

## 106 CROSS CONNECTIONS AND BACKFLOW PREVENTION

### 106.1 GENERAL

Cross connection from any well or other source of water to any piping system connected to the Water Utility distribution mains shall not be permitted.

### 106.2 BACKFLOW PREVENTION

106.2.1 The customer shall prevent pollutants and contaminants from entering his/her potable water supply system or the Water Utility distribution mains by backflow or back siphoning.

106.2.2 All water-using devices shall be so designed so that backflow or back siphoning to the system cannot occur.

106.2.3 Where harmful contaminants or pollutants are used with any device or process connected to the water system, the customer shall install and maintain a reduced pressure backflow prevention assembly in accordance with these Rules and Regulations and any applicable plumbing code requirements.

106.2.4 All permanently installed underground irrigation systems shall contain a reduced pressure principle backflow assembly to prevent backflow or back-siphoning to the Water Utility's distribution system.

106.2.5 Water activated sump pumps shall require a reduced pressure zone backflow assembly.

106.2.6 All new commercial and industrial construction is required to have a backflow assembly installed on the domestic water line immediately following the domestic water meter.

106.2.7 All booster pump(s) in the distribution system shall have an automatic shutoff or pressure controllers to maintain at least 20 psi in the suction line under all flow conditions.

### 106.3 REQUIRED INSTALLATION

The approved backflow prevention assembly shall be installed:

106.3.1 For all new commercial, industrial and multi-level buildings over two stories when constructed.

106.3.2 For existing facilities, when major plumbing changes are made.

106.3.3 For any residence, plant, or facility where a hazardous condition is found.

106.3.4 When required by other codes or statutes.

## **106.4 INTERCONNECTED SERVICES AND/OR FIRE LINES**

When a commercial property is served by two or more interconnected services and/or fire lines connected to different Water Utility distribution mains, the customer shall install and maintain, at his/her expense, on each service and/or fire line, an approved check valve according to the latest edition of the AWWA Standard C508.

## **106.5 CROSS CONNECTION CONTROL - CONTAINMENT PROVISIONS**

### 106.5.1 Administrative Authority

- 1) The Water Utility shall have the right to enter, with the consent of the customer or upon the basis of a suitable warrant issued by a court of appropriate jurisdiction, any property to inspect for possible cross connections.
- 2) The Water Utility shall maintain records of cross connection hazard surveys, and the installation, testing, and repair of all backflow prevention assemblies installed for containment purposes.

### 106.5.2 New Water Services

- 1) Plans shall be submitted to the Water Utility for review on all new water services in order to determine the degree of hazard.
- 2) The Water Utility shall determine the type of backflow prevention assembly required for the containment based on the degree of hazard.
- 3) The Water Utility shall inspect the installation of the required backflow prevention assembly for containment before the initiation of water service.

### 106.5.3 Existing Water Service

- 1) Upgrades of existing water services shall be treated as new water services for the purpose of this section.
- 2) The Water Utility shall, on the basis of information received from customers, surveys, or gathered through on-site investigations; determine **if a** backflow prevention assembly is required for containment based on the degree of hazard.
- 3) Within the time frame specified by the Water Utility, the customer shall install a backflow prevention assembly for containment as required by the Water Utility.
- 4) For existing water services, the Water Utility may inspect the premises to determine if a hazardous connection to the water system exists. When found, the Water Utility at its sole discretion shall develop a schedule of compliance which the customer shall follow or water service may be terminated until the required backflow assembly has been installed.
- 5) Failure of the Water Utility to notify a customer that they are believed to have a hazardous cross connection in no way relieves a customer of the responsibility to comply with all requirements of this section.

