Lithos

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UD23-002

Functional Servicing and Stormwater Management Report

Project: 300 Montgomery St., OT (Riverain - Phase 3),
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 Zoning and Site Plan Application, for a proposed residential development located at 300 Montgomery Street (K1L 7W8), in the City of Ottawa (the "City"). This Functional Servicing and Stormwater Management Report provides a detailed design analysis of Phase III, 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 III of the proposed development. More specifically, Phase III will consist of one (1) three - storey podium with above ground parking area and with a high-rise 25-storey tower (Tower C). In addition, Phase III will be facilitated by one underground parking level (P1 level). Stormwater flow from Phase III will be discharged into the existing 375mm diameter storm sewer on Selkirk Street, through one (1) 200mm diameter storm connection with a minimum grade of 1.00% (or equivalent design).

Post-development storm flows from the proposed development (Phase III), 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 147.6 m^3 of total on site storage will be required for Phase III.

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 III will consist of one (1) three - storey podium with above ground parking area and with a high-rise 25-storey tower (Tower C). The proposed development (Phase III) will be serviced by one (1) 200mm diameter sanitary lateral connection to the 250mm diameter sanitary sewer on Montgomery Street, with a minimum grade of 2.00% (or equivalent design).

The additional discharge flow from the proposed development (Phase III) towards the sanitary network, is anticipated at approximately 6.41 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 III) will be provided by two (2) water connections. More specifically, the proposed development (Phase III) will be connected to the existing 150 mm diameter watermain running along the centerline of Selkirk Street and to the existing 150 mm diameter watermain running at the east side of Montgomery Street.

It is anticipated that a total design flow of 72.12 L/s will be required to support Phase III. 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 Zoning and Site Plan Application for a proposed residential development located at 300 Montgomery Street (K1L 7W8), in the City of Ottawa (the "City"). The proposed development will be a part of a greater development, as per the 2 Montreal Road & 3 Selkirk Street-FSR SWM Report, submitted and 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 III.

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 Street, drawing No. D-16-23, dated July, 2014; and,
  - 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;
  - Montreal Road, No. E.2209, dated August 08, 1973;
  - Montreal Road, drawing No. S-3, dated May, 1991;
  - Montgomery Street, drawing No. 931208-9, dated April, 1994; and,
  - North River Road, drawing No. 05-2050-003, dated January, 2006.
- Site Plan (Phase 3 and Overall) prepared by Roderick Lahey Architect Inc., dated October 03, 2023;
- Statistics (Phase III) prepared by Roderick Lahey Architect Inc., dated July 13, 2023;
- Hydrogeological Report prepared by Paterson Group dated July 22, 2022;
- 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 300 Montgomery Street (K1L 7W8), in the City of Ottawa. It is bound by Montgomery Street to the northeast and by Selkirk Street to the southwest. Refer to **Figures 1** and **2** following this report and site photographs in **Appendix A**.

3.0 Site Proposal

The proposed site (Phase III) will be a residential development with a total area of 0.378 hectares, comprised by one (1) ownership. More specifically, Phase III will consist of one (1) three - storey podium with above ground parking area and with a high-rise 25-storey tower (Tower C). It will be facilitated by one (1) underground parking level (P1 level) and will be comprised of 385 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 & 3 Selkirk 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** (2010)

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.

Section 4.3.22 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 three (3) storm sewers abutting the subject property. More specifically:

- A 450mm diameter storm sewer on Montgomery Street flowing north-east;
- A 300mm diameter storm sewer on Montgomery Street flowing south-east; and
- A 300mm and a 375mm diameter storm sewer on Selkirk Street flowing east.

The existing storm sewer segments on Montgomery Street and Selkirk Street belong to the same municipal storm sewer network.

Phase III 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 Montgomery Street and Selkirk Street.

The existing site is primarily covered by the existing building and 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 III which are illustrated on the pre-development drainage area plan in **Figure DAP-1** in **Appendix C**.

Table 5-1 – Target Input Parameters – Phase III

Catchment	Drainage Area (ha)	Actual "C"	Design "C"	Tc (min.)
A1 Pre (Phase III)	0.378	0.90	0.50	20

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

Table 5-2 – Target Peak Flows – Phase III

Catchment	Peak Flow Rational Method (L/s)		
	2-year	5-year	100-year
A1 Pre (Phase III)	27.3	36.9	63.0

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 36.9 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 right-of-ways.

Phase III consists of two (2) internal drainage areas:

1. A1 Post (Phase III) – Storm runoff from the rooftops and terraces of Tower C, the Podium's terraces and walkways, controlled in the underground storage tank located into P1 level on the south side of the property, and;
2. A2 Post (Phase III) – Uncontrolled runoff towards the adjacent right of ways.

The post-development drainage areas and runoff coefficients for Phase III 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 III

Drainage Area	Drainage Area (ha)	Drainage Area Atot (ha)	"C"	Tc (min.)
A1 Post (Rooftops/Terraces/Walkways)	0.350	0.378	1.00*	10
A2 Post (Uncontrolled Area)	0.028		0.45*	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**. The detailed post-development quantity control calculations are provided in **Appendix C**.

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

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	36.9	2.2	45.6	1.0	14.7	17.9
5-year		3.0	64.3	1.0	17.5	21.5
100-year		6.0	147.6	1.0	26.6	33.6

As shown in **Table 5-4** 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. 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 147.6 m^3 for the 100-year storm event.

The stormwater flow released from the rooftops and terraces of Tower C, the Podium's terraces and walkways (**Drainage Area A1 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 III** (**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 C, the Podium's terraces and walkways (**Drainage Area A1 Post**) will be gravity driven into the proposed underground storage tank located at P1 level.

The proposed underground storage tank for Phase III will have an active storage depth of 1.47m above the inlet of the outlet pipe, accounting for a quantity control maximum storage of 147.6 m^3, 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 26.6 L/s and will be gravity driven to the existing 375mm diameter storm sewer along Selkirk Street.

The proposed storage tank will have a total footprint area of 100.4 m^2. 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.

A maximum control stormwater release rate from the storage tank of 26.6L/s, along with the uncontrolled release rate of 6.0 L/s (**Drainage Area A2 Post**) and the groundwater release rate of 1.0 L/s, results to a post-development total release rate of 33.6 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 will be directed overland towards Montgomery Street and Selkirk Street.

Proposed Conditions

Under proposed conditions, the grading design has been prepared to ensure that the existing major overland flow route will be maintained to the extent possible. More specifically, for storm flows over a 100 year event or under a catch basin clogging condition, the north side of the site area will drain overland towards Montgomery Street, while the south portion of the property 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 56.03 m, which is translated into a water elevation of minimum 0.32 m below the top of both proposed CB11 and CB12. Please refer to engineering drawing **Servicing Sections** (**SS-02**, 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 designed in order to ensure emergency overland flow from the property will be directed towards Selkirk Street and Montgomery Street, 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 Selkirk Street and Montgomery Street will have a minimum of 20cm vertical clearance from any portion of the building envelope. Please refer to **Site Grading Plan** (**SG-01,** submitted separately) and **Figure 4**, found in **Appendix C**.

Therefore, the proposed development's grading design has been designed in order 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 III

Drainage Area	Drainage Area (ha)	% Area of Controlled Site	Effective TSS Removal	Additional Quality Control Required
Rooftops/Terraces/Walkways	0.350	100%	80%	Inherent

5.2.5. Proposed Storm Connection

Phase III will connect to the existing 375mm 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 III** (**SG-01,** 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, submitted and 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) will be installed in P1 level, to receive and clean the driveway area, which will be polluted by car waste. Please refer to engineering drawing **Site Servicing Plan Phases I-II-III** (**"SS-03",** submitted separately) for details.

Phase I will connect to the existing 450mm diameter storm sewer along Montgomery Street via a 200 mm diameter storm sewer service connection with a minimum grade of 2.00% (or equivalent pipe design). Please refer to engineering drawing **Site Servicing Plan Phases I-II-III** (**"SS-03",** submitted separately) for details.

Phase II

For Phase II, 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, as per the 2 Montreal Road & 3 Selkirk Street-FSR SWM Report, submitted and approved on September 28, 2022. The required on-site storage is accommodated by the use of one (1) suspended underground storage tank, located at the southwest 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 29.7 L/s, for the 100-year event.

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). Please refer to engineering drawing **Site Servicing Plan Phases I-II-III** (**"SS-03",** submitted separately) for details.

The stormwater flow released from the rooftops of Tower B, the Podium's terraces and walkways will be gravity driven into the underground storage tank on the south west side of the property. Stormwater from the area that will be polluted by car waste will be gravity driven into an oil & grit treatment device, before being discharged into the storage tank. 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, submitted and 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 are five (5) sanitary sewers abutting the subject property. More specifically:

- A 200mm diameter sanitary sewer on Selkirk Street flowing east; and,
- A 250mm diameter sanitary sewer on Montgomery Street flowing north west.

6.2. Existing Sanitary Flows

The sanitary flow generated by the proposed development at 300 Montgomery Street 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 further downstream of the existing 250mm diameter sanitary sewer along Montgomery Street, 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, submitted and 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 C (Phase III) will discharge a sanitary flow of 6.41 L/s (6.41L/s < 6.44L/s) to the existing sanitary network along Montgomery Street. Taking into consideration that the sanitary network along Montgomery Street and North River Road are connected, the total net sanitary flow from the proposed development to the connected sanitary network is estimated at 19.43 L/s. For detailed calculations refer to the sanitary sewer design sheets in **Appendix D**.

6.4. Proposed Sanitary Connections

The proposed development (Phase III) will connect to the existing 250mm diameter sanitary sewer on Montgomery Street via a 200mm diameter lateral. The municipal service connection will be at a minimum grade of 2.00% (or equivalent pipe design).

Phases I, II and Parkland Area

Tower A (Phase I) will connect to the existing 250mm diameter sanitary sewer on Montgomery Street via a 200mm diameter lateral while Tower B (Phase II) will connect to the sanitary manhole along the 1950mm diameter trunk sanitary sewer on North River Street, with a proposed municipal service connection at a minimum grade of 2.00% (or equivalent pipe design) each.

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 drawing **Site Servicing Plan-Phase III** 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 20.27 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 6.41 L/s for Phase III is smaller than the approved by the City (6.44 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 III 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 m^3/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 III will have one (1) underground level and the lowest basement's elevation will be approximately 4.0m below surface or 52.80masl (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 150mm diameter watermain on the east side of Montgomery Street 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 1.98 L/s (171,072 L/day), a maximum daily consumption of 5.45 L/s (470,880L/day) and a peak hourly demand of 8.18 L/s (29,448 L/hr) will be required to service Phase III.

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 is 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 6 and the immediately adjoining storeys, which are Levels 5 and 7.

Table 8-1 illustrates the input parameters used for the FUS calculations. According to our calculations, a minimum fire suppression flow of approximately 66.67 L/s (1,057 USGPM) will be required to service Tower C (Phase III). Detailed calculations can be found in **Appendix E**.

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

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	Non-Combustible	Yes	Road	Road	Road	20.1m to 30m
Surcharge/reduction from base flow	0.8	25%	30%	0%	0%	0%	10%

In summary, the required design flow is the sum of 'the minimum fire suppression flow' and 'maximum daily demand' (66.67 + 5.45 = 72.12 L/s, 1,143 USGPM).

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

Table 8-2 – Water Demand – Tower C (Phase III)

Design Parameter	Anticipated Demand[1] (L/min)
Average Day Demand	118.8
Max Day + Fire Flow	327 + 4,000 = 4,327
Max Hour Demand	490.8

Phases I and II

According to the 2 Montreal Road & 3 Selkirk Street-FSR SWM Report, submitted and approved on September 28, 2022, Towers A and B (Phase I and II) were estimated with a required design flow of approximately 121.86 L/s (1,932 USGPM) and 89.90 L/s (1,425 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 below 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	Montgomery Street – Tower C (Phase III)	Selkirk Street – Tower C (Phase III)
Minimum HGL	105.6	105.3
Maximum HGL	118.4	118.4
Available Flow @ 20 psi	85.2 L/s	83.8 L/s

Table 8-4 below 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 – Tower C Phase III	Average Demand	1.98	87 psi (61.4m)	50-70 psi
	Peak Hour Demand	8.18	69 psi (48.3m)	40-70 psi
	Max Day + Fire Flow	72.12	69 psi (48.3m)	20 psi (min)
Montgomery Street – Tower C Phase III	Average Demand	1.98	87 psi (61.4m)	50-70 psi
	Peak Hour Demand	8.18	69 psi (48.6m)	40-70 psi
	Max Day + Fire Flow	72.12	69 psi (48.6m)	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 300 Montgomery Street.

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

Watermain Connection	Required Fire Flow (L/s)	Available Fire Flow (L/s)
Selkirk Street – Tower C	66.67 L/s	83.8 L/s
Montgomery Street – Tower C	66.67 L/s	85.2 L/s

As indicated in **Table 8-5**, the available fire flow along Montgomery and Selkirk Street, exceeds the required fire flow of the corresponding tower, thus, the existing water infrastructure will be able to support Phase III 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** 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 C	4,000	2 – Class AA	4 – Class AA	5,700	8,460

8.4. Proposed Watermain Connection

Phase III will be serviced by two (2) 150 mm diameter waterlines. One proposed water lateral will connect to the 150mm diameter existing watermain on Selkirk Street and one proposed water lateral will connect to the 150mm diameter existing watermain on Montgomery Street.

Phases I, II and Parkland Area

Each of Phases I and II will be serviced by two (2) 150 mm diameter waterlines separated by an isolation valve. The proposed water lateral of Phase I will connect to the 150mm diameter existing watermain on Montgomery Street while the proposed water lateral for Phase II will connect to the 150mm diameter existing watermain on Selkirk 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 will be insulated. Refer to engineering drawing **Site Servicing Plan-Phase III** and **Site Servicing Plan-Phase I-II-III** (**SS-01** and **SS-03,** 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 intersection between Montreal Road and Montgomery Street. 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 III of the proposed development. More specifically, Phase III will consist of one (1) three - storey podium with above ground parking area and with a high-rise 25-storey tower (Tower C). In addition, Phase III will be facilitated by one underground parking level (P1 level). Stormwater flow from Phase III will be discharged into the existing 375mm diameter storm sewer on Selkirk Street, through one (1) 200mm diameter storm connection with a minimum grade of 1.00% (or equivalent design).

Post-development storm flows from the proposed development (Phase III), 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 147.6 m^3 of total on site storage will be required for Phase III.

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 III will consist of one (1) three - storey podium with above ground parking area and with a high-rise 25-storey tower (Tower C). The proposed development (Phase III) will be serviced by one (1) 200mm diameter sanitary lateral connection to the 250mm diameter sanitary sewer on Montgomery Street, with a minimum grade of 2.00% (or equivalent design).

The additional discharge flow from the proposed development (Phase III) towards the sanitary network, is anticipated at approximately 6.41 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.

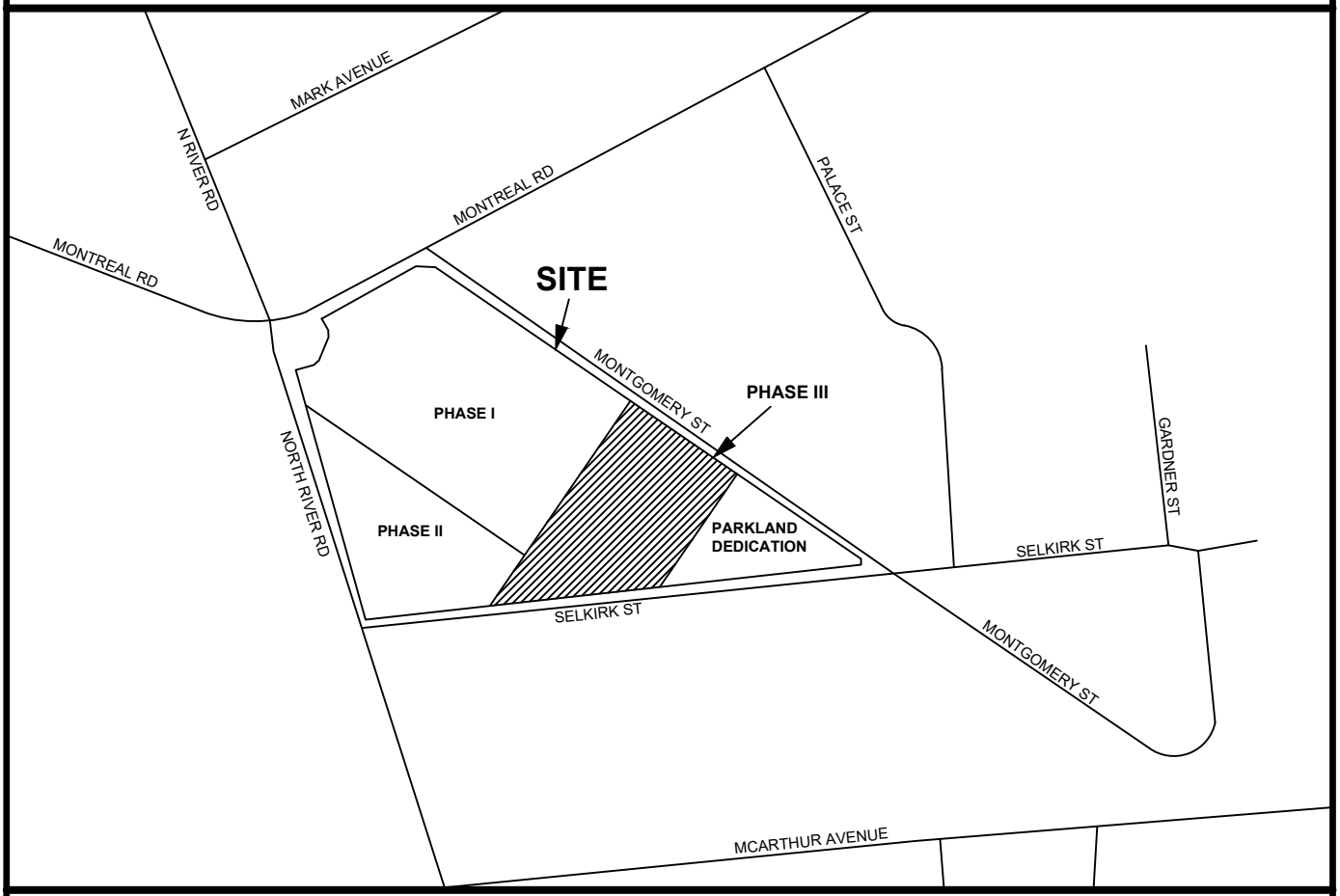
Water Supply

Water supply for the proposed development (Phase III) will be provided by two (2) water connections. More specifically, the proposed development (Phase III) will be connected to the existing 150 mm diameter watermain running along the centerline of Selkirk Street and to the existing 150 mm diameter watermain running at the east side of Montgomery Street.

It is anticipated that a total design flow of 72.12 L/s will be required to support Phase III. 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).



Lithos

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

LOCATION PLAN

RESIDENTIAL USE DEVELOPMENT
300 MONTGOMERY STREET
OTTAWA, ONTARIO

DATE:	OCTOBER 2023	PROJECT No:	UD23-002
SCALE:	N.T.S.	FIGURE No:	FIG 1

Lithos

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

AERIAL PLAN

RESIDENTIAL USE DEVELOPMENT
300 MONTGOMERY STREET
OTTAWA, ONTARIO

DATE:	OCTOBER 2023	PROJECT No:	UD23-002
SCALE:	N.T.S.	FIGURE No:	FIG 2

Appendix A

Site Photographs

North-West Corner of Property – Facing South-East

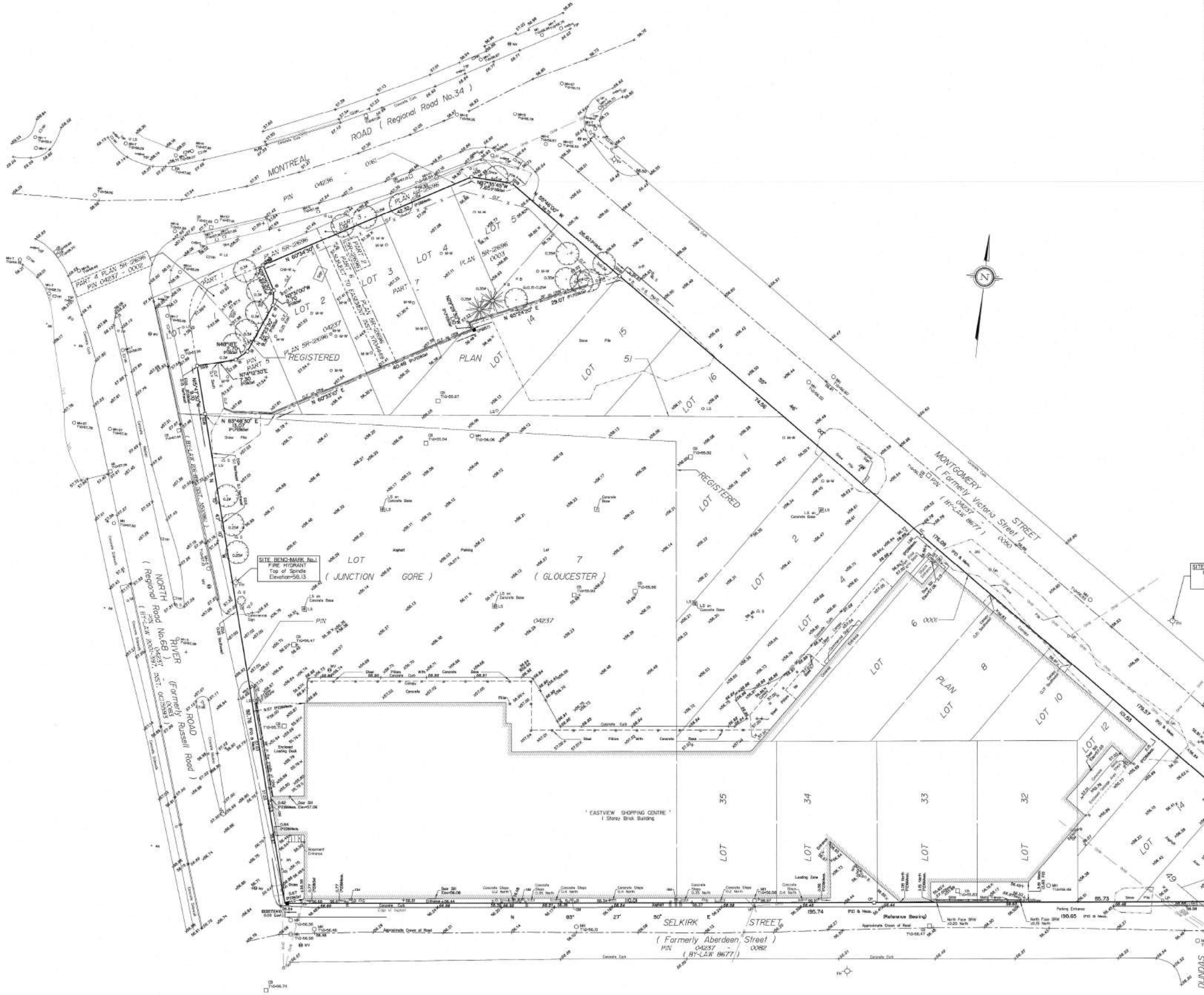
North-East Corner of Property – Facing South-West

South-East Corner of Property – Facing North-West

South-West Corner of Property – Facing North-East

Appendix B

Background Information



Detail
Scale 1:100

Notes & Legend

	Denotes	
	-	Survey Monument Planted
	-	Survey Monument Found
SIB	-	Standard Iron Bar
SSIB	-	Short Standard Iron Bar
IB	-	Iron Bar
CC	-	Cut Cross
CP	-	Concrete Pin
IBø	-	Round Iron Bar
S&W	-	Spike & Washer
SSIB*	-	Short Standard Iron Bar
IB*	-	Iron Bar
(WIT)	-	Witness
Meas.	-	Measured
(AOG)	-	Annis, O'Sullivan, Vollebekk Ltd.
(P1)	-	Plan 5R-12698
(P2)	-	(857) Plan, dated July 14, 2000 (Ref. 16a-49GR)
	-	Deciduous Tree
	-	Coniferous Tree
	-	Shrub
FH	-	Fire Hydrant
MH-S	-	Maintenance Hole (Sanitary)
MH-T	-	Maintenance Hole (Traffic)
MH-H	-	Maintenance Hole (Hydro)
MH	-	Maintenance Hole (Unidentified)
VC	-	Valve Chamber (Watermain)
WV	-	Water Valve
OHW	-	Overhead Wires
CB	-	Catch Basin
M-W	-	Monitoring Well
GM	-	Gas Meter
B	-	Bollard
S	-	Sign
PM	-	Parking Meter
HR	-	Handrail
MF	-	Metal Fence
CLF	-	Chain Link Fence
BF	-	Board Fence
TW	-	Top Wire
MW	-	Middle Wire
BW	-	Bottom Wire
BP	-	Brick Pillar with Light
Elev	-	Elevation
T/G	-	Top of Grate
EOA	-	Edge of Asphalt
CRW	-	Concrete Retaining Wall
SRW	-	Stone Retaining Wall
	-	Gate
UP	-	Utility Pole
AN	-	Anchor
LS	-	Light Standard
FP	-	Flag Pole
ø	-	Diameter
+85.00	-	Location of Elevations
+85.00	-	Top of Concrete Curb Elevation
C/L	-	Centreline
tow	-	Top of Wall
	-	Property Line
TSP	-	Traffic Signal Post
TB	-	Unidentified Terminal Box

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, Vollebekk Ltd.
Field Work Completed March 6, 2020.

