

# Cross Connection Control Program

City of Mount Dora's Cross Connection Control Program (CCCP) safeguards Mount Dora's public drinking water supply from unintentional contamination. Cross connections occur anywhere the public water supply is connected to any other potentially contaminated source. These cross connections can pose a hazard if contaminated water from a customer is forced back into the public water supply. This is called backflow.

The Cross Connection Control Program's goal is to prevent backflow and is necessary to protect the public's health of our customers by keeping our water supply safe.

A cross-connection is a direct arrangement of piping that allows the potable (safe drinking) water pipe to be connected to a pipe supply that contains a contaminant or pollutant. Ironically, the most common cross-connection is the garden hose. An example of a cross-connection is a common garden hose attached to your home outside faucet with the hose outlet end lying in a pool or inserted into a sewer clean out. Other examples include a garden hose inserted in a car's radiator for flushing that contains anti-freeze or a hose attached to a chemical sprayer for weed killing. Again, a cross-connection would be any drinking water supply connected to any non-drinking water supply.

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# Cross Connection Control - Frequently Asked Questions

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# Responsibilities and Enforcement Authority

## Department of Environmental Protection (DEP)

**The Florida Department of Environmental Protection (DEP) was given rule-making and enforcement authority to address cross connection control and backflow prevention.**

The Florida Administrative Code Chapter 62-555, requires each water supplier to establish a routine cross-connection control and backflow prevention program. The water purveyor has the primary responsibility for development and implementation of this program. Rule 62-555.360 states that “a cross-connection program shall include a written plan that is developed using accepted practices of the American Water Works Association (AWWA)” as set forth in the reference documents cited in Rules 62-555.330 (6) and (7) F.A.C.

To the water purveyor this means that they must plan and diligently execute a program of cross connection control which either eliminates all cross connections or requires the installation and maintenance of a proper type of approved backflow prevention assembly at the water service connection whenever a potential hazard is determined to exist in the consumer’s system.

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## Water Purveyor

Under the cross connection control regulations the water purveyor has primary responsibility to prevent water from unapproved sources, or any other substance, entering the public water supply system. The water purveyor is prohibited to supply water by these regulations or rules from where a health, system plumbing or pollutional hazard exists, or will probably exist, unless the public potable water supply is protected against backflow by approved backflow prevention assembly(s) installed at the service connection(s) (i.e., point of delivery)

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## Consumer

The consumer has the responsibility of preventing pollutants and contaminants from entering his/her potable water system(s) or the public potable water system. The consumer’s responsibility starts at the point of delivery from the public potable water system and includes all of his/her water systems. The consumer, at his/her own expense, shall install, operate, test and maintain approved backflow prevention assemblies as directed by the authority having jurisdiction.

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## Certified Backflow Prevention Assembly Tester

The tester is responsible for performing accurate field tests and for repairing or overhauling backflow prevention assemblies and making reports of such repair to the consumer and responsible authorities on forms approved by the administrative authority having jurisdiction.

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**QUESTION: What is a Backflow prevention program?**

**ANSWER:** It is a program required by the State of Florida to detect and prevent possible sources of non-drinking water from entering your public utility drinking water system.

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**QUESTION: Why do water suppliers need to control cross-connections and protect their public water systems against backflow?**

**ANSWER:** Backflow into a public water system can pollute or contaminate the water in that system (i.e., making the water in that system unusable or unsafe to drink), and each water supplier has a responsibility to provide water that is usable and safe to drink under all foreseeable circumstances. Furthermore, consumers generally have absolute faith that water delivered to them through a public water system is always safe to drink. For these reasons, each water supplier must take reasonable precautions to protect its public water system against backflow.

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**QUESTION: What is a cross-connection?**

**ANSWER:** A cross-connection is any temporary or permanent connection between a public water system or consumer's potable (drinking) water system and any source or system containing nonpotable water or other substances. An example is the piping between a public water system or consumer's potable water system and an auxiliary water system, cooling system, or irrigation system.

