UTILITIES
PETERBOROUGH
COMMISSION

WATER
RIVERVIEW PARK AND ZOO

SUBDIVISION & DEVELOPMENT REQUIREMENTS

January 2024

LIST OF REVISION NOTICE DATES

Rev. #	Rev. Date	COMMENTS
14	Jan. 2024	Added Functional Servicing Report Requirements Added Subdivision Agreement – Completion to Assumption Flow Chart Added Water Meter Specification
13	Apr. 2022	Combined all Design related Specifications into one document Added references to Construction Standards
12	June 2020	Removed Section 7.0 Water Works Standard Drawings. It is now a separate document. Removed Section 8.0 Approved Manufacturers' Products for the Peterborough Water System. It is now a separate document.
11	April 2020	Section 1.4 – MOE updated to MECP Revised Section 6.1.2 – *poly services 25-75 mm* Revised Sections 6.1.3.14, 6.1.5.3, 6.1.5.14, 6.1.5.19
10	May 2019	Revised Section 6.1.3 Materials (6.1.3.1, 6.1.3.13, 6.1.3.14) Revised Section 6.1.5 Installation (6.1.5.20, 6.1.5.26, Added 6.1.5.32, renumbered remainder of Section 6.1.5) Moved Sections 6.1.5.37 to 6.1.5.45 (Temp bypass) to new Section 6.12 Revised Section 7.0 (Deleted A2371; Revised A1997, A3005, A3073 & B1779; Added A3004, A3080, A3081, A3085) Revised Section 8.0
9	July 2018	Added Sections 6.1.5.37 to 6.1.5.45 (Temporary bypass watermain) Revised Section 7.0 (Revised A1997, Added A3080, Deleted A3004) Revised Section 8.0
8	Feb. 2018	Revised Section 1.4 Revised Section 4.3.4 Revised Section 6.1.2.1 Flushing Stations Revised Section 6.1.2.1 Water Services Revised Section 7.0 (Revised A3073; Added A3005, A3006) Revised Section 8.0

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NOTE: In conversion of measures to/from metric equivalents both exact and nominal conversions have been used in this specification as and where deemed appropriate.

1.0 GENERAL

This section outlines the Peterborough Utilities Commission's (PUC), otherwise known as the Commission, general policy for water servicing of subdivisions and developments.

PUG Services Corp. (PUGSC) shall act as the Peterborough Utilities Commission's agent regarding matters related to the water distribution system.

1.1 WATER DISTRIBUTION SYSTEMS

The Developer shall enter into an agreement to provide watermains, hydrants, water service pipes and the connecting mains from the existing system to the subdivision including the necessary looping as well as pay applicable Development Charges used towards the cost of system facilities including trunk mains, reservoirs, major pressure zones, pumping stations and treatment plant facilities.

The Developer shall design, supply and construct at their own expense, a complete water system, including watermains, valves, hydrants and water service connections from the watermain to the property line to service the land in the subdivision, according to the specifications of the Commission and the subdivision agreement. The Developer shall design and construct a water system of sufficient size as approved by the Commission, to serve the subdivision.

1.2 OVERSIZING

The Commission shall pay for the oversizing of a watermain in low density residential subdivisions, based on the difference in the cost of watermains over 200 mm in diameter, where oversizing is required by the Commission.

For medium and high density residential, industrial and commercial subdivisions, the Commission shall pay for the cost of oversizing based on the difference in cost of watermains over 300 mm in diameter where oversizing is required by the Commission.

1.3 SUBDIVISION PHASING

The minimum size of a phase shall not be less than ten (10) lots. Phasing of smaller numbers of lots does not allow for the proper spacing of hydrant and valves in the water distribution system.

1.4 MECP APPROVAL REQUIREMENTS

Under the new Ministry of the Environment, Conservation and Parks (MECP) Municipal Drinking Water License process the Peterborough Utilities Commission was issued its Drinking Water Works Permit (DWWP) on June 21, 2011, part of

the replacement for the Certificate of Approval (CofA) that the Ministry previously issued.

With the new DWWP the MECP Certificate of Approval application process and the MECP Transfer of Review Program no longer exist. Most alterations of the Peterborough Drinking Water System by addition, modification, replacement or extension now must satisfy the requirements of the PUC's Drinking Water Works Permit (#145-201). Therefore, most submissions are made directly to the PUC.

There are limited conditions which would require an application directly to the MECP to amend Peterborough's Drinking Water Works Permit (DWWP). Those conditions are addition, modification, replacement, or extension of a watermain that:

a) Has a nominal diameter greater than 750mm;
b) Passes under or through a surface water (except if trenchless construction method is to be used);
c) Connects to another drinking water system; or
d) Results in fragmentation of the drinking water system.

If in doubt, the Developer should contact the PUC Water Utility Engineer at the design stage to determine if a DWWP amendment application to the MECP is required.

Generally, however a DWWP Amendment will not be required. In that case the water works design is submitted to and must receive the consent of the PUC and meet MECP design requirements. The Developer shall be required to submit engineering drawings, prepared by a Professional Engineer, to the PUC Water Utility Engineer for review and approval in accordance with PUC's Drinking Water Works Permit for water works projects within the City of Peterborough.

The design must satisfy the design criteria set out in the MECP publication "Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Permit – March 2009", as amended from time to time, and the design objectives contained within the MECP publication "Design Guidelines for Drinking Water Systems, 2008", as amended from time to time. Both documents are available on the Ministry's website.

Furthermore, the design must also satisfy the requirements of the PUC, as further defined in this document.

The above only deals with watermains within the boundaries of the City of Peterborough. Other facilities such as water intake pipes, water supply, and treatment works, high and low lift pumping stations, water storage facilities at water

treatment plants and chemical feeding equipment will require an amendment of the DWWP, submissions being made directly to the MECP.
A completed and signed "Record of Watermains Authorized as a Future Alteration" MECP Form 1 must be submitted to the Water Utility Engineer, along with a cheque in the amount of $1,200.00, payable to PUG Services Corp.

PUG Services Corp.
1867 Ashburnham Dr.
Peterborough ON K9J 6Z5
Attn: Water Utility Engineer, Engineering Department

Complete Parts 1, 2 and 3 and attach a copy of the overall servicing plan for the new subdivision (or phase) and "issued for construction" drawings for all proposed watermain installations. Attachments to be Adobe PDF format.

Form 1 can be found online at:

http://www.forms.ssb.gov.on.ca/mbs/ssb/forms/ssbforms.nsf/ODAGetFormDetail?openagent&lang=E&env=ODA&NO=012-2202E

1.5 INSPECTION OF WATERWORKS MATERIALS

Prior to construction of watermains, water services, or any other underground water facilities, PUC shall inspect and approve the materials to be used. Any materials installed that are unacceptable for use shall be removed and replaced at the Developer's cost. If PUC has not approved the material prior to installation, PUC retains the right to order excavation of installed material, at the Developer's cost, for inspection.

PUC may order excavation of approved material if there is reason for concern regarding the material or installation. If, upon excavation, the concerns are unfounded, PUC shall pay for the costs of the excavation. If installation or materials are found to be not as specified, the Developer shall pay all costs for excavation and replacement of unacceptable materials.

1.6 CONSTRUCTION SPECIFICATIONS AND STANDARDS

For the latest **construction specifications**, refer to:

www.peterboroughutilities.ca/en/services/construction-standards.aspx

For the latest **construction drawings**, refer to:

www.peterboroughutilities.ca/en/services/construction-standards.aspx

For the latest **approved manufacturers products** list, refer to:

www.peterboroughutilities.ca/en/services/construction-standards.aspx

2.0 SUBDIVISION AGREEMENT REQUIREMENTS

2.1 AGREEMENT REQUIREMENTS

The Developer shall enter into an agreement with the Commission to provide watermains, hydrants, water service pipes and an agreed portion of a connecting main (if necessary) from the existing system to the subdivision.

