

Appendix L
Cross-Connection Control Program

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**SAMMAMISH PLATEAU WATER & SEWER DISTRICT
KING COUNTY, WASHINGTON**

RESOLUTION NO. 3340

RESOLUTION OF THE BOARD OF COMMISSIONERS OF SAMMAMISH PLATEAU WATER AND SEWER DISTRICT, KING COUNTY, WASHINGTON, REVISING AND READOPTING A CROSS CONNECTION CONTROL PROGRAM AS SET FORTH IN THE DISTRICT'S WATER COMPREHENSIVE PLAN; AND RESCINDING RESOLUTION NO. 1327.

WHEREAS, the Sammamish Plateau Water & Sewer District of King County, Washington ("District") provides water supply to residents and property located within its corporate and service area boundaries; and

WHEREAS, the District is required by law to develop and implement a cross connection control program to eliminate cross connections in the District's public water supply system whenever possible or, when cross connections cannot be eliminated, to control such cross connections by installation of approved backflow prevention devices commencement with the degree of hazard relating to the cross connection; and

WHEREAS, Washington Administrative Code 246-290-490 (WAC) requires that all community water systems comply with the cross connection control requirements specified in such regulations, to include a written description of the cross connection control program in the water system plan for a community water system required under WAC 246-290-100 and to include the minimum program elements described in WAC 246-290-490(3) in such cross connection control program; and

WHEREAS, pursuant to RCW 57.08.005(3), the District has full authority to regulate and control the use, content, distribution and price of water supplied by the District to its customers and properties; and

WHEREAS, the Water Comprehensive Plan adopted by the District Board of Commissioners by Resolution No. 2768 on May 29, 2001 ("Water Comprehensive Plan") includes a written description of the District's cross connection control program as currently set forth in Appendix J of the Water Comprehensive Plan, and the District has updated and revised its cross connection control program, such revised and updated cross connection control program being attached as Exhibit A and incorporated herein by this reference (the "Revised Cross Connection Control Program"); and

WHEREAS, prior to the District's adoption of the Water Comprehensive Plan which included a cross connection control program, the District adopted policies and procedures relating to cross connection control as set forth in Resolution No. 1327 adopted by the District Board of Commissioners on April 1, 1991; and

WHEREAS, the purpose of the District's Revised Cross Connection Control Program is to protect the public water system from contamination via cross connections by eliminating cross connections or, when cross connections cannot be eliminated, by controlling cross connections through the installation of backflow prevention assemblies; and the development and implementation of the Revised Cross Connection Control Program is necessary to protect public health and safety; now, therefore,

BE IT RESOLVED, by the Board of Commissioners of the Sammamish Plateau Water & Sewer District as follows:

1. The Revised Cross Connection Control Program as set forth in Exhibit A attached hereto is hereby approved and adopted for implementation.
2. All District resolutions, policies and procedures, including Resolution No. 1327, are hereby rescinded, superseded and/or amended to be in accordance with the Revised Cross Connection Control Program approved and adopted herein.

3. This resolution shall be effective the date set forth below.

ADOPTED by the Board of Commissioners of Sammamish Plateau Water & Sewer District, King County, Washington, at the regular open public meeting thereof held on the 18th day of July, 2005.

***Individual Commissioner's
Vote on this Resolution:***

Approved:	_____	_____
Opposed:	_____	Stanley E. Stone
Abstained:	_____	President and Commissioner
Absent:	_____	

Approved:	_____	_____
Opposed:	_____	W. F. Stevlingson
Abstained:	_____	Vice President and Commissioner
Absent:	_____	

Approved:	_____	_____
Opposed:	_____	Thomas C. Harman
Abstained:	_____	Secretary and Commissioner
Absent:	_____	

Approved:	_____	_____
Opposed:	_____	Lloyd J. Warren
Abstained:	_____	Commissioner
Absent:	_____	

Approved:	_____	_____
Opposed:	_____	Mary Shustov
Abstained:	_____	Commissioner
Absent:	_____	

Cross-Connection Control Program

1. Purpose

The Sammamish Plateau Water and Sewer District has developed a cross-connection control program under the requirements for Group A Water Systems (WAC 246-290-490). The purpose of this program is to protect the health of water consumers of the public water system. This cross-connection control program addresses this requirement by establishing minimum operating policies and backflow prevention assembly installation and testing practices and procedures. It is structured such that it may be supplemented with published documents and materials developed by the District for its specific use. The authority to enforce these practices and policies is established in District Resolution 1327 or its future revisions.

2. Responsibilities

- a. The Sammamish Plateau Water and Sewer District
 - i. The District or its designated representative shall prevent the contamination of the water distribution system by inspecting cross connections, providing guidance for new installations and existing connections, maintaining records on backflow prevention devices, and responding to customer inquiries to meet the requirements of the state regulations in cross-connection control.
 - ii. The District's responsibility for cross-connection control shall begin at the water supply source, include all the public water treatment, storage, and distribution facilities, and end at the point of delivery to the consumer's water system, which begins at the downstream end of the service connection or water meter on the public right-of-way or utility-held easement.
- b. Water Customer
 - i. The water customer shall be responsible for identifying and eliminating cross connections or controlling them through the installation, regular testing, and maintenance of approved backflow prevention assemblies.
 - ii. The water customer shall be responsible for providing the necessary information, scheduling, and providing access for inspection (as required) to allow a determination of cross-connection potential and the necessary control methods.
 - iii. The water customer is responsible for notifying the District of any assembly that the customer believes is no longer required.

- iv. The water customer is responsible for all costs associated with the inspection, testing, repair, and replacement of backflow prevention assemblies.

3. Applicability of Regulations and References

- a. The control or elimination of cross connections shall be in accordance with the most current revisions of the following state, county, and local rules and regulations:
 - i. Cross-Connection Control WAC 246-290-490
 - ii. Washington State Plumbers Code RCW 18.106
 - iii. Washington State Building Code RCW 19.27
 - iv. Washington State Public Water Systems Mandate RCW 70.119A.060
 - v. Washington State Powers and Duties of the State Board of Health RCW 43.20.050
 - vi. Sammamish Plateau Water and Sewer District Resolution 1327
- b. The polices, procedures, and criteria for determining appropriate levels of protection shall be in accordance with the most current editions of the following references:
 - i. *Cross-Connection Control Manual: Accepted Procedure and Practice* published by the Cross-Connection Control Committee of the Pacific Northwest Section of the American Water Works Association
 - ii. *Manual of Cross-Connection Control* published by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California
 - iii. *Recommended Practice for Backflow Prevention and Cross-Connection Control* (AWWA M14) published by the American Water Works Association
- c. Interpretation of the above regulations and references is subject to the discretion of the District or its designated representatives.

4. Operating Procedures

- a. Guidelines for Premises Isolation:
 - i. The District shall rely on premises isolation as defined in WAC 246-290-010 for cross-connection control.
 - ii. Premises isolation is the District's recommended method of cross-connection control, where an approved air gap or approved backflow prevention assembly is installed at or near the service connection or an alternative location acceptable to the District to isolate the consumer's water system from the District's distribution system.

- iii. If the in-premises isolation method is used, that is, as in the case of residential irrigation systems, residential swimming pools, spas, decorative ponds and boilers, it must provide a level of protection commensurate with the District's assessed degree of hazard. In-premises isolation employs an approved air gap or approved backflow prevention assembly that is located within the property lines of the customer's premises, which is generally a plumbing fixture. If access for inspection is denied by the water customer and there is not an immediate hazard present, the District will install an air gap (AG) or reduced pressure backflow assembly (RPBA) at the property line or immediately upstream of the area where access has been denied. The customer will assume costs.
- b. Guidelines for Type and Location of Protection
 - i. The type of backflow protection required shall depend on the degree of hazard. The final hazard determined shall be made by the District or its designated representative.
 - A. For customers requesting new service connections, an initial evaluation of the premises' planned or future water service in regards to cross connections shall be made by the District or its designated representative. Proper selection and installation of a backflow prevention assembly, as determined by the District or its designated representative, shall be a condition of allowing new water service connection.
 - B. For existing service connections, the District will perform an initial inspection according to a plan developed by the District. The District will notify the customer of the required inspection, and the customer is responsible scheduling the inspection.
 - C. For all service connections, upon initial evaluation, an annual reevaluation of hazard shall occur in accordance with Section 6 of this program.
 - ii. An Air Gap (AG), Reduced Pressure Backflow Assembly (RPBA), or a Reduced Pressure Detector Assembly (RPDA) shall be used for services that present high health hazards, where back pressure and back siphonage may occur. These premises are listed, but not limited to, those in Table 9, High Health Cross-Connection Hazard Requiring Premises Isolation by AG or RPBA, in WAC 246-290-490.
 - iii. A Double Check Valve Assembly (DCVA) or a Double Check Detector Assembly (DCDA) shall be used for low health hazards where back pressure and back siphonage may occur. Higher levels of protection, that is AG, RPBA, or RPDA may be installed but would not be required.

