Lithos

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UD24-013

Functional Servicing and Stormwater Management Report

Project: 45 Grenoble Drive, TO
Client: Davad Investments Inc.

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FSR/SWM Report	December 18th, 2024	Issued for Zoning Application
FSR/SWM Report	October 20th,2025	Issued for Zoning Application

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Executive Summary

Lithos Group Inc. (Lithos) was retained by Davad Investments Inc. (the "Owner") to prepare a Functional Servicing and Stormwater Management (FSR-SWM) Report in support of Zoning By-Law Amendment (ZBA) Application for a proposed residential development comprised by an existing 28-storey residential building which will be maintained and a proposed 40-storey residential building at 45 Grenoble Drive, in the City of Toronto (the "City"). The following is a summary of our conclusions:

Storm Drainage

A detailed Stormwater Management Report (Phase II) will be prepared during the future Site Plan Application stage. The stormwater discharge from the reconstructed portion of the residential development will be controlled to the 2-year pre-development flow and will be connected to the existing 450mm diameter storm sewer along Grenoble Drive, flowing south. In order to attain the target flows and meet the City's Wet Weather Flow Management Guidelines (WWFMG), quantity controls will be utilized and up to 87.2 m^3 of on-site storage will be required for the proposed residential development. In addition, the storm drainage pattern from the existing 28-storey residential building will be maintained and will not negatively affect the existing municipal storm network along Grenoble Drive, which consists of a 300mm diameter storm sewer and 600mm diameter storm sewer. The stormwater management (SWM) system will be designed to provide enhanced level (Level 1) water quality treatment, as specified by the Ministry of Environment, Conversation and Parks (MECP). As part of the future Site Plan Application, a detailed analysis will be provided to assess the water quality on-site and determine additional measures in order to achieve a minimum Total Suspended Solids (TSS) removal of 80%.

Sanitary Sewers

The proposed development will be connected to the existing 250 mm diameter sanitary sewer on Grenoble Drive flowing south, through a 200 mm diameter sanitary sewer lateral connection, with a minimum grade of 2.00% (or equivalent pipe design). The additional net discharge flow from the entire property (proposed and existing development), is anticipated at approximately 8.73 L/s.

According to the "Downstream Sanitary Capacity Analysis Report", prepared by Lithos Group Inc., dated October 2025, the analysis of the external sanitary drainage area indicates that Criteria 1 and 2 (of Table 1: Capacity Criteria for Sanitary and Combined Sewers, City's Sanitary Sewer Capacity Assessment Guidelines) have been achieved and the proposed site does not affect flow conditions downstream, while the existing sanitary sewer infrastructure can support the proposed development.

Water Supply

The proposed building will exceed a height of 84.0m, and according to the Ontario Building Code (OBC), an additional fire line will be required, to support the proposed development's sprinkler system. Therefore, two (2) separate fire service connections will be provided for the proposed development.

The main fire and domestic water services for the new building will be connected to the existing 300 mm diameter watermain located on the east side of Grenoble Drive. The additional fire line and the water apply for the existing building (which will be maintained) will be connected to the existing 400 mm diameter watermain on the north side of Grenoble Drive.

It is anticipated that a total design flow of 106.68 L/s and 214.00 L/s will be required to support the proposed development and the existing building, respectively. The results of the hydrant flow tests, prepared by Lithos, dated June 7, 2024, reveal that the municipal existing water infrastructure abutting the subject site will be able to support both the proposed and existing development.

Site Grading

The proposed grades will match the current drainage patterns and will improve the existing drainage conditions to meet the City's/Regional requirements. Grades will be maintained along the property lines wherever feasible and overland flow will be directed towards the adjacent right of ways (ROW).

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1.0 Introduction

Lithos Group Inc. (Lithos) was retained by Davad Investments Inc. (the "Owner") to prepare a Functional Servicing and Stormwater Management (FSR-SWM) Report in support of Zoning By-Law Amendment (ZBA) Application for a proposed residential development comprised by an existing 28-storey residential building which will be maintained and a proposed 40-storey residential building at 45 Grenoble Drive (M3C 1C4), in the City of Toronto (the "City").

The purpose of this report is to provide site-specific information for the City's review with respect to the infrastructure required to support the proposed development. More specifically, the report will present details on sanitary discharge and 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:

- Plan and profile drawings of Deauville Lane, from Grenoble Drive to Rochefort Drive, drawing No. D-186-01, dated October, 1959;
- Plan and profile drawings of Easement, from Grenoble Drive to St. Dennis Drive, drawing No. SA-58-R-01, dated January, 1967;
- Plan and profile drawings of Grenoble Drive, from Gateway Boulevard to Deauville Lane, drawing No. G-113-03, January, 1967;
- Plan and profile drawings of Gateway Boulevard, drawing No. ST-391-R, February, 1967;
- Toronto CU Maps of Grenoble Drive;
- Site Plan prepared by BDP Quadrangle, dated October 14, 2025;
- Site Statistics prepared by BDP Quadrangle, dated October 14, 2025;
- Survey Plan prepared by J. D. Barnes, dated March 20, 2023;
- Geotechnical Engineering Report by Grounded Engineering Inc., dated August 6, 2024;
- Hydrogeological Review Report by Grounded Engineering Inc., dated December 18, 2024; and,
- Subsurface Utility Plan prepared by Onsite Locates Inc., dated March 14, 2023.

2.0 Site Description

The existing site is approximately 8,945.2 m^2 (0.895 hectares). It is currently occupied by a 28-storey residential building and an underground parking area. The site is bound by Grenoble Drive to the north and east and landscaped area to the south and west. Refer to **Figures 1** and **2** following this report and site photographs in **Appendix A**.

The entire City was deemed as an area of basement flooding. As shown in the updated map, included in **Appendix B**, Environmental Assessment (EA) Studies are being performed across the City of Toronto, separated in areas. According to the "Current Basement Flooding Investigation Environmental Assessment Studies" for the City of Toronto found online, the site is located in area 55, where the EA Study has been completed.

3.0 Site Proposal

The proposed development will be comprised by:

- A proposed 40-storey residential building; and,
- The existing 28-storey residential building which will be maintained.

The proposed building will consist of 405 residential units and will be facilitated by three (3) levels of underground parking. In addition, the proposed building will include approximately 28,493.5 m^2 of Gross Floor Area (GFA). Please refer to **Appendix B** for the proposed site plan and statistics.

4.0 Terms of Reference and Methodology

4.1. Terms of Reference

The Terms of Reference used for the scope of this report were based on the City's Sewer Capacity Assessment Guidelines, July 2021, the January 2021 Second Edition of the City of Toronto Design Criteria for Sewers and Watermains and the November 2006 Wet Weather Flow Management Guidelines (WWFMG).

4.2. Methodology: Stormwater Drainage and Management

This report provides an overview of the pre-development and post-development conditions and comments on opportunities to reduce peak flows. A detailed Stormwater Management (SWM) Report will be prepared at the Site Plan Application stage.

The proposed development will be designed to meet the City's WWFMG and the standards of the Province of Ontario as set out in 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 will be controlled to the two (2)-year target flow;
- A specified rainfall depth of 5 mm is to be retained on-site, as required by the WWFMG; and,
- 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 discharge flow that considers infiltration.

The estimated sanitary discharge flows from the proposed site will be calculated based on the criteria shown in **Table 4-1**.

Table 4-1 – Sanitary Flows

Usage	Design Flow	Units	Population Equivalent
Residential	240	Litres / capita / day	Studio/1 Bedroom Unit = 1.4 ppu 2 Bedroom Unit = 2.1 ppu 3 Bedroom Unit = 3.1 ppu

Based on the calculated peak flows, the adequacy of the existing infrastructure to support the proposed development will be discussed.

4.4. Methodology: Water Usage

The fire flow requirements were estimated using the method prescribed by the Fire Underwriters Survey (FUS 2020). This method is based on the fire protected building floors, the type and combustibility of the structural frame and the separation distances with adjoining building units. The domestic water usage was calculated based on the City's design criteria outlined in **Table 4-2** below.

Table 4-2 – Water Usage

Usage	Water Demand	Units
Residential	190	Litres / capita / day

Pressure and flow testing have been conducted on hydrants, in the vicinity of the proposed development to obtain existing flows, residual and static pressure on the existing infrastructure along Grenoble Drive.

5.0 Stormwater Management and Drainage

The site is currently occupied by a 28-storey residential development and an underground parking area that will be maintained. A new, 40-storey, residential-use building will be constructed at the eastern portion of the site.

According to available records, there are three (3) existing storm sewers abutting the subject property. More specifically, there is:

- A 300 mm diameter storm sewer on Grenoble Drive, flowing west;
- A 600 mm diameter storm sewer along the Easement within Grenoble Public School, flowing south; and,
- A 450 mm diameter storm sewer on Grenoble Drive, flowing south.

Please note that storm runoff from the 300mm diameter storm sewer on Grenoble Drive discharges into the 600mm diameter storm sewer at the landscaped area; therefore, these two sewers form part of the same storm sewer network.

5.1. Existing Conditions

According to the Topographic survey prepared by JD. Barnes, dated March 14, 2023, and a site investigation by Lithos Group (please refer to the 'Site Investigation and Dye Test Report', dated April 9th, 2024 in **Appendix B**), it was discovered that, under pre-development conditions, storm runoff from the north and west portions of the property drains towards the storm sewer network, conveyed either directly or through the 300mm diameter sewer along Grenoble Drive, into the 600mm diameter sewer at the landscape area. The remaining portion of the site is draining east towards Grenoble Drive, captured by the existing catchbasins and conveyed by the 450mm diameter storm sewer flowing south.

Refer to **Pre-Development Drainage Area Plan (DAP-1)** in **Appendix C**. Furthermore, our investigation showed that there is no overland external storm flow towards our site under pre-development conditions.

The existing run-off coefficients are estimated based on the infiltration of the area as well as the City's WWFMG guidelines. **Table 5-1** below shows the input parameters which are illustrated on the **Pre-Development Drainage Area Plan (DAP-1)** in **Appendix C**.

Table 5-1 – Target Input Parameters

Catchment	Drainage Area (ha)	Actual "C"	Design "C"	Tc (min.)
A1 Pre – towards Grenoble Drive (conveyed by the 300mm diameter storm sewer into the 600mm diameter storm sewer)	0.208	0.51	-	10
A2 Pre – towards Grenoble Drive (conveyed by the 450mm diameter storm sewer)	0.248	0.28	0.28	
A3 Pre – towards 600mm diameter storm sewer along the easement within Grenoble Public School	0.493	0.61	-	

Peak flows calculated for the existing conditions are shown in **Table 5-2** below. Detailed calculations are in **Appendix C**.

Table 5-2 – Target Peak Flows

Catchment	Peak Flow Rational Method (L/s)		
	2-year	5-year	100-year
A1 Pre – (conveyed by the 300mm diameter storm sewer into the 600mm diameter storm sewer)	25.8	38.6	73.3
A2 Pre – towards Grenoble Drive (conveyed by the 450mm diameter storm sewer)	17.0	25.4	48.2
A3 Pre – towards 600mm diameter storm sewer along the easement within Grenoble Public School	65.3	97.6	185.5

Under post-development conditions, a portion of the site will be reconstructed in order to incorporate the new proposed residential building **(Drainage Areas A3 Post, A4 Post, A5 Post, A6 Post and A7 Post)**, while the rest of the property will be maintained as is **(Drainage Areas A1 Post and A2 Post)**.

Consequently, as shown in **Table 5-2**, post-development flows for the reconstructed areas will need to be controlled to the target flow of 17.0 L/s.

5.2. Stormwater Management

In order to meet the WWFMG criteria, the post-development flow will be controlled to the pre-development two (2)-year target flow as established in **Section 5.1.** Any excess flow will be retained on-site and will ultimately outlet into the existing storm sewer infrastructure on Grenoble Drive.

The post-development drainage areas and runoff coefficients are indicated on **Post-Development Drainage Area Plan (DAP-2)**, located in **Appendix C** and summarized in **Table 5-3** below.

Table 5-3 – Post-development Input Parameters

Drainage Area	Drainage Area (ha)	"C"	Tc (min.)
A1 Post Uncontrolled towards Grenoble Drive (conveyed by the 300mm diameter storm sewer into the 600mm diameter storm sewer)	0.139	0.60	10
A2 Post Towards Grenoble Drive (towards 600mm diameter storm sewer along the easement within Grenoble Public School)	0.240	0.90	10
A3 Post Controlled in underground tank (conveyed by the 450mm diameter storm sewer)	0.426	0.43	10
A4 Post Uncontrolled towards Grenoble Drive (conveyed by the 300mm diameter storm sewer)	0.028	0.37	10
A5 Post Uncontrolled area towards Grenoble Drive (conveyed by the 450mm diameter storm sewer)	0.012	0.68	10
A6 Post Pet relief area (conveyed by the 250mm sanitary sewer)	0.005	0.25	10
A7 Post Green roof - Controlled in underground tank (conveyed by the 450mm diameter storm sewer)	0.045	0.45	10

5.3. Water Balance

The City's WWFMG requires 5 mm of onsite runoff from any rainfall event to be retained over the entirety of the property **(Drainage Areas A1 Post, A2 Post, A3 Post, A4 Post, A5 Post, A6 Post and A7 Post)**. A 5 mm of rainfall equates to a required water balance volume of 44.73 m^3. In order to achieve this, the following low impact development (LID) techniques may be implemented.

- Rainwater captured in the storage tank to be reused for irrigation purposes; and,
- Green Roof and Planters.

Detailed calculations will be provided during the detailed design stage of the Site Plan Application.

5.4. Quantity Controls

As mentioned in **Section 5.1,** storm runoff from the existing property drains towards three (3) separate storm sewer systems, all of which are part of the same sewer network further downstream. Under post-development conditions, the site will consist of the existing building area that will be maintained **(Drainage Areas A1 Post and A2 Post)**, and the proposed reconstructed residential building area **(Drainage Areas A3 Post, A4 Post, A5 Post and A7 Post)**.

A quantity control analysis has been prepared for each storm network adjacent to the site, to assess the pre-development to post-development impacts on each storm sewer network.

5.5. Post-Development flows towards Grenoble Drive (conveyed by the 300mm diameter storm sewer into the 600mm diameter storm sewer)

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

Table 5-4 – Post-development Quantity Control as per City Requirements (300mm diameter storm sewer)

Storm Event	A1 Post Release Rate (L/s)	A4 Post Release Rate (L/s)	A1 Pre-Development Runoff (L/s)	Total Post-Development Runoff (L/s)
2-year	20.3	2.5	25.8	22.8
5-year	30.3	3.8	38.6	34.1
100-year	57.6	7.2	73.3	64.8

As shown in **Table 5-4**, post-development flows will be greatly reduced compared to pre-development conditions, for each storm event.

5.6. Post-Development flows towards Grenoble Drive (conveyed by the 600mm diameter storm sewer along the easement within Grenoble Public School)

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 5-5**. The detailed post-development quantity control calculations are provided in **Appendix C.**

Table 5-5 – Post-development Quantity Control as per City Requirements (600mm diameter storm sewer)

Storm Event	A3 Pre-Development Runoff (L/s)	A2 Post-Development Runoff (L/s)
2-year	65.3	52.9
5-year	97.6	79.1
100-year	185.5	150.2

As shown in **Table 5-5**, post-development flows will be greatly reduced compared to pre-development conditions, for each storm event.

5.7. Post-development flows towards Grenoble Drive (conveyed by the 450mm diameter storm sewer)

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 5-6** below. The detailed post-development quantity control calculations are provided in **Appendix C.**

Table 5-6 – Post-development Quantity Control as per City Requirements (450mm diameter storm sewer)

Storm Event	Target Flow (L/s)	Uncontrolled Release Rate (L/s)	Required Storage Volume (m^3)	Designed Controlled Release Rate (L/s)	Total Site Release Rate (L/s)
2-year	**17.0**	2.0	25.9	5.8	7.8
5-year		3.0	39.8	7.2	10.2
100-year		5.7	87.2	10.8	16.5

As shown in **Table 5-6**, in order to control post-development flows to 2-year pre-development conditions, a target flow of 17.0 L/s is to be satisfied for the reconstructed area **(Drainage Area A3 Post, Drainage Area A5 Post and Drainage Area A7 Post)**. The minimum required on-site storage capacity to achieve the above target flow is 87.2 m^3, for the 100-year storm event. This can be achieved through the design and installation of stormwater holding tanks, flow control devices and/or roof storage, details of which will be provided through the detailed design stage of Site Plan Application.

5.8. Quality Controls

Stormwater treatment must meet Enhanced Protection criteria as defined by the MECP 2003 SWMPD Manual, including the removal of at least 80% total suspended solids (TSS). Water quality calculations and quality measures in order to achieve an overall TSS removal of 80%, will be provided through the detailed design stage of the Site Plan Application.

5.9. Proposed Storm Connection

The storm sewer system for the reconstructed portion of the residential development will be designed to meet the City's requirements and will discharge into the existing 450 mm diameter storm sewer on Grenoble Drive via a 200 mm diameter storm lateral connection, with a minimum grade of 2.00% (or equivalent pipe design). Orifice controls, if required, will be designed to meet the allowable release rate to the municipal system. Details regarding the proposed Stormwater Management System will be provided during the detailed design stage of the Site Plan Application. Refer to the Engineering drawing **"Conceptual Site Servicing Plan" SS-01** submitted separately, for the proposed storm connection.

6.0 Sanitary Drainage System

6.1. Existing Sanitary Drainage System

The existing site is currently occupied by one (1) residential building. According to available records, there are two (2) existing sanitary sewers, abutting the subject property. More specifically there are:

- A 450 mm diameter sanitary sewer on the west side of the subject property along the Easement within Grenoble Public School, flowing south towards Gateway Boulevard; and,
- A 250mm diameter sanitary sewer on Grenoble Drive on the east side of the subject property, flowing south.

According to the City's available information, the sanitary network abutting our property eventually discharges into the trunk sewer between Don Mills Road and Don Valley Parkway.

6.2. Existing and Proposed Sanitary Flows

The sanitary flow generated by the proposed development at 45 Grenoble Drive 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 existing residential building is estimated at 5.29 L/s. The existing sanitary service connection from the existing building is to the existing 450 mm diameter sanitary sewer, on the west side of the subject property along the Easement within Grenoble Public School, flowing south towards Gateway Boulevard.

The pet relief area (**Drainage Area A6 Post**) will contribute to the total sanitary flow of the proposed development with a flow rate of 0.31 L/s.

In addition, using the design criteria outlined in **Section 4.3** and the proposed development statistics, the proposed development will discharge 8.73 L/s into the City's infrastructure. The proposed development will be connected to the existing 250mm diameter sanitary sewer on Grenoble Drive, flowing South. Detailed calculations can be found in **Appendix D**.

The capacity of the existing sanitary sewer network along Grenoble Drive to accommodate the post-development sanitary flow will be discussed under **Section 8.0** of this report.

6.3. Proposed Sanitary Connection

The proposed development will be connected to the existing 250mm diameter sanitary sewer on Grenoble Drive flowing South, through a 200 mm diameter sanitary lateral connection. The municipal service connection will use a recommended grade of 2.0%, according to the MECP guidelines for sewage works. Refer to the Engineering drawing **"Conceptual Site Servicing Plan" SS-01** submitted separately, for the proposed sanitary connection.

7.0 Groundwater

According to the ''Hydrogeological Review Report'' prepared by Grounded Engineering Inc., dated December 18th, 2024, the stabilized groundwater level is at an elevation of approximately 121.4 masl (meters above sea level). In addition, the lowest finished floor elevation of the proposed development will be at the elevation of 119.21 masl.

The results of groundwater sampling on site, reveal that groundwater exceeds the City's limits of total suspended solids and total manganese for discharging into the storm sewer network, however it is within the City's limits for discharging into the sanitary and combined sewer network. The results of the Hydrogeological review report can be found in **Appendix B.**

7.1. Long Term Dewatering

The proposed development will be serviced by three (3) basement levels (lowest basement slab elevation at 119.21 masl). Therefore, it is anticipated that the proposed underground construction will be partially submerged under the existing groundwater table.

Consequently, in order to comply with the City's criteria, the proposed underground construction is proposed to be water-tight; thus, a foundation drain system will not be implemented for this development. To conclude, there will be no direct or indirect permanent groundwater discharge towards the City's infrastructure.

7.2. Short Term Dewatering

Site dewatering during construction, under the worst case scenario, is anticipated at 152,000 L/day, which translates to approximately 1.76 L/s. Groundwater will be discharged into the existing 250mm diameter sanitary sewer along Grenoble Drive. Following the fact that the existing network along Grenoble Drive can accommodate the proposed total net flow of 8.73 L/s under post-development conditions, it is anticipated that it would be capable to accommodate the groundwater discharge during construction.

8.0 Sanitary Sewer Capacity Analysis

The existing site is located in the City's Basement Flooding Area 55 and the Basement flooding model for this area has been provided for our review. The Downstream Sanitary Capacity Analysis Report, prepared by Lithos Group Inc., dated October 2025, has been provided in order to identify the impact of the proposed development on the existing sanitary network. Sanitary flow from the proposed development will be discharged into the City's sanitary network. A sanitary sewer analysis has been conducted using pre-development and post-development flows outlined in **Section 6.0.**

According to the Sewer Capacity Analysis, four (4) model scenarios were developed to access the sewer condition. Scenarios and findings are listed below:

- **Scenario 1**: Existing DWF Conditions (base model updated with all other development applications and existing site flow (not the proposed site flows) + reflective of current sewer system conditions);
- **Scenario 2**: Proposed DWF Conditions (240L/c/d) (base model updated with all other development applications and the proposed site flows considering 240L/c/d average wastewater flow generation + reflective of current sewer system conditions);
- **Scenario 3**: Existing WWF Conditions (May 12,2000 storm event) (base model updated with all other development applications and existing site flow (not the proposed site flows) + reflective of current sewer system conditions); and,
- **Scenario 4**: Proposed WWF Conditions (May 12,2000 storm event) (240 L/c/d) (base model updated with all other development applications and the proposed site flows considering 240L/c/d average wastewater flow generation + reflective of current sewer system conditions).

Ten (10) new development applications were found in the drainage area from the City's Development Applications online. **Table 8-1** below, shows the new developments, which have been incorporated into our analysis to account for "proposed conditions".

Table 8-1 – New Developments

No	Site Address	Residential Population	Non-Residential Area (ha)	Non - Residential Population	Total population	Groundwater Flow (L/s)
1.	7, 11 Rochefort Drive	2680	0.068	4	2684	-
2.	789, 793 Don Mills Road, & 10 Ferrand Drive	4470	3.59	1185	5655	-
3.	25 St Dennis Drive	1101	-	-	1101	-
4.	7 St Dennis Drive, 10 Grenoble Drive	5374	-	-	5374	-
5.	200 Gateway Boulevard	1746	-	-	1746	0.94
6.	1185 Eglinton Ave E, 2 Sonic Way	1192	-	-	1192	-
7.	805 Don Mills Road	1764	-	-	1764	-
8.	48 Grenoble Drive	1882	0.068	1	1883	-
9.	1 Deauville Lane	3066	-	-	3066	-
10.	250 Ferrand Drive	633	-	-	633	-

8.1. Capacity Assessment Results

The analysis conducted by Lithos Group Inc., dated October 2025, shows that:

- **Under Dry Weather Flow (DWF) Conditions**, for both existing and proposed scenarios, the system operates under free flow conditions and no sewers are surcharging in the downstream network, from the site up to the 600 mm diameter sanitary trunk sewer between Don Mills Road and Don Valley Parkway (trunk connection, MH_ID#: MH5512534175);

- **Under Existing Wet Weather Flow (WWF) (May 12, 2000 storm event) Conditions**, simulation results indicate that the downstream network is expected to experience minor surcharging with freeboard (freeboard>1.8m) at seven (7) sewer segments and the minimum freeboard attained within the sewer segments is 2.27m, and;

- **Under Proposed Wet Weather Flow (WWF) (May 12, 2000 storm event) Conditions**, simulation results indicate that the downstream network is expected to experience minor surcharging with freeboard (freeboard>1.8m) at eight (8) sewer segments and the minimum freeboard attained within the sewer segments is 2.23m.

According to Table 1: Capacity Criteria for Sanitary and Combined Sewers, in Sewer Capacity Assessment Guidelines please see below the conclusions of our Analysis:

Criterion 1: Under Dry Weather Flow conditions, the system operates under free flow conditions and no surcharge (HGL is below the pipe obvert) occurs.

Criterion 2: Under proposed Wet Weather Flow conditions, which include I&I generated under the May 12, 2000 storm event, the HGL in the downstream sewers is at least 1.80 m below grade.

Due to the above, Criteria 1 and 2 (of Table 1: Capacity Criteria for Sanitary and Combined Sewers, City's Sanitary Sewer Capacity Assessment Guidelines) have been achieved; therefore, no mitigation measures are required from our property and there is adequate local system capacity.

The Downstream Sanitary Capacity Analysis demonstrates that the proposed residential development at 45 Grenoble Drive does not increase the risk of basement flooding and can be serviced by the existing sanitary network.

9.0 Water Supply System

9.1. Existing System

Based on plans provided by the City, the existing watermain system consists of the following waterlines:

- A 400 mm diameter watermain on the north side of Grenoble Drive; and,
- A 300 mm diameter watermain on the east side of Grenoble Drive.

The existing water service connection from the site is to the existing 400 mm diameter watermain on the west side of Grenoble Drive.

Two (2) fire hydrant flow tests were carried out by Lithos Group Inc., on June 7, 2024 along Grenoble Drive, to determine the flow and pressure in the existing 400 mm and 300mm diameter watermains.

The results of the test conducted on the existing 300mm diameter watermain along Grenoble Drive indicate that the existing static pressure is 620 KPa (90 psi) and 146.71 L/sec (2325 USPGM) of water is available with a residual pressure of 586 KPa (85 psi). Similarly, according to the test conducted on the existing 400mm diameter watermain along Grenoble Drive, the existing static pressure is 634 KPa (92 psi) and 137.23 L/sec (2174 USPGM) of water is available with a residual pressure of 586 KPa (85 psi). The full detailed reports are included in **Appendix F.**

9.2. Proposed Water Supply Requirements

The estimated water consumption was calculated based on the occupancy rates shown on **Table 4-2**, based on the City's watermain design criteria, revised in January 2021.

Proposed Residential Building

It is anticipated that an average consumption of approximately 1.70L/s (146,880L/day), a maximum daily consumption of 2.54L/s (219,456L/day) and a peak hourly demand of 3.81L/s (13,716L/hr) will be required to service this development with domestic water. Detailed calculations are found in **Appendix E**.

The fire flow requirements were estimated using the method prescribed by the Fire Underwriters Survey (FUS 2020) be undertaken to assess the minimum requirement for fire suppression. The fire flow calculations are normally conducted for the largest storey, by area, and for the two immediately adjacent storey.

As a result of the above mentioned method, we have selected Levels 3, 4 and 5 to determine the fire flow demand. **Table 9.1** below illustrates the input parameters used for the FUS 2020 calculations. According to our calculations, a minimum fire suppression flow of approximately 104.13 L/s (1,651 USGPM) will be required. Refer to detailed calculations found in **Appendix E**.

Table 9.1 – Fire Flow Input Parameters (Proposed Residential Building)

Parameter	Frame used for Building	Combustibility of Contents	Presence of Sprinklers	Separation Distance			
				North	West	South	East
Value according to FUS options	non-combustible construction	limited combustible occupancy	Yes	10.1m to 20m	20.1m to 30m	20.1m to 30m	> 30m
Surcharge/reduction from base flow	0.8	15%	30%	15%	10%	10%	0%

Based on the **Table 9.1** the maximum fire suppression flow is estimated at 104.13 L/s. The design flow requirement is either the maximum hourly demand or the sum of the fire flow requirements and the maximum daily demand.

In summary, the required design flow is the sum of 'the minimum fire suppression flow' and the 'maximum daily demand' (104.13 + 2.54 = 106.68 L/s, 1,691 USGPM).

Existing Building (to be maintained)

It is anticipated that an average consumption of approximately 1.00L/s (86,400L/day), a maximum daily consumption of 1.50L/s (129,600L/day) and a peak hourly demand of 2.26L/s (8,136L/hr) will be required to service this development with domestic water. Detailed calculations are found in **Appendix E**.

The fire flow requirements were estimated using the method prescribed by the Fire Underwriters Survey (FUS 2020) be undertaken to assess the minimum requirement for fire suppression. The fire flow calculations conducted for the two largest adjoining floor areas, plus 50% of all floors immediately above them up to maximum of eight. **Table 9.2** below illustrates the input parameters used for the FUS 2020 calculations.

According to our calculations, a minimum fire suppression flow of approximately 212.50 L/s (3,369 USGPM) will be required. Refer to detailed calculations found in **Appendix E**.

Table 9.2 – Fire Flow Input Parameters (Existing Building)

Parameter	Frame used for Building	Combustibility of Contents	Presence of Sprinklers	Separation Distance			
				North	West	South	East
Value according to FUS options	non-combustible construction	limited combustible occupancy	No	> 30m	> 30m	10.1m to 20m	20.1m to 30m
Surcharge/reduction from base flow	0.8	15%	0%	0%	0%	15%	10%

Based on the **Table 9.2** the maximum fire suppression flow is estimated at 212.50 L/s. The design flow requirement is either the maximum hourly demand or the sum of the fire flow requirements and the maximum daily demand.

In summary, the required design flow is the sum of 'the minimum fire suppression flow' and the 'maximum daily demand' (212.50 + 1.50 = 214.00 L/s, 3,392 USGPM). The results of the hydrant flow test carried out by Lithos Group Inc., on June 7, 2024 on the 300 mm diameter watermain on the east side of Grenoble Drive, indicate that 610.05 L/s (9,667 USGPM) of water is available with a pressure of 138KPa (20.0 psi) and on the 400 mm diameter watermain on the north side of Grenoble Drive, indicate that 483.13 L/s (7,656 USGPM) of water is available with a pressure of 138KPa (20.0 psi) revealing that the existing water infrastructure will support the proposed development. The hydrant flow tests can be found in **Appendix E.**

9.3. Proposed Watermain Connection

Two (2) supplemental fire lines will be provided for the proposed development, as the building's height is greater than 84m, according to the Ontario Building Code (OBC). The proposed development will be serviced by two (2) 200 mm diameter fire and one (1) 150 mm diameter domestic, water services. According to the City's standard drawing T-1104.02-3, the 200 mm diameter water service will split two (2) meters from the property line and valve and boxes will be installed on each service at the property line.

Water supply for the proposed development will be from the existing 400 mm diameter watermain on the North side of Grenoble Drive and the existing 300 mm diameter watermain on the East side of Grenoble Drive. Refer to the Engineering drawing **"Conceptual Site Servicing Plan" SS-01** submitted separately, for the proposed water connections.

10.0 Site Grading

10.1. Existing Grades

The existing site is currently occupied by a 28-storey residential building and an underground parking area. It is currently draining overland or through its internal stormwater management sewer system towards the adjacent right of way ("ROW"). Under pre-development conditions, no external drainage enters the site.

10.2. Proposed Grades

The current drainage pattern will be maintained and the proposed grades will improve the existing drainage conditions to meet the City's requirements. Grades will be maintained along the property line wherever feasible and overland flow will be directed towards the adjacent right of ways (ROW).

11.0 Conclusions and Recommendations

Based on our investigations, we conclude the following:

Storm Drainage

A detailed Stormwater Management Report (Phase II) will be prepared during the future Site Plan Application stage. The stormwater discharge from the reconstructed portion of the residential development will be controlled to the 2-year pre-development flow and will be connected to the existing 450mm diameter storm sewer along Grenoble Drive, flowing south. In order to attain the target flows and meet the City's Wet Weather Flow Management Guidelines (WWFMG), quantity controls will be utilized and up to 87.2 m^3 of on-site storage will be required for the proposed residential development. In addition, the storm drainage pattern from the existing 28-storey residential building will be maintained and will not negatively affect the existing municipal storm network along Grenoble Drive, which consists of a 300mm diameter storm sewer and 600mm diameter storm sewer. The stormwater management (SWM) system will be designed to provide enhanced level (Level 1) water quality treatment, as specified by the Ministry of Environment, Conversation and Parks (MECP). As part of the future Site Plan Application, a detailed analysis will be provided to assess the water quality on-site and determine additional measures in order to achieve a minimum Total Suspended Solids (TSS) removal of 80%.

Sanitary Sewers

The proposed development will be connected to the existing 250 mm diameter sanitary sewer on Grenoble Drive flowing south, through a 200 mm diameter sanitary sewer lateral connection, with a minimum grade of 2.00% (or equivalent pipe design). The additional net discharge flow from the entire property (proposed and existing development), is anticipated at approximately 8.73 L/s.

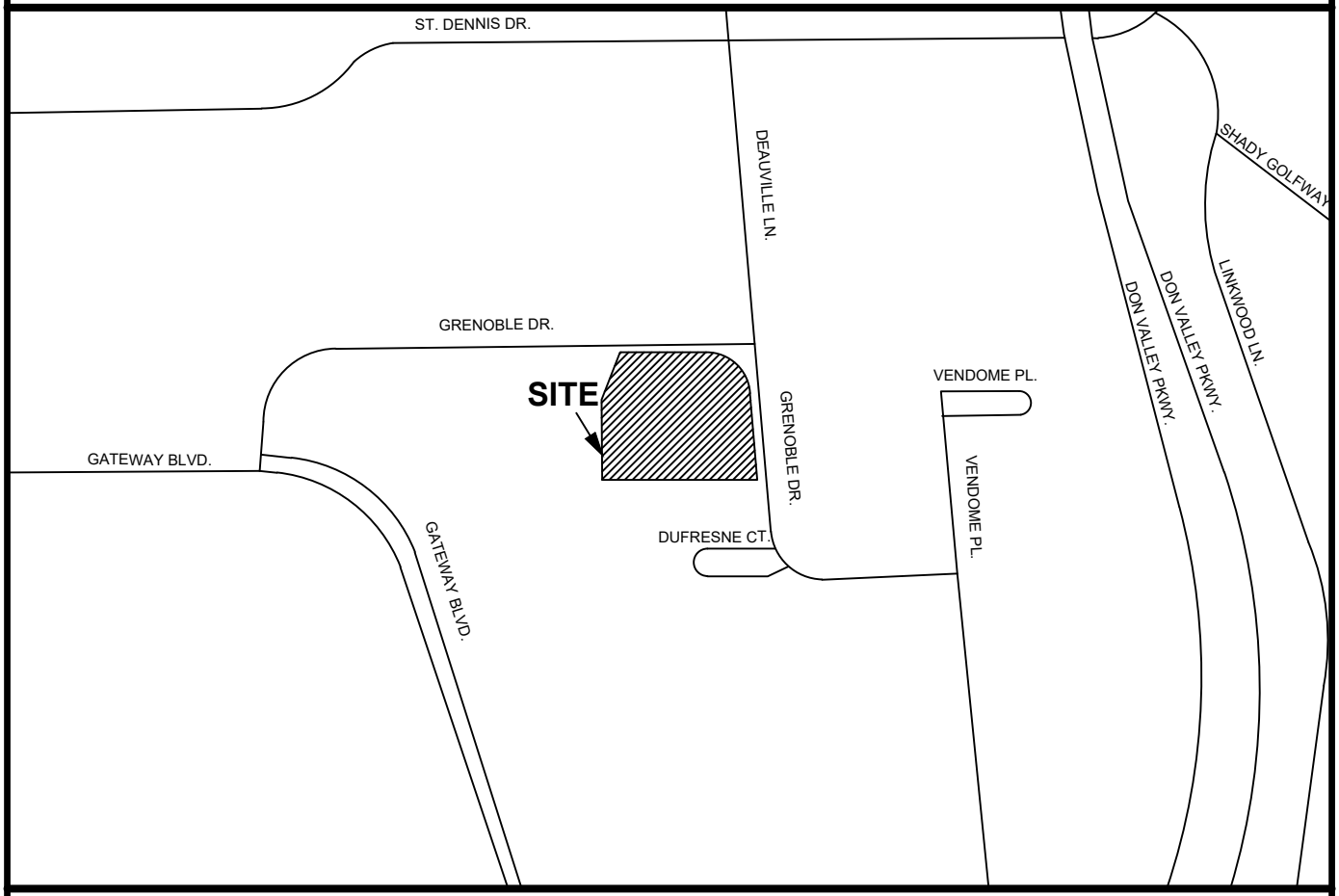
According to the "Downstream Sanitary Capacity Analysis Report", prepared by Lithos Group Inc., dated October 2025, the analysis of the external sanitary drainage area indicates that Criteria 1 and 2 (of Table 1: Capacity Criteria for Sanitary and Combined Sewers, City's Sanitary Sewer Capacity Assessment Guidelines) have been achieved and the proposed site does not affect flow conditions downstream, while the existing sanitary sewer infrastructure can support the proposed development.

Water Supply

The proposed building will exceed a height of 84.0m, and according to the Ontario Building Code (OBC), an additional fire line will be required, to support the proposed development's sprinkler system. Therefore, two (2) separate fire service connections will be provided for the proposed development.

The main fire and domestic water services for the new building will be connected to the existing 300 mm diameter watermain located on the east side of Grenoble Drive. The additional fire line and the water apply for the existing building (which will be maintained) will be connected to the existing 400 mm diameter watermain on the north side of Grenoble Drive.

It is anticipated that a total design flow of 106.68 L/s and 214.00 L/s will be required to support the proposed development and the existing building, respectively. The results of the hydrant flow tests, prepared by Lithos, dated June 7, 2024, reveal that the municipal existing water infrastructure abutting the subject site will be able to support both the proposed and existing development.

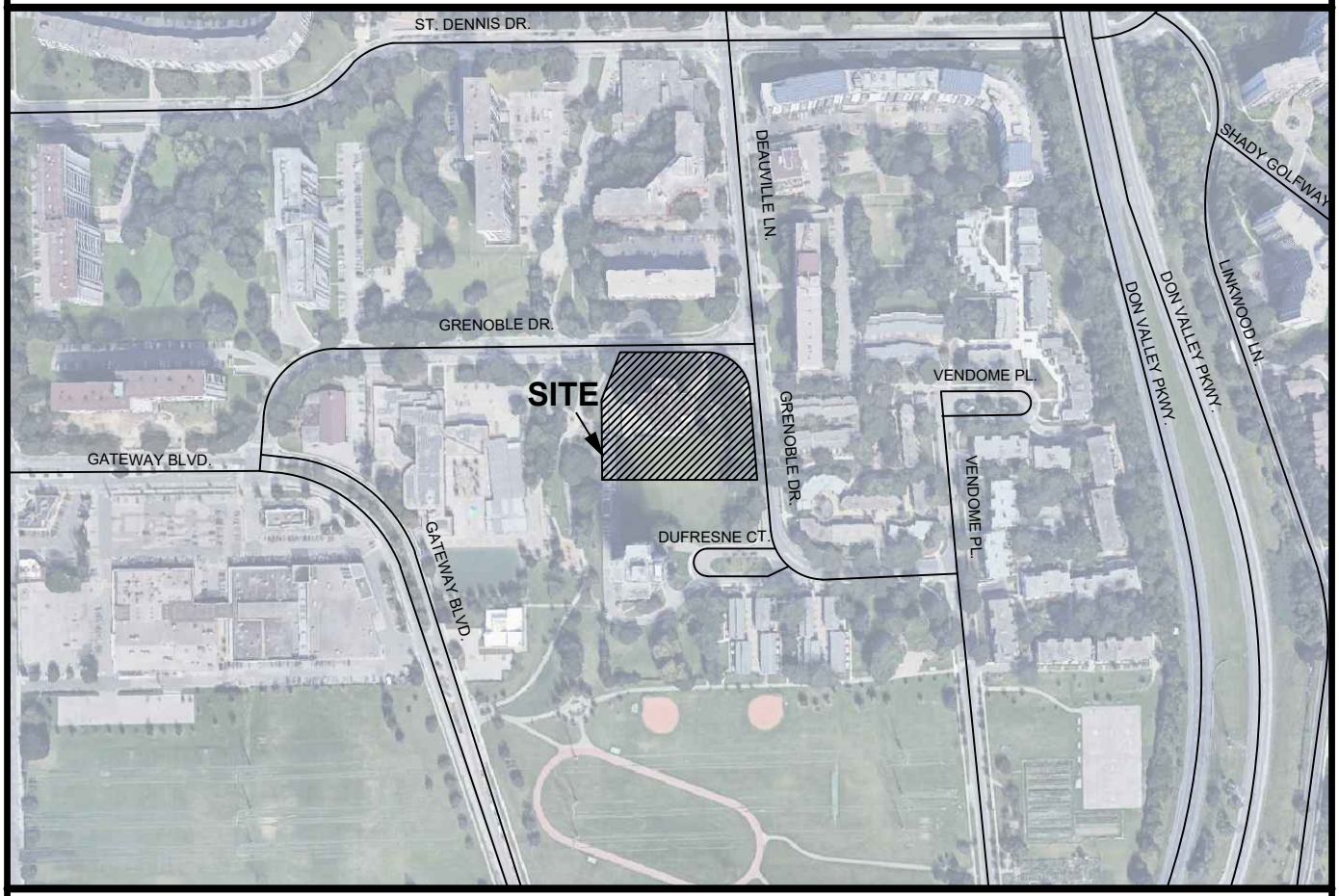


Lithos

150 Bermondsey Road, Toronto, Ontario M4A 1Y1

LOCATION PLAN
RESIDENTIAL USE DEVELOPMENT
45 GRENOBLE DRIVE
TORONTO, ONTARIO

DATE:	OCTOBER 2025	PROJECT No:	UD24-013
SCALE:	N.T.S.	FIGURE No:	FIG 1



Lithos

150 Bermondsey Road, Toronto, Ontario M4A 1Y1

AERIAL PLAN

RESIDENTIAL USE DEVELOPMENT
45 GRENOBLE DRIVE
TORONTO, ONTARIO

DATE:	OCTOBER 2025	PROJECT No:	UD24-013
SCALE:	N.T.S.	FIGURE No:	FIG 2

Appendix A

Site Photographs

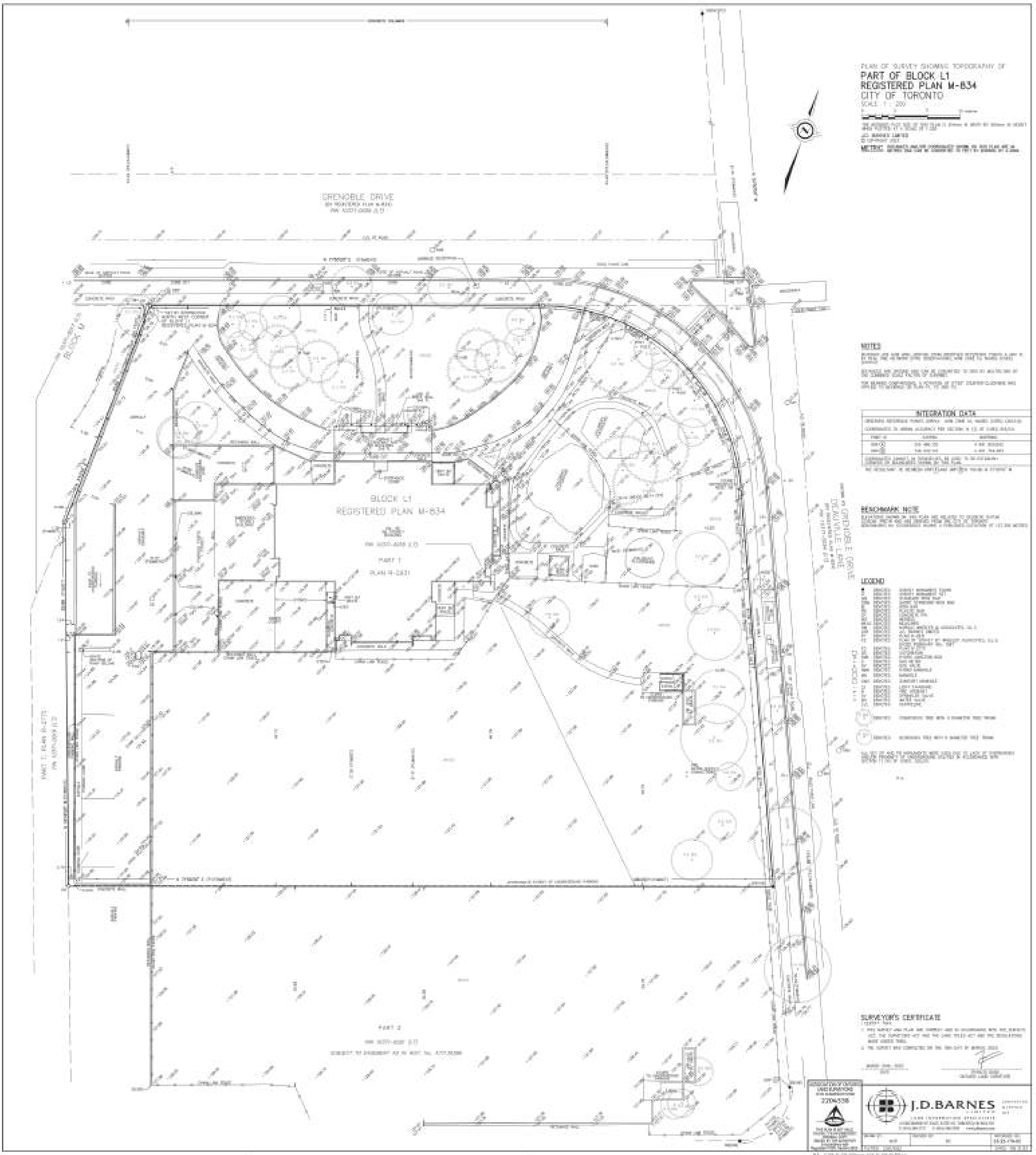
North East Corner of Property along Grenoble Drive – Facing South West

North West Corner of Property along Grenoble Drive – Facing South East

South East Corner of the Property along Grenoble Drive – Facing North West

Appendix B

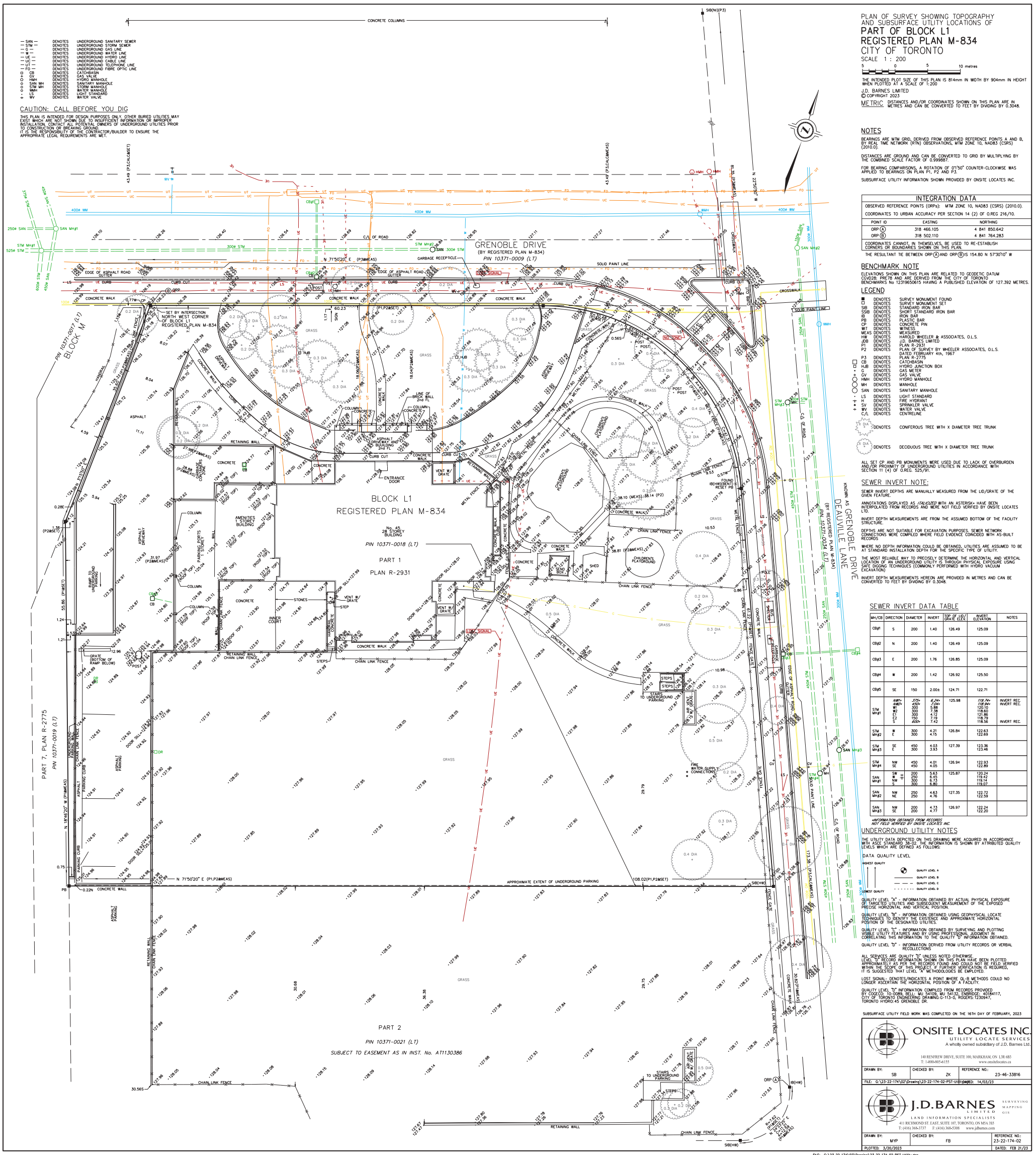
Background Information


PLAN OF SURVEY SHOWING TOPOGRAPHY OF
PART OF BLOCK L1
REGISTERED PLAN M-834
CITY OF TORONTO
SCALE 1 : 200
METRIC
GRENOBLE DRIVE
BLOCK L1
REGISTERED PLAN M-834
PART 1
PLAN R-2831
BLOCK U
DEAUVILLE LANE
GRENOBLE DRIVE
PART 2
NOTES
INTEGRATION DATA
BENCHMARK NOTE
LEGEND
SURVEYOR'S CERTIFICATE
2204338
J.D.BARNES
LIMITED

— SAN — DENOTES UNDERGROUND SANITARY SEWER
— STM — DENOTES UNDERGROUND STORM SEWER
— G — DENOTES UNDERGROUND GAS LINE
— W — DENOTES UNDERGROUND WATER LINE
— UE — DENOTES UNDERGROUND HYDRO LINE
— UC — DENOTES UNDERGROUND CABLE LINE
— UT — DENOTES UNDERGROUND TELEPHONE LINE
— FO — DENOTES UNDERGROUND FIBRE OPTIC LINE
CB DENOTES CATCHBASIN
GV DENOTES GAS VALVE
HMH DENOTES HYDRO MANHOLE
SAN MH DENOTES SANITARY MANHOLE
STM MH DENOTES STORM MANHOLE
WMH DENOTES WATER MANHOLE
LS DENOTES LIGHT STANDARD
WV DENOTES WATER VALVE

CAUTION: CALL BEFORE YOU DIG

THIS PLAN IS INTENDED FOR DESIGN PURPOSES ONLY. OTHER BURIED UTILITIES MAY EXIST WHICH ARE NOT SHOWN DUE TO INSUFFICIENT INFORMATION OR IMPROPER INSTALLATION. CONTACT ALL POTENTIAL OWNERS OF UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION OR BREAKING GROUND.
IT IS THE RESPONSIBILITY OF THE CONTRACTOR/BUILDER TO ENSURE THE APPROPRIATE LEGAL REQUIREMENTS ARE MET.