The Developer shall design, supply and construct a complete watermain system, including watermains, hydrants and water service connections from the watermain to the street line, to service the lands in the subdivision according to the specifications of the Commission and the subdivision agreement.

A Developer shall enter into an agreement with the Peterborough Utilities Commission prior to any watermain construction associated with the subdivision as outlined in Section 1.1. Pursuant to the requirements of the City of Peterborough's Subdivision Requirement, a letter stating that the appropriate arrangements have been made with the Commission must be submitted to the City Engineer. The Water Subdivision Agreements shall be approved and signed by the Commission prior to the submission of this letter.

2.2 PERFORMANCE SECURITY

A performance security shall be posted by the Developer prior to construction. Performance security shall amount to 100% of the cost of the water distribution system associated with the new development as determined by the consultant and approved by PUC and may be in one of the following forms:

1) An irrevocable, automatically renewable Letter of Credit, drawn on a Schedule I Canadian chartered bank with a branch in Ontario; or
2) Bank Draft

An approved form of a Letter of Credit is provided in Section 2.5.

2.3 INSURANCE REQUIREMENTS

A Comprehensive Liability Insurance policy to the extent of $5,000,000 shall be provided and remain in effect during the period from the commencement of the watermain construction until the one (1) year warranty expires.

PUG Services Corp., including its officers, employees and agents while performing their duties on behalf of the Commission, and the Peterborough Utilities Commission shall both be named as additional insured parties on this Liability Insurance policy.

2.4 WATER CAPITAL AND DEVELOPMENT CHARGES AND DEPOSITS

The charge for watermains, water service pipes and Development Charges for new houses on new or existing watermains installed by or on behalf of the Commission, shall be prepaid on a lump sum cash basis. The frontage charge for watermains and the charge for water service pipes will be those applicable at the time of payment. The charge for new watermains and services, if an extension is necessary, will be the charge current at the time of construction. The current Development Charges shall apply.

a) Development Charges

The Developer shall be required to pay the Water Capital and Development Charges as established by the Commission, prior to the start of any watermain construction associated with the subdivision. The Development Charges are for the construction of trunk watermains, oversizing watermains, reservoirs, pumping stations and water treatment facilities. The charges are based on a residential unit and depend on the type of unit (i.e. single family, apartment). The commercial/institutional/industrial charge is based on a square metre of gross building area.

The Water Capital and Development rates are reviewed periodically and therefore the charges in effect at the time of payment will apply. Contact the PUC Engineering Department to obtain the current rates.

Payments required for material to be procured by PUC are due prior to PUC ordering the material.

b) Inspection Charge

The Developer shall be required to pay an inspection charge per lot, prior to starting any work. The inspection charge is a cursory spot inspection charge on a per lot basis. The Developer is expected to provide continuous resident inspection by the Consultant that oversees the design and installation of the subdivision or development.

c) Water Frontage and Water Service Connection Charges on Existing Streets

Where a new subdivision has frontage on a street(s) with existing watermain facilities, there may be additional Watermain Frontage Charges on a per metre of frontage basis and water service connection charges due. The Developer should contact PUC as some exemptions may apply.

2.5 TYPICAL LETTER OF CREDIT

TO: PETERBOROUGH UTILITIES COMMISSION

Pursuant to the request of our customer, _____

WE, _____

hereby establish an irrevocable Letter of Credit in your favour in the total amount of _____($_____)

which may be drawn on by you at any time and from time to time to the extent required to perform the obligations of our said customer under an agreement dated _____ between the Peterborough Utilities Commission and our said customer relating to the subdivision of _____ in the City of Peterborough, as shown on the plan attached to said subdivision agreement as Schedule 'A'.

Drawings under this Letter of Credit shall be in the form of a written demand for payment made by the President of Peterborough Utilities Commission and any such demand shall be honoured without inquiring whether you have a right as between yourself and our said customer to make the demand and without recognizing any claim of our said customer or of this bank.

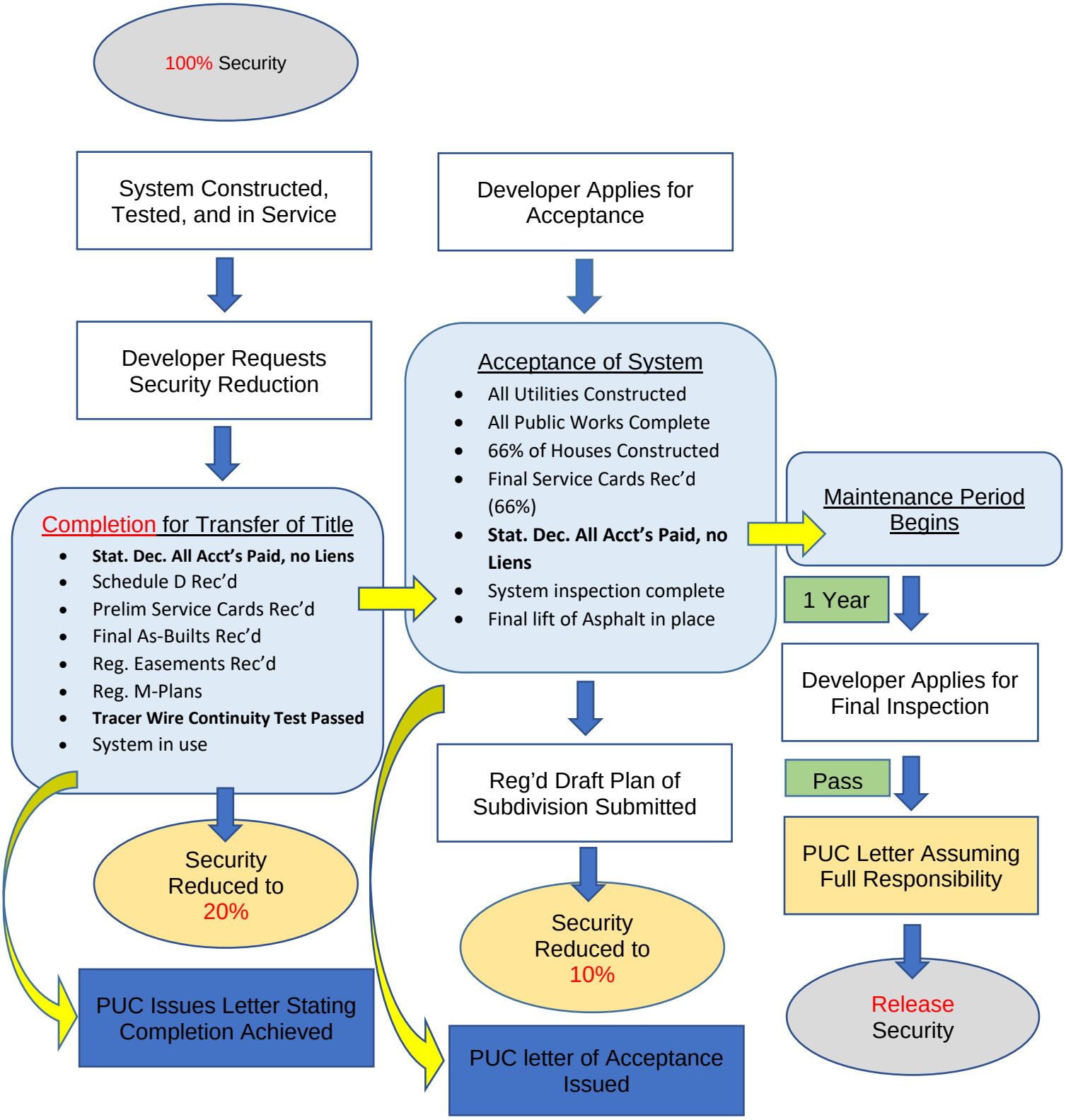
The amount of this credit may be reduced from time to time by notice in writing given to this Bank by the Peterborough Utilities Commission.

