

CHAPTER 7-03

CITY WATER SYSTEM REGULATIONS

7-03-001-0015 CROSS CONNECTION CONTROL

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(Amended Ord. 2010-06, 04/20/10)

A. Definitions

Approved: The term "approved" as herein used in reference to a water supply shall mean a water supply that has been approved by the Arizona Department of Environmental Quality (ADEQ) and the City of Flagstaff. (Amended Ord. 2010-06, 04/20/10)

The term "approved" as herein used in reference to backflow prevention assemblies or methods shall mean an approval by the City of Flagstaff, Utilities Division based on a favorable laboratory and field evaluation report by a testing laboratory recognized by the Division.

Assembly: Any system for backflow protection consisting of more than one component and having been tested as one unit, and approved as one unit by the Division.

AWWA: American Water Works Association. (Amended Ord. No. 2010-06, 04/20/10)

Backflow: The undesirable reversal of flow of water or mixtures of water and other liquids, gases, or other substances into the distribution pipes of the potable water supply from any source or sources. Backflow is caused by either backpressure or backsiphonage. (Amended Ord. No. 2010-06, 04/20/10)

Backflow Prevention Assembly Approval: Any backflow prevention assembly equipped with test cocks shall have been issued a certificate of approval by the USC Foundation for Cross-Connection Control and Hydraulic Research. Any backflow prevention assembly not equipped with test cocks shall be certified by a third party entity unrelated to the product's manufacturer or vendor and approved by the Arizona Department of Environmental Quality (ADEQ).

A backflow prevention assembly not listed by USC-FCCCHR cannot be used for containment, fire line or landscape protection.

Backflow Prevention Assembly Tester (registered): A person who is currently certified by an authority recognized in the Arizona Department of Environmental Quality regulations and is approved and registered with the City of Flagstaff to test, repair, and maintain backflow prevention assemblies. (Amended Ord. No. 2010-06, 04/20/10)

Backflow prevention method: A backflow prevention method may be approved by the City of Flagstaff if it is contained in the most current edition of the USC-FCCCHR Manual of Cross-Connection Control

Backpressure: Any Elevation of pressure in the customer's water distribution system (by pump, elevation of piping, or steam and/or air pressure) above the public potable water supply pressure which could cause a reversal of the normal direction of water flow from the consumer's water supply system into the public potable water supply system.

Backsiphonage: A form of backflow due to a reduction in the public water supply system pressure which causes a negative or sub-atmospheric pressure to exist at a site in the water system. A reversal in the normal flow of water results.

Check Valve:— A valve that allows free flow in one direction and stops flow in the other direction. (Amended Ord. No. 2010-06, 04/20/10)

Close as practicable: is the point nearest the service connection where the assembly can be installed. Where the assembly installation location may interfere with obstacles such as driveways and sidewalks, then close as practicable is the nearest point after the obstacle, but in no event beyond the first tap.

Compliance date: The annual date by which the annual backflow prevention assembly compliance test report must be received by the City of Flagstaff Cross Connection Control office, ~~and that the backflow assembly meets the requirements of the most current section of the Arizona Administrative Code (AAC) referencing cross connection control and the City of Flagstaff Cross Connection Control Code 7-03-001-0016. For violations of this code, the specified date by which a violation must be remedied.~~ (Amended Ord. No. 2010-06, 04/20/10)

Consumer or Customer: The owner, official custodian or person in control of any premises or any property supplied by or in any manner connected to the City of Flagstaff public water supply system.

Contamination: An impairment of the quality of the water which creates an actual hazard to the public health through poisoning or through the spread of disease by sewage, industrial fluids, waste, etc. (Amended Ord. No. 2010-06, 04/20/10)

Cross-Connection: Any unprotected actual or potential connection or structural arrangement between a public or a consumer's potable water system and any other source or system through which it is possible to introduce into any part of the potable system any used water, industrial fluid, gas, or substance other than the intended potable water with which the system is supplied. By-pass arrangements, jumper connections, removable sections, swivel or change-over devices and other temporary or permanent devices through which or because of which "backflow" can or may occur are considered to be cross-connections.

Division: The City of Flagstaff, ~~Utilities~~ Water Services Division.

Hazard: A cross connection or potential cross connection between the public water supply and a private plumbing system involving any substance that could, if introduced into the public water supplies, be aesthetically objectionable or a nuisance (pollution), cause severe damage to the physical facilities of the public water supply systems, cause death, illness, or spread disease (contamination), or have a high probability of causing such effects. (Amended Ord. No. 2010-06, 04/20/10)

Hazard, Degree of: Evaluation of the potential risk to the public health and/or adverse effects upon the potable water supply system. Health hazards shall be classified as contamination while non-health hazards shall be classified as pollution.

Health Hazard: Any condition, device or practice in a water system or its operation resulting from a real or potential danger to the health and well-being of consumers. The word "severe" as used to qualify "health hazard" means a hazard to the health of the user that could be expected to result in death or significant reduction in the quality of life.

