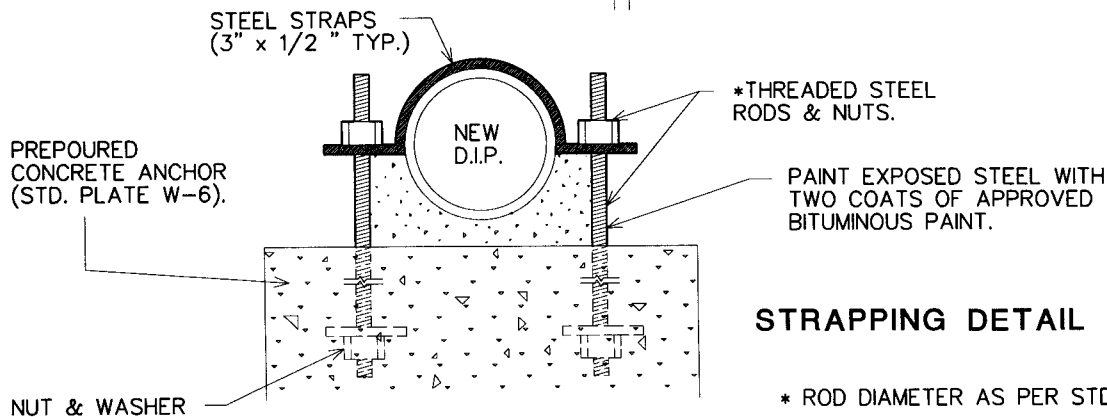
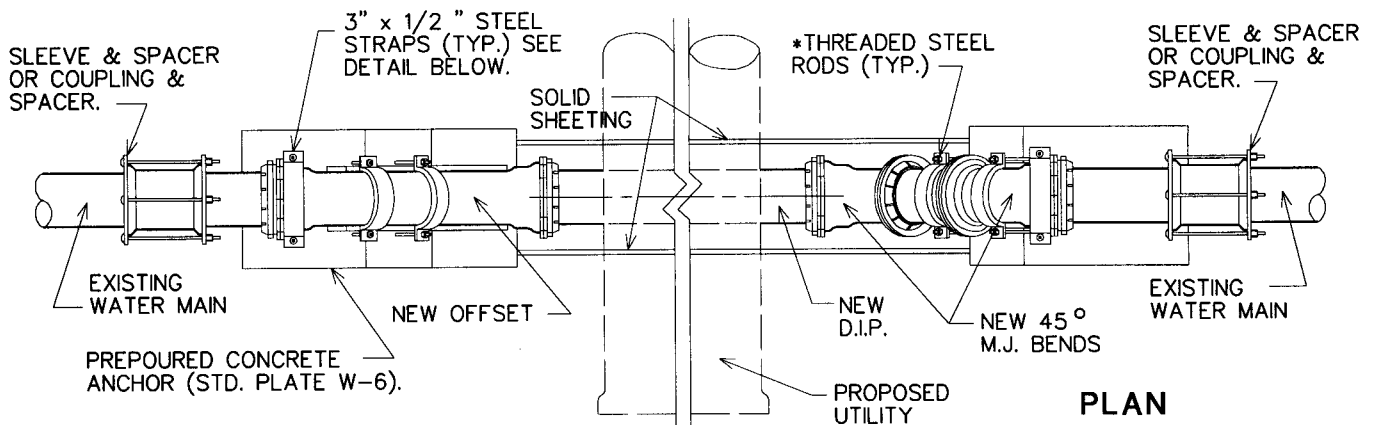
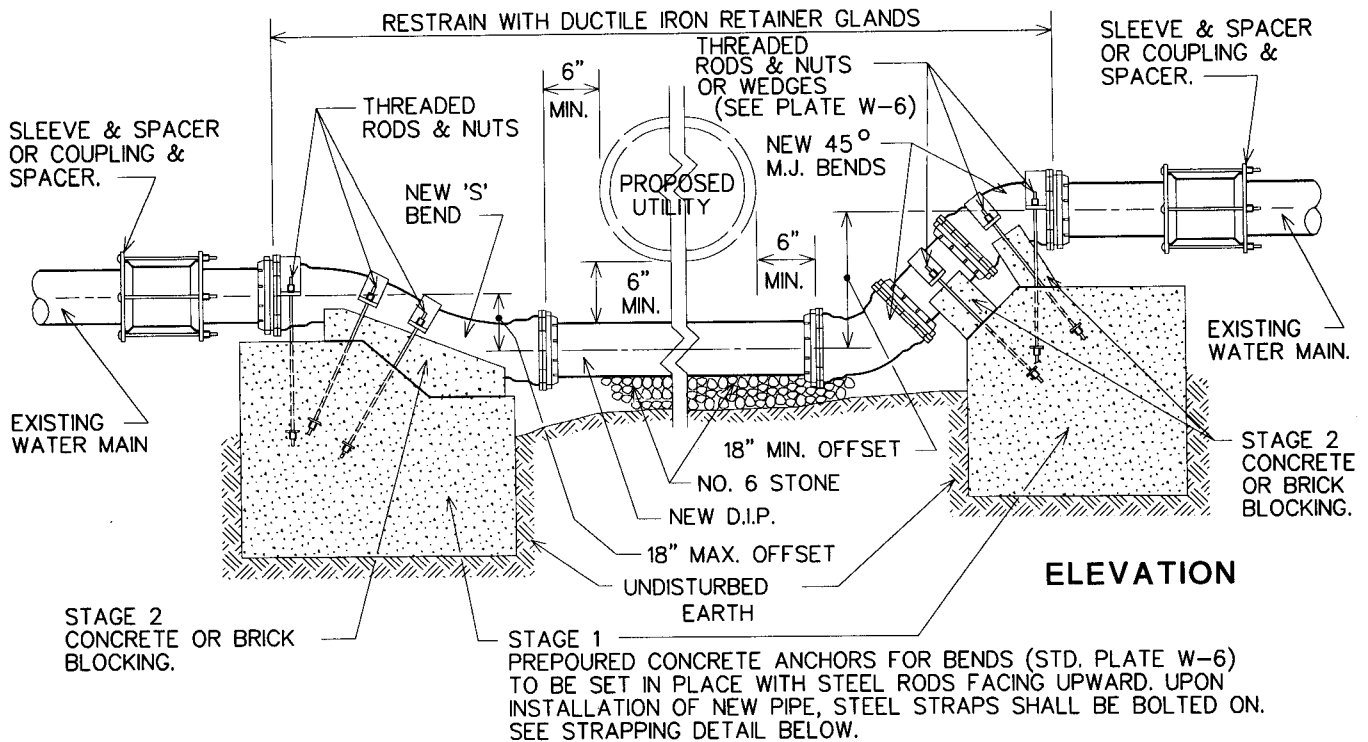


Water Supply Standard Details

PLATE #	TITLE	SIGNATURE DATE	STD. SPECS. REFERENCE	COMMODITY CODE
W-1	Water Main Reloc.@ Util	10/23/1997	1001	-
W-2	Dewatering Valve,Vault	7/24/2006	1004	839040
W-3A	Std. Installation/Fire Hydrants	7/24/2006	1006	847000
W-3B	Fire Hyd.Steamer,Nozzle	10/23/1997	1006	847000
W-4	Buttress for Tees	7/24/2006	1003.03.06	-
W-5	Buttress-Caps & Hor.Bend	7/24/2006	1003.03.06	-
W-5A	Dbl Caps, Jack & Buttress	1/2/2007	1003.03.06	-
W-6	Butt.& Anch./Vert.Bends	1/2/2007	1003.03.06	-
W-6A	Thrust Blks for Reducers	7/24/2006	1003.03.06	-
W-7	Curvature of Water Mains	1/2/2007	1003	-
W-8	Air Release Valve, Vault	1/2/2007	1004	848020
W-9	Tapping Sleeve & Valve	7/24/2006	1004	837000
W-10	Tapping Sleeve, Hor.Valve	7/24/2006	1004	837000
W-11	Blow-Off	1/2/2007	1004	846000
W-12	Types of Housing/Valves	7/24/2006	1004	-
W-12A	Types of Housing/Meters	1/2/2007	1004	-
W-13	Sections/Conc.Valve Vault	10/23/1997	1004	-
W-14	Std.Sect/Sml.Conc.Vault	10/23/1997	1004	-
W-15	Std.Sect/Lg.Conc.Vault	10/23/1997	1004	-
W-16	Std.Vaults/Vert.Valves/Gear	7/24/2006	1004	-
W-16A	Std.Vlts./Vert.Valves/No Gear	7/24/2006	1004	-
W-17	Std.Vaults/Hor.Valves	1/2/2007	1004	-
W-18	Std.Traffic Frame&Cover	10/23/1997	905	-
W-19	Std.Sidewalk Frame&Cover	11/24/1999	905	-
W-20	Std. Water Meter Vaults	7/24/2006		-
W-21	3/4"Supply Svce-5/8" Mtr.	1/2/2007	1005	844010
W-22	3/4"Supply Svce-Twin 5/8" Mtr.	1/2/2007	1005	844020
W-23	1" Supply Svce-3/4" Mtr.	1/2/2007	1005	844030
W-24	1-1/2"Supply Svce-1" Mtr.	1/2/2007	1005	-
W-24A	1-1/2"Svce - 3/4" Sngl Mt	1/2/2007	1005	-
W-25	2" Supply Svce-1.5"Mtr	1/2/2007	1005	844040
W-26	2" Supply Svce-2" Mtr	1/2/2007	1005	844050
W-26A	2" Supply Svce-2" Mtr	1/2/2007	1005	844050
W-27	4" Supply Svce-3" Mtr	7/24/2006	1005	-
W-27A	Vault-4" to 12" FM Mtrs	7/24/2006	1004	-
W-27B	Vault-4" to 12" FM Mtrs	7/24/2006	1004	-
W-28A	Vault-4"-12"FM,Dom.Mtrs	1/2/2007	1004	-
W-28B	Vault-4"-12"FM Dom.Mtrs	1/2/2007	1004	-
W-31	1" Supply Svce-Twin 3/4" Mtrs.	1/2/2007	1005	-
W-32	1-1/2"SupplySvce-Twin3/4"Mtr	1/2/2007	1005	-
W-33	1-1/2"SupplySvce-Twin 1"Mtr.	1/2/2007	1005	-
W-34	Comfort Station Dewatering	7/24/2006	1005	-

'S' BEND \leq 18" OFFSET

TWO 45° BENDS $>$ 18" OFFSET



* ROD DIAMETER AS PER STD. PLATE W-6.



APPROVAL
William J. [Signature]
 DIRECTOR
 BUR. OF ENGINEERING/CONSTRUCTION
 10/23/97
 DATE

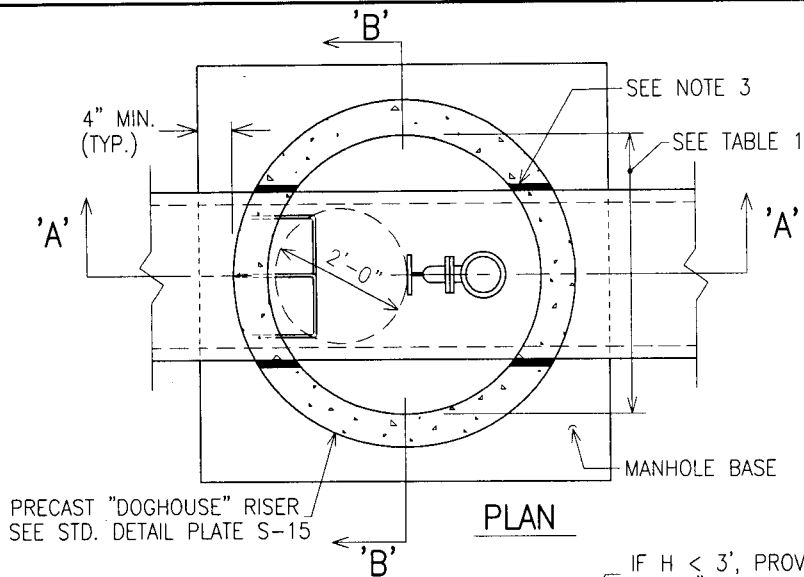
DEPARTMENT OF PUBLIC WORKS
 STANDARD WATER DETAILS

**WATER MAIN RELOCATION
 UNDER PROPOSED UTILITY**

ISSUED: AUGUST, 1997
 REVISED:
 REVISED:

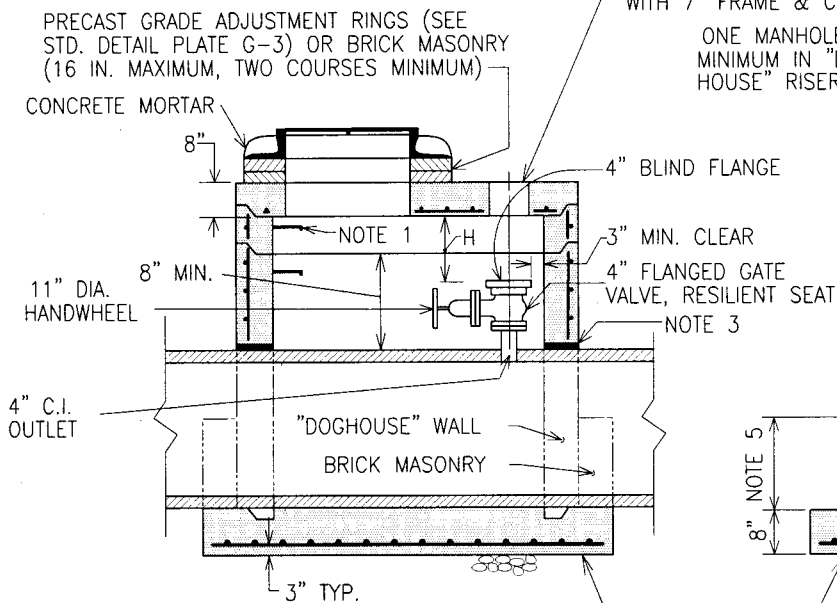
PLATE

W-1



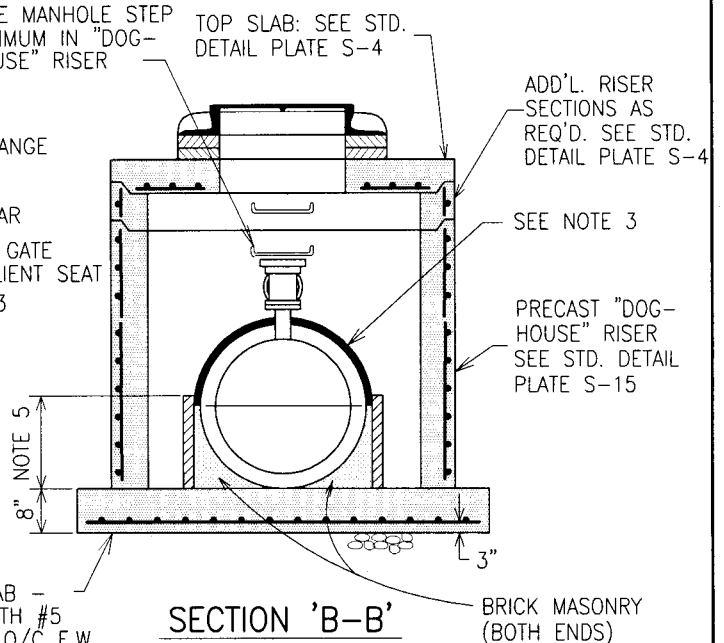
PRECAST "DOGHOUSE" RISER
SEE STD. DETAIL PLATE S-15

PLAN



SECTION 'A-A'

BASE SLAB -
MIX #3 WITH #5
BARS @ 12" O/C E.W.



SECTION 'B-B'

NOTES

1. SEE BALTIMORE CO. STD. DETAIL PLATE G-4 FOR MANHOLE STEP SPECIFICATIONS, PLACEMENT AND SPACING. LOCATE STEPS AS SHOWN.
2. MANHOLE CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS INDICATED ON STD. DETAIL PLATES S-4, S-5 AND S-15.
3. MINIMUM 2" CLEARANCE SHALL BE MAINTAINED BETWEEN PIPES AND PRECAST "DOGHOUSE" PIPE OPENINGS. OPENINGS ABOVE PIPE CENTERLINE SHALL BE FILLED WITH PRE-MOLDED EXPANSION JOINT FILLER.
4. COVER TO BE LABELED "WATER VALVE MAIN VAULT".
5. BLOCK OPENING BELOW PIPE CENTERLINE WITH BRICK AND MORTAR INSTALLED ON THE OUTSIDE OF THE VAULT WALL. CONTINUE BRICK AND MORTAR TO ONE COURSE ABOVE THE PIPE CENTERLINE.

REFERENCES

SEE STD. DETAIL PLATE	FOR
S-4	TOP SLAB DIMENSIONS & REINFORCEMENT;
S-5	TRANSITION UNIT TO 48" DIA. FROM 60" & 72" DIA.
S-15	"DOGHOUSE" MANHOLE RISER
W-19	7" MANHOLE FRAME & COVER

TABLE 1

PIPE DIAMETER	MANHOLE DIAMETER
24" OR LESS	48"
30" TO 36"	60"
42" TO 48"	72"

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[Signature]
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7/24/06
DATE

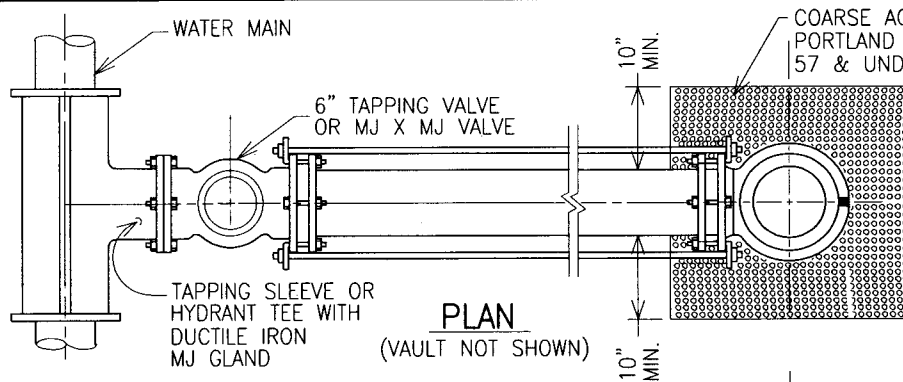
DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS

DEWATERING VALVE AND VAULT

ISSUED: AUGUST, 1997
REVISED: FEBRUARY, 2002
REVISED: MARCH, 2006

PLATE

W-2



PLAN
(VAULT NOT SHOWN)

APPROVED 3' DIA. PRECAST VAULT
OR
SMALL SECTIONAL VAULT - (STD. DETAIL PLATE W-14)
OR
PRECAST SANITARY MANHOLE (48\"/>

PRECAST CONCRETE GRADE RINGS
OR BRICK MASONRY. (SEE STD.
DETAIL PLATE G-3)

ROAD SURFACE

18\"/>

SECTIONAL VAULT
SHOWN

TAPPING SLEEVE, SADDLE
OR MJ HYDRANT TEE
WITH RESTRAINT

STD. CONCRETE BUTTRESS
FOR TAPPING TEE (MIX #3)

4\"/>

STANDARD
TAPPING VALVE

BRICK & MORTAR
MUST REMAIN ON
OUTSIDE OF VAULT
2\"/>

RESTRAINED JOINTS
APPROVED BY
ENGINEER MAY BE
SUBSTITUTED.

6\"/>

BRICK SUPPORT

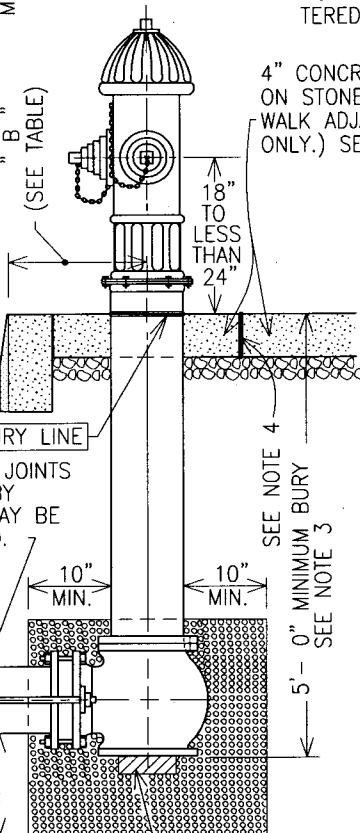
WATER MAIN

BOTTOM SLAB-
SEE NOTE 2

ELEVATION

HYDRANT WITHIN SIDEWALK

AASHTO M43 NO.1 STONE
WITH 6\"/>



" B " (SEE TABLE)

4\"/>

SEE NOTE 4
SEE NOTE 3

BRICK LAYER OF FILTER FABRIC
BETWEEN STONE & BACKFILL

ELEVATION
HYDRANT OUTSIDE SIDEWALK

PAVEMENT / SHOULDER

2' x 2' x 6\"/>

BURY LINE

COMPACTION PER
STD. SPECIFICATION
204.03.04.

NOTES

1. FIRE HYDRANT SHALL NOT BE INSTALLED WITHIN SIDEWALK LESS THAN 5' WIDE WITHOUT PRIOR WRITTEN APPROVAL FROM THE BUREAU OF ENGINEERING & CONSTRUCTION.
2. BOTTOM SLAB (SECTIONAL VAULTS): 6\"/>

INSTALLATION	" B "	FROM
STREETS WITHOUT CURB & GUTTER	* 2'- 0" MIN. TO 12'- 0" MAX.	LIMIT OF STABILIZED SHOULDER OR PAVEMENT.
STREET (EXISTING OR NEW) - SIDEWALK ADJACENT TO CURB. SEE NOTE 1.	1'- 6"	TOP OF CURB FACE.
NEW SUBDIVISION- WITH STD. 7\"/>	2'- 0"	TOP OF CURB FACE.
NEW SUBDIVISION- WITH MOUNTABLE CURB & GUTTER (STD. DETAIL PLATE R-21)	3'- 4" MIN.	FACE OF CURB (A) (SEE STD. DETAIL PLATE R-21)

* SET BEYOND LIMITS OF ROADSIDE SWALE;
WITHIN RIGHT-OF-WAY.



