

**Site Servicing and Stormwater Management  
Brief**

**Lynwood Retail Plaza**

**1826 Robertson Road**

**LYNWOOD RETAIL PLAZA  
1826 ROBERTSON ROAD  
OTTAWA, ONTARIO**

**SITE SERVICING AND STORMWATER MANAGEMENT BRIEF**

Prepared For:



Prepared By:



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Submitted: March 3, 2023  
**Revised: November 17, 2023**

Novatech File: 106134  
**Ref: R-2023-012**

November 17, 2023

City of Ottawa  
Planning, Infrastructure and Economic Development Department  
Infrastructure Approvals Division,  
110 Laurier Avenue West, 4th Floor  
Ottawa, ON K1P 1J1

**Attention: Justin Armstrong**

**Reference: Lynwood Retail Plaza – 1826 Robertson Road  
Site Servicing and Stormwater Management Brief  
Novatech File No.: 106134**

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Novatech has been retained by the Regional Group of Companies, 'Regional' to prepare this revised Site Servicing and Stormwater Management Brief in support of an application for *Site Plan Control* for their property municipally known as 1826 Robertson Road in Ward 8 – College, Ottawa, Ontario. The herein will be referred to as the 'Subject Site'.

Regional is proposing to develop a 790 m<sup>2</sup> single-storey retail plaza consisting of five (5) commercial units and drive-through facility on a portion of the Subject Site. The Subject Site currently consists of a shopping centre known as the "Lynwood Centre" developed in the late 1950's based on a review of aerial photography from GeoOttawa. No changes are proposed to the existing Lynwood Centre building as part of this proposed development.

The report demonstrates how the proposed site will be serviced with sanitary, watermain, utilities, and stormwater management and is submitted for your review and approval.

If you have any questions or comments, please do not hesitate to contact us.

Sincerely,

**NOVATECH**



Steve Zorgel, P. Eng.  
Project Manager | Land Development Engineering

## TABLE OF CONTENTS

<b>1.0 INTRODUCTION AND PROPOSED DETAILS .....</b>	<b>1</b>
1.1 SITE DESCRIPTION AND SURROUNDING USES .....	1
1.2 PROPOSED DEVELOPMENT .....	3
<b>2.0 ADDITIONAL REPORTS AND PLANS.....</b>	<b>3</b>
<b>3.0 SANITARY SERVICING.....</b>	<b>4</b>
3.1 DESIGN CRITERIA.....	4
3.2 PROPOSED SANITARY DESIGN .....	4
<b>4.0 WATERMAIN.....</b>	<b>5</b>
4.1 DESIGN CRITERIA.....	5
4.2 PROPOSED WATERMAIN DESIGN.....	5
<b>5.0 STORMWATER MANAGEMENT.....</b>	<b>6</b>
5.1 PRE-DEVELOPMENT CONDITIONS.....	6
5.2 POST-DEVELOPMENT CONDITIONS AND CRITERIA .....	6
5.3 RESULTS .....	6
5.3.1 <i>Runoff from Uncontrolled Areas.....</i>	<i>6</i>
5.3.2 <i>Controlled Flow from Building Roof.....</i>	<i>7</i>
<b>6.0 NOISE.....</b>	<b>8</b>
<b>7.0 UTILITIES .....</b>	<b>8</b>
<b>8.0 EROSION AND SEDIMENT CONTROL .....</b>	<b>8</b>
<b>9.0 CONCLUSIONS.....</b>	<b>9</b>

### LIST OF TABLES

- Table 2.1: Subject Site - Sanitary Flow Summary  
 Table 4.1: Peak Flows from Uncontrolled Areas – Pre-development Conditions  
 Table 4.2: Peak Flows from Uncontrolled Areas  
 Table 4.3: Design Flow and Roof Drain Table

### LIST OF FIGURES

- Figure 1: Subject Site and Surrounding Uses  
 Figure 2: Concept Plan  
 Figure 3: Hydrant Coverage Plan  
 Figure 4: SWM – Pre-Development Conditions  
 Figure 5: SWM – Post-Development Conditions

### LIST OF APPENDICIES

- Appendix A – Correspondence  
 Appendix B – Boundary Conditions, Fire Flow Calculations  
 Appendix C – Stormwater Calculations  
 Appendix D – Drawings

## **LIST OF DRAWINGS**

This report should be read in conjunction with the engineering drawing set which includes the following drawings, dated November 17, 2023:

- 106134-GS – Grading and Servicing Plan
- 106134-NLD – Notes, Legends and Details
- 106134-RE-ESC – Removals and Erosion and Sediment Control Plan

## 1.0 INTRODUCTION AND PROPOSED DETAILS

Novatech has been retained by the Regional Group of Companies, 'Regional' to prepare this revised Site Servicing and Stormwater Management Brief in support of an application for *Site Plan Control* for their property municipally known as 1826 Robertson Road in Ward 8 – College, Ottawa, Ontario. The herein will be referred to as the 'Subject Site'.

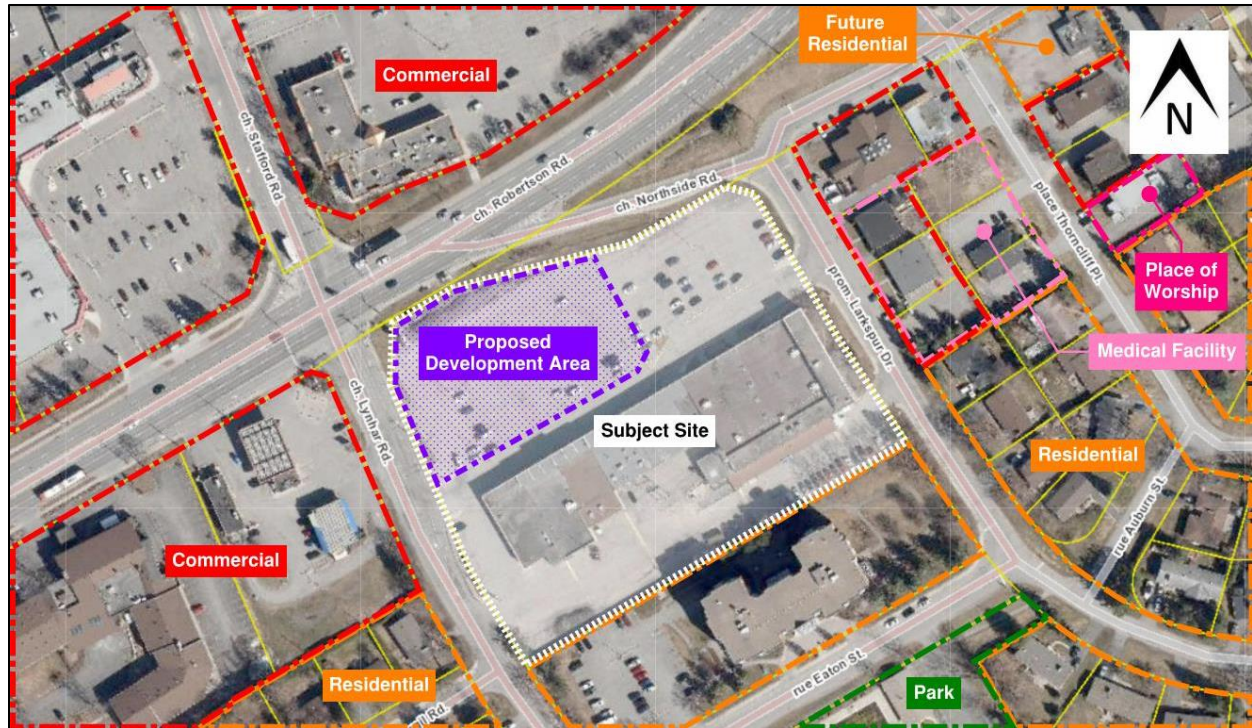
Regional is proposing to develop a 790 m<sup>2</sup> single-storey retail plaza consisting of five (5) commercial units and drive-through facility on a portion of the Subject Site. The Subject Site currently consists of a shopping centre known as the "Lynwood Centre" developed in the late 1950's based on a review of aerial photography from GeoOttawa. The limits of the proposed development area are defined on the Site Plan prepared by McRobie Architects + Interior Designers and Novatech's Grading and Servicing Plan. No changes are proposed to the existing Lynwood Centre building as part of this proposed development.

The proposed development will be built in the northwest corner of the Subject Site's parking lot abutting the intersection of Robertson Road and Lynhar Road. The proposed development will feature four (4) bicycle parking spaces and an outdoor commercial patio which will be operated by a future restaurant tenant. Modifications are required to the existing parking lot layout in the northwest corner to accommodate the proposed development. No new accesses or egresses are being considered as the proposed development will utilize the existing accesses and egresses along Lynhar Road and Larkspur Drive.

The report demonstrates how the proposed site will be serviced with sanitary, watermain, utilities, and stormwater management.

### 1.1 Site Description and Surrounding Uses

The Subject Site is an irregular shaped parcel of land situated in the community of Bells Corners with frontages along Robertson Road, Northside Road, Lynhar Road, and Larkspur Drive. The Subject Site is already developed with a shopping centre known as the Lynwood Centre constructed in the late 1950's. An expansion to the westerly portion of the building was completed in the early 1970's based on a review of aerial photography from GeoOttawa. The shopping centre consists of various land uses such as a bank, payday loan establishment, personal service business, restaurant, and retail store. The Subject Site has a total area of 1.89 hectares with the proposed development to occupy a portion of this area as shown on **Figure 1**.



**Figure 1: Subject Site and Surrounding uses.**

The following describes the land uses adjacent to the Subject Site as shown in **Figure 1**.

**North:** Northside Road and Robertson Road abut the Subject Site to the north. The “Stafford Centre” is a shopping centre situated on the north side of Robertson Road opposite of the Subject Site. The Stafford Centre consists of a recreational and athletic facility as well as various restaurants and retail stores. The “National Bank Centre” is another shopping centre that consists of a bank, personal service business, restaurants, and retail stores located northwest of the Subject Site at the intersection of Stafford Road and Robertson Road.

**East:** Larkspur Drive abuts the Subject Site to the east. A mix of land uses such as commercial, medical facility, place of worship, and existing and future planned residential are located east of Larkspur Drive.

**South:** A retirement residence known as “Lynwood Park” abuts the Subject Site to the south. Eaton Street and Entrance Park are located south of the retirement residence.

**West:** Lynhar Road abuts the Subject Site to the west. A gas bar, automobile service station, hotel, and existing residential are situated west of Lynhar Road opposite of the Subject Site.

The Subject Site is legally described as follows:

*PT BLK D & PT OF NORTHSIDE RD CLOSED BY BY-LAW NS123760 PLAN 392092,  
PT 2 5R8383 SUBJECT TO CR440700, NS151107, NS151104, NS151105 NEPEAN*

## 1.2 Proposed Development

As previously discussed, the proposed development will feature a 790 m<sup>2</sup> single-storey retail plaza consisting of five (5) commercial units and drive-through facility on a portion of the Subject Site as shown on **Figure 2 – Concept Plan**. The Subject Site currently consists of a shopping centre known as the Lynwood Centre originally developed in the late 1950's. No changes are proposed to the existing Lynwood Centre as part of this proposed development.

The proposed development will be built in the northwest corner of the Lynwood Centre parking lot abutting the intersection of Robertson Road and Lynhar Road. The proposed development will feature four (4) bicycle parking spaces and an outdoor commercial patio which will be operated by a future restaurant tenant. Internal walkways will enable pedestrian circulation throughout the Subject Site while also providing a connection to the existing sidewalk along Lynhar Road.

Modifications are required to the existing surface parking lot layout in the northwest corner to facilitate the proposed development. A total of two-hundred eight vehicle parking spaces will be provided to serve the proposed development including the existing shopping centre. Soft and hard landscape elements within the limits of the proposed development area will be incorporated with special consideration around the drive-through facility and outdoor waste collection area to ensure adequate buffering is provided in relation to the public realm as shown on the Landscape Plan prepared by Ruhland and Associates Ltd.

The proposed development has been designed to respect the Subject Site's development constraints including municipal infrastructure easements for stormwater, sanitary, and watermain services. An existing hydro easement and setback requirements from overhead hydro infrastructure further limits the placement of buildings and landscaping elements on the proposed development area. As such, the proposed development has been designed to comply with the requirements of the Subject Site's existing development constraints. Refer to engineering drawings for constraints.

No new accesses or egresses are being considered as the proposed development will utilize the existing accesses and egresses along Lynhar Road and Larkspur Drive. The proposed development represents a more efficient use of land resources as the stand-alone retail plaza will be built on an area of the Subject Site's existing surface parking area.

## 2.0 ADDITIONAL REPORTS AND PLANS

This report should be read in conjunction with the following reports and plans prepared by Novatech, Farley, Smith, & Denis Surveying Ltd., McRobie Architects + Interior Designers, Ruhland and Associates Ltd., Paterson Group, and Pinchin.

- Topographic Plan of Survey prepared by Farley, Smith, & Denis Surveying Ltd. dated October 25, 2022.
- Planning Rationale, Report R-2022-152, prepared by Novatech, dated March 3, 2023.
- Transportation Impact Assessment, Report R-2020-46, prepared by Novatech dated November 2023.
- Site Plan, Drawing SP-A01, prepared by McRobie Architects + Interior Designers dated September 12, 2023.
- Architectural Building Elevations, Drawing A201, prepared by McRobie Architects + Interior Designers dated March 3, 2023.



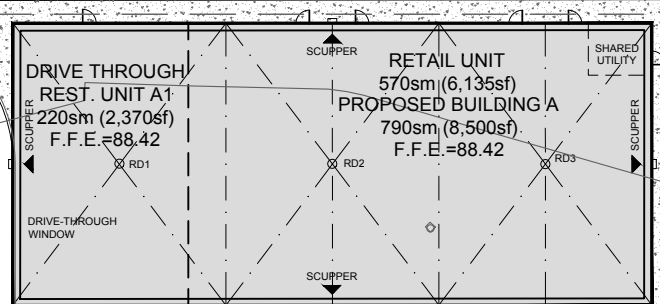
ROBERTSON ROAD

LYNHAR ROAD

LARKSPUR DRIVE

PROPERTY LINE

PROPERTY LINE

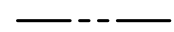

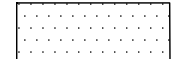


PROPOSED PARKING AREA

EXISTING PARKING

EXISTING BUILDING  
LYNWOOD SHOPPING CENTRE

**LEGEND**

-  SITE BOUNDARY
-  LIMIT OF SITE PLAN CONTROL APPLICATION
-  ACCESS LANES / HEAVY DUTY TRUCK PARKING

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CITY OF OTTAWA  
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CONCEPT PLAN

1 : 500



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FIG 2

- Landscape Plan, Drawing L-01, prepared by Ruhland and Associates Ltd., dated October 30, 2023.
- Geotechnical Investigation Report PG6426-1, prepared by Paterson Group, dated November 9, 2022.
- Phase One Environmental Site Assessment Pinchin File: 315515, prepared by Pinchin, dated November 9, 2022.

### 3.0 SANITARY SERVICING

The proposed single-storey retail plaza will consist of five (5) commercial units and drive-thru facility. The building will be serviced with a single 200mm diameter sanitary service complete with backwater flow valve that will connect to the existing sanitary manhole located northeast of the proposed building. The existing manhole and existing 375mm diameter sanitary sewer is located in an easement within the Subject Site, north of the proposed building. Refer to the Grading and Servicing Plan, 106134-GS for details.

#### 3.1 Design Criteria

The current sanitary design is based on design criteria outlined in the City of Ottawa's Technical Bulletin ISTB 2018-01 and are as follows:

- Commercial / Institutional Average Sewage Flow = 28,000L/gross ha/day
- ICI Peaking factor = 1.5, ICI >20%
- Infiltration Allowance = 0.33 L/s/ha
- Minimum Mainline Pipe Slope (200mm) = 0.32% (if necessary)
- Minimum Full Flow Velocity = 0.6m/s
- Maximum Full Flow Velocity = 3.0m/s

#### 3.2 Proposed Sanitary Design

The peak sanitary flows are summarized below in **Table 2.1**. Refer to the design drawing located in **Appendix D** showing the proposed building area and limits of the development. Note that the only additional flow to the existing sanitary sewer is from the proposed building. The Subject Site is part of a larger site area that was previously considered tributary to the existing sanitary sewer. Therefore, no additional infiltration flow should be considered, however, it has been shown for information purposes based on the building footprint.

**Table 2.1: Subject Site - Sanitary Flow Summary**

Development Condition	Area (m <sup>2</sup> )	Peak Res. Flow (L/s)	Peak Ext. Flow (L/s)	Peak Design Flow (L/s)
Commercial Building	790	0.04	0.03	0.07

Based on GeoOttawa, the existing 375mm sanitary sewer has a slope of 0.35%, giving a maximum capacity of 108.2L/s. The proposed sanitary design flows for the Subject Site are considered negligible outletting to the existing 375mm diameter sanitary sewer and should have no negative impact on the existing system. As per the pre-consultation notes located in **Appendix A**, no sanitary issues are expected because of the Subject Site.

## 4.0 WATERMAIN

The proposed single-storey retail plaza will consist of five (5) commercial units and drive-thru facility. The building will be serviced with a single 150mm diameter water service complete with standpost that will connect to the existing 200mm diameter watermain located northeast of the Subject Site, near the existing sanitary manhole. Refer to the Grading and Servicing Plan, 106134-GS for details.

### 4.1 Design Criteria

The Subject Site watermain design is based on design criteria outlined in the City of Ottawa's Technical Bulletin ISTB 2018-01 & ISTB 2021-03 and are as follows. Fireflows are based on the FUS 2020:

#### Demands:

- Average Daily Demand = 28,000L/Gross ha/day
- Maximum Daily Demand = 1.5 x Average Daily Demand
- Peak Hour Demand = 1.8 x Maximum Daily Demand
- Fire Flow = Fire Underwriter's Survey 2020

#### System Requirements

- Maximum Allowable Pressure = 100psi (690 kPa)
- Minimum Allowable Pressure (excluding fire flow conditions) = 40psi (276 kPa)
- Minimum Allowable Pressure during fire flow conditions = 20psi (138 kPa)
- Maximum Allowable Age = 5 days (residence time = 8 days, 192 hours)

#### Fire Flow (maximum):

- 83L/s, based on un-sprinklered steel frame construction.

#### Friction Factors:

Watermain Size:	C-Factor:
300mm diameter	120
200mm and 250mm diameter	110
150mm to 50mm diameter	100

### 4.2 Proposed Watermain Design

There is no mainline watermain proposed for the Subject Site, only an individual service connection. Therefore, no further analysis is required for the Subject site other than confirming there are adequate pressures through the boundary condition process.

The boundary conditions indicate there is adequate capacity in the existing watermain system under all operating conditions including fireflow. The boundary conditions included a worst-case scenario for the site producing a fireflow of 150L/s, which can be achieved by the existing system. Through further discussions with the architect and client, it was concluded that the building requires a fireflow of 83L/s, which will improve pressures. A copy of the City of Ottawa provided boundary conditions are included in **Appendix B**.

Fireflows will be achieved using existing fire hydrants surrounding the Subject Site. There is adequate hydrant coverage to provide 83 L/s under the fireflow operating conditions, refer to **Figure 3** – Hydrant Coverage Plan for locations.

## 5.0 STORMWATER MANAGEMENT

Stormwater from the proposed development will be discharged overland to the existing drainage ditch located north between the Subject Site and Northside Drive as per existing conditions. There is no storm connection proposed for the Subject Site and the roof will be controlled before outletting to the surface and ultimately the existing drainage ditch.

### 5.1 Pre-Development Conditions

Under existing conditions, the Subject Site is mainly surface parking lot with a drainage ditch north of the parking lot adjacent to Robertson Road / Northside Road. The Subject Site is almost completely impervious. Stormwater flows from the site are currently conveyed overland to the northern edge of the parking lot where flow outlet via curb cuts to the existing drainage ditch north of the parking lot. Refer to **Figure 4** – Pre-Development Conditions for existing drainage patterns.

### 5.2 Post-Development Conditions and Criteria

The stormwater management design will include maintaining existing drainage patterns stormwater outlet with additional roof drain controls and storage on the building roof.

Under post development conditions, there is a decrease in imperviousness mostly due to replacing the existing parking lot with greenspace north of the proposed drive-thru and building. Therefore, the amount of stormwater runoff will be decreased from the proposed development compared to pre-development conditions, without any controls or storage.

As per the pre-consultation notes located in **Appendix A**, the roof will be required to store and control up to and including the 100-year design event. This will be achieved by using controlled flow roof drains. The roof will control the 100-year event to the 2-year release rate. These further decreases stormwater flow rates from the proposed site compared to pre-development conditions. Refer to **Figure 5** – Post-Development Conditions for drainage areas and patterns.