Improper: Not functioning within the manufacturer's or City of Flagstaff's specifications or the requirements of this section. (Amended Ord. No. 2010-06, 04/20/10)

Inspection: A visual examination of a premise or any backflow protection equipment, materials, workmanship and operational performance. (Amended Ord. No. 2010-06, 04/20/10)

Maintenance: Work performed or repairs made to keep backflow prevention assemblies operable and in compliance. (Amended Ord. No. 2010-06, 04/20/10)

O.S. & Y. Valve: Outside screw and yoke control valve for fire sprinkler systems. (Amended Ord. No. 2010-06, 04/20/10)

Pollution: An impairment of the quality of the water to a degree which does not create a hazard to the public health but which does adversely and unreasonably affect the aesthetic qualities of such waters for domestic use. (Amended Ord. No. 2010-06, 04/20/10)

Proper: Functioning within the parameters of the manufacturer's and City of Flagstaff's specifications and the requirements of this article. (Amended Ord. No. 2010-06, 04/20/10)

Public Water Supply System: All mains, pipes and structures owned and/or maintained by the City of Flagstaff, through which water is obtained and distributed to the public, including wells and well structures, intakes and cribs, pumping stations, treatment plants reservoirs, storage tanks and appurtenances, collectively or separate, actually used or intended for use for the purpose of furnishing potable water. ~~Any mains, pipes or structures connected to the above listed system and supplying potable water to the customers of the City of Flagstaff.~~ (Amended Ord. No. 2010-06, 04/20/10)

Reclaimed water: Wastewater that has been sufficiently treated by the City of Flagstaff's ~~Wastewater Treatment~~ Water Reclamation Plants for approved use, ~~e.g., irrigation,~~ and is provided through the City of Flagstaff's reclaimed water system. (Amended Ord. No. 2010-06, 04/20/10)

Retrofit: Furnish new parts, equipment, or method of installation, any existing assembly that does not meet the requirements of this ordinance in such a way that will bring the assembly into compliance with this Ordinance.

Service Connection: The terminal end of a water tap from the public potable water system, (i.e. where the water purveyor may lose jurisdiction and sanitary control over the water at its point of delivery to the consumer's water system). If a city-owned meter is installed at the end of the service connection, then the service connection shall mean the discharge end of the meter. ((Amended Ord. No. 2010-06, 04/20/10)

Service Protection: The acceptable backflow prevention method installed between a City of Flagstaff's water meter and a customer's private plumbing system. (Amended Ord. No. 2010-06, 04/20/10)

Testing: An authorized procedure to determine the operational and functional status of a backflow prevention assembly. (Amended Ord. No. 2010-06, 04/20/10)

(Amended Ord. No. 2010-06, 04/20/10)

B. Purpose and Application

1. To protect the public water supplies of the City of Flagstaff from the possibility of contamination or pollution by preventing the backflow of contaminants and pollutants into the public water supply systems.
2. To promote the elimination or control of cross-connections, actual or potential, between a customer's internal water systems, plumbing fixtures, industrial piping systems, and the public water supply.

3. To provide for a continuing program of cross-connection control which will prevent the contamination or pollution of the public water supply systems.
4. To implement the requirements of the most current AAC pertaining to the cross connection control program requiring public water systems to protect against backflow, and to this end, this ordinance shall be construed and applied consistently with the requirements of ~~this~~ the most current AAC.

(Amended Ord. No. 2010-06, 04/20/10)

C. General Requirements

1. Cross-connections prohibited. Connections between the public water supply system and other systems or equipment containing water or other substances of unknown or questionable quality are prohibited except when and where approved backflow prevention assemblies or methods are installed or implemented, tested and maintained to Division specifications to insure proper operation on a continuing basis.
2. Rights and Responsibilities of the Division. It shall be the right and responsibility of the Division to evaluate and investigate as deemed necessary, industrial and ~~other~~ commercial properties served by the public water supply to determine whether actual or potential hazards to the public water supply exist. Such evaluations and investigations shall be repeated as often as the Division deems necessary.

It shall also be the right and responsibility of the Division to require the installation and periodic annual testing of backflow prevention assemblies at any premises or property where such potential or actual hazards are found to exist.

3. Responsibility of the Consumer. The consumer, as defined by Section 7-03-001-001 ~~56~~ 56(A), shall be responsible and financially obligated for the protection of the public water supply system from the possibility of contamination or pollution due to backflow or backsiphonage of contaminants through the customer's water service connection into the public potable water system.

~~If, in the judgment of the Division, an approved backflow prevention assembly is necessary for the protection of the public water system, the Division shall give notice to the consumer to install such. The consumer, after due written notice and within the prescribed time indicated on the notice, shall install such approved assembly(ies) at their own expense. Installation of such assembly(ies) shall be in accordance with the manufacturer's instructions, and the Division's installation requirements. The consumer shall provide for the maintenance, testing, and repair of the assembly(ies) and shall provide all reports as required by the City of Flagstaff. Failure, refusal or inability on the part of the consumer to install, have tested and/or maintain said assembly(s) or failure of the consumer to file required reports shall constitute a ground for discontinuing water service to the premises until such requirements have been satisfactorily met.~~

~~It shall be the responsibility of the consumer to make arrangements for an authorized representative of the City of Flagstaff to, upon presentation of his or her credentials, have free access at all reasonable hours to any property served by a connection to the public water distribution system of the City of Flagstaff and/or any backflow assemblies on the property and any related records for the purpose of verifying the presence or absence of actual or potential cross connections and/or required assemblies.~~

4. Existing facilities

- a. All presently installed backflow prevention assemblies, devices, or methods which do not meet the requirements of the Division and/or applicable state or federal regulations but were approved for the purposes described herein at the time of installation shall be evaluated for their ability to efficiently and satisfactorily protect the public water system from potential or existing cross connections with the private water supply. If, upon such evaluation, the Division determines that an existing device, method or assembly does not meet existing requirements, the customer shall at their own expense, upon due written notice and within the prescribed time indicated on the notice, retrofit, replace or modify the installation of such to meet current standards or show just cause for noncompliance.

- b. Whenever an existing device, method or assembly is removed or moved from the present location, ~~or~~ requires more than minimum maintenance, or when the Division finds that the maintenance constitutes a hazard to health, the unit shall be replaced by an approved backflow prevention assembly meeting the requirements of these regulations.
- c. If an existing facility undergoes construction for improvements or change of use, the installed backflow assemblies will be evaluated for hazard. If it is found the current backflow assembly(s) is inadequate protection, the customer will be required to replace with a device suited for the hazard.