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[Signature]
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7/24/06
DATE

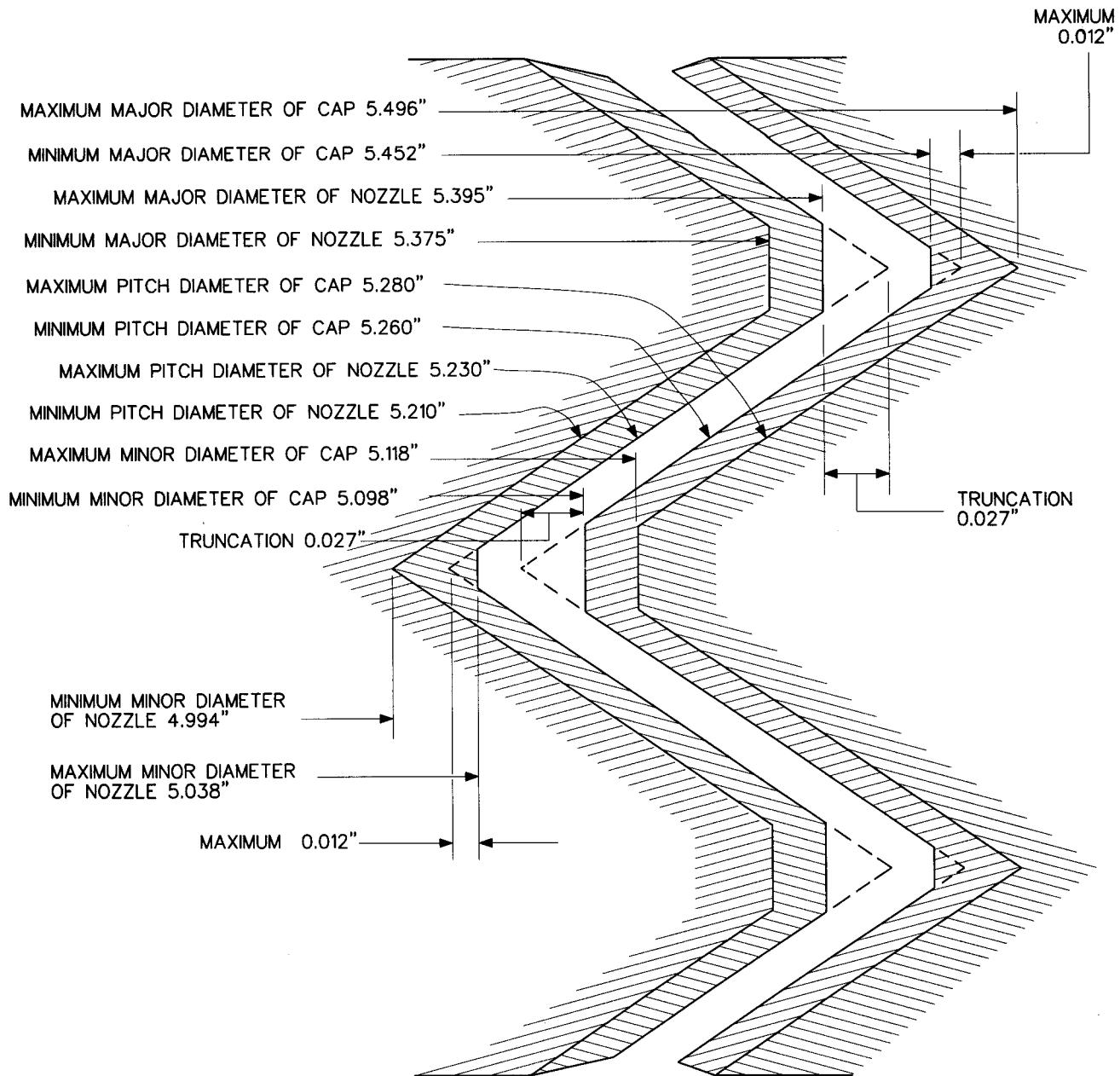
DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS

STANDARD INSTALLATION OF FIRE HYDRANTS

ISSUED: JANUARY, 1979
REVISED: DECEMBER, 1979
REVISED: JUNE, 2006

PLATE
W-3A

W-03AREV2.dwg 6/1/2006 6:07 PM



FORM OF THREAD OF "BALTIMORE CITY STANDARD"
4 1/2 " FIRE HYDRANT NOZZLE & CAP

4 THREADS PER INCH
 UN 60° THREAD FORM



APPROVAL
William H. Kopp
 DIRECTOR
 BUR. OF ENGINEERING/CONSTRUCTION
 10/23/97
 DATE

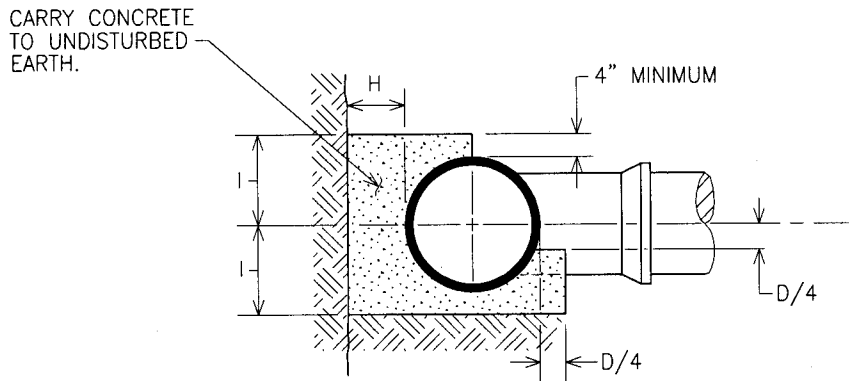
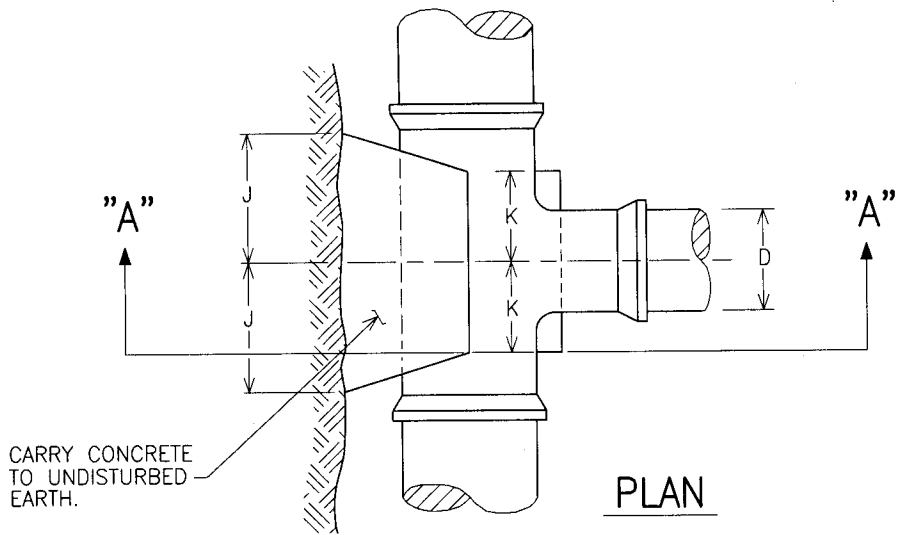
DEPARTMENT OF PUBLIC WORKS
 STANDARD WATER DETAILS

**FIRE HYDRANT STEAMER
 NOZZLE THREAD DETAIL**

ISSUED: MARCH 5, 1982
 REVISED: AUGUST, 1997
 REVISED:

PLATE

W-3B



NOTES

BUTTRESS FOR TEES									
SIZE OF BRANCH									
D	6"	8"	10"	12"	16"	20"	24"	30"	36"
H	8"	9"	10"	1'-0"	1'-2"	1'-10"	1'-8"	2'-6"	4'-6"
I	9"	11"	1'-2"	1'-4"	1'-9"	2'-2"	2'-7"	3'-3"	3'-11"
J	8"	11"	1'-1"	1'-4"	1'-9"	2'-2"	2'-7"	3'-2"	3'-9"
K	6"	8"	8"	8"	10"	1'-2"	1'-4"	1'-6"	1'-10"

1. ALL CONCRETE TO BE MIX #1. (2,500 p.s.i.)
2. BUTTRESS DIMENSIONS SHOWN ARE MINIMUM. DIMENSIONS ARE BASED UPON SOIL BEARING PRESSURE OF 3,000 p.s.f., STATIC WATER PRESSURE OF 150 p.s.i. AND DUCTILE IRON PIPE SIZES. WHERE PRESSURE EXCEEDS 150 p.s.i. OR WHERE SOIL BEARING PRESSURE IS LESS THAN 3,000 p.s.f. SPECIAL BUTTRESS DESIGN IS REQUIRED.



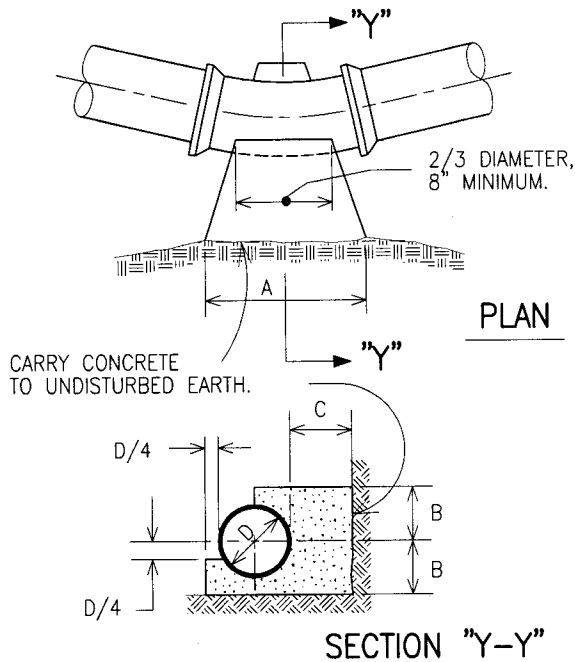
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 7/24/06
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DEPARTMENT OF PUBLIC WORKS
 STANDARD WATER DETAILS
BUTTRESS FOR TEES

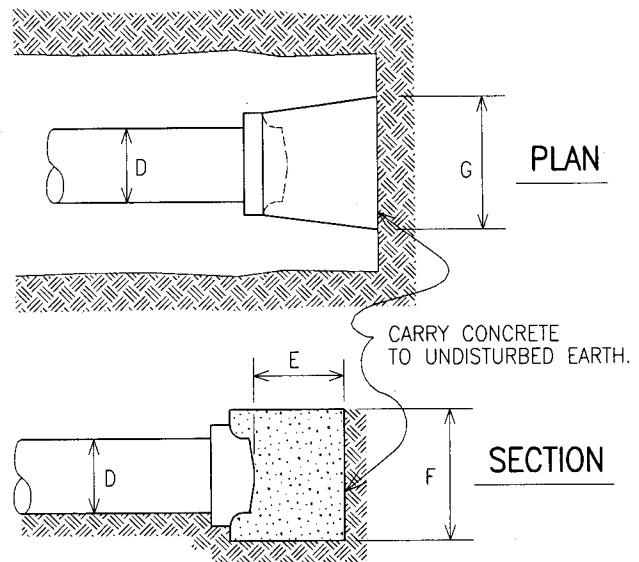
ISSUED: AUGUST, 1955
 REVISED: OCTOBER 27, 1959
 REVISED: MAY, 2006

PLATE
W-4

BUTTRESS FOR HORIZONTAL BENDS



BUTTRESS FOR CAPS



NOTES :

- ALL CONCRETE TO BE MIX #1.
- BUTTRESS DIMENSIONS SHOWN ARE MINIMUM. DIMENSIONS ARE BASED UPON SOIL BEARING PRESSURE OF 3,000 p.s.f., STATIC WATER PRESSURE OF 150 p.s.i. AND DUCTILE IRON PIPE SIZES. WHERE PRESSURE EXCEEDS 150 p.s.i. OR WHERE SOIL BEARING PRESSURE IS LESS THAN 3,000 p.s.f. SPECIAL BUTTRESS DESIGN IS REQUIRED, OR ALTERNATIVE RESTRAINT METHODS SHALL BE USED.

BUTTRESS FOR HORIZONTAL BENDS

	D	6"	8"	10"	12"	16"	20"	24"	30"	36"
1/64 BEND	A						1'-8"	2'-0"	2'-6"	3'-0"
	B						10"	1'-0"	1'-3"	1'-6"
	C						10"	1'-0"	1'-1"	1'-2"
1/32 BEND	A	8"	8"	10"	1'-0"	1'-4"	1'-8"	2'-0"	2'-6"	3'-0"
	B	7"	8"	9"	10"	1'-0"	1'-2"	1'-4"	1'-7"	1'-11"
	C	7"	7"	8"	8"	9"	10"	1'-0"	1'-1"	1'-2"
1/16 BEND	A	9"	1'-0"	1'-6"	1'-9"	2'-3"	3'-0"	3'-8"	4'-4"	5'-6"
	B	7"	8"	9"	10"	1'-1"	1'-3"	1'-5"	1'-10"	2'-1"
	C	8"	9"	10"	11"	1'-2"	1'-4"	1'-6"	1'-9"	2'-0"
1/8 BEND	A	1'-3"	1'-8"	2'-3"	2'-10"	3'-6"	4'-4"	5'-6"	6'-11"	8'-1"
	B	7"	9"	10"	1'-0"	1'-4"	1'-8"	1'-10"	2'-3"	2'-9"
	C	8"	9"	10"	1'-1"	1'-4"	1'-8"	2'-1"	2'-8"	3'-1"
1/4 BEND	A	2'-4"	2'-10"	3'-2"	3'-8"	5'-4"	SPECIAL DESIGN			
	B	7"	10"	1'-1"	1'-4"	1'-7"				
	C	1'-5"	1'-7"	1'-8"	1'-9"	2'-3"				

BUTTRESS FOR CAPS

	D	6"	8"	10"	12"	16"	20"	24"	30"	36"
E		6"	8"	8"	10"	1'-1"	1'-4"	1'-8"	2'-4"	2'-11"
F		1'-3"	1'-8"	2'-0"	2'-4"	3'-0"	3'-10"	4'-6"	5'-1"	6'-0"
G		1'-6"	2'-0"	2'-6"	3'-0"	4'-0"	4'-10"	5'-10"	7'-11"	9'-8"



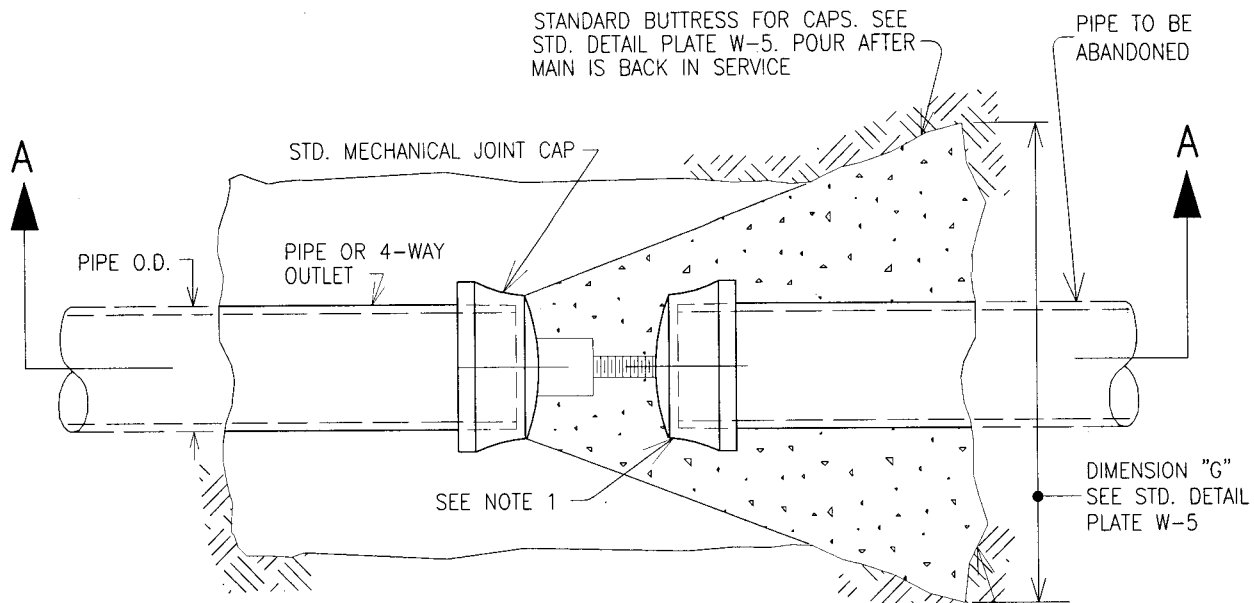
APPROVAL
[Signature]
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[Signature]
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 7/24/66
 DATE

DEPARTMENT OF PUBLIC WORKS STANDARD WATER DETAILS BUTTRESSES FOR CAPS AND HORIZONTAL BENDS

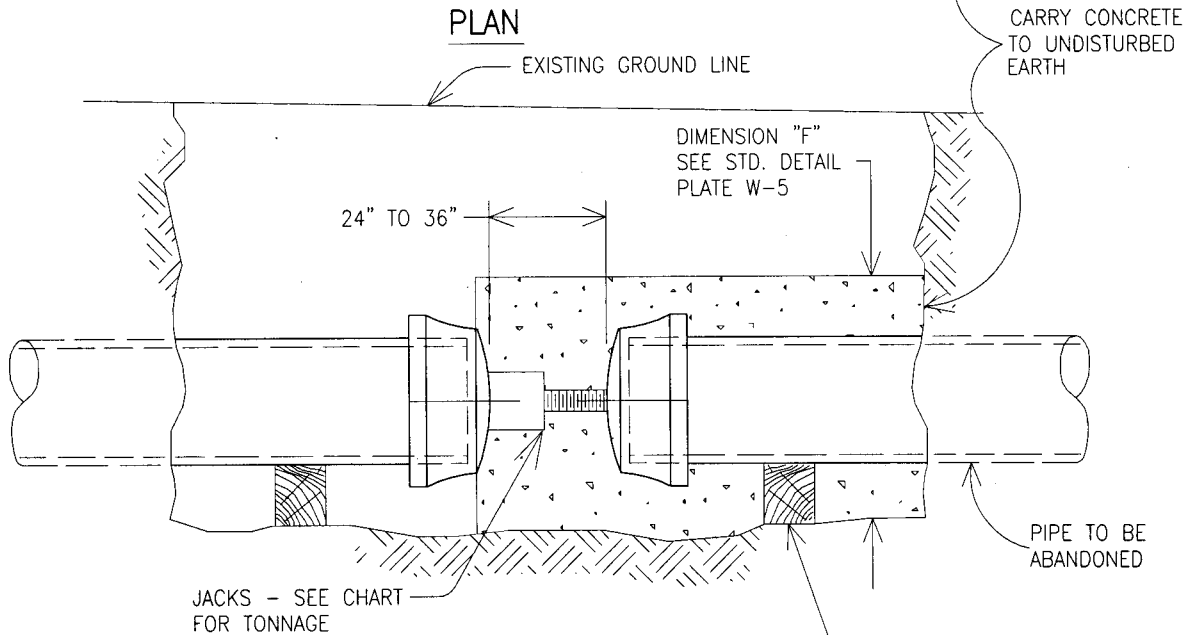
ISSUED: AUGUST 22, 1955
 REVISED: DECEMBER 31, 1963
 REVISED: MAY, 2006

PLATE

W-5



PLAN



SECTION A - A

NOTES

1. GLAND, BOLTS AND GASKET NOT REQUIRED ON THIS CAP UNLESS LEAKAGE IS PRESENT IN ABANDONED PIPE. FOR CAP DIAMETER > 12", JACK LOAD WITH BLOCKING ON CAPS.
2. O.D. MEASURED IN INCHES.
3. IN LIEU OF JACK, STEEL BLOCKING OF SAME CAPACITY MAY BE USED.
4. STANDARD DETAIL PLATE W-5A (THIS PLATE) SHALL BE USED FOR DUCTILE IRON PIPE ONLY. FOR HDPE PIPE, CONSULT THE DESIGN DIVISION OF THE BUREAU OF ENGINEERING AND CONSTRUCTION.

JACK TONNAGE CHART

JACK TONNAGE @ 100 psi	$\frac{O.D.^2}{25}$ TONS
JACK TONNAGE @ 150 psi	$\frac{O.D.^2}{16}$ TONS
JACK TONNAGE @ 200 psi	$\frac{O.D.^2}{12}$ TONS



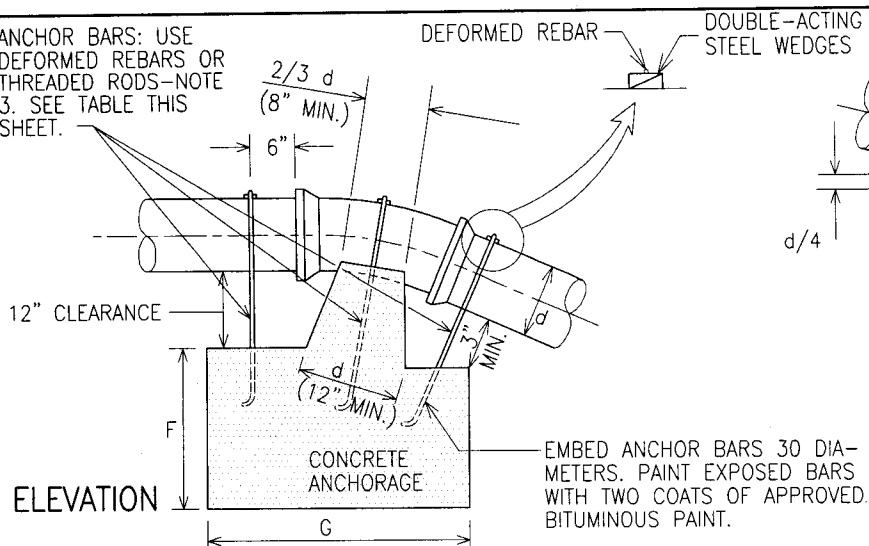
APPROVAL
[Signature]
 DIRECTOR
[Signature]
 BUR. OF ENGINEERING/CONSTRUCTION
 1-2-07
 DATE

DEPARTMENT OF PUBLIC WORKS
 STANDARD WATER DETAILS
 DOUBLE CAPS, JACK
 AND BUTTRESS

ISSUED: AUGUST, 1997
 REVISED: OCTOBER, 2006
 REVISED:

PLATE
W-5A

ANCHOR BARS: USE DEFORMED REBARS OR THREADED RODS—NOTE 3. SEE TABLE THIS SHEET.



PLAN

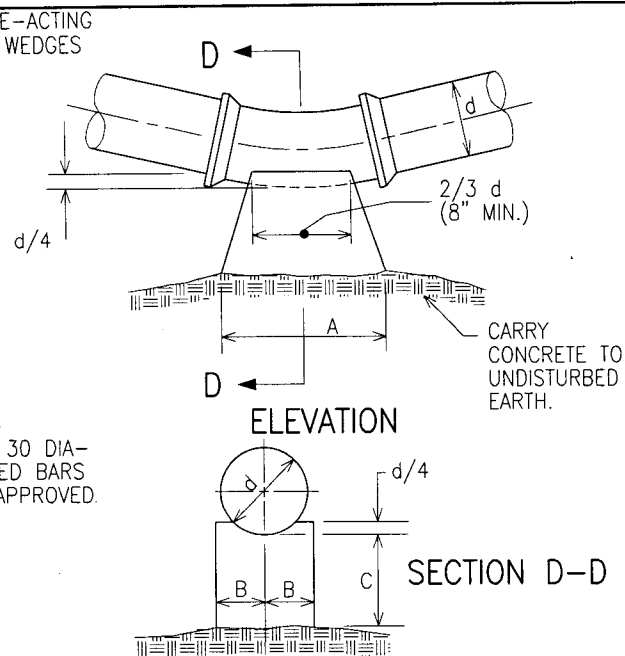
ANCHORAGE FOR VERTICAL BENDS

NOTES :

1. ALL CONCRETE TO BE MIX #1.
2. BUTTRESS DIMENSIONS SHOWN ARE MINIMUM. DIMENSIONS ARE BASED UPON 3,000 P.S.F. SOIL BEARING PRESSURE, 150 P.S.I. STATIC WATER PRESSURE AND DUCTILE IRON PIPE SIZES. SPECIAL BUTTRESS DESIGN IS REQUIRED WHERE PRESSURE EXCEEDS 150 P.S.I. OR WHERE SOIL BEARING PRESSURE IS LESS THAN 3,000 P.S.F.
- 3A. USE DEFORMED REBAR OR THREADED ROD AS SHOWN FOR ANCHORING DIP. SEE STD. DETAIL PLATE W-1 FOR THREADED RODS. DEFORMED REBARS: TACK WELD STEEL WEDGES TOGETHER & TACK WELD REBAR TO TOP STEEL WEDGE AFTER PLACEMENT.
- 3B. FOR ANCHORING HDPE PIPE, USE 3" WIDE HEAVY GAUGE 18-8 TYPE 304 S.S. STRAPS & THREADED STEEL RODS & NUTS.
4. ALTERNATE DESIGNS WILL BE CONSIDERED SUBJECT TO APPROVAL BY BUREAU OF ENGINEERING & CONSTRUCTION.

PIPE SIZE	ANCHOR BARS *			
	1/64 BEND	1/32 BEND	1/16 BEND	1/8 BEND
6"		3-#6	3-#6	3-#6
8"		3-#6	3-#6	3-#6
10"		3-#6	3-#6	3-#6
12"		3-#6	3-#6	3-#6
16"	3-#6	3-#6	3-#6	3-#6
20"	3-#6	3-#6	3-#6	4-#6
24"	3-#6	3-#6	3-#6	5-#6
30"	3-#6	3-#6	5-#6	5-#7
36"	3-#6	4-#6	5-#7	6-#7

* REBAR # AS INDICATED OR EQUAL DIAM. THREADED ROD.



