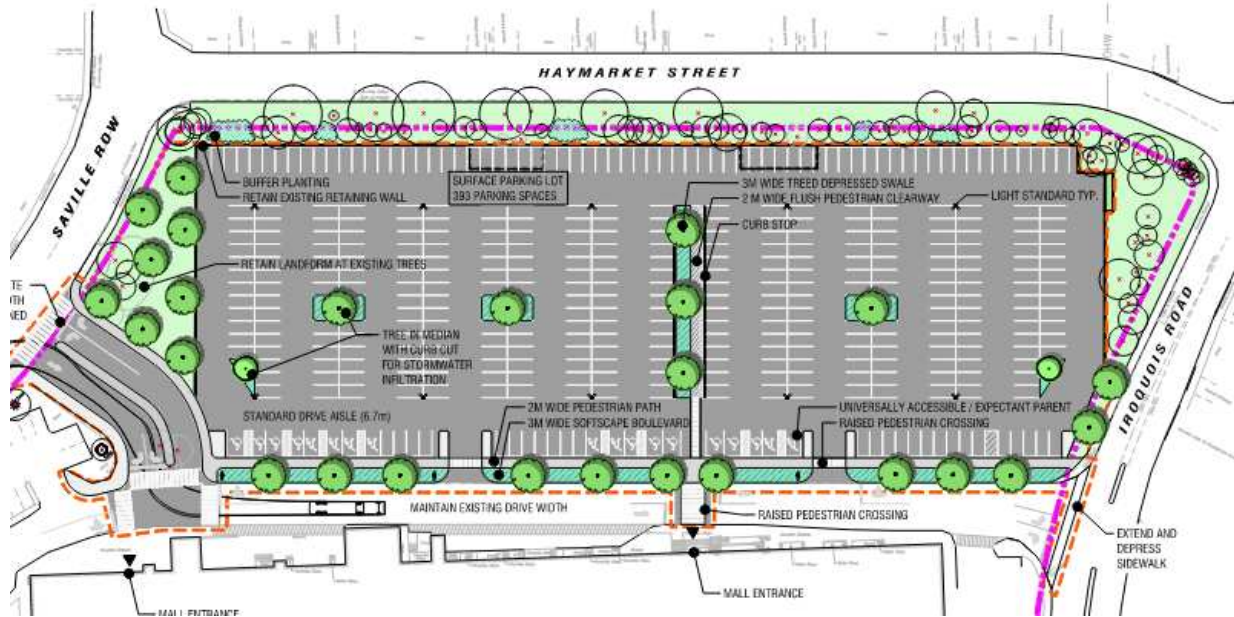


SERVICING & STORMWATER MANAGEMENT REPORT 2121 CARLING AVENUE – PARKING GARAGE REDEVELOPMENT



Project No.: CCO-26-3216

City File No.:

Prepared for:

Anthem Minett Carlingwood Holdings

Suite 1100 Bentall IV Box 49200

1055 Dunsmuir Street

Vancouver, BC V7X 1K8

Prepared by:

Egis Canada Ltd.

750 Palladium Drive, Suite 310

Kanata, ON K2V 1C7

Submitted: March 2026

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1.0 PROJECT DESCRIPTION

1.1 Purpose

Egis Canada (Egis) has been retained by Anthem Minett Carlingwood Holdings LP to prepare this Servicing and Stormwater Management Report in support of the site plan control application for the proposed development located at 2121 Carling Avenue 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 Rideau Valley Conservation Authority (RVCA), and the Ministry of the Environment, Conservation and Parks (MECP). This report will address the storm sewer servicing for the development, ensuring that existing and proposed services will adequately service the development.

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

- CCO-26-3216, C101 – Lot Servicing, Grading and Drainage Plan, and
- CCO-26-3216, PRE – Pre-Development Drainage Area Plan (Appendix 'C'), and
- CCO-26-3216, POST – Post-Development Drainage Area Plan (Appendix 'D').

1.2 Site Description



Figure 1: Site Map

The subject property, herein referred to as the site, is located at 2121 Carling Avenue within the Bay ward. The site covers approximately **6.9 ha** and is bound by Saville Row to the west, Haymarket Street to the north, and Iroquois Road to the east. The site is zoned for General Mixed-Use (GM). See Site Location Plan in **Appendix 'A'** for more details.

1.3 Proposed Development and Statistics

The property, 2121 Carling Avenue, contains an existing shopping centre and an above-ground parking garage structure. The development proposes to remove the existing above-ground parking structure at the north end of the site and construct an at-grade parking lot in replacement. The parking lot will connect into the existing drive aisle along the north side of the shopping centre, with site access from Saville Row and Iroquois Road.

1.4 Existing Conditions and Infrastructure

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):

- ❖ Saville Row
 - 1350 mm diameter concrete storm sewer, draining in a northern direction
 - 203 mm diameter unlined cast iron watermain
 - 900 mm diameter concrete sanitary sewer, draining in a northern direction
- ❖ Haymarket Street
 - 525 mm diameter concrete storm sewer, draining in a western direction towards Saville Row
 - 203 mm diameter unlined cast iron watermain
 - 300 mm diameter concrete sanitary sewer, draining in a western direction towards Saville Row
- ❖ Iroquois Road
 - 300 mm diameter concrete storm sewer, draining in a northern direction towards Haymarket Street
 - 203 mm diameter unlined cast iron watermain
 - 225 mm diameter concrete sanitary sewer, draining in a northern direction towards Haymarket Street
- ❖ Adjacent to the Development Area, Within the Site
 - 600 mm diameter storm sewer, north of the existing parking garage, draining in a western direction towards Saville Row. This storm sewer is the outlet for existing catch basin drains on the lower level of the existing parking garage structure.
 - 600 mm diameter storm sewer, within the main drive aisle, draining in a western direction towards Saville Row. This storm sewer is the outlet for the existing catch basins along the drive aisle.

1.5 Approvals

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

2.0 BACKGROUND STUDIES, STANDARDS, AND REFERENCES

2.1 Background Reports / Reference Information

As-built drawings of existing services, provided by the City of Ottawa Information centre, within the vicinity of the proposed site were reviewed in order to identify infrastructure available to service the proposed development.

