2020

LAKEFRONT UTILITY SERVICES INC

WATERMAIN & APPURTENANCE POLICY

CONTENTS

1. INTRODUCTION

The purpose of this document is to provide guidance for the design and installation of water infrastructure systems that connect to Drinking Water Systems operated by Lakefront Utility Services Inc (LUSI). This information is made available to consulting engineers, contractors or any individual wanting to make any connection to a drinking water system operated by LUSI. These guidelines shall not relieve the proponent from the primary responsibility for the design to meet all Federal, Provincial and Municipal Regulations, including the Ontario Safe Drinking Water Act, 2002.

This specification is applicable to installation of watermains and services up to and including 600mm in diameter. Installations of watermains larger than 600mm in diameter, or for any special installation shall be reviewed and approved on an individual basis by LUSI and/or the Contract Administrator.

Note: Watermains that form part of a drinking water system or the temporary water system can only be *Isolated* and placed into service by *LUSI Certified Operators*. Activities performed on *Isolated* watermains are not required to be performed by *LUSI Certified Operators*.

1.1. DEFINITIONS

AWWA – American Water Works Association

Certified Operator/Third Party Contractor - an individual who holds or is deemed to hold a certificate under Ontario Regulation 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts) that is applicable under that regulation to that subsystem or that type of subsystem, but does not include an individual who holds or is deemed to hold only a water quality analyst's certificate or conditional water quality analyst's certificate under that regulation

Contract Administrator – the firm retained by the Owner of the drinking water system to manage the construction contract

Contractor – the firm of Contractors, the company or individual acting as the Contractor and having entered into a contract with the Contract Administrator/Owner/LUSI to install the watermains, services and/or appurtenances.

LUSI – Lakefront Utility Services Inc.

MECP – Ministry of Environment, Parks and Conservation

OPSD – Ontario Provincial Standard Drawings

OPSS – Ontario Provincial Standard Specification

Owner – Any person assigned to a project by the Owner to carry out work on their behalf. The name of the Representative shall be specified prior to the start of construction on any project.

Watermain Disinfection Procedure – MECP Watermain Disinfection Procedure (August 1, 2020)

SECTION 1 – DISTRIBUTION SYSTEM APPURTENANCES

2. WATER METERS

Reference: By-law No. 049-2011 Water By-law

All water meters shall be supplied, installed, maintained, and removed as per Section 11 of the Water By-law.

2.1. MULTI-RESIDENTIAL WATER METERS

Further clarification to Water By-law section 11.8 is as follows,

Water meters shall be installed immediately at the point of entry of the water service into the building. Each water meter shall have a dedicated curb stop to be located at the front of a building at the property line.

Water meters and backflow devices are to be installed horizontally and shall remain fully accessible at all times with no obstructions permitted.

A separate water service and separate water meter with a dedicated curb stop fronting each building shall be required for each:

i. Single family dwelling
ii. Unit of a semi-detached building
iii. Townhouse or Rowhouse unit

A single water service and single bulk meter with a dedicated service valve fronting each building shall be required for each:

i. Apartment/Condominium building
ii. Commercial building
iii. Industrial building

The Owner will be responsible for any utility cost sharing within the user group. All costs related to sub-metering and administration of such cost sharing will be the responsibility of the owner.

Meters up to and including 50mm shall be installed as per Standard Drawing WD-M-001, attached in Appendix 1.

3. NEW WATER VALVE INSTALLATION

Reference: OPSS 441 and 442

The Contractor shall supply resilient seat gate valves, complete with valve box, on watermains up to and including 400mm. Proposed location of valves shall be identified in contract drawings and must be approved by the Contractor Administrator prior to installation. All valves must be,

- Cathodically protected by installation of a Z-12-24, 5.4 kg zinc anode as per OPSS 442 and OPSD 1109.011,
- Restrained on PVC piping on each side of the valve using mechanical restrainers in

combination with granular thrust blocks,
- Set to base course asphalt grade if located in the travelled portion of the roadway, and
- Set to finished grade if outside the travelled portion of the roadway.