BUTTRESSES FOR VERTICAL BENDS

		BUTTRESSES FOR VERTICAL BENDS								
		PIPE SIZE								
		6"	8"	10"	12"	16"	20"	24"	30"	36"
1/64 BEND	A					1'-4"	1'-8"	2'-0"	2'-6"	3'-0"
	B					8"	10"	1'-0"	1'-3"	1'-6"
	C					10"	10"	1'-0"	1'-1"	1'-2"
1/32 BEND	A	8"	8"	10"	1'-0"	1'-4"	1'-8"	2'-0"	2'-6"	3'-0"
	B	7"	8"	9"	10"	1'-0"	1'-2"	1'-4"	1'-7"	1'-11"
	C	7"	7"	8"	8"	9"	10"	1'-0"	1'-1"	1'-2"
1/16 BEND	A	9"	1'-0"	1'-6"	1'-9"	2'-3"	3'-0"	3'-8"	4'-4"	5'-6"
	B	7"	8"	8"	10"	1'-1"	1'-3"	1'-5"	1'-10"	2'-1"
	C	7"	7"	8"	8"	9"	1'-0"	1'-2"	1'-4"	1'-9"
1/8 BEND	A	1'-3"	1'-8"	2'-3"	2'-10"	3'-6"	4'-4"	5'-6"	6'-8"	8'-1"
	B	7"	9"	10"	1'-0"	1'-4"	1'-8"	1'-10"	2'-4"	2'-9"
	C	7"	8"	10"	1'-1"	1'-4"	1'-8"	2'-1"	2'-6"	3'-1"

		ANCHORAGES FOR VERTICAL BENDS								
		PIPE SIZE								
		6"	8"	10"	12"	16"	20"	24"	30"	36"
1/64 BEND	E					2'-0"	2'-3"	2'-8"	3'-6"	4'-0"
	F					2'-11"	3'-7"	4'-4"	4'-6"	5'-0"
	G					4'-0"	4'-6"	4'-6"	5'-0"	5'-7"
1/32 BEND	E	1'-6"	1'-8"	2'-0"	3'-0"	3'-6"	4'-0"	4'-3"	4'-6"	5'-0"
	F	2'-0"	2'-7"	2'-11"	2'-8"	3'-5"	3'-8"	4'-4"	5'-5"	6'-3"
	G	2'-6"	3'-0"	3'-4"	3'-5"	4'-0"	5'-0"	5'-9"	6'-6"	7'-4"
1/16 BEND	E	2'-0"	3'-4"	3'-8"	4'-0"	4'-6"	4'-10"	5'-4"	6'-0"	6'-10"
	F	2'-7"	2'-7"	2'-9"	3'-3"	3'-10"	4'-0"	4'-7"	5'-8"	6'-5"
	G	2'-10"	3'-0"	3'-10"	4'-2"	5'-6"	7'-6"	8'-6"	9'-4"	10'-4"
1/8 BEND	E	2'-6"	3'-4"	4'-0"	4'-6"	5'-4"	6'-0"	6'-6"	7'-6"	8'-6"
	F	3'-4"	3'-5"	3'-8"	4'-4"	5'-0"	5'-7"	6'-2"	7'-1"	8'-3"
	G	3'-4"	4'-2"	4'-10"	5'-2"	6'-6"	8'-0"	9'-6"	11'-0"	12'-0"



APPROVAL
RL All
DIRECTOR
Robert
BUR. OF ENGINEERING/CONSTRUCTION
1-2-07
DATE

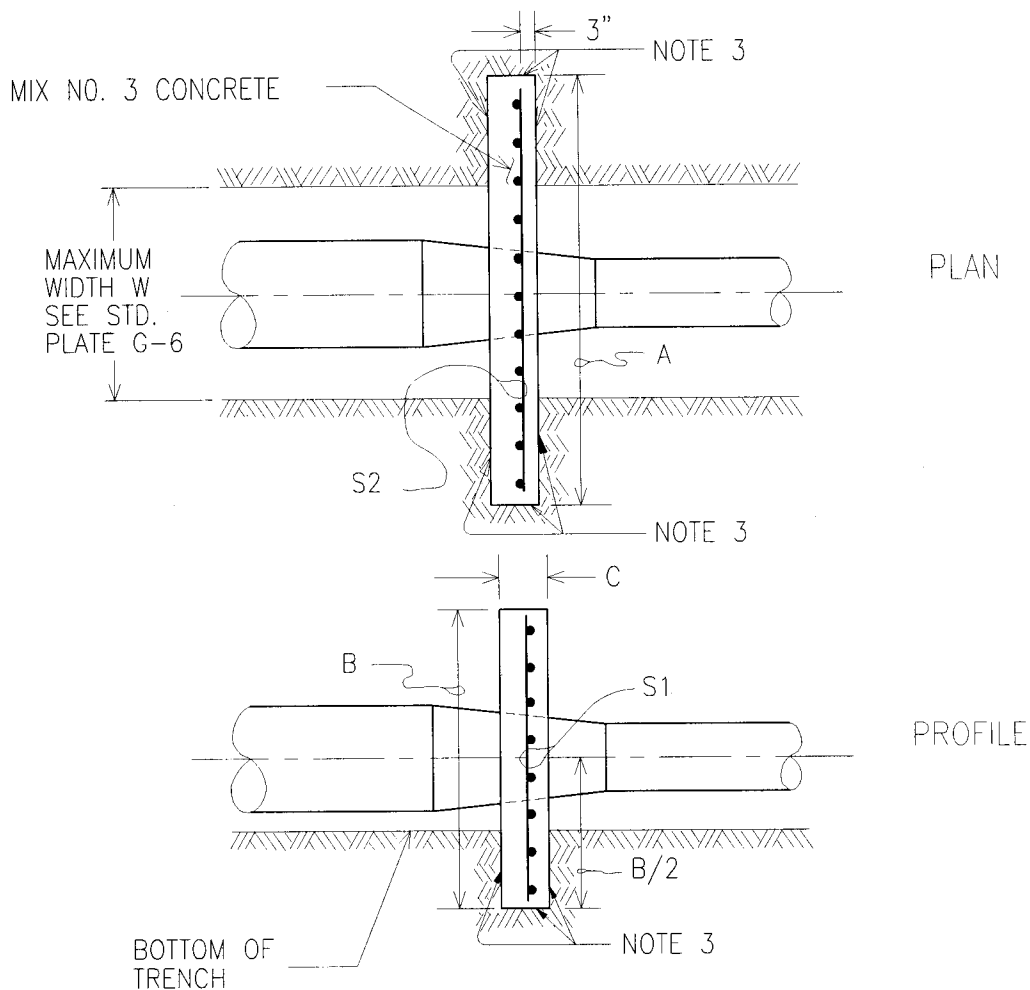
DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS

BUTTRESSES AND ANCHORAGES FOR VERTICAL BENDS

ISSUED: AUGUST 22, 1955
REVISED: AUGUST, 1997
REVISED: OCTOBER, 2006

PLATE

W-6



SIZE	A	B	C	S1	S2
8" x 4"	5' - 0"	1' - 6"	8"	3 - #4	
12" x 4"	6' - 6"	2' - 0"	8"	4 - #6	
12" x 6"	6' - 0"	2' - 0"	8"	4 - #6	
12" x 8"	5' - 6"	2' - 0"	8"	4 - #5	
16" x 6"	7' - 6"	2' - 4"	8"	5 - #7	
16" x 8"	7' - 0"	2' - 4"	8"	5 - #7	5 - #7
16" x 10"	6' - 6"	2' - 4"	8"	5 - #6	5 - #6
16" x 12"	6' - 6"	2' - 0"	8"	5 - #6	5 - #6
20" x 10"	8' - 0"	3' - 0"	10"	8 - #6	8 - #6
20" x 12"	7' - 6"	3' - 0"	10"	7 - #6	7 - #6
20" x 16"	6' - 6"	3' - 0"	10"	4 - #6	4 - #6

1. DESIGNED FOR 150 PSI TEST PRESSURE, 3000 PSF SOIL BEARING VALUE & DUCTILE IRON PIPE SIZES.
2. THRUST BLOCKS GENERALLY NOT NEEDED FOR 6" x 4", 8" x 6", 10" x 8" AND 12" x 10". PROPERLY DESIGNED RESTRAINED JOINTS CAN BE USED IN LIEU OF THRUST BLOCKS.
3. CONCRETE SHALL BE POURED AGAINST UNDISTURBED EARTH WHERE INDICATED.



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 7/24/06
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DEPARTMENT OF PUBLIC WORKS
 STANDARD WATER DETAILS
**THRUST BLOCKS
 FOR REDUCERS**

ISSUED: JULY 1, 1986
 REVISED: AUGUST, 1997
 REVISED: MAY, 2006

PLATE
W-6A

MAXIMUM PERMISSIBLE DEFLECTION IN LAYING
MECHANICAL-JOINT DUCTILE IRON PIPE.

SIZE OF PIPE IN.	MAX. PERMISSIBLE DEFLECTION PER LENGTH - IN.		APPROX. RADIUS OF CURVE PRODUCED BY SUCCESSION OF JOINTS - FT.	
	18 - FT. LENGTH	20 - FT. LENGTH	18 - FT. LENGTH	20 - FT. LENGTH
4	31	35	125	140
6	27	30	145	160
8	20	22	195	220
10	20	22	195	220
12	20	22	195	220
16	13.5	15	285	320
20	11	12	340	380
24	9	10	450	500

MAXIMUM PERMISSIBLE DEFLECTION IN LAYING
PUSH-ON JOINT DUCTILE IRON PIPE.

SIZE OF PIPE IN.	MAX. PERMISSIBLE DEFLECTION PER LENGTH - IN.		APPROX. RADIUS OF CURVE PRODUCED BY SUCCESSION OF JOINTS - FT.	
	18 - FT. LENGTH	20 - FT. LENGTH	18 - FT. LENGTH	20 - FT. LENGTH
4	19	21	205	230
6	19	21	205	230
8	19	21	205	230
10	19	21	205	230
12	19	21	205	230
16	15	17	260	285
20	15	17	260	285
24	15	17	260	285

NOTES: 1. SOURCE: AWWA 600-99 (EXCEPT 16" - 24" PUSH-ON JOINTS, WHICH ARE BASED UPON A 4 DEGREE DEFLECTION ANGLE.

2. FOR DESIGN, MAXIMUM DEFLECTION OF DUCTILE IRON PIPE SHALL BE LIMITED TO 80% OF THAT SHOWN IN TABLES ABOVE.

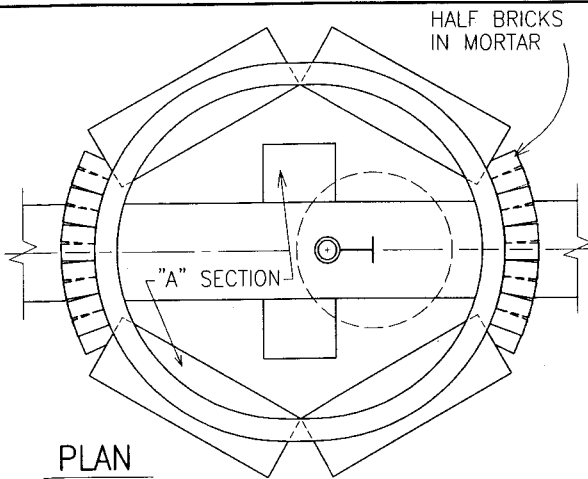


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DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS
CURVATURE OF WATER MAINS

ISSUED: DECEMBER, 1963
REVISED: FEBRUARY, 1987
REVISED: OCTOBER, 2006

PLATE
W-7

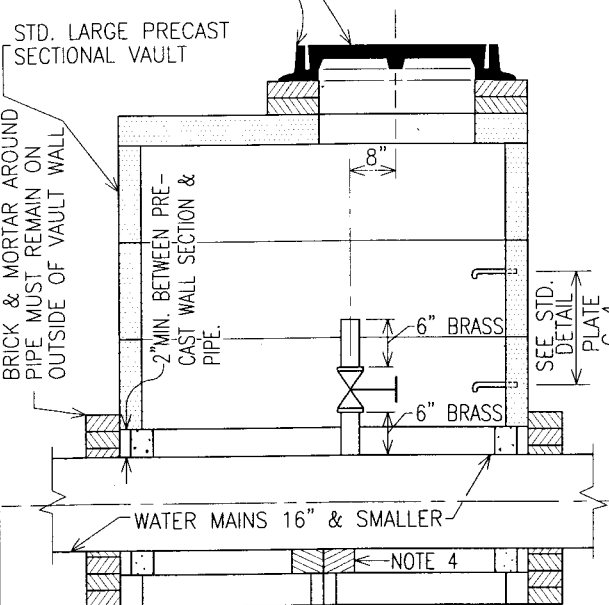


PLAN

24" MANHOLE FRAME & COVER. SEE NOTE 2.

STD. LARGE PRECAST SECTIONAL VAULT

BRICK & MORTAR AROUND PIPE MUST REMAIN ON OUTSIDE OF VAULT WALL

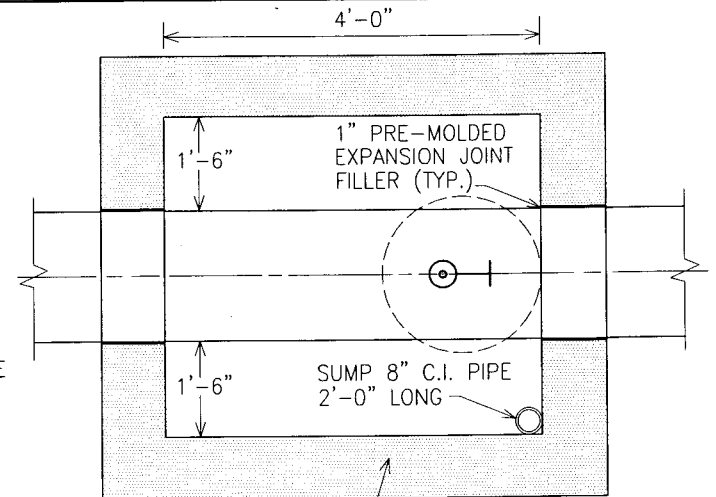


SECTION

TABLE 1	
PIPE DIAMETER	AIR RELEASE ASSEMBLY
4"	1" CORP. WITH TAPPING SADDLE / GATE VALVE
6"	1" CORP. / GATE VALVE
8" - 12"	1.5" CORP. / GATE VALVE
16" - 30"	2" CORP. / GATE VALVE
36" - 48"	4" RESILIENT GATE VALVE, FI.x FI.
54"+	6" RESILIENT GATE VALVE, FI.x FI.

NOTES

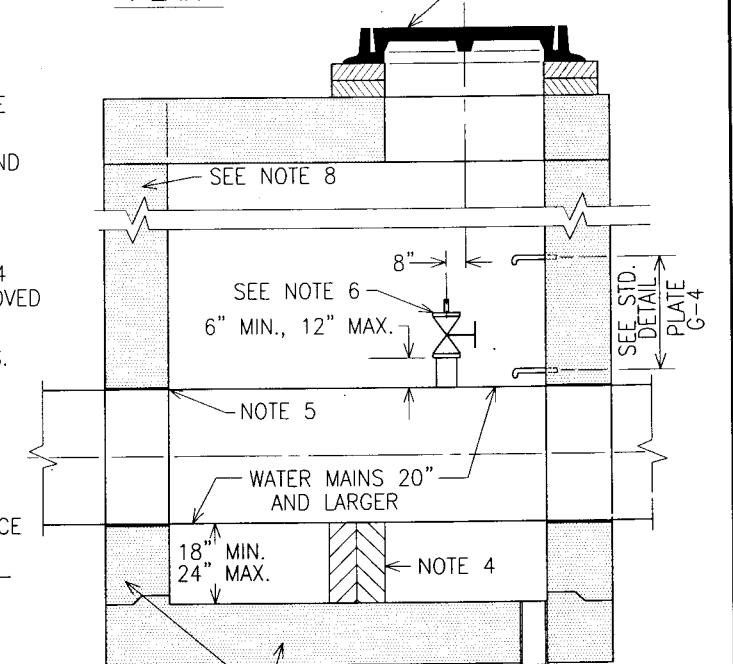
- HYDRANT MAY BE INSTALLED AS AN ALTERNATE TO THE AIR RELEASE VALVE.
- MANHOLE COVER TO BE MARKED "WATER VALVE MAIN VAULT".
- FOR CONNECTION TO 4" DUCTILE IRON PIPE, USE SERVICE SADDLE (FORD FC-202 OR SMITH-BLAIR 315). FOR CONNECTION TO 4" - 30" HDPE PIPE, USE APPROVED ELECTROFUSION TAPPING SADDLE.
- SUPPORTS FOR PIPES:
4" TO 16" PIPES: "A" SECTION & 8" BRICK PIER;
20" TO 30" PIPES: 12" x 12" BRICK PIER;
36"+ PIPES: 12" WIDE REINF. CONC. CRADLE. PROVIDE BOND BREAKER.
- PLACE 1" PREMOLDED EXPANSION JOINT FILLER AROUND PIPE (TYP.) FOR CAST-IN-PLACE STRUCTURE.
- PIPE 36" & LARGER - PROVIDE VERTICAL OUTLET, VALVE & BLIND FLANGE WITH GASKET. DRILL & TAP CENTER OF BLIND FLANGE & PROVIDE FORD FB500-4 CORPORATION WITH LA21-44 EIGHTH BEND OR APPROVED EQUAL.
- FOR ADDITIONAL VAULT REQUIREMENTS, SEE NOTE NOS. 1 THROUGH 6, AND NOTE 12 ON STANDARD DETAIL PLATE W-16.
- CAST-IN-PLACE VAULT (SHOWN) OR PRECAST VAULT WITH DOGHOUSE OPENINGS (NOT SHOWN).
- FOR CONNECTION TO 6" - 12" DUCTILE IRON PIPE, CONTRACTOR MAY INSTALL CORPORATION USING SERVICE SADDLE (FORD FC-202 OR SMITH-BLAIR 315). FOR CONNECTION TO 16" - 30" DUCTILE IRON PIPE, CONTRACTOR MAY INSTALL CORPORATION USING SERVICE SADDLE (FORD FC-202 OR SMITH-BLAIR 317).



PLAN

SEE NOTE 8

24" MANHOLE FRAME & COVER. SEE NOTE 2.



SECTION

MIX #3 CONCRETE

CONCRETE PLUG



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DEPARTMENT OF PUBLIC WORKS STANDARD WATER DETAILS AIR RELEASE VALVE & VAULT PRECAST & CAST IN PLACE

ISSUED: AUGUST 22, 1955
REVISED: AUGUST 28, 1961
REVISED: OCTOBER, 2006

PLATE

W-8

APPROVED 3' DIA. PRECAST VAULT (4", 6", 8")
OR
LARGE SECTIONAL VAULT (10", 12")
SEE STD. DETAIL PLATE W-15.
OR
SMALL SECTIONAL VAULT (4", 6", 8")
SEE STD. DETAIL PLATE W-14
OR
PRECAST SANITARY MANHOLE (48" SHALLOW)
SEE STD. DETAIL PLATE S-4
(SECTIONAL VAULT SHOWN)

PRECAST CONCRETE GRADE
RINGS OR BRICK MASONRY.
(SEE STD. DETAIL PLATE G-3)

ROADWAY

SEE NOTE 5

ALLOW CLEARANCE
FOR VALVE WRENCH

STANDARD
TAPPING VALVE

2" MIN. GAP
BETWEEN PRECAST
WALL & PIPE (TYP.)

BRICK & MORTAR AROUND
PIPE MUST REMAIN ON
OUTSIDE OF VAULT WALL (TYP.)

4", 6", 8", 10" OR 12"
SEE NOTE 6

TAPPING SLEEVE
OR SADDLE

BRICK SUPPORT

STANDARD CONCRETE BUTTRESS
FOR TAPPING TEE (MIX #3 CONCRETE).
SEE STD. DETAIL PLATE W-4

BOTTOM SLAB- SEE NOTE 4.

NOTES

1. SEE BALTIMORE CO. STD. DETAIL PLATE G-4 FOR MANHOLE STEP SPECIFICATIONS, PLACEMENT AND SPACING. LOCATE STEPS AS SHOWN (PRECAST SHALLOW MANHOLE ONLY).
2. MANHOLE CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS INDICATED ON STD. DETAIL PLATES S-4, S-5 AND S-15 (PRECAST SHALLOW MANHOLE ONLY).
3. IF PRECAST "DOGHOUSE" MANHOLE RISER IS USED, PROVIDE AND MAINTAIN A 2" GAP BETWEEN PIPE AND RISER. SEE STD. DETAIL PLATE S-15 FOR DOGHOUSE RISER REQUIREMENTS.
4. BOTTOM SLAB :
SECTIONAL VAULTS- 6" THICK 3500 psi CONCRETE SLAB;
#4 BARS @ 12" C/C E.W. AT $\frac{1}{4}$ OF SLAB.
PRECAST MANHOLE- SEE STD. DETAIL PLATES S-4, S-15 AS APPLICABLE.
5. SECTIONAL VAULT- 12" MINIMUM, 18" MAXIMUM.
PRECAST MANHOLE- SEE STD. DETAIL PLATE S-4.
6. IF TAPPING VALVE FUNCTIONS AS A SERVICE VALVE TO A LARGE METER (3" OR GREATER), PIPE BETWEEN TAPPING VALVE & METER SHALL BE DIP ONLY.



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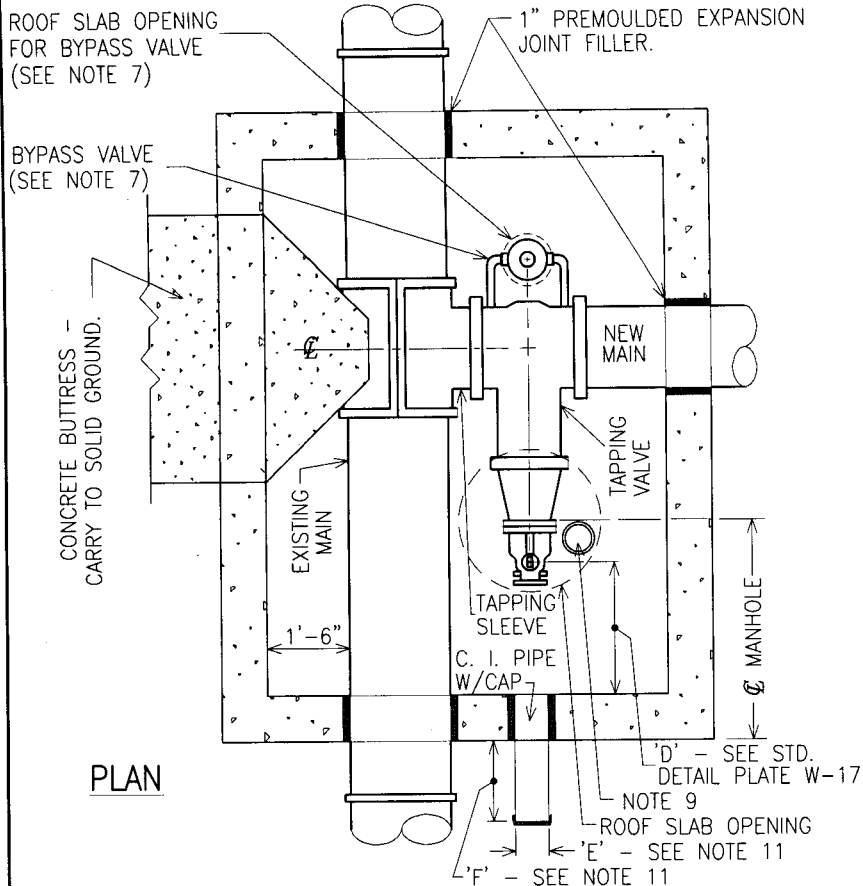
DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS

TAPPING SLEEVE & VALVE

ISSUED: AUGUST, 1997
REVISED: MARCH, 2002
REVISED: MARCH, 2006

PLATE

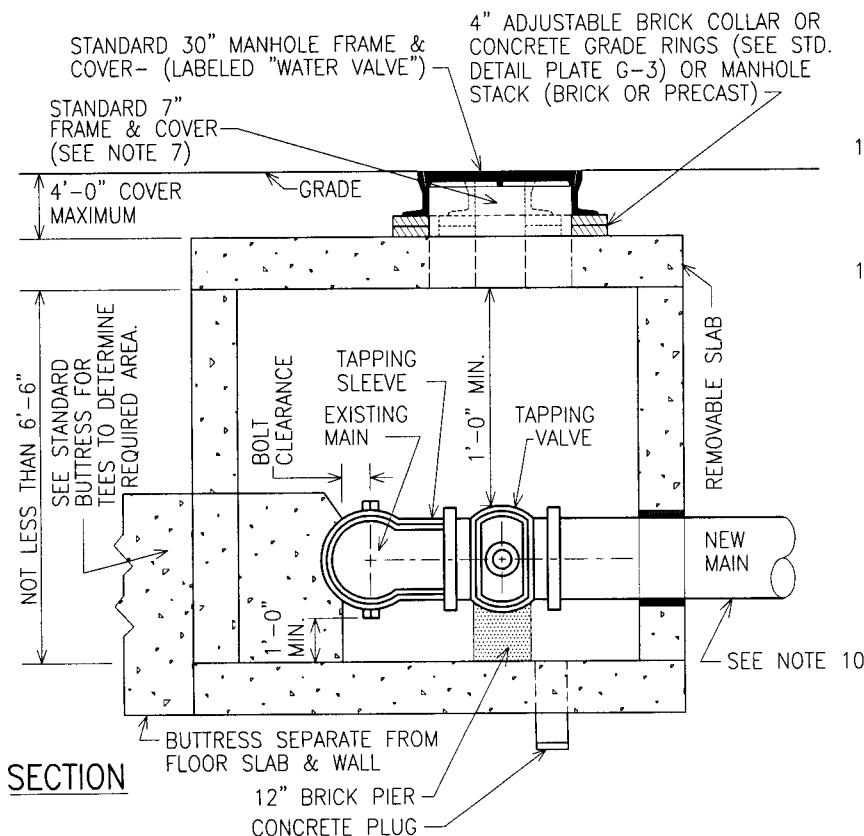
W-9



PLAN

NOTES

1. VAULTS SHALL BE DESIGNED TO MATCH SUPPLIED VALVES. SHOP DRAWINGS SHALL BE SUBMITTED & APPROVED FOR EACH VAULT. SHOP DRAWINGS SHALL BE SIGNED & SEALED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER.
2. LOADS: L.L. = MdSHA HS-27 (135% OF AASHTO HS20-44 LOADING)
D.L. = EARTH AT 110 Lbs. PER CU. FT. & 42 Lbs. PER CU. FT. EQUIVALENT FLUID PRESSURE.
3. CONCRETE & REINFORCING SHALL CONFORM TO THE STANDARD BALTIMORE COUNTY SPECIFICATION.
4. CAST-IN-PLACE CONCRETE SHALL BE MIX #3.
5. TOP SLAB MUST BE SEPARATE AND REMOVABLE FROM VAULT. TOP SLAB OPENINGS MUST ALIGN WITH VALVE CONTROLS AS INSTALLED.
6. VAULT FLOTATION TO BE ADDRESSED BY CERTIFYING ENGINEER TO SATISFACTION OF BUREAU OF ENGINEERING & CONSTRUCTION.
7. VALVES 24 INCHES IN DIAMETER OR LESS SHALL BE OF RESILIENT SEAT DESIGN WITHOUT BYPASS VALVE & WITHOUT 7 INCH FRAME & COVER.
8. FOR VALVES 30 INCHES IN DIAMETER OR LARGER, CONSULT DESIGN DIVISION OF THE BUREAU OF ENGINEERING & CONSTRUCTION.
9. SUMP- 8" PIPE, 2' LONG, PITCH FLOOR TO SUMP. ADJUST LOCATION AS NECESSARY TO BE UNDER ROOF SLAB OPENING.
10. IF TAPPING VALVE FUNCTIONS AS A SERVICE VALVE TO A LARGE METER (3" OR GREATER), PIPE BETWEEN TAPPING VALVE AND METER SHALL BE D.I.P. ONLY.
11. FOR VALVES 16" TO 24", USE F=18" AND E=6". FOR 30" VALVES, USE F=24" AND E=8".



