

**CITY OF HAMILTON
PLANNING AND ECONOMIC
DEVELOPMENT DEPARTMENT
GROWTH MANAGEMENT DIVISION,
DEVELOPMENT ENGINEERING APPROVALS SECTION**

SEWER AND WATER PERMIT PROCESS

**SEWER AND WATER SYSTEM DESIGN REQUIREMENTS
(Servicing Drawing Requirements)**

LAST REVISION: April 15, 2019

SEWER AND WATER PERMIT PROCESS

In order to obtain sewer and water permits for commercial, industrial (see MOE requirements below), institutional and multi residential developments (i.e. townhouse, condominium and apartments), the applicant/owner must provide an appropriate drawing to the Planning and Economic Development Department, Growth Management Division, Development Engineering Approvals Section for review and approval. Along with this drawing an application review fee in the amount of \$840.00 (small servicing project) or \$1,665.00 (large servicing project), must be submitted, with the actual required amount to be determined through initial review and consultation. Review fees are HST exempt.

For commercial Water Filling Stations, applications should be made directly to the Public Works Department, Water and Wastewater Division, 330 Wentworth Street North. Application requires the submission of a servicing drawing along with the current applicable application fee. The application review fee, as noted above, is not applicable to these applications. Submitted drawings will be reviewed and approved by the Development Engineering Approvals Section prior to permit issuance.

Permits for single family homes are also required and are issued by the City of Hamilton Building Services Division. As servicing designs for these dwellings generally follow a set standard, or were previously dealt with under a Plan of Subdivision, servicing drawings are not required.

It is understood that all servicing systems vary to some degree therefore the following represents the basic requirements for the review of sewer/water drawings to be undertaken. Specific modifications and/or additions to the drawings may be requested by the Development Engineering Approvals Section to ensure that the proposed system will meet the minimum standards for permit issuance. Failure to include this basic information may result in the drawings being rejected or processing of the drawings being delayed.

After review of the preliminary servicing drawing, the applicant/owner will be requested to make all necessary revisions, and resubmit 5 copies of the completed plan for final review, processing and costing of the permit.

Upon notification of the Servicing Plans approval, and prior to commencing the works, a Servicing Permit, and Water Meter Permit, as applicable, must be obtained from the Development Engineering Approvals Section, 6th Floor City Hall, 71 Main Street West, Hamilton, between the hours of 8:30 a.m. and 4:30 p.m., excluding weekends and holidays.

For Permits related to private property works only, the Owner or their designate may obtain the Permit. Permits for projects, which include works within the municipal road allowance, may only be obtained by the Owner's contractor, bonded with the City of Hamilton. An Excavation Permit in addition to the Servicing Permit will be issued for these road allowance works. The current cost of an Excavation Permit is \$576.07 (HST exempt) with the cost of the Servicing Permit/Water Meter Permit being based on the formula sheet in Appendix "B", attached.

Where applicable, permits for the installation of water meters will also be issued in conjunction with the Servicing Permit, and their cost is based on the size of meter requested by the applicant/owner.

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All water meters, paid for by the applicant/owner under a Meter Permit, are installed by the City of Hamilton contractor, by appointment, and upon notification that all applicable plumbing, including spacer issued by the City of Hamilton, have been installed and inspected to the City's satisfaction. All meters remain under the ownership of the City of Hamilton. It should be noted that the Development Engineering Approvals Section issues Water Meter Permits, including the master and satellite (secondary) meters for all commercial, industrial, institutional developments. For multi-residential developments (where applicable; see below) the Development Engineering Approvals Section will issue the Permit for the master meter only, with all other satellite (secondary) meters being issued through the City of Hamilton Building Services Division, 3rd Floor City Hall, 71 Main Street West, Hamilton. Water meters for single family homes will also be issued through the Building Services Division.

In accordance with the "Industrial, Commercial, Institutional (ICI) and Multiple Unit Residential Water Metering Policy (06-006) all **ICI** developments require a water meter (master or independent) for the entire development in addition to a satellite water meter for "each" unit within that development. **Horizontal Multi Unit Residential** developments require an independent water meter within "each" unit; however, a master meter is not required. **Vertical Multi Unit Residential** developments (apartments) require an independent meter for entire development, while "satellite" meters are optional, but subject to the owner entering into an agreement for individual water meters in vertical buildings. See page 6 for definition of "master", "independent" and "satellite" meters, and page 7 and 8 for additional detail respecting meter sizing, installation location etc.

Satellite meters, issued by the City, will only be permitted when installed downstream of a sites master meter and sub metering or the installation of satellite meters off satellite meters will not be permitted.

Note that the proposed meter selected for a particular use must meet the specific needs of the development and be to the satisfaction of the City of Hamilton. It is; however, the Owner's responsibility through their Consultant to suggest the meter required from the list of meters available from the City (see Appendix "B"). Also note that not all meters are applicable for all situations, and in the case of magnetic flow meters and turbine meters approval must be received from the Supervisor of Meter Operations prior to application. Use of turbine meters must be supported by flow data.

Backflow prevention is required on all ICI developments in accordance with the backflow prevention By-law #10-103 (see page 9, 10 and 11).

After receipt of Permit(s) it is the applicant/owner's responsibility to contact the City of Hamilton and request the required sewer and water inspections, and obtain the applicable water meter spacer necessary for proper meter installation etc. Requests for sewer/water inspection should be made 48 hours in advance through the Planning and Economic Development Department, Growth Management Division, Development Engineering Construction Section at 546-2424 X7860. For after-hours inspection an additional fee of \$401.15 (minimum 4 hours) is payable in addition to the Permit Fee (fee includes 13% HST). Requests for after-hours inspection must be made during regular business hours 8:00 am and are subject to staff availability.

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To obtain the appropriate sized meter spacer for meter installation the Meter Permit (original copy) must be taken to Public Works, Hamilton Water Customer Service at 330 Wentworth Street (905 546-4426), where the spacer will be issued along with instructions related to final meter installation

Approval of the servicing drawing is for material acceptability and compliance with municipal and provincial specifications and standards only. Approval and inspection by the City of Hamilton of the works does not certify the line and grade of the works and it is the Owner's responsibility to have their Engineer certify this accordingly.

Servicing drawings approved by the City are valid for Permit issuance for up to one year from the date of the plans approval, and notification of the applicant/owner. Issuance of Permits after the one year expiration date will require resubmission of the plan, payment of the applicable servicing review fee, and revision to the plan to reflect current standards etc. as applicable.