The Site Plan was prepared by FOTENN and dated March 9th, 2026 (Site Plan).

2.2 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-2018-04 City of Ottawa, March 2018. (**ISTB-2018-04**)
 - Technical Bulletin ISTB-2019-02 City of Ottawa, February 2019. (**ISTB-2019-02**)
 - Technical Bulletin IWSTB-2024-04 City of Ottawa, September 2024. (**ISTB-2024-04**)
- ◆ 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-2018-02 City of Ottawa, March 2018. (**ISTB-2018-02**)
 - Technical Bulletin ISTB-2021-03 City of Ottawa, August 2021. (**ISTB-2021-03**)
 - Technical Bulletin IWSTB-2024-05 City of Ottawa, November 2024. (**IWSTB-2024-05**)

Ministry of Environment, Conservation and Parks:

- ◆ Design Guidelines for Drinking-Water Systems, Ministry of the Environment, 2008. (**MECP Water Design Guidelines**)
- ◆ 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

A pre-consultation meeting was conducted with City of Ottawa staff regarding the proposed development. Follow-up pre-consultation notes, included in **Appendix B**, were provided on December 22, 2025. 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 (T_c) no less than 10 minutes.
- ◆ For all storm events up to and including the 100year event, the post development peak flow rate must match the pre-development peak flow rate.
- ◆ A monitoring maintenance hole for storm sewers shall be required for all connections from a private sewer to a public sewer.
- ◆ Water quality control will not be imposed for the proposed parking lot.

4.0 STORM SEWER SERVICING

4.1 Existing Storm Sewers

The property is generally sloped from south to north. Stormwater runoff within the development area, is currently collected via surface drains on the upper parking deck and via surface catch basins on the lower parking deck. Stormwater is then pumped from the existing sewer system to the 600 mm storm sewer that runs along the northern property line, ultimately flowing to the 1350 mm storm sewer within Saville Row.

4.2 Proposed Storm Servicing

A new 300-525 mm diameter storm sewer is proposed to be installed within the north section of the new parking lot, connecting to the existing 600 mm storm sewer outlet along Haymarket Street. The sewer has been designed to provide gravity drainage to the outlet, removing the existing stormwater pump. At-grade catchbasins will be installed to collect runoff from the asphalt areas and perimeter landscape areas draining towards the parking lot.

Stormwater in the post-development condition are less than existing conditions due to the increase in pervious areas within the parking lot. Refer to drawing C101 for a detailed servicing layout and **CCO-26-3216 - POST** included in **Appendix D** of this report for more details. The Stormwater Management design for the subject property will be outlined in **Section 5.0** of this report.

5.0 PROPOSED STORMWATER MANAGEMENT

5.1 Design Criteria and Methodology

Stormwater management for the proposed site will be maintained through positive drainage away from the existing building and towards catchbasins. The storm system will capture and control runoff via an inlet control device in combination with surface storage to restrict the system to the allowable capture rate.

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

Quality Control

- Quality controls are not required to be provided for this site.

Quantity Control

- Pre-development time of concentration (TC) shall be calculated and be no less than 10 minutes.
- Control site post-development flows to the 5-year pre-development flows with a combined C value of no greater than 0.50.

5.2 Runoff Calculations

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

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

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 2/5-year balanced 'C' value must be increased by 25% for a 100-year storm event to a maximum of 1.0.

5.3 Pre-Development Drainage

It has been assumed that the development area contains no stormwater management controls for flow attenuation as it was noted that the pump was not actively running, and no surface ponding has been observed. The estimated pre-development peak flows for the 5- and 100-year events are summarized below in Table 1. See CCO-23-2497 - PRE in Appendix E and Appendix G for calculations.

Table 1: Pre-Development Runoff Summary

Drainage Area	Area (ha)	Runoff Coefficient (2/5-Year)	Runoff Coefficient (100-Year)	5-Year Peak Flow (L/s)	100-Year Peak Flow (L/s)
A1	1.24	0.84	0.94	223.11	577.67
A2	0.22	0.78	0.87	36.94	95.97
Total	1.46			260.05	673.64

5.4 Post-Development Drainage

The proposed site drainage limits are demonstrated on the Post-Development Drainage Area Plan included in **Appendix D**. A summary of the Post-Development Runoff Calculations can be found below in **Table 2**.

Table 2: Post-Development Uncontrolled Runoff Summary

Drainage Area	Area (ha)	Runoff Coefficient (5/100-Year)	Tc (min)	2-Year Peak Flow (L/s)	100-Year Peak Flow (L/s)
A1	1.24	0.84 / 0.93	10	221.56	573.85
A2	0.22	0.55 / 0.63	10	26.10	68.94
Total	1.46	-	-	247.67	642.79

See **Appendix E** for calculations.

Based on the post-development calculations, no flow restriction devices are required to meet the required release rate due to the increase in pervious area within the parking lot. Surface storage areas above catch basins have been provided should there be a large storm event or blockage in the system. In the event of an emergency, an overland flow route will be provided from the north side of the parking lot towards Haymarket Street, as illustrated by drawing C101.

6.0 EROSION AND SEDIMENT CONTROL

6.1 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 are 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.

6.2 Permanent Measures

Rip-rap will be placed at all locations that have the potential for concentrated flow. It is crucial that the Contractor ensure that the geotextile is keyed in properly to ensure runoff does not undermine the rip rapped area. Additional rip rap is to be placed at erosion prone locations as identified by the Contractor / Contract Administrator / City or Conservation Authority.

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.

7.0 SUMMARY

- A new surface parking lot is proposed to replace the above-ground parking garage structure at 2121 Carling Avenue.
- A new 300-525 mm diameter storm sewer is proposed to collect surface runoff from the parking lot and surrounding landscaped areas.
- No flow restrictions are required due to the increase in proposed pervious areas.
- Quality controls are not required for the development.

8.0 RECOMMENDATIONS

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 development at 2121 Carling Avenue.

This report is respectfully being submitted for approval.

Regards,

Egis Canada Ltd.



Alison Gosling, P.Eng.
Project Engineer, Land Development
E: alison.gosling@egis-group.com

A handwritten signature in black ink that reads "Francis Valenti".

