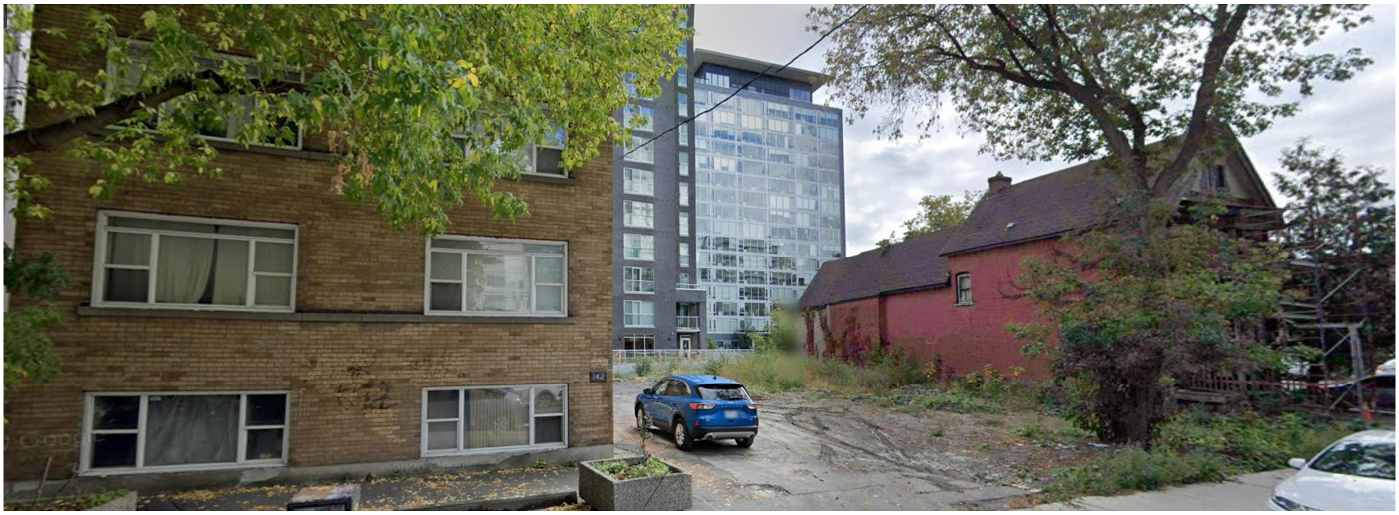
STORMWATER MANAGEMENT BRIEF
PROPOSED PARKING LOT, 142-148 NEPEAN STREET



Project No.: CCO-21-4058

City File No.: D07-

Prepared for:

190 O'Connor Inc
190 O'Connor Street
Ottawa, ON
K2P 2R3

Prepared by:

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

May 14, 2021

McINTOSH PERRY

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1.0 PROJECT DESCRIPTION

1.1 Purpose

McIntosh Perry (MP) has been retained by 190 O'Connor Inc to prepare this Stormwater Management Brief in support of the Site Plan Control approval process for the proposed parking lot, located at 142-148 Nepean Street within the City of Ottawa.

The main purpose of this brief is to address the storm sewer servicing for the development, including stormwater management calculations.

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

- CCO-21-4058, C101 – Site Removals, Grading and Drainage Plan, and
- CCO-21-4058, C102 – Site Servicing, Erosion & Sediment Control Plan.

1.2 Site Description

The property is located at 142-148 Nepean Street within ward 14 Somerset Catherine McKenny. It is described as Registered Plan 2996, Part of Lots 39 and 40, City of Ottawa. The land in question covers approximately 0.09 ha. The development area for the proposed works is approximately 0.09ha. Two of the existing properties are currently developed with residential buildings whereas one of the properties has had the building demolished. The topographic survey indicates three buildings but there is currently only two. The proposed development consists of a parking lot with approximately 30 parking stalls.

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

2.0 BACKROUND STUDIES

Background studies that have been completed for the proposed site include City of Ottawa as-built drawings and a topographical survey.

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.

The following is a list of documents available but included under separate cover:

- Topographical Survey (Farley, Smith & Denis Surveying)

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3.0 PRE-CONSULTATION SUMMARY

A pre-consultation meeting was conducted on March 11, 2021 regarding the proposed site. Specific design parameters to be incorporated within this design include the following:

- Pre-development and post-development flows shall be calculated using a time of concentration (Tc) of 10 minutes, respectively.
- Control 5 through 100-year post-development flows to the 2-year pre-development flows with a combined C value to a maximum of 0.50.
- Quality control is required to be provided for this site (80% TSS Removal) as per RVCA requirements.

The notes from the City of Ottawa can be found in Appendix 'B'.

4.0 EXISTING SERVICES

The following subsections describe the existing services within the William Street right of way.

4.1 Existing Sanitary

There is two existing 225 mm diameter PVC Sanitary Sewer located within Nepean Street. The sewers drain towards the east which drains to Lisgar St. and onto the Rideau Canal Combined Sewer Trunk which then conveys effluent to the Interceptor Sewer.

4.2 Existing Storm

There is an existing 600 mm diameter Storm Sewer within Nepean Street. Catch basins are present near the proposed site entrance as well as across the road. The catch basins are connected to the storm main within Nepean Street. The system drains to Carling Ave., then onto the Cooper storm that outlets at Rideau Canal.

4.3 Existing Water

There is an existing 300 mm diameter Watermain within Nepean Street.

5.0 SERVICING PLAN

5.1 Proposed Servicing Overview

Since the site will not have any buildings or structures, there is no need for water or sanitary servicing for the site. However, a new storm system including stormwater management will be implemented. The storm servicing will be provided via a connection to the main within Nepean Street. Details pertaining to the final proposed storm locations have been reviewed and are shown on the proposed Site Servicing Plan.

5.2 Proposed Storm Design (Conveyance and Management)

Stormwater runoff will be conveyed by way of catch basins (CB's) and catch basin manholes (CBMH's) to a new storm network consisting of 250 mm and 300 mm diameter PVC pipe. The flows will be restricted by an inlet control device (ICD) located within manhole (MH) #1. The ICD will restrict the flow to conform to City requirements.

A new 300 mm diameter storm service will be connected to the existing 600 mm diameter storm main within Nepean Street.

From discussions with the Rideau Valley Conservation Authority (RVCA), quality control at an enhanced level (80% TSS) will be required. A Stormceptor has been proposed downstream of the restriction to provide the quality control for the site. Correspondence with the RVCA is available in Appendix 'B'. Further details and calculations pertaining to the quantity and quality of the stormwater management system are provided in Section 6.0.

6.0 PROPOSED STORMWATER MANAGEMENT

6.1 Design Criteria and Methodology

Stormwater management for the proposed site will be maintained through positive drainage into a new underground storm sewer system. The storm system will capture the parking lot runoff and direct the flow to CB1, CB and CBMH#1, where it is restricted. The restricted flow will then release into a proposed storm sewer network that connects to the existing 600 mm storm sewer located within Nepean Street. The quantitative and qualitative properties of the storm runoff for both the pre & post development flows are further detailed below. Stormwater Best Management Practices (SWM BMP's) will be implemented at the "Lot level", "Conveyance" and "End of Pipe" locations. These concepts will be explained further in Section 5.6.

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

Quality Control

- The site has been designed to achieve an 80% total suspended solids removal (enhanced level) using a proposed oil/grit separator.

Quantity Control

- Post-development flow 5/100-year is be restricted to match the 2-year pre-development flow with a maximum C value of 0.50.

6.2 Runoff Calculations

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

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

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 be calculated using a Tc of 10 minutes and post-development flows shall be calculated using a Tc of 10 minutes.

6.3 Pre-Development Drainage

The existing site drainage limits are demonstrated on the Pre-Development Drainage Area Plan. Area A1 represents the existing site. A summary of the Pre-Development runoff calculations can be found below.

Table 1: Pre-Development Runoff Summary

Drainage Area	Area (ha)	Runoff Coefficient (2/5-Year)	Runoff Coefficient (100-Year)	2-year Peak Flow (L/s)	5-year Peak Flow (L/s)	100-year Peak Flow (L/s)
A1	0.09	0.73	0.82	9.76	13.24	22.68
Total	0.09			9.76	13.24	22.68

See CCO-21-4058 - PRE in Appendix 'C' and Appendix 'E' for calculations.

6.4 Post-Development Drainage

The proposed site drainage limits are demonstrated on the Post-Development Drainage Area Plan. See CCO-21-4058 - POST in Appendix 'D' of this report for more details. A summary of the Post-Development Runoff Calculations can be found below.

Table 2: Post-Development Runoff Summary

Drainage Area	Area (ha)	Runoff Coefficient (2/5-Year)	Runoff Coefficient (100-Year)	2-year Peak Flow (L/s)	5-year Peak Flow (L/s)	100-year Peak Flow (L/s)
B1	0.026	0.90	1.00	5.08	6.89	13.12
B2	0.033	0.90	1.00	6.26	8.50	16.18

B3	0.032	0.90	1.00	6.22	8.44	16.07
Total	0.09			17.56	23.83	45.37

See Appendix 'E' for calculations.

Runoff from areas B1-B3 will be restricted through the use of an ICD in MH#1. The ICD will restrict the 100-year runoff to the 2-year pre-development flow rate. See Appendix 'E' for calculations. This restriction will be further detailed in Section 6.3.

6.5 Quantity Control

After discussing the stormwater management criteria for the site with City staff, the total post-development runoff for this site has been restricted to match the 2-year pre-development flow rate with a maximum C value of 0.50. (See Appendix 'B' for pre-consultation notes). These values create the following allowable release rate and storage volumes for the development site.

Table 3: Allowable Release Rate Summary

Drainage Area	Area (ha)	2 - Year Runoff Coefficient	Required Restricted Flow *2-Year* (L/s)
A1	0.09	0.5	9.76

See Appendix 'E' for calculations.

Reducing site flows will be achieved using an Ipex Tempest ICD flow restriction device and will create the need for onsite storage. Runoff from areas B1, B2 and B3 will be restricted as shown in the table below.

Table 4: Post-Development Restricted Runoff Summary

Drainage Area	Post Development Unrestricted Flow (L/s)			Post Development Restricted Flow (L/s)			
	2-Year	5-Year	100-Year	2- Year	5-Year	100-Year	
B1	5.08	6.89	13.12	9.76	9.76	9.76	Restricted
B2	6.26	8.50	16.18				Restricted
B3	6.22	8.44	16.07				Restricted
Total	17.56	23.83	45.37	9.76	9.76	9.76	

See Appendix 'E' for calculations.