- iv. A Pressure Vacuum Breaker Assembly (PVBA) or Spill Resistant Vacuum Breaker Assembly (SVBA) would be required for high and low health hazards for backsiphonage only. Higher levels of protection, i.e., AG, RPBA, RPDA, DCVA, or DCDA, may be installed, but would not be required.
- c. Guidelines for Eliminating Cross Connections
 - i. Cross connections shall be eliminated whenever possible.
 - ii. When cross connections cannot be eliminated, an approved air gap or an approved backflow prevention assembly, commensurate to the degree of hazard as determined by the District or its designated representative shall be installed in accordance with Section 5 of this program.

5. Installation Procedures

- a. General
 - i. The criteria for assembly installation practices shall be in accordance with the current edition of the following manuals: *Accepted Procedure and Practice*, published by the Cross-Connection Control Committee of the Pacific Northwest Section of the American Water Works Association; *Manual of Cross-Connection Control* published by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California; *Recommended Practice for Backflow Prevention and Cross-Connection Control* (AWWA M14) published by the American Water Works Association, and the Sammamish Plateau Water and Sewer Districts *Technical Specifications Manual*.
 - ii. The installer is responsible for notifying the District of newly installed assemblies.
 - iii. All new installations shall be inspected and tested by a state certified backflow assembly tester.
 - iv. Assemblies shall be accessible for testing and maintenance. They shall be installed no higher than five (5) feet above the floor or ground surface to the centerline of the assembly, or else be provided with an OSHA approved work platform for assembly maintenance and testing.
 - v. Assemblies shall be protected against freezing, flooding, and mechanical damage.
 - vi. Assemblies shall not be installed in any enclosure or area containing fumes which are corrosive or toxic.

- b. Installation of Prevention Devices
- i. Approved Air Gaps (as defined by the Washington State Department of Health Drinking Water Regulations Relating to Cross-Connection):
- A. An "approved air gap" means a physical separation between the free flowing end of a potable water supply pipeline and the overflow rim of an open or nonpressurized receiving vessel. To be an air gap approved by Washington State Department of Health (DOH), the separation must be at least:
- Twice the diameter of the supply piping measured vertically from the overflow rim of the receiving vessel, and in no case be less than one-inch, when unaffected by vertical surfaces (sidewalls);
 - Three times the diameter of the supply piping, if the horizontal distance between the supply pipe and a vertical surface (sidewall) is less than or equal to three times the diameter of the supply pipe, or if the horizontal distance between the supply pipe and intersecting vertical surface (sidewalls) is less than or equal to four times the diameter of the supply pipe and in no case less than one and one-half inches.
- ii. Reduced Pressure Backflow Assembly (RPBA) and Reduced Pressure Detector Assembly (RPDA)
- A. RPBAs/RPDAs shall be installed horizontally, unless they are approved by the State for vertical installation.
- B. RPBAs/RPDAs shall be installed with minimum clearances of 12 inches (larger RPBAs may require more clearance) in front of test cocks, check valves, and relief valve covers to facilitate testing and maintenance. If an assembly is installed in an area with limited accessibility, a crawl space, a minimum of 24 inches clearance in front of test cocks shall be provided.
- C. RPBAs/RPDAs shall be installed a minimum of 12 inches above ground or flood level, whichever is greater.
- D. RPBAs/RPDAs shall not be installed in a below grade pit, vault, or box.
- E. RPBAs/RPDAs shall be installed in a location where discharge from the relief port will not be objectionable, and shall be provided with an approved air-gapped drain which will reasonably handle the full discharge of the relief port.
- iii. Double Check Valve Assembly (DCVA) and Double Check Detector Assembly (DCDA)

- A. DCVAs/DCDAs shall be installed horizontally, unless they are approved by the State for vertical installation.
 - B. DCVAs/DCDAs shall be installed with minimum clearances of 12 inches (larger DCVAs/DCDAs may require more clearance) in front of test cocks and check valves to facilitate testing and maintenance. If an assembly is installed in an area with limited accessibility, a crawl space, a minimum of 24 inches clearance in front of test cocks shall be provided.
 - C. DCVAs/DCDAs shall be installed at such a location that they will not become submerged due to weather related conditions such as flooding.
- iv. Pressure Vacuum Breaker Assembly (PVBA) and Spill Resistant Pressure Vacuum Breaker Assembly (SVBA)
- A. PVBA's / SVBA's shall be installed to prevent backflow caused by backsiphonage only.
 - B. A PVBA shall only be installed in a vertical configuration, a minimum of 12 inches above the highest downstream piping.
 - C. A SVBA shall only be installed in a vertical configuration a minimum of 12 inches above the highest downstream piping. The SVBA shall be treated the same as a PVBA because of the potential for the SVBA to be replaced by a PVBA. When the SVBA is located inside a building, the concern is not as great about its installation in a location where the occasional spitting from the air inlet port could be a problem when the assembly is first pressurized. The SVBA is spill resistant, not spill proof.

6. Inspection and Testing Procedures

- a. General
 - i. Backflow prevention assemblies shall be inspected and tested at the time of:
 - A. Initial installation. If an assembly is installed prior to the enactment of this program, an initial inspection time should be scheduled.
 - B. After the assembly is repaired or moved.
 - C. Annually after the initial installation.
 - D. As required by the District if testing indicates repeated failures.
 - ii. Annual testing of backflow assemblies shall be per WAC 246-290-490. The District may require more frequent testing of certain facilities.

- iii. Testing procedures shall be in accordance with the requirements of the Washington State Department of Health.
- b. Inspection and testing of new installations
 - i. All new assemblies shall be tested upon initial installation.
 - ii. The District shall notify property owners of required backflow preventers including air gaps (AGs). The District will notify property owners of required inspection for all new installations of backflow preventers, including AGs in the District's service area.
 - iii. The installer is responsible for notifying the District of newly installed assemblies.
 - iv. If at the inspection, the newly installed backflow preventer fails its performance test, the installer and/or owner of the backflow prevention assembly must have the repair completed, and provide evidence of a satisfactory performance test by a state-certified Backflow Assembly Tester, submitted to the District within 30 days of the initial unsatisfactory performance test. All test reports, whether satisfactory or unsatisfactory, must be submitted to the District.
 - v. The District or its designated representative shall assess the degree of hazard prior to and after the elimination and removal of any assembly. An assembly no longer needed and for which the site was inspected, will be removed from the District's database of active backflow prevention devices.
 - vi. The District will levy a standard charge, in accordance with District Resolution 1327, against the customer's water service account for inspection of any installed or removed backflow prevention assemblies.
- c. Inspecting and testing of existing installations
 - i. All assemblies shall be tested annually by a certified Backflow Assembly Tester, who has on file a current certificate proving verification of accuracy of his/her test equipment at the District. If this information is not on file, the tester shall submit this verification to the District prior to submitting any test results.
 - ii. The District will notify all water customers responsible for assemblies of record of the requirement for testing not less than 60 days before the test is required.
 - iii. Results indicating satisfactory performance must be forwarded to the District within 60 days from the date of notification.
 - iv. If satisfactory results have not been received within 60 days of notification, a second, certified letter will be sent, requesting satisfactory testing reports be forwarded to the District within