Amended February 18, 2022 to illustrate updated topographic detail along Montreal Road, Montgomery Street, and North River Road.

Scale 1 : 300

12 9 6 3 0 6 12 Metres

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 6th day of March, 2020.

Date

V. Andrew Shelp
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 (76°30' West Longitude) NAD-83 (original).

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum.
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 it's 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 m^2

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 AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR in accordance with Regulation 1026, Section 29 (3).

Ontario Land Surveyors
ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079

Job No. 22607-21 Ltd-16 32-35 RP49 Ltd-4 14 RP51 T F

1 SP-1 SITE PLAN - PHASE 1
SCALE =1:300

0m 10 20 30
SCALE 1:300

KEY MAP

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 UNTIL SIGNED BY THE ARCHITECT.

DO NOT SCALE DRAWINGS.

NOTATION SYMBOLS:

- (00) INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- (W#) INDICATES ASSEMBLIE TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDUAL.
- (W#) INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A900 SERIES.
- (D00) INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A900 SERIES.
- 00 TITLE SCALE — DETAIL NUMBER, DETAIL REFERENCE PAGE, DETAIL CROSS REFERENCE PAGE

PROJECT INFORMATION

Zoning By-law 2008-250 Consolidation TM7[2719] S441 — SITE AREA 1.69 ha. 16,930.0 sq. m. 182,239 sq. ft.

ZONING	REQUIRED	PROVIDED
BUILDING HEIGHT AREA 'C' ON Schedule 441	28 STOREYS / 90,0m	28 STOREYS / 90,2m
GRADE (GEODETIC ELEVATION - ASL)	(GEO. ELEV.) 57,10	(GEO. ELEV.) 57,10
FLOOR SPACE INDEX - MAX. 3 TOWERS	3.7	3.5
TOWER FLOOR PLATE - MAX.	900m²	900m²
TOWER SEPARATION - MIN.	20,0m	26,0m
FRONT YARD SETBACK - Montgomery Street	3,0m	3,0m
REAR YARD SETBACK - Selkirk Street	6,0m	6,0m
TRANSPARENT GLAZING - Montreal & River Road only	3,0m	N.A.
LANDSCAPE BUFFER - Selkirk Street	40%	40%
VEHICLE PARKING - RESIDENTIAL (AFTER 12 UNITS - 0,5 per unit)	173	282
VEHICLE PARKING - VISITOR (MIN. COMBINED VISITOR / COMMERCIAL) TOTAL FOR SITE: 35		IN PHASE 1: 35
BICYCLE PARKING - 0,5 PER UNIT	193	333
AMENITY AREA - TOTAL PER UNIT - 6,0m²	2,310m²	4,050m²
AMENITY AREA - 50% COMMUNAL PER UNIT - 3,0m²	1,155m²	1,160m²
AISLE & DRIVEWAY MINIMUM / MAXIMUM WIDTH	6,0m / 6,7m	6,0m
10% PARKLAND DEDICATION	1,693,06m²	1,694,0m²

DRAWING NOTES

1. PROPERTY LINE
2. PHASE LINE
3. HOARDING - SOLID WOOD CONSTRUCTION BARRIER
4. 2.0m WIDE CONCRETE STREET CURB / SIDEWALK
5. INTERIM ASPHALT / CONCRETE SIDEWALK
6. BENCHES, SEE LANDSCAPE
7. EXISTING STREET CURB AND SIDEWALK
8. SOFT LANDSCAPING, SEE LANDSCAPE PLAN
9. 150mm WIDE BARRIER CURB
10. ENTRANCE TO GARAGE PARKING GARAGE
11. INTERIM STAGING AREA - ASPHALT / GRAVEL SURFACE
12. EXISTING FIRE HYDRANT
13. OUTLINE OF TOWER ABOVE
14. TEMPORARY SNOW STORAGE
15. 1.5m WIDE CYCLE LANE PAINTED ON STREET
16. EX. CURB AND ASPHALT WALK TO BE REMOVED
17. METAL GRATE - AIR SHAFT
18. MOUNTABLE CURB
19. WALL GRILL FOR BELOW GRADE PARKING GARAGE
20. BELOW GRADE CISTERN IN PARKING GARAGE
21. 1.2 X 1.8 CONCRETE PAD FOR GAS EQUIPMENT (GAS BLOW OFF)
22. HYDRO TRANSFORMER LOCATION IN PARKING GARAGE
23. SIAMESE CONNECTION
24. SHORT TERM LAY-BY PARKING
25. TRAFFIC / LIGHT BOLLARD
26. RAISED PLANTER, SEE LANDSCAPE FOR DETAILS
27. TRAFFIC SIGN - STOP, FIRE ROUTE, LOADING etc.
28. CITY BOULEVARD, 2.0m CONCRETE WALK, PLANTING STRIP, STREET CURB AND ON STREET PARKING
29. PROPOSED UTILITIES, SEE CIVIL
30. INTERIM GRASS BOULEVARD / SNOW STORAGE
31. INTERIM TURNING CIRCLE
32. PEDESTRIAN WALKING SURFACE
33. SERVICE / LOADING BAY: GARBAGE / DELIVERIES
34. 5,0 x 5,0 METRE SIGHT TRIANGLE
35. EXISTING UTILITY POLE
36. 6,0m WIDE FIRE ROUTE
37. BOLLARD STYLE BICYCLE RACK
38. SIGN FOR FIRE TRUCKS NOTING U/G PARKING STRUCTURE BELOW, AS PER OFC REQUIREMENTS
39. EXTERIOR TERRACE ABOVE PODIUM LEVEL
40. BALCONIES
41. ASPHALT DRIVING SURFACE
42. PEDESTRIAN CROSSWALK WITH TWSI & DEPRESSED CURBS

AMENITY AREA

GROUND FLOOR INTERIOR - COMMUNAL	196,0 sq. m.
4th FLOOR INTERIOR - COMMUNAL	251,0 sq. m.
4th FLOOR EXTERIOR - COMMUNAL	713,0 sq. m.
BALCONIES (ALL LEVELS) - PRIVATE	2,640,0 sq. m.
TERRACE - PRIVATE	300,0 sq. m.
TOTAL	4,050 sq. m.
TOTAL COMMUNAL	1,160 sq. m.
REQUIRED (385 UNITS X 6 m²) = 2,310 sq. m.	
REQUIRED COMMUNAL @ 50% =1,155 sq. m.	

SOLID WASTE (385 UNITS)

GARBAGE - COMPACTED	- 0,055 PER UNIT	21 YARDS
RECYCLING GMP	- 0,018 PER UNIT	7 YARDS
RECYCLING FIBER	- 0,038 PER UNIT	15 YARDS
COMPOST	- 240L PER 50 UNITS	8

SITE PLAN LEGEND

UNIT PAVERS ON PRIVATE BOULEVARD
PRIVATE CONCRETE BOULEVARD
ENCLOSED HOARDING AREA
CITY BOULEVARD PAVERS
SOFT LANDSCAPING
CONCRETE SIDEWALK
TEMPORARY SNOW STORAGE
BIKE RACK
TWO WAY VEHICLE CIRCULATION
VEHICLE SERVICE ENTRANCE
MAIN ENTRANCE
COMMERCIAL ENTRY / FIRE EXIT
PROPERTY LINE

PROJECT STATISTICS - PHASE 3

GROSS BUILDING FLOOR AREA
(OTTAWA ZONING DEFINITION)

BELOW GRADE PARKING LEVEL		0,0 sq. m. 000 sq. ft.
GROUND FLOOR		0,0 sq. m. 000 sq. ft.
2nd FLOOR		309,4 sq. m. 3,330 sq. ft.
3rd FLOOR		533,0 sq. m. 5,737 sq. ft.
4th FLOOR		479,5 sq. m. 5,161 sq. ft.
5th - 28th FLOOR	24 x 729,4 sq. m. 24 x 7,851 sq. ft.	17,505,2 sq. m. 188,424 sq. ft.
MECHANICAL LEVEL		0,0 sq. m. 000 sq. ft.
TOTAL AREA ABOVE GRADE		18,827,0 sq. m. 202,652 sq. ft.

UNIT STATISTICS

STUDIO	75
1 BEDROOM UNIT	205
1 BEDROOM + STUDY UNIT	29
2 BEDROOM UNIT	76
2 BEDROOM + STUDY UNIT	1
TOTAL	385

CAR PARKING

REQUIRED		
RESIDENCE	- 0,5 PER UNIT AFTER 12 UNITS	187
VISITOR	- PROVIDED IN PHASE 1 (35)	0
TOTAL		187
PROVIDED		
RESIDENCE	- 0,74 PER UNIT (385 UNITS)	282
VISITOR	- PROVIDED IN PHASE 1 (35)	0
TOTAL		282

BICYCLE PARKING

REQUIRED		
RESIDENCE	- 0,5 PER UNIT (385 UNITS)	193
PROVIDED		
PARKING GARAGE	-0,77 PER UNIT (385 UNITS)	297
EXTERIOR		36
TOTAL		333
LOCATION		
EXTERIOR AT GRADE		36
P1 PARKING LEVEL		78
GROUND FLOOR		195
SECOND FLOOR		12
THIRD FLOOR		12

No.	DESCRIPTION	DATE
6	REVISED AS PER ROUND 1 SPC COMMENTS	Oct. 03, 23
5	ISSUED FOR 50% REVIEW	Sept 28, 23
4	REVISED AS PER ROUND 1 SPC COMMENTS DRAFT	Sept 25, 23
3	ISSUED FOR SPC APPLICATION PHASE 3	June 14, 23
2	ISSUED FOR OWNER / CONSULTANT REVIEW	June 1, 23

REVISIONS:

ARCHITECT SEAL: ONTARIO ASSOCIATION OF ARCHITECTS — RODERICK J. LAHEY — LICENCE 4375
SEAL DATE: STAMP DATE

NORTH ARROW:

CLIENT: main + main — Riverain Developments Inc.

ARCHITECT: RODERICK LAHEY ARCHITECT INC
56 Beech Street, Ottawa, Ontario K1S 3J6
t.613.724.9932 f.613.724.1209 www.rodericklahey.ca

PROJECT TITLE: MAISON RIVERAIN
300 MONTGOMERY STREET
OTTAWA ONTARIO

SHEET TITLE:
SITE PLAN
TOWER 'C' - PHASE 3

DRAWN:	CHECKED:
RV	S.S.
SCALE: 1:300	SHEET No. SP-1
PROJECT No. 2302	

D07-12-23-0087

PROJECT DEVELOPER

Riverain Developments Inc.
109 Atlantic Ave, Suite 302B,
Toronto ON
M6K 1X4
Tel: (416) 986-2119
E-Mail: emily@mainandmain.ca

GEOTECHNICAL ENGINEER

Paterson Group
154 Colonnade Road South
Ottawa, Ontario
K2E 7J5
Tel: 613,226-7381
Email: MD'Arcy@Patersongroup.ca

URBAN PLANNER

J.L. Richards & Associates
864 Lady Ellen Place
Ottawa, ON
K1Z 5M2
Tel.:(613) 728-3571
Fax: (613) ____
E-Mail: mrivet@jlrichards.ca

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, Vollebekk Ltd.

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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SURVEYOR

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CIVIL ENGINEER

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PAPER SIZE: ISO_B1_(707.00_x_1000.00_MM) | PLOT DATE: Monday, October 02, 2023 | PLOT SCALE: 1:1 | PEN STYLE: 0-RLA-MASTER-100%.ctb

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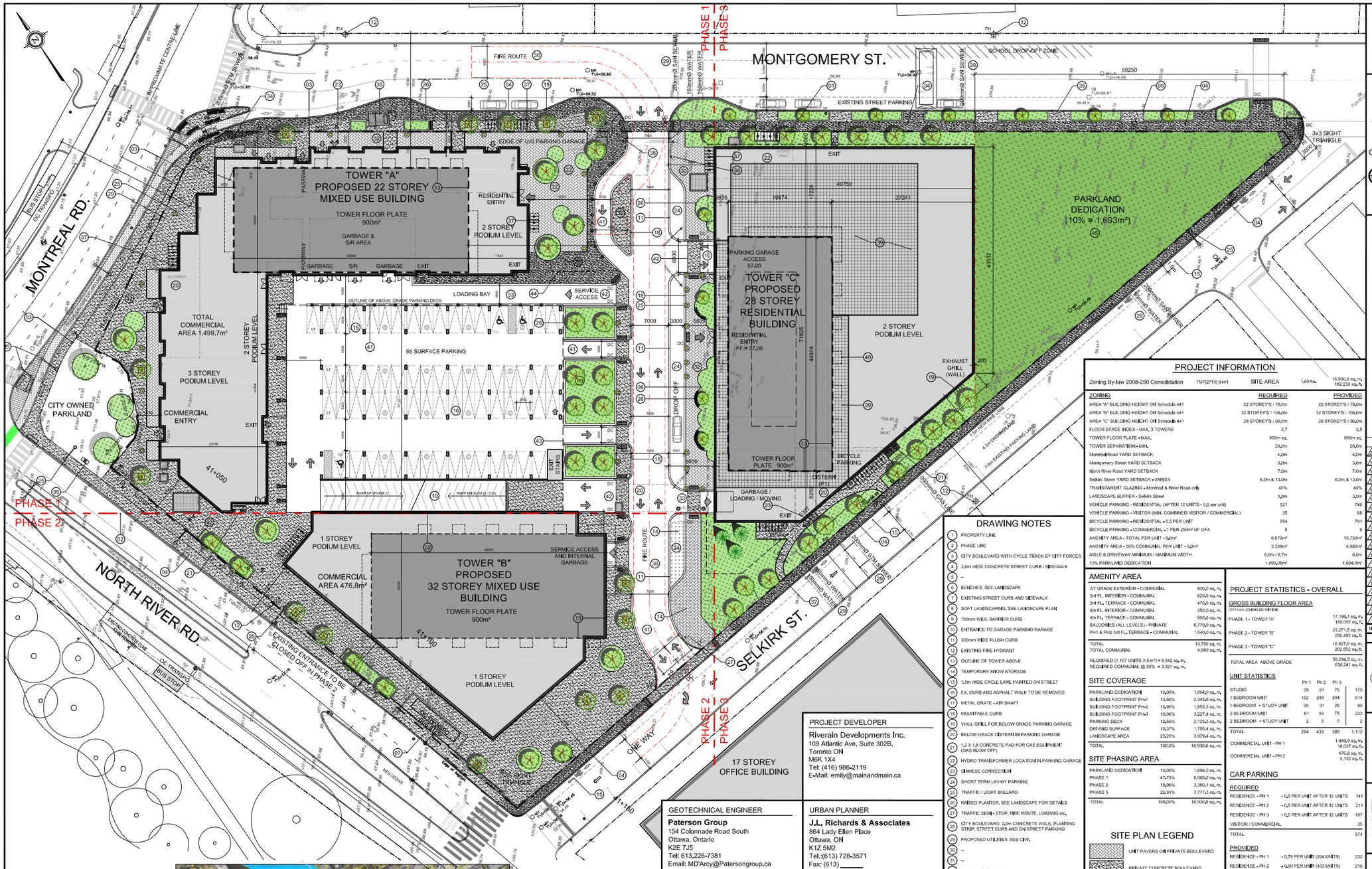
Plan No.: # _____



1 SITE PLAN - OVERALL
SP-2
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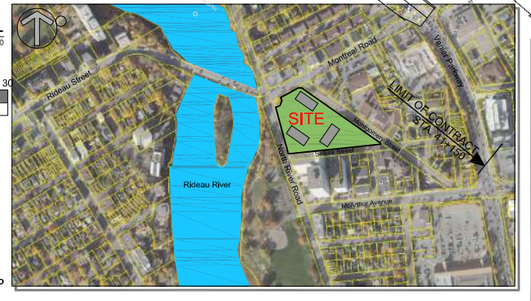
0m 10 20 30

SCALE 1:300



KEY MAP

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 UNTIL SIGNED BY THE ARCHITECT.

DO NOT SCALE DRAWINGS.

NOTATION SYMBOLS:

- (00) INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- (W) INDICATES ASSEMBLIE TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDUAL.
- (W) INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A900 SERIES.
- (D00) INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A900 SERIES.
- DETAIL NUMBER
- TITLE
- DETAIL REFERENCE PAGE
- DETAIL CROSS REFERENCE PAGE

PROJECT INFORMATION

Zoning By-law 2008-250 Consolidation TM7[2719] S441 — SITE AREA 1.69 ha. — 16,930.6 sq. m. / 182,239 sq. ft.

ZONING	REQUIRED	PROVIDED
AREA "A" BUILDING HEIGHT ON Schedule 441	22 STOREYS / 78.0m	22 STOREYS / 78.2m
AREA "B" BUILDING HEIGHT ON Schedule 441	32 STOREYS / 108.2m	32 STOREYS / 108.2m
AREA "C" BUILDING HEIGHT ON Schedule 441	28 STOREYS / 96.0m	28 STOREYS / 96.2m
FLOOR SPACE INDEX - MAX, 3 TOWERS	3.7	3.5
TOWER FLOOR PLATE - MAX,	900m sq.	900m sq.
TOWER SEPARATION - MIN,	20.2m	26.0m
Montreal Road YARD SETBACK	4.2m	4.0m
Montgomery Street YARD SETBACK	3.2m	3.0m
North River Road YARD SETBACK	7.0m	7.0m
Selkirk Street YARD SETBACK - VARIES	6.0m & 13.0m	6.0m & 13.0m
TRANSPARENT GLAZING - Montreal & River Road only	40%	40%
LANDSCAPE BUFFER - Selkirk Street	3.2m	3.0m
VEHICLE PARKING - RESIDENTIAL (AFTER 12 UNITS - 0.5 per unit)	521	740
VEHICLE PARKING - VISITOR (MIN. COMBINED VISITOR / COMMERCIAL)	35	68
BICYCLE PARKING - RESIDENTIAL - 0.5 PER UNIT	554	791
BICYCLE PARKING - COMMERCIAL - 1 PER 250m² OF GFA	8	8
AMENITY AREA - TOTAL PER UNIT - 6.2m²	6,672m²	13,750m²
AMENITY AREA - 50% COMMUNAL PER UNIT - 3.2m²	3,336m²	4,980m²
AISLE & DRIVEWAY MINIMUM / MAXIMUM WIDTH	6.0m / 6.7m	6.0m
10% PARKLAND DEDICATION	1,693.06m²	1,694.0m²

DRAWING NOTES

1. PROPERTY LINE
2. PHASE LINE
3. CITY BOULEVARD WITH CYCLE TRACK BY CITY FORCES
4. 2.0m WIDE CONCRETE STREET CURB / SIDEWALK
5. –
6. BENCHES, SEE LANDSCAPE
7. EXISTING STREET CURB AND SIDEWALK
8. SOFT LANDSCAPING, SEE LANDSCAPE PLAN
9. 150mm WIDE BARRIER CURB
10. ENTRANCE TO GARAGE PARKING GARAGE
11. 300mm WIDE FLUSH CURB
12. EXISTING FIRE HYDRANT
13. OUTLINE OF TOWER ABOVE
14. TEMPORARY SNOW STORAGE
15. 1.5m WIDE CYCLE LANE PAINTED ON STREET
16. EX. CURB AND ASPHALT WALK TO BE REMOVED
17. METAL GRATE - AIR SHAFT
18. MOUNTABLE CURB
19. WALL GRILL FOR BELOW GRADE PARKING GARAGE
20. BELOW GRADE CISTERN IN PARKING GARAGE
21. 1.2 X 1.8 CONCRETE PAD FOR GAS EQUIPMENT (GAS BLOW OFF)
22. HYDRO TRANSFORMER LOCATION IN PARKING GARAGE
23. SIAMESE CONNECTION
24. SHORT TERM LAY-BY PARKING
25. TRAFFIC / LIGHT BOLLARD
26. RAISED PLANTER, SEE LANDSCAPE FOR DETAILS
27. TRAFFIC SIGN - STOP, FIRE ROUTE, LOADING etc.
28. CITY BOULEVARD, 2.0m CONCRETE WALK, PLANTING STRIP, STREET CURB AND ON STREET PARKING
29. PROPOSED UTILITIES, SEE CIVIL
30. –
31. –
32. PEDESTRIAN WALKING SURFACE
33. SERVICE / LOADING BAY; GARBAGE / DELIVERIES
34. 5.0 x 5.0 METRE SIGHT TRIANGLE
35. EXISTING UTILITY POLE
36. 6.0m WIDE FIRE ROUTE
37. BOLLARD STYLE BICYCLE RACK
38. SIGN FOR FIRE TRUCKS NOTING U/G PARKING STRUCTURE BELOW, AS PE OFC REQUIREMENTS
39. EXTERIOR TERRACE ABOVE PODIUM LEVEL
40. BALCONIES
41. ASPHALT DRIVING SURFACE
42. PEDESTRIAN CROSSWALK WITH TWSI & DEPRESSED CURBS
43. OUTLINE OF PHASE 2 ABOVE GRADE PARKING STRUCTURE
44. PRIVACY SCREEN, SEE LANDSCAPE
45. 10% PARKLAND DEDICATION

AMENITY AREA

AT GRADE EXTERIOR - COMMUNAL	800.0 sq. m.
3rd FL. INTERIOR - COMMUNAL	620.0 sq. m.
3rd FL. TERRACE - COMMUNAL	470.0 sq. m.
4th FL. INTERIOR - COMMUNAL	350.0 sq. m.
4th FL. TERRACE - COMMUNAL	950.0 sq. m.
BALCONIES (ALL LEVELS) - PRIVATE	8,770.0 sq. m.
PH1 & PH2 3rd FL. TERRACE - COMMUNAL	1,640.0 sq. m.
TOTAL	13,750 sq. m.
TOTAL CO. COMMUNAL	4,980 sq. m.
REQUIRED (1,107 UNITS X 6 m²) = 6,642 sq. m.	
REQUIRED COMMUNAL @ 50% = 3,321 sq. m.	