This Letter of Credit shall continue for a period of one year from this date and shall be deemed to be automatically renewed and extended from year to year thereafter unless we notify you in writing, at least thirty days prior to any expiration date that we elect not to renew or extend this Letter of Credit.

Upon receipt by you of any such notice, you may draw hereunder to the extent you consider necessary to provide adequate security for the due performance of the obligations of our said customer under the said Agreement.

This standby Letter of Credit is subject to the most current version of the International Chamber of Commerce “Uniform Customs and Practice for Documentary Credits” ICC Publication No. 500 and engages us in accordance with the terms thereof.

2.6 SUBDIVISION AGREEMENT – COMPLETION TO ASSUMPTION



3.0 COMMERCIAL, INSTITUTIONAL, AND INDUSTRIAL SERVICING

3.1 SUPPLY ON NEW OR EXISTING WATERMAINS

The charge for watermains, water service pipes and Development Charges for commercial, industrial and institutional buildings on new or old watermains installed by or on behalf of the Commission, shall be prepaid on a lump sum cash basis. The charges applicable at the time of payment shall apply.

Commercial and industrial subdivisions are covered separately. Information in this regard may be obtained from the Water Utility Engineer.

A deposit for the estimated cost of the water service pipe must be made to the Commission before work is commenced. On completion of the work, the Commission will charge the actual cost of the water service pipe by making an adjustment based on the estimate.

All charges shall be paid before installation of the watermain and/or water service pipe.

All commercial services shall be a minimum of 25mm (1") ‘poly’ and shall be metered.

3.2 LEAD TIME FOR INSTALLATION OF WATER SERVICES

PUGSC considers requests for water service to be valid once payment of any outstanding capital charges (i.e. frontage charge, water service connection costs and Development Charges) have been received.

Generally, installations of this nature are carried out on a first-come, first-served basis.

Sufficient notice must be given to PUGSC Water Distribution Department to obtain materials and schedule work. Under normal conditions, providing the watermain is in place, there will be a 1 to 2 week backlog in the installation of new services. New services are installed along with the response to emergency conditions and other water installations by PUGSC Water Distribution Department. In the spring, when the construction season begins, and in the fall, before freeze-up, the normal backlog is longer as a result of a higher demand for service.

Prior to connection, satisfactory test results for private services shall be submitted to PUGSC in conformance with Section 3.0 of PUC Construction Specifications.

4.0 DESIGN REQUIREMENTS

The purpose of the following information is to indicate for subdivision development, watermain extension work and water servicing, for the various forms of residential, commercial and industrial construction, the specific requirements for the design and construction of watermains and services to be connected to the Peterborough Utilities Commission waterworks system.

This information is applicable to cement lined ductile iron pipe, from 150 mm diameter to 300 mm diameter inclusive, polyvinyl chloride pipe (PVC) from 150 mm to 300 mm inclusive, copper pipes for 20 mm diameter to 50 mm diameter inclusive, poly tubing for 25 mm to 50 mm diameter inclusive, and all appurtenances such as valves and hydrants. For installation of watermains larger than 300 mm diameter and for any other waterworks installations, special specifications must be approved by the Engineer.

Basic Design Criteria:

Average Day Demand:	450 litres per capita per day
Min. Day Peaking Factor:	0.70
Max. Day Peaking Factor:	1.65
Peak Hour Peaking Factor:	3.00
Demand:	Greater of ‘Max. day + Fire’ and ‘Peak Hour’
Watermain Diameter:	150 mm min., unless approved otherwise
Normal Operating Pressure:	350 to 480 kPa (50 – 70 psi) (objective) But not less than 275 kPa (40 psi)
Maximum Operating Pressure:	700 kPa (100 psi)
Minimum Pressure (Fire):	140 kPa (20 psi) at Max. Day + Fire
Transient Pressure:	Max. Operating Press. + surge press. created by stopping a 0.6m/s (2 ft/s) water column
Maximum Design Velocity:	1.5m/s (5 ft/sec); 5.0 m/s during fire flow
Minimum Velocity:	0.8 m/s flushing velocity
Head Losses:	< 1m/100m (10 ft/1000 ft)

Design for Fire in accordance with Fire Code (O.Reg. 388/97 or latest edition) under the FPPA, 1997 and the latest edition of Fire Underwriters Survey “Water Supply for Public Fire Protection” and to AWWA Manual of Water Supply Practices M31 – Distribution Requirements for Fire Protection. The desired minimum flow is 63 lps @ 140 kPa (1,000 USgpm @ 20 psi; single family residential) although this may not be always available.

Designs must comply with the MECP’s ”Design Guidelines for Drinking Water Systems 2008”, as amended from time to time, and MECP’s publication

"Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit, March 2009, as amended from time to time.

With respect to Design Criteria the most rigid criteria will apply, and in no case should any criteria less than regulatory requirements be adopted.

Within a subdivision a second redundant feed will be required in order to minimize customer disruption during a watermain repair. No more than 50 units are to be constructed before a second feed is provided, unless otherwise approved by PUC. The provision of looping may also be subject to a time limit and/or the requirement to post security equal to the cost of extending the watermain.

4.0.1 Functional Servicing Report – Terms of Reference:

The Functional Servicing Report (FSR) determines the impacts of a land development proposal and how the proposed development water infrastructure will satisfy PUC design requirements. The purpose of the report is to identify the related existing water infrastructure supporting the proposed development and summarize any related new infrastructure or upgrades to existing infrastructure required. The FSR is to detail the impact of the proposed development on water treatment, pumping, storage, transmission, and distribution lines as applicable.

The report is to be prepared by a Registered Professional Engineer in the Province of Ontario qualified in Municipal Engineering. All reports and drawings are to be signed, stamped, and dated.

An FSR is required under the following conditions:

a) Zoning By-law Amendment
b) Draft Plan of Subdivision/Condominium
c) Site Plan Approval
d) Consent to Sever
e) Request of PUC

The FSR shall include, but may not be limited to, the following:

a) Location map and description of subject property
b) Description of proposed site development and preliminary site design
c) Water servicing strategy and phasing of the development
d) Average day, minimum day, maximum day and peak hour demand conditions for phasing as well as full buildout
e) Analysis of maximum day plus fire flow and peak hour demand conditions

f) Hydrant flow tests to confirm that boundary conditions can support development and meet PUC design requirements. Hydrant flow testing results used should be less than 5 years old or as requested by PUC

g) Analysis of nominal pressure ranges recorded in the watermains supplying the development as well as anticipated maximum and minimum pressures and velocities to be experienced within development during maximum and minimum flows

h) Identification of capital improvements (if required) to meet PUC design requirements

i) Identification of water system pressure zones that are servicing the proposed development

j) Identify the high point and low point elevations for the proposed watermain

k) Plans, drawings, design calculations to show and support design recommendations

l) The proposed ground floor elevations of all buildings to be constructed

m) Identify the impact of the proposed development on all reservoirs, pumping stations and/or elevated tanks in the proposed development's pressure zone

n) It is recommended that the PUC Water Engineering Department be contacted for site specific requirements

4.1 LOCATION

4.1.1 Watermains

Watermains shall be located in accordance with the City of Peterborough standard locations as per the drawing entitled "Standard Service Locations for Various Street Allowances". For example, a 4.0 metre offset from the property line is most commonly used for a 20.0m Right-of-Way in residential subdivisions. The width of the proposed pavement and road allowance could affect the watermain location. The watermain location is normally on the side of the street opposite to that chosen by the City's Utility Services Department for the storm sewer.

The standard location must be followed on straight streets. On curved streets or bends, the watermain may deviate from the standard location, but should not deviate from the standard location in either direction by more than 0.3 metres. Where the standard location is exceptionally tight, a 0.6 metre deviation from the standard location towards the centre of the roadway may be allowed, providing the deviation does not conflict with other facilities such as catch basins, gas mains, etc.