- 10 days, with notification of a specific date of termination of water service, if reports are not received within 10 days. The District will levy a standard charge against the customer's water service account for each overdue backflow preventer.
- v. If satisfactory test results have not been received within 10 days of the certified letter being sent, a notification of water shutoff will be hand delivered, if necessary, to the occupants of the building to which water is scheduled for termination. If the District determines a high health hazard, termination will follow immediately thereafter. If the District determines that there is a low non-health hazard and no imminent danger, the following corrective measures will be followed:
 - A. Denying or discontinuing water service to a customer's premises until the cross-connection hazard is eliminated or controlled to the satisfaction of the District. Shutoff will follow within 72 hours of notice.
 - B. Requiring the consumer to install approved backflow preventer for premises isolation commensurate to the degree of hazard.
 - C. The District will install an approved backflow preventer for premises isolation commensurate with the degree of hazard.
 - vi. The District will levy a standard charge against the customer's water service account for each notification of water shutoff and/or installation of a backflow prevention assembly in order to achieve premises isolation. Water service will be terminated if no action is satisfactorily taken to test and/or repair and retest the backflow assembly(ies) and will remain discontinued until the testing is successfully completed and satisfactory test reports are provided to the District. The District will levy a standard charge against the customer's water service account for each shut-off and turn-on action required at the affected address.
 - vii. The District or its designated representative may require testing more often than annually or may field verify the test results.
 - d. Inspection and testing of repaired or replaced installations
 - i. Testing is required of any assembly that is repaired, replaced, or moved due to problems found during the annual test or due to revisions of the plumbing system.
 - e. Inspections of high hazard sites
 - i. The District shall assign priorities to high hazard site inspections with special emphasis on the following types of facilities: hospital, schools, clinics, laboratories, piers and docks, mortuaries, sewage treatment plants, food and beverage processing plants, chemical plants using

water process, metal plating industries, petroleum processing or storage plants, car washes, facilities having a non-potable auxiliary water supply, and others specified by the District.

- ii. The District shall notify the responsible party of the premises which require inspection.
 - A. If during the site survey, a cross connection is found that presents, in the opinion of the inspector, an imminent threat to public health, water service to the site shall be immediately terminated and shall remain off until the hazard is corrected.
 - B. The state-certified cross-connection specialist must provide the property owner and District a written notice of the results of the survey including a list of the cross connections found. If an approved backflow prevention assembly is required on the customer's system, the type and location of the assembly shall be specified in the inspectors written notice. The owner has 30 days after the written notice to have the required backflow prevention assembly(ies) installed and tested.
 - C. The water customer shall notify the District at the completion of the required work and certification that the backflow assemblies have been installed and tested with a positive test result.
 - D. If the water customer does not complete the work required in the inspector's letter within the time specified, a certified letter will be sent by the District requiring the water customer to complete the work within a shorter specified time (generally 10 days) and reminding the water customer that it is the District's responsibility to deny water service to anyone who does not comply with backflow protection requirements. The District will levy a standard charge, in accordance with District Resolution 1327, against the customer's water service account for each certified letter sent to the customer.
 - E. If the water customer does not complete the work within the time specified or does not make special arrangements with the District for an alternate compliance date based on extenuating circumstances, the District will give notice to the water customer of its intention to discontinue water service within 24 hours. The standard District charges for termination of water service will be levied against the customer's water service account.

7. Backflow Incident Response Procedures

- a. Due to the severity of cross-connection effects, the District shall respond to backflow incidents immediately, upon receipt of an incident report. The

response time may vary depending on the location of the incident, time and day of the report, and location of the responder, but this time should not be more than 30 minutes, as delineated in the WAC.

8. Quality Control Program

- a. General
 - i. The criteria for tester certification and test kit calibration practices shall be in accordance with the current edition of the following manuals: *Accepted Procedure and Practice*, published by Cross-Connection Control Committee of the Pacific Northwest Section of the American Water Works Association; *Manual of Cross-Connection Control*, published by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California; *Recommended Practice for Backflow Prevention and Cross-Connection Control* (AWWA M14), published by the American Water Works Association.
- b. Tester Certification and Test Kit Calibration
 - i. Acceptance of customer's test reports will be contingent upon the District's records for the receipt of records of the state-certified Backflow Assembly Tester and the test kit calibration.
- c. Test Reports
 - i. Sample test reports are attached to this program.
 - ii. Test Report Submittal Schedule

Connection Type	Results	Test Report Submittal Schedule
New Connection	Satisfactory Results	Submit Test Report at the time of the inspection (within 10 days of inspection date).
	Unsatisfactory Results	Submit Unsatisfactory Test Report at the time of inspection (within 10 days of inspection date). Submit Retest Report within 30 days of the unsatisfactory test date.
Existing Connection	Satisfactory Results	Submit Satisfactory Test Report within 60 days of notification of annual test requirement.
	Unsatisfactory Results	Make necessary repairs and submit Satisfactory Test Report within 60 days of notification of annual test requirement.

9. Records

- a. General:
 - i. The Master List of Service Connections shall be in accordance with WAC 246-290-490(3)(j). Information to be included in the database:

- A. Customer address
- B. Assessed hazard level
- C. Required backflow prevention assembly
- b. The District shall maintain an inventory of information as required in WAC 246-290-490(3)(j)(ii) on:
 - i. Approved Air Gaps used in Lieu of Approved Assemblies
 - A. Property owner
 - B. Exact location on premises
 - C. Assessed degree of hazard
 - D. Installation date
 - E. Inspection results and history
 - F. Name of person conducting inspections
 - ii. Approved Backflow Assemblies
 - A. Property owner
 - B. Exact location on premises
 - C. Assembly description (type, manufacturer, model, serial number, size, etc.)
 - D. Assessed degree of hazard
 - E. Installation date
 - F. Inspection results and history, test results, and repairs
 - G. Name of person conducting inspection
 - iii. Approved AVBs used for irrigation system applications
 - A. Property owner
 - B. Exact location on premises
 - C. Assembly description (manufacturer, model, and size)
 - D. Installation date
 - E. Inspection results and history
 - F. Name of person conducting inspection
 - iv. Cross-Connection Control Program Summary Reports
 - v. Backflow Incident Reports
- c. Sample reports are provided as attachments.

- d. Sample notification letters are provided as attachments.

10. Public Education Program

- a. The District shall provide their existing and future water customers with information regarding backflow and backflow prevention, as well as the District's Cross-Connection Control Program. This public education program shall include, but is not limited to:
 - i. Articles in the District's newsletter
 - ii. Fact sheets available for new customers and developers
 - iii. Informational pamphlets and brochures available at the District office
 - iv. Water quality (Consumer Confidence) reports

11. Improvements Program

- a. The District shall prepare staff and delineate resources to meet the requirements of this Cross-Connection Control Program. Their tasks include upgrading their existing procedures to the requirements set in this program and preparing the program so that it will meet the challenges of future water system operations. This shall include, but is not limited to:
 - i. Dedicating staff to execute and maintain the cross-connection control program
 - ii. Establishing funds for all new and existing cross-connection program activities
 - iii. Identification, inspection, and record of all cross-connections
 - A. New cross connections (First priority)
 - B. Existing cross connections (Second priority)
 - iv. Establishing an annual inspection schedule for all new and existing cross connections after the initial inspection.