Disinfection of valves must be in accordance with Section 7.5.1.

4. FIRE HYDRANT SETTING

The Contractor shall set fire hydrants as referenced in OPSS 441 and 442. Additional requirements are described in Section 4.1, 4.2 and 4.3.

4.1. REMOVAL & DISPOSAL

When removing a fire hydrant for the purposes of disposal, the Contractor must remove the existing fire hydrant, secondary valve and remove or abandon the fire hydrant lead. Care will be taken in the removal, storage and transport of the salvaged fire hydrant to a location agreed upon by the Contractor and the Contractor Administrator/LUSI.

4.2. REMOVAL & REINSTALLATION

When removing a fire hydrant for the purposes of reinstallation, the Contractor must remove the existing fire hydrant, secondary valve and remove or abandon the fire hydrant lead. Care will be taken in the removal, storage and transport of the fire hydrant to be reinstalled at a location as specified by the Contract Administrator and/or LUSI.

Installation of the hydrant shall correspond with Section 4.3.1, unless stated by the Contract Administrator/LUSI.

Disinfection of the reinstalled hydrant must be disinfected in accordance with Section 7.5.1.

4.3. SUPPLY & INSTALLATION

The installation of a new fire hydrant on a new or existing watermain, shall be completed as specified on the Contract Drawings, and shall ensure the installation meets all specifications outlined in Section 4.3.1.

4.3.1. Installation Specifications

Hydrants are to be either Canada Valve – Century Model or Clow – Brigadier M67 model. Hydrants shall be outfitted with two CSA 60mm side outlets and one CSA 113mm pumper outlet.

All hydrants must be disinfected prior to installation in accordance with Section 9.5.1.

In residential areas, hydrants shall not be installed more than 150m apart.

In industrial, commercial and institutional areas, hydrants shall not be installed more than 75m apart.

All hydrants installed shall be cathodically protected by installation of Z-24-48, 10.9 kg zinc anodes as per OPSS 442 and OPSD 1109.011.

Drain holes shall be left open for drainage of the hydrant barrel.

Drain holes shall be plugged in high groundwater areas or when deemed necessary by LUSI. All fire hydrant leads must be placed inside main line valves located in intersections to allow for directional watermain flushing from either direction to the specified hydrant.

Hydrants shall be installed such that the breakaway flange is 100 to 150 mm above the surrounding ground surface.

SECTION 2 – WATERMAIN CONSTRUCTION

5. WATERMAIN CONSTRUCTION

Reference: OPSS 401, 402, 441, 442, 501, and 1010

This section provides minimum requirements for the construction of a new watermain as stipulated by OPSS 401, 402, 441, 442, 501 and 1010. Additionally, requirements for disinfection of new watermains, as required by the MECP WDP.

Operation of existing valves to isolate the area for installation of a new watermain shall only be undertaken by LUSI certified operators. The Contractor must provide a minimum of 48-hours advance notice to LUSI when operations staff are required to operate valves.

5.1. WATERMAIN DESIGN CRITERIA

The Contract Administrator and/or LUSI may require the Contractor to verify the proposed watermain construction using the Water Distribution Hydraulic Model.

5.2. AS-BUILT DRAWINGS

The Contractor shall supply all as-built drawings in CAD and PDF format, for the purposes of updating distribution schematics within one year of the substantial completion of the alteration.