SITE COVERAGE

PARKLAND DEDICATION	10.00%	1,694.0 sq. m.
BUILDING FOOTPRINT PH-1	13.86%	2,345.8 sq. m.
BUILDING FOOTPRINT PH-2	10.95%	1,853.3 sq. m.
BUILDING FOOTPRINT PH-3	15.06%	3,227.4 sq. m.
PARKING DECK	12.55%	2,125.3 sq. m.
DRIVING SURFACE	10.37%	1,755.4 sq. m.
LANDSCAPE AREA	23.21%	3,929.4 sq. m.
TOTAL	100.0%	16,930.6 sq. m.

SITE PHASING AREA

PARKLAND DEDICATION	10.00%	1,694.0 sq. m.
PHASE 1	47.73%	8,080.2 sq. m.
PHASE 2	19.96%	3,380.1 sq. m.
PHASE 3	22.31%	3,777.3 sq. m.
TOTAL	100.0%	16,930.6 sq. m.

SITE PLAN LEGEND

- UNIT PAVERS ON PRIVATE BOULEVARD
- PRIVATE CONCRETE BOULEVARD
- CITY BOULEVARD PAVERS
- SOFT LANDSCAPING
- PARKLAND DEDICATION AREA
- CONCRETE SIDEWALK
- TEMPORARY SNOW STORAGE
- CYCLE TRACK
- BIKE RACK
- TWO WAY VEHICLE CIRCULATION
- VEHICLE SERVICE ENTRANCE
- MAIN ENTRANCE
- COMMERCIAL ENTRY / FIRE EXIT
- PROPERTY LINE

PROJECT STATISTICS - OVERALL

GROSS BUILDING FLOOR AREA (OTTAWA ZONING DEFINITION)

PHASE 1 - TOWER "A"	17,196.1 sq. m. / 185,097 sq. ft.
PHASE 2 - TOWER "B"	23,271.5 sq. m. / 250,492 sq. ft.
PHASE 3 - TOWER "C"	18,827.0 sq. m. / 202,652 sq. ft.
TOTAL AREA ABOVE GRADE	59,294.5 sq. m. / 638,241 sq. ft.

UNIT STATISTICS

	Ph 1	Ph 2	Ph 3	
STUDIO	39	61	75	175
1 BEDROOM UNIT	162	248	204	614
1 BEDROOM + STUDY UNIT	30	31	28	89
2 BEDROOM UNIT	61	93	78	232
2 BEDROOM + STUDY UNIT	2	0	0	2
TOTAL	294	433	385	1,112
COMMERCIAL UNIT - PH 1				1,489.9 sq. m. / 16,037 sq. ft.
COMMERCIAL UNIT - PH 2				475.8 sq. m. / 5,132 sq. ft.

CAR PARKING

REQUIRED

RESIDENCE - PH 1	- 0.5 PER UNIT AFTER 12 UNITS	141
RESIDENCE - PH 2	- 0.5 PER UNIT AFTER 12 UNITS	211
RESIDENCE - PH 3	- 0.5 PER UNIT AFTER 12 UNITS	187
VISITOR / COMMERCIAL		35
TOTAL		574

PROVIDED

RESIDENCE - PH 1	- 0.79 PER UNIT (294 UNITS)	232
RESIDENCE - PH 2	- 0.50 PER UNIT (433 UNITS)	216
RESIDENCE - PH 3	- 0.76 PER UNIT (385 UNITS)	282
VISITOR / COMMERCIAL		66
TOTAL		796

BICYCLE PARKING

REQUIRED

RESIDENCE - PH 1	- 0.5 PER UNIT (294 UNITS)	147
RESIDENCE - PH 2	- 0.5 PER UNIT (433 UNITS)	217
RESIDENCE - PH 3	- 0.5 PER UNIT (385 UNITS)	193
COMMERCIAL	- 1 per 250 M² OF GFA	8
TOTAL		565

PROVIDED

RESIDENCE - PH 1	- 1.0 PER UNIT (294 UNITS)	294
RESIDENCE - PH 2	- 0.5 PER UNIT (433 UNITS)	217
RESIDENCE - PH 3	- 0.72 PER UNIT (385 UNITS)	333
COMMERCIAL	- 1 per 250 M² OF GFA	8
TOTAL		852

LOCATION

INTERIOR: P1, 1st, 2nd, 3rd FLOOR	784
EXTERIOR AT GRADE	68

No.	DESCRIPTION	DATE
1	REVISED AS PER ROUND 1 SPC COMMENTS	Oct. 03, 23
1	ISSUED FOR REVISED ENTRY WIDTH	Feb. 13, 23
1	ISSUED FOR SPC APPLICATION PHASE 3	June 14, 23
1	REVISED AS PER ROUND 1 SPC COMMENTS DRAFT	Sept 25, 23
1	ISSUED FOR 50% REVIEW	Sept 28, 23
1	ISSUED FOR CORNER REVISION	Dec, 07, 22
1	ISSUED FOR SPC AGREEMENT	Sept, 29, 22
1	ISSUED FOR SPC 4th ROUND COMMENTS	Sept, 20, 22
1	ISSUED FOR SUPERSTRUCTURE PERMIT	Sept, 16, 22
1	ISSUED FOR SPC 2nd ROUND COMMENTS	July 22, 22
1	GENERAL UPDATES / REVISED RAMP LOCATION	July 13, 22
1	ISSUED FOR OWNERS REVIEW	Apr, 13, 22
1	ISSUED FOR SPC 1st ROUND COMMENTS	Mar, 11, 22
1	ISSUED FOR OWNER / CONSULTANT REVIEW	Mar. 02, 22
1	ISSUED FOR OWNER / CONSULTANT REVIEW	Dec, 15, 21

REVISIONS:

ARCHITECT SEAL: ONTARIO ASSOCIATION OF ARCHITECTS — RODERICK LAHEY — LICENCE #3751 — SEAL DATE: STAMP DATE

NORTH ARROW:

CLIENT: main + main — Riverain Developments Inc.

ARCHITECT: RODERICK LAHEY ARCHITECT INC
56 Beech Street, Ottawa, Ontario K1S 3J6
t (613) 724 4932 f (613) 724 1209 www.roderickLahey.ca

PROJECT TITLE: MAISON RIVERAIN
2 MONTREAL ROAD, 3 SELKIRK STREET
300 MONTGOMERY STREET
OTTAWA ONTARIO

SHEET TITLE: SITE PLAN OVERALL

DRAWN:	CHECKED:
RV	S.S.

SCALE: 1:300 — SHEET No.: SP-2

PROJECT No.: 2302

D07-12-23-0087

PROJECT DEVELOPER

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URBAN PLANNER

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Ottawa, ON
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Fax: (613) ____
E-Mail: mrivet@jlrichards.ca

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
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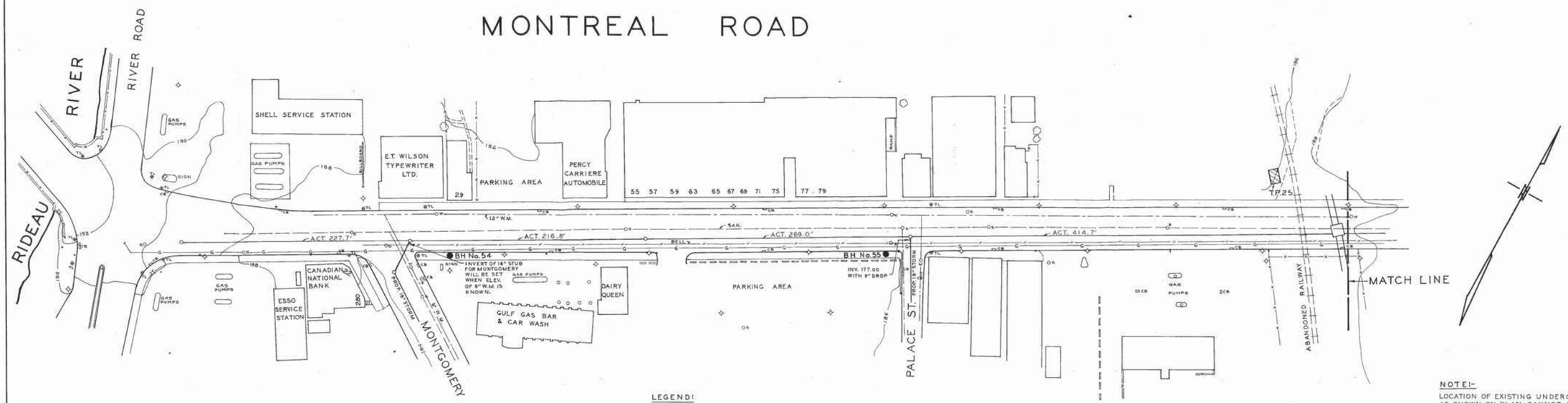
Plan No.: # ____

Riverain District Tower "C" - Phase 3 (300 Montgomery)
Project Statistics

FLOOR/UNIT IDENTIFICATION	GFA CONSTRUCTION AREA	RESIDENTIAL AREA	PARKING AREA	COMMERCIAL LEASABLE AREA	RESIDENTIAL LEASABLE AREA	COMMON / NON-SELLABLE AREA	FLOOR EFFICIENCY **Leasable to Gross**	Studio Unit	1 Bedroom Unit	1 Bed+Study Unit	2 Bedroom Unit	2 Bed+Study Unit	3 Bedroom Unit	TOTAL Units	# OF PARKING SPACES	# OF BICYCLE SPACES (INTERIOR)	**City Of Ottawa GFA (Zoning)**	**City of Ottawa** FLOOR EFFICIENCY
SUITE AREA - SQ.FT.																	For Site Plan stats only	
P1	**36,091**		**36,091**												91	0		
Ground floor	**33,397**	**5,910**	**27,487**		0	33,397	0.00%								52	365	0	0.00%
2nd floor	**29,078**	**4,663**	**24,414**		3,370	25,708	11.59%	0	4	2	0	0	0	**6**	76	9	3,330	11.45%
3rd floor	**31,775**	**7,679**	**24,118**		5,894	25,881	18.55%	0	4	1	3	1	0	**9**	73		5,727	18.02%
4th floor	**9,626**	**9,626**			5,468	4,158	56.80%	2	5	1	2	0	0	**10**			5,169	53.70%
5th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
6th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
7th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
8th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
9th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
10th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
11th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
12th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
13th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
14th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
15th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
16th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
17th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
18th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
19th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
20th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
21th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
22nd floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
23rd floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
24th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
25th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
26th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
27th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
28th floor	**9,626**	**9,626**			8,349	1,277	86.73%	3	8	1	3	0	0	**15**			7,851	81.56%
Mechanical Level	**2,730**																	0
TOTAL # OF UNITS								**74**	**205**	**28**	**77**	**1**	**0**	**385**	**292**	**374**		
BUILDING AREA (ABOVE GROUND)	**337,630**	**258,902**	**76,019**	**0**	**215,108**	**119,792**		**74**	**233**		**78**		**0**				**202,650**	
UNDER GROUND PARKING AREA	**36,091**		**36,091**					19%	**61%**		20%							
TOTAL AREA	**373,721**		**112,110**															

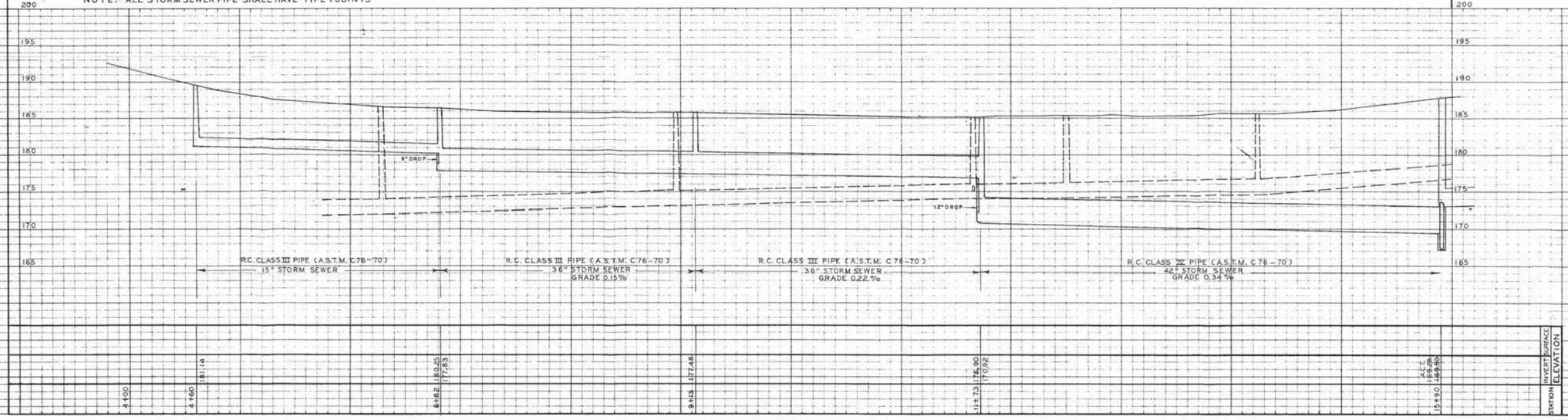
13/07/2023

MONTREAL ROAD



NOTE!-
LOCATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON PLAN CANNOT BE GUARANTEED BY THE ENGINEER.
THE CONTRACTOR MUST VERIFY LOCATION OF UTILITES WITH REPRESENTATIVES OF COMPANIES.

NOTE!- ALL STORM SEWER PIPE SHALL HAVE TYPE I JOINTS



DATE	SUBJECT	DRWN. BY	APPD. BY
MAR.11,'75	AS BUILT	JNT	NIM

REVISIONS

CORPORATION OF THE CITY OF VANIER

MONTREAL ROAD

RIVER ROAD TO ABANDONED RAILWAY

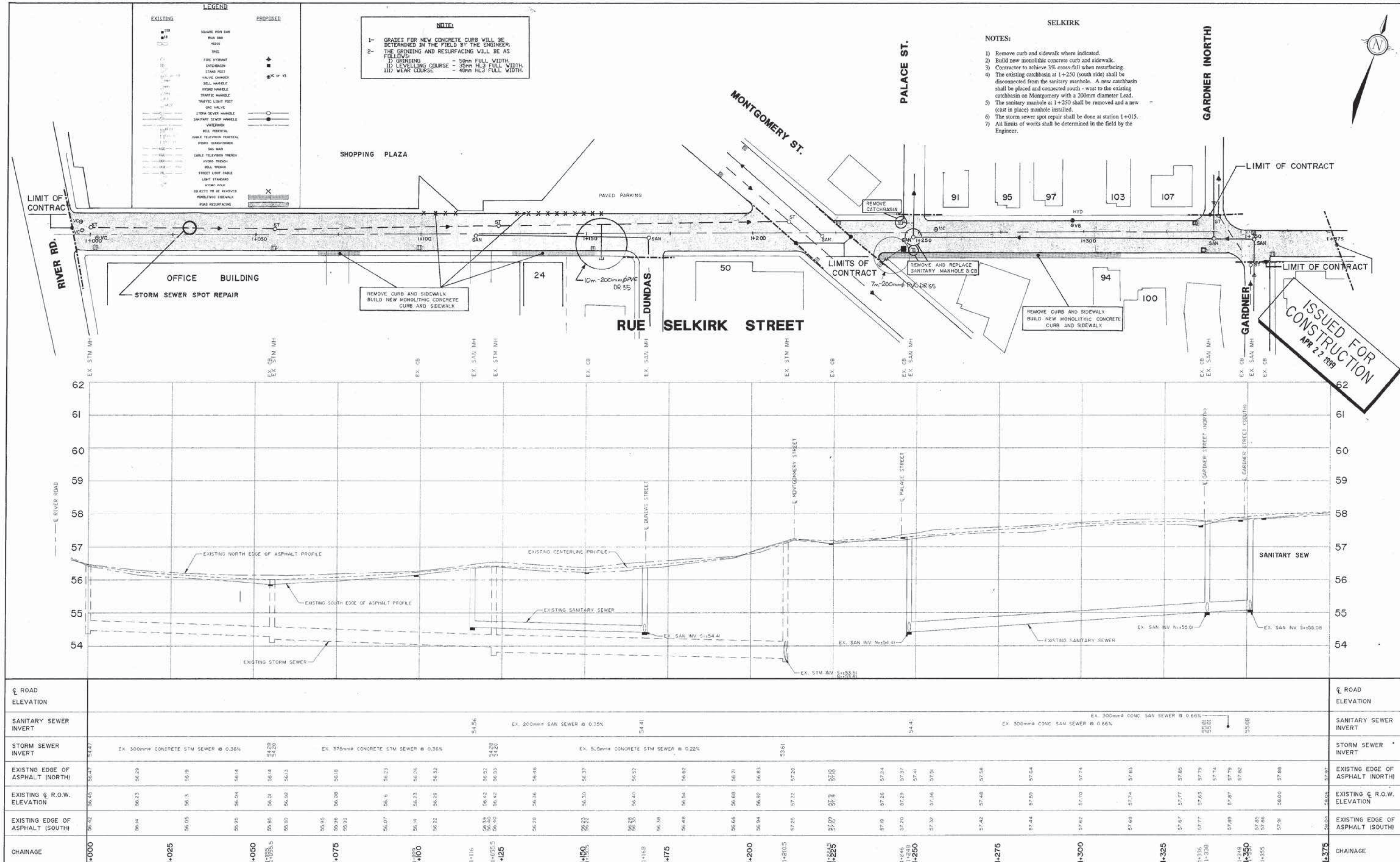
McROSTIE GENEST MIDDLEMISS & ASSOCIATES LTD. & ASSOCIÉS LTÉE
CONSULTING ENGINEERS INGÉNIEURS CONSEILS

J. Pineau
CITY ENGINEER OF VANIER

DESIGNED BY V. Sam A. Mitchell
DRAWN BY V.S./J.T.
CHECKED BY
DATE 08 AUG 73

SCALES:- HORIZ. 1"=40' VERT. 1"=6'
JOB No. E.2209
2209/73/1

VA-254



NOTE:

1- GRADES FOR NEW CONCRETE CURB WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2- THE GRINDING AND RESURFACING WILL BE AS FOLLOWS:
 I) GRINDING - 50mm FULL WIDTH.
 II) LEVELLING COURSE - 35mm HL3 FULL WIDTH.
 III) WEAR COURSE - 40mm HL3 FULL WIDTH.

SELKIRK

NOTES:

1) Remove curb and sidewalk where indicated.
2) Build new monolithic concrete curb and sidewalk.
3) Contractor to achieve 3% cross-fall when resurfacing.
4) The existing catchbasin at 1+250 (south side) shall be disconnected from the sanitary manhole. A new catchbasin shall be placed and connected south - west to the existing catchbasin on Montgomery with a 200mm diameter Lead.
5) The sanitary manhole at 1+250 shall be removed and a new (cast in place) manhole installed.
6) The storm sewer spot repair shall be done at station 1+015.
7) All limits of works shall be determined in the field by the Engineer.

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

No.	REVISION △-APPLIES WHEN DRAWING MODIFIED	DATE	BY

SCALE: 1:500 HORIZONTAL; 1:50 VERTICAL

DESIGN: YTS
CHECKED:
DRAWN: RRC
CHECKED:
APPROVED:

LICENSED PROFESSIONAL ENGINEER — Y.T.SIMONEAU — PROVINCE OF ONTARIO

Ville de VANIER City of

ATREL Engineering Ltd Ltée
Engineers - Ingénieurs
380 LAURIER ST., ROCKLAND, ONTARIO K4K 1G2
TEL.: (613) 446-7423 FAX: (613) 446-7425

ROAD GRINDING AND RESURFACING

RUE SELKIRK STREET

PLAN AND PROFILE
RIVER RD. TO DEAD END
STATION 1+000 TO STATION 1+375

CLIENT No. 185
PROJECT No. 980605
DATE JULY, 1998
DRAWING No. 980605-P3

mmddyy

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.

LOCAL SERVICING — Stantec

TRUNK SEWER — R.V. Anderson Associates Limited, engineering · environment · infrastructure

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

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.

RIDEAU RIVER COLLECTOR SEWER TWINNING

NORTH RIVER ROAD from WRIGHT STREET to MONTREAL ROAD, VANIER

PLAN & PROFILE STATION 0+000 TO 0+175

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

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

Ottawa

CONTRACT NO. ISB05-2050

DWG. NO. 05-2050-003

SHEET 3 OF 12

Date: JANUARY 2006

Scale: HORIZONTAL 1:250 VERTICAL 1:50

LIMIT OF CONSTRUCTION

MONTREAL RD

NORTH RIVER ROAD

0+000

0+100

305mm WATERMAIN

FLOW CONVERGENCE STRUCTURE

254mm UCI WATERMAIN

NEW 203mm DIA. WATERMAIN

300mm STORM

450mm STORM

CB004

CB005

CB006

CB007

CB002

CB001

CB003

152mm UCI WATERMAIN (1922)

45° BEND

100mm GAS (ABAN)

300mm GAS (LINED100 mm PE)

GAS = 1.2m b/g

MH1

MH2

MH1B

1950 SANITARY SEWER (22m)

1950 SANITARY SEWER (180m)

BELL DUCT = 0.38 b/g (TD) = 0.97 b/g (BD)

BELL DUCT top = 0.74m (b/g)

EXISTING RIDEAU RIVER COLLECTOR 1980mm

EXISTING RECREATIONAL PATHWAY

(BRICK INLAY SEWER CONSTRUCTION)

WATER SERVICE EAST STATION 54.719.0 AT BLDG =55.125

NEW 203mmx152mm DIA. REDUCER

NEW VALVE BOX STD.NO.W24

NEW 203mm DIA. WATERMAIN

11 1/4° BEND

NEW VALVE BOX STD. NO. W24

NEW FIRE HYDRANT STD. NO. W19

150mm GAS

SELKIRK 152mm WATERMAIN

NEW 375mm DIA. STORM SEWER (114.0m)

NEW RELOCATED 50MM GAS MAIN

BELL MH. 1.35m WIDE 2.80m LONG 2.63m DEEP

O/H HYDRO

O/H ROGERS

O/H HYDRO & BELL

BELL & ALLSTREAM

GAS MAIN

U/G ROGERS

U/G ALLSTREAM

MATCH LINE STATION 0+175.00 SEE SHEET No. 05-2050-0004

2 Steel Pipe — 100mmØ Gas — 300mmØ Steel Pipe — Concrete Duct

56.78 masl – 100 yr elevation

56.34 masl – 5 yr elevation

55.96 masl – mean annual elevation

55.0 masl – typical summer elevation

54.62 masl – January 12, 2006

203mm DIA.WATERMAIN - PVC CLASS 150 SDR18 (483.3m)

TOPSOIL — FILL — ASPHALTIC CONCRETE — BASE (CRUSHED STONE) — SUB BASE (CRUSHED STONE) — GLACIAL TILL — DECOMPOSED SHALE BEDROCK — HIGHLY WEATHERED SHALE BEDROCK

1.50m THICK IMPERVIOUS SEAL SEAL TO FULLY PENETRATE THE PIPE BEDDING (TYPICAL). SEE CITY DETAIL S8

BOTTOM OF GRANULARS

40mm SUPERPAVE 12.5mm PG 58-34 SURFACE COURSE
50mm SUPERPAVE 19.0mm PG 58-34 UPPER BINDER COURSE
50mm SUPERPAVE 19.0mm PG 58-34 LOWER BINDER COURSE
150mm GRANULAR 'O'
450mm GRANULAR 'B' TYPE II

PROFILE GRADE

IMPERVIOUS SEAL (TYPICAL)

1950mm SAN. SEWER

300mm (TYPICAL)

EXIST. 1980mmSAN. (brick)

MATCH EX.WM

1950mm CLASS 100-D CONCRETE SANITARY SEWER (22m) GRADE = 0.10 %

1950mm CLASS 100-D CONCRETE SANITARY SEWER (31m) GRADE = 0.10 %

1950mm CLASS 65-D CONCRETE SANITARY SEWER (149m) GRADE = 0.10 %

375mm DIA.STORM SEWER AT 0.35% (114m) - PVC SDR35

TOP OF WATERMAIN		MATCH EX.WM	55.68 55.66 45°H.BEND 55.29 45°H.BEND		55.24		45°H.BEND	45°H.BEND		54.73 203 x 152 TEE			54.46	45°H.BEND	45°H.BEND		54.44 VALVE & BOX	54.31 203x203 TEE		54.36	HYDRANT	TOP OF WATERMAIN
PROPOSED & EXISTING INVERT				N/S: 50.810 EX. 1980mm SAN.			50.848 PROP. 1950mm SAN. 50.806		N:53.33 EX. STM. S:55.27 EX. STM.	50.859(N) 50.859(S) 50.851(S)	S:54.62 EX. 375mm STM.					EX. 152mm VALVE AND CHAMBER	EX. 152mm x 152mm TEE	S:54.526 PROP. 375mm STM			PROPOSED & EXISTING INVERT
STATION	0+000	0+008.0	0+017.5	0+018.2	0+019.0	0+035.0	0+060.3	0+062.92	0+062.5	0+076.4	0+083.4	0+100.00	0+108.1	0+111.7 0+114.0		0+133.7	0+144.7	0+152.3	0+160.0	0+166.4	STATION

RUE MONTGOMERY STREET

NOTES AND SPECIFICATIONS

1) THE PLAN & PROFILE DATA IS TAKEN, IN WHOLE OR IN PART, FROM ORIGINAL MANUSCRIPTS SUPPLIED BY THE CITY OF VANIER.

