

Functional Servicing and Stormwater Management Report



Project: 3 Silkirk Street, OT,
Ottawa Selkirk & Main Developments Inc.

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Executive Summary

Lithos Group Inc. (Lithos) was retained by Selkirk & Main Development Inc. (the “Owner”) to prepare a Functional Servicing and Stormwater Management Report in support of a Site Plan Application for a proposed residential development located at 3 Selkirk Street (K1L 8E3), in the City of Ottawa (the “City”). This Functional Servicing and Stormwater Management Report provides a detailed design analysis of Phase II, since the proposed development will be part of a greater development that will be constructed in three (3) Phases.

The following summarizes our conclusions:

Storm Drainage

The subject property will be constructed under Phase II of the proposed development. More specifically, Phase II will consist of a 2 and 6-storey podium with above ground parking area and with a high-rise 32-storey tower (Tower B). In addition, Phase II will be facilitated by one underground parking level (P1 level). Stormwater flow from Phase II will be discharged into the existing 300mm diameter storm sewer on Selkirk Street, through one (1) 150mm diameter storm connection with a minimum grade of 2.00% (or equivalent design).

Post-development storm flows from the proposed development (Phase II), will meet the 5-year pre-development flow. In order to achieve the target flows and meet the City’s Regulations, quantity controls will be utilized up to 143.9 m³ of total on site storage will be required for Phase II.

The stormwater management (SWM) system will be designed to provide enhanced level (Level 1) protection as specified by the Ministry of the Environment, Conservation and Parks (MECP). Quality control will be provided for the subject site by rooftops/terraces for a minimum total suspended solids (TSS) removal of 80%.

Sanitary Sewers

Phase II will consist of a 2 and 6-storey podium with above ground parking area and with a high-rise 32-storey tower (Tower B). The proposed development (Phase II) will be serviced by one (1) 200mm diameter sanitary lateral connection to the 1950mm diameter trunk sanitary sewer on North River Road, with a minimum grade of 2.00% (or equivalent design).

The additional discharge flow from the proposed development (Phase II) towards the sanitary network, is anticipated at approximately 7.50 L/s. According to the information provided by the City, the existing infrastructure has the capacity to support the additional sanitary flow, from the proposed development.

Water Supply

Water supply for the proposed development (Phase II) will be provided by two (2) water connections towards the existing 150 mm diameter watermain running along the centerline of Selkirk Street.

It is anticipated that a total design flow of 89.79 L/s will be required to support Phase II. Based on the boundary conditions received from the City, it is revealed that the existing water infrastructure can support the proposed development.

Site Grading

The proposed grades will improve the existing drainage conditions to meet the City’s/Regional requirements. Grades will be maintained along the property line wherever feasible and emergency overland flow will be gravity driven to the adjacent right-of-way’s (ROW).

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1.0 Introduction

Lithos Group Inc. (Lithos) was retained by Selkirk & Main Development Inc. (the “Owner”) to prepare a Functional Servicing and Stormwater Management Report in support of a Site Plan Application for a proposed residential development located at 3 Selkirk Street (K1L 8E3), in the City of Ottawa (the “City”). The proposed development will be a part of a greater development, as per the 2 Montreal Road & 300 Montgomery Street-FSR SWM Report approved on September 28, 2022, which will be constructed in three (3) Phases. This Functional Servicing and Stormwater Management Report studies the detailed design of Phase II.

The purpose of this report is to provide site-specific information for the City’s review with respect to infrastructure required to support the proposed development. More specifically, the report will present details on sanitary discharge, water supply and an outline of the storm drainage pattern.

We contacted the City’s engineering department to obtain existing information in preparation of this report. The following documents were available for our review:

- Servicing maps of:
 - North River Road, Montreal Road and Montgomery Street, drawing No. D-16-22, dated August, 2016;
 - Montgomery and Selkirk Street, drawing No. D-16-29, dated November, 2012.
- Plan and Profiles of:
 - Selkirk Street, drawing No. 980605-P3, dated July, 1998;
 - North River Road, drawing No. 05-2050-003, dated January, 2006.
- Site Plan (Phase II & Overall) prepared by Roderick Lahey Architect Inc., dated February 10, 2026;
- Hydrogeological Report prepared by Paterson Group dated July 22, 2022;
- Topographical sketch prepared by Annis, O’Sullivan, Vollebekk Ltd., dated November 28, 2025;
- Topographical Survey prepared by Annis, O’Sullivan, Vollebekk Ltd., dated March 06, 2020; and,
- Geotechnical Investigation prepared by Paterson Group dated March 26, 2022.

2.0 Site Description

The total existing site area is approximately 1.693 hectares site and is comprised of one (1) single-storey commercial building with outdoor parking area. The site is located at 3 Selkirk Street (K1L 8E3), in the City of Ottawa and will be comprised by three (3) Phases. Phase II is approximately 0.339ha and is bound by North River Road to the west and by Selkirk Street to the south. Refer to **Figures 1** and **2** following this report and site photographs in **Appendix A**.

3.0 Site Proposal

The proposed site (Phase II) will be a residential development with a total area of 0.339 hectares, comprised by one (1) ownership. More specifically, Phase II will consist of a 2 and 6-storey podium with above ground parking area and with a high-rise 32-storey tower (Tower B). It will be facilitated by one (1) underground parking level (P1 level) and will be comprised of 426 units. Please refer to **Appendix B** for proposed site plan and building site statistics.

The proposed site will be part of a greater development which will consist of three (3) Phases, as per Functional Servicing and Stormwater Management Report of 2 Montreal Road & 300 Montgomery Street - FSR SWM Report, submitted and approved on September 28, 2022.

4.0 Terms of Reference and Methodology

4.1. Terms of Reference

The following references and technical guidelines were consulted in the present study:

- **City of Ottawa Servicing Study Guidelines**, online edition,
- **City of Ottawa Sewer Design Guidelines**, (2012),
- **City of Ottawa Design Guidelines – Water Distribution**, (2010),
- **Technical Bulletin ISTB-2018-2;**
- **Ministry of Environment, Conservation and Park (MECP) Guidelines for the Design of Water Systems** (2008)
- **MECP Guidelines for the Design of Sanitary Sewage Systems** (2008)
- **MECP Stormwater Planning and Design Manual** (2003)
- **Ontario Building Code** (2024).

4.2. Methodology: Stormwater Drainage and Management

This report provides a detailed Stormwater Management (SWM) review of the pre-development and post-development conditions and comments on opportunities to reduce peak flows, as per the City of Ottawa guidelines.

The stormwater management criteria for this development are based on the City of Ottawa Sewer Design Guidelines, as well as the Ministry of Environment, Conservation and Parks (MECP) 2003 Stormwater Management Planning and Design Manual (SWMPD). The following design criteria will be reviewed:

- Post-development peak flow for the 100-year storm event from the site should be controlled to the 5-year target flow. A 20-minute time of concentration and a 10 min inlet time derived from City of Ottawa IDF curves, were considered for connection to a dedicated storm sewer;
- For connection to a dedicated storm sewer, when the imperviousness of the existing property is greater than 50%, the maximum value of the runoff coefficient, “c”, used in calculating the pre-development peak runoff rate is limited to 0.50;
- A safe overland flow will be provided for all flows in excess of the 100-year storm event.

4.3. Methodology: Sanitary Discharge

The sanitary sewage discharge from the site will be determined using sanitary sewer design sheets that incorporate the land use and building statistics as supplied by the design team. The calculated values provide peak sanitary flow discharge that considers infiltration.

The estimated sanitary discharge flows from the proposed site will be calculated based on the criteria shown **Table 4-1**. (Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines).

Table 4-1 – Sanitary Design Criteria

Design Parameter	Value
Residential Units (1-Bedroom)	1.4 people/unit
Residential Units (2-Bedroom)	2.1 people/unit
Residential Units (3-Bedroom)	3.1 people/unit
Average Daily Residential Flow	280 L/person/day
Residential Peak Factor	$PF = 1 + (14/(4+(P/1000)^{1/2}))$
Commercial Floor Space	50000 L/ha/day
Commercial Peaking Factor	1.5 if commercial contribution >20%, otherwise 1.0
Infiltration and Inflow Allowance	0.28 L/s/ha
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	1.5 m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6 m/s
Maximum Full Flowing Velocity	3.0 m/s

4.4. Methodology: Water Usage

The fire flow requirements were estimated using the method prescribed by the Fire Underwriters Survey (FUS). This method is based on the floor area of the building to be protected, the type and combustibility of the structural frame and the separation distances with adjoining building units.

Part 3 of the City Design guidelines for water distribution provides guidance for determining the method for estimating Fire Demand. As indicated, the requirements for levels of fire protection on private property are covered in the Ontario Building Code. Section 7.2.11 of the OBC addresses the installation of water service pipes and fire service mains. Part 3 of the OBC outlines the requirement for Fire Protection, Occupant Safety, and Accessibility; and subsection A-3.2.5.7 provides the provisions for firefighting.

Based on trained personnel responding to the emergency, and water supply being delivered through a municipal, the required minimum provision for water supply flow rates shall not be less than 2,700L/min or greater than 9,000L/min (OBC Section A.3.2.5.7, Table 2). The City of Ottawa was contacted in February 2021 to obtain boundary conditions based on an estimated water demand.

The domestic water usage was calculated based on the City of Ottawa Guidelines – Water Distribution outlined in [Table 4-2](#) that follows.

Table 4-2 – Water Usage

Design Parameter	Value
Average Residential Day Demand	350 L/person/day
Maximum Residential Day Demand	2.5 x Average Day Demand
Maximum Residential Hour Demand	2.2 x Max Day Demand
Average Commercial Day Demand	2.5 L/m ² /d
Maximum Commercial Day Demand	1.5 x Average Day Demand
Maximum Commercial Hour Demand	1.8 x Max Day Demand
Minimum Depth of Cover	2.4 m from top of watermain to finished grade
During Peak Hour Demand desired operating pressure is within	350kPa and 480KPa
Minimum pressure during normal operating conditions (average day to maximum hour demand)	275kPa
During normal operating conditions, pressure must not exceed	552kPa
Minimum pressure during fire flow plus maximum day demand	140kPa

5.0 Stormwater Management and Drainage

5.1. Existing Conditions

The existing total site area is currently occupied by one (1) single-storey commercial building with outdoor parking area.

According to available records, there are two (2) storm sewers abutting the subject property. More specifically:

- A 300mm diameter storm sewer on North River Road flowing north; and
- A 300mm diameter storm sewer on Selkirk Street flowing east.

Phase II drains towards Selkirk Street. No external areas drain towards the subject property. Under major storm events, storm flow from the property is directed overland towards North River Road and Selkirk Street.

The existing site is primarily covered by impermeable areas, thus there is no significant infiltration onsite. Although the existing run-off composite coefficient is estimated at 0.90, the City of Ottawa Guidelines require target flow calculations based on a run-off coefficient of 0.50.

Table 5-1 shows the input parameters for Phase II which are illustrated on the pre-development drainage area plan in **Figure DAP-1** in **Appendix C**.

Table 5-1 – Target Input Parameters – Phase II

Catchment	Drainage Area (ha)	Actual "C"	Design "C"	Tc (min.)
A1 Pre (Phase II)	0.339	0.90	0.50	20

Peak flows calculated for the existing conditions for Phase II are shown in **Table 5-2**. Detailed calculations can be found in **Appendix C**.

Table 5-2 – Target Peak Flows – Phase II

Catchment	Peak Flow Rational Method (L/s)		
	2-year	5-year	100-year
A1 Pre (Phase II)	24.5	33.1	56.5

As shown on **Table 5-2**, post-development flows from Phase III towards Selkirk Street will need to be controlled to the target flows of 24.5 L/s.

5.2. Proposed Conditions

In order to meet the City’s Stormwater Management criteria, the development flow rate is to be controlled to the five (5)-year target flow established in **Section 5.1**. Overland flow from the site will be directed towards the adjacent public right-of-ways (ROWs).

Phase II consists of three (3) internal drainage areas:

1. A1 Post (Phase II) – Storm runoff from the rooftops and terraces of Tower B, the Podium’s terraces and walkways, controlled in the underground storage tank located into P1 level on the south-east side of the property,
2. A2 Post (Phase II) – Storm runoff from the driveway of Tower B, controlled in the underground storage tank located into P1 level on the south-east side of the property;
3. A3 Post (Phase II) – Storm runoff, draining uncontrolled towards the public ROW; and,

The post-development drainage areas and runoff coefficients for Phase II are indicated in **Figure DAP-2**, located in **Appendix C** and summarized in **Table 5-3** below.

Table 5-3 – Post-development Input Parameters – Phase II

Drainage Area	Drainage Area (ha)	Drainage Area Atot (ha)	“C”	Tc (min.)
A1 Post (Rooftops/Terraces/Walkways)	0.269	0.339	1.00*	10
A2 Post (Driveway/Walkways)	0.064		1.00*	10
A3 Post (Uncontrolled)	0.006		1.00*	10

5.2.1. Quantity Controls

Using the City’s intensity-duration-frequency (IDF) data, modified rational method calculations were undertaken to determine the maximum storage required during each storm event. Results for the 2, 5, and 100-year storm events are provided in **Table 5-4** below. The detailed post-development quantity control calculations are provided in **Appendix C**.

Table 5-4 - Post-development Quantity Control as Per City Requirements – Phase II

Storm Event	Target Controlled Release Rate (L/s)	Uncontrolled Flow (L/s)	Required Storage Tank Volume (m ³)	Groundwater Release Rate (L/s)	Total Controlled Release Rate of the Tank (L/s)	Total Site Release Rate (L/s)
2-year	33.1	1.2	45.6	1.0	13.0	15.2
5-year		1.6	64.1	1.0	15.4	18.0
100-year		2.7	143.9	1.0	23.8	27.5

As shown in **Table 5-4** in order to control post-development flows to the 5-year pre-development conditions, a target flow of 33.1 L/s is to be satisfied. The required on-site storage is accommodated by one (1) underground storage tank, located at P1 level. **Table 5-4** illustrates the minimum required storage to be retained on-site, which is 143.9 m³ for the 100-year storm event.

The stormwater flow released from the rooftops and terraces of Tower B, the Podium's terraces, walkways and driveway (**Drainage Areas A1 Post and A2 Post**) will be gravity driven into the underground storage tank at the south side of the property, located at P1 Level. Please refer to engineering drawing **Site Servicing Plan Phase II (SS-01)** submitted separately for details.

5.2.2. Underground Storage Tank

An underground storage tank is proposed to meet the quantity control requirements, set forth by the City's WWFMG Guidelines. Controlled stormwater flows from the rooftops and terraces of Tower B, the Podium's terraces, walkways and driveway (**Drainage Areas A1 Post and A2 Post**) will be gravity driven into the proposed underground storage tank located at P1 level.

The proposed underground storage tank for Phase II will have an active storage depth of 1.18m above the inlet of the outlet pipe, accounting for a quantity control maximum storage of 143.9 m³, during the hundred - year storm event. Stormwater from the underground storage tank will outlet through a **100mm diameter orifice plate** with a maximum release rate of 23.8 L/s and will be gravity driven to the existing 300mm diameter storm sewer along Selkirk Street.

The proposed storage tank will have a total footprint area of 121.6 m². Refer to **Figure 3**, included in **Appendix C**, for the minimum tank design requirements. Additional details of the tank design will also be provided by the mechanical engineer at detailed design stage.

A maximum control stormwater release rate from the storage tank of 23.8 L/s, along with the groundwater release rate of 1.0 L/s and the uncontrolled storm flows' release rate of 2.7 L/s (**Drainage Area A3 Post**), results to a post-development total release rate of 27.5 L/s, for the 100-year event. For over 100-year storm events, the storm tank will also include a perforated access hatch and in case of emergency will overflow towards the adjacent right-of-way (ROW).

Consequently, the proposed SWM plan retains enough runoff volume, to reduce the post-development peak flows for each storm event to the extent possible and approach the required target flow.

5.2.3. Major Overland Flow Route and Emergency Overland Flow Route

Grading design and stormwater management techniques for this property have been designed to maintain as much as possible the existing storm minor and major drainage patterns, improve the existing servicing conditions and provide flood protection of the proposed development, during all storm events.

Existing Conditions

Under existing conditions, storm flow from the property drains towards Selkirk Street. Under major storm events, storm flow from the property is directed overland towards Selkirk Street.

Proposed Conditions

Under proposed conditions, the grading design has been prepared to maintain the existing major overland flow route to the extent possible.

More specifically, for storm flows over a 100 - year event or under a catch basin clogging condition, the west side of the site area will drain overland towards North River Road, while the southeast portion of the property (driveway area) will drain overland towards Selkirk Street. Please refer to engineering drawing **Site Grading Plan (SG-01)**, submitted separately).

In addition, according to our stormwater management calculations (found in **Appendix C**) the 100-year elevation obtained within the underground storage tank is calculated at 55.75 m, which is translated into a water elevation of minimum 0.60 m below the top of the proposed catch basins and trench drain. Please refer to engineering drawings **Site Servicing Plan – Phase II** and **Servicing Sections (SS-01 and SS-02)** drawings, submitted separately). Hence, no surface ponding occurs on site under the 2-year, 5-year and 100-year storm events.

Furthermore, grading plan has been to ensure emergency overland flow from the property will be directed towards Selkirk Street and North River Road, without impacting any portion of the buildings' envelope. More specifically, for all events up to the stress-test event (100 – year +20%), spill elevations along North River Road and Montgomery Street will have a minimum of 5cm vertical clearance from any portion of the building envelope. Please refer to **Site Grading Plan – Phase II (SG-01)** drawing, submitted separately) and **Figure 4**, found in **Appendix C**.

Therefore, the proposed development's grading design has been designed to secure a safe overland flow route direction for all events over the stress test event (100yr + 20%).

5.2.4. Quality Control

For MECP Enhanced Level protection, the removal of 80% total suspended solids (TSS) is required. Stormwater discharged from the proposed development's rooftop area that will not be polluted by car waste, is considered "clean" and will be driven into the underground storage tank. The detailed quality control calculations can be found in **Appendix C**. A summary of the site quality control is included in **Table 5-5** below.

Table 5-5 – Site TSS Removal – Phase II

Drainage Area	Drainage Area (ha)	% Area of Controlled Site	Effective TSS Removal	Additional Quality Control Required
Rooftops/Terraces/Walkways	0.269	81%	80%	Inherent
Driveway Area	0.064	19%	80%	Stormfilter SFPD 0608
Total	0.333	100%	-	-

5.2.5. Proposed Storm Connection

Phase II will connect to the existing 300mm diameter storm sewer along Selkirk Street via a 200 mm diameter storm sewer service connection with a minimum grade of 2.00% (or equivalent pipe design). Refer to engineering drawing "**SS-03**" (submitted separately) for details.

The post-development 100-year storm flow has been designed to match the five (5)-year pre-development storm flow. Therefore, this development will not adversely affect flow conditions downstream and the existing infrastructure on Selkirk Street will be adequate to service this development.

Flows above the 100-year event will be conveyed within pipes and overland to the adjacent municipal right-of-way (ROW). Refer to engineering drawing **Site Grading Plan - Phase II (SG-01)** drawing submitted separately) for overland flow in excess of the 100-year storm event.

5.2.6. Phases I, II and Parkland Area

Phase I

For Phase I, in order to control post-development flows to the 5-year pre-development conditions, a target flow of 77.6 L/s is to be satisfied, as per the 2 Montreal Road & 3 Selkirk Street-FSR SWM Report, approved on September 28, 2022. The required on-site storage is accommodated by the use of one (1) suspended underground storage tank, located at P1 level. The controlled and uncontrolled storm flows, along with the groundwater discharge release rate, result into a post-development total release rate of 77.1 L/s, for the 100-year event.

An oil & grit treatment device (SFPD 0816 with twenty – nine (29) 18in perlite cartridges) has been installed to receive and clean storm flows from the driveway area, which is polluted by car waste. Please refer to engineering drawing **Site Servicing Plan Phases I-II-III (“SS-03”**, submitted separately) for details.

Phase I is serviced by a 200mm storm sewer connection towards to the existing 450mm diameter storm sewer along Montgomery Street with an approximate grade of 1.00%. Please refer to engineering drawing **Site Servicing Plan Phases I-II-III (“SS-03”**, submitted separately) for details.

Phase III

For Phase III, in order to control post-development flows to the 5-year pre-development conditions, a target flow of 36.9 L/s is to be satisfied, as per the 2 Montreal Road & 3 Selkirk Street-FSR SWM Report, approved on August 19, 2025. The required on-site storage is accommodated by the use of one (1) underground storage tank, located at the south side of the property. The controlled and uncontrolled storm flows, along with the groundwater discharge release rate, result into a post-development total release rate of 33.6 L/s, for the 100-year event.

Phase II is serviced by a 200 mm diameter storm sewer service connection to the existing 300mm diameter storm sewer along Selkirk Street with an approximate grade of 1.00%. Please refer to engineering drawing **Site Servicing Plan Phases I-II-III (“SS-03”**, submitted separately) for details.

Parkland Dedication Area

As per the 2 Montreal Road & 3 Selkirk Street-FSR SWM Report approved on September 28, 2022, under post-development conditions storm flow from the Parkland Dedication area decreases significantly, as the C value of this site has reduced from paved surface (0.9) to grass area (0.25). Hence, as far as stormwater management is concerned, no other measures are required for the Parkland Dedication Area. Storm flow from the site will be running uncontrolled towards Selkirk Street, as the target release rate of 28.2 L/s for the subject parkland is achieved.

6.0 Sanitary Drainage System

6.1. Existing Sanitary Drainage System

The existing site is comprised of one (1) single-storey commercial building with parking area. According to available records, there is one (1) sanitary sewer abutting the subject property and more specifically, a 1950mm diameter trunk sewer on North River Road flowing north.

6.2. Existing Sanitary Flows

The sanitary flow generated by the proposed development of Phase II of the Riverain development was compared to the existing flow in order to quantify the net increase in the sanitary sewer.

Using the design criteria outlined in [Section 4.3](#) and existing site information, the sanitary discharge flow from the total existing site towards the existing 600mm diameter sanitary sewer along Montreal Street, which is upstream of the existing 1950mm diameter sanitary trunk sewer along North River Road, is estimated at 0.84 L/s.

6.3. Proposed Sanitary Flows

6.3.1. Sanitary Flows

According to the 2 Montreal Road & 3 Selkirk Street-FSR SWM Report approved on September 28, 2022, Tower A (Phase I) and Tower C (Phase III) were estimated to discharge a sanitary flow of 6.27 L/s and 6.44 L/s to the existing sanitary network along Montgomery Street, respectively, while Tower B (Phase II) was estimated to discharge 7.60 L/s to the existing sanitary network along North River Road.

Using the design criteria and the proposed development statistics to calculate the proposed population, Tower B (Phase II) will discharge a sanitary flow of 7.50L/s ($7.50\text{L/s} < 7.60\text{L/s}$) to the existing sanitary network along North River Road. The total net sanitary flow from the proposed development to the connected municipal sanitary network is estimated at 19.34 L/s. For detailed calculations refer to the sanitary sewer design sheets in [Appendix D](#).

6.4. Proposed Sanitary Connections

The proposed development (Phase II) will connect to the existing 1950mm diameter trunk sanitary sewer on North River Road via a 200mm diameter lateral. The municipal service connection will be at a minimum grade of 2.00% (or equivalent pipe design).

Phases I, III and Parkland Area

Tower A (Phase I) has been connected to the existing 250mm diameter sanitary sewer on Montgomery Street via a 200mm diameter lateral while Tower C (Phase III) has been connected to the existing 250mm diameter sanitary sewer on Montgomery Street via a 200mm diameter lateral at a grade of 2.00% and 1.00% respectively.

The parkland dedication area will connect to the existing 200mm diameter sanitary sewer on Selkirk Street via a 200mm diameter lateral of a minimum grade of 2.00% (or equivalent pipe design).

Refer to engineering drawings [Site Servicing Plan-Phase II](#) and [Site Servicing Plan-Phase I-II-III \(SS-01 and SS-03\)](#), submitted separately) for details.

6.5. Conclusions

After taking into consideration all the above, we provided the required calculations to the City, in order to review how the additional flow from the proposed development will affect the municipal networks downstream. According to the information provided, the sanitary sewer infrastructure along Montgomery Street and Selkirk Street has adequate capacity to accommodate the total additional flows of 20.18 L/s from the proposed development and, thus, they can support it. Refer to [Appendix B](#) for email correspondence with the City.

Considering the fact that the proposed sanitary flow of 7.50 L/s for Phase II is smaller than the approved by the City (7.60 L/s), the municipal sanitary infrastructure will be able to accommodate the subject proposed flow. For detailed calculations refer to the sanitary sewer design sheet in [Appendix D](#).

7.0 Groundwater Flows

Phase II of the proposed development will be serviced by one (1) underground parking level and the lowest basement slab design depth will be approximately 4.0 m below surface or 52.8 masl (FFE of P1 Level). Based on the Hydrogeological Report prepared by Paterson Group dated July 22, 2022 (can be found in [Appendix B](#)) the building and basement level will be founded above the long-term groundwater table, which ranges between 6m to 7m deep.

According to the Geotechnical Investigation prepared by Paterson Group dated March 26, 2022 water carried by the foundation and underfloor drainage system will generally consist of surface water and will not consist of groundwater/long-term dewatering of the groundwater table. Under post-remediation process, the water collected by the foundation drain, should be 'clean' by the time it will be discharged into the City's storm sewer network via a sump pit. Therefore, no treatment should be necessary.

7.1. Short-Term Groundwater Dewatering

According to the Hydrogeological Report prepared by Paterson Group dated July 22, 2022 (can be found in [Appendix B](#)) site dewatering during construction is estimated at more than 2,000 m³/day, translated into 2,000,000 L/day. Detailed information regarding the short-term groundwater discharge rate for Phase III will be provided on a later stage.

7.2. Long-Term Groundwater Dewatering

Phase II will have one (1) underground level and the lowest basement's elevation will be approximately 4.0m below surface or 52.80 masl (FFE of P1 Level) below grade elevation. According to the Geotechnical Investigation prepared by Paterson Group dated March 26, 2022, (can be found in [Appendix B](#)) it is recommended that 150mm diameter sleeves at 3m centres be cast in the footing or at the foundation wall/footing interface to allow the infiltration of water to flow to the interior perimeter drainage pipe.

The sleeves should be connected to openings in the HDPE face of the drainage board layer. The perimeter drainage pipe and underfloor drainage system should direct water to sump pit(s) within the lower basement area.

Groundwater sump pump will be sized, based on the estimated long-term discharge rate of 30,000 L/day due to surface water infiltration, as per the Geotechnical Investigation prepared by Paterson Group dated March 26, 2022, which can be found in [Appendix B](#). Assuming that the groundwater pump will run for approximately 8 hours per day, the peak groundwater discharge rate is estimated at 1.0 L/s.

8.0 Water Supply System

8.1. Existing System

The subject property lies within the City of Ottawa 1E pressure zone. The existing watermain system abutting the proposed development consists of a 200 mm diameter watermain on the east side of North River Road and a 150 mm diameter watermain on the centerline of Selkirk Street.

8.2. Proposed Water Supply Requirements

The estimated water consumption was calculated based on the occupancy rates shown on [Table 4-2](#), according to the City's watermain design criteria.

It is anticipated that an average domestic water consumption of approximately 2.35 L/s (203,040 L/day), a maximum daily consumption of 6.46 L/s (558,144L/day) and a peak hourly demand of 9.70 L/s (34,920 L/hr) will be required to service Phase II.

The fire flow requirements we estimated using the method prescribed by the Fire Underwriters Survey (FUS) be undertaken to assess the minimum requirement for fire suppression. The fire flow calculations are normally conducted for the largest storey, by area, and for the two immediately adjacent storeys.

As a result to the above-mentioned method, we have selected the total area of Level 5 and the immediately adjoining storeys, which are Levels 4 and 6.

Table 8-1 below illustrates the input parameters used for the FUS calculations. According to our calculations, a minimum fire suppression flow of approximately 83.33 L/s (1,321 USGPM) will be required to service Tower B (Phase II). Detailed calculations can be found in **Appendix E**.