Francis Valenti, P.Eng.
Junior Project Engineer, Land Development
E: francis.valenti@egis-group.com

9.0 STATEMENT OF LIMITATIONS

This report was produced for the exclusive use of Anthem Minett Carlingwood Holdings LP. 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. Egis Canada reviewed the site information and background documents listed in Section 2.0 of this report. While the previous data was reviewed by Egis Canada 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. Egis Canada 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, Egis Canada should be requested to re-evaluate the conclusions presented in this report, and provide amendments, if required.

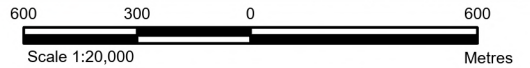
APPENDIX A KEY PLAN





LEGEND

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



REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2026.

CLIENT:	ANTHEM MINETT CARLINGWOOD HOLDINGS	
PROJECT:	2121 CARLING AVENUE	
TITLE:	SITE LOCATION PLAN	
	PROJECT NO: CCO-26-3216	FIGURE:
	Date	Mar., 05, 2026
	GIS	AH
	Checked By	AG
	1	

750 Palladium Dr, Suite 310, Kanata, ON K2V 1C7
 Tel: 613-836-2184 Fax: 613-836-3742

APPENDIX B BACKGROUND DOCUMENTS

December 22, 2025

Kenneth Blouin
Fotenn
Via email: blouin@fotenn.com

**Subject: Pre-Consultation: Meeting Feedback
Proposed Site Plan Application – 2085 Carling Avenue**

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on [Enter Date of Meeting](#).

Pre-Consultation Preliminary Assessment

Next Steps

1. A review of the proposal and materials submitted for the above-noted pre-consultation has been undertaken. For your next submission, please submit the required Application Form, together with the necessary studies and/or plans to planningcirculations@ottawa.ca, copy (cc:) to the file lead and planning support.
2. In your subsequent pre-consultation or application submission, please ensure that all comments or issues detailed herein are addressed. A detailed cover letter stating how each issue has been addressed is requested with the submission materials. Please coordinate the numbering of your responses within the cover letter with the comment number(s) herein.
3. Please note, if your development proposal changes significantly in scope, design, or density it is recommended that a subsequent pre-consultation application be submitted.

Supporting Information and Material Requirements

1. The attached **Study and Plan Identification List** outlines the information and material that has been identified, during this phase of pre-consultation, as either required (R) or advised (A) as part of a future complete application submission.
 - a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.

Consultation with Technical Agencies

1. You are encouraged to consult with technical agencies early in the development process and throughout the development of your project concept. A list of technical agencies and their contact information is enclosed.

Planning

Comments:

1. General Mixed-use, Subzone 24, Exception 90, subject to a holding. **GM24[90]-h S125.**
2. Please consider including walking areas to improve safe travel of pedestrians through the parking lot to the entrance.
3. Grades should be gradually transitioned to ensure safety for those that decide to cut through the landscaped area.
4. Demonstrate that the parking requirements are still being met with the removal of the parking garage, as well as any other compliance matters, such as landscaping within parking areas.

Urban Design

Comments:

5. We would ask that you introduce further plantings to the Haymarket Street side, buffer the parking from the homes along Haymarket Street. And protect existing trees from being impacted.

Engineering

Comments:

6. For all storm events up to and including the 100-year event, the post development peak flow rate must match the pre-development peak flow rate.
7. A monitoring maintenance hole for storm sewers shall be required for all connections from a private sewer to a public sewer. Monitoring maintenance holes should be located in an accessible location on private property near the property line (ie. not in a parking area).
8. Water quality control will not be imposed for the proposed parking lot, however low-impact developments and best management practices are encouraged.

Feel free to contact Julie Candow, Project Manager, for follow-up questions.

Transportation

Comments:

9. Extend and depress the sidewalk through the unsignalized private approach on Iroquois.
10. A TIA is not required for the parking reduction.
11. Provide corner triangles at the two Haymarket intersections: 3x3 (Iroquois) and 3x9 (Saville):

Feel free to contact **Mike Giampa**, Transportation Project Manager, for follow-up questions.

Other:

12. The High Performance Development Standard (HPDS) is a collection of voluntary and required standards that raise the performance of new building projects to achieve sustainable and resilient design and will be applicable to Site Plan Control and Plan of Subdivision applications.
 - a. The HPDS was passed by Council on April 13, 2022, but is not in effect at this time, as Council has referred the 2023 HPDS Update Report back to staff with the direction to bring forward an updated report to Committee at a later date. The timing of an updated report to Committee is unknown at this time, and updates will be shared when they are available.
 - b. Please refer to the HPDS information at ottawa.ca/HPDS for more information.
13. Under the Affordable Housing Community Improvement Plan, a Tax Increment Equivalent Grant (TIEG) program was created to incentivize the development of affordable rental units. It provides a yearly fixed grant for 20 years. The grant helps offset the revenue loss housing providers experience when incorporating affordable units in their developments.
 - a. To be eligible for the TIEG program you must meet the following criteria:
 - i. the greater of five units OR 15 per cent of the total number of units within the development must be made affordable
 - ii. provide a minimum of 15 per cent of each unit type in the development as affordable
 - iii. enter into an agreement with the city to ensure the units maintain affordable for a minimum period of 20 years at or below the city-wide average market rent for the entire housing stock based on building form and unit type, as defined by the Canada Mortgage and Housing Corporation

