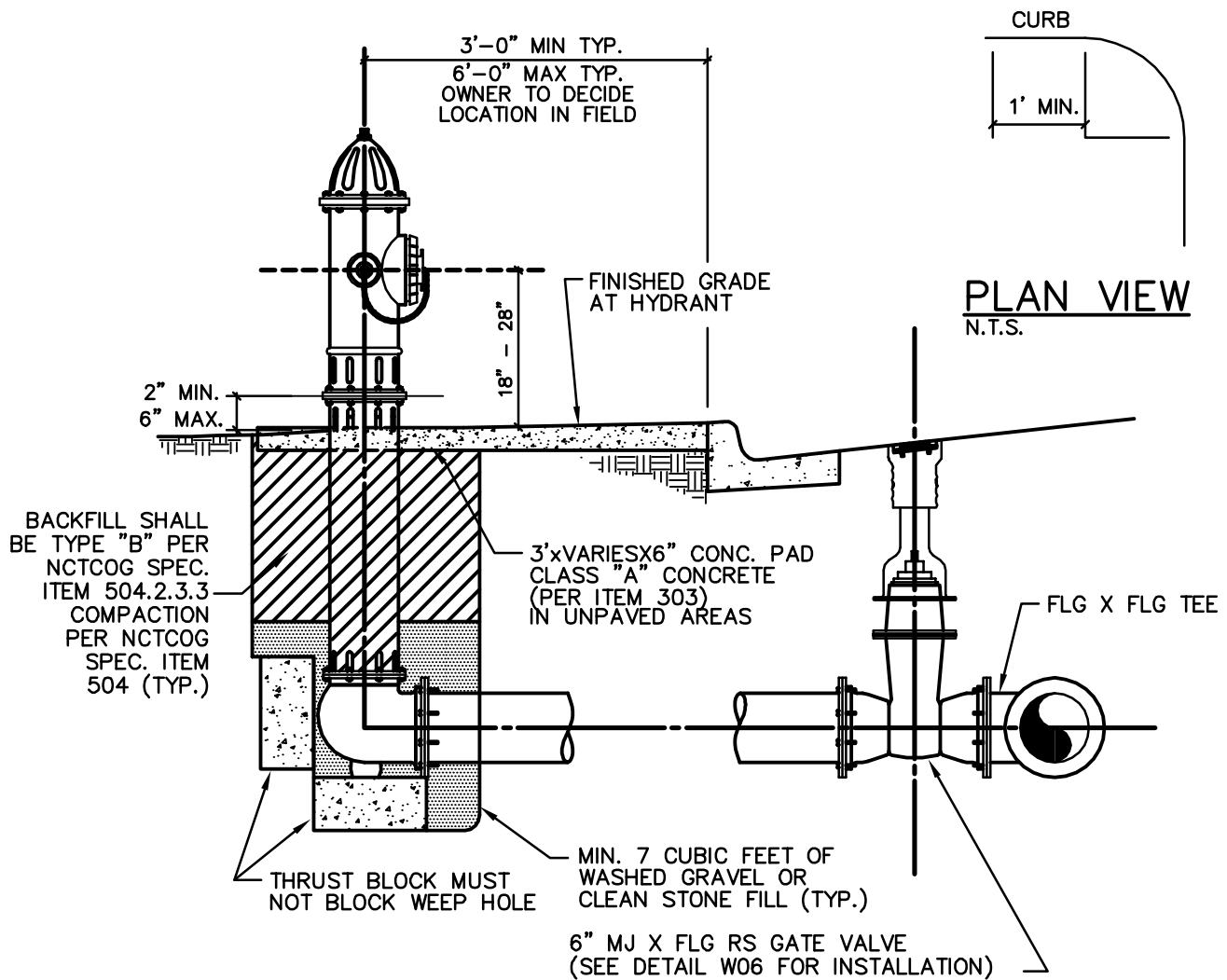
STANDARD CONSTRUCTION DETAIL

GATE VALVE

SCALE: 1/4"=1'-0"

REVISED: NOV 2014

W06



NOTES:

1. ALL FIRE HYDRANTS SHALL CONFORM TO AWWA STANDARD SPECIFICATIONS FOR FIRE HYDRANTS, C502. FIRE HYDRANTS SHALL HAVE A 5 1/4" MIN VALVE OPENING AND AN INSIDE BARREL DIAMETER OF APPROXIMATELY 7". ALL HYDRANTS SHALL BE EQUIPPED WITH A BREAKAWAY TRAFFIC MODEL.
2. ACTUAL VALVE LOCATION WILL DEPEND ON LOCATION OF WATER MAIN.
3. FIRE HYDRANT LEADS GREATER THAN 2 FEET REQUIRE JOINT THRUST RETAINERS.
4. FIRE HYDRANT NO CLOSER THAN 18" TO EXISTING OR PROPOSED SIDEWALKS. (TYPICAL)
5. TOP OF PIPE SHALL BE A MINIMUM 42" BELOW GRADE.
6. FIRE HYDRANT SHALL BE PLACED ON THE EXTENDED LOT LINE WHEN POSSIBLE.
7. FIRE HYDRANT SHALL BE LOCATED A MINIMUM 1 FT. OUTSIDE OF THE AREA BETWEEN THE P.C.'S OF THE CORNER TURNING RADIUS AT THE INTERSECTIONS. (SEE PLAN VIEW)
8. ALL FIRE HYDRANTS SHALL BE AT LEAST 42 INCHES FROM ANY ABOVE GROUND OBSTRUCTIONS, SUCH AS GUARDRAILS, RETAINING WALLS, BOLLARDS, ETC.
9. ALL BELOW GROUND IRON ASSEMBLES SHALL BE WRAPPED IN POLYETHYLENE ACCORDING TO AWWA C105.
10. ACCEPTABLE MANUFACTURERS: MUELLER-SUPER CENTURIAN, AVK, M&H OR APPROVED EQUAL.
11. GRADELOCK OR APPROVED EQUAL CONNECTOR PIPE SHALL BE USED AS NECESSARY TO ENSURE THE FIRE HYDRANT IS SET AT THE PROPER GRADE. ONLY ONE EXTENSION MAY BE USED.
12. FIRE HYDRANTS SHALL BE PAINTED IN ACCORDANCE WITH THE FIRE DEPARTMENT'S REQUIREMENTS.
13. ALL JOINTS SHALL BE MECHANICAL JOINTS.
14. MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH NCTCOG ITEM 502.3.



