



SECTION 4

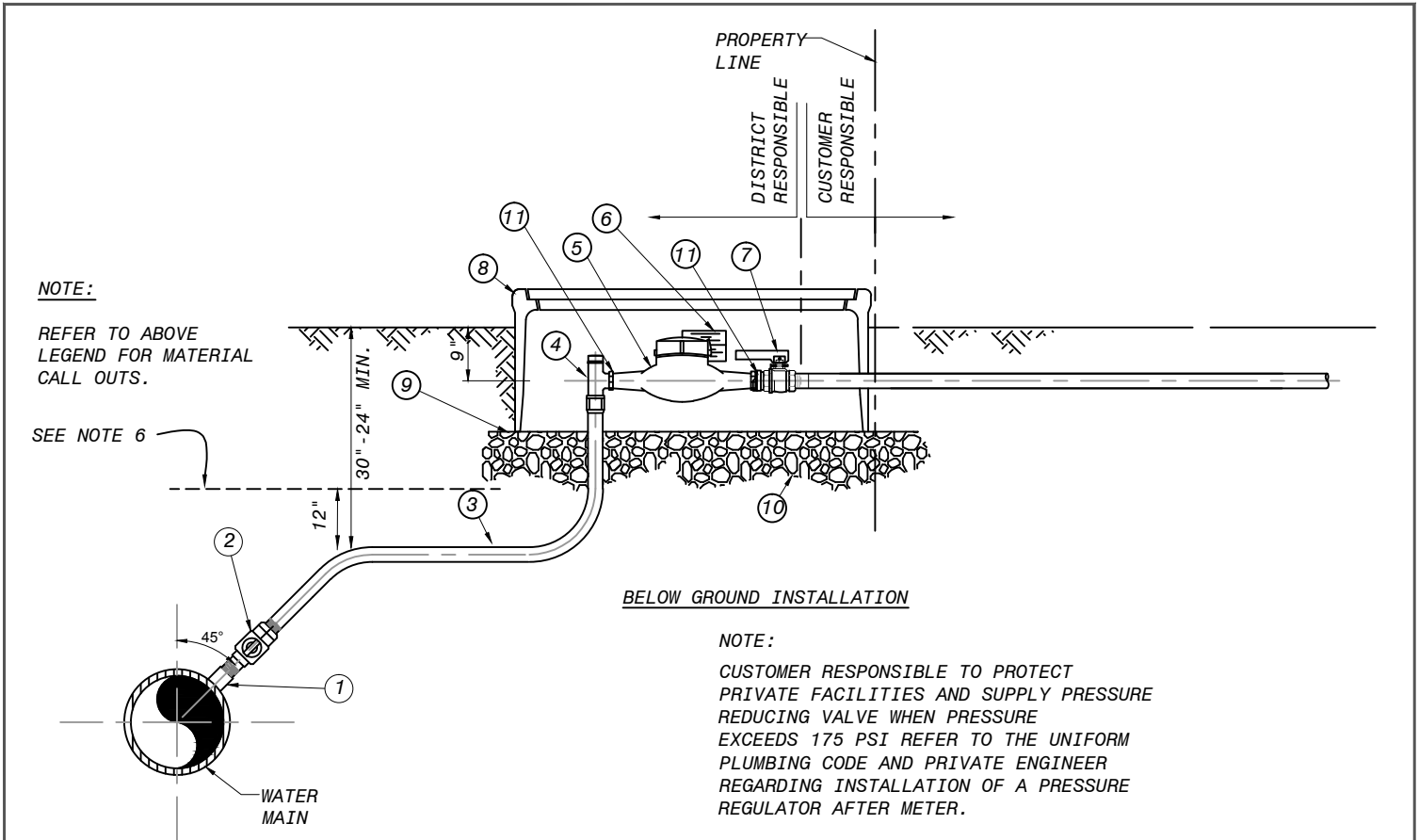
STANDARD DRAWINGS DOMESTIC WATER FACILITIES

(SEPT 25, 2019)

SECTION 4

DWG #	STANDARD DRAWINGS – DOMESTIC WATER	Revision Date
W-1	Typical 3/4" Through 2" Water Service Installation	2/23/17
W-1A	3/4" & 2" Meter With RP Device	2/23/17
W-2	3" Through 6" Water Service	5/24/17
W-2A	3" Through 6" Water Service With RP Device	5/24/17
W-3	Standard Pipe Zone and Trench Backfill	5/24/17
W-4	Concrete Thrust Blocks	5/24/17
W-5	Service Outlet Saddle	8/28/19
W-6	2" Blow Off Assembly	9/25/19
W-7	4" Blow Off Assembly (For Pressure Less Than 250 psi)	9/23/19
W-8	4" Blow Off Assembly (For Pressure 250 psi and Greater)	9/23/19
W-9	6" Fire Hydrant Assembly (For Pressure Less Than 250 psi)	5/24/17
W-10	6" Fire Hydrant Assembly (For Pressure 250 psi and Greater)	5/24/17
W-11	2" Automatic Air Release and Vacuum Relief Valve	9/25/19
W-12	4" and 6" Automatic Air Release and Vacuum Relief Valve	9/23/19
W-13	Standard Guard Post Installation	5/24/17
W-14	Water Pipeline Pipe Installation & Separation Requirements	5/24/17
W-15	Standard Cutoff Wall	5/24/17
W-16	Appurtenance Wall	5/24/17
W-17	Standard Cul-de-Sac Water Services	5/24/17
W-18	Three Valve Tee (Typical)	7/12/17
W-19	Valve Well Frame	5/24/17
W-20	Valve Well Cover	5/24/17
W-21	Trench Resurfacing	5/24/17
W-22	4" Fire Service / Notes	5/24/17
W-23	3" Fire Service / Notes	5/24/17
W-24	2" Fire Service / Notes	2/7/18

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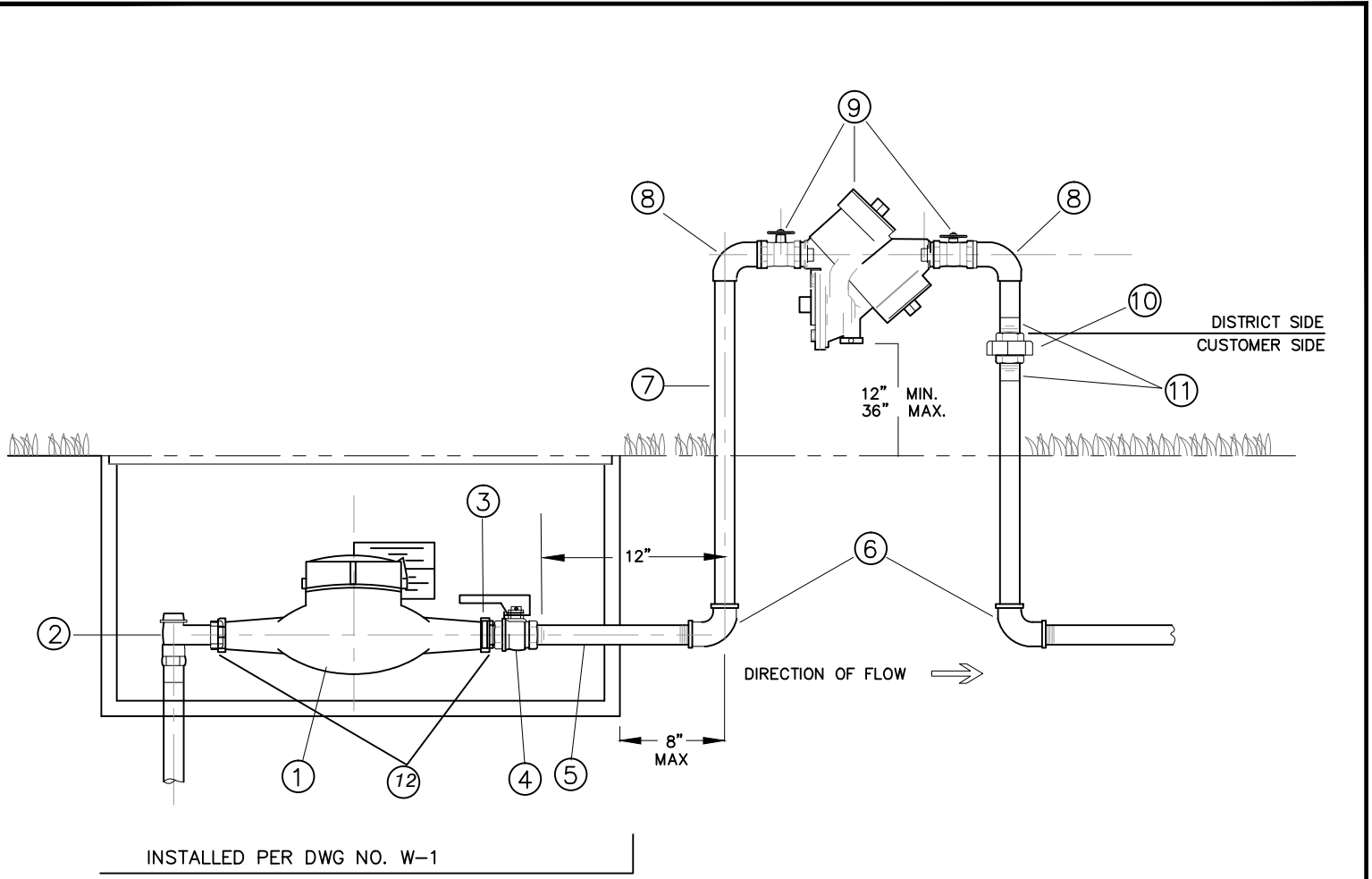
MATERIAL LIST

ITEM	QTY	MATERIAL	PART NO.
1		PER W-5: FORGED STEEL HALF-COUPLING, THREADED, CLASS 3000 WELDED TO PIPE WITH REINFORCING SADDLE (CML&C PIPE); OR DOUBLE STRAP, STAINLESS STEEL, TAPPING COLLAR (PVC OR DUCTILE IRON PIPE).	
2		THREADED CORP STOP, MIP x MIP THREAD BALL VALVE (T-HEAD ONLY), OR APPROVED EQUAL BY D.E.	J E-1943, J E-1956
3		CONTINUOUS TYPE "K" COPPER TUBING	SEE NOTE 8
4		ANGLE STOP: 180 deg TURN, FIP X SWIVEL NUT (OR FLG) AND LOCK WING. METER SIZE 3/4" (1" X 3/4") METER SIZE 1" (1" X 1") METER SIZE 1.5" AND 2"	JONES E-1527 JONES E-1527 JONES E-1527F
5		WATER METER SUPPLIED BY DISTRICT	
6		ERT RADIO SUPPLIED AND/OR INSTALLED BY DISTRICT	
7		BRONZE BALL VALVE, JONES OR FORD WITH LOCKING WING AND BRASS HANDLE OR APPROVED EQUAL BY D.E. HANDLE: JONES - HB-34 AND FORD - J-2813	JONES E-1908W, FORD B13-332W, B13-444W-NL
8		HDPE PLASTIC METER BOX AND COVER, (GREEN) BRASS METER TAILS WITH GASKETS. (1.5" & 2" METERS USE LARGER BOX)	REG: 20" X 26" LARGE: 26" X 39"
9		1/2" WIRE MESH 19 GAUGE, GALVANIZED COATING D, SET 1" BEYOND METER BOX DIMENSIONS	
10		6" BASE OF 3/4" ROCK	
11		USE FPU D APPROVED GASKET WASHERS. CLOTH INSERTED GASKET W/ FABRIC FINISH: 1/8" THICK	TRIPAC

TYPICAL CONSTRUCTION NOTES:

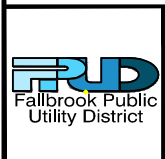
- REPAIR COATING ON PIPE TO COVER WELDED COUPLING AND REPAIR COUPLING AND MALE THREADS OF CORP STOP AFTER CONNECTING PIPE. SEE W-5.
- APPLY BITUMASTIC COMPOUND TO COUPLING AND MALE THREADS OF CORP STOP AFTER CONNECTING TO A TAR/WRAPPED STEEL PIPE.
- PIPE THREADS SHALL BE CLEAN, SHARP AND WRAPPED WITH A PIPE THREAD SEAL TAPE.
- WHERE METER BOX IS LOCATED IN CONCRETE OR ASPHALT TRAFFIC AREAS, CONTACT DISTRICT FOR AN APPROVED CONCRETE METER BOX.
- WRAP BURIED FACILITIES WITH 10 MIL CALPICO TAPE OR CONTINUOUS POLYETHYLENE SLEEVE ENCASUREMENT (6-MIL).
- INSTALL BLUE UNDERGROUND WARNING TAPE, INDICATING "WATER PIPE", IN PIPE TRENCH 12" ABOVE PIPE.
- SHALLOW SERVICE LINE INSTALLATIONS SHALL BE APPROVED BY D.E. PRIOR TO CONSTRUCTION.
- 3/4"-1" METER - 1" SERVICE LINE
1-1/2" METER - 1-1/2" SERVICE LINE
2" METER - 2" SERVICE LINE
- ON 1-1/2" & 2" METERS (WHICH ARE FLANGED), PROVIDE THREADED COMPANION FLANGES, 150-LB.

	Rev. Date	By	Approve		<p>TYPICAL 3/4" THRU 2" WATER SERVICE INSTALLATION</p>	DRAWING NO.
	2/23/17	SMD	JB			W-1



MATERIAL LIST

ITEM	QTY	PART TYPE	PART NO.	PART NO.
1	1	METER (SUPPLIED BY THE DISTRICT)	3/4" OR 1" METER	1.5" OR 2" METER
2	1	ANGLE STOP	JONES 1527, FIP	JONES 1527 F
3	1	METER CONNECTION	MIP	FLANGE
4	1	BALL VALVE, BRASS, W/ LOCKING WING	E-1903W (W/HANDLE)	E-1913W (FLG W/HANDLE)
5	1	COPPER OR BRASS NIPPLE	(12" MAX. LENGTH)	(12" MAX. LENGTH)
6	2	90° EL	C X FIP 90	C X FIP 90
7	REQ'D	TYPE K HARD COPPER PIPE	TYPE K	TYPE K
8	2	90° EL	C X MIP 90	C X MIP 90
9	1	R.P. DEVICE WITH BALL VALVES	WILKINS 975XL	WILKINS 975XL
10	1	UNION, THREADED BRASS	FIP X FIP	FIP X FIP
11	2	ADAPTER	C X MIP ADAPTER	C X MIP ADAPTER
12	2	USE FPU D APPROVED GASKET WASHERS.	CLOTH INSERTED W/ FABRIC FINISH, 1/8" THICK	FLANGE GASKET



REV. DATE	BY	APPV'D
2/23/17	SMD	JB



3/4" TO 2" METER WITH REDUCED PRESSURE BACKFLOW DEVICE

DRAWING NO. W-1A

MATERIAL LIST PER METER SIZE X" (MINIMUM)

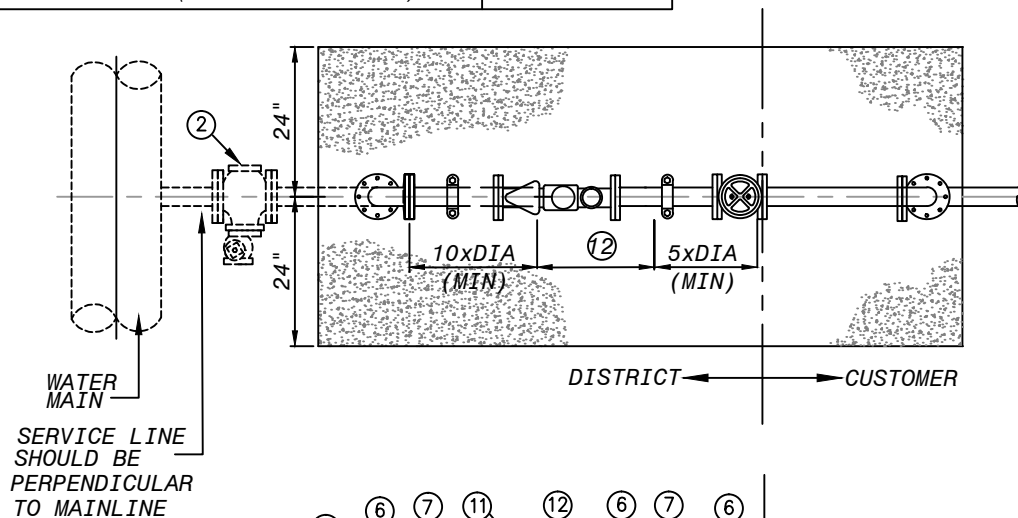
ITEM	QTY	MATERIAL DESCRIPTION	PART NO.
①		X" FLANGED OUTLET PER AWWA AND DISTRICT STANDARDS	
②		X" FLANGED GATE VALVE, (OR FLANGED PLUG VALVE, WHERE PRESSURE IS GREATER THAN 250 PSI)	
③		X" DUCTILE IRON PIPE (DIP) T.2E.	
④		X" 90° DI PIPE ELBOW, FLANGED.	
⑤		VALVE WELL INSTALLATION PER DISTRICT STD. DWG NO.W-19	
⑥		X" FLANGE X GROVE END SPOOL.	
⑦		X" COUPLING, 150-LB, GALVANIZED.	
⑧		WRAP WITH FOAM TAPE FOR CONCRETE PENETRATION	
⑨		X" GATE VALVE, FLANGED	
⑩		X" COMPANION FLANGE, FLANGED, 150-LB	
⑪		WATER METER AND RADIO RTU SUPPLIED BY DISTRICT	
⑫		HALF WRAP WELD SADDLE	
⑬		THRUST BLOCK, FPUD SEC 03300	
⑭		DELETED	
⑮		ADJUSTABLE STAINLESS STEEL PIPE SUPPORT FOR X" PIPING	
⑯		4" CONCRETE SLAB, #4 STEEL REBAR 12" O.C. EACH WAY GRADE 60, AT MID-DEPTH	
⑰		WRAP PER DISTRICT STANDARD WITH 8 MIL POLYETHYLENE	
⑱		BACKFILL WITH AGGREGATE BASE (95% REL. COMPACTION)	

NOTE:

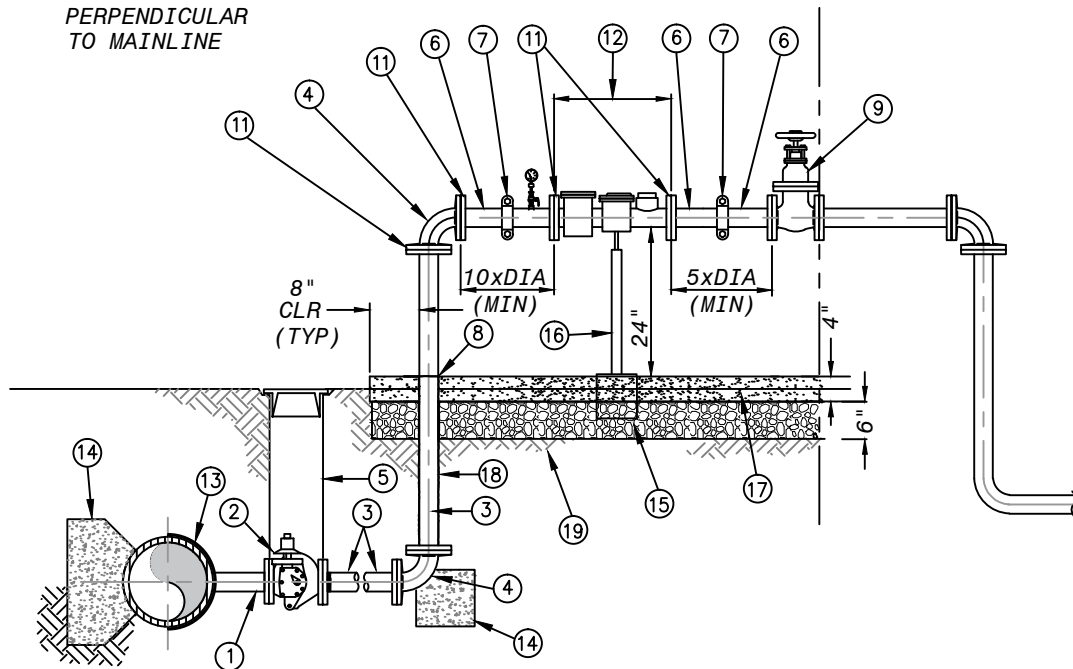
CUSTOMER IS RESPONSIBLE FOR SUPPLYING PRESSURE REDUCING VALVE (PRV) WHEN PRESSURE EXCEEDS 175 PSI. REFER TO THE UNIFORM BUILDING CODE AND A PRIVATE ENGINEER REGARDING INSTALLATION OF A PRV AFTER THE METER.

