

UTILITY - SERVICES

Chapter 902 BACKFLOW AND CROSS CONNECTION PREVENTION

Article 1 SHORT TITLE

902.1.1 Citation

Article 2 INTERPRETATION

902.2.1 Applicable buildings - defined
902.2.2 ASSE - defined
902.2.3 AWWA - defined
902.2.4 Authorized functions list - defined
902.2.5 Auxiliary water supply - defined
902.2.6 Backflow - defined
902.2.7 Backflow prevention device - defined
902.2.8 Building - defined
902.2.9 Building Code - defined
902.2.10 City - defined
902.2.11 Cross connection - defined
902.2.12 CSA Standard - defined
902.2.13 Cross Connection Control Specialist - defined
902.2.14 High or severe hazard - defined
902.2.15 Kitchener Utilities - defined
902.2.16 Municipal hydrant - defined
902.2.17 NFPA 25 Standard - defined

BACKFLOW CROSS CONNECTION

- 902.2.18 Officer - defined
- 902.2.19 Owner - defined
- 902.2.20 Potable water - defined
- 902.2.21 Premise isolation - defined
- 902.2.22 Private hydrant - defined
- 902.2.23 Source isolation - defined
- 902.2.24 Structure - defined
- 902.2.25 Tester - defined
- 902.2.26 Test report - defined
- 902.2.27 Test tag - defined
- 902.2.28 Utilities Engineer - defined
- 902.2.29 Water meter - defined
- 902.2.30 Zone isolation - defined

Article 3

APPLICATION OF CHAPTER

- 902.3.1 Buildings applicable
- 902.3.2 Hazardous - detrimental condition - applicable
- 902.3.3 Cross connection - prohibited
- 902.3.4 Backflow prevention device - where required
- 902.3.5 Persons permitted to carry out work - list
- 902.3.6 Backflow prevention devices - to CSA standard
- 902.3.7 Conflict with CSA standard - Chapter to prevail

Article 4

SELECTION OF BACKFLOW PREVENTION DEVICES

- 902.4.1 Devices used - testable - proper
- 902.4.2 Devices - selection - standards
- 902.4.3 Dual check valve - use - prohibited

BACKFLOW CROSS CONNECTION

Article 5

INSTALLATION OF BACKFLOW PREVENTION DEVICES

- 902.5.1 Types of connections - properly labelled
- 902.5.2 Proper operation - at all times - owner responsibility

Article 6

TESTING OF DEVICES

- 902.6.1 Required - upon installation - repair - report to City
- 902.6.2 Testing - procedure - standards
- 902.6.3 Testing - other approved methods
- 902.6.4 Test report - required - all persons testing
- 902.6.5 Testing - report filed - annual - malfunction notice

Article 7

INSPECTIONS

- 902.7.1 Entry on property - any reasonable time
- 902.7.2 Non-compliance - notice - water shut off
- 902.7.3 Device installation - building permit required

Article 8

MUNICIPAL FIRE HYDRANTS

- 902.8.1 Use - other than employee duties - permission required
- 902.8.2 Unauthorized attachments - confiscated

Article 9

PRIVATE FIRE HYDRANTS

- 902.9.1 Maintained - inspected - services - owner responsibility
- 902.9.2 Use - restricted- as approved
- 902.9.3 Standards - colour
- 902.9.4 Unauthorized attachments - confiscated
- 902.9.5 Testing - by owner - annual - proof of - requirement

**Article 10
GENERAL PROVISIONS**

- 902.10.1 Tests - reports - order by CCCS
- 902.10.2 Time to comply - extension - conditions
- 902.10.3 Contravention - water shut off - other measures
- 902.10.4 Removal of backflow prevention devices - prohibited
- 902.10.5 Backflow prevention device permit and tag fees
- 902.10.6 Schedule - CSA Standard

**Article 11
ENFORCEMENT**

- 902.11.1 Fine - for contravention
- 902.11.2 Severability

SCHEDULE

Schedule ‘A’ - Authorized Functions List

**Article 1
SHORT TITLE**

902.1.1 Citation

This Chapter may be cited as the “Backflow Prevention By-law.” By-law 2002-135, 2 July, 2002.

**Article 2
INTERPRETATION**

902.2.1 Applicable buildings - defined

“applicable buildings” means existing industrial, commercial, institutional and multi-residential buildings and structures, except buildings of residential occupancies within the scope of Part 9 of the Building Code. By-law 2013-115, 30 September, 2013.

902.2.2 ASSE - defined

“ASSE” means the American Society of Sanitary Engineering.

902.2.3 AWWA - defined

“AWWA” means the American Water Works Association.

902.2.4 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 Schedule ‘A’.

902.2.5 Auxiliary water supply - defined

“auxiliary water supply” means any water source or system other than the City’s direct water supply that may be available in a building or on any property, including any recycled water or cistern.

