SITE SERVICING AND STORMWATER MANAGEMENT REPORT MYERS AUTOMOTIVE GROUP – PROPOSED AUTOMOBILE DEALERSHIP – 540 DEALERSHIP DRIVE, CITY OF OTTAWA

Project No.: CP-17-0442

Prepared for:

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1.0 INTRODUCTION

Egis Canada Ltd. has been retained by Myers Automotive Group to complete a Functional Servicing and Stormwater Management Report for the proposed automobile dealership at 540 Dealership Drive within the City of Ottawa. This report will address the servicing (water, sanitary, and storm) and stormwater management (SWM) requirements for the proposed development.

1.1 Pre-Consultation Summary

City of Ottawa Staff have been pre-consulted regarding this proposed development in person on August 9th, 2017. 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 20 minutes and 10 minutes, respectively.
- Control 5 through 100-year post-development as outlined in the approved Citi Gate report (Section 6.1.1, Citi Gate Lands – West Side of O'Keefe Drain).
- Ponding of water shall not exceed 0.35 m for the 100-year storm event within the asphalt parking areas.
- Quality control is provided via the existing SWM pond design as part of the Citi Gate Development (Block 12) and is located downstream on the site.

Correspondence with the City can be found in Appendix 'A'.

2.0 SITE DESCRIPTION

The property is located at 540 Dealership Drive within the approved Citi Gate 416 Corporate Campus Development (City File Number D07-16-12-0023), shown in Figure 1. It is described as Block 9, Registered Plan 4M-1538, City of Ottawa. The land in question covers approximately 1.84 ha and is located between the proposed body shop building at Block 10 (City File Number D07-12-12-0183) and the Honda Dealership.

Figure 1: 540 Dealership Drive, Ottawa

The existing site is currently undeveloped and is made up of grass areas, low lying vegetation and two stockpiles of topsoil. The existing site has been serviced with water, sanitary and storm lateral stubs as well as the downstream SWM facility previously constructed as part of the Citi Gate development.

The proposed development consists of a 2,144 m^2 automobile dealership. Parking and drive aisles will be provided throughout the site along with landscaping. There will be two site accesses for the development extending from Dealership Drive, with one entrance being shared with Block 10.

3.0 BACKGROUND INFORMATION

Background studies that have been completed for the site include review of the City of Ottawa as-built drawings, Citi Gate 416 Corporate Campus Development plans and reports, a topographical survey of the site, a geotechnical report and a traffic impact statement.

As-built drawings of the existing services within the vicinity of the site were reviewed in order to determine proper servicing and SWM schemes for the site.

The original Citi Gate 416 Corporate Campus Development plans and reports (City File Number D07-16-12-0023) were reviewed for the Block 9 specific design criteria.

A topographic survey of the site was completed by McIntosh Perry Survey Inc. (MPSI) dated August 28, 2017, and can be found under separate cover.

4.0 EXISTING SERVICING

4.1 Municipal Water

The watermain services the adjacent properties as well as the existing fire hydrants along the south side of Dealership Drive.

4.2 Sanitary Sewer

There is an existing 450 mm diameter concrete sanitary main located within Dealership Drive as well as a 1,350 mm diameter concrete storm sewer. There is also a 250 mm diameter watermain within Dealership Drive that is looped to Philsar Street along the boundary of the site.

4.3 Storm Sewer

There is an existing private 825 mm diameter concrete private storm pipe within a 6.0 m easement along the north property line that services the adjacent Block 10 and Block 8 (Honda dealership). A 200 mm diameter PVC sanitary stub and a 200 mm PVC water stub have been extended into the site from Dealership Drive east of the existing fire hydrant.

5.0 PROPOSED SERVICING

5.1 Watermain Design

A new 200 mm PVC diameter water lateral will be connected to the existing 200 mm PVC water stub that was extended from Dealership Drive, complete with the existing water valve located at the property line. A private hydrant will be located within the site along the north property line.

The water demands for the new buildings have been calculated as per the Ottawa Design Guidelines – Water Distribution and are as follows: the average and maximum daily demands are 0.75 L/s and 1.12 L/s respectively. The maximum hourly demand was calculated as 2.01 L/s (Refer to Appendix 'B' for flow details).

Boundary conditions have been provided by the City of Ottawa and are available in Appendix 'B'. It is anticipated the existing 250 mm watermain within Dealership Drive can adequately service the proposed development.

5.2 Fire Protection

The proposed building will be equipped with a sprinkler system for fire protection. The required fire flow from the Ontario Building Code (OBC) is 5,400 L/min (See Appendix 'B' for calculation). The required fire protection from the Fire Underwriters Survey (FUS) is 5,000 L/min (provided for information purposes only). This required fire flow is consistent with the flows calculated within the Citi Gate SWM report for large and medium size buildings (Section 5.3, Table 5.5 of the Citi Gate report). The Citi Gate report states that the proposed watermain is capable of meeting all design criteria for the initial and ultimate buildout. Available flows from the hydrants along Dealership Drive have been requested, however were not available for the submission of this report.

5.3 Sanitary Sewer Design

A new 200 mm diameter gravity sanitary service will be connected to the existing 200 mm diameter PVC sanitary stub extended from Dealership Drive. The sanitary service will be complete with a maintenance manhole (SAN MH1A) inside the property line as per the Ottawa Sewer Design Guidelines (SDG) SDG002, October 2012, City of Ottawa, Clause 4.4.4.7 and City of Ottawa Sewer-Use By-Law 2003-514 (14).

The peak design flow for the proposed site was determined to be 0.3 L/s, which is well within the available capacity of the proposed 200 mm diameter lateral (See Appendix 'C' for detailed calculations). It is anticipated that there will be no issues with capacity constraints within the proposed lateral or the existing sanitary main within Dealership Drive as the amount of flow leaving the site is below the flow assumption of 1.86 L/s noted within the Citi Gate report. This flow was determined using the building occupancy and car wash load.

Therefore, the proposed 200 mm sanitary lateral on site has the capacity to accommodate the sanitary flows for the proposed development.

5.4 Storm Sewer Design

Site runoff within the development area will sheet flow to the new storm network within the parking lot areas. The new storm network will direct runoff to the existing storm maintenance hole at the northwest corner of the site before outletting to the existing Ministry of the Environment, Conservation, and Parks (previously Ministry of the Environment and Climate Change, MOECC) approved SWM facility. The storm system will be further detailed in Section 6.0.

6.0 STORMWATER MANAGEMENT

Stormwater management for this site will be maintained through positive drainage away from the proposed buildings and into a new underground storm sewer system within the site. This SWM plan will protect the receiving waterways from excessive erosion by implementing velocity and quantity control strategies. The storm

runoff will enter the pipe system through catchbasins (CB's) and catchbasin manholes (CBMH's) located throughout the site. The restricted stormwater runoff will be directed to the existing storm sewer located along the northern frontage of the site. The overland flow route will be directed towards the rear of the site to the O'Keefe Drain. The quantitative and qualitative properties of the storm runoff for both the pre- and post-development flows are further detailed below.

6.1 Design Methodology

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

Q=2.78 CIA (L/s)
Q=Runoff flow rate in L/s
C=Runoff coefficient
I=Rainfall intensity in mm/hr
A=Drainage area in hectares

It is recognized that the rational method tends to overestimate runoff rates. As a by-product of using extremely conservative prediction method, any facilities that are sized using these results are expected to function as intended in real world conditions.

In conjunction with the City of Ottawa Sewer Design Guidelines the following runoff coefficients were used to develop a balanced 'C' for each drainage area:

Building roofs, Asphalt, Concrete	0.90
Grass, undeveloped areas	0.20
Gravel	0.60

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 and post-development flows shall be calculated using a time of concentration (Tc) of 20 minutes and 10 minutes, respectively.

6.2 Site Drainage

6.2.1 Pre-Development Drainage

The existing site has been demonstrated as drainage area A1. Drawing CP-17-0442 PRE (Appendix 'D') indicates the limits of these drainage areas. The Pre-Development Drainage characteristics for the site are summarized in Table 1.

Table 1: Pre-Development Drainage Summary

Basin	Drainage Area (ha)	Balanced Runoff Coefficient (C) 5-Yr	Balanced Runoff Coefficient (C) 100-Yr	5-Yr Flow Rate (L/s)	100-Year Flow Rate (L/s)
A1	1.84	0.20	0.25	71.7	153.1
Total	**1.84**			**71.7**	**153.1**

(See Appendix 'F' for calculations.)

6.2.2 Post-Development Drainage

The proposed site has been demonstrated as drainage areas B1-B9. Drawing CP-17-0442 Post (Appendix 'E') indicates the limits of these drainage areas. The Post-Development Drainage characteristics for the site are summarized in Table 2.