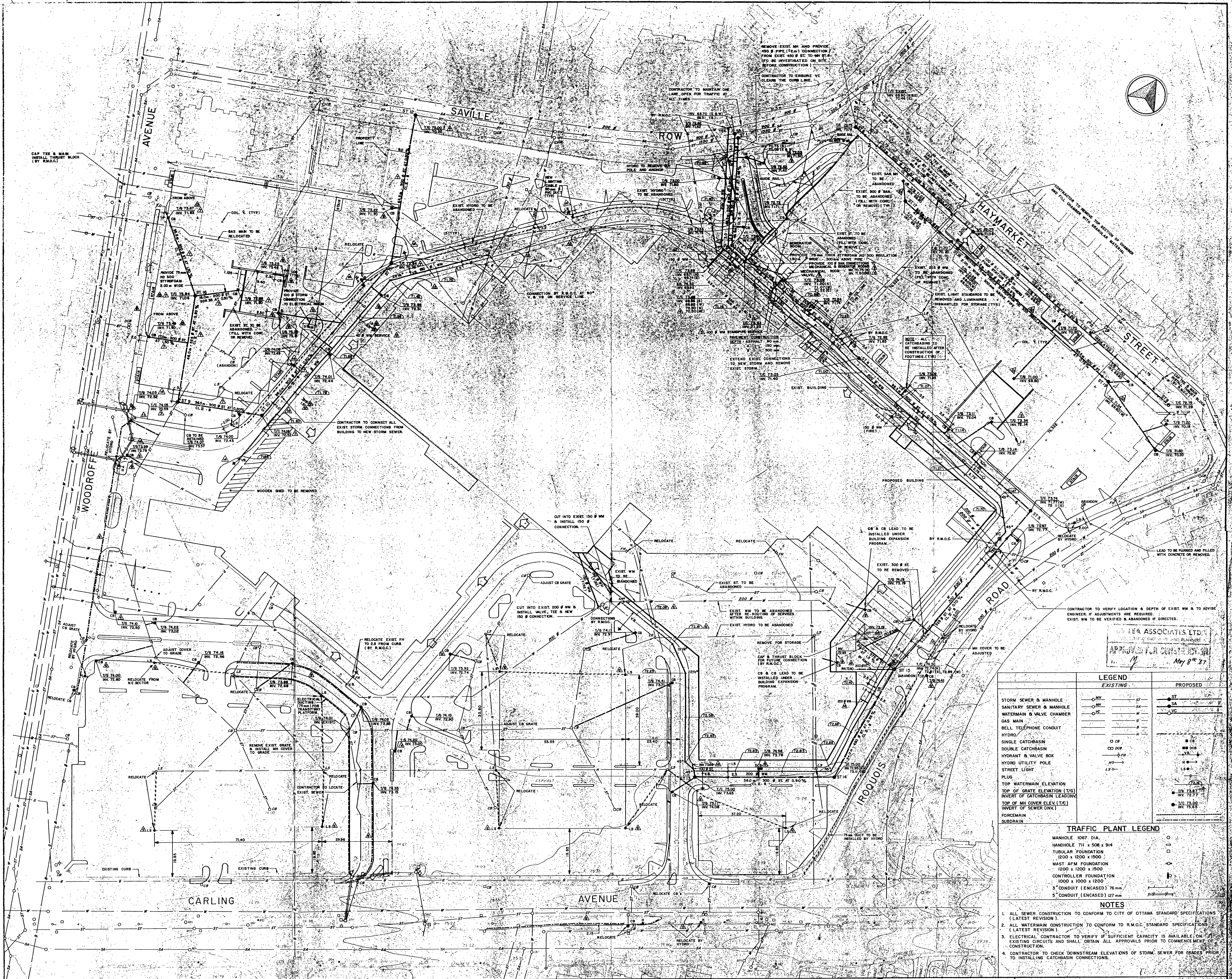
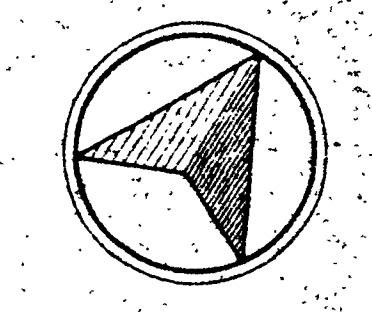
- iv. must apply after a formal Site Plan Control submission, or Building Permit submission for projects not requiring Site Plan Control, and prior to Occupancy Permit issuance
- b. Please refer to the TIEG information at [Affordable housing community improvement plan / Plan d'améliorations communautaires pour le logement abordable](#) for more details or contact the TIEG coordinator via email at affordablehousingcip@ottawa.ca.

Submission Requirements and Fees

1. Site Plan Control - Standard
 - a. Additional information regarding fees related to planning applications can be found [here](#).
2. The attached **Study and Plan Identification List** outlines the information and material that has been identified as either required (R) or advised (A) as part of a future complete application submission.
 - a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.
3. All of the above comments or issues should be addressed to ensure the effectiveness of the application submission review.

Should there be any questions, please do not hesitate to contact myself or the contact identified for the above areas / disciplines.

Yours Truly,
John Bernier, MCIP, RPP



LEA ASSOCIATES LTD.
CONSULTING ENGINEERS AND PLANNERS
APPROVED FOR CONSTRUCTION
May 9th 87

LEGEND		PROPOSED
EXISTING		
ST	STORM SEWER & MANHOLE	ST
SA	SANITARY SEWER & MANHOLE	SA
WM	WATERMAIN & VALVE CHAMBER	WM
GM	GAS MAIN	GM
BC	BELL TELEPHONE CONDUIT	BC
H	HYDRO	H
SC	SINGLE CATCHBASIN	SC
DC	DOUBLE CATCHBASIN	DC
HV	HYDRANT & VALVE BOX	HV
UP	HYDRO UTILITY POLE	UP
SL	STREET LIGHT	SL
PL	PLUM	PL
TE	TOP WATERMAIN ELEVATION	TE
GE	TOP OF GRATE ELEVATION (T/G)	GE
IL	INVERT OF CATCHBASIN LEAD (INV)	IL
ME	TOP OF MH COVER ELEV. (T/C)	ME
IS	INVERT OF SEWER (INV.)	IS
FC	FORCEMAIN	FC
SD	SUBDRAIN	SD

TRAFFIC PLANT LEGEND	
○	MANHOLE 1067 DIA.
○	HANDHOLE 711 x 508 x 914
○	TUBULAR FOUNDATION 2000 x 2000 x 1500
○	MAST AFM FOUNDATION 1200 x 1200 x 1500
○	CONTROLLER FOUNDATION 1000 x 1000 x 1200
○	3" CONDUIT (ENCASED) 76 mm
○	5" CONDUIT (ENCASED) 127 mm

- NOTES**
1. ALL SEWER CONSTRUCTION TO CONFORM TO CITY OF OTTAWA STANDARD SPECIFICATIONS (LATEST REVISION).
 2. ALL WATERMAIN CONSTRUCTION TO CONFORM TO R.M.O.C. STANDARD SPECIFICATIONS (LATEST REVISION).
 3. ELECTRICAL CONTRACTOR TO VERIFY IF SUFFICIENT CAPACITY IS AVAILABLE ON EXISTING CIRCUITS AND SHALL OBTAIN ALL APPROVALS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
 4. CONTRACTOR TO CHECK DOWNSTREAM ELEVATIONS OF STORM SEWER FOR GRADES PRIOR TO INSTALLING CATCHBASIN CONNECTIONS.

