

FACTS ON CUSTOMER WATER PIPING

GENERAL:

Customer water piping systems can vary from a very basic system of pipes that deliver water to each fixture to complex systems that incorporate the use of heat recovery systems, solar panels and all types of appliances. Materials vary from rigid piping to flexible connectors. Valves and different types of safety devices are also part of the water system. Each customer should take the time to understand how the system works and where valves are located for maintenance or fixture and appliance replacement projects. All systems are subject to periodic problems from small leaks to catastrophic failures. This fact sheet is designed to help our customers better understand the issues that cause these problems and provide information that helps our customer know how to be prepared for problems as they may occur.

DAMAGE AND INSURANCE:

Failures that can occur in household piping systems can be catastrophic in nature. There are many contributing factors that can lead to water pipe failure in piping systems, including pressure spikes, long term effects of pressure surges where the piping moves against an abrasive object, defects in the piping material, freezing weather, installation techniques and any combination of all of these factors. Homeowner's insurance policies may provide coverage for such damage, but a thorough review of your coverage, and the deductible expense for such coverage, is recommended with your insurance agent. There are insurance policies available for inside piping damages. Riviera Utilities does not recommend separate coverage for water leaks unless the homeowner has discussed this issue with their homeowner's insurance carrier, and it is decided that a separate policy is beneficial.

There is no guarantee that any level of protection will prevent leaks in household plumbing systems. These suggested measures are a result of many applications and the improvements of devices and technology over a period of time. Each homeowner must try to understand the risk of piping failure, apply the risk factors to their specific condition and decide on the most prudent course of action for their premises. One contributing factor is the installation of backflow prevention devices that are mandated by the United States Environmental Protection Agency, USEPA.

HISTORY OF BACKFLOW PREVENTION:

In 1977, the Alabama Department of Environmental Management, ADEM, first promulgated regulations concerning backflow prevention. These regulations were necessary to comply with mandates of the USEPA to prevent contamination of the public water supply through any potential cross connection to the public water supply system. Cross connections can come in a

variety of sources, from garden hoses connected to chemical application devices to swimming pool pumping systems, plus any number of commercial facilities. The goal of the Cross Connection Regulation is to protect the integrity of the water quality in the water distribution system for the public good.

The primary method used to achieve this goal is to install, or have installed, backflow prevention devices directly behind the water meter serving each customer. Since 1982, Riviera Utilities has installed backflow prevention devices for each 3/4" and 1" service we install. In 1988, a cross connection policy was adopted by our Board that better defined the level of protection required for specific installations. In 2003, ADEM mandated that all services, including those installed prior to the implementation of a cross connection program, be upgraded to meet the regulations governing backflow prevention. Our Board approved this work in October of 2003, which included approximately 1,700 services installed prior to 1982.

Today, every water service connection on the Riviera Utilities water system is equipped with a backflow prevention device. While this improvement doesn't eliminate all risks for contamination to the water system, it does eliminate many risks that are unintended, but possible.

THE BACKFLOW PREVENTION DEVICE:

Riviera Utilities currently provides a double check valve, built into each meter yoke on our 3/4", 1", 1-1/2" and 2" services. All services larger than 2" and some services 2" and smaller require a double check valve be installed by the developer.



Service Yoke



Enlarged Image-Backflow Preventer

The double check valve is designed to allow water to flow through it in one direction only. This will keep water from a customer's piping system from flowing back into our water system. This can happen when a higher water pressure exists in the customer's piping than the pressure in the water system. Examples of this may be where a chemical pump is allowed to boost pressure and is incorrectly piped or a valve is incorrectly positioned. It can also be a result of lost pressure in the water system from a main break or from routine flushing. This can allow a siphon effect of any liquid connected to a garden hose. These devices work very well in preventing potential contaminants from coming into the water system from a customer's residence or place of business.

The device also keeps any pressure that can build up in the customer's piping from relieving itself back into the water system. There are several common practices that can cause this.

WATER HEATERS:

Heating water lowers the density of the water, and therefore causes it to expand. As the water expands, the customer piping system builds pressure. For the normal water heating cycle, the pressure increase can vary depending on the size of the water heater tank, the recovery time of the water heater and the size and length of the water pipes that make up the water system of each location. When the thermostat of a water heater fails and the heating elements continue to heat the water, the pressure can build significantly. For this condition, the water heaters are equipped with a pressure relief valve. The pressure relief valve, if operating correctly, should prevent excess pressures from building up in the customer piping system. A periodic inspection of this device is recommended to help ensure the device will work properly if needed.