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**QUESTION: What is an indirect cross-connection?**

**ANSWER:** This is a temporary cross-connection that may exist for a short time. A good example of an indirect cross-connection is a garden hose attached to an outside hose bib with the end of the hose submerged in a pail, swimming pool, or pesticide dispenser. Of additional concern is that some people use the garden hose to flush out sewers and drain pipes.

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**QUESTION: How does a cross connection happens?**

**ANSWER:** Contamination of drinking water is usually the result of cross-connections of piping between your drinking water and some other source such as irrigation well or pond. The American Water Works Association (AWWA) estimates over 100,000 cross-connections occur each day - half of these from garden hoses.

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### **QUESTION: What is backflow, and why is it dangerous?**

Water systems are designed to move water in one direction. However, a drop in pressure or a break in a water line can send water flowing in the opposite direction – and draw contaminants such as fertilizers and other chemicals into the drinking water system. This reversal of flow is called backflow, or back-siphoning.

Backflow is dangerous because non-drinkable water, chemicals, fertilizers, etc. In a municipality's drinking water system can contaminate the water supply and may cause sickness or death.

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### **QUESTION: What is backflow?**

**ANSWER:** Backflow is the undesirable reversal of flow of nonpotable water or other substances through a cross-connection and into the piping of a public water system or consumer's potable water system. There are two types of backflow-backpressure backflow and back siphonage.

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### **QUESTION: What are the types of backflow?**

**ANSWER:** Back siphonage creates a vacuum as water drains toward the community water system. Water or fluid can be siphoned or pulled into the utility main water line.

Example: A garden hose with one end immersed in a pail of soapy water or a hose immersed in a swimming pool

Back pressure can develop when irrigation well pumps are connected to drinking water for pump priming or blending drinking water with well water to reduce a "rotten egg" odor or driveway staining.

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### **QUESTION: What is a backflow preventer?**

**ANSWER:** A backflow preventer is a means or mechanism to prevent backflow. The basic means of preventing backflow is an air gap, which either eliminates a cross-connection or provides a barrier to backflow. The basic mechanism for preventing backflow is a mechanical backflow preventer which provides a physical barrier to backflow. The principal types of mechanical backflow preventer are the reduced-pressure principle assembly, the pressure vacuum breaker assembly, and the double check valve assembly. A secondary type of mechanical backflow preventer is the residential dual check valve.

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### **QUESTION: Why are backflow preventers needed?**

**ANSWER:** Backflow preventers are designed and installed to prevent the flow of water backwards through a pipe. Two commonly required backflow preventers are the Double Check Valve Assembly (DC) and the Reduced Pressure Zone Assembly (RP). Both of these protect your public utility drinking water system from backflow created by back siphonage and back pressure.

The Reduced Pressure Zone Assembly (RP) backflow preventer is used for potential health hazards such as sewage, medical fluids, and chemicals.

The double check (DC) is used to protect the utility system from non-health hazards such as odor, color, and taste. These include well water, swimming pool water, or nontoxic industrial fluids such as dye or food products.

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### **QUESTION: Why do backflow preventers need to be tested every year?**

**ANSWER:** The backflow preventer is a mechanical device that needs maintenance just like a car. Mechanical backflow preventers have internal seals, springs, and moving parts that are subject to fouling, wear, or fatigue. Also, mechanical backflow preventers and air gaps can be bypassed. Therefore, all backflow preventers have to be tested periodically to ensure that they are functioning properly. A visual check of air gaps is sufficient, but mechanical backflow preventers have to be tested with properly calibrated gauge equipment. The annual test indicates if the internal check valves and mechanics are working properly and protecting your water.

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### **QUESTION: Why does the backflow preventer need to be installed in the front of my house?**

**ANSWER:** In order to protect the community water system as much as possible and meet state requirements, the backflow preventer needs to be installed as close to the water meter as possible.

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### **QUESTION: Can I cover or hide the backflow preventer?**

**ANSWER:** Yes, there are several methods to cover and protect the backflow preventer assembly from weather, vandals, and lawn mowing equipment.