5.3. MINIMUM CONSTRUCTION REQUIREMENTS

The Contractor shall supply all materials and shall perform all work required to construct new watermains in the locations shown on the Contract Drawings or as directed by the Contract Administrator. LUSI requires at a minimum, the following work requirements be met,

- Installation of acceptable watermain material, as approved on Contract Drawings,
- Non-ferrous watermains must include a 7-strand, 10-gauge copper tracer wire
- Ferrous watermain fittings installed on PVC water mains shall be subject to cathodic protection via the installation of 5.4kg zinc anodes, as per OPSS 442 and OPSD 1109.011,
- Joint restraint shall be achieved using mechanical joint restrainers**,**
    - All joints located within six (6) meters of any bend, tee, cap, plug of gate valve shall be restrained
- The contractor makes every effort possible to protect existing trees as per OPSS 801
    - If the proposed watermain alignment is in direct conflict with an existing tree, the contractor shall use trenchless methods to construct the watermain (no additional compensation will be considered for construction using trenchless methods)
- Valves opened to place a new watermain into service shall, in all cases, be operated by a LUSI Certified Operator,
- When a watermain is placed into service, flushing through the Connection shall continue until an acceptable disinfectant concentration is achieved

5.4. CONTRACT REQUIREMENTS

The Contract price shall include the following,

- Labour,
- Equipment and material to excavate,

- Removal and disposal of all surplus material, including existing watermain piping, valves and fittings,
    - This includes all costs for labour, equipment and materials for the handling and disposal of asbestos-cement pipe encountered during proposed watermain installation,
    - Asbestos-cement is to be disposed at a licensed landfill facility in accordance with applicable regulations,
- Supply and installation of all temporary works (bulkheads, blow-offs, valves, backflow preventors, etc.)
- Allowance for swabbing, testing, disinfection and flushing of new installation prior to commissioning

6. TEMPORARY WATER

Reference: OPSS 493

Prior to work commencing, the Contractor shall submit a Work Plan for review and approval by the Contract Administrator and LUSI. The Work Plan must describe in detail the temporary water distribution system proposed, conforming to OPSS 493. Details that must be included in the Work Plan include, but are not limited to, all isolation valves required, how the system will be maintained during construction of the permanent works and how the system will be removed upon commission of the new permanent works. No work shall be undertaken to implement the temporary system until the Work Plan has been reviewed and approved by the Contract Administrator and LUSI.

The Contractor shall assume all responsibility for the design, operation and maintenance of the temporary water supply system. Under this item, the Contractor shall supply all labour, equipment and materials to perform all work required to install a temporary distribution system to supply potable water to all properties affected.

6.1. TEMPORARY WATERMAINS

Temporary watermains used to maintain a continuous supply of water must be equipped with a reduced pressure (RP) backflow preventer. The RP backflow prevention device shall be installed, maintained and field tested in accordance with the latest edition of CAN/CSA B64.10.

Additional, LUSI-required specifications related to the temporary water system are as follows,

- Temporary connections for watermains up to and including 200mm diameter pipe must be 50mm-diameter
- Temporary connections for watermains 250mm-400mm, inclusive, must be 100mm-diameter
- All materials for the temporary connections are to conform to NSF 61 standards for potable water use
- When the temporary watermain is no longer required, all efforts are to be made to remove the section of pipe with the temporary tap during the construction process. If that cannot be achieved, the mainstop shall be removed and the service saddle plugged with a brass plug. The procedure must be witnessed by a LUSI certified operator.

Above ground temporary water systems shall meet all requirements of the commissioning of a new

watermain, except for hydrostatic pressure testing. A visual check shall be performed at line pressure on a temporary bypass to ensure that it is leak free.

6.2. TEMPORARY SERVICE CONNECTIONS

The Contractor must provide 24-48 hours advance written notice to all homeowners that their water supply will be temporarily affected for the installation of the temporary water supply system.

The Contractor must provide a draft notice to LUSI for approval prior to distributing to homeowners. Installation of the system must be coordinated at periods of low customer water demand.

The Work Plan must outline a plan to conduct work to minimize interruption to the water supply.

