CROSS-CONNECTION CONTROL PLAN

For

Greer Commission of Public Works

Greer Commission of Public Works
Amended April 2025

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1. INTRODUCTION

1.1. Purpose

The purpose of this document is to outline the Greer Commission of Public Works (GCPW) Cross-connection Control (CCC) policies for all commercial, governmental, residential, non-residential, and miscellaneous facilities having service connections to the Greer Commission of Public Works public water supply and is summarized as follows:

- Protect the public water supply from contaminants and pollutants that could backflow through the service connection(s)
- Promote the elimination of actual and potential cross-connections between the public water supply and non-potable water systems, plumbing fixtures, and sources or systems containing substances of unknown or questionable quality

The GCPW has established an ongoing Cross-Connection Control Program. This program began to comply with safe drinking water standards. This program aims to protect the Greer Commission of Public Works Potable Water system and its customers from contamination from backflow.

This manual of policies and procedures is part of the cross-connection control policy adopted by the Commissioners of the GCPW. The techniques to prevent backflow shall be a joint effort of the Greer Commission of Public Works, the South Carolina Department of Environmental Services, and the customers of the GCPW.

The primary method of cross-connection control shall be by a backflow prevention assembly on the customer's service line. All commercial, industrial, and private fire protection customers will be required to install, maintain, and test a backflow prevention assembly on their service line. Many existing customers currently have a backflow prevention assembly installed.

Due to periodic changes in drinking water regulations, this manual of Cross-Connection Control is subject to changes without notice to comply with these regulations. The customer is responsible for periodically obtaining the most current updated copies of this manual. Current copies of this manual may be obtained by calling (864) 848-5500.

1.2. Legality

In accordance with the South Carolina Department of Environmental Services (SCDES), Bureau of Water, Greer Commission of Public Works proclaims this Cross-Connection Control Plan as a continuing effort to maintain pure, clean, safe, potable water.

2. AUTHORITY/ADMINISTRATOR

2.1. Water Purveyor

The Water Purveyor (GCPW) is primarily responsible for preventing backflow into the public water supply system. Such responsibility begins at the water supply and includes water treatment facilities, water storage facilities, water distribution piping systems and ends at the water service connection. The Water Purveyor shall evaluate new and existing water service connections to determine the need to install backflow prevention assemblies. Files shall be maintained with water customer information, and customers shall be notified of the required annual backflow prevention assembly testing. The Water Purveyor shall cooperate with the Plumbing Official and SCDES for cross-connection control for new construction, repairs, or additions to the customer's water systems.

The GCPW shall be the Authority and the Cross-connection Control (CCC) Program Administrator. This Cross-connection Control Program shall include, but not be limited to:

- Establish Authority
- Applicable Rules and Regulations
- Inspection Process and Requirements
- Approved Backflow Prevention Devices and Assemblies
- Testing Requirements of Backflow Prevention Assemblies
- Data Management
- Reporting
- Public Education and Awareness

The GCPW or a Designated Agent (Administrator/Agent) conducting inspections (site assessments) on behalf of the Greer Commission of Public Works must be designated or approved by the Greer Commission of Public Works. The Administrator/Agent must meet a certification/training component as described below:

<u>Inspector Certification/Training</u>
Acceptable certification/training may include one- (1) or more of the following:

- Meet American Society of Sanitary Engineer Standards (ASSE) 5020 and completed their Cross-connection Inspector Course (40 hours)
- Possess a certificate of completion from one of the following:
    - America Society of Sanitary Engineers (ASSE) Certified Cross-connection Control Surveyor
    - University of Southern California (USC) Cross-connection Control Specialist Course (40 hours)
    - University of Florida TREEO Center (UFTREEO) Cross-connection Control Program Manager Course (40 hours)

2.2. Plumbing Official

The Plumbing Official enforces the provisions of the Standard Plumbing Code as adopted for the applicable area, including but not limited to those provisions regarding backflow, back-siphonage, and cross-connections from the customer's water service connection to the extremities of the customer's water system. The Plumbing Official has the primary enforcing responsibility of new installations, alterations, or repairs of customer's water systems.

2.3. South Carolina Department of Environmental Services

SCDES legislates and enforces the laws, rules, and regulations of the state of South Carolina concerning water quality. SCDES monitors the Water Purveyor's Cross-Connection Control Program.

SCDES trains and certifies testers of backflow prevention assemblies. SCDES maintains a list of certified testers who renew and revoke certification if necessary. Any tester certifications from other agencies are to be forwarded to appropriate personnel at SCDES.

SCDES reviews backflow prevention assemblies and provides a list of approved assemblies for installation and use in South Carolina.

2.4. Water Customer

The Owner shall protect the public water supply from contamination due to backflow through the water service connection. GCPW may require the Owner, at their expense, to install, alter, replace, or repair any plumbing connected to the public water system that may threaten public health. Failure, refusal, or the inability on the part of the Owner to correct any deficiency or violation immediately shall be unlawful, and GCPW may deny or discontinue water service to the premises. The owner shall eliminate all unprotected cross-connections, including service line protection and any connections downstream of the service line supply to the building(s).

The Customer is responsible for maintaining any special plumbing fixtures or devices designed to accommodate variations in the water pressure. Such devices or fixtures include but are not limited to, thermal expansion tanks, relief valves, and pressure-reducing valves. The GCPW water supply is subject to variations in pressure and is subject to being shut off for repairs, maintenance, and construction, planned or unplanned.

The customer shall not install, permit to be installed, or maintain any unprotected cross-connections beyond the water service connection point.

Auxiliary water systems, industrial fluids, recycled water, product manufacturing, processing, fire protection systems, irrigation systems, and temperature-increasing devices, among other systems, are considered cross-connections.

The customer is responsible for obtaining all necessary permits and inspections and complying with all applicable codes and regulations as required by the Plumbing Official, SCDES , the GCPW, or another official required for changes, alterations, additions, or new construction to their water supply system.

The customer shall assist the GCPW, the Plumbing Official, and SCDES in surveying or inspecting their existing water supply system or any plans of proposed changes or additions for actual or potential cross connections and the degree of hazard.

The customer shall install, test, and maintain all backflow prevention assemblies as required.

The customer will be responsible for all costs related to the purchase, installation, annual testing, and maintenance of all backflow prevention assemblies required. The customer is responsible for compliance with these requirements even if the customer does not own the water system beyond the service connection.

The customer should contact GCPW before purchasing or installing a backflow prevention assembly.

3. EVALUATING NEW AND EXISTING WATER SERVICE CONNECTIONS

3.1. New Installations

(A) Customer makes an application and purchases desired size water service connection.

(B) GCPW provides the applicant with a "**WATER SERVICE CONNECTION CROSS CONNECTION CONTROL QUESTIONNAIRE**" (see example Appendix A-1)

(C) Applicant completes the Questionnaire and returns it to the GCPW.

(D) GCWP CCC review Questionnaire and determines the type of backflow prevention assembly required (if any) and notifies the applicant in writing of requirements.

(E) Applicant has backflow prevention assembly and its enclosure completely installed according to all GCPW requirements found in the Manual of Cross-Connection Control (see Pages 3-4 and Appendices A-2 and A-3, B-1 through B-5). The GCPW will define other requirements not found in these references. The applicant then notifies the GCPW at least two days before the required inspection at (864) 848-5500. All local plumbing, SCDES, and manufacturers' installation requirements shall be met.

(F) GCPW will make site inspections, and if the installation is satisfactory, the meter or service will be unlocked and turned on. If installation deficiencies are found during the inspection, the customer is notified and will correct all such deficiencies, and a follow-up inspection shall be completed before the service is turned on.