Watermain pipe shall be laid to a designed grade, so that the proper record is obtained of its vertical position. All watermains shall have a depth of cover of at

least 1.8 metres measured from the top of the pipe to the finished grade. For watermains that are dead-ended, either temporarily or permanently, the depth of cover shall be 2.0 metres minimum for the final 30 metres of pipe. Unless specifically approved in writing, no watermain shall be laid with more than 2.75 metres of cover. All temporary or permanent dead-end watermains shall have the last five joints restrained.

Watermain grades shall be set to minimize high and low points in the distribution system.

Watermains and sewers/sewage works located parallel to each other shall be constructed in separate trenches maintaining a minimum clear horizontal separation distance of 2.5 metres wherever possible. Sewers/sewage works include sanitary sewers and force mains, storm sewers and force mains and all appurtenances and fittings thereto. When conditions prevent a clear horizontal separation of 2.5 metres, a watermain may be laid closer to a sewer providing that:

a) The elevation of the crown of the sewer is at least 0.5 metres below the invert of the watermain. Such separation shall be of undisturbed or compacted earth.
b) Where this vertical separation cannot be maintained, the sewer main is constructed of materials with joints equivalent to watermain materials and is pressure tested at a pressure of 350 kPa (50 psi) without leakage, using OPSS 701 testing methodology.

Under normal conditions, watermains should cross above sewers with a minimum clear vertical separation of 500 mm to allow for proper bedding and structural support of the watermain and sewer main.

When it is not possible for the watermain to cross above the sewer, the watermain passing under a sewer shall be protected by:

a) Providing a vertical separation of at least 500 mm between the bottom (external) of the sewer and the crown of the watermain.
b) Providing adequate structural support for the sewers to prevent excessive deflection of joints and settling.
c) Ensuring that the length of water pipe shall be centred at the point of crossing so that the joints will be equidistant and as far as possible from the sewer.

A minimum 2.5 metre separation (wall to wall) shall be maintained between a watermain and a sanitary/storm manhole or catch basin. Where it is not practical or possible to maintain a 2.5 metre separation between the watermain and a manhole or catch basin, the section of water pipe shall be centred opposite the structure such that the joints are at least 2.5 metres from the nearest surface of

the structure. Rigid insulation shall be installed as required by the Engineer. All other factors relevant to design shall be considered, as outlined in The MECP Design Guidelines for Drinking-Water Systems.

No watermain shall pass through or come into contact with any part of a sewer or sewer structure, septic tank, tile field, subsoil treatment system or other source of contamination under any circumstance.

Watermains shall, preferably, be terminated opposite the property lines.

Watermains shall be arranged in a looped pattern for mutual support and reliability. Dead-ends shall be avoided wherever practicable. Watermains on permanent dead-end streets where the watermain length, exclusive of looping, would exceed approximately 150 metres (500') shall be looped, where practically possible.

Watermain dead-ends on permanent dead-end streets, where unavoidable and approved by the PUC, generally shall be equipped with a suitably located hydrant at the dead-end. Additionally, and at the discretion of the Engineer, a permanent automated flushing station shall be incorporated at the end of the watermain. These shall be designed in a manner to alleviate as much as practically possible, the negative affects created by dead-end facilities.

4.1.2 Flushing Stations

The automated, metered flushing station will be direct buried and shall discharge to the sanitary sewer. Appropriate backflow prevention and air gap shall be provided to reduce the potential for a cross connection hazard. The flushing station shall be installed in accordance with PUC Standard Drawing A3073.

Where the sanitary sewer access is unavailable, the temporary flushing station shall be equipped with a manufacturer approved de-chlorination unit, enabling discharge to storm sewer or other receiving body. It is the Owner's responsibility to maintain and monitor the de-chlorination process to ensure continuous uninterrupted de-chlorination and comply with the Ministry of the Environment requirements, as well as any other applicable regulatory bodies. Should de-chlorination be required in this capacity, and it is observed that discharged water is not being properly treated, the PUC may, at its discretion, employ its own staff and resources to dechlorinate flushing water at the Owner's expense.

Temporary automated, metered flushing stations, if required, shall be installed at the phasing limits of a subdivision until such time as the next phase is connected and placed into service. Charges will be invoiced for all water discharged from flushing stations. Charges will be based on the current Water Utility Rate Schedule. Wastewater charges may be applicable at the discretion of the City of Peterborough.

The Utility will provide and install the water meter for the automated flushing station. It is the Owner's responsibility to ensure that the water meter and associated appurtenances are sufficiently protected (insulated) from potential freeze up in the winter months as well as protected from any other incidental damages. In the event of damage to the water meter following installation, the Owner will be responsible for all associated replacement costs.

4.1.3 Valves

Valves are generally required at all intersections on the extension of all street lines. At an intersection valves shall be located opposite the property line. Four valves shall be required at each watermain cross and three valves are required at a tee intersection. In the case where intersections create short blocks, consideration will be given to valving two of the three intersecting watermains.

Valves shall be distributed so that any section of watermain serving approximately 50 dwelling units can be isolated by operating not more than four valves.

Where property lines are not involved or are indeterminate, the valves shall be located so they do not exceed a maximum spacing of 245 metres (800') for valves 150 mm (6") to 300 mm (12") inclusive in a residential area, and can be referenced with respect to certain obvious above-ground facilities. (For commercial and industrial districts the valve spacing shall not exceed 150 metres (500 ft.))

Hydrant valves shall be located 2.75 metres (9') from the hydrant as shown on PUC Standard Drawing A1633.

4.1.4 Hydrants

Hydrants shall be installed at a spacing not exceeding 150 metres (492') in single family residential districts and not exceeding 75 metres (246') in congested areas, medium and high density areas and commercial or industrial districts.

Hydrants shall, where possible, be placed near street intersections. At street intersections, hydrants shall be installed at least 3.5 metres (12') back from the corner formed by the intersecting street lines and preferably on the flankage or short side of the lot, rather than the frontage or long side of the lot.

All hydrants shall be installed with an isolating valve on the 150 mm (6") branch connection and in accordance with PUC Standard Drawing A1633.

A temporary hydrant may be required for blow-off purposes at the end of the watermain, which will be continued into a future phase of the subdivision. This temporary hydrant may be required where the end of the watermain is more than approximately 90 metres (300') from the last permanent hydrant. This temporary hydrant may be located on the end of the watermain, providing it does not conflict with the other facilities.

A permanent hydrant is required at the end of all permanent dead-end watermains in cul-de-sacs, etc.

As soon as possible after the hydrant has been installed and until the water distribution system is in service, the new hydrant shall be covered with a protective bag clearly marked "Hydrant Out of Service", as approved by the Engineer, and securely fastened to the hydrant, indicating to the public, and the Fire Department, that the hydrant is not in service.

4.1.5 Water Services – Subdivision

Each individually owned building unit shall have a separate water service extending directly from the watermain on public property to the property being serviced. For all single-family homes, semi-detached and townhouses, the minimum service size for poly tubing services shall be 25 mm (minimum size for copper shall be 20 mm).

In locations where the normal water pressure in the watermain, adjacent to the service connection, is expected to be less than 350 kPa (50 psi), the minimum poly service size shall be increased to 35 mm (1¼ inch) inside diameter. (Copper servicing would increase from 20 mm to 25 mm).

Larger services for other multi dwelling residential units or commercial buildings, shall be designed by the Developer and the design notes shall be submitted to the Engineer for information.

Pipes on the Customer’s property shall be the same or larger than the Commission’s service pipe.

For Special Thickness Class 52 ductile iron pipe, the maximum allowable direct tap without a saddle is as follows:

- 150 mm (6") pipe ..... 32 mm (1 1/4")
- 200 - 250 mm (8” to 10”) pipe ..... 38 mm (1 1/2")
- 300 mm (12") pipe and larger ..... 50 mm (2”)

Any size of tap larger than what is listed above must have a saddle installed similar to that used on PVC pipe.