NO.	DATE	DESCRIPTION	BY	CHKD.
14	XVF 07/04/87	RELOCATE CB'S & FH'S, DELETE S/W & CB'S ALONG FRONTAGE ROAD WEST	B	KXF
13	HRL 15/12/86	NEW GARAGE - T/C ELEV. ST. 18, T/A'S CB'S REVISED	B	HRL
12	HRL 04/12/86	CB ADDED THROUGH TRUCK ENTRANCE	B	HRL
11	HRL 01/12/86	PHONAGE REL. W. DRIVEWAY & WM LOCATED ON X-SECTIONS	F	XVF
10	XVF 01/12/86	PHONAGE TRUCK ENTR. CHAMBER FRONTAGE RD. WEST REVISED	X	XVF
9	XVF 22/10/86	NEW GARAGE, WM & ST CONNECTIONS ADDED, CARLING MEDIAN REVISED	X	XVF
8	XVF 17/10/86	NORTHEAST GARAGE - DRAINAGE SYSTEM ADDED	A	XVF
7	XVF 29/10/86	INVERTS & ST SEWER REVISED NW SECTION	X	XVF
6	XVF 18/10/86	CB'S ADDED, WM REVISED, L'S MOND, GENERAL REVISIONS	X	XVF
5	XVF 22/10/86	RELOCATE CB'S & LEAD	X	XVF
4	XVF 17/10/86	ADD CB'S, INVERTS, DIMENSIONS	X	XVF
3	XVF 14/11/86	WATERMAIN LOCATION REVISED FRONTAGE RD. WEST	B	XVF
2	HRL 10/11/86	CARLING E. ENTRANCE & MEDIAN LAYOUT	B	HRL
1	XVF 01/11/86	CURB ALTERED, FH MOVED, V/S CB REVISED, CB DELETED	B	XVF

Architect: ALA - KANTTI - BRISBIN - WOODMAN
 Electrical Consultant: H. H. ANGUS & ASSOCIATES LTD.
 Landscape Architect: L.P. PLANNING & ASSOCIATES LTD.

DS-LEA ASSOCIATES LTD.
 Consulting Engineers and Planners
 Vancouver, Winnipeg, Toronto, Ottawa, London

J. P.	10/09/86	GENERAL REVISIONS
J. P.	24/09/86	GENERAL REVISIONS
XVF	10/10/86	STORM SEWER & SA CONNECTION ADDED
REV BY	DATE	DESCRIPTION

