D.B. Gray Engineering Inc.

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

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SITE SERVICING & STORMWATER MANAGEMENT REPORT

299 WEST HUNT CLUB ROAD
OTTAWA, ONTARIO

REPORT NO. 24044

AUGUST 15, 2025
REVISED NOVEMBER 14, 2025

CONTENTS

LIST OF APPENDICES

1.0 INTRODUCTION

This Site Servicing & Stormwater Management Report has been prepared in support of a Site Plan Control application for a proposed redevelopment at 299 West Hunt Club Road. Currently the development consists of a 2,589 m^2 automobile dealership building. The proposed 1,013 m^2 building is a garage for employee parking, automobile inventory storage, wash bays and detailing bays. This report is a description of the servicing for the development and addresses the stormwater management requirements for the 0.79 hectare property. Refer to the Pre-Application Consultation meeting notes in Appendix D.

This report forms part of the site servicing and stormwater management design for the proposed development. Also refer to drawings C-1 to C-10 prepared by D.B. Gray Engineering Inc.

2.0 WATER SERVICING

2.1 WATER SUPPLY FOR FIREFIGHTING

The basement of the proposed building will have a sprinkler system, with the fire department connection (FDC) located on the east façade of the proposed building. The closest existing fire hydrant is a private hydrant located on the subject property. It is about 77 m unobstructed distance to the proposed FDC, which is more than the maximum 45 m required by the Ontario Building Code (OBC); therefore, another private hydrant is required. The proposed private hydrant will be about 22 m unobstructed distance to the proposed FDC.

In accordance with City of Ottawa Technical Bulletin IWSTB-2024-05, when calculating the required fire flow on private property in urban areas, the Ontario Building Code (OBC) method is to be used, provided the calculated fire flow is less than 9,000 L/min. However, since a private fire hydrant is proposed, the Fire Underwriter's Survey (FUS) method is to be used. Based on 'Type I Fire Resistive Construction' (as defined by FUS and as determined by the architect) and using the FUS method, the required fire flow is calculated to be 8,000 L/min (133.3 L/s). Refer to calculations in Appendix A.

The boundary conditions in the 406 mm West Hunt Club Road municipal watermain provided by the City of Ottawa for a 133.3 L/s fire flow at the subject property indicate a hydraulic grade line (HGL) of 126.4 m. Using EPANET, a model was created to analyze the hydraulics of the existing and proposed private watermain. Based on 126.4 m HGL, a 133.8 L/s demand (133.3 L/s fire flow + 0.5 L/s maximum daily demand), of which 95 L/s is from the proposed fire hydrant; the pressure at proposed private is calculated to 167 kPa (24 psi); and at the existing fire hydrant the pressure is calculated to be 292 kPa (42 psi). Refer to Appendix B. Since these pressures are above the OBC's minimum required pressure of 138 kPa (20 psi), there is an adequate water supply for firefighting from the existing and proposed private water distribution system.

In accordance with City of Ottawa Technical Bulletin ISTB-2018-02, the aggregate flow of all contributing fire hydrants within 150 m of the building shall not be less than the required fire flow. In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 Appendix I:

Class	Distance (m)	Contribution (L/min)
AA	≤ 75	5,700
	> 75 and ≤ 150	3,800

Since the pressures at the private hydrants are above the OBC's minimum required pressure of 138 kPa (20 psi), the proposed private fire hydrant can contribute 5,700 L/min (95 L/s); and the existing private hydrant can contribute the required balance of 2,300 L/s (38.3 L/s). Therefore, the aggregate flow of the two contributing fire hydrants is equal to the required fire flow of 8,000 L/min (133.3 L/s).

2.2 DOMESTIC WATER SUPPLY

In accordance with the City of Ottawa Water Design Guidelines for the consumption rate (28,000 L/ha/day for a commercial development) and peaking factors, the average daily demand is calculated to be 0.3 L/s, the maximum daily demand is calculated to be 0.5 L/s and the maximum hourly demand is calculated to be 0.9 L/s. Refer to calculations in Appendix B.

The boundary conditions in the 406 mm West Hunt Club Road municipal watermain provided by the City of Ottawa at the subject property indicate a minimum HGL of 126.0 m and a maximum HGL of 132.1 m. Refer to Appendix B. Based on these boundary conditions, the pressure at the water meter is calculated to vary between 399 kPa (58 psi) and 459 kPa (67 psi). This is an acceptable range for the development.

A 200 mm water service is proposed to service the proposed sprinkler system. This 200 mm water service will provide an adequate domestic water supply to the proposed building.

3.0 SANITARY SERVICING

In accordance with

i. the City of Ottawa Sewer Design Guidelines for the peaking factor, and
ii. City of Ottawa Technical Bulletin ISTB-2018-01 for the average daily flow (28,000 L/ha/day for a commercial development) and infiltration allowance,

the sanitary flow rate generated from the proposed building is calculated to be 0.16 L/s; and it is calculated to be 0.64 L/s for the entire property. A 150 mm sanitary sewer connecting to a manhole in the existing private sanitary sewer will serve the proposed building; and, at a 1% slope, will have a capacity of 14.43 L/s; therefore, at the design flow rate the sanitary sewer connection will only be at 1% of its capacity. The last segment of the existing 150 mm private sanitary sewer has a capacity of 9.13 L/s; therefore, at the design flow rate for the entire property it will only be at 7% of its capacity. Refer to calculations in Appendix B. The proposed redevelopment is expected to have an acceptable impact on the existing sanitary sewers.

4.0 STORMWATER MANAGEMENT

4.1 QUALITY CONTROL

Erosion & Sediment Control Plans have been developed to be implemented during construction. Refer to drawings C-6, and notes 2.1 to 2.5 on drawing C-7:

i. Sediment capture filter sock inserts are to be installed in all existing and proposed catch basins and catch basin manholes adjacent to and within the site,
ii. A silt fence barrier is to be installed along the perimeter of the part of the site that is being redeveloped, and
iii. Any material deposited on the public road is to be removed.

The existing development has no permanent quality control measures and none are proposed.

4.2 QUANTITY CONTROL

As stated in the existing Stormwater Management and Servicing Report, dated February 2009, prepared by David McManus Engineering Ltd. (refer to relevant excerpts in Appendix E):

- *"In July 2004, Novatech Engineering Consultants Ltd. completed a Stormwater Management report for Kestrel Properties Inc. for 285-295 West Hunt Club Road (herein referred to as the Novatech SWM Report), which provided stormwater management design guidance for the proposed development area."*
- *"According to the requirements outlined in the Novatech SWM Report, the allowable release rate for the site is limited to 45.8 L/s/ha for the 5 year storm event and 38.4 L/s/ha for the 100 year storm event. Therefore, with a total site area of 0.79 ha the allowable release rates for the 5 year and 100 year storm events are 36.2 L/s and 30.4 L/s respectively. The building rooftop will be utilized for storage with an assumed roof release rate of 40 L/s/ha."*
- *"The 5 year release rates for the site are attained by controlling the outflow from the structure (CBMH 204 & 207) via plug and hydrovex type inlet control devices (ICD) …"*
- *"The runoff will be restricted to 3.5 L/s using a Hydrovex ICD located at CBMH 204 …"*
- *"The runoff will be restricted to 15.3 L/s using a plug type ICD located at CBMH 207 …"*
- *"Table 5. Storage Requirements for Area 8 (Roof Top) … Controlled Release … 6.4 L/s …"*
- *"Drawing No. 2790-SWM1 … CONTROLLED ROOF RELEASE RATE 40 L/d/Ha = 6.4 L/s TO BE CONFIRMED WITH BUILDING DESIGN - 5 YEAR PONDING 27.2 m^3 DEPTH=0.05m - 100 YEAR PONDING 66.1 m^3 DEPTH=0.12m"*

The stormwater quantity control criterion in this report is to control the post-development peak flow rate to the pre-development (existing development) peak flow rates. Specifically, the existing ICDs, which have a combined release rate of 18.8 L/s (= 3.5 L/s + 15.3 L/s) will be replaced with two new ICDs with the combined release rate of 18.8 L/s. (The number and type of roof drains, and the geometry of the roof is not known, but no changes are proposed; therefore, roof top control and storage is ignored in this report.)

The Rational and Modified Rational Methods are used to calculate the post-development flow rates and corresponding storage volumes. The runoff coefficients for the 100-year event are increased by 25% to maximum 1.00. Refer to calculations in Appendix D.

Drainage Area I (NORTH AREA - 3,949 m^2)

An inlet control device (ICD) located in the outlet pipe of catch basin / manhole CB/MH-3 will restrict the flow of stormwater and cause it to backup into the upstream infrastructure (including sewer pipes, manholes, catch basins and underground storage chambers). The ICD will be a vortex style manufactured by Hydrovex (or approved equal) sized by the manufacturer for 10.05 L/s at 1.80 m. It is calculated that an orifice area of 7,854 mm^2 (100 mm dia.) with a discharge coefficient of 0.215 will achieve the release rate of 10.05 L/s at 1.80 m. Based on this orifice the maximum release rate for the 5-year event is calculated to be 5.98 L/s at 0.64 m. Since underground storage is proposed, an average release rate equal to 50% of the maximum release rate is used to calculate the required storage volumes. The underground storage infrastructure includes a group of 45 and a group of 15 Soleno HydroStor HS75 chambers surrounded by clear stone wrapped in geotextile fabric.

	100-Year Event	5-Year Event
Maximum Release Rate	10.05 L/s	5.98 L/s
Maximum Water Elevation	86.98 m	85.82 m
Maximum Volume Stored	191.02 m^3	98.28 m^3

Drainage Area I (SOUTH AREA – 1,818 m^2)

An inlet control device (ICD) located in the outlet pipe of existing catch basin / manhole CB/MH-207 will restrict the flow of stormwater and cause it to backup into the upstream infrastructure (including sewer pipes, manholes, catch basins and underground storage chambers). The ICD will be a vortex style manufactured by Hydrovex (or approved equal) sized by the manufacturer for 8.75 L/s at 1.87 m. It is calculated that an orifice area of 7,854 mm^2 (100 mm dia.) with a discharge coefficient of 0.184 will achieve the release rate of 8.75 L/s at 1.80 m. Based on this orifice the maximum release rate for the 5-year event is calculated to be 7.60 L/s at 1.41 m. Since underground storage is proposed, an average release rate equal to 50% of the maximum release rate is used to calculate the required storage volumes. The underground storage infrastructure includes a group of 8 Soleno HydroStor HS75 chambers surrounded by clear stone wrapped in geotextile fabric.

	100-Year Event	5-Year Event
Maximum Release Rate	10.05 L/s	5.98 L/s
Maximum Water Elevation	86.98 m	85.82 m
Maximum Volume Stored	191.02 m^3	98.28 m^3

Summary

	100-Year Event	5-Year Event
Pre-development Release Flow Rate (through ICDs)	18.80 L/s	18.40 L/s
Post development Release Rate (through ICDs)	18.80 L/s	13.58 L/s
Maximum Volume Required & Stored	259.00 m^3	128.40 m^3

The maximum post-development release rate through the proposed ICDs during the 100-year event is calculated to be 18.80 L/s, which is equal to the pre-development release rate through the existing ICDs. To achieve the maximum allowable release rate, a maximum storage volume of 259.00 m^3 is required and provided. The maximum release rate during the 5-year event is calculated to be 13.58 L/s, which is

26% less than the pre-development release rate. The proposed release rates are expected to have an acceptable impact on the existing downstream storm infrastructure.

4.3 STORM SERVICING

The existing on-site storm sewer system is proposed to be modified. The peak unrestricted flow rate in the last segment of the modified storm sewer system during the 2-year event is calculated to be 115.67 L/s; which would be at 79% of its capacity. However, considering the restricted flow rate through the ICDs, the flow in last segment 46.81 L/s, is which is only 32% of its capacity. Refer to calculations in Appendix D.

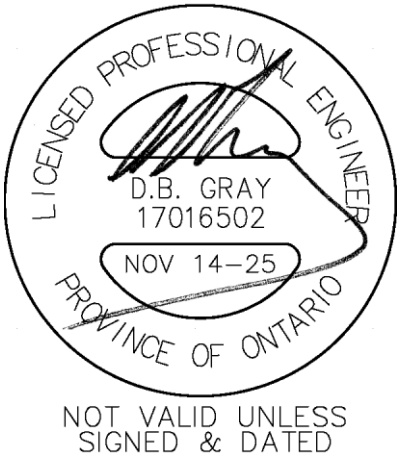
4.4 ENVIRONMENTAL COMPLIANCE APPROVAL

Since the existing stormwater management facility is proposed to be modified, the existing Environmental Compliance Approval (ECA) is expected to require an amendment application.

5.0 CONCLUSIONS

1. An additional private onsite fire hydrant is required and is proposed.
2. There is an adequate water supply for firefighting from the existing and proposed private water distribution system.
3. The proposed private fire hydrant can contribute 5,700 L/min (95 L/s).
4. The aggregate flow of the two contributing existing municipal fire hydrants is equal to the required fire flow.
5. There is an acceptable range of water pressures in the existing municipal water distribution system for the domestic water supply.
6. The proposed water service will provide an adequate domestic water supply to the proposed building.
7. The proposed redevelopment is expected to have an acceptable impact on the existing sanitary sewers.
8. An Erosion & Sediment Control Plan has been developed to be implemented during construction.
9. The maximum post-development release rate through the proposed ICDs during the 100-year event is equal to the pre-development release rate through the existing ICDs; and the maximum release rate during the 5-year event is 26% less than the pre-development release rate. The proposed release rates are expected to have an acceptable impact on the existing downstream storm infrastructure.
10. The existing Environmental Compliance Approval (ECA) is expected to require an amendment application.

Prepared by D.B. Gray Engineering Inc.



NOT VALID UNLESS
SIGNED & DATED

APPENDIX A

WATER SERVICING

D.B. Gray Engineering Inc.

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

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9-Jul-25

299 West Hunt Club Dr
Ottawa, Ontario

Fire Flow Requirements

Proposed Three-Storey Parking Garage with Ground Floor Cleaning Bays

Fire flow requirement as calculated as per Fire Underwriters Survey "Water Supply For Fire Protection".

$F = 220\ C\ A^{0.5}$ = the required fire flow in litres per minute

C = coefficient related to the type of construction
= 0.60 (Pre-Cast Concrete Structure)

A = total floor area (all storeys excluding basements at least 50% below grade)

3rd Floor	1031	sq.m.
2nd Floor	1031	sq.m.
Ground Floor	1031	sq.m.
TOTAL FIRE AREA:	3093	sq.m.

F = 7,341 L/min
= 7,000 L/min (rounded off to the nearest 1,000 L/min)

0% Charge for Limited-combustible Occupancy (Parking Garage)

= 7,000 L/min No sprinkler system reduction

Increase for Separation Exposed Buildings

			Adjacent Building			Length-Height
			Construction	Length m	Storeys	Factor
0%	North	Over 45				0
0%	East	Over 45				0
9%	South	10.1 to 20m	Ordinary	46	2	92
0%	West	Over 45				0

9% Total Increase for Exposure (maximum 75%)
= 630 L/min Increase

= 7,630 L/min
F = 8,000 L/min (rounded off to the nearest 1,000 L/min)
= 133.3 L/s

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3-Jul-25

299 West Hunt Club Dr
Ottawa, Ontario

Fire Flow Requirements

Proposed Three-Storey Parking Garage with Ground Floor Cleaning Bays

Fire flow requirement as calculated as per Fire Underwriters Survey "Water Supply For Fire Protection".

$F = 220\ C\ A^{0.5}$ = the required fire flow in litres per minute

C = coefficient related to the type of construction
= 1.00 (Pre-Cast Concrete Structure)

A = total floor area (all storeys excluding basements at least 50% below grade)

3rd Floor	1031	sq.m.
2nd Floor	1031	sq.m.
Ground Floor	1031	sq.m.
TOTAL FIRE AREA:	3093	sq.m.

F = 12,235 L/min
= 12,000 L/min (rounded off to the nearest 1,000 L/min)

0% Charge for Limited-combustible Occupancy (Parking Garage)

= 12,000 L/min No sprinkler system reduction

Increase for Separation Exposed Buildings

			Adjacent Building			Length-Height Factor
			Construction	Length m	Storeys	
0%	North	Over 45				0
0%	East	Over 45				0
9%	South	10.1 to 20m	Ordinary	46	2	92
0%	West	Over 45				0
9%	Total Increase for Exposure (maximum 75%)					

= 1,080 L/min Increase

= 13,080 L/min
F = 13,000 L/min (rounded off to the nearest 1,000 L/min)
= 216.7 L/s

D.B. Gray Engineering Inc.

Douglas Gray <d.gray@dbgrayengineering.com>

Re: 2520 - 299 West Hunt Club - Lexus Parking

1 message

Daniel Vinals <daniel@vwarchitects.ca> Wed, Jul 2, 2025 at 5:26 PM
To: Laurent Brosseau <l.brosseau@dbgrayengineering.com>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>, Taylor White <taylor@pritec.ca>

Hi Laurent,

Since the building is a precast concrete structure, I would say that is a Type I Fire Resistive construction given it has a 2 hr FRR.

The bays are just for cleaning and detailing of the cars before handing them over to the client. Very light work type.

Let me know if this helps,
Thanks.

Regards.