Table 2: Post-Development Drainage Runoff Calculations

Basin	Drainage Area (ha)	Runoff Coefficient (C) 2-Yr	Runoff Coefficient (C) 5-Yr	Runoff Coefficient (C) 100-Yr	2-Yr Flow Rate (L/s)	5-Yr Flow Rate (L/s)	100-Year Flow Rate (L/s)
B1	0.13	0.23	0.23	0.28	6.44	8.76	18.45
B2	0.13	0.90	0.90	1.00	24.36	33.17	63.16
B3	0.25	0.81	0.81	0.90	42.07	57.28	109.53
B4	0.21	0.84	0.84	0.94	37.76	51.42	98.14
B5	0.36	0.52	0.52	0.59	39.20	53.38	104.35
B6	0.25	0.72	0.72	0.81	37.62	51.23	98.42
B7	0.15	0.88	0.88	0.97	28.66	39.03	74.40
B8	0.16	0.86	0.86	0.96	30.06	40.94	78.07
B9	0.20	0.80	0.80	0.89	34.00	46.30	88.57
Total	**1.84**				**280.17**	**381.52**	**733.08**

Runoff from areas B3 through B8 will be restricted before outletting to the existing private storm system through Blocks 8 and 9. The total flow leaving the site will be controlled by an inlet control device located within CBMH 3 to account for the unrestricted flow leaving the site. See Appendix 'F' for calculations. This restriction and quality control of runoff will be further detailed in Sections 6.3 and 6.4.

6.3 Quantity Control

After discussing the SWM criteria for the site with City staff, the total post-development runoff for this site has been restricted to match the required flows within the Citi Gate SWM report (See Appendix 'A' for pre-consultation notes). These values create the allowable release rates and storage volume for the development site shown in Table 3.

Table 3: Allowable Release Rates and Required Storage Volumes

Basin	Drainage Area (ha)	Balanced Runoff Coefficient (C) 5-Yr	Balanced Runoff Coefficient (C) 100-Yr	5-Yr Flow Rate (L/s)	100-Year Flow Rate (L/s)
A1	1.84	0.80	120%	425.5	510.6

(See Appendix 'F' for Calculations)

Reducing site flows will be achieved using a flow restriction and will create the need for onsite storage. The runoff will be restricted in areas B3 through B8 as detailed in Table 4. Calculations are included in Appendix 'F'.

Table 4: Post-Development Runoff Restrictions

Area	Post-Development Unrestricted (L/s)			Post-Development (Restricted) (L/s)			
	2-Yr	**5-Yr**	**100-Yr**	**2-Yr**	**5-Yr**	**100-Yr**	
B1	6.44	8.76	18.45	6.44	8.76	18.45	UNRESTRICTED
B2	24.36	33.17	63.16	24.36	33.17	63.16	UNRESTRICTED
B3	42.07	57.28	109.53	319.96	324.07	329.74	RESTRICTED
B4	37.76	51.42	98.14				
B5	39.20	53.38	104.35				
B6	37.62	51.23	98.42				
B7	28.66	39.03	74.40				
B8	30.06	40.94	78.07				
B9	34.00	46.30	88.57	34.00	46.30	88.57	UNRESTRICTED
Total	**280.17**	**381.52**	**733.08**	**384.75**	**412.30**	**499.91**	

Runoff from areas B3-B8 will be restricted at CBMH 3 through a 332 mm diameter orifice plug. This orifice plug will restrict areas B3-B8 to 320.0 L/s, 324.1 L/s and 329.7 L/s for the 2-, 5-, and 100-year storm events, respectively. The restriction creates a water surface elevation (WSEL) of 95.30 m, 95.35 m, and 95.42 m for the 2-, 5-, and 100-year storm events, respectively. The storage for this area will be provided above the parking lot structures.

In the event that there is a rainfall above the 100-year storm event, or a blockage within the storm network, an emergency overland flow route has been provided such that the storm water runoff will be conveyed towards the south side of the site, away from the building, and into the O'Keefe Drain. An elevation difference of 0.30 m has been provided from the finished floor (95.80 m) of the building to the overland flow route elevation (95.50 m).

Table 5 summarizes the storage requirements and the depth of the water ponding during the 2-, 5-, and 100-year storm events to meet the required storage volumes.

Table 5: Storage Summary

	2-Yr Storm Event	5-Yr Storm Event	100-Yr Storm Event
Required Storage (m^3)	40.3	87.8	277.5
Provided Storage (m^3)	51.6	105.4	349.0
Depth of Ponding (m)	0.10	0.15	0.22

6.4 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. This is consistent with the intent of the BMP's for SWM as outlined in the Citi Gate Report (2014) and the work invested into re-aligning and protecting the ecological health of O'Keefe Drain's aquatic habitat.

As per Section 6.1.1 of the Citi Gate Report a SWM Facility has been constructed on the west side of the O'Keefe Drain as part of the Phase 1 development of the Citi Gate Lands. This facility has been designed to accommodate runoff from all future development within the tributary drainage area, including Phases 1 and 2, and adjacent lands. Additionally, the facility has been oversized to reduce the quantity control storage requirements for the lands on the east side of the O'Keefe Drain.

As the site is on the west side of the O'Keefe Drain, quality control is provided within the downstream SWM facility. The combination of the above BMP's and the sites flow control measures will aid in the thermal protection of O'Keefe Drain.

6.4.1 Temperature Mitigation

The proposed building will be equipped with a high-albedo roof to mitigate the temperature of the stormwater runoff. The grading of the site only permits the emergency overland flow to discharge into the O'Keefe Drain system. The site has been designed to retain the stormwater up to the 100-year storm event and discharge into

the infrastructure within Dealership Drive. It is anticipated that stormwater discharged into the O'Keefe Drain from the site will be negligible in the normal yearly operation of the site.

7.0 SEDIMENT AND EROSION CONTROL

The site-grading contractor is responsible for ensuring sediment control structures are installed in accordance with the Site Grading and Drainage Plan as indicated. Silt fences shall be installed on site before construction or earth-moving operations begin, as shown on the site plan.

Geosock is to be installed under the grates of all existing structures along the frontage of the site and any new structures immediately upon installation. The Geosock 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.

At the discretion of the project manager, municipal staff or conservation authority, additional silt control devices shall be installed at designated locations.

8.0 SUMMARY

- A new 2,144 m^2 automobile dealership will be constructed centrally on the site located at 540 Dealership Drive (Block 9).
- A new 200 mm diameter sanitary service and monitoring manhole will be installed and connected to the existing 200 mm diameter stub within Dealership Drive.
- A new 200 mm diameter water lateral will be extended from the existing 200 mm diameter stub to service the new building. A 'tee' connection is proposed from the new 200 mm diameter water lateral to service the hydrant with a 150 mm diameter water lateral.
- A new storm network will be installed onsite and will connect to the existing maintenance hole at the northwest corner of the site.
- As discussed with the City of Ottawa staff, the SWM design will ensure that the post-development flow rates conform to the allowable release rates from the Citi Gate SWM Report for the entire site area.
- Storage for the 5- through 100-year storm events will be provided within the parking lot areas above the proposed storm structures.
- An MOECC approved downstream SWM Facility (Block 12) has been constructed as part of the Citi Gate Development to ensure 80% TSS removal is achieved for the site.
- Any other regulatory requirements/approvals (Conservation Authority Permit, MTO permit, EASR, ECA, etc.) will be attained prior to a commence work notification.

9.0 RECOMMENDATIONS

We respectfully recommend that:

This revised report, dated January 30, 2026, and the associated site grading, drainage and servicing plans be approved for engineering details.

The sediment and erosion control plan outlined in Section 7.0 and detailed in the Grading and Drainage Plan notes are to be implemented by the contractor.

This report is respectfully being submitted for approval.

Jessica Burden, P. Eng.
Project Engineer, Land Development
613-266-5779

Robbie Pickard, P.Eng.
Project Engineer, Land Development
613-808-3427

APPENDIX A
CITY OF OTTAWA PRE-CONSULTATION NOTES

Robbie Pickard

From:	Bernier, John <John.Bernier@ottawa.ca>
Sent:	Wednesday, August 16, 2017 5:02 PM
To:	David Traher; Curtis Melanson
Cc:	Shillington, Jeffrey; Moise, Christopher; Baggs, Rosanna
Subject:	Dealership Drive - Pre-Consult Follow-up
Attachments:	540 Dealership Drive_Plans and Study list1.docx

Good afternoon,

It was nice meeting you for a pre-application consultation (PC2017-0217) on August 9th, 2017, regarding the yet to be addressed property between 550 and 530 Dealership Drive. We met to discuss the development of a dealership and associated parking area.

The following is a brief summary of our meeting and the requirements of a formal application:

Planning Comments:

1. I've contacted addressing and signs regarding an address for this property. I'll provide this once I receive it.
2. A design brief/cover letter will be required which discusses how this property is meeting relevant policy. Attention should be directed to the Citi Gate Design Guidelines and the Secondary Plan – ie. A high proportion of the lot area should be dedicated to landscaping.
3. More and larger landscaping internally – such as islands and caps at the end of parking rows to break up the mass of hard surface. Include tree plantings in these.
4. Define the spaces on the site plan, such as visitor parking area, storage, etc.
5. Add zoning table.
6. Identify approximate location of spaces within the building and their proportions on the Site Plan.
7. Show snow storage.
8. Add directional sign and detail for the shared entrance and for any other signs on the property.
9. Include address and legal description of lands.
10. Provide bike lockups as per Zoning By-law.
11. Include pedestrian connections to the street.
12. Would prefer interesting vehicle display pads similar to 4115 Strandherd Drive over a row of spaces that simply look like parking lot.