Area B1-B3 will be restricted through the use of an Ipex Tempest LMF ICD (or an approved equivalent) before discharging to the existing storm main within Nepean Street. The total flow leaving the site will be 9.76 L/s for the 2, 5 and 100-year storm events, respectively (design head of 1.89 m). All storage required for the 2 year storm event will be provided within the pipes and CB/MH structures themselves upstream of the ICD. No ponding above the structures within the parking lot has been accounted for to meet the storage requirement for the 2 year storm event. The restriction creates a water surface elevation (WSEL) of 70.88 m for the 5-year storm event and 70.97 m for the 100-year storm event. See below table for details of the required and provided storage volumes.

Table 5: Storage Summary

Drainage Area	Depth of Ponding (m)	Storage Required (m^3)	Storage Available (m^3)	Depth of Ponding (m)	Storage Required (m^3)	Storage Available (m^3)	Depth of Ponding (m)	Storage Required (m^3)	Storage Available (m^3)
	2-Year			5- Year			100- Year		
B1	Storage provided in pipes and storm structures			0.16	8.44	5.10	0.24	24.94	13.10
B2				0.16		1.47	0.24		4.71
B3				0.16		2.91	0.24		7.38
Total		4.68	6.86		8.44	9.45		24.94	25.14

See Appendix 'E' for calculations.

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 entrances at Nepean Street.

6.6 Quality Control

The development of this lot will employ Best Management Practices (BMP's) wherever possible. The intent of implementing stormwater BMP's is to ensure that water quality and quantity concerns are addressed at all stages of development. Lot level BMP's typically include temporary retention of the parking lot runoff, minimizing ground slopes and maximizing landscaped areas. Some of these BMP's cannot be provided for this site due to site constraints and development requirements.

As per the discussions with the RVCA, the existing storm sewers within Nepean Street ties into Rideau Canal. A quality treatment unit has been sized to provide a TSS removal rate of 80% as per RVCA requirements. The OGS Unit will provide a water quality of at least 80% TSS. The OGS Unit shall be placed downstream of the restriction unit in order to provide the required water quality treatment for the site runoff before discharging to the storm sewer within Nepean Street. Detailed sizing information for the OGS Unit has been provided in Appendix 'E' of this report.

7.0 EROSION AND SEDIMENT CONTROL

7.1 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. Mud mats are to be provided at the site access. 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.

7.2 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 CB's, CBMH's or MH's to ensure that no sediment is washed out into the storm network. 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.

8.0 SUMMARY

- A new parking lot will be constructed at 142-148 Nepean Street.
- No water or sanitary servicing will be required.
- Proposed storm sewers will be installed throughout the site and drain to the existing 600 mm storm sewer within Nepean Street.
- Storage for the 2- through 100-year storm events will be provided within the proposed structures and pipe network (for the 2 year storm only) and parking lot area above the proposed storm structures.
- An OGS unit has been proposed to provide 80% TSS removal as per RVCA requirements.

9.0 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 parking lot.

This report is respectfully being submitted for approval.

Regards,

McIntosh Perry Consulting Engineers Ltd.

Tyler Ferguson, P.Eng.
T: 613.298.2921
E: t.ferguson@mcintoshperry.com

Curtis Melanson, C.E.T.
T: 613.714-4621
E: c.melanson@mcintoshperry.com

u:\ottawa\01 project - proposals\2021 jobs\cco\cco-21-4058 glenview_parking lot_142-148 nepean street\03 - servicing\report\cco-21-4058_servicing report.docx

10.0 STATEMENT OF LIMITATIONS

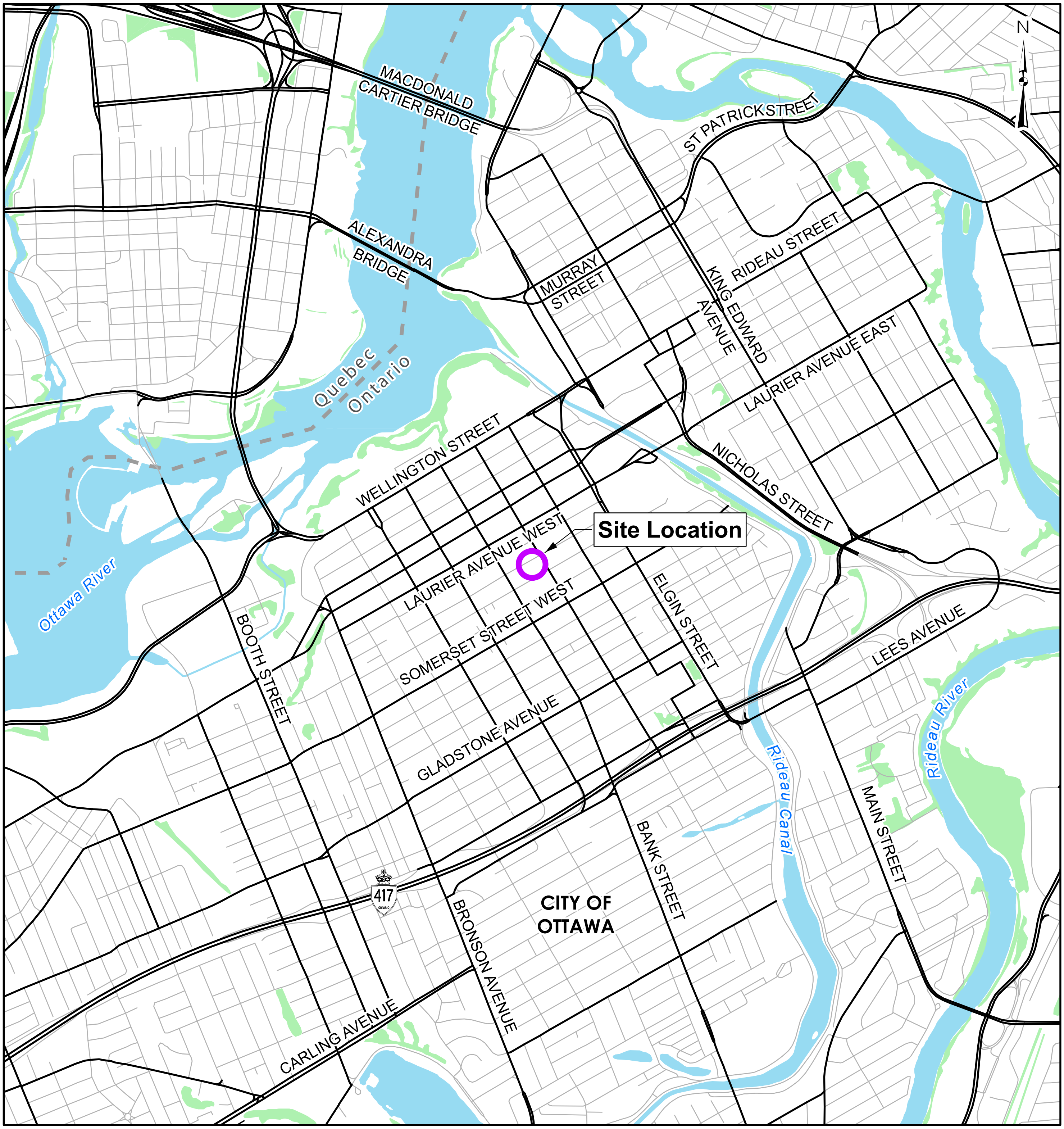
This report was produced for the exclusive use of 190 O'Connor Inc. The purpose of the report is to assess the existing stormwater management system and provide recommendations and designs for the post-construction scenario that are in compliance with the guidelines and standards from the Ministry of 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

MCINTOSH PERRY



LEGEND

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

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2021.

CLIENT:	GLENVIEW HOMES
PROJECT:	142-148 NEPEAN STREET, OTTAWA, ON
TITLE:	SITE LOCATION

McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

PROJECT NO: PCO-21-4058		FIGURE:
Date	May., 21, 2021	1
GIS	EU	
Checked By	RR	

APPENDIX B
CITY OF OTTAWA PRE-CONSULTATION NOTES

Pre-Consul Meeting Notes to the File Lead - Andrew McCreight March 11, 2021
Re: 142-148 Nepean Street
Ward 14 - Somerset, Councillor Catherine McKenney
Redevelopment of the existing residential dwelling sites into a temporary parking lot for 190 O'Connor.

Infrastructure:

Nepean St.:

A 305 mm dia. DI Watermain (c. 1982) is available.

A 225 mm dia. Conc. Sanitary Sewer (c. 1971) is available (North side of ROW), which drains to Lisgar St. and onto the Rideau Canal Combined Sewer Trunk which then conveys effluent to the Interceptor Sewer.

A 525 mm dia. Conc. sanitary Sewer (c. 2002) is available, which drains to Lisgar St. and onto the Rideau Canal Combined Sewer Trunk which then conveys effluent to the Interceptor Sewer.

225 mm dia. Conc. Sanitary Sewer (c. 1982) is available (closest to site), which drains to Lisgar St. and onto the Rideau Canal Combined Sewer Trunk which then conveys effluent to the Interceptor Sewer.

A 600 mm dia. Conc. Storm Sewer is available, which drains to Carling Ave., then onto the Cooper Stm that outlets at Rideau Canal.

- Total allowable release rate will be 2-year pre-development rate.
- Coefficient (C) of runoff will need to be determined **as per existing conditions** but in no case more than 0.5
- TC = 20 minutes or can be calculated
  TC should be not be less than 10 minutes, since IDF curves become unrealistic at less than 10 min.
- Any storm events greater than 5 year, up to 100 year, and including 100-year storm event must be detained on site.
- Two separate sewer laterals (one for sanitary and other for storm) will be required.

All existing reports and plans will need to be revised if older than 2 years and must reflect current City Standards, Guidelines, By-laws and Policies.

Please refer to City of Ottawa website portal **for “Guide to preparing Studies and Plans”** at https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans.

Please ensure you are using the current guidelines, bylaws and standards including materials of construction, disinfection and all relevant reference to OPSS/D and AWWA guidelines - all current and as amended, such as:

City of Ottawa Sewer Design Guidelines (**CoOSDG**) complete with ISTDB 2012-01, 2014-01, 2016-01, 2018-01 & 2019-02 technical bulletin updates as well as current Sewer, Landscape & Road Standard Detail Drawings as well as Material Specifications (MS Docs).
Sewer Connection (2003-513) & Sewer Use (2003-514) By-Laws.

City of Ottawa Water Distribution Design Guidelines (**CoOWDDG**) complete with ISTDB 2010-02, 2014-02 & 2018-02 technical bulletin updates as well as current Watermain/ Services Material Specifications (MS Docs) as well as Water and Road Standard Detail Drawings.
FUS Fire Flow standards
Water (2018-167) By-Law

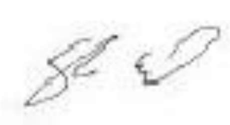
Ensure to include version date and add **“(as amended)**” when referencing all standards, detail drwaings, by-Laws and guidelines.