902.2.6 Backflow - defined

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

902.2.7 Backflow prevention device - defined

“backflow prevention device” means a device that prevents backflow and includes, but is not limited to, a reduced pressure principle assembly, a dual check valve, a double check valve.

902.2.8 Building - defined

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

902.2.9 Building Code - defined

“Building Code” means Ontario Regulation 403/97, as amended, or any successor thereof.

902.2.10 City - defined

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

902.2.11 Cross connection - defined

“cross connection” means any actual or potential connection between a potable water supply or system and any source of pollution or contamination and includes any by-pass, jumper connection, removable section of pipe, swivel or changeover device and any other temporary or permanent connecting arrangement through which backflow may occur. By-law 2002-135, 2 July, 2002.

902.2.12 CSA Standard - defined

“CSA Standard” means the document entitled CAN/CSA-B64.10-11/CAN/CSA-B64.10.1-11 - Selection and Installation of Backflow Preventers Maintenance and Field Testing of Backflow Preventers and amendments published by the Canadian Standards Association, or any successor thereof.

902.2.13 Cross Connection Control Specialist - defined

“Cross Connection Control Specialist” means the Cross Connection Control Specialist of the City. By-law 2013-115, 30 September, 2013.

902.2.14 High or severe hazard - defined

“high or severe hazard” means any cross connection or potential cross connection involving any substance that could be a danger to health. Examples shall include hospitals, all establishments involving chemical usage, high hazard uses as defined by the Building Code and any use where protection is deemed required by the Cross Connection Control Specialist. By-law 2002-135, 2 July, 2002; By-law 2013-115, 30 September, 2013.

902.2.15 Kitchener Utilities - defined

“Kitchener Utilities” means the Kitchener Utilities Division of the City.

902.2.16 Municipal hydrant - defined

“municipal hydrant” means a fire hydrant that is installed on municipal property as part of a system of fire protection.

902.2.17 NFPA 25 Standard - defined

“NFPA 25 Standard” means the document entitled NFPA 25: Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems and amendments published by the National Fire Protection Association, or any successor thereof.

902.2.18 Officer - defined

“officer” means the Cross Connection Control Specialist, and any municipal law enforcement officer or by-law enforcement officer of the City. By-law 2013-115, 30 September, 2013.

902.2.19 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 and any occupant of any building or structure located on such property.

902.2.20 Potable water - defined

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

902.2.21 Premise isolation - defined

“premise isolation” means isolation of the water located within a building or structure from the City’s water supply. By-law 2002-135, 2 July, 2002.

902.2.22 Private hydrant - defined

“private hydrant” means a fire hydrant that is installed on property other than municipal property as part of a system of fire protection for that property. By-law 2013-115, 30 September, 2013.

902.2.23 Source isolation - defined

“source isolation” means isolation of the water located within or having flowed through a source or potential source of contamination within a building or structure, including, but not limited to, a device, machine or water system, from any potable water system.

902.2.24 Structure - defined

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

902.2.25 Tester - defined

“tester” means a person who is a certified backflow prevention device tester who has successfully completed a cross connection course in backflow prevention device testing at an accredited school or college as defined in the CAN/CSA B64.10-94 and is recognized by the City.

902.2.26 Test report - defined

“test report” means a report in the form as prescribed from time to time.

902.2.7 Test tag - defined

“test tag” means a tag in the form as prescribed from time to time. By-law 2002-135, 2 July 2002

902.2.28 Utilities Engineer - defined

“Utilities Engineer” means the Utilities Engineer of the City. By-law 2013-115, 30 September, 2013.

902.2.29 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.

902.2.30 Zone isolation - defined

“zone isolation” means the isolation of the water located within an area of a building or structure from any potable water system located within such building or structure. By-law 2002-135, 2 July 2002

Article 3**APPLICATION OF CHAPTER****902.3.1 Buildings applicable**

This Chapter applies to applicable buildings and to all lawn irrigation systems including systems appurtenant to residential occupancies under Part 9 of the Building Code. By-law 2013-115, 30 September, 2013.

902.3.2 Hazardous - detrimental condition - applicable

In addition to and notwithstanding Section 902.3.1, this Chapter applies where a condition exists in any new or existing building or structure that may be hazardous or detrimental to the potable water supply.

902.3.3 Cross connection - prohibited

No person or owner shall connect, cause to be connected or allow to remain connected to the City's water supply or any other potable water system 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 except in compliance with the provisions of this Chapter. By-law 2002-135, 2 July, 2002.

902.3.4 Backflow prevention device - where required

In addition to Section 902.3.3 and in accordance with all other provisions of this Chapter, every owner of a property to which this Chapter applies shall ensure that a backflow prevention device is installed in respect of premise isolation for all lawn irrigation systems and applicable buildings. By-law 2013-115, 30 September, 2013.

