



LAWN IRRIGATION SYSTEMS

The City of Westminster "Building Assistance Program" is intended to help the general public understand the requirements for building certain projects within the City and provide a guideline for obtaining a building permit.

Building permits must be obtained from the City's Building Division prior to starting your project. Applications for building permits may be obtained at the Building Division counter and should be filled out as completely and accurately as possible.

Upon completion of your project, it will be necessary for you to call the Building Division and request a final inspection of the work. This inspection can be made anytime after the backflow prevention device has been installed and all sprinkler head locations have been determined, whether all of the sprinkler heads are installed or not.

Finally, please remember that the Building Division Staff is here to assist you and will be happy to answer any questions you may have concerning your project.

ABOUT BACKFLOW PREVENTERS

Almost every water-using fixture or device may be improperly connected to a domestic water system, or improperly used, so that a cross connection results. A cross connection is any actual or potential connection between the potable water supply (drinking water) and a source of contamination or pollution where it is possible for the contaminated fluid to "backflow" through the cross connection and into a potable water system, thereby creating a health hazard. Irrigation systems are cross connections because they may be equipped with pumps, injectors, pressurized tanks and vessels, or other facilities for injecting into the irrigation system chemicals such as fungicides, pesticides, soil conditioners, and similar noxious, toxic, or objectionable substances. Also, irrigation systems may be subject to contamination from submerged sprinklers and spray heads, auxiliary water supplies, ponds, reservoirs, swimming pools, and other sources of stagnant, polluted or contaminated water. A cross connection can be eliminated by establishing an air gap separation, or the cross connection can be controlled by the installation of a mechanical backflow prevention device.

A mechanical backflow prevention device, quite simply, is a device which, when properly installed, allows water to flow in one direction only, but will not allow reverse flow or "backflow." The three basic types of backflow prevention devices that are approved for use with lawn irrigation systems within the City are as follows:

1. Atmospheric Vacuum Breakers
2. Pressure Vacuum Breakers
3. Reduced Pressure Principle Backflow Preventers

A brief description of these approved devices and installation guidelines for each are given in the following pages of this packet. The diagrams shown may also be helpful in deciding which of these devices will best suit your particular needs.



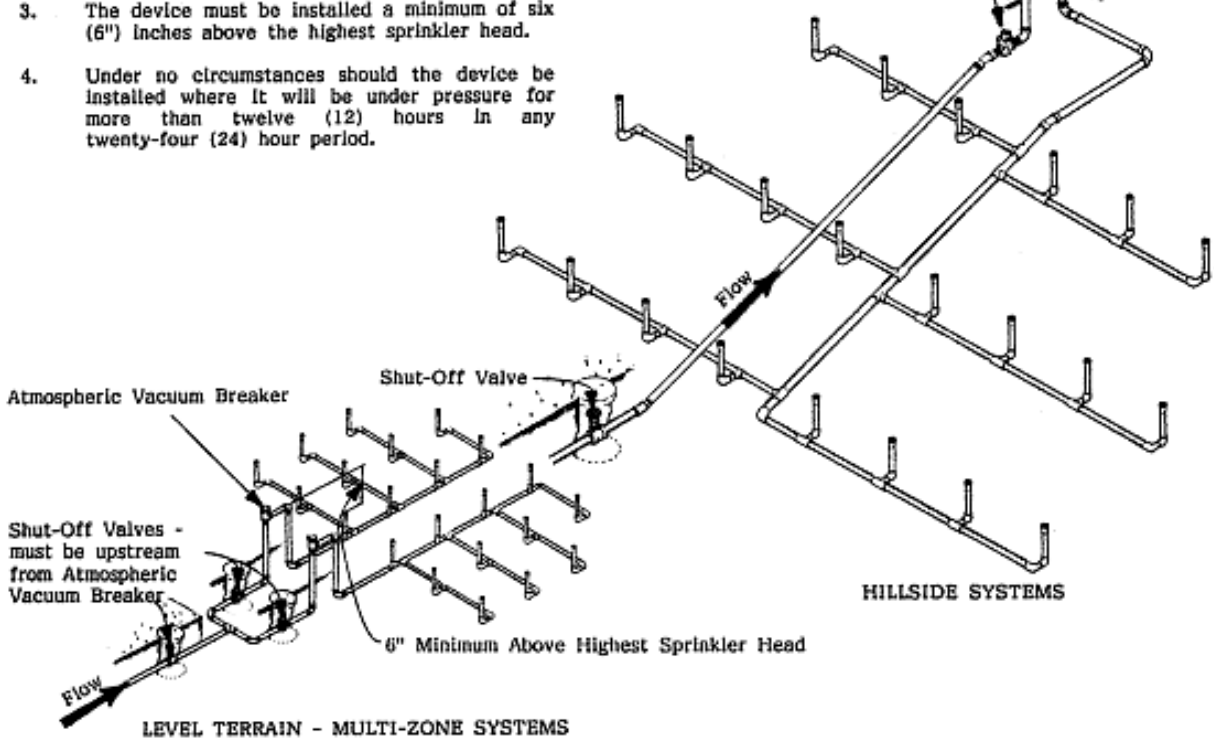
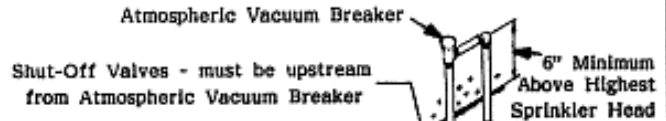
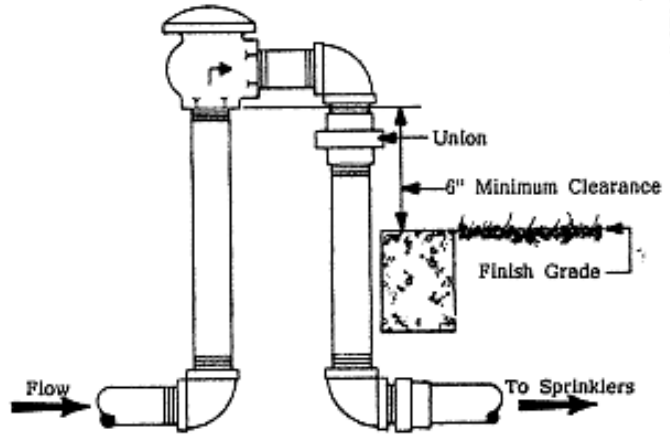
ATMOSPHERIC VACUUM BREAKERS

