

Mount Pleasant Waterworks



**Cross-Connection Control
Program Guidelines
October 2010**

PREFACE

The purpose of this policy is to protect the public water supply from the possibility of contamination. The customer's distribution system is isolated with backflow preventers so that the contaminants cannot backflow or back-siphon into the public water supply.

Mount Pleasant Waterworks
Cross-Connection Control Program Guideline

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CHAPTER 1 DEFINITIONS

SECTION 1.1 DEFINITIONS

- 1.1.1 **Annual Testing:** Yearly testing of the backflow prevention assembly, to ensure the assembly is working properly, as required by South Carolina Department of Health and Environmental Control (SCDHEC).
- 1.1.2 **Backflow:** The flow of water or other liquids, mixtures, or substances, under positive or reduced pressure into the distribution pipes of a public water supply from any unauthorized source.
- 1.1.3 **Backflow Prevention Assembly (a/k/a Backflow Prevention Device):** Device designed to prevent backflow or back-siphonage.
- 1.1.4 **Back-Siphonage:** The flow of water or other liquids, mixtures or substances into the distribution pipes of a public water supply system from any unauthorized source, caused by the sudden reduction of pressure in the public water supply system.
- 1.1.5 **Compliance Date:** The date the backflow assembly is due for testing.
- 1.1.6 **Contaminant:** Any unauthorized substance.
- 1.1.7 **Cross-Connection:** Any actual or potential connection or structural arrangement between a public water supply and any source or systems through which it is possible to introduce into any part of the potable system any used water, industrial fluid or substance other than the intended potable water that the system supplies. Any arrangement through which, or because of which, backflow may occur are considered cross-connections.
- 1.1.8 **Double Check Valve Assembly (a/k/a D.C.)** An assembly of two (2) independent spring loaded check valves with shut off valves on each side of the check valves, plus properly located test ports for the testing of each check valve.
- 1.1.9 **Effluent:** Wastewater that has been treated.
- 1.1.10 **Fire Protection Systems:** A piping arrangement between the public water supply and the user designated for extinguishing fires only.
- 1.1.11 **Fire Service Backflow Prevention Assembly:** Any SCDHEC approved backflow assembly installed between the public water supply and the user's fire protection system.
- 1.1.12 **Fixture Outlet:** The point at which water exits from a plumbing fixture.
- 1.1.13 **High Degree of Hazard:** Having the potential to endanger health and safety.
- 1.1.14 **Letter of Intent:** Standard form required for all commercial customers requesting public water service from MPW.
- 1.1.15 **MPW:** Mount Pleasant Waterworks (a.k.a. Commissioners of Public Works for the Town of Mount Pleasant).
- 1.1.16 **Non-Potable:** Any liquid that does not meet the Safe Drinking Water standards.
- 1.1.17 **Outlet End:** The last point the water exits from the backflow assembly.
- 1.1.18 **Potable Water:** Water that is safe for human consumption (meets the Safe Drinking Water Standards).
- 1.1.19 **Reduced Pressure Principal Assembly (a/k/a R.P.)** An assembly consisting of two (2) independent check valves with an automatic differential relief valve located between the two (2)

check valves, shut-off valves on each side of the check valves, plus properly located test ports for the testing of the check valves and the relief valve.

- 1.1.20 Residential Dual Check:** A device with two (2) spring loaded, independently operating check valves without shut-off valves. Generally used immediately downstream of the water meter to act as a backflow device.
- 1.1.21 SCDHEC Certified Tester:** A person who has satisfactorily completed the SCDHEC Backflow Certified Tester training workshop. A current listing of Certified Testers is available upon request or can be downloaded from the SCDHEC Website: "www.scdhec.net."
- 1.1.22 SCDHEC Notice of Approved Backflow Prevention Assemblies for South Carolina:** A list of backflow prevention assemblies, approved by the SCDHEC that can be used to protect against backflow.
- 1.1.23 Thermal Expansion:** The expansion of water when it is heated.