3.2. Existing Service Connections

Existing service connections shall be evaluated individually for the degree of hazard and immediate backflow threat to the potable water system.

(1) A **WATER SERVICE CONNECTION CROSS-CONNECTION CONTROL QUESTIONNAIRE** will be forwarded to the customer, completed by the customer, and returned to the GCPW.

Existing service line connections should be reassessed/inspected at an interval of no less than every five - (5) years or change of ownership (unless the service line is protected with an approved Reduced Pressure Backflow Prevention Assembly (ASSE 1013) or properly installed air gap) to determine if the existing backflow preventer/method is appropriate for the level of hazard, or if service line protection is required.

Residential/Low Hazard and Non-Residential with minimal hazard service line connections should be reassessed/inspected every 15 years along with the meter replacement program.

(2) The GCPW reviews the questionnaire and makes an appointment with the water customer for a site survey. In selected cases, a site survey may not be necessary.

(3) The customer is notified in writing of backflow prevention assembly requirements with an installation deadline.

(4) The customer has the backflow prevention assembly completely installed according to all GCPW requirements found in the manual of cross-connection control (see pages 11 and 12; and Appendices B-1 through B-8), all local plumbing, SCDES, and manufacturers' installation requirements shall be met. The customer shall notify the GCPW two days before the required inspection at (864) 848-5500.

4. POLICY STATEMENTS

4.1 Inspection

Having proper identification, authorized inspectors shall be permitted to enter the building/premises at any reasonable time for inspection for the presence or absence of cross-connections, testing, repair, and maintenance. Each customer, as a condition of continued delivery of water to their premises, shall be required to consent for inspectors to enter their premises for the purpose stated herein. GCPW shall deny or discontinue, after reasonable notice to the occupants, water service to any building/premises for refusal or failure to arrange a cross-connection inspection. GCPW shall deny or discontinue water service if there is reason to believe the building/premises pose a potential danger to the public and occupants.

4.2 Existing Backflow Prevention Assemblies

If the GCPW has determined that an existing assembly will provide adequate backflow protection to the potable water supply, it shall be permitted to remain in service; however, when it becomes necessary to replace or change the size or an entire backflow prevention assembly, the procedures and requirements of the most current CCCM shall be met. Routine maintenance and repairs are not included under this requirement. However, if the GCPW determines that the existing assembly or its location no longer ensures adequate backflow protection, it shall be replaced with an assembly meeting current GCPW CCC requirements.

4.3 Non-Compliance/Discontinuance of Service

The GCPW shall not provide water service to any customer unless backflow protection is provided and properly tested and maintained as required by State Laws and Regulations and this CCCM. Services of water to any premises shall be discontinued after notice in writing by GCPW if backflow prevention assemblies are not installed, tested, or maintained as mandated by this policy. A letter will be sent regarding the non-compliance and notifying that discontinuance of water service will occur if the non-compliance is not corrected within five days. Within these five days, the customer may come to the GCPW offices to be heard by a designate of the Commission. Removal or by-passing of backflow prevention assemblies or falsifying test results shall also be grounds for discontinuing water service. Service will not be restored until such conditions or defects are corrected in conformance with the current CCCM. The customer shall be responsible for all applicable reconnection fees.

The GCPW shall not be liable for damages, losses, or claims arising from discontinuance of water service.

4.4 Inspection/Survey Forms

An *Inspection/Survey Form* shall be used in every inspection, as required, and will be filed in a location as identified in Appendix A-2, along with other pertinent information accumulated. This form will be used to record both existing backflow prevention devices discovered and any requirements for additional backflow prevention devices at the time of the inspection.

4.5 Inspection Procedures (for External Inspections Only)

Cross-connection control inspections shall be completed as follows:

- Identify the building to be inspected.
- Meet on-site with the facility contact/owner and explain the inspection process and purpose.
- Inspect/Evaluate the status of service line protection – complete all inspection forms as required (See Appendix B).
- In addition to the field forms, a piping diagram or schematic of the plumbing system may be requested or required.

4.6 Request for Internal Cross-connection Control Information

GCPW has the right to request specific cross-connection control information, including service line protection methods, assembly test records, CCC Program information, piping drawings, etc.

4.7 Record Keeping and Data Management Software

All data obtained from the *Inspection Forms, Existing Devices Forms,* and *Requirements Forms* will be input into a data management system and held for no less than ten- (10) years to facilitate the CCC Program. This information will include:

- Address and location
- Owner name and contact information
- Required re-inspection frequency
- Degree of hazard classification
- List of assemblies
- Location of assemblies
- Make, model, and size of assemblies
- Testing and maintenance of assemblies
- Description of other cross-connections within the facility
- Air gaps
- Non-testable devices

Additionally, all written backflow incident reports and annual cross-connection control program activities reports shall be maintained for no less than ten – (10) years.

5. BACKFLOW PREVENTION ASSEMBLIES AND DEVICES

5.1. Approved Backflow Prevention Assemblies and Devices

a) GCPW accepts backflow prevention devices, assemblies, and methods (downstream of service line protection) as recognized by the South Carolina Plumbing Code.
b) ASSE-recognized backflow prevention devices, assemblies, and methods intended to protect the public water supply at the point of the service connection must be used.
c) New installation of Reduced Pressure Backflow Prevention Assemblies intended for service line protection must conform to AWWA Standards C510 and C511 and the ASME Standards.

5.2. Hazard Applications

Reduced Pressure Principle Assemblies **(ASSE 1013)** shall be used for cross-connection control of the **HIGH HAZARD CATEGORY**.

Common High Hazard Facilities include but not limited to:

- Hospitals
- Nursing Homes
- Sewage Plants
- Marinas
- Swimming Pools
- Facilities with limited accessibility
- Dental Clinics
- Animal Clinics
- Chemical Plants
- Car Washes
- Facilities with reclaim water systems
- Large Industrial Plants
- Mortuaries/Funeral Homes
- Laboratories
- Food/Beverage Plants
- Laundromats/Dry Cleaners
- Facilities with Complex Piping
- Facilities with continuous piping corrections

Double-Check Valve Assemblies **(ASSE 1015)** shall be used for cross-connection control of the **LOW HAZARD CATEGORY**.

Common Low Hazard Facilities include but not limited to:

- Restaurants
- Warehouses
- Grocery Stores
- Untreated Lawn Irrigation systems
- Churches
- Office Buildings
- Storage Units
- Retail Stores
- Apartments
- Golf Courses
- Banks
- Schools
- Car Dealerships
- Automotive Garages
- Hotel/Motel

Dual-Checks **(ASSE 1024)** shall be used for cross-connection control of the **MINIMAL HAZARD CATEGORY**.

Common Minimal Hazard Facilities include but not limited to:

- Small Offices
- Duplex/Tri-Plex
- Small Retail Shops
- Basic Plumbing with limited low hazard water connections
- Facilities with Restrooms only
- Single Family Homes

The containment protection requirements for facilities classified under the three hazard categories (High, Low and Minimal) outlined above may be subject to adjustment based on the condition and configuration of the internal plumbing system identified during the onsite inspection.

5.3. Location

Installation of these assemblies will usually be in a structure near the water meter or inside a building, a mechanical area, and before the first connection off the service line. The GCPW will review each site and make a written recommendation for the location of the assembly. The standard procedure will be CROSS-CONNECTION CONTROL BY CONTAINMENT.

