SERVICING & STORMWATER MANAGEMENT REPORT SILVER HOTELS – 1305 MARITIME WAY

Project No.: CCO-18-0534

City File No.: D07-12-22-0091

Prepared for:

Silver Hotels (Kanata) Inc
1251 Maritime Way Kanata, ON, K2K 0J6

Prepared by:

McIntosh Perry Consulting Engineers Ltd.
115 Walgreen Road
Carp, ON K0A 1L0

2024-02-07

McINTOSH PERRY

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1.0 PROJECT DESCRIPTION

1.1 Purpose

McIntosh Perry (MP) has been retained by Silver Hotels (Kanata) Inc to prepare this Servicing and Stormwater Management Report in support of the Site Plan Control process for the proposed hotel located at 1305 Maritime Way within the City of Ottawa.

The main purpose of this report is to present a servicing design for the development in accordance with the recommendations and guidelines provided by the City of Ottawa (City), the Mississippi Valley Conservation Authority (MVCA), and the Ministry of the Environment, Conservation and Parks (MECP). This report will address the water, sanitary and storm sewer servicing for the development, ensuring that existing and available services will adequately service the proposed development.

This report should be read in conjunction with the following drawings:

- CCO-18-0534, C101 – Site Grading, Drainage, Sediment and Erosion Control Plan
- CCO-18-0534, C102 – Site Servicing Plan.

1.2 Site Description

The property is located at 1305 Maritime Way. It is described as Pin 04507-0826, Part 2, Plan 4R-9182 between concessions 2 and 3, Geographic Township of March, City of Ottawa. The land in question covers approximately 0.61 ha and is located between Maritime Way and Canadian Shield Avenue within the Kanata Town Centre-Central Business District (KTC-CBD) Subdivision. The development area for the proposed works is approximately 0.61 ha.

See Site Location Plan in Appendix 'A' for more details.

The existing site is currently undeveloped with a variety of trees, grass, shrubs and bush. The existing site has no sanitary, water or storm services.

The proposed development consists of a 1,017 m², six-storey hotel with 102 rooms. Parking and drive aisles will be provided throughout the site along with landscaping. There will be one site access for the development; a new entrance extending from Maritime Way is proposed.

1.3 Existing Conditions and Infrastructures

The Site is currently undeveloped.

Sewer and watermain mapping collected from the City of Ottawa indicate that the following services exist across the property frontages within the adjacent municipal rights-of-way(s):

- Maritime Way
    - 203 mm diameter PVC watermain
    - 305 mm diameter PVC watermain (Stubbed within Maritime Way Right of Way)
    - 610 mm diameter concrete watermain
    - 825 mm diameter concrete sanitary trunk sewer
    - 1650 mm diameter concrete storm sewer, tributary to the KTC-CBD Stormwater Management Facility (SWMF)

The 305 mm watermain has been stubbed at the location of the Canadian Shield Avenue Road extension. This service will be extended north to service future development. In addition to the services within the roadway, there are also fire hydrants within Maritime Way that are available for fire protection.

1.4 Approvals

The proposed development is subject to the City of Ottawa site plan control approval process. Site plan control requires the City to review, provided concurrence and approve the engineering design package. Permits to construct can be requested once the City has issued a site plan agreement.

An Environmental Compliance Approval (ECA) through the Ministry of Environment, Conservation and Parks (MECP) is not anticipated to be required for the development since the development will be serviced from Maritime Way via service laterals. The development does not propose connections to a combined sewershed and does not propose industrial uses. As a result, the stormwater management system meets the exemption requirements under O.Reg 525/90.

2.0 BACKROUND STUDIES

Background studies that have been completed for the proposed site include City of Ottawa as-built drawings, a topographical survey, a geotechnical report and a Phase I Environmental Site Assessment (ESA).

As-built drawings of existing services within the vicinity of the proposed site were reviewed in order to determine accurate servicing and stormwater management schemes for the site.

Master servicing reports for the area have been previously completed for the area and identify stormwater management criteria. The reviewed reports were:

- Kanata Town Centre, Central Business District, Stormwater Management Report (J.L. Richards, January 1999) (KTC SWM)
- Servicing Brief (Revised) – Kanata Town Centre Central Business District Subdivision, Technical Memorandum (J.L. Richards, June 13, 2012)(Technical Memo).

A topographic survey of the site was completed by Farley, Smith & Denis Surveying Ltd. dated July 30th, 2020 and is available under separate cover.

The following reports have previously been completed and are available under separate cover:

- Geotechnical Investigation, prepared by McIntosh Perry and dated April 2021.
- Phase I Environmental Site Assessment prepared by McIntosh Perry and dated Jan 6th, 2022.

2.1 Applicable Guidelines and Standards

City of Ottawa:

- Ottawa Sewer Design Guidelines, City of Ottawa, SDG002, October 2012. (Ottawa Sewer Guidelines)
  - Technical Bulletin ISTB-2014-01 City of Ottawa, February 2014. (ISTB-2014-01)
  - Technical Bulletin PIEDTB-2016-01 City of Ottawa, September 2016. (PIEDTB-2016-01)
  - Technical Bulletin ISTB-2018-01 City of Ottawa, January 2018. (ISTB-2018-01)
  - Technical Bulletin ISTB-2018-03 City of Ottawa, March 2018. (ISTB-2018-03)
  - Technical Bulletin ISTB-2019-01 City of Ottawa, January 2019. (ISTB-2019-01)
  - Technical Bulletin ISTB-2019-02 City of Ottawa, February 2019. (ISTB-2019-02)
- Ottawa Design Guidelines – Water Distribution City of Ottawa, July 2010. (Ottawa Water Guidelines)
  - Technical Bulletin ISD-2010-2 City of Ottawa, December 15, 2010. (ISD-2010-2)
  - Technical Bulletin ISDTB-2014-02 City of Ottawa, May 2014. (ISDTB-2014-02)
  - Technical Bulletin ISTB-2018-03 City of Ottawa, March 2018. (ISTB-2018-03)

Ministry of Environment, Conservation and Parks:

- Stormwater Planning and Design Manual, Ministry of the Environment, March 2003. (MECP Stormwater Design Manual)
- Design Guidelines for Sewage Works, Ministry of the Environment, 2008. (MECP Sewer Design Guidelines)

3.0 PRE-CONSULTATION SUMMARY

Silver Hotels (Kanata) Inc and City staff conducted a pre-consultation meeting on August 17th, 2021 to discuss the proposed development. Specific design parameters to be incorporated within this design include the following:

- Control post-development stormwater runoff to the 5-year pre-development flows with a pre-development time of concentration (TC) of 20 min and a runoff coefficient of 0.8 per the KTCSWM.
- Flows to the storm sewer in excess of the allowable release rate, up to and including the 100-year storm event, must be detained on-site.
- Emergency overland flow is to be directed to the Maritime Way Right-of-Way.

City of Ottawa pre-consultation notes can be found in Appendix 'B'.

4.0 WATERMAIN

4.1 Existing Watermain

The site is located within the 3W pressure zone. There is an existing 203 mm diameter PVC watermain and 610 mm diameter concrete watermain within Maritime Way, fronting the south side of the site. In addition, there is an existing 305 mm diameter PVC watermain stub located within Maritime Way which is planned to service a new road following the north and west borders of the site up to Canadian Shield Avenue. Canadian Shield Avenue also contains a 203 mm diameter PVC watermain stub for future servicing.

4.2 Proposed Watermain

A new 150 mm diameter PVC water service will be extended into the site from the 203 mm diameter watermain within Maritime Way, complete with a water valve located at the property line. A private hydrant and fire department connection have been proposed within the subject site. The watermain is designed to have a minimum of 2.4m cover. Refer to drawing C102 for a detailed servicing layout.

The Fire Underwriters Survey 2020 (FUS) method was utilized to determine the required fire flow for the site. The 'C' factor (type of construction) for the FUS calculation was determined to be 0.8 (non-combustible construction). The total floor area ('A' value) for the FUS calculation was determined to be 5791 m^2. The results of the calculations yielded a required fire flow of 5,000 L/min. The detailed calculations for the FUS can be found in Appendix 'C'.

The water demands for the proposed building have been calculated to adhere to the Ottawa Design Guidelines – Water Distribution manual and can be found in Appendix 'C'. The results have been summarized below:

Table 1: Water Demands

Site Area	0.61 ha
Hotels	225 L/(Bed-Space/Day)
Average Day Demand (L/s)	0.44
Maximum Daily Demand (L/s)	0.66
Peak Hourly Demand (L/s)	1.19
FUS Fire Flow Requirement (L/s)	83.33

The City provided the estimated water pressures at both for the average day scenario, peak hour scenario and the max day plus fire flow scenario for the demands indicated by the correspondence in Appendix C. The resulting pressures for the boundary conditions results are shown in Table 2, below.

Table 2: Boundary Conditions Results

Scenario	Proposed Demands (L/S)	Connection HGL (m H_2O)* / kPa
Average Day Demand	3.20	62.6 / 614.1
Maximum Daily + Fire Flow Demand	83.99	56.9 / 558.2
Peak Hourly Demand	8.64	58.3 / 571.9
* Adjusted for an estimated ground elevation of 98.2 m at the Connection		

To confirm the adequacy of fire flow to protect the proposed development, public and private fire hydrants within 150 m of the proposed building were analysed per City of Ottawa ISTB 2018-02 Appendix I Table 1. The results are demonstrated below.

Table 3: Fire Protection Confirmation

Building	Fire Flow Demand (L/min.)	Fire Hydrant(s) within 75m	Fire Hydrant(s) within 150m	Combined Fire Flow (L/min.)
1305 Maritime Way	5,000	1 Private (Proposed)	2 Public (Existing)	13,300

Assuming 5,700 L/min fire flow for hydrants within 75m and 3,800 L/min fire flow for hydrants within 150m based on City guidelines (ISTB-2018-02), the existing and proposed hydrants can provide adequate hydrant coverage to the proposed development.

4.3 Water Model Results

A water model was completed using the EPANet modelling software and the boundary condition results provided and noted above. The results determined that the proposed 150mm watermain can adequately service the proposed development and provide sufficient fire flow. The model determined pressures during average day, maximum day plus fire flow, and peak hour demands. The model results identify the estimated pressures at the building finished floors and at fire hydrants during fire flow conditions. For the purposes of determining pressures during the fire flow scenario, a demand of 83.33 L/s (5,000 L/min) was assumed at hydrant one (H1).

Table 4: Water Pressure at Junctions

Junction	Average Day (kPa)	Max. Day + Fire Flow (kPa)	Peak Hourly (kPa)
H1	620.60	448.54	578.44
J2	643.15	521.48	600.99
J3	637.76	448.54	595.60

The normal operating pressure range is anticipated to be 578 kPa to 643 kPa and will not be less than 275 kPa (40 psi) and will meet the minimum required 140 kPa (20 psi) at the ground level under maximum day demand and fire flow conditions. It is estimated that the watermain network will exceed 552kPa (80 psi) during normal operating conditions. Therefore, a pressure check at the completion of construction is required to confirm whether a pressure control valve is required at the building connection.

5.0 SANITARY DESIGN

5.1 Existing Sanitary Sewer

There is an existing 825 mm diameter concrete sanitary trunk sewer within Maritime Way. There is also an existing 200 mm diameter sanitary sewer and manhole at the intersection of Cordillera Street and Canadian Shield Avenue.

5.2 Proposed Sanitary Sewer

A new 200 mm diameter gravity sanitary service will be connected to the existing 825 mm diameter sanitary sewer within Maritime Way. The sanitary service will be complete with a maintenance manhole (MH2A) which will be available for monitoring purposes as per the City of Ottawa – Sewer Design Guidelines, October 2012, Clause 4.4.4.7 and City of Ottawa Sewer-Use By-Law 2003-514 (14). Refer to drawing C102 for a detailed servicing layout.

Table 5, below, summarizes the wastewater design criteria identified by the Ottawa Sewer Guidelines.

Table 5: Sanitary Design Criteria

Design Parameter	Value
Site Area	0.61 ha
Infiltration Allowance	0.33L/s/ha
Commercial/Amenity Space	2,800 L/(1000m^2/day)
Hotels	225 L/(bed-space/day)

Table 6, below, summarizes the estimated wastewater flow from the proposed development. Refer to Appendix 'D' for detailed calculations.

Table 6: Summary of Estimated Sanitary Flow

Design Parameter	Total Flow (L/s)
Total Estimated Average Dry Weather Flow	0.47
Total Estimated Peak Dry Weather Flow	0.69
Total Estimated Peak Wet Weather Flow	0.86

The peak design flows for the proposed building were calculated using criteria from the City of Ottawa – Sewer Design Guidelines, October 2012. The proposed development will generate a peak flow of 0.86 L/s. The internal sanitary sewer system has a maximum capacity of 33.54 L/s, therefore the proposed 200 mm diameter service lateral has sufficient capacity to convey the flows. The proposed 200 mm diameter gravity sanitary sewers will be installed throughout the site with a minimum full flow target velocity (cleansing velocity) of 0.6 m/s and a full flow velocity of not more than 3.0 m/s. Refer to Appendix 'D' for detailed calculations.

Due to the complexity of the downstream network, City staff are to inform if there are any capacity constraints.

6.0 STORM SEWER DESIGN

6.1 Existing Storm Sewers

The subject property is currently not serviced. There is an existing 1650 mm diameter storm sewer within Maritime Way. Existing runoff flow from the site drains from north to south into the Maritime Way right of way. From there, it is collected by the existing storm network and is directed through the KTC-CBD Subdivision to a SWMF approximately 400 m west of the site.

6.2 Proposed Storm Sewers

A new sewer system will be extended from the existing 1650 mm diameter storm sewer within Maritime Way. Stormwater runoff will be conveyed to the municipal infrastructure via overland sheet flow and surface catch basins.

Runoff collected on the roof of the proposed building will be stored and controlled using four (4) roof drains. Roof drains will be used to limit the flow from the roof to the specified allowable release rate. For calculation purposes a Watts Accutrol roof drain was used estimate a reasonable roof flow. Other products maybe specified at detailed building design so long as release rates and storage volumes are respected.

Drainage within the parking lot is to be directed to a series of catch basins and catch basin manholes. The flow will be restricted using a 136 mm diameter orifice on the outlet of CBMH4. Storage will be provided by surface ponding and a proposed storage tank (Triton S-29 or approved equivalent) within the parking lot area.

Runoff from the landscaped area at the east side of the property will be collected by a perforated subdrain and catch basin system conforming to City Standard S29. Drainage is proposed to be collected and conveyed without attenuation to the proposed 525mm diameter storm sewer via CB3. The direction and location of overland sheet flow has also been indicated on drawing C101, indicating that water will be directed towards Maritime Way in the event of a failure or blockage.

Foundation drainage is proposed to be conveyed the 300 mm diameter storm service without flow attenuation.

Drainage between the future Canadian Shield Avenue Road (design by others) and the property is proposed to be conveyed overland via a swale within the Municipal Right of Way. The swale will ultimately discharge to Municipal infrastructure within Maritime Way via a proposed catch basin within the Right of Way.

See CCO-18-0534 - POST and Storm Sewer Design Sheet in Appendix 'F' of this report for more details. The Stormwater Management design for the subject property will be outlined in Section 6.0.

7.0 PROPOSED STORMWATER MANAGEMENT

7.1 Design Criteria and Methodology

Stormwater management for the proposed site will be maintained through rooftop and parking lot surface attenuation. It is estimated that four Watts Accutrol Weirs will be used to control the release rate of the stormwater. Flow from the building will be directed towards a manhole at the property line. Drainage from the parking lot will be collected by a series of catch basins. The collected parking lot flow is proposed to be restricted by a 136 mm diameter orifice before discharging to a manhole at the property line. Flow from the manhole will discharge to the existing 1650 mm diameter sewer within Maritime Way.

In summary, the following design criteria have been employed in developing the stormwater management design for the site as directed by the MVCA and City:

Quality Control

- No quality control is required as quality control will be provided downstream of the site in the SWMF constructed as part of the Urbandale KTC-CBD Subdivision.

Quantity Control

- Control post-development peak flows up-to and including the 100-year storm event to the allowable release rate. Provide on-site water quantity control for all flow in excess of the allowable release rate.
- The allowable release rate is to be determined by applying the following KTC SWM parameters to the site area:
    - A runoff coefficient of 0.8
    - A time of concentration of 20 minutes
    - A 5-year intensity using the City of Ottawa Intensity-Duration-Frequency (IDF) curves

7.2 Runoff Calculations

Runoff calculations presented in this report are derived using the Rational Method, given as:

$$Q = 2.78CIA \quad (L/s)$$

Where C = Runoff coefficient
I = Rainfall intensity in mm/hr (City of Ottawa IDF curves)
A = Drainage area in hectares

It is recognized that the Rational Method tends to overestimate runoff rates. As a result, the conservative calculation of runoff ensures that any SWM facility sized using this method is expected to function as intended.

The following coefficients were used to develop an average C for each area:

Roofs/Concrete/Asphalt	0.90
Gravel	0.60
Undeveloped and Grass	0.20

As per the City of Ottawa - Sewer Design Guidelines, the 5-year balanced 'C' value must be increased by 25% for a 100-year storm event to a maximum of 1.0.

As per the pre-consultation meeting with the City of Ottawa the time of concentration (Tc) used for pre-development shall computed using a calculated Tc and post-development flows shall be calculated using a Tc of 10 minutes.

7.3 Pre-Development Drainage

7.3.1 Existing Site Flows

The existing site drainage limits are demonstrated on the Pre-Development Drainage Area Plan. A summary of the Pre-Development Runoff Calculations can be found below. See CCO-18-0534 - PRE in Appendix 'E' and Appendix 'G' for calculations.

Table 7: Pre-Development Runoff Summary

Area ID	Drainage Area (ha)	5-Year Runoff Coefficient	100-Year Runoff Coefficient	T_c (min)	Unrestricted 5-year Peak Flow (L/s)	Unrestricted 100-year Peak Flow (L/s)
A1	0.607	0.20	0.25	12	31.98	68.44
Total	0.607				31.98	68.44

7.3.2 Existing External Flows

There is an external drainage area north of the site which currently flows overland through the site to the Maritime Way Right of Way, where it is ultimately collected by existing municipal catch basins. In the future, this area is planned to be developed into a Municipal Road as part of the extension of Canadian Shield Avenue. City Staff have indicated that the existing drainage patterns, with respect to the future Canadian Shield Avenue extension, must be respected as part of the proposed development. Refer to Appendix 'G' for correspondence with City staff.

7.4 Post-Development Drainage

To meet the stormwater objectives the development will contain a combination of flow attenuation with rooftop controls, surface storage, and subsurface storage.

As per correspondence with City staff and the KTC SWM report, the total post-development runoff for this site has been restricted to match the 5-year flow rate with a combined C value of 0.80 and Tc of 20 minutes. Refer to Appendix 'G'.

Table 8: Allowable Release Rate

Area ID	Drainage Area (ha)	Runoff Coefficient	T_c (min)	Required Restricted Flow 5-year (L/s)
Site	0.607	0.80	20	94.89
Total	0.607			94.89

See Appendix 'G' for calculations.

The proposed site drainage limits are demonstrated on the Post-Development Drainage Area Plan. See CCO-18-0534 POST in Appendix 'F' of this report for more details. A summary of the Post-Development Runoff Calculations can be found below. See Appendix 'G' for calculations.

Table 9: Post Development Runoff Summary

Drainage Area	Area (ha)	5-year Peak Flow (L/s)	100-year Peak Flow (L/s)	100-year Storage Required (m^3)	100-year Storage Available (m^3)
B1	0.108	1.76	3.28	48.97	52.55
B2	0.379	60.95	62.63	65.53	70.22
B3	0.056	6.16	12.31	-	-
B4	0.064	4.84	10.03	-	-
Total	0.607	73.71	88.26	114.51	122.77

Runoff for area B1 will be stored on the roof of the proposed hotel building (B1) and restricted using four (4) Watts Accutrol roof drains (or equivalent product) to a maximum release rate of 3.28 L/s and will provide up to 52.55 m^3 of storage. Attenuated runoff from the roof will be conveyed via the building storm service to the internal storm network. Runoff will ultimately discharge to the existing 1650 mm diameter storm sewer within Maritime Way. Emergency roof scuppers will be installed to ensure ponding does not exceed the proposed ponding limits.

