June 07, 2024
Reference No.: 141003

Hamid Mazaheri, P.Eng.
Manager (Acting), Development Engineering
Toronto and East York South District
Engineering & Construction Services
Metro Hall
55 John Street, 16th Floor
Toronto, ON M5V 3C6

Attention: Charlotte Patterson, P.Eng.

Re: Response to City Comments
Zoning By-Law Amendment No.: 23 124848 STE OZ
Your Memorandum Dated: May 15, 2023
Applicant: Fora Developments Inc.
Owner: Dundas Li Properties Inc.
Location: 2440 Dundas Street West
Ward: 4

Dear Ms. Patterson:

Arcadis Professional Services (Canada) Inc. (Arcadis), formerly IBI Group, is in receipt of the City of Toronto (the "City")'s engineering submission comments dated May 15, 2023. For ease of reference, the City comments have been reiterated in *italics*, with Arcadis' responses in **bold** below.

A. REVISIONS AND ADDITIONAL INFORMATION REQUIRED FOR SITE PLAN, STUDIES, AND DRAWINGS

3.4 Revise the composite utilities plan as follows:

a) Show the direction of flow in existing and proposed sewers.

Direction arrows have been added to the Public Utilities Plan (PUP-01) for existing and proposed sewers.

b) Show the locations of any proposed soil cell systems.

The locations of soil cells per the landscape drawings have been added to Drawing PUP-01.

3.5 Revise the Functional Servicing and Stormwater Management Report as per the comments in Attachment 1

Please refer to Attachment 1 following this report for responses to each of the comments provided.

3.6 As of January 1, 2022, the Foundation Drainage Policy and Guidelines apply to all new development applications received by the City of Toronto under the Ontario Planning Act. The Site Plan Control application is subject to this.

Submit a completed Foundation Drainage Summary form as per the template provided as Attachment 2, as well as a supporting Foundation Drainage Technical Brief.

Details regarding the policy can be reviewed at the following website: https://www.toronto.ca/services-payments/water-environment/water-sewer-related-permits-and-bylaws/sewers-by-law/managing-foundation-drainage/ See Section D: Background of this memorandum for additional information.

Due to the phased approach of the construction of the underground level, the site will be seeking an exemption to the policy. Please refer to the Hydrogeological Report dated June 2024 by GEMS for additional details related to the exemption. A long-term groundwater rate of 0.16 L/s is proposed to be discharged to the combined sewer. The municipal combined system has adequate capacity for the long-term flow and MECP Procedure F-5-5 will be met through an offsite disconnection. Please refer to the FS&SWM Report for additional details.

The Foundation Drainage Summary Form shall be submitted under separate cover.

3.7. The Hydrogeological Report is to be stamped by Professional Geoscientist and/or a P. Eng.

The Hydrogeological Report shall be submitted under separate cover. An excerpt can be found in Appendix B of the FS&SWM Report for reference.

3.8. Submit a revised Hydrological Review Summary form as per the comments provided in Attachment 3.

The Hydrological Review Summary shall be submitted under separate cover. A copy can be found in Appendix B of the FS&SWM Report for reference.

We trust that this letter provides you with the additional information which you required at this time. Should you have any questions or comments, please do not hesitate to contact our office.

Yours sincerely,

ARCADIS PROFESSIONAL SERVICES (CANADA) INC.
Shirley Beaudoin
CAD Technologist
Land Engineering

Fora Developments

2400 – 2440 Dundas St. West City of Toronto

Functional Servicing and Stormwater Management Report (FSR/SWM)

June 7, 2024

2400 – 2440 Dundas St. West

Functional Servicing and Stormwater Management Report (FSR/SWM)

June 7, 2024

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Jason Jenkins, P.Eng., P.E.
Associate Principal, Practice Lead
Land Engineering

Version Control

Issue	Rev No.	Date Issued	Description	Reviewed By
ZBA	1	May 2023	Final Report	JJ
ZBA	2	June 7, 2024	Final Report	JJ

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1 Introduction

1.1 Background

Arcadis Professional Services (Canada) Inc. (Arcadis) has been retained by Fora Developments (the "Owner") to prepare a Functional Servicing Report to support the Zoning By-Law Amendment (ZBA) process for a proposed mixed-use development located at 2400 - 2440 Dundas Street West (the "Subject Site"), in the City of Toronto (the "City"). The purpose of this report is to develop a municipal site servicing strategy (stormwater, sanitary discharge, and water supply), and to identify any potential constraints within the existing municipal infrastructure. More specifically, the report will present the following:

- Calculate allowable and proposed runoff rates for the development;
- Evaluate suitable methods for attenuation and treatment of stormwater runoff;
- Develop on-site control measures and examine theoretical performance to satisfy the City's Wet Weather Flow Management Guidelines (WWFMG);
- Evaluate groundwater quantity and quality parameters from the hydrogeological report and develop a strategy to manage groundwater under both short- and long-term conditions to comply with the City of Toronto's Discharge By-Law criteria;
- Develop a Stormwater Management (SWM) plan that complies with the City's Wet Weather Flow Management Guidelines (WWFMG);
- Identify sanitary servicing opportunities and constraints and evaluate the capacity of the receiving municipal sewer; and,
- Identify water servicing opportunities and constraints, calculate the proposed domestic water and firefighting supply needs; and evaluate the capacity of the municipal infrastructure.

The following documents have been obtained from various sources:

- City of Toronto plan and profile drawings for Dundas Street West;
- City of Toronto DMOG Mapping of water and sewer networks;
- Topographic Survey prepared by KRCMAR Surveyors Ltd., dated May 2022; and,
- Architectural plans and site statistics prepared by GPA Architects

1.2 Existing Site Description

Located in the City of Toronto, the 11,143 m^2 (1.11 ha) subject site is bounded by Dundas Street West to the west, railroad tracks to the east, a single storey retail space to the north, and a mixed-use high rise building to the south. Please see **Figure 1** following the report for an aerial view of the site.

The site currently hosts (1) one-story and (1) two-storey commercial buildings and an asphalt parking surface which are to be removed. The site slopes to the south with ground surface elevations ranging from 115.14 m to 113.83 m and is self-contained with no external drainage areas to consider.

The subject site is located within Basement Flooding Study Area (BFA) #44 which is slated to be completed in 2024, therefore, the no Infoworks model was available.

1.3 Site Proposal

The proposed development includes the phased construction of the following:

- Phase 1 (Block A): A 37-storey tower (Tower A) with residential and retail space.
- Phase 2 (Block B): A 42-storey residential tower (Tower B1) and a 25-storey residential tower (Tower B2) with a shared mixed-use podium containing residential and commercial space.
- Parkland Dedication: A 1,044 m^2 parkland dedication fronting Dundas Street West.

The buildings will be connected via a shared underground level which will contain parking, storage, and utility rooms. Sample architectural drawings can be found in **Appendix A** for reference.

1.4 Service Connections

Per the City's servicing requirements for point tower developments, separate storm sewer connections and SWM facilities are required for each point tower and the shared podium, or the buildings may share a SWM facility and storm connection if the internal mechanical piping for each building is separated with sampling ports for each system upstream of the connection point to the SWM facility.

Per the City's servicing requirements, individual sanitary and domestic services are required for each built form. Accordingly, each tower and the podium shall be serviced independently for sanitary and domestic services.

