

A backwater valve is required by IPC and UPC plumbing codes, as well as many state and local plumbing codes, when the cover of the nearest upstream manhole is above the flood rim of the lowest fixture in the building. The presence of a backwater valve can also be very important when a combination storm and sewer system is present as well as when sealed manhole covers are present in flood areas. A new exception specifically addresses a common problem encountered with installation of a backwater valve for an existing building. Existing buildings built before the code required backwater valves for fixtures on floor levels below the elevation of the next upstream manhole cover are at risk for sewage backflows caused by public sewer problems. In some cases, many years will pass without the public sewer creating a fixture overflow in an older building. As more building sewer connections are made to the public sewer, and as storm water infiltration increases as the public sewer ages, surcharging and clogs in the public sewer can develop. Usually, a building owner will experience only one sewage overflow in the building before he or she consults with a plumbing contractor to provide a solution to protect against these sometimes catastrophic events. However, installation of a backwater valve after a building is built presents the problem of how to separate the drainage flow from fixtures on floors below the next upstream manhole cover from the fixtures on floors above the next upstream manhole cover. The drainage piping within the building is so integral to the construction of the building that separation of the drainage flows for installation of backwater valve in accordance with the code is often impossible. This exception allows, for existing buildings only, installation of a backwater valve for all fixtures in a building, even if those fixtures are on a floor above the next upstream manhole cover elevation. A building owner should have the ability to protect his or her property from public sewer surcharging that could cause an overflow in the building. Without a backwater valve installed in these situations, multiple overflow events and property damage could continue to occur unabated.

1.0 Introduction - 715.1 Exception For Backwater Valve Installations

1.1 Purpose: The purpose of this acceptance criteria is to establish requirements for backwater valves to be recognized in an ICC Evaluation Service, Inc. (ICC-ES), evaluation report under the 2003 *International Plumbing Code*® (IPC), the 2003 *International Residential Code*™ (IRC), and the 2003 *Uniform Plumbing Code* (UPC). Bases of recognition are IPC Section 715, IRC Section P3008, and UPC Section 710.1.

1.2 Scope: Backwater valves are installed in the building drain or sewer pipe to prevent backflow of sewage in buildings where the flood-level rim of a plumbing fixture is below the elevation of the manhole cover of the next upstream manhole in the public sewer.

1.3 Reference Standards:

1.3.1 2003 *International Plumbing Code*® (IPC), International Code Council.

1.3.2 2003 *International Residential Code*® (IRC), International Code Council.

1.3.3 2003 *Uniform Plumbing Code* (UPC), International Association of Plumbing and Mechanical Officials.

1.3.4 ASME A112.14.1-1975 (R1998), Backwater Valves, American Society of Mechanical Engineers.

1.3.5 CSA B181.1-99 ABS, Drain, Waste, and Vent Pipe and Pipe Fittings, Canadian Standards Association.

1.3.6 CSA B181.2-99, PVC Drain, Waste, and Vent Pipe and Pipe Fittings, Canadian Standards Association.

1.3.7 NSF 14-1999, Plastic Piping System Components and Related Materials, National Sanitation Foundation.

1.4 Definitions: Definitions shall be in accordance with the referenced standard, except as noted below:

1.4.1 Access Sleeve: Pipe opening through which access is gained to the disc or valve seat.

1.4.2 Collar, Insert Pipe, and Disc Assembly:

Designed to fit inside the access sleeve, this removable assembly consists of a length of insert pipe permanently attached to the access collar (on top) and a disc assembly (on the bottom). When removed vertically from the access sleeve, the attached disc assembly is also removed, allowing above-grade repair.

2.0 BASIC INFORMATION

2.1 General: The following information shall be submitted:

2.1.1 Product Description: Complete information concerning material specifications, thickness, size and the manufacturing process.

2.1.2 Installation Instructions: Installation details and limitations, pipe connection details.

2.1.3 Packaging and Identification: A description of the method of packaging and field identification of the valve must be provided. Identification provisions must include the evaluation report number, and the name or logo of the inspection agency.