Runoff from Area B2 will be restricted at CBMH4 through a 136 mm orifice plug or an approved equivalent. Runoff will be attenuated to a maximum release rate of 62.63 L/s with 70.22 m^3 of storage. Surface storage is provided above the parking lot structures CB2, CBMH3 and CBMH4. Subsurface storage will be provided in a Triton S-29 storage tank (or approved equivalent). Attenuated runoff from area B2 will be conveyed via storm network to existing 1650 mm diameter storm sewer within Maritime Way.

Runoff from area B3 will be conveyed overland to the Maritime Way ROW without attenuation.

Runoff from area B4 will be collected in a landscape catch basin system and conveyed without attenuation via CB3 to the existing 1650 mm diameter storm sewer within Maritime Way.

External drainage between the future Canadian Shield Avenue Road (design by others) and the property is proposed to be conveyed overland via a swale within the Municipal Right of Way. In accordance with existing drainage patterns, the swale will ultimately discharge to Municipal infrastructure within Maritime Way via proposed CB4 within the ROW. City staff have advised that a swale and catch basin within municipal lands is an acceptable approach to conveying existing external drainage around the site. Refer to Appendix 'G' for correspondence with City Staff.

In the event that there is a rainfall above the 100-year storm event, or a blockage within the storm sewer system, an emergency overland flow route has been provided so that the storm water runoff will be conveyed towards the Southeast entrance on Maritime Way.

8.0 EROSION AND SEDIMENT CONTROL

8.1 Temporary Measures

Before construction begins, temporary silt fence, straw bale or rock flow check dams will be installed at all natural runoff outlets from the property. It is crucial that these controls be maintained throughout construction and inspection of sediment and erosion control will be facilitated by the Contractor or Contract Administration staff throughout the construction period.

Silt fences will be installed where shown on the final engineering plans, specifically along the downstream property limits. The Contractor, at their discretion or at the instruction of the City, Conservation Authority or the Contract Administrator shall increase the quantity of sediment and erosion controls on-site to ensure that the site is operating as intended and no additional sediment finds its way off site. The rock flow, straw bale & silt fence check dams and barriers shall be inspected weekly and after rainfall events. Care shall be taken to properly remove sediment from the fences and check dams as required. Fibre roll barriers are to be installed at all existing curb inlet catchbasins and filter fabric is to be placed under the grates of all existing catchbasins and manholes along the frontage of the site and any new structures immediately upon installation. The measures for the existing/proposed structures is to be removed only after all areas have been paved. Care shall be taken at the removal stage to ensure that any silt that has accumulated is properly handled and disposed of. Removal of silt fences without prior removal of the sediments shall not be permitted.

Although not anticipated, work through winter months shall be closely monitored for erosion along sloped areas. Should erosion be noted, the Contractor shall be alerted and shall take all necessary steps to rectify the situation. Should the Contractor's efforts fail at remediating the eroded areas, the Contractor shall contact the City and/or Conservation Authority to review the site conditions and determine the appropriate course of action. As the ground begins to thaw, the Contractor shall place silt fencing at all required locations as soon as ground conditions warrant. Please see the Site Grading, Drainage and Sediment & Erosion Control Plan for additional details regarding the temporary measures to be installed and their appropriate OPSD references.

8.2 Permanent Measures

It is expected that the Contractor will promptly ensure that all disturbed areas receive topsoil and seed/sod and that grass be established as soon as possible. Any areas of excess fill shall be removed or levelled as soon as possible and must be located a sufficient distance from any watercourse to ensure that no sediment is washed out into the watercourse. As the vegetation growth within the site provides a key component to the control of sediment for the site, it must be properly maintained once established. Once the construction is complete, it will be up to the landowner to maintain the vegetation and ensure that the vegetation is not overgrown or impeded by foreign objects.

9.0 SUMMARY

- A new six storey, 1,017 m^2 hotel will be constructed along the west property line at 1305 Maritime Way.
- A new 150 mm watermain will be installed to service the site, connecting to the watermain within Maritime Way.
- A new 200 mm sanitary sewer will be installed to service the site, connecting to the municipal sanitary sewer within Maritime Way.
- The proposed storm sewer, ranging in diameter from 250 mm to 525 mm, will be installed throughout the site, connecting to the municipal storm sewer within Maritime Way.
- Storage for the 5- through 100-year storm events will be provided within the parking lot area via surface and subsurface storage attenuation and on the proposed flat roof.
- Quality control will be provided downstream of the site in the stormwater management facility constructed as part of the Urbandale Kanata Town Centre Development.

10.0 RECOMMENDATION

Based on the information presented in this report, we recommend that City of Ottawa approve this Servicing and Stormwater Management Report in support of the proposed hotel at 1305 Maritime Way.

This report is respectfully being submitted for approval.

Regards,

McIntosh Perry Consulting Engineers Ltd.

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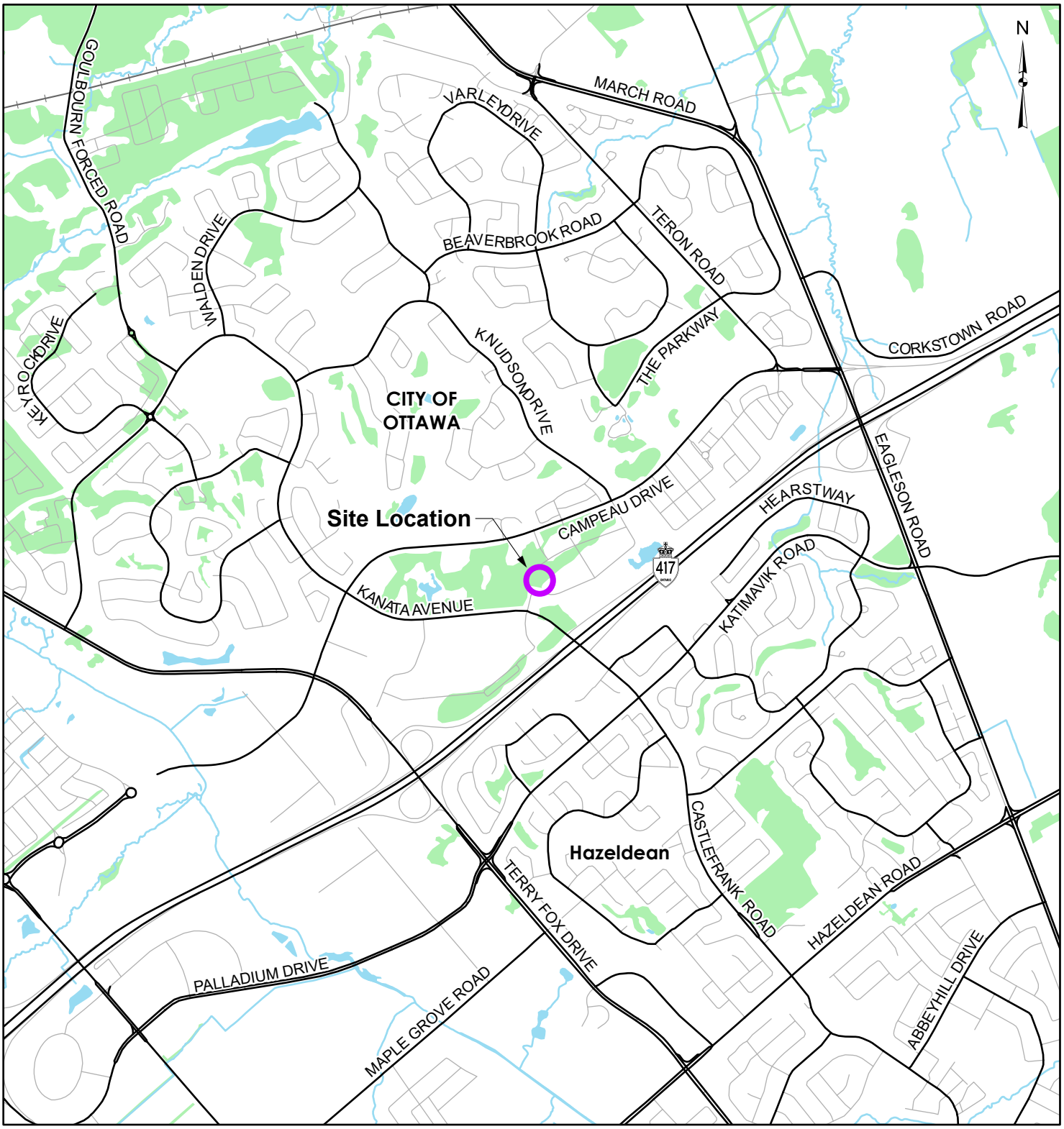
11.0 STATEMENT OF LIMITATIONS

This report was produced for the exclusive use of Silver Hotels. The purpose of the report is to assess the existing stormwater management system and provide recommendations and designs for the post-construction scenario that are in compliance with the guidelines and standards from the Ministry of the Environment, Conservation and Parks, City of Ottawa and local approval agencies. McIntosh Perry reviewed the site information and background documents listed in Section 2.0 of this report. While the previous data was reviewed by McIntosh Perry and site visits were performed, no field verification/measures of any information were conducted.

Any use of this review by a third party, or any reliance on decisions made based on it, without a reliance report is the responsibility of such third parties. McIntosh Perry accepts no responsibility for damages, if any, suffered by any third party as a result of decisions or actions made based on this review.

The findings, conclusions and/or recommendations of this report are only valid as of the date of this report. No assurance is made regarding any changes in conditions subsequent to this date. If additional information is discovered or becomes available at a future date, McIntosh Perry should be requested to re-evaluate the conclusions presented in this report, and provide amendments, if required.

APPENDIX A
KEY PLAN



LEGEND

- Site Location
- Local Road
- Major Road
- Railroad
- Watercourse
- Waterbody
- Wooded Area

600 300 0 600

Scale 1:25,000 Metres

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2022.

CLIENT: SILVER HOTELS (KANATA) INC.

PROJECT: 6-STOREY HOTEL
1305 MARITIME WAY, OTTAWA, ON

TITLE: SITE LOCATION

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PROJECT NO: CCO-18-0534	FIGURE: 1
Date	Feb., 10, 2022
GIS	EU
Checked By	RR

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APPENDIX B
BACKGROUND DOCUMENTS

McINTOSH PERRY

Pre-Application Consultation Meeting Notes

1:00pm to 2:00pm, August 17, 2021, via Microsoft Teams
Property Address: 1305 Maritime Way
File No.: PC2021-0289

Attendees:

Molly Smith – Planner, City of Ottawa
Laurel McCreight – Planner, City of Ottawa
Mark Young – Planner (Parks), City of Ottawa
Josiane Gervais – Project Manager (Transportation), City of Ottawa
Justin Armstrong – Project Manager (Infrastructure), City of Ottawa
Dhaneshwar Neermul – Program Manager (Corporate Real Estate Office), City of Ottawa
Edith Tam – Planner (Corporate Real Estate Office), City of Ottawa
Jeff Goettling – Planner (Parks), City of Ottawa
Jeffrey Ren – Co-op Student, City of Ottawa
Stephen Mauro – Chamberlin
Mohamed Zeid – Silver Hotel Group
Jay Patel – Silver Hotel Group
Vinnie Patel – Silver Hotel Group

Applicant's Proposal:

- The applicant is proposing to construct a six-storey, 102-room hotel with a gross floor area of 6,092 square metres; 102 parking spaces, a drop off and 2 loading spaces are proposed
- Restaurant and other amenities are designed to be used by the hotel guests only
- The exterior of the building will be clad in textured EFIS panels
- The applicant intends to submit a Site Plan Control application as soon as possible

Preliminary comments and questions from staff and agencies, including follow-up actions:

Hello Stephen,

Please refer to the below regarding the Pre-Application Consultation Meeting held on Tuesday, August 17, 2021 for the property located at 1305 Maritime Way for a Site Plan Control (Manager Approval, Public Consultation) application in order to construct a six-storey, 102-room hotel with a gross floor area of 6,092 square metres. I have also attached the required Plans & Study List for application submission.

Below are staff's preliminary comments based on the information available at the time of pre-consultation meeting:

Planning

- The application will be considered Site Plan Control (Manager Approval, Public Consultation), please find the application form and information on fees here.
- Please review the following policies and by-laws:

    - The subject site is designated as Mixed-Use Centres and Town Centres in the Official Plan; the site falls under the Kanata Town Centre Secondary Plan and is designated as 'Central Business District' under the Secondary Plan.
    - The draft New Official Plan designates the site as a 'Hub' within the Suburban Transect; the policies of the Kanata Town Centre Secondary Plan are expected to be carried over when the new Official Plan goes to Council in the fall. Your planning rationale should review the current OP and new OP policies.
    - The subject site is zoned Mixed-Use Centre Zone, Subzone 5, maximum height 35 metres (MC5 H(35)).
- Please incorporate additional landscaping through the introduction of additional parking lot islands and along the perimeter of the property where sidewalks would be found.
- Please ensure that all landscaping provisions for parking lots are being followed; please refer to Section 110 of the Zoning By-law.
- Please add sidewalks along Canadian Shield Avenue connecting to the Maritime Way intersection.
- Please ensure that the provisions pertaining to outdoor refuse collection and refuse loading areas under Section 110(3)(c) of the Zoning By-law are being followed; additional screening may be desirable in order to accommodate neighboring uses.
- Review options moving the bicycle parking under the covered vehicle drop-off concord for weather protection.
- To determining the appropriate Official Plan policies in the submitted Planning Rationale, please note the following:
    - A complete application is received by no later than the day before the new Official Plan is adopted (October 2021), it will be processed on the basis of existing Official Plan policy provided it is consistent with the 2020 Provincial Policy Statement.
    - Applications received after the day before the new Official Plan is adopted will be reviewed and evaluated on the basis of the policies of the new Official Plan.
    - Based on the submitted concept plan and the draft New Official Plan available at the time of the pre-consultation meeting, the proposed development does not appear to be affected by any proposed policy changes.
- Please remember to reach out to Councillor Jenna Sudds so that she is aware of the plans for the site.
- The application will be subject to public consultation (conducted through the posting of on-site signage, the notification of community groups, and through the City of Ottawa's DevApps website).

Urban Design

- A design brief is required. A terms of reference is attached.
- The subject site is located in a design priority area. A formal review by the Urban Design Review Panel will be required.
- Additional landscaping should be provided around the perimeter of the proposed parking area in key groupings.
- Consider creating a more meaningful vehicular entrance to the parking lot to create a sense of arrival.
- Consider scoping back the scale of the canopy at the vehicular drop off to a partially covered lay-by vs. a fully looped drop off.
- A mid-parking lot pedestrian connection with landscaping should be considered.

- The buildings through Lobby is appreciated.
- Efforts to place equal emphasize on the public building entrance facing Canadian Shield Avenue should be taken, including the provision of a direct access to the planned sidewalk.
- The applicant should explore locating the back of house functions facing the parking lot, with better access to garbage and loading areas.
- Meeting spaces and the Dining Area would be better placed facing the public realm and Bill Teron Park/Canadian Shield Avenue.
- All islands within the parking area should be landscaped vs. line painting.
- The wood slat gesture on the drop off canopy is appreciated, and is a motif that could be used throughout the project, including blank facades, parking screening etc.

Please contact Urban Design Planner Mark Young for follow-up questions.

Engineering

Please note the following information regarding the engineering design submission for the above noted site:

1. The Servicing Study Guidelines for Development Applications are available at the following address: http://ottawa.ca/en/development-application-review-process-0/servicing-study-guidelines-development-applications

2. Servicing and site works shall be in accordance with the following documents:
   - Ottawa Sewer Design Guidelines (October 2012)
   - Ottawa Design Guidelines – Water Distribution (2010)
   - Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
   - City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
   - City of Ottawa Environmental Noise Control Guidelines (January, 2016)
   - City of Ottawa Park and Pathway Development Manual (2012)
   - City of Ottawa Accessibility Design Standards (2012)
   - Ottawa Standard Tender Documents (latest version)
   - Ontario Provincial Standards for Roads & Public Works (2013)

3. Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-2424 x.44455).

4. The Stormwater Management Criteria, for the subject site, is to be based on the following:
   i. The 5-yr storm event using the IDF information derived from the Meteorological Services of Canada rainfall data, taken from the MacDonald Cartier Airport, collected 1966 to 1997.
   ii. The pre-development runoff coefficient or a maximum equivalent 'C' of 0.5, whichever is less (§ 8.3.7.3).
   iii. A calculated time of concentration (Cannot be less than 10 minutes).
   iv. Flows to the storm sewer in excess of the 5-year storm release rate, up to and including the 100-year storm event, must be detained on site.

5. As mentioned during the pre-consultation meeting, preference would be for the site to obtain servicing from the infrastructure that is to be installed as part of the future Canadian Shield extension. As identified in the *Kanata Town Centre Phasing and Servicing Overview prepared by IBI, dated 2013,* this parcel (Parcel J in IBI's report) was intended to proceed following the extension of Canadian Shield Avenue's sanitary sewer, watermain, storm sewer, roadway, and shallow utilities. If the anticipated construction timeline of 2024 for the extension of Canadian Shield Avenue does not work with the anticipated construction timeline for the 1305 Maritime Way hotel site, servicing for the site through Maritime Way can be explored. A deviation request with sufficient detail (of the proposed connection(s)) and justification may need to be provided for connection to the sanitary trunk sewer and to the 1650 storm sewer in Maritime Way as these are both deep, large sewers to which connection is typically not permitted.

6. It should be ensured that sufficient capacity is available for this site in the receiving sanitary trunk sewer. This can be done by updating the 'Sanitary Flow Analysis for Maritime Way' completed by JL Richards as part of Novatech's work for 1251 Maritime Way (dated Nov 20, 2017 Novatech, Aug 18, 2017 JLR).

7. Monitoring maintenance holes to be provided and to be located in an accessible location on private property near the property line (i.e., Not in a parking area).

8. Services should ideally be grouped in a common trench to minimize the number of road cuts.

9. Water connections can be made to the local main in Maritime or future local main in Canadian Shield extension.

10. Two water connections separated by an isolation valve are required for industrial, commercial, institutional, or individual residential facilities with a basic day demand greater than $50m^3$/day and residential areas serving 50 or more dwellings.

11. A District Meter Area (DMA) chamber may be required for the site. Chamber location and requirements are subject to the review of the Environmental Services Department.

12. Water Boundary condition requests must include a screenshot showing the location of the proposed service(s) and the expected loads required by the proposed development. Please provide the following information complete with supporting calculations:
    i. Location of service
    ii. Type of development and the amount of fire flow required (as per FUS, 1999).
    iii. Average daily demand: ___ l/s.
    iv. Maximum daily demand: ___l/s.
    v. Maximum hourly daily demand: ___ l/s.

13. Coordination should be made as it relates to site design (e.g. grading, landscaping, etc.) and the Canadian Shield extension adjacent to the site.

14. MOECC ECA Requirements

It is not anticipated that an MOECC Environmental Compliance Approval (ECA) will be required at this time. However, this will be re-examined following the completion of detailed design and submission of formal Site Plan Application.

15. Phase 1 ESAs and Phase 2 ESAs must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.

Please contact Infrastructure Project Manager Justin Armstrong for follow-up questions.

Corporate Real Estate Office (CREO)

1. The applicant shall work with Planning and Urban Design staff to maximize relationship with Bill Teron Park across the street.
2. The applicant shall document and provide proof that construction that they have satisfied the Sustainable Design Criteria checked off as documented Schedule K of the APS with OCLDC.
3. The applicant shall pay its proportionate share of the Work Costs to the OCLDC in accordance with section 4(c) of the Development Agreement after the City deems the Road Works have been completed.

Please contact Program Manager Dhaneshwar Neermul or Planner Edith Tam for follow-up questions.

Transportation

- Follow Transportation Impact Assessment Guidelines.
    - A TIA is required. Note that a Step 4 TIA was received in April 2021 in support of this application. Please update and re-submit (as required) if there are proposed changes from what is included in the TIA.
- Corner triangles as per OP Annex 1 - Road Classification and Rights-of-Way at the following locations on the final plan will be required (measure on the property line/ROW protected line; no structure above or below this triangle): Local Road to Local Road: 3 m x 3 m
- On site plan:
    - Site plan must show details of access. Ensure access meets the City's Private Approach Bylaw and that corner clearances are met (minimum distances are set out within TAC Figure 8.8.2).
    - Increase throat length if possible.
    - Review sightlines, ensure the analysis takes into consideration the street trees along Maritime Way.
    - Show all details of the roads abutting the site up to and including the opposite curb; include such items as pavement markings, accesses and/or sidewalks. The site plan presented indicates that Maritime Way is under construction, work is complete here. Update the plan to show the existing conditions.
    - Turning movement diagrams required for all accesses showing the largest vehicle to access/egress the site.
    - Turning movement diagrams required for internal movements (loading areas, garbage).
    - Show all curb radii measurements; ensure that all curb radii are reduced as much as possible
    - Show dimensions for site elements (i.e. lane/aisle widths, access width and throat length, parking stalls, sidewalks, pedestrian pathways, etc.)
    - Sidewalk is to be continuous across access as per City Specification 7.1.
    - Ensure all crosswalks located internally on the site provide a TWSI at the depressed curb, per requirements of the Integrated Accessibility Standards Regulation under the AODA.

