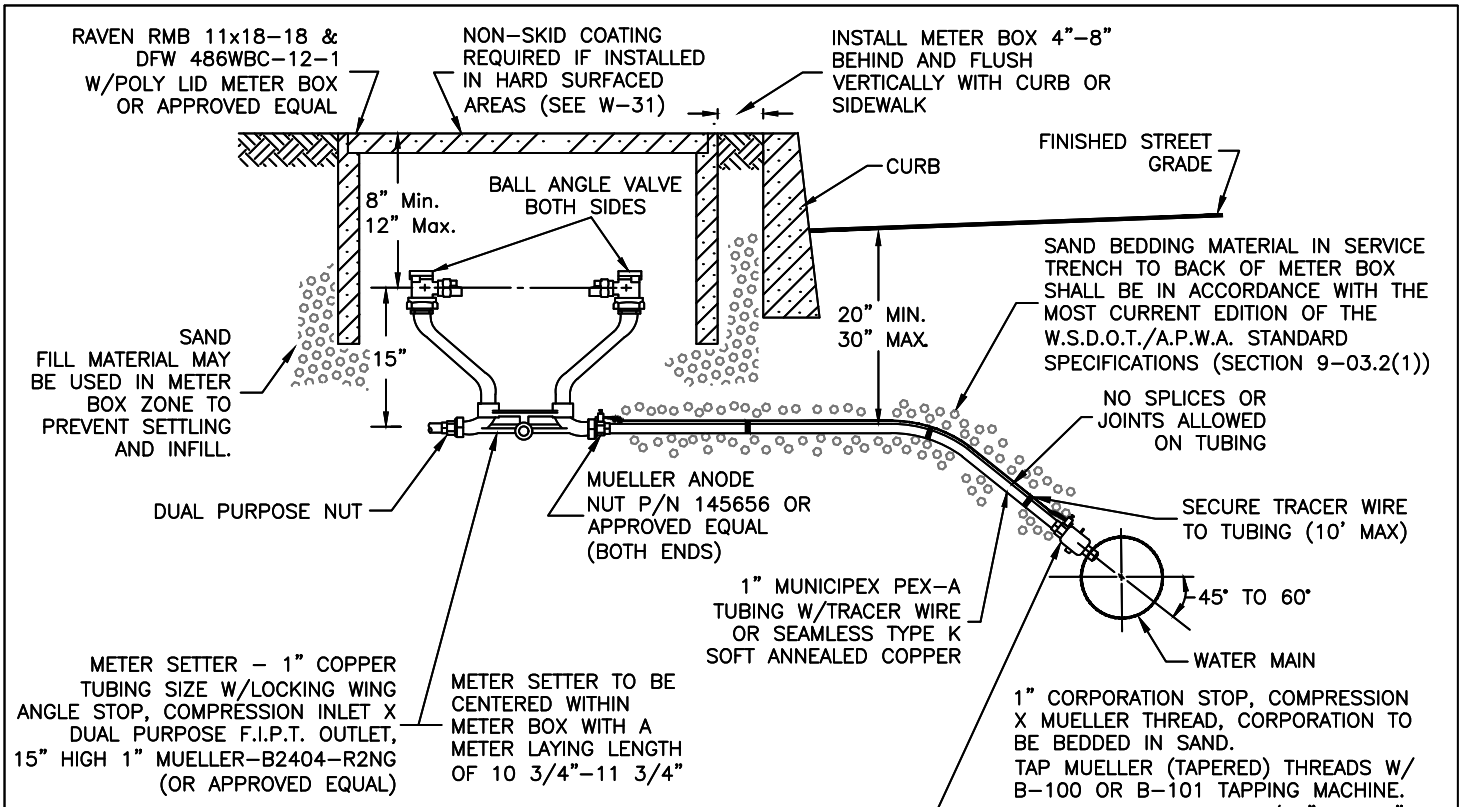


NOTES:

1. ALL DOMESTIC AND IRRIGATION METERS SHALL BE SUPPLIED, OWNED AND INSTALLED BY THE CITY OF VANCOUVER PER VMC 14.04.170(B)
2. ALL METERS 1" AND LESS SHALL BE OF THE NUTATING DISC TYPE.
3. PRIOR TO CITY INSTALLATION OF METERS, ALL SERVICE APPLICATIONS MUST BE COMPLETED AND APPROVED. SERVICE FEES PAID IN FULL AND AS-BUILTS SUBMITTED AND APPROVED.
4. CONTRACTOR SHALL CONTACT CITY CONSTRUCTION MANAGER'S OFFICE (360) 487-7750 48 HRS. PRIOR TO INSTALLING ANY WATER SERVICE CONNECTIONS.
5. METERS WILL NOT BE SET BY THE CITY PRIOR TO DISINFECTION OF THE MAIN AND SERVICE, AND PRIOR TO A SUCCESSFUL BACTERIOLOGICAL TEST.
6. WATER SERVICES SHALL BE PRESSURE TESTED ALONG WITH THE MAIN.
7. METER BOX SHALL NOT BE ALLOWED IN HARD SURFACE AREAS WITHOUT PRIOR CITY OF VANCOUVER WRITTEN APPROVAL..
8. ALL SERVICES ARE SUBJECT TO REVIEW FOR BACKFLOW PROTECTION REQUIREMENTS.
9. ALL SERVICE REPLACEMENTS MUST TERMINATE AT EITHER A NEW YOKE, AN ANGLE STOP OR A CURB STOP. NEW ANGLE OR CURB STOPS SHALL BE MUELLER 110 FITTINGS OR APPROVED EQUAL.
10. A MAXIMUM OF ONE FITTING (MUELLER 110 3 PART COMPRESSION x COMPRESSION, OR APPROVED EQUAL) SHALL BE ALLOWED BETWEEN THE CORP. STOP AND THE METER SET ON ALL SERVICE TRANSFERS.
11. DIRECT SERVICE TAPS ARE ONLY ALLOWED ON 6" DI AND LARGER, ALL OTHER MUST USE A SERVICE SADDLE.
12. TRACER WIRE IS REQUIRED ON ALL MUNICIPEX PEX-A TUBING AND SHALL BE COPPERHEAD 1230 COPPER COATED STEEL WIRE DESIGNED FOR DIRECT BURY APPLICATIONS OR APPROVED EQUAL.
13. COMPRESSION FITTINGS WITH STAINLESS STEEL INSERTS SHALL BE USED ON ALL CONNECTIONS TO MUNICIPEX PEX-A TUBING.
14. TRACING WIRE SHALL NOT BE SPLICED AND SHALL BE TESTED FOR CONTINUITY PRIOR TO ACCEPTANCE.

N.T.S.

REV NO.	DATE	BY	APPROVED
9	1/15	G.P.H.	T.W.C.
10	1/17	G.P.H.	T.W.C.
11	1/19	G.P.H.	T.W.C.
12	1/21	G.P.H.	T.W.C.
13	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

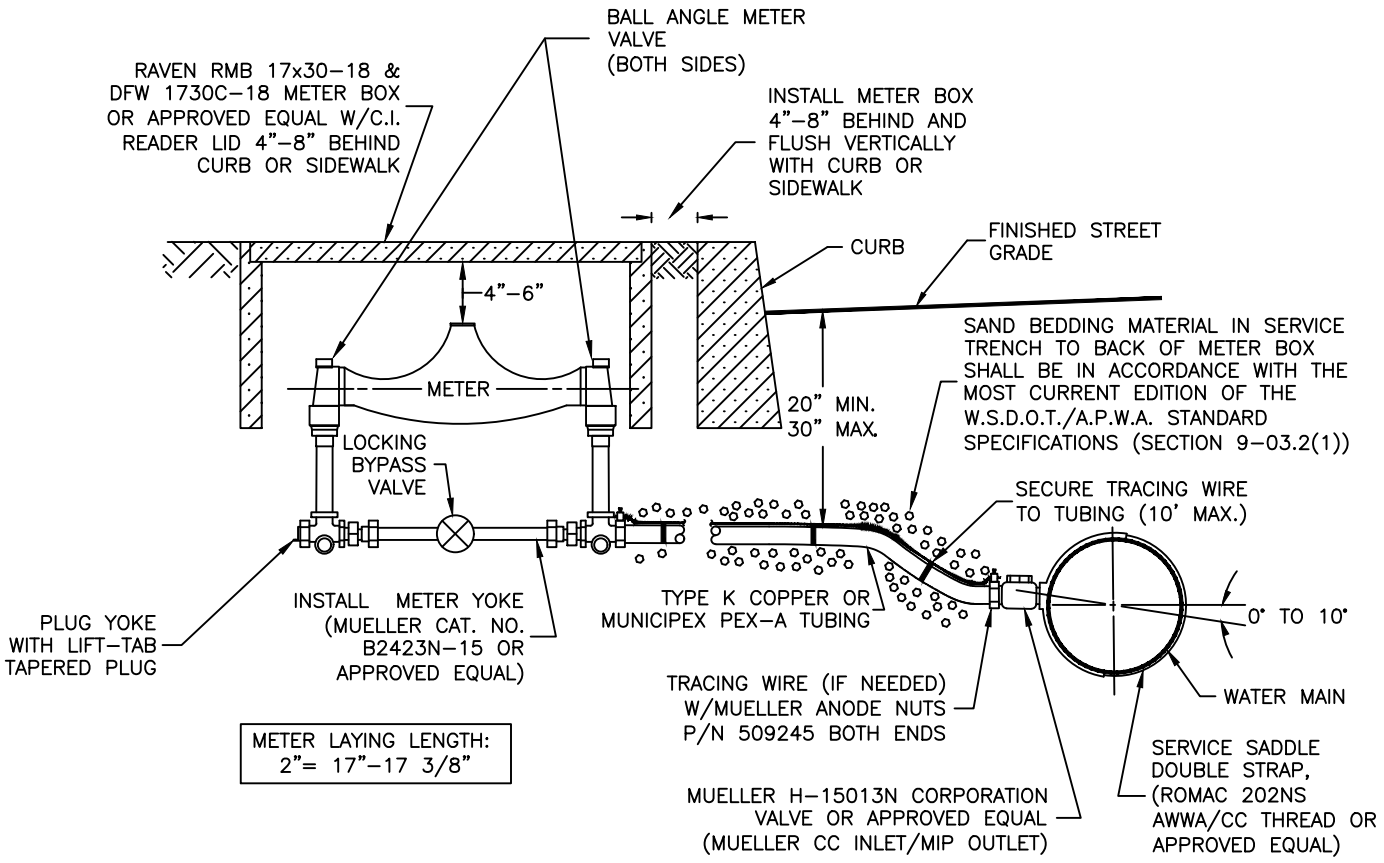
CITY OF Vancouver WASHINGTON

STANDARD 1" WATER SERVICE

STANDARD PLAN NUMBER

W-1

23_WATER_DETAILS



NOTES:

1. ALL DOMESTIC AND IRRIGATION METERS SHALL BE SUPPLIED, OWNED AND INSTALLED BY THE CITY OF VANCOUVER PER VMC 14.04.170(B)
2. ALL 1 1/2" AND 2" METERS MAY BE EITHER THE NUTATING DISC OR ULTRASONIC TYPE, TURBINE METERS ARE NOT ALLOWED.
3. PRIOR TO CITY INSTALLATION OF METERS, ALL SERVICE APPLICATIONS MUST BE COMPLETED AND APPROVED. SERVICE FEES PAID IN FULL AND AS–BUILTS SUBMITTED AND APPROVED.
4. CONTRACTOR SHALL CONTACT CITY CONSTRUCTION MANAGER'S OFFICE (360)487–7750 48 HOURS PRIOR TO INSTALLING ANY WATER SERVICE CONNECTIONS.
5. METERS WILL NOT BE SET BY THE CITY PRIOR TO DISINFECTION OF THE MAIN AND SERVICE, AND PRIOR TO A SUCCESSFUL BACTERIOLOGICAL TEST.
6. WATER SERVICES SHALL BE PRESSURE TESTED ALONG WITH THE MAIN.
7. USE 1–7/8" BIT FOR ALL 2" SADDLE TAPS.
8. METER BOX SHALL NOT BE ALLOWED IN HARD SURFACE AREAS WITHOUT PRIOR CITY OF VANCOUVER WRITTEN APPROVAL, IF METER BOX MUST BE LOCATED IN A WALKING AREA, A NON–SKID TRAFFIC RATED LID SHALL BE REQUIRED. (SEE W–31)
9. METERS PLACED IN HARD SURFACED AREAS SHALL BE CALLED OUT AS SUCH ON THE PLANSET.
10. ALL SERVICES ARE SUBJECT TO REVIEW FOR BACKFLOW PROTECTION REQUIREMENTS.
11. ALL 1–1/2" AND 2" METER INSTALLATIONS SHALL BE 2" TAPS AND 2" SERVICE PIPING.
12. TRACER WIRE IS REQUIRED ON ALL MUNICIPEX PEX–A TUBING AND SHALL BE COPPERHEAD 1230 COPPER COATED STEEL WIRE DESIGNED FOR DIRECT BURY APPLICATIONS OR APPROVED EQUAL.
13. COMPRESSION FITTINGS WITH STAINLESS STEEL INSERTS SHALL BE USED ON ALL CONNECTIONS TO PEX–A TUBING.
14. TRACING WIRE SHALL NOT BE SPLICED AND SHALL BE TESTED FOR CONTINUITY PRIOR TO ACCEPTANCE.

N.T.S.

REV NO.	DATE	BY	APPROVED
8	1/15	G.P.H.	T.W.C.
9	1/17	G.P.H.	T.W.C.
10	1/19	G.P.H.	T.W.C.
11	1/21	G.P.H.	T.W.C.
12	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

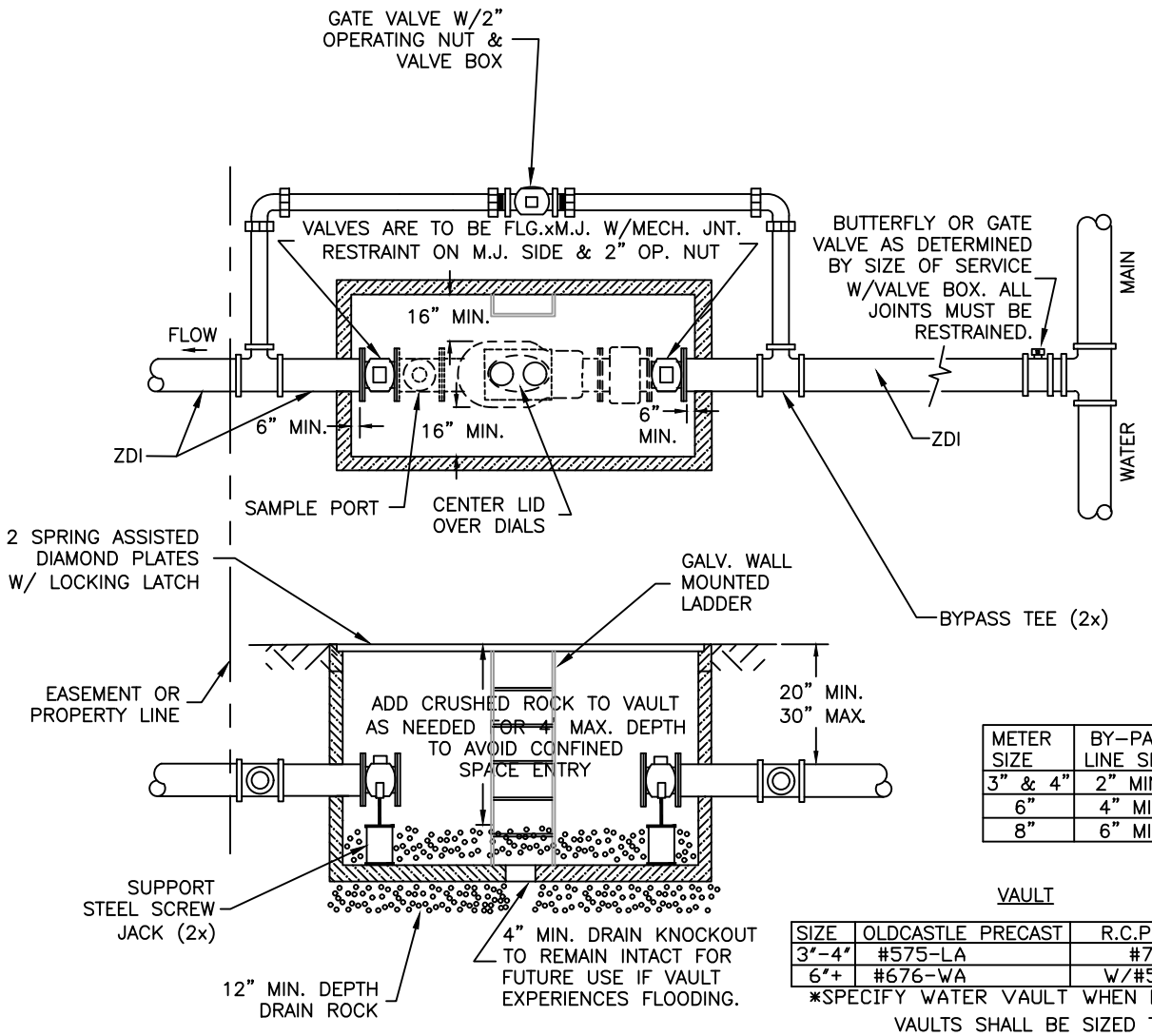
CITY OF Vancouver WASHINGTON

STANDARD 2" WATER SERVICE

STANDARD PLAN NUMBER

W-2

23_WATER_DETAILS



METER SIZE	BY-PASS LINE SIZE	BY-PASS MATERIAL
3" & 4"	2" MIN.	COPPER
6"	4" MIN.	D.I.
8"	6" MIN.	D.I.