### 5.3 Results

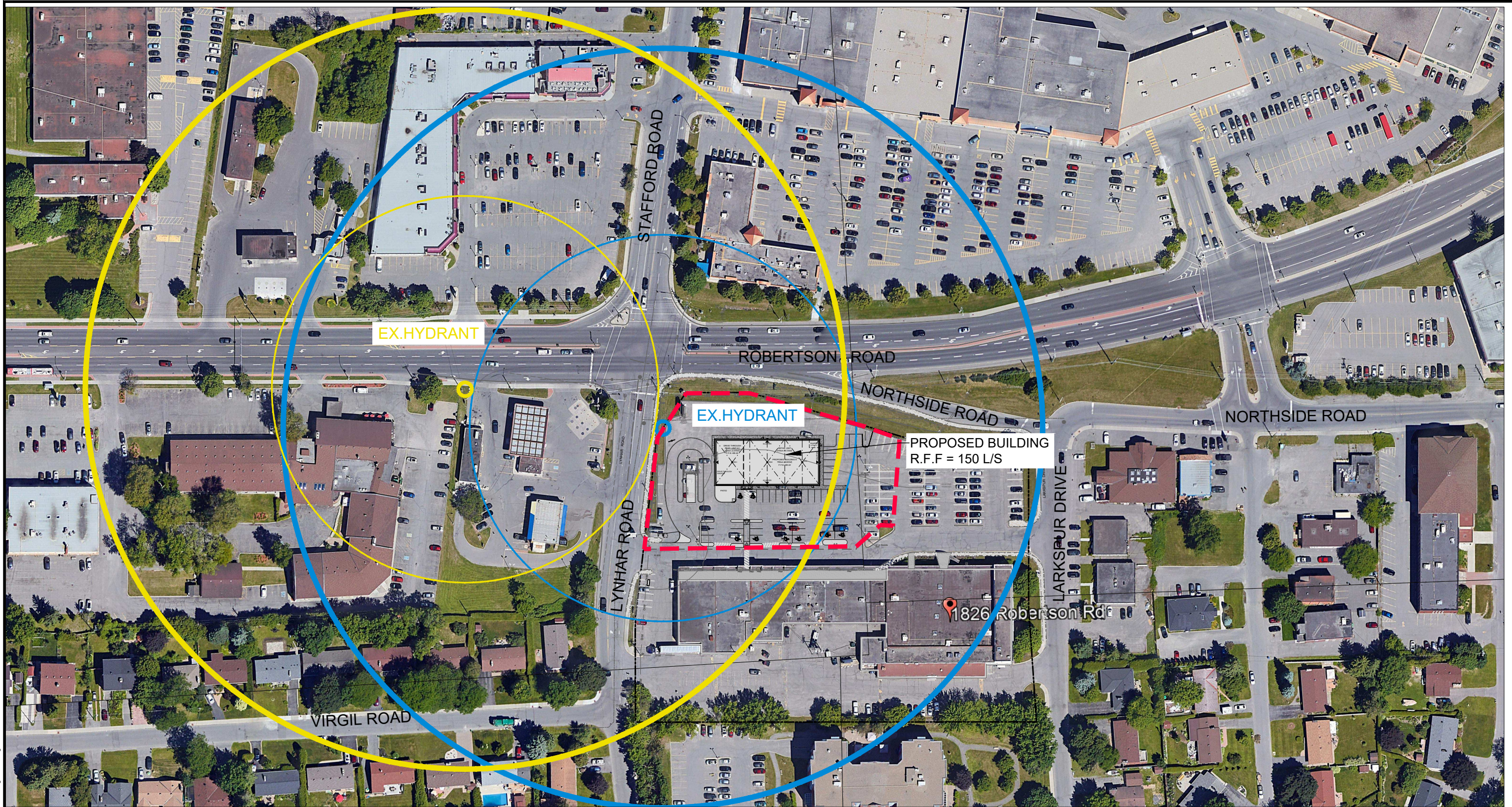
#### 5.3.1 Runoff from Uncontrolled Areas

The majority of the runoff from the site will sheet drain overland towards a large curb cut at the northeastern edge of the site where it will outlet to the existing drainage ditch. A small portion will outlet via a curb cut located at the northern edge of the drive-thru and will outlet to the existing drainage ditch.

A connecting pathway is proposed from the northeastern corner of the building to Robertson Road near the bus stop. The pathway crosses the existing drainage ditch and will require a culvert to convey flows from one side to another. A 500mm culvert is proposed and has been designed to convey the 100-year flow with no overtopping. Refer to the Grading and Servicing Plan for details. Refer to Appendix C for culvert calculations.

A summary of the 100-year release rate from the site under pre-development conditions calculated using the Rational Method, is shown in **Table 4.1** below for information. Refer to **Figure 4** - Pre-Development Conditions for details. Refer to **Appendix C** for detailed calculations.

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**LEGEND**

- PROPERTY BOUNDARY
- LIMIT OF SITE PLAN CONTROL APPLICATION
- 75m COVERAGE RADIUS
- 150m COVERAGE RADIUS
- LOCATION OF EXISTING FIRE HYDRANT

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CITY OF OTTAWA  
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LYNWOOD RETAIL PLAZA

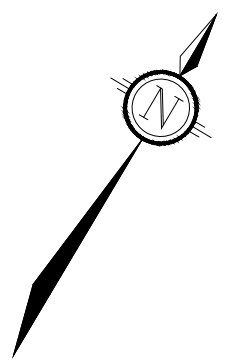
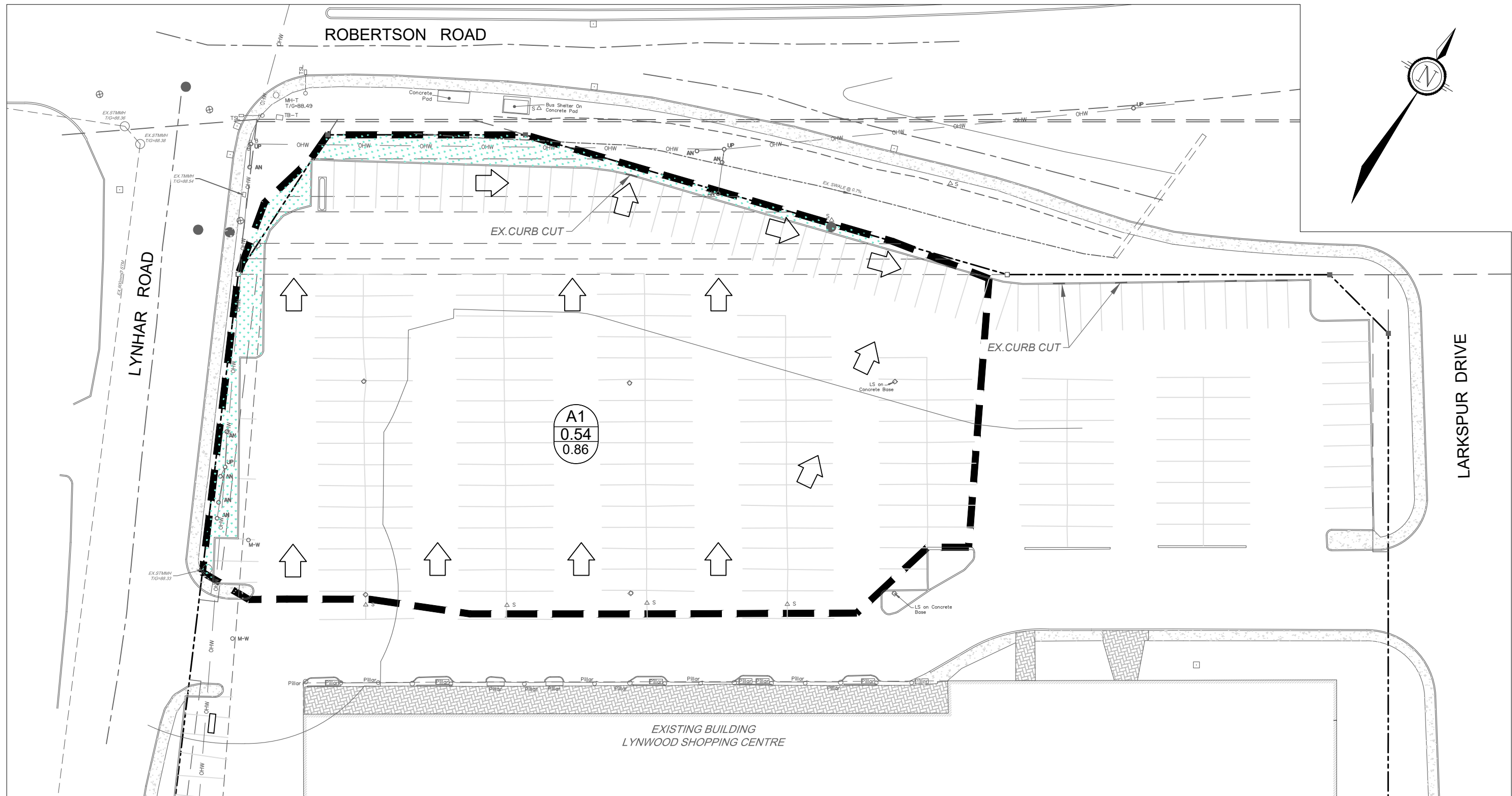
**HYDRANT COVERAGE PLAN**

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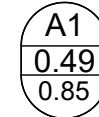


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FIG 3



**LEGEND**

-  PROPERTY LINE
-  PRE DEVELOPMENT CONDITIONS - STORM DRAINAGE AREA BOUNDARY
-  AREA ID  
DRAINAGE AREA (HECTARES)  
RUN-OFF COEFFICIENT (C-VALUE)
-  MAJOR OVERLAND FLOW DIRECTION (PRE DEVELOPMENT CONDITIONS)
-  GREEN SPACE (PRE DEVELOPMENT CONDITIONS)

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CITY OF OTTAWA  
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**SWM - PRE DEVELOPMENT CONDITIONS**

1 : 500 

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**Table 4.1: Peak Flows from Uncontrolled Areas – Pre-development Conditions**

Area ID	Drainage Area (ha)	Runoff Coefficient		Rainfall Intensity (mm) <sup>2</sup>		Peak Flow (L/s)	
		2-year	100-year <sup>1</sup>	2-year	100-year	2-year	100-year
A01	0.54	0.86	0.96	76.52	178.56	98.79	257.33
<b>TOTAL</b>	<b>0.54</b>	<b>0.86</b>	<b>0.96</b>	<b>76.52</b>	<b>178.56</b>	<b>98.79</b>	<b>257.33</b>

<sup>1</sup>Runoff coefficient increased by 25% for a 100-year storm event.

<sup>2</sup>Rainfall intensity based on a 10-minute Time-of-Concentration (Tc) as per the IDF parameters provided in the City of Ottawa Sewer Design Guidelines (October, 2012).

A summary of the peak flows from the uncontrolled areas, calculated using the Rational Method, is shown in **Table 4.2** below. Refer to **Figure 5 – Post-Development Conditions** for drainage areas and patterns. Refer to **Appendix C** for detailed calculations.

**Table 4.2: Peak Flows from Uncontrolled Areas**

Area ID	Drainage Area (ha)	Runoff Coefficient		Rainfall Intensity (mm) <sup>2</sup>		Peak Flow (L/s)	
		2-year	100-year <sup>1</sup>	2-year	100-year	2-year	100-year
A01	0.46	0.73	0.82	76.52	178.56	71.71	187.48
<b>TOTAL</b>	<b>0.46</b>	<b>0.73</b>	<b>0.82</b>	<b>76.52</b>	<b>178.56</b>	<b>71.71</b>	<b>187.48</b>

<sup>1</sup>Runoff coefficient increased by 25% for a 100-year storm event.

<sup>2</sup>Rainfall intensity based on a 10-minute Time-of-Concentration (Tc) as per the IDF parameters provided in the City of Ottawa Sewer Design Guidelines (October, 2012).

### 5.3.2 Controlled Flow from Building Roof

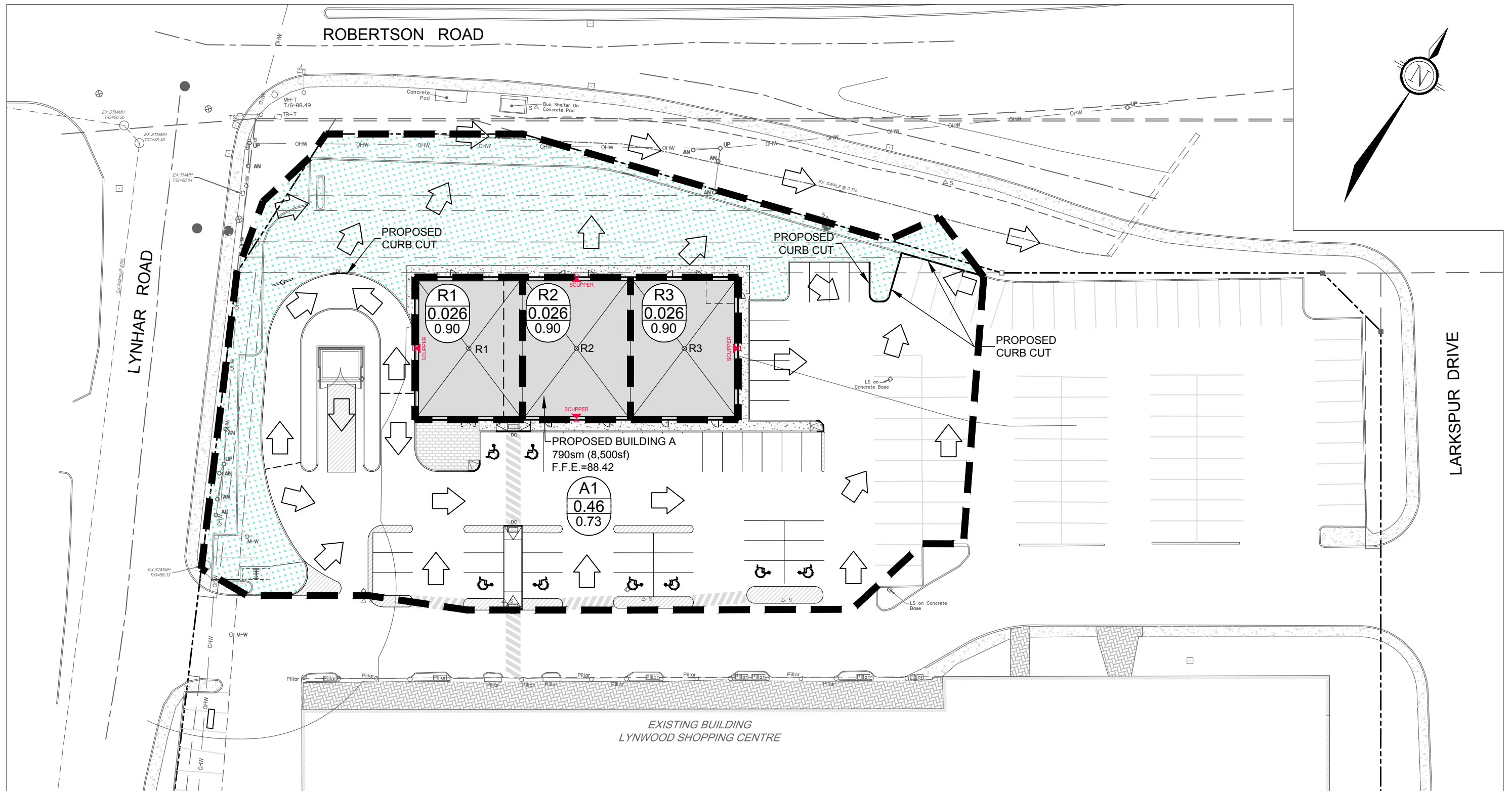
As per the pre-consultation notes located in **Appendix A**, the roof will be required to store and control up to and including the 100-year design event. The roof will control the 100-year event to the 2-year release rate.

The 2-year release rate for the roof was calculated using the Rational Method and determined to be **15.12 L/s** based on the following criteria:




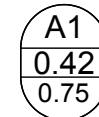


- Building Area = 0.79ha
- C = 0.90
- 10min Time of Concentration
- 2-year Intensity = 76.52 mm/hr



Runoff from the roof areas (catchments RD1 and RD3) will be attenuated by the use of Zurn controlled flow roof drains. These roof drains discharge at a rate of 2.5 GPM per inch of head.

**Table 4.3** summarizes the controlled post-development design flows from the building rooftop, the maximum anticipated ponding depths, storage volumes required and storage volumes provided for both the 1:2 year and the 1:100 year design events. As indicated in the table below, the building roof will provide sufficient storage for both the 1:2 year and 1:100 year design events. Refer to **Figure 5 – Post-Development Conditions** for drainage areas and patterns. Refer to **Appendix C** for detailed calculations.



**LEGEND**

-  PROPERTY LINE
-  POST DEVELOPMENT CONDITIONS - DRAINAGE AREA BOUNDARY
-  OVERLAND DRAINAGE DIRECTION
-  AREA ID
-  DRAINAGE AREA (HECTARES)
-  RUN-OFF COEFFICIENT (C-VALUE)

 Engineers, Planners & Landscape Architects Suite 200, 240 Michael Cowpland Drive Ottawa, Ontario, Canada K2M 1P6 Telephone (613) 254-9643 Facsimile (613) 254-5867 Website www.novatech-eng.com	CITY OF OTTAWA 1826 ROBERTSON ROAD LYNWOOD CENTRE REDEVELOPMENT	
	SWM - POST DEVELOPMENT CONDITIONS	
1 : 500		
NOV 2023	106134	FIG-5

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**Table 4.3: Design Flow and Roof Drain Table**

Area ID	Roof Drain Type	# of Notches	1:2 - Year Event			1:100 - Year Event		
			Head (m)	Q (L/s)	Vol (m <sup>3</sup> )	Head (m)	Q (L/s)	Vol (m <sup>3</sup> )
RD1	Zurn Roof Drain	4	0.07	3.06	1.15	0.11	4.95	7.04
RD2	Zurn Roof Drain	4	0.07	3.06	1.15	0.11	4.95	7.04
RD3	Zurn Roof Drain	4	0.07	3.06	1.15	0.11	4.95	7.04
<b>TOTAL</b>	-	<b>4</b>	-	<b>9.19</b>	<b>3.45</b>	-	<b>14.86</b>	<b>14.51</b>

The controlled 100-year release rate from the building (14.86 L/s) is less than the 2-year release rate (15.12 L/s) for the building roof, therefore satisfying the stormwater management requirements for the site.

It should be noted that the 100-year release rate (sum of A01, RD1 to RD3) under post development conditions is approximately 55L/s less compared to pre-development conditions for the site boundary.

## 6.0 NOISE

As per the pre-consultation notes located in **Appendix A**, a stationary noise report to be completed if any mechanical equipment is exposed to surrounding residents. If required, the noise study will be completed by others.

## 7.0 UTILITIES

The Subject Site will be serviced with utilities with connections to either Lynhar Road or Robertson Road. Site lighting will be provided parking lots as per City standards.

## 8.0 EROSION AND SEDIMENT CONTROL

Temporary erosion and sediment control measures will be implemented during construction in accordance with the "Guidelines on Erosion and Sediment Control for Urban Construction Sites" (Government of Ontario, May 1987). Details will be provided on the Erosion and Sediment Control Plan. Erosion and sediment control measures may include:

- Placement of insert in catchbasins and filter fabric under all maintenance holes;
- Mud Mat(s) at construction entrances;
- Silt fences around the area under construction placed as per OPSS 577 and OPSD 219.110;
- Light duty straw bale check dam per OPSD 219.180; and
- Application of topsoil and sod to disturbed areas.

The erosion and sediment control measures are to be installed to the satisfaction of the engineer, the City, and conservation authority prior to construction and will remain in place during construction until vegetation is established. The erosion and sediment control measures will also be subject to regular inspection to ensure the measures are operational.

## 9.0 CONCLUSIONS

This report confirms the Subject Site can be adequately serviced with sanitary sewer and watermain connections and adhere to stormwater requirements. The report is summarized below:

### Sanitary Servicing

- The building will be serviced with a single 200mm diameter sanitary service complete with backwater flow valve that will connect to an existing manhole located northeast of the proposed building.
- Sanitary flows have calculated to be 0.07L/s from the Subject Site. No sanitary issues are expected because of the Subject Site development.

### Watermain

- The building will be serviced with a single 150mm diameter water service that will connect to the existing 200mm diameter watermain located northeast of the Subject Site, near the existing sanitary manhole.
- There is no mainline watermain proposed for the Subject Site, only an individual service connection. Therefore, no further analysis is required for the Subject site other than confirming there are adequate pressures through the boundary condition process. The boundary conditions indicate there is adequate capacity in the existing watermain system under all operating conditions including fireflow.
- Fireflows will be achieved using existing fire hydrants surrounding the Subject Site. There is adequate hydrant coverage to provide 83 L/s under the fireflow operating conditions.

### Stormwater Management

- Stormwater from the proposed development will be discharged overland to the existing drainage ditch located north between the Subject Site and Northside Drive as per existing conditions. There is no storm connection proposed for the subject site and the roof will be controlled before outletting to the surface and ultimately the existing drainage ditch.
- The controlled 100-year release rate from the building (14.86 L/s) is less than the 2-year release rate (15.12 L/s) for the building roof, therefore satisfying the stormwater management requirements for the site.

### Noise

- As per the pre-consultation notes located in **Appendix A**, a stationary noise report to be completed if any mechanical equipment is exposed to surrounding residents. If required, the noise study will be completed by others.

### Utilities

- The Subject Site will be serviced with utilities with connections to either Lynhar Road or Robertson Road. Site lighting will be provided parking lots as per City standards.

### Erosion and Sediment Control

- Erosion and sediment control measures will be implemented prior to construction and remain in place until vegetation is established.

This report is respectfully submitted for site plan approval. Please contact the undersigned should you have questions or require additional information.

**NOVATECH**

Prepared by:



Steve Zorgel, P. Eng.  
Project Manager | Land Development Engineering

Reviewed by:

A handwritten signature in blue ink, appearing to read "M St Pierre".

Marc St. Pierre  
Senior Project Manager | Land Development Engineering

## **Appendix A Correspondence**

**From:** Kelly Rhodenizer  
**Sent:** January 31, 2020 9:24 AM  
**To:** Marc St.Pierre; Greg Mignon; Kayla Blakely; salem@microbie.com  
**Cc:** Ashling Cassidy  
**Subject:** FW: Pre-con Follow-up - 1826 Robertson Road  
**Attachments:** [AODA Checklist.docx](#); [drive thru options.pdf](#); [380 coventry.JPG](#); [5R05997.pdf](#); [1826 Robertson Rd - Study and Plan Identification List.pdf](#)

Team,

Please see attached and below. I think we have them on board for our design. However, James can you review the comments and let me know what you think based on their suggestions.