Fourth (4th) Review Charge:
Please be advised that additional charges for each review, after the 3rd review, will be applicable to each file. There will be no exceptions.

Construction approach – Please contact the Right-of-Ways Permit Office (Britney.McGrath@ottawa.ca) early in the zoning & site plan process to determine the ability to construct site and copy **Andrew McCreight** on this request.

Contact me by e-mail shawn.wessel@ottawa.ca if you have any questions.

Sincerely,



Shawn Wessel, A.Sc.T., rcji
Project Manager
Development Review, Central Branch

From: Curtis Melanson
Sent: May 17, 2021 1:26 PM
To: Ryan Robineau
Subject: FW: 142 - 148 Nepean Street - Quality Control

Please file and save.

Curtis Melanson, C.E.T.
Practice Area Lead, Land Development
T. 613.714.4621 | **F.** 613.836.3742 | **C.** 613.857.0784
McINTOSH PERRY
Turning Possibilities Into Reality

From: Eric Lalande <eric.lalande@rvca.ca>
Sent: May 17, 2021 1:18 PM
To: Curtis Melanson <c.melanson@mcintoshperry.com>
Subject: RE: 142 - 148 Nepean Street - Quality Control

Hi Curtis,

For a full parking lot site, the RVCA would require enhanced water quality protection to be provided on-site, best management practices are encouraged to be integrated including opportunities for LIDs where possible.

Thank you,

Eric Lalande, MCIP, RPP
Planner, RVCA
613-692-3571 x1137

From: Curtis Melanson <c.melanson@mcintoshperry.com>
Sent: Wednesday, May 12, 2021 9:16 AM
To: Eric Lalande <eric.lalande@rvca.ca>
Subject: 142 - 148 Nepean Street - Quality Control

Hi Eric,
See attached site plan for a project that we're working on. The site currently consists of buildings that will be demolished. A new parking lot will be built and occupy the entire site.

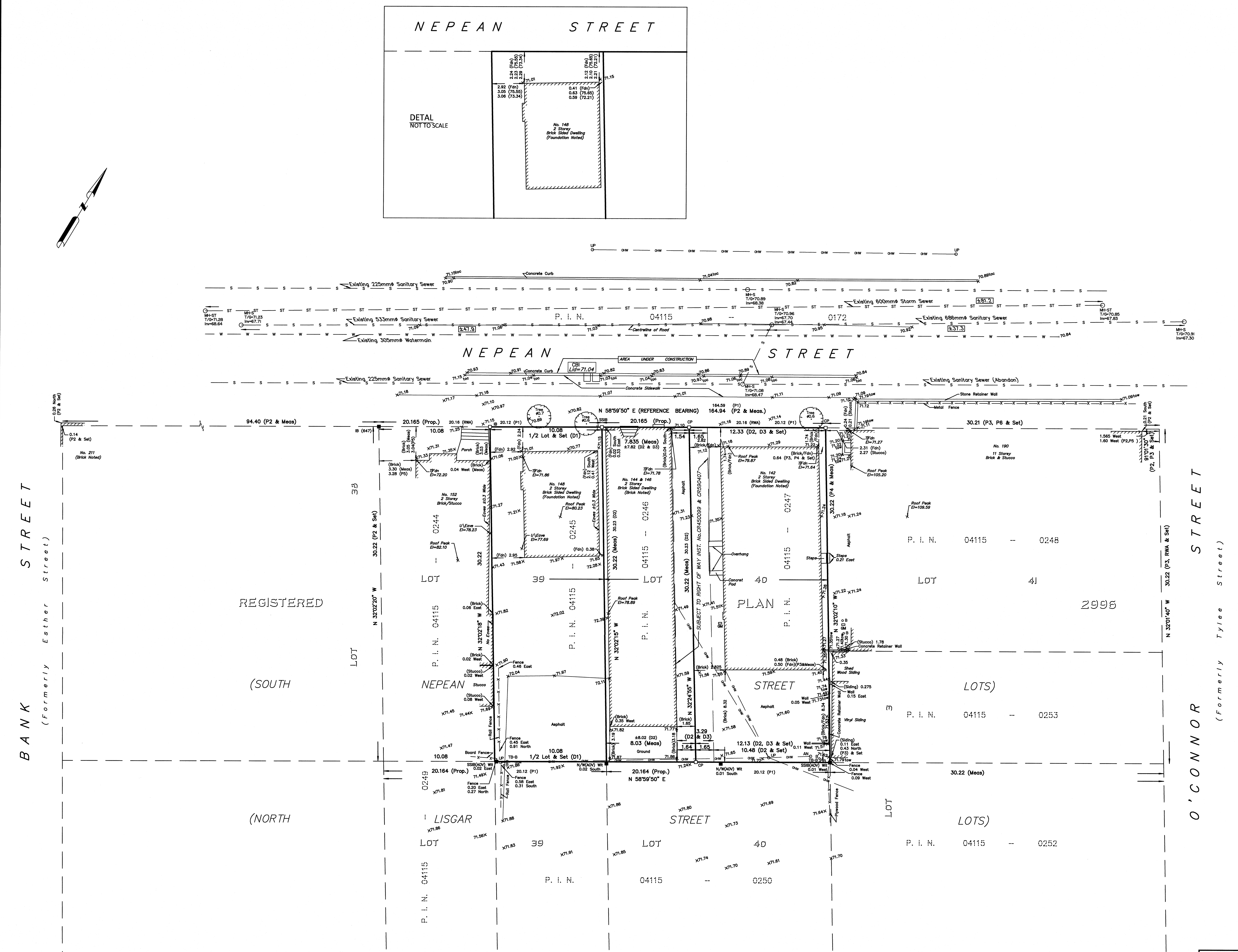
We pre-consulted with the City and will be providing SWM Quantity control but can you confirm if we require quality control?

I've attached the survey and the proposed site plan for reference.

If you have any questions or concerns please don't hesitate to get back to me whenever you have a moment.

Thanks,

Curtis Melanson, C.E.T.
Practice Area Lead, Land Development
115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
T. 613.714.4621 | **F.** 613.836.3742 | **C.** 613.857.0784
c.melanson@mcintoshperry.com | www.mcintoshperry.com
McINTOSH PERRY



This Plan must be read in conjunction with Survey Report - Part 2, Dated: 10/16/15

SURVEYOR'S REAL PROPERTY REPORT
PART 1 Plan of

PART OF LOT 39 AND LOT 40 (SOUTH NEPEAN STREET) REGISTERED PLAN 2996 CITY OF OTTAWA

FARLEY, SMITH & DENIS SURVEYING LTD. 2015

Scale 1: 150
0 1.5 3 6 9 12 15 metres

Metric Note
Distances and coordinates on this plan are in metres and can be converted to feet by dividing by 0.3048.

Distance Note
Distances shown on this plan are ground distances and can be converted to grid distances by multiplying by the combined scale factor of 0.999xx.

Bearing Note
Bearings hereon are grid bearings derived from the Smart-Net Real Time Network and are referred to the Central Meridian of MTM Zone 9 (76°30' West Longitude) Nad-83 (Original).

For bearing comparisons, a rotation of 0°03'40" counter-clockwise was applied to bearings on Plan

Elevation Notes
1. Elevations shown are geodetic and are referred to Geodetic Datum CGVD-1928 :1978.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

Utility Notes
1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. Underground utility data derived from City of Ottawa utility sheet reference: Plan No. 1609, sheets 2 & 3 of 3.
4. Sanitary and storm sewer grades and inverts were derived\compiled from: Field measurement \ City of Ottawa
5. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

Notes & Legend

—□—	Denotes	Survey Monument Planted
—■—	"	Survey Monument Found
IB	"	Iron Bar
SSIB	"	Short Standard Iron Bar
CP	"	Concrete Pin
Meas	"	Measured
Prop.	"	Proportioned
(P1)	"	Registered Plan 2996
(P2)	"	Plan By (ANNIS, O'SULLIVAN, VOLLEBEKK LTD.) Dated April 27, 1989 Dated June 28, 2010
(P3)	"	Plan By (FARLEY, SMITH & MURRAY SURVEYING LTD.) Dated April 3, 1996
(P4)	"	Plan By (J. D.BARNES LTD.)
(P5)	"	Plan By (H.R. FARLEY O.L.S.) Dated April 23, 1968, November 17, 1972
(P6)	"	Plan By (FARLEY & MARTIN LTD.) Dated July 7, 1982
RWA	"	R. W. ARNETT O.L.S. Dated November 18, 1967
D1	"	Inst. No. CR606974
D2	"	Inst. No. CR450099
D3	"	Inst. No. CR590407
○ MH-ST	"	Maintenance Hole (Storm)
○ MH-S	"	Maintenance Hole (Sanitary)
⊗ VC	"	Valve Chamber (Watermain)
—— ST ——	"	Underground Storm Sewer
—— S ——	"	Underground Sanitary Sewer
—— W ——	"	Underground Water
—— OHW ——	"	Overhead Wires
UP	"	Utility Pole
AN	"	Anchor
□ CBI	"	Catch Basin Inlet
Inv.	"	Invert
T/G	"	Top of Grate
GM	"	Gas Meter
TB-B	"	Bell Terminal Box
B	"	Bollard
65.00	"	Location of Elevations
———	"	Property Line
	"	Deciduous Tree

THIS REPORT WAS PREPARED FOR:
PINO GUERRA ("The Client"), the Client's solicitors, mortgagees, and other related parties. The undersigned accepts no responsibility for use by other parties. See Part 2 of this Report.

Surveyor's Certificate
I certify that :
1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act and the Regulations made under them.
2. The survey was completed on the 14th day of October, 2015.

OCTOBER 16, 2015
Date

Ronald A. Denis
Ontario Land Surveyor

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
1948356

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR
In accordance with Regulation 1026, Section 29 (3).

FARLEY, SMITH & DENIS SURVEYING LTD.

