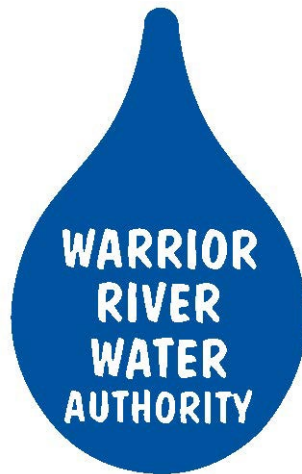


# WARRIOR RIVER WATER AUTHORITY

## CROSS CONNECTION/BACKFLOW PREVENTION CONTROL PROGRAM



Adopted: 04/05/2022  
Latest Update: 02/19/2024

## **I. GENERAL POLICY**

### **A. Compliance**

This Cross Connection/Backflow Prevention Control Program as adopted by the Warrior River Water Authority (WRWA) as a purveyor of potable water in the State of Alabama is consistent with and meets the requirements of the following:

1. The Federal Safe Drinking Water Act of 1974 (and Amendments) – Public Law 93- 523.
2. The U.S. Environmental Protection Agency (EPA) – Cross Connection Control Manual, 2003.
3. The Alabama Department of Environmental Management (ADEM), Division 7, Water Supply Program, Code R. 335-7-9 – Cross Connection Control Requirements, Effective: April 2022.
4. Statutory Authority: Code of Alabama 1975, Section 22-23-33, 22-23-49, 22-22A-5, and 22-22A-6.

### **B. Purpose**

The purpose of this policy is:

1. To protect the public potable water supply of WRWA from the possibility of contamination or pollution by isolating within the customer's internal distribution system(s) or the customer's private water system(s) such contaminants or pollutants that could backflow into the public water system; and,
2. To promote the elimination or control of existing cross-connections, actual or potential, between the customer's potable water system(s) and non-potable water systems, plumbing fixtures, and industrial piping systems; and,
3. To provide for the maintenance of a continuing program of cross-connection control that will systematically and effectively prevent the contamination or pollutants that could enter the potable water system due to cross connections.
4. To provide for the annual testing and repair of backflow prevention assemblies to effectively prevent contamination.

### **C. Responsibility**

#### **1. Water Purveyor**

WRWA shall be responsible for developing, implementing, and enforcing a backflow and cross-connection control policy consistent with the applicable State and Federal regulations for the reasonable protection of the public potable water distribution system from contamination or pollution originating in a customer's water system. WRWA's responsibility to ensure a safe water supply begins at the raw water source and includes adequate treatment facilities, storage facilities, distribution networks, and ends at the point of service to the customer's water system. WRWA shall determine the degree of hazard or potential hazard to the public potable water system inherent in supplying a customer's water system and shall specify the appropriate means of protection required for the service connection. The location and type of backflow prevention assemblies for each connection to the WRWA distribution system shall be approved by WRWA.

#### **2. Customer**

The customer has the primary responsibility of preventing pollutants and contaminants from entering their potable water system or the public potable water system. WRWA customers are fully responsible for ensuring that they have an approved and operating backflow prevention assembly. The customer's responsibility starts at the point of delivery from the public potable water system at the connection to

WRWA's meter or isolation valve, in the case of a dedicated fire service line, and includes all of their water system. The customer, at their own expense, shall install, operate, test, and maintain approved backflow prevention assemblies as required by WRWA.

Failure, refusal, or inability on the part of the customer to meet WRWA's time schedule for the installation of required backflow prevention assemblies or for annual testing shall constitute grounds for discontinuance of water service until such required backflow prevention assemblies have been properly installed and/or tested. A licensed plumber shall install the proper backflow prevention assemblies in the correct manner. (Call 205-491-7721 for additional information).

In the event of any known or suspected accidental pollution or contamination of the customers or WRWA's potable water system, the customer shall promptly take steps to confine any further spread of pollution or contamination and shall immediately notify WRWA of the situation. In the event of pollution or contamination, the customer from which the pollution or contamination occurred shall be responsible for any corrective actions and/or damages (i.e. public health notices, liability, customer health issues, WRWA water lost to correct the issue, etc.) caused to the system and/or other WRWA customers regardless of the condition of the backflow prevention assemblies found or not found at the service.

The customer shall maintain accurate records of tests and repairs made to backflow prevention assemblies and shall maintain such records for a minimum period of five (5) years. The records shall include the list of materials or replacement parts used. Following any installation, repair, overhaul, re-piping or relocation of a backflow prevention assembly, the customer shall have it tested to insure that it is in good operating condition and will prevent backflow. A certified backflow prevention assembly tester shall perform tests, maintenance and repairs of backflow prevention assemblies. The tester is also required to submit all installation and test reports to WRWA, or its designee, via current submittal methods.

### **3. Certified Backflow Prevention Assembly Testers**

When employed by the customer to test, repair, overhaul, or maintain backflow prevention assemblies, a backflow prevention assembly tester will have the following responsibilities: The tester will be responsible for making competent inspections and for replacing, repairing or overhauling backflow prevention assemblies and making reports of such repair to the customer and responsible authorities on forms approved by WRWA via the current submittal methods. The tester shall be familiar with all applicable federal, state and local laws, rules, and regulations, and shall be equipped with and be competent to use all the necessary tools, gauges, manometers and other equipment necessary to properly test, repair, and maintain backflow prevention assemblies. It will be the tester's responsibility to insure that original manufactured parts are used in the repair of or replacement of parts in a backflow prevention assembly. It will be the tester's further responsibility not to change the design, material or operational characteristics of an assembly during repair or maintenance without prior approval of WRWA. A certified tester shall perform the work and be responsible for the competency and accuracy of all tests and reports. A certified tester shall provide a copy of all test and repair reports to the customer and to WRWA, via the current submittal methods, within ten (10) business days of any completed test or repair work. A certified tester shall maintain such records for a minimum period of five (5) years. All certified testers must obtain certification from an approved training course and employ properly calibrated backflow prevention assembly test equipment.

## II. DEFINITIONS

The following words, terms and phrases, when used in this policy, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

### A. Air Gap Separation

An unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water through to a tank, plumbing fixture, or other assembly and the flood rim of the receptacle. The distance between the lowest end of the supply pipe and the flood rim of the vessel shall be at least double the diameter of the supply pipe measured vertically above the flood level rim of the vessel. In no case shall the gap be less than one (1) inch. This gap shall also be above the established 100-year flood level.

### B. Atmospheric Vacuum Breaker

A backflow prevention assembly which is operated by atmospheric pressure in combination with the force of gravity. The unit is designed to work in a vertical plane only. The moving part consists of a poppet valve, which must be carefully sized to slide in a guided chamber and effectively shut off the reverse flow of water when a negative pressure exists.

### C. Auxiliary Water

Any water on or available to the premises other than the water supplied by WRWA's public potable water system. These auxiliary waters may include water from another supplier's public water system; or water from a source such as wells, lakes, or streams; or process fluids; or used water. They may be polluted, contaminated, or objectionable, or constitute a water source or system over which the supplier does not have control.

### D. Backflow

Any reversal of flow of water from its intended direction that can potentially cause used water to return to the WRWA distribution system. Backflow or reversed flow occurs through a cross connection under the following two conditions:

#### (1) Back Pressure

Backflow caused by an increase in the pressure of the private (customer's) system above that of the WRWA distribution system.