Can you please review in detail and let's set up a meeting to in mid February?

Thanks

**Kelly Rhodenizer**

Director, Commercial and Multi-Family Development

T: 613-230-2100 x 7229

C: 613-979-6547

[krhodenizer@regionalgroup.com](mailto:krhodenizer@regionalgroup.com)

---

**From:** Gorni, Colette <[colette.gorni@ottawa.ca](mailto:colette.gorni@ottawa.ca)>  
**Sent:** January 30, 2020 2:17 PM  
**To:** Kelly Rhodenizer <[krhodenizer@regionalgroup.com](mailto:krhodenizer@regionalgroup.com)>  
**Cc:** Armstrong, Justin <[justin.armstrong@ottawa.ca](mailto:justin.armstrong@ottawa.ca)>; Knight, Melanie (Planning) <[Melanie.Knight@ottawa.ca](mailto:Melanie.Knight@ottawa.ca)>; Gervais, Josiane <[josiane.gervais@ottawa.ca](mailto:josiane.gervais@ottawa.ca)>  
**Subject:** Pre-con Follow-up - 1826 Robertson Road

Hello Kelly,

Please refer to the below regarding the Pre-Application Consultation (pre-con) Meeting held on December 11, 2019 for the property at 1826 Robertson Road for Site Plan Control in order to allow the development of a commercial building with a drive through by Northside Road Inc. I have also attached the required Plans & Study List for application submission.

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

### **Planning**

- Official Plan (OP) Designation – Arterial Mainstreet ([Section 3.6.3](#))
- Zoning – AM[1278] ([Arterial Mainstreet](#), [Urban Exception 1278](#))
  - Drive-through facility is a permitted use within this zoning.
  - Urban Exception 1278 outlines that any new buildings must be constructed with the maximum front yard setback being either that required in the AM Zone or where applicable the location of the southerly limit of the City easement, whichever distance is the greater.
- Parking is to be provided at rates specified for Area C per [Schedule 1A](#):
  - Retail Store – 3.4 per 100m<sup>2</sup> of gross floor area
  - Restaurant- Fast Food (By-law 2011-124) – 10 per 100 m<sup>2</sup> of gross floor area
  - Please note that where a restaurant use operates in combination with a drive-through facility, the parking required by Table 101 for the restaurant may be reduced by 20 percent, as per Section 101(6) (i) of the Zoning By-law.
- Please refer to [Section 110](#) (3) for the garbage enclosures provided east of the proposed building.
- Please refer to [Section 85](#) when designing the proposed outdoor commercial patio.
- Please refer to Section 112 of the Zoning By-law when designing drive-through.
  - All queuing spaces must be (a) at least 3 metres wide, and (b) 5.7 metres long.
  - If there is to be an order board, 7 queuing spaces before/at the order board and a minimum total 11 queuing spaces are required.
- Please be aware that the City prefers for drive through queuing lines to be internal to the site and not adjacent to roadways. However, with the limitations of the site and surrounding context in mind, staff is prepared to consider a drive-through facility in the proposed location. However, significant screening of the drive-through must be provided through landscaping.
- Upon review of the easements on the site, it has been determined that site features, such as the drive-through and landscaping may be constructed/installed on the lands subject to easements, except on the overflow easement (Part 1, Plan 5R05997 - attached), which must remain clear. However, should you wish to pursue this option, approval would be conditional on the ability of the City to remove any site features situated on the easement lands to access underground infrastructure, if necessary. The City will also likely require the Owner to reinstate the features at their own cost.
- The proposed development is subject to Site Plan Control and will be a New - Site Plan Control – Standard application. Application form, timeline and fees can be found [here](#).

### **Urban Design**

- Based on the location and restriction of the easements, the applicant is encouraged to consider other options that may be viable and more desirable than the one currently proposed. Please consider placing a U-shaped drive-through on the northwest portion of the site abutting Lynhar Road. This reduces the large amount of queuing along Robertson Road and allows for landscaping and patio space.
- The attachment entitled “drive thru options” outlines two examples of U-shaped drive-throughs:

- The first is from an active site plan application at [5150 Innes Road](#) where a double loaded U-shaped drive thru is proposed. The advantages here are that the stacking length is shorter because it is double loaded, and the inside of the U is used for loading purposes, which buffers loading from the street. This arrangement still allows room for a patio space fronting Robertson Road and the remainder of the attached retail units can remain east of the drive through restaurant.
- The second option in the PDF is a very rough sketch illustrating how a U-shaped drive through can work on the proposed site plan. The width of the U can be manipulated to either contain parking, loading, garbage or any combination of these. This arrangement also allows for patio space along Robertson Road and some landscaping or more patio space, depending on the use of the other commercial units.
- Please see the Starbucks at 380 Coventry Road (attached), which utilizes a U-shaped drive-through. In this case, the coffee shop is also able to have a patio abutting Coventry Road as well and the inside of the U is quite wide which allows for a good amount of parking.

## **Engineering**

- The Servicing Study Guidelines for Development Applications are available at the following address: <https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans>
- Servicing and site works shall be in accordance with the following documents:
  - Ottawa Sewer Design Guidelines (October 2012)
  - Ottawa Design Guidelines – Water Distribution (2010)
  - Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
  - City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
  - City of Ottawa Environmental Noise Control Guidelines (January 2016)
  - City of Ottawa Park and Pathway Development Manual (2012)
  - City of Ottawa Accessibility Design Standards (2012)
  - Ottawa Standard Tender Documents (latest version)
  - Ontario Provincial Standards for Roads & Public Works (2013)
- Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at [InformationCentre@ottawa.ca](mailto:InformationCentre@ottawa.ca) or by phone at (613) 580-2424 x.44455).
- The Stormwater Management approach of maintaining existing grading and drainage patterns for the proposed development is generally acceptable, however, the roof shall be controlled to the 2-year before being discharged to the surface.
- The applicant's preferred sanitary connection option of connecting to the sanitary sewer that runs through the northern portion of the site is acceptable. No sanitary sewer capacity issues are expected.
- After reviewing the easement documents associated with the site, Parts 3 & 4 on Plan 5R-5997 relate to watermain easement 151104, Parts 1, 6, 7, 9 on Plan 5R-5997 relate to overland flow easement 151107, while no information was found in relation to Parts 2 and 5 on Plan 5R-5997. Without an existing easement pertaining the sanitary sewer that runs through the northern portion of the site, one will need to be taken as part of the site

plan Agreement. As per the sewer design guidelines, the combined easement width over the watermain and sanitary sewer should be a minimum of 9 metres wide.

- Water Boundary condition requests must include the location of the service and the expected loads required by the proposed development. Please provide the following information:
  - i. Location of service
  - ii. Type of development and the amount of fire flow required (as per FUS).
  - iii. Average daily demand: \_\_\_\_\_ l/s.
  - iv. Maximum daily demand: \_\_\_\_\_ l/s.
  - v. Maximum hourly daily demand: \_\_\_\_\_ l/s.

Feel free to contact Infrastructure Project Manager, Justin Armstrong, at [Justin.Armstrong@ottawa.ca](mailto:Justin.Armstrong@ottawa.ca) for follow-up questions.

### **Transportation**

- Follow Traffic Impact Assessment Guidelines
  - A TIA is required.
  - Start this process asap. The application will not be deemed complete until the submission of the draft step 1-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable).
  - Request base mapping asap if RMA is required. Contact Engineering Services (<https://ottawa.ca/en/city-hall/planning-and-development/engineering-services>)
- Protected ROW must be shown on the site plan:
  - ROW protection on Robertson Road between Bell's Corners urban area west limit and Richmond Rd is 37.5m even.
  - ROW protection on Lynhar Road between Robertson Rd and Eaton St is 24m even.
  - ROW protection on Larkspur Dr between Northside Rd and Eaton St is 24m even.
- Questions raised: *Do we have to account for the ROW protection on this site plan application? What happens to the parking stalls that are existing that would be impacted by the ROW protection?*
  - If the existing parking stalls that fall within the protected ROW line are not being impacted by the proposed site plan application changes, then it's OK to allow those stalls to stay (e.g. 10 stalls in NE section of the site and 12 stalls along west side of site, between the two accesses). Any new development planned should be outside the protected ROW lines.
- Corner triangles as per OP Annex 1 - Road Classification and Rights-of-Way at the following locations on the final plan will be required (measure on the property line/ROW protected line; no structure above or below this triangle):
  - Collector Road to Arterial Road: 5 m x 5 m
- Sight triangle as per Zoning by-law is 6 m x 6 m measure on the curb line.
- On site plan:
  - Show all details of the roads abutting the site up to and including the opposite curb; include such items as pavement markings, accesses and/or sidewalks.
  - Turning templates will be required for all accesses showing the largest vehicle to access the site; required for internal movements and at all access (entering and exiting and going in both directions).



- Show all curb radii measurements; ensure that all curb radii are reduced as much as possible
- Show lane/aisle widths.
- Sidewalk is to be depressed and continuous across access as per City Specification 7.1.
- Grey out any area that will not be impacted by this application.
- AODA legislation is in effect for all organizations, please ensure that the design conforms to these standards.
- Noise Impact Studies required for the following:
  - Stationary if there will be any exposed mechanical equipment due to the proximity to neighboring noise sensitive land uses.

Feel free to contact Transportation Project Manager, Josiane Gervais, at [josiane.gervais@ottawa.ca](mailto:josiane.gervais@ottawa.ca) for follow-up questions.

### **Forestry**

- TCR Requirements:
  - A Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City; an approved TCR is a requirement of Site Plan or Plan of Subdivision approval
  - Any removal of privately-owned trees 10cm or larger in diameter requires a tree permit issued under the Urban Tree Conservation Bylaw; the permit is based on the approved TCR
  - Any removal of City-owned trees will require the permission of Forestry Services who will also review the submitted TCR
  - For this site, the TCR may be combined with the Landscape Plan provided all information is clearly displayed
  - If possible, please submit separate plans showing 1) existing tree inventory, and 2) a plan showing to be retained and to be removed trees with tree protection details
  - The TCR must list all trees on site by species, diameter and health condition – separate stands of trees may be combined using averages
  - The TCR must address all trees with a critical root zone that extends into the developable area – all trees that could be impacted by the construction that are outside the developable area need to be addressed.
  - Trees with a trunk that crosses/touches a property line are considered co-owned by both property owners; permission from the adjoining property owner must be obtained prior to the removal of co-owned trees
  - If trees are to be removed, the TCR must clearly show where they are, and document the reason they can not be retained – please provide a plan showing retained and removed tree areas
  - 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 listed on Ottawa.ca
    - The location of tree protection fencing must be shown on a plan
    - Include distance indicators from the trunk of the retained tree to the nearest part of the tree protection fencing
    - Show the critical root zone of the retained trees

- If excavation will occur within the critical root zone, please show the limits of excavation and calculate the percentage of the area that will be disturbed
- The City encourages the retention of healthy trees; if possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.
- Please ensure newly planted trees have an adequate soil volume for their size at maturity
- For more information on the process or help with tree retention options, contact Mark Richardson [mark.richardson@ottawa.ca](mailto:mark.richardson@ottawa.ca)

### **Parkland**

- Parks will take cash-in-lieu of parkland at a rate of 2 percent of the value of the gross land area of the site being developed, unless it is demonstrated that cash-in-lieu has already been paid through a previous application.

### **Conservation Authority**

- No issues with the proposal.

### **Next Steps**

Please refer to the links to “[Guide to preparing studies and plans](#)” and [fees](#) for further information. Additional information is available related to [building permits](#), [development charges](#), and the [Accessibility Design Standards](#). Be aware that other fees and permits may be required, outside of the development review process. You may obtain background drawings by contacting [informationcentre@ottawa.ca](mailto:informationcentre@ottawa.ca).

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

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

Regards,

### **Colette Gorni**

Planner I | Urbaniste I

Development Review West | Services d'examen demandes d'aménagements Ouest

Planning, Infrastructure and Economic Development Department

City of Ottawa | Ville d'Ottawa

613-580-2424, ext./poste 21239

[Colette.Gorni@ottawa.ca](mailto:Colette.Gorni@ottawa.ca)

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## APPLICANT'S STUDY AND PLAN IDENTIFICATION LIST

Legend: **S** indicates that the study or plan is required with application submission.

**A** indicates that the study or plan may be required to satisfy a condition of approval/draft approval.

For information and guidance on preparing required studies and plans refer [here](#):

S/A	Number of copies	ENGINEERING		S/A	Number of copies
<b>S</b>	<b>15</b>	1. Site Servicing Plan	2. Site Servicing Study	<b>S</b>	<b>3</b>
<b>S</b>	<b>15</b>	3. Grade Control and Drainage Plan	4. Geotechnical Study / Slope Stability Study	<b>S</b>	<b>3</b>
	2	5. Composite Utility Plan	6. Groundwater Impact Study		3
	3	7. Servicing Options Report	8. Wellhead Protection Study		3
<b>S</b>	<b>9</b>	9. Transportation Impact Assessment (TIA)	10. Erosion and Sediment Control Plan / Brief	<b>S</b>	<b>3</b>
<b>S</b>	<b>3</b>	11. Storm water Management Report / Brief	12. Hydro geological and Terrain Analysis		3
	3	13. Hydraulic Water main Analysis	14. Noise / Vibration Study	<b>S</b>	<b>3</b>
	PDF only	15. Roadway Modification Functional Design	16. Confederation Line Proximity Study		3

S/A	Number of copies	PLANNING / DESIGN / SURVEY		S/A	Number of copies
	15	17. Draft Plan of Subdivision	18. Plan Showing Layout of Parking Garage		2
	5	19. Draft Plan of Condominium	20. Planning Rationale	<b>S</b>	<b>3</b>
<b>S</b>	<b>15</b>	21. Site Plan	22. Minimum Distance Separation (MDS)		3
	15	23. Concept Plan Showing Proposed Land Uses and Landscaping	24. Agrology and Soil Capability Study		3
	3	25. Concept Plan Showing Ultimate Use of Land	26. Cultural Heritage Impact Statement		3
<b>S</b>	<b>15</b>	27. Landscape Plan	28. Archaeological Resource Assessment Requirements: <b>S</b> (site plan) <b>A</b> (subdivision, condo)		3
<b>S</b>	<b>2</b>	29. Survey Plan	30. Shadow Analysis		3
<b>S</b>	<b>3</b>	31. Architectural Building Elevation Drawings (dimensioned)	32. Design Brief (includes the Design Review Panel Submission Requirements)		Available online
	3	33. Wind Analysis			

S/A	Number of copies	ENVIRONMENTAL		S/A	Number of copies
<b>S</b>	<b>3</b>	34. Phase 1 Environmental Site Assessment	35. Impact Assessment of Adjacent Waste Disposal/Former Landfill Site		3
	3	36. Phase 2 Environmental Site Assessment (depends on the outcome of Phase 1)	37. Assessment of Landform Features		3
	3	38. Record of Site Condition	39. Mineral Resource Impact Assessment		3
<b>S</b>	<b>3</b>	40. Tree Conservation Report	41. Environmental Impact Statement / Impact Assessment of Endangered Species		3
	3	42. Mine Hazard Study / Abandoned Pit or Quarry Study	43. Integrated Environmental Review (Draft, as part of Planning Rationale)		3

S/A	Number of copies	ADDITIONAL REQUIREMENTS		S/A	Number of copies
	1	44. Applicant's Public Consultation Strategy (may be provided as part of the Planning Rationale)	45. Site Lighting Plan and Certification Letter		3

Meeting Date: December 11, 2019

Application Type: *Site Plan Control - Standard*

File Lead (Assigned Planner): Colette Gorni

Infrastructure Approvals Project Manager: Justin Armstrong

Site Address (Municipal Address): 1826 Robertson Road \*Preliminary Assessment: 1  2  3  4  5

\*One (1) indicates that considerable major revisions are required before a planning application is submitted, while five (5) suggests that 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.**

**It is important to note that the need for additional studies and plans may result during application review. If following the submission of your application, it is determined that material that is not identified in this checklist is required to achieve complete application status, in accordance with the Planning Act and Official Plan requirements, the Planning, Infrastructure and Economic Development Department will notify you of outstanding material required within the required 30 day period. Mandatory pre-application consultation will not shorten the City's standard processing timelines, or guarantee that an application will be approved. It is intended to help educate and inform the applicant about submission requirements as well as municipal processes, policies, and key issues in advance of submitting a formal development application. This list is valid for one year following the meeting date. If the application is not submitted within this timeframe the applicant must again pre-consult with the Planning, Infrastructure and Economic Development Department.**

**Appendix B**  
**Boundary Conditions, Fire Flow Calculations**

## Steve Zorgel

---

**From:** Armstrong, Justin <justin.armstrong@ottawa.ca>  
**Sent:** Friday, February 24, 2023 10:45 AM  
**To:** Steve Zorgel  
**Cc:** Marc St.Pierre; Gorni, Colette; TMarquis@regionalgroup.com  
**Subject:** RE: Boundary Condition Request - 1826 Robertson Road  
**Attachments:** 1826 Robertson Road February 2023.pdf

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Hi Steve,

See boundary condition results below and attached.

Have a great weekend.

The following are boundary conditions, HGL, for hydraulic analysis at 1826 Robertson Road (zone 2W2C) assumed to be connected to the 203 mm on Robertson Road (see attached PDF for location).

Minimum HGL = 126.9 m

Maximum HGL = 132.7 m

MaxDay + FireFlow (50 L/s) = 128.8 m

MaxDay + FireFlow (150 L/s) = 124.4 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.*

**Justin Armstrong, P.Eng.**

Project Manager

Planning, Real Estate and Economic Development Department – Direction générale de la planification, des biens immobiliers et du développement économique

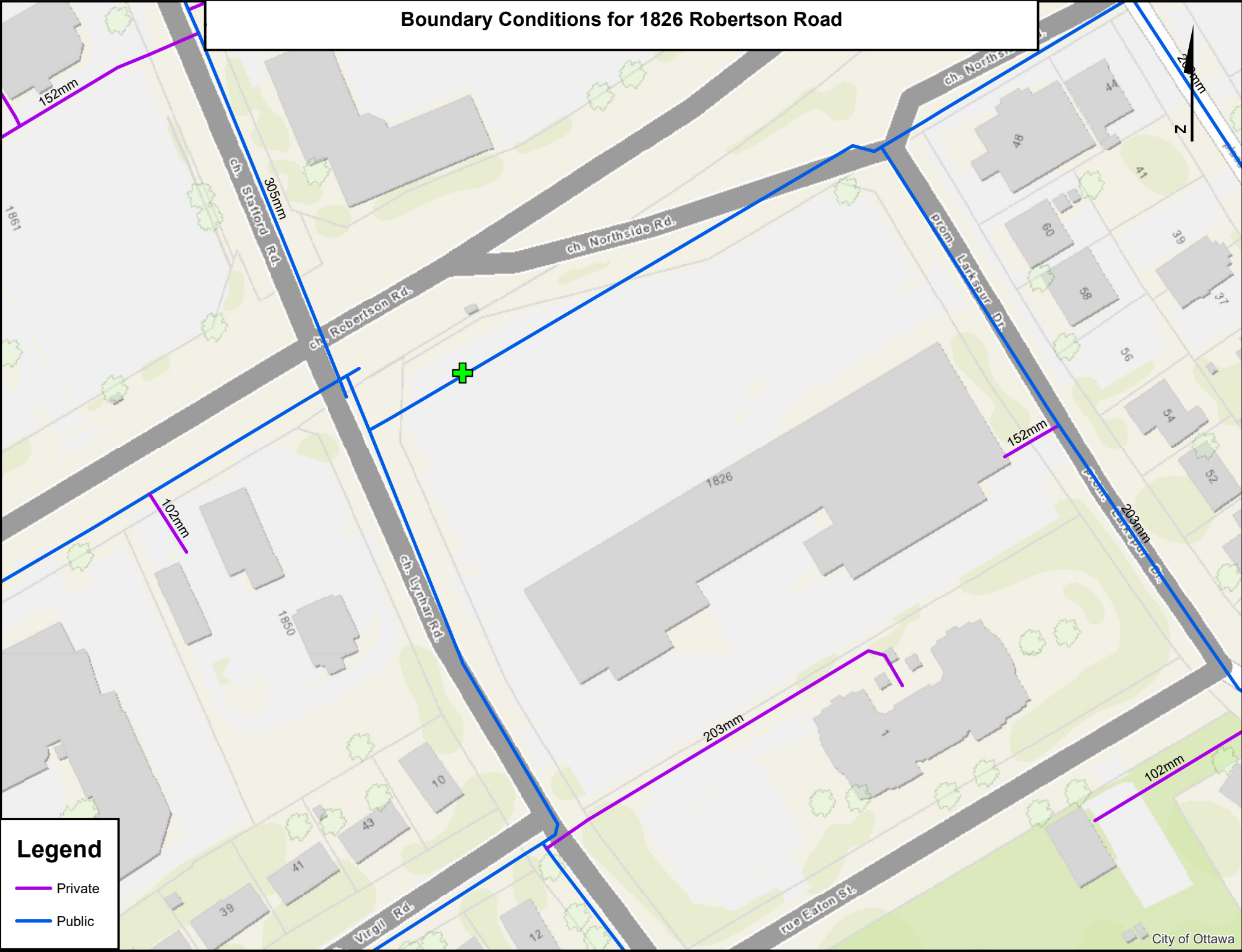
Development Review - West Branch

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1

613.580.2424 ext./poste 21746, [justin.armstrong@ottawa.ca](mailto:justin.armstrong@ottawa.ca)