5. New Facilities

- a. ~~All facilities constructed after the effective date of this Ordinance,~~ New facilities shall present their plans for review by an authorized representative of the Division for determination of cross-connection hazards.
- b. All backflow prevention assemblies to be installed shall be shown on all required building and engineering plans. No installation of assemblies shall be made unless these plans are reviewed and approved by an authorized representative of the Division.
- c. During construction of new facilities, water shall not be used for construction purposes until the containment backflow assembly has been tested.
- d. All assemblies shall be inspected by an authorized representative of the Division upon installation and the consumer shall provide written verification that the assembly has been successfully tested as described in section (K~~D~~) of this Ordinance, prior to issuance of certification of occupancy. Water service may be withheld if the assembly is not installed and tested in accordance with this ordinance and Division requirements.

~~6. Backflow prevention is required~~

~~The following conditions shall warrant the installation of an approved backflow prevention assembly:~~

- ~~a. When the City of Flagstaff determines that the water supplied by the public water systems may be subject to contamination or pollution, an approved backflow prevention method shall be required at every service connection to a customer's water system. The customer shall install the required backflow protection within the time specified by the City of Flagstaff. In determining the time in which backflow protection shall be installed, the City of Flagstaff shall consider the degree of hazard potential to the public water supplies.~~
- ~~b. The backflow prevention method required shall be determined by the City of Flagstaff. The method required by the City of Flagstaff shall be sufficient to protect against the hazard potential as stated in the most current edition of the University of Southern California Foundation for Cross Connection Control and Hydraulic Research (USC FCCCHR) Manual of Cross Connection Control.~~
- ~~c. Premises with internal cross connections which the Division determines to be non-correctable, or premises with plumbing systems so intricate that a cross connection inspection is impossible or impractical.~~
- ~~d. Premises with security restrictions or other access prohibitions which make cross connection inspections impossible or impractical.~~
- ~~e. Premises with an existing unprotected cross connection or with a history of cross connection violations.~~

The type of assembly required shall be determined by the Division according to the degree of hazard present as recommended by the most current USC FCCCHR Manual of Cross Connection Control. Containment and landscape assemblies shall be installed as close as possible to the service connection before the first branch line leading off the service line. Fire line backflow prevention assemblies may be installed in fire riser rooms with adequate drainage for the size of the assembly and the water pressure in that area of the system. All drains for fire risers with antifreeze and reduced pressure principle backflow

~~prevention assemblies must go to the sanitary sewer system, not the storm drain system. In all cases, the backflow prevention assembly shall protect against the highest hazard present.~~

~~76.~~ Adoption of Public Record

The most current edition of the USC-FCCCHR Manual of Cross Connection Control.

(Amended Ord. No. 2010-06, 04/20/10)

D. List of Backflow Prevention Methods

A backflow prevention method shall be any assembly or other means designed to prevent backflow. The following are the recognized backflow prevention methods which the City of Flagstaff may require (in order of degree of protection):

1. Air Gap (AG): The unobstructed vertical distance through the free atmosphere between the opening of the pipe or faucet supplying potable water to a tank, plumbing fixture or other device. An approved air gap shall be at least double the effective opening of the supply pipe or faucet and in no case less than one (1) inch above the flood rim.

2. Reduced Pressure Principle Assembly (RPA or RP): An assembly containing two (2) independently acting approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves, and at the same time, below the first check valve. The assembly shall include properly located test cocks and tightly closing shutoff valves located at each end of the assembly.

3. Reduced Pressure Principle Detector Assembly (RPDA): An assembly composed of a line sized approved reduced pressure principle assembly with a bypass containing a specific water meter and an approved reduced pressure principle assembly.

~~43.~~ Double Check Valve Assembly (DCVA or DC): An assembly composed of two (2) independently acting, approved check valves, including tightly closing shutoff valves located at each end of the assembly and fitted with properly located test cocks.

56. Double Check Detector Assembly (DCDA or DDCVA): An assembly composed of a line size approved double check valve assembly with a bypass containing a specific water meter and an approved double check valve assembly.

~~64.~~ Pressure Vacuum Breaker Assembly (PVB): An assembly containing an independently operating, loaded check valve and an independently operating, loaded air inlet valve located on the discharge side of the check valve. The assembly shall be equipped with properly located test cocks and tightly closing shutoff valves located at each end of the assembly.

~~57.~~ Spill-resistant Pressure Vacuum Breaker (SVB): An assembly containing an independently operating internally loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check valve. The assembly shall be equipped with a properly located resilient seated test cock, properly located bleed/vent valve and tightly closing resilient seated shutoff valves located at each end of the assembly.

~~6. Double Check Detector Assembly (DCDA or DDCVA): An assembly composed of a line size approved double check valve assembly with a bypass containing a specific water meter and an approved double check valve assembly.~~

~~7. Reduced Pressure Principle Detector Assembly (RPDA): An assembly composed of a line sized approved reduced pressure principle assembly with a bypass containing a specific water meter and an approved reduced pressure principle assembly.~~

~~8. Backflow prevention method: A backflow prevention method may be approved by the City of Flagstaff if it is contained in the most current edition of the USC FCCCHR Manual of Cross Connection Control. The current list of approved methods shall be available for inspection at the City of Flagstaff Industrial Waste Section to any customer required to install a backflow prevention assembly.~~

~~9. Backflow Prevention Assembly Approval: Any backflow prevention assembly equipped with test cocks shall have been issued a certificate of approval by the USC Foundation for Cross Connection Control and Hydraulic Research. Any backflow prevention assembly not equipped with test cocks shall be certified by a third party entity unrelated to the product's manufacturer or vendor and approved by the Arizona Department of Environmental Quality (ADEQ). A backflow prevention assembly not listed by USC FCCCHR cannot be used for containment, fire line or landscape protection.~~

(Amended Ord. No. 2010-06, 04/20/10)

