# Water Servicing and Metering Manual



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# Water Servicing and Metering Manual



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#### **Contact us:**

Standards, Policies and Quality Assurance Portfolio Management and Support Technical Services Metro Hall, Stn. 1180, 19<sup>th</sup> Floor 55 John Street Toronto, ON M5V 3C6 Tel: 416-392-8388 Fax: 416-392-8241

City of Toronto Water Servicing and Metering Manual: intranet http://insideto.toronto.ca/wes/techserv/spqa/ Internet www.toronto.ca/techservices

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# Introduction

We have written the *Water Servicing and Metering Manual* for City of Toronto staff, plumbing contractors, and consulting engineers working for the development industry preparing engineering designs and drawings for private developments. The purpose of this manual is to ensure there is consistency when applying the requirements of Toronto Municipal Code, Chapter 851 – Water Supply.

This manual provides procedures on how and where to obtain a water meter, fire hydrant permit, water service connection and so on. Included also are guidelines for handling different water servicing scenarios. This manual also describes in detail some of the most frequently asked questions pertaining to the water supply bylaw.

If you are going to be installing a water service, water meter or backflow prevention device for a new or reconstructed dwelling or building in the city of Toronto, this manual is for you.

This manual is available in both print and online formats.

# What This Manual Contains

**Requirements** – covers the requirements for material types for public and private water services, type and size of meter to use, who supplies and installs the meter, meter installation details, pipe and fitting installation, backflow prevention assemblies, fire hydrant permits, and reusing of water service lines.

**Appendix A – Frequently Asked Questions** – contains a listing for frequently asked questions about water service connections, water meters, double check detector and reduced pressure detector assemblies as it relates to the water supply bylaw along with its corresponding explanation.

**Appendix B** – **Servicing Drawings** – contains drawings of acceptable servicing options and their corresponding solutions.

**Appendix C – Standard Drawings** – contains all standard drawings relating to the water supply bylaw.

**Appendix D** – **Applicable Standards and Specifications** – contains a listing of all applicable City standard drawings and construction specifications relating to each section of the water supply bylaw.

**Appendix E** – **Maps** – contains a map showing the water meter service areas and a map showing the backflow prevention program service area.

Appendix F – Contacts – contains location information and phone numbers for the backflow prevention program, Toronto Building customer service offices and pickup locations for water meters and temporary meters for construction sites.

**Glossary** – an alphabetical list of technical terms relating to the water supply bylaw.

**Feedback Form** – a form for telling us what you think of this manual.

# Acknowledgments

I must thank the working group for your active participation and contributions to this manual, which without your knowledge and experience, this manual could not have been written:

#### **Toronto Building – Plan Review**

Ganna veitman Manager, Plan Kevlev	alina Veltman	Manager, Plan Review
------------------------------------	---------------	----------------------

#### **Toronto Water – Business Operations Management**

Vijay Ratnaparkhe	Supervisor, Pollution Prevention/Backflow
	Prevention
Mike Grisbrook	Engineering Technologist

#### **Toronto Water – District Operations**

Anthony Paolini Senior Engineer

#### **Toronto Water – Operational Support**

Cosmo Donato Sheldon Giles Sandra Ormonde Supervisor, Water Meter Program Supervisor, Water Meter Program Project Manager

#### **Technical Services – Development Engineering**

John Baldesarra
Frank Clarizio
Reza Fani
Malcolm Light

Senior Development Engineer Manager, Development Engineering Development Engineer Senior Development Engineer

Thank you!

Robert Klimas Senior Engineer Technical Services

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# Requirements

This manual outlines the requirements and process for the installation of public and private water services, water meters, and backflow prevention devices for new or existing properties in the city of Toronto. This manual is intended to complement the *Design Criteria for Sewers and Watermains* manual. This manual is not intended to replace Toronto Municipal Code, Chapter 851 Water Supply.

To view this and other chapters from the Toronto Municipal Code go to <u>www.toronto.ca/legdocs/municode/1184\_toc.pdf</u>.

# **Material Types for Water Services**

#### **Public Water Services**

The following material types are approved for use in the installation of new water services within the public right-of-way.

#### Service Lines 100 mm and Larger – PVC

Polyvinyl chloride (PVC) pressure pipe conforming to American Water Works Association (AWWA) standard C900 and having a pressure rating of DR 18. A tracer wire is required so that the plastic pipe can be located. Tracer wire will be AWG 10 gauge copper, and shall be installed and tested for continuity, as per City standard TS 7.40.

#### Service Lines 100 mm and Larger – DI

Ductile iron (DI) pipe conforming to AWWA standard C151 and having a minimum thickness class of 52. All ductile iron pipes 100 mm and larger will be cathodically protected as per City standard TS 7.22.

#### Service Lines 19 mm to 50 mm – Copper

Copper service lines will be Type K seamless copper tubing conforming to ASTM B88M. All copper water service lines require a zinc anode as per City standard TS 7.22.

#### Service Lines 19 mm to 25 mm – Plastic

Cross linked polyethylene (PEX) tubing water services certified to CSA B137.5 for new home construction only. Tracer wire will be AWG 10 gauge copper, and shall be installed and tested for continuity, as per City standard TS 7.40.

#### Restraints

All 100 mm diameter and larger water service connections, including the valves, bends and fittings will be fully restrained from the watermain pipe to the property line. If there are more than two consecutive pipe joints, the necessity of installing restraints will be reviewed on an individual case-by-case basis.

#### **Private Water Services**

The following are some of the material types permitted by the Ontario Building Code for water service pipes and fire service mains.

- polyethylene pipe fittings
- cross linked polyethylene (PEX) tubing system
- PVC
- ductile iron
- type K copper tube

#### Tracer Wire

A solid plastic coated tracer wire will be attached to every nonmetallic water service pipe or fire service main.

For more detail information on allowed materials, see Table 7.2.11.2 in the Ontario Building Code.

# **Service Connection Configuration**

The inverted 'h' pattern is the preferred water service connection configuration. For the majority of proposed water service connections, this is the configuration type to use. For more details on this connection configuration, see drawing T-1105.02-1 in Appendix C, *Drawings*.

In special cases, if only one water supply feed is proposed, that is to say, one line supplies both domestic and fire to the property, an electromagnetic type meter must be specified. Electromagnetic meters do not offer an obstruction in the flow and therefore ensure there will be sufficient water for fire fighting. For more details on this service connection configuration, see drawing T-1105.02-2 in Appendix C, *Drawings*.

#### Second Water Supply Feed

If the building is 84 metres or more high, measured between grade and the ceiling level of the top storey, the building shall be served by not less than two sources of water supply from a public water system.

### Type and Size of Meter to Use

The size and type of water meter selected is based on the maximum continuous flow and maximum intermittent peak flow. Too often, size is chosen just to match pipe size; but an oversized pipe may be installed to allow for possible future increases in water use or to reduce pressure loss in a long pipe. The type of meter to use is determined by the anticipated range of flow rates, allowable pressure loss, and possible safety requirements, such as fire-service regulations.

#### Small Flows

Positive-displacement meters are the most common type of meter for measuring water use through a customer's water service. This type of meter consists of a measuring chamber of known size that measures the volume of water flowing through it by means of a nutating-disk. Positive-displacement meters are generally used for residences and small commercial services in sizes from 16 mm to 50 mm because of their excellent sensitivity to low flow rates and their high accuracy over a wide range of flow rates.

Positive-displacement meters under register when they're excessively worn. To avoid inordinate wear, the meters shouldn't be operated beyond the flow rates listed in the Table 1: *Maximum Flow Rates for Positive Displacement Meters*. Operating a meter continuously at maximum flow will quickly destroy it.

#### **Medium Flows**

Positive-displacement meters can be used for residential or small commercial water services up to and including 50 mm meters. The low-flow accuracy of modern 50 mm meters is excellent, and compound meters aren't usually manufactured in sizes less than 50 mm.

#### Large Flows

Compound meters are often installed for customers that use large quantities of water and have wide variations in water use: hospitals, golf courses, large public buildings, apartment buildings, and industries. There may be times during a day when water demand in such facilities is high and other times when there is little or no use. The meters used in these conditions must be accurate at low and high flow rates.

A standard compound meter consists of three parts: a turbine meter, a positive-displacement meter, and an automatic valve arrangement. The automatic valve opens when high flows are sensed, enabling the water to flow with little restriction through the turbine side of the meter. Under low flows, the valve shuts and directs water through a small displacement meter for measurement. Compound meters have separate registers for each meter. Other meters for large flows include electromagnetic and turbine meters.

**Note:** The use of a turbine or electromagnetic meter may be considered if supported by detailed calculations to justify its use and must be approved in writing by the General Manager, Toronto Water.

Meter size (mm)	Safe maximum operating capacity	Recommended maximum rate for continuous operations
()	(1/300)	(1/366)
16	1.2	0.6
19	1.9	0.96
25	3.2	1.6
38	6.3	3.2
50	10	5.0

Table 1: Maximun	1 flow rates	for positive dis	splacement meters

# **Meter Selection**

During development application review, Technical Services – Development Engineering will review connection size only. Toronto Water – water meters service area unit will determine meter type and size. Toronto Building will not be checking for any of these three components. The applicant's engineer must calculate the maximum continuous flow rate and maximum intermittent peak flow rate for water services equal to and larger than 38 mm in diameter. These two design values must be included on the *Municipal Services Application* form when the applicant applies for a water service connection. The application should also note the intended use of the building, for example; school, laundry or retail. Failure to provide this information could delay the processing of the application.

The engineer must show the water service connection and its size on the engineering drawing. The maximum continuous flow rate and maximum intermittent peak flow rate must be clearly indicated on the drawing.

Toronto Water meter office will select the appropriate meter type and size in advance of the applicant coming to pick up the meter.

#### Supply of Meter

For all new connections, Toronto Water will supply the water meter and the owner or developer will install all piping, fittings, meter chamber, and accessories in accordance with the City standards and specifications. A summary of who supplies and installs the meter for each type of property and installation is shown in Table 2: *Supply of Meters, Chambers, Accessories and Meter Location.* 

#### Installing a New Water Meter

All water meters 16 mm in size and larger for new residential developments or reconstructed dwellings will be installed by the owner.

#### Will the City Install a Meter

If the current meter is non-functioning or if a water meter test is requested by the owner, Toronto Water will remove the old meter and install a new meter.

Toronto Water will also install a meter at the time the water service is upgraded from a flat rate to metered account. For all other circumstances, the owner is responsible to remove and install the meter and immediately notify Toronto Water once the new meter is installed which must be within seven days of pick-up of the meter from the City.

#### **Residential Water Meters**

Generally, residential water meters are sized one size smaller than the diameter of the service pipe installed, unless otherwise supported by calculations.

- 38 mm service receives a 25 mm water meter
- 25 mm service receives a 20 mm x 25 mm water meter
- 19 mm service receives a 16 mm x 19 mm water meter

For water service connections 50 mm and larger provisions shall be made in the piping system for the installation of a water meter of the same diameter as the private water pipe entering the building. The sizing of the water meter will be such that the accuracy of the low flow measurement is optimized while ensuring that the rated supply to the property is not adversely affected.

Type of property	Type of installation	Type of house or building	Size of meter	Who supplies meter?	Who installs meter?	Supply and installation of chamber and accessories
residential reconstruct- ed		single family or duplex	all sizes	city	owner	owner
		multiple family	all sizes	city	owner	owner
	new construction	single family or duplex	all sizes	city	owner	owner
		triplex, fourplex, multi-family	all sizes	city	owner	owner
industrial, commercial, institutional	new construction		all sizes	city	owner	owner
temporary connection	all categories	_	all sizes	city	owner	owner

Table 2: Supply of meters.	chambers and	accessories and	meter location
Table 2. Oupping of meters,	chambers and		meter location

#### Notes:

- 1 If the distance between the streetline and the location where the water meter would be located inside the building or structure is greater than 30 m beyond streetline as measured along the alignment of the pipe, the water meter shall be installed in a water meter chamber located on private property within 3 m of the property line;
- 2 For all installations, developer or owner installs meter at their own cost.

# **Meter Installation**

If a meter is installed inside a building, the location must be accessible to City staff for servicing or inspection of the meter as per standards and specifications.

When a meter is installed in the utility room or elsewhere inside the building, the installation shall be within a reasonable distance of a floor drain. Under no circumstances will a meter be installed in a bathroom or a bedroom. The area of 600 mm around the meter shall be free of any obstructions, to allow for convenient reading and servicing of the meter. The meter installed area should have a minimum headroom clearance of 2 m. No electronic, electrical, mechanical, and water sensitive equipment or machinery should be placed or installed under the meter installation, or in an area where splash or flow from the meter or pipes could occur during the servicing of the meter.

Meters must be installed horizontally with register casings plumb, facing upward. When a meter is installed in a chamber at the property line, the meter shall be centered as much as possible in the chamber. Plumbed-in meter test port, if any, should not be closer than three pipe diameters from the meter.

Piping adjacent to the meter—neither the meter nor the strainer—, valves, and bypasses shall be supported in accordance with the standards and specifications. Meter installations must be checked for leakage at completion of the installation. The assembly shall be flushed and air must be eliminated from the system. By running water through the meter and performing a visual check of the low flow indicator, the proper operation of the meter should be established.

Installation requirements for meters inside a chamber are shown in Table 3, *Meter Installation Details*. Construction drawings for meters in chamber T-1107.01-1, T-1107.02-1, T-1107.02-2, T-1107.03-1, T-1107.04-1 and T-1107.04-6 can be found in Appendix C, *Standard Drawings*.