INSTALLATION, MATERIALS AND VALVES SHALL BE ACCORDING TO DISTRICT SPECIFICATIONS. SEE FOR MORE INFORMATION.

PLAN



SECTION



REV. DATE	BY	APP'D
5/24/17	SMD	JRB



3" - 6" WATER SERVICE

DRAWING NO.

W-2

MATERIAL LIST PER METER SIZE X" (MINIMUM)

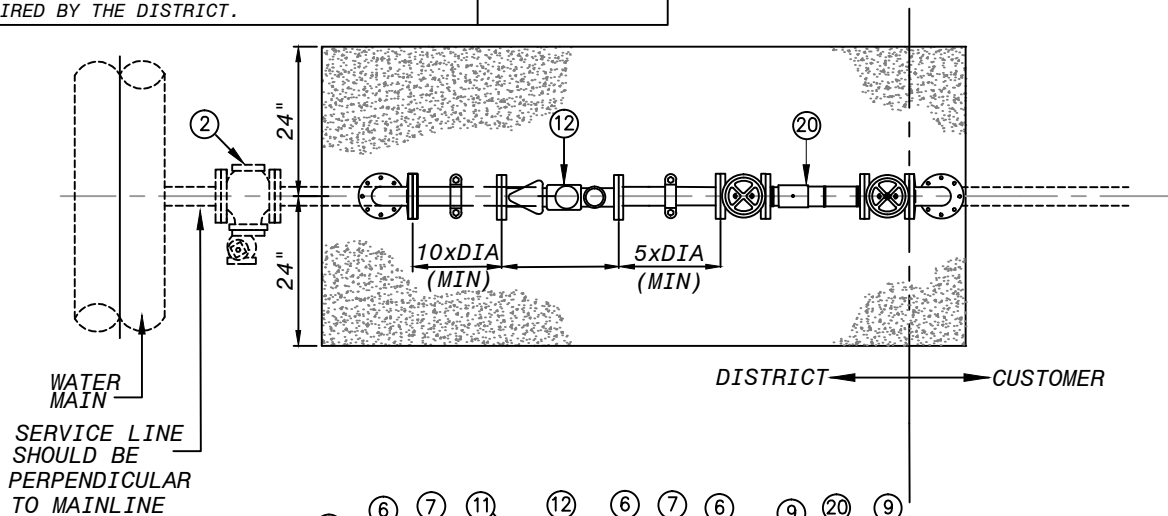
ITEM	QTY	MATERIAL DESCRIPTION	PART NO.
①		X" FLANGED OUTLET PER AWWA AND DISTRICT STANDARDS	
②		X" FLANGED GATE VALVE, (OR FLANGED PLUG VALVE, WHERE PRESSURE IS GREATER THAN 250 PSI)	
③		X" DUCTILE IRON PIPE (DIP) T.2E.	
④		X" 90° DI PIPE ELBOW, FLANGED.	
⑤		VALVE WELL INSTALLATION PER DISTRICT STD. DWG NO.W-19	
⑥		X" FLANGE x GROVE END SPOOL.	
⑦		X" COUPLING, 150-LB, GALVANIZED.	
⑧		WRAP WITH FOAM TAPE FOR CONCRETE PENETRATION	
⑨		X" GATE VALVE, FLANGED	
⑩		X" COMPANION FLANGE, FLANGED, 150-LB	
⑪		WATER METER AND RADIO RTU SUPPLIED BY DISTRICT	
⑫		HALF WRAP WELD SADDLE	
⑬		THRUST BLOCK, FPUD SEC 03300	
⑭		DELETED	
⑮		ADJUSTABLE STAINLESS STEEL PIPE SUPPORT FOR X" PIPING	
⑯		4" CONCRETE SLAB, #4 STEEL REBAR 12" O.C. EACH WAY GRADE 60, AT MID-DEPTH	
⑰		WRAP PER DISTRICT STANDARD WITH 8 MIL POLYETHYLENE	
⑱		BACKFILL WITH AGGREGATE BASE, (95% REL. COMPACTION)	
⑳		DISTRICT APPROVED REDUCED PRESSURE BACKFLOW PREVENTION DEVICE AS REQUIRED BY THE DISTRICT.	

NOTE:

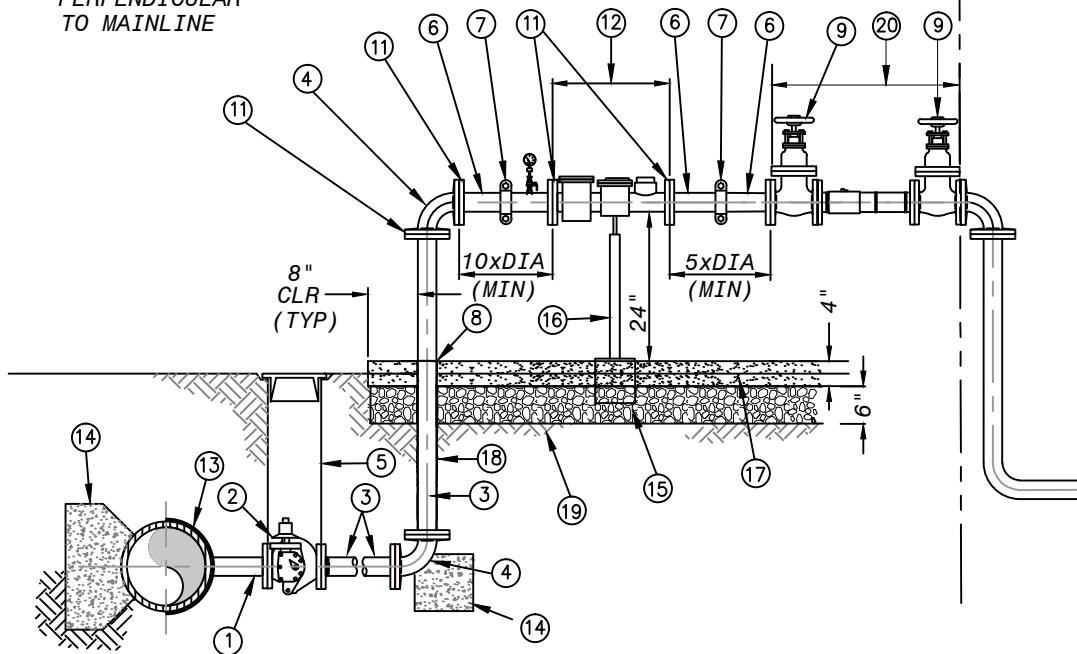
CUSTOMER IS RESPONSIBLE FOR SUPPLYING PRESSURE REDUCING VALVE (PRV) WHEN PRESSURE EXCEEDS 175 PSI. REFER TO THE UNIFORM BUILDING CODE AND A PRIVATE ENGINEER REGARDING INSTALLATION OF A PRV AFTER THE METER.

INSTALLATION, MATERIALS AND VALVES SHALL BE ACCORDING TO DISTRICT SPECIFICATIONS. SEE FOR MORE INFORMATION.

PLAN



SECTION



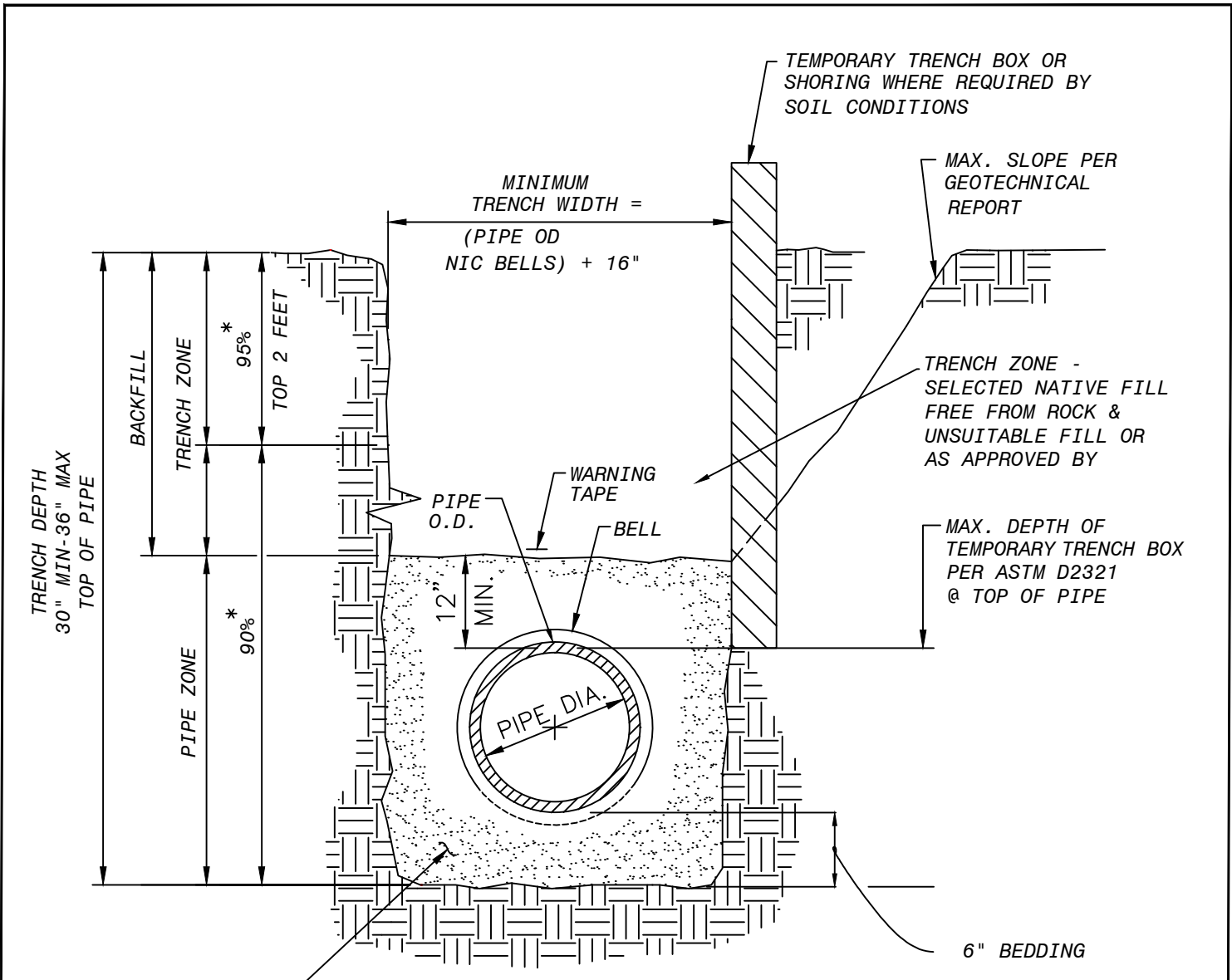
REV. DATE	BY	APP'D
5/24/17	SMD	JRB



**3" - 6" WATER SERVICE WITH
REDUCED PRESSURE BACKFLOW DEVICE**

DRAWING NO.

W-2A



PIPE ZONE - IMPORTED GRANULAR MATERIAL PER FPUD STANDARD SPECIFICATION SECTION 02223, OR AS APPROVED BY DISTRICT ENGINEER

NOTES:

1. REFER TO SECTION 02223 OF THE SPECIFICATIONS
2. PAVING OR PAVEMENT REPAIR TO BE DONE IN ACCORDANCE TO COUNTY STANDARDS
3. EXCAVATE BELL HOLES AT EACH PIPE JOINT TO PERMIT PROPER ASSEMBLY AND INSPECTION OF THE ENTIRE JOINT.
4. (*) INDICATES MINIMUM RELATIVE COMPACTION.



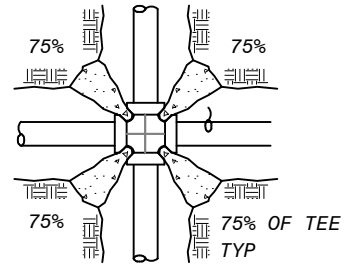
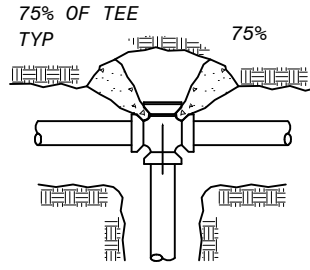
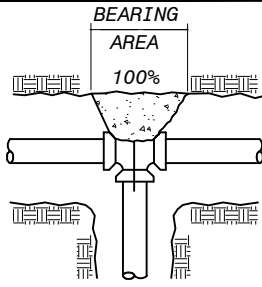
REV. DATE	BY	APPROVED
5/24/17	SMD	JRB



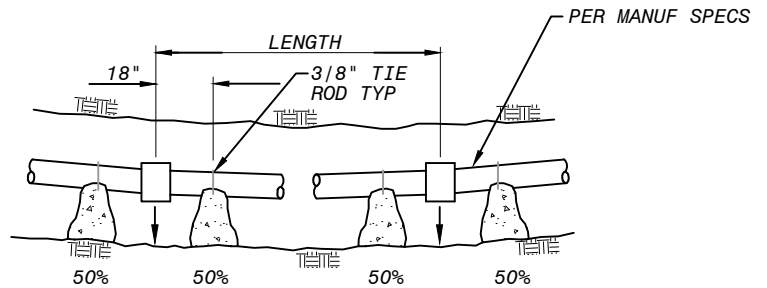
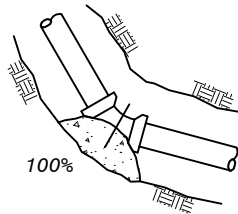
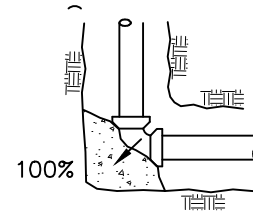
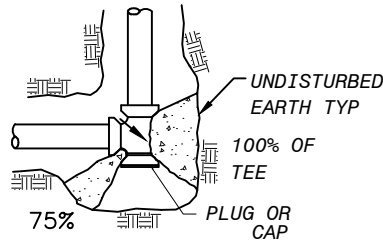
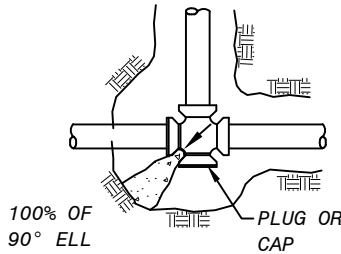
STANDARD PIPE ZONE AND TRENCH BACKFILL

DRAWING NO.

W-3

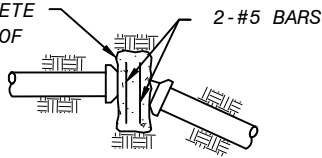


PLANS

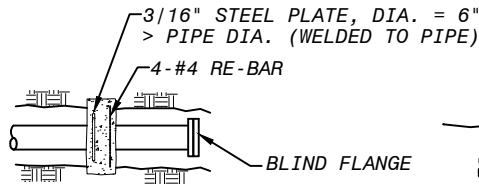


CURVE THRUST BLOCKING

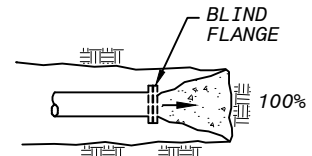
WEIGHT OF CONCRETE TO RESIST 100% OF TOTAL THRUST



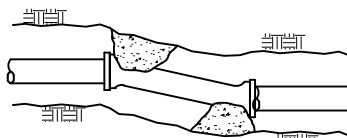
VERTICAL BEND



STEEL PIPE THRUST COLLAR



PLAN DEAD-END

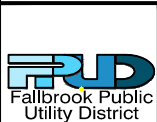


DEFLECTION

NOTES:

1. IN USING THE ABOVE TABLES, USE THE MAXIMUM INTERNAL PRESSURE ANTICIPATED (i.e. HYDROSTATIC TEST PRESSURE, POSSIBLE SURGE PRESSURE DUE TO PUMP SHUT-OFF, ETC.)
2. SEE SOILS REPORT FOR BEARING STRENGTH OF SOIL. IN THE ABSENCE OF A SOILS REPORT, AN AVERAGE SOIL (SPADABLE MEDIUM CLAY) CAN BE ASSUMED TO HAVE A BEARING STRENGTH OF 2000 P.S.F.
3. ARROWS () INDICATE THRUST DIRECTION
4. FIGURE (100%) AT THRUST BLOCK INDICATES PER CENT OF TOTAL THRUST TO BE APPLIED FOR BEARING AREA.
5. CONC. FOR THRUST BLOCKS TO BE 450-C-2000
6. CONCRETE THRUST BLOCK TO BE POURED AGAINST UNDISTURBED EARTH.