Design Comments:

13. Have regard to the design guidelines for car dealerships in this area;
14. Create more presence at the street by:
    a. Relocating visitor parking to the side or back of the building;
    b. Increase landscaping in front of the building;
    c. Use space in front of the building for showcasing;
    d. Provide safe and clear pedestrian access across and through the site.

Transportation:

15. Submit the Traffic Impact Assessment Screening Form as per the new Traffic Impact Assessment Guidelines (2017). The Traffic Impact Assessment need to consider Dealership Drive up to and including the intersection of Strandherd Dr. If any of the triggers on the Traffic Impact Assessment Screening Form are statisfied, then the Developer will be required to continue with a Traffic Impact Assessment as laid out in the guidelines.
16. Turning templates at any private accesses and the driveway aisles within the site are required to show their largest vehicle being able to enter, exit and service the site.
17. Must indicate a loading zone as per Parking By-Law.
18. All product deliveries must be made within the property. It will not be permitted for their delivery trucks to stop on the road.
19. Must indicate parking stall lengths and widths.
20. Inventory storage is not considered as part of the required parking calculations.
21. Show details for all curb radii, clear throat lengths, etc. See Private Approach By-lay for requirements.
22. Show pedestrian accesses, walkways including depressed curbs.
23. Any parking adjacent to a pedestrian walkway that abuts a building should have a minimum with of 2.0-2.5m to prevent bumper overhang.

Engineering Comments:

24. Grading and Drainage Plan;
25. Servicing Plan;
26. Sediment and Erosion Control Plan (may be included on Grading);
27. Servicing Report
    a. The servicing design should conform to the Citi Gate – 416 Corporate Campus – Detailed Servicing and Stormwater Management Report (Phase 1), prepared by Novatech Engineering,dated October 1, 2014.
    b. Section 6.1.1 of the above report, outlines the Allowable Stormwater Management release rates and storage requirements for the individual sites:
    c. Based on a runoff coefficient of C=0.80:
        i. the 5 year peak flow can be released uncontrolled
        ii. the maximum release rate is not to exceed 120% of the 5-year peak flow for all storms up to and including the 100-year event.
        iii. Ensure no overland flow for all storms up to and including the 100-year event.
28. -Should be no issues for water and sanitary servicing.
29. -Geotechnical Report.

The posed application will be a (New, Manager Approval, Public Consultation) Application, which costs **$21,086.77** (click here for exact fees), plus the engineering design review and inspection fee, legal fees, as well as conservation authority fee.

Please find attached the "Applicant's Study and Identification List" including the number of copies required for each in order for the application to be deemed complete. Here is the link to the guide for preparing studies and plans: http://ottawa.ca/en/development-application-review-process-0/guide-preparing-studies-and-plans

Best regards,

John Bernier
Planner
Development Review - South
Planning, Infrastructure and Economic Development Department

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APPENDIX B
EXISTING WATERMAIN FLOW AND FIRE CALCULATIONS

540 Dealership Drive - Fire Underwriters Survey (FUS) Fire Calculations

Project:	540 Dealership Drive
Project No.:	CP-17-0442
Designed By:	CDH
Checked By:	CJM
Date:	May 2, 2025

1. From the Fire Underwriters Survey (1999)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:

F = 220 x C x √A Where:

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

2. Determine Ground Floor Area

As provided by the Architect:

Floor Area (One Floor)	=	2,625.00	m²
Floor Area (Second Floor)	=	559.27	m²
Total Floor Area	=	3,184.27	m²

This floor area represents the final build-out of the development; as outlined on the Site Plan drawing.

3. Calculate Required Fire Flow

F = 220 x C x √A

C = 0.80
A = 3,184.27
F = 220.00 X 0.80 X √ 3184.27
F = 9,931.56 L/min.

4. Determine Height in Storeys

From Architectural Drawings:

Number of Storeys = 2.00

5. Determine Increase or Decrease Based on Occupancy

From note 2, Page 18 of the Fire Underwriter Survey:

Combustible
No Change

F = 9,931.56 L/min.

6. Determine the Decrease, if any for Sprinkler Protection

From note 3, Page 18 of the Fire Underwriter Survey:

- The flow requirement may be reduced by up to 50% for complete automatic sprinkler protection depending upon adequacy of the system.
- The credit for the system will be a maximum of 30% for an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards.
- Additional credit of 10% if water supply is standard for both the system and fire department hose lines
- If sprinkler system is fully supervised system, an additional 10% credit is granted
- The entire building will be installed with a fully automated, standardized with the City of Ottawa Fire Department and fully supervised.
- Therefore 9931.56 L/min – 50% (The building is sprinklered with a standard system and fire department hose lines)

F = 4,965.78 L/min.

7. Determine the Total Increase for Exposures

From note 4, Page 18 of the Fire Underwriter Survey:

- There are no existing buildings surrounding the remainder of the site that are within 45m.
- 9931.56 L/min - 4965.78 L/min + (9931.56 L/min x 0%)

F = 4,965.78 L/min.

Therefore, after rounding to the nearest 1,000 L/min, the total required fire flow for the development is 5,000 L/min 1,320 GPM).

540 DEALERSHIP DRIVE - OBC FIRE PROTECTION CALCULATIONS

Project:	540 DEALERSHIP DRIVE
Project No.:	CP-17-0442
Designed By:	CDH
Checked By:	CJM
Date:	May 2, 2025

Ontario 2006 Building Code Compendium (Div. B - Part 3)

Water Supply for Fire-Fighting - Store/Office & Warhouse Building

Building is classified as Group : F3 (from table 3.2.2.55)
Building is of noncombustable construction with fire separations and fire-resistance ratings provided in accordance with Subsection 3.2.2, including loadbearging walls, columns and arches.

From Div. B A-3.2.5.7. of the Ontario Building Code - 3. Building On-Site Water Supply:

(a) Q = K x V x Stot

where:
Q = minimum supply of water in litres
K = water supply coefficient from Table 1
V = total building volume in cubic metres
Stot = total of spatial coefficient values from the property line exposures on all sides as obtained from the formula:
Stot = 1.0 + [Sside1+Sside2+Sside3+..etc.]

K	12	(from Table 1 pg A-31) (Worst case occupancy {E/ F2} 'K' value used)
V	15,694	(Total building volume in cu.m.)
Stot	1.0	(From figure 1 pg A-32)
Q =	188,324.64 L	

From Figure 1 (A-32)

Snorth	26	m	0.0
Seast	25	m	0.0
Ssouth	70	m	0.0
Swest	40	m	0.0

* approximate distances

From Table 2: Required Minimum Water Supply Flow Rate (L/s)

5400 L/min (if 162,000 L< Q < 190,000 L)
1427 GPM

540 Dealership - Water Demands

Project:	540 Dealership Drive
Project No.:	CP-17-0442
Designed By:	CDH
Checked By:	CJM
Date:	May 2, 2025
Site Area:	1.84 gross ha

DEMAND TYPE	AMOUNT	UNITS
Residential	350	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Parks no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Othe Commercial	28,000	L/gross ha/d
0	0.75	L/s

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	2.5 x avg. day	L/c/d
Industrial	1.5 x avg. day	L/gross ha/d
Commercial	1.5 x avg. day	L/gross ha/d
Institutional	1.5 x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	1.12	L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	2.2 x max. day	L/c/d
Industrial	1.8 x max. day	L/gross ha/d
Commercial	1.8 x max. day	L/gross ha/d
Institutional	1.8 x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	2.01	L/s

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

APPENDIX C
SANITARY SEWER CALCULATION

Project Name: 540 Dealership Drive
Ottawa, Ontario

Re: Sanitary Flow Calculations

---

1. Building Occupancy

   The maximum building occupancy will be 55 persons, similar to other Myers dealerships.

2. Daily Volume in Litres

   As per the extract of the City of Ottawa Sewer Design Guidelines, Appendix 4-A; Daily Sewage Flow for Various Establishments;
   Various buildings and places of employment – e.g. store employees, office workers – depends on facility

   - = 75 Liters/Person/Day

   As per the extract of the City of Ottawa Sewer Design Guidelines, Appendix 4-A; Daily Sewage Flow for Various Establishments;
   (Car) Wash – Hand Wash

   - = 400 Liters/Car

3. Peak Flow (Q/p)

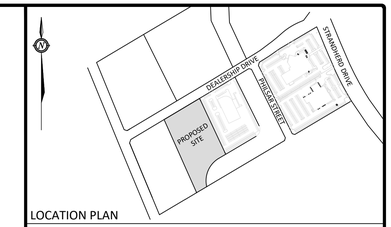
   - $Q_1(p) = F \times P$ Where:
     F = Litres/Person/Day (as per City of Ottawa Sewer Design Guidelines)
     P = 55 Persons
     - Therefore, $Q_1(p) = (75) \times (55) = 4{,}125$ L/Day (0.048 L/Sec)
   - $Q_2(p) = F \times P$ Where:
     F = 400 Litres/Car (as per City of Ottawa Sewer Design Guidelines)
     P = 55 Cars (Daily average)
     - Therefore, $Q_2(p) = (400) \times (55) = 22{,}000$ L/Day (0.255 L/Sec)

   - Therefore, $Q_{TOTAL}(p) = Q_1(p) + Q_2(p) = 26{,}125$ L/Day (0.302 L/s)

It is anticipated that there will be no issues with capacity constraints within the existing sanitary main or lateral as the amount of flow leaving the site is negligible. Therefore, the existing sanitary lateral stub within Dealership Drive has the capacity to accommodate the new flows.