Meter Size (mm)	Type of meter	Bypass require- ments	Strainer require- ments	Chamber type <sup>4</sup>	Chamber size (mm) <sup>5</sup>	Lid	Lid size (mm)
16 x 19	positive displace- ment	no <sup>1</sup>	no	chamber	1500 diameter	cast iron	std
19	positive displace- ment	no <sup>1</sup>	no	chamber	1500 diameter	cast iron	std
25	positive displace- ment	no <sup>1</sup>	no	chamber	1500 diameter	cast iron	std
25	positive displace- ment	yes <sup>2</sup>	no	chamber	1500 diameter	cast iron	std
38	positive displace- ment	yes <sup>3</sup>	no	chamber	1500 diameter	cast iron	std
50	positive displace- ment	yes <sup>3</sup>	no	chamber	1500 diameter	cast iron	std
50	compound	yes <sup>3</sup>	yes	chamber	1500 diameter	cast iron	std
75	compound	yes <sup>3</sup>	yes	chamber	3500 x 2300	cast iron	std
100	compound	yes <sup>3</sup>	yes	chamber	3500 x 2300	cast iron	std
150	compound	yes <sup>3</sup>	yes	chamber	4300 x 2500	cast iron	std
200	turbine /electro- magnetic	yes <sup>3</sup>	yes	chamber	5000 x 2700	cast iron	std
250	turbine /electro- magnetic	yes <sup>3</sup>	yes	chamber	6000 x 3000	cast iron	std
300	turbine /electro- magnetic	yes <sup>3</sup>	yes	chamber	6600 x 3200	cast iron	std

Table 3: Meter installation details

- <sup>1</sup> Bypasses not required for single family dwellings. Duplex's require a bypass.
- <sup>2</sup> Bypasses required for non-residential.
- <sup>3</sup> Bypass size must be the same size as the private water service pipe entering the building.
- <sup>4</sup> In all cases, chambers must be as per City standard T-1108.01-1 or T-1108.01-2.
- <sup>5</sup> Chambers are only required for property line installations.

#### Strainer

Where required, as noted in Table 3, *Meter Installation Details*, strainers should be installed immediately upstream of the meter using a flanged connection. Manufacturer's specification can be adopted in terms of distance between the meter and the strainer. Strainers must be straight type and of the same size as the meter. Strainer mesh material shall be corrosion resistant, such as stainless steel. Strainer should have an effective minimum straining area of at least twice the bore diameter of the meter.

#### Isolation Valves – Inlet and Outlet Valves

Isolation valves must be provided, at specified distances, upstream and downstream of the meter assembly to facilitate the removal of the meter and strainer. Valves should comply with the requirements stated in the standards and specifications.

#### Meter Bypass

Meter bypass shall be of the same size as the private water service line entering the building. Two valves are required on the bypass. After testing the installation, the bypass valve must be closed and sealed by Toronto Water.

#### Test Port

All compound meters have a test port. Turbine and electromagnetic meters do not have a test port. A test point or port must be provided for all turbine and electromagnetic water meters. A test tee or plug must be installed with a threaded lateral and plug on the meter piping, at a minimum distance of three pipe diameters downstream of the meter. For test tee size, see drawing T-1107.02-2 in Appendix C, *Standard Drawings*.

#### Prohibited Drain Port Connection

No connection of any kind is permitted on all piping between the water meter bypass outlet tee and the premise isolation backflow device. The piping will be clearly labelled 'No connection permitted'. For more information see drawing SD-10 in Appendix B, *Servicing Drawings*.

#### Receptacle Installation

For meters installed in a chamber, remote register receptacles must be mounted on a pole or post according to the standards and specifications. Remote wiring connections must be properly sealed to ensure a waterproof connection.

#### Meters Farther than 30 m from the Property Line

If the distance between the streetline and the location where the water meter would be located inside the building or structure is greater than 30 m beyond streetline, the water meter will be installed in a water meter chamber. The length of the water service is measured along the alignment of the water service.

The meter chamber must be located on private property within 3 m of the property line. A radial distance of 1.5 m in and around the meter chamber should be free of any major landscaping or objects, such as shrubs to facilitate the future maintenance work on the meter. In all possible cases, the meter and chamber installation should be off driveways or parking areas.

Where the water main is within private property, in an easement, the meter chamber must be placed outside the easement.

During development application review Technical Services-Development Engineering section will identify this requirement. Toronto Building will not be checking for this requirement.

#### Meter Chambers

Meter chambers must be pre-cast or cast-in-place reinforced concrete to the dimensions provided in Table 3, *Meter Installation Details*. Variations will be considered if the dimensions are impractical due to site conditions, but any such variations are subject to the review and written approval of the General Manager.

#### Inspection of Installation

The owner or applicant is responsible to install the meter within seven days of receiving it from the City, and to notify Toronto Water of the completion of the installation. Toronto Water will inspect the installation to ensure the installation conforms to the standards and specifications. At this time the meter is sealed and water is turned on to the home or building. Toronto Building does not inspect whether the water meter conforms to the standards and specifications.

# **Backflow Preventer Assemblies**

Only assemblies with Canadian Standards Association (CSA) approval will be installed for the premise isolation back flow prevention program as per §851-8D(3) of Chapter 851, Water Supply.

The type of assembly, its location within the plumbing system, and the details of its installation will be in accordance with Toronto Municipal Code Chapter 851, the Ontario Building Code, manufacturer's specifications and CSA B64 series standard. A building permit is required for all new or replacement installations of the premise isolation backflow prevention device(s). In addition, the General Manager may at any time order an owner to conduct tests, provide reports and undertake any other measures required for the purpose of ensuring the prevention of backflow to the city waterworks.

The installation, maintenance, replacement, and any required testing of the assembly is at the expense of the owner.

#### **Domestic Water Services**

#### **Double Check Valves**

Double check valve assembly (DCVA) is a mechanical backflow prevention device that consists of two internally loaded check valves. A DCVA prevents backflow even if one check valve fails to close tightly.

If installed in a chamber, the device can be installed in a circular chamber or rectangular chamber as per standard T-1108.01-2 and OPSD 1108.010, respectively. In case of variations, a design should be submitted for City approval. Lids of chambers should be large enough to service and remove the valve assembly. A minimum distance of 900 mm on test port side and a minimum distance of 300 mm on opposite side must be available between the valve assembly and inside wall of chamber.

#### Reduced Pressure Principle Assembly

Reduced pressure principle assembly (RP) is designed for use for industries where the hazard level is severe. RP is a mechanical backflow prevention device that consists of two independently, internally loaded check valves, separated by a reduced pressure zone.

If located outside the building, the RP device must be installed in a heated box above ground, not below grade in a chamber.

#### Fire Service Main

Fire service mains must be metered to detect underground leakage or help locate illegal taps in accordance with the water supply bylaw. A CSA approved detector assembly should be installed in accordance with CSA B64.10 series standard. The device must have the ability to accept a positive-displacement type meter. Typically, the assembly comes pre-installed with a water meter. If the meter is not an approved water meter, Toronto Water will supply its own meter which the owner will install on the detector assembly's bypass.

The required detector assembly on the fire service is determined based on the fire sprinkler or standpipe classification as found in Section 7.6.2.4, Backflow from Fire Protection Systems, of the 2006 Ontario Building Code and section 5.5 of the CSA B64.10 series standard. If the building code and CSA B64.10 series standard requires a double check valve assembly for the fire service then the bylaw requires it to be a double check detector assembly. On the other hand, if a reduced pressure principal assembly is required by the building code or CSA B64.10 series standard, then it should be a reduced pressure detector assembly. It should be noted that a reduced pressure detector assembly cannot be installed below grade in a vault or chamber.

#### Double Check Detector Assembly

If installed in a chamber, the device must be installed as per standard T-1108.01-3. In case of variations, a design should be submitted for City approval. Lids of chambers should be large enough to service and remove the valve assembly. A minimum distance of 900 mm on test port side and a minimum distance of 300 mm on opposite side must be available between the valve assembly and inside wall of chamber.

The chamber must be maintained in a dry condition with all test cocks on the device plugged using a water tight means.

#### Reduced Pressure Detector Assembly

If located outside the building, the RP device must be installed in a heated box above ground, not in a below grade chamber.

#### Clearances

The minimum clearances above, in front and behind the backflow prevention device is indicated in Table 4, *Clearances*.

Installations of more than 1.5 m above the floor or grade as measured from the floor to the centre line of the backflow preventer assembly is not allowed. A permanent platform with proper stairs and railings to provide safe access for testing or repair by an operator will then be required.

			Minimum clearance			
	Centreline height above the floor					
Type of device	Minimum	Maximum	Between the bottom of the relief valve and the floor	Above the device	In front of the device <sup>2</sup>	Behind the device <sup>2</sup>
DCVA	750	1500		300	750	20
DCVAF	750	1500		300	750	20
PVB		1500		300	750	20
RP	750	1500	300	300	750	20
RPF	750	1500	300	300	750	20
SCVAF	750	1500		300	750	20
SRPVB		1500		300	750	20

#### Table 4: Clearances, mm<sup>1</sup>

<sup>1</sup> B64.10 Canadian Standards Association, 2007, p.37.

<sup>2</sup> To the nearest wall or obstruction.

#### Notes:

- 1. An emdash (—) indicates that there is no requirement specification.
- 2. Clearances might have to be increased for backflow preventers with side mounted test cocks or relief valves or when the sight tube method of testing is used.

#### Testing and Repair Requirements

All backflow prevention assemblies required for premise isolation will be tested at least annually by a licensed tester as defined in Schedule 6 to Chapter 851, *Authorized Functions List*. Backflow prevention assemblies can be tested more frequently, if required by the General Manager.

A licensed plumber is allowed to install, replace or repair any backflow prevention assembly on a water service or fire line. However, testing of the assemblies can only be performed by qualified

Toronto Water will send out reminder letters to owners that a test is up coming. If no response a Notice of Violation letter will be mailed. persons as defined in Schedule 6 to Chapter 851, Authorized Functions List.

Test and repair results must be submitted to Toronto Water, Environmental Monitoring and Protection branch, within seven days of the test, installation, or repair date. Any test, installation, or repair report not received by Toronto Water office located at 30 Dee Avenue within seven calendar days from the date of the test, installation, or repair will result in invalidation of the test. To download a copy of the *Backflow Prevention Device Test Report* go to www.toronto.ca/water/protecting\_quality/backflow\_prevention/index. htm.

A test report will be submitted for fire service backflow preventers if there is a severe hazard.

#### Gauge Calibration Requirements

To ensure accurate readings, the testers must use properly calibrated gauges. Gauges must be checked for accuracy at least once within a 12 month period or more often if required. All verification of calibration equipment will be traceable to a national standard, for example, National Institute of Standards and Technology (NIST) criteria. Send a copy of all gauge calibration records to the Environmental Monitoring and Protection branch of Toronto Water annually. Calibration records can be e-mailed to <u>backflow@toronto.ca</u>.

#### **Backflow Prevention Survey**

A premise isolation backflow prevention survey is required if there is more than one water service connection to the property or if the General Manager, Toronto Water, directs it. A survey is required every five years or earlier if changes are made to type of property use. Only qualified persons as set out in Schedule 6 to Chapter 851 are permitted to do the survey. All backflow prevention surveys shall include the following as per §851-8D (14)(a) of Chapter 851.

- Number of service connections with the waterworks;
- Level of hazard for each service connection;
- Number, type and condition of any existing premise isolation backflow prevention devices;
- Recommended and planned corrective measures, if any;

- Schedule of work required for any corrective measures;
- Recommendations for appropriate premise isolation backflow prevention devices or assemblies, if any, all in accordance with CSA B64 series standards; and
- A detailed schematic drawing of the plumbing system that clearly shows the layout of the backflow prevention device with reference to the water meter and meter bypass, prepared by a qualified person to do surveys under Schedule 6 to Chapter 851.

The Environmental Monitoring and Protection unit is responsible to enforce the bylaw for all four districts. For contact information, see Appendix F, *Contacts*.

#### **Qualifications of Testers**

Inspections, tests, and repairs of backflow prevention assemblies and persons conducting surveys and investigations of a property or properties served for the purpose of backflow prevention compliance, shall be persons on the *Authorized Functions List*, Schedule 6 to Chapter 851.

The owner of the property is responsible to ensure that the plumbing contractor has all of the required training and documentation along with adequate liability insurance.

### **Fire Hydrant Permits**

Fire hydrant permits cannot be used to supply water to a construction site. In accordance with §851-13 of Chapter 851, the applicant must submit an application for a temporary supply of water from a fire hydrant regardless of the amount that will be used. If the total usage of water is to exceed 50 cubic metres, Toronto Water may provide or require the applicant to supply and install a backflow prevention device, valve and a temporary water meter on the fire hydrant. Fire hydrant permits are granted for the following uses:

- film industry, for example movie shoots
- hydrant flow testing by private companies
- capital works program, for example watermain cleaning and lining

No hydrant permit will be issued for use of a fire hydrant between November 15 to April 15. For the location of a service counter, see Appendix F, Contacts.

### Water for Construction Sites

Site owners can obtain and submit an application for a temporary meter or temporary water service or both at a Toronto Water service counter. Application processing time is approximately one to two weeks for meter supply; six to eight weeks if the work includes the installation of a temporary water service

For the location of a service counter, see Appendix F, Contacts.

# **Relocating a Fire Hydrant**

#### In the Right-of-Way

During development application review, Technical Services – Development Engineering section will review the fire hydrant relocation. If an existing fire hydrant in the right-of-way needs relocation, you must submit a *Municipal Services Application* form to Toronto Water, Contract Services. The applicant making such a request shall pay the entire cost of the relocation. Work must be done in accordance to §851-12B of Chapter 851.

#### **On Private Property**

If an existing fire hydrant on private property needs relocation, you must contact a Toronto Building district customer service counter office.

### **Re-use of Water Service Line**

A municipal water service connection up to and including 25 mm in diameter for the purposes of servicing a residential dwelling can be reused if all the following criteria is met:

- The water service connection must meet current City standards and specifications;
- The water service connection must not be a double connection; and
- The water service connection must have properly functioning curb stops and valves and no record of low pressure.