Issued Permits, subject to their terms, will be deemed to have lapsed, and will be revoked if construction has been substantially suspended or discontinued for a period in excess of one year, or has not commenced within six months of the date of issue. All servicing, inspection, review and excavation fees paid are not refundable. Consideration will be given to refunding water meter fees, as applicable, if the required meter is a common stock item or the spacer has not been issued.

Excavation Permits are valid for one year from the date of issue.

City of Hamilton Projects Requiring Servicing

Where a Contractor is hired by a City of Hamilton Department, including Public Works, to construct municipal servicing works tendered by the City and these works require inspection through the Growth Management, Development Engineering Approvals Inspection Section (i.e. projects not completed through the City of Hamilton Capital Works process and inspected by Public Works Inspectors), the Servicing Permit process is applicable, and servicing drawings must be submitted for review and approval by Growth Management, Development Engineering Approvals. All applicable fees must be paid prior to Permits being issued and Fee payment is to be worked out between the Contractor and the City Department tendering the project. If the fees are to be paid by the City this can be arranged through internal Department journal transfer. Projects which include road works and are being dealt with under the Servicing Permit process will require that the Contractor be fully bonded with the City of Hamilton, as per standard protocol, regardless if they were hired by the City.

It must be noted that on projects where Growth Management will not be involved due to Public Works staff undertaking the inspections, and where a water meter is required, Growth Management will continue to issue the Permit for this meter as per standard practice for book keeping purposes.

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Ministry of Environment (MOE) Approvals for Storm Systems on Industrial Lands

It is the Ministry's opinion that runoff from lands used for industrial purposes, as defined below, may be contaminated due to the industrial activities taking place on such properties.

The Ministry requires information on the quality of the stormwater runoff from these industrial lands and ensures that if contaminated, the stormwater is transmitted to a facility designed to treat the contaminants.

Definition of 'Industrial Land' - "industrial land" means land used for the production, processing, repair, maintenance or storage of goods or materials, or the processing, storage, transfer or disposal of waste, but does not include land used primarily for the purpose of buying or selling,

- (a) goods or materials other than fuel, or
- (b) services other than vehicle repair services.

Therefore all applications for Certificates of Approval for storm sewers/stormwater management works under Section 53 of the Ontario Water Resources Act located on industrial land shall be forwarded directly to the Environmental Assessment and Approvals Branch with an Application for Approval of Industrial Sewage Works for review and approval. This includes overland and/or piped runoff directed to a ditch or sewer that leaves the site.

SEWER AND WATER SYSTEM DESIGN REQUIREMENTS (Servicing Drawing Requirements)

Sewer and Water Servicing Plans (General)

Servicing plans should be drawn to a minimum scale of 1:500 (metric only). Please refer to Appendix "A" of this document for a typical example.

The following information shall be shown on all servicing plans submitted for review.

- (a) Scale of the drawing. Minimum scale to be 1:500.
- (b) A key plan, showing the location of the site in relation to the nearest major intersections. A north arrow must be provided on the plan.
- (c) A legend must be provided on the plan and all items clearly labelled.
- (d) The municipal address of the property. The Owner/applicant **must** ensure that the correct municipal address is provided as incorrect addresses may result in delays in inspection and water meter installation by the City. Please contact 905 545-2424 X4348 to confirm addresses.

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- (e) Name of business, property etc.
- (f) Drawing date including any revisions.
- (g) All existing municipal services (i.e. storm and sanitary sewers, watermains, sewer drains and water services, etc.) located within the abutting municipal road allowances, etc. Engineering drawings showing this information may be available from the Public Works Department, Capital Planning & Implementation, Surveys/Technical Services Section, 3rd Floor, Hamilton City Centre, 77 James Street North, Hamilton.

Note: It is the applicant/owners responsibility to ensure that the information shown on the plans obtained is accurate. It is recommended that the applicant/owner field check all information.

- (h) If applicable, all existing water services and sewer drains for a subject property must be shown on the plan. The drawing must indicate which water services and private sewer drains are to be abandoned and/or re-used.

Note: If a water service or sewer drain is to be re-used the applicant/owner must assure themselves that the existing service is adequate to meet their proposed uses and are in good working condition.

- (i) All existing and proposed structures on the property.
- (j) All elevations on the plan (inverts etc.) to be to geodetic datum.
- (k) The size and location of all existing and proposed water meters. Water meters in addition to their size and location, must be labelled as either a “master meter”, “independent meter” or “satellite meter”. For definition purposes a “master meter” denotes the sites main meter, and indicates that subsequent meters, or “satellite meters” will be proposed/exist on the sites common water service downstream of this “master meter”. An “independent meter” denotes that it is the only intended meter for that specific water service on a site, and no “satellite” meters are intended on that service line. Sites with more than one independent water service can include all three meter definitions.

Sewer and Water Servicing Plans - Requirements for Proposed Systems

All water services and sewer drains to be connected to the City of Hamilton’s infrastructure are to be designed and installed in accordance with the City of Hamilton Construction and Material Specifications Manual (latest edition), Ministry of the Environment Guidelines (latest edition) and the Ontario Building Code, Part 7. Copies of the City of Hamilton Construction and Materials Specifications Manual are available from the City of Hamilton Public Works Department, 3rd Floor, Hamilton City Centre, 77 James Street North, Hamilton, or on the City Web Site at:

<http://www.hamilton.ca/develop-property/policies-guidelines/construction-and-material-specifications>

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Reference should also be made to the City of Hamilton “Comprehensive Development Guidelines and Financial Policies Manual”; as applicable, to the servicing of existing lots or lots being redeveloped in whole or part. This document can be viewed at:

<https://www.hamilton.ca/develop-property/policies-guidelines/comprehensive-development-guidelines-and-financial-policies>

Depending on the proposed system design, some or all of the following information must be reflected/included on the plan:

Water Servicing

- (a) Water services are to be installed perpendicular to the existing City watermain and straight into the building.
- (b) Water services to be installed with a minimum cover of 1.6 m.
- (c) Minimum horizontal separation between water services and sewer drains and/or municipal sewer mains shall be 2.5 m measured from the closest pipe edge to closest pipe edge. Vertical separation where a water service passes over a sewer drain and/or municipal sewer mains must be a minimum of 0.15 m unless greater separation is required to provide for proper bedding and structural support. Water services passing under sewer drains and/or municipal sewer mains must have a separation of 0.5 m between the invert of the sewer drain and/or municipal sewer main and the crown of the watermain. It is the design Engineers responsibility to ensure that all installations reflect the requirements of the City of Hamilton, Ontario Building Code and the Ministry of the Environment’s “Watermain Design Criteria for Future Alterations Authorized Under a Drinking Water Works Permit” etc.