#### (2) Back Siphonage

Backflow caused by a lowering in the pressure of the WRWA distribution system below that of the private (customer's) system.

### E. Backflow Prevention Assembly

An assembly or device used to prevent backflow into a customer or public potable water system. The type of assembly used should be based on the degree of hazard, either existing or potential. Some types of Backflow Prevention Assemblies used in the WRWA distribution system are as follows:

#### (1) Dual Check Valve (DuC)

A DuC provides the minimum type of protection required; This type is required for each new residential connection or service connection that is 1 inch in diameter or smaller which does not present a specific contamination or pollution hazard to the system as identified by WRWA. This

assembly consists of two internally loaded check valves. DuCs are not testable backflow prevention assemblies.

**(2) Double Check Valve Assembly (DC)**

Level of backflow protection typically required for pollution type hazards and as a minimum protection for any connection larger than 1 inch. DCs consist of two internally loaded check valves installed between two resilient-seated gate valves with properly located resilient-seated test cocks.

**(3) Reduced Pressure Zone Backflow Assembly (RPZ)**

Highest degree of backflow protection. Required for contamination or health types of hazards. RPZs consists of two independently acting check valves together with a hydraulically operating, mechanically independent pressure-differential relief valve installed between two resilient-seated gate valves with properly located resilient- seated test cocks.

**F. Contaminant**

A substance that will impair the quality of the water to a degree that it creates a serious health hazard to the public leading to poisoning or spread of disease.

**G. Cross-Connection**

A connection or potential connection between any part of a potable water system and any other environment containing other substances in a manner that, under any circumstances would allow such substances to enter the potable water system. Other substances may be gases, liquids, or solids, such as chemicals, waste products, steam, water from other sources (potable or non-potable), or any matter that may contaminate, change the color, or add odor to the water.

**H. Customer**

The owner or tenant, or the agent of either, or other persons in charge of any premises supplied by or in any manner connected to the WRWA potable water system.

**I. Degree of Hazard**

A term derived from an evaluation of the potential risk to health and the adverse effect on the potable water system. Hazards evaluated in WRWA's potable water system are as follows:

**(1) Contamination or Health Hazard**

A cross-connection or potential cross-connection involving any foreign substance that could, if introduced into the potable water supply, cause death or illness, spread disease, or have a high probability of causing such effects.

**(2) Pollution Hazard**

A cross-connection or potential cross-connection involving any foreign substance, that if permitted to get into the public water system, will degrade its quality so as to constitute a moderate hazard, or impair the usefulness or quality of the water to a degree which does not create an actual hazard to the public health but which does adversely and unreasonably effect such water for domestic use.

**(3) System Hazard**

A condition posing an actual or potential threat of damage to the physical properties of the public water system or a customer's potable water system.

## **J. Detector Assembly**

Low flow bypass water meter and backflow prevention assembly used to indicate water usage through an isolated connection to the potable water system where a line size meter is not currently installed. For example, fire protection service lines.

### **(1) Double Check Valve Detector Assembly (DCDA)**

A specially designed backflow prevention assembly composed of a line-size approved double check valve assembly with a bypass containing a specific water meter and an approved double check valve assembly.

### **(2) Reduced Pressure Zone Detector Assembly (RPDA)**

A specially designed backflow prevention assembly composed of a line-size approved reduced pressure zone backflow assembly with a bypass containing a specific water meter and an approved reduced pressure zone backflow prevention assembly.

## **K. Industrial - Fluids System**

Any fluid or solution which may be chemically, biologically or otherwise contaminated or polluted in a form or concentration such as would constitute a health, pollutional, or system hazard if introduced into the public or a potable customer's water system. This includes, but is not limited to:

- a). Polluted or contaminated waters
- b). Process waters
- c). Used waters originating from the public water system which may have deteriorated in sanitary quality
- d). Cooling waters
- e). Contaminated natural waters taken from wells, lakes, streams, or irrigation systems
- f). Chemicals in solution or suspension
- g). Oils, gases, acids, alkalis, and other liquid and gaseous fluids used in industrial or other processes, or for fire fighting purposes

## **L. Pollutant**

A foreign substance, that if permitted to get into the public water system, will degrade its quality so as to constitute a moderate hazard, or impair the usefulness or quality of the water to a degree which does not create an actual hazard to the public health but which does adversely and unreasonably effect such water for domestic use.

## **M. Pressure Vacuum Breaker**

A backflow prevention assembly that is similar to an atmospheric vacuum breaker except that the checking unit poppet valve is activated by a spring. This type of vacuum breaker does not require a negative pressure to react and can be used on the pressure side of a valve.

## **N. Service Connection**

The terminal end of a service line from the public potable water system. If a meter is installed at the end of the service, then the service connection means the downstream end of the meter.

## **O. Service Lines**

The customer's water system downstream of the WRWA meter(s).

## **P. Water – Potable**

Water that is safe for human consumption as described by the public health authority having jurisdiction.

**Q. Water – Non-Potable**

Water that is not safe for human consumption or that is of questionable quality.

**R. Water – Used**

Any water supplied by the public water system to a customer’s water system.

**III. REQUIREMENTS**

**A. New Service Connections and Meter Change Outs**

Every new connection, or connection that is being brought up to current WRWA standards shall have an approved backflow prevention assembly installed. Each service connection shall be protected against a backflow incident. The exact type of backflow prevention assembly will be determined based on the degree of hazard of a backflow incident from the customer’s premises, not the likelihood of a backflow incident occurring.

All applications for new service connections to the public potable water system shall be evaluated by WRWA to determine the degree of hazard present and the type of backflow prevention assembly or assemblies required. The criteria used for evaluation shall be as outlined in Section VI of this policy. The backflow prevention assembly required and approved by WRWA shall be installed and tested by the customer and at the customer’s expense before service will be granted.

Where adequate plans and specifications are not available for review, and no realistic evaluation of the proposed water uses can be determined, WRWA will require the customer to install a backflow prevention assembly that will provide the maximum protection to the public potable water supply.

WRWA requires a minimum of a Dual Check Valve (DuC) for any new service connection that is 1 inch in diameter and smaller which does not present a specific contamination or pollution hazard to the system.

**B. Existing Service Connections**

For services existing prior to the implementation of this policy, WRWA may perform evaluations and inspection of plans and/or premises to identify potential cross connections/backflows. For potential cross connections / backflows identified, WRWA shall inform owners by letter of any corrective action deemed necessary, the method of achieving the correction, and the time allowed for the correction to be made.

Ordinarily, ninety (90) days will be allowed for compliance. This time period may be decreased at the discretion of WRWA depending upon the degree of hazard involved and the history of the assembly in question. If, in the judgment of WRWA, an imminent contamination hazard exists, water service to the building or premises where a cross connection exists may be terminated unless the hazard is immediately eliminated. The criteria for selection of backflow protection shall be as outlined in Section VI of this policy.

Any customer who cannot or will not allow WRWA personnel on the premises for an inspection of the customer’s water and piping system shall be required to install the backflow prevention assembly that will provide the maximum protection to the public potable water supply system. Refusal by a customer to allow an inspection or refusal to install the required backflow prevention assembly shall cause WRWA to discontinue service for non-compliance.

Any customer that is currently not in compliance with this program or is determined to not have a backflow prevention assembly or has a malfunctioning backflow prevention assembly shall install and

maintain an approved backflow prevention assembly at the customer's expense.