To make an application to re-use a water service line, visit a Toronto Water service counter. For the location of a service counter, see Appendix F, Contacts.

#### Fees

Toronto Water charges various service fees for permits, water shutoffs and turn-ons, cancellation of turn-ons or turnoffs, fire hydrant permits, and flow testing. Toronto Water also charges for various materials used in water service installation. A fee schedule can be obtained by viewing Toronto Municipal Code, Chapter 441, Appendix A, *Schedule 2, Water Services* or contact a Toronto Water service counter.

# Water Servicing Approval

The process to upgrade a water service can be done several ways depending on the application type.

#### Stand Alone Upgrade

When a development application is not required, Toronto Water does not circulated to Technical Services -Development Engineering and Toronto Building for comment.

If the owner plans to upgrade or alter the water service connection in the right-of-way, the applicant will submit a *Municipal Services Application* form to Toronto Water, District Contract Services for review and approval.

#### **Development Application**

If the submission is part of a development application, Technical Services Development Engineering branch will review and provide comments on the proposed water service connection.

The applicant's engineer must calculate the maximum continuous flow rate and maximum intermittent peak flow rate for services larger than 50 mm in diameter. These two design values must be shown on the engineering drawing.

The applicant's engineer will add the following note or a variation of the note on to the site servicing plan. The note will read as follows: This note will notify Toronto Building permit staff to ask for a backflow preventer. The owner is required to install and maintain a premise isolation device for all applicable water services in accordance with Toronto Municipal Code, Chapter 851 Water Supply, the building code, and CSA B64 series standards.

A copy of the approved plan is distributed by the district manager of development engineering to the Toronto Water contract services unit, area water meter supervisor, and Toronto Building for information purposes.

#### No Development Application

For water servicing on private property an application for a building permit must be submitted to Toronto Building for review and approval.

A building permit is required if installing a new or replacing one or all premise isolation backflow devices. The Toronto Building division will issue a permit and inspect the installation of the devices.

If a building permit is issued, Toronto Building does not circulate plans to Toronto Water or Technical Services for review or information purposes.

# Appendix A – Frequently Asked Questions

Question number	Question description				
Water serv	Water service connections				
1	How many water service connections do I need?				
2	When would a building require a second water supply feed?				
3	Are single water services with bulk meters still allowed?				
4	Do I need to setup a water account for billing purposes for my water meter?				
5	How do I obtain water for my construction site?				
6	I have installed my temporary meter at my construction site, what do I do now?				
7	Who conducts fire hydrant flow tests?				
Water met	ters				
8	Who supplies the water meter? Who installs?				
9	What type and size of meter will be provided?				
10	Who supplies the remote read-out or wireless transmitter unit and wire now required for water meters?				
11	When is bypass piping required for a water meter?				
12	When is a meter chamber required?				
13	What appurtenances, valves, or other parts are required by Toronto Water? Who supplies these parts?				
14	What is the maximum size allowed to take a domestic water service off a fire service main?				
15	Who turns on the water once my water service is connected?				
16	Who inspects the water meter after installation? When will the water supply to my property be turned on?				
17	When is disinfection of my private water service main required? What is the procedure?				

#### Table: Frequently asked questions

Question number	Question description
Backflow	prevention
18	What is the Backflow Prevention Program? Why is it important?
19	What is premise isolation?
20	Are backflow prevention devices required on all domestic water service connections?
21	What type of backflow prevention device will be required for premise isolation?
22	What is a double check valve assembly?
23	What is a reduced pressure principle assembly?
24	Does the water supply bylaw require zone isolation devices?
25	What is a fire service main double check detector assembly?
26	If there is a hydrant on my fire service main before it enters the building, do I need a double check detector assembly?
27	If my fire service main has no hydrant connected to it, do I still require a detector assembly?
28	Is a backflow prevention device required for my fire service main?
29	My fire service main will need a double check detector assembly installed in a chamber. Where do I install this assembly?
30	My fire service main will need a reduced pressure detector assembly inside the building. Where do I install this assembly?
31	Is a building permit required to install a backflow prevention device?
32	How often do backflow prevention devices need to be tested?
33	Who is qualified to test backflow prevention devices?

Table: Frequently asked questions (continued)

# 1. How many water service connections do I need?

For dwelling units, each dwelling unit needs a separate water service connection. For dwelling unit applicable standards and specifications for §851-4(F) of Chapter 851, see Appendix D, *Applicable Standards and Specifications*.

For industrial, commercial or institutional buildings situated inside one property, one separate water service connection can service all the buildings located on the property. For condominium applications for §851-5S of Chapter 851, see Appendix D, *Applicable Standards and Specifications*.

# 2. When would a building require a second water supply feed?

If the proposed building is 84 metres or more high, measured between the grade and the ceiling level of the top storey, the building shall be served by not less than two sources of water supply from a public water system. For more information, see Section 3.2.9.7 in the Ontario Building Code.

# 3. Are single water services with bulk meters still allowed?

Yes, only if the single domestic water service is providing water to an apartment or condominium building, or to townhouse units that do not have either the front, rear or flank of the unit adjacent to the waterworks. The number of services to one property using bulk meters will depend on how many buildings or units are set back behind other buildings or units having front, rear or flank adjacent to the waterworks. For applicable standards and specifications for §851-5 of Chapter 851, see Appendix D, *Applicable Standards and Specifications*.

# 4. Do I need to setup a water account for billing purposes for my water meter?

Most probably not. If the dwelling or building is at an existing address, it will already have a utility account. If the address is new, an account will need to be set up. To set up an account by phone, contact revenue services at 416-395-1271 or 416-395-6783.

# 5. How do I obtain water for my construction site?

You must complete an application to obtain a temporary meter or temporary water service and meter for your construction site. You will be required to pay all costs for the installation of any temporary or permanent water service connection, and the costs for disconnection of any temporary water service connection.

Fire hydrant permits cannot be used to supply water to a construction site.

# 6. I have installed my temporary water meter at my construction site, what do I do now?

Once you have installed the temporary water meter and backflow prevention device, the meter will need to be inspected and sealed by Toronto Water. In accordance with §851-5N of Chapter 851, the applicant must ensure that the meter is protected from damage or freezing before Toronto Water comes to seal the meter. Once the meter is properly registering water and meets the following conditions, the meter will be sealed:

- No obstruction to access to meter, for example cannot install a hot water tank or build a wall in front of the meter.
- Building must be complete and have heat, windows and doors to prevent freezing of the meter.
- Have a safe, permanent access to the basement.
- Meter is protected from on-going and future construction activities.
- Valves are installed in accordance with standards and specifications, for example, valves are installed on both sides of the meter. Ball valves are not allowed in lieu of gate valves.
- A backflow prevention device with the proper documentation is required to be installed downstream of the temporary water meter to ensure that the water supply is protected. The selection of the testable backflow assembly must be done in accordance with CSA B64.10 series standard.

For inspection and sealing of your water meter, see contacts in your service area in Appendix F, *Contacts*.

# 7. Who conducts fire hydrant flow tests?

Upon application and payment of fees for such a test, Toronto Water operations and maintenance staff will attend the site to operate the hydrant valve, but it is the applicant who will conduct the test. As noted in Chapter 851, a copy of the test results must be supplied to Toronto Water upon completion of the test.

# 8. Who supplies the water meter? Who installs?

Toronto Water meters office will supply the meter upon application and payment of required fees by the owner or applicant. Once the private water system is installed in accordance with the Ontario Building Code, the owner will immediately notify the water meter office that the property is ready for the meter. The owner or applicant is responsible to pickup and install the meter within seven days of receiving it from the City, and to notify Toronto Water of the completion of the installation. The building must have heat, windows and doors to prevent freezing of the meter. Water will not be turned on until the water meter is installed.

# 9. What type and size of meter is provided?

The type and size of meter will depend on the anticipated consumption and flow rates based on the business use and number of employees working in the building, if any. The owner or applicant must supply this information at the time of application and payment of fees. Toronto Water will determine the type and size of the water meter, not the applicant. If there is need to verify the information given by the applicant, Toronto Water may conduct a flow monitoring survey to determine the appropriate size and type of water meter.

# 10. Who supplies the remote read-out or wireless transmitter unit and wire now required for water meters?

Toronto Water will supply the remote readout unit and wire for new and existing properties. The City will provide and retain ownership of the equipment. The owner must have the wiring run to the exterior of the building for a remote readout unit.

For the Automatic Meter Reading (AMR) program, Toronto Water will install a wireless transmitter unit when Toronto Water comes to the site to inspect and seal the meter.

The owner is responsible to install wire at the owner's expense, and in accordance with the standards and specifications. For applicable standards and specifications for §851-5J of Chapter 851, see Appendix D, *Applicable Standards and Specifications*.

# 11. When is bypass piping required for a water meter?

This will depend on the size and type of the service connection. For more information, see Table 3: *Meter Installation Details* in section *Requirements*. If bypass piping is required, the owner will supply and install the bypass to permit the testing, repair or replacement of the water meter without interruption of the water supply. For applicable standards and specifications for §851-5H of Chapter 851, see Appendix D, *Applicable Standards and Specifications*.

# 12. When is a meter chamber required?

A water meter chamber is required if the distance—measured along the alignment of the water service pipe—between the streetline and the location where the water meter is to be located inside the building is greater than 30 metres. For applicable standards and specifications for §851-51 of Chapter 851, see Appendix D, *Applicable Standards and Specifications*.

# 13. What appurtenances, valves, or other parts are required by Toronto Water? Who supplies these parts?

The owner is required to install strainers, valves, bypass appurtenances where required, at the owner's expense, and in accordance with the standards and specifications. Toronto Water will supply the strainers, hardware kits and flanges or couplings to attach to the water meter if these parts are required by the standards and specifications. The City will retain ownership of all water meters, strainers, flanges and remote readout units supplied. For applicable standards and specifications for §851-5 of Chapter 851, see Appendix D, *Applicable Standards and Specifications*.
## 14. What is the maximum size allowed to take a domestic water service off a fire service main?

This depends on the size of the domestic connection required. The domestic service connection must be taken directly off the fire service main pipe on the city side at streetline. This connection cannot be made beyond street line on the private side. Normally, the size of the domestic service is one size smaller or smaller than the fire service line.

Fire service size (mm)	Maximum domestic size (mm)
200	150
150	100
100	50

Table: Fire line and domestic service connection sizes

This guideline is shown in standard drawing T-1104.02-3.

### 15. Who turns on the water once my water service is connected?

Only Toronto Water is permitted to operate the valve at streetline to supply water to a property. It is prohibited under Chapter 851 for anyone else to do so.

In the event that the water supply to a property is already turned on prior to the inspection and sealing of the water meter, Toronto Water is authorized under Chapter 851 to shut off the supply of water.

The owner will call 3-1-1 for turn-on of water. If no meter present, the first responders for Toronto Water will not turn-on the water.

Anyone who contravenes Chapter 851 is subject to fines for contravention.

# 16. Who inspects the water meter after installation? When will the water supply to my property be turned on?

The water meter, remote readout or the AMR transmitter unit and wire must be installed prior to occupancy of a new or renovated building. Toronto Water will inspect and seal the water meter and if present the bypass as well. After the water meter is sealed, only Toronto Water is allowed to turn on the water at the property.

## 17. When is disinfection of my private water service main required? What is the procedure?

Disinfection is required for private water service pipes, including both domestic and fire service mains, when the water service is equal to or greater than 100 millimetres in diameter. Chapter 851 requires that the procedure be authorized and supervised by a professional engineer, at the expense of the owner, and that all sampling, transportation and testing be conducted by an accredited laboratory. A report showing satisfactory disinfection results must be submitted to Toronto Water within 48-hours of the tests being performed prior to turn-on by the City. For applicable standards and specifications for §851-8B of Chapter 851, see Appendix D, *Applicable Standards and Specifications*.

## 18. What is the Backflow Prevention Program? Why is it important?

Toronto Water delivers safe and clean drinking water through the water distribution system. The *Safe Drinking Water Act* and Ontario Ministry of the Environment regulations mandate water purveyors to protect the water supply to the point of delivery. In order to protect the public, the water supply bylaw includes a program for premise isolation backflow prevention between the distribution system and premise to ensure the safety of the drinking water. The program requires the isolation of certain private water systems from the public waterworks based on the hazard level through the installation of a backflow prevention device immediately after the water meter and bypass.

The backflow prevention program focuses on industrial, commercial, and institutional properties, as well as multi-residential properties of five or more units, where there is a greater potential for backflow and contamination of the water supply.

## 19. What is premise isolation?

Premise isolation is the isolation of a property's private water system from the City's water distribution system. This is accomplished by installing a backflow prevention device immediately downstream of the property's water meter and bypass.

## 20. Are backflow prevention devices required on all domestic water service connections?

The bylaw requires all industrial, commercial, and institutional facilities and multi-residential units with five units or more to install a premise isolation backflow prevention device on the water service connection to the property. The device needs to be installed downstream of the water meter and its bypass and prior to any tapping. The hazard level for specific industry sectors is set out in Schedule 5 to Chapter 851. All installations will be completed in accordance Chapter 851, the Ontario Building Code, CSA B64 series standards and manufacturer's specifications.

A single family dwelling does not require a premise isolation backflow prevention device at this time.

## 20. What type of backflow prevention devices will be required for premise isolation?

The type of device required for you property will depend on the hazard level of your facility as classified in Schedule 5 to Chapter 851. The hazard level is determined by the industry sector listed and the water usage at your property. Facilities classified as a moderate hazard require the installation of a double check valve assembly. Facilities classified as a severe hazard require the installation of a reduced pressure principle device.

### 22. What is a double check valve assembly?

Double check valves assemblies are designed to prevent the reverse backflow of water entering into the potable water system from a private water system. These assemblies are required where there is a moderate to severe health hazard installation.