Watermain or water service lowerings, 100 to 300 mm pipe, to be as per WM-204.13. Water service deflections, where feasible, should be less than or equal to 50 % of the values recommended by the manufacturer, as per City Form 400.

- (d) Water service and watermain bedding and cover material to be installed as per WM-200.01 (concrete and PVC watermains and services) and WM-200.02 (ductile iron watermains and services) with Granular "A" for both bedding and cover. Bedding and cover for small diameter water services (i.e. 50 mm and under to be as per WM-200.01 with Granular "D" for both bedding and cover. Water services to be installed with a minimum cover of 1.6 m.

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(e) Proposed system material:

For water service and watermains greater than 50 mm, the proposed water service both within the road allowance and on private property may either be ductile iron (class 52), copper, or PVC rated at minimum working pressure of 150 psi (DR18). Water services 50 mm and less must be copper within the road allowance, however, PVC or an alternate material approved for use under the Ontario Building Code may be used on private property, as long as it is rated at a minimum 150 psi. **Note: Service sizes of 75 mm are not permitted for connection to municipal watermains.**

If PVC pipe is to be utilized the following note must be included on the plan.

Note: PVC water service/main material, cathodic protection, tracer wire etc. must be as per Form 400.

(f) Size of the water service being proposed, including water meter(s) size and installation location (see item (g) page 9) must be noted on the plan. Water service size and meter size/type (based on meters available from City) is to be determined by the Applicant/Owner in consultation with their Consultant. Application of a specific meter type will be subject to verification by the City of Hamilton, and in some cases require submission of proposed water usage data etc. In the case of magnetic flow meters and turbine meters approval must be received from the Supervisor of Meter Operations prior to any Permit for these meters being issued.

Proposed meter(s) will be supplied and installed by the City and are available in a number of types and sizes to suit specific applications. Please refer to Appendix "B" at the end of this document for a list of meter types and their cost. It is the Owner/applicant's responsibility through their Consultant to ensure that the appropriate type meter is chosen (see page 3). The Owner/Applicant may wish to discuss the application of certain meter types with Growth Management or City of Hamilton Public Works, Hamilton Water at 905 546-2424 prior to finalizing their application for Permit. **Note: 75 mm water meters are not a standard City of Hamilton size and are not permitted for use as a City designated water meter.**

In accordance with City Water By-law # R84-026, minimum water service size for connections directly off municipal watermains is 20 mm. However, in accordance with the Ontario Building Code, and based on usage calculations, new single family homes will require a minimum 25 mm water service.

If the applicant/owner intends to reuse an existing water service it must be in good working condition, of acceptable material (re-use of lead services is not permitted) and adequately sized to handle the requirements of the site. If the existing service to be reused has a nominal size of 12 mm or 16 mm, which is less than the standard 20mm By-law requirement, and a service flow exceeding 0.3 l/s, then the applicant/owner may connect to it or reuse it, subject to them entering into a "Special Private Water Service Agreement" with the City, and registering this Agreement on title.

No proposed connection shall be made to a City watermain having a diameter larger than the watermain, except that of a fire service, which may be increased above the watermain size. This exception applies to 150 mm municipal watermains only, where the proposed fire service can be upsized to a 200 mm.

- (g) A water meter must be installed on all domestic water services at the service point of entry to the building, or alternate permitted location subject to the Waterworks By-law R84-026 (see below *). Internal water meter installations to be as per WM-210 with meter installed at floor level.

ICI developments – “master” water meter required, in addition to a “satellite” water meter within each unit of the development.

Horizontal multi-unit residential – “independent” water meter required in each unit, “master” meter not required.

Vertical multi unit residential – “master” water meter required, “satellite” meters for each unit optional.

(See page 6 Item (k) of this document for definitions of “master”, “independent”, and “satellite” meter)

In vertical multi-unit buildings, where more than one meter is being proposed, the meters must be installed to all applicable standards in a common area on the floor level that the meters are servicing.

*If the effective length of the proposed water service, from the property line to the point where the service pipe is to be introduced into the building, exceeds 60 m, or if the proposed water service is not laid in a straight line and at a right angle to the watermain, as nearly as practicable in the opinion of the Senior Director of Growth Management (as a general practise a maximum of two bends are allowed in the service pipe to enter the building), the required water meter must be installed in a properly drained chamber on private property just inside the property line. The proposed chamber and piping layout must be to City standard, WM-209 for 16 mm to 50 mm meter installations and WM-234 for 100 mm to 250 mm water services.

If the applicant/owner is proposing a combined fire and domestic service, and a chamber is required, due to the length or layout of the service, a fire meter (type of meter) must be utilized. As no City of Hamilton standard specification meter chamber is currently available for the larger fire type meters, WM-234, modified, with the by-pass piping external to the chamber, is acceptable. Currently separate independent fire services are not required to be metered.

For information respecting issuance of Water Meter Permits please refer to page 3 of this document.

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- (h) In accordance with the City of Hamilton Backflow Prevention By-law #10-103, a backflow prevention device must be installed and maintained on all existing and/or proposed water services to industrial, commercial, institutional properties and also multi-residential buildings over the height of 3 stories to prevent the flow of contaminants into the municipal drinking water system.

Selection of the required backflow prevention device, specific to a property for a water service line that is 50mm or greater is to be determined through a "Cross Connection Survey", carried out by a qualified individual, under the terms and timelines, as described within the By-law. In the case of water service lines that are 38mm and smaller the survey that is required will be a Self Assessed Cross Connection Survey and may be completed by the property owner and if the property is deemed to be a high hazard property then a Cross Connection survey will apply.

If the property is deemed to be a moderate hazard the property may not be required to install a device at this time. The decision for compliance of any property submitting a Self Assessed Cross Connection Survey will be made by Public Works.

Backflow prevention devices must be installed no more than 3.0 m downstream of a properties "master" water meter, or in the case of a fire protection system, where the fire protection service enters the building and in a location acceptable to the City. Where a water meter is installed with an underground chamber, due to Water By-law requirements, the backflow preventer must also be located within the 3.0 m maximum spacing which may necessitate the installation of an additional chamber or secure structure to house the device. It must be noted where a "reduced pressure" type backflow device is specified for use, through the survey process, it **cannot** be located within a chamber due to its workings and must be installed above ground in a heated and secure structure. As such care must be taken when proposing a meter chamber location in order to accommodate a suitable location for an above ground backflow device i.e. outside of drive aisles, parking areas etc.