VAULT

SIZE	OLDCASTLE PRECAST	R.C.P. VAULTS
3'-4'	#575-LA	#76632
6'+	#676-WA	W/#57-TL-B LID

SPECIFY WATER VAULT WHEN ORDERING

VAULTS SHALL BE SIZED TO ALLOW FOR CLEARANCES.

NOTES:

1. CITY TO SUPPLY, OWN AND MAINTAIN THE METER, METER SPACER, REDUCING TEE AND STRAINER. CONTACT CITY INSPECTOR 2 WEEKS PRIOR TO INSTALLATION.
2. PIPE SUPPORTS REQUIRED ON ALL METERS 6" AND LARGER.
3. REDUCERS, IF REQUIRED, SHALL BE INSTALLED INSIDE VAULT.
4. TEN PIPE DIAMETERS OF STRAIGHT PIPE REQ'D. IN & OUT OF METER. (IF USING 6" PIPE, NO BENDS ALLOWED WITHIN 5' OF THE METER IN EITHER DIRECTION. IE: 6" x 10 = 60")
5. CONTRACTOR SHALL USE APPROPRIATE METHODS TO ENSURE COPPER PIPE, FITTINGS AND JOINTS WILL REMAIN LEAK-TIGHT.
6. ALL METERS SHALL BE INSTALLED BY THE CITY OF VANCOUVER PER VMC 14.04.170(B). CONTRACTOR TO INSTALL TEMP. SPACER AS PER NOTE 1.
7. INSTALL VAULT IN SOFT-SCAPE AREA, VERTICALLY FLUSH WITH CURB OR SIDEWALK.
8. METER VAULT SHALL NOT BE ALLOWED IN HARD SURFACE AREAS WITHOUT PRIOR CITY OF VANCOUVER WRITTEN APPROVAL.
9. IF VAULT MUST BE LOCATED IN A WALKING AREA, A NON-SKID TRAFFIC RATED LID SHALL BE REQUIRED.
10. ALL SERVICES ARE SUBJECT TO REVIEW FOR BACKFLOW PROTECTION REQUIREMENTS.

N.T.S.

REV NO.	DATE	BY	APPROVED
8	1/15	G.P.H.	T.W.C.
9	1/17	G.P.H.	T.W.C.
10	1/19	G.P.H.	T.W.C.
11	1/21	G.P.H.	T.W.C.
12	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

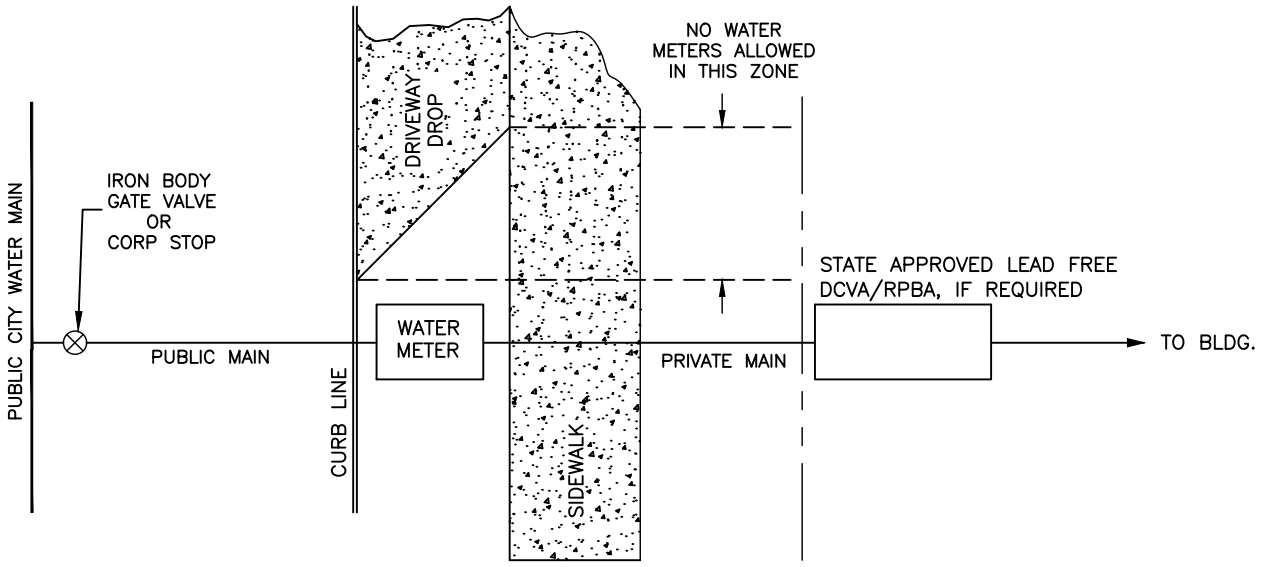
CITY OF Vancouver WASHINGTON

STANDARD 3" WATER METER & LARGER SERVICE INSTALLATION

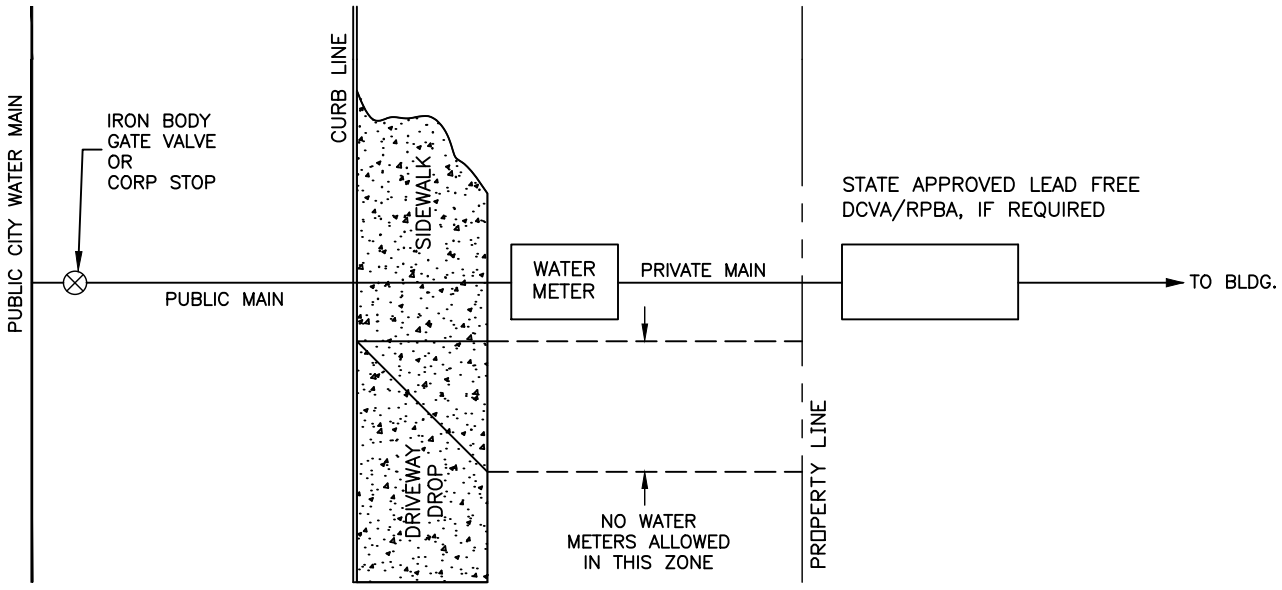
STANDARD PLAN NUMBER

W-3

23_WATER_DETAILS



DETACHED SIDEWALK



ATTACHED SIDEWALK

NOTES:

1. ALL BACKFLOW ASSEMBLIES SHALL BE INSTALLED AS CLOSE TO THE METER AS POSSIBLE.
2. SEE WATER METER DETAILS W–1 THROUGH W–5 FOR WATER METER INSTALLATION INFORMATION.
3. WATER METERS ARE NOT ALLOWED IN THE DRIVEWAY WING EXTENSION AREAS.
4. DIRECT ALL DESIGN QUESTIONS TO CITY OF VANCOUVER WATER ENGINEERING AT (360) 487–7130.
5. EXCEPTIONS TO THESE REQUIREMENTS SHALL BE SUBMITTED IN WRITING WITH A PLAN FOR REVIEW TO THE CITY OF VANCOUVER COMMUNITY DEVELOPMENT DEPARTMENT–ENGINEERING (360) 487–7804 FOR ROUTING TO WATER ENGINEERING.

N.T.S.

REV NO.	DATE	BY	APPROVED
7	1/15	G.P.H.	T.W.C.
8	1/17	G.P.H.	T.W.C.
9	1/19	G.P.H.	T.W.C.
10	1/21	G.P.H.	T.W.C.
11	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

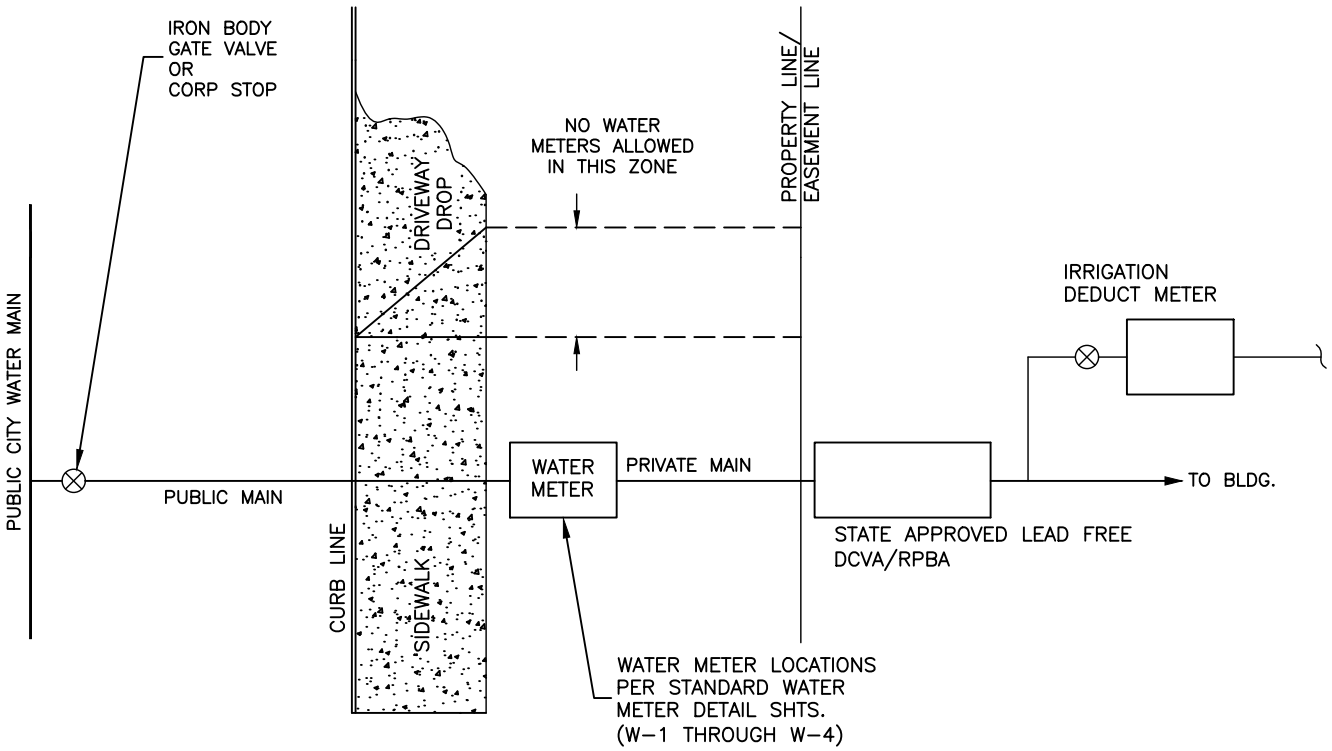
CITY OF Vancouver WASHINGTON

STANDARD DOMESTIC METER LOCATIONS

STANDARD PLAN NUMBER

W-4

23_WATER_DETAILS



NOTES:

1. WATER METERS ARE NOT ALLOWED IN THE DRIVEWAY WING EXTENSION AREAS.
2. ALL DEDUCT METERS SHALL BE PER APPROVED PLAN.
3. DEDUCT METERS SHALL BE PLACED IN A STANDARD METER BOX WITH READER LID ACCORDING TO METER SIZE. (SEE W-1 & W-2)
4. DEDUCT METERS SHALL BE CONSTRUCTED PER THE DOMESTIC METER DETAIL OF THE SAME METER SIZE (SEE W-1, W-2 & W-3)
5. IRRIGATION DEDUCT METERS WILL BE READ DURING THE BILLING CYCLES FROM APRIL THROUGH OCTOBER.
6. DEDUCT METERS SHALL BE PURCHASED FROM THE CITY OF VANCOUVER COMMUNITY DEVELOPMENT DEPARTMENT PERMIT COUNTER.
7. DEDUCT METERS ARE SUPPLIED BY THE CITY OF VANCOUVER OPERATIONS DEPARTMENT AND INSTALLED BY THE CONTRACTOR
8. DEDUCT METERS SHALL BE OWNED AND MAINTAINED BY THE CUSTOMER, INCLUDING ANY BATTERY REPLACEMENT.
9. IF THE DEDUCT METER CANNOT BE LOCATED WITHIN 5' OF DOMESTIC METER, A TOUCH READ DEVICE SUPPLIED BY THE CITY OF VANCOUVER MAY BE REQUIRED.
10. DIRECT ALL DESIGN QUESTIONS TO CITY OF VANCOUVER WATER ENGINEERING AT (360) 487-7130.
11. INSTALLATION QUESTIONS SHOULD BE DIRECTED TO CITY OF VANCOUVER UTILITIES AT (360) 487-7999.
12. ALL BACKFLOW ASSEMBLIES SHALL BE INSTALLED AS CLOSE TO THE METER AS POSSIBLE.
13. EXCEPTIONS TO THESE REQUIREMENTS SHALL BE SUBMITTED IN WRITING WITH A PLAN FOR REVIEW TO COMMUNITY & ECONOMIC DEVELOPMENT DEPARTMENT-ENGINEERING (360) 487-7804 FOR ROUTING TO WATER ENGINEERING.

N.T.S.

REV NO.	DATE	BY	APPROVED
4	1/15	G.P.H.	T.W.C.
5	1/17	G.P.H.	T.W.C.
6	1/19	G.P.H.	T.W.C.
7	1/21	G.P.H.	T.W.C.
8	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

CITY OF Vancouver WASHINGTON

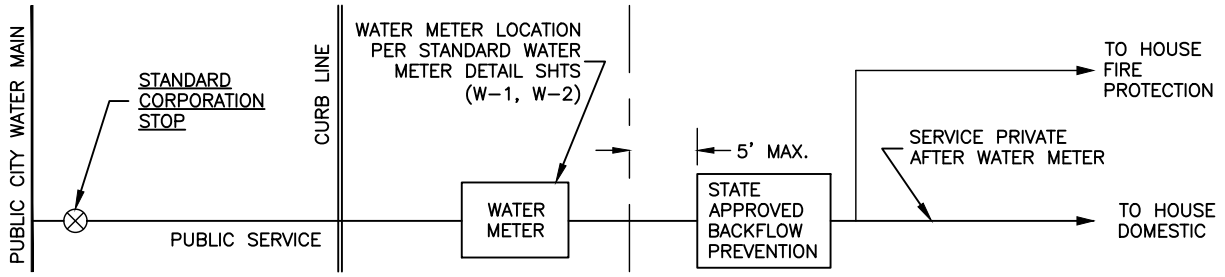
STANDARD DEDUCT METER LOCATIONS

STANDARD PLAN NUMBER

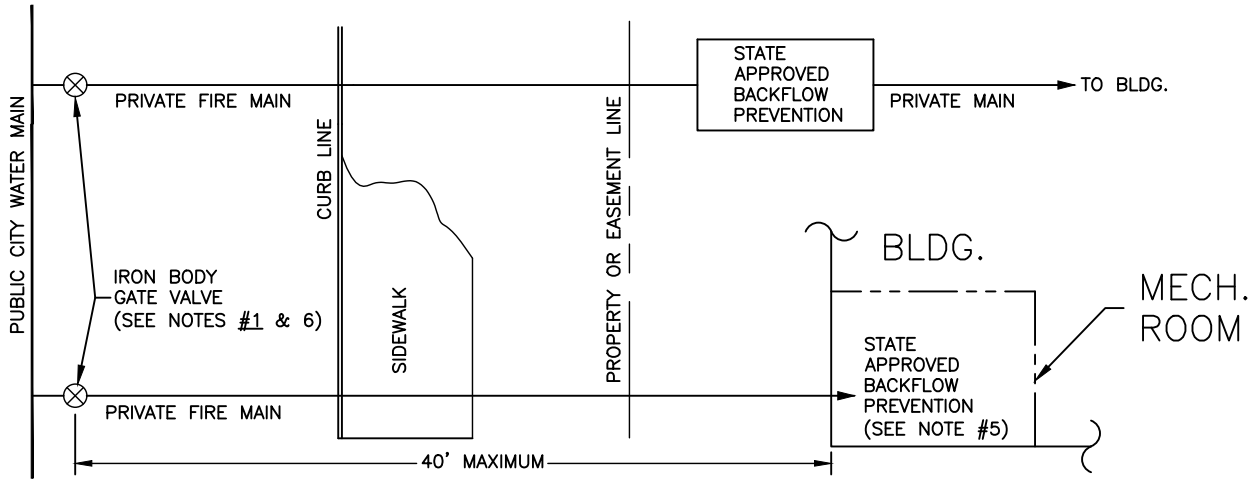
W-5

23_WATER_DETAILS

SINGLE FAMILY FIRE PREVENTION INSTALLATION



COMMERCIAL/MULTI-FAMILY BACKFLOW PREVENTION INSTALLATION



NOTES:

1. ALL STAND ALONE FIRE PROTECTION SERVICES (F.P.S.) SHALL HAVE A 4" OR LARGER IRON BODY GATE VALVE AS DESCRIBED IN 2-2.06 IN THE CITY OF VANCOUVER ENGINEERING SERVICES GENERAL REQUIREMENTS AND DETAILS. VALVES SHALL BE LOCATED AT THE CONNECTION TO THE WATER MAIN. WATER METERS ARE NOT REQUIRED ON NON-SINGLE FAMILY RESIDENTIAL FIRE PROTECTION SERVICES.
2. FIRE PROTECTION SERVICES 2" AND SMALLER SHALL BE MUNICIPEX (PEX A) W/TRACER WIRE OR TYPE "K" COPPER. ALL F.P.S. SERVICES LARGER THAN 2" SHALL BE 4" OR LARGER EXTERNALLY ZINC COATED DUCTILE IRON PIPE.
3. ALL BACKFLOW ASSEMBLIES SHALL BE PER APPROVED PLAN.
4. EACH BACKFLOW ASSEMBLY SHALL BE PLACED IN A STANDARD CONCRETE METER BOX, PLASTIC IRRIGATION BOX OR CONCRETE VAULT WITH LID PER W-21, W-22, W-23, W-24 AND W-25 AS APPROPRIATE.
5. WITH THE EXCEPTION OF SINGLE FAMILY RESIDENCES, ALL BACKFLOW DEVICES MAY BE INSTALLED INSIDE THE BUILDING MECHANICAL ROOM WITH WRITTEN APPROVAL FROM THE CITY OF VANCOUVER WATER QUALITY GROUP
6. ALL FIRE PROTECTION SERVICES SHALL BE PRIVATELY OWNED AND MAINTAINED DOWNSTREAM OF THE GATE VALVE LOCATED AT THE PUBLIC MAIN.
7. ALL BACKFLOW ASSEMBLIES ARE PRIVATELY OWNED, TESTED AND MAINTAINED.
8. SINGLE FAMILY WATER METERS SHALL BE SIZED TO MEET THE REQUIRED FIRE FLOW AND HAVE AN APPROVED BACKFLOW ASSEMBLY UNLESS DESIGNED AS A FLOW THROUGH SYSTEM.
9. PER RCW CHAPTER 70.119A.210, THE CITY OF VANCOUVER SHALL NOT BE LIABLE FOR DAMAGES RESULTING FROM THE SHUTDOWN OF SINGLE FAMILY SERVICES DUE TO ROUTINE MAINTENANCE, NONPAYMENT; OR WATER SYSTEM EMERGENCIES.
10. ALL FIRE PROTECTION SERVICES, EXCEPT SINGLE FAMILY APPLICATIONS, SHALL BE TAPPED SEPARATELY FROM ALL DOMESTIC SERVICES AND FIRE HYDRANT LEADS.
11. ALL FIRE BACKFLOW PREVENTORS 3" AND LARGER SHALL BE A DETECTOR ASSEMBLY.
12. UNDERGROUND FIRE SPRINKLER SUPPLY MAINS SHALL BE INSTALLED ONLY BY CONTRACTORS IN COMPLIANCE WITH WAC 212-80 AND ENDORSED IN ACCORDANCE WITH VMC 16.04.095 UNDER SEPARATE PERMIT.
13. REQUESTS FOR EXCEPTIONS TO THESE REQUIREMENTS MAY BE SUBMITTED IN WRITING WITH THE PLAN VIEW TO COMMUNITY ECONOMIC DEVELOPMENT ENGINEERING (360) 487-7804. ALL RESPONSES SHALL BE MADE IN WRITING.

N.T.S.

REV NO.	DATE	BY	APPROVED
8	1/15	G.P.H.	T.W.C.
9	1/17	G.P.H.	T.W.C.
10	1/19	G.P.H.	T.W.C.
11	1/21	G.P.H.	T.W.C.
12	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

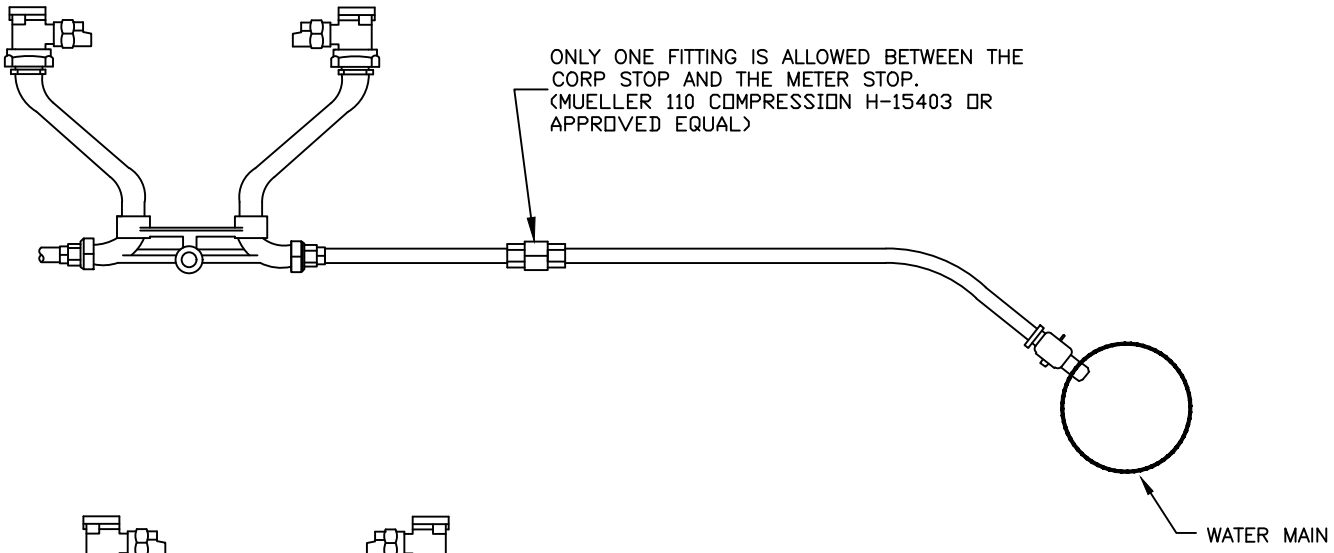
CITY OF Vancouver WASHINGTON

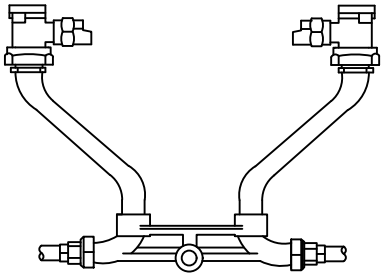
STANDARD FIRE PROTECTION BACKFLOW LOCATIONS

STANDARD PLAN NUMBER

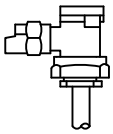
W-6

23_WATER_DETAILS





METER YOKE



ANGLE STOP

CURB STOP

NOTE:

1. REPLACE ALL SERVICES WHICH MEET ANY OF THE FOLLOWING CONDITIONS:
   A. METER BOX IS RELOCATED
   B. SUBSTANDARD EITHER BY MATERIALS OR LACK OF COVER
   C. THE YOKE MUST BE REPLACED WITH LIKE SIZED SERVICE.

2. ALL SERVICES MUST TERMINATE AT EITHER A NEW YOKE, CURB STOP OR ANGLE STOP. (MUELLER "110 COMPRESSION" OR APPROVED EQUAL)

3. FOR SERVICE TRANSFERS, ONLY ONE FITTING IS ALLOWED BETWEEN THE CORP STOP AND THE METER STOP. A METER ADAPTER REDUCING FROM A 1" SERVICE TO A SMALLER METER MAY BE ALLOWED IN ADDITION TO THE ONE FITTING.

4. NEW SERVICE PIPING SHALL BE 1" MINIMUM TYPE "K" COPPER OR MUNICIPEX, MATCHING EXISTING PIPING MATERIAL.

N.T.S.

REV NO.	DATE	BY	APPROVED
6	1/15	G.P.H.	T.W.C.
7	1/17	G.P.H.	T.W.C.
8	1/19	G.P.H.	T.W.C.
9	1/21	G.P.H.	T.W.C.
10	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

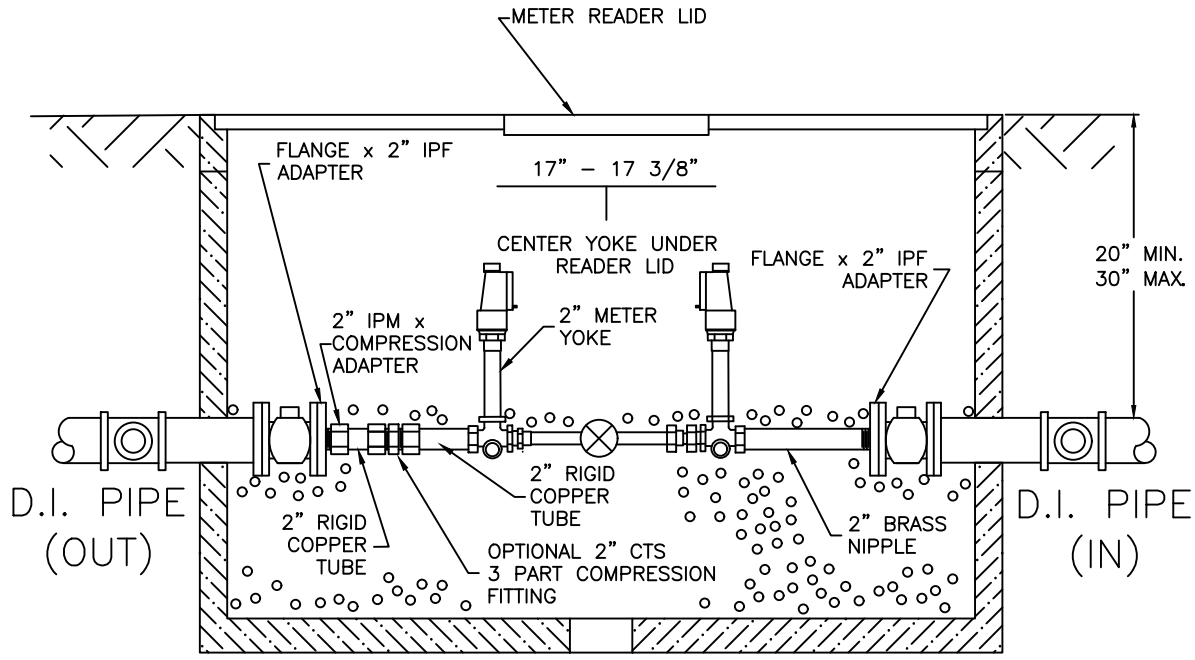
CITY OF Vancouver WASHINGTON

METER SERVICE TRANSFER & REPLACEMENT

STANDARD PLAN NUMBER

W-7

23_WATER_DETAILS



NOTES:

1. 2", 1–½" 1" AND ⅝" METERS SET IN COMPOUND METER VAULT SHALL BE SET IN A 2" METER YOKE ONLY.
2. FILL VAULT WITH ⅝" ROCK TO BOTTOM OF OPERATIONAL NUTS ON THE CONTROL VALVES.
3. CENTER THE 2" METER YOKE UNDER THE METER READER LID.
4. REFER TO W–2 FOR ADDITIONAL YOKE INFORMATION

N.T.S.

REV NO.	DATE	BY	APPROVED
7	1/15	G.P.H.	T.W.C.
8	1/17	G.P.H.	T.W.C.
9	1/19	G.P.H.	T.W.C.
10	1/21	G.P.H.	T.W.C.
11	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

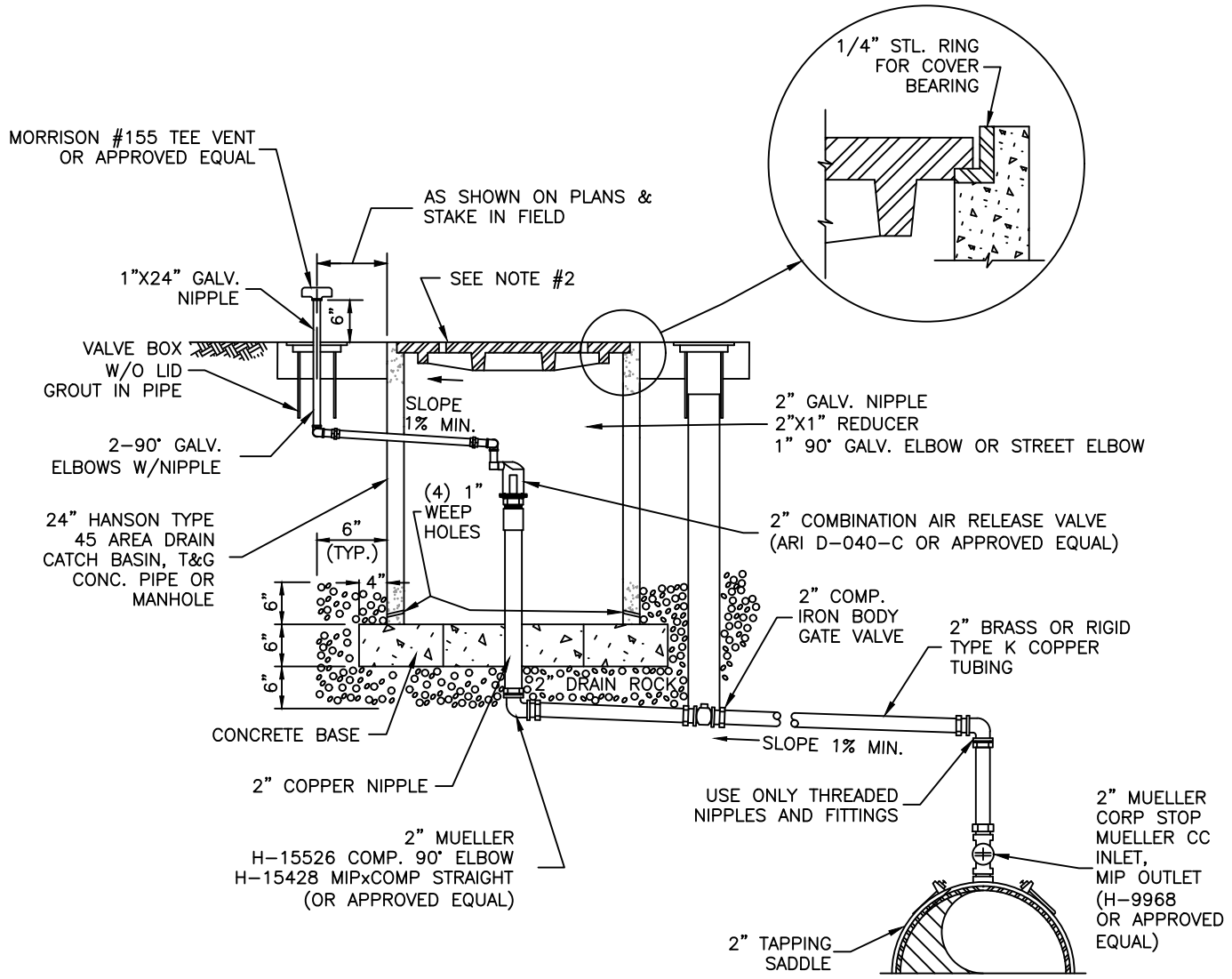
CITY OF Vancouver WASHINGTON

COMPOUND METER REDUCTION

STANDARD PLAN NUMBER

W-8

23_WATER_DETAILS



NOTE:

1. PLACE VENT AND AIR RELEASE UNIT ASSEMBLY OUTSIDE OF HARD SURFACED AREA IN R.O.W. OR 15' EASEMENT DEDICATED TO THE CITY OF VANCOUVER
2. MANHOLE COVER SHALL MEET SANITARY SEWER STANDARD DETAIL S-2.2 STANDARD LID OR APPROVED EQUAL.
3. ADD 4'x4'x4" CONCRETE PAD IF THE AIR RELEASE IS INSTALLED IN A "SOFTSCAPE" AREA.

N.T.S.