E. Backflow Prevention Methods Required

1. The following conditions shall warrant the installation of an approved backflow prevention assembly:

a. When the City of Flagstaff determines that the water supplied by the public water systems may be subject to contamination or pollution, an approved backflow prevention method shall be required at every service connection to a customer's water system. The customer shall install the required backflow protection within the time specified by the City of Flagstaff. In determining the time in which backflow protection shall be installed, the City of Flagstaff shall consider the degree of hazard potential to the public water supplies.

b. The backflow prevention method required shall be determined by the City of Flagstaff. The method required by the City of Flagstaff shall be sufficient to protect against the hazard potential as stated in the most current edition of the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC-FCCCHR) Manual of Cross-Connection Control.

c. Premises with internal cross-connections which the Division determines to be non-correctable, or premises with plumbing systems so intricate that a cross-connection inspection is impossible or impractical.

d. Premises with security restrictions or other access prohibitions which make cross-connection inspections impossible or impractical.

e. Premises with an existing unprotected cross-connection or with a history of cross-connection violations.

2. Whenever the following items exist or activities are conducted on premises served by the public water systems, a potential hazard to the public water supplies shall be presumed, and a backflow prevention method of the type specified herein for that item or activity must be utilized or installed at each service connection for that premise. If an activity or item is not on the following list, it shall be evaluated by the City of Flagstaff and a method of backflow prevention will be determined.

1a. Cooling tower, boiler, condenser, chiller, and other cooling systems: RP

2b. Tank, vessel, receptacle, and all other water connections, including mobile units, except emergency vehicles and private swimming pools: RP

3c. Ice maker (other than a residential service): RP

4d. Water-cooled equipment, boosters, pumps or autoclaves: RP

- 5e. Water treatment facilities and all water processing equipment (other than residential water softeners): RP
- 6f. Bottle washer, bedpan washer, garbage can washer: RP
- 7g. Pesticide, herbicide, fertilizer, and chemical applicators (other than typical in-home use): RP
- 8h. Aspirator: RP
- 9i. Commercial dishwashers, food processing and/or preparation equipment, carbonation equipment or other food service processes: RP
- 10j. Decorative fountain, baptismal, non-residential swimming pool or spa, or any location water is exposed to atmosphere: RP
- 11k. X-ray equipment, plating equipment, or any other photographic processing equipment: RP
- 12l. Auxiliary water supply and/or connections to unapproved water supply systems: RP
- 13m. Reclaimed water sites with potable water connections: RP on the potable meter, AG between feed line from supplemental domestic water supply to a holding tank to reclaim water lines.
- 14n. Recreational vehicle dump stations (sewer), or any other location where water may be exposed to bacteria, virus or gas: RP
- 15o. Any premises on which chemicals, oils, solvents, pesticides, disinfectants, cleaning agents, acids or other pollutants and/or contaminants are handled in a manner by which they may come in direct contact with water, or there is evidence of the potential to contact water: RP
- 16p. Materials and piping systems unapproved by the currently adopted City of Flagstaff Plumbing Code or Environmental Protection Agency (EPA) for potable water usage: RP
- 17q. Separately metered or unprotected irrigation systems, and construction water services: RP or PVB/SVB as allowed.
- 18r. Any premises where a cross-connection is maintained or where internal backflow protection is required pursuant to the City of Flagstaff adopted plumbing code: RP
- 19s. Multimetered properties with more than one (1) meter connected to another or any building three (3) stories or greater than thirty-four (34) feet in height from service level: RP
- 20t. Fire systems - AWWA Classes 1 and 2 and all systems constructed of a piping material not approved for potable water pursuant to the City of Flagstaff Plumbing Code: DCVA (DC) or Double Detector CVA (DCDVA): DC [Residential fire sprinklers shall be exempt from this requirement.](#)
- 21u. Fire systems – AWWA Class 3, 4, 5, 6: RP or RP with detector
- v. Fire systems which require backflow protection and where backflow protection is required on the industrial/domestic service connection that is located on the same premises, both service connections will have adequate backflow protection for the highest degree of hazard affecting either system: RP
- 22w. Any premise which has a source of water supply that is not accepted by the public water system or not approved by the Arizona Department of Environmental Quality: RP or AG as determined by the City of Flagstaff
- 23x. Any premise where an unprotected cross-connection exists or where there has previously occurred a cross connection problem within the premises: AG or RP as determined by the City of Flagstaff

24y. Any premise where there is a significant possibility that a cross-connection problem will occur and entry onto the premises is restricted to the extent that cross-connection inspections cannot be made with sufficient frequency or on sufficiently short notice to assure that unprotected cross-connections do not exist: RP or AG as determined by the City of Flagstaff

25z. Multi-use commercial property: RP

26aa. Properties with active private wells: RP

27bb. Consecutive systems, when required by the City of Flagstaff: RP

28cc. Fire hydrant/construction water: RP

29dd. Jumper connection to new water mains: RP

30ee. Post mix soda machine with a carbonator: [Stainless-Steel RPASSE 1022](#)

31ff. Shampoo sink: RP

gg. [Brewery, distillery, meadery, or alcohol making process: RP or AG](#)

hh. [Hospitals and medical offices.: RP](#)

~~a. When two (2) or more of the activities listed above are conducted on the same premises and served by the same service connection or multiple service connections, the most restrictive backflow prevention method required for any of the activities conducted on the premises shall be required to be installed at each service connection. The order of the most restrictive to least restrictive backflow prevention methods shall be as follows:~~

- ~~1. Air gap (AG).~~
- ~~2. Reduced pressure principle assembly (RP or RPA).~~
- ~~3. Reduced pressure principle detector assembly (RPDA).~~
- ~~4. Double check valve assembly (DCVA).~~
- ~~5. Double check detector assembly (DCDA).~~
- ~~6. Pressure vacuum breaker assembly (PVB).~~
- ~~7. Spill resistant pressure vacuum breaker (SVB).~~

