City of Santa Barbara

Backflow Assembly Requirements

Index:

Responsibility of the Water Supplier .......................................................... 2
Cross-Connection Program ............................................................................. 3
Backflow FAQs ............................................................................................ 4
SB Municipal Code Chapter 14.20.120 & Title 17 §7605
Uniform Plumbing Code 2012 Chapter 6 §603.4 ......................................... 5
Chart of Backflow Prevention Assemblies ..................................................... 6
City Standards for installation ...................................................................... 7
Residential Fire Sprinkler System Policy ....................................................... 15
Contact Information for Cross-Connection office ....................................... 17
Responsibility of Water Supplier

The water supplier has the responsibility to maintain their public water system in compliance with all federal and state drinking water standards. Since cross-connection can cause contamination of the public water supply, water suppliers should have a cross-connection program in place.

The program should include an ordinance or rules of service to give the water supplier the authority to implement the cross-connection control program. Under the cross-connection regulations or rules of most states and territories the water supplier has the primary responsibility to prevent unapproved water sources, or any other substance, from entering the public water system.

The water supplier is prohibited by these regulations or rules from installing or maintaining a water service connection to a consumer’s water system within its jurisdiction where a health system, plumbing or pollutional hazard exists, or will probably exist, unless the public potable water supply is protected against backflow by an approved backflow prevention assembly(s) installed at the service connection(s), i.e. point of delivery.

The water supplier’s responsibility begins at the source and includes all of the public water distribution system, including the service connection and the ends at the point of delivery to the consumer’s water system(s). In addition, the water supplier must exercise reasonable vigilance to ensure that the consumer has taken the proper steps to protect the public potable water system.

To ensure that the proper precautions are taken the water supplier is required to determine the degree of hazard to the public potable water system. When it is determined that a backflow prevention assembly is required for the protection of the public system the water supplier shall require the consumer, at the consumer’s expense, to install an approved backflow prevention assembly at each service connection, to test immediately upon installation, relocation and annually or more often, to properly repair and maintain such assembly or assemblies and to keep adequate records of each field test and subsequent maintenance and repair, including materials or replacement parts.

Cross Connection Program
(Summary of Title 17 Code of Regulations
Division 1, Chapter 5, Group 4, Article 1)

§7584. Responsibility and scope of program.
The water supplier shall protect the public water supply from contamination by implementation of a cross-connection control program. The program, or any portion thereof, may be implemented directly by the water supplier or by means of a contract with the local health agency, or with another agency approved by the health agency. The water supplier’s cross-connection control program shall for the purpose of addressing the requirements of Sections §7585 through §7605 include, but not limited to, the following elements:

(a) The adoption of operating rules or ordinances to implement the cross-connection program,

(b) The conducting of surveys to identify water user premises where cross-connections are likely to occur,

(c) The provision of backflow protection by the water user at the user’s connection or within the user’s premises or both,

(d) The provision of at least one person trained in cross-connection control to carry out the cross-connection program,

(e) The establishment of a procedure or system for testing backflow preventers, and

(f) The maintenance of records of locations, test and repairs of backflow preventers.

Common Commercial Hazards: (Examples only)

<table>
<thead>
<tr>
<th>Irrigation</th>
<th>Fire Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed- Use</td>
<td>Fire Sprinkler</td>
</tr>
<tr>
<td>3+ Story buildings/Elevation</td>
<td>Boilers</td>
</tr>
</tbody>
</table>

Common Residential Hazards: (Examples only)

<table>
<thead>
<tr>
<th>Irrigation</th>
<th>Fire Sprinkler</th>
</tr>
</thead>
<tbody>
<tr>
<td>3+ Story bldg /Elevated lots</td>
<td>Water Softener</td>
</tr>
<tr>
<td>Solar Water Heater</td>
<td>Pools/Spas/Ornamental Fountains</td>
</tr>
</tbody>
</table>

**Backflow Prevention Assembly FAQs**

Q. **What is a backflow?**
A. Backflow is backpressure and/or backsiphonage;
   - **Backpressure:** Any elevation of pressure in downstream piping system above the supply pressure at the point of consideration, which could cause or tend to cause a reversal in the normal direction of flow – i.e. pump, elevation, and steam or air pressure.
   - **Backsiphonage:** A form of backflow due to a reduction in system pressure, which causes sub-atmospheric pressure to exist in the water system – i.e. water main break, damaged fire hydrant, meter shut off.