The pipe, hose and all other materials supplied by the Contractor for temporary servicing shall be fully adequate to withstand the pressures and other conditions of use and shall be of material which does not impart any taste or odour to the water in accordance with NSF 61 Standard. Flushing of the private service connections and chlorination of the temporary water system prior to their use will be required. The temporary service connection shall have a valve near the point of connection to the temporary system and to the private plumbing system so that, except for the final connection, the temporary service line and private services may be chlorinated.

The Contractor must coordinate the installation of the system during periods of low customer water demand. The Contractor must make the physical connection to each home at an agreed upon time with the homeowner. The Contractor shall not turn on temporary water services unless the homeowner is present.

It shall be the responsibility of the Contractor to ensure an adequate water supply at all times. During the construction process, the Contractor is responsible for restoring a customer's water supply upon notification.

6.3. EXISTING WATERMAIN CUT AND CAP

Operation of existing valves to isolate the area for installation of the cap shall only be undertaken by LUSI certified operators. The Contractor must provide a minimum of 48-hours advance notice to LUSI when operations staff are required to operate valves.

The Contractor shall cap the existing watermain to facilitate the connection of the temporary system. When relevant, the location for the temporary caps must permit the existing hydrants in the area to remain in service once the watermain is isolated from the permanent water distribution system. Each temporary cap location shall be provided on the drawings, as part of the Work Plan, and must include,

- A restrained cap or tapped tee with plug on existing watermain, and
- A temporary 50mm diameter blow-off (main stop, copper or municipex piping and curb stop). The temporary blow-off may be connected to the cap/tee or to the existing piping adjacent to the cap/tee.

The works shall be undertaken in a manner which prohibits groundwater in the trench from back flowing into the existing piping that is destined to remain in service.

All piping, valves and fittings utilized shall conform to NSF 61 standard, be in good condition and shall be thoroughly cleaned and disinfected prior to being placed in service. Disinfection must be achieved, by spraying with a minimum 1% sodium hypochlorite solution.

Note: LUSI reserves the right to inspect and deem the system acceptable prior to the temporary system being placed in service.

Following installation, the watermain shall be aggressively flushed, by LUSI certified operators, through the blow-off assembly before being placed in service.

The use of cold mix shall not be permitted on asphalt driveways for the temporary water line.

7. WATERMAIN COMMISIONING

Watermain commissioning shall follow procedures and guidelines as identified in Ontario Provincial Specifications (OPS), the American Water Works Association (AWWA) standards, Ontario Watermain Disinfection Procedure, and any other and applicable Ontario Drinking Water Regulations.

All costs associated with the requirements required for acceptance of the new watermain or temporary and permanent connections to existing watermains shall be the responsibility of the Contractor. This work includes but is not limited to, swabbing, leakage testing, chlorination, dechlorination and bacteriological sampling. The work shall be conducted by a certified, third-party contractor, not LUSI, and certification records shall be available to LUSI upon request. Documentation as required by the most current MECP Watermain Disinfection Procedure must be provided to LUSI before final commissioning.

7.1. CERTIFIED OPERATOR

All required chlorine residual tests shall be performed by a certified operator, with an electronic tester such as a Hach Pocket Colorimeter or equivalent, which is to be supplied by the Contractor and witnessed by the Contract Administrator/LUSI.

The certified operator must hold, at minimum, a current Level 1 Water Distribution, Water Distribution and Supply or Water Treatment License. A copy of the license must be provided to the Contract Administrator/LUSI.

7.2. WATERMAIN CHARGING

The watermain is to be charged via a temporary connection equipped with a backflow preventer, as described in Section 6.1.

7.3. SWABBING

The watermain is to be charged prior to the commencement of swabbing.

Watermains 300 mm or smaller shall be swabbed through hydrants on approval by the Contract Administrator. Procedures for swabbing watermains larger than 300 mm must also be approved by the Contract Administrator.

The certified third-party contractor must record the number of swabs inserted and retrieved. The swabs should be numbered and carefully controlled by the certified third-party contractor to ensure

that all swabs that are introduced into the watermain are retrieved and accounted for.