Where a fire protection system exists or is proposed within a building, the water service must also be protected against backflow in accordance with the CSA standards, and the backflow device must be either a double check detector assembly or a reduced pressure detector assembly with a detector meter which is capable of measurements in cubic meters.

Proposed backflow prevention devices to be installed within buildings will be reviewed and approved under a Permit issued by the City of Hamilton Building Department. Installation of devices within chambers etc., outside the building structure, will be approved under the Water Permit issued by the Growth Management Division.

All Backflow Prevention Devices must be selected, and maintained in accordance with the City of Hamilton's Backflow Prevention By-law # 10-103 the manufacturer's specifications and the guidelines set out in the most recent version's of the AWWA Canadian Cross Connection Control manual and the CSA. B64.10 / 07 / B64. 10.1-07 Standards. A general note to this effect should be included on all plans submitted for Water Service Permit issuance through the Growth Management Division.

Typical backflow devices and their applications are as follows:

Double check detector assembly (DCDA) – Moderate hazard fire systems only
Double check valve assembly (DCVA) – Moderate hazard domestic water service
Reduced pressure detector assembly (RPDA) – High hazard fire systems with chemical additives.
Reduced pressure zone assembly (RP) – High hazard domestic water service

For more information respecting the backflow prevention program, survey requirements, selection of devices etc. please refer to the respective By-law or contact The City of Hamilton Water and Wastewater Division, Public Works Department at 905 546-2424 X2734. Information can also be obtained through the City of Hamilton web site at:

<http://www.hamilton.ca/operating-business/commercial-water-sewer/backflow-prevention-program>

(i) Method of connecting proposed water service to the City watermain:

Depending on the location of the subject property (needs of local users), the construction of the existing watermain to which the proposed water service is to be connected and the size of the water service, the proposed method of connection will differ. Connection will be made by one of the following methods.

Water Services greater than 50 mm

- Where the City watermain cannot be shut down and/or the watermain is concrete, a tapping valve must be utilized. Tapping sleeve and valve are to be as per WM-207.05 and as a standard rule, the proposed water service must be one size smaller than the watermain being tapped.

When tapping 100 mm to 300 mm diameter ductile iron services off 400 mm to 600 mm diameter municipal watermains, WM-235 is to be utilized with the chamber omitted. *(Please note that a chamber is no longer required for all tapping situations and the City will be revising its standards accordingly in the near future.)*

- If the watermain can be shut down, and it is not concrete, a tee may be used. 100 mm to 300 mm diameter water service connections using a tee and sleeve are to be as per WM-207.04.

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Shutdown of a City watermain will be at the discretion of the City and is subject to the following requirements, which should be noted on the plan.

"Watermain Shutdown"

- (a) Maximum 4 hour shutdown of existing main at a time convenient to the City of Hamilton and abutting users.
- (b) Contractor to give 48 hour prior notification using the "City of Hamilton Notice of Shutdown" for all affected areas.
- (c) In the event a scheduled shutdown is cancelled by the City of Hamilton, the contractor shall have no claims against the City.

Water Services 50 mm or less

- A main stop shall be installed as per the City standard. If the City watermain is concrete an approved saddle must also be utilized.

Piping arrangements are to be as per WM-207.01 for 19 mm to 25 mm services.

The proposed method of connection will be reviewed and approved by the Planning and Economic Development Department, Growth Management Division at the review stage.

- (j) Curb stops (valves) are to be installed on all water services at the property line, entirely within the road allowance. Wherever possible curb stops (valves) should be located within the sodded or landscaped areas, which are easily accessible, and outside of the vehicular portion of the site.

For proposed services 100 mm and greater, which will be connected to the municipal watermain on the opposite side of the street of the property being serviced, defined as "long side" servicing, which are in excess of 5.0 m in length, an additional gate valve must be installed on the service at the municipal main. This is in addition to the valve at the property line and is in accordance with the requirements of Form 400 of the City Construction and Material Specifications Manual

All curb stops (valves), 400 mm or greater, regardless of where they are located, either within the sodded/landscaped areas or within a vehicular portion of the site, must be installed within a chamber. For chamber specifications refer to the City Construction and Materials Specifications Manual (latest edition). Curb stops (valves) less than 300 mm to be installed with a box as per WM-202.

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- (k) If a fire service is proposed to a building, the service must be protected against backflow in accordance with the CSA and Ontario Building Code. The backflow device must be installed at the service point of entry and shall be either a double check detector assembly or a reduced pressure detector assembly with a detector meter which is capable of measurements in cubic meters.

For long or complicated fire service layouts, a check valve (swing type) will be required at the property line, entirely on private property. This check valve can be of the direct bury type, however, it is recommended that it be installed within a chamber whenever possible, to aid maintenance.

Tapping of a domestic water service off of a fire service is acceptable; however, the connection should be made within the road allowance, with separate curb stops provided for both the fire and domestic services within the road allowance.

- (l) Where water services are to be looped on a site, check valves are required on the system at the property lines, entirely on private property. Check valves are also required on long fire service runs, with the check valve being installed at the property line, as above.
- (m) Design standards for standard water system components (i.e. hydrants, meter chambers, thrust blocks, valves, piping arrangements etc.)

Note: All water system components are to be as per City of Hamilton Standards or Ontario Provincial Standard Drawing (OPSD). Where a City Standard exists it shall take precedence over the other standards.

The following represents a partial list of the more commonly used standards or major system components specific to City requirements. For a complete list, please refer to the above noted documents.

- All hydrants are to be installed as per WM-203.01 and/or WM-203.02, as applicable, and are to be complete with a secondary valve. Secondary valves are to be close coupled to the hydrant in all cases, and are to open right in the original City of Hamilton (prior to amalgamation), and left in the other five municipalities comprising the new City of Hamilton. The main hydrant valve is to be open left, with clear markings cast in the bonnet showing an open left directional indicator arrow. A black letter "L" must also be stencilled on the upper bonnet indicating that the valve opens left. Hydrants are to be equipped with 100 mm (4 inch) "Storz" pumper nozzles, black in colour.
- Internal water meter installation to be as per WM-210. It should be noted that the meter by-pass, as shown on the standard drawing is required in all installations, including Water Filling Stations.
- Water meters to be installed in a chamber are to be as per WM-209 (16 mm to 50 mm meter) and WM-234 (100 mm to 250 mm meter). It should be noted that the meter by-pass, as shown on the standard drawing is required in all installations, including Water Filling Stations.

