

City of Hollywood, Florida
Department of Public Utilities
Cross-Connection Control Plan



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Policies and Procedures Manual

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Table of Contents

	Page Number
Abbreviations -----	3
I. Definitions -----	3
II. Scope and Intent-----	8
III. Legal Authority-----	8
IV. Responsibility-----	9
V. Procedure for Initial System Evaluation-----	9
VI. Backflow Requirements – Methods-----	10
VII. Backflow Requirements – Standards-----	10
VIII. Containment Requirements-----	14
IX. Isolation Requirements-----	14
X. Certification Requirements-----	14
XI. Installation Specifications-----	16
XII. Enforcement -----	19
XIII. References-----	21
 Appendix A – Ordinance Sections	
 Appendix B - Pictures and Details	

Abbreviations

AG - Air Gap

AHJ – Authority Having Jurisdiction – (means Authority Having Jurisdiction) shall be a federal, state, local (Building or Fire Department), or individual such as a Building Official, Assistant Building Official; Chief Electrical/Mechanical/Plumbing/Structural Inspector; Fire Chief; Fire Marshal/Code Official; or Broward County Board of Rules and Appeals.

AVB - Atmospheric Vacuum Breaker backflow prevention device

AWWA - American Water Works Association

ASSE - American Society of Sanitary Engineering

BFP - Backflow Prevention device

CCCP – Cross-Connection Control Plan

DPU – The City of Hollywood Department of Public Utilities

DC- Double Check Valve backflow prevention Assembly

DCDA - Double check detector backflow prevention assembly

FAC- Florida Administrative Code

FBC- Florida Building Code

FCCCHR - University of Southern California-Foundation for Cross-connection Control and Hydraulic Research

ICCC - Institute for Cross-Connection Control

PVB - Pressure Vacuum Breaker backflow prevention device

RP, RPZ - Reduced Pressure Principal (Zone) Backflow Prevention Assembly

RPDA - Reduced pressure principle detector backflow prevention assembly

TREEO - University of Florida Center for Training, Research and Education for Environmental Occupations

UL - Underwriters Laboratories, Inc.

I. Definitions

The following words, terms and phrases, when used in this department, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

- A. *Approved* means accepted by the Director of Public Utilities or his/her designee as meeting an applicable specification stated or cited in this department or as suitable for the proposed use.
- B. *Approved backflow prevention assembly* means an assembly that has been manufactured in full conformance with the standards established by the American Water Works Association (AWWA) titled, "AWWA C510-89-Standard for Double Check Valve Backflow Prevention Assembly" (DC) and "AWWA C511-89-Standard for Reduced Pressure Principle Backflow Prevention Assembly" (RP), and has been certified to meet completely the laboratory and field performance specifications of the

Foundation for Cross-Connection Control and Hydraulic Research (FCCCHR) established by "Specification of Backflow Prevention Assemblies" - Sec. 10 of the most current issue of the Manual of Cross-Connection Control.

- C. *Approved backflow prevention assembly testing laboratories* means the Foundation for Cross-connection Control and Hydraulic Research of the University of Southern California (FCCCHR) or other qualified laboratories in accordance with FAC and AWWA requirements.
- D. *Auxiliary water supply* means any water supply on or available to the premises other than the water purveyor's approved potable water supply. These auxiliary waters may include water from natural source(s), such as a well, spring, river stream, harbor; used waters; reclaimed, recycled or conditioned waters; or industrial fluids. These waters may be contaminated or polluted, or they may be objectionable or altered and constitute an unacceptable water source over which the water purveyor does not have sanitary control.
- E. *Backflow* means the undesirable reversal of flow of water, liquids, mixtures or substances into the public water supply distribution system from any source or sources other than the intended source as a result of a cross-connection. Back-siphonage is one type of backflow.
- F. *Backflow prevention assembly* means a device or method that prevents backflow. The following are assemblies and means of backflow prevention and standards for their use:
 - 1) *Air gap (AG)* means the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water or waste to a tank, plumbing fixture, receptor, or other device and the flood level rim of the receptacle. These vertical, physical separations must be at least twice the diameter of the water supply outlet, but not less than one inch (25mm) above the receiving vessel flood rim.
 - 2) *Reduced pressure principle backflow prevention assembly (RP or RPZ)* means an approved complete assembly consisting of a mechanical, independently acting, hydraulically dependent relief valve, located between two independently acting, hydraulically dependent relief valves, located between two independently operating, internally loaded check valves that are located between two tightly closing resilient-seated shutoff valves with four properly placed resilient-seated test cocks.
 - 3) *Reduced pressure principle detector backflow prevention assembly (RPDA)* means a specially designed backflow assembly composed of a line-size approved reduced pressure principle backflow prevention assembly (RP) with a bypass containing a specific water meter and an approved reduced pressure principle backflow prevention assembly (RP). The meter shall register accurately for only very low rates of flow up to 3 gallons per minute (gpm) and shall show a registration for all rates of flow. This assembly shall be used to protect against a non-health hazard, (i.e. a pollutant) or a health hazard (i.e. a contaminant). The RPDA is primarily used on fire sprinkler systems.
 - 4) *Double check valve assembly (DC or DCVA)* means an approved complete assembly consisting of two internally loaded, independently operating check valves, located between two tightly closing resilient-seated shutoff valves with four properly placed resilient-seated test cocks. This assembly shall only be used to protect against a non-health hazard (i.e. a pollutant).