Daniel Vinals (M.Arch)
INTERN ARCHITECT
VANDENBERG & WILDEBOER ARCHITECTS INC.
160 FLAMBOROUGH WAY, KANATA, ONTARIO, K2K 3H9,
613-287-0144
30 YEARS OF DESIGN & INNOVATION: www.vwarchitects.ca

From: Laurent Brosseau <l.brosseau@dbgrayengineering.com>
Sent: Wednesday, July 2, 2025 4:30:01 p.m.
To: Daniel Vinals <daniel@vwarchitects.ca>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>; Taylor White <taylor@pritec.ca>
Subject: Re: 2520 - 299 West Hunt Club - Lexus Parking

Hi Daniel,

We will need to use the FUS method to calculate the fire flows. Can you confirm which of the construction in the attached file corresponds to the proposed building's construction?

I see that the first floor has bays, what kind of work will be happening there (washing, repairs, etc.)?

Thank you

Laurent Brosseau
D.B. Gray Engineering Inc.
700 Long Point Circle
Ottawa, Ontario K1T 4E9
613-425-8044

On Wed, Jul 2, 2025 at 4:05 PM Daniel Vinals <daniel@vwarchitects.ca> wrote:

Hi Laurent,

Building will be a precast concrete structure, and only the basement will be sprinklered.

Let me know if you have any other question,

Thanks.

Regards.

Daniel Vinals (M.Arch)

INTERN ARCHITECT

VANDENBERG & WILDEBOER ARCHITECTS INC.

160 FLAMBOROUGH WAY, KANATA, ONTARIO, K2K 3H9,

613-287-0144

30 YEARS OF DESIGN & INNOVATION: www.vwarchitects.ca

From: Laurent Brosseau <l.brosseau@dbgrayengineering.com>
Sent: July 2, 2025 3:44 PM
To: Daniel Vinals <daniel@vwarchitects.ca>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>; Taylor White <taylor@pritec.ca>
Subject: Re: 2520 - 299 West Hunt Club - Lexus Parking

Hi Daniel,

Will the building construction be the same as 64 Jamie and 2500 Palladium? I'm assuming it's also not sprinklered, is that correct?

Thank you

Laurent Brosseau

D.B. Gray Engineering Inc.
700 Long Point Circle
Ottawa, Ontario K1T 4E9
613-425-8044

On Thu, Jun 12, 2025 at 7:52 AM Daniel Vinals <daniel@vwarchitects.ca> wrote:

> Hi Laurent,

Just to follow up and see if you guys received this and started gathering any required info from the city that we know it takes time.

Thanks.

Regards.

Daniel Vinals (M.Arch)

INTERN ARCHITECT

VANDENBERG & WILDEBOER ARCHITECTS INC.

160 FLAMBOROUGH WAY, KANATA, ONTARIO, K2K 3H9,

613-287-0144

30 YEARS OF DESIGN & INNOVATION: www.vwarchitects.ca

From: Daniel Vinals
Sent: May 14, 2025 3:57 PM
To: Laurent Brosseau <l.brosseau@dbgrayengineering.com>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>; Taylor White <taylor@pritec.ca>
Subject: 2520 - 299 West Hunt Club - Lexus Parking

Hi Laurent,

Attached is the latest set of drawings recently reviewed with the client for this project. Also attached is the CAD file of the site plan.

I believe you have the survey of this property, if not let me know please and I can send it.

One thing to note is that the roof of the last floor will not be built in phase 1, so the project will be up to the roof of the second floor, where is planned to be open air parking on that roof.

The second floor will be open air as well, but will have a metal mesh to avoid birds get in.

Please take a look and let me know if you need anything else to start your work,

Thanks.

Regards.

Daniel Vinals (M.Arch)

INTERN ARCHITECT

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Construction Coefficient (C)

Note that the construction typology used by the insurance industry and public fire protection differs from the terms of reference in the National Building Code of Canada (NBC).

The following Construction Types and Coefficients are used in the required fire flow formula:

C	=	1.5 for **Type V** Wood Frame Construction
	=	0.8 for **Type IV-A** Mass Timber Construction
	=	0.9 for **Type IV-B** Mass Timber Construction
	=	1.0 for **Type IV-C** Mass Timber Construction
	=	1.5 for **Type IV-D** Mass Timber Construction
	=	1.0 for **Type III** Ordinary Construction
	=	0.8 for **Type II** Noncombustible Construction
	=	0.6 for **Type I** Fire Resistive Construction

When determining the predominate Construction Coefficient of a building, the following reference terms are used by fire underwriters and fire departments.

Wood Frame Construction (Type V)
A building is considered to be of Wood Frame construction (Type V) when structural elements, walls, arches, floors, and roofs are constructed entirely or partially of wood or other material.

Note: Includes buildings with exterior wall assemblies that are constructed with any materials that do not have a fire resistance rating that meets the acceptance criteria of CAN/ULC-S114. May include exterior surface brick, stone, or other masonry materials where they do not meet the acceptance criteria.

Mass Timber (Type IV)
Mass timber construction, including Encapsulated Mass Timber, Heavy Timber and other forms of Mass Timber are considered as one of the following sub-types relating to the fire resistance ratings of assemblies as follows:

- Type IV-A (Encapsulated Mass Timber)
    - A building is considered to be of Mass Timber Type IV-A (Encapsulated Mass Timber) construction when structural elements, walls, arches, and floors have a minimum 2-hour fire resistance rating and the roof has a minimum 1 hour fire resistance rating. Additionally all elements of the building must meet the requirements set out for Encapsulated Mass Timber Construction within the 2020 National Building Code of Canada . For types of mass timber construction that do not fully meet these criteria, treat as Type IV-B, Type IV-C or Type IV-D.
- Type IV-B (Rated Mass Timber)
    - A building is considered to be of Mass Timber Type IV-B (Rated Mass Timber) construction when the building assemblies include mass timber construction elements and all structural elements, exterior walls, interior bearing walls and roof have a minimum 1-hour fire resistance rating.

- Type IV-C (Ordinary Mass Timber)
    - A building is considered to be of Mass Timber Type IV-C (Partially Rated Mass Timber) construction when exterior walls are of Mass Timber construction with a minimum 1-hour fire resistance rating. Other structural elements, interior bearing walls and the roof may not have a fire resistance rating.
- Type IV-D (Un-Rated Mass Timber)
    - A building is considered to be of Mass Timber Type IV-D (Un-Rated Mass Timber) construction when exterior walls do not have a minimum 1-hour fire resistance rating, regardless of the fire resistance rating of other structural elements, interior bearing walls and the roof.

Ordinary Construction (Type III also known as joisted masonry)

A building is considered to be of Ordinary construction (Type III) when exterior walls are of masonry construction (or other approved material) with a minimum 1-hour fire resistance rating, but where other elements such as interior walls, arches, floors and/or roof do not have a minimum 1 hour fire resistance rating.

Noncombustible Construction (Type II)

A building is considered to be of Noncombustible construction (Type II) when all structural elements, walls, arches, floors, and roofs are constructed with a minimum 1-hour fire resistance rating and are constructed with noncombustible materials.

Fire-Resistive Construction (Type I)

A building is considered to be of Fire-resistive construction (Type I) when all structural elements, walls, arches, floors, and roofs are constructed with a minimum 2-hour fire resistance rating, and all materials used in the construction of the structural elements, walls, arches, floors, and roofs are constructed with noncombustible materials.

Items of Note Regarding Construction Coefficients

i. Unprotected noncombustible construction (example unprotected steel) should be considered within ordinary construction or noncombustible construction based on the minimum fire resistance rating of the structural elements, exterior walls, and interior bearing walls;
    - If minimum fire resistance rating of exterior walls is 1 hr, apply Ordinary Construction Coefficient (1.0)
    - If minimum fire resistance rating of all structural elements, walls, arches, floors, and roofs is 1 hr, apply Noncombustible Construction Coefficient (0.8).

ii. If a building cannot be defined within a single Construction Coefficient, the Construction Coefficient is determined by the predominate Construction Coefficient that makes up more than 66% or over of the Total Floor Area.

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08-Aug-25

299 West Hunt Club Dr

Ottawa, Ontario

Water Demand

COMMERCIAL DAILY AVERAGE:	28,000	L /gross ha / day (as per Ottawa Design Guidelines)				
	0.79	ha (land area)				
	22120	L/day				
	18	hour day				
	20.5	L/min	0.3	L/s	5.4	USgpm
MAXIMUM DAILY DEMAND:	1.5	(Peaking Factor as per Ottawa Design Guidelines)				
	30.7	L/min	0.5	L/s	8.1	USgpm
MAXIMUM HOURLY DEMAND:	1.8	(Peaking Factor as per Ottawa Design Guidelines)				
	55.3	L/min	0.9	L/s	14.6	USgpm

Elevation of Water Meter:	85.27	m ASL				
Basement Floor Elevation:	84.37	m ASL				
.			Static Pressure at Water Meter			
MINIMUM HGL:	126.0	m ASL	58	psi	399	kPa
MAXIMUM HGL:	132.1	m ASL	67	psi	459	kPa

D.B. Gray Engineering Inc.

Laurent Brosseau <l.brosseau@dbgrayengineering.com>

RE: Request for boundary conditions - 299 West Hunt Club Rd

1 message

Fawzi, Mohammed <mohammed.fawzi@ottawa.ca> Tue, Jul 22, 2025 at 9:25 AM

To: laurent Brosseau <l.brosseau@dbgrayengineering.com>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>, "Polyak, Alex" <alex.polyak@ottawa.ca>

Hi Laurent,

The following are boundary conditions, HGL, for the hydraulic analysis at 299 West Hunt Club Road (zone 2W2C) assumed to be connected to the 406mm watermain on West Hunt Club Road (see attached PDF for location).

-

Minimum HGL: 126.0 m

Maximum HGL: 132.1 m.

Max Day + Fire Flow (133.33 L/s): 126.4 m

Max Day + Fire Flow (216.7 L/s): 125.0 m

These are for current conditions and are based on computer model simulation.

Disclaimer:

The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of

watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

"The IWSD has recently updated their water modelling software. Any significant difference between previously received BC results and newly received BC results could be attributed to this update."

Best Regards,

Mohammed Fawzi, P.Eng.

Senior Project Manager (A), Infrastructure Projects

Development Review – West Branch

Planning, Development and Building Services Department (PDBS)| Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West | 110 Avenue Laurier Ouest

Ottawa, ON K1P 1J1

613.580.2424 ext./poste 70120, Mohammed.Fawzi@ottawa.ca

From: Fawzi, Mohammed
Sent: July 14, 2025 8:51 AM
To: laurent Brosseau <l.brosseau@dbgrayengineering.com>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>
Subject: RE: Request for boundary conditions - 299 West Hunt Club Rd

Hi Laurent,

This email is to confirm your request has been received. Results will be provided as soon as they are available.

Best Regards,

Mohammed Fawzi, P.Eng.

Senior Project Manager (A), Infrastructure Projects

Development Review – West Branch

Planning, Development and Building Services Department (PDBS)| Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West | 110 Avenue Laurier Ouest

Ottawa, ON K1P 1J1

613.580.2424 ext./poste 70120, Mohammed.Fawzi@ottawa.ca

From: Schaeffer, Gabrielle <gabrielle.schaeffer@Ottawa.ca>
Sent: July 9, 2025 1:26 PM
To: laurent Brosseau <l.brosseau@dbgrayengineering.com>; Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>
Subject: FW: Request for boundary conditions - 299 West Hunt Club Rd

Hi Laurent,

Mohammed Fawzi will be taking over this file from Rubina. By way of this email, I am passing along this boundary conditions request.

Best Regards,

Gabrielle (Gabi) Schaeffer, P.Eng.

Senior Engineer, Infrastructure Applications | Ingénieur senior, Projets d'infrastructure

Development Review – West | Direction de l'examen des projets d'aménagement - Ouest

Planning, Development and Building Services | Direction générale des services de la planification, de l'aménagement et du bâtiment

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West | 110, avenue Laurier Ouest

Ottawa, ON, K1P 1J1

Mail Code | Code postal 01-14

Tel. | Tél. 613-580-2424, ext. | poste 22517

From: Laurent Brosseau <l.brosseau@dbgrayengineering.com>
Sent: Wednesday, July 9, 2025 1:08 PM
To: Schaeffer, Gabrielle <gabrielle.schaeffer@Ottawa.ca>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>
Subject: Fwd: Request for boundary conditions - 299 West Hunt Club Rd

Hi Gabrielle,

I got an out of office from Rubina. Can you help us with this?

Thank you

Laurent Brosseau

D.B. Gray Engineering Inc.
700 Long Point Circle
Ottawa, Ontario K1T 4E9
613-425-8044

---------- Forwarded message ---------
From: **Laurent Brosseau** <l.brosseau@dbgrayengineering.com>

Date: Wed, Jul 9, 2025 at 1:05 PM
Subject: Request for boundary conditions - 299 West Hunt Club Rd
To: Rasool, Rubina <Rubina.Rasool@ottawa.ca>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>

Hi Rubina,

We are working on a project that proposes an additional building at the above noted address.

Please provide the boundary conditions at 299 West Hunt Club Rd. We have calculated the following expected demands.

Average daily demand: 0.3 L/s.

Maximum daily demand: 0.5 L/s.

Maximum hourly daily demand: 0.9 L/s

Fire Flow demand: 133.3 L/s

Fire Flow + Max Day: 133.8 L/s

We are looking at alternative designs so please also provide the boundary conditions for a fire flow demand of 216.7 l/s.

Average daily demand: 0.3 L/s.

Maximum daily demand: 0.5 L/s.

Maximum hourly daily demand: 0.9 L/s

Fire Flow demand: 216.7 L/s

Fire Flow + Max Day: 217.2 L/s

Calculations are attached. Also attached is a sketch showing the approximate location of the proposed service connection.

Thank you

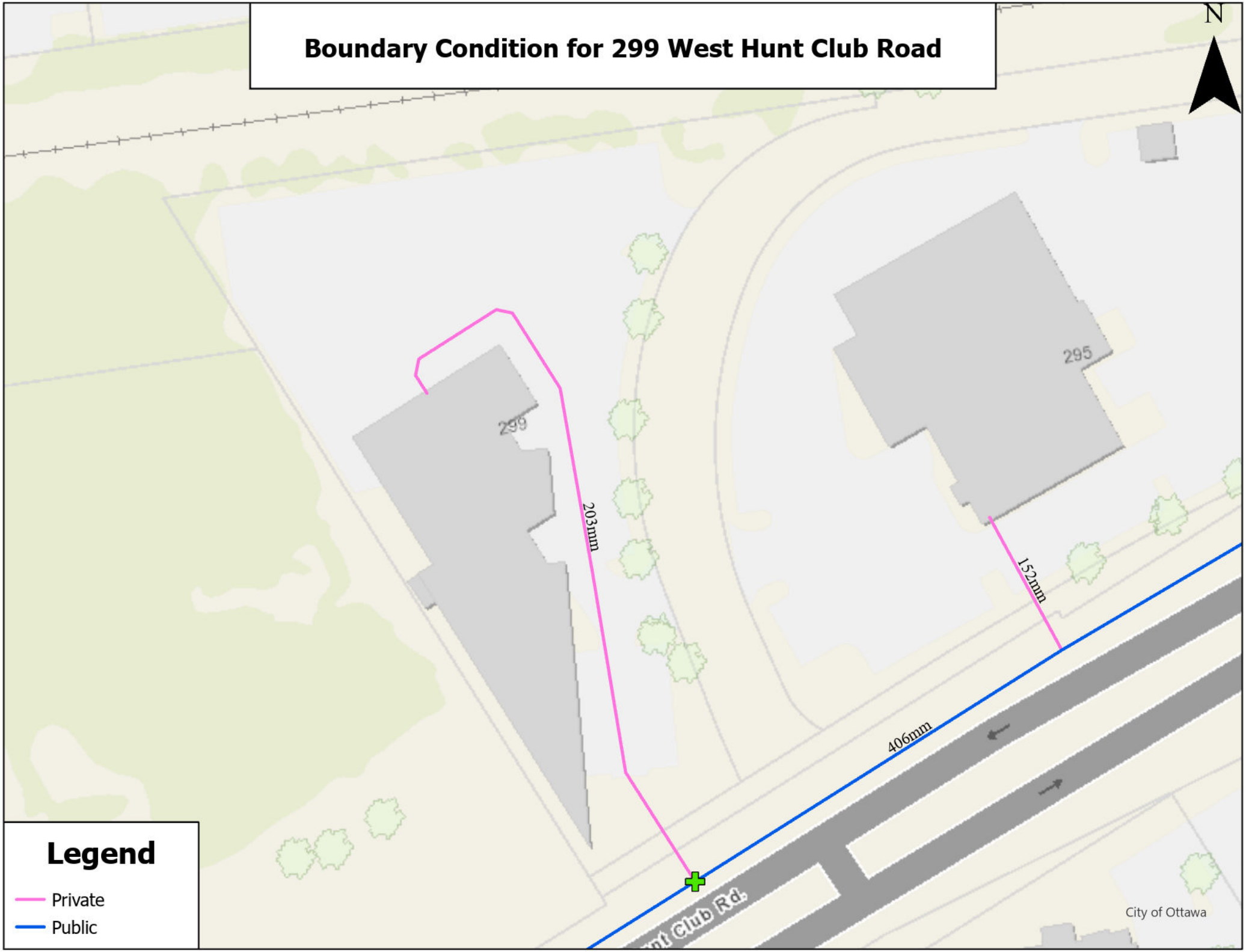
Laurent Brosseau

D.B. Gray Engineering Inc.
700 Long Point Circle
Ottawa, Ontario K1T 4E9
613-425-8044
'

'

---

299 West Hunt Club July 2025.pdf
163K


Boundary Condition for 299 West Hunt Club Road
N
299
295
203mm
152mm
406mm
Legend
Private
Public
City of Ottawa

D.B. Gray Engineering Inc.