# Boundary Conditions for 1826 Robertson Road



## Legend

- Private
- Public

# FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines



Engineers, Planners & Landscape Architects

Novatech Project #: 106134  
 Project Name: 1826 Robertson Road - Lynwood  
 Date: 2/21/2023  
 Input By: Steve Zorgel  
 Reviewed By: Marc St. Pierre

Legend

Input by User  
 No Information or Input Required

Building Description: Entire Building - Part 3  
 Non-combustible construction

Step			Input		Value Used	Total Fire Flow (L/min)
<b>Base Fire Flow</b>						
1	<b>Construction Material</b>			<b>Multiplier</b>		
	<b>Coefficient related to type of construction</b> <b>C</b>	Wood frame		1.5	0.8	
		Ordinary construction		1		
		Non-combustible construction	Yes	0.8		
		Modified Fire resistive construction (2 hrs)		0.6		
Fire resistive construction (> 3 hrs)			0.6			
2	<b>Floor Area</b>					
	<b>A</b>	Building Footprint (m <sup>2</sup> )	790			
		Number of Floors/Storeys	1			
		Area of structure considered (m <sup>2</sup> )		790		
<b>F</b>	<b>Base fire flow without reductions</b>			5,000		
	<b>F = 220 C (A)<sup>0.5</sup></b>					
<b>Reductions or Surcharges</b>						
3	<b>Occupancy hazard reduction or surcharge</b>			<b>Reduction/Surcharge</b>		5,000
	<b>(1)</b>	Non-combustible		-25%	0%	
		Limited combustible		-15%		
		Combustible	Yes	0%		
		Free burning		15%		
Rapid burning			25%			
4	<b>Sprinkler Reduction</b>			<b>Reduction</b>		0
	<b>(2)</b>	Adequately Designed System (NFPA 13)	No	-30%		
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
<b>Cumulative Total</b>				<b>0%</b>		
5	<b>Exposure Surcharge (cumulative %)</b>			<b>Surcharge</b>		0
	<b>(3)</b>	North Side	> 45.1m		0%	
		East Side	> 45.1m		0%	
		South Side	30.1- 45 m		0%	
		West Side	> 45.1m		0%	
<b>Cumulative Total</b>				<b>0%</b>		
<b>Results</b>						
6	<b>(1) + (2) + (3)</b>	<b>Total Required Fire Flow, rounded to nearest 1000L/min</b>			<b>L/min</b>	<b>5,000</b>
		(2,000 L/min < Fire Flow < 45,000 L/min)			or	<b>83</b>
					or	<b>1,321</b>
7	<b>Storage Volume</b>	Required Duration of Fire Flow (hours)			Hours	1.75
		Required Volume of Fire Flow (m <sup>3</sup> )			m <sup>3</sup>	525



<b>1826 Robertson Road - Lynwood Centre Redevelopment</b>				
<b>Water Demand</b>				
	<b>Unit Area (ha)</b>	<b>Average Day Demand (L/s)</b>	<b>Maximum Day Demand (L/s)</b>	<b>Peak Hour Demand (L/s)</b>
<b>1826 Robertson Road - Entire Building</b>	0.79	0.26	0.38	0.69
<b>Total</b>	<b>0.79</b>	<b>0.26</b>	<b>0.38</b>	<b>0.69</b>
<b>Water Demand Parameters</b>				
Commercial Demand		28000.0	L/gross ha/day	
Commercial Max Day		1.5	x Avg Day	
Commercial Peak Hour		1.8	x Max Day	
<b><u>Fireflow Option 1 - Max Fire Flow</u></b>				
Best Case Scenario Commercial Unit - Part 3		<b>50.00</b>	L/s	
<b><u>Fireflow Option 2 - Max Fire Flow</u></b>				
Worst Case Scenario - No Sprinklers - Wood Frame		<b>150.00</b>	L/s	
Notes:				
1) Water demand based on City of Ottawa Design Guidelines - Water Distribution 2010				
2) Fireflows calculated as per 2020 Fire Underwriter's Survey Guidelines.				

# FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines



**Novatech Project #:** 106134  
**Project Name:** 1826 Robertson Road - Lynwood  
**Date:** 1/30/2023  
**Input By:** Steve Zorgel  
**Reviewed By:** Marc St. Pierre

Legend	Input by User
	No Information or Input Required

**Building Description:** Office Portion - 1 Firewall Separating Building into Areas < 600m<sup>2</sup> - Part 9  
**Wood frame**

Step	Input		Value Used	Total Fire Flow (L/min)		
<b>Base Fire Flow</b>						
1	<b>Construction Material</b>		<b>Multiplier</b>	1.5		
	<b>Coefficient related to type of construction</b> <b>C</b>	Wood frame	Yes		1.5	
		Ordinary construction			1	
		Non-combustible construction			0.8	
		Modified Fire resistive construction (2 hrs)			0.6	
Fire resistive construction (> 3 hrs)			0.6			
2	<b>Floor Area</b>		570	8,000		
	<b>A</b>	Building Footprint (m <sup>2</sup> )			570	
		Number of Floors/Storeys			1	
		Area of structure considered (m <sup>2</sup> )			570	
<b>F</b>	<b>Base fire flow without reductions</b>		<b>F = 220 C (A)<sup>0.5</sup></b>			
<b>Reductions or Surcharges</b>						
3	<b>Occupancy hazard reduction or surcharge</b>		<b>Reduction/Surcharge</b>	8,000		
	<b>(1)</b>	Non-combustible			-25%	
		Limited combustible			-15%	
		Combustible	Yes		0%	
		Free burning			15%	
Rapid burning			25%			
4	<b>Sprinkler Reduction</b>		<b>Reduction</b>	0		
	<b>(2)</b>	Adequately Designed System (NFPA 13)			-30%	
		Standard Water Supply			-10%	
		Fully Supervised System			-10%	
<b>Cumulative Total</b>			<b>0%</b>			
5	<b>Exposure Surcharge (cumulative %)</b>		<b>Surcharge</b>	800		
	<b>(3)</b>	North Side	> 45.1m		0%	
		East Side	2Hr Fire Wall		10%	
		South Side	30.1- 45 m		0%	
		West Side	> 45.1m		0%	
<b>Cumulative Total</b>			<b>10%</b>			
<b>Results</b>						
6	<b>(1) + (2) + (3)</b>	<b>Total Required Fire Flow, rounded to nearest 1000L/min</b>		<b>L/min</b>	<b>9,000</b>	
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	<b>L/s</b>	<b>150</b>
				or	<b>USGPM</b>	<b>2,378</b>
7	<b>Storage Volume</b>	Required Duration of Fire Flow (hours)		Hours	2	
		Required Volume of Fire Flow (m <sup>3</sup> )		m <sup>3</sup>	1080	

# FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines



**Novatech Project #:** 106134  
**Project Name:** 1826 Robertson Road - Lynwood  
**Date:** 1/30/2023  
**Input By:** Steve Zorgel  
**Reviewed By:** Marc St. Pierre

**Legend**  
Input by User  
No Information or Input Required

**Building Description:** Entire Building - Unsprinklered, No Firewall  
**Wood frame**

Step			Input		Value Used	Total Fire Flow (L/min)	
<b>Base Fire Flow</b>							
1	<b>Construction Material</b>			<b>Multiplier</b>			
	<b>Coefficient related to type of construction</b> <b>C</b>	Wood frame	Yes	1.5	1.5		
		Ordinary construction		1			
		Non-combustible construction		0.8			
		Modified Fire resistive construction (2 hrs)		0.6			
Fire resistive construction (> 3 hrs)			0.6				
2	<b>Floor Area</b>						
	<b>A</b>	Building Footprint (m <sup>2</sup> )	790		790		
		Number of Floors/Storeys	1				
		Area of structure considered (m <sup>2</sup> )					
<b>F</b>	<b>Base fire flow without reductions</b>			9,000			
<b>Reductions or Surcharges</b>							
3	<b>Occupancy hazard reduction or surcharge</b>			<b>Reduction/Surcharge</b>		9,000	
	<b>(1)</b>	Non-combustible		-25%	0%		
		Limited combustible		-15%			
		Combustible	Yes	0%			
		Free burning		15%			
Rapid burning			25%				
4	<b>Sprinkler Reduction</b>			<b>Reduction</b>		0	
	<b>(2)</b>	Adequately Designed System (NFPA 13)		-30%			
		Standard Water Supply		-10%			
		Fully Supervised System		-10%			
<b>Cumulative Total</b>				<b>0%</b>			
5	<b>Exposure Surcharge (cumulative %)</b>			<b>Surcharge</b>		0	
	<b>(3)</b>	North Side	> 45.1m		0%		
		East Side	> 45.1m		0%		
		South Side	30.1- 45 m		0%		
		West Side	> 45.1m		0%		
<b>Cumulative Total</b>				<b>0%</b>			
<b>Results</b>							
6	<b>(1) + (2) + (3)</b>	<b>Total Required Fire Flow, rounded to nearest 1000L/min</b>			<b>L/min</b>	<b>9,000</b>	
		(2,000 L/min < Fire Flow < 45,000 L/min)			or	<b>L/s</b>	<b>150</b>
					or	<b>USGPM</b>	<b>2,378</b>
7	<b>Storage Volume</b>	Required Duration of Fire Flow (hours)			Hours	2	
		Required Volume of Fire Flow (m <sup>3</sup> )			m <sup>3</sup>	1080	

# FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines



Engineers, Planners & Landscape Architects

Novatech Project #: 106134  
 Project Name: 1826 Robertson Road - Lynwood  
 Date: 1/30/2023  
 Input By: Steve Zorgel  
 Reviewed By: Marc St. Pierre

Legend	Input by User
	No Information or Input Required

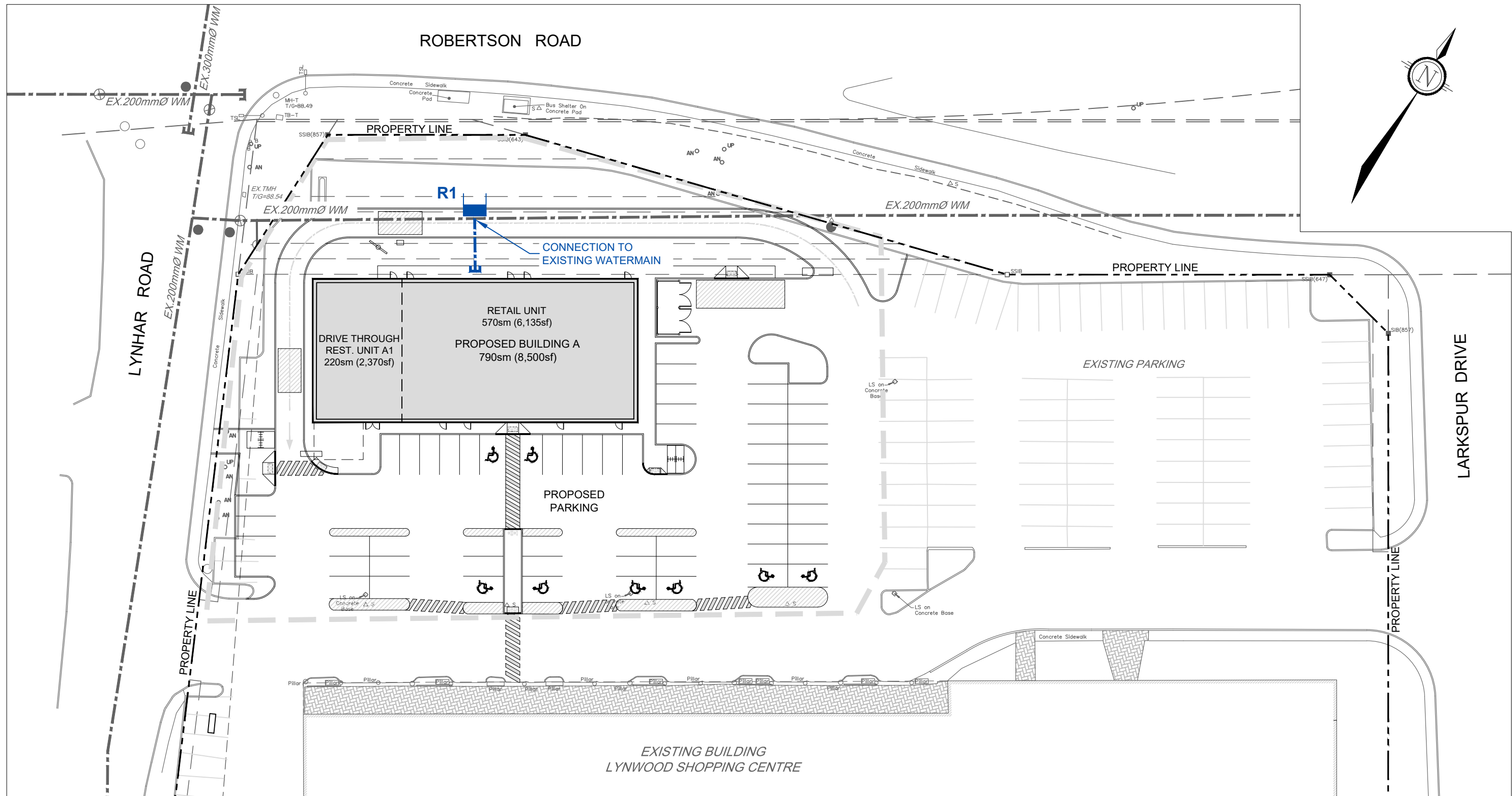
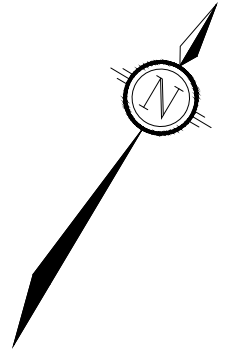
Building Description: Entire Building - Part 3 - Best Case  
 Non-combustible construction

Step	Input		Value Used	Total Fire Flow (L/min)		
<b>Base Fire Flow</b>						
1	<b>Construction Material</b>		<b>Multiplier</b>	0.8		
	<b>Coefficient related to type of construction</b> <b>C</b>	Wood frame			1.5	
		Ordinary construction			1	
		Non-combustible construction	Yes		0.8	
		Modified Fire resistive construction (2 hrs)			0.6	
Fire resistive construction (> 3 hrs)			0.6			
2	<b>Floor Area</b>			5,000		
	<b>A</b>	Building Footprint (m <sup>2</sup> )	790			
		Number of Floors/Storeys	1			
		Area of structure considered (m <sup>2</sup> )			790	
<b>F</b>	<b>Base fire flow without reductions</b>					
<b>Reductions or Surcharges</b>						
3	<b>Occupancy hazard reduction or surcharge</b>		<b>Reduction/Surcharge</b>	5,000		
	<b>(1)</b>	Non-combustible			-25%	
		Limited combustible			-15%	
		Combustible	Yes		0%	
		Free burning			15%	
Rapid burning			25%			
4	<b>Sprinkler Reduction</b>		<b>Reduction</b>	-2,500		
	<b>(2)</b>	Adequately Designed System (NFPA 13)	Yes		-30%	
		Standard Water Supply	Yes		-10%	
		Fully Supervised System	Yes		-10%	
<b>Cumulative Total</b>			<b>-50%</b>			
5	<b>Exposure Surcharge (cumulative %)</b>		<b>Surcharge</b>	0		
	<b>(3)</b>	North Side	> 45.1m		0%	
		East Side	> 45.1m		0%	
		South Side	30.1- 45 m		0%	
		West Side	> 45.1m		0%	
<b>Cumulative Total</b>			<b>0%</b>			
<b>Results</b>						
6	<b>(1) + (2) + (3)</b>	<b>Total Required Fire Flow, rounded to nearest 1000L/min</b>		<b>L/min</b>	<b>3,000</b>	
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	50
				or	USGPM	793
7	<b>Storage Volume</b>	Required Duration of Fire Flow (hours)		Hours	1.25	
		Required Volume of Fire Flow (m <sup>3</sup> )		m <sup>3</sup>	225	






ROBERTSON ROAD

LYNHAR ROAD

LARKSPUR DRIVE



**LEGEND**

-  PROPERTY LINE
-  EXTENT OF SITE PLAN CONTROL APPLICATION
-  PROPOSED WATERMAIN
-  EXISTING WATERMAIN
-  EXISTING RESERVOIR & ID NUMBER


**NOVATECH**

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CITY OF OTTAWA  
1826 ROBERTSON ROAD  
LYNHAR CENTRE REDEVELOPMENT

**BOUNDARY CONDITIONS**

1 : 500 

JAN 2023      106134      FIG-BC

## **Appendix C**

### **Stormwater Management**

**Runoff Coefficients**

Drainage Area	Total Area (m <sup>2</sup> )	Ponding Area (m <sup>2</sup> )	Hard Surface Area		Gravel Area		Grass Area		2-Year Runoff Coefficient	100-Year Runoff Coefficient
			Area (m <sup>2</sup> )	C	Area (m <sup>2</sup> )	C	Area (m <sup>2</sup> )	C		
Building										
RD1	260.0	240.0	260.0	0.90	0.0	0.70	0.0	0.20	0.90	1.00
RD2	260.0	240.0	260.0	0.90	0.0	0.70	0.0	0.20	0.90	1.00
RD3	260.0	240.0	260.0	0.90	0.0	0.70	0.0	0.20	0.90	1.00
A01	4607.0	-	3500.0	0.90	0.0	0.70	1107	0.20	0.73	0.82
<b>Total</b>	<b>5387.00</b>		<b>4280.0</b>		<b>0.0</b>		<b>1107.0</b>			

**Zurn Roof Drains**

Opening	G.P.M. Per Inch of Head	L.P.M. Per Inch (25 mm) of Head	L/s Per Metre of Head	L/s Per 0.15 m of Head
Standard - X1	5.00	22.730	14.915	2.237
Reduced - X2	3.75	17.048	11.186	1.678
Reduced - X3	2.50	11.365	7.458	1.119
Max Reduced - X4	1.25	5.683	3.729	0.559



**SAMPLE CALCULATION:**

AREA R-01

Number of notches (N) = 4  
 Head (H) = 0.068 m for 5-year event  
 Head (H) = 0.111 m for 100-year event

$$Q_{5 \text{ all}} = 11.186 \text{ L/s/m/notch} \times H \times N$$

$$Q_{5 \text{ all}} = 11.186 \text{ L/s/m/notch} \times .068 \text{ m} \times 4 \text{ notch}$$

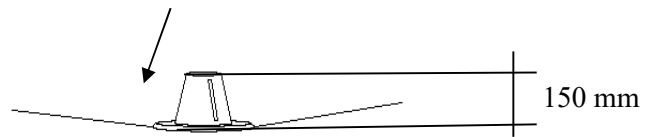
$$Q_{5 \text{ all}} = 3.06 \text{ L/s}$$

$$Q_{100 \text{ all}} = 11.186 \text{ L/s/m/notch} \times H \times N$$

$$Q_{100 \text{ all}} = 11.186 \text{ L/s/m/notch} \times .111 \text{ m} \times 4 \text{ notch}$$

$$Q_{100 \text{ all}} = 4.95 \text{ L/s}$$

No. of Notches





**Controlled Flow**

2 YR

Area No.	Area (ha)	C <sub>2yr</sub>	Time (min)	intensity mm/hr	Uncontrolled runoff L/s	Control System	Zurn Model Number	Release Rate (L/s/m of head)	Notches	Depth (m)	Controlled Flow (L/s)	Storage available (m <sup>3</sup> )	Storage used (m <sup>3</sup> )
<b>Building</b>													
<b>Roof Drains</b>													
RD1	0.0260	0.90	10.00	76.52	4.98	Zurn Roof Drain	ZCF121-1W-X2-Z-105-10-77	11.19	4	0.068	3.06	12.000	1.15
RD2	0.0260	0.90	10.00	76.52	4.98	Zurn Roof Drain	ZCF121-1W-X2-Z-105-10-77	11.19	4	0.068	3.06	12.000	1.15
RD3	0.0260	0.90	10.00	76.52	4.98	Zurn Roof Drain	ZCF121-1W-X2-Z-105-10-77	11.19	4	0.068	3.06	12.000	1.15
<b>Roof Subtotal:</b>	<b>0.08</b>				<b>14.93</b>						<b>9.19</b>	<b>36.00</b>	<b>3.45</b>
<b>Parking Lot</b>													
A01	0.4607	0.73	10.00	76.52	71.71	No Control							
<b>Parking Lot Subtotal</b>	<b>0.46</b>				<b>71.71</b>								
<b>Total Roof+Parking Lot:</b>	<b>0.54</b>				<b>86.65</b>								

100 YR

Area ID	Area (ha)	C <sub>100yr</sub>	Time (min)	intensity mm/hr	Uncontrolled runoff L/s	Control System	Zurn Model Number	Release Rate (L/s/m of head)	Notches	Depth (m)	Controlled Flow (L/s)	Storage available (m <sup>3</sup> )	Storage used (m <sup>3</sup> )
<b>Building</b>													
<b>Roof Drains</b>													
RD1	0.0260	1.00	10.00	178.56	12.91	Zurn Roof Drain	ZCF121-1W-X2-Z-105-10-77	11.19	4	0.111	4.95	12.000	4.84
RD2	0.0260	1.00	10.00	178.56	12.91	Zurn Roof Drain	ZCF121-1W-X2-Z-105-10-77	11.19	4	0.111	4.95	12.000	4.84
RD3	0.0260	1.00	10.00	178.56	12.91	Zurn Roof Drain	ZCF121-1W-X2-Z-105-10-77	11.19	4	0.111	4.95	12.000	4.84
<b>Roof Subtotal:</b>	<b>0.08</b>				<b>38.72</b>						<b>14.86</b>	<b>36.00</b>	<b>14.51</b>
<b>Parking Lot</b>													
A01	0.4607	0.82	10.00	178.56	187.48	No Control							
<b>Parking Lot Subtotal:</b>	<b>0.46</b>				<b>187.48</b>								
<b>Total Roof+ Parking Lot:</b>	<b>0.54</b>				<b>226.19</b>								

**Summary Table**

Area ID	Area (ha)	Runoff		Storage available (m <sup>3</sup> )	Storage used	
		2 year event L/s	100 year L/s		2 year event (m <sup>3</sup> )	100 year event (m <sup>3</sup> )
Controlled						
Roof	0.078	9.19	<b>14.86</b>	36.00	3.45	14.51
Uncontrolled						
A01	0.46	71.71	187.48	-	-	-
Total	0.54	80.91	202.34	36.00	3.45	14.51

**Allowable release rate - For Roof Area Only**

Area	0.079 ha
C	0.90
tc	10 min
i <sub>2</sub>	76.52
Q allowable = 2.78 x C x i x A	
	<b>15.12</b> L/s

As per pre-consultation notes, the building roof is to control and store up to and including the 100-year event. The release rate for the 100-year event will not exceed the 2-year releaserate (15.12L/s).