PLAN OF SURVEY SHOWING TOPOGRAPHY AND SUBSURFACE UTLILITY LOCATIONS OF

PART OF BLOCK L1
REGISTERED PLAN M-834
CITY OF TORONTO

SCALE 1 : 200

5 0 5 10 metres

THE INTENDED PLOT SIZE OF THIS PLAN IS 814mm IN WIDTH BY 904mm IN HEIGHT WHEN PLOTTED AT A SCALE OF 1:200

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

NOTES

BEARINGS ARE MTM GRID, DERIVED FROM OBSERVED REFERENCE POINTS A AND B, BY REAL TIME NETWORK (RTN) OBSERVATIONS, MTM ZONE 10, NAD83 (CSRS) (2010.0).

DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.999887.

FOR BEARING COMPARISONS, A ROTATION OF 0°1'50" COUNTER-CLOCKWISE WAS APPLIED TO BEARINGS ON PLAN P1, P2 AND P3.

SUBSURFACE UTILITY INFORMATION SHOWN PROVIDED BY ONSITE LOCATES INC.

INTEGRATION DATA

OBSERVED REFERENCE POINTS (ORPs): MTM ZONE 10, NAD83 (CSRS) (2010.0).
COORDINATES TO URBAN ACCURACY PER SECTION 14 (2) OF O.REG 216/10.

POINT ID	EASTING	NORTHING
ORP (A)	318 466.105	4 841 850.642
ORP (B)	318 502.110	4 841 764.283

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

THE RESULTANT TIE BETWEEN ORP (A) AND ORP (B) IS 154.80 N 57°30'10" W

BENCHMARK NOTE

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM CGVD28: PRE78 AND ARE DERIVED FROM THE CITY OF TORONTO BENCHMARKS No 12319650615 HAVING A PUBLISHED ELEVATION OF 127.392 METRES.

LEGEND

■ DENOTES SURVEY MONUMENT FOUND
□ DENOTES SURVEY MONUMENT SET
SIB DENOTES STANDARD IRON BAR
SSIB DENOTES SHORT STANDARD IRON BAR
IB DENOTES IRON BAR
PB DENOTES PLASTIC BAR
CP DENOTES CONCRETE PIN
WIT DENOTES WITNESS
MEAS DENOTES MEASURED
HW DENOTES HAROLD WHEELER & ASSOCIATES, O.L.S.
JDB DENOTES J.D. BARNES LIMITED
P1 DENOTES PLAN R-2931
P2 DENOTES PLAN OF SURVEY BY WHEELER ASSOCIATES, O.L.S. DATED FEBRUARY 4th, 1967
P3 DENOTES PLAN R-2775
CB DENOTES CATCHBASIN
HJB DENOTES HYDRO JUNCTION BOX
G DENOTES GAS METER
GV DENOTES GAS VALVE
HMH DENOTES HYDRO MANHOLE
MH DENOTES MANHOLE
SAN DENOTES SANITARY MANHOLE
LS DENOTES LIGHT STANDARD
H DENOTES FIRE HYDRANT
SV DENOTES SPRINKLER VALVE
WV DENOTES WATER VALVE
C/L DENOTES CENTRELINE
DIA DENOTES CONIFEROUS TREE WITH X DIAMETER TREE TRUNK
DIA DENOTES DECIDUOUS TREE WITH X DIAMETER TREE TRUNK

ALL SET CP AND PB MONUMENTS WERE USED DUE TO LACK OF OVERBURDEN AND/OR PROXIMITY OF UNDERGROUND UTILITIES IN ACCORDANCE WITH SECTION 11 (4) OF O.REG. 525/91.

SEWER INVERT NOTE:

SEWER INVERT DEPTHS ARE MANUALLY MEASURED FROM THE LID/GRATE OF THE GIVEN FEATURE.

ANNOTATIONS DISPLAYED AS *ITALICIZED* WITH AN ASTERISK* HAVE BEEN INTERPOLATED FROM RECORDS AND WERE NOT FIELD VERIFIED BY ONSITE LOCATES LTD.

INVERT DEPTH MEASUREMENTS ARE FROM THE ASSUMED BOTTOM OF THE FACILITY STRUCTURE.

DEPTHS ARE NOT SUITABLE FOR EXCAVATION PURPOSES. SEWER NETWORK CONNECTIONS WERE COMPILED WHERE FIELD EVIDENCE COINCIDED WITH AS-BUILT RECORDS

WHERE NO DEPTH INFORMATION COULD BE OBTAINED, UTILITIES ARE ASSUMED TO BE AT STANDARD INSTALLATION DEPTH FOR THE SPECIFIC TYPE OF UTILITY.

THE MOST RELIABLE WAY TO PRECISELY DETERMINE THE HORIZONTAL AND VERTICAL LOCATION OF AN UNDERGROUND UTILITY IS THROUGH PHYSICAL EXPOSURE USING SAFE DIGGING TECHNIQUES (COMMONLY PERFORMED WITH HYDRO VACUUM EXCAVATION)

INVERT DEPTH MEASUREMENTS HEREON ARE PROVIDED IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

SEWER INVERT DATA TABLE

MH/CB	DIRECTION	DIAMETER	INVERT	TOP OF LID/ GRATE ELEV.	INVERT ELEVATION	NOTES
CB#1	S	200	1.40	126.49	125.09	
CB#2	N	200	1.40	126.49	125.09	
CB#3	E	200	1.76	126.85	125.09	
CB#4	W	200	1.42	126.92	125.50	
CB#5	SE	150	2.00±	124.71	122.71	
STM MH#1	NW/1* NW/2* W1 W2 E1 E2 S	375ø 450ø 300 300 300 150 600ø	6.24± 7.04± 5.88 7.38 6.13 7.19 7.42	125.98	119.74± 118.94± 120.10 118.60 119.86 118.78 118.56	INVERT REC. INVERT REC. INVERT REC.
STM MH#2	W E	300 300	4.21 4.15	126.84	122.63 122.69	
STM MH#3	SE E	450 300	4.03 3.93	127.39	123.36 123.46	
STM MH#4	NW SE	450 450	4.01 4.05	126.94	122.93 122.89	
SAN MH#1	SW W NW S	200 250 300 300	5.63 6.45 6.73 6.80	125.87	120.24 119.42 119.14 119.07	
SAN MH#2	NW NE	250 250	4.63 4.76	127.35	122.72 122.59	
SAN MH#3	NW SE	200 200	4.73 4.77	126.97	122.24 122.20	

*INFORMATION OBTAINED FROM RECORDS. NOT FIELD VERIFIED BY ONSITE LOCATES INC.

UNDERGROUND UTILITY NOTES

THE UTILITY DATA DEPICTED ON THIS DRAWING WERE ACQUIRED IN ACCORDANCE WITH ASCE STANDARD 38-02. THE INFORMATION IS SHOWN BY ATTRIBUTED QUALITY LEVELS WHICH ARE DEFINED AS FOLLOWS:

DATA QUALITY LEVEL

HIGHEST QUALITY
QUALITY LEVEL A
QUALITY LEVEL B
QUALITY LEVEL C
QUALITY LEVEL D
LOWEST QUALITY

QUALITY LEVEL "A" - INFORMATION OBTAINED BY ACTUAL PHYSICAL EXPOSURE OF TARGETED UTILITIES AND SUBSEQUENT MEASUREMENT OF THE EXPOSED PRECISE HORIZONTAL AND VERTICAL POSITION.

QUALITY LEVEL "B" - INFORMATION OBTAINED USING GEOPHYSICAL LOCATE TECHNIQUES TO IDENTIFY THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF THE DESIGNATED UTILITIES.

QUALITY LEVEL "C" - INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE UTILITY FEATURES AND BY USING PROFESSIONAL JUDGMENT IN CORRELATING THIS INFORMATION TO THE QUALITY "D" INFORMATION OBTAINED.

QUALITY LEVEL "D" - INFORMATION DERIVED FROM UTILITY RECORDS OR VERBAL RECOLLECTIONS.

ALL SERVICES ARE QUALITY "D" UNLESS NOTED OTHERWISE.
LEVEL "D" RECORD INFORMATION SHOWN ON THIS PLAN HAVE BEEN PLOTTED APPROXIMATELY AS PER THE RECORDS FOUND AND COULD NOT BE FIELD VERIFIED WITHIN THE SCOPE OF THIS PROJECT. IF FURTHER VERIFICATION IS REQUIRED, IT IS SUGGESTED THAT LEVEL "A" METHODOLOGIES BE EMPLOYED.

LOST SIGNAL- DENOTES/INDICATES A POINT WHERE QL-B METHODS COULD NO LONGER ASCERTAIN THE HORIZONTAL POSITION OF A FACILITY.

QUALITY LEVEL "D" INFORMATION COMPILED FROM RECORDS PROVIDED BY COGECO: 10-0089, BELL: MU 54109, MU 54132, ENBRIDGE: 40184117, CITY OF TORONTO ENGINEERING DRAWING:G-113-0, ROGERS: 1230947, TORONTO HYDRO: 45 GRENOBLE DR.

SUBSURFACE UTILITY FIELD WORK WAS COMPLETED ON THE 16TH DAY OF FEBRUARY, 2023

ONSITE LOCATES INC.
UTILITY LOCATE SERVICES
A wholly owned subsidiary of J.D. Barnes Ltd.
140 RENFREW DRIVE, SUITE 100, MARKHAM, ON L3R 6B3
T: 1-800-805-6155 www.onsitelocates.ca

DRAWN BY:	CHECKED BY:	REFERENCE NO.:
SB	ZK	23-46-33816

FILE: G:\23-22-174\02\Drawing\23-22-174-02-PST-Utility.dgn DATED: 14/03/23

J.D.BARNES LIMITED
SURVEYING MAPPING GIS
LAND INFORMATION SPECIALISTS
411 RICHMOND ST. EAST, SUITE 107, TORONTO, ON M5A 3S5
T: (416) 368-3727 F: (416) 368-5308 www.jdbarnes.com

DRAWN BY:	CHECKED BY:	REFERENCE NO.:
MYP	FB	23-22-174-02

PLOTTED: 3/20/2023 DATED: FEB 21/23

FILE: G:\23-22-174\02\Drawing\23-22-174-02-PST-Utility.dgn

	Floor	GBA Proposed Building (no exclusions)		No. Typ. Floors	Estimated Existing Building GBA (±)		GBA Total Existing + Proposed		GFA Exclusions* (sm)	City-Wide By-Law 569-2013	Unit Type			
		sm	*sf*		sm	*sf*	sm	sf		GFA Proposed (Res)	1B	2B	3B	Total Units
ABOVE GRADE	MPH	577.8	*6,220*				577.8	*6,220*	577.8	0.0				
	40	747.0	*8,041*	1			747.0	*8,041*	74.3	672.7	4	5	1	10
	39	747.0	*8,041*	1			747.0	*8,041*	74.3	672.7	4	5	1	10
	38	747.0	*8,041*	1			747.0	*8,041*	74.3	672.7	4	5	1	10
	37	747.0	*8,041*	1			747.0	*8,041*	74.3	672.7	4	5	1	10
	36	747.0	*8,041*	1			747.0	*8,041*	74.3	672.7	4	5	1	10
	35	747.0	*8,041*	1			747.0	*8,041*	74.3	672.7	4	5	1	10
	34	747.0	*8,041*	1			747.0	*8,041*	74.3	672.7	4	5	1	10
	33	747.0	*8,041*	1			747.0	*8,041*	74.3	672.7	4	5	1	10
	32	747.0	*8,041*	1			747.0	*8,041*	74.3	672.7	4	5	1	10
	31	747.0	*8,041*	1			747.0	*8,041*	74.3	672.7	4	5	1	10
	30	747.0	*8,041*	1			747.0	*8,041*	74.3	672.7	4	5	1	10
	29	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	28	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	27	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	26	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	25	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	24	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	23	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	22	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	21	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	20	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	19	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	18	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	17	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	16	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	15	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	14	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	13	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	12	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	11	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	10	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	9	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	8	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	7	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7	4	5	1	10
	6	747.0	*8,041*	1	761.7	*8,199*	1508.7	*16,239*	74.3	672.7				0
	5	1,099.4	*11,834*	1	761.7	*8,199*	1861.1	*20,033*	74.3	1,025.1	9	5	2	16
	4	1,099.4	*11,834*	1	761.7	*8,199*	1861.1	*20,033*	74.3	1,025.1	9	5	2	16
	3	1,099.4	*11,834*	1	761.7	*8,199*	1861.1	*20,033*	74.3	1,025.1	9	5	2	16
	2	924.9	*9,956*	1			924.9	*9,956*	130.9	794.0	5	3	1	9
	Ground	1,176.9	*12,668*	1	679.6	*7,315*	1,856.5	*19,983*	97.2	1,079.7	6	1	1	8
	Above Grade Totals	**32,122.8**	**345,767**	**40**	**21,245.5**	**228,684**	**53,368.3**	**574,451**	**3,629.3**	**28,493.5**	**174**	**189**	**42**	**405**
BELOW GRADE	P1	2,011.1	*21,647*	1	1,447.2	*15,578*	3,458.3	*37,225*	3,458.3					
	P2	2,273.7	*24,474*	1	1,878.5	*20,220*	4,152.2	*44,694*	4,152.2					
	P3	2,366.7	*25,475*	1			2,366.7	*25,475*	2,366.7					
	Below Grade Totals	**6,651.5**	**71,596**	**3**	**3,325.7**	**35,798**	**9,977.2**	**107,394**						

TOTALS

Site Area	8945.2 sm	Interior Amenity Reduction	913.9 sm	1 Bedroom Total	174 43%
Existing Building GBA ±	21,245.5 sm	Net Residential Area	27,579.6 sm	2 Bedroom Total	189 47%
Proposed Building GBA	32,122.8 sm	Existing Building FSI	2.4	3 bedroom Total	42 10%
Existing+Proposed GBA	**53,368.3** sm	Proposed Building FSI	3.6	Proposed Unit Total	405
		Total FSI	**6.0**	Existing Residential Units	217
				Total Res Units	**622**

** Existing GFA is approximate*

GBA: *Aggregate area of each floor measured from the exterior side of the exterior walls. Includes all shafts, stairs, open to below areas, loading areas, below grade areas and mechanical penthouse.*

GFA: **As per By-law 569-2103, Gross Floor Area (GFA) is reduced by the area in the building used for: parking, loading and bicycle parking below-ground; required loading spaces at the ground level and required bicycle parking spaces at or above-ground; storage rooms, washrooms, electrical, utility, mechanical and ventilation rooms in the basement; shower and change facilities required by this By-law for required bicycle parking spaces; amenity space required by this By-law; elevator shafts; garbage shafts; mechanical penthouse; and exit stairwells in the building.*

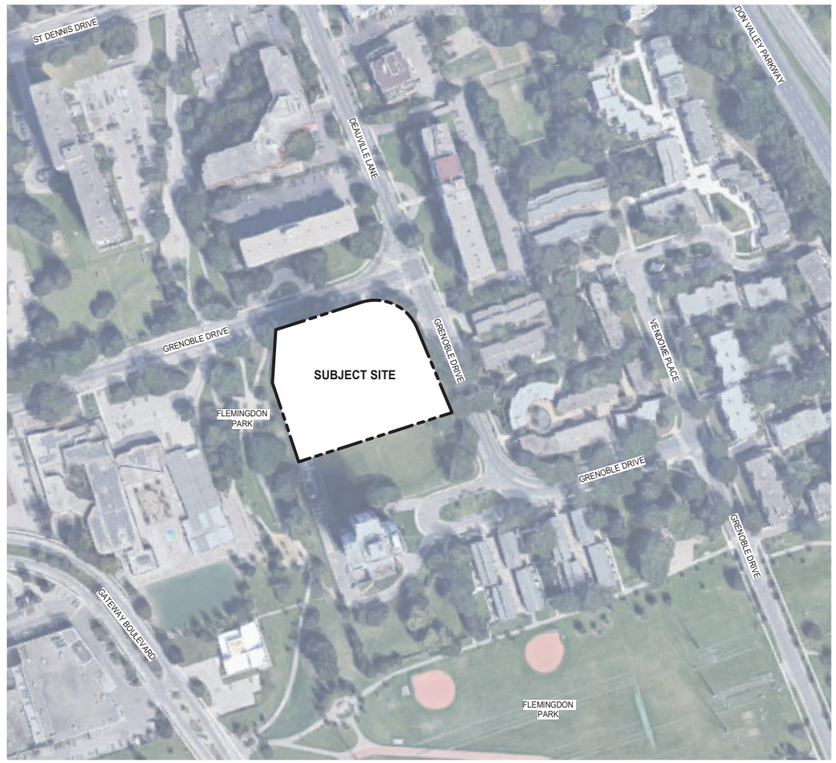
AMENITY AREA

Total Units	Required Indoor Amenity Area 2.0sm / unit		Required Outdoor Amenity Area 2.0sm / unit		Required Total Amenity Area 4.0sm / unit	
	sm	sf	sm	sf	sm	sf
405	810.0	8,719	810.0	8,719	1,620.0	17,438
Floor	**Provided Indoor Amenity Area**		**Provided Outdoor Amenity Area**		**Provided Total Amenity Area**	
	sm	sf	sm	sf	sm	sf
5	665.5	7,163	429.2	4,620	1094.7	11,783
Ground	248.4	2,674	380.8	4,099	629.2	6,773
Total	**913.9**	**9,837**	**810.0**	**8,719**	**1,723.9**	**18,556**

*The provided outdoor amenity area at Ground floor level does not include an additional 3083.7 sm of landscaped space.

Green Roof Statistics		
Available Roof Space Calculation		Proposed
Gross Floor Area, *as defined in Green Roof Bylaw* (sm)		33,082.40
Total Roof Area (sm)		1,178.70
Area of Residential Private Terraces (sm)		0
Rooftop Outdoor Amenity Space, *if in Residential Building* (sm)		40
Area of Renewable Energy Devices (sm)		0
Tower(s) Roof Area with floor plate less than 750sm		747.7
Total Available Roof Space (sm)		391.00
Green Roof Coverage	Required	Proposed
Coverage of Available Roof Space (sm)	234.6	234.6*
Coverage of Available Roof Space (%)	60%	60%

*Proposed green roof includes 25% of outdoor amenity space on 5th floor and the green roof on the tower rooftop



1 A100.S Context Plan
1:2000

The Statistics below are based on requirements as per the Toronto City-Wide Zoning Bylaw 569-2013 and the Toronto Green Standard v4

VEHICULAR PARKING

Parking Zone A (PZA)
Refer to Traffic Report prepared by R.J. Burnside & Associates Ltd., for additional information.

PROPOSED BUILDING	
Residential Parking Spaces (no min. req'd, except for Accessible Spaces)	122
EXISTING BUILDING	
Total Existing Parking Spaces	**244**
Total Omitted due to Demolition and Conversion to Accessible Parking Spaces	106
Remaining Existing Parking to be Residential	120
Remaining Existing Parking to be Visitor	18
Total Existing Parking Spaces Remaining	**138**
Total Residential Parking	**242**
Total Visitor Parking (Min. 2+0.01 x 622 = 8 Required Spaces;'	**18**
Total Parking Spaces	**260**
Total Accessible Parking	**13**
Ratios	
Residential Parking Ratio	**0.39**
Visitor Parking Ratio	**0.03**
Total Parking Ratio	**0.42**
Residential parking spaces w/ Energized Outlet (min. 100%)	242
Res Visitor & Non-Res parking spaces w/ Energized Outlet *(min. 25%)*	31

BICYCLE PARKING

Bicycle Zone 2

				Required	Provided
Res - Long Term	(0.9/unit)	0.90 x	405	365	365
Res - Short Term	(0.2/unit)	0.20 x	405	81	92
			TOTAL	**446**	**457**

* Numbers indicated above are for the new building. No bicycle parking provided for existing building.
** 26 of the short term bicycle parking spaces are provided at P1 level. 66 short term bicycle parking are provided at exterior of grade level.
*** 15% of required long-term bicycle spaces, which is 55 spaces, shall include an Energized Outlet (120V) adjacent to the bicycle parking space.

PROJECT STATISTICS SUMMARY	
Municipal Address: 45 Grenoble Drive	
Zoning Bylaw 569-2013	
Established Grade	127.29
Building Height (Storeys): (excl. Mech Penthouse)	125.3
	(m)
Gross Site Area	8,945.2
	(sm)
GFA - Residential Uses	28,493.5
GFA - Non-Residential Uses	0.0
	(sm)
Floor Space Index/FSI	5.97
Number of Residential Suites	405
Amenity Space Required	1,620.0
Amenity Space Provided	1,723.9
	(sm)
Vehicular Parking Total Provided	122
Bicycle Parking Total Required	446
Bicycle Parking Total Provided	457
Total Loading Spaces Required	1
Total Loading Spaces Provided	1*

*1 existing loading space available

General Project Description	Proposed
Total Gross Floor Area (sm)	28,493.52
Breakdown of project components (sm):	
Residential	28,493.52
Retail	0.00
Commercial	0.00
Industrial	0.00
Institutional/other	0.00
Total number of residential units	405.00

Section 1: For Stand Alone Zoning Bylaw Amendment Applications and Site Plan Control Applications

Low Emissions Transportation	Required	Proposed	Proposed %
Number of parking spaces	0	126	
Number of parking spaces with EVSE (residential)	126	126	100%
Number of parking spaces with EVSE (non-residential)	0	0	

Cycling Infrastructure	Required	Proposed	Proposed %
Number of long-term bicycle parking spaces (all-uses)	365	365	100%
Number of long-term bicycle parking located on:			
a) first storey of building			
b) second storey of building		63	
c) first level below-ground		55	
d) second level below-ground		168	
e) other levels below-ground		79	
Number of short-term bicycle parking spaces	81	92	88%
Number of shower and change facilities *(non-residential)*			

Date	No.	Description
REVISION RECORD		
2025-10-14		Issued for ZBA Resubmission
2024-12-16		Issued for ZBA Submission
ISSUE RECORD		

ONTARIO ASSOCIATION OF ARCHITECTS
LESLIE M. KLEIN
LICENCE
2969

BDP. Quadrangle

Quadrangle Architects Limited
The Well, 8 Spadina Avenue, Suite 2100, Toronto, ON M5V 0S8
t 416 598 1240 www.bdpquadrangle.com

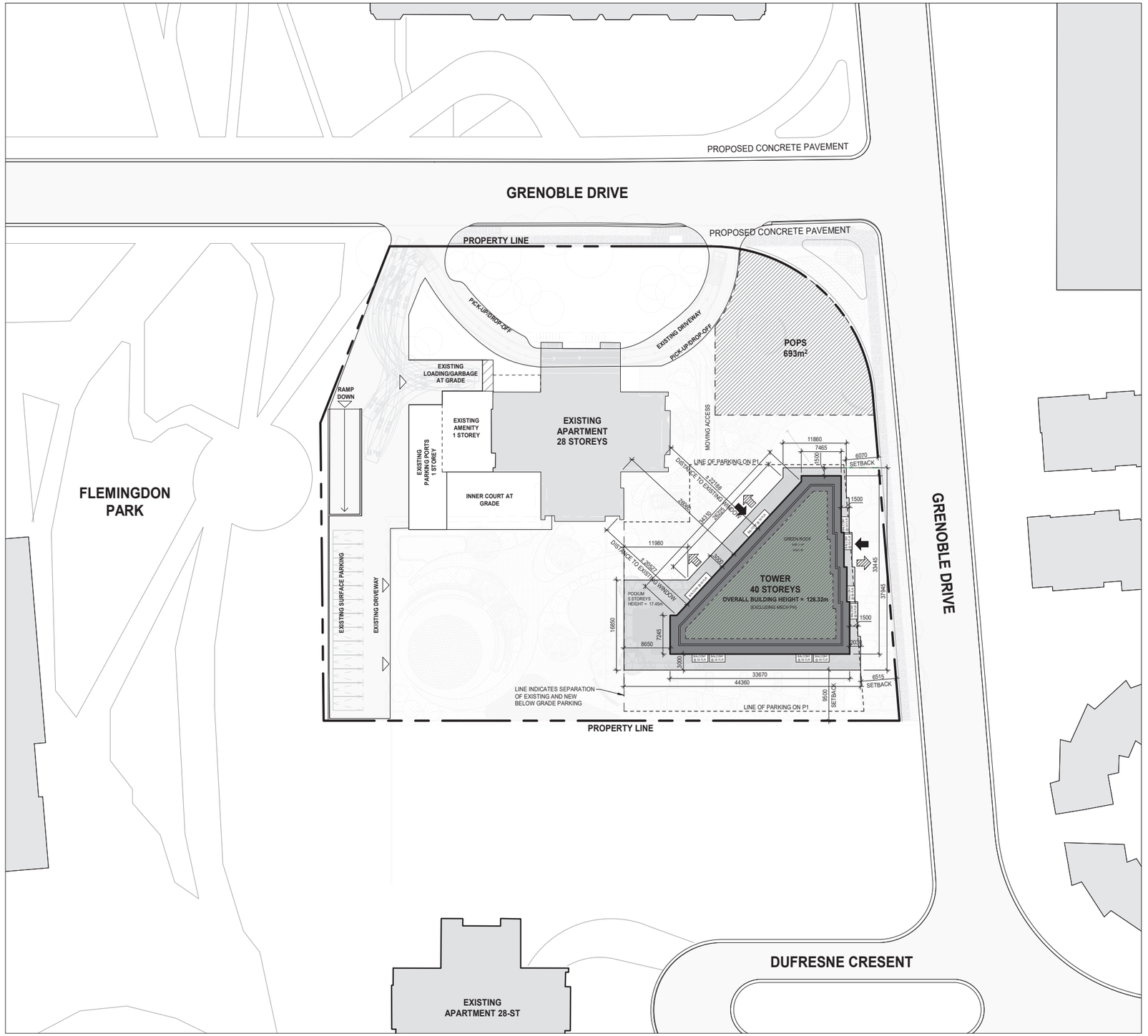
45 GRENOBLE DRIVE

Toronto, Ontario
for
Davad Investments Inc.

23009	1 : 2000	AS	AB
PROJECT SCALE		DRAWN	REVIEWED

Context Plan & Statistics

A100.S



1 A101.S SITE PLAN

LEGEND

- PROPERTY LINE
- LINE OF FLOOR ABOVE/BELOW
- MAIN BUILDING ENTRANCE
- EXIT
- VEHICLE / LOADING ENTRANCE / EXIT
- TYPICAL PARKING SPACE
- BUILDING ENVELOPE

NOTE : DELIVERIES AND MOVE-IN/MOVE-OUT ACTIVITIES WILL BE SCHEDULED THROUGH BUILDING MANAGEMENT. ONLY ONE VEHICLE WILL BE PERMITTED TO USE THE LOADING ACCESS AT ANY GIVE TIME.

Date	No.	Description

REVISION RECORD

2025-10-14	Issued for ZBA Resubmission
2024-12-16	Issued for ZBA Submission

ISSUE RECORD

ONTARIO ASSOCIATION OF ARCHITECTS
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45 GRENOBLE DRIVE

Toronto, Ontario
for
Davad Investments Inc.

23009	1:400	SJ	AB
PROJECT	SCALE	DRAWN	REVIEWED

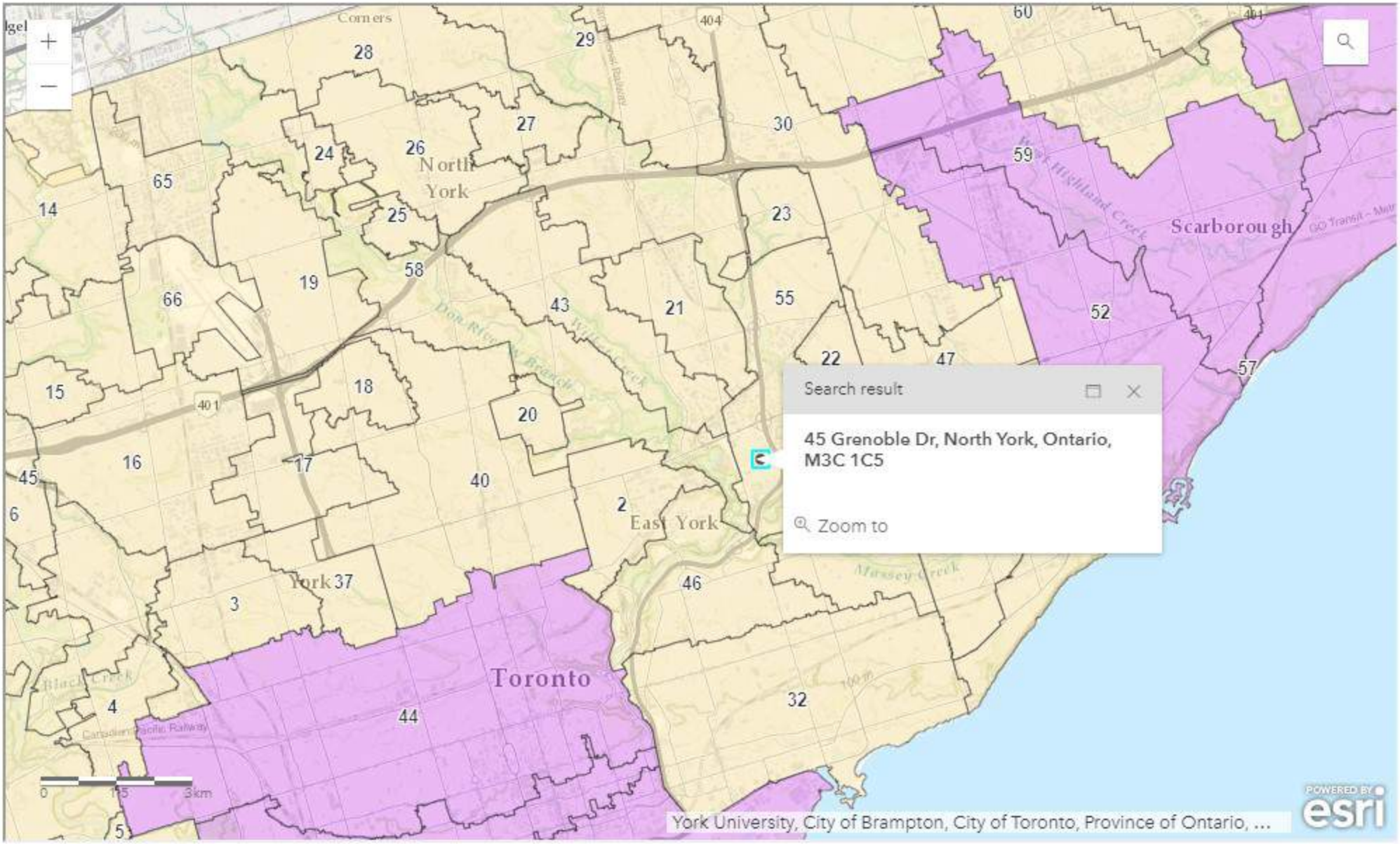
Site Plan

A101.S

Map Legend

- Basement Flooding Study Completed
- Basement Flooding Study in Progress (started before 2019)
- Basement Flooding Study in Progress (started in 2019)

For more information enter an address in the search bar and/or click on the shaded area in the map



SEE DWG #15008

SEE DWG #15009

SEE DWG #15003

SEE DWG #15001

SEE DWG #15001

BLOCK 'B2'

BLOCK 'G1'

BLOCK 'D3'

BLOCK 'B'

DEAUVILLE LANE

DEAUVILLE LANE

BLOCK 'H2'

BLOCK 'D4'

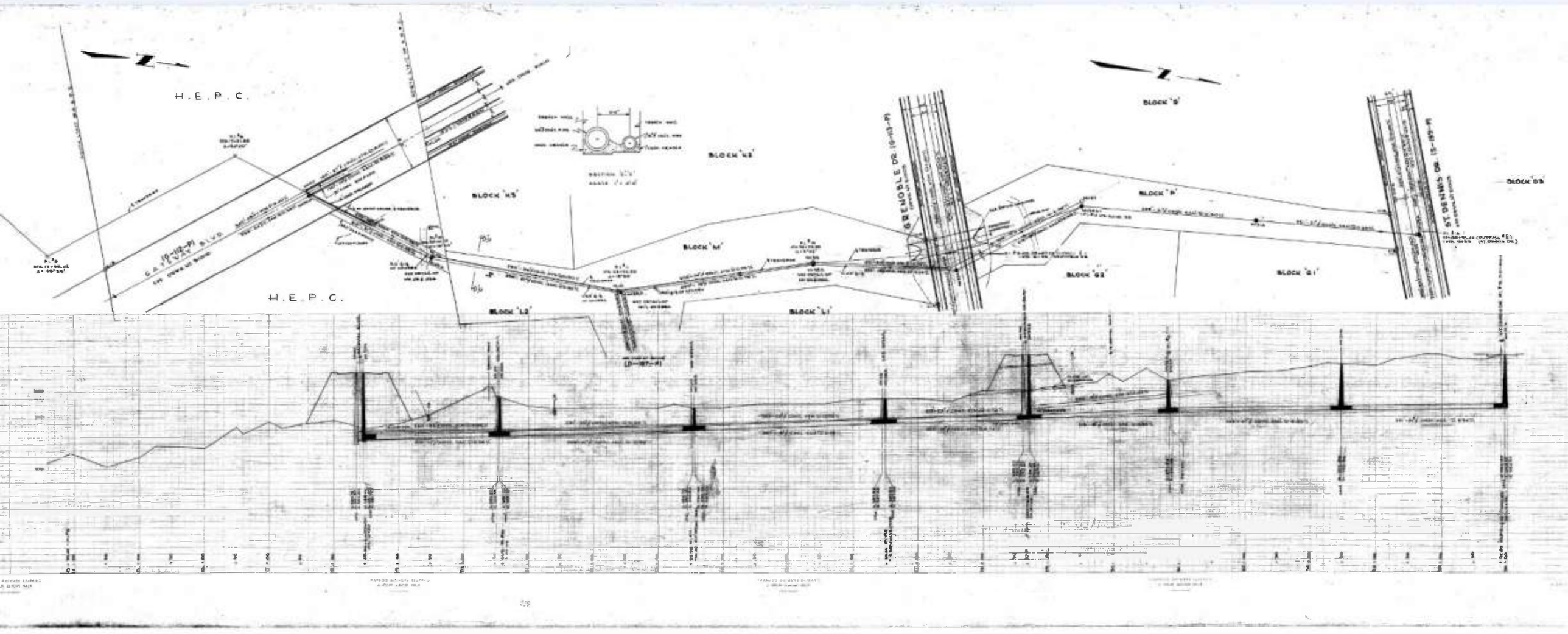
BLOCK 'D6'

BLOCK 'C'

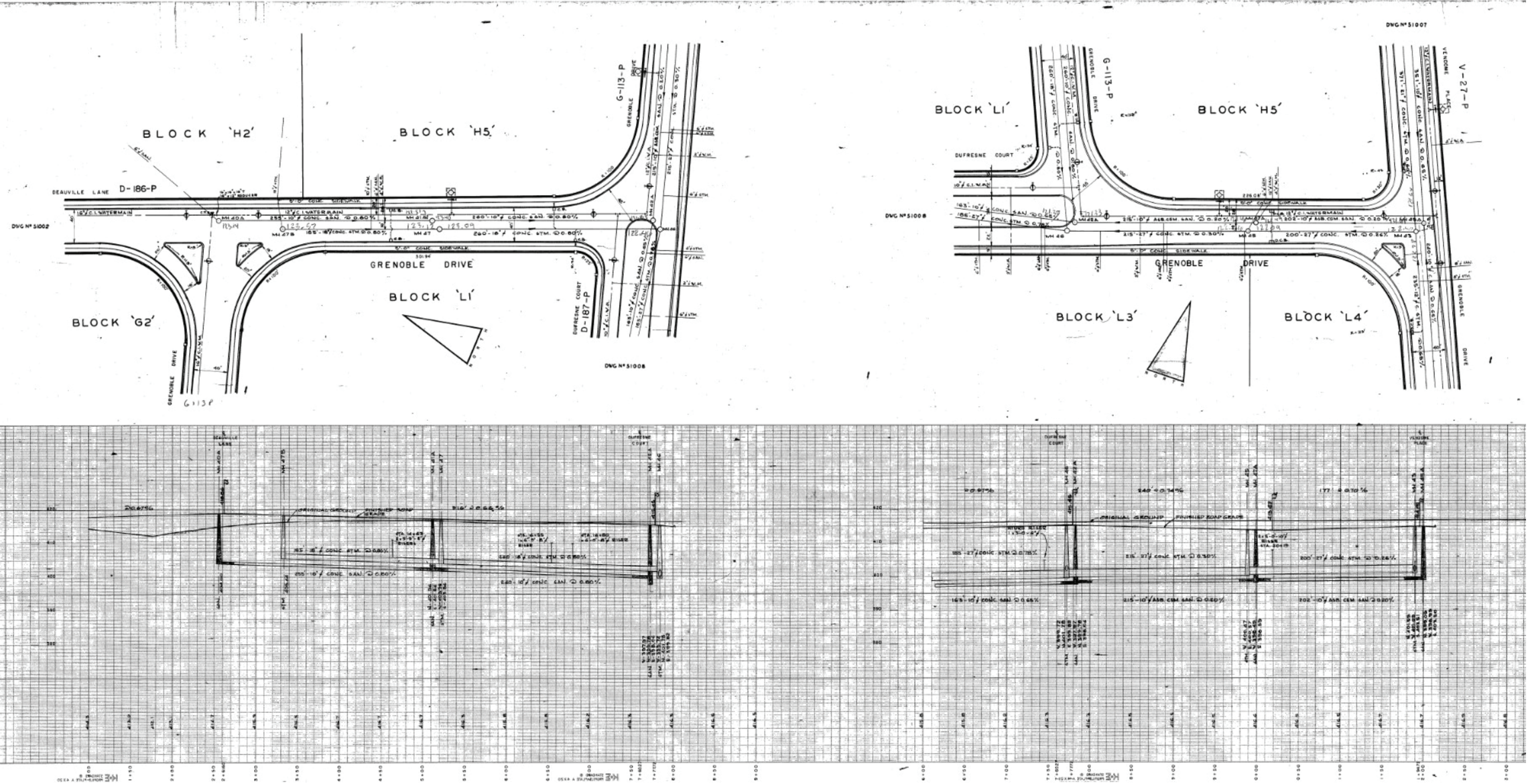
SEE DWG #15000

FLEMINGDON PARK

DEAUVILLE LANE

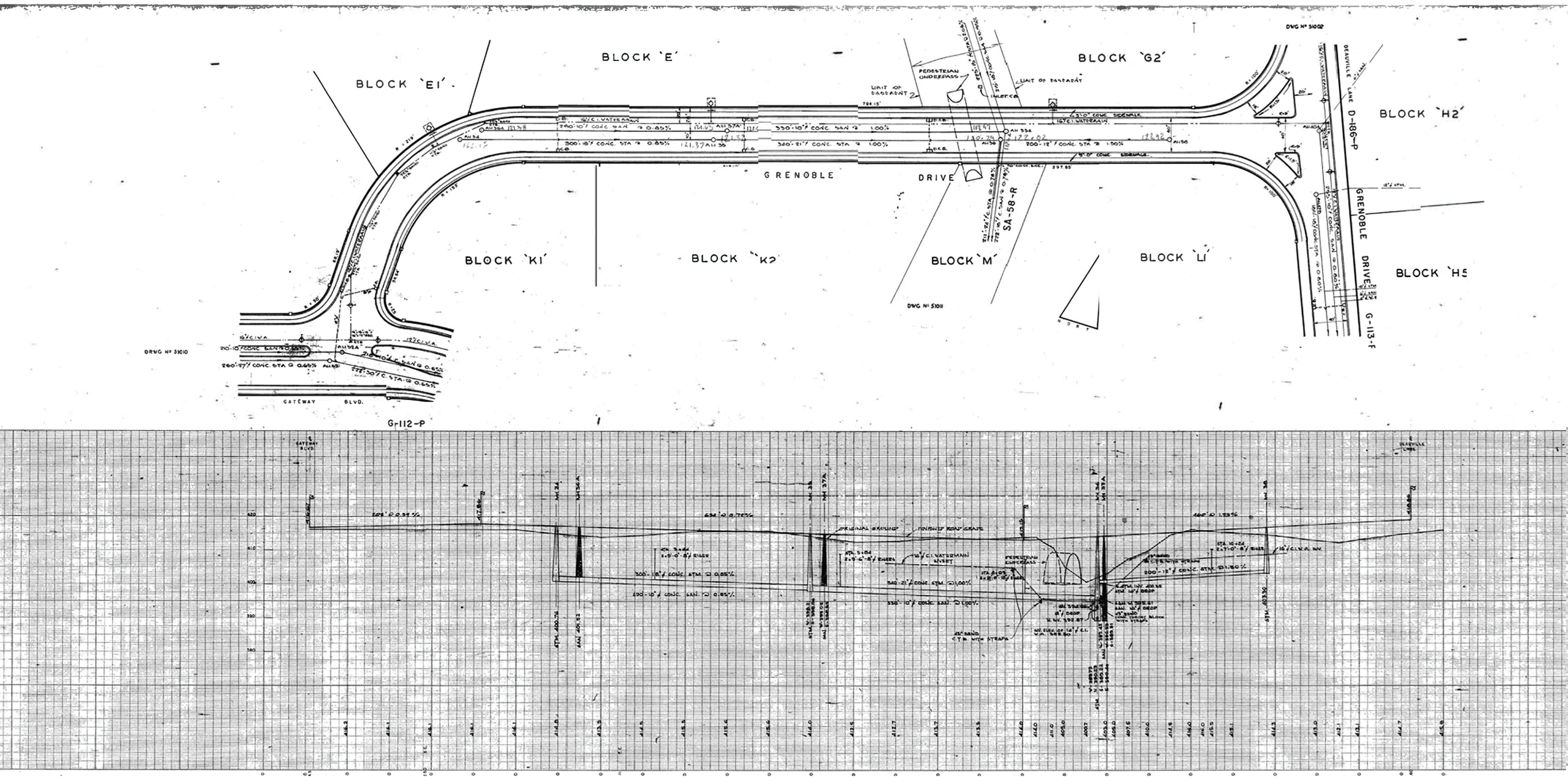


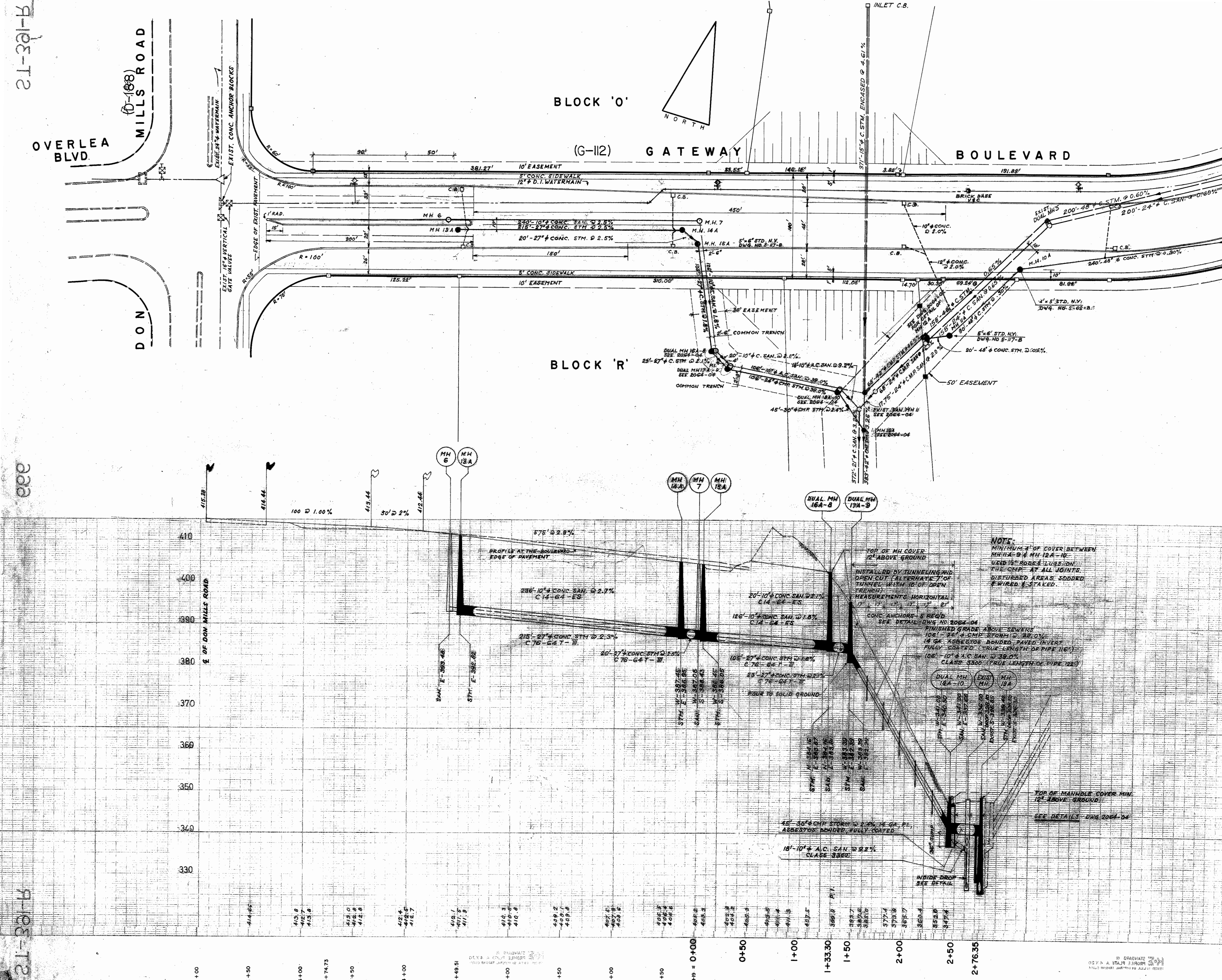
PART OF PLAN & PROFILE SA-58-R-01



PART OF PLAN & PROFILE G-113-03

PART OF PLAN & PROFILE G-113-03





LEGEND:

- MH2A — STORM MANHOLE
- MH2 — SANITARY MANHOLE
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- VALVE & CHAMBER
- HYDRANT & VALVE
- SINGLE CATCHBASIN
- DOUBLE CATCHBASIN

NOTES:

ALL SERVICES CONSTRUCTED TO THE BOROUGH OF NORTH YORK STANDARDS AND SPECIFICATIONS AND TO THE SATISFACTION OF THE COMMISSIONER OF PUBLIC WORKS.

WATERMAINS ARE 12" ϕ DUCTILE IRON PIPE WITH WALL THICKNESS OF 0.37". ALL JOINTS ARE "TYTON" OR EQUIVALENT.

MANHOLES ARE 4'x4' N.Y. STD. DWG. NO. S-58 B EXCEPT IF OTHERWISE NOTED.

HIGH BENCHING REQUIRED ON ALL MANHOLES EXCEPT FOR TYPE S-117-B.

SURFACE COURSE (ASPHALT) ASBESTOS ASPHALT OVERLAY AS PER BOROUGH SPECIFICATIONS.