### **C. Discontinuance of Service**

Under the authority of Alabama Department of Environmental Management Code R. 335-7-9-.05, WRWA shall deny or discontinue water service to any customer if a required backflow prevention assembly is not installed, tested, or properly maintained, or if a cross-connection exists on the premises and in the view of WRWA, there is inadequate backflow prevention at the service connection. Water service shall not be restored to such premises until the deficiencies have been corrected or eliminated to the satisfaction of WRWA.

## **IV. INSTALLATION**

### **A. General**

All new construction plans and specifications shall be made available to WRWA for review and approval, and to determine the degree of hazard. All backflow prevention assemblies shall be installed in accordance with WRWA's standard specifications, and the manufacturer's installation instructions. In the absence of applicable provisions in these standards, the most current building and plumbing code requirements shall apply. The installation of a backflow prevention assembly, which is not approved, must be replaced with an approved backflow prevention assembly.

Following installation, all Double Check Valve Assemblies (DCs) and Reduced Pressure Zone Backflow Assemblies (RPZs) are required to be tested by a certified backflow prevention assembly tester at install. The test results shall be submitted in an approved format within 10 business days. Ownership, testing, and maintenance of the assembly shall be the responsibility of the customer.

### **B. Location**

All backflow prevention assemblies shall be installed at a location designated by WRWA. Generally, this will be immediately on the customer's side of the meter. If circumstances make this location impractical, then the backflow prevention assembly may be installed further downstream from the meter if approved by WRWA. However, any piping between the meter and the backflow prevention assembly must be either exposed or readily accessible for inspection. Backflow prevention and detector assemblies, as required by WRWA, shall be situated on the customer's premises as close to the service connection as practicable. WRWA strongly recommends that all new installations of DCs and RPZs include the installation of strainers located immediately upstream of the backflow prevention assembly. The installation of strainers may preclude the fouling of backflow prevention assemblies.

All DCs must be installed in drainable vaults wherever below ground installation is necessary, in accordance with WRWA's standard specifications. RPZs must be installed above grade in a horizontal position and in a location in which no portion of the assembly can become submerged in any substance under any circumstances. Vault and/or below grade installations are prohibited for RPZs.

### **C. Bypass**

If the customer's operations cannot permit any interruption of service for backflow prevention assembly testing or repairs, it will be the customer's responsibility to have two (2) approved backflow prevention assemblies installed in parallel so that one (1) may be used while the other is being tested or repaired. Bypasses around backflow prevention assemblies are strictly forbidden. RPZs shall not be equipped with a bypass connection unless a completely redundant RPZ system is installed.



## V. TESTING, CERTIFICATION & ENFORCEMENT

### A. General and Administrative

Testing of backflow prevention assemblies shall be performed by a certified backflow prevention assembly tester at the customer's expense. WRWA has an established timeline for submission of testing results and shall notify each affected water user their backflow prevention assemblies are required to be tested. This written notice shall give the water user notification to have the assembly or assemblies tested, and supply the water user with directions for completing and submitting test results.

A letter will be sent (typically 30-60 days) before the backflow test due date each year to notify customers of their responsibilities for testing and reporting of their backflow test results. Results shall be submitted annually by the certified tester via current submittal methods before the test due date. Any test results not submitted on or before the test due date are considered late and will be subject to a \$30.00 fee per backflow prevention assembly. A second letter will be sent to customers who are out of compliance with the original test due deadline, and 30 days from the original test due date will be given to come into compliance or a second \$30.00 fee per assembly will be assessed. In addition to the second \$30.00 fee, any customer who is not in compliance by the second deadline will be subject to disconnection. When the backflow prevention assembly is tested and brought into compliance, a \$100.00 fee (\$50.00 Out of Compliance Fee and \$50.00 Reconnection Fee) would have to be paid before service was restored.

### B. Testing Personnel

Certified backflow prevention assembly testers shall provide proof of completion of a training course as outlined by the AWWA Manual M14, *Backflow Prevention and Cross-Connection Control: Recommended Practices*. The course shall include classroom instruction, laboratory (hands-on) experience with various types of backflow prevention assemblies, familiarization with testing equipment from several manufacturers, and the successful completion of a written examination. The course shall be recognized by AWWA, ASSE, The University of Florida – TREEO Center, or the American Backflow Prevention Association (ABPA). If required, testers shall provide certification with current certification number and certifications must be maintained with all continuing education completed to keep certification current. No test reports shall be accepted from non-certified personnel or from personnel that do not have up to date certification. All testing equipment shall be, at minimum, checked for accuracy and calibrated annually. If required, provide evidence that all equipment used has been calibrated within one year of a test. In addition to the certification course requirements as outlined above, personnel testing backflow assemblies servicing fire lines and sprinkler systems must be a pre-approved, qualified inspection technician, currently on file with the State Fire Marshal's office.

### C. Test Frequency

All DCs and RPZs shall be tested when installed and annually thereafter. DuCs are not testable backflow prevention assemblies.

### D. Test Procedures

Test procedures shall be those currently recommended by the Foundation for Cross- Connection Control and Hydraulic Research of the University of Southern California, and shall comply with all local plumbing codes. Testing of backflow assemblies on fire lines and sprinkler systems shall also comply with the requirements of NFPA 25, Standards for the Inspection, Testing, and Maintenance of Water Based Fire Protection Systems.

Testing requires an interruption of service usually lasting 5 to 20 minutes. For facilities that require an uninterrupted supply of water, and when it is not possible to provide water service from two separate meters, provisions shall be made for a parallel installation of backflow prevention assemblies.

**E. Reporting**

A record of all testing and repairs is to be retained by the customer and the certified tester for a period of five (5) years. Copies of the records must be provided in an approved format via the current submittal methods within ten (10) business days after the completion of any testing and/or repair work.

Any time that repairs to backflow prevention assemblies are deemed necessary, whether through annual or required testing or routine inspection by the owner or by WRWA, WRWA shall be notified immediately and a failed backflow test report must be received by WRWA via current submittal methods. The tester shall include the list of all repair materials or replacement parts used in the report.

**F. Enforcement**

A letter will be sent (typically 30-60 days) before the backflow test due date each year to notify customers of their responsibilities for testing and reporting of their backflow test results. Results shall be submitted annually by the certified tester via current submittal methods before the test due date. Any test results not submitted on or before the test due date are considered late and will be subject to a \$30.00 fee per backflow prevention assembly. A second letter will be sent to customers who are out of compliance with the original test due deadline, and 30 days from the original test due date will be given to come into compliance or a second \$30.00 fee per assembly will be assessed. In addition to the second \$30.00 fee, any customer who is not in compliance by the second deadline will be subject to disconnection. When the backflow prevention assembly is tested and brought into compliance, a \$100.00 fee (\$50.00 Out of Compliance Fee and \$50.00 Reconnection Fee) would have to be paid before service was restored.

In the event of a failed test and/or if repairs to the backflow prevention assembly is required based on test results or inspection, the customer will be required to hire a certified backflow tester, repair technician, and/or installer to repair/replace the assembly and provide passing test results. The customer will have 15 days from the date of notification to fulfill their obligation. If compliance is not met within the 15 days, WRWA may take further action, which may include penalties, fines, or termination of water supply. Water supply may be terminated if, in the judgment of WRWA, an imminent contamination hazard exists.

**VI. FACILITIES REQUIRING BACKFLOW PREVENTION**

**A. General**

Approved backflow prevention assemblies shall be installed on all service lines connected to WRWA's distribution system.