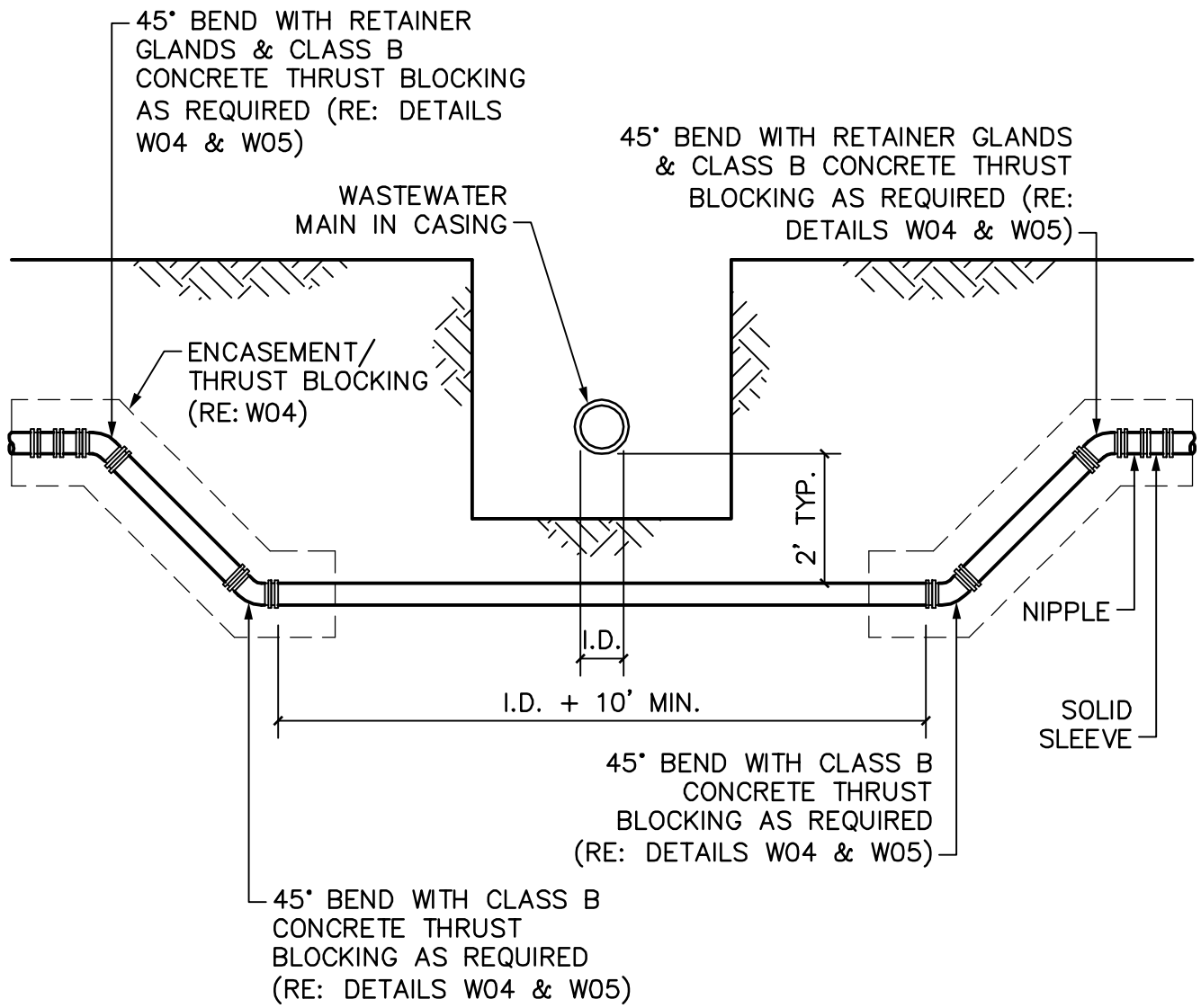
STANDARD CONSTRUCTION DETAIL

FIRE HYDRANT

SCALE: 5/8"=1'-0"

REVISED: DEC 2014

W07



NOTES:

1. INSTALLING PIPE WITH CLEARANCES OF LESS THAN 2' BETWEEN WATER AND SEWER SHALL BE APPROVED BY THE CITY.
2. INSTALLATION AND DESIGN SHALL BE PER TCEQ CHAPTER 217.
3. 3M MARKER PADS SHALL BE LOCATED AT ALL FITTINGS

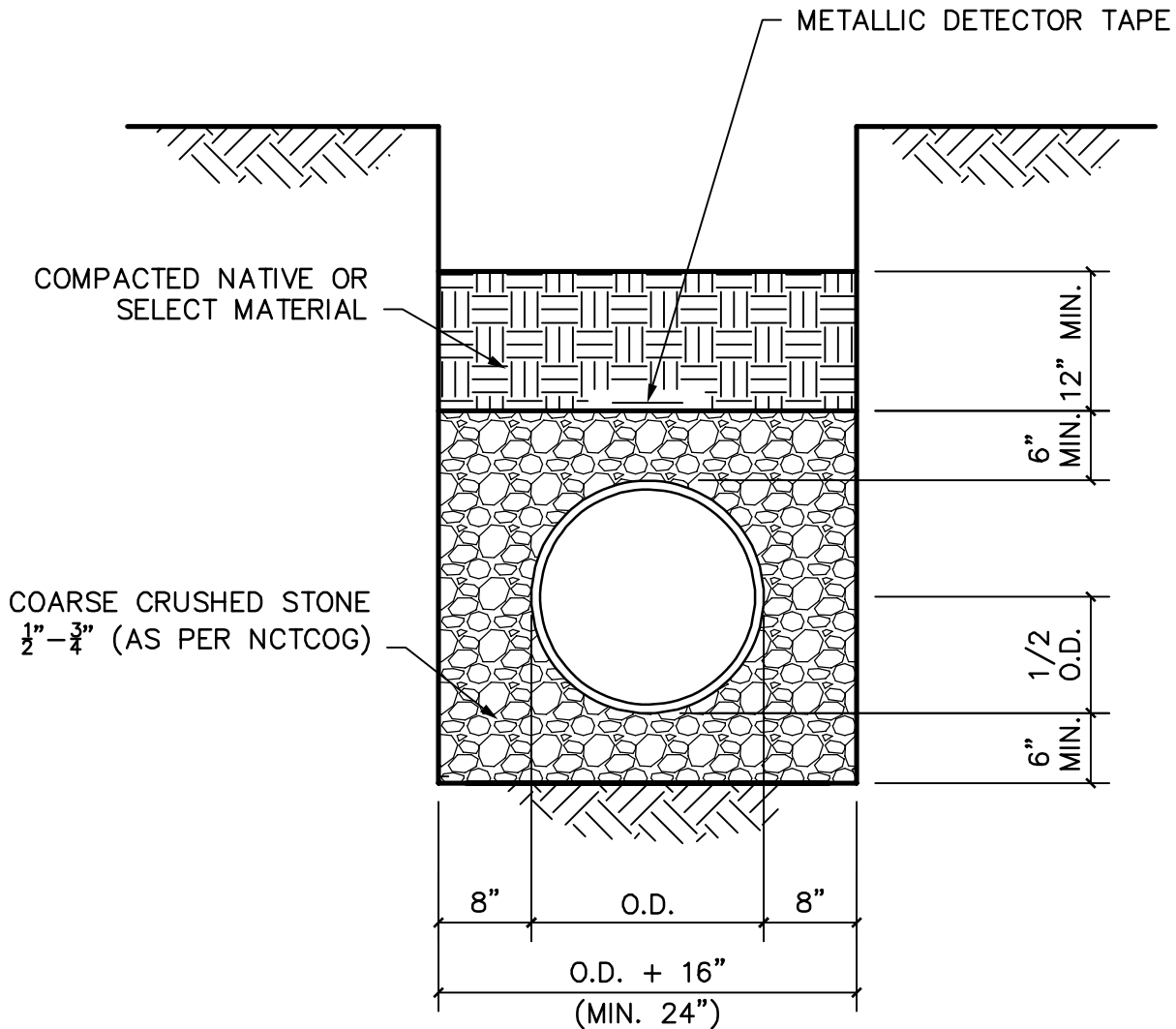


STANDARD CONSTRUCTION DETAIL
WATER MAIN LOWERING
BELOW WASTEWATER MAIN

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

REVISED: NOV 2014

W08



CLASS "H"

NOTES:

1. UTILIZE CLASS "H" EMBEDMENT FOR PVC WATER LINE INSTALLATIONS.
2. INSTALLATION SHALL BE IN ACCORDANCE WITH NCTCOG ITEM 503.
3. BEDDING DEPTH MEASURED FROM OUTSIDE THE PIPE BELL.