MINIMUM BEARING AREAS IN SQUARE FEET PER 100 PSI OF PRESSURE					
PIPE SIZE	DEAD END OR TEE	90° ELBOW	45° ELBOW	22-1/2° ELBOW	11-1/4° ELBOW
6	3.7	5.3	2.9	1.5	0.7
8	6.4	9.1	4.9	2.5	1.3
10	9.7	13.7	7.4	3.8	1.9
12	13.7	19.4	10.5	5.3	2.7
14	18.4	26.0	14.1	7.2	3.6
16	23.8	33.6	18.2	9.3	4.7
18	24.9	42.2	22.9	11.7	5.9
20	36.6	51.8	28.0	14.3	7.2
24	52.3	73.9	40.0	20.4	10.2
30	80.4	113.7	61.6	31.4	15.8

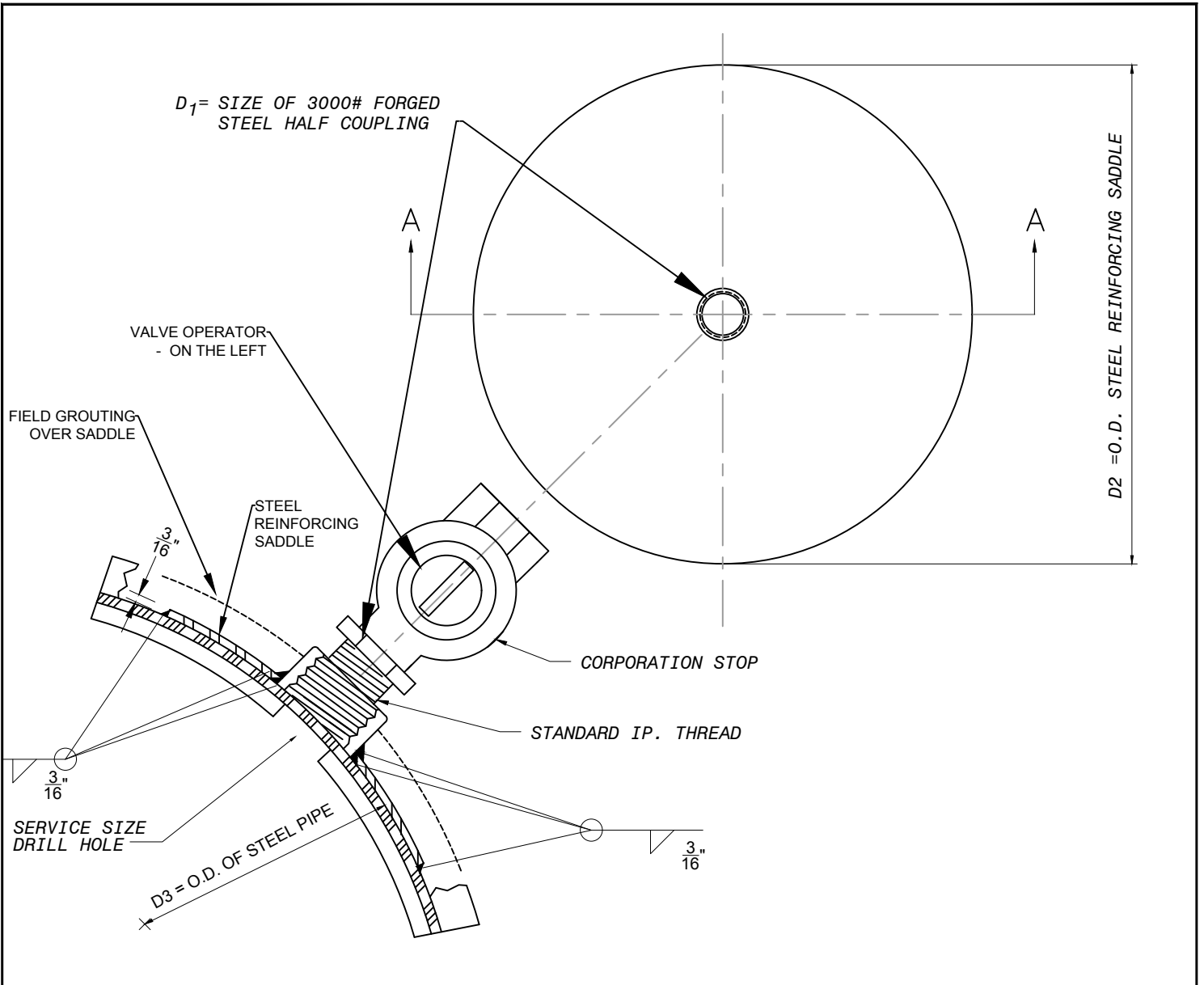


REV. DATE	BY	APPROVED
5/24/17	SMD	JRB



CONCRETE THRUST BLOCKS

DRAWING NO.
W-4

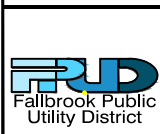


SECTION A-A

SADDLE DIMENSIONS		
SERVICE SIZE	D ₁	D ₂
3/4" / 1"	1-1/4"	5"
1-1/2" / 2"	2-1/2"	7"

NOTES:

1. USE DOUBLE-PASS WELDS FOR FABRICATION & FIELD WELDS.
2. SADDLE CURVATURE TO BE FORMED TO MEET PIPE DIAMETERS D₃ AS INDICATED.
3. WHEN INSTALLED, OUTLET TO BE COATED WITH SAME COATING AS PIPE.
4. SERVICE LATERALS TO BE INSTALLED AT 45° ANGLE ABOVE SPRINGLINE OF PIPE.
5. SERVICE CONNECTION SHALL BE MADE WITH LINE IN SERVICE (HOT-TAPPED).
6. BUSHINGS ARE NOT ALLOWED.

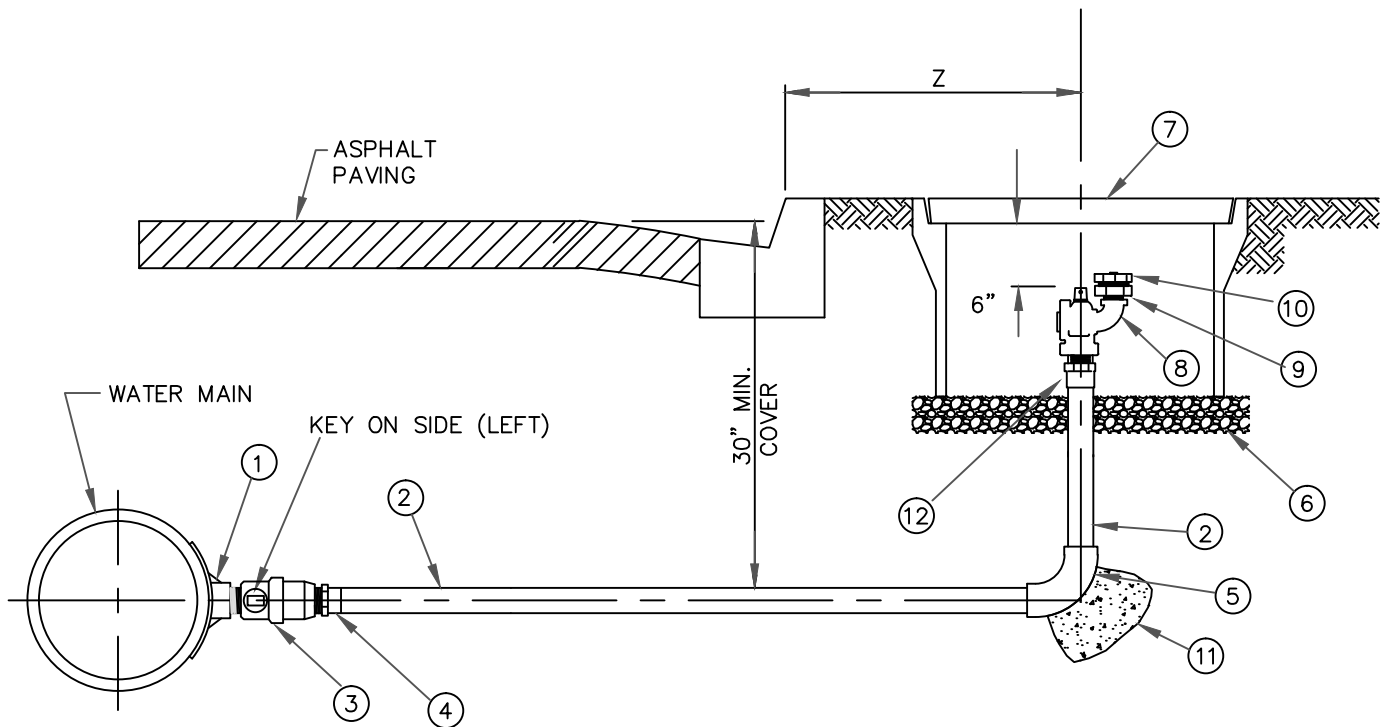


REV. DATE	BY	APPROVED
2/23/17	SMD	JB
8/28/19	SMD	AC

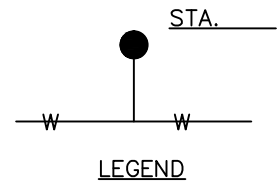


SERVICE OUTLET SADDLE

DRAWING NO.
W-5



Z = 2' FROM BACK OF SIDEWALK.
 2' FROM FACE OF CURB IF NO SIDEWALK EXISTS.



- NOTE: 1. IF BLOWOFF CANNOT BE LOCATED BEHIND OR IN THE SIDEWALK THEN IT MAY BE INSTALLED IN THE ROADWAY (IN TRAFFIC BOX). AVOID STORM GUTTER AREAS.
 2. ALL JOINTS TO BE 15% SILVER SOLDERED. NO LEAD.
 3. FOR PVC PIPE, USE S.S. SADDLE, AS LISTED IN THE APPROVED MATERIALS LIST.

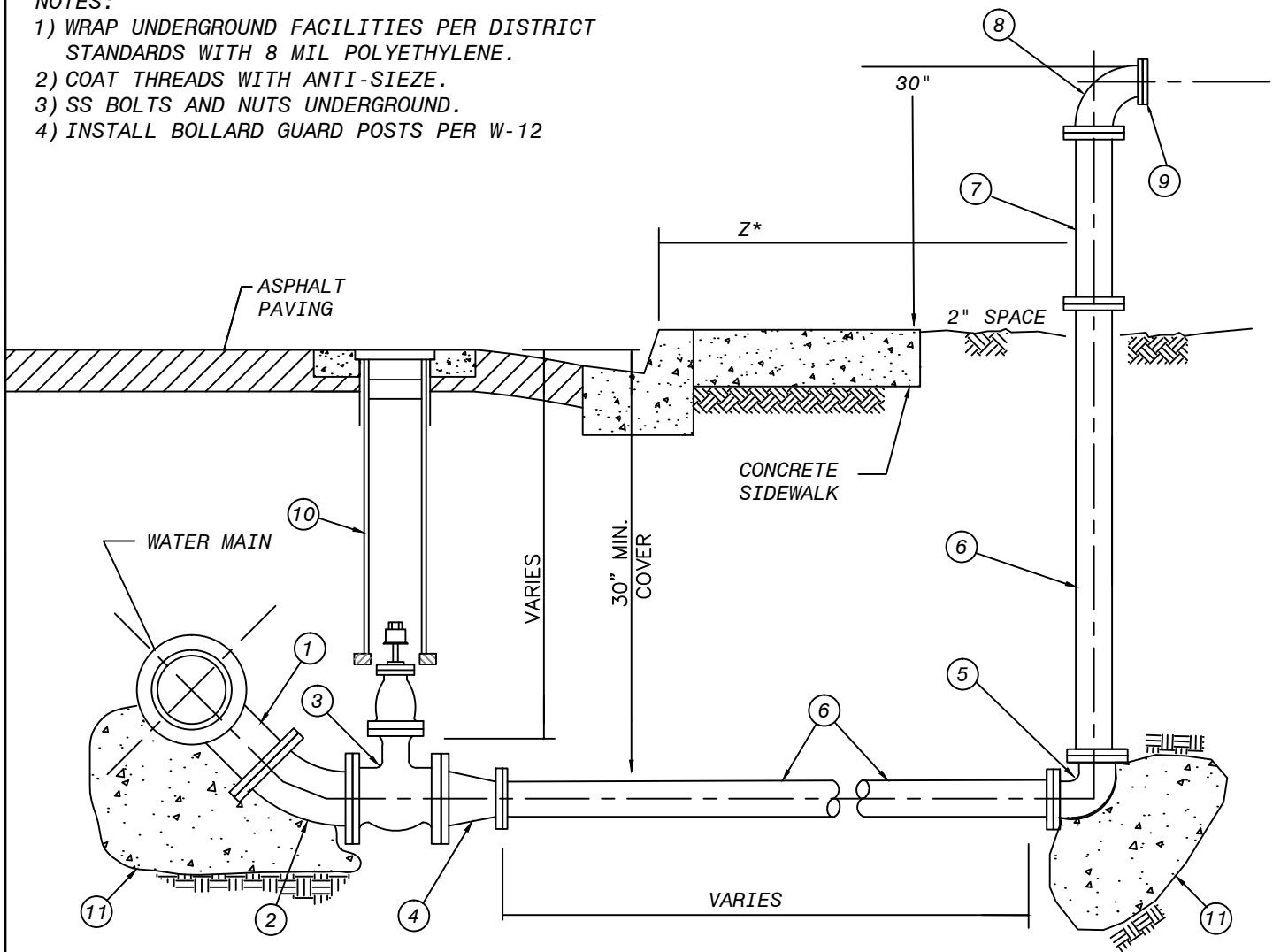
ITEM	NO.	DESCRIPTION	REMARKS
1	1	REINFORCING SADDLE, W/ 3000# FORGED STEEL COUPLING	STEEL, WELDED, HOT TAP.
2	1	2" COPPER TUBING W/ PIPE SLEEVE	BRASS OR COPPER (TYPE K)
3	1	2 INCH BALL CORP VALVE, MIP X MIP	BRASS
4	1	PIPE (SWEAT) TO THREADED FIP ADAPTER	PER STD. DWG W-4
5		2 INCH 90° SOLDERED ELBOW	BRASS OR COPPER
6	1	3/8" GRAVEL W/ 1/4" GALVANIZED METAL MESH BOTTOM	4" TO 6" DEEP
7	1	POLYMER METER BOX WITH LID, 20" X 26" X 12", TRAFFIC BOX IF IN ST.	1220-12, 1220-4 T-COVER, NOT "METER"
8	1	2" NL BLOW-OFF BALL VALVE, FIP x MIP	BRASS, McDONALD 76109BCA F 2
9	1	BRASS 2" FIP THREAD X 2 1/2" MALE NST (HOSE THREAD) ADAPTER	BRASS (FIP X MNST)
10	1	2 1/2" NST HOSE CAP (FIRE HYDRANT THREAD)	BRASS
11	1	THRUST BLOCK	PER STD. DWG W-4
12	1	2-INCH PIPE (SWEAT) TO THREADED MIP ADAPTER	BRASS / COPPER

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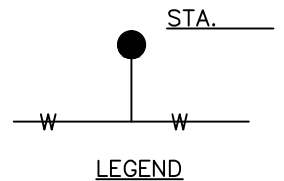
	REV. DATE	BY	APPR'D		<h2 style="margin: 0;">2" BLOW-OFF ASSEMBLY</h2> <h3 style="margin: 0;">(for 6" to 8" pipe)</h3>	DRAWING NO.
	5/24/17	SMD	JRB			<h1 style="margin: 0;">W-6</h1>
	3/13/18	SMD	JRB			
9/25/19	SMD	AC				

NOTES:

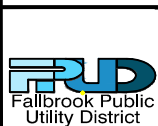
- 1) WRAP UNDERGROUND FACILITIES PER DISTRICT STANDARDS WITH 8 MIL POLYETHYLENE.
- 2) COAT THREADS WITH ANTI-SIEZE.
- 3) SS BOLTS AND NUTS UNDERGROUND.
- 4) INSTALL BOLLARD GUARD POSTS PER W-12



*Z- 2'-6" FROM BACK OF SIDEWALK.
2'-6" FROM FACE OF CURB IF NO SIDEWALK EXISTS.



ITEM	NO.	DESCRIPTION	REMARKS
1	1	6" FLANGED OUTLET - WELDED, WITH REINFORCING SADDLE	STEEL CML&C
2	1	6" 45° FLG X FLG ELL	STEEL CML&C (DIP ACCEPTABLE)
3	1	6" GATE VALVE, FLG.X FLG., 2" NUT	PER DISTRICT STANDARD 15100
4	-	6" X 4" REDUCER. FLG X FLG, STEEL	
5	1	4" FLG. 90° BEND	STEEL CML&C (DIP ACCEPTABLE)
6	1	4" CML&C STEEL PIPE - WELDED	
7	1	4" X 24" SPOOL - BREAKAWAY IF AVAILABLE	DIP FLG X FLG
8	1	4" X 4" 90 DEGREE ELL	DIP FLG X FLG
9	1	4" BLIND FLANGE	STEEL
10	-	VALVE BOX INSTALLATION PER DISTRICT STD. DWG# W-19	
11	-	THRUST BLOCK	PER FPU D STD., DET W-4



REV. DATE	BY	APPROVED
5/24/17	SMD	JRB
9/23/19	SMD	AWC

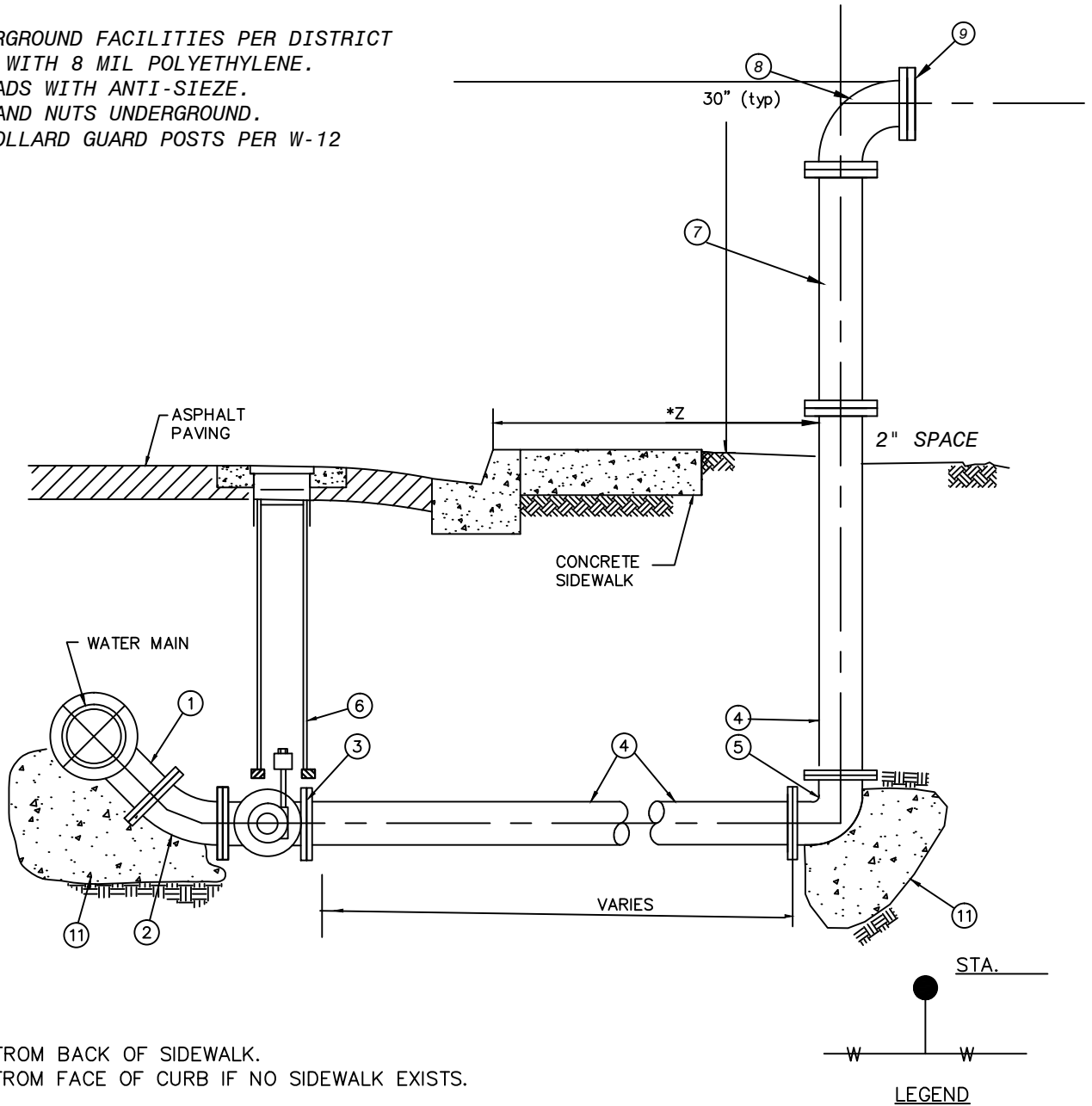


4" BLOW-OFF ASSEMBLY
(FOR PRESSURE LESS THAN 250 PSI)
(FOR 10" to 16" PIPE)

DRAWING NO.
W-7

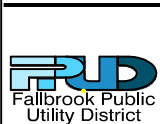
NOTES:

- 1) WRAP UNDERGROUND FACILITIES PER DISTRICT STANDARDS WITH 8 MIL POLYETHYLENE.
- 2) COAT THREADS WITH ANTI-SIEZE.
- 3) SS BOLTS AND NUTS UNDERGROUND.
- 4) INSTALL BOLLARD GUARD POSTS PER W-12



*Z 2' FROM BACK OF SIDEWALK.
2' FROM FACE OF CURB IF NO SIDEWALK EXISTS.