2) EXACT LIMITS OF WORK SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.

3) ALL WORK SHALL BE PERFORMED AS APPLICABLE IN ACCORDANCE WITH CITY OF VANIER STANDARD SPECIFICATIONS AND PROVINCIAL OPSS STANDARDS.

4) CO-ORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.

5) FOR FRAMES & COVERS, SEE SPECIAL PROVISIONS SP-4

6) THE LONGITUDINAL ROAD PROFILE IS TO MATCH EXISTING CURB OR SIDEWALK.

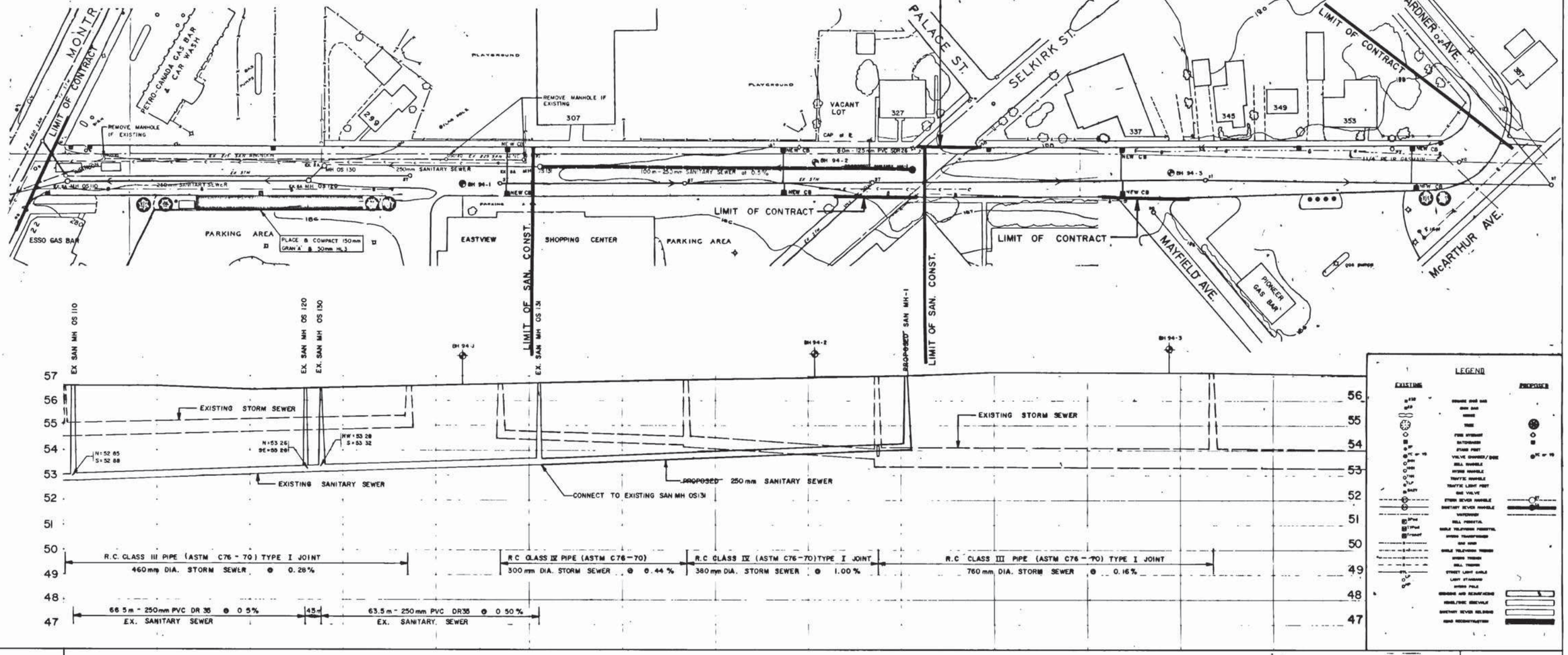
7) EXACT LOCATIONS AND LIMITS OF AREAS TO BE GRINDED SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.

8) THE GRINDING AND RESURFACING WILL BE AS FOLLOW:
   i) GRINDING 50mm PARTIAL WIDTH
   ii) TAPER PADDING 50mm AT CENTRE TO 0 mm
   iii) WEAR COURSE 50mm FULL WIDTH

9) STRUCTURES SHALL BE ADJUSTED TO MATCH THE NEW GRADING AND DRAINAGE PROFILE.

10) REFER TO SOILS REPORT PREPARED BY CONSULTING ENGINEERS FOR SUBSURFACE CONDITIONS.

11) PIPE SIZE AND MATERIAL USED SHALL BE AS PER MANUFACTURERS STANDARDS AND SPECIFICATIONS.



LEGEND

EXISTING | PROPOSED

AS-BUILT

℄ ROAD ELEVATION	
TOP OF WATERMAIN ELEVATION	
STORM SEWER INVERT	54.69 54.74 ; 55.00 ; 54.90 ; 54.28 54.23 ; 53.69 53.39 ; 53.24
SANITARY SEWER INVERT	53.57 53.37 ; ~~95 m~~ ~~100m~~ 250mm SAN at ~~0.5%~~ 0.67% PVC SDR 35 ~~PROPOSED~~ ; 54.07
EXISTING ℄ R.O.W. ELEVATION	
CHAINAGE	0+962.5 ; 1+000 ; 1+015 ; 1+040 ; 1+025 ; 1+042 ; 1+050 ; 1+067 ; 1+075 ; 1+077.5 ; 1+100 ; 1+117 ; 1+125 ; 1+150 ; 1+168 ; 1+176 ; 1+200 ; 1+225 ; 1+250 ; 1+258 ; 1+275 ; 1+300

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

No	REVISION	DATE	BY
1	AS-BUILT	OCT 26 94	AMB

SCALE
1:500
0m 0 10m HORIZONTAL
1:75
1m 0 2m VERTICAL

DESIGN YTS
CHECKED MDS
DRAWN ESL
CHECKED
APPROVED

LICENSED PROFESSIONAL ENGINEER M. DUMONCEAU PROVINCE OF ONTARIO

CORPORATION OF THE CITY OF VANIER

ATREL Engineering Ltd. Engineers - Ingénieurs
SUITE 105, 2303 LAURIER ST., ROCKLAND, ONTARIO TEL (613) 446-7423

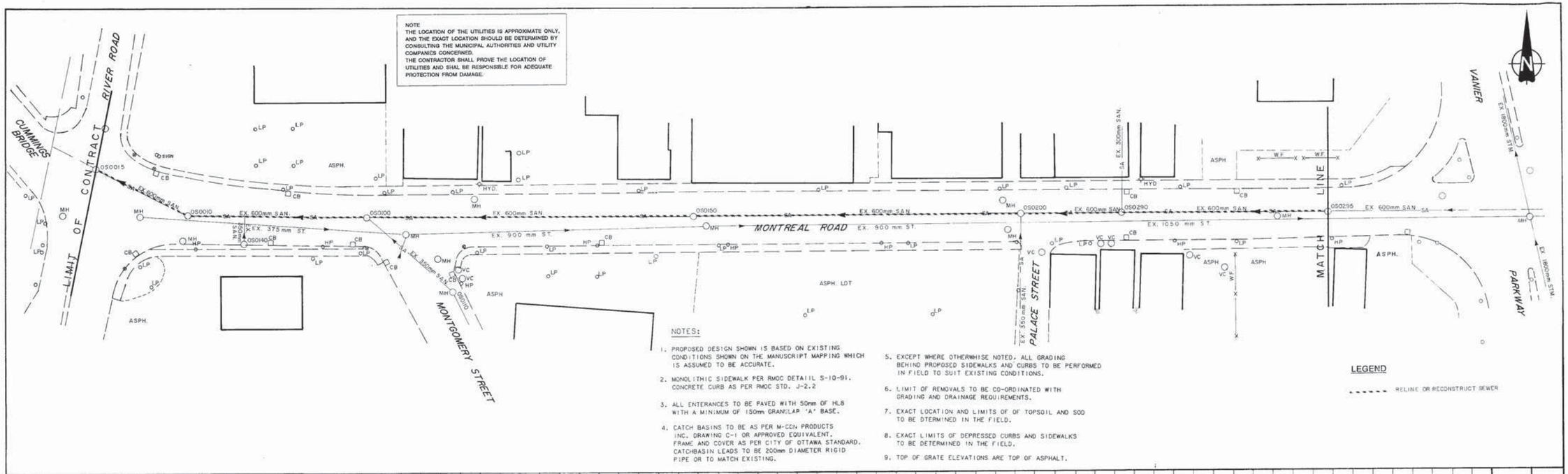
STORM SEWER AND ROAD RESURFACING

RUE MONTGOMERY STREET

PLAN AND PROFILE
MONTREAL RD. TO SELKIRK ST.
STA 1+000 TO STA 1+275

CLIENT No. 185
PROJECT No 931208
DATE APRIL 1994
DRAWING No 931208-9

NOTE
THE LOCATION OF THE UTILITIES IS APPROXIMATE ONLY, AND THE EXACT LOCATION SHOULD BE DETERMINED BY CONSULTING THE MUNICIPAL AUTHORITIES AND UTILITY COMPANIES CONCERNED.
THE CONTRACTOR SHALL PROVE THE LOCATION OF UTILITIES AND SHAL BE RESPONSIBLE FOR ADEQUATE PROTECTION FROM DAMAGE.



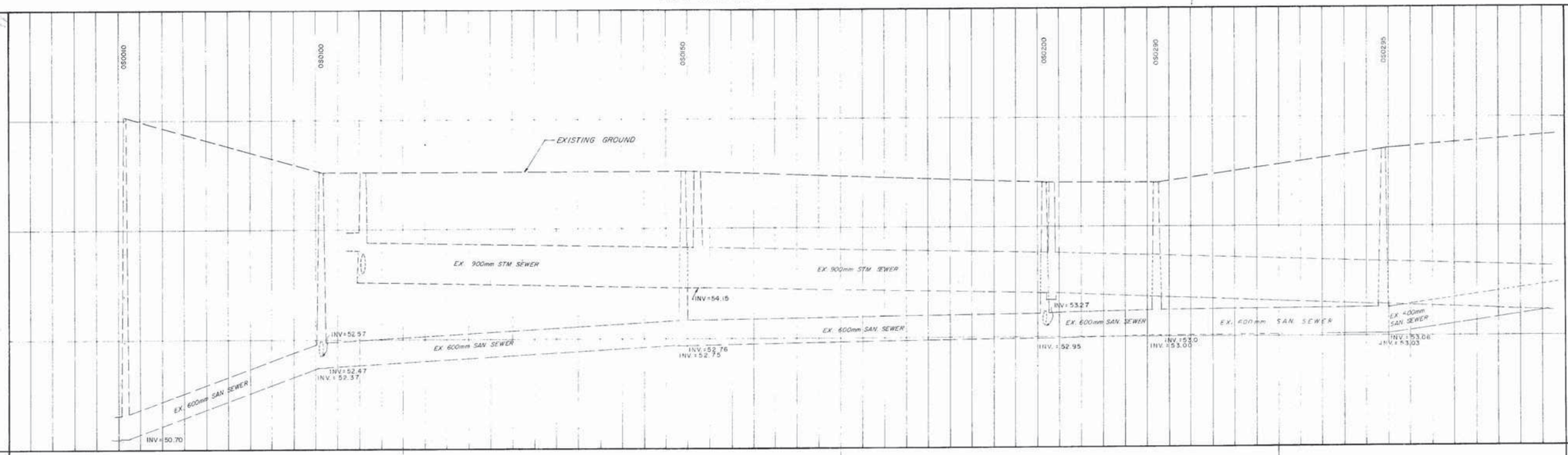
NOTES:

1. PROPOSED DESIGN SHOWN IS BASED ON EXISTING CONDITIONS SHOWN ON THE MANUSCRIPT MAPPING WHICH IS ASSUMED TO BE ACCURATE.
2. MONOLITHIC SIDEWALK PER RMOC DETAIIL S-10-91. CONCRETE CURB AS PER RMOC STD. J-2.2
3. ALL ENTERANCES TO BE PAVED WITH 50mm OF HL8 WITH A MINIMUM OF 150mm GRANULAR 'A' BASE.
4. CATCH BASINS TO BE AS PER M-CON PRODUCTS INC. DRAWING C-1 OR APPROVED EQUIVALENT. FRAME AND COVER AS PER CITY OF OTTAWA STANDARD. CATCHBASIN LEADS TO BE 200mm DIAMETER RIGID PIPE OR TO MATCH EXISTING.
5. EXCEPT WHERE OTHERWHISE NOTED, ALL GRADING BEHIND PROPOSED SIDEWALKS AND CURBS TO BE PERFORMED IN FIELD TO SUIT EXISTING CONDITIONS.
6. LIMIT OF REMOVALS TO BE CO-ORDINATED WITH GRADING AND DRAINAGE REQUIREMENTS.
7. EXACT LOCATION AND LIMITS OF OF TOPSOIL AND SOD TO BE DTERMINED IN THE FIELD.
8. EXACT LIMITS OF DEPRESSED CURBS AND SIDEWALKS TO BE DETERMINED IN THE FIELD.
9. TOP OF GRATE ELEVATIONS ARE TOP OF ASPHALT.

LEGEND

------ RELINE OR RECONSTRUCT SEWER

ELEVATIONS



ELEVATIONS

608.2

No.	DATE	REVISIONS	BY
1	21/06/91	ISSUED FOR TENDER	RB

SCALES
HORIZONTAL 0 5 10 20
VERTICAL 0 0.5 1.0 2.0

UMA Engineering Ltd.
Engineers & Planners
Ottawa, Ontario

DESIGN
CHECKED
DRAWN
CHECKED
APPROVED

THE CORPORATION OF THE CITY OF VANIER
LA CORPORATION DE LA VILLE DE VANIER

MONTREAL ROAD
SANITARY SEWER REHABILITATION
RIVER ROAD TO VANIER PARKWAY

PROJ No.
CONT No.
DATED MAY 1991
DWG No. S-3

D-16-17

REVISIONS / RÉVISIONS	DATE	BY
93208-09-MONTGOMERY (APP 19841) SAN STORM AND WATER ON MONTGOMERY	JUNE 2009	JH
91-04-S-03-MONTREAL SAN (MAY 1991) UPDATED SAN STORM AND WATER ON MONTREAL	JUNE 2009	JH
HYDRO,BELL,ENBRIDGE,ROGERS, CITY SEWER, WATER, TRAFFIC, SL COMPILED/DIGITIZED FROM UTILITY/CITY DATA	JUL 2014	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 (PS, HP, GR)
- Amp, Hand Hole, Vault, Gas Valve (HP)
- OC Transpo: Bus Shelter-No Power, Energized, Isolated (BUS)
- Streetscape: Planter Box, Grate Square, Eng. Soil (TGS)
- Traffic Connect Box / Disconnect Box, SL Disconnect (TCB, TDB, SDB)
- R.L Hand Hole, R.L. Camera (THH)
- 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 - Atria	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
H1 - 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
O/OC - OCTranspo	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.
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Ottawa
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 generale de la planification, de l'infrastructure et du développement economique
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

UCC Ottawa CCSP

PRODUCED BY: GIS & DATA MANAGEMENT BRANCH
INFORMATION CENTRE UNIT

SCALE: 1:250

SHEET NUMBER
D-16-23

D-16-23

Metres

SELKIRK STREET

MONTGOMERY STREET

DUNDAS STREET

D-16-28

D-16-30

D-16-33

D-16-34

REVISIONS / RÉVISIONS	DATE	BY
NO EXISTING UTILITY PLAN NEW UTILITY PLAN CREATED	JULY 2009	JH
980605-P3-SELKIRK (JULY 1998) UPDATED SAN STORM AND WATER ON SELKIRK	JUNE 2009	JH
931208-09-MONTGOMERY (APR 1994) SAN STORM AND WATER ON MONTGOMERY	JUNE 2009	JH
ROG10071-SELKIRK/MONTGOMERY (JULY 2011) ROGERS CONDUIT ADDED	NOV 2012	ZB
HYDRO,BELL,ENBRIDGE,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 (PS, PED, GR)
- Amp, Hand Hole, Vault, Gas Valve
- OC Transpo: Bus Shelter-No Power, Energized, Isolated (BUS)
- Streetscape: Planter Box, Grate Square, Eng. Soil (TGS)
- Traffic: Connect Box / Disconnect Box, SL Disconnect (TCB, TTSR, SDS)
- R.L Hand Hole, R.L. Camera (THH)
- 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	Atria	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
H1	Hydro One	V	Videotron
L / L3	Level 3	Z	Zayo

GLOSSARY - OTHER

DD	Dept. of Defence	PED	Pedestal (owner unknown)
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Ottawa

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Gestionnaire, Services des emprises, du patrimoine, et du design urbain
Planning, Infrastructure and Economic Development Department /
Direction generale de la planification, de l'infrastructure et du developpement economique
100 Constellation Cres., 6th Floor East / 6ème Étage Est, Ottawa, ON K2G 6J8

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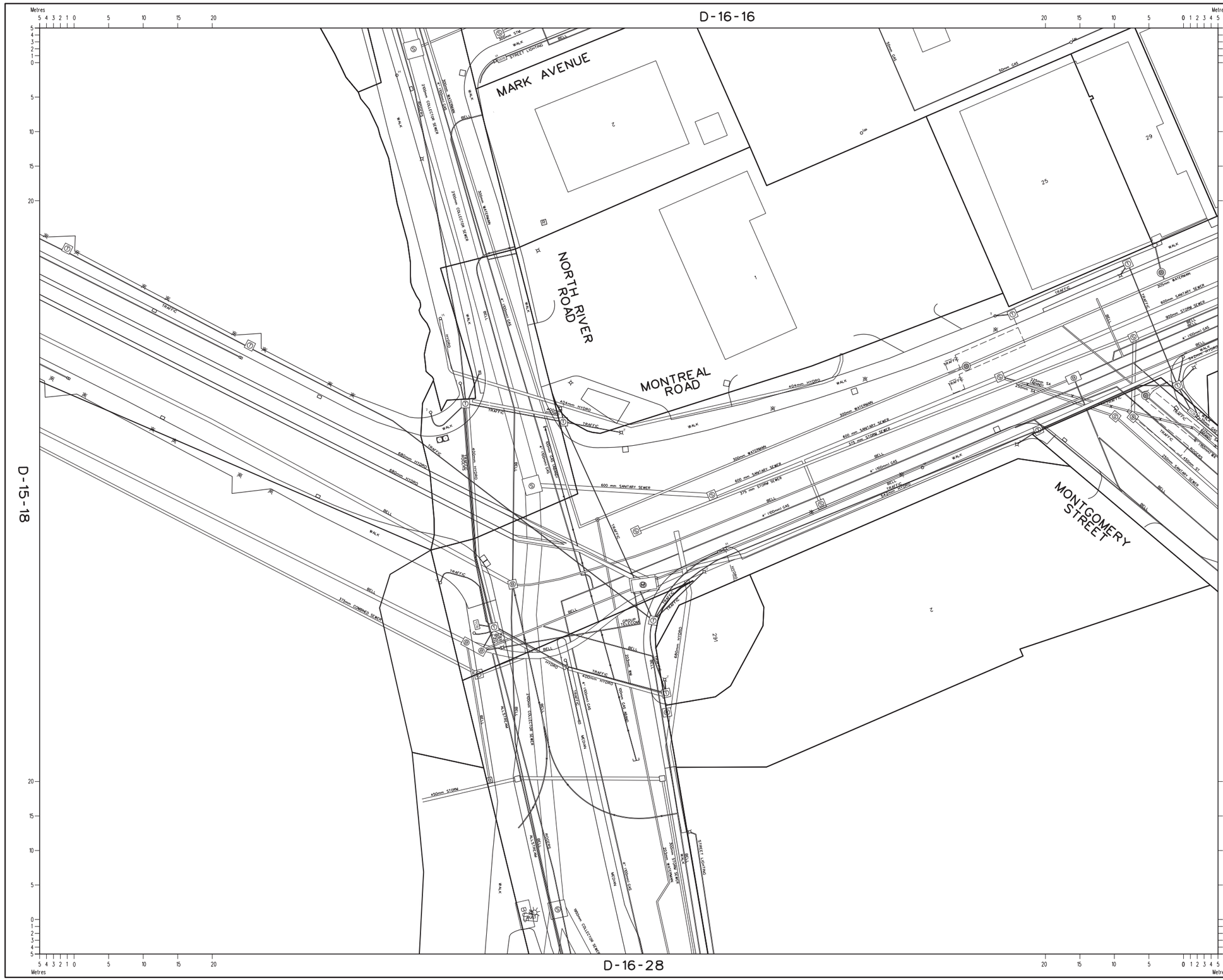
INFORMATION CENTRE UNIT

SCALE: 1 : 250

SHEET NUMBER
D-16-29



REVISIONS / RÉVISIONS	DATE	BY
91-04-5-03-MONTREAL SAN (MAY 1991) UPDATED SAN STORM AND WATER ON MONTREAL	JUNE 2009	JH
GTS2401I SEPTEMBER 2004 BUS SHELTER ADDED ON NORTH RIVER	JULY 01/09	JH
CRC-N/A BELL PL 29-1 AUGUST 1978 MODIFIED BELL DUCTS AT MONTREAL & RIVER	JULY 01/09	JH
CRC-N/A BELL PL 29 1970 MODIFIED BELL DUCTS AT MONTREAL & RIVER	JULY 01/09	JH
1384-CITY OF OTTAWA (JAN 2006) UPDATED SAN STORM AND WATER ON RIVER	NOV 2010	JM
TOL020T079-TELECOM OTTAWA (NOV 02) CONDUIT ADDED ON RIVER ROAD	NOV 2010	JM
P1SP4 5001-FIBRE NOIR (JAN 2015) CONDUIT ADDED TO NORTH RIVER	AUG 2016	JM
HYDRO,BELL,ENBRIDGE,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	PS PED PM GR
Amp, Hand Hole, Vault, Gas Valve	
OC Transpo: Bus Shelter-No Power, Energized, Isolated	BUS BUS BUS
Streetscape: Planter Box, Grate Square, Eng. Soil	TGS
Traffic: Connect Box / Disconnect Box, SL Disconnect	TCB TDB SDB
R.L Hand Hole, R.L. Camera	THH
Scada: Hand Hole, Monitoring Panel	
Reducer	
Pipe, Duct, Conduit, Lateral	
Culvert	
Abandoned	
Capped	
Buried Cable	
Property Line	
Install Year	(2015)