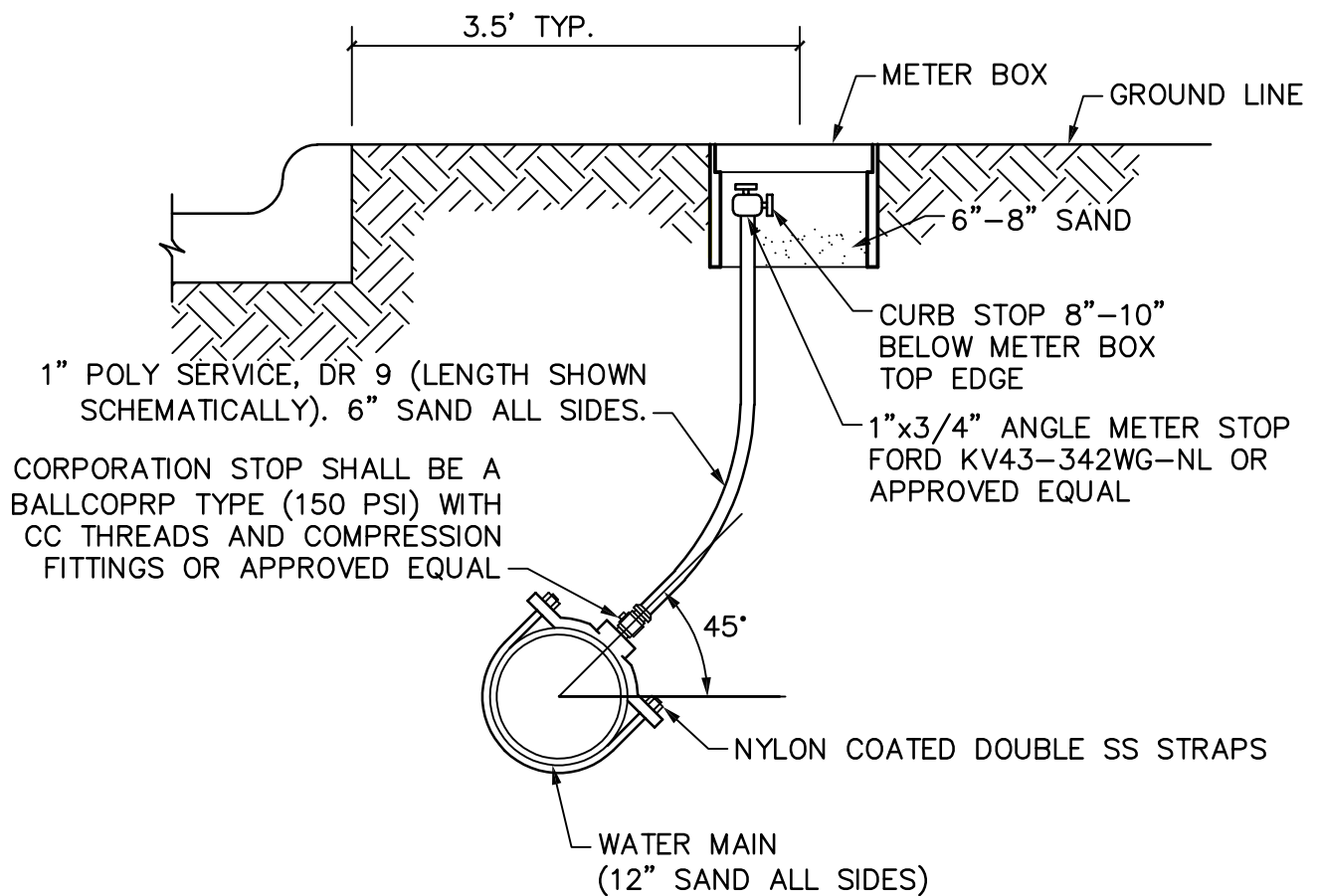
STANDARD CONSTRUCTION DETAIL

EMBEDMENT "H" (WATER)

SCALE: $\frac{3}{4}$ "=1'-0"

REVISED: NOV 2014

W09



NOTES:

1. WATER SERVICES SHALL NOT BE CONNECTED TO FIRE HYDRANT LINES OR TO FIRE SERVICE MAINS.
2. METER BOX SHALL BE LOCATED OUT OF ALL FLATWORK, SIDEWALKS AND APPROACHES.
3. SERVICES SHALL BE IN 6" SAND ALL SIDES OF THE PIPE.
4. MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH NCTCOG ITEM 502.10, AWWA C800, AND AWWA C901.
5. SAND SHALL BE PLACED 12" ON BOTH SIDES OF SERVICE SADDLE.
6. 3M MARKER PADS WILL BE REQUIRED IN BETWEEN ALL DOUBLE SERVICE CONNECTIONS AND AT ALL SINGLE SERVICE CONNECTIONS.

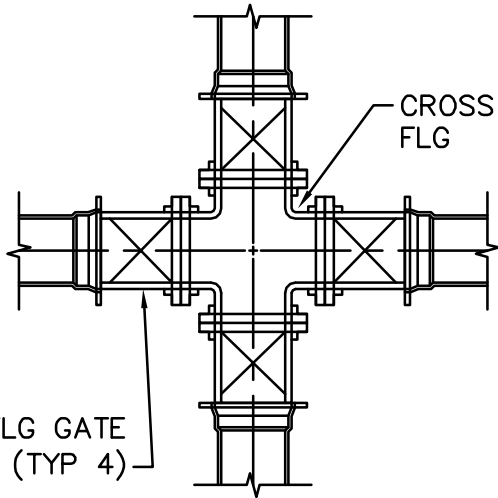


STANDARD CONSTRUCTION DETAIL
TYPICAL RESIDENTIAL SERVICE CONNECTION

SCALE: 3/4"=1'-0"

REVISED: JUNE 2017

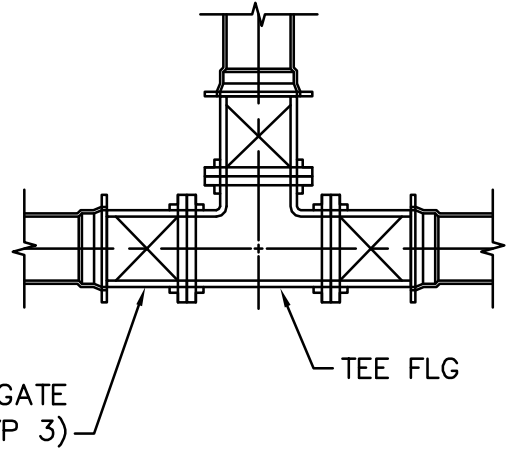
W10



MJ X FLG GATE VALVE (TYP 4)

NOTE: ALL CROSSES SHALL HAVE 4 FLANGED GATE VALVES

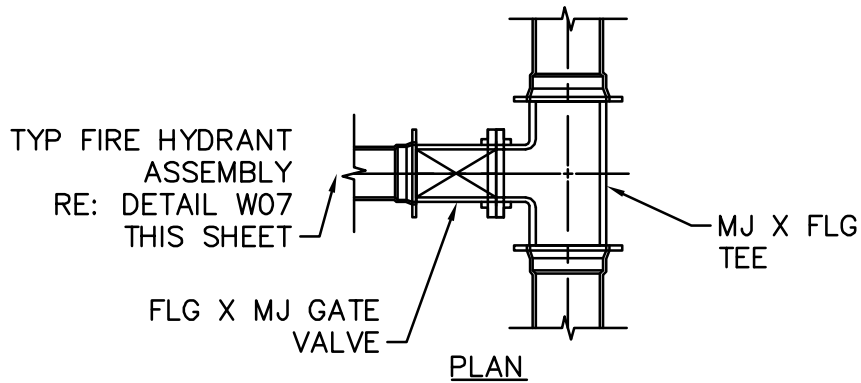
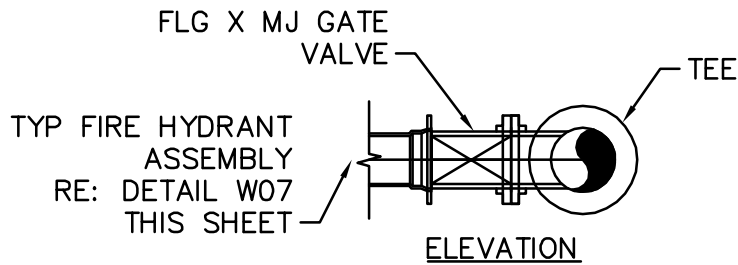
CROSS FITTINGS



MJ X FLG GATE VALVE (TYP 3)

NOTE: ALL TEES SHALL HAVE 3 FLANGED GATE VALVES

TEE FITTINGS



FIRE HYDRANT FITTINGS

NOTES:

1. ALL CROSSES, TEES, VALVES AND FIRE HYDRANTS SHALL HAVE FLANGED CONNECTIONS.
2. REFER TO BLOCKING DETAILS FOR BLOCK DESIGN AND INSTALLATION.