**CHAPTER 2
ADMINISTRATION**

SECTION 2.1 AUTHORITY TO IMPLEMENT A CROSS-CONNECTION CONTROL PROGRAM

1. MPW will administer a Cross-Connection Control Program, which fulfills the requirements of the SCDHEC.
2. The SCDHEC requires MPW to prevent water from unapproved sources, or any other substance, from entering the public water supply.
3. Resolution No. 7-98 adopting the MPW "Cross-Connection Control Program" was approved on June 29, 1998 (Appendix No. 1).
4. Section 50.36 of the Town of Mount Pleasant Ordinances: Paragraph 18 states, "No person shall install or maintain any unprotected cross-connection between a public water supply and any other water system, wastewater, or waste line from any contained liquids or polluting substance."
5. MPW is responsible for protecting the public water supply from contamination due to the backflow or back-siphonage of contaminants or pollutants. If MPW determines that a backflow prevention assembly is required, the Customer shall install the required assembly(s) at their expense within the specified time limit. Failure to install the assembly(s) within the specified time limit shall constitute grounds for disconnecting water service until the assembly(s) has been properly installed and inspected.
6. MPW requires reduced pressure principle backflow preventers for all irrigation systems. This requirement is in accordance with the American Water Works Association (M14) and Standard Plumbing Code recommendations.

SECTION 2.2 NOTIFICATION PROCEDURES FOR NEW INSTALLATIONS

If MPW determines that a backflow assembly is required, the procedures outlined below will be followed:

1. MPW will send a written notice to the Customer informing of the type of backflow device to install (Appendix No. 2).
2. In the event that MPW does not receive the installation information in the time frame given, a second notice will be sent (Appendix No. 3).
3. Customers who fail to comply with MPW's installation requests will receive a Notice of Violation (Appendix No. 4).
4. Once a new device has been properly installed and accepted by MPW, the Customer will have fifteen (15) days to provide satisfactory test results to MPW's Cross-Connection Control Department, or water service may be discontinued.
5. The Customer will be required to have the device(s) tested annually as outlined in Section 2.3.

SECTION 2.3 NOTIFICATION PROCEDURES FOR ANNUAL TESTING

Backflow assemblies must be tested on an annual basis. (MPW reserves the right to require more frequent testing depending upon the degree of hazard).

2.3.1 Annual Testing by MPW: Upon the Customer's request, MPW will test the backflow prevention assembly(s) serving their property.

1. An agreement for annual testing of the backflow prevention assembly(s) must be executed by the Customer prior to MPW testing the assembly(s) (Appendix 5).
2. An annual testing fee (per assembly) will be added to the Customer's account when the testing is complete. This fee is subject to change depending on the cost of providing this service and is evaluated annually.
3. Customers who have an agreement with MPW to test their backflow assemblies will be notified as follows:
 - a. MPW's Cross-Connection Inspector will test the assembly annually according to the compliance date. Once testing is complete the customer will be notified by letter (Appendix No.6) and a copy of the test (Appendix No. 7) results will be mailed to the customer.
 - b. In the event the assembly fails, MPW will notify the Customer in writing of the need to make repairs within a prescribed time frame. (Appendix No. 8).
 - c. Customers who fail to have the assembly repaired, and tested within the time frame allowed will receive a Notice of Violation (Appendix No.9).

The annual testing by MPW will only allow for the testing of backflow devices. Any repairs required will be the responsibility of the Customer.

2.3.2 Annual Testing by an Outside Agency: Customers may select an outside agency to test the backflow prevention assembly(s) serving their property.

1. All backflow prevention assemblies must be tested by a SCDHEC Certified Backflow Prevention Tester. A current listing of Certified Testers is available upon request or can be downloaded from the MPW web site at www.mountpleasantwaterworks.com
2. All testing and repairs (if required) will be at the Customer's expense.
3. Customers who elect to have their backflow assemblies tested by an outside agency will be notified as follows:
 - a. MPW will send a written notice to the Customer (Appendix No. 10).
 - b. In the event that MPW does not receive the test results (Appendix No. 7) showing the assembly is in compliance, a Notice of Violation Final will be sent (Appendix No. 11).

CHAPTER 3 INSTALLATION PROCEDURES

This Chapter outlines the procedures that a Customer must follow when installing a new backflow prevention assembly.

SECTION 3.1 PROCEDURES AND ACTIVITY SEQUENCE

3.1.1 Commercial Customers:

- a. Complete and submit MPW's standard Letter of Intent.
- b. MPW reviews the plans, site, and Letter of Intent to determine what type of backflow assembly is required, and advises the Customer.

3.1.2 Residential Customers:

- a. Customer sets up new account through MPW's Customer Service Department. MPW advises the customer of what type of backflow assembly is required.