Some types of facilities or services have been identified by WRWA as having a potential for backflow of non-potable water into the public water supply system. Therefore, an approved backflow prevention assembly will be required on all such services according to the degree of hazard present.

## **B. Facilities Requiring Double Check Backflow Assemblies**

DCs that meet all of the applicable plumbing codes will be required to be installed when the potential backflow consequences would constitute a pollution type hazard and as a minimum requirement for any connection larger than 1 inch in diameter.

WRWA will evaluate each facility on its own unique set of circumstances for the type of backflow protection required. The following list has been developed as a general guide for the type of facilities requiring DCs:

- Connections to other approved public potable water systems
- Multistoried building without booster pumps
- Fire lines and fire hydrants with no chemical addition capability

## **C. Facilities Requiring Reduced Pressure Zone Backflow Assemblies**

RPZs that meet all applicable plumbing codes will be required to be installed when the potential backflow consequences would constitute a contamination or health hazard due to the introduction of a contaminant into the water system.

WRWA will evaluate each facility on its own unique set of circumstances for the type of backflow protection required. The following list has been developed as a general guide for the type facilities requiring RPZs:

- Car washing facilities
- Multistoried buildings with booster pumps
- Commercial laundries
- Sewer treatment plants and sewer pump stations (private or public)
- Hospitals or medical centers
- Veterinary facilities
- Mortuaries
- Laboratories
- Premises with restricted access
- Facilities with cooling systems connected to the water system
- Food and beverage processing facilities
- Chemical plants using water
- Metal plating plants
- Petroleum processing or storage facilities
- Radioactive material processing plants/nuclear reactors

- Premises with fire lines and/or private fire hydrants with potential chemical addition (i.e., foamite systems, antifreeze addition, close proximity to auxiliary water supply)
- Premises with an auxiliary water supply for domestic or irrigation services
- Premises using “reclaimed” water
- Facilities with complex piping
- Any facility built within established industrial parks

## **VII. CONNECTIONS**

### **A. General**

No person shall connect or cause to be connected any supply of water not approved by the Alabama Department of Environmental Management to the water system supplied by WRWA. Any such connections allowed by WRWA must be in conformance with the backflow prevention requirements of this policy.

In the event of contamination or pollution of a public or customer potable water system, the customer shall notify WRWA immediately in order that appropriate measures may be taken to overcome and eliminate the contamination or pollution.

### **B. Fire Protection Systems**

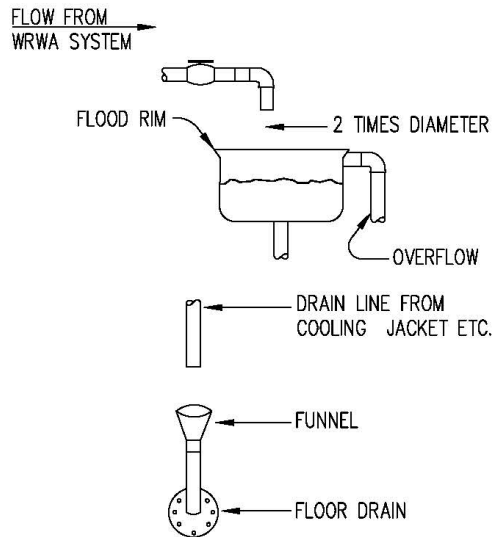
All connections for fire protection systems shall be protected with an approved DC or DCDA as a minimum requirement. All fire protection systems using toxic or hazardous additives shall be required to install an approved RPZ or RPDA.

# **TYPICAL BACKFLOW PREVENTION ASSEMBLY DETAILS**

\* The following illustrations may be used as a guide to install and test the proper assembly \*

## AIR GAP (AG)

- \* GOOD FOR TOXIC AND NON-TOXIC SUBSTANCES
- \* GOOD AGAINST BACKPRESSURE AND BACKSIPHONAGE
- \* A DISTANCE OF 2-TIMES THE DIAMETER OF SUPPLY PIPE, NEVER LESS THAN A 1" GAP
- \* BEST PROTECTION AGAINST BACKFLOW PROVIDED IT IS INSTALLED PROPERLY AND NOT CIRCUMVENTED
- \* ANSI STANDARD No. A112.1.2

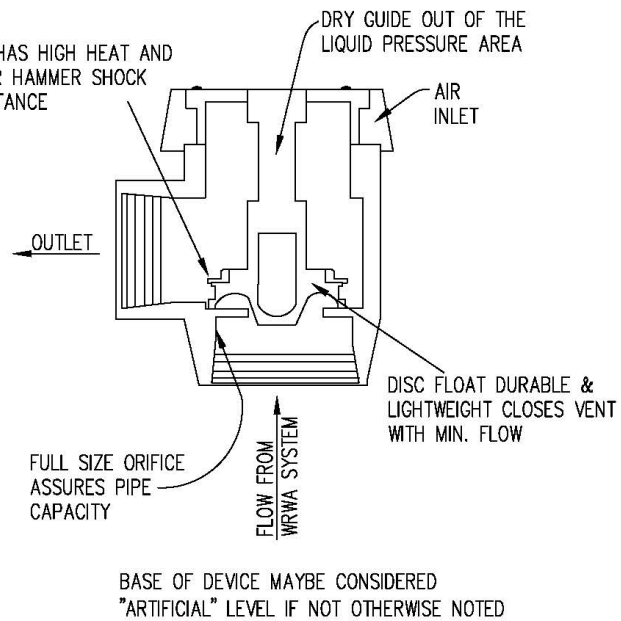


Rev. 04/16/14

Figure 1

## ATMOSPHERIC VACUUM BREAKER (AVB)

- \* GOOD FOR MOST TOXIC AND ALL NON-TOXIC SUBSTANCES
- \* GOOD FOR BACKSIPHONAGE ONLY
- \* NO CONTROL VALVES ALLOWED ON DISCHARGE SIDE OF DEVICE
- \* MINIMUM OF 6" BETWEEN BASE OF DEVICE AND HIGHEST OUTLET
- \* NO MORE THAN 12 HOURS CONTINUOUS SERVICE IN A DAY
- \* SIZES AVAILABLE: 1/4"-3"
- \* ASSE STANDARD No. 1001

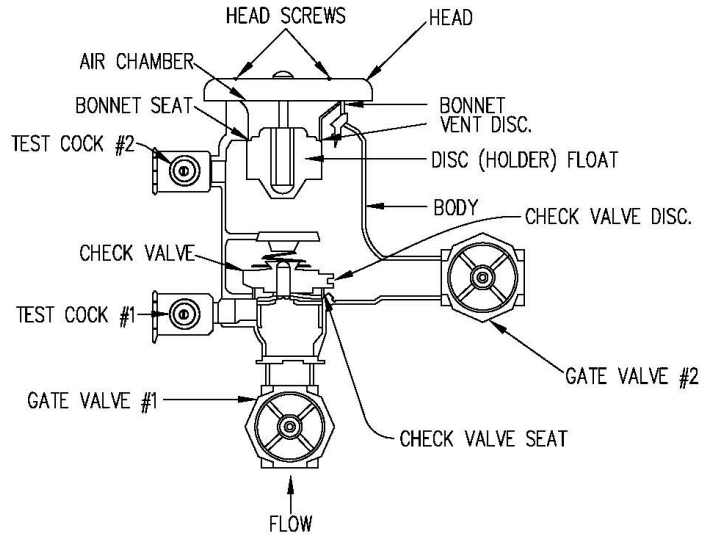


Rev. 04/16/14

Figure 2

## PRESSURE VACUUM BREAKER (PVB)

- \* GOOD FOR TOXIC AND NON-TOXIC SUBSTANCE
- \* GOOD FOR BACKSIPHONAGE ONLY
- \* CAN BE INSTALLED UNDER CONTINUOUS PRESSURE (VALVES DOWNSTREAM)
- \* MINIMUM OF 12" BETWEEN BASE OF DEVICE AND HIGHEST OUTLET
- \* MUST BE TESTED ANNUALLY
- \* SIZES AVAILABLE: 1/2"-2" (2 1/2" TO 10" SIZES NOT NORMALLY USED)
- \* ASSE STANDARD No. 1020