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GT.....Group Telecom	TO.....Telecom Ottawa
H.....Hydro Ottawa	TU.....Telus
H1.....Hydro One	V.....Videotron
L / L3.....Level 3	Z.....Zayo

GLOSSARY - OTHER

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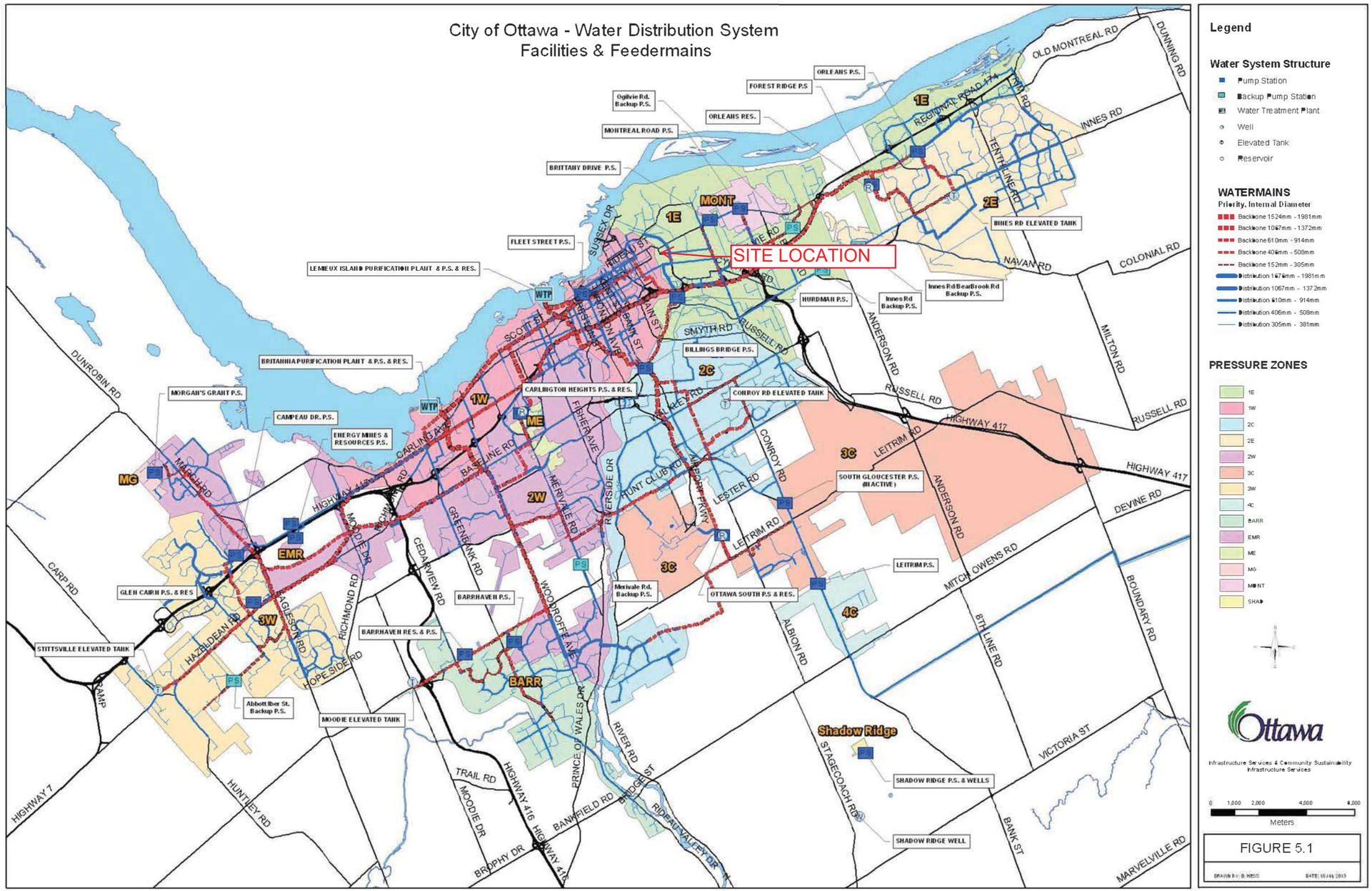
CENTRAL REGISTRY

COMITÉ DE COORDINATION DES SERVICES PUBLICS D'OTTAWA
ENREGISTREMENT CENTRAL

PRODUCED BY: GIS & DATA MANAGEMENT BRANCH
INFORMATION CENTRE UNIT

SCALE: 1:250

SHEET NUMBER
D-16-22



Source: City of Ottawa GIS infrastructure database

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

4.1 General Content

☒ Executive Summary (for larger reports only).

Comments: *Page 1 & 2*

☒ Date and revision number of the report.

Comments: *Page i*

☒ Location map and plan showing municipal address, boundary, and layout of proposed development.

Comments: *Figure 1 and Site Servicing (SS-01) Plan*

☒ Plan showing the site and location of all existing services.

Comments: *Site Servicing (SS-01) Plan*

☒ Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.

Comments: *Appendix B*

☐ Summary of Pre-consultation Meetings with City and other approval agencies.

Comments: *N/A*

☒ Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.

Comments: *N/A. Reference to the City's guidelines are included in Section 4.0 pg. 7*

☒ Statement of objectives and servicing criteria.

Comments: *Section 4.2 (Stormwater Criteria), Section 4.3 (Sanitary Sewer Criteria), Section 4.4 (Water Usage Criteria)*

☒ Identification of existing and proposed infrastructure available in the immediate area.

Comments: *Section 5.1 (ex. storm sewers), Section 6.1 (ex. sanitary sewers), Section 8.1 (ex. water system)*

☐ Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).

Comments: *N/A*

☐ Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.

Comments: *Site Grading - Phase I (SG-01) Plan & Site Grading - Phases I, II & III (SG-02) Plan.*

☐ Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.

Comments: *N/A*

☐ Proposed phasing of the development, if applicable.

Comments: *N/A*

☐ Reference to geotechnical studies and recommendations concerning servicing.

Comments: *N/A*

☒ All preliminary and formal site plan submissions should have the following information:

- ☒ Metric scale
- ☒ North arrow (including construction North)
- ☒ Key plan
- ☒ Name and contact information of applicant and property owner
- ☒ Property limits including bearings and dimensions
- ☒ Existing and proposed structures and parking areas
- ☒ Easements, road widening and rights-of-way
- ☒ Adjacent street names

Comments: *Existing and proposed structures and parking areas are included in topo survey and architectural dwgs. Name and owner info. can be found in zba cover letter.*

4.2 Development Servicing Report: Water

☐ Confirm consistency with Master Servicing Study, if available

Comments: *Not available*

☒ Availability of public infrastructure to service proposed development

Comments: *Section 8.3*

☒ Identification of system constraints

Comments: *N/A*

☒ Identify boundary conditions

Comments: *Upon receipt of the City of Ottawa boundary conditions.*

☒ Confirmation of adequate domestic supply and pressure

Comments: *Upon receipt of the City of Ottawa boundary conditions.*

☒ Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.

Comments: *Section 8.2 and Appendix E*

☒ Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.

Comments: *N/A*

☐ Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design

Comments: *N/A*

☐ Address reliability requirements such as appropriate location of shut-off valves

Comments: *N/A*

☐ Check on the necessity of a pressure zone boundary modification.

Comments: *N/A*

☒ Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range

Comments: *Appendix E*

☒ Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.

Comments: *Appendix E and Site Servicing - Phase I (SS-01) and Site Servicing - Phases I-II-III (SS-02) Plans*

☐ Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.

Comments: *N/A*

☒ Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.

Comments: *Section 4.4*

☐ Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.

Comments: *Appendix B*

4.3 Development Servicing Report: Wastewater

☒ Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).

Comments: *Section 4.3*

☐ Confirm consistency with Master Servicing Study and/or justifications for deviations.

Comments: *N/A*

☐ Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.

Comments: *N/A*

☒ Description of existing sanitary sewer available for discharge of wastewater from proposed development.

Comments: *Section 6.1*

☒ Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)

Comments: *Section 6.2*

☐ Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.

Comments: *N/A*

☐ Special considerations such as contamination, corrosive environment etc.

Comments: *N/A*

4.4 Development Servicing Report: Stormwater

☒ Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)

Comments: *N/A*

☒ Analysis of available capacity in existing public infrastructure.

Comments: *Section 5.3*

☒ A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.

Comments: *DAP1 and 2 in Appendix C*

☒ Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.

Comments: *Sections 5.2.1, 5.2.2, 5.3.3 and 5.3.4*

☐ Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.

Comments: *Section 5.2.1.5*

☒ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.

Comments: *Sections 5.2.1, 5.2.2, 5.3.3 and 5.3.4*

☐ Set-back from private sewage disposal systems.

Comments: *N/A*

☐ Watercourse and hazard lands setbacks.

Comments: *N/A*

☐ Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.

Comments: *N/A*

☐ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.

Comments: *N/A*

☒ Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).

Comments: *Appendix C*

☐ Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.

Comments: *N/A*

☒ Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.

Comments: *Section 5.2 and Appendix C*

☐ Any proposed diversion of drainage catchment areas from one outlet to another.

Comments: *N/A*

☒ Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.

Comments: *Section 5.2 and Site Servicing - Phase I (SS-01) and Site Servicing - Phases I-II-III (SS-02) Plans*

☒ If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.

Comments: *Section 5.2 Site Servicing - Phase I (SS-01) and Site Servicing - Phases I-II-III (SS-02) Plans*

☒ Identification of potential impacts to receiving watercourses

Comments: *Section 5.2 and Site Servicing - Phase I (SS-01) and Site Servicing - Phases I-II-III (SS-02) Plans*

☒ Identification of municipal drains and related approval requirements.

Comments: *Section 5.2 and Site Servicing - Phase I (SS-01) and Site Servicing - Phases I-II-III (SS-02) Plans*

☒ Descriptions of how the conveyance and storage capacity will be achieved for the development.

Comments: *Section 5.2 Site Servicing - Phase I (SS-01) and Site Servicing - Phases I-II-III (SS-02) Plans*

☐ 100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.

Comments: *N/A*

☐ Inclusion of hydraulic analysis including hydraulic grade line elevations.

Comments: *N/A*

☒ Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.

Comments: *Section 9.0*

☐ Identification of floodplains - proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.

Comments: *N/A*

☐ Identification of fill constraints related to floodplain and geotechnical investigation.

Comments: *N/A*

4.5 Approval and Permit Requirements: Checklist

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

☐ Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.

Comments: *N/A*

☐ Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.

Comments: *N/A*

☐ Changes to Municipal Drains.

Comments: *N/A*

☐ Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)

Comments: *N/A*

4.6 Conclusion Checklist

☒ Clearly stated conclusions and recommendations

Comments: *Section 10.0*

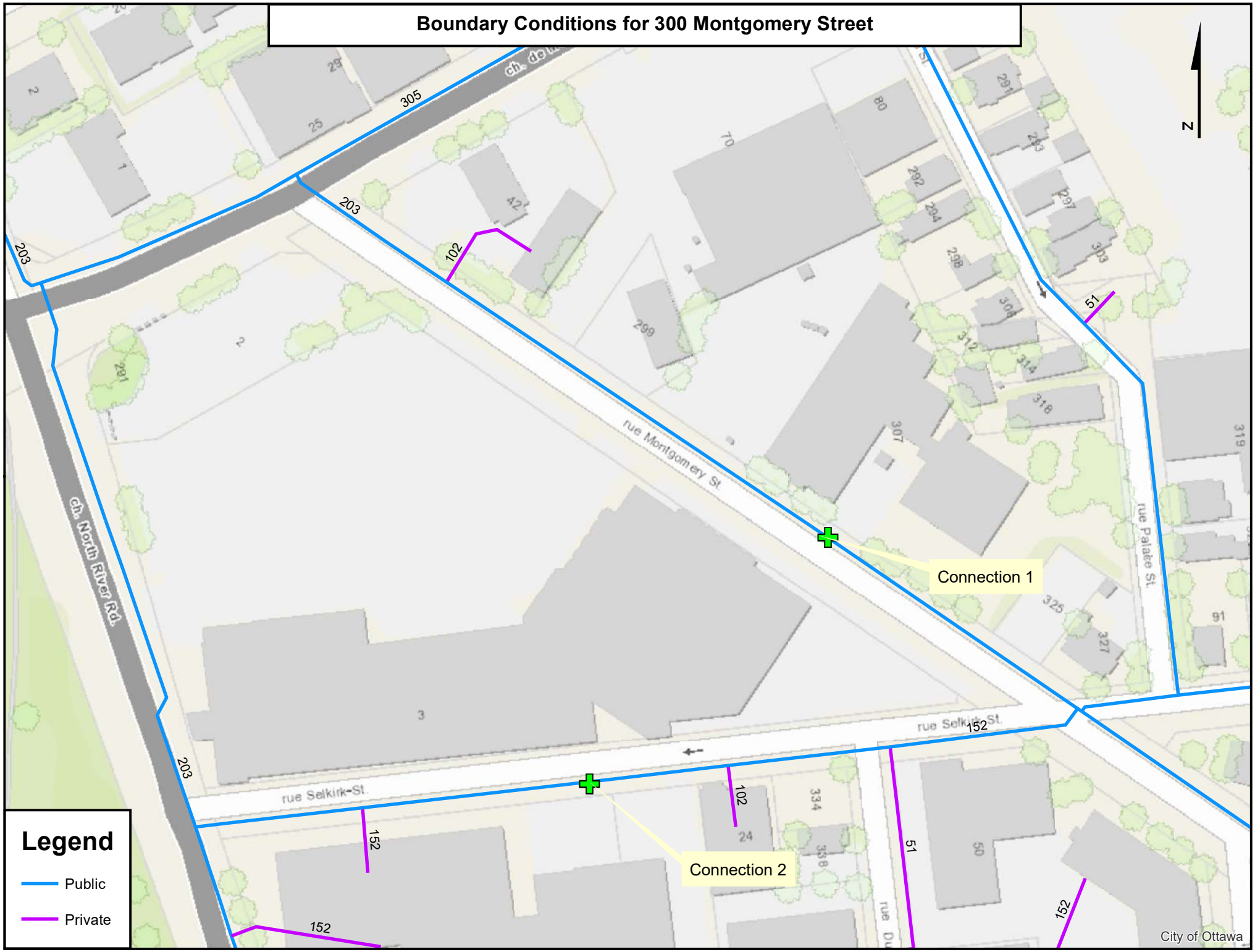
☐ Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.

Comments: *N/A*

☒ All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario

Comments: *Signed and stamped by Ontario engineer*

Boundary Conditions for 300 Montgomery Street



From: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Sent: September 22, 2023 2:16 PM
To: sarrak@lithosgroup.ca
Subject: RE: 300 Montgomery St., OT (Riverain Phase 3) - addressing comments

Hello Sarra

The following are boundary conditions, HGL, for hydraulic analysis at 300 Montgomery 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 (Montgomery)	Connection 2 (Selkirk)
Min HGL	105.6	105.3
Max HGL	118.4	118.4
Max Day + FF (66.67 L/s)	85.2	83.8

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 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

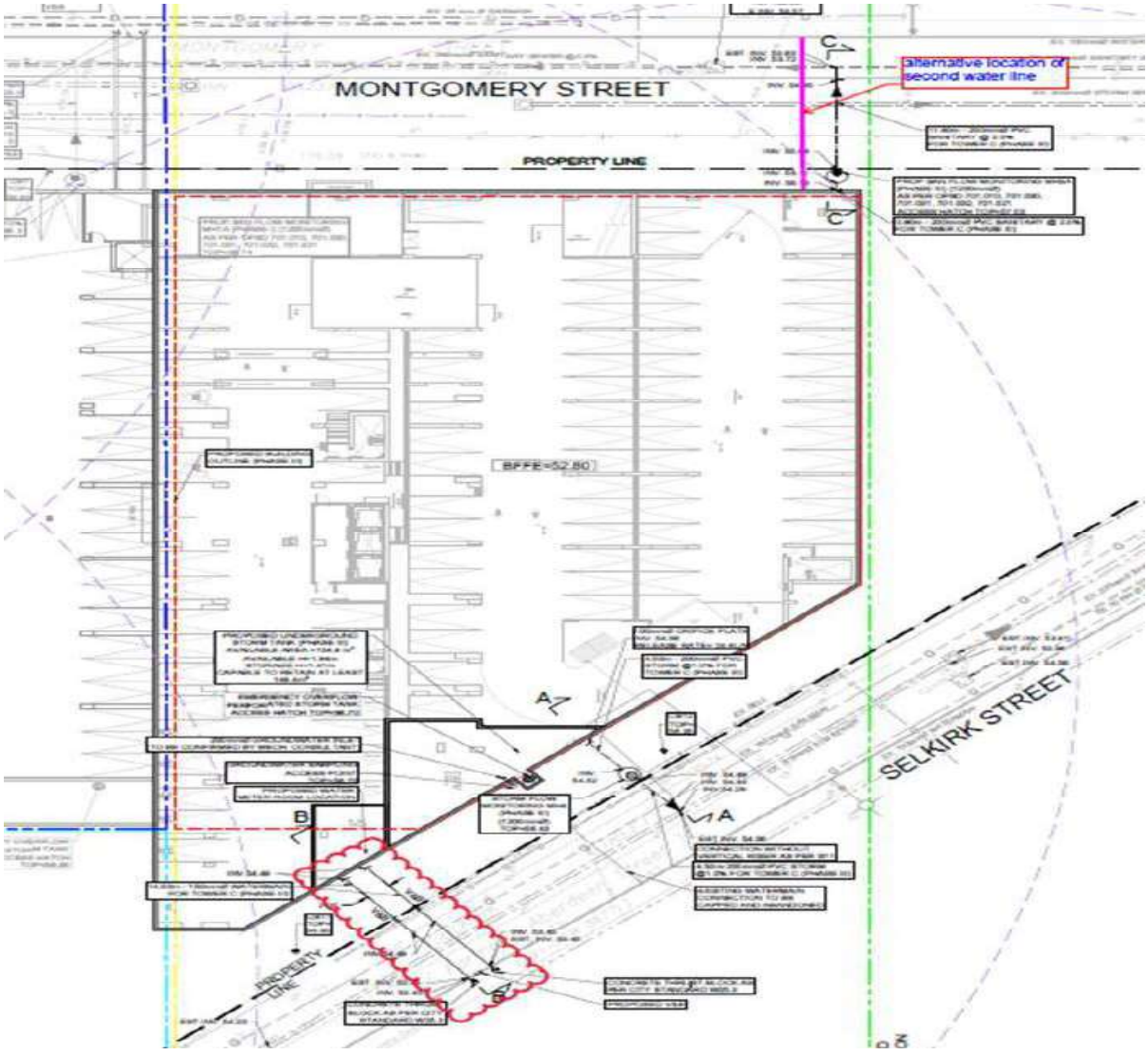
From: sarrak@lithosgroup.ca <sarrak@lithosgroup.ca>
Sent: September 19, 2023 12:38 PM
To: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Subject: RE: 300 Montgomery St., OT (Riverain Phase 3) - addressing comments

Hello Nishant,

I hope all is well with you and thank you for the clarifications provided – your assistance is always greatly appreciated.

Kindly provide us with the boundary conditions for the watermains on Selkirk Street and Montgomery Street, based on the following information in **blue**:

- Type of Development and Units: **Residential development, with 385 units**
- Site Address: **300 Montgomery Street, OT**
- A plan showing the proposed water service connection location: **Our two (2) proposed water connection are to the existing 150mm diameter watermain on Selkirk Street. Please see bubbled in the capture below. Kindly provide us with the boundary conditions for the existing watermain on Montgomery Street as well, in order for us to confirm if there is sufficient pressure to relocate our second water line there (see in pink in the capture below).**



- Average Daily Demand (L/s): **1.98 L/s**
- Maximum Daily Demand (L/s): **5.45 L/s**
- Peak Hour Demand (L/s): **8.18 L/s**
- Fire Flow (L/min): **4,000.2 L/min (66.67 L/s)**

Thank you,

Sarra Karavasili, P.E., M.A.Sc.
Project Manager
Lithos Group Inc.
150 Bermondsey Rd, Unit #200
Toronto, Ontario M4A 1Y1
T: (647) 366-9610 x1
Sarrak@LithosGroup.ca
www.LithosGroup.ca

From: Catherine Agiou <catherine@lithosgroup.ca>
Sent: September 15, 2023 11:17 AM
To: 'Jhamb, Nishant' <nishant.jhamb@ottawa.ca>; sarrak@lithosgroup.ca
Subject: RE: 300 Montgomery St., OT (Riverain Phase 3) - addressing comments

Hello Nishant,

On Sarra's behalf, thank you for your response.
We will let you know of any questions or concerns.

Thank you,

Catherine Agiou, P.E., M.A.Sc.
Project Manager, Civil Unit Leader
Lithos Group Inc.
150 Bermondsey Road, Unit #200
Toronto, Ontario M4A 1Y1
T: (647) 366-9610 x3
Catherine@LithosGroup.ca
www.LithosGroup.ca

From: Jhamb, Nishant [mailto:nishant.jhamb@ottawa.ca]
Sent: Friday, September 15, 2023 11:13 AM
To: sarrak@lithosgroup.ca
Subject: RE: 300 Montgomery St., OT (Riverain Phase 3) - addressing comments

Hello Sarra,

Sorry for the delay, please see my comments below.

Thanks
Nishant

From: sarrak@lithosgroup.ca <sarrak@lithosgroup.ca>
Sent: September 14, 2023 4:34 PM
To: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Subject: RE: 300 Montgomery St., OT (Riverain Phase 3) - addressing comments

Hello Nishant,

As a follow up to my email below, could you kindly provide us with the boundary conditions for the existing 150mm watermains on Montgomery Street and Selkirk Street?

Thank you for your assistance.

Sincerely,

Sarra Karavasili, P.E., M.A.Sc.
Project Manager
Lithos Group Inc.
150 Bermondsey Rd, Unit #200
Toronto, Ontario M4A 1Y1
T: (647) 366-9610 x1
Sarrak@LithosGroup.ca
www.LithosGroup.ca

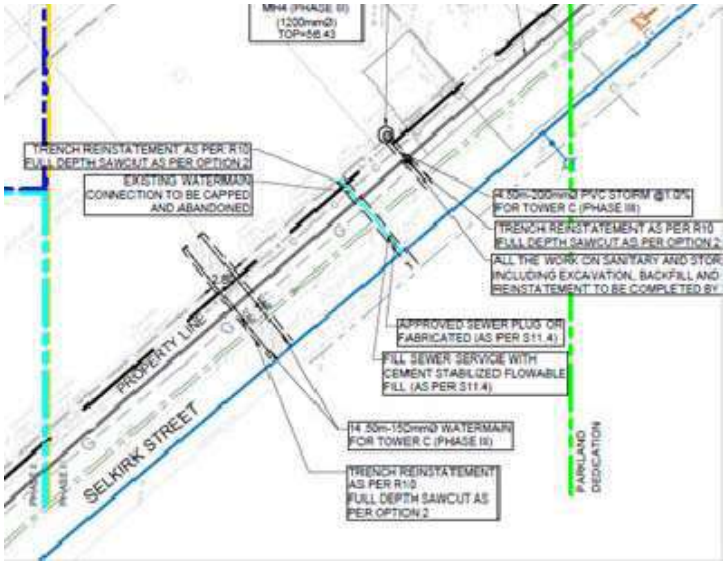
From: sarrak@lithosgroup.ca <sarrak@lithosgroup.ca>
Sent: September 13, 2023 1:17 PM
To: 'Jhamb, Nishant' <nishant.jhamb@ottawa.ca>
Subject: 300 Montgomery St., OT (Riverain Phase 3) - addressing comments

Hello Nishant,

I hope my email finds you well and safe.