- 5) *Double check detector backflow prevention assembly (DCDA)* means a specially designed backflow 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. The meter shall register accurately for only very low rates of flow up to 3 gallons per minute (gpm) and shall show a registration for all rates of flow. This assembly shall only be used to protect against a non-health hazard (i.e. a pollutant).
- 6) *Atmospheric vacuum breaker (AVB)* means an approved assembly consisting of a float check, a check seat and an air inlet port. A shutoff valve immediately upstream may or may not be an integral part of the assembly. The atmospheric vacuum breaker is designed to allow air to enter the downstream water line to prevent back-siphonage. This unit may never be subjected to a backpressure condition or have a downstream shutoff valve, or be installed where it will be in continuous operation for more than twelve (12) hours.
- 7) *Pressure vacuum breaker assembly (PVB)* means an approved assembly consisting of an independently operating, internally loaded check valve, an independently operating, loaded air inlet valve located on the discharge side of the check valve, with properly located resilient-seated test cocks and tightly closing resilient-seated shutoff valves attached at each end of the assembly designed to operate under pressure for prolonged periods of time to prevent back-siphonage. The pressure vacuum breaker may not be subjected to any backpressure.
- 8) *Dual Check Valve (DuC)* means an approved device containing two internally loaded, independently operating check valves. This device does not meet the requirements of a backflow assembly and should only be used in low-hazard internal-protection applications.
- G. *Backpressure* means a pressure, higher than the supply pressure of the utility, caused by a pump, elevated tank, tall building, boiler, air/steam pressure, pressure washer, or any other means that may cause backflow.
- H. *Back-siphonage* means a type of backflow caused by negative or reduced pressure in the supply piping of the utility.
- I. *Building Official* means the principal enforcing officer of the Florida Building Code (FBC)
- J. *Certification (of backflow prevention devices)* means certification to the testing of backflow prevention devices for the purpose of ensuring their operational conformance with American Society of Sanitary Engineers (ASSE), AWWA, and FCCCHR specifications. The certification procedure shall be performed by a certified backflow prevention tester who shall submit a "Certified Backflow Test Form". The initial certification at installation shall be through the City's Building Department. Subsequent recertification and periodic testing shall be as mandated by the water purveyors CCCP requirements, in collaboration with the Building Department and shall certify that the device has been properly tested and is properly operating.
- K. *Certified backflow prevention assembly tester* means a person who has demonstrated competence to test, repair, and maintain backflow prevention assemblies as evidenced by current certification by the University of Florida Center for Training, Research and Education for Environmental Occupations (TREEO), ASSE or other organization acceptable to the Director of Public Utilities.
- L. *Containment* means to control the potential contamination of the public supply by installing an approved backflow prevention device on the property (discharge) side of

the City's public water main meter or tap.

- M. *Contamination* means an impairment of the potable water supply by the introduction or admission of any foreign substance that degrades the quality and creates a health hazard.
- N. *Cross-connection* means a connection or potential connection between any part of the potable water system and any other environment containing other substances in a manner that, under any circumstances, would allow such substances to enter the potable water system. These substances may be gases, liquids, or solids, such as chemicals, biology, waste products, oil, gas, food, soap, ice, steam, water from other sources (potable or non-potable), or any matter that may change the quality, taste, characteristics, color or add odor to the water. Bypass arrangements, jumper connections, removable sections, swivel or changeover assemblies, or any other temporary or permanent connecting arrangement through which backflow may occur are considered to be cross-connections; and as defined in Rule 62-550.200 F.A.C. and any subsequent amendments.
- O. *Cross-connection-controlled* means a connection between the potable water system and a non-potable water source with an approved backflow prevention assembly properly installed and maintained so that it will continuously afford the protection commensurate with the degree of hazard.
- P. *Customer* means any person, business or other entity whose name or names appear on billing for a water service connection from the city.
- Q. *Customer's system* means those parts of the water system beyond the termination of the utility distribution system that are utilized in conveying utility-delivered potable water to points of use.
- R. *Director of Public Utilities* means the Director of the City of Hollywood's Department of Public Utilities or his/her designee.
- S. *Distribution system* means the network of conduits used by the utility system for the delivery of potable water from the source to the customer's system.
- T. *Hazard, degree of* means an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system.
- U. *Hazard, health* means a cross-connection or potential cross-connection involving any substance that could, if introduced in the potable water supply, cause death, illness, spread disease, or have a high probability of causing such effects; reclaimed water stored with surface water in a pond that is part of a stormwater management system; well water if determined by the Director of Public Utilities.
- V. *Hazard, plumbing* means a plumbing-type cross-connection in a customer's system that has not been properly protected by an approved air gap or an approved backflow prevention assembly.
- W. *Hazard, non-health* (low hazard pollutant) means a cross-connection or potential cross-connection involving any substance that generally would not be a health hazard but would constitute a nuisance or be aesthetically objectionable such as changing the quality, taste, characteristics, color or add odor to the water, if introduced into the potable water supply.
- X. *Hazard, system* means an actual or potential threat of severe damage to the physical properties of the water system or pollution or contamination that would have a protracted effect on the quality of the potable water in the water system.

- Y. *Industrial fluids system* means any system containing a fluid or solution that may be chemically, biologically, or otherwise contaminated or polluted in a form or concentration such as would constitute a health, system, pollution, contamination or plumbing hazard, if introduced into the potable water supply. This may include, but not be limited to: polluted or contaminated waters; all types of process waters and used waters originating from the utility system that may have deteriorated in sanitary quality; chemicals in gaseous or fluid form; plating acids and alkalis; circulating cooling waters connected to an open cooling tower; cooling towers that are chemically or biologically treated or stabilized with toxic substances; contaminated natural waters, such as wells, springs, streams, rivers, bays, harbors, seas, irrigation canals or systems; oils, gases, glycerin, paraffins, caustic and acid solutions, metals in boilers, pesticides in irrigation systems, chemicals in fire sprinkler systems for firefighting purposes.
- Z. *Isolation* means to control the potential pollution and contamination of the private potable water system by installing air gaps or approved backflow prevention devices within the property owners plumbing systems or private water system.
- AA. *Low Hazard Auxiliary Water System* means a well unless determined otherwise by the Director of Public Utilities.
- BB. *Multi-family Building* means a building having two (2) or more units.
- CC. *Pollution* means the presence of any foreign substance in potable water that tends to degrade its quality so as to constitute a non-health hazard (low hazard) or impair the usefulness of the potable water.
- DD. *Pollutant* means any liquid, gas or material that may change the characteristics, taste, odor or color of the water.
- EE. *Potable water* means water which is satisfactory for drinking, culinary and domestic purposes, and meets the requirements of the Safe Drinking Water Act under the purview of the Florida Department of Environmental Protection (FDEP).
- FF. *Private Water System* means a water system on the property owner's side of the water service connection.
- GG. *Public Water System* means that portion of the water distribution system over which the city has management and maintenance responsibilities.
- HH. *Residential Service connection* means any service connection including any dedicated irrigation or fire service connection that is two (2) inches or less in diameter and that supplies water to a building, or premises, containing only dwelling units; and "*Non-Residential Service Connection*" means any other service connection.
- II. *Service connection* means the terminal end of a service connection from the utility, that is, where the water purveyor loses jurisdiction and sanitary control over the water at its point of delivery to the customer's system. If a meter is installed at the end of the service connection, then the service connection shall mean the downstream end of the meter. Service connection shall also include water service connection from a fire hydrant and all other temporary or emergency water service connections from the utility system.
- JJ. *Source* means all components of the facilities utilized in the production, treatment, storage, and delivery of potable water to the distribution system.
- KK. *Tall Building* means a building with five or more floors at or above ground level.
- LL. *Temporary cross-connection* means a connection from the public water system to a new water main, wastewater force main or reclaimed water main to supply water for

flushing or pressure testing; or connection to a fire hydrant.

