

# UTILITIES - SERVICES

## Chapter 649 BACKFLOW - PREVENTION

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### Article 1 INTERPRETATION

#### **649.1.1 ASSE - defined**

“ASSE” means the American Society of Sanitary Engineering.

#### **649.1.2 AWWA - defined**

“AWWA” means the American Water Works Association.

#### **649.1.3 Authorized Functions List - defined**

“Authorized Functions List” means the list of functions and the persons authorized to carry out such functions as set out as Appendix ‘A’ of this Chapter.

#### **649.1.4 Backflow - defined**

“backflow” means the flowing back of or reversal of the normal direction of flow of water.

#### **649.1.5 Backflow prevention device - defined**

“backflow prevention device” means a device that prevents backflow.

#### **649.1.6 Building - defined**

“building” shall have the same meaning as set out in the *Building Code Act, 1992*, as amended.

#### **649.1.7 City - defined**

“City” means The Corporation of the City of Brantford.

#### **649.1.8 Compliance schedule - defined**

“compliance schedule” means the schedule by which property owners will be required to submit cross-connection surveys for their property, or install appropriate backflow prevention devices.

**649.1.9 Cross-connection - defined**

“cross-connection” means any actual or potential connection between the City’s potable water supply and any source of pollution or contamination and includes any by-pass, jumper connection, removable section of pipe, auxiliary water supply, swivel or changeover device and any other temporary or permanent connecting arrangement through which backflow may occur.

**649.1.10 Cross-connection survey form - defined**

“cross-connection survey form” means the form set out as Appendix ‘C’ of this Chapter.

**649.1.11 CSA Standard - defined**

“CSA Standard” means the document entitled National Standard of Canada -CAN/CSA-B64.10-94 & Amendments - Manual for the Selection, Installation, Maintenance, and Field Testing of Backflow Prevention Devices - Plumbing Products and Materials - A National Standard of Canada published in 1994 by the Canadian Standards Association, as amended.

**649.1.12 General Manager - defined**

“General Manager” means the General Manager, Engineering and Operational Services or designate.

**649.1.13 Hazard - defined**

“hazard” means degree of danger posed to health by a cross-connection. Hazards shall be divided into the following three categories, as per section 4.2 of the CSA Standard:

- (a) minor hazard – any cross-connection or potential cross-connection that constitutes only a nuisance, with no possibility of any health hazard;
- (b) moderate hazard – any minor hazard as defined in item (a) that has a low probability of becoming a severe hazard;
- (c) high or severe hazard – any cross-connection or potential cross-connection involving any substance that could be a danger to health.

**649.1.14 Owner - defined**

“owner” means any person, firm or corporation having control over property to which this Chapter applies and includes the owner registered on the title of the property or any occupant of any building or structure located on such property.

**649.1.15 Potable water - defined**

“potable water” means water that is safe for human consumption.

**649.1.16 Premise isolation - defined**

“premise isolation” means isolation of the water located within a property from the City’s water supply.

**649.1.17 Selection guide - defined**

“selection guide” means the Backflow Prevention Device Selection Guide set out in Table B1 of Appendix ‘B’ of the CSA Standard.

**649.1.18 Structure - defined**

“structure” means anything constructed or built permanently or temporarily which is provided with a source of City’s potable water.

**649.1.19 Survey - defined**

“survey” means a cross-connection survey which is a complete review of a water system that receives potable water from the City or systems located within a property to determine if any cross-connection exists.

**649.1.20 Tester - defined**

“tester” means a person who meets the requirements provided under section 6.1.5.1 of the CSA Standard and is recognized by the City as per the Authorized Functions List in Appendix ‘A’.

**649.1.21 Test report - defined**

“test report” means a report in the form set out as Appendix ‘D’ of this Chapter.

**649.1.22 Water meter - defined**

“water meter” means the water meter installed within a premises to record the amount of water supplied to such premises by the City.

**Article 2****APPLICATION OF CHAPTER****649.2.1 All properties - exception - single - residential**

This Chapter applies to all existing industrial, commercial, institutional and multi-residential properties located within the City that receive it’s potable water except properties of residential buildings with 3 storeys or less in building height and single family dwellings.