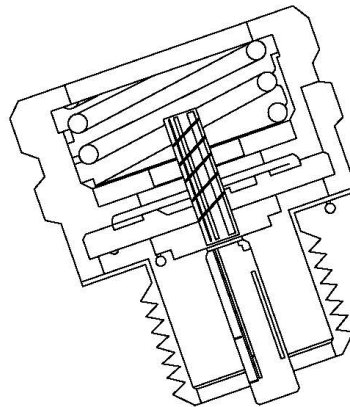
Rev. 01/07/22

Figure 3

## HOSE BIBB VACUUM BREAKER (HBVB)

- \* TO BE INSTALLED ON ALL HOSE THREADED FAUCETS
- \* GOOD AGAINST BACKSIPHONAGE AND VERY-LOW BACKPRESSURE
- \* NOT TO BE SUBJECT TO CONTINUOUS PRESSURE
- \* NO MORE THAN 12 HOURS CONTINUOUS SERVICE IN A DAY
- \* SIZES: 3/4"
- \* ASSE STANDARD No. 1011

WITH LOSS OF WATER SUPPLY, DISC SEALS TIGHTLY AGAINST DIAPHRAM PREVENTING BACKSIPHONAGE OR BACKFLOW OF WATER AND OPENS ATMOSPHERIC VENT



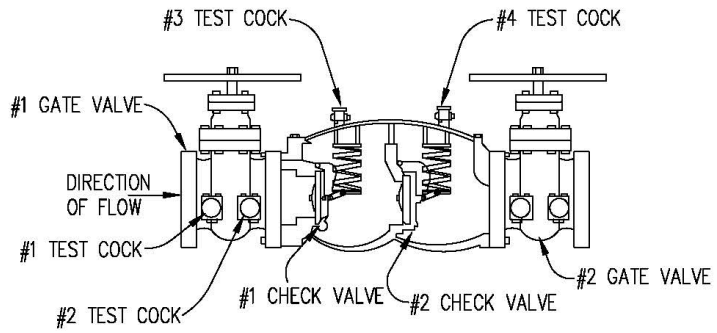
NON-REMOVABLE TYPE HAVE SEAL OR BREAKABLE SET SCREW

Rev. 04/01/14

Figure 4

## DOUBLE CHECK VALVE ASSEMBLY (DC)

- \* GOOD FOR NON-TOXIC SUBSTANCES SUCH AS STEAM, AIR, FOOD, BEVERAGES
- \* GOOD AGAINST BACKSIPHONAGE AND BACKPRESSURE
- \* INSTALLED MINIMUM OF 12" ABOVE GROUND OR VAULT FLOOR
- \* MUST BE TESTED ANNUALLY
- \* SIZES AVAILABLE: 3/4"-12"
- \* ASSE STANDARD No. 1015 OR AWWA STANDARD C506-78
- \* CAN BE INSTALLED IN UNDERGROUND CONCRETE VAULT AS LONG AS VAULT PROVIDES ADEQUATE ROOM FOR MAINTENANCE AND THE DCBA IS A MINIMUM OF 12" ABOVE VAULT FLOOR

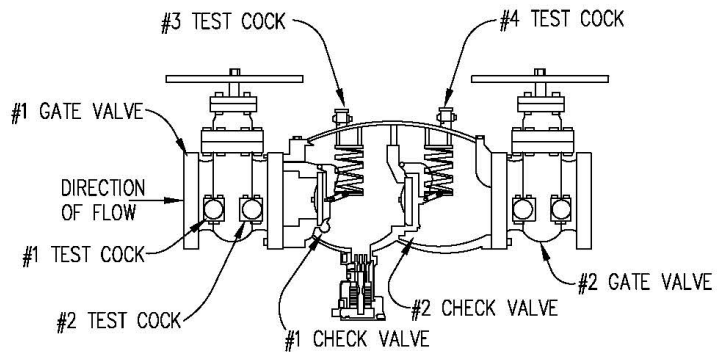


Rev. 2/19/24

Figure 5

## REDUCED PRESSURE ZONE BACKFLOW ASSEMBLY (RPZ)

- \* GOOD FOR TOXIC AND NON-TOXIC SUBSTANCES
- \* GOOD AGAINST BACKSIPHONAGE AND BACK PRESSURE
- \* INSTALLED MINIMUM OF 12" ABOVE GROUND OR FLOOD LEVEL
- \* MUST BE TESTED ANNUALLY
- \* SIZES AVAILABLE: 3/4"-12"
- \* ASSE STANDARD No. 1013 OR AWWA STANDARD C511-07
- \* MUST BE INSTALLED IN AN ABOVE GROUND INSULATED ENCLOSURE



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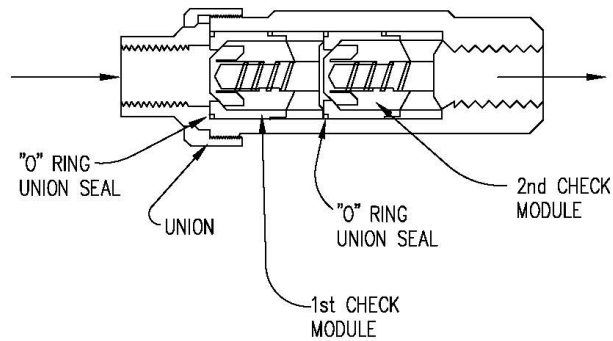
Figure 6



## DUAL CHECK VALVES (DuC)

\* ASSE STANDARD No. 1024 SUITED PARTICULARLY FOR INSTALLATIONS IMMEDIATELY DOWNSTREAM FROM RESIDENTIAL WATER METERS WHERE POTENTIAL POLLUTANTS FROM RESIDENCES COULD ENTER THE WATER MAINS.