**Pre-Development release rate - Site Boundary - For Information Only**

Area	0.540 ha
C	0.86
tc	10 min
i <sub>2</sub>	76.52
i <sub>100</sub>	178.56
Q <sub>2yr</sub> allowable = 2.78 x C x i x A	
	<b>98.79</b> L/s
Q <sub>100yr</sub> allowable = 2.78 x C x i x A	
	<b>257.33</b> L/s

REQUIRED STORAGE - 2-YEAR EVENT				
AREA R-1 : BUILDING ROOF				
OTTAWA IDF CURVE				
Area =	0.026	ha	Qallow =	3.06
C =	0.90		Vol(max) =	1.15
			Notches =	4
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m <sup>3</sup> )
5	103.68	6.74	3.68	1.11
10	76.52	4.98	1.92	1.15
15	61.36	3.99	0.93	0.84
20	51.59	3.36	0.30	0.36
25	44.72	2.91	-0.15	-0.23
30	39.60	2.58	-0.48	-0.87
35	35.63	2.32	-0.74	-1.56
40	32.45	2.11	-0.95	-2.28
45	29.84	1.94	-1.12	-3.02
50	27.65	1.80	-1.26	-3.78
55	25.79	1.68	-1.38	-4.56
60	24.19	1.57	-1.49	-5.35
65	22.80	1.48	-1.58	-6.15
70	21.57	1.40	-1.66	-6.96
75	20.48	1.33	-1.73	-7.77
80	19.51	1.27	-1.79	-8.60
85	18.63	1.21	-1.85	-9.43
90	17.84	1.16	-1.90	-10.26

Notes: Vol = Qnet x time  
Qnet = Q - Qallow

Ponding Depth (2-Year Storm)		
Area m <sup>2</sup>	V m <sup>3</sup>	H m
0	0.00	0.00
1	0.00	0.01
4	0.03	0.02
10	0.10	0.03
17	0.23	0.04
27	0.44	0.05
38	0.77	0.06
52	1.22	0.07
68	1.82	0.08
86	2.59	0.09
107	3.56	0.10
129	4.73	0.11
154	6.14	0.12
180	7.81	0.13
209	9.76	0.14
<b>240</b>	<b>12.00</b>	<b>0.15</b>

Linear Interpolation				
0.07	H	0.06	H =	0.068 m
1.22	1.15	0.77	Qallow =	3.06 L/s

Note: Qallow is the flow rate through an overcontrolled Zurn Roof Drain (11.19 L/s/m of head.)

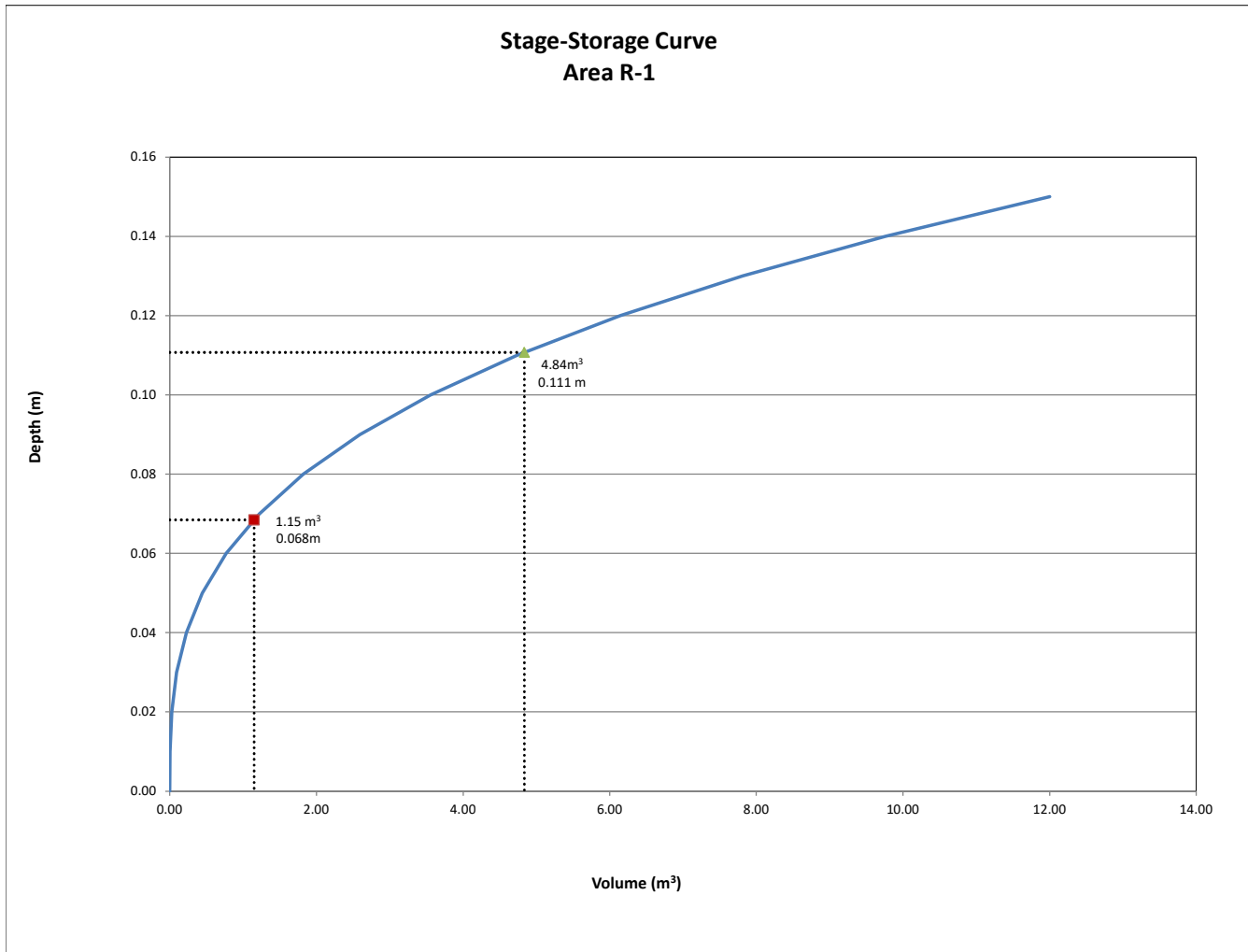
REQUIRED STORAGE - 100-YEAR EVENT				
AREA R-1 : BUILDING ROOF				
OTTAWA IDF CURVE				
Area =	0.026	ha	Qallow =	4.95
C =	1.00		Vol(max) =	4.84
			Notches =	4
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m <sup>3</sup> )
5	242.70	17.54	12.59	3.78
10	178.56	12.91	7.95	4.77
15	142.89	10.33	5.37	4.84
20	119.95	8.67	3.72	4.46
25	103.85	7.51	2.55	3.83
30	91.87	6.64	1.69	3.03
35	82.58	5.97	1.01	2.13
40	75.15	5.43	0.48	1.14
45	69.05	4.99	0.04	0.10
50	63.95	4.62	-0.33	-1.00
55	59.62	4.31	-0.64	-2.13
60	55.89	4.04	-0.91	-3.29
65	52.65	3.81	-1.15	-4.48
70	49.79	3.60	-1.36	-5.69
75	47.26	3.42	-1.54	-6.92
80	44.99	3.25	-1.70	-8.17
85	42.95	3.10	-1.85	-9.43
90	41.11	2.97	-1.98	-10.71

Notes: Vol = Qnet x time  
Qnet = Q - Qallow

Ponding Depth (100-Year Storm)		
Area m <sup>2</sup>	V m <sup>3</sup>	H m
0	0.00	0.00
1	0.00	0.01
4	0.03	0.02
10	0.10	0.03
17	0.23	0.04
27	0.44	0.05
38	0.77	0.06
52	1.22	0.07
68	1.82	0.08
86	2.59	0.09
107	3.56	0.10
129	4.73	0.11
154	6.14	0.12
180	7.81	0.13
209	9.76	0.14
<b>240</b>	<b>12.00</b>	<b>0.15</b>

Linear Interpolation				
0.12	H	0.11	H =	0.111 m
6.14	4.84	4.73	Qallow =	4.95 L/s

Note: Qallow is the flow rate through an overcontrolled Zurn Roof Drain (11.19 L/s/m of head.)



REQUIRED STORAGE - 2-YEAR EVENT				
AREA R-2 : BUILDING ROOF				
OTTAWA IDF CURVE				
Area =	0.026	ha	Qallow =	3.06
C =	0.90		Vol(max) =	1.15
			Notches =	4
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m <sup>3</sup> )
5	103.68	6.74	3.68	1.11
10	76.52	4.98	1.92	1.15
15	61.36	3.99	0.93	0.84
20	51.59	3.36	0.30	0.36
25	44.72	2.91	-0.15	-0.23
30	39.60	2.58	-0.48	-0.87
35	35.63	2.32	-0.74	-1.56
40	32.45	2.11	-0.95	-2.28
45	29.84	1.94	-1.12	-3.02
50	27.65	1.80	-1.26	-3.78
55	25.79	1.68	-1.38	-4.56
60	24.19	1.57	-1.49	-5.35
65	22.80	1.48	-1.58	-6.15
70	21.57	1.40	-1.66	-6.96
75	20.48	1.33	-1.73	-7.77
80	19.51	1.27	-1.79	-8.60
85	18.63	1.21	-1.85	-9.43
90	17.84	1.16	-1.90	-10.26

Notes: Vol = Qnet x time  
Qnet = Q - Qallow

Ponding Depth (2-Year Storm)		
Area m <sup>2</sup>	V m <sup>3</sup>	H m
0	0.00	0.00
1	0.00	0.01
4	0.03	0.02
10	0.10	0.03
17	0.23	0.04
27	0.44	0.05
38	0.77	0.06
52	1.22	0.07
68	1.82	0.08
86	2.59	0.09
107	3.56	0.10
129	4.73	0.11
154	6.14	0.12
180	7.81	0.13
209	9.76	0.14
<b>240</b>	<b>12.00</b>	<b>0.15</b>

Linear Interpolation				
0.07	H	0.06	H =	0.068 m
1.22	1.15	0.77	Qallow =	3.06 L/s

Note: Qallow is the flow rate through an overcontrolled Zurn Roof Drain (11.19 L/s/m of head.)

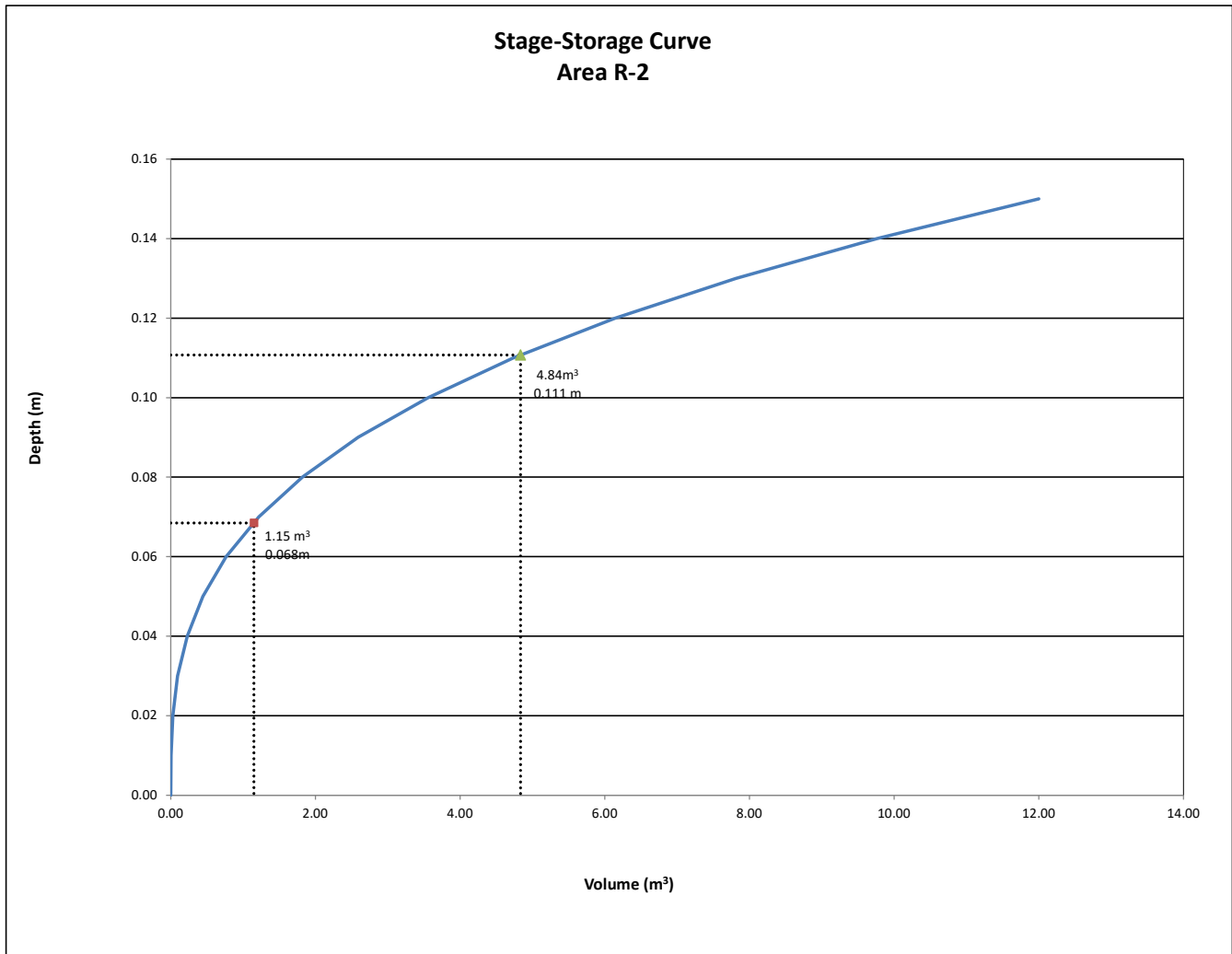
REQUIRED STORAGE - 100-YEAR EVENT				
AREA R-2 : BUILDING ROOF				
OTTAWA IDF CURVE				
Area =	0.026	ha	Qallow =	4.95
C =	1.00		Vol(max) =	4.84
			Notches =	4
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m <sup>3</sup> )
5	242.70	17.54	12.59	3.78
10	178.56	12.91	7.95	4.77
15	142.89	10.33	5.37	4.84
20	119.95	8.67	3.72	4.46
25	103.85	7.51	2.55	3.83
30	91.87	6.64	1.69	3.03
35	82.58	5.97	1.01	2.13
40	75.15	5.43	0.48	1.14
45	69.05	4.99	0.04	0.10
50	63.95	4.62	-0.33	-1.00
55	59.62	4.31	-0.64	-2.13
60	55.89	4.04	-0.91	-3.29
65	52.65	3.81	-1.15	-4.48
70	49.79	3.60	-1.36	-5.69
75	47.26	3.42	-1.54	-6.92
80	44.99	3.25	-1.70	-8.17
85	42.95	3.10	-1.85	-9.43
90	41.11	2.97	-1.98	-10.71

Notes: Vol = Qnet x time  
Qnet = Q - Qallow

Ponding Depth (100-Year Storm)		
Area m <sup>2</sup>	V m <sup>3</sup>	H m
0	0.00	0.00
1	0.00	0.01
4	0.03	0.02
10	0.10	0.03
17	0.23	0.04
27	0.44	0.05
38	0.77	0.06
52	1.22	0.07
68	1.82	0.08
86	2.59	0.09
107	3.56	0.10
129	4.73	0.11
154	6.14	0.12
180	7.81	0.13
209	9.76	0.14
<b>240</b>	<b>12.00</b>	<b>0.15</b>

Linear Interpolation				
0.12	H	0.11	H =	0.111 m
6.14	4.84	4.73	Qallow =	4.95 L/s

Note: Qallow is the flow rate through an overcontrolled Zurn Roof Drain (11.19 L/s/m of head.)



REQUIRED STORAGE - 2-YEAR EVENT				
AREA R-3 : BUILDING ROOF				
OTTAWA IDF CURVE				
Area =	0.026	ha	Qallow =	3.06
C =	0.90		Vol(max) =	1.15
			Notches =	4
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m <sup>3</sup> )
5	103.68	6.74	3.68	1.10
10	76.52	4.98	1.91	1.15
15	61.36	3.99	0.93	0.83
20	51.59	3.36	0.29	0.35
25	44.72	2.91	-0.16	-0.23
30	39.60	2.58	-0.49	-0.88
35	35.63	2.32	-0.75	-1.57
40	32.45	2.11	-0.95	-2.29
45	29.84	1.94	-1.12	-3.03
50	27.65	1.80	-1.27	-3.80
55	25.79	1.68	-1.39	-4.58
60	24.19	1.57	-1.49	-5.37
65	22.80	1.48	-1.58	-6.17
70	21.57	1.40	-1.66	-6.98
75	20.48	1.33	-1.73	-7.79
80	19.51	1.27	-1.80	-8.62
85	18.63	1.21	-1.85	-9.45
90	17.84	1.16	-1.90	-10.28

Notes: Vol = Qnet x time  
Qnet = Q - Qallow

Ponding Depth (2-Year Storm)		
Area m <sup>2</sup>	V m <sup>3</sup>	H m
0	0.00	0.00
1	0.00	0.01
4	0.03	0.02
10	0.10	0.03
17	0.23	0.04
27	0.44	0.05
38	0.77	0.06
52	1.22	0.07
68	1.82	0.08
86	2.59	0.09
107	3.56	0.10
129	4.73	0.11
154	6.14	0.12
180	7.81	0.13
209	9.76	0.14
<b>240</b>	<b>12.00</b>	<b>0.15</b>

Linear Interpolation				
0.07	H	0.06	H =	0.068 m
1.22	1.15	0.77	Qallow =	3.06 L/s

Note: Qallow is the flow rate through an overcontrolled Zurn Roof Drain (11.19 L/s/m of head.)

