

SANITARY DRAINAGE

SECTION P3008 BACKWATER VALVES

P3008.1 Where required. Where the flood level rims of plumbing fixtures are below the elevation of the manhole cover of the next upstream manhole in the public sewer, the fixtures shall be protected by a backwater valve installed in the *building drain*, branch of the *building drain* or horizontal branch serving such fixtures.

- ❖ A backwater valve is required in areas where the public sewer might back up into the building through the sanitary drainage system [see Commentary Figure P3008.1(1)]. Where plumbing fixtures are located above the next upstream manhole cover from the building sewer connection to the public sewer, the sewer will back up through the street manhole before entering the building.

Public sewers might become blocked or overloaded, which will result in sewage backing up into the manholes and any laterals (taps) connected to the sewer system. The point of overflow for the public sewer will be the top of the manholes in the backed-up portion of the system.

Fixtures or drains located at an elevation below that of the tops of the manholes for the related portion of the sewer system are subject to backflow and must be protected by backwater valves [see Commentary Figure P3008.1(2)]. Plumbing fixtures that are not subject to backflow are not permitted to discharge through a backwater valve. In theory, limiting the fixtures that dis-

charge through a backwater valve will prevent waste from upstream fixtures from backing up through downstream fixtures because it cannot pass through the backwater valve when the public sewer is blocked or overloaded. Additionally, the valve will be protected from excess wear and potential failure resulting from debris and accumulations.

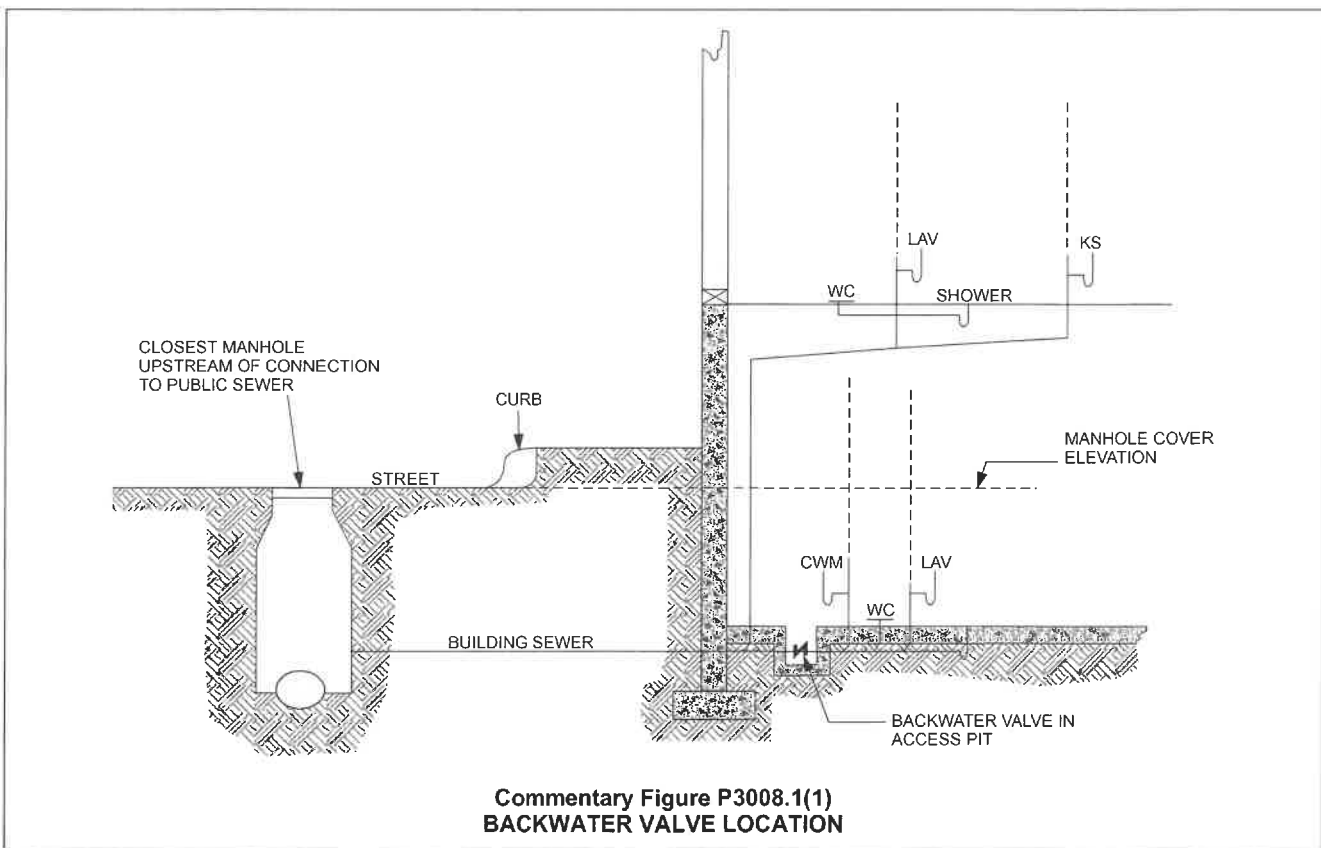
P3008.2 Allowable installations. Where plumbing fixtures are installed on a floor with a finished floor elevation above the elevation of the manhole cover of the next upstream manhole in the public sewer, and a backwater valve is installed in the *building drain* or horizontal branch serving such fixtures, the backwater valve shall be of the normally open type.