3.1.3 All Customers:

- a. Pay applicable fees for water service, which include backflow inspection fee. A copy of the current fee schedule can be obtained from MPW's Customer Service Department or from MPW's website: www.mountpleasantwaterworks.com.
- b. Customer installs the proper backflow prevention assembly(s), and has it inspected by MPW's Cross-Connection Department.
- c. When the assembly(s) is installed, and meets all requirements, MPW will activate water service. Following activation the Customer has fifteen (15) days to test the backflow prevention assembly.
- d. Annual testing of each assembly will be required as outlined in Section 2.3.

SECTION 3.2 SELECTION REQUIREMENTS

1. All backflow prevention assemblies must be selected from SCDHEC's Notice of Approved Backflow Prevention Devices for SC. A list of approved devices is available upon request, or can be downloading from Mount Pleasant Waterworks website: www.mountpleasantwaterworks.com.
2. Only two types of backflow prevention assemblies are allowed:
 - a. Double Check Valve Assembly
 - b. Reduced Pressure Principle Assembly

SECTION 3.3 INSTALLATION REQUIREMENTS

3.3.1 General Requirements:

1. Backflow prevention assemblies must be inspected by MPW's Cross-Connection Inspector immediately after installation.
2. Backflow prevention assembly installations must be on private property between the meter, and the first downstream connection, and must be readily accessible for in line maintenance and testing.
3. Backflow prevention assemblies must be installed according to the manufacturer's instructions.

4. Backflow prevention assemblies must be installed in a rigid and stable manner.
5. Double Check Valve Assemblies **1-inch** and smaller must be installed in accordance with the "Double Check Valve Assemblies installation Detail" (Appendix No. 12). Double Check Valve Assemblies **1-1/2-inch** and larger must be installed in accordance with the "Double Check Valve Assemblies installation Detail" (Appendix No. 13) The device must be installed no more than three (3') feet above ground, and protected from freezing.
6. Reduced Pressure Principle Assemblies must be installed in accordance with the "Reduced Pressure Principle Assembly Installation Detail" shown in (Appendix No. 14). The device must be installed with 12-inches to 36-inches between the relief valve vent and the finished grade allowing proper drainage for air gap, and protected from freezing.
 - a. Thermal Expansion is a condition that exists whenever the plumbing system is "closed." In an "open system," heated water expands and is vented to the atmosphere or to where the pressure is lowest. Therefore, the heated water is usually forced back into the public water supply. When a backflow preventer is installed, the system becomes "closed" and the pressure build up cannot escape. The resulting thermal expansion can cause the pressure relief valve to open allowing the hot water to drain. Several options such as Expansion Tanks (Appendices No.15) are available to control thermal expansion. More information on thermal expansion can be found on Mount Pleasant Waterworks Web Site.

3.3.2 Existing Services:

1. For existing facilities and assemblies installed prior to the implementation of this program, MPW's Cross-Connection Inspector will perform evaluations and inspections to advise the Customer of any corrective action required, the method of correcting the deficiency, and the time allowed for the correction to be made.

3.3.3 Irrigation Services: MPW requires an approved backflow assembly on all irrigation systems connected to the public water supply.

1. New Irrigation Systems:
 - a. Only the reduced pressure principle backflow assembly will be allowed for lawn irrigation systems.
 - b. Backflow prevention assembly installations must be on private property between the meter, and the first downstream connection, and must be readily accessible for in line maintenance and testing.
 - c. Once the appropriate assembly is installed it must be inspected by an MPW Inspector before water service can be activated.
 - d. Inspection of new backflow installations can be requested by calling MPW at (843) 884-9626. The same fees outlined in Section 3.1 will apply. Inspections will be conducted within seventy-two (72) hours of request.
 - e. Any property utilizing effluent water for irrigation purposes may be required to install a reduced pressure principle assembly on all other MPW water services to the property.

2. Existing Irrigation Systems: Any Irrigation system installed without appropriate backflow protection and is connected to the public water supply will be required to install a reduced pressure principle backflow assembly.

MPW will send a written notice to the Customer to install the appropriate backflow device as outlined in Section 2.2

3.3.4 Fire Services:

1. Any connection between MPW's water main and the fire service backflow preventer must have a separate backflow preventer. The domestic service line connection must always be prior to the fire service backflow preventer (See Appendix No.16).
2. Any existing fire service lines found without a SCDHEC approved backflow assembly will be required to install the appropriate backflow assembly.