Table 8-1 - Fire Flow Input Parameters – Tower C (Phase II)

Parameter	Frame used for Building	Combustibility of Contents	Presence of Sprinklers	Separation Distance			
				North	East	South	West
Value according to FUS options	Non-Combustible Construction	Limited-Combustible	Yes	0.0m to 3m	20.1m to 30m	Road	Road
Surcharge/reduction from base flow	0.8	15%	30%	25%	10%	0%	0%

In summary, the required design flow is the sum of ‘the minimum fire suppression flow’ and ‘maximum daily demand’ (83.33 + 6.46 = 89.79 L/s, 1,423 USGPM).

Table 8-2 below summarizes the anticipated water demand for Phase II on the City of Ottawa Guidelines – Water Distribution.

Table 8-2 – Water Demand – Tower B (Phase II)

Design Parameter	Anticipated Demand (L/min)
Average Day Demand	141.0
Max Day + Fire Flow	387.6 + 4,000 = 4,387.6
Max Hour Demand	582.0

Phases I and III

According to the 2 Montreal Road & 3 Selkirk Street and 300 Montgomery Street-FSR SWM Reports, approved on September 28, 2022 and August 19, 2025 respectively, were estimated with a required design flow of approximately 121.86 L/s (1,932 USGPM) and 72.12 L/s (1,143 USGPM), respectively.

8.3. Watermain Analysis Results

Upon completion of the detailed calculations in order to determine the anticipated domestic water consumption and the required minimum fire flow for the proposed development, the calculation results were provided to the City of Ottawa. As a result, the above noted values were used to generate the municipal watermain network boundary conditions.

Table 8-3 that follows summarizes the boundary conditions provided by the City of Ottawa for the existing municipal watermain network along Selkirk Street.

Table 8-3– Boundary Conditions Provided by the City

Municipal Watermain Boundary Condition	Selkirk Street (Phase II)
Minimum HGL	105.6
Maximum HGL	118.4
Available Flow @ 20 psi	90.2 L/s

Table 8-4 summarizes the calculated water demands for the proposed development under the various operating conditions and compares the anticipated operating pressures at the watermains to the normal operating pressures outlined in the City of Ottawa Design Guidelines.

Table 8-4- Watermain Analysis Results – Domestic Flow

Watermain Connection	Design Parameter	Anticipated Demand (L/s)	Approximate Design Operating Pressures (psi) / Relative Head (m)	Normal Municipal Operating Pressures (psi)
Selkirk Street – Phase II	Average Demand	2.35	87 psi (61.3m)	50-70 psi
	Peak Hour Demand	9.70	69 psi (48.5m)	40-70 psi
	Max Day + Fire Flow	89.79	69 psi (48.5m)	20 psi (min)

According to **Table 8-4** and the information provided by the City of Ottawa, the water pressure for the average demand result in greater values than the maximum allowed by the City's Guidelines. Hence, pressure reducing valves are required, as well as a pressure check at the completion of construction to determine whether a pressure control is required for the proposed development at 3 Selkirk Street.

Table 8-5- Watermain Analysis Results – Fire Flow Phase II

Watermain Connection	Required Fire Flow (L/s)	Available Fire Flow (L/s)
Selkirk Street – Phase II	89.79	90.2 L/s

As indicated in **Table 8-5**, the available fire flow along Selkirk Street, exceeds the required fire flow of the corresponding tower, thus, the existing water infrastructure will be able to support Phase II of the proposed development. The boundary conditions and the multi hydrant analysis results received by the City of Ottawa can be found in **Appendices B and E**.

As far as the sufficiency of the fire hydrants is concerned, **Table 8-6** below represents the available fire flow at 20 psi, as per Table 1 of the Technical Bulletin ISTB 2018-02 of the existing fire hydrants in the adjacent roads of the proposed development.

As displayed in **Figure 5** (found in **Appendix E**), the proposed buildings are within a radius of 75m of at least one Class-AA fire hydrant. According to **Table 8-6** the existing fire hydrants are adequate to service the fire flow demand for the proposed development.

Table 8-6 – Fire flow requirements and Available Fire Flow

Building	Fire Flow Demand (L/min)	Fire Hydrants in a distance ≤75m / Hydrant Class	Fire Hydrants in a distance >75m and ≤150m / Hydrant Class	Maximum Available Fire Flow per Table 1 of ISTB 2018-2 (L/min)	Available Fire Flow according to the information provided by the City of Ottawa (L/min)
Tower B	5,000	2 – Class AA	3– Class AA	5,700	5,412

8.4. Proposed Watermain Connection

Phase II will be serviced by two (2) 150 mm diameter water laterals, which will connect to the 150mm diameter existing watermain on Selkirk Street. According to City standards, the watermains will be partially insulated. Refer to engineering drawing **Site Servicing Plan-Phase III (SS-01)** drawing submitted separately) for details.

Phases I, III and Parkland Area

The water lateral of Phase I is connected to the 150mm diameter existing watermain on Montgomery Street while the water laterals for Phase III will connect to the 150mm diameter existing watermain on Selkirk Street and to the 150mm diameter existing watermain on Montgomery Street. The Parkland Dedication Area will be connected to the 150mm diameter existing watermain on Selkirk Street via a 50mm diameter waterline. According to City standards, the watermains are insulated. Refer to engineering drawing **Site Servicing Plan-Phase I-II-III (SS-03)** drawing, submitted separately) for details.

9.0 Erosion and Sediment Control

Soil erosion occurs naturally and is a function of soil type, climate topography. The extent of erosion losses is exaggerated during construction where vegetation has been removed and the top layer of soil becomes agitated.

Prior to topsoil stripping, earthworks or underground construction, erosion and sediment controls will be implemented and will be maintained throughout construction.

Silt fence will be installed around the perimeter of the site and will be cleaned and maintained throughout construction.

Catch basins will have filter fabric installed under the grate during construction to protect from silt entering the storm sewer system.

A mud mat will be installed at the construction access in order to prevent mud tracking onto adjacent roads.

Erosion and sediment controls must be in place during construction. The following recommendations to the contractor will be included in contract documents.

- Limit extend of exposed soils at any given time.
- Re-vegetate exposed areas as soon as possible.
- Minimize the area to be cleared and grubbed.
- Protect exposed slopes with plastic or synthetic mulches.
- Install silt fence to prevent sediment from entering existing ditches.
- No refueling or cleaning of equipment near existing watercourses.
- Provide sediment traps and basins during dewatering.
- Install filter cloth between catch basins and frames.
- Plan construction at proper time to avoid flooding.

Establish material stockpiles away from watercourses, so that barriers and filters may be installed.

The contractor will, at every rainfall, complete inspections and guarantee proper performance. The inspection is to include:

- Verification that water is not following under silt barriers.
- Clean and change filter cloth at catch basins.

10.0 Site Grading

10.1. Existing Grades

The existing site is approximately 1.693 hectares and is currently occupied by one (1) single-storey commercial building and by outdoor parking area. Moreover, it is located between North River Road, Selkirk Street, Montgomery Street and Montreal Road, in the City of Ottawa. The site drains into the existing stormwater system inside the property and overland towards the adjacent right of ways (ROW).

10.2. Proposed Grades

The proposed grades will improve the existing drainage conditions to meet the City's/Regional requirements. Grades will be maintained along the property line wherever feasible and emergency overland flow will be directed towards the public ROWs. Existing drainage patterns on adjacent properties will not be altered and stormwater runoff from the subject development will not affect the adjacent properties.

11.0 Conclusions and Recommendations

Based on our investigation, we conclude the following:

Storm Drainage

The subject property will be constructed under Phase II of the proposed development. More specifically, Phase II will consist of a 2 and 6-storey podium with above ground parking area and with a high-rise 32-storey tower (Tower B). In addition, Phase II will be facilitated by one underground parking level (P1 level). Stormwater flow from Phase II will be discharged into the existing 300mm diameter storm sewer on Selkirk Street, through one (1) 150mm diameter storm connection with a minimum grade of 2.00% (or equivalent design).

Post-development storm flows from the proposed development (Phase II), will meet the 5-year pre-development flow. In order to achieve the target flows and meet the City's Regulations, quantity controls will be utilized up to 143.9 m³ of total on site storage will be required for Phase II.

The stormwater management (SWM) system will be designed to provide enhanced level (Level 1) protection as specified by the Ministry of the Environment, Conservation and Parks (MECP). Quality control will be provided for the subject site by rooftops/terraces for a minimum total suspended solids (TSS) removal of 80%.

Sanitary Sewers

Phase II will consist of a 2 and 6-storey podium with above ground parking area and with a high-rise 32-storey tower (Tower B). The proposed development (Phase II) will be serviced by one (1) 200mm diameter sanitary lateral connection to the 1950mm diameter trunk sanitary sewer on North River Road, with a minimum grade of 2.00% (or equivalent design).

The additional discharge flow from the proposed development (Phase II) towards the sanitary network, is anticipated at approximately 7.50 L/s. According to the information provided by the City, the existing infrastructure has the capacity to support the additional sanitary flow, from the proposed development.

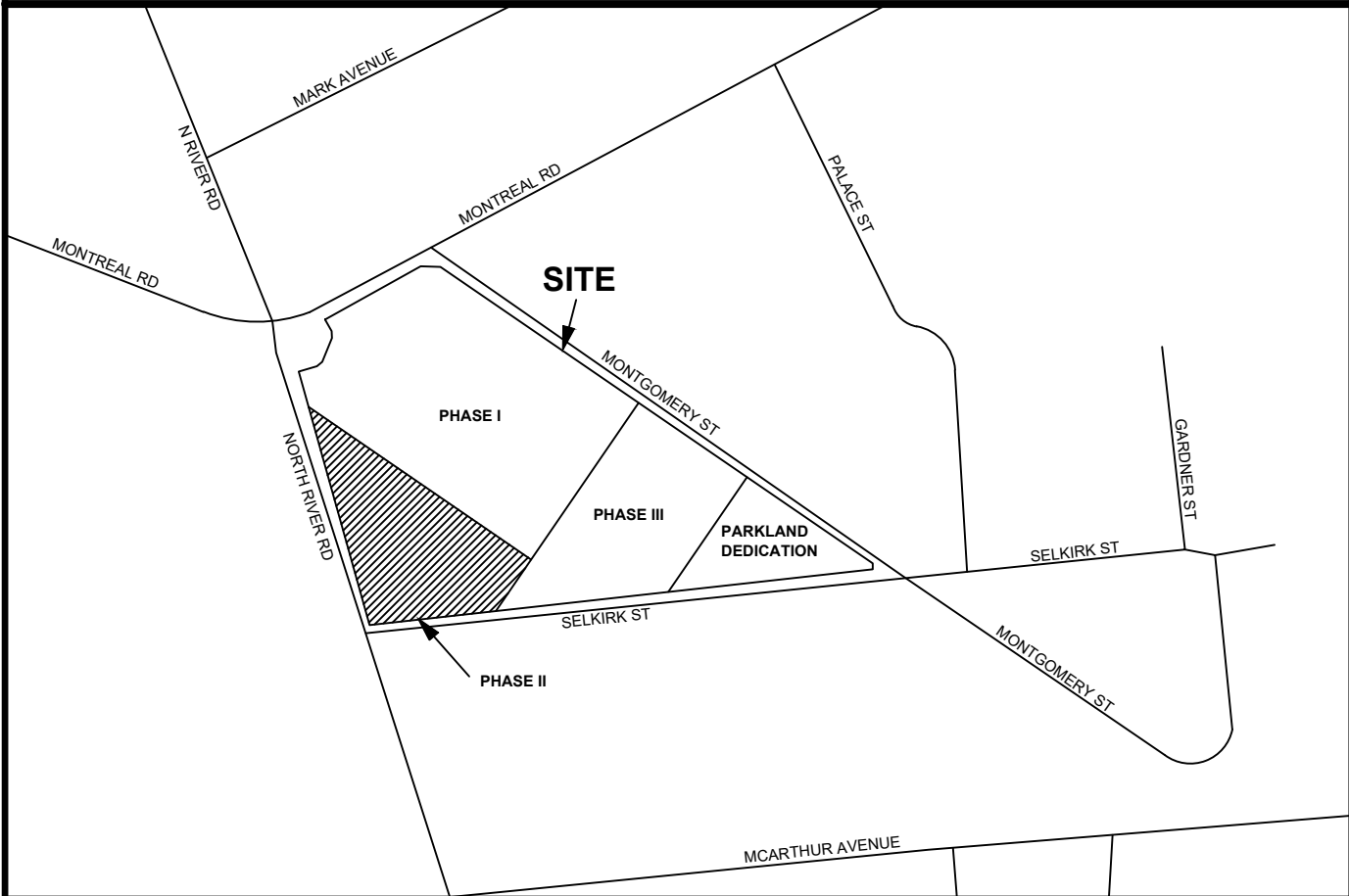
Water Supply

Water supply for the proposed development (Phase II) will be provided by two (2) water connections towards the existing 150 mm diameter watermain running along the centerline of Selkirk Street.

It is anticipated that a total design flow of 89.79 L/s will be required to support Phase II. Based on the boundary conditions received from the City, it is revealed that the existing water infrastructure can support the proposed development.

Site Grading

The proposed grades will improve the existing drainage conditions to meet the City's/Regional requirements. Grades will be maintained along the property line wherever feasible and emergency overland flow will be gravity driven to the adjacent right-of-way's (ROW).



150 Bermondsey Road, Toronto, Ontario, M4A-1Y1

LOCATION PLAN
RESIDENTIAL USE DEVELOPMENT
3 SELKIRK STREET
OTTAWA, ONTARIO

DATE:	FEBRUARY 2026	PROJECT No:	UD25-052
SCALE:	N.T.S.	FIGURE No:	FIG 1



150 Bermondsey Road, Toronto, Ontario, M4A-1Y1

AERIAL PLAN
RESIDENTIAL USE DEVELOPMENT
3 SELKIRK STREET
OTTAWA, ONTARIO

DATE:	FEBRUARY 2026	PROJECT No:	UD25-052
SCALE:	N.T.S.	FIGURE No:	FIG 2

Appendix A

Site Photographs



North-West Corner of Property – Facing South-East



North-East Corner of Property – Facing South-West



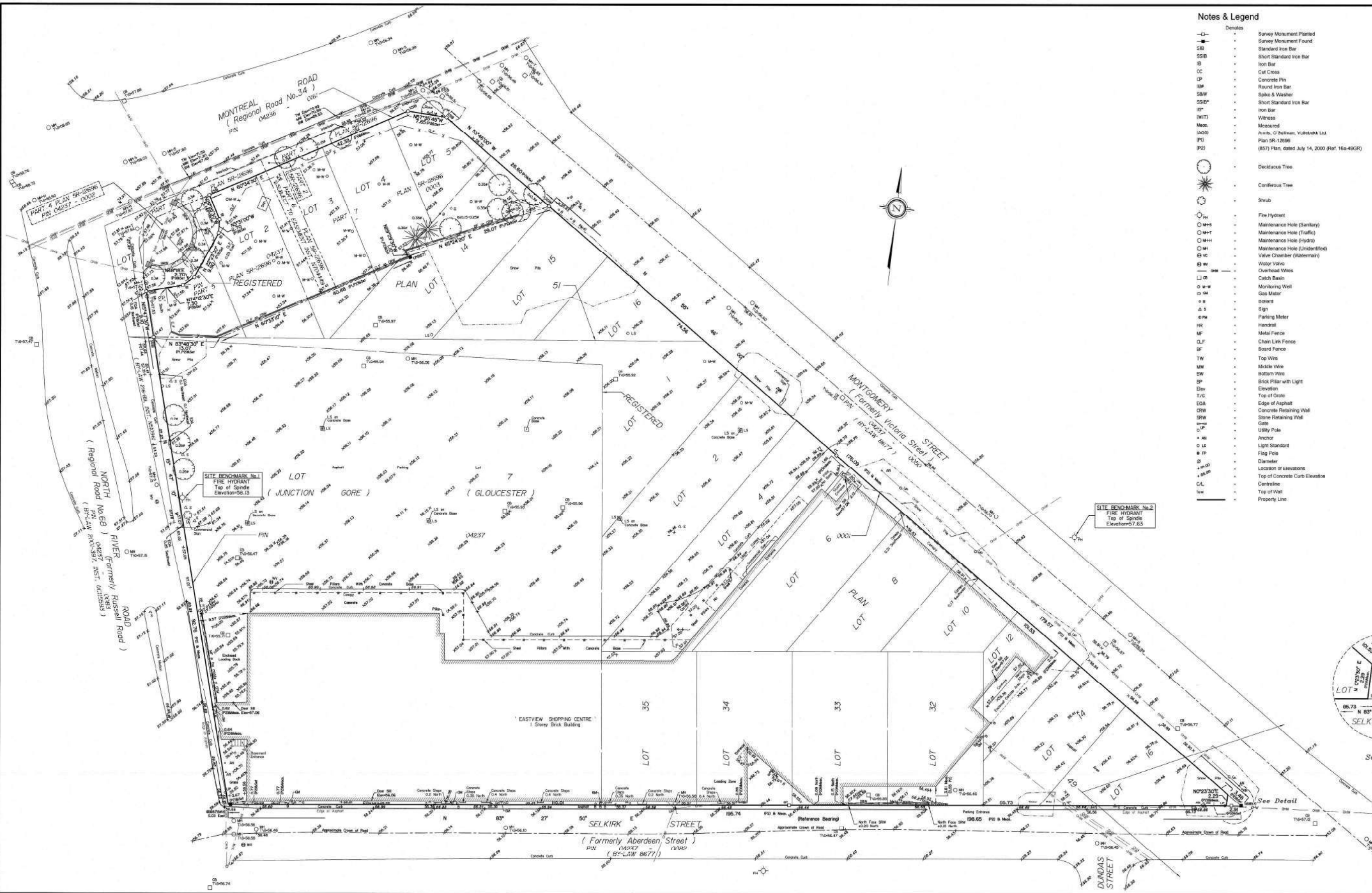
South-East Corner of Property – Facing North-West



South-West Corner of Property – Facing North-East

Appendix B

Background Information



Notes & Legend

Symbol	Description
—□—	Survey Monument Planted
—■—	Survey Monument Found
—SIB	Standard Iron Bar
—SSB	Short Standard Iron Bar
—IB	Iron Bar
—CC	Cut Cross
—CP	Concrete Pin
—RIF	Round Iron Bar
—S&W	Spike & Washer
—SSB*	Short Standard Iron Bar
—IB*	Iron Bar
—(WIT)	Witness
—Meas.	Measured
—(AOO)	Annis, O'Sullivan, Vollebek Ltd.
—(PI)	Plan SR-12696
—(P2)	(857) Plan, dated July 14, 2000 (Ref. 166-48GR)
—○—	Deciduous Tree
—*—	Coniferous Tree
—○—	Shrub
—○—	Fire Hydrant
—○—	Maintenance Hole (Sanitary)
—○—	Maintenance Hole (Traffic)
—○—	Maintenance Hole (Hydro)
—○—	Maintenance Hole (Undertended)
—○—	Valve Chamber (Watermain)
—○—	Valve Valve
—○—	Overhead Wires
—○—	Catch Basin
—○—	Monitoring Well
—○—	Gas Meter
—○—	Isolant
—○—	Sign
—○—	Parking Meter
—○—	Handrail
—○—	Metal Fence
—○—	Chain Link Fence
—○—	Board Fence
—○—	Top Wire
—○—	Middle Wire
—○—	Bottom Wire
—○—	Brick Pillar with Light
—○—	Elev.
—○—	Top of Grade
—○—	Edge of Asphalt
—○—	Concrete Retaining Wall
—○—	Stone Retaining Wall
—○—	Gate
—○—	Utility Pole
—○—	Anchor
—○—	Light Standard
—○—	Flag Pole
—○—	Diameter
—○—	Location of Elevations
—○—	Top of Vise
—○—	Centreline
—○—	Top
—○—	Property Line

TOPOGRAPHICAL PLAN OF SURVEY OF
LOTS 2, 4, 6, 8, 10, 12, 14, 16, 32, 33,
34, 35 AND PART OF LOT 1
REGISTERED PLAN 49
AND
LOTS 14, 15, 16 AND
PART OF LOTS 1, 2, 3, 4, AND 5
REGISTERED PLAN 51
AND
PART OF LOT 7
JUNCTION GORE
GEOGRAPHIC TOWNSHIP OF GLOUCESTER
CITY OF OTTAWA

Prepared by Annis, O'Sullivan, Vollebek Ltd.
 Field Work Completed March 6, 2020.



Metric
 DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND
 CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

Surveyor's Certificate
 I CERTIFY THAT:
 1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act and the Land Titles Act and the regulations made under them.
 2. The survey was completed on the 06th day of March, 2020.

[Signature]
 Date: 03/06/20
 V. Sullivan
 Ontario Land Surveyor

Bearing Note
 Bearings are grid, derived from the northerly limit of Selkirk Street having a bearing of N83°27'50"E as shown on a Plan by (857) dated July 14, 2000 and are referenced to the Central Meridian of MTM Zone 9 (17°30' west longitude) NAD83 (original).

ELEVATION NOTES
 1. Elevations shown are geodetic and are referred to the CGVD2011 geodetic datum, derived from City of Ottawa benchmark No. 3465 having an elevation of 107.611 metres.
 2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that its relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES
 1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
 2. Only visible surface utilities were located.
 3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

SITE AREA = 16931.9 m²
 Topographic data was collected under Winter Conditions. Snow cover and ice preclude determining location and elevation of some topographical data that is otherwise visible.



ASSOCIATION OF ONTARIO
 LAND SURVEYORS
 PLAN SUBMISSION FORM
 2121743

THIS PLAN IS NOT VALID UNLESS IT IS SUBMITTED IN ORIGINAL COPY TO THE SURVEYOR IN ACCORDANCE WITH REGULATION 1120 (Section 26 (3))

TOPOGRAPHIC SKETCH OF

SELKIRK STREET AND
NORTH RIVER ROAD
CITY OF OTTAWA

Prepared by Annis, O'Sullivan, Vollebek Ltd.
Fieldwork Completed November 28, 2025

Scale 1 : 300



Metric

DISTANCES AND COORDINATES SHOWN ON THIS PLAN
ARE IN METRES AND CAN BE CONVERTED TO FEET BY
DIVIDING BY 0.3048.

Notes & Legend

Denotes	
○ MH-ST	Maintenance Hole (Storm Sewer)
○ MH-S	Maintenance Hole (Sanitary)
○ MH-B	Maintenance Hole (Bell)
○ MH-T	Maintenance Hole (Traffic)
○ MH-C	Maintenance Hole (Cable)
○ MH	Maintenance Hole (Unidentified)
⊕ VC	Valve Chamber (Watermain)
— OHW	Overhead Wires
○ LP	Utility Pole
• AN	Anchor
○ LS	Light Standard
□ CB	Catch Basin
○ FH	Fire Hydrant
⊕ WV	Water Valve
T/G	Top of Grate
□ HH	Handhole
○ TB-B	Bell Terminal Box
○ TB-C	Cable Terminal Box
○ TB-T	Traffic Terminal Box
○ TB	Unidentified Terminal Box
○ B	Bollard
△ S	Sign
TOS	Top of Slope
BOS	Bottom of Slope
○ PO-M	Metal Pole
○ PO-C	Concrete Pole
+ 45.50	Location of Elevations
+ 65.50	Top of Concrete Curb/Retaining Wall Elevation

ELEVATION NOTES

- Elevations shown are geodetic and are derived from City of Ottawa Vertical Benchmark No. 001196530246 having an elevation of 57.393 referred to the CGVD28 geodetic datum.
- It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that its relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

- This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
- Only visible surface utilities were located.
- A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

PLAN ILLUSTRATING CONFIGURATION OF 4R-36153 PARTS AT ELEVATION 57.10

Caution

This is NOT a Plan of Survey and shall not be used except for the purpose indicated in the title block.

Boundary information compiled from Plans 4R-34900 and 4R-36153.

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ANNIS, O'SULLIVAN, VOLLEBEK LTD.

14 Concourse Gate, Suite 500

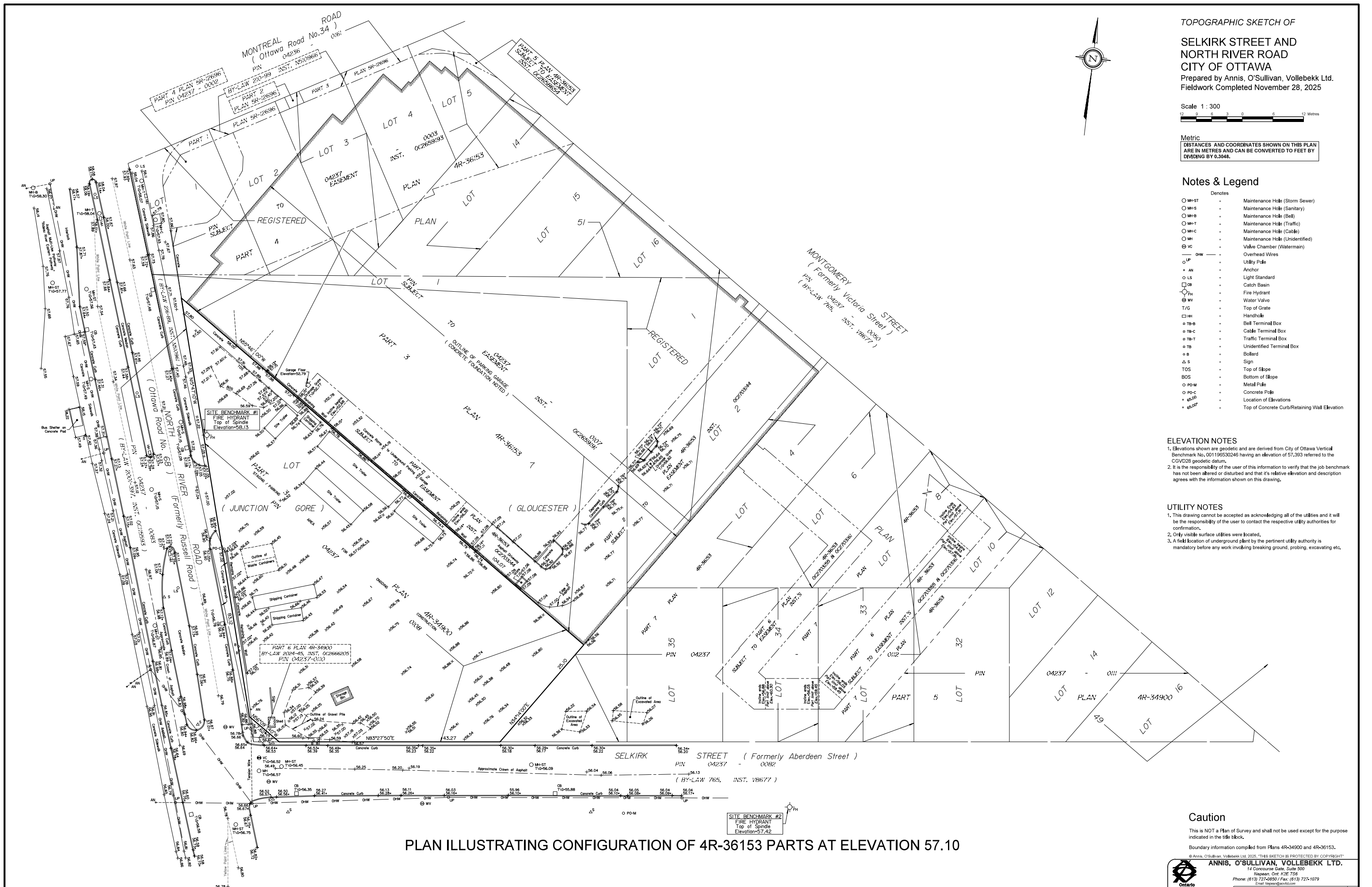
Napanee Ont. K2E 7J8

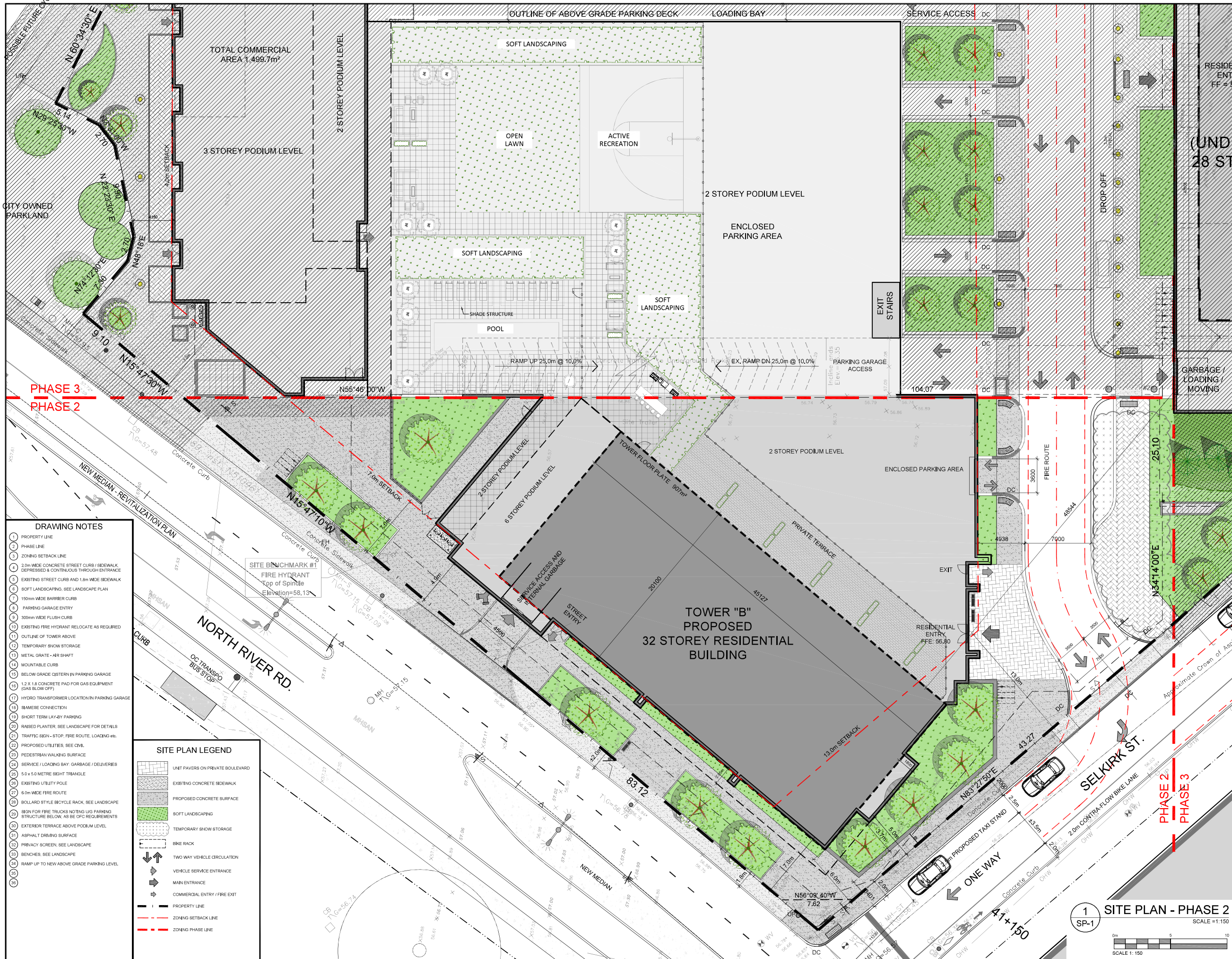
Phone: (613) 727-0850 / Fax: (613) 727-1079

Email: napanee@annis.com

Ontario Land Surveyors

Reg. No. 25875-25 Member: Selkirk St & N. River Rd. T.F.