Wherever possible buried water services shall be separated from any building drain or building sewer by not less than 1.5 metres of undisturbed or compacted earth, on the non-driveway side of the lot, preferably on the uphill side of the sewer service, as referenced from the direction of flow of the sewer. (This location is based on a standard sanitary sewer service location in the middle of the lot.) If the

sewer service should be located other than the middle of the lot, the water service location shall be reviewed and approved by the Engineer.

The buried water service may be closer than 1.5 metres or be placed in the same trench with the building drain or building sewer if:

a) The bottom of the water service pipe at all points as at least 500 mm above the top of the building drain or building sewer and;

b) When in a common trench with the building drain or building sewer, the water service pipe is placed on a shelf at one side of the common trench.

c) The water service pipe is constructed of a single run of pipe with no joints or fittings between the mainstop and the curbstop, or;

d) The building drain or building sewer is constructed of piping which is pressure tested with a pressure of 345 kPa (50 psi) without leakage, using OPSS 701 testing methodology.

A minimum 2.5 metre separation shall be maintained between a water service line and the wall of a sanitary/storm manhole or catch basin.

Water services are to be located at least 500 mm away from any driveway unless absolutely unavoidable and approved by PUC. Any water service installed within the driveway location not approved by PUC shall be relocated at the Developer's expense.

Water services shall be installed at right angles to the watermain. In the case where the main is not on the straight standard offset or is on a bend, the length of the water service pipe from the curb stop to the main should be noted during construction on the "as-built" drawings and additional dimensional information recorded as appropriate for future location of the service.

All water service boxes shall be located on streetline unless otherwise specified. A maximum deviation of up to 300 mm towards curbline of road shall be acceptable. Water boxes shall not be located on private property.

Water boxes installed at non-standard locations shall be corrected at the Developer's expense prior to acceptance. Where a water box is located in excess of 300 mm towards the curb line, the entire water service shall be replaced and water service box installed in the appropriate location.

All water services shall be minimum depth of cover of 1.8 metres measured from the top of the pipe to the finished grade. The depth of the water service shall not exceed 2.4 metres.

New water services shall not have any unions installed between the mainstop and the curbstop. For long side water services on roadways in excess of 20 m (66'),

30 m (100') coils of service tubing are to be used. If the use of a union is approved, the union shall not be installed under the paved portion of the road.

If a new water service is to be installed to replace an existing water service to any building, the Developer/Owner will be required to cover all costs related to excavating, removal and plugging of the original (existing) mainstop at the watermain. The existing water service line shall be cut a minimum of 300 mm from the watermain and crimped shut or capped. The existing curb stop post shall be removed at the property line. All work shall be completed by PUC staff unless otherwise approved and shall be coordinated with the PUC prior to any work taking place.

Upon completion of the installation of water services a 50 mm x 100 mm x 2400 mm wooden marker, 1200 mm in the ground, 1200 mm above ground, shall be placed behind the water service to indicate its location. The top portion of this wooden marker shall be painted blue to indicate the water service. A sign shall be securely attached to this wooden stake near the top, and facing the street, indicating the municipal address and lot number for each lot or building block being serviced.

4.1.6 Water Services - Development

Each individually owned building unit shall have a separate water service extending directly from the water main on public property to the property being serviced.

The minimum size of water service pipes, assuming a total service pipe length of less than 30 m (100 ft), shall be as follows:

- Single family dwelling..... 20 mm (3/4") copper or 25 mm (1") poly
- Semi-Detached dwelling... 20 mm (3/4") copper each or 25 mm (1") poly each
- Duplex..... 20 mm (3/4") copper or 25 mm (1") poly
- Four-Plex ..... 25 mm (1")
- Six-Plex..... 30 mm (1 ½")
- 12 Unit Apartment..... 50 mm (2")

Pipe sizes on the Customer's property shall be the same or larger than the Commission's service pipe.

In areas of the City of Peterborough where the normal water pressure in the water main, adjacent the service connection, is expected to be less than 345 kPa (50 psi), the minimum service size shall be increased to 25 mm diameter (1"). Larger services shall be designed by the Owner's engineer and the design notes shall be submitted to the Water Utility Engineer for information.

Water services shall be located in a separate trench at least 1.5 metres from the sewer service, preferably, on the uphill side of the sewer service, as referenced from the direction of flow of the sewer. The water service shall be 500 mm higher than the sewer. If the 500 mm vertical separation cannot be maintained then the separation shall be 2.5 metres laterally. (This location is based on a standard sewer service location in the middle of the lot.) If the sewer service should be located other than the middle of the lot, the water service location shall be reviewed and approved by the Engineer.

If the driveway locations for the lots are fixed before the water servicing is carried out consideration will be given to locating the water service on the non-driveway side of the lot.

Service locations shall be approved by the Water Distribution Department Superintendent or Foreman. If this approval is not obtained and the Customer extends the service to the property line before PUGSC constructs its portion of the water service, any adjustments required of the Customer's portion of the service will take place on the Customer's property at the Customer's expense.

Service pipes shall be installed with at least 1.8 m (6 ft) of cover and clear of driveways, walks, etc., where possible.

PUGSC shall install water services from the main to the property line with water service shut-off boxes on the property line. Shut-off boxes will be left at or above grade and will be marked by a 50 mm x 102 mm x 1200 mm (2" x 4" x 4') stake, painted blue.

It is the responsibility of the Builder and/or Customer to protect such boxes and stakes until the dwelling is occupied and the lawn brought to the finished grade. Any repairs to or replacement of damaged water service shut-offs will be charged to the offending Contractor, Builder or Customer.

PUGSC shall, if notified, raise or lower such boxes during landscaping at its convenience, without charge during regular working hours. (This does not apply in new subdivisions until the Commission has accepted and taken over the subdivision water system.)

4.1.7 Permanent Water Quality Sampling Stations

As specified by the Engineer, permanent water quality sampling stations shall be installed in a suitable location to allow easy access to the station by PUC staff during routine sampling. The sampling station assembly shall be supplied by the PUC and installed plumb, with free draining material placed around its base, by the Contractor.

The sampling station shall be located on street line unless otherwise specified. A maximum deviation of up to 300 mm towards curb line of road shall be acceptable. Sampling stations shall not be located on private property.

The sampling and purge lines shall be protected by 100 mm PVC casing pipe, filled with sand, from the bottom of the trench to the underside of the sampling station housing. Heat tracing wire shall protect the sampling line and the purge line from the bottom of the trench to the sampling station box.

4.2 ALIGNMENT AND GRADE

All pipe, fittings, valves, hydrants, and water services, etc., shall be laid and maintained to the required location and grades at the proper location, with joints centred with spigots set according to the manufacturers' instructions and with all valve and hydrants stems plumb. Any variation from line and grade must be approved by the Engineer in writing.

Where it is necessary to raise or lower the pipe due to unforeseen obstructions or other causes, the Engineer may approve of changes to the alignment and/or the grade; changes shall be made by the deflection of joints or by the use of bends. No joints shall be displaced or offset any amount which, in the opinion of the Engineer, will be detrimental to the strength and water tightness of the finished joint.

Water service pipe laying shall not begin until stakes are provided to indicate grade and the centre line of the lot or the boundaries of the lot or the exact location of the service laying line. The location of the water service shall conform to approved drawings.

Errors in water service location and/or grade shall be corrected to the satisfaction of the Engineer at the expense of the Developer.

5.0 DOCUMENTATION AND DRAWING REQUIREMENTS

5.1 SUBMISSION OF PLANS

The Developer, sufficiently in advance to the anticipated start of the work, shall provide acceptable engineering plans, profiles and working drawings at their own expense, prior to any work being carried out, as outlined in this section for PUC review and approval. Two (2) hardcopies of the design drawings are required.

Two (2) copies of the survey draft plan of subdivision are required for the water subdivision agreements. One (1) signed copy of the agreement is ultimately returned to the Developer with a copy of the survey plan included.