SECTION



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DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS

STANDARD INSTALLATION OF TAPPING SLEEVE & HOR. VALVE

ISSUED: AUGUST, 1997
REVISED: MARCH, 2006
REVISED:

PLATE

W-10



1. ON 4" AND 6" PIPE (ALL TYPES) USE 1" CORPORATION STOP, 1" GATE VALVE AND 1" PIPE.
2. ON 4" DUCTILE IRON PIPE USE SERVICE SADDLE (FORD FC202 OR SMITH-BLAIR 315).
3. FOR CONNECTION TO 6" - 12" DUCTILE IRON PIPE, CONTRACTOR MAY INSTALL CORPORATION USING SERVICE SADDLE (FORD FC202 OR SMITH-BLAIR 315).
4. ON 4" - 12" HDPE PIPE, USE APPROVED ELECTROFUSION TAPPING SADDLE.
5. BRASS PIPE SHALL BE SEAMLESS RED BRASS PIPE, EXTRA STRONG, CONFORMING TO A.S.T.M. B43 - LATEST EDITION.
6. USE HYDRANT FOR PIPES LARGER THAN 12 INCHES IN DIAMETER. CONNECT HYDRANT WITHIN 5 FEET OF END CAP.



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DEPARTMENT OF PUBLIC WORKS
WATER DETAILS

BLOW - OFF

ISSUED: _____
 REVISED: JANUARY, 1979
 REVISED: OCTOBER, 2006
 PLATE

W-11

PLATE	VALVES	PRECAST MANHOLE	VAULT SMALL PRECAST	VAULT LARGE PRECAST	VAULT BUILT IN PLACE
W-14	MAINS 8"Ø AND SMALLER		●		
W-15	MAINS 10"Ø AND 12"Ø			●	
W-16, 16A & 17	MAINS 16"Ø , 20"Ø , 24"Ø AND 30"Ø			*	● ▲
W-2	DEWATERING VALVE & VAULT	■			
W-3A, 14	FIRE HYDRANT LEADS 6"Ø	■	● ▲		
W-11, 14	BLOW OFF INSTALLATION		●		
W-8, 15	AIR RELEASE INSTALLATION, 16"Ø MAIN & SMALLER			● (F TOP)	
W-8	AIR RELEASE INSTALLATION, 20"Ø MAIN & LARGER				● ▲
W-9, 14	TAPPING SLEEVE AND VALVE 8"Ø AND SMALLER	■	● ▲		
W-9, 15	TAPPING SLEEVE AND VALVE 10"Ø AND 12"Ø	■		● (F TOP)	
W-10	TAPPING SLEEVE AND VALVE 16"Ø AND LARGER				●
W-34	COMFORT STATION DEWATERING VALVE AND VAULT	■			

* FOR DUCTILE IRON PIPE INSTALLATIONS WITH VERTICAL VALVES, 16" RESILIENT SEATED VALVES (NON-TAPPING AND WITHOUT BYPASS) MAY BE INSTALLED IN A LARGE PRECAST SECTIONAL VAULT (STANDARD DETAIL PLATE W-15).

■ PRECAST MANHOLE MAY BE UTILIZED WHERE INDICATED. SEE APPROPRIATE STANDARD DETAIL PLATE AS REFERENCED.

▲ PRECAST VAULT MAY BE SUBSTITUTED WHERE INDICATED, SUBJECT TO APPROVAL BY DESIGN DIVISION, BUREAU OF ENGINEERING & CONSTRUCTION. SEE APPROPRIATE STANDARD DETAIL PLATE AS REFERENCED.



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 7/24/06
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DEPARTMENT OF PUBLIC WORKS
 STANDARD WATER DETAILS
 TYPES OF HOUSING
 FOR VALVES

ISSUED: AUGUST 22, 1955
 REVISED: JUNE, 1989
 REVISED: JUNE, 2006

PLATE
W-12

PLATE	METERS	CIRCULAR VAULT	SMALL PRECAST VAULT	LARGE PRECAST VAULT	VAULT BUILT IN PLACE
W-21, 20	3/4" SUPPLY SERVICE, 5/8" METER (SINGLE)	18"			
W-22, 20	3/4" SUPPLY SERVICE, TWIN 5/8" METERS	18"			
W-23, 20	1" SUPPLY SERVICE, 3/4" METER (SINGLE)	18"			
W-24, 20	1-1/2" SUPPLY SERVICE, 1" METER (SINGLE)	24"			
W-24A, 20	1-1/2" SUPPLY SERVICE, 3/4" METER (SINGLE)	24"			
W-25, 14	2" SUPPLY SERVICE, 1-1/2" METER (SINGLE)		●		
W-26, 26A, 14	2" SUPPLY SERVICE, 2" METER (SINGLE)		●		
W-27	4" SUPPLY SERVICE, 3" METER				● ▲
W-27A, B	4", 6", 8", 10" AND 12" FM METERS				● ▲
W-28A, B	4", 6", 8", 10" AND 12" FM METERS WITH SMALL DOMESTIC METER (5/8" - 2"), OUTSIDE FIRE HYDRANTS ALLOWED.				●
W-31, 20	1" SUPPLY SERVICE, TWIN 3/4" METERS	24"			
W-32, 20	1-1/2" SUPPLY SERVICE, TWIN 3/4" METERS	24"			
W-33, 20	1-1/2" SUPPLY SERVICE, TWIN 1" METERS	24"			
-	4", 6", 8" & 10" FIRE SUPPLY SERVICE (TYPE DETECTOR CHECK) WITH SMALL DOMESTIC METER (5/8" - 2"), NO OUTSIDE FIRE HYDRANTS.			●	
-	4", 6", 8", 10" & 12" FIRE SUPPLY SERVICE (TYPE DETECTOR CHECK) WITH REDUCED SIZE LARGE OR LARGE DOMESTIC METER (3" - 6"), NO OUTSIDE FIRE HYDRANTS.				●
-	4", 6", 8", 10" & 12" FIRE SUPPLY SERVICE (TYPE F.M.) WITH REDUCED SIZE LARGE OR LARGE DOMESTIC METER (3" - 6"), OUTSIDE FIRE HYDRANTS ALLOWED.				●

▲ PRECAST VAULT MAY BE SUBSTITUTED WHERE INDICATED, SUBJECT TO APPROVAL BY DESIGN DIVISION, BUREAU OF ENGINEERING & CONSTRUCTION. SEE APPROPRIATE STANDARD DETAIL PLATE AS REFERENCED.



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 1-2-07
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DEPARTMENT OF PUBLIC WORKS
 STANDARD WATER DETAILS
 TYPES OF HOUSING
 FOR METERS

ISSUED: _____
 REVISED: NOVEMBER 2006
 REVISED: _____

PLATE
 W-12A

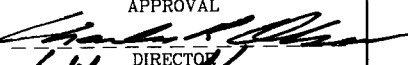
PRECAST VAULTS

4" VALVE (SMALL VAULT)							6" VALVE (SMALL VAULT)						
COVER ON MAIN	STD. CONCRETE SECTIONS					FRAME & COVER	COVER ON MAIN	STD. CONCRETE SECTIONS					FRAME & COVER
	A	B	C	D	E			A	B	C	D	E	
1'-6" to 1'-9"	2	2	0	2	1	1	2'-0" to 2'-1"	2	2	2	0	1	1
1'-10" to 2'-3"	2	2	2	0	1	1	2'-4" to 2'-7"	2	2	2	2	1	1
2'-4" to 2'-9"	2	2	2	2	1	1	2'-10" to 3'-1"	2	2	2	4	1	1
2'-10" to 3'-3"	2	2	2	4	1	1	3'-4" to 3'-7"	2	2	4	2	1	1
3'-4" to 3'-9"	2	2	4	2	1	1	3'-10" to 4'-1"	2	2	4	4	1	1
3'-10" to 4'-3"	2	2	4	4	1	1	4'-4" to 4'-7"	2	2	4	6	1	1
4'-4" to 4'-9"	2	2	4	6	1	1	4'-10" to 5'-1"	2	2	6	4	1	1

8" VALVE (SMALL VAULT)							10" VALVE (LARGE VAULT)							12" VALVE (LARGE VAULT)						
COVER ON MAIN	STD. CONCRETE SECTIONS					FRAME & COVER	COVER ON MAIN	STD. CONCRETE SECTIONS					FRAME & COVER	COVER ON MAIN	STD. CONCRETE SECTIONS					FRAME & COVER
	A	B	C	D	E			A	B	C	D	E			A	B	C	D	E	
1'-11"	2	2	2	0	1	1	2'-3" to 2'-9"	4	2	2	2	2*	1	2'-6" to 2'-7"	4	2	2	2	2*	1
2'-3" to 2'-5"	2	2	2	2	1	1	2'-9" to 3'-3"	4	2	2	4	2*	1	2'-9" to 3'-1"	4	2	2	4	2*	1
2'-9" to 2'-11"	2	2	2	4	1	1	3'-3" to 3'-9"	4	2	2	6	2*	1	3'-3" to 3'-7"	4	2	2	6	2*	1
3'-3" to 3'-5"	2	2	4	2	1	1	3'-9" to 4'-3"	4	2	4	4	2*	1	3'-9" to 4'-1"	4	2	4	4	2*	1
3'-9" to 3'-11"	2	2	4	4	1	1	4'-3" to 4'-9"	4	2	4	6	2*	1	4'-3" to 4'-7"	4	2	4	6	2*	1
4'-3" to 4'-5"	2	2	4	6	1	1	4'-9" to 5'-3"	4	2	4	8	2*	1	4'-9" to 5'-1"	4	2	4	8	2*	1
4'-9" to 4'-11"	2	2	6	4	1	1	5'-3" to 5'-9"	4	2	6	6	2*	1	5'-3" to 5'-7"	4	2	6	6	2*	1

* For 10" and 12" tapping sleeve and valve, F Sections shall be substituted for E Sections.

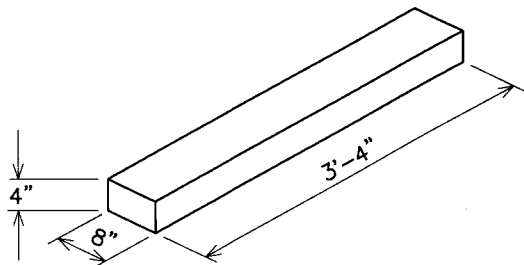


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 10/23/97
 DATE

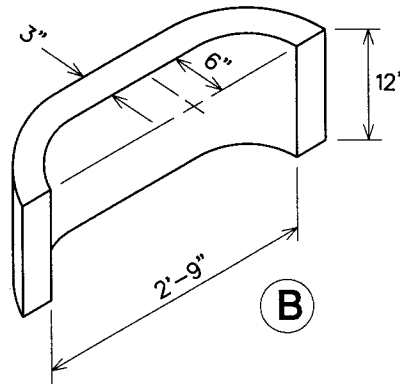
DEPARTMENT OF PUBLIC WORKS STANDARD WATER DETAILS TABLE OF SECTIONS REQUIRED FOR CONCRETE VALVE VAULTS

ISSUED: AUGUST 22, 1955
 REVISED: JANUARY 1979
 REVISED: AUGUST, 1997

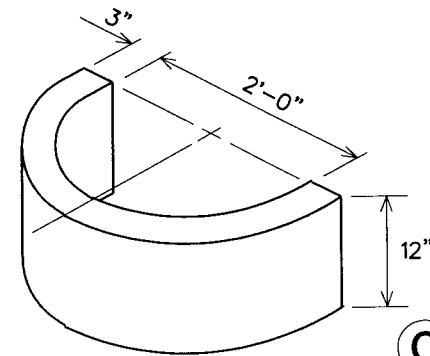
PLATE
W-13



(A)



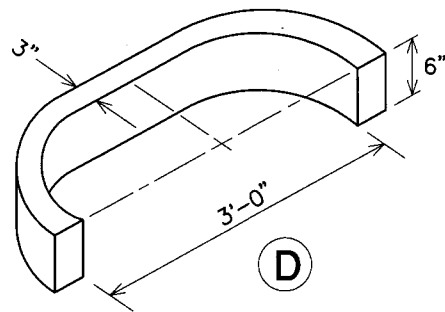
(B)



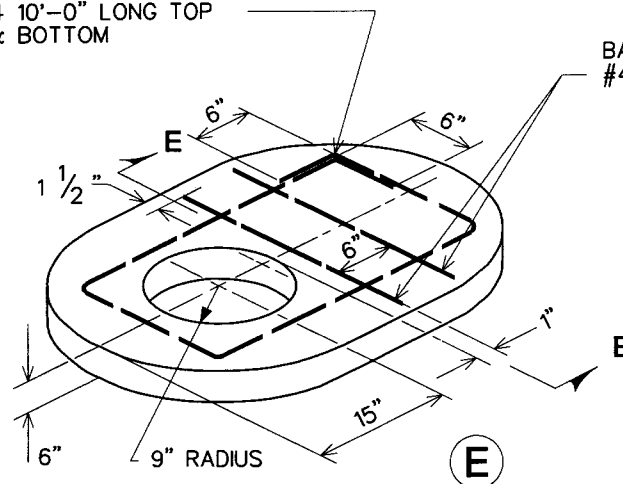
(C)

BARS "A":
#4 10'-0" LONG TOP
& BOTTOM

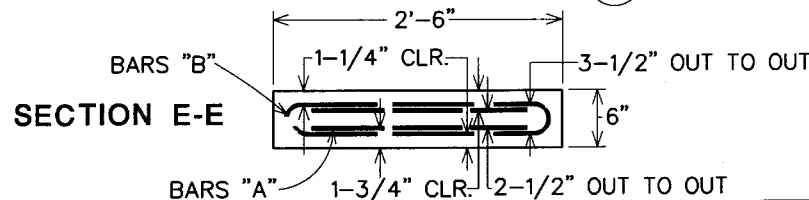
BARS "B":
#4 BOTH SIDES



(D)



(E)



SECTION E-E

NOTES:

1. ALL SECTIONS TO HAVE 4"x4" W4 x W4 WIRE MESH REINFORCING EXCEPT AS INDICATED ON SECTION E. WWF TO HAVE 3/4" COVER.
2. ALL CONCRETE TO BE MIX NO. 3.
3. TAPPING VALVE VAULT TO BE PLACED ON 6" CONCRETE SLAB REINFORCED WITH NO. 4 BARS AT 12" E. W. ON CENTER LINE OF SLAB. SEE DETAIL W-9.
4. SECTION JOINTS SHALL BE MORTARED.



APPROVAL
William H. Hagan
DIRECTOR
BUR. OF ENGINEERING/CONSTRUCTION
DATE 10/23/97

DEPARTMENT OF PUBLIC WORKS STANDARD WATER DETAILS SECTIONS FOR SMALL CONCRETE VAULTS

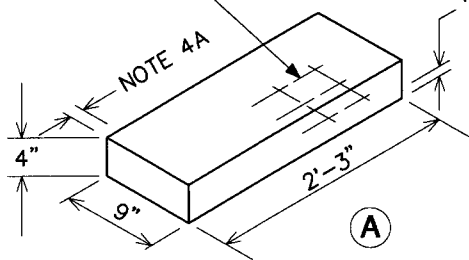
ISSUED: AUGUST 22, 1955
REVISED: JANUARY, 1979
REVISED: AUGUST, 1997

PLATE

W-14

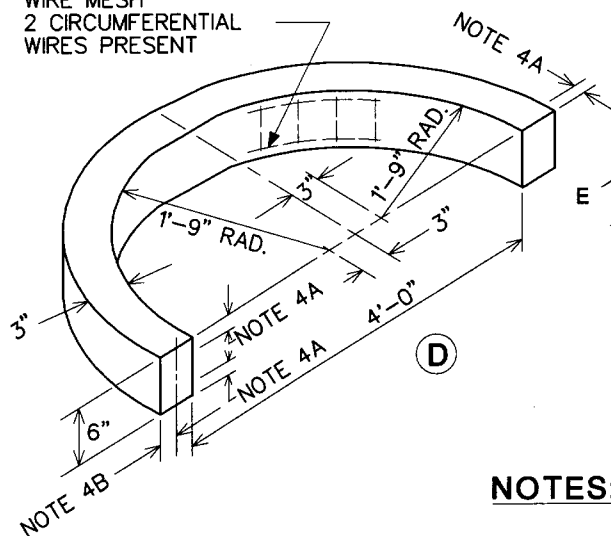
MARCH 1995 JAY/DAS

WIRE MESH— SEE NOTE 1.
3 LONGITUDINAL WIRES
PRESENT

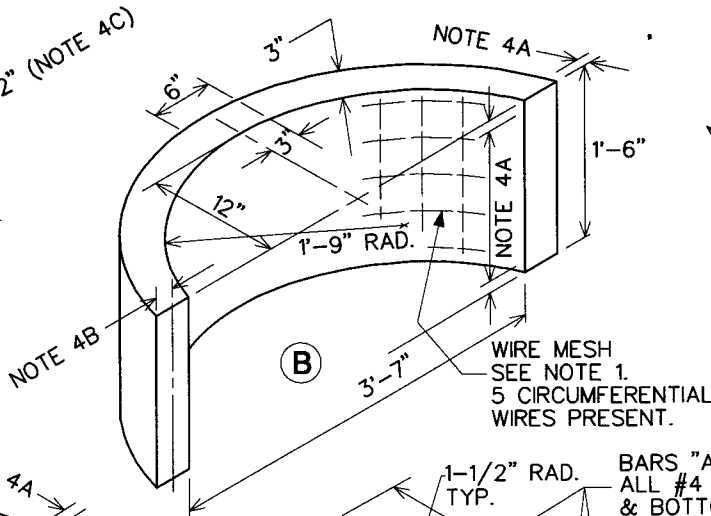


(A)

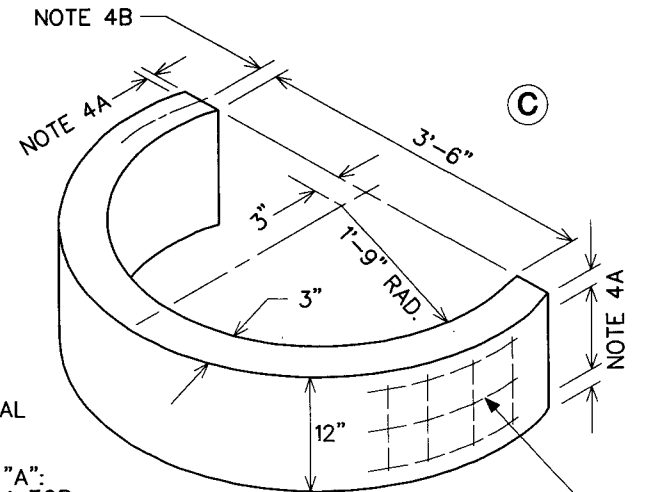
WIRE MESH
2 CIRCUMFERENTIAL
WIRES PRESENT



(D)



(B)

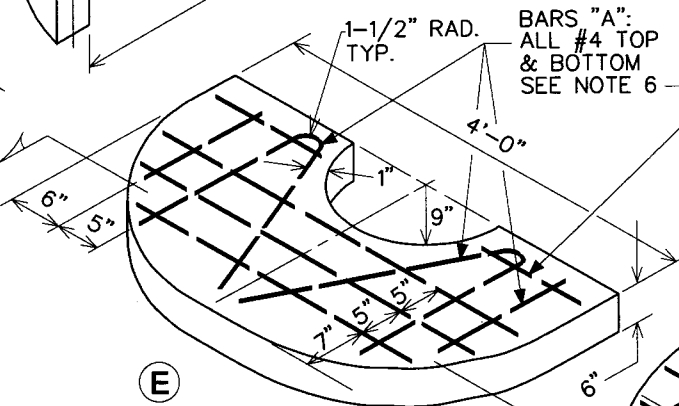


(C)

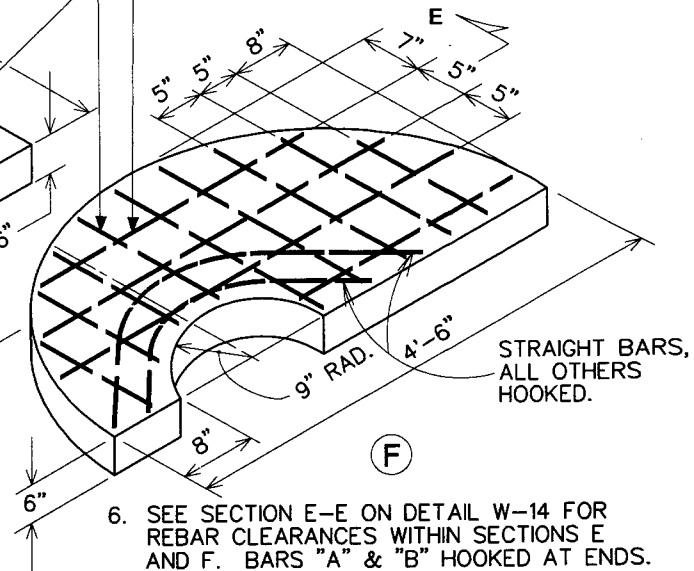
BARS "A":
ALL #4 TOP
& BOTTOM
SEE NOTE 6

BARS "B":
ALL #4 TOP
& BOTTOM
SEE NOTE 6

WIRE MESH
SEE NOTE 1.
3 CIRCUMFERENTIAL
WIRES PRESENT.



(E)



(F)

STRAIGHT BARS,
ALL OTHERS
HOOKED.

NOTES:

1. SECTIONS A, B, C & D TO HAVE 4" x 4" NO. 6 WIRE MESH REINFORCING INSTALLED AT CENTER OF SECTION, 3/4" COVER (TYPICAL) AT ENDS & SIDES OF CONCRETE.
2. ALL CONCRETE SHALL BE MIX NO. 3
3. SECTION JOINTS SHALL BE MORTARED.

4. WIRE MESH SPACING :
A. 3/4" CLEAR TO END OF WIRE MESH.
B. 1 1/2" TYP. TO CENTER OF WIRE MESH.
C. 2" TYP. TO CENTER OF WIRE MESH.
5. TAPPING VALVE VAULT TO BE PLACED ON 6" CONCRETE SLAB REINFORCED WITH #4 AT 12" E.W. ON CENTER LINE OF SLAB. SEE DETAIL W-9.

6. SEE SECTION E-E ON DETAIL W-14 FOR REBAR CLEARANCES WITHIN SECTIONS E AND F. BARS "A" & "B" HOOKED AT ENDS.



APPROVAL
William Kopman
DIRECTOR
BUR. OF ENGINEERING/CONSTRUCTION
10/23/97
DATE

DEPARTMENT OF PUBLIC WORKS STANDARD WATER DETAILS SECTIONS FOR LARGE CONCRETE VAULTS

ISSUED: AUGUST 22, 1955
REVISED: JANUARY, 1979
REVISED: AUGUST, 1997

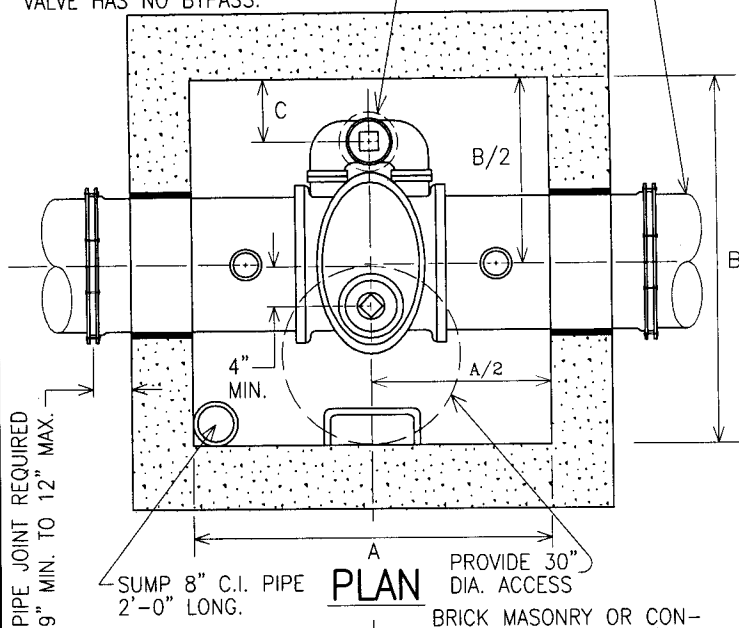
PLATE

W-15

REV. FEBRUARY 1990 J.A.V.

PROVIDE ACCESS THROUGH TOP SLAB AS SHOWN, WITH 7" FRAME & COVER. ELIMINATE ACCESS WHEN VALVE HAS NO BYPASS.

DUCTILE IRON OR HDPE PIPE (TYP.)



PIPE JOINT REQUIRED 9\" MIN. TO 12\" MAX.

SUMP 8\" C.I. PIPE 2'-0\" LONG.