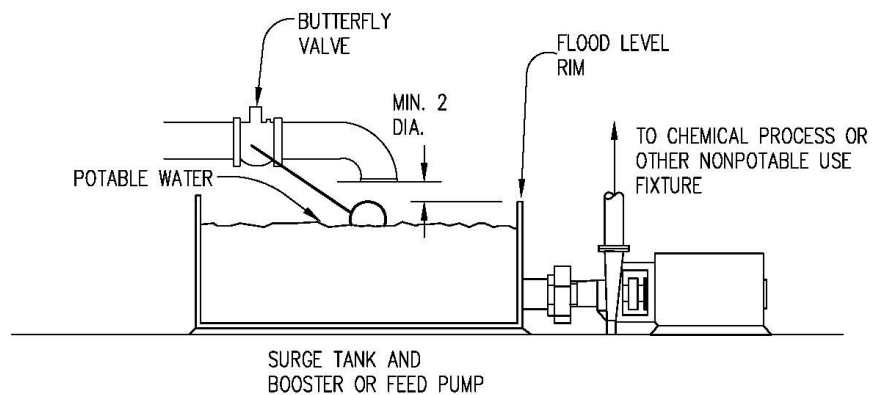
(MINIMUM REQUIREMENT FOR ALL NEW SERVICES)



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Figure 7

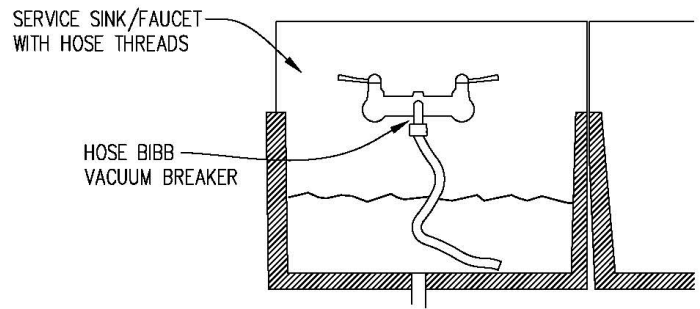
## AIR GAP SEPARATION



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Figure 8

### HOSE BIBB VACUUM BREAKER

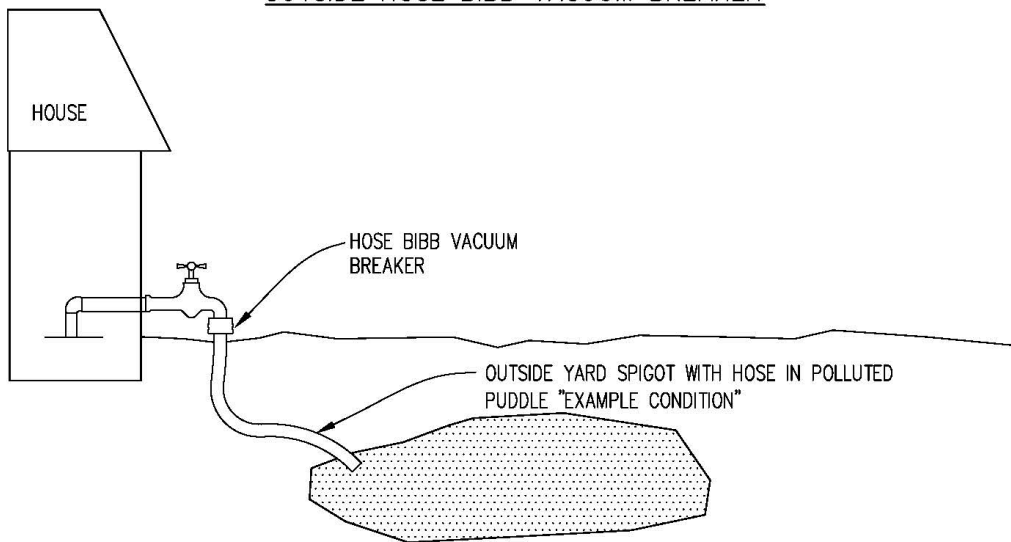


TYPICAL INSTALLATION ON SERVICE SINKS, LAUNDRY TUBS, DEVELOPING TANKS AND WASHING MACHINES.

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Figure 9

### OUTSIDE HOSE BIBB VACUUM BREAKER

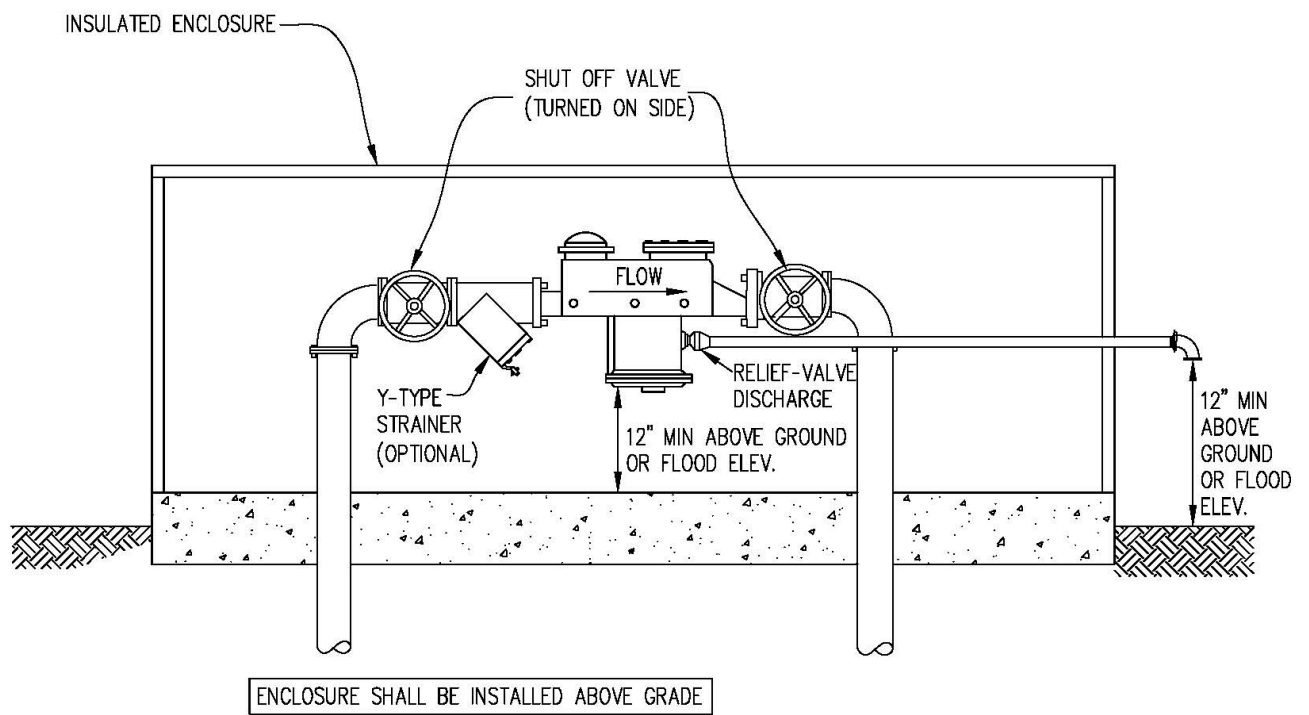


TYPICAL INSTALLATION ON SILL COCKS, HOSE BIBBS, YARD HYDRANTS, SWIMMING POOLS, WASH RACKS AND OTHER FAUCETS WITH GARDEN HOSES.