REV NO.	DATE	BY	APPROVED
7	1/15	G.P.H.	T.W.C.
8	1/17	G.P.H.	T.W.C.
9	1/19	G.P.H.	T.W.C.
10	1/21	G.P.H.	T.W.C.
11	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

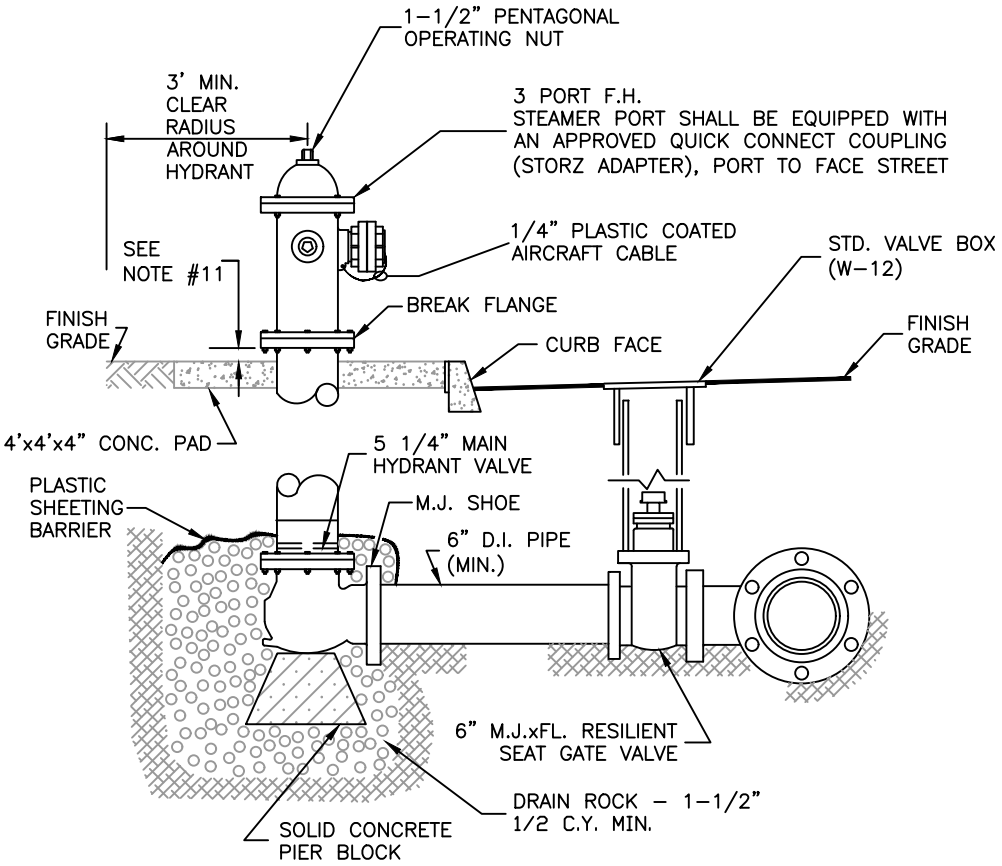
CITY OF Vancouver WASHINGTON

COMBINATION AIR RELEASE VALVE

STANDARD PLAN NUMBER

W-9

23_WATER_DETAILS



NOTES:

1. FIRE HYDRANT INSTALLATIONS SHALL BE MUELLER SUPER CENTURION, M&H 129, CLOW MEDALLION, EAST JORDON OR APPROVED EQUAL AND MUST BE APPROVED BY THE CITY INSPECTOR PRIOR TO BACKFILLING.
2. IN GENERAL, FIRE HYDRANT LOCATIONS SHALL BE AS SHOWN ON THE PLANS AND SHALL CONFORM TO THIS DETAIL. FIRE HYDRANTS SHALL NOT BE SET UNTIL LOCATION AND DEPTH ARE APPROVED BY THE CITY.
3. THE FIRE HYDRANT SHALL BE INSTALLED SO THAT IT IS PLUMB IN ALL DIRECTIONS.
4. THE FACE OF THE STORZ CAP GASKET SHALL BE LUBRICATED WITH FUCHS FM 387 GREASE OR AN APPROVED EQUAL.
5. NO DOMESTIC OR FIRE PROTECTION SERVICES SHALL BE TAPPED OFF OF THE FIRE HYDRANT PIPING.
6. A CONCRETE PAD NO LESS THAN 4'x4'x4", SHALL BE CENTERED AROUND THE FIRE HYDRANT.
7. THE CONCRETE PAD SHALL BE PLACED FLUSH IN ELEVATION AND ADJOINED W/BACK OF CURB (IF THE SIDEWALK IS DETACHED OR DOESN'T EXIST) OR BACK OF SIDEWALK (IF SIDEWALK IS ATTACHED). EXPANSION JOINT MATERIAL SHALL BE PLACED BETWEEN THE CONCRETE PAD AND CURB/SIDEWALK.
8. CONCRETE PAD SHALL BE FINISHED TO APWA SIDEWALK STANDARDS.
9. ALL JOINTS SHALL BE RESTRAINED UTILIZING MECHANICAL RESTRAINT SYSTEMS. CONCRETE THRUST BLOCKS SHALL NOT BE ALLOWED.
10. FIRE HYDRANTS SHALL BE FACTORY PAINTED OR QUALITY FIELD PAINTED WITH RODDA SILICONE ALKYD ENAMEL HEAVY DUTY GLOSS SAFETY YELLOW 7–32616–1 TO NEW CONDITION.
11. FIRE HYDRANT MAINS SHALL BE 8" MIN., A 6" MAIN CAN BE USED FOR A DEAD–END RUN OF LESS THAN 50' TO A HYDRANT SUBJECT TO ADEQUATE FIRE FLOW.
12. DESIGN SEPARATION SHALL BE 3 INCHES, WITH AN AS–BUILT SEPARATION OF 2–4 INCHES.
13. BOLLARDS SHALL NOT BE INSTALLED AS FIRE HYDRANT PROTECTION.

N.T.S.

REV NO.	DATE	BY	APPROVED
5	1/17	G.P.H.	T.W.C.
6	1/19	G.P.H.	T.W.C.
7	1/21	G.P.H.	T.W.C.
8	6/21	G.P.H.	T.W.C.
9	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

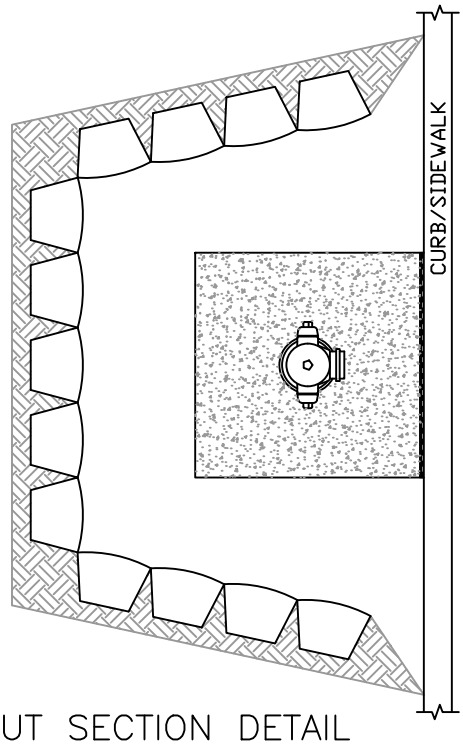
CITY OF Vancouver WASHINGTON

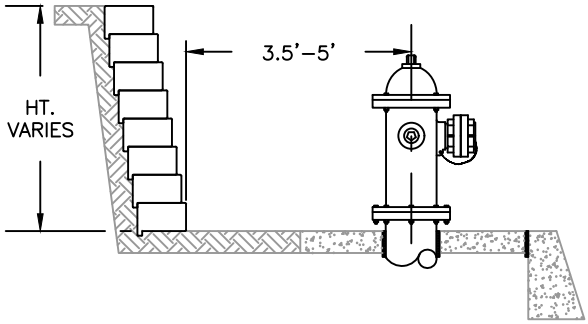
STANDARD FIRE HYDRANT ASSEMBLY

STANDARD PLAN NUMBER

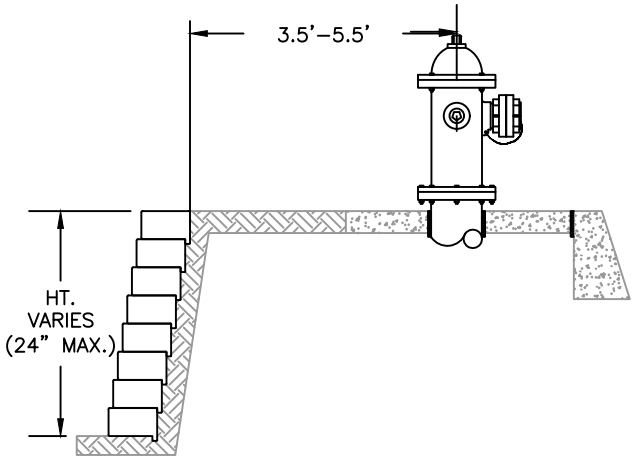
W-10

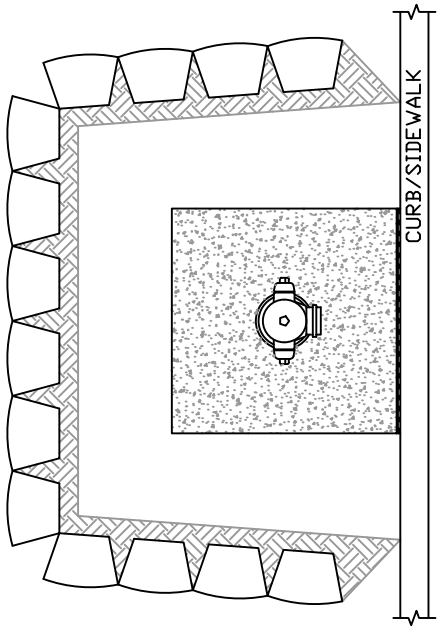
23_WATER_DETAILS





CUT SECTION DETAIL





FILL SECTION DETAIL

NOTES:

1. CONSULT I.B.C. FOR RETAINING WALL CONSTRUCTION REQUIREMENTS.
2. THE AREA WITHIN THE RETAINING WALL BOUNDARIES FROM THE CURB/SIDEWALK TO THE REAR RETAINING WALL SHALL HAVE A MAXIMUM SLOPE OF 1% IN ANY DIRECTION.
3. THE 4'x4' CONCRETE PAD SHALL HAVE A MAXIMUM SLOPE OF 1%.
4. RETAINING WALL SHALL MAINTAIN A MINIMUM RADIUS OF 3.5' AROUND THE HYDRANT

N.T.S.

REV NO.	DATE	BY	APPROVED
7	1/15	G.P.H.	T.W.C.
8	1/17	G.P.H.	T.W.C.
9	1/19	G.P.H.	T.W.C.
10	1/21	G.P.H.	T.W.C.
11	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

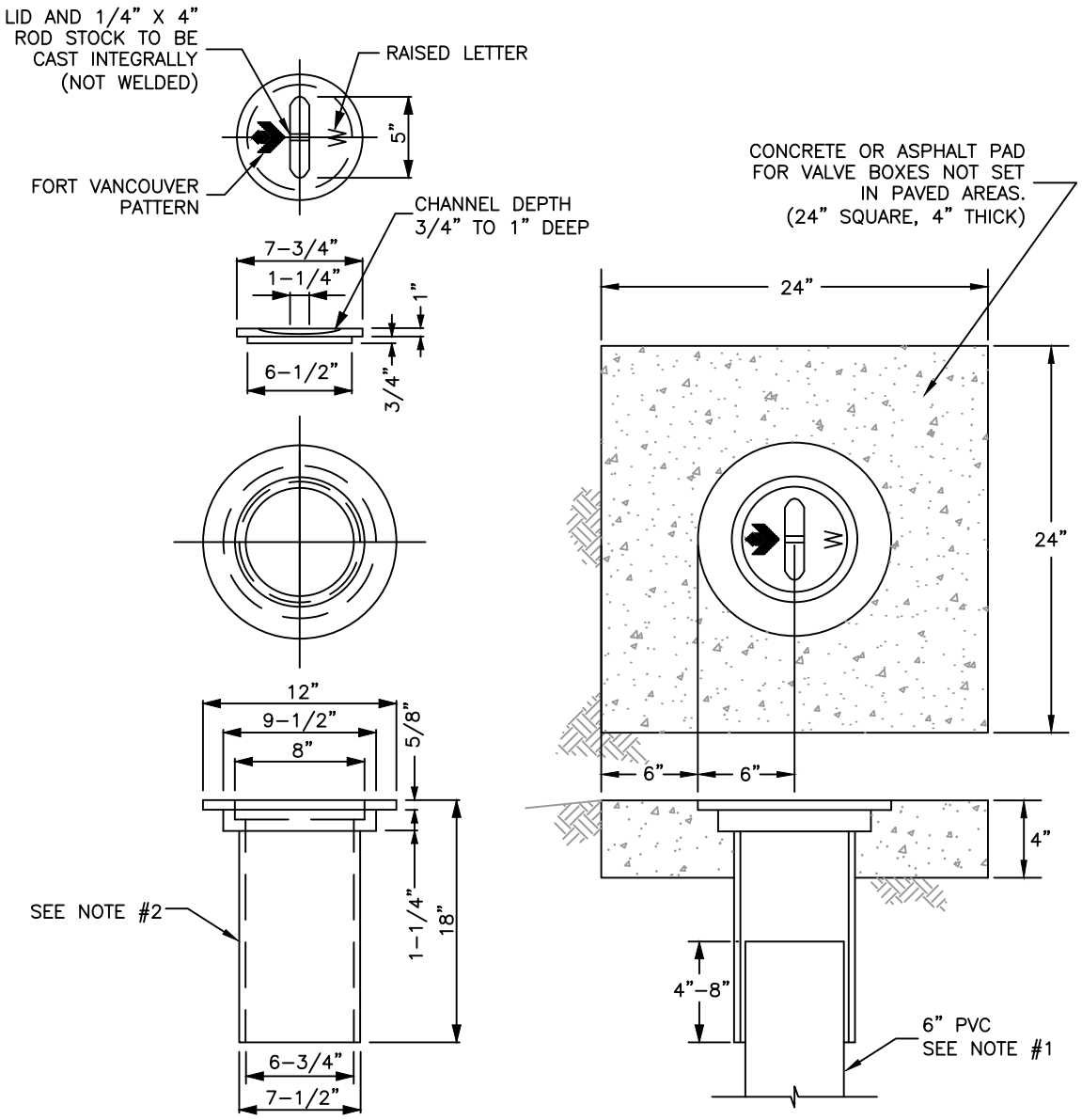
CITY OF Vancouver WASHINGTON

HYDRANT RETAINING WALL DETAIL

STANDARD PLAN NUMBER

W-11

23_WATER_DETAILS



NOTES:

1. EXTENSIONS SHALL BE 6" ASTM D 3034 SDR 35 PVC PIPE (ONE PIECE)
2. VALVE BOX SHALL BE U.S. FILTER/PACIFIC WATER WORKS NO. 910 OR EQUAL.
3. FOR ARTERIAL TRAFFIC APPLICATIONS, USE EAST JORDON #3639A2 SOLID EXTRA DEEP VALVE BOX AND LID
4. THE LID SHALL INCLUDE THE FORT VANCOUVER LOGO AND "W" IN THE DESIGN.
5. IF THE ORIGIN IS OTHER THAN USA, THE COUNTRY OF ORIGIN SHALL BE CAST ON THE UNDERSIDE OF THE LID
6. THERE SHALL BE 1/2" CLEARANCE UNDER THE PIN CAST INTO THE LID.
7. THE OPERATOR NUT SHALL HAVE A DEPTH FROM 18"-36" FROM FINISH GRADE TO THE OPERATOR NUT.

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11	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

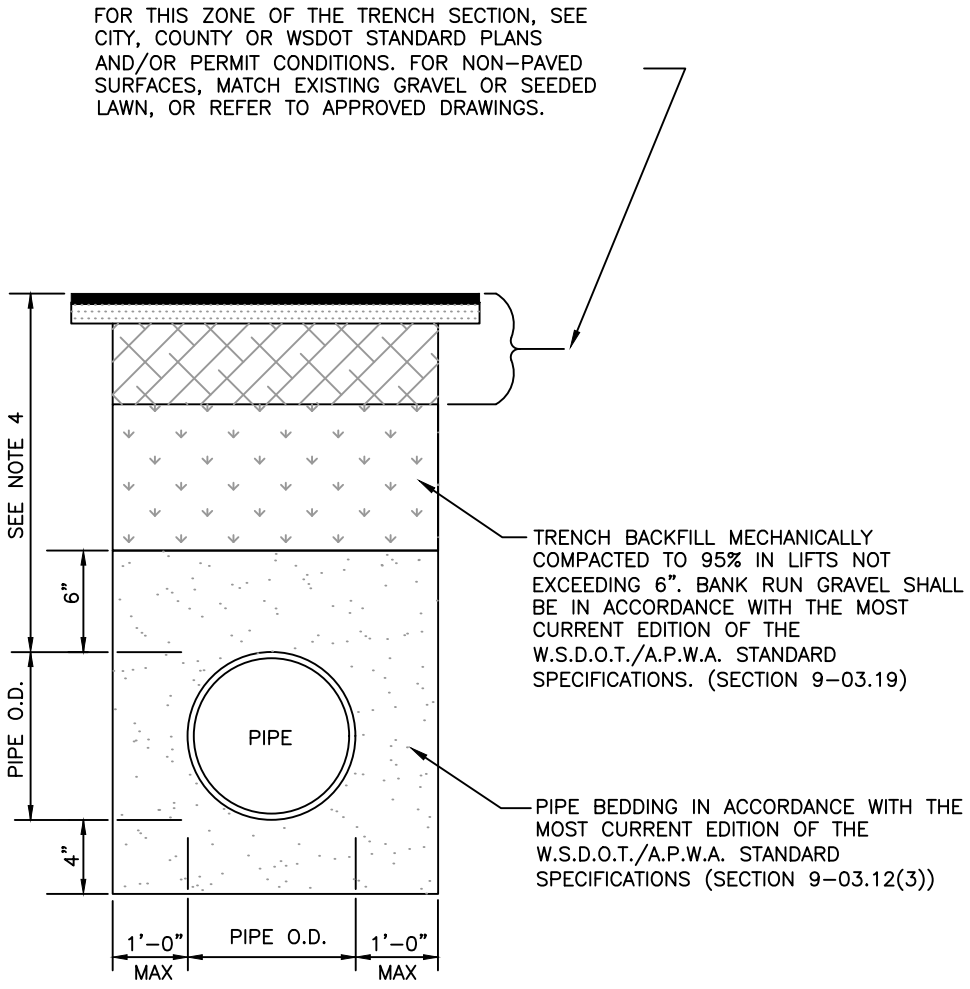
CITY OF Vancouver WASHINGTON

STANDARD VALVE BOX & COVER

STANDARD PLAN NUMBER

W-12

23_WATER_DETAILS



NOTE:

1. CLEAN NATIVE MATERIAL MAY BE USED AS PIPE BEDDING AND TRENCH BACKFILL AS APPROVED BY CITY OF VANCOUVER CONSTRUCTION INSPECTOR PER WSDOT SPECIFICATION (SECTION 9-03.12(3)).
2. CONTROL DENSITY FILL (CDF) MAY BE REQUIRED BASED ON THE LOCAL JURISDICTION'S STANDARDS.
3. OVERSIZE MATERIAL (4"+) SHALL NOT BE ALLOWED IN TRENCH.
4. PIPE DEPTH OF BURY MEASURED FROM TOP OF PIPE TO FINISH GRADE:
   36" FOR ALL PIPE 10" AND SMALLER
   48" FOR ALL PIPE DIAMETERS 12" AND LARGER

N.T.S.