A double check valve assembly (DCVA) is a mechanical backflow prevention device that consists of two internally loaded check valves.

It includes two shut-off valves and four test cocks. With the two check valves in series, a DCVA prevents backflow even if one check valve fails to close tightly. It can be used to prevent backflow due to both back siphonage and back pressure where a minor or moderate hazard exists. A DCVA is tested upon installation, repair, relocation, replacement and at least once a year thereafter.

### 23. What is a reduced pressure principle assembly?

A reduced pressure principle assembly is designed for use in industries where the hazard level is severe. For example, severe hazard level industries can be a mortuary or morgue, metal coating or chemical manufacturing facilities. This assembly prevents the backflow of fire protection substances such as glycerine wetting agents, foam agents, stagnant water, auxiliary supplies and water of non-potable quality from being pumped or siphoned into the City's potable water supply. For a complete listing of hazard levels for specific industry sectors, see Schedule 5 to Chapter 851.

A reduced pressure principle (RP) device is a mechanical backflow prevention device that consists of two independently acting, internally loaded check valves, separated by a reduced pressure zone. During normal operation, the pressure between the two check valves is maintained at a lower pressure than the supply pressure. If either check valve leaks, water will discharge from the relief port. When this happens, maintenance is required. If located outside the building, the RP device must be installed in a heated box above ground. If installed inside a building, there must a sanitary drainage system provided to accept any water released to avoid any water damage to the building and its contents.

### 24. Does the water supply bylaw require zone isolation devices?

The bylaw sets the requirements for premise isolation only. It is the responsibility of the owner to protect the internal water distribution system in the building.

### 25. What is a fire service main double check detector assembly?

It is designed to normally operate in a closed position with a bypass meter. The spring load prevents the main check valve from opening, thus forcing all low flows through the metered bypass assembly. This serves to detect leakage or misuse of water from the fire line system. In the event of a fire, large flows open the main check valve allowing water to flow through the main check valve without being metered. Some flow is recorded when the hydrant is opened. Toronto Water will supply the meter required for this assembly.

# 26. If there is a hydrant on my fire service main before it enters the building, do I need a double check detector assembly?

If the building code, CSA B64.1 series standard or the water supply bylaw requires a double check detector assembly, then the assembly is required to be installed in a chamber on the private side within three metres of the property line. For applicable standards and specifications for §851-5M of Chapter 851, see Appendix D, *Applicable Standards and Specifications*.

Alternatively, you can install the fire hydrant lead pipe through the building, thus avoiding installation of a chamber. For more details on this servicing option, see drawing SD-3 in Appendix B, *Servicing Drawings*.

Reduced pressure principle assemblies and reduced pressure detector assemblies cannot be installed in a below grade chamber or vault.

## 27. If my fire service main has no hydrant connected to it, do l still require a detector assembly?

Yes. This type of detector assembly is determined by the building code and CSA B64.10 series standard. You would install the detector assembly inside your building at the point where the fire line enters through the building wall. If the distance between the streetline and the detector assembly is greater than 30 metres, you will then be required to install the double check detector assembly in a chamber. This makes it accessible for servicing and testing by backflow prevention device testers. For applicable standards and specifications for §851-5M of Chapter 851, see Appendix D, *Applicable Standards and Specifications*.

Reduced pressure principle assemblies and reduced pressure detector assemblies cannot be installed in a below grade chamber or vault.

## 28. Is a backflow prevention device required for my existing fire service main?

For an existing fire system, a fire protection system utilizing chemical additives or connected to an auxiliary water supply represents a severe hazard to the waterworks, which will require premise isolation from the waterworks under Schedule 5 to Chapter 851. The type of device required for a chemical fire protection system is a reduced pressure principle assembly.

Changes to a fire system must be done under the direction of an engineer who is qualified to work on such systems and a building permit must be obtained before any changes are made.

For a proposed fire system, the system must comply with the Ontario Building Code.

# 29. My fire service main will need a double check detector assembly installed in a chamber. Where do I install this assembly?

In this case, the double check detector assembly which is the backflow prevention device would be installed inside a chamber no more than 3 metres from streetline, if the building is more than 30 metres from streetline. This makes it accessible for servicing and testing by the backflow prevention device testers. The chamber must be maintained in a dry condition with all test cocks on the device plugged using a watertight means. For applicable standards and specifications for §851-8(3) of Chapter 851, see Appendix D, *Applicable Standards and Specifications*.

Reduced pressure principle devices must be installed in an above ground heated enclosure, not in a below grade chamber.

# 30. My fire service main will need a reduced pressure detector assembly installed inside the building. Where do I install this assembly?

This type of device will need to be installed indoors or in a heated above ground enclosure. The device cannot be subject to it becoming submerged in water, otherwise the check assembly could freeze, causing it to become non-functioning and permanently damaged which will then require the device to be replaced. The reduced pressure principle assembly must be installed above ground if outdoors, or installed inside a building with proper drainage to a sanitary sewer. You may install a reduced pressure detector assembly in lieu of a separate detector check valve and separate reduced pressure device. For applicable standards and specifications for §851-8(3) of Chapter 851, see Appendix D, *Applicable Standards and Specifications*.

All new or replacement installations will require a building permit before any installation takes place.

# 31. Is a building permit required to install a backflow prevention device?

Yes, Toronto Municipal Code, Chapter 851, Water Supply requires a building permit for projects involving new or altered plumbing regardless of the size of the water service. This includes all premise isolation backflow prevention devices.

To find a location near you to obtain a building permit go to www.toronto.ca/building/customer\_service.htm#contact.

### 32. How often do backflow prevention devices need to be tested?

In order to ensure the proper operation of a backflow prevention device, the device must be tested as per the bylaw upon installation, repair, relocation or replacement, and at least once a year thereafter. To ensure that backflow prevention devices are functioning properly, a qualified person as set out in Schedule 6 to Chapter 851 must perform the test at the owner's expense.

Test reports on premise isolation backflow prevention device(s) must be submitted within seven days of performance of the test to Toronto Water on a current *Backflow Prevention Device Test Form*. Toronto Water sends out reminder letters to owners that tests are upcoming. All backflow forms can be downloaded at <u>www.toronto.ca/water/backflow</u>.

### 33. Who is qualified to test backflow prevention devices?

A certified tester with the following qualifications will only test backflow prevention devices:

A person who holds a valid and current *Certificate of Achievement* in cross connection control endorsed by the Ontario Water Works Association (OWWA); or

A person who has completed a cross connection control specialist (CCCS) course:

- 1 Delivered by a school or institution with the plumbing laboratory certified by the OWWA; and
- 2 The instructor teaching the course is certified by OWWA; and
- **3** The course is delivered using the *AWWA Canadian Cross Connection Control Manual*, current version; and
- 4 The person passes the CCCS certification test; and

has a current calibration certificate for the test equipment used to test the devices traceable to National Institute for Standardization Technology (NIST).

For more information on authorized testers, see Schedule 6 to Chapter 851.

## **Appendix B – Servicing Drawings**

Sketch number	Title	Version (month/yr)
SD – 1	Water servicing for townhouse complex	09/11
SD – 2	Water servicing for industrial, commercial and institutional buildings – hydrant on private side	09/11
SD – 3	Water servicing for industrial, commercial and institutional buildings – hydrant on private side through building	09/11
SD – 4	Water servicing for industrial, commercial and institutional buildings 30 m or less from property line – no hydrant on private side	09/11
SD – 5	Water servicing for industrial, commercial and institutional buildings 30 m or more from property line – no hydrant on private side	09/11
SD – 6	Water servicing for multiple buildings – with frontage on municipal road allowance one lot	09/11
SD - 7	Water servicing for multiple buildings hydrant through building – with frontage on municipal road allowance one lot	09/11
SD – 8	Water servicing for multiple buildings – with and without frontage on municipal road allowance one lot	09/11
SD – 9	Water servicing for proposed new building with frontage on municipal road allowance one lot	09/11
SD – 10	Installation of premise isolation backflow device	09/11

### Table: Acceptable servicing options

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## **Appendix C – Standard Drawings**

Drawing number	Title	Version (month/yr)
T-1104.01	Standard water service connection details – 19 and 25 mm diameter sizes	11/10
T-1104.02-1	Standard water service connection details – 32, 38 and 50 mm diameter sizes	11/10
T-1104.02-2	Tapping sleeve and valve connection detail	11/10
T-1104.02-3	Combine fire and domestic water connection	09/11
T-1104.03	25 mm blow-off assembly detail	11/10
T-1104.03-1	Detail of temporary 50 mm diameter blow-off and assembly	11/10
T-1104.03-2	Detail of temporary isolating valve and sampling cocks	11/10
T-1105.01	Hydrant installation	11/10
T-1105.02-1	Standard service connection – 1	09/11
T-1105.02-2	Standard service connection – 2	09/11
T-1107.01-1	Piping layout for meter chamber up to 50 mm – private water service pipe	11/10
T-1107.02-1	Piping layout for compound water meter 75 mm to 300 mm in chamber	09/11
T-1107.02-2	Piping layout for electromagnetic water meter 75 mm to 300 mm in chamber	09/11
T-1107.02-3	Piping layout for turbine water meter 75 mm to 300 mm in chamber	09/11
T-1107.03-1	Installation details for compound, turbine or electromagnetic type water meter in buildings	09/11

### Table: Standard drawings

Drawing number	Title	Version (month/yr)
T-1107.04-1	Installation details for 37 mm and 50 mm positive displacement water meter in all buildings	09/11
T-1107.04-2	Installation details for 16 mm to 25 mm positive displacement water meter in single family residential buildings	09/11
T-1107.04-3	Detail of connections with cross or tee for watermains	11/10
T-1107.04-4	150 mm diameter branch connection	11/10
T-1107.04-5	Service connection branch diameter larger than water main	11/10
T-1107.04-6	Installation details for 16 mm to 25 mm positive displacement water meter in all buildings other than single family residential buildings	09/11
T-1108.01-1	Water meter chamber for 75 mm or greater private water service pipe	09/11
T-1108.01-2	Circular precast meter chamber for up to 50 mm private water service pipe	11/10
T-1108.01-3	Double check detector chamber	09/11

Table: Standard drawings (continued)







#### TO NON PLASTIC WATERMAIN

SIZE OF	SIZE OF MAIN MAIN MAIN MAIN MAIN MAXIMUM SIZE OF DIRECT CONNECTION WITH CORPORATION STOP TO THE MAIN	OVER MAXIMUM SIZE CONNECTION TO MAIN		
MAIN		BETWEEN	SIZE OF TS & V	
150 mm	25 mm	38-50 mm	100 mm	
200 mm	25 mm	38-50 mm	100 mm	
250 mm	25 mm	38-50 mm	100 mm	
300 mm	38 mm	50 mm	100 mm	
400 mm	50 mm	50 mm	100 mm	
		≥ 100 mm	SAME AS SERVICE	

### TO PLASTIC WATERMAIN

INSTALL WATER SERVICE, UP TO 50 mm IN DIAMETER, USING A SPECIFIED SERVICE SADDLE

#### NOTES:

- 1. SERVICES LARGER THAN 50 mm USE PVC OR DUCTILE IRON.
- 2. FOR SERVICES WHERE THE WATERMAIN IS ON THE SAME SIDE OF THE STREET, THE SERVICE MUST BE RODDED BACK FROM THE SERVICE VALVE TO THE TAPPING VALVE. THE BRANCH CONNECTION MUST BE RODDED FROM THE SERVICE VALVE TO THE TEE.
- 3. ALL SERVICE VALVES MUST BE RESTRAINED AS SPECIFIED.
- 4. FOR CONSTRUCTION OF NEW WATERMAIN, ANCHOR TEES SHALL BE USED.

All dimensions are in millimetres unless otherwise shown

Toronto Technical Services	CITY OF TORONTO STANDARD DRAWING	REV 01	NOV 2010
	TAPPING SLEEVE AND VALVE CONNECTION DETAIL	T-110	4.02-2
		NTS	SHEET 01

















### Notes:

- 1. All water meters shall be installed in the horizontal position. By-pass piping shall be installed in the horizontal position around the water meter. The private water service pipe shall be installed through the horizontal centre of the chamber.
- 2. Water meters shall be installed with a minimum 600 mm unobstructed clearance in front of water meter to nearest wall.
- 3. By-pass piping shall be installed with a minimum 100 mm unobstructed clearance from the outside wall of the by-pass pipe to the nearest wall.
- 4. The working space in front of the meter shall have a minimum of 2 m unobstructed head clearance.
- 5. All meters and piping shall be fully supported from the floor and such support shall be suitable for that purpose and shall be supplied and installed by the owner at the time of the installation of the water meter.
- 6. All valves, bends and tees shall be flanged, threaded or solder type. Acid core type solder not permitted.
- 7. All piping, including by-pass pipe, tees, bends and valves, except for the tee on the drainage valve shall be the same diameter as the private water service pipe. Pipe reducers required to accommodate a smaller water meter than the private water service pipe shall only be installed between the inlet and outlet valves and shall be attached directly to the valves. All pipe reducers shall be concentric type reducers.
- 8. From the time of the installation of the water meter, the by-pass and flushing valves shall remain closed at all times and shall be sealed by the City.
- Only gate valves shall be permitted for inlet, outlet, by-pass or flushing valves. No ball valves or butterfly valves shall be permitted. Valves shall be designed for a minimum cold water working pressure of 1035 kPa.
- 10. Drainage valve shall be a brass ball valve with a brass plug.
- 11. All pipe shall be either type "L" or "K" copper pipe (certified to ASTM B88) or stainless steel pipe rated to a minimum working pressure of 1035 kPa. All pipe flanges shall be threaded or welded to the pipe. Galvanized, polyethylene, PVC and other plastic pipe and fittings shall not be permitted.
- 12. All check valves, backflow preventers, pressure reducing valves, cross connection control devices and all other such devices shall be located downstream of the outlet tee. No other fittings or connections shall be allowed upstream of such devices.
- 13. No bends, tees or other fittings shall be allowed between the inlet and outlet valves other than the water meter.
- 14. The by-pass valve shall be attached to the inlet tee, the flushing valve shall be attached to the outlet tee and the drainage valve shall be positioned between the by-pass valve and the flushing valve as close as possible to the outlet tee. All valves shall be configured such that their handles shall not interfere with each other and all valves shall be readily accessible for operation, repair or replacement.
- 15. Any insulation placed on or around any water meter shall be easily removable and replaceable and shall not contain asbestos or any other toxic or hazardous materials. Such insulation shall not cover or obstruct the water meter register. The City shall not be responsible for any damage to such insulation during any removal or replacement of such insulation.
- 16. The private water service pipe shall be flushed prior to and after the installation of the water meter.
- 17. For remote readout device wire and conduit installation, refer to City of Toronto specifications.