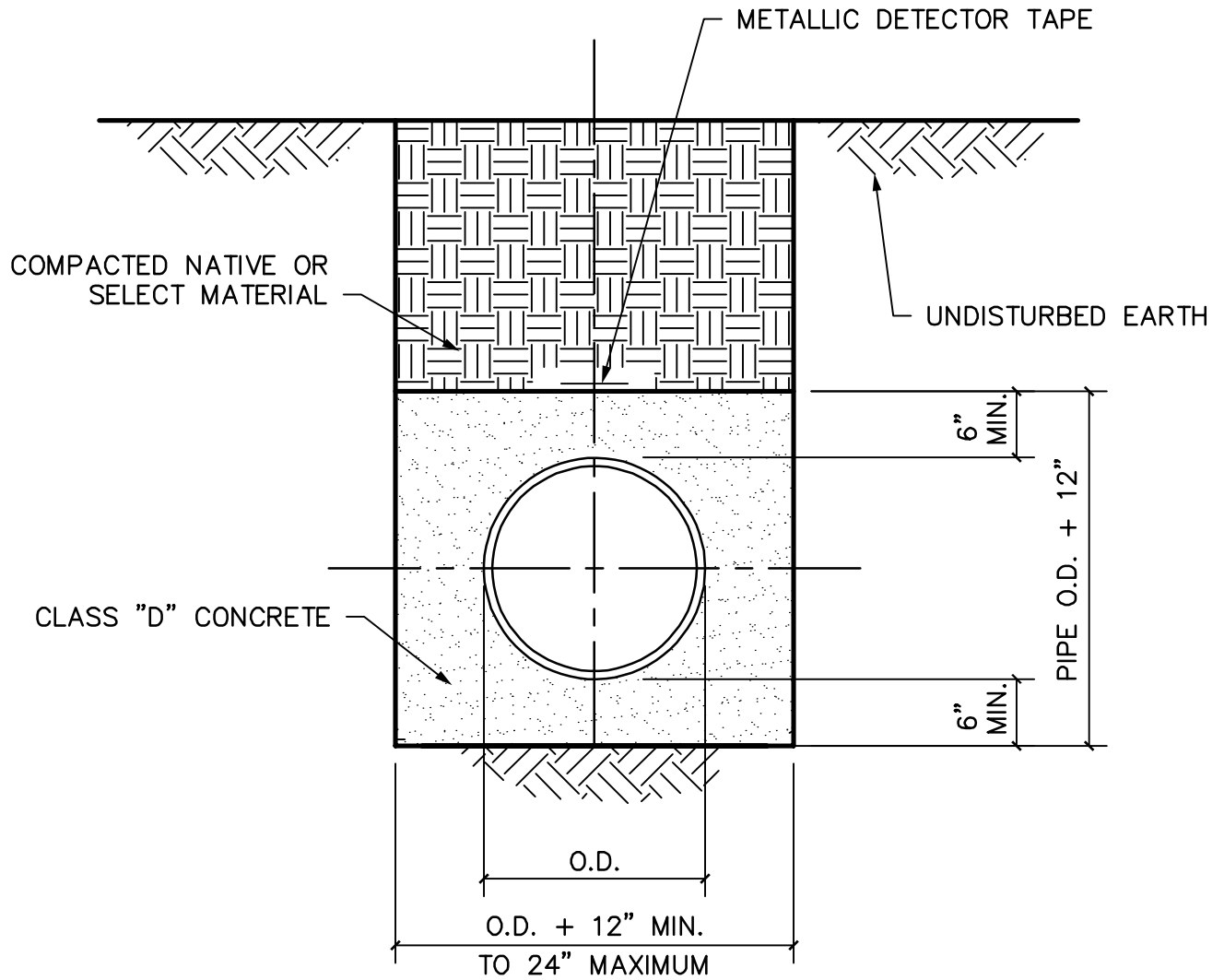
STANDARD CONSTRUCTION DETAIL

FITTINGS (WATER)

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

REVISED: NOV 2014

W11



NOTE:
CONCRETE ENCASEMENT
MAY BE MODIFIED FOR A
CONCRETE CAP.



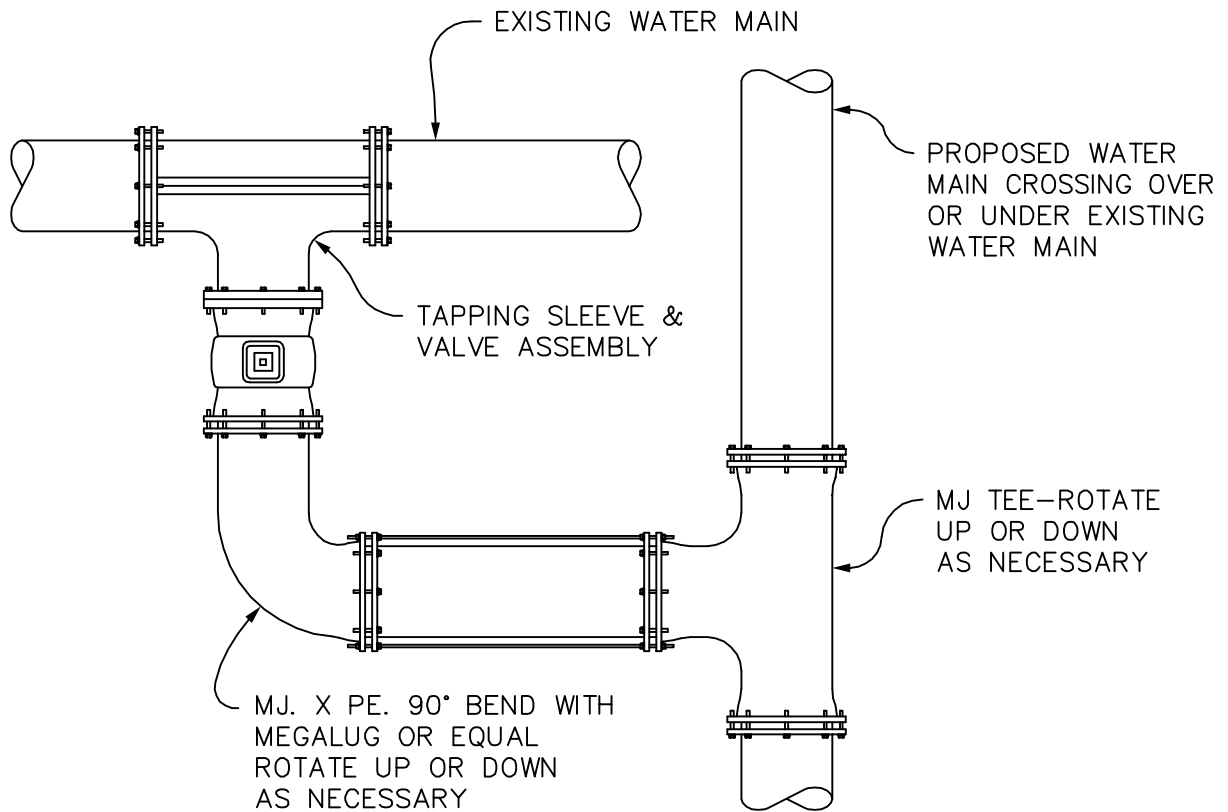
STANDARD CONSTRUCTION DETAIL

CONCRETE ENCASEMENT

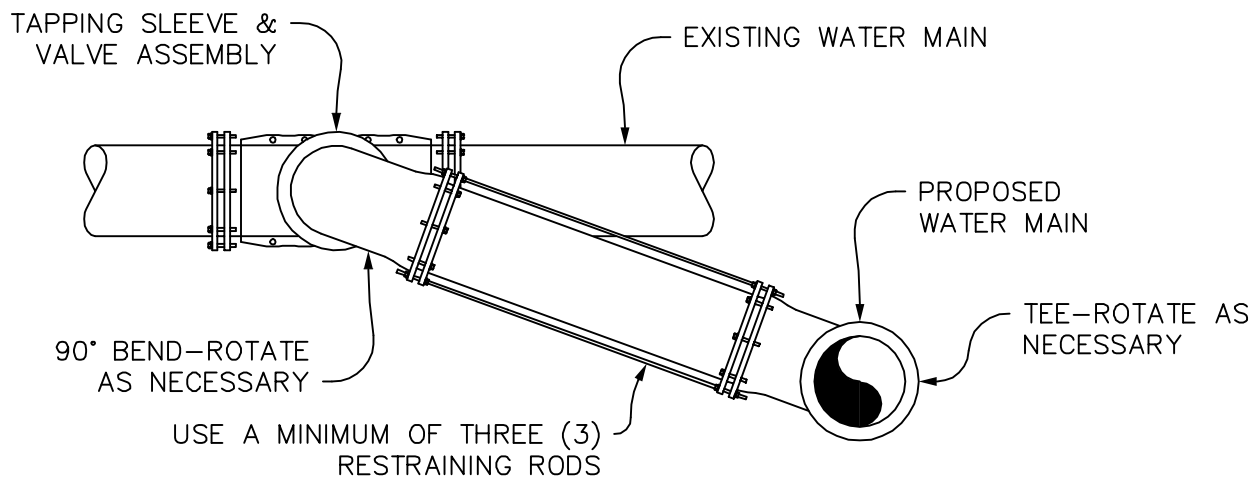
SCALE: 3/4"=1'-0"

REVISED: NOV 2014

W12



PLAN



SECTION

NOTES:

1. WRAP ALL BELOW GROUND ASSEMBLIES IN POLYETHYLENE ACCORDING TO AWWA C105.
2. THE DIAMETER OF THE CONNECTING PIPE BETWEEN THE PROPOSED AND EXISTING WATER MAINS SHALL HAVE A DIAMETER EQUAL TO THE SMALLER OF THE TWO MAINS TO BE CONNECTED THROUGH THE PROPOSED RING CONNECTION.