All photo copying, white print sets, vellum plots and mylar plots supplied during the design drafting and as-built stages are to be provided to PUC at the Developer's expense.

5.2 DIGITAL DRAWINGS

Subdivision projects require digital copies of drawings to be supplied in AutoCAD .dwg format on final acceptance to a standard acceptable to the PUC. Prior to preparation of drawings for the subdivision, the Developer's Consultant should request a typical standard of acceptance from the PUC.

5.3 WATER PLAN REQUIREMENTS

5.3.1 Plans

Sufficient location dimensions, calculations and pre-planning are required when designing water distribution systems to achieve the desired offset and not conflict with standard locations allotted to other utilities. This pre-planning and detailing shall be carried out by the designer and NOT left to the field layout people who may not be aware of the other design constraints. Watermains shall be laid to a designed grade so that a proper record is obtained of its vertical position.

The layout design for steel and reinforced concrete pipe shall be more rigorous due to the fact that pipe fittings and closure pieces are pre-manufactured to suit a specific installation.

In general, a plan and profile, together with certain other details are necessary for construction of any water pipeline. These shall show:

a) All pertinent existing watermains, hydrants, valves, fittings and other existing utilities.

b) Horizontal and vertical distances, either directly or by survey station and elevation.

c) Location of deflections or bends, both horizontal and vertical (point of intersection preferred).

d) Degree of bends, degree or radius of curves, tangent distances for curves, or external distances if clearance is required.

e) Points of intersection with pipe centreline for tees, wyes, crosses or other branches, together with direction - right or left hand, up or down or angle of flow, viewed from inlet end.

f) Location and overall length of all valves, pumps, or other inserted fittings not supplied by the pipe manufacturer.

g) Location of adjacent or interfering installations or structures.

h) Occasional tie-ins with property lines, curb lines, road or street centre lines, and other pertinent features necessary to design right-of-way and locate pipe centre-line clearly.

i) Details and descriptions of all specials, together with data required to supplement AWWA Standards.

j) Details, dimensions, and class designation or other descriptions of all flanges and mechanical field joints.

k) Any special requirements affecting the manufacturer of the pipe or any installation procedures.

The overall layout plan shall show the location of the watermains, valves and hydrants and the size and type of pipe. The overall layout plan shall also show the location of the proposed sanitary and storm sewers, manholes, catch basin and any other major sewer or drainage facilities, ROW, driveways, curb line, etc.

The plan and profile drawing shall show the relevant location and elevation information in plan and profile for all watermains, fittings, valves, hydrants, services, locations of bends with deflection angles, and details of other facilities etc. Where it is necessary for the watermain to cross under other facilities using bends, a special detail of the arrangement shall be provided.

5.3.2 Composite Utility Plan Requirements for MC Approval Submissions

In addition to other design plans submitted the following are the Criteria required for any proposed subdivision submission to Peterborough Utilities requesting Municipal Consent (MC) Approval. The applicant is to provide a Composite Utility Plan as further herein defined in addition to other subdivision plans and their request for MC Approval. A composite utility plan, in addition to any other detail plans provided, will assist all service/utility providers in ensuring there are no conflicts during their review of an MC submission. (Any deviation will be at the Utilities' discretion alone.)

The Composite Utility Plan must adhere to PUG Services Corp. standards and provide the following information:

a) The lot layout and numbering is to be shown as per the draft plan, and municipal addresses if available. A total lot count shall be identified for development charge calculations.

b) All utility line locations including sanitary sewer, storm sewer, watermain, catch basins including rear yard catch basins, manholes, hydrants and valves, are to be identified.

c) All utility service drop locations are to be shown including sewer and water service laterals.

d) The complete street lighting system is to be identified as well as disconnects.

e) Other street features are to be indicated/scaled i.e. sidewalks, communications pedestals, transformers, bus stop locations, shelters and pads, Canada Post Super Mailboxes, etc.

f) Location of all proposed trees and landscaping on the subdivision road allowance are to be shown.

g) All driveways are to be indicated at maximum allowable width and clear of water services, transformers, fire hydrants and streetlights.

h) A note stating that all utility boxes (i.e. pedestals and transformers) are to be installed in accordance with utility / telecom parties standards, within the road right-of-way.

i) For particular minimum clearance requirements, a reference to each individual utility's specifications and standards will be made.

j) The Plan scale ranges from 1:1000 or 1:1500 metric for some larger developments to 1:500 or 1:250 metric for particular areas of congestion such as cul-de-sacs, garden home/townhouses, etc. (Attached detail plans typically are 1:500 metric).

k) All easements must be clearly identified, and registration number indicated if available.

l) Show maximum building footprint on each lot considering required minimum setbacks, or each house footprint if established.

m) Symbol Legend to conform to City standards.

n) North arrow is to be shown.

o) A Key Plan shall be provided.

Some details key to the above that need to be provided within a submission package are:

a) A typical utility road cross-section is to be shown including road width, typical utility trench, utility depths, clearances between utilities and dimensions from utility plant to curbs and lot lines.

b) A typical lot servicing detail is to be shown for each type of proposed unit and the location of all utility services, driveways, and trees if standard shall be shown including dimensions for each from lot lines.

c) Typical utility trench details are to be shown including depth, layout and identification of each utility's ducts and cables within the trench when a joint use trench is used.

Approval will be provided in writing on our own MC Approval Form. This Approval can then be used as confirmation to the City that the applicant has satisfied the requirements of the Water Utility respecting MC Approval.

5.3.3 Preliminary Drawing Approval

For preliminary approval, the following plans shall be submitted:

a) Two (2) copies of the proposed layout plan.

b) Two (2) copies of the detailed plan and profile drawings to a scale of not less than 1:500 horizontally and not less than 1:50 vertically.

After examination of the preliminary plans, one copy shall be returned to the Developer's Consultant outlining and showing any changes that are required.

5.3.4 Final Drawing Approval

The final submission shall be made, once all requested revisions have been completed and shall consist of:

a) One (1) hard copy of the survey plan of subdivision and a PDF file of the same.

b) Two (2) sets of the approved "stamped" Engineering "For Construction" drawings and construction specifications in hard copy and PDF files of the same.

c) A completed and signed MECP Form 1 "Record of Watermains Authorized as a Future Alteration" and payment of $1,200.00.

Once final drawing approval has been received from PUC, Ministry of the Environment, if required, and all other regulatory agencies, and all provisions of the subdivision agreement between the Commission and the Developer have been complied with, the Developer shall arrange a pre-construction meeting with PUC staff to review details of the project and to

inspect materials forming part of the work. A start date shall be determined, and the Developer may then proceed with the installation of the water system. The Developer shall advise PUC at least one (1) week in advance of the start of the work, so that PUC can arrange for inspection during construction.

d) One (1) digital copy of the approved overall layout plan of the water distribution system; no activity related to final swabbing, pressure testing, leakage testing, nor disinfection shall be permitted without this overall layout plan.

5.3.5 Layout

The Developer shall, at their own expense, carry out all layout work necessary for complete construction of the work in accordance with the approved plans and specifications. The Developer's Engineer involved in the design of the waterworks facilities shall, unless otherwise approved, be responsible for the complete layout, inspection and resident supervision of the work.

5.3.6 "As Constructed" Information

a) General

"As Constructed" information of underground services is an essential requirement of any underground work.

The acquisition of "as constructed" information shall be obtained for two purposes:

a) Enable a service locater to quickly pin-point the water facilities in all kinds of weather conditions, summer or winter, from readily identifiable and normally visible surface or above-ground facilities.

b) Provide a drawing showing all facilities in the "as constructed" locations relative to one another for accurate reference purposes.

b) "As Constructed" Plan Tie Points

"As Constructed" tie points shall allow the location of underground water facilities during any time of the year. Acceptable tie points include:

a) Hydrants;

b) Water valve boxes in roadway;

c) Sanitary or storm manhole covers located in the roadway;

d) Any easily identifiable existing permanent structures such as houses.