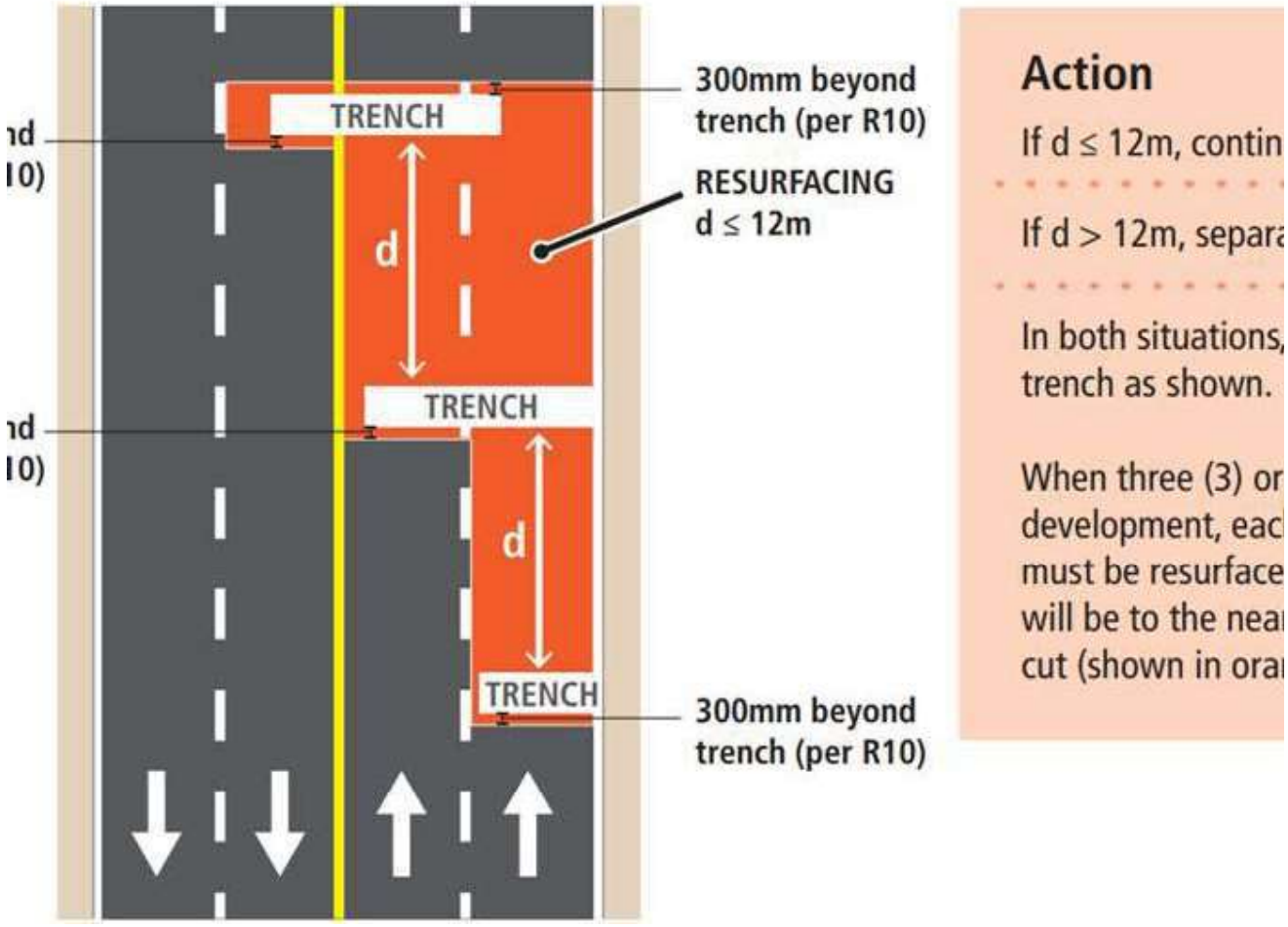
Following receipt of comments regarding Phase 3 of Riverain project, I am reaching out wishing to clarify the following comment, if possible:

1.3: ‘’Show single resurfacing area for the following three trenches on Selkirk Street on RR-01:



To our understanding, there should be three (3) separate trenches and resurfacing areas as the minimum distance between these trenches is approximately 7m. Could you please provide further clarifications?

I would like to request single resurfacing area covering all three trenches .
As per Scenario 6 if City resurfacing policy
https://documents.ottawa.ca/sites/documents/files/road_cut_policy_scenarios_en.pdf



In addition, further to the latest site statistics received from the architect, the proposed sanitary and water flows will be slightly raised to 19.44 L/s (previously 19.35 L/s) and 72.11 L/s (previously 72.04 L/s).
Could you kindly confirm if the existing 250mm diameter sanitary sewer on Montgomery Street and the 150mm diameter watermain on Selkirk Street have the capacity to support the proposed sanitary and water flows above?

No concerns with Sanitary increase. For water please provide BC request.

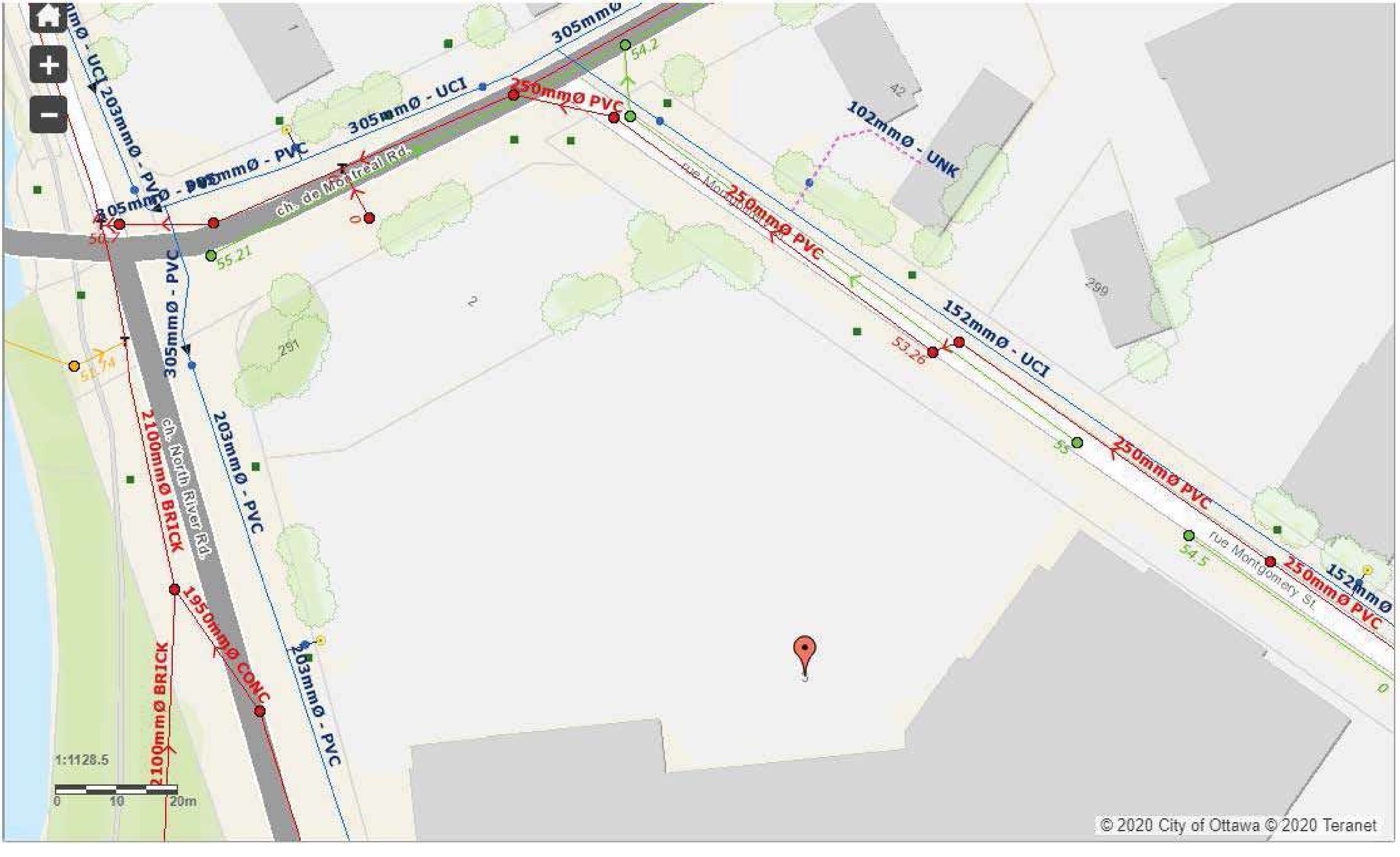
Moreover, following our coordination with the mechanical consultant, could you please confirm if one of the two (2) proposed water lateral services can be connected to the existing 150mm diameter watermain on Montgomery Street? Please resubmit the BC request with following info,

- Type of Development and Units
- Site Address
- A plan showing the proposed water service connection location.
- **Average Daily Demand** (L/s)
- **Maximum Daily Demand** (L/s)
- **Peak Hour Demand** (L/s)
- **Fire Flow** (L/min)

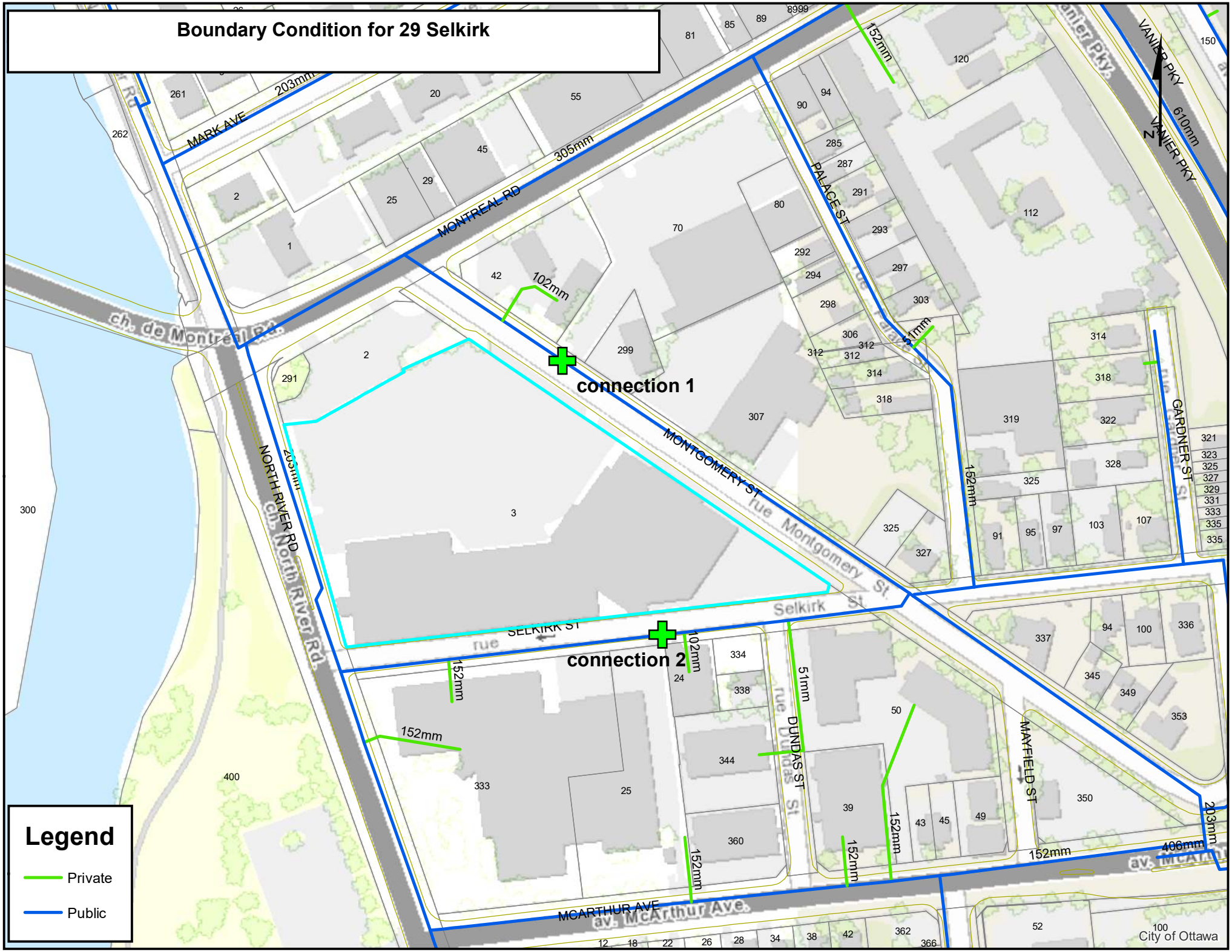
Thank you in advance for your assistance.

Kind regards,

Sarra Karavasili, P.E., M.A.Sc.
Project Manager
Lithos Group Inc.
150 Bermondsey Rd, Unit #200
Toronto, Ontario M4A 1Y1
T: (647) 366-9610 x1
Sarrak@LithosGroup.ca
www.LithosGroup.ca


305mmØ - UC1
203mmØ - PVC
305mmØ - UC1
250mmØ PVC
102mmØ - UNK
250mmØ PVC
152mmØ - UC1
305mmØ - PVC
305mmØ - PVC
203mmØ - PVC
2100mmØ BRICK
1950mmØ CONC
2100mmØ BRICK
203mmØ - PVC
250mmØ PVC
250mmØ PVC
152mmØ
ch. de Montreal Rd.
rue Montgomery St.
ch. North River Rd.
54.2
55.21
53.26
54.5
51.74
42
299
291
2
1:1128.5
0
10
20m
© 2020 City of Ottawa © 2020 Teranet


152mmØ - UC1
250mmØ PVC
152mmØ - UC1
300mmØ CONR
54.07
53.26
rue Selkirk St.
rue Selkirk St.
203mmØ - PVC
1950mmØ CONC
203mmØ - PVC
152mmØ - UC1
375mmØ CONR
54.2
rue Selkirk St.
52.46
102mmØ - UNK
250mmØ PVC
525mmØ CONR
rue Selkirk
200mmØ PVC
51mmØ - UNK
152mmØ - UNK
334
338
50
111128.5
0
10
20m
© 2020 City of Ottawa © 2020 Teranet


Boundary Condition for 29 Selkirk
connection 1
connection 2
MONTREAL RD
MONTGOMERY ST
rue Montgomery St
PALACE ST
MARK AVE
NORTH RIVER RD
ch. North River Rd
ch. de Montreal Rd
SELKIRK ST
rue Selkirk St
DUNDAS ST
rue Dundas St
MAYFIELD ST
GARDNER ST
VANIER PKY
MCARTHUR AVE
av. McArthur Ave
203mm
305mm
152mm
102mm
51mm
610mm
400mm
Legend
Private
Public
City of Ottawa

From: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Sent: Tuesday, August 2, 2022 2:17 PM
To: sarrak@lithosgroup.ca
Cc: ginal@lithosgroup.ca
Subject: RE: 29 Selkirk St., OT - comment clarification

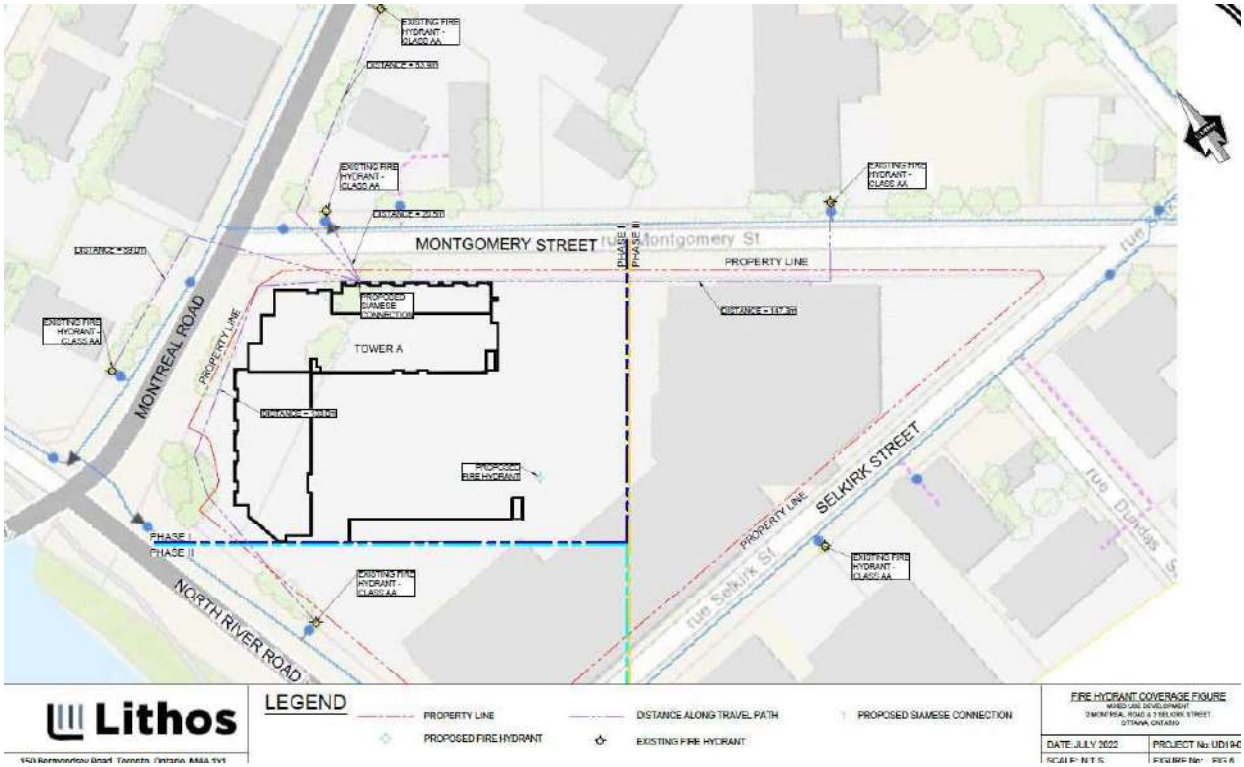
Hello Sarra

Please include the email in the appendix of the site servicing study in the next submission.

As per the boundary condition provided on July 25, available fire flow at 20 psi for connection 1 from 152 mm watermain on Montgomery Street: 94 L/s, assuming ground elevation of 56.6 m.

Further to the your request a multi hydrant analysis was performed for phase 1 building using the hydrant distance plan provided on July 26, 2022. The multi hydrant analysis suggested that the required fire demand of 116.67 L/s for phase 1 building can be met.

Please let me know if you have any questions.



Thanks
Nishant

From: sarrak@lithosgroup.ca <sarrak@lithosgroup.ca>
Sent: July 26, 2022 11:31 AM
To: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Cc: ginal@lithosgroup.ca
Subject: RE: 29 Selkirk St., OT - comment clarification

Hello Nishant,

Please see figure attached, as requested.

Kindly provide us with an update regarding the capacity of the existing municipal watermain infrastructure, once available.

Thank you,

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

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

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

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

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

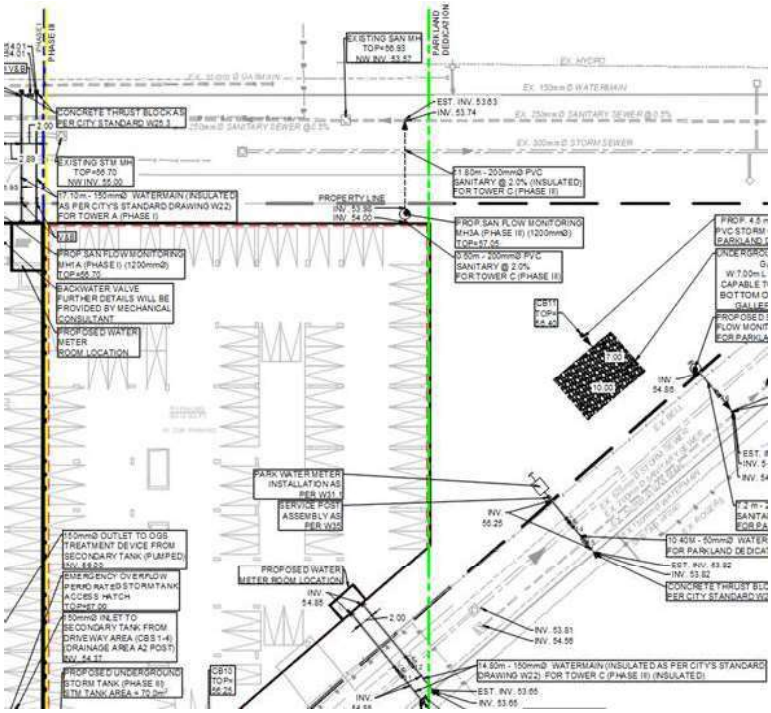
Total – 13.5L/s

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

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.**

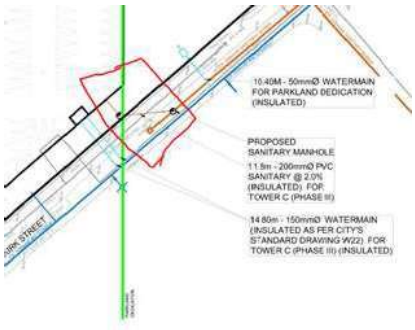
Thank you for your assistance.

Kind regards,

Sarra Karavasili, P.E., M.A.Sc.
Assistant Project Manager
Lithos Group Inc.
150 Bermondsey Rd, Unit #200
Toronto, Ontario M4A 1Y1
D: (647) 366-9610 x1
Main Office: (416) 750-7769
Sarrak@LithosGroup.ca
www.LithosGroup.ca

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

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

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 1,499.7m^2 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 501.4m^2 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.
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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
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

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

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
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

PATERSON GROUP

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 develpment.

The excavation footprint related to the proposed high-rise complex at the subject site is expected to encompass an area of approximately 13,200 m^2. 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 x 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 m^2 and a precipitation depth of 2.63 x 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.

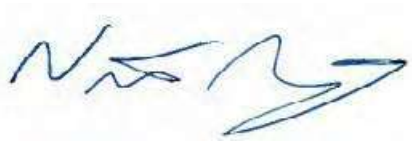
5.0 STATEMENT OF LIMITATIONS

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

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patersongroup

Geotechnical Investigation

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

Prepared For

Main and Main Developments Inc.

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.