When using a hydrant for swabbing, the main valve seat of the hydrant must be removed, and a blind seat installed to prevent undermining the soil at the hydrant boot. Full reinstatement of the hydrant shall begin immediately after the swabbing process is completed.

All swabs must be inspected prior to insertion and immediately after they exit the watermain to ensure that they have remained intact and that pieces of the foam do not stay in the watermain.

Only new swabs will be permitted for use and under no circumstances will used swabs be allowed. The swabs must be new open cell polyurethane foam, having a density of 1.5 pounds per cubic foot (24 kilograms per cubic meter), and are to be a minimum of 50 mm larger than the nominal pipe diameter with a length at least one and a half times its diameter.

Supplied water used for swabbing operations must be provided through the temporary connection at the backflow device. If the temporary system cannot be used and a water haulage truck is required, work must be preapproved by LUSI. Swabs shall be forced through the watermain using potable water so that they maintain a minimum velocity of 0.6 to 1 meter per second.

All watermain pipes must be swabbed with a minimum of three swabs plus a minimum of one swab shall be passed through each hydrant lead, stub or blow-off. Additional swabs shall be used as directed by the Contract Administrator if discharge water does not run clear within ten seconds of the swab exiting the discharge point. No additional payment shall be made for subsequent swabbing.

The Contract Administrator must approve all methods of disposal of the discharged water. The Contractor shall take the necessary precautions to minimize soil erosion and shall reinstate the area upon completion.

7.4. HYDROSTATIC TESTING

The existing distribution systems and the backflow preventer shall be physically disconnected from the test section during hydrostatic testing.

Leakage tests shall be applied to the section of watermain after the swabbing. The Contractor shall ensure that no air pockets are present in the section of watermain.

The ends of the mains shall be capped and the main filled with potable water under a pressure of 1035 kPa after which all visible leaks shall be stopped. All connections, including water service saddles, mainstops, pipe and curbstop must be included in the hydrostatic testing.

Leakage must be measured and recorded by a calibrated meter with readings taken at fifteen-minute intervals for a period of two hours. The allowable leakage calculation shall be in accordance with AWWA C605-13 or the latest version. If the leakage exceeds the calculated allowable leakage the contractor shall locate and correct the leaks.

The leakage tests are to be conducted in sections, where a section is a length of watermain between two valves, or a valve and a dead end. Maximum allowable test section shall be 300m. Note, for high density polyethylene (HDPE) pipe the test section is not to include any other materials. Should the Contractor wish to test more than one section at a time, the Contractor must calculate the

allowable leakage for all sections within the tested portion and the smallest calculated leakage will become the allowable for the entire tested portion. The cost of the labor and materials required to conduct leak tests, find leaks and fix leaks is the responsibility of the Contractor.

If leakage test results in a failure, the leak(s) are to be found, repaired and the hydrostatic test to be applied again until it is successful.

A 3-4-hour deformation period, maintaining 1,035 kPa, will be required immediately prior to the hydrostatic testing.

7.5. DISINFECTION

7.5.1. Appurtenances & Connections Less Than One Pipe Length

Connections equal to or less than one pipe length (generally ≤ 6 m) shall be undertaken in accordance with the latest version of the MECP Watermain Disinfection Procedure., A Certified Operator is required to witness the installation of the Connection to ensure that sanitary construction practices are followed and proper disinfection is performed.

Appurtenances, such as valves and hydrants must be disinfected using the same method as connections equal to or less than one pipe length, as described above.

7.5.2. Connections Greater Than One Pipe Length

Connections greater than one pipe length (generally > 6 m) shall be undertaken in accordance with the latest version of the MECP Watermain Disinfection Procedure and at the discretion of the Contract Administrator/LUSI

For disinfection purposes the method used shall be the continuous feed method. The sodium hypochlorite (hypo) solution must be injected into the system through the access point on the temporary connection.