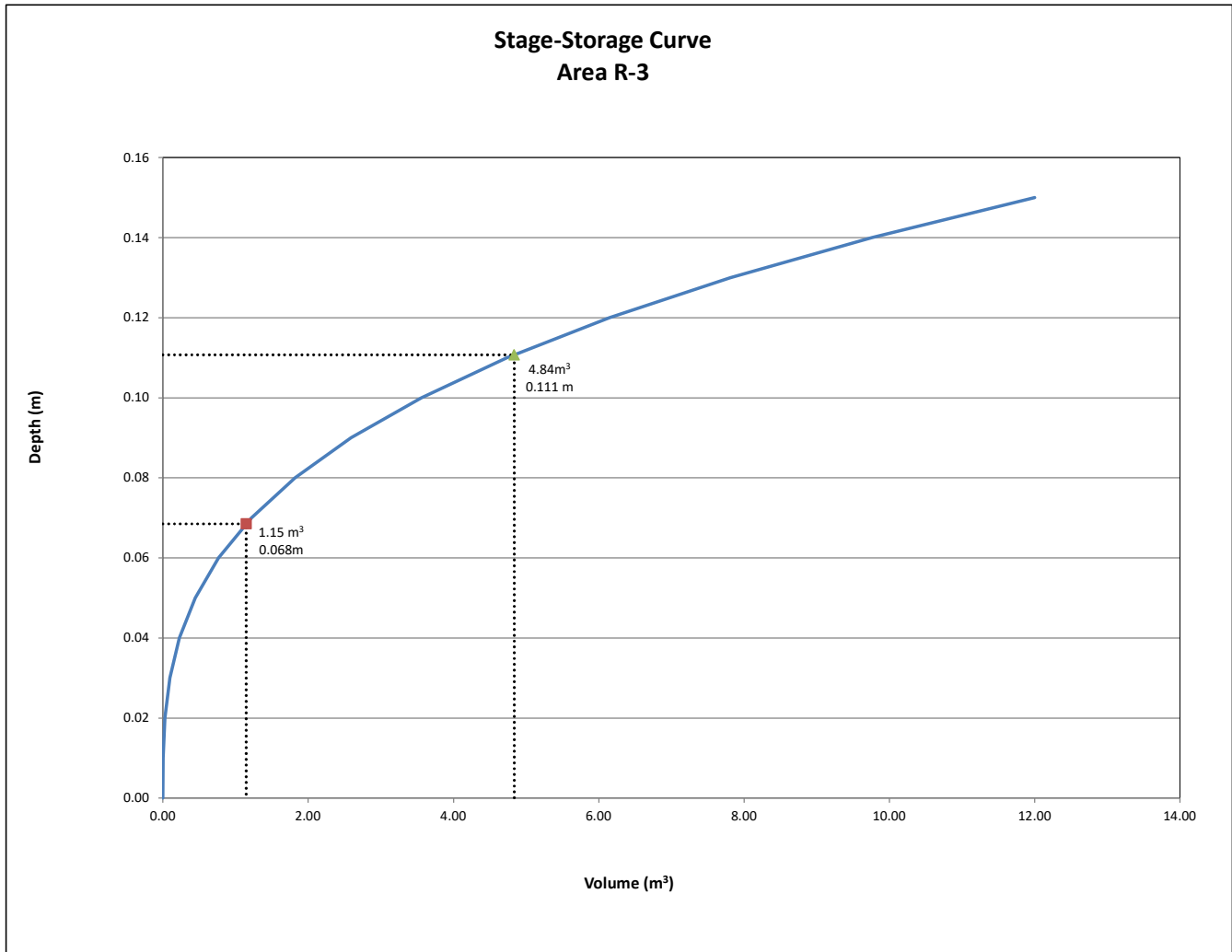
REQUIRED STORAGE - 100-YEAR EVENT				
AREA R-3 : BUILDING ROOF				
OTTAWA IDF CURVE				
Area =	0.026	ha	Qallow =	4.95
C =	1.00		Vol(max) =	4.84
			Notches =	4
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m <sup>3</sup> )
5	242.70	17.54	12.59	3.78
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35	82.58	5.97	1.01	2.13
40	75.15	5.43	0.48	1.14
45	69.05	4.99	0.04	0.10
50	63.95	4.62	-0.33	-1.00
55	59.62	4.31	-0.64	-2.13
60	55.89	4.04	-0.91	-3.29
65	52.65	3.81	-1.15	-4.48
70	49.79	3.60	-1.36	-5.69
75	47.26	3.42	-1.54	-6.92
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85	42.95	3.10	-1.85	-9.43
90	41.11	2.97	-1.98	-10.71

Notes: Vol = Qnet x time  
Qnet = Q - Qallow

Ponding Depth (100-Year Storm)		
Area m <sup>2</sup>	V m <sup>3</sup>	H m
0	0.00	0.00
1	0.00	0.01
4	0.03	0.02
10	0.10	0.03
17	0.23	0.04
27	0.44	0.05
38	0.77	0.06
52	1.22	0.07
68	1.82	0.08
86	2.59	0.09
107	3.56	0.10
129	4.73	0.11
154	6.14	0.12
180	7.81	0.13
209	9.76	0.14
<b>240</b>	<b>12.00</b>	<b>0.15</b>

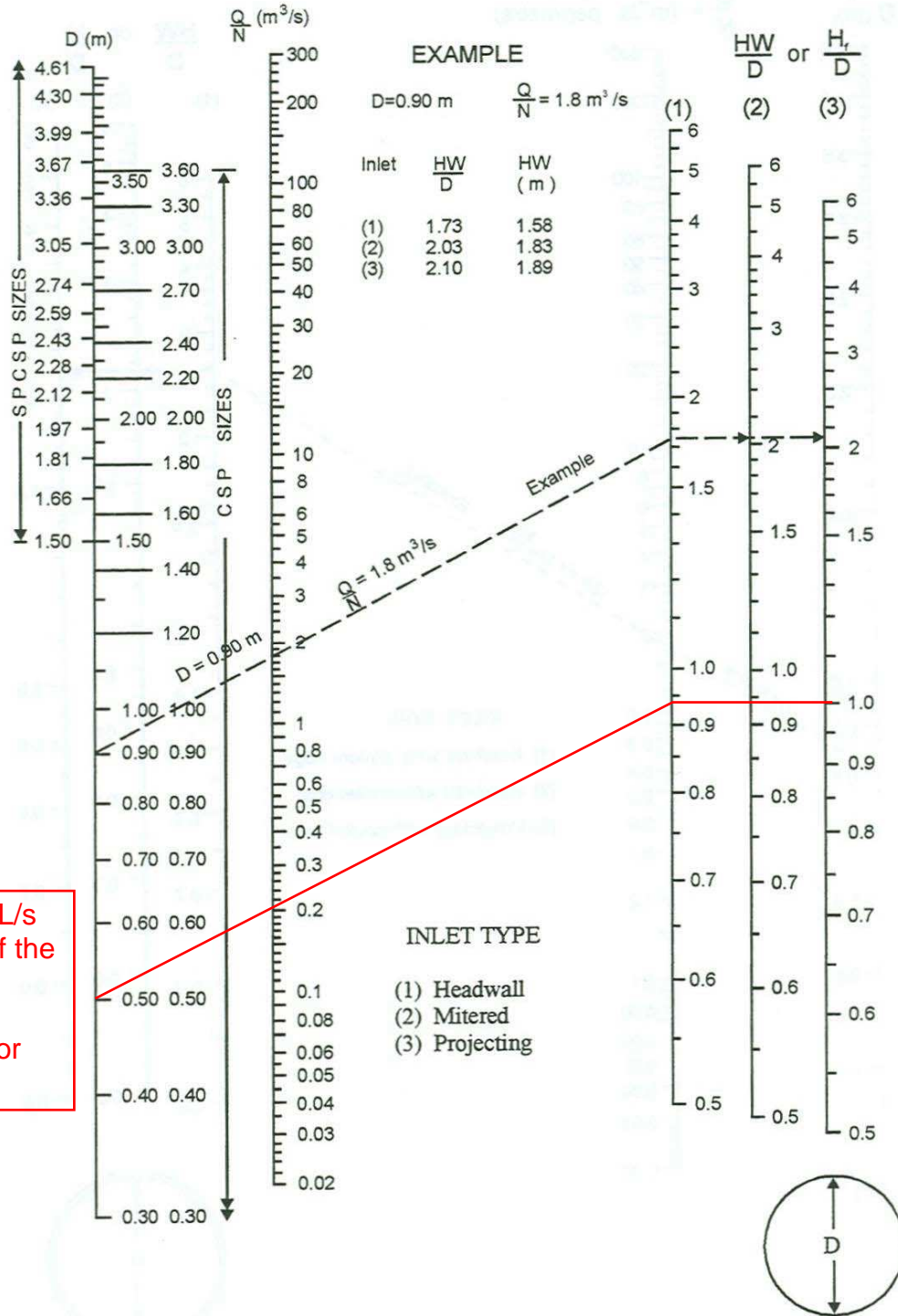
Linear Interpolation				
0.12	H	0.11	H =	0.111 m
6.14	4.84	4.73	Qallow =	4.95 L/s

Note: Qallow is the flow rate through an overcontrolled Zurn Roof Drain (11.19 L/s/m of head.)





**Design Chart 2.32: Inlet Control: Circular CSP and SPCSP Culverts**

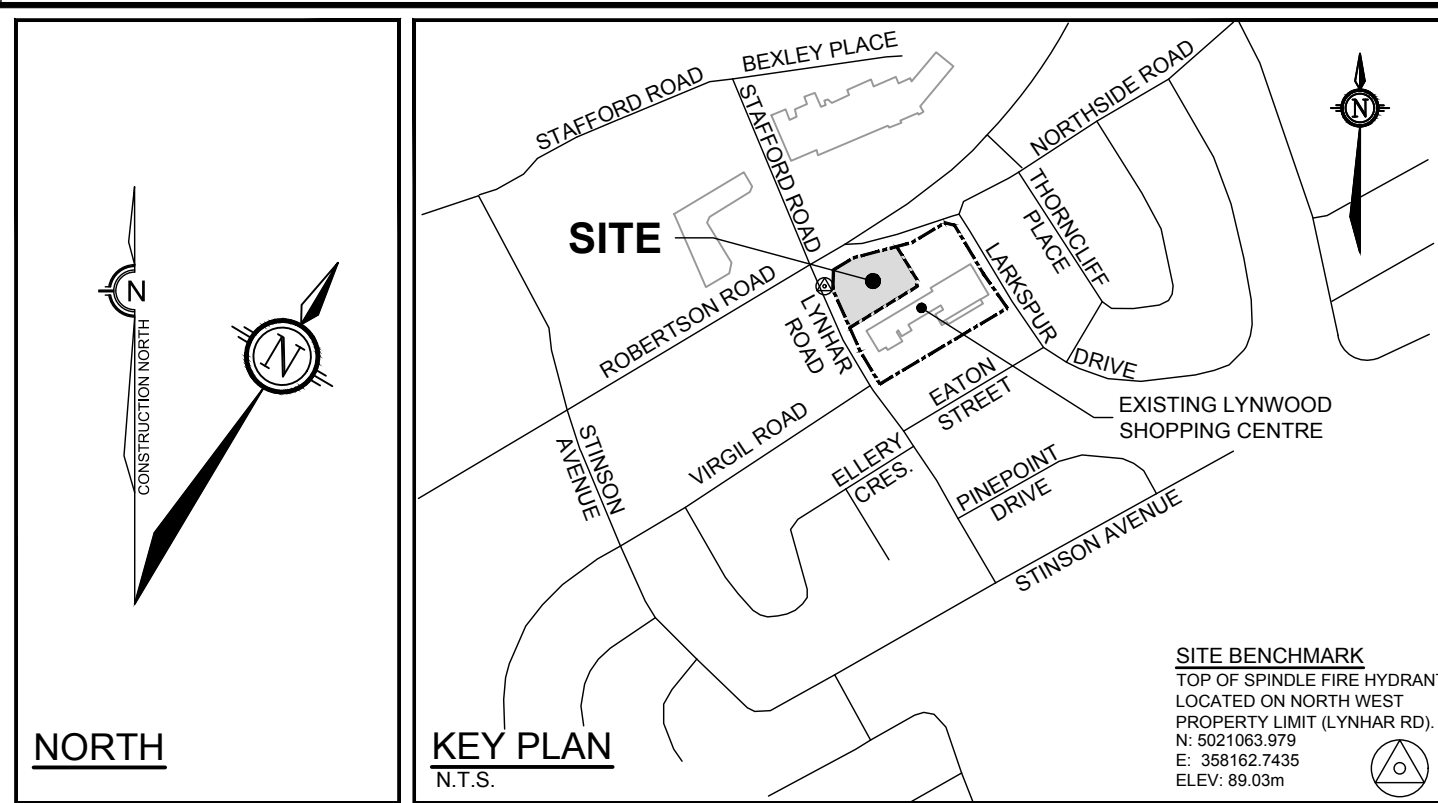


Source: Herr (1977)

## **Appendix D Drawings**

ROOF DRAIN TABLE								
AREA ID	ZURN SPECIFICATION	NOTCHES	POST DEVELOPMENT ZURN ROOF DRAIN CONTROL PARAMETERS					
			12 - YEAR EVENT		1:100 - YEAR EVENT			
			HEAD(m)	Q(m³/s)	HEAD(m)	Q(m³/s)		
RD1	ZCF121-1W-X2-2-105-10-77	4	0.068	3.06	1.15	0.111	4.95	4.84
RD2	ZCF121-1W-X2-2-105-10-77	4	0.068	3.06	1.15	0.111	4.95	4.84
RD3	ZCF121-1W-X2-2-105-10-77	4	0.068	3.06	1.15	0.111	4.95	4.84
ROOF SUBTOTAL			0.068	9.19	3.45	0.111	14.86	14.51

WATERMAIN TABLE - LYNWOOD RETAIL PLAZA			
150mmØ WATER SERVICE (MIN COVER = 2.4m)			
STATION	SURFACE ELEVATION	TOP OF WM ELEVATION	DESCRIPTION
0+000	87.55	85.15	CONNECTION TO EXISTING 200mmØ WATERMAIN
0+015	87.63	85.23	CROSSING OVER EXISTING 375mmØ SAN SEWER PROVIDE 0.25m CLEARANCE AS PER W25.2 EX SAN INV. @ CROSSING = 88.69 EX SAN OBV. @ CROSSING = 85.07
0+025	87.71	85.31	45° BEND
0+041	87.83	85.43	VALVE & VALVE BOX
0+054	87.91	85.51	22.5° BEND
0+10	87.93	85.53	
0+15	88.05	85.64	
0+19.1	88.33	85.93	22.5° BEND
0+21.4	88.40	86.00	WM CAP 1.0m OFF BUILDING FACE

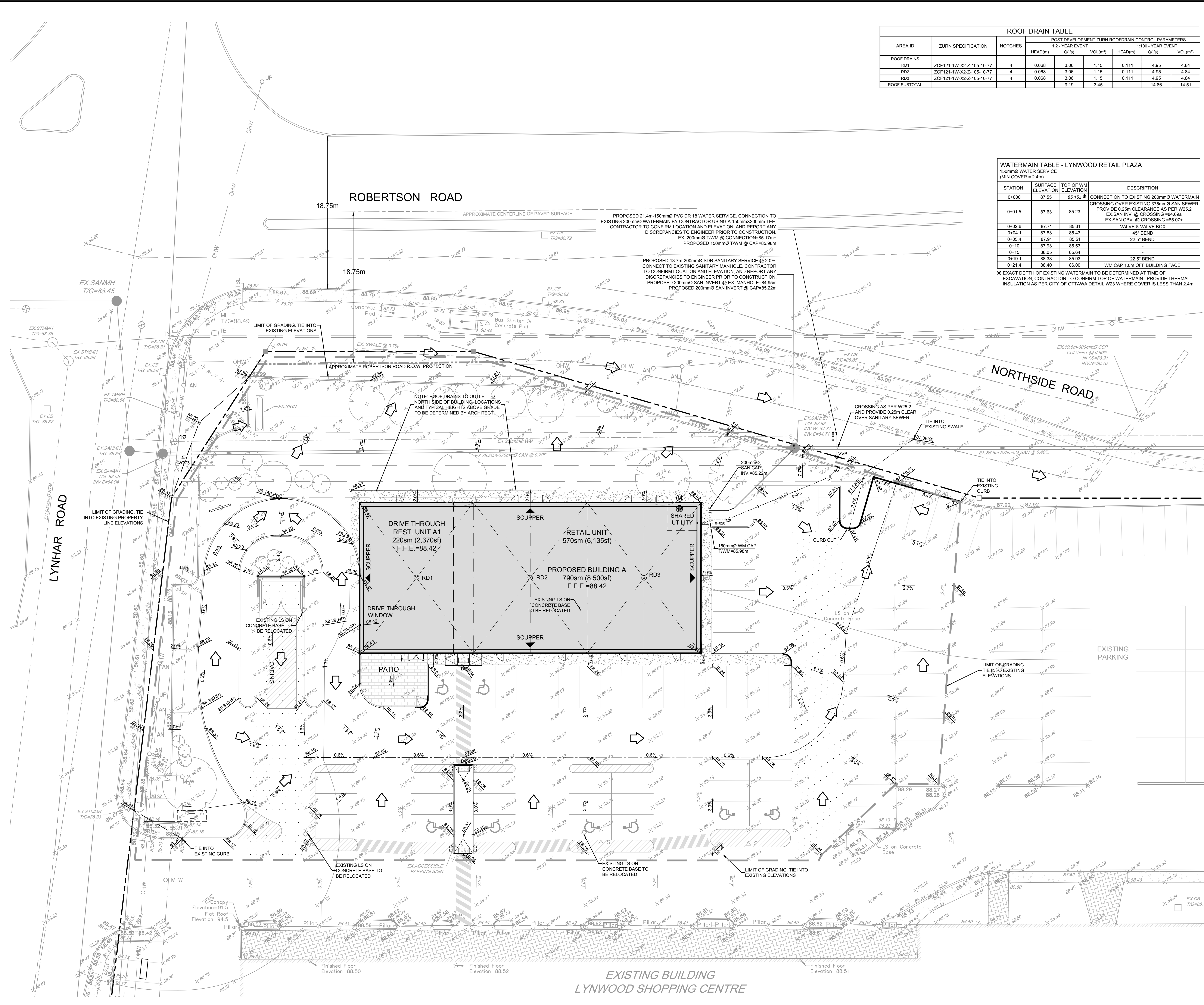


**LEGEND**

- SITE BOUNDARY
- LIMIT OF SITE PLAN CONTROL APPLICATION
- LIMIT OF ROBERTSON ROAD R.O.W. PROTECTION
- PROPOSED ELEVATION
- EXISTING ELEVATION
- PROPOSED FINISHED FLOOR ELEVATION
- PROPOSED GRADE AND DIRECTION
- EXISTING GRADE AND DIRECTION
- EXISTING TOPOGRAPHIC SURVEY ELEVATION
- EXISTING SURVEY TOP OF CURB ELEVATION
- PROPOSED LIMIT OF GRADING
- PROPOSED SANITARY SERVICE CW CAP
- PROPOSED WATER SANITARY SERVICE CW CAP
- PROPOSED VALVE & VALVE BOX LOCATION
- PROPOSED BIKE STALL & AISLE (REFER TO LANDSCAPE PLANS)
- EXISTING CONCRETE
- PROPOSED CONCRETE
- PROPOSED PAVERS (REFER TO LANDSCAPE PLANS)
- PROPOSED TREE LOCATION
- OVERLAND DRAINAGE DIRECTION

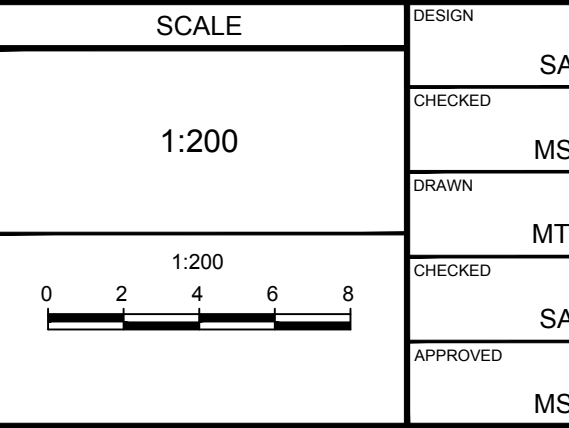
**PAVEMENT STRUCTURE:**  
REFER TO GEOTECHNICAL REPORT FOR SUBSURFACE CONDITIONS AND CONSTRUCTION RECOMMENDATIONS

- CAR ONLY PARKING AREAS: 50mm HL3 OR SUPERPAVE 12.5 / 150mm GRAN 'A'
- ACCESS LANES AND HEAVY DUTY TRUCK PARKING: 40mm HL3 OR SUPERPAVE 12.5 / 50mm HL8 OR SUPERPAVE 19.0 / 150mm GRAN 'A'
- 450mm GRAN 'B' TYPE II
- \*GRANULAR BASE TO BE COMPACTED TO 99% STANDARD PROCTOR DRY DENSITY.

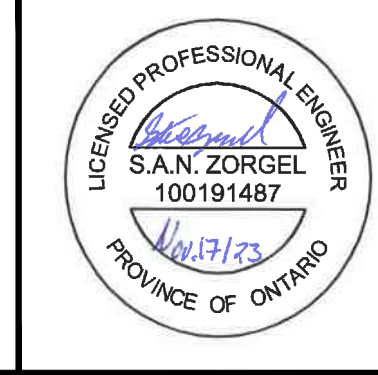


**PRELIMINARY  
NOT FOR  
CONSTRUCTION**

No.	REVISION	DATE	BY
6	REVISED AS PER CITY OF OTTAWA COMMENTS	NOV 17/23	SAZ
5	ISSUED FOR COORDINATION	OCT 25/23	SAZ
4	ISSUED FOR COORDINATION	OCT 16/23	SAZ
3	REVISED SITE PLAN	OCT 12/23	SAZ
2	ISSUED WITH SITE PLAN APPLICATION	MAR 3/23	SAZ
1	ISSUED FOR COORDINATION	FEB 24/23	SAZ



FOR REVIEW ONLY	
CHECKED	SAZ
DRAWN	MSP
CHECKED	MTM
APPROVED	SAZ
	MSP



**NOVATECH**  
Engineers, Planners & Landscape Architects  
Suite 200, 240 Michael Cowpland Drive  
Ottawa, Ontario, Canada K2M 1P6  
Telephone: (613) 254-9643  
Facsimile: (613) 254-5867  
Website: www.novatech-eng.com

CITY OF OTTAWA  
1826 ROBERTSON ROAD  
LYNWOOD RETAIL PLAZA

DRAWING NAME  
**GRADING & SERVICING PLAN**

PROJECT No.: 106134-00  
REV # 6  
DRAWING No.: 106134-GS

C:\000\106134-00\Drawings\106134-GS.dwg, QS-31, 10/17/2023, 10:48am, aarchib

D07-12-23-002

PLANS/21016

#XXXXX

**GENERAL NOTES:**

- COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
- DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
- OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
- BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR \$5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED.
- RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
- REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
- ALL ELEVATIONS ARE GEODETIC.
- REFER TO ARCHITECTS AND LANDSCAPE ARCHITECTS DRAWINGS FOR BUILDING AND HARDSURFACE AREAS AND DIMENSIONS.
- REFER TO SERVICING DESIGN BRIEF PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
- SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
- PROVIDE LINE/PARKING PAINTING.
- CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GRADING PLAN INDICATING THE AS-BUILT ELEVATION OF EVERY DESIGN GRADE SHOWN ON THIS PLAN.
- REFER TO GEOTECHNICAL REPORT (PG6426-1 DATED NOV 9, 2022, BY PATERSON GROUP) FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
- ALL MATERIALS AND CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS AND ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS. ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS WILL APPLY WHERE NO CITY STANDARDS ARE AVAILABLE.
- ALL PRIVATE APPROACHES MUST BE CONSTRUCTED AS PER CITY SPECIFICATION SC13.