(Amended Ord. No. 2010-06, 04/20/10)

F. Installation Requirements

1. The Division shall [use the most current edition of the USC-FCCCHR Manual of Cross Connection Control for list of approved assemblies.](#)~~maintain a list of approved backflow prevention assemblies, by type and manufacturer. Any consumer required by the Division to install an approved backflow prevention assembly must utilize an assembly included in such list.~~
2. Backflow prevention assemblies shall have a diameter at least equal to the diameter of the service connection.
3. Backflow prevention assemblies shall be installed and maintained by the customer, at the customer's expense and in compliance with the standards and specifications adopted by the City of Flagstaff at each

service connection. The customer is responsible for notifying the City of Flagstaff Industrial ~~Waste-Pretreatment~~ Section of any installation, repair, relocation, removal, or replacement.

4. The approved assembly shall be installed above ground, as close as practicable, to the service connection before the first branch line leading off the service line, and in a hot box with electricity for heat. The heated enclosure must be ASSE 1060 certified or similar. The electrical for the heat must be installed in accordance with City approved Building Code and City Engineer standard drawing 19-02-025. Assemblies shall be installed per manufacturer's specifications with adequate clearances for testing and maintenance, and not installed in a meter box, pit or vault.

~~A backflow prevention assembly shall be installed as close as practicable to the service connection outside the building unless it is for a fire line.~~

a. Where containment at the property line cannot be achieved or is waived based on extenuating circumstances, installation within a building can be completed. A waiver may be granted by the Industrial Waste Manager for the retrofit installation of a backflow prevention assembly inside the building provided a City of Flagstaff Attorney approved "Backflow Prevention Assembly Hold Harmless Agreement" is signed by the property owner and notarized. This document must be received and approved the City of Flagstaff Industrial ~~Waste Manager~~Pretreatment Supervisor prior to the installation of the backflow prevention assembly. The interior installation of a backflow assembly must be done as close as practicable to the incoming water line.

b. Internal installations shall have clearance on all sides and ends for testing and maintenance. RP and DC assemblies must have 12" bottom clearance from lowest point on the assembly (i.e. relief valve on RP style).

~~—RP's for fire line assemblies may be installed inside a fire riser room provided they have an adequate drain for a full port discharge for the size of the assembly per the manufacturer's specifications into the sanitary sewer system, not the storm water system. If a drain cannot be provided that can contain a full port discharge to the sanitary sewer system from a fire line with chemical additives such as anti-freeze or glycerin, the assembly must be installed outside the building in an insulated enclosure with electricity for a heat source for freeze protection and a check valve must be installed in the system to prevent the discharge of antifreeze onto the ground. The assembly shall be in an accessible location approved by the Division and protected from freezing. The RP, RPDA, DC, DCDA, PVB and SVB shall be installed above ground and per City of Flagstaff standard details. Backflow prevention assemblies shall not be installed in a meter box, pit or vault.~~

~~A double check valve assembly may be installed, upon approval of the Division, below ground in a vault which meets standard specifications established by the City.~~

54. When a customer requires a continuous water supply, two backflow prevention assemblies shall be installed parallel to one another at the service connection to allow a continuous water supply during testing, repair and/or maintenance of the backflow prevention assemblies. When backflow prevention assemblies are installed parallel to one another, the sum of the cross-sectional diameters of the assemblies shall be at least equal to the cross-sectional diameter of the service connection or service line piping at the point of installation and the assemblies shall be of the same type.

65. For an AG installation all piping installed between the user's connection and the receiving tank shall be entirely visible unless otherwise approved in writing by the City of Flagstaff Industrial ~~Waste-Pretreatment~~ Section.

~~6.—It shall be unlawful for any person to bypass or remove a backflow prevention method without the approval of the Division.~~

7. Any property with more than one water service connection shall install backflow prevention assemblies on each service connection to the property, unless otherwise designated by the Division.

8. Fiberglass insulation cannot be wrapped or otherwise placed around a backflow prevention assembly as a form of freeze protection as it allows condensation to occur and subsequent degradation of the backflow

prevention assembly. There must be adequate air flow around the backflow prevention assembly to prevent the formation of condensation on the assembly- or for a purge event by a RP relief valve.

9. All test cocks and relief ports on a backflow prevention assembly must be accessible for testing and for release of water from the relief port during a discharge event.

10. PVB, AVB, or RP backflow assemblies are approved for irrigation systems. Valves shall not be installed downstream from an AVB. If chemicals will be used, a RP assembly is required. A PVB or SVB assembly may be installed for use on a landscape water irrigation system if:

a.—Condominiums and townhomes that are part of a Home Owners Association (HOA) will need to test the irrigation backflow assemblies each year. The water use beyond the assembly is for irrigation purposes only.

b.—The PVB/SVB is installed in accordance with the manufacturer's specifications.

e.—The irrigation system is designed and constructed to be incapable of inducing backpressure.

d.—Chemigation, an injection of chemical pesticides and fertilizers, is not used or provided for in the irrigation system.

e.—No other source of water is available on the premises.

f.—Single family residences with testable backflow prevention assemblies will not need to test the assemblies on the landscape irrigation assemblies each year. Condominiums and townhomes that are part of a Home Owners Association (HOA) do need to test the backflow prevention assemblies on the landscape irrigation system each year.

If the criteria are not met, then an RP assembly is required.

11.—No person shall alter, modify, bypass or remove a backflow prevention method without the approval of the City of Flagstaff Industrial Waste Section.

12. Installation of the backflow prevention assembly must be completed within the time specified in the notice to install or within forty five (45) days of the water meter installation. A time extension may be granted by the City of Flagstaff provided no cross-connection hazards exist at the site.