902.3.5 Persons permitted to carry out work - list

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

902.3.6 Backflow prevention devices - to CSA standard

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.

902.3.7 Conflict with CSA standard - Chapter to prevail

Wherever the CSA standard and this Chapter are in conflict the provisions of this Chapter shall prevail. By-law 2002-135, 2 July, 2002.

Article 4**SELECTION OF BACKFLOW PREVENTION DEVICES****902.4.1 Devices used - 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 the provisions of this Chapter.

902.4.2 Devices - selection - standards

Backflow prevention devices for premise, source or zone isolation shall be determined using the CSA Standard or, when the type of cross connection is not identified in the CSA Standard, shall be determined by the Cross Connection Control Specialist.

902.4.3 Dual check valve - use - prohibited

Despite any provision of the CSA Standard, a dual check valve device shall not be used for premise isolation. By-law 2013-115, 30 September, 2013.

Article 5**INSTALLATION OF BACKFLOW PREVENTION DEVICES****902.5.1 Types of connections - properly labelled**

Every person installing a backflow prevention device shall ensure that:

- (a) such device is installed in accordance with acceptable engineering practices and the requirement of the Building Code, 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 backflow the device prevents contamination of the City's water supply and any other potable water system;
- (d) where such device is installed in respect of premise isolation, such device is located within a maximum of 3.0 metres (98.4 feet) downstream of the water meter, except where circumstances require the device to be installed upstream of the water meter and such location is to the satisfaction of the City;
- (e) where such device is installed in respect of premise isolation, all piping between the water meter and such device is clearly labelled "no connection permitted";
- (f) where such device is installed in respect of source or zone isolation, all piping between the point of contamination and the point at which the device is located is labelled "non-potable water"; and
- (g) where such device is installed in a public pool as defined in the Building Code, all exposed water piping and chlorine piping within the water treatment service room shall be colour coded by means of:
 - (i) painting the entire outer surface of the piping, or
 - (ii) coloured bands at least 25 mm (1 in) in width that are spaced along the piping at intervals of not more than 1,200 mm (4 ft. 1 in.); and
 - (iii) colour coding referred to in (i) and (ii) shall be yellow for chlorine and green for potable water.

902.5.2 Proper operation - 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.

Article 6
TESTING OF DEVICES

902.6.1 Required - upon installation - repair - report to City

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

- (a) such device is tested by a tester when it is first installed and annually thereafter or earlier if requested by the City and also when it is cleaned, repaired, overhauled or relocated;
- (b) when such device is tested that a test report, of such test is provided to the City within fourteen days of the test being conducted; and
- (c) in the event that such device is malfunctioning or otherwise not in proper working order, the device is immediately repaired or replaced.

902.6.2 Testing - procedure - standards

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

902.6.3 Testing - other approved 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.

902.6.4 Test report - required - all persons testing

Despite section 6.3.1 of the CSA Standard, every person who tests a backflow prevention device shall prepare a test report. By-law 2002-135, 2 July, 2002.

902.6.5 Testing - report filed - annual - malfunction notice

Every person who tests a backflow prevention device shall:

- (a) within fourteen days of carrying out such test and at least once annually provide a legible test report to the Cross Connection Control Specialist in respect of such test; and
- (b) upon finding that such device is malfunctioning or is otherwise not in proper working order, immediately notify the owner of the premises and the Cross Connection Control Specialist of such condition."

Article 7 INSPECTIONS

902.7.1 Entry on property - any reasonable time

Any officer may enter on land at any reasonable time for the purpose of carrying out an inspection to determine whether or not this Chapter is being complied with. Entry to any place actually being used as a dwelling unit shall be subject to the requirements of the *Municipal Act, 2001*.

902.7.2 Non-compliance - notice - water shut off

Where the City finds that a condition exists on any property that may allow contamination of the City's water supply or the contamination of any other potable water system on such property, including any residential building or structure, the Cross Connection Control Specialist may:

- (a) cause the water supply to the property or any portion thereof to be shut off until the condition is eliminated; or
- (b) notify Kitchener Utilities which may cause the water supply to the property or any portion thereof to be shut off until the condition is eliminated. By-law 2013-115, 30 September, 2013.

902.7.3 Device installation - building permit required

A building permit is required to be obtained pursuant to the *Building Code Act, 2006* to install a backflow prevention device. The provisions of the Act and the regulations pertaining to such building permit continue to apply to each installation in addition to the provisions of this Chapter. By-law 2002-135, 2 July, 2013; By-law 2013-115, 30 September, 2013.

Article 8 MUNICIPAL FIRE HYDRANTS

902.8.1 Use - other than employee duties - permission required

No person except for City employees, acting within the scope of their duties, shall make use of municipal hydrants without written permission from the Utilities Engineer.