- MM. *Utility or utility system* means the source facilities and distribution system of the city, and shall include all those facilities of the water system under the complete control of the utility, up to a point where the customer's system begins.
- NN. *Water, non-potable* means water that is not safe for human consumption or that is of questionable quality.
- OO. *Water, used* means any water supplied by the water purveyor from the utility to a customer's system after it has passed through the point of delivery and is no longer under the sanitary control of the water purveyor.
- PP. *Water purveyor* means the City of Hollywood Department of Public Utilities.
- QQ. *Water system* means the total system of water supply and distribution of potable water including the utility system and the customer system.

II. Scope and Intent

This manual is intended to be a policy and procedural guide for the City of Hollywood (COH) to implement a backflow prevention (BFP) and cross-connection control plan (CCCP). As the Owner and Operator of the public potable water supply the responsibility is upon the COH to preserve the integrity of the public water supply and system for community health and safety and to prevent cross-connections that may create an imminent and substantial danger to public health.

Unless otherwise provided herein, this manual applies to water customers of the City of Hollywood, as defined herein. The purpose of this manual is to implement the provisions of Section 62-555.360 of the Florida Administrative Code, promulgated under authority of Part VI of Chapter 403, Florida Statutes by the Department of Environmental Protection.

III. Legal Authority

The legal authority for this program is provided by the City of Hollywood Code of Ordinances Chapters 51, 52, the current Florida Building Code for Plumbing (FBC) – section 608, the Florida Administrative Code (FAC) 62-555.330 and 62-550.360, and the Federal Safe Drinking Water Act under Chapter 42. The FAC further adopts by rule the American Water Works Association Recommended Practice for Backflow Prevention and Cross-Connection Control (AWWA Manual M14: Third Edition). The FAC adoption of the AWWA practices was clarified and modified within the FAC 62-555.360 rule and promulgated on May 5, 2014.

Table 62-555.360 (2) of the FAC delineates the minimum required backflow prevention device that is acceptable to the community water system (CWS) on specific types of hazards for service connections. Whenever a prohibited cross-connection exists according to the FBC or a specific or potential hazard to the public water supply or system, the FAC requires the cross-connection or hazard to be protected or eliminated. The Code of Ordinances also authorizes the COH to discontinue water service until the prohibited cross-connection is eliminated under FAC 62-555.360 (3).

IV. Responsibility

- A. Water Purveyor: Section 62-555.360 of the FAC mandates the water purveyor to protect or eliminate all potential cross-connections discovered in the water system. Such responsibility begins at the point of origin of the public water supply and ends at the point of delivery to the property owner's water system at the COH water meter or at the property line. The Director of Public Utilities or his/her designee in union with the Building Official shall require a backflow prevention assembly at each connection to the public water system on the property side of the City's water meter or at the property line as required by FAC, the Code of Ordinances and this Cross-Connection Control Plan. The Director of Public Utilities, the Building Official, or his/her designee has the right to inspect all private property to determine whether a hazard exists.
- B. Building Official: The Building Official or his/her designee shall enforce the provisions of the FBC, Plumbing and the Cross-Connection Control Plan (CCCP) policies and procedures, herein stated, so as to ensure the property owner's water supply from the point of entrance of the public water supply to the extremities of the owner's water system remains uncompromised. The Authority Having Jurisdiction (AHJ) shall have primary enforcement responsibility of new and existing installations, alterations, inspections and repairs to the property owner's water systems.
- C. Property Owner: The property owner has the prime responsibility of preventing contaminants (high hazards) and pollutants (low hazards) from entering the potable water system, from the owner's side of the COH's water meter. The property owner shall assure the necessary plumbing permits are obtained for water supply system installations, alterations, testing and repairs to existing systems to include backflow prevention assemblies, as required by this plan. The property owner shall also assure that all backflow protection devices once installed are routinely tested, certified and maintained in accordance with CCCP policies and procedures herein stated.
- D. Backflow Prevention Device Tester: All Testers employed by the property owner to install and/or test backflow prevention device(s) shall be certified backflow preventer testers as defined within the **I. Definition** herein. The Tester shall submit a Certified Backflow Test form to the property owner and Chief Plumbing Inspector at the time of routine BFP testing. The report shall include all fields listed on the COH's Form (All applications & forms available on-line at www.hollywoodfl.org, under Departments/Building/Applications and Forms). For new installation the registered contractor will send the transmittal, permit application, and test certificate(s) electronically to bldgpermit@hollywoodfl.org.

V. Procedure for Initial System Evaluation - Commercial, Industrial, and Multi-Family Buildings

Commercial, industrial and reuse customers are considered potential High Hazard Cross-connections as defined in **Section VII** herein. Therefore, during the COH initial evaluations they will be handled as follows:

- A. Identify all commercial, industrial, multi-family buildings and reuse customers within the respective COH systems.

- B. After all commercial, industrial, multi-family buildings and reuse customers are identified, they will be compiled, categorized, and then entered into the Backflow Database (BFD). The BFD will be filtered to determine which accounts have existing backflow prevention devices installed along with the existing details for those units (size, manufacturer, model, serial number, type, date of last test, etc...). Site visits may be required to identify which commercial, industrial and reuse customers do not have existing backflow prevention devices and to verify the BFD information for older entrants.
- C. Informational material will be provided annually to COH customers to educate them on backflow prevention and cross-connection control, COH/customer responsibilities, testing requirements and steps the COH is taking to eliminate cross-connections within the water distribution system.
- D. All commercial, industrial, multi-family buildings and reuse customers found to have no existing backflow prevention device will be notified of the requirement to install an approved backflow prevention device at their premises. The customer will be given a compliance notification, which will contain a deadline to comply, in addition to details regarding the consequences of non-compliance.
- E. Annual testing notifications will be distributed to all commercial, industrial, multi-family buildings and reuse customers with instructions on testing requirements, record keeping and COH enforcement policies.