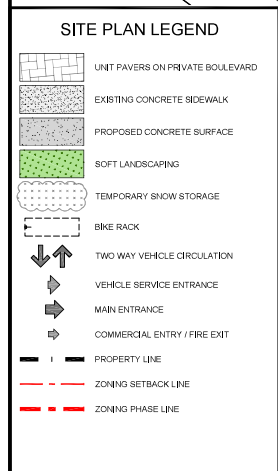


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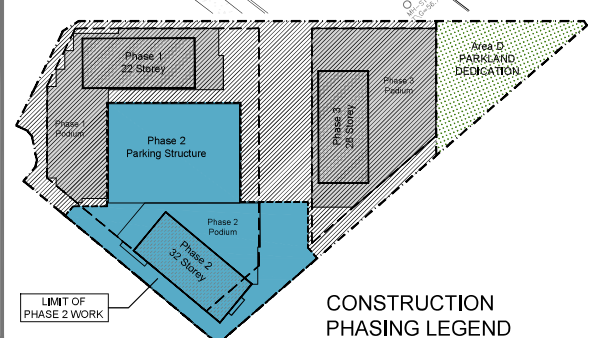
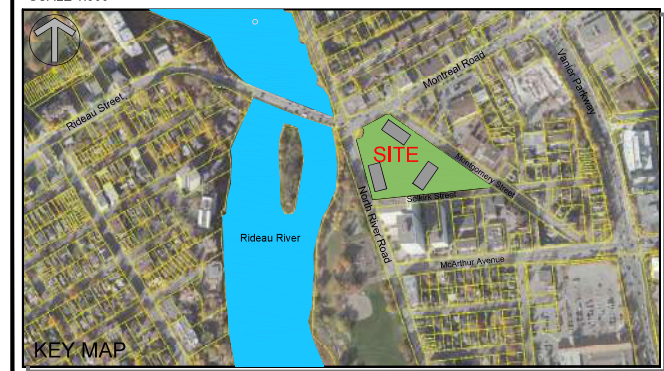
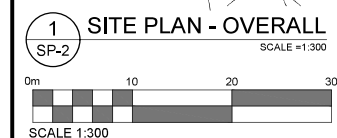
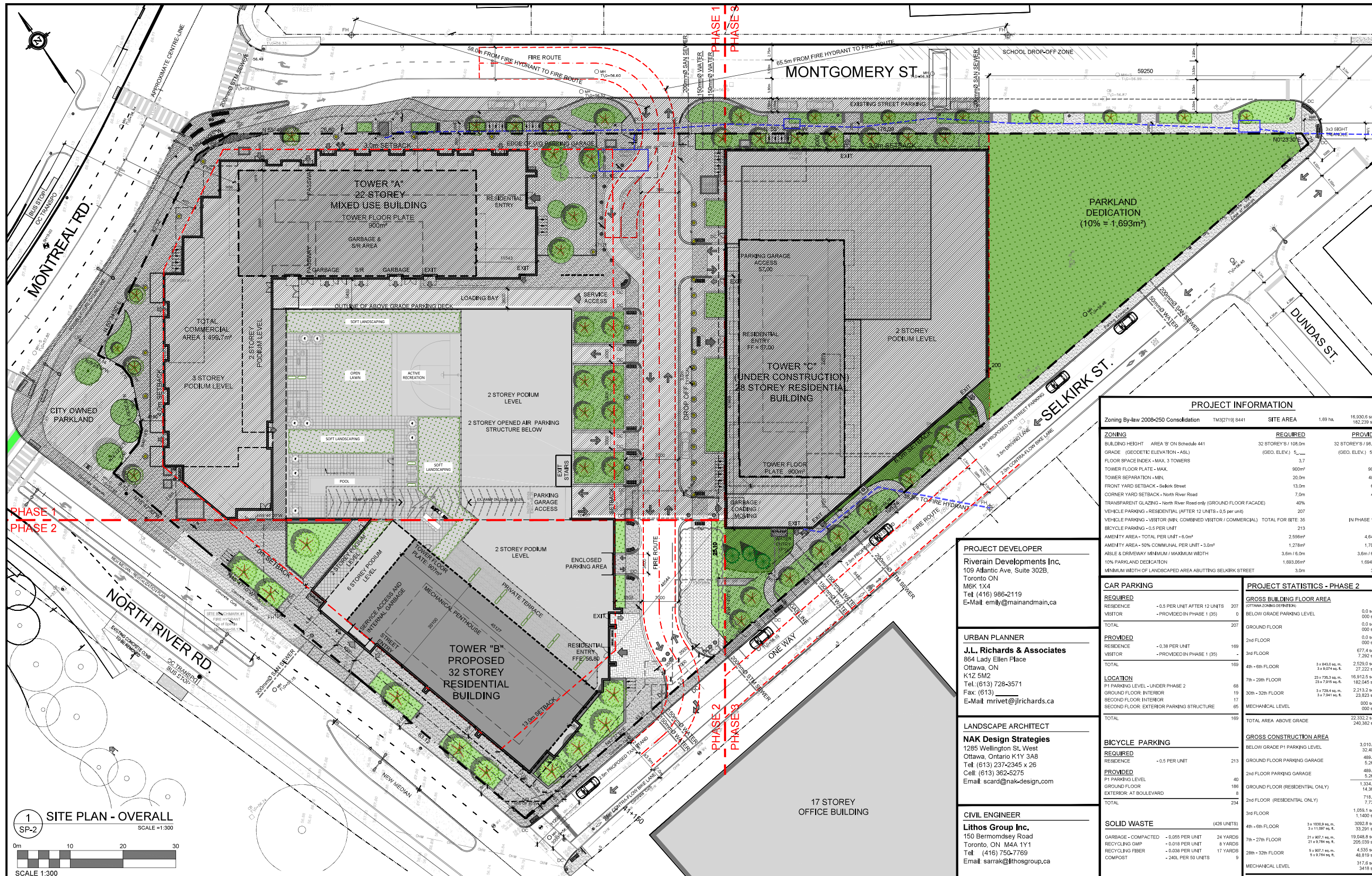
NOTATION SYMBOLS:

- DC INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- DC INDICATES ASSEMBLY TYPE, REFER TO TYPICAL ASSEMBLIES SCHEDULE.
- DC INDICATES WINDOW TYPE, REFER TO WINDOW ELEVATIONS AND DETAILS ON A100 SERIES.
- DC INDICATES DOOR TYPE, REFER TO DOOR SCHEDULE AND DETAILS ON A100 SERIES.
- DC -DETAIL NUMBER
- DC -DETAIL REFERENCE PAGE
- DC -DETAIL CROSS REFERENCE PAGE

- DRAWING NOTES**
- PROPERTY LINE
 - PHASE LINE
 - ZONING SETBACK LINE
 - 2.0m WIDE CONCRETE STREET CURB / SIDEWALK, DEPRESS & CONTINUOUS THROUGH ENTRANCE
 - EXISTING STREET CURB AND 1.8m WIDE SIDEWALK
 - SOFT LANDSCAPING, SEE LANDSCAPE PLAN
 - 150mm WIDE BARRIER CURB
 - PARKING GARAGE ENTRY
 - 300mm WIDE FLUSH CURB
 - EXISTING FIRE HYDRANT RELOCATE AS REQUIRED
 - OUTLINE OF TOWER ABOVE
 - TEMPORARY SNOW STORAGE
 - METAL GRATE - AIR SHAFT
 - MOUNTABLE CURB
 - BELOW GRADE CISTERN IN PARKING GARAGE
 - 1.2 X 1.8 CONCRETE PAD FOR GAS EQUIPMENT (GAS BLOW OFF)
 - HYDRO TRANSFORMER LOCATION IN PARKING GARAGE
 - SIAMOSE CONNECTION
 - SHORT TERM LAY-BY PARKING
 - RAISED PLANTER, SEE LANDSCAPE FOR DETAILS
 - TRAFFIC SIGN - STOP, FIRE ROUTE, LOADING etc.
 - PROPOSED UTILITIES, SEE CIVIL
 - PEDESTRIAN WALKING SURFACE
 - SERVICE / LOADING BAY, GARBAGE / DELIVERIES
 - 5.0 x 5.0 METRE SIGHT TRIANGLE
 - EXISTING UTILITY POLE
 - 6.0m WIDE FIRE ROUTE
 - BOLLARD STYLE BICYCLE RACK, SEE LANDSCAPE
 - SIGN FOR FIRE TRUCKS NOTING LUG PARKING STRUCTURE BELOW, AS BE OFC REQUIREMENTS
 - EXTERIOR TERRACE ABOVE PODIUM LEVEL
 - ASPHALT DRIVING SURFACE
 - PRIVACY SCREEN, SEE LANDSCAPE
 - BENCHES, SEE LANDSCAPE
 - RAMP UP TO NEW ABOVE GRADE PARKING LEVEL
 -
 -
 -



ISSUED FOR COORDINATION	Feb. 10, 26
ISSUED FOR OWNER / CONSULTANT REVIEW	Jan. 28, 25
NO. DESCRIPTION	DATE
REVISIONS	
ARCHITECT SEAL	NORTH ARROW
SEAL DATE: STAMP DATE	
CLIENT:	main + main
ARCHITECT:	rla / architecture roderick lahey architect inc. 55 beach street, ottawa, ontario k1s 3j6 1.613.724.9932 1.613.724.1205 rlaarchitecture.ca
PROJECT TITLE:	MAISON RIVERAIN 2 MONTREAL ROAD, 3 SELKIRK STREET 300 MONTGOMERY STREET OTTAWA, ONTARIO
SHEET TITLE:	SITE PLAN (PHASE 2) TOWER 'B' - PHASE 2
DRAWN:	CHECKED:
RV	R.D.
SCALE:	SHEET NO.:
1:150	SP-1
PROJECT NO.:	
2511	



LEGAL DESCRIPTION
 TOPOGRAPHICAL PLAN OF SURVEY OF
 LOTS 2, 4, 6, 8, 10, 12, 14, 16, 32, 33, 34,
 35 AND PART OF LOT 1
 REGISTERED PLAN 49 AND
 LOTS 14, 15, 16 AND
 PART OF LOTS 1, 2, 3, 4, AND 5
 REGISTERED PLAN 51 AND
 PART OF LOT 7
 JUNCTION GORE
 GEOGRAPHIC TOWNSHIP OF
 GLOUCESTER
 CITY OF OTTAWA
 Surveyed by Annis, O'Sullivan, Vollebek Ltd.

GEOTECHNICAL ENGINEER
Paterson Group
 154 Colonnade Road South
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 Tel: (613) 226-7381
 Email: MD'Arcy@Patersongroup.ca

TRANSPORTATION ENGINEER
Parsons
 1223 Michael Street, Suite 100,
 Ottawa, ON
 K1J 7T2
 Tel: (613) 601-1528
 Cell: (343) 996-5362
 Email: Matthew.Mantle@parsons.com

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 Nepean, Ontario K2E 7S6
 Tel: (613) 727-4352
 Fax: (613) 727-1079
 Email: AndyS@aovltd.com

PROJECT INFORMATION

Zoning By-law 2006-250 Consolidation	TM3(211) S441	SITE AREA	1.69 ha	16,300.6 sq. ft.	162,239 sq. ft.
ZONING		REQUIRED		PROVIDED	
BUILDING HEIGHT - AREA 'B' ON Schedule 441		32 STOREYS / 108.0m		32 STOREYS / 98.50m	
GRADE (GEODEIC ELEVATION + ABL)		(GEO. ELEV.) 0		(GEO. ELEV.) 97.00	
FLOOR SPACE INDEX - MAX. 3 TOWERS		3.7		3.7	
TOWER FLOOR PLATE - MAX.		900m ²		907m ²	
TOWER SEPARATION - MIN.		20.0m		48.5m	
FRONT YARD SETBACK - Selkirk Street		13.0m		6.0m	
CORNER YARD SETBACK - North River Road		7.0m		4.9m	
TRANSPARENT GLAZING - North River Road only (GROUND FLOOR FACADE)		40%		44%	
VEHICLE PARKING - RESIDENTIAL (AFTER 12 UNITS - 0.5 per unit)		207		169	
VEHICLE PARKING - VISITOR (MIN. COMBINED VISITOR / COMMERCIAL)		TOTAL FOR SITE: 35		IN PHASE 1: 35	
BICYCLE PARKING - 0.5 PER UNIT		213		234	
AMENITY AREA - TOTAL PER UNIT - 6.0m ²		2,556m ²		4,640m ²	
AMENITY AREA - 50% COMMUNAL PER UNIT - 3.0m ²		1,278m ²		1,700m ²	
ABLE & DRIVEWAY MINIMUM / MAXIMUM WIDTH		3.6m / 6.0m		3.6m / 6.0m	
10% PARKLAND DEDICATION		1,684.0m ²		1,684.0m ²	
MINIMUM WIDTH OF LANDSCAPED AREA ABUTTING SELKIRK STREET		3.0m		3.7m	

CAR PARKING

REQUIRED		PROVIDED	
RESIDENCE	-0.5 PER UNIT AFTER 12 UNITS	207	207
VISITOR	- PROVIDED IN PHASE 1 (35)	0	35
TOTAL		207	242
PROVIDED			
RESIDENCE	-0.38 PER UNIT	169	169
VISITOR	- PROVIDED IN PHASE 1 (35)	0	35
TOTAL		169	204

PROJECT STATISTICS - PHASE 2

GROSS BUILDING FLOOR AREA		
BELOW GRADE PARKING LEVEL	0.0 sq. ft.	0.0 sq. ft.
2ND FLOOR	0.0 sq. ft.	0.0 sq. ft.
3RD FLOOR	0.0 sq. ft.	0.0 sq. ft.
4th - 6th FLOOR	3,843.0 sq. ft.	2,529.0 sq. ft.
7th - 20th FLOOR	23,735.3 sq. ft.	16,912.5 sq. ft.
30th - 32nd FLOOR	3,128.8 sq. ft.	2,213.2 sq. ft.
MECHANICAL LEVEL	0.0 sq. ft.	0.0 sq. ft.
TOTAL AREA ABOVE GRADE	22,532.2 sq. ft.	24,035.2 sq. ft.

BICYCLE PARKING

REQUIRED		PROVIDED	
RESIDENCE	-0.5 PER UNIT	213	213
P1 PARKING LEVEL		40	40
GROUND FLOOR INTERIOR		186	186
EXTERIOR AT BOULEVARD		8	8
TOTAL		234	234

SOLID WASTE (426 UNITS)

GARBAGE - COMPACTED	-0.055 PER UNIT	24 YARDS
RECYCLING COMP	-0.018 PER UNIT	8 YARDS
RECYCLING FIBER	-0.038 PER UNIT	17 YARDS
COMPOST	-240L PER 50 UNITS	9

TOTAL UNITS PER PHASE

PHASE 1	394
PHASE 2	385
PHASE 3	426
TOTAL	1,205
TOTAL UNITS	1,205
TOTAL RESIDENTIAL PARKING	626
TOTAL VISITOR / COMMERCIAL	66

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND TO REPORT ALL ERRORS AND/OR OMISSIONS TO THE ARCHITECT.
 ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.
 THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNLESS SIGNED BY THE ARCHITECT.
 DO NOT SCALE DRAWINGS.
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NOTATION SYMBOLS:

- INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- INDICATES ASSEMBLY TYPE, REFER TO TYPICAL ASSEMBLIES SCHEDULED.
- INDICATES WINDOW TYPE, REFER TO WINDOW ELEVATIONS AND DETAILS ON A100 SERIES.
- INDICATES DOOR TYPE, REFER TO DOOR SCHEDULE AND DETAILS ON A100 SERIES.
- DETAIL NUMBER
- DETAIL REFERENCE PAGE
- DETAIL CROSS REFERENCE PAGE

ARCHITECT SEAL	ARCHITECT
SEAL DATE, STAMP DATE	CLIENT
ARCHITECT ASSOCIATION	PROJECT TITLE
NORTH ARROW	2 MONTREAL ROAD, 3 SELKIRK STREET
	300 MONTGOMERY STREET
	OTTAWA, ONTARIO
	SHEET TITLE
	SITE PLAN (PHASE 2) OVERALL
	DRAWN: RV
	CHECKED: R.D.
	SCALE: 1:300
	SHEET NO. SP-2
	PROJECT No. 2511

D07-12-23-0087

mdddy

Record Drawing
 These drawings have been prepared using information from third parties. Any changes made outside the contract, or after contract completion or the date of issue (whichever is earlier) may not be reflected in the drawings. Users are advised to take sufficient steps to field verify equipment, layout, locations, dimensions and elevations. R.V. Anderson Associates Limited / Stantec Consulting Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made, or actions based on, this information.

NO.		BY	DATE
04	99% U.C. & M.O.E. C of A	BG/TK	19/04/06
05	TENDER	BG/TK	06/01/06
06	FINAL TENDER	BG/TK	19/06/06
07	ISSUED FOR CONSTRUCTION	BG/TK	18/00/06
08	AS-BUILT	MZ/JK	30/11/09
09	REVISED AS-BUILT	JK	29/04/10

**RIDEAU RIVER COLLECTOR
SEWER TWINNING**
 NORTH RIVER ROAD from WRIGHT STREET
to MONTREAL ROAD, VANIER

**PLAN & PROFILE
STATION 0+000 TO 0+175**

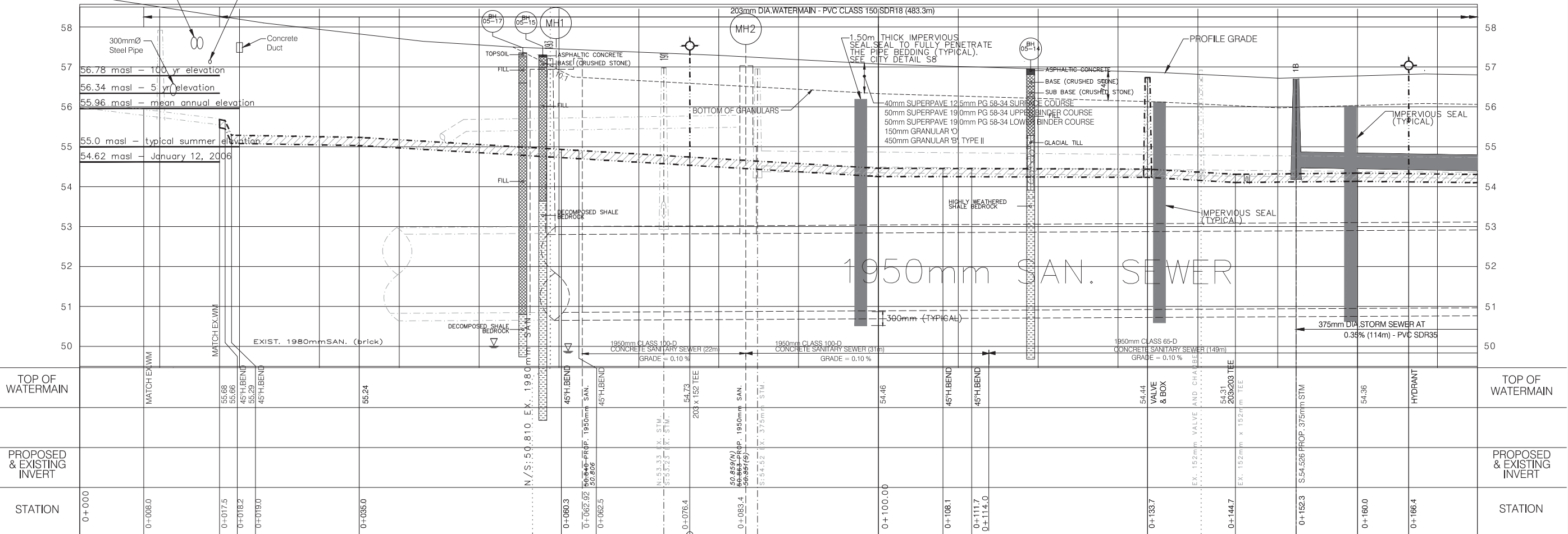
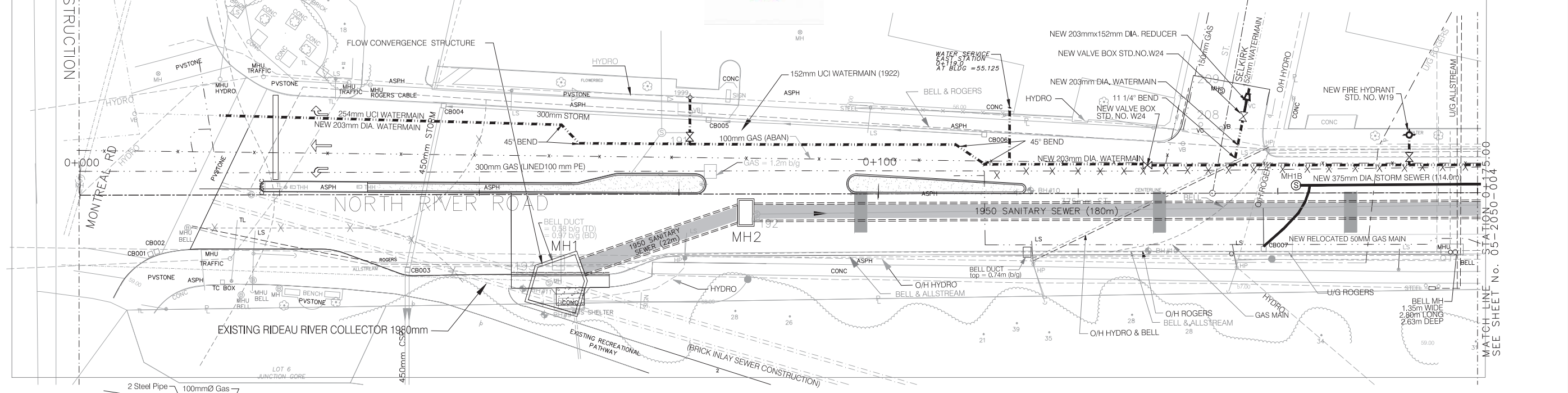
Ottawa
 CONTRACT NO.
ISB05-2050
 DWG. NO.
05-2050-003
 SHEET 3 OF 12
 Date: JANUARY 2006
 Scale:
 HORIZONTAL 1:250
 VERTICAL 1:50

 LOCAL SERVICING	 TRUNK SEWER
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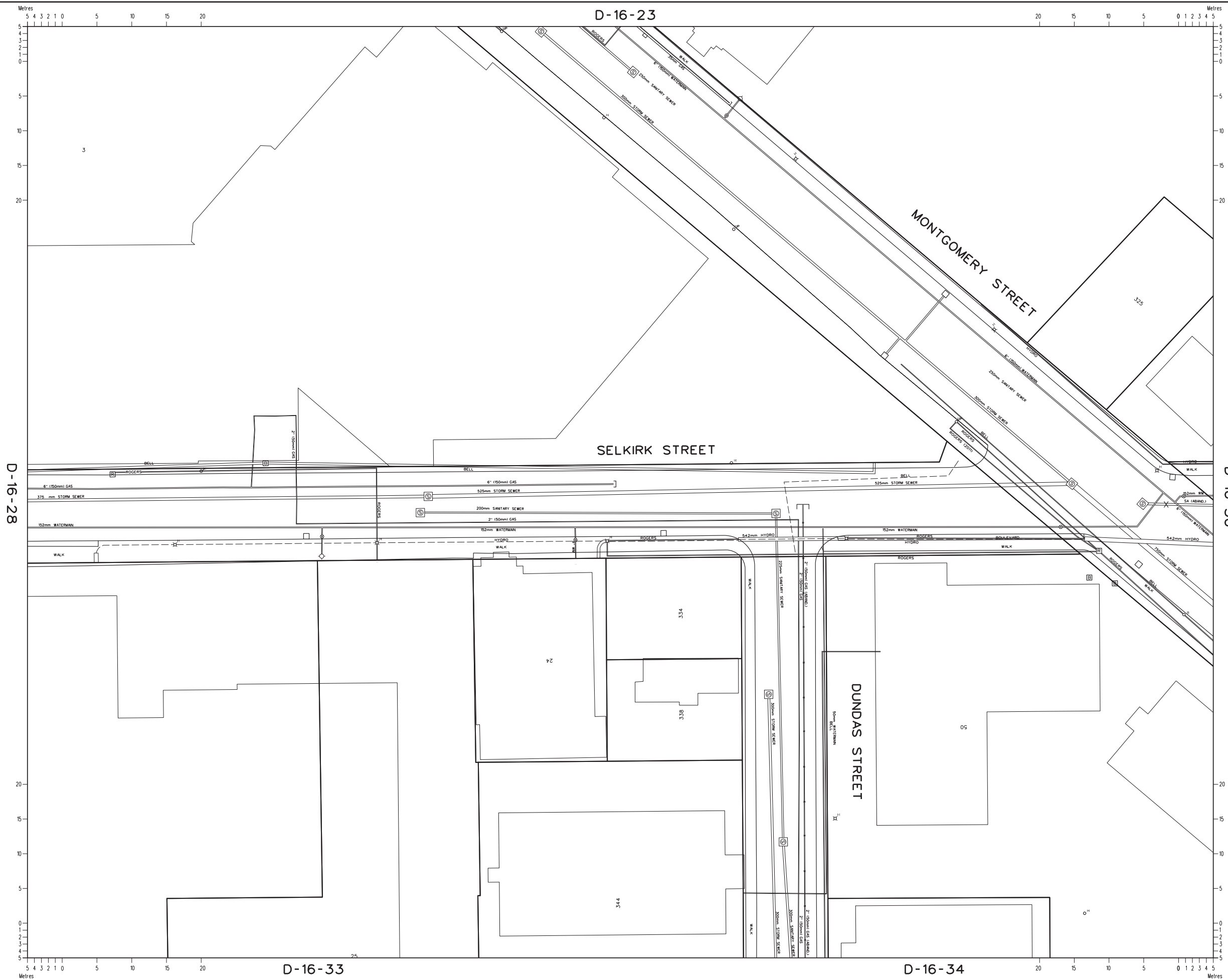
NOTE:
 The location of the utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned.
 The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

W. NEWELL, P.ENG.
 Director Infrastructure Services (Acting)
 Dwn: TK/BJG Ckcd:JCK/MJL

W. BENNETT, P.ENG.
 Manager Construction Services
 Des: JCK/FW Ckcd: GAB/BB



D-16-23



REVISIONS / REVISIONS	DATE	BY
NO EXISTING UTILITY PLAN NEW UTILITY PLAN CREATED	JULY 2009	JH
9800A-PS-SALKIRK (AUG 1998) UPDATED SAN STORM AND WATER ON SELKIRK	JUNE 2009	JH
83108-08-MONTGOMERY (APR 1994) SAN STORM AND WATER ON MONTGOMERY	JUNE 2009	JH
ROD0071-SELKIRK/MONTGOMERY (JULY 2010) ROGERS CONDUIT ADDED	NOV 2012	ZB
HYDRO/BELLENRODGE/ROGERS, CITY SEWER, WATER, TRAFFIC, SL COMPILED/DIGITIZED FROM UTILITY/CITY DATA	NOV 2012	ZB

LEGEND

Water Valve, Valve Chamber, Fire Hydrant	
Sewer Manhole, Catch Basin Manhole	
Catch Basin / Drainage, Wing Wall, Head Wall	
Pole, Pole w/ light, Decorative, Lawn Light	
Power Supply, Panel, Pedestal, Transformer, Tower, Regulator	
Amp, Hand Hole, Vault, Gas Valve	
OC Transpo: Bus Shelter-No Power, Energized, Isolated	
Streetscape: Planter Box, Grate Square, Eng. Soil	
Traffic Connect Box / Disconnect Box, SL Disconnect	
R.L. Hand Hole, R.L. Camera	
Scada: Hand Hole, Monitoring Panel	
Reducer	
Pipe, Duct, Conduit, Lateral	
Culvert	
Abandoned	
Capped	
Buried Cable	
Property Line	
Install Year	(2015)

TELECOM GLOSSARY

A.....Allstream	P.....Primus
AT.....Atia	P2P.....Canadian P2P Fibre
B.....Bell	R.....Rogers
BH.....Birch Hill	S.....Sprint
F.....Fibre Noir	SL.....Street Lighting
G.....Globility	T.....Traffic
GT.....Group Telecom	TO.....Telecom Ottawa
H.....Hydro Ottawa	TU.....Telus
HI.....Hydro One	V.....Videotron
L / L3.....Level 3	Z.....Zayo

GLOSSARY - OTHER

DD.....Dept. of Defence	PED.....Pedestal (owner unknown)
MH.....Manhole (owner unknown)	PW.....Public Works
OIOC.....OC Transpo	UP.....Utility Pole (owner unknown)
SCD.....Scada	

CAUTION/ATTENTION

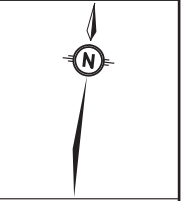
Although utility locations are established using the best available information, they cannot be guaranteed. Property lines were compiled from plans and documents recorded in the Land Registry System and are for indexing purposes only.