    - Grey out any area that will not be impacted by this application.
- As the proposed site is commercial/institutional/industrial and for general public use, AODA legislation applies. Consider using the City's Accessibility Design Standards as a reference.
- Noise Impact Studies required for the following:
    - Road (Highway)
    - Stationary (due to the proximity to neighboring exposed mechanical equipment an if there will be any exposed mechanical equipment due to the proximity to neighboring noise sensitive land uses).

Please contact Transportation Project Manager Josiane Gervais for follow-up questions.

Parks

1. Cash-in-lieu of parkland and associated appraisal fee will be required as a condition of approval as per the Parkland Dedication Bylaw Parkland Dedication (By-law No. 2009-95) | City of Ottawa. Value of noted lands to be appraised through a Real Estate Valuation Advisor within the Planning Infrastructure & Eco Development Department. The exact amount will be identified as a condition of site plan approval.
2. It is understood the proposed hotel does not meet the definition of a 'dwelling unit' i.e. long-term stay or apartment units. Therefore, Cash-in-lieu of parkland will be calculated as 2% of the gross land area of the vacant parcel.

Please contact Parks Planner Jeff Goettling for follow-up questions.

Forestry

Please contact Planning Forester Mark Richardson for follow-up questions.

- A tree permit is required prior to any tree removal on site.
- A Tree Conservation Report (TCR) is required.

TCR requirements:

1. A Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City
    a. an approved TCR is a requirement of Site Plan approval.
    b. The TCR may be combined with eh LP provided all information is supplied
2. As of January 1 2021, any removal of privately-owned trees 10cm or larger in diameter, or publicly (City) owned trees of any diameter requires a tree permit issued under the Tree Protection Bylaw (Bylaw 2020 – 340); the permit will be based on an approved TCR and made available at or near plan approval.
3. The Planning Forester from Planning and Growth Management as well as foresters from Forestry Services will review the submitted TCR
    a. If tree removal is required, both municipal and privately-owned trees will be addressed in a single permit issued through the Planning Forester
    b. Compensation may be required for city owned trees – if so, it will need to be paid prior to the release of the tree permit
4. The TCR must list all trees on site, as well as off-site trees if the CRZ extends into the developed area, by species, diameter and health condition
5. Please identify trees by ownership – private onsite, private on adjoining site, city owned, co-owned (trees on a property line)

6. The TCR must list all trees on adjacent sites if they have a critical root zone that extends onto the development site
7. If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained
8. All retained trees must be shown and all retained trees within the area impacted by the development process must be protected as per City guidelines available at Tree Protection Specification or by searching Ottawa.ca
    a. the location of tree protection fencing must be shown on a plan
    b. show the critical root zone of the retained trees
    c. if excavation will occur within the critical root zone, please show the limits of excavation
9. The City encourages the retention of healthy trees; if possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.
10. For more information on the process or help with tree retention options, contact Mark Richardson mark.richardson@ottawa.ca or on City of Ottawa

LP tree planting requirements:

For additional information on the following please contact adam.palmer@Ottawa.ca

Minimum Setbacks

- Maintain 1.5m from sidewalk or MUP/cycle track.
- Maintain 2.5m from curb
- Coniferous species require a minimum 4.5m setback from curb, sidewalk or MUP/cycle track/pathway.
- Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing.
- Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.

Tree specifications

- Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.
- Maximize the use of large deciduous species wherever possible to maximize future canopy coverage
- Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; and include watering and warranty as described in the specification (can be provided by Forestry Services).
- Plant native trees whenever possible
- No root barriers, dead-man anchor systems, or planters are permitted.
- No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)

Hard surface planting

- Curb style planter is highly recommended
- No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.
- Trees are to be planted at grade

Soil Volume

- Please ensure adequate soil volumes are met:

Tree Type/Size	Single Tree Soil Volume (m3)	Multiple Tree Soil Volume (m3/tree)
Ornamental	15	9
Columnar	15	9
Small	20	12
Medium	25	15
Large	30	18
Conifer	25	15

Please note that these soil volumes are not applicable in cases with Sensitive Marine Clay.

Sensitive Marine Clay

- Please follow the City's 2017 Tree Planting in Sensitive Marine Clay guidelines

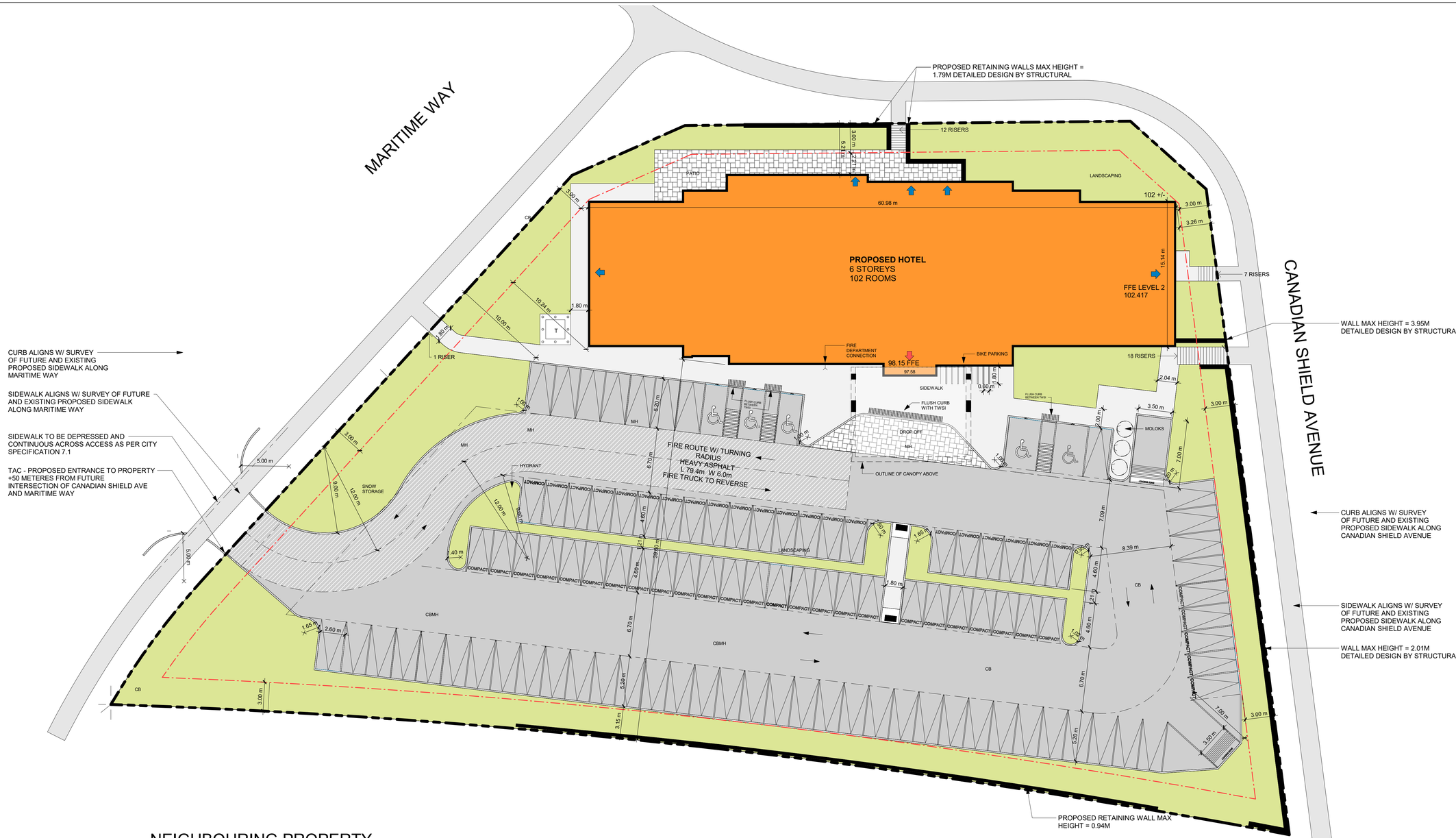
Other

Please refer to the links to the guide to preparing studies and plans and development application fees for general information. Additional information is available related to building permits, development charges, and the Accessibility Design Standards. Be aware that other fees and permits may be required, outside of the development review process. You may obtain background drawings by contacting informationcentre@ottawa.ca.

These pre-consultation comments are valid for one year. If you submit a development application(s) after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.

Please do not hesitate to contact me if you have any questions.

Regards,
Molly



1 A001 Site Plan
1 : 200

GENERAL PROVISIONS
ZONE MC5 H[35] – 200 - 250 CONSOLIDATION – PART 10 MIXED USE
OTTAWA ZONING BY-LAW NO. 2017-295
The topographic information has been derived per the Survey by Farley, Smith & Denis Surveying – File No: 342-20, dated July 30th, 2020. The property boundary was provided on the R-Plan by JD Barnes – Ref No: 18-10-115-00, dated October 16, 2018.

LEGAL DESCRIPTION
KANATA AVENUE PIN 04507-0826 PART 2, PLAN 4R-9182 *NOTE: BETWEEN CONCESSIONS 2 & 3

ZONING DATA	REQUIRED	PROVIDED
LOT WIDTH	NONE	NONE
LOT AREA	NONE	6073.9 SQM
FSI		0.96
MIN. SETBACKS		
• FRONT YARD	NONE	3m
• REAR YARD	NONE	3m
• INTERIOR SIDE YARD	3.5m	5m
• CORNER SIDE YARD	NONE	NONE
LANDSCAPE BUFFER		
• NOT ABUTTING A STREET	1.5m	3.0m
• ABUTTING A STREET	3.0m	3.0m
BUILDING HEIGHT	35m	20.93m

PARKING REQUIRMENTS

COUNT

- **HOTEL**
  = 1 BEDROOM = 1.0 PARKING SPOT
  = 102 BEDROOM
  = 102 PARKING SPOTS

TOTAL PARKING REQUIRED = 102 PARKING SPOTS

SIZES:

- TYPICAL PARKING
  = 2.6 X 5.2
- ACCESSIBLE PARKING
  = TYPE A : 3.6 X 5.2

*NOTE: 10m MIN FRONT YARD & CORNER SIDE YARD SETBACK FOR SURFACE PARKING

BICYCLE SPOTS:

= 1 PER 1000 SQM OF GROSS FLOOR AREA
= 6,092/ 1000
= 6.092 (7)

TOTAL REQUIRED BICYCLE SPOTS = 7

SITE STATISTICS (ACRES)			
DESCRIPTION	AREA (SM)	AREA (SF)	PERCENTAGE
BUILDING FOOTPRINT			
BUILDING FOOTPRINT	1078.01 m²	11604 ft²	17.8%
	1078.01 m²	11604 ft²	17.8%
HARD LANDSCAPE			
ASHPALT	2743.99 m²	29536 ft²	45.2%
CURB	70.41 m²	758 ft²	1.2%
PAVER	154.64 m²	1665 ft²	2.5%
SIDEWALK	383.28 m²	4126 ft²	6.3%
	3352.32 m²	36084 ft²	55.2%
SOFT LANDSCAPE			
LANDSCAPE	1638.18 m²	17633 ft²	27.0%
	1638.18 m²	17633 ft²	27.0%
Grand total: 10	6068.52 m²	65321 ft²	100.0%

FSI = TOT BLDG GFA/ TOTSITE
= 5791/ 6080.13
= .95

PARKING SCHEDULE		
TYPE	DESCRIPTION	COUNT
ACCESSIBLE STALL	5.2m x 3.6m	5
COMPACT PARKING	5.2m x 2.6m	51
TYPICAL STALL	5.2m x 2.6m	46
TOTAL		102
LOADING	3.5m x 7.0m	2
BIKE - HORIZONTAL	1.8 x 0.6m	7

NOTES:

- BUILDING PERMIT ISSUANCE SHALL BE SUBJECT TO THE BUILDING PERMIT DRAWINGS NOT BEING IN CONTRAVENTION WITH THESE APPROVED PLANS AND DRAWINGS INCLUDING, BUT NOT LIMITED TO, THE EXTERIOR DESIGN OF THE BUILDING AND THE EXTERIOR BUILDING MATERIALS.
- PROPOSED FIRE ROUTE SHALL PROVIDE LOAD SUPPORT SUFFICIENT TO SUPPORT THE EXPECTED LOADS IMPOSED BY FIRE FIGHTING EQUIPMENT AND MEET THE REQUIRMENTS OF THE CANADIAN HIGHWAY BRIDGE CODE, CAN/CSA-6S6, AND SHALL BE SURFACED IN ORDER TO BE ACCESSIBLE UNDER ALL CLIMATIC CONDITIONS.

NOTES:

- IT IS RESPONSIBILITY OF THE APPLICANT TO COMPLY WITH THE SEWER USE BY-LAW AND OBTAIN ALL APPROVALS/PERMITS FROM THE CITY OF OTTAWA WATER SERVICES DEPARTMENT FOR ANY PROPOSED TEMPORARY OR PERMANENT DISCHARGE OF GROUNDWATER INTO THE MUNICIPAL SEWER SYSTEMS AND WATERCOURSES;
- THE APPLICANT IS ALSO RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE PROVINCIAL REQUIRMENTS AND OBTAINING THE NECESSARY APPROVALS AND/OR PERMITS FROM THE MINISTRY OF THE ENVIRONMENT & CLIMATE CHANGE WITH REGARD TO ANY PROPOSED DEWATERING;
- ALL TREE PRESERVATION WITHIN THE RIGHT OF WAY LANDS SHALL BE IN ACCORDANCE WITH LANDSCAPE DRAWINGS AND TREE PRESERVATION DRAWINGS AND REPORTS, APPROVED BY CITY OF OTTAWA'S URBAN FORESTS;
- PRIOR TO COMMENCING ANY WORK WITHING THE RIGHT OF WAY, THE CONTRACTOR, DEVELOPER, OR CONSULTANT WILL OBTAIN ALL NECESSARY ROAD OCCUPANCY PERMITS FROM THE CITY'S RIGHT OF WAY MANAGEMENT UNIT;
- REFER TO THE APPROVED ENGINEERING DRAWINGS FOR THIS SUBJECT SITE, PREPARED BY ARCHITECTURE INC. FOR ALL SITE SERVICING AND ABOVE GROUND CONNECTIONS INFORMATION.
- ALL CONC, BASES TO BE ARCHITECTURAL BASE I. FLAG POLE, LIGHT POST, ETC.

- PROPOSED BUILDING
- LANDSCAPE
- ASPHALT DRIVEWAY
- CONCRETE CURB
- CONCRETE SIDEWALK
- PAVERS
- MULCH/ WOODCHIPS
- PAINTED ROAD LINES
- WOOD DECKING
- 6m WIDE FIRE ROUTE WITH HEAVY DUTY ASPHALT
- FIRE DEPARTMENT CONNECTION
- LIGHT STANDARD
- PROPOSED FIRE HYDRANT
- DEPRESSED CURB
- NO PARKING SIGN FOR FIRE ROUTE, IN ACCORDANCE WITH THE CITY OF WELLAND SIGN BY-LAW AND OBC
- SETBACKS
- PROPERTY LINE
- HANDICAP PARKING
- MOLLUK
- MH MANHOLE
- CB CATCHBASIN
- CU PROPOSED MECHANICAL CONDENSING UNIT ON CONCRETE HOUSEKEEPING PAD - SEE MECH DWGS
- T PROPOSED PAD MOUNTED TRANSFORMER (REFER TO ELECTRICAL DRAWINGS
- MAIN ENTRANCE
- SECONDARY ENTRANCE
- SERVICE ENTRANCE