Q. **What is a cross-connection?**
A. A cross-connection is a direct or indirect arrangement of piping that allows the potable water supply to be connected to a contaminated source.
   - **For example:** water service supplying water to a building that also serves the irrigation system. Most common cross-connection is a garden hose submerged, or attached to contaminated fluids and undesirable substances.

Q. **What is a Backflow Prevention Assembly?**
A. A Backflow Prevention Assembly is a plumbing device that is most commonly installed between the water meter and the service main to the property.

Q. **Why are they installed?**
A. They are installed to protect the public & private drinking water supplies from cross-connections. These are plumbing requirements at the Federal, State and Local jurisdictions.

Q. **What does a backflow preventer do?**
A. Properly functioning backflow preventer only allows water to flow in one direction.
   - **For example:** The direction of flow would be through the water meter to the property. Never allowing the water to reverse back through the water meter, into public drinking water supply.

Q. **Where is the backflow preventer located?**
A. The preventer is normally located as close as practical to the service connection from your water supply. Commonly found behind the water meter.

Q. **Why does a backflow preventer have to be tested?**
A. The backflow preventer is a mechanical device with internal components such as check valves, seals, springs and rubber materials. These parts are subject to wear, fatigue and fouling. This is why backflow preventers are tested annually to ensure that they are functioning properly.

Q. **How often do the backflow preventers need to be tested?**
A. Title 17 of the California Health & Safety Code states that backflow preventers must be tested annually.

Q. **What happens if the backflow preventer fails the initial test?**
A. Repairs are necessary to pass the backflow preventer. In most cases, simply a cleaning and service corrects the problem. Repair parts are available if needed. Retest is performed to ensure the repairs have corrected the problem, and pass the backflow preventer.

Q. **Do I need design review approval from the Planning Division?**
A. Installation with exterior elements (the assembly itself or risers) requires review and approval. Depending on the extent of the visibility, approval may be handled at the staff level or may be referred to a design review board or commission if it remains prominent.

Q. **Who installs and tests private backflow prevention assemblies?**
A. The customer hires a private plumber to install the backflow and a certified backflow assembly tester must be used to test the backflow.

Santa Barbara Municipal Code Chapter 14.21
Cross-Connection Control

14.21.050B Protection of City Water System
Backflow preventers must be tested upon installation, relocation, or repair and before provision of water service. Testing must be by a certified backflow tester and a test report showing the backflow preventer is properly installed and operating must be filed with the Director. In addition, backflow preventers must be tested annually. If a backflow preventer fails a test, service to the premises may be disconnected until a test report showing the backflow preventer is properly installed and operating is filed with the Director. The owner of the premises is responsible for the test.

Title 17 §7605 California Code of Regulations
TESTING AND MAINTENANCE OF BACKFLOW PREVENTERS.

(a) The water supplier shall assure that adequate maintenance and periodic testing are provided by the water user to ensure their proper operation.

(b) Backflow preventers shall be tested by persons who have demonstrated their competency in testing of these devices to the water supplier or health agency.

(c) Backflow preventers shall be tested at least annually or more frequently if determined to be necessary by the health agency or water supplier. When devices are found to be defective, they shall be repaired or replaced in accordance with the provisions of this Chapter.

(d) Backflow preventers shall be tested immediately after they are installed, relocated or repaired and not placed in service unless they are functioning as required.

(e) The water supplier shall notify the water user when testing of backflow preventers is needed. The notice shall contain the date when the test must be completed.

(f) Reports of testing and maintenance shall be maintained by the water supplier for a minimum of three years.

California Plumbing Code 2019
§603.4 WATER SUPPLY AND DISTRIBUTION – GENERAL REQUIREMENTS.

Assemblies shall comply with listed standards and be acceptable to the Authority Having Jurisdiction, with jurisdiction over the selection and installation of backflow prevention assemblies.
The Premise owner or responsible person shall have the backflow prevention assembly tested by a certified backflow assembly tester at the time of installation, repair, or relocation and not less
than on an annual schedule thereafter or more often where required by the Authority Having Jurisdiction.


### BACKFLOW PREVENTION ASSEMBLIES

#### Types of Hazards & Protection

<table>
<thead>
<tr>
<th>Type of Protection</th>
<th>Non-Health Hazard (Pollutant)</th>
<th>Health Hazard (Contaminant)</th>
<th>Lethal Hazard (Sewage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Gap</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Reduced Pressure Principal</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Double Check</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Pressure Vacuum Breakers</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Spill-Resistant Vacuum Breakers</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atmospheric Vacuum Breakers</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


**Definitions:**

- **Pollutant:** any hazard that affects aesthetics of water – taste, odor, color, smell but will not make you sick – i.e. stale water, beer, sugar, coffee, salty water, baptismal fountains.