Bien que l'emplacement des services publics soient établis en utilisant la meilleure information disponible, ils ne peuvent pas être garantis. Des lignes de propriété ont été compilées en utilisant des plans et des documents enregistrés dans le système de cadastre et sont pour l'indexation seulement.



Right of Way, Heritage, and Urban Design Services /
Gestionnaire, Services des emprises, du patrimoine, et du design urbain
Planning, Infrastructure and Economic Development Department /
Direction générale de la planification, de l'infrastructure et du développement économique
100 Constellation Cres., 6th Floor East / 6ème Étage Est, Ottawa, ON K2G 6J8

OTTAWA UTILITY COORDINATING COMMITTEE
CENTRAL REGISTRY
COMITÉ DE COORDINATION DES SERVICES PUBLICS D'OTTAWA
ENREGISTREMENT CENTRAL



PRODUCED BY: GIS & DATA MANAGEMENT BRANCH
INFORMATION CENTRE UNIT

SHEET NUMBER
D-16-29

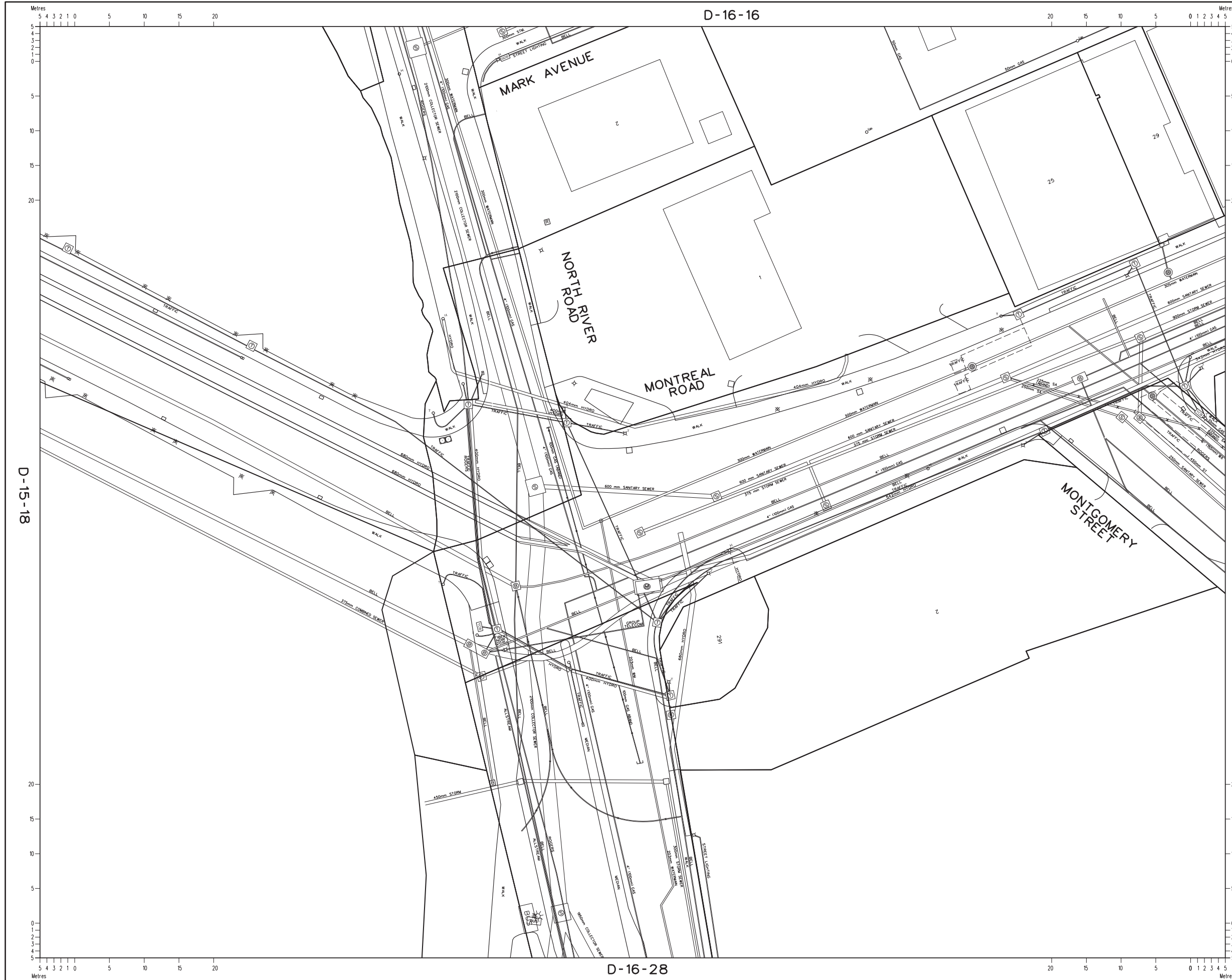
SCALE: 1:250

D-16-28

D-16-30

D-16-33

D-16-34



REVISIONS / REVISIONS	DATE	BY
91-04-02-MONTREAL SAN MAY 1990 UPDATED SAN STORM AND WATER ON MONTREAL	JUNE 2009	JH
0150401-SEPTEMBER 2004 BUS SHELTER ADDED ON NORTH RIVER	JULY 01/09	JH
00C-4/A-BELL PL 29-1-AUGUST 1978 MODIFIED BELL DUCTS AT MONTREAL & RIVER	JULY 01/09	JH
00C-4/A-BELL PL 29 1975 MODIFIED BELL DUCTS AT MONTREAL & RIVER	JULY 01/09	JH
13004-CITY OF OTTAWA (JAN 2006) UPDATED SAN STORM AND WATER ON RIVER	NOV 2010	JM
101020179-TELECOM OTTAWA INDY 021 CONDUIT ADDED ON RIVER ROAD	NOV 2010	JM
0151401-FIBRE NOIR (JAN 2010) CONDUIT ADDED TO NORTH RIVER	AUG 2016	JM
HYDRO-BELLENBROGE, ROGERS, CITY SEWER, WATER, TRAFFIC, SL COMPILED/DIGITIZED FROM UTILITY/CITY DATA	AUG 2016	JM

LEGEND	
Water Valve, Valve Chamber, Fire Hydrant	
Sewer Manhole, Catch Basin Manhole	
Catch Basin / Drainage, Wing Wall, Head Wall	
Pole, Pole w/ light, Decorative, Lawn Light	
Power Supply, Panel, Pedestal, Transformer, Tower, Regulator	
Amp, Hand Hole, Vault, Gas Valve	
OC Transpo: Bus Shelter-No Power, Energized, Isolated	
Streetscape: Planter Box, Grate Square, Eng. Soil	
Traffic Connect Box / Disconnect Box, SL Disconnect	
R.L. Hand Hole, R.L. Camera	
Scada: Hand Hole, Monitoring Panel	
Reducer	
Pipe, Duct, Conduit, Lateral	
Culvert	
Abandoned	
Capped	
Buried Cable	
Property Line	
Install Year	(2015)

TELECOM GLOSSARY	
A.....Allstream	P.....Primus
AT.....Atia	P2P.....Canadian P2P Fibre
B.....Bell	R.....Rogers
BH.....Birch Hill	S.....Sprint
F.....Fibre Noir	SL.....Street Lighting
G.....Globility	T.....Traffic
GT.....Group Telecom	TO.....Telecom Ottawa
H.....Hydro Ottawa	TU.....Telus
HI.....Hydro One	V.....Videotron
L/L3.....Level 3	Z.....Zayo

GLOSSARY - OTHER	
DD.....Dept. of Defence	PED.....Pedestal (owner unknown)
MH.....Manhole (owner unknown)	PW.....Public Works
OIOC.....OCTranspo	UP.....Utility Pole (owner unknown)
SCD.....Scatia	

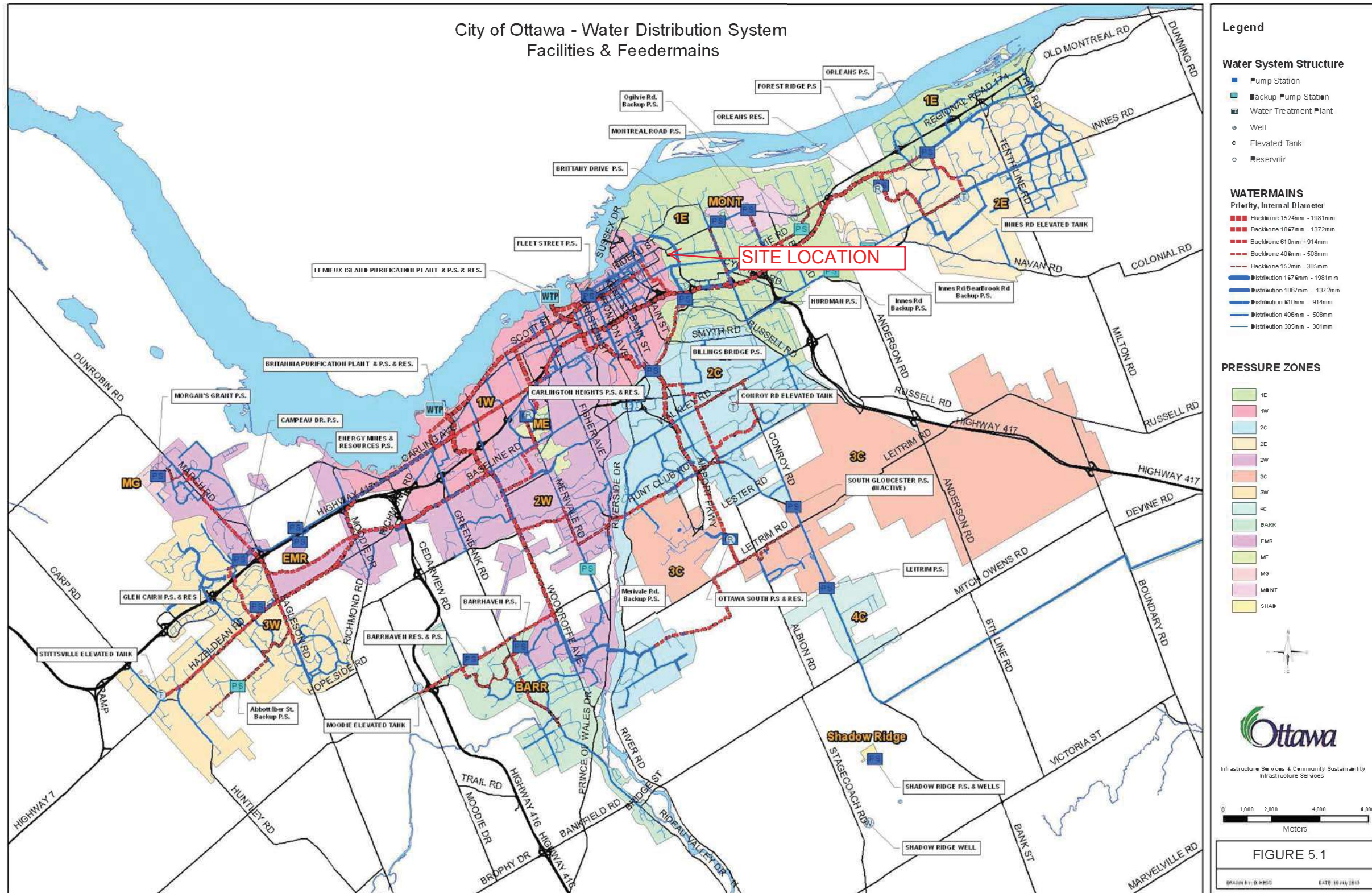
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 Bien que l'emplacement des services publics soient établis en utilisant la meilleure information disponible, ils ne peuvent pas être garantis.
 Des lignes de propriété ont été compilées en utilisant des plans et des documents enregistrés dans le système de cadastre et sont pour l'indexation seulement.

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 100 Constellation Cres., 6th Floor East / 6ème Étage Est, Ottawa, ON K2G 6J8

OTTAWA UTILITY COORDINATING COMMITTEE
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 ENREGISTREMENT CENTRAL



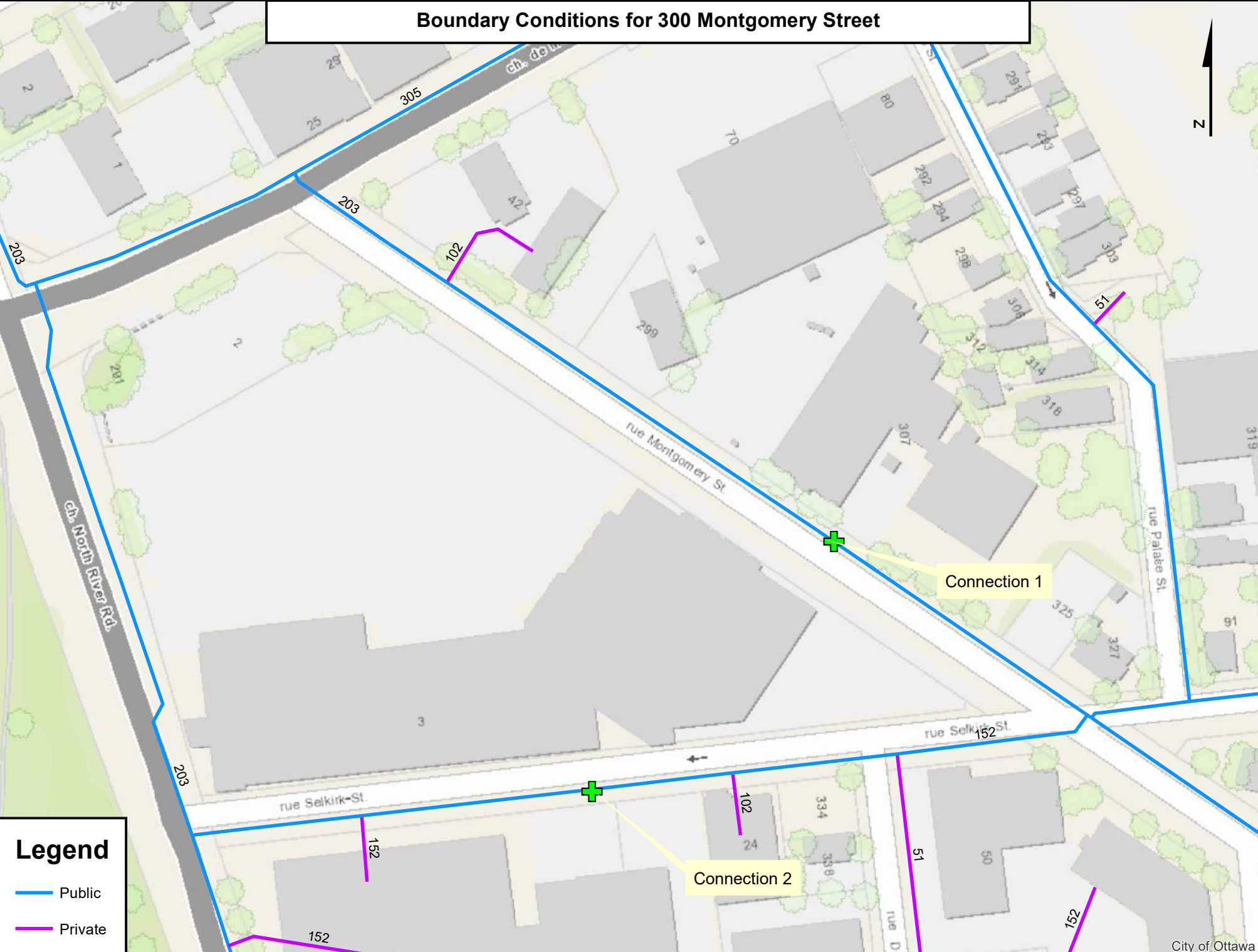
PRODUCED BY: GIS & DATA MANAGEMENT BRANCH
 INFORMATION CENTRE UNIT
 SHEET NUMBER
 D-16-22
 SCALE: 1:250



Source: City of Ottawa GIS infrastructure database

Figure 5.1: City of Ottawa Water Distribution System, Facilities and Feeder mains

Boundary Conditions for 300 Montgomery Street



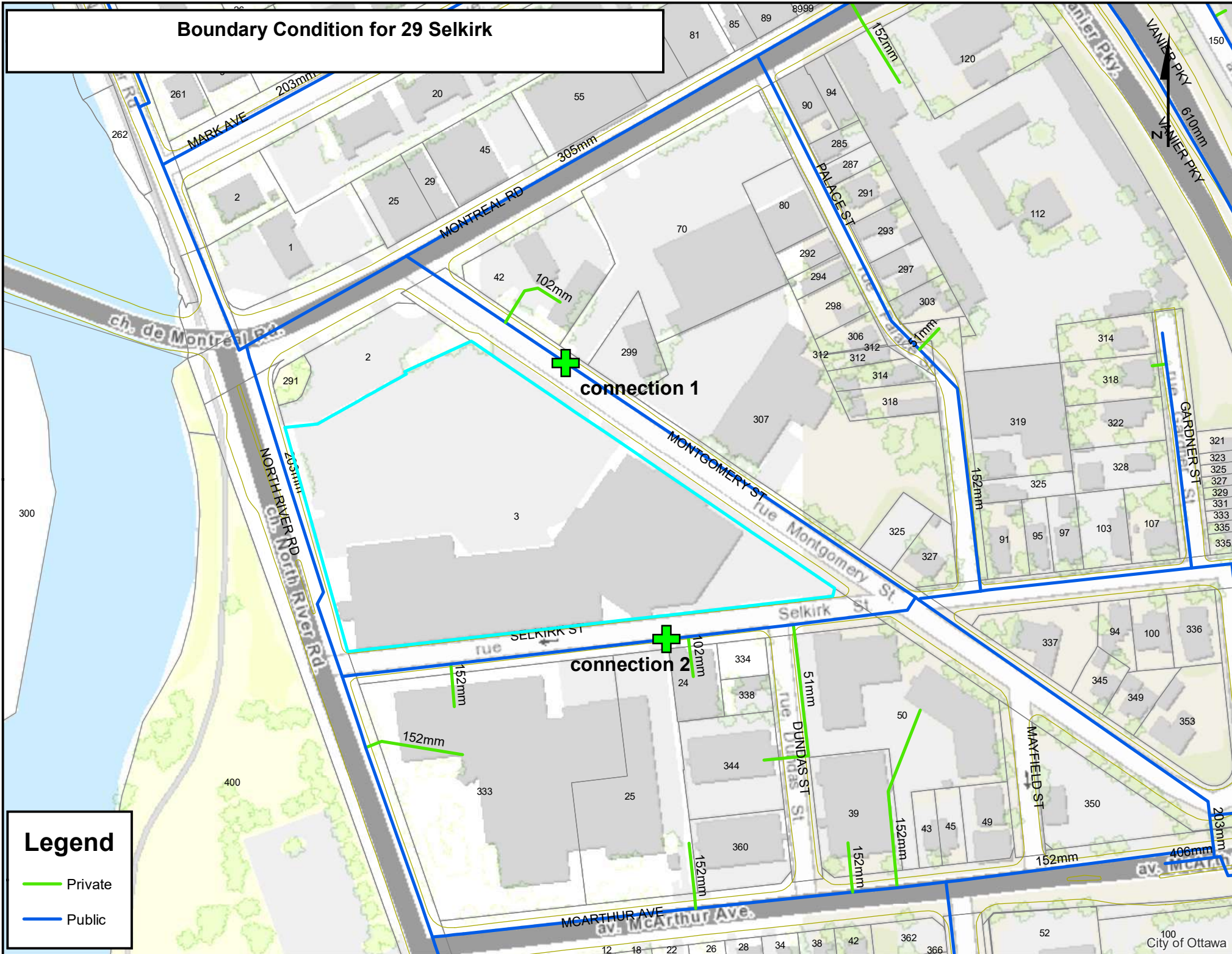
Legend

- Public
- Private





Boundary Condition for 29 Selkirk



Legend

- Private
- Public

From: sarrak@lithosgroup.ca <sarrak@lithosgroup.ca>
Sent: July 26, 2022 8:30 AM
To: 'Jhamb, Nishant' <nishant.jhamb@ottawa.ca>
Cc: 'ginal@lithosgroup.ca' <ginal@lithosgroup.ca>
Subject: RE: 29 Selkirk St., OT - comment clarification

Hello Nishant,

Thank you for the information shared.

As per your request, we will prepare a figure including all existing fire hydrants within 150m, and circulate to you as soon as possible.

Kind regards

Sarra Karavasili, P.E., M.A.Sc.

Assistant Project Manager



Lithos Group Inc.
150 Bermondsey Rd, Unit #200
Toronto, Ontario M4A 1Y1
D: (647) 366-9610 x1
Main Office: (416) 750-7769
Sarrak@LithosGroup.ca
www.LithosGroup.ca

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If you have received this transmission in error, please notify us by telephone or e-mail. Thank you.

From: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Sent: July 25, 2022 3:39 PM
To: sarrak@lithosgroup.ca
Cc: ginal@lithosgroup.ca
Subject: RE: 29 Selkirk St., OT - comment clarification

Hello Sarra,

The following are boundary conditions, HGL, for hydraulic analysis at 29 Selkirk Street (zone 1E) assumed to be connected to the 152 mm watermain on Montgomery Street and the 152 mm on Selkirk Street (see attached PDF for location).

	Connection 1	Connection 2	Connection 3
Min HGL	106.2	105.6	105.1
Max HGL	118.4	118.4	118.4

Max Day + Fire Flow (116.67 L/s): **not available** (connection 1)

As connection 1(Phase 1) does not have enough fire flow, Please provide a plan showing all fire hydrants within 150 meters and their distance (along the travel path) from Phase 1 building and City can confirm if the available Hydrants can meet the demand.

Max Day + Fire Flow (83.33 L/s): 90.2 m (Connection 2)

Max Day + Fire Flow (66.67 L/s): 82.8 m (Connection 3)

The maximum pressure is estimated to be more than 80 psi. A pressure check at completion of construction is recommended to determine if pressure control is required.

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.

Thanks
Nishant

From: sarrak@lithosgroup.ca <sarrak@lithosgroup.ca>
Sent: July 18, 2022 12:06 PM
To: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Cc: ginal@lithosgroup.ca
Subject: RE: 29 Selkirk St., OT - comment clarification

CAUTION: This email originated from an External Sender. Please do not click links or open attachments unless you recognize the source.

ATTENTION : Ce courriel provient d'un expéditeur externe. Ne cliquez sur aucun lien et n'ouvrez pas de pièce jointe, excepté si vous connaissez l'expéditeur.

Hello Nishant,

Thank you for your assistance and for the information provided.

Could you kindly advise if there are any updates on the boundary conditions for the existing water infrastructure abutting the subject site?

Sincerely,

Sarra Karavasili, P.E., M.A.Sc.

Assistant Project Manager



Lithos Group Inc.

150 Bermondsey Rd, Unit #200

Toronto, Ontario M4A 1Y1

D: (647) 366-9610 x1

Main Office: (416) 750-7769

Sarrak@LithosGroup.ca

www.LithosGroup.ca

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From: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Sent: July 15, 2022 2:36 PM
To: sarrak@lithosgroup.ca
Cc: ginal@lithosgroup.ca
Subject: RE: 29 Selkirk St., OT - comment clarification

Hello Sarra,

This is to confirm that 250mm Sanitary PVC sewer on Montgomery Street has the capacity for the following.