PROCEDURAL REQUIREMENTS

1. ALL ASSEMBLIES MUST BE ON THE WASHINGTON STATE DEPARTMENT OF HEALTH APPROVED BACKFLOW ASSEMBLY LIST.
2. ALL ASSEMBLIES ARE REQUIRED TO BE TESTED BY A WASHINGTON STATE CERTIFIED TESTER UPON INSTALLATION AND ANNUALLY. IN ADDITION, ASSEMBLIES MUST BE TESTED AFTER REPAIRS, RELOCATION, REINSTALLATION AND AFTER A BACKFLOW INCIDENT. NOTE THAT AIR GAPS INSTALLED IN LIEU OF A REDUCED PRESSURE BACKFLOW ASSEMBLY ALSO REQUIRE ANNUAL INSPECTION. TEST REPORTS MUST BE SUBMITTED IMMEDIATELY TO THE DISTRICT.
3. CONTACT DISTRICT FOR INSPECTION OF ALL NEWLY INSTALLED ASSEMBLIES.
4. A CATALOG CUT PRODUCT SUBMITTAL SHALL BE PROVIDED TO THE DISTRICT PRIOR TO INSTALLATION FOR VERIFICATION OF ASSEMBLY APPROVAL STATUS.
5. WHEN INSTALLING AN ASSEMBLY INSIDE A BUILDING, ENSURE ASSEMBLY IS LOCATED WHERE OCCASIONAL SPITTING FROM THE RELIEF VALVE PORT, A FOULED CHECK, OR WATER FLUSHED OUT DURING THE ANNUAL TEST WILL NOT BE OBJECTIONABLE. PROPER DRAINAGE MUST BE PROVIDED. DISTRICT WRITTEN APPROVAL MUST BE RECEIVED FOR INSIDE INSTALLATIONS.
6. ALL RBPA ASSEMBLIES SHALL BE PROTECTED FROM FREEZING, FLOODING AND MECHANICAL DAMAGE DUE TO WATER HAMMER AND EXCESSIVE PRESSURE BUILD UP.

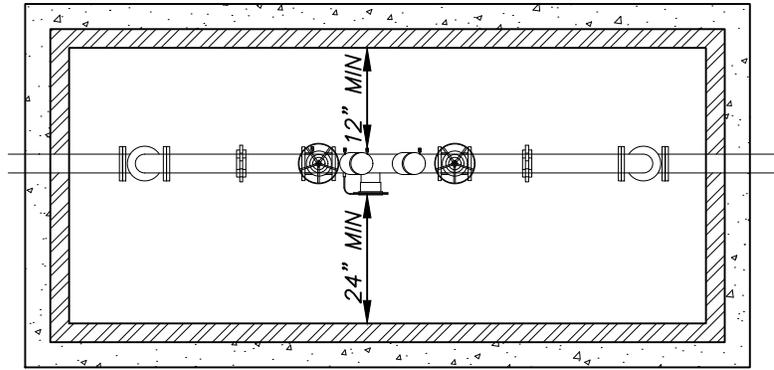
INSTALLATION REQUIREMENTS

1. CONTACT DISTRICT TO ENSURE YOU ARE INSTALLING THE CORRECT ASSEMBLY FOR THE DEGREE OF HAZARD.
2. ASSEMBLY MUST BE INSTALLED AS A UNIT, INCLUDING TWO SHUT OFF VALVES, RELIEF PORT, TWO CHECK VALVES, AND FOUR TEST COCKS. ALL ASSEMBLIES ARE REQUIRED TO BE AS A UNIT IN THE CONFIGURATION THEY WERE APPROVED BY DOH AND USC.
3. THOROUGHLY FLUSH THE WATER LINE PRIOR TO INSTALLING ASSEMBLIES.
4. ASSEMBLIES MUST BE INSTALLED A MINIMUM OF 12-INCHES FROM THE BOTTOM OF THE RELIEF PORT TO FINISHED GRADE, AND NO HIGHER THAN 5-FEET FROM THE FLOOR TO CENTERLINE OF ASSEMBLY. AN ASSEMBLY INSTALLED MORE THAN 5-FEET ABOVE FLOOR OR GROUND LEVEL MUST HAVE A PERMANENT PLATFORM UNDER IT FOR THE TESTER OR MAINTENANCE PERSON TO STAND ON. THE PLATFORM MUST COMPLY WITH ALL CURRENT AND APPLICABLE SAFETY STANDARDS AND CODES IN EFFECT. ALL ASSEMBLIES MUST BE INSTALLED HORIZONTALLY, UNLESS THEY HAVE WASHINGTON STATE APPROVAL TO BE INSTALLED VERTICALLY. IF INSTALLED IN A VERTICAL CONFIGURATIONS, IT MUST BE A MINIMUM OF 12-INCHES FROM FLOOR, AND NO HIGHER THAN 5-FEET FROM THE FLOOR TO CENTER OF THE #2 SHUT OFF VALVE. ALL ASSEMBLIES MUST MAINTAIN A SUFFICIENT CLEARANCE FROM ANY WALL TO ENSURE ACCESSIBILITY OF MAINTENANCE AND TESTING. SIZES 2-1/2 INCHES AND LARGER IN DIAMETER MAY REQUIRE ADDITIONAL SPACE ON ONE SIDE OF THE ASSEMBLY. ASSEMBLIES 2-1/2 INCHES AND LARGER IN DIAMETER SHALL HAVE SUPPORT BLOCK TO PREVENT FLANGE DAMAGE.
5. REDUCED PRESSURE BACKFLOW ASSEMBLIES SHALL NOT BE INSTALLED BELOW GROUND AT ANYTIME.
6. ASSEMBLIES MUST MEET THE ABOVE REQUIREMENTS TO ENSURE ACCESSIBILITY FOR TESTING, MAINTENANCE AND APPROVAL OF THE DISTRICT. VARIANCE OF ANY INSTALLATION MUST HAVE PRIOR WRITTEN APPROVAL OF THE DISTRICT.

AIR GAP REQUIREMENTS

1. AIR GAP MUST BE TWICE THE INLET DIAMETER OF THE INLET PIPE, MINIMUM OF 1-INCH FOR 1/2" PIPE OR SMALLER.
2. THE AIR GAP MUST PROVIDE A PHYSICAL SEPARATION FROM THE BOTTOM OF THE INLET PIPING TO THE TOP OF THE OVERFLOW RIM OF THE RECEIVING VESSEL.
3. IF INLET PIPING IS CUT DIAGONALLY TO DECREASE SPLASHING, THE AIR GAP SEPARATION IS MEASURED FROM THE BOTTOM OF THE CUT TO THE RECEIVING VESSEL.
4. IF AIR GAP IS LOCATED NEAR SIDEWALLS, THE SEPARATION INCREASES TO THREE TIMES THE INLET DIAMETER OF THE INLET PIPING, MINIMUM OF 1-1/2 INCHES.

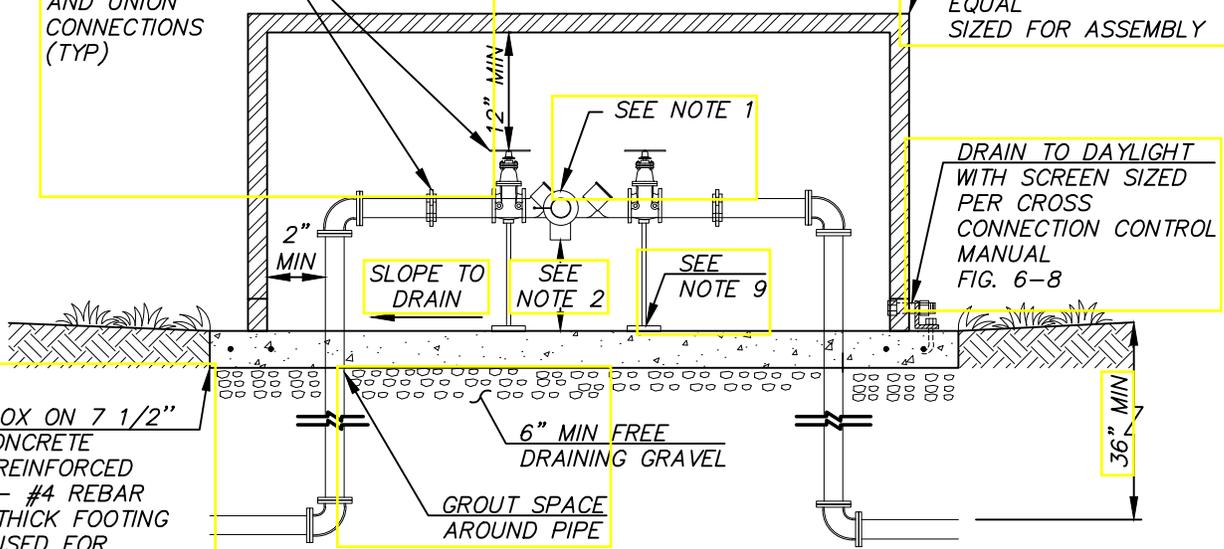
REV. 6/9/17



PLAN

FOR 2-1/2 INCH & SMALLER USE APPROVED VALVE AND UNION CONNECTIONS (TYP)