5.4. DCV (ASSE 1015) and RP (ASSE 1013) Installation Check List

(1) The assembly must be approved and installed as per the South Carolina Plumbing Code.

(2) No by-pass is permitted around the assembly unless there is an equal backflow prevention assembly in the by-pass.

(3) All manufacturers' installation requirements, including hot water and high-pressure applications, shall be consulted and followed.

(4) Customers with situations that prohibit shutting off the water service to test or repair the assembly should install a backflow prevention assembly in parallel or install a separate parallel duplicate service line with proper backflow protection.

(5) Height and side clearance requirements must comply with Appendices B-1 through B-8.

(6) All backflow prevention assemblies shall be installed in an enclosure or building on the customer's property to prevent damage from freezing, traffic, or vandalism and shall be readily accessible for testing and maintenance.

(7) The customer shall design and install adequate thrust restraints. Upon inspection, the GCPW may require additional thrust restraints where deemed necessary.

(8) The customer shall design and install adequate pipe supports. Upon inspection, the GCPW may require additional pipe supports where deemed necessary.

(9) A strainer between the water service connection and the backflow prevention assembly may be needed to prevent particles from fouling the check assemblies.

5.5. Specific Requirements for the RP (ASSE 1013)

(10) Conditions may exist where periodic pressure fluctuations cause the relief valve of the assembly to discharge to the point of being a nuisance. In this event, the customer could install an additional check valve prior to the assembly.

(11) Relief valve drain piping must meet approved air gap requirements. The air gap distance requirement is equal to two (2) times the relief valve diameter or 1 inch, whichever is greater. The piping shall be sized to exceed the discharge rate of the relief valve.

(12) The relief valve shall never become submerged.

(13) Underground installations of reduced pressure principle backflow assemblies are discouraged. Underground installations are only permitted in exceptional circumstances on a case-by-case basis and only where an adequately sized gravity drain can be installed to the ground's surface.

5.6 Specific Requirements for the Dual Check (ASSE 1024)

(1) Dual Checks shall be installed in a horizontal position only, unless listed or approved for vertical installation.

(2) Dual Checks should always be installed in an accessible location to facilitate the removal for servicing.

(3) Ensure that valve is installed in proper flow direction. Refer to flow direction arrow on valve nameplate or body.

(4) No by-pass is permitted around the device unless there is an equal backflow prevention device in the by-pass.

6. FIRE SUPPRESSION/SPRINKLER SYSTEMS

Each private fire protection system shall be evaluated by site and plan survey for the degree of hazard. Backflow prevention assemblies commensurate with the degree of hazard shall be required on all connections to the GCPW.

6.1. High Hazard Category

Systems considered **high hazard category** include but are not limited to, antifreeze systems, foam injection systems, and systems supplied from or connected to lakes, ponds, streams, or any other source other than the GCPW system. High-hazard category fire protection systems will require a **REDUCED PRESSURE PRINCIPLE ASSEMBLY (ASSE 1013 or 1047)** on any connection to the GCPW as close as possible to the service connection and the property line.

6.2. Low Hazard Category

Systems considered **low-hazard category** fire protection systems shall include simple wet or dry fire sprinkler systems. The systems may also include covered storage tanks or pumps supplied by the GCPW. A **DOUBLE DETECTOR CHECK ASSEMBLY (ASSE 1015 or 1048)** is required on any connection to the GCPW as close as possible to the service connection and the property line.

In isolated cases, the backflow prevention assembly must be installed inside the building. A **DOUBLE CHECK VALVE ASSEMBLY (1015 or 1048)** shall be installed on the riser piping immediately above the floor. Refer to the manufacturer's installation requirements for approved installation orientations.

7. LAWN IRRIGATION SYSTEMS

7.1. Commercial Lawn Irrigation Systems

Commercial lawn systems supplied by the GCPW water system shall be installed in accordance with the South Carolina Plumbing Code.

All commercial lawn irrigation systems shall be equipped with an approved **backflow prevention assembly** to protect the potable water supply from contamination.

The following **minimum backflow prevention devices** shall be installed based on system type and local risk assessment:

- A **Reduced Pressure Backflow Preventer (RPBP)** conforming to **ASSE 1013** for all treated irrigation systems (High Hazard).
- A **Double Check Valve Assembly (DCV)** conforming to **ASSE 1015** for non-treated non-residential and residential irrigation systems (Low-Hazard systems).
- A **Pressure Vacuum Breaker (PVB)** conforming to **ASSE 1020**, installed at least **12 inches above the highest point** of the irrigation system.
- A **Dual Check Valve (DC)** conforming to **ASSE 1024**, installed on non-treated residential irrigation systems.

7.2. Residential Lawn Irrigation Systems

Greer Commission of Public Works will not require testing of double check backflow assemblies on low hazard residential irrigation systems based on:

Amendments to the State Primary Drinking Water Regulations R.61-58.
(F) Cross Connection Control as of April 29, 2005

Greer Commission of Public Works will take the responsibility of complying with South Carolina Department of Health and Environmental Control regulations listed above by maintaining dual check assemblies which meet SCDES regulations for low hazard residential irrigation systems.

Greer Commission of Public Works installs and will change out the dual check assembly on all low hazard residential irrigation systems on a ten year basis. Existing residential irrigation dual check assemblies will be changed out over a five year period based on the latest double check assembly test date which complies with the existing Greer CPW Cross Connection Control policy. The initial change of the dual check assembly will be billed to existing low hazard residential customers at the cost set forth by CPW.

8. Testing of Backflow Prevention Assemblies

Certified testers shall test all backflow prevention assemblies in accordance with SCDES regulations.

8.1. New Assemblies

All new assemblies shall be tested upon installation and before use by the customer. The installer shall contact a certified tester to test the device and forward the test report to the GCPW. The report must be received by the GCPW within ten days of starting the water service.

8.2. Existing Assemblies

All existing assemblies shall be tested at least once annually or more often as determined by the GCPW, SCDES , or the Plumbing Official.

Customers with existing backflow prevention assemblies will be notified by letter from the GCPW to have the annual test performed. The customer will be responsible for contacting a certified tester and having the test made within 30 DAYS of notification. The completed report shall be returned to the GCPW within 7 DAYS of the test. All test forms shall be received by the GCPW within 37 DAYS.

If the assembly fails the required tests and cannot be repaired immediately (i.e., repair parts on order), the tester shall return a copy of the test report explaining the test failure to the GCPW the same day. After the assembly is repaired, the assembly shall be tested immediately, and the completed report shall be returned to the GCPW on the same day.

8.3. Follow Up Retest

The GCPW may randomly choose a number of recently returned test reports and retest the assembly, at its expense. The customer will be notified in advance of this retest. This retest is for verification information on testers, and compliance with SCDES requirements.

8.4. Testing Non-Compliance

Customers failing to return completed test reports to the GCPW within the 37-day period shall be considered non-compliant. At that time, the GCPW will proceed with one of the following:

(A) Assemblies located at the property line or meter: The GCPW shall hire a certified general tester to test the assemblies. Upon receiving the completed report, the GCPW will apply the general tester's fee plus the current GCPW administration fee to the customer's water bill.

(B) Assemblies not located on the property line or meter. The GCPW will consider the customer in noncompliance and proceed with the discontinuance of water service as outlined in Section 4-3, page number 6.

9. THERMAL EXPANSION

Several regulatory agencies require the GCPW to maintain a viable Cross-Connection Control Program. Backflow can occur from all industrial, commercial, or residential water service connections. Since 1971, backflow prevention assemblies have been installed on many service connections. In 1985, the Greer Commission of Public Works began installing residential dual check valves on ¾" services. These practices continue today to prevent backflow from various size services from entering the public potable water supply.