Per the Ontario Building Code (OBC), two fire service connections separated by an isolation valve are required for any building above 84 m in height. As the proposed towers will exceed this threshold, a secondary fire line will be required to service each building. Furthermore, per the City's design Criteria for Sewers and Watermains, if a building exceeds 84 m and two separate watermains are available to service the development from a fire flow perspective, the applicant must connect to each of them. As there is only one watermain available, the fire service connections will be separated by an isolation valve.

Accordingly, service connections and SWM facilities shall be provided as follows:

Phase 1/Block A:

- (1) SWM facility and storm service connection
- (1) sanitary service connection
- (2) fire service connections
- (1) domestic water connection

Phase 2/Block B:

- (1) shared SWM facility and storm service connection for the podium and point towers, with (3) individual sampling ports upstream
- (3) sanitary service connections
- (2) fire service connections
- (3) domestic water connections

Parkland Dedication:

- (1) SWM facility and storm service connection
- (1) sanitary service connection
- (1) domestic water connection

Specific site servicing details will be further discussed in subsequent sections.

2 Terms of Reference and Methodology

2.1 Terms of Reference

The terms of reference used for the scope of this report have been based on the City of Toronto Design Criteria for Sewers and Watermains, dated January 2021, and the City of Toronto Wet Weather Flow Management Guidelines, dated November 2006. The City's Sewer Capacity Assessment Guidelines (July 2021) were referenced to assess the capacity of the existing sanitary sewers.

2.2 Methodology: Stormwater Management

As the proposed development has a total site area less than 5.0 ha (Table 7, Section 2, WWFMG), the following SWM criteria shall apply:

Quantity Control

The allowable release rate to the municipal storm sewer system from the development site during a 2- year design storm event must not exceed the peak runoff rate from the site under pre-development conditions during the same storm event, or existing capacity of the receiving storm sewer, whichever is less.

A maximum runoff coefficient of 0.50 shall be used in calculating the pre-development peak runoff. An overland flow route (major system) shall be provided within the developed site to direct runoff in excess of the 100-year storm to an approved overland flow outlet.

Quality Control

Long-term average removal of 80% of the total suspended solids (TSS) on an annual loading basis must be achieved. TSS removal efficiency is to be based on 100% of the runoff leaving the site from all storm events that occurs in an average year.

Water Balance

As the proposed development aims to qualify for Tier 1 of the Toronto Green Standard (TGS), controls should be in place, such that the runoff resulting from a 5 mm rainfall event must be retained on-site for rainwater re-use, infiltration, and evapotranspiration.

2.3 Methodology: Sanitary Discharge

Pre- and post-development peak sewer flows will be calculated based on the following City design criteria:

Table 2-1 Sanitary Design Parameters

DESIGN FLOWS		POPULATION DENSITIES	
Residential Flow	240 L/c/day		
ICI Flow	250 L/c/day		
Infiltration Allowance	0.26 L/s/ha	1 Bedroom Units	1.4 people / unit
Peaking Factor	Harmon Equation	2 Bedroom Units	2.1 people / unit
SANITARY SERVICE CONNECTION SIZING		3 Bedroom Units	3.1 people / unit
Population Flow	450 L/c/day	Retail Space	1.1 people/100m^2
Infiltration Allowance	0.26 L/s/ha	Office Space	3.3 people/100m^2
Peaking Factor	Harmon Equation		

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

2.4 Methodology: Water Supply

The domestic water usage will be calculated based on the following City of Toronto and Ontario Building Code design criteria:

Table 2-2 Water Design Parameters

Average Daily Demand (ADD)		Peaking Factors		
		Land Use	Peak Hour	Max Day
Single Family	310 L/c-day	Residential	2.25	1.50
Multi-Unit	190 L/c-day	Commercial	1.20	1.10

Pressure and flow testing to determine the adequacy of the existing watermain to support the development with fire suppression in accordance with the Fire Underwriters Survey (FUS) Guidelines will be discussed in the subsequent sections.

3 Foundation Drainage

3.1 Groundwater Quality

A hydrogeological assessment was carried out by Groundwater Environmental Management Services (GEMS), dated June 7, 2024, to assess existing groundwater conditions. Per the assessment, the groundwater quality was found to be below the City's limits for discharge to sanitary sewers but exceeded the City's limits for discharge to storm sewers for both Total Suspended Solids (TSS) and Total Manganese (Mn). The results are summarized as follows:

Table 3-1 Groundwater Quality Exceedances

Parameter	Storm By-Law Criteria	Sanitary By-Law Criteria	Measured Reading
Total Suspended Solids (TSS)	15 mg/L	350 mg/L	41 mg/L
Total Manganese (Mn)	50 ug/L	5000 ug/L	170 mg/L

It is therefore recommended that all dewatering activities will need to be pre-treated for TSS and Mn prior to discharge to the combined sewer within the municipal right-of-way. Please see **Appendix B** for an excerpt copy of the hydrogeological assessment.

3.2 Short-Term Groundwater Discharge

The anticipated short-term groundwater discharge has been estimated by GEMS to be 597,7.0 L/day (6.9 L/s). At the time of this report, a dewatering plan was not made available. It is therefore assumed that groundwater pumping will operate for 6 hours per day.

The peak post-development sanitary design flow has been estimated to be 21.5 L/s (please see Section 5) which exceeds the anticipated short-term pumping rate. Therefore, the long-term rate governs and will be used to assess downstream sewer capacity and compliance with MECP Procedure F-5-5 which will be discussed in subsequent sections.

Furthermore, compliance with MECP procedure F-5-5 will require an off-site catchbasin disconnection, which is further discussed in subsequent sections of this report. It should be noted that the off-site disconnection must be completed before short-term groundwater can be discharged to the combined sewer so that at no point will the flow into the combined sewer system be more than existing.

Table 3.1 summarizes the recommendations for groundwater discharge during construction. It should be noted that a Permit to Take Water (PTTW) application must be submitted to the Ministry of the Environment, Conservation and Parks (MECP) if dewatering rates exceed 50 m^3/day.

Table 3-2 Short-Term Groundwater Discharge Summary

Average Discharge	Average Discharge	Hours Of Pumping	Peak Discharge	Connection Outlet	Treatment Required
597 m^3/Day	**6.9 L/s**	**12 Hours**	**13.8 L/s**	**Dundas Combined**	**Yes**

3.3 Long-Term Groundwater Discharge

As the site is seeking an exemption to the City's Foundation Drainage Policy, a Private Water Drainage System (PWDS) with perimeter weeping tile is proposed below the basement slab, which shall discharge to the sanitary control manhole. Please refer to the Hydrogeological Investigation by GEMS for additional details related to the policy exemption.

The following table shows the anticipated long-term discharge as estimated by GEMS, and corresponding pumping rates as established by the mechanical consultant, MCW Consultants Ltd. The pumping rate has been used to determine the post-development sewer flow, downstream sewer capacity, and compliance with MECP Procedure F-5-5 which will be further discussed in **Section 5**.

Table 3-3 Long-Term Groundwater Discharge

Average Discharge	Average Discharge	Hours Of Pumping	Peak Discharge	Connection Outlet	Treatment Required
6,868 L/Day	0.08 L/s	12 Hours	0.16 L/s	Dundas Combined	No

Please refer to **Drawing SS-01** for the location of the groundwater Sampling Access Port (SAP), and **Appendix B** for a copy of the Servicing Report Groundwater Summary Form.

