CITY OF SAN ANTONIO — TEXAS —

DEVELOPMENT SERVICES

TO: Development Services Customers

SUBJECT: **INFORMATION BULLETIN 161**
Backflow Prevention Assembly Installations

DATE: May 7, 2009/*Revised March 1, 2012/August 1, 2014/Nov.*12, 2024

CREATED BY: Field Services Division

Purpose:

As a customer service initiative, the Development Services Department (DSD) created this **revised** bulletin to update Information Bulletin (IB) 161 on backflow prevention assembly installations. This IB has been developed to assist Contractors installing backflow prevention assemblies, in accordance with the *Plumbing Code* and as amended by the City of San Antonio. These installation standards are requirements within the City of San Antonio and within the Extra Territorial Jurisdiction of the City of San Antonio and may be updated periodically. . This bulletin has been updated to incorporate the department's new format for Information Bulletins.

Scope:

GENERAL INSTRUCTIONS

1. Assemblies shall be installed in an accessible location to facilitate maintenance, testing and repair and above floor/grade assemblies shall be provided with ready access/readily accessible. The backflow preventer must be installed at the equipment unless otherwise approved. In no instance will the assembly be allowed in the same vault with the San Antonio Water System (SAWS) water meter.

2. Vault lids will be constructed in such a manner as to permit easy accessibility at all times by an individual. Vaults deeper than 5 feet shall be provided with a ladder permanently attached to a side wall. It is the contractors and owner's obligation and responsibility to ensure OSHA regulations are adhered to in the construction of all vaults. Additionally, confined space regulations are to be consulted and followed in the testing and maintenance of backflow prevention assemblies.

3. Before installing the assembly, pipelines are to be thoroughly flushed to remove foreign material.

4. Test cocks must never be used as supply connections and must be plugged. Plugs must be non-ferrous, e.g., brass, plastic, etc. Backflow assembly testing shall be performed in accordance with the University of Southern California. Future testing and repair on backflow prevention assemblies require proper clearances to be provided regardless of the test cocks locations except for assemblies that are repairable from the top, have test cocks on top of the assembly and not installed in concrete or asphalt.

5. All hot water heating systems should be evaluated before the backflow prevention assembly is installed to ensure that the temperature and pressure relief valves have been properly installed and are in working condition and the hot water system thermal expansion shall be addressed. Future backflow prevention assembly test should also include the testing of pressure relief valves.

6. In order to ensure that backflow prevention assemblies continue to operate satisfactorily, it will be necessary that they be tested at the time of installation and on an annual basis thereafter. Such test will be conducted in accordance with performance standards and field test procedures as prescribed by the University of Southern California. The appropriate "test and maintenance" report forms are available on the DSD plumbing related documents web site.

7. All cost entailed in the subject program are to be borne by the customer. This includes the initial purchase of the backflow preventer, its proper installation, testing and maintenance. Both containment and internal isolation backflow preventers must be tested and maintained in good working condition.

INSTALLATION OF REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTERS

Reduce pressure principle backflow preventers shall be installed above ground. (See Figure A below) The unit should be placed at least 12 inches (12") plus diameter of pipe above the finish grade to allow clearance for repair work. Proper drainage should be provided for the relief valve and may be piped away from the location, provided it is readily visible from above grade and the relief valve is separated from the drain line by a minimum of double the diameter of the supply line. A modified vault installation may be used if constructed with ample side clearances. (See Figure B below) Freezing can be a problem in this area and precautions should be taken to protect above ground installations. (See General Instructions, page 1).