ONTARIO LAND SURVEYORS
CANADA LAND SURVEYORS

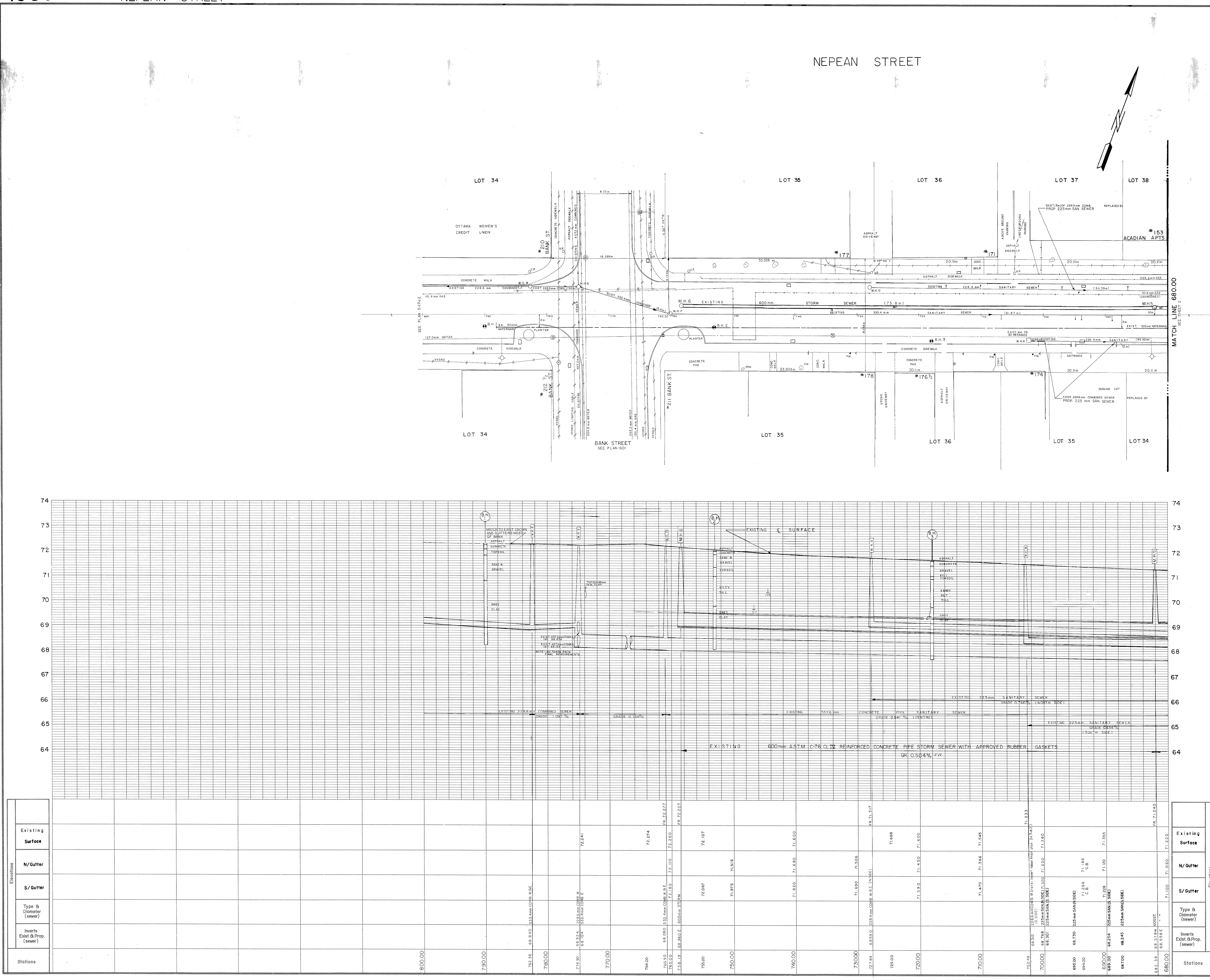
190 COLONNADE ROAD, OTTAWA, ONTARIO K2E 7J5
TEL. (613) 727-8226 FAX. (613) 727-1826

FILE No. : 360-15

J:\2015\360-15_142 - 148 Nepean St_SRPR\Drafting\360-15_Pino Guerra_142-148 Nepean Str_LT 39&40 RP 2996_T_D3.dwg

TOPO 24X36

1609 NEPEAN STREET



City Of Ottawa
Department Of Physical Environment
Engineering And Surveys Branch

Notes:

· Utilities shown are taken from best available records. Contractor is requested to check with all utility companies before digging.
· Soil information shown is not guaranteed and contractors are advised to collect additional soils information as deemed necessary.
· Reference bench mark:

Notes: (Sewer Construction Only)

· A minimum of 460 mm vertical clearance to be maintained between sewers and watermains where practical.
· Borehole soil descriptions are not based on sieve analysis but on visual inspection only, except where otherwise noted.
· Soil information taken from:
· Date of television inspection:
· This plan supercedes (in whole or in part) plan no:
· Actual rock line recorded during construction of existing sewer.
· Registered plan no.:
· See additional notes on sheet #1.
· Proposed storm and sanitary sewers may be constructed in a common trench provided that a minimum horizontal distance of 460mm is maintained between outside barrels of pipe.

Legend: EXISTING / PROPOSED

· STORM SEWER
· SANITARY SEWER
· STREET LINE
· LOT LINE
· ROADS & DRIVEWAYS
  Curb
  Asphalt or Concrete
  Surface Treated
· WALKS
  Concrete or Asphalt
  Gravel, Cinder or Dirt
· DEPRESSED ACCESS
  On Curb
  On Sidewalk
· WATERMAIN
· GASMAIN & VALVE
· BELL
· HYDRO
· TRAFFIC
· FIRE ALARM
· CABLEVISION
· STEAM LINE
· HYDRANT
· WATER VALVE
· STAND PIPE
· WATER VALVE CHAMBER
· SEWER, TRAFFIC, HYDRO & BELL MANHOLES (may be labelled for clarification)
· TRAFFIC HANDHOLE
· GUARD RAIL
· RETAINING WALL
· FENCE
· HYDRO POLE
· HYDRO POLE & LIGHT
· BELL POLE
· TRAFFIC LIGHT
· LIGHT STANDARD
· TRAFFIC SIGN
· STREET SIGN
· CULVERT & DITCH
· STANDARD CATCH BASIN & LEAD
· HEAVY DUTY CATCH BASIN & LEAD
· CATCH BASIN TO BE REMOVED & REPLACED WITH STANDARD C.B.
· HEAVY DUTY CATCH BASIN TO BE REMOVED & REPLACED WITH HEAVY DUTY CATCH BASIN
· HOUSE or CATCH BASIN CONNECTION TAKEN FROM T.V. INSPECTION
· HOUSE or CATCH BASIN CONNECTION TAKEN FROM RECORDS
· RELOCATION
· REMOVAL
· SQUARE IRON BAR
· STANDARD IRON BAR
· ROUND IRON BAR
· TREE, SHRUB & HEDGE
· BOREHOLE
· ROCK

· IN PLAN SEWERS 600mm & ABOVE ARE SHOWN AS DOUBLE LINE, TO SCALE, USING SAME LINE WEIGHT.
· UTILITIES X-OUT ARE ABANDONED, BELL PLANT SO MARKED MAY BECOME ACTIVE

Revisions:

No	Date	Description	Drawn By	Appr'd By
1	NOV.12,1991	HYDRO ADDED ON EAST & WEST SIDE OF BANK	M.M.A.	

REGISTERED PROFESSIONAL ENGINEER — I. BHATIA — PROVINCE OF ONTARIO

Designed By I. Bhatia	I. Bhatia oct 8, 1981	Structural Check By	I. Bhatia oct 8, 1981
Survey Detail By J. Pinhey	P A Pinhey	Checked By	P A Pinhey
Drafting By M. Anderson	Mary Anderson	Checked By L. Lalonde	Keith Stewart OCT 5/81
PLANNING	J. C. Simmond	oct 8/81	

Final Measurements :

Construction Type	Inspector
Work Commenced	Instrumentman
Work Completed	Field Book #
Designer	Date
Drafting Revisions	Checked By

Design And Construction Division

C. Sim P. Eng. — Commissioner
D.K. Donaldson P.Eng. — Branch Director

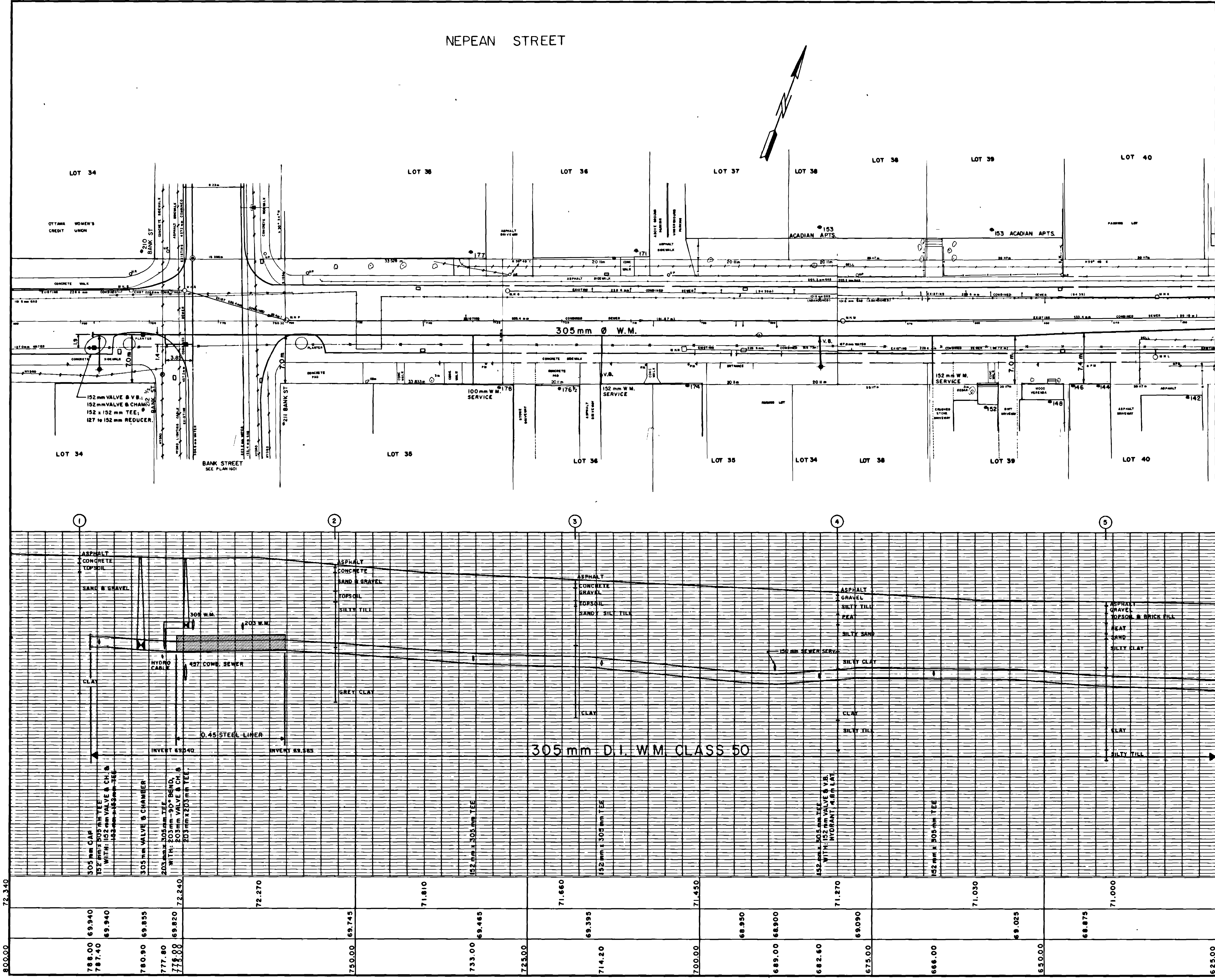
Chief Design & Constr. Eng. | Senior Design & Constr. Eng. K.W. Pascoe | Senior Const. Coord.