4 Stormwater Management

4.1 Pre-Development Conditions

There is one dedicated storm sewer within Dundas Street West ranging in size from 450 mm to 600 mm fronting the site. This storm sewer conveys flows south to Bloor Street West and eventually to High Park. Storm drainage within the site is conveyed to the 450 mm storm sewer through an existing storm service connection. Please refer to dye testing in **Appendix A** which confirms existing storm drainage.

As previously mentioned, the site currently hosts two existing buildings and an asphalt parking lot resulting in a pre-development runoff coefficient of 0.90, however, the allowable release rate will be calculated using 0.50 per the City's WWFMG.

4.2 Grading

Under pre-development conditions, no external drainage enters the site and all drainage within the site is conveyed to Dundas Street West. Proposed grades and existing drainage patterns will be maintained along property lines to the extent practical. Emergency overland flow route in excess of a 100-year storm event will continue to be directed Dundas Street West matching pre-development conditions.

4.3 Allowable Release Rates

Using the City's IDF data for a 2-year storm event and a time of concentration of 10 minutes, the gross allowable release rate for the subject site is calculated as follows:

Phase 1 (Block A)

$$Q_{Allowable} = \frac{(A \times R) * I_2}{360} = \frac{(0.4384\ ha \times 0.50) \times 88.2\ mm/hr}{360} \times \left(\frac{1000\ L}{m^3}\right) = \mathbf{53.7\ L/s}$$

Phase 2 (Block B)

$$Q_{Allowable} = \frac{(A \times R) * I_2}{360} = \frac{(0.5715\ ha \times 0.50) \times 88.2\ mm/hr}{360} \times \left(\frac{1000\ L}{m^3}\right) = \mathbf{70.0\ L/s}$$

Parkland Dedication

$$Q_{Allowable} = \frac{(A \times R) * I_2}{360} = \frac{(0.1044\ ha \times 0.50) \times 88.2\ mm/hr}{360} \times \left(\frac{1000\ L}{m^3}\right) = \mathbf{12.8\ L/s}$$

As shown above, the gross allowable release rate from the subject site shall be limited to a maximum of **53.7 L/s** for Phase 1, **70.0 L/s** for Phase 2, and **12.8** L/s for the park. The associated pre-development drainage area plan is shown on **Figure DAP-1** which can be found in **Appendix C** for reference.

4.4 Uncontrolled Flows

Due to grading constraints, a small portion of the site will be released uncontrolled. Using the City's IDF data for a 100-year storm event and a time of concentration of 10 minutes, the un-controlled discharge is summarized as follows:

Table 4-1 100-Year Uncontrolled Storm Flow

Phase/Block	Receiving Street Name	Drainage Area (ha)	Runoff Coefficient	Time Of Concentration	Intensity (mm/hr)	Flow (L/s)
Phase 1/Block A	Dundas St.W.	0.0046	0.90	10 min	250.3	2.9
Phase 2/Block B	Dundas St.W.	0.0096	0.90	10 min	250.3	6.0

The site will require on-site storage which will be further discussed in the following section. The net allowable release from the storage element will be reduced by the un-controlled flow calculated above. Please see **Appendix C** for the detailed design sheet.

4.5 Quantity Control

As previously mentioned, the allowable release rate for the subject site shall be limited to the 2-year target flow calculated in **Section 4.3**.

To attenuate flows per the City's WWFMG, each phase and the parkland dedication will require underground stormwater storage and an orifice control. Storage details are summarized as follows:

Phase 1/Block A

Block A will require a stormwater management tank with a minimum storage area of 135 m^2 and an orifice tube consisting of a 5" (128mm) Schedule 40 PVC pipe. Setting the 100-year storage depth at 0.83 m, the orifice discharge is calculated as follows:

$$Q_{Orifice} = (0.82) * \frac{\pi * (0.128)^2}{4} * \sqrt{2 * 9.81 * (0.83\text{-}0.128/2)} \times \frac{1000\ L}{1\ m^3} = \mathbf{41.0\ L/s}$$

Phase 2/Block B

Block B will require a stormwater management tank with a minimum storage area of 100 m^2 and an orifice tube consisting of a 5" (128mm) Schedule 40 PVC pipe. Setting the 100-year storage depth at 1.76 m, the orifice discharge is calculated as follows:

$$Q_{Orifice} = (0.82) * \frac{\pi * (0.128)^2}{4} * \sqrt{2 * 9.81 * (1.76\text{-}0.128/2)} \times \frac{1000\ L}{1\ m^3} = \mathbf{60.9\ L/s}$$

Parkland Dedication

The park will require a 35 m length of 750 mm diameter oversize pipe and a 75 mm orifice plate. Setting the 100-year storage depth at 0.92 m, the orifice discharge is calculated as follows:

$$Q_{Orifice} = (0.63) * \frac{\pi * (0.075)^2}{4} * \sqrt{2 * 9.81 * (0.92\text{-}0.0.75/2)} \times \frac{1000\ L}{1\ m^3} = \mathbf{11.6\ L/s}$$

The following provides a summary of the stormwater management parameters pertaining to quantity control:

Table 4-2 Discharge Summary

Phase / Block	Storage Req'd (m^3)	Storage Provided (m^3)	Allowable Release Rate (L/s)	Orifice Release Rate (L/s)	Uncontrolled Flow (L/s)	Total Release Rate (L/s)
Phase 1 / Block A	112.7	141.8	53.7	41.0	2.9	43.9
Phase 2 / Block B	160.2	176.9	70.0	60.9	6.0	66.9
Parkland Dedication	14.8	31.0	12.8	11.6	0.0	11.6

As shown above, the site discharge (orifice + un-controlled) is less than the allowable site release rate for each block. By providing on-site storage and an orifice control for each block, the City's objectives for quantity control have been met. Please see detailed calculations which can be found in **Appendix C**. It should be noted that regular inspection and maintenance of any storage element and orifice control should be conducted on a regular basis to ensure that the system is functioning as designed.

4.6 Quality Control

As previously mentioned, 80% TSS removal is required in order to meet the City's WWFMG. Based on the proposed site conditions and surface treatment, the following summarizes the inferred TSS removal rate of each site:

Phase 1/Block A

Table 4.3 TSS Performance: Phase 1

Surface Type	Area (m^2)	Effective TSS	Overall TSS
Conv. Roof	1,764	80	32.2
Extensive Green Roof	1,270	80	23.2
Intensive Green Roof	0	80	0.0
Landscape	163	80	3.0
Landscape Over P1	0	80	0.0
Pavers	0	80	0.0
Impervious (Dirty)	1,141	0	0.0
Impervious (Clean)	46	80	0.8
Total	4,384		59.2

Left untreated, the site will not achieve the City's requirement for 80% TSS removal. Therefore, it is proposed that a Stormfilter© system complete with (6) media cartridges be installed. All "dirty" areas within the drive aisle shall first be directed to the Contech chamber, whereas all other areas can be considered clean and routed directly to the stormwater management tank. Please refer to the Contech Sizing Report which can be found in **Appendix C**.

The Stormfilter© system is accepted as a standalone off-line treatment unit and meets the City of Toronto's criteria for 80% TSS per the WWMFG's. Any proposed substitutions will require approval from both the engineer of record and the City of Toronto.

It is recommended that the Stormfilter© system be inspected on a regular basis to ensure proper operation. Per Contech's recommendations, inspection and maintenance should be carried out at a minimal interval of 12 months with inspections prior to each winter season with filter replacements as required.