131. If a customer fails to install a backflow prevention assembly pursuant to this article, the City of Flagstaff shall discontinue water service and assess a compliance fee pursuant to this article.

142. All backflow prevention assemblies shall be installed with a y strainer or fire line strainer unless the manufacturer states that the assembly cannot have one. The y strainer or fire line strainer shall be installed directly upstream of the assembly. If, in the judgment of the Division, an approved backflow prevention assembly is necessary for the protection of the public water system, the Division shall give notice to the consumer to install such. The consumer, after due written notice and within the prescribed time indicated on the notice, shall install such approved assembly(ies) at their own expense. Installation of such assembly(ies) shall be in accordance with the manufacturer's instructions, and the Division's installation requirements. Installation of the backflow prevention assembly must be completed within the time specified in the notice to install or within forty-five (45) days of the water meter installation. A time extension may be granted by the City of Flagstaff provided no cross-connection hazards exist at the site.

153. A backflow prevention assembly for containment or landscape may need to have a pressure reducing valve upstream of it if the water line pressure is higher than 80 psi. This does not apply to fire lines.

(Amended Ord. No. 2010-06, 04/20/10)

G. Installation of Backflow Prevention Assemblies for Fire Systems

Fire Systems

1. Fire protection systems may consist of sprinklers, hose connections, and hydrants for commercial, industrial or residential structures and services. Sprinkler systems may be dry or wet, open or closed. Systems consisting of fixed-spray nozzles may be used indoors or outdoors for protection of flammable-liquid and other hazardous processes. It is standard practice, especially in cities, to equip automatic sprinkler systems with fire department pumper connections.
2. A meter (compound, detector check) should not ~~normally~~ be permitted as part of a backflow prevention assembly. An exception may be made if the meter and backflow prevention assembly are specifically designed for that purpose.
3. For cross-connection control, fire protection systems shall be classified ~~on the basis of~~based on water source and arrangement of supplies as follows:
 - a. Class 1: Direct connections from public water mains only; no pumps, tanks or reservoirs; no physical connection from other water supplies; no antifreeze or other additives of any kind; all sprinkler drains discharging to atmosphere, dry wells or other safe outlets.
 - b. Class 2: Same as class 1, except that booster pumps may be installed in the connections from the street mains. It is necessary to avoid drafting so much water that pressure in the water main is reduced below twenty (20) psi.
 - c. Class 3: Direct connection from public water supply main plus one (1) or more of the following: elevated storage tanks; fire pumps taking suction from above-ground covered reservoirs or tanks; and pressure tanks (all storage facilities are filled or connected to public water only, the water in the tanks to be maintained in a potable condition). ~~Otherwise, Class 3 systems are the same as class 1.~~ Class 3 systems will generally require minimum protection (approved double check valves) to prevent stagnant waters from backflowing into the public potable water system.
 - d. Class 4: Directly supplied from public mains ~~similar to~~like classes 1 and 2, and with an auxiliary water supply on or available to the premises; or an auxiliary supply may be located within seventeen hundred (1,700) feet of the pumper connection. Class 4 systems will ~~normally~~ require backflow protection at the service connection. The type (air gap or reduced pressure) will ~~generally~~ depend on the quality of the auxiliary supply.
 - e. Class 5: Directly supplied from public mains, and interconnected with auxiliary supplies, such as: pumps taking suction from reservoirs exposed to contamination, or rivers and ponds; driven wells, mills or other industrial water systems; or where antifreeze or other additives are used. ~~Classes 4 and 5 systems normally would~~will need maximum protection (air gap or reduced pressure) to protect the public water system.
 - f. Class 6: Combined industrial and fire protection systems supplied from the public water mains only, with or without gravity storage or pump suction tanks. Class 6 system protection would depend on the requirements of both industry and fire ~~protection, and~~protection and could only be determined by a survey of the premises.

4.g. Installation of assembly

- a. When a backflow assembly is required for a water service connection supplying water only to a fire system, the assembly shall be installed on the service line in compliance with standard specifications adopted by the city. ~~(Installation of DC or DCDVA)~~ may be allowed on fire systems with the City of Flagstaff approval provided both the manufacturer's specifications and USC approval allow such an installation. ~~If an RP is needed for a fire line system and the RP is inside a structure, that room must have a drain large enough to contain the full port discharge volume for that size of assembly with that areas water pressure. The drain must go to the sanitary sewer and not the storm sewer.~~
- b. RP's for fire line assemblies may be installed inside a fire riser room provided they have an adequate drain for a full port discharge for the size of the assembly per the manufacturer's specifications into the sanitary sewer system, not the storm water system. If a drain cannot be provided that can contain a

full port discharge to the sanitary sewer system from a fire line with chemical additives such as anti-freeze or glycerin, the assembly must be installed outside the building in an insulated enclosure with electricity for a heat source for freeze protection and a check valve must be installed in the system to prevent the discharge of antifreeze onto the ground.

5. All backflow assemblies installed on fire sprinkler systems shall have a chain with a padlock from the first O.S. & Y. valve to the second O.S. & Y. valve, or an operable alarm system or both.

6. For looped fire lines, a DC or RP backflow prevention assembly is required on both ends of a private water main that is connected to the public water services at two or more locations.

(Amended Ord. No. 2010-06, 04/20/10)

H. Removal requirement

1. It shall be unlawful for any person to alter, modify, bypass or remove a backflow prevention method without the written approval of the Division.
2. If a device is removed without the approval of the City, the City reserves the right to visually inspect the piping to verify there is a physical separation and/or no piping is connected before an existing backflow assembly.
3. The device and piping shall be removed as close as possible to the main service connection and any property connections to mitigate the possibility of stagnating water in the piping.
4. A device will not be deactivated in the City's records unless there is a physical separation between the piping and no possibility of connecting the two ends. An inspection of the removal by the City will need to be completed before removal from the records.