B.M. TOP OF S.E. BOLT AT BASE OF TRAFFIC LIGHT ON N.E. CORNER OF INTERSECTION OF DON MILLS ROAD & GATEWAY BLVD NORTH YORK DATUM ELEV /5.550

ISSUE	DATE	REVISION	BY	APP'D
D	NOV.68	AS CONSTRUCTED	M.H.	
C				
B				
A				

R. ANDERSON ASSOCIATES LIMITED
CONSULTING ENGINEERS
194 WILSON AVENUE HU-1-5155
TORONTO ONTARIO

REGISTERED PROFESSIONAL ENGINEER
CIVIL
E. D. RICHARD
PROVINCE OF ONTARIO
ENGINEER'S STAMP

APPROVED
JUL 20 1967
BOROUGH OF NORTH YORK
PUBLIC WORKS DEPT.
Per. R.E. Davey
APPROVAL STAMP

BOROUGH OF NORTH YORK
DEPARTMENT OF PUBLIC WORKS

STORM & SANITARY OUTFALL

SCALE: HORIZ 1" = 40', VERT 1" = 10'
BENCH MARK: TWP OF NORTH YORK DATUM (SEE DESCRIPTION ABOVE)
FIELD BOOK:
DATE: FEB - 1967
DRAWN BY: H. J. M. / P.M.
CHECKED BY: F. X. S.
R.V.A. DWG. No.: 206-4-03
APPROVED BY: E.D.R.
DWG. NO.: ST-391-R

SUB. DIV. 666 PHASE II

ST-391-R

Site Investigation & Dye Test Report

PUD24-013

45 Grenoble Drive, TO

April 2024

Lithos
Professional Engineering Services

Lithos Group Inc.
150 Bermondsey Road, Unit 200
Toronto, Ontario, M4A 1Y1

T: 416-750-7769
E: info@lithosgroup.ca
www.LithosGroup.ca

Professional Engineers
Ontario

Site Investigation Report and Dye Test

General Information			
Date:	April 9, 2024	Report No.:	R24-04-09-01
Project No.:	PUD24-013	Address:	45 Grenoble Dr.
Owner:	Davad Investments Inc.	Region/Municipality:	City of Toronto

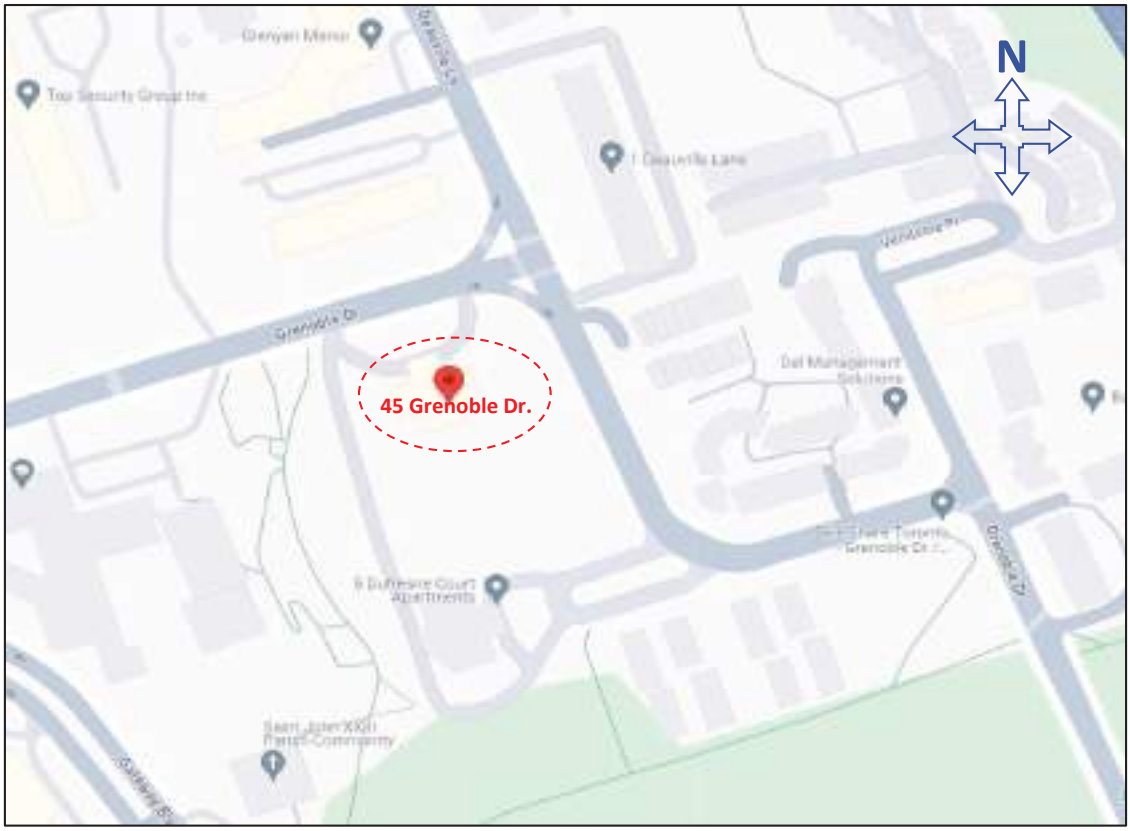
Attendants			
	Name	Title	Contact Info.
Lithos Inspector	Peter Varsos	Construction Inspector	437-215-1144
Lithos Inspector	Pradeep Kumar Oleti	Construction Inspector	905-609-3435
Lithos Inspector	Mauricio Baez	Project Inspector	437-603-7725

Weather Condition							
☐	Sunny	☐	Cold	☐	Light Rain	☐	Windy
■	Partly Cloudy	■	Cool	☐	Heavy Rain	☐	Foggy
☐	Overcast	☐	Warm	☐	Light Snow	☐	
Temperature:+8 °C		☐	Hot	☐	Heavy Snow	☐	

Existing Facilities at Project/Site

It is currently occupied by a 28- storey residential building, driveway, outdoor parking and landscaped areas.

Site Location



General Information			
Date:	April 9, 2024	Report No.:	R24-04-09-01
Project No.:	PUD24-013	Address:	45 Grenoble Dr.
Owner:	Davad Investments Inc.	Region/Municipality:	City of Toronto

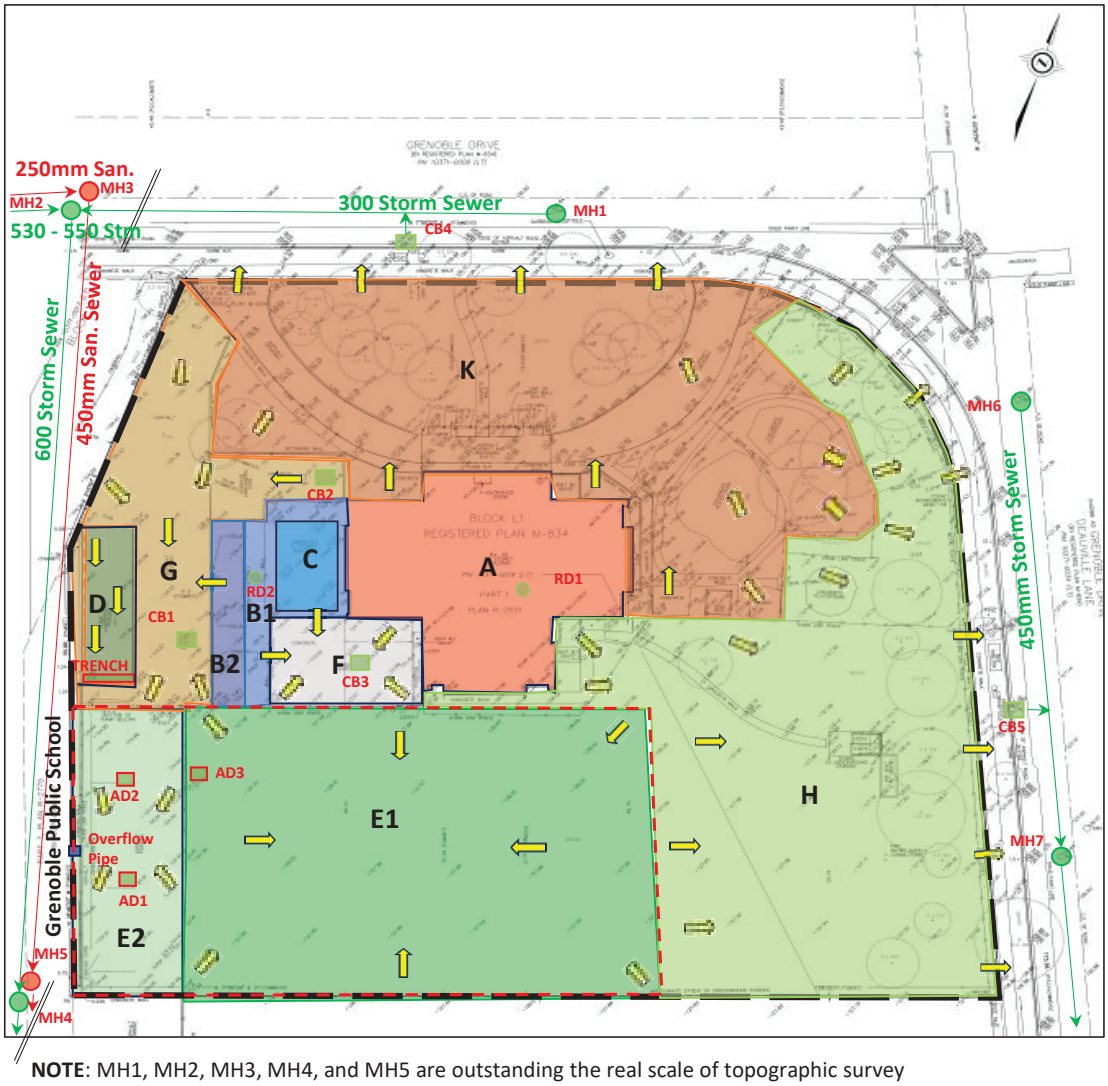
Summary of Findings

1. All the storm runoff from Areas A, B, C, D, E, F, and G at 45 Grenoble Drive, are collected by the existing 600mm diameter Concrete Storm Sewer along the easement within Grenoble Public School.

2. All the storm runoff from Area H flows overland and is collected by the existing 450mm diameter Concrete Storm Sewer along Grenoble Drive, Deauville Lane.

3. All the storm runoff from Area K flows overland and is collected by the existing 300mm Storm Sewer along Grenoble Drive.

4. All the sanitary flow from the existing building at 45 Grenoble Drive, is discharged into the existing 450mm diameter Sanitary Sewer along the easement within Grenoble Public School.



NOTE: MH1, MH2, MH3, MH4, and MH5 are outstanding the real scale of topographic survey

General Information			
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Existing Infrastructure within the area of investigation

General Information			
Date:	April 9, 2024	Report No.:	R24-04-09-01
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Owner:	Davad Investments Inc.	Region/Municipality:	City of Toronto

Existing Infrastructure within the area of investigation

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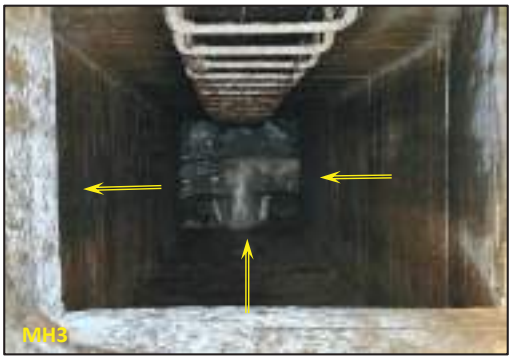
Existing Infrastructure within the area of investigation



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Project No.:	PUD24-013	Address:	45 Grenoble Dr.
Owner:	Davad Investments Inc.	Region/Municipality:	City of Toronto

Investigation Details

Area A

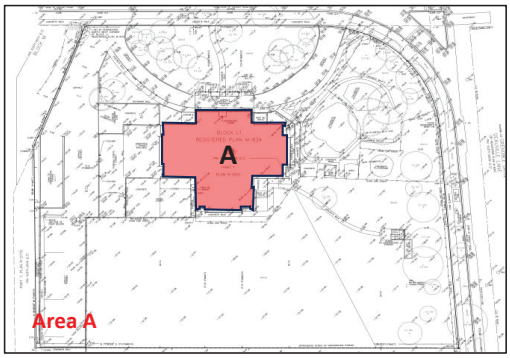
This area has been occupied by the existing building at 45 Grenoble Drive.

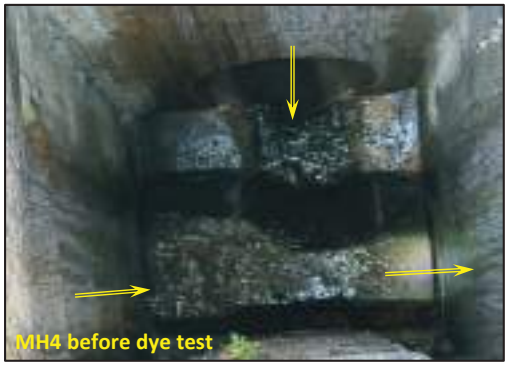
The existing building has a flat roof, and the storm runoff within this area is captured by the existing roof drains and is directed into the ground via the existing network of storm drains within the building.

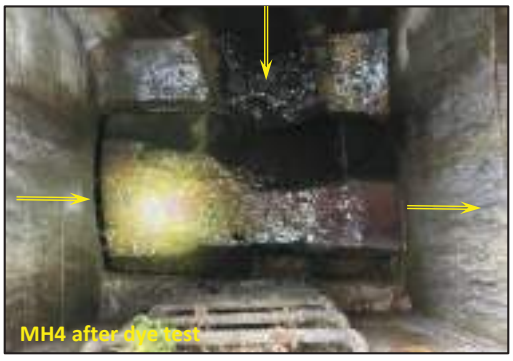
In order to identify the storm drainage pattern within this area, a dye test was conducted on one of the existing roof drains **(Dye Test #1**).

The dye was discharged into one of the roof drains and was observed at MH4.

The result of the subject dye test confirms that the storm runoff within Area A of the existing building at 45 Grenoble Drive is discharged into the existing 600mm diameter Concrete Storm Sewer along easement within Grenoble Public School.







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Date:	April 9, 2024	Report No.:	R24-04-09-01
Project No.:	PUD24-013	Address:	45 Grenoble Dr.
Owner:	Davad Investments Inc.	Region/Municipality:	City of Toronto

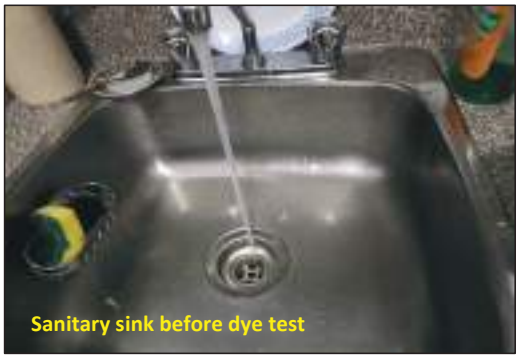
Investigation Details

Dye Test #2:

In order to identify the sanitary discharge pattern within Area A, a dye test was conducted on the existing sanitary network within the property at 45 Grenoble Drive.

The dye was discharged into one of the sanitary sinks and was observed at SAN MH 5.

The result of the subject dye test confirms that, the sanitary discharge from the existing building at 45 Grenoble Drive is conveyed into the existing 450mm diameter Concrete Sanitary Sewer along the easement within Grenoble Public School.


Sanitary sink before dye test


Sanitary sink after dye test


MH5 before dye test


MH5 after dye test

General Information			
Date:	April 9, 2024	Report No.:	R24-04-09-01
Project No.:	PUD24-013	Address:	45 Grenoble Dr.
Owner:	Davad Investments Inc.	Region/Municipality:	City of Toronto

Investigation Details

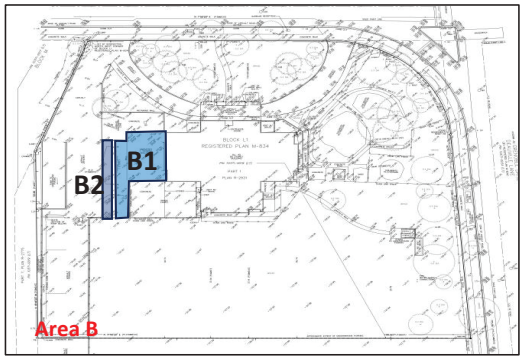
Area B

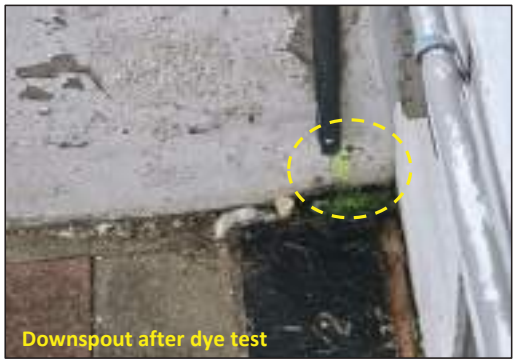
This area is the flat roof of the parking, and amenities building of 45 Grenoble Drive. Based on the storm drainage patter, Area B is divided into Area B1 & Area B2.

In order to identify the storm drainage pattern within Area B1, a dye test was conducted on one of the existing roof drains **(Dye Test #3**).

The dye was discharged into one of the roof drains and was observed at the downspout, discharging overland towards Area F.

The results of the subject dye test confirms that the storm runoff from the rooftop of the existing building at Area B1 flows overland towards Area F.





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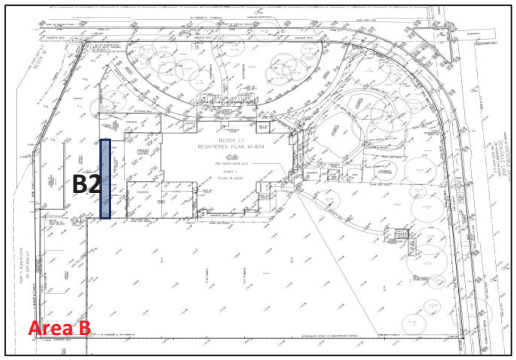
Owner:	Davad Investments Inc.	Region/Municipality:	City of Toronto

Investigation Details

Area B2

All the storm runoff from the rooftop of the existing building at Area B2 is collected by two existing roof drains, directed to the ground via downspouts, flows overland towards Area G.



General Information			
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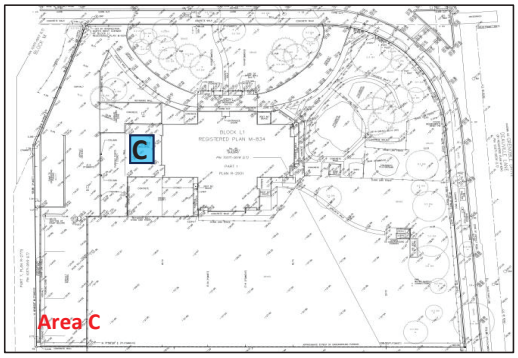
Project No.:	PUD24-013	Address:	45 Grenoble Dr.
Owner:	Davad Investments Inc.	Region/Municipality:	City of Toronto

Investigation Details

Area C

This area consists of the indoor pool within the amenities building of 45 Grenoble Drive.
Water from the pool is discharged into the existing sanitary network within the property at 45 Grenoble Drive.

Refering to the results of Dye Test 2, it is confirmed that, all the sanitary discharge from the existing building at 45 Grenoble Drive is conveyed into the existing 450mm diameter Concrete Sanitary Sewer along the easement within Grenoble Public School.



General Information			
Date:	April 9, 2024	Report No.:	R24-04-09-01
Project No.:	PUD24-013	Address:	45 Grenoble Dr.
Owner:	Davad Investments Inc.	Region/Municipality:	City of Toronto

Investigation Details

Area D

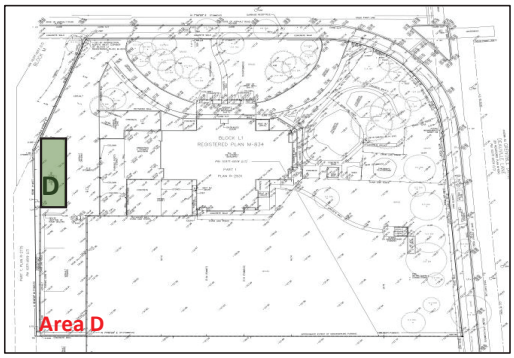
This area is the entrance of the underground parking of the existing building at 45 Grenoble Drive.

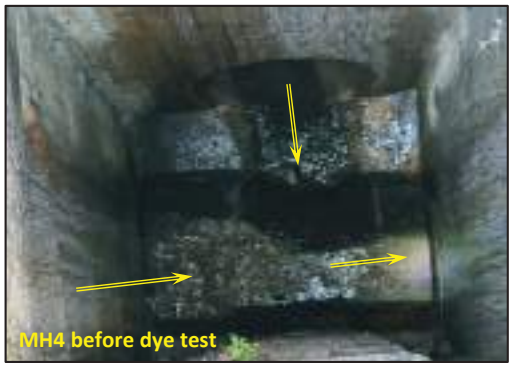
All the storm runoff within this area is captured by the existing trench drain, which is connected to the existing network of storm drains within the building.

In order to identify the storm drainage pattern within this area, a dye test was conducted on the existing trench drain(**Dye Test #4**).

The dye was discharged into the trench drain and observed at MH4.

The result of the subject dye test confirms that, the storm runoff within Area D of the existing building at 45 Grenoble Drive is discharged into the existing 600mm diameter Concrete Storm Sewer along easement within Grenoble Public School.





General Information			
Date:	April 9, 2024	Report No.:	R24-04-09-01
Project No.:	PUD24-013	Address:	45 Grenoble Dr.
Owner:	Davad Investments Inc.	Region/Municipality:	City of Toronto

Investigation Details

Area E1

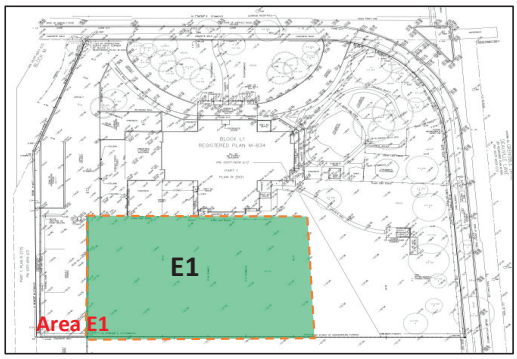
This area is the landscape area on top of the underground parking (two floors) at 45 Grenoble Drive.

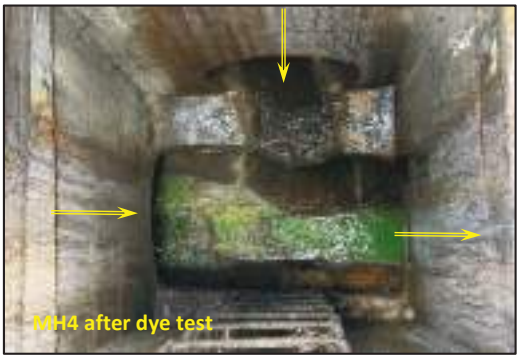
Storm runoff within this area is captured by the area drains and subdrains, which are connected to the existing network of drain pipes within the building.

In order to identify the storm drainage pattern within this area, a dye test was conducted on one of the existing area drains (**Dye Test #5**).

The dye was discharged into the area drain and was observed at MH4.

The result of the subject dye test confirms that the storm runoff within Area E1 of the existing building at 45 Grenoble Drive is discharged into the existing 600mm diameter Concrete Storm Sewer along easement within Grenoble Public School.





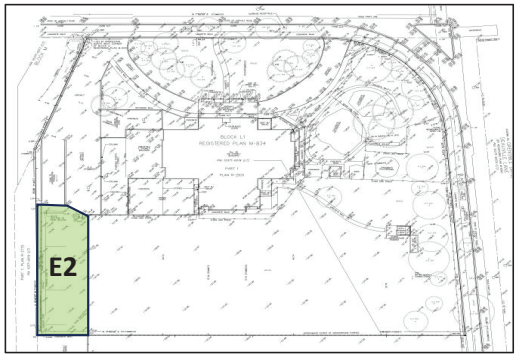
General Information			
Date:	April 9, 2024	Report No.:	R24-04-09-01
Project No.:	PUD24-013	Address:	45 Grenoble Dr.
Owner:	Davad Investments Inc.	Region/Municipality:	City of Toronto

Investigation Details

Area E2

This area is the asphalt paved parking lot, which is the roof of the existing one storey underground parking at 45 Grenoble Drive.

Storm runoff within this area is captured by the existing area drains, which are connected to the existing network of storm drain pipes within the building, the excess runoff is directed towards the adjacent property, Grenoble Public School.

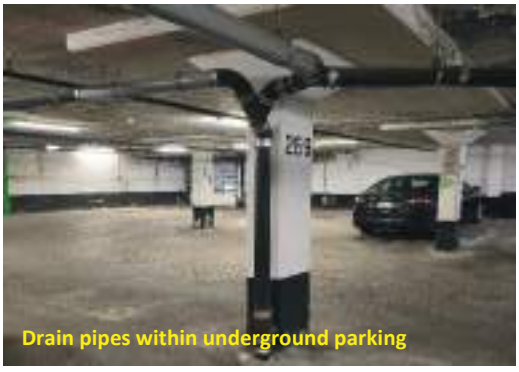



Area Drains 1 and 2


Area Drain 1


Area Drain 2


Overflow Pipe


Drain pipes within underground parking

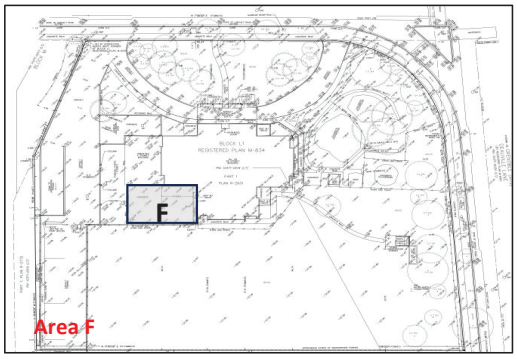
General Information			
Date:	April 9, 2024	Report No.:	R24-04-09-01
Project No.:	PUD24-013	Address:	45 Grenoble Dr.
Owner:	Davad Investments Inc.	Region/Municipality:	City of Toronto

Investigation Details

Area F

This area is the entrance for the indoor pool of the existing building at 45 Grenoble Drive. This area has an unpaved area with granular material and a paved area with unit pavers.

Storm runoff within the unpaved area is infiltrated into the ground, the excess runoff overflows to the paved area and is captured by the CB3, which is connected to the existing network of storm pipes within the building.



General Information			
Date:	April 9, 2024	Report No.:	R24-04-09-01
Project No.:	PUD24-013	Address:	45 Grenoble Dr.
Owner:	Davad Investments Inc.	Region/Municipality:	City of Toronto

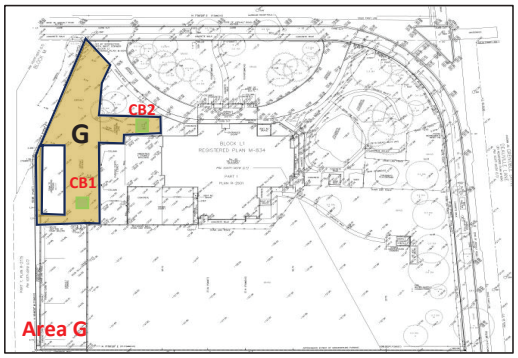
Investigation Details

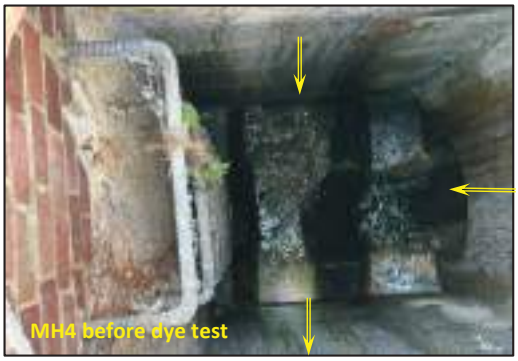
Area G

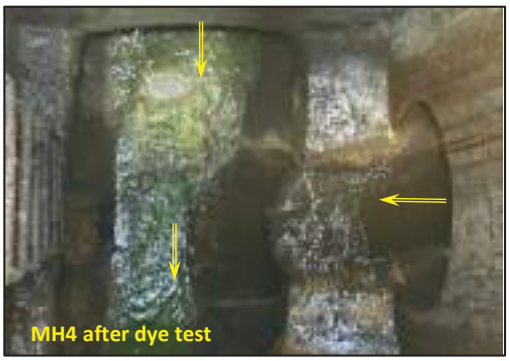
This area is the asphalt paved driveway to the outdoor parking.

Storm runoff within this area is captured by CB1 and CB2.
In order to identify the storm drainage pattern within Area G, a dye test was conducted on one of the CB's, CB1(**Dye Test #6**).
The dye was discharged into the existing CB1 and was observed at MH4.

The results of the subject dye test confirms that the storm runoff within Area G at 45 Grenoble Drive is discharged into the existing 600mm diameter Concrete Storm Sewer along easement within Grenoble Public School.







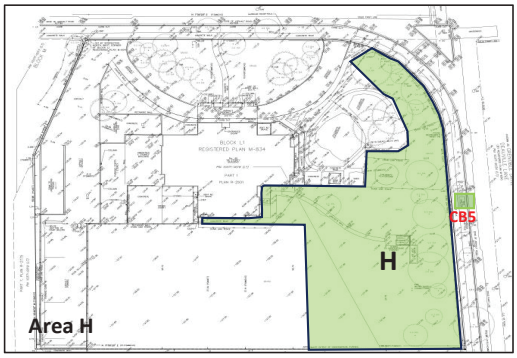
General Information			
Date:	April 9, 2024	Report No.:	R24-04-09-01
Project No.:	PUD24-013	Address:	45 Grenoble Dr.
Owner:	Davad Investments Inc.	Region/Municipality:	City of Toronto

Investigation Details

Area H

This area consists of concrete paved walkways and an unpaved grass filled area along the East side of the property.

Storm runoff within this area flows overland towards Grenoble Drive, Deauville Lane, and is captured by existing catch basin CB5 along the street, which is connected to the existing 450mm diameter Concrete Storm Sewer.



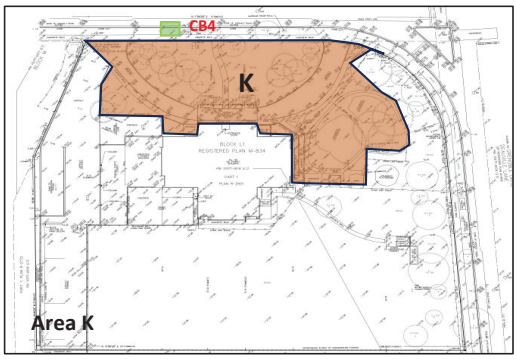
General Information			
Date:	April 9, 2024	Report No.:	R24-04-09-01
Project No.:	PUD24-013	Address:	45 Grenoble Dr.
Owner:	Davad Investments Inc.	Region/Municipality:	City of Toronto

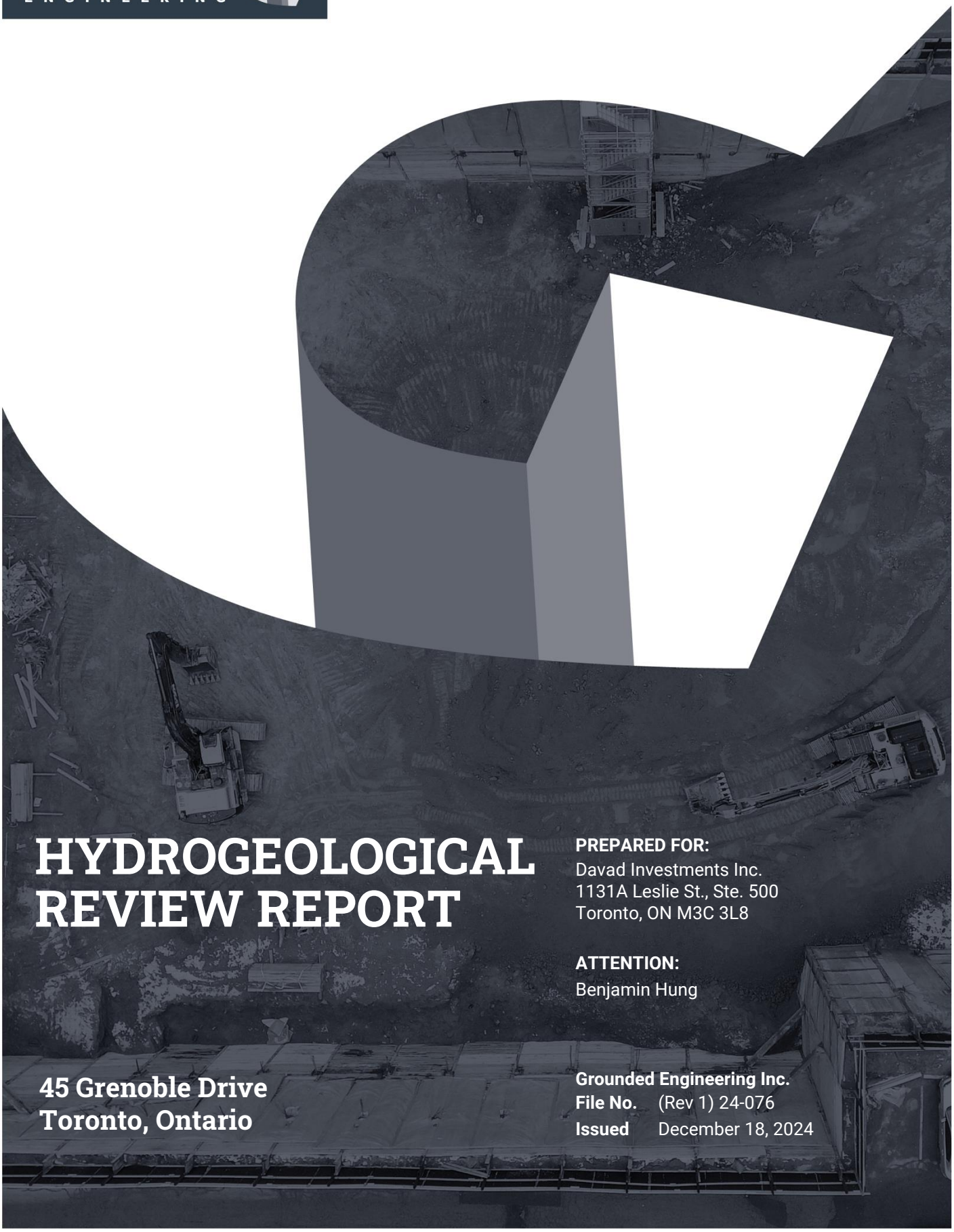
Investigation Details

Area K

This area consists of an asphalt paved driveway, concrete paved walkway and an unpaved grass filled area towards the North side of the property.

Storm runoff within this area flows overland towards the street, and is captured by existing catch basin, CB4 along Grenoble Drive, which is connected to the existing 300mm diameter Storm Sewer along Grenoble Drive.





HYDROGEOLOGICAL REVIEW REPORT

PREPARED FOR:
Davad Investments Inc.
1131A Leslie St., Ste. 500
Toronto, ON M3C 3L8

ATTENTION:
Benjamin Hung

45 Grenoble Drive
Toronto, Ontario

Grounded Engineering Inc.
File No. (Rev 1) 24-076
Issued December 18, 2024

1 Banigan Drive, Toronto ON M4H 1G3 | (647) 264-7909 | groundedeng.ca | Grounded Engineering

- All boreholes identified on site
- All buildings identified on site and within the study area
- The site boundaries
- Any watercourses and drainage features within the study area

3 Geology and Physical Hydrogeology

The site stratigraphy, including soil materials, composition and texture are presented in detail on the borehole logs in Appendix A. A summary of stratigraphic units that were encountered at the site is outlined as follows:

Site Stratigraphy				
Stratum/Formation	**Depth Range (mbgs)**	**Elevation Range (masl)**	**Hydraulic Conductivity (m/s)**	**Method of Determination**
Fill	0 – 2.2	127.7 – 125.5	1.0×10^{-6}	literature[1]
Uppers Sands	2.2- 8.5	125.5 – 119.2	1.0×10^{-5}	literature/grain size
Glacial Till	8.5 – 18.7	119.2 – 109.1	1.0×10^{-9}	slug test

Surface Water			
Surface Water Body	**Distance from site (m)**	**Direction from site**	**Hydraulically Connected to Site (yes/no)**
Don River	400	East	No

4 Groundwater Elevations

4.1 Monitoring Well Information

Well ID	Well Diameter (mm)	Ground Surface (masl)	Top of Screen (masl)	Bottom of Screen (masl)	Screened Geological Unit
BH101-S	50	128.1	125.0	122	Sand
BH101-D	50	128.1	115.9	112.9	Glacial Till
BH102-S	50	127.8	124.8	121.7	Sand

[1] Freeze and Cherry (1979)

- Short term (construction) dewatering assumes a caisson wall hydraulic conductivity of 10^{-9} m/s. The caisson wall option assumes a continuous interlocking caisson wall to act as a lateral groundwater barrier.
- In the long term, the basement is assumed to be a fully watertight structure. There will be no long term water takings or discharge.
- A Factor of Safety of 3.0 was used for all groundwater seepage volume calculations.

The design hydraulic conductivities for the site are:

Design Hydraulic Conductivity	
Stratum/Formation	**K (m/s)**
Earth Fill	1.0×10^{-6}
Upper Sands	1.0×10^{-5}
Silts and Clay	1.0×10^{-9}

Stored Groundwater (pre-excavation/dewatering)					
Volume of Excavation (m^3)	**Volume of Excavation Below Water Table (m^3)**	**Estimated Volume of Stored Groundwater**		**Estimated Volume of Available Groundwater**	
		m^3	**L**	**m^3**	**L**
23,888	9,305	4,900	4,900,000	1,200	1,200,00

The quantity estimates for both short- and long-term conditions are presented below and in the appendices.

Short Term (Construction) Steady State Groundwater Quantity						
Scenario	**Estimated Groundwater Seepage**		**Design Rainfall Event (25mm)**		**Estimated Total Daily Water Takings**	
	L/day	**L/min**	**L/day**	**L/min**	**L/day**	**L/min**
Soldier Pile & Lagging	95,000	66.0	57,000	39.6	152,000	105.6
Full Caisson Wall	5,000	3.5	57,000	39.6	62,000	43.1

Long Term (Permanent) Steady State Groundwater Quantity - Fully Watertight					
Estimated Groundwater Seepage		**Estimated Infiltrated Stormwater – Design Rainfall Event (25mm)**		**Estimated Total Daily Water Takings**	
L/day	**L/min**	**L/day**	**L/min**	**L/day**	**L/min**
0	0	0	0	0	0

Regulatory Requirements	
Environmental Activity and Sector Registry (EASR) Posting	Required
Short Term Permit to Take Water (PTTW)	Not Required
Long Term Permit to Take Water (PTTW)	Not Required
Short Term Discharge Agreement City of Toronto	Required
Long Term Discharge Agreement City of Toronto	Not Required

The lowest elevation of the proposed structure (taken as the base of subfloor drainage layer) at the site will be below the determined MAGWL. A fully waterproofed underground structure will be required at this site.

As on-site management of stormwater or groundwater (which includes creating a watertight basement structure) is technologically feasible, it may also be possible to obtain a Long Term Storm/Sanitary Discharge Exemption for the purpose of a **temporary, emergency foundation drainage** connection to the City's Sewers. Note however, that all conditions and requirements within Sections 4 and 5 of Toronto Water's Foundation Drainage Policy must be met for an exemption to be considered.

The City of Toronto will require Discharge Agreements in the short term, if any water is to be discharged to the storm or sanitary sewers.

Please note:

- The proposed pump schedule for short term construction dewatering has not been completed. As such, the actual peak short term discharge rate is not available at the time of writing this report. The pump schedule must be specified by either the dewatering contractor retained or the mechanical consultant.
- If an emergency repair connection is proposed, the pump schedule for this connection has not been completed. The actual emergency discharge rate is not available at the time writing of this report. The pump schedule must be specified by the mechanical consultant.
- On-site containment (infiltration gallery/dry well etc.) has not been considered as part of the proposed development at this time. If this option is considered, additional work will have to be conducted (i.e. infiltration testing).

11 Evaluation of Impact

11.1 Zone of Influence

Localized dewatering of an aquifer produces a cone-shaped depression in the groundwater table that extends some distance away from the dewatering point. The lateral distance which the cone of depression extends (i.e., the distance to where drawdown is effectively zero) is known as the Zone of Influence (ZOI).

The ZOI was calculated using the Sichardt equation below.

$$R_0 = 3000(\Delta H)\sqrt{K}$$

ΔH	=	dewatering thickness (m)
K	=	hydraulic conductivity (m/s)
R_0	=	radius of influence (m)

The ZOI with respect to groundwater seepage at the site is summarized as follows.

Zone of Influence (ZOI)		
	Short Term (Construction), m	**Long Term (Permanent), m**
Soldier Pile and Lagging Scenario	19	0
Cutoff Wall Scenario	0	0

11.2 Land Stability

The impacts to land stability on adjacent structures due to the proposed short and long term dewatering at the site are summarized as follows:

Land Stability		
	Short Term (Construction)	**Long Term (Permanent)**
Dewatering Thickness (m)	2.1	0
Increase in Effective Stress (kPa)	21	0
Maximum Theoretical Settlement due to Dewatering (mm)	1	0
Public Realm Theoretical Settlement due to Dewatering (mm)	<1	0

On this basis, the impact of the proposed dewatering on the existing adjacent structures is considered by Grounded to be within acceptable limits.

11.3 City's Sewage Works

Negative impacts to City's sewage works may occur in terms of the quantity or quality of the groundwater discharged. This report provided the estimated quantity of the water discharge. However, this report does not speak to the sewer capacities. The sewer capacity analysis is provided under a separate cover by the civil consultant.

The quality of the proposed groundwater discharge is provided in Section 7. As noted in that section, the groundwater sample exceeded the Limits for Storm Sewer Discharge and met the Limits for Sanitary and Combined Sewer Discharge.

As such, additional treatment will be required before the water can be discharged to the Storm Sewer to avoid impacts to the City's sewage works caused by groundwater quality. Additional

treatment will not be required before the water can be discharged to the Sanitary and Combined Sewer.

11.4 Natural Environment

There are no natural waterbodies within the ZOI that will be affected by the proposed construction dewatering or permanent drainage. Any groundwater which will be taken from the site will be discharged (if required) into the City's sewer systems and not into any natural waterbody. As such, there will be no impact to the natural environment caused by the water takings at the site.

11.5 Local Drinking Water Wells

The site is located within the municipal boundaries of the City of Toronto. The site and surrounding area are provided with municipal piped water and sewer supply. There is no use of the groundwater for water supply in this area of Toronto. As such, there will be no impact to drinking water wells.

11.6 Contamination Source

The site and immediately surrounding area currently consist mostly of residential and commercial areas. These land uses are not anticipated to be a source of potential contamination and are not expected to provide an Area of Potential Environmental Concern for the site. As such, the pumping of groundwater at the site is not anticipated to facilitate the movement of potential contaminants onto the site. Evaluation of the environmental condition of the site has been completed under a separate cover.

12 Proposed Mitigation Measures and Monitoring Plan

As a result of dewatering and draining the soil, changes in groundwater level have the potential to cause settlement based on the change in the effective stresses within the ZOI. The extent of the negative impact identified in previous sections will be limited to the ZOI caused by the groundwater taking at the site.

If adjacent buildings or municipal infrastructure are within the ZOI and will undergo settlement that may be considered unacceptable as identified the Land Stability Section, consideration should be given to implement a monitoring and mitigation program during dewatering activities.

A caisson cutoff wall shoring system is also provided. This system will provide additional risk mitigation against loss of ground, and will limit the ZOI to 0 m per the above sections.

The temporary construction dewatering system must be properly installed and screened to ensure sediments and fines will not be removed, which is typically a primary cause of dewatering related settlement.

13 Limitations

Natural occurrences, the passage of time, local construction, and other human activity all have the potential to directly or indirectly alter the subsurface conditions at or near the project site. Contractual obligations related to groundwater or stormwater control must be considered with attention and care as they relate this potential site alteration.

The hydrogeological engineering advice provided in this report is based on the factual observations made from the site investigations as reported. It is intended for use by the owner and their retained design team. If there are changes to the features of the development or to the scope, the interpreted subsurface information, geotechnical engineering design parameters, advice, and discussion on construction considerations may not be relevant or complete for the project. Grounded should be retained to review the implications of such changes with respect to the contents of this report.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Grounded accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report, including consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

The authorized users of this report are Davad Investments Inc. and their design team, for whom this report has been prepared. Grounded Engineering Inc. maintains the copyright and ownership of this document. Reproduction of this report in any format or medium requires explicit prior authorization from Grounded Engineering Inc. The City of Toronto may also make use of and rely upon this report, subject to the limitations as stated.

14 Closure

If there are any questions regarding the discussion and advice provided, please do not hesitate to contact our office. We trust that this report meets your requirements at present.

For and on behalf of our team,

GROUNDED ENGINEERING

LICENSED PROFESSIONAL ENGINEER
M. DIEZ DE AUX
100159147
2024/12/18
PROVINCE OF ONTARIO

Andrew Kernerman B.A.Sc., EIT.
Project Coordinator

Michael Diez de Aux, M.A.Sc., P.Geo., P.Eng.
Associate

14 Closure

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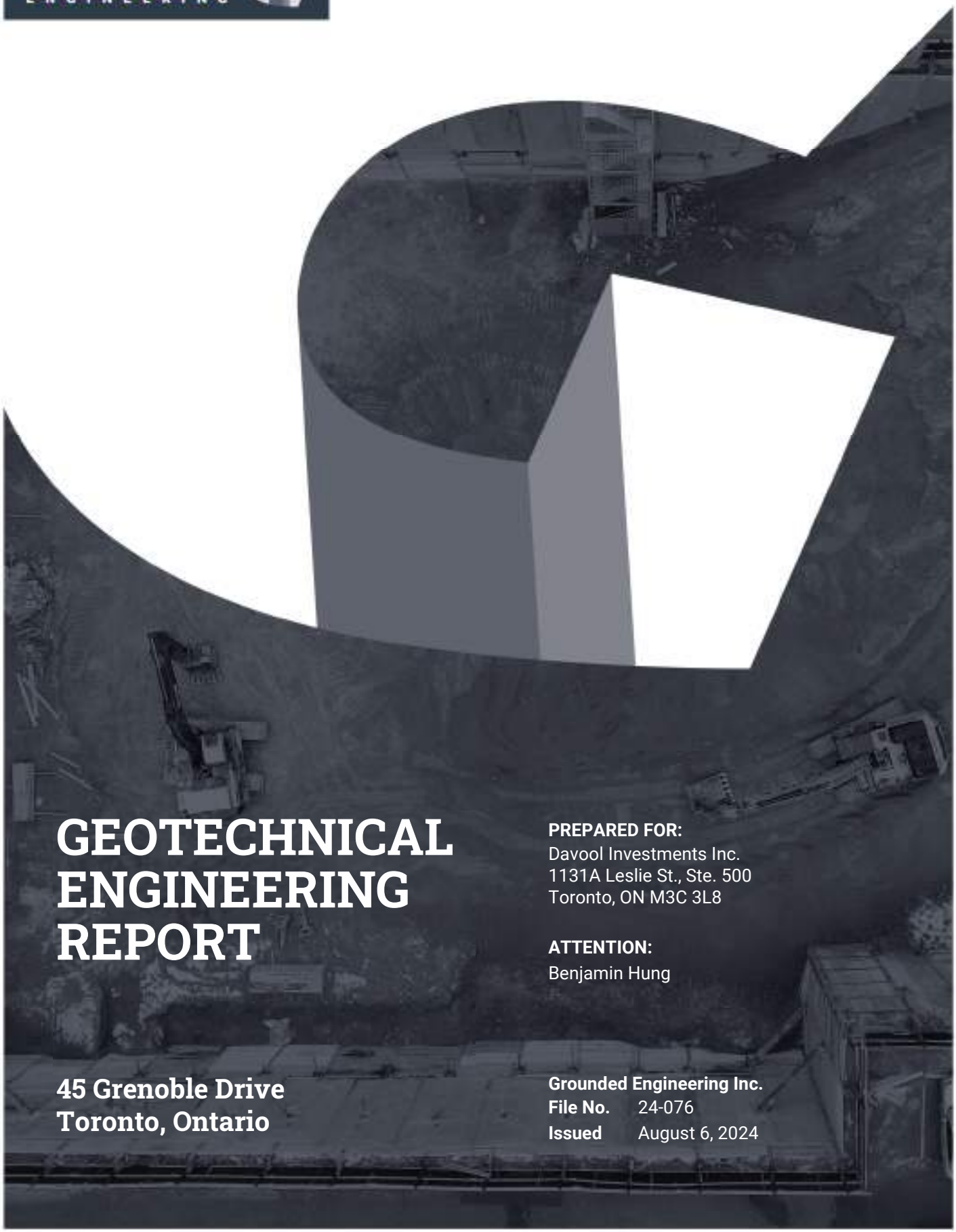
For and on behalf of our team,

GROUNDED ENGINEERING

Andrew Kernerman B.A.Sc., EIT.
Project Coordinator

Michael Diez de Aux, M.A.Sc., P.Geo., P.Eng.
Associate



GEOTECHNICAL ENGINEERING REPORT

PREPARED FOR:
Davool Investments Inc.
1131A Leslie St., Ste. 500
Toronto, ON M3C 3L8

ATTENTION:
Benjamin Hung

45 Grenoble Drive
Toronto, Ontario

Grounded Engineering Inc.
File No. 24-076
Issued August 6, 2024

1 Introduction

Davool Investments Inc.has retained Grounded Engineering Inc. to provide geotechnical engineering design advice, in accordance with the City of Toronto Terms of Reference for Geotechnical Study, for their proposed development at 45 Grenoble Drive, in Toronto, Ontario. The level of study presented in this report is consistent with the requirements for a Zoning Bylaw Amendment, Plan of Subdivision, Consent to Server, or Site Plan Control application. Deep drilling and pressuremeter testing is excluded from the current scope of work. Additional boreholes, in-situ testing, and a detailed geotechnical engineering report will be required for detailed foundation design and building permit purposes.

There is an existing 28-storey building with two levels of underground parking across the site, and under the proposed basement footprint. The existing tower will remain.

The proposed project includes the construction of a new 39± storey infill tower, with a P3 underground parking structure beneath the new tower footprint. The proposed P3 FFE is set at 119.21 m. The existing underground structure will therefore be lowered from a P2 to a P3 in that location.

Grounded has been provided with the following reports and drawings to assist in our geotechnical scope of work:

- Site survey, prepared by JD Barnes (Mar 20, 2023).
- Architectural Drawings, “45 Grenoble Drive, Toronto, Ontario”; Project 23009, dated May 22, 2024 (Issued for rezoning application), prepared by BDP Quadrangle Limited.

Grounded’s subsurface investigation of the site to date includes four (4) boreholes (Boreholes 101 to 104) with seven (7) monitoring wells, which were advanced from May 27th to 29th, 2024.

Based on the borehole findings, preliminary geotechnical engineering advice for the proposed development is provided for foundations, seismic site classification, earth pressure design, slab on grade design, and basement drainage. Construction considerations including excavation, groundwater control, and geostructural engineering design advice are also provided.

Grounded Engineering must conduct the on-site evaluation of founding subgrade as foundation and slab construction proceeds. This is a vital and essential part of the geotechnical engineering function and must not be grouped together with other “third-party inspection services”. Grounded will not accept responsibility for foundation performance if Grounded is not retained to carry out all the foundation evaluations during construction.