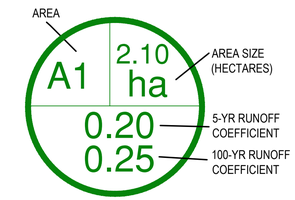
(MP File # CP-17-0442)

APPENDIX D
PRE-DEVELOPEMENT PLAN



LOCATION PLAN

LEGEND



No.	Revision/Issue	Date
8	REVISED FOR RESUBMISSION	MAY 02, 2025
7	REVISED PER UPDATED ENTRANCE LAYOUT	OCT 20, 2023
6	REVISED PROJECT TITLE	JUN 12, 2018
5	REVISED AS PER CITY COMMENT	JUN 06, 2018
4	REVISED PER NEW SITE PLAN	MAY 14, 2018
3	REVISED PER CITY COMMENTS (MAR 27/18)	APR 03, 2018
2	REVISED PER CITY COMMENTS (DEC 18/17)	FEB 12, 2018
1	ISSUED FOR SITE PLAN CONTROL	SEP 19, 2017

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

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

Stamp:

Client:
MYERS AUTOMOTIVE GROUP
1200 BASELINE ROAD
OTTAWA, ON K2C 0A6

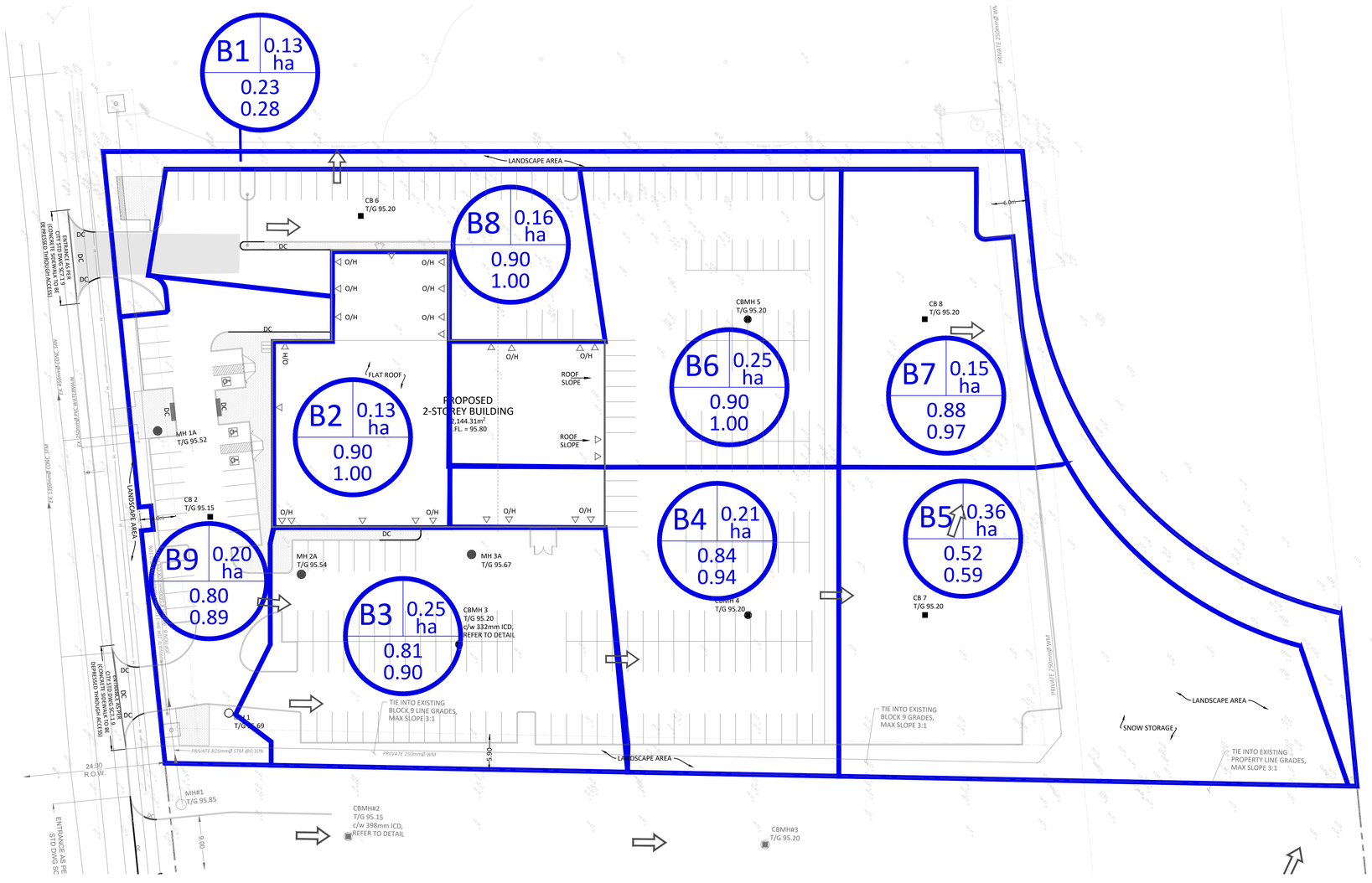
Project:
540 DEALERSHIP DRIVE
PROPOSED AUTOMOBILE DEALERSHIP
OTTAWA — ONTARIO

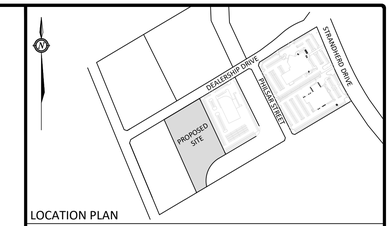
Drawing Title:
PRE-DEVELOPMENT DRAINAGE PLAN

Scale:	N.T.S.
Drawn by:	CDH
Checked By:	CJM/RPK
Designed By:	CDH
Date:	AUG. 28, 2017
Project Number:	CP-17-0442
Drawing Number:	PRE
SHEET 1 of 1	

FILENAME: U:\Drawn\01 Project - Proposals\2017 Jobs\CP\0CP-17-0442 Myers_Dealership_540 Dealership Drive\Civil\15 - Drawing\0CP-17-0442_Presentation.dwg
LAST SAVED: Tuesday, April 22, 2025 LAST SAVED BY: rjackard
LAST PLOTTED: Friday, May 02, 2025 CTB FILE USED: ----

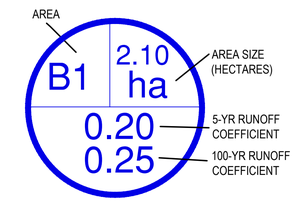
APPENDIX E
POST-DEVELOPMENT PLAN





LOCATION PLAN

LEGEND



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1	ISSUED FOR SITE PLAN CONTROL	SEP 19, 2017

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

egis

Stamp:

Client:
MYERS AUTOMOTIVE GROUP
1200 BASELINE ROAD
OTTAWA, ON K2C 0A6

Project:
540 DEALERSHIP DRIVE
PROPOSED AUTOMOBILE DEALERSHIP
OTTAWA — ONTARIO

Drawing Title:
POST-DEVELOPMENT DRAINAGE PLAN

Scale:	N.T.S.	Project Number:	CP-17-0442
Drawn by:	CDH		
Checked By:	CJM/RPK	Drawing Number:	
Designed By:	CDH		
Date:	AUG. 28, 2017	SHEET 1 of 1	POST

FILENAME: U:\Ottawa\01 Project - Proposal\\2017 Jobs\CP\CP-17-0442 Myers_Dealership_540 Dealership Drive\Civil\15 - Drawing\0CP-17-0442_Presentation.dwg
LAST SAVED: Tuesday, January 13, 2026 LAST SAVED BY: rpickard
LAST PLOTTED: Tuesday, January 27, 2026 CTB FILE USED: ----

APPENDIX F
STORMWATER CALCULATIONS

CP-17-0442 - 540 Dealership Drive - SWM Calculations

Tc (min)	Intensity (mm/hr) 2-Year	5-Year	100-Year	
20	51.6	70.3	120.0	PRE-DEVELOPMENT
10	76.5	104.2	178.6	POST-DEVELOPMENT

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-year)	Average C (5-year)	Average C (100-year)
A1	0	0	18,400	0.20	0.20	0.25