VI. Backflow Requirements - Methods

The following lists approved types or methods of backflow prevention devices and methods:

- A. Air Gap (AG)
- B. Reduced Pressure Principal Backflow Prevention Assemblies (RP or RPZ)
- C. Reduced Pressure Principal Detector Backflow Prevention Assemblies (RPDA)
- D. Double Check Valve Assemblies (DC)
- E. Double Check Detector Backflow Prevention Assemblies (DCDA)
- F. Pressure Vacuum Breakers (PVB)
- G. Atmospheric Vacuum Breakers (AVB)
- H. Residential Dual Check (DuC) - may only be used for low hazard application, e.g. reclaimed water only.

See Recommended Practice for Backflow Prevention and Cross-Connection Control AWWA Manual M14, Third Edition for applicable standards for approved devices. The conditions where each type of device or method would provide effective protection against backflow are given in the sections that follow.

VII. Backflow Requirements Standards

Cross-connections are prohibited unless appropriate backflow protection is provided to prevent backflow through the cross-connection into the public water system. Appropriate backflow protection for various applications is described in AWWA Manual M14, Third Edition 2004, Recommended Practice for Backflow Prevention and Cross-Connection Control and as subsequently amended in Rule 62-555.330 - FAC and the requirements are as follows:

- A. An approved backflow prevention assembly or means, appropriate to the degree of hazard, shall be installed on each service connection to a customer's water system as close as practical to the city water meter at or near the property line and in all cases before the first branch line leading off the service line, wherever the following conditions exist:
- 1) For premises using an auxiliary water supply.
 - 2) For premises on which any industrial fluids or any other objectionable substances may be stored or handled that may create an actual or potential hazard to the public water supply or
 - i. utility system that may include radioactive or other materials such as oil, gas, steam, ice, beverages, animals, birds, dairy, fish, food, rodents, chemicals, masonry, concrete, minerals, film, metals; or
 - ii. businesses such as aircraft, automotive, boats, cargo, dental, laboratory, (commercial) laundry, marine, medical, autopsy, mortuary, sanitarium, veterinary, etc.; or
 - iii. facilities such as a cooling tower; boiler, and multi-family buildings; or
 - iv. operations such as blending, canning, cleaning, construction, development, dispensing, fabricating, handling, manufacturing, packing, plant, plating, preparation, processing, production, reactor, rendering, repair, refining, research, service, storage, treatment or transmission, etc.
 - 3) For premises having internal cross-connections, intricate plumbing and piping arrangements.
 - 4) For premises where entry to all portions of the premises is not readily accessible or practical for inspection purposes.
 - 5) For premises in which backpressure may be generated in the customer's system.
 - 6) All dedicated irrigation services.
 - 7) All dedicated fire services.
 - 8) All commercial properties and businesses.
 - 9) Temporary connections.
 - 10) Lift Stations
- B. The type of backflow prevention assembly or means required under subsection (A) above, testing and certification frequency shall be determined by the degree of hazard that may exist, the facility type, business operation, customer category, type of connection or business tax standard industrial code (SIC) as follows:
- 1) For premises where there is an auxiliary water supply the utility system shall be protected by an approved air gap separation or a backflow prevention assembly as follows:
 - i. Dual check valve (DuC) - Residential service connection with no known cross-connection between the plumbing system and the auxiliary water supply or reclaimed water supply on the customer's premises; a dual check valve (DuC) shall be replaced/certified in accordance with manufactures recommendation or at least every ten years.
 - ii. Double check valve (DC) - residential or non-residential service connection with a cross-connection between the plumbing system and a low hazard auxiliary

water supply or low hazard reclaimed water supply on the customer's premises; a double check valve (DC) for non-residential service connections shall be inspected and tested/certified annually; a double check valve (DC) for a residential services connection shall be tested biennially or more frequently if deemed necessary by the water purveyor.

- iii. Reduced pressure principle backflow prevention assembly (RP or RPZ) - residential or non-residential service connection with a cross-connection between the plumbing system and a high hazard auxiliary water supply or high hazard reclaimed water supply on the customer's premises such as reclaimed water not regulated under Part III of Chapter 62-610, F.A.C. and surface water; an RPZ shall be provided and tested/certified annually for commercial service connections; an RPZ shall be provided and tested/certified biennially for residential service connections.
- 2) No cross-connections shall exist on the customer's premises between an auxiliary water supply such as a well, and any reclaimed water system, or fire system; an air gap (AG) shall be provided and inspected/certified annually or an RPZ shall be provided and tested/certified annually.
- 3) For premises where, in the opinion of the Director of Public Utilities an undue health threat is posed because of the presence of extremely toxic substances, the Director of Public Utilities shall require an air gap at the service connection to protect the utility system; an air gap shall be inspected and certified annually.
- 4) For premises where there is any material dangerous to health that is handled in such a fashion as to create an actual or potential hazard to the utility system, the utility system shall be protected by an air gap separation or a reduced pressure principle assembly. Examples of premises where these conditions will exist include, but are not limited to, sewage treatment plants, sewage pumping stations, chemical manufacturing plants, hospitals, mortuaries, and plating plants; an RPZ shall be provided and tested/certified annually.
- 5) For premises on which any industrial fluids or any other objectionable substances may be stored or handled that may create an actual or potential hazard to the public water supply or utility system a reduced pressure principle assembly shall be provide; an RPZ shall be tested/certified annually for a non-residential service connection; a RPZ for a residential service connection shall be inspected and tested/certified annually.
- 6) For premises where there is backpressure, such as a pump or tall building and if the customer has no potable water distribution lines connected to the suction side of a booster pump or the presence of water or other substance that would be objectionable, but not hazardous to health, if introduced into the utility system, the utility system shall be protected by an approved backflow prevention assembly as follows:
 - i. Double check valve assembly (DC) – if the property is a commercial use, low density residential use or a residential use without a compound meter a double check valve (DC) shall be provided; a double check valve assembly (DC) for a non-residential service connection shall be inspected and tested/certified annually; a double check valve assembly (DC) for a residential service connection shall be inspected and tested/certified biennially.
 - ii. Double check detector backflow prevention assembly (DCDA) - if the property is a high density multi-family residential use or a compound meter exists; a

double check valve detector backflow prevention assembly (DCDA) shall be provided and inspected and tested/certified annually.