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- Valve box installation for 100 mm to 300 mm watermains as per WM-202.
 - Piping arrangement for 100 mm to 300 mm water service connection, cutting in with tee and sleeve, to be as per WM-207.04; Piping arrangement for 100 mm to 300 mm water service connection with tapping valve and sleeve to be as per WM-207.05; Piping arrangement for 100 mm to 300 mm diameter ductile iron services off 400 mm to 600 mm diameter municipal watermains with tapping valve and sleeve, to be as per WM-235, chamber omitted.
- (n) All unused water services are to be properly abandoned. For services 50 mm and less the following notes should be included on the plan.

“Water Service Abandonment”

- (i) Remove curb stop.
- (ii) Cut and crimp water service at the main.
- (iii) Close mainstop

For water services greater than 50 mm, using a tee and sleeve, the tee should be removed and replaced with a section of pipe and sleeve. Where a tapping valve was used the applicant should contact the City for further direction.

All existing water meters on systems to be abandoned **must** be removed and salvaged by the City of Hamilton. The servicing contractor should contact the Water and Wastewater Section, Public Works Department at 905 546-4426 to arrange for the work, and a note to this effect should be included on the plan.

- o) Anchor or thrust blocks are to be installed at all water service elbows, tees, plugs etc. For 300 mm diameter water services and smaller, anchor blocks are to be as per WM-204.01. For water services greater than 300 mm, anchor blocks are to be as per WM-204.02 to WM-204.13 as applicable.
- p) Inspection and testing of water services and watermains to be to the satisfaction of the City of Hamilton and in accordance with Form 400 of the Construction and Material Specifications Manual (latest edition) and MOE Guidelines.
- q) Where an existing municipal fire hydrant requires relocation due to interference with proposed driveways or street furniture as a result of development etc., Growth Management, Development Engineering Approvals staff must be consulted. Hydrant relocation must be such that the new location meets the needs of the development i.e. clearance etc., but more importantly continues to provide adequate coverage to existing development. The Applicant will be required to provide the necessary documentation to confirm adequate coverage, or in some instances provide additional hydrants in conjunction with the relocated hydrant for coverage. Also, a determination will be made at that time who will undertake the works, i.e. either Public Works through their staff, or directly by the Applicant’s bonded contractor through the Service Permit process.

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Any hydrant to be relocated must meet all current City Standards etc. and be connected off the municipal watermain at 90 degrees. Hydrant relocation will include the removal of the old hydrant lead, valve etc., and will not be permitted through the use of elbows on the existing lead.

Sewer Servicing

- (a) All proposed sewer drains, throughout their length from the municipal sewer main to the building and/or area to be drained are to be laid as straight as possible in a trench at right angle to the main sewer.
- (b) Sewer drains to be installed with a minimum cover of 2.20 m at the property line below the final road grade or at such higher elevation only as may be necessitated by the elevation of the main sewer. On private property the minimum cover is to be no less than 1.2 m.
- (c) Storm and sanitary flows must be separated wherever possible, and the installation of new combined storm and sanitary drains is not permitted. Refer to item (m) below for details respecting the connection of separate storm and sanitary drains for a development to a combined municipal sewer.
- (d) Minimum horizontal separation between sewer drains and watermains and water services shall be 2.5 m. Vertical clearance between crossing sewer drains and watermains or water services shall be a minimum of 0.15 m where a watermain or water service passes over a municipal sewer main or sewer drain, and 500 mm where a water service/main passes under a municipal sewer or sewer drain. See Item (c), Page 6 for more detail.
- (e) Proposed sewer drain/main inverts must be provided including the slope of the pipe.
- (f) Proposed sanitary and storm sewer mains and sewer drains shall be either; (a) PVC SDR 28 for 150 mm diameter and SDR 35 for other sizes; (b) Class 3 concrete (CSA A257.1-M92).

Ribbed or profile pipe is no longer permitted for sanitary or storm use, including sewer drains and catch basin leads.

It is recommended that PVC pipe not be used where it will be exposed to contaminated soils and in industrial/heavy commercial areas where it may come into contact with materials detrimental to the PVC material.

- (g) Sewer drain and main bedding, cover and backfill for flexible pipe to be as per OPSD 802.010 with Granular "A" for both the bedding and cover. Reference however should be made to the OPSD standards for alternate bedding and backfill specifications as determined by the proposed pipe material and excavation conditions.

Cont'd...

- (h) Minimum size of storm and sanitary sewer drains located within the road allowance to be 150 mm. On private property minimum size in accordance with the Ontario Building Code is 100 mm.

No person is to install any sewer drain that is of capacity, in the opinion of the Senior Director of Growth Management or their designate, less than adequate, or of a diameter less than that of the building drain.

It is the applicant/owner's responsibility to design the sewer drain system to handle the needs of the site, subject to and in accordance with City of Hamilton standards and By-laws.

Reuse of a portion of a sites existing sewer system is permitted subject to the above criteria and sewer condition. On private property it is the Owner's responsibility to assure themselves that existing sewer drains to be reused i.e. extended and/or connected to under Service Permit, are in good physical condition, and any reuse of these sewers is at the Owner's sole risk and responsibility. Within the road allowance and/or municipal easements, sewer drains (sewer laterals) to be reused must be video inspected, while the City of Hamilton Sewer Inspector is present to determine condition.

The Owner is responsible for making all arrangements with their private video inspection contractor along with payment of an inspection fee of \$508.50 (fee includes 13% HST) to the City of Hamilton, payable on the 6th Floor Hamilton City Hall. Sewer laterals deemed to be in poor condition or not meeting City standards must be replaced/repared at the Owner's cost to the City's satisfaction. The following note must be included on the plan where sewers on private property or sewer laterals within the road allowance etc. are intended to be reused.

Note: The reuse of existing sewers on private property is at the Owner's sole risk and responsibility. Sewer laterals within the municipal road allowance or within municipal easements may be reused if in good working condition, meet by-law requirements and are of adequate capacity to meet the requirements of the site. The Owner or their Contractor is responsible for having the lateral to be reused video inspected while the City of Hamilton Sewer Inspector is present. Contact Planning and Economic Development Department, Growth Management Division, Development Engineering Construction Section at (905)546-2424 X7860 to arrange for an inspection.

Should an existing sewer drain on private property, intended to be reused, either fail during construction or after completion of the proposed works, the City will not be responsible, and the Owner is required to obtain additional Permits etc. to undertake replacement of the failed sections.

Re-use of sewer drains in cases requiring a new separate storm or sanitary drain i.e. existing combined systems, will only be permitted where feasible, and where the installation of the new service will not compromise or damage the existing service.

All existing unused sewer drains, servicing a property being redeveloped, in whole or in part, must be removed from municipal property i.e. road allowance etc., with an appropriate repair to the municipal sewer main to which they connect, and either removed from private property or abandoned in accordance with City minimum requirements i.e. plugging at either end with a minimum 300 mm concrete. Appropriate notes must be included on the plan submitted for Permit.