EXISTING STORM SEWER CONSTRUCTION,
SAN. SEWER REPLACEMENT & ROAD RE-CONSTRUCTION

NEPEAN STREET

FROM METCALFE ST. TO BANK ST.

Contract No:	Survey Books:	Scales:	Plan No:
81-33	4007	HOR. 1:200 VERT. 1:50	1609 Sheet 3 of 3



Regional Municipality of Ottawa-Carleton Works Department

F.E. AYERS Works Commissioner	W.L. KEAY Director Pollution Control
Engineer in Charge of Design & Construction L.L. Larson Date 15-7-81	REGISTERED PROFESSIONAL ENGINEER L.L. LARSON PROVINCE OF ONTARIO

Project Officer — Date July 10/81

Drawn by: M.J. Willmets — Date JUNE '81

Approved by: — Date

Notes

Scales
HOR. 1:250
VERT. 1:50

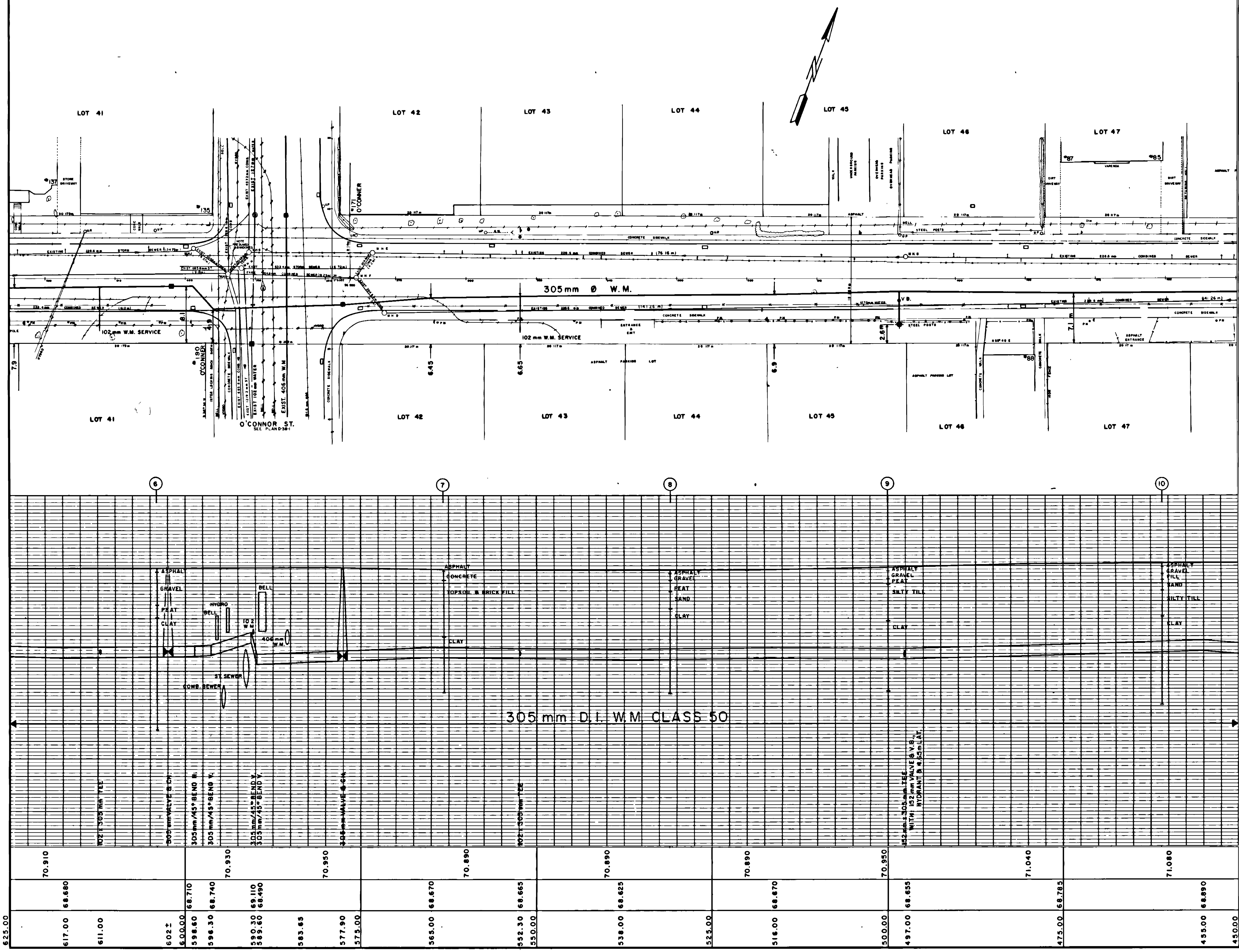
Legend

Revisions
1. "AS BUILT" FROM FIELD PRINT & FIELD BOOK 633. JAN.'82 — M.J.W.

Project Title
305mm Ø W.M.
IN
NEPEAN ST.
BANK ST.
TO
METCALFE ST.

Drawing No.: 2802 — Sheet 1

7118



Regional Municipality of Ottawa-Carleton Works Department

F.E. AYERS Works Commissioner	W.L. KEAY Director Pollution Control

Engineer in Charge of Design & Construction

L. L. Larson P. Eng

Date 15-7-81

REGISTERED PROFESSIONAL ENGINEER L. L. LARSON PROVINCE OF ONTARIO

Project Officer — Date July 10/81

Drawn by: M. J. Willmets — Date JUNE '81

Approved by: — Date

Notes

Scales
HOR. 1:250
VERT. 1:50

Legend

Revisions

1. "AS BUILT" FROM FIELD PRINT & FIELD BOOK 633. JAN. '82 — M.J.W.
2. TEE, T.V.S. & CHAMBER REMOVED STN. 0+583.65 VALVE & CHAMBER ADDED STN. 0+602±. 21/9/87 P.N.

Project Title

305 mm Ø W.M. IN

NEPEAN ST.

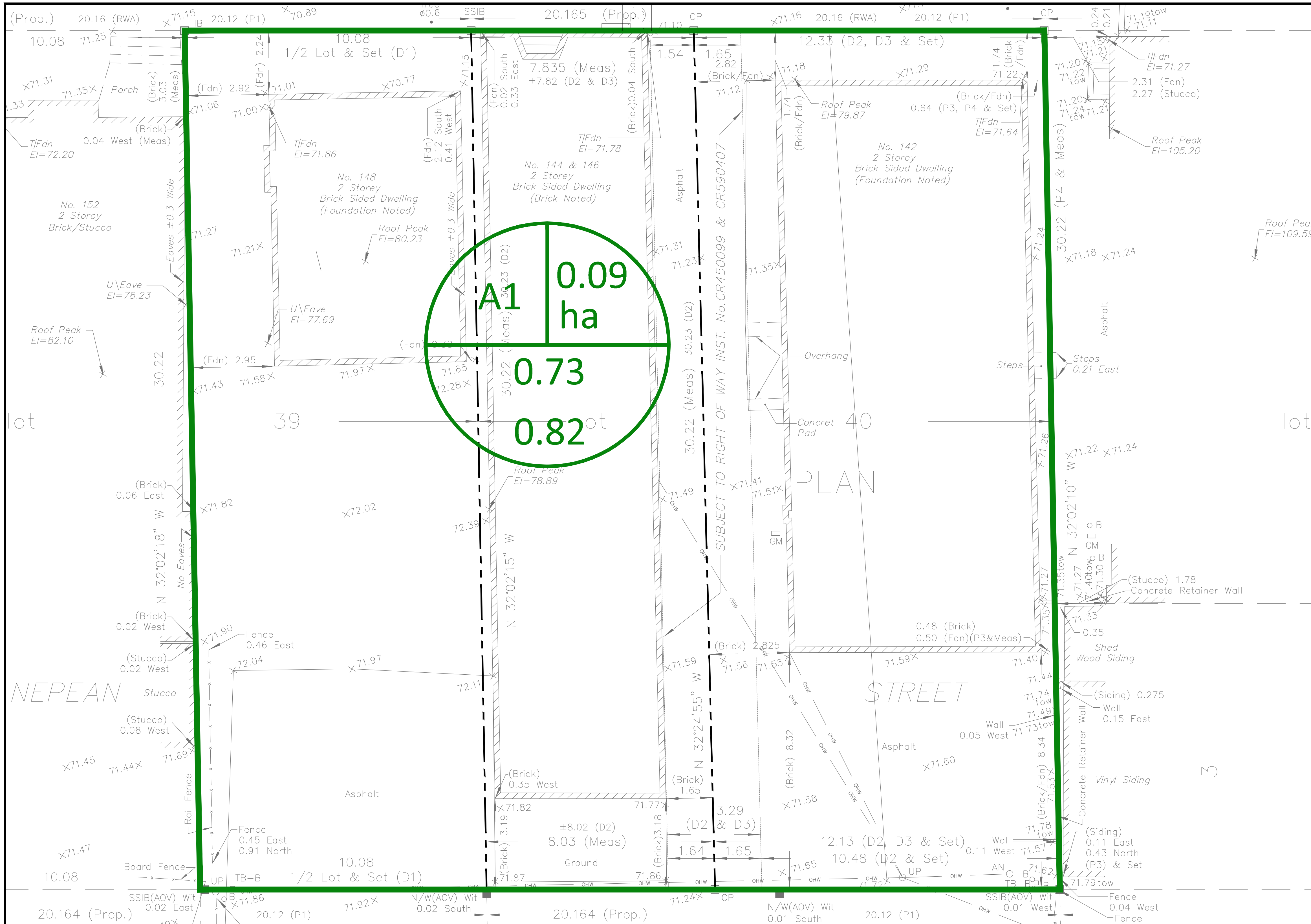
BANK ST. TO METCALFE ST.