- 7) For premises where there is backpressure, such as a pump or tall building and if the customer has one or more potable water distribution lines connected to the suction side of a booster pump or the premises may have any industrial fluids or any other objectionable substances that may create an actual or potential hazard to the public water supply or utility system or substance that would be a high hazard to health, if introduced into the utility system, the utility system shall be protected by an approved backflow prevention assembly as follows:
 - i. Reduced pressure principle backflow prevention assembly (RP) - if the property is a commercial use, a low density residential use or does not have a compound meter; a RPZ for a non-residential service connections shall be inspected and tested/certified annually.
 - ii. Reduced pressure principle detector backflow prevention assembly (RPDA) - if the property is a high density multi-family residential use or has a compound meter; a RPZ for a non-residential service connection shall be inspected and tested/certified annually; a RPZ for a residential service connection shall be inspected and tested/certified biennially.
- 8) For premises where there are cross-connections that are not controlled, either actual or potential, the utility system shall be protected by an air gap separation or a reduced pressure principle assembly (RPZ); an air gap (AG) shall be inspected/certified annually; an RPZ for a non-residential service connection shall be tested/certified annually; an RPZ for a residential service connection shall be tested/certified biennially.
- 9) For premises where, because of security requirements or other prohibitions or restrictions, it is impossible or impractical to make a complete in-plant cross-connection survey, the utility system shall be protected against backflow from the premises by either an air gap separation or a reduced pressure principle assembly (RPZ); an air gap (AG) shall be inspected/certified annually; a RPZ for a non-residential service connection shall be tested/certified annually; a RPZ for a residential service connection shall be tested/certified biennially.
- 10) For premises having internal cross-connections, intricate plumbing and piping arrangements or where entry to all portions of the premises is not readily accessible or practical for inspection purposes a reduced pressure principle assembly (RPZ) is required; a RPZ for a non-residential service connection shall be inspected/certified annually; a RPZ for a residential service connection shall be tested/certified biennially.
- 11) For premises where an irrigation system is connected directly to the utility system through a dedicated irrigation meter, the utility system shall be protected as follows:
 - i. Pressure vacuum breaker assembly (PVB) - On an irrigation system not subject to backpressure; a pressure vacuum breaker assembly (PVB) shall be provided; a PVB on a non-residential service connection shall be inspected/certified annually; a PVB on a residential service connection shall be inspected/certified biennially.
 - ii. Reduced pressure principle backflow prevention assembly (RP) - On an irrigation system subject to backpressure or with chemical additives or agents; a RPZ for a non-residential service connection shall be tested/certified annually; a RPZ for a residential service connection shall be tested/certified biennially.

- iii. Double check valve assembly (DC) – if the dedicated irrigation connection was initially constructed before May 5, 2014 and no chemicals or agents are fed into the irrigation system; a double check valve (DC) for a non-residential service connection shall be inspected and tested/certified annually; a double check valve (DC) for a residential service connection shall be inspected and tested/certified biennially.
- 12) For premises with a fire service connection, the provisions of the Code of Ordinances and the FBC, Plumbing shall require a double check detector valve assembly (DCDA); a double detector check valve (DCDA) for residential and non-residential service connection shall be inspected and tested/certified annually.
- 13) Cross-connections between the public water supply and the wastewater system or reclaimed water system are prohibited, i.e. an air gap (AG) inspected/certified annually or two (2) RPs in series tested/certified biannually shall be maintained between any public water system and any wastewater system or reclaimed water system except at:
- i. temporary connections for construction sites where only non-health hazards (low hazard pollutants) exist or for flushing or pressure testing for construction of new water mains or sewer force mains a double check valve (DC) inspected and tested/certified annually is adequate; or
 - ii. temporary connections for construction sites where health hazards (high hazard contaminants) exist a RPZ shall be provided, inspected and tested/certified annually; or
 - iii. temporary connections for construction sites to supply water for temporarily operating a new reclaimed water main that has not been connected to a reclaimed water supply a RPZ shall be provided and inspected and tested/certified annually; or
 - iv. temporary connections for mobile contractors where health hazards (high hazard contaminants) exist two (2) RPZs in series shall be provided and inspected and tested/certified biannually is required for each approved location with a permit.

The selected type of backflow prevention assembly required herein shall be subject to the approval of the Building Official or his/her designee along with the Director of Public Utilities or his/her designee and shall be provided as written notice to such customer to install such approved backflow prevention assembly.

VIII. Containment Requirements

All water service connections shall provide protection against backflow into the public water supply by installation of the appropriate backflow prevention on the property owner's side of the City's water meter as close as practical to the property line and before the first branch off of the service line. The Director of Public Utilities along with the Building Official shall determine the appropriate protection of the public water supply where not defined herein.

IX. Isolation Requirements

Backflow prevention methods and devices shall be provided at the time of construction of the private water system for the fixtures and systems listed in the FBC, Plumbing. The Building Official shall require the installation of the BFP device at the time of permitting for new construction in accordance with the current FBC, Plumbing, FAC and the City's Code of Ordinances.

Whereas the FBC, Plumbing, FAC and Code of Ordinances are subject to periodic updates and modifications, the Building Official, along with the Director of Public Utilities shall determine the appropriate protection for the isolation of a facilities internal system commensurate with the degree of hazard. All water service connections that require isolation on the private system also require containment through the installation of a backflow assembly at the property's side of the meter at the property line.

X. Certification Requirements

A. Existing Facilities

All existing facilities, multi-family buildings, irrigation services and fire service lines shall have a backflow protection device at the property owner's side of the water service connection. The type of protection shall be in accordance with FAC, the City's Code of Ordinances, and the CCCP Manual or whichever is more stringent.

A plumbing permit must be obtained from the city prior to installation of a BFP device. The water purveyor is exempt from permitting requirements. The Building Official shall require the BFP device to be tested, prior to issuing the final approval of the installation. Testing shall be conducted by a certified backflow prevention assembly tester. After ensuring the proper operation of a BFP device, the backflow tester shall complete a "Field Test Report" and submit it to the COH Building Department.

B. New Construction

All new construction shall, at the time of permitting, be required to incorporate cross connection/backflow protection into the design and construction plans to protect the public water supply and in accordance with the requirements of this CCCP. Contaminants and pollutants shall be isolated and contained in accordance with the FBC, Plumbing, FAC, and the Code of Ordinances as established by this CCCP Manual. The City's Plumbing Official shall require the BFP device to be inspected and tested, to ensure proper construction and operation, prior to issuing the final approval for the plumbing of the new construction.