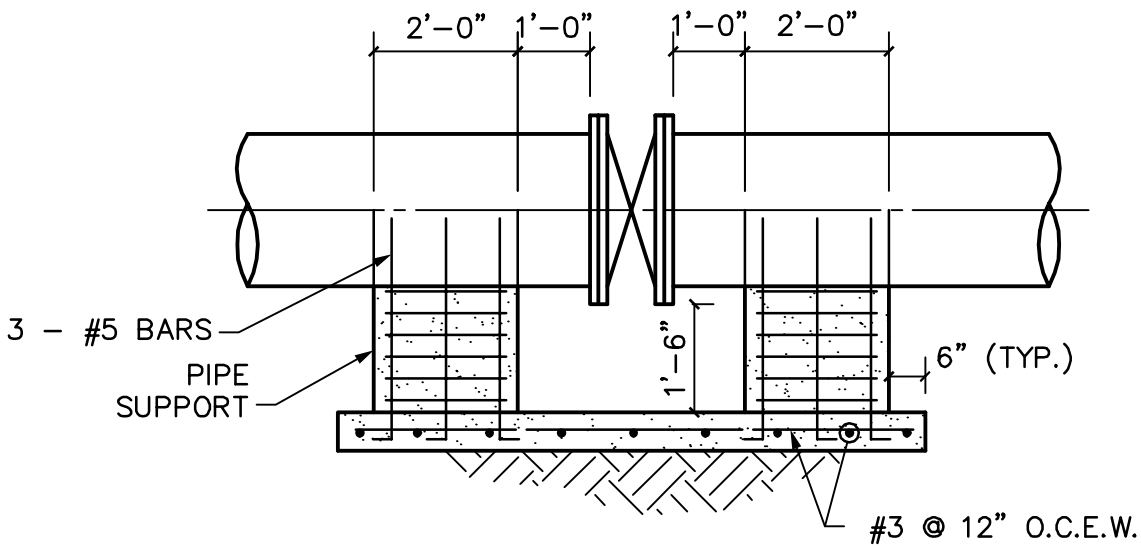
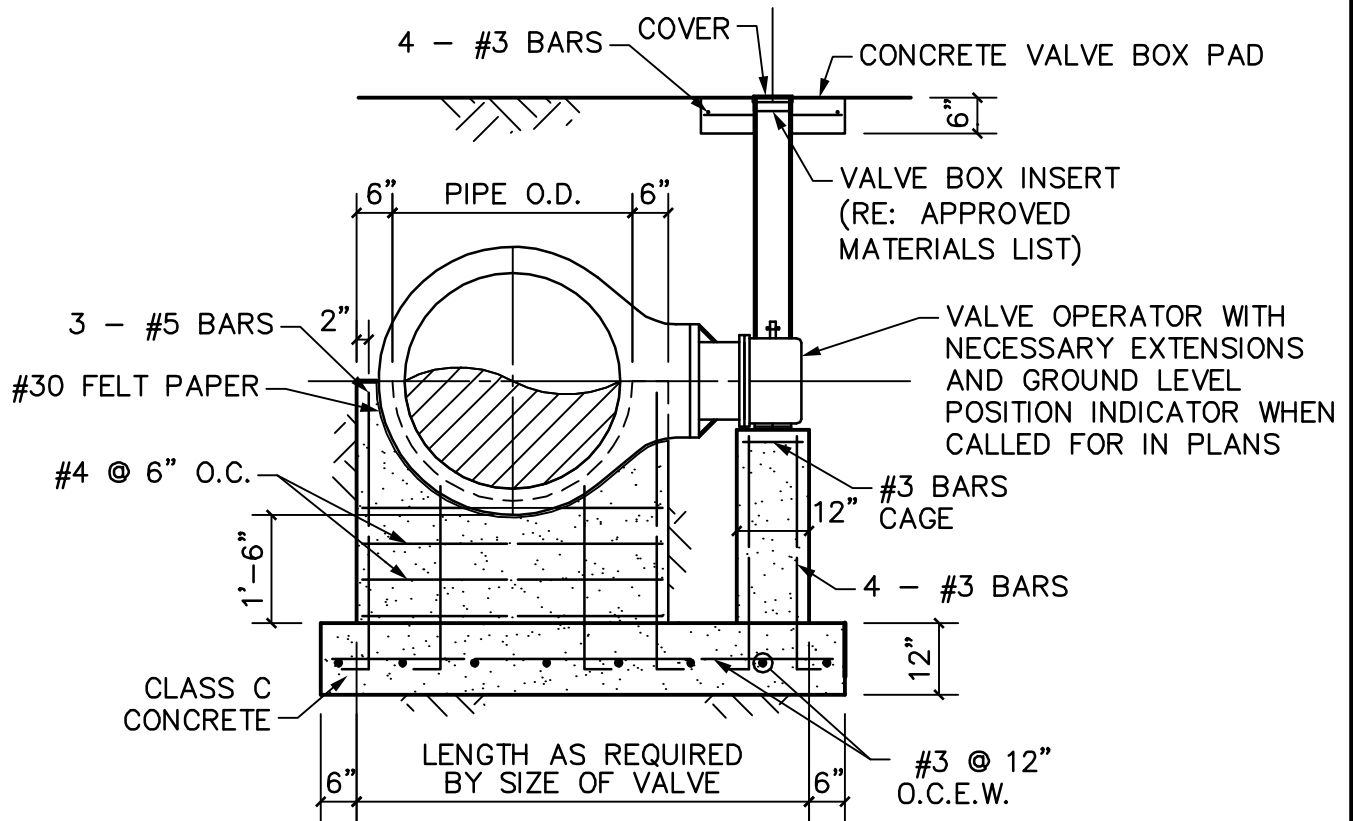
STANDARD CONSTRUCTION DETAIL

RING CONNECTION

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

REVISED: NOV 2014

W13



NOTES:

1. ALL OPERATING NUTS SHALL BE EXTENDED TO WITHIN 12" OF FINAL GRADE.
2. 6" BYPASS MAY BE REQUIRED BY CITY ON SPECIFIC PROJECTS.
3. MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH NCTCOG ITEM 502.6.