All dimensions are in millimetres unless otherwise shown.

	CITY OF TORONTO STANDARD DRAWING	<b>REV 01</b>	NOV 2010
Toronto Technical Services	PIPING LAYOUT FOR METER CHAMBER UP TO 50 mm	T-110	7.01-1
	PRIVATE WATER SERVICE PIPE	NTS	SH 2 of 2



### Notes:

- 1. All water meters shall be installed in the horizontal position. By-pass piping shall be installed in the horizontal position around the water meter. The inlet tee and outlet tee must be installed within a minimum of 300 mm from the point of entry on the floor or wall where the private water service pipe enters the chamber.
- 2. Water meters shall be installed with a minimum 900 mm unobstructed clearance in front of water meter to nearest wall.
- 3. By-pass piping shall be installed with a minimum 300 mm unobstructed clearance from the outside wall of the by-pass pipe to the nearest wall.
- 4. The working space in front of the water meter shall have a minimum of 2 m unobstructed head clearance.
- 5. All piping shall be fully supported from the floor, and such support shall be suitable for that purpose and shall be supplied and installed by the property owner at the time of the installation of the water meter. The pipe immediately adjacent to the meter, not the meter, shall be fully supported from the floor.
- 6. All valves, bends and tees shall be flanged or solder type. Acid core type solder is not permitted.
- 7. All piping, including by-pass pipe, tees, bends and valves, except for the tee on the drainage valve shall be the same diameter as the private water service pipe. Pipe reducers required to accommodate a smaller water meter than the private water service pipe shall only be installed between the inlet and outlet valves and shall be attached directly to the valves. All pipe reducers shall be concentric type reducers.
- 8. After the water meter has been installed, the by-pass and flushing valves shall remain closed at all times and shall be sealed by the City.
- 9. All valves shall have a handle showing the open and close directions.
- 10. Only gate valves shall be permitted for inlet, outlet, by-pass or flushing valves. No ball valves or butterfly valves shall be permitted. Valves shall be designed for a minimum cold water working pressure of 1035 kPa. When cement lined ductile iron pipe is used, the valves shall be cast or ductile iron gate valves and shall be according to AWWA C509.
- 11. Drainage valve shall be a brass ball valve with a brass plug.
- 12. All pipe shall be either type "L" copper pipe (certified to ASTM B88), or cement lined ductile iron pipe (pipe to comply with ANSI/AWWA C115/A21.15 or ANSI/AWWA C151/A21.51; cement lining to comply with ANSI/AWWA C104/A21.4; fittings to comply with ANSI/AWWA C110/A21.10), or stainless steel pipe rated to a minimum working pressure of 1035 kPa. All pipe flanges shall be threaded or welded to the pipe. Galvanized, polyethylene, PVC and other plastic pipe and fittings shall not be permitted.
- 13. An approved strainer shall be supplied by the City and shall be bolted to the upstream side of the water meter.
- 14. All check valves, backflow preventers, pressure reducing valves, cross connection control devices and all other devices shall be located downstream of the outlet tee. No other fittings or connections shall be allowed upstream of such devices.

NOTES CONTINUE ON SHEET 3 OF 3

All dimensions are in millimetres unless otherwise shown.			
Toronto Technical Services	CITY OF TORONTO STANDARD DRAWING	REV 01	SEPT 2011
	PIPING LAYOUT FOR COMPOUND WATER METER 75 mm TO 300 mm IN CHAMBER	T-1107.02-1	
		NTS	SH 2 of 3
- 15. With the exception of items number 16 and 17 herein, all meter installations shall conform to the manufacturer's installation instructions.
- 16. The minimum distance between the flange on the outlet side of the inlet valve and the flange on the inlet side of the strainer shall be no less than six pipe diameters. No bends or other fittings shall be allowed in this pipe section.
- 17. The minimum distance between the flange on the outlet side of the water meter and the inlet side of the outlet valve shall be no less than four pipe diameters. No bends or other fittings shall be allowed in this pipe section.
- 18. The by-pass valve shall be bolted to the inlet tee, the flushing valve shall be bolted to the outlet tee and the drainage valve shall be bolted to the flushing valve. All valves shall be configured such that their handles shall not interfere with each other and all valves shall be readily accessible for operation, repair or replacement.
- 19. Any insulation placed on or around any water meter shall be easily removable and replaceable and shall not contain asbestos or any other toxic or hazardous materials. Such insulation shall not cover or obstruct the water meter register(s). The City shall not be responsible for any damage to such insulation during any removal or replacement of such insulation.
- 20. The private water service pipe shall be flushed prior to and after the installation of the water meter.
- 21. For remote readout device wire and conduit installation, refer to City of Toronto specifications.

NOTES CONTINUED FROM SHEET 2

**REV 01** 

NTS

All dimensions are in millimetres unless otherwise shown.

CITY



T-1107.02-1

WATER METER 75 mm TO 300 mm IN CHAMBER

PIPING LAYOUT FOR

COMPOUND

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**SEPT 2011** 



- 1. All water meters shall be installed in the horizontal position. By-pass piping shall be installed in the horizontal position around the water meter. The inlet tee and outlet tee must be installed within a minimum of 300 mm from the point of entry on the floor or wall where the private water service pipe enters the chamber.
- 2. Water meters shall be installed with a minimum 900 mm unobstructed clearance in front of water meter to nearest wall.
- 3. By-pass piping shall be installed with a minimum 300 mm unobstructed clearance from the outside wall of the by-pass pipe to the nearest wall.
- 4. The working space in front of the water meter shall have a minimum of 2 m unobstructed head clearance.
- 5. All piping shall be fully supported from the floor and such support shall be suitable for that purpose and shall be supplied and installed by the property owner at the time of the installation of the water meter. The pipe immediately adjacent to the meter, not the meter, shall be fully supported from the floor.
- 6. All valves, bends and tees shall be flanged or solder type. Acid core type solder is not permitted.
- 7. All piping, including by-pass pipe, tees, bends and valves, except for the tee on the drainage valve shall be the same diameter as the private water service pipe. Pipe reducers required to accommodate a smaller water meter than the private water service pipe shall only be installed between the inlet and outlet valves and shall be attached directly to the valves. All pipe reducers shall be concentric type reducers.
- 8. After the water meter has been installed, the by-pass and flushing valves shall remain closed at all times and shall be sealed by the City.
- 9. All valves shall have a handle showing the open and close directions.
- 10. Only gate valves shall be permitted for inlet, outlet, by-pass or flushing valves. No ball valves or butterfly valves shall be permitted. Valves shall be designed for a minimum cold water working pressure of 1035 kPa. When cement lined ductile iron pipe is used, the valves shall be cast or ductile iron gate valves and shall be according to AWWA C509.
- 11. Drainage valve shall be a brass ball valve with a brass plug.
- 12. All pipe shall be either type "L" copper pipe (certified to ASTM B88) or cement lined ductile iron pipe (pipe to comply with ANSI/AWWA C115/A21.15 or ANSI/AWWA C151/A21.51; cement lining to comply with ANSI/AWWA C104/A21.4; fittings to comply with ANSI/AWWA C110/A21.10), or stainless steel pipe rated to a minimum working pressure of 1035 kPa. All pipe flanges shall be threaded or welded to the pipe. Galvanized, polyethylene, PVC and other plastic pipe and fittings shall not be permitted.
- 13. Strainer is not required for electromagnetic water meter installations.
- 14. All check valves, backflow preventers, pressure reducing valves, cross connection control devices and all other such devices shall be located downstream of the outlet tee. No other fittings or connections shall be allowed upstream of such devices.
- 15. With the exception of items number 16 and 17 herein, all meter installations shall conform to the manufacturer's installation instructions.

All dimensions are in millin	netres unless otherwise shown.			
	CITY OF TORONTO STANDARD DRAWING	}	<b>REV 01</b>	SEPT 2011
Toronto	PIPING LAYOUT FOR ELECTROMAGNETIC		T-1107.02-2	
	WATER METER 75 mm TO 300 mm IN CHA		NTS	SH 2 of 3

- 16. The minimum distance between the flange on the outlet side of the inlet valve and the flange on the inlet side of the electromagnetic water meter shall be no less than five pipe diameters. No bends or other fittings shall be allowed in this pipe section.
- 17. The minimum distance between the flange on the outlet side of the electromagnetic water meter and the inlet side of the test tee shall be no less than three pipe diameters. No bends or other fittings shall be allowed in this pipe section.
- 18. The by-pass valve shall be bolted to the inlet tee, the flushing valve shall be bolted to the outlet tee and the drainage valve shall be bolted to the flushing valve. The test tee shall be bolted to the upstream side of the outlet valve. All valves shall be configured such that their handles shall not interfere with each other and all valves shall be readily accessible for operation, repair or replacement.
- 19. Any insulation placed on or around any water meter shall be easily removable and replaceable and shall not contain asbestos or any other toxic or hazardous materials. Such insulation shall not cover or obstruct the water meter register(s). The City shall not be responsible for any damage to such insulation during any removal or replacement of such insulation.
- 20. The private water service pipe shall be flushed prior to and after the installation of the water meter.
- 21. For remote readout device wire and conduit installation, refer to City of Toronto specifications.

Technical Services	CITY OF TORONTO STANDARD DRAWING	REV 01	SEPT 2011
	PIPING LAYOUT FOR ELECTROMAGNETIC WATER METER 75 mm TO 300 mm IN CHAMBER	T-1107.02-2	
		NTS	SH 3 of 3



- 1. All water meters shall be installed in the horizontal position. By-pass piping shall be installed in the horizontal position around the water meter. The inlet tee and outlet tee must be installed within a minimum of 300 mm from the point of entry on the floor or wall where the private water service pipe enters the chamber.
- 2. Water meters shall be installed with a minimum 900 mm unobstructed clearance in front of water meter to nearest wall.
- 3. By-pass piping shall be installed with a minimum 300 mm unobstructed clearance from the outside wall of the by-pass pipe to the nearest wall.
- 4. The working space in front of the water meter shall have a minimum of 2 m unobstructed head clearance.
- 5. All piping shall be fully supported from the floor, and such support shall be suitable for that purpose and shall be supplied and installed by the property owner at the time of the installation of the water meter. The pipe immediately adjacent to the meter, not the meter, shall be fully supported from the floor.
- 6. All valves, bends and tees shall be flanged or solder type. Acid core type solder is not permitted.
- 7. All piping, including by-pass pipe, tees, bends and valves, except for the tee on the drainage valve shall be the same diameter as the private water service pipe. Pipe reducers required to accommodate a smaller water meter than the private water service pipe shall only be installed between the inlet and outlet valves and shall be attached directly to the valves. All pipe reducers shall be concentric type reducers.
- 8. After the water meter has been installed, the by-pass and flushing valves shall remain closed at all times and shall be sealed by the City.
- 9. All valves shall have a handle showing the open and close directions.
- 10. Only gate valves shall be permitted for inlet, outlet, by-pass or flushing valves. No ball valves or butterfly valves shall be permitted. Valves shall be designed for a minimum cold water working pressure of 1035 kPa. When cement lined ductile iron pipe is used, the valves shall be cast or ductile iron gate valves and shall be according to AWWA C509.
- 11. Drainage valve shall be a brass ball valve with a brass plug.
- 12. All pipe shall be either type "L" copper pipe (certified to ASTM B88), or cement lined ductile iron pipe (pipe to comply with ANSI/AWWA C115/A21.15 or ANSI/AWWA C151/A21.51; cement lining to comply with ANSI/AWWA C104/A21.4; fittings to comply with ANSI/AWWA C110/A21.10), or stainless steel pipe rated to a minimum working pressure of 1035 kPa. All pipe flanges shall be threaded or welded to the pipe. Galvanized, polyethylene, PVC and other plastic pipe and fittings shall not be permitted.
- 13. An approved strainer shall be supplied by the City and shall be bolted to the upstream side of the water meter.
- 14. All check valves, backflow preventers, pressure reducing valves, cross connection control devices and all other devices shall be located downstream of the outlet tee. No other fittings or connections shall be allowed upstream of such devices.

All dimensions are in millimetres unless otherwise shown.				
Technical Services	CITY OF TORONTO STANDARD DRAWING	<b>REV 01</b>	SEPT 2011	
	PIPING LAYOUT FOR TURBINE	T-1107.02-3		
	WATER METER 75 mm TO 300 mm IN CHAMBER	NTS	SH 2 of 3	

- 15. With the exception of items number 16 and 17 herein, all meter installations shall conform to the manufacturer's installation instructions.
- 16. The minimum distance between the flange on the outlet side of the inlet valve and the flange on the inlet side of the strainer shall be no less than six pipe diameters. No bends or other fittings shall be allowed in this pipe section.
- 17. The minimum distance between the flange on the outlet side of the water meter and the inlet side of the outlet valve shall be no less than four pipe diameters. No bends or other fittings shall be allowed in this pipe section.
- 18. The by-pass valve shall be bolted to the inlet tee, the flushing valve shall be bolted to the outlet tee and the drainage valve shall be bolted to the flushing valve. All valves shall be configured such that their handles shall not interfere with each other and all valves shall be readily accessible for operation, repair or replacement.
- 19. Any insulation placed on or around any water meter shall be easily removable and replaceable and shall not contain asbestos or any other toxic or hazardous materials. Such insulation shall not cover or obstruct the water meter register(s). The City shall not be responsible for any damage to such insulation during any removal or replacement of such insulation.
- 20. The private water service pipe shall be flushed prior to and after the installation of the water meter.
- 21. For remote readout device wire and conduit installation, refer to City of Toronto specifications.