The hypo solution shall be thoroughly mixed prior to introduction into the system. The hypo solution shall be applied so that the chlorine concentration is a minimum of 50 mg/L throughout the system. The contractor must record the actual concentration of the hypo solution.

The chlorine solution is to be flowed through each hydrant and blow off. The chlorine residual is to be measured by the Contractor at each sample location and recorded.

The Contractor shall ensure that no air pockets are present in the section of watermain.

After the required contact time, as shown in Table 1, the chlorine residual is to be taken at each sample location by the Contractor and recorded. Flow required for taking the chlorine residuals shall be provided through the temporary connection.

Table 1: Chlorine Concentrations and Contact Times for New Watermains [1]

Disinfection Method	Minimum Contact Time	Initial Chlorine Concentration	Maximum Allowable Decrease in Chlorine Concentration
Tablet or Continuous Feed	24 hours	≥ 25 mg/L	40% of the Initial Chlorine Concentration to a Maximum of 50 mg/L

If the chlorine residual is at or less than the specified concentration the disinfection process is considered to have failed. The chlorine in the system is to be discharged, and the system is to be re-chlorinated. The Contract Administrator and /or LUSI has the authority to require further swabbing if the residual is less than 40% of the initial concentration.

7.5.3. Disposal of Super Chlorinated Water

The watermain shall be flushed to remove super chlorinated water. The disposal of super chlorinated water must ensure proper disposal**,** such that the chlorine residual in the neutralized water does not exceed 0.5 mg/L. The sanitary sewer shall not be considered an option for disposal during this procedure. Super chlorinated water may not be disposed to a storm sewer or watercourse unless the residual is reduced to 0.00mg/L.

7.6. BACTERIOLOGICAL SAMPLING

Reference: AWWA C651-14 (or most recent)

Before the watermain, or temporary above ground water system, can be approved for connection to the existing water distribution system, two (2) consecutive rounds of water samples shall be taken. The two samples must be taken a minimum 16 hours apart and shall pass both the chlorine residual and bacteriological requirements.

Prior to the first sample the Contractor must ensure that super chlorinated water has been removed from all portions of the watermain system that is subject to testing, including hydrant leads, stubs, branches, services, etc.

The watermain must remain continually pressurized from the start of bacteriological testing until the connection to the existing system is undertaken.

The first sample shall be taken 24 hours after the flushing/dechlorination of the super chlorinated water has been completed. The Contractor must ensure the temporary connection is open while collecting bacteriological samples at all sampling locations. Upon collection of the bacteriological samples the certified third-party Contractor is responsible for delivering them to an accredited laboratory for analysis. Upon completion of initial testing, the test section shall be immediately shut down and must not be disturbed or flushed for the period between collection of the first samples and collection of the second set of samples. The second set of samples shall be taken 16 hours after the first set, from the same sampling locations.

Samples shall be taken from the end of every dead end and, every 300 meters or less of new watermain pipe. No hose or hydrant shall be permitted for the collection of bacteriological samples.

7.6.1. Sample Results

The certified third-party contractor shall supply LUSI a copy of the laboratory analysis with all test parameters and analysis results. Upon review and acceptance, criteria listed in Table 2, the system can be put into service.

TABLE 2: ACCEPTABLE BACTERIOLOGICAL TEST RESULTS	
E. Coli	0 CFU/100mL
Total Coliform	0 CFU/100mL
Heterotrophic Plate Count	100 CFU/1mL

A single failed bacteriological parameter will constitute a failure of the entire sampling round. If sample results do not meet requirements the failed section must be flushed or re-disinfected, as directed by the Contract Administrator and/or LUSI, and re-sampled at sample locations determined by the Contract Administrator and/or LUSI until two (2) consecutive rounds of water samples, taken 16 hours apart pass both chlorine residual and bacteriological requirements.