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### **QUESTION: What is an air gap?**

**ANSWER:** An air gap is a vertical, physical separation between the end of a water supply outlet and the flood-level rim of a receiving vessel. This separation must be at least twice the

diameter of the water supply outlet and never less than one inch. An air gap is considered the maximum protection available against backpressure backflow or back siphonage but is not always practical and can easily be bypassed.

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**QUESTION: What is a reduced-pressure principle assembly (RP)?**

**ANSWER:** An RP is a mechanical backflow preventer that consists of two independently acting, spring-loaded check valves with a hydraulically operating, mechanically independent, spring-loaded pressure differential relief valve between the check valves and below the first check valve. It includes shutoff valves at each end of the assembly and is equipped with test cocks. An RP is effective against back pressure backflow and back siphonage and may be used to isolate health or nonhealth hazards.

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**QUESTION: What is a pressure vacuum breaker assembly (PVB)?**

**ANSWER:** A PVB is a mechanical backflow preventer that consists of an independently acting, spring-loaded check valve and an independently acting spring-loaded air inlet valve on the discharge side of the check valve. It includes shutoff valves at each end of the assembly and is equipped with test cocks. A PVB may be used to isolate health or nonhealth hazards but is effective against back siphonage only.

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**QUESTION: What is a double check valve assembly (DC)?**

**ANSWER:** A DC is a mechanical backflow preventer that consists of two independently acting, spring-loaded check valves. It includes shutoff valves at each end of the assembly and is equipped with test cocks. A DC is effective against back pressure backflow and back siphonage but should be used to isolate only nonhealth hazards.

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**QUESTION: Who do I call to test my backflow device?**

**ANSWER:** You can look in the yellow pages or contact the City. The City has an informational list only. The City does not endorse a particular tester.

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**QUESTION: How do I know if I picked the right person to test my assembly?**

**ANSWER:** You will need to ask if they are certified to test and repair backflow assemblies. The tester gets their certification through American Water Works Association (AWWA), FWPCOA, or through University of Florida TREEO Center. Make sure their test kit is

calibrated. The test kit's calibration is only good for one year and must be done on an annual basis.

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**QUESTION: Where can I get more information about cross-connection control and backflow prevention?**

**ANSWER:** One excellent reference manual is the third (2004) edition of the American Water Works Association's (AWWA's) Manual M14, *Recommended Practice for Backflow Prevention and Cross-Connection Control*, which is available from the AWWA Bookstore; 6666 West Quincy Avenue; Denver, Colorado 80235; 800/926-7337; <http://www.awwa.org>. Another excellent reference manual is the ninth (1993) edition of the University of Southern California's *Manual of Cross-Connection Control*, which is available from the Foundation for Cross- Connection Control and Hydraulic Research; University of Southern California; KAP-200 University Park MC-2531; Los Angeles, California 90089-2531; 213/740-2032; <http://www.usc.edu/dept/fccchr>.

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# What does a Backflow Preventer look like



**Pressure Vacuum Breaker (PVB) backflow prevention device**



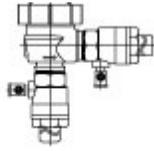
**Reduced Pressure Principle Assembly (RPZ) backflow prevention device**



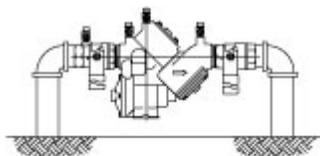
**Double Check Detector Assembly (DCDA) backflow prevention device**

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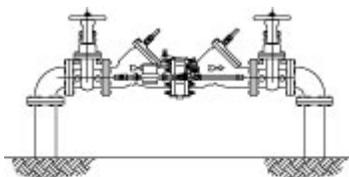
# Backflow device with a diagram



**PRESSURE VACUUM BREAKER**



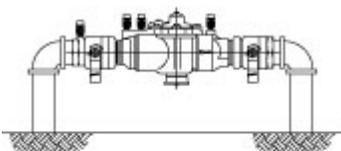
**REDUCED PRESSURE**  
(2" & SMALLER)