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7	1/15	G.P.H.	T.W.C.
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11	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

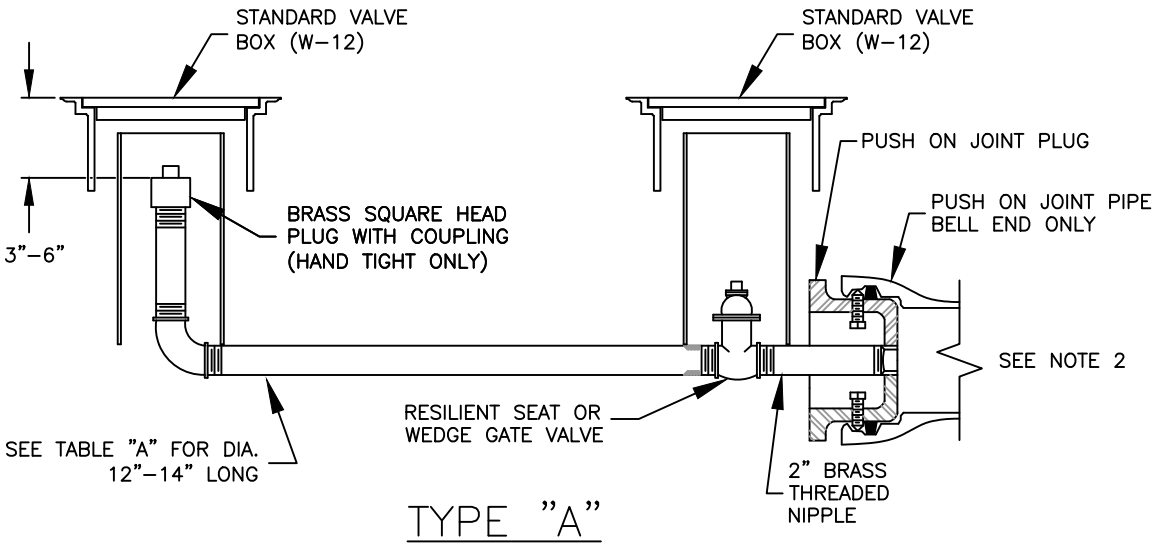
CITY OF Vancouver WASHINGTON

WATER PIPE TRENCH BEDDING & BACKFILL

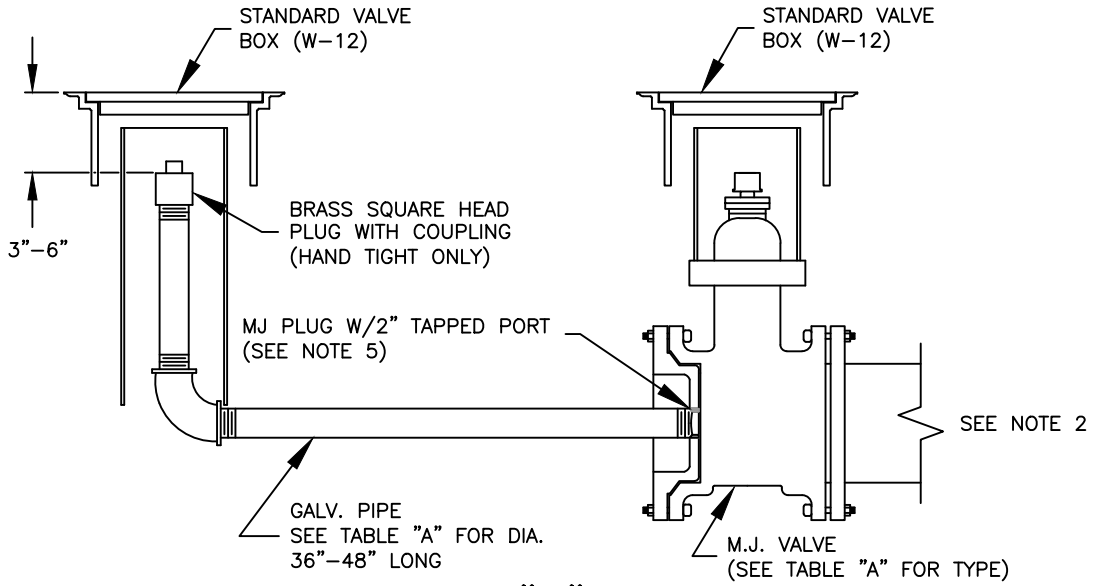
STANDARD PLAN NUMBER

W-13

23_WATER_DETAILS



TYPE "A"



TYPE "B"

TABLE "A"

MAIN DIAMETER	4"-6"	8"	10"	12"	16"-20"	>20"
VALVE TYPE	GATE VALVE			BUTTERFLY VALVE		
BLOWOFF DIAMETER	2"	2.5"	3"	4"	6"	*8"

TABLE "B"

MAIN DIAMETER	4"	6"	8"	10"	12"	16"	18"	24"
RESTRAINT LENGTH	29'	41'	55'	66'	70'	91'	101'	132'

* ADDITIONAL AND/OR ALTERNATIVE MEASURES MAY BE REQUIRED TO MITIGATE WATER QUANTITIES

NOTES:

1. SIZE OF BLOWOFF DETERMINED BY SIZE OF MAIN
2. ALL JOINTS SHALL BE RESTRAINED UPSTREAM OF VALVE. SEE TABLE 'B' FOR MINIMUM RESTRAINT DISTANCES.
3. A SPOOL SHALL BE REQUIRED ON BUTTERFLY VALVE INSTALLATIONS DOWNSTREAM OF THE BUTTERFLY VALVE.
4. CIVIL PLANS SHALL CLEARLY INDICATE WHICH TYPE OF BLOWOFF IS TO BE INSTALLED AT EACH LOCATION.
5. SEE TABLE "A" FOR BLOWOFFS LARGER THAN 2". REPLACE PLUG WITH APPROPRIATELY SIZED REDUCER.
6. BLOWOFF SHALL BE CENTERED WITHIN THE VALVE CAN.

N.T.S.

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8	1/15	G.P.H.	T.W.C.
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10	1/19	G.P.H.	T.W.C.
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12	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

CITY OF Vancouver WASHINGTON

STANDARD BLOWOFF ASSEMBLIES

STANDARD PLAN NUMBER

W-14

23_WATER_DETAILS

TABLE "A"

MAIN DIAMETER	VALVE TYPE	BLOW-OFF DIAMETER
12"-20"	BUTTERFLY	4" MINIMUM
>20"	BUTTERFLY	6" MINIMUM

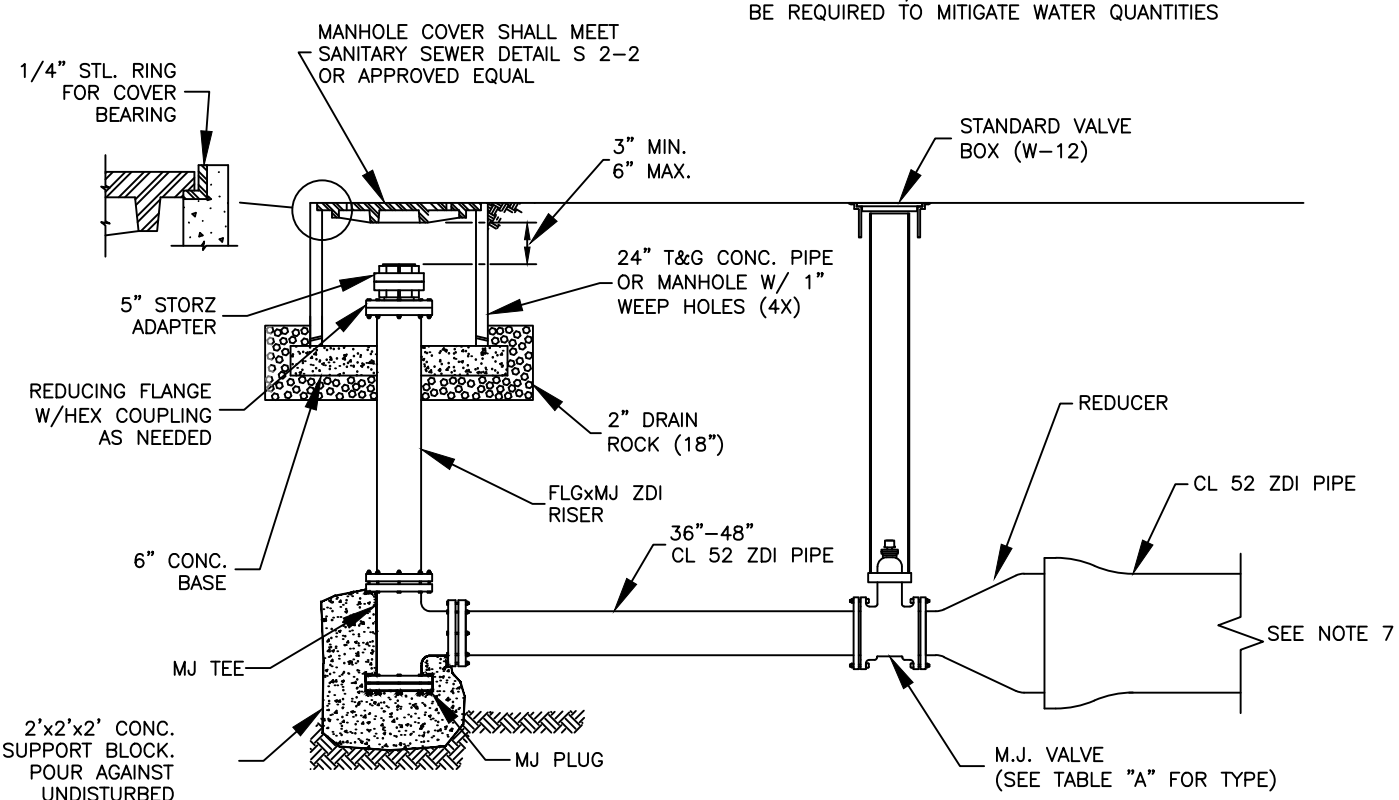
TABLE "B"

MAIN DIAMETER	12"	16"	18"	24"
RESTRAINT LENGTH	70'	91'	101'	132'

TABLE "C"

MAIN DIAMETER	12"	16"-20"	>20"
VALVE TYPE	BUTTERFLY VALVE		
BLOWOFF DIAMETER	4"	6"	*8"

* ADDITIONAL AND/OR ALTERNATIVE MEASURES MAY BE REQUIRED TO MITIGATE WATER QUANTITIES



4"/6" BLOWOFF ASS'Y

NOTES:

1. BLOWOFFS SHALL BE INSTALLED AT THE END OF THE MAIN.
2. SIZE OF BLOWOFF DETERMINED BY SIZE OF MAIN PER TABLE "A"
3. IF THE BLOWOFF IS TO BE UTILIZED FOR CONSTRUCTION PURPOSES, THE BLOWOFF SHALL BE SIZED PER TABLE "C".
4. (3/4-) GRAVEL SHALL BE USED AS BEDDING AND BACKFILL.
5. A 2'x2'x4" CONCRETE PAD AROUND VALVE CAN SHALL BE INSTALLED IN UNIMPROVED AREAS.
6. BLOWOFF SHALL BE CENTERED WITHIN THE MANHOLE.
7. ALL JOINTS SHALL BE RESTRAINED BOTH DOWNSTREAM AND UPSTREAM OF VALVE. SEE TABLE 'B' FOR MINIMUM RESTRAINT DISTANCES.

N.T.S.

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9	1/19	G.P.H.	T.W.C.
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11	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

CITY OF Vancouver WASHINGTON

OVERSIZE BLOWOFF ASSEMBLY

STANDARD PLAN NUMBER

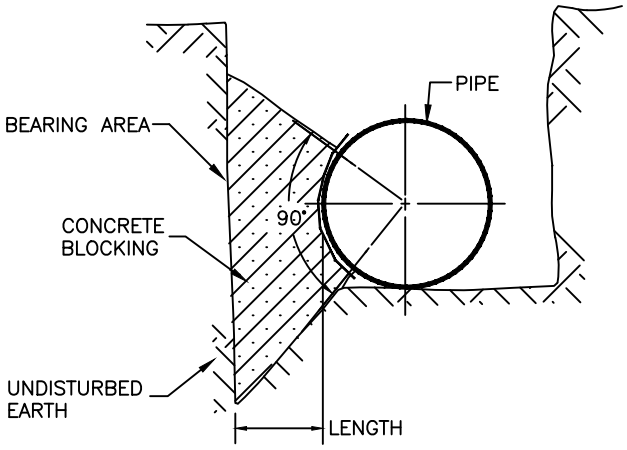
W-15

23_WATER_DETAILS

SOIL BEARING = 2000 LB/S.F.				
PIPE SIZE	HORZ. BENDS	MIN. BEARING AREA S.F.	MIN. VOL. OF BLOCKING C.F.	MIN. LENGTH OF BLOCKING
4"	TEE	2.7	0.9	1.00
	90°	3.8	1.4	1.00
	45°	2.1	0.5	0.75
	22–1/2°	1.1	0.2	0.50
	11–1/4°	–	–	–
6"	TEE	5.6	2.4	1.25
	90°	7.9	4.0	1.50
	45°	4.3	1.6	1.00
	22–1/2°	2.2	0.6	0.75
	11–1/4°	1.1	0.2	0.50
8"	TEE	9.6	5.6	1.75
	90°	13.6	9.1	2.00
	45°	7.4	3.7	1.50
	22–1/2°	3.8	1.3	1.00
	11–1/4°	1.9	0.5	0.50
10"	TEE	14.5	9.9	2.00
	90°	20.5	17.1	2.50
	45°	11.1	6.6	1.75
	22–1/2°	5.7	2.4	1.25
	11–1/4°	2.8	0.9	0.75
12"	TEE	20.5	17.1	2.50
	90°	29.0	29.0	3.00
	45°	15.7	11.2	2.00
	22–1/2°	8.0	4.1	1.25
	11–1/4°	4.0	1.5	0.75
16"	TEE	35.7	32.7	2.75
	90°	50.4	58.8	3.50
	45°	27.3	20.5	2.25
	22–1/2°	13.9	7.0	1.50
	11–1/4°	7.0	2.4	1.00
18"	TEE	55.0	55.0	3.00
	90°	77.7	97.2	3.75
	45°	42.1	38.6	2.75
	22–1/2°	21.4	12.5	1.75
	11–1/4°	10.8	3.6	1.00
24"	TEE	78.4	104.5	4.00
	90°	110.9	184.8	5.00
	45°	60.0	75.0	3.75
	22–1/2°	30.6	22.9	2.25
	11–1/4°	15.4	7.7	1.25

NOTES:

1. ALL BLOCKING SHALL BE POURED AGAINST FIRM UNDISTURBED SOIL.
2. ALL CONCRETE BLOCKING SHALL BE POURED IN PLACE WITHOUT DIRECT CONTACT TO PIPE, FITTINGS OR FLANGES. 15 LB. ASPHALT–IMPREGNATED FELT, OR EQUIVALENT AS APPROVED BY THE INSPECTOR, SHALL BE PLACED BETWEEN THE CONCRETE AND PIPE, FITTINGS OR FLANGES.
3. LAYOUT TO BE APPROVED BY THE INSPECTOR PRIOR TO AND AFTER CONCRETE POUR.
4. CONCRETE FOR ALL BLOCKING SHALL HAVE A 28–DAY MINIMUM COMPRESSIVE STRENGTH OF 2,300 P.S.I.
5. THIS CHART IS NOT APPLICABLE TO VERTICAL BENDS. LOCATION SPECIFIC DESIGN IS REQUIRED FOR SUCH INSTALLATIONS.
6. WHERE THE TRENCH SOIL HAS A BEARING PRESSURE LESS THAN 2000 POUNDS PER SQUARE FOOT, LOCATION SPECIFIC DESIGN IS REQUIRED.
7. THRUST BLOCKS SHALL ONLY BE USED AT CONNECTIONS TO EXISTING WATER MAIN AND AT ALL "LIVE TAP" CONNECTIONS



N.T.S.