6 Closure

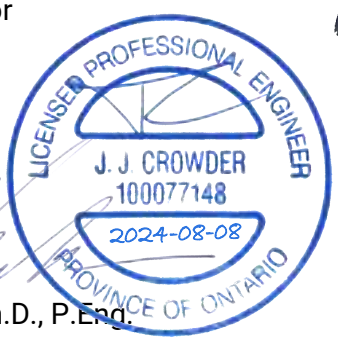
If the design team has any questions regarding the discussion and advice provided, please do not hesitate to have them contact our office. We trust that this report meets your requirements at present.

For and on behalf of our team,

GROUNDED ENGINEERING

Andrew Kernerman, B.A.Sc., EIT.
Project Coordinator

Michael Diez de Aux, M.A.Sc., P.Geo., P.Eng.
Associate



Jason Crowder, Ph.D., P.Eng.
Principal

Davad Investments Inc.

December 11, 2024

Attention: Chief Engineer and Executive Director, Engineering and Construction Services
c/o Manager, Development Engineering

cc: General Manager, Toronto Water
c/o Manager, Environmental Monitoring and Protection Unit
2126 Kipling Avenue Etobicoke, ON M9W 4K5

Dear Sir or Madam,

I David Waterstein, confirm and undertake that I will construct and maintain all building(s) on the subject lands (45 Grenoble Drive, Toronto) in a manner which shall be completely water-tight below grade and resistant to hydrostatic pressure without any necessity for Private Water Drainage System (subsurface drainage system) consisting of but not limited to weeping tile(s), foundation drain(s), private water collection sump(s), private water pump or any combination thereof for the disposal of private water on the surface of the ground or to a private sewer connection directly or indirectly or drainage system for disposal directly or indirectly in a municipal sewer.

David Waterstein, President
Name (printed) and Title

david@gatewayproperties.ca
Email

per: _____
Signature

I, David Waterstein, have the authority to bind the corporation.

1131A Leslie Street, Suite 500 • Toronto, Ontario, Canada M3C 3L8
Tel: (416) 907-7420 • Fax: (416) 907-7427 • www.gatewayproperties.ca

I have attached the following documents, confirming that I have ownership to bind the corporation:

Corporation Profile Report obtained within 30 days

AND

Parcel Register obtained within 30 days

1131A Leslie Street, Suite 500 • Toronto, Ontario, Canada M3C 3L8
Tel: (416) 907-7420 • Fax: (416) 907-7427 • www.gatewayproperties.ca

Ontario

Ministry of Public and
Business Service Delivery

Profile Report

DAVAD INVESTMENTS INC. as of December 12, 2024

Act	Business Corporations Act
Type	Ontario Business Corporation
Name	DAVAD INVESTMENTS INC.
Ontario Corporation Number (OCN)	2225562
Governing Jurisdiction	Canada - Ontario
Status	Active
Date of Incorporation	November 27, 2009
Registered or Head Office Address	Attention/Care of BENJAMIN HUNG, 1131a Leslie Street, 500, Toronto, Ontario, M3C 3L8, Canada

Certified a true copy of the record of the Ministry of Public and Business Service Delivery.

Director/Registrar

This report sets out the most recent information filed on or after June 27, 1992 in respect of corporations and April 1, 1994 in respect of Business Names Act and Limited Partnerships Act filings and recorded in the electronic records maintained by the Ministry as of the date and time the report is generated, unless the report is generated for a previous date. If this report is generated for a previous date, the report sets out the most recent information filed and recorded in the electronic records maintained by the Ministry up to the "as of" date indicated on the report. Additional historical information may exist in paper or microfiche format.

Active Director(s)

Minimum Number of Directors	1
Maximum Number of Directors	10

Name	DAVID WALERSTEIN
Address for Service	1131a Leslie Street, 500, Toronto, Ontario, M3C 3L8, Canada
Resident Canadian	Yes
Date Began	November 27, 2009

Active Officer(s)

Name	BERNICE WALERSTEIN
Position	Vice-President
Address for Service	1131a Leslie Street, 500, Toronto, Ontario, M3C 3L8, Canada
Date Began	November 27, 2009

Name	DAVID WALERSTEIN
Position	President
Address for Service	1131a Leslie Street, 500, Toronto, Ontario, M3C 3L8, Canada
Date Began	November 27, 2009

Name	DAVID WALERSTEIN
Position	Secretary
Address for Service	1131a Leslie Street, 500, Toronto, Ontario, M3C 3L8, Canada
Date Began	November 27, 2009

Corporate Name History

Name	DAVAD INVESTMENTS INC.
Effective Date	November 27, 2009

Certified a true copy of the record of the Ministry of Public and Business Service Delivery.

Director/Registrar

This report sets out the most recent information filed on or after June 27, 1992 in respect of corporations and April 1, 1994 in respect of Business Names Act and Limited Partnerships Act filings and recorded in the electronic records maintained by the Ministry as of the date and time the report is generated, unless the report is generated for a previous date. If this report is generated for a previous date, the report sets out the most recent information filed and recorded in the electronic records maintained by the Ministry up to the "as of" date indicated on the report. Additional historical information may exist in paper or microfiche format.

Active Business Names

Name	BERNADA PROPERTIES
Business Identification Number (BIN)	191295096
Registration Date	December 30, 2009
Expiry Date	December 27, 2024

Name	GATEWAY PROPERTIES
Business Identification Number (BIN)	191295245
Registration Date	December 30, 2009
Expiry Date	December 27, 2024

Expired or Cancelled Business Names

Name	CARLTON PROPERTIES
Business Identification Number (BIN)	241020338
Status	Inactive - Expired
Registration Date	October 22, 2014
Expired Date	October 21, 2019

Document List

Filing Name	Effective Date
BCA - Articles of Amendment	June 01, 2023
Annual Return - 2019 PAF: BENJAMIN HUNG - DIRECTOR	June 07, 2020
Annual Return - 2018 PAF: BENJAMIN HUNG - DIRECTOR	June 18, 2019
Annual Return - 2017 PAF: BENJAMIN HUNG - DIRECTOR	June 10, 2018
Annual Return - 2016 PAF: DAVID WALERSTEIN - DIRECTOR	June 11, 2017
Annual Return - 2015 PAF: DAVID WALERSTEIN - DIRECTOR	June 19, 2016
Annual Return - 2014 PAF: DAVID WALERSTEIN - DIRECTOR	June 13, 2015
CIA - Notice of Change PAF: DAVID WALERSTEIN - DIRECTOR	September 23, 2014
Annual Return - 2013 PAF: DAVID WALERSTEIN - DIRECTOR	June 14, 2014
Annual Return - 2012 PAF: DAVID WALERSTEIN - DIRECTOR	June 01, 2013
Annual Return - 2011 PAF: DAVID WALERSTEIN - DIRECTOR	June 02, 2012
Annual Return - 2010 PAF: DAVID WALERSTEIN - DIRECTOR	July 02, 2011
Annual Return - 2009 PAF: DAVID WALERSTEIN - DIRECTOR	June 19, 2010

CIA - Initial Return PAF: DAVID WALERSTEIN - DIRECTOR	December 03, 2009
BCA - Articles of Incorporation	November 27, 2009

All “PAF” (person authorizing filing) information is displayed exactly as recorded in the Ontario Business Registry. Where PAF is not shown against a document, the information has not been recorded in the Ontario Business Registry.

Ontario

Ministère des Services au public et aux entreprises

Rapport de profil

DAVAD INVESTMENTS INC. en date du 12 décembre 2024

Loi	Loi sur les sociétés par actions
Type	Société par actions de l'Ontario
Dénomination	DAVAD INVESTMENTS INC.
Numéro de société de l'Ontario	2225562
Autorité législative responsable	Canada - Ontario
Statut	Active
Date de constitution	27 novembre 2009
Adresse légale ou du siège social	À l'attention / aux soins de BENJAMIN HUNG, 1131a Leslie Street, 500, Toronto, Ontario, M3C 3L8, Canada

Copie certifiée conforme du dossier du ministère des Services au public et aux entreprises.

Directeur ou registrateur

Ce rapport présente les renseignements les plus récents déposés à compter du 27 juin 1992 à l'égard des sociétés, et le 1er avril 1994, à l'égard des dépôts en vertu de la Loi sur les noms commerciaux et de la Loi sur les sociétés en commandite et enregistrés dans les dossiers électroniques tenus par le Ministère à la date et à l'heure auxquelles le rapport est généré, sauf si le rapport est généré pour une date antérieure. Si ce rapport est produit pour une date antérieure, le rapport contient les renseignements les plus récents déposés et enregistrés dans les dossiers électroniques tenus par le Ministère jusqu'à la date « en date du » indiquée sur le rapport. Des renseignements historiques supplémentaires peuvent exister au format papier ou microfiche.

Administrateurs en fonction

Nombre minimal d'administrateurs	1
Nombre maximal d'administrateurs	10

Dénomination	DAVID WALERSTEIN
Adresse aux fins de signification	1131a Leslie Street, 500, Toronto, Ontario, M3C 3L8, Canada
Résident canadien	Oui
Date d'entrée en fonction	27 novembre 2009

Dirigeants en fonction

Dénomination	BERNICE WALERSTEIN
Poste	Vice-président de la société
Adresse aux fins de signification	1131a Leslie Street, 500, Toronto, Ontario, M3C 3L8, Canada
Date d'entrée en fonction	27 novembre 2009

Dénomination	DAVID WALERSTEIN
Poste	Président de la société
Adresse aux fins de signification	1131a Leslie Street, 500, Toronto, Ontario, M3C 3L8, Canada
Date d'entrée en fonction	27 novembre 2009

Dénomination	DAVID WALERSTEIN
Poste	Secrétaire
Adresse aux fins de signification	1131a Leslie Street, 500, Toronto, Ontario, M3C 3L8, Canada
Date d'entrée en fonction	27 novembre 2009

Historique des dénominations sociales

Nom	DAVAD INVESTMENTS INC.
Date d'entrée en vigueur	27 novembre 2009

Noms commerciaux en vigueur

Dénomination	BERNADA PROPERTIES
Numéro d'identification d'entreprise (NIE)	191295096
Date d'enregistrement	30 décembre 2009
Date d'expiration	27 décembre 2024

Dénomination	GATEWAY PROPERTIES
Numéro d'identification d'entreprise (NIE)	191295245
Date d'enregistrement	30 décembre 2009
Date d'expiration	27 décembre 2024

Noms commerciaux expirés ou révoqués

Dénomination	CARLTON PROPERTIES
Numéro d'identification d'entreprise (NIE)	241020338
Statut	Inactive - Expiré
Date d'enregistrement	22 octobre 2014
Date d'expiration	21 octobre 2019

Liste de documents

Nom du dépôt	Date d'entrée en vigueur
BCA - Statuts de modification	01 juin 2023
Rapport annuel - 2019 PRE: BENJAMIN HUNG - DIRECTOR	07 juin 2020
Rapport annuel - 2018 PRE: BENJAMIN HUNG - DIRECTOR	18 juin 2019
Rapport annuel - 2017 PRE: BENJAMIN HUNG - DIRECTOR	10 juin 2018
Rapport annuel - 2016 PRE: DAVID WALERSTEIN - DIRECTOR	11 juin 2017
Rapport annuel - 2015 PRE: DAVID WALERSTEIN - DIRECTOR	19 juin 2016
Rapport annuel - 2014 PRE: DAVID WALERSTEIN - DIRECTOR	13 juin 2015
CIA - Avis de modification PRE: DAVID WALERSTEIN - DIRECTOR	23 septembre 2014
Rapport annuel - 2013 PRE: DAVID WALERSTEIN - DIRECTOR	14 juin 2014
Rapport annuel - 2012 PRE: DAVID WALERSTEIN - DIRECTOR	01 juin 2013
Rapport annuel - 2011 PRE: DAVID WALERSTEIN - DIRECTOR	02 juin 2012
Rapport annuel - 2010 PRE: DAVID WALERSTEIN - DIRECTOR	02 juillet 2011
Rapport annuel - 2009 PRE: DAVID WALERSTEIN - DIRECTOR	19 juin 2010

CIA - Rapport initial	03 décembre 2009
PRE: DAVID WALERSTEIN - DIRECTOR	
BCA - Statuts constitutifs	27 novembre 2009

Tous les renseignements de la « PRE » (personne autorisant le dépôt) sont affichés exactement tels qu'ils sont enregistrés dans le Registre des entreprises de l'Ontario. Lorsque la PRE ne figure pas sur un document, les renseignements n'ont pas été enregistrés dans le Registre des entreprises de l'Ontario.

PROPERTY DESCRIPTION: PCL 16335B SEC EAST YORK; PT BLK L1 PL M834 NORTH YORK PT 1 R2931; TORONTO , CITY OF TORONTO

PROPERTY REMARKS:

ESTATE/QUALIFIER:	RECENTLY:	PIN CREATION DATE:
FEE SIMPLE ABSOLUTE	FIRST CONVERSION FROM BOOK	2000/05/23

OWNERS' NAMES — CAPACITY — SHARE

45 GRENOBLE LIMITED

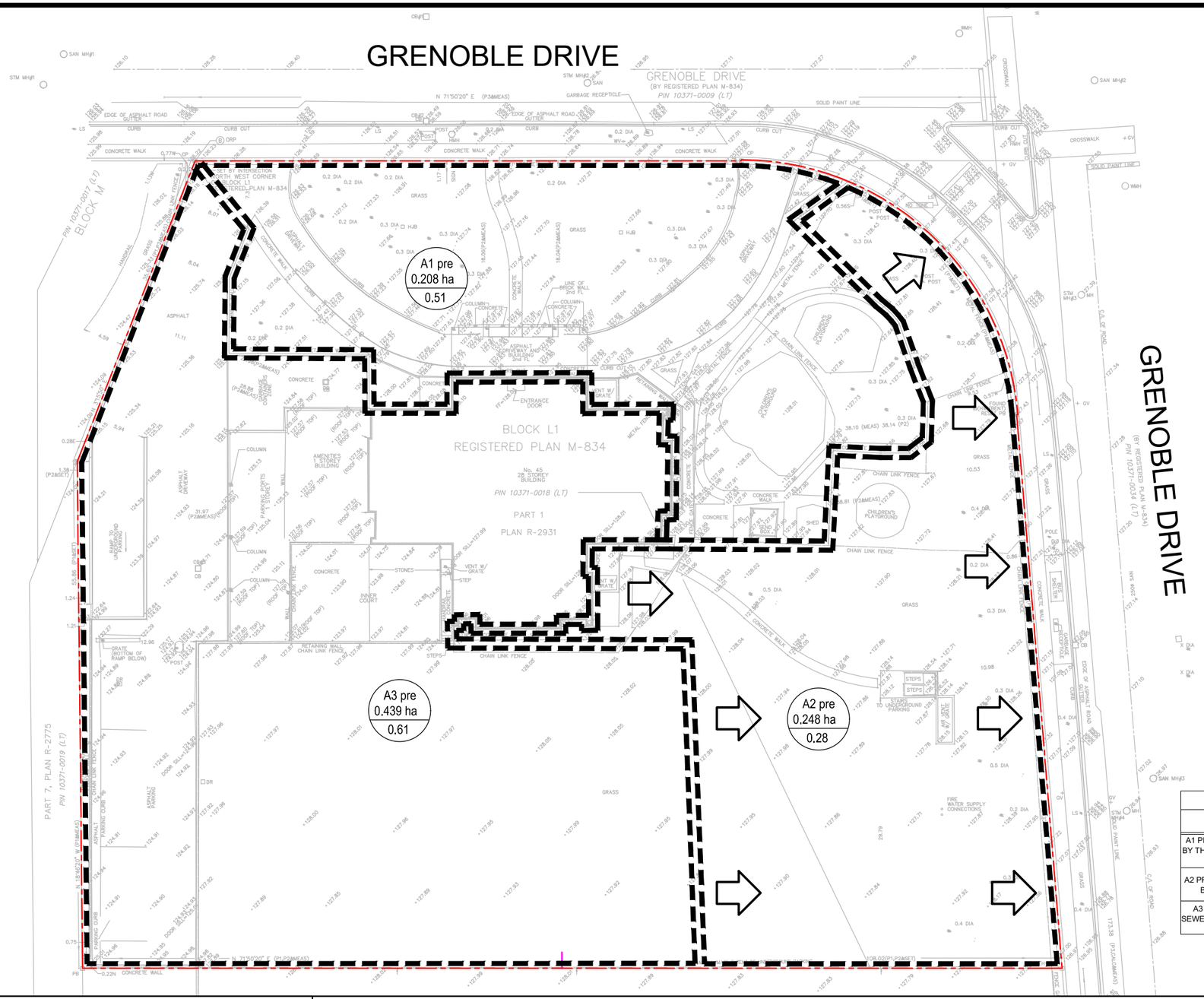
REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
EFFECTIVE 2000/07/29 THE NOTATION OF THE "BLOCK IMPLEMENTATION DATE" OF 2000/05/23 ON THIS PIN						
WAS REPLACED WITH THE "PIN CREATION DATE" OF 2000/05/23						
*** PRINTOUT INCLUDES ALL DOCUMENT TYPES AND DELETED INSTRUMENTS SINCE 2000/05/19 ***						
A55551	1960/06/29	NOTICE		LEXHAR REALTY LIMITED	THE CORPORATION OF THE TOWNSHIP OF NORTH YORK	C
CORRECTIONS: 'PARTY' CHANGED FROM 'LEXHOR REALTY LIMITED' TO 'LEXHAR REALTY LIMITED' ON 2000/10/02 BY KIM RIZZO.						
B60696	1961/02/28	NOTICE				C
REMARKS: RE: BYLAW 15711-PT LOT CONTROL						
A73319	1961/06/05	NOTICE			SHELL OIL COMPANY OF CANADA LIMITED	C
A132876	1964/03/04	NOTICE			PURPLE INVESTMENTS LIMITED. WEBB & KNAPP (CANADA) LIMITED YORK TERRACE LIMITED	C
A186031	1966/02/04	TRANSFER	$2		GRENOBLE APARTMENTS (TORONTO) LIMITED	C
R2931	1967/02/21	PLAN REFERENCE				C
A231001	1967/12/01	NOTICE AGREEMENT				C
A237709	1968/03/27	NOTICE OF LEASE		**** COMPLETELY DELETED ****	COINWASH (EASTERN) LIMITED COINWASH (PRAIRIES) LIMITED	
CORRECTIONS: 'PARTY: COB' DELETED ON 2002/09/05 BY ALMA GILDEA - LRO #20. 'PARTY: COIN-A-MATICE OF ONTARIO' DELETED ON 2002/09/05 BY ALMA GILDEA - LRO #20.						
A240475	1968/05/06	CHARGE		**** COMPLETELY DELETED ****	GUARANTY TRUST COMPANY OF CANADA	
A249576	1968/09/09	POSTPONEMENT		**** COMPLETELY DELETED ****		
REMARKS: A237709, A240475						

NOTE: ADJOINING PROPERTIES SHOULD BE INVESTIGATED TO ASCERTAIN DESCRIPTIVE INCONSISTENCIES, IF ANY, WITH DESCRIPTION REPRESENTED FOR THIS PROPERTY.
NOTE: ENSURE THAT YOUR PRINTOUT STATES THE TOTAL NUMBER OF PAGES AND THAT YOU HAVE PICKED THEM ALL UP.

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
B266843	1970/07/20	BYLAW EX PART LOT				C
A337710	1971/12/07	APL (GENERAL)				C
	REMARKS: A132876					
C428250	1987/11/13	CHARGE		*** COMPLETELY DELETED ***	ISRAEL DISCOUNT BANK OF CANADA	
AT268837	2003/09/04	DISCH OF CHARGE		*** COMPLETELY DELETED *** HSBC BANK CANADA		
	REMARKS: RE: C428250					
AT1734578	2008/03/18	APL CH NAME OWNER		GRENOBLE APARTMENTS (TORONTO) LIMITED	45 GRENOBLE LIMITED	C
AT1801341	2008/06/10	DISCH OF CHARGE		*** COMPLETELY DELETED *** CENTRAL GUARANTY TRUST COMPANY		
	REMARKS: RE: A240475					
AT3869644	2015/04/30	APL (GENERAL)		*** COMPLETELY DELETED *** 45 GRENOBLE LIMITED		
	REMARKS: DELETE A237709					
AT3872109	2015/05/01	CHARGE	$13,921,680	45 GRENOBLE LIMITED	SUN LIFE ASSURANCE COMPANY OF CANADA	C
AT3872110	2015/05/01	NO ASSGN RENT GEN		45 GRENOBLE LIMITED	SUN LIFE ASSURANCE COMPANY OF CANADA	C
	REMARKS: AT3872109.					

Appendix C

Storm Analysis



RUN-OFF COEFFICIENTS					
DRAINAGE AREA	LAND USE	AREA (ha)	INITIAL COEFFICIENT	ACTUAL COEFFICIENT	DESIGN COEFFICIENT
A1 PRE (TOWARDS GRENOBLE DRIVE (CONVEYED BY THE 300MM DIAMETER STORM SEWER INTO THE 600MM DIAMETER STORM SEWER)	LANDSCAPE	0.126	0.25	0.51	-
	HARDSCAPE	0.082	0.90		
A2 PRE (TOWARDS GRENOBLE DRIVE - CONVEYED BY THE 450mm DIAMETER STORM SEWER)	LANDSCAPE	0.237	0.25	0.28	0.28
	HARDSCAPE	0.011	0.90		
A3 PRE (TOWARDS 600MM DIAMETER STORM SEWER ALONG THE EASEMENT WITHIN GRENOBLE PUBLIC SCHOOL)	LANDSCAPE	0.197	0.25	0.61	-
	HARDSCAPE	0.242	0.90		

Lithos

150 Bermondsey Road, Toronto, Ontario M4A 1Y1

LEGEND

- A1 pre / 0.04 ha / 0.50 — STORM DRAINAGE AREA NUMBER; DRAINAGE AREA (ha); COMPOSITE RUNOFF COEFFICIENT
- PRE-DEVELOPMENT STORM DRAINAGE AREA
- PROPERTY LINE
- MAJOR DRAINAGE PATTERN

PRE-DEVELOPMENT DRAINAGE AREA PLAN

RESIDENTIAL USE DEVELOPMENT
45 GRENOBLE DRIVE
TORONTO, ONTARIO

DATE: OCTOBER 2025	PROJECT No: UD24-013
SCALE: N.T.S.	FIGURE No: DAP1

Lithos

Rational Method
Pre-Development Flow Calculation
45 Grenoble Drive

Prepared By: Stergios Grigoriadis, P.E., M.A.Sc.
Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

File No. UD24-013
City of Toronto
Date: October 2025

Area Number	Area (ha)	Actual Coefficient	Design Coefficient
A1 Pre - towards Grenoble Drive (conveyed by the 300mm diameter storm sewer)	0.208	0.51	-
A2 Pre – towards Grenoble Drive (conveyed by the 450mm diameter storm sewer)	0.248	0.28	0.28
A3 Pre – towards 600mm diameter storm sewer along the easement within Grenoble Public School	0.439	0.61	-

Rational Method Calculation

A1 Pre - towards Grenoble Drive (conveyed by the 300mm diameter storm sewer)

Event 2-year IDF Data Set City of Toronto a = 21.80 c = -0.780

Area Number	A (ha)	C	AC	Tc (min.)	I (mm/h)	Q (m^3/s)	Q (L/s)
A1 Pre - towards Grenoble Drive (conveyed by the 300mm diameter storm sewer)	0.208	0.51	0.11	10	88.2	0.026	25.8

Event 5-year IDF Data Set City of Toronto a = 32.00 c = -0.790

Area Number	A (ha)	C	AC	Tc (min.)	I (mm/h)	Q (m^3/s)	Q (L/s)
A1 Pre - towards Grenoble Drive (conveyed by the 300mm diameter storm sewer)	0.208	0.51	0.11	10	131.8	0.039	38.6

Event 100-year IDF Data Set City of Toronto a = 59.70 c = -0.800

Area Number	A (ha)	C	AC	Tc (min.)	I (mm/h)	Q (m^3/s)	Q (L/s)
A1 Pre - towards Grenoble Drive (conveyed by the 300mm diameter storm sewer)	0.208	0.51	0.11	10	250.3	0.073	73.3

A2 Pre – towards Grenoble Drive (conveyed by the 450mm diameter storm sewer)

Event 2-year IDF Data Set City of Toronto a = 21.80 c = -0.780

Area Number	A (ha)	C	AC	Tc (min.)	I (mm/h)	Q (m^3/s)	Q (L/s)
A2 Pre – towards Grenoble Drive (conveyed by the 450mm diameter storm sewer)	0.248	0.28	0.07	10	88.2	0.017	17.0

Event 5-year IDF Data Set City of Toronto a = 32.00 c = -0.790

Area Number	A (ha)	C	AC	Tc (min.)	I (mm/h)	Q (m^3/s)	Q (L/s)
A2 Pre – towards Grenoble Drive (conveyed by the 450mm diameter storm sewer)	0.248	0.28	0.07	10	131.8	0.025	25.4

Event 100-year IDF Data Set City of Toronto a = 59.70 c = -0.800

Area Number	A (ha)	C	AC	Tc (min.)	I (mm/h)	Q (m^3/s)	Q (L/s)
A2 Pre – towards Grenoble Drive (conveyed by the 450mm diameter storm sewer)	0.248	0.28	0.07	10	250.3	0.048	48.2

A3 Pre – towards 600mm diameter storm sewer along the easement within Grenoble Public School

Event 2-year IDF Data Set City of Toronto a = 21.80 c = -0.780

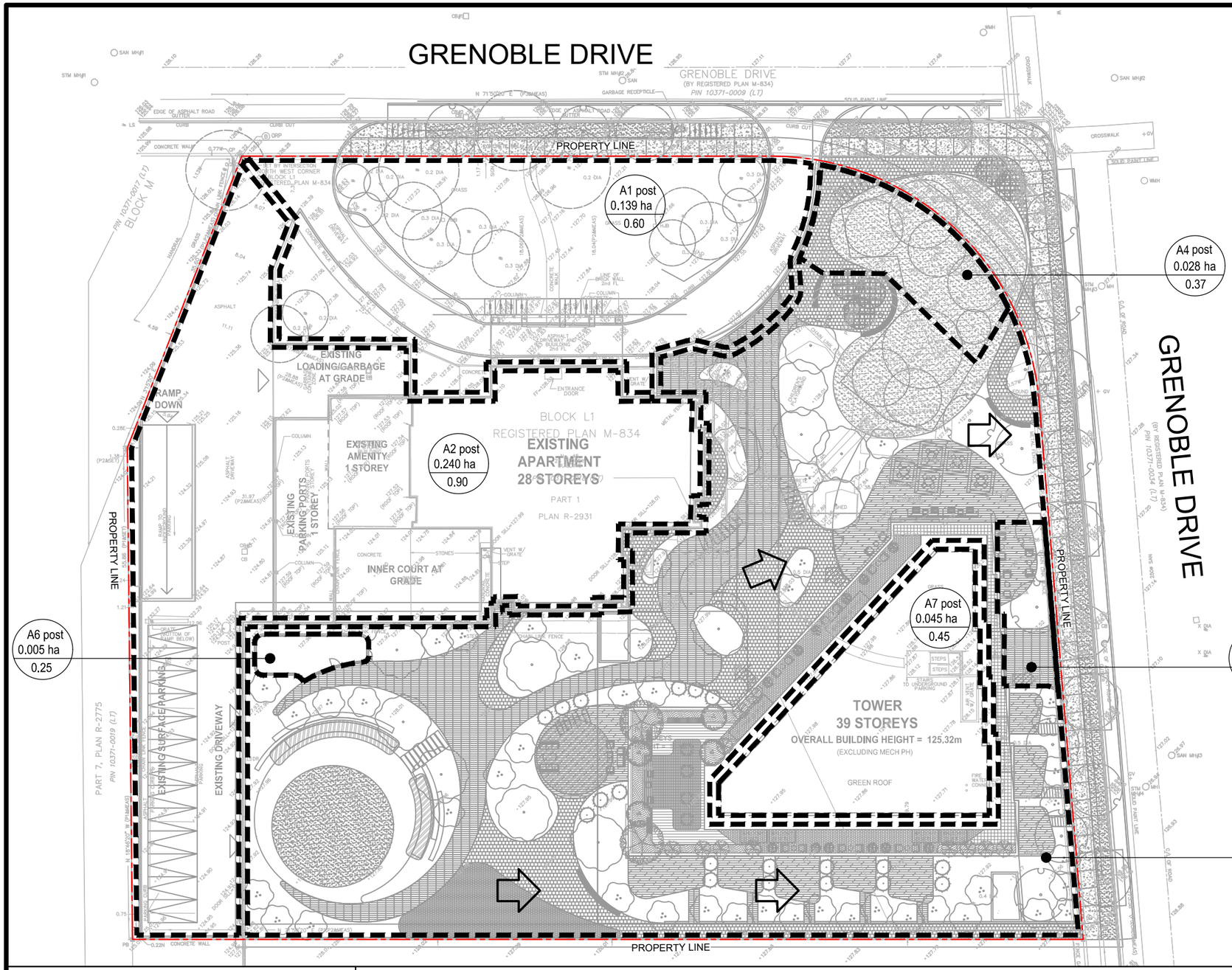
Area Number	A (ha)	C	AC	Tc (min.)	I (mm/h)	Q (m^3/s)	Q (L/s)
A3 Pre – towards 600mm diameter storm sewer along the easement within Grenoble Public School	0.439	0.61	0.27	10	88.2	0.065	65.3

Event 5-year IDF Data Set City of Toronto a = 32.00 c = -0.790

Area Number	A (ha)	C	AC	Tc (min.)	I (mm/h)	Q (m^3/s)	Q (L/s)
A3 Pre – towards 600mm diameter storm sewer along the easement within Grenoble Public School	0.439	0.61	0.27	10	131.8	0.098	97.6

Event 100-year IDF Data Set City of Toronto a = 59.70 c = -0.800

Area Number	A (ha)	C	AC	Tc (min.)	I (mm/h)	Q (m^3/s)	Q (L/s)
A3 Pre – towards 600mm diameter storm sewer along the easement within Grenoble Public School	0.439	0.61	0.27	10	250.3	0.185	185.5



RUN-OFF COEFFICIENTS

DRAINAGE AREA	LAND USE	AREA (ha)	INITIAL COEFFICIENT	COMPOSITE COEFFICIENT
A1 POST (TOWARDS GRENOBLE DRIVE (CONVEYED BY THE 300MM DIAMETER STORM SEWER INTO THE 600MM DIAMETER STORM SEWER)	LANDSCAPE	0.065	0.25	0.60
	HARDSCAPE	0.074	0.90	
A2 POST (TOWARDS 600MM DIAMETER STORM SEWER ALONG THE EASEMENT WITHIN GRENOBLE PUBLIC SCHOOL)	LANDSCAPE	0.000	0.25	0.90
	HARDSCAPE	0.240	0.90	
A3 POST (CONTROLLED IN UNDERGROUND TANK - CONVEYED BY THE 450MM DIAMETER STORM SEWER)	LANDSCAPE	0.305	0.25	0.43
	HARDSCAPE	0.121	0.90	
A4 POST (UNCONTROLLED AREA TOWARDS GRENOBLE DRIVE - 300MM DIAMETER STORM SEWER)	LANDSCAPE	0.023	0.25	0.37
	HARDSCAPE	0.005	0.90	
A5 POST (UNCONTROLLED AREA TOWARDS GRENOBLE DRIVE - 450MM DIAMETER STORM SEWER)	LANDSCAPE	0.004	0.25	0.68
	HARDSCAPE	0.008	0.90	
A6 POST (PET RELIEF AREA - DISCHARGED TOWARDS SANITARY SEWER)	LANDSCAPE	0.005	0.25	0.25
	HARDSCAPE	0.000	0.90	
A7 POST (GREEN ROOF - CONTROLLED IN UNDERGROUND TANK - CONVEYED BY THE 450MM DIAMETER STORM SEWER)	GREEN ROOF	0.045	0.45	0.45

Lithos

150 Bermondsey Road, Toronto, Ontario M4A 1Y1

LEGEND

A1 post
0.04 ha
0.50

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

POST-DEVELOPMENT DRAINAGE AREA PLAN

RESIDENTIAL USE DEVELOPMENT
45 GRENOBLE DRIVE
TORONTO, ONTARIO

DATE: OCTOBER 2025	PROJECT No: UD24-013
SCALE: N.T.S.	FIGURE No: DAP2

Lithos

Prepared By: Stergios Grigoriadis, P.E., M.A.Sc.

Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

Modified Rational Method
Two Year Storm
Site Flow and Storage Summary - towards Grenoble Drive (Existing Building Area to be maintained)
File No. UD24-013

Date: October 2025

Drainage Area A1 Post

Towards Grenoble Drive (conveyed by the 300mm diameter storm sewer into the 600mm diameter storm sewer)

Area (A1) = **0.139** ha
"C" = **0.60**
AC1= **0.083**

Tc = **10.0** min
Time Increment = **5.0** min
Max. Release Rate = **20.3** L/s

Drainage Area A4 Post

Uncontrolled towards Grenoble Drive (300mm diameter storm sewer)

Area (A4) = **0.028** ha
"C" = **0.37**
AC4= **0.010**

Tc = **10.0** min
Time Increment = **5.0** min
Max. Release Rate = **2.5** L/s

Total Site

2-yr Pre-Development Site Release Rate towards Grenoble Drive (A1-pre)= **25.8** L/s

Site Release Rate towards Grenoble Drive (A1-post)= **20.3** L/s

Uncontrolled Release Rate towards Grenoble Drive (A4-post)= **2.5** L/s

Total Site Realease Rate = **22.8** L/s

2-Year Design Storm		Type	Area (ha)	"C"	Type	Area (ha)	"C"
a=	21.80	Landscaped	0.065	0.25	Landscaped	0.023	0.25
c=	-0.78	Hardscaped	0.074	0.90	Hardscaped	0.005	0.90
I =	$A(T)^c$	**Total Area**	**0.139**	**0.60**	**Total Area**	**0.028**	**0.37**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Time	**Rainfall Intensity**	**Storm Runoff (A1 post)**	**Runoff Volume (A1 post)**	**Storm Runoff (A4 post)**	**Runoff Volume (A4 post)**	**Total Storm Runoff Volume**	**Released Volume**
(min)	**(mm/hr)**	**(m^3/s)**	**(m^3)**	**(m^3/s)**	**(m^3)**	**(m^3)**	**(m^3)**
10.0	88.2	0.020	12.18	0.003	1.53	13.71	13.71
15.0	64.3	0.015	13.31	0.002	1.67	14.98	20.56
20.0	51.4	0.012	14.18	0.001	1.78	15.96	27.41
25.0	43.2	0.010	14.90	0.001	1.87	16.77	34.26
30.0	37.4	0.009	15.51	0.001	1.95	17.45	41.12
35.0	33.2	0.008	16.04	0.001	2.01	18.05	47.97
40.0	29.9	0.007	16.52	0.001	2.07	18.59	54.82
45.0	27.3	0.006	16.95	0.001	2.13	19.08	61.68
50.0	25.1	0.006	17.35	0.001	2.18	19.53	68.53
55.0	23.3	0.005	17.72	0.001	2.22	19.94	75.38
60.0	21.8	0.005	18.06	0.001	2.27	20.33	82.23
65.0	20.5	0.005	18.38	0.001	2.31	20.69	89.09
70.0	19.3	0.004	18.68	0.001	2.34	21.03	95.94
75.0	18.3	0.004	18.97	0.001	2.38	21.35	102.79
80.0	17.4	0.004	19.24	0.001	2.41	21.66	109.64
85.0	16.6	0.004	19.50	0.000	2.45	21.95	116.50
90.0	15.9	0.004	19.75	0.000	2.48	22.22	123.35
95.0	15.2	0.004	19.98	0.000	2.51	22.49	130.20
100.0	14.6	0.003	20.21	0.000	2.54	22.75	137.06
105.0	14.1	0.003	20.43	0.000	2.56	22.99	143.91
110.0	13.6	0.003	20.64	0.000	2.59	23.23	150.76
115.0	13.1	0.003	20.84	0.000	2.62	23.46	157.61
120.0	12.7	0.003	21.04	0.000	2.64	23.68	164.47
125.0	12.3	0.003	21.23	0.000	2.66	23.89	171.32
130.0	11.9	0.003	21.41	0.000	2.69	24.10	178.17
135.0	11.6	0.003	21.59	0.000	2.71	24.30	185.03
140.0	11.3	0.003	21.76	0.000	2.73	24.49	191.88
145.0	11.0	0.003	21.93	0.000	2.75	24.68	198.73
150.0	10.7	0.002	22.10	0.000	2.77	24.87	205.58
155.0	10.4	0.002	22.26	0.000	2.79	25.05	212.44
160.0	10.1	0.002	22.41	0.000	2.81	25.22	219.29
165.0	9.9	0.002	22.56	0.000	2.83	25.39	226.14
170.0	9.7	0.002	22.71	0.000	2.85	25.56	233.00
175.0	9.5	0.002	22.86	0.000	2.87	25.73	239.85
180.0	9.3	0.002	23.00	0.000	2.89	25.89	246.70
185.0	9.1	0.002	23.14	0.000	2.90	26.04	253.55
190.0	8.9	0.002	23.27	0.000	2.92	26.20	260.41
195.0	8.7	0.002	23.41	0.000	2.94	26.35	267.26
200.0	8.5	0.002	23.54	0.000	2.95	26.49	274.11
205.0	8.4	0.002	23.67	0.000	2.97	26.64	280.96
210.0	8.2	0.002	23.79	0.000	2.99	26.78	287.82
215.0	8.1	0.002	23.92	0.000	3.00	26.92	294.67
220.0	7.9	0.002	24.04	0.000	3.02	27.05	301.52
225.0	7.8	0.002	24.16	0.000	3.03	27.19	308.38
230.0	7.6	0.002	24.27	0.000	3.05	27.32	315.23
235.0	7.5	0.002	24.39	0.000	3.06	27.45	322.08
240.0	7.4	0.002	24.50	0.000	3.07	27.58	328.93
245.0	7.3	0.002	24.61	0.000	3.09	27.70	335.79
250.0	7.2	0.002	24.72	0.000	3.10	27.83	342.64
255.0	7.1	0.002	24.83	0.000	3.12	27.95	349.49
260.0	6.9	0.002	24.94	0.000	3.13	28.07	356.35
265.0	6.8	0.002	25.04	0.000	3.14	28.18	363.20
270.0	6.7	0.002	25.15	0.000	3.16	28.30	370.05

Lithos

Prepared By: Stergios Grigoriadis, P.E., M.A.Sc.

Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

Modified Rational Method
Five Year Storm
Site Flow and Storage Summary - towards Grenoble Drive (Existing Building Area to be maintained)
File No. UD24-013

Date: October 2025

Drainage Area A1 Post

Towards Grenoble Drive (conveyed by the 300mm diameter storm sewer into the 600mm diameter storm sewer)

Area (A1) = **0.139** ha
"C" = **0.60**
AC1= **0.083**

Tc = **10.0** min
Time Increment = **5.0** min
Max. Release Rate = **30.3** L/s

Drainage Area A4 Post

Uncontrolled towards Grenoble Drive (300mm diameter storm sewer)

Area (A4) = **0.028** ha
"C" = **0.37**
AC4= **0.010**

Tc = **10.0** min
Time Increment = **5.0** min
Max. Release Rate = **3.8** L/s

Total Site

5-yr Pre-Development Site Release Rate towards Grenoble Drive (A1-pre)= **38.6** L/s

Site Release Rate towards Grenoble Drive (A1-post)= **30.3** L/s

Uncontrolled Release Rate towards Grenoble Drive (A4-post)= **3.8** L/s

Total Site Realease Rate = **34.1** L/s

5-Year Design Storm		Type	Area (ha)	"C"	Type	Area (ha)	"C"
a=	32.00	Landscaped	0.065	0.25	Landscaped	0.023	0.25
c=	-0.79	Hardscaped	0.074	0.90	Hardscaped	0.005	0.90
I =	$A(T)^c$	**Total Area**	**0.139**	**0.60**	**Total Area**	**0.028**	**0.37**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Time	**Rainfall Intensity**	**Storm Runoff (A1 post)**	**Runoff Volume (A1 post)**	**Storm Runoff (A4 post)**	**Runoff Volume (A4 post)**	**Total Storm Runoff Volume**	**Released Volume**
(min)	**(mm/hr)**	**(m^3/s)**	**(m^3)**	**(m^3/s)**	**(m^3)**	**(m^3)**	**(m^3)**
10.0	131.8	0.030	18.20	0.004	2.28	20.48	20.48
15.0	95.7	0.022	19.82	0.003	2.49	22.30	30.72
20.0	76.2	0.018	21.05	0.002	2.64	23.69	40.96
25.0	63.9	0.015	22.06	0.002	2.77	24.83	51.21
30.0	55.3	0.013	22.92	0.002	2.88	25.80	61.45
35.0	49.0	0.011	23.67	0.001	2.97	26.65	71.69
40.0	44.1	0.010	24.35	0.001	3.06	27.40	81.93
45.0	40.2	0.009	24.96	0.001	3.13	28.09	92.17
50.0	37.0	0.009	25.52	0.001	3.20	28.72	102.41
55.0	34.3	0.008	26.03	0.001	3.27	29.30	112.65
60.0	32.0	0.007	26.51	0.001	3.33	29.84	122.89
65.0	30.0	0.007	26.96	0.001	3.38	30.34	133.13
70.0	28.3	0.007	27.38	0.001	3.44	30.82	143.37
75.0	26.8	0.006	27.78	0.001	3.49	31.27	153.62
80.0	25.5	0.006	28.16	0.001	3.53	31.70	163.86
85.0	24.3	0.006	28.52	0.001	3.58	32.10	174.10
90.0	23.2	0.005	28.87	0.001	3.62	32.49	184.34
95.0	22.3	0.005	29.20	0.001	3.66	32.86	194.58
100.0	21.4	0.005	29.51	0.001	3.70	33.22	204.82
105.0	20.6	0.005	29.82	0.001	3.74	33.56	215.06
110.0	19.8	0.005	30.11	0.001	3.78	33.89	225.30
115.0	19.1	0.004	30.39	0.001	3.81	34.21	235.54
120.0	18.5	0.004	30.67	0.001	3.85	34.51	245.78
125.0	17.9	0.004	30.93	0.001	3.88	34.81	256.03
130.0	17.4	0.004	31.19	0.001	3.91	35.10	266.27
135.0	16.9	0.004	31.43	0.000	3.94	35.38	276.51
140.0	16.4	0.004	31.68	0.000	3.97	35.65	286.75
145.0	15.9	0.004	31.91	0.000	4.00	35.91	296.99
150.0	15.5	0.004	32.14	0.000	4.03	36.17	307.23
155.0	15.1	0.003	32.36	0.000	4.06	36.42	317.47
160.0	14.7	0.003	32.58	0.000	4.09	36.66	327.71
165.0	14.4	0.003	32.79	0.000	4.11	36.90	337.95
170.0	14.1	0.003	32.99	0.000	4.14	37.13	348.19
175.0	13.7	0.003	33.19	0.000	4.17	37.36	358.44
180.0	13.4	0.003	33.39	0.000	4.19	37.58	368.68
185.0	13.1	0.003	33.58	0.000	4.21	37.80	378.92
190.0	12.9	0.003	33.77	0.000	4.24	38.01	389.16
195.0	12.6	0.003	33.96	0.000	4.26	38.22	399.40
200.0	12.4	0.003	34.14	0.000	4.28	38.42	409.64
205.0	12.1	0.003	34.32	0.000	4.31	38.62	419.88
210.0	11.9	0.003	34.49	0.000	4.33	38.82	430.12
215.0	11.7	0.003	34.66	0.000	4.35	39.01	440.36
220.0	11.5	0.003	34.83	0.000	4.37	39.20	450.60
225.0	11.3	0.003	34.99	0.000	4.39	39.39	460.85
230.0	11.1	0.003	35.16	0.000	4.41	39.57	471.09
235.0	10.9	0.003	35.31	0.000	4.43	39.75	481.33
240.0	10.7	0.002	35.47	0.000	4.45	39.92	491.57
245.0	10.5	0.002	35.63	0.000	4.47	40.10	501.81
250.0	10.4	0.002	35.78	0.000	4.49	40.27	512.05
255.0	10.2	0.002	35.93	0.000	4.51	40.43	522.29
260.0	10.0	0.002	36.07	0.000	4.53	40.60	532.53
265.0	9.9	0.002	36.22	0.000	4.54	40.76	542.77
270.0	9.8	0.002	36.36	0.000	4.56	40.92	553.01

Lithos

Prepared By: Stergios Grigoriadis, P.E., M.A.Sc.

Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

Modified Rational Method
Hundred Year Storm
Site Flow and Storage Summary - towards Grenoble Drive (Existing Building Area to be maintained)
File No. UD24-013

Date: October 2025

Drainage Area A1 Post

Towards Grenoble Drive (conveyed by the 300mm diameter storm sewer into the 600mm diameter storm sewer)

Area (A1) = **0.139** ha
"C" = **0.60**
AC1= **0.083**
Tc = **10.0** min
Time Increment = **5.0** min
Max. Release Rate = **57.6** L/s

Drainage Area A4 Post

Uncontrolled towards Grenoble Drive (300mm diameter storm sewer)

Area (A4) = **0.028** ha
"C" = **0.37**
AC4= **0.010**
Tc = **10.0** min
Time Increment = **5.0** min
Max. Release Rate = **7.2** L/s

Total Site

100-yr Pre-Development Site Release Rate towards Grenoble Drive (A1-pre)= **73.3** L/s

Site Release Rate towards Grenoble Drive (A1-post)= **57.6** L/s

Uncontrolled Release Rate towards Grenoble Drive (A4-post)= **7.2** L/s

Total Site Realease Rate = **64.8** L/s

100-Year Design Storm

a= 59.70
c= -0.80
$I = A(T)^c$

Type	Area (ha)	"C"	Type	Area (ha)	"C"
Landscaped	0.065	0.25	Landscaped	0.023	0.25
Hardscaped	0.074	0.90	Hardscaped	0.005	0.90
Total Area	**0.139**	**0.60**	**Total Area**	**0.028**	**0.37**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Time	**Rainfall Intensity**	**Storm Runoff (A1 post)**	**Runoff Volume (A1 post)**	**Storm Runoff (A4 post)**	**Runoff Volume (A4 post)**	**Total Storm Runoff Volume**	**Released Volume**
(min)	**(mm/hr)**	**(m^3/s)**	**(m^3)**	**(m^3/s)**	**(m^3)**	**(m^3)**	**(m^3)**
10.0	250.3	0.058	34.57	0.007	4.34	38.90	38.90
15.0	181.0	0.042	37.48	0.005	4.70	42.19	58.35
20.0	143.8	0.033	39.70	0.004	4.98	44.69	77.81
25.0	120.3	0.028	41.52	0.003	5.21	46.73	97.26
30.0	103.9	0.024	43.06	0.003	5.40	48.46	116.71
35.0	91.9	0.021	44.41	0.003	5.57	49.98	136.16
40.0	82.6	0.019	45.61	0.002	5.72	51.33	155.61
45.0	75.1	0.017	46.70	0.002	5.86	52.56	175.06
50.0	69.1	0.016	47.69	0.002	5.98	53.68	194.51
55.0	64.0	0.015	48.61	0.002	6.10	54.71	213.96
60.0	59.7	0.014	49.46	0.002	6.21	55.67	233.42
65.0	56.0	0.013	50.26	0.002	6.31	56.57	252.87
70.0	52.8	0.012	51.01	0.002	6.40	57.41	272.32
75.0	49.9	0.011	51.72	0.001	6.49	58.21	291.77
80.0	47.4	0.011	52.39	0.001	6.57	58.97	311.22
85.0	45.2	0.010	53.03	0.001	6.65	59.68	330.67
90.0	43.2	0.010	53.64	0.001	6.73	60.37	350.12
95.0	41.3	0.010	54.22	0.001	6.80	61.03	369.57
100.0	39.7	0.009	54.78	0.001	6.87	61.66	389.03
105.0	38.2	0.009	55.32	0.001	6.94	62.26	408.48
110.0	36.8	0.008	55.84	0.001	7.01	62.84	427.93
115.0	35.5	0.008	56.33	0.001	7.07	63.40	447.38
120.0	34.3	0.008	56.82	0.001	7.13	63.95	466.83
125.0	33.2	0.008	57.28	0.001	7.19	64.47	486.28
130.0	32.2	0.007	57.73	0.001	7.24	64.98	505.73
135.0	31.2	0.007	58.17	0.001	7.30	65.47	525.19
140.0	30.3	0.007	58.60	0.001	7.35	65.95	544.64
145.0	29.5	0.007	59.01	0.001	7.40	66.41	564.09
150.0	28.7	0.007	59.41	0.001	7.46	66.86	583.54
155.0	27.9	0.006	59.80	0.001	7.50	67.30	602.99
160.0	27.2	0.006	60.18	0.001	7.55	67.73	622.44
165.0	26.6	0.006	60.55	0.001	7.60	68.15	641.89
170.0	25.9	0.006	60.92	0.001	7.64	68.56	661.34
175.0	25.4	0.006	61.27	0.001	7.69	68.96	680.80
180.0	24.8	0.006	61.62	0.001	7.73	69.35	700.25
185.0	24.3	0.006	61.95	0.001	7.77	69.73	719.70
190.0	23.7	0.005	62.29	0.001	7.82	70.10	739.15
195.0	23.3	0.005	62.61	0.001	7.86	70.47	758.60
200.0	22.8	0.005	62.93	0.001	7.90	70.82	778.05
205.0	22.3	0.005	63.24	0.001	7.94	71.18	797.50
210.0	21.9	0.005	63.54	0.001	7.97	71.52	816.95
215.0	21.5	0.005	63.84	0.001	8.01	71.86	836.41
220.0	21.1	0.005	64.14	0.001	8.05	72.19	855.86
225.0	20.7	0.005	64.43	0.001	8.09	72.51	875.31
230.0	20.4	0.005	64.71	0.001	8.12	72.83	894.76
235.0	20.0	0.005	64.99	0.001	8.16	73.15	914.21
240.0	19.7	0.005	65.26	0.001	8.19	73.45	933.66
245.0	19.4	0.004	65.53	0.001	8.22	73.76	953.11
250.0	19.1	0.004	65.80	0.001	8.26	74.06	972.56
255.0	18.8	0.004	66.06	0.001	8.29	74.35	992.02
260.0	18.5	0.004	66.32	0.001	8.32	74.64	1011.47
265.0	18.2	0.004	66.57	0.001	8.35	74.93	1030.92
270.0	17.9	0.004	66.82	0.001	8.39	75.21	1050.37

Lithos

Prepared By: Stergios Grigoriadis, P.E., M.A.Sc.

Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

Modified Rational Method
Two Year Storm
Site Flow and Storage Summary - towards Grenoble Drive (Existing Building Area to be maintained)
File No. UD24-013

Date: October 2025

Drainage Area A2 Post

Towards Grenoble Drive (towards 600mm diameter storm sewer along the easement within Grenoble Public School)

Area (A2) =	**0.240**	ha
"C" =	**0.90**	
AC2=	**0.216**	
Tc =	**10.0**	min
Time Increment =	**5.0**	min
Max. Release Rate =	**52.9**	L/s

Total Site

2-yr Pre-Development Site Release Rate towards Grenoble Drive (A3-pre)= **65.3** L/s

Site Release Rate towards Grenoble Drive (A2-post)= **52.9** L/s

Total Site Realease Rate = 52.9 L/s

2-Year Design Storm		Type	Area (ha)	"C"
a=	21.80	Landscaped	0.000	0.25
c=	-0.78	Hardscaped	0.240	0.90
I =	$A(T)^c$	**Total Area**	**0.240**	**0.90**

(1)	(2)	(3)	(4)	(5)	(6)
Time	**Rainfall Intensity**	**Storm Runoff (A2 post)**	**Runoff Volume (A2 post)**	**Total Storm Runoff Volume**	**Released Volume**
(min)	**(mm/hr)**	**(m^3/s)**	**(m^3)**	**(m^3)**	**(m^3)**
10.0	88.2	0.053	31.75	31.75	31.75
15.0	64.3	0.039	34.71	34.71	47.62
20.0	51.4	0.031	36.98	36.98	63.50
25.0	43.2	0.026	38.84	38.84	79.37
30.0	37.4	0.022	40.43	40.43	95.24
35.0	33.2	0.020	41.82	41.82	111.12
40.0	29.9	0.018	43.07	43.07	126.99
45.0	27.3	0.016	44.20	44.20	142.87
50.0	25.1	0.015	45.24	45.24	158.74
55.0	23.3	0.014	46.20	46.20	174.61
60.0	21.8	0.013	47.09	47.09	190.49
65.0	20.5	0.012	47.92	47.92	206.36
70.0	19.3	0.012	48.71	48.71	222.24
75.0	18.3	0.011	49.46	49.46	238.11
80.0	17.4	0.010	50.16	50.16	253.98
85.0	16.6	0.010	50.84	50.84	269.86
90.0	15.9	0.010	51.48	51.48	285.73
95.0	15.2	0.009	52.10	52.10	301.61
100.0	14.6	0.009	52.69	52.69	317.48
105.0	14.1	0.008	53.26	53.26	333.35
110.0	13.6	0.008	53.81	53.81	349.23
115.0	13.1	0.008	54.33	54.33	365.10
120.0	12.7	0.008	54.84	54.84	380.98
125.0	12.3	0.007	55.34	55.34	396.85
130.0	11.9	0.007	55.82	55.82	412.72
135.0	11.6	0.007	56.28	56.28	428.60
140.0	11.3	0.007	56.74	56.74	444.47
145.0	11.0	0.007	57.18	57.18	460.35
150.0	10.7	0.006	57.60	57.60	476.22
155.0	10.4	0.006	58.02	58.02	492.09
160.0	10.1	0.006	58.43	58.43	507.97
165.0	9.9	0.006	58.83	58.83	523.84
170.0	9.7	0.006	59.21	59.21	539.72
175.0	9.5	0.006	59.59	59.59	555.59
180.0	9.3	0.006	59.96	59.96	571.46
185.0	9.1	0.005	60.32	60.32	587.34
190.0	8.9	0.005	60.68	60.68	603.21
195.0	8.7	0.005	61.03	61.03	619.09
200.0	8.5	0.005	61.37	61.37	634.96
205.0	8.4	0.005	61.70	61.70	650.83
210.0	8.2	0.005	62.03	62.03	666.71
215.0	8.1	0.005	62.35	62.35	682.58
220.0	7.9	0.005	62.67	62.67	698.46
225.0	7.8	0.005	62.98	62.98	714.33
230.0	7.6	0.005	63.28	63.28	730.21
235.0	7.5	0.005	63.58	63.58	746.08
240.0	7.4	0.004	63.88	63.88	761.95
245.0	7.3	0.004	64.17	64.17	777.83
250.0	7.2	0.004	64.46	64.46	793.70
255.0	7.1	0.004	64.74	64.74	809.58
260.0	6.9	0.004	65.01	65.01	825.45
265.0	6.8	0.004	65.29	65.29	841.32
270.0	6.7	0.004	65.56	65.56	857.20

Lithos

Prepared By: Stergios Grigoriadis, P.E., M.A.Sc.

Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

Modified Rational Method
Five Year Storm
Site Flow and Storage Summary - towards Grenoble Drive (Existing Building Area to be maintained)
File No. UD24-013

Date: October 2025

Drainage Area A2 Post

Towards Grenoble Drive (towards 600mm diameter storm sewer along the easement within Grenoble Public School)

Area (A2) =	**0.240**	ha
"C" =	**0.90**	
AC2=	**0.216**	
Tc =	**10.0**	min
Time Increment =	**5.0**	min
Max. Release Rate =	**79.1**	L/s

Total Site

5-yr Pre-Development Site Release Rate towards Grenoble Drive (A3-pre)= **97.6** L/s

Site Release Rate towards Grenoble Drive (A2-post)= **79.1** L/s

Total Site Realease Rate = **79.1** L/s

5-Year Design Storm		Type	Area (ha)	"C"
a=	32.00	Landscaped	0.000	0.25
c=	-0.79	Hardscaped	0.240	0.90
I =	$A(T)^c$	**Total Area**	**0.240**	**0.90**

(1)	(2)	(3)	(4)	(5)	(6)
Time	**Rainfall Intensity**	**Storm Runoff (A2 post)**	**Runoff Volume (A2 post)**	**Total Storm Runoff Volume**	**Released Volume**
(min)	**(mm/hr)**	**(m^3/s)**	**(m^3)**	**(m^3)**	**(m^3)**
10.0	131.8	0.079	47.45	47.45	47.45
15.0	95.7	0.057	51.66	51.66	71.17
20.0	76.2	0.046	54.88	54.88	94.89
25.0	63.9	0.038	57.51	57.51	118.61
30.0	55.3	0.033	59.76	59.76	142.34
35.0	49.0	0.029	61.72	61.72	166.06
40.0	44.1	0.026	63.48	63.48	189.78
45.0	40.2	0.024	65.07	65.07	213.50
50.0	37.0	0.022	66.52	66.52	237.23
55.0	34.3	0.021	67.87	67.87	260.95
60.0	32.0	0.019	69.12	69.12	284.67
65.0	30.0	0.018	70.29	70.29	308.39
70.0	28.3	0.017	71.39	71.39	332.12
75.0	26.8	0.016	72.44	72.44	355.84
80.0	25.5	0.015	73.42	73.42	379.56
85.0	24.3	0.015	74.37	74.37	403.28
90.0	23.2	0.014	75.26	75.26	427.01
95.0	22.3	0.013	76.12	76.12	450.73
100.0	21.4	0.013	76.95	76.95	474.45
105.0	20.6	0.012	77.74	77.74	498.17
110.0	19.8	0.012	78.50	78.50	521.90
115.0	19.1	0.011	79.24	79.24	545.62
120.0	18.5	0.011	79.95	79.95	569.34
125.0	17.9	0.011	80.64	80.64	593.06
130.0	17.4	0.010	81.31	81.31	616.79
135.0	16.9	0.010	81.95	81.95	640.51
140.0	16.4	0.010	82.58	82.58	664.23
145.0	15.9	0.010	83.19	83.19	687.95
150.0	15.5	0.009	83.79	83.79	711.68
155.0	15.1	0.009	84.36	84.36	735.40
160.0	14.7	0.009	84.93	84.93	759.12
165.0	14.4	0.009	85.48	85.48	782.85
170.0	14.1	0.008	86.02	86.02	806.57
175.0	13.7	0.008	86.54	86.54	830.29
180.0	13.4	0.008	87.06	87.06	854.01
185.0	13.1	0.008	87.56	87.56	877.74
190.0	12.9	0.008	88.05	88.05	901.46
195.0	12.6	0.008	88.53	88.53	925.18
200.0	12.4	0.007	89.00	89.00	948.90
205.0	12.1	0.007	89.47	89.47	972.63
210.0	11.9	0.007	89.92	89.92	996.35
215.0	11.7	0.007	90.37	90.37	1020.07
220.0	11.5	0.007	90.80	90.80	1043.79
225.0	11.3	0.007	91.23	91.23	1067.52
230.0	11.1	0.007	91.65	91.65	1091.24
235.0	10.9	0.007	92.07	92.07	1114.96
240.0	10.7	0.006	92.48	92.48	1138.68
245.0	10.5	0.006	92.88	92.88	1162.41
250.0	10.4	0.006	93.27	93.27	1186.13
255.0	10.2	0.006	93.66	93.66	1209.85
260.0	10.0	0.006	94.05	94.05	1233.57
265.0	9.9	0.006	94.42	94.42	1257.30
270.0	9.8	0.006	94.79	94.79	1281.02

Lithos

Prepared By: Stergios Grigoriadis, P.E., M.A.Sc.

Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

Modified Rational Method
Hundred Year Storm
Site Flow and Storage Summary - towards Grenoble Drive (Existing Building Area to be maintained)
File No. UD24-013

Date: October 2025

Drainage Area A2 Post

Towards Grenoble Drive (towards 600mm diameter storm sewer along the easement within Grenoble Public School)

Area (A2) =	**0.240**	ha
"C" =	**0.90**	
AC2=	**0.216**	
Tc =	**10.0**	min
Time Increment =	**5.0**	min
Max. Release Rate =	**150.2**	L/s

Total Site

100-yr Pre-Development Site Release Rate towards Grenoble Drive (A3-pre)= **185.5** L/s

Site Release Rate towards Grenoble Drive (A2-post)= **150.2** L/s

Total Site Realease Rate = 150.2 L/s

100-Year Design Storm		Type	Area (ha)	"C"
a=	59.70	Landscaped	0.000	0.25
c=	-0.80	Hardscaped	0.240	0.90
I =	$A(T)^c$	**Total Area**	**0.240**	**0.90**

(1)	(2)	(3)	(4)	(5)	(6)
Time	**Rainfall Intensity**	**Storm Runoff (A2 post)**	**Runoff Volume (A2 post)**	**Total Storm Runoff Volume**	**Released Volume**
(min)	**(mm/hr)**	**(m^3/s)**	**(m^3)**	**(m^3)**	**(m^3)**
10.0	250.3	0.150	90.12	90.12	90.12
15.0	181.0	0.109	97.73	97.73	135.17
20.0	143.8	0.086	103.52	103.52	180.23
25.0	120.3	0.072	108.24	108.24	225.29
30.0	103.9	0.062	112.26	112.26	270.35
35.0	91.9	0.055	115.77	115.77	315.40
40.0	82.6	0.050	118.91	118.91	360.46
45.0	75.1	0.045	121.74	121.74	405.52
50.0	69.1	0.041	124.33	124.33	450.58
55.0	64.0	0.038	126.73	126.73	495.63
60.0	59.7	0.036	128.95	128.95	540.69
65.0	56.0	0.034	131.03	131.03	585.75
70.0	52.8	0.032	132.99	132.99	630.81
75.0	49.9	0.030	134.84	134.84	675.86
80.0	47.4	0.028	136.59	136.59	720.92
85.0	45.2	0.027	138.26	138.26	765.98
90.0	43.2	0.026	139.84	139.84	811.04
95.0	41.3	0.025	141.37	141.37	856.09
100.0	39.7	0.024	142.82	142.82	901.15
105.0	38.2	0.023	144.22	144.22	946.21
110.0	36.8	0.022	145.57	145.57	991.27
115.0	35.5	0.021	146.87	146.87	1036.32
120.0	34.3	0.021	148.13	148.13	1081.38
125.0	33.2	0.020	149.34	149.34	1126.44
130.0	32.2	0.019	150.52	150.52	1171.50
135.0	31.2	0.019	151.66	151.66	1216.55
140.0	30.3	0.018	152.76	152.76	1261.61
145.0	29.5	0.018	153.84	153.84	1306.67
150.0	28.7	0.017	154.89	154.89	1351.73
155.0	27.9	0.017	155.91	155.91	1396.78
160.0	27.2	0.016	156.90	156.90	1441.84
165.0	26.6	0.016	157.87	157.87	1486.90
170.0	25.9	0.016	158.81	158.81	1531.96
175.0	25.4	0.015	159.74	159.74	1577.02
180.0	24.8	0.015	160.64	160.64	1622.07
185.0	24.3	0.015	161.52	161.52	1667.13
190.0	23.7	0.014	162.39	162.39	1712.19
195.0	23.3	0.014	163.23	163.23	1757.25
200.0	22.8	0.014	164.06	164.06	1802.30
205.0	22.3	0.013	164.87	164.87	1847.36
210.0	21.9	0.013	165.67	165.67	1892.42
215.0	21.5	0.013	166.45	166.45	1937.48
220.0	21.1	0.013	167.22	167.22	1982.53
225.0	20.7	0.012	167.97	167.97	2027.59
230.0	20.4	0.012	168.71	168.71	2072.65
235.0	20.0	0.012	169.44	169.44	2117.71
240.0	19.7	0.012	170.15	170.15	2162.76
245.0	19.4	0.012	170.86	170.86	2207.82
250.0	19.1	0.011	171.55	171.55	2252.88
255.0	18.8	0.011	172.23	172.23	2297.94
260.0	18.5	0.011	172.90	172.90	2342.99
265.0	18.2	0.011	173.56	173.56	2388.05
270.0	17.9	0.011	174.21	174.21	2433.11

Lithos

Modified Rational Method - Two Year Storm

Site Flow and Storage Summary - towards Grenoble Drive (Proposed Residential Building)
City of Toronto
File No. UD24-013
Date: October 2025

Prepared By: Stergios Grigoriadis, P.E., M.A.Sc.
Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

Drainage Area A3 Post

Controlled in underground tank - conveyed by the 450mm diameter storm sewer

Area (A3) = **0.426** ha
"C" = **0.43**
AC3= **0.19**
Tc = **10.0** min
Time Increment = **5.0** min

Max. Release Rate = **45.3** L/s

Drainage Area A5 Post

Uncontrolled area towards Grenoble Drive (450mm diameter storm sewer)

Area (A5) = **0.012** ha
"C" = **0.68**
AC5= **0.01**
Tc = **10.0** min
Time Increment = **5.0** min

Max. Release Rate = **2.0** L/s

Drainage Area A7 Post

Green roof - Controlled in underground tank - conveyed by the 450mm diameter storm sewer

Area (A7) = **0.045** ha
"C" = **0.45**
AC7= **0.02**
Tc = **10.0** min
Time Increment = **5.0** min

Max. Release Rate = **4.9** L/s

Storage Tank

Storage Tank = A3+A7

Design Controlled Release Rate (77mm orifice plate)= **5.8** L/s
Max. Storage Tank Size = **25.9** m^3
Storage Tank footprint Area = **126.6** m^2

Total Site

2-yr Pre-Development Site Release Rate Towards the 450 mm diameter storm sewer along Grenoble Drive = **17.0** L/s

Site Controlled Release Rate (Tank) = **5.8** L/s
Uncontrolled Release Rate = **2.0** L/s

Total Site Release Rate = **7.8** L/s

2-Year Design Storm

a= 21.80
c= -0.78
I = $A(T)^C$

Tributary Area	ha	"C"	Tributary Area	ha	"C"
Hardscape	0.121	0.90	Hardscape	0.008	0.90
Landscape	0.305	0.25	Landscape	0.004	0.25
Totals	**0.426**	**0.43**	**Totals**	**0.012**	**0.68**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Time	**Rainfall Intensity**	**Storm Runoff (A3 Post)**	**Runoff Volume (A3 Post)**	**Storm Runoff (A5 Post)**	**Runoff Volume (A5 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/s)	(m^3)	(m^3)	(m^3)	(m^3)	(m)
10.0	88.2	0.045	27.20	0.002	1.21	0.005	2.94	30.14	4.69	25.45	0.20
15.0	64.3	0.033	29.73	0.001	1.32	0.004	3.22	32.95	7.04	25.91	0.20
20.0	51.4	0.026	31.68	0.001	1.40	0.003	3.43	35.10	9.38	25.72	0.20
25.0	43.2	0.022	33.27	0.001	1.47	0.002	3.60	36.87	11.73	25.14	0.20
30.0	37.4	0.019	34.63	0.001	1.53	0.002	3.75	38.38	14.08	24.30	0.19
35.0	33.2	0.017	35.83	0.001	1.59	0.002	3.88	39.70	16.42	23.28	0.18
40.0	29.9	0.015	36.89	0.001	1.64	0.002	3.99	40.89	18.77	22.12	0.17
45.0	27.3	0.014	37.86	0.001	1.68	0.002	4.10	41.96	21.11	20.85	0.16
50.0	25.1	0.013	38.75	0.001	1.72	0.001	4.19	42.94	23.46	19.48	0.15
55.0	23.3	0.012	39.57	0.001	1.75	0.001	4.28	43.85	25.81	18.05	0.14
60.0	21.8	0.011	40.34	0.000	1.79	0.001	4.37	44.70	28.15	16.55	0.13
65.0	20.5	0.011	41.05	0.000	1.82	0.001	4.44	45.50	30.50	15.00	0.12
70.0	19.3	0.010	41.73	0.000	1.85	0.001	4.52	46.24	32.84	13.40	0.11
75.0	18.3	0.009	42.36	0.000	1.88	0.001	4.59	46.95	35.19	11.76	0.09
80.0	17.4	0.009	42.97	0.000	1.90	0.001	4.65	47.62	37.54	10.09	0.08
85.0	16.6	0.009	43.55	0.000	1.93	0.001	4.71	48.26	39.88	8.38	0.07
90.0	15.9	0.008	44.10	0.000	1.95	0.001	4.77	48.87	42.23	6.64	0.05
95.0	15.2	0.008	44.63	0.000	1.98	0.001	4.83	49.46	44.57	4.88	0.04
100.0	14.6	0.008	45.13	0.000	2.00	0.001	4.89	50.02	46.92	3.10	0.02
105.0	14.1	0.007	45.62	0.000	2.02	0.001	4.94	50.56	49.27	1.29	0.01
110.0	13.6	0.007	46.09	0.000	2.04	0.001	4.99	51.08	51.61	0.00	0.00
115.0	13.1	0.007	46.54	0.000	2.06	0.001	5.04	51.58	53.96	0.00	0.00
120.0	12.7	0.007	46.98	0.000	2.08	0.001	5.09	52.07	56.30	0.00	0.00
125.0	12.3	0.006	47.40	0.000	2.10	0.001	5.13	52.54	58.65	0.00	0.00
130.0	11.9	0.006	47.81	0.000	2.12	0.001	5.18	52.99	61.00	0.00	0.00
135.0	11.6	0.006	48.21	0.000	2.14	0.001	5.22	53.43	63.34	0.00	0.00
140.0	11.3	0.006	48.60	0.000	2.15	0.001	5.26	53.86	65.69	0.00	0.00
145.0	11.0	0.006	48.98	0.000	2.17	0.001	5.30	54.28	68.03	0.00	0.00
150.0	10.7	0.005	49.34	0.000	2.19	0.001	5.34	54.69	70.38	0.00	0.00
155.0	10.4	0.005	49.70	0.000	2.20	0.001	5.38	55.08	72.73	0.00	0.00
160.0	10.1	0.005	50.05	0.000	2.22	0.001	5.42	55.47	75.07	0.00	0.00
165.0	9.9	0.005	50.39	0.000	2.23	0.001	5.45	55.84	77.42	0.00	0.00
170.0	9.7	0.005	50.72	0.000	2.25	0.001	5.49	56.21	79.76	0.00	0.00
175.0	9.5	0.005	51.05	0.000	2.26	0.001	5.53	56.57	82.11	0.00	0.00
180.0	9.3	0.005	51.36	0.000	2.28	0.001	5.56	56.92	84.46	0.00	0.00
185.0	9.1	0.005	51.67	0.000	2.29	0.001	5.59	57.27	86.80	0.00	0.00
190.0	8.9	0.005	51.98	0.000	2.30	0.000	5.63	57.60	89.15	0.00	0.00
195.0	8.7	0.004	52.28	0.000	2.32	0.000	5.66	57.93	91.50	0.00	0.00
200.0	8.5	0.004	52.57	0.000	2.33	0.000	5.69	58.26	93.84	0.00	0.00
205.0	8.4	0.004	52.85	0.000	2.34	0.000	5.72	58.58	96.19	0.00	0.00
210.0	8.2	0.004	53.14	0.000	2.35	0.000	5.75	58.89	98.53	0.00	0.00
215.0	8.1	0.004	53.41	0.000	2.37	0.000	5.78	59.19	100.88	0.00	0.00
220.0	7.9	0.004	53.68	0.000	2.38	0.000	5.81	59.49	103.23	0.00	0.00
225.0	7.8	0.004	53.95	0.000	2.39	0.000	5.84	59.79	105.57	0.00	0.00
230.0	7.6	0.004	54.21	0.000	2.40	0.000	5.87	60.08	107.92	0.00	0.00
235.0	7.5	0.004	54.47	0.000	2.41	0.000	5.90	60.36	110.26	0.00	0.00
240.0	7.4	0.004	54.72	0.000	2.43	0.000	5.92	60.64	112.61	0.00	0.00
245.0	7.3	0.004	54.97	0.000	2.44	0.000	5.95	60.92	114.96	0.00	0.00
250.0	7.2	0.004	55.21	0.000	2.45	0.000	5.98	61.19	117.30	0.00	0.00
255.0	7.1	0.004	55.45	0.000	2.46	0.000	6.00	61.46	119.65	0.00	0.00
260.0	6.9	0.004	55.69	0.000	2.47	0.000	6.03	61.72	121.99	0.00	0.00
265.0	6.8	0.004	55.93	0.000	2.48	0.000	6.05	61.98	124.34	0.00	0.00
270.0	6.7	0.003	56.16	0.000	2.49	0.000	6.08	62.23	126.69	0.00	0.00

Lithos

Modified Rational Method - Five Year Storm

Site Flow and Storage Summary - towards Grenoble Drive (Proposed Residential Building)
City of Toronto
File No. UD24-013
Date: October 2025

Prepared By: Stergios Grigoriadis, P.E., M.A.Sc.
Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

Drainage Area A3 Post

Controlled in underground tank - conveyed by the 450mm diameter storm sewer

Area (A3) = **0.426** ha
"C" = **0.43**
AC3= **0.19**
Tc = **10.0** min
Time Increment = **5.0** min

Max. Release Rate = **67.7** L/s

Drainage Area A5 Post

Uncontrolled area towards Grenoble Drive (450mm diameter storm sewer)

Area (A5) = **0.012** ha
"C" = **0.68**
AC5= **0.01**
Tc = **10.0** min
Time Increment = **5.0** min

Max. Release Rate = **3.0** L/s

Drainage Area A7 Post

Green roof - Controlled in underground tank - conveyed by the 450mm diameter storm sewer

Area (A7) = **0.045** ha
"C" = **0.45**
AC7= **0.02**
Tc = **10.0** min
Time Increment = **5.0** min

Max. Release Rate = **7.3** L/s

Storage Tank

Storage Tank = A3+A7

Design Controlled Release Rate (77mm orifice plate)= **7.2** L/s
Max. Storage Tank Size = **39.8** m^3
Storage Tank footprint Area = **126.6** m^2

Total Site

2-yr Pre-Development Site Release Rate Towards the 450 mm diameter storm sewer along Grenoble Drive = **17.0** L/s

Site Controlled Release Rate (Tank) = **7.2** L/s
Uncontrolled Release Rate = **3.0** L/s

Total Site Release Rate = **10.2** L/s

5-Year Design Storm

a= 32.00
c= -0.79
I = $A(T)^C$

Tributary Area	ha	"C"	Tributary Area	ha	"C"
Hardscape	0.121	0.90	Hardscape	0.008	0.90
Landscape	0.305	0.25	Landscape	0.004	0.25
Totals	**0.426**	**0.43**	**Totals**	**0.012**	**0.68**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Time	**Rainfall Intensity**	**Storm Runoff (A3 Post)**	**Runoff Volume (A3 Post)**	**Storm Runoff (A5 Post)**	**Runoff Volume (A5 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/s)	(m^3)	(m^3)	(m^3)	(m^3)	(m)
10.0	131.8	0.068	40.64	0.003	1.80	0.007	4.40	45.04	6.14	38.90	0.31
15.0	95.7	0.049	44.25	0.002	1.96	0.005	4.79	49.04	9.21	39.83	0.31
20.0	76.2	0.039	47.01	0.002	2.08	0.004	5.09	52.10	12.28	39.81	0.31
25.0	63.9	0.033	49.26	0.001	2.18	0.004	5.33	54.60	15.36	39.24	0.31
30.0	55.3	0.028	51.19	0.001	2.27	0.003	5.54	56.73	18.43	38.30	0.30
35.0	49.0	0.025	52.87	0.001	2.34	0.003	5.72	58.60	21.50	37.10	0.29
40.0	44.1	0.023	54.38	0.001	2.41	0.002	5.89	60.26	24.57	35.69	0.28
45.0	40.2	0.021	55.74	0.001	2.47	0.002	6.03	61.77	27.64	34.13	0.27
50.0	37.0	0.019	56.98	0.001	2.53	0.002	6.17	63.15	30.71	32.44	0.26
55.0	34.3	0.018	58.14	0.001	2.58	0.002	6.29	64.43	33.78	30.65	0.24
60.0	32.0	0.016	59.21	0.001	2.62	0.002	6.41	65.62	36.85	28.76	0.23
65.0	30.0	0.015	60.21	0.001	2.67	0.002	6.52	66.73	39.92	26.81	0.21
70.0	28.3	0.015	61.16	0.001	2.71	0.002	6.62	67.78	43.00	24.78	0.20
75.0	26.8	0.014	62.05	0.001	2.75	0.001	6.72	68.77	46.07	22.70	0.18
80.0	25.5	0.013	62.90	0.001	2.79	0.001	6.81	69.70	49.14	20.57	0.16
85.0	24.3	0.012	63.70	0.001	2.82	0.001	6.90	70.60	52.21	18.39	0.15
90.0	23.2	0.012	64.47	0.001	2.86	0.001	6.98	71.45	55.28	16.17	0.13
95.0	22.3	0.011	65.21	0.001	2.89	0.001	7.06	72.27	58.35	13.91	0.11
100.0	21.4	0.011	65.91	0.000	2.92	0.001	7.14	73.05	61.42	11.63	0.09
105.0	20.6	0.011	66.59	0.000	2.95	0.001	7.21	73.80	64.49	9.31	0.07
110.0	19.8	0.010	67.25	0.000	2.98	0.001	7.28	74.52	67.56	6.96	0.05
115.0	19.1	0.010	67.88	0.000	3.01	0.001	7.35	75.22	70.64	4.59	0.04
120.0	18.5	0.010	68.49	0.000	3.04	0.001	7.41	75.90	73.71	2.19	0.02
125.0	17.9	0.009	69.07	0.000	3.06	0.001	7.48	76.55	76.78	0.00	0.00
130.0	17.4	0.009	69.65	0.000	3.09	0.001	7.54	77.19	79.85	0.00	0.00
135.0	16.9	0.009	70.20	0.000	3.11	0.001	7.60	77.80	82.92	0.00	0.00
140.0	16.4	0.008	70.74	0.000	3.14	0.001	7.66	78.40	85.99	0.00	0.00
145.0	15.9	0.008	71.26	0.000	3.16	0.001	7.71	78.98	89.06	0.00	0.00
150.0	15.5	0.008	71.77	0.000	3.18	0.001	7.77	79.54	92.13	0.00	0.00
155.0	15.1	0.008	72.27	0.000	3.20	0.001	7.82	80.09	95.20	0.00	0.00
160.0	14.7	0.008	72.75	0.000	3.22	0.001	7.88	80.63	98.28	0.00	0.00
165.0	14.4	0.007	73.22	0.000	3.25	0.001	7.93	81.15	101.35	0.00	0.00
170.0	14.1	0.007	73.68	0.000	3.27	0.001	7.98	81.66	104.42	0.00	0.00
175.0	13.7	0.007	74.13	0.000	3.29	0.001	8.03	82.16	107.49	0.00	0.00
180.0	13.4	0.007	74.57	0.000	3.30	0.001	8.07	82.64	110.56	0.00	0.00
185.0	13.1	0.007	75.00	0.000	3.32	0.001	8.12	83.12	113.63	0.00	0.00
190.0	12.9	0.007	75.42	0.000	3.34	0.001	8.16	83.59	116.70	0.00	0.00
195.0	12.6	0.006	75.84	0.000	3.36	0.001	8.21	84.05	119.77	0.00	0.00
200.0	12.4	0.006	76.24	0.000	3.38	0.001	8.25	84.49	122.84	0.00	0.00
205.0	12.1	0.006	76.64	0.000	3.40	0.001	8.30	84.93	125.92	0.00	0.00
210.0	11.9	0.006	77.03	0.000	3.41	0.001	8.34	85.36	128.99	0.00	0.00
215.0	11.7	0.006	77.41	0.000	3.43	0.001	8.38	85.79	132.06	0.00	0.00
220.0	11.5	0.006	77.78	0.000	3.45	0.001	8.42	86.20	135.13	0.00	0.00
225.0	11.3	0.006	78.15	0.000	3.46	0.001	8.46	86.61	138.20	0.00	0.00
230.0	11.1	0.006	78.51	0.000	3.48	0.001	8.50	87.01	141.27	0.00	0.00
235.0	10.9	0.006	78.87	0.000	3.50	0.001	8.54	87.40	144.34	0.00	0.00
240.0	10.7	0.006	79.22	0.000	3.51	0.001	8.58	87.79	147.41	0.00	0.00
245.0	10.5	0.005	79.56	0.000	3.53	0.001	8.61	88.17	150.48	0.00	0.00
250.0	10.4	0.005	79.90	0.000	3.54	0.001	8.65	88.55	153.55	0.00	0.00
255.0	10.2	0.005	80.23	0.000	3.56	0.001	8.69	88.92	156.63	0.00	0.00
260.0	10.0	0.005	80.56	0.000	3.57	0.001	8.72	89.28	159.70	0.00	0.00
265.0	9.9	0.005	80.88	0.000	3.58	0.001	8.76	89.64	162.77	0.00	0.00
270.0	9.8	0.005	81.20	0.000	3.60	0.001	8.79	89.99	165.84	0.00	0.00

Lithos

Modified Rational Method - Hundred Year Storm

Site Flow and Storage Summary - towards Grenoble Drive (Proposed Residential Building)
City of Toronto
File No. UD24-013
Date: October 2025

Prepared By: Stergios Grigoriadis, P.E., M.A.Sc.
Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

Drainage Area A3 Post

Controlled in underground tank - conveyed by the 450mm diameter storm sewer

Area (A3) = **0.426** ha
"C" = **0.43**
AC3= **0.19**
Tc = **10.0** min
Time Increment = **5.0** min

Max. Release Rate = **128.7** L/s

Drainage Area A5 Post

Uncontrolled area towards Grenoble Drive (450mm diameter storm sewer)

Area (A5) = **0.012** ha
"C" = **0.68**
AC5= **0.01**
Tc = **10.0** min
Time Increment = **5.0** min

Max. Release Rate = **5.7** L/s

Drainage Area A7 Post

Green roof - Controlled in underground tank - conveyed by the 450mm diameter storm sewer

Area (A7) = **0.045** ha
"C" = **0.45**
AC7= **0.02**
Tc = **10.0** min
Time Increment = **5.0** min

Max. Release Rate = **13.9** L/s

Storage Tank

Storage Tank = A3+A7

Design Controlled Release Rate (77mm orifice plate)= **10.8** L/s
Max. Storage Tank Size = **87.2** m^3
Storage Tank footprint Area = **126.6** m^2

Total Site

2-yr Pre-Development Site Release Rate Towards the 450 mm diameter storm sewer along Grenoble Drive = **17.0** L/s

Site Controlled Release Rate (Tank) = **10.8** L/s
Uncontrolled Release Rate = **5.7** L/s

Total Site Release Rate = **16.5** L/s

100-Year Design Storm

a= 59.70
c= -0.80
I = $A(T)^C$

Tributary Area	ha	"C"
Hardscape	0.121	0.90
Landscape	0.305	0.25
Totals	**0.426**	**0.43**

Tributary Area	ha	"C"
Hardscape	0.008	0.90
Landscape	0.004	0.25
Totals	**0.012**	**0.68**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Time	**Rainfall Intensity**	**Storm Runoff (A3 Post)**	**Runoff Volume (A3 Post)**	**Storm Runoff (A5 Post)**	**Runoff Volume (A5 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/s)	(m^3)	(m^3)	(m^3)	(m^3)	(m)
10.0	250.3	0.129	77.19	0.006	3.42	0.014	8.36	85.55	6.48	79.07	0.62
15.0	181.0	0.093	83.71	0.004	3.71	0.010	9.06	92.78	9.71	83.06	0.66
20.0	143.8	0.074	88.67	0.003	3.93	0.008	9.60	98.27	12.95	85.32	0.67
25.0	120.3	0.062	92.72	0.003	4.11	0.007	10.04	102.75	16.19	86.56	0.68
30.0	103.9	0.053	96.16	0.002	4.26	0.006	10.41	106.57	19.43	87.14	0.69
35.0	91.9	0.047	99.17	0.002	4.40	0.005	10.74	109.91	22.67	87.24	0.69
40.0	82.6	0.042	101.86	0.002	4.51	0.005	11.03	112.88	25.91	86.98	0.69
45.0	75.1	0.039	104.28	0.002	4.62	0.004	11.29	115.57	29.14	86.43	0.68
50.0	69.1	0.036	106.50	0.002	4.72	0.004	11.53	118.03	32.38	85.65	0.68
55.0	64.0	0.033	108.55	0.001	4.81	0.004	11.75	120.31	35.62	84.69	0.67
60.0	59.7	0.031	110.46	0.001	4.90	0.003	11.96	122.42	38.86	83.56	0.66
65.0	56.0	0.029	112.24	0.001	4.97	0.003	12.15	124.39	42.10	82.30	0.65
70.0	52.8	0.027	113.92	0.001	5.05	0.003	12.33	126.25	45.34	80.92	0.64
75.0	49.9	0.026	115.50	0.001	5.12	0.003	12.50	128.00	48.57	79.43	0.63
80.0	47.4	0.024	117.00	0.001	5.19	0.003	12.67	129.67	51.81	77.86	0.61
85.0	45.2	0.023	118.43	0.001	5.25	0.003	12.82	131.25	55.05	76.20	0.60
90.0	43.2	0.022	119.79	0.001	5.31	0.002	12.97	132.76	58.29	74.47	0.59
95.0	41.3	0.021	121.09	0.001	5.37	0.002	13.11	134.20	61.53	72.68	0.57
100.0	39.7	0.020	122.34	0.001	5.42	0.002	13.24	135.59	64.76	70.82	0.56
105.0	38.2	0.020	123.54	0.001	5.48	0.002	13.37	136.92	68.00	68.91	0.54
110.0	36.8	0.019	124.70	0.001	5.53	0.002	13.50	138.19	71.24	66.95	0.53
115.0	35.5	0.018	125.81	0.001	5.58	0.002	13.62	139.43	74.48	64.95	0.51
120.0	34.3	0.018	126.89	0.001	5.62	0.002	13.74	140.62	77.72	62.90	0.50
125.0	33.2	0.017	127.93	0.001	5.67	0.002	13.85	141.77	80.96	60.82	0.48
130.0	32.2	0.017	128.93	0.001	5.71	0.002	13.96	142.89	84.19	58.70	0.46
135.0	31.2	0.016	129.91	0.001	5.76	0.002	14.06	143.97	87.43	56.54	0.45
140.0	30.3	0.016	130.86	0.001	5.80	0.002	14.17	145.02	90.67	54.35	0.43
145.0	29.5	0.015	131.78	0.001	5.84	0.002	14.27	146.05	93.91	52.14	0.41
150.0	28.7	0.015	132.68	0.001	5.88	0.002	14.36	147.04	97.15	49.89	0.39
155.0	27.9	0.014	133.55	0.001	5.92	0.002	14.46	148.01	100.39	47.62	0.38
160.0	27.2	0.014	134.40	0.001	5.96	0.002	14.55	148.95	103.62	45.33	0.36
165.0	26.6	0.014	135.23	0.001	5.99	0.001	14.64	149.87	106.86	43.01	0.34
170.0	25.9	0.013	136.04	0.001	6.03	0.001	14.73	150.77	110.10	40.67	0.32
175.0	25.4	0.013	136.83	0.001	6.06	0.001	14.81	151.64	113.34	38.30	0.30
180.0	24.8	0.013	137.60	0.001	6.10	0.001	14.90	152.50	116.58	35.92	0.28
185.0	24.3	0.012	138.36	0.001	6.13	0.001	14.98	153.34	119.81	33.52	0.26
190.0	23.7	0.012	139.10	0.001	6.16	0.001	15.06	154.16	123.05	31.10	0.25
195.0	23.3	0.012	139.82	0.001	6.20	0.001	15.14	154.96	126.29	28.67	0.23
200.0	22.8	0.012	140.53	0.001	6.23	0.001	15.21	155.75	129.53	26.22	0.21
205.0	22.3	0.011	141.23	0.001	6.26	0.001	15.29	156.52	132.77	23.75	0.19
210.0	21.9	0.011	141.91	0.000	6.29	0.001	15.36	157.27	136.01	21.27	0.17
215.0	21.5	0.011	142.58	0.000	6.32	0.001	15.43	158.02	139.24	18.77	0.15
220.0	21.1	0.011	143.24	0.000	6.35	0.001	15.51	158.74	142.48	16.26	0.13
225.0	20.7	0.011	143.88	0.000	6.38	0.001	15.58	159.46	145.72	13.74	0.11
230.0	20.4	0.010	144.52	0.000	6.40	0.001	15.64	160.16	148.96	11.20	0.09
235.0	20.0	0.010	145.14	0.000	6.43	0.001	15.71	160.85	152.20	8.66	0.07
240.0	19.7	0.010	145.75	0.000	6.46	0.001	15.78	161.53	155.43	6.10	0.05
245.0	19.4	0.010	146.36	0.000	6.49	0.001	15.84	162.20	158.67	3.53	0.03
250.0	19.1	0.010	146.95	0.000	6.51	0.001	15.91	162.86	161.91	0.94	0.01
255.0	18.8	0.010	147.53	0.000	6.54	0.001	15.97	163.50	165.15	0.00	0.00
260.0	18.5	0.009	148.10	0.000	6.56	0.001	16.03	164.14	168.39	0.00	0.00
265.0	18.2	0.009	148.67	0.000	6.59	0.001	16.09	164.76	171.63	0.00	0.00
270.0	17.9	0.009	149.23	0.000	6.61	0.001	16.15	165.38	174.86	0.00	0.00

Lithos

Orifice Design

45 Grenoble Drive
File No. UD24-013
Date: October 2025
Prepared By: Stergios Grigoriadis, P.E., M.A.Sc.
Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

Orifice Equation for 77 mm orifice plate

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

100 yr event

d=	77	mm
C=	0.63	
A=	0.005	m^2
g=	9.81	m/s^2
h=	0.69	m
Q=	**10.8**	**L/s**

5 yr event

d=	77	mm
C=	0.63	
A=	0.005	m^2
g=	9.81	m/s^2
h=	0.31	m
Q=	**7.2**	**L/s**

2 yr event

d=	77	mm
C=	0.63	
A=	0.005	m^2
g=	9.81	m/s^2
h=	0.20	m
Q=	**5.8**	**L/s**

Water Balance Calculation

45 Grenoble Drive

File No. UD24-013

Date: October 2025

Prepared By: Stergios Grigoriadis, P.E., M.A.Sc.

Reviewed By: Anastasia Tzakopoulou, P.E., M.A.Sc.

Contributing Drainage Area	8945	m^2
Rainfall depth to be retained	5.0	mm
Total rainfall volume required at 5mm	**44.73**	m^3

Initial Abstraction Calculations

Surface	Area (m^2)	IA (mm)	Volume (m^3)	
Green Roofs	445	5.0	2.23	m^2
Landscape	4020	5.0	20.10	m^3
Hardscape	4480	1.0	4.48	m^3
Total	8945		26.81	m^3

Water Volume provided by initial abstraction is	**26.81**	**m^3**
Therefore Required Remaining Rainfall Volume to be retained	**17.92**	**m^3**

Appendix D

Sanitary Data Analysis

Lithos

Prepared by: Stergios Grigoriadis, P.Eng., M.A.Sc.
Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

Rational Method

Proposed Storm Flow towards the Sanitary Network

45 Grenoble Drive
City of Toronto
File No. UD24-013
Date: October 2025

Input Parameters	**Area (ha)**	**C**	**Tc (min.)**
A6 Post (Pet Relief Area) draining towards sanitary sewer network (250 mm Sanitary Sewer on Grenoble Drive)	0.005	0.25	10

Rational Method Calculation

Event 2 yr
IDF Data Set City of Toronto
Event a = 21.80
IDF Data Set c = -0.780

	A (ha)	**C**	**AC**	**Tc (min.)**	**I (mm/h)**	**Q (m^3/s)**	**Q (L/s)**
Area Draining Towards sanitary sewer network (250 mm Sanitary Sewer on Grenoble Drive)	0.005	0.25	0.001	10	88.2	0.000	0.31

under Wet Weather Conditions

45 Gr

SANITARY SEWER DESIGN SHEET

45 Grenoble Drive

CITY OF TORONTO

LOCATION	RESIDENTIAL									COMMERCIAL		FLOW											SEWER DESIGN				
	SECTION AREA (ha.)	NUMBER OF UNITS: Single Fam. Dwell. @ 3.5 ppu	Townhouse @ 2.7	Residential (ha.)	Studio @ 1.4 ppu	1 Bed Apts. @ 1.4 ppu	2 Bed Apts. @ 2.1 ppu	3 Bed Apts. @ 3.1 ppu	SECTION POP. (persons)	SECTION AREA (ha.)	SECTION POP. @ 110 ppha (persons)	TOTAL ACCUM. POP. (persons)	AVERAGE RESIDENTIAL FLOW '@' 240 L/c/d (L/s)	AVERAGE COMMERCIAL FLOW @ 250 L/c/d (L/s)	HARMON PEAKING FACTOR	RES. PEAK FLOW (L/s)	TOTAL ACCUM. AREA (ha.)	INFILT. @ 0.26 L/s/ha. (L/s)	TOTAL SANITARY FLOW (L/s)	STORM FLOW 2 -YEAR (L/s)	PEAK GROUNDWATER FLOW (L/S)	TOTAL DESIGN FLOW (L/s)	PIPE LENGTH (m)	PIPE DIA. (mm)	SLOPE (%)	FULL FLOW CAPACITY n = 0.013 (L/sec)	% of DESIGN CAPACITY (%)
column nunber	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Existing Condition																											
Residential-use Development	0.895	0	0	0.00	0	0	217	0	456	0.000	0	456	1.27	0.000	3.99	5.06	0.895	0.23	5.06	0.00	0.00	5.29					
Proposed Condition																											
Residential-use development	0.516	0	0	0.00	0	174	189	42	771	0.000	0.000	771	2.14	0.000	3.87	8.29	0.516	0.13	8.29	0.31	0.00	8.73		200	2.0%	46.38	19%
Existing Building (to be maintained)	0.379	0.000	0	0.00	0	0	217	0	456	0	0	456	1.27	0.000	3.99	5.06	0.895	0.23	5.06	0.00	0.00	5.29		200	2.0%	46.38	11%
														Total Flow								14.02					
														Total Net Flow								8.73					

Residential Flow Rate - 240 litres/capita/day

Commercial/Office Flow Rate - 250 litres/capita/day

Infiltration - 0.26 L/ha

Foundation allowance - 5.0 L/ha

Peaking Factor = $1 + [14 / (4 + P^{0.5})]$, P=Population in thousands

Site Area (ha): 0.895

Lithos

Prepared by: Thanasis Tsiamantas, P.E., M.A.Sc.
Reviewed by: Iraklis Nikoletos, P.Eng., Ph.D.
Date: October 2025

Project: 45 Grenoble Drive
Project: UD24-013
City of Toronto

Sheet 2 OF 2

Appendix E

Water Data Analysis

WATER DEMAND

45 Grenoble Dr

Project No: UD24-013

Date: October 2025

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

Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

Fire Flow Calculation

PROPOSED RESIDENTIAL BUILDING

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, includes garage*

		Area Applied
Level 4=	1025.1 m^2	100%
Level 3=	1025.1 m^2	25%
Level 5=	1025.1 m^2	25%
=	1,538 sq.m.	

Note: The levels indicated, reference the floors with the largest areas, which considers the total floor areas which span through the east and west towers, and podium (Please refer to building stats).

F = 6,901 L/min

F = 7,000 L/min Round to nearest 1000 l/min

2 Occupancy Reduction

15% reduction for limited combustible occupancy

F = 5950 L/min

3 Sprinkler Reduction

30% Reduction for NFPA automatic sprinkler system

F = 4165 l/min

4 Separation Charge

15%	North	10.1m to 20m
0%	East	> 30m
10%	South	20.1m to 30m
10%	West	20.1m to 30m
35%	Total Separation Charge,	2083 L/min

F = 6,248 L/min

104.13 L/s

F = 1651 US GPM

Domestic Flow Calculations

Population High Rise = 771 Persons from Site Statistics

Average Day Demand = 190 L/cap/day

Residential Flow= 1.70 L/s

1 US Gallon=3.785 L

Retail/Commercial Area= 0 m^2 from Site Statistics

Average Day Demand= 2.8 L/m2/day

Retail/Commercial Flow= 0.00 L/s

1 US GPM=15.852L/s

Total Flow= 1.70 L/s

= 26.42 US GPM

Max. Daily Demand Peaking Factor = 1.5

Max. Daily Demand = 2.54 L/s = 40 US GPM

or

Max. Hourly Demand Peaking Factor = 2.25

Max. Hourly Demand = 3.81 L/s = 60 US GPM

Max Daily Demand = 2.54 L/s

Fire Flow = 104.13 L/s

Required 'Design' Flow = 106.68 L/s

1691 US GPM

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

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

WATER DEMAND

45 Grenoble Dr

Project No: UD24-013

Date: October 2025

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

Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

Pressure Losses

Hazen-Williams Formula

V= $kCR_h^{0.63}xS^{0.54}$

k= 0.85 - conversion factor (0.849 for SI units and 1.318 for US customary units)

C= 140 - roughness coefficient (PVC : 140-150)

S= h_f/L

Rh= D/4 - hydraulic radius (D/4 for full flow, A/P_W for partially flow)

Fire Fighting and Domestic Head Loss

Flow Requirements=	106.68	l/s
Diameter=	200	mm
Area=	3.14E-02	
L=	44.8	m
V=	3.40	m/s
S=	6.37E-02	
R_h=	0.04	
H_f=	2.85	m
=	4.06	psi

Flow Test *(dated: June 7, 2024)*

when:	Static Pressure =	90	psi	Flow =	0 gpm =	0	L/s
	Residual Pressure =	85	psi	Flow =	2325.02 gpm =	146.71	L/s

Pressure (psi)	***Flow (L/s)***
90	0.0
85	146.71
86.4	*106.68*

Based on the Pressure/Flow relationship, we have to confirm that the flow requirement of 106.68 L/s can be provided at minimum pressure (20.3 psi + Losses) as set out by the FUS guidelines

Fire Flow is above minimum of 24.36 psi (20.3+Hf)

Since the flow of 106.68 L/s required for the proposed development is provided in the existing watermain at 86.4 psi (which is more than the minimum of 24.36 psi), we anticipate that the existing watermain infrastructure can support the proposed development.

Flow available at 20psi = 9668 gpm = 610.05 L/s

Q_{avail} @ 20psi = $Q_T ((P_S-P_A)/(P_S-P_R))^{0.54}$

= 2325.02 x ((90-20) / (90-85))$^{0.54}$

= 9668 gpm

WATER DEMAND

45 Grenoble Dr

Project No: UD24-013

Date: October 2025

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

Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

Pressure Losses

Hazen-Williams Formula

$V = kCR_h^{0.63}xS^{0.54}$

k= 0.85 - conversion factor (0.849 for SI units and 1.318 for US customary units)

C= 140 - roughness coefficient (PVC : 140-150)

S= h_f/L

Rh= D/4 - hydraulic radius (D/4 for full flow, A/P_W for partially flow)

Fire Fighting and Domestic Head Loss

Flow Requirements=	106.68	l/s
Diameter=	200	mm
Area=	3.14E-02	
L=	58.5	m
V=	3.40	m/s
S=	6.37E-02	
R_h=	0.04	
H_f=	3.73	m
=	5.30	psi

Flow Test *(dated: June 7, 2024)*

when:	Static Pressure =	92	psi	Flow =	0 gpm =	0	L/s
	Residual Pressure =	85	psi	Flow =	2174.86 gpm =	137.23	L/s

Pressure (psi)	***Flow (L/s)***
92	0.0
85	137.23
86.6	*106.68*

Based on the Pressure/Flow relationship, we have to confirm that the flow requirement of 106.68 L/s can be provided at minimum pressure (20.3 psi + Losses) as set out by the FUS guidelines

Fire Flow is above minimum of 25.60 psi (20.3+Hf)

Since the flow of 106.68 L/s required for the proposed development is provided in the existing watermain at 86.6 psi (which is more than the minimum of 25.60 psi), we anticipate that the existing watermain infrastructure can support the proposed development.