An Atmospheric Vacuum Breaker is a relatively simple device which uses a disc float assembly to seal off the atmospheric vent area when the system is pressurized (i.e. water is flowing through the device to the irrigation system). When the water supply is shut off, or if the line pressure drops to atmospheric or lower (vacuum), the float falls, opening the atmospheric vent and allowing air to enter the piping system, thus effectively destroying the possibility of back-siphonage.

Atmospheric Vacuum Breakers are designed to prevent back-siphonage only. They are not effective against backflow due to back pressure and should not be installed where they will be under continuous operating pressure.

The minimum installation requirements for Atmospheric Vacuum Breakers are as follows:

1. The device should be installed in an accessible location to facilitate inspection and servicing.
2. The device must be installed downstream of the last shut-off valve (no valves may be located downstream of the device).
3. The device must be installed a minimum of six (6") inches above the highest sprinkler head.
4. Under no circumstances should the device be installed where it will be under pressure for more than twelve (12) hours in any twenty-four (24) hour period.





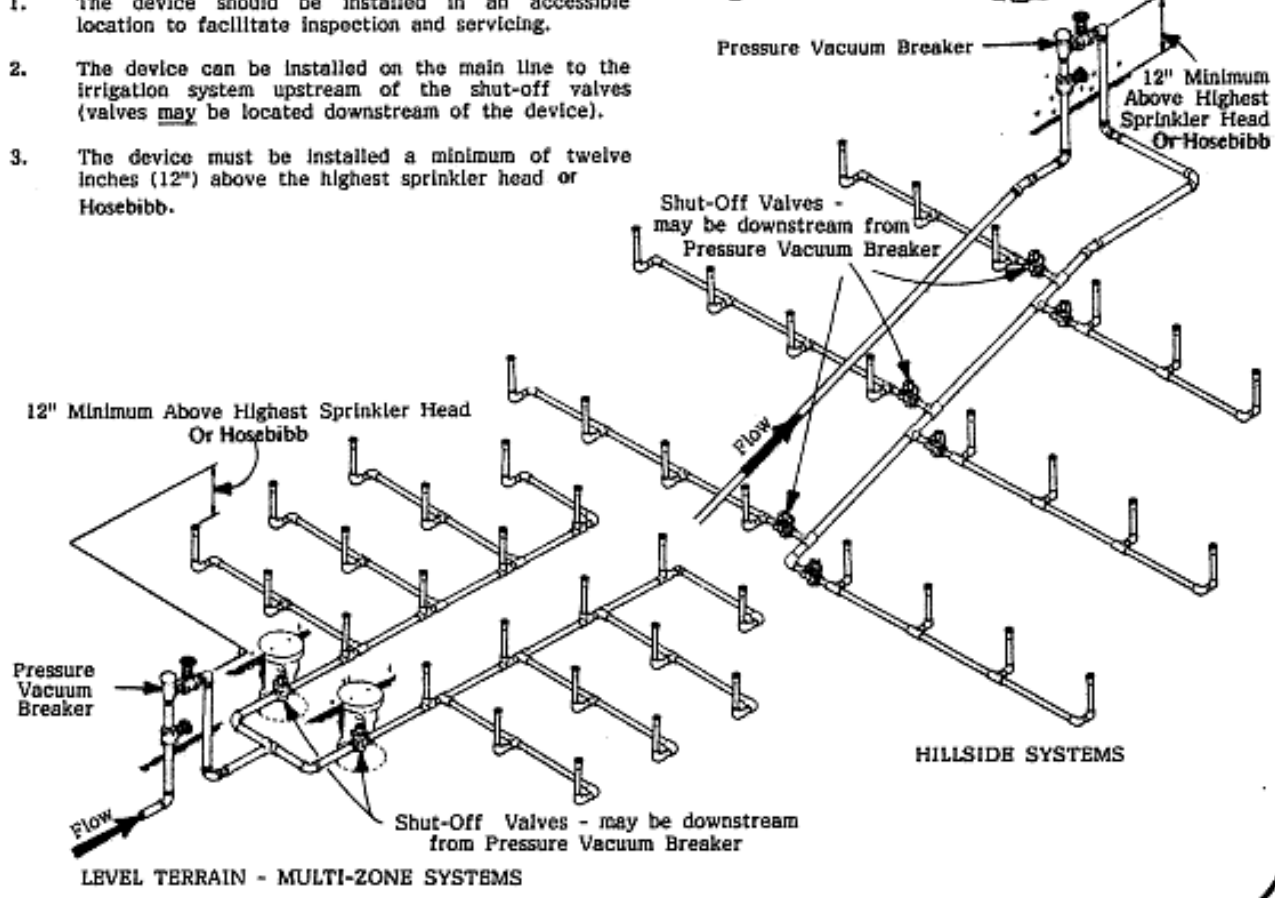
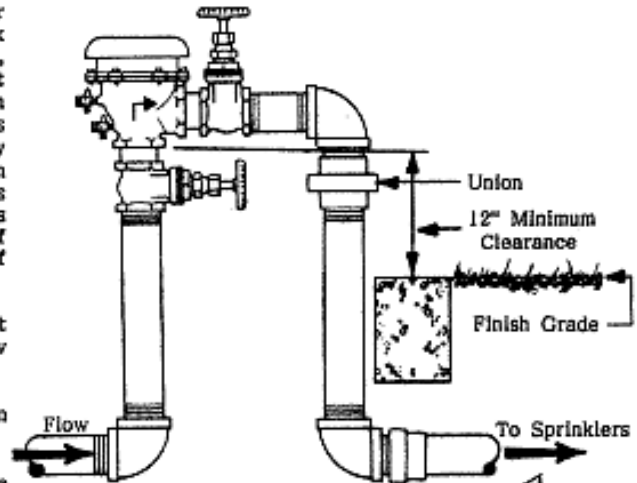
PRESSURE VACUUM BREAKERS

A Pressure Vacuum Breaker is a device consisting of one or two (depending on the line size) positive seating check valve(s) and an internally force loaded disc float assembly, downstream of the check valve(s), installed as a unit between two tightly closing shut-off valves, and fitted with properly located test cocks. The disc float assembly is force loaded (generally by means of a spring) to a normally open position, and allows air to enter the piping system whenever the pressure within the device approaches atmospheric. Since the disc float is force loaded, this device can be installed on the pressure side of a shut-off valve (i.e. shut-off valves may be located downstream of the device).

Pressure Vacuum Breakers are designed to prevent back-siphonage only and are not effective against backflow due to back-pressure.

The minimum installation requirements for Pressure Vacuum Breakers are as follows:

1. The device should be installed in an accessible location to facilitate inspection and servicing.
2. The device can be installed on the main line to the irrigation system upstream of the shut-off valves (valves may be located downstream of the device).
3. The device must be installed a minimum of twelve inches (12") above the highest sprinkler head or hosebibb.





REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTERS

A Reduced Pressure Principle Backflow Preventer is a device consisting of two positive seating check valves and an automatically operating pressure differential relief valve integrally located between the two check valves, installed as a unit between two tightly closing shut-off valves and fitted with properly located test cocks. During normal operation, the pressure in the zone between the two check valves is maintained at a lower pressure than the supply pressure. If the zone pressure starts to approach the supply pressure, the differential pressure relief valve will automatically maintain a differential of not less than two (2) psi between the supply pressure and the zone between the two check valves by discharging to the atmosphere.

Reduced Pressure Principle Backflow Preventers are effective against backflow caused by back-pressure and back-siphonage and are used to protect the water system from substances which are hazardous to health.

The minimum installation requirements for Reduced Pressure Principle Backflow Preventers are as follows:

1. The device should be installed in an accessible location to facilitate inspection and servicing.
2. Pipe lines should be thoroughly flushed prior to installing the device.
3. The device must be protected from freezing (install in a properly insulated utility building or shelter and properly drain if removed from service in the winter months).
4. The device should be protected by a strainer (located upstream of the device).
5. When located inside a building, the relief port should be piped to a drain or to the exterior of the building to prevent water damage.
6. The device should not be installed in a pit or where any part of the device could become submerged in standing water.
7. The device must be installed a minimum of twelve inches (12") above the surrounding grade or floor level.