Chamberlain Architects Constructors Managers

Chamberlain Architect Services Limited

4671 Palladium Way (Unit 1)
Burlington, Ontario. L7M 0W9
CANADA

Phone: 905.631.7777

www.chamberlainIPD.com

NO.	ISSUED	DATE
1	SITE PLAN APPROVAL #3	2024.01.31
2	SITE PLAN APPROVAL	2023.09.29

SEAL

ONTARIO ASSOCIATION OF ARCHITECTS
STEPHEN A. MAURO
LICENCE
6514

CONSTRUCTION NORTH TRUE NORTH

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2024-01-31 4:37:50 PM

KANATA HAMPTON INN & SUITES

Hampton by HILTON

1305 MARITIME WAY,
KANATA, ON

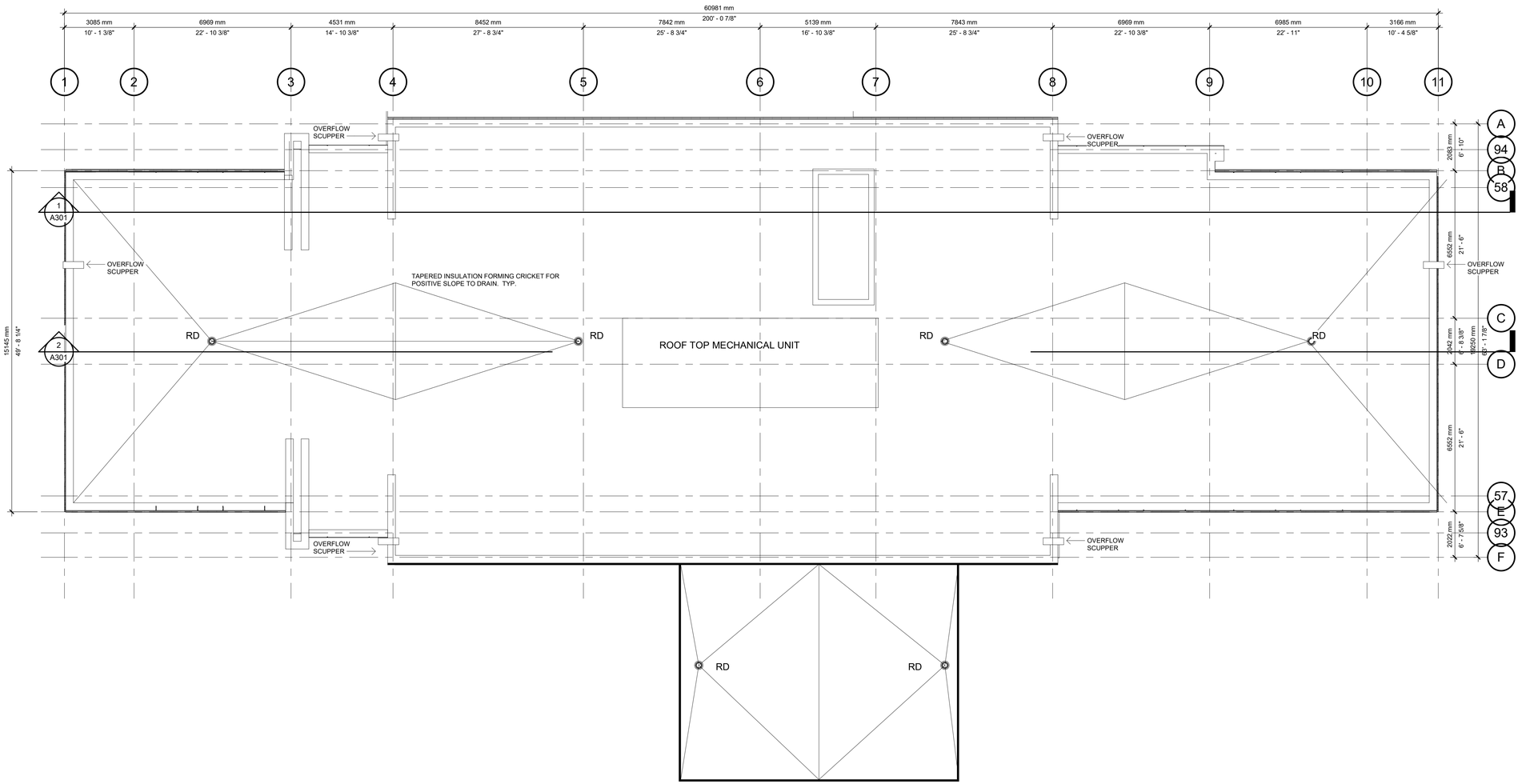
SHEET NAME

SITE PLAN

START DATE	SEPT 19, 2019
DRAWN BY	LGJ, DM, MOR,NAL
CHECKED BY	SM
SCALE	As indicated
PROJECT NO.	117079

DRAWING

A001



1 A105 ROOF PLAN
1 : 100

Chamberlain Architects Constructors Managers

Chamberlain Architect Services Limited

4671 Palladium Way (Unit 1)
Burlington, Ontario. L7M 0W9
CANADA

Phone: 905.631.7777

www.chamberlainIPD.com

NO.	ISSUED	DATE
1	SITE PLAN APPROVAL	2022.01.19

SEAL

ONTARIO ASSOCIATION OF ARCHITECTS
STEPANOVA, MAURO
LICENCE
8514

CONSTRUCTION NORTH | TRUE NORTH

KANATA HAMPTON INN
D07-12-22-0091

1251 MARITIME WAY,
KANATA, ON
Plan No. 18768

SHEET NAME

ROOF PLAN & DETAILS

START DATE	16 SEPT 2019
DRAWN BY	Author
CHECKED BY	Checker
SCALE	1 : 100
PROJECT NO.	117079
DRAWING	A105

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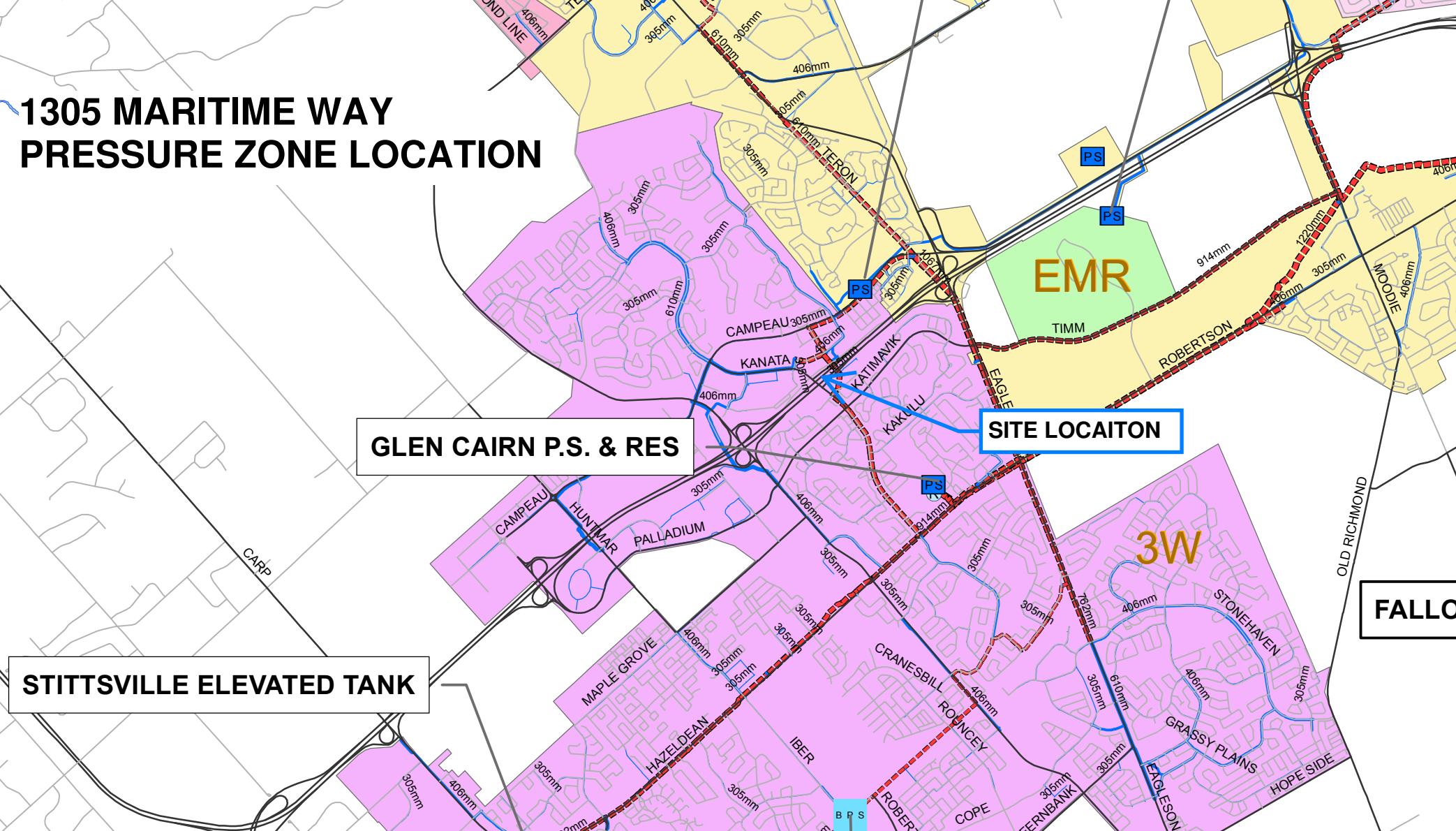
APPENDIX C
WATERMAIN CALCULATIONS

McINTOSH PERRY


1305 MARITIME WAY
PRESSURE ZONE LOCATION
GLEN CAIRN P.S. & RES
SITE LOCAITON
STITTSVILLE ELEVATED TANK
EMR
3W
PS
CAMPEAU
KANATA
KATIMAVIK
KAKULU
HUNTMAR
PALLADIUM
MAPLE GROVE
HAZELDEAN
IBER
CRANESBILL
ROXNCEY
STONEHAVEN
GRASSY PLAINS
HOPE SIDE
EAGLESON
COPE
TERON
TIMM
ROBERTSON
MOODIE
OLD RICHMOND
CARP
406mm
305mm
610mm
762mm
914mm
1220mm

McINTOSH PERRY

CO-18-0534 - 1305 Maritime Way - Water Demands

Project:	1305 Maritime Way
Project No.:	CO-18-0534
Designed By:	FV
Checked By:	AG
Date:	July 25, 2023
Site Area:	0.61 gross ha

Commercial				
1-Bed Hotel Room	40	rooms	1	bed/room
2-Bed Hotel Room	62	rooms	2	bed/room
Total Beds	164	beds	225	L/(bed-space/d)
Office Space, Fitness Centre, Meeting Rooms	0.04	ha	28000	L/gross ha/d

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d
AVERAGE DAILY DEMAND	Residential	0.00 L/s
	Commerical/ Industrial/ Institutional	0.44 L/s

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	9.5	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	Residential	0.00	L/s
	Commerical/ Industrial/ Institutional	0.66	L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	14.3	x avg. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	Residential	0.00	L/s
	Commerical/ Industrial/ Institutional	1.19	L/s

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	0.44	L/s
MAXIMUM DAILY DEMAND	0.66	L/s
MAXIMUM HOUR DEMAND	1.19	L/s

McINTOSH PERRY

CO-18-0534 - 1305 Maritime Way - Fire Underwriters Survey

Project:	1305 Maritime Way
Project No.:	CO-18-0534
Designed By:	FV
Checked By:	AG
Date:	July 25, 2023

From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
City of Ottawa Technical Bulletin ISTB-2018-02 Applied Where Applicable

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where:

F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Non-Combustible Construction

C 0.8 A 5,985.0 m^2

Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area) 3,964.0 m^2 * Unprotected Vertical Openings

Calculated Fire Flow	11,081.0 L/min
	11,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Limited Combustible -15%

Fire Flow	9,350.0 L/min

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Fully Supervised Sprinklered -50%

Reduction	-4,675.0 L/min

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	Over 30 m	Fire Resistive - Non Combustible (Unprotected Openings)	66	6	396.0	0%
Exposure 2	Over 30 m	Fire Resistive - Non Combustible (Unprotected Openings)	16	5	80.0	0%
Exposure 3	Over 30 m	Fire Resistive - Non Combustible (Unprotected Openings)	57	7	399.0	0%
Exposure 4	Over 30 m	Fire Resistive - Non Combustible (Unprotected Openings)	77	5	385.0	0%
					% Increase*	0%

Increase*	0.0 L/min

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	4,675.0 L/min
Fire Flow Required**	5,000.0 L/min

* In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
** In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

115 Walgreen Road, R.R.3. Carp, ON K0A 1L0 | T. 613-836-2184 | F. 613-836-3742
info@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

CO-18-0534 - 1305 Maritime Way - Boundary Condition Unit Conversion

Project:	1305 Maritime Way
Project No.:	CO-18-0534
Designed By:	FV
Checked By:	AG
Date:	July 25, 2023

Boundary Conditions Unit Conversion

MARITIME WAY

Scenario	Height (m)	Elevation (m)	m H_2O	PSI	kPa
Avg. DD	160.8	98.2	62.6	89.1	614.1
Fire Flow (83.3 L/s or 5,000 L/min)	155.1	98.2	56.9	81.0	558.2
Peak Hour	156.5	98.2	58.3	82.9	571.9

1305 Maritime Way - Model Output

Project:	CO-18-0534
Project No.:	1305 Maritime Way
Designed By:	RRR
Checked By:	RRR
Date:	2023-07-25

MODEL INPUTS

Flow Units	L/s
Headloss Formula	H-W
Specific Gravity	1.0
Accuracy	0.001
Demand Multiplier	1.0
Maximum Fire Flow (L/s)	100.0

MODEL LOSSES

Standard Tee - Flow through run	0.6
Standard Tee - Flow through branch	1.8
45 Degree Elbow	0.4
Long Radius Elbow	0.6
Short Radius Elbow	0.9
Gate valve, fully open	0.2
Swing check valve, fully open	2.5

MODEL RESULTS

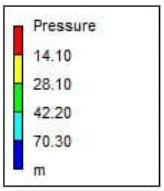
Junctions	Average Daily Demand (kPa)	Maximum Daily Demand + Fire Flow (kPa)	Peak Hourly Demand (kPa)
H1	620.60	448.54	578.44
J2	643.15	521.48	600.99
J3	637.76	448.54	595.60

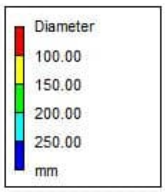
Junctions	Average Daily Demand (m)	Maximum Daily Demand + Fire Flow (m)	Peak Hourly Demand (m)
H1	63.30	45.75	59.00
J2	65.60	53.19	61.30
J3	65.05	45.75	60.75

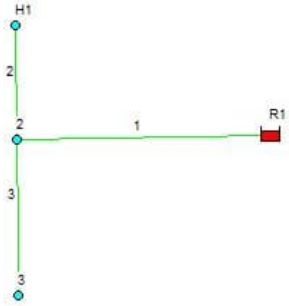
EPANET WATER MODEL
AVERAGE DAY SCENARIO

McINTOSH PERRY

AVERAGE DAILY SCENARIO







MAX HGL= 160.8

MIN HGL = 156.5

MAX DAY+ FIRE FLOW=155.1

BUILDING CONNECTION

AVG DAILY DEMAND = 0.44 L/s

MAX DAILY DEMAND = 0.66 L/s

MAX HOUR DEMAND = 1.19 L/s

MAX DAY+FIRE FLOW=83.99 L/s

```
******************************************************************************
*                                 E P A N E T                                *
*                       Hydraulic and Water Quality                          *
*                       Analysis for Pipe Networks                           *
*                             Version 2.2                                    *
******************************************************************************
```

Input File: CCO-21-0534-AVG DAY.net

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
2	2	H1	11.08	150
3	2	3	11	150
1	R1	2	21.65	150

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality	
2	0.00	160.80	65.60	0.00	
3	0.44	160.80	65.05	0.00	
H1	0.00	160.80	63.30	0.00	
R1	-0.44	160.80	0.00	0.00	Reservoir

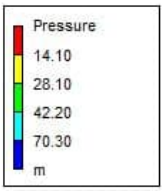
Link Results:

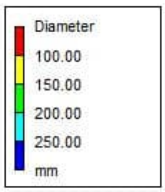
Link ID	Flow LPS	Velocity m/s	Unit Headloss m/km	Status
2	0.00	0.00	0.00	Open
3	0.44	0.02	0.02	Open
1	0.44	0.02	0.02	Open

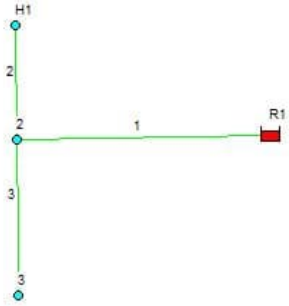
EPANET WATER MODEL
MAX DAY + FIRE FLOW SCENARIO

McINTOSH PERRY

MAX DAILY + FIRE FLOW SCENARIO







MAX HGL= 160.8

MIN HGL = 156.5

MAX DAY+ FIRE FLOW=155.1

BUILDING CONNECTION

AVG DAILY DEMAND = 0.44 L/s

MAX DAILY DEMAND = 0.66 L/s

MAX HOUR DEMAND = 1.19 L/s

MAX DAY+FIRE FLOW=83.99 L/s

```
******************************************************************************
*                                 EPANET                                     *
*                        Hydraulic and Water Quality                         *
*                        Analysis for Pipe Networks                          *
*                                Version 2.2                                 *
******************************************************************************
```

Input File: CCO-21-0534-MAX DAY + FIRE FLOW.net

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
2	2	H1	11.08	150
3	2	3	11	150
1	R1	2	21.65	150

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality	
2	0.00	148.39	53.19	0.00	
3	1.19	148.39	52.64	0.00	
H1	83.33	143.25	45.75	0.00	
R1	-84.52	155.10	0.00	0.00	Reservoir

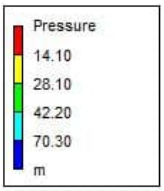
Link Results:

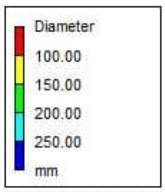
Link ID	Flow LPS	Velocity m/s	Unit Headloss m/km	Status
2	83.33	4.72	463.42	Open
3	1.19	0.07	0.11	Open
1	84.52	4.78	310.00	Open

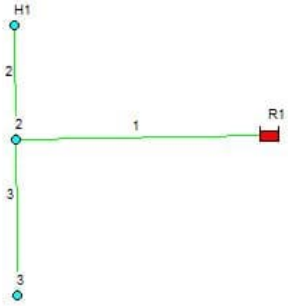
EPANET WATER MODEL
PEAK HOUR SCENARIO

McINTOSH PERRY

PEAK HOUR SCENARIO







MAX HGL= 160.8

MIN HGL = 156.5

MAX DAY+ FIRE FLOW=155.1

BUILDING CONNECTION

AVG DAILY DEMAND = 0.44 L/s

MAX DAILY DEMAND = 0.66 L/s

MAX HOUR DEMAND = 1.19 L/s

MAX DAY+FIRE FLOW=83.99 L/s

```
******************************************************************************
*                                 E P A N E T                                *
*                        Hydraulic and Water Quality                         *
*                        Analysis for Pipe Networks                          *
*                              Version 2.2                                   *
******************************************************************************
```

Input File: CCO-21-0534-PEAK HOUR.net

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
2	2	H1	11.08	150
3	2	3	11	150
1	R1	2	21.65	150

Node Results:

Node ID	Demand LPS	Head m	Pressure m	Quality	
2	0.00	156.50	61.30	0.00	
3	1.19	156.50	60.75	0.00	
H1	0.00	156.50	59.00	0.00	
R1	-1.19	156.50	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPS	Velocity m/s	Unit Headloss m/km	Status
2	0.00	0.00	0.00	Open
3	1.19	0.07	0.11	Open
1	1.19	0.07	0.10	Open

Ryan Robineau

From: Kuruvilla, Santhosh <Santhosh.Kuruvilla@ottawa.ca>
Sent: November 21, 2022 7:54 AM
To: Ryan Robineau
Cc: Alison Gosling
Subject: RE: 18-0534 - 1305 Maritime Way - Boundary Condition request
Attachments: 1305 Maritime Way_18Nov2022.docx

Hi Ryan,

Please find attached the boundary conditions for the subject application.

Thanks,

Santhosh Kuruvilla
Project Manager, Infrastructure Approvals
City of Ottawa
mailto:santhosh.kuruvilla@ottawa.ca

From: Ryan Robineau <r.robineau@mcintoshperry.com>
Sent: November 01, 2022 4:46 PM
To: Kuruvilla, Santhosh <Santhosh.Kuruvilla@ottawa.ca>
Cc: Alison Gosling <a.gosling@mcintoshperry.com>
Subject: RE: 18-0534 - 1305 Maritime Way - Boundary Condition request

Good afternoon Santhosh,

The requested information is listed below and attached:

1. Please refer to the attached Connection Figure.pdf
2. Average Daily Demand: 0.44 L/s
3. Maximum Daily Demand: 0.66 L/s
4. Maximum hourly daily demand: 1.19 L/s
5. The estimate fire flow is 5,000 L/min based on the FUS (2020). Please refer to Hydrant Coverage Figure and FUS Exposure Distance.pdf
6. Please refer to Hydrant Coverage Figure and FUS Exposure Distance.pdf

Thank you,

Ryan Robineau, EIT

Boundary Conditions
1305 Maritime Way

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	26	0.44
Maximum Daily Demand	40	0.66
Peak Hour	71	1.19
Fire Flow Demand #1	5,000	83.33

Location

Results

Connection 1 – Maritime Way

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	160.8	89.0
Peak Hour	156.5	82.9
Max Day plus Fire 1	155.1	80.9

Ground Elevation = 98.2 m

Notes

1. As per the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi.) Pressure control measures to be considered are as follows, in order of preference:
    a. If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
    b. Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/ building, located downstream of the meter so it is owner maintained.