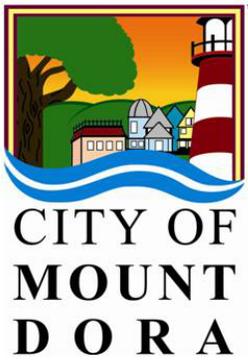
**DOUBLE CHECK**  
(2" & LARGER)



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**DOUBLE CHECK**  
(2" & SMALLER)



# Cross Connection Control Program

## COMMONLY ASKED QUESTIONS ABOUT BACKFLOW PREVENTION

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### What is a backflow?

Backflow devices are installed to prevent contaminated or polluted water from backflowing into the fresh water supply. This can be the result of backpressure, where the pressure on the supply side (fresh water coming into the building or irrigation system) is exceeded by something causing greater pressure. If the pressure on the supply side drops below the pressure on the demand side, the potentially bad water can be forced back into the fresh water supply. When this happens, many people can get sick or die as a result of being exposed to the contaminated or polluted water. If a backflow incident should occur resulting in the contamination of the public water supply, the responsible owner or occupant could be held liable for damages. With backflow devices installed, the water cannot flow back.

### How can water backflow from the customer to the City of Mount Dora's drinking water supply?

This happens in 2 ways:

1. Back siphoning occurs when there is a loss in water pressure from the public supply. This may occur if a water line is broke or loss of pressure. With low water pressure, water trapped in a customer's pipes may siphon back into the City of Mount Dora's water system pulling any contaminants with it.
2. Back pressure occurs when the water pressure in a customer's pipes becomes greater than the pressure exerted by the public water supply forcing the customer's water and any contaminants back into the public water supply. Increased pressure could take place when a customer uses pumps.

### How does the City of Mount Dora protect the community from backflow?

The City of Mount Dora Public Works and Utilities along with the Building Department requires assemblies to be installed by certain customers on their drinking water line.



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### **Are all customers required to have backflow prevention assemblies?**

Requirements for backflow assemblies are determined by the degree of hazard present at a customer's premise. For example; Customers with in ground irrigation systems must have a backflow assembly. Since these systems are in ground they may get dirt or other contaminants in their pipes which in turn could backflow into the public drinking water.

### **What are the maintenance requirements for backflow prevention assemblies?**

- Assemblies must be tested annually by a certified backflow prevention assembly tester to make sure they function properly.
- If the assembly fails, it must be repaired or replaced and tested again to ensure it functions properly.
- Upon successful completion of the test a Backflow Assembly Test Report must be submitted to the City of Mount Dora's Cross Connection Control program.

### **Are there any regulatory requirements for backflow prevention assemblies?**

#### **Local Requirements**

The City of Mount Dora's Cross Connection Control Policy

#### **State Requirements –**

Florida Safe Drinking Water Act, section 403

Florida Administrative Code Chapter 62-555

#### **Federal Requirements –**

The Safe Drinking Water Act (1996)



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## LOCATIONS USING RECLAIM WATER

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The City of Mount Dora's reclaimed water is highly treated wastewater produced through an advanced wastewater treatment process. This process eliminates any harmful byproducts while retaining beneficial elements, such as nitrogen, for irrigating landscapes. It contains low levels of nitrogen and phosphorus, which are beneficial to plant and turf growth and may reduce the amount of fertilizer needed to maintain lawns and landscapes.

Ironically, the most common cross-connection is the garden hose. The weekend warrior (the "fix-it" person) either is unaware of the potential danger or makes plumbing changes without understanding local plumbing codes which address cross-connections. These cross-connections are potentially dangerous to the internal plumbing of our homes and the water utility supply system.

**For specific questions regarding backflow devices or cross connection please contact the City of Mount Dora Public Works and Utilities at (352) 735-7151.**



**Connecting reclaimed and potable water pipes is prohibited**



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## DID YOU KNOW?

