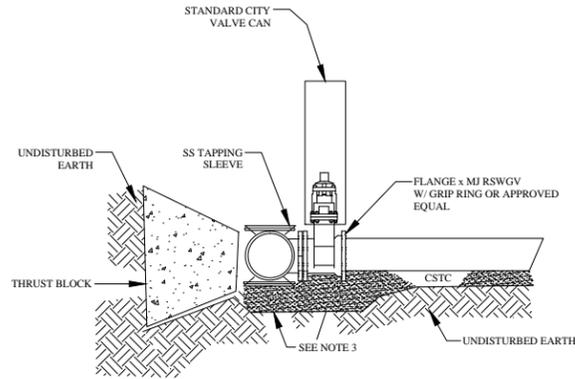


**NOTES:**

- TAPPING SLEEVE SHALL BE 304 STAINLESS STEEL W/ STAINLESS STEEL FLANGE. 1CM OR EQUIVALENT.
- ALL BOLTS SHALL BE 304 STAINLESS STEEL OR APPROVED EQUAL.
- TAPPING SLEEVE AND VALVE SHALL BE SUPPORTED BY 6" MIN. CSTC OR AS DETERMINED BY THE INSPECTOR & COMPACTED TO 95%.
- CITY MUST WITNESS AIR TEST AND BE PROVIDED W/ WITH TAPPING COUPON.
- TAPPING SLEEVE EDGE SHALL BE A MIN. OF 18" FROM BELL OR SPIGOT END OF EXISTING PIPE, AND A MIN. OF 18" FROM ANY OTHER TAP OR FITTING.
- CONTRACTOR SHALL SCHEDULE THE HOT TAP WITH THE CITY 48 HOURS (2 WORKING DAYS) IN ADVANCE.
- SIZE ON SIZE TAPS ARE NOT PERMITTED.
- ALL THRUST BLOCKS TO BE CLASS 4000.



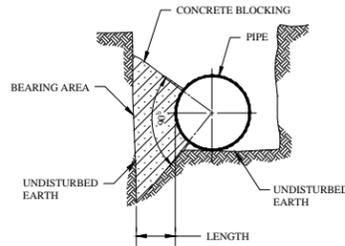
**HOT TAP OF EXISTING WATER MAIN**

DETAIL NO. - W60

SOIL BEARING = 2000 LB/FT <sup>2</sup>					
PIPE SIZE	HORIZ. BENDS	BEARING AREA S.F.	VOL. OF BLOCKING C.F.	LENGTH OF BLOCKING	LENGTH OF BLOCKING
4"	TEE	2.3	0.8	0.86	
	90°	3.2	1.4	1.06	
	45°	1.7	0.5	0.73	
6"	TEE	4.7	2.4	1.24	
	90°	6.6	4.0	1.53	
	45°	3.6	1.6	1.05	
8"	TEE	8.0	5.4	1.63	
	90°	11.4	9.0	2.00	
	45°	6.2	3.6	1.37	
10"	TEE	12.1	9.9	2.00	
	90°	17.1	16.7	2.46	
	45°	9.3	6.6	1.69	
12"	TEE	17.1	16.7	2.37	
	90°	24.2	28.0	2.93	
	45°	13.1	11.2	2.01	
16"	TEE	23.8	27.3	2.73	
	90°	33.6	46.0	3.37	
	45°	18.2	18.3	2.29	
18"	TEE	29.9	38.5	3.05	
	90°	42.2	64.7	3.79	
	45°	22.9	25.8	2.57	
20"	TEE	36.6	52.3	3.38	
	90°	51.8	87.9	4.19	
	45°	28.1	35.0	2.84	
24"	TEE	52.3	89.1	4.03	
	90°	74.0	149.8	5.00	
	45°	40.0	59.7	3.55	
11-1/4"	TEE	20.4	21.7	2.11	
	90°	20.4	21.7	2.11	
	45°	10.3	7.7	1.18	