REV NO.	DATE	BY	APPROVED
7	1/15	G.P.H.	T.W.C.
8	1/17	G.P.H.	T.W.C.
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10	1/21	G.P.H.	T.W.C.
11	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

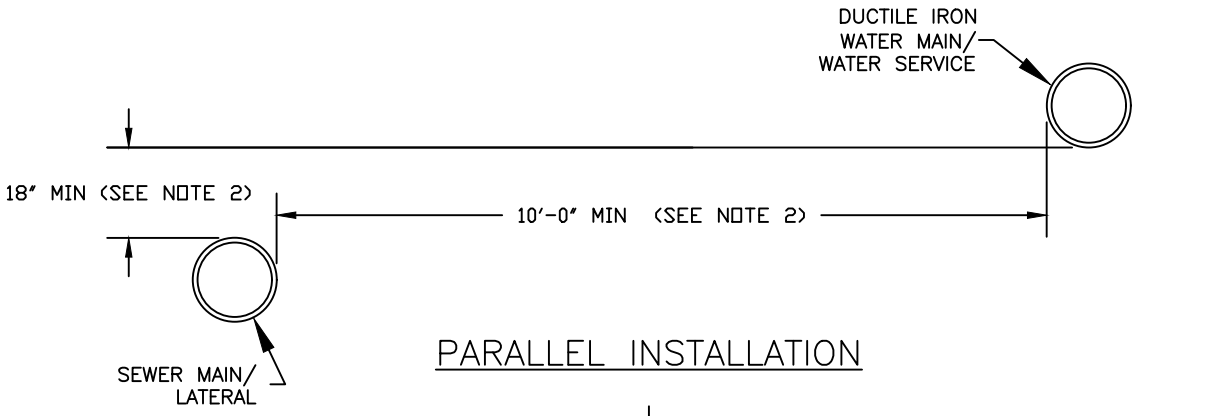
CITY OF Vancouver WASHINGTON

STANDARD THRUST BLOCK

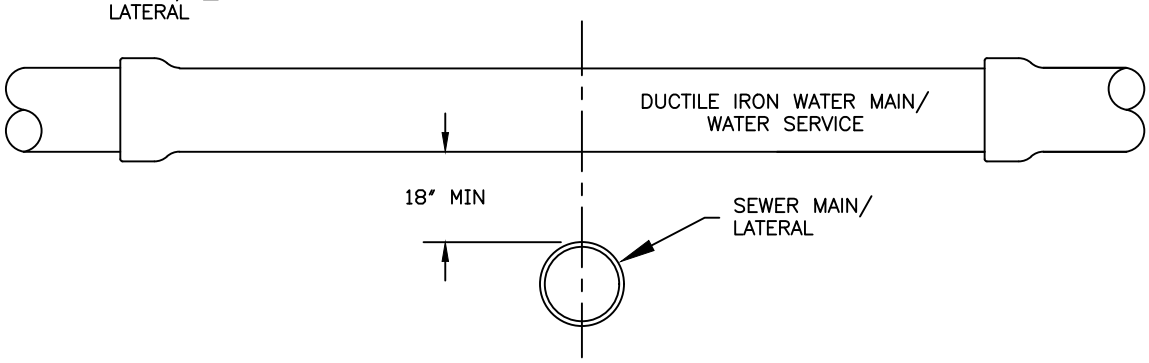
STANDARD PLAN NUMBER

W-16

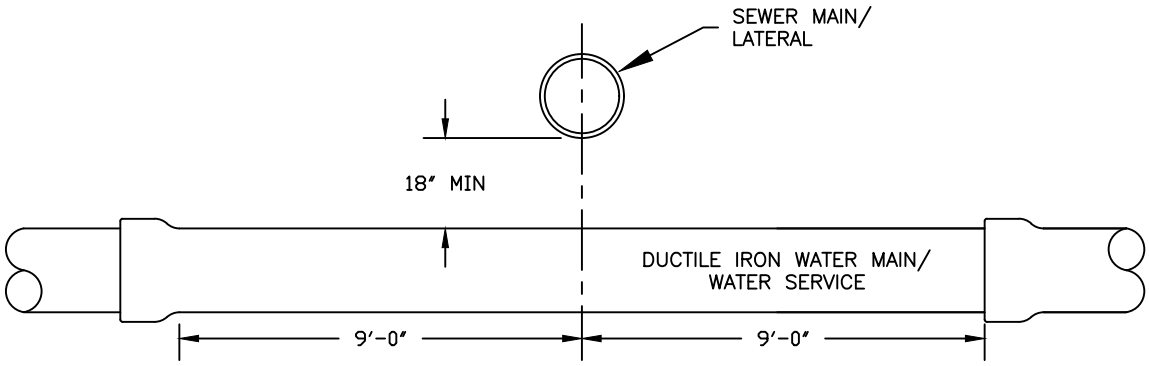
23_WATER_DETAILS



PARALLEL INSTALLATION



CROSSING WATER OVER SEWER



CROSSING WATER UNDER SEWER

NOTES:

1. EXCEPTIONS SHALL BE APPROVED BY THE CITY OF VANCOUVER IN WRITING.
2. WHERE MINIMUM CLEARANCES CANNOT BE MET, THE SEWER MAIN SHALL BE PLACED IN SEPARATE TRENCHES AND CONSTRUCTED OF MATERIALS EQUIVALENT TO THE CITY OF VANCOUVER WATER MAIN STANDARDS, INCLUDING PRESSURE TESTING. ADEQUATE RESTRAINT SHALL BE PROVIDED TO ALLOW TESTING TO OCCUR.
3. ALL SEWER CROSSINGS OVER OR UNDER WATER MAINS SHALL MAXIMIZE THE JOINT SEPARATION BY USING THE LONGEST STANDARD LENGTH PIPE AVAILABLE FROM THE MANUFACTURER FOR BOTH THE WATER AND SEWER MAINS. BOTH PIPES SHALL BE CENTERED AT THE POINT OF CROSSING.
4. ALL SEWER CROSSING OVER WATER MAINS SHALL BE CONSTRUCTED OF MATERIALS EQUIVALENT TO THE CITY OF VANCOUVER WATER MAIN STANDARDS, INCLUDING PRESSURE TESTING.
5. SPACING REQUIREMENTS SHALL ALSO APPLY TO SEWER LATERALS AND WATER SERVICES.

N.T.S.

REV NO.	DATE	BY	APPROVED
6	1/15	G.P.H.	T.W.C.
7	1/17	G.P.H.	T.W.C.
8	1/19	G.P.H.	T.W.C.
9	1/21	G.P.H.	T.W.C.
10	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

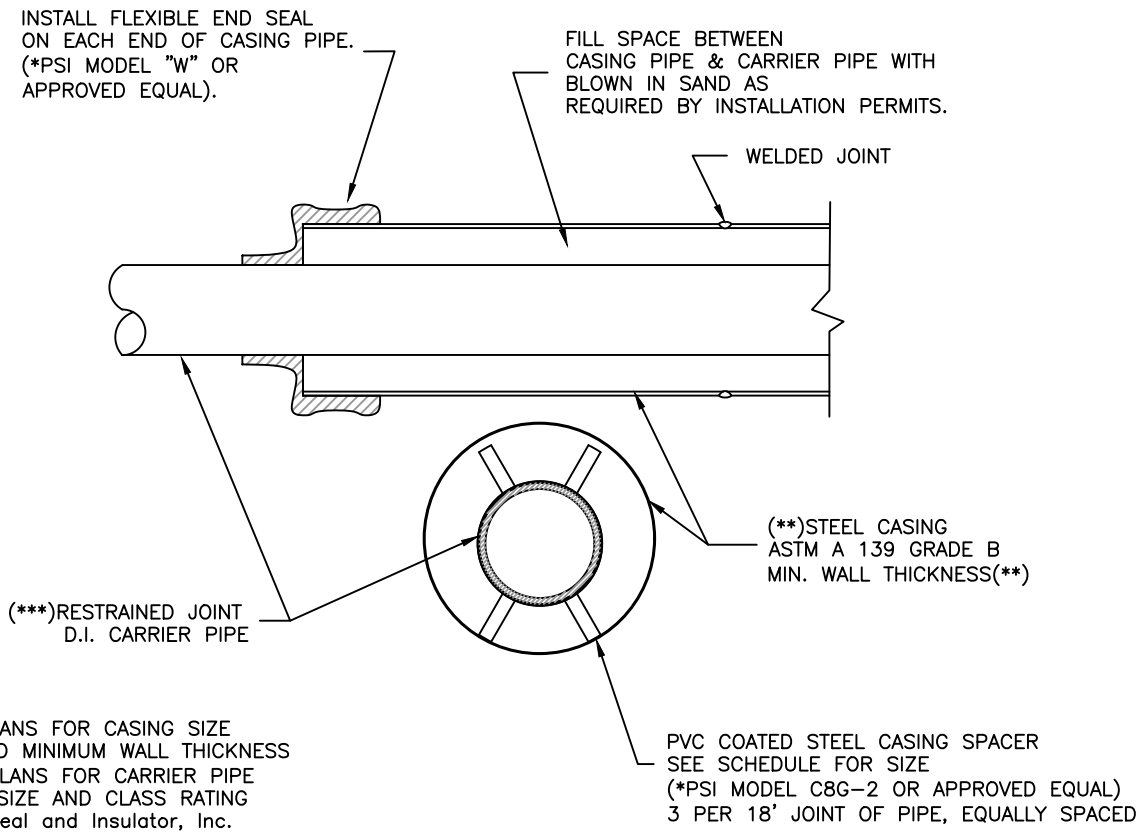
CITY OF Vancouver WASHINGTON

WATER & SEWER SPACING

STANDARD PLAN NUMBER

W-17

23_WATER_DETAILS



CASING SIZING REQUIREMENTS

CARRIER PIPE	MINIMUM CASING REQUIREMENTS	WALL THICKNESS
4"	16" A36 STEEL	3/8"
6"	16" A36 STEEL	3/8"
8"	24" A36 STEEL	3/8"
10"	24" A36 STEEL	3/8"
12"	24" A36 STEEL	3/8"
16"	36" A36 STEEL	5/8"
24"	48" A36 STEEL	5/8"

1. CASING TO BE EXTENDED 5' BEYOND ANY CURBS, WALLS, STRUCTURES OR FOOTINGS
2. PUBLIC AND PRIVATE MAINS SHALL BE PLACED IN SEPARATE CASINGS.
3. FOR CASINGS UNDER RAILROAD TRACKS, WRITTEN PERMISSION FROM THE OWNER OF THE RAILROAD TRACKS IS REQUIRED PRIOR TO OBTAINING CITY OF VANCOUVER PERMITS TO PROCEED.
4. NO OTHER UTILITIES SHALL BE ALLOWED IN CITY OF VANCOUVER CASINGS.

N.T.S.

REV NO.	DATE	BY	APPROVED
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9	1/19	G.P.H.	T.W.C.
10	1/21	G.P.H.	T.W.C.
11	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

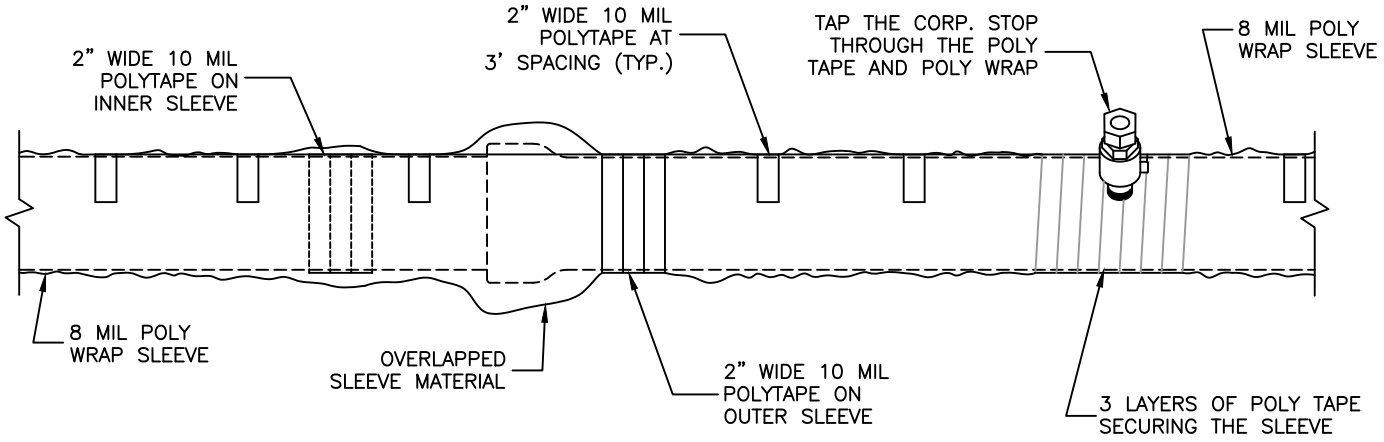
CITY OF Vancouver WASHINGTON

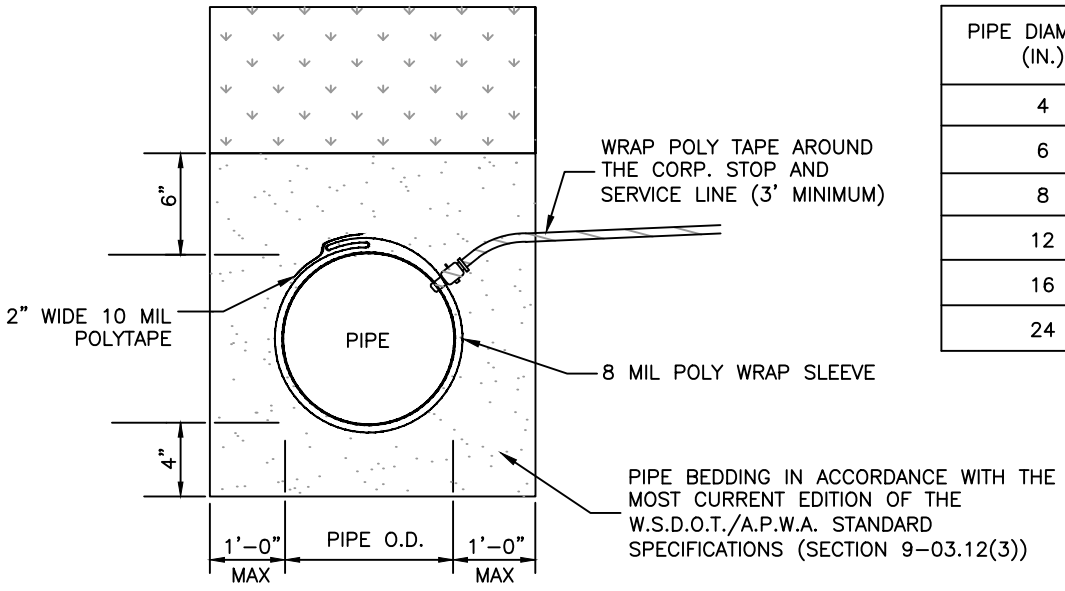
PIPE & CASING DETAIL

STANDARD PLAN NUMBER

W-18

23_WATER_DETAILS





PIPE DIAMETER (IN.)	POLYWRAP FLAT TUBE WIDTH (IN.)
4	16
6	20
8	24
12	30
16	37
24	53

NOTE:

1. ALL POLYWRAPPED MAIN SHALL CONFORM TO THE REQUIREMENTS OF AWWA C105.
2. ALL VALVES, FITTINGS, JOINTS, BOLTS SHALL BE WRAPPED WITH 8 MIL POLYWRAP AND SEALED WITH 2" POLY TAPE.
3. THE INNER POLY SLEEVE SHALL EXTEND 1' PAST THE BELL OR FITTING AND BE TAPED TO THE PIPE.
4. THE OUTER SLEEVE SHALL OVERLAP THE INNER SLEEVE BY 2'
5. EXCESS POLYWRAP TO BE FOLDED ON THE TOP OF THE PIPE AND SECURED WITH POLY TAPE AT 3' SPACING
6. APPLY POLY TAPE COMPLETELY AROUND THE PIPE FOR A WIDTH TO PROTECT THE POLY WRAP FROM THE TAPPING MACHINE
7. SEE CHART FOR MINIMUM WRAP SIZING

N.T.S.

REV NO.	DATE	BY	APPROVED
1	1/15	G.P.H.	T.W.C.
2	1/17	G.P.H.	T.W.C.
3	1/19	G.P.H.	T.W.C.
4	1/21	G.P.H.	T.W.C.
5	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

CITY OF Vancouver WASHINGTON

STANDARD POLYETHYLENE PIPE WRAP

STANDARD PLAN NUMBER

W-19

23_WATER_DETAILS

RESERVED FOR
FUTURE DETAILS

N.T.S.