Flow available at 20psi = 7657 gpm = 483.13 L/s

$$Q_{avail} @ 20psi = Q_T ((P_S-P_A)/(P_S-P_R))^{0.54}$$

$$= 2174.86 \times ((92-20) / (92-85))^{0.54}$$

$$= 7657 \text{ gpm}$$

WATER DEMAND

45 Grenoble Dr

Project No: UD24-013

Date: October 2025

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

Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

Fire Flow Calculation

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

Where F= Fire flow in Lpm

EXISTING BUILDING (TO BE MAINTAINED)

C= construction type coefficient

= 0.8 non-combustible construction

A = total floor area in sq.m. excluding basements, includes garage*

		Area Applied
Level 3=	761.7 m^2	100%
Level 4=	761.7 m^2	100%
Level 5=	761.7 m^2	50%
Level 6=	761.7 m^2	50%
Level 7=	761.7 m^2	50%
Level 8=	761.7 m^2	50%
Level 9=	761.7 m^2	50%
Level 10=	761.7 m^2	50%
Level 11=	761.7 m^2	50%
Level 12=	761.7 m^2	50%
=	4,570 sq.m.	
F =	11,898 L/min	F(No.1) = 220C√A
F =	12,000 L/min	Round to nearest 1000 l/min

Note: The levels indicated, reference the floors with the largest areas, which considers the total floor areas which span through the east and west towers, and podium (Please refer to building stats).

2 Occupancy Reduction

15% reduction for limited combustible occupancy

F = 10200 L/min

3 Sprinkler Reduction

0% Reduction

F = 10200 l/min

4 Separation Charge

0%	North	>30m
10%	East	20.1m to 30m
15%	South	10.1m to 20m
0%	West	>30m
25%	Total Separation Charge,	2550 L/min

F = 12,750 L/min

212.50 L/s

F = 3369 US GPM

Domestic Flow Calculations

Population High Rise = 456 Persons from Site Statistics

Average Day Demand = 190 L/cap/day 1 US Gallon=3.785 L

Residential Flow= 1.00 L/s

Retail/Commercial Area= 0 m^2 from Site Statistics

Average Day Demand= 2.8 L/m2/day 1 US GPM=15.852L/s

Retail/Commercial Flow= 0.00 L/s

Total Flow= 1.00 L/s

= 15.63 US GPM

Max. Daily Demand Peaking Factor = 1.5

Max. Daily Demand = 1.50 L/s = 24 US GPM

or

Max. Hourly Demand Peaking Factor = 2.25

Max. Hourly Demand = 2.26 L/s = 36 US GPM

Max Daily Demand = 1.50 L/s

Fire Flow = 212.50 L/s

Required 'Design' Flow = 214.00 L/s

3392 US GPM

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

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

WATER DEMAND

45 Grenoble Dr

Project No: UD24-013

Date: October 2025

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

Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

Pressure Losses

Hazen-Williams Formula

$V = kCR_h^{0.63}xS^{0.54}$

k= 0.85 - conversion factor (0.849 for SI units and 1.318 for US customary units)

C= 140 - roughness coefficient (PVC : 140-150)

S= h_f/L

Rh= D/4 - hydraulic radius (D/4 for full flow, A/P_W for partially flow)

Fire Fighting and Domestic Head Loss

Flow Requirements=	214.00	l/s
Diameter=	150	mm
Area=	1.77E-02	
L=	40.6	m
V=	12.11	m/s
S=	6.71E-01	
R_h=	0.04	
H_f=	27.25	m
=	38.77	psi

Flow Test (dated: June 7, 2024)

when:	Static Pressure =	90	psi	Flow =	0 gpm =	0	L/s
	Residual Pressure =	85	psi	Flow =	2174.86 gpm =	137.23	L/s

Pressure (psi)	***Flow (L/s)***
92	0.0
85	137.23
81.1	*214.00*

Based on the Pressure/Flow relationship, we have to confirm that the flow requirement of 214.00 L/s can be provided at minimum pressure (20.3 psi + Losses) as set out by the FUS guidelines

Fire Flow is above minimum of 59.07 psi (20.3+Hf)

Since the flow of 214.00 L/s required for the proposed development is provided in the existing watermain at 81.1 psi (which is more than the minimum of 59.07 psi), we anticipate that the existing watermain infrastructure can support the proposed development.

Flow available at 20psi = 7657 gpm = 483.13 L/s

$$Q_{avail} @ 20psi = Q_T ((P_S-P_A)/(P_S-P_R))^{0.54}$$
$$= 2174.86 \times ((92-20) / (92-85))^{0.54}$$
$$= 7657 \text{ gpm}$$

Lithos

Fire Hydrant Flow Test Report

General Information			
Report No. :	FHR-24-06-07-01	Date :	07-Jun-24
Project No. :	PUD24-013		
Site Address/Location:	45 Grenoble Dr., TO		
Region/Municipality:	City of Toronto		
Residual Fire Hydrant Location/description :	48 GRENOBLE DR / HY4015071		
Flow Fire Hydrant Location/description :	OP/ 9 GRENOBLE DR / HY4015064		
Watermain Pipe Size (mm) :	400 mm		
Test Equipment Orifice Size (in) :	2.5		
Test Equipment Orifice coefficient :	0.9		
Date of test:	07-Jun-24		
Time of test:	9:00		
Temperature:	17°C		
Testing Method :	NFPA 291 (Recommended Practice for Fire Flow Testing and Marking of Hydrants)		

Attendants			
	Name	Title	Contact Info.
Lithos Inspector	Peter	Project Inspector	(437)-215-1144
Lithos Inspector	Mauricio	Project inspector	(437)-603-7725
City of Toronto Rep.	Tony	Inspector	(647)-459-5077

Site Plan/Sketch

Pressure Readings (PSIG)			
Flow Hydrant's Outlet Condition	C-0 { Outlet #1 : Close; Outlet #2 : Close }	C-1 { Outlet #1 : Open; Outlet #2 : Close }	C-2 { Outlet #1 : Open; Outlet #2 : Open }
Residual Fire Hydrant	92	89	85
Flow Fire Hydrant	-	52	42

Lithos

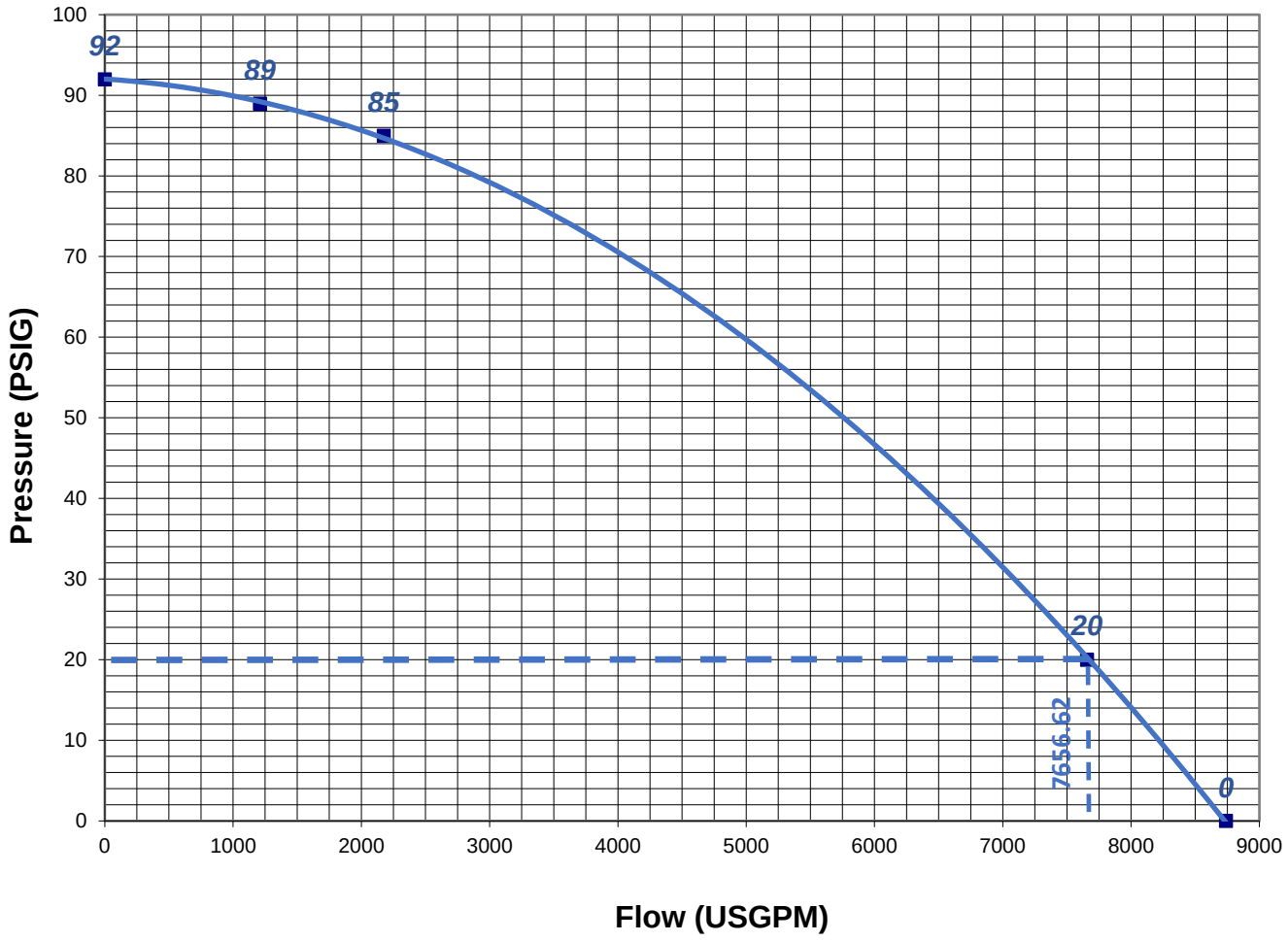
Fire Hydrant Flow Test Report

General Information	
Report No. : **FHR-24-06-07-01**	Date : **07-Jun-24**
Project No. : **PUD24-013**	
Site Address/Location: **45 Grenoble Dr., TO**	
Region/Municipality: **City of Toronto**	

Pressure-Flow Table

Condition		C-0	C-1	C-2	C(20)	C(0)
Pressure (PSIG)		92	89	85	20	0
Flow	(USGPM)	0	1209.98	2174.86	7656.62	8740.23
	(L/S)	0.00	76.35	137.23	483.13	551.51

Pressure-Flow Graph



Result

Maximum available flow at 20PSI = 7656.62 USGPM or 483.13 L/s

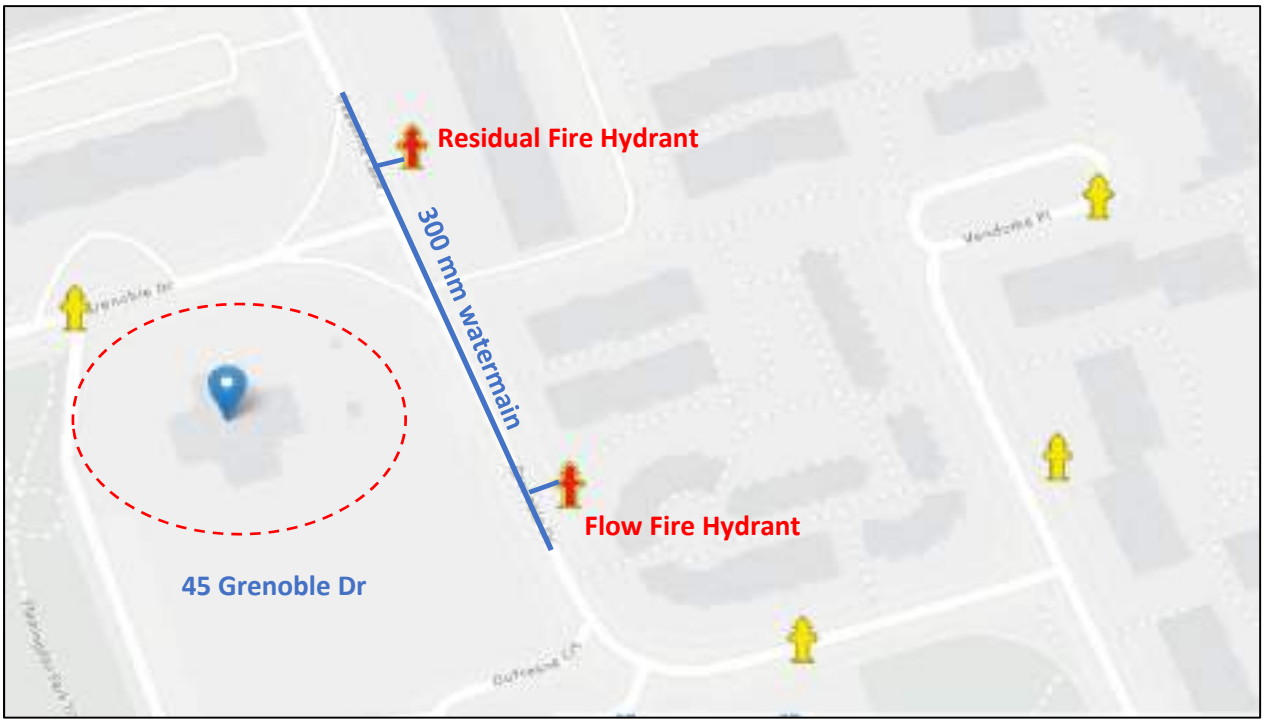
Lithos

Fire Hydrant Flow Test Report

General Information			
Report No. :	FHR-24-06-07-02	Date :	07-Jun-24
Project No. :	PUD24-013		
Site Address/Location:	45 Grenoble Dr., TO		
Region/Municipality:	City of Toronto		
Residual Fire Hydrant Location/description :	1 DEAUVILLE LANE / HY4015242		
Flow Fire Hydrant Location/description :	58 GRENOBLE DR / HY4015223		
Watermain Pipe Size (mm) :	300 mm		
Test Equipment Orifice Size (in) :	2.5		
Test Equipment Orifice coefficient :	0.9		
Date of test:	07-Jun-24		
Time of test:	10:00		
Temperature:	17°C		
Testing Method :	NFPA 291 (Recommended Practice for Fire Flow Testing and Marking of Hydrants)		

Attendants			
	Name	Title	Contact Info.
Lithos Inspector	Peter	Project Inspector	(437)-215-1144
Lithos Inspector	Mauricio	Project inspector	(437)-603-7725
City of Toronto Rep.	Tony	Inspector	(647)-459-5077

Site Plan/Sketch



Pressure Readings (PSIG)			
Flow Hydrant's Outlet Condition	C-0 { Outlet #1 : Close; Outlet #2 : Close }	C-1 { Outlet #1 : Open; Outlet #2 : Close }	C-2 { Outlet #1 : Open; Outlet #2 : Open }
Residual Fire Hydrant	90	87	85
Flow Fire Hydrant	-	68	48

Lithos

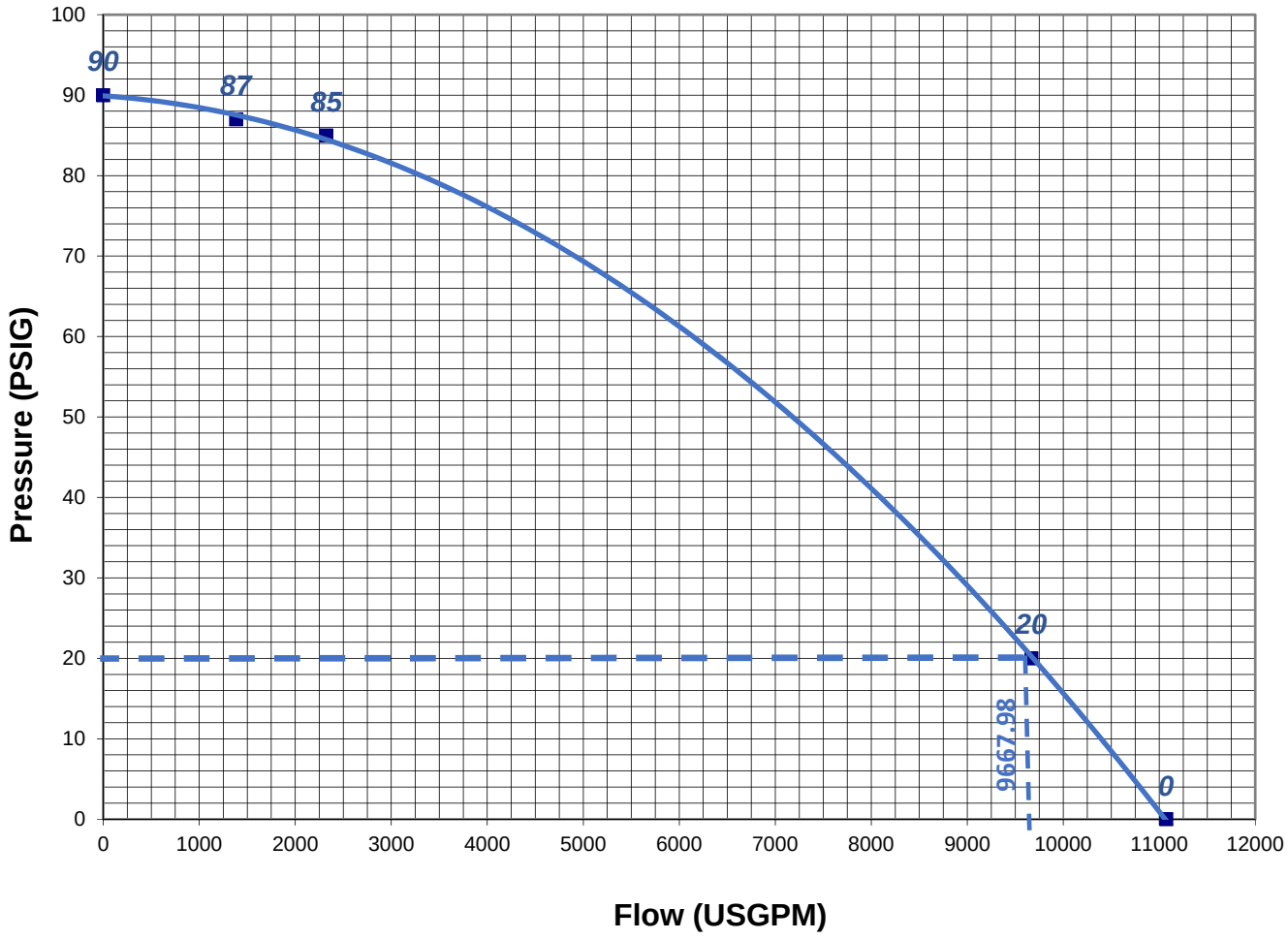
Fire Hydrant Flow Test Report

General Information	
Report No. : **FHR-24-06-07-02**	Date : **07-Jun-24**
Project No. : **PUD24-013**	
Site Address/Location: **45 Grenoble Dr., TO**	
Region/Municipality: **City of Toronto**	

Pressure-Flow Table

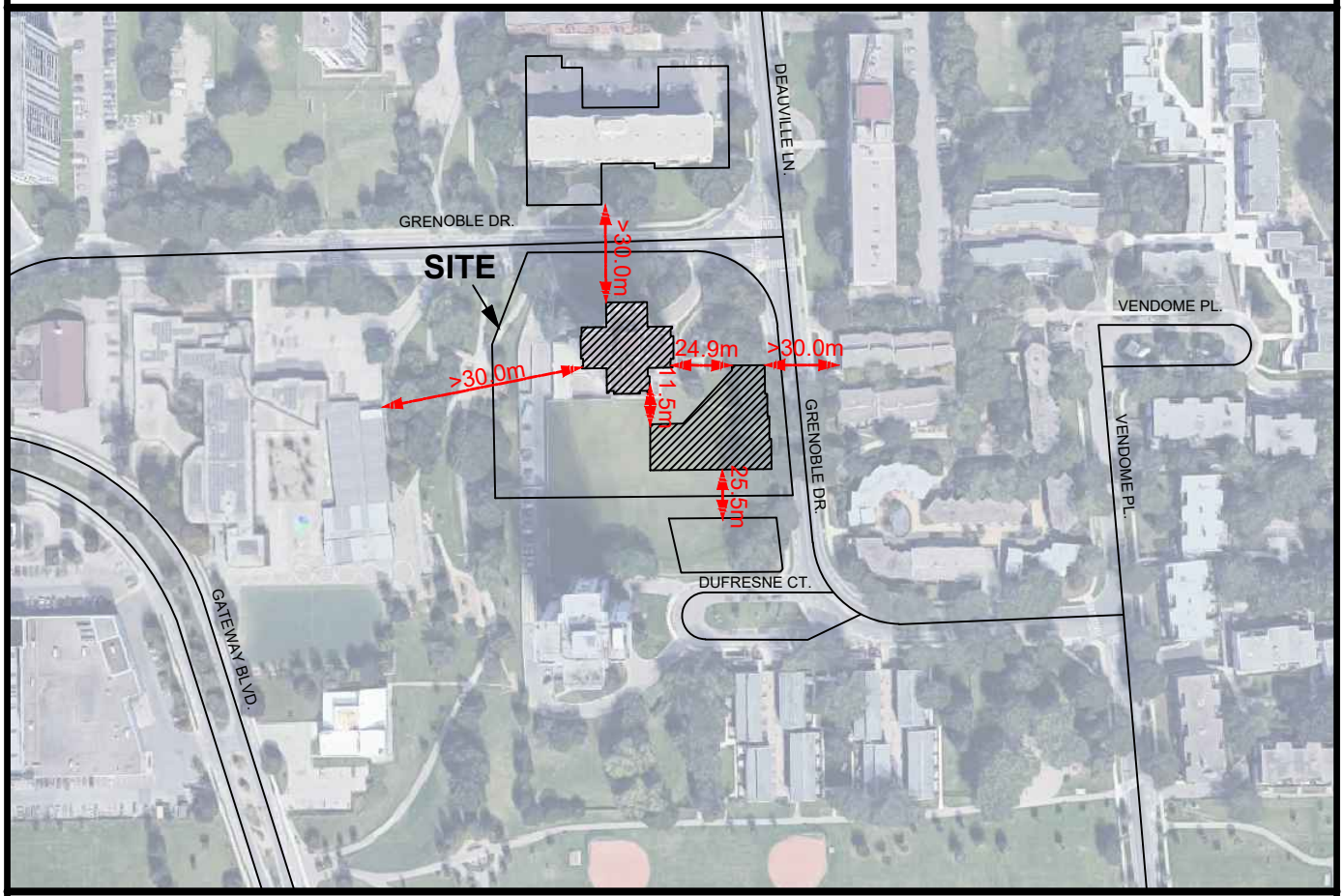
Condition		C-0	C-1	C-2	C(20)	C(0)
Pressure (PSIG)		90	87	85	20	0
Flow	(USGPM)	0	1383.66	2325.02	9667.98	11073.21
	(L/S)	0.00	87.31	146.71	610.05	698.72

Pressure-Flow Graph



Result

Maximum available flow at 20PSI = 9667.98 USGPM or 610.05 L/s



Lithos

150 Bermondsey Road, Toronto, Ontario M4A 1Y1

SEPARATION DISTANCES
RESIDENTIAL USE DEVELOPMENT
45 GRENOBLE DRIVE
TORONTO, ONTARIO

DATE:	OCTOBER 2025	PROJECT No:	UD24-013
SCALE:	N.T.S.	FIGURE No:	FIG 3

Appendix F

Sanitary Sewer Capacity Analysis

Lithos

October 2025

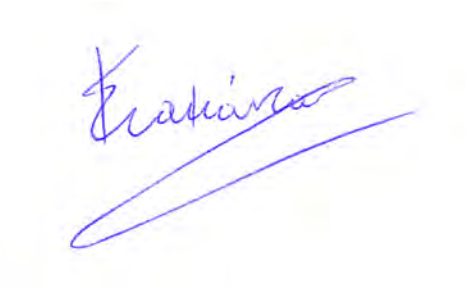
UD24-013

Downstream Sanitary Capacity Analysis Report

Project: 45 Grenoble Drive, TO
Client: David Investments Inc.

Lithos Group Inc.
150 Bermondsey Road
Toronto, ON M4A-1Y1
Tel: (416) 750-7769
Email: info@LithosGroup.ca

PREPARED BY:



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LITHOS GROUP INC.

Nick Moutzouris, P.Eng., M.A.Sc.
Principal

Identification	Date	Description of issued and/or revision
Downstream Sanitary Capacity Analysis Report	December 18th, 2024	Issued for Zoning Application
Downstream Sanitary Capacity Analysis Report	October 20th, 2025	Issued for Zoning Application

Statement of Conditions

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Executive Summary

Lithos Group Inc. (Lithos) was retained by Davad Investments Inc. (the "Owner") to prepare a Downstream Sanitary Capacity Analysis Report in support of a Zoning By-law Amendment Application for a proposed residential development comprised by an existing 28-storey residential building which will be maintained and a proposed 40-storey residential building at 45 Grenoble Drive (M3C-1C4), in the City of Toronto (the "City"). The following is a summary of our conclusions:

Existing Conditions

The sanitary flow from the site is currently being discharged into the existing 450 mm diameter sanitary sewer, along the existing Easement, which the west boundary of the subject property, flowing south. Under pre-development conditions, the sanitary flow from the site is estimated at 5.29 L/s. The downstream analyzed sanitary network consists of nineteen (19) sewer segments up to the 600 mm diameter sanitary trunk sewer between Don Mills Road and Don Valley Parkway (trunk connection, MH_ID#: MH5512534175). Under existing **Dry Weather Flow (DWF) Conditions**, the sanitary sewer system operates under free flow conditions and no surcharge occurs, while under existing **Wet Weather Flow (WWF) Conditions (May 12, 2000 storm event)**, the modeling results show that the existing sanitary system experiences minor surcharging with freeboard (freeboard>1.8 m) at seven (7) sewer segments. In addition, the minimum available freeboard is 2.27m (Pipe ID: SL4172651, Map ID: #18).

Proposed Conditions

Under proposed conditions, the existing residential building will be preserved, and a new residential-use building will be constructed.

Sanitary flow from the proposed building will be discharged to the existing 250mm diameter sanitary sewer at Grenoble Drive, flowing south, while the sanitary connection of the existing building will be maintained. The 250mm diameter sanitary sewer along Grenoble Drive and the existing 450mm diameter along existing easement are part of the same sewer network ultimately discharging into the 600mm diameter trunk sewer located between Don Mills Road and Don Valley Parkway (trunk connection, MH_ID#: MH5512534175). Please refer to **DAP-1.1** for details.

Flow generation from the site, consists of approximately 13.35 L/s, an infiltration allowance of about 0.36 L/s and a 2-year storm flow of 0.31 L/s draining towards sanitary network, resulting in a total flow of 14.02 L/s and a net increase towards of the network along Grenoble Drive of 8.73 L/s under proposed conditions, while the network along the easement will not be affected.

Under proposed **Dry Weather Flow (DWF) Conditions**, the sanitary sewer system operates under free flow conditions and no surcharge occurs, while under **Wet Weather Flow (WWF) Conditions (May 12, 2000 storm event)**, the modelling results show that the sanitary system experiences minor surcharging with freeboard (freeboard>1.8 m) at eight (8) sewer segments. In addition, the minimum available freeboard at the entire network is calculated at 2.23m (Pipe ID: SL4172651, Map ID: #18).

Conclusion

According to Table 1: Capacity Criteria for Sanitary and Combined Sewers, of the Sewer Capacity Assessment Guidelines:

Criterion 1: Under Dry Weather Flow conditions, the system operates under free flow conditions and no surcharge (HGL is below the pipe obvert) occurs.

Criterion 2: Under proposed Wet Weather Flow conditions, which include I&I generated under the May 12, 2000 storm event, the HGL in the downstream sewers is at least 1.80 m below grade.

The Downstream Sanitary Capacity Analysis demonstrates that the proposed residential development at 45 Grenoble Drive does not increase the risk of basement flooding and can be serviced by the existing sanitary network.

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Appendices

1.0 Introduction

Lithos Group Inc. (Lithos) was retained by Davad Investments Inc. (the "Owner") to prepare a Downstream Sanitary Capacity Analysis Report in support of a Zoning By-law Amendment Application for a proposed residential development comprised by an existing 28-storey residential building which will be maintained and a proposal 40-storey residential building at 45 Grenoble Drive, in the City of Toronto (the "City").

The purpose of this report is to provide site-specific information for the City for their review with respect to the municipal sanitary infrastructure downstream, required to support the proposed residential development.

The following documents were available for our review:

- InfoWorks ICM model prepared as part of the City's Basement Flooding Study Area 55, completed in 2022;
- City of Toronto Infoworks CS Basement Flooding Model Studies Guideline, dated October 2014;
- Engineering Design Guidelines for the City of Toronto (January 2021);
- Sewer Capacity Assessment Guidelines for the City of Toronto (July 2021); and,
- Google Maps Overhead Satellite Imagery, Google Street View, and ESRI Base maps.

Figure 1-1 Site Overview

2.0 Sanitary Servicing Design Criteria

As per the City of Toronto's Design Criteria for Sewers and Watermains, the following guidelines were used in this analysis:

Table 2.1 – Sanitary Flows

Usage	Design Flow	Units	Population Equivalent
Residential	240	Litres / capita / day	Townhouse unit = 2.7 ppu Studio/1 Bedroom Unit = 1.4 ppu 2 Bedroom Unit = 2.1 ppu 3 Bedroom Unit = 3.1 ppu

In addition, the design criteria used for this analysis were based on the City of Toronto's Sanitary Sewer Surcharge Approval Guideline for Development Applications. During **Dry Weather Flow (DWF)** Conditions, no surcharging of existing or proposed sewers should apply. With respect to the **Wet Weather Flow (WWF)** Conditions, the minimum hydraulic grade line (HGL) depth of 1.8m below the road grade for both existing and proposed sewers should apply.

Furthermore, according to the Sewer Capacity Assessment Guidelines for the City of Toronto (July 2021), the following criteria need to be achieved:

1) Under proposed design flow (design sanitary sewage and design I&I allocation rate) conditions, there will be no surcharge (HGL is below pipe obvert) in the sewer system. Otherwise, mitigation measures will be required.

2) Under proposed **WWF** Conditions (design sanitary sewage and estimated WWF I&I), which includes I&I generated under the May 12, 2000 storm event (estimate equivalent 25-year design storm, where no WWF I&I for May 12, 2000 event is available from BFPP studies), the HGL in the sewer will be at least 1.80 m below grade. Otherwise, mitigation measures will be required.

3) Under proposed **WWF** Conditions, WWF mitigation measures (includes WWF/I&I reduction, sewer upsizing and upgrades) will ensure that the proposed HGL will be no greater, than the existing HGL. The proposed peak flow rate will be no greater than existing peak flow rate at the connection to the trunk sewer or pumping station.

3.0 Site Description

The subject property is located within the City's Basement Flooding Area 55 (BFA55). The basement flooding EA for BFA55 was completed in 2022. The sewershed for BFA55 is fully serviced by sanitary sewers.

3.1 Existing Site

The existing site is approximately 8,945.2 m^2 (0.895 hectares). It is currently occupied by a 28-storey residential development and underground parking area. The site is bound by Grenoble Drive to the north and east and landscape area to the south and west, as shown in **Figure 1-1**.

Using the design criteria outlined in **Section 2.0** and existing site information, the sanitary discharge flow from the existing residential building is estimated at 5.29 L/s (including inflow and infiltration from the site). Please refer to **Appendix A** for more details.

3.2 Proposed Site

The proposed development will be comprised by:

- A proposed 40-storey residential building; and,
- The existing 28-storey residential building which will be maintained;

The proposed building will consist of 405 residential units and will be facilitated by three (3) levels of underground parking. In addition, the proposed building will include approximately 28,493.5 m^2 of Gross Floor Area (GFA).

Using the design criteria outlined in **Section 2.0**, a total population of one thousand two hundred and twenty-seven (1,227) people was considered to estimate the proposed total discharge flow of 14.02 L/s, (0.36 L/s infiltration flow, 0.31 L/s of storm flow under a 2-year storm event draining towards sanitary sewer network and 13.35 L/s sanitary flow) from the proposed development. Therefore, the additional net discharge flow from the proposed development is anticipated at 8.73 L/s. Please refer to **Appendix A** for more details.

4.0 Sanitary Capacity and Overflow Analysis

A capacity analysis was conducted using the City's InfoWorks ICM sewer model (the "Model"). This Model was developed in 2022 as a part of basement flooding remediation and a water quality improvement master plan for Area 55. In addition, the Model has been updated with all future developments available in the City's Development Applications found online and the latest version was used for this analysis.

The model was used to analyze the sanitary sewer network from the proposed development up to the 600 mm diameter sanitary trunk sewer between Don Mills Road and Don Valley Parkway (trunk connection, MH_ID#: MH5512534175).

The following assumptions were made when performing the capacity analysis:

- The model used the RTK unit hydrograph approach to generate an I/I rate during the May 12, 2000 storm. This approach allows for the generation of different I/I rates during the ramped analysis. The I&I value reflects a number of different potential sources including infiltration from public and private properties as well as potential inflows including downspouts, perforated MH lids etc;
- The models assumed the downstream boundary conditions as "Free Flow", as available flow monitoring data suggested limited surcharging conditions with no negative impact on local collection system;

- The existing pipe properties, modelling approach, and other assumptions made in the preparation of the provided InfoWorks model are correct and the provided BFA55 InfoWorks model can be used to perform the analysis;
- The Analysis can be conducted by assessing the difference in the system performance between the existing and proposed scenarios under both Dry Weather Flow (DWF) and Weather Flow (WWF) conditions;
- Sanitary flows and private water/groundwater from development sites within the sewershed were manually added to each applicable sewer section for sanitary analysis. As such, these flows were modelled as additional foul flows in the InfoWorks model;
- New developments and their respective groundwater infiltration flows were determined from the City's Application Information Centre (AIC);
- The City's design criteria are valid to estimate populations and flow generation rates within the study area;
- Design (proposed) conditions can be assessed using dry weather conditions as modelled in BFA55;
- Wet Weather Flow (WWF) conditions can be assessed by running the BFA55 model with the (Oriole Yard) May 12, 2000 storm hyetographs;
- Best efforts have been made to include all peak flows from Private Water Discharge Agreements in the sanitary sewershed; and,
- No parameter adjustments were made in the BFA55 model.

5.0 Model Preparation

A review of the available data was undertaken to determine any necessary changes or revisions required to be incorporated into the received BFA55 model. There were no pipe upgrades to the analyzed network since the completion of the BFA55 model in 2022.

The subject property is located in a subcatchment area within the BFA55 model. The population estimate for the subcatchment has been increased to account for the existing and the proposed (future) population change. The existing sanitary flows estimated, were applied to the subcatchment area and were maintained under the post-development scenario.

5.1 Recent Developments

All the recent development applications since the completion of the model from the City's website were taken into consideration. The City's Design Criteria were used to estimate the population within the Basement Flooding Area 55 (BFA55). Recent developments and their associated site flows were estimated as shown in the table below.

Recent developments and their associated site flows were estimated as shown in **Table 5.1** below.

Table 5.1 Recent developments Included in the Model

No	Site Address	Res. Pop.	Non-Res. Area (ha)	Non-Res. Pop.	Ground water Flow (L/s)	Total Sanitary Flow (L/s)	Net Flow (L/s)	Status Application
1.	7-11 Rochefort Dr.	2,680	0.2232	4	-	49.46	45.34	Under Review
2.	789-797 Don Mills Rd.	4,470	3.59	1,185	-	44.82	40.85	Appeal Received
3.	25 St Dennis Dr.	1,101	-	-	-	22.67	16.09	Draft Plan Approved
4.	7-11 St Dennis Dr.	5,374	-	-	-	56.78	43.80	Under Review
5.	200 Gateway Blvd.	1,746	-	-	0.94	17.44	12.63	Under Review
6.	1185 Eglinton Ave. E.	1,192	-	-	-	12.42	-	Approval (?)
7.	805 Don Mills Rd.	1,764	-	-	-	17.77	-	Approval (?)
8.	48 Grenoble Dr.	1,882	0.068	-	-	19.01	14.82	Closed
9.	1 Deauville Lane	3,066	-	-	-	29.5	26.4	Under Review
10.	250 Ferrand Dr.	633	0.0139	2	-	7.29	-	Under Review

5.2 Data Quality Assessment

According to "City of Toronto InfoWorks CS Basement Flooding Model Studies Guidelines", dated October 2024, the completeness of the modelling data sets, both in terms of physical node-link development and suitability of flow monitoring data was assessed. Identification of data gaps, based on the provided asset geodatabase from the City of Toronto was completed via Site Investigation. The following observations were made:

- Information pertaining sewer segment, along Grenoble Drive, obtained from Site Investigation is not in alignment with the information provided in InfoWorks ICM Model. More specifically, the City's Model illustrate that sewer segment (#SL4036327) operates as storage unit (downstream invert is lower than the upstream invert of the next sewer segment (#SL4036331), which plays an important role to the downstream analyzed network.

According to the Site Investigation report, prepared by Lithos Inspection Team, dated April 2024, the upstream invert of #SL4036331 is 0.133m lower than the downstream invert of #SL4036327. Please refer to the Site Investigation, prepared by Lithos Group dated 12 April, 2024, found in **Appendix C.**

5.3 Model Calibration – Observation for Future Use

The model simulation was not compared to observed data for proper calibration of the model and the current version is considered that represent realistic conditions.

Upon review of the City's Infoworks ICM model, the parameters of baseflow, diurnal pattern, per capita flow rates and population are summarized in **Table 5.2**

Table 5.2 – Input Parameters (Dry Weather)

Baseflow (L/s)	Diurnal Pattern Factor	Per Capita Flow Rate (L/c/d)	Population within a single Subcatchment
0.02 - 3.53	0.43 - 3.00	240	0 – 2,705

For Wet Weather flow conditions the parameters of initial loss, runoff coefficient and roughness are summarized in **Table 5.3** while "R", "T" and "K" parameters of RTK Hydrograph are summarized in **Table 5.4**.

Table 5.3 – Input Parameters (Wet Weather)

Surface Type	Parameters		
	Initial Loss (m)	Runoff Coefficient	Roughness
Impervious	0.000071	1.00	0.009

Table 5.4 – Input Parameters, Hydrology (Wet Weather)

Parameters			
RTK Values (Hydrograph ID: Profile 55-SAN22)			Manning
R	T	K	
0.018-0.020	0.5-12.0	1.0	0.025

Although the peak flow responses are overestimated, the current analysis has been conducted without any modifications and parameters adjustments except from Baseflow values.

6.0 Model Scenarios

The capacity analysis was performed on all receiving sanitary sewers from the development up to the last sanitary sewer before the trunk connection (MH_ID#: MH5512534175). Four (4) scenarios were considered for the analysis, covering both Dry Weather Flow (DWF) and Wet Weather Flow (WWF) conditions:

1. Existing DWF Conditions (base model updated with all other development applications and existing site flow (not the proposed site flows) + reflective of current sewer system conditions);
2. Proposed DWF Conditions (240L/c/d) (base model updated with all other development applications and the proposed site flows considering 240L/c/d average wastewater flow generation + reflective of current sewer system conditions);
3. Existing WWF Conditions (May 12,2000 storm event) (base model updated with all other development applications and existing site flow (not the proposed site flows) + reflective of current sewer system conditions);
4. Proposed WWF Conditions (May 12,2000 storm event) (240 L/c/d) (base model updated with all other development applications and the proposed site flows considering 240L/c/d average wastewater flow generation + reflective of current sewer system conditions);

Furthermore, the existing model, provided by the City, includes the RTK method generating the wet weather flow in the sanitary system. According to the City's InfoWorks CS Basement Flooding Model Studies Guidelines, the RTK unit hydrograph method calculates infiltration and inflow entering the sanitary sewers during wet weather events.

The total I/I in the sanitary sewer system is determined by combining triangular unit hydrographs from three components of flow:

- Rapid inflow (short-term response);
- Moderate infiltration (medium-term response); and,
- Slow infiltration (long-term response).

The following three parameters describe the shape and volume of runoff that enters the sanitary sewer:

- "R" is the fraction of precipitation that becomes direct inflow;
- "T" is the time to peak of the hydrograph; and,
- "K" is the ratio of the recession time to time to peak.

"R" can be equated to the area under the unit hydrograph curve and represents I/I volume per unit area as a fraction of precipitation. The InfoWorks CS model allows for the direct input of RTK parameters on a separate tab.

The I/I component was derived as the instantaneous difference between the total flow of the event and the dry weather flow.

The results for each of the Downstream Sanitary Capacity Analysis scenarios are summarized in the following section.

7.0 Results

7.1 Existing Dry Weather Flow (DWF) Conditions

Under **Existing Dry Weather Flow (DWF)** Conditions plus I/I allowance, the findings can be summarized as follows:

- The peak flow in the segment with the maximum pipe utilization, 94%, (Pipe ID: SL4038124, Map ID: #7) is 291.45 L/s;
- The peak flow at the last sanitary sewer before the trunk connection (Pipe ID: SL4172671, Map ID: #19) is calculated at 337.62 L/s. The pipe is at 42% of its capacity;
- The HGL at the last sanitary sewer before the trunk connection (Pipe ID: SL4172671, Map ID: #19) is 92.92m, while the minimum freeboard attained is 4.51m; and,
- Under this scenario, the sanitary sewer system operates under free flow conditions and no surcharge occurs.

Table 7.1 and **Figure DAP3-1** following this report summarizes the HGL and the peak flows under this scenario.

7.2 Proposed Dry Weather Flow (DWF) Conditions (240 L/c/d)

Under the **Proposed Dry Weather Flow (DWF)** Conditions plus I/I allowance, the findings can be summarized as follows:

- The peak flow in the segment with the maximum pipe utilization, 96%, (Pipe ID: SL4038124, Map ID: #7) is 300.18 L/s;
- The peak flow at the last sanitary sewer before the trunk connection (Pipe ID: SL4172671, Map ID: #19) is calculated at 346.35 L/s. The pipe is at 43% of its capacity;
- The HGL at the last sanitary sewer before the trunk connection (Pipe ID: SL4172671, Map ID: #19) is 92.93m, while the minimum freeboard attained is 4.50m; and,
- Under this scenario, the sanitary sewer system operates under free flow conditions and no surcharge occurs.

Table 7.1 and **Figure DAP3-2** following this report summarizes the HGL and the peak flows under this scenario.

7.3 Existing Wet Weather Flow (WWF) Conditions (May 12, 2000 storm)

Under the **Existing Wet Weather Flow (WWF)** Conditions, Dry Weather Flow (DWF) plus the estimated I/I under the May 12, 2000 storm event, the findings can be summarized as follows:

- The peak flow in the segment with the maximum pipe utilization, 139%, (Pipe ID: SL4036781, Map ID: #10) is 466.49 L/s;

- The minimum available freeboard, in the downstream sewer segments is 2.27m (Pipe ID: SL4172651, Map ID: #18);
- The peak flow at the last sanitary sewer before the trunk connection (Pipe ID: SL4172671, Map ID: #19) is calculated at 586.86 L/s. The pipe is at 73% of its capacity;
- The HGL at the last sanitary sewer before the trunk connection (Pipe ID: SL4172671, Map ID: #19) is 93.05m, while the minimum freeboard attained is 4.38m; and,
- Under this scenario, the sanitary sewer system experienced minor surcharging with freeboard (freeboard>1.8m) at seven (7) sewer segments.

Table 7.2 and **Figure DAP3-3** following this report summarizes the HGL and the peak flows under this scenario.

7.4 Proposed Wet Weather Flow (WWF) Conditions (May 12, 2000 storm) (240 L/c/d)

Under the **Proposed Wet Weather Flow (WWF)** Conditions, Dry Weather Flow (DWF) plus the estimated I/I under the May 12, 2000 storm event, the findings can be summarized as follows:

- The peak flow in the segment with the maximum pipe utilization, 140%, (Pipe ID: SL4036781, Map ID: #10) is 472.16 L/s;
- The minimum available freeboard, in the downstream analyzed network is 2.23m (Pipe ID: SL4172651, Map ID: #18);
- The peak flow at the last sanitary sewer before the trunk connection (Pipe ID: SL4172671, Map ID: #19) is calculated at 591.78 L/s. The pipe is at 74% of its capacity;
- The HGL at the last sanitary sewer before the trunk connection (Pipe ID: SL4172671, Map ID: #19) is 93.06m, while the minimum freeboard attained is 4.37m; and,
- Under this scenario, the sanitary sewer system experienced minor surcharging with freeboard (freeboard>1.8m) at eight (8) sewer segments.

Table 7.2 and **Figure DAP3-4** following this report summarizes the HGL and the peak flows under this scenario.

8.0 Conclusion

Based on the analysis and assumptions undertaken for this report, the conclusions are as follows.

- The total population under post-development conditions is estimated one thousand two hundred and twenty-seven (1,227) persons and a peak sanitary flow of 14.02 L/s (including inflow and infiltration peak flow);
- Conveyance capacity of the existing sanitary sewer system was assessed based on the City's Design Criteria (January 2021);

- New developments and their respective groundwater infiltration flows were determined from the City's Application Information Centre (AIC);
- The model has been updated to include all sanitary peak flow rates including peak flow rates from groundwater being discharged to the municipal sanitary system from all active and recent development applications located within the affected sanitary sewershed;
- Best efforts have been made to include all peak flows from Private Water discharge agreements in the sanitary sewershed;
- Four (4) scenarios covering both existing and proposed development conditions were analyzed;
- Under **Existing Dry Weather Flow (DWF) Conditions**, the system operates under free flow conditions and no sewers are surcharging in the downstream network, from the site up to the 600 mm diameter sanitary trunk sewer between Don Mills Road and Don Valley Parkway (trunk connection, MH_ID#: MH5512534175),
- Under **Proposed Dry Weather Flow (DWF) Conditions**, the system operates under free flow conditions and no sewers are surcharging in the downstream network, from the site up to the 600 mm diameter sanitary trunk sewer between Don Mills Road and Don Valley Parkway (trunk connection, MH_ID#: MH5512534175),
- Under **Existing Wet Weather Flow (WWF) (May 12, 2000 storm event)** Conditions, simulation results indicate that the downstream network is expected to experience minor surcharging with freeboard (freeboard>1.8m) at seven (7) sewer segments and the minimum freeboard attained within the sewer segments is 2.27m, and;
- Under **Proposed Wet Weather Flow (WWF) (May 12, 2000 storm event)** Conditions, simulation results indicate that the downstream network is expected to experience minor surcharging with freeboard (freeboard>1.8m) at eight (8) sewer segments and the minimum freeboard attained within the sewer segments is 2.23m;

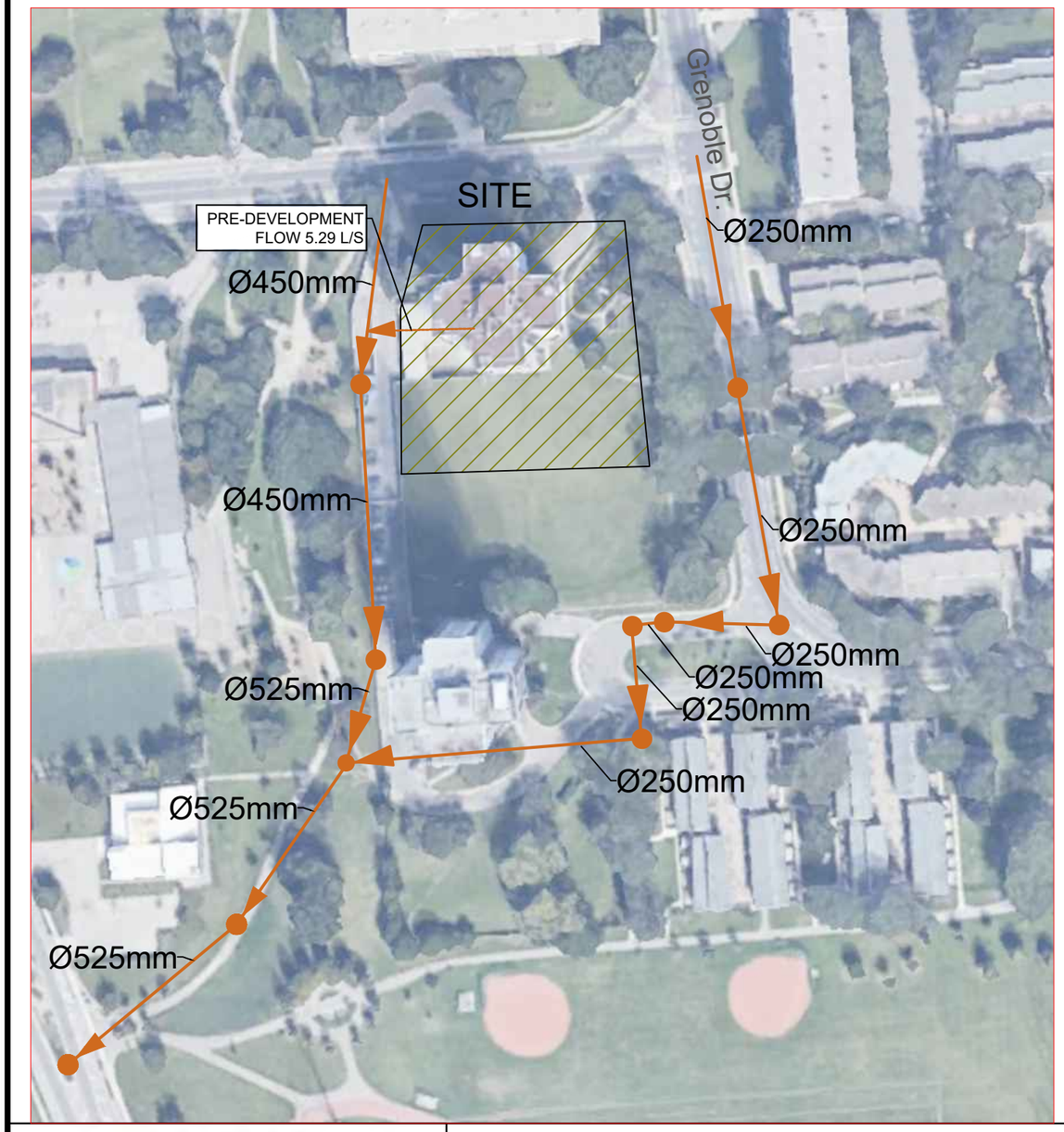
According to Table 1: Capacity Criteria for Sanitary and Combined Sewers, in Sewer Capacity Assessment Guidelines:

Criterion 1: Under Dry Weather Flow conditions, the system operates under free flow conditions and no surcharge (HGL is below the pipe obvert) occurs.