TRIZEC EQUITIES LTD.
Carlingwood Mall Expansion
UTILITY RELOCATIONS

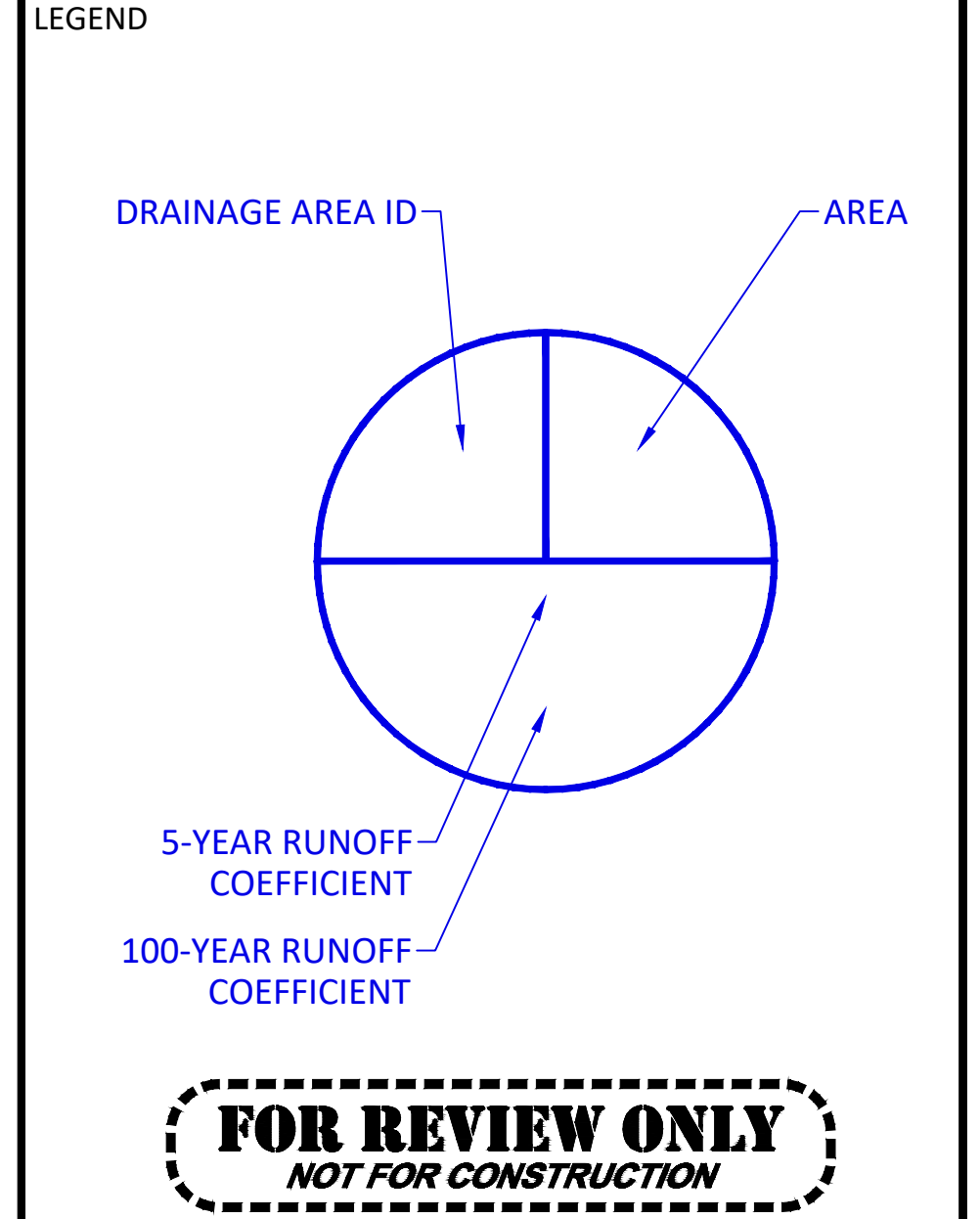
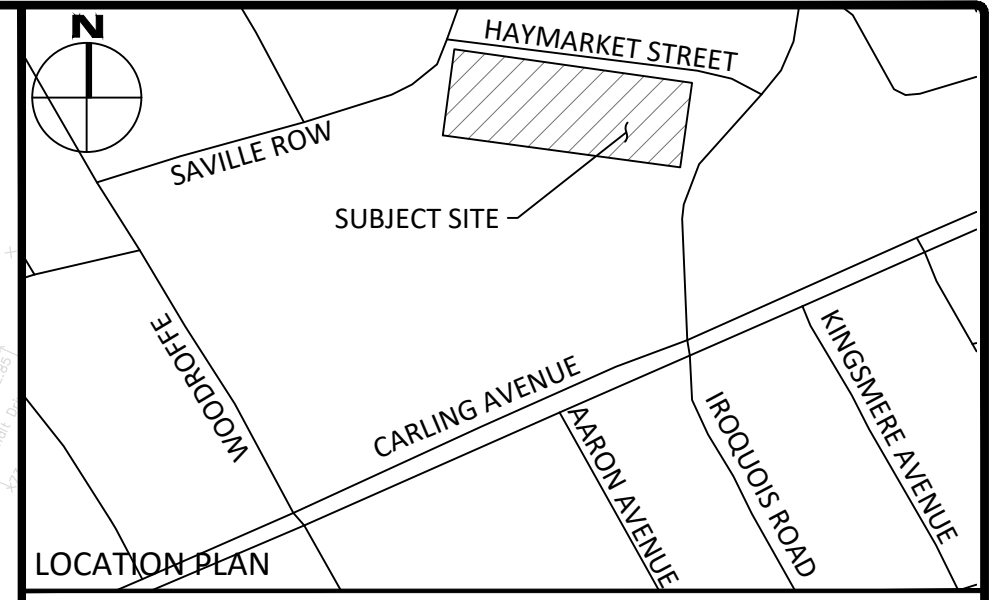
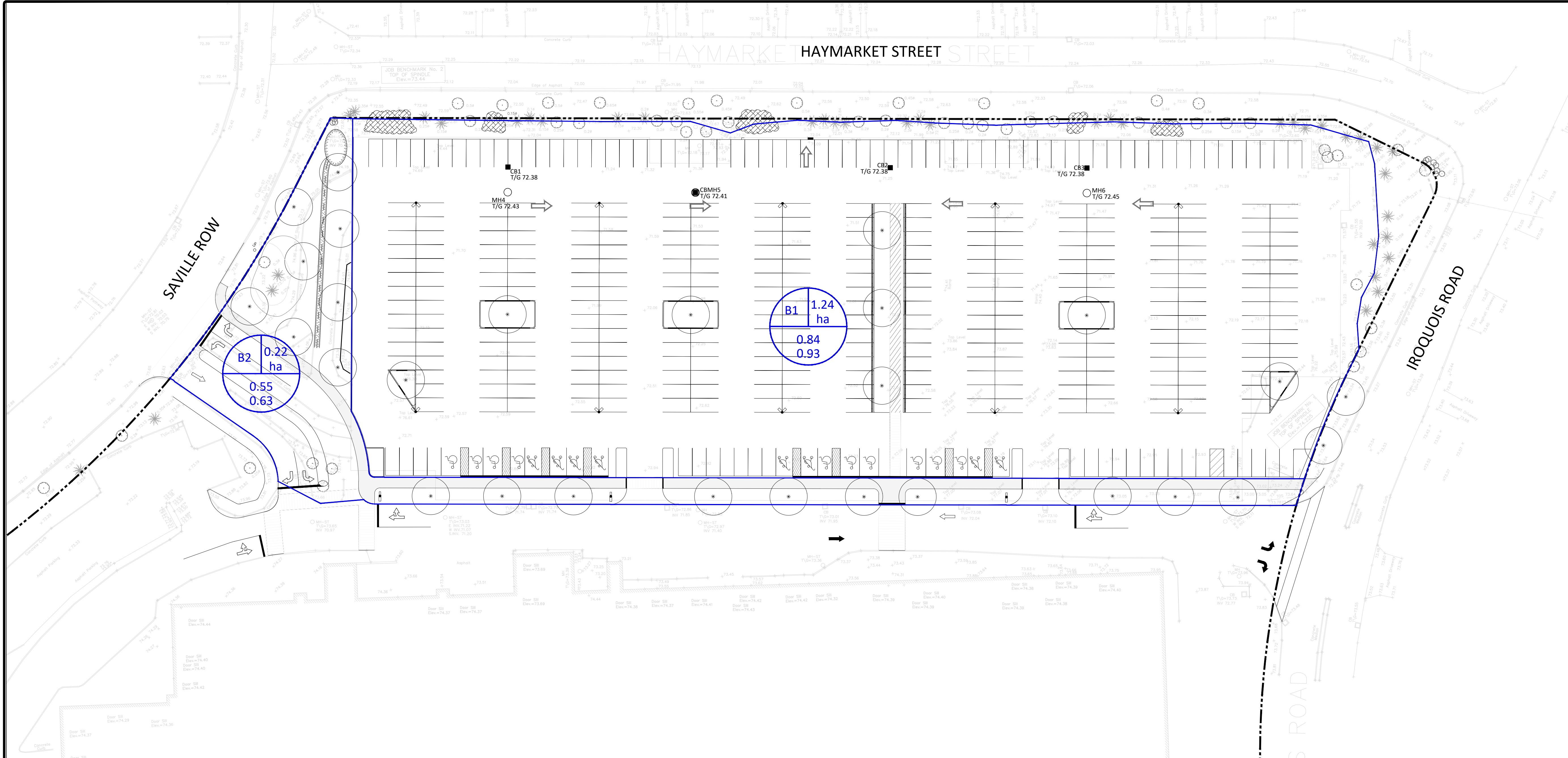
Drawn L.A.B. Date AUGUST 1986 Scale 1:500
 Check: [] Plate [] DRAWING NO. 2021-G006