STATE OF SOUTH CAROLINA)
)
COUNTY OF CHARLESTON)

RESOLUTION NO. 7-98

WHEREAS, the South Carolina Department of Health and Environmental Control places primary responsibility on the water purveyor for preventing water from unapproved sources, or any other substance, from entering the public water supply; and

WHEREAS, the Town of Mount Pleasant Ordinances; Section 50.36, paragraph 18, states " No person shall install or maintain any unprotected cross-connection between a public water supply and any other water system, sewer, waste line from any contained liquids or polluting substance." and

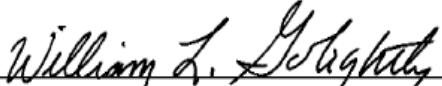
WHEREAS, the Commissioners of Public Works of the Town of Mount Pleasant have developed a Cross-Connection Program to protect the public water supply from the possibility of contamination by cross-connection, by isolating (within its customers internal distribution system) such contaminants that could backflow or back-siphon into the public water supply; and

NOW, THEREFORE, BE IT RESOLVED by the Commissioners of Public Works of the Town of Mount Pleasant that the Cross-Connection Control Program dated June 24, 1998, be adopted by the Commission in its entirety.

The Cross-Connection Control Program will become effective immediately upon signing of this Resolution.


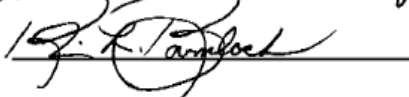
DONE AND RATIFIED this 29th day of June, 1998.

MOUNT PLEASANT WATERWORKS


William L. Golightly, Jr., Ph.D., Chairman


Clay Duffie, General Manager

WITNESS:

BACKFLOW PREVENTION DEVICE INSTALLATION REQUEST

November 9, 2010

«Customer»
«Address» «Address_2»
«City», «State» «Zip»

RE: Mount Pleasant Waterworks (MPW) Cross-Connection Control Program
Location: «Site_addr»
Type of Service: «Serv_type»
Account No.: «Service_»

Dear Customer:

In accordance with MPW and South Carolina Department of Health & Environmental Control (SCDHEC) regulations, a backflow prevention device is required for your water service. The purpose of this device is to ensure that the public water supply is adequately protected against contamination due to a cross-connection. Therefore, a “**type of device**” is required to be connected directly to your meter. No other pipes can be connected between the meter and the backflow device. In addition, the device must be installed to allow for easy access during inspections and testing. Once the device has been installed it must be tested by a SCDHEC Certified Tester. The test report will need to be completed and returned to MPW within 30 days.

Thank you for your cooperation. If you should have any questions, please call me at the office (843) 375-5460 or my cell phone (843) 327-3160.

Sincerely,

MOUNT PLEASANT WATERWORKS



Del Harbin, Water Quality Foreman

**SECOND REQUEST
FOR THE INSTALLATION OF A BACKFLOW PREVENTION DEVICE**

November 9, 2010

«Customer»
«Address» «Address_2»
«City», «State» «Zip»

RE: Mount Pleasant Waterworks (MPW) Cross-Connection Control Program
Location: «Site_addr»
Type of Service: «Serv_type»
Account No. : «Service_»

Dear Customer:

MPW mailed you a backflow prevention device installation request on _____. This notice was to advise you that a **“type of device”** must be installed on your water service in accordance with MPW regulations. To date, we have not received confirmation that a device was properly installed and successfully tested.

Failure to comply with this MPW and South Carolina Department of Health and Environmental Control regulations will result in the termination of water service on **DATE**. The test report will need to be completed and returned to MPW within 15 days.

Thank you for your cooperation. If you should have any questions, please call me at the office (843)375-5460 or my cell phone (843) 327-3160.

Sincerely,

MOUNT PLEASANT WATERWORKS



Del Harbin, Water Quality Foreman

NOTICE OF VIOLATION

November 9, 2010

FINAL NOTICE

«Customer»
«Address»
«Address_2»
«City», «State» «Zip»

RE: Failure to Comply with Mount Pleasant Waterworks (MPW)
Connection Control Requirements
Location: «Site_addr»
Type of Service: «Serv_type»
Account No.: «Service_»

Dear Customer:

MPW mailed you a backflow prevention device installation request on _____ and a second request on _____, advising that you are required to install a backflow prevention device on your water service. To date, MPW has not received the completed Field Testing and Maintenance Report showing that a **“type of device”** has been installed and is functioning properly. Therefore, you are currently out of compliance with MPW requirements.

Failure to comply with this MPW and South Carolina Department of Health and Environmental Control regulations will result in the termination of water service on **DATE**.