By adding this stormwater quality treatment unit, the City requirements for quality control (i.e. minimum 80% TSS removal) have been satisfied for the Phase 1 site.

Phase 2/Block B

Table 4.4 TSS Performance: Phase 2

Surface Type	Area (m^2)	Effective TSS	Overall TSS
Conv. Roof	2,537	80	35.5
Extensive Green Roof	480	80	6.7
Intensive Green Roof	0	80	0.0
Landscape	231	80	3.2
Landscape Over P1	0	80	0.0
Pavers	0	80	0.0
Impervious (Dirty)	1,180	0	0.0
Impervious (Clean)	1,287	80	18.0
Total	5,715		63.5

Left untreated, the site will not achieve the City's requirement for 80% TSS removal. Therefore, it is proposed that a Stormfilter© system complete with (7) media cartridges be installed. All “dirty” areas within the drive aisle shall first be directed to the Contech chamber, whereas all other areas can be considered clean and routed directly to the stormwater management tank. Please refer to the Contech Sizing Report which can be found in **Appendix C**.

The Stormfilter© system is accepted as a standalone off-line treatment unit and meets the City of Toronto's criteria for 80% TSS per the WWMFG's. Any proposed substitutions will require approval from both the engineer of record and the City of Toronto.

It is recommended that the Stormfilter© system be inspected on a regular basis to ensure proper operation. Per Contech's recommendations, inspection and maintenance should be carried out at a minimal interval of 12 months with inspections prior to each winter season with filter replacements as required.

By adding this stormwater quality treatment unit, the City requirements for quality control (i.e. minimum 80% TSS removal) have been satisfied for the Phase 2 site.

Parkland Dedication

While the detailed design of the park will be performed by others at a later date, it is anticipated that the park will be comprised of pedestrian and landscape areas which are considered inherently clean, and therefore the park will provide an overall TSS removal which will satisfy the City’s criteria for quality control without the need for additional quality treatment devices.

4.7 Water Balance

As required by the City's WWFMG, controls should be in place such that 50 % of average annual rainfall volume is retained on-site, which can be achieved by retaining all runoff from a 5 mm rainfall event. In order to achieve the required volume, a combination of initial abstraction and water re-use will be incorporated. The following discusses the water balance targets for each phase.

Phase 1/Block A

With an area of 4,384 m^2, the corresponding water balance volume to be retained on-site is calculated to be 21.9 m^3. Based on initial abstraction values for each surface type, the total abstraction is calculated as follows:

Table 4-5 Initial Abstraction

Area Type	Area (m^2)	Initial Abstraction	Vol. Retained (m^3)
Conv. Roof	1,764	1	1.8
Extensive Green Roof	1,270	5	6.4
Intensive Green Roof	0	7	0.0
Landscape	163	5	0.8
Landscape Over P1	0	5	0.0
Pavers	0	5	0.0
Impervious (Dirty)	1,141	1	1.1
Impervious (Clean)	46	1	0.0
Total	4,384		10.1

As shown above, 10.1 m^3 is retained on-site through initial abstraction. The balance of 11.8 m^3 will be retained through water re-use purposes such as landscape irrigation and / or toilet flushing. Confirmation from the irrigation and mechanical consultants shall be provided at the SPA stage. The following is a summary of the water balance summary for Phase 1:

Table 4-6 Water Balance Summary

Strategy	Vol. Retained (m^3)
Initial Abstraction	10.1
Water Re-Use	11.8
Total	21.9

As indicated above it is expected that Phase 1 will meet the City's water balance target through a combination of initial abstraction and water re-use within a 72-hour period. An adequate sump within the stormwater management tank will be provided within the P1 level to retain the total water re-use volume. Please see **Appendix C** for the detailed design sheet and **Appendix F** for the Site Servicing Exhibit **SS-01**.

Phase 2/Block B

With an area of 5,715 m^2, the corresponding water balance volume to be retained on-site is calculated to be 28.6 m^3. Based on initial abstraction values for each surface type, the total abstraction is calculated as follows:

Table 4-7 Initial Abstraction

Area Type	Area (m^2)	Initial Abstraction	Vol. Retained (m^3)
Conv. Roof	2,537	1	2.5
Extensive Green Roof	480	5	2.4
Intensive Green Roof	0	7	0.0
Landscape	231	5	1.2
Landscape Over P1	0	5	0.0
Pavers	0	5	0.0
Impervious (Dirty)	1,180	1	1.2
Impervious (Clean)	1,287	1	1.3
Total	5,715		8.6

As shown above, 8.6 m^3 is retained on-site through initial abstraction. The balance of 20.0 m^3 will be retained through water re-use purposes such as landscape irrigation and / or toilet flushing. Confirmation from the irrigation and mechanical consultants shall be provided at the SPA stage. The following is a summary of the water balance summary for Phase 2:

Table 4-8 Water Balance Summary

Strategy	Vol. Retained (m^3)
Initial Abstraction	8.6
Water Re-Use	20.0
Total	28.6

As indicated above it is expected that Phase 2 will meet the City's water balance target through a combination of initial abstraction and water re-use within a 72-hour period. An adequate sump within the stormwater management tank will be provided within the P1 level to retain the total water re-use volume. Please see **Appendix C** for the detailed design sheet and **Appendix F** for the Site Servicing Exhibit **SS-01**.

Parkland Dedication

While the detailed design of the park will be performed by others a later date, it is anticipated that the park will be required to meet the City's 5 mm water balance target, which will likely be achieved through initial abstraction. Additionally, water re-use (irrigation) can also be considered if needed.

4.8 Storm Service Connection

It is proposed that each phase be connected to the existing municipal storm sewer within Dundas Street West with a PVC storm service. New control manholes for each of the phases and the park are to be installed entirely within each site and orifice controls shall be located upstream of the control manholes. Furthermore, as Towers B1 and B2 are to share a stormwater management tank and storm connection, the internal mechanical piping for each point tower shall be separated with sampling ports for each system upstream of the connection point to the stormwater management tank. Please refer to the Site Servicing Exhibit **SS-01** which can be found in **Appendix F**.

The following table illustrates the peak flow and corresponding capacity of each service:

Table 4.9 Storm Service Performance

From	To	Pipe Size (mm)	Pipe Slope	Peak Flow (L/s)	Capacity (L/s)	Percent Of Full Flow
MH1	450mm STM	250	2.0%	41.0	84.1	49%
MH2	600mm STM	250	2.0%	60.9	84.1	72%
MH3	450mm STM	200	2.0%	11.6	46.4	25%

As shown above, each storm service can convey the controlled discharge while operating at 72% (or less) of full flow capacity. Please refer to the detailed design calculations which can be found in **Appendix C**, and the Site Servicing Exhibit **SS-01** which can be found in **Appendix F**.

4.9 Emergency Overflow

It is recommended that rooftop scuppers be installed to ensure emergency overflow from roof areas should rooftop drains become plugged.

- All areas at grade level have been designed with positive drainage (away from the building).
- The stormwater management tanks shall be designed with a catchbasin lid (open grate) to allow storm flows to spill to the adjacent municipal right-of-way in an emergency situation.
- Maximum ponding within the development site shall not exceed City requirements of 0.30 m.