**GRADING NOTES:**

- ALL TOPSOIL, ORGANIC OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED PAVED AREAS.
- EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE PROOF ROLLED WITH A LARGE STEEL DRUM ROLLER AND INSPECTED BY THE GEOTECHNICAL CONSULTANT.
- ANY SOFT AREAS EVIDENT FROM THE PROOF ROLLING SHOULD BE SUBEXCAVATED AND REPLACED WITH SUITABLE MATERIAL THAT IS FROST COMPATIBLE WITH THE EXISTING SOILS.
- THE GRANULAR BASE SHOULD BE COMPACTED TO AT LEAST 100% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE. ANY ADDITIONAL GRANULAR FILL USED BELOW THE PROPOSED PAVEMENT SHOULD BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE.
- GRADE AND/OR FILL BEHIND PROPOSED CURBS AND BETWEEN BUILDINGS AND CURBS, WHERE REQUIRED TO PROVIDE POSITIVE DRAINAGE.
- MINIMUM OF 2% GRADE FOR ALL GRASS AREAS UNLESS OTHERWISE NOTED.
- ALL GRADES BY CURBS ARE EDGE OF PAVEMENT GRADES UNLESS OTHERWISE INDICATED.
- ALL CURBS SHALL BE BARRIER CURBS (150mm) UNLESS OTHERWISE NOTED AND CONSTRUCTED AS PER CITY OF OTTAWA STANDARDS (SC1.1).
- REFER TO LANDSCAPE PLAN FOR PLANTING AND OTHER LANDSCAPE FEATURE DETAILS.

**PAVEMENT STRUCTURE NOTES**

- SUBGRADE MATERIAL SHALL BE PLACED IN MAXIMUM 300mm LIFTS AND COMPACTED TO AT LEAST 98% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY.
- ROADWAY GRANULAR MATERIAL SHALL BE PLACED IN MAXIMUM 300mm LIFTS AND COMPACTED TO AT LEAST 100% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY.
- ASPHALTIC CONCRETE TO BE COMPACTED TO AT LEAST 97% OF MARSHALL DENSITY.
- ROADWAY SUBGRADE TO BE INSPECTED BY THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION TO REVIEW THE GRANULAR B' DEPTH AND FOR THE NECESSITY OF A WOVEN GEOTEXTILE BELOW THE GRANULAR MATERIALS.
- PRIOR TO THE PLACEMENT OF TOPLIFT, CONTRACTOR IS TO ADJUST ALL STRUCTURES AS PER CITY OF OTTAWA STANDARD R-2.

**PAVEMENT STRUCTURE:**

REFER TO GEOTECHNICAL REPORT FOR SUBSURFACE CONDITIONS AND CONSTRUCTION RECOMMENDATIONS

- CAR ONLY PARKING AREAS  
50mm HL3 OR SUPERPAVE 12.5  
150mm GRAN 'A'  
300mm GRAN 'B' TYPE II
- ACCESS LANES AND HEAVY DUTY TRUCK PARKING  
40mm HL3 OR SUPERPAVE 12.5  
50mm HL3 OR SUPERPAVE 19.0  
150mm GRAN 'A'  
450mm GRAN 'B' TYPE II
- GRANULAR BASE TO BE COMPACTED TO 99% STANDARD PROCTOR DRY DENSITY.

**SERVICING NOTES:**

- COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
- DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
- OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
- BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR \$5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED.
- RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
- REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
- ALL ELEVATIONS ARE GEODETIC.
- REFER TO ARCHITECTS AND LANDSCAPE ARCHITECTS DRAWINGS FOR BUILDING AND HARDSURFACE AREAS AND DIMENSIONS.
- REFER TO SERVICING DESIGN BRIEF PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
- SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
- PROVIDE LINE/PARKING PAINTING.
- CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GRADING PLAN INDICATING THE AS-BUILT ELEVATION OF EVERY DESIGN GRADE SHOWN ON THIS PLAN.
- ALL MATERIALS AND CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS AND ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS. ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS WILL APPLY WHERE NO CITY STANDARDS ARE AVAILABLE.
- ALL PRIVATE APPROACHES MUST BE CONSTRUCTED AS PER CITY SPECIFICATION SC13.

**SEWER NOTES:**

- SPECIFICATIONS:
 

ITEM	SPEC. No.	REFERENCE
SEWER SERVICE CONNECTION - RIGID PIPE	S11, S11.1	CITY OF OTTAWA
SEWER TRENCH - BEDDING (GRANULAR A)	S6, S7, W17	CITY OF OTTAWA / OPSD
SEWER TRENCH - COVER (GRANULAR A OR GRANULAR B TYPE I, WITH MAXIMUM PARTICLE SIZE=25mm)	S6, S7, W17	CITY OF OTTAWA / OPSD
SANITARY SEWER - PVC DR 35		
WASTEWATER SAMPLING/INSPECTION CHAMBER	S18.1	CITY OF OTTAWA
- INSULATE ALL PIPES (SANITARY) THAT HAVE LESS THAN 2.0m COVER FROM STORM AND 2.5m FOR SANITARY SEWER WITH 50mmX1200mm HI-40 INSULATION. PROVIDE 150mm CLEARANCE BETWEEN PIPE AND INSULATION.
- SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM FACE OF BUILDING AT A MINIMUM SLOPE OF 2.0%.
- PIPE BEDDING, COVER AND BACKFILL ARE TO BE COMPACTED TO AT LEAST 96% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. THE USE OF CLEAR CRUSHED STONE AS A BEDDING LAYER SHALL NOT BE PERMITTED.
- FLEXIBLE CONNECTIONS ARE REQUIRED FOR CONNECTING PIPES TO MANHOLES (FOR EXAMPLE KOR-N-SEAL, PSX POSITIVE SEAL AND DURASEAL). THE CONCRETE CRADLE FOR THE PIPE CAN BE ELIMINATED.
- THE OWNER SHALL REQUIRE THAT THE SITE SERVICING CONTRACTOR PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.07.16, 410.07.18.04 AND 407.07.24. DYE TESTING IS TO BE COMPLETED ON ALL SANITARY SERVICES TO CONFIRM PROPER CONNECTION TO THE SANITARY SEWER MAIN. THE FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF A CERTIFIED PROFESSIONAL ENGINEER WHO SHALL SUBMIT A CERTIFIED COPY OF THE TEST RESULTS.
- FULL PORT BACKWATER VALVES ARE REQUIRED ON THE SANITARY SERVICES. INSTALLED AS PER THE MANUFACTURERS RECOMMENDATIONS AND A BACKWATER VALVE IS REQUIRED ON THE STORM SERVICES / FOUNDATION DRAINS FOR EACH BUILDING. INSTALLED AS PER STD. DWG S14.
- CONTRACTOR TO TELEVIEW (CCTV) ALL PROPOSED SEWERS/LATERALS.
- REINSTATE ALL EXISTING PAVEMENT, CURB AND BOULEVARDS AS PER CITY OF OTTAWA R10.
- ALL EXISTING SANITARY AND STORM SERVICES ARE TO BE CAPPED AT THE PROPERTY LINE TO THE SATISFACTION OF THE CITY OF OTTAWA'S SEWER OPERATION.
- MONITORING TEST PORTS FOR BUILDING SERVICES TO BE INSTALLED IN PARKING GARAGE.
- ANY SERVICES THAT REQUIRE ENTRY TO THE BUILDING THROUGH A FOUNDATION WALL ARE TO BE SLEEVED AND SEALED TO PREVENT INFILTRATION.

**WATERMAIN NOTES:**

- SPECIFICATIONS:
 

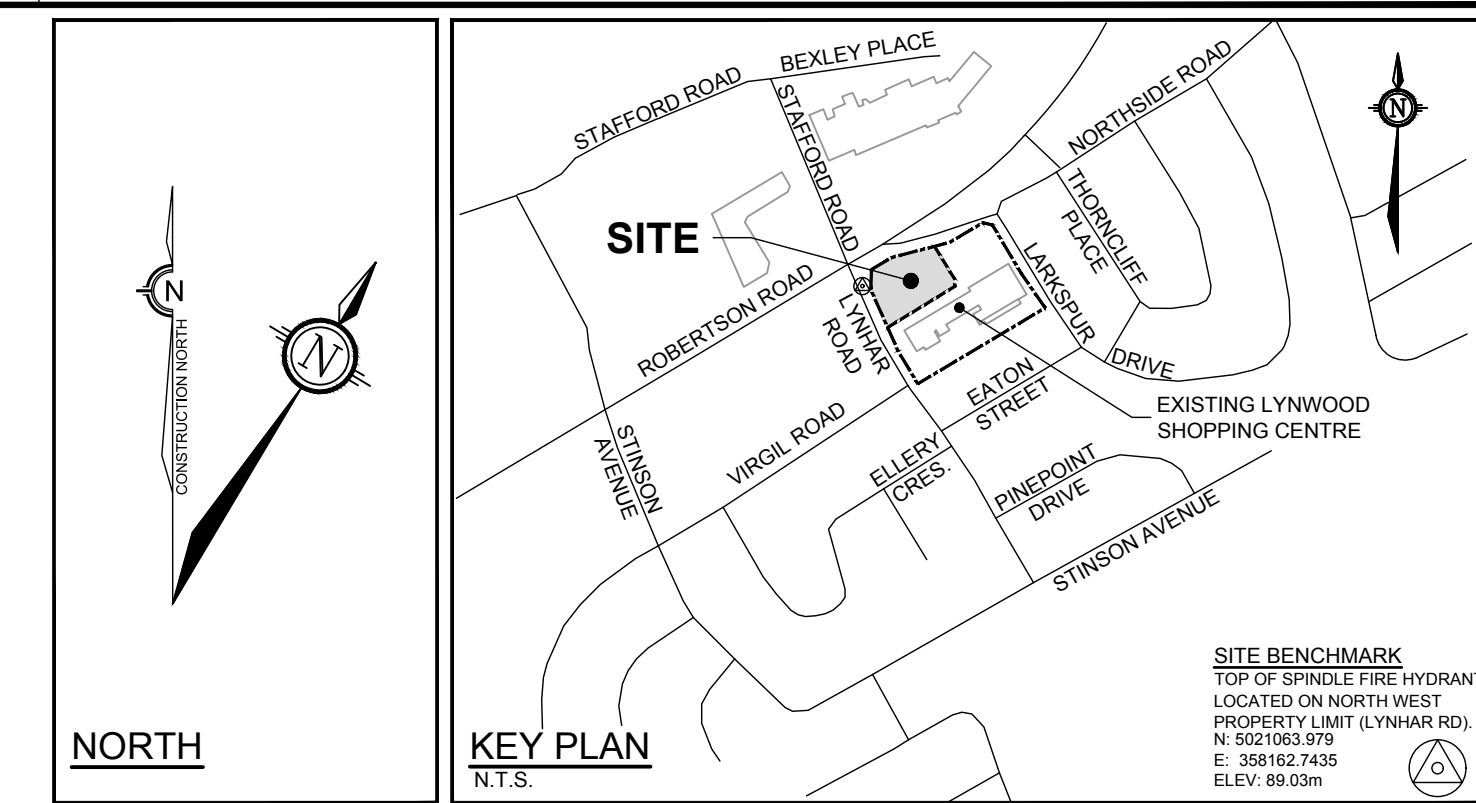
ITEM	SPEC. No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22	CITY OF OTTAWA
VALVE BOX ASSEMBLY	W24	CITY OF OTTAWA
CONNECTION DETAIL FROM EXISTING TO NEW WM	W25.1	CITY OF OTTAWA
WATERMAIN (150mmØ)	PVC DR 18	
WATERMAIN CROSSING ABOVE SEWER	W25.2	CITY OF OTTAWA
THERMAL INSULATED AT OPEN STRUCTURE	W23	CITY OF OTTAWA
WATER SERVICE INSTALLATION AT SEWER CROSSING	W38	CITY OF OTTAWA
- SUPPLY AND CONSTRUCT ALL WATERMANS AND APPURTENANCES IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARD AND SPECIFICATIONS. EXCAVATION, INSTALLATION, BACKFILL AND RESTORATION OF ALL WATERMANS BY THE CONTRACTOR. CONNECTIONS AND SHUT-OFFS AT THE MAIN AND CHLORINATION OF THE WATER SYSTEM SHALL BE PERFORMED BY CITY OFFICIALS.
- WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE UNLESS OTHERWISE INDICATED. OTHERWISE THERMAL INSULATION IS REQUIRED AS PER STD. DWG W21, W22, AND W23.
- PROVIDE MINIMUM 0.5m CLEARANCE BETWEEN OUTSIDE OF PIPES AT ALL CROSSINGS WHEN WATERMAIN IS BELOW AND MINIMUM 0.25m CLEARANCE WHEN WATERMAIN IS ABOVE.
- WATER SERVICE IS TO BE CONSTRUCTED TO WITHIN 1m OF FOUNDATION WALL AND CAPPED, UNLESS OTHERWISE INDICATED.
- VALVES TO BE OPERATED BY CITY OF OTTAWA STAFF ONLY. NO CONNECTION TO EXISTING WATER NETWORK SHALL BE COMPLETED UNTIL A WATER PERMIT IS OBTAINED FROM THE CITY OF OTTAWA (CO). COA FORCES TO COMPLETE WATERMAIN CONNECTIONS. EXCAVATION, BACKFILLING AND REINSTATEMENT TO BE COMPLETED BY CONTRACTOR.

**EROSION AND SEDIMENT CONTROL NOTES:**

- THE OWNER AGREES TO PREPARE AND IMPLEMENT AN EROSION AND SEDIMENT CONTROL PLAN TO THE SATISFACTION OF THE CITY OF OTTAWA, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS AND DURING ALL PHASES OF THE SITE PREPARATION AND CONSTRUCTION IN ACCORDANCE WITH THE CURRENT BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL. SUCK AS BUT NOT LIMITED TO INSTALLING CATCHBASIN INSERTS ACROSS IN & O/S AND INSTALLING AND MAINTAINING LIGHT DUTY SILT FENCE BARRIERS AND STRAW BALE/ROCK CHECK DAMS AS REQUIRED.
- CONDITIONS OF THE SILT FENCE AND STRAW BALE/ROCK CHECK DAMS TO BE INSPECTED REGULARLY AND REPLACED OR REPAIRED AS INSTRUCTED BY THE ENGINEER.
- THE CONTRACTOR SHALL ENSURE THAT ROADS ARE KEPT CLEAN AT ALL TIMES USING SUCH PRACTICES AS WASHING DOWN TRUCK TIRES, ROAD SWEEPING AND FLUSHING ETC.
- THE CONTRACTOR ACKNOWLEDGES THAT SURFACE EROSION AND SEDIMENT RUNOFF RESULTING FROM HIS CONSTRUCTION OPERATIONS WILL HAVE A DETRIMENTAL IMPACT TO ANY DOWNSTREAM WATERCOURSE OR SEWER, AND THAT ALL CONSTRUCTION OPERATIONS THAT MAY IMPACT UPON WATER QUALITY SHALL BE CARRIED OUT IN A MANNER THAT STRICTLY MEETS THE REQUIREMENTS OF ALL APPLICABLE LEGISLATION AND REGULATIONS.
- AS SUCH, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CARRYING OUT HIS OPERATIONS, AND SUPPLYING AND INSTALLING ANY APPROPRIATE CONTROL MEASURES, SO AS TO PREVENT SEDIMENT LADEN RUNOFF FROM ENTERING ANY SEWER OR WATERCOURSE WITHIN DOWNSTREAM OF THE WORKING AREA. FOR THIS PROJECT THE SUGGESTED ON-SITE MEASURES SHALL INCLUDE BUT SHALL NOT BE LIMITED TO THE FOLLOWING METHODS:
  - CATCH BASIN SILTSACKS
  - MAINTENANCE HOLE AND REAR YARD CATCH BASIN FILTERS
  - LIGHT DUTY SILT FENCE
  - MUD MATS
  - STRAW BALE CHECK DAMS
 SPECIFIC MEASURES SHALL BE INSTALLED AT THE SPECIFIED LOCATIONS AND IN ACCORDANCE WITH THE REQUIREMENTS OF OPSS 577 WHERE APPROPRIATE, OR IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- WHERE, IN THE OPINION OF THE CONTRACT ADMINISTRATOR OR ANY REGULATORY AGENCY, THE INSTALLED CONTROL MEASURES FAIL TO PERFORM ADEQUATELY, THE CONTRACTOR SHALL SUPPLY AND INSTALL ADDITIONAL OR ALTERNATIVE MEASURES AS DIRECTED BY THE CONTRACT ADMINISTRATOR OR THE REGULATORY AGENCY AS SUCH, THE CONTRACTOR SHALL HAVE ADDITIONAL CONTROL MATERIALS ON SITE AT ALL TIMES WHICH ARE EASILY ACCESSIBLE AND MAY BE IMPLEMENTED BY HIM AT A MOMENT'S NOTICE.
- THE CONTRACTOR SHALL ENSURE THAT ALL WORKERS, INCLUDING IN THE WORKING AREA ARE AWARE OF THE IMPORTANCE OF THE EROSION AND SEDIMENT CONTROL MEASURES AND INFORMED OF THE CONSEQUENCES OF THE FAILURE TO COMPLY WITH THE REQUIREMENTS OF ALL REGULATORY AGENCIES AND THE SPECIFICATIONS DETAILED HEREIN.
- THE CONTRACTOR SHALL PERIODICALLY, OR WHEN REQUESTED BY THE CONTRACT ADMINISTRATOR, CLEAN OUT ACCUMULATED SEDIMENT DEPOSITS AS REQUIRED AT THE SEDIMENT CONTROL DEVICES, INCLUDING THOSE DEPOSITS THAT MAY ORIGINATE FROM OUTSIDE THE CONSTRUCTION AREA. ACCUMULATED SEDIMENT SHALL BE REMOVED IN SUCH A MANNER THAT PREVENTS THE DEPOSITION OF THIS MATERIAL INTO ANY SEWER OR WATERCOURSE AND AVOIDS DAMAGE TO THE CONTROL MEASURE. THE SEDIMENT SHALL BE REMOVED FROM THE SITE AT THE CONTRACTOR'S EXPENSE AND MANAGED IN COMPLIANCE WITH THE REQUIREMENTS FOR EXCESS EARTH MATERIAL, AS SPECIFIED ELSEWHERE IN THE CONTRACT.

**REMOVALS NOTES:**

- OBTAIN ALL APPROVALS AND PERMITS FROM THE CITY OF OTTAWA PRIOR TO ANY REMOVAL WORK OR CONSTRUCTION.



**LEGEND**

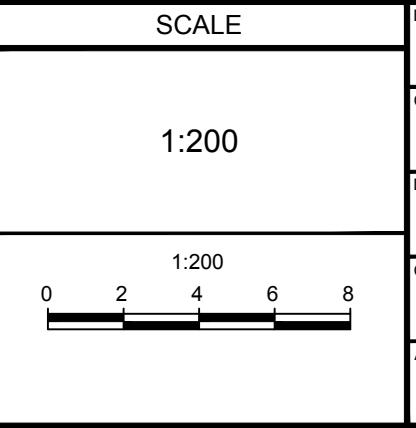
- SITE BOUNDARY
- LIMIT OF SITE PLAN CONTROL APPLICATION
- PROPOSED ELEVATION
- EXISTING ELEVATION
- PROPOSED FINISHED FLOOR ELEVATION
- PROPOSED GRADE AND DIRECTION
- EXISTING GRADE AND DIRECTION
- EXISTING TOPOGRAPHIC SURVEY ELEVATION
- EXISTING SURVEY TOP OF CURB ELEVATION
- PROPOSED LIMIT OF GRADING
- PROPOSED SANITARY SERVICE CW CAP
- PROPOSED WATER SANITARY SERVICE CW CAP
- PROPOSED BARRIER CURB AS PER SC1.1
- PROPOSED DEPRESSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED TREE LOCATION
- MAJOR OVERLAND FLOW DIRECTION
- AREA ID
- DRAINAGE AREA (HECTARES)
- RUN-OFF COEFFICIENT (C-VALUE)
- DRAINAGE AREA BOUNDARY
- PROPOSED SILT FENCE (AS PER O.P.S.D. 219.110)
- PROPOSED STRAW BALE (AS PER O.P.S.D. 219.180)
- EXISTING BARRIER CURB TO BE REMOVED
- EXISTING LIGHT STANDARD ON CONCRETE BASE TO BE RELOCATED
- PROPOSED ASPHALT REMOVAL
- EXISTING CONCRETE
- PROPOSED CONCRETE
- PROPOSED PAVERS (REFER TO LANDSCAPE PLANS)
- EXISTING LEGAL ADJACENT LINE
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING GULVERT
- EXISTING STORM MANHOLE
- EXISTING CATCHBASIN
- EXISTING SANITARY MANHOLE
- EXISTING HYDRANT
- EXISTING VALVE & VALVE BOX
- EXISTING CENTERLINE SWALE
- EXISTING TOP OF GRATE ELEVATION
- EXISTING INVERT ELEVATION
- EXISTING OVERHEAD WIRES
- EXISTING TRAFFIC MANHOLE
- EXISTING UTILITY POLE
- EXISTING UTILITY POLE ANCHOR
- EXISTING TRAFFIC SIGNAL LIGHT
- EXISTING LIGHT STANDARD ON CONCRETE BASE
- EXISTING SIGN

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NOTE:  
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMANS, 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.