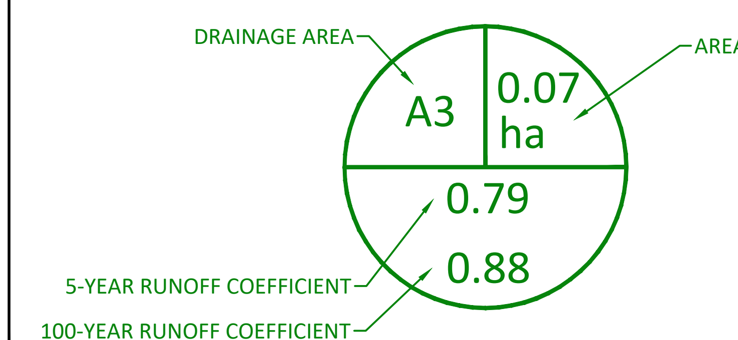
Drawing No.: 2802 — Sheet 2

7119

APPENDIX C

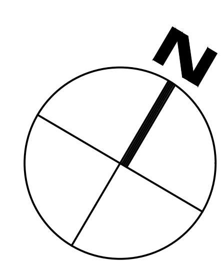
PRE-DEVELOPMENT DRAINAGE PLAN





SCALE 1 : 150

0 5 10 15 Metres



McINTOSH PERRY

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

Client: 190 O'CONNOR INC
190 O'CONNOR STREET OTTAWA, ON K2P 2R3

Project: PARKING LOT
142-148 NEPEAN STREET

Drawing Title: PRE-DEVELOPMENT DRAINAGE AREA PLAN

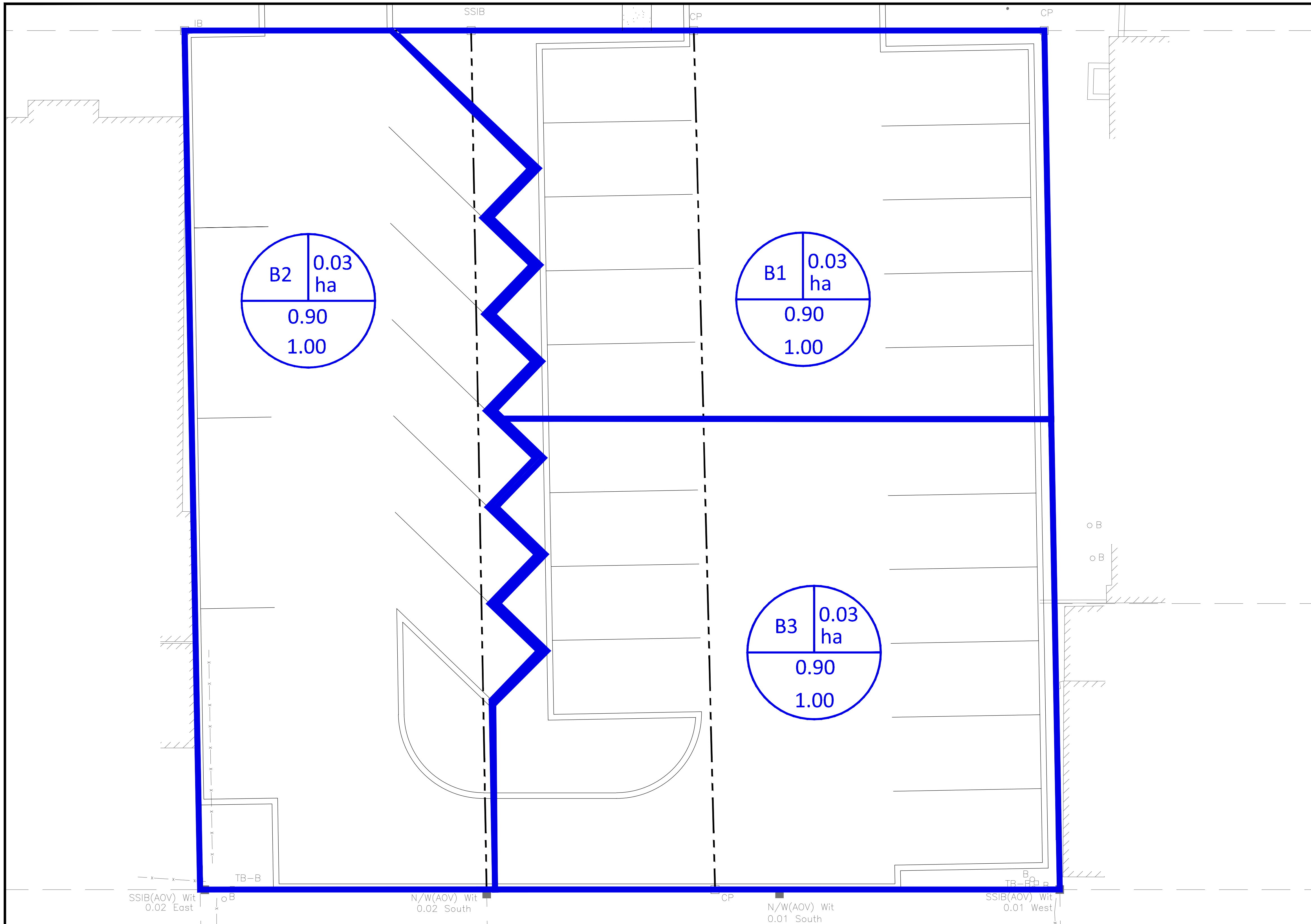
Drawn by:	Checked By:
R.R.R.	C.J.M.
Scale: 1:150	Project Number: CCO-21-4058

No.	Revisions	Date
1	ISSUED FOR CLIENT REVIEW	MAY 14, 2021

Drawing Number: PRE

FILENAME: U:\Ottawa\01 Project - Proposals\2021 Jobs\CCO\CCO-21-4058 Glenview_Parking Lot_142-148 Nepean Street\12 - Drawings\CCO-21-4058_Presentation.dwg
LAST SAVED: Tuesday, May 25, 2021 LAST SAVED BY: r.robineau
LAST PLOTTED: Tuesday, May 25, 2021 CTB FILE USED: ----

APPENDIX D
POST-DEVELOPMENT DRAINAGE PLAN



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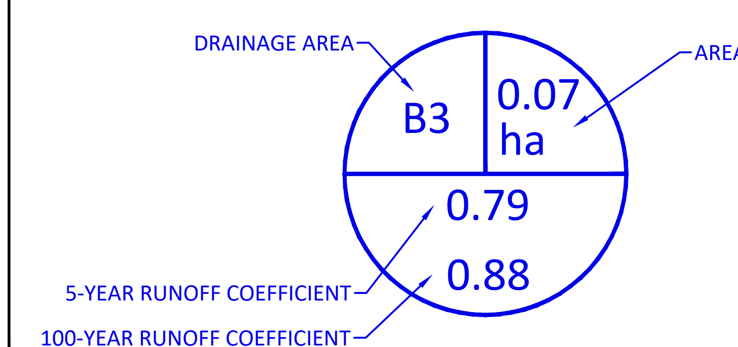
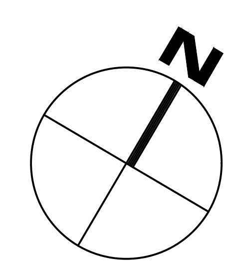




McINTOSH PERRY

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

Client:	190 O'CONNOR INC 190 O'CONNOR STREET OTTAWA, ON K2P 2R3
Project:	PARKING LOT 142-148 NEPEAN STREET
Drawing Title:	POST-DEVELOPMENT DRAINAGE AREA PLAN
Drawn by:	R.R.R.
Checked By:	C.J.M.
Scale:	1:150
Project Number:	CCO-21-4058
Drawing Number:	POST

No.	Revisions	Date
1	ISSUED FOR CLIENT REVIEW	MAY 14, 2021

SCALE 1 : 150

0 5 10 15 Metres

FILENAME: U:\Ottawa\01 Project - Proposals\2021 Jobs\CCO\CCO-21-4058 Glenview_Parking Lot_142-148 Nepean Street\12 - Drawings\CCO-21-4058_Presentation.dwg
LAST SAVED: Tuesday, May 25, 2021 LAST SAVED BY: r.robineau
LAST PLOTTED: Tuesday, May 25, 2021 CTB FILE USED: ----

APPENDIX E
STORMWATER MANAGEMENT CALCULATIONS

McINTOSH PERRY

MCINTOSH PERRY

CCO-21-4058 - 142-148 Nepean Street - 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} 5-Year	C_{AVG} 100-Year
A1	0.09	644.48	0.90	83.13	0.60	186.32	0.20	0.73	0.82

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 2/5-Year	C 100-Year	Tc (min)	I (mm/hr)			Q (L/s)		
					2-Year	5-Year	100-Year	2-Year	5-Year	100-Year
A1	0.09	0.73	0.82	10	76.8	104.2	178.6	14.25	19.32	37.20
Total	0.09							14.25	19.32	37.20

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	0.026	264.30	0.90	0.00	0.60	0.00	0.20	0.90	1.00
B2	0.033	325.96	0.90	0.00	0.60	0.00	0.20	0.90	1.00
B3	0.032	323.66	0.90	0.00	0.60	0.00	0.20	0.90	1.00

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 2/5-Year	C 100-Year	Tc (min)	I (mm/hr)			Q (L/s)		
					2-Year	5-Year	100-Year	2-Year	5-Year	100-Year
B1	0.026	0.90	1.00	10	76.8	104.2	178.6	5.08	6.89	13.12
B2	0.033	0.90	1.00	10	76.8	104.2	178.6	6.26	8.50	16.18
B3	0.032	0.90	1.00	10	76.8	104.2	178.6	6.22	8.44	16.07
Total	0.09							17.56	23.83	45.37

Required Restricted Flow

Drainage Area	Area (ha)	C 5-Year	Tc (min)	I (mm/hr) 2-Year	Q (L/s) 2-Year
A1	0.09	0.50	10	76.8	9.76

Post-Development Restricted Runoff Calculations

Drainage Area	Unrestricted Flow (L/s)			Restricted Flow (L/s)			Storage Required (m^3)			Storage Provided (m^3)		
	2-Year	5-Year	100-Year	2-Year	5-Year	100-Year	2-Year	5-Year	100-Year	2-Year	5-Year	100-Year
B1	5.08	6.89	13.12	9.76	9.76	9.76	4.68	8.44	24.94	6.86	9.45	25.14
B2	6.26	8.50	16.18									
B3	6.22	8.44	16.07									
Total	17.56	23.83	45.37	9.76	9.76	9.76	4.68	8.44	24.94	6.86	9.45	25.14