**APPENDIX C
PRE-DEVELOPMENT DRAINAGE PLAN**



APPENDIX D
POST-DEVELOPMENT DRAINAGE PLAN





1	ISSUED FOR REVIEW	MAR. 05, 2026
No.	Revisions	Date

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

SCALE 1:400



egis 750 Palladium Drive, Suite 310
 Kanata, ON K2V 1C7
 Tel: 613-836-2184
 Fax: 613-836-3742
 www.egis-group.com

Client:
ANTHEM MINETT CARLINGWOOD HOLDINGS
 SUITE 1100 BENTAL IV BOX 49200 1055 DUNSMUIR STREET
 VANCOUVER BC V7X 1K8

Project:
2121 CARLING AVENUE

Drawing Title:
POST-DEVELOPMENT DRAINAGE AREA PLAN

Scale:	1:400	Project Number:	CCO-26-3216
Drawn By:	F.V.		
Checked By:	A.G.	Drawing Number:	POST
Designed By:	A.G.		

FILENAME: I:\Infrastructure\2026\CCO-26-3216-Anthem_Carlingwood Parkside Redevelopment - 1105-2121 Carling Avenue\12 - Drawings\CCO-26-3216 - PRODUCTION.dwg
 LAST SAVED: Thursday, March 05, 2026 10:58:54 AM
 LAST PLOTTED: Thursday, March 05, 2026 10:58:54 AM
 CREDITS: ---

D07-12-XX-XXXX

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APPENDIX E STORMWATER MANAGEMENT CALCULATIONS

Tc (min)	Intensity (mm/hr)		
	2-Year	5-Year	100-Year
20	52.0	70.3	120.0
10	76.8	104.2	178.6

C-Values	
Impervious	0.90
Gravel	0.60
Pervious	0.20

Pre-Development Runoff Coefficient

Drainage Area	Impervious Area (m ²)	Gravel (m ²)	Pervious Area (m ²)	Average C (2/5-Year)	Average C (100-Year)	
A1	11,394	0	975	0.84	0.94	To Parking Garage Storm Network
A2	1,835	0	395	0.78	0.87	To Drive Aisle Storm Network

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 2/5-Year	C 100-Year	Tc (min)	Q (L/s)		
					2-Year	100-Year	
A1	1.24	0.84	0.94	10	223.11	577.67	To Parking Garage Storm Network
A2	0.22	0.78	0.87	10	36.94	95.97	To Drive Aisle Storm Network
Total	1.46				260.05	673.64	

Post-Development Runoff Coefficient

Drainage Area	Impervious Area (m ²)	Gravel (m ²)	Pervious Area (m ²)	Average C (2-year)	Average C (100-year)	
B1	11,285	0	1,100	0.84	0.93	To Parking Garage Storm Network
B2	1,114	0	1,098	0.55	0.63	To Drive Aisle Storm Network

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 2-Year	C 100-Year	Tc (min)	Q (L/s)		
					2-Year	100-Year	
B1	1.24	0.84	0.93	10	221.56	573.85	To Parking Garage Storm Network
B2	0.22	0.55	0.63	10	26.10	68.94	To Drive Aisle Storm Network
Total	1.46				247.67	642.79	

Required Restricted Flow

Drainage Area	Area (ha)	C 2-Year	C 100-Year	Tc (min)	Q (L/s)		
					2-Year	100-Year	
A1	1.24	0.84	0.94	10	223.11	577.67	To Parking Garage Storm Network
A2	0.22	0.78	0.87	10	36.94	95.97	To Drive Aisle Storm Network
Total	1.46				260.05	673.64	

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	100-Year	2-Year	100-Year	2-Year	100-Year	2-Year	100-Year
B1	221.56	573.85	221.56	573.85	0.0	0.0	0.0	0.0
B2	26.10	68.94	26.10	68.94	0.0	0.0	0.0	0.0
Total	247.67	642.79	247.67	642.79	0.00	0.00	0.00	0.00

STORM SEWER DESIGN SHEET



PROJECT: CCO-26-3216
 LOCATION: 2121 Carling Avenue
 CLIENT: Anthem Minett Carlingwood Holdings

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
Area	AREA ID	FROM MH	TO MH	C-VALUE	AREA	INDIV AC	CUMUL AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (2) (mm/hr)	i (5) (mm/hr)	i (100) (mm/hr)	2yr PEAK FLOW (L/s)	5yr 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)
	B1	CB1	MH4	0.84	0.31	0.26	0.26	10.00	0.06	10.06	76.81	104.19		54.71	74.21			74.21	100.88	4.70	300			1.00	1.383	26.67	26.43%
			MH4			0.00	0.26	10.06	0.63	10.69	76.59	103.89		54.55	74.00			74.00	105.07	35.05	375			0.33	0.922	31.07	29.57%
		CB3	MH6	0.84	0.44	0.37	0.37	10.00	0.06	10.06	76.81	104.19		79.61	108.00			108.00	153.03	4.68	375			0.70	1.342	45.03	29.43%
		CB2	525mm	0.84	0.26	0.22	0.22	10.00	0.06	10.06	76.81	104.19		47.31	64.18			64.18	100.88	4.69	300			1.00	1.383	36.71	36.39%
			MH6			0.00	0.59	10.06	1.11	11.17	76.58	103.89		126.55	171.67			171.67	245.74	73.05	525			0.30	1.100	74.07	30.14%
			EX Manhole	0.84	0.23	0.19	1.08	11.17	0.12	11.28	72.60	98.42		217.29	294.54			294.54	429.70	10.20	600			0.45	1.472	135.16	31.45%
Definitions:				Notes:				Designed:				No.				Revision				Date							
Q = 2.78QA, 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				1. Mannings coefficient (n) = 0.013				FV				1.				Revision 1				2026.03.05							
								Checked: AG																			
								Project No.: CCO-26-3216																			
																Date: 2026.03.05				Sheet No: 1 of 1							