Phase I- 7.06L/s

Phase III- 6.44L/s

Total – 13.5L/s

Thanks
Nishant

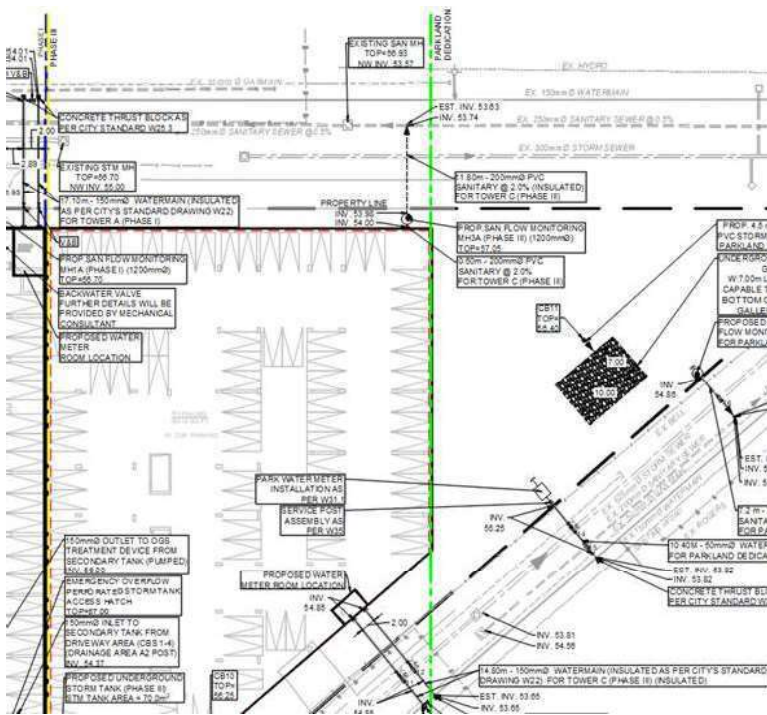
From: sarrak@lithosgroup.ca <sarrak@lithosgroup.ca>
Sent: July 12, 2022 2:07 PM
To: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Cc: ginal@lithosgroup.ca
Subject: RE: 29 Selkirk St., OT - comment clarification

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Hello Nishant,

Could you kindly advise if we can have the proposed sanitary lateral connection of Phase III to the 250mm existing sanitary sewer along Montgomery Street? Please see capture below.



Please note that, the amount of sanitary flow calculated for the subject Phase, is 6.44L/s.

Thank you for your assistance.

Kind regards,

Sarra Karavasili, P.E., M.A.Sc.

Assistant Project Manager



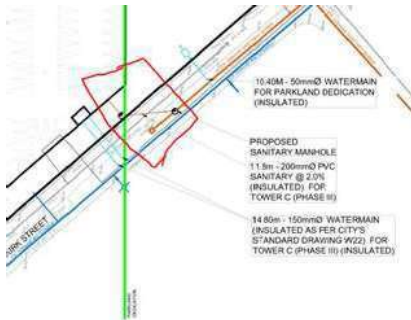
Lithos Group Inc.
 150 Bermondsey Rd, Unit #200
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From: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Sent: July 12, 2022 11:02 AM
To: sarrak@lithosgroup.ca
Cc: ginal@lithosgroup.ca
Subject: RE: 29 Selkirk St., OT - comment clarification

There are no concerns with Sanitary sewer discharge volumes.
 The sanitary service connection for Phase III needs to be at right angle to the sewer main.



Thanks
 Nishant

From: Jhamb, Nishant
Sent: July 12, 2022 10:43 AM
To: sarrak@lithosgroup.ca
Cc: ginal@lithosgroup.ca
Subject: RE: 29 Selkirk St., OT - comment clarification

Hello Sarra, Sorry for the delay

I have requested the BC from water resource group, Please note it may take up to 2 weeks to get the results.

Regards
Nishant

From: sarrak@lithosgroup.ca <sarrak@lithosgroup.ca>
Sent: July 12, 2022 10:27 AM
To: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Cc: ginal@lithosgroup.ca
Subject: RE: 29 Selkirk St., OT - comment clarification

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ATTENTION : Ce courriel provient d'un expéditeur externe. Ne cliquez sur aucun lien et n'ouvrez pas de pièce jointe, excepté si vous connaissez l'expéditeur.

I hope my email finds you well and safe.

I am following up on my email below.

Could you kindly provide us with the boundary conditions for water and sanitary infrastructure, using the information shared for all three phases (please see email below)?

Thank you for your assistance.

Sincerely,

Sarra Karavasili, P.E., M.A.Sc.

Assistant Project Manager



Lithos Group Inc.
150 Bermondsey Rd, Unit #200
Toronto, Ontario M4A 1Y1
D: (647) 366-9610 x1
Main Office: (416) 750-7769
Sarrak@LithosGroup.ca
www.LithosGroup.ca

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If you have received this transmission in error, please notify us by telephone or e-mail. Thank you.

From: sarrak@lithosgroup.ca <sarrak@lithosgroup.ca>
Sent: July 8, 2022 11:54 AM
To: 'Jhamb, Nishant' <nishant.jhamb@ottawa.ca>
Cc: 'ginal@lithosgroup.ca' <ginal@lithosgroup.ca>
Subject: RE: 29 Selkirk St., OT - comment clarification

Hello Nishant,

I hope all is well!

Further to my email below, could you kindly provide us with the boundary conditions regarding the proposed development located at 2 Montreal & 3 Selkirk Street?

In order for your to be able to provide the requested boundary conditions, kindly see below information for all three (3) phases in **green**:

Phase I

1. Location of Service **Indicated in the attached connection figure – Phase I.**
2. A sketch of the proposed water service to the city watermain **Indicated in the attached connection figure-Phase I.**
3. Street Number & Name **2 Montreal & 3 Selkirk Street**
4. Type of development and units **294 residential units and 1,499.7m² retail area**
5. Amount of fire flow required **116.67 L/s** (Calculation as per the FUS Method).
6. Average daily demand: **0.04L/s commercial area and 1.85L/s residential area**
7. Maximum daily demand: **5.20L/s**
8. Maximum hourly daily demand: **7.81L/s**
9. Amount of wastewater calculated: **6.27L/s**

Phase II

1. Location of Service **Indicated in the attached connection figure – Phase II.**
2. A sketch of the proposed water service to the city watermain **Indicated in the attached connection figure-Phase II.**

3. Street Number & Name **2 Montreal & 3 Selkirk Street**
4. Type of development and units **433 residential units and 501.4m² retail area (based on preliminary site statistics)**
5. Amount of fire flow required **83.33 l/s (Calculation as per the FUS Method).**
6. Average daily demand: **0.01 L/s commercial area and 2.37 L/s residential area**
7. Maximum daily demand: **6.57L/s**
8. Maximum hourly daily demand: **9.86L/s**
9. Amount of wastewater calculated: **7.60L/s**

Phase III

1. Location of Service **Indicated in the attached connection figure – Phase III.**
2. A sketch of the proposed water service to the city watermain **Indicated in the attached connection figure-Phase III.**
3. Street Number & Name **2 Montreal & 3 Selkirk Street**
4. Type of development and units **364 residential units**
5. Amount of fire flow required **66.67 l/s (Calculation as per the FUS Method).**
6. Average daily demand: **1.99L/s residential area**
7. Maximum daily demand: **5.47L/s**
8. Maximum hourly daily demand: **8.21L/s**
9. Amount of wastewater calculated: **6.44L/s**

Parkland Dedication

1. Location of Service **Indicated in the attached connection figure – Phase III.**
2. A sketch of the proposed water service to the city watermain **Indicated in the attached connection figure.**
3. Street Number & Name **2 Montreal & 3 Selkirk Street**
4. Type of development and units **Parkland Dedication**
5. Area **1,694.0 m²**

Kindly feel free to contact me should you have any questions or should you require any additional information.

Thank you and have a great weekend,

Sarra Karavasili, P.E., M.A.Sc.

Assistant Project Manager



Lithos Group Inc.
150 Bermondsey Rd., Unit #200
Toronto, Ontario M4A 1Y1
D: (647) 366-9610 x1
Main Office: (416) 750-7769
Sarrak@LithosGroup.ca
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From: sarrak@lithosgroup.ca <sarrak@lithosgroup.ca>
Sent: June 28, 2022 7:12 AM
To: 'Jhamb, Nishant' <nishant.jhamb@ottawa.ca>
Cc: 'ginal@lithosgroup.ca' <ginal@lithosgroup.ca>
Subject: RE: 29 Selkirk St., OT - comment clarification

Hello Nishant,

Thank you for your prompt response and for the clarifications provided.

We will proceed as advised.

Kind regards,

Sarra Karavasili, P.E., M.A.Sc.

Assistant Project Manager



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From: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Sent: June 27, 2022 3:30 PM
To: sarrak@lithosgroup.ca
Cc: ginal@lithosgroup.ca
Subject: RE: 29 Selkirk St., OT - comment clarification

Hello Sarra,

I have provide the response below in Green, please feel free to reach out if you have any more questions.

Regards

Nishant Jhamb, P.Eng
Project Manager | Gestionnaire de projet
Planning, Real Estate and Economic Development Department
Development Review - Central 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 23112, nishant.jhamb@ottawa.ca

Nishant

From: sarrak@lithosgroup.ca <sarrak@lithosgroup.ca>
Sent: June 27, 2022 9:26 AM
To: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Cc: ginal@lithosgroup.ca
Subject: 29 Selkirk St., OT - comment clarification

CAUTION: This email originated from an External Sender. Please do not click links or open attachments unless you recognize the source.

ATTENTION : Ce courriel provient d'un expéditeur externe. Ne cliquez sur aucun lien et n'ouvrez pas de pièce jointe, excepté si vous connaissez l'expéditeur.

I hope my email finds you well and safe.

I am reaching out following receipt of your comments regarding the subject development (dated May 25, 2022), wishing to clarify a few of them if possible. Please refer to the comments below and our responses on the side in red:

General

10. "I did not understand Water quality calculation table in Appendix C, the requirement is to remove 80% TSS from the driveway area, please confirm this requirement is being met." **80% TSS removal for the driveway area is achieved, through the installation of an OGS device. This information has been incorporated in the above noted table. Kindly confirm if this will address the subject comment. Can you please provide more explanation, As per table below**, 48% TSS removal is achieved from Driveway area. Please update the table if required.

Also, Please provide correspondence with the manufacturer confirming that 80% TSS removal will be achieved for the driveway area.

Table 5-5- Site TSS Removal

Drainage Area	Drainage Area (ha)	Overall TSS Removal	Additional Quality Control Required
Rooftops and Terraces	0.306	32%	Inherent
Driveway Area	0.465	48%	SPFD 0816 with 27 perlite cartridges
Total	0.771	80%	

Grading Plan

22. "Show USF for Phase 1." **Could you please confirm if 'USF' is for 'Underside of Footing Elevation'? If that is the case, should we incorporate the USF outline within our Grading and Servicing Plans? Correct, Yes, please include USF in grading plan for Phase 1**

Site Servicing Plan – Sanitary

32. "Sanitary connection to Rideau River Collector can be allowed via the existing MH. A MH will be required on the private property. Connection will require an external drop pipe (OPSD 1003.010) and we would need to have the design of the drop pipe, construction methodology and re-benching details submitted for our review." **Could you kindly confirm if having the sanitary connection to the existing manhole of Rideau River Collector along North River Road is acceptable? Yes, it is acceptable. City will need the following information to approve the connection (Type- OPSD 1003.010) to the existing MH on Rideau River Collector.**

- design of drop pipe
- construction methodology
- re-benching details

Also please note a Monitoring MH is required inside the property line.

Road Reinstatement Plan (Phase I)

42. "I could not find reinstatement details where existing water service will be capped at the main." **Please advise on what reinstatement details you would require to be incorporated on the subject drawing. Blanking of the existing water service at the main in the ROW will require trench excavation and reinstatement. Please show the road reinstatement area on the plan.**

Moreover, upon receipt of the final site statistics for the entire parcel, we will get back to you in order to confirm if there is adequate capacity in the existing water and sanitary infrastructure to support all phases of the proposed development.

Thank you,

Sarra Karavasili, P.E., M.A.Sc.

Assistant Project Manager



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Hydrogeological Report in Support of Category 3 Permit to Take Water Proposed High-Rise Complex

3 Selkirk Street and 2 Montreal Road
Ottawa, Ontario

Prepared for Riverain Developments Inc.

Report PH4590-1 dated July 22, 2022

1.0 INTRODUCTION

Paterson Group (Paterson) was commissioned by Riverain Developments Inc. to prepare a hydrogeological report in support of a Permit to Take Water Category 3 application for the proposed high-rise complex to be constructed at 2 Montreal Road and 3 Selkirk Street in Ottawa, Ontario (refer to Drawing PH4590-1 - Site Plan within Appendix 1). An Environmental Activity and Sector Registry (EASR), Registration Number R-009-1180262009 is currently registered for the subject site. The EASR will be superseded by the PTTW Category 3 upon issuance for the purpose of a groundwater remediation program within Phase 1 of the proposed development. It is understood the groundwater remediation program will be carried out upon reaching the base of the proposed excavation.

Subsurface information was obtained from the field investigations carried out by Paterson and others to determine the subsoil and groundwater conditions at the site by means of test holes.

The following report has been prepared specifically and solely for the aforementioned project which is described herein. It contains the investigation findings and includes hydrogeological assessments pertaining to the proposed program as understood at the time of writing this report.

1.1 Proposed Project

It is understood that the proposed development of the subject site will consist of 3 high-rise buildings with one level of shared underground parking encompassing the majority of the subject site. Riverain Developments Inc. owns the property and will be the applicant for the PTTW. As such a letter of permission allowing site access for the purpose of taking water will not be required for the application.

1.2 Project Pre-Consultation

While no formal project pre-consultation was performed with the MECP, in our opinion, the application would be classified as a Category 3 taking due to the groundwater remediation program anticipated for the subject site. It is understood at the time of report preparation that consultations have been completed with the City of Ottawa as part of the site plan application submission. A public meeting was also held in support of the site plan application.

2.0 SITE CONDITIONS

2.1 Surface Conditions

The subject site is currently occupied by a one storey slab-on-grade commercial building with asphalt covered parking areas and access lanes. A gas station was previously located at 2 Montreal Road and has been demolished as part of the proposed redevelopment of the subject site. The site is bordered by Montreal Road to the north followed by low-rise commercial buildings, Montgomery Street to the east followed by low-rise commercial buildings and an education centre, Selkirk Street to the south followed by a mixture of low and high-rise residential and commercial buildings, and to the west by North River Road followed by the Rideau River. The slope across the site is generally flat and at grade with adjacent roadways and properties.

Field Investigations

Field investigations completed by Paterson for the subject site were carried out between April 3, 2019 and February 18, 2022, with a total of 24 boreholes and 18 test pits advanced to a maximum depth of 11.3 and 6.0 m, respectively, below ground surface (bgs). Historical investigations were completed by others at 2 Montreal Road between September 2014 and May 2019. At that time, a total of 26 boreholes were advanced to a maximum depth of 11.6 m bgs. The test hole locations for the field investigations are presented on Drawing PG4915-1 – Test Hole Location Plan, included in Appendix 2.

The subsurface conditions observed in the test holes were recorded in detail during the field investigations by Paterson and others. The subsurface profiles are presented on the Soil Profile and Test Data Sheets by Paterson and test hole logs by others in Appendix 2.

Surface Water

The subject site is located within the Ottawa East of Core 1 subwatershed. The only surface water feature identified within 500 m of the subject site is the Rideau River, located approximately 40 m west from the subject site.

Groundwater

Groundwater monitoring wells were installed by Paterson and others in select borehole locations to permit the monitoring of the groundwater levels. Groundwater information is discussed in Sections 3 and 4 of this report, and details are noted on the Soil Profile and Test Data Sheets by Paterson as well as test hole logs by others in Appendix 2 of this report.

2.2 Subsurface Profile

The subsurface profile at the subject site generally consists of an asphaltic pavement structure or topsoil overlying a fill layer. Glacial till was observed at select test hole locations underlying the fill material. Bedrock was encountered underlying the fill material and/or glacial till deposit. Reference should be made to the Soil Profile and Test Data Sheets and Test Hole Location Plan by Paterson and borehole logs by others included in Appendix 2 for the details of the soil profiles encountered at each test hole location.

Fill

The fill material consists of silty sand to sandy silt with varying amounts of clay, gravel, shale fragments, topsoil, and construction debris, and extends to a maximum depth of approximately 9.8 m bgs.

Glacial Till

A glacial till deposit was encountered underlying the fill material in select test hole locations to a maximum depth of 8.2 m bgs. The deposit was observed to consist of a silty sand to sandy silt matrix with varying amounts of shale fragments, gravel, cobbles, and boulders.

Bedrock

Based on the testing results completed by Paterson and others, interbedded shale and limestone bedrock was encountered at depths ranging from 2.0 to 7.6 m bgs and was observed to a maximum depth of 11.3 m bgs. The recovery values ranged from 0 to 100%, while the RQD values varied between 0 and 100%. Based on these results, the quality of the bedrock ranges from very poor to excellent.

This is generally consistent with available geological mapping, which indicates that bedrock consists of shale of the Billings formation with an approximate drift thickness of 3 to 10 m.

3.0 HYDROGEOLOGY

At the time of the field investigations, groundwater levels encountered at the borehole locations ranged between 4 and 7.5 m bgs. It should be noted that groundwater can become perched within the backfilled boreholes, which can lead to apparent elevated groundwater levels. Groundwater levels can also be estimated based on the observed moisture levels, colour and consistency of the recovered samples. Based on these observations, it is estimated that the groundwater table can be expected between 6 to 7 m bgs. Groundwater levels can also fluctuate seasonally and with precipitation events. Therefore, groundwater levels could vary at the time of construction.

On a conceptual scale, hydrogeological/hydrologic conditions at the subject site suggest that water may infiltrate the open excavation as surface water infiltration during precipitation events and as perched water transmitted above the bedrock surface within the overburden material.

Based on the anticipated excavation depth of the proposed development relative to the expected groundwater table, groundwater infiltration is not expected within the excavation during construction. However, it is understood that a trench will be excavated within the northern portion of the development and will extend from the base of the excavation to 1.5 m below the groundwater table in order to pump and treat impacted groundwater located within Phase 1 of the proposed development.

The excavation footprint related to the proposed high-rise complex at the subject site is expected to encompass an area of approximately 13,200 m². Therefore, the potential exists for a moderate to high amount of surface water to intercept the excavation footprint directly during significant precipitation events.

With respect to perched water, the overburden within the development consists of fill material overlying glacial till with a silty sand to sandy silt matrix. As such, the potential exists for moderate to high volumes of perched water to be encountered at the time of construction dependent on the time of year and the majority composition of the fill material and glacial till deposit.

Based on the field investigations completed at the subject site, groundwater flow generally trends in a northwest direction, a trend similar to that of the anticipated regional groundwater flow direction in the area. The regional groundwater flow is considered to be in a northwest direction towards the Rideau River and Ottawa River. It should be noted that groundwater levels can fluctuate based on precipitation events and seasonal variations. Therefore, groundwater levels and flow directions may vary at the time of construction.

3.1 Groundwater Inflow and Sources

Two potential sources of dewatering have been identified at the subject site. The sources consist of the excavation footprint of the underground parking structure and a source to remove impacted groundwater from below the proposed development within Phase 1 of the proposed development.

To determine surface water infiltration rate into the underground parking excavation footprint, an intensity duration frequency (IDF) curve from the Ministry of Transportation - Ontario (MTO) was obtained. The IDF curve is the graphical representation of the probability that a given average rainfall intensity will occur. For the purposes of this project, a five- year storm event with a one-hour duration was chosen as the design storm. This provides a potential rainfall intensity of 2.63×10^{-2} m of precipitation into the excavation footprint. Various duration storm events with their associated rainfall intensities are presented in the IDF Curve in Appendix 3.

Based on the anticipated excavation depth of the proposed development relative to the expected elevation of the groundwater table, groundwater infiltration is not anticipated during construction activities. Groundwater takings associated with the remediation program at the subject site will be related to the capacity of the treatment system.

Source

S1 – Building Excavation Footprint

The typical depth of excavation is expected to be approximately 4 m bgs and anticipated to be above the groundwater table. Therefore groundwater infiltration is not expected during construction activities.

With respect to the potential for surface water inflow into the excavation footprint, the proposed development is adjacent to developed land on all sides. It is therefore expected that the majority of surface water inflow into the excavation footprint will be caused by precipitation directly onto the footprint rather than runoff from other sources. Given an excavation footprint with a sizing of 13,200 m² and a precipitation depth of 2.63×10^{-2} m, a total volume of approximately 350,000 L of surface water can be expected during a 5 year - 1 hour duration precipitation event. It is expected that the contractor will direct surface water away from open excavation whenever possible.

As a precautionary measure, a maximum of 2,000,000 L/day is being request for the building excavation. This volume will account for surface water infiltration, seasonal variations, perched conditions, precipitation events above the provided design storm and unforeseen circumstances.

S2 – Impacted Groundwater (Pump and Treat)

Based on Phase II Environmental Site Assessments (ESAs) completed by Paterson and others, as well as an environmental remedial action plan prepared by Paterson, it is understood that concentrations of benzene exceed MECP Table 3 standards within the central portion of 2 Montreal Road. As such, a pump and treat system has been recommended as part of the remedial action plan for Phase 1 of the proposed development. A trench for groundwater collection and removal will be excavated approximately 1.5 m into the water table within the 2 Montreal Road property to pump and treat impacted groundwater. A portable granular activated carbon treatment unit has been recommended in combination with a tank or tanker truck to treat the accumulated groundwater. The pump and treat system will remain in place until the on-site groundwater quality is in compliance with MECP Table 3 standards.

A maximum of 500,000 L/day is being requested for the source to for multiple treatment systems/tanks remaining on site simultaneously and variability in tank size.

3.2 Water Taking Rates

The water taking rates were established at a maximum of 5,600 L/min for the building excavation and 2,800 L/min for the pump and treat system. The volumetric rate per minute is requested to allow for dewatering in a timely manner.

3.3 Water Discharge

The discharge point for the pumped water from the excavation sump is expected to be the existing City of Ottawa sanitary sewer system. It will be subject to the City of Ottawa Sewer Use Bylaws and a permit will be required to discharge the water to the sewer system.

Pumping of the sumps to prevent the collection of surface water within the excavation and during the remediation program is expected to continue intermittently for a period of approximately 5-year. However, a period of 8-years is being requested to account for unforeseen project delays and forced market conditions. Water within the excavation is not expected to be encountered immediately, but only when a large precipitation event occurs, and/or during groundwater remediation activities. Therefore, pumping is not anticipated for the entire duration of construction. It is anticipated that dewatering of the excavation sumps will be accomplished using various pumping equipment.

A reasonable flow rate has been noted in Subsection 3.2 and under the Maximum Daily Flow Rate in Section 9 of the Permit Application. Dewatering may extend up to 24 hours per day but will likely be done on an as-needed basis for shorter periods of time.

4.0 POTENTIAL IMPACTS

4.1 Adverse Effects on Adjacent Structures

The subsurface profile at the subject site is generally comprised of topsoil and/or fill material underlain by glacial till followed by bedrock. Based on field observations and measured groundwater levels, groundwater is expected within the bedrock with minimal compressibility. Furthermore, groundwater infiltration is not expected to be encountered within the proposed excavation during construction dewatering activities, with only perched water expected to be encountered within the overburden materials. Additionally, minimal pumping volumes associated with the groundwater remediation program are expected. As such, adverse effects on adjacent structures as a result of dewatering activities at the subject site are expected to be negligible.

4.2 Adverse Effects on Neighbouring Water Wells

A search of the Ontario Water Well Records online mapping database indicates there are several wells within 500 m of the site as depicted on drawing PH4590-2 included in Appendix 1. However, it is expected that these wells are either no longer in use due to both their installation dates and the developed nature of the region or are monitoring well installations. Additionally, groundwater infiltration is not expected to be encountered within the proposed excavation during construction dewatering activities, while minimal pumping volumes related to the groundwater remediation program is expected. Furthermore, the area surrounding the site is serviced by municipal water supplies. Dewatering activities at the site are therefore not expected to cause any interference to the water supply of surrounding properties or other negative impacts.

Municipal water is available in the immediate area. However, if the taking of water is shown to cause negative impacts to the water supplies of existing users/sources that were in use prior to the issuance of the PTTW for this water taking, the Permit Holder shall take action to make available a supply of water equivalent in quality and quantity of their typical takings, or shall compensate those affected for reasonable costs for doing so, or shall reduce water taking amounts to alleviate the negative impacts. The Permit Holder shall provide temporary water supplies, to those affected, to meet their typical takings or compensate such persons for reasonable costs associated to do so until permanent restoration of the affected water supply or an equivalent source.

4.3 Soil, Surface Water and Groundwater

A search of the MECP Brownfields Environmental Site Registry was conducted as part of the assessment of the site, neighbouring properties, and the general area. No brownfield sites were located within 500 m of the subject site.

Following the completion of Phase II ESAs by Paterson and others at the subject site, as well as a remedial action plan prepared by Paterson, it was concluded that soil has been impacted by petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene and xylenes (BTEX), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), mercury, and metals with concentrations exceeding the MECP Table 3 standards. Groundwater within the central portion of 2 Montreal Road has been impacted by benzene with concentrations exceeding the MECP Table 3 standards. Based on the remedial action plan, impacted soil will be hauled to an approved waste disposal facility. A portable granular activated carbon treatment unit has been recommended in combination with a tank or tanker truck to treat the accumulated groundwater. The pump and treat system will remain in place until the on-site groundwater quality is in compliance with MECP Table 3 standards.

It is anticipated that the excess soil will be handled in accordance with O.Reg. 406/19 – On-site and Excess Soil Management.

With respect to nearby surface water bodies, the Rideau River is located approximately 40 m west from the subject site. However, groundwater infiltration is not expected to be encountered within the proposed excavation during construction dewatering activities, while minimal pumping volumes related to the groundwater remediation program is expected. As such, adverse effects to surface water features resulting from dewatering activities at the subject site are expected to be negligible.

The surface water and groundwater that is pumped from the site excavation must be managed in an appropriate manner. The contractor will be required to implement a water management program to dispose of the pumped water. It is expected that the treated waters will be discharged to the City of Ottawa sewer system in accordance with City Sewer Use By-Laws. Depending on the results of the baseline test to be performed for the discharge permit application, the City of Ottawa will determine the appropriate discharge location (storm versus sanitary sewer), on-site treatment or if off-site disposal is required.

4.4 Adjacent Permits to Take Water

A search of the MECP Permit to Take Water database provided no active PTTW within 500 m of the subject site. A search of the MECP Environmental Activity and Sector Registry (EASR) database provided two (2) actively registered water taking permit within a 500 m radius of the subject site. Permit Number R-009-7113143069 is located approximately 250 m north of the subject site and has been registered to 1479151 Ontario Inc. However, it is understood that water taking activities related to the proposed development have been completed. Permit number R-009-1163962695, located approximately 500 m west of the subject site, has been registered to Core Civil Construction Inc. and is located well outside any theoretical radius of influence that may develop from either site. Therefore, cumulative impacts between the subject site and the above noted EASRs are not expected.

5.0 STATEMENT OF LIMITATIONS

The recommendations provided in this report are in accordance with our present understanding of the project.

A hydrogeological review of this nature is a limited sampling of a site. The recommendations are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around the test locations. Should any conditions at the site be encountered which differ from those at the test locations, we request notification immediately in order to permit reassessment of our recommendations.

The present report applies only to the project described in this document. Use of this report for purposes other than those described herein or by person(s) other than Riverain Developments Inc. or their agent(s) is not authorized without review by Paterson Group for the applicability of our recommendations to the altered use of the report.

Paterson Group Inc.



Nicholas Zulinski, P.Geo., géo.



Sok Kim, M.Eng.



Geotechnical
Engineering

Environmental
Engineering

Hydrogeology

Geological
Engineering

Materials Testing

Building Science

Noise and Vibration
Services

Geotechnical Investigation

Proposed High-Rise Complex
3-33 Selkirk Street and 2 Montreal Road
Ottawa, Ontario

Prepared For

Main and Main Developments Inc.

Paterson Group Inc.
Consulting Engineers
154 Colonnade Road South
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Canada K2E 7J5

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March 26, 2022

Report PG4915-1 Revision 3

1.0 Introduction

Paterson Group (Paterson) was commissioned by Main and Main Developments Inc. to conduct a geotechnical investigation for the subject site located at 3-33 Selkirk Street and 2 Montreal Road in the City of Ottawa (refer to Figure 1 - Key Plan in Appendix 2 of this report).

The objectives of the current investigation were to:

- ❑ determine the subsurface soil and groundwater conditions based on borehole information.
- ❑ provide geotechnical recommendations for the design of the proposed development including construction considerations which may affect the design.

The following report has been prepared specifically and solely for the aforementioned project which is described herein. It contains our findings and includes geotechnical recommendations pertaining to the design and construction of the subject development as they are understood at the time of writing this report.

Investigating the presence or potential presence of contamination on the subject property was not part of the scope of work of this present investigation. Environmental information is provided under a separate cover.

2.0 Proposed Development

Based on the current conceptual drawings, it is our understanding that several multi-storey high-rise buildings will be constructed over an underground parking structure with one basement level which will occupy the majority of the subject site.