# WATER NEVER ACTUALLY DISAPPEARS

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Water is too valuable to be used just once. Every gallon of recycled water used to irrigate landscaping saves a gallon of drinking water for domestic uses. Reclaimed, or "recycled" water is produced from the water we discard every day. Reclaimed water is ideal for many non-drinking purposes. Reclaimed water also allows the City of Mount Dora to stretch our water supply.



## WHAT CAN YOU DO WITH RECLAIM WATER

- Irrigate your lawn
- Irrigate flower gardens
- Irrigate trees and shrubs

## WHAT CAN'T YOU DO WITH RECLAIM WATER

**DO NOT DRINK** reclaimed water.

- Do not connect any pipes to your reclaimed water pipes.
- Do not connect your reclaimed water pipes to any other pipes.
- Do not use reclaimed water to fill swimming pools, hot tubs, or wading pools.
- Do not use reclaimed water to irrigate edible crops (i.e., vegetables or fruits) that WILL NOT be peeled, skinned, or cooked before being eaten.



We encourage you to visit the City of Mount Dora's website for more information regarding the landscape irrigation schedule; (including watering new landscape, restrictions, and exceptions)

[www.cityofmountdora.com](http://www.cityofmountdora.com)

**Connecting reclaimed and potable water pipes is prohibited**



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# Cross Connection Control Program

## LOCATIONS WITH IRRIGATION SYSTEMS

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**Irrigation systems have the potential for contaminants and pollutants to be introduced into the potable supply through submerged sprinkler heads, injectors or aspirators.**

The City of Mount Dora's Cross Connection Control policy requires the installation of backflow preventers to protect the public water supply.

**Irrigation systems for commercial customers** require the installation of a ***reduced pressure zone*** backflow preventer (BFP).

**Irrigation systems for residential customers** require a pressure vacuum breaker, double check, or reduced zone backflow preventer. The type of backflow device depends on the degree of hazard on property per the City of Mount Dora's Cross Connection Control policy.

### **Installation Requirements**

The City of Mount Dora requires all backflow preventers be installed in accordance with manufacturers' instructions and the City of Mount Dora Cross Connection Control policy.

If an irrigation system is fed from the same meter as the potable water (same water that goes into household), an alternate location to install the backflow preventer is allowed on property. Provided that the backflow device is installed on the irrigation supply after the connection to the service line before the first zone or sprinkler head.





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The backflow preventer must be tested by a certified tester upon installation and annually thereafter. Maintenance of the backflow preventer is the responsibility of the water service customer. Any installation

exceptions must be approved by the City of Mount Dora prior to installation.

**Note:** The installation of a backflow preventer may require additional plumbing adjustments to prevent thermal expansion damage to internal plumbing.



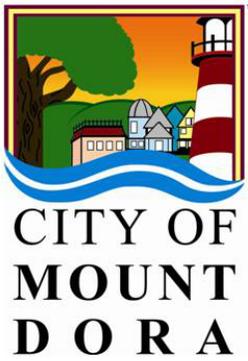
*Irrigation poses a high hazard to the drinking water supply, and these water service lines require backflow preventers to protect against pollution and health risks caused by contamination.*

## WATERING SCHEDULE AND RESTRICTIONS

- 💧 In no event shall irrigation occur between 10:00 am – 4:00 pm
- 💧 No more than 3/4 inch of water may be applied per irrigation zone on each day that irrigation occurs.
- 💧 In no event shall irrigation occur for more than 1 hour per irrigation zone on each day that irrigation occurs.
- 💧 All landscape irrigation shall not exceed the amount necessary to meet landscape needs.

Remember, too, water only when needed and not between 10 a.m. and 4 p.m. Water for no more than one hour per zone. Restrictions apply to private wells and pumps, ground or surface water and water from public and private utilities.