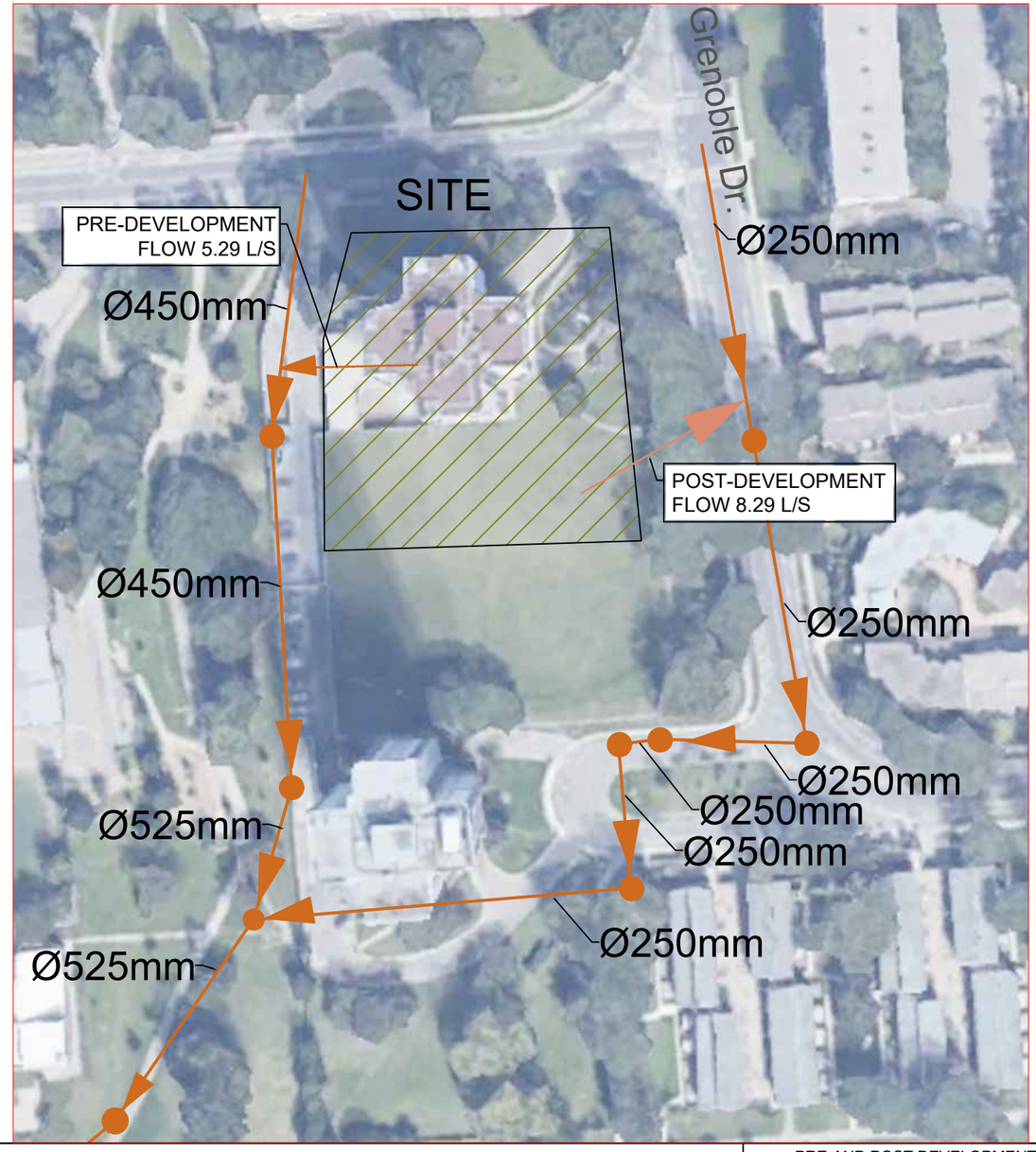
Criterion 2: Under proposed Wet Weather Flow conditions, which include I&I generated under the May 12, 2000 storm event, the HGL in the downstream sewers is at least 1.80 m below grade.

The Downstream Sanitary Capacity Analysis demonstrates that the proposed residential development at 45 Grenoble Drive does not increase the risk of basement flooding and can be serviced by the existing sanitary network.

PRE - DEVELOPMENT FLOWS



POST- DEVELOPMENT FLOWS



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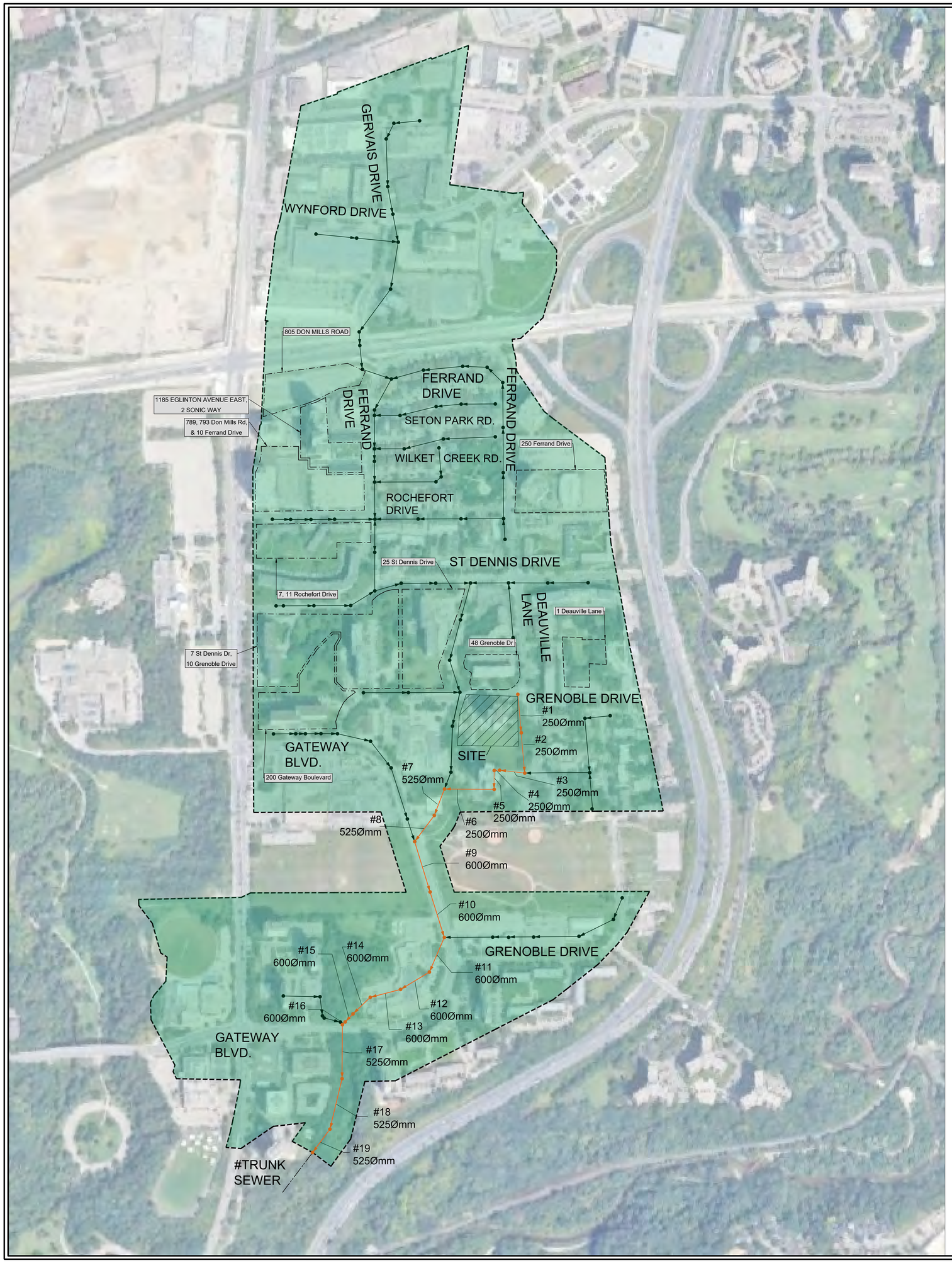
150 Bermondsey Road, Toronto, Ontario M4A 1Y1

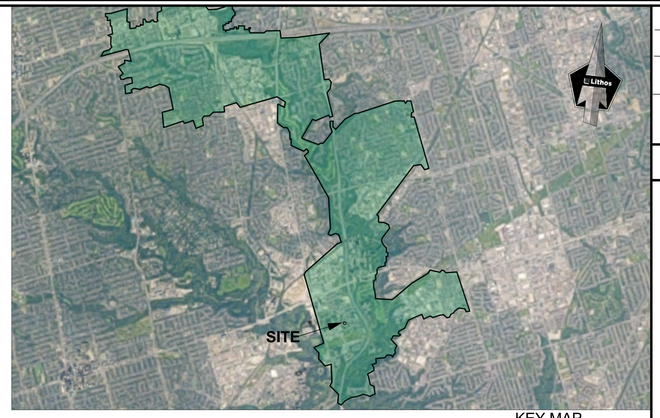
LEGEND

- EXISTING SANITARY CONNECTION
- PROPOSED SANITARY CONNECTION
- EXISTING SANITARY SEWER
- PROPERTY LINE

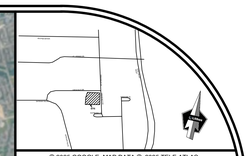
PRE-AND POST DEVELOPMENT SITE
CONTRIBUTION TO SANITARY SEWER
RESIDENTIAL DEVELOPMENT
45 GRENOBLE DRIVE
TORONTO, ONTARIO

DATE: OCT 2025	PROJECT No: UD24-013
SCALE: N.T.S.	FIGURE No: DAP1.1





KEY MAP



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LOCATION PLAN
NTS

LEGEND

- EXISTING DOWNSTREAM SANITARY NETWORK
- EXISTING UPSTREAM SANITARY NETWORK
- EXISTING UPSTREAM MANHOLE
- EXISTING DOWNSTREAM MANHOLE
- TRUNK SEWER
- DRAINAGE AREA
- INFILTRATION AREA
- # 1 NUMBERED SEGMENT
- FUTURE DEVELOPMENT

DOWNSTREAM SANITARY SEWER SEGMENT INFORMATION

SEWER SEGMENT	MAINTENANCE HOLE ID (FROM)	MAINTENANCE HOLE ID (TO)	TYPE	SIZE (mm)	LENGTH (m)	SLOPE (%)
#1	MH4163818457	MH4156718486	CIR	250	77.1	0.82
#2	MH4156718486	MH4149418517	CIR	250	79.3	1.01
#3	MH4149418517	MH4148418469	CIR	250	49.6	0.67
#4	MH4148418469	MH4148118459	CIR	250	10.6	2.55
#5	MH4148118459	MH4144518470	CIR	250	37.2	1.8
#6	MH4144518470	MH4141618377	CIR	250	97.4	1.9
#7	MH4141618377	MH4136018374	CIR	525	55.4	0.52
#8	MH4136018374	MH4130018354	CIR	525	64.2	0.55
#9	MH4130018354	MH4121518413	CIR	600	103.4	0.3
#10	MH4121518413	MH4113918467	CIR	600	93.3	0.3
#11	MH4113918467	MH4106518460	CIR	600	74.0	0.57
#12	MH4106518460	MH4101518417	CIR	600	66.0	0.61
#13	MH4101518417	MH4098218365	CIR	600	61.4	0.6
#14	MH4098218365	MH4094118343	CIR	600	47.4	0.65
#15	MH4094118343	MH4092218333	CIR	600	21.6	38.06
#16	MH4092218333	MH4091818330	CIR	600	7.6	1.45
#17	MH4091818330	MH5512534151	CIR	525	105.9	3.49
#18	MH5512534151	MH5512534152	CIR	525	101.8	2.03
#19	MH5512534152	MH5512534175	CIR	525	57.1	3.49

CITY OF TORONTO

DOWNSTREAM SEWER NETWORK

RESIDENTIAL DEVELOPMENT
45 GRENOBLE DRIVEWAY
TORONTO, ONTARIO

Lithos

150 Bermondsey Road, Toronto, Ontario M4A 1Y1

DESIGNED BY: TT	DATE: OCT 2025	CHECKED BY: NM
DRAWN BY: TT	PROJECT No:	APPROVED BY: NM
SCALE: N.T.S.	UD24-013	DRAWING No. DAP3

APPENDIX A
Sanitary Sewer Design Sheet

Lithos

Prepared by: Stergios Grigoriadis, P.Eng., M.A.Sc.
Reviewed by: Anastasia Tzakopoulou, P.Eng., M.A.Sc.

Rational Method

Proposed Storm Flow towards the Sanitary Network

45 Grenoble Drive
City of Toronto
File No. UD24-013
Date: October 2025

Input Parameters	**Area (ha)**	**C**	**Tc (min.)**
A6 Post (Pet Relief Area) draining towards sanitary sewer network (250 mm Sanitary Sewer on Grenoble Drive)	0.005	0.25	10

Rational Method Calculation

Event 2 yr
IDF Data Set City of Toronto
Event a = 21.80
IDF Data Set c = -0.780

	A (ha)	**C**	**AC**	**Tc (min.)**	**I (mm/h)**	**Q (m^3/s)**	**Q (L/s)**
Area Draining Towards sanitary sewer network (250 mm Sanitary Sewer on Grenoble Drive)	0.005	0.25	0.001	10	88.2	0.000	0.31

under Wet Weather Conditions

45 Gr

Lithos

SANITARY SEWER DESIGN SHEET

45 Grenoble Drive

CITY OF TORONTO

LOCATION	RESIDENTIAL									COMMERCIAL		FLOW											SEWER DESIGN				
	SECTION AREA (ha.)	NUMBER OF UNITS: Single Fam. Dwell. @ 3.5 ppu	Townhouse @ 2.7	Residential (ha.)	Studio @ 1.4 ppu	1 Bed Apts. @ 1.4 ppu	2 Bed Apts. @ 2.1 ppu	3 Bed Apts. @ 3.1 ppu	SECTION POP. (persons)	SECTION AREA (ha.)	SECTION POP. @ 110 ppha (persons)	TOTAL ACCUM. POP. (persons)	AVERAGE RESIDENTIAL FLOW '@' 240 L/c/d (L/s)	AVERAGE COMMERCIAL FLOW @ 250 L/c/d (L/s)	HARMON PEAKING FACTOR	RES. PEAK FLOW (L/s)	TOTAL ACCUM. AREA (ha.)	INFILT. @ 0.26 L/s/ha. (L/s)	TOTAL SANITARY FLOW (L/s)	STORM FLOW 2 -YEAR (L/s)	PEAK GROUNDWATER FLOW (L/S)	TOTAL DESIGN FLOW (L/s)	PIPE LENGTH (m)	PIPE DIA. (mm)	SLOPE (%)	FULL FLOW CAPACITY n = 0.013 (L/sec)	% of DESIGN CAPACITY (%)
column nunber	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Existing Condition																											
Residential-use Development	0.895	0	0	0.00	0	0	217	0	456	0.000	0	456	1.27	0.000	3.99	5.06	0.895	0.23	5.06	0.00	0.00	5.29					
Proposed Condition																											
Residential-use development	0.516	0	0	0.00	0	174	189	42	771	0.000	0.000	771	2.14	0.000	3.87	8.29	0.516	0.13	8.29	0.31	0.00	8.73		200	2.0%	46.38	19%
Existing Building (to be maintained)	0.379	0.000	0	0.00	0	0	217	0	456	0	0	456	1.27	0.000	3.99	5.06	0.895	0.23	5.06	0.00	0.00	5.29		200	2.0%	46.38	11%
														Total Flow								14.02					
														Total Net Flow								8.73					

Residential Flow Rate - 240 litres/capita/day

Commercial/Office Flow Rate - 250 litres/capita/day

Infiltration - 0.26 L/ha

Foundation allowance - 5.0 L/ha

Peaking Factor = $1 + [14 / (4 + P^{0.5})]$, P=Population in thousands

Site Area (ha): 0.895

Lithos

Prepared by: Thanasis Tsiamantas, P.E., M.A.Sc.
Reviewed by: Iraklis Nikoletos, P.Eng., Ph.D.
Date: October 2025

Project: 45 Grenoble Drive
Project: UD24-013
City of Toronto

Sheet 2 OF 2

APPENDIX B
Infoworks Result Sheets

A55_EA_SAN_BaselineConditions Subcatchment-A55_EA_SAN_BaselineCondition

	Population	Ground infiltration node	Maximum soil moisture capacity (mm)	Wastewater profile	Base flow (l/s)	Additional foul flow (l/s)	Trade flow (l/s)
	2705.00			1	3.53	0.00	
	2583.01			1	1.89	0.00	
	1500.01			1	1.64	0.00	
	1454.00			1	1.08	0.00	
	1377.64			1	1.21	0.00	
	1359.99			1	1.22	0.00	
	1279.00			1	0.34	0.00	
	1250.00			1	0.64	0.00	
	1249.22			1	2.72	0.00	
	1248.00			1	1.45	0.00	
	1176.00			1	0.31	0.00	
	1148.00			1	1.16	0.00	
	1100.00			1	1.44	0.00	
	1087.00			1	0.88	0.00	
	1030.00			1	1.21	0.00	
	978.00			1	0.79	0.00	
	967.00			1	1.56	0.00	
	961.00			1	0.73	0.00	
	914.00			1	0.62	0.00	
	900.00			1	0.46	0.00	
	836.00			1	0.68	0.00	
	800.00			1	1.10	0.00	
	798.00			1	0.30	0.00	
	795.00			1	0.91	0.00	
	794.00			1	0.89	0.00	

Subcatchment | Land use | Build-up/washoff land use | Runoff si

Figure 2 - Infoworks Model Input Parameters (Dry Weather)

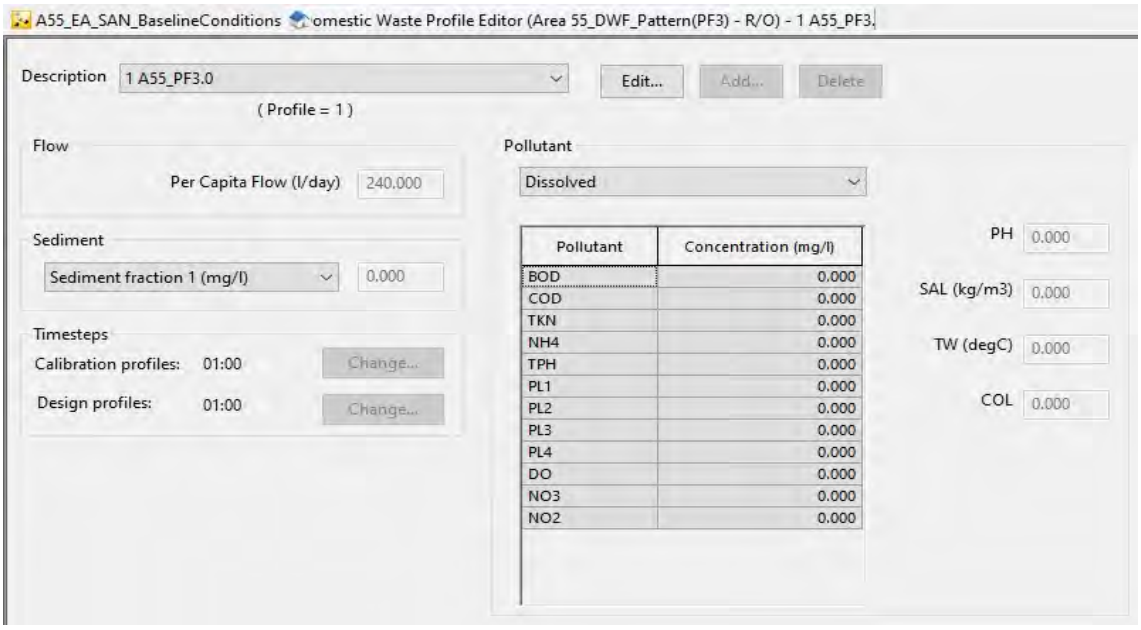

Figure 3: Wastewater profile

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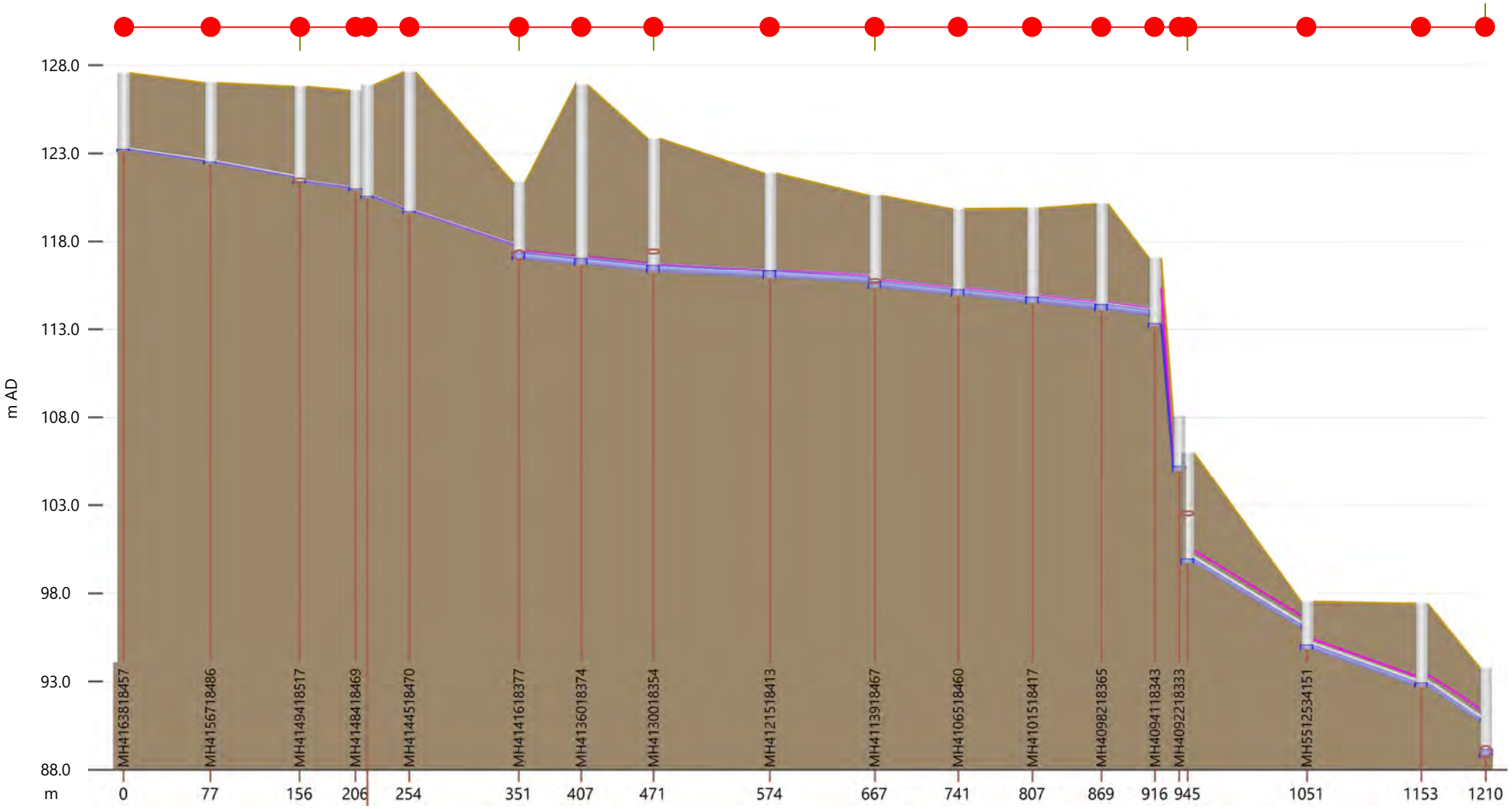
Table 7.1
Dry Weather Flow (DWF) Analysis

45 Grenoble Dr
Prepared by: Thanasis Tsiamantas, P.E., M.A.Sc.
File No. UD24-013
City of Toronto
Date: October 2025

												SC1: Existing DWF						SC2: Proposed DWF					
Pipe ID	Upstream Manhole ID	Downstream Manhole ID	MAP ID	Length (m)	Diameter (mm)	Upstream Ground Elevation (m)	Downstream Ground Elevation (m)	Upstream Invert (m AD)	Downstream Invert (m AD)	Slope (%)	Full flow Capacity (l/s)	Peak Flow (l/s)	Full-Flow Capacity Utilization (%)	Maximum HGL (m AD)	Surcharge Status	Maximum Surcharging (m)	Minimum Available Freeboard (m)	Peak Flow (l/s)	Full-Flow Capacity Utilization (%)	Maximum HGL (m AD)	Surcharge Status	Maximum Surcharging (m)	Minimum Available Freeboard (m)
SL4036327	MH4163818457	MH4156718486	#1	77.10	250	127.55	127.00	123.14	122.51	0.82	53.77	7.18	13.00%	123.20	Free Flow	N/A	4.35	15.91	30.00%	123.24	Free Flow	N/A	4.32
SL4036328	MH4156718486	MH4149418517	#2	79.30	250	127.00	126.79	122.42	121.60	1.03	60.38	8.32	14.00%	122.48	Free Flow	N/A	4.52	17.05	28.00%	122.51	Free Flow	N/A	4.49
SL4036331	MH4149418517	MH4148418469	#3	49.60	250	126.79	126.56	121.30	120.97	0.67	48.52	14.48	30.00%	121.40	Free Flow	N/A	5.39	23.21	48.00%	121.42	Free Flow	N/A	5.36
SL4038116	MH4148418469	MH4148118459	#4	10.60	250	126.56	126.88	120.90	120.63	2.55	94.94	14.48	15.00%	120.97	Free Flow	N/A	5.59	23.21	24.00%	120.99	Free Flow	N/A	5.57
SL4043664	MH4148118459	MH4144518470	#5	37.20	250	126.88	127.61	120.47	119.80	1.80	79.83	14.76	18.00%	120.55	Free Flow	N/A	6.33	23.49	29.00%	120.57	Free Flow	N/A	6.31
SL4038123	MH4144518470	MH4141618377	#6	97.40	250	127.61	121.37	119.61	117.76	1.90	81.98	14.76	18.00%	119.69	Free Flow	N/A	7.92	23.49	29.00%	119.71	Free Flow	N/A	7.90
SL4038124	MH4141618377	MH4136018374	#7	55.40	525	121.37	126.89	116.99	116.70	0.52	311.22	291.45	94.00%	117.4	Free Flow	N/A	3.98	300.18	96.00%	117.41	Free Flow	N/A	3.97
SL4038125	MH4136018374	MH4130018354	#8	64.20	525	126.89	123.84	116.67	116.32	0.55	317.60	291.45	92.00%	117.07	Free Flow	N/A	9.82	300.18	95.00%	117.08	Free Flow	N/A	9.81
SL4036780	MH4130018354	MH4121518413	#9	103.40	600	123.84	121.88	116.24	115.93	0.30	336.26	300.88	89.00%	116.69	Free Flow	N/A	7.16	309.61	92.00%	116.70	Free Flow	N/A	7.15
SL4036781	MH4121518413	MH4113918467	#10	93.30	600	121.88	120.62	115.90	115.62	0.30	336.43	302.26	90.00%	116.34	Free Flow	N/A	5.54	310.99	92.00%	116.35	Free Flow	N/A	5.53
SL4036782	MH4113918467	MH4106518460	#11	74.00	600	120.62	119.84	115.35	114.93	0.57	462.67	310.51	67.00%	115.71	Free Flow	N/A	4.9	319.24	69.00%	115.72	Free Flow	N/A	4.90
SL4036783	MH4106518460	MH4101518417	#12	66.00	600	119.84	119.89	114.90	114.50	0.61	478.10	319.05	67.00%	115.26	Free Flow	N/A	4.58	327.78	69.00%	115.27	Free Flow	N/A	4.57
SL4036784	MH4101518417	MH4098218365	#13	61.40	600	119.89	120.14	114.47	114.10	0.60	476.73	319.05	67.00%	114.83	Free Flow	N/A	5.06	327.78	69.00%	114.84	Free Flow	N/A	5.05
SL4037541	MH4098218365	MH4094118343	#14	47.40	600	120.14	117.08	114.07	113.76	0.65	496.65	319.05	64.00%	114.42	Free Flow	N/A	5.71	327.78	66.00%	114.43	Free Flow	N/A	5.71
SL4037351	MH4094118343	MH4092218333	#15	21.60	600	117.08	108.08	113.18	104.96	38.06	3788.50	319.05	8.00%	113.31	Free Flow	N/A	3.76	327.78	9.00%	113.32	Free Flow	N/A	3.76
SL4037352	MH4092218333	MH4091818330	#16	7.60	600	108.08	105.99	104.96	104.85	1.45	738.84	319.05	43.00%	105.24	Free Flow	N/A	2.84	327.78	44.00%	105.25	Free Flow	N/A	2.83
SL4037350	MH4091818330	MH5512534151	#17	105.90	525	105.99	97.54	99.71	96.01	3.49	804.03	337.25	42.00%	99.95	Free Flow	N/A	6.03	345.98	43.00%	99.96	Free Flow	N/A	6.03
SL4172651	MH5512534151	MH5512534152	#18	101.80	525	97.54	97.43	94.80	92.73	2.03	613.38	337.25	55.00%	95.09	Free Flow	N/A	2.45	345.98	56.00%	95.09	Free Flow	N/A	2.45
SL4172671	MH5512534152	MH5512534175	#19	57.10	525	97.43	93.78	92.68	90.69	3.49	803.02	337.62	42.00%	92.92	Free Flow	N/A	4.51	346.35	43.00%	92.93	Free Flow	N/A	4.50



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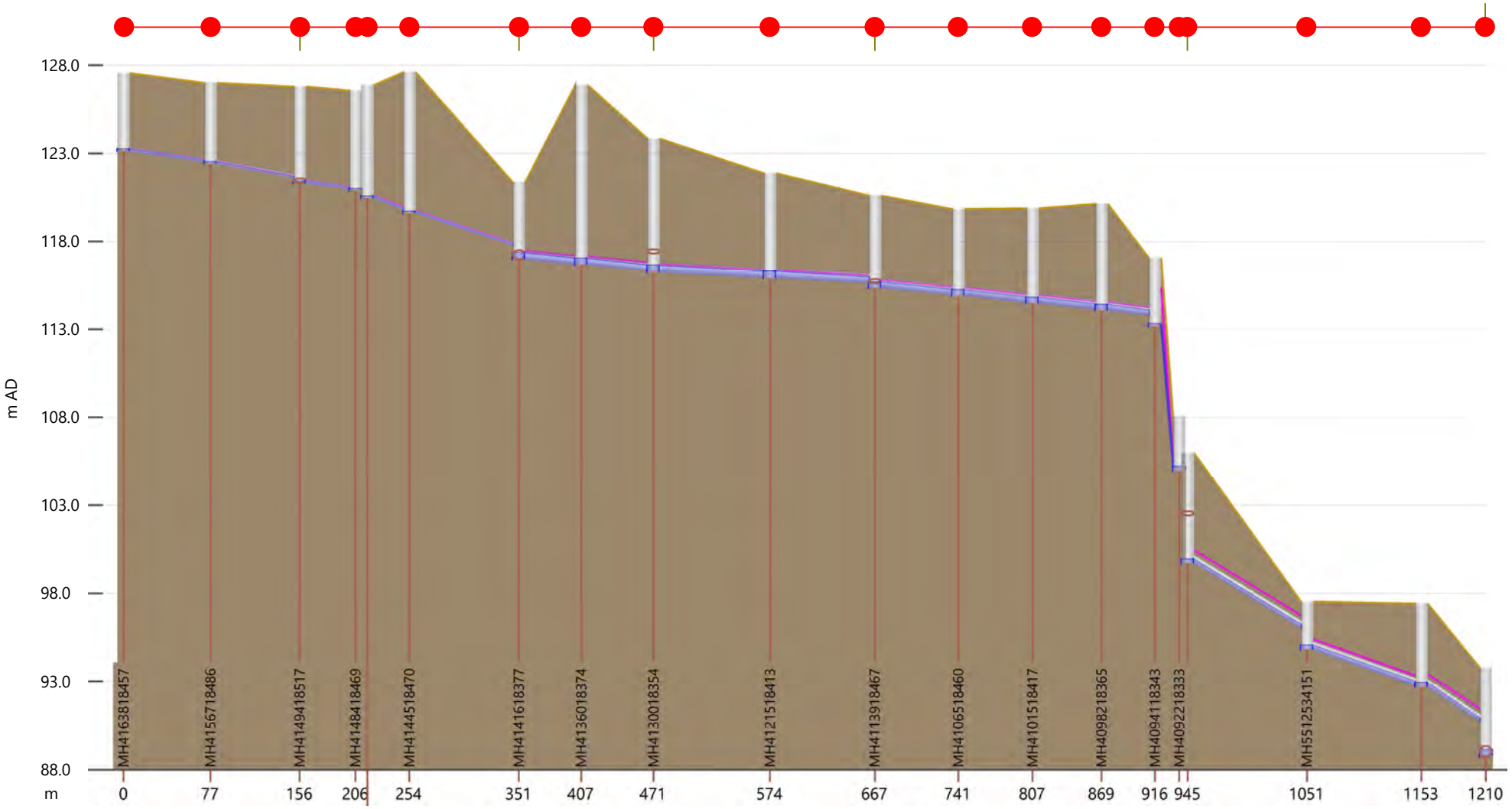
height (mm)	250	250	250	250	250	525	525	600	600	600	600	600	600	-	525	525	525	
length (m)	77.1	79.3	49.6	37.2	97.4	55.4	64.2	103.4	93.3	74.0	66.0	61.4	47.4	-	105.9	101.8	57.1	
grad (m/m)	0.00817	0.01030	-	-	0.01899	-	0.00545	0.00300	0.00300	0.00568	0.00606	0.00603	-	-	0.03494	0.02033	0.03485	
us inv (m AD)	123.140	122.417	-	-	119.610	-	116.670	116.240	115.900	115.350	114.900	114.470	-	-	99.710	94.800	92.680	
ds inv (m AD)	122.510	121.600	-	-	117.760	-	116.320	115.930	115.620	114.930	114.500	114.100	-	-	96.010	92.730	90.690	
US total head (m AD)	123.231	122.515	-	-	119.756	-	117.206	116.774	116.431	115.867	115.425	114.995	-	-	100.552	95.489	93.522	
Node	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ground (m AD)	-	127.004	-	-	127.607	121.374	-	123.842	121.882	120.618	119.845	-	-	-	-	97.540	97.430	-

Section for Network - A55_EA_SAN_BaselineConditions at 01/01/2007 05:45:00



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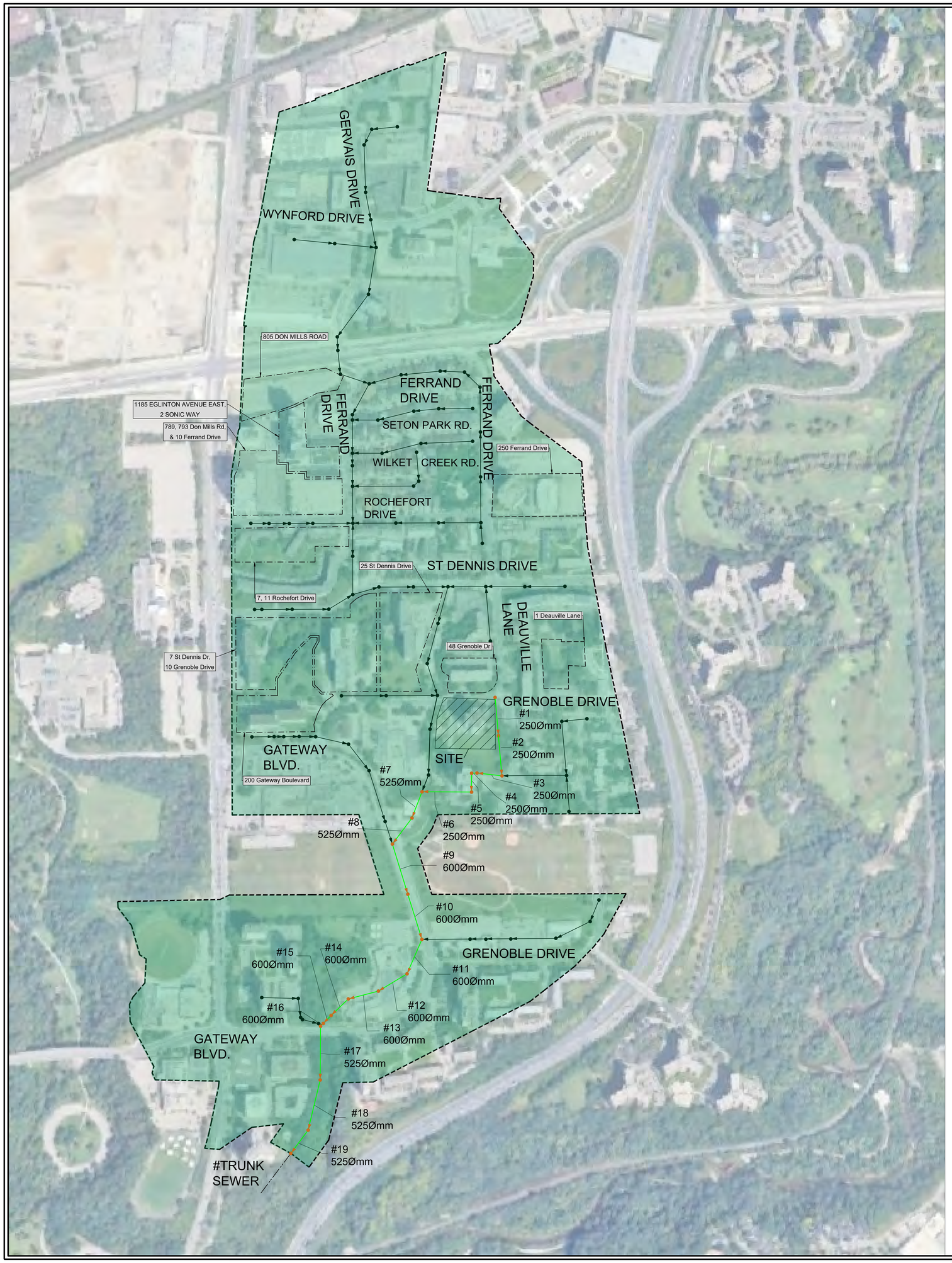
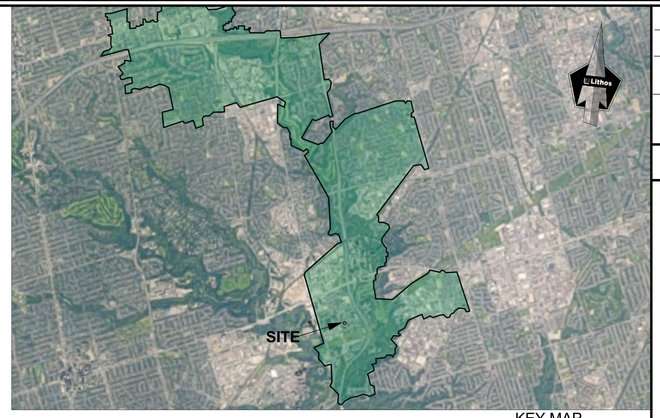
height (mm)	250	250	250	250	250	525	525	600	600	600	600	600	600	-	525	525	525
length (m)	77.1	79.3	49.6	37.2	97.4	55.4	64.2	103.4	93.3	74.0	66.0	61.4	47.4	-	105.9	101.8	57.1
grad (m/m)	0.00817	0.01030	-	-	0.01899	-	0.00545	0.00300	0.00300	0.00568	0.00606	0.00603	-	-	0.03494	0.02033	0.03485
us inv (m AD)	123.140	122.417	-	-	119.610	-	116.670	116.240	115.900	115.350	114.900	114.470	-	-	99.710	94.800	92.680
ds inv (m AD)	122.510	121.600	-	-	117.760	-	116.320	115.930	115.620	114.930	114.500	114.100	-	-	96.010	92.730	90.690
US total head (m AD)	123.277	122.561	-	-	119.799	-	117.217	116.784	116.441	115.875	115.433	115.003	-	-	100.564	95.499	93.533

Node	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ground (m AD)	-	127.004	-	-	127.607	121.374	-	123.842	121.882	120.618	119.845	-	-	-	-	97.540	97.430	-

Section for Network - A55_EA_SAN_BaselineConditions at 01/01/2007 05:30:00

Powered by InfoWorks





KEY MAP

LOCATION PLAN
NTS

LEGEND

- FREE FLOW
- SURCHARGING W. FREEBOARD >1.8
- CRITICALLY SURCHARGING W. FREEBORD < 1.8
- EXISTING UPSTREAM MANHOLE
- EXISTING DOWNSTREAM MANHOLE
- PROPOSED MANHOLE
- TRUNK SEWER
- DRAINAGE AREA
- INFILTRATION AREA
- # 1 NUMBERED SEGMENT
- FUTURE DEVELOPMENT

DOWNSTREAM SANITARY SEWER SEGMENT INFORMATION

SEWER SEGMENT	MAINTENANCE HOLE ID (FROM)	MAINTENANCE HOLE ID (TO)	TYPE	SIZE (mm)	LENGTH (m)	SLOPE (%)
#1	MH4163818457	MH4156718486	CIR	250	77.1	0.82
#2	MH4156718486	MH4149418517	CIR	250	79.3	1.01
#3	MH4149418517	MH4148418469	CIR	250	49.6	0.67
#4	MH4148418469	MH4148118459	CIR	250	10.6	2.55
#5	MH4148118459	MH4144518470	CIR	250	37.2	1.8
#6	MH4144518470	MH4141618377	CIR	250	97.4	1.9
#7	MH4141618377	MH4136018374	CIR	525	55.4	0.52
#8	MH4136018374	MH4130018354	CIR	525	64.2	0.55
#9	MH4130018354	MH4121518413	CIR	600	103.4	0.3
#10	MH4121518413	MH4113918467	CIR	600	93.3	0.3
#11	MH4113918467	MH4106518460	CIR	600	74.0	0.57
#12	MH4106518460	MH4101518417	CIR	600	66.0	0.61
#13	MH4101518417	MH4098218365	CIR	600	61.4	0.6
#14	MH4098218365	MH4094118343	CIR	600	47.4	0.65
#15	MH4094118343	MH4092218333	CIR	600	21.6	38.06
#16	MH4092218333	MH4091818330	CIR	600	7.6	1.45
#17	MH4091818330	MH5512534151	CIR	525	105.9	3.49
#18	MH5512534151	MH5512534152	CIR	525	101.8	2.03
#19	MH5512534152	MH5512534175	CIR	525	57.1	3.49

CITY OF TORONTO

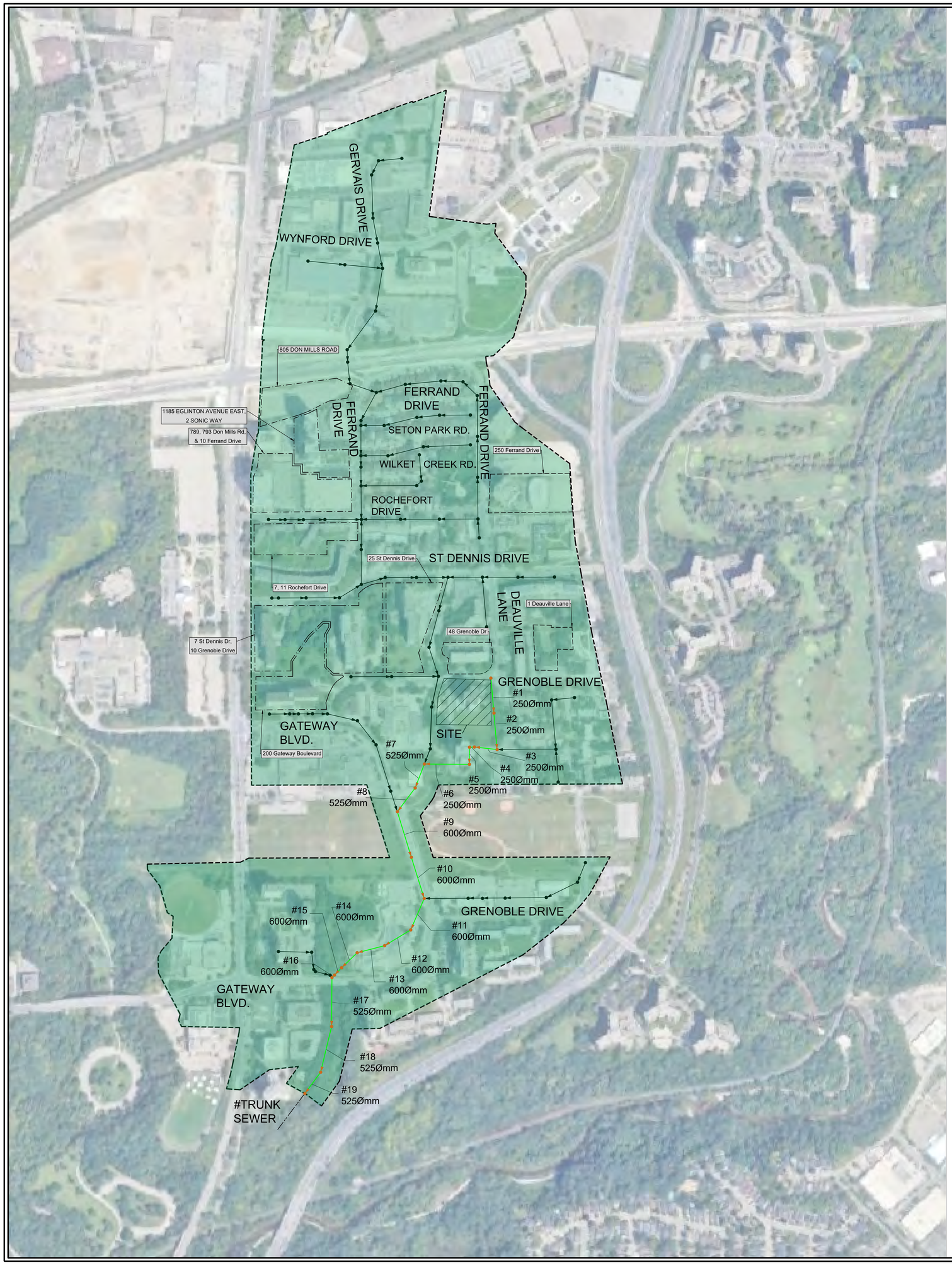
DOWNSTREAM SEWER NETWORK - SCENARIO 1: EXISTING DRY WEATHER FLOW

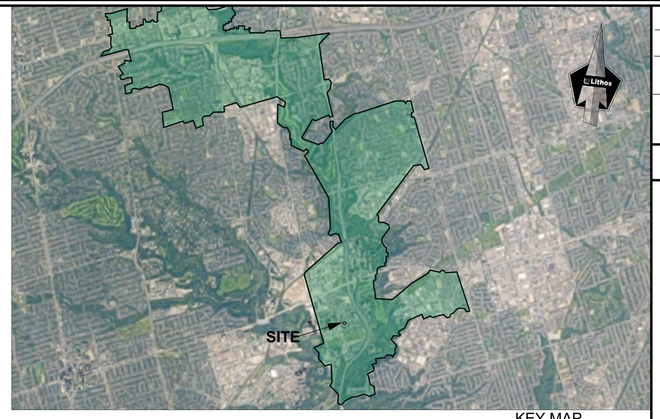
RESIDENTIAL DEVELOPMENT
45 GRENOBLE DRIVEWAY
TORONTO, ONTARIO

Lithos

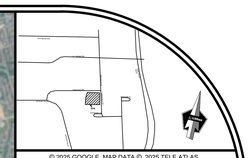
150 Bermondsey Road, Toronto, Ontario M4A 1Y1

DESIGNED BY: TT	DATE: OCT 2025	CHECKED BY: NM
DRAWN BY: TT	PROJECT No:	APPROVED BY: NM
SCALE: N.T.S.	UD24-013	DRAWING No: DAP3.1





KEY MAP



LOCATION PLAN
NTS

LEGEND

- FREE FLOW
- SURCHARGING W. FREEBOARD >1.8
- CRITICALLY SURCHARGING W. FREEBORD < 1.8
- EXISTING UPSTREAM MANHOLE
- EXISTING DOWNSTREAM MANHOLE
- PROPOSED MANHOLE
- TRUNK SEWER
- DRAINAGE AREA
- INFILTRATION AREA
- # 1 NUMBERED SEGMENT
- FUTURE DEVELOPMENT

DOWNSTREAM SANITARY SEWER SEGMENT INFORMATION

SEWER SEGMENT	MAINTENANCE HOLE ID (FROM)	MAINTENANCE HOLE ID (TO)	TYPE	SIZE (mm)	LENGTH (m)	SLOPE (%)
#1	MH4163818457	MH4156718486	CIR	250	77.1	0.82
#2	MH4156718486	MH4149418517	CIR	250	79.3	1.01
#3	MH4149418517	MH4148418469	CIR	250	49.6	0.67
#4	MH4148418469	MH4148118459	CIR	250	10.6	2.55
#5	MH4148118459	MH4144518470	CIR	250	37.2	1.8
#6	MH4144518470	MH4141618377	CIR	250	97.4	1.9
#7	MH4141618377	MH4136018374	CIR	525	55.4	0.52
#8	MH4136018374	MH4130018354	CIR	525	64.2	0.55
#9	MH4130018354	MH4121518413	CIR	600	103.4	0.3
#10	MH4121518413	MH4113918467	CIR	600	93.3	0.3
#11	MH4113918467	MH4106518460	CIR	600	74.0	0.57
#12	MH4106518460	MH4101518417	CIR	600	66.0	0.61
#13	MH4101518417	MH4098218365	CIR	600	61.4	0.6
#14	MH4098218365	MH4094118343	CIR	600	47.4	0.65
#15	MH4094118343	MH4092218333	CIR	600	21.6	38.06
#16	MH4092218333	MH4091818330	CIR	600	7.6	1.45
#17	MH4091818330	MH5512534151	CIR	525	105.9	3.49
#18	MH5512534151	MH5512534152	CIR	525	101.8	2.03
#19	MH5512534152	MH5512534175	CIR	525	57.1	3.49