NOTES CONTINUED FROM SHEET 2

**REV 01** 

NTS

All dimensions are in millimetres unless otherwise shown.



CITY OF TORONTO STANDARD DRAWING

T-1107.02-3

10	RDINE
WATER METER 75 mm	TO 300 mm IN CHAMBER

PIPING LAYOUT FOR

SH 3 of 3

**SEPT 2011** 



- 1. All water meters shall be installed in the horizontal position. By-pass piping may be installed in either the horizontal or vertical position around the water meter. The inlet tee must be installed within one metre from the floor or wall where the private water service pipe enters the building.
- 2. Water meters shall be installed with a minimum 1.5 m unobstructed clearance in front of water meter to nearest wall and 600 mm unobstructed clearance behind the water meter to nearest wall.
- 3. By-pass piping shall be installed with a minimum 600 mm unobstructed clearance from the outside wall of the by-pass pipe to the nearest ceiling or wall.
- 4. The working space in front of the meter shall have a minimum of 2 m unobstructed head clearance.
- 5. The meters and all piping shall be fully supported from the floor and such support shall be suitable for that purpose and shall be supplied and installed by the property owner at the time of the installation of the water meter. For all water meters, the pipe immediately adjacent to the meter, not the meter, shall be fully supported from the floor.
- 6. All valves, bends and tees shall be flanged or solder type. Acid core type solder is not permitted.
- 7. All piping, including by-pass pipe, tees, bends and valves, except for the tee on the drainage valve shall be the same diameter as the private water service pipe. Pipe reducers required to accommodate a smaller water meter than the private water service pipe shall only be installed between the inlet and outlet valves and shall be attached directly to the valves. All pipe reducers shall be concentric type reducers.
- 8. The by-pass and flushing valves shall remain closed at all times and shall be sealed by the City after the water meter has been installed.
- 9. All valves shall have a handle showing the open and close directions.
- 10. Only gate valves shall be permitted for inlet, outlet, by-pass or flushing valves. No ball valves or butterfly valves shall be permitted. Valves shall be designed for a minimum cold water working pressure of 1035 kPa. When cement lined ductile iron pipe is used, valves shall be cast or ductile iron gate valves and shall be according to AWWA C509.
- 11. Drainage valve shall be a brass ball valve with brass plug.
- 12. All pipe shall be either type "L" copper pipe (certified to ASTM B88), or cement lined ductile iron pipe (pipe to comply with ANSI/AWWA C115/A21.15 or ANSI/AWWA C151/A21.51; cement lining to comply with ANSI/AWWA C104/A21.4; fittings to comply with ANSI/AWWA C110/A21.10), or stainless steel pipe rated to a minimum working pressure of 1035 kPa. All pipe flanges shall be threaded or welded to the pipe. Galvanized, polyethylene, PVC and other plastic pipe and fittings shall not be permitted.
- 13. An approved strainer shall be supplied by the City and shall be bolted to the upstream side of the water meter. Strainer is not required for electromagnetic water meter installations.
- 14. All check valves, backflow preventers, pressure reducing valves, cross connection control devices and all other devices shall be located downstream of the outlet tee. No other fittings or connections shall be allowed upstream of such devices.
- 15. With the exception of items number 16 and 17 herein, all meter installations shall conform to the manufacturer's installation instructions.

All dimensions are in millimetres unless otherwise shown.				
Toronto Technical Services	CITY OF TORONTO STANDARD DRAWING	REV 01	SEPT 2011	
	INSTALLATION DETAILS FOR COMPOUND, TURBINE OR ELECTROMAGNETIC	T-1107.03-1		
		NTS	SH 2 of 3	

- 16. The minimum distance between the flange on the outlet side of the inlet valve and the flange on the inlet side of the strainer shall be no less than six pipe diameters. For electromagnetic water meter installations, the minimum distance between the flange on the outlet side of the inlet valve and the flange on the inlet side of the meter shall be no less than five pipe diameters. No bends or other fittings shall be allowed in this pipe section.
- 17. The minimum distance between the flange on the outlet side of the water meter and the inlet side of the drain port tee shall be no less than four pipe diameters. For electromagnetic water meter installations, the minimum distance between the flange on the outlet side of the water meter and the inlet side of the tee shall be no less than three pipe diameters. No bends or other fittings shall be allowed in this pipe section.
- 18. The by-pass valve shall be bolted to the inlet tee, the flushing valve shall be bolted to the outlet tee and the drainage valve shall be bolted to the flushing valve. The test tee shall be bolted to the upstream side of the outlet valve. All valves shall be configured such that their handles shall not interfere with each other and all valves shall be readily accessible for operation, repair or replacement.
- 19. Any insulation placed on or around any water meter shall be easily removable and replaceable and shall not contain asbestos or any other toxic or hazardous materials. Such insulation shall not cover or obstruct the water meter register(s). The City shall not be responsible for any damage to such insulation during any removal or replacement of such insulation.
- 20. The room where the water meter is located shall be positioned in the building such that it is adjacent to the outside wall of the building at the point where the private water service pipe enters the building.
- 21. The room where the water meter is located shall have a door with a minimum opening of one metre wide and 2.2 m high. The floor, walls and ceiling shall be constructed of waterproof materials.
- 22. The private water service pipe shall be flushed prior to and after the installation of the water meter.
- 23. For remote readout device wire and conduit installation, refer to City of Toronto specifications.

Technical Services	CITY OF TORONTO STANDARD DRAWING	REV 01	SEPT 2011
	INSTALLATION DETAILS FOR COMPOUND, TURBINE OR ELECTROMAGNETIC	T-110	7.03-1
	I YPE WATER METER IN BUILDINGS	NTS	SH 3 of 3



- 1. All water meters shall be installed in the horizontal position. By-pass piping may be installed in either the horizontal or vertical position around the water meter. The inlet tee must be installed within 600 mm of the point of entry on the floor or wall where the private water service pipe enters the building.
- 2. Water meters shall be installed with a minimum 1.2 m unobstructed clearance in front of water meter to nearest wall and 500 mm unobstructed clearance behind the water meter to the nearest wall. Water meters shall not be installed at a height greater than 550 mm above the floor.
- 3. By-pass piping shall be installed with a minimum 500 mm unobstructed clearance from the outside wall of the by-pass pipe to the nearest ceiling or wall.
- 4. The working space in front of the meter shall have a minimum of 2 m unobstructed head clearance.
- 5. All joints shall be soldered, compression type, welded, threaded or flanged. Acid core type solder is not permitted.
- 6. All piping, including by-pass pipe, tees, bends and valves, except for the tee on the drainage valve shall be the same diameter as the private water service pipe. Pipe reducers required to accommodate a smaller water meter than the private water service pipe shall only be installed between the inlet and outlet valves and shall be attached directly to the valves. All pipe reducers shall be concentric type reducers.
- 7. From the time of the installation of the water meter, the by-pass and flushing valves shall remain closed at all times and shall be sealed by the City.
- 8. Only gate valves shall be permitted for inlet, outlet, by-pass or flushing valves. No ball valves or butterfly valves shall be permitted. All valves and fittings shall be with rated working pressure of 1035 kPa. Valves shall be brass or bronze gate valves.
- 9. Drainage valve shall be a brass ball valve with brass plug.
- 10. All piping shall be either type "L" copper (certified to ASTM B88) or stainless steel pipe rated to a minimum working pressure of 1035 kPa. For stainless steel pipe, all pipe flanges shall be welded to the pipe. Galvanized, polyethylene, PVC and other plastic pipe or fittings are not permitted.
- 11. All check valves, backflow preventers, pressure reducing valves, cross connection control devices and all other such devices shall be located downstream of the outlet tee. No other fittings or connections shall be allowed upstream of such devices.
- 12. All water meter installations shall conform with the manufacturer's installation instructions.
- 13. The by-pass valve shall be connected to the inlet tee, the flushing valve shall be connected to the outlet tee and the drainage valve shall be connected to the flushing valve. The drain port tee shall be connected to the upstream side of the outlet valve. All valves shall be configured such that their handles shall not interfere with each other and all valves shall be readily accessible for operation, repair or replacement.
- 14. Any insulation placed on or around any water meter shall be easily removable and replaceable and shall not contain asbestos or any other toxic or hazardous materials. Such insulation shall not cover or obstruct the water meter register. The City shall not be responsible for any damage to such insulation during any removal or replacement of such insulation.

		NOTES CONTINUE ON SHEET 3 OF 3		3 OF 3
All dimensions are in millime	etres unless otherwise shown.			
	CITY OF TORONTO STANDARD DRAWING		REV 01	SEPT 2011
Toronto Technical Services	INSTALLATION DETAILS FOR 37 mm AND 50 mm POSITIVE DISPLACEME	ENT	T-1107.04-1	7.04-1
	WATER METER IN ALL BUILDINGS	S NT	NTS	SH 2 of 3

- 15. The room where the water meter is located shall be positioned in the building such that it is adjacent to the outside wall of the building at the point where the private water service pipe enters the building.
- 16. The room where the water meter is located shall have a door with a minimum opening of one metre wide and 2.2 m high. The floor shall be constructed of waterproof materials. The walls and ceiling shall be constructed of water-resistant materials.
- 17. The private water service pipe shall be flushed prior to and after the installation of the water meter.
- 18. For remote readout device wire and conduit installation, refer to City of Toronto specifications.





- 1. All water meters shall be installed in the horizontal position. The water meter must be installed within 500 mm of the point on the floor or wall where the private water service pipe enters the building.
- 2. Water meters shall be installed with a minimum one metre unobstructed clearance in front of water meter to nearest wall and 200 mm unobstructed clearance behind the water meter to nearest wall. Water meters shall not be installed at a height greater than 400 mm above the floor.
- 3. The working space in front of the meter shall have a minimum of 2 m unobstructed head clearance.
- 4. All joints shall be soldered, compression type, threaded or welded. Acid core type solder not permitted. Connectors of diameter up to 25 mm shall be Cambridge Brass or approved equivalent.
- 5. All piping, tees, bends and valves, shall be the same diameter as the private water service pipe.
- 6. The water meter shall be sealed by the City.
- 7. Only gate and full bore ball valves shall be permitted for the stop and waste valve. A full bore ball valve shall be installed downstream of the water meter.
- 8. All piping shall be either type "L" copper (certified to ASTM B88) or stainless steel pipe rated to a minimum working pressure of 1035 kPa. Galvanized, polyethylene, PVC and other plastic pipe and fittings shall not be allowed.
- 9. No other fittings or connections shall be allowed upstream of the ball valve. All check valves, backflow preventers, pressure reducing valves or other devices shall be located downstream of the ball valve.
- 10. All water meter installations shall conform with the manufacturer's installation instructions.
- 11. Solder-joint fittings for copper pipe shall conform to ANSI B16. Valves shall be designed for a minimum cold water working pressure of 1035 kPa and shall conform to CSA B125.
- 12. Any insulation placed on or around any water meter shall be easily removable and replaceable and shall not contain asbestos or any other toxic or hazardous materials. Such insulation shall not cover or obstruct the water meter register. The City shall not be responsible for any damage to such insulation during any removal or replacement of such insulation.
- 13. The room where the water meter is located shall be positioned in the building such that it is adjacent to the outside wall of the building at the point where the private water service pipe enters the building.
- 14. The room where the water meter is located shall have a door with a minimum opening of 0.8 m wide and 2.2 m high. The floor shall be constructed of waterproof materials. The walls and ceiling shall be constructed of water resistant materials.
- 15. The private water service pipe shall be flushed prior to and after the installation of the water meter.
- 16. For remote readout device wire and conduit installation, refer to City of Toronto specifications.
- 17. When non-metallic pipe is used for the private water service pipe and / or private water pipe downstream of the meter, the section of pipe between the stop and waste valve and full bore ball valve shall be as per note 8 above and shall be fully supported and restrained to prevent movement of the piping around the meter.

All dimensions are in millin	netres unless otherwise snown.		
Technical Services	CITY OF TORONTO STANDARD DRAWING	REV 01	SEPT 2011
	INSTALLATION DETAILS FOR 16 mm AND 25 mm POSITIVE DISPLACEMENT WATER METER IN SINGLE FAMILY RESIDENTIAL BUILDINGS	T-1107.04-2	
		NTS	SH 2 of 2









- 1. All water meters shall be installed in the horizontal position. By-pass piping may be installed in either the horizontal or vertical position around the water meter. The inlet tee shall be installed within 500 mm from the floor or wall where the private water service pipe enters the building.
- 2. Water meters shall be installed with a minimum 1.2 m unobstructed clearance in front of water meter to nearest wall and 300 mm unobstructed clearance behind the water meter to nearest wall. Water meters shall not be installed at a height greater than 450 mm above the floor.
- 3. By-pass piping shall be installed with a minimum 300 mm unobstructed clearance from the outside wall of the by-pass pipe to the nearest ceiling or wall.
- 4. The working space in front of the meter shall have a minimum of 1.8 m unobstructed head clearance.
- 5. All joints shall be soldered, compression type, threaded or welded. Acid core type solder is not permitted. Solder-joint fittings for copper pipe shall conform to ANSI B16.
- 6. All piping, including by-pass pipe, tees, bends and valves, shall be the same diameter as the private water service pipe.
- 7. The by-pass and flushing valves shall remain closed at all times and shall be sealed by the City after water meter has been installed.
- Only gate valves shall be permitted for inlet, outlet, by-pass or flushing valves. No ball valves or butterfly valves shall be permitted. Gate valves shall be designed for a minimum cold water working pressure of 1035 kPa and shall conform to CSA B125.
- 9. Drainage valve shall be a brass ball valve with brass plug.