We encourage you to visit the City of Mount Dora's website for more information regarding the landscape irrigation schedule; (including watering new landscape, restrictions, and exceptions) [www.cityofmounddora.com](http://www.cityofmounddora.com)



# Cross Connection Control Program

## WHEN ARE YOU REQUIRED TO INSTALL A BACKFLOW ASSEMBLY

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Backflow assembly are owned by the customer and regulated by the Department of Environmental Protection through the City of Mount Dora. While it is primarily business customers who require backflow assemblies, some residential properties need them, also.

Backflow prevention assemblies, if properly installed and maintained, allow water to flow in only one direction. Water can flow from the public water system to the customer's property, but not in the other direction.

Water systems are designed to move water in one direction. However, a drop in pressure or a break in a water line can send water flowing in the opposite direction – and draw contaminants such as fertilizers and other chemicals into the drinking water system. This reversal of flow is called backflow, or back-siphoning.

Backflow is dangerous because non-drinkable water, chemicals, fertilizers, etc. in the city's drinking water system can contaminate the water supply and may cause sickness or death.

**The type of device that is suitable for your property is based on the degree of hazard your property presents to the public water system.**

### **Selection of a backflow preventer**

The selection of a backflow preventer is based upon several factors. However, backflow preventers will be required if there exists an actual or potential hazard for cross-connection. Some of these hazards include:

- Irrigation systems
- Fire sprinkler systems
- Processing plants
- Well, lake, and reclaimed water sources

**Did you know that leaving a hose in a swimming pool can create a potential backflow hazard?**

The HCVB should be installed on all outside hose bibs to protect residents from any backflow into their home.



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## How Do I Select the Proper Device?

CONDITION	Double Check Valve Assembly (DCVA ASSE 1015)	Reduced Pressure Principle (RP) ASSE 1013	Pressure Vacuum Breaker (PVB) ASSE 1020	Atmospheric Vacuum Breaker (AVB) ASSE 1001	Air Gap (AG)
BACK PRESSURE	X	X			X
BACK SIPHONAGE	X	X	X	X	X
TOXIC (high hazard)		X	X		X
NON TOXIC (low hazard)	X	X	X	X	X
CONTINUOUS SUPPLY PRESSURE	X	X	X	No more than 12 hours	
INSTALL LEVEL	12" above grade	Relief valve 12" above grade	12" above highest water outlet	6" above highest water outlet	2x pipe diameter. Not less than 1"



# Cross Connection Control Program

## What is the Difference Between a Backflow Device And a Backflow Assembly

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**Backflow Devices** are not to be substituted for applications that require backflow assemblies. They usually do not include shutoff valves or test cocks, and they usually cannot be tested or repaired in-line. These devices are used for internal protection and usually come only in smaller sizes. The application of these devices usually comes under the jurisdiction of the plumbing code, because they usually are located only in private plumbing systems.

**Backflow Assemblies** are backflow preventers that are required to have certain parts, such as test cocks and shutoff valves that are used for field testing. Assemblies must be able to be tested and repaired in-line. They must meet an approval standard for performance and design. Backflow devices are not always designed for field testing. Standards for devices and assemblies differ, with various standards describing different performance requirements.



# Cross Connection Control Program

## Staying in Compliance with Backflow Regulations

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Backflow prevention assemblies are subject to corrosion that may lead to failure. Annual testing of backflow prevention assemblies is required to ensure proper functioning of the assemblies and the safety of our water supply.

Testers must pass an extensive classroom and hands-on training curriculum, followed by a practical exam. Upon completion of the exam, the testers are certified and assigned a certified tester number.

While some testers only test valves, others are trained in their repair or replacement as well.

- Assemblies must be tested annually by a certified backflow prevention assembly tester.
- If the assembly fails, it must be repaired or replaced and tested again to ensure functions properly.
- Upon successful completion of the test a Backflow Assembly Test Report must be submitted to the City of Mount Dora's Cross Connection Control program.

All costs associated with backflow prevention assembly maintenance are the responsibility of the customer.

You will receive a notice from the City of Mount Dora Public Works and Utilities that it is time to have your backflow assembly tested, you typically have 30 days to get them tested by a certified tester.