Disclaimer

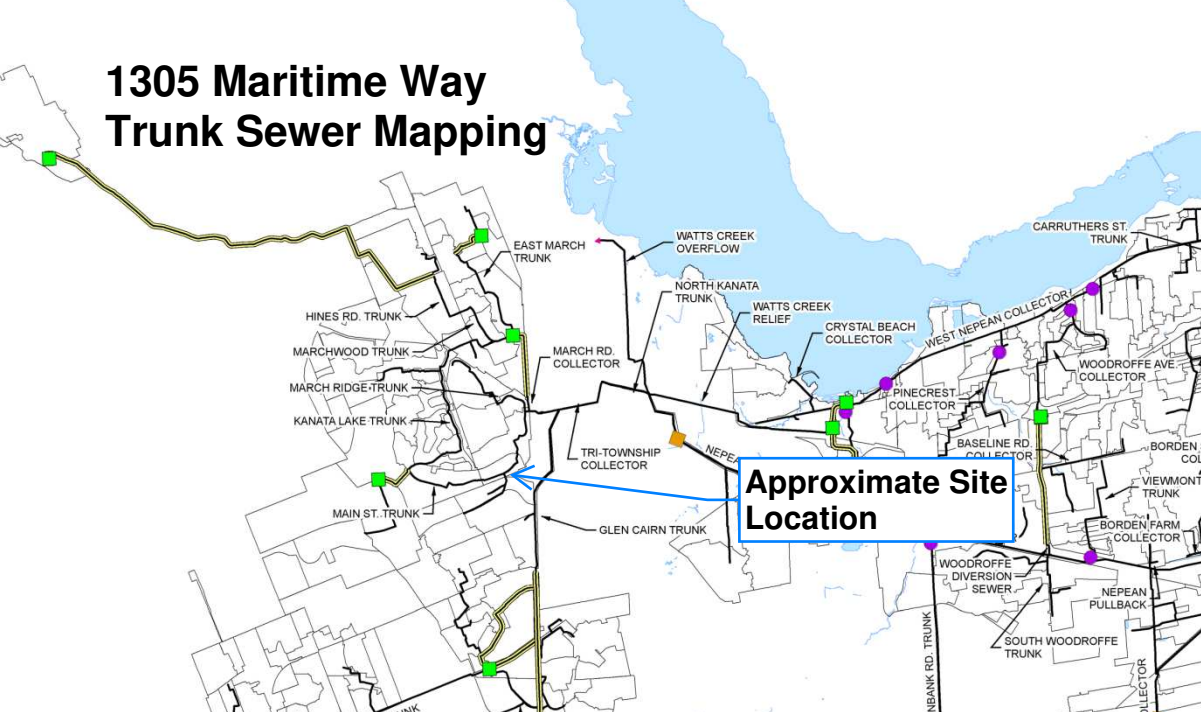
The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

Hydrant Coverage Figure

APPENDIX D
SANITARY CALCULATIONS

McINTOSH PERRY

1305 Maritime Way
Trunk Sewer Mapping



McINTOSH PERRY

CP-18-0534 - 1305 Maritime Way - Sanitary Demands

Project:	1305 Maritime Way
Project No.:	CP-18-0534
Designed By:	R.R.R.
Checked By:	A.J.G.
Date:	11/12/2021

Site Area	0.61	Gross ha	
Duplex	0	2.30	Persons per unit
Apartment	0	1.80	Persons per unit

Total Population	0	Persons
Commercial Area	0.00	m^2
Amenity Space	410.00	m^2
Hotel Beds	164	Beds

DESIGN PARAMETERS

Institutional/Commercial Peaking Facto	1.5	* Check technical bulleting (Either use 1.0 or 1.5)
Residential Peaking Factor	3.80	* Using Harmon Formula = 1+(14/(4+P^0.5))*0.8 where P = population in thousands, Harmon's Correction Factor = 0.8
Mannings coefficient (n)	0.013	
Demand (per capita)	280	L/day
Infiltration allowance	0.33	L/s/Ha

EXTRANEOUS FLOW ALLOWANCES

Infiltration / Inflow	Flow (L/s)
Dry	0.03
Wet	0.17
Total	0.20

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d	0	0.00
Industrial - Light**	35,000	L/gross ha/d		0.00
Industrial - Heavy**	55,000	L/gross ha/d		0.00
Commercial / Amenity	2,800	L/(1000m^2/d)	410.00	0.01
Hospital	900	L/(bed/day)		0.00
Schools	70	L/(Student/d)		0.00
Trailer Parks no Hook-Ups	340	L/(space/d)		0.00
Trailer Park with Hook-Ups	800	L/(space/d)		0.00
Campgrounds	225	L/(campsite/d)		0.00
Mobile Home Parks	1,000	L/(Space/d)		0.00
Motels	150	L/(bed-space/d)		0.00
Hotels	225	L/(bed-space/d)	164	0.43
Office	75	L/7.0m^2/d		0.00
Tourist Commercial	28,000	L/gross ha/d		0.00
Other Commercial	28,000	L/gross ha/d		0.00

AVERAGE RESIDENTIAL FLOW	0.00	L/s
PEAK RESIDENTIAL FLOW	0.00	L/s
AVERAGE ICI FLOW	0.44	L/s
PEAK INSTITUTIONAL/ COMMERCIAL FLOW	0.66	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	0.66	L/s

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	0.47	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	0.69	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	0.86	L/s

** PEAK INDUSTRIAL FLOW PER CITY OF OTTAWA SEWER DESIGN GUIDELINES APPENDIX 4B

SANITARY SEWER DESIGN SHEET

PROJECT: 6-Storey Hotel
LOCATION: 1305 Martitime Way
CLIENT: Silver Hotels (Kanata) Inc

McINTOSH PERRY

LOCATION				RESIDENTIAL									ICI AREAS								INFILTRATION ALLOWANCE			FLOW	SEWER DATA						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		20	21	22	23	24	25	26	27	28	29	30	31
STREET	AREA ID	FROM MH	TO MH	UNIT TYPES				AREA (ha)	POPULATION		PEAK FACTOR	PEAK FLOW (L/s)	AREA (ha)						HOTELS	PEAK FLOW (L/s)	AREA (ha)		FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	DIA (mm)	SLOPE (%)	VELOCITY (full) (m/s)	AVAILABLE CAPACITY	
				SF	SD	TH	APT		IND	CUM			INSTITUTIONAL		COMMERCIAL		INDUSTRIAL				IND	CUM								L/s	(%)
													IND	CUM	IND	CUM	IND	CUM	BEDSPACE											
Maritime Way		BLDG	MH1A								4.00	0.00			0.04	0.04			164	0.66	0.04	0.04	0.01	0.67	34.22	6.99	200	1.00	1.055	33.54	98.03
		MH1A	MH2A												0.00	0.04			-	0.66	0.00	0.04	0.01	0.67	34.22	11.73	200	1.00	1.055	33.54	98.03
		MH2A	Ex. Sewer												0.00	0.04			-	0.66	0.00	0.04	0.01	0.67	35.06	22.81	200	1.05	1.081	34.39	98.08

Design Parameters:

Residential

SF	3.4	p/p/u
TH/SD	2.7	p/p/u
APT	2.3	p/p/u
Other	60	p/p/Ha

ICI Areas

			Peak Factor
INST	28,000	L/Ha/day	1.5
COM	28,000	L/Ha/day	1.5
IND	35,000	L/Ha/day	MOE Chart
HOTEL	225	L/(bed-space/day)	1.5

Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 280 L/day
3. Infiltration allowance: 0.33 L/s/Ha
4. Residential Peaking Factor:
Harmon Formula = 1+(14/(4+P^0.5)*0.8)
where P = population in thousands

Designed: R.R.R.

Checked: A.J.G.

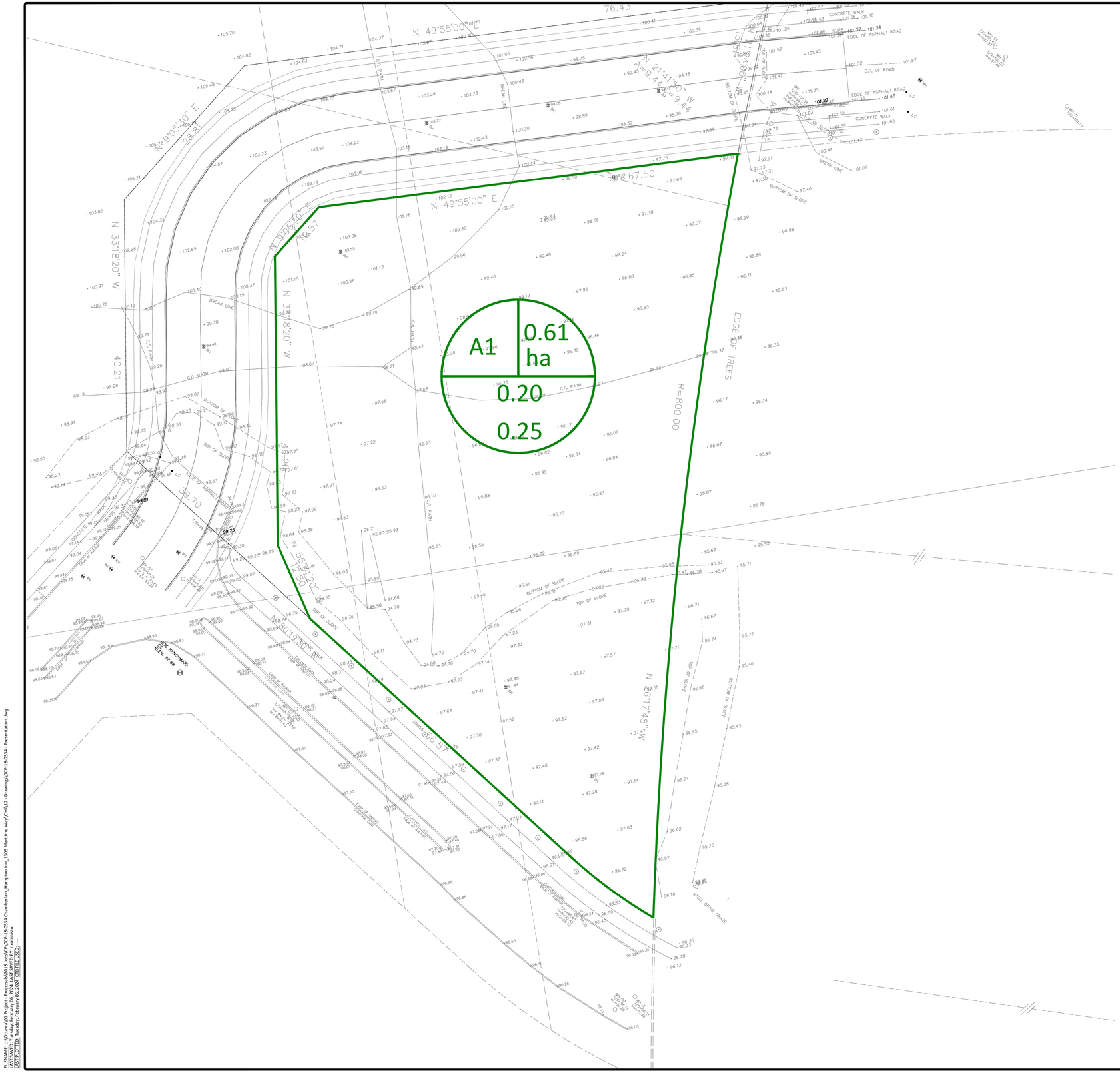
Project No.: CCO-18-0534

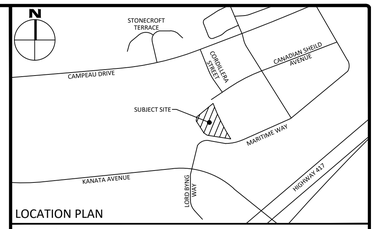
No.	Revision	Date

Sheet No:
1 of 1

APPENDIX E
PRE-DEVELOPMENT DRAINAGE PLAN

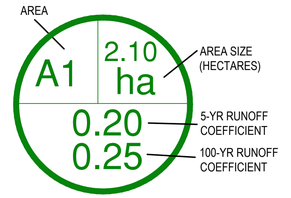
McINTOSH PERRY





LOCATION PLAN

LEGEND



FOR REVIEW ONLY
NOT FOR CONSTRUCTION

No.	Revisions	Date
4	ISSUED FOR REVIEW	FEB 07, 2024
3	ISSUED FOR REVIEW	NOV 01, 2023
2	ISSUED FOR REVIEW	FEB 23, 2022
1	ISSUED FOR REVIEW	FEB 11, 2022

Check and verify all dimensions before proceeding with the work — Do not scale drawings

SCALE 1 : 300
0 5 10 15 20 25 30 Metres

McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A 1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

Stamp: LICENSED PROFESSIONAL ENGINEER — 2024.02.07 — A.J. GOSLING — 100226726 — 18-0534 — PROVINCE OF ONTARIO

Client:
SILVER HOTELS (KANATA) INC
100 DIDSBURY ROAD #77
OTTAWA, ON K2T 0C2

Project:
PROPOSED 6-STOREY HOTEL
1305 MARITIME WAY
OTTAWA, ON

Drawing Title:
PRE-DEVELOPMENT DRAINAGE PLAN

Scale: 1:300	Project Number: CCO-18-0534
Drawn By: R.R.R.	
Checked By: B.S.C.	Drawing Number: PRE
Designed By: A.J.G.	

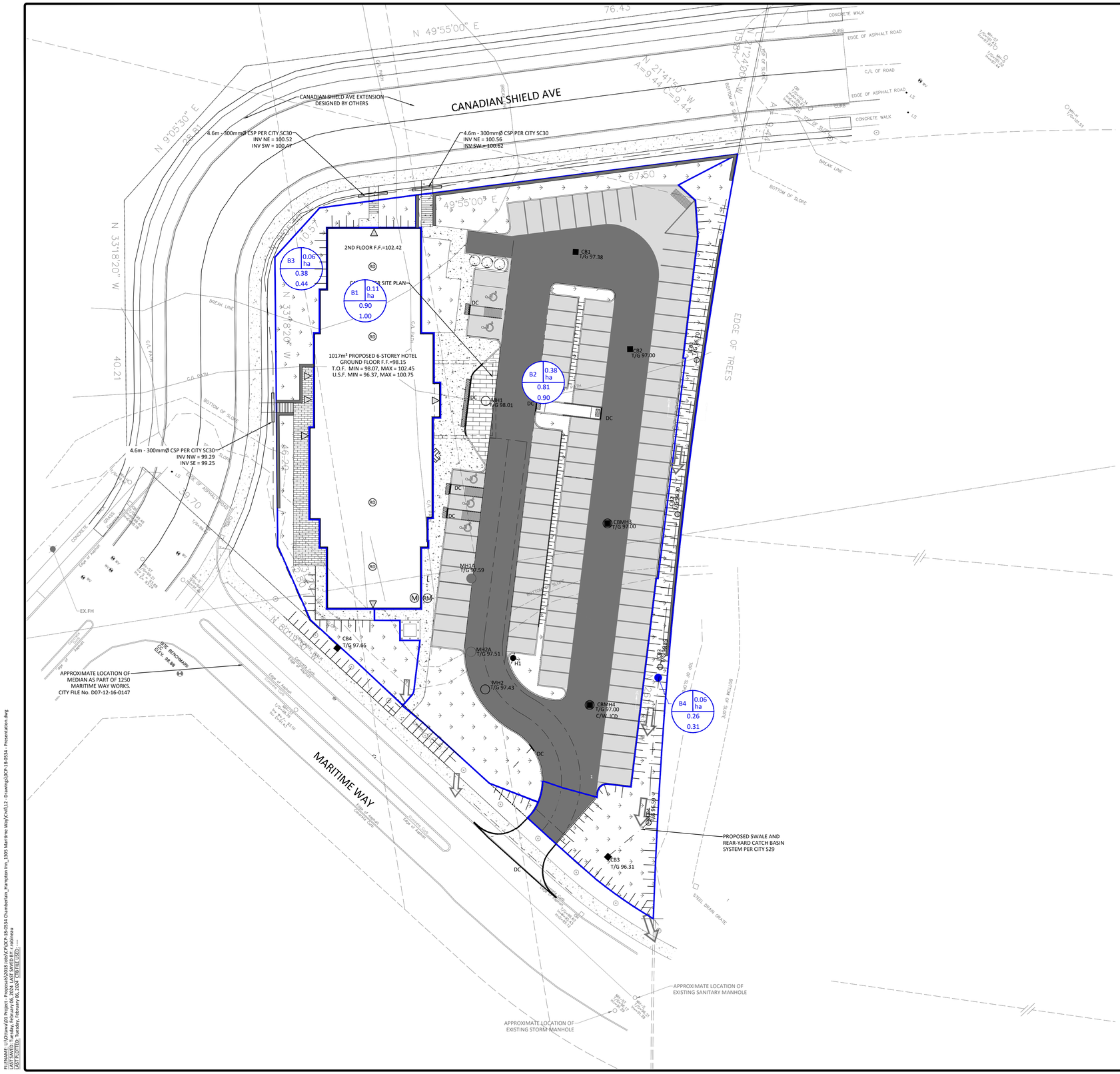
D07-12-22-0091

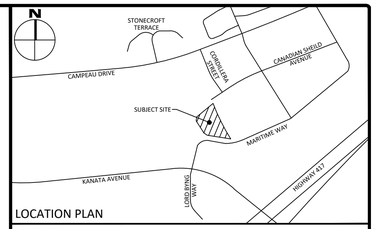
#18768

FILENAME: I:\Ottawa\01 Project - Proposal\2018 Jobs\CP\OCP-18-0534 Chamberlain_Hampton Inn_1305 Maritime Way\Civil\12 - Drawing\04CP-18-0534 - Presentation.dwg
LAST SAVED: Tuesday, February 06, 2024 LAST SAVED BY: r.robineau
LAST PLOTTED: Tuesday, February 06, 2024 C:\STAT.CTB

APPENDIX F
POST-DEVELOPMENT DRAINAGE PLAN

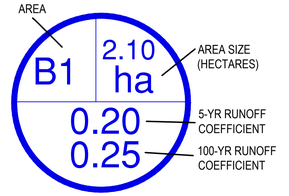
McINTOSH PERRY





LOCATION PLAN

LEGEND



FOR REVIEW ONLY
NOT FOR CONSTRUCTION

No.	Revisions	Date
4	ISSUED FOR REVIEW	FEB 07, 2024
3	ISSUED FOR REVIEW	NOV 01, 2023
2	ISSUED FOR REVIEW	FEB 23, 2022
1	ISSUED FOR REVIEW	FEB 11, 2022

Check and verify all dimensions before proceeding with the work — Do not scale drawings

SCALE 1 : 300

0 5 10 15 20 25 30 Metres

McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A 1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

Stamp: LICENSED PROFESSIONAL ENGINEER — 2024.02.07 — A.J. GOSLING — 100226726 — 18-0534 — PROVINCE OF ONTARIO

Client:
SILVER HOTELS (KANATA) INC
100 DIDSBURY ROAD #77
OTTAWA, ON K2T 0C2

Project:
PROPOSED 6-STOREY HOTEL
1305 MARITIME WAY
OTTAWA, ON

Drawing Title:
POST-DEVELOPMENT DRAINAGE PLAN

Scale: 1:300	Project Number: CCO-18-0534
Drawn By: R.R.R.	
Checked By: B.S.C.	Drawing Number: POST
Designed By: A.J.G.	

D07-12-22-0091

#18768

FILENAME: I:\Ottawa\01 Project - Proposal\2018 Jobs\CP\CCO- 18-0534 Chamberlain_Hampton Inn_1305 Maritime Way\Civil\12 - Drawing\MCP-18-0534 - Presentation.dwg
LAST SAVED: Tuesday, February 06, 2024 LAST SAVED BY: r.robineau
LAST PLOTTED: Tuesday, February 06, 2024 PLOTTED BY: —

APPENDIX G
STORMWATER MANAGEMENT CALCULATIONS

McINTOSH PERRY

2.0 STORMWATER MANAGEMENT - MINOR/MAJOR SYSTEM DESIGN

2.1 General

Traditionally, urban drainage systems were designed considering only the "minor system". A more recent trend however is to design the drainage system according to the dual drainage concept which considers both, the "minor" and the "major" systems. The "minor" drainage system is comprised mainly of street gutters, inlet catch basins, storm sewers and manholes. This system is designed to capture and convey runoff during frequent storm events with return periods up to 1:5 year. The major system is formed by swales/ditches, streets, open channels, stormwater management facilities and will accommodate runoff during storms exceeding 1:5 year up to 1:100 year.

Stormwater servicing for all lands included in the Central Business District of the Kanata Town Centre will be designed using the dual drainage concept, also know as the minor/major drainage system. Furthermore, the minor system on Urbandale's lands (and other lands such as the Penex Kanata Ltd. lands) will also be designed allowing the use of inlet control devices (ICD). With the use of ICD's, flows captured by catch basins can be limited to the conveyance capacity of the storm sewers and therefore minimizing the risk of unacceptable surcharges. With the use of ICD's in catch basin inlets, a higher level of protection (1:100 year) against flooding of basements having foundation drains connected to storm sewers is provided.

2.2 Minor System Design

Storm sewers for Urbandale's lands in the Central Business District of the Kanata Town Centre were sized using the Rational Method. An inlet time of 20 minutes and runoff coefficients ranging from 0.2 (parks) to 0.9 (high density commercial) as presented in Table 1.0 were used.

Table 1.0 - Urban Runoff Coefficients

Land Use	Runoff Coefficient
Park	0.20
Residential: - low	0.40
- medium	0.45
- high	0.50 and 0.60
Commercial	0.80 and 0.90

Rainfall intensities required by the Rational Method were taken from the City of Kanata's Intensity-Duration-Curve (IDF). A time of concentration was calculated based on an inlet time of 20 minutes and the 5 year rainfall intensity was extracted using this information. The storm sewer layout (for Street 'A'), drainage area limits and respective runoff coefficients are presented on Drawings 15712-STM (attached in pocket). Plan and profiles for the future Street 'A' are presented on Drawings 15712-01, 15712-02 and 15712-03. The Rational Method storm sewer design sheet for Urbandale's lands (Street 'A') located in the Central Business District is provided in Appendix 'B'.

2.3 Major System Design

A properly designed, constructed and maintained minor/major drainage system is the keystone to good urban drainage. The purpose of the major system is to convey excess runoff generated from severe events which are not captured by the sewer system without causing any damages. With the combination of a properly designed major system and ICD's installed on the minor system, the risk of property damage due to surcharged storm sewer is essentially eliminated, provided that the storm sewer is properly operated and maintained.