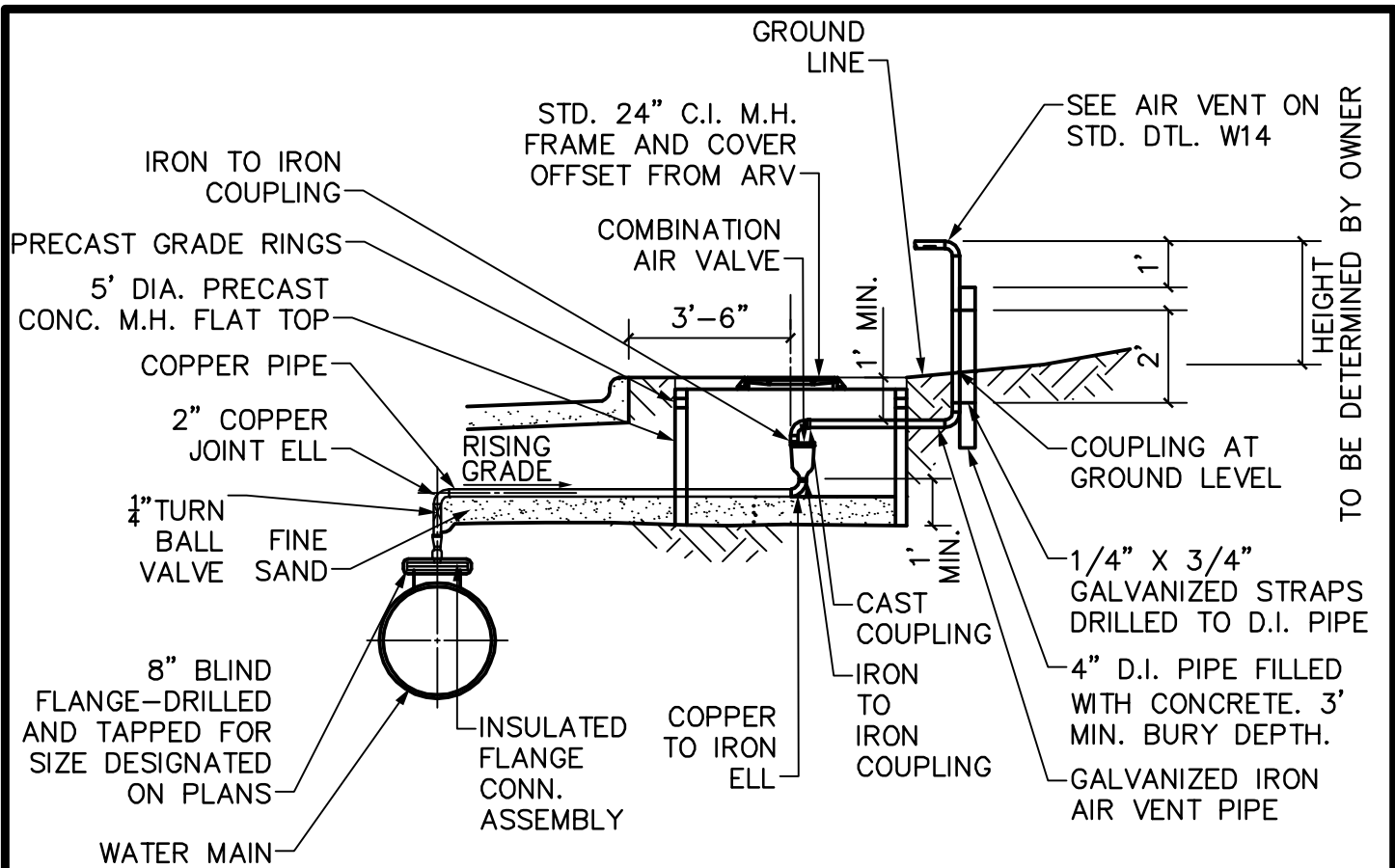
STANDARD CONSTRUCTION DETAIL

18" > BUTTERFLY VALVE

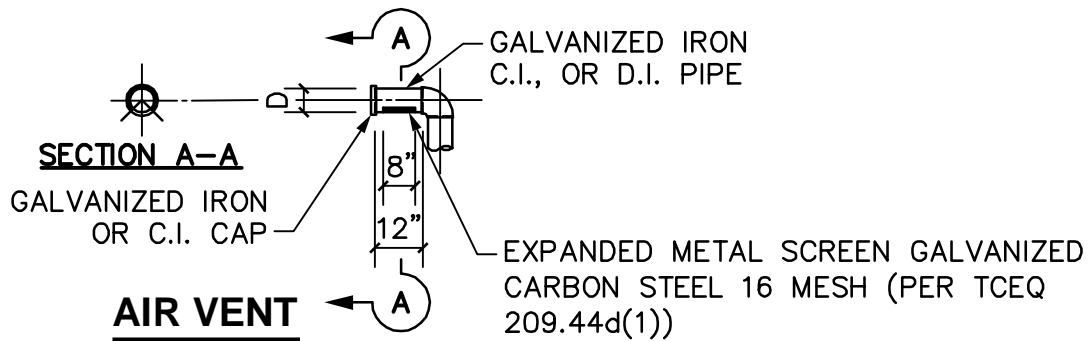
SCALE: 3/8"=1'-0"

REVISED: AUG 2014

W13



COMBINATION AIR VACUUM VALVE - TYPE "1"



NOTES:

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.

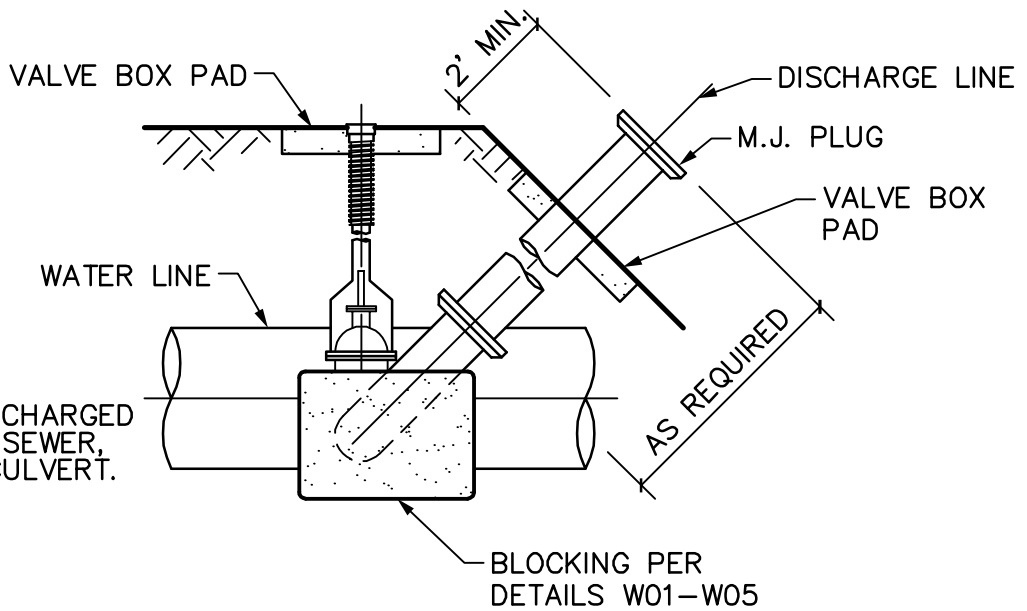
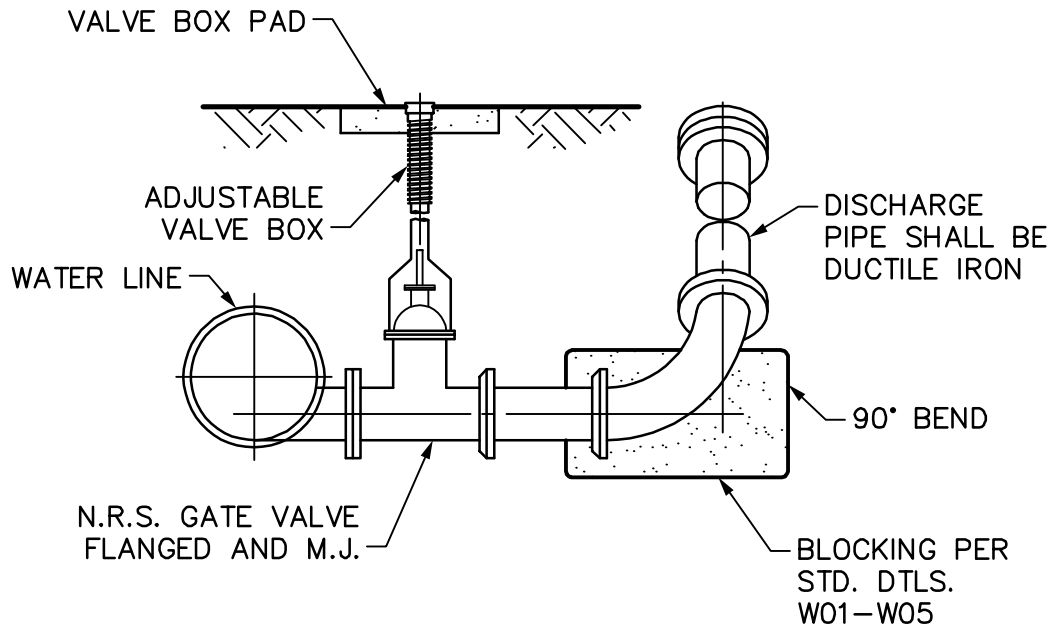