#### 106.5.4 Customer

- 1) The customer shall be responsible for ensuring that no cross connection exist without approved backflow protection within his/her or premise starting at the point of service from the public potable water system.
- 2) The customer shall, at his/her expense, cause installation, operation, testing, and maintenance of backflow prevention assemblies.
- 3) The customer shall ensure that copies of records of the installation and all tests and repairs made to the backflow prevention assembly are delivered in an electronic format to its record keeping representative within fifteen (15) days after testing and/or repairs are completed.
- 4) In the event of a backflow incident, the customer shall immediately notify the Water Utility of the incident and take steps to confine the contamination or pollution.

#### 106.5.5 Required Backflow Prevention Assemblies for Containment - Water Services

- 1) An air gap or an approved reduced pressure principle backflow prevention assembly is required for water services having one or more cross connections which the administrative authority has classified as high hazard.
- 2) An approved **reduced pressure principle backflow prevention assembly** is required for water services having no high hazard cross connections but having one or more cross connections which the Water Utility has classified as a low hazard.

#### 106.5.6 Required Backflow Prevention Assemblies for Containment - Fire Protection Systems

- 1) A reduced pressure principle backflow prevention assembly shall be installed on all new and existing fire protection systems which the Water Utility has determined to have any of the following:
  - a) Direct connections from public water mains with an auxiliary water supply on or available to the premise for pumper connection.
  - b) Interconnections with auxiliary supplies such as reservoirs, rivers, ponds, wells, mills, or other industrial water systems.
  - c) Use of antifreezes or other additives in the fire protection system.
  - d) Combined industrial and fire protection systems supplied from the public water mains only, with or without gravity storage or pump suction tanks.
  - e) Any other facility, connection, or condition which may cause contamination.
- 2) A double check valve assembly will be required for all other fire protection systems. The double check valve assembly shall be required on all new systems at the time of installation and on existing systems at the time they are upgraded.

- 3) Submittal of proposed backflow prevention assembly to the Water Utility does not relieve the designer or the sprinkler contractor of the responsibility of submitting plans, including backflow prevention assembly to the fire marshal for approval.

#### 106.5.7 Backflow Prevention Assembly Technicians

A Backflow Prevention Assembly Technician registered by the State of Iowa shall include his/her registration number, the expiration date of the license, company name, address and phone number on all correspondence and forms required by or associated with this section.

#### 106.5.8 Registered Backflow Prevention Assembly Technician Noncompliance

- 1) Noncompliance with any of the following by a registered technician shall be grounds for reporting said individual to the State Health Department.
  - a) Improper testing or repair of backflow prevention assemblies.
  - b) Improper reporting of the results of testing or of repairs made to backflow prevention assemblies.
  - c) Failure to meet registration requirements.
  - d) Related unethical practices.

#### 106.5.9 Installation of Backflow Prevention Assemblies

- 1) The required backflow prevention assemblies for containment shall be installed in the horizontal plumbing immediately following the water meter or as close to that location as deemed practical by the Water Utility. In any case, it shall be located upstream from any branch piping. Installation at this point does not eliminate the responsibility of the customer to protect the water supply system from contamination or pollution between the backflow prevention assembly and the water main.
- 2) Reduced pressure principle backflow prevention assemblies shall be installed so as to be protected from flooding.
- 3) Reduced pressure principle backflow prevention assemblies shall not be installed in underground vaults or pits.
- 4) All backflow prevention assemblies shall be protected from freezing. Those assemblies used for seasonal water services may be removed in lieu of being protected from freezing; however, the assemblies shall be reinstalled and tested by a registered backflow prevention technician prior to service being reactivated.
- 5) If hot water is used within the water system, thermal expansion shall be provided for when installing a backflow prevention assembly for containment.
- 6) Provisions shall be made to convey the discharge of water from reduced pressure principle backflow prevention assemblies to a suitable drain.