Practically all customers utilize heated water in their plumbing system. When water is heated, its physical character changes, and it expands. This expanded water needs to occupy more space. Before backflow preventers or dual check valves were installed on service lines, this expanded water into the GCPW's distribution system. This was known as an open system. This is no longer possible where a backflow preventer or a dual check is present. This is known as a closed system. The condition of heated water expanding in a closed system is known as Thermal Expansion. Often, thermal expansion will cause water heater Temperature and Pressure Relief Valves to discharge excessive water pressures, usually at above 150 psi.

The three most popular methods of dealing with the effects of thermal expansion are: installing a bladder-type expansion tank, a special ball cock and relief valve in the water closet, or a remote thermal expansion relief valve. The GCPW suggests you discuss these alternatives with a licensed plumber. Thermal expansion control shall be in accordance with the South Carolina Plumbing Code.

Thermal expansion The Greer Commission of Public Works will make its best effort to continue to provide safe, potable water to all customers. Backflow prevention assemblies are necessary to protect the GCPW's water distribution system. If you have any questions concerning thermal expansion related to cross-connection control, call (864) 848-5500.

10. APPEALS

Customers, contractors, or others who disagree with any requirement of the GCPW's Cross-Connection Control Policy or requirements imposed by the GCPW may appeal any requirement to the GCPW. Any appeal must be submitted in writing to the GCPW General Manager at least two weeks before any regularly scheduled Commission Meeting. The individual appealing will be allowed to appear before the Commission to present their appeal. Should an appeal be made, discontinuance of service will not occur until after the Commission has rendered its decision.

After review and any investigation necessary, the Commission will notify the individual of a decision which will be final.

11. EMERGENCY RESPONSE PLAN

11.1. Emergency Response Plan Procedures

GCPW shall develop and maintain an Emergency Response Plan (ERP) document intended to facilitate properly responding to a backflow event. The written ERP shall be readily available to designated personnel.

Investigative actions to address an actual or potential backflow event are intended to:

a) Protect the distribution system from the spread of a contaminant detected in the water supply
b) Quickly restore the quality of water in the distribution system if a contaminant has entered the system through backflow
c) Prevent any further contamination of the distribution system

The facilities investigation should include these steps:

1) Locate the source of contamination
2) Isolate the source to protect the water distribution system from further contamination
3) Determine the extent of the spread of contamination through the distribution system and provide timely, appropriate notification to the public and its regulatory agencies as applicable
4) Take corrective action to clean the contamination from the distribution system
5) Restore water service

11.2. Emergency Scenarios

Common scenarios causing unintended backflow forcing execution of Emergency Response may include the following:

b) Main water supply pipe break
c) Internal facility water pipe break
d) Internal facility – unprotected cross-connection allowing contaminant to flow into potable water distribution system
e) Report of illness due to water supply contamination
f) Report of discolored water

11.3. Incident Report Form

BACKFLOW INCIDENT REPORT FORM

There are many backflow incidents which occur that are not reported. This is usually because they are of short duration, are not detected, the customer is not aware they should be reported, or it may not be known to whom the incident should be reported. If you have any knowledge regarding incidents, please complete the form below and return it to the Municipal Engineer at the above address.

Reporting Agency: _____ Report Date: _____
Reported By: _____ Position: _____
Mail Address: _____ Utility: _____
Province: _____ Postal Code: _____ Telephone: _____
Date of Incident: _____ Time of Occurrence: _____
General Location (Street, etc.): _____

1. **Backflow Originated From:**

   Name of Premise: _____
   Street Address: _____ Utility: _____
   Contact Person: _____ Telephone: _____
   Type of Business: _____

2. **Description of Contaminant(s):**
   (Attach Chemical Analysis if available)
   _____
   _____

3. **Distribution of Contaminant(s):**

   Contained within customer's property: Yes: ___ No: ___
   Number of persons affected: _____

4. **Effect of Contamination:**

   Illness reported: _____

   Physical irritation reported: _____
   _____

5. **Cross-connection Source of Contaminant:**
   (boiler, chemical pump, irrigation system, etc.)
   _____
   _____

Backflow Incident Report Form
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6. **Cause of Backflow:**
(main break, fire flow, etc.)

_____

_____

7. **Corrective Measures Taken to Restore Water Quality:**
(main flushing, disinfection, etc.)

_____

_____

8. **Corrective Action Ordered to Eliminate or Protect from Cross-connection:**
(type of backflow preventer, location, etc.)

_____

_____

9. **Previous Cross-connection Survey of Premise:**

Date: _____ By: _____

10. **Type(s) of Backflow Preventer Isolating Property:**

RP: ___ RPDA: ___ DCVA: ___ DCDA: ___ PVB: ___ SVBA: ___
AVB: ___ Air Gap: ___ None: ___ Other Type: _____

11. **Date of Latest Test of Device:** _____

12. **Notification of Health Department:**
Date: _____ Time: _____ Person Notified: _____

Attach sheets containing any additional information, sketches, etc., to the back of this form.

12. EDUCATION AND AWARENESS

The cross-connection control program staff must have a good understanding of the program. GCPW shall ensure their cross-connection control staff receives proper in-the-field training and classroom education focusing on terminology, backflow prevention devices/assemblies, regulations, and hydraulic concepts. In addition, cross-connection control staff will be encouraged to receive continuing education to be made aware of new backflow prevention devices/assemblies, regulation changes (i.e., plumbing code updates), new water use devices that pose cross-connection concerns, etc.

Furthermore, attempts to educate the public about cross-connections will be made by distributing pamphlets on common residential cross-connections, visiting schools, providing onsite education of facility management and maintenance staff during routine inspections, speaking at condominium association meetings, website information, newsletter articles (s), or posting newspaper announcements.

Cross-connection staff shall also be available to provide backflow prevention education to pertinent community officials and GCPW employees upon request.

APPENDIX A – FORMS

CCC QUESTIONAIRE

COMMISSION OF PUBLIC WORKS
WATER SERVICE CONNECTION
CROSS CONNECTION CONTROL QUESTIONNAIRE

Date: _____

Service Address: _____ **W/O #** _____

Owner: _____ **Phone #**_____

Applicant: _____ **Phone #**_____

Mailing Address: _____

Meter Size: _____ **Plumber:**_____ **Phone #**_____

Type of Service: Residential: □ Commercial: □
Any existing Water Source/Service? Yes: □ No: □ Well? Yes: □ No: □ Other:_____

COMMERCIAL SERVICES

Describe Your Business: _____

Mechanical Equipment:

- □ Auxiliary Water Supply
- □ Auxiliary Water System (Process)
- □ Autopsy Morgue, Mortuary
- □ Air Condition Chilled Water
- □ Air Condition Cooling Water
- □ Aspirator
- □ Autoclave or Sterilizer
- □ Boiler
- □ Chemical Feeder
- □ Chemical Mixing
- □ Commercial Laundry
- □ Commercial Dishwasher
- □ Dairy Processing
- □ Degreasing Equipment
- □ Dental Cuspidors
- □ Below the Rim Supplied, Tanks, Vats, or Fixtures
- □ Medical Treatment: Dialysis, Surgery, Therapy
- □ Dye Vats, Tanks
- □ Etching Tanks
- □ Film or X-ray Developers
- □ Fountain/Ornamental
- □ Garbage Can Washers
- □ Industrial Fluids System
- □ Laboratory
- □ Multi Story Building - # of floors:_____
- □ Radioactive Material
- □ Pump Prime Lines
- □ Reclaimed/Recycled Water
- □ Sewage Treatment
- □ Trap Primer
- □ Dry Cleaning
- □ Other:_____