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Figure 10

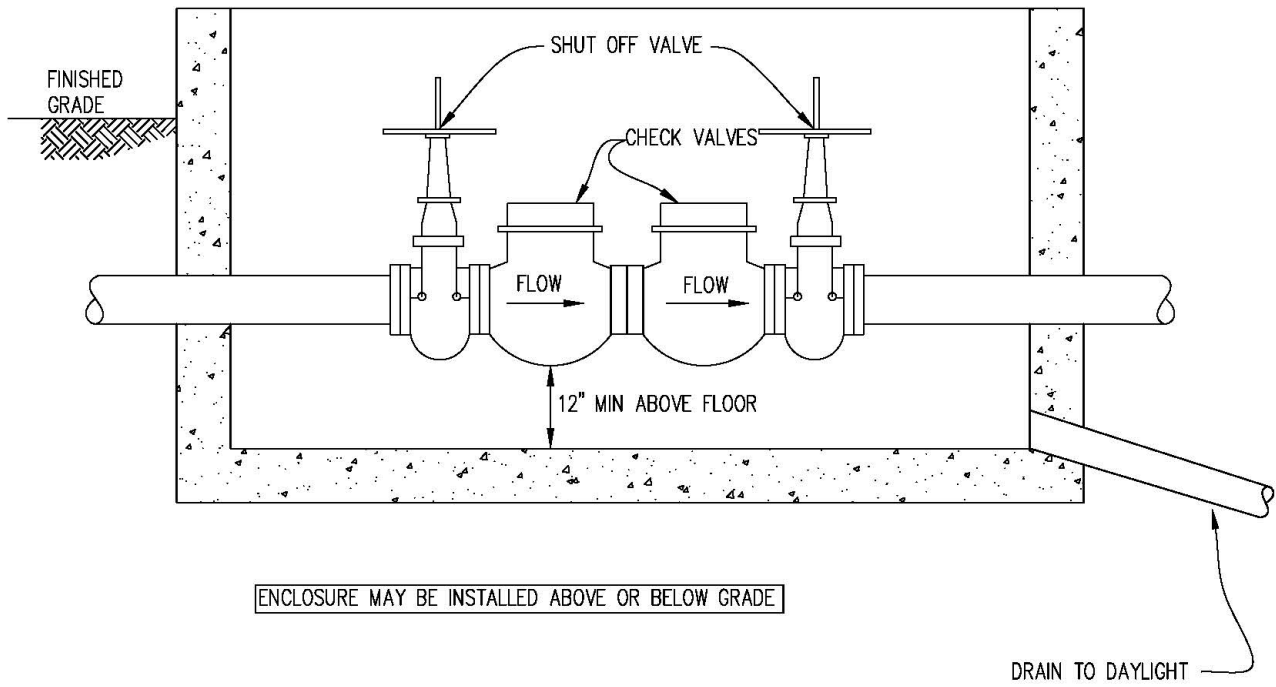
REDUCED PRESSURE ZONE BACKFLOW ASSEMBLY ENCLOSURE



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Figure 11

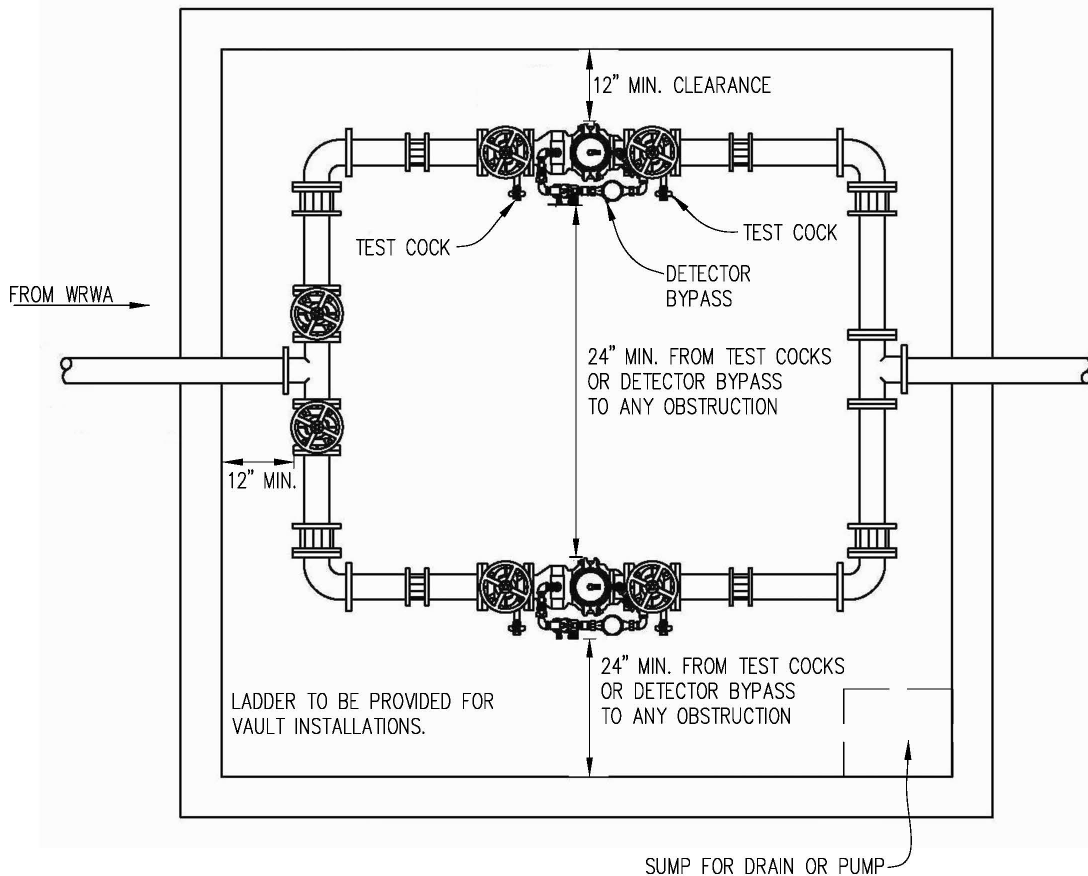
DOUBLE CHECK VALVE ASSEMBLY ENCLOSURE



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Figure 12

## PARALLEL BACKFLOW DEVICE INSTALLATION



### NOTES:

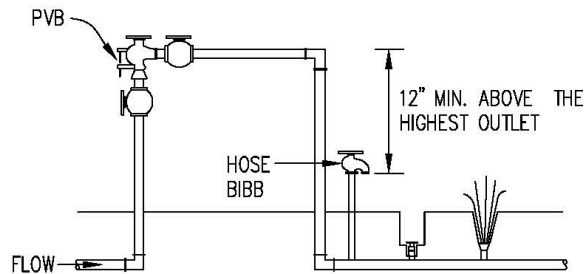
1. ASSEMBLY SHALL BE AN APPROVED DEVICE.
2. THE ENTIRE MANIFOLD SHALL BE EXPOSED WITHIN THE ABOVE GROUND BOX OR BELOW GROUND VAULT.
3. SUPPORTS SHALL BE PROVIDED AS NECESSARY.
4. FOR BURIED VAULT INSTALLATION, VAULT SHALL DRAIN TO DAYLIGHT OR PROVIDE SUMP PUMP.
5. NO STOP AND WASTE VALVES.
6. INSPECTION BY WRWA PERSONNEL REQUIRED BEFORE METER IS SET OR SERVICE IS ACTIVATED.
7. THRUST BLOCKS ARE REQUIRED AT ALL BELOW GRADE ELBOWS (TO BE SIZED BY ENGINEER)
8. INSTALL WHERE CONTINUOUS FLOW MAY BE REQUIRED EVEN DURING TIMES OF SERVICING OR TESTING
9. BELOW GROUND VAULT ONLY ALLOWED FOR DOUBLE CHECK VALVE ASSEMBLY. REDUCED PRESSURE ZONE BACKFLOW ASSEMBLY ENCLOSURE MUST BE ABOVE GROUND.