4.10 Erosion and Sediment Control

It is recommended that a sediment control fence per T-219.130-1 be installed along the perimeter of the site as required during demolition activities. All existing and proposed catch basins within close proximity of the subject site shall be protected with a geotextile fabric. A mud mat shall be installed as required to minimize distribution of mud into the public realm.

5 Sanitary Drainage System

5.1 Existing Sanitary Infrastructure

The existing sanitary infrastructure servicing the proposed development site at 2400 - 2440 Dundas Street West consists of circular and egg-shaped sewers ranging from 675x1050 mm to 1200 mm. These sewers carry flows southwards along Dundas St W and eastwards along Bloor St W, ultimately discharging to a combined sewer overflow (CSO) at Bartlett Ave & Bloor St W. The current site, encompassing 1.11 hectares and primarily commercial, generates a pre-development peak sanitary flow of **0.39 L/s**. Detailed calculations are included in the sanitary capacity analysis report in **Appendix D.**

5.2 Post-Development Sanitary Flows

The proposed development site comprised of residential units has a sanitary discharge of 21.53 L/s, which results in an increase of **21.14 L/s** (21.53 L/s-0.39 L/s) under dry weather conditions. All construction is assumed to be conducted following the Ontario Building Code and therefore no elevated infiltration rate is expected to occur during extreme wet weather scenarios.

5.3 Combined Sewer Analysis & MECP F-5-5 Compliance

To ensure compliance with the City of Toronto's Sewer Assessment Guidelines (July 2021), two main criteria were assessed:

1. Design Function (Criterion 1):

- **Requirement:** Under proposed design flow conditions and contributing peak stormwater flows (2-year design storm event), there should be no surcharge in the sewer systems.
- **Outcome:** A custom *InfoWorks ICM* was used to simulate pre and post development scenarios under the 2-year design storm event. The model confirmed that all downstream sewers operate under free flow conditions in all scenarios, with the exception of pipe nine (P.9). Pipe nine (600mm) has an extreme slope (16.2%) and has its downstream connection point lower than the mid-point of pipe ten. Due to the size of pipe ten (1200mm), the downstream end of pipe nine is constantly surcharged (4.46m of available freeboard) regardless of the upstream flow, while the upstream end of pipe nine is not experiencing any surcharging. Therefore, the surcharged conditions seen at pipe nine are considered acceptable and are not likely to pose a risk to basement flooding in the area.

2. WWF Mitigation (Criterion 3):

- **Requirement:** Mitigation measures should offset two times the proposed increase from on-site discharges during a 2-year design storm event, ensuring no increase in peak overflow rate at the CSO point.
- **Mitigation Measure/Outcome:** Three (3) catchbasins on Campbell Ave currently connected to the combined system will be redirected to the storm system on Rankin Cres. This will remove 94.81 L/s (under a 2-year storm event) of storm runoff from the combined system. Since the proposed disconnection flow exceeds the proposed site increase by more than double, the site complies with MECP F-5-5 and the City of Toronto Sanitary Capacity

Guidelines (July 2021). Additionally, despite the redirected storm runoff, the development site contributes less flow to the storm sewers compared to the existing conditions due to on-site storm control measures.

The downstream capacity analysis confirms that the proposed development at 2400 - 2440 Dundas Street West meets both design function and WWF mitigation criteria set by the City of Toronto Sewer Assessment Guidelines.

For a comprehensive review of the downstream capacity assessment, including detailed calculations, modeling methodology, and assumptions, please refer to the supporting document in **Appendix D**.

5.4 Sanitary Service Connections

It is proposed that (1) new sanitary service be installed for Phase 1/Block A, (3) new sanitary services be installed for Phase 2/Block B, and (1) new sanitary service be installed for the park. Each service connection will be installed at a 2.0% slope and will be connected to the existing combined sewer within Dundas Street West. A new control manhole will be provided at the property line, entirely within the site for each new service.

Using a design flow of 450 L/cd for the service connections, the following table illustrates the peak flow and corresponding capacity of each service:

Table 5.1 Sanitary Service Performance

Building	From	To	Pipe Size (mm)	Pipe Slope	Peak Flow (L/s)	Capacity (L/s)	Percent Of Full Flow
Tower A1	MH1A	COMB.	200	2.0%	16.4	48.4	34%
Tower B1	MH2A	COMB.	200	2.0%	17.4	48.4	36%
Tower B2	MH3A	COMB.	200	2.0%	9.6	48.4	20%
Podium	MH4A	COMB.	200	2.0%	2.5	48.4	5%
Park	MH5A	COMB.	150	2.0%	0.1	22.5	0%

As shown above, the sanitary services have ample capacity to convey their respective post-development peak sanitary flow while operating at 36% (or less) of full flow capacity. Please see the detailed design sheet which can be found in **Appendix D**, and the Site Servicing Exhibit **SS-01** which can be found in **Appendix F**.

6 Water Supply System

6.1 Existing Water Infrastructure

Per the City's record information, local water infrastructure consists of a 300 mm watermain within Dundas Street West. In order to evaluate the municipal water supply network's ability to support the subject site, a hydrant flow test was conducted in accordance with NFPA 291 on June 8, 2023 and is summarized as follows:

Table 6-1 Hydrant Response Curve

Dundas Street West (300 mm)			
Flow (Gpm)	Flow (L/S)	Pressure (Psi)	Pressure (Kpa)
0	0	53	365
888	56.0	50	345
1300	82.0	48	331
Projecting to 20 psi			
3,602	227.2	20	138

As shown above, static pressure within the system is expected to be approximately 53 psi, and it is estimated that a flow of 227 L/s is available at 20 psi. A copy of the hydrant flow test can be found in **Appendix E** for reference.

6.2 Domestic Water Supply Demands

Using the criteria set in **Section 2.4** and the site statistics provided by the architect, the Average Day Demand (ADD), Peak Hour Demand (PHD), and Max Day Demand (MDD) have been calculated, and are summarized as follows:

Table 6-2 Domestic Water Demands

Building	Population	ADD (L/S)	PHD (L/S)	MDD (L/S)
Tower A	801	1.69	4.22	2.19
Tower B1	861	1.89	4.74	2.46
Tower B2	456	1.00	2.50	1.30
Podium	106	0.23	0.28	0.26
Parkland	1	0.00	0.00	0.00
Total	2,225	4.8	11.7	6.2

The domestic supply line for each building will be designed based on PHD while maintaining a minimum available pressure of 40 psi (275 kPa) at the face of the building. Please see **Appendix E** for the detailed calculations.

6.3 Fire Supply Demands

The recommended fire flow demand for the subject site has been calculated using the design criteria outlined in the Water Supply for Public Fire Protection Manual, 1999 by the Fire Underwriters Survey (FUS).

Phase 1/Block A

As the buildings will be constructed using fire resistive materials, the effective floor area is taken as the largest floor area plus 25 % of the two adjacent floors.