CITY OF TORONTO

DOWNSTREAM SEWER NETWORK - SCENARIO 2: PROPOSED DRY WEATHER FLOW

RESIDENTIAL DEVELOPMENT
45 GRENOBLE DRIVEWAY
TORONTO, ONTARIO

Lithos

150 Bermondsey Road, Toronto, Ontario M4A 1Y1

DESIGNED BY: TT	DATE: OCT 2025	CHECKED BY: NM
DRAWN BY: TT	PROJECT No:	APPROVED BY: NM
SCALE: N.T.S.		DRAWING No:
	UD24-013	DAP3.2

A55_EA_SAN_BaselineConditions Runoff surface-A55_EA_SAN_BaselineConditions

	Surface type	Ground slope (m/m)	Initial loss type	Initial loss value (m)	Initial abstraction factor	Routing model	Fixed runoff coefficient	Minimum runoff	:r-specif RAFTS B	Maximum runoff	RAFTS adapt factor	Equivalent Manning's n
▶	Impervious	0.000000	Slope	0.00007100	0.00000000	Wallingfrd	1.00000		☐		1.000	0.025
*									☐			

Build-up/washoff land use | Runoff surface | Ground infiltration

Figure 6 - Infoworks Model Input Parameters, Hydrology (Wet Weather)

A55_EA_SAN_BaselineConditions | RTK hydrograph-A55_EA_SAN_BaselineConditions

RTK hydrograph ID	Response ratio R - short term	Time to peak T - short term (hours)	Recession limb ratio K - short term	Response ratio R - medium term	Time to peak T - medium term (hours)	Recession limb ratio K - medium term	Response ratio R - long term	Time to peak T - long term (hours)	Recession limb ratio K - long term
55-SAN	0.018	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN1	0.016	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN2	0.050	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN3	0.017	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN4	0.018	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN5	0.049	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN6	0.024	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN7	0.025	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN8	0.018	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN9	0.018	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN10	0.026	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN11	0.018	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN12	0.110	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN13	0.017	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN14	0.018	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN15	0.064	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN16	0.035	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN17	0.018	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN18	0.018	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN19	0.020	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN20	0.035	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN21	0.018	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN22	0.020	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000
Prifile 55-SAN23	0.018	0.500	1.000	0.018	2.000	1.000	0.018	12.000	1.000

Ground infiltration | RTK hydrograph | Monthly RTK hydrograph

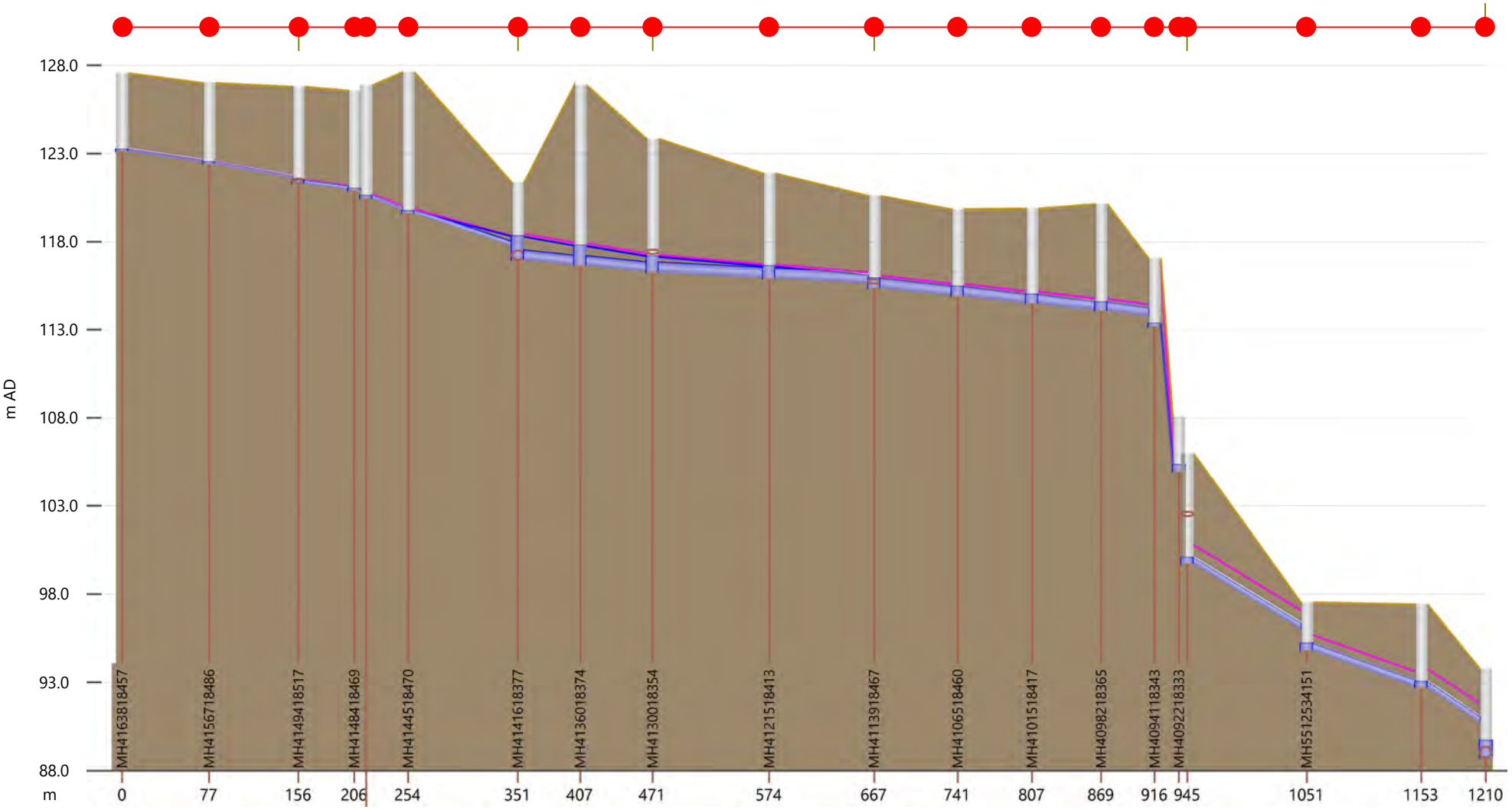
Figure 7 - Infoworks Model RTK Hydrograph

Lithos

Table 7.2
Wet Weather Flow (WWF) Analysis

45 Grenoble Dr
Prepared by: Thanasis Tsiamantas, P.E., M.A.Sc.
File No. UD24-013
City of Toronto
Date: October 2025

												SC3: Existing WWF						SC4: Proposed WWF					
Pipe ID	Upstream Manhole ID	Downstream Manhole ID	MAP ID	Length (m)	Diameter (mm)	Upstream Ground Elevation (m)	Downstream Ground Elevation (m)	Upstream Invert (m AD)	Downstream Invert (m AD)	Slope (%)	Full flow Capacity (l/s)	Peak Flow (l/s)	Full-Flow Capacity Utilization (%)	Maximum HGL (m AD)	Surcharge Status	Maximum Surcharging (m)	Minimum Available Freeboard (m)	Peak Flow (l/s)	Full-Flow Capacity Utilization (%)	Maximum HGL (m AD)	Surcharge Status	Maximum Surcharging (m)	Minimum Available Freeboard (m)
SL4036327	MH4163818457	MH4156718486	#1	77.10	250	127.55	127.00	123.14	122.51	0.82	53.77	11.96	22.00%	123.22	Free Flow	N/A	4.33	20.69	39.00%	123.25	Free Flow	N/A	4.30
SL4036328	MH4156718486	MH4149418517	#2	79.30	250	127.00	126.79	122.42	121.60	1.03	60.38	18.14	30.00%	122.51	Free Flow	N/A	4.49	26.87	45.00%	122.54	Free Flow	N/A	4.47
SL4036331	MH4149418517	MH4148418469	#3	49.60	250	126.79	126.56	121.30	120.97	0.67	48.52	45.87	95.00%	121.50	Free Flow	N/A	5.29	53.43	110.00%	121.59	Surcharge w.freeboard>1.8m	0.04	5.20
SL4038116	MH4148418469	MH4148118459	#4	10.60	250	126.56	126.88	120.90	120.63	2.55	94.94	45.87	48.00%	121.03	Free Flow	N/A	5.54	53.43	56.00%	121.04	Free Flow	N/A	5.52
SL4043664	MH4148118459	MH4144518470	#5	37.20	250	126.88	127.61	120.47	119.80	1.80	79.83	49.83	62.00%	120.62	Free Flow	N/A	6.26	57.29	72.00%	120.63	Free Flow	N/A	6.24
SL4038123	MH4144518470	MH4141618377	#6	97.40	250	127.61	121.37	119.61	117.76	1.90	81.98	49.35	60.00%	119.76	Free Flow	N/A	7.85	56.69	69.00%	119.77	Free Flow	N/A	7.84
SL4038124	MH4141618377	MH4136018374	#7	55.40	525	121.37	126.89	116.99	116.70	0.52	311.22	416.16	134.00%	118.47	Surcharge w.freeboard>1.8m	0.96	2.90	423.77	136.00%	118.58	Surcharge w.freeboard>1.8m	1.06	2.80
SL4038125	MH4136018374	MH4130018354	#8	64.20	525	126.89	123.84	116.67	116.32	0.55	317.60	416.50	131.00%	117.93	Surcharge w.freeboard>1.8m	0.73	8.97	424.16	134.00%	118.01	Surcharge w.freeboard>1.8m	0.82	8.88
SL4036780	MH4130018354	MH4121518413	#9	103.40	600	123.84	121.88	116.24	115.93	0.30	336.26	453.27	135.00%	117.30	Surcharge w.freeboard>1.8m	0.46	6.54	459.40	137.00%	117.37	Surcharge w.freeboard>1.8m	0.53	6.48
SL4036781	MH4121518413	MH4113918467	#10	93.30	600	121.88	120.62	115.90	115.62	0.30	336.43	466.49	139.00%	116.70	Surcharge w.freeboard>1.8m	0.2	5.18	472.16	140.00%	116.75	Surcharge w.freeboard>1.8m	0.25	5.13
SL4036782	MH4113918467	MH4106518460	#11	74.00	600	120.62	119.84	115.35	114.93	0.57	462.67	495.77	107.00%	116.10	Surcharge w.freeboard>1.8m	0.15	4.52	501.28	108.00%	116.14	Surcharge w.freeboard>1.8m	0.19	4.48
SL4036783	MH4106518460	MH4101518417	#12	66.00	600	119.84	119.89	114.90	114.50	0.61	478.10	517.99	108.00%	115.58	Surcharge w.freeboard>1.8m	0.08	4.27	523.40	109.00%	115.61	Surcharge w.freeboard>1.8m	0.11	4.24
SL4036784	MH4101518417	MH4098218365	#13	61.40	600	119.89	120.14	114.47	114.10	0.60	476.73	517.87	109.00%	115.08	Surcharge w.freeboard>1.8m	0.01	4.81	523.28	110.00%	115.10	Surcharge w.freeboard>1.8m	0.03	4.80
SL4037541	MH4098218365	MH4094118343	#14	47.40	600	120.14	117.08	114.07	113.76	0.65	496.65	517.84	104.00%	114.61	Free Flow	N/A	5.53	523.26	105.00%	114.62	Free Flow	N/A	5.52
SL4037351	MH4094118343	MH4092218333	#15	21.60	600	117.08	108.08	113.18	104.96	38.06	3788.50	517.84	14.00%	113.34	Free Flow	N/A	3.73	523.26	14.00%	113.35	Free Flow	N/A	3.73
SL4037352	MH4092218333	MH4091818330	#16	7.60	600	108.08	105.99	104.96	104.85	1.45	738.84	517.84	70.00%	105.35	Free Flow	N/A	2.73	523.26	71.00%	105.35	Free Flow	N/A	2.73
SL4037350	MH4091818330	MH5512534151	#17	105.90	525	105.99	97.54	99.71	96.01	3.49	804.03	584.08	73.00%	100.08	Free Flow	N/A	5.91	588.83	73.00%	100.08	Free Flow	N/A	5.90
SL4172651	MH5512534151	MH5512534152	#18	101.80	525	97.54	97.43	94.80	92.73	2.03	613.38	582.33	95.00%	95.27	Free Flow	N/A	2.27	587.33	96.00%	95.31	Free Flow	N/A	2.23
SL4172671	MH5512534152	MH5512534175	#19	57.10	525	97.43	93.78	92.68	90.69	3.49	803.02	586.86	73.00%	93.05	Free Flow	N/A	4.38	591.78	74.00%	93.06	Free Flow	N/A	4.37



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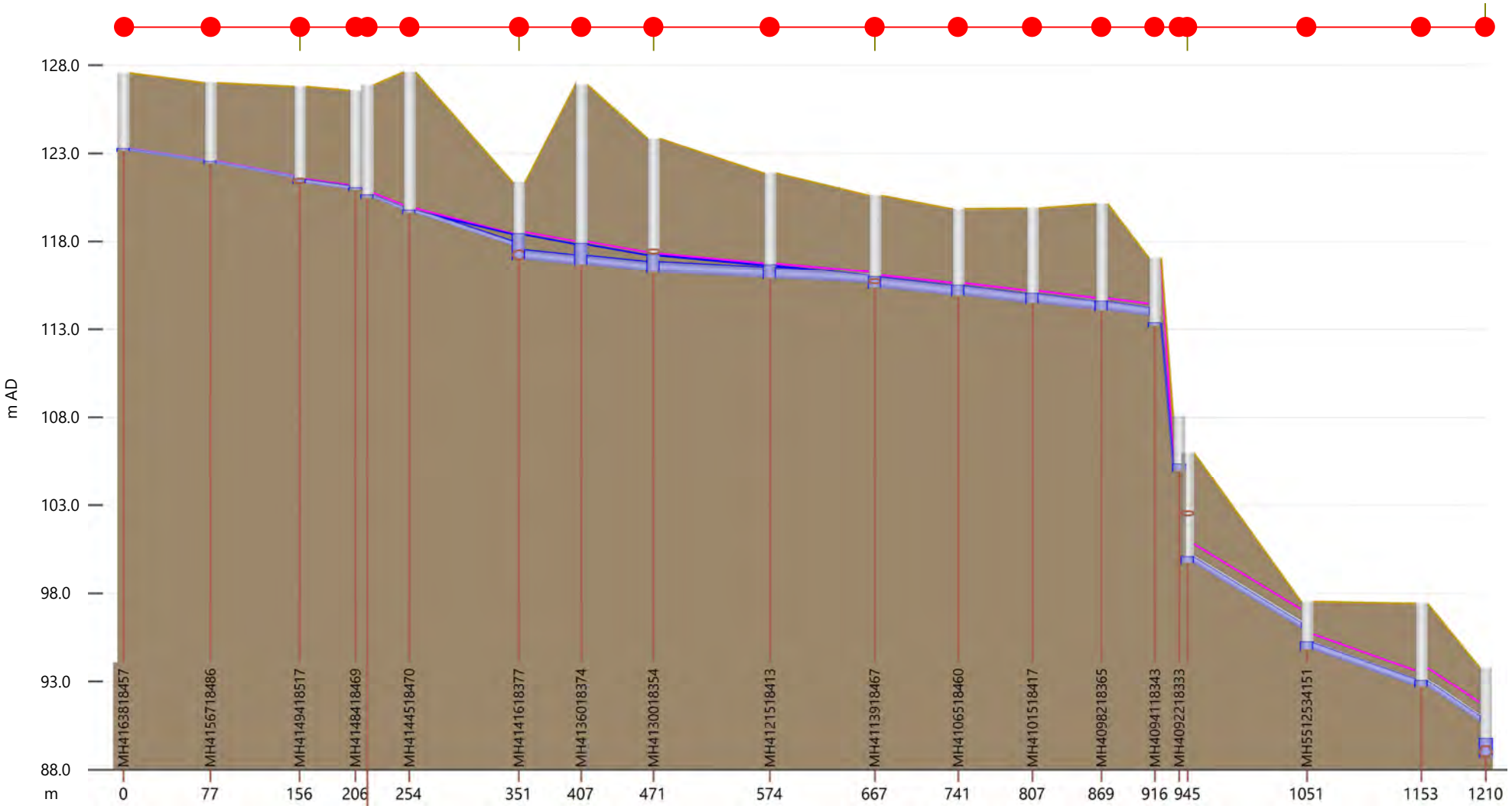
height (mm)	250	250	250	250	250	525	525	600	600	600	600	600	600	-	525	525	525
length (m)	77.1	79.3	49.6	37.2	97.4	55.4	64.2	103.4	93.3	74.0	66.0	61.4	47.4	-	105.9	101.8	57.1
grad (m/m)	0.00817	0.01030	-	-	0.01899	-	0.00545	0.00300	0.00300	0.00568	0.00606	0.00603	-	-	0.03494	0.02033	0.03485
us inv (m AD)	123.140	122.417	-	-	119.610	-	116.670	116.240	115.900	115.350	114.900	114.470	-	-	99.710	94.800	92.680
ds inv (m AD)	122.510	121.600	-	-	117.760	-	116.320	115.930	115.620	114.930	114.500	114.100	-	-	96.010	92.730	90.690
US total head (m AD)	123.259	122.568	-	-	119.902	-	118.068	117.390	116.799	116.212	115.714	115.232	-	-	100.848	95.721	93.819

Node	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ground (m AD)	-	127.004	-	-	127.607	121.374	-	123.842	121.882	120.618	119.845	-	-	-	-	97.540	97.430	-

Section for Network - A55_EA_SAN_BaselineConditions at 05/13/2000 00:25:00



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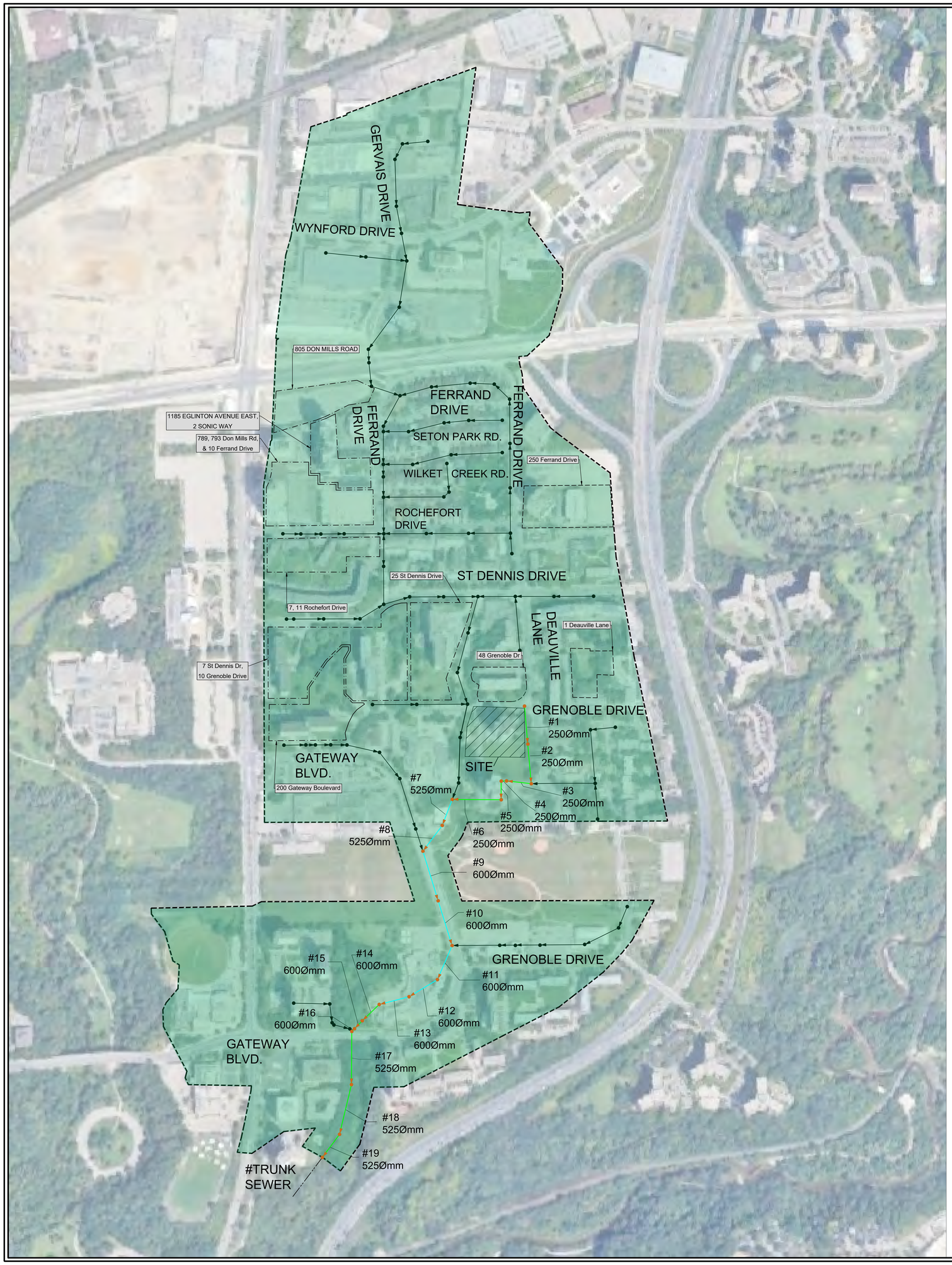
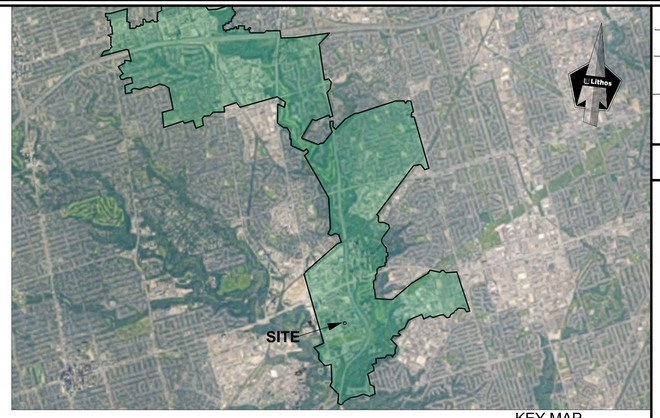
width (mm)	250	250	250	250	250	525	525	600	600	600	600	600	600	-	525	525	525
height (mm)	250	250	250	250	250	525	525	600	600	600	600	600	600	-	525	525	525
length (m)	77.1	79.3	49.6	37.2	97.4	55.4	64.2	103.4	93.3	74.0	66.0	61.4	47.4	-	105.9	101.8	57.1
grad (m/m)	0.00817	0.01030	-	-	0.01899	-	0.00545	0.00300	0.00300	0.00568	0.00606	0.00603	-	-	0.03494	0.02033	0.03485
us inv (m AD)	123.140	122.417	-	-	119.610	-	116.670	116.240	115.900	115.350	114.900	114.470	-	-	99.710	94.800	92.680
ds inv (m AD)	122.510	121.600	-	-	117.760	-	116.320	115.930	115.620	114.930	114.500	114.100	-	-	96.010	92.730	90.690
US total head (m AD)	123.299	122.603	-	-	119.925	-	118.153	117.456	116.848	116.254	115.742	115.246	-	-	100.852	95.721	93.824

Node	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ground (m AD)	-	127.004	-	-	127.607	121.374	-	123.842	121.882	120.618	119.845	-	-	-	-	97.540	97.430	-

Section for Network - A55_EA_SAN_BaselineConditions at 05/13/2000 00:30:00





KEY MAP

LOCATION PLAN
NTS

LEGEND

- FREE FLOW
- SURCHARGING W. FREEBOARD >1.8
- CRITICALLY SURCHARGING W. FREEBORD < 1.8
- EXISTING UPSTREAM MANHOLE
- EXISTING DOWNSTREAM MANHOLE
- PROPOSED MANHOLE
- TRUNK SEWER
- DRAINAGE AREA
- INFILTRATION AREA
- # 1 NUMBERED SEGMENT
- FUTURE DEVELOPMENT

DOWNSTREAM SANITARY SEWER SEGMENT INFORMATION

SEWER SEGMENT	MAINTENANCE HOLE ID (FROM)	MAINTENANCE HOLE ID (TO)	TYPE	SIZE (mm)	LENGTH (m)	SLOPE (%)
#1	MH4163818457	MH4156718486	CIR	250	77.1	0.82
#2	MH4156718486	MH4149418517	CIR	250	79.3	1.01
#3	MH4149418517	MH4148418469	CIR	250	49.6	0.67
#4	MH4148418469	MH4148118459	CIR	250	10.6	2.55
#5	MH4148118459	MH4144518470	CIR	250	37.2	1.8
#6	MH4144518470	MH4141618377	CIR	250	97.4	1.9
#7	MH4141618377	MH4136018374	CIR	525	55.4	0.52
#8	MH4136018374	MH4130018354	CIR	525	64.2	0.55
#9	MH4130018354	MH4121518413	CIR	600	103.4	0.3
#10	MH4121518413	MH4113918467	CIR	600	93.3	0.3
#11	MH4113918467	MH4106518460	CIR	600	74.0	0.57
#12	MH4106518460	MH4101518417	CIR	600	66.0	0.61
#13	MH4101518417	MH4098218365	CIR	600	61.4	0.6
#14	MH4098218365	MH4094118343	CIR	600	47.4	0.65
#15	MH4094118343	MH4092218333	CIR	600	21.6	38.06
#16	MH4092218333	MH4091818330	CIR	600	7.6	1.45
#17	MH4091818330	MH5512534151	CIR	525	105.9	3.49
#18	MH5512534151	MH5512534152	CIR	525	101.8	2.03
#19	MH5512534152	MH5512534175	CIR	525	57.1	3.49

CITY OF TORONTO

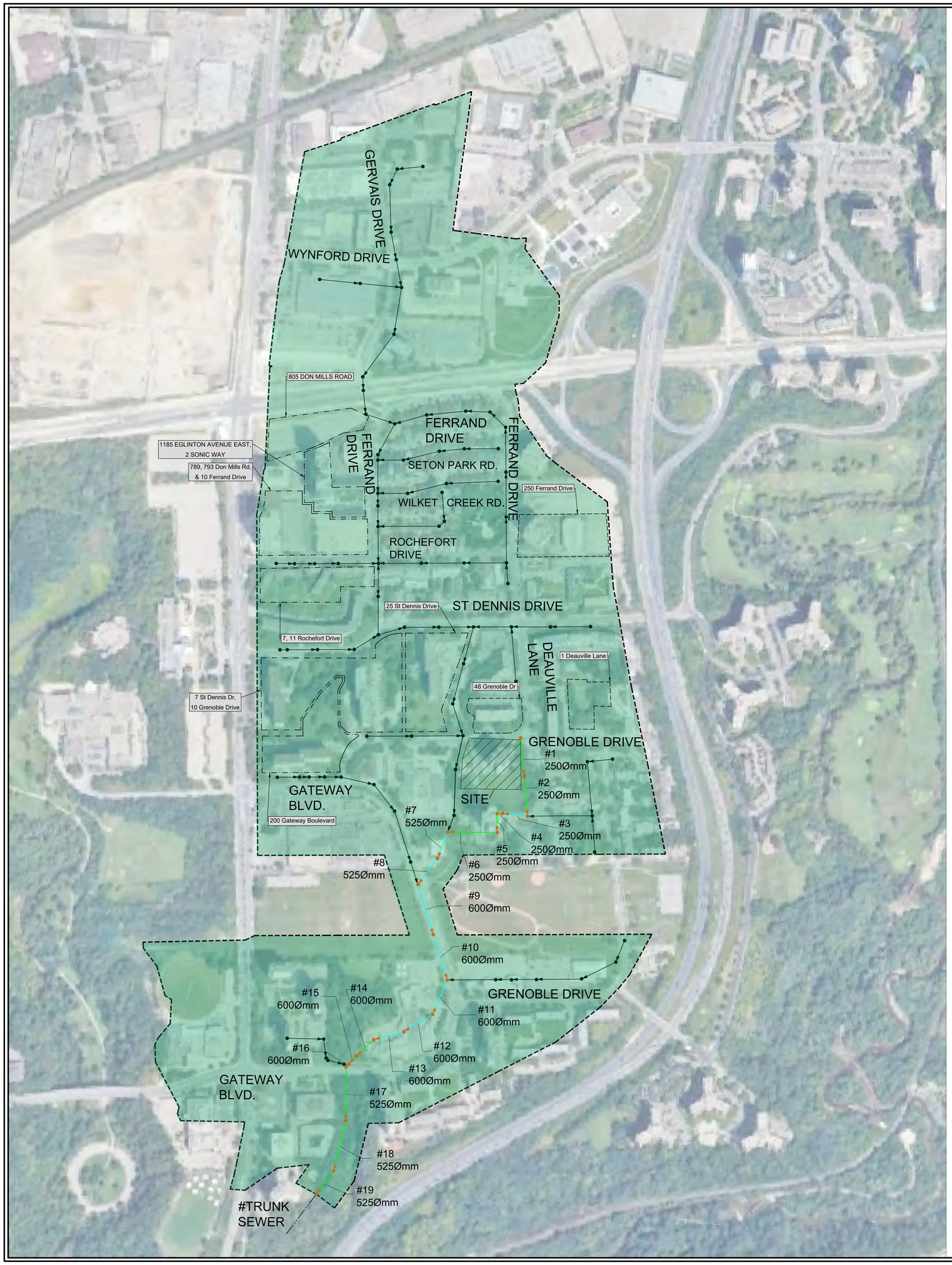
DOWNSTREAM SEWER NETWORK - SCENARIO 3: EXISTING WET WEATHER FLOW

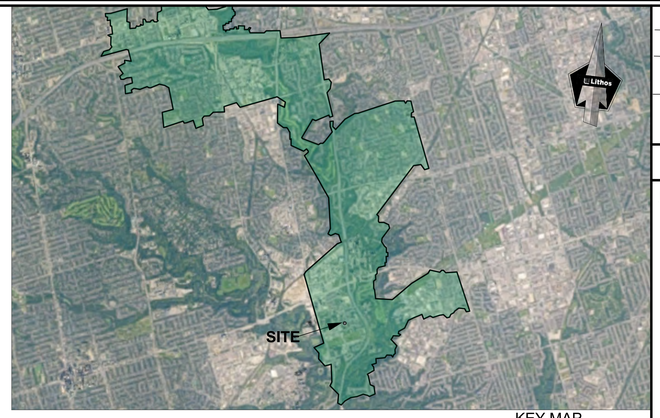
RESIDENTIAL DEVELOPMENT
45 GRENOBLE DRIVEWAY
TORONTO, ONTARIO

Lithos

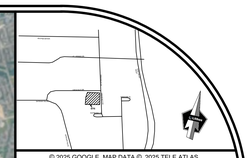
150 Bermondsey Road, Toronto, Ontario M4A 1Y1

DESIGNED BY: TT	DATE: OCT 2025	CHECKED BY: NM
DRAWN BY: TT	PROJECT No:	APPROVED BY: NM
SCALE: N.T.S.	UD24-013	DRAWING No: DAP3.3





KEY MAP



LOCATION PLAN
NTS

LEGEND

- FREE FLOW
- SURCHARGING W. FREEBOARD >1.8
- CRITICALLY SURCHARGING W. FREEBORD < 1.8
- EXISTING UPSTREAM MANHOLE
- EXISTING DOWNSTREAM MANHOLE
- PROPOSED MANHOLE
- TRUNK SEWER
- DRAINAGE AREA
- INFILTRATION AREA
- # 1 NUMBERED SEGMENT
- FUTURE DEVELOPMENT

DOWNSTREAM SANITARY SEWER SEGMENT INFORMATION

SEWER SEGMENT	MAINTENANCE HOLE ID (FROM)	MAINTENANCE HOLE ID (TO)	TYPE	SIZE (mm)	LENGTH (m)	SLOPE (%)
#1	MH4163818457	MH4156718486	CIR	250	77.1	0.82
#2	MH4156718486	MH4149418517	CIR	250	79.3	1.01
#3	MH4149418517	MH4148418469	CIR	250	49.6	0.67
#4	MH4148418469	MH4148118459	CIR	250	10.6	2.55
#5	MH4148118459	MH4144518470	CIR	250	37.2	1.8
#6	MH4144518470	MH4141618377	CIR	250	97.4	1.9
#7	MH4141618377	MH4136018374	CIR	525	55.4	0.52
#8	MH4136018374	MH4130018354	CIR	525	64.2	0.55
#9	MH4130018354	MH4121518413	CIR	600	103.4	0.3
#10	MH4121518413	MH4113918467	CIR	600	93.3	0.3
#11	MH4113918467	MH4106518460	CIR	600	74.0	0.57
#12	MH4106518460	MH4101518417	CIR	600	66.0	0.61
#13	MH4101518417	MH4098218365	CIR	600	61.4	0.6
#14	MH4098218365	MH4094118343	CIR	600	47.4	0.65
#15	MH4094118343	MH4092218333	CIR	600	21.6	38.06
#16	MH4092218333	MH4091818330	CIR	600	7.6	1.45
#17	MH4091818330	MH5512534151	CIR	525	105.9	3.49
#18	MH5512534151	MH5512534152	CIR	525	101.8	2.03
#19	MH5512534152	MH5512534175	CIR	525	57.1	3.49

CITY OF TORONTO

DOWNSTREAM SEWER NETWORK - SCENARIO 4: PROPOSED WET WEATHER FLOW

RESIDENTIAL DEVELOPMENT
45 GRENOBLE DRIVEWAY
TORONTO, ONTARIO

Lithos
150 Bermondsey Road, Toronto, Ontario M4A 1Y1

DESIGNED BY: TT	DATE: OCT 2025	CHECKED BY: NM
DRAWN BY: TT	PROJECT No:	APPROVED BY: NM
SCALE: N.T.S.		DRAWING No:
	UD24-013	DAP3.4

APPENDIX C
Supporting Documentation

Site Investigation Report (Class B)

PUD24-013

45 Grenoble Drive

April 12, 2024

Lithos
Professional Engineering Services

Lithos Group Inc.
150 Bermondsey Road, Unit 200
Toronto, Ontario, M4A 1Y1

T: 416-750-7769
E: info@lithosgroup.ca
www.LithosGroup.ca

Professional Engineers Ontario

Lithos Site Investigation and Dye Test Report

General Information	
Date: **April 12, 2024**	Report No. : **R23-03-29-01**
Project No. : **PUD24-013**	Address : **45 Grenoble Dr., TO, ON**
Owner : **Bousfiel s nc**	Region/Municipality: **City Toronto**

Attendants			
	Name	Title	Contact Info.
Lithos Inspector	**Alma Loshe**	**Project Inspector**	**647-901-3495**
Lithos Inspector	**Pradeep Oleti**	**Construction Inspector**	**905-609-3435**

Weather Condition			
☐ Sunny	☐ Cold	☐ Light Rain	☐ Windy
☑ Partly Cloudy	☑ Cool	☐ Heavy Rain	☐ Fogy
☐ Overcast	☐ Warm	☐ Light Snow	
Temprature :**+9°C**	☐ Hot	☐ Heavy Snow	

Existing Facilities at Project/Site

28 storey residential (apartment) building

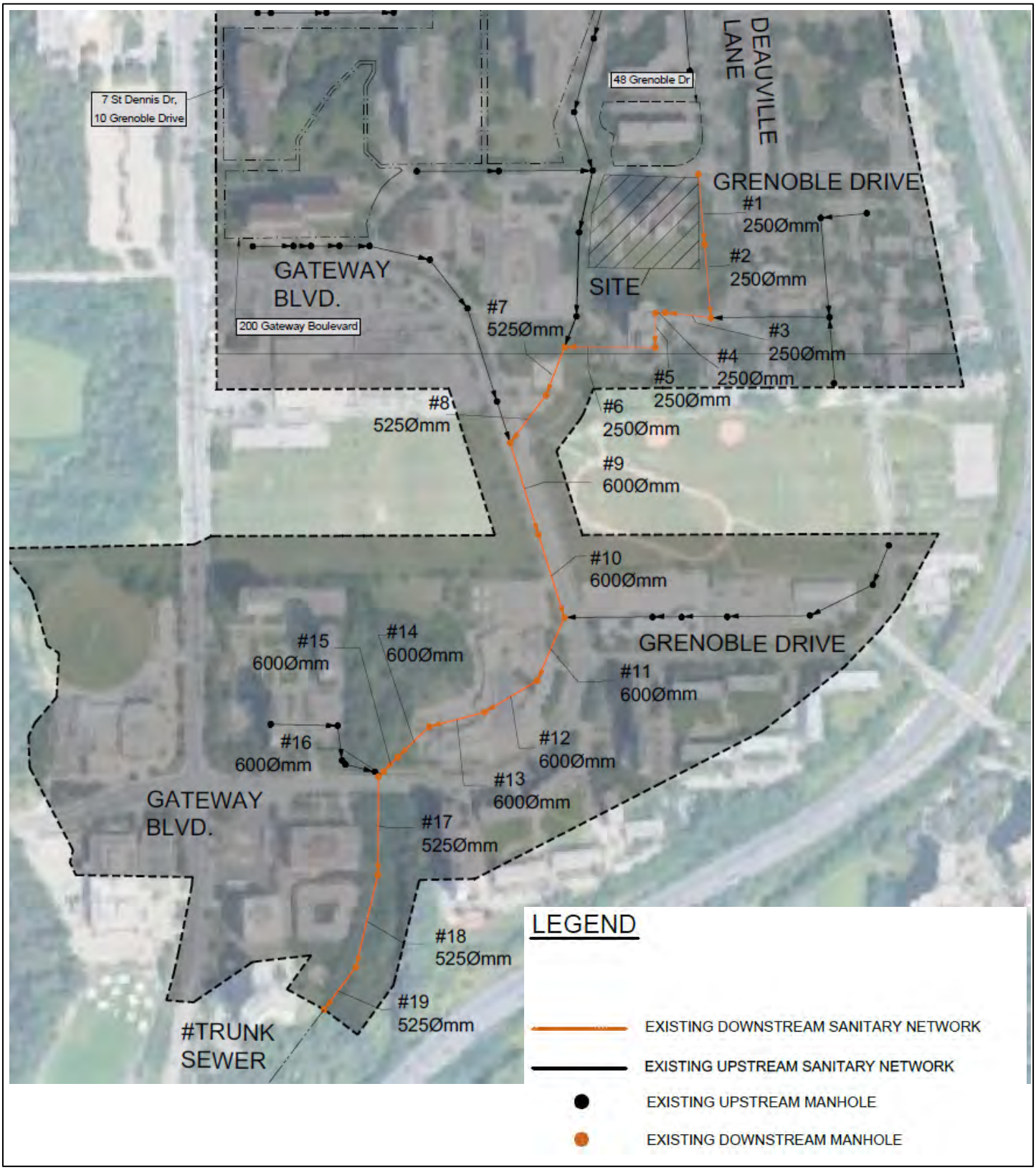
Purpose on Investigation

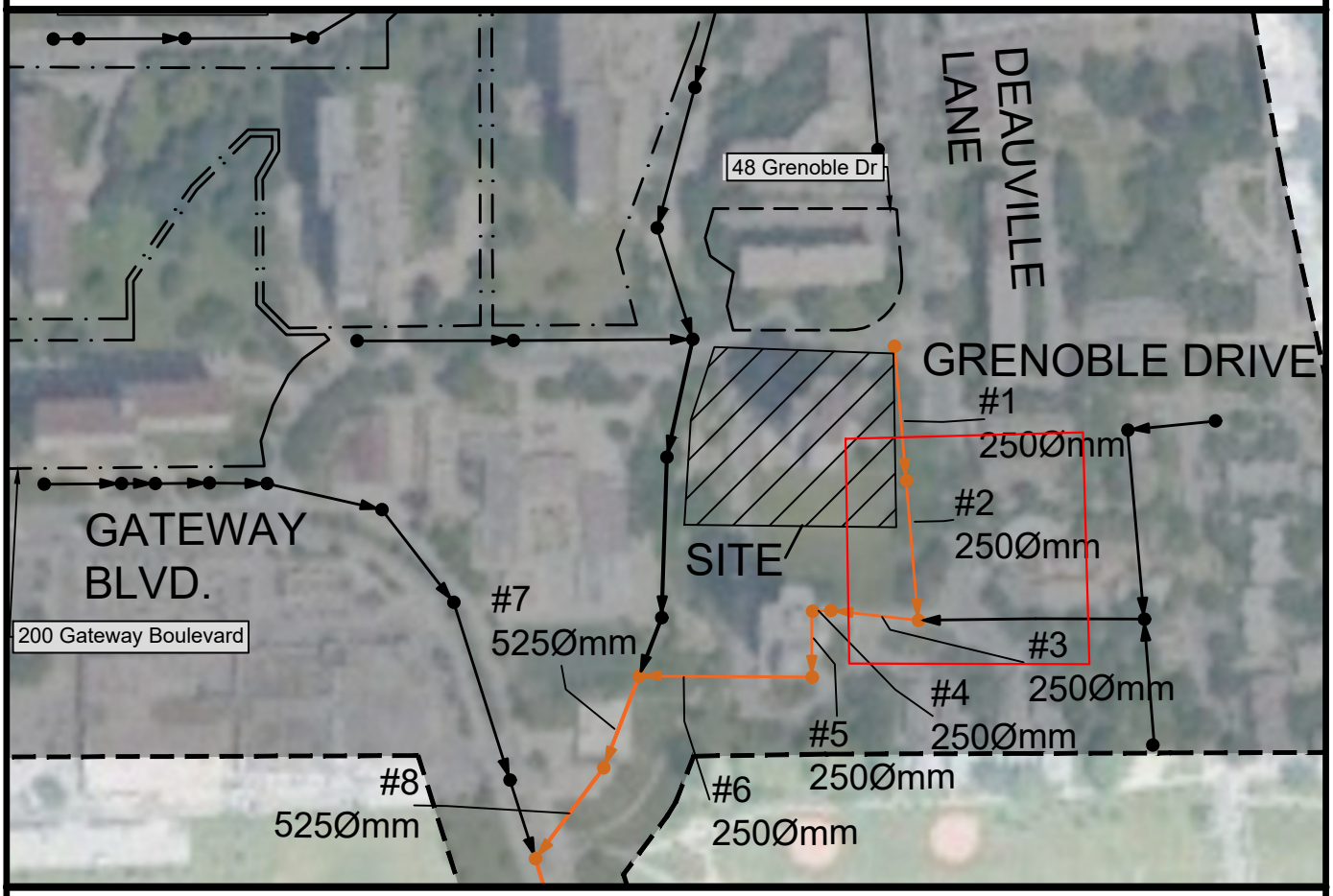
Indicate the invert elevations of the selected Sanitary network in the Grenoble Drive.

Site Location

General Information	
Date: **April 12,2024**	Report No. : **R23-03-29-01**
Project No. : **PUD 24-013**	Address : **45 Grenoble Dr., TO, ON**
Owner : **Bousfiel s nc**	Region/Municipality: **City Toronto**

Investigation Details





EXISTING DOWNSTREAM SANITARY SEWER

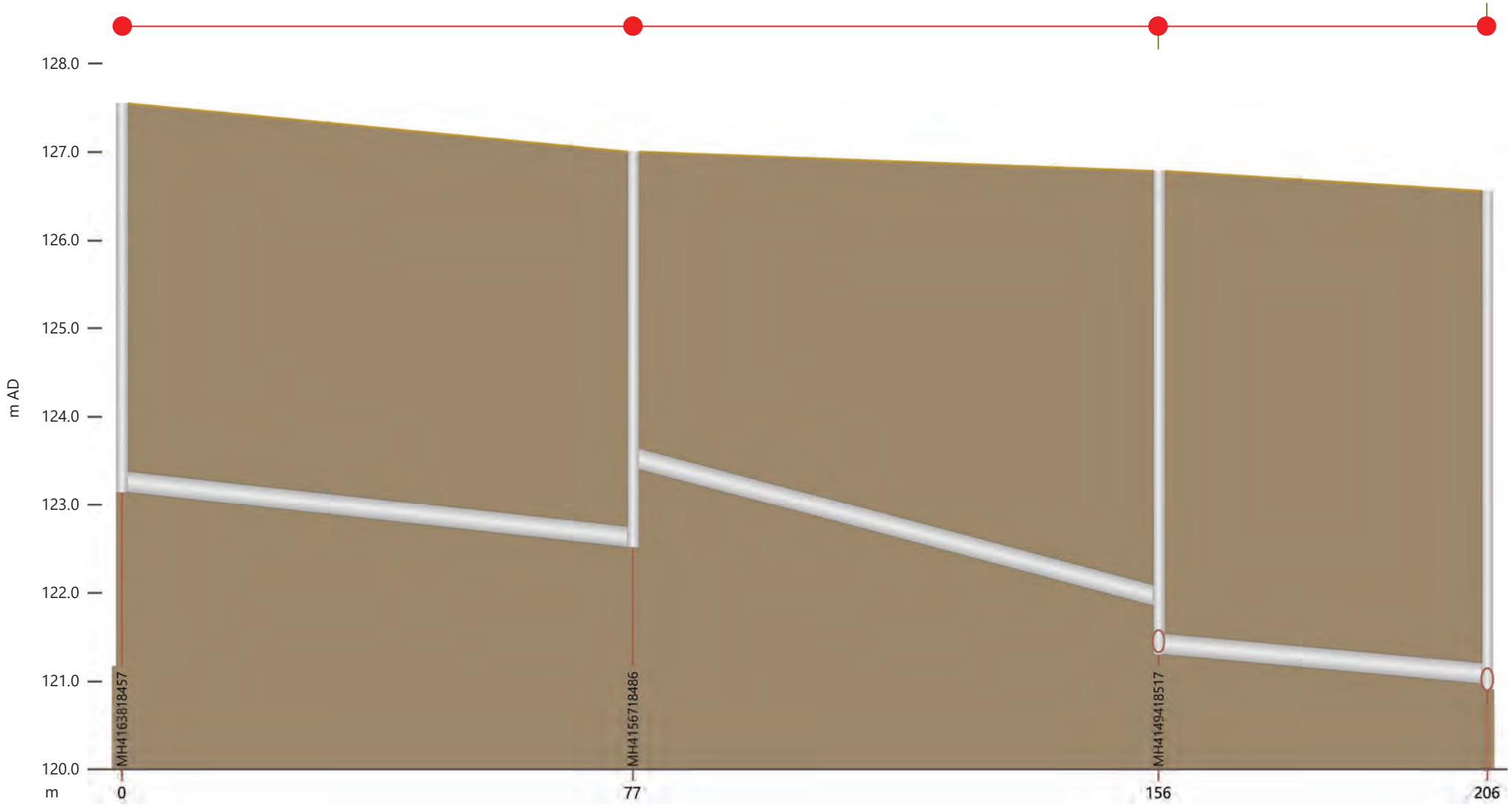
INETRSECTION FOR SITE INVESTIGATION

INFILTRATION AREA

Lithos

150 Bermondsey Road, Toronto, Ontario M4A 1Y1

DATE:	OCT 2025	PROJECT No:	UD24-013
SCALE:	N.T.S.	FIGURE No:	FIG 3



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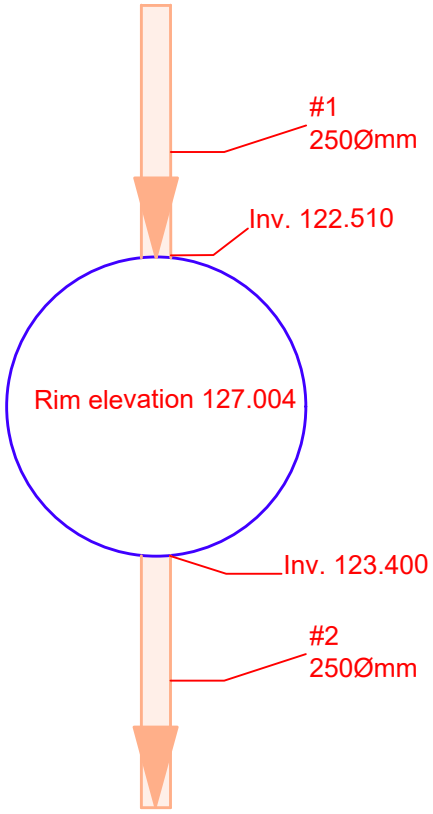
width (mm)	250	250	250
height (mm)	250	250	250
us inv (m AD)	123.140	123.400	121.300
ds inv (m AD)	122.510	121.850	120.970
grad (m/m)	0.00817	0.01955	0.00665

Node	MH4163818457	MH4156718486	MH4149418517	MH4148418469
ground (m AD)	127.552	127.004	126.787	126.562

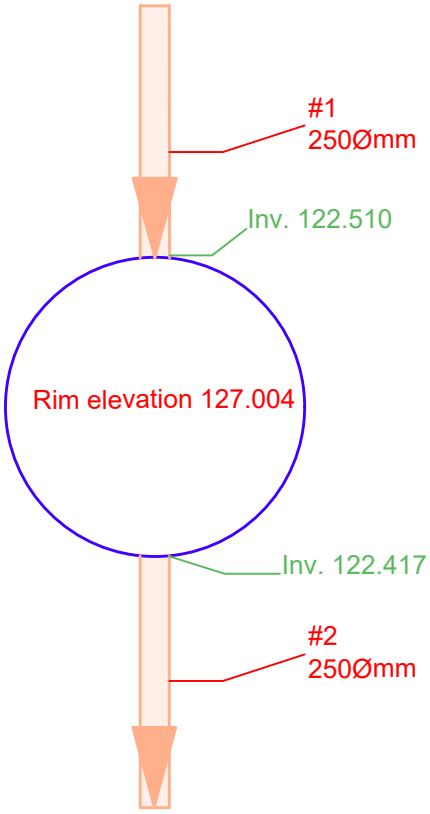
Section for Network - A55 _EA_SAN_BaselineConditions

Powered by InfoWorks

INFOWORKS DATA



SITE INVESTIGATION DATA



Lithos

150 Bermondsey Road, Toronto, Ontario M4A 1Y1

INFOWORKS AND SITE INVESTIGATION DATA FOR THE INTERSECTION
RESIDENTIAL USE DEVELOPMENT
45 GRENOBLE DRIVE
TORONTO, ONTARIO

DATE:	OCT 2025	PROJECT No:	UD24-013
SCALE:	N.T.S.	FIGURE No:	FIG 4