Tie points which are unacceptable include:

a) Hydro or Bell poles;

b) Storm catch basins along the gutter (EXCEPT as a temporary tie point);

c) Manhole covers located off the roadway; and

d) Survey bars (except for occasional tie-ins for hydrants and curb stops).

Water services are tied down relative to each other and to valves and hydrants and NOT survey bars. The occasional tie point of a hydrant and water service curb stop to a survey bar is useful for field location and in identifying the exact location of hydrants and curb stops relative to the property line. Tie every 5th or 6th curb stop to property bars.

Where water services are installed on a bend, cul-de-sac or other locations where it is not possible to locate the water service at right angles to the main, the location of the main stop and the curb stop shall be shown on the "as constructed" drawing so that the exact line of the service can be accurately determined. End curb stops and every 5th or 6th curb stop to be tied to above grade features.

c) "As Constructed" Plans

Both preliminary and final "as constructed" information is required as follows:

i) Preliminary "As Constructed"

Within one (1) month of the completed water system in the subdivision or any phase thereof being put into service and before the issuance of building permits, the Developer shall provide preliminary "As Constructed" information. This preliminary "As Constructed" information can be in any legible, comprehendible form that is convenient such as a marked copy of the overall plan or photocopies of pertinent "As Constructed" field notes. This information shall be sufficient so that valves and services can be readily located from above ground objects such as hydrants.

"As Constructed" information required on completion of the watermain installation shall include the make, type, class and manufacturer of all watermain pipe (PVC, Ductile Iron, Concrete Pressure Pipe) and is to be recorded on the drawings.

Preliminary "As Constructed" information shall include completing the node, main, hydrant, valve and chamber inventory record forms (supplied by PUC). One service card (supplied by PUC) is to be completed for each water service installed in the subdivision. Preliminary as-built ties to the water services are to be drawn in pencil

on the water service cards. All other information on the cards is to be in pen.

It is the Consultant's responsibility to provide an accurate description of the water services, valves and hydrants installed in the development. PUC shall be consulted for proper completion of the documents.

ii) Final "As Constructed"

Prior to the final acceptance of the waterworks system in the subdivision by PUC, one (1) complete final set of approved "As Constructed" original mylars in accordance with the general requirements for "As Constructed" information shall be provided.

In addition, PUC will require a digital copy of the final "As Constructed" plans. PUC should be contacted regarding any questions on the appropriate digital format. An AutoCAD .dwg file, plus a PDF copy, for each plan to be provided.

d) Tie Points

i) Water Distribution System Ties

For swing tie measurements to plant features such as hydrants, valves, sanitary manholes, storm manholes, catch basins and double catch basins, etc. the plant ID numbers from the construction drawing are to be used. All measurements are to be metric.

- SMH # Sanitary Manhole
- STMH # Storm Manhole
- CB #Catch Basin
- DCB # Double Catch Basin
- H # Hydrant
- V # Valve

Where # represents the plant ID number on the construction drawing.

ie. 25.4 m SMH 15
19.5 m DCB 19

ii) Building Ties

For swing tie measurements to buildings the following convention applies. When standing on the road allowance facing the house or lot the left swing tie distance is your left side and the right swing tie distance is your right side. All measurements are to be metric. The municipal address and street name are to be used to reference the ties.

ie. 25.4 m L. 1582 Ravenwood Dr.
19.5 m R. 1582 Ravenwood Dr.

Generally, the reference is to the two corners of the main building, although circumstances may dictate the use of other building reference points.

iii) As Constructed Watermain Elevations

The actual as constructed top of pipe watermain elevations and station location are to be plotted on the construction profile drawing.

5.4 ACCEPTANCE

The Acceptance of the water distribution system in a subdivision is tied to the completion of all other services (i.e. paving, curbing, sodding of the boulevards and sidewalk installation). The maintenance guarantee period extends for one (1) year from the date of Acceptance of the water system.

Acceptance usually occurs after the substantial construction of the majority (approximately 66%) of the houses in the subdivision. The City of Peterborough's Subdivision Agreement requires that a substantial number of houses have roofs on before allowing the completion of the curb and gutter, paving, sidewalk construction and boulevard sod.

The Developer is responsible for rectifying damages to the water distribution systems facilities that occur prior to the completion of the one (1) year maintenance period.

The Developer shall provide a copy of the final registered subdivision plan complete with lot numbers before acceptance by PUC. The municipal address and lot numbers are to be on all “as-constructed” plan/profile drawings.

5.5 COST AND STATISTICAL DATA

The Developer shall provide the quantities and tendered unit prices for watermains, hydrants, services, etc. for the water system once they become available. Cost figures for water facilities and statistical information (i.e. trunk mains, watermains, number of water services, hydrants) shall be made available to PUC on a yearly basis and prior to final acceptance. (This information is required for the Commission’s financial and statistical records.) These values should be the actual amounts paid with the exception of monies paid directly to the Commission.

6.0 INSPECTION

6.1 INSPECTION - SUBDIVISIONS

a) Initial Inspection

PUC will carry out cursory spot inspections during the installation of the water distribution systems. The Developer is required to provide continuous resident inspection by their Consultant, during the initial installation and testing.

b) Additional Inspections

After the initial installation and prior to Acceptance, PUC will carry out additional inspections for the Developer or their Consultant, under the following conditions:

i) Sufficient advance notice is provided and the work is carried out during regular working hours. (The extent of the advance notice will depend on the size of the subdivision and the time required to inspect the work.)

ii) The inspection is carried out during the normal construction season (i.e. between April 1st and October 31st), unless approved in writing by the Water Utility Engineer.

iii) The Developer or their agent, prior to inspection, will carry out the necessary preparatory work in locating the various facilities not readily visible (It is the Developer's responsibility to search for, dig up and locate individual water valves and services so that the waterworks facilities can be easily and effectively checked). PUC will expect this preparatory work to be carried out prior to being asked to carry out an inspection.

iv) The Developer or their agent shall accompany PUC Inspectors to aid them in the inspection so that the extent and nature of any problems uncovered can be viewed firsthand and recorded on a deficiency list created by the Developer or their consultant. A copy of this list shall be provided to PUC and its content approved by PUC. All additional inspections deemed necessary by the circumstances will be carried out at the cost of the Developer.

In the case of the water distribution system, the inspection will generally consist of checking the location, condition and operation of the hydrants, services, valves and valve boxes, depth of valves and services, cursory investigation for leaks and condition of hydrants. A tracer wire continuity test shall be carried out on the water system as outlined in Section 6.1.5.14. The first and last inspection of the water distribution system will be carried out at no additional cost.

6.2 ENGINEER/INSPECTOR

The Developer shall employ the services of a professional engineer, licensed to practice engineering in the Province of Ontario, to design the water distribution system and stamp the drawings.

The Developer shall supply a full-time qualified Inspector who is well experienced in watermain and subdivision construction.

The water works inspector is required to ensure material meets PUC requirements, ensure the watermain and water services are installed correctly and at the proper locations as illustrated on the plans, both horizontal and vertical alignments.

6.3 LOCATES IN SUBDIVISIONS PRIOR TO ACCEPTANCE

Prior to Acceptance, PUC reserves the right to apply the normal utility locate requirements prior to excavation, where applicable. PUC’s normal utility locate requirements shall generally apply after Acceptance of the water distribution facilities in the subdivision.

Generally, PUC will, on provision of adequate advanced notice, for individual builders or plumbers in new subdivisions during regular work hours at no additional cost to the builder or plumber, stake from locations provided from the Consultant’s "as constructed" information the location of individual water service shut-offs. PUC, however, will not dig up or search for the water service shut-off box if it is not readily found at the staked location and does not take responsibility for the accuracy of the Consultant's "as-built" information.

7.0 WATER METER SPECIFICATION

7.1 SCOPE OF WORK

7.1.1 Metering Applications

This specification covers requirements for the installation of water meters. The Owner shall provide all labour, equipment and materials not specified as being supplied by the Commission for a complete installation.