It is further expected that the proposed high-rise complex will be municipally serviced with water and sewer services. Further, it is also expected the existing structures will be demolished as part of construction of the proposed development.

4.3 Groundwater

Groundwater levels were measured in monitoring wells on April 12, 2019. The measured groundwater level (GWL) readings are presented in Table 1 below and further presented in the Soil Profile and Test Data sheets in Appendix 1. Long-term groundwater level can also be estimated based on the observed moisture levels, colour and consistency of the recovered soil samples. Based on these observations, it is estimated that the long-term groundwater table can be expected between 6 to 7 m depth. It should be noted that groundwater levels are subject to seasonal fluctuations. Therefore, the groundwater level could vary at the time of construction.

Table 1A - Summary of Groundwater Level Readings - 2022 Boreholes				
Test Hole Number	Ground Elevation, m	Groundwater Levels (m)		Recording Date
		Depth	Elevation	
BH 1-22	57.06	7.00	50.06	March 2, 2022
BH 2-22	57.05	7.01	50.04	March 2, 2022
BH 3-22	56.02	6.02	50.00	March 2, 2022
BH 4-22	56.21	6.21	50.00	March 2, 2022
BH 5-22	56.33	6.28	50.05	March 2, 2022
BH 6-22	55.99	6.04	49.95	March 2, 2022
BH 7-22	56.18	6.19	49.99	March 2, 2022
BH 8-22	56.04	6.06	49.98	March 2, 2022

Notes: The boreholes were surveyed with respect to a temporary benchmark (TBM), consisting of the top of spindle of the fire hydrant located to the east of the subject site in front of 307 Montgomery Street. A geodetic elevation of 57.63 m was assigned to the TBM.

Table 1B - Summary of Groundwater Level Readings - 2021 Boreholes				
Test Hole Number	Ground Elevation, m	Groundwater Levels (m)		Recording Date
		Depth	Elevation	
BH 1-21	57.49	7.45	50.04	January 6, 2022
BH 2-21	57.30	7.24	50.06	January 6, 2022
BH 3-21	57.19	7.15	50.04	January 6, 2022
BH 4-21	57.02	7.00	50.02	January 6, 2022
BH 5-21	56.94	6.97	49.97	January 6, 2022
BH 6-21	56.82	6.84	49.98	January 6, 2022

Notes: The boreholes were surveyed with respect to a temporary benchmark (TBM), consisting of the top of spindle of the fire hydrant located to the east of the subject site in front of 307 Montgomery Street. A geodetic elevation of 57.63 m was assigned to the TBM.

Table 1C - Summary of Groundwater Level Readings - 2019 Boreholes				
Test Hole Number	Ground Elevation, m	Groundwater Levels (m)		Recording Date
		Depth	Elevation	
BH 1	56.08	6.02	50.06	April 12, 2019
BH 2	56.09	5.56	50.53	April 12, 2019
BH 3	56.47	5.94	50.53	April 12, 2019
BH 4	56.50	5.95	50.55	April 12, 2019
BH 5	56.55	5.98	50.57	April 12, 2019
BH 6	56.69	5.56	51.13	April 12, 2019
BH 7	56.75	6.22	50.53	April 12, 2019
BH 8	56.70	6.16	50.54	April 12, 2019
BH 9	56.66	4.04	52.62	April 12, 2019
BH 10	57.07	6.43	50.64	April 12, 2019
Notes: The boreholes were surveyed with respect to a temporary benchmark (TBM), consisting of the top of spindle of the fire hydrant located to the east of the subject site in front of 307 Montgomery Street. A geodetic elevation of 57.63 m was assigned to the TBM.				

All test pits were dry upon completion at the time of the 2021 test pit investigation.

$$V_{s30} = \frac{Depth_{OfInterest} (m)}{\left(\frac{Depth_{Layer1} (m)}{Vs_{Layer1} (m/s)} + \frac{Depth_{Layer2} (m)}{Vs_{Layer2} (m/s)} \right)}$$

$$V_{s30} = \frac{30m}{\left(\frac{3m}{240m/s} + \frac{27m}{2,782m/s} \right)}$$

$$V_{s30} = 1,351m/s$$

Based on the results of the shear wave velocity testing, the average shear wave velocity, V_{s30} , for the proposed buildings beyond the high-rise buildings is **1,351 m/s**. Therefore, a **Site Class B** is applicable for the proposed podium buildings and parking structures, as per Table 4.1.8.4.A of the OBC 2012.

The soils underlying the subject site are not susceptible to liquefaction.

5.5 Basement Slab

With the removal of all topsoil and deleterious fill within the footprint of the proposed building, the in-situ soil and/or bedrock surfaces will be considered an acceptable subgrade upon which to commence backfilling for basement slab construction.

The recommended pavement structures noted in Subsection 5.7 will be applicable for the founding level of the proposed parking garage structure. However, if storage or other uses of the lower level will involve the construction of a concrete floor slab, the upper 200 mm of sub-slab fill consists of 19 mm clear crushed stone.

All backfill material within the footprint of the proposed building should be placed in maximum 300 mm thick loose layers and compacted to at least 98% of its SPMDD. Any soft areas should be removed and backfilled with appropriate backfill material. OPSS Granular B Type II, with a maximum particle size of 50 mm, are recommended for backfilling below the floor slab.

A sub-slab drainage system consisting of lines of perforated drainage pipes should be connected to a sump pump located within the lowest basement level. The spacing and layout of the sub-slab drainage system should be provided by the geotechnical consultant once the foundation layout has been finalized.

6.0 Design and Construction Precautions

6.1 Foundation Drainage and Backfill

Foundation Drainage

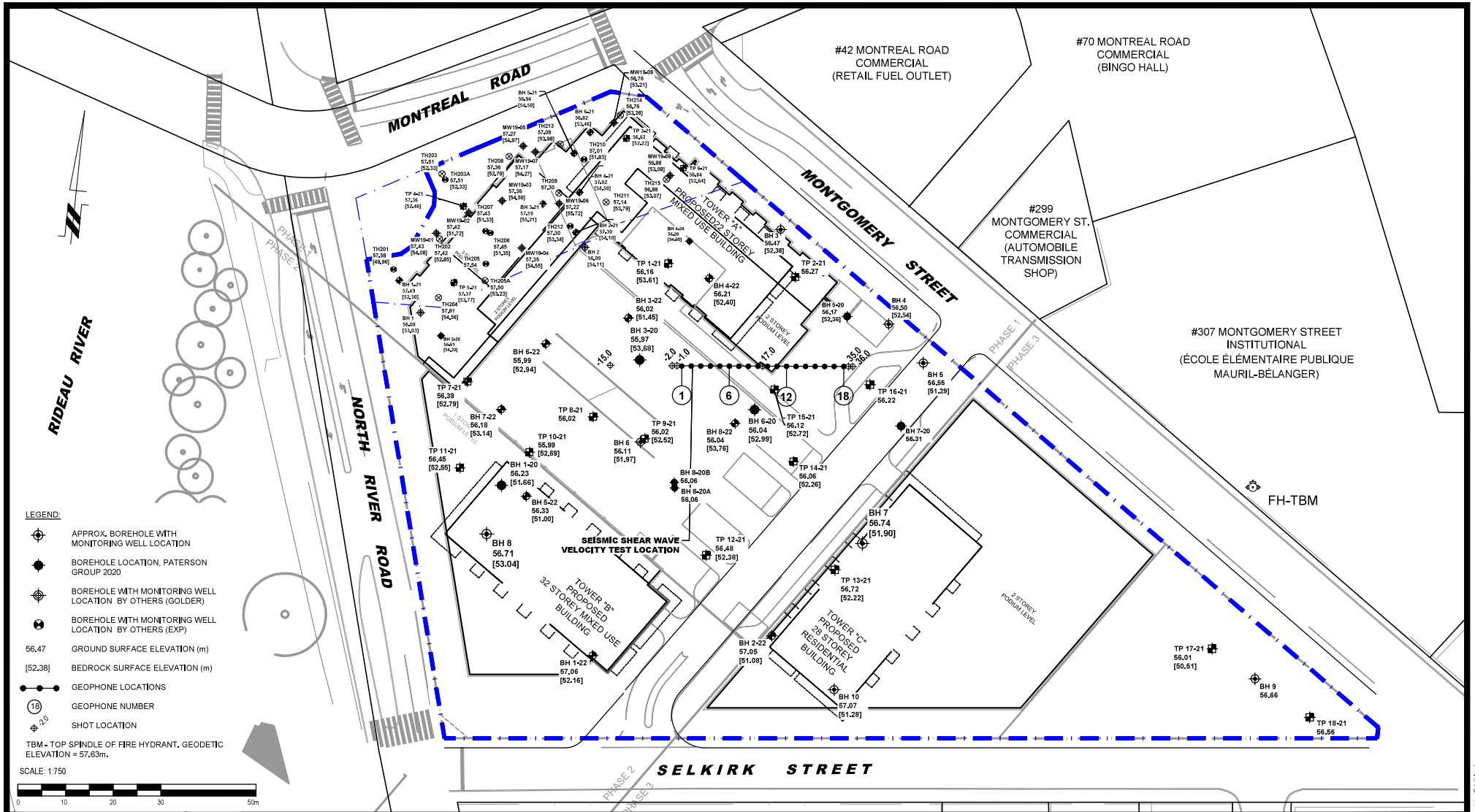
It's recommended that a perimeter foundation drainage system be provided for the proposed structure. It's expected that insufficient room will be available for exterior backfill and the foundation wall will be cast as a blind-sided pour against a shoring system. It is recommended that the drainage system consist of the following:

- ❑ A composite drainage membrane (DeltaDrain 6000, MiraDrain G100N or equivalent) should be placed against the shoring system and bedrock excavation face from the finished ground surface to the top of the footing.
- ❑ It is recommended that 150 mm diameter sleeves at 3 m centres be cast in the footing or at the foundation wall/footing interface to allow the infiltration of water to flow to the interior perimeter drainage pipe. The sleeves should be connected to openings in the HDPE face of the drainage board layer. The perimeter drainage pipe and underfloor drainage system should direct water to sump pit(s) within the lower basement area.

Water Infiltration Volumes

Based on the above-noted methodology, water carried by the foundation and underfloor drainage system will generally consist of surface water and will not consist of groundwater/long-term dewatering of the groundwater table. Water managed by this system will be directed to the appropriate building sump pit.

It is expected that the successful implementation of this system throughout the subject site will result in a long-term infiltration rate of less than 30,000 L/day of surface water. Peak periods of infiltration (i.e.- short-term conditions) should be anticipated during heavy rainfall and snow-melt events.



patersongroup
consulting engineers

154 Colonnade Road South
Ottawa, Ontario K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

NO.	REVISIONS	DATE	INITIAL

OTTAWA, ONTARIO
MAIN AND MAIN DEVELOPMENTS
GEOTECHNICAL INVESTIGATION
3-33 SELKIRK STREET AND 2 MONTREAL ROAD
TEST HOLE LOCATION PLAN

Scale:	1:750	Date:	11/2021
Drawn by:	RCG	Report No.:	PG4915-1
Checked by:	RG	Revision No.:	2
Approved by:	DJG		

c:\users\congrind\downloads\pg4915-1-revised-11-11-21.dwg



**Goodkey, Weedmark
& Associates Limited**

Consulting Engineers

1688 Woodward Dr.
Ottawa, ON
Canada
K2C 3R8

Tel. 613-727-5111
info@gwal.com
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F.W.A. Bann, P.Eng.
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D.R. Vyas, P.Eng., MIEEE
S. Hamilton, P.Eng.
J. Moffat, P.Eng.
E. Pérusse, P.Eng., ing.
R. Boivin, P.Eng., ing.
R. Leonard, P.Eng.
M. Sarasin, P.Eng.

Executive Consultants
A. Bogdanowicz, P.Eng.
M.G. Carriere, C.E.T.
R.J. McIntyre, P.Eng.

January 31, 2022

VIA E-MAIL

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

**ATTENTION: MS. ALLISON HAMLIN MCIP, RPP, PLANNER III
DEVELOPMENT REVIEW (URBAN SERVICES)**

**SUBJECT: SITE PLAN APPROVAL APPLICATION
2 MONTREAL ROAD AND 3 SELKIRK STREET
THREE (3) NEW APARTMENT BUILDINGS
OUR PROJECT NO. 2020-276**

Dear Madame:

SITE PLAN CONTROL AGREEMENT COMMENTS:

Please find herewith response based on the City of Ottawa's Site Plan Control Agreement comments for the above-mentioned project.

The long-term groundwater discharge flow is at 30,000L/day according to the "Geotechnical Response to City's Comments". In addition, we have assumed for the previous submission, a discharge flow of 1.04L/s for a pump that will run 8hrs/day based on the Geotechnical information provided to GWAL.

Yours very truly,

GOODKEY, WEEDMARK & ASSOCIATES LIMITED



Mark Sarasin, P.Eng.
Senior Associate
Senior Mechanical Engineer

MS/jnd

e.c.: Emily Roukhian (Riverain Development Inc.)





**Goodkey, Weedmark
& Associates Limited**
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M. Sarasin, P.Eng.

Executive Consultants
A. Bogdanowicz, P.Eng.
M.G. Carriere, C.E.T.
R.J. McIntyre, P.Eng.

December 21, 2021

VIA E-MAIL

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

**ATTENTION: MS. ALLISON HAMLIN MCIP, RPP, PLANNER III
DEVELOPMENT REVIEW (URBAN SERVICES)**

**SUBJECT: SITE PLAN APPROVAL APPLICATION
2 MONTREAL ROAD AND 3 SELKIRK STREET
THREE (3) NEW APARTMENT BUILDINGS
OUR PROJECT NO. 2020-276**

Dear Madame:

SITE PLAN CONTROL AGREEMENT COMMENTS:

Please find herewith response based on the City of Ottawa's Site Plan Control Agreement comments for the above-mentioned project.

Mechanical Comment 1 - Provide a memo from the Mechanical Engineer confirming the discharge rates of the pumps in storage tank will not exceed the allowable discharge rates of the site.

Response: Storm water discharge rates will not exceed the allowable discharge rates of the site. In case of a pump failure, the cistern will have catch basins located on the top of the cistern which will allow for the cistern to overflow at grade thus eliminating the risk of flooding the garage. The cistern pumps will also be duty/standby (redundant pump in case of a failure) and on emergency power.

Mechanical Comment 2 - The mechanical engineer needs to provide a letter (signed and sealed) confirming each building sprinkler system will meet the requirements of a fully supervised system as per the NFPA and are fully supervised by a monitored fire alarm system as per OBC.

Response: The site will be fully sprinklered in accordance with the Ontario Building Code and to NFPA 13. The system will also be fully supervised.

Yours very truly,

GOODKEY, WEEDMARK & ASSOCIATES LIMITED



Mark Sarasin, P.Eng.

Senior Associate, Senior Mechanical Engineer

MS/nh

e.c.: Emily Roukhian (Riverain Development Inc.)



September 01, 2022

Attention: Lorraine Stevens, MCIP, RPP
Planner, Development Review
110 Laurier Avenue West
Ottawa, ON K1P 1J1

Re: 2 Montreal Road and 3 Selkirk Street (D07-12-21-0123)

On behalf of our client, we are writing this memo to support the city of Ottawa's Site Plan Control request. The new development located at 2 Montreal Road and 3 Selkirk Street is comprised of 3 new high-rise mixed use residential buildings. All floor levels including the below grade parking structure will be fully sprinklered. Construction will be that of a typical reinforced concrete high rise using noncombustible materials as per the Ontario Building Code requirements. All structural members including floors, beams and columns will have a minimum of 2 hours fire rating as supported by ULC and UL Standard assemblies. This design will provide the building with a FUS occupancy class of "Limited combustible" and the Type of construction will be "Non-combustible" as defined in the appendix of the Fire Underwriters Survey (1999). Additionally, all vertical openings will be protected in accordance with the Ontario Building Code or other applicable code having jurisdiction; all vertical enclosures will have walls of non-combustible construction with a fire-resistance rating of minimum one hour, all openings will have automatic self-closing devices, and all elevator doors will be of metal or metal-covered construction that will be normally closed for operation of the elevator in keeping with the pertinent code clauses.

We trust this is satisfactory.

Sincerely,



Adam Stead, CCCA
Senior Project Coordinator & Certified Construction Contract Administrator

rla / architecture

From: Jamie Batchelor <jamie.batchelor@rvca.ca>
Sent: March 4, 2022 3:27 PM
To: sarrak@lithosgroup.ca
Subject: 29 Selkirk Street

Good Afternoon Sarra,

Thanks for your inquiry. We offer the following comments for your consideration:

The Conservation Authority has no objection to the minor system design, provided approval is obtained from the City (pumping, mechanical, sewer capacity, maintenance (etc.)). The water quality objective is also acceptable. Have you considered other stormwater measures such as roof top storage and LID options for this site? We would also strongly encourage you to look at runoff volume control in accordance with the anticipated linear ECA process.

Jamie Batchelor, MCIP, RPP
Planner, ext. 1191
jamie.batchelor@rvca.ca



3889 Rideau Valley Drive
PO Box 599, Manotick ON K4M 1A5
T 613-692-3571 | 1-800-267-3504 F 613-692-0831 | www.rvca.ca

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Stormfilter Design Determining Number of Cartridges for Flow Based Systems

Echelon Environmental

55 Albert Street, Suite #200 | Markham, ON, L3P 2T4

www.echelonenvironmental.ca

info@echelonenvironmental.ca

[905-948-0000](tel:905-948-0000)

Project Name: 3 Selkirk St

Engineer: Lithos Group

Location: Ottawa, ON

Contact: Gina Liaropoulou, M.Arch

OGS ID: OGS

Report Date: 9-Feb-26

Site Data

Drainage Area, Ad	0.16 ac	(0.064 ha)
Runoff Coefficient, Rc	1.00	
Treatment storm flow rate, Q_{treat}	0.08 cfs	(2.22 L/s)
Peak storm flow rate, Q_{peak}	1.13 cfs	(31.9 L/s)

StormFilter System Configuration

Filtration brand	StormFilter
Cartridge height	12 in
Specific Flow Rate	2.12 gpm/ft ²
Flow rate per cartridge	11.24 gpm

Treatment Summary

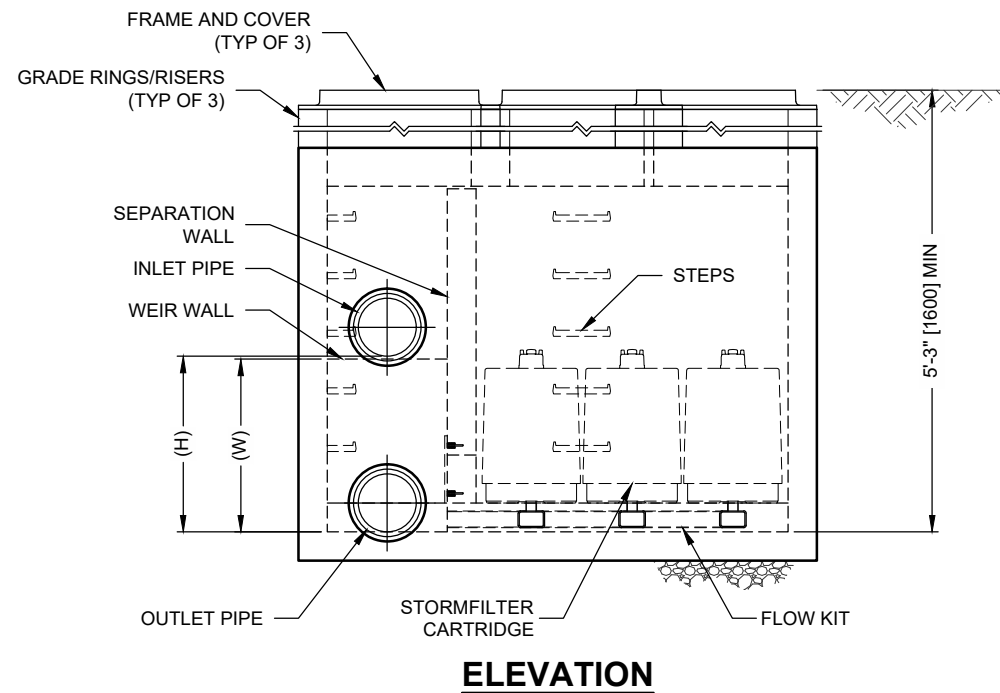
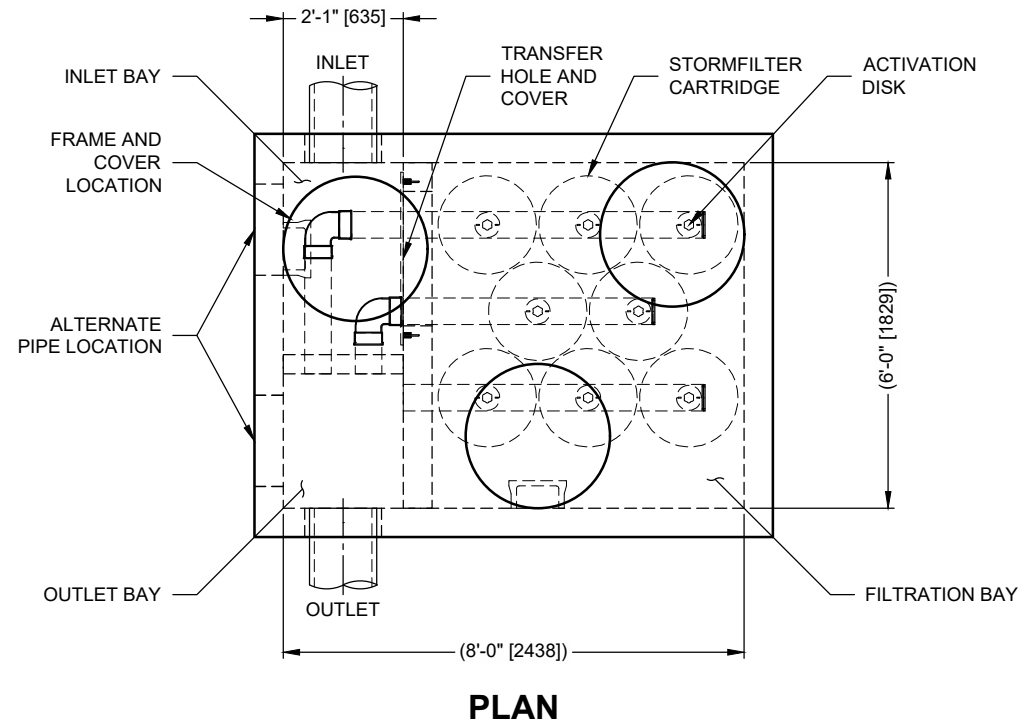
Number of Cartridges Required	4
Filter Media Type	Perlite
Event Mean Concentration (EMC)	120 mg/L
Annual TSS Removal Efficiency	80%
Percent Annual Runoff Captured	90%

Recommended Unit: **Stormfilter SFPD0608 vault or CIP**

***Connecting pipe sizes, materials, and orientation to be confirmed prior to design finalization.**

****Refer to provided standard detail for minimum installation depths. For low cover designs reach out to Echelon Environmental for a custom proposal.**

I:\STORMWATER\COMMP\PS110 STORMFILTER\40 STANDARD DRAWINGS\SF PEAK DIVERSION\DWG\SFPD0608-DTL.DWG 3/16/2022 8:10 AM

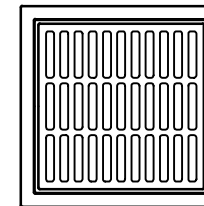


STORMFILTER DESIGN NOTES

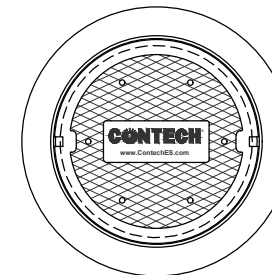
- STORMFILTER TREATMENT CAPACITY VARIES BY CARTRIDGE COUNT AND LOCALLY APPROVED SURFACE AREA SPECIFIC FLOW RATE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD
- A 6' x 8' [1829 x 2438] PEAK DIVERSION STYLE STORMFILTER IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (8) AND IS AVAILABLE IN A LEFT INLET (AS SHOWN) OR A RIGHT INLET CONFIGURATION
- ALL PARTS AND INTERNAL ASSEMBLY PROVIDED BY CONTECH UNLESS NOTED OTHERWISE

CARTRIDGE SIZE (in. [mm])	27 [686]			18 [457]			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H) (ft. [mm])	3.05 [930]			2.3 [701]			1.8 [549]		
HEIGHT OF WEIR (W) (ft. [mm])	3.00 [914]			2.25 [686]			1.75 [533]		
SPECIFIC FLOW RATE (gpm/sf [L/s/m ²])	2 [1.36]	1.67* [1.13]*	1 [0.68]	2 [1.36]	1.67* [1.13]*	1 [0.68]	2 [1.36]	1.67* [1.13]*	1 [0.68]
CARTRIDGE FLOW RATE (gpm [L/s])	22.5 [1.42]	18.79 [1.19]	11.25 [0.71]	15 [0.95]	12.53 [0.79]	7.5 [0.47]	10 [0.63]	8.35 [0.53]	5 [0.32]

* 1.67 gpm/sf [1.13 L/s/m²] SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY



FRAME AND GRATE
(24" SQUARE)
(NOT TO SCALE)



FRAME AND COVER
(30" ROUND)
(NOT TO SCALE)

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	
WATER QUALITY FLOW RATE (cfs [L/s])	
PEAK FLOW RATE (cfs [L/s])	
RETURN PERIOD OF PEAK FLOW (yrs)	
CARTRIDGE FLOW RATE	
CARTRIDGE SIZE (27, 18, LOW DROP (LD))	
MEDIA TYPE (PERLITE, ZPG, PSORB)	
NUMBER OF CARTRIDGES REQUIRED	
INLET BAY RIM ELEVATION	
FILTER BAY RIM ELEVATION	
PIPE DATA:	INVERT MATERIAL DIAMETER
INLET PIPE 1	
INLET PIPE 2	
OUTLET PIPE	
NOTES/SPECIAL REQUIREMENTS:	

PERFORMANCE SPECIFICATION

FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. **RADIAL MEDIA DEPTH SHALL BE 7" [178]**. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST **38 SECONDS**. SPECIFIC FLOW RATE SHALL BE **2 GPM/SF [1.36 L/s/m²] (MAXIMUM)**. SPECIFIC FLOW RATE IS THE MEASURE OF THE FLOW (GPM) DIVIDED BY THE MEDIA SURFACE CONTACT AREA (SF). MEDIA VOLUMETRIC FLOW RATE SHALL BE **6 GPM/CF [13.39 L/s/m³] OF MEDIA (MAXIMUM)**.

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH () ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. ALTERNATE DIMENSIONS ARE IN MILLIMETERS [mm] UNLESS NOTED OTHERWISE.
4. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH REPRESENTATIVE. www.ContechES.com
5. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
6. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 10' [3048] AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.

INSTALLATION NOTES

- A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE.
- C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL SECTIONS AND ASSEMBLE STRUCTURE.
- D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.
- E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
- F. CONTRACTOR TO REMOVE THE TRANSFER OPENING COVER WHEN THE SYSTEM IS BROUGHT ONLINE.



THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,322,629; 5,524,576; 5,707,527; 5,985,157; 6,027,639; 6,649,048; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

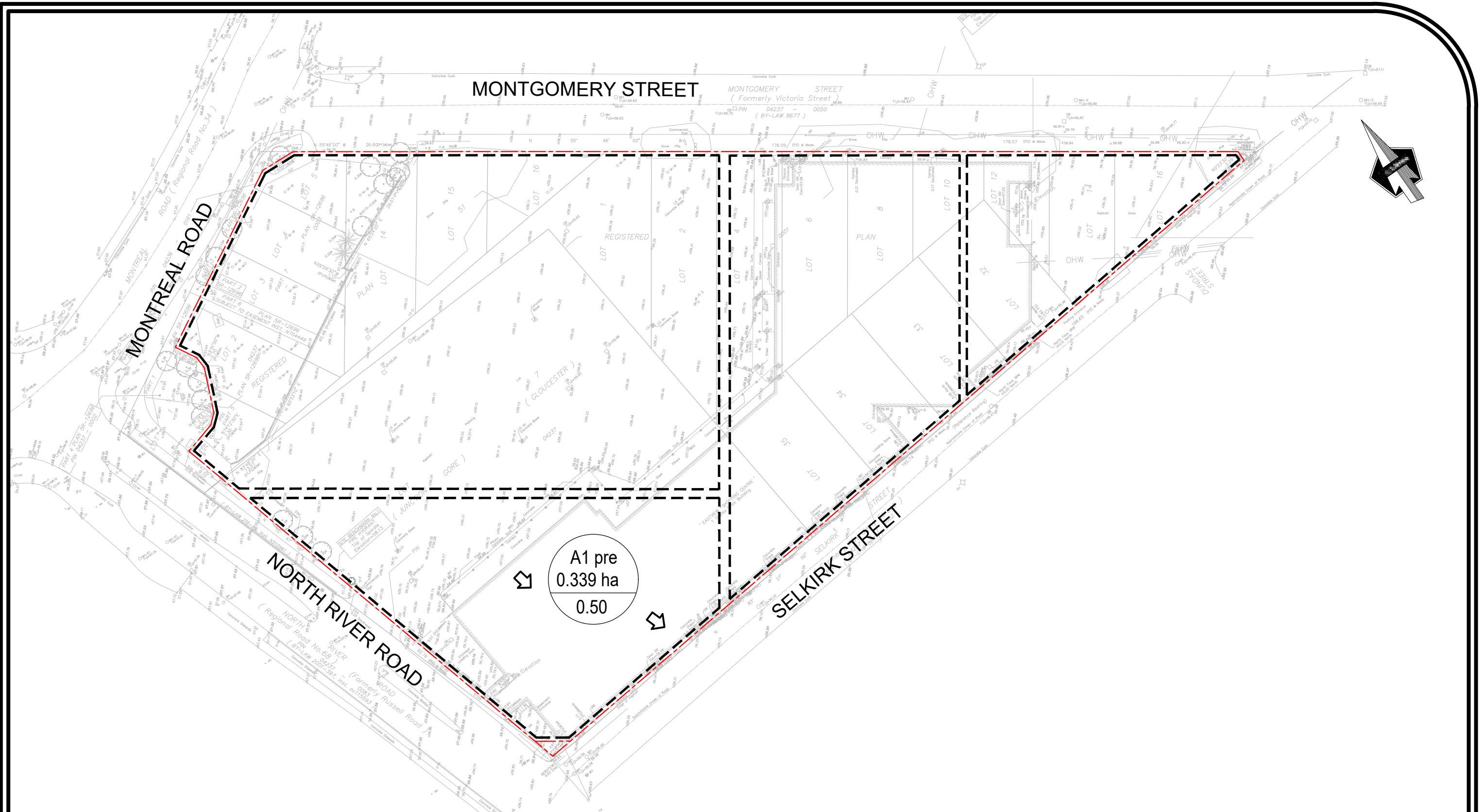


www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

SFPD0608 (6' x 8')
PEAK DIVERSION STORMFILTER
STANDARD DETAIL

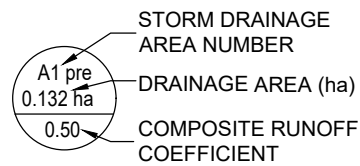
Appendix C

Storm Analysis



150 Bermondsey Road, Toronto, Ontario M4A 1Y1

LEGEND



STORM DRAINAGE AREA NUMBER
DRAINAGE AREA (ha)
COMPOSITE RUNOFF COEFFICIENT

--- PRE-DEVELOPMENT STORM DRAINAGE AREA
- - - PROPERTY LINE



MAJOR DRAINAGE PATTERN

PRE-DEVELOPMENT
STORM DRAINAGE AREA PLAN
RESIDENTIAL USE DEVELOPMENT
3 SELKIRK STREET
OTTAWA, ONTARIO

DATE: FEBRUARY 2026

PROJECT No: UD25-052

SCALE: N.T.S.

FIGURE No: DAP 1



Prepared By: Isaak Chlorotiris, M.Arch
 Reviewed by: Nick Moutzouris, P.Eng., M.A.Sc.

**Rational Method
 Pre-Development Flow Calculation**

3 Selkirk Street, OT
 File No. UD25-052
 City of Ottawa
 Date: February 2026

Area Number	Area (ha)	Actual Coefficient	Design Coefficient
A1 Pre (Phase II)	0.339	0.90	0.50

Rational Method Calculation

Event 2-year IDF Data Set City of Ottawa a = 732.950 b= 6.199 c= 0.810

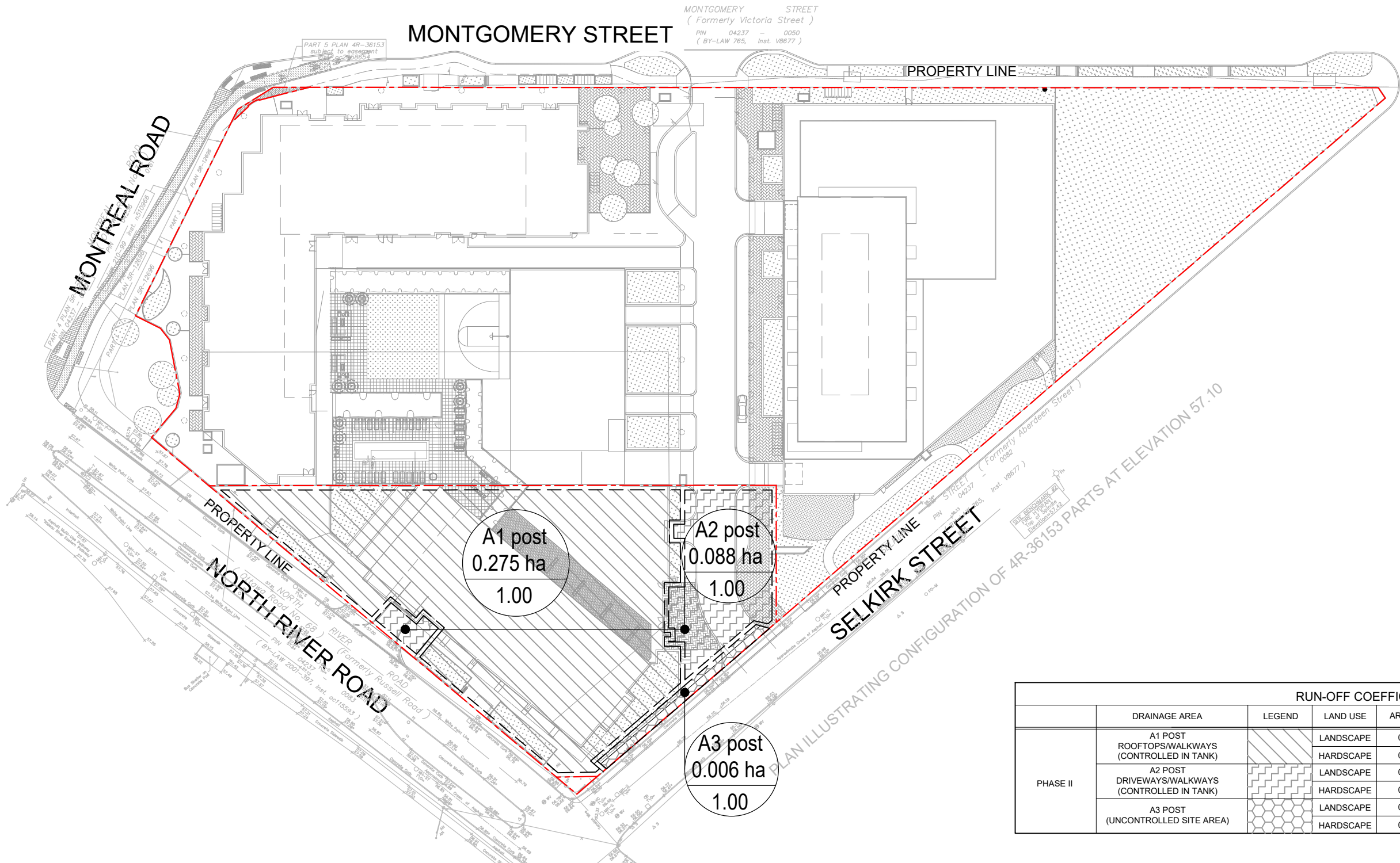
Area Number	A (ha)	C	AC	Tc (min.)	I (mm/h)	Q (m ³ /s)	Q (L/s)
A1 pre (Phase II)	0.339	0.50	0.17	20	52.0	0.024	24.5

Event 5-year IDF Data Set City of Ottawa a = 998.071 b= 6.053 c= 0.814

Area Number	A (ha)	C	AC	Tc (min.)	I (mm/h)	Q (m ³ /s)	Q (L/s)
A1 pre (Phase II)	0.339	0.50	0.17	20	70.3	0.033	33.1

Event 100-year IDF Data Set City of Ottawa a = 1735.688 b= 6.014 c= 0.820

Area Number	A (ha)	C	AC	Tc (min.)	I (mm/h)	Q (m ³ /s)	Q (L/s)
A1 pre (Phase II)	0.339	0.50	0.17	20	120.0	0.056	56.5



A1 post
0.275 ha
1.00

A2 post
0.088 ha
1.00

A3 post
0.006 ha
1.00

RUN-OFF COEFFICIENTS							
	DRAINAGE AREA	LEGEND	LAND USE	AREA (ha)	INITIAL COEFFICIENT	COMPOSITE COEFFICIENT	TOTAL AREA (ha)
PHASE II	A1 POST ROOFTOPS/WALKWAYS (CONTROLLED IN TANK)		LANDSCAPE	0.035	0.25	1.00	0.339
			HARDSCAPE	0.235	0.90		
	A2 POST DRIVEWAYS/WALKWAYS (CONTROLLED IN TANK)		LANDSCAPE	0.000	0.25	1.00	
			HARDSCAPE	0.064	0.90		
	A3 POST (UNCONTROLLED SITE AREA)		LANDSCAPE	0.000	0.25	1.00	
			HARDSCAPE	0.006	0.90		



150 Bermondsey Road, Toronto, Ontario M4A 1Y1

LEGEND

- STORM DRAINAGE AREA NUMBER
- DRAINAGE AREA (ha)
- COMPOSITE RUNOFF COEFFICIENT
- POST-DEVELOPMENT STORM DRAINAGE AREA
- PROPERTY LINE

**POST-DEVELOPMENT
STORM DRAINAGE AREA PLAN**
RESIDENTIAL USE DEVELOPMENT
3 SELKIRK STREET
OTTAWA, ONTARIO

DATE: FEBRUARY 2026 PROJECT No: UD25-052
SCALE: N.T.S. FIGURE No: DAP 2



**Modified Rational Method -
Two Year Storm - Phase II
Site Flow and Storage Summary**
3 Selkirk Street, OT
Date: February 2026

2-Year Design Storm		Tributary Area (A1)		Tributary Area (A2)		Tributary Area (A3)		Total Site Release Rate Achieved=							
a=	732.95	ha	C	ha	C	ha	C	Phase II							
b=	6.199	Landsc. Area (A1)	0.034	0.25	Landsc. Area (A2)	0.000	0.25	Landsc. Area (A3)	0.000	0.25	Total Storm Runoff Volume		Released Volume	Storage Volume	Storage Depth of Tank
c=	18.0	Hardsc. Area (A1)	0.235	0.90	Hardsc. Area (A2)	0.064	0.90	Hardsc. Area (A3)	0.006	0.90	Runoff Volume	Volume	Volume	Volume	Depth of Tank
d=	a / (TC + b)c	Total	0.269	0.82	Total	0.064	0.90	Total	0.006	0.90	(m ³)	(m ³)	(m ³)	(m ³)	(m)
Time (min)	Rainfall Intensity (mm/hr)	Storm Runoff (A1 Post) (m ³ /s)	Runoff Volume (A1 Post) (m ³)	Storm Runoff (A2 Post) (m ³ /s)	Runoff Volume (A2 Post) (m ³)	Storm Runoff (A3 Post) (m ³ /s)	Runoff Volume (A3 Post) (m ³)	Total Storm Runoff Volume (m ³)	Released Volume (m ³)	Storage Volume (m ³)	Storage Volume (m ³)	Storage Volume (m ³)	Storage Volume (m ³)	Storage Depth of Tank (m)	
10.0	76.8	0.047	28.21	0.01	7.41	0.00	1.99	35.62	3.89	31.72	31.72	0.26			
15.0	61.9	0.038	34.02	0.01	8.94	0.00	1.93	42.96	5.84	37.12	37.12	0.31			
20.0	52.0	0.032	38.22	0.01	10.04	0.00	1.83	48.25	7.79	40.47	40.47	0.33			
25.0	45.2	0.028	41.47	0.01	10.89	0.00	1.72	52.36	9.73	42.63	42.63	0.35			
30.0	40.0	0.025	44.12	0.01	11.59	0.00	1.63	55.71	11.68	44.03	44.03	0.36			
35.0	36.1	0.022	46.35	0.01	12.18	0.00	1.54	58.52	13.63	44.90	44.90	0.37			
40.0	32.9	0.020	48.28	0.01	12.68	0.00	1.46	60.96	15.57	45.38	45.38	0.37			
45.0	30.2	0.019	49.97	0.00	13.13	0.00	1.39	63.10	17.52	45.58	45.58	0.37			
50.0	28.0	0.017	51.49	0.00	13.53	0.00	1.33	65.01	19.47	45.55	45.55	0.37			
55.0	26.2	0.016	52.86	0.00	13.89	0.00	1.27	66.75	21.41	45.33	45.33	0.37			
60.0	24.6	0.015	54.11	0.00	14.21	0.00	1.22	68.33	23.36	44.97	44.97	0.37			
65.0	23.2	0.014	55.26	0.00	14.52	0.00	1.18	69.78	25.31	44.47	44.47	0.37			
70.0	21.9	0.013	56.33	0.00	14.80	0.00	1.14	71.13	27.25	43.87	43.87	0.36			
75.0	20.8	0.013	57.33	0.00	15.06	0.00	1.10	72.38	29.20	43.18	43.18	0.36			
80.0	19.8	0.012	58.26	0.00	15.30	0.00	1.06	73.56	31.15	42.42	42.42	0.35			
85.0	18.9	0.012	59.14	0.00	15.54	0.00	1.03	74.67	33.09	41.58	41.58	0.34			
90.0	18.1	0.011	59.96	0.00	15.75	0.00	1.00	75.72	35.04	40.68	40.68	0.33			
95.0	17.4	0.011	60.75	0.00	15.96	0.00	0.97	76.71	36.99	39.72	39.72	0.33			
100.0	16.7	0.010	61.50	0.00	16.16	0.00	0.95	77.65	38.93	38.72	38.72	0.32			
105.0	16.1	0.010	62.21	0.00	16.34	0.00	0.92	78.55	40.88	37.67	37.67	0.31			
110.0	15.6	0.010	62.89	0.00	16.52	0.00	0.90	79.41	42.83	36.59	36.59	0.30			
115.0	15.0	0.009	63.55	0.00	16.69	0.00	0.88	80.24	44.77	35.47	35.47	0.29			
120.0	14.6	0.009	64.17	0.00	16.86	0.00	0.86	81.03	46.72	34.31	34.31	0.28			
125.0	14.1	0.009	64.78	0.00	17.02	0.00	0.84	81.79	48.67	33.12	33.12	0.27			
130.0	13.7	0.008	65.36	0.00	17.17	0.00	0.82	82.52	50.61	31.91	31.91	0.26			
135.0	13.3	0.008	65.92	0.00	17.32	0.00	0.81	83.23	52.56	30.67	30.67	0.25			
140.0	12.9	0.008	66.46	0.00	17.46	0.00	0.79	83.92	54.51	29.41	29.41	0.24			
145.0	12.6	0.008	66.98	0.00	17.60	0.00	0.78	84.58	56.45	28.12	28.12	0.23			
150.0	12.3	0.007	67.49	0.00	17.73	0.00	0.76	85.22	58.40	26.82	26.82	0.22			
155.0	11.9	0.007	67.98	0.00	17.86	0.00	0.75	85.84	60.35	25.49	25.49	0.21			
160.0	11.7	0.007	68.46	0.00	17.98	0.00	0.73	86.44	62.29	24.15	24.15	0.20			
165.0	11.4	0.007	68.92	0.00	18.11	0.00	0.72	87.03	64.24	22.79	22.79	0.19			
170.0	11.1	0.007	69.38	0.00	18.23	0.00	0.71	87.60	66.19	21.41	21.41	0.18			
175.0	10.9	0.007	69.82	0.00	18.34	0.00	0.70	88.16	68.13	20.02	20.02	0.16			
180.0	10.6	0.007	70.24	0.00	18.45	0.00	0.69	88.70	70.08	18.62	18.62	0.15			
185.0	10.4	0.006	70.66	0.00	18.56	0.00	0.68	89.23	72.03	17.20	17.20	0.14			
190.0	10.2	0.006	71.07	0.00	18.67	0.00	0.67	89.74	73.97	15.77	15.77	0.13			
195.0	10.0	0.006	71.47	0.00	18.78	0.00	0.66	90.24	75.92	14.32	14.32	0.12			
200.0	9.8	0.006	71.86	0.00	18.88	0.00	0.65	90.74	77.87	12.87	12.87	0.11			
205.0	9.6	0.006	72.24	0.00	18.98	0.00	0.64	91.22	79.81	11.40	11.40	0.09			
210.0	9.4	0.006	72.61	0.00	19.08	0.00	0.63	91.69	81.76	9.93	9.93	0.08			
215.0	9.2	0.006	72.98	0.00	19.17	0.00	0.62	92.15	83.71	8.44	8.44	0.07			
220.0	9.1	0.006	73.33	0.00	19.27	0.00	0.61	92.60	85.65	6.95	6.95	0.06			
225.0	8.9	0.005	73.68	0.00	19.36	0.00	0.60	93.04	87.60	5.44	5.44	0.04			
230.0	8.8	0.005	74.03	0.00	19.45	0.00	0.60	93.47	89.55	3.93	3.93	0.03			
235.0	8.6	0.005	74.36	0.00	19.54	0.00	0.59	93.90	91.49	2.41	2.41	0.02			
240.0	8.5	0.005	74.69	0.00	19.62	0.00	0.58	94.32	93.44	0.88	0.88	0.01			
245.0	8.3	0.005	75.02	0.00	19.71	0.00	0.58	94.73	95.39	0.00	0.00	0.00			
250.0	8.2	0.005	75.34	0.00	19.79	0.00	0.57	95.13	97.33	0.00	0.00	0.00			
255.0	8.1	0.005	75.65	0.00	19.87	0.00	0.56	95.52	99.28	0.00	0.00	0.00			
260.0	8.0	0.005	75.96	0.00	19.95	0.00	0.56	95.91	101.23	0.00	0.00	0.00			
265.0	7.8	0.005	76.26	0.00	20.03	0.00	0.55	96.30	103.17	0.00	0.00	0.00			
270.0	7.7	0.005	76.56	0.00	20.11	0.00	0.54	96.67	105.12	0.00	0.00	0.00			
275.0	7.6	0.005	76.85	0.00	20.19	0.00	0.54	97.04	107.07	0.00	0.00	0.00			
280.0	7.5	0.005	77.14	0.00	20.26	0.00	0.53	97.40	109.01	0.00	0.00	0.00			
285.0	7.4	0.005	77.42	0.00	20.34	0.00	0.53	97.76	110.96	0.00	0.00	0.00			
290.0	7.3	0.004	77.70	0.00	20.41	0.00	0.52	98.12	112.91	0.00	0.00	0.00			
295.0	7.2	0.004	77.98	0.00	20.48	0.00	0.52	98.46	114.85	0.00	0.00	0.00			
300.0	7.1	0.004	78.25	0.00	20.56	0.00	0.51	98.81	116.80	0.00	0.00	0.00			



**Modified Rational Method -
Five Year Storm - Phase II
Site Flow and Storage Summary**

3 Selkirk Street, OT
Date: February 2026

5-Year Design Storm		Tributary Area (A1)		ha	C	Tributary Area (A2)		ha	C	Tributary Area (A3)		ha	C	Total Site			
a=	998.07	Landsc. Area (A1)	0.034	0.25	Landsc. Area (A2)	0.000	0.25	Landsc. Area (A3)	0.000	0.25	Total Site Release Rate (towards Selkirk Street)= "Storage Tank"						
b=	6.053	Hardsc. Area (A1)	0.235	0.90	Hardsc. Area (A2)	0.064	0.90	Hardsc. Area (A3)	0.006	0.90	5-yr Pre-Development Site Release Rate = 33.1 L/s						
c=	24.3	Total		0.269	0.82	Total		0.064	0.90	Total		0.006	0.90	Uncontrolled Flow = 1.6 L/s			
d=	a / (TC + b)c	Total		0.269	0.82	Total		0.064	0.90	Total		0.006	0.90	Groundwater release rate= 1.0 L/s			
		Total		0.269	0.82	Total		0.064	0.90	Total		0.006	0.90	Allowable Controlled Release Rate = 30.5 L/s			
		Total		0.269	0.82	Total		0.064	0.90	Total		0.006	0.90	Site Controlled Release Rate (Tank-Phase II) = 15.4 L/s			
		Total		0.269	0.82	Total		0.064	0.90	Total		0.006	0.90	Total Site Release Rate Achieved= 18.0 L/s			
		Total		0.269	0.82	Total		0.064	0.90	Total		0.006	0.90	Phase II			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)						
Time	Rainfall Intensity	Storm Runoff (A1 Post)	Runoff Volume (A1 Post)	Storm Runoff (A2 Post)	Runoff Volume (A2 Post)	Storm Runoff (A3 Post)	Runoff Volume (A3 Post)	Total Storm Runoff Volume	Released Volume	Storage Volume	Depth of Tank						
(min)	(mm/hr)	(m ³ /s)	(m ³)	(m ³ /s)	(m ³)	(m ³ /s)	(m ³)	(m ³)	(m ³)	(m ³)	(m)						
10.0	104.2	0.064	38.26	0.02	10.05	0.00	3.67	48.32	4.63	43.68	0.36						
15.0	83.6	0.051	46.03	0.01	12.09	0.00	3.54	58.12	6.95	51.17	0.42						
20.0	70.3	0.043	51.60	0.01	13.55	0.00	3.34	65.15	9.27	55.88	0.46						
25.0	60.9	0.037	55.91	0.01	14.69	0.00	3.13	70.60	11.59	59.01	0.49						
30.0	53.9	0.033	59.41	0.01	15.61	0.00	2.95	75.02	13.90	61.12	0.50						
35.0	48.5	0.030	62.36	0.01	16.38	0.00	2.79	78.74	16.22	62.52	0.51						
40.0	44.2	0.027	64.90	0.01	17.05	0.00	2.64	81.96	18.54	63.42	0.52						
45.0	40.6	0.025	67.14	0.01	17.64	0.00	2.51	84.78	20.86	63.92	0.53						
50.0	37.7	0.023	69.14	0.01	18.16	0.00	2.40	87.30	23.17	64.13	0.53						
55.0	35.1	0.021	70.94	0.01	18.64	0.00	2.29	89.58	25.49	64.09	0.53						
60.0	32.9	0.020	72.59	0.01	19.07	0.00	2.20	91.66	27.81	63.85	0.53						
65.0	31.0	0.019	74.10	0.00	19.47	0.00	2.12	93.57	30.13	63.44	0.52						
70.0	29.4	0.018	75.51	0.00	19.84	0.00	2.04	95.34	32.44	62.90	0.52						
75.0	27.9	0.017	76.81	0.00	20.18	0.00	1.97	96.99	34.76	62.23	0.51						
80.0	26.6	0.016	78.04	0.00	20.50	0.00	1.91	98.54	37.08	61.46	0.51						
85.0	25.4	0.016	79.19	0.00	20.80	0.00	1.85	99.99	39.40	60.60	0.50						
90.0	24.3	0.015	80.28	0.00	21.09	0.00	1.79	101.37	41.71	59.65	0.49						
95.0	23.3	0.014	81.31	0.00	21.36	0.00	1.74	102.67	44.03	58.64	0.48						
100.0	22.4	0.014	82.29	0.00	21.62	0.00	1.70	103.90	46.35	57.56	0.47						
105.0	21.6	0.013	83.22	0.00	21.86	0.00	1.65	105.08	48.67	56.42	0.46						
110.0	20.8	0.013	84.11	0.00	22.10	0.00	1.61	106.21	50.98	55.23	0.45						
115.0	20.1	0.012	84.97	0.00	22.32	0.00	1.57	107.29	53.30	53.99	0.44						
120.0	19.5	0.012	85.79	0.00	22.54	0.00	1.54	108.33	55.62	52.71	0.43						
125.0	18.9	0.012	86.58	0.00	22.74	0.00	1.50	109.32	57.93	51.39	0.42						
130.0	18.3	0.011	87.34	0.00	22.94	0.00	1.47	110.28	60.25	50.03	0.41						
135.0	17.8	0.011	88.07	0.00	23.14	0.00	1.44	111.21	62.57	48.64	0.40						
140.0	17.3	0.011	88.78	0.00	23.32	0.00	1.41	112.11	64.89	47.22	0.39						
145.0	16.8	0.010	89.47	0.00	23.50	0.00	1.38	112.97	67.20	45.77	0.38						
150.0	16.4	0.010	90.13	0.00	23.68	0.00	1.36	113.81	69.52	44.29	0.36						
155.0	15.9	0.010	90.78	0.00	23.85	0.00	1.33	114.62	71.84	42.78	0.35						
160.0	15.6	0.010	91.40	0.00	24.01	0.00	1.31	115.41	74.16	41.26	0.34						
165.0	15.2	0.009	92.01	0.00	24.17	0.00	1.29	116.18	76.47	39.70	0.33						
170.0	14.8	0.009	92.60	0.00	24.33	0.00	1.26	116.92	78.79	38.13	0.31						
175.0	14.5	0.009	93.17	0.00	24.48	0.00	1.24	117.65	81.11	36.54	0.30						
180.0	14.2	0.009	93.73	0.00	24.62	0.00	1.22	118.36	83.43	34.93	0.29						
185.0	13.9	0.008	94.28	0.00	24.77	0.00	1.20	119.05	85.74	33.30	0.27						
190.0	13.6	0.008	94.81	0.00	24.91	0.00	1.19	119.72	88.06	31.66	0.26						
195.0	13.3	0.008	95.33	0.00	25.04	0.00	1.17	120.38	90.38	30.00	0.25						
200.0	13.0	0.008	95.84	0.00	25.18	0.00	1.15	121.02	92.70	28.33	0.23						
205.0	12.8	0.008	96.34	0.00	25.31	0.00	1.13	121.65	95.01	26.64	0.22						
210.0	12.6	0.008	96.83	0.00	25.44	0.00	1.12	122.26	97.33	24.93	0.21						
215.0	12.3	0.008	97.30	0.00	25.56	0.00	1.10	122.87	99.65	23.22	0.19						
220.0	12.1	0.007	97.77	0.00	25.68	0.00	1.09	123.45	101.96	21.49	0.18						
225.0	11.9	0.007	98.23	0.00	25.80	0.00	1.07	124.03	104.28	19.75	0.16						
230.0	11.7	0.007	98.68	0.00	25.92	0.00	1.06	124.60	106.60	18.00	0.15						
235.0	11.5	0.007	99.11	0.00	26.04	0.00	1.05	125.15	108.92	16.23	0.13						
240.0	11.3	0.007	99.53	0.00	26.15	0.00	1.04	125.70	111.23	14.46	0.12						
245.0	11.1	0.007	99.97	0.00	26.26	0.00	1.02	126.23	113.55	12.68	0.10						
250.0	10.9	0.007	100.38	0.00	26.37	0.00	1.01	126.76	115.87	10.89	0.09						
255.0	10.8	0.007	100.79	0.00	26.48	0.00	1.00	127.27	118.19	9.09	0.07						
260.0	10.6	0.006	101.19	0.00	26.58	0.00	0.99	127.78	120.50	7.27	0.06						
265.0	10.4	0.006	101.59	0.00	26.69	0.00	0.98	128.28	122.82	5.46	0.04						
270.0	10.3	0.006	101.98	0.00	26.79	0.00	0.97	128.77	125.14	3.63	0.03						
275.0	10.1	0.006	102.36	0.00	26.89	0.00	0.96	129.25	127.46	1.79	0.01						
280.0	10.0	0.006	102.74	0.00	26.99	0.00	0.94	129.72	129.77	0.00	0.00						
285.0	9.9	0.006	103.11	0.00	27.09	0.00	0.94	130.19	132.09	0.00	0.00						
290.0	9.7	0.006	103.47	0.00	27.19	0.00	0.93	130.65	134.41	0.00	0.00						
295.0	9.6	0.006	103.83	0.00	27.28	0.00	0.92	131.10	136.73	0.00	0.00						
300.0	9.5	0.006	104.18	0.00	27.37	0.00	0.91	131.55	139.04	0.00	0.00						