**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)
<input type="checkbox"/> Executive Summary (for larger reports only).	N/A
<input type="checkbox"/> Date and revision number of the report.	On Cover
<input type="checkbox"/> Location map and plan showing municipal address, boundary, and layout of proposed development.	Appendix A
<input type="checkbox"/> Plan showing the site and location of all existing services.	Site Servicing Plan (C101)
<input type="checkbox"/> 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 5.0 Proposed Stormwater Management
<input type="checkbox"/> Summary of pre-consultation meetings with City and other approval agencies.	Appendix B
<input type="checkbox"/> 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 defensible design criteria.	1.1 Purpose 1.2 Site Description 5.0 Proposed Stormwater Management
<input type="checkbox"/> Statement of objectives and servicing criteria.	3.0 Pre-Consultation Summary

<input type="checkbox"/> Identification of existing and proposed infrastructure available in the immediate area.	N/A
<input type="checkbox"/> 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)
<input type="checkbox"/> 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 Plan (C101)
<input type="checkbox"/> 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
<input type="checkbox"/> Proposed phasing of the development, if applicable.	N/A
<input type="checkbox"/> Reference to geotechnical studies and recommendations concerning servicing.	Section 2.0 Background Studies, Standards and References
<input type="checkbox"/> All preliminary and formal site plan submissions should have the following information: <ul style="list-style-type: none"> ○ Metric scale ○ North arrow (including construction North) ○ Key plan ○ Name and contact information of applicant and property owner ○ Property limits including bearings and dimensions ○ Existing and proposed structures and parking areas ○ Easements, road widening and rights-of-way ○ Adjacent street names 	Site Grading Plan (C101)

4.2 Development Servicing Report: Water

Criteria	Location (if applicable)
<input type="checkbox"/> Confirm consistency with Master Servicing Study, if available	N/A
<input type="checkbox"/> Availability of public infrastructure to service proposed development	N/A
<input type="checkbox"/> Identification of system constraints	N/A
<input type="checkbox"/> Identify boundary conditions	N/A
<input type="checkbox"/> Confirmation of adequate domestic supply and pressure	N/A
<input type="checkbox"/> 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
<input type="checkbox"/> 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
<input type="checkbox"/> Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	N/A
<input type="checkbox"/> Address reliability requirements such as appropriate location of shut-off valves	N/A
<input type="checkbox"/> Check on the necessity of a pressure zone boundary modification.	N/A
<input type="checkbox"/> 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

<input type="checkbox"/> 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
<input type="checkbox"/> Description of off-site required feeder mains, 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
<input type="checkbox"/> Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	N/A
<input type="checkbox"/> 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)
<input type="checkbox"/> 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
<input type="checkbox"/> Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A
<input type="checkbox"/> 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
<input type="checkbox"/> Description of existing sanitary sewer available for discharge of wastewater from proposed development.	N/A

<input type="checkbox"/> 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
<input type="checkbox"/> 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
<input type="checkbox"/> Description of proposed sewer network including sewers, pumping stations, and forcemains.	N/A
<input type="checkbox"/> 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
<input type="checkbox"/> Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
<input type="checkbox"/> Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
<input type="checkbox"/> 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
<input type="checkbox"/> Special considerations such as contamination, corrosive environment etc.	N/A

4.4 Development Servicing Report: Stormwater Checklist

Criteria	Location (if applicable)
<input type="checkbox"/> Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 4.0 Storm Sewer Servicing & Section 5.0 Proposed Stormwater Management
<input type="checkbox"/> Analysis of available capacity in existing public infrastructure.	N/A
<input type="checkbox"/> A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Pre & Post-Development Plans
<input type="checkbox"/> 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 4.0 Storm Sewer Servicing & Section 5.0 Proposed Stormwater Management
<input type="checkbox"/> Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 4.0 Storm Sewer Servicing & Section 5.0 Proposed Stormwater Management
<input type="checkbox"/> Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 4.0 Storm Sewer Servicing & Section 5.0 Proposed Stormwater Management
<input type="checkbox"/> Set-back from private sewage disposal systems.	N/A
<input type="checkbox"/> Watercourse and hazard lands setbacks.	N/A
<input type="checkbox"/> Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	N/A
<input type="checkbox"/> Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
<input type="checkbox"/> 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

<input type="checkbox"/> 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 (C101)
<input type="checkbox"/> 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.	Appendix E, Section 5.0 Proposed Stormwater Management
<input type="checkbox"/> Any proposed diversion of drainage catchment areas from one outlet to another.	Section 4.0 Storm Sewer Servicing & Section 5.0 Proposed Stormwater Management
<input type="checkbox"/> Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Section 4.0 Storm Sewer Servicing & Section 5.0 Proposed Stormwater Management
<input type="checkbox"/> 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
<input type="checkbox"/> Identification of potential impacts to receiving watercourses	N/A
<input type="checkbox"/> Identification of municipal drains and related approval requirements.	N/A
<input type="checkbox"/> Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 4.0 Storm Sewer Servicing & Section 5.0 Proposed Stormwater Management
<input type="checkbox"/> 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)
<input type="checkbox"/> Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A

<input type="checkbox"/> Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Section 6.0 Sediment & Erosion Control
<input type="checkbox"/> 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
<input type="checkbox"/> 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)
<input type="checkbox"/> 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
<input type="checkbox"/> Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	N/A
<input type="checkbox"/> Changes to Municipal Drains.	N/A
<input type="checkbox"/> 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)
<input type="checkbox"/> Clearly stated conclusions and recommendations	Section 7.0 Summary Section 9.0 Recommendations
<input type="checkbox"/> 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
<input type="checkbox"/> All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	All are stamped