 <p>Development Services Building Division</p> <p>285 Hamilton Avenue Palo Alto, CA 94301 650.329.2496</p>	<p><b>BACKFLOW PREVENTION Water Supply</b></p>	Revision Date: 9/3/15
		<p>General Requirements/Checklist for: <b>Residential and Commercial</b></p>
<p><b>Inspection Code # 510</b></p>		<p>Codes Enforced:</p> <ul style="list-style-type: none"> <li>• Current California Code of Regulations Title 24</li> <li>• Palo Alto Municipal Code (PAMC)</li> </ul>
<p>The information provided in this document is general and intended as a guide only. Each project is unique and additional requirements may be enforced as deemed appropriate.</p>		

**WARNING**

- Failure to complete items below prior to inspection may result in a re-inspection fee.

**APPLICATION**

A backflow prevention device is required when:

- **Single family residential:** When an unapproved fresh water supply is available (not connected to the domestic water supply) from a well, spring, reservoir, or other source; solar water heater; boiler, swimming pool and spa. Reduced Pressure Principle Assemblies RPPA is required when basement ejector pump is installed.
- **Commercial, industrial, retail, and multi-family residential (more than 4 units in building)** water applicants shall install backflow protection for all water services including irrigation.
- **Single family and multi-family residential FIRE SERVICE:** When fire sprinklered off the domestic water service.
- **Commercial or industrial FIRE SERVICE:** Shall be installed for the existing or new water connections for the fire system.

**PERMIT REQUIREMENTS**

- **Building Department permit** is required when installing a backflow device AND
- **Fire Department permit** is required when installing a backflow device on the fire service for commercial and multi-family residential AND
- **Publics Works Department permit** is required when water service or work in any way cross or impact the public right of way.

**INFORMATION CONTACTS**

- Contact Cross Connection Control Program for all questions regarding backflow prevention device at [650-496-5926](tel:650-496-5926)
- Contact the Building Division for questions only regarding the placement and inspection of the device.
- **Go to Utilities web site for a list of approved testers and standards**  
[www.cityofpaloalto.org/backflow](http://www.cityofpaloalto.org/backflow)

**EXPANSION TANK**

- Any water system provided with a backflow prevention device shall be provided with an approved, listed, and adequately sized expansion tank and combination pressure and temperature relief valve when a water system contains storage water heating equipment such as water heater and boiler.  
**Caution: Tank must be firmly secured to wall or other structural member (i.e. unistrut or other approved method). Do not install valve on expansion tank. CPC 608.3**

**REQUIRED INSPECTIONS:**

1. All underground piping (shall be charged with water at time of inspection)
2. Final inspection including expansion tank

**CPA BUILDING DIVISION INSPECTION**

- All backflow assemblies must be listed and approved by the Foundation for Cross Connection Control and Hydraulic Research at USC.
- All devices and components must be certified **lead free** when used in conjunction with potable water.
- Backflow device piping shall be the same size as the service supply pipe (I.E. IF THE SERVICE LINE IS 3" AND THE METER IS 2" THE RP SHOULD BE SIZED ON SERVICE LINE (3")) unless a water system analysis is completed showing that a backflow prevention device not smaller than the water meter is sufficient. **ALL PIPING SHALL BE DUCTILE IRON OR COPPER.**
- Water piping connections to BP shall be exposed and charged with water at time of inspection. CPC 606.4
- Underslab joints** within the building shall be brazed, and fittings shall be wrought copper CPC 609.3.2,
- Contractor shall provide Inspector with Backflow Preventer manufacturer installation instructions.
- Verify Backflow device is installed per manufactures instructions for exterior or interior location.
- Verify contracted Backflow tester is CPA certified and **test tag** is attached to device.
- Where more than one backflow preventer is installed on a single premise, and the valves are installed in one location, each separate valve shall be permanently identified (i.e. address/unit number) with **brass tags** and attached to backflow device. *CPC 603.3.2*
- Verify no connections up stream from the device to the meter such as hose bib or sprinklers.
- **Common Pitfall: Reduced pressure assembly backflow devices reduce the inlet water pressure by 10-15 psi and should be taken into consideration when installing a new device.**

**Location and clearances**

- Backflow preventer shall be installed on the owner's property adjacent to the point of service within 5 feet of the property line. *CPA Utility Standards*
- Backflow device shall be located where it is readily accessible for testing and maintenance, as close as practical to the user's connection and shall be installed a minimum of **12" above grade** and a maximum of **36" above grade** (vertical installations maximum 5' above grade), and within a minimum **12" side clearance**. *CPA Utility Standards and CPC 603.3.4*

**Installation of a backflow preventer**

Backflow device will reduce the available water pressure to the buildings. Special care should be taken and calculations made prior to installation. Calculations must include the following:

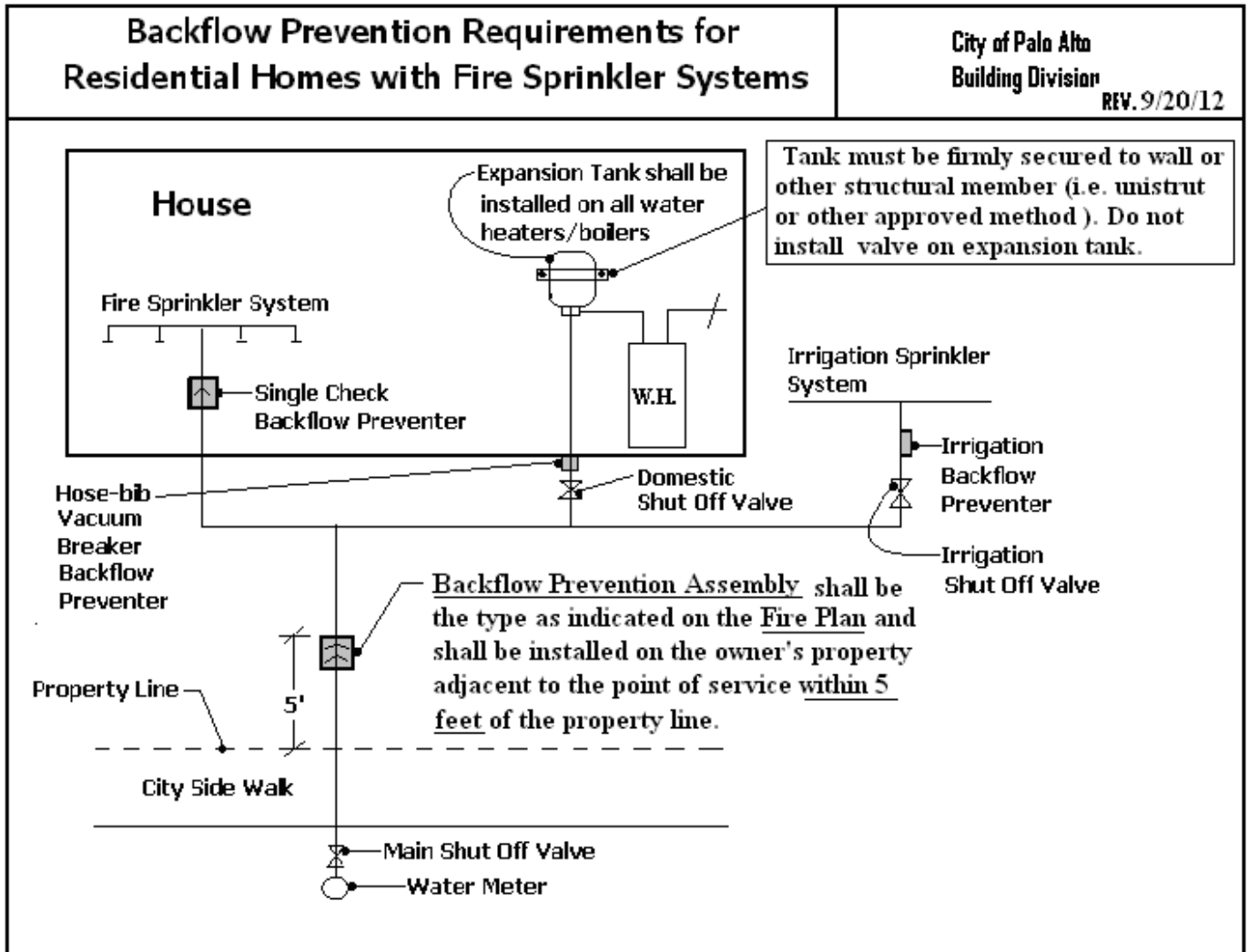
1. Total number of fixture units based on CPC table 6
2. Developed length of pipe from the meter (include the backflow preventer and the pressure loss.)
3. Difference in elevation from the meter to the highest fixture or outlet
4. Allowing for water filters, under size pipe, backflow preventers, or similar devices.

**Protection and Security**

- Protection** of backflow preventer is required when subject to vehicular damage. See WGW Utility Standards detail for required Bollard installation. [Security cage](#) and lock or hood may be necessary when subject to vandalism. Bollard Standard details can be downloaded from Utilities Department web site.

**Utilities installation standards**

- A double check valve is permitted to be installed in a sub grade vault, see Utilities standard WD-18-B.
- A reduced pressure principle must be installed above ground. See attached Vault Installation standard detail.
- Backflow preventer shall be supported/secured per CPA Utility installation standards.



- For further assistance regarding the installation of the Backflow preventer contact one of the following Building Inspectors (Phone hours 7:30-8:00 a.m.):
  - John Carr      Phone: 650-963-6400      Email: [john.carr@cityofpaloalto.org](mailto:john.carr@cityofpaloalto.org)