CCO-21-4058 - 142-148 Nepean Street - Runoff Calculations

Storage Requirements for Area B1-B3

2-Year Storm Event

Tc (min)	I (mm/hr)	B1 Runoff (L/s)	B2 Runoff (L/s)	B3 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	76.8	5.08	6.26	6.22	9.76	7.80	4.68
15	61.8	4.08	5.04	5.00	9.76	4.36	3.93
20	52.0	3.44	4.24	4.21	9.76	2.14	2.57
25	45.2	2.99	3.68	3.66	9.76	0.57	0.85
30	40.0	2.65	3.27	3.24	9.76	-0.60	-1.09
35	36.1	2.38	2.94	2.92	9.76	-1.51	-3.18
40	32.9	2.17	2.68	2.66	9.76	-2.25	-5.39

Maximum Storage Required 2-Year (m^3) = 4.68

5-Year Storm Event

Tc (min)	I (mm/hr)	B1 Runoff (L/s)	B2 Runoff (L/s)	B3 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	6.89	8.50	8.44	9.76	14.07	8.44
15	83.6	5.53	6.81	6.77	9.76	9.35	8.41
20	70.3	4.65	5.73	5.69	9.76	6.30	7.56
25	60.9	4.03	4.97	4.93	9.76	4.16	6.25
30	53.9	3.57	4.40	4.37	9.76	2.57	4.63
35	48.5	3.21	3.96	3.93	9.76	1.33	2.80
40	44.2	2.92	3.60	3.58	9.76	0.34	0.82

Maximum Storage Required 5-Year (m^3) = 8.44

100-Year Storm Event

Tc (min)	I (mm/hr)	B1 Runoff (L/s)	B2 Runoff (L/s)	B3 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	13.12	16.18	16.07	9.76	35.61	21.36
15	142.9	10.50	12.95	12.86	9.76	26.55	23.89
20	120.0	8.81	10.87	10.79	9.76	20.72	24.86
25	103.8	7.63	9.41	9.34	9.76	16.62	24.94
30	91.9	6.75	8.32	8.27	9.76	13.58	24.45
35	82.6	6.07	7.48	7.43	9.76	11.22	23.56
40	75.1	5.52	6.81	6.76	9.76	9.33	22.40

Maximum Storage Required 100-Year (m^3) = 24.94

Storage Occupied In Area B1-B3
2-Year Storm Event

Structure/Pipe	Size (mm)	Depth/ Length (m)	Area (m^2)	Volume (m^3)
CB1	600x600	1.680	0.372	0.625
CB1-CBMH1	250	4.470	0.196	0.878
CBMH1	1200	2.300	1.167	2.684
CB2	600x600	1.680	0.372	0.625
CB2-CBMH1	250	10.420	0.196	2.046

Storage Available (m^3) =	6.9
Storage Required (m^3) =	4.7

5-Year Storm Event Storage Summary

Water Elev. (m) =		70.86			
Structure	T/G	INV. (out)	Head (m)	Depth (m)	Volume (m^3)
CB1	70.70	68.55	2.16	0.16	1.5
CB2	70.70	68.67	2.04	0.16	2.9
CBMH1	70.70	68.93	1.78	0.16	5.1

Storage Available (m^3) =	9.5
Storage Required (m^3) =	8.4

*Available Storage Calculated in AutoCAD

100-Year Storm Event Storage Sumamry

Water Elev. (m) =		70.94			
Structure	T/G	INV. (out)	Head (m)	Depth (m)	Volume (m^3)
CB1	70.70	68.55	2.24	0.24	4.7
CB2	70.70	68.67	2.12	0.24	7.4
CBMH1	70.70	68.93	1.86	0.24	13.1

Storage Available (m^3) =	25.1
Storage Required (m^3) =	24.9

*Available Storage calculated from AutoCAD

Time of Concentration Pre-Development

Drainage Area ID	Sheet Flow Distance (m)	Slope of Land (%)	Tc (min) (5-Year)	Tc (min) (100-Year)
A1	30	1.87	5	3

Therefore, a Tc of 10 can be used

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

c= Blanced Runoff Coefficient
L= Length of drainage area
S= Average slope of watershed

STORM SEWER DESIGN SHEET

PROJECT: PARKING LOT
LOCATION: 142-148 Nepean Street
CLIENT: 190 O'Connor 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) DIA	PIPE SIZE (mm) W	PIPE SIZE (mm) H	SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (5yr) (L/s)	AVAIL CAP (5yr) (%)
	B2	CB1	MH1	0.90	0.03	0.03	0.03	10.00	0.03	10.03	104.19	122.14	178.56	8.50				8.50	62.04	2.47	250			1.00	1.224	53.54	86.30%
	B3	CB2	CBMH1	0.90	0.03	0.03	0.03	10.00	0.14	10.14	104.19	122.14	178.56	8.27				8.27	62.04	10.43	250			1.00	1.224	53.77	86.67%
	B1	CBMH1	MH1	0.90	0.03	0.02	0.05	10.14	0.05	10.19	103.45	121.26	177.27	15.05				15.05	100.88	4.09	300			1.00	1.383	85.83	85.08%
		MH1	OGS	0.90	0.00	0.00	0.08	10.03	0.03	10.07	104.02	121.93	178.25	23.62				23.62	142.67	3.71	300			2.00	1.955	119.05	83.44%
		OGS	SEWER	0.90	0.00	0.00	0.08	10.07	0.11	10.17	103.85	121.74	177.96	23.58				23.58	142.67	12.40	300			2.00	1.955	119.09	83.47%

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: C.J.M.
Project No.: CCO-21-4058