Basements in Urbandale's lands in the Central Business District of the Kanata Town Centre will be protected against flooding resulting from a surcharged storm sewer system by setting basement floors 0.3 m above the 1:100 year hydraulic grade line. To achieve this, Scepter Type 'A' ICD's (with a capture of 20 L/s for a head = 1.22 m) will be used in street catch basins to limit the minor system's carrying capacity. Since the road grades for the internal roads have not been designed at this stage, the location of the proposed catch basins have not

been determined. During the detailed design of the internal road grades, the use of Scepter Type 'A' ICD's will be specified. The number of contributing catch basins will be limited to the carrying capacity of the minor system. Furthermore, all storm sewer manholes should be provided with solid covers to limit sources of water which were not accounted for during the design of the minor system.

Overall grading plans will be prepared for Urbandale's lands located in the Central Business District to ensure that the minor/major drainage concept is properly implemented. Overland flow corridors will be carefully selected for these lands. Once the detailed design of these lands is completed, detailed plan and profiles and grading plans will be included in the submission package for a Certificate of Approval by the MOE.

2.4 On-Site Controls

The 1993 Master Drainage Study discussed and recommended the use of the following on-site controls in addition to end of pipe control (stormwater management facility):

1. Rooftop storage on flat roofs and parking lot storage in the commercial area, where feasible, to detain post-development flows.

2. Use of catch basin equipped with ICD's to control the rate of inflow to the storm sewer system.

3. Direction of the building roof downspouts, where possible, to grassed areas to minimize the runoff from hard surfaces and increase the recharge of the groundwater table.

4. Provision of grassed swales along the rear of lots (in residential development) at minimum slope to retard runoff and provide opportunity for infiltration.

5. Use of perforated leads to connect rear yard catch basins to increase groundwater recharge, where soils conditions are favourable.

The above measures should be investigated and evaluated site-specifically during the detailed design of each subdivision. The investigation and evaluation should be incorporated in the individual Stormwater Site Management Plan.

In addition to the investigation and evaluation of the above on-site controls, it is also recommended that consideration should be given to source control measures that trap oil and grease and provide protection against spills. The need for these source control measures should be investigated in the following areas:

- industrial areas;
- areas where there is a high volume of traffic; and
- areas where there is a high spill potential.

It is recommended that item No.5 (i.e. perforated leads to connect rear yard catch basin) only be investigated and evaluated in the residential subdivision (refer to Subwatershed No. 16, Figure 3) if the soil conditions are suitable to promote infiltration. To date, subsurface investigation of a large portion of Urbandale's lands (lands along Street "A" and the commercial area south of Street "A") was carried out by McRostie Genest St-Louis (July 16, 1998). This investigation revealed that the upper 5 metres of overburden generally consists of a 0.3 m of top soil or organic matter underlain by approximately 4.1 m to 4.7 m of brownish gray clay and silty gray clay. This type of soil condition is unsuitable for the use of perforated leads. To date, no subsurface investigation was carried out in the future residential subdivision. During the detail design of the residential subdivision, a subsurface investigation will be carried out to determine the overburden's characteristic of this subdivision. However, based on the hydrological soil complex of this area (refer to Figure 4.4 of the 1993 MDS - hydrological soil cover complexes), it is anticipated that the future subsurface investigation will reveal that the existing overburden will not be suitable for the use of perforated leads since the overburden of this area consists of deep soil deposits of silty clay/clay silt with some exposed bedrock. However, the suitability will only be assessed after the completion of the subsurface investigation. It is also recommended that Item No. 4 (i.e. rear yard swales) be designed using a minimum slope to retard runoff from entering the minor system. However, these rear lot swales should be designed to meet the City of Kanata Design Standards.

The design and implementation of the proposed SWMF located in the southeast corner of the Central Business District is discussed in the next chapters.

It should be noted that the proposed stormwater management facility has been sized to provide quality and quantity treatment for all contributing lands included in the Central Business District.

3.0 HYDROLOGICAL ANALYSIS

Hydrological modelling of the area defined as the "Kanata Town Centre - Central Business District" was undertaken as part of the Master Drainage Study (Kanata Town Centre Master Drainage Study Watts Creek, Cumming Cockburn Limited, May 1993) and was approved by the various review agencies in 1993 (refer to Appendix 'C' for correspondence). This section of the report summarizes the refinement of the hydrological analysis that has been carried out to assist with the final design of the recommended facility using the latest subdivision drainage information.

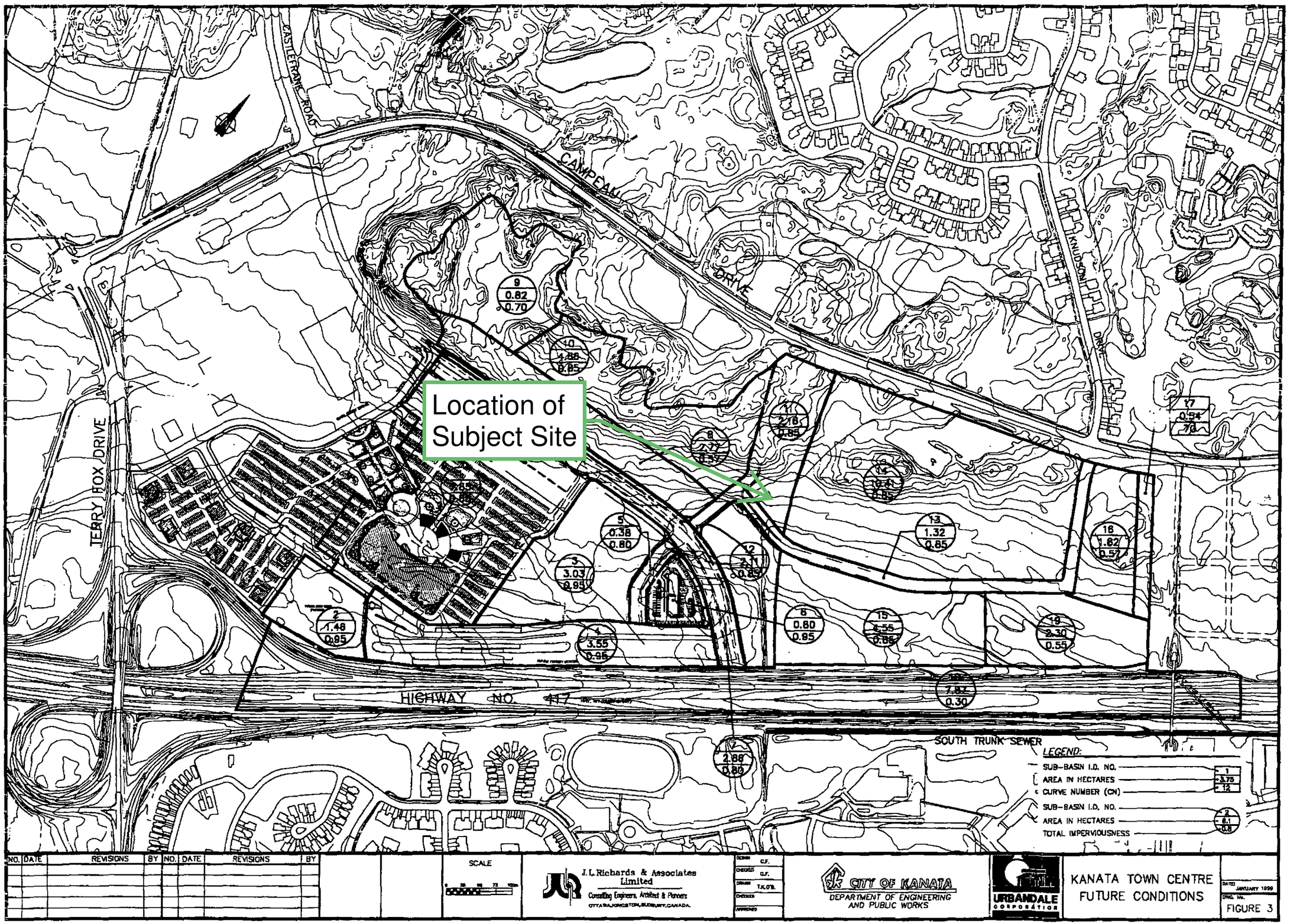
An hydrological analysis was performed to determine peak flows for various recurrences to confirm that the proposed SWMF would adequately control future flows to existing levels and/or to the flow allocation of 1.4 m^3/s (refer to Section 1.2 Background Review of report entitled "Review of Flow Conditions on Watts Creek at the Highway 417 Culvert", by Paul Wisner & Associates Inc., November 1989).

The hydrological analysis carried out as part of this study was performed using the OTTHYMO model (InterHymo 1989). This model, developed in 1983, has become a commonly used modelling tool for master drainage studies and stormwater management studies. This model was utilized to calculate peak runoff rates for various recurrences and also to determine the storage requirements of the proposed SWMF.

The study area was descretized in a number of subwatershed areas for both the existing and future development conditions. Subwatershed descretization was based on the information presented in the 1993 Master Drainage Study and using the latest planning information and topographical information. The hydrological analysis was carried out for both the existing development conditions (refer to Figure 2 for existing condition watershed boundary) and for the future development conditions with ultimate development (refer to Figure 3 for future condition watershed boundary).

Peak runoff rates were calculated using two different modelling approaches:

i) peak runoff rates generated from synthetic rainfall design storm events (refer to Section 3.1); and



NO.	DATE	REVISIONS	BY	NO.	DATE	REVISIONS	BY

SCALE

J.L. Richards & Associates Limited
Consulting Engineers, Architect & Planners
OTTAWA, KINGSTON, SUDBURY, CANADA

DESIGN C.F.
CHECKED C.F.
DRAWN T.K.O'B.
CHECKED
APPROVED

CITY OF KANATA
DEPARTMENT OF ENGINEERING AND PUBLIC WORKS

URBANDALE CORPORATION

KANATA TOWN CENTRE FUTURE CONDITIONS

DATE JANUARY 1999
DWG. No.
FIGURE 3

TECHNICAL MEMORANDUM

J.L.Richards
ENGINEERS·ARCHITECTS·PLANNERS

J.L. Richards
& Associates Limited
864 Lady Ellen Place
Ottawa, ON Canada
K1Z 5M2
Tel: 613 728 3571
Fax: 613 728 6012

TO: Urbandale Corporation
c/o Mary Jarvis, MCIP, RPP
Director of Planning

DATE: June 13, 2012

JOB NO.: 15712-10

FROM: Jonathan Párraga, P.Eng.

CC: J.L. Richards & Associates Limited
Attention: Lucie Dalrymple, P.Eng.

RE: Servicing Brief (Revised)
Kanata Town Centre
Central Business District Subdivision

PURPOSE OF UNDERTAKING

This Servicing Brief was prepared, in support of Urbandale Corporation's re-zoning application for the Kanata Town Centre - Central Business District (KTC-CBD) Subdivision. The following confirms that water, sanitary and storm sewer services are readily available to accommodate this subdivision.

DESCRIPTION OF PROPERTY

The subject lands encompass an area of approximately 18.8 hectares within the KTC-CBD, in the City of Ottawa (former City of Kanata). The lands are bounded to the north by Campeau Drive, to the west by a partial of land fronting Castlefrank Drive, south by Hwy. 417 and to the east by the Hydro One corridor (refer to Figure 1 attached). This subdivision is comprised of residential and commercial developments. Civil infrastructure (i.e., local watermains, storm and sanitary sewers) within the ROWs are all existing and in service. The trunk storm sewer, sanitary sewer, and watermain along the south leg of Maritime Way were constructed by Urbandale Corporation in 1998 and the remaining local infrastructure in 2007-2008. The 900 mm dia. feedermain on Great Lakes Avenue was constructed for the City of Ottawa in 2008-2009.

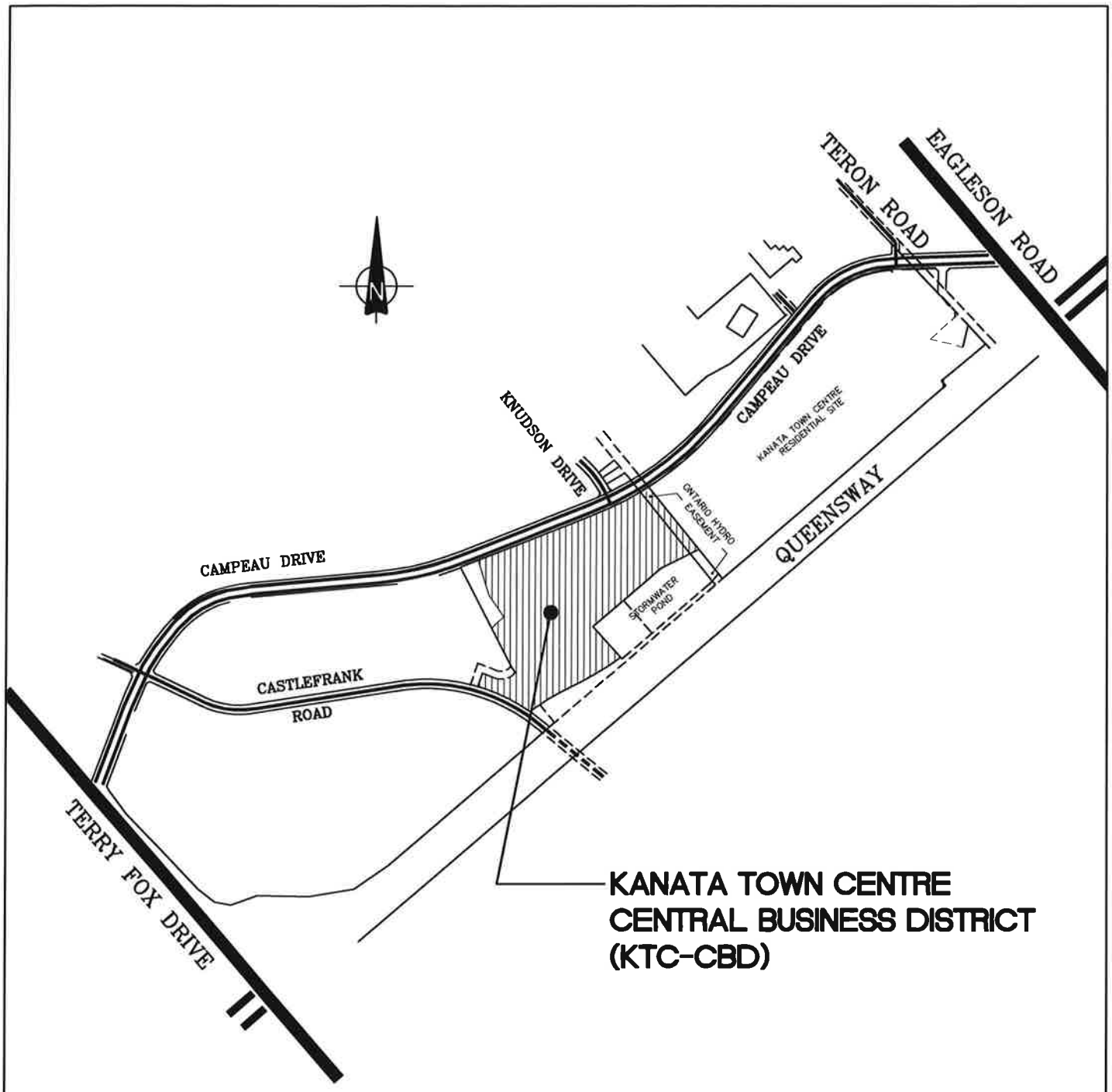
STORM SEWER SERVICING

Outlet:

The KTC-CBD lands are tributary to the KTC-CBD Stormwater Management Facility (SWMF) located in the southeast corner of the subdivision (refer to Figure 1 for Pond location), which subsequently drains to Watts Creek. This SWMF was designed, and subsequently constructed, to accommodate the development of the KTC-CBD subdivision and provides quantity as well as quality control for the stormwater flows. Details of the SWMF can be found in the Stormwater Management Report, Kanata Town Centre, Central Business District, dated January 1999 and prepared by J.L. Richards & Associates Limited.

Minor/Major System:

The KTC-CBD storm drainage system has been designed using the dual drainage concept, consisting of a minor and a major system. The minor system conveys storm runoff generated during frequent storm events (i.e., 1:5 year or less) via a local storm sewer collection system outletting to the KTC-CBD



URBANDALE CORPORATION

Ottawa

PROJECT: KTC–CBD URBANDALE CORPORATION CITY OF OTTAWA	DRAWING: KEY PLAN

J.L.Richards
ENGINEERS·ARCHITECTS·PLANNERS

J.L. Richards
& Associates Limited
864 Lady Ellen Place
Ottawa, ON Canada
K1Z 5M2
Tel: 613 728 3571
Fax: 613 728 6012

DESIGN:	DRAWN: T.S.	DRAWING No.: FIG. 1
DATE: OCT. 2006		
SCALE: N.T.S.		JOB No.: 15712

SWMF where, as noted, water quality and quantity treatment is provided. In accordance with the noted SWMF Design Report, the following runoff coefficients were used at detailed design of the local storm sewers

Residential - Low Density	C=0.40
Residential - Medium Density	C=0.45
Residential - High Density	C=0.50 and 0.60
Commercial Area	C=0.80 and 0.90
Parkland	C=0.20

An excerpt from the noted 1999 Stormwater Management Report, indicating assigned runoff coefficients 'C', allowable capture rates, and required on-site storage volumes for the specific land parcels is included in Attachment 1. The servicing design for each Block in the KTC-CBD shall adhere to these SWM design requirements.

The major system was established at the detailed design stage to convey excess runoff generated during severe events which would not be captured in the minor system. The excess runoff will be conveyed via overland routes to the KTC-CBD SWMF. The grading plans of the KTC-CBD lands have been developed with roadway sags. Local Blocks of land are expected to incorporate parking lot, cistern and roof top storage (or a combination thereof) at Site Plan Control, to ensure that the minor / major drainage concept, as specified in the Attachment 1 Table, is properly implemented.

A Hydraulic Grade Line (HGL) Analysis was carried out during detailed design to verify the anticipated amount of freeboard provided between the maximum storm sewer HGL elevations and the building underside of footing elevations. At detailed design of each Block, and as required at Site Plan Control, the on-site HGL clearance will require confirmation. The analysis was based on the estimated maximum water elevations of the KTC-CBD SWMF.

WATER SERVICING

The local network of water servicing for the KTC-CBD Subdivision was originally developed based on the existing 610 mm and 406 mm diameter watermains on Maritime Way. Water servicing specifics for the subdivision were addressed in detail in the Hydraulic Network Analysis (HNA) Report, which was prepared and submitted to the City in conjunction with the detailed servicing design of this project. The HNA Report for KTC-CBD demonstrated that the proposed (now existing) watermain sizing satisfied the water demand during the maximum hourly and fire flow conditions, as per the City of Ottawa Design Guidelines. Furthermore, the analysis included an assessment of pressures during low demand conditions (i.e., high pressure check) ensuring that the system pressures do not exceed the maximum pressure requirements set by the Ontario Building Code (OBC).

Since then a 900 mm diameter feedermain was constructed in 2008-2009 on Great Lakes Avenue, linking the existing 610 mm diameter feedermain on Maritime Way to the existing 900 mm diameter feedermain on Campeau Drive. At detailed design of each Block, and as required at Site Plan Control, the designer will have to obtain boundary conditions from the City of Ottawa and carry out an HNA for their respective Block.

Kanata Town Centre - Central Business District

Stormwater Design Criteria - Tributary Areas to SWMF

DRAINAGE AREA No.	Description	Area (ha)	TIMP (%)	C factor	Allowable Capture Rate	On-Site Storage	Required on-site Storage Volume
1	AMC Site	7.85	85	0.80	1:5 year	Yes	up to 100 yr
2	Park & Ride	1.46	95	0.87	1:5 year	No	
3	Phase IV	3.03	95	0.87	1:5 year	Yes	up to 100 yr
4	Transitway	3.55	95	0.87	1:5 year	No	
5	Hotel Road	0.38	80	0.76	1:5 year	No	
6	Hotel Site	0.80	95	0.87	1:5 year	Yes	up to 100 yr
7	Castlefrank Road	2.84	80	0.76	1:10 year	No	
8	Adjacent Lands	2.77	57	0.60	1:10 year	No	
9	Exist Pond **	0.82	---	0.20	1:10 year	Yes	up to 100 yr
10	Kanata North	4.66	85	0.80	1:5 year	No	
11	Adj Lands (east)	2.16	85	0.80	1:5 year	No	
12	Adj Lands (south-east)	2.11	85	0.80	1:5 year	Yes	up to 100 yr
13	Street "A"	1.32	85	0.80	1:5 year	Limited	up to 10 yr
14	Urbandale North	10.41	85	0.80	1:5 year	Limited	up to 10 yr
15	Urbandale South	4.48	85	0.80	1:5 year	Yes	up to 100 yr
16	Urbandale East	1.82	57	0.60	1:5 year	Limited	up to 10 yr
17	Urbandale East (park)	0.54	---	0.20	1:5 year	No	
18	Queensway	7.87	30	0.41	1:100 year	No	
19	SWMF	0.95	52	0.56	1:100 year	No	

Charissa Hampel

From: McCreight, Laurel <Laurel.McCreight@ottawa.ca>
Sent: September 3, 2019 3:22 PM
To: Charissa Hampel
Subject: RE: 1305 Maritime Way

Hi Charissa,

Yes, connections for water, sanitary and storm can be made at Maritime Way. Sanitary and storm sewer connections to existing trunk sewers must respect the minimum local sewer sizes as per the Ottawa Sewer Design Guidelines. As such, the minimum sanitary and storm sewer connection sizes would be 200mm and 250mm diameter, respectively.