**649.2.2 Exception - hazardous - detrimental situation**

In addition to and notwithstanding Section 649.2.1, this Chapter applies where a condition exists in any building that is determined by the General Manager to be hazardous or detrimental to the potable water supply.

**649.2.3 Owner - property - responsibility**

Every owner of property to which this Chapter applies shall ensure that a backflow prevention device is installed in respect of premise isolation where a City's potable water supply exists.

**Article 3****PERSONS PERMITTED TO CARRY OUT WORK****649.3.1 Listed - Authorized Functions List - Appendix 'A'**

Only the persons listed in the Authorized Functions List, Appendix 'A', shall carry out the corresponding functions set out in such list.

**Article 4****CROSS-CONNECTION SURVEYS AND SELECTION OF BACKFLOW PREVENTION DEVICES****649.4.1 Owner - responsible for initial survey**

Every owner of a property of a type set out in Article 2, shall, carry out an initial survey of each of his or her properties with respect to all existing cross-connections and all existing and required backflow prevention devices as per the Compliance Schedule as set out in Appendix 'B'.

**649.4.2 Survey - permitted person - submitted - within 14 days**

Every owner shall ensure that the survey required in Section 649.4.1 is carried out by a person permitted to do so pursuant to the Authorized Functions List, Appendix 'A' and that the survey is provided to the City within fourteen days of the survey being completed.

**649.4.3 Owner to ensure device - testable - proper**

Every owner shall ensure that every backflow prevention device required for premise isolation on its property is a testable device and is the proper device to be used pursuant to Article 6 of this Chapter.

**649.4.4 Devices - as approved only - information requirement**

Backflow prevention devices for premise isolation shall be determined using the Selection Guide in CAN/CSA-B64.10-94, as amended. If the type of cross connection is not identified in the Selection Guide, it shall be determined by a Professional Engineer using the CSA Standard. The Professional Engineer must provide the rationale for selection of the device and provide this information on Appendix 'C', Cross-Connection Survey Form.

**649.4.5 Cross connection - type not specified**

Despite Article 6, when the type of cross-connection is not identified in the Selection Guide, the City may require that a particular backflow prevention device be used in respect of any cross-connection.

**649.4.6 Cross connection - reviewed by surveyor**

Despite Article 6 where the manufacturer of equipment has installed a source backflow prevention device, the cross-connection is required to be reviewed by the surveyor listed in Appendix 'A' to determine if the backflow prevention device meets the requirements of the Selection Guide. Cross connections of this type are required to be included on the Cross Connection Survey described in Appendix 'C' .

**649.4.7 Dual check valve - use - prohibited**

Despite section 4.3.4.2(a) of the CSA Standard, a dual check valve device shall not be used for premise isolation.

**649.4.8 Process - operational change - survey - required**

When the owner of a property of a type set out in Article 2 makes any process or operational changes that may increase the hazard level, he or she shall perform a survey within thirty days of completion of the changes and that the survey shall be provided to the City within fourteen days of the survey being completed.

**649.4.9 Survey - follow-up - every five years - conditions**

On the fifth year of the anniversary of the initial survey, and every five years thereafter, a follow-up survey must be performed and submitted to the City within fourteen days of completion. If no operational or process changes were made within the previous five-year period of time, the owner may indicate this on the Survey Form and forego the requirement to perform a new survey.

**649.4.10 Reduced pressure backflow device - use - conditions**

The owner will be exempted from the requirement to perform a survey if premises are isolated with an existing reduced pressure principle assembly (RP) backflow prevention device or if the owner chooses to install one. The owner shall either provide proof of an existing RP or notify the City of his or her intention to install an RP before the initial survey completion date. If the owner chooses to install an RP, the deadline to install shall be January 31, 2009.

**Article 5****INSTALLATION OF BACKFLOW PREVENTION DEVICES****649.5.1 Installation - maintenance - as per CSA standards**

Except as otherwise set out in this Chapter, the installation, maintenance and field-testing of backflow prevention devices shall be in accordance with the CSA Standard.