ITEM	NO.	DESCRIPTION	REMARKS
1	1	4" FLANGED OUTLET	STEEL, CMLC, PIPE
2	1	4" FL X FL 45° ELL	DIP
3	1	4" PLUG VALVE, FLG X FLG. WITH WEATHERPROOF GEARS	
4	-	4" DIP, FL X FL, USE MJ ADAPTERS WITH RESTRAINTS	LENGTH AS REQ'D
5	1	4" 90°, FLG.	DIP
6	1	VALVE BOX INSTALLATION PER STD. DWG W-19	
7	1	4" x 24" DIP, SPOOL, FL X FL	OR LENGTH AS REQ'D
8	1	4" 90°, FLG.	DIP
9	1	4" BLIND FLANGE	STEEL
10			
11	2	THRUST BLOCK	PER FPUD STD. DETAIL DWG W-4



REV. DATE	BY	APPR
5/24/17	SMD	JRB
9/23/19	SMD	AWC



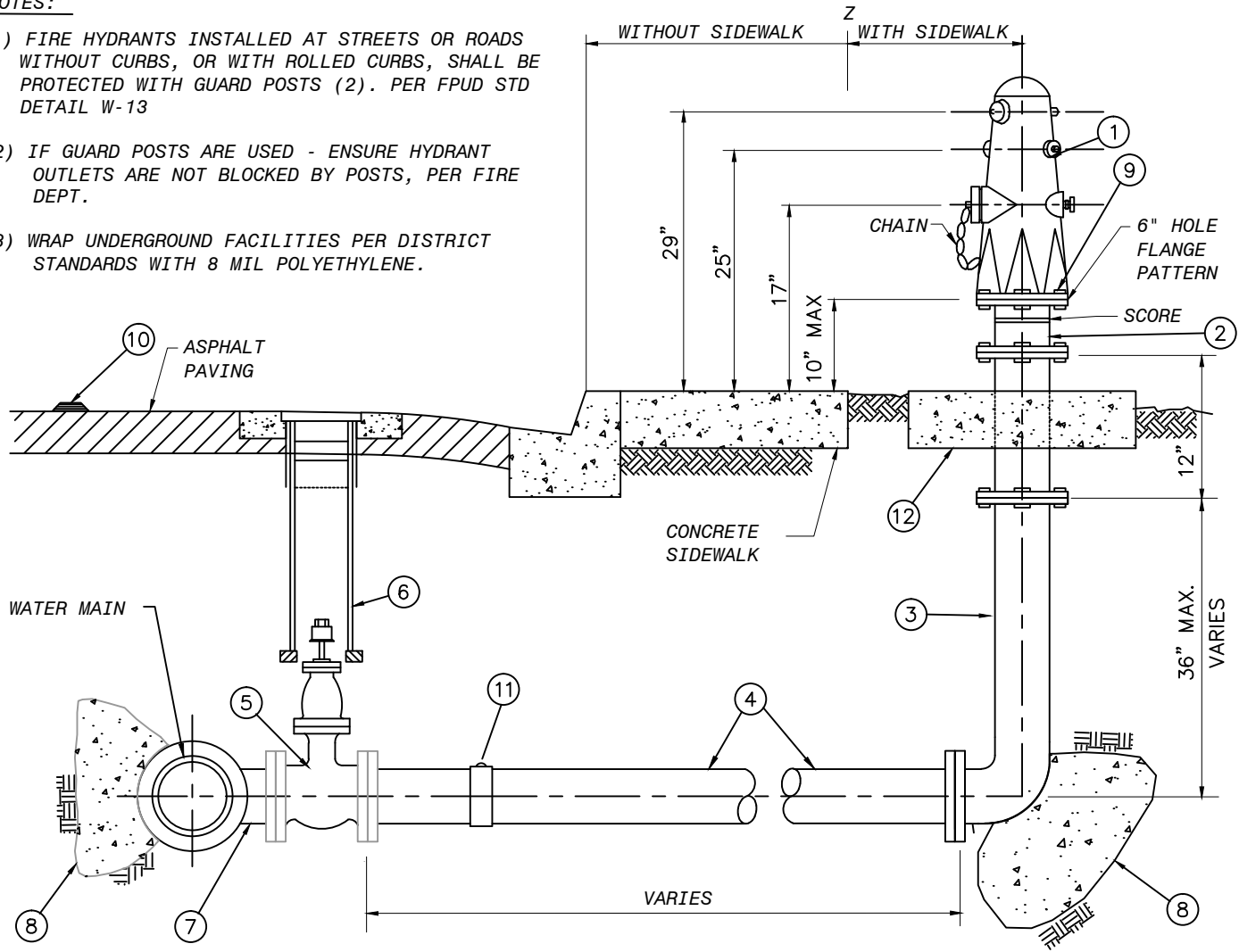
4" BLOW-OFF ASSEMBLY
(FOR PRESSURE 250 PSI & GREATER)
(for 10" to 16" pipe)

DRAWING NO.

W-8

NOTES:

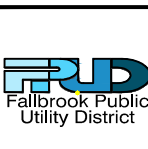
- 1) FIRE HYDRANTS INSTALLED AT STREETS OR ROADS WITHOUT CURBS, OR WITH ROLLED CURBS, SHALL BE PROTECTED WITH GUARD POSTS (2). PER FPUD STD DETAIL W-13
- 2) IF GUARD POSTS ARE USED - ENSURE HYDRANT OUTLETS ARE NOT BLOCKED BY POSTS, PER FIRE DEPT.
- 3) WRAP UNDERGROUND FACILITIES PER DISTRICT STANDARDS WITH 8 MIL POLYETHYLENE.



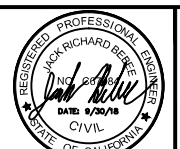
Z 2'-6" FROM BACK OF SIDEWALK.
 2'-6" FROM FACE OF CURB IF NO SIDEWALK EXISTS.

DESCRIPTION	BARRELS OUTLETS
COMMERCIAL FIRE HYDRANT (MODEL J-3700)	4 PORT: 6"x4"x2-1/2"x2-1/2"
SINGLE FAMILY RESIDENTIAL (MODEL J-3765)	3 PORTS: 6"x4"x2-1/2"

ITEM NO.	DESCRIPTION	REMARKS
1	6" FIRE HYDRANT	6 BOLTS, ALL BRONZE, SAFETY YELLOW
2	BREAK-OFF RISER, 6" STEEL OR DUCTILE IRON	SCORED (NOT MOLDED)
3	DUCTILE IRON BURY ELL	
4	6" CML & C	
5	6" GATE VALVE FL OR PO	PER STANDARD SPECIFICATION
6	VALVE BOX INSTALLATION PER DISTRICT STD. DWG# W-19	SEE STANDARD SPECIFICATION
7	6" FLANGED OUTLET	PER STANDARD SPECIFICATION
8	THRUST BLOCK	PER FPUD STD. 03300
9	BREAK OFF BOLTS, THREADS UP FILL W/SILICON	PER STANDARD SPECIFICATIONS
10	REFLECTIVE PAVEMENT MARKER (BLUE)	PER FIRE DISTRICT REQUIREMENTS
11	6" BUTTSTRAP (IF NEEDED)	
12	4' x 4' CONCRETE PAD, 6" THICK, 520-C-2500	



REV. DATE	BY	APPROVED
5/24/17	SMD	JRB

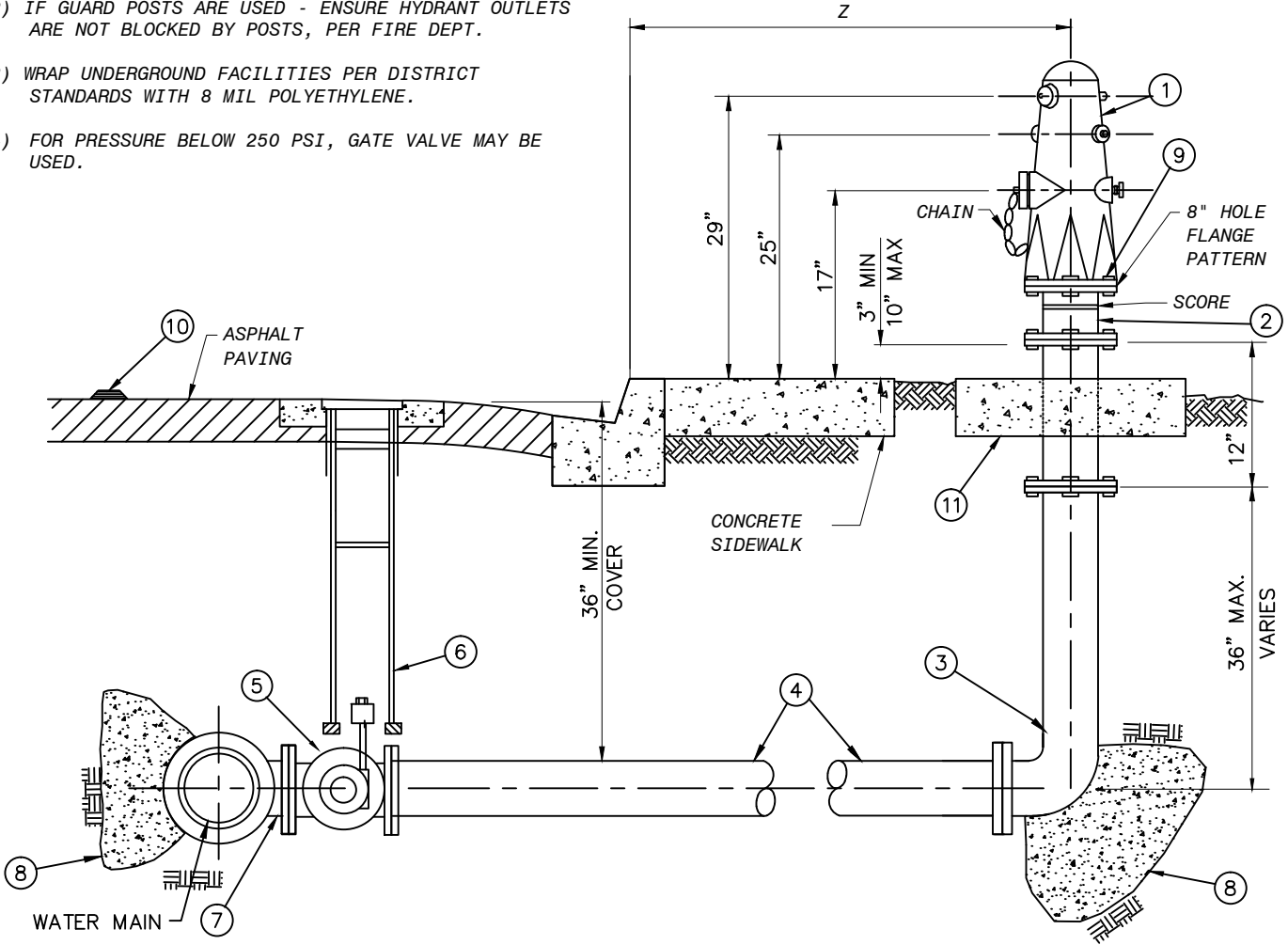


6" FIRE HYDRANT ASSEMBLY
 (FOR PRESSURE LESS THAN 250 PSI)

DRAWING NO.
W-9

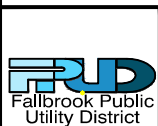
NOTES:

- 1) FIRE HYDRANTS INSTALLED AT STREETS OR ROADS WITHOUT CURBS, OR WITH ROLLED CURBS, SHALL BE PROTECTED WITH GUARD POSTS (2). PER FPUD STD DETAIL W-13
- 2) IF GUARD POSTS ARE USED - ENSURE HYDRANT OUTLETS ARE NOT BLOCKED BY POSTS, PER FIRE DEPT.
- 3) WRAP UNDERGROUND FACILITIES PER DISTRICT STANDARDS WITH 8 MIL POLYETHYLENE.
- 4) FOR PRESSURE BELOW 250 PSI, GATE VALVE MAY BE USED.



Z = 2' FROM BACK OF SIDEWALK.
 2' FROM FACE OF CURB IF NO SIDEWALK EXISTS.

ITEM	NO.	DESCRIPTION	REMARKS
1	1	6" FIRE HYDRANT	6 BOLTS,
2	1	6" BREAK-OFF RISER,	SCORED (NOT MOLDED)
3	1	6" BURIED ELL, FLG.	
4	-	6" STEEL PIPE	CL-300
5	1	6" PLUG VALVE, FLG.X FLG.	PER STANDARD SPECIFICATION, DEZURIK
6	1	VALVE BOX INSTALLATION PER DISTRICT STD. DWG# W-19	SEE STANDARD SPECIFICATION
7	1	6" FLANGED OUTLET	PER STANDARD SPECIFICATION
8	1	THRUST BLOCK	PER FPUD STD. DETAIL W-4
9	6	BOLTS BREAK OFF BELOW 300 psi.	PER STANDARD SPECIFICATIONS
10	1	REFLECTIVE PAVEMENT MARKER(BLUE) AT STREET CL	PER FIRE DISTRICT REQUIREMENTS
11	1	4' x 4' CONCRETE PAD 6" THICK, 520-C-2500	



REV. DATE	BY	APPROVED
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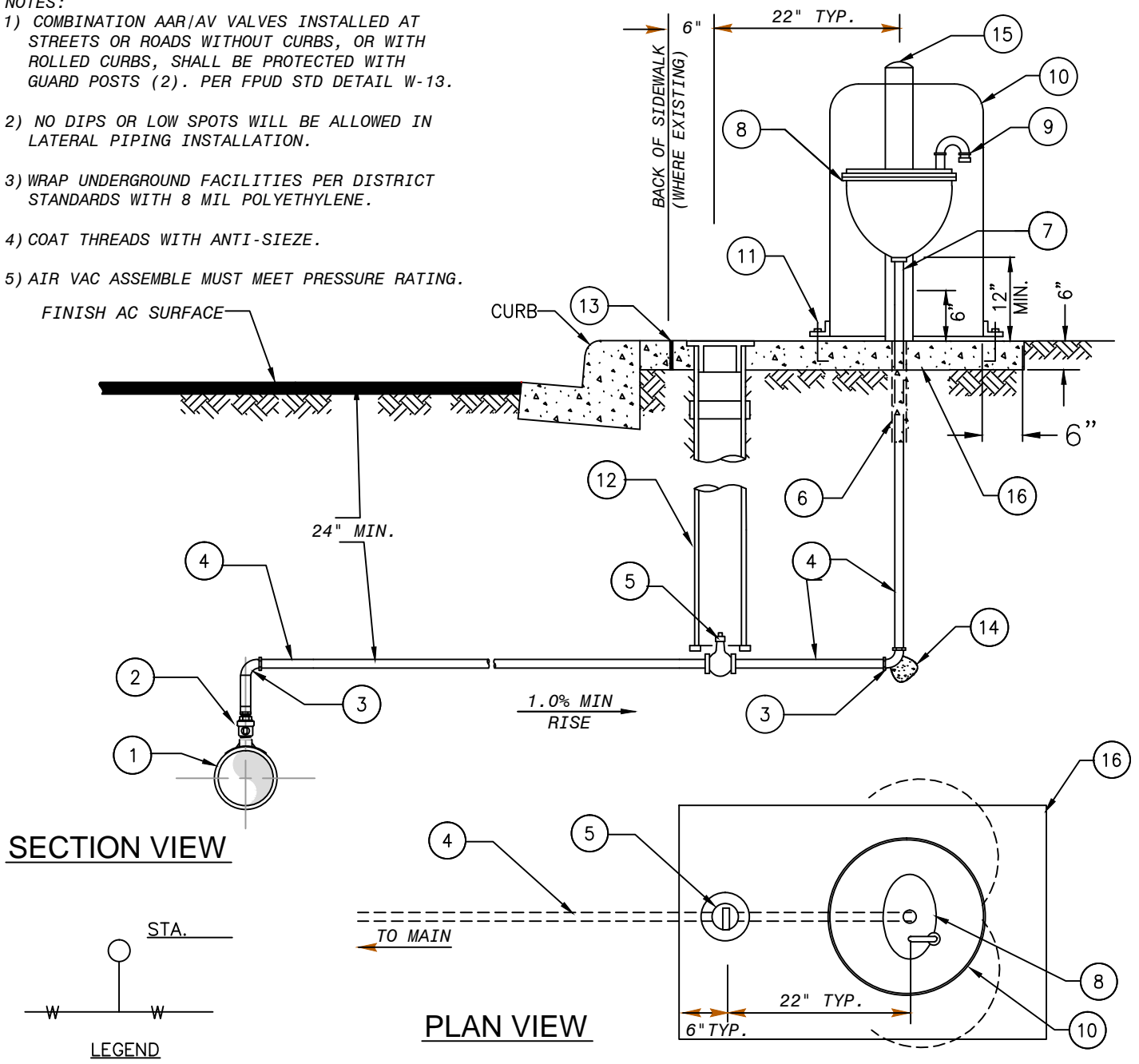


6" FIRE HYDRANT ASSEMBLY
 (FOR PRESSURE 250 AND GREATER)

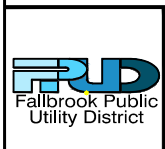
DRAWING NO.
W-10

NOTES:

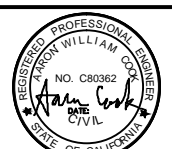
- 1) COMBINATION AAR/AV VALVES INSTALLED AT STREETS OR ROADS WITHOUT CURBS, OR WITH ROLLED CURBS, SHALL BE PROTECTED WITH GUARD POSTS (2). PER FPUD STD DETAIL W-13.
- 2) NO DIPS OR LOW SPOTS WILL BE ALLOWED IN LATERAL PIPING INSTALLATION.
- 3) WRAP UNDERGROUND FACILITIES PER DISTRICT STANDARDS WITH 8 MIL POLYETHYLENE.
- 4) COAT THREADS WITH ANTI-SIEZE.
- 5) AIR VAC ASSEMBLE MUST MEET PRESSURE RATING.