- 7) The backflow prevention assemblies will not be installed where they would create a safety hazard; such as but not limited to over an electrical panel, or above ceiling level.
- 8) If interruption of water service during testing and repair of backflow prevention assemblies for containment is unacceptable, another backflow prevention assembly, sized to handle the temporary water flow need during the time of test or repair, should be installed in parallel piping.
- 9) All backflow prevention assemblies shall be installed so that they are accessible for testing as stated in Section 1003 of the Plumbing Code.
- 10) All shut-off valves shall conform to the current edition of the Manual of Cross-Connection Control (University of Southern California) requirements for either ball or resilient seat gate valves at the time of installation. Ball valves shall be used on assemblies installed in piping two inches and smaller and resilient seat gate valves on assemblies installed in piping larger than two inches.
- 11) Location and protection of the containment assembly shall be approved by the Water Utility prior to installation.
- 12) The piping used at the irrigation meter setting shall be copper at both the inlet and the outlet side of the meter. The copper piping on the outlet side of the meter shall extend to the backflow assembly and securely fastened for maximum rigidity. If the backflow assembly is located on the outside of the residence, copper piping shall be used from the meter to the floor joist and securely fastened prior to transitioning to PEX piping. Copper piping shall also be used for the penetration of the exterior wall for the irrigation system.
- 13) All drain down valves shall require the installation of a vacuum breaker backflow device.

#### 106.5.10 Testing of Backflow Prevention Assemblies

- 1) Testing of backflow prevention assemblies shall be performed by a registered backflow prevention assembly technician. The costs of tests required in the following paragraphs 2-5 shall be borne by the customer.
- 2) Backflow prevention assemblies shall be tested upon installation and tested and inspected at least annually.
- 3) Backflow prevention assemblies that are in place, but have been out of operation for more than three months, shall be tested before being put back into operation. Backflow prevention assemblies used in seasonal applications shall be tested before being put into operation each season.
- 4) Any backflow prevention assembly that fails a periodic test shall be repaired or replaced. When water service has been terminated for noncompliance, the backflow prevention assembly shall be repaired or replaced prior to the resumption of water service. Backflow prevention assemblies shall be retested by a registered backflow prevention assembly technician immediately after repair or replacement.

- 5) The Water Utility may require backflow prevention assemblies to be tested at any time in addition to the annual testing requirement.
- 6) The registered backflow prevention assembly technician shall report the successful test of a backflow prevention assembly to the customer and in an electronic format to its record keeping representative within fifteen (15) days of the test.
- 7) The Water Utility may require, at the owner's expense, additional tests of individual backflow prevention assemblies, as it shall deem necessary to verify test procedures and results.

#### 106.5.11 Repair of Backflow Prevention Assemblies

- 1) All repairs to backflow prevention assemblies shall be performed by registered backflow prevention assembly technicians.
- 2) The registered backflow prevention assembly technician shall not change the design, material, or operational characteristics of a backflow prevention assembly during repair or maintenance, and shall use only original manufacturer replacement parts.
- 3) The registered backflow prevention assembly technician shall report the repair of a backflow prevention assembly to the customer and in an electronic format to its record keeping representative within fifteen (15) days of the repair. The report shall include the list of materials or replacement parts used.
- 4) Any time fire services are disconnected for a period of time longer than necessary to test the backflow assembly; the tester is required to notify the fire marshal's office that the fire services are shut off for repair.

#### 106.5.12 Customer Noncompliance

- 1) The water service may be discontinued in the case of noncompliance with this section. Noncompliance includes, but is not limited to, the following:
  - a) Refusal to allow Water Utility personnel access to the property to inspect for cross connections.
  - b) Removal of a backflow prevention assembly which has been required by the Water Utility.
  - c) Bypassing of a backflow prevention assembly which has been required by the Water Utility.
  - d) Providing inadequate backflow prevention when cross connections exist.
  - e) Failure to install a backflow prevention assembly which has been required by the Water Utility.
  - f) Failure to test and/or properly repair a backflow prevention assembly as required by the Water Utility.

### 106.5.13 Inactive Agreement

In the event a resident chooses not to use an irrigation system, an Inactive Agreement must be signed and returned to the Utility. Signing the agreement does not release the resident of their obligation to protect the water supply system.