**NOTES:**

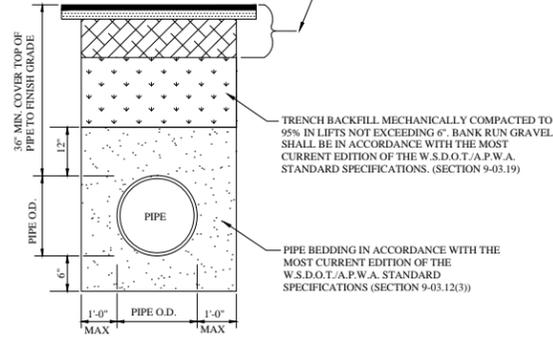
- ALL BLOCKING SHALL BE POURED AGAINST FIRM UNDISTURBED SOIL.
- WHEN POURING AGAINST PLUGS AND BLIND FLANGES. SEE SPECIAL PROVISIONS.
- LAYOUT TO BE APPROVED BY THE INSPECTOR PRIOR TO AND AFTER CONCRETE POUR.
- ALL CONCRETE BLOCKING SHALL BE POURED IN PLACE WITHOUT DIRECT CONTACT TO THE PIPE OR FITTINGS. SOME PROTECTIVE MATERIAL SUCH AS TAR PAPER SHALL BE PLACED BETWEEN THE CONCRETE AND PIPE OR FITTING.
- CONCRETE FOR ALL BLOCKING SHALL HAVE A 28-DAY MINIMUM COMPRESSIVE STRENGTH OF 2,300 P.S.I.
- CONCRETE BLOCKING FOR VERTICAL BENDS SHALL BE PER APWA STD. PLAN NO. 74.



**STANDARD THRUST BLOCK**

DETAIL NO. - W70

FOR THIS ZONE OF THE TRENCH SECTION, SEE CITY, COUNTY OR WSDOT STANDARD PLANS AND/OR PERMIT CONDITIONS. FOR NON-PAVED SURFACES, MATCH EXISTING GRAVEL OR SPEEDED LAWN, OR REFER TO APPROVED DRAWINGS.

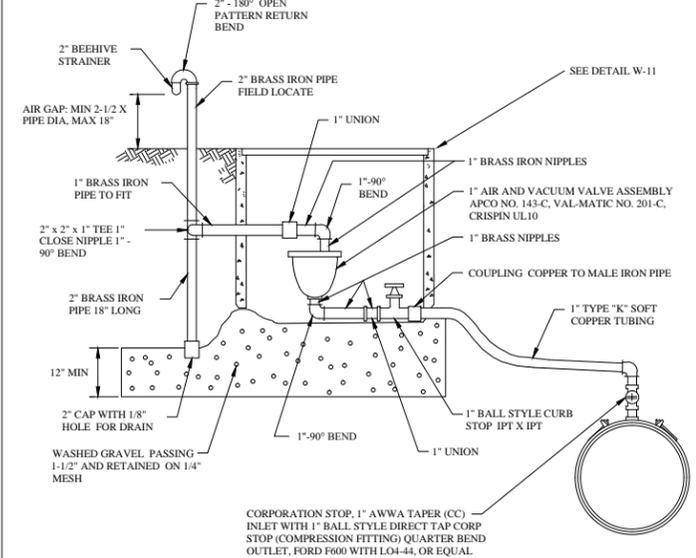


**NOTE:**

- CLEAN NATIVE MATERIAL MAY BE USED AS TRENCH BACKFILL AS APPROVED BY CITY OF WASHOUGAL CONSTRUCTION INSPECTOR PER WSDOT SPECIFICATION (SECTION 9-03.12(5)).
- CONTROL DENSITY FILL (CDF) MAY BE REQUIRED BASED ON THE LOCAL JURISDICTION'S STANDARDS.
- OVERSIZE MATERIAL (4"+) SHALL NOT BE ALLOWED IN TRENCH.