ABOVE GROUND INSTALLATION

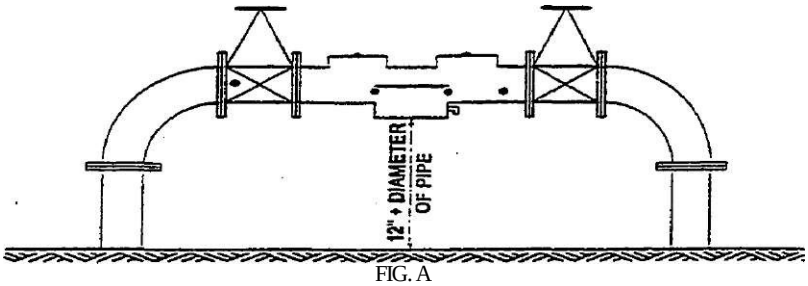


FIG. A

MODIFIED VAULT INSTALLATION

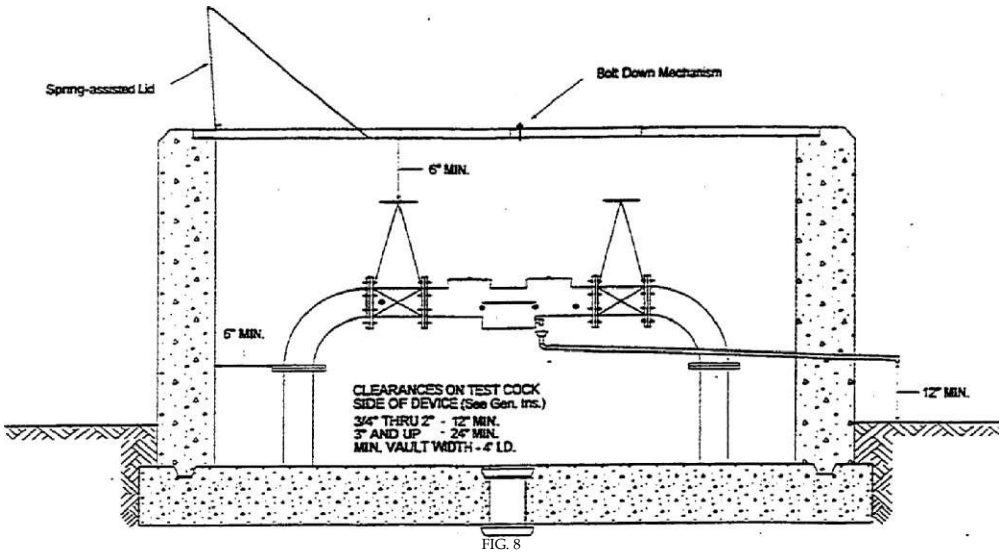


FIG. 8

BELOW GRADE VAULT INSTALLATION OF DOUBLE CHECK VALVE ASSEMBLY

Though double check valve assemblies can be installed above ground, these backflow preventers are also readily adaptable for vault installations. Special notice should be given to the side clearances for accessibility to properly test and repair the assembly. Test cocks must be plugged. Plugs must be non-ferrous, e.g., brass, plastic, etc.

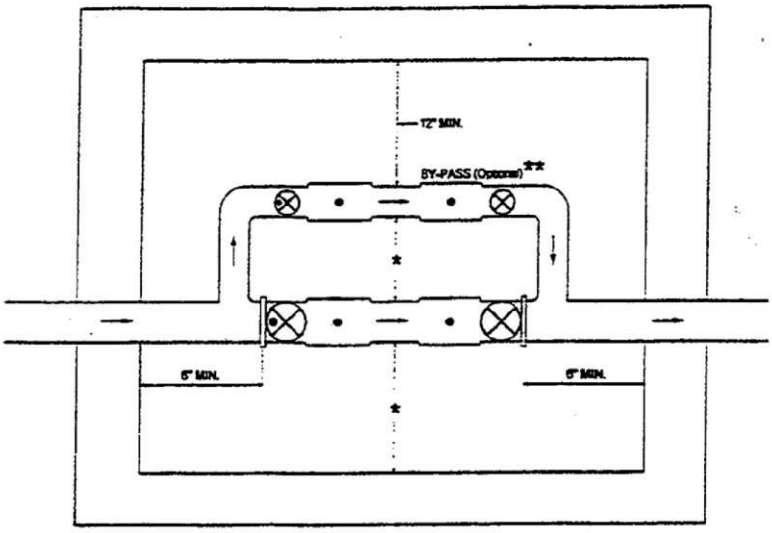
1. **General - Double Check Valve Assemblies - All Sizes**

Double check valve assembly backflow preventers, unlike reduced pressure principle assemblies, are designed and readily adaptable for below grade installations, provided they are installed in a vault which is well drained and of solid construction. Vaults within traffic areas should be constructed accordingly. Assemblies must be installed horizontally and in an upright position.