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

700 Long Point Circle
Ottawa, Ontario K1T 4E9

613-425-8044
d.gray@dbgrayengineering.com

August 8, 2025

299 West Hunt Club Rd

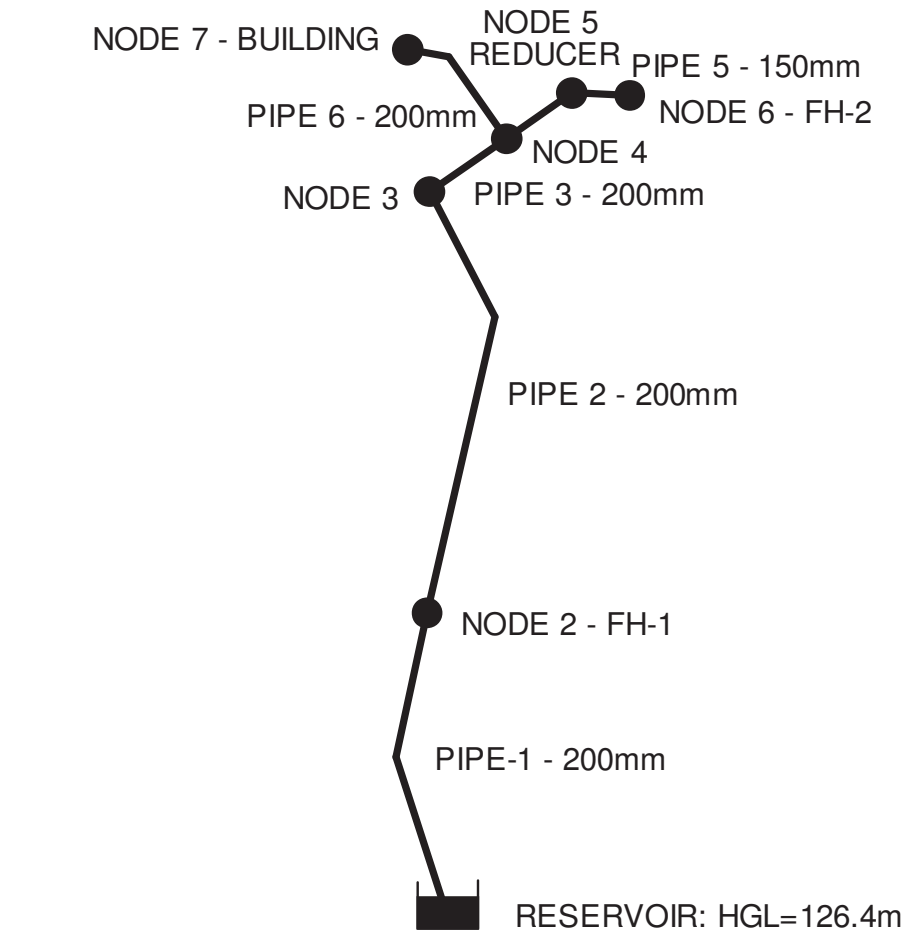
Ottawa, Ontario

EPANET RESULTS

Fire Flow Demand:	133.3	L/s
Maximum Daily Demand (MDD):	0.50	L/s
Fire Flow + MDD:	133.8	L/s
Fire Flow + MDD HGL:	126.4	m

Node ID	Demand (L/s)	HGL (m)	Elevation (m)	Pressure (m)	Pressure (kPa)	Pressure (psi)
1 - Reservoir	-133.8	126.40	87.37	39.0	383	55
2 - Tee to Existing Fire Hydrant	0.0	117.06	87.24	29.8	292	42
3 - Tee (A+00.0) 0.4 L/s MDD	0.4	111.35	87.24	24.1	236	34
4 - Tee (A+17.6) 0.1 L/s MDD	0.0	107.21	87.14	20.1	197	29
5 - Reducer (A+24.5)	0.0	106.44	87.21	19.2	189	27
6 - Fire Hydrant (A+28.4)	95.0	104.40	87.40	17.0	167	24
7 - Builidng (B+20.9)	38.4	106.78	87.25	19.5	191	28

Link ID	Length (m)	Diameter (mm)	Roughness Coefficient	Minor Loss Coefficient	Flow (L/s)	Velocity (m/s)
1 - Reservoir to Tee to Existing FH	62.0	200	110	2.85	133.8	4.26
2 - Tee to Existing FH to Tee (A+00.0)	50.6	200	110	0.25	133.8	4.26
3 - Tee (A+00.0) + Tee (A+17.6)	17.6	200	110	2.45	133.4	4.25
4 - Tee (A+17.6) to Reducer (A+24.5)	6.9	200	110	0.80	95.0	3.02
5 - Reducer (A+24.5) ti Fire Hydrant (A+28.4)	3.9	150	100	0.65	95.0	5.38
6 - Tee (B+00.0) to Building (B+20.9)	20.9	200	110	2.70	38.4	1.22


NODE 7 - BUILDING
NODE 5
REDUCER
PIPE 5 - 150mm
NODE 6 - FH-2
PIPE 6 - 200mm
NODE 4
NODE 3
PIPE 3 - 200mm
PIPE 2 - 200mm
NODE 2 - FH-1
PIPE-1 - 200mm
RESERVOIR: HGL=126.4m

EPANET 2.2

APPENDIX B

SANITARY SERVICING

D.B. Gray Engineering Inc.

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

700 Long Point Circle
Ottawa, Ontario K1T 4E9

613-425-8044
d.gray@dbgrayengineering.com

SANITARY SEWER CALCULATIONS

299 West Hunt Club Road
Ottawa, Ontario

August 8, 2025

Residential Average Daily Flow:	280	L/capita/day		Residential Peaking Factor:	Harmon Formula		
Commercial Average Daily Flow:	28,000	L/ha/day		Harmon Formula Correction Factor:	0.8		
Institutional Average Daily Flow:	28,000	L/ha/day		Commercial Peaking Factor:	1.5		
Light Industrial Average Daily Flow:	35,000	L/ha/day		Institutional Peaking Factor:	1.5		
Heavy Industrial Average Daily Flow:	55,000	L/ha/day		Industrial Peaking Factor:	Ministry of the Environment		
Infiltration Allowance:	0.33	L/s/ha		Manning's Roughness Coefficient:	0.013		

		Residential													Non-Residential				Infiltration			Q	Sewer Data						
		Individual									Cumulative				Individual			Cumulative	Individual	Cumulative		Total							
Location		Single	Semi		Apartment				Area	Population	Area	Population	Peaking	Flow Rate	Area	Daily Flow	Peaking	Flow Rate	Area	Area	Flow Rate	Flow Rate	Length	Nominal Diameter	Actual Diameter	Slope	Velocity	Q_{Full} Capacity	
From	To	Family	Detached	Duplex	(1 Bed)	(2 Bed)	(3 Bed)	(Average)	(ha)		(ha)		Factor	(L/s)	(ha)	L/ha/day	Factor	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(m)	(mm)	(mm)	(%)	(m/s)	(L/s)	Q / Q_{Full}
		ppu = 3.4	ppu = 2.7	ppu = 2.3	ppu = 1.4	ppu = 2.1	ppu = 3.1	ppu = 1.8																					
																							Proposed						
Proposed BLDG	Exist. MH-SA.102									0	0.0000	0	3.2	0.00	0.1975	28,000	1.5	0.10	0.1975	0.1975	0.07	0.16	10.1	150	147	1.0	0.85	14.43	0.01
																							Existing						
Exist. BLDG	Exist. MH-SA.102									0	0.0000	0	3.2	0.00	0.5925	28,000	1.5	0.38	0.5925	0.7900	0.26	0.64	26.7	150	147	1.2	0.93	15.81	0.04
																						0.64	34.9	150	147	0.4	0.54	9.13	0.07
																				250 mm Existing Sanitary Sewer:			250	251	0.41	0.78	38.49	

APPENDIX C

STORMWATER MANAGEMENT

SUMMARY TABLES

100-YEAR EVENT

Drainage Area	Pre-Development Release Rate (L/s)	Post Development Release Rate (L/s)	Maximum Volume Required (cu.m)	Maximum Volume Stored (cu.m)
AREA I (NORTH)	-	10.05	191.02	191.02
AREA II (SOUTH)	-	8.75	67.98	67.98
TOTAL	18.80	18.80	259.00	259.00

5-YEAR EVENT

Drainage Area	Pre-Development Flow Rate (L/s)	Post Development Release Rate (L/s)	Maximum Volume Required (cu.m)	Maximum Volume Stored (cu.m)
AREA I (NORTH)	-	5.98	98.28	98.28
AREA II (SOUTH)	-	7.60	30.13	30.13
TOTAL	18.40	13.59	128.41	128.41

August 8, 2025

299 West Hunt Club Rd

Ottawa, Ontario

STORMWATER MANAGEMENT CALCULATIONS

Modified Rational Method

100-YEAR EVENT

PRE-DEVELOPMENT FLOW RATE &

MAXIMUM ALLOWABLE RELEASE RATE

ICD Release Rate in Existing CB/MH-204=	3.5	L/s
ICD Release Rate in Existing CB/MH-207=	15.3	L/s
Maximum Allowable Release Rate:	18.8	L/s

DRAINAGE AREA I (NORTH)

(100-YEAR EVENT)

			C
Roof Area:	1,031	sq.m	1.00
Hard Area:	2,210	sq.m	1.00
Gravel Area:	0	sq.m	1.00
Soft Area:	708	sq.m	0.25
Total Catchment Area:	3,949	sq.m	0.87

Water Elevation:	86.98	m
Head:	1.80	m
Centroid of ICD Orifice:	85.18	m (ICD in Outlet Pipe of Exist. CB/MH-204)
Invert of Outlet Pipe of Exist. CB/MH-204:	85.13	m
Orifice Diameter:	100	mm
Orifice Area:	7,854	sq.mm
Discharge Coefficient:	0.215	
Maximum Release Rate:	10.05	L/s

HS75 Chamber Storage at entrance

No. of Chambers	Volume Per Chamber	No. of Rows	No. of End Caps	Volume Per End Cap	Volume	
45	1.31	5	10	0.08	59.75	cu.m

Clear Stone Storage

Length	Width	Depth	Volume	40% Voids	
20.410	8.275	1.06	119.28	47.71	cu.m

HS75 Chamber Storage at West Property Line

No. of Chambers	Volume Per Chamber	No. of Rows	No. of End Caps	Volume Per End Cap	Volume	
15	1.31	3	6	0.08	20.13	cu.m

Clear Stone Storage

Length	Width	Depth	Volume	40% Voids	
11.786	5.085	1.06	43.40	17.36	cu.m

CB/MH Storage

CB/MH	Invert	Size	Volume	
MH-7	85.42	1.219	1.82	cu.m
CB/MH-6	85.25	1.219	2.02	cu.m
CB/MH-5	85.19	1.219	2.09	cu.m
MH-4	85.17	1.219	2.11	cu.m
CB-8	85.37	0.61	0.55	cu.m
CB/MH-9	85.27	1.219	1.99	cu.m
CB/MH-10	85.21	1.219	2.06	cu.m
CB-11	85.31	0.61	0.62	cu.m
MH-12	85.42	1.219	1.82	cu.m
MH-13	85.19	1.219	2.09	cu.m
CB/MH-3	85.13	2.438	8.63	cu.m

Pipe Storage

From	Invert	To	Invert	Length	Diameter	Volume	
MH-7	85.42	CB/MH-6	85.42	6.7	450	1.07	cu.m
CB/MH-6	85.25	CB/MH-5	85.19	26.8	450	4.26	cu.m
CB/MH-5	85.19	MH-4	85.17	10.2	450	1.62	cu.m
MH-4	85.17	CB/MH-3	85.14	27.7	450	4.41	cu.m
CB-8	85.37	CB/MH-9	85.27	27.7	250	1.36	cu.m
CB/MH-9	85.27	CB/MH-10	85.21	29.4	450	4.68	cu.m
CB/MH-10	85.21	MH-13	85.19	8.6	450	1.37	cu.m
MH-12	85.42	MH-13	85.19	6.4	450	1.02	cu.m
CB-11	85.31	pipe	85.27	9.7	250	0.48	cu.m
MH-13	85.19	CB/MH-3	85.14	23.1	450	3.67	cu.m

Maximum Volume Stored:	191.02	cu.m
Maximum Volume Required:	191.02	cu.m

DRAINAGE AREA I (Continued)

(100-YEAR EVENT)

Time (min)	i (mm/hr)	2.78AiC (L/s)	50% of ICD Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	179	169.67	5.03	164.64	98.79
15	143	135.78	5.03	130.75	117.68
20	120	113.98	5.03	108.95	130.74
25	104	98.68	5.03	93.65	140.48
30	92	87.29	5.03	82.27	148.08
35	83	78.47	5.03	73.44	154.23
40	75	71.40	5.03	66.38	159.31
45	69	65.61	5.03	60.59	163.58
50	64	60.77	5.03	55.74	167.23
55	60	56.65	5.03	51.63	170.38
60	56	53.11	5.03	48.09	173.11
65	53	50.02	5.03	45.00	175.50
70	50	47.31	5.03	42.28	177.60
75	47	44.90	5.03	39.88	179.45
80	45	42.75	5.03	37.72	181.08
85	43	40.81	5.03	35.79	182.53
90	41	39.06	5.03	34.04	183.81
95	39	37.47	5.03	32.45	184.94
100	38	36.02	5.03	30.99	185.94
105	36	34.68	5.03	29.65	186.82
110	35	33.45	5.03	28.42	187.60
115	34	32.31	5.03	27.29	188.28
120	33	31.26	5.03	26.23	188.86
125	32	30.28	5.03	25.25	189.37
130	31	29.36	5.03	24.33	189.80
135	30	28.50	5.03	23.48	190.17
140	29	27.70	5.03	22.67	190.47
145	28	26.95	5.03	21.92	190.71
150	28	26.24	5.03	21.21	190.89
180	24	22.71	5.03	17.69	191.02
240	19	18.06	5.03	13.03	187.68
300	16	15.10	5.03	10.07	181.34
360	14	13.04	5.03	8.01	173.07
420	12	11.51	5.03	6.49	163.46
480	11	10.33	5.03	5.31	152.86
540	10	9.39	5.03	4.37	141.49
600	9	8.62	5.03	3.60	129.50
660	8	7.98	5.03	2.95	117.01
720	8	7.44	5.03	2.41	104.11
780	7	6.97	5.03	1.94	90.85
840	7	6.56	5.03	1.53	77.28
900	7	6.20	5.03	1.17	63.45
960	6	5.88	5.03	0.86	49.38
1020	6	5.60	5.03	0.57	35.11
1080	6	5.34	5.03	0.32	20.66
1140	5	5.11	5.03	0.09	6.03
1200	5	4.90	4.90	0.00	0.00

DRAINAGE AREA II (SOUTH)

(100-YEAR EVENT)

			C
Roof Area:	0	sq.m	1.00
Hard Area:	1,370	sq.m	1.00
Gravel Area:	0	sq.m	1.00
Soft Area:	448	sq.m	0.25
Total Catchment Area:	1,818	sq.m	0.82

Water Elevation:	87.15	m
Head:	1.87	m
Centroid of ICD Orifice:	85.28	m (ICD in Outlet Pipe of Exist. CB/MH-207)
Invert of Outlet Pipe of Exist. CB/MH-207:	85.23	m
Orifice Diameter:	100	mm
Orifice Area:	7,854	sq.mm
Discharge Coefficient:	0.184	
Maximum Release Rate:	8.75	L/s

CB/MH	Top Area (sq.m)	Depth (m)	Volume	
CB/MH-206	339	0.19	21.59	cu.m
CB/MH-207	254	0.17	14.49	cu.m

HS75 Chamber Storage

No. of Chambers	Volume Per Chamber	No. of Rows	No. of End Caps	Volume Per End Cap	Volume	
8	1.31	2	4	0.08	10.80	cu.m

Clear Stone Storage

Length	Width	Depth	Volume	40% Voids	
9.634	3.490	1.06	24.84	9.94	cu.m

CB/MH Storage

CB/MH	Invert	Size	Volume	
CB-205	85.66	0.61	0.55	cu.m
CB/MH-206	85.46	1.219	1.75	cu.m
CB/MH-207	85.23	1.219	2.04	cu.m
CB/MH-1	85.34	1.219	2.02	cu.m

Pipe Storage

From	Invert	To	Invert	Length	Diameter	Volume	
CB-205	85.66	CB/MH-206	85.51	28.2	250	1.38	cu.m
CB/MH-206	85.46	CB/MH-207	85.29	40.9	300	2.89	cu.m
CB/MH-1	85.34	CB/MH-207	85.34	3.3	450	0.52	cu.m

Maximum Volume Stored:	67.98	cu.m
Maximum Volume Required:	67.98	cu.m

DRAINAGE AREA II (Continued)

(100-YEAR EVENT)