**WATER PIPE TRENCH BEDDING & BACKFILL**

DETAIL NO. - W80

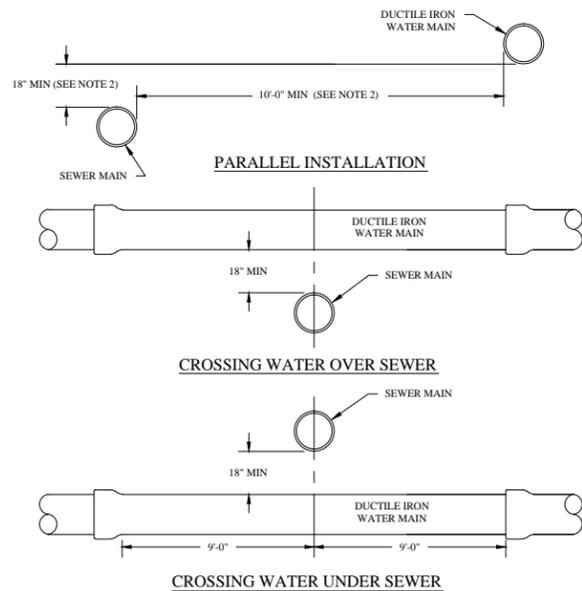


**NOTES:**

- ALL FITTINGS TO BE BRASS OR COPPER FROM WATER MAIN TO 1" AIR & VACUUM ASSEMBLY.
- AIR & VACUUM RELEASE VALVE ASSEMBLY MUST BE INSTALLED AT HIGHEST POINT OF LINE. IF HIGH POINT FALLS IN A LOCATION WHERE ASSEMBLY CANNOT BE INSTALLED, PROVIDE ADDITIONAL DEPTH OF LINE TO CREATE HIGH POINT AT A LOCATION WHERE ASSEMBLY CAN BE INSTALLED.

**COMBINATION AIR RELEASE VALVE**

DETAIL NO. - W90



**NOTES:**

- EXCEPTIONS SHALL BE APPROVED BY THE CITY OF WASHOUGAL IN WRITING.
- WHERE MINIMUM CLEARANCES CANNOT BE MET, THE SEWER MAIN SHALL BE PLACED IN SEPARATE TRENCHES AND CONSTRUCTED OF MATERIAL EQUIVALENT TO THE CITY OF WASHOUGAL WATER MAIN STANDARDS, INCLUDING PRESSURE TESTING. ADEQUATE RESTRAINT SHALL BE PROVIDED TO ALLOW TESTING TO OCCUR.
- 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.
- ALL SEWER CROSSING OVER WATER MAINS SHALL BE CONSTRUCTED OF MATERIALS EQUIVALENT TO THE CITY OF WASHOUGAL WATER MAIN STANDARDS, INCLUDING PRESSURE TESTING.