- (i) The City's minimum and maximum design requirements for velocities in sewer and drains is as follows:
- minimum allowable velocity 0.75 m/s for sanitary sewers and 0.90 m/s for storm sewers
 - maximum allowable velocity 2.75 m/s for sanitary sewers and 3.65 m/s for storm sewers
- (j) Maintenance holes are required at all changes in pipe size, changes in pipe direction, ends of pipe runs and as cleanouts. Maximum spacing of maintenance holes is 120 m for pipes 200 mm to 1050 mm and 150 m for pipes 1200 mm and larger. In accordance with the "Ontario Building Code" a maintenance hole is also required within the first 30 m after the pipe exits the building.

For pipe sizes 200 mm or greater, in accordance with the "Ontario Building Code", all required cleanouts shall be maintenance holes. For pipe sizes less than 200 mm cleanouts may be substituted for maintenance holes.

For a more complete description of the appropriate applications of cleanouts/maintenance holes please refer to Section 7.4.7, 'Cleanouts', "The Ontario Building Code".

For commercial, institutional and industrial developments a maintenance hole is required on all storm and sanitary sewer services and must be installed on private property, as close as possible to the property line. The maintenance hole(s) are required for inspection purposes and to permit the City to sample sewer discharges. The inspection maintenance hole(s) are a requirement of the City of Hamilton's By-law # 14-090, "To regulate the Discharge of any Matter into the Sewer Works, including the Sanitary, Combined and Storm Sewer Systems of the City of Hamilton", and would be in addition to all other maintenance holes on the system required by the Ontario Building Code, City Standards etc.

Maintenance holes are to be as per OPSD standards and are to be sumpluss. A partial list is noted in item (o) below.

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Catch basin maintenance holes (CBMH) are permitted for use on private property where the system outlets to separate storm sewers and where storm water quality control, is provided on-site. CBMH's are not permitted on combined systems due to the increased potential for sewer gas transmission, which would normally be reduced/prevented through the use of a separate CB complete with goss trap (SEW-304) and where quality control is not provided as the CB with goss trap helps to prevent larger debris from entering the municipal system. CBMH's are to be sumplless and are to be constructed to OPSD standards including all grates, steps etc. CBMH's are to be sumplless.

- (k) A drop structure is required at all manholes where there is a drop of greater than 600 mm between the invert of the upstream pipe and the invert of the downstream pipe and is to be as per OPSD 1003.010. Generally the size of the drop pipe shall be one size smaller than the connecting sewer drain, minimum size 200 mm.
- (l) Catch basins within the City of Hamilton, excluding those within single family residential sodded yards, must be as per OPSD 705.010 (single) or OPSD 705.020 (double) and must be modified with a goss trap as per SEW-304. All private property catch basins are to have a minimum lead size of 200 mm for a single and 250 mm for a double catch basin. Catch basins are to include a minimum 600 mm sump. Residential single family yard catch basins, are to be as per the applicable OPSD standard, but do not require the goss traps, and are to be sumplless.
- (m) Every connection to a municipal sewer main must be by proper "T" or "Y" fittings. Saddles may only be used where approved by the Senior Director of Growth Management or their designate, and in accordance with the approved sewer products list, "City of Hamilton Construction and Material Specifications Manual" latest edition.

For proposed sewer drain that are greater than or equal to 300 mm, a maintenance hole must be provided at the junction with the municipal sewer.

As the construction of combined storm and sanitary sewer drains and municipal sewer mains is no longer permitted, and where a site requires both storm and sanitary drains to facilitate development, and only a combined municipal sewer main exists, the sewer drains, if identical in size must be connected with a "Y", as per SEW-303, within the road allowance, prior to the pipe riser. This layout facilitates easy separation of the storm and sanitary flows at such time as future separate municipal storm and/or sanitary sewer mains are constructed. If the proposed sewer drains are not of equal size, separate independent connections are required to the municipal combined sewer.

- (n) In accordance with the Ontario Building Code, Section 7.4.4.3, "Interceptors" (oil and grit) are required in the following situations.
 - (i) Where a fixture that discharges sewage that includes grease is located in a public kitchen or restaurant or in an institutional occupancy, a grease interceptor shall be installed.
 - (ii) Where the discharge from a fixture may contain oil or gasoline, an oil interceptor shall be installed.

Cont'd...

- (iii) Where a fixture discharges sand, grit or similar materials, an interceptor designed for the purposes of trapping such discharges shall be installed.
- (iv) Every interceptor shall have sufficient capacity to perform the service for which it is provided. The applicant should refer to Article 7.5.4.2, Ontario Building Code, for venting requirements for oil interceptors.
- (v) An on site constructed interceptor shall be constructed to the requirements of a manufactured interceptor.

In accordance with the "City of Hamilton Criteria and Guidelines for Stormwater Infrastructure" and the City Sewer Discharge By-law 14-090, an appropriate treatment train is required for all storm water discharges to the City sewer system from commercial/industrial/institutional parking areas and areas at risk of surface run-off contamination. Discharges to the sewer system must be in accordance with the By-law and the parameter limits as outlined in the By-law's schedules. In the case of discharges to the municipal storm sewer main, an appropriately sized oil/grit separator (OGS unit) shall be used in conjunction with low impact development (LID) techniques etc. to provide for an appropriate "treatment train". For storm discharges to combined municipals sewer mains the discharge parameters must not be exceeded and a combination of treatment methods may be adopted including OGS and LID.

- (o) Where "on site" storm water quantity control is required the design shall be in accordance with the "City of Hamilton Criteria and Guidelines for Stormwater Infrastructure Design" and the "City of Hamilton Storm Drainage Policy". Throttling of flows to the City sewer main shall be through the use of permanently fixed orifice tubes and orifice plates. Removable orifice plates will not be considered in and amongst themselves will not be considered.
- (p) Design standards for System Components (i.e. catch basins, manholes, etc.).

Note: All system components are to be either to City of Hamilton standards or OPSD standards. Where a City standard exists it shall be used in place of the OPSD standard.

The following represents a partial list of the more commonly used or major system components, and items specific to the City of Hamilton requirements. For a complete list, please refer to the above noted documents.

- All catch basins, excluding those within single family residential sodded yards, are to be as per OPSD 705.010 (single) and/or OPSD 705.020 (double) modified with a goss trap as per SEW-304. All private property catch basins are to have a minimum lead size of 200 mm for a single and 250 mm for a double catch basin. Single family residential rear yard catch basins are to be as per the applicable OPSD standard, but do not require the goss traps and are to be supple.