ABOVE GROUND ENCLOSURE "HOT BOX", "HOT ROCK", OR EQUAL SIZED FOR ASSEMBLY



ELEVATION

CENTER BOX ON 7 1/2" THICK CONCRETE FOOTING REINFORCED WITH TWO- #4 REBAR (6-INCH THICK FOOTING MAY BE USED FOR 2-1/2 INCH & SMALLER)

SLOPE TO DRAIN

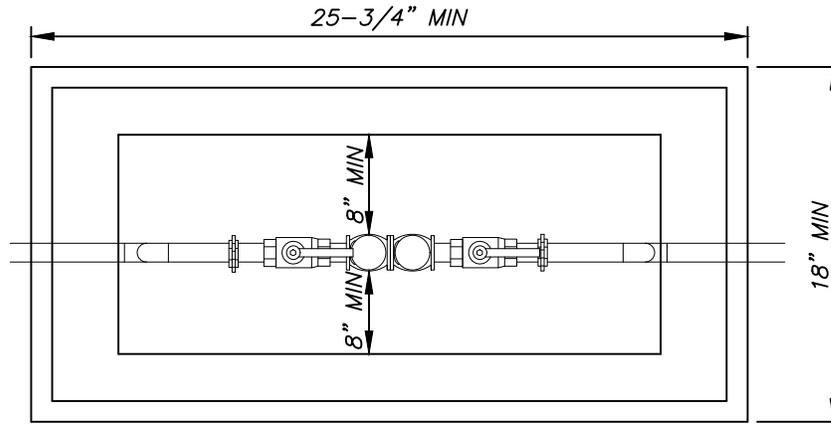
DRAIN TO DAYLIGHT WITH SCREEN SIZED PER CROSS CONNECTION CONTROL MANUAL FIG. 6-8

RPBA INSTALLATION NOTES

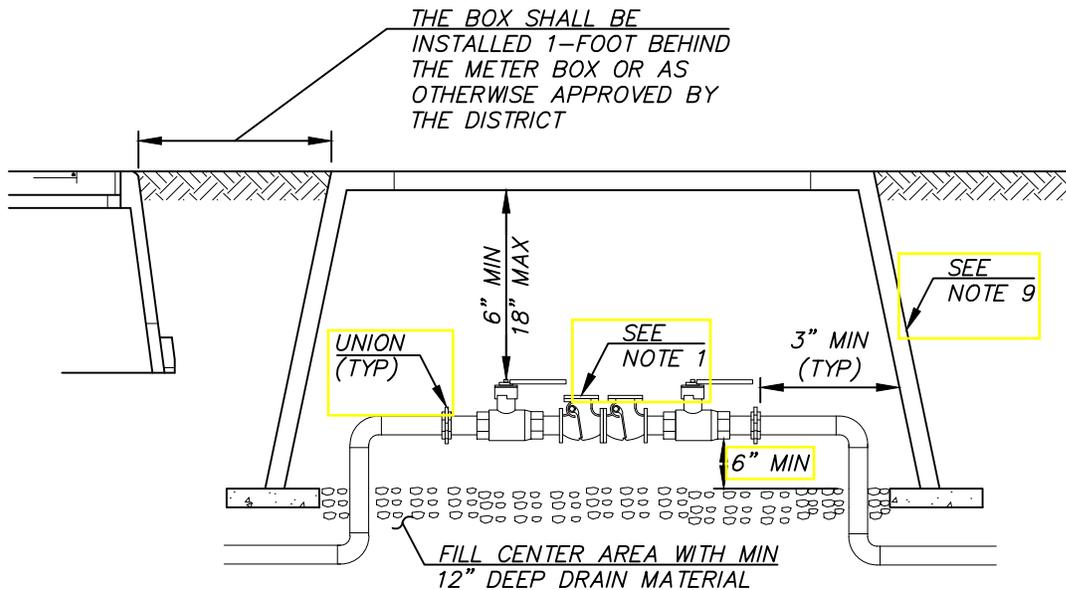
1. MUST BE ON THE LATEST DEPT. OF HEALTH APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
2. MUST BE INSTALLED ABOVE FINISHED GRADE, MIN. 12 INCHES TO BOTTOM OF RELIEF PORT.
3. WHEN INSTALLED INSIDE A BUILDING, A FLOOR DRAIN SIZED TO ACCEPT MAXIMUM DISCHARGE FROM THE RELIEF ASSEMBLY IS REQUIRED.
4. FREEZE PROTECTION MUST BE PROVIDED.
5. RISERS AND ALL PIPE IN BOX TO BE BRASS, COPPER, OR PVC.
6. DO NOT INSTALL IN AN AREA SUBJECT TO FLOODING. ASSEMBLIES MUST BE INSTALLED ABOVE GROUND.
7. A DISTRICT CROSS CONNECTION SPECIALIST SHALL INSPECT INSTALLATION OF DEVICE AND RECEIVE TEST REPORTS PRIOR TO ESTABLISHMENT OF WATER SERVICE OR APPROVAL. TEST REPORTS MUST BE SIGNED BY A CERTIFIED BACKFLOW ASSEMBLY TESTER AND IMMEDIATELY SENT TO THE DISTRICT.
8. SOME CLEARANCES (I.E. SIDE AND TOP) MAY NOT BE REQUIRED FOR DEVICES WITH A FULLY REMOVABLE ENCLOSURE.
9. SUPPORTS MUST BE INSTALLED FOR SIZES LARGER THAN 2-1/2".