Revised: April 14, 2022
✓ **Contaminant**: any hazard that could cause illness or death – i.e. chemical, pesticide, biohazard, gasoline, excessive nitrate, carbonated copper (potential toxic byproduct from soda machine backflow).

✓ **Backpressure**: Any elevation of pressure in downstream piping system above the supply pressure at the point of consideration, which would cause or tend to cause a reversal in the normal direction of flow – i.e. pump, elevation, and steam or air pressure.

✓ **Backsiphonage**: A form of backflow due to a reduction in system pressure, which causes sub-atmospheric pressure to exist in the water system – i.e. water main break, damaged fire hydrant, meter shut off.
Backflow assembly shall be lead-free.

Backflow prevention assemblies shall be installed upstream of the assembly.

In the water system continues to cause flushing, a strong flow of water shall be used to flush the pipe and the entire system before the assembly is installed. If debris or contaminants are flushed downstream, resulting in continued discharge from the relief valve, the relief valve shall be adjusted or replaced to eliminate the discharge.

When field problems occur because dirt or debris present in the system at the time of installation becomes

Proper installation of the assembly is essential to the protection of the water supply. The following are important:

1. The assembly shall be installed in a horizontal position with a minimum clearance of 12 inches and maximum of

2. A Reduced Pressure Assembly shall not be installed in a pit. Flooding of the pit can result in cross connection

3. The assembly shall be installed in a horizontal position with a minimum clearance of 12 inches and maximum of

4. The assembly must be purchased and installed with resilient seat valves as approved by the University of California Foundation for Cross-Connection Control and Hydraulics Research (USC).

5. Removal of the assembly shall be planned where water discharged from the relief port will not be

6. Ensure the supply water pressure does not exceed the manufacturer's maximum water pressure rating of the

7. The system shall be checked and tested for leaks before the system is backfilled, ensuring that all connections

8. The system should be flushed before the assembly is installed. If debris or contaminants are flushed downstream, resulting in continued discharge from the relief valve, the relief valve shall be adjusted or replaced to eliminate the discharge.

NOTES:
Revised: April 14, 2022

NOTES:

1. The Double Check Valve Assembly must be installed where it is accessible for periodic testing and maintenance.

2. Prior to installing line flush supply line of all foreign material. Failure to flush line completely may cause the check to become fouled and require disassembly and cleaning.

3. When threading the device, fill the device with water at the site. Place wrench on ball valve box ends. Keep pipe dope off the threads.

4. When lifting the device, hold only the nut. When reassembling, make sure the check is free of debris and securely seated.

5. After installation, fill device and bleed air from the system. Increase pressure slowly to test for leaks.

6. The device must be protected from freezing. Ensure that all expansion and/or water hammer devices are cleaned.

7. Interstorey surfaces of valve. On 2½-in. and larger devices, do not lift the device with gate.

8. Valve handles or stems. Also do not support device from only one end.

9. Any backflow prevention assembly installed over a flow of 50 ft or more must have a permanent platform.

10. Refer to Uniform Plumbing Code (UPC) chapter 6, sections 603.00 thru 603.42, 4.20 for more information.

Public Works Director
Approved:

Drawn:

Date:

Detail: W-13.0
NOTES:
1. Assembly and installation shall conform to Standard Detail W-13.0.
2. Double check detector required on all potable dedicated firelines.
3. Assembly must be installed as a unit.
4. Distance from grade to centerline of #2 shutoff valve shall be a minimum of 12 units.
5. Minimum of 18 units from grade to first flange of #1 shutoff valve.
6. Assembly must be an approved assembly from the USC list.
7. Assembly must be an approved assembly from USC list or equivalent.

ELEVATION

MATERIALS USED SHALL CONFORM TO NFPA, UFC, AND UPC REQUIREMENTS

SIDE VIEW

CITY OWNED
PRIVATELY OWNED

5' MAXIMUM FROM GRADE TO CENTERLINE OF #2 SHUTOFF VALVE

18" MAX. FROM GRADE TO FIRST FLANGE

2" MIN. SIDE CLEARANCE

%" ASSEMBLY

"\%" DETECTOR VALVE

TYPICAL APPROVED DOUBLE CHECK DETECTOR VALVE

INSPECTION BY COMPANY'S APPROVED INSPECTOR IS REQUIRED
NOTES:

1. Downstream side of pressure type vacuum breaker may be maintained under pressure by a valve. But any backpressure by

PLAN VIEW

1. Sprinkler

2. Sprinkler Control Valve

3. Hose Bib

4. Hose Bib

5. Hose Bib

6. Provide minimum clearances for testing and repair.

7. PVBs and SVBs shall always be installed above the 100-year flood level unless otherwise approved by Engineer or designee.