The Contract Administrator and/or LUSI has the authority to require further swabbing if more than one bacteriological sample fails or if the HPC is greater than 100 CFU/1ml.

7.7. CONNECTION REQUIREMENTS

The Contractor shall make every possible effort to ensure that the length of the final connection is no more than one pipe length.

The Contractor must provide 24-48 hours advance written notice to all homeowners that their water supply will be temporarily affected to complete the watermain commissioning. The notice must be provided to LUSI prior to distributing to homeowners. Installation of the system must be coordinated at periods of low customer water demand.

Connection(s) to the existing watermain shall not be made until the new watermain, or a section thereof, has passed the commissioning process as described in Section 7.

A sump, minimum 300 mm depth, shall be excavated in the trench bottom, and filled with clear stone, to provide a location to collect and pump water.

Watermains shall be cut back to remove any temporary taps. The Contractor shall disinfect the watermain to be connected, as required in Section 7.5.1 or 7.5.2, dependent on the length of watermain.

Using all means possible, dewater the watermains and trench in a controlled manner as to not allow backflow of water into the watermains.

If trench water, dirt or debris has entered the watermain during the final connection, the watermain shall be aggressively flushed and additional bacteriological samples shall be taken as directed by LUSI.

When the final connection length is greater than one pipe length, the new pipe required for the connection shall be set up above ground and commissioning procedures shall be followed, refer to Section 7.5.2. Between the time the satisfactory bacteriological sample results are received and the time that the connection piping is installed, the ends of the pipe must be sealed with clean, disinfected, watertight plugs or caps.

All caps shall be kept in place during the installation procedure until immediately prior to making the connection.

The existing watermain in the immediate area of the connection, as well as the newly required fittings and valves shall be thoroughly cleaned and disinfected as outlined in Section 7.5.1.

When the connection of the new PVC watermain is being made to an existing ferrous watermain, a 14.5 kg magnesium anode shall be installed on the ferrous watermain within 1.5 m of the point of connection to the PVC watermain. The 7-strand 10-gauge copper tracer wire shall be welded to the existing ferrous watermain to provide locate continuity.

Solid sleeve type couplings used to affect the final connection shall be prevented from moving along the pipe by installation of mechanical restrainers of each side of the solid sleeve.

Dechlorination of discharged water shall be controlled as described in Section 7.5.3.