All dimensions are in millimetres unless otherwise shown.

- 10. All piping shall be either type "L" copper (certified to ASTM B88) or stainless steel pipe rated to a minimum working pressure of 1035 kPa. For stainless steel pipe, all pipe flanges shall be welded to the pipe. Galvanized, polyethylene, PVC and other plastic pipe and fittings shall not be allowed.
- 11. All check valves, backflow preventers, pressure reducing valves, cross connection control devices and all other such devices shall be located downstream of the outlet tee. No other fittings or connections shall be allowed upstream of such devices.
- 12. All water meter installations shall conform with the manufacturer's installation instructions.
- 13. The by-pass valve shall be connected to the inlet tee, the flushing valve shall be connected to the outlet tee and the drainage valve shall be connected to the flushing valve. The drain port tee shall be connected to the upstream side of the outlet valve. All valves shall be configured such that their handles shall not interfere with each other and all valves shall be readily accessible for operation, repair or replacement.
- 14. Any insulation placed on or around any water meter shall be easily removable and replaceable and shall not contain asbestos or any other toxic or hazardous materials. Such insulation shall not cover or obstruct the water meter register. The City shall not be responsible for any damage to such insulation during any removal or replacement of such insulation.
- 15. The room where the water meter is located shall be positioned in the building such that it is adjacent to the outside wall of the building at the point where the private water service pipe enters the building.

Technical Services	CITY OF TORONTO STANDARD DRAWING	REV 01	SEPT 2011	
	INSTALLATIONS DETAILS FOR 16 mm TO 25 mm POSITIVE DISPLACEMENT WATER METER IN ALL BUILDINGS OTHER THAN SINCLE FRAMEY RESIDENTIAL BUILDINGS	T-1107.04-6		ER IN ALL T-1107.04-6
	BUILDINGS OTHER THAN SINGLE FAMILY RESIDENTIAL BUILDINGS	NTS	SH 2 OF 3	

NOTES CONTINUED FROM SHEET 2

- 16. The room where the water meter is located shall have a door with a minimum opening of one metre wide and 2.2 m high. The floor, shall be constructed of waterproof materials. The walls and ceiling shall be constructed of water-resistant materials.
- 17. The private water service pipe shall be flushed prior to and after the installation of the water meter.
- 18. For remote readout device wire and conduit installation, refer to City of Toronto specifications.
- 19. When non-metallic pipe is used for the private water service pipe and / or private water pipe downstream of the meter, the section of pipe between the stop and waste valve and full bore ball valve shall be as per note 8 above and shall be fully supported and restrained to prevent movement of the piping around the meter.

	CITY OF TORONTO STANDARD DRAWING	REV 01	SEPT 2011
Technical Services	INSTALLATIONS DETAILS FOR 16 mm TO 25 mm POSITIVE DISPLACEMENT WATER METER IN ALL	T-110	7.04-6
	BUILDINGS UTHER THAN SINGLE FAMILY RESIDENTIAL BUILDINGS	NTS	SH 3 OF 3



- 1. Concrete strength shall be 35 MPa with 6% air entrainment.
- 2. Reinforcing bars to have a minimum of 50 mm concrete cover.
- 3. Precast sections to be as per OPSS 1351.
- 4. Base concrete strength shall not be less than 30 MPa.
- 5. All mortar mix to be 1:3.
- 6. All joints and lift holes in chamber sections to be filled with mortar and pointed before backfilling.
- 7. Solid aluminum steps as per OPSD 405.020 at 300 mm centre to centre with first step to be 300 mm below frame.
- 8. Polyethylene bond breaker to be used between concrete and fittings. An approved flexible sealant shall be used where the pipe goes through the chamber wall. Installation of pipe seal shall conform to manufacturer's directions.
- 9. All exterior and interior brickwork and frame adjustment rings to be parged to a minimum 15 mm thickness.
- 10. Floor to slope to sump. Sump to be positioned in either corner on the front side of the water meter.
- 11. Circular cover in three piece frame and cover shall be positioned immediately adjacent to the wall in front of the meter directly over the 900 mm clear space in front of the meter.
- 12. Reinforced concrete design shall be adequate for chamber dimensions shown under H-20 loading.
- 13. The words "Water Meter" shall be cast onto the surface of the chamber cover using minimum 50 mm high letters.
- 14. The three piece chamber frame and cover shall be as per OPSD 402.030.
- 15. No other piping or fittings shall be installed in the chamber that may interfere with the clear space in front of the water meter or the operation of valves or that may obstruct the meter or valves in any way.





- 1. Concrete strength shall be no less than 30 MPa and with 6% air entrainment.
- 2. Reinforcing bars to have a minimum of 50 mm concrete cover.
- 3. Precast sections to be as per OPSS 1351.
- 4. Base concrete strength shall not be less than 30 MPa.
- 5. All mortar mix to be 1:3.
- 6. All joints and lift holes in chamber sections to be filled with mortar and pointed before backfilling.
- 7. Solid aluminum steps as per OPSD 405.020 at 300 mm centre to centre with first step to be 300 mm below frame.
- 8. Polyethylene bond breaker to be used between concrete and fittings. An approved flexible sealant shall be used where the pipe goes through the chamber wall. Installation of pipe seal shall conform to manufacturers directions.
- 9. All exterior and interior brickwork and frame adjustment rings to be parged to a minimum 15 mm thickness.
- 10. Floor to slope to sump. Sump to be positioned on the front side of the water meter.
- 11. Frame and cover shall be positioned immediately adjacent to the wall in front of the meter directly over the clear space in front of the meter.
- 12. Reinforced concrete design shall be adequate for chamber dimensions shown under H-20 loading.
- 13. The words "Water Meter" shall be cast onto the surface of the chamber cover using minimum 50 mm high letters.
- 14. The chamber frame and cover shall be as per OPSD 402.01.
- 15. No other piping or fittings shall be installed in the chamber that may interfere with the clear space in front of the water meter or the operation of valves or that may obstruct the meter or valves in any way.





- 1. Concrete strength shall be 35 MPA with 6% air entrainment.
- 2. Reinforcing bars to have a minimum of 50 mm concrete cover.
- 3. Precast sections to be as per OPSS 1351.
- 4. Base concrete strength shall not be less than 30 MPa.
- 5. All mortar mix to be 1:3.
- 6. All joints and lift holes in chamber sections to be filled with mortar and pointed before backfilling.
- 7. Solid aluminum steps as per OPSD 405.020 at 300 mm centre to centre with first step to be 300 mm below frame.
- 8. Polyethylene bond breaker to be used between concrete and fittings. An approved flexible sealant shall be used where the pipe goes through the chamber wall. Installation of pipe seal shall conform to manufacturer's directions.
- 9. All exterior and interior brick work and frame adjustment rings to be parged to a minimum 15 mm thickness.
- 10. Floor to slope to sump. Sump to be positioned in either corner on the front side of the detector assembly.
- 11. Circular cover in three piece frame and cover shall be positioned immediately adjacent to the wall in front of the meter directly over the 900 mm clear space in front of the meter.
- 12. Reinforced concrete design shall be adequate for chamber dimensions shown under H-20 loading.
- 13. The three piece chamber frame and cover shall be as per OPSD 402.030.
- 14. No other piping or fittings shall be installed in the chamber that may interfere with the clear space in front of the water meter or the operation of the double check detector that may obstruct the double check detector in any way.
- 15. Detector assembly shall be installed with a minimum 900 mm unobstructed clearance in front of detector assembly meter to nearest wall.
- 16. The working space in front of the detector assembly shall have a minimum of 2 m unobstructed head clearance.
- 17. All piping shall be fully supported from the floor and such support shall be suitable for that purpose and shall be supplied and installed by the property owner at the time of the installation of the detector assembly. The pipe immediately adjacent to the meter, not the meter, shall be fully supported from the floor.
- 18. All valves, bends and tees shall be flanged or solder type. Acid core type solder is not permitted.
- 19. All pipe shall be either type "L" copper pipe (certified to ASTM B88) or cement lined ductile iron pipe (pipe to comply with ANSI/AWWA C115/A21.15 or ANSI/AWWA C151/A21.51; cement lining to comply with ANSI/AWWA C104/A21.4; fittings to comply with ANSI/AWWA C110/A21.10), or stainless steel pipe rated to a minimum working pressure of 1035 kPa. All pipe flanges shall be threaded or welded to the pipe. Galvanized, polyethylene, PVC and other plastic pipe and fittings shall not be permitted.



- 20. All meter and detector assembly installations shall conform to the manufacturer's installation instructions.
- 21. Any insulation placed on or around any water meter shall be easily removable and replaceable and shall not contain asbestos or any other toxic or hazardous materials. Such insulation shall not cover or obstruct the water meter register(s). The City shall not be responsible for any damage to such insulation during any removal or replacement of such insulation.
- 22. The private water service pipe shall be flushed prior to and after the installation of the water meter.
- 23. For remote readout device wire and conduit installation, refer to City of Toronto specifications.

	CITY OF TORONTO STANDARD DRAWING	<b>REV 01</b>	SEPT 2011	
Technical Services	DOUBLE CHECK DETECTOR CHAMBER		T-1108.01-3	
		NTS	SH 3 of 3	

# Appendix D – Applicable Standards and Specifications

The following table lists the applicable standards and specifications for each section of Toronto Municipal Code, Chapter 851, Water Supply.

Section	Section description	Applicable standards and specifications
§ 851-4	Water service connections	
4B(2)	Application for connection	All applicable standards and specifications
4C(1)	Installation of water service connection	T-708.01-4
		T-1101.02-2
		T-1101.02-3
		T-1104.01
		T-1104.02-1
		T-1104.02-2
		T-1105.02-1
		T-1105.02-2
		T-1106.04
		TS 701 (701.07.20, OPSS 701 '92, OPSS 701 '06)
		TS 7.30
		TS 7.40
		OPSS 503
		OPSS 507
		TS 514
		OPSS 514
		OPSS 517
		OPSS 538
		Chapter 6, Material Specifications,

## Table: Applicable standards and specifications

Section	Section description	Applicable standards and specifications
4K(2) (water service connection)	Acceptance of temporary water service connection.	Same as § 851-4C(1)
4K(2) (water	Acceptance of temporary water service connection.	T-1107.01-1 (with regard to water service pipe)
connection)		T-1107.02-1
,		T-1107.02-2
		T-1107.03-1
		T-1107.04-1
		T-1107.04-2
		T-1107.04-6
		TS 7.30
4L(1)	Installation and inspection of private water service pipe and private fire service mains.	Same as § 851-4K(2) (private water services)
4L(3)	Installation and inspection of private water service pipe and private fire service mains.	Same as § 851-4K(2) (private water services)
4L(4)(b)[1]	Installation and inspection of private water service pipe and private fire service mains.	Same as § 851-4K(2) (private water services)
4L(4)(c)[3]	Installation and inspection of private water service pipe and private fire service mains.	Same as § 851-4K(2) (private water services)

 Table: Applicable standards and specifications (continued)

Section	Section description	Applicable standards and specifications
§ 851-5	Metering of water	
5B(2)	Installation of water meter	T-1107.01-1
		T-1107.02-1
		T-1107.02-2
		T-1107.03-1
		T-1107.04-1
		T-1107.04-2
		T-1107.04-6
5B(4)(b)	Installation of water meter	No City standards or specifications. Use manufacturer's specifications.
5C(1)(a)	Supply and payment for water meters	Same as § 851-5B(2)
5D(1)	Size of water meter	No City standards or specifications. Use AWWA M22 manual or consult with Toronto Water.
5D(5)	Size of water meter	Same as § 851-5B(2)
5F(2)	Notification by owner	Same as § 851-5B(2)
5G	Provision for water meter	Same as § 851-5B(2)
5H(1)	Water meter by-pass piping	Same as § 851-5B(2)
5H(5)	Water meter by-pass piping	Same as § 851-5B(2)
5I(1)	Water meter chamber	T-1105.02-1
		T-1105.02-2
		T-1108.01-1
		T-1108.01-2
		OPSD 402.01
		OPSD 402.030
		OPSD 405.020
		OPSS 407
		OPSS 516
		OPSS 517, OPSS 538

Table: Applicable standards and specifications (continued)

Section	Section description	Applicable standards and specifications
5I(1)	Water meter chamber (continued)	OPSS 1351 (2004)
		OPSS 1850
5I(6)(a)	Water meter chamber	TS 7.50
5I(6)(b)[1]	Water meter chamber	TS 7.50
5I(6)(b)[2]	Water meter chamber	TS 7.50
		T-1108.01-1
5J(2)	Remote readout unit and remote unit wire	TS 7.50
5J(4)	Remote readout unit and remote unit wire	TS 7.50
5J(8)	Remote readout unit and remote unit wire	No City standards or specifications. Use manufacturer's specifications.
5J(9)	Remote readout unit and remote unit wire	TS 7.50
5J(12)	Remote readout unit and remote unit wire	TS 7.50
5J(13)(a)	Remote readout unit and remote unit wire	TS 7.50
5K(1)(a)	Dedicated telephone line and electrical outlet	No City standards or specifications. Use manufacturer's specifications.
5K(2)(b)	Dedicated telephone line and electrical outlet	No City standards or specifications. Use manufacturer's specifications.
5M	Detector check valve and water meter on private fire service main	T-1108.01-3

 Table: Applicable standards and specifications (continued)