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 2-Year	C 5-Year	C 100-Year	Tc (min)	Q (L/s) 2-Year	5-Year	100-Year
A1	1.84	0.20	0.20	0.25	10	52.78	71.87	153.39

Post-Development Runoff Coefficient

Drainage Area	Impervious Area (m^2)	Gravel (m^2)	Pervious Area (m^2)	Average C (2-year)	Average C (5-year)	Average C (100-year)
B1	53	0	1,276	0.23	0.23	0.28
B2	1,272	0	0	0.90	0.90	1.00
B3	2,125	0	327	0.81	0.81	0.90
B4	1,935	0	169	0.84	0.84	0.94
B5	1,613	0	1,956	0.52	0.52	0.59
B6	1,825	0	632	0.72	0.72	0.81
B7	1,485	0	55	0.88	0.88	0.97
B8	1,552	0	84	0.86	0.86	0.96
B9	1,709	0	301	0.80	0.80	0.89

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 2-Year	C 5-Year	C 100-Year	Tc (min)	Q (L/s) 2-Year	5-Year	100-Year	
B1	0.13	0.23	0.23	0.28	10	6.44	8.76	18.45	Unrestricted
B2	0.13	0.90	0.90	1.00	10	24.36	33.17	63.16	Unrestricted
B3	0.25	0.81	0.81	0.90	10	42.07	57.28	109.53	Restricted
B4	0.21	0.84	0.84	0.94	10	37.76	51.42	98.14	
B5	0.36	0.52	0.52	0.59	10	39.20	53.38	104.35	
B6	0.25	0.72	0.72	0.81	10	37.62	51.23	98.42	
B7	0.15	0.88	0.88	0.97	10	28.66	39.03	74.40	
B8	0.16	0.86	0.86	0.96	10	30.06	40.94	78.07	
B9	0.20	0.80	0.80	0.89	10	34.00	46.30	88.57	Unrestricted
Total	1.84					280.17	381.52	733.08	

Required Restricted Flow

Drainage Area	Area (ha)	Q (L/s)	
A1	1.84	510.60	Per Citi Gate SWM Report Section 6.1.1

Post-Development Restricted Runoff Calculations

Drainage Area	Unrestricted Flow 2-year	5-year	100-Year	Restricted Flow 2-Year	5-Year	100-Year	Storage Required (m^3) 2-Year	5-Year	100-Year	Storage Provided (m^3) 2-Year	5-Year	100-Year
B1	6.44	8.76	18.45	6.44	8.76	18.45						
B2	24.36	33.17	63.16	24.36	33.17	63.16						
B3	42.07	57.28	109.53	319.96	324.07	329.74	40.30	78.0	277.5	51.6	105.4	349.0
B4	37.76	51.42	98.14									
B5	39.20	53.38	104.35									
B6	37.62	51.23	98.42									
B7	28.66	39.03	74.40									
B8	30.06	40.94	78.07									
B9	34.00	46.30	88.57	34.00	46.30	88.57						
Total	280.17	381.52	733.08	384.75	412.30	499.91	40.30	78.00	277.54	51.59	105.44	349.01

Data sensitivity - Internal

CP-17-0442 - 540 Dealership Drive - SWM Calculations

Storage Requirements for Area B3-B8

2-YEAR STORM EVENT

Tc	I (mm/hr)	Runoff (l/s) B3	Runoff (l/s) B4	Runoff (l/s) B5	Runoff (l/s) B6	Runoff (l/s) B7	Runoff (l/s) B8	Allowable Outflow (l/s)	Runoff To Be Stored (l/s)	Storage Required (m^3)
2	134.2	73.8	66.2	68.8	66.0	50.3	52.7	160.0	217.8	26.1
4	112.0	61.6	55.3	57.4	55.1	42.0	44.0	160.0	155.3	37.3
6	96.6	53.1	47.7	49.5	47.5	36.2	38.0	160.0	111.9	40.3
8	85.3	46.9	42.1	43.7	41.9	32.0	33.5	160.0	80.1	38.5
10	76.5	42.1	37.8	39.2	37.6	28.7	30.1	160.0	55.4	33.2

Maximum Storage Required (m^3) = 40.3

5-YEAR STORM EVENT

Tc	I (mm/hr)	Runoff (l/s) B3	Runoff (l/s) B4	Runoff (l/s) B5	Runoff (l/s) B6	Runoff (l/s) B7	Runoff (l/s) B8	Allowable Outflow (l/s)	Runoff To Be Stored (l/s)	Storage Required (m^3)
2	182.7	100.4	90.2	93.6	89.8	68.4	71.8	163.3	351.0	42.1
5	141.2	77.6	69.7	72.3	69.4	52.9	55.5	163.3	234.2	70.2
10	104.2	57.3	51.4	53.4	51.2	39.0	40.9	163.3	130.0	78.0
15	83.6	46.0	41.3	42.8	41.1	31.3	32.8	163.3	72.0	64.8
20	70.3	38.7	34.7	36.0	34.6	26.3	27.6	163.3	34.6	41.5

Maximum Storage Required (m^3) = 78.0

100-YEAR STORM EVENT

Tc	I (mm/hr)	Runoff (l/s) B3	Runoff (l/s) B4	Runoff (l/s) B5	Runoff (l/s) B6	Runoff (l/s) B7	Runoff (l/s) B8	Allowable Outflow (l/s)	Runoff To Be Stored (l/s)	Storage Required (m^3)
5	242.7	148.9	133.4	142.1	165.8	100.8	110.4	164.9	636.4	190.9
10	178.6	109.6	98.2	104.6	122.0	74.2	81.2	164.9	424.8	254.9
15	142.9	87.7	78.6	83.7	97.6	59.3	65.0	164.9	306.9	276.2
20	120.0	73.6	66.0	70.2	82.0	49.8	54.6	164.9	231.3	277.5
25	103.8	63.7	57.1	60.8	70.9	43.1	47.2	164.9	177.8	266.7

Maximum Storage Required (m^3) = 277.5

2-Year Storm Event Storage Summary

		Water Elev. (m) =		95.30		
Location	T/G	INV. (out)	Area (m^2)	Head (m)	Depth (m)	Volume (m^3)
CBMH 3	95.20	93.14	150.06	1.93	0.10	7.50
CBMH 4	95.20	93.29	167.75	1.93	0.10	8.39
CBMH 5	95.20	93.49	186.92	1.93	0.10	9.35
CB 6	95.20	93.82	56.00	1.93	0.10	2.80
CB 7	95.20	93.26	209.08	1.93	0.10	10.45
CB 8	95.20	93.60	261.94	1.93	0.10	13.10

Storage Available (m^3) = 51.6 *
Storage Required (m^3) = 40.3

5-Year Storm Event Storage Summary

		Water Elev. (m) =		95.35		
Location	T/G	INV. (out)	Area (m^2)	Head (m)	Depth (m)	Volume (m^3)
CBMH 3	95.20	93.14	383.77	1.98	0.15	19.00
CBMH 4	95.20	93.29	362.72	1.98	0.15	17.95
CBMH 5	95.20	93.49	395.71	1.98	0.15	19.59
CB 6	95.20	93.82	124.35	1.98	0.15	6.16
CB 7	95.20	93.26	456.00	1.98	0.15	22.57
CB 8	95.20	93.60	407.64	1.98	0.15	20.18

Storage Available (m^3) = 105.4 *
Storage Required (m^3) = 87.8

100-Year Storm Event Storage Summary

		Water Elev. (m) =		95.42		
Location	T/G	INV. (out)	Area (m^2)	Head (m)	Depth (m)	Volume (m^3)
CBMH 3	95.20	93.14	762.11	2.05	0.22	55.33
CBMH 4	95.20	93.29	796.00	2.05	0.22	57.79
CBMH 5	95.20	93.49	829.77	2.05	0.22	60.24
CB 6	95.20	93.82	336.86	2.05	0.22	24.46
CB 7	95.20	93.26	979.08	2.05	0.22	71.08
CB 8	95.20	93.60	1103.49	2.05	0.22	80.11

Storage Available (m^3) = 349.0 *
Storage Required (m^3) = 277.5

* Measurements made in Civil 3D

Data sensitivity - Internal

Project Name: Proposed Automotive Dealership
Project Number: CP-17-0442

Structure: OBMH 3 Date: 1-27-26 11:18 AM
Designer: RP

For Orifice Flow, C= 0.6
For Weir Flow, C= 0.66

	Orifice 1	Orifice 2	Weir 1	Weir 2
invert elevation	93.20			X
center of crest elevation	93.37			X
orifice width / weir length	332 mm			X
orifice height				
orifice area (m^2)	0.087	0.000	0.000	X