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

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

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

Based on the results of the shear wave velocity testing, the average shear wave velocity, Vs_{30}, 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 available for exterior backfill and the foundation wall will bast as a blind-sided pour against a shoring system. It is recommended that the drainage system consist of the following:

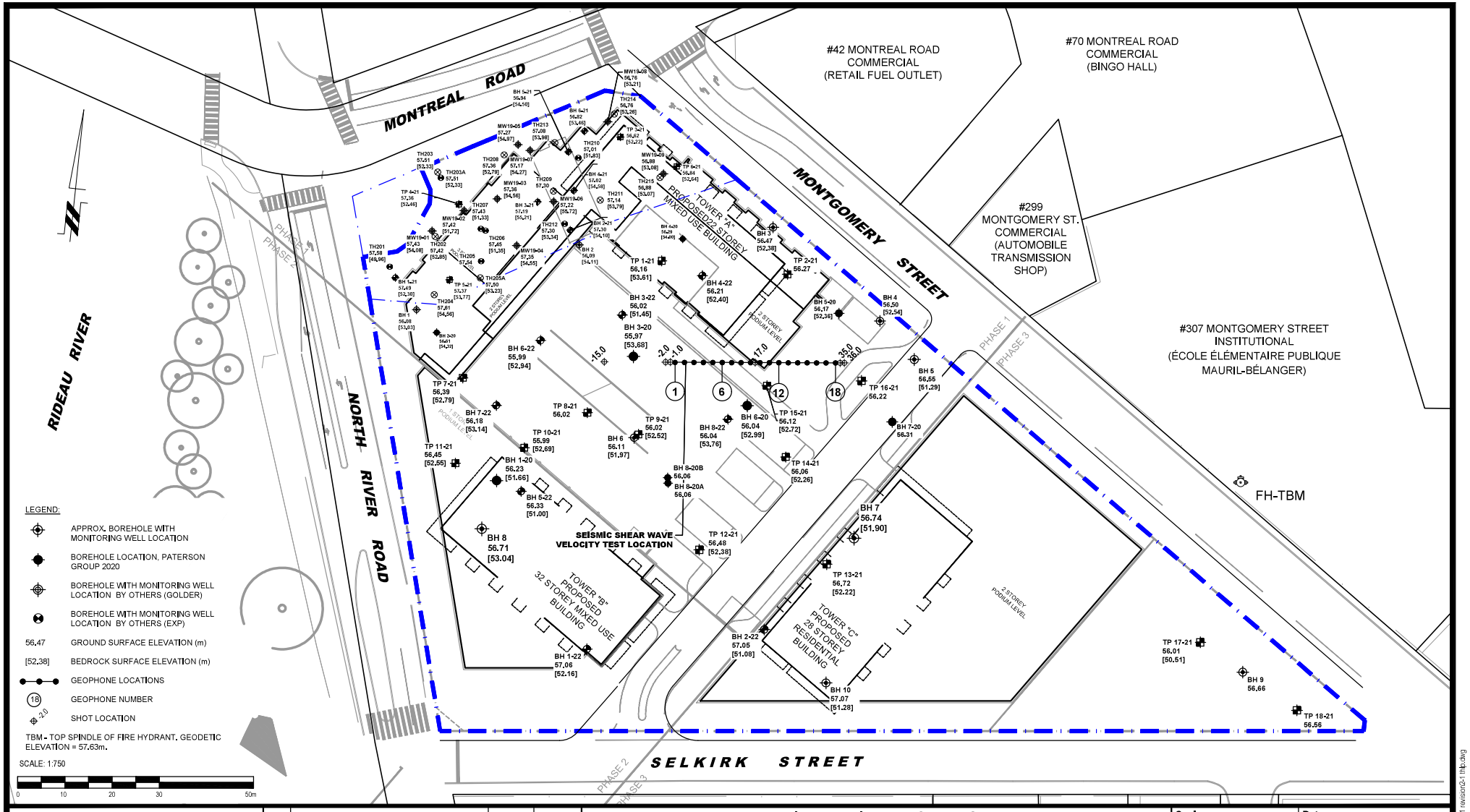
- A composite drainage membrane (DeltaDrain 6000, MiraDrain G100N or equivalent) should be placed against the shoring system and bedrock excavation face from the finished ground surface to the top of the footing.

- 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

MAIN AND MAIN DEVELOPMENTS

GEOTECHNICAL INVESTIGATION
3-33 SELKIRK STREET AND 2 MONTREAL ROAD

OTTAWA, ONTARIO

Title:

TEST HOLE LOCATION PLAN

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

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Goodkey, Weedmark & Associates Limited

Consulting Engineers

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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 Rouhkhian (Riverain Development Inc.)

Goodkey Weedmark 65 years 1956 – 2021

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 Rouhkhian (Riverain Development Inc.)

Goodkey Weedmark 65 years 1956 – 2021

rla/architecture

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 with 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

56 Beech Street, Ottawa, Ontario K1S 3J6
t.613.724.9932 f.613.724.1209 www.rlaarchitecture.ca

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:

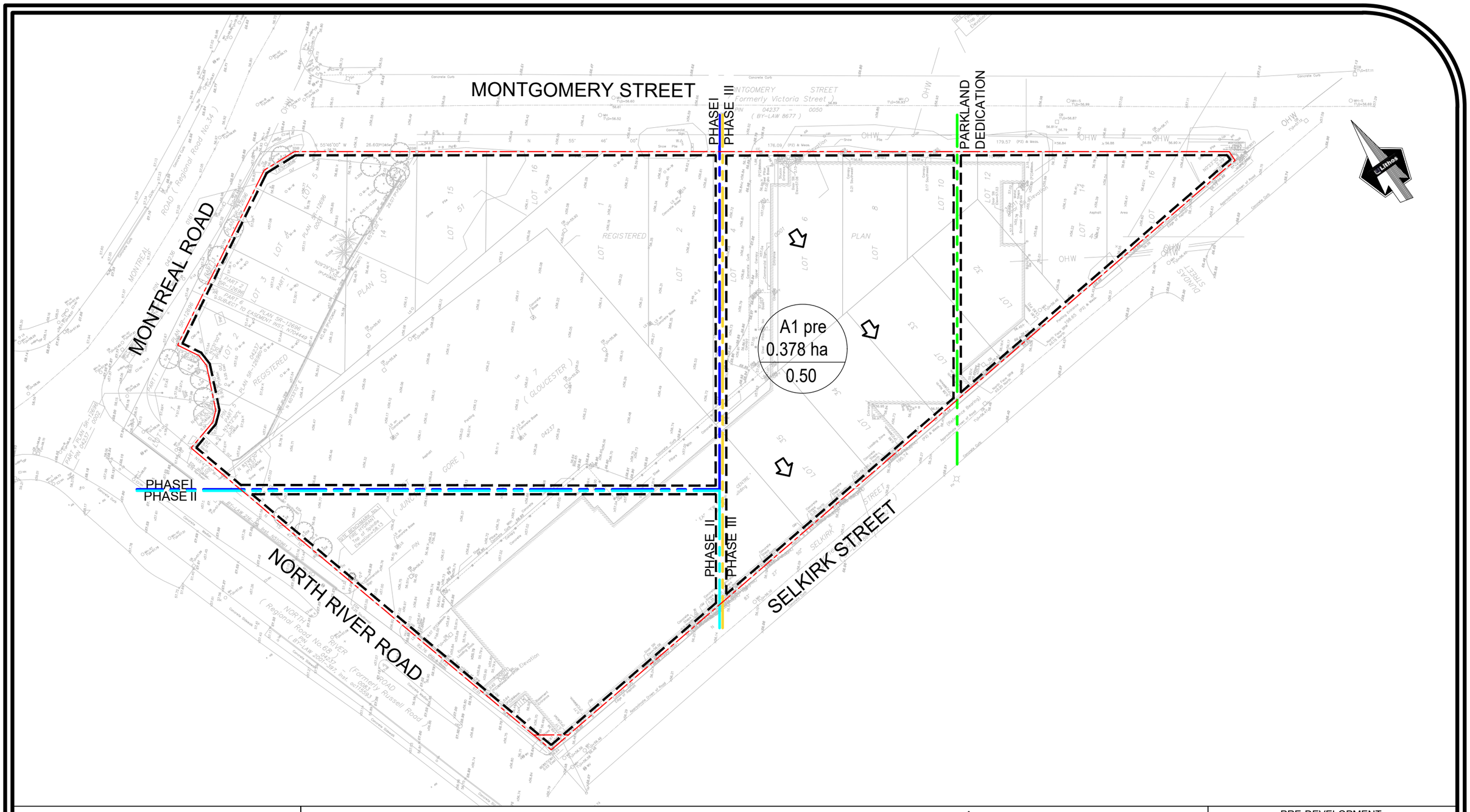
The Conservation Authority has no objection to the minor system design, provided approval is obtained from the City (pumping, mechanical, sewer capacity, maintenance (etc.). The water quality objective is also acceptable. Have you considered other stormwater measures such as roof top storage and LID 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

Rideau Valley Conservation Authority
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

Appendix C

Storm Analysis



Lithos

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
300 MONTGOMERY STREET
OTTAWA, ONTARIO

DATE:OCTOBER 2023	PROJECT No: UD23-002
SCALE: N.T.S.	FIGURE No: DAP 1

Lithos

Prepared By: Dimitra Savvaoglou, P.Eng., M.A.Sc.
Reviewed by: Gina Liaropoulou, P.Eng., M.A.Sc.

Rational Method
Pre-Development Flow Calculation

300 Montgomery Street, Ottawa
File No. UD23-002
City of Ottawa
Date: October 2023

Area Number	Area (ha)	Actual Coefficient	Design Coefficient
A1 Pre (Phase III)	0.378	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

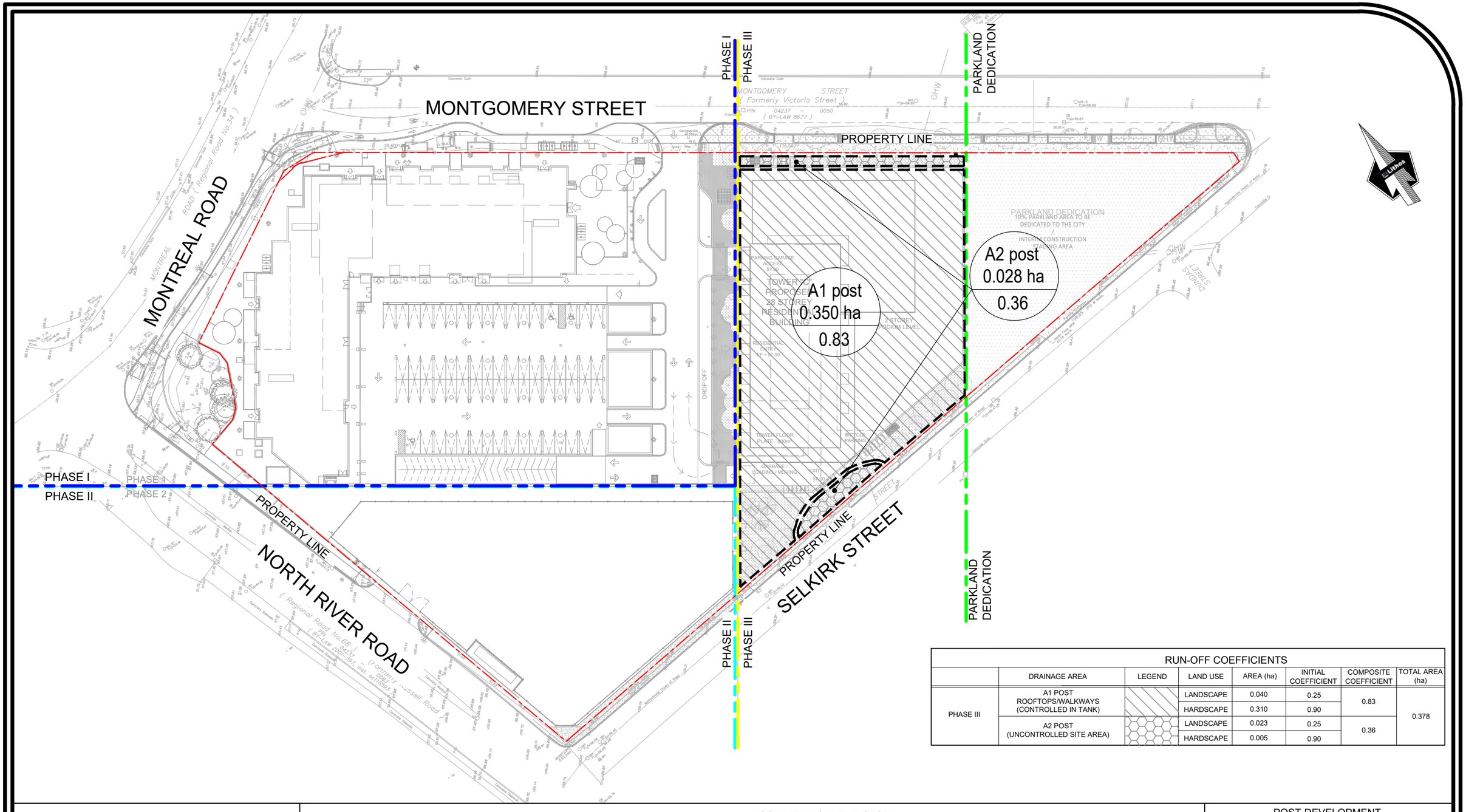
Area Number	A (ha)	C	AC	Tc (min.)	I (mm/h)	Q (m^3/s)	Q (L/s)
A1 Pre (Phase III)	0.378	0.50	0.20	20	52.0	0.027	27.3

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 III)	0.378	0.50	0.20	20	70.3	0.037	36.9

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 III)	0.378	0.50	0.20	20	120.0	0.063	63.0



RUN-OFF COEFFICIENTS							
	DRAINAGE AREA	LEGEND	LAND USE	AREA (ha)	INITIAL COEFFICIENT	COMPOSITE COEFFICIENT	TOTAL AREA (ha)
PHASE III	A1 POST ROOFTOPS/WALKWAYS (CONTROLLED IN TANK)		LANDSCAPE	0.040	0.25	0.83	0.378
			HARDSCAPE	0.310	0.90		
	A2 POST (UNCONTROLLED SITE AREA)		LANDSCAPE	0.023	0.25	0.36	
			HARDSCAPE	0.005	0.90		

Lithos

150 Bermondsey Road, Toronto, Ontario M4A 1Y1

LEGEND

A1 post / 1.693 ha / 0.90

- 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
300 MONTGOMERY STREET
OTTAWA, ONTARIO

DATE: OCTOBER 2023	PROJECT No: UD23-002
SCALE: N.T.S.	FIGURE No: DAP 2

Lithos

Modified Rational Method - Two Year Storm - Phase III

Site Flow and Storage Summary

300 Montgomery Street, Ottawa

Date: October 2023

Drainage Area A1 Post

Phase III - Rooftops/Terraces/Walkways - Controlled in Tank

Area (A6) =	**0.350**	ha
"C" =	**0.83**	
AC6=	**0.29**	
Tc =	**10.0**	min
Time Increment =	**5.0**	min
Max. Release Rate =	**61.6**	L/s

Drainage Area A2 Post

Phase III - Uncontrolled

Area (A7) =	**0.028**	ha
"C" =	**0.36**	
AC7=	**0.01**	
Tc =	**10.0**	min
Time Increment =	**5.0**	min
Max. Release Rate =	**2.2**	L/s

Storage Tank

A1 Post

Design Controlled Release Rate (100mm orifice plate) (Tank-Phase III) =	14.7	L/s
Max. Storage Tank Size =	45.6	m^3
Storage Tank footprint Area =	100.4	m^2

Total Site

Total Site Realease Rate (towards Selkirk Street)= "Storage Tank"

5-yr Pre-Development Site Release Rate =	**36.9**	**L/s**
Groundwater release rate=	**1.0**	**L/s**
Uncontrolled Flow =	**2.2**	**L/s**
Allowable Controlled Release Rate =	**33.7**	**L/s**
Site Controlled Release Rate (Tank-Phase III) =	14.7	L/s
Total Site Release Rate Achieved=	**17.9**	**L/s**

2-Year Design Storm

a=	732.95
b=	6.199
c=	0.810
I =	a / (TC + b)c

Tributary Area (A1)	ha	C
Landsc.Area (A1)	0.040	0.25
Hardsc. Area (A1)	0.310	0.90
Total	0.350	0.83

Tributary Area (A2)	ha	C
Landsc.Area (A2)	0.023	0.25
Hardsc. Area (A2)	0.005	0.90
Total	0.028	0.36

Phase III

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Time	**Rainfall Intensity**	**Storm Runoff (A6 Post)**	**Runoff Volume (A6 Post)**	**Storm Runoff (A7 Post)**	**Runoff Volume (A7 Post)**	**Total Storm Runoff Volume**	**Released Volume**	**Storage Volume**	**Storage Depth of Tank**
(min)	**(mm/hr)**	**(m^3/s)**	**(m^3)**	**(m^3/s)**	**(m^3)**	**(m^3)**	**(m^3)**	**(m^3)**	**(m)**
10.0	76.8	0.062	36.94	0.00	1.31	36.94	4.41	32.53	0.32
15.0	61.8	0.050	44.57	0.00	1.58	44.57	6.62	37.95	0.38
20.0	52.0	0.042	50.06	0.00	1.78	50.06	8.82	41.23	0.41
25.0	45.2	0.036	54.32	0.00	1.93	54.32	11.03	43.29	0.43
30.0	40.0	0.032	57.78	0.00	2.05	57.78	13.23	44.55	0.44
35.0	36.1	0.029	60.71	0.00	2.16	60.71	15.44	45.27	0.45
40.0	32.9	0.026	63.23	0.00	2.25	63.23	17.64	45.59	0.45
45.0	30.2	0.024	65.46	0.00	2.33	65.46	19.85	45.61	0.45
50.0	28.0	0.022	67.44	0.00	2.40	67.44	22.05	45.39	0.45
55.0	26.2	0.021	69.24	0.00	2.46	69.24	24.26	44.98	0.45
60.0	24.6	0.020	70.88	0.00	2.52	70.88	26.46	44.41	0.44
65.0	23.2	0.019	72.38	0.00	2.57	72.38	28.67	43.71	0.44
70.0	21.9	0.018	73.78	0.00	2.62	73.78	30.87	42.91	0.43
75.0	20.8	0.017	75.09	0.00	2.67	75.09	33.08	42.01	0.42
80.0	19.8	0.016	76.31	0.00	2.71	76.31	35.29	41.02	0.41
85.0	18.9	0.015	77.46	0.00	2.75	77.46	37.49	39.97	0.40
90.0	18.1	0.015	78.54	0.00	2.79	78.54	39.70	38.85	0.39
95.0	17.4	0.014	79.57	0.00	2.83	79.57	41.90	37.67	0.38
100.0	16.7	0.013	80.55	0.00	2.86	80.55	44.11	36.45	0.36
105.0	16.1	0.013	81.49	0.00	2.90	81.49	46.31	35.17	0.35
110.0	15.6	0.012	82.38	0.00	2.93	82.38	48.52	33.86	0.34
115.0	15.0	0.012	83.23	0.00	2.96	83.23	50.72	32.51	0.32
120.0	14.6	0.012	84.05	0.00	2.99	84.05	52.93	31.13	0.31
125.0	14.1	0.011	84.84	0.00	3.01	84.84	55.13	29.71	0.30
130.0	13.7	0.011	85.60	0.00	3.04	85.60	57.34	28.27	0.28
135.0	13.3	0.011	86.34	0.00	3.07	86.34	59.54	26.79	0.27
140.0	12.9	0.010	87.05	0.00	3.09	87.05	61.75	25.30	0.25
145.0	12.6	0.010	87.73	0.00	3.12	87.73	63.96	23.78	0.24
150.0	12.3	0.010	88.40	0.00	3.14	88.40	66.16	22.24	0.22
155.0	11.9	0.010	89.04	0.00	3.16	89.04	68.37	20.68	0.21
160.0	11.7	0.009	89.67	0.00	3.19	89.67	70.57	19.10	0.19
165.0	11.4	0.009	90.28	0.00	3.21	90.28	72.78	17.50	0.17
170.0	11.1	0.009	90.87	0.00	3.23	90.87	74.98	15.89	0.16
175.0	10.9	0.009	91.45	0.00	3.25	91.45	77.19	14.26	0.14
180.0	10.6	0.009	92.01	0.00	3.27	92.01	79.39	12.62	0.13
185.0	10.4	0.008	92.56	0.00	3.29	92.56	81.60	10.96	0.11
190.0	10.2	0.008	93.09	0.00	3.31	93.09	83.80	9.29	0.09
195.0	10.0	0.008	93.61	0.00	3.33	93.61	86.01	7.60	0.08
200.0	9.8	0.008	94.12	0.00	3.34	94.12	88.21	5.91	0.06
205.0	9.6	0.008	94.62	0.00	3.36	94.62	90.42	4.20	0.04
210.0	9.4	0.008	95.11	0.00	3.38	95.11	92.62	2.48	0.02
215.0	9.2	0.007	95.59	0.00	3.40	95.59	94.83	0.76	0.01
220.0	9.1	0.007	96.05	0.00	3.41	96.05	97.04	0.00	0.00
225.0	8.9	0.007	96.51	0.00	3.43	96.51	99.24	0.00	0.00
230.0	8.8	0.007	96.96	0.00	3.45	96.96	101.45	0.00	0.00
235.0	8.6	0.007	97.40	0.00	3.46	97.40	103.65	0.00	0.00
240.0	8.5	0.007	97.84	0.00	3.48	97.84	105.86	0.00	0.00
245.0	8.3	0.007	98.26	0.00	3.49	98.26	108.06	0.00	0.00
250.0	8.2	0.007	98.68	0.00	3.51	98.68	110.27	0.00	0.00
255.0	8.1	0.006	99.09	0.00	3.52	99.09	112.47	0.00	0.00
260.0	8.0	0.006	99.49	0.00	3.54	99.49	114.68	0.00	0.00
265.0	7.8	0.006	99.89	0.00	3.55	99.89	116.88	0.00	0.00
270.0	7.7	0.006	100.28	0.00	3.56	100.28	119.09	0.00	0.00
275.0	7.6	0.006	100.66	0.00	3.58	100.66	121.29	0.00	0.00
280.0	7.5	0.006	101.04	0.00	3.59	101.04	123.50	0.00	0.00
285.0	7.4	0.006	101.41	0.00	3.60	101.41	125.70	0.00	0.00
290.0	7.3	0.006	101.78	0.00	3.62	101.78	127.91	0.00	0.00
295.0	7.2	0.006	102.14	0.00	3.63	102.14	130.12	0.00	0.00
300.0	7.1	0.006	102.49	0.00	3.64	102.49	132.32	0.00	0.00

Lithos

Modified Rational Method - Five Year Storm - Phase III

Site Flow and Storage Summary

300 Montgomery Street, Ottawa

Date: October 2023

Drainage Area A1 Post

Phase III - Rooftops/Terraces/Walkways - Controlled in Tank

Area (A6) =	**0.350**	ha
"C" =	**0.83**	
AC6=	**0.29**	
Tc =	**10.0**	min
Time Increment =	**5.0**	min
Max. Release Rate =	**83.5**	L/s

Drainage Area A2 Post

Phase III - Uncontrolled

Area (A7) =	**0.028**	ha
"C" =	**0.36**	
AC7=	**0.01**	
Tc =	**10.0**	min
Time Increment =	**5.0**	min
Max. Release Rate =	**3.0**	L/s

Storage Tank

A1 Post

Design Controlled Release Rate (100mm orifice plate) (Tank-Phase III) =	17.5	L/s
Max. Storage Tank Size =	64.3	m^3
Storage Tank footprint Area =	100.4	m^2

Total Site

Total Site Realease Rate (towards Selkirk Street)= "Storage Tank"

5-yr Pre-Development Site Release Rate =	**36.9**	**L/s**
Groundwater release rate=	**1.0**	**L/s**
Uncontrolled Flow =	**3.0**	**L/s**
Allowable Controlled Release Rate =	**32.9**	**L/s**
Site Controlled Release Rate (Tank-Phase III) =	17.5	L/s
Total Site Release Rate Achieved=	**21.5**	**L/s**

5-Year Design Storm

a=	998.07
b=	6.053
c=	0.814
I =	a / (TC + b)c

Tributary Area (A1)	ha	C
Landsc.Area (A1)	0.040	0.25
Hardsc. Area (A1)	0.310	0.90
Total	0.350	0.83

Tributary Area (A2)	ha	C
Landsc.Area (A2)	0.023	0.25
Hardsc. Area (A2)	0.005	0.90
Total	0.028	0.36