2.1.4 Maintenance: A copy of the recommended maintenance instructions that include methods and recommended intervals shall be provided.

2.2 Testing Laboratories: Testing laboratories shall comply with Section 4.2 of the ICC-ES Rules of Procedure for Evaluation Reports.

2.3 Test Reports: Test reports shall comply with the ICCES Acceptance Criteria for Test Reports (AC85).

2.4 Product Sampling: Products shall be sampled in accordance with Section 3.0 of AC85.

3.0 DATA, TEST AND PERFORMANCE REQUIREMENTS

3.1 All bearing portions of backwater valves shall be of corrosion-resistant material.

3.2 Backwater valves shall comply with one of the following standards.

3.2.1 ASME A112.14.1. **3.2.2** CSA B181.1. **3.2.3** CSA B181.2.

Exceptions:

1. When valves otherwise conforming with CSA B181.2 are provided with access sleeves in excess of 24 inches and accommodating a removable collar, insert pipe, and disc assembly, said valve shall also conform to Sections 5.2 and 5.3 of this criteria.

2. Plastic valve bodies may be of any color plastic.

3.3 Backwater valves shall be so constructed as to provide a mechanical seal against backflow.

3.4 Backwater valves, when fully opened, shall have a capacity not less than that of the pipes in which they are installed.

3.5 Backwater valves shall be installed so that access is provided to the working parts for service and repair.

3.6 Materials used in the valve shall comply with NSF 14.

4.0 QUALITY CONTROL

4.1 The products shall be manufactured under an approved quality control program with inspections by an inspection agency accredited by the International Accreditation Service, Inc. (IAS), or as otherwise acceptable to ICC-ES.

4.2 A quality control manual complying with the ICC-ES Acceptance Criteria for Quality Control Manuals (AC10) shall be submitted.

5.0 EVALUATION REPORT RECOGNITION

5.1 The report shall require the installed valve to be tested for leakage in accordance with IPC Section 312 or UPC Section 712 or 723, as applicable.

5.2 When valves otherwise conforming with CSA B 181.2 have access sleeves up to 12 feet long and are equipped with removable collar, insert pipe, and disc assemblies, the tests described in Sections 5.2.1 and 5.2.2 shall be successfully completed.

5.2.1 The seat cleaning test shall be performed in accordance with Sections 5.2.1.1 through 5.2.1.2, with the maximum length of access sleeve. The inner access sleeve and disc assembly shall be removed for this test.

5.2.1.1 The valve seat shall be covered with a mixture of cooking lard and 25% by weight mortar sand to a minimum depth of 0.25 inch (6.35 mm).

5.2.1.2 The mixture shall be dislodged by using a hose or pipe with water pressure of maximum 30 psi and a minimum nozzle opening diameter of 1/4 inch (6.35 mm), for a maximum duration of 3 minutes through the maximum sleeve length.

5.2.2 Pressure Test: The valve tested as noted in Section 5.2.1, with no additional cleaning of the disc seat, and with the inner access sleeve and disc assembly installed, shall then successfully complete the following leakage test: The valve shall be oriented in its normal operating position. Over a 1-minute period, water pressure shall be gradually increased to 4.5 psi on the exit side of the valve and maintained for a test period of 10 minutes. During the test period, any water that is emitted from the entrance side of the fitting shall be collected, measured, and recorded. Emitted water shall not exceed 21.5 fluid ounces for a valve with a nominal size of 3 inches; or 38.5 fluid ounces for a valve with a nominal size of 4 inches.

5.3 The removable collar, insert pipe, and disc assemblies shall satisfy Sections 5.3.1 through 5.3.3, as follows:

5.3.1 The valve shall have an integral lifting device consisting of the removable collar insert pipe and disc assembly equipped with an indicator located not more than 12 inches from the access opening, indicating that the seal element is aligned properly.

5.3.2 The valve shall be designed such that the removable collar insert pipe and disc assembly is self-aligning and self-seating.

5.3.3 The valve shall have no seating surface other than the moving seal element below the top of the inlet pipe of the valve.

5.4 The evaluation report shall require that a copy of the maintenance instructions be left with the property owner.