Elevation Discharge Table - Storm Routing

	Orifice 1		Orifice 2		Weir 1		Weir 2		Total	
Elevation	H [m]	Q [m^3]	H [m]	Q [m^3]	H [m]	Q [m^3]	H [m]	Q [m^3]	Q [l/s]	
93.20	x	x					x	x	0.0	
93.25	x	x					x	x	0.0	
93.30	x	x					x	x	0.0	
93.35	x	x					x	x	0.0	
93.40	0.03	0.042					x	x	42.4	
93.45	0.08	0.067					x	x	66.7	
93.50	0.13	0.084					x	x	84.2	
93.55	0.18	0.099					x	x	98.7	
93.60	0.23	0.111					x	x	111.3	
93.65	0.28	0.123					x	x	122.6	
93.70	0.33	0.133					x	x	133.0	
93.75	0.38	0.143					x	x	142.6	
93.80	0.43	0.152					x	x	151.6	
93.85	0.48	0.160					x	x	160.1	
93.90	0.53	0.168					x	x	168.1	
93.95	0.58	0.176					x	x	175.8	
94.00	0.63	0.183					x	x	183.2	
94.05	0.68	0.190					x	x	190.3	
94.10	0.73	0.197					x	x	197.1	
94.15	0.78	0.204					x	x	203.7	
94.20	0.83	0.210					x	x	210.1	
94.25	0.88	0.216					x	x	216.3	
94.30	0.93	0.222					x	x	222.4	
94.35	0.98	0.228					x	x	228.2	
94.40	1.03	0.234					x	x	234.0	
94.45	1.08	0.240					x	x	239.5	
94.50	1.13	0.245					x	x	245.0	
94.55	1.18	0.250					x	x	250.3	
94.60	1.23	0.256					x	x	255.6	
94.65	1.28	0.261					x	x	260.7	
94.70	1.33	0.266					x	x	265.7	
94.75	1.38	0.271					x	x	270.7	
94.80	1.43	0.276					x	x	275.5	
94.85	1.48	0.280					x	x	280.3	
94.90	1.53	0.285					x	x	285.0	
94.95	1.58	0.290					x	x	289.6	
95.00	1.63	0.294					x	x	294.1	
95.05	1.68	0.299					x	x	298.6	
95.10	1.73	0.303					x	x	303.0	
95.15	1.78	0.307					x	x	307.3	
95.20	1.83	0.312					x	x	311.6	
95.25	1.88	0.316					x	x	315.8	
95.26	1.89	0.317					x	x	316.6	
95.27	1.90	0.317					x	x	317.5	
95.28	1.91	0.318					x	x	318.3	
95.29	1.92	0.319					x	x	319.1	
95.30	1.93	0.320					x	x	320.0	2-YR
95.31	1.94	0.321					x	x	320.8	
95.32	1.95	0.322					x	x	321.6	
95.33	1.96	0.322					x	x	322.4	
95.34	1.97	0.323					x	x	323.3	
95.35	1.98	0.324					x	x	324.1	5-YR
95.36	1.99	0.325					x	x	324.9	
95.37	2.00	0.326					x	x	325.7	
95.38	2.01	0.327					x	x	326.5	
95.39	2.02	0.327					x	x	327.3	
95.40	2.03	0.328					x	x	328.1	
95.41	2.04	0.329					x	x	328.9	
95.42	2.05	0.330					x	x	329.7	100-YR
95.43	2.06	0.331					x	x	330.5	
95.44	2.07	0.331					x	x	331.3	
95.45	2.08	0.332					x	x	332.1	
95.46	2.09	0.333					x	x	332.9	
95.47	2.10	0.334					x	x	333.7	
95.48	2.11	0.335					x	x	334.5	
95.49	2.12	0.335					x	x	335.3	
95.50	2.13	0.336					x	x	336.1	
95.51	2.14	0.337					x	x	336.9	
95.52	2.15	0.338					x	x	337.7	
95.53	2.16	0.338					x	x	338.5	
95.54	2.17	0.339					x	x	339.2	
95.55	2.18	0.340					x	x	340.0	
95.60	2.23	0.344					x	x	343.9	
95.65	2.28	0.348					x	x	347.7	
95.70	2.33	0.351					x	x	351.5	

Notes: 1. For Orifice Flow, User is to Input an Elevation Higher than Crown of Orifice.
2. Orifice Equation: $Q = cA(2gh)^{1/2}$
3. Weir Equation: $Q = CLH^{3/2}$
4. These Computations Do Not Account for Submergence Effects Within the Pond Riser.
5. H for orifice equations is depth of water above the centroide of the orifice.
6. H for weir equations is depth of water above the weir crest.

STORM SEWER DESIGN SHEET

PROJECT: Proposed Automotive Dealership
LOCATION: 540 Dealership Drive
CLIENT: Myers
PAGE: 6 OF 6

LOCATION				CONTRIBUTING AREA (ha)								RATIONAL DESIGN FLOW											SEWER DATA								
1	2	3	4	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
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	W	H	SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (5yr) (L/s)	(%)
	B8	CB 6	CBMH 5	0.90		0.16			0.15	0.15	10.00	1.49	11.49	104.19	122.14	178.56	42.64				42.64	55.26	67.85	300			0.30	0.757	12.62	22.83%
	B7	CB 8	CBMH 5	0.88		0.15			0.14	0.14	10.00	0.58	10.58	104.19	122.14	178.56	39.25				39.25	43.87	30.00	250			0.50	0.866	4.62	10.53%
	B6	CBMH 5	CBMH 4	0.90		0.25			0.22	0.50	11.49	0.84	12.34	96.92	113.57	165.97	135.75				135.75	162.91	50.15	450			0.30	0.992	27.16	16.67%
	B5	CB 7	CBMH 4	0.52		0.36			0.19	0.19	10.00	0.37	10.37	104.19	122.14	178.56	53.76				53.76	67.96	30.00	250			1.20	1.341	14.20	20.90%
	B4	CBMH 4	CBMH 3	0.84		0.21			0.18	0.87	12.34	0.64	12.98	93.29	109.30	159.70	224.62				224.62	265.43	45.81	525			0.35	1.188	40.81	15.37%
	B2	ROOF	CBMH 3	0.90		0.13			0.12	0.12	10.37	0.28	10.65	102.26	119.87	175.22	34.12				34.12	39.01	19.90	200			1.30	1.203	4.90	12.55%
	B3	CBMH 3	MH 1	0.81		0.25			0.20	1.18	12.98	0.64	13.62	90.71	106.27	155.25	298.77				298.77	332.84	43.97	600			0.27	1.140	34.07	10.24%
	B9	CB 2	MH 1	0.80		0.20			0.16	0.16	10.00	0.56	10.56	104.19	122.14	178.56	46.58				46.58	55.49	36.72	250			0.80	1.095	8.91	16.05%
		MH 1	EX. MH							1.35	13.62	0.14	13.76	88.29	103.42	151.07	330.28				330.28	350.85	10.16	600			0.30	1.202	20.57	5.86%

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: CDH
Checked: CJM
Project No.: CP-17-0422

No.	Revision	Date
1.	ISSUED FOR SITE PLAN CONTROL	

Date: 2017-09-11
Sheet No: 6 OF 6

APPENDIX G
EXISTING MOECC ECA APPROVAL

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 3156-9SPPR3
Issue Date: January 14, 2015

Strandherd Road Inc.
1737 Woodward Drive, 2nd Floor
Ottawa, Ontario
K2C 0P9

Site Location: Citi Gate 416 Corporate Campus - Phase 1
4123, 4225, 4337, 4433, and 4501 Strandherd Drive
Part of Lots 17, 18, 19 and 20, Concession 4 (Rideau Front)
City of Ottawa

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

an amendment to the wastewater infrastructure Works serving Phase 1 of the Citi Gate 416 Corporate (Business Park) Campus located on the west side of Strandherd Drive, south of Fallowfield Road, within the Jock River watershed, within the South Nepean Secondary Plan Area - Annex 6 of the City of Ottawa, to add stormwater management facilities for the collection, treatment and disposal of stormwater run-off from the Citi Gate 416 Corporate Campus, providing Enhanced Level water quality control and erosion protection and attenuating post-development peak flows to pre-development levels for all storm events up to and including the 100-year storm event, consisting of the following:

Proposed Works:

collector swale: - a temporary perimeter collector swale constructed along the east side of Block 14 and 15, on land owned by the Owner, to intercept run-off from the undeveloped Phase 2 areas to the west of Phase 1 of the Citi Gate 416 Corporate Campus, and continuing along the south side of the Systemhouse Street and the temporary swale along the west side of Block 19, from Systemhouse Street to the inlet to the stormwater management facility (Pond A), identified below;

stormwater management facility (Pond A - catchment area 66.75 hectares): - one (1) wet pond with two (2) sediment forebays, located on Block 12 on the north side of Dealership Street, west of Strandherd Drive, serving approximately 12.28 hectares of Phase 1 and 54.47 hectares of the proposed Phase 2 Citi Gate 416 Corporate Campus, with an inlet from the storm sewer on Dealership Drive and an inlet from the temporary collector swale along the west side of Block 19, from Systemhouse Street, having a permanent pool volume of 15,448 m^3, an

extended detention volume of 4,612 m^3, and a total storage volume for the 100-year storm event of approximately 48,079 m^3, including the permanent pool volume, at a total depth of 3.4 m, discharging southward via an outlet control structure and box culvert to the relocated O'Keefe Drain at Dealership Street, and via the Jock River and Rideau River to the Ottawa River;

oil and grit separators: - four (4) oil and grit separators located within the municipal right-of-way serving Phase 1 of the Citi Gate 416 Corporate Campus, draining to the realigned O'Keefe Drain, as follows:

OGS #1A - one (1) Vortechs System (Model 5000 or Approved Equivalent - catchment area 0.59 hectares) oil and grit separator, located on Nortel Drive, north of Crosskey Place (STM MH 206), having a sediment storage capacity of 2.45 m^3, an oil storage capacity of 1,383 L, a total storage volume of 7.731 m^3, a maximum treatment flow rate of 240 L/s and a net annual load removal efficiency of 90% for the stormwater run-off from a portion of Nortel Drive;

OGS #1B - one (1) Vortechs System (Model 5000 or Approved Equivalent - catchment area 0.71 hectares) oil and grit separator, located on Crosskey Place, east of Nortel Drive (STM MH 300A), having a sediment storage capacity of 2.45 m^3, an oil storage capacity of 1,383 L, a total storage volume of 7.731 m^3, a maximum treatment flow rate of 240 L/s and a net annual load removal efficiency of 90% for the stormwater run-off from a portion of Crosskey Place;

OGS #2 - one (1) Vortechs System (Model 3000 or Approved Equivalent - catchment area 0.35 hectares) oil and grit separator, located on Systemhouse Street, east of the O'Keefe Drain (STM MH 408), having a sediment storage capacity of 1.38 m^3, an oil storage capacity of 853 L, a total storage volume of 4.672 m^3, a maximum treatment flow rate of 125 L/s and a net annual load removal efficiency of 92% for the stormwater run-off from a portion of Systemhouse Street;

OGS #3 - one (1) Vortechs System (Model 4000 or Approved Equivalent - catchment area 0.86 hectares) oil and grit separator, located on the west end of Philsar Street (STM MH 602), having a sediment storage capacity of 1.84 m^3, an oil storage capacity of 1,105 L, a total storage volume of 6.116 m^3, a maximum treatment flow rate of 175 L/s and a net annual load removal efficiency of 90% for the stormwater run-off from a portion of Philsar Street;

oil and grit separators: - seven (7) oil and grit separators located within Blocks 16, 1, 2, 3, 4, 5/6 of Phase 1 of the Citi Gate 416 Corporate Campus, discharging directly to the realigned O'Keefe Drain, as follows:

OGS #4 - one (1) Stormceptor (Model STC 3000 or Approved Equivalent - catchment area 2.5 hectares) oil and grit separator, located within Block 16, having a sediment storage capacity of 11.965 m^3, an oil storage capacity of 2,890 L, a total storage volume of 15.27 m^3, a maximum treatment flow rate of 30 L/s and a net annual load removal efficiency of 80% for the stormwater run-off from Block 16, discharging to the O'Keefe Drain culvert under the intersection of Nortel Drive and Crosskey Place;

OGS #5 - one (1) Stormceptor (Model STC 5000 or Approved Equivalent - catchment area 3.52 hectares) oil and grit separator, located within Block 1, having a sediment storage capacity of 20.94 m^3, an oil storage capacity of 3,360 L, a total storage volume of 24.71 m^3, a maximum treatment flow rate of 50 L/s and a net

annual load removal efficiency of 80% for the stormwater run-off from Block 1, discharging to the O'Keefe Drain culvert under the intersection of Nortel Drive and Crosskey Place;

OGS #6/7 - two (2) Stormceptor (Model STC 9000 or Approved Equivalent - combined catchment area 12.04 hectares) oil and grit separators, both located within Block 2, each having a sediment storage capacity of 32.98 m^3, an oil storage capacity of 10,555 L, a total storage volume of 44.355 m^3, a maximum treatment flow rate of 100 L/s and a net annual load removal efficiency of 80% for the stormwater run-off from Block 2, both discharging to the O'Keefe Drain culvert under Systemhouse Street;

OGS #8 - one (1) Stormceptor (Model STC 9000 or Approved Equivalent - catchment area 5.28 hectares) oil and grit separator, located within Block 3, having a sediment storage capacity of 32.98 m^3, an oil storage capacity of 10,555 L, a total storage volume of 44.355 m^3, a maximum treatment flow rate of 100 L/s and a net annual load removal efficiency of 80% for the stormwater run-off from Block 3, discharging to the O'Keefe Drain approximately 220 m north of Dealership Drive;

OGS #9 - one (1) Stormceptor (Model STC 4000 or Approved Equivalent - catchment area 3.41 hectares) oil and grit separator, located within Block 4, having a sediment storage capacity of 16.49 m^3, an oil storage capacity of 3,360 L, a total storage volume of 20.255 m^3, a maximum treatment flow rate of 50 L/s and a net annual load removal efficiency of 80% for the stormwater run-off from Block 4, discharging to the O'Keefe Drain approximately 210 m north of Dealership Drive;

OGS #10 - one (1) Stormceptor (Model STC 4000 or Approved Equivalent - catchment area 3.49 hectares), located within Block 5/6, having a sediment storage capacity of 16.49 m^3, an oil storage capacity of 3,360 L, a total storage volume of 20.255 m^3, a maximum treatment flow rate of 50 L/s and a net annual load removal efficiency of 80% for the stormwater run-off from Block 5/6, discharging to the O'Keefe Drain approximately 190 m south of Dealership Drive;

Previous Works:

sanitary and storm sewers to be constructed in the City of Ottawa, on Nortel Drive (from Station 20+020 to Station 20+625), Crosskey Place (from Station 3+042 to Station 3+310), Systemhouse Street (from Station 4+011 to Station 4+467), Dealership Street (from Station 5+159 to Station 5+723), and Philsar Street (from Station 6+010 to Station 6+200);

including erosion/sedimentation control measures during construction and all other controls and appurtenances essential for the proper operation of the aforementioned Works;

all in accordance with the submitted supporting documents listed in Schedule "A" forming part of this Approval.

For the purpose of this environmental compliance approval, the following definitions apply:

"Approval" means this entire document including the application and any supporting documents listed in any schedules in this Approval;

"Approved Equivalent" means a substituted product that meets the required quality and performance standards of a named product and has been approved for substitution in writing by the Director.

"Director" means a person appointed by the Minister pursuant to section 5 of the Environmental Protection Act for the purposes of Part II.1 of the Environmental Protection Act;

"District Manager" means the District Manager of the Ottawa office of the Ministry;

"Ministry" means the ministry of the government of Ontario responsible for the Environmental Protection Act and the Ontario Water Resources Act and includes all officials, employees or other persons acting on its behalf;

"Owner" means Strandherd Road Inc. and includes their successors and assignees;

"Previous Works" means those portions of the sewage Works previously approved under an Approval;

"Property" means the property located within Phase 1 of the Citi Gate 416 Corporate Campus and includes the blocks located within the Phase 1 development;

"Water Supervisor" means the Water Supervisor of the Ottawa office of the Ministry;

"Works" means the sewage works described in the Owner's application(s) and this Approval.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

(1) The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the Conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) The designation of the City of Ottawa as the operating authority of the site on the application for approval of the Works does not relieve the Owner from the responsibility of complying with any and all of the Conditions of this Approval.

(3) Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with the description given in this Approval, and the application for approval of the Works.

(4) Where there is a conflict between a provision of any submitted document referred to in this Approval and the Conditions of this Approval, the Conditions in this Approval shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date

shall prevail.

(5) Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

(6) The Conditions of this Approval are severable. If any Condition of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such Condition to other circumstances and the remainder of this Approval shall not be affected thereby.

(7) The issuance of, and compliance with the Conditions of this Approval does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approval from the local conservation authority necessary to construct or operate the sewage Works; or

(b) limit in any way the authority of the Ministry to require certain steps be taken to require the Owner to furnish any further information related to compliance with this Approval.

(8) This Approval includes the treatment and disposal of stormwater run-off from approximately 66.75 hectares of Phase 1 and Phase 2 of the Citi Gate 416 Corporate Campus draining to Pond A, assuming an average imperviousness of approximately 82%. Any changes within the drainage areas that might increase the required storage volumes or increase the flows to or from the stormwater management facility or any structural/physical changes to the stormwater management facility including the inlets or outlets will require an amendment to this Approval.

(9) This Approval includes the treatment and disposal of stormwater run-off from Blocks 16, 1, 2, 3, 4, and 5/6 of Phase 1 of the Citi Gate 416 Corporate Campus draining to oil and grit separators located on the Blocks and discharging directly to the realigned O'Keefe Drain. Any changes within each Block that might increase the required storage volume or increase the flows to or from any or all of the oil and grit separators or any structural/physical changes to any or all of the oil and grit separators including the outlets to the O'Keefe Drain will require an amendment to this Approval.

2. EXPIRY OF APPROVAL

(1) This Approval will cease to apply to those parts of the Works which have not been constructed within **five (5) years** of the date of this Approval.

3. CHANGE OF OWNER

(1) The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within **thirty (30) days** of the change occurring:

(a) change of Owner;

(b) change of address of the Owner;

(c) change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c. B17 shall be included in the notification to the District Manager;

(d) change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C39 shall be included in the notification to the District Manager.