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Figure 13

## PRESSURE VACUUM BREAKER (PVB)

THE PRESSURE VACUUM BREAKER CANNOT BE INSTALLED WHERE THERE CAN BE BACKPRESSURE BUT ONLY WHERE THERE CAN BE BACKSIPHONAGE. THE PRESSURE VACUUM BREAKER CAN HAVE SHUT-OFF VALVES DOWNSTREAM OF THE DEVICE. THE PVB MUST BE INSTALLED AT LEAST 12" ABOVE THE HIGHEST OUTLET OR, IF IT IS FEEDING AN OPEN TANK, AT LEAST 12" ABOVE THE HIGHEST OVERFLOW RIM OF THE TANK. THE FOLLOWING FIGURE SHOWS A TYPICAL INSTALLATION ON A SPRINKLER SYSTEM.

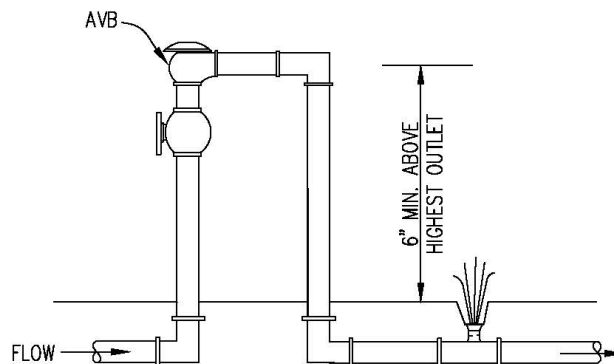


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Figure 14

## ATMOSPHERIC VACUUM BREAKER (AVB)

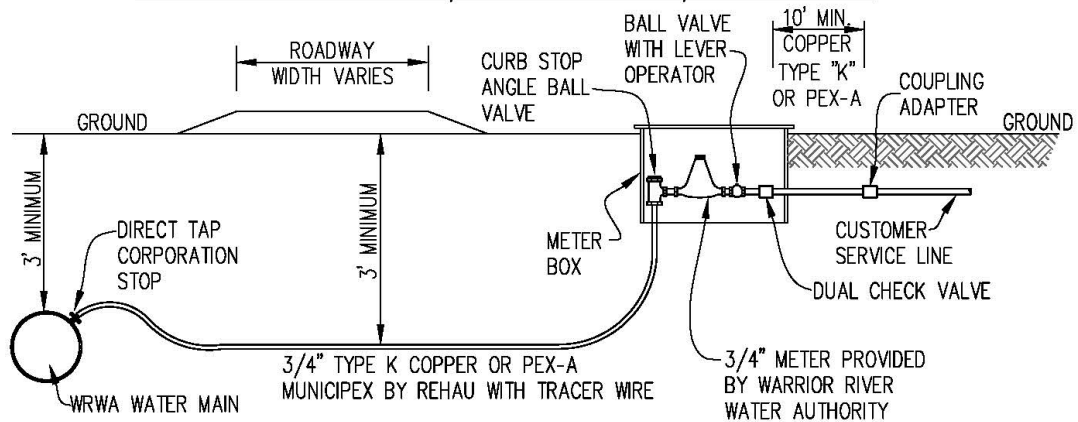
JUST AS THE PRESSURE VACUUM BREAKER, THE ATMOSPHERIC VACUUM BREAKER CANNOT BE INSTALLED WHERE THERE CAN BE BACKPRESSURE, ONLY WHERE THERE CAN BE BACKSIPHONAGE. THE ATMOSPHERIC VACUUM BREAKER CANNOT HAVE ANY SHUT-OFF VALVES DOWNSTREAM OF IT. IT ALSO MUST BE INSTALLED AT LEAST 6" ABOVE THE HIGHEST OUTLET OR THE TOPMOST OVERFLOW RIM OF A NON-PRESSURE TANK. THE FOLLOWING ILLUSTRATION SHOWS THE AVB ON A SPRINKLER SYSTEM.



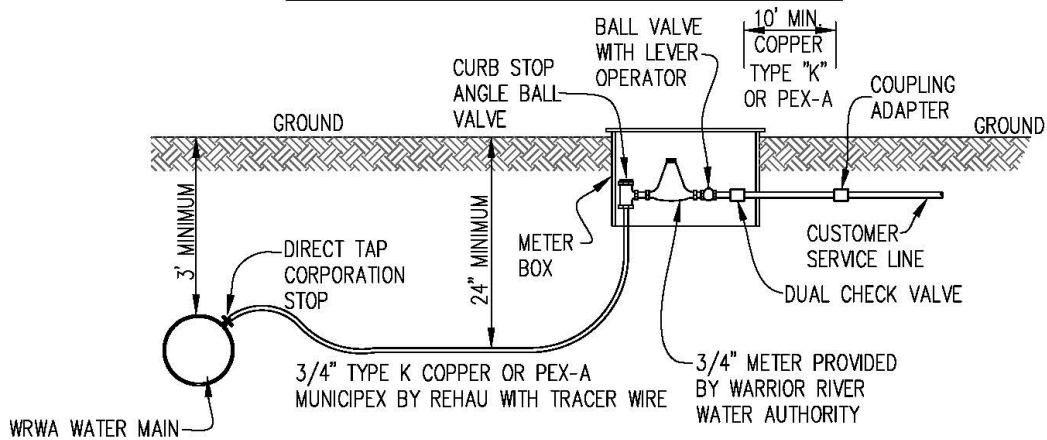
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Figure 15

### TYPICAL RESIDENTIAL 3/4" OR 1" METER/DCV INSTALL



### TYPICAL METER INSTALLATION-LONG SIDE



### TYPICAL METER INSTALLATION-SHORT SIDE

#### PARTIAL MATERIALS LIST:

1. ALL BRASS SHALL BE FORD, GRIP NUT COMPRESSION TYPE. ALL CORP STOPS SHALL BE F1000-3G. ALL CURB STOPS SHALL BE BA43-232W-G ANGLE VALVE.
2. ALL DUAL CHECK VALVES SHALL BE EQUIVALENT TO WATTS #7 STYLE (LF7U2-2).
3. METERS SHALL BE AS DESIGNATED BY WARRIOR RIVER WATER AUTHORITY.
4. METER BOXES SHALL BE 12" NDS D1200 PLASTIC TOP WITH METAL LID OR EQUAL, UNLESS OTHERWISE SPECIFIED.

#### METER INSTALLATION NOTES:

1. METERS TO BE SET IMMEDIATELY OFF STATE RIGHT OF WAY OR AT BACK OF COUNTY RIGHT OF WAY. ALL INSTALL LOCATIONS SHALL BE APPROVED BY WRWA.
2. NO JOINTS ALLOWED IN SERVICES. SERVICE PIPE SHALL MEET THE REQUIREMENTS OF ALDOT, COUNTY DOT AND/OR WRWA, AS APPLICABLE. NEW COPPER OR PEX SERVICE PIPE SHALL BE PROVIDED AND INSTALLED FROM WRWA WATER MAIN TO METER TO 10 FEET PAST THE METER BOX LOCATION, AS SHOWN IN THESE DETAILS.
3. CONTRACTOR SHALL PROVIDE ALL FITTINGS AND ACCESSORIES (COUPLINGS, ADAPTERS, BRASS NIPPLES, FITTINGS, ETC.) REQUIRED TO CONNECT METERS AND CONNECT TO CUSTOMER SERVICE LINES.

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Figure 16