IRRIGATION

Yes: □ No: □ Greenhouse/Commercial Garden: □ Residential: □

Chemical Injection: Yes: □ No: □ If residential, installing a: □ dual check or □ double check

Email or Mail to: **Greer Commission of Public Works (backflow@greercpw.com)**
Attn: Backflow Coordinator
P.O. Box 216
Greer. SC 29652

SURVEY FORM

Cross-Connection Control Survey/Inspection Report

Facility Name _____ **Survey Date** _____

Facility Name 2 _____ **Survey By** _____

Service Loc/Address _____

Contact Name _____ **Contact Phone** _____

Area Name _____ **Acct Number** _____

Service Type _____ **Facility Status** _____

Comments _____

BFP/CC Info

#1 Location Floor _____ Location Room _____ ☐ Confinement

Equip Location _____ ☐ UD CB 1

Type		
Mfr		
Size		
Model		
Serial Num		

Location ID _____ ☐ Freeze Protect

Meter # _____ Map Page _____

PT _____

Haz. Level _____ Protection Type _____

Install Date _____ Status _____

#2 Location Floor _____ Location Room _____ ☐ Confinement

Equip Location _____ ☐ UD CB 1

Type		
Mfr		
Size		
Model		
Serial Num		

Location ID _____ ☐ Freeze Protect

Meter # _____ Map Page _____

PT _____

Haz. Level _____ Protection Type _____

Install Date _____ Status _____

#3 Location Floor _____ Location Room _____ ☐ Confinement

Equip Location _____ ☐ UD CB 1

Type		
Mfr		
Size		
Model		
Serial Num		

Location ID _____ ☐ Freeze Protect

Meter # _____ Map Page _____

PT _____

Haz. Level _____ Protection Type _____

Install Date _____ Status _____

TEST REPORT FORM

CPW
FOCUSING OUR ENERGY ON YOU

GREER COMMISSION OF PUBLIC WORKS
BACKFLOW DEVICE TEST REPORT FORM

Date: _____/_____/_____ Account Number: _____

Meter No : _____ Meter Reading: _____

Customer Name/Business Name: _____

Customer Address: _____

Physical Address (address where backflow preventer is located): _____

Customer Contact Person: _____ Contact Phone Number: (_____) _____ - _____

Assembly Information: RP:_____ DCVA:_____ DDCVA:_____ AG:_____ OTHER: _____

Size: _____ Manufacturer: _____ Model No.: _____ Serial No : _____

Location of Device:_____

Define Hazard: (beauty shop, restaurant, irrigation, car lot, medical facility, etc.)_____

TEST RESULTS

	Check No. 1	Check No. 2	Differential Pressure Relief Valve	#1 Gate or Ball (Circle One)	#2 Gate or Ball (Circle One)
Test Before Repairs	(Mark One) Leaked ☐ Closed Tight ☐ Drop Across:_____	(Mark One) Leaked ☐ Closed Tight ☐ Drop Across:_____	Opened at _____lbs. Differential Pressure	(Mark One) Leaked ☐ Closed Tight ☐	(Mark One) Leaked ☐ Closed Tight ☐
Repairs and New Materials	Date:___/___/___	Date:___/___/___	Date:___/___/___	Date:___/___/___	Date:___/___/___
Test After Repairs	(Mark One) Leaked ☐ Closed Tight ☐ Drop Across:_____	(Mark One) Leaked ☐ Closed Tight ☐ Drop Across:_____	Opened at _____lbs. Differential Pressure	(Mark One) Leaked ☐ Closed Tight ☐	(Mark One) Leaked ☐ Closed Tight ☐

Test must be performed by a general, limited, or inspector tester duly certified by the South Carolina Department of Health and Environmental Control. I have provided a copy of this report to the customer and am responsible for sending the original passing or failing report to CPW Cross Connection Control Department. I hereby certify that the above testing and/or repair was performed by myself and the information is correct

TESTER NAME (PRINT): _____ SIGNATURE: _____

COMPANY NAME: _____ PHONE NUMBER: _____

CERTIFICATION NUMBER: _____ CATEGORY: ___ General ___ Limited ___ Inspector Tester

METHOD OF TESTING: _____ TEST KIT USED: _____

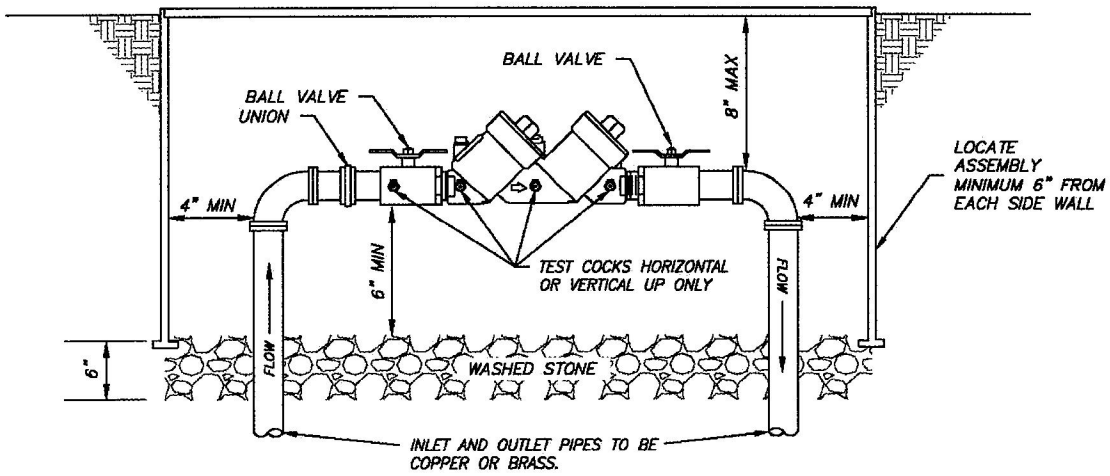
COMMENTS: _____

_____

APPENDIX B - DRAWINGS

APPENDIX B-1

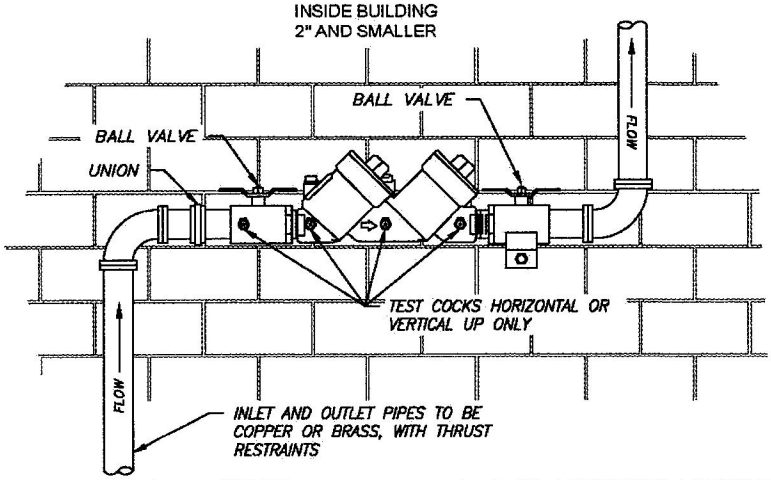
DOUBLE CHECK VALVE ASSEMBLY
BELOW GROUND INSTALLATION
2" AND SMALLER



NOTES:
BOX SHALL BE CONSTRUCTED AT OWNERS DISCRETION OF SUITABLE MATERIAL WITH REMOVAL ACCESS COVER CAPABLE OF HANDLING TRAFFIC LOAD THAT IT MAY BE SUBJECTED TO. ALSO IT SHALL BE VANDAL RESISTANT AND PROVIDE PROTECTION FORM WEATHER ELEMENTS.