Time (min)	i (mm/hr)	2.78AiC (L/s)	50% of ICD Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	179	73.57	4.37	69.19	41.52
15	143	58.87	4.37	54.50	49.05
20	120	49.42	4.37	45.05	54.05
25	104	42.78	4.37	38.41	57.62
30	92	37.85	4.37	33.48	60.26
35	83	34.02	4.37	29.65	62.26
40	75	30.96	4.37	26.59	63.81
45	69	28.45	4.37	24.08	65.00
50	64	26.35	4.37	21.98	65.93
55	60	24.56	4.37	20.19	66.63
60	56	23.03	4.37	18.65	67.16
65	53	21.69	4.37	17.32	67.54
70	50	20.51	4.37	16.14	67.79
75	47	19.47	4.37	15.10	67.93
80	45	18.54	4.37	14.16	67.98
85	43	17.70	4.37	13.32	67.95
90	41	16.94	4.37	12.56	67.85
95	39	16.25	4.37	11.87	67.68
100	38	15.62	4.37	11.24	67.45
105	36	15.04	4.37	10.66	67.18
110	35	14.50	4.37	10.13	66.86
115	34	14.01	4.37	9.64	66.49
120	33	13.55	4.37	9.18	66.09
125	32	13.13	4.37	8.75	65.65
130	31	12.73	4.37	8.36	65.18
135	30	12.36	4.37	7.99	64.68
140	29	12.01	4.37	7.64	64.15
145	28	11.68	4.37	7.31	63.60
150	28	11.38	4.37	7.00	63.02
180	24	9.85	4.37	5.47	59.12
240	19	7.83	4.37	3.46	49.78
300	16	6.55	4.37	2.17	39.13
360	14	5.65	4.37	1.28	27.64
420	12	4.99	4.37	0.62	15.58
480	11	4.48	4.37	0.11	3.08
540	10	4.07	4.07	0.00	0.00
600	9	3.74	3.74	0.00	0.00
660	8	3.46	3.46	0.00	0.00
720	8	3.22	3.22	0.00	0.00
780	7	3.02	3.02	0.00	0.00
840	7	2.84	2.84	0.00	0.00
900	7	2.69	2.69	0.00	0.00
960	6	2.55	2.55	0.00	0.00
1020	6	2.43	2.43	0.00	0.00
1080	6	2.32	2.32	0.00	0.00
1140	5	2.22	2.22	0.00	0.00
1200	5	2.13	2.13	0.00	0.00

5-YEAR EVENT

PRE-DEVELOPMENT FLOW RATE &

MAXIMUM ALLOWABLE RELEASE RATE

ICD Release Rate in Existing CB/MH-204=	3.4	L/s
ICD Release Rate in Existing CB/MH-207=	15.0	L/s
Maximum Allowable Release Rate:	18.4	L/s

DRAINAGE AREA I (NORTH)

(5-YEAR EVENT)

			C
Roof Area:	1,031	sq.m	0.90
Hard Area:	2,210	sq.m	0.90
Gravel Area:	0	sq.m	0.80
Soft Area:	708	sq.m	0.20
Total Catchment Area:	3,949	sq.m	0.77

Water Elevation:	85.82	m
Head:	0.64	m
Centroid of ICD Orifice:	85.18	m (ICD in Outlet Pipe of Exist. CB/MH-204)
Invert of Outlet Pipe of CB/MH-3:	85.13	m
Orifice Diameter:	100	mm
Orifice Area:	7,854	sq.mm
Discharge Coefficient:	0.215	
Maximum Release Rate:	5.98	L/s

HS75 Chamber Storage at entrance

No. of Chambers	Volume Per Chamber	No. of Rows	No. of End Caps	Volume Per End Cap	Volume	
45	0.90	5	10	0.06	41.01	cu.m

Clear Stone Storage

Length	Width	Depth	Volume	40% Voids	
20.410	8.275	0.40	26.15	10.46	cu.m

HS75 Chamber Storage at West Property Line

No. of Chambers	Volume Per Chamber	No. of Rows	No. of End Caps	Volume Per End Cap	Volume	
15	0.90	3	6	0.06	13.83	cu.m

Clear Stone Storage

Length	Width	Depth	Volume	40% Voids	
11.786	5.085	0.40	10.00	4.00	cu.m

CB/MH Storage

CB/MH	Invert	Size	Volume	
MH-7	85.42	1.219	0.46	cu.m
CB/MH-6	85.25	1.219	0.66	cu.m
CB/MH-5	85.19	1.219	0.73	cu.m
MH-4	85.17	1.219	0.76	cu.m
CB-8	85.37	0.610	0.17	cu.m
CB/MH-9	85.27	1.219	0.64	cu.m
CB/MH-10	85.21	1.219	0.71	cu.m
CB-11	85.31	0.610	0.19	cu.m
MH-12	85.42	1.219	0.46	cu.m
MH-13	85.19	1.219	0.73	cu.m
CB/MH-3	85.13	2.438	3.21	cu.m

Pipe Storage

From	Invert	To	Invert	Length	Diameter	Volume	
MH-7	85.42	CB/MH-6	85.42	6.7	450	1.07	cu.m
CB/MH-6	85.25	CB/MH-5	85.19	26.8	450	4.26	cu.m
CB/MH-5	85.19	MH-4	85.17	10.2	450	1.62	cu.m
MH-4	85.17	CB/MH-3	85.14	27.7	450	4.41	cu.m
CB-8	85.37	CB/MH-9	85.27	27.7	250	1.36	cu.m
CB/MH-9	85.27	CB/MH-10	85.21	29.4	450	4.68	cu.m
CB/MH-10	85.21	MH-13	85.19	8.6	450	1.37	cu.m
MH-12	85.42	MH-13	85.19	6.4	450	1.02	cu.m
CB-11	85.31	pipe	85.27	9.7	250	0.48	cu.m
MH-13	85.19	CB/MH-3	85.14	23.1	450	3.67	cu.m

Maximum Volume Stored:	98.28	cu.m
Maximum Volume Required:	98.28	cu.m

DRAINAGE AREA I (Continued)

(5-YEAR EVENT)

Time (min)	i (mm/hr)	2.78AiC (L/s)	50% of ICD Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	104	88.59	2.99	85.60	51.36
15	84	71.05	2.99	68.05	61.25
20	70	59.73	2.99	56.74	68.09
25	61	51.78	2.99	48.79	73.18
30	54	45.85	2.99	42.86	77.15
35	49	41.25	2.99	38.26	80.35
40	44	37.57	2.99	34.58	82.98
45	41	34.55	2.99	31.55	85.19
50	38	32.02	2.99	29.02	87.07
55	35	29.86	2.99	26.87	88.68
60	33	28.01	2.99	25.02	90.07
65	31	26.40	2.99	23.40	91.27
70	29	24.97	2.99	21.98	92.32
75	28	23.71	2.99	20.72	93.24
80	27	22.58	2.99	19.59	94.05
85	25	21.57	2.99	18.58	94.75
90	24	20.65	2.99	17.66	95.36
95	23	19.82	2.99	16.82	95.90
100	22	19.05	2.99	16.06	96.36
105	22	18.35	2.99	15.36	96.76
110	21	17.70	2.99	14.71	97.10
115	20	17.11	2.99	14.12	97.39
120	19	16.55	2.99	13.56	97.64
125	19	16.04	2.99	13.04	97.84
130	18	15.56	2.99	12.56	97.99
135	18	15.10	2.99	12.11	98.11
140	17	14.68	2.99	11.69	98.20
145	17	14.29	2.99	11.29	98.26
150	16	13.91	2.99	10.92	98.28
180	14	12.06	2.99	9.06	97.90
240	11	9.60	2.99	6.61	95.20
300	9	8.04	2.99	5.05	90.87
360	8	6.95	2.99	3.96	85.50
420	7	6.14	2.99	3.15	79.39
480	6	5.52	2.99	2.53	72.74
540	6	5.02	2.99	2.03	65.67
600	5	4.61	2.99	1.62	58.27

DRAINAGE AREA II (SOUTH)

(5-YEAR EVENT)

			C
Roof Area:	0	sq.m	0.90
Hard Area:	1,370	sq.m	0.90
Gravel Area:	0	sq.m	0.90
Soft Area:	448	sq.m	0.20
Total Catchment Area:	1,818	sq.m	0.73

Water Elevation: 86.69 m

Head: 1.41 m

Centroid of ICD Orifice: 85.28 m (ICD in Outlet Pipe of Exist. CB/MH-207)

Invert of Outlet Pipe of Exist. CB/MH-207: 85.23 m

Orifice Diameter: 100 mm

Orifice Area: 7,854 sq.mm

Discharge Coefficient: 0.184

Maximum Release Rate: 7.60 L/s

CB/MH	Top Area (sq.m)	Depth (m)	Volume	
CB/MH-206	0	0.00	0.00	cu.m
CB/MH-207	0	0.00	0.00	cu.m

HS75 Chamber Storage

No. of Chambers	Volume Per Chamber	No. of Rows	No. of End Caps	Volume Per End Cap	Volume	
8	1.31	2	4	0.08	10.80	cu.m

Clear Stone Storage

Length	Width	Depth	Volume	40% Voids	
9.634	3.490	1.06	24.84	9.94	cu.m

CB/MH Storage

CB/MH	Invert	Size	Volume	
CB-205	85.66	0.61	0.38	cu.m
CB/MH-206	85.46	1.22	1.44	cu.m
CB/MH-207	85.23	1.22	1.71	cu.m
CB/MH-1	85.34	1.22	1.58	cu.m

Pipe Storage

From	Invert	To	Invert	Length	Diameter	Volume	
CB-205	85.66	CB/MH-206	85.51	28.2	250	1.38	cu.m
CB/MH-206	85.46	CB/MH-1	85.29	40.9	300	2.89	cu.m
CB/MH-1	85.34	CB/MH-207	85.34	3.3	450	0.52	cu.m

Maximum Volume Stored: 30.13 cu.m

Maximum Volume Required: 30.13 cu.m

DRAINAGE AREA II (Continued)

(5-YEAR EVENT)

Time (min)	i (mm/hr)	2.78AiC (L/s)	50% of ICD Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	104	38.31	3.80	34.51	20.70
15	84	30.72	3.80	26.92	24.23
20	70	25.83	3.80	22.03	26.43
25	61	22.39	3.80	18.59	27.88
30	54	19.83	3.80	16.03	28.85
35	49	17.84	3.80	14.04	29.48
40	44	16.25	3.80	12.44	29.86
45	41	14.94	3.80	11.14	30.07
50	38	13.84	3.80	10.04	30.13
55	35	12.91	3.80	9.11	30.07
60	33	12.11	3.80	8.31	29.92
65	31	11.41	3.80	7.61	29.69
70	29	10.80	3.80	7.00	29.39
75	28	10.25	3.80	6.45	29.03
80	27	9.77	3.80	5.96	28.63
85	25	9.33	3.80	5.53	28.18
90	24	8.93	3.80	5.13	27.69
95	23	8.57	3.80	4.77	27.17
100	22	8.24	3.80	4.44	26.62
105	22	7.94	3.80	4.13	26.04
110	21	7.66	3.80	3.85	25.44
115	20	7.40	3.80	3.60	24.81
120	19	7.16	3.80	3.36	24.16
125	19	6.93	3.80	3.13	23.49
130	18	6.73	3.80	2.92	22.81
135	18	6.53	3.80	2.73	22.11
140	17	6.35	3.80	2.55	21.39
145	17	6.18	3.80	2.38	20.67
150	16	6.02	3.80	2.21	19.92
180	14	5.21	3.80	1.41	15.24
240	11	4.15	3.80	0.35	5.05
300	9	3.48	3.48	0.00	0.00
360	8	3.01	3.01	0.00	0.00
420	7	2.66	2.66	0.00	0.00
480	6	2.39	2.39	0.00	0.00
540	6	2.17	2.17	0.00	0.00
600	5	1.99	1.99	0.00	0.00

D.B. Gray Engineering Inc.

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

700 Long Point Circle
Ottawa, Ontario K1T 4E9

613-425-8044
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STORM SEWER CALCULATIONS

Rational Method

2-YEAR EVENT

Project: 299 West Hunt Club Rd
Ottawa, Ontario

Date: August 8, 2025

Manning's Roughness Coefficient: 0.013

Location		Individual					Cumulative				Sewer Data							
		Roof C = 0.90	Hard C = 0.90	Gravel C = 0.70	Soft C = 0.20				Rainfall	Q		Nominal	Actual			Q_{Full}		
From	To	(ha)	(ha)	(ha)	(ha)	2.78AC	2.78AC	Time (min)	Intensity (mm/hr)	Flow Rate (L/s)	Length (m)	Diameter (mm)	Diameter (mm)	Slope (%)	Velocity (m/s)	Capacity (L/s)	Time (min)	Q / Q_{Full}
CB/MH-6	CB/MH-5		0.0833			0.2084	0.2084	10.00	77	16.01	26.8	450	457	0.22	0.85	139.3	0.53	0.11
CB/MH-5	MH-4		0.0188			0.0470	0.2555	10.53	75	19.12	10.2	450	457	0.20	0.81	132.9	0.21	0.14
MH-4	CB/MH-3						0.2555	10.74	74	18.93	12.0	450	457	0.22	0.85	139.3	0.24	0.14
CB-2	CB/MH-9		0.0093			0.0233	0.0233	10.00	77	1.79	2.1	250	251	1.00	1.21	60.1	0.03	0.03
CB-8	CB/MH-9		0.0015		0.0133	0.0111	0.0111	10.00	77	0.86	27.7	300	299	0.36	0.82	57.5	0.56	0.01
CB/MH-9	CB/MH-10	0.1031			0.0074	0.2621	0.2965	10.56	75	22.15	29.4	450	457	0.20	0.81	132.9	0.60	0.17
CB/MH-10	MH-13				0.0065	0.0036	0.3001	11.17	73	21.78	8.6	450	457	0.23	0.87	142.5	0.17	0.15
CB-11	MH-13		0.0510		0.0369	0.1481	0.1481	10.00	77	11.38	9.7	250	251	0.46	0.82	40.8	0.20	0.28
MH-13	CB/MH-3					0.0000	0.4482	11.33	72	32.29	23.1	450	457	0.22	0.85	139.3	0.45	0.23
ROOF	CB/MH-3	0.1729				0.4326	0.4326	10.00	77	33.23	14.4	250	251	1.80	1.63	80.6	0.15	0.41
CB/MH-3	MH-208		0.0571		0.0067	0.1466	1.2829	11.79	71	90.52	8.5	375	366	0.35	0.92	97.2	0.15	0.93
								Flow though ICD:		5.98								
								Flow from Roof:		33.23								
										39.21	8.5	375.0	366.0	0.4	0.92	97.2	0.15	0.40
CB-205	CB/MH-206		0.0145		0.0298	0.0528	0.0528	10.00	77	4.06	28.2	250	251	0.50	0.86	42.5	0.55	0.10
CB/MH-206	CB/MH-207		0.0568		0.0079	0.1465	0.1994	10.55	75	14.90	40.9	300	299	0.40	0.86	60.6	0.79	0.25
CB/MH-207	MH-208		0.0657		0.0071	0.1683	0.3677	11.34	72	26.48	24.9	300	299	0.40	0.86	60.6	0.48	0.44
								Flow though ICD:		7.60	24.9	300	299	0.40	0.86	60.6	0.48	0.13
MH-208	MH-102					0.0000	1.6505	11.94	70	115.67	11.2	375	366	0.80	1.40	147.0	0.13	0.79
								Flow though ICD:		5.98								
								Flow though ICD:		7.60								
								Flow from Roof:		33.23								
										46.81	11.2	375	366	0.80	1.40	147.0	0.13	0.32
								Existing 375 mm Private Storm Sewer:				375	366	0.60	1.21	127.3		

APPENDIX D

PRE-CONSULTATION MEETING NOTES

File No.: PC2024-0534

January 30, 2025

Jasmine Paoloni
P2 Concepts Inc.
Via email: planning@p2concepts.ca

Subject: Pre-Consultation: Meeting Feedback
Proposed Site Plan Control Application – 299 West Hunt Club Road

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on January 17, 2025.

Pre-Consultation Preliminary Assessment

1 ☐	**2** ☐	**3** ☒	**4** ☐	**5** ☐

One (1) indicates that considerable major revisions are required while five (5) suggests that the proposal appears to meet the City's key land use policies and guidelines. This assessment is purely advisory and does not consider technical aspects of the proposal or in any way guarantee application approval.

Next Steps

1. A review of the proposal and materials submitted for the above-noted pre-consultation has been undertaken. In your next submission, complete the application Form and submit it together with the necessary studies and/or plans to planningcirculations@ottawa.ca.

2. In your subsequent submission, please ensure that all comments or issues detailed herein are addressed. A detailed cover letter stating how each issue has been addressed should be included 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, you are encouraged to complete or repeat the pre-consultation process.

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.

Proposed Development

- Proposed development is a four-storey commercial use building associated with the existing automobile dealership. The proposed building will replace 70 surface parking spaces currently on the site, located north of the existing two-storey automotive dealership.
- The proposed development has 4720 sq.m of gross floor area, and will consist of uses including automobile inventory storage, wash bays, detailing bays.
- Inventory and employee parking will be located within an underground parking garage in the proposed building. The ground floor will contain a show room and wash and detailing bays, and the upper floors will contain vehicle inventory storage, accessed by a car elevator.

Planning

Comments:

1. The subject site is located in the Outer Urban Transect and is designated Neighborhood pursuant to Schedule B3 of the Official Plan. The proposed uses are not contemplated in the Neighbourhood designation; however, staff have no concerns as the proposed “automobile dealership” and “automobile service station” uses are both permitted uses in the GM23 subzone.