2. **Double Check Valve Assemblies Sizes 1/2" through 2"**

Backflow preventers of sizes two inches and less should not be installed more than 12" below grade for accessibility during testing and repair. To accommodate the installation of most double check valve assemblies up to and including two inch sizes, a vault constructed of concrete, steel, cast iron or other durable material conforming to the dimensions described below is acceptable provided a twelve inch (12") clearance is maintained on the test cock side of the assembly (see General Instructions No. 4), a four inch (4") clearance on the non-test cock side' and a four inch (4") clearance between the two gate valves and the ends of the vault. Exception: On 1" or smaller double check valve assemblies that are repairable from the top, have test cocks on the top of the assembly and not installed in cement or asphalt, the side clearance can be reduced to 4", see General Instructions No. 4. The floor of the vault shall be either of solid construction with a drain or bottomless to facilitate drainage. In order to facilitate repair of Y- pattern assemblies, a twelve inch (12") clearance must be provided below the assembly. Rigid construction must extend to the floor of the vault.

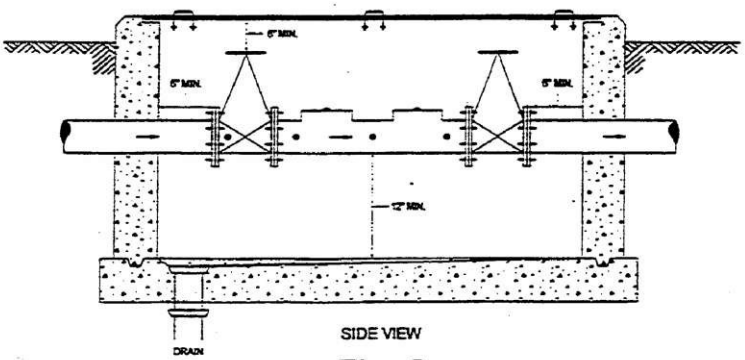
VAULT INSTALLATION



TOP VIEW

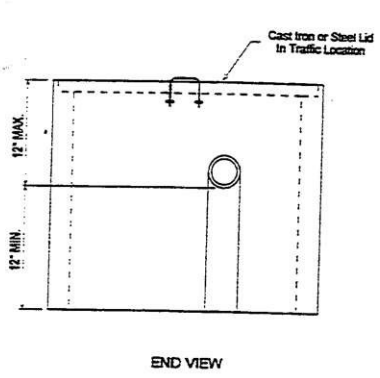
CLEARANCES ON TEST COCK SIDE OF DEVICE (See Gen. Ins.)
3/4" THRU 2" - 12" MIN. *
3" AND UP - 24" MIN.
MIN. VAULT WIDTH 3" AND UP - 4' I.D.

* SEE III A - 3/4" THRU 2"
** SEE V - BY-PASS POLICY

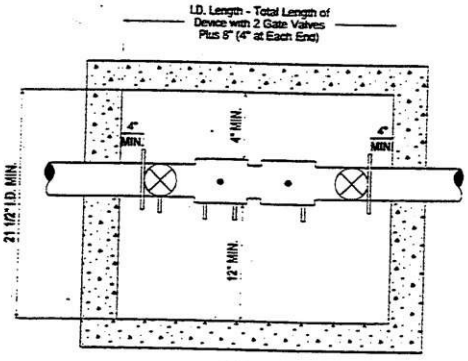


SIDE VIEW

Fig. C



END VIEW



TOP VIEW

INDOOR INSTALLATION - REDUCED PRESSURE AND DOUBLE CHECK VALVE ASSEMBLY BACKFLOW PREVENTERS

Where it is impractical to install the backflow preventer above ground, the installation may be made in an easily accessible/readily accessible location inside a building. The unit should be placed above the floor and away from the wall, at a distance great enough to allow clearance for repair work. If the backflow preventer is positioned against the wall, care should be taken that the test cocks are easily accessible for testing, and the assembly can be repaired. An air gap shall be used between the assembly relief valve outlet and the drain line discharge. The drain line should be of adequate size to carry the volume of water the relief valve is capable of discharging. The air gap should be no less than double the diameter of the discharge pipe. (See Figure D below and General Instructions, Page 1)