- Maintenance holes 1200 mm diameter to be as per OPSD 701.010 (with no sumps); Maintenance holes 1500 mm diameter to be as per OPSD 701.011 (with no sumps); Maintenance holes 1800 mm diameter to be as per OPSD 701.012 (with no sumps); Maintenance holes 2400 mm diameter to be as per OPSD 701.013 (with no sumps)

General

In addition to the general notes required on a drawing to cover the previously noted items the following general notes must also be added to the plan.

- (1) All services to be installed as per City of Hamilton Construction and Material Specifications Manual (latest edition) and Ministry of the Environment Guidelines (latest edition).
- (2) Minimum horizontal separation between water services/mains and sewer drains and municipal sewer mains shall be 2.5 m measured from the closest pipe edge to closest pipe edge. Vertical separation where water service/main passes over a sewer drain or municipal sewer main must be a minimum of 0.15 m unless greater separation is required to provide for proper bedding and structural support. Water services/mains passing under sewer drains or municipal sewer mains must have a separation of 0.5 m between the invert of the sewer main/drain and the crown of the waterservice/main.

All water services to be installed with a minimum of 1.6 m cover. Sewer drains to be installed with a minimum cover of 2.20 m at the property line below the final road grade or at such higher elevation only as may be necessitated by the level of the main sewer. On private property the minimum cover for sewer drains is to be no less than 1.2 m.

- (3) Restoration of road over utility cuts in Hamilton to be as per Standard drawings RD-100.01 and RD-100.02, with granular "A" bedding.
- (4) Approval of this drawing is for material acceptability and compliance with municipal and provincial specifications and standards only. Approval and inspection by the City of the works does not certify the line and grade of the works and it is the owner's responsibility to have their Engineer certify this accordingly.

Should there be any questions or clarification required please contact the Growth Management Division, Development Engineering Approvals Section at (905) 546-2424 X2822.

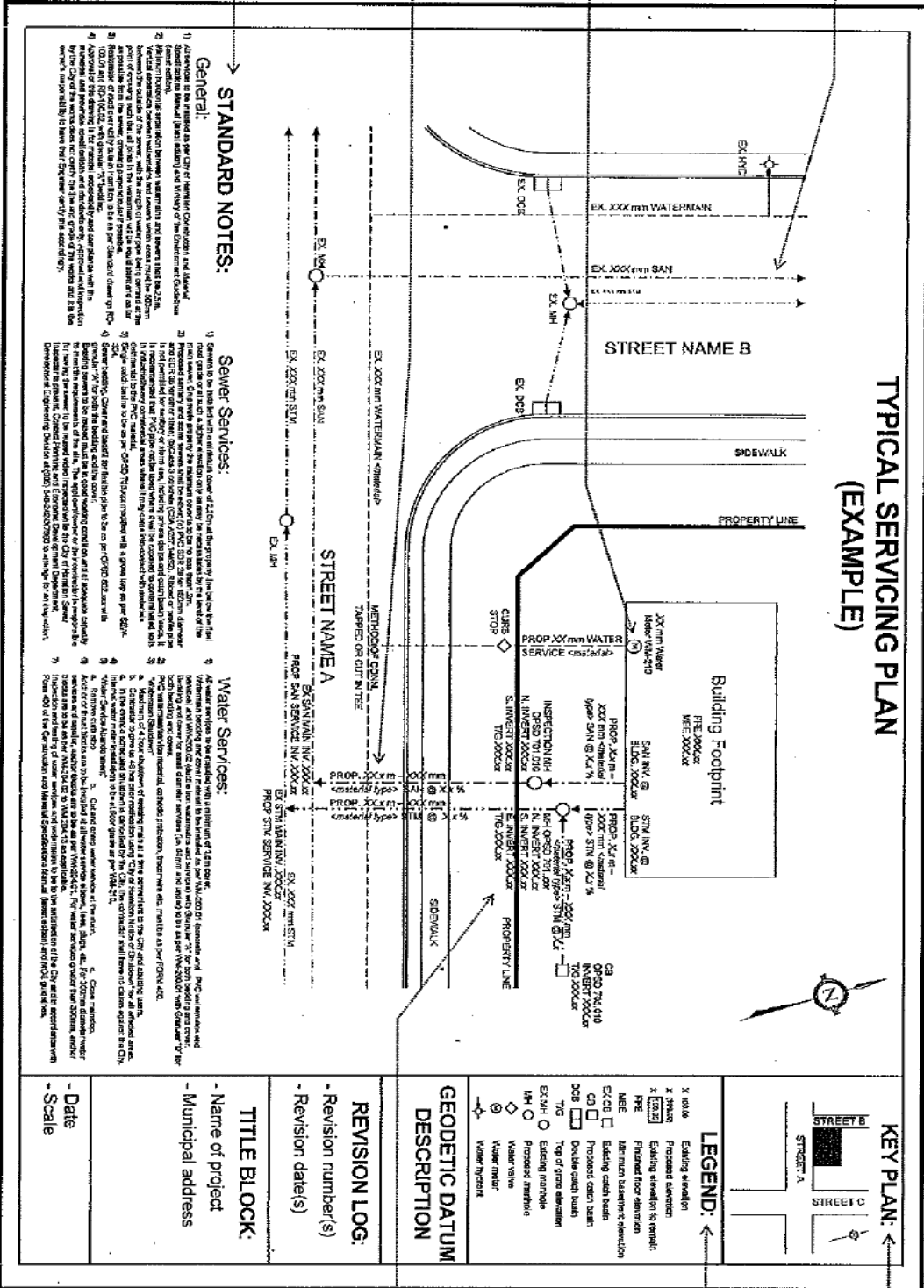
Appendix "A"

Information regarding existing municipal infrastructure to be obtained from the City of Hamilton, Public Works Department.

Water meter location varies. Refer to Sewer and Water Permit Process.

Provide pipe length, diameter, material type and slope for all proposed sewers.

Standard notes to be included vary based on design. Additional notes etc. may be required. Refer to Sewer and Water Permit Process.



TYPICAL SERVICING PLAN (EXAMPLE)

KEY PLAN:
location of site in relation to the nearest major intersection.

LEGEND:
Legend describes all symbols and acronyms on the plan.