**WATER & SEWER SPACING**

DETAIL NO. - W100

- ALL REDUCED PRESSURE AND BACKFLOW DEVICES SHALL BE WA STATE APPROVED, PER WAC 246-290.
- FIRE SPRINKLER AND IRRIGATION SYSTEMS SHALL BE PROTECTED WITH STATE APPROVED BACKFLOW PROTECTION AS DESCRIBED IN WAC 246-290.
- ALL COMMERCIAL, INDUSTRIAL AND MULTI-FAMILY FACILITIES SHALL BE PROTECTED WITH WASHINGTON STATE APPROVED BACKFLOW PROTECTION.
- FURTHER BACKFLOW PREVENTION SHALL BE REQUIRED DEPENDING ON WATER USAGE, I.E. BOILERS, CHILLERS, CHEMICAL ADDITION, BOOSTER PUMPS, WELLS, MEDICAL EQUIP, SODA POP MACHINES ETC.
- ALL HOSEBIBS SHALL BE PROTECTED WITH VACUUM BREAKERS.
- IF CHEMICALS ARE ADDED TO THE FIRE PROTECTION SYSTEM, A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER IS REQUIRED.
- 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.
- WHERE A VAULT IS REQUIRED, A GALV. STEEL WALL MOUNTED CHAMBER LADDER W/EXTENSIONS IS REQUIRED AND SHALL BE CENTERED UNDER THE ACCESS DOOR.
- DOUBLE CHECK ASSEMBLIES SHALL BE INSTALLED IN AN APPROVED VAULT.
- REDUCED PRESSURE ASSEMBLIES SHALL BE INSTALLED OUTSIDE ABOVE GROUND.
- ALL BACKFLOW DEVICES SHALL BE PROTECTED FROM FREEZING.
- BACKFLOW PREVENTION ASSEMBLY VAULTS (I.E. FIRE AND SERVICE PROTECTION) MUST BE INSTALLED AT THE CUSTOMER'S SIDE OF THE EASEMENT OR PROPERTY LINE. ALTERNATE LOCATIONS MUST BE REQUESTED IN WRITING AND APPROVED BY CITY OF WASHOUGAL WATER QUALITY SERVICES PRIOR TO INSTALLATION.
- 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, ADEQUATE DRAINAGE SHALL BE PROVIDED.
- ALL FIRE PROTECTION SERVICES SHALL HAVE A RSW GATE VALVE AT THE PUBLIC MAIN AND SHALL BE PRIVATE AFTER THE CITY ROW OR EASEMENT.
- ALL FIRE PROTECTION SERVICES SHALL BE CONSTRUCTED TO CITY OF WASHOUGAL PUBLIC MAIN MATERIAL AND RESTRAINT STANDARDS UP TO THE BACKFLOW DEVICE.
- ALL DOMESTIC SERVICES WITH BACKFLOW PROTECTION SHALL BE PRIVATE AFTER THE DOMESTIC WATER METER.
- ALL BACKFLOW PREVENTION DEVICES SHALL BE TESTED AFTER INSTALLATION AND PRIOR TO ACCEPTANCE, ALSO YEARLY THEREAFTER BY A CERTIFIED BACKFLOW ASSEMBLY TESTER. TEST RESULTS SHALL BE SENT TO THE CITY OF WASHOUGAL BY THE FOLLOWING METHODS.

Mail, fax, or email test results to:

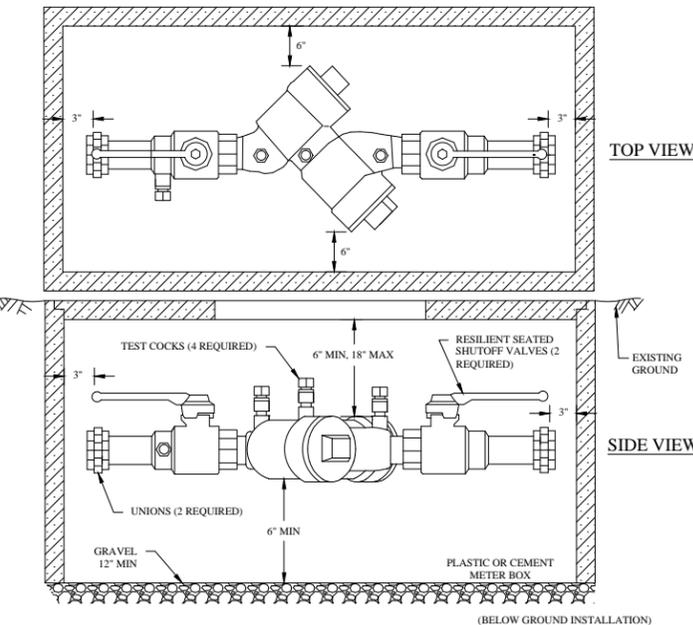
Operations Center - Water Quality Services  
City of Washougal  
1701 C Street  
Washougal, WA. 98671