Testing shall be conducted by a certified backflow prevention tester. After ensuring the proper operation of a BFP device, the certified backflow prevention tester shall complete a "Field Test Report" and submit it to the COH Building Department. The Building Department shall submit a copy to the Director of Public utilities and maintain a copy of the report in the Building Department database. The new BFP will then go into the database for annual re-certification. If the BFP fails the test it shall be replaced or repaired and a new inspection shall be requested and the final approval shall not be issued until the BFP installation is corrected and certified.

C. New Businesses

The Building Department shall be notified through the Building Permitting Application process if a property has a change of use or if the property is being remodeled. The Building Official or his/her designee along with the Director of Public Utilities or his/her designee shall review each new business to determine whether protection from backflow exists or is required in accordance with FAC, the City's Code of Ordinances and the CCCP.

D. Periodic Re-Certification

1) Requirements

All existing RPs, RPDAs, DCs, DCDAs, and PVBs, shall be inspected, tested, and certified upon installation, by a certified backflow prevention device assembly tester. The tester shall complete a Certified Backflow Test Form (available online) and deliver the completed report electronically to bldgpermit@hollywoodfl.org. Backflow prevention assemblies for non-residential service connections shall be tested at least annually thereafter. Residential service connections shall be tested biennially (i.e. every two years) or more frequently if deemed necessary by the water purveyor.

The technician shall forward to the COH Building Department a completed "Field Test Report" to indicate that the BFP device has been tested and found to be operating in accordance with the industry's specifications as provided by the AWWA, ASSE, and FCCHR.

Annual certification of dual check valve (DuC) and atmospheric vacuum breaker (AVB) BFP devices is not required; these BFP devices may be certified at the discretion of the water purveyor. DuCs and AVBs shall be replaced in accordance with the manufactures recommendations or at least every ten (10) years.

All Air Gaps (AGs) under the control of the utility shall be inspected annually. Inspections shall be conducted by the Manager of the Underground Utilities Department or his/her designee. The air gap (AG) inspection shall be associated to a specific service or meter. Results of the inspections and certifications shall be forwarded to the Building Department with a fully completed "Certified Backflow Test Form" along with the administrative fee as established by the Building Department at [www.hollywoodfl.org/Departments/Building/PermitProcedures and Fee Schedule](http://www.hollywoodfl.org/Departments/Building/PermitProcedures%20and%20Fee%20Schedule)

2) Test failure

The owner shall have a maximum of five (5) business days to repair or replace any BFP assembly which fails an annual test necessary for certification. Failure of the device that protects the public water supply against an imminent health hazard shall be reported immediately to the Director of Public Utilities.

XI. Installation Specifications

A. Location of installation:

When installed for the purpose of containment, backflow prevention devices shall be installed at the property owner's side of the City's water meter, as close to the water meter and property line as is functionally possible, and before any branch off the line.

B. FBC, Plumbing requirements:

Backflow prevention assemblies shall be installed in accordance with the specifications from the current FBC, Plumbing and in accordance with Recommended Practice for Backflow Prevention and Cross Connection Control AWWA Manual M14, Third Edition and as follows:

- 1) All devices shall be accessible. They shall not be installed in pits or similar potentially submerged locations, except for dual check (DuC) and double check (DC) backflow preventers, if approved by the water purveyor and in full conformance with the standards established by the American Water Works Association (AWWA) titled, "AWWA C510-89-Standard for Double Check Valve Backflow Prevention Assembly"

- (DC). They shall not be installed with any actual or potential unprotected bypass. Any bypass installed shall be protected with the same minimum approved device as the main. When any connection is made between the public water service meter and the containment backflow preventer each system shall be protected to the highest degree of hazard found on that system.
- 2) Atmospheric Vacuum Breaker (AVB): Atmospheric vacuum breakers shall be installed with the critical level at least six (6) inches above the flood level rim or highest point of discharge. Such devices shall be installed on the discharge side of the last control valve to the fixture and no shut off valve or faucet shall be installed downstream of the device. Flush valve vacuum breakers shall be installed a minimum of six (6) inches above the fixture flood level rim.
 - 3) Pressure Type Vacuum Breakers (PVB): Pressure type vacuum breakers shall be installed at least twelve (12) inches above the flood level rim.
 - 4) Double check (DC or DCDA) and Reduced Pressure Devices (RP, RPZ or RPDA): Such devices shall be installed at least twelve (12) inches above the ground and at least twelve (12) inches above the maximum flood level (100 year flood elevation).
- C. Additional installation requirements adopted from the American Water Works Association AWWA Recommended Practice for Backflow Prevention and Cross-Connection Control - M14 Manual, Third Edition or as subsequently amended and adopted by FAC:
- 1) RP or RPDA:
 - i. The RP or RPDA shall be installed with adequate space to facilitate maintenance and testing. Ideally, the installation should not require platforms, ladders, or lifts for access.
 - ii. Adequate clearance from the floor, ceiling, and walls must be provided to facilitate the removal of the relief valve and/or check valves.
 - iii. Before selection and installation, refer to the manufacturer's literature for temperature ranges. An RP and RPDA must be protected from freezing temperatures and if installed where temperatures will reach 110 degrees Fahrenheit or above, the hot-water type of assembly must be used. Consult manufacturer's specifications for recommendations.
 - iv. An RP and RPDA shall not be installed in a pit below ground level. Semi-buried pits are acceptable if the RP or RPDA is installed above the ground, above the maximum flood level (100 year flood elevation), and the bottom of the backflow valve is a minimum of twelve (12) inches above the finished grade with an approved air gap between the relief valve port and the daylight drain.
 - 2) The daylight drain from above ground or semi-buried vaults must provide:
 - i. Adequate drainage for the discharge from the reduced-pressure principle backflow prevention assembly (RP or RPDA) relief valve ports. Minimum RP and RPDA relief valve flow rates and minimum diameter of relief valve porting are as set forth in AWWA C511-89-Standard for Reduced Pressure Principle Backflow Prevention Assembly (RP) and has been certified to meet completely the laboratory and field performance specifications of the Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California FCCCHR established by "Specification of Backflow Prevention Assemblies" - Sec. 10 of the most current issue of the Manual of Cross-Connection Control.

- ii. Access for maintenance and periodic testing. If the existing RP or RPDA is located inside a building, it is recommended that a drain be provided to receive spillage from the relief valve port. The relief valve port must always have an approved air gap (AG) between it and the drain or maximum flood level (100 year flood elevation), whichever is highest.

The assembly should be sized hydraulically, taking into account both the volume requirements of the service and the head loss of the assembly. (Refer to the manufacturer's head loss pressure curves.) If a strainer is provided, the additional head loss of the strainer must be taken into account.