ITEM	SIZE & DESCRIPTION	ITEM	SIZE & DESCRIPTION
1	CML&C WATER MAIN - 6" TO 14" PIPE	9	CLOSE NIPPLE & RETURN BEND WITH INSECT SCREEN TURNED OUT
2	2" BRASS CORP STOP, MIP X MIP	10	HOUSING, 18" DIA.X 30", YELLOW, VCAS-1830
3	2" 90° COPPER ELL	11	316 SST, BOLTS ON ENCLOSURE, RED HEAD
4	COPPER OR BRASS (W/ PIPE SLEEVE)	12	VALVE CAN INSTALLATION PER DIST.STD.DWG. W-19
5	2-INCH BRASS BALLVALVE, W/ TEE HEAD	13	1/2" EXPANSION JOINT
6	PVC TAPE DOUBLE WRAPPED, EXTEND 4" BELOW CONCRETE (MIN.)	14	THRUST BLOCK, PER FPUD SECTION 03300
7	BRASS CLOSE NIPPLE	15	GUARD POSTS PER W-13, AS REQUIRED
8	2" COMBINATION AUTOMATIC AIR RELEASE AND VACUUM RELIEF VALVE	16	6" THICK CONCRETE PAD



REV. DATE	BY	APPROVED
5/24/17	SMD	JRB
3/13/18	SMD	JRB
9/25/19	SMD	AWC



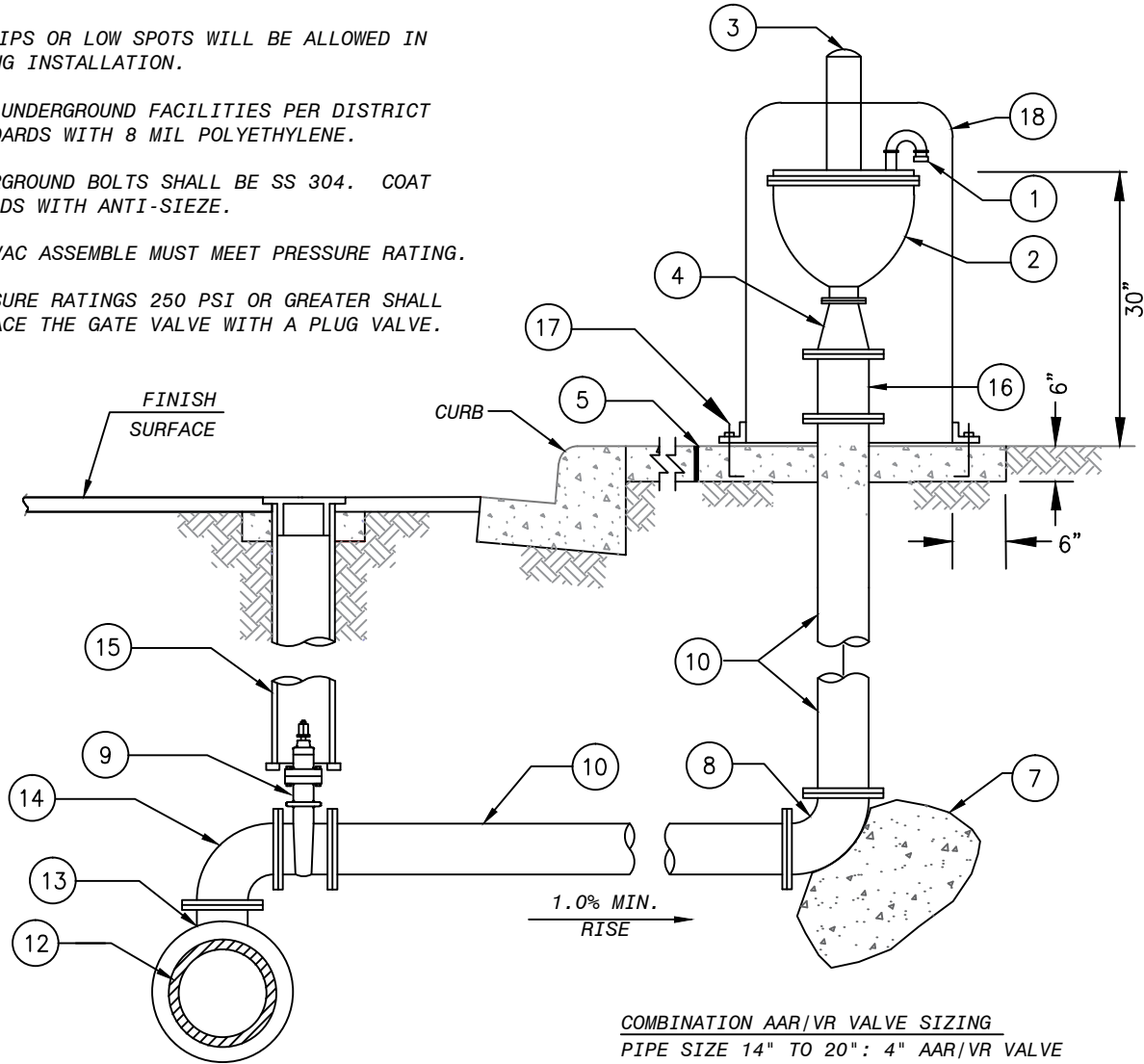
**2" COMBINATION
AUTOMATIC AIR RELEASE
AND VACUUM RELIEF VALVE**

**DRAWING NO.
W-11**

X:\RECORD FILES\DISTRICT STANDARDS\DISTRICT DRAWINGS\WATER

NOTES:

- 1) AAR/AV VALVES INSTALLED AT STREETS OR ROADS WITHOUT CURBS, OR WITH ROLLED CURBS, SHALL BE PROTECTED WITH GUARD POSTS (2). PER FPUD STD DETAIL W-13.
- 2) NO DIPS OR LOW SPOTS WILL BE ALLOWED IN PIPING INSTALLATION.
- 3) WRAP UNDERGROUND FACILITIES PER DISTRICT STANDARDS WITH 8 MIL POLYETHYLENE.
- 4) UNDERGROUND BOLTS SHALL BE SS 304. COAT THREADS WITH ANTI-SIEZE.
- 5) AIR VAC ASSEMBLE MUST MEET PRESSURE RATING.
- 6) PRESSURE RATINGS 250 PSI OR GREATER SHALL REPLACE THE GATE VALVE WITH A PLUG VALVE.



COMBINATION AAR/VR VALVE SIZING
 PIPE SIZE 14" TO 20": 4" AAR/VR VALVE
 PIPE SIZE GREATER THAN 20": 6" AAR/VR VALVE

ITEM	SIZE & DESCRIPTION	ITEM	SIZE & DESCRIPTION
1	CLOSE NIPPLE & RETURN BEND WITH INSECT SCREEN TURNED OUT	10	6" CML&C
2	COMBINATION AUTOMATIC AIR RELEASE AND VACUUM RELIEF VALVE	11	DELETED
3	GUARD POSTS PER W-13, AS REQUIRED	12	STEEL WATER MAIN (16" AND GREATER)
4	6" x 4" FLG REDUCER, IF NEEDED	13	6" FLG OUTLET
5	1/2" EXPANSION JOINT	14	6" FLG DIP 90° BEND
6	DELETED	15	VALVE BOX INSTALLATION PER DISTRICT STD. DWG NO. W-19
7	THRUST BLOCK PER DISTRICT SPEC. 03300	16	6" DIP FLG X FLG SPOOL, (BREAK AWAY IF AVAILABLE)
8	6" 90° BEND FLG X FLG	17	316 SST, BOLTS ON ENCLOSURE, RED HEAD
9	6" FLG x FLG GATE VALVE	18	HOUSING, 24" X 36" TALL, FACE LOCK AWAY FROM CURB



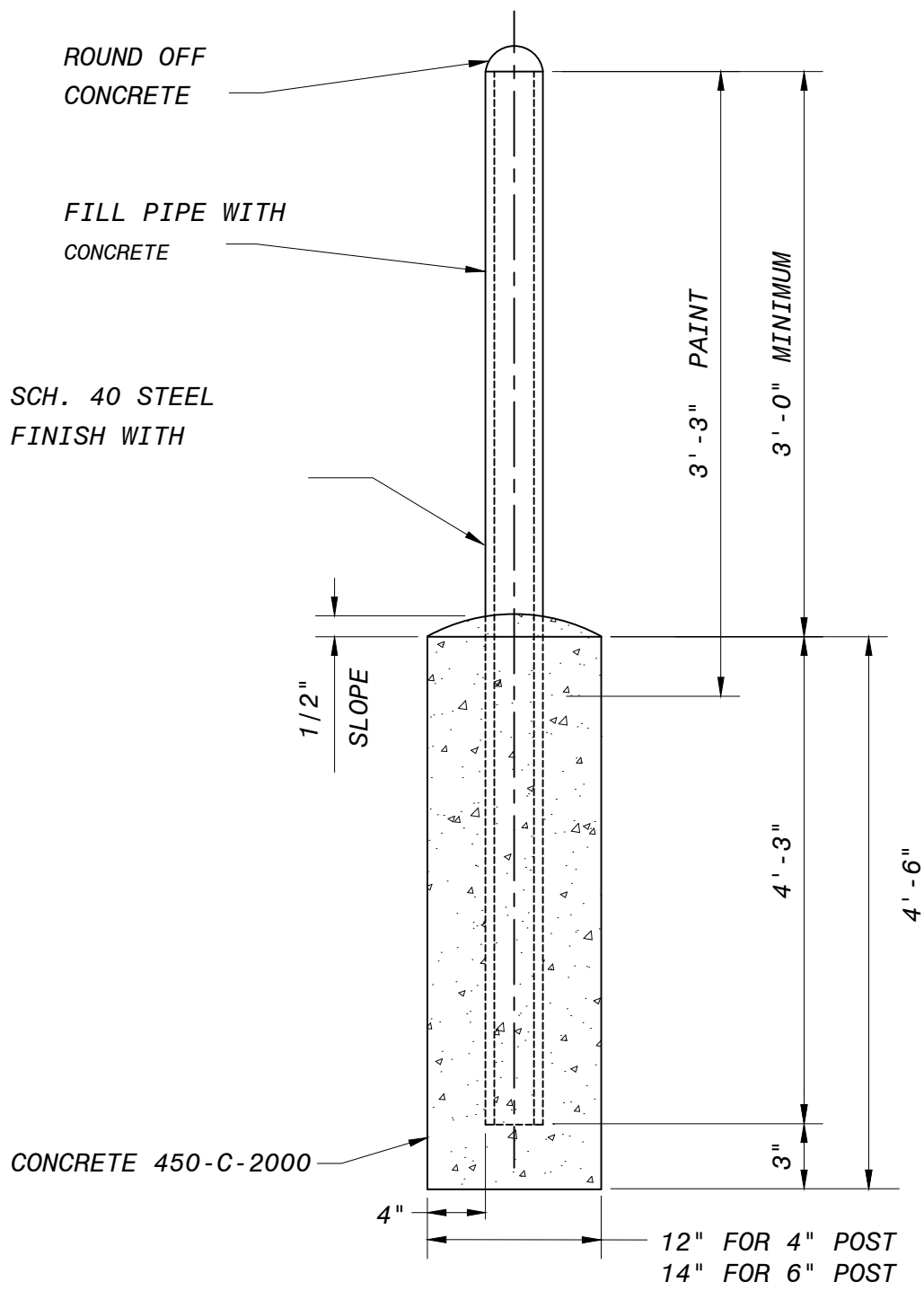
REV. DATE	BY	APPROVED
5/24/17	SMD	JRB
9/23/19	SMD	AWC



4" AND 6" COMBINATION
 AUTOMATIC AIR RELEASE
 AND VACUUM RELIEF VALVE

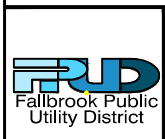
DRAWING NO.
W-12

4" OR 6" DIA. SCH. 40 STEEL PIPE, PRIME & FINISH WITH ENAMEL SILVER

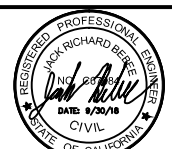


NOTES:

1. LOCATION SHALL BE AS SHOWN ON PLAN VIEW, OR AS DIRECTED IN THE FIELD BY DISTRICT ENGINEER.
2. 4" DIA. POSTS SHALL BE APPROVED BY D.E. FOR SPEED GREATER THAN 30 MPH 6" DIA. POSTS SHALL BE USED.



REV. DATE	BY	APPROVED
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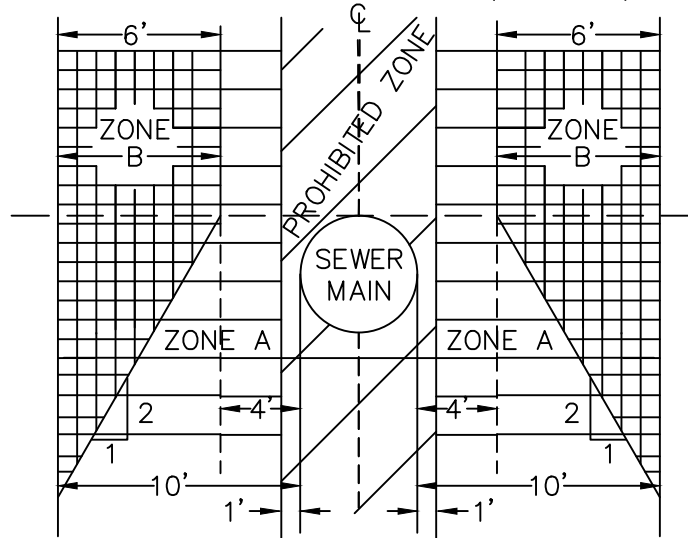
**GROUND POST
(BOLLARD)**

DRAWING NO.
W-13

SEPARATION STANDARDS:

1. WATER & SEWER MAINS SHALL BE INSTALLED IN SEPARATE TRENCHES.
2. PARALLEL CONSTRUCTION: THE HORIZONTAL DISTANCE BETWEEN PRESSURE WATER LINE AND SEWER OR NON-POTABLE PIPE SHALL BE AT LEAST 10 FEET.
3. PERPENDICULAR CONSTRUCTION (CROSSING): PRESSURE WATERLINES SHALL BE AT LEAST 12" ABOVE SEWER LINES OR NON-POTABLE (RECYCLED) WATERLINES, WHERE THESE LINES MUST CROSS.
4. SPECIAL PROVISIONS: ALTERNATIVE CONSTRUCTION CRITERIA WHERE THE BASIC SEPARATION STANDARDS ABOVE CANNOT BE ATTAINED ARE SHOWN BELOW.

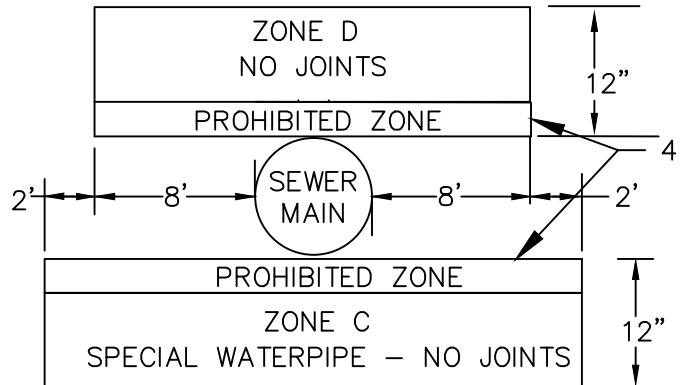
PARALLEL CONSTRUCTION (CASE 2)



NOTES:

- A. DIMENSIONS ARE FROM OUTSIDE OF WATER MAIN TO OUTSIDE OF SEWER.
- B. SANITARY SEWERS OR WATERLINES ARE NOT PERMITTED WITHIN ANY OF THE INDICATED ZONES UNLESS CONSTRUCTED IN CONFORMANCE WITH THE SPECIAL REQUIREMENTS NOTED BELOW.