REV. 10/19/17

REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) INSTALLATION



PLAN



ELEVATION

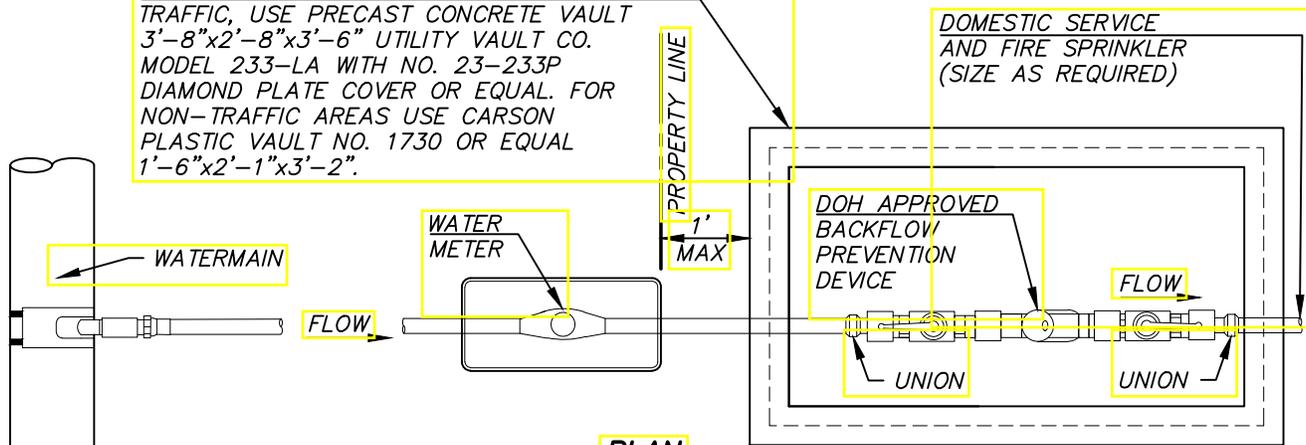
DCVA INSTALLATION NOTES

1. MUST BE ON THE LATEST DEPT. OF HEALTH APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
2. MAY BE INSTALLED BELOW GROUND IN AN APPROVED VAULT.
3. FREEZE PROTECTION IS THE RESPONSIBILITY OF THE OWNER.
4. RISERS AND ALL PIPE IN BOX TO BE BRASS, COPPER, OR PVC.
5. THE DCVA SHALL NOT BE INSTALLED WHERE IT MAY BECOME SUBMERGED.
6. A DISTRICT CROSS CONNECTION SPECIALIST SHALL INSPECT INSTALLATION OF DEVICE AND RECEIVE TEST REPORTS PRIOR TO ESTABLISHMENT OF WATER SERVICE OR APPROVAL. TEST REPORTS MUST BE SIGNED BY A CERTIFIED BACKFLOW ASSEMBLY TESTER AND IMMEDIATELY SENT TO THE DISTRICT.
7. FOR 2-1/2" TO 3-1/2" DCVA'S, USE A UTILITY VAULT 506-LA W/LOCKING STEEL DOOR NO. 55-332.P.
8. FOR 4" AND LARGER DCVA'S, USE A UTILITY VAULT 687-LA W/BASE 687-SB AND 2 LOCKING STEEL DOOR NO. 686-TL-2-332P.
9. FOR 1-INCH AND SMALLER DCVA USE CARSON INDUSTRIES "1220-12" OR EQUAL (21-1/2"x15") FOR 1 1/4-INCH TO 2-INCH DCVA USE CARSON INDUSTRIES "JUMBO BOX 1730-12" OR EQUAL (33-1/2"x20-1/2").

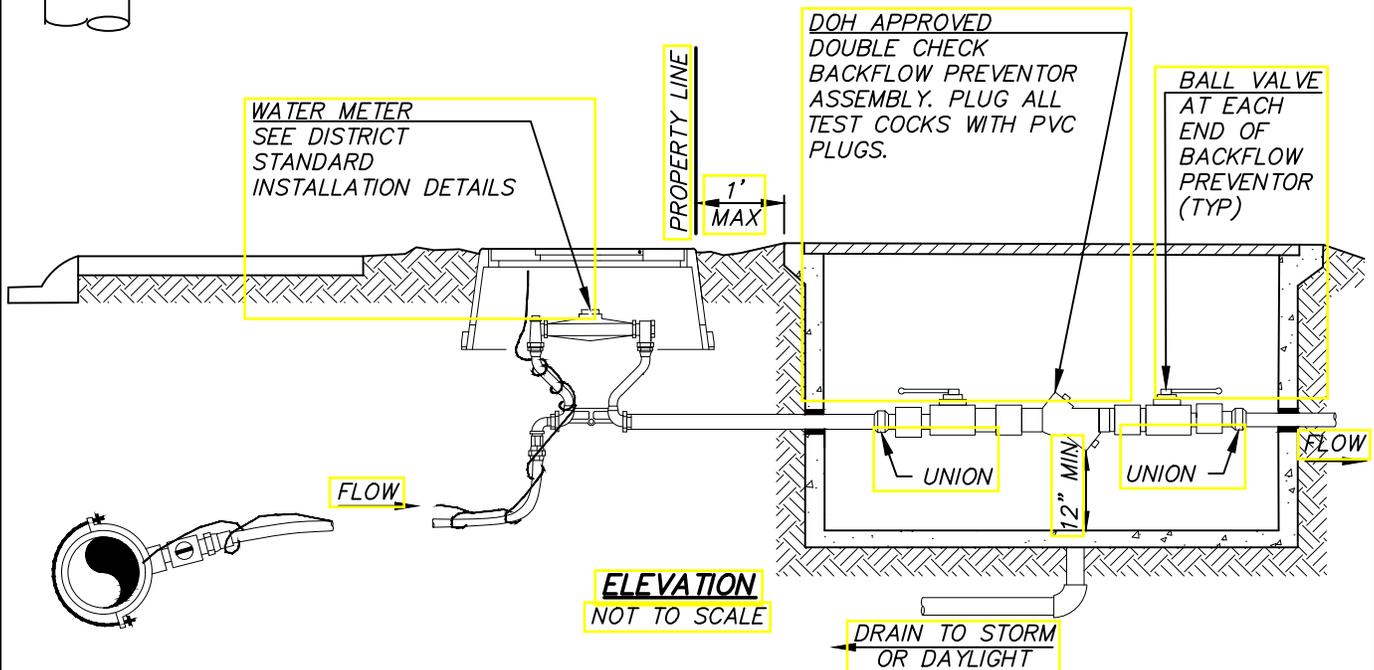
REV. 10/19/17

DOUBLE CHECK VALVE ASSEMBLY (DCVA) INSTALLATION

FOR AREAS SUBJECT TO VEHICULAR TRAFFIC, USE PRECAST CONCRETE VAULT 3'-8"x2'-8"x3'-6" UTILITY VAULT CO. MODEL 233-LA WITH NO. 23-233P DIAMOND PLATE COVER OR EQUAL. FOR NON-TRAFFIC AREAS USE CARSON PLASTIC VAULT NO. 1730 OR EQUAL 1'-6"x2'-1"x3'-2".



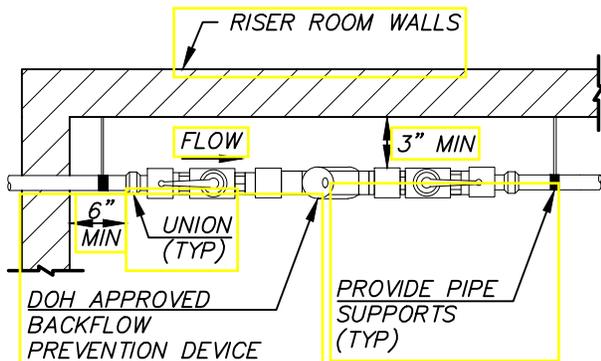
PLAN
NOT TO SCALE



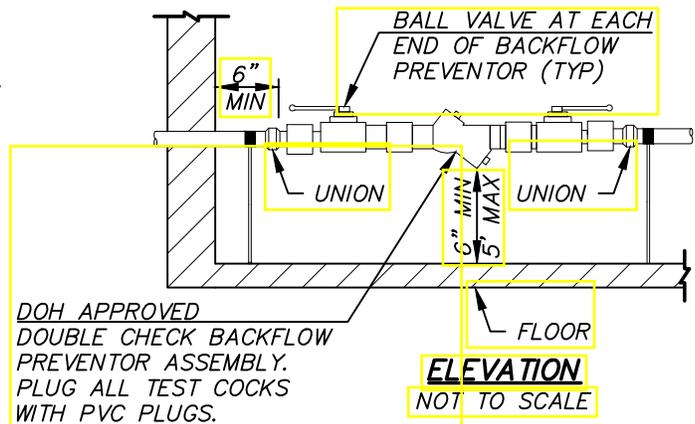
ELEVATION
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NOTE

1. NO FENCING, GATES OR OTHER OBSTACLES SHALL BE LOCATED AS TO RESTRICT ACCESS TO METER SERVICE.
2. SEE DISTRICT STANDARDS FOR WATER SERVICE METER BOX REQUIREMENTS.