- Effective Floor Area = Largest Floor Area + 25% (two adjoining floors)
- Effective Floor Area = 2,607 m^2 + 25% (1,103 m^2 + 2,980 m2)
- Effective Floor Area = 3,628 m^2

The following FUS factors will be applied to the water demand calculations:

Table 6-3 Fire Underwriters Survey Factors

Construction Coefficient	Building Occupancy	Sprinkler Adjustment	Proximity Factor
0.6 (Resistive)	- 15 % (Limited)	- 50 %	+ 45 %

Using the effective floor area for each building and the appropriate FUS factors, the required fire flow for the building is calculated as follows:

Table 6-4 Fire Demand Calculations – Building A

FIRE FLOW (F) CALCULATION	APPLYING FUS FACTORS	ADJUSTED FIRE FLOW	TOTAL DEMAND (TD)
F = 220 · 0.6 √Area	F_1=F·0.85 = 6,800 L/min	Fire Flow = F_1 - F_2 + F_3	Td= FF + MDD
F = 220 · 0.6 √3,628 m^2	F_2=F_1·0.50 = 3,400 L/min	FF= 6,000 L/Min (Rnd'd)	TD= 100.0 L/s + 6.2 L/s
F = 8,000 L/Min (Rnd'd)	F_3=F_1·0.45 = 3,060 L/min	FF = 100.0 L/s	TD= 106.2 L/s

Table 6-5 Fire Demands Calculations – Building B

FIRE FLOW (F) CALCULATION	APPLYING FUS FACTORS	ADJUSTED FIRE FLOW	TOTAL DEMAND (TD)
F = 220 · 0.6 √Area	F_1=F·0.85 = 6,800 L/min	Fire Flow = F_1 - F_2 + F_3	Td= FF + MDD
F = 220 · 0.6 √4,080 m^2	F_2=F_1·0.50 = 3,400 L/min	FF= 6,000 L/Min (Rnd'd)	TD= 100.0 L/s + 6.2 L/s
F = 8,000 L/Min (Rnd'd)	F_3=F_1·0.45 = 3,060 L/min	FF = 100.0 L/s	TD= 106.2 L/s

The fire supply line for the building will be designed based on Total Demand (Fire Flow + MDD) while maintaining a minimum available pressure of 20 psi (140 kPa) at the face of the building. Please see **Appendix E** for the detailed calculations.

Phase 2/Block B

As the building will be constructed using fire resistive materials, the effective floor area is taken as the largest floor area plus 25 % of the two adjacent floors.

- Effective Floor Area = Largest Floor Area + 25% (two adjoining floors)
- Effective Floor Area = 3,035 m^2 + 25% (1,341 m^2 + 2,837 m2)
- Effective Floor Area = 4,080 m^2

The following FUS factors will be applied to the water demand calculations:

Table 6-6 Fire Underwriters Survey Factors

Construction Coefficient	Building Occupancy	Sprinkler Adjustment	Proximity Factor
0.6 (Resistive)	- 15 % (Limited)	- 50 %	+ 45 %

Using the effective floor area for each building and the appropriate FUS factors, the required fire flow for each building is calculated as follows:

Table 6-7 Fire Demands Calculations – Building B

FIRE FLOW (F) CALCULATION	APPLYING FUS FACTORS	ADJUSTED FIRE FLOW	TOTAL DEMAND (TD)
$F = 220 \cdot 0.6 \sqrt{Area}$	$F_1=F \cdot 0.85$ = 6,800 L/min	Fire Flow = $F_1 - F_2 + F_3$	Td= FF + MDD
F = 220 · 0.6 √4,080 m^2	$F_2=F_1 \cdot 0.50$ = 3,400 L/min	FF= 6,000 L/Min (Rnd'd)	TD= 100.0 L/s + 6.2 L/s
F = 8,000 L/Min (Rnd'd)	$F_3=F_1 \cdot 0.45$ = 3,060 L/min	FF = 100.0 L/s	TD= 106.2 L/s

The fire supply line for the building will be designed based on Total Demand (Fire Flow + MDD) while maintaining a minimum available pressure of 20 psi (140 kPa) at the face of the building. Please see **Appendix E** for the detailed calculations.

6.4 System Pressure Under Normal Operation

As previously mentioned, the domestic services shall be sized to convey domestic demands under normal system operating conditions (PHD) while maintaining a minimum available pressure of 40 psi (275 kPa). The residual pressure at the building is calculated by first interpolating the PHD residual pressure within the existing watermain, and then subtracting head losses within the system using the Hazen-Williams formula. The following table summarizes the residual pressure for each proposed domestic service:

Table 6-8 Residual Pressure Under PHD Conditions

Building	PHD (L/s)	Domestic Service (mm)	Residual Pressure @ Main		Residual Pressure @ Bldg.	
			(psi)	(kPa)	(psi)	(kPa)
Tower A1	4.2	150	53	364	51	350
Tower B1	4.7	150	53	364	51	350
Tower B2	2.5	150	53	364	51	350
Podium	0.3	150	53	364	51	350
Parkland	0.0	50	53	364	51	350

As shown above, there is no appreciable head loss within the system, and the residual pressure at the building face is above the minimum acceptable pressure of 40 psi (275 kPa) under PHD conditions. Please see **Appendix E** for the detailed design calculations.

6.5 System Pressure Under Fire Flow

The fire services shall be sized to convey the total fire demand (Fire + MDD) while maintaining a minimum available pressure of 20 psi (140 kPa). The residual pressure at the building is calculated by first interpolating the residual pressure within the existing watermain, and then subtracting head losses within the system using the Hazen-Williams formula.

The following table summarizes the residual pressure for each proposed fire service:

Table 6.9 Residual Pressure Under Fire + MDD Conditions

Building	FF+MDD (L/s)	Fire Service (mm)	Residual Pressure @ Main		Residual Pressure @ Bldg.	
			(psi)	(kPa)	(psi)	(kPa)
Tower A	106.2	200	45	310	43	298
Tower B1, Tower B2, Podium	106.2	200	45	310	43	298

As shown above, the residual pressure at the building face for each fire service is above the minimum acceptable pressure of 20 psi (140 kPa) under fire demand conditions (Fire + MDD). Furthermore, as the Fire + MDD flow of 106.2 L/s is less than the available flow at 20 psi (227 L/s), it can be concluded that there is adequate pressure within the municipal water system without any upgrades to the system. Please see **Appendix E** for the detailed design calculations.

6.6 Water Service Connection

To service Tower A, a new 200 mm fire line shall be connected to the existing 300 mm watermain within Dundas Street West with a tapping sleeve and valve. A separate 150 mm domestic service will tee off from the fire line within the municipal right of way. As Tower A is over 84 m in height, a secondary fire line shall be connected to the 300 mm watermain within Dundas Street West with a tapping sleeve and valve. An isolation valve shall be provided between the two fire service connections.

To service Towers B1, B2, and the shared podium, two new 200 mm fire lines shall be connected to the existing 300 mm watermain within Dundas Street West with a tapping sleeve and valve. An existing watermain valve shall serve to isolate the two fire service connections. Three 150 mm domestic services will be provided for Towers B1, B2, and the shared podium. Two of the domestic services will tee off from each fire line within the municipal right of way, while the third will be connected to the 300 mm watermain within Dundas Street West with a tapping sleeve and valve.

A new valve and box shall be installed at the property line for each incoming service, and all required water meters, backflow preventers, and double check valves shall be located inside mechanical rooms within the P1 level.

The National Fire Protection Association (NFPA) considers any building over 23 m in height to be classified as a high-rise building and thus requires a remotely located secondary siamese connection for each zone. Accordingly, a second siamese connection has been provided.

To service the park, a new 50 mm copper water service shall be connected to the 300 mm watermain within Dundas Street West with a tapping sleeve and valve. A new curb stop shall be installed at the property line for the incoming service, and the required water meter chamber shall be located just inside the property line.