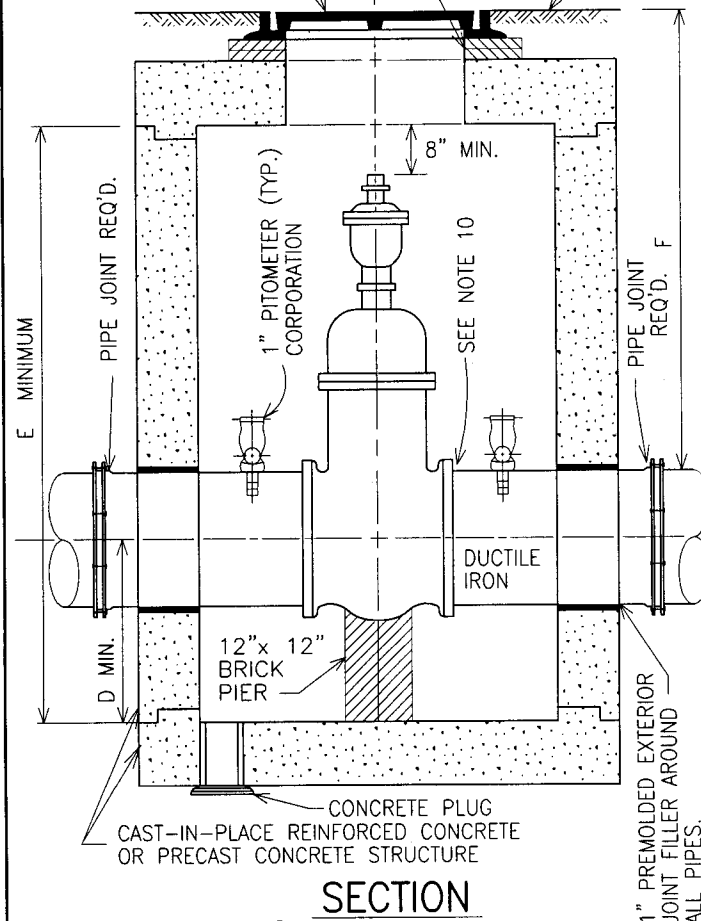
PLAN

PROVIDE 30\" DIA. ACCESS

BRICK MASONRY OR CON-
CRETE GRADE RINGS (SEE
STD. DETAIL PLATE G-3)

30\" MANHOLE
FRAME & COVER.

GRADE



CONCRETE PLUG
CAST-IN-PLACE REINFORCED CONCRETE
OR PRECAST CONCRETE STRUCTURE

SECTION

1\" PREMOLDED EXTERIOR
JOINT FILLER AROUND
ALL PIPES.

VALVE SIZE	16\"*	20"	24"	30\"**
A	5'-0"	5'-0"	5'-6"	6'-0"
B	5'-0"	5'-0"	5'-6"	6'-0"
C	11.50"	11.50"	12"	12"
D	2'-3"	2'-6"	2'-8"	2'-11"
E	7'-1"	8'-4"	9'-2"	10'-5"
F	5'-11"	6'-3"	6'-5"	7'-0"

* SEE NOTE 8

** SEE NOTE 11

NOTES

1. VAULTS SHALL BE DESIGNED TO MATCH SUPPLIED VALVES. SHOP DRAWINGS SHALL BE SUBMITTED & APPROVED FOR EACH VAULT. SHOP DRAWINGS SHALL BE SIGNED & SEALED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER.
2. LOADS: L.L. = MdSHA HS-27 (135% OF AASHTO HS20-44 LOADING)
D.L. = EARTH AT 110 Lbs. PER CU. FT. & 42 Lbs. PER CU. FT. EQUIVALENT FLUID PRESSURE.
3. CONCRETE & REINFORCING SHALL CONFORM TO THE STANDARD BALTIMORE COUNTY SPECIFICATION.
4. CAST-IN-PLACE CONCRETE SHALL BE MIX #3. PRECAST CON-
CRETE SHALL BE 4500 PSI.
5. TOP SLAB MUST BE SEPARATE AND REMOVABLE FROM VAULT. TOP SLAB OPENINGS MUST ALIGN WITH VALVE CONTROLS AS INSTALLED.
6. VAULT FLOTATION TO BE ADDRESSED BY CERTIFYING ENGINEER TO THE SATISFACTION OF THE BUREAU OF ENGINEERING & CONSTRUCTION.
7. 1 INCH PITOMETER CORPORATION TO BE INSTALLED ON EACH SIDE OF THE VALVE.
8. FOR DUCTILE IRON PIPE INSTALLATIONS (DUCTILE IRON PIPE ON EACH SIDE OF PIPE JOINTS), 16 INCH RESILIENT-SEATED VALVES WITHOUT BYPASS MAY BE INSTALLED IN A LARGE SECTIONAL VAULT. PITOMETER CORPORATIONS ARE REQUIRED.
9. FOR HDPE PIPE INSTALLATIONS, TRANSITION TO DUCTILE IRON PIPE OUTSIDE OF VAULT (AT PIPE JOINTS) USING BUTT FUSION WELDED MECHANICAL JOINT ADAPTER WITH METAL INSERT, METAL GLAND AND ATTACHMENT BOLTS & NUTS. PIPE BETWEEN JOINTS SHOWN SHALL BE DUCTILE IRON ONLY.
10. CONNECT DUCTILE IRON PIPE (EACH SIDE) TO VALVE USING RESTRAINED JOINTS APPROVED BY THE ENGINEER.
11. FOR 30\" VALVE, CONSULT DESIGN DIVISION OF THE BUREAU OF ENGINEERING & CONSTRUCTION.
12. FOR PRECAST VAULTS (NOT SHOWN), PROVIDE & MAINTAIN A 2\" GAP BETWEEN PIPE & \"DOGHOUSE\" OPENINGS. OPENINGS ABOVE PIPE CENTERLINE SHALL BE FILLED WITH PRE-MOLDED EXPANSION JOINT FILLER. BLOCK OPENINGS BELOW PIPE CENTERLINE WITH BRICK AND MORTAR INSTALLED ON THE OUTSIDE OF THE VAULT WALL. CONTINUE BRICK AND MORTAR TO ONE COURSE ABOVE THE PIPE CENTERLINE.



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7/26/06
DATE

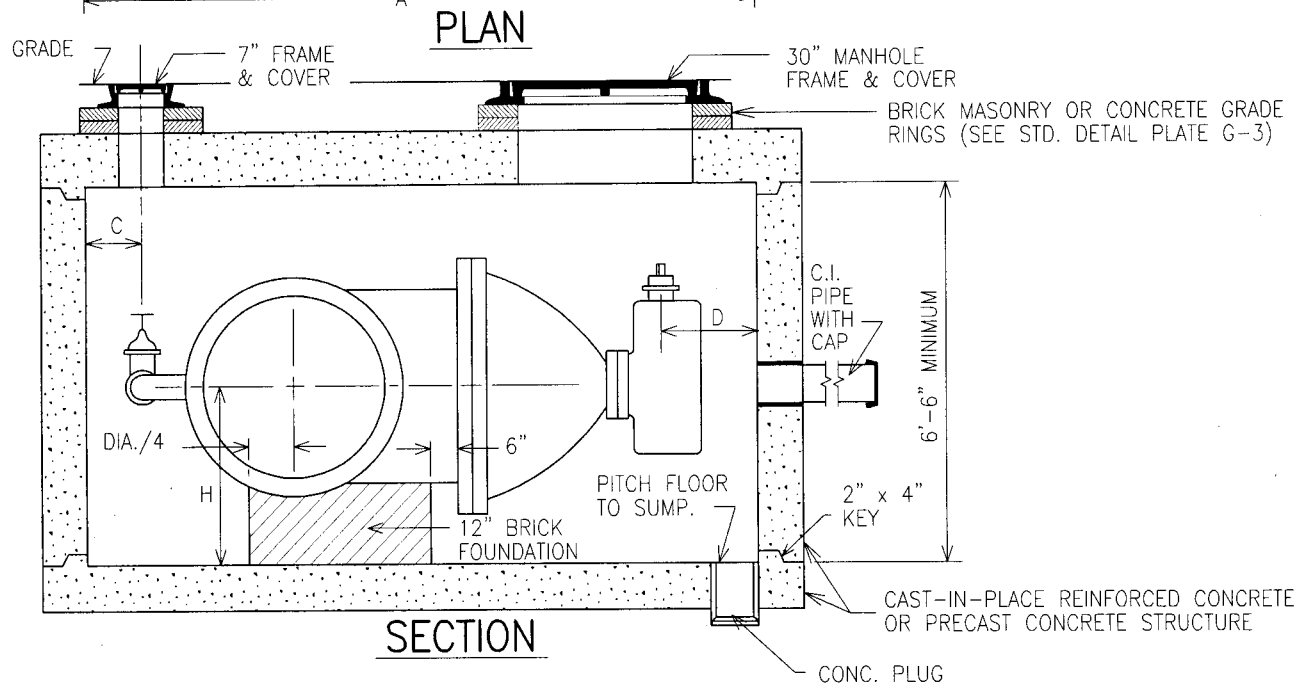
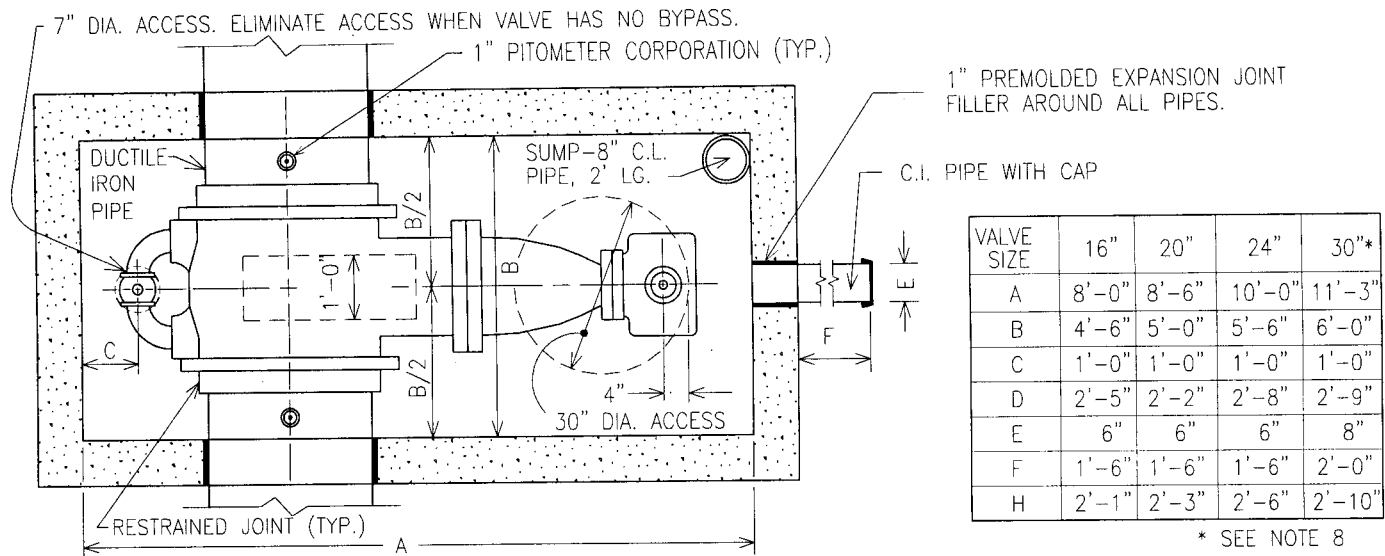
DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS

STANDARD VAULTS FOR
VERTICAL VALVES WITH GEARING

ISSUED: AUGUST 22, 1955
REVISED: AUGUST 18, 1959
REVISED: JUNE, 2006

PLATE

W-16



NOTES:

1. VAULTS SHALL BE DESIGNED TO MATCH SUPPLIED VALVES. SHOP DRAWINGS SHALL BE SUBMITTED & APPROVED FOR EACH VAULT. SHOP DRAWINGS SHALL BE SIGNED & SEALED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER.
2. LOADS: L.L. = MdSHA HS-27 (135% OF AASHTO HS20-44 LOADING)
D.L. = EARTH AT 110 Lbs. PER CU. FT. & 42 Lbs. PER CU. FT. EQUIVALENT FLUID PRESSURE.
3. CONCRETE & REINFORCING SHALL CONFORM TO THE STANDARD BALTIMORE COUNTY SPECIFICATION.
4. CAST-IN-PLACE CONCRETE SHALL BE MIX #3. PRECAST CONCRETE SHALL BE 4500 PSI.
5. TOP SLAB MUST BE SEPARATE AND REMOVABLE FROM VAULT. TOP SLAB OPENINGS MUST ALIGN WITH VALVE CONTROLS AS INSTALLED.
6. VAULT FLOTATION TO BE ADDRESSED BY CERTIFYING ENGINEER TO SATISFACTION OF BUREAU OF ENGINEERING & CONSTRUCTION.
7. 1 INCH CORPORATION TO BE INSTALLED ON EACH SIDE OF THE VALVE.
8. FOR 30" VALVE, CONSULT DESIGN DIVISION OF THE BUREAU OF ENGINEERING & CONSTRUCTION.
9. FOR DETAILS AND ADDITIONAL NOTES REGARDING PRECAST VAULTS, PIPE AND PIPE JOINTS, SEE STANDARD DETAIL PLATE W-16.



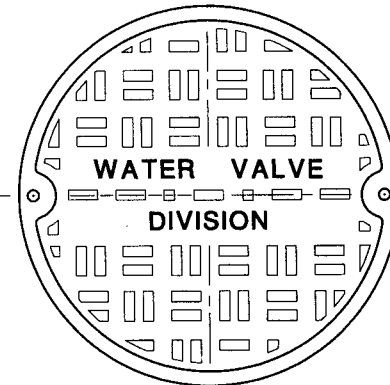
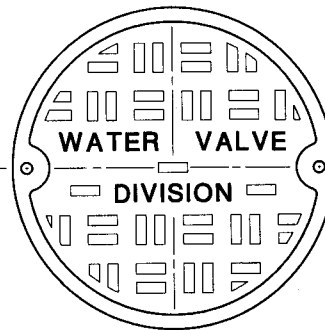
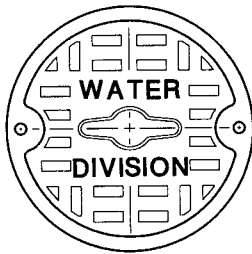
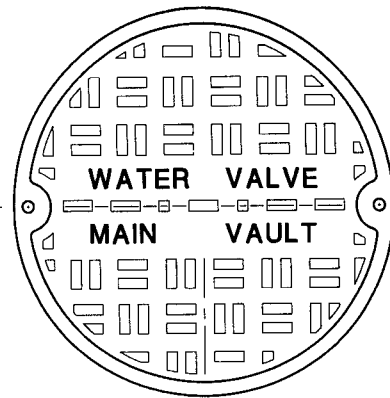
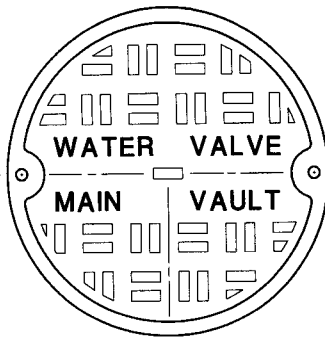
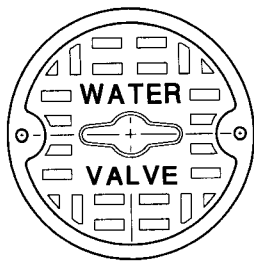
APPROVAL
[Signature]
DIRECTOR
[Signature]
BUR. OF ENGINEERING/CONSTRUCTION
1-2-07
DATE

DEPARTMENT OF PUBLIC WORKS STANDARD WATER DETAILS STANDARD VAULTS FOR HORIZONTAL VALVES

ISSUED: AUGUST 22, 1955
REVISED: AUGUST 25, 1961
REVISED: OCTOBER, 2006

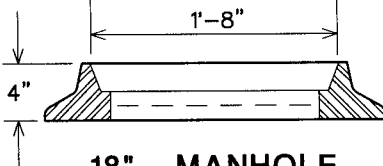
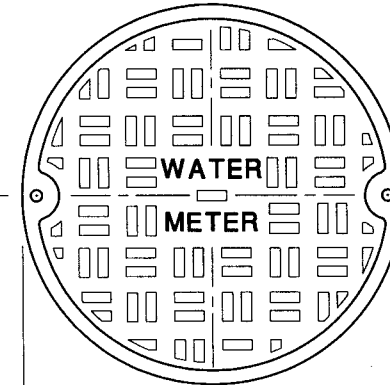
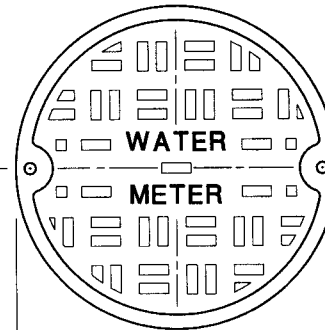
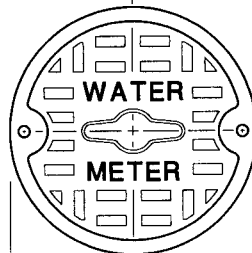
PLATE

W-17

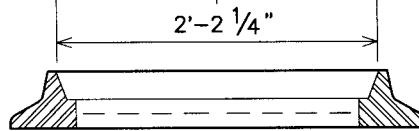


NOTE :

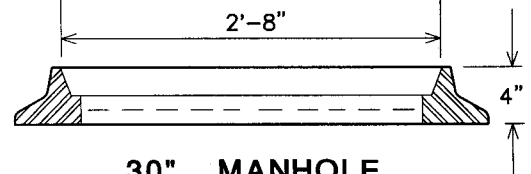
24" & 30" METER COVERS
SHALL BE CAST IRON.
CASTINGS SHALL CON-
FORM TO ASTM A-48
CLASS 30B.



18" MANHOLE
FRAME & COVER



24" MANHOLE
FRAME & COVER



30" MANHOLE
FRAME & COVER



APPROVAL
William Kopman
DIRECTOR
BUR. OF ENGINEERING / CONSTRUCTION
10/23/97
DATE

DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS
**STANDARD TRAFFIC
FRAME & COVER**

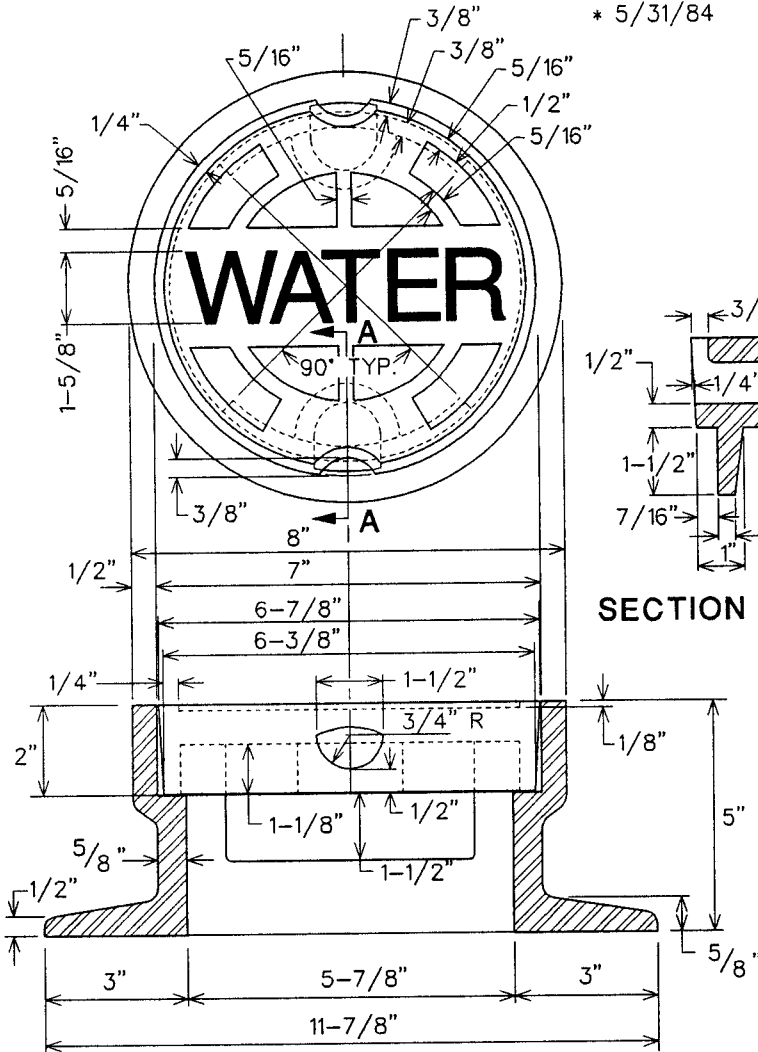
ISSUED: AUGUST 22, 1955
REVISED: AUGUST, 1997
REVISED:

PLATE

W-18

ITEM	WEIGHT	CITY DETAIL REF.
7" FRAME	46 LBS. COMBINED	BC 890.10
7" COVER		BC 890.11
12" TO 18" COVER ADAPTER	67 LBS.	BC 890.18,19
18" MANHOLE FRAME	175 LBS.	BC 890.21
12" METER COVER	11 LBS.	BC 890.13*,14*
12" METER FRAME	22 LBS.	BC 890.12*

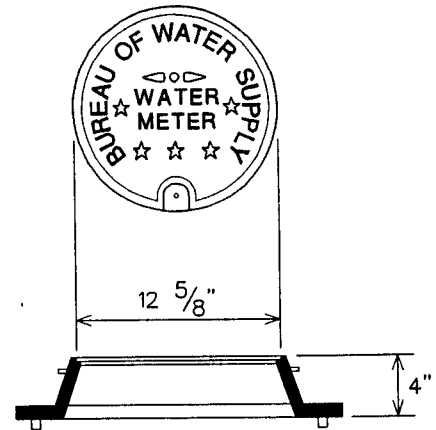
* 5/31/84



7" FRAME & COVER

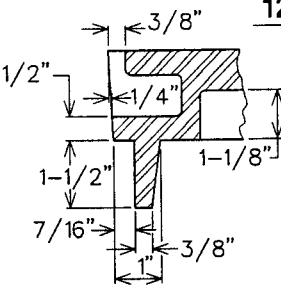
CAST IRON

WEIGHT FRAME AND COVER = 46 Lbs.

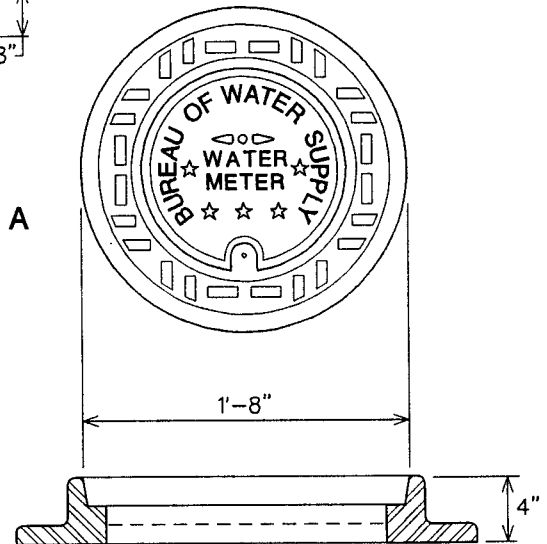


12" METER FRAME & COVER

CAST IRON



SECTION A - A



18" x 12" METER FRAME & COVER

CAST IRON

NOTES :

1. IN SIDEWALKS FOR 1" AND 1-1/2" METER SETTINGS AND ALSO FOR TWIN 3/4" METERS IN 24" VAULTS.
2. IRON CASTINGS SHALL CONFORM TO ASTM A-48, CLASS 30B.
3. REFER TO BALTIMORE CITY DETAILS FOR CASTING INFORMATION.