Your immediate attention to this matter is advised. If you have any questions, please contact me at (843) 375-5460 or cell phone (843) 327-3160.

Sincerely,

MOUNT PLEASANT WATERWORKS



Del Harbin, Water Quality Foreman

MOUNT PLEASANT WATERWORKS
CROSS-CONNECTION CONTROL PROGRAM
ANNUAL TESTING AGREEMENT

THIS AGREEMENT is made between the Mount Pleasant Waterworks (MPW) and:

Name: _____
(Owner)

Address: _____

MPW and the Owner mutually agree to the following:

Name:
Account No.:
Type of Service:
Service Address:

1. MPW will provide routine annual testing of the backflow prevention device referenced above.
2. MPW will notify you in writing of the date the backflow prevention device was tested and provide a copy of the test report.
3. The Owner agrees to pay the current approved rate per device for the annual test, which will be included on the water bill. Fees are subject to adjustment upon adoption of MPW's Annual Budget. The Owner will be notified in writing of any fee increase and given 30 days to renew or terminate this Agreement.
4. Should the device fail the annual test it is understood that MPW will notify the Owner of what repairs are necessary and the Owner will have the device repaired within 30 days.
5. The Owner shall hold MPW, representatives harmless from and against all liabilities, damages, losses, etc., associated with testing the backflow prevention device.
6. This Agreement may be canceled by MPW or the Owner upon receipt of thirty days written notice, otherwise this Agreement will renew annually.

MOUNT PLEASANT WATERWORKS

Jim Ouellet, Water Department Manager
Date _____

PROPERTY OWNER
By: _____
Its: _____
Date: _____

CROSS-CONNECTION CONTROL PROGRAM
MPW TEST COMPLETE

November 9, 2010

«Customer»
«Address» «Address_2»
«City», «State» «Zip»

RE: Annual Backflow Testing
Account Number: «Service_»
Location: «Site_addr»
Type of Service: «Serv_type»

Dear Customer:

Mount Pleasant Waterworks is pleased to inform you that your backflow device has passed its recent annual test. You will be notified next year when your backflow device is due to be retested. I am enclosing a copy of the Field Testing Report for your records.

Thank you for your cooperation. If you should have any questions, please call me at the office (843) 884-9626 or 375 5460.

Sincerely,

MOUNT PLEASANT WATERWORKS



Del Harbin, Water Quality Foreman

**CROSS-CONNECTION CONTROL PROGRAM
Notice to Repair**

Date

«Customer»

«Address» «Address_2»

«City», «State» «Zip»

RE: Notice to Repair – Mount Pleasant Waterworks (MPW)

Account Number: «Service_»

Location: «Site_addr»

Type of Service: «Serv_type»

Dear Customer:

In accordance with MPW's Annual Testing Agreement, your backflow prevention device was tested on «Last Test». The device did not pass the test, and will need to be repaired as noted on the enclosed report. You must have the backflow device repaired and tested to stay in compliance with MPW and South Carolina Department of Health and Environmental Control regulations. Once completed, please provide MPW with the passing test results.

Thank you for your cooperation. If you have any questions, please call me at (843) 884-9626 or 327-3160.

Sincerely,

MOUNT PLEASANT WATERWORKS



Del Harbin, Water Quality Foreman

**CROSS-CONNECTION CONTROL PROGRAM
NOTICE OF VIOLATION**

November 9, 2010

FINAL NOTICE

«Customer»

«Address» «Address_2»

«City», «State» «Zip»

RE: Failure to Comply with Mount Pleasant Waterworks (MPW)
Cross-Connection Control Requirements
Location: «Site_addr»
Type of Service: «Serv_type»
Account No.: «Service_»

Dear Customer:

MPW tested your backflow device «Last Test», and advised you that repairs were required in order to stay in compliance with MPW and South Carolina Department of Health and Environmental Control regulations. To date MPW has not been notified that the necessary repairs have been made. Therefore, the device serving your property is currently out of compliance.

To prevent discontinuation of service, please have the device repaired and provide MPW with passing test results no later than **“due date”** to avoid disconnection of your service.