INDOOR INSTALLATION

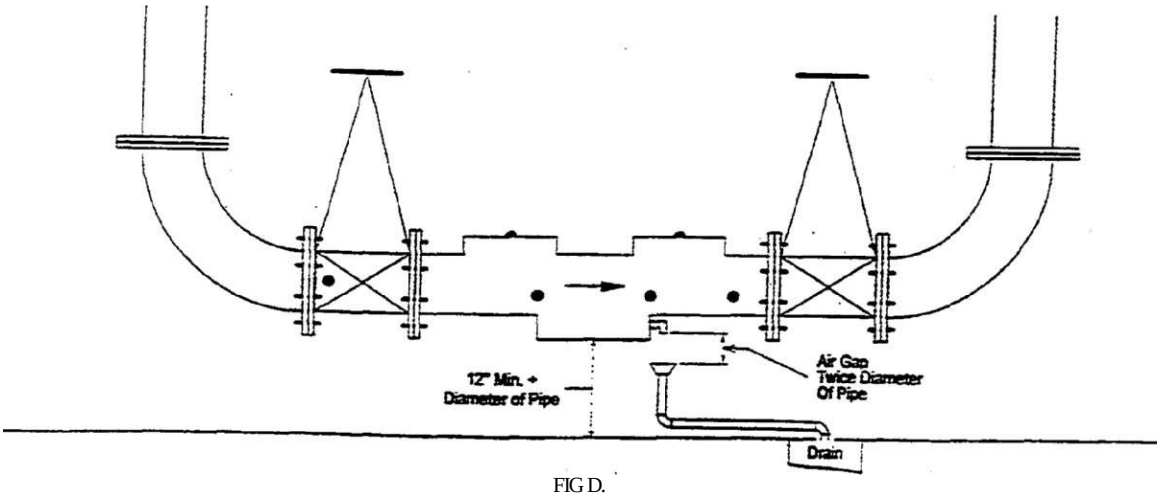


FIG D.

BY-PASS POLICY

Backflow prevention assemblies must be tested upon installation and on an annual basis thereafter. The testing procedure requires the water to be turned off. If continuous water service is a necessity, provisions should be made for a by-pass around the mainline backflow preventer. A by-pass installed around an approved backflow prevention assembly must be protected from backflow through this bypass, i.e., it also will include a backflow preventer of the same type as the main service line backflow preventer. Though it need not be of the same size, it must be installed in a similar fashion to the service line device.

AIR GAP SEPARARTION (A/G)

An air gap separation means the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture or other device and the flood level or overflow rim of the receptacle. An "approved air gap separation" shall be at least double the diameter of the supply pipe measured vertically above the overflow rim of the vessel and in no case shall the gap be less than 1". The piping

between the water meter and the air gap separation should be entirely visible to ensure that no connections or tees are made in that area. To eliminate possible entrance of vermin, screened protections over the entire (A/G) set up are encouraged. (See Figure E below and General Instructions, Page 1)