**649.5.2 Installation - requirements**

Every person installing a backflow prevention device shall ensure that:



- (a) such device is installed in accordance with acceptable engineering practices and the requirements of the Ontario Building Code, Ontario Regulation 350/06, as amended, this Chapter, the Installation Guide and the CSA Standard;
- (b) such device is installed in a building or structure;
- (c) such device is located in such a manner so that in the event of a backflow condition the device prevents contamination of the City's water supply;
- (d) where such device is installed in respect of premise isolation, such device is located not more than 3.0 metres (9.84 feet) downstream of the water meter, except where circumstances require the device to be installed upstream of the water meter and such location is authorized by the General Manager;
- (e) where such device is installed in respect of premise isolation, no connection shall be made between the property line and the backflow prevention device, unless authorized by the General Manager (all piping between the property line and such device is clearly labelled "No Connection Permitted").

**649.5.3 Device - operational - at all times - owner responsibility**

Every owner of property upon which a backflow prevention device is installed shall ensure that such device is in proper working order at all times.

**649.5.4 Device installation - building permit - required**

A building permit shall be required pursuant to the *Building Code Act, 1992*, as amended to install a backflow prevention device. The owner or agent of the owner is responsible for acquiring all applicable permits.

**649.5.5 Installation - deadlines - set out**

Installation of an appropriate backflow prevention device shall occur prior to the date set out below for the corresponding degree of hazard:

<b>Degree of Hazard According To Selection Guide</b>	<b>Compliance Schedule</b>
Severe	January 31, 2009
Moderate	June 30, 2009
Minor	December 31, 2009

## **Article 6 TESTING OF DEVICES**

### **649.6.1 Owner - responsibility - testing - reporting - repair**

Every owner who has a backflow prevention device located on his or her property shall ensure that:

- (a) such device is tested by a tester when it is first installed and annually thereafter or when requested by the City and also when it is cleaned, repaired, replaced, overhauled or relocated;
- (b) when such device is tested, a Test Report, as attached as Appendix 'D', is to be provided to the City within fourteen days of the test being conducted;
- (c) in the event that such device is malfunctioning or otherwise not in proper working order, the device shall be immediately repaired or replaced; and
- (d) all existing backflow prevention devices shall be tested by no later than June 30th, 2008.

### **649.6.2 Testing - requirements**

Every person who tests a backflow prevention device shall carry out such testing in accordance with this Chapter and the CSA Standard.

### **649.6.3 Testing - additional methods**

In addition to the testing methods set out in section 6 of the CSA Standard, test procedures established by the ASSE or AWWA for testing backflow prevention devices may be employed.

### **649.6.4 Test report prepared - after each testing**

Despite section 6.3.1 of the CSA Standard, every person who tests a backflow prevention device shall prepare a test report.

### **649.6.5 Testing - tag affixed - owner notified if defective**

Every person who tests a backflow prevention device shall:

- (a) upon completing such test, complete and affix a "Test Tag", to the device or immediately adjacent to the device on the piping connected thereto; and
- (b) upon finding that such device is malfunctioning or otherwise not in proper working order, immediately notify the owner or agent of the owner of the premises and the City of such condition.

**Article 7**  
**GENERAL PROVISIONS**

**649.7.1 Inspection - by City - at any reasonable time**

The City may at any reasonable time enter onto the property of any owner to inspect the potable water system for compliance with this Chapter.

**649.7.2 Non-compliance order - water shut off - owner expense**

Where the City finds that a condition exists on any property that may allow contamination of the City's water supply, including any residential building, the City may:

- (a) order the owner to eliminate the condition and in doing so may prescribe the time period for compliance with such Order; or
- (b) shut off the water supply to the property or any portion thereof until the condition is eliminated;
- (c) have such work done at the owner's expense and may recover the costs by adding the costs to the tax roll and collect them in the same manner as taxes if in default of compliance with such Order.

**649.7.3 City - may order tests - reports - other**

In addition to any other provision of this Chapter, the City may at any time order an owner to conduct tests, provide reports and undertake any other measures required for the prevention of backflow or protection against a cross-connection.

**649.7.4 Time frame specified - extension - compliance program**

Where a time frame is set out in this Chapter for carrying out any action, the General Manager may extend the time for compliance beyond the established time frame and the owner may be required to enter into a compliance program through a separate agreement.

**649.7.5 Variance - compliance - General Manager approved**

A variance from complying with any condition of this Chapter may be approved by the General Manager if reasonable justification is provided.