6.7 Hydrant Coverage

Existing municipal hydrants are located on Dundas Street West and provide the required 45 m of coverage for all proposed siamese connections to satisfy OBC requirements. An existing private hydrant which will be disturbed during building construction shall be replaced in the same location to provide additional coverage. Please see **Drawing SS-01** for the location of all existing and proposed water infrastructure.

7 Conclusions and Recommendations

Foundation Drainage

Short-term groundwater shall be discharged to the combined sewer within Dundas Street West. As the post-development sanitary design flow exceeds the anticipated short-term pumping rate, the long-term rate was used to assess downstream sewer capacity. The applicant is seeking an exemption to the Foundation Drainage Policy and as such, long-term groundwater shall be discharged to the combined sewer within Dundas Street West.

Storm Sewer and Stormwater Management

The objectives of the City's WWFMG's can be met by implementing on-site measures. Storm flows shall be attenuated on-site and released to the municipal storm sewer at an appropriate discharge rate thus meeting the City's target for quantity control. As a Stormfilter system is proposed, the site will meet the City's target for quality control. Through initial abstraction and irrigation, the site will meet the City's target for water balance, details for which shall be provided at the SPA stage.

Sanitary Sewers

The results of the downstream sanitary sewer capacity analysis indicate that the receiving sewers downstream of the development site meet Criterion 1 ("Design Function") and Criterion 3 ("WWF Mitigation") of the Sewer Assessment Guidelines (July 2021). Criterion 1 is met as all existing combined sewers operate under free flow conditions with the exception of pipe nine (P.9) due to its extreme slope and downstream connection point. The surcharged conditions seen at pipe nine are considered acceptable and should not pose a risk to basement flooding in the area.

Criterion 2 is met by a proposed disconnection of three catchbasins on Campbell Ave from the combined system, which will be redirected to the storm system on Rankin Cres. The catchbasins generate a peak runoff of 94.81 L/s under a two-year storm event. Since the proposed disconnection flow exceeds the proposed site increase by more than double, the site complies with MECP F-5-5 and the City of Toronto Sanitary Capacity Guidelines (July 2021). Additionally, despite the redirected storm runoff, the development site contributes less flow to the storm sewers compared to the existing conditions due to on-site storm control measures.

Water Supply

The existing water supply network has sufficient capacity to support the proposed fire and domestic water demands for the proposed development without improvements to the system.

In summary, it can be concluded that the Zoning By-Law Amendment can be supported from a municipal site servicing and stormwater management perspective.

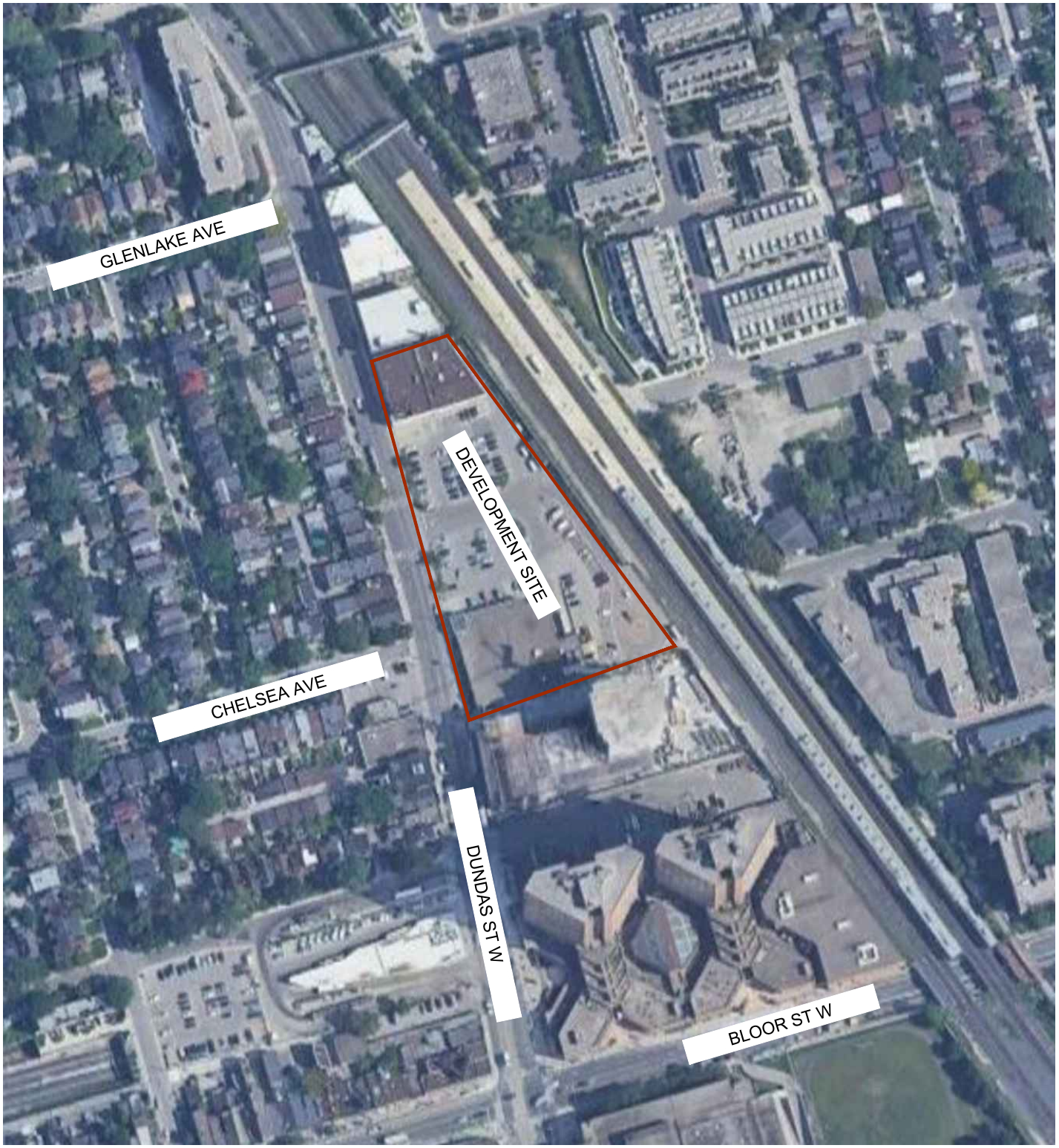
Appendix A
Background Information

Aerial Exhibit

Topographic Survey (KRCMAR)

Site Plan and Statistics (GPA Architects)

Dye Testing (Aquaflow Technologies)



CLIENT DUNDAS LI PROPERTIES INC 1840 EGLINTON AVE WEST, SUITE 202, TORONTO, ON, M6E 5B2	PROJECT NAME 2400 DUNDAS STREET WEST		ARCADIS		
	SCALE: NTS	DATE: 2022-11-16	FIGURE NAME AERIAL PLAN	FIGURE NO. FIG.1	REVISION 1
	PROJECT ENG: JMJ	DRAWN BY: CG			
	CHECKED BY: JMJ	APPROVED BY: JMJ			
	PROJECT NO: 141003				

PLAN OF SURVEY
SHOWING TOPOGRAPHICAL INFORMATION OF
LOTS 6 TO 14 (INCLUSIVE), AND LOTS 16 TO 22 (INCLUSIVE)
AND
PART OF LOT 15
AND
PART OF SOHO STREET
(KNOWN AS CHELSEA AVENUE)
(CLOSED BY BY-LAW No. 8302, INST. WH7880)
REGISTERED PLAN 776
CITY OF TORONTO

SCALE 1: 200

5 0 5 10 15 20m

KRCMAR SURVEYORS LTD. 2022

METRIC: DISTANCES AND COORDINATES SHOWN HEREON ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

BEARING

BEARINGS SHOWN HEREON ARE GRID DERIVED FROM GPS OBSERVATIONS OF OBSERVED REFERENCE POINTS 'A' AND 'B', USING THE LEICA SMARTNET RTK NETWORK AND ARE REFERRED TO THE 3° MTM COORDINATE SYSTEM, ZONE 10, CENTRAL MERIDIAN 79°30' WEST LONGITUDE. (3° MODIFIED TRANSVERSE MERCATOR PROJECTION, NAD 83 (CSRS)(2010)).