(2) In the event of any change in ownership of the Works, other than a change in ownership to the municipal, i.e. assumption of the Works, the Owner shall notify the succeeding owner in writing of the existence of this Approval, and a copy of such notice shall be forwarded to the District Manager and the Director.

(3) Notwithstanding any other requirements in this Approval, upon transfer of the ownership of the Works to a municipality, if applicable, any reference to the "District Manager" within the Terms and Conditions of this Approval shall be replaced with "Water Supervisor".

4. OPERATION AND MAINTENANCE

(1) The Owner shall ensure that the design minimum liquid retention volume is maintained at all times.

(2) The Owner shall inspect the Works at least **once a year** and, if necessary, clean and maintain the Works to prevent the excessive build-up of sediments and/or vegetation.

(3) The Owner shall maintain a logbook to record the results of these inspections and any cleaning and maintenance operations undertaken, and shall keep the logbook at the Owner's office for inspection by the Ministry. The logbook shall include the following:

(a) the name of the Works; and

(b) the date and results of each inspection, maintenance and cleaning, including an estimate of the quantity of any materials removed.

5. MONITORING AND REPORTING

(1) The Owner shall carry out a monitoring program and evaluate the performance of the stormwater management Works commencing at the initial completion of construction of the Works and continuing for a minimum of two (2) years after 90% of the Blocks in the Citi Gate 416 Corporate Business Park - Phase 1 have been occupied.

(2) The monitoring program shall include obtaining grab samples at the outlet structure from Pond A (STM MH 1050) discharging to the box culvert draining to the O'Keefe Drain at Dealership Street, and

obtaining grab samples from each of the outlets from Blocks 16, 1, 2, 3, 4, and 5/6 of Phase 1 of the Citi Gate 416 Corporate Campus to the O'Keefe Drain, for at least three (3) rainfall wet events per year (a wet event is defined as a minimum of 15 mm of rain in the previous 24 hours). Two (2) of the events must occur within the May to September time period.

(3) Samples should be tested for Total Suspended Solids (mg/L) and Temperature (^{o}C), and results recorded.

(4) The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

(a) the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only)", as amended from time to time by more recently published editions;

(b) the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (January 1999), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions;

(c) the publication "Standard Methods for the Examination of Water and Wastewater" (21st edition), as amended from time to time by more recently published editions.

(5) The Owner shall submit to the District Manager, **every year**, a copy of the test results as per Condition 5, Subsection (3), above.

(6) The Owner shall submit to the District Manager, **every five (5) years**, a Performance Assessment Report addressing the following:

(a) a description of any operating problems encountered and corrective actions taken during the reporting period and the need for further investigations in the following reporting period for system refinements or ways of improving the performance of the Works;

(b) measurement of the mass of accumulated sediment removed when undertaking maintenance of the Works as per Condition 4, Subsection (3), above;

(7) The measurement frequency specified in Condition 5, Subsection (2) and reporting frequency specified in Condition 5, Subsections (5) and (6), above, may, **after five (5) years** of monitoring in accordance with this Condition, be modified by the District Manager in writing from time to time.

(8) The Owner shall copy the District Manager on any and all reports submitted to the City of Ottawa and/or the Rideau Valley Conservation Authority related to the monitoring and maintenance program for the Works.

6. <u>DISCLOSURE OF APPROVAL</u>

(1) Pursuant to Section 103 of the Ontario Water Resources Act, no person having an interest in the Property, shall deal with the Property in any way without first giving a copy of this Approval to each person acquiring an interest in the Property as a result of the dealing.

(2) The Owner shall make arrangements to have a Site Plan Agreement, in a form satisfactory to the City of Ottawa, registered on the title of each Property containing an oil and grit separator, to ensure the maintenance program for the oil and grit separator will be adhered to by any new property owners.

7. TEMPORARY EROSION AND SEDIMENT CONTROL

(1) The Owner shall install and maintain temporary sediment and erosion control measures during construction and conduct inspections once every **two (2) weeks** and after each significant storm event (a significant storm event is defined as a minimum of 25 mm of rain in any 24 hours period). The inspections and maintenance of the temporary sediment and erosion control measures shall continue until they are no longer required and at which time they shall be removed and all disturbed areas reinstated properly.

(2) The Owner shall maintain records of inspections and maintenance which shall be made available for inspection by the Ministry, upon request. The record shall include the name of the inspector, date of inspection, and the remedial measures, if any, undertaken to maintain the temporary sediment and erosion control measures.

8. RECORD KEEPING

The Owner shall retain for a minimum of **five (5) years** from the date of their creation, all records and information related to or resulting from the operation and maintenance activities required by this Approval.

Schedule "A"

1. Application from Strandherd Road Inc., dated July 24, 2014, including final plans and specifications prepared by Novatech Engineering Consultants Ltd.;

2. Application for Environmental Compliance Approval, dated July 24, 2014 and received on October 10, 2014, submitted by the City of Ottawa;

3. Citi Gate 416 Corporate Campus Detailed Servicing and Stormwater Management Report (Phase 1), Volume 1 and Volume 2, dated October 1, 2014, prepared by Novatech Engineering Consulting Ltd.;

4. Preliminary Geotechnical Investigation, Proposed Commercial Development Strandherd Drive, dated November 1, 2012, prepared by Paterson Group Inc.;

5. Preliminary Geotechnical Investigation, 4337 and 4225 Strandherd Drive, dated November 1, 2012, prepared by Paterson Group Inc.;

6. Set of Engineering Drawings (11 drawings) for Citi Gate 416 Corporate Campus Roads, Sewers and Watermains, Issued for MOE Approval - SWM Pond, dated October 6, 2014, prepared by Novatech Engineering Consulting Ltd.;

7. E-mail from Mike Petepiece of Novatech Engineering Consulting Ltd. to the Ministry, dated January 13, 2015; and

8. E-mail from Melanie Riddell of Novatech Engineering Consulting Ltd. to the Ministry, dated January 13, 2015.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which approval was granted. This Condition is also included to emphasize the precedence of Conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review.

2. Condition 2 is included to ensure that, when the Works are constructed, the Works will meet the standards that apply at the time of construction to ensure the ongoing protection of the environment.

3. Condition 3 is included to ensure that the Ministry records are kept accurate and current with respect to approved Works and to ensure that any subsequent Owner of the Works is made aware of the Approval and continue to operate the Works in compliance with it.

4. Condition 4 is included to require that the Works be properly operated and maintained such that the environment is protected.

5. Condition 5 is included to enable the Owner to evaluate and demonstrate the performance of the Works on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives specified in the Approval and that the Works do not cause any impairment of the receiving watercourse.

6. Condition 6 is included to require the Owner to give notice of this Approval to potential future owners of the property before the property is dealt with.

7. Condition 7 is included as installation, regular inspection and maintenance of the temporary sediment and erosion control measures is required to mitigate the impact on the downstream receiving watercourse during construction, until they are no longer required.

8. Condition 8 is included to require that all records are retained for a sufficient time period to adequately evaluate the long-term operation and maintenance of the Works.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 7146-9PNJXJ issued on October 7, 2014.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment and
Climate Change
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 14th day of January, 2015

Edgardo Tovilla
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

DC/

c: District Manager, MOECC Ottawa office
Water Supervisor, MOECC Ottawa office
M. Rick O'Connor, Clerk, City of Ottawa (File No. D07-16-12-0023)
Damien Whittaker, Senior Engineer, Infrastructure Approvals, City of Ottawa
Linda Carkner, Program Manager, Infrastructure Services, City of Ottawa
John Riddell, P.Eng., Novatech Engineering Consultants Ltd.

APPENDIX H
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.	N/A
☐ 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 Storm Sewer Design
☐ 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 Storm Sewer Design
☐ 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).	N/A
☐ Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	N/A
☐ Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	N/A
☐ Proposed phasing of the development, if applicable.	N/A
☐ Reference to geotechnical studies and recommendations concerning servicing.	N/A
☐ 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	N/A

4.2 Development Servicing Report: Water

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

☐ Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	Site Servicing Plan (C101)
☐ Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	N/A
☐ Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Appendix C
☐ Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	N/A

4.3 Development Servicing Report: Wastewater

Criteria	Location (if applicable)
☐ Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	N/A
☐ Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A
☐ Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	N/A
☐ Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 5.2 Proposed Sanitary Servicing

☐ 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)	Section 5.2 Proposed Sanitary Servicing
☐ Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	N/A
☐ Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 5.2 Proposed Sanitary Servicing
☐ 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 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management
☐ Analysis of available capacity in existing public infrastructure.	N/A
☐ A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Pre & Post-Development Plans
☐ Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5-year event (dependent on the receiving sewer design) to 100-year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Section 6.0 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management
☐ Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 6.0 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management
☐ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 6.0 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management
☐ Set-back from private sewage disposal systems.	N/A
☐ Watercourse and hazard lands setbacks.	N/A
☐ Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	N/A
☐ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
☐ Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5-year return period) and major events (1:100-year return period).	Appendix G

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

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

4.5 Approval and Permit Requirements: Checklist

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

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

4.6 Conclusion Checklist

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