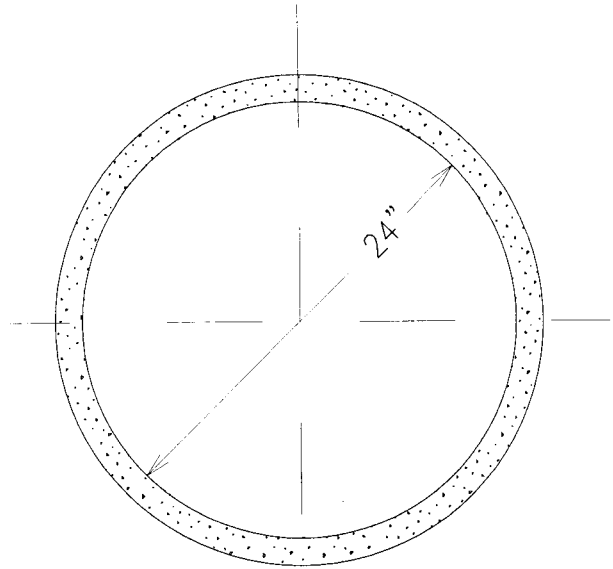
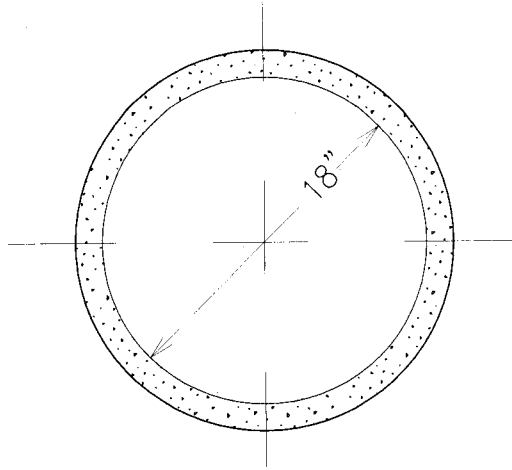
APPROVAL
William J. Koppman
 DIRECTOR
 BUR. OF ENGINEERING/CONSTRUCTION
 11/24/99
 DATE

DEPARTMENT OF PUBLIC WORKS
 STANDARD WATER DETAILS
**STANDARD SIDEWALK
 FRAME & COVER**

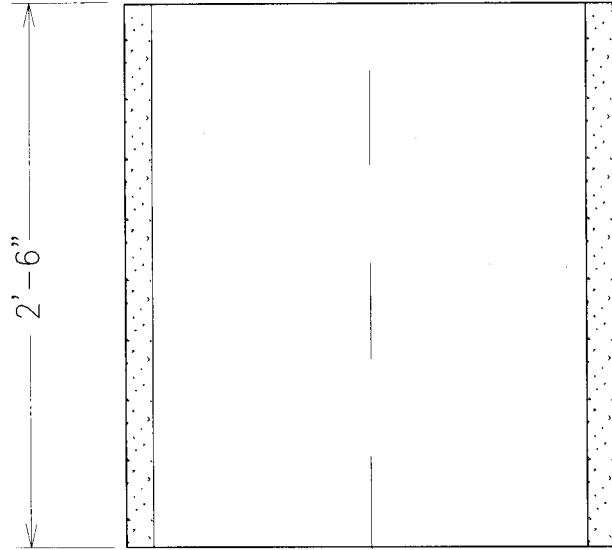
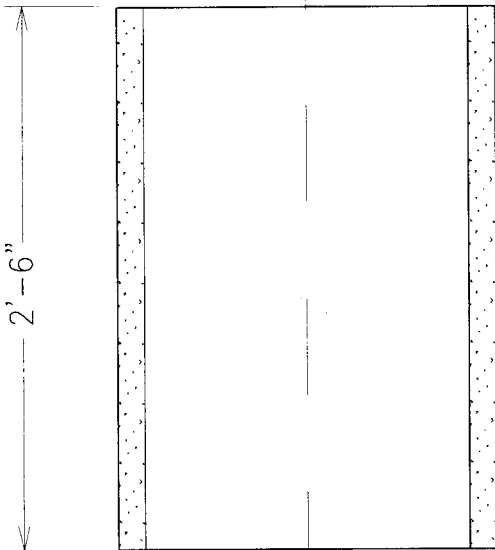
ISSUED: AUGUST 22, 1955
 REVISED: AUGUST 23, 1961
 REVISED: AUGUST, 1997

PLATE

W-19



Materials, Wall Thickness &
Reinforcement Per AASHTO M-170



18" METER VAULT

24" METER VAULT



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DIRECTOR
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7/24/06
DATE

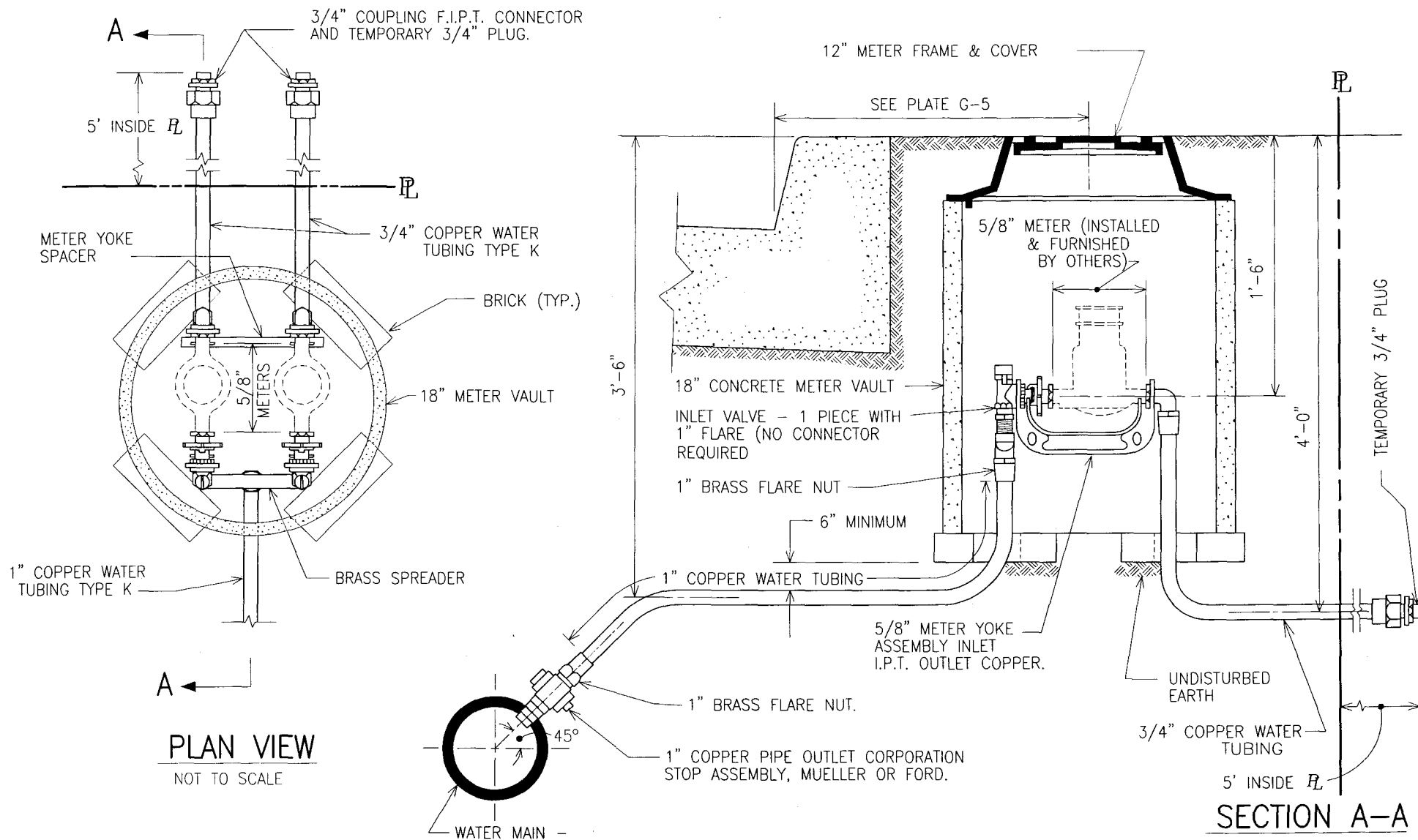
DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS

STANDARD
WATER METER VAULTS

ISSUED: February, 2001
REVISED: May, 2006
REVISED:

PLATE

W-20



1. ON 4" DUCTILE IRON PIPE, USE SERVICE SADDLE (FORD FC202 OR SMITH-BLAIR 315).
2. FOR 6" AND LARGER DIP, CONTRACTOR MAY INSTALL CORPORATION USING SERVICE SADDLE LISTED IN NOTE 1.
3. ON 4" TO 24" HDPE, USE APPROVED ELECTROFUSION TAPPING SADDLE.



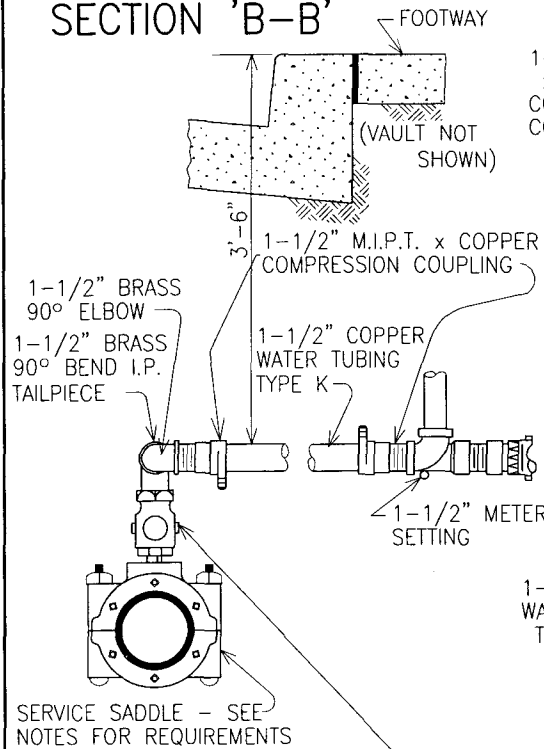
APPROVAL
[Signature]
DIRECTOR
[Signature]
BUR. OF ENGINEERING/CONSTRUCTION
1-2-07
DATE

DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS
3/4" SUPPLY SERVICE
TWIN 5/8" METERS

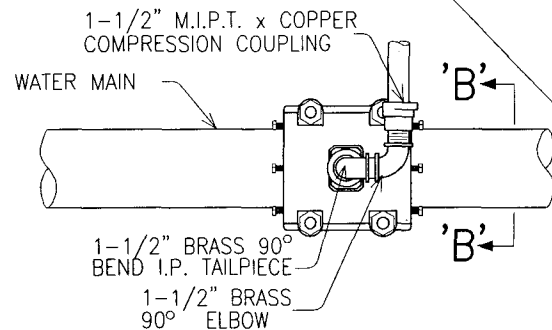
ISSUED: AUGUST 22, 1955
REVISED: JULY, 1979
REVISED: OCTOBER, 2006

PLATE
W-22

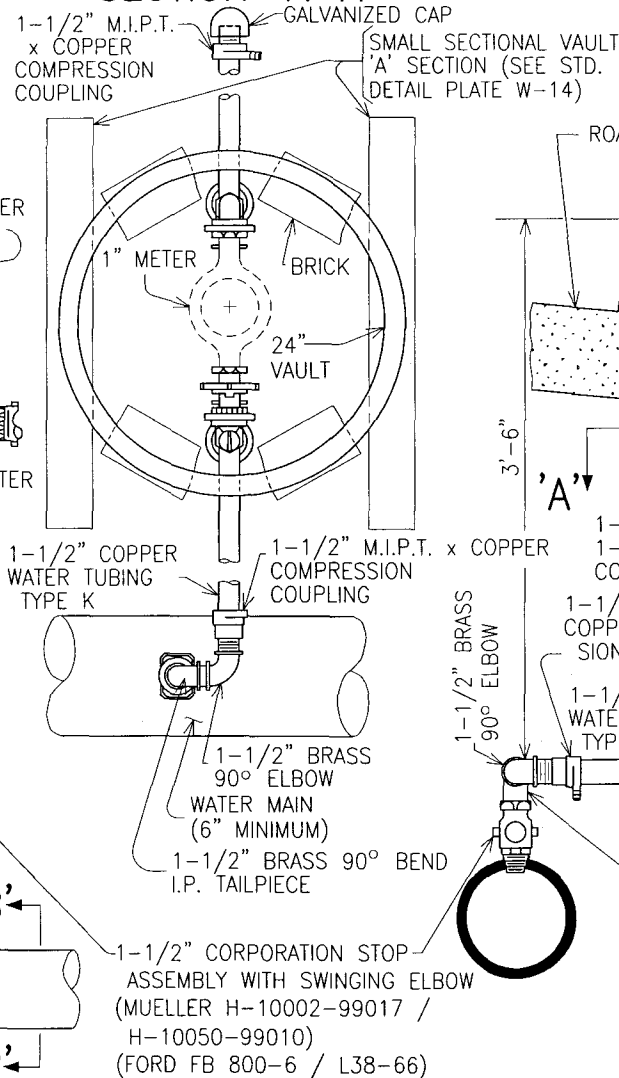
SECTION 'B-B'



SECTION 'B-B'



SECTION 'A-A'



NOTES:

- ON 4" - 6" DUCTILE IRON PIPE, USE SERVICE SADDLE (FORD FC202 OR SMITH-BLAIR 315)
- FOR 8" AND LARGER DIP, CONTRACTOR MAY INSTALL CORPORATION USING SERVICE SADDLE LISTED IN NOTE 1.
- ON 4" - 24" HDPE, USE APPROVED ELECTROFUSION TAPPING SADDLE.

DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS

STANDARD INSTALLATION 1-1/2"
WATER SUPPLY SERVICE (1" METER)

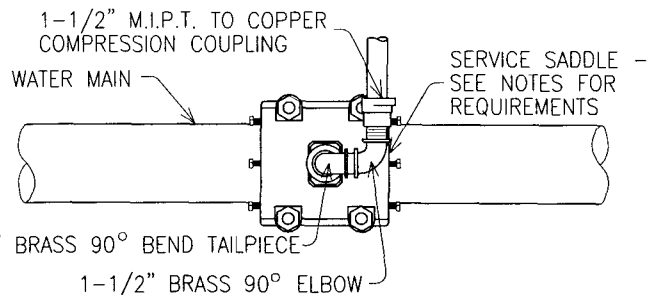
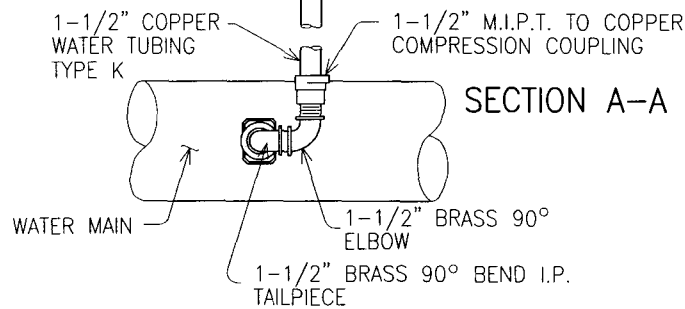
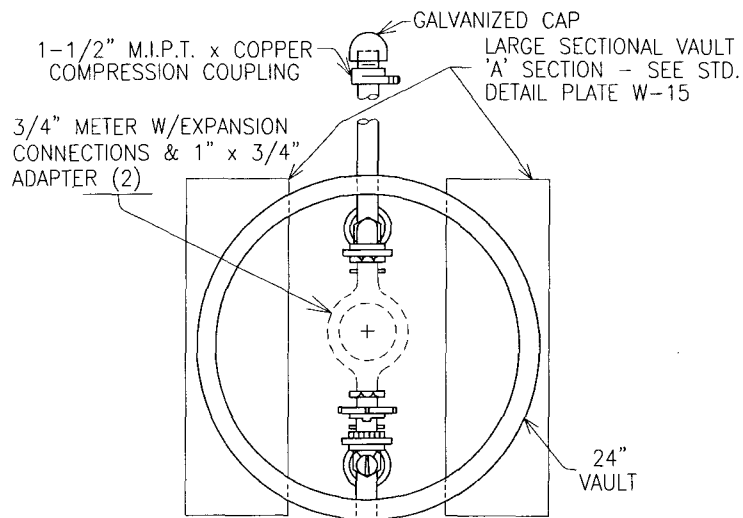
ISSUED: SEPTEMBER, 1984
REVISED: OCTOBER, 2006
REVISED:

PLATE

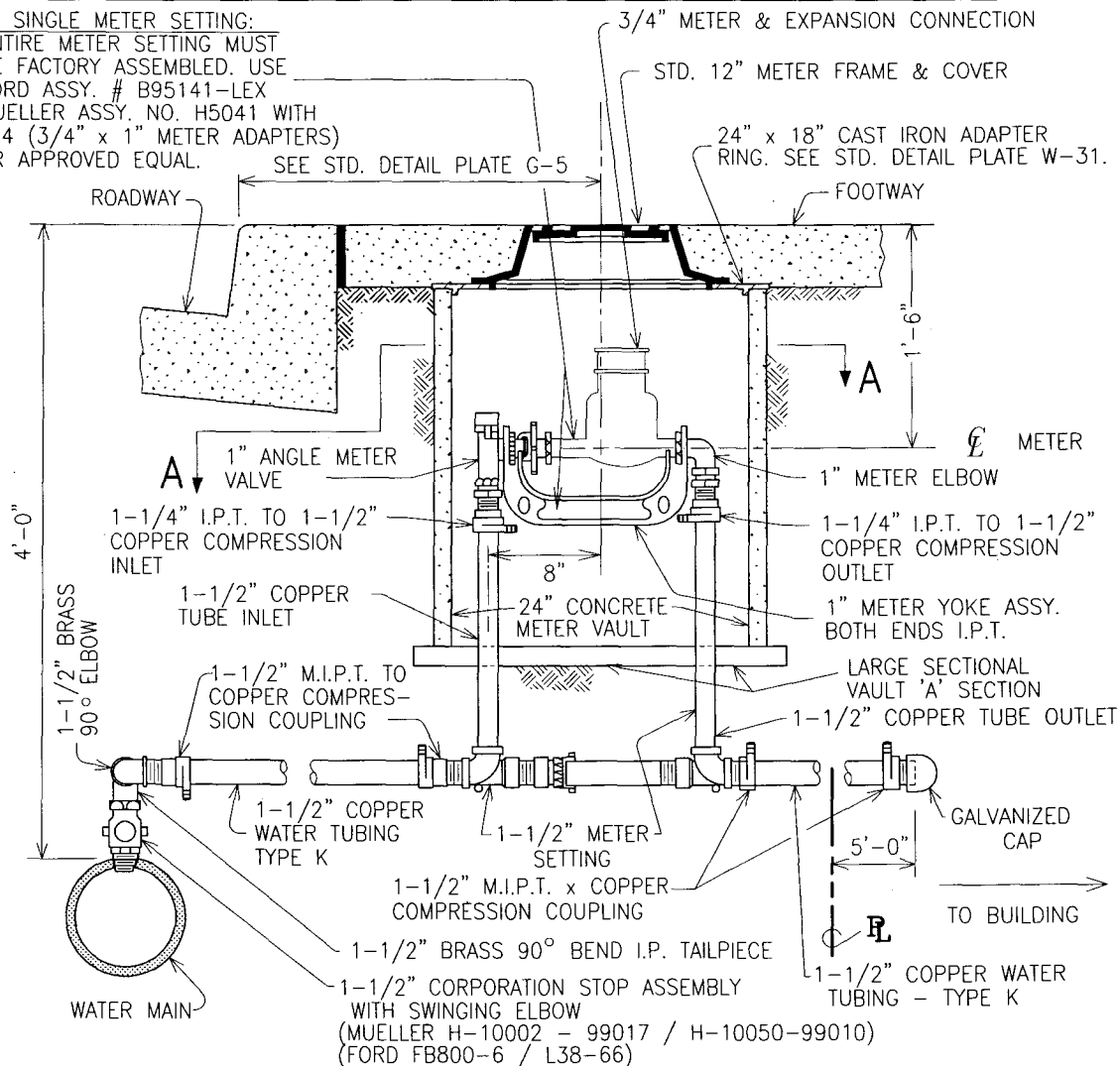
W-24



APPROVAL
DIRECTOR
BUR. OF ENGINEERING/CONSTRUCTION
1-2-07
DATE



1" SINGLE METER SETTING:
ENTIRE METER SETTING MUST
BE FACTORY ASSEMBLED. USE
FORD ASSY. # B95141-LEX
MUELLER ASSY. NO. H5041 WITH
A34 (3/4" x 1" METER ADAPTERS)
OR APPROVED EQUAL.



NOTES:

1. ON 4" - 6" DUCTILE IRON PIPE, USE SERVICE SADDLE (FORD FC202 OR SMITH-BLAIR 315)
2. FOR 8" AND LARGER DIP, CONTRACTOR MAY INSTALL CORPORATION USING SERVICE SADDLE LISTED IN NOTE 1.
3. ON 4" - 24" HDPE, USE APPROVED ELECTROFUSION TAPPING SADDLE.

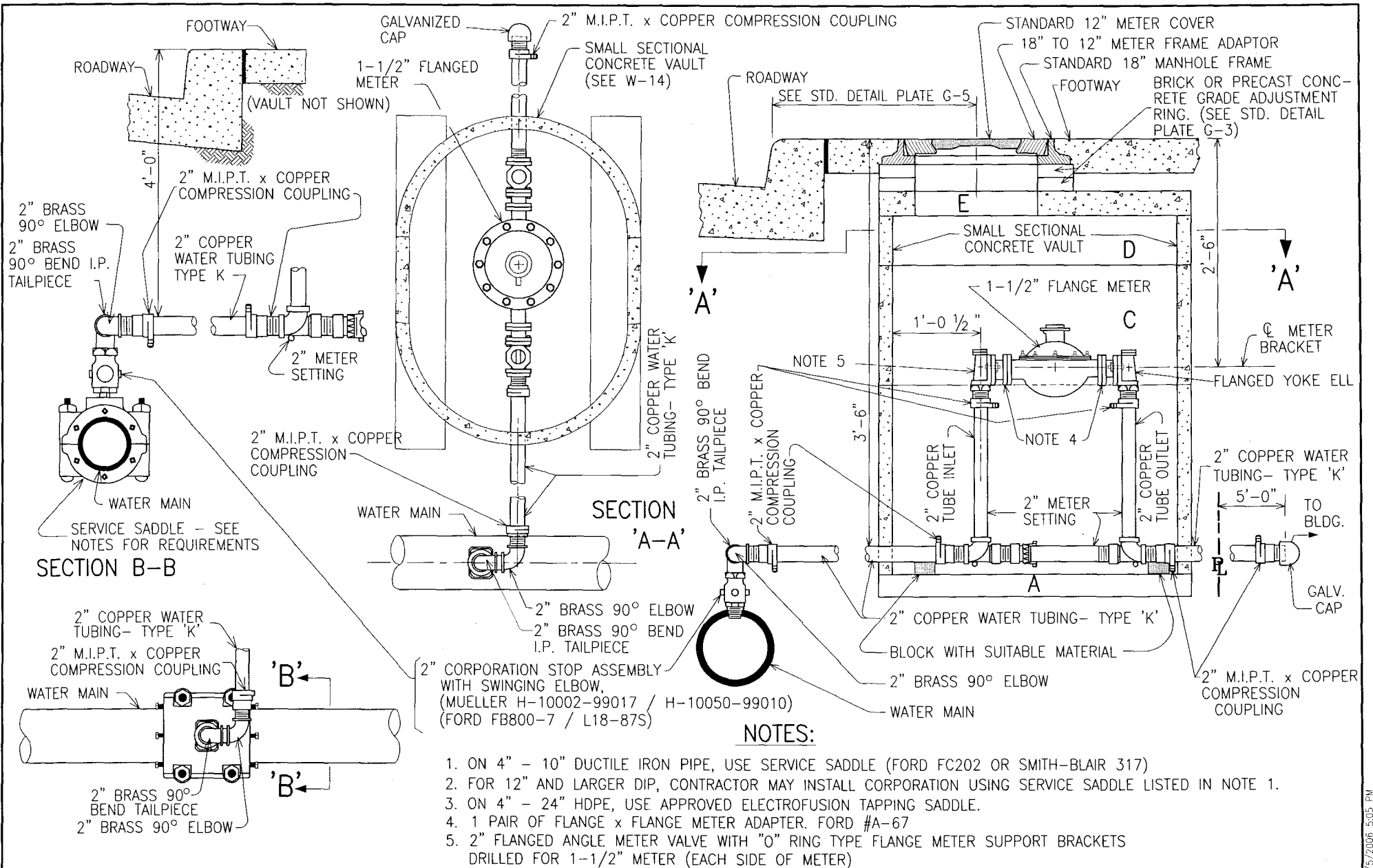


APPROVAL
[Signature]
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[Signature]
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DATE 1-2-07

DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS
STANDARD INSTALLATION 1-1/2"
WATER SUPPLY SERVICE (3/4" METER)

ISSUED: AUGUST, 1997
REVISED: OCTOBER, 2006
REVISED:

PLATE
W-24A



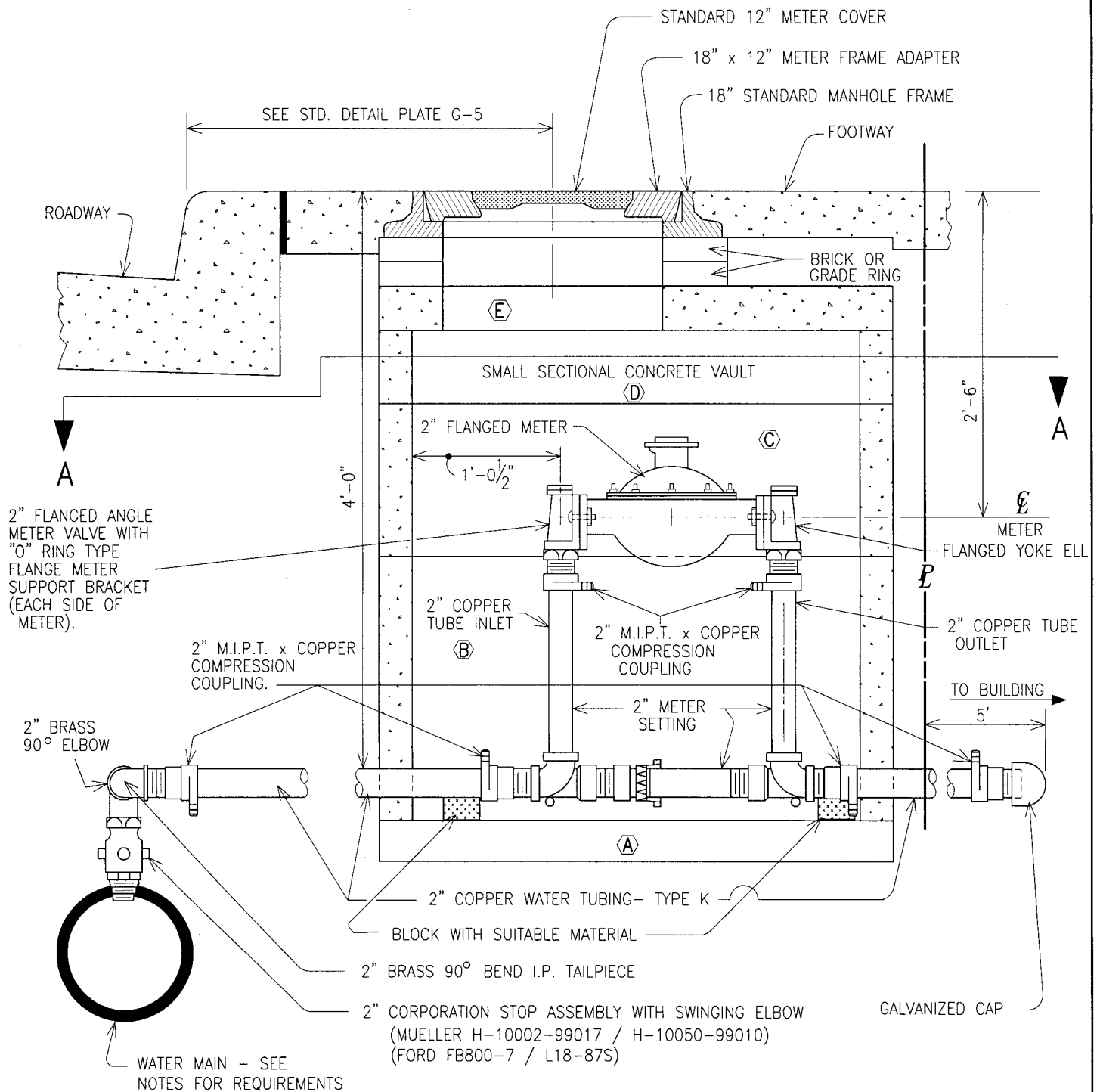
APPROVAL
[Signature]
DIRECTOR
[Signature]
BUR. OF ENGINEERING/CONSTRUCTION
1-2-07
DATE

DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS
STANDARD INSTALLATION 2"
WATER SUPPLY SERVICE (1-1/2" METER)

ISSUED: SEPTEMBER, 1984
REVISED: DECEMBER, 2006
REVISED:

PLATE

W-25



NOTES:

1. ON 4" - 10" DUCTILE IRON PIPE, USE SERVICE SADDLE (FORD FC202 OR SMITH-BLAIR 317).
 2. FOR 12" AND LARGER DIP, CONTRACTOR MAY INSTALL CORPORATION USING SERVICE SADDLE LISTED IN NOTE 1.
 3. ON 4" - 24" HDPE, USE APPROVED ELECTROFUSION TAPPING SADDLE.
- SEE STD. DETAIL PLATE W-26A FOR PLAN VIEW. SEE STD. DETAIL PLATE W-14 FOR DETAILS OF VAULT SECTIONS.