PLAN
NOT TO SCALE



ELEVATION
NOT TO SCALE

ALTERNATE/ADDITIONAL DCVA IN RISER ROOM

GENERAL DCDA NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE APPROPRIATE FEDERAL, STATE, COUNTY OR DISTRICT REQUIREMENTS.
2. ALL DCDA_s SHALL BE APPROVED FOR INSTALLATION WITHIN THE STATE OF WASHINGTON BY THE WASHINGTON STATE DEPARTMENT OF HEALTH. THE CONTRACTOR SHALL PROVIDE THE DISTRICT WITH SPECIFICATIONS AND SHOP DRAWINGS OF THE APPROVED DCDA PRIOR TO CONSTRUCTION.
3. THE SUPPLY LINE FOR THE DCDA SHALL BE DUCTILE IRON, A MINIMUM OF 4" DIA. AND MEET THE MATERIAL AND CONSTRUCTION REQUIREMENTS OF THE DISTRICT FOR WATER MAIN CONSTRUCTION.
4. THE CONTRACTOR SHALL INSTALL AT THE WATER MAIN A TEE AND 4" MINIMUM SIZED GATE VALVE ON ALL DCDA SYSTEMS. WET TAPS ARE ONLY ALLOWED ON EXISTING WATER MAINS.
5. A FLEXIBLE FITTING (MJ SLEEVE) SHALL BE INSTALLED WHEN ENTERING THE VAULT. THIS FITTING MAY BE OMITTED IF AN MJ BELL CONNECTION IS WITHIN 5 FEET OF THE VAULT.
6. THE CONTRACTOR SHALL LEVEL THE UTILITY VAULTS AND ADJUST THE COVER TO MATCH THE EXISTING GRADE OR 6" ABOVE GRADE IN UNIMPROVED AREAS.
7. THE CONTRACTOR SHALL INSTALL A LADDER-UP AS SHOWN IN THE DETAILS. SUBMIT PRODUCT INFORMATION FOR DISTRICT REVIEW.
8. ALL VAULTS SHALL BE INSTALLED WITH A 4" ZURN FLOOR DRAIN MODEL 551 W/ GRATING ON A 4" PVC DRAIN PIPE. THE DRAIN SHALL BE RUN TO DAYLIGHT OR A STORM DRAIN SYSTEM WITH A MINIMUM OF 4" SCHEDULE 80 PVC STORM PIPE. IF POSITIVE DRAINAGE FROM THE VAULT CANNOT BE ACHIEVED A SUMP PUMP SYSTEM WILL BE REQUIRED. SUMP PUMP SHALL BE ZOELLER "MIGHTY-MATE" AUTOMATIC SUBMERSIBLE PUMP. WRITTEN DISTRICT APPROVAL IS REQUIRED FOR SUMP PUMP SYSTEM. VAULT SHALL BE CONSTRUCTED SO BACKFLOW ASSEMBLY DOES NOT BECOME SUBMERGED.
9. FIRE DEPARTMENT CONNECTIONS SHALL BE LOCATED, SIZED AND INSTALLED PER THE REQUIREMENTS OF THE FIRE MARSHAL AND AS SHOWN ON THE FIRE MARSHAL APPROVED DRAWINGS.
10. IF REQUIRED, THE POST INDICATOR VALVE IS TO BE INSTALLED AT THE LOCATION APPROVED BY THE FIRE MARSHAL AND AS SHOWN ON THE FIRE MARSHAL APPROVED DRAWINGS.
11. ALL TEST COCKS INSTALLED WITH THE DCDA SHALL HAVE THE APPROPRIATE PLUGS INSTALLED.
12. SIZING OF THE DCDA AND THE DCDA SUPPLY LINE IS THE RESPONSIBILITY OF THE PROPERTY OWNER. WHERE THE DCDA IS INSTALLED WITHIN AN UNDERGROUND VAULT AS SHOWN IN THE DETAILS, THE DISTRICT WILL MAINTAIN AND OPERATE THE SUPPLY LINE BETWEEN THE MAIN AND DCDA VAULT. THE DCDA VAULT AND ALL ITEMS AFTERWARDS ARE THE RESPONSIBILITY OF THE PROPERTY OWNER.
13. BACKFLOW ASSEMBLY TYPE AND INSTALLATION REQUIREMENTS MAY VARY AND WILL BE AT THE DISTRICT'S DISCRETION BASED UPON WASHINGTON STATE DEPARTMENT OF HEALTH DRINKING WATER REGULATIONS RELATING TO CROSS CONNECTION WAC 246-290-010. THE DISTRICT REQUIREMENTS MAY BE EQUAL TO OR MORE STRINGENT THAN THE ABOVE CITED CODE.

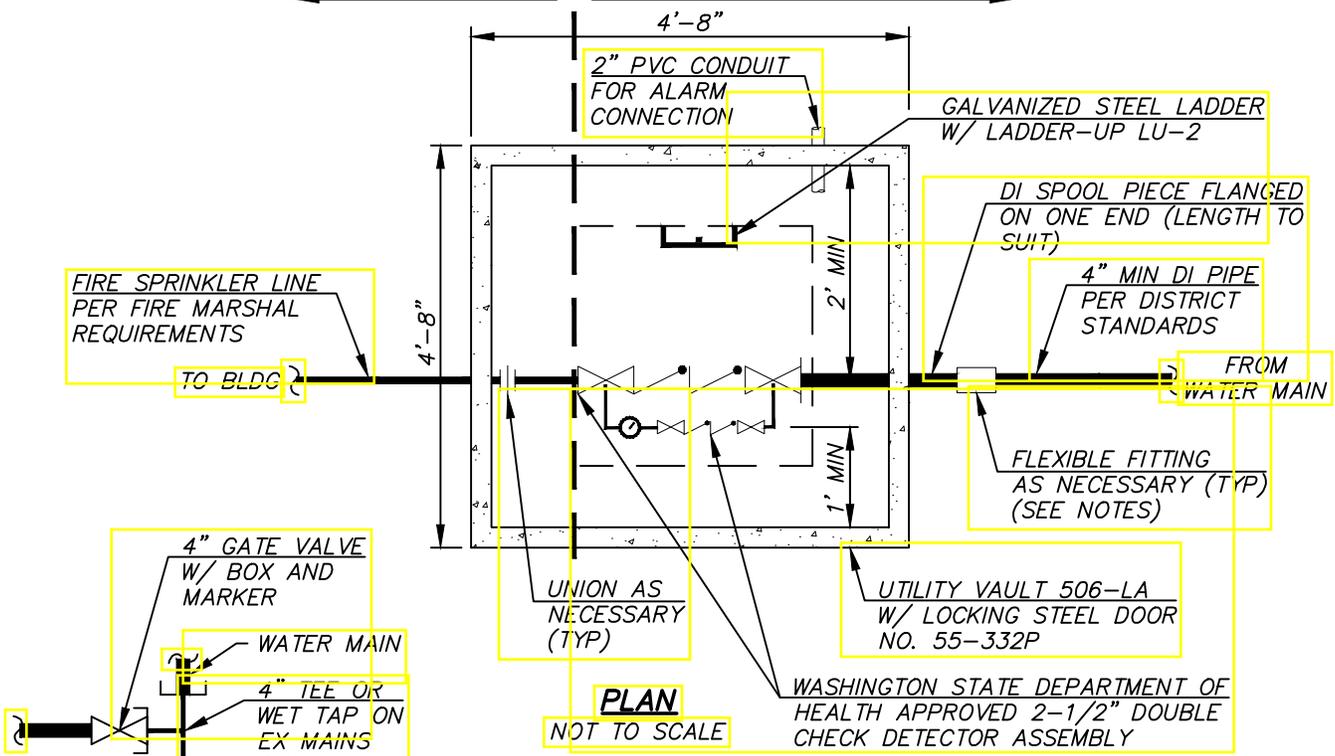
PAINT SCHEDULE

EXTERIOR OF VAULT BELOW GRADE TWO COATS OF BLACK BITUMASTIC SOLUTION VAULT SHOULD BE DRIED WITH NO MOISTURE PRESENT PRIOR TO APPLICATION OF COATINGS.

PAINT INTERIOR PIPING AND VALVES ONLY, BACKFLOW ASSEMBLY SHALL NOT BE PAINTED.