2. It is understood from discussion at the pre-con meeting that the upper levels of the proposed building will contain parking/storage area for motor vehicles and will be accessed by a car elevator. Please confirm the intended uses, and ensure the entrance to the car elevator is indicated on the site plan.

3. The site is indicated as having archaeological potential and is subject to Section 4.5 of the Official Plan. As per the attached Study and Plan Identification List, an archaeological assessment will be required for submission of a site plan control application. Additional information can be found in the Archaeological Assessment terms of reference (Archaeological Assessment Terms of Reference)

4. Proximity to Airport

    (i) The subject lands are within the Airport Vicinity Development Zone on Schedule C14 – Land Use Constraints to due Aircraft Noise. Refer to noise comments in this letter for further details.

    (ii) Refer to Section 10.2.2 of the Official Plan for policies related to protection of airport and aircraft operations.

    (iii) The site is subject to Section 70 of the Zoning By-law –Protection of Airport Operations (Section 70). Per Section 70 (2), please consult the airport regulations for requirements relating to the Ottawa McDonald-Cartier airport, including bird hazard zones, etc.

5. Proximity to Rail Corridor

    (i) The subject site is abutting the Beachburg Rail Corridor, which is an active rail corridor operated by CN Rail. Early consultation with CN Rail is encouraged to confirm feasibility of the proposed development. Refer to list of technical agencies provided for CN Rail contact information.

    (ii) The Beachburg Rail Coridor is identified as a Protected Transportation Corridor on Schedule C2 – Transit Network Ultimate of the Official Plan. Please note that new development on land adjacent to all Protected Transportaiton corridors and facilties shown on Schedule C2 are required to follow rail safety and risk mitigation best practices to determine appropriate development setbacks, per Policy 9 of Section 4.1.2 of the Official Plan. Refer the Federation of Canadian Municipalities and Rail Association of Canada (FCM-RAC) Guidelines.

    (iii) Staff have concerns with the proposed 6-metre setback from the proposed building to the rail corridor abutting. Further information required to determine appropriate setback and/or mitigation measures.

    (iv) A Rail Proximity Study is required as part of a complete application. The terms of reference can be reviewed here.

    (v) Identify all rail setbacks and mitigation measures on the site plan.

    (vi) Please note that staff have also circulated the concept plan to the Transportation Services Department for preliminary feedback and are awaiting a response. Comments to be provided once available.

6. Parking Requirements

    (i) Refer to Sections 100-114 for parking requirements and provide parking requirements and conformity within the zoning confirmation report.

(ii) Confirm the number of bicycle parking spaces existing/propsoed on the site – it appears that only three are proposed based on the provided plan. Please note that 1 bicycle parking space per 500 m^2 of gross floor area is required, per Table 111A(f) of the Zoning By-law.Policy 9 of Section 4.1.2 outlines that proponents of development shall provide an adequate number of bicycle parking facilities and identifies associated requirements for short- and long-term bicycle parking. Please see comment 11 (b) for additional detail.

(iii) Ensure it is clear on the site plan which parking spaces are being impacted/changed through the propsoed development. Please note that the Zoning By-law has parking location restrictions for certain select non-residential zones. Section 109(2) identifies that in the GM zone, no person may park a motor vehicle (a) in a required front yard (b) in a required corner side yard, and (c) i n the extension of a required corner side yard into a rear yard.

(iv) It has been determined that the wash and detailing bays within the proposed building would be considered “service bays”. Please account for the service bay area(s) in the parking calculations.

7. Consider opportunities to provide tree planting with the development (with reference to the airport restricted species list) and increase soft landscaping/vegetation throughout the site. Section 4.8.2 of the Official Plan outlines that development shall preserve and provide space for mature, healthy trees and accommodate space for tree planting.

8. Required Applications

    (i) A Site Plan Control (Complex, Non-Residential) is required. More information on the process can be found here.

    (ii) Ensure that all required plans and studies idenitfied on Studies and Plans Identificaiton List (SPIL) are prepared in accordance with the applicable terms of reference. All terms of reference can be found here. Application will be deemed incomplete where deficencies are identified.

Feel free to reach out to Amanda Davidson, Planner (amanda.davidson@ottawa.ca) for any follow-up questions.

Urban Design

Comments:

9. As part of a formal submission, staff require an architectural drawing set (including a Site Plan, Floor Plans, and Building Elevations) and a Landscape Plan.

Feel free to reach out to Nader Kadri, Planner (nader.kadri@ottawa.ca) for any follow-up questions.

Engineering

Comments:

10. Stormwater Management:

    (i) The developer should make reference to the existing site servicing report to demonstrate that the new stormwater release rate in the minor and major storm event does not exceed the existing site stormwater release rate. If the new stormwater release rate exceeds the existing stormwater release rate for this site, than the applicant should confirm the allocated release rate for this site based on the site servicing and stormwater report design for this area.

    (ii) Enhanced treatment of 80% TSS removal is required.

    (iii) There should be no surface ponding up to the 2-year event in parking areas or drive aisle.

    (iv) The development is located with the Primary Aiport Bird Hazard Zone and stormwater ponds/ornamental ponds are not permitted.

11. Sanitary Sewer:

    a. The developer should confirm from the servicing report for this area if the private sanitary sewer allocated a sanitary release rate for the development area. If the servicing report did not allocate a sanitary release rate, the developer would be required to demonstrate that there is adequate capacity to connect to the existing private sanitary sewer.

12. Water

    (i) Water Boundary condition requests must include the location of the service (map or plan with connection location(s) indicated) and the expected loads required by the proposed development, including calculations. Please provide the following information:

        i. Location of service

        ii. Type of development

        iii. The amount of fire flow required (per OBC or FUS).

        iv. Average daily demand: ___ l/s.

        v. Maximum daily demand: ___l/s.

vi. Maximum hourly daily demand: ___ l/s.

13. The FCM Rail Corridor Guidelines should be used to design the development within proximity to the rail. A berm or other similar earthworks may be required for safety and noise mitigation measures.

14. The grading and drainage should follow the existing servicing report. Otherwise, excess drainage should not be directed towards the rail corridor or neighboring properties.

15. The geotechnical report should provide recommendations about the impacts of the rail corridor and the development and any berm/earthworks required.

16. An amendment to the existing MECP Environmental Compliance Approval Industrial Sewage Works may be required for the proposed development. A Ministry contact has been provided below but please work with City staff on the need of an application.

    a. Shannon Hamilton-Browne at (613) 521-3450 or Shannon.Hamilton-Browne@ontario.ca

Feel free to contact Rubina Rasool, Project Manager, for follow-up questions.

Noise

Comments:

17. Noise study is not required as the proposed site is not a noise sensitive land use.

18. The site falls within the Airport Vicinity Development Zone, as such the following Warning Clause will apply: "*Purchasers/tenants are advised that due to the proximity of the airport, noise from the airport and individual aircraft may at times interfere with outdoor or indoor activities."*

Feel free to contact Josiane Gervais, TPM, for follow-up questions.

Transportation

Comments:

19. A Transportation Impact Assessment (TIA) is not required.

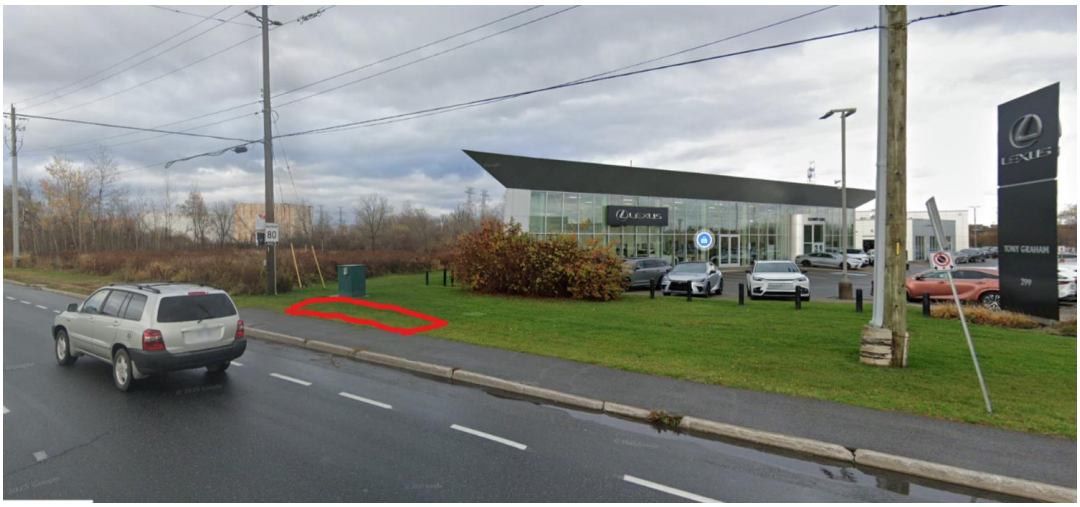
20. Ensure that the development proposal complies with the Right-of-Way protection requirements of the Official Plan's Schedule C16.

21. Transportation Master Plan includes:

    (i) Transit Priority Measures (Isolated) along West Hunt Club Rd (2031 Network Concept)

(ii) Widening West Hunt Club Rd (2031 Network Concept)

22. There is an existing transit stop (#1320) along the property frontage. OC Transpo has requested a standard shelter pad, per SC11, to be constructed behind the sidewalk, generally as sketched below. It is noted there is a utility box in the vicinity, review off-set requirements and discuss with City staff accordingly.



23. As the proposed site is commercial and for general public use, AODA legislation applies.

    (i) Ensure all crosswalks located internally on the site provide a TWSI at the depressed curb, per requirements of the Integrated Accessibility Standards Regulation under the AODA.

    (ii) Clearly define accessible parking stalls and ensure they meet AODA standards (include an access aisle next to the parking stall and a pedestrian curb ramp at the end of the access aisle, as required).

    (iii) Please consider using the City's Accessibility Design Standards, which provide a summary of AODA requirements.

24. On site plan:

    (i) Show all details of the roads abutting the site; include such items as pavement markings, signage, accesses, on-street parking, and/or sidewalks.

    (ii) Turning movement diagrams required for all accesses showing the largest vehicle to access/egress the site.

    (iii) Turning movement diagrams required for internal movements (loading areas, garbage).

(iv) Consider providing a pedestrian pathway connecting to the sidewalk along West Hunt Club Rd and the bus stop.

(v) Show all curb radii measurements; ensure that all curb radii are reduced as much as possible and fall within TAC guidelines (Figure 8.5.1).

(vi) Show dimensions for site elements (i.e. lane/aisle widths, access width and throat length, parking stalls, sidewalks, pedestrian pathways, etc.)

(vii) Show slope of garage ramp on site plan. Note that underground ramps should be limited to a 12% grade and must contain a subsurface melting device when exceeding 6%. Ramp grades greater than 15% can be psychological barriers to some drivers. When the underground parking ramp's break over slope exceeds 8%, a vertical-curve transition or a transition slope of half the ramp slope should be used. Without this transition, bottoming out of vehicles may occur.

Feel free to contact Josiane Gervais, Transportation Project Manager, for follow-up questions.

Environment

Comments:

25. There are no significant natural features that trigger an environmental impact study.

26. Bird-Safe Design Guidelines - Please review and incorporate bird safe design elements. Some of the risk factors include glass and related design traps such as corner glass and fly-through conditions, ventilation grates and open pipes, landscaping, light pollution. More guidance and solutions are available in the guidelines which can be found here: https://documents.ottawa.ca/sites/documents/files/birdsafedesign_guidelines_en.pdf

27. Please consider if there are features that can be added reduce the urban heat island effect (see OP 10.3.3). For example, this impact can be reduced by adding large canopy trees, green roofs or vegetation walls, or incorporating building with low heat absorbing materials.

Feel free to contact Matthew Hayley, Environmental Planner, for follow-up questions.

Forestry

Comments:

28. The proposed building and site plan appear to create new planting opportunities along the North end of the property and the private road to the East. Please

prioritize the retention of existing trees and provide additional plantings where new planting spaces are created.

(i) A Tree Conservation Report and Landscape Plan are required, outlining tree removals and protection measures, as well as proposed new tree plantings.

29. Please note that the site is within the Airport Vicinity Development Zone. As per OP §10.2.2 (7), it is recommended that the planting of trees and shrubs attractive to birds be limited or avoided on site. Please refer to table C.4 (page C.12) of the Wildlife Control Procedures Manual.

30. The following Tree Conservation Report (TCR) guidelines have been adapted from the Schedule E of the Tree Protection By-law – for more information on these requirements please contact julian.alvarez-barkham@ottawa.ca

    a. A Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City
        i. An approved TCR is a requirement of Site Plan approval.
    b. Any removal of privately-owned trees 10cm or larger in diameter within the urban area, or city-owned trees of any diameter requires a tree permit issued under the Tree Protection Bylaw (Bylaw 2020 – 340); the permit will be based on an approved TCR and made available at or near plan approval.
    c. The TCR must contain 2 separate plans:
        i. Plan/Map 1 - show existing conditions with tree cover information.
        ii. Plan/Map 2 - show proposed development with tree cover information.
    d. The TCR must list all trees on site, as well as off-site trees if the CRZ (critical root zone) extends into the developed area, by species, diameter, and health condition.
        i. For ease of review, the Planning Forester suggests that all trees be numbered and referenced in an inventory table.
    e. Please identify trees by ownership – private onsite, private on adjoining site, city owned, co-owned (trees on a property line)
    f. If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained.
        i. Compensation may be required for the removal of city owned trees.
    g. The removal of trees on a property line will require the permission of both property owners.

h. All retained trees must be shown, and all retained trees within the area impacted by the development process must be protected as per City guidelines available on the Tree Protection Specification or by searching Ottawa.ca.
    i. The location of tree protection fencing must be shown on the plan.
    ii. Show the critical root zone of the retained trees.
i. As per the Official Plan §4.8.2, the retention of healthy trees must be prioritized wherever possible. Please seek opportunities for retention of trees that will contribute to the design and function of the site.

31. The following Landscape Plan (LP) guidelines have been adapted from Schedule E of the Tree Protection By-law – for more information on these requirements please contact julian.alvarez-barkham@ottawa.ca
    a. Please ensure any retained trees are shown on the LP.
    b. Minimum Setbacks
        i. Maintain 1.5m from sidewalk or MUP/cycle track or water service laterals.
        ii. Maintain 2.5m from curb.
        iii. Coniferous species require a minimum 4.5m setback from curb, sidewalk, or MUP/cycle track/pathway.
        iv. Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing, except where otherwise approved in naturalization / afforestation areas.
        v. Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.
    b. Tree specifications
        i. Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.
        ii. Maximize the use of large deciduous species wherever possible to maximize future canopy coverage.
    c. Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; and if possible, include watering and warranty as described in the specification.
    d. No root barriers, dead-man anchor systems, or planters are permitted.
    e. No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)
    f. Hard surface planting

i. If there are hard surface plantings, a planting detail must be provided.

ii. Curb style planter design is highly recommended.

iii. No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.

c. Trees are to be planted at grade.

d. Soil Volume - Please demonstrate as per the **Landscape Plan Terms of Reference** that the available soil volumes for new plantings will meet or exceed the following:

Tree Type/Size	Single Tree Soil Volume (m^3)	Multiple Tree Soil Volume (m^3/tree)
Ornamental	15	9
Columnar	15	9
Small	20	12
Medium	25	15
Large	30	18
Conifer	25	15

i. It is strongly suggested that the proposed species list include a column listing the available soil volume.

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

f. The city requests that consideration be given to planting native species wherever there is a high probability of survival to maturity.

g. Efforts shall be made to provide as much future canopy cover as possible at a site level, through tree planting and tree retention. The Landscape Plan shall show/document that the proposed tree planting and retention will contribute to the City's overall canopy cover over time. **Please provide a projection of the future canopy cover for the site to 40 years.**

Feel free to contact Julian Alvarez-Barkham, Forester, for follow-up questions.

Parkland

Comments:

Parkland Dedication:

32. The amount of required parkland conveyance is to be calculated as per the City of Ottawa Parkland Dedication By-law No.2022-280 (or as amended):

For conveyance of parkland, cash-in-lieu of conveyance parkland, or combination thereof:

(i) 2% of the gross land area (commercial & industrial uses).

(ii) The conveyance requirement shall be the cumulative sum for each use, as calculated using the applicable rate and based upon the portion of the site allocated to each use, including, but not limited to, the gross floor area allocated to each use, required and provided parking spaces, amenity space, landscape buffers, driveways, and drive aisles.

Prior to registration of the Site Plan Agreement, the Owner acknowledges and agrees to pay cash-in-lieu of conveyance of parkland as referenced in Schedule "B" herein. Pursuant to the City's Parkland Dedication By-law, being By-law No. 2022-280, as amended, 40% of said funds collected shall be directed to City wide funds, and 60% shall be directed to Ward 8 funds. The Owner shall also pay the parkland appraisal fee of $820.00 plus H.S.T. of $106.60, as referenced in Schedule "B" herein.

All of the above shall be to the satisfaction of the General Manager, Recreation, Cultural and Facility Services.

Form of Parkland Dedication:

33. PFP will be requesting **cash-in-lieu of conveyance of parkland** for parkland dedication in accordance with the Parkland Dedication By-law.

Pre-consultation Preliminary Parkland Dedication Calculation:

34. PFP requests the following information to confirm and calculate the parkland conveyance:

    (i) Gross land area, in square meters

    (ii) Gross floor area of proposed/existing commercial development

35. Please note, if the proposed land use changes or gross floor area changes, then the parkland dedication requirement will be re-evaluated accordingly.