DISTANCES SHOWN HEREON ARE GROUND DISTANCES AND CAN BE CONVERTED TO GRID DISTANCES BY MULTIPLYING BY A COMBINED SCALE FACTOR OF 0.99989.

INTEGRATION DATA

3° MTM ZONE 10 COORDINATES
NAD 83 (CSRS)(2010)(CENTRAL MERIDIAN 79°30' WEST LONGITUDE)
THE MTM COORDINATES LISTED BELOW ARE TO URBAN ACCURACY AND COMPLY WITH SUBSECTION 14(2) OF ONTARIO REGULATION 216/10 FILED UNDER THE SURVEYORS ACT.

OBSERVED REFERENCE POINTS

MONUMENT ID.	NORTHING	EASTING
(A) CP(OU)	4 835 340.156	308 591.607
(B) CC(OU)	4 835 563.407	308 543.033

REFERENCE POINTS

POINT	NORTHING	EASTING
1	4 835 327.71	308 612.77
2	4 835 382.12	308 601.99
3	4 835 484.00	308 570.39
4	4 835 496.27	308 609.30
5	4 835 391.48	308 683.40
6	4 835 347.80	308 682.65

COORDINATE VALUES SHOWN ARE FOR GEOGRAPHIC INFORMATION SYSTEM INTEGRATION ONLY. COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

ELEVATION

ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE RELATED TO CITY OF TORONTO BENCH MARK No. CT218, HAVING AN ELEVATION OF 114.759 METRES.

NOTE

ELEVATIONS SHOWN THUS x123.45 DERIVED FROM PLAN SHOWING PARTIAL TOPOGRAPHY BY KRCMAR SURVEYORS LTD., O.L.S., DATED AUGUST 20, 2022, UPDATED SEPTEMBER 3, 2022 (DRAWING No. 11-D19TD1).

EASEMENT

(C) SUBJECT TO EASEMENT IN GROSS AS IN INST. AT4994084
(E) SUBJECT TO EASEMENT AS IN INST. AT5373161
(G) SUBJECT TO EASEMENT AS IN INST. AT5717695
(W) SUBJECT TO EASEMENT AS IN INST. AT3576186

LEGEND

■	DENOTES SURVEY MONUMENT FOUND
□	DENOTES SURVEY MONUMENT PLANTED
SIB	DENOTES STANDARD IRON BAR
SSIB	DENOTES SHORT STANDARD IRON BAR
IB	DENOTES IRON BAR
CP	DENOTES CONCRETE PIN
CC	DENOTES CUT CROSS
(M)	DENOTES MEASURED
(S)	DENOTES SET
(WIT)	DENOTES WITNESS
(N1)	DENOTES FIELD NOTES BY CITY OF TORONTO SURVEYS (SURVEY TO CHECK ENCROACHMENTS OF No. 2454 DUNDAS STREET WEST) DATED JULY 8, 1941
(P2)	DENOTES PLAN OF SURVEY BY J.D. BARNES LIMITED, O.L.S., DATED JANUARY 3, 1986
(P4)	DENOTES PLAN 64R-15496
(P7)	DENOTES PLAN OF SURVEY BY GUIDO PAPA SURVEYING LTD., O.L.S., DATED AUGUST 30, 2001
(P10)	DENOTES PLAN 66R-30390
(P11)	DENOTES EXPROPRIATION PLAN AT3576186
(P12)	DENOTES SURVEYOR'S REAL PROPERTY REPORT BY KRCMAR SURVEYORS LTD., O.L.S., DATED JULY 5, 2021
(P13)	DENOTES PLAN 66R-27192
(P14)	DENOTES PLAN 66R-31362
(P15)	DENOTES PLAN BY SPEIGHT, VAN NOSTRAND, WARD & ANDERSON, O.L.S. DATED MARCH 17, 1939
(P17)	DENOTES PLAN OF SURVEY BY E.W. PETZOLD LIMITED, O.L.S., DATED JULY 4, 1984 (PLAN L-11D-104)
(P18)	DENOTES PLAN OF SURVEY BY E.W. PETZOLD LIMITED, O.L.S., DATED JULY 4, 1984 (PLAN L-11D-103)
(P19)	DENOTES PLAN OF JOHN C. BEATSON, O.L.S., DATED MARCH 11, 1974
(P20)	DENOTES PLAN OF SURVEY BY JAMES, S.M. HWANG, O.L.S., DATED JULY 26, 1982
(P21)	DENOTES REGISTERED PLAN 776
(978)	DENOTES JOHN C. BEATSON, O.L.S.
(JDB)	DENOTES J.D. BARNES LIMITED, O.L.S.
(HJV)	DENOTES HOLDING JONES VANDERVEEN INC., O.L.S.
(OU)	DENOTES ORIGIN UNKNOWN
(BR)	DENOTES TIES TO BRICK
(CBK)	DENOTES TIES TO CONCRETE BLOCK
(CF)	DENOTES TIES TO CONCRETE FOUNDATION
(CONC)	DENOTES TIES TO CONCRETE
(ST)	DENOTES TIES TO STONE
(STU)	DENOTES TIES TO STUCCO
CLF	DENOTES CHAIN LINK FENCE
COL	DENOTES COLUMN
CONC	DENOTES CONCRETE
CW	DENOTES CONCRETE WALL
DSE	DENOTES DOOR SILL ELEVATION
GRL	DENOTES GUARD RAIL
HP	DENOTES HORIZONTAL PLANE
LL	DENOTES LOWER LIMITATION IN METRES
NUL	DENOTES NO UPPER LIMITATIONS
UL	DENOTES UPPER LIMITATION IN METRES
NLL	DENOTES NO LOWER LIMITATIONS
(Bc)	DENOTES BOTTOM OF CURB
(Tc)	DENOTES TOP OF CURB
(Tw)	DENOTES TOP OF WALL
	DENOTES FENCE
	DENOTES GUARD RAIL
x123.45	DENOTES EXISTING GRADE ELEVATION
BH	DENOTES BOREHOLE
BMH	DENOTES BELL MANHOLE
BBOX	DENOTES BELL BOX
BK	DENOTES BIKE PARKING
BOL	DENOTES BOLLARD
CB	DENOTES CATCH BASIN
0.1ø	DENOTES CONIFEROUS TREE WITH TRUNK DIAMETER
0.1ø	DENOTES DECIDUOUS TREE WITH TRUNK DIAMETER
	DENOTES DOWN GUY ANCHOR
FH	DENOTES FIRE HYDRANT
GM	DENOTES GAS METER
GV	DENOTES GAS VALVE
HW	DENOTES HYDRO HAND