3) DC or DCDA:

- i. The DC or DCDA should be installed with adequate space to facilitate maintenance and testing and should have free access without the use of platforms, ladders, or lifts.
- ii. The assembly should be sized hydraulically, taking into account both the flow rate requirements of the service and the head loss of the assembly. (Refer to the manufacturer's head loss pressure curves.) If a strainer is provided, the additional head loss of the strainer must be taken into account.
- iii. A DC or DCDA should not be installed below ground level unless provided with adequate drainage to maintain a dry location. Where an assembly must be installed in a location that is susceptible to flooding, such as a basement, the test cocks shall be plugged.
- iv. Water lines must be flushed thoroughly before installing the DC or DCDA.
- v. All DCs and DCDA's shall be installed in a horizontal position unless otherwise recommended by the manufacturer and approved by the Utilities Department.
- vi. Before selection and installation, refer to the manufacturer's literature for temperature ranges. A DC or DCDA must be protected from freezing temperatures. For temperatures of 110 degrees Fahrenheit or above, consult manufacturer's literature for recommendations.
- vii. The DC or DCDA shall be installed in-line and should be the same size as the supply and discharge piping.

4) PVB:

- i. The PVB shall be installed at least twelve (12) inches above all downstream piping and the highest fixture flood level rim outlet, or highest point of water use.
- ii. The PVB shall be installed in a vertical position with adequate space to facilitate maintenance and testing.
- iii. The PVB shall be installed in an area where water spillage through the vacuum relief valve (air vent) is not objectionable. Provide adequate drainage to floor drains to accommodate this spillage.
- iv. The PVB shall not be installed in a vent hood or where toxic or objectionable fumes could enter and contaminate the potable water piping.
- v. The PVB shall be installed in-line and should be the same size as the supply and discharge piping.

- vi. Before installation, refer to the manufacturer's literature for temperature ranges. The PVB must be protected from freezing temperatures. If installed where temperatures will reach 110 degrees Fahrenheit or above, the hot-water type of assembly must be used.
- 5) AVB:
- i. The AVB shall not be installed where it will be under continuous pressure for more than twelve (12) hours.
 - ii. The AVB shall be installed downstream of the last shutoff valve in a system, such that the discharge side is exposed to atmosphere.
 - iii. The AVB shall be installed in-line and should be the same size as the supply and discharge piping.
 - iv. The AVB shall be installed a minimum of: six (6) inches above all downstream piping and the highest outlet or flood level rim.
 - v. The AVB shall not be installed in a vent hood or where toxic or objectionable fumes could enter and contaminate the potable water piping. The AVB shall be installed in a visible location for maintenance.
 - vi. The AVB shall be installed in an area where water spillage is not objectionable.
 - vii. Before installation, refer to the manufacturer's literature for temperature ranges. AVBs must be protected from freezing temperatures, and if installed where temperatures will reach 110 degrees Fahrenheit or above, the hot-water type of assembly must be used.
- 6) Air Gap (AG):
- An approved air gap (AG) is the unobstructed vertical distance through free atmosphere between the lowest point of a water supply outlet and the flood level rim of the fixture or assembly into which the outlet discharges. These vertical, physical separations must be at least twice the diameter of the water supply outlet, but never less than 1 inch.
- 7) Bypass lines:
- Backflow prevention devices shall be installed on lines where it would be practical to shut off the water supply for annual certification/testing purposes. Where impractical or unfeasible to shut off the water supply through a system, a bypass line shall be extended parallel to the supply line. The bypass line shall be provided with backflow protection equivalent to the supply line.

Note: All backflow prevention devices and methods shall be installed in accordance with the FBC and AWWA specifications for installation of backflow prevention devices, as stated above. In the event of conflict between specifications the more stringent shall apply.

XII. Enforcement

A. Facilities requiring BFP installation – Initial Implementation

1) First notice:

All property owners who are required, in accordance with FAC, the City Code of Ordinances or this CCCP Manual, to install a BFP device, shall be notified in writing

of the requirement by DPU of a maximum of thirty (30) days from the date of the notice to install, recertify or provide documentation of current BFP device.

2) Second Notice and Final Notice:

A second notice shall be mailed to the business and property owners that may have potential high hazards and all addressees associated with the property in the water billing system no more than five (5) days following the first notification. The second notice will allow a maximum of fourteen (14) days from the date of the notice to comply. The second notice shall also contain a warning that non-compliance after the due date will result in disconnection of the water service.

3) Request for Extension of Time – (Only Applicable for Low Hazard Connections)

Should the property owner at any time find that he/she cannot install the BFP device within the time frame allotted by DPU and the premises have only a potential low hazard, then the owner shall have the right to submit to the DPU a written request for an additional thirty (30) calendar day extension of time for installation and testing of the backflow device. The request shall disclose the date of the request, name of the owner, the water service address, the reason for the request, the time at which the installation is expected to be completed, the signature of the owner and a contact phone number or email address. All enforcement action for premises with potential low hazard being considered or undertaken, by the DPU shall cease at the time of receiving the written request. No extensions of time shall be granted to premises that may have high health hazards.

After reviewing the written request, the DPU or designee shall exercise its discretion in granting a thirty (30) calendar day extension approval, partial approval, or denial of the request. The DPU or designee shall notify the owner in writing of its decision and give the reason for the decision. Should an extension be granted, then the DPU or designee shall specify the new date by which the BFP installation shall be completed and hold in abeyance all enforcement action. Should the request for an extension be denied, then all previously contemplated enforcement action shall resume.

B. Periodic Recertification

Property owners who have installed BFP devices and are required in accordance with the FAC, the City Code of Ordinances and these Cross-Connection Control Plan (CCCP) policies and procedures to have periodic inspections, testing, and recertification of BFP devices, shall be notified in writing of the requirement.

Such notice, informing the owner of his/her non-compliance shall be thirty (30) calendar days before the anniversary date of the installation, testing and certification of the owner's BFP device(s). The notice shall allow the owner a maximum of thirty (30) days to have his/her BFP device tested and certified and a fully completed Certified Backflow Test Form forwarded to the City of Hollywood Building Department Building Official along with the administrative processing fee.

Should the BFP device not be certified within the thirty (30) days, a second notice of non-compliance may be mailed following the first notice allowing the owner a maximum of fourteen (14) days from the date of the notice to certify the BFP device. The second notice shall also contain a warning that continued non-compliance could result in water disconnection and reconnection fees upon compliance with the backflow prevention requirements.