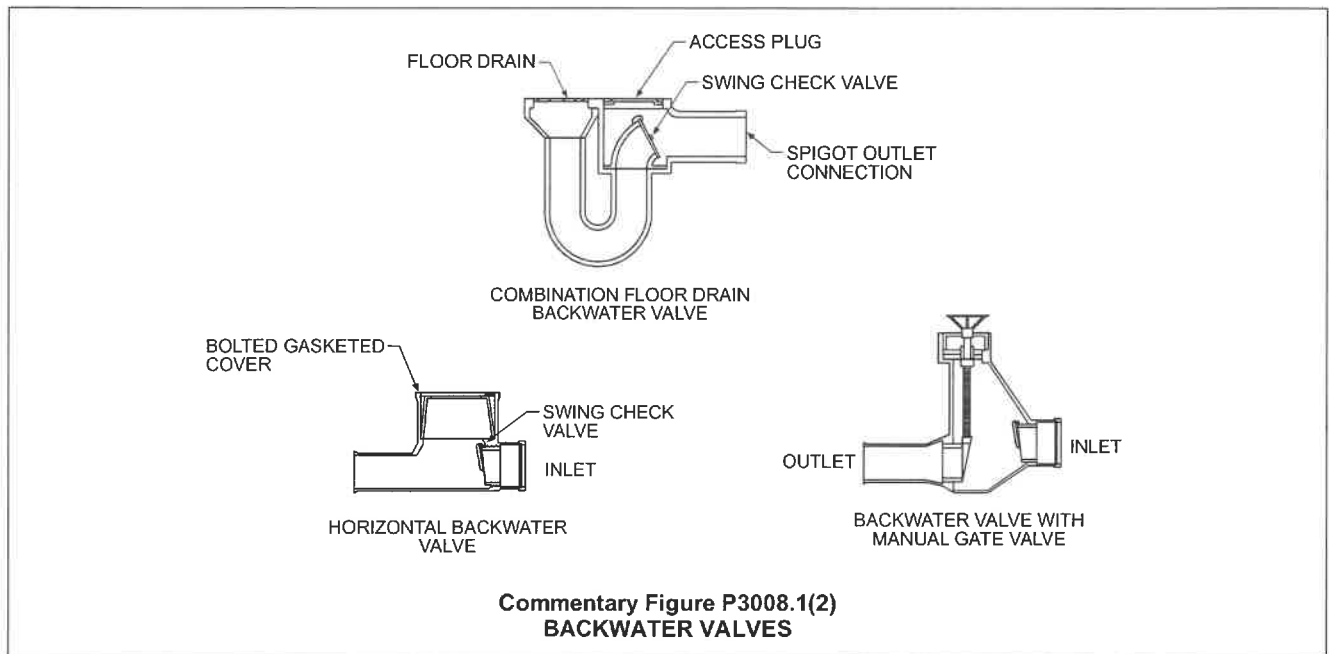
Exception: Normally closed backwater valve installations for existing buildings shall not be prohibited.

- ❖ Normally open type backwater valves can be used for some applications.

P3008.3 Material. Backwater valves shall comply with ASME A112.14.1, CSA B181.1 or CSA B181.2.

- ❖ This section requires that bearing parts of the backwater valve be made of corrosion-resistant materials so that the valve remains operable for its expected life, thus protecting the building it serves. This section also gives the industry standards to which the backwater valve must be manufactured. As required in Section P2608.4, these backwater valves are to be inspected and verified by an independent third-party quality-assurance facility.





P3008.4 Location. Backwater valves shall be installed so that access is provided to the working parts.

- ❖ Because a backwater valve has movable parts, there is a possibility of stoppage or malfunction. This section requires that backwater valves be located to be accessible to permit the necessary maintenance or repairs.

SECTION P3009

SUBSURFACE LANDSCAPE IRRIGATION SYSTEMS

P3009.1 Scope. The provisions of this section shall govern the materials, design, construction and installation of subsurface landscape irrigation systems connected to nonpotable water from on-site water reuse systems.

- ❖ The chapter provides specific details for designing and constructing subsurface irrigation systems.

P3009.2 Materials. Above-ground drain, waste and vent piping for subsurface landscape irrigation systems shall conform to one of the standards indicated in Table P3002.1(1). Subsurface landscape irrigation, underground building drainage and vent pipe shall conform to one of the standards indicated in Table P3002.1(2).

- ❖ Piping for above-ground landscape systems must comply with the standards in Table P3002.1(1). Piping for subsurface landscape systems must comply with the standards in Table P3002.1(2). The appropriate pipe fittings from Table P3002.3 must be used to make connections in the pipe

P3009.3 Tests. Drain, waste and vent piping for subsurface landscape irrigation systems shall be tested in accordance with Section P2503.

- ❖ Section P2503 covers testing of drainage and vent piping inside a building (including under the building). Note that air testing of piping is prohibited

P3009.4 Inspections. Subsurface landscape irrigation systems shall be inspected in accordance with Section R109.

- ❖ The inspection of systems must be performed prior to concealment to make sure that the system is installed according to the requirements of the code.

P3009.5 Disinfection. Disinfection shall not be required for on-site nonpotable reuse water for subsurface landscape irrigation systems.

- ❖ Water sent to a subsurface irrigation system is not required to be disinfected as there is not human contact with the water.

P3009.6 Coloring. On-site nonpotable reuse water used for subsurface landscape irrigation systems shall not be required to be dyed.

- ❖ Coloring of the water is not required because the water is not visible to humans.

P3009.7 Sizing. The system shall be sized in accordance with the sum of the output of all water sources connected to the subsurface irrigation system. Where graywater collection piping is connected to subsurface landscape irrigation systems, graywater output shall be calculated according to the gallons-per-day-per-occupant (liters per day per occupant) number based on the type of fixtures connected. The graywater discharge shall be calculated by the following equation:

$$C = A \times B \quad \text{(Equation 30-1)}$$

where:

A = Number of occupants;

Number of occupants shall be determined by the actual number of occupants, but not less than two occupants for one bedroom and one occupant for each additional bedroom.