8. PVBs and SVBs shall be installed a minimum of 12 inches above the highest downstream piping and/or outlets.

9. PVBs and SVBs shall be installed where occasional water discharge caused by pressure fluctuations is acceptable.

10. Provide only: not backpressure.

11. Pump or other means is strictly prohibited.

12. Or Spill-Resistant Vacuum Breaker or Spill-Resistant Vacuum Breaker
CITY OF SANTA BARBARA PUBLIC WORKS
RESIDENTIAL FIRE SPRINKLER SYSTEMS POLICY

The following represents water meter and fire line options available for residential fire sprinkler systems.

**METERED OPTIONS**

<table>
<thead>
<tr>
<th>FLOW REQUIRED</th>
<th>SERVICE SIZE</th>
<th>METER SIZE</th>
<th>COST</th>
<th>BUY-IN REQ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 20 GPM</td>
<td>1 in</td>
<td>5/8 in</td>
<td>Per Resolution</td>
<td>Yes</td>
</tr>
<tr>
<td>&gt;20 up to 50 GPM</td>
<td>1 in</td>
<td>1 in</td>
<td>Per Resolution</td>
<td>Yes</td>
</tr>
<tr>
<td>&gt;50 up to 160 GPM</td>
<td>2 in</td>
<td>2 in</td>
<td>Per Resolution</td>
<td>Yes</td>
</tr>
</tbody>
</table>

All residential services used for fire sprinkler supply shall have as a minimum, an approved double check valve backflow assembly. The backflow assembly shall be placed at the meter or a location approved by the City’s Cross-Connection Specialist. There is no exception to the backflow requirement.

There may be situations where the flow requirement, available flow capacity, or unfavorable hydraulic conditions require a service that is dedicated to providing the flow to the fire sprinkler system. In such cases, a domestic meter of appropriate size is purchased along with the dedicated fire line listed below.

**DEDICATED FIRE LINE OPTION**

<table>
<thead>
<tr>
<th>FLOW REQUIRED</th>
<th>SERVICE SIZE</th>
<th>METER SIZE</th>
<th>COST</th>
<th>BUY-IN REQ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 160 GPM</td>
<td>2 in</td>
<td>N/A</td>
<td>Per Resolution</td>
<td>No</td>
</tr>
</tbody>
</table>

All dedicated fire lines shall have, as a minimum; a City of Santa Barbara approved double check detector backflow assembly with a manufacture installed flow detection meter. The backflow assembly shall be placed at the curb above or below ground, per City of Santa Barbara Standards or a location approved by the City’s Cross-Connection Specialist. There is no exception to the backflow requirement.

**CONTACTS:**

| Water Distribution | Day-time Dispatch number | 805-564-5413 |
| Jeff Becker        | Cross-Connection Control Specialist | 805-564-5575 |
| Maggi Heinrich     | Water Distribution Supervisor | 805-560-7539 |
| Rabi Days          | Water Distribution Superintendent | 805-564-5414 |
Santa Barbara Municipal Code 14.12
PRIVATE FIRE SERVICE


The rate for City water for private fire services when the use of a meter is not required shall be set by resolution of the City Council.  (Ord. 3829, 1976.)


If an existing fire service line is found tapped for domestic use, a meter or detector-check device shall be installed on such service at the expense of the consumer and the regular meter rate shall be charged thereafter in addition to the fire service rate.  All fire service lines installed after the effective date of the ordinance codified in this chapter shall have an approved detector-check and by-pass meter installed and such device shall be considered part of the fire service cost.  (Ord. 2931 §2(part), 1963; prior Code §44.21.)


The right shall be reserved to disconnect fire service lines from the City main by direction of the Council on recommendation of the Director of the Public Works Department.  (Ord. 2931 §2(part), 1963; prior Code §44.22.)
Contact Information:

Mailing Address:
City of Santa Barbara
Cross-Connection Control Office
P.O. Box 1990
Santa Barbara CA  93102-1990

Email Address:
Backflow@SantaBarbaraCA.gov

Street Address:
625 Laguna Street

FAX – (805) 564-5561

Please send all test reports to:
Backflow@SantaBarbaraCA.gov

For Technical questions please contact:

Sr. Cross-Connection Specialist:
Jeff Becker  (805) 564-5575
JBecker@SantaBarbaraCA.gov

Water Distribution Day-Time Operator:
(805) 564-5413