APPENDIX B-2

DOUBLE CHECK VALVE ASSEMBLY
INSIDE BUILDING
2" AND SMALLER

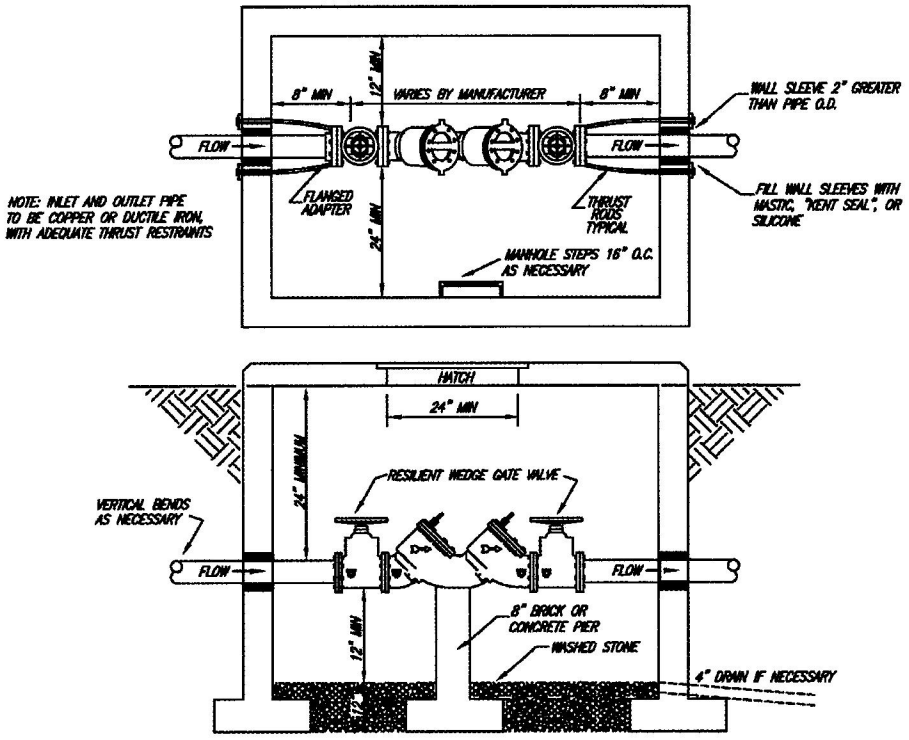


NOTES:
ASSEMBLY TO BE MINIMUM OF 6" FROM WALL AND 12" (MIN.) TO 48" (MAX.) OFF FLOOR.

GREER COMMISSION OF PUBLIC WORKS CROSS CONNECTION STANDARD DETAILS DOUBLE CHECK VALVE ASSEMBLY			
APPROVED BY: SK		DATE: APRIL 2025	DRAWING NO. B-1 & 2
SCALE: NTS		REVISED: --	

APPENDIX B-3

DOUBLE CHECK VALVE ASSEMBLY
BELOW GROUND INSTALLATION
LARGER THAN 2"



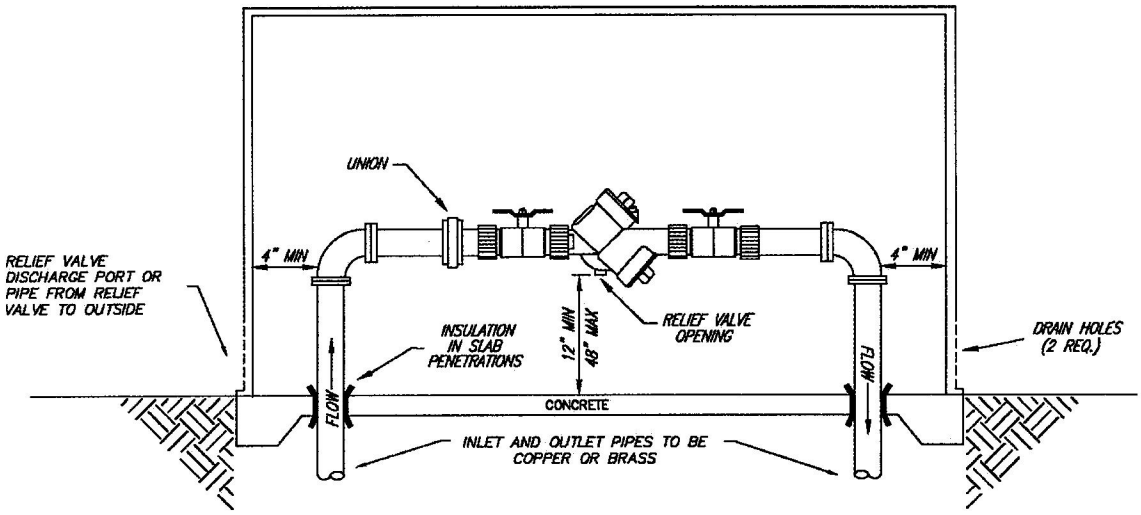
NOTES:

1. WALLS MAY BE PRECAST CONCRETE, REINFORCED POURED IN PLACE CONCRETE, FILLED BLOCK, OR BRICK.
2. TOP MAY BE REINFORCED CONCRETE, REINFORCED POURED IN PLACE CONCRETE, STEEL PLATE WITH EPOXY COATING, OR ALUMINUM PLATE.
3. HATCH SHALL BE MANUFACTURED STEEL OR ALUMINUM DOOR, CAST IRON MANHOLE RING AND EQUAL TO SUMTER MACHINE MF-11 FRAME AND MF-18 COVER, OR FABRICATED STEEL OR ALUMINUM OPENING SUITABLE TO OWNER.
4. WALL SLEEVES P.V.C., CAST IRON, STEEL, OR CORE DRILLED CONCRETE.

GREER COMMISSION OF PUBLIC WORKS CROSS CONNECTION STANDARD DETAILS DOUBLE CHECK VALVE ASSEMBLY			
APPROVED BY: SK		DATE: APRIL 2025	DRAWING NO. B-3
SCALE: NTS		REVISED: --	

APPENDIX B-4

REDUCED PRESSURE ASSEMBLY
ABOVE GROUND ENCLOSURE
2" AND SMALLER



NOTES:

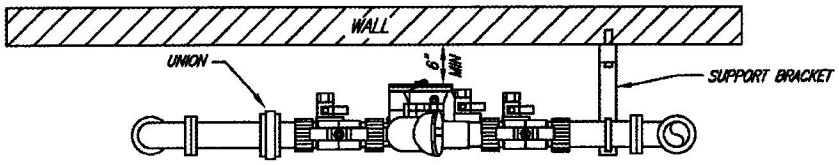
1) *ENCLOSURE TO BE ENGINEERED BACKFLOW PREVENTION ASSEMBLY OUTSIDE ENCLOSURE OR CONSTRUCTED TO PREVENT FREEZE AND VANDALISM.*