REV NO.	DATE	BY	APPROVED

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

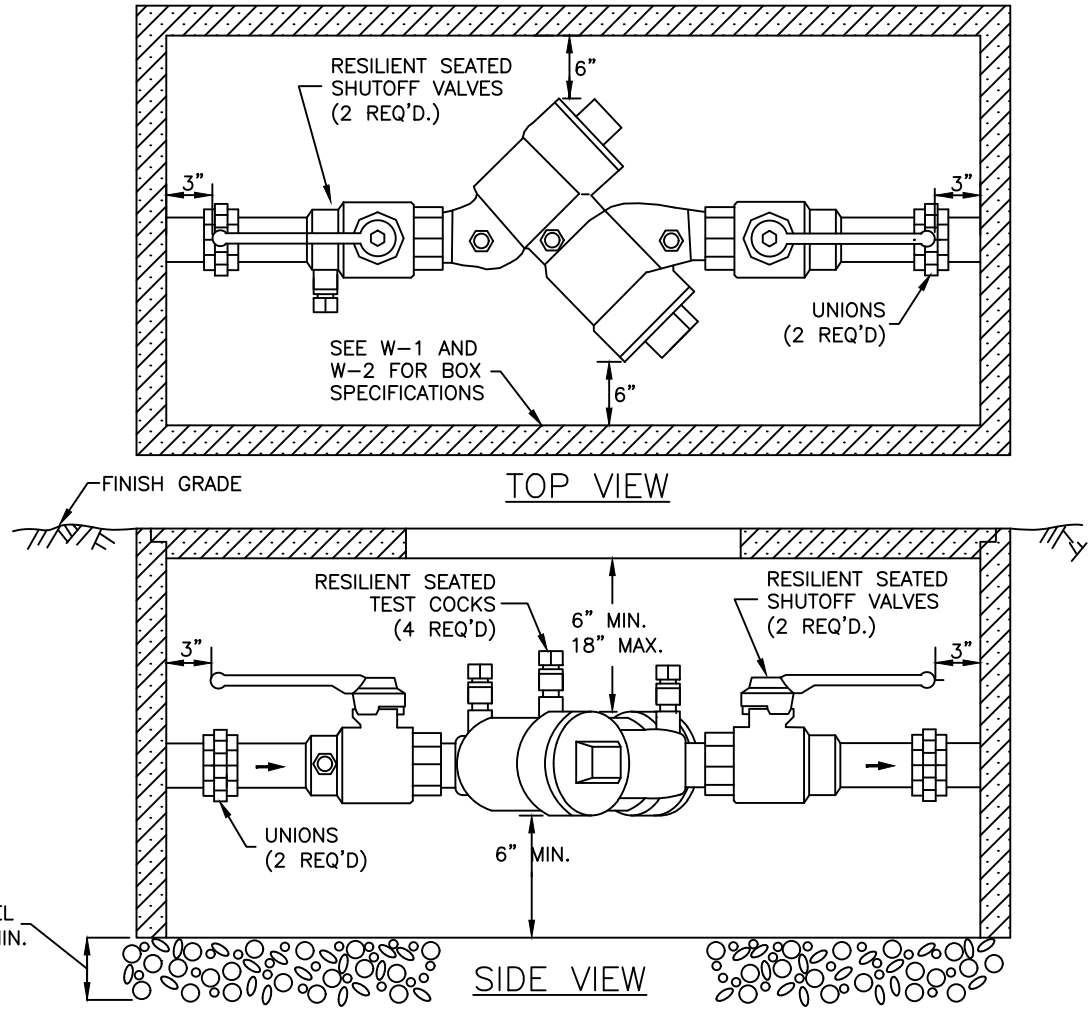
CITY OF Vancouver WASHINGTON

BLANK SHEET

STANDARD PLAN NUMBER

W-20

23_WATER_DETAILS



NOTES:

1. A WASHINGTON STATE APPROVED DOUBLE CHECK BACKFLOW ASSEMBLY (DCVA) SHALL ONLY BE INSTALLED IN THE ORIENTATION (VERTICAL OR HORIZONTAL) FOR WHICH THEY ARE APPROVED. DCVA MAY BE INSTALLED ABOVE OR BELOW GROUND PROVIDED ALL CLEARANCES ARE MET.
2. ALL BACKFLOW PREVENTERS MUST BE LEAD FREE AND PLACED AS CLOSE TO THE PROPERTY LINE AND/OR BACKSIDE OF THE METER AS POSSIBLE ASSEMBLY. MUST BE ACCESSIBLE.
3. A PLUMBING PERMIT IS REQUIRED–CONTACT THE APPROPRIATE JURISDICTION'S PERMITS COUNTER
4. SINGLE FAMILY HOUSES PROTECTED BY FIRE SPRINKLER SYSTEMS SHALL HAVE APPROVED BACKFLOW ASSEMBLIES UNLESS DESIGNED AS A FLOW THROUGH SYSTEM.
5. TEST COCKS TO FACE UPWARDS FROM ASSEMBLY.
6. THE WATER LINE SHALL BE DISINFECTED, THOROUGHLY FLUSHED AND PRESSURE TESTED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY. THE ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.
7. HEAT AND/OR INSULATION SHALL BE PROVIDED TO PREVENT FREEZING.
8. ALL INSTALLATIONS SHALL HAVE 2 UNIONS.
9. ASSEMBLY MUST BE TESTED WITHIN 30 DAYS AFTER INSTALLATION, RELOCATION OR REPAIR, THEN ANNUALLY BY A WA. STATE CERTIFIED BACKFLOW TESTER. RESULTS SHALL BE SENT TO THE CITY WATER QUALITY GROUP.

N.T.S.

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7	1/15	G.P.H.	T.W.C.
8	1/17	G.P.H.	T.W.C.
9	1/19	G.P.H.	T.W.C.
10	1/21	G.P.H.	T.W.C.
11	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

CITY OF Vancouver WASHINGTON

STANDARD DOUBLE CHECK VALVE ASSEMBLY 2" & SMALLER

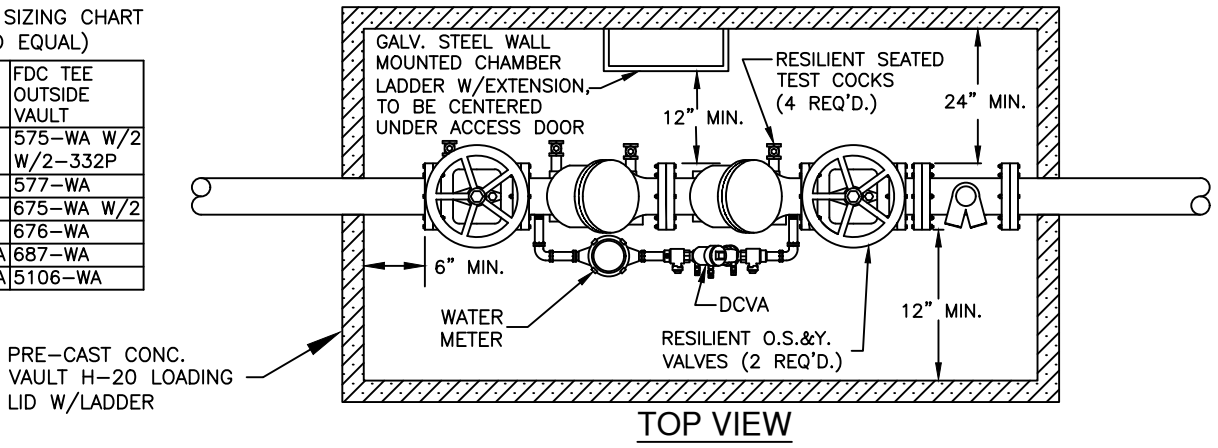
STANDARD PLAN NUMBER

W-21

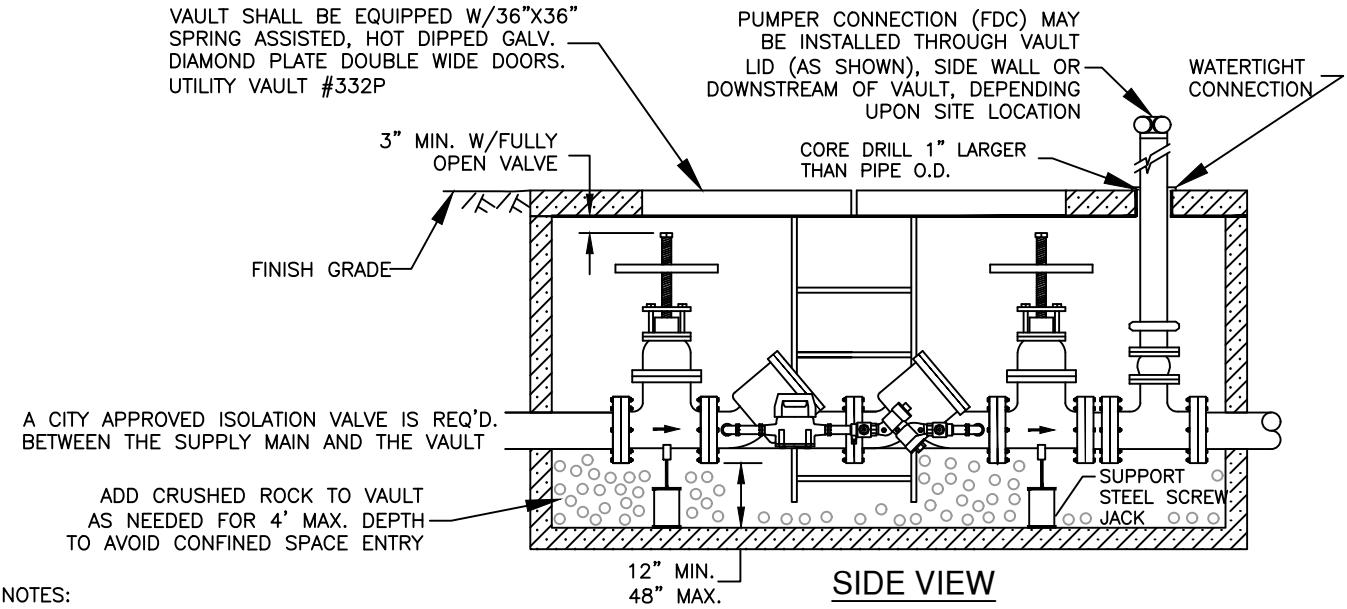
23_WATER_DETAILS

UTILITY VAULT SIZING CHART
(OR APPROVED EQUAL)

PIPE DEPTH UP TO	DCVA SIZE	FDC TEE INSIDE VAULT	FDC TEE OUTSIDE VAULT
4'	4"	675-WA	575-WA W/2 W/2-332P
6'	4"	676-WA	577-WA
4'	6"	687-WA	675-WA W/2
6'	6"		676-WA
6'	8"	5106-WA	687-WA
6'	10"	5106-WA	5106-WA



TOP VIEW



SIDE VIEW

NOTES:

1. A WASHINGTON STATE APPROVED DOUBLE CHECK BACKFLOW ASSEMBLY (DCVA/DCDA) SHALL ONLY BE INSTALLED IN THE ORIENTATION (VERTICAL OR HORIZONTAL) FOR WHICH THEY ARE APPROVED. DCVA/DCDA MAY BE INSTALLED ABOVE OR BELOW GROUND PROVIDED ALL CLEARANCES ARE MET.
2. ALL BACKFLOW PREVENTERS MUST BE LEAD FREE AND PLACED AS CLOSE TO THE PROPERTY LINE AND/OR BACKSIDE OF THE METER AS POSSIBLE. ASSEMBLY MUST BE ACCESSIBLE.
3. A PLUMBING PERMIT IS REQUIRED-CONTACT THE APPROPRIATE JURISDICTION'S PERMITS COUNTER
4. THE WATER LINE SHALL BE DISINFECTED, THOROUGHLY FLUSHED AND PRESSURE TESTED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY. THE ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.
5. HEAT AND/OR INSULATION SHALL BE PROVIDED TO PREVENT FREEZING.
6. ALL PIPE, VALVE AND FITTING JOINTS, FROM SUPPLY MAIN, SHALL BE FLANGED OR RESTRAINED.
7. ALL VAULTS SHALL BE PRE-APPROVED PRIOR TO INSTALLATION.
8. FIRE PROTECTION BACKFLOW ASSEMBLIES 3" OR LARGER SHALL PROTECTED BY A DCDA. BYPASS METER SHALL READ IN C.F.
9. ASSEMBLY SHALL HAVE A MINIMUM OF 3' CLEARANCE FROM ALL STRUCTURES.
10. ASSEMBLY MUST BE TESTED WITHIN 30 DAYS AFTER INSTALLATION, RELOCATION OR REPAIR, THEN ANNUALLY BY A WA. STATE CERTIFIED BACKFLOW TESTER. RESULTS SHALL BE SENT TO THE CITY WATER QUALITY GROUP.
11. GROUT PIPE ENTRANCE AND EXIT, IN VAULT, WITH WATERTIGHT GROUT.

N.T.S.

REV NO.	DATE	BY	APPROVED
8	1/15	G.P.H.	T.W.C.
9	1/17	G.P.H.	T.W.C.
10	1/19	G.P.H.	T.W.C.
11	1/21	G.P.H.	T.W.C.
12	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

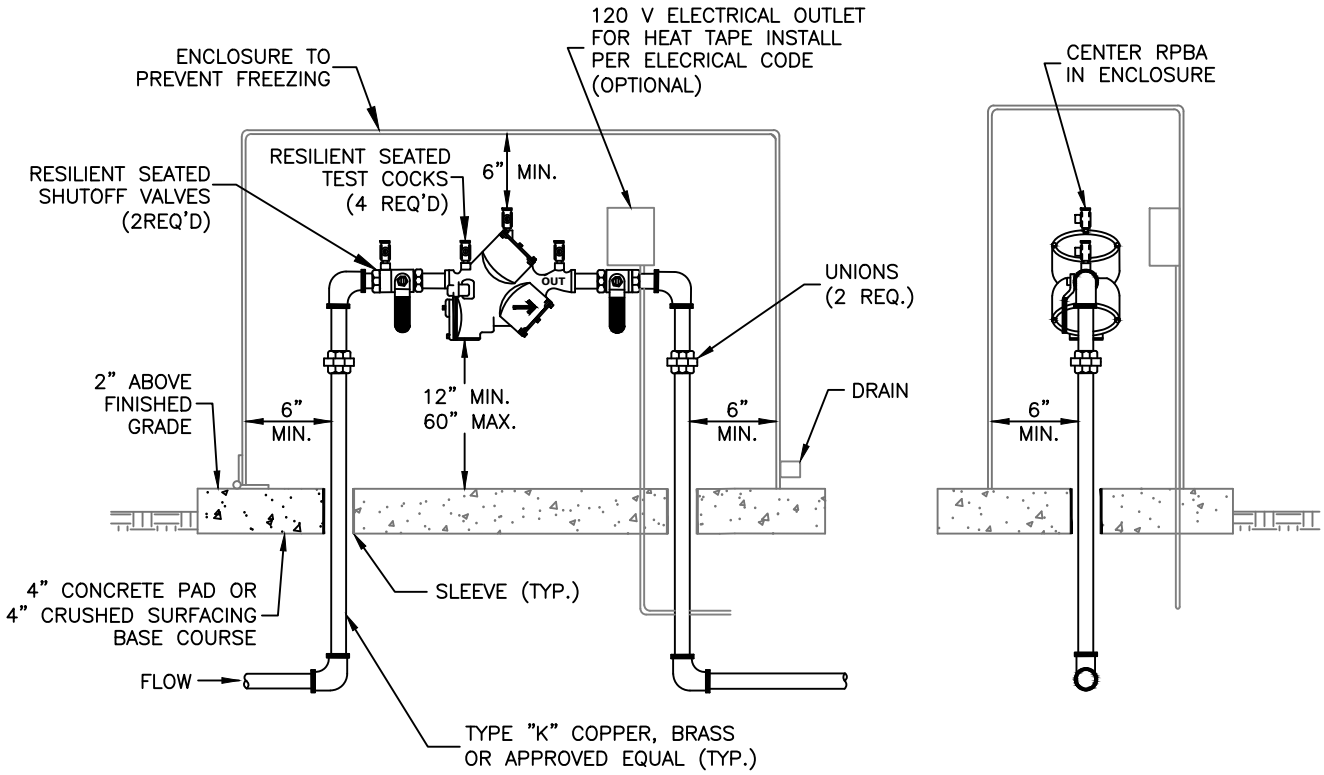
CITY OF Vancouver WASHINGTON

STANDARD DCVA/DCDA 2-1/2" & LARGER

STANDARD PLAN NUMBER

W-22

23_WATER_DETAILS



NOTES:

1. A WASHINGTON STATE APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) SHALL ONLY BE INSTALLED IN THE ORIENTATION (VERTICAL OR HORIZONTAL) FOR WHICH THEY ARE APPROVED. ASSEMBLY MUST BE ACCESSIBLE.
2. ALL BACKFLOW PREVENTERS MUST BE LEAD FREE AND PLACED AS CLOSE TO THE PROPERTY LINE AND/OR BACKSIDE OF THE METER AS POSSIBLE. ASSEMBLY MUST BE ACCESSIBLE.
3. A PLUMBING PERMIT IS REQUIRED—CONTACT THE APPROPRIATE JURISDICTION'S PERMITS COUNTER
4. THE WATER LINE SHALL BE DISINFECTED, THOROUGHLY FLUSHED AND PRESSURE TESTED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY.
5. DO NOT INSTALL IN A PIT, TRENCH OR AN AREA SUBJECT TO FLOODING.
6. HEAT AND/OR INSULATION SHALL BE PROVIDED TO PREVENT FREEZING.
7. A PLUMBING PERMIT IS REQUIRED—CONTACT THE APPROPRIATE JURISDICTION'S PERMITS COUNTER
8. RPBA MUST BE TESTED WITHIN 30 DAYS AFTER INSTALLATION, RELOCATION OR REPAIR, THEN ANNUALLY BY A WA. STATE CERTIFIED BACKFLOW TESTER. RESULTS SHALL BE SENT TO THE CITY WATER QUALITY GROUP.
9. DRAIN SHALL BE SIZED PER THE AWWA CROSS CONNECTION CONTROL MANUAL

(ABOVE GROUND INSTALLATION ONLY)

N.T.S.