Reference Documents:

36. Please review the following City of Ottawa reference documents which outline the requirements for parkland conveyance and/or cash-in-lieu of parkland.

    (i) Official Plan (2021)

    (ii) Parks and Recreation Facilities Master Plan (2021)

(iii) Park Development Manual, 2nd edition

(iv) Parkland Dedication By-Law (2022-280) and Planning Act amendments

(v) City of Ottawa Standard Parks Conditions

Please note that the park comments are preliminary and will be finalized (and subject to change) upon receipt of the development application and the requested supporting documentation.

Feel free to contact Louise Cerveny, Parks Planner, for follow-up questions.

Other

37. 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.

Submission Requirements and Fees

1. Site Plan Control – Complex
    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,

Amanda Davidson
Planner I, Development Review – West

Encl. Study and Plan Identification List
List of Technical Agencies

c.c. Colette Gorni, Planner II, Development Review West
Rubina Rasool, Infrastructure Project Manager, Development Review West
Mohammed Fawzi, Senior Infrastructure Project Manager, Development Review West
Josiane Gervais, Transportation Project Manager
Nader Kadri, Planner III, Urban Design
Matthew Hayley, Planner III, Environment
Julian Alvarez-Barkham, Planning Forester
Louise Cerveny, Planner II, Parks Planner

APPENDIX E

EXCERPTS FROM EXISTING
STORMWATER MANAGEMENT AND SERVICING REPORT
DATED FEBRUARY 2009, PREPARED BY
DAVID MCMANUS ENGINEERING LTD.

Design Flow for Commercial Use:	50,000 L/day/ha (0.578 L/s/ha)
Peaking Factor:	1.5
Site Area:	0.79 hectares
Extraneous Flow:	0.28 L/s/ha

The location of the proposed sanitary sewer service is shown on 2790-S1 Site Servicing Plan Appendix 2. See Table 1, Appendix 3 for the Sanitary Sewer Design Sheet and calculations.

6.0 STORM SEWER DESIGN

In July 2004, Novatech Engineering Consultants Ltd. completed a Stormwater Management report for Kestrel Properties Inc. for 285-295 West Hunt Club Road (herein referred to as the Novatech SWM Report), which provided stormwater management design guidance for the proposed development area.

The Novatech SWM Report outlines that the runoff from the developed site is to be released at 45.8 L/s/ha for a 5 year storm event and 38.4 L/s/ha for a 100 year storm event (see drawing 98112-STM in Appendix 1). Any runoff in excess of the maximum release rates up to the one hundred year storm event is to be stored on site. Storm events in excess of the one hundred year event must not impact the proposed building.

The roof and foundation drainage for the proposed building and the catchbasins will outlet to an existing 375mm diameter storm sewer on the private road. The on-site sewers were designed using the modified rational method to accommodate a 5-year rainfall event with a time of concentration of 10 minutes. All City of Ottawa current design parameters were used in the design of the sewers. Details for the storm sewer design can be found on drawing 2790-S1 (see Appendix 2) and the storm sewer design sheet Table 2(see Appendix 4).

7.0 STORMWATER MANAGEMENT DESIGN

7.1 Allowable Release Rate

According to the requirements outlined in the Novatech SWM Report, the allowable release rate for the site is limited to 45.8 L/s/ha for the 5 year storm event and 38.4 L/s/ha for the 100 year storm event. Therefore, with a total site area of 0.79 ha the allowable release rates for the 5 year and 100 year storm events are 36.2 L/s and 30.4 L/s respectively. The building rooftop will be utilized for storage with an assumed roof release rate of 40 L/s/ha.

7.2 Storage Requirements and Allocation

The site is designed to limit runoff to the allowable release rate, up to the 100-year storm event, by utilizing rooftop storage and parking area surface storage. Parking lot ponding depths were limited to 150mm for the 5-year storm and 300mm for the 100-year event. Major overland flow routes will drain to the private road. The overland flow routes are shown on the Storm Water Management Plan (see 2790-SWM1 in Appendix 4).

The results of the on-site storage volume requirements are found in Tables 3 to 6 and the Stormwater Management Summary Sheet is provided in Table 7 (see Appendix 4).

7.3 Flow Control Device Sizing

The 5 year release rates for the site are attained by controlling the outflow from the structure (CBMH 204 & 207) via plug and hydrovex type inlet control devices (ICD) to the actual ponding volume determined from a surface ponding depth up to 150mm (See Tables 3 to 6 in Appendix 4). Using the IDF equation for the 5 year (Ottawa Sewer Design Guidelines Section 5.4.2), a time step of 5 minutes, and a flow based on the areas characterises, a maximum required storage volume is computed to equal the actual ponding volume through a series of iterations determining a controlled release rate. The diameter of the orifice is then calculated using the controlled release rate and head at the location of the orifice (See Appendix 6 for Sample Calculations). The 100 year controlled release rate was then calculated using the orifice diameter calculated for the 5 year storm event and the 100 year head on the orifice. See Table 7 in Appendix 4 for inlet control device sizing.

7.4 Parking Lot Areas 1-4

The parking lot has been designed with an underground pipe network utilizing catchbasins to collect the runoff, directing the flow to the existing storm sewer on the Private Road. The runoff will be restricted to 3.5 L/s using a Hydrovex ICD located at CBMH 204 (See Appending 2, 2848-S1), providing underground pipe and surface storage in the 5 and 100 year events up to the maximum allowable ponding depths. A Hydrovex type ICD is required because the effective orifice diameter of an equivalent plug type ICD would be less then the City's allowable orifice diameter of 75mm. The Hydrovex was selected using the John Meunier Inc. design chart for vertical vortex flow regulator (see Appendix 5 Figure 2-VHV) with the following input; design head from CBMH 204 outlet pipe invert to 100 year ponding elevation of

2.06m and the 100 year release rate of 3.5 L/s. The design chart yields that the Hydrovex 50VHV-1 will be sufficient in restricting the release rate to 3.5 L/s.

Summary of Ponding Volumes (m^3)

5 Year		100 Year		
Depth (m) = 0.15		Depth (m) = 0.24		0.25
Required	Actual	Required	Actual	Available
98.0	101.8	216.9	219.1	237.0

7.5 Landscape and Parking Lot Areas 5-7

The parking lot has been designed with an underground pipe network utilizing catchbasins to collect the runoff, directing the flow to the existing storm sewer on the Private Road. The runoff will be restricted to 15.3 L/s using a plug type ICD located at CBMH 207 (See Appending 2, 2848-S1), providing underground pipe and surface storage in the 5 and 100 year events up to the specified ponding depths. The 5 year release rate was calculated using orifice equation (see Appendix 6 Sample Calculations), a diameter of 75mm and 5 year head on orifice of 1.66m.

Summary of Ponding Volumes (m^3)

5 Year			100 Year		
Depth (m) = 0.09		0.15m	Depth (m) = 0.17		0.25
Required	Actual	Available	Required	Actual	Available
16.2	16.4	40.0	46.0	47.4	89.2

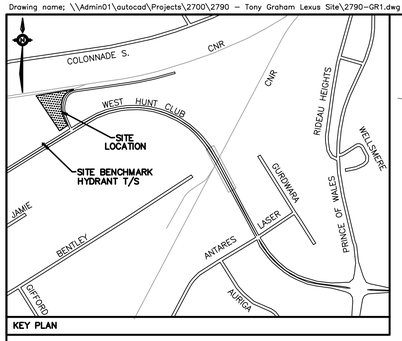
7.6 Quality Control Measures

The City has indicated that stormwater management quality control measures are not required for the site due to existing downstream treatment facilities (see email from Saeid Behnia re: Colonnade facility Appendix 4).

8.0 EROSION AND SEDIMENT CONTROL

It will be necessary to implement the following sediment control measures during construction in order to minimize the transport of sediment to adjacent lands and into the existing storm sewer system:

- Geotextile cloth shall be installed between all catch basin covers and frames and sediment shall be removed from geotextile cloth on a regular basis to ensure proper operation.
- Silt fence along property boundaries where construction is taking place
- Minimization, wherever possible, of exposed soils and cleared areas



KEY PLAN

LEGEND

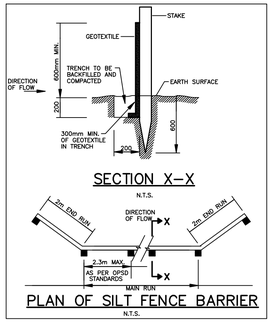
- PROPOSED GRADE
- EXISTING GRADE
- SLOPE AND DRAINAGE DIRECTION
- VALVE AND VALVE BOX
- HYDRANT
- EXISTING STREET LIGHT
- PROPOSED STREET LIGHT
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- SANITARY SEWER
- STORM SEWER
- WATERMAIN
- MH 100 SANITARY MANHOLE
- MH 200 STORM MANHOLE
- STORM CBMH
- STORM CB
- FIRE LANE HEAVY DUTY ASPHALT
- OVERLAND FLOW DIRECTION
- SERVICE DOORS
- ENTRANCE/DOOR
- TERRACING (SLOPE 3:1 MAX.)
- PROPERTY LINE
- EASEMENT LINE
- PROPOSED FENCE (SEE ARCHITECTURAL DESIGN)
- PROPOSED SILT FENCE SEDIMENT CONTROL (SEE DETAIL)
- PROPOSED 5 YEAR PONDING AREA
- PROPOSED 100 YEAR PONDING AREA
- DRAINAGE SWALE C/W 150mmø PERFORATED PIPE & FILTER SOCK

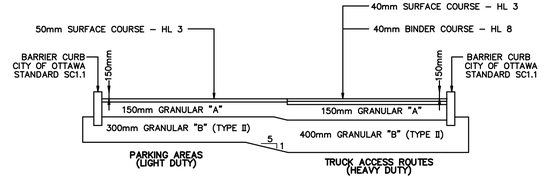
NOTES: EROSION AND SEDIMENT CONTROL

1. GEOTEXTILE MATERIAL IS TO BE PLACED UNDERNEATH ALL STORM CATCHBASIN AND CATCHBASIN MANHOLE LIDS UNTIL CONSTRUCTION IS COMPLETE.
2. SILT FENCING TO BE INSTALLED WHERE INDICATED.
3. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM DURING CONSTRUCTION ACTIVITIES. THIS INCLUDES LIMITING THE AMOUNT OF EXPOSED SOIL.

NOTES:

1. CONTRACTOR TO COMPLY WITH RECOMMENDATIONS OUTLINED IN DME STORMWATER MANAGEMENT AND SERVICING REPORT, REVISED FEBRUARY 2009.
2. CONTRACTOR TO COMPLY WITH RECOMMENDATIONS OUTLINED IN GEOTECHNICAL INVESTIGATION, HOULE CHEVRIER DATED JANUARY 2009.
3. FOR GENERAL NOTES SEE SERVICING PLAN, DRAWING # 2790–S1
4. 5–YEAR AND 100–YEAR PONDING LEVELS ARE INDICATED ON STORMWATER MANAGEMENT PLAN, DRAWING # 2790–SWM1





NOTE
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

Ottawa

NOT FOR CONSTRUCTION

No.	REVISION	DATE	BY
3.	REVISED AS PER CITY COMMENTS	FEB 06/09	AHJ
2.	REVISED AS PER CITY COMMENTS	DEC 22/08	AHJ
1.	ISSUED FOR SITE PLAN APPLICATION	SEPT 8/08	SMC

LICENSED PROFESSIONAL ENGINEER A. H. JONKMAN PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER S.M. CZAHARYNSKI PROVINCE OF ONTARIO

DME Ltd.
David McManus Engineering Ltd.
400 – 30 Camelot Drive
Nepean Ontario, K2G 5X8
E–mail: mcmanus@magma.ca
Ph. 225–1929 Fax 225–7330

BASEPLAN	DME
DESIGN	BFP
CHECKED	AHJ
CAD	BFP
PROJ. MGR.	AHJ
APPROVED	SMC

SCALE 1:250

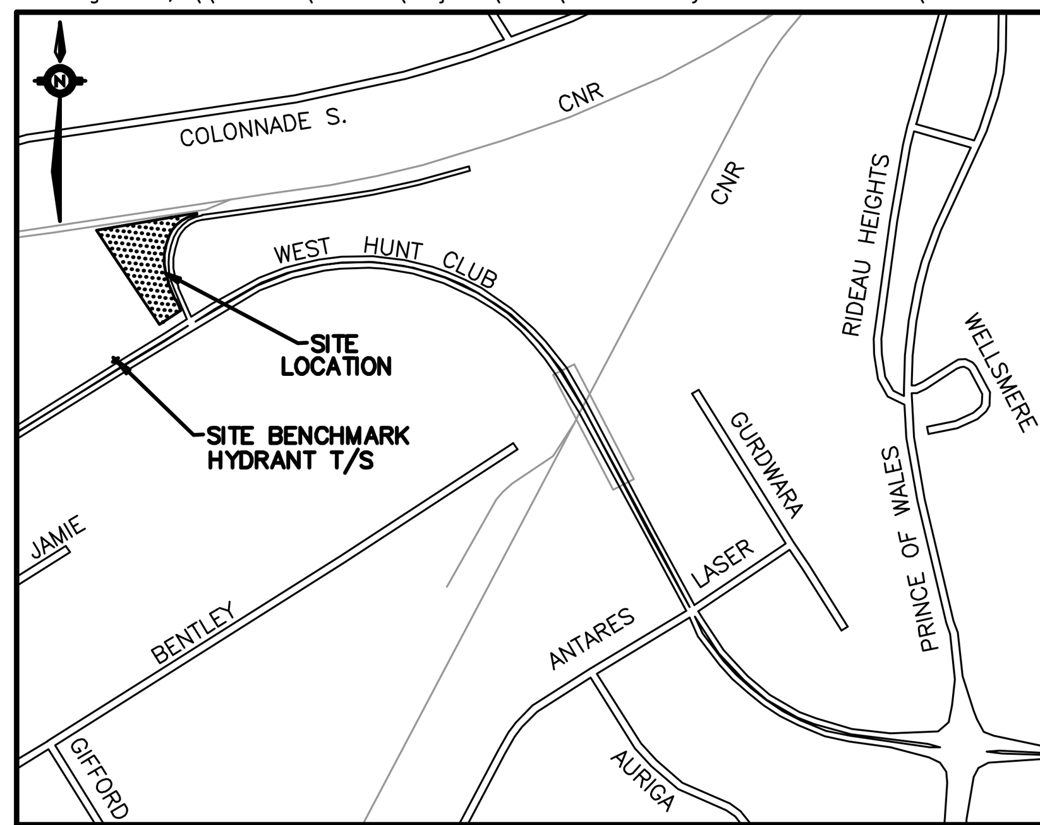
0 2.5 5 7.5 10

TONY GRAHAM LEXUS
299 WEST HUNT CLUB ROAD
CITY OF OTTAWA

GRADING PLAN

PROJECT No.	2790
SURVEY BY	DME
DATE	SEPT 2008
DRAWING No.	2790–GR1

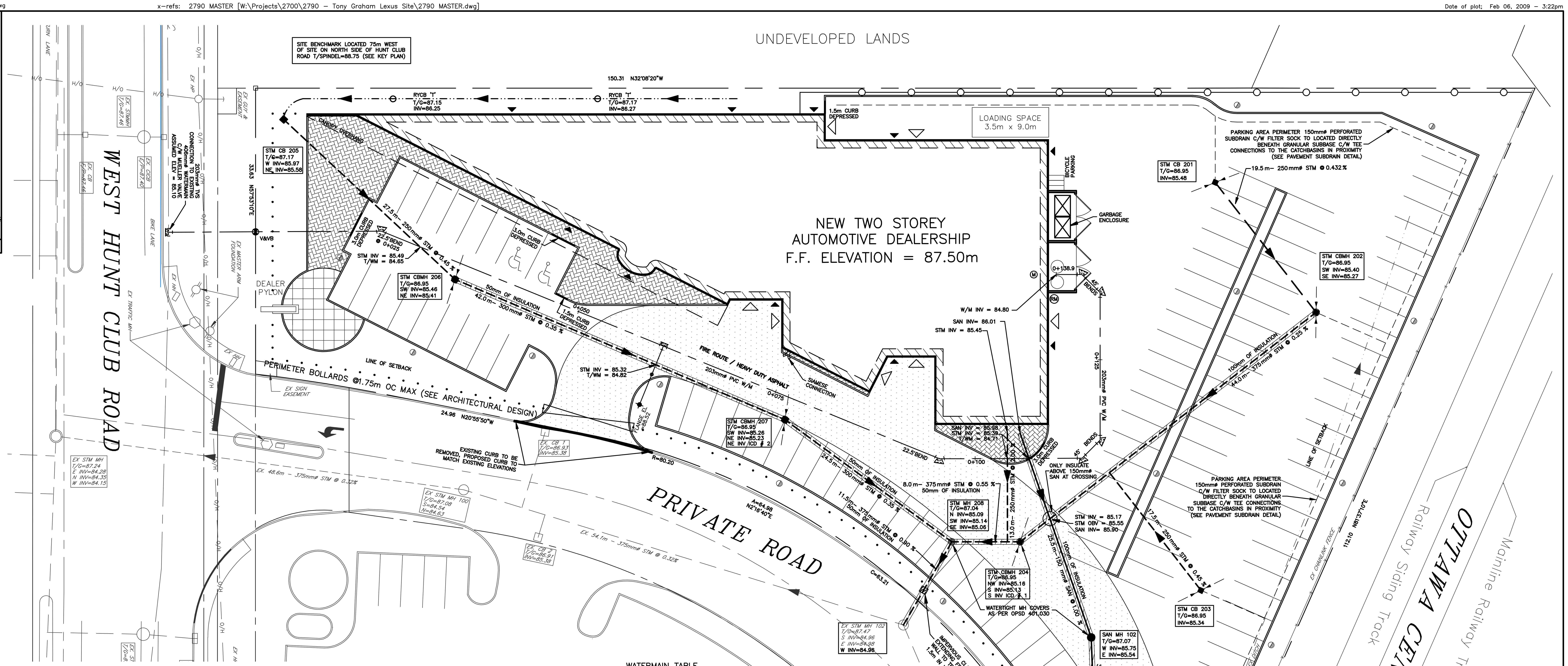
Drawing name: \\Admin01\autocad\Projects\2700\2790 - Tony Graham Lexus Site\2790-S1.dwg   x-refs: 2790 MASTER [W:\Projects\2700\2790 - Tony Graham Lexus Site\2790 MASTER.dwg]   Date of plot: Feb 06, 2009 - 3:22pm