2) *PROVIDE HEAT WHERE NECESSARY.*

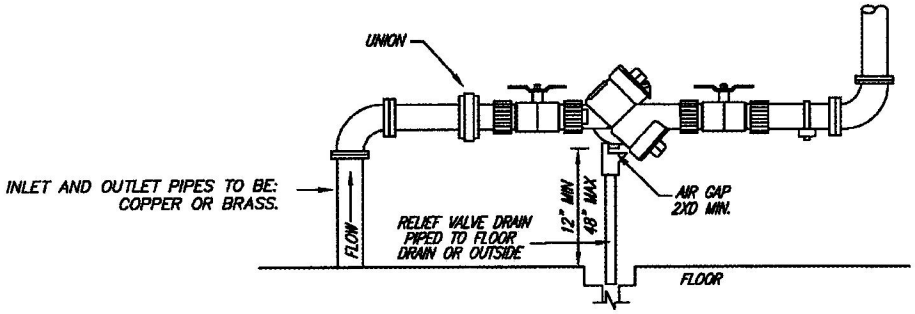
GREER COMMISSION OF PUBLIC WORKS CROSS CONNECTION STANDARD DETAILS REDUCED PRESSURE ASSEMBLY			
APPROVED BY: SK	GREER CPW	DATE: APRIL 2025	DRAWING NO. B-4
SCALE: NTS		REVISED: --	

APPENDIX B-5

REDUCED PRESSURE ASSEMBLY
INSIDE BUILDING
2" AND SMALLER



TOP VIEW



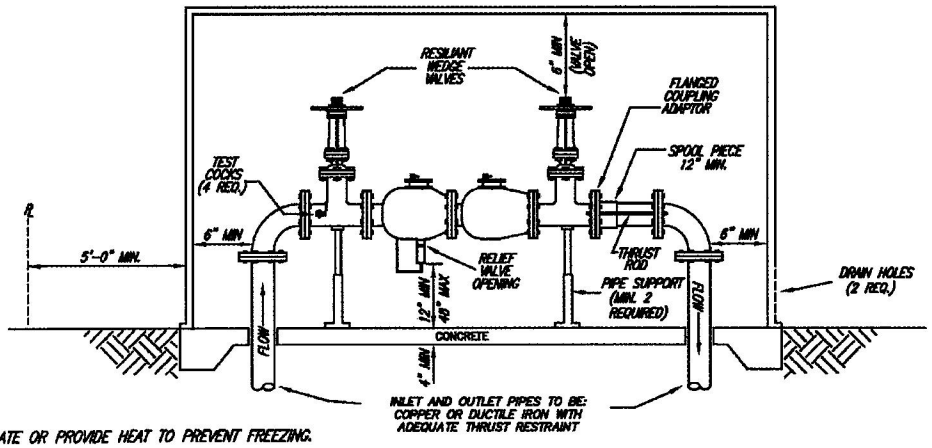
SIDE VIEW

NOTES:
1) ASSEMBLY TO BE A MINIMUM OF 6" FROM WALL AND 12" (MIN) TO 48" (MAX) OFF FLOOR.

GREER COMMISSION OF PUBLIC WORKS CROSS CONNECTION STANDARD DETAILS REDUCED PRESSURE ASSEMBLY			
APPROVED BY: SK		DATE: APRIL 2025	DRAWING NO. B-5
SCALE: NTS		REVISED: --	

APPENDIX B-6

REDUCED PRESSURE PRINCIPLE ASSEMBLY ABOVE GROUND INSTALLATION LARGER THAN 2" (ENCLOSURE CAN ALSO BE USED FOR DOUBLE CHECK VALVE ASSEMBLY)

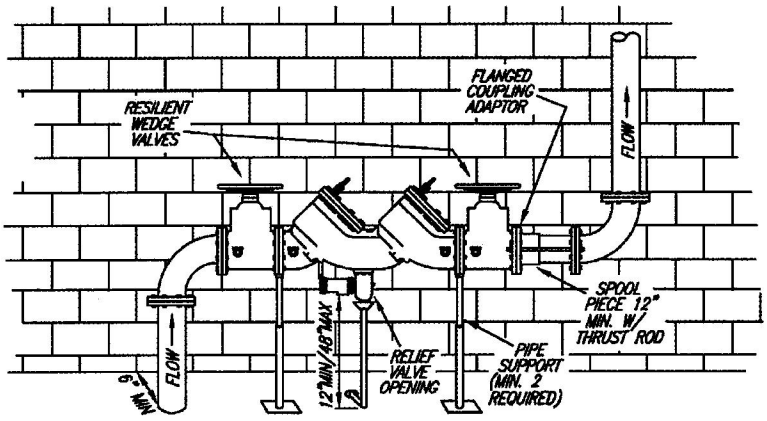


NOTES:

1. INSULATE OR PROVIDE HEAT TO PREVENT FREEZING.
2. MINIMUM 12" CLEARANCE EACH SIDE OF ASSEMBLY
3. DRAIN HOLES ABOVE GROUND EQUAL TO DIA. OF RELIEF VALVE

APPENDIX B-7

REDUCED PRESSURE PRINCIPLE ASSEMBLY OR DOUBLE CHECK VALVE ASSEMBLY INSIDE BUILDING - LARGER THAN 2"



INLET AND OUTLET PIPES TO BE: COPPER OR DUCTILE IRON WITH ADEQUATE THRUST RESTRAINT

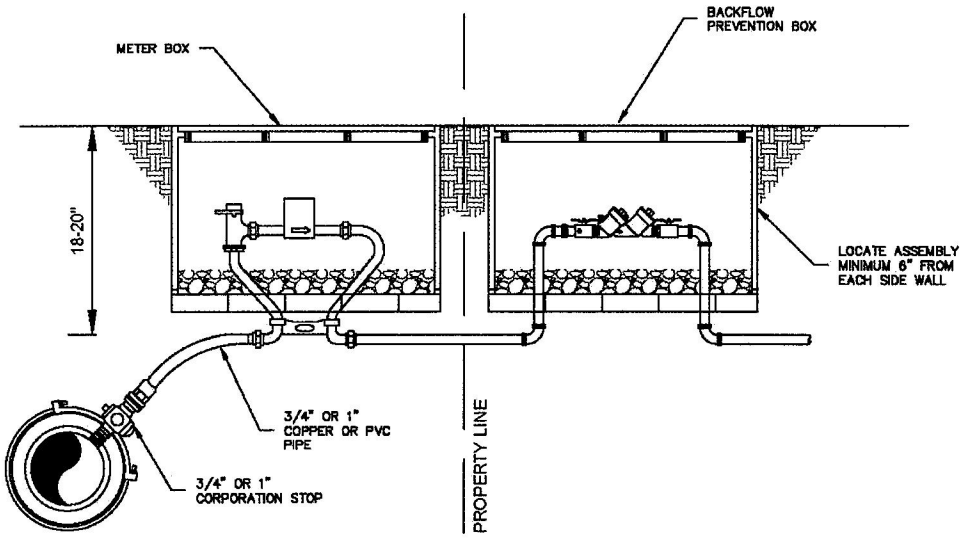
GREER COMMISSION OF PUBLIC WORKS

CROSS CONNECTION STANDARD DETAILS
REDUCED PRESSURE ASSEMBLY

APPROVED BY:		DATE:	DRAWING NO.
SK	GREER CPW	APRIL 2025	B-6 & B-7
SCALE: NTS		REVISED: –	

APPENDIX B-8 DOUBLE CHECK
VALVE ASSEMBLY BELOW
GROUND INSTALLATION 3/4" AND
1" METER

STANDARD INSTALLATION



NOTES:
1) INSTALL UNION CLOSE NIPPLE AND BACKFLOW ASSEMBLY DIRECTLY TO EXISTING 3/4" OR 1" x 6" BRASS NIPPLE.
2) BOX SHALL BE CONSTRUCTED AT OWNERS DISCRETION OF SUITABLE MATERIAL WITH REMOVABLE ACCESS COVER CAPABLE OF HANDLING TRAFFIC LOAD THAT IT MAY BE SUBJECT ALSO IT SHALL BE VANDAL RESISTANT AND PROVIDE PROTECTION FROM WEATHER ELEMENTS.