REV NO.	DATE	BY	APPROVED
7	1/15	G.P.H.	T.W.C.
8	1/17	G.P.H.	T.W.C.
9	1/19	G.P.H.	T.W.C.
10	1/21	G.P.H.	T.W.C.
11	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

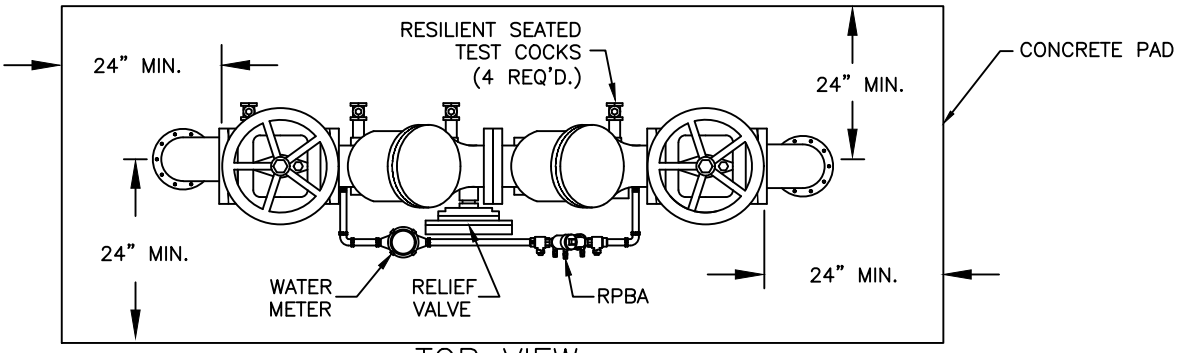
CITY OF Vancouver WASHINGTON

STANDARD REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY 2" & SMALLER

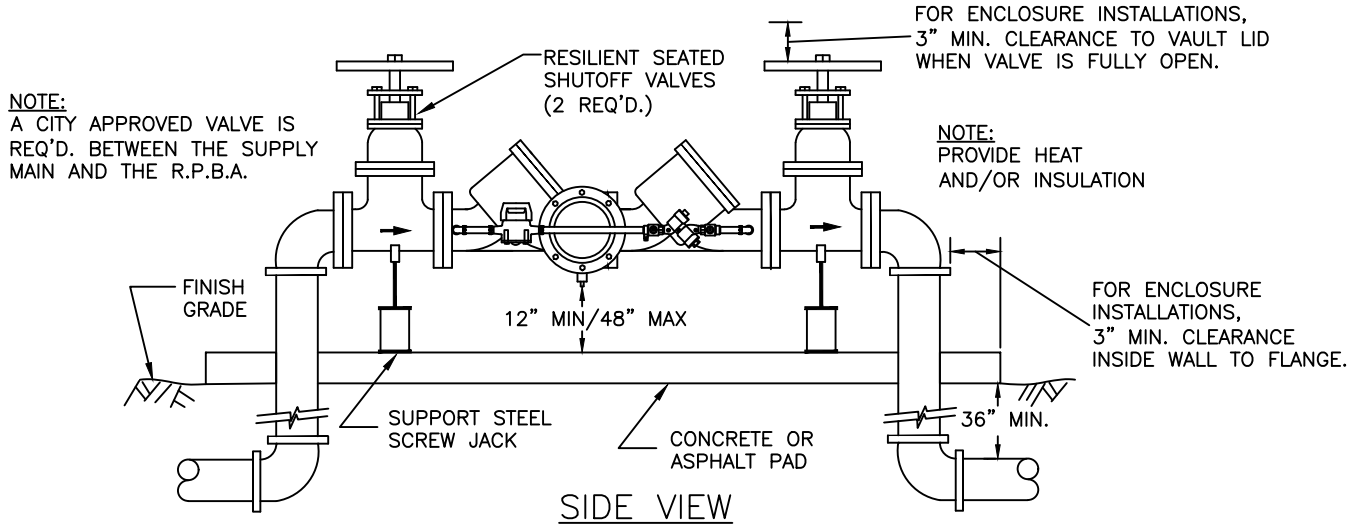
STANDARD PLAN NUMBER

W-23

23_WATER_DETAILS



TOP VIEW



SIDE VIEW

NOTES:

1. A WASHINGTON STATE DEPARTMENT OF HEALTH APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA/DA) SHALL ONLY BE INSTALLED IN THE ORIENTATION (VERTICAL OR HORIZONTAL) FOR WHICH THEY ARE APPROVED.
2. ALL BACKFLOW PREVENTERS MUST BE LEAD FREE AND PLACED AS CLOSE TO THE PROPERTY LINE AND/OR BACKSIDE OF THE METER AS POSSIBLE. ASSEMBLY MUST BE ACCESSIBLE.
3. A PLUMBING PERMIT IS REQUIRED—CONTACT THE APPROPRIATE JURISDICTION'S PERMITS COUNTER
4. DO NOT INSTALL IN A PIT, TRENCH OR AN AREA SUBJECT TO FLOODING.
5. THE WATER LINE SHALL BE DISINFECTED, THOROUGHLY FLUSHED AND PRESSURE TESTED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY. THE ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.
6. ALL UNDERGROUND PIPE, VALVES AND FITTING JOINTS SHALL BE RESTRAINED FROM THE SUPPLY MAIN. ALL ABOVE GROUND JOINTS SHALL BE FLANGED.
7. ALL BYPASS METERS SHALL BE OF THE POSITIVE DISPLACEMENT ODOMETER STYLE, SEALED REGISTERS AND READ IN CF
8. ALL ENCLOSURES SHALL BE PRE—APPROVED PRIOR TO INSTALLATION.
9. RPBA SHALL BE INSTALLED AT PROPERTY LINE OR EASEMENT LINE AND ON OWNER'S PROPERTY.
10. ADEQUATE GRAVITY DRAINAGE SYSTEM REQUIRED WITH APPROVED AIR GAP.
11. MINIMUM 24" CLEARANCE ON ALL SIDES AROUND RPBA.
12. RPBA MUST BE TESTED WITHIN 30 DAYS AFTER INSTALLATION, RELOCATION OR REPAIR, THEN ANNUALLY BY A WA. STATE CERTIFIED BACKFLOW TESTER. RESULTS SHALL BE SENT TO THE CITY WATER QUALITY GROUP.
13. HEAT AND/OR INSULATION SHALL BE PROVIDED TO PREVENT FREEZING.

(ABOVE GROUND INSTALLATION ONLY)

N.T.S.

REV NO.	DATE	BY	APPROVED
8	1/15	G.P.H.	T.W.C.
9	1/17	G.P.H.	T.W.C.
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11	1/21	G.P.H.	T.W.C.
12	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

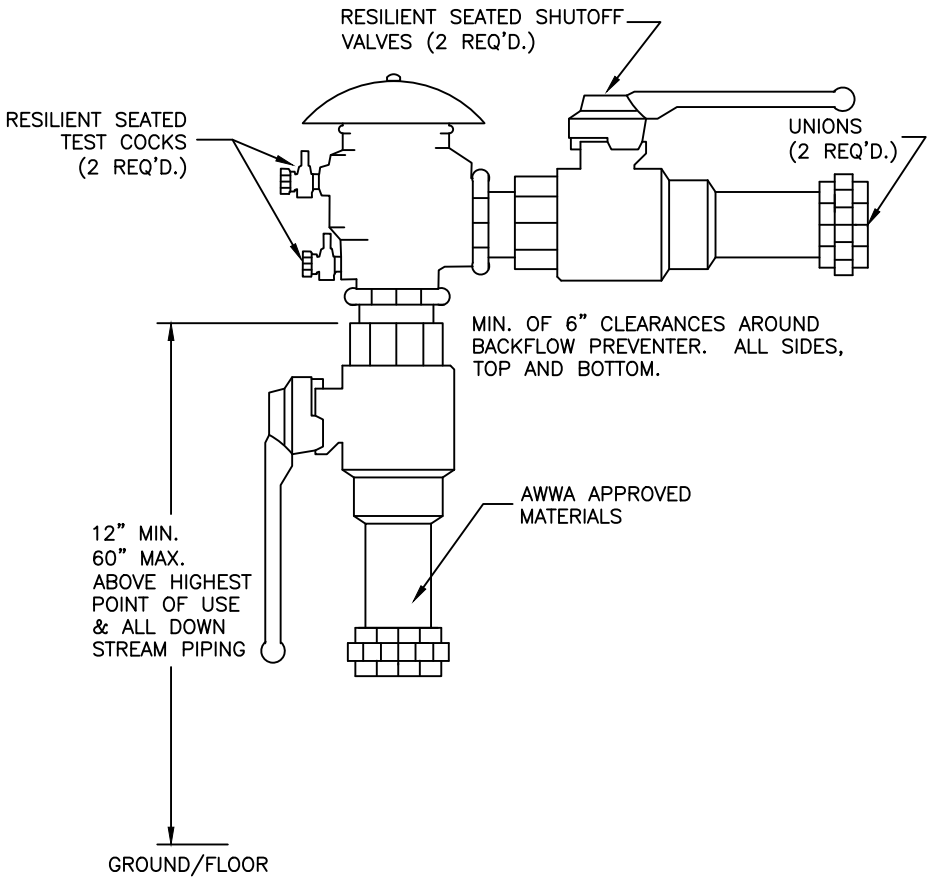
CITY OF Vancouver WASHINGTON

STANDARD RPBA/RPDA
2 1/2" & LARGER

STANDARD PLAN NUMBER

W-24

23_WATER_DETAILS



NOTE:

1. A WASHINGTON STATE APPROVED PRESSURE VACUUM BREAKER ASSEMBLY (PVBA) SHALL ONLY BE INSTALLED IN THE ORIENTATION (VERTICAL OR HORIZONTAL) FOR WHICH THEY ARE APPROVED.
2. ASSEMBLY MUST BE INSTALLED VERTICALLY, 12" MIN. – 60" MAX. ABOVE THE HIGHEST POINT OF USE AND ALL DOWNSTREAM PIPING. ASSEMBLY MUST BE ACCESSIBLE.
3. A PLUMBING PERMIT IS REQUIRED–CONTACT THE APPROPRIATE JURISDICTION'S PERMITS COUNTER
4. DESIGNED FOR BACK SIPHONAGE ONLY, NOT BACK PRESSURE.
5. THE WATER LINE SHALL BE DISINFECTED, THOROUGHLY FLUSHED AND PRESSURE TESTED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY. THE ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.
6. CONSIDERATION MUST BE GIVEN TO THE WATER LEAKAGE IF BACKFLOW PREVENTER FAILS. (EXCESSIVE WATER SPILLAGE)
7. ASSEMBLY SHALL NOT BE INSTALLED IN AN AREA SUBJECT TO FLOODING.
8. HEAT AND/OR INSULATION SHALL BE PROVIDED TO PREVENT FREEZING.
9. PVBA MUST BE TESTED WITHIN 30 DAYS AFTER INSTALLATION, RELOCATION OR REPAIR, THEN ANNUALLY BY A WA. STATE CERTIFIED BACKFLOW TESTER. RESULTS SHALL BE SENT TO THE CITY WATER QUALITY GROUP.

(ABOVE GROUND INSTALLATION ONLY)

N.T.S.

REV NO.	DATE	BY	APPROVED
7	1/15	G.P.H.	T.W.C.
8	1/17	G.P.H.	T.W.C.
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11	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

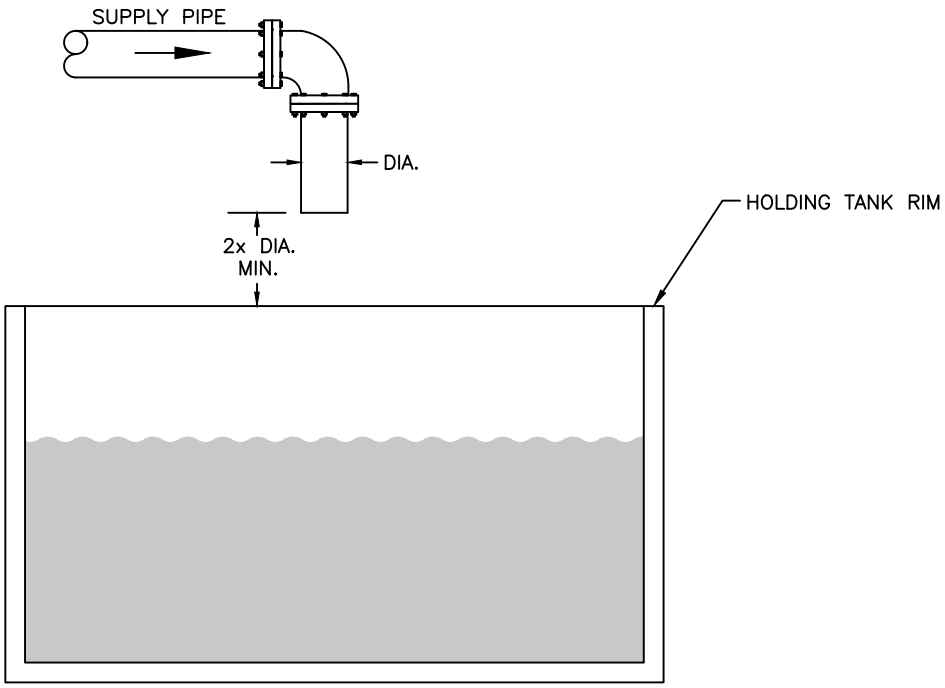
CITY OF Vancouver WASHINGTON

STANDARD PRESSURE VACUUM BREAKER ASSEMBLY 2" & SMALLER

STANDARD PLAN NUMBER

W-25

23_WATER_DETAILS



NOTES:

1. A WASHINGTON STATE APPROVED AIR GAP MUST BE TWICE THE SUPPLY PIPE DIAMETER, BUT NEVER LESS THAN ONE INCH, MEASURED VERTICALLY FROM THE SUPPLY PIPE TO THE HOLDING TANK RIM.
2. ALL AIR GAPS SHALL BE ACCESSIBLE FOR INSPECTION.
3. HOLDING TANK SHALL NOT BE INSTALLED IN AN AREA SUBJECT TO FLOODING.
4. A PLUMBING PERMIT IS REQUIRED – CONTACT THE APPROPRIATE JURISDICTION'S PERMITS COUNTER
5. ALL AIR GAPS MUST BE INSPECTED WITHIN 30 DAYS AFTER INSTALLATION, RELOCATION OR REPAIR, THEN ANNUALLY BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER OR CROSS–CONNECTION CONTROL SPECIALIST. INSPECTION RESULTS SHALL BE SENT TO THE CITY WATER QUALITY GROUP.

N.T.S.

REV NO.	DATE	BY	APPROVED
1	1/21	G.P.H.	T.W.C.
2	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

CITY OF Vancouver WASHINGTON

APPROVED AIR GAP

STANDARD PLAN NUMBER

W-26

23_WATER_DETAILS

RESERVED FOR
FUTURE DETAILS

N.T.S.

REV NO.	DATE	BY	APPROVED

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

CITY OF Vancouver WASHINGTON

BLANK SHEET

STANDARD PLAN NUMBER

W-27

23_WATER_DETAILS

RESERVED FOR
FUTURE DETAILS

N.T.S.

REV NO.	DATE	BY	APPROVED

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

CITY OF Vancouver WASHINGTON

BLANK SHEET

STANDARD PLAN NUMBER

W-28

23_WATER_DETAILS

1. All commercial, industrial, mixed use and and facilities where health-hazards exist shall be protected with Washington State approved backflow protection per the City of Vancouver's Cross-Connection Control Procedures Manual.
2. Fire sprinkler and irrigation systems shall be protected with Washington State approved backflow protection as prescribed in the City of Vancouver's Cross-Connection Control Procedures Manual.
3. If chemicals are added to the Fire Protection System, a reduced pressure backflow assembly is required.
4. An approved air gap or reduced pressure backflow assembly is required for all service connections and fire protection systems on a site with access to unapproved auxiliary water supplies connected to a piping system whether or not an interconnection exists between the unapproved auxiliary water supply and City water system.
5. All fire protection services shall be constructed to City of Vancouver public main material and restraint standards up to the backflow assembly.
6. All dedicated fire protection services shall have a 4" or larger iron body gate valve at the public main and shall be private after that valve.
7. Where a vault is required, a galvanized steel wall mounted chamber ladder with extensions is required and shall be centered under the access door.
8. All backflow prevention assemblies (i.e. fire and service protection) shall be installed at the customer's side of the easement or property line. Alternate locations must be requested in writing and approved by the City of Vancouver Water Quality Group prior to installation.
9. No part of the backflow prevention assembly shall be submerged in water or installed in a location subject to flooding. If a backflow prevention assembly is installed in a vault or inside a building, adequate drainage shall be provided.
10. Atmospheric Vacuum Breakrs are not an acceptable form of backflow protection.
11. All backflow assemblies for potable use must be certified lead-free.
12. All backflow prevention assemblies must be tested within 30 days after installation, relocation or repair, then annually thereafter by a Washington State certified Backflow Assembly Tester. Test results shall be sent to the City of Vancouver Water Quality Group.
13. For additional documentation, see Water Design and Construction Requirements and the City of Vancouver's Cross-Connection Control Procedures Manual.
14. All bypass meters shall be of the postitive displacement odometer style, sealed registers and read in cubic feet.

For Questions or to return completed backflow test reports, contact:
Water Quality, City of Vancouver
PO Box 1995, Vancouver, WA. 98668
E-mail: backflowtestreports@cityofvancouver.us
Phone: (360) 487-8276

N.T.S.

REV NO.	DATE	BY	APPROVED
6	1/15	G.P.H.	T.W.C.
7	1/17	G.P.H.	T.W.C.
8	1/19	G.P.H.	T.W.C.
9	1/21	G.P.H.	T.W.C.
10	1/23	G.P.H.	T.W.C.

CITY OF VANCOUVER
PUBLIC WORKS
WATER ENGINEERING

CITY OF Vancouver WASHINGTON

GENERAL BACKFLOW NOTES

STANDARD PLAN NUMBER
W-29
23_WATER_DETAILS