902.8.2 Unauthorized attachments - confiscated

All unauthorized attachments found on municipal hydrants may be confiscated by the Cross Connection Control Specialist.

Article 9 PRIVATE FIRE HYDRANTS

902.9.1 Maintained - inspected - services - owner responsibility

The owner of property that has a private hydrant shall ensure that the hydrant is maintained in good working condition at all times and that inspection, servicing and testing of the hydrant is carried out by a person qualified to perform these services and in accordance with the NFPA Standard.

902.9.2 Use - restricted- as approved

Except as set out herein, no person shall make use of a private hydrant unless for servicing, maintenance or testing purposes. Private hydrants are not to be used as a water supply unless the Utilities Engineer has approved such use and any conditions placed on the use by the Utilities Engineer are complied with.

902.9.3 Standards - colour

All private hydrants shall conform to City hydrant standards, with the exception of the paint colours. The hydrants may not be painted with a yellow body as this is the colour that identifies municipal hydrants.

902.9.4 Unauthorized attachments - confiscated

All unauthorized attachments found on private hydrants may be confiscated by the Cross Connection Control Specialist.

902.9.5 Testing - by owner - annual - proof of - requirement

The owner of a private hydrant shall not less than once each year have all components of the hydrant inspection, serviced and tested to NFPA 25 Standard and shall provide proof of compliance with this requirement within seventy-two hours of a request from the Cross Connection Specialist.

Article 10 GENERAL PROVISIONS

902.10.1 Tests - reports - order by CCCS

In addition to any other provision of this Chapter, the Cross Connecting Control Specialist may at any time order an owner to conduct tests, provide reports and undertake any other measures required for the prevention of backflow or cross connection.

902.10.2 Time to comply - extension - conditions

Where a time frame is set out in this Chapter for carrying out any action, the City may extend the time for compliance beyond the established time frame provided such extension is required and is acceptable to the Cross Connecting Control Specialist. By-law 2002-135, 2 July, 2013; By-law 2013-115, 30 September, 2013.

902.10.3 Contravention - water shut off - other measures

Where any person contravenes any provision of this Chapter, in addition to any other measures permitted to be taken by the City to address such contravention, the City may shut off the water to the affected property or any portion thereof until the contravention is rectified.

902.10.4 Removal of backflow prevention devices - prohibited

No person shall remove a backflow prevention device after it has been installed and no owner of a building or structure 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.

902.10.5 Backflow prevention device permit and tag fees

There shall be a fee payable for any permit required by this Chapter which shall be in an amount as prescribed by Council from time to time.

902.10.6 Schedule - CSA Standard

Schedule 'A' and the CSA Standard shall form part of this Chapter. By-law 2002-135, 2 July, 2013.

Article 11 ENFORCEMENT

902.11.1 Fine - for contravention

Every person who contravenes any provision of this Chapter is guilty of an offence and is liable, upon conviction, to a fine not exceeding Ten Thousand Dollars (\$10,000), exclusive of costs, for each offence, recoverable under the *Provincial Offences Act*. By-law 2002-135, 2 July, 2013; By-law 2013-115, 30 September, 2013.

902.11.2 Severability

It is hereby declared that each and every of the foregoing provisions of this Chapter is severable and that if any provisions of this Chapter should, for any reason, be declared invalid by any court, it is the intention and desire of this Council that each and every of the then remaining provisions hereof shall remain in full force and effect. By-law 2002-135, 2 July, 2002.

BACKFLOW CROSS CONNECTION

SCHEDULE

Schedule 'A' - Authorized Functions List

Item	Authorized Function	Professional Engineer with tester's licence	Certified Engineering Technologist with tester's licence (A)	Licensed Master Plumber with contractor's and tester's licence	Journeyman Plumber with tester's licence (B)	Apprentice Plumber with tester's licence (C)	Fire Sprinkler Fitter with tester's licence	Lawn Irrigation System Installer with tester's licence
1	carry out cross-connection survey	yes	yes	yes	yes	no	no	no
2	install, relocate, or replace backflow preventer	no	no	yes	yes	yes	no	no
3	repair backflow preventer	yes	yes	yes	yes	yes	no	no
4	test backflow preventer	yes	yes	yes	yes	yes	no	yes
5	complete items 1, 2, 3 and 4 in relation to fire protection systems	yes	yes	yes	yes	yes	yes	no
6	complete items 3 and 4 in relation to lawn sprinkler	yes	yes	yes	yes	yes	no	no

A. Required to be under the direction of a professional engineer
 B. Required to be employed by a licensed plumbing contractor or licensed fire sprinkler contractor
 C. Required to be employed by a licensed plumbing contractor and under the direct supervision of a journeyman plumber or master plumber

By-law 2013-115, 30 September, 2013; Schedule 'A'.