GREER COMMISSION OF PUBLIC WORKS CROSS CONNECTION STANDARD DETAILS DOUBLE CHECK VALVE ASSEMBLY			
APPROVED BY: SK	GREER CPW	DATE: APRIL 2025	DRAWING NO. B-8
SCALE: NTS		REVISED: --	

APPENDIX C - DEFINITIONS

Air Gap: The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water or waste to a tank, plumbing fixture, receptor, or other assembly and the flood-level rim of the receptacle. These vertical, physical separations must be at least twice the diameter of the water supply outlet and at no time less than 1 inch.

Approved: Accepted by the authority responsible as meeting an applicable specification stated or cited in this plan or as suitable for the proposed use.

Auxiliary Water System: Any water system on or available to the premises other than the purveyor's approved public water supply.

Backflow: The undesirable reversal of flow in a potable water distribution system as a result of a cross-connection.

Backflow Preventer: An assembly, device, or method designed to prevent backflow.

Backflow Prevention Assembly: A mechanical backflow preventer used to prevent backward flow of contaminants or pollutants into a potable water distribution system. An assembly has a resilient seated, full-flow shut-off valve before and after the backflow preventer, making it testable in line.

Backflow Prevention Device: A mechanical backflow preventer without shut-off valves. Typically, these devices are not testable in the field.

Backpressure: A pressure higher than the supply pressure caused by a pump, elevated tank, boiler, or any other means that may cause backflow.

Backsiphonage: Backflow caused by negative or reduced pressure in the supply piping.

Contaminant: Any foreign substance (liquid, solid, or gas) that degrades the quality of water and creates a health hazard.

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 change the color or add an odor to the water.

Owner: Person or entity receiving service from the public water distribution system.

Pollutant: Any foreign substance (liquid, solid, or gas) that degrades water quality to constitute a non-health hazard or impair the usefulness of the water.

Potable Water: Water safe for human consumption as described by the public health official having jurisdiction.

Non-Potable Water: Water unsafe for human consumption or questionable quality.

Reclaimed Water: Water resulting from wastewater treatment is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is not safe for human consumption.

Service Line Protection: Installation of an approved backflow prevention device, assembly, or method at the point of service to confine potential contamination caused by a cross-connection within the facility where it arises; also referred to as containment.

APPENDIX D – FACILITIES REQUIRING SERVICE LINE PROTECTION

The information provided in this section is only a partial listing of typical facility types requiring service line protection. Other types of facilities not on this list may be required to install service line protection at the discretion of the Authority.

1. Hospitals and Medical Facilities
2. Dental Clinics
3. Mortuaries/Funeral Homes
4. Nursing homes
5. Animal hospitals/Veterinary Clinics
6. Laboratories
7. Sewage treatment plants, sewage pumping stations, stormwater pumping stations
8. Chemical plants
9. Dyeing plants
10. Metal plating industries
11. Tanneries
12. Petroleum processing or storage plants
13. Slaughterhouses/Poultry processing plants
14. Food or beverage processing plants
15. Piers, docks, waterfront facilities
16. Photo development plants
17. Car washes
18. Laundromats
19. Public swimming pools
20. Where reclaimed water is being provided to the premises.
21. Farms where water is used for other than household purposes
22. Premises with internal cross-connections that are not correctable or with intricate plumbing arrangements that make it impractical to determine if cross-connections exist
23. Premises where, because of security requirements or other prohibitions or restrictions, it is impossible or impractical to make a cross-connection survey.
24. Premises having a repeated history of cross-connections being established or re-established.

Resolution No-2-2025

GREER COMMISSION OF PUBLIC WORKS
RESOLUTION ADOPTING AMENDED
CROSS-CONNECTION CONTROL POLICY

SECTION 1 – Purpose

The Greer Commission of Public Works has established a program of Cross-Connection Control to protect and maintain the Greer Commission of Public Works' potable water supply from potential hazards to the health of customers due to backflow into the Greer Commission of Public Works Water System by cross-connection through the following procedures:

A. **Eliminating or controlling existing unprotected cross-connections between the Greer Commission of Public Works' water distribution system and any piping or water system; and**

B. **Establishing and maintaining regulations, standards, records, and administration thereof in accordance and compatible with regulations and accepted practices promulgated by South Carolina Department of Environmental Services (SCDES), American Water Works Association, Federal and Local Agencies.**

SECTION 2 – Authority

Authority includes the Federal Safe Drinking Water Act of 1974, the State Safe Drinking Water Act (1976 Code of Laws of South Carolina, Section 44- 55-10, et seq.) and the South Carolina Primary Drinking Water Regulations promulgated by the South Carolina Department of Environmental Services and the Plumbing Code adopted by the City of Greer and Counties of Spartanburg and Greenville, SC. The invalidity of any provision(s) in this policy or manual of Cross-Connection Control shall not affect the validity of any other provisions or applications which can be given effect without such invalid provision(s) or application(s).

SECTION 3 – Responsibility

A. **The Greer Commission of Public Works has the primary responsibility for the protection of the potable water distribution system from potential hazards to the health of the customers by backflow from cross connections. The Greer Commission of Public Works shall evaluate connections to the potable water distribution system for cross-connections and the customer shall provide and maintain backflow prevention assemblies commensurate with the degree of hazard for each connection. The Greer Commission of Public Works is not obligated to provide water service to unprotected cross-connections.**

B. **The customer shall have the responsibility of preventing backflow from entering the customer's water system, and from entering the Greer Commission of Public Works Water System's water distribution system. The customer shall install, maintain, and test all backflow prevention assemblies, as necessary, according to all codes, Federal, State, Greer Commission of Public Works, and local backflow prevention practices.**

SECTION 4 – Administration

A. **The Greer Commission of Public Works shall operate a Cross-Connection Control Program in accordance with the South Carolina Department of Health and Environmental Control laws and regulations to consist of but not limited to, conducting on-site inspections, interviews, issuing permits, reviewing of plans, consulting local and state plumbing officials, maintaining files with pertinent customer information, notifying customer on an annual basis of required testing, and maintaining a manual of cross-connection control which shall be a part of this policy and is available by calling (864) 848-5500.**

B. It is unlawful to install, permit to be installed or maintain any unprotected cross-connections. Customer's who install or maintain service connections to the Greer Commission of Public Works Water System that are unprotected or fail or refuse to install protective devices or to test backflow prevention assemblies as required shall be notified by mail and the Greer Commission of Public Works will disconnect the service connection until corrections or tests are approved by the Greer Commission of Public Works. All applicable disconnect and reconnect fees shall be paid by the customer.

NOW THEREFORE, BE IT RESOLVED, by the Board of Commissioners of the Public Works of the City of Greer that the amended Cross-Connection Control Plan is hereby adopted and approved.

Approved and Adopted by the Commission this 28 **day of** April **, 2025.**

Witnesses:

Commissioners of the Greer Commission of Public Works:

Eugene G. Gibson, Chairman

Perry J. Williams, Commissioner

Jeffery M. Howell, Commissioner