(E) = TYPE E VAULT SECTION

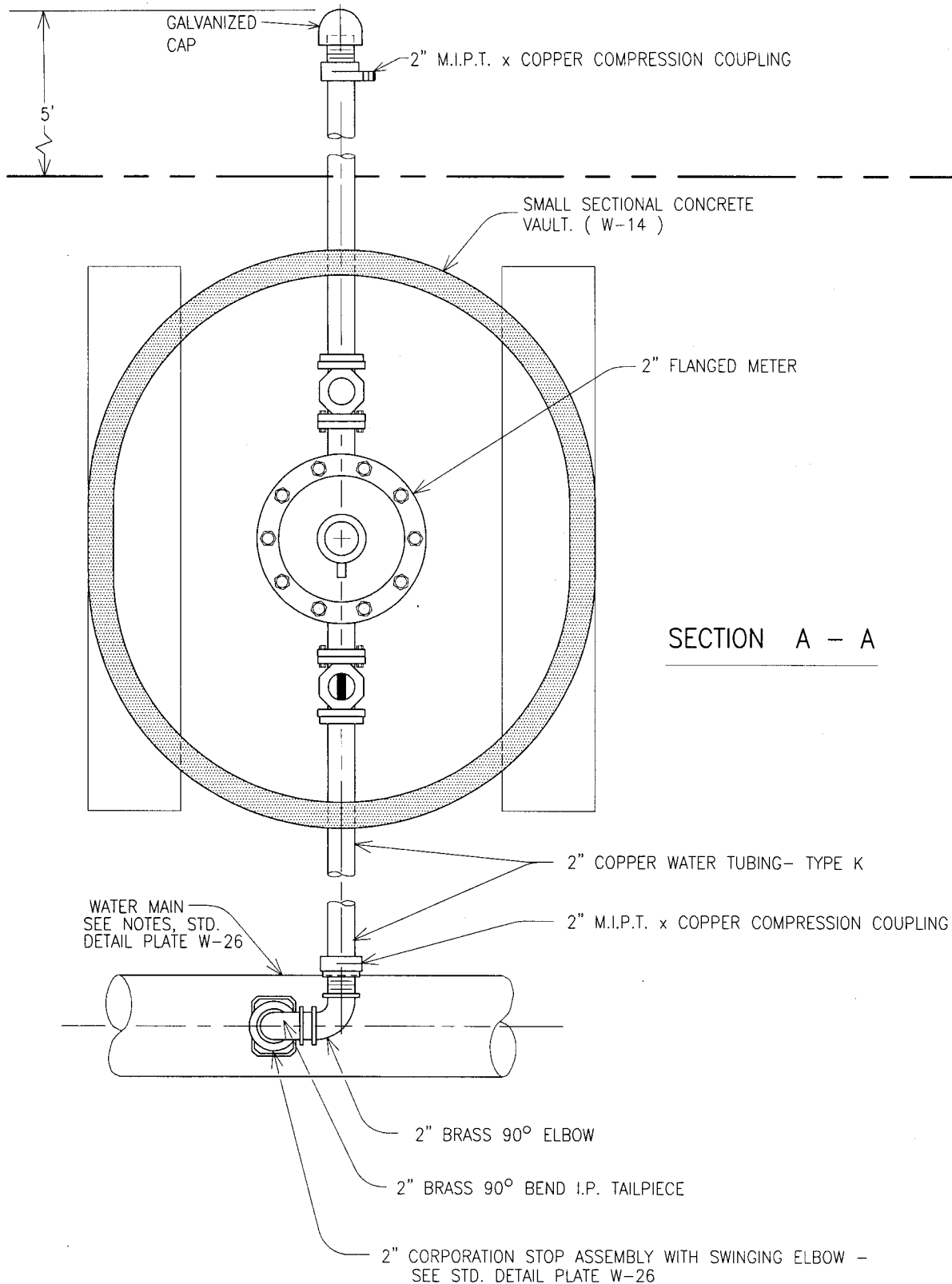


APPROVED
[Signature]
 DIRECTOR
[Signature]
 BUR. OF ENGINEERING/CONSTRUCTION
 1-2-07
 DATE

DEPARTMENT OF PUBLIC WORKS
 STANDARD WATER DETAILS
 STANDARD INSTALLATION
 2" WATER SUPPLY SERVICE
 (2" METER)

ISSUED: SEPTEMBER, 1984
 REVISED: JUNE, 1989
 REVISED: OCTOBER, 2006

PLATE
W-26



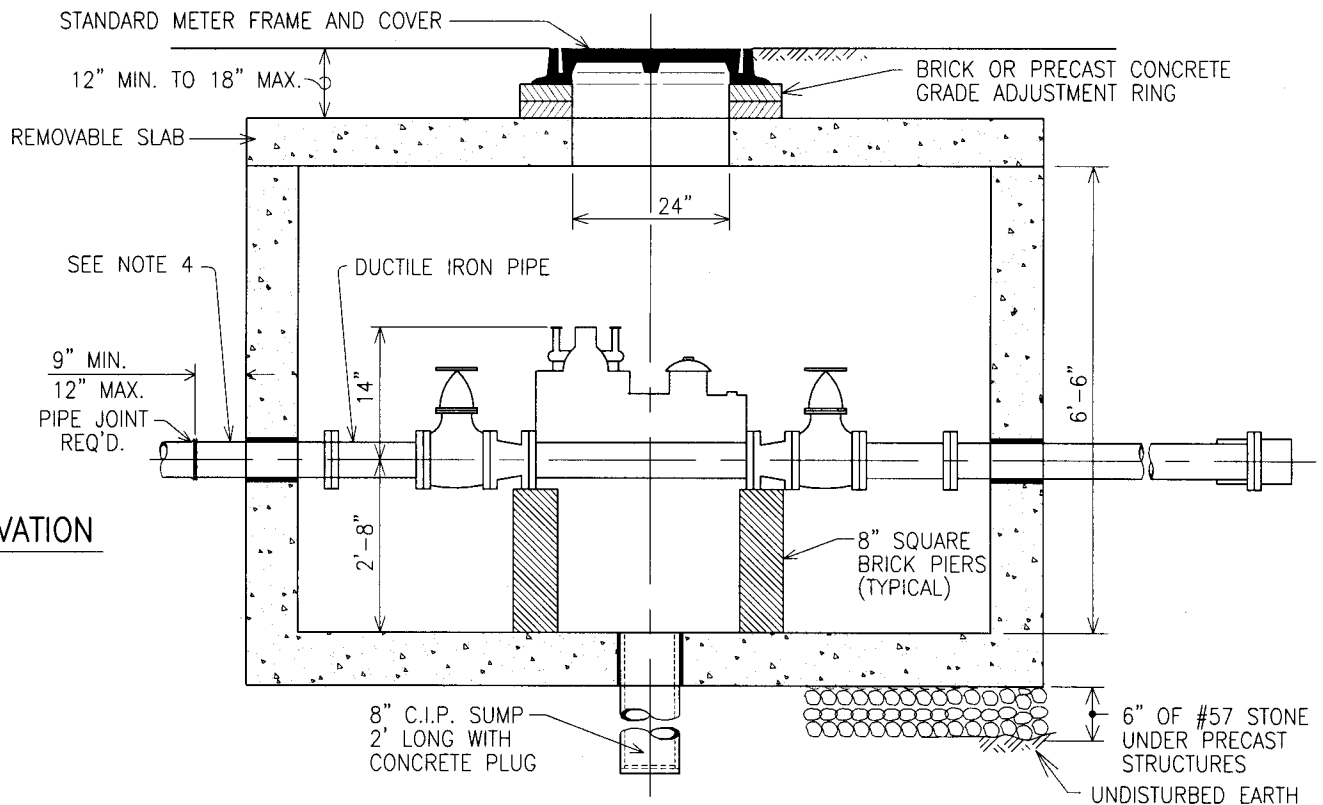
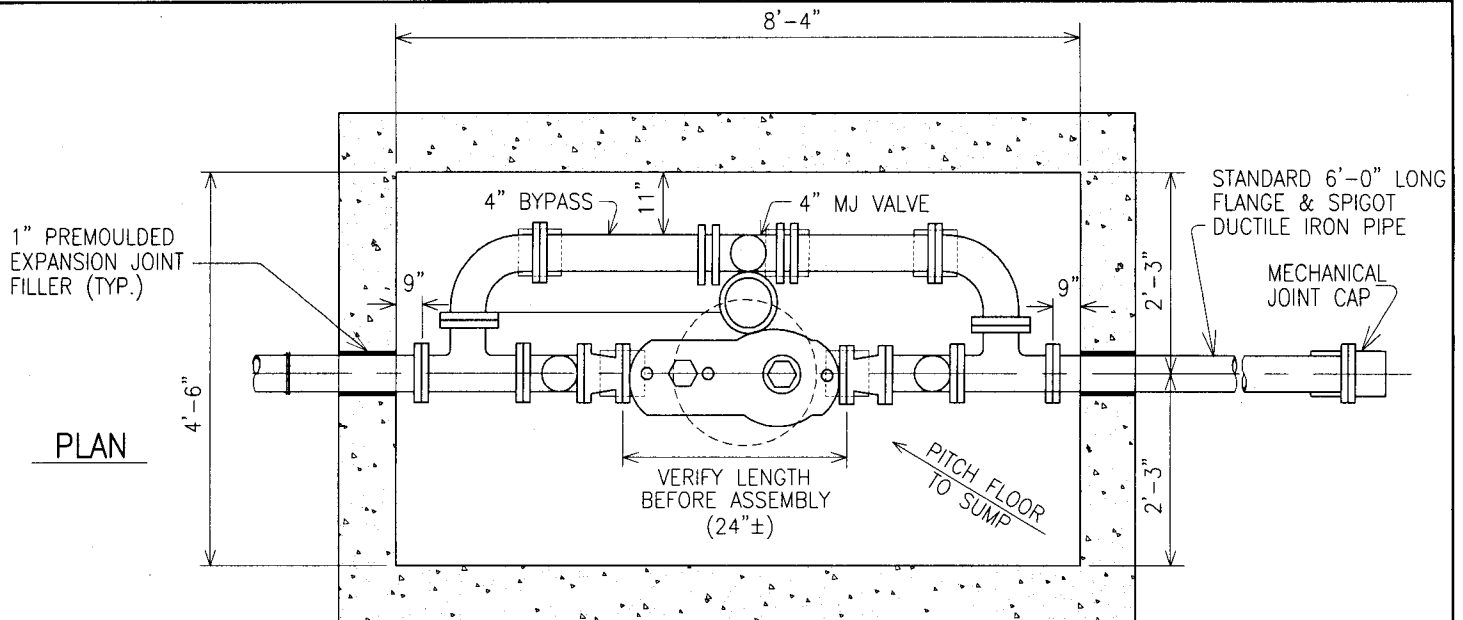
APPROVAL
[Signature]
 DIRECTOR
 BUR. OF ENGINEERING/CONSTRUCTION
 1-2-07
 DATE

DEPARTMENT OF PUBLIC WORKS
 STANDARD WATER DETAILS
 STANDARD INSTALLATION
 2" WATER SUPPLY SERVICE
 (2" METER)

ISSUED: SEPTEMBER, 1984
 REVISED: JUNE, 1989
 REVISED: OCTOBER, 2006

PLATE

W-26A



NOTES

1. ALL VALVES AND FITTINGS TO BE FLANGED. VALVES SHALL HAVE HANDWHEELS.
2. BYPASS SHALL BE SIZED FOR NON-FIRE DEMAND ONLY.
3. VAULT CONSTRUCTION SHALL BE IN ACCORDANCE WITH INTERIOR DIMENSIONS SHOWN, AND WITH NOTES 3 THROUGH 9 ON STANDARD DETAIL PLATE W-27B.
4. PIPES BETWEEN SERVICE VALVE (NOT SHOWN) AND METER VAULT SHALL BE DUCTILE IRON PIPE, REGARDLESS OF TYPE OF PIPE USED ELSEWHERE.

SHEET 1 OF 3
SHEET 2: SEE W-27A
SHEET 3: SEE W-27B

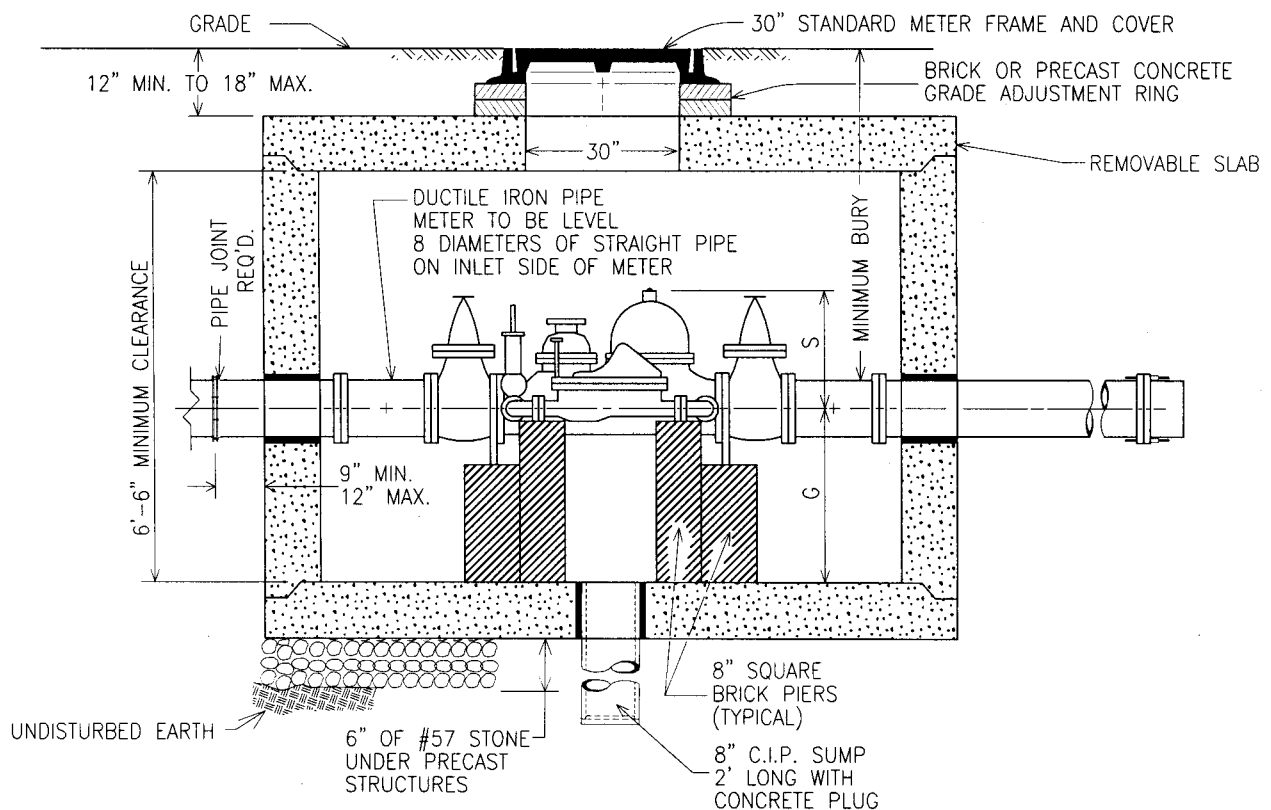
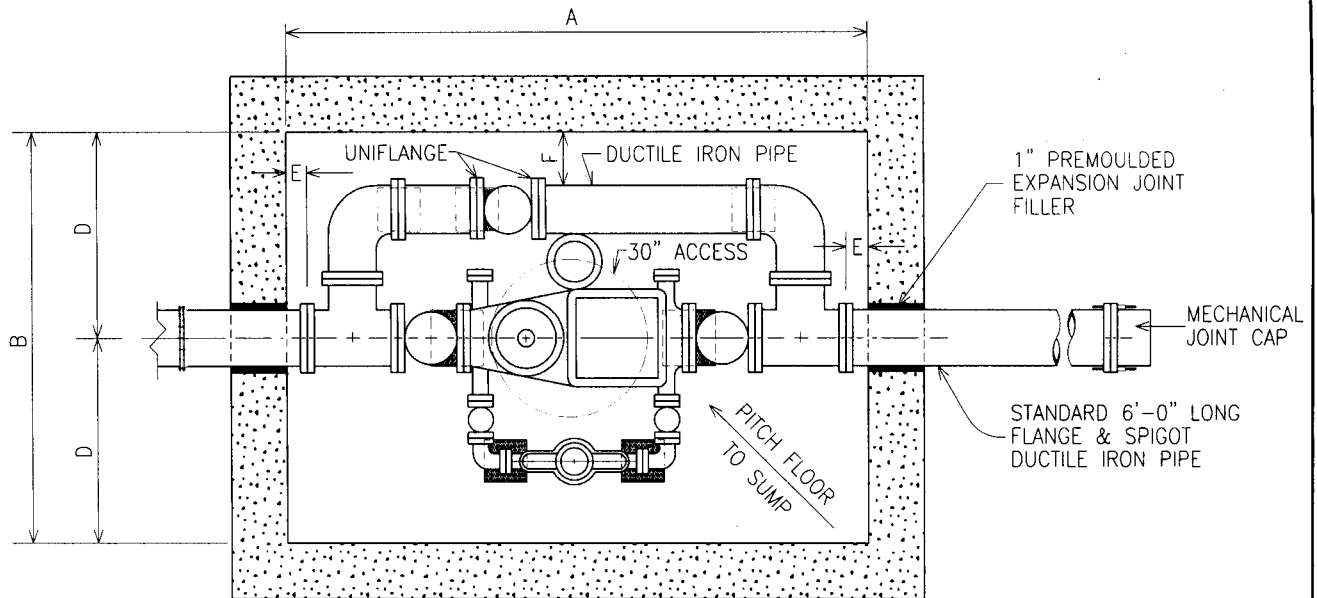


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DIRECTOR
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BUR. OF ENGINEERING/CONSTRUCTION
DATE 7/24/06

DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS
STANDARD INSTALLATION
4" WATER SUPPLY SERVICE
WITH 3" METER

ISSUED: FEBRUARY, 2005
REVISED: MAY, 2006
REVISED:

PLATE
W-27



SEE SHEET 3 OF 3 (STD. DETAIL PLATE W-27B) FOR NOTES.

SHEET 2 OF 3
SHEET 1: SEE W-27
SHEET 3: SEE W-27B



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7/24/06
DATE

DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS
STANDARD VAULT FOR
4", 6", 8", 10" & 12" FM METERS

ISSUED: JUNE 16, 1983
REVISED: NOVEMBER 2, 1984
REVISED: FEBRUARY 2006

PLATE

W-27A

W-27A-2.DWG

	SIZE	A	B	D	E	F	G	S
4" FM WITH BYPASS *	4"	7'-11"	5'-6"	2'-9"	9"	1'-3"	2'-8"	1'-2 $\frac{1}{2}$ "
6" FM WITH BYPASS *	6"	9'-8"	6'-0"	3'-0"	9"	1'-2"	2'-5"	1'-5 $\frac{1}{2}$ "
8" FM WITH BYPASS *	8"	10'-10"	6'-11"	3'-5 $\frac{1}{2}$ "	9"	1'-4"	2'-2"	1'-9 $\frac{1}{2}$ "
10" FM WITH BYPASS *	10"	13'-0"	8'-6"	4'-3"	9"	1'-8"	2'-2"	2'-6"
12" FM WITH BYPASS *	12"	13'-6"	8'-6"	4'-3"	9"	1'-7"	2'-2"	2'-6"

* SEE NOTE 2

NOTES :

1. ALL VALVES AND FITTINGS TO BE FLANGED; VALVES TO HAVE HANDWHEELS.
2. BYPASS TO BE SIZED FOR NON-FIRE DEMAND ONLY.
3. SHOP DRAWINGS SHALL BE SUBMITTED & APPROVED FOR EACH VAULT. SHOP DRAWINGS SHALL BE SIGNED & SEALED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER.
4. LOADS: L.L. = MdSHA HS-27 (135% OF AASHTO HS20-44 LOADING)
D.L. = EARTH AT 110 LBS. PER CU. FT. & 42 LBS. PER CU. FT. EQUIVALENT FLUID PRESSURE.
5. CONCRETE & REINFORCING SHALL CONFORM TO THE STANDARD BALTIMORE COUNTY SPECIFICATION.
6. CAST-IN-PLACE CONCRETE SHALL BE MIX #3. PRECAST CONCRETE SHALL BE 4500 PSI.
7. TOP SLAB SHALL BE SEPARATE AND REMOVABLE FROM VAULT.
8. VAULT FLOTATION TO BE ADDRESSED BY CERTIFYING ENGINEER TO SATISFACTION OF BUREAU OF ENGINEERING & CONSTRUCTION.
9. FOR PRECAST VAULTS, PROVIDE A MINIMUM 2" CLEARANCE BETWEEN TOP OF PIPE AND PRECAST "DOGHOUSE" PIPE OPENINGS. OPENINGS ABOVE CENTERLINE OF PIPE SHALL BE FILLED WITH PRE-MOLDED EXPANSION JOINT FILLER. BLOCK REMAINING OPENINGS WITH BRICK AND MORTAR INSTALLED ON THE OUTSIDE OF THE VAULT WALL. CONTINUE BRICKS TO ONE COURSE ABOVE THE CENTERLINE OF PIPE.
10. PIPE BETWEEN SERVICE VALVE (NOT SHOWN) AND METER VAULT SHALL BE DUCTILE IRON PIPE REGARDLESS OF THE TYPE OF PIPE USED ELSEWHERE.