Water meters will be installed in the following applications:

a) All new residential buildings;

b) All commercial, institutional and industrial services;

c) In any other location as required by the Commission.

7.2 WATER METER INSTALLATION SPECIFICATIONS

7.2.1 Definitions

- "Building" shall have the same meaning as set out in the Ontario Building Act, S.O. 1992, Chap. 23, as amended, or any successor thereof.

- "Commission" means the Peterborough Utilities Commission and includes its employees, servants, and agents.

- "CSA Standard" means the document entitled CAN/CSA B64-10-11, Manual for the Selection and Installation of Backflow Prevention Devices.

- "Enclosure" means an above or below ground structure, designed to accommodate a water meter and premise isolation backflow preventer, that incorporates positive drainage to prevent submergence of the water meter and backflow preventer, provide security, increase accessibility for testing and repair or replacement, and provide freeze protection.

- "Ontario Building Code" means Ontario Regulation 350/06 or any successor thereof made under the Ontario Building Code Act.

- "Owner" means any person, firm or corporation having control over property to which this policy applies and includes the Owner registered on title of the property and any occupant of any building or enclosure located on such property.

- "Person" means any person, firm, or corporation having control over property to which this policy applies and includes the Owner registered on

title of the property and any occupant of any building or enclosure located on such property.

- "Water-cooled System" means any individual unit, group, or combination of collection of units of apparatus or equipment supplied with water for cooling purposes.

- "Water Meter" means the water meter supplied and owned by the Commission, installed within a building or enclosure to record the amount of water supplied to such building by the Commission and includes all remote readout equipment supplied and installed with the water meter.

7.2.2 Water Meter Location

Water meters shall be readily accessible at all times.

The water meter shall be located where the water service pipe enters a building or in another area of a building or location approved by the Commission.

No branch connection shall be made between the building control valve and the water meter.

Where the water meter is installed in an enclosure, the location and design of the enclosure shall be approved by the Commission.

Enclosures are privately owned and shall be designed in accordance with the Ontario Building Code and the CSA Standard if a premise location backflow device is required.

If the entrance to the enclosure is to be locked, a key shall be provided to the Commission for meter service work.

Water meters and premise isolation double check valve assembly backflow prevention devices shall not be located in a below-grade pit or vault unless approved by the Commission and/or their approved contractor.

Water meters shall not be located in ceilings or any overhead structures.

Water meters shall be located where they can be easily replaced, repaired, and maintained.

Water meters shall be protected against freezing. Owners shall be responsible for any damage to a water meter due to freezing.

No electronic, electrical, mechanical, water sensitive equipment or machinery shall be placed or installed under or adjacent to the water meter installation or in an area where splash or flow from the meter settings or pipes could occur during servicing of the water meter.

7.2.3 Installation of Water Meters

Water meters shall be installed or relocated by a certified plumber, an apprentice plumber under the Trades Qualification and Apprenticeship Act or a water meter installer holding a Completion Certificate from the Ministry of Training, Colleges, and Universities.

A residential property owner residing in his or her own property may do the installation provided a building permit is obtained from the City of Peterborough. The permit must be obtained before commencing the work. The Commission will require verification of the permit before a water meter will be issued. The meter installation must be completed and inspected within five (5) days of meter issuance from the Commission.

Water meters shall be provided, sealed, replaced, maintained, repaired, tested, inspected, or removed, only by the Commission.

Owners shall, at their own expense, provide easy access to the Commission at all reasonable times to perform any of the above noted functions.

Owners shall be responsible for all expenses incurred for installing a water meter.

7.2.4 Water Meter Installation

All material used to install the water meter shall comply with the Ontario Building Code.

Water meters up to and include 25 mm shall be installed horizontally with register facings, plumb and facing upwards or vertically with register facings facing outwards.

Water meters 38 mm and larger shall be installed horizontally with register facings plumb and facing upwards.

Water meters shall be supported independent of the water service pipe and the water distribution system.

Water service pipe and water distribution system pipe shall be supported sufficiently and in compliance with the Ontario Building Code so that removal of the water meter by the Commission shall not affect the integrity of the service pipe or the distribution system.

Water meter supports shall be steel support stands or other permanent means acceptable to the Commission. The water meter shall be protected from dissimilar metal corrosion.

Bricks, concrete, or wood blocking shall not be acceptable means of supporting a water meter unless they are permanently installed.

Other support or restraint for piping, valves, joints, or water meters shall be provided as required by the Ontario Building Code.

The person installing the water meter shall be responsible for all piping, joints, supports, and valves required to install the meter.

Water meter type shall be determined by the Commission.

For non-typical water meter installation and water meters 38 mm or larger, or a metered fire safety system, the Owner must provide detailed drawings, designed, and reviewed by an architect or professional engineer, of the installation and relevant calculations of water use to show that the water meter size specified will provide an adequate water supply for the intended use.

Provisions shall be made for the disposal of water used for in place testing either through a floor drain or other means approved by the Commission.

The Commission shall inspect all water meter installations prior to turn on of water.

Water supplied to fire safety systems are not required to be metered.

7.2.5 Clearances

Unless otherwise approved by the Commission, water meters up to and including 50 mm shall be installed with the following clearances:

a) Not less than 300 mm and not more than 900 mm to centerline above floor level;
b) Not less than 300 mm from the foundation or exterior wall;
c) Not less than 600 mm clearance above the top of the meter;
d) Not less than 500 mm from any partition or obstruction;
e) Not less than 1 m from any internal structure (ie. Furnace, water heater, etc.)

Clearance specifications for water meters larger than 50 mm shall be submitted to the Commission for approval.

Where a premise isolation backflow prevention device is installed, minimum clearances for the device shall be according to the CSA Standard.

No backflow preventer shall be installed directly above a water meter.

7.2.6 Meter Valving and By-Pass

Water meters shall be installed downstream of a building control valve and a shut off valve and drain port shall be provided downstream of the water meter.

Water meters up to and including 25 mm shall be installed as close as possible to the building control valve.

Unless otherwise approved by the Commission, for water meters greater than 25 mm, a straight run of pipe of a minimum length of five times the diameter of the water supply pipe shall be installed between the building control valve and the water meter and a straight run of pipe of a minimum of two times the diameter shall be installed between the water meter and downstream shut off valve.

No other connections are permitted between the building control valve and the downstream shut off valve.

Water meters larger than 25 mm shall be provided with a by-pass, complete with shut off valve, arranged so that the water meter may be removed without interrupting the water supply.

If a by-pass is installed directly over the water meter, there shall be a minimum clearance of 500 mm.

A by-pass shall not be installed to obstruct access to the water meter for the purposes of repairing, replacing, or maintaining the water meter.

A by-pass shall be the same size as the supply pipe connected to the water meter.

The by-pass valve shall be closed, locked out and tagged by the Commission.

No person other than the Commission shall operate the by-pass valve.

Owners shall ensure that all valves are visible, accessible, and maintained in good working order at all times.

Full port valves, gate, or ball type, shall be used for all water meter installations.

7.2.7 Protection of Meters

It is the Owner’s responsibility to protect water meters from frost and all other damage when received from the Commission.

Owners shall protect water service pipe, the water distribution system, supports or connections appurtenant thereto on their premises leading to or connected with the water meter from frost or any other injury so that the water meter will not be damaged.

Owners are responsible for the loss of or damage to water meters.

Grounding wires of any type are not permitted to be affixed to a water meter.

No person shall tamper with, modify, remove, or by-pass a water meter.

No person shall relocate a water meter unless prior approval is obtained from the Commission.

Owners shall be responsible for all expenses to relocate a water meter.

7.2.8 Cooling

The Commission does not recommend the use of water for cooling of refrigeration equipment or for air conditioning purposes.

Water used for cooling purposes will be charged on a metered basis.

Water-cooled systems used directly or indirectly shall utilize approved conservation equipment wherever possible.