Laurel

From: Charissa Hampel <c.hampel@mcintoshperry.com>
Sent: September 03, 2019 3:01 PM
To: McCreight, Laurel <Laurel.McCreight@ottawa.ca>
Subject: RE: 1305 Maritime Way

Great. Thank you.

Also, just to confirm. We are ok to connect to the existing 825mm Sanitary, 1650mm storm, and 600mm water mains within Maritime Way fronting the site?

Charissa Hampel, EIT
Engineering Intern
115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
T. 613.714.4625 | **F.** 613.836.3742 | **C.** 613.791.0505
c.hampel@mcintoshperry.com | www.mcintoshperry.com

From: McCreight, Laurel <Laurel.McCreight@ottawa.ca>
Sent: September 3, 2019 2:49 PM
To: Charissa Hampel <c.hampel@mcintoshperry.com>
Subject: RE: 1305 Maritime Way

Hi Charissa,

I have spoken with engineering and your proposed assumptions are correct.

Regards,
Laurel

Laurel McCreight MCIP, RPP

Planner
Development Review West
Urbaniste
Examen des demandes d'aménagement ouest

City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 16587
ottawa.ca/planning / ottawa.ca/urbanisme

From: Charissa Hampel <c.hampel@mcintoshperry.com>
Sent: August 30, 2019 10:33 AM
To: McCreight, Laurel <Laurel.McCreight@ottawa.ca>
Subject: 1305 Maritime Way

Good Morning,
We are starting up the Civil design for a proposed 6-storey hotel building located at 1305 Maritime Way within the City of Ottawa. I have made some preliminary assumptions on the stormwater criteria from my review of Servicing Brief (Revised) by J.L. Richards & associates Ltd. dated June 13, 2012 revising the Servicing Brief for the Kanata Town Centre – Central Business District Subdivision . When you have a moment can you please review and correct any erroneous assumptions? Also, if I missed something please let me know.

- The post-development stormwater runoff will be restricted to the 5-year pre-development flows with a time of concentration of 20 min and an allocated 0.8 runoff coefficient from the Servicing Brief (Revised) by J.L. Richards & associates Ltd.
- Any post-development stormwater flows (up to the 100-year storm event) above the calculated 5-year pre-development flows will be retained on site until the event subsides.
- The emergency overland flow is to be directed to the Maritime Way Right-of-Way.
- The proposed storm sewer network is permitted to connect to the 1650mm diameter concrete main within Maritime Way.

In addition, we would like to extend the sanitary and water services and connect to the existing mains within Maritime Way. Let me know if there are any comments or concerns with this approach.

Thank you for your time, I look forward to hearing from you.

Charissa Hampel, EIT
Engineering Intern
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c.hampel@mcintoshperry.com | www.mcintoshperry.com
McINTOSH PERRY

CCO-18-0534 - 1305 Maritime Way - Runoff Calculations

Pre-Development Runoff Coefficient

Drainage Area	Area (ha)	Impervious Area (m^2)	C	Gravel Area (m^2)	C	Pervious Area (m^2)	C	C_{AVG} 2/5-Year	C_{AVG} 100-Year
A1	0.607	0.00	0.90	0.00	0.60	6,073.56	0.20	0.20	0.25

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 5-Year	C 100-Year	Tc (min)	I (mm/hr)		Q (L/s)	
					5-Year	100-Year	5-Year	100-Year
A1	0.607	0.20	0.25	12	94.7	162.1	31.98	68.44
Total	0.607						31.98	68.44

Post-Development Runoff Coefficient

Drainage Area	Area (ha)	Impervious Area (m^2)	C	Gravel Area (m^2)	C	Pervious Area (m^2)	C	C_{AVG} 2/5-Year	C_{AVG} 100-Year
B1	0.108	1,078.00	0.90	0.00	0.60	0.00	0.20	0.90	1.00
B2	0.379	3,282.68	0.90	0.00	0.60	507.98	0.20	0.81	0.90
B3	0.056	143.12	0.90	0.00	0.60	419.46	0.20	0.38	0.44
B4	0.064	55.41	0.90	0.00	0.60	586.91	0.20	0.26	0.31

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 2/5-Year	C 100-Year	Tc (min)	I (mm/hr)		Q (L/s)	
					5-Year	100-Year	5-Year	100-Year
B1	0.108	0.90	1.00	10	104.2	178.6	28.10	53.51
B2	0.379	0.81	0.90	10	104.2	178.6	88.52	169.25
B3	0.056	0.38	0.44	10	104.2	178.6	6.16	12.31
B4	0.064	0.26	0.31	10	104.2	178.6	4.84	10.03
Total	0.607						127.63	245.11

Required Restricted Flow

Drainage Area	Area (ha)	C 5-Year	Tc (min)	I (mm/hr)	Q* (L/s)
				5-Year	5-Year
Site	0.607	0.80	20	70.3	94.89
Total	0.607				94.89

*Based on critetria outlined in the KTC-CBD Stormwater Management Report

Post-Development Restricted Runoff Calculations

Drainage Area	Unrestricted Flow (L/s)		Restricted Flow (L/s)		Storage Required (m^3)		Storage Provided (m^3)		
	5-Year	100-Year	5-Year	100-Year	5-Year	100-Year	5-Year	100-Year	
B1	28.10	53.51	1.76	3.28	25.94	48.97	28.30	52.55	Restricted - Roof Drains
B2	88.52	169.25	60.95	62.63	18.40	65.53	20.36	70.22	Restricted - CBMH4
B3	6.16	12.31	6.16	12.31					
B4	4.84	10.03	4.84	10.03					
Total	127.63	245.11	73.71	88.26	44.34	114.51	48.66	122.77	

Storage Requirements for Area B1

5-Year Storm Event

Tc (min)	I (mm/hr)	B1 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	28.10	1.76	26.34	15.81
20	70.3	18.95	1.76	17.19	20.63
30	53.9	14.55	1.76	12.79	23.01
40	44.2	11.92	1.76	10.16	24.38
50	37.7	10.16	1.76	8.40	25.19
60	32.9	8.89	1.76	7.13	25.65
70	29.4	7.92	1.76	6.16	25.88
80	26.6	7.16	1.76	5.40	25.94
90	24.3	6.55	1.76	4.79	25.87
100	22.4	6.04	1.76	4.28	25.70

Maximum Storage Required 5-Year (m^3) =	25.94

100-Year Storm Event

Tc (min)	I (mm/hr)	B1 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	53.51	3.28	50.23	30.14
20	120.0	35.95	3.28	32.67	39.20
30	91.9	27.53	3.28	24.25	43.65
40	75.1	22.52	3.28	19.24	46.18
50	64.0	19.17	3.28	15.89	47.66
60	55.9	16.75	3.28	13.47	48.49
70	49.8	14.92	3.28	11.64	48.89
80	45.0	13.48	3.28	10.20	48.97

Maximum Storage Required 100-Year (m^3) =	48.97

Storage Occupied In Area B1

5-Year Storm Event

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	808.50	0.035	28.30
		Total	28.30

Storage Available (m^3) =	28.30
Storage Required (m^3) =	25.94

100-Year Storm Event

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	808.50	0.065	52.55
		Total	52.55

Storage Available (m^3) =	52.55
Storage Required (m^3) =	48.97

* Storage area is 75% of the total roof area

Roof Drain Flow (B1)

Roof Drains Summary		
Type of Control Device	Watts Drainage - Accutrol Weir	
Number of Roof Drains	4	
	5-Year	100-Year
Rooftop Storage (m^3)	28.30	52.55
Storage Depth (m)	0.035	0.065
Flow (Per Roof Drain) (L/s)	0.44	0.82
Total Flow (L/s)	1.76	3.28

Flow Rate Vs. Build-Up (One Weir)	
Depth (mm)	Flow (L/s)
15	0.19
20	0.25
25	0.32
30	0.38
35	0.44
40	0.50
45	0.57
50	0.63
55	0.69

* Roof Drain model to be Accutrol Weirs, See attached sheets

* Roof Drain Flow information taken from Watts Drainage website

CALCULATING ROOF FLOW EXAMPLES

2 roof drains during a 5 year storm
elevation of water = 30mm
Flow leaving 2 roof drains = (2 x 0.36 L/s) = 0.72 L/s

2 roof drains during a 100 year storm
elevation of water = 45mm
Flow leaving 2 roof drains = (2 x 0.54 L/s) = 1.08 L/s

	Roof Drain Flow		
	Flow (l/s)	Storage Depth (mm)	Drains Flow (l/s)
	0.19	15	0.76
	0.25	20	1.00
	0.32	25	1.28
	0.38	30	1.52
5-Year	0.44	35	1.76
	0.50	40	2.00
	0.57	45	2.28
	0.63	50	2.52
	0.69	55	2.76
	0.76	60	3.04
100-Year	0.82	65	3.28
	0.88	70	3.52
	0.95	75	3.80
	1.01	80	4.04
	1.07	85	4.28
	1.13	90	4.52
	1.20	95	4.80
	1.26	100	5.04
	1.32	105	5.28
	1.39	110	5.56
	1.45	115	5.80
	1.51	120	6.04
	1.58	125	6.32
	1.64	130	6.56
	1.70	135	6.80
	1.76	140	7.04
	1.83	145	7.32
	1.89	150	7.56

Note: The flow leaving through a restricted roof drain is based on flow vs. head information

Storage Requirements for Area B2

2-Year Storm Event

Tc (min)	I (min)	B1 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
1	148.1	125.9	59.71	66.15	3.97
3	121.5	103.2	59.71	43.48	7.83
5	103.6	88.0	59.71	28.28	8.48
7	90.7	77.0	59.71	17.32	7.27
9	80.9	68.7	59.71	9.00	4.86
11	73.2	62.2	59.71	2.45	1.62
13	66.9	56.9	59.71	0.00	0.00

Maximum Storage Required 2-Year (m^3) =	8.48

5-Year Storm Event

Tc (min)	I (min)	B1 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
5	141.2	119.9	60.95	59.00	17.70
7	123.3	104.8	60.95	43.81	18.40
9	109.8	93.3	60.95	32.33	17.46
11	99.2	84.3	60.95	23.32	15.39
13	90.6	77.0	60.95	16.05	12.52
15	83.6	71.0	60.95	10.04	9.04
17	77.6	65.9	60.95	4.99	5.09

Maximum Storage Required 5-Year (m^3) =	18.40

100-Year Storm Event

Tc (min)	I (min)	B1 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	169.3	62.63	106.62	63.97
15	142.9	135.4	62.63	72.81	65.53
20	120.0	113.7	62.63	51.07	61.28
25	103.8	98.4	62.63	35.80	53.70
30	91.9	87.1	62.63	24.45	44.00
35	82.6	78.3	62.63	15.64	32.85
40	75.1	71.2	62.63	8.60	20.63

Maximum Storage Required 100-Year (m^3) =	65.53

Storage Occupied In Area B2

2-Year Storm Event Storage Summary

Water Elev. (m) =		96.99			
Structure	T/G	INV. (out)	Head (m)	Depth (m)	Volume (m^3)
Triton S-29	N/A	95.25	N/A	N/A	17.0
CB2	97.00	95.30	N/A	N/A	0.0
CBMH3	97.00	94.74	N/A	N/A	0.0
CBMH4	97.00	94.53	N/A	N/A	0.0

* Available Storage Calculated in AutoCAD

Storage Available (m^3) =	17.0
Storage Required (m^3) =	8.5

5-Year Storm Event Storage Summary

Water Elev. (m) =		97.09		
Structure	T/G	INV. (out)	Depth (m)	Volume (m^3)
Triton S-29	N/A	95.25	N/A	17.0
CB2	97.00	95.30	0.09	1.0
CBMH3	97.00	94.74	0.09	1.1
CBMH4	97.00	94.53	0.09	1.3

* Available Storage Calculated in AutoCAD

Storage Available (m^3) =	20.4
Storage Required (m^3) =	18.4

100-Year Storm Event Storage Sumamry

Water Elev. (m) =		97.23		
Structure	T/G	INV. (out)	Depth (m)	Volume (m^3)
Triton S-29	97.00	94.82	N/A	17.0
CB2	97.00	95.30	0.23	13.4
CBMH3	97.00	94.74	0.23	18.8
CBMH4	97.00	94.53	0.23	21.0

* Available Storage calculated from AutoCAD

Storage Available (m^3) =	70.2
Storage Required (m^3) =	65.5

For Orifice Flow, C= 0.6
For Weir Flow, C= 3.33

	Orifice 1	Orifice 2	Weir 1	Weir 2
invert elevation	94.53			
center of crest elevation	94.60			
orifice width / weir length	136 mm			
orifice height				
orifice area (m^2)	0.015	0.000		

Elevation Discharge Table - Storm Routing

Elevation (m)	Orifice 1 H [m]	Orifice 1 Q [m^3]	Orifice 2 H [m]	Orifice 2 Q [m^3]	Weir 1 H [m]	Weir 1 Q [m^3]	Weir 2 H [m]	Weir 2 Q [m^3]	Total Q [l/s]
94.53	x	x							0.00
94.54	x	x							0.00
94.55	x	x							0.00
94.56	x	x							0.00
94.57	x	x							0.00
94.58	x	x							0.00
94.59	x	x							0.00
96.99	2.39	0.060							59.71
97.00	2.40	0.060							59.84
97.01	2.41	0.060							59.96
97.02	2.42	0.060							60.08
97.03	2.43	0.060							60.21
97.04	2.44	0.060							60.33
97.05	2.45	0.060							60.45
97.06	2.46	0.061							60.58
97.07	2.47	0.061							60.70
97.08	2.48	0.061							60.82
97.09	2.49	0.061							60.95
97.10	2.50	0.061							61.07
97.11	2.51	0.061							61.19
97.12	2.52	0.061							61.31
97.13	2.53	0.061							61.43
97.14	2.54	0.062							61.55
97.15	2.55	0.062							61.68
97.16	2.56	0.062							61.80
97.17	2.57	0.062							61.92
97.18	2.58	0.062							62.04
97.19	2.59	0.062							62.16
97.20	2.60	0.062							62.28
97.21	2.61	0.062							62.40
97.22	2.62	0.063							62.52
97.23	2.63	0.063							62.63
97.24	2.64	0.063							62.75
97.25	2.65	0.063							62.87
97.26	2.66	0.063							62.99
97.27	2.67	0.063							63.11
97.28	2.68	0.063							63.23
97.29	2.69	0.063							63.34
97.30	2.70	0.063							63.46

Notes: 1. For Orifice Flow, User is to Input an Elevation Higher than Crown of Orifice.
2. Orifice Equation: $Q = cA(2gh)^{1/2}$
3. Weir flow calculated in Bentley's FlowMaster - Trapezoidal Channel at 0.1%, 3:1 side slopes, roughness coeff. Of 0.035
4. These Computations Do Not Account for Submergence Effects Within the Pond Riser.
5. H for orifice equations is depth of water above the centroide of the orifice.
6. H for weir equations is depth of water above the weir crest.

Time of Concentration Pre-Development

Drainage Area ID	Sheet Flow Distance (m)	Slope of Land (%)	Tc (min) (5-Year)	Tc (min) (100-Year)
A1	26	1.76	12	3

Tc= (3.26(1.1-c)L^0.5/ S^0.33)

c= Balanced Runoff Coefficient

L= Length of Drainage Area

S= Average Slope of Watershed

STORM SEWER DESIGN SHEET

PROJECT: 6-Storey Hotel
LOCATION: 1305 Maritime Way
CLIENT: Silver Hotels (Kanata) Inc

McINTOSH PERRY

LOCATION				CONTRIBUTING AREA (ha)				RATIONAL DESIGN FLOW										SEWER DATA								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
STREET	AREA ID	FROM MH	TO MH	C-VALUE	AREA	INDIV AC	CUMUL AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	5yr PEAK FLOW (L/s)	10yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm)			SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (5yr)	
																					DIA	W	H			(L/s)	(%)
Maritime Way	B1	BLDG	MH1	0.90	0.11	0.10	0.10	10.00	0.10	10.10	104.19	122.14	178.56	28.68				28.68	71.33	5.87	300			0.50	0.978	42.66	59.80%
		MH1	MH2			0.00	0.10	10.10	0.57	10.67	103.67	121.52	177.65	28.53				28.53	100.88	47.66	300			1.00	1.383	72.35	71.72%
	B2	CB1	CB2	0.81	0.10	0.08	0.08	10.00	0.22	10.22	104.19	122.14	178.56	22.29				22.29	67.39	17.88	250			1.18	1.330	45.10	66.93%
		CB2	CBMH3	0.81	0.05	0.04	0.12	10.22	0.27	10.50	103.02	120.76	176.54	34.33				34.33	85.06	27.69	250			1.88	1.679	50.73	59.64%
		CBMH3	CBMH4	0.81	0.05	0.04	0.16	10.50	0.59	11.09	101.63	119.12	174.12	46.00				46.00	59.68	29.17	300			0.35	0.818	13.68	22.93%
		CBMH4	MH2	0.81	0.18	0.14	0.31	11.09	0.34	11.43	98.75	115.73	169.15	84.50				84.50	117.12	20.77	375			0.41	1.027	32.62	27.85%
	B4	LCB1	LCB2	0.20	0.07	0.01	0.01	10.00	0.32	10.32	104.19	122.14	178.56	4.31				4.31	65.36	24.86	250			1.11	1.290	61.05	93.41%
		LCB2	LCB3				0.01	10.32	0.47	10.79	102.53	120.18	175.67	4.24				4.24	43.87	24.56	250			0.50	0.866	39.63	90.33%
		LCB3	LCB4				0.01	10.79	0.48	11.27	100.18	117.41	171.61	4.14				4.14	43.87	24.98	250			0.50	0.866	39.72	90.55%
		LCB4	CB3				0.01	11.27	0.09	11.37	97.91	114.74	167.69	4.05				4.05	76.74	8.48	250			1.53	1.514	72.69	94.72%
		CB3	525mm SEWER (FROM MH2)				0.01	11.37	0.63	12.00	97.48	114.24	166.95	4.03				4.03	43.87	32.63	250			0.50	0.866	39.84	90.81%
		MH2	Sewer				0.42	12.00	0.27	12.27	94.71	110.98	162.16	111.03				111.03	448.66	32.63	525			1.00	2.008	337.63	75.25%

Definitions:
Q = 2.78CIA, where:
Q = Peak Flow in Litres per Second (L/s)
A = Area in Hectares (ha)
i = Rainfall intensity in millimeters per hour (mm/hr)
[i = 998.071 / (TC+6.053)^0.814] 5 YEAR
[i = 1174.184 / (TC+6.014)^0.816] 10 YEAR
[i = 1735.688 / (TC+6.014)^0.820] 100 YEAR

Notes:
1. Mannings coefficient (n) = 0.013

Designed: R.R.R.
Checked: A.J.G.
Project No.: CO-18-0534

No.	Revision	Date

Date:

Sheet No:
1 of 1

Parameters

Units: Metric

Storage Volume: 17 Cu m

Chamber Selection: S-29B

Header Row Position: Left

Fill Over Embedment Stone: 300 mm

Controlled By: length 10 m

Embedment Stone mm:

Over: 150 Under: 150 Porosity: 0.4

Min 150mm over and under

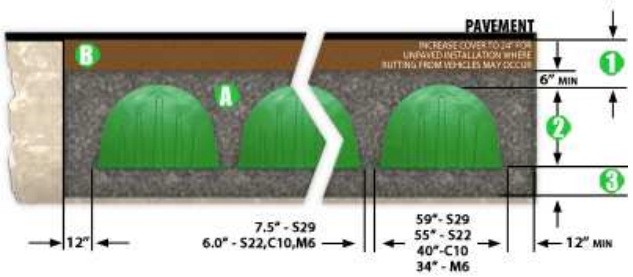
Double Stacked

Double Stacked?: No

Stone Between:

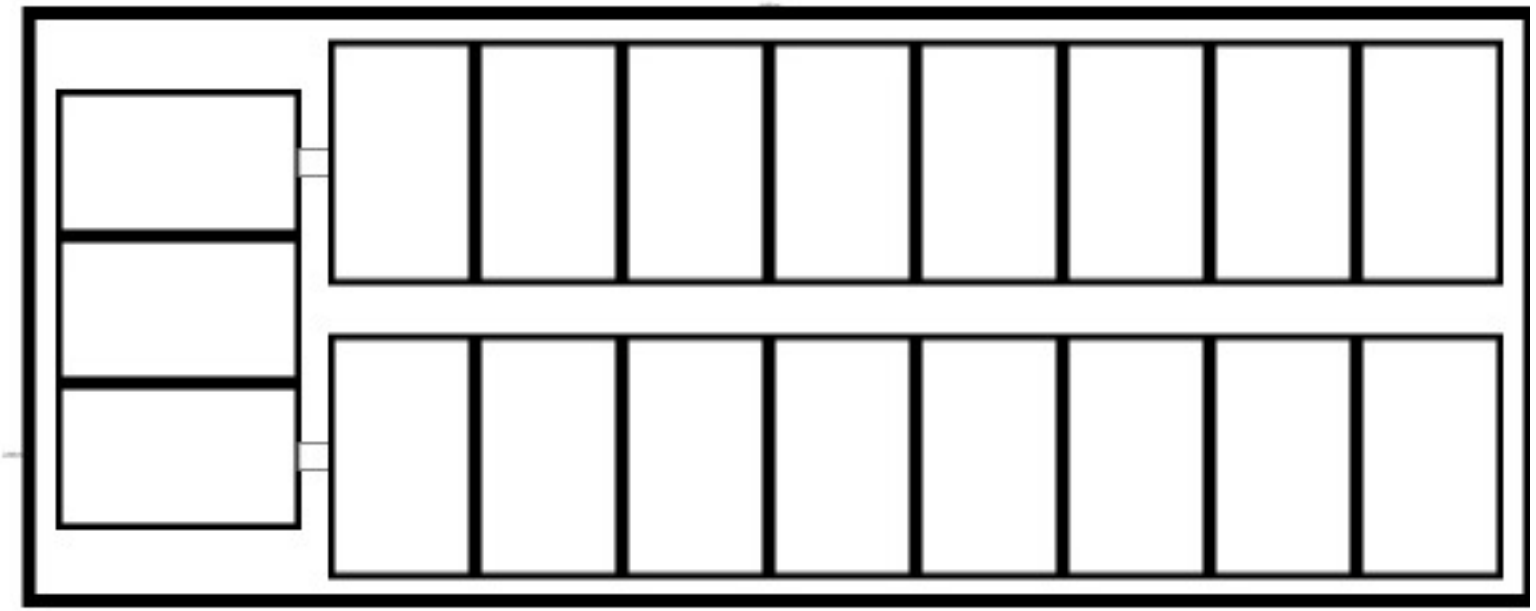
Note: After making an input change you must hit calculate to update the Field Diagram and Project Results.
* The image generation will not save if using MicroSoft Edge

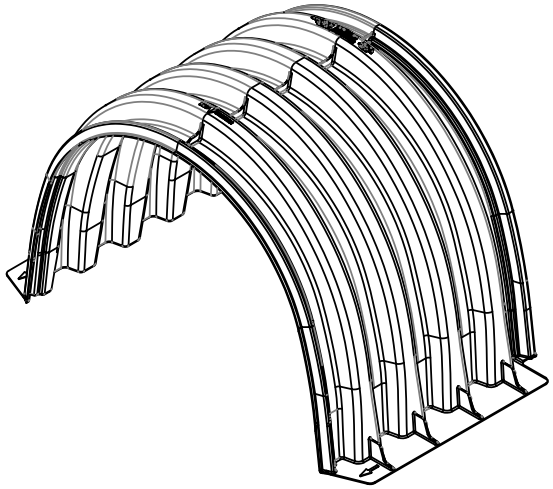
Project Results



1	Total Cover Over Chambers: 301 mm
2	Height Of Chamber: 947 mm
3	Embedment Stone Under Chambers: 151 mm
A	Volume of Embedment Stone Required: 31 Cu. m
B	Volume of Fill Material Required: 12 Cu. m
	Total Storage Provided: 28 Cu. m
	Type Of Chambers: S-29B
	# Of Chambers Required: 19
	# Of End Caps Required: 6
	Required Bed Size: 37 Sq. m
	Volume of Excavation: 47 Cu. m
	* Area of Filter Fabric: 71 Sq. m
	# of Chambers Long: 8
	# of rows: 2
	Actual Trench Length: 9.55 m
	Actual Trench Width: 3.88 m

* Filter Fabric quantity for Fabric on Top and Sides of System Only, does not include overlap

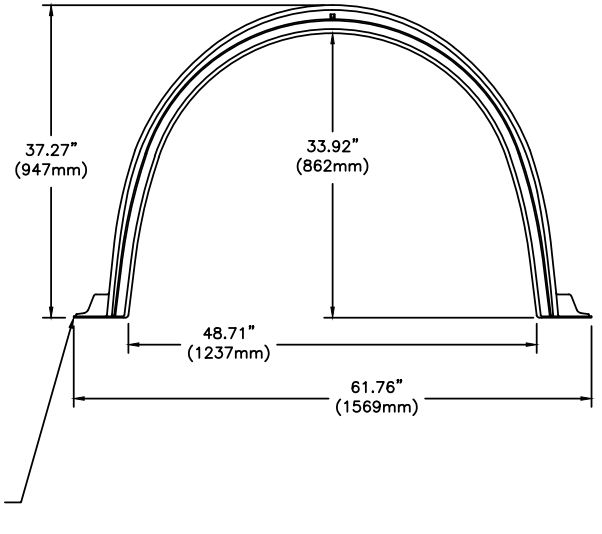


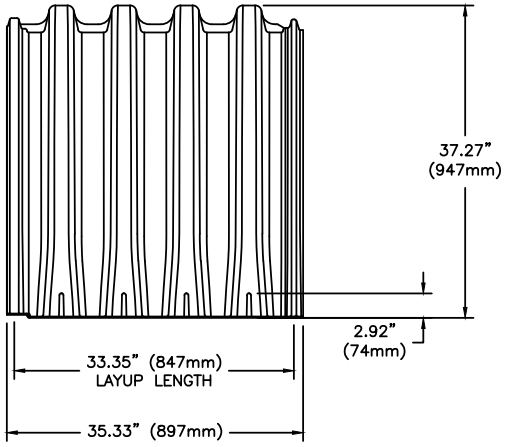


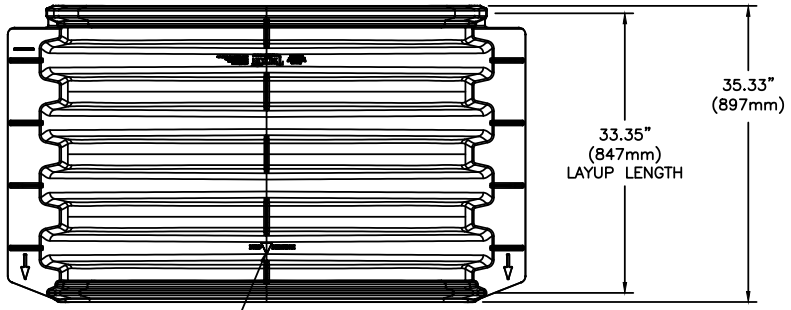
S-29-B CHAMBER SPECS	
NOMINAL DIMENSIONS (LAYUP LENGTH X WIDTH X HEIGHT)	33.35" x 61.76" x 37.27" [847mm x 1569mm x 947mm]
BARE CHAMBER STORAGE	27.80 ft^3 [0.787 m^3]
*MIN INSTALLED STORAGE	42.52 ft^3 [1.204 m^3]
CHAMBER WEIGHT	34 lbs [15.42 kg]
STORAGE PER LINEAR UNIT WITHOUT STONE	10.0 ft^3/ft [0.929 m^3/m]
STORAGE PER LINEAR UNIT WITH STONE	15.3 ft^3/ft [1.421 m^3/m]
*ASSUMING A MIN OF 6" (152mm) STONE ABOVE AND BELOW AND 5" (127mm) BETWEEN ROWS WITH 40% STONE POROSITY (DOES NOT INCLUDE 12" (305mm) PERIMETER STONE VOLUME)	

NOTE: S-29-B CHAMBER DETAILS TESTED AND RATED TO EXCEED HS-25 LOAD CONDITIONS WITH 18" (457mm) OF COVER AND NO PAVEMENT.

EACH S29-B CHAMBER HAS A TOTAL FLANGE SURFACE CONTACT AREA OF 294 IN^2 (1896 CM^2) OR 147 IN^2 (948 CM^2) PER FLANGE







TRITON STORMWATER SOLUTIONS

7600 EAST GRAND RIVER, STE.195
BRIGHTON, MI 48114
PHONE: (810) 222-7652 ● FAX: (810) 222-1769
WWW.TRITONSWS.COM

S-29-B CHAMBER DETAIL

TRITON - STANDARD DETAILS

REVISED:
01-24-23 JWM

Adjustable Accutrol Weir

Tag: _____

Adjustable Flow Control for Roof Drains

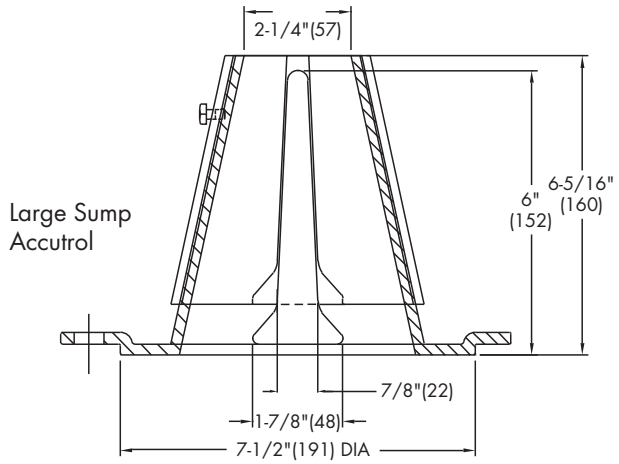
ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

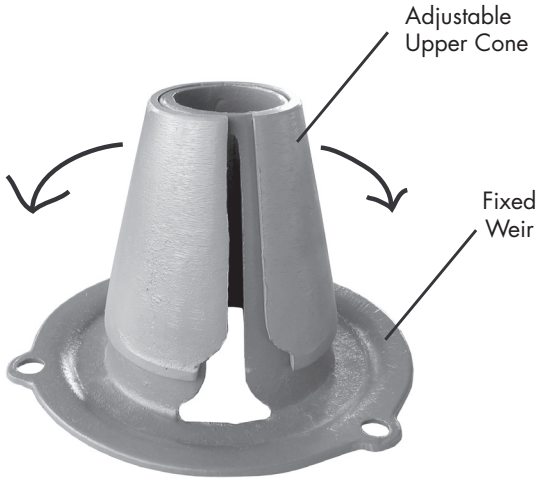
For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the flow rate for depths over 2" of head, set the slot in the adjustable upper cone according to the flow rate required. Refer to Table 1 below.
Note: Flow rates are directly proportional to the amount of weir opening that is exposed.

EXAMPLE:

For example, if the adjustable upper cone is set to cover 1/2 of the weir opening, flow rates above 2"of head will be restricted to 2-1/2 gpm per inch of head.

Therefore, at 3"of head, the flow rate through the Accutrol Weir that has 1/2 the slot exposed will be:
[5 gpm (per inch of head) x 2 inches of head] + 2-1/2 gpm (for the third inch of head) = 12-1/2 gpm.





1/2 Weir Opening Exposed Shown Above

TABLE 1. Adjustable Accutrol Flow Rate Settings

Weir Opening Exposed	1"	2"	3"	4"	5"	6"
	Flow Rate (gallons per minute)					
Fully Exposed	5	10	15	20	25	30
3/4	5	10	13.75	17.5	21.25	25
1/2	5	10	12.5	15	17.5	20
1/4	5	10	11.25	12.5	13.75	15
Closed	5	5	5	5	5	5

Job Name _____ Contractor _____

Job Location _____ Contractor's P.O. No. _____

Engineer _____ Representative _____

USA: Tel: (800) 338-2581 • Fax: (828) 248-3929 • Watts.com
Canada: Tel: (905) 332-4090 • Fax: (905) 332-7068 • Watts.ca
Latin America: Tel: (52) 81-1001-8600 • Fax: (52) 81-8000-7091 • Watts.com

A Watts Water Technologies Company

Ryan Robineau

From:	Armstrong, Justin <justin.armstrong@ottawa.ca>
Sent:	June 15, 2023 3:06 PM
To:	Benjamin Clare; Mohamed Zeid; Smith, Molly
Cc:	Curtis Melanson; Ryan Robineau; Stephen Mauro; Jay Patel; Vinnie Patel; Watson, Kieran; Surprenant, Eric; Stern, Lisa
Subject:	RE: 1305 Maritime Way - Canadian Shield Drainage
Attachments:	0CP-18-0534-SK02.2023.04.19.pdf

Hello Mohamed and Ben,

The approach of temporary swales within the Canadian Shield ROW is generally supported by staff. However, please take into consideration the following comments that were received as part of our internal circulation:

- OCLDC has received direction to proceed with the construction of a road (which is Option #1 in McIntosh Perry's Canadian Shield Extension Multi-Use Pathway Review), as was originally intended, rather than a MUP within the Canadian Shield ROW. OCLDC is now in the process of securing the necessary funds from the 2024 Capital Budget. If funds are approved, approximately a year of detailed design will follow, which means road construction will likely not begin until 2025.
- It seems the proposed eastbound swale will direct runoff to the neighbouring private property at 1101 Canadian Shield. Rather than this runoff being directed to the neighbouring property, it should be directed down to Maritime Way, either following the westbound/southbound swale, or through the 1305 Maritime Way site.
- Given that the proposed swale(s) will result in City ROW flows crossing the private site, unless there are existing clauses or easements that were included in the Agreement of P&S with OCLDC, easements will be required as part of Site Plan Control until such a time as Canadian Shield Avenue is constructed and the ROW runoff no longer crosses the property.
- The external swales will require an ECA as they collect runoff from more than one lot or parcel. The 1305 Maritime Way site will require an ECA because the external swale(s) will cross onto the site resulting in the storm system collecting runoff from the adjacent land.
- The possibility of having the western swale tie into the Maritime Way sewer via a DICB in the ROW could be explored in order to avoid flows entering CB6 on the 1305 Maritime private property. If the eastbound swale could be directed westbound, tying the western swale into the Maritime Way storm system in the ROW would result in external flows remaining within the ROW and would negate the need for easements and private site ECA.
- Provided the appropriate erosion and sediment control measures are implemented, there are no concerns from a natural heritage perspective as the work is proposed within a future ROW and is not likely to have an impact on the retained natural features located within Bill Teron Park to the west.
- The need for tree removal was justified via the TCR. Permit to be issued once it is warranted and pending Planner confirmation.

Feel free to let us know if you have any questions or would like to discuss.

Thank you,

Justin Armstrong, P.Eng.
Project Manager
Planning, Real Estate and Economic Development Department – Direction générale de la planification, des biens immobiliers et du développement économique

APPENDIX H
CITY OF OTTAWA DESIGN CHECKLIST

McINTOSH PERRY

City of Ottawa

4. Development Servicing Study Checklist

The following section describes the checklist of the required content of servicing studies. It is expected that the proponent will address each one of the following items for the study to be deemed complete and ready for review by City of Ottawa Infrastructure Approvals staff.

The level of required detail in the Servicing Study will increase depending on the type of application. For example, for Official Plan amendments and re-zoning applications, the main issues will be to determine the capacity requirements for the proposed change in land use and confirm this against the existing capacity constraint, and to define the solutions, phasing of works and the financing of works to address the capacity constraint. For subdivisions and site plans, the above will be required with additional detailed information supporting the servicing within the development boundary.

4.1 General Content

Criteria	Location (if applicable)
☐ Executive Summary (for larger reports only).	N/A
☐ Date and revision number of the report.	On Cover
☐ Location map and plan showing municipal address, boundary, and layout of proposed development.	Appendix A
☐ Plan showing the site and location of all existing services.	Site Servicing Plan (C102)
☐ Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	1.1 Purpose 1.2 Site Description 6.0 Stormwater Management
☐ Summary of pre-consultation meetings with City and other approval agencies.	Appendix B
☐ Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.	1.1 Purpose 1.2 Site Description 6.0 Stormwater Management
☐ Statement of objectives and servicing criteria.	3.0 Pre-Consultation Summary

☐ Identification of existing and proposed infrastructure available in the immediate area.	N/A
☐ Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	Site Grading Plan (C101)
☐ Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	N/A
☐ Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	N/A
☐ Proposed phasing of the development, if applicable.	N/A
☐ Reference to geotechnical studies and recommendations concerning servicing.	Section 2.0 Background Studies, Standards and References
☐ All preliminary and formal site plan submissions should have the following information: o Metric scale o North arrow (including construction North) o Key plan o Name and contact information of applicant and property owner o Property limits including bearings and dimensions o Existing and proposed structures and parking areas o Easements, road widening and rights-of-way o Adjacent street names	Site Grading Plan (C101)

4.2 Development Servicing Report: Water

Criteria	Location (if applicable)
☐ Confirm consistency with Master Servicing Study, if available	N/A
☐ Availability of public infrastructure to service proposed development	N/A
☐ Identification of system constraints	N/A
☐ Identify boundary conditions	Appendix C
☐ Confirmation of adequate domestic supply and pressure	N/A
☐ Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Appendix C
☐ Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	N/A
☐ Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	N/A
☐ Address reliability requirements such as appropriate location of shut-off valves	N/A
☐ Check on the necessity of a pressure zone boundary modification.	N/A
☐ Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range	Appendix C, Section 4.2

☐ Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	Site Servicing Plan (C102)
☐ Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	N/A
☐ Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Appendix C
☐ Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	N/A

4.3 Development Servicing Report: Wastewater

Criteria	Location (if applicable)
☐ Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	N/A
☐ Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A
☐ Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	N/A
☐ Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 5.1 Existing Sanitary Sewer

☐ Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)	N/A
☐ Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	N/A
☐ Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 5.2 Proposed Sanitary Sewer
☐ Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	N/A
☐ Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
☐ Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
☐ Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A
☐ Special considerations such as contamination, corrosive environment etc.	N/A

4.4 Development Servicing Report: Stormwater Checklist

Criteria	Location (if applicable)
☐ Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
☐ Analysis of available capacity in existing public infrastructure.	N/A
☐ A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Pre & Post-Development Plans
☐ Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5-year event (dependent on the receiving sewer design) to 100-year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
☐ Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
☐ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
☐ Set-back from private sewage disposal systems.	N/A
☐ Watercourse and hazard lands setbacks.	N/A
☐ Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	N/A
☐ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
☐ Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5-year return period) and major events (1:100-year return period).	Appendix G

☐ Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	Site Grading Plan
☐ Calculate pre-and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Section 7.0 Proposed Stormwater Management Appendix G
☐ Any proposed diversion of drainage catchment areas from one outlet to another.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
☐ Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
☐ If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	N/A
☐ Identification of potential impacts to receiving watercourses	N/A
☐ Identification of municipal drains and related approval requirements.	N/A
☐ Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 6.0 Stormwater Sewer Design & Section 7.0 Proposed Stormwater Management
☐ 100-year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	Site Grading Plan (C101)
☐ Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A

☐ Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Section 8.0 Sediment & Erosion Control
☐ Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A
☐ Identification of fill constraints related to floodplain and geotechnical investigation.	N/A

4.5 Approval and Permit Requirements: Checklist

The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development as well as the relevant issues affecting each approval. The approval and permitting shall include but not be limited to the following:

Criteria	Location (if applicable)
☐ Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.	N/A
☐ Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	N/A
☐ Changes to Municipal Drains.	N/A
☐ Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	N/A

4.6 Conclusion Checklist

Criteria	Location (if applicable)
☐ Clearly stated conclusions and recommendations	Section 9.0 Summary Section 10.0 Recommendations
☐ Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	All are stamped
☐ All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	All are stamped