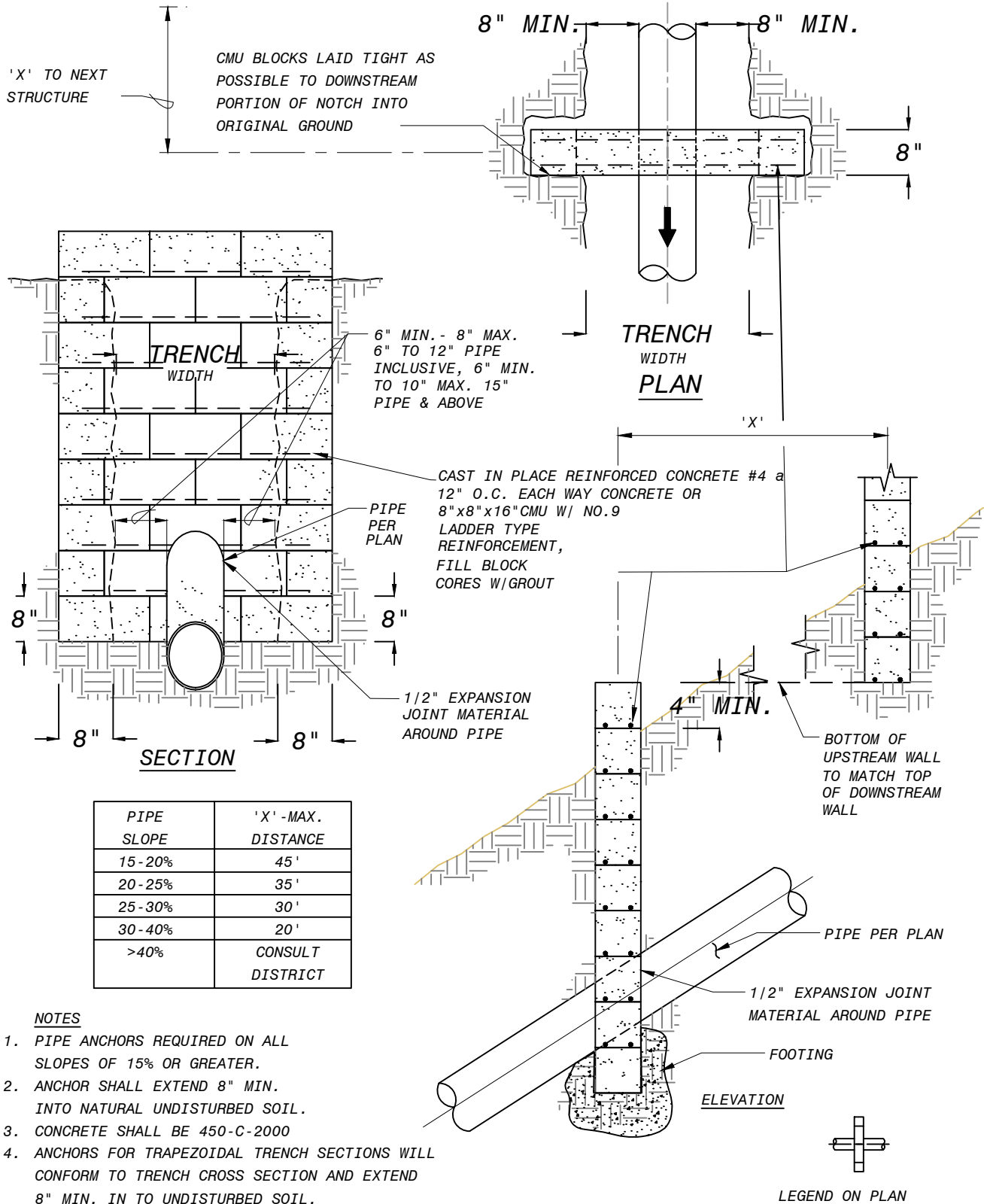
PERPENDICULAR CONSTRUCTION (CASE 2)



ZONE SPECIAL WATERLINE CONSTRUCTION REQUIREMENTS: (INSTALLING NEAR EXISTING SEWER MAINS = CASE 2)

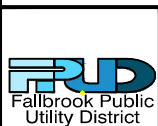
- A. WATER MAINS INSTALLED RUNNING PARALLEL TO SEWER MAINS SHALL NOT BE PERMITTED WITHIN THIS ZONE WITHOUT SPECIAL WRITTEN PERMISSION FROM THE SAN DIEGO COUNTY DEPARTMENT OF ENVIRONMENTAL HEALTH.
- B. WATER MAINS INSTALLED IN THIS ZONE SHALL BE CML&C STEEL PIPE WITH WELDED JOINTS.
- C. WATER MAINS INSTALLED IN THIS ZONE, PERPENDICULAR TO AND BELOW A SEWER MAINLINE, REQUIRES THAT THE WATERLINE HAVE NO JOINTS TEN (10) FEET ON EITHER SIDE OF THE SEWER MAINLINE, AND CONSTRUCTED OF MINIMUM 1/4" WELDED CML&C STEEL PIPE.
- D. WATER MAINS INSTALLED IN THIS ZONE, ABOVE EXISTING SEWER MAINLINE, THE WATERLINE SHALL HAVE NO JOINTS WITHIN FOUR (4) FEET OF THE SEWER MAINLINE CROSSING AND BE CONSTRUCTED WITH MINIMUM 1/4" CML&C STEEL PIPE, CENTERED OVER PIPE BEING CROSSED.

	Rev.Date	By	Apprv		<p style="text-align: center;">WATERLINE PIPE INSTALLATION & PIPELINE SEPARATION REQUIREMENTS</p>	DRAWING NO.
	5/24/17	SMD	JRB			W-14



NOTES

1. PIPE ANCHORS REQUIRED ON ALL SLOPES OF 15% OR GREATER.
2. ANCHOR SHALL EXTEND 8" MIN. INTO NATURAL UNDISTURBED SOIL.
3. CONCRETE SHALL BE 450-C-2000
4. ANCHORS FOR TRAPEZOIDAL TRENCH SECTIONS WILL CONFORM TO TRENCH CROSS SECTION AND EXTEND 8" MIN. IN TO UNDISTURBED SOIL.



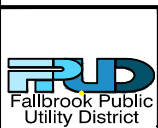
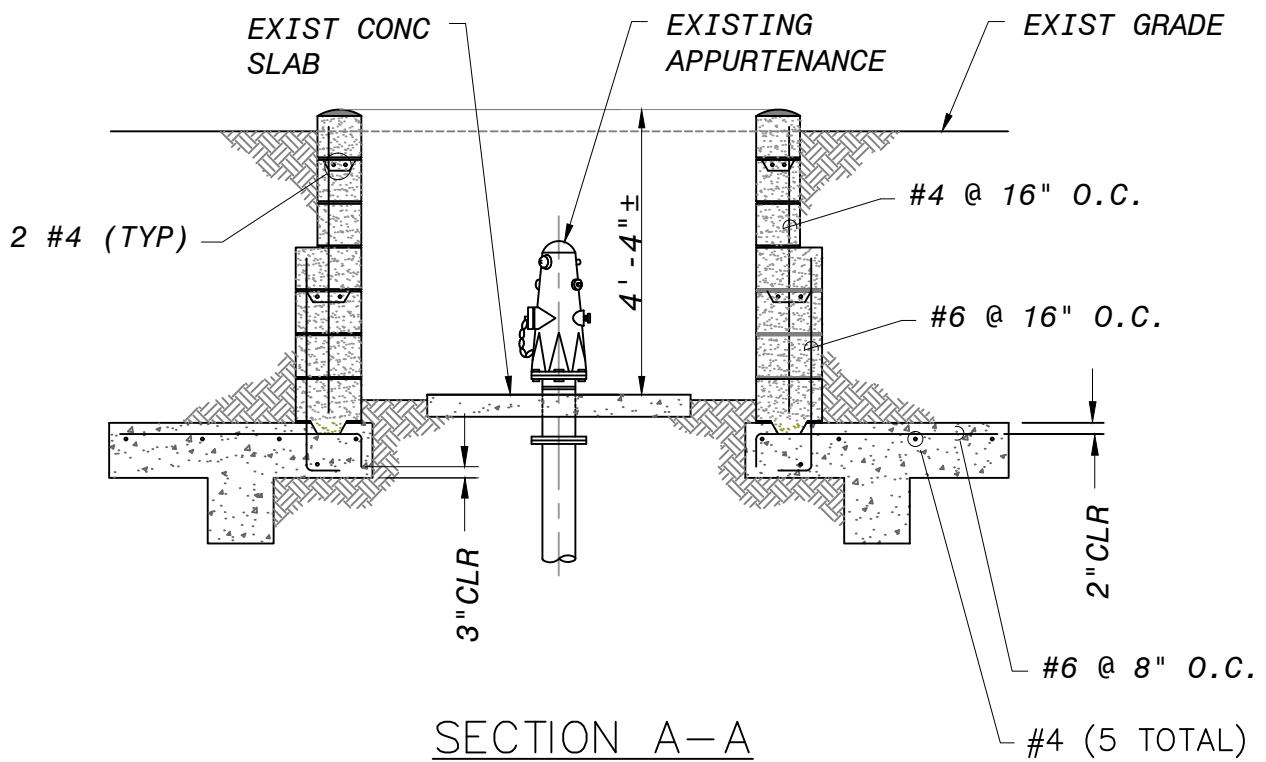
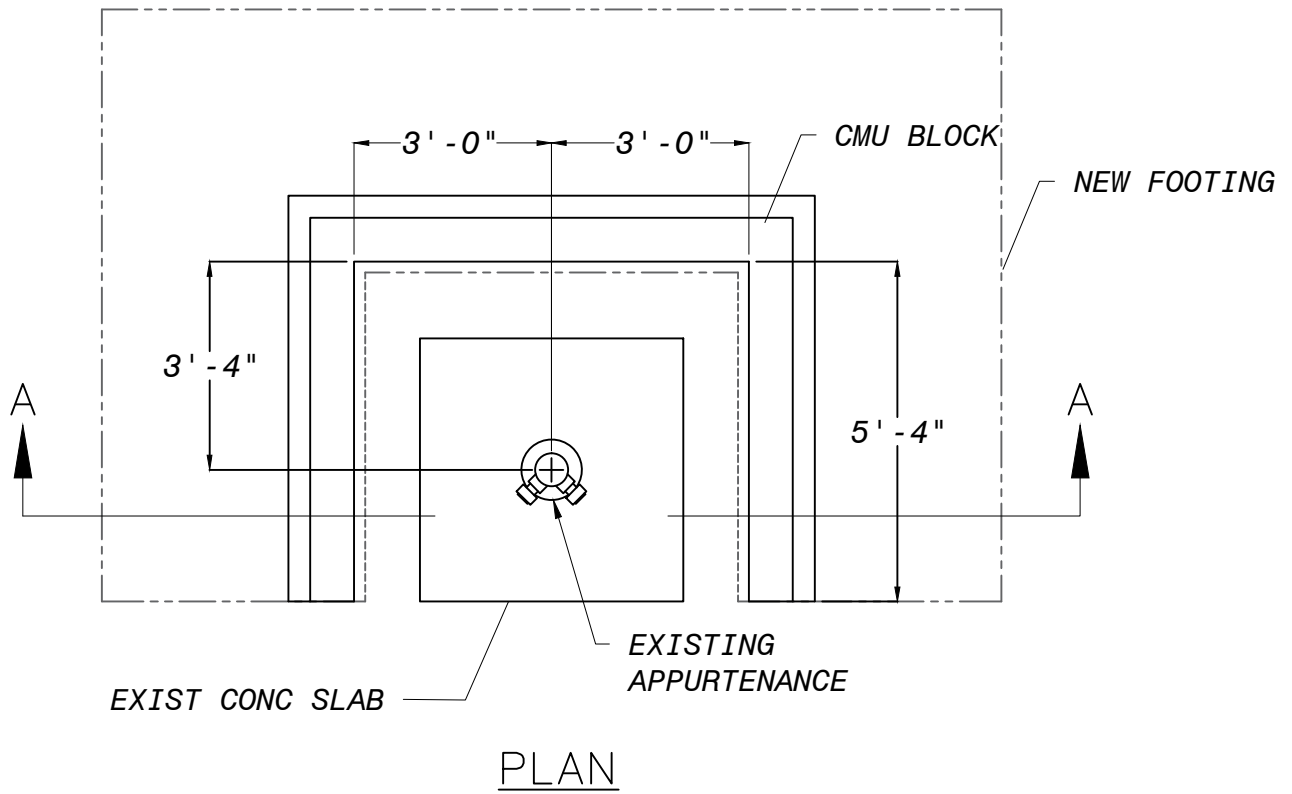
Rev. Date	By	APPRV'D
5/24/17	SMD	JRB



STANDARD CUTOFF WALL

DRAWING NO.

W-15



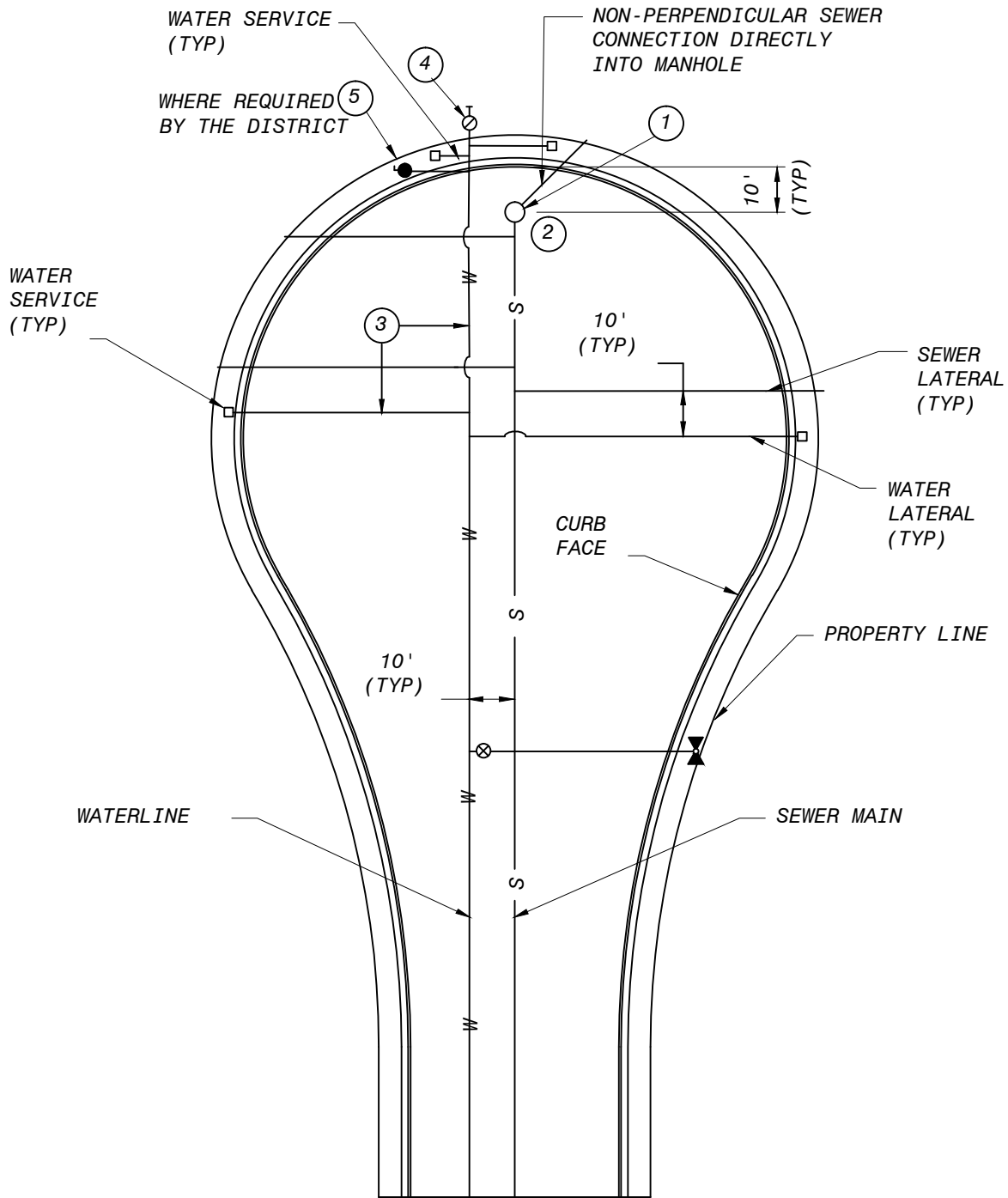
Rev. Date	By	APPRV'D
5/24/17	SMD	JRB



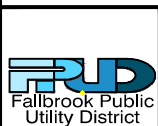
APPURTENANCE WALL

DRAWING NO.

W-16



ITEM	DESCRIPTION
1	MANHOLE; USE WATER-TIGHT COVER WHERE CUL-DE-SAC CREATES LOW POINT
2	45° ANGLE ONLY IF NECESSARY TO SERVE REAR LOTS (WATER & SEWER)
3	90° ANGLE OFF MAINLINE (STANDARD FOR WATER & SEWER LATERALS)
4	END OF MAIN (BLOWOFF OR AAV). LOCATE TO CLEAR DRIVEWAYS
5	END OF MAIN AUTO AV/AR VALVE (WHERE CUL-DE-SAC CREATES A HIGH POINT).