Your immediate attention to this matter is advised. You can contact me at (843) 375-5460, cell phone (843) 327-3160, email dharbin@mpwonline.com or Fax (843) 849-2230

Sincerely,

MOUNT PLEASANT WATERWORKS



Del Harbin, Water Quality Foreman

CROSS-CONNECTION CONTROL PROGRAM
ANNUAL TESTING NOTICE

November 9, 2010

«Customer»
«Address» «Address_2»
«City», «State» «Zip»

RE: Mount Pleasant Waterworks (MPW) Cross - Connection Control Program
Location: «Site_addr»
Type of Service: «Serv_type»
Account No.: «Service_»

Dear Customer:

In accordance with the Department of Health and Environmental Control (DHEC) and MPW regulations, **the backflow prevention device serving the referenced property is due for annual testing** by **“due date”**, to ensure that it is functioning properly.

You may retain the service of a DHEC certified tester to perform the required testing. Your tester needs to perform the test and provide MPW with a copy of the results. A list of testers can be found on our website at www.mtpleasantwaterworks.com or we can mail or fax you a copy.

As an optional service to our customers, MPW offers testing for backflow prevention devices. If you would like MPW to test your device, please complete a Mount Pleasant Waterworks Cross-Connection Control Program Annual Testing Agreement and return it to our office via mail or fax. A copy of the Agreement can be found on the MPW web site or we can mail or fax you a copy. After receiving the agreement, MPW will test the device and maintain the file. The annual charge is \$50.00 per device, which will be billed to your account.

Thank you for your cooperation. If you should have any questions, please call me at the office (843) 375-5460 or my cell phone (843) 327-3160.

Sincerely,

MOUNT PLEASANT WATERWORKS



Del Harbin, Water Quality Foreman

**Cross-Connection Control Program
Annual Testing Notice**

November 9, 2010

FINAL NOTICE

«Customer»

«Address» «Address_2»

«City», «State» «Zip»

RE: Mount Pleasant Waterworks (MPW) Cross - Connection Control Program

Location: «Site_addr»

Type of Service: «Serv_type»

Account No.: «Service_»

Dear Customer:

MPW recently sent you a letter informing you that your backflow device needs to be tested in accordance with the South Carolina Department of Health and Environment Control (DHEC) and MPW regulations. To date MPW has not received passing test results for your backflow device.

You may have a DHEC certified tester perform the test. A list of certified testers is available on our website at www.mtpleasantwaterworks.com or we can mail or fax you a copy.

If you would like for MPW to test your device, please complete the enclosed agreement and return it via mail or fax. After receiving your agreement MPW will test your backflow device and send you a copy of the results. The annual charge is \$50.00 per device, which will be billed to your account.

Failure to have the device tested in the time frame allowed will result in the termination of water service on "**due date**". If it becomes necessary to have the water service terminated, a fee of \$55.00 will be added to your bill.

Thank you for your cooperation. If you should have any questions, please call me at the office (843) 375-5460 or my cell phone (843) 327-3160 or e-mail धारbin@mpwonline.com.
Fax (843) 849-2230