**Modified Rational Method -
Hundred Year Storm - Phase II
Site Flow and Storage Summary**

3 Selkirk Street, OT
Date: February 2026

Time (min)	Rainfall Intensity (mm/hr)	Drainage Area A1 Post Phase II - Rooftops/Walkways - Controlled in Tank		Drainage Area A2 Post Phase II - Driveways/Walkways - Controlled in Tank OGS		Drainage Area A3 Post Phase II - Uncontrolled		Storage Tank A1 Post + A2 Post + A3 Post			
		Storm Runoff (A1 Post) (m ³ /s)	Runoff Volume (A1 Post) (m ³)	Storm Runoff (A2 Post) (m ³ /s)	Runoff Volume (A2 Post) (m ³)	Storm Runoff (A3 Post) (m ³ /s)	Runoff Volume (A3 Post) (m ³)	Total Storm Runoff Volume (m ³)	Released Volume (m ³)	Storage Volume (m ³)	Storage Depth of Tank (m)
10.0	178.6	0.134	80.17	0.03	19.14	0.00	13.18	99.31	7.14	92.17	0.76
15.0	142.9	0.107	66.23	0.03	22.98	0.00	12.58	119.21	10.71	108.49	0.89
20.0	120.0	0.090	107.71	0.02	25.72	0.00	11.89	133.42	14.28	119.14	0.98
25.0	103.8	0.078	116.56	0.02	27.83	0.00	11.14	144.39	17.86	126.53	1.04
30.0	91.9	0.069	123.74	0.02	29.54	0.00	10.46	153.28	21.43	131.85	1.08
35.0	82.6	0.062	129.76	0.01	30.98	0.00	9.86	160.74	25.00	135.75	1.12
40.0	75.1	0.056	134.95	0.01	32.22	0.00	9.34	167.17	28.57	138.60	1.14
45.0	69.1	0.052	139.51	0.01	33.31	0.00	8.87	172.81	32.14	140.67	1.16
50.0	64.0	0.048	143.57	0.01	34.28	0.00	8.45	177.84	35.71	142.13	1.17
55.0	59.6	0.045	147.23	0.01	35.15	0.00	8.08	182.38	39.28	143.10	1.18
60.0	55.9	0.042	150.57	0.01	35.95	0.00	7.75	186.52	42.85	143.66	1.18
65.0	52.6	0.039	153.64	0.01	36.68	0.00	7.45	190.32	46.43	143.89	1.18
70.0	49.8	0.037	156.48	0.01	37.36	0.00	7.17	193.84	50.00	143.84	1.18
75.0	47.3	0.035	159.12	0.01	37.99	0.00	6.92	197.11	53.57	143.55	1.18
80.0	45.0	0.034	161.60	0.01	38.58	0.00	6.69	200.18	57.14	143.04	1.18
85.0	43.0	0.032	163.92	0.01	39.14	0.00	6.48	203.06	60.71	142.35	1.17
90.0	41.1	0.031	166.12	0.01	39.66	0.00	6.29	205.78	64.28	141.50	1.16
95.0	39.4	0.030	168.20	0.01	40.16	0.00	6.11	208.35	67.85	140.50	1.16
100.0	37.9	0.028	170.17	0.01	40.63	0.00	5.94	210.80	71.42	139.38	1.15
105.0	36.5	0.027	172.06	0.01	41.08	0.00	5.78	213.13	74.99	138.14	1.14
110.0	35.2	0.026	173.85	0.01	41.51	0.00	5.63	215.36	78.57	136.80	1.13
115.0	34.0	0.025	175.57	0.01	41.92	0.00	5.50	217.49	82.14	135.36	1.11
120.0	32.9	0.025	177.23	0.01	42.31	0.00	5.37	219.54	85.71	133.83	1.10
125.0	31.9	0.024	178.81	0.01	42.69	0.00	5.24	221.50	89.28	132.22	1.09
130.0	30.9	0.023	180.34	0.01	43.06	0.00	5.13	223.40	92.85	130.55	1.07
135.0	30.0	0.022	181.81	0.01	43.41	0.00	5.02	225.22	96.42	128.80	1.06
140.0	29.2	0.022	183.24	0.01	43.75	0.00	4.92	226.99	99.99	126.99	1.04
145.0	28.4	0.021	184.61	0.01	44.08	0.00	4.82	228.69	103.56	125.13	1.03
150.0	27.6	0.021	185.95	0.00	44.40	0.00	4.73	230.34	107.14	123.20	1.01
155.0	26.9	0.020	187.24	0.00	44.70	0.00	4.64	231.94	110.71	121.23	1.00
160.0	26.2	0.020	188.49	0.00	45.00	0.00	4.55	233.49	114.28	119.22	0.98
165.0	25.6	0.019	189.71	0.00	45.29	0.00	4.47	235.00	117.85	117.15	0.96
170.0	25.0	0.019	190.89	0.00	45.58	0.00	4.40	236.47	121.42	115.05	0.95
175.0	24.4	0.018	192.04	0.00	45.85	0.00	4.32	237.90	124.99	112.90	0.93
180.0	23.9	0.018	193.17	0.00	46.12	0.00	4.25	239.29	128.56	110.72	0.91
185.0	23.4	0.018	194.26	0.00	46.38	0.00	4.18	240.64	132.13	108.51	0.89
190.0	22.9	0.017	195.33	0.00	46.64	0.00	4.12	241.96	135.70	106.26	0.87
195.0	22.4	0.017	196.37	0.00	46.88	0.00	4.05	243.26	139.28	103.98	0.86
200.0	22.0	0.016	197.39	0.00	47.13	0.00	3.99	244.52	142.85	101.67	0.84
205.0	21.6	0.016	198.38	0.00	47.37	0.00	3.94	245.75	146.42	99.33	0.82
210.0	21.1	0.016	199.36	0.00	47.60	0.00	3.88	246.95	149.99	96.96	0.80
215.0	20.6	0.016	200.31	0.00	47.82	0.00	3.83	248.13	153.56	94.57	0.78
220.0	20.4	0.015	201.24	0.00	48.05	0.00	3.77	249.29	157.13	92.16	0.76
225.0	20.0	0.015	202.16	0.00	48.27	0.00	3.72	250.42	160.70	89.72	0.74
230.0	19.7	0.015	203.05	0.00	48.48	0.00	3.68	251.53	164.27	87.26	0.72
235.0	19.3	0.014	203.93	0.00	48.69	0.00	3.63	252.62	167.85	84.77	0.70
240.0	19.0	0.014	204.79	0.00	48.89	0.00	3.58	253.69	171.42	82.27	0.68
245.0	18.7	0.014	205.64	0.00	49.10	0.00	3.54	254.73	174.99	79.75	0.66
250.0	18.4	0.014	206.47	0.00	49.30	0.00	3.50	255.76	178.56	77.20	0.63
255.0	18.1	0.014	207.28	0.00	49.49	0.00	3.45	256.77	182.13	74.64	0.61
260.0	17.8	0.013	208.08	0.00	49.68	0.00	3.41	257.77	185.70	72.06	0.59
265.0	17.6	0.013	208.87	0.00	49.87	0.00	3.38	258.74	189.27	69.47	0.57
270.0	17.3	0.013	209.65	0.00	50.05	0.00	3.34	259.70	192.84	66.86	0.55
275.0	17.0	0.013	210.41	0.00	50.24	0.00	3.30	260.64	196.42	64.23	0.53
280.0	16.8	0.013	211.16	0.00	50.42	0.00	3.27	261.57	199.99	61.59	0.51
285.0	16.6	0.012	211.90	0.00	50.59	0.00	3.23	262.49	203.56	58.93	0.48
290.0	16.3	0.012	212.62	0.00	50.76	0.00	3.20	263.39	207.13	56.26	0.46
295.0	16.1	0.012	213.34	0.00	50.94	0.00	3.16	264.27	210.70	53.57	0.44
300.0	15.9	0.012	214.04	0.00	51.10	0.00	3.13	265.15	214.27	50.88	0.42



Orifice Design - Phase II

3 Selkirk Street, OT

File No. UD25-052

Date: February 2026

Prepared By: Isaak Chlorotiris, M.Arch

Reviewed by: Nick Moutzouris, P.Eng., M.A.Sc.

Orifice Equation for 100 mm Orifice Plate

$$Q = C \times A \times \sqrt{2 \times g \times h}$$

100 yr event

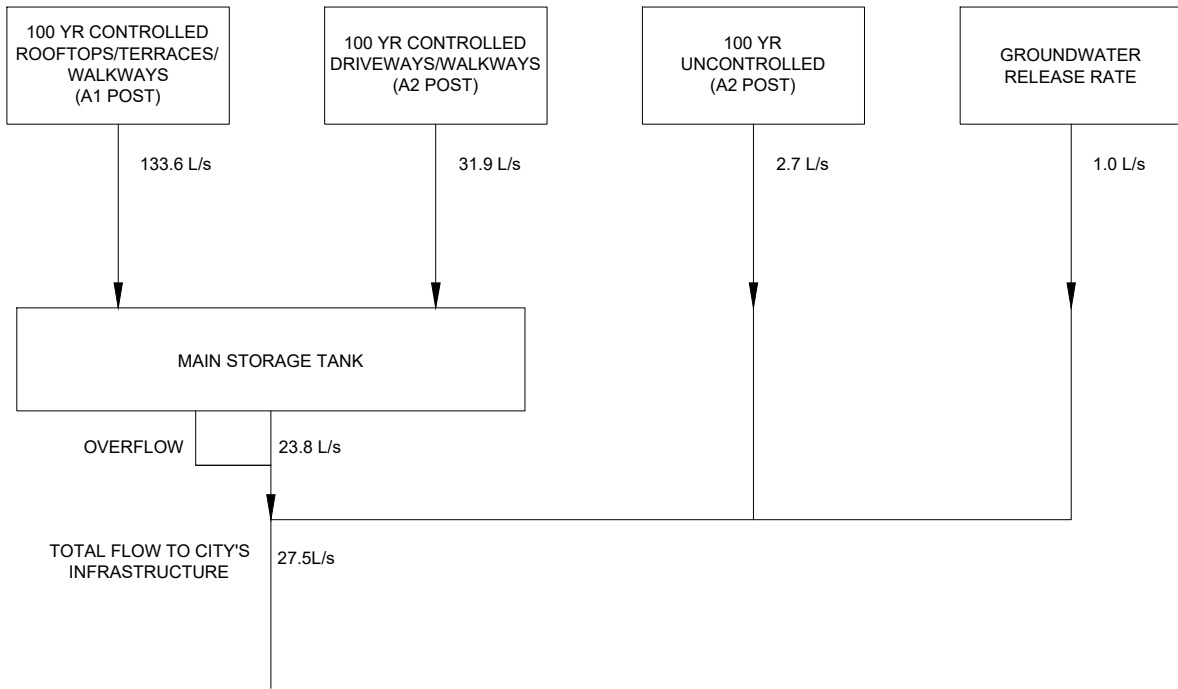
d= 100 mm
C= 0.63
A= 0.008 m²
g= 9.81 m/s²
h= 1.18 m
Q= 23.8 L/s

5 yr event

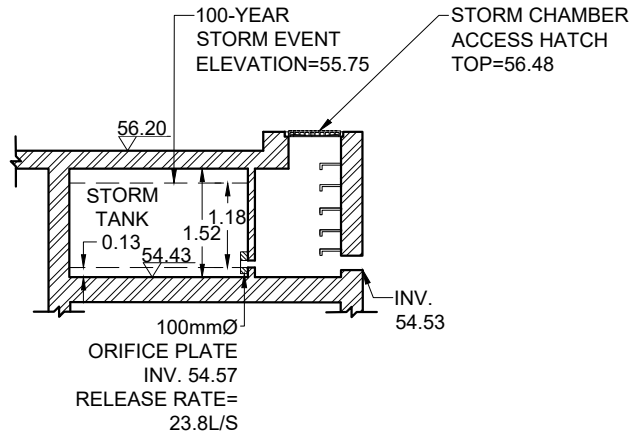
d= 100 mm
C= 0.61
A= 0.008 m²
g= 9.81 m/s²
h= 0.53 m
Q= 15.4 L/s

2 yr event

d= 100 mm
C= 0.61
A= 0.008 m²
g= 9.81 m/s²
h= 0.37 m
Q= 13.0 L/s



5-yr PRE-DEVELOPMENT CONDITION RELEASE RATE = 33.1 L/s
 MAX SITE RELEASE RATE = 33.1L/s



QUANTITY CONTROL

Volume required for 100-year storm event = 143.9 m³
 Volume of Storage Tank provided = Refer to Mechanical Engineering Drawing
 Tank Size: 121.6 sq.m

NOTE: TANK DESIGN TO BE VERIFIED BY BUILDING MECHANICAL CONSULTANT



CONCEPTUAL FLOW SCHEMATIC

RESIDENTIAL USE DEVELOPMENT
 3 SELKIRK STREET
 OTTAWA, ONTARIO

DATE:	FEBRUARY 2026	PROJECT No:	UD25-052
SCALE:	N.T.S.	FIGURE No:	FIG 3

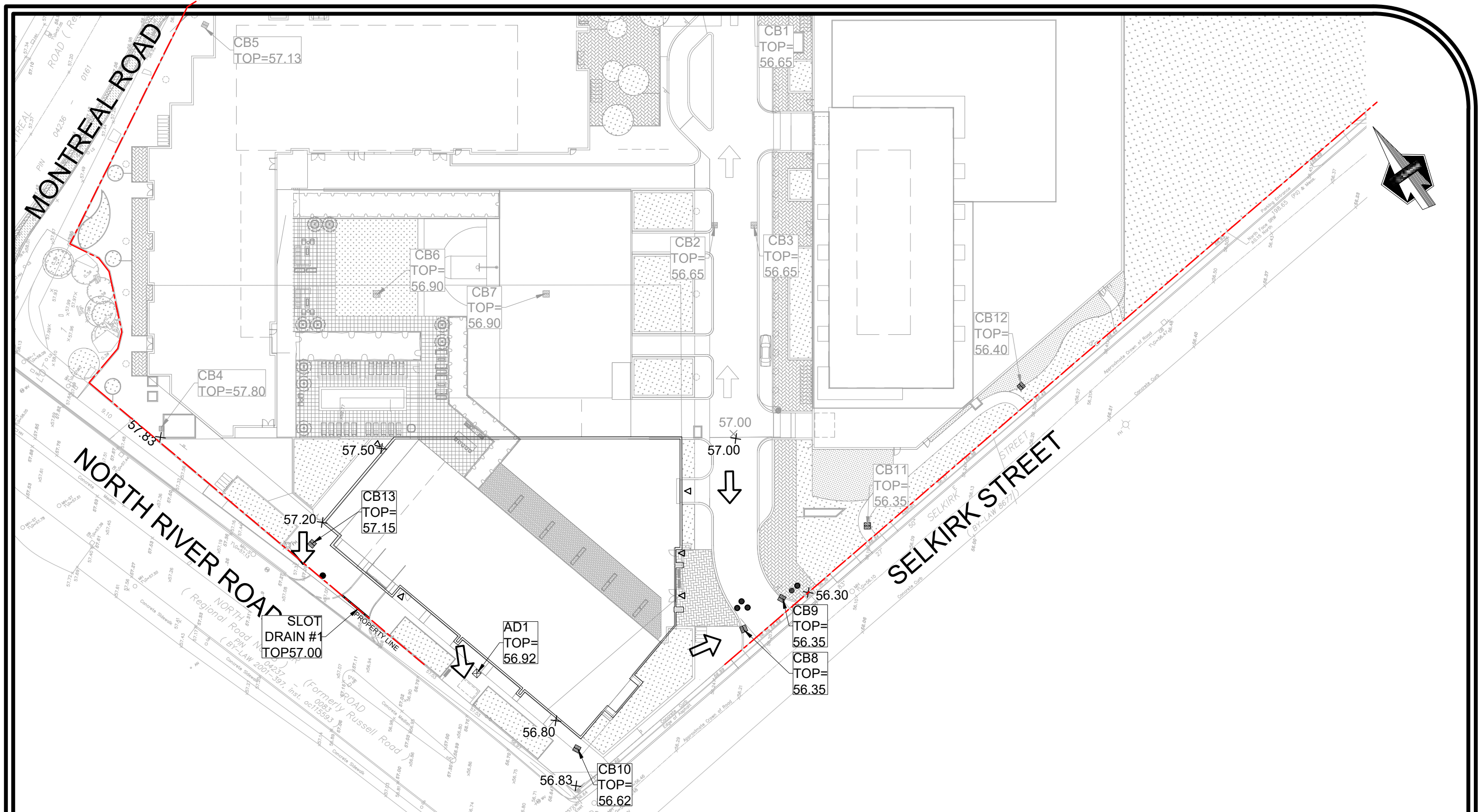


Water Quality Calculations

3 Selkirk Street, OT
File No. UD25-052
Date: February 2026

Surface	Method	Effective TSS Removal	Area (ha)	% Area of Controlled Site
Rooftop/Terraces	Inherent	80%	0.269	81%
Driveway Area	Stormfilter SFPD 0608	80%	0.064	19%
Total			0.333	100%

Note: Uncollected water does not account in the above calculation



150 Berrymore Road, Toronto, Ontario M4A 1Y1

LEGEND

- PROPERTY LINE
- x PROPOSED GRADES
- OVERLAND FLOW ROUTE
- BUILDING'S ENTRANCES

OVERLAND FLOW ROUTE
RESIDENTIAL USE DEVELOPMENT
3 SELKIRK STREET
OTTAWA, ONTARIO

DATE: FEBRUARY 2026	PROJECT No: UD25-052
SCALE: N.T.S.	FIGURE No: FIG 4

Appendix D

Sanitary Data Analysis



**SANITARY SEWER DESIGN SHEET
(towards North River Road)
RIVERAIN PHASE 2
CITY OF OTTAWA**

LOCATION	RESIDENTIAL					COMMERCIAL		INFILTRATION		SEWER DESIGN									
	SECTION (ha.)	STUDIO @1.4 ppu	1 BED @1.4 ppu	2 BED @2.1 ppu	3 BED @3.1 ppu	TOTAL RESIDENTIAL POPULATION	AVERAGE RES. FLOW @ 280 L/c/d (L/s)	HARMON PEAKING FACTOR	RES. PEAK FLOW (L/s)	COMMERCIAL/ PARK AREA (ha.)	AVERAGE COMMERCIAL FLOW @50000L/ha/d (L/s)	TOTAL ACCUM. AREA (ha.)	INFILT. @ 0.28 L/s/ha. (ha.)	TOTAL DESIGN FLOW (L/s)	PIPE LENGTH (m)	PIPE DIA. (mm)	SLOPE (%)	FULL FLOW CAPACITY n = 0.013 (L/sec)	% of DESIGN CAPACITY (%)
column number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Existing Condition																			
Retail	1.693	0	0	0	0	0.00	0.00	4.00	0.00	0.64	0.37	1.69	0.47	0.84	-	-	-	-	-
Proposed Condition																			
Tower A (Montgomery Street) Phase I (approved)	0.808	39	192	63	0	456	1.48	3.99	5.90	0.15	0.09	0.81	0.22	6.27	12.00	200	2.0%	46.38	13.52%
Tower B (North River Road) Phase II	0.339	46	319	56	5	580	1.88	3.94	7.40	0.00	0.00	0.34	0.09	7.50	12.90	200	2.0%	46.38	16.16%
Tower C (Montgomery Street) Phase III	0.378	74	234	77	0	489	2	3.98	6.31	0.00	0.00	0.38	0.10	6.41	11.80	200	2.0%	46.38	13.82%
												Total =		20.18					
												NET FLOW TOWARDS MONTGOMERY STREET		19.34					
Average Residential Flow Rate - 280 Litres / capita / day						Infiltration Allowance (Dry Weather) - 0.05 Litres / s / grosss ha													
Average Daily Flow Commercial - 50,000 Litres / gross ha / day						Infiltration Allowance (Wet Weather) - 0.28 Litres / s / grosss ha													
Site Area: 0.339 Ha						Infiltration Allowance (Total II) - 0.33 Litres / s / grosss ha													
						Peaking Factor = $1 + [14 / (4 + P^{0.5})]$, P=Population in thousands													
	Prepared by: Isaak Chlorotiris, P.Eng., M.A.Sc. Reviewed by: Sarra Karavasili, P.Eng., M.A.Sc. Date: February 2026					Project: 3 Selkirk Street, OT Project: UD25-052 City of Ottawa					Sheet 1 OF 1								

Appendix E

Water Data Analysis



FIRE FLOW DEMAND

3 Selkirk Street, OT

File No: UD25-052

Date: February 2026

Prepared by: Isaak Chlorotiris, P.Eng., M.A.Sc.

Reviewed By: Sarra Karavasili, P.Eng., M.A.Sc.

Fire Flow Calculation

Tower B

1 $F = 220 C (A)^{1/2}$

Where F= Fire flow in Lpm

C= construction type coefficient

= 0.8 Non-combustible Construction

A = total floor area in sq.m. excluding basements

Area Applied

Level 5= 843.00 m² 100%

Level 4= 843.00 m² 25%

Level 6= 843.00 m² 25%

= 1,264.5 sq.m.

F = 6,258.53 L/min $F(No.1) = 220C \sqrt{A}$

F = 6,000 L/min $F(No.1) \text{ Round to nearest } 1000 \text{ l/min}$

Note: The levels indicated, reference the floors with the largest areas (refer to architectural design)

2 Occupancy Reduction

15% reduction for limited-combustible occupancy

F = 5100 L/min $F(No.2) = F(No.1) \times \text{occupancy reduction/charge}(\%)$

3 Sprinkler Reduction

30% Reduction for NFPA Sprinkler System

F = 3570 l/min $F(No.3) = F(No.2) \times \text{sprinkler reduction}(\%)$

4 Separation Charge

0% West Road

25% North 0-3m

0% South Road

10% East 20.1-30m

35% Total Separation Charge

F = 1,785.00 L/min $F(No.4) = F(No.2) \times \text{separation charge}(\%)$

F = 5,355.00 L/min $F(tot) = F(No.3) + F(No.4)$

F = 5,000 L/min $F(tot) \text{ Round to nearest } 1000 \text{ l/min}$

83.33 L/s

F = 1321 US GPM

Domestic Flow Calculations

Population= 580 Persons

Commercial Area = 0.0 m²

Average Day Demand (Residential) = 350.0 L/person/day

Average Day Demand (Commercial) = 2.5 L/m²/day (OBC) 1 US Gallon=3.785 L

Average Residential Water Demand= 2.35 L/s

37 US GPM 1 US GPM=15.852L/s

Average Commercial Water Demand= 0.00 L/s

0 US GPM

Average Day Demand (Total) = 2.35 L/s

37 US GPM

Max. Daily Residential Demand Peaking Factor= 2.75 = 102 US GPM

Max. Daily Commercial Demand Peaking Factor = 2.75

Max. Daily Demand = 6.46 L/s

or

Max. Hourly Residential Demand Peaking Factor = 4.13 = 154 US GPM

Max. Hourly Commercial Demand Peaking Factor = 4.1

Max. Hourly Demand = 9.70 L/s

Max Daily Demand = 6.46 L/s

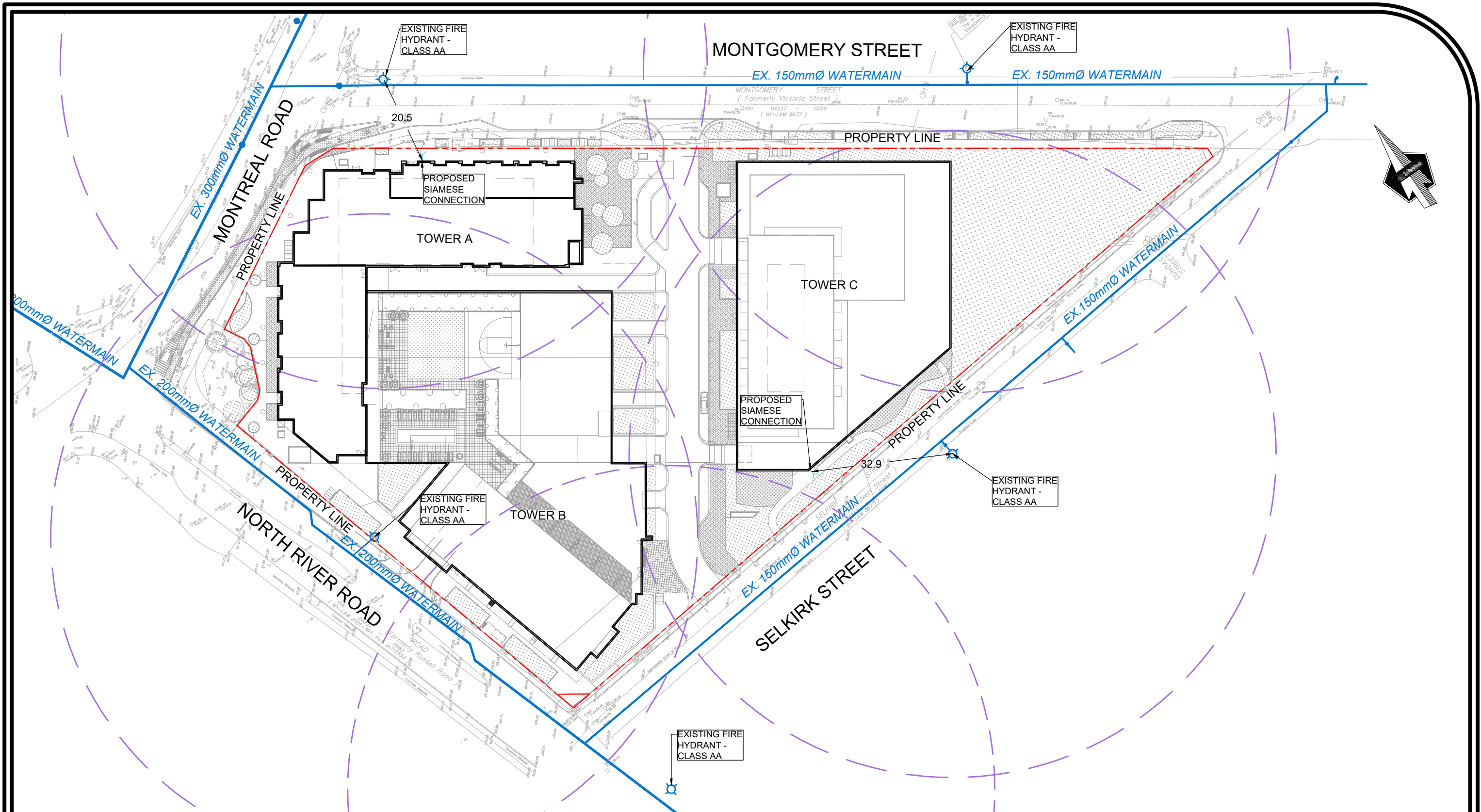
Fire Flow = 83.33 L/s

Required 'Design' Flow = 89.79 L/s

1423 US GPM

Note: Required 'Design' Flow is the maximum of either:

- 1) Fire Flow + Maximum Daily Demand
- 2) Maximum Hourly Demand



150 Bermondsey Road, Toronto, Ontario M4A 1Y1

LEGEND

- - - PROPERTY LINE
- - - EXISTING FIRE HYDRANT COVERAGE (75m)
- Y PROPOSED SIAMESE CONNECTION
- ⊙ PROPOSED FIRE HYDRANT
- ⊙ EXISTING FIRE HYDRANT

FIRE HYDRANT COVERAGE FIGURE
 RESIDENTIAL USE DEVELOPMENT
 RIVERRAIN PHASE 2, OT
 OTTAWA, ONTARIO

DATE: FEBRUARY 2026	PROJECT No: UD25-052
SCALE: N.T.S.	FIGURE No: FIG 5