Section	Section description	Applicable standards and specifications
5N(3)	Temporary water meter	No City standards or specifications. Use manufacturer's specifications.
		OPSS 701 (Nov 2006)
		TS 701
		T-1107.01-1 (Item 11)
		T-1107.02-1 (Item 13)
		T-1107.02-2 (Item 13)
		T-1107.03-1 (Item 13)
		T-1107.04-1 (Item 10)
		T-1107.04-2 (Item 9)
		T-1107.04-6 (Item 10)
5N(4)(a)	Temporary water meter	Same as § 851-5N(3)
5N(4)(b)	Temporary water meter	Same as § 851-5N(3)
5Q(4)(a)	Seasonal water service connection and meter	No City standards or specifications. Use manufacturer's specifications.
		Same as § 851-5B(2)
		Same as § 851-5I(1)
5S(4)(b)	Condominium applications	Same as § 851-4C(1)
		Same as § 851-4K(2)
		Same as § 851-5B(2)
		TS 7.50
5S(6)	Condominium applications	Same as § 851-5S(4)(b)

Table: Applicable standards and specifications (continued)

Section	Section description	Applicable standards and specifications
§ 851-6	Water meter inspection	
6B(3)(b)	Access	T-1107.01-1 (Item 14)
		T-1107.02-1 (Item 18)
		T-1107.02-2 (Item 18)
		T-1107.03-1 (Item 18)
		T-1107.04-1 (Item 13)
		T-1107.04-2 (Item 12)
		T-1107.04-6 (Item 13)
		See also Occupational Health and Safety Act (OHSA)
§ 851-7	Maintenance	
7A(1)	Maintenance of water meter appurtenances and piping	T-1107.01-1
		T-1107.02-1
		T-1107.02-2
		T-1107.03-1
		T-1107.04-1
		T-1107.04-2
		Т-1107.04-6
7A(2)	Maintenance of water meter appurtenance and piping	Same as § 851-7A(1)
7A(3)	Maintenance of water meter appurtenance and piping	Same as § 851-7A(1)
7C(1)	Water meter accuracy	Meet or exceed all current minimum AWWA standards for accuracy.
7C(3)(a)	Water meter accuracy	Meet or exceed all current minimum AWWA standards for accuracy.
7C(8)	Water meter accuracy	Meet or exceed all current minimum AWWA standards for accuracy.

Table: Applicable standards and specifications (continued)

Section	Section description	Applicable standards and specifications
7D(3)(c)	Relocation of water meter	Same as § 851-5B(2)
		T-1108.01-1 (Item 10 & 11)
		T-1108.01-2 (Item 10 & 11)
7D(4)	Relocation of water meter	TS 7.50
7D(5)	Relocation of water meter	T-1107.04-1
		T-1107.04-2
		T-1107.04-6
7D(10)	Relocation of water meter	T-1107.04-1
		T-1107.04-2
		T-1107.04-6
7D(11)(a)	Relocation of water meter	All applicable standards and specifications.
		T-1107.04-1
		T-1107.04-2
		T-1107.04-6
§ 851-8	Private water system	
8A(1)	Installation	T-1107.01-1
		T-1107.02-1
		T-1107.02-2
		T-1107.03-1
		T-1107.04-1
		T-1107.04-2
		T-1107.04-6

Table: Applicable standards and specifications (continued)

Section	Section description	Applicable standards and specifications
8B(1)	Disinfection	OPSS 701
		TS 7.30
		T-1107.01-1 (Item 11)
		T-1107.02-1 (Item 13)
		T-1107.02-2 (Item 13)
		T-1107.03-1 (Item 13)
		T-1107.04-1 (Item 10)
		T-1107.04-2 (Item 9)
		T-1107.04-6 (Item 10)
8B(2)(b)	Disinfection	TS 7.30
		OPSS 701
8D(3)	Cross connection and backflow prevention	No City standard and specification. Use CSA B64 series standards.
8D(4)	Cross connection and backflow prevention	No City standard and specification. Use CSA B64 series standards.
8D(5)	Cross connection and backflow prevention	No City standard and specification. Use CSA B64 series standards.
8D(7)(c)[5]	Cross connection and backflow prevention	No City standard and specification. Use CSA B64 series standards.
8D(11)	Cross connection and backflow prevention	No City standard and specification. Use CSA B64 series standards.
8D(13)	Cross connection and backflow prevention	No City standard and specification. Use CSA B64 series standards.
8D(14)(a)[6]	Cross connection and backflow prevention	No City standard and specification. Use CSA B64 series standards.

Table: Applicable standards and specifications (continued)
Section	Section description	Applicable standards and specifications
8D(16)(b)	Cross connection and backflow prevention	No City standard and specification. Use CSA B64 series standards.
8D(17)(c)[2]	Cross connection and backflow prevention	No City standard and specification. Use CSA B64 series standards.
8D(18)	Cross connection and backflow prevention	No City standard and specification. Use CSA B64 series standards.
§ 851-12	Fire hydrants	
12B(1)(b)	Fire hydrant relocation	No standards for relocation, use standards and specifications for new installations.
		T-1105.01
		TS 701.05.10
		OPSS 701.07.19 (Nov 2006)
		For list of approved fire hydrant manufacturers, see Chapter 6, <i>Material Specifications</i> from <i>Design Criteria for Sewers and</i> <i>Watermains</i> manual.
§ 851-13	Fire hydrant permits	
13B(2)(a)	Intentionally left blank	No City standard and specification. Use CSA B64 series standards.
13B(2)(b)	Installation of water meter	Same as § 851-5N(3)

Table: Applicable standards and specifications (continued)

Notes:

- 1 To access City standards and specifications online by city staff on the intranet, go to <u>http://insideto.toronto.ca/techserv/spqa/index.htm</u>.
- 2 To access City standards and specifications online by the public on the Internet, go to <u>www.toronto.ca/calldocuments/construction\_specs.htm</u>.

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# Appendix F – Contacts

## **Backflow Prevention Program**

Call 311 to report:

- emergency or backflow incident
- non-compliance or backflow prevention
- failure of backflow prevention devices

For general inquiry, concern or issue contact:

Environmental Monitoring & Protection Toronto Water 30 Dee Avenue Toronto, ON M9N 1S9

Tel: 416-394-8888 (voice mail only) or send an e-mail message to backflow@toronto.ca.

### **Building Permits**

Building permit applications can be made at any of the four offices of the Toronto Building division.

Civic centre	District	Address	Phone number
Etobicoke Civic Centre	Etobicoke / York	2 Civic Centre Court	416-394-8002
North Civic Centre	North York	5100 Yonge Street	416-395-7000
Scarborough Civic Centre	Scarborough	150 Borough Drive	416-396-7526
City Hall	Toronto / East York	100 Queen Street West	416-392-7539

Table: Toronto Building district customer service offices

## **Toronto Water Service Counter**

#### **Temporary Meter for Construction Sites**

Site owners can obtain and submit an application for a temporary meter or temporary water service or both at a Toronto Water service counter.

#### **Municipal Services Application**

To obtain and submit a *Municipal Services Application* form, visit a Toronto Water service counter.

#### Table: Toronto Water service counter

Service counter	Address	Phone number
North York Civic Centre	5100 Yonge Street, 2 <sup>nd</sup> Floor	walk-in only

### Water Meter Program Service Areas

For the closest water meter pickup location, see map in Appendix E, *Maps*.

Service counter	Address	Phone number
meters west	1026 Finch Ave W	416-395-6378
meters east	60 Tiffield Rd, Bldg 'B'	416-338-0421

Table: Water meter customer service counters

## Glossary

ASTM – American Society for Testing Materials

**AWG** – American Wire Gauge

AWWA - American Water Works Association

**Applicant** – The owner of lands or his or her authorized agent requiring services.

**Authorized Functions List** – The list of functions and the persons authorized to carry out such functions as set out in Schedule 6 to Chapter 851.

**Backflow Prevention Device** – A device in a water supply pipe which incorporates two or more check valves to prohibit the reverse flow of the water, irrespective of pressure differentials, where the maximum working pressure is not exceeded and contains integral safeguards to make it failsafe in the event of a malfunction of one or more of the check valves.

**Backflow Prevention Device Tester** – A person who has completed and passed a cross-connection control course in backflow prevention device testing at an accredited school or college and shall be in accordance with CSA B64.10.1-07, Subsection 5, School accreditation and tester certification and licensing.

**Canadian Standards Association (CSA)** – is a non-profit organization that oversees the development of voluntary consensus standards for products, services, processes, systems and personnel in Canada.

**Chapter 851** – Water supply bylaw was enacted January 1, 2008 to harmonize the existing water supply bylaw of the former municipalities following amalgamation.

**City** – The City of Toronto—the corporation—and will be referred to as the City for the purposes of this document.

**Consulting Engineer** – A professional engineer or firm of engineers retained by the City or a developer, skilled, and experienced in municipal work and land development projects and registered with the Professional Engineers of Ontario.

**CSA Standard** – The document entitled CSA B64.10 – Selection and installation of backflow preventers / Maintenance and field testing of backflow preventers published in July 2007 by the Canadian Standards Association.

**Double Check Valve (DCVA)** – A backflow preventer that consists of two force-loaded, independently acting check valves and two resilient-seated shut-off valves located at each end of the DCVA backflow preventer and is fitted with resilient-seated test cocks. DCVA backflow preventers are designed for use under continuous pressure.

**Double check valve for fire protection system (DCVAF)** – A DCVA backflow preventer specifically designed for use on fire sprinkler and standpipe systems.

**Developer** – The owner of land upon which municipal services will be located and ultimately owned by the City.

**Executive Director** – The person appointed by the City from time to time as the Executive Director of Technical Services and his or her successors or his or her duly authorized representative.

**General Manager** – The person appointed by the City from time to time as the General Manager of Toronto Water and his or her successors or his or her duly authorized representative.

**High or Severe Hazard** – Any cross-connection or potential cross connection involving any substances that could be a danger to health. Examples include hospitals, all establishments involving chemical usage, high hazard uses as defined by CSA B64.10-07, as amended and any use where protection is deemed required by the General Manager.

**Isolation Types** – There are three types of isolation:

- Individual for point of use, one backflow preventer per crossconnection
- Zone to separate a hazardous area from the rest of the water distribution system within a building
- Premise to separate the building from the City water system

**Meter Chamber** – An accessible in-ground structure remote from a building, containing and protecting the water meter, control valve, and backflow prevention device and is maintained by the owner.

**Municipal Service** – The portion of the water service pipe located on municipal property.

**National Pipe Thread** – is a United States standard for tapered threads used in threaded pipes and fittings.

**OPSD** – Ontario Provincial Standard Drawing

**OPSS** – Ontario Provincial Standard Specification

**Owner** – A person who has any right, title, estate, or interest in a property, other than that of only an occupant and, where that person is a corporation, shall include the officers, directors and shareholders of that corporation, and shall include any person with authority or power over or control of that property on the behalf of an owner. An owner includes a developer.

**Potable Water** – Water that is safe for human consumption.

**Premise Isolation** – Isolation of the water located within a building, structure, or property from the City waterworks or water supply system.

**Pressure vacuum breaker (PVB)** – a vacuum breaker that contains an independently acting check valve force-loaded or biased to a closed position, and an independently operating air inlet valve force-loaded or biased to an open position and located downstream of the check valve. PVB devices are equipped with resilient-seated test cocks and resilient-seated shut-off valves located at each end of the vacuum breaker and designed for use under continuous pressure.

**Private Service** – The portion of the water service pipe located on private property.

**Reduced pressure principle (RP)** – a backflow preventer that consists of a mechanically independently acting, hydraulically dependent relief valve located in a chamber between two independently operating, force-loaded check valves. RP backflow preventers are designed for use under continuous pressure.

**Reduced pressure principle for fire protection (RPF)** – an RP backflow preventer specifically designed for use on fire sprinkler and standpipe systems.

**Single check valve for fire protection systems (SCVAF)** – a backflow preventer that consists of one force-loaded, independently acting check valve, including resilient-seated shut-off valves located at each end of the SCVAF backflow preventer and fitted with resilient-seated test cocks. SCVAF backflow preventers are designed for use under continuous pressure on fire sprinkler and standpipe systems

**Service** – The service pipe connected to a watermain distribution system and which is designed to carry potable water from the system to the property, together with any incidental appurtenances.

**Spill-resistant pressure vacuum breaker (SRPVB)** – a vacuum breaker that contains an independently acting check valve force-loaded or biased to a closed position, and an independently operating air inlet valve force-loaded or biased to an open position and located downstream of the check valve. A diaphragm separates the flow from the atmospheric vent. SRPVB devices are equipped with a resilientseated test cock, a bleeder, and resilient-seated shut-off valves located at each end of the device. SRPVB devices are designed for indoor use under continuous pressure.

**Toronto Municipal Code** – A municipal code adopted by Toronto City Council under Section 248 of the Municipal Act, 2001 or a predecessor of that section, or deemed to be a bylaw adopted by council under the City of Toronto Act, 1997.

The Toronto Municipal Code is updated four times per year. The city of Toronto web site can be checked for recent amendments or changes to specific code chapters since the last code update. These bylaws must be consulted along with the code chapters.

**Water Meter** – A device or mechanism at a property that measures and records the quantity of water passing through it and is read, serviced, maintained or supplied by the City.

## We Want to Hear from You

We want to know what you think of the *Water Servicing and Metering Manual*. If you've got suggestions on how it could be improved or new topics you'd like to see added, fill out this form and send it to the address below. Thanks!

Name	Position Title	
Company/Department		
Address		
Province	Postal Code	
Phone number		
Comments		
Strong points of manual		
Weak points of manual		
Send form to: Manager, Standards, Policies & Quality Assurance Technical Services Metro Hall, Stn 1180, 19 <sup>th</sup> Floor 55 John Street Toronto, Ontario M5V 3C6		

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# **City of Toronto**

Technical Services Metro Hall 55 John Street, Stn 1180, 19<sup>th</sup> Floor Toronto, Ontario M5V 3C6

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