Thermal Expansion Tank



Pressure Relief Valve

**Retrofit Pressure Relief Valve for Water Heaters
With added High Temp. Blow-off Valve**

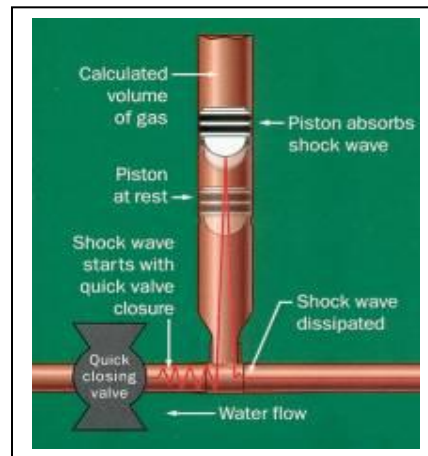


Enlargement of a Retrofit High Temp. Blow-off Valve



WATER HAMMER:

Water hammer is another phenomenon that can cause pressure spikes in a closed loop system, which is what the customer piping becomes with backflow prevention devices installed at the service. Water hammer is created from the near instantaneous closing of a valve when water is moving with high velocity. Standard appliances, such as dish washers and washing machines, can cause water hammer, as well as faucets and other valves that are manually shut off too quickly. This creates a pressure wave that reverberates through the water system. This pressure wave can also cause pipes to move in the walls or under slabs. Water pipes that move against an abrasive object can weaken the structural integrity of the pipe over some course of time. Surge devices can minimize this impact on your plumbing. There are several devices on the market similar to those shown here, plus there are some devices that can be installed on the toilet tank filling system that will discharge into the toilet tank when activated form high pressure.



Water Hammer Surge Arresters

BUILDING CODES:

Building codes are used by the jurisdiction permitting any structure to ensure certain life safety issues are met and to provide a reasonably safe environment for habitation. Building codes are generally adopted by the jurisdiction based on the specific version the jurisdiction chooses, plus any amendments to that specific code the jurisdiction determines appropriate. Building codes change from time to time in order to keep up with technology, improved building techniques or circumstances that are brought to the attention of the membership of the International Code Council (ICC). The general membership can recommend changes and comment on any revisions proposed prior to the revisions being integrated into the building code through ICC committee approval. The plumbing code has evolved this way as well. Pressure-reducing devices are now integrated into the code and are required when check valves, such as Riviera's backflow preventers, are provided at the point of service. The plumbing code has adopted this language

to address the potential problems that can come from over-pressured water systems. These problems include leaks in the piping system, which can be anywhere from a drip at a fitting to a sudden bursting of the piping. Any failure can result in damage to the structure; some more catastrophic than others. The building code also recommends pressure regulating devices when static pressures exceed 80 pounds per square inch, PSI. There are some locations within the Riviera Utilities water service area where static pressures can be at 80 PSI or higher. Pressure regulators are advised in these locations, generally in the low areas of Magnolia Springs, Miflin and Bon Secour. The installation of a pressure regulator at any customer location can lower the customer piping system pressure to a minimum acceptable pressure; reduce the actual consumption of water in faucets, showers and from garden hoses and minimize the increases in pressure from heating water and water hammer.

Contact information for the International Code Council can be found at www.iccsafe.org

MAINTENANCE:

Periodic maintenance of any device is recommended. Please refer to the owner's manual for the type of maintenance required and the frequency it is required. If you are not sure what type of maintenance you should perform on any device, call a licensed plumber for assistance. Static installations, such as water hammer arrestors that depend on a column of air to dampen the pressure surge, should be drained annually. This will allow you to replace the air that absorbs into the water over time. Tank-type arrestors without bladders would be similar in that the air cushion can be absorbed into the water, rendering the unit ineffective. If you are not sure what pressure devices you have or what devices you may need, call a licensed plumber to see what considerations are recommended.

Other precautions that are recommended include turning off the water heater and the water service when leaving for an extended period of time. Each water service should have a customer shutoff valve between the residence and the meter. Customers are encouraged to know where this valve is located and keep accessibility to the valve obvious. Valve boxes are available at the local hardware stores where customers can protect the valve damage and always be aware of its location. Customers should avoid driving over the meter box. This can cause the connection to the customers piping and the meter yoke to break from the heavy load of an automobile. These breaks are generally on the customer's side of the meter; before the customer's shutoff valve. The leak will continue until Riviera's side of the meter is shut off, which can take time and the water lost will be billed to the customer.

SUMMARY:

Customer piping systems vary in many ways from the types of appliances that are connected to it, to the types of materials that are used. Each system is designed to meet certain standards, but no system is 100% safe from leaks or other forms of failure. Customers should take the time to familiarize themselves with the system components and the maintenance requirements of these components. A licensed plumber should be contacted if you have any questions

concerning your plumbing system or the maintenance requirements for any components of the plumbing system. Each customer should also be aware of the provisions in their homeowner's insurance policy, including the limits of coverage and the deductible for each claim.