



Cross-Connection Control Requirements for Dedicated Irrigation Services

The City and County of San Francisco has a Cross-Connection Control Program to protect the city's drinking water distribution system from contamination caused by backflow (reversal of flow from a customer's premises into the potable water distribution system). The program is administered by the Water Quality Division of San Francisco Water, Power and Sewer. The purpose of this brochure is to explain San Francisco's requirements for backflow protection for irrigation services.

What is a cross-connection?

A cross-connection is an actual or potential connection between a public or consumer's drinking water system and a non-potable (non-drinkable) source of water or other fluid. All cross-connections must be protected with the appropriate backflow prevention assembly.

What is the required protection for NEW irrigation services?

Water Quality Division requires that all new water service connections for irrigation systems in San Francisco be protected with a **reduced pressure principle (RP)** backflow prevention assembly at the service connection.

What is the required protection for EXISTING irrigation services?

1. **An RP is required** under the following conditions:
 - The sprinkler/irrigation system has pumps, connections for pumping equipment, auxiliary air tanks, or is otherwise capable of creating back-pressure. If the highest outlet of an irrigation system, e.g., a sprinkler head or hose bibb, is less than 12 inches below the elevation of the outlet of the backflow preventer, the potential for back-pressure exists (*San Francisco Plumbing Code 603.4.6.2*).
 - The sprinkler/irrigation system includes a chemical injector or any provisions for chemical injection (*San Francisco Plumbing Code 603.4.6.4*).

If an irrigation system meets the criteria above and the service line is not protected with an RP, the property owner must install an RP.

2. If an existing irrigation system has **no pumps or connections for pumping equipment and no chemical injection or provisions for chemical injection**, then the San Francisco Plumbing Code requires an atmospheric vacuum breaker, a pressure vacuum breaker, a spill-resistant pressure vacuum breaker, or an RP (*San Francisco Plumbing Code 603.4.6.1*).
3. If an existing irrigation system has a **backflow prevention assembly/device installed downstream of a potable water supply pump or a potable water supply pump connection**, then the San Francisco Plumbing Code requires a pressure vacuum breaker, a spill-resistant pressure vacuum breaker, or an RP (*San Francisco Plumbing Code 603.4.6.3*).

If an atmospheric vacuum breaker, pressure vacuum breaker, or spill-resistant pressure vacuum breaker (on a system meeting the requirements in cases 2 and 3 above) fails and cannot be repaired, then Water Quality Division requires that an RP be installed at the service connection. Note: Before modifying an existing irrigation system, you must obtain a permit from the Department of Building Inspection, Plumbing Inspection Division.

What kinds of backflow prevention assemblies may be installed?

All assemblies installed in San Francisco must (1) be on the “Approved Backflow Prevention Assemblies for Service Containment” list developed by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research or (2) certified by a comparable organization approved by the General Manger. In addition, all assemblies must be lead-free as defined in California Health and Safety Code §116875.

Who is responsible for the cost of installing backflow prevention assemblies?

All costs associated with backflow protection on irrigation services are the responsibility of the property owner. These costs include purchase, installation, permitting, testing (both upon installation and annually thereafter), and maintenance.

Where must backflow prevention assemblies be installed?

Backflow prevention assemblies must be installed as close as practical but in any case within 25 feet of the downstream side of the point of connection to the potable water system. No connections may be made between the point of connection and backflow prevention assemblies for containment.

When must backflow prevention assemblies be tested?

Assemblies must be tested immediately after installation by a tester approved to work in San Francisco, and test results must be reported to the Cross-Connection Control Program within five days. After initial testing, assemblies must be tested annually.

Who is permitted to test backflow prevention assemblies?

Testers who work in San Francisco must have a valid Permit to Operate issued by the San Francisco Department of Public Health. A list of companies employing Authorized Backflow Prevention Assembly Testers is available at sf.gov/backflow.

Where can I get additional information?

Additional information is available at sfpuc.gov/backflow or you can call the Cross-Connection Control Program at (650) 652-3199 between 8 am and 5 pm, Monday through Friday. You may also contact the Department of Building Inspection, Plumbing Inspection Division at (628) 652-3400.