No.	Revision	Date
1.	Issued For Client Review	2021-05-20

Date: 2021-05-20
Sheet No: 1 of 1

TEMPEST Product Submittal Package

Date: May 12, 2021

Customer: McIntosh Perry

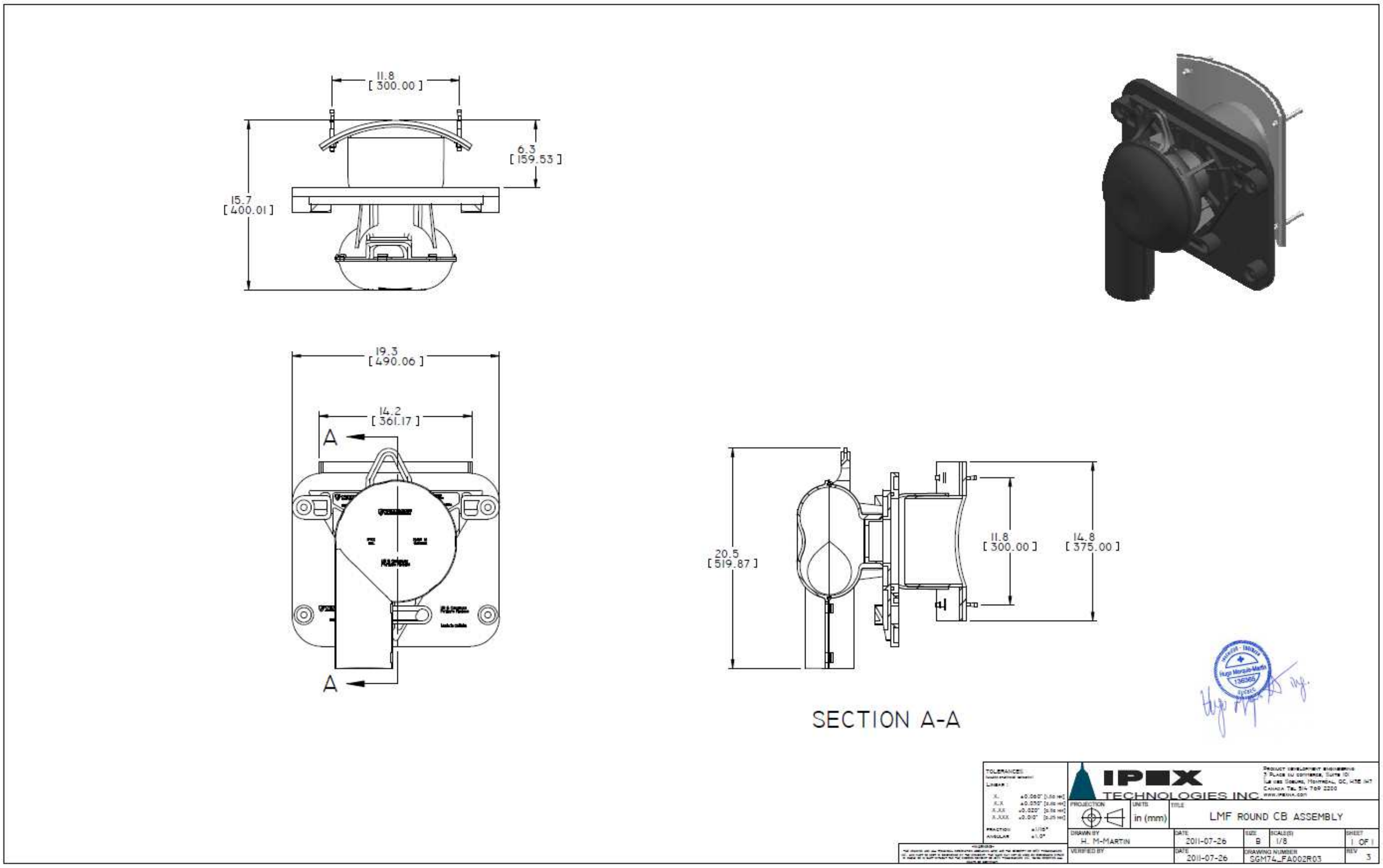
Contact: Ryan Robineau

Location: Ottawa

Project Name: Nepean St Parking Lot

IPEX

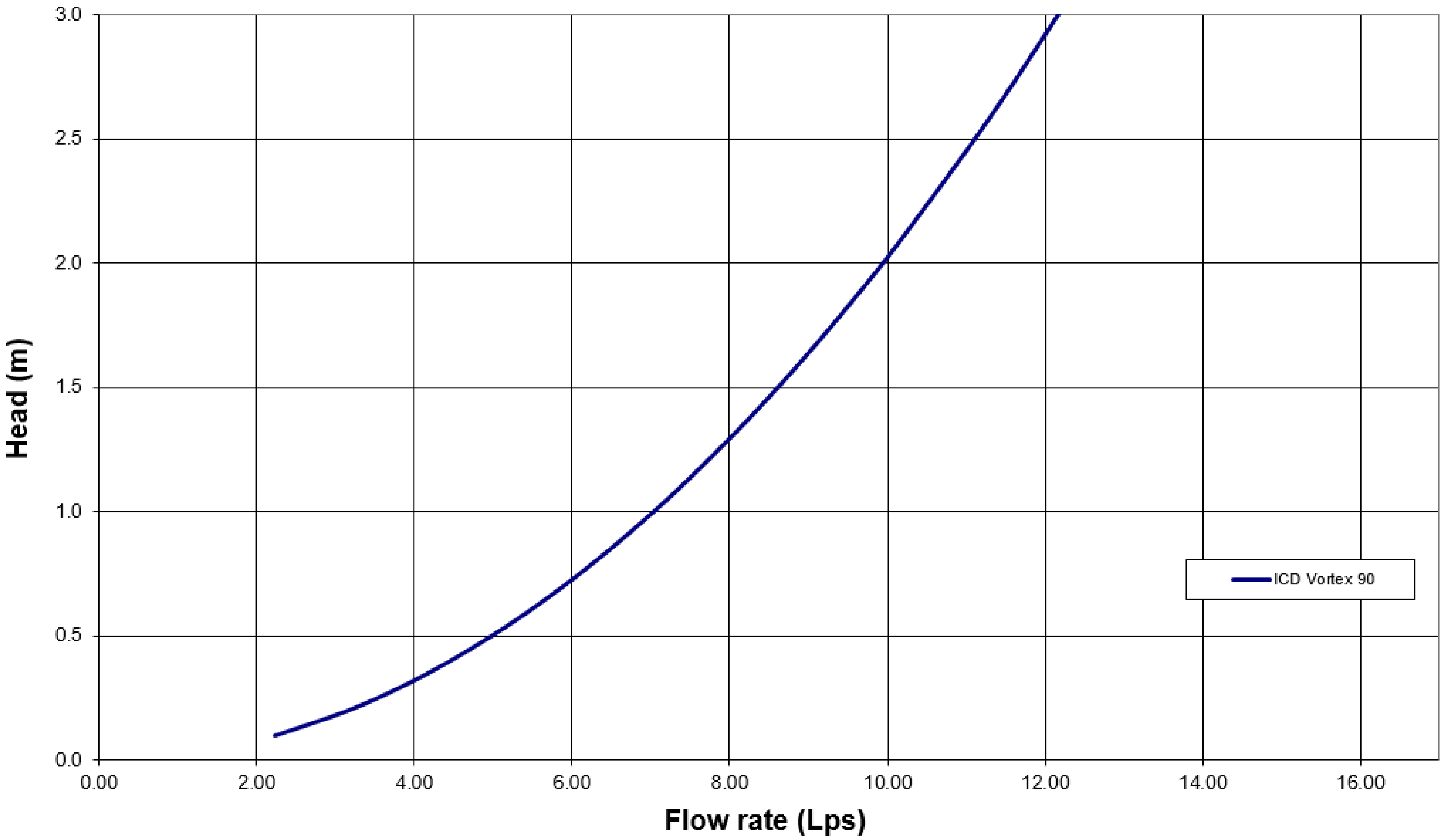
<u>Tempest LMF ICD Rd</u> Shop Drawing



IPEX

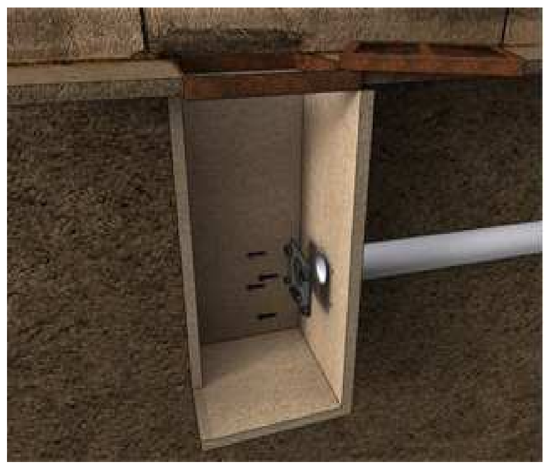
Tempest LMF ICD Flow Curve

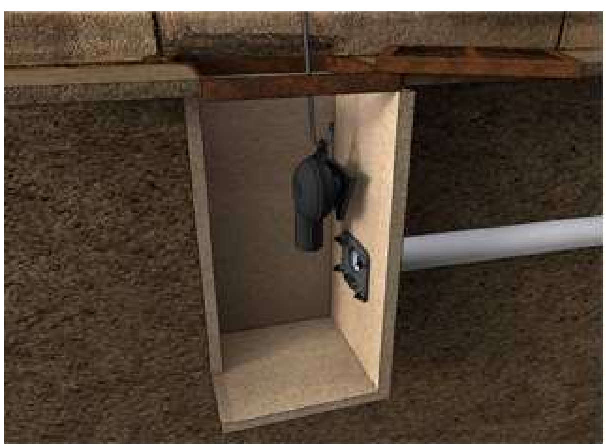
Flow: 9.76 L/s
Head: 1.89 m



Square CB Installation Notes:

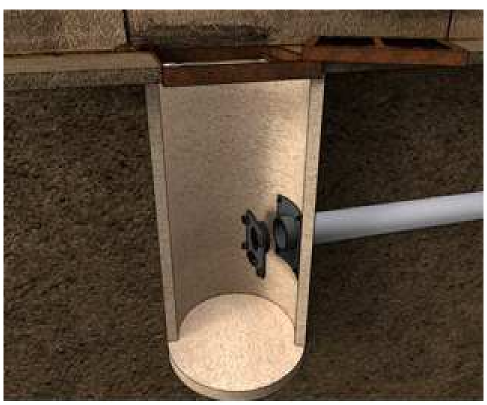
1. Materials and tooling verification:
    - Tooling: impact drill, 3/8’’ concrete bit, torque wrench for 9/16’’nut, hand hammer, level, and marker.
    - Material: (4) concrete anchor 3/8x3-1/2, (4) washers, (4) nuts
2. Use the mounting wall plate to locate and mark the hole (4) pattern on the catch basin wall. You should use a level to ensure that the plate is at the horizontal.
3. Use an impact drill with a 3/8’’ concrete bit to make the four holes at a minimum of 1-1/2’’ depth up to 2-1/2’’. Clean the concrete dust from the holes.
4. Install the anchors (4) in the holes by using a hammer. Put the nuts on the top of the anchors to protect the threads when you will hit the anchors with the hammer. Remove the nuts on the ends of the anchors
5. Install the wall mounting plate on the anchors and screw the nut in place with a maximum torque of 40 N.m (30 lbf-ft). There should be no gap between the wall mounting plate and the catch basin wall.
6. From ground above using a reach bar, lower the device by hooking the end of the reach bar to the handle of the LMF device. Align the triangular plate portion into the mounting wall plate. Push down the device to be sure it has centered in to the wall mounting plate and has created a seal.





Round CB Installation Notes: (Refer to square install notes above for steps 1 , 3, & 4)

2. Use spigot catch basin wall plate to locate and mark the hole (4) pattern on the catch basin wall. You should use a level to ensure that the plate is at the horizontal.
5. Install the CB spigot wall plate on the anchors and screw the 4 nuts in place with a maximum torque of 40 N.m (30 lb-ft). There should be no gap between the CB spigot wall plate and the catch basin wall.
6. Apply solvent cement on the hub of the universal mounting plate and the spigot of the spigot CB wall plate. Slide the hub over the spigot. Make sure the universal mounting plate is at the horizontal and its hub is completely inserted onto the spigot. Normally, the corners of the universal mounting plate hub adapter should touch the catch basin wall.
7. From ground above using a reach bar, lower the ICD device by hooking the end of the reach bar to the handle of the ICD device. Align the triangular plate portion into the mounting wall plate. Push down the device to be sure it has centered into the mounting plate and has created a seal.



CAUTION/WARNING/DISCLAIM:

- Verify that the inlet(s) pipe(s) is not protruding into the catch basin. If it is, cut it back so that the inlet pipe is flush with the catch basin wall.
- Any required cement in the installation must be approved for PVC.
- The solvent cement should not be used below 0°C (32°F) or in a high humidity environment. Please refer to the IPEX solvent cement guide to confirm required curing times or attend the IPEX **Online Solvent Cement Training Course**.
- Call your IPEX representative for more information or if you have any questions about our products.

IPEX TEMPEST Inlet Control Devices Technical Specification

General

Inlet control devices (ICD's) are designed to provide flow control at a specified rate for a given water head level and also provide odour and floatable control where specified. All ICD's will be IPEX Tempest or approved equal.

All devices shall be removable from a universal mounting plate. An operator from street level using only a T-bar with a hook will be able to retrieve the device while leaving the universal mounting plate secured to the catch basin wall face. The removal of the TEMPEST devices listed above must not require any unbolting or special manipulation or any special tools.

High Flow (HF) Sump devices will consist of a removable threaded cap which can be accessible from street level with out entry into the catchbasin (CB). The removal of the threaded cap shall not require any special tools other than the operator's hand.

ICD's must have no moving parts.

Materials

ICD's are to be manufactured from Polyvinyl Chloride (PVC) or Polyurethane material, designed to be durable enough to withstand multiple freeze-thaw cycles and exposure to harsh elements.

The inner ring seal will be manufactured using a Buna or Nitrile material with hardness between Duro 50 and Duro 70.

The wall seal is to be comprised of a 3/8" thick Neoprene Closed Cell Sponge gasket which is attached to the back of the wall plate.

All hardware will be made from 304 stainless steel.

Dimensioning

The Low Medium Flow (LMF), High Flow (HF) and the High Flow (HF) Sump shall allow for a minimum outlet pipe diameter of 200mm with a 600mm deep Catch Basin sump.

Installation

Contractor shall be responsible for securing, supporting and connecting the ICD's to the existing influent pipe and catchbasin/manhole structure as specified and designed by the Engineer.

APPENDIX F
CITY OF OTTAWA DESIGN CHECKLIST

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, Drainage, Sediment & Erosion Control 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.	Site Grading, Drainage, Sediment & Erosion Control Plan (C101)
☐ 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 Backround Studies
☐ 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, Drainage, Sediment & Erosion Control 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	N/A
☐ 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.	N/A
☐ 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	N/A

☐ 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.	N/A
☐ 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.	N/A
☐ 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.	N/A

☐ 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.	N/A
☐ 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 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 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 Management
☐ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 6.0 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 E

☐ 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, Drainage, Sediment & Erosion Control 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 6.0 Stormwater Management Appendix E
☐ Any proposed diversion of drainage catchment areas from one outlet to another.	Section 6.0 Stormwater Management
☐ Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Section 6.0 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 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, Drainage, Sediment & Erosion Control 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 7.0 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 8.0 Summary Section 9.0 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