GEODETIC DATUM DESCRIPTION

REVISION LOG:
- Revision number(s)
- Revision date(s)

TITLE BLOCK:
- Name of project
- Municipal address

Scale
- Date
- Scale

STANDARD NOTES:

- General:**
- All services to be provided as per City of Hamilton Codebooks and Standard Specifications for Sewer and Water Services.
 - Minimum depth for sewer service lines shall be 1.50m below finished ground level.
 - Minimum depth for storm service lines shall be 0.75m below finished ground level.
 - Minimum depth for water service lines shall be 0.75m below finished ground level.
 - Minimum depth for storm service lines shall be 0.75m below finished ground level.
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 - Minimum depth for storm service lines shall be 0.75m below finished ground level.
 - Minimum depth for water service lines shall be 0.75m below finished ground level.
- Sewer Services:**
- Sewer to be installed with a minimum cover of 0.75m at the property line unless the lot is road grade or such a higher cover is required by the level of the street.
 - Minimum cover for sewer service lines shall be 0.75m below finished ground level.
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- Water Services:**
- All water services to be installed with a minimum cover of 0.75m below finished ground level.
 - Minimum cover for water service lines shall be 0.75m below finished ground level.
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Appendix "B"

Servicing Review/Permit Cost Fees (2019)

The following formulae are used in calculating cost of Sewer/Water Permits for external building services and Water Meter Permit costs. These Permits are in addition to Building Permits which cover internal building servicing etc.

- 1. Drawing Review Fee = \$840.00** (small servicing project) or **\$1,665.00** (large servicing project)
(paid at first submission of plans or resubmission of revised plans after permit issued, amount of fee determined based on initial application review and consultation) (fees HST exempt)
- 2. Sewer Permit Cost = Service Permit Administration Fee** (One fee charged if sewer and water included on same permit) + **Inspection Testing Fee + Service Length Cost**
- 3. Water Permit Cost = Service Permit Administration Fee** (One fee charged if sewer and water included on same permit) + **Inspection Testing Fee + Service Length Cost + Water Construction Cost** (Applied to servicing of properties with no existing metered service)
- 4. Water Meter Permit Cost = Cost of meter (based on size)**
(Permit cost, see page two of Appendix "B", includes inspection, water meter and remote reading device installed by City forces. All other associated plumbing, including spacer installation (to be supplied by City), to be completed by Owner's Contractor.)
- 5. Excavation Permit Cost = Flat Fee of \$576.07** (Applicable where road works required. Terms of Excavation Permit apply.)
- 6. Total Servicing Permit Cost = Sewer Permit Cost + Water Permit Cost + Excavation Permit Cost** (Where applicable)
- 7. After Hours Inspection = \$401.15** (Minimum 4 hours, request must be made during normal business hours, fee in addition to regular permit fees) (fee includes 13% HST)
- 8. Inspection Fee for re-use of existing sewer service = \$508.50** (Owner to arrange for private video of service) (fee includes 13% HST)

Breakdown of individual fees for above formulae 2, 3 and 4

Service Permit Administration Fee = **\$203.40** (fee includes 13% HST)

Inspection Testing Fee (sewer and water) = **\$621.50** for services less than 100 mm dia. or **\$774.05** for larger services (water services less than 50 mm no charge) (fees include 13% HST)

Service Length Cost = **Total linear length of private service from municipal service main to within 1.0 m of structure face** (includes all service laterals for multi-unit developments) X **\$11.30/m** (fee includes 13 % HST)

Excavation Permit Cost = **\$576.07**

Water Construction Cost = **\$31.20/1,000 ft² of building area or \$31.20/ha** where no structure is constructed, **\$44.45/unit multi-residential per apartment condo/unit or \$95.05 single residential/lot or townhouse (no H.S.T.)**

Cont'd...

Appendix "B"

Page 2

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Cost of meter = 16 mm - \$359.70

20 mm - \$404.60

21 mm - \$404.60 (same as 20 mm meter, above, but is manufactured with 25 mm tail ends for ease of plumbing when connecting to 25 mm service lines – RESIDENTIAL USE ONLY)

25 mm - \$559.40

38 mm - \$886.76

50 mm (displacement) - \$1,218.80

50 mm (turbine) – \$1,384.60 *

50 mm (compound) - \$3,316.40

100 mm (turbine) - \$3,870.13 *

100 mm (compound) - \$5,206.07

100 mm (fire service turbine) - \$6,637.49 *

100 mm (fire service compound) - \$8,624.85

100 mm (magnetic flow meter) - \$8,899.76 *

100 mm (fire rated magnetic flow meter) - \$9,297.22 *

150 mm (turbine) - \$7,467.78 *

150 mm (compound) - \$10,226.88

150 mm (fire service turbine) - \$11,028.42 *

150 mm (magnetic flow meter) - \$11,186.31 *

150 mm (fire rated magnetic flow meter) - \$12,334.54 *

150 mm (fire service compound) - \$13,954.24

200 mm (turbine) - \$8,998.80*

200 mm (compound) - \$12,097.96

200 mm (magnetic flow meter) - \$12,041.98 *

200 mm (fire rated magnetic flow meter) - \$13,160.41 *

200 mm (fire service turbine) - \$14,171.75 *

200 mm (fire service compound) - \$19,092.63

250 mm (turbine) - \$15,496.05 *

250 mm (magnetic flow meter) - \$14,415.75 *

250 mm (fire rated magnetic flow meter) - \$17,063.33 *

250 mm (fire service turbine) - \$19,312.34 *

250 mm (fire service compound) - \$24,832.75

Radio Remote Read Installation - \$209.80

HST is not applicable to the above meter fees

* "Magnetic Flow Type Meters and turbine meters" must be approved by Supervisor of Meter Operations.

In order to choose the appropriate meter for a specific application the Owner/applicant should contact their Plumber/Mechanical Contractor and/or Hamilton Public Works, Hamilton Water at 905 546-4426.

Water Meter Removal Fee

Note: Cost to remove a meter prior to the building being demolished and/or the water service being decommissioned or abandoned. Failure to have the meter removed prior to the building being demolished will incur a meter replacement cost charge. *Does not include a turn water off fee, which is required and charged separately as per Section 14 of this schedule.*

16 mm Displacement - \$123.62

20 mm Displacement - \$123.62

21 mm Displacement - \$123.62 (same as 20 mm meter, above, but is manufactured with 25 mm tail ends for ease of plumbing when connecting to 25 mm service lines – RESIDENTIAL USE ONLY)

25 mm Displacement - \$123.62

38 mm – 250 mm Meters – Cost + 10% OH **

** Cost depends on size, labour, and meter location

13% HST is included in above fees

Meter costs not specifically addressed in the schedule will be invoiced at Actual Cost plus overhead. For general Meter Inquiries, please call (905) 546-4426 between 8:30 am and 4:30 pm.