Phase III

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Time	**Rainfall Intensity**	**Storm Runoff (A6 Post)**	**Runoff Volume (A6 Post)**	**Storm Runoff (A7 Post)**	**Runoff Volume (A7 Post)**	**Total Storm Runoff Volume**	**Released Volume**	**Storage Volume**	**Storage Depth of Tank**
(min)	**(mm/hr)**	**(m^3/s)**	**(m^3)**	**(m^3/s)**	**(m^3)**	**(m^3)**	**(m^3)**	**(m^3)**	**(m)**
10.0	104.2	0.084	50.12	0.00	1.78	50.12	5.26	44.86	0.45
15.0	83.6	0.067	60.29	0.00	2.14	60.29	7.89	52.40	0.52
20.0	70.3	0.056	67.58	0.00	2.40	67.58	10.52	57.06	0.57
25.0	60.9	0.049	73.23	0.00	2.60	73.23	13.15	60.08	0.60
30.0	53.9	0.043	77.82	0.00	2.77	77.82	15.78	62.04	0.62
35.0	48.5	0.039	81.68	0.00	2.90	81.68	18.41	63.27	0.63
40.0	44.2	0.035	85.01	0.00	3.02	85.01	21.04	63.97	0.64
45.0	40.6	0.033	87.94	0.00	3.12	87.94	23.67	64.27	0.64
50.0	37.7	0.030	90.56	0.00	3.22	90.56	26.30	64.26	0.64
55.0	35.1	0.028	92.92	0.00	3.30	92.92	28.93	63.99	0.64
60.0	32.9	0.026	95.08	0.00	3.38	95.08	31.56	63.52	0.63
65.0	31.0	0.025	97.06	0.00	3.45	97.06	34.19	62.87	0.63
70.0	29.4	0.024	98.90	0.00	3.51	98.90	36.82	62.08	0.62
75.0	27.9	0.022	100.61	0.00	3.58	100.61	39.45	61.16	0.61
80.0	26.6	0.021	102.21	0.00	3.63	102.21	42.08	60.13	0.60
85.0	25.4	0.020	103.72	0.00	3.69	103.72	44.71	59.01	0.59
90.0	24.3	0.019	105.15	0.00	3.74	105.15	47.34	57.81	0.58
95.0	23.3	0.019	106.50	0.00	3.78	106.50	49.97	56.53	0.56
100.0	22.4	0.018	107.78	0.00	3.83	107.78	52.60	55.18	0.55
105.0	21.6	0.017	109.01	0.00	3.87	109.01	55.23	53.77	0.54
110.0	20.8	0.017	110.18	0.00	3.91	110.18	57.86	52.31	0.52
115.0	20.1	0.016	111.30	0.00	3.95	111.30	60.49	50.80	0.51
120.0	19.5	0.016	112.37	0.00	3.99	112.37	63.12	49.25	0.49
125.0	18.9	0.015	113.40	0.00	4.03	113.40	65.75	47.65	0.47
130.0	18.3	0.015	114.40	0.00	4.07	114.40	68.38	46.02	0.46
135.0	17.8	0.014	115.36	0.00	4.10	115.36	71.01	44.35	0.44
140.0	17.3	0.014	116.29	0.00	4.13	116.29	73.64	42.65	0.42
145.0	16.8	0.013	117.19	0.00	4.16	117.19	76.27	40.92	0.41
150.0	16.4	0.013	118.06	0.00	4.19	118.06	78.90	39.16	0.39
155.0	15.9	0.013	118.90	0.00	4.22	118.90	81.53	37.37	0.37
160.0	15.6	0.012	119.72	0.00	4.25	119.72	84.16	35.56	0.35
165.0	15.2	0.012	120.51	0.00	4.28	120.51	86.79	33.72	0.34
170.0	14.8	0.012	121.29	0.00	4.31	121.29	89.42	31.87	0.32
175.0	14.5	0.012	122.04	0.00	4.34	122.04	92.05	29.99	0.30
180.0	14.2	0.011	122.77	0.00	4.36	122.77	94.68	28.09	0.28
185.0	13.9	0.011	123.49	0.00	4.39	123.49	97.31	26.18	0.26
190.0	13.6	0.011	124.19	0.00	4.41	124.19	99.94	24.25	0.24
195.0	13.3	0.011	124.87	0.00	4.44	124.87	102.57	22.30	0.22
200.0	13.0	0.010	125.54	0.00	4.46	125.54	105.20	20.34	0.20
205.0	12.8	0.010	126.19	0.00	4.48	126.19	107.83	18.36	0.18
210.0	12.6	0.010	126.83	0.00	4.51	126.83	110.46	16.36	0.16
215.0	12.3	0.010	127.45	0.00	4.53	127.45	113.09	14.36	0.14
220.0	12.1	0.010	128.06	0.00	4.55	128.06	115.72	12.34	0.12
225.0	11.9	0.010	128.66	0.00	4.57	128.66	118.35	10.31	0.10
230.0	11.7	0.009	129.25	0.00	4.59	129.25	120.98	8.27	0.08
235.0	11.5	0.009	129.82	0.00	4.61	129.82	123.61	6.21	0.06
240.0	11.3	0.009	130.39	0.00	4.63	130.39	126.24	4.15	0.04
245.0	11.1	0.009	130.94	0.00	4.65	130.94	128.87	2.07	0.02
250.0	10.9	0.009	131.49	0.00	4.67	131.49	131.50	0.00	0.00
255.0	10.8	0.009	132.02	0.00	4.69	132.02	134.13	0.00	0.00
260.0	10.6	0.008	132.55	0.00	4.71	132.55	136.76	0.00	0.00
265.0	10.4	0.008	133.06	0.00	4.73	133.06	139.39	0.00	0.00
270.0	10.3	0.008	133.57	0.00	4.75	133.57	142.02	0.00	0.00
275.0	10.1	0.008	134.07	0.00	4.76	134.07	144.65	0.00	0.00
280.0	10.0	0.008	134.56	0.00	4.78	134.56	147.28	0.00	0.00
285.0	9.9	0.008	135.05	0.00	4.80	135.05	149.91	0.00	0.00
290.0	9.7	0.008	135.53	0.00	4.82	135.53	152.54	0.00	0.00
295.0	9.6	0.008	136.00	0.00	4.83	136.00	155.17	0.00	0.00
300.0	9.5	0.008	136.46	0.00	4.85	136.46	157.80	0.00	0.00

Lithos

Modified Rational Method - Hundred Year Storm - Phase III

Site Flow and Storage Summary

300 Montgomery Street, Ottawa

Date: October 2023

*** C value for the 100 year storm event is increased by 25%, with a maximum of 1.0 per City's Sewer Design Guidelines**

Drainage Area A1 Post

Phase III - Rooftops/Terraces/Walkways - Controlled in Tank

Area (A1) =	**0.350**	ha
"C" =	**1.00**	
AC1=	**0.35**	
Tc =	**10.0**	min
Time Increment =	**5.0**	min
Max. Release Rate =	**173.4**	L/s

Drainage Area A2 Post

Phase III - Uncontrolled

Area (A2) =	**0.028**	ha
"C" =	**0.45**	
AC2=	**0.01**	
Tc =	**10.0**	min
Time Increment =	**5.0**	min
Max. Release Rate =	**6.0**	L/s

Storage Tank

A1 Post

Design Controlled Release Rate (100mm orifice plate) (Tank-Phase III) =	26.6	L/s
Max. Storage Tank Size =	147.6	m^3
Storage Tank footprint Area =	100.4	m^2

Total Site

Total Site Realease Rate (towards Selkirk Street)= "Storage Tank"

5-yr Pre-Development Site Release Rate =	**36.9**	**L/s**
Groundwater release rate=	**1.0**	**L/s**
Uncontrolled Flow =	**6.0**	**L/s**
Allowable Controlled Release Rate =	**29.9**	**L/s**
Site Controlled Release Rate (Tank-Phase III) =	26.6	L/s
Total Site Release Rate Achieved=	**33.6**	**L/s**

100-Year Design Storm

a=	1735.69
b=	6.014
c=	0.820
I =	a / (TC + b)c

Tributary Area (A1)	ha	C
Landsc.Area (A1)	0.040	0.25
Hardsc. Area (A1)	0.310	0.90
Total	0.350	0.83

Tributary Area (A2)	ha	C
Landsc.Area (A2)	0.023	0.25
Hardsc. Area (A2)	0.005	0.90
Total	0.028	0.36

Phase III

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Time	**Rainfall Intensity**	**Storm Runoff (A1 Post)**	**Runoff Volume (A1 Post)**	**Storm Runoff (A2 Post)**	**Runoff Volume (A2 Post)**	**Total Storm Runoff Volume**	**Released Volume**	**Storage Volume**	**Storage Depth of Tank**
(min)	**(mm/hr)**	**(m^3/s)**	**(m^3)**	**(m^3/s)**	**(m^3)**	**(m^3)**	**(m^3)**	**(m^3)**	**(m)**
10.0	178.6	0.173	104.07	0.01	3.60	104.07	7.97	96.10	0.96
15.0	142.9	0.139	124.92	0.01	4.58	124.92	11.96	112.97	1.13
20.0	120.0	0.117	139.82	0.00	5.13	139.82	15.94	123.88	1.23
25.0	103.8	0.101	151.31	0.00	5.55	151.31	19.93	131.38	1.31
30.0	91.9	0.089	160.63	0.00	5.89	160.63	23.92	136.72	1.36
35.0	82.6	0.080	168.45	0.00	6.18	168.45	27.90	140.55	1.40
40.0	75.1	0.073	175.19	0.00	6.42	175.19	31.89	143.30	1.43
45.0	69.1	0.067	181.10	0.00	6.64	181.10	35.87	145.23	1.45
50.0	64.0	0.062	186.37	0.00	6.83	186.37	39.86	146.51	1.46
55.0	59.6	0.058	191.13	0.00	7.01	191.13	43.85	147.28	1.47
60.0	55.9	0.054	195.46	0.00	7.17	195.46	47.83	147.63	1.47
65.0	52.6	0.051	199.45	0.00	7.31	199.45	51.82	147.63	1.47
70.0	49.8	0.048	203.13	0.00	7.45	203.13	55.80	147.33	1.47
75.0	47.3	0.046	206.56	0.00	7.57	206.56	59.79	146.78	1.46
80.0	45.0	0.044	209.78	0.00	7.69	209.78	63.77	146.00	1.45
85.0	43.0	0.042	212.80	0.00	7.80	212.80	67.76	145.04	1.44
90.0	41.1	0.040	215.65	0.00	7.91	215.65	71.75	143.90	1.43
95.0	39.4	0.038	218.35	0.00	8.00	218.35	75.73	142.61	1.42
100.0	37.9	0.037	220.91	0.00	8.10	220.91	79.72	141.19	1.41
105.0	36.5	0.035	223.35	0.00	8.19	223.35	83.70	139.65	1.39
110.0	35.2	0.034	225.69	0.00	8.27	225.69	87.69	138.00	1.37
115.0	34.0	0.033	227.92	0.00	8.36	227.92	91.68	136.25	1.36
120.0	32.9	0.032	230.07	0.00	8.43	230.07	95.66	134.40	1.34
125.0	31.9	0.031	232.13	0.00	8.51	232.13	99.65	132.48	1.32
130.0	30.9	0.030	234.11	0.00	8.58	234.11	103.63	130.48	1.30
135.0	30.0	0.029	236.02	0.00	8.65	236.02	107.62	128.40	1.28
140.0	29.2	0.028	237.87	0.00	8.72	237.87	111.61	126.26	1.26
145.0	28.4	0.028	239.66	0.00	8.79	239.66	115.59	124.06	1.24
150.0	27.6	0.027	241.39	0.00	8.85	241.39	119.58	121.81	1.21
155.0	26.9	0.026	243.06	0.00	8.91	243.06	123.56	119.50	1.19
160.0	26.2	0.025	244.69	0.00	8.97	244.69	127.55	117.14	1.17
165.0	25.6	0.025	246.27	0.00	9.03	246.27	131.54	114.73	1.14
170.0	25.0	0.024	247.81	0.00	9.08	247.81	135.52	112.29	1.12
175.0	24.4	0.024	249.30	0.00	9.14	249.30	139.51	109.80	1.09
180.0	23.9	0.023	250.76	0.00	9.19	250.76	143.49	107.27	1.07
185.0	23.4	0.023	252.18	0.00	9.24	252.18	147.48	104.70	1.04
190.0	22.9	0.022	253.57	0.00	9.30	253.57	151.47	102.10	1.02
195.0	22.4	0.022	254.92	0.00	9.34	254.92	155.45	99.47	0.99
200.0	22.0	0.021	256.24	0.00	9.39	256.24	159.44	96.80	0.96
205.0	21.6	0.021	257.53	0.00	9.44	257.53	163.42	94.11	0.94
210.0	21.1	0.021	258.80	0.00	9.49	258.80	167.41	91.39	0.91
215.0	20.8	0.020	260.03	0.00	9.53	260.03	171.40	88.64	0.88
220.0	20.4	0.020	261.24	0.00	9.58	261.24	175.38	85.86	0.86
225.0	20.0	0.019	262.43	0.00	9.62	262.43	179.37	83.06	0.83
230.0	19.7	0.019	263.59	0.00	9.66	263.59	183.35	80.24	0.80
235.0	19.3	0.019	264.73	0.00	9.70	264.73	187.34	77.39	0.77
240.0	19.0	0.018	265.85	0.00	9.75	265.85	191.32	74.53	0.74
245.0	18.7	0.018	266.95	0.00	9.79	266.95	195.31	71.64	0.71
250.0	18.4	0.018	268.03	0.00	9.83	268.03	199.30	68.73	0.68
255.0	18.1	0.018	269.09	0.00	9.86	269.09	203.28	65.80	0.66
260.0	17.8	0.017	270.13	0.00	9.90	270.13	207.27	62.86	0.63
265.0	17.6	0.017	271.15	0.00	9.94	271.15	211.25	59.89	0.60
270.0	17.3	0.017	272.15	0.00	9.98	272.15	215.24	56.91	0.57
275.0	17.0	0.017	273.14	0.00	10.01	273.14	219.23	53.92	0.54
280.0	16.8	0.016	274.12	0.00	10.05	274.12	223.21	50.90	0.51
285.0	16.6	0.016	275.07	0.00	10.08	275.07	227.20	47.88	0.48
290.0	16.3	0.016	276.02	0.00	10.12	276.02	231.18	44.83	0.45
295.0	16.1	0.016	276.95	0.00	10.15	276.95	235.17	41.78	0.42
300.0	15.9	0.015	277.86	0.00	10.19	277.86	239.16	38.71	0.39

Lithos

Orifice Design - Phase III

300 Montgomery Street, Ottawa

File No. UD23-002

Date: October 2023

Prepared By: Dimitra Savvaoglou, P.Eng., M.A.Sc.

Reviewed by: Gina Liaropoulou, P.Eng., M.A.Sc.

Orifice Equation for 100mm Orifice Plate

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

100 yr event			**5 yr event**			**2 yr event**		
d=	100	mm	d=	100	mm	d=	100	mm
C=	0.63		C=	0.63		C=	0.63	
A=	0.008	m^2	A=	0.008	m^2	A=	0.008	m^2
g=	9.81	m/s^2	g=	9.81	m/s^2	g=	9.81	m/s^2
h=	1.47	m	h=	0.64	m	h=	0.45	m
Q=	**26.6**	**L/s**	**Q=**	**17.5**	**L/s**	**Q=**	**14.7**	**L/s**

Lithos

Water Quality Calculations

300 Montgomery Street, Ottawa
File No. UD23-002
Date: October 2023

Surface	Method	Effective TSS Removal	Area (ha)	% Area of Controlled Site
Rooftop/Walkways	Inherent	80%	0.350	100%
Total			0.350	100%

Note: Uncotrolled water does not account in the above calculation

MONTGOMERY STREET

MONTREAL ROAD

PHASE I

PHASE III

PHASE II

NORTH RIVER ROAD

SELKIRK STREET

PARKLAND DEDICATION

10% PARKLAND AREA TO BE DEDICATED TO THE CITY

FFE=57.00

TOWER "C" PROPOSED 28 STOREY RESIDENTIAL BUILDING

2 STOREY PODIUM LEVEL

PARKING GARAGE ACCESS 57.00

RESIDENTIAL ENTRY FF = 57.00

DROP OFF

FUTURE PHASE 2 32 STOREY BLDG. TOWER B

CONSTRUCTION STAGING

CONSTRUCTION STAGING ACCESS

EXISTING ENTRANCE TO REMAIN

PROPERTY LINE

CB1 TOP= 56.65

CB2 TOP= 56.65

CB3 TOP= 56.65

CB4 TOP=57.80

CB5 TOP=57.13

CB6 TOP= 56.90

CB7 TOP= 56.90

CB11 TOP= 56.35

CB12 TOP= 56.40

56.72

56.88

56.95

57.03

57.10

56.65

57.00

56.90

56.43

56.37

TY OWNED ARKLAND

LEGEND

PROPERTY LINE

OVERLAND FLOW ROUTE

57.50× PROPOSED GRADES

BUILDING'S ENTRANCES

Lithos

150 Bermondsey Road, Toronto, Ontario M4A 1Y1

OVERLAND FLOW ROUTE

RESIDENTIAL USE DEVELOPMENT

300 MONTGOMERY STREET

OTTAWA, ONTARIO

DATE: OCTOBER 2023	PROJECT No: UD23-002
SCALE: N.T.S.	FIGURE No: FIG 4

Appendix D

Sanitary Data Analysis

Lithos

SANITARY SEWER DESIGN SHEET
(towards Montgomery Street and North River Road)
300 MONTGOMERY STREET
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	HARMON PEAKING FACTOR	RES. PEAK FLOW	COMMERCIAL/ PARK AREA	AVERAGE COMMERCIAL FLOW @50000/L/ha/d	TOTAL ACCUM. AREA	INFILT. @ 0.28 L/s/ha.	TOTAL DESIGN FLOW	PIPE LENGTH	PIPE DIA.	SLOPE	FULL FLOW CAPACITY n = 0.013	% of DESIGN CAPACITY
	(ha.)					population	(L/s)		(L/s)	(ha.)	(L/s)	(ha.)	(ha.)	(L/s)	(m)	(mm)	(%)	(L/sec)	(%)
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	0.338	61	279	93	0	586	1.90	3.94	7.48	0.05	0.03	0.34	0.09	7.60	12.90	200	2.0%	46.38	16.38%
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 =	**20.27**					
										NET FLOW TOWARDS MONTGOMERY STREET				19.43					

Average Residential Flow Rate - 280 Litres / capita / day
Average Daily Flow Commercial - 50,000 Litres / gross ha / day
Site Area: **0.378** **Ha**

Infiltration Allowance (Dry Weather) - 0.05 Litres / s / grosss ha
Infiltration Allowance (Wet Weather) - 0.28 Litres / s / grosss ha
Infiltration Allowance (Total I/I) - 0.33 Litres / s / grosss ha
Peaking Factor = $1 + [14 / (4 + P^{0.5})]$, P=Population in thousands

Lithos

Prepared by: Dimitra Savvaoglou, P.Eng., M.A.Sc.
Reviewed by: Sarra Karavasili, P.Eng., M.A.Sc.
Date: October 2023

Project: 300 Montgomery Street, OT
Project: UD23-002
City of Ottawa

Sheet 1 OF 1

Appendix E

Water Data Analysis

FIRE FLOW DEMAND

300 MONTGOMERY STREET
File No: UD23-002
Date: October 2023
Prepared by: Dimitra Savvaoglou, P. Eng. M.A.Sc.
Reviewed By: Sarra Karavasili, P.Eng., M.A.Sc.

Fire Flow Calculation

Tower C

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 6=	729.38	m^2	100%
Level 5=	729.38	m^2	25%
Level 7=	729.38	m^2	25%
=	1,094.1	sq.m.	
F =	5,821.50	L/min	*F(No.1) = 220C√A*
F =	6,000	L/min	*F(No.1) Round to nearest 1000 l/min*

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

2 Occupancy Reduction
25% reduction for non-combustible occupancy
F = 4500 L/min *F(No.2) = F(No.1) x occupancy reduction/charge(%)*

3 Sprinkler Reduction
30% Reduction for NFPA Sprinkler System
F = 3150 l/min *F(No.3) = F(No.2) x sprinkler reduction(%)*

4 Separation Charge

10%	West	20.1-30m
0%	North	Road
0%	South	Road
0%	East	Road
10%	Total Separation Charge	

F = 450.00 L/min *F (No.4) = F(No.2) x separation charge(%)*
F = 3,600.00 L/min *F (tot) = F(No.3) + F(No.4)*
F = 4,000 L/min *F(tot) Round to nearest 1000 l/min*
66.67 L/s
F = 1057 US GPM

Domestic Flow Calculations

Population=	489	Persons		
Commercial Area =	0.0	m^2		
Average Day Demand (Residential) =	350.0	L/person/day		
Average Day Demand (Commercial) =	2.5	$L/m^2/day$	(OBC)	1 US Gallon=3.785 L
Average Residential Water Demand=	1.98	L/s		
	31	US GPM		1 US GPM=15.852L/s
Average Commercial Water Demand=	0.00	L/s		
	0	US GPM		
Average Day Demand (Total) =	1.98	L/s		
	31	US GPM		

Max. Daily Residential Demand Peaking Factor= 2.75
Max. Daily Commercial Demand Peaking Factor = 2.75
Max. Daily Demand = 5.45 L/s = 86 US GPM
or
Max. Hourly Residential Demand Peaking Factor = 4.13
Max. Hourly Commercial Demand Peaking Factor = 4.1
Max. Hourly Demand = 8.18 L/s = 130 US GPM

Max Daily Demand = 5.45 L/s
Fire Flow = 66.67 L/s

Required 'Design' Flow = 72.12 L/s
1143 US GPM

Note: Required 'Design' Flow is the maximum of either:
1) Fire Flow + Maximum Daily Demand
2) Maximum Hourly Demand

MONTGOMERY STREET

EX. 150mmØ WATERMAIN

EX. 150mmØ WATERMAIN

EXISTING FIRE HYDRANT - CLASS AA

EXISTING FIRE HYDRANT - CLASS AA

20.5

PROPOSED SIAMESE CONNECTION

PROPERTY LINE

PHASE I

PHASE III

MONTREAL ROAD

EX. 300mmØ WATERMAIN

PROPERTY LINE

TOWER A

2 STOREY PODIUM LEVEL

PARKLAND DEDICATION (10% = 1,693m²)

EX. 150mmØ WATERMAIN

EX. 300mmØ WATERMAIN

EX. 200mmØ WATERMAIN

CITY OWNED PARKLAND

3 STOREY PODIUM LEVEL

COMMERCIAL ENTRY

TOWER "C" PROPOSED 28 STOREY RESIDENTIAL BUILDING

TOWER C

2 STOREY PODIUM LEVEL

RESIDENTIAL ENTRY FF = 57.00

PROPOSED FIRE HYDRANT

PROPOSED SIAMESE CONNECTION

PROPERTY LINE

PHASE I

PHASE II

PROPERTY LINE

EX. 200mmØ WATERMAIN

32.9

EXISTING FIRE HYDRANT - CLASS AA

1 STOREY PODIUM LEVEL

EXISTING FIRE HYDRANT - CLASS AA

TOWER "B"

TOWER B

32 STOREY MIXED USE BUILDING

1 STOREY PODIUM LEVEL

NORTH RIVER ROAD

EX. 150mmØ WATERMAIN

SELKIRK STREET

PHASE II

PHASE III

LEGEND

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

Lithos

150 Bermondsey Road, Toronto, Ontario M4A 1Y1

FIRE HYDRANT COVERAGE FIGURE

RESIDENTIAL USE DEVELOPMENT
300 MONTGOMERY STREET
OTTAWA, ONTARIO

DATE: OCTOBER 2023	PROJECT No: UD23-002
SCALE: N.T.S.	FIGURE No: FIG 5