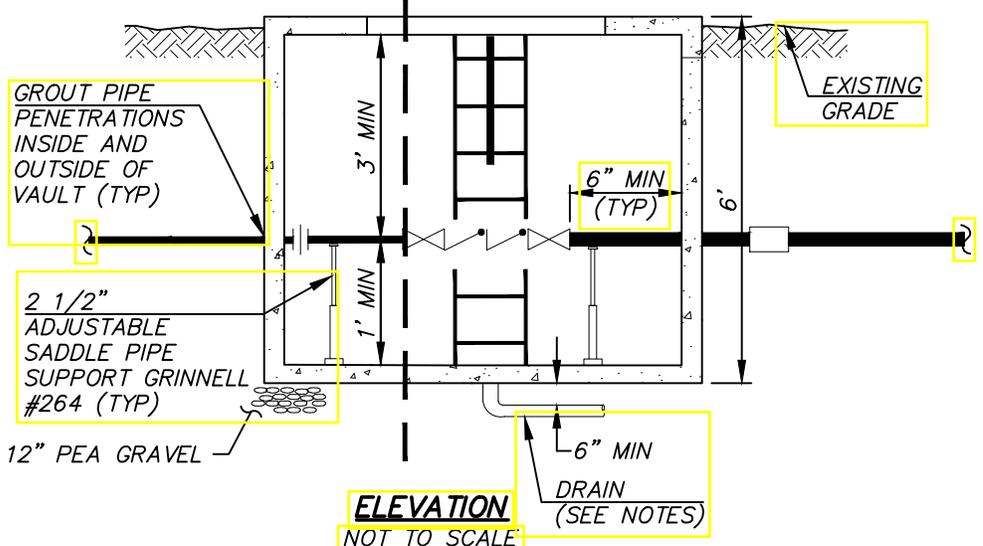
- 1 - COAT RUST RESISTOR PRIMER RED #1013
- 2 - COATS SAFETY BLUE

PLAN REVIEW AND INSPECTION BY FIRE MARSHAL | **PLAN REVIEW AND INSPECTION BY SAMMAMISH PLATEAU WATER AND SEWER DISTRICT**



CONNECTION TO MAIN
NOT TO SCALE

PLAN REVIEW AND INSPECTION BY FIRE MARSHAL | **PLAN REVIEW AND INSPECTION BY SAMMAMISH PLATEAU WATER AND SEWER DISTRICT**

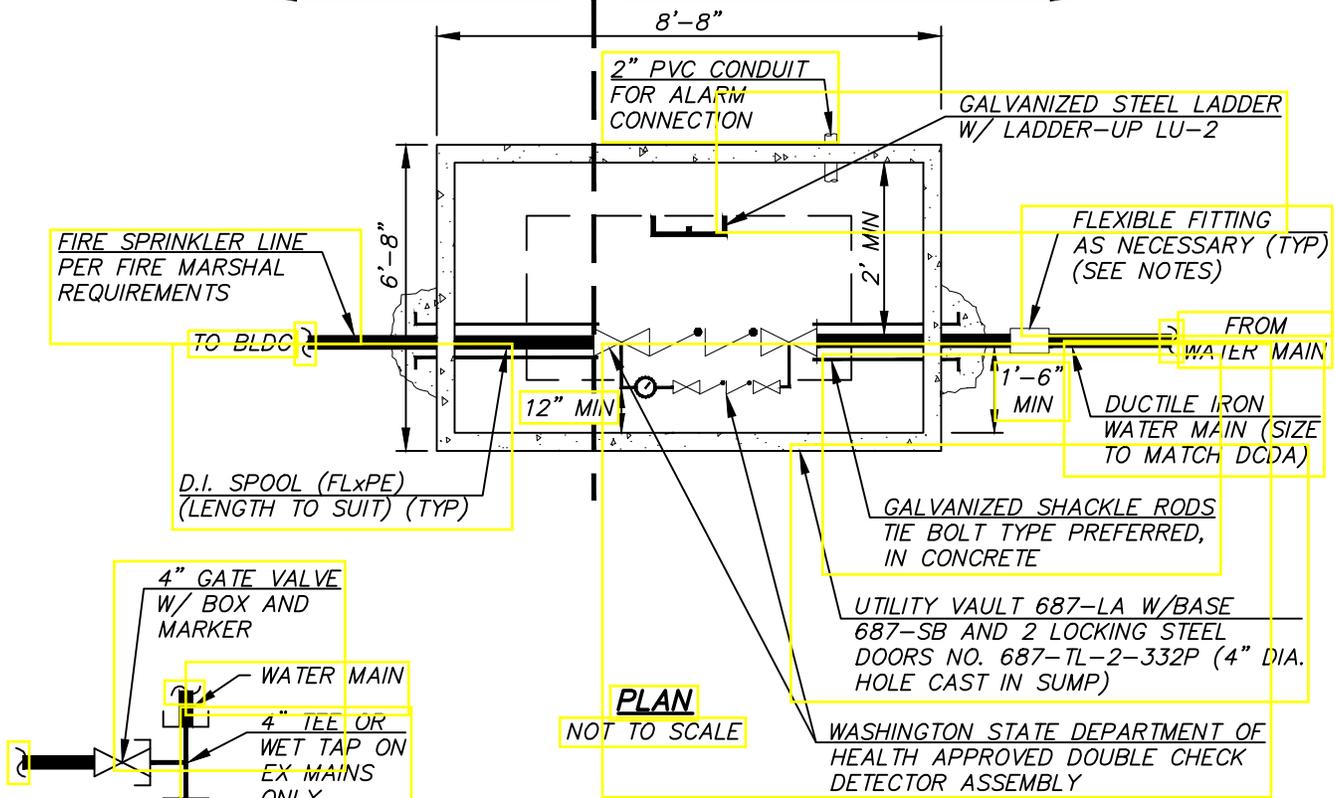


NOTE

1. FOR LOCATION OF FIRE DEPARTMENT CONNECTION (FDC) AND POST INDICATOR VALVE (PIV), IF APPLICABLE, SEE FIRE MARSHAL APPROVED DRAWINGS.
2. DISTRICT OPERATIONS AND MAINTENANCE RESPONSIBILITY OF THE WATERMAIN ENDS AT THE FACE OF THE VAULT

PLAN REVIEW AND INSPECTION BY FIRE MARSHAL

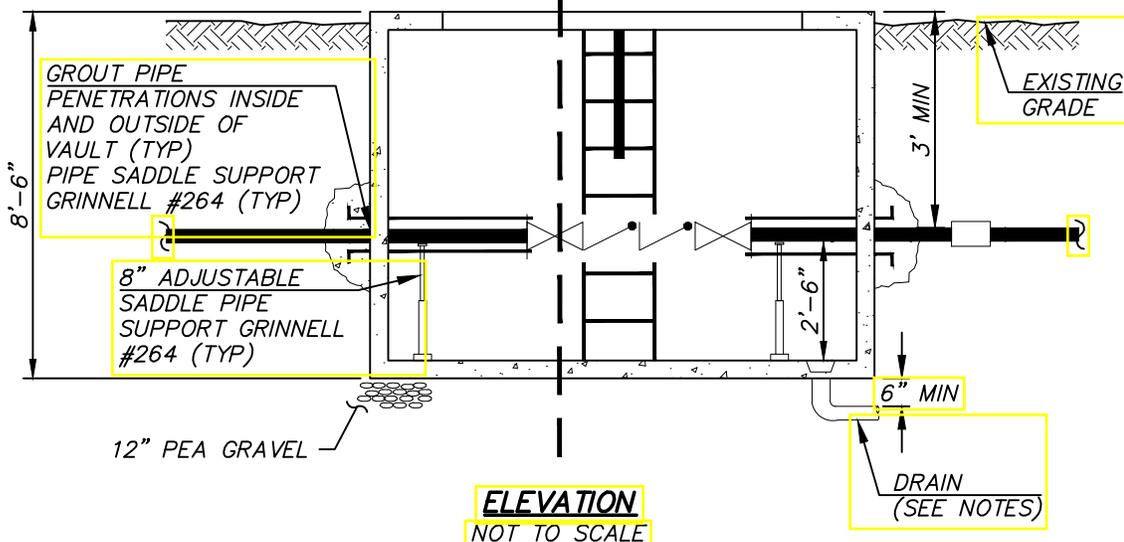
PLAN REVIEW AND INSPECTION BY SAMMAMISH PLATEAU WATER AND SEWER DISTRICT



CONNECTION TO MAIN
NOT TO SCALE

PLAN REVIEW AND INSPECTION BY FIRE MARSHAL

PLAN REVIEW AND INSPECTION BY SAMMAMISH PLATEAU WATER AND SEWER DISTRICT



NOTE

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2. DISTRICT OPERATIONS AND MAINTENANCE RESPONSIBILITY OF THE WATERMAIN ENDS AT THE FACE OF THE VAULT.

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