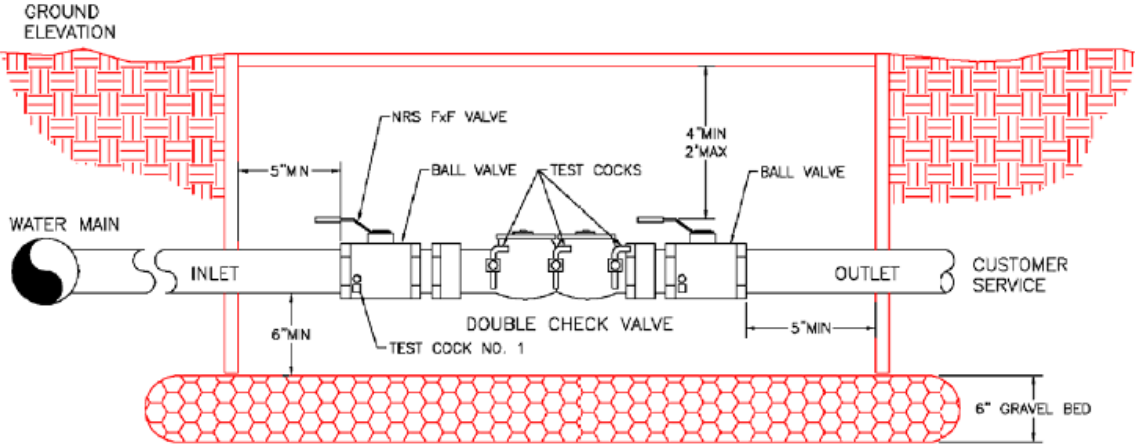
Sincerely,

MOUNT PLEASANT WATERWORKS

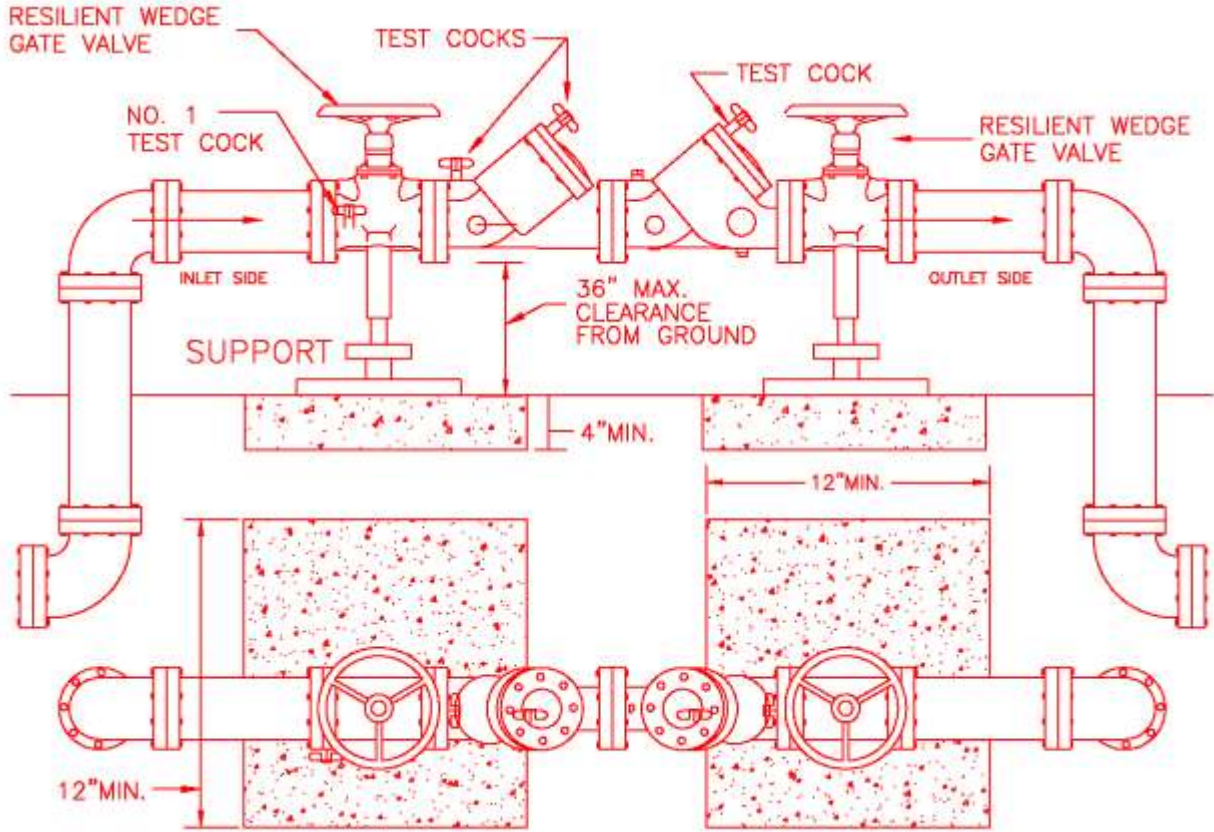


Del Harbin, Water Quality Foreman
Enclosures

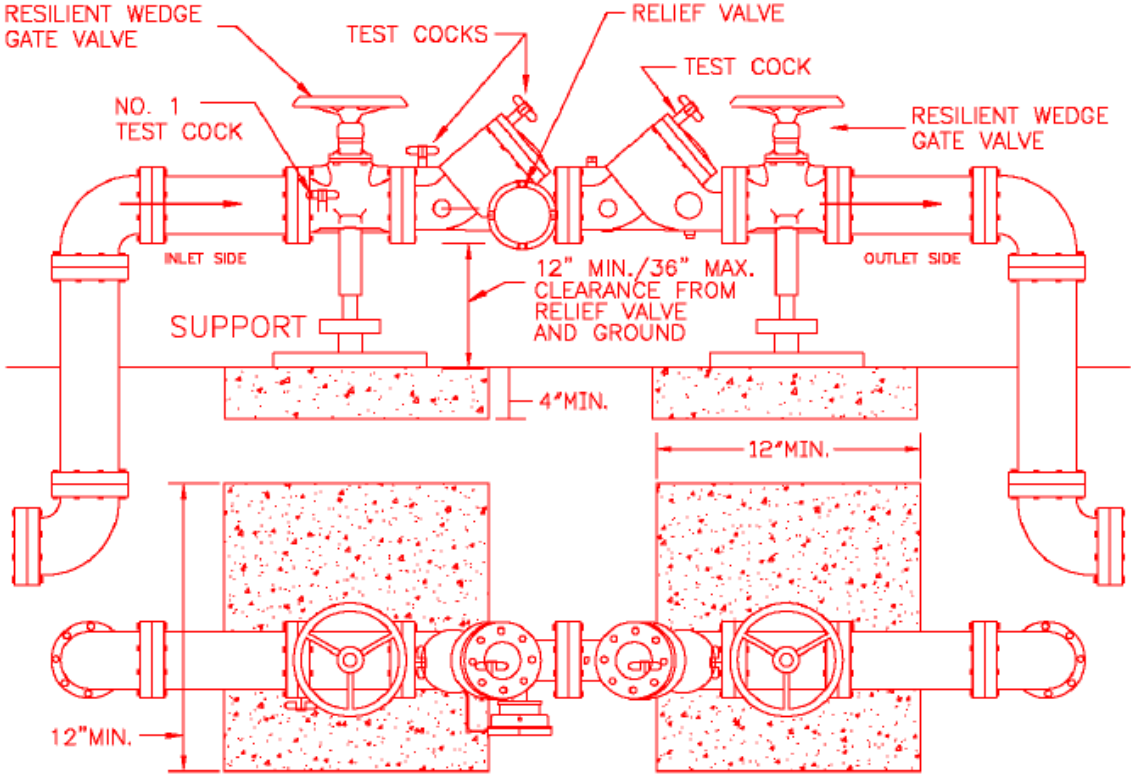
Detail for below ground Installation of 1-inch Diameter and Smaller Double Check Valve Assembly



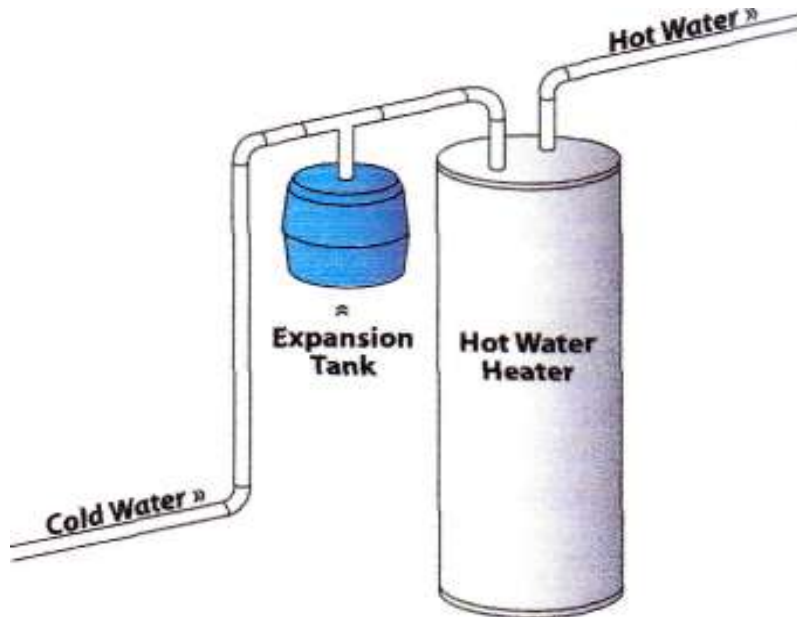
Detail for above ground installation of 1-1/2 inch Diameter and Larger Double Check Valve Assembly



Detail for above ground Installation of all Reduced Pressure Principle Assemblies



Detail of typical expansion tank installation



In order to protect the public water supply from unknown contamination, MPW requires the use of a backflow prevention device on all water services. These backflow prevention devices stop the customer's water from flowing back into the public water supply. This is called a "closed water system". A thermal expansion device is required by local building codes on "closed water system". Without a thermal expansion device the pressure inside a customer's water system may build up excessive pressure that could damage the customer's water system. The thermal expansion tank is a simple and efficient method to ensure that your system is safe.

Meter and Backflow Schematic

Typical installation of Fire, Domestic and Irrigation Services