**STANDARD CONSTRUCTION DETAIL
COMBINATION AIR VACUUM VALVE TYPE "1"
AND AIR VENT**

SCALE: 1/4"=1'-0"

REVISED: DEC 2014

W14



NOTE:

1. MUST BE DISCHARGED INTO STORM SEWER, BRIDGE OR CULVERT.



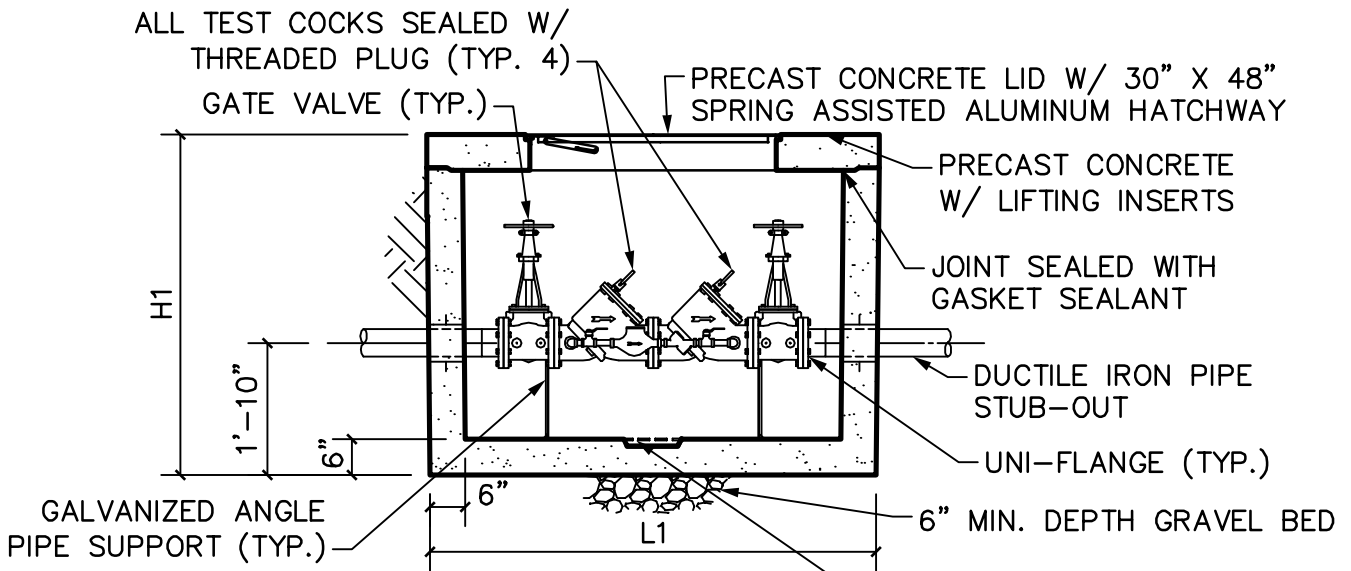
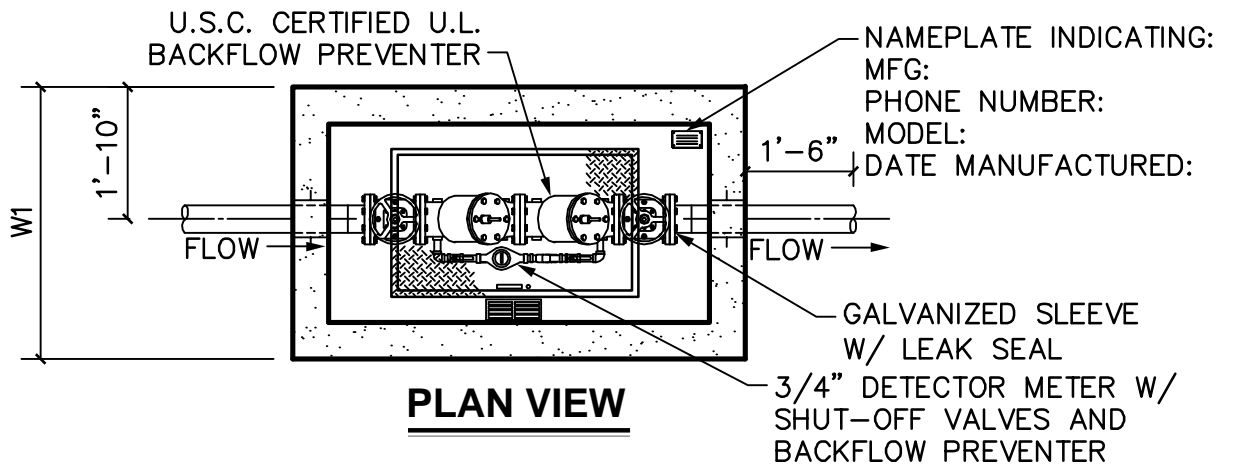
STANDARD CONSTRUCTION DETAIL

BLOW OFF VALVE

SCALE: 1/4"=1'-0"

REVISED: DEC 2014

W15



SIZE	L1	W1	H1
4"	7'-10"	4'-4"	6'-0"
6"	7'-10"	4'-4"	6'-0"
8"	8'-8"	5'-0"	6'-0"
10"	9'-2"	5'-8"	6'-6"

NOTES:

1. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.
2. REINFORCEMENT: GRADE 60 REINFORCED. STEEL BAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.
3. HATCHWAY: 1/4" ALUMINUM DIAMOND PLATE COVER WITH EXTRUDED ALUMINUM FRAME. HATCH TO BE FURNISHED WITH 316 STAINLESS STEEL SNAP LOCK & BRASS FINISH HINGES.
4. PRECAST VAULT SHALL BE FROM APPROVED MATERIALS LIST.
5. PIPE AND FITTINGS SHALL BE DUCTILE IRON.