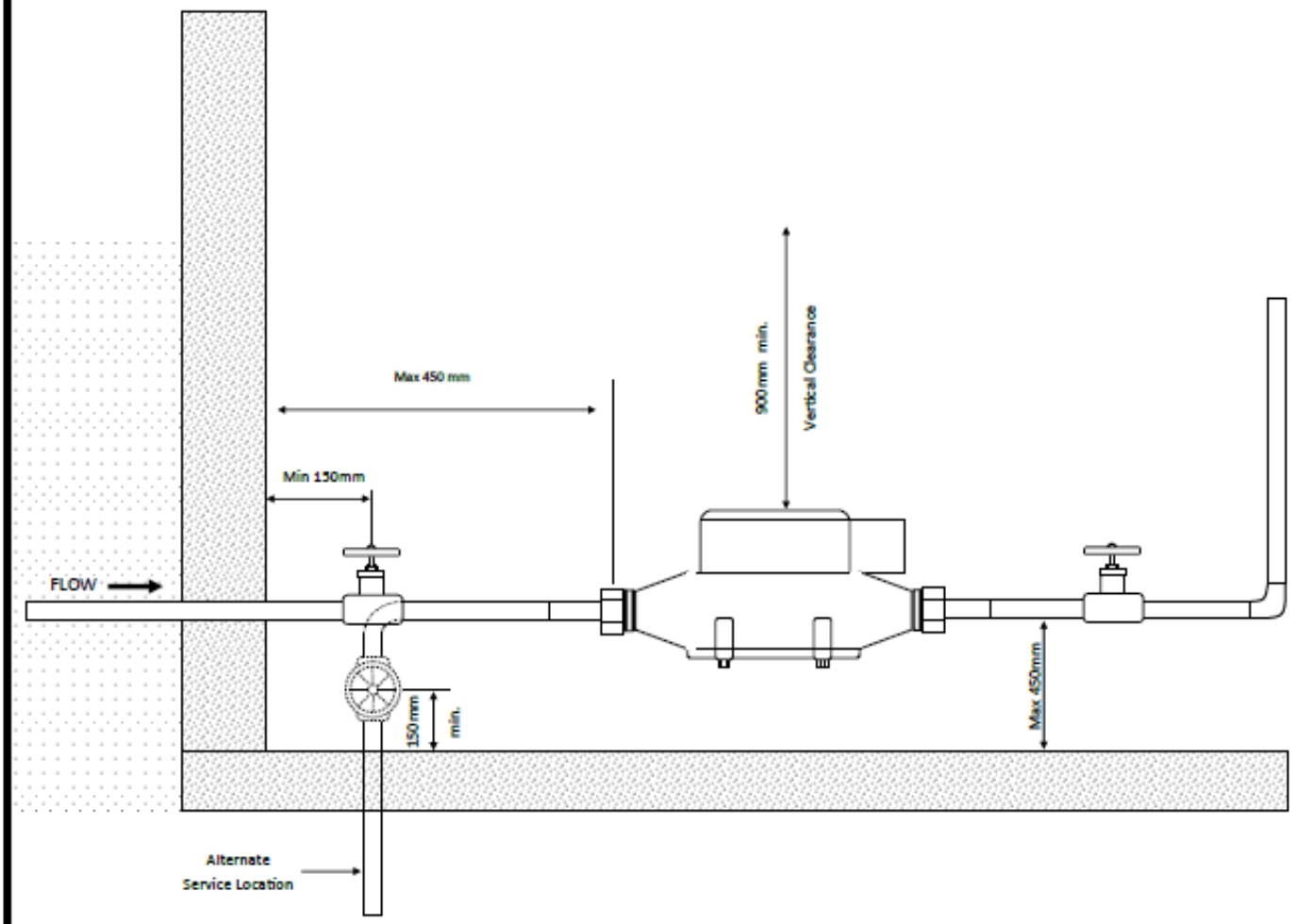
8. ABANDON EXISTING SERVICES

Existing services that are to be abandoned, due to new construction requirements, must be abandoned at the water main and inspected by LUSI certified operators. The main stop may be shut off and the service physically disconnected or, at the discretion of the LUSI certified operator, the main stop shall be removed and a stainless-steel repair clamp installed.

9. ABANDON EXISTING WATERMAIN

The Contractor shall supply and install a 20 MPa concrete plug to the open end of the existing watermain that is to be abandoned in place. The minimum length of plug shall be 300 mm.

Appendix 1 - WD-M-001



NOTE:

1. Installations must be in accordance with the Ontario Building Code and Northumberland County requirements.
2. All meters and backflow devices must be installed horizontally.
3. The centreline of the building control valve must be a minimum of 150 mm away from a wall or floor.
4. The meter assembly must be installed no further then 450 mm from point of entry to the building.
5. Ball valves must be installed on both the upstream and downstream sides of the meter assembly.
6. If the contractor/designer has determined a pressure reducing valve is required it must be installed upstream of the water meter and a dual check valve installed downstream of the meter.
7. All meters, pressure reducing valves and backflow devices must remain accessible at all times.
8. Meters must NOT be located behind furnaces, hot water tanks, appliances, etc.

Lakefront Utility Services Inc.	Municipal Drinking Water System Standard Drawing	Rev. Date:	Nov 19, 2019
		Approved By:	Drawn By:
Up to 50mm Meter Installation		SB	AF
		Standard Drawing Number:	Scale:
		WD-M-001	Not to Scale