Fax# (360) 835-0792

EMAIL: backflowtestreports@cityofwashougal.us

**GENERAL BACKFLOW NOTES**

DETAIL NO. - W110

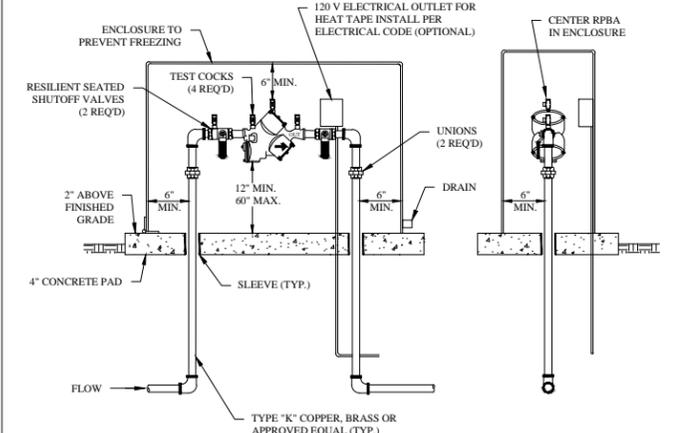


**NOTES:**

- APPROVED DOUBLE CHECK VALVE ASSEMBLY TO LAY HORIZONTAL WITH GROUND. - DESIGNED FOR BACK SIPHONAGE AND BACK PRESSURE.
- TEST COCKS TO EITHER FACE OUTWARDS OR UPWARDS FROM ASSEMBLY. - THOROUGHLY FLUSH LINES PRIOR TO INSTALLATION OF BACKFLOW PREVENTER. INSTALL SO DATA PLATE & S/N ARE READABLE.
- THE DCVA MAY BE INSTALLED ABOVE OR BELOW THE GROUND PROVIDED ALL CLEARANCES ARE MET - DO NOT INSTALL IN AN AREA SUBJECT TO FLOODING.
- MUST BE PROTECTED FROM FREEZING CONDITIONS.
- THE BACKFLOW ASSEMBLY SHALL BE A STATE APPROVED MODEL.
- A PLUMBING PERMIT IS REQUIRED. PLEASE CONTACT YOUR LOCAL PLUMBING PERMIT CENTER.
- MUST BE TESTED AFTER INSTALLATION AND YEARLY THEREAFTER BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER. TEST RESULTS SHALL BE SENT TO THE CITY OF WASHOUGAL ACCORDING TO DETAIL W110.

**STANDARD DOUBLE CHECK VALVE ASSEMBLY - 2" & SMALLER**

DETAIL NO. - W120



**NOTES:**

- APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) TO LAY HORIZONTAL WITH GROUND. (VERTICAL ALLOWED IF APPROVED BY WA. DEPT. OF HEALTH)
- DESIGN RPBA FOR BACK SIPHONAGE AND BACK PRESSURE.
- THOROUGHLY FLUSH LINES PRIOR TO INSTALLATION OF BACKFLOW PREVENTER.
- DO NOT INSTALL IN AN AREA SUBJECT TO FLOODING.
- RPBA MUST BE ACCESSIBLE.
- PROTECT RPBA FROM FREEZING.
- A PLUMBING PERMIT IS REQUIRED-CONTACT THE APPROPRIATE JURISDICTION'S PERMITS COUNTER
- RPBA MUST BE TESTED AFTER INSTALLATION, THEN ANNUALLY BY A WA. STATE CERTIFIED BACKFLOW TESTER. TEST RESULTS SHALL BE SENT TO THE CITY CROSS CONNECTION PROGRAM ADMINISTRATOR, (360) 835-2662 OR Backflowtestreports@cityofwashougal.us
- RPBA SHALL BE APPROVED BY THE STATE OF WASHINGTON.
- DRAIN SHALL BE SIZED PER THE AWWA CROSS CONNECTION CONTROL MANUAL
- RPBA MUST BE RETESTED IF MOVED OR REPAIRED
- AS OF JANUARY 4, 2014 ALL NEWLY INSTALLED FITTINGS IN CONTACT WITH WATER SHALL BE IN COMPLIANCE WITH THE REVISED SECTION 1417 OF THE EPA SAFE WATER DRINKING ACT AND CERTIFIED LEAD FREE USING NSF 372 STANDARDS.

(ABOVE GROUND INSTALLATION ONLY)

**2" & SMALLER REDUCED PRESSURE BACKFLOW ASSEMBLY & IRRIGATION SERVICE (OUTSIDE INSTALLATION)**

DETAIL NO. - W130

By	
Revision	
No.	
Designed By: IV	
Drawn By: IV	
Reviewed By:	
As Shown	

**STANDARD WATER DETAILS - SHEET 3**



Drawing No. 3

3 of 4