XIII. References

Florida Administrative Code 62-555.220 and 62-555.360, 2014
Florida Building Code – Plumbing (FBC) Section 608, 2010
City of Hollywood Code of Ordinance Chapters 51 and 52
Recommended Practice for Backflow Prevention and Cross-Connection Control AWWA
Manual M14, Third Edition
EPA Cross-Connection Control Manual, 2003
Federal Safe Drinking Water Act Chapter 42

APPENDIX A

ORDINANCE SECTIONS

As previously stated, ordinances and other reference materials cited in this manual always revert to the most current version available. To check for changes to the below referenced City of Hollywood Code of Ordinances please visit: The American legal publishing company's website which contains all the City's most recent amendments.

<http://www.amlegal.com/nxt/gateway.dll/Florida/hollywood/cityofhollywoodfloridacodeofordinances>

§ 51.015 AUTHORITY OF CITY TO REQUIRE OWNER TO INSTALL BACKFLOW PREVENTERS OR THE LIKE ON SERVICE CONNECTION.

The city reserves the right, at its option, where and when, in its discretion, the conditions require it, at any time to require any owner to install on his service connection at the location designated by the city, a tank, check valve or valves, stop or gate valve, pressure regulator, backflow preventer or other appliances, apparatus or equipment of such type and design as is approved by the city and thereafter to require any change, alteration, substitution or addition of and to any such tank, valve regulator, backflow preventer or other appliances, apparatus or equipment, as aforesaid, and failure upon the part of the owner to comply with such requirements of the city within 30 days after written notice to the owner, or within some agreed extension beyond such 30 days also in writing, shall authorize the city, at its option, and without further notice, to cancel the contract for such service and discontinue the same.

('72 Code, § 36-28) (Ord. 205, passed - - ; Am. Ord. O-72-206, passed 12-6-72 ; Am. Ord. O-2005-04, passed 5-4-05)

§ 51.031 APPLICATION TO BECOME BINDING CONTRACT UPON INSTALLATION OF SERVICE.

(A) *Effective when installation complete.*

(1) The application becomes a binding contract upon both the owner and the city when the service connection for water supply service applied for has been installed and completed.

(2) It is the property owner's responsibility to maintain the water supply service upon his property; regardless of the location of the meter backflow assembly or other devices.

(3) It is the city's responsibility to maintain the water supply service from the water main in the adjacent public right-of-way to the right-of-way line.

('72 Code, § 36-17)

§ 52.75 INSTALLATION/CONSTRUCTION OF RECLAIMED WATER IRRIGATION SYSTEMS.

(A) Wells connected to existing irrigation systems shall be disconnected and plugged prior to connection to the effluent reuse system. An application may be submitted to the Utilities Director for the installation of a reduced pressure zone backflow prevention device on well connections rather than disconnection of the well.

(B) Existing irrigation systems shall be disconnected from potable water systems prior to connection to the effluent reuse system.

(C) A reduced pressure zone backflow prevention device shall be installed on the potable water supply to a property by a certified technician at the expense of the property owner or customer prior to connection to the effluent reuse system.

(D) A single-family residential customer may use reclaimed water, when available, by connecting his or her in-ground spray irrigation system directly to the effluent reuse system or, alternatively, by using the hose bib provided by the city, at customer's request, within a subterranean valve box at the property line.

(E) Industrial/commercial customers shall only use in-ground spray irrigation systems to apply reclaimed water.

(F) Control valve boxes and boxes for subterranean hose bibs shall be labeled "Reclaimed Water". The boxes shall be of the size and design required by the Utilities Department.

(G) All piping, pipelines, valves and outlets shall be color coded purple, or otherwise marked by permanent labeling, to differentiate reclaimed water from domestic or other water supplies.

(H) Maximum obtainable separation of reclaimed water lines and domestic water lines shall be practiced. A minimum horizontal separation of five feet (center to center) or three feet (outside to outside), shall be maintained between reclaimed water lines and either potable water mains or sewage collection lines. Reclaimed water mains crossing under potable water mains shall be laid to provide a minimum vertical distance of 18 inches between the invert of the upper pipe and the crown of the lower pipe. Where this minimum vertical separation cannot be maintained, the crossing shall be arranged so that the reclaimed water pipe joints and the potable water main joints are equidistant from the point of crossing with no less than 10 feet between any two joints.

(Ord. O-94-09, passed 3-2-94; Am. Ord. O-94-20, passed 6-15-94)

APPENDIX B

PICTURES AND DETAILS

FIGURE 1 - DOUBLE CHECK ASSEMBLY. Most commonly used on Commercial and Multi-Family Fire only meters 2 ½" – 8"

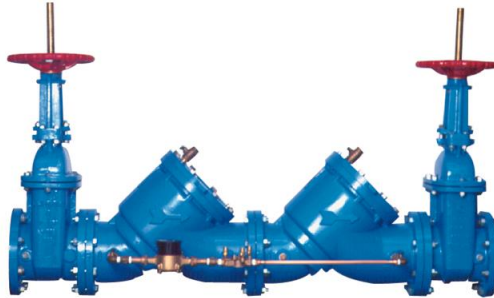


FIGURE 2 - DOUBLE CHECK ASSEMBLY. The two examples below would be most commonly used on Residential meters ¾" – 2" for Reclaimed Water or 13 D fire systems



FIGURE 3 - PRESSURE VACUUM BREAKER ASSEMBLY. Used on irrigation only meters ¾" to 2"



FIGURE 4 - REDUCED PRESSURE ASSEMBLY. Two examples of most commonly used on high hazard or Commercial units $\frac{3}{4}$ " – 2".



Example of reduced pressure assembly most commonly used on Large Scale Commercial Application 2 $\frac{1}{2}$ " – 8".

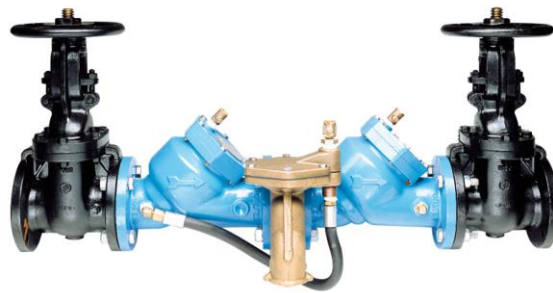


FIGURE 5 - DUAL CHECK DEVICE