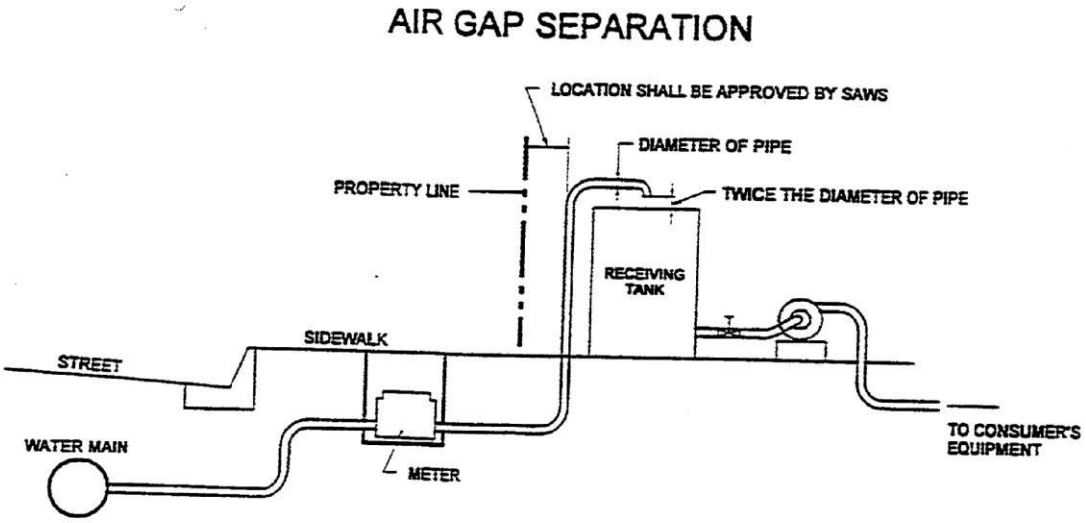
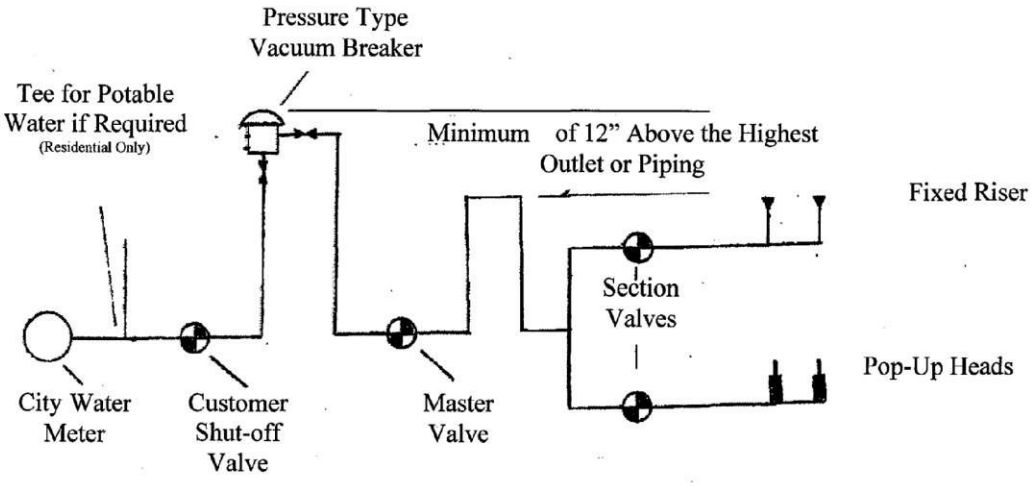


FIG E

LAWN SPRINKLER INSTALLATION USING A PRESSURE TYPE VACUUM BREAKER AS A BACKFLOW PREVENTER

Pressure type vacuum breakers may be installed without regards to down stream valve, making it possible to isolate an entire lawn sprinkler system with a single unit when properly located. This assembly must not be installed where it will be subject to backpressure and should be installed at least twelve inches (12") above the highest outlet. The pressure type vacuum breaker should be installed where it will be readily accessible for annual testing and where, if slight spillage should occur, it would not be objectionable. (See Figure F below and General Instructions, Page 1). If chemical/fertilizer additives are to be used, or an on site (OSSF) private sewage facility is installed, a reduce pressure principle assembly will be required.



(Residential Only)

Should you have any questions regarding this Information Bulletin, please contact the Plumbing Inspections Supervisor at (210) 207-8279.

Summary:

This Information Bulletin is for informational purposes only.

Prepared by:	Milton Morales, Plumbing Inspections Supervisor
Reviewed by:	Michael Constantino, Development Services
Authorized by:	Manager Michael Shannon, PE, CBO, Assistant Director