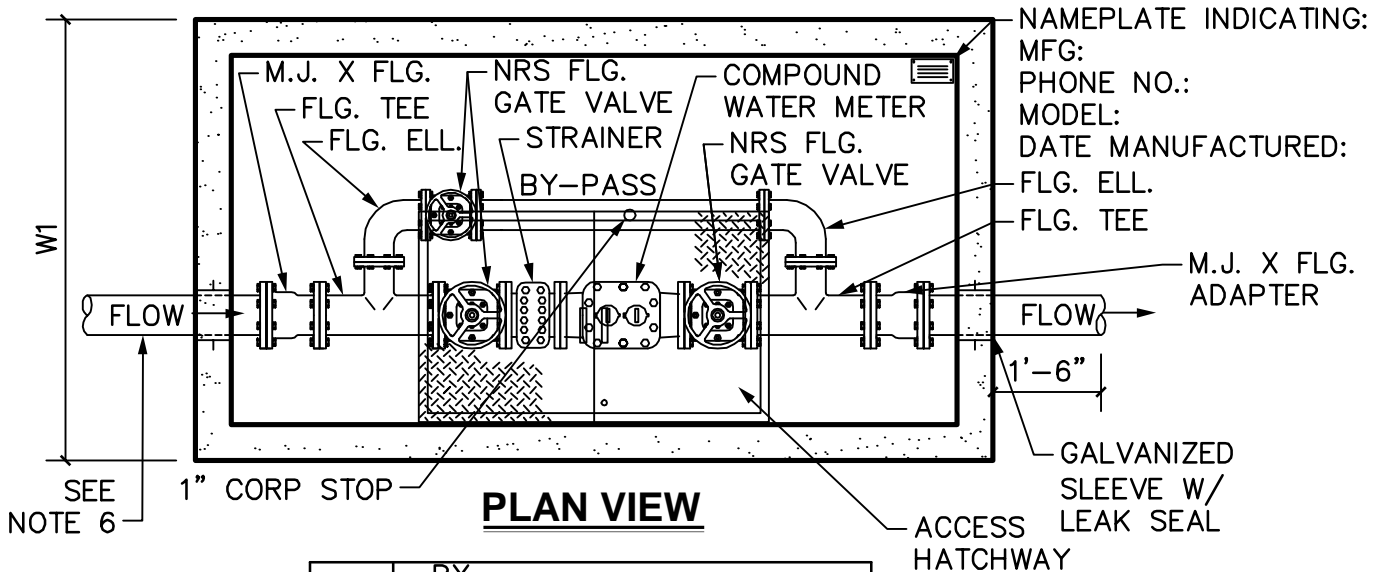


STANDARD CONSTRUCTION DETAIL
DOUBLE DETECTOR CHECK FIRE VAULT

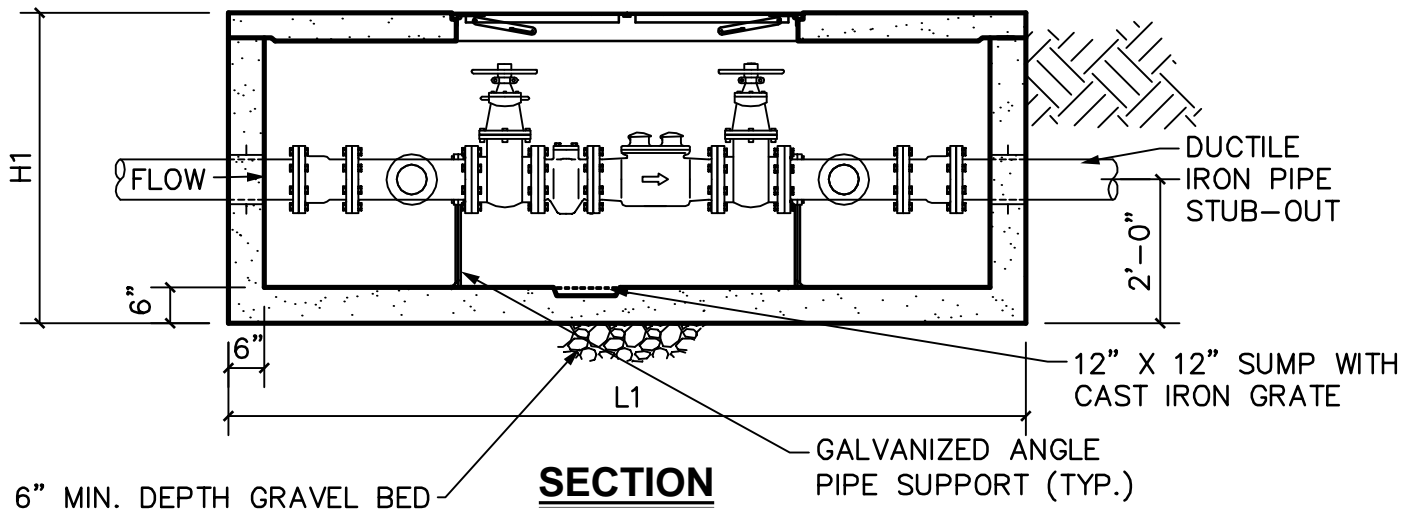
SCALE: 3/8"=1'-0"

REVISED: DEC 2014

W16



SIZE	BY PASS	L1	W1	H1
3"	2"	8'-8"	4'-8"	4'-6"
4"	2"	8'-8"	4'-8"	4'-6"
6"	4"	11'-0"	6'-0"	4'-6"



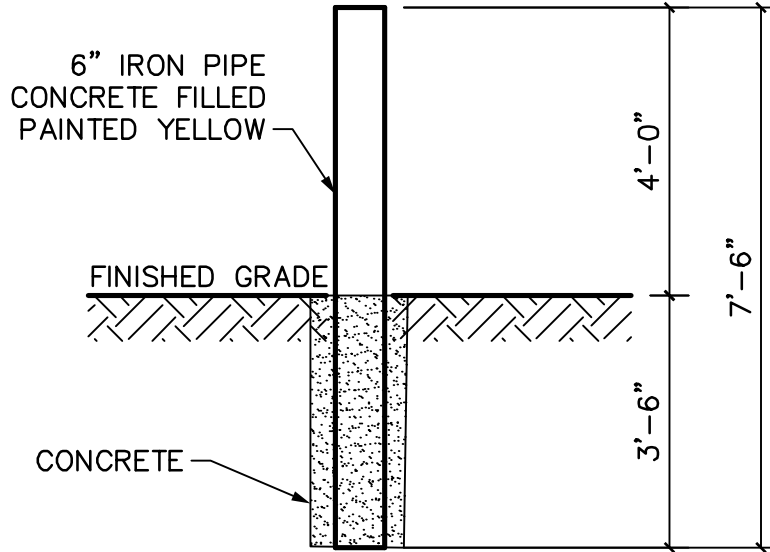
NOTES:

1. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.
2. REINFORCEMENT: GRADE 60 REINFORCED. STEEL BAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.
3. HATCHWAY: 3' X 5' GALVANIZED STEEL DOUBLE LEAF SPRING ASSISTED HATCHWAY - W/ SLAM LOCK (TRAFFIC RATED IF WITHIN PAVING).
4. PRECAST VAULT SHALL BE FROM APPROVED MATERIAL LIST.
5. PIPE FITTINGS SHALL BE DUCTILE IRON.
6. MINIMUM 6" WATER LINE OFF THE WATER MAIN WITH MINIMUM 6" GATE VALVE PRIOR TO REDUCING IN SIZE.

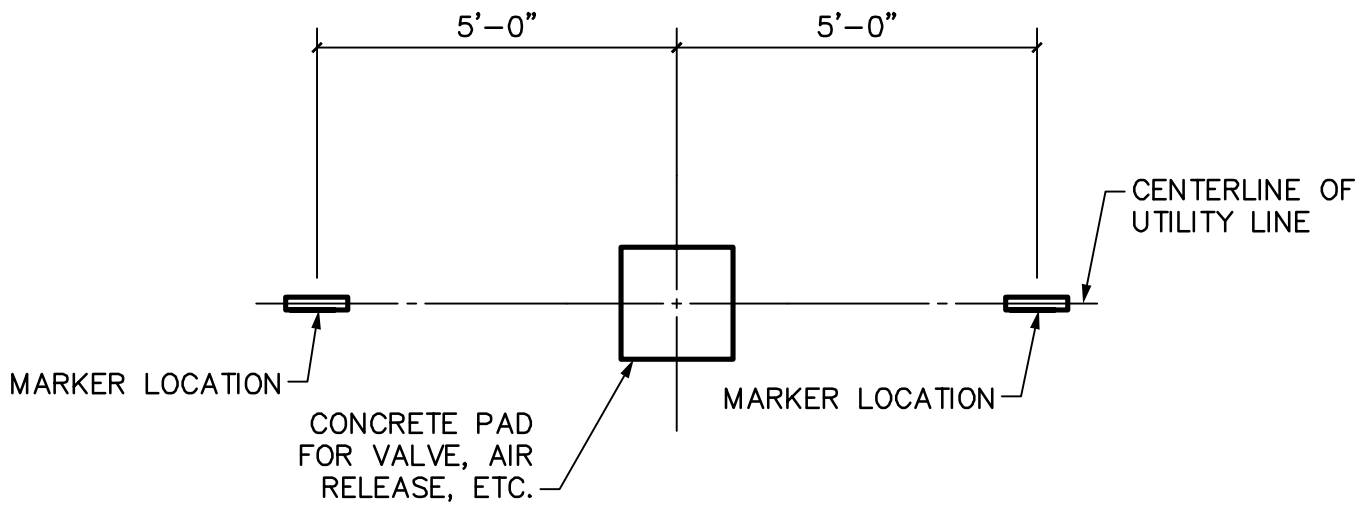


STANDARD CONSTRUCTION DETAIL
DOMESTIC WATER METER VAULT

SCALE: 3/8"=1'-0"
REVISED: DEC 2014
W17



ELEVATION



FIELD INSTALLATION DETAIL

NOTE:

1. ALL OFFSITE CITY MAINS WITH VALVES, AIR RELEASE VALVES, ETC. SHALL BE MARKED AS DETAILED ON THIS SHEET.



STANDARD CONSTRUCTION DETAIL

OFFSITE WATER MAIN BOLLARD

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

REVISED: DEC 2014

W18