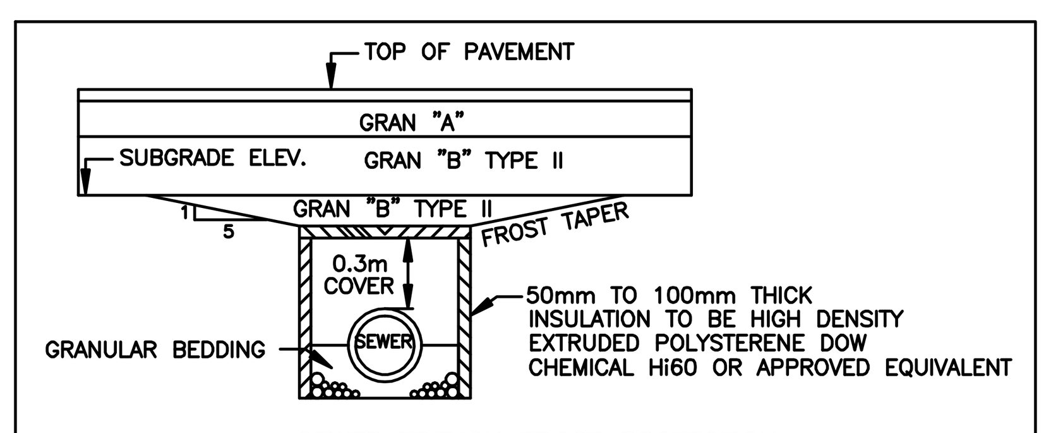


KEY PLAN

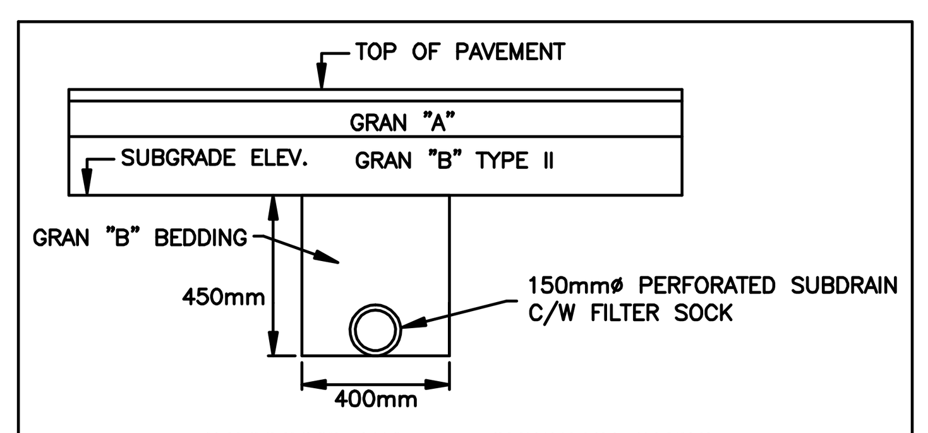
LEGEND

- VALVE AND VALVE BOX
- HYDRANT
- EXISTING STREET LIGHT
- PROPOSED STREET LIGHT
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- SANITARY SEWER
- STORM SEWER
- WATERMAIN
- MH 100 SANITARY MANHOLE
- MH 200 STORM MANHOLE
- STORM CBMH C/W 3.0m 150mmø SUBDRAIN
- STORM CB C/W 3.0m 150mmø SUBDRAIN
- WATER METER
- REMOTE WATER METER
- FIRE LANE HEAVY DUTY ASPHALT
- SERVICE DOORS
- ENTRANCE/DOOR
- TERRACING (SLOPE 3:1 MAX.)
- PROPERTY LINE
- EASEMENT LINE
- PROPOSED FENCE (SEE ARCHITECTURAL DESIGN)
- INSULATION
- DRAINAGE SWALE C/W 150mmø PERFORATED PIPE & FILTER SOCK
- PAVEMENT SUBDRAIN 150mmø PERFORATED PIPE C/W FILTER SOCK





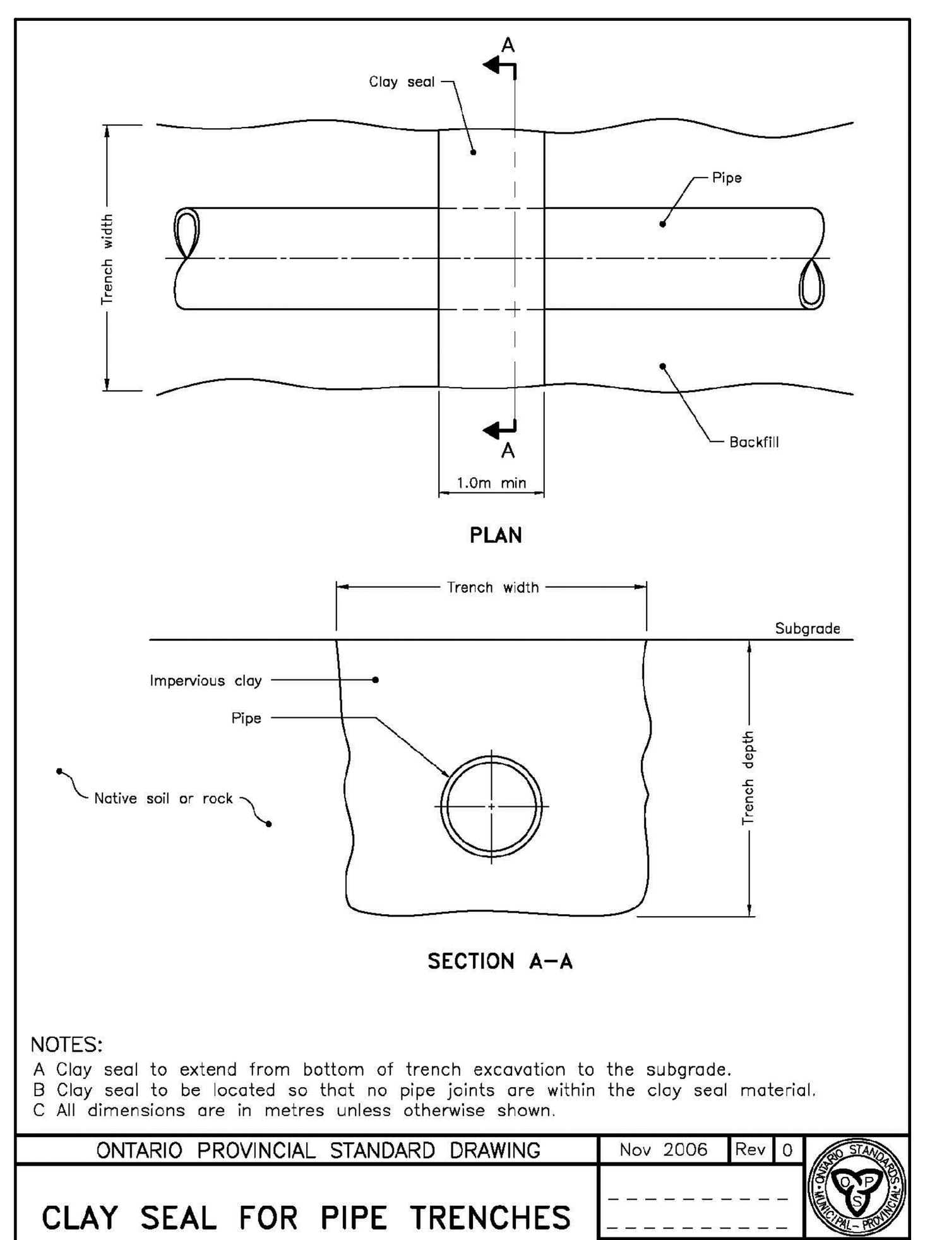
SEWER TRENCH FROST PROTECTION



PAVEMENT 150mmø SUBDRAIN DETAIL

WATERMAIN TABLE
203mmø WATER SERVICE

STATION	FIN/GRADE	T/W GRADE	COMMENT
0+000.0	87.50	85.10	TVS TO EX 406mmø
0+010.2	87.45	85.05	V&VB
0+025.0	87.05	84.65	22.5° BEND
0+029.9	87.05	84.65	STM INV = 85.49
0+050.0	87.10	84.70	
0+060.8	87.22	84.82	203 OFF 203 TEE HYDRANT
0+075.0	87.10	84.70	
0+095.8	87.15	84.75	22.5° BEND
0+100.0	87.11	84.71	
0+112.6	87.10	84.70	45° BEND
0+115.6	87.14	84.74	45° BEND
0+125.0	87.28	84.88	
0+132.9	87.16	84.76	45° BEND
0+135.9	87.20	84.80	45° BEND
0+138.9	87.30	84.80	SERVICE CONNECTION



NOTES:
A Clay seal to extend from bottom of trench excavation to the subgrade.
B Clay seal to be located so that no pipe joints are within the clay seal material.
C All dimensions are in metres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2006 | Rev 0

CLAY SEAL FOR PIPE TRENCHES — OPSD 802.095

NOTES: SEWER

1. SEWER BEDDING TO BE 0.15m, GRANULAR A BEDDING COMPACTED TO 95% STANDARD PROCTOR DENSITY.
2. ALL WORK SHALL BE PERFORMED, AS APPLICABLE, IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS S6, S7, O.P.S.S. 407, AND O.P.S.S. 410.
3. ALL SANITARY SERVICES, MATERIAL AND INSTALLATION SHALL CONFORM TO CITY OF OTTAWA STANDARD DRAWINGS AND SPECIFICATIONS.
4. STORM AND SANITARY SEWERS TO BE PVC SDR 35.
5. ALL CB'S AND CBMH'S TO HAVE 2x3.0m–150mm SUBDRAIN INSTALLED IN 2 DIRECTIONS UNLESS OTHERWISE NOTED.

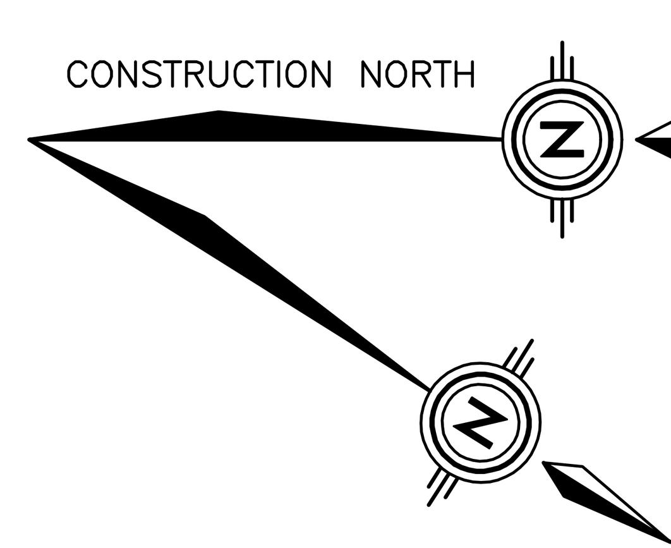
NOTES: WATERMAIN

1. ALL WATERMAIN WORK AND MATERIAL SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS. NO WORK SHALL COMMENCE UNLESS A CITY WATER WORKS INSPECTOR IS ON SITE.
2. ALL WATERMAIN TO BE INSTALLED AT MINIMUM COVER OF 2.4m UNLESS OTHERWISE SHOWN.
3. WATERMAIN BEDDING IS TO BE AS PER CITY OF OTTAWA DETAIL W–17.
4. CATHODIC PROTECTION REQUIRED FOR ALL IRON FITTINGS PER CITY OF OTTAWA DETAILS W–39, W–40, W–41 AND W–42.
5. CONNECTIONS TO EXISTING WATERMAIN SHALL BE BY CITY FORCES. EXCAVATION, BEDDING, BACKFILLING AND REINSTATEMENT BY CONTRACTOR.
6. WATERMAIN IS TO BE 203mmø PVC DR18 (WITH TRACER WIRE AS PER CITY OF OTTAWA STANDARD W–40).
7. VALVE BOXES AS PER CITY OF OTTAWA DETAIL W–24.
8. IF WATERMAIN MUST BE DEFLECTED TO MEET ALIGNMENT, ENSURE THAT THE AMOUNT OF DEFLECTION USED IS LESS THAN HALF THAT RECOMMENDED BY THE MANUFACTURER.

NOTES: GENERAL

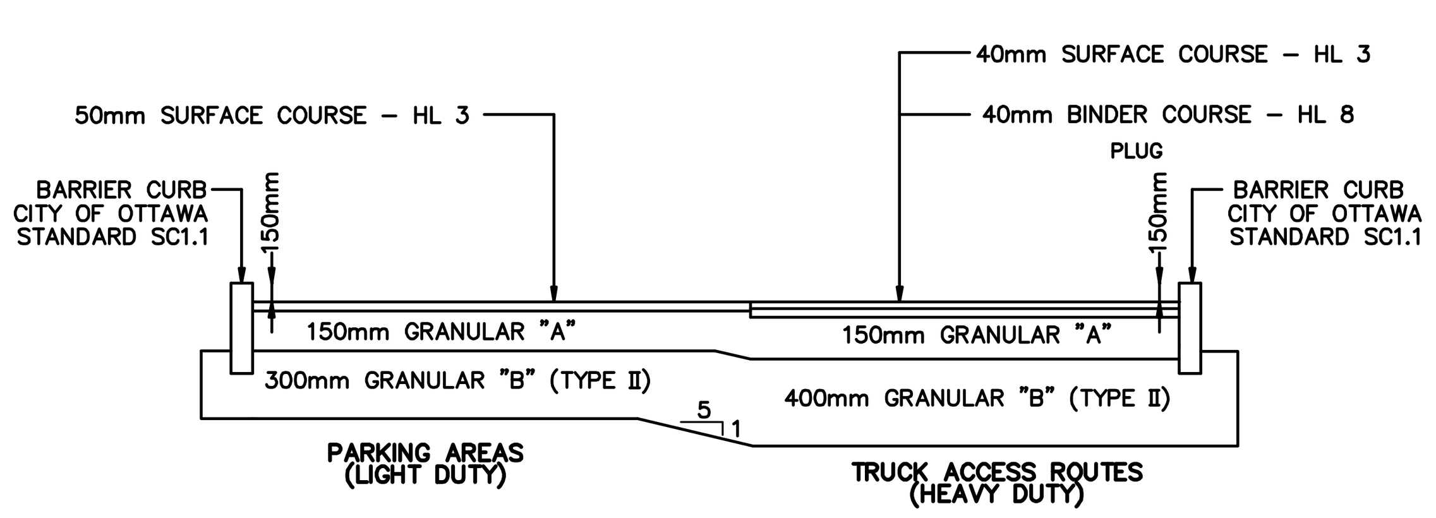
1. DO NOT CONSTRUCT USING DRAWINGS THAT ARE NOT MARKED "ISSUED FOR CONSTRUCTION"
2. CONTRACTOR TO COMPLY WITH RECOMMENDATIONS OUTLINED IN GEOTECHNICAL INVESTIGATION, HOULE CHEVRIER DATED JANUARY 2009.
3. CONTRACTOR TO COMPLY WITH RECOMMENDATIONS OUTLINED IN DME STORMWATER MANAGEMENT AND SERVICING REPORT, REVISED FEBRUARY 2009.
4. REFER TO ARCHITECT'S SITE PLAN FOR BUILDING DIMENSIONS AND SITE LAYOUT. DIMENSIONS AND LAYOUT INFORMATION SHALL BE CONFIRMED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
5. SERVICING AND GRADING PLANS TO BE READ IN CONJUNCTION WITH ELECTRICAL, STRUCTURAL, MECHANICAL AND LANDSCAPE DRAWINGS
6. CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT FOR CONSTRUCTION PURPOSES.
7. ALL ELEVATIONS ARE GEODETIC AND UTILIZE METRIC UNITS.
8. THE CONTRACTOR SHALL CLEAR AND GRUB THE AREA AS NECESSARY TO COMPLETE THE WORK.
9. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
10. ALL EDGES OF DISTURBED PAVEMENT SHALL BE SAW CUT TO FORM A NEAT AND STRAIGHT LINE PRIOR TO PLACING NEW PAVEMENT.
11. CONTRACTOR IS TO COMPLY WITH THE CITY OF OTTAWA REQUIREMENTS FOR TRAFFIC CONTROL WHEN WORKING NEAR WEST HUNT CLUB AND PRIVATE ROAD.
12. RESTORE PAVEMENT STRUCTURE, SURFACES, SIDEWALKS AND BOULEVARDS IN EXISTING RIGHT OF WAYS TO A CONDITION AT LEAST EQUAL TO ORIGINAL AND TO THE SATISFACTION OF THE MUNICIPAL AUTHORITIES.
13. DESIGN ELEVATIONS AS GIVEN ON THIS PLAN ARE TO BE ADHERED TO WITH NO CHANGES WITHOUT PRIOR WRITTEN APPROVAL BY DME.
14. THE CONTRACTOR SHALL COORDINATE AND PAY FOR ALL CONSTRUCTION RELATED PERMITS, FEES, INSPECTIONS AND APPROVALS REQUIRED BY THE CITY OF OTTAWA.
15. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING ANY SITE WORK.
16. THE CONTRACTOR SHALL CONFIRM LOCATIONS AND ELEVATIONS OF EXISTING SERVICES AND STRUCTURES TO BE CONNECTED TO AND EXISTING SERVICES THAT MAY BE DAMAGED OR CAUSE CONFLICTS PRIOR TO CONSTRUCTION OF ANY NEW SEWER OR WATER WORKS. THE ENGINEER SHALL BE INFORMED IMMEDIATELY OF ANY ERRORS, DISCREPANCIES, CONFLICTS, OMISSIONS etc THAT ARE FOUND. DO NO CONTINUE CONSTRUCTION IN AREAS WHERE DISCREPANCIES APPEAR UNTIL SUCH DISCREPANCIES HAVE BEEN RESOLVED.
17. JOB BENCH MARK – CONFIRM WITH DAVID MCMANUS ENGINEERING PRIOR TO UTILIZATION.
18. ALL GROUND SURFACES SHALL BE EVENLY GRADED WITHOUT PONDING AREAS AND WITHOUT LOW POINTS EXCEPT WHERE APPROVED SWALE OR CATCHBASIN OUTLETS ARE PROVIDED.
19. STRIP AND REMOVE ALL TOPSOIL FROM IMPROVED AREAS.
20. ALL MATERIAL SUPPLIED AND PLACED FOR PARKING LOT AND ACCESS ROAD CONSTRUCTION SHALL BE TO OPSS STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED. (CONSTRUCTION OPSS 206, 310 & 314 MATERIALS OPSS 1001, 1003 & 1010).
21. SUPPLY AND INSTALL ALL PIPING AND APPURTENANCES AS SHOWN TO WITHIN 1.0m OF BUILDING WALLS PROVIDE TEMPORARY CAPS.
22. CONTRACTOR SHALL REFER TO AND COMPLY WITH LANDSCAPE ARCHITECTS' PLAN FOR SIDEWALKS, PATHWAYS, CONCRETE MEDIAN, PLANTING AND OTHER LANDSCAPE FEATURE MATERIALS AND LOCATIONS.
23. 5–YEAR AND 100–YEAR PONDING LEVELS ARE INDICATED ON STORMWATER MANAGEMENT PLAN DRAWING # 2790–SWM1