**649.7.6 Appendices - set out**

Appendices 'A' through 'D' inclusive and the CSA Standard shall form part of this Chapter.

## **Article 8 GENERAL PROHIBITIONS**

### **649.8.1 Connection - allowing contamination - prohibited**

No person or owner shall connect, cause to be connected, or allow to remain connected to the City's potable water supply, any other potable water system or any piping, fixture, fitting, container, appliance, vehicle, machine or the like in a manner which may under any circumstance allow water, waste water or any other liquid, chemical or substance to enter such supply or system.

### **649.8.2 Backflow device - removal - prohibited - exception**

No person or owner shall remove a backflow prevention device after it has been installed and no owner of a property in which a backflow prevention device is installed shall cause or permit the removal of such device, unless such removal is:

- (a) to facilitate the repair of the device and such device is replaced immediately after such repair is carried out; or
- (b) to replace the device with another device that meets or exceeds the provisions of this Chapter.

### **649.8.3 Device - removal for repair - temporary restriction**

While any device is being repaired or replaced, no bypass or temporary water supply line shall be used unless it is equipped with a backflow prevention device of the same level of protection as the existing device.

## **Article 9 ENFORCEMENT**

### **649.9.1 Fine - for contravention**

Every person who contravenes any provision of this Chapter is guilty of an offence and upon conviction is liable to pay a penalty recoverable under the provisions of the *Provincial Offences Act*.

## **Article 10 ENACTMENT**

### **649.10.1 Effective date**

This Chapter shall come into full force and effect from and after the date of passing thereof. By-law 75-2007, 7 May, 2007.

# BACKFLOW - PREVENTION

## APPENDIX

### Appendix ‘A’ - Authorized Functions List

Item	Function	<sup>1</sup> Professional Engineer with Tester's Licence	<sup>2</sup> Certified Engineering Technologist with Tester's Licence	Licensed Master Plumber with Contractor and Tester's Licence	<sup>3</sup> Journeyman Plumber with Tester's Licence	<sup>4</sup> Apprentice Plumber with Tester's Licence
1	Perform Cross-Connection Survey	X	X	X	X	
2	5 Install, Repair, Relocate or Replace Backflow Prevention Device			X	X	X
3	Test Backflow Prevention Device	Anyone with a Tester's Licence as per CAN/CSA-B64.10-94, as amended, is permitted.				

- 1 An in-house Professional Engineer in a related field may perform survey at their own facility without a tester's licence.
- 2 Required to be under the direction of a Professional Engineer.
- 3 Required to be employed by a licensed Plumbing Contractor.
- 4 Required to be employed by a licensed Plumbing Contractor and under the direct supervision of a Journeyman Plumber or Master Plumber.
- 5 In-house maintenance staff are permitted to do repairs, if they have a tester's licence.

By-law 75-2007, 7 May, 2007; Appendix ‘A’.

# BACKFLOW - PREVENTION

## Appendix 'B' - Compliance Schedule

Compliance Schedule for Completion of the  
Cross-Connection Survey

<b>Meter Size</b>	<b>Due Date</b>
4", 3", 2", 1 ½"	January 31, 2008
1"	March 31, 2008
¾"	June 30, 2008
5/8"	September 30, 2008

By-law 75-2007, 7 May, 2007; Appendix 'B'.

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**Cross Connection Survey - APPENDIX C**

Date of Audit: \_\_\_/\_\_\_/20\_\_\_

- Plumbing System
- Fire System
- Irrigation System

Building Department  
 City Hall, 100 Wellington Square,  
 Brantford, Ontario, N3T 5K7  
 Phone: 519-759-4150  
 Fax: 519-752-1874



Facility Name: \_\_\_\_\_ Address: \_\_\_\_\_ Hazard Level: Low \_\_\_\_\_ Moderate \_\_\_\_\_ Severe \_\_\_\_\_  
 Property/Business Owner: \_\_\_\_\_ Phone # \_\_\_\_\_  
 Surveyor Name: \_\_\_\_\_ Phone # \_\_\_\_\_ Company: \_\_\_\_\_

	Location of Cross Connection Service what equip. etc.	Acceptable Protection Y/N?	Serial Number of Exist. Device	Required Upgrade from list of BFP devices below	Remarks
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

I, the undersigned, hereby declare that to the best of my knowledge, the information contained herein is complete and accurate.