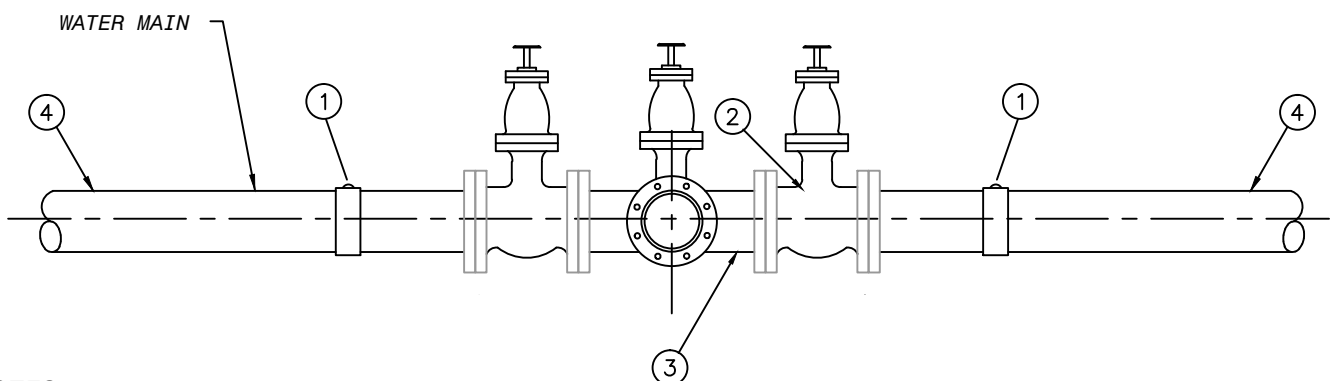
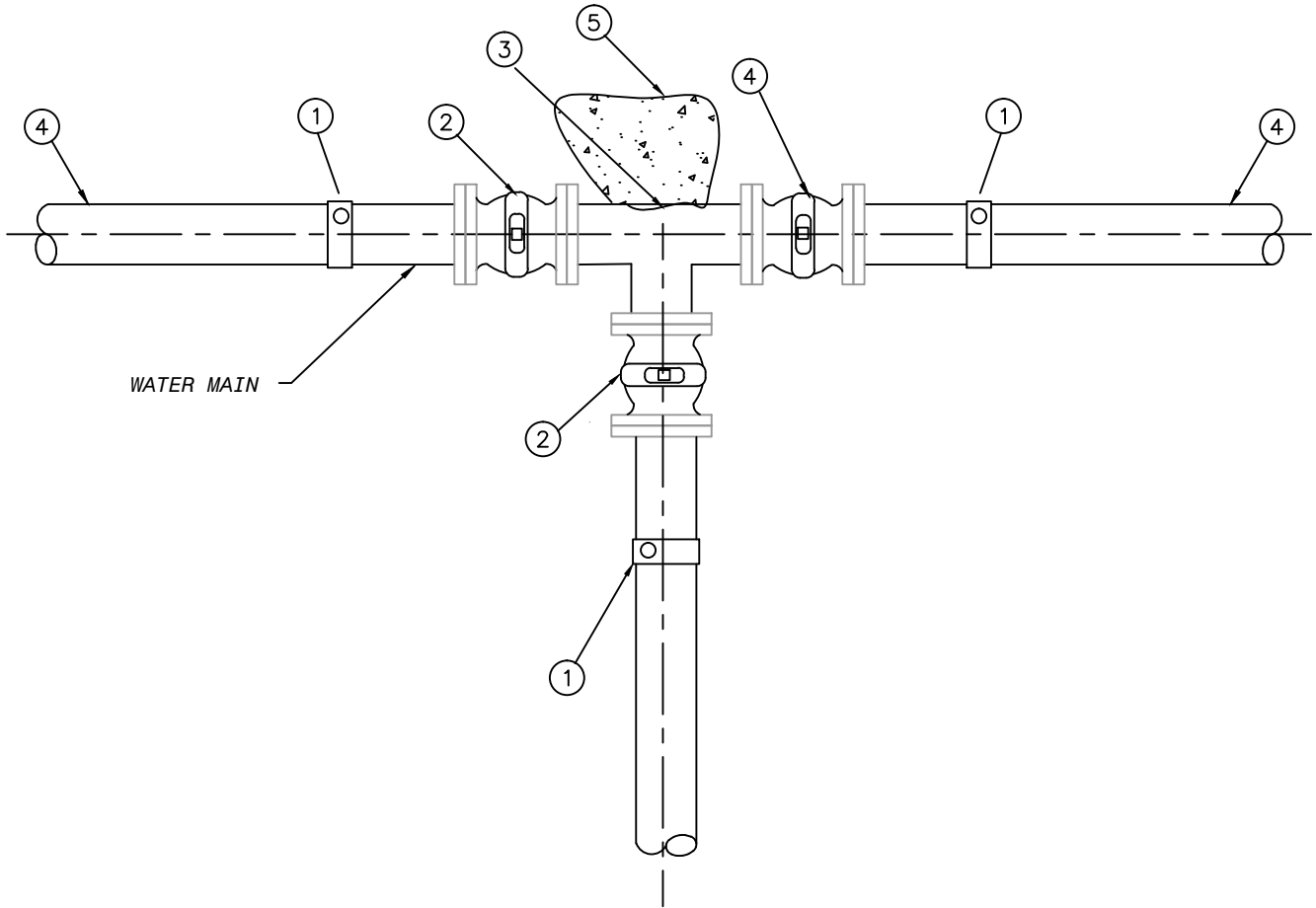
Rev. Date	By	APPRV'D
5/24/17	SMD	JRB



STANDARD CUL-DE-SAC
WATER LATERALS

DRAWING NO.

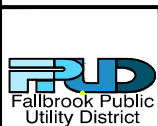
W-17



NOTES:

- 1) WRAP UNDERGROUND FACILITIES PER DISTRICT STANDARDS WITH 8 MIL POLYETHYLENE.
- 2) PIPE JOINTS SHALL BE ALL WELDED, WITH WELDED BUTT STRAPS, (1) - AS NEEDED.

- (1) BUTT STRAP W/ HANDHOLE
- (2) GATE VALVE
- (3) TEE
- (4) CML&C STEEL PIPE
- (5) THRUST BLOCK PER W-5



REV. DATE	BY	APPROVED
7/12/17	SMD	JRB

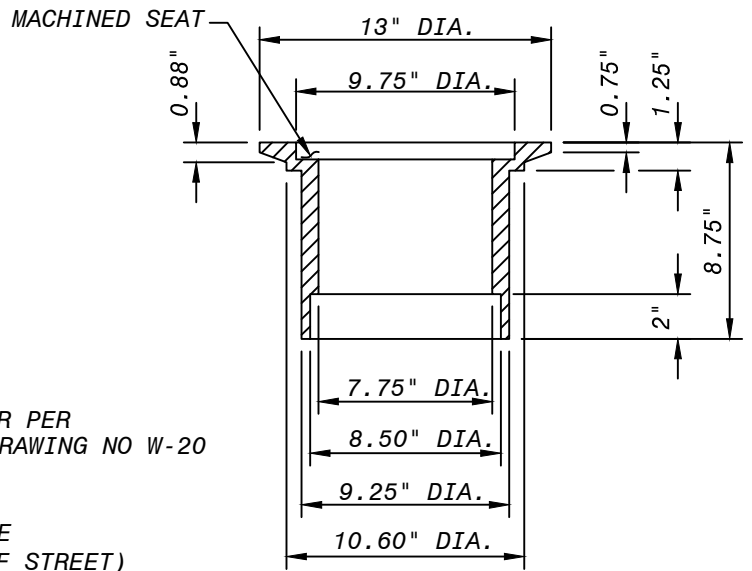
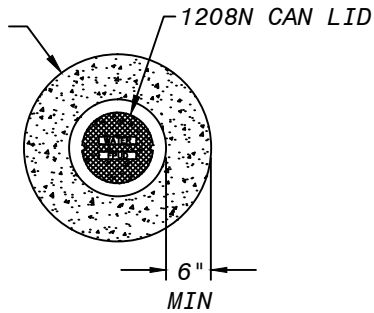


TYPICAL
THREE VALVE TEE

DRAWING NO.

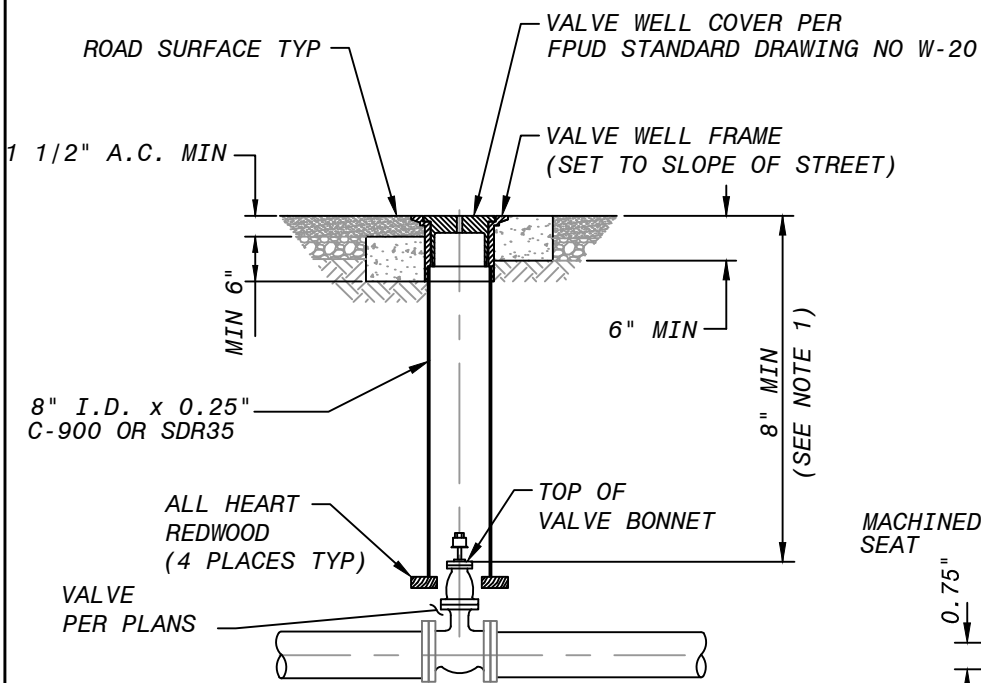
W-18

CONCRETE
(560-C-3250)

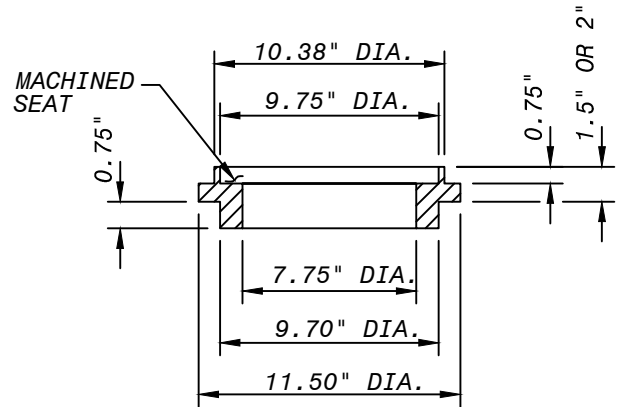


CAST IRON
VALVE WELL FRAME

TYPE 1 TYPE 2



VALVE WELL AND FRAME
FOR NEW INSTALLATIONS

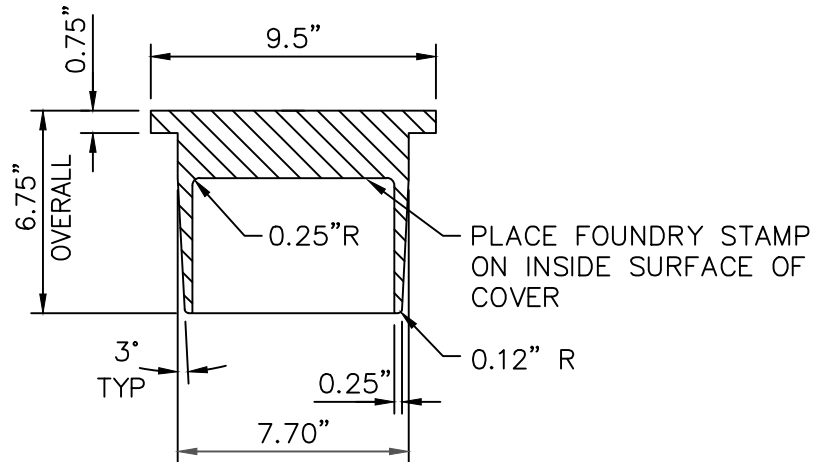
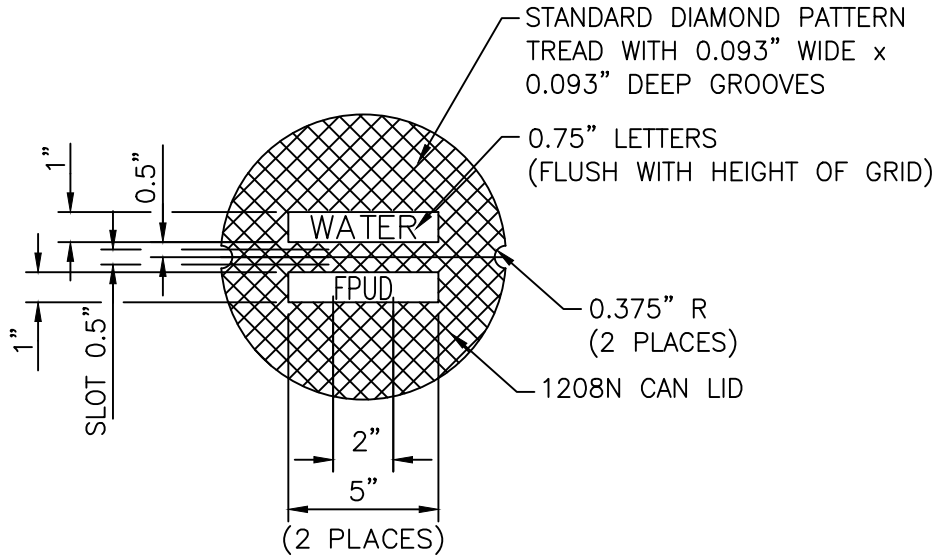


CAST IRON RISER RING FOR
RETROFITTING AND OVERLAY PROJECTS

NOTES:

1. FOR GATE VALVES, PROVIDE VALVE KEY EXTENSION WHERE THIS DIMENSION EXCEEDS 25 INCHES.
2. THE SURFACE OF THE VALVE WELL COVER SHALL MATCH THE STREET CROSS SLOPE AND PROFILE.

	REV. DATE	BY	APPROVED		<p style="text-align: center;">VALVE WELL AND FRAME</p>	DRAWING NO.
	5/24/17	SMD	JRB			W-19



VALVE WELL COVER PAINT CHART

INLINE VALVES
SILVER

B.O.s AND AIR VACS
SILVER

HYDRANTS
YELLOW

RECYCLED
PURPLE

CLOSED
RED



Rev.Date
5/24/17

By
SMD

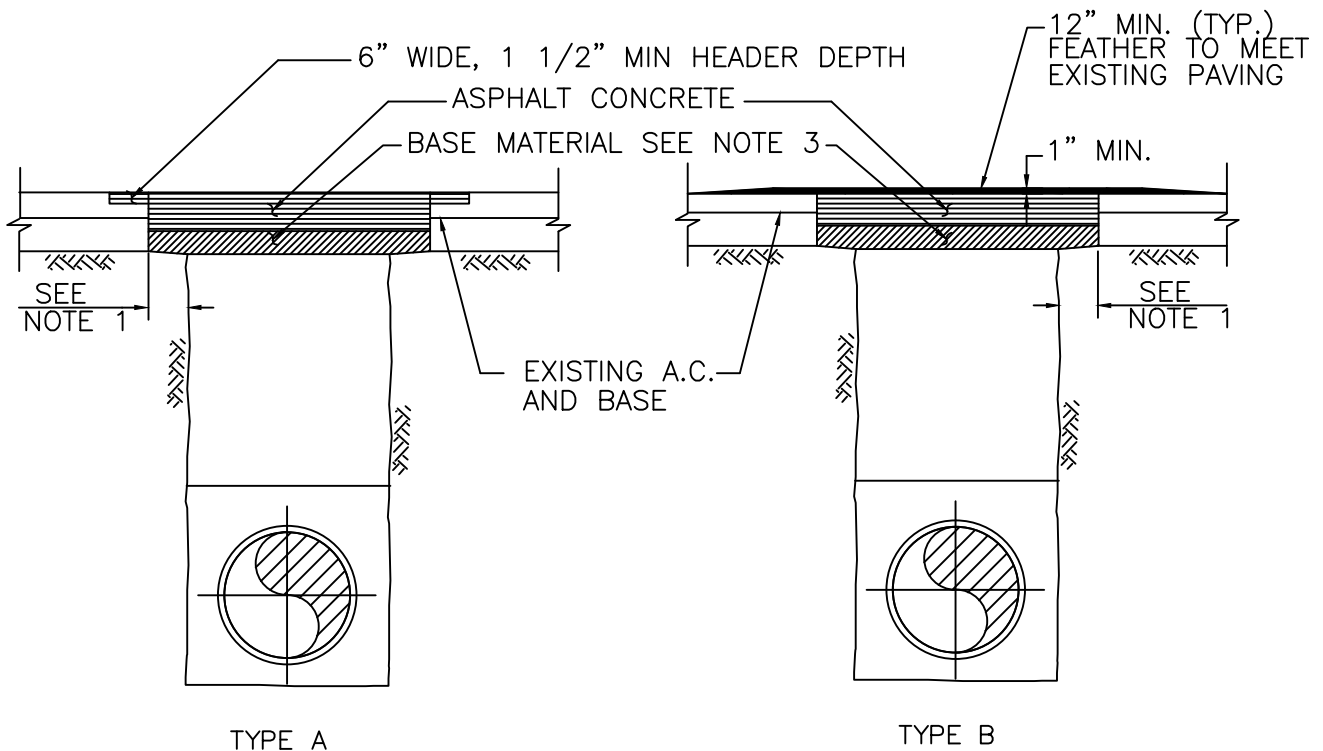
Apprv'd
JRB



VALVE WELL COVER

DRAWING NO.

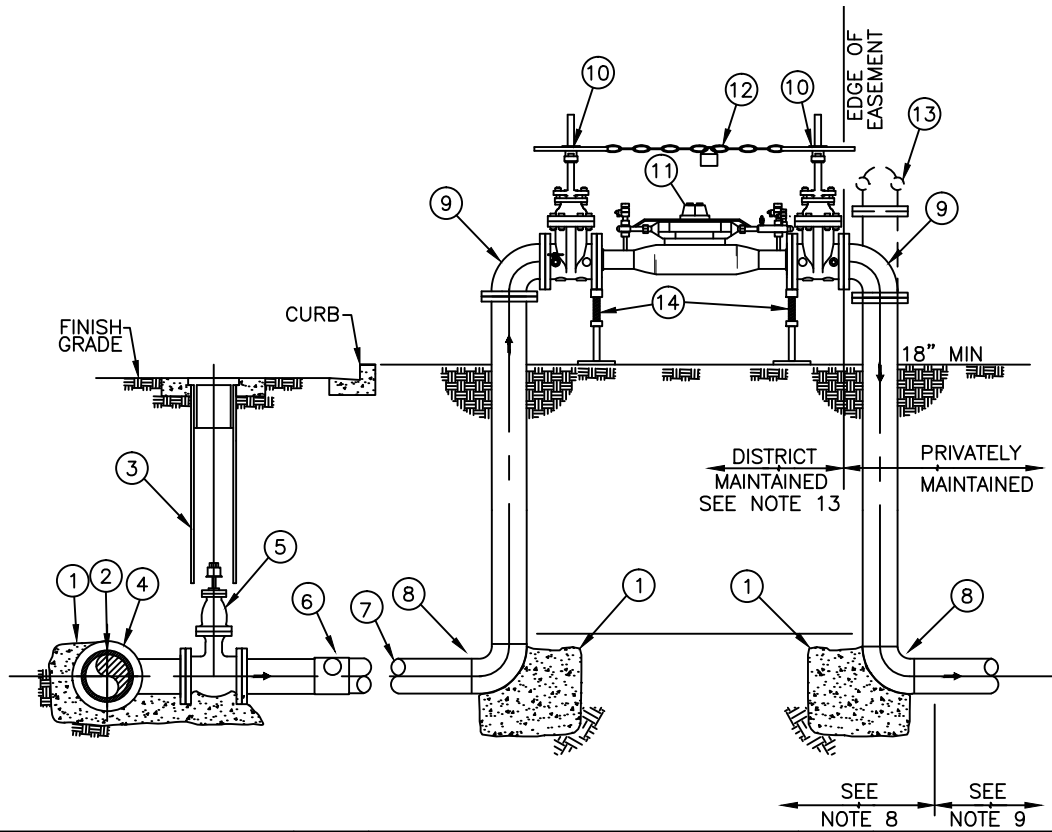
W-20



NOTES:

- 1) TRENCH EDGES TO BE CUT A MINIMUM OF 6" WIDER THAN TRENCH FOR TRENCHES 3' WIDE OR LESS, AND 12" WIDER FOR TRENCHES OVER 3' WIDE.
- 2) EXISTING AC SHALL BE CUT AND REMOVED IN SUCH A MANNER SO AS NOT TO TEAR, BULGE OR DISPLACE ADJACENT PAVEMENT. EDGES SHALL BE CLEAN AND VERTICAL. ALL CUTS SHALL BE PARALLEL OR PERPENDICULAR TO STREET CENTERLINE, WHEN PRACTICAL.
- 3) BASE MATERIAL TO BE REPLACED TO DEPTH OF EXISTING BASE OR 6" MINIMUM, AC MAY BE SUBSTITUTED FOR BASE MATERIAL.
- 4) A TACK COAT OF ASPHALT EMULSION OR PAVING ASPHALT SHALL BE APPLIED TO EXISTING AC OR P.C.C. CONTACT SURFACES, PRIOR TO RESURFACING.
- 5) ASPHALT CONCRETE RESURFACING:
 - A) MINIMUM TOTAL THICKNESS SHALL BE ONE INCH GREATER THAN EXISTING AC OR 3" MINIMUM,
 - B) AC SHALL BE HOT PLANT MIX CALTRANS SPEC GRADE C2-PG-64-10
 - C) FINISH COURSE FOR TYPE B RESURFACING SHALL BE LAID DOWN USING A SPREADER BOX.
- 6) ALL AC RESURFACING SHALL BE SEAL COATED WITH AN EMULSIFIED ASPHALT AND COVERED WITH SAND. CHIP SEALING TO BE APPLIED AS REQUIRED BY AGENCY.
- 7) TYPE B SHALL NOT BE USED ON LATERAL CROSSINGS.
- 8) SLOUGHING OF TRENCH UNDER PAVEMENT SHALL BE CAUSE FOR REQUIRING ADDITIONAL PAVEMENT AND BASE.