SHEET 3 OF 3
SHEET 1: SEE W-27
SHEET 2: SEE W-27A



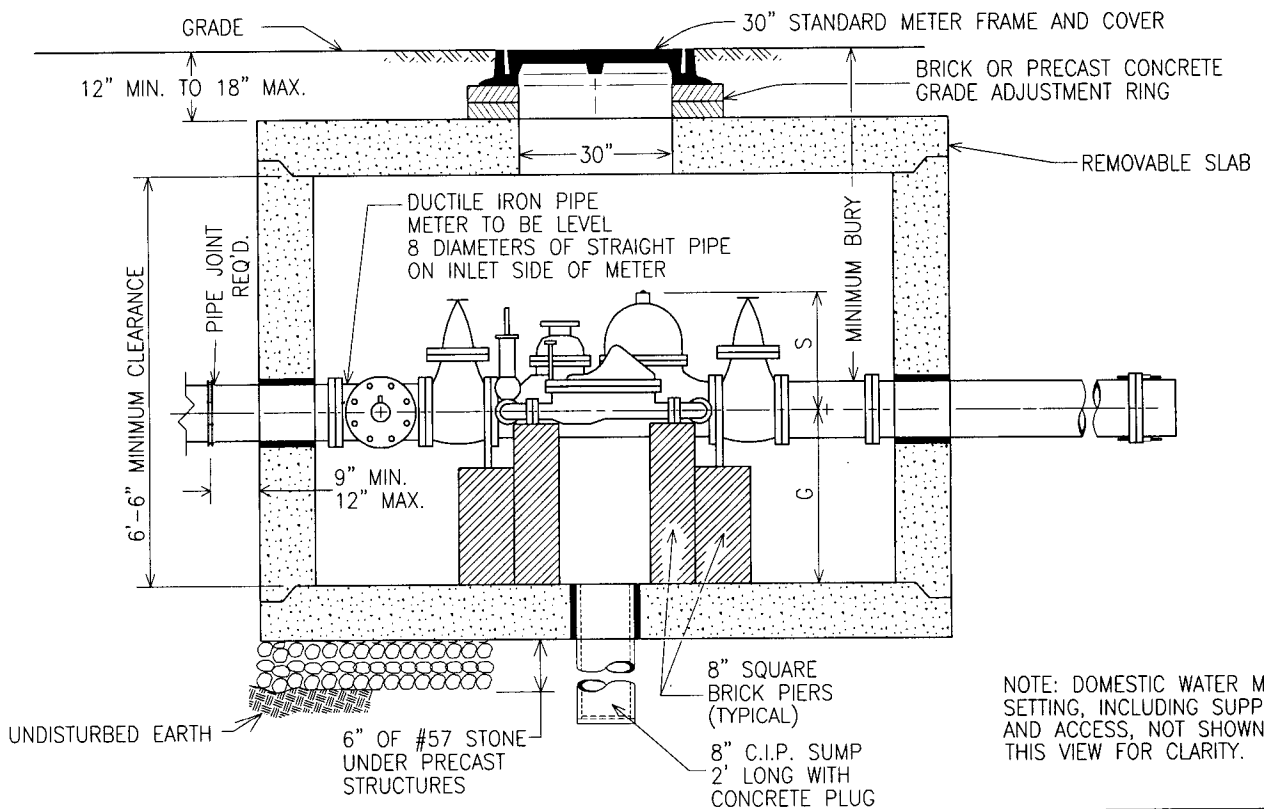
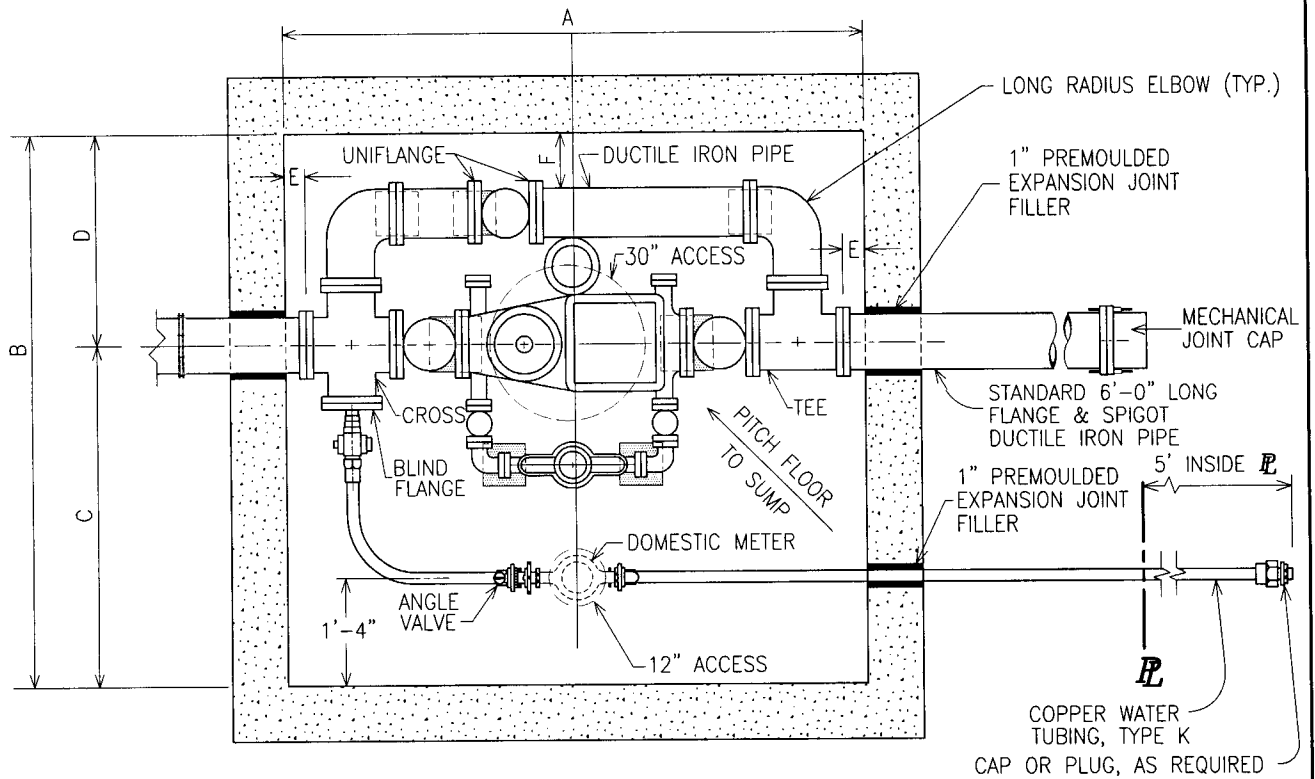
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7/24/06
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DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS
STANDARD VAULT FOR
4", 6", 8", 10" & 12" FM METERS

ISSUED: JUNE 16, 1983
REVISED: NOVEMBER 2, 1984
REVISED: FEBRUARY, 2006

PLATE

W-27B



NOTE: DOMESTIC WATER METER SETTING, INCLUDING SUPPORTS AND ACCESS, NOT SHOWN ON THIS VIEW FOR CLARITY.

SHEET 1 OF 2
SHEET 2: SEE W-28B



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1-2-07
DATE

DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS
STANDARD VAULT FOR
4", 6", 8", 10" & 12" FM METERS
WITH SMALL DOMESTIC METERS

ISSUED: NOVEMBER, 2006
REVISED:
REVISED:
PLATE
W-28A

11/15/2006 1:43 PM
W-28A.DWG

	SIZE	A	B	C	D	E	F (MIN.)	G	S	CROSS, TEE (RUN x BRANCH)
4" FM WITH SMALL DOMESTIC METER & BYPASS	4"	7'-11"	7'-4"	4'-7"	2'-9"	9"	1'-3"	2'-8"	1'-2 $\frac{1}{2}$ "	4" x 4"
6" FM WITH SMALL DOMESTIC METER & BYPASS*	6"	9'-8"	8'-1"	5'-1"	3'-0"	9"	1'-2"	2'-5"	1'-5 $\frac{1}{2}$ "	6" x 4"
8" FM WITH SMALL DOMESTIC METER & BYPASS*	8"	10'-10"	8'-11"	5'-5 $\frac{1}{2}$ "	3'-5 $\frac{1}{2}$ "	9"	1'-4"	2'-2"	1'-9 $\frac{1}{2}$ "	8" x 6"
10" FM WITH SMALL DOMESTIC METER & BYPASS*	10"	13'-0"	10'-6"	6'-3"	4'-3"	9"	1'-8"	2'-2"	2'-6"	10" x 8"
12" FM WITH SMALL DOMESTIC METER & BYPASS*	12"	13'-6"	10'-6"	6'-3"	4'-3"	9"	1'-7"	2'-2"	2'-6"	12" x 8"

* SEE NOTE 2

NOTES :

1. ALL VALVES AND FITTINGS FOR FM METER SETTING & BYPASS SHALL BE FLANGED; VALVES SHALL HAVE HANDWHEELS.
2. BYPASS TO BE SIZED FOR NON-FIRE DEMAND ONLY (EXCEPT 4" FM).
3. SMALL DOMESTIC METERS SHALL BE 5/8", 3/4", 1", 1-1/2", OR 2" SINGLE METERS ONLY. SEE APPROPRIATE STANDARD DETAIL PLATE (W-21, W-23, W-24, W-25, W-26, W-26A) FOR SPECIFIC METER SETTING REQUIREMENTS.
4. PROVIDE 8" SQUARE BRICK PIERS UNDER DOMESTIC WATER METER SETTING.
5. A 12" FRAME AND COVER SHALL BE CENTERED OVER THE SMALL DOMESTIC WATER METER REGISTER.
6. DRILL & TAP BLIND FLANGE FOR APPROPRIATE SIZE OF CORPORATION, AS REQUIRED BY RESPECTIVE DOMESTIC WATER METER SIZE.
7. ELEVATION OF SMALL DOMESTIC WATER METER REGISTER TO MATCH ELEVATION OF FM METER REGISTER \pm 4".
8. SHOP DRAWINGS SHALL BE SUBMITTED & APPROVED FOR EACH VAULT. SHOP DRAWINGS SHALL BE SIGNED & SEALED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER.
9. LOADS: L.L. = MdSHA HS-27 (135% OF AASHTO HS20-44 LOADING)
D.L. = EARTH AT 110 LBS. PER CU. FT. & 42 LBS. PER CU. FT. EQUIVALENT FLUID PRESSURE.
10. CONCRETE & REINFORCING SHALL CONFORM TO THE STANDARD BALTIMORE COUNTY SPECIFICATION.
11. CAST-IN-PLACE CONCRETE SHALL BE MIX #3.
12. TOP SLAB SHALL BE SEPARATE AND REMOVABLE FROM VAULT.
13. VAULT FLOTATION TO BE ADDRESSED BY CERTIFYING ENGINEER TO SATISFACTION OF BUREAU OF ENGINEERING & CONSTRUCTION.
14. PIPE BETWEEN SERVICE VALVE (NOT SHOWN) AND METER VAULT SHALL BE DUCTILE IRON PIPE REGARDLESS OF THE TYPE OF PIPE USED ELSEWHERE.

SHEET 2 OF 2
SHEET 1: SEE W-28A



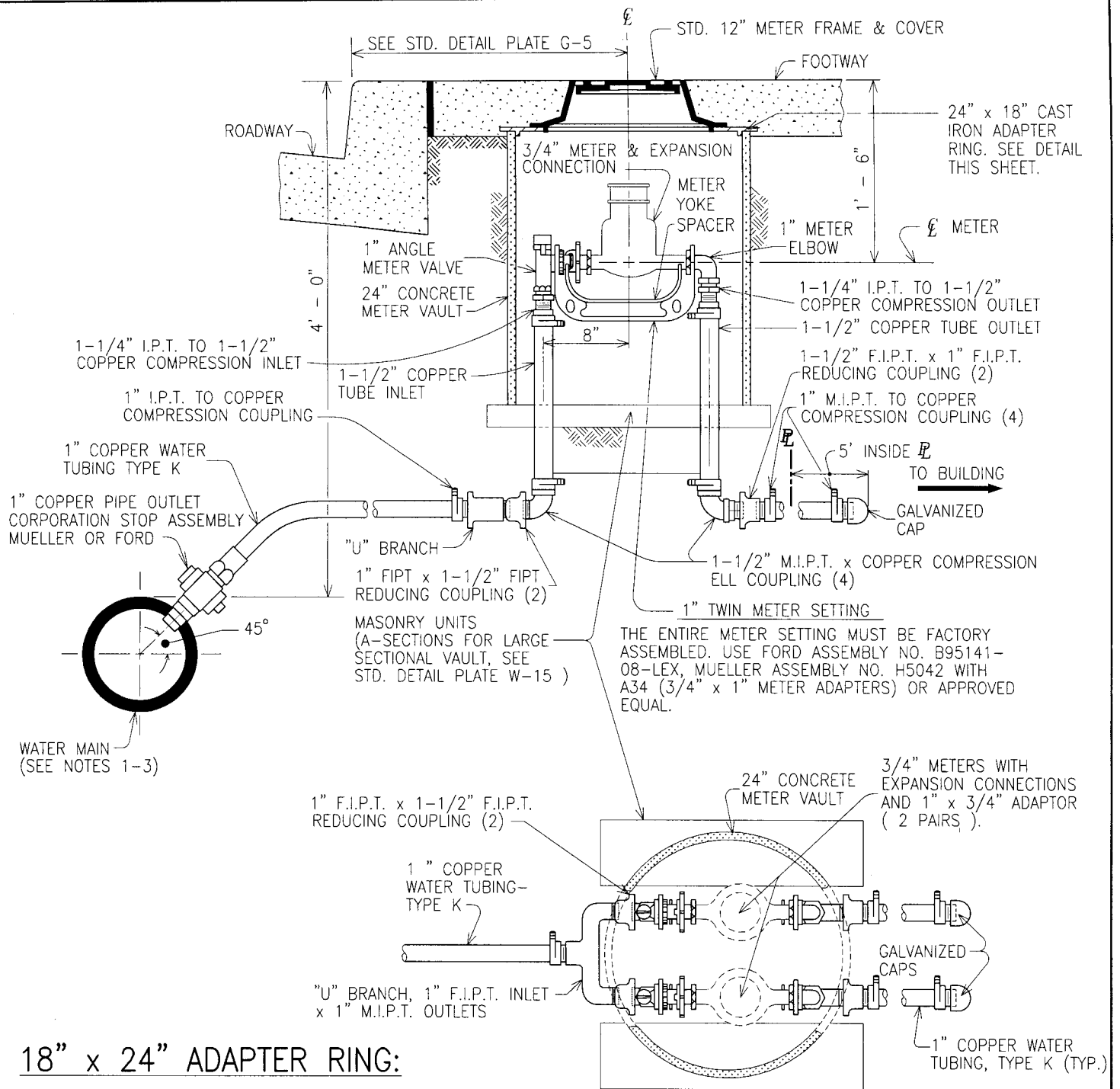
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1-2-07
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DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS
STANDARD VAULT FOR
4", 6", 8", 10" & 12" FM METERS
WITH SMALL DOMESTIC METERS

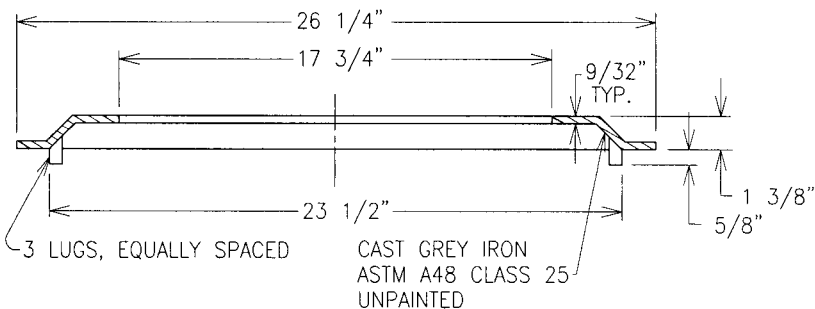
ISSUED: NOVEMBER, 2006
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PLATE

W-28B



18" x 24" ADAPTER RING:



NOTES

1. ON 4" DUCTILE IRON PIPE, USE SERVICE SADDLE (FORD FC202 OR SMITH-BLAIR 315).
2. FOR 6" AND LARGER DIP, CONTRACTOR MAY INSTALL CORPORATION USING SERVICE SADDLE LISTED ABOVE.
3. ON 4" - 24" HDPE, USE APPROVED ELECTROFUSION TAPPING SADDLE.

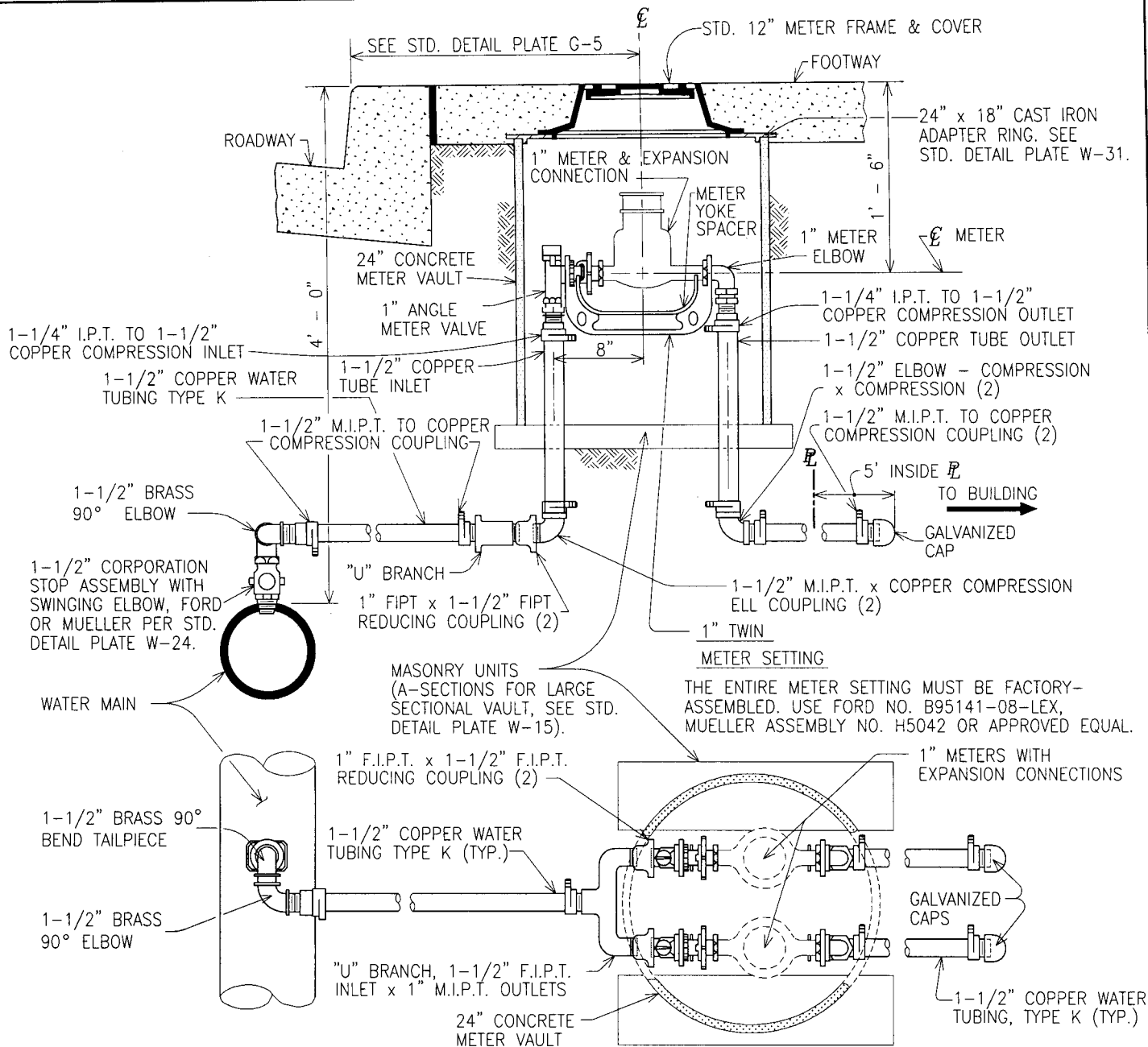


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 1-2-07
 DATE

DEPARTMENT OF PUBLIC WORKS
 STANDARD WATER DETAILS
 1" SUPPLY SERVICE
 WITH TWIN 3/4" METERS

ISSUED: AUGUST, 1997
 REVISED: DECEMBER, 2006
 REVISED:

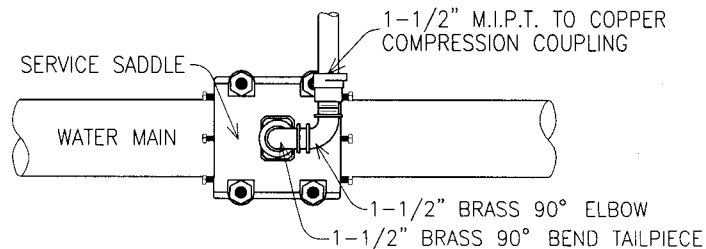
PLATE
 W-31



DETAIL FOR MAIN WITHOUT SERVICE SADDLE

NOTES

- ON 4" - 6" DUCTILE IRON PIPE, USE SERVICE SADDLE (FORD FC202 OR SMITH-BLAIR 315).
- FOR 8" AND LARGER DIP, CONTRACTOR MAY INSTALL A CORPORATION USING SERVICE SADDLE LISTED ABOVE.
- ON 4" - 24" HDPE, USE APPROVED ELECTROFUSION TAPPING SADDLE.



DETAIL FOR MAIN WITH SERVICE SADDLE



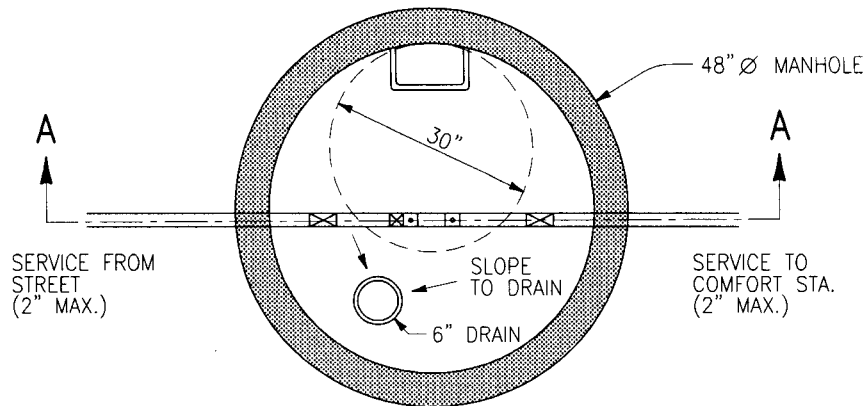
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1-2-07
DATE

DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS

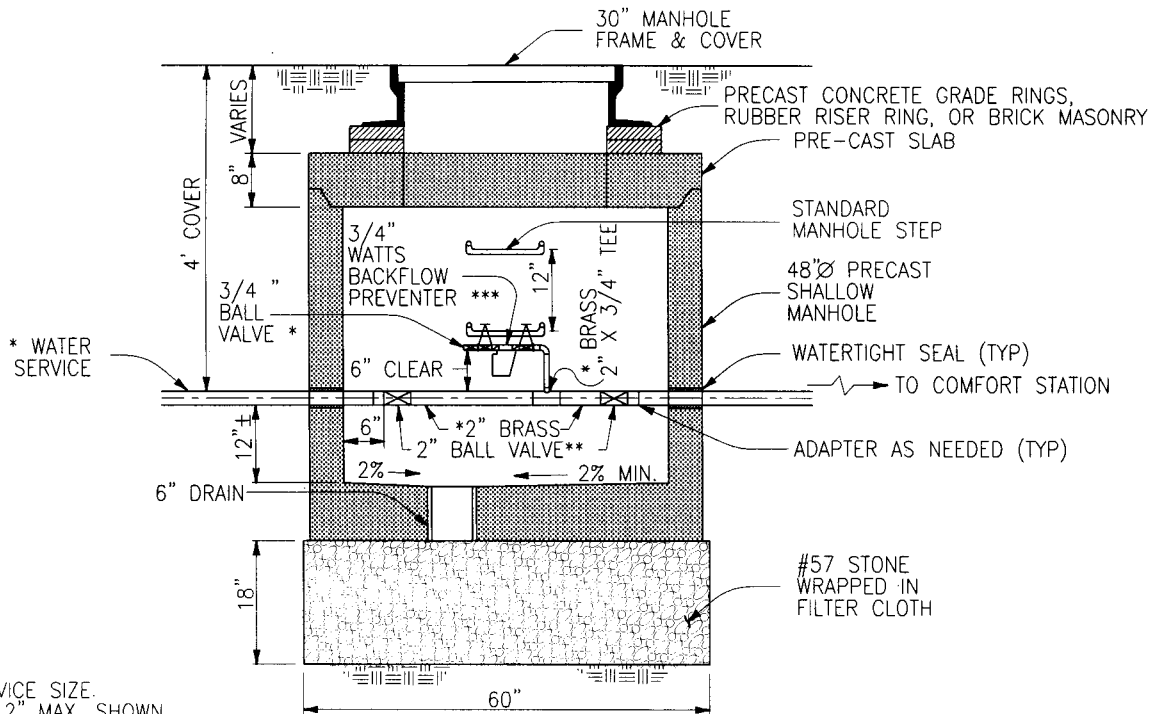
1 1/2" SUPPLY SERVICE
TWIN 1" METERS

ISSUED: AUGUST, 1997
REVISED: DECEMBER, 2006
REVISED:

PLATE
W-33



PLAN



SECTION A-A

* WATER SERVICE SIZE.
MAY VARY, 2" MAX. SHOWN

** FORD No. B11 BALL VALVES
MATCHING SERVICE SIZE

*** WATTS 7U2-2 "DOUBLE-CHECK"

STD. DETAIL PLATE CROSS-REFERENCE

30" MANHOLE FRAME & COVER	PLATE W-18
48" Ø PRECAST SHALLOW MANHOLE	PLATE S-4
MANHOLE STEPS	PLATE G-4, 4A
PRECAST CONCRETE GRADE RING	PLATE G-3
RUBBER RISER RING	PLATE G-3B



APPROVAL
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7/26/06
DATE

DEPARTMENT OF PUBLIC WORKS
STANDARD WATER DETAILS

COMFORT STATION
DEWATERING VALVE & VAULT

ISSUED: FEBRUARY, 1999
REVISED: FEBRUARY, 2006
REVISED:

PLATE

W-34