Surveyor's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

5 Year Renewal? Yes \_\_\_\_\_ No \_\_\_\_\_ If No, complete the survey.  
 If yes, any process or operational changes made in the last 5 years? Yes \_\_\_\_\_ No \_\_\_\_\_  
 If yes, complete the survey. If no, Owner may forego completion of survey and sign below:  
 I, the undersigned, hereby declare that to the best of my knowledge, the information contained herein is complete and accurate.  
 Owner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

# BACKFLOW - PREVENTION



Building Department  
 City Hall, 100 Wellington Square,  
 Brantford, Ontario, N3T 5R7  
 Phone: 519-759-4150  
 Fax: 519-752-1874

## APPENDIX D Backflow Prevention Device Inspection and Testing Report

*To be completed clearly & submitted by fax or mail within 14 days of test to:  
 Building Department  
 City Hall, P.O. Box 818, Brantford, N3T 5R7*

**Facility Information**

Building Address: _____	Postal _____
Owner: _____	Phone _____
Owner's Address: _____	Postal _____
Occupant: _____	Phone _____
Contact Name: _____	Phone _____

**Tester Information**

Name: _____	Phone _____
Address: _____	Postal _____
Certificate Number: _____	Test Gauge Serial Number _____
Date Last Calibration: _____	

**Device Information**

**Date of Test** \_\_\_\_\_ / \_\_\_\_\_ / 20\_\_\_\_\_

Location (room/floor/serving equip/etc.) _____	
Type of Assembly <input type="checkbox"/> RPZ <input type="checkbox"/> DCVA <input type="checkbox"/> PVB	
Make _____	Line Pressure _____ PSI
Model _____	Size _____
Serial Number _____	Device Tagged? <input type="checkbox"/> Yes <input type="checkbox"/> No

**Test Information - Type of Test**    Initial    Annual    Re-test    Passed    Failed

<p><b>Reduced Pressure Principle Assembly</b></p> <p>Check Valve #1 <input type="checkbox"/> Leaked    <input type="checkbox"/> Closed Tight                  Press. Diff. #1 Check _____ psi</p> <p>Check Valve #2 <input type="checkbox"/> Leaked    <input type="checkbox"/> Closed Tight                  Press. Diff. #2 Check _____  </p> <p>Differential Press. Relief Valve  <input type="checkbox"/> Failed to Open  <input type="checkbox"/> Opened at _____ psi</p> <p>Shut off Valve #2  <input type="checkbox"/> Leaked    <input type="checkbox"/> Closed Tight</p>		
<p><b>Double Check Valve Assembly</b></p> <p>Check Valve #1 <input type="checkbox"/> Leaked    <input type="checkbox"/> Failed to Open  <input type="checkbox"/> Closed Tight    <input type="checkbox"/> Opened at _____ psi                  Press. Diff. #1 Check _____ psi</p> <p>Differential Press. Relief Valve  <input type="checkbox"/> Leaked    <input type="checkbox"/> Closed Tight                  Press. Diff. #2 Check _____  </p> <p>Shut off Valve #2  <input type="checkbox"/> Leaked    <input type="checkbox"/> Closed Tight</p>		
<p><b>Pressure Vacuum Breaker</b></p> <p>Air Inlet Valve  <input type="checkbox"/> Failed to Open  <input type="checkbox"/> Opened at _____ psi</p> <p>Check Valve  <input type="checkbox"/> Leaked    <input type="checkbox"/> Closed Tight</p> <p>Press. Diff. Across Check _____ psi</p>		
<p><b><i>If device fails tests for any reason please comment in space provided below</i></b></p>		


I certify that I have tested the above assembly in accordance to the City of Brantford Backflow Prevention Bylaw Number 649.  
 Tester's Signature \_\_\_\_\_ Date \_\_\_\_\_ / \_\_\_\_\_ / 20\_\_\_\_\_

**NOTE: Submit one report per device to City of Brantford Building Department within 14 days of test!**

Appendix C/D E, and A New 4b - Appendix D 4/11/2017