CONSTRUCTION NORTH



ORIFICE SUMMARY

#	LOCATION	RELEASE RATE 5yr	RELEASE RATE 100yr	HEAD 5yr	HEAD 100yr	ORIFICE DIA. / MODEL #	TYPE
1	CBMH 204	3.4 L/s	3.5 L/s	1.97 m	2.06 m	50VHV–1	HYDROVEX
2	CBMH 207	15.0 L/s	15.3 L/s	1.66 m	1.74 m	75mm	PEDRO PLASTICS PLUG



NOTE
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

Ottawa

NOT FOR CONSTRUCTION

No.	REVISION	DATE	BY
4.	REVISED AS PER CITY COMMENTS	FEB 06/09	AHJ
3.	REVISED WATER SERVICE CONNECTION	JAN 07/09	AHJ
2.	REVISED AS PER CITY COMMENTS	DEC 22/08	AHJ
1.	ISSUED FOR SITE PLAN APPLICATION	SEPT 8/08	SMC

LICENSED PROFESSIONAL ENGINEER — A. H. JONKMAN — PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER — S.M. CZAHARYNSKI — PROVINCE OF ONTARIO

DME Ltd.
David McManus Engineering Ltd.
400 – 30 Camelot Drive
Nepean Ontario, K2G 5X8
E-mail: mcmanus@dmel.on.ca
Ph. 225–1929 Fax 225–7330

BASEPLAN	DME
DESIGN	BFP
CHECKED	AHJ
CAD	BFP
PROJ. MGR.	AHJ
APPROVED	SMC

SCALE 1:250 (0 2.5 5 7.5 10)

TONY GRAHAM LEXUS
299 WEST HUNT CLUB ROAD
CITY OF OTTAWA

SERVICING PLAN

PROJECT No.	2790
SURVEY BY	DME
DATE	SEPT 2008
DRAWING No.	2790–S1

DME Project #: 2790
Location: 299 West Hunt Club Road
Client: Pri-Tec Construction Ltd.

Table 3. Storage Requirements for Area A1-4

Area =	0.41	hectares
Runoff Coefficient 5yr =	0.77	post development
Runoff Coefficient 100yr =	0.87	post development
5yr Actual Ponding Vol. =	101.8	m^3
100yr Actual Ponding Vol. =	219.1	m^3

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Controlled Release	Net Runoff To Be Stored (L/s)	Storage Req'd m^3
5 Year	125	18.86	16.46	3.4	13.1	97.9
	130	18.29	15.97	3.4	12.6	98.0
	135	**17.76**	**15.50**	**3.4**	**12.1**	**98.0**
	140	17.27	15.07	3.4	11.7	98.0
	145	16.80	14.66	3.4	11.3	98.0
100 Year	245	18.69	18.23	3.5	14.7	216.8
	250	18.39	17.94	3.5	14.5	216.8
	255	**18.11**	**17.66**	**3.5**	**14.2**	**216.9**
	260	17.83	17.38	3.5	13.9	216.9
	265	17.56	17.12	3.5	13.6	216.8

Table 4. Storage Requirements for Area A5-7

Area =	0.20	hectares
Runoff Coefficient 5yr =	0.69	post development
Runoff Coefficient 100yr =	0.78	post development
5yr Actual Ponding Vol. =	16.4	m^3
100yr Actual Ponding Vol. =	47.4	m^3

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Controlled Release	Net Runoff To Be Stored (L/s)	Storage Req'd m^3
5 Year	10	104.19	41.10	15.0	26.1	15.7
	15	**83.56**	**32.96**	**15.0**	**18.0**	**16.2**
	20	70.25	27.71	15.0	12.7	15.3
	25	60.90	24.02	15.0	9.0	13.5
	30	53.93	21.27	15.0	6.3	11.3
100 Year	15	142.89	63.29	15.3	48.0	43.2
	20	119.95	53.13	15.3	37.8	45.3
	25	**103.85**	**46.00**	**15.3**	**30.7**	**46.0**
	30	91.87	40.69	15.3	25.4	45.6
	35	82.58	36.58	15.3	21.2	44.6

Table 5. Storage Requirements for Area 8 (Roof Top)

Area =	**0.1592**	hectares
Runoff Coefficient 5yr=	**0.90**	post development
Runoff Coefficient 100yr=	**1.00**	post development
5 yr Ponding Depth =	**0.05**	metres
100 yr Ponding Depth =	**0.12**	metres

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Controlled Release	Net Runoff To Be Stored (L/s)	Storage Req'd m^3
5 Year	20	70.25	27.98	6.4	21.6	25.9
	25	60.90	24.26	6.4	17.9	26.8
	30	**53.93**	**21.48**	**6.4**	**15.1**	**27.2**
	35	48.52	19.33	6.4	13.0	27.2
	40	44.18	17.60	6.4	11.2	27.0
100 Year	50	63.95	28.30	6.4	21.9	65.8
	55	59.62	26.39	6.4	20.0	66.1
	60	**55.89**	**24.74**	**6.4**	**18.4**	**66.1**
	65	52.65	23.30	6.4	16.9	66.0
	70	49.79	22.04	6.4	15.7	65.8

DME Project #: 2790
Location: 299 West Hunt Club Road
Client: Pri-Tec Construction Ltd.

David McManus Engineering Ltd.

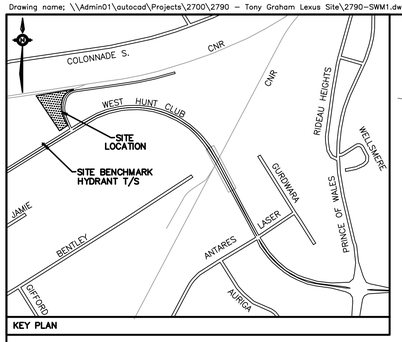
Table 7. Stormwater Management Summary Sheet

Sub Area I.D.	Sub Area (ha)	C = 0.2	C = 0.9	Individual 'C' 5yr	Comp. 'C' 5yr	Comp. 'C' 100yr	Outlet Location	Release Rates 5yr (L/s)	Release Rates 100yr (L/s)	Top of Grate (m)	Ponding Depth 5yr (m)	Ponding Depth 100yr (m)	Actual Volume 5yr (m^3)	Actual Volume 100yr (m^3)	Actual Volume Underground Storage (m^3)	Invert Elev. (m)	Pipe Dia. (mm)	Orifice Type	Head on Orifice 5yr (m)	Head on Orifice 100yr (m)	Diameter of Orifice (mm)	Head on Hydrovex 5yr (m)	Head on Hydrovex 100yr (m)	Hydrovex Model
A1	0.11	0.01	0.10	0.84			CB 201			86.95	0.15	0.24	20.2	47.4		85.48	254							
A2	0.10	0.02	0.08	0.75	0.77	0.87	CBMH 202	**3.4**	**3.5**	86.95	0.15	0.24	25.6	59.6	11.7	85.27	381.0							
A3	0.11	0.03	0.08	0.70			CB 203			86.95	0.15	0.24	23.6	54.6		85.34	254							
A4	0.08	0.01	0.07	0.83			CBMH 204			86.95	0.15	0.24	20.7	45.8		85.13	381	Hydrovex				1.97	2.06	50VHV-1
A5	0.02	0.02	0.00	0.20			CB 205			87.17	N/A	N/A	N/A	N/A		85.58	254							
A6	0.12	0.03	0.09	0.73	0.69	0.78	CBMH 206	**15.0**	**15.3**	86.95	0.09	0.17	5.0	23.7	8.4	85.41	304.8							
A7	0.06	0.01	0.05	0.80			CBMH 207			86.95	0.09	0.17	3.0	15.3		85.23	304.8	Plug	1.66	1.74	75			
A8	0.16	0.00	0.16	0.90	0.90	1.00	Roof Top	**6.4**	**6.4**	N/A	0.05	0.12	27.2	66.1	N/A	85.45	254							
A9	0.02	0.02	0.01	0.41	0.41	0.47	Private Road (Uncontrolled)	**2.6**	**5.2**	N/A	N/A	N/A	N/A	N/A	N/A									

A_{site} =	**0.79**

Q_{totals} =	**27.4**	**30.4**

Given 5yr release rate = **45.8** L/s/ha = **36.2** L/s
Given 100yr release rate = **38.4** L/s/ha = **30.4** L/s



KEY PLAN

LEGEND

- VALVE AND VALVE BOX
- HYDRANT
- EXISTING STREET LIGHT
- PROPOSED STREET LIGHT
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- SANITARY SEWER
- STORM SEWER
- WATERMAIN
- MH 100 SANITARY MANHOLE
- MH 200 STORM MANHOLE
- STORM CBMH
- STORM CB
- SERVICE DOORS
- ENTRANCE/DOOR
- TERRACING (SLOPE 3:1 MAX.)
- PROPERTY LINE
- EASEMENT LINE
- PROPOSED FENCE (SEE ARCHITECTURAL DESIGN)
- PROPOSED STORM DRAINAGE AREA
- PROPOSED 5 YEAR PONDING AREA
- PROPOSED 100 YEAR PONDING AREA
- DRAINAGE SWALE C/W 150mmø PERFORATED PIPE & FILTER SOCK

RUNOFF COEFFICIENT 0.87 | 0.11 DRAINAGE AREA (Ha)
A23
DRAINAGE AREA NUMBER

NOTES:

1. CONTRACTOR TO COMPLY WITH RECOMMENDATIONS OUTLINED IN DME STORMWATER MANAGEMENT AND SERVICING REPORT, REVISED FEBRUARY 2009.
2. CONTRACTOR TO COMPLY WITH RECOMMENDATIONS OUTLINED IN GEOTECHNICAL INVESTIGATION, HOULE CHEVRIER DATED JANUARY 2009.
3. FOR GENERAL NOTES SEE SERVICING PLAN, DRAWING # 2790-S1

ORIFICE SUMMARY

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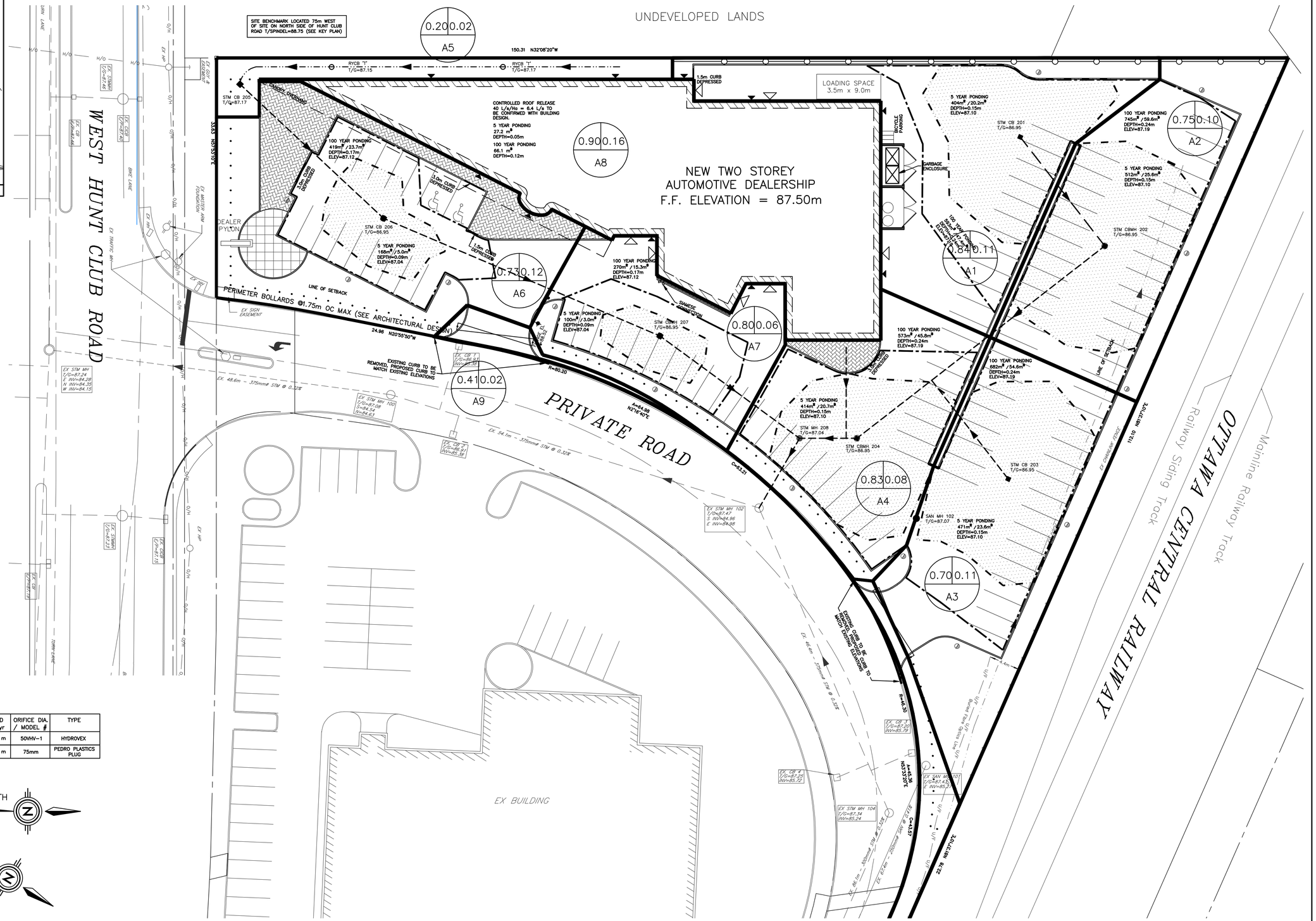

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LICENCED PROFESSIONAL ENGINEER A. H. JONKMAN PROVINCE OF ONTARIO

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DME Ltd. David McManus Engineering Ltd.
400 – 30 Camelot Drive Nepean Ontario, K2G 5X8
E-mail: mcmanus@dmel.on.ca
Ph. 225-1929 Fax 225-7330

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DESIGN	BFP
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APPROVED	SMC

SCALE 1:250
0 2.5 5 7.5 10

TONY GRAHAM LEXUS
299 WEST HUNT CLUB ROAD
CITY OF OTTAWA

STORMWATER MANAGEMENT PLAN

PROJECT No. 2790
SURVEY BY DME
DATE SEPT 2008
DRAWING No. 2790-SWM1