	Rev. Date	By	Apprv'd		TRENCH RESURFACING TYPES A & B	DRAWING NO.
	5/24/17	SMD	JRB			W-21

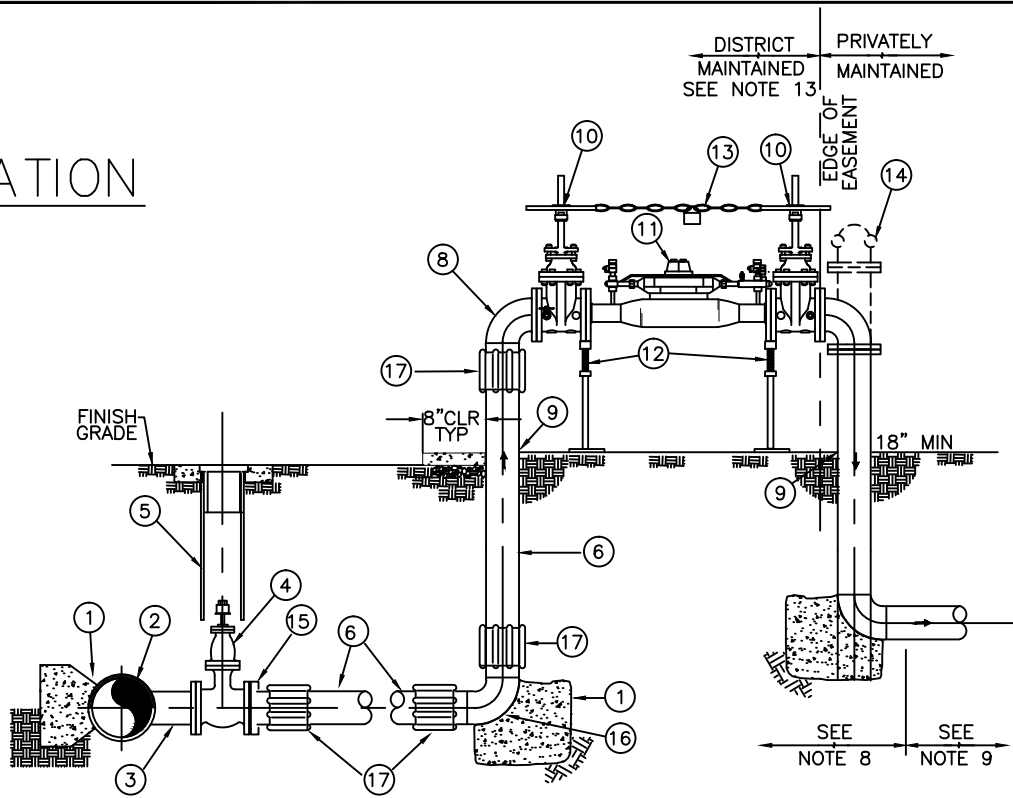


ITEM NO.	SIZE AND DESCRIPTION	ITEM NO.	SIZE AND DESCRIPTION	ITEM NO.	SIZE AND DESCRIPTION
①	CONCRETE THRUST BLOCK SEE W-4	⑥	WELDED BUTT-STRAP W/ HAND HOLE	⑪	3/4" BYPASS, RADIO READ METER & DOUBLE CHECK VALVE OR RP DEVICE
②	WATER MAIN	⑦	CML & C STEEL PIPE	⑫	CHAIN WITH LOCK SEE NOTE 4
③	GATE WELL SEE W-19	⑧	WELDED 90° BEND	⑬	FLANGED TEE WITH "FDC" SEE NOTE 4
④	SIZE X SIZE FLG X FLG TEE (WELDED)	⑨	FLANGED 90°	⑭	ADJUSTABLE VALVE SUPPORT
⑤	FLG X FLG RWGV	⑩	FLG'D OS&Y RWGV WITH HAND WHEEL		

- 1) REFER TO SECTION 15112 OF THE SPECIFICATIONS
- 2) INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON W-3
- 3) LOCATION OF FIRE SERVICES SHALL BE AS DIRECTED BY THE FIRE DEPARTMENT OF JURISDICTION. FIRE SERVICES SHOULD BE LOCATED IN SUCH A MANNER THAT WILL ALLOW THE DEVICE TO BE READILY ACCESSIBLE FOR INSPECTION, REPAIR, AND USAGE.
- 4) TAMPER SWITCH, AUTOMATIC RESET, CHAIN WITH KNOX LOCK, AND FIRE DEPARTMENT CONNECTION ("FDC") SHALL BE AS REQUIRED BY THE FIRE DEPARTMENT OF JURISDICTION.
- 5) BALL VALVE TEST COCKS SHALL BE PROVIDED AND LOCATED PER THE MANUFACTURERS RECOMMENDATIONS AND THE REQUIREMENTS OF THE WATER AGENCY STANDARDS.
- 6) INSTALL FIRE SERVICES SO THAT THE DISTANCE BETWEEN THE BOTTOM OF THE RELIEF DIAPHRAGM AND THE CONCRETE SLAB OR FINISH GRADE IS 12" MIN. AND 36" MAX.
- 7) INSTALL AN ANGLE PRESSURE REDUCING VALVE IN LIEU OF THE FIRST 90° BEND WHEN SYSTEM STATIC PRESSURE EXCEEDS 175psi OR WHEN RECOMMENDED BY THE BACKFLOW MANUFACTURER
- 8) INSTALL PIPE AND RELATED APPURTENANCES IN THIS AREA PER THE REQUIREMENT OF THE FPUD SPECIFICATIONS.
- 9) INSTALL PIPE AND RELATED APPURTENANCES IN THIS AREA AS REQUIRED BE THE FIRE THE FIRE DEPARTMENT OF JURISDICTION.
- 10) ABOVE GROUND APPURTENANCE SHALL BE PAINTED AND IDENTIFIED AS CALLED FOR BY THE FIRE DEPARTMENT OF JURISDICTION.
- 11) TESTING SHALL BE CONDUCTED AS CALLED FOR IN SECTION 15112 OF THE SPECIFICATIONS PRIOR TO ACCEPTANCE BY THE DISTRICT.
- 12) MATERIALS SHALL BE SELECTED FORM THE APPROVED MATERIALS LIST.
- 13) DISTRICT RESPONSIBILITY ENDS AT THE DOWNSTREAM SIDE OF THE VALVE.

	Rev.Date	By	Apprv'd		4" AND LARGER FIRE SERVICE INSTALLATION	DRAWING NO.
	5/24/17	SMD	JRB			W-22

ELEVATION



MATERIAL LIST

ITEM NO.	SIZE AND DESCRIPTION	ITEM NO.	SIZE AND DESCRIPTION	ITEM NO.	SIZE AND DESCRIPTION
①	THRUST BLOCK, FPUD SEC. 03300	⑦	DELETED	⑬	CHAIN WITH LOCK
②	WELD SADDLE	⑧	3"x90° DI PIPE ELBOW, MJxFLG	⑭	FIRE DEPARTMENT CONNECTION
③	3" FLANGED OUTLET/ AWWA & DISTRICT STANDARDS	⑨	WRAP FOAM TAPE FOR CONCRETE PENETRATION	⑮	MJxFLG ADAPTER
④	3" FLGxFLG RWGV (PLUG V. ≥ 250 PSI)	⑩	FLANGED OS&Y RWGV W/ HAND WHEEL	⑯	3"x90° DIA PIPE ELBOW, MJxMJ
⑤	VALVE WELL, W-19	⑪	3/4" BYPASS RADIO READ METER & DCV/RP DEVICE	⑰	MEGA-LUG RESTRAINT
⑥	3" DI PIPE T.2E.	⑫	ADJUSTABLE VALVE SUPPORT		

NOTES:

- 1) REFER TO SECTION 15112 OF THE SPECIFICATIONS
- 2) INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON W-3
- 3) LOCATION OF FIRE SERVICES SHALL BE AS DIRECTED BY THE FIRE DEPARTMENT OF JURISDICTION. FIRE SERVICES SHOULD BE LOCATED IN SUCH A MANNER THAT WILL ALLOW THE DEVICE TO BE READILY ACCESSIBLE FOR INSPECTION, REPAIR, AND USAGE.
- 4) TAMPER SWITCH, AUTOMATIC RESET, CHAIN WITH KNOX LOCK, AND FIRE DEPARTMENT CONNECTION ("FDC") SHALL BE AS REQUIRED BY THE FIRE DEPARTMENT OF JURISDICTION.
- 5) BALL VALVE TEST COCKS SHALL BE PROVIDED AND LOCATED PER THE MANUFACTURES RECOMMENDATIONS AND THE REQUIREMENTS OF THE WATER AGENCY STANDARDS.
- 6) INSTALL FIRE SERVICES SO THAT THE DISTANCE BETWEEN THE BOTTOM OF THE RELIEF DIAPHRAGM AND THE CONCRETE SLAB OR FINISH GRADE IS 12" MIN. AND 36" MAX.
- 7) INSTALL AN ANGLE PRESSURE REDUCING VALVE IN LIEU OF THE FIRST 90° BEND WHEN SYSTEM STATIC PRESSURE EXCEEDS 175psi OR WHEN RECOMMENDED BY THE BACKFLOW MANUFACTURER
- 8) INSTALL PIPE AND RELATED APPURTENANCES IN THIS AREA PER THE REQUIREMENT OF THE FPUD SPECIFICATIONS.
- 9) INSTALL PIPE AND RELATED APPURTENANCES IN THIS AREA AS REQUIRED BE THE FIRE THE FIRE DEPARTMENT OF JURISDICTION.
- 10) ABOVE GROUND APPURTENANCE SHALL BE PAINTED AND IDENTIFIED AS CALLED FOR BY THE FIRE DEPARTMENT OF JURISDICTION.
- 11) TESTING SHALL BE CONDUCTED AS CALLED FOR IN SECTION 15112 OF THE SPECIFICATIONS PRIOR TO ACCEPTANCE BY THE DISTRICT.
- 12) MATERIALS SHALL BE SELECTED FORM THE APPROVED MATERIALS LIST.
- 13) DISTRICT RESPONSIBILITY ENDS AT DOWNSTREAM SIDE OF VALVE.



Rev.Date	By	Apprv'd
5/24/17	SMD	JRB

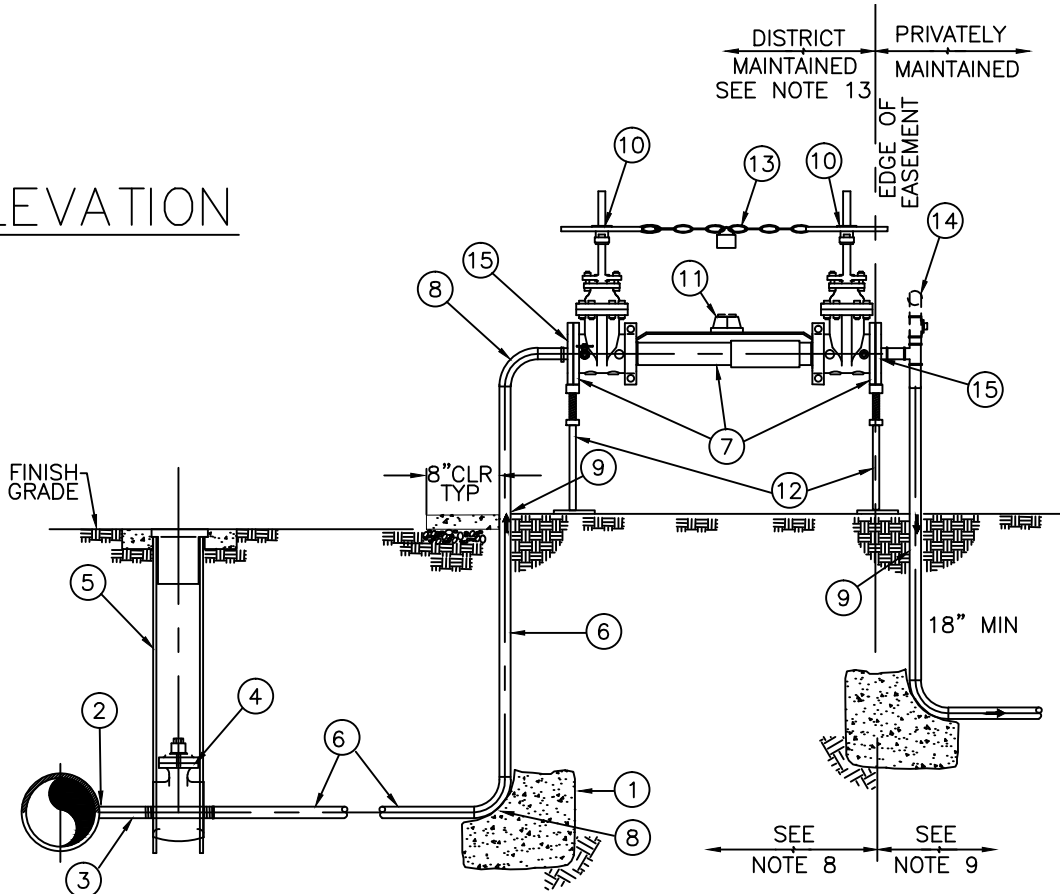


3" FIRE SERVICE INSTALLATION

DRAWING NO.

W-23

ELEVATION



MATERIAL LIST

ITEM NO.	SIZE AND DESCRIPTION	ITEM NO.	SIZE AND DESCRIPTION	ITEM NO.	SIZE AND DESCRIPTION
①	THRUST BLOCK, FPUD SEC. 03300	⑥	2" RIGID COPPER PIPE	⑪	3/4" BYPASS RADIO READ METER & RP DEVICE (LEAK DETECTOR)
②	WELD SADDLE - PER W-5 AWWA & DISTRICT STANDARDS	⑦	2-1/2" DCDA COLT 300-GV ASSEMBLY BY AMES COMP.	⑫	ADJUSTABLE VALVE SUPPORTS
③	2" FIP COPPER / 12-INCH NIPPLE.	⑧	2"x90° COPPER ELBOW, SOLDERED	⑬	CHAIN WITH LOCK
④	2" FIPxFIP PLUG VALVE	⑨	WRAP FOAM TAPE FOR CONCRETE PENETRATION	⑭	FIRE DEPARTMENT CONNECTION FITTINGS WITH SHUTOFF VALVE
⑤	VALVE WELL, W-19	⑩	FLANGED OS&Y RWGV W/ HAND WHEEL	⑮	2-1/2" X 2" FIP FLANGE ADAPTER

NOTES:

- 1) REFER TO SECTION 15112 OF THE SPECIFICATIONS
- 2) INSTALL WARNING/IDENTIFICATION TAPE AS SHOWN ON W-3, STANDARD PIPE ZONE & TRENCH BACKFILL.
- 3) LOCATION OF FIRE SERVICES SHALL BE AS DIRECTED BY THE FIRE DEPARTMENT OF JURISDICTION. FIRE SERVICES SHOULD BE LOCATED IN SUCH A MANNER THAT WILL ALLOW THE DEVICE TO BE READILY ACCESSIBLE FOR INSPECTION, REPAIR, AND USAGE.
- 4) TAMPER SWITCH, AUTOMATIC RESET, CHAIN WITH KNOX LOCK, AND FIRE DEPARTMENT CONNECTION ("FDC") SHALL BE AS REQUIRED BY THE FIRE DEPARTMENT OF JURISDICTION.
- 5) BALL VALVE TEST COCKS SHALL BE PROVIDED AND LOCATED PER THE MANUFACTURES RECOMMENDATIONS AND THE REQUIREMENTS OF THE WATER AGENCY STANDARDS.
- 6) INSTALL FIRE SERVICES SO THAT THE DISTANCE BETWEEN THE BOTTOM OF THE RELIEF DIAPHRAGM AND THE CONCRETE SLAB OR FINISH GRADE IS 12" MIN. AND 36" MAX.
- 7) INSTALL AN ANGLE PRESSURE REDUCING VALVE IN LIEU OF THE FIRST 90° BEND WHEN SYSTEM STATIC PRESSURE EXCEEDS 175psi OR WHEN RECOMMENDED BY THE BACKFLOW MANUFACTURER
- 8) INSTALL PIPE AND RELATED APPURTENANCES IN THIS AREA PER THE REQUIREMENT OF THE FPUD SPECIFICATIONS.
- 9) INSTALL PIPE AND RELATED APPURTENANCES IN THIS AREA AS REQUIRED BE THE FIRE THE FIRE DEPARTMENT OF JURISDICTION.
- 10) ABOVE GROUND APPURTENANCE SHALL BE PAINTED AND IDENTIFIED AS CALLED FOR BY THE FIRE DEPARTMENT OF JURISDICTION.
- 11) TESTING SHALL BE CONDUCTED AS CALLED FOR IN SECTION 15112 OF THE SPECIFICATIONS PRIOR TO ACCEPTANCE BY THE DISTRICT.
- 12) MATERIALS SHALL BE SELECTED FORM THE APPROVED MATERIALS LIST.
- 13) DISTRICT RESPONSIBILITY ENDS AT DOWNSTREAM SIDE OF VALVE.
- 14) ALL UNDERGROUND PIPE SHALL BE WRAPPED IN POLY SLEEVE AND / OR TAPED WITH 10 MIL PVC TAPE.



Rev.Date: 2/07/18
By: SMD
Apprv'd: JRB



2" FIRE SERVICE INSTALLATION

DRAWING NO.

W-24