**PRELIMINARY  
NOT FOR  
CONSTRUCTION**

No.	REVISION	DATE	BY
2	REVISED AS PER CITY OF OTTAWA COMMENTS	NOV 17/23	SAZ
1	ISSUED WITH SITE PLAN APPLICATION	MAR 3/23	SAZ



DESIGN	SAZ
CHECKED	MSP
DRAWN	MTM
CHECKED	SAZ
APPROVED	MSP

**FOR REVIEW ONLY**

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CITY OF OTTAWA  
1826 ROBERTSON ROAD  
LYNWOOD RETAIL PLAZA

DRAWING NAME: NOTES & DETAILS PLAN

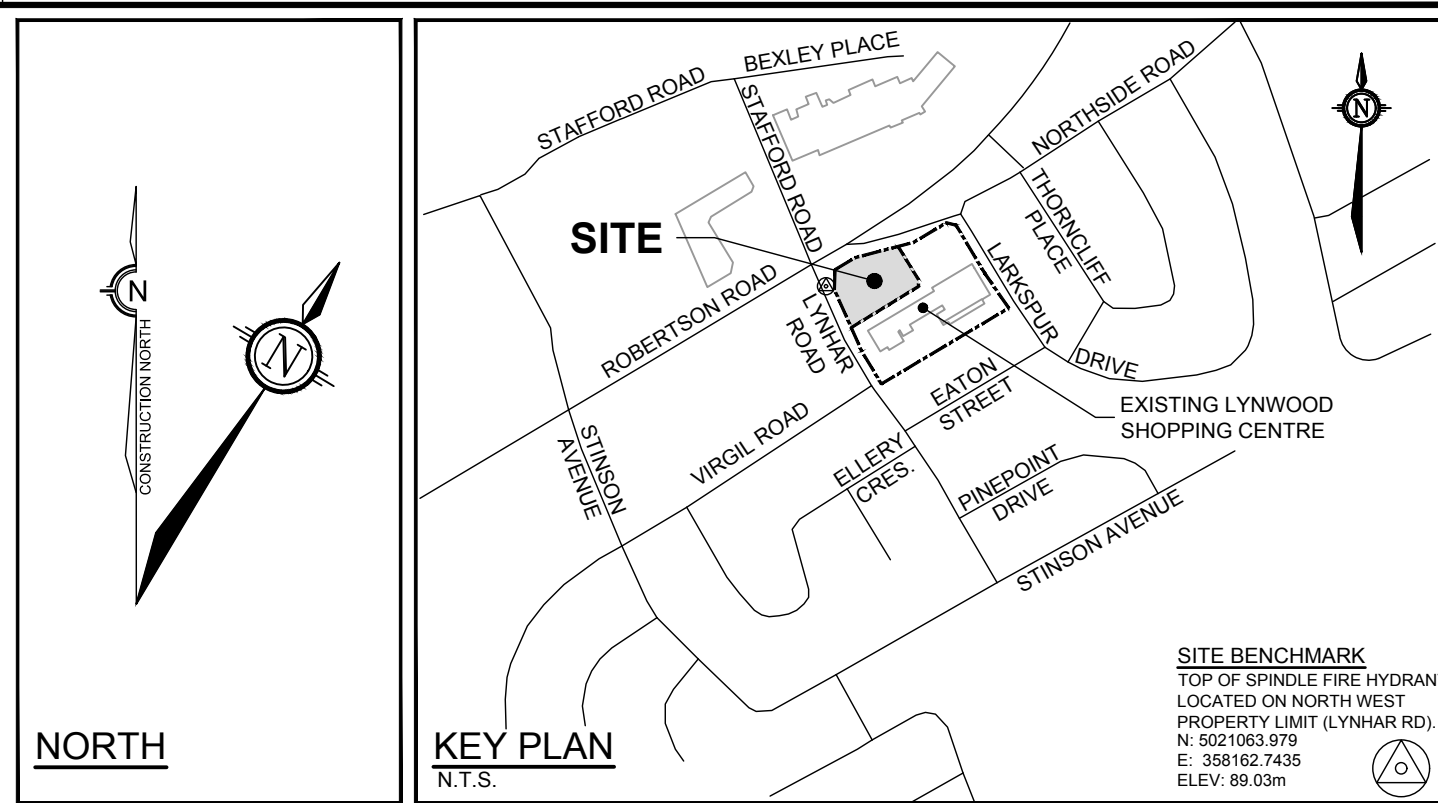
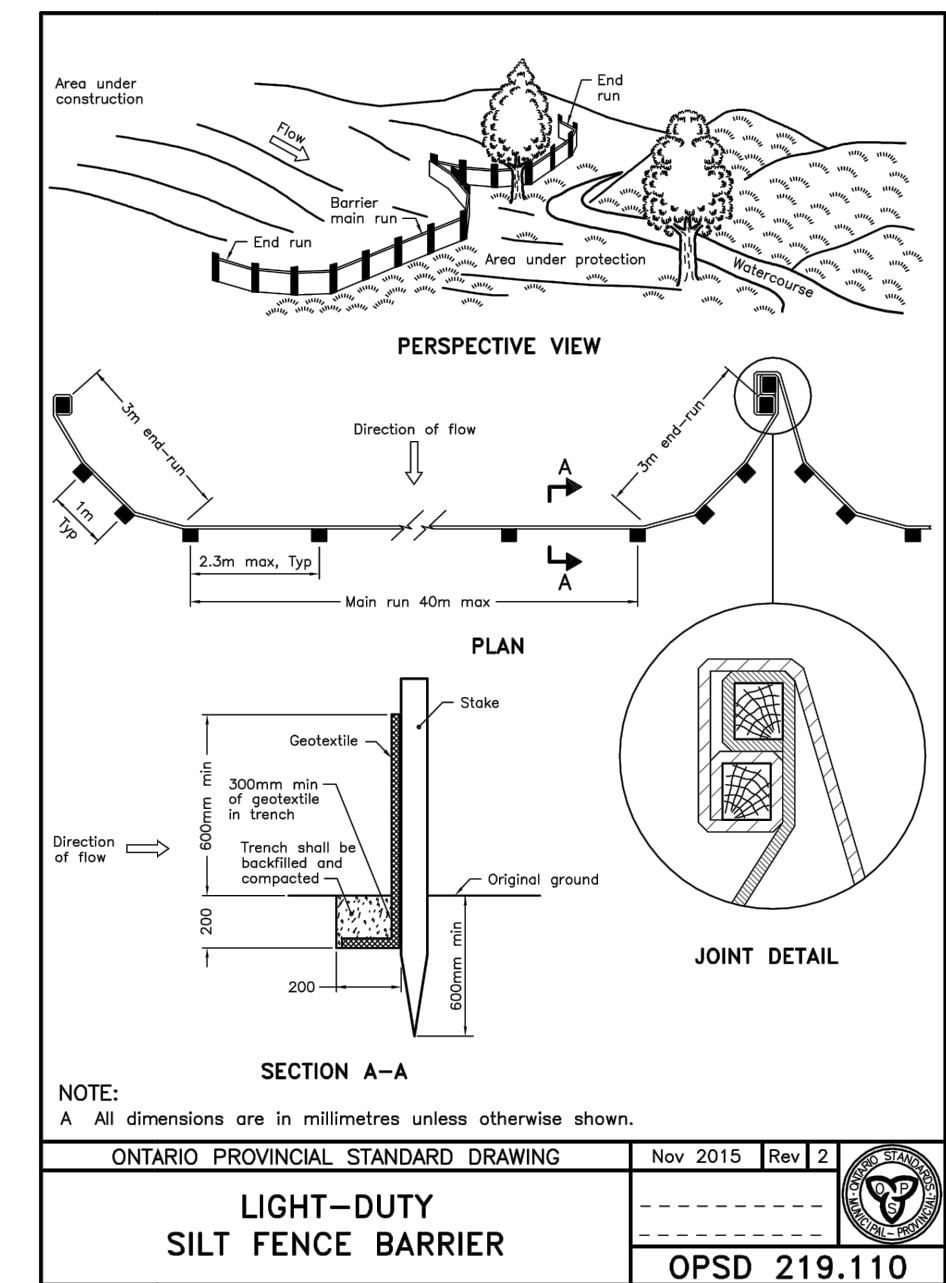
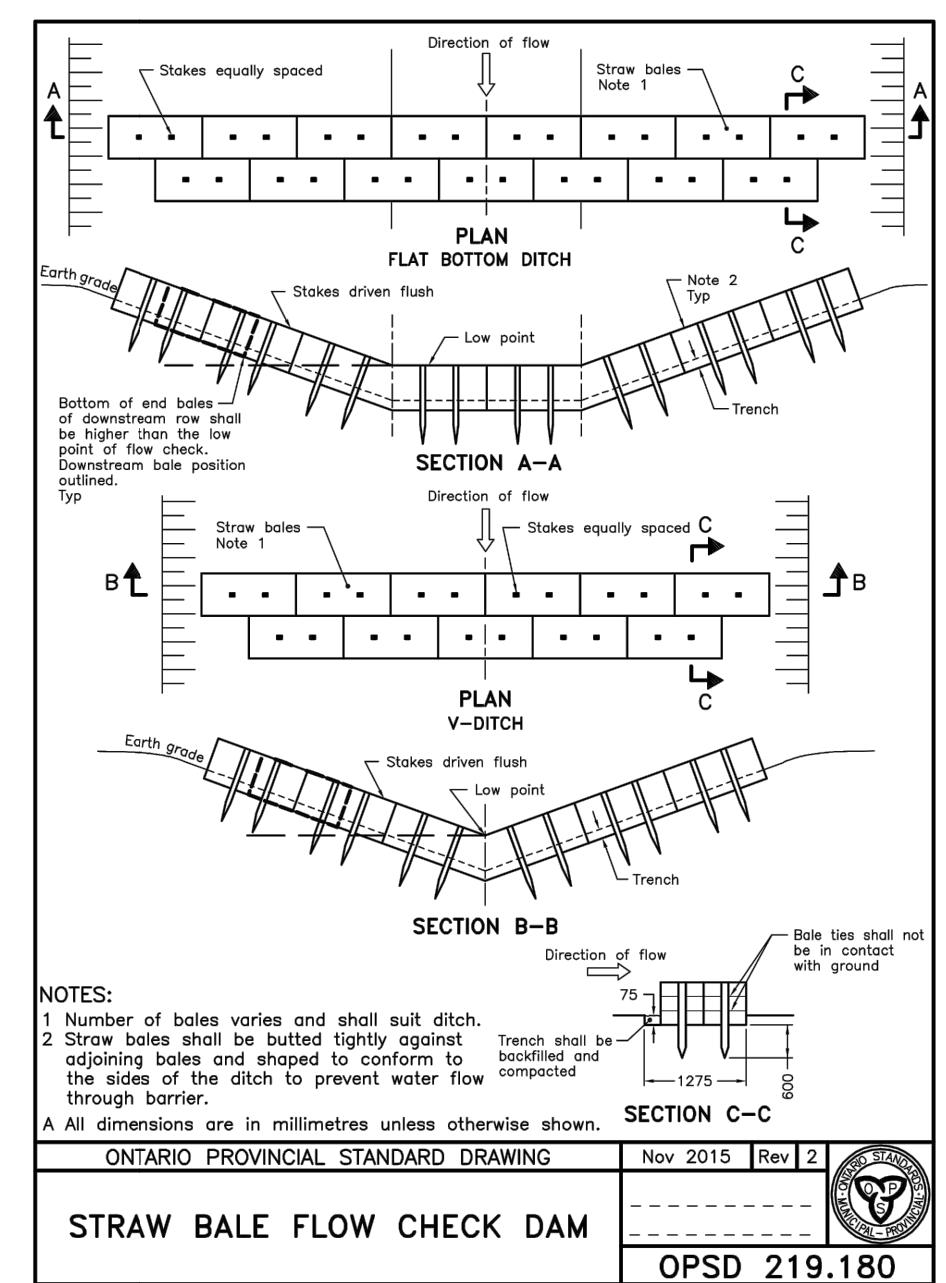
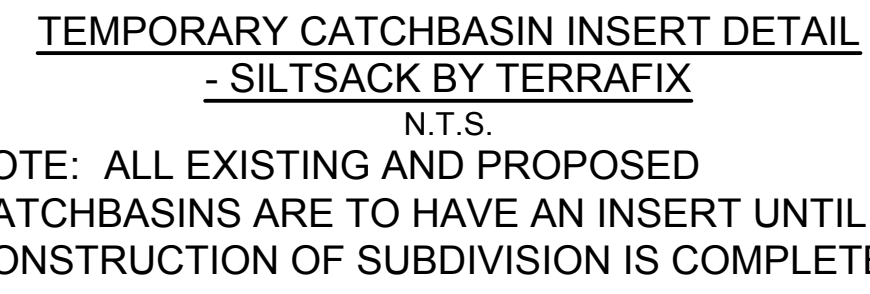
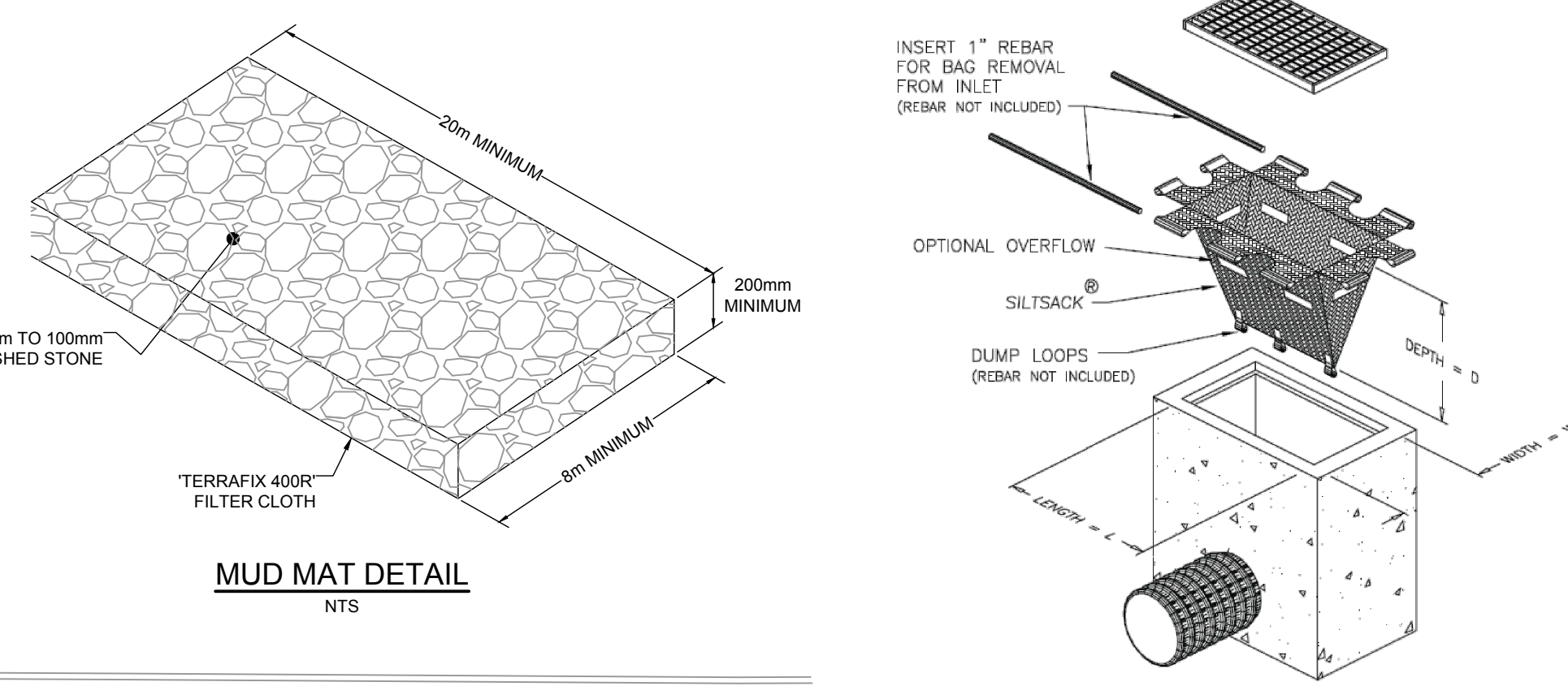
DRAWING NO.: 106134-ND

PROJECT NO.: 106134-00

REV # 2

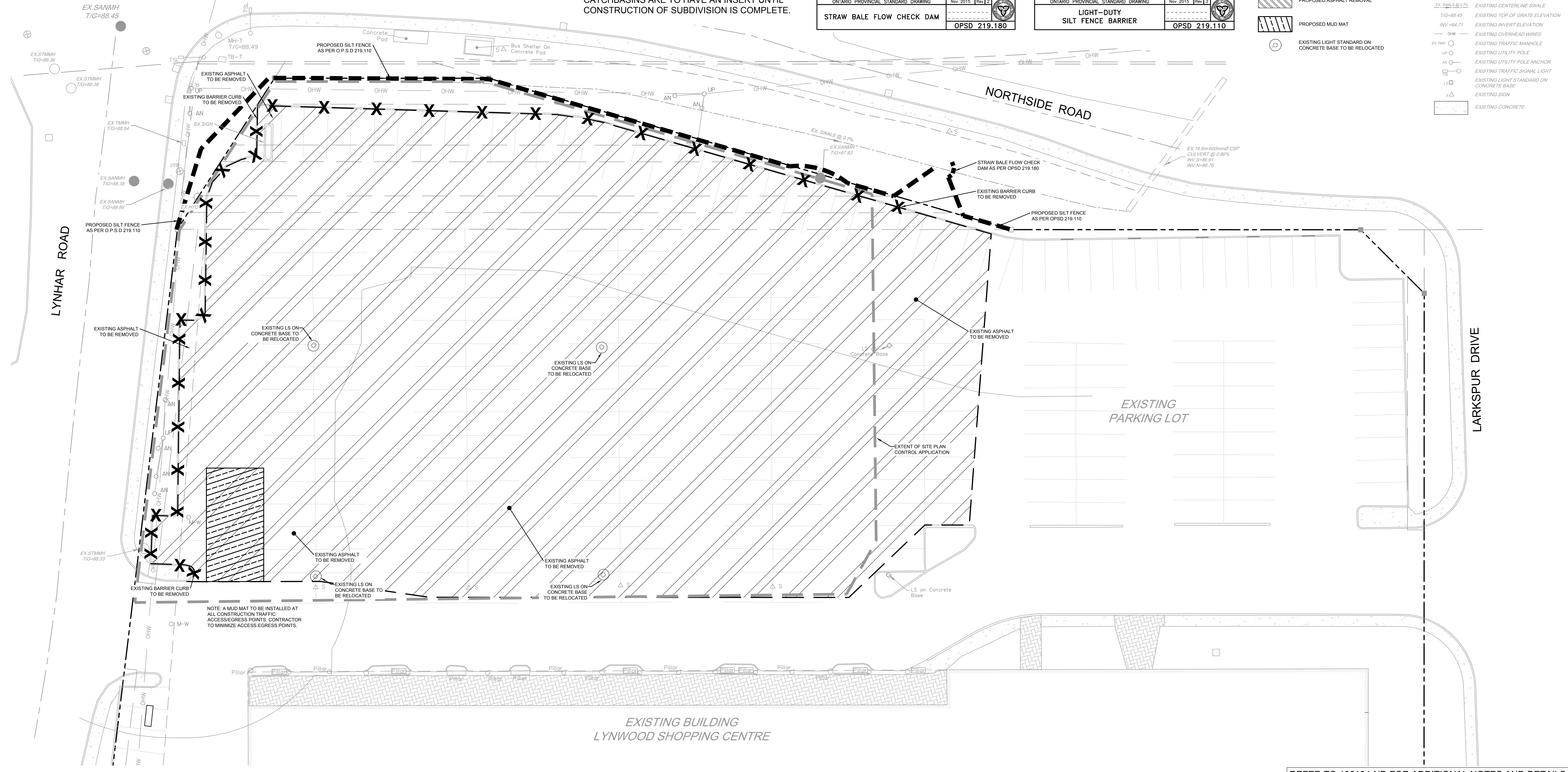
DATE: 106134-ND

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**LEGEND**

---	SITE BOUNDARY	---	EXISTING ADJACENT LEGAL LINE
---	LIMIT OF SITE PLAN CONTROL APPLICATION	---	EXISTING STORM MANHOLE
---	PROPOSED SILT FENCE (AS PER O.P.S.D. 219.110)	---	EXISTING CATCHBASIN
---	PROPOSED STRAW BALE (AS PER O.P.S.D. 219.180)	---	EXISTING SANITARY MANHOLE
X X X	EXISTING BARRIER CURB TO BE REMOVED	---	EXISTING HYDRANT
---	PROPOSED ASPHALT REMOVAL	---	EXISTING VALVE & VALVE BOX
---	PROPOSED MUD MAT	---	EXISTING CENTERLINE SWALE
---	EXISTING LIGHT STANDARD ON CONCRETE BASE TO BE RELOCATED	---	EXISTING TOP OF GRATE ELEVATION
---		---	EXISTING INVERT ELEVATION
---		---	EXISTING OVERHEAD WIRES
---		---	EXISTING TRAFFIC POLE
---		---	EXISTING TRAFFIC MANHOLE
---		---	EXISTING UTILITY POLE
---		---	EXISTING UTILITY POLE ANCHOR
---		---	EXISTING TRAFFIC SIGNAL LIGHT
---		---	EXISTING LIGHT STANDARD ON CONCRETE BASE
---		---	EXISTING SIGN
---		---	EXISTING CONCRETE



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2	REVISED AS PER CITY OF OTTAWA COMMENTS	NOV 17/23	SAZ
1	ISSUED WITH SITE PLAN APPLICATION	MAR 3/23	SAZ

SCALE	REVISION	FOR REVIEW ONLY
1:200	SAZ	SAZ
	MSP	MSP
	MTM	MTM
	SAZ	SAZ
	MSP	MSP



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CITY OF OTTAWA 1826 ROBERTSON ROAD LYNWOOD RETAIL PLAZA		PROJECT No. 106134-00
DRAWING NAME REMOVALS AND EROSION & SEDIMENT CONTROL PLAN		REV # 2
DRAWING No. 106134-RM-ESC		

REFER TO 106134-ND FOR ADDITIONAL NOTES AND DETAILS