HI. Inspections

- A customer's water system shall always be available ~~at all times~~ during business operations for premises inspection ~~and backflow prevention assembly testing~~ by City of Flagstaff personnel and backflow prevention assembly testing, if necessary. The inspection shall be conducted to determine whether any cross-connection or other hazard potentials exist and to determine compliance with this article and modifications.
- City of Flagstaff shall inspect all new sites, assembly installations, assembly relocations, assembly removal and assemblies that have been repaired for compliance.
- A waived premise is a property for which the City of Flagstaff has determined there are currently no hazard potentials. All waived premises shall be inspected periodically or when there has been a change in owner/tenant or there has been a use change.
- If a customer refuses entry to a premise for inspection during business operations, the City of Flagstaff may discontinue water service, require backflow prevention or take any steps allowed by law to gain entry to the premises.

(Amended Ord. No. 2010-06, 04/20/10)

II. Permit Authorization

- Installation permits-authorizations for the installation of all backflow prevention assemblies required by the City of Flagstaff shall be obtained from the City of Flagstaff prior to installation. ~~A separate permit shall be obtained for each required backflow prevention assembly to be installed, including replacement or relocation.~~
- It shall be the duty of the person doing the work authorized by the permit to notify the City of Flagstaff, ~~orally or~~ in writing, that the work is ready for inspection. Such notification shall be given not less than twenty-four (24) hours before the work is to be inspected and shall be given only if there is reason to believe that the work done will meet current city codes and regulations.

3. Whenever any work is being done contrary to the provisions of the city's adopted plumbing code or this article, the City of Flagstaff or an authorized representative may order the work stopped by notice in writing served on any persons engaged in the doing or causing such work to be done; and any such person shall forthwith stop such work until authorized by City of Flagstaff to proceed with the work.

~~4. Any City of Flagstaff employee may, in writing, suspend or revoke a permit issued under provisions of this article, whenever the permit is issued in error or on the basis of incorrect information supplied, or in violation of any ordinance or regulation of any provision of the City Plumbing Code or this article.~~

(Amended Ord. No. 2010-06, 04/20/10)

K.J. Maintenance and Testing

1. The annual test compliance date shall be set by the City of Flagstaff Industrial Waste Section. The consumer shall have backflow prevention assemblies tested upon installation and at least once per year, or more frequently if deemed necessary by the Division, at the consumer's expense. ~~The customer shall arrange for repairs if the testing reveals the assembly to be defective or in unsatisfactory operating condition. If the testing reveals the assembly to be defective or in unsatisfactory operating condition, the customer shall arrange for repairs. The customer shall have performed, by an appropriately licensed contractor, any necessary repairs within 30 days or as directed by the Division, including replacement or overhaul of the assembly if necessary, which will return the assembly to satisfactory operating condition. The customer shall then have the assembly retested, within 30 days following repairs, until testing reveals no defects or unsatisfactory operating conditions. If the Division determines that a health hazard exists, they may specify a more restrictive repair testing schedule. All residences with fire line backflow prevention assemblies shall have the assemblies tested annually on the anniversary date. Single family residences with testable backflow prevention assemblies will not need to test the assemblies on the landscape irrigation assemblies each year. Condominiums and townhomes that are part of a Home Owners Association (HOA) do need to test the backflow prevention assemblies on the landscape irrigation system each year.~~

2. The customer may request ~~orally or~~ in writing a change of the annual test compliance date for any assembly. No compliance date may be changed to be more than twelve (12) months after the most recent test.

3. The consumer shall be responsible for maintenance of all backflow assemblies at his/her expense. If the Division or customer learns or discovers, during the interim period between tests that an assembly is defective or in unsatisfactory operating condition, the customer shall arrange for repairs. The customer shall have any necessary repairs performed by an appropriately licensed contractor, including replacement or overhaul of the assembly, if necessary, which will return the assembly to satisfactory operating condition within 30 days of discovery. Such assembly shall be retested within 30 days following repairs, until testing reveals no defects or unsatisfactory operating conditions.

4. All testing shall be performed by an individual who holds a valid "General" Tester Certification issued by the California-Nevada American Water Works Association (Cal-Nev AWWA), the Arizona State Environmental Technical Training (ASETT) Center, or other certifying authority approved by the Division. A list of certified testers registered with the City of Flagstaff ~~shall be maintained by the City of Flagstaff Industrial Waste Section and~~ shall be available upon request to all persons required to install or maintain a backflow prevention assembly. Test procedures shall be performed as required by ~~the~~ ADEQ as set forth in ~~Chapter Nine of~~ the most current edition of the USC-FCCCHR Manual Cross-Connection Control. The tester shall provide a copy of the test report to the customer and to the City of Flagstaff Industrial Waste Pretreatment Section within five (5) working days from the date of the test and shall maintain a copy for their records for at least three years. ~~If the tester fails to submit a test result within 5 days from the date of the test, their name shall be removed from the tester list.~~

5. No existing backflow prevention assembly shall be altered, disconnected or replaced without prior approval of the Division.

6. ~~All backflow assemblies installed on fire sprinkler systems shall have a chain with a padlock from the first O.S. & Y. valve to the second O.S. & Y. valve, or an operable alarm system or both. During construction, any new backflow assemblies must be tested before the water is used for any purpose, including construction uses.~~
7. Test cocks are to be used for testing only and shall be installed in accordance with Division requirements. Any unauthorized use of these test cocks is a violation of this code.
8. Each backflow prevention assembly shall be easily identified by displaying the following in a conspicuous manner on the assembly:
 - a. Manufacturer
 - b. Model Number
 - c. Serial Number

This information must also be provided to the Division by the consumer promptly upon installation.

9. The customer shall maintain records, ~~on forms approved by the City of Flagstaff,~~ of the results of all tests and all servicing, repairs, or replacements of the backflow prevention assembly. A copy of the records shall be provided to the City of Flagstaff within five (5) days after completion of the activity for which the record is made.
10. The consumer shall notify and receive approval from the City of Flagstaff Fire Marshall, at least 24 hours in advance, of any maintenance or testing performed upon assemblies installed upon fire sprinkler systems which requires discontinuance of water supply to that system. Fire systems shall not be out of service for more than eight (8) consecutive hours due to testing, maintenance or repairs. The fire department shall be notified immediately of any changes in fire service status.
11. ~~City of Flagstaff may test any backflow prevention assembly at any time. In lieu of discontinuance of service, City of Flagstaff may take action to install, test, repair, or replace a backflow device at the customer's point of service and bill the customer for all costs associated with the installation, test, repair, or replacement of a backflow prevention device.~~
12. The City of Flagstaff will return incomplete and erroneous test forms to the tester and customer for correction and resubmission by the compliance date. Information on submitted test forms can only be changed or modified by the tester who has signed the form and is responsible for that test. Test reports must have a clear description of the location of the backflow device.
13. Test equipment shall be maintained and calibrated annually by an agency approved by the City of Flagstaff as required by the cross connection manual. A copy of the annual equipment calibration certificates shall be submitted to the City of Flagstaff Industrial ~~Waste-Pretreatment~~ Section (or proctor) to maintain equipment registration and certification. ~~Test equipment for testing backflow prevention assemblies in the City of Flagstaff service area shall be registered with and approved by the City of Flagstaff.~~ Test equipment used on anything other than potable water backflow prevention assemblies shall not be used to test such assemblies and shall be identified as non-potable test equipment.
14. Testers shall register with the City of Flagstaff Industrial ~~Waste-Pretreatment~~ Section (or proctor) if they are conducting backflow assembly testing in City of Flagstaff service area. Testers shall submit a current copy of their certification or recertification upon registration. ~~Testers, upon renewal of tester certification, shall be certified on all backflow prevention assemblies that may be used for service protection.~~ A City of Flagstaff registration issued to a backflow prevention assembly tester for testing backflow prevention assemblies in the City of Flagstaff service area may be revoked or suspended upon certification expiration or for improper testing, maintenance, reporting or other improper practices.

(Amended Ord. No. 2010-06, 04/20/10)

LK. Enforcement~~General Penalty and Fees~~

- ~~1. Violation of any section of this Ordinance shall constitute a misdemeanor and shall result in a fine of no less than one hundred dollars (\$100.00) and not to exceed twenty five hundred dollars (\$2,500.00) for any one offense. A separate offense shall be committed for each day of noncompliance with any of the requirements of this Ordinance. This chapter will be enforced pursuant to the general enforcement provisions found in Chapter 7-01, and any additional specific enforcement procedures set forth herein.~~
2. When convicted of a violation of this Ordinance, any license previously issued to that person by the City may be revoked by the Flagstaff City Council or any proper court, if there may be reasonable relationship between the activities listed and the offense. Revocation of license shall not be considered a recovery of penalty so as to bar any other penalty being enforced.
3. The Division may deny or discontinue, after reasonable notice to the occupants thereof, the water service to anyone using the City of Flagstaff water distribution system or to any premise wherein any backflow prevention assembly or method required by these regulations is not installed, tested, maintained and repaired in a manner acceptable to the Division, or if required reports and/or records are not properly filed, or if it is found that the backflow prevention assembly or method has been removed or bypassed, or if an unprotected cross-connection exists on the premises. Reasonable notice shall be sent in writing at least two weeks prior to the disconnection, unless the Division determines that a potential for a severe health hazard exists.
4. If the Division determines that a potential for a severe health hazard exists, the Division may immediately discontinue water service without notice. Notice by telephone will be given as soon as possible and written notice will be sent within five (5) days, following discontinuance of water service. Water service to such premises shall not be restored until the consumer has corrected or eliminated such conditions or defects in conformance with these regulations and to the satisfaction of the Division.
5. Fire sprinkler systems shall not be subject to disconnection without the explicit approval of the City Fire Marshall, but will be subject to other penalties as provided for in this Ordinance. (Ord. 1736, 4-2-92)

~~E. Administrative appeal:~~

~~An administrative appeal may be taken whenever a question arises over any of the requirements of this article, and the applicant wishes to appeal the decision of the City of Flagstaff or seek a variance from the requirements of this article. The appeal may be made to the City of Flagstaff Industrial Waste Section Manager as follows:~~

- ~~1. The applicant shall file a written appeal on the forms provided by the City of Flagstaff Industrial Waste Section within ten (10) days from the date of the decision by the City of Flagstaff that the applicant wishes to appeal. The applicant shall set forth, in detail, and on the form provided, the basis for their request, and may attach additional documentation to the form.~~
- ~~2. The appeal will be heard by the hearing committee within seven (7) working days after receipt of the written appeal. Formal Arizona Rules of Evidence will not apply but any testimony or evidence offered must be relevant to the issue in question.~~
- ~~3. The hearing committee shall consist of at least one member of the Industrial Waste Section that is an active Cross-Connection Control Specialist and one building inspector from the City of Flagstaff Community Development. If the question involves a fire line backflow prevention assembly, a member of the City of Flagstaff Fire Department plan review team may also be present.~~
- ~~4. The applicant shall provide adequate information at the appeal hearing to fully describe the conditions in question and to establish the justification and basis for the applicant's request.~~
- ~~5. The applicant may, but is not required to, personally attend the hearing.~~

(Amended Ord. No. 2010-06, 04/20/10; Amended Ord. No. 2010-23, 09/07/10)

2010-23, Amended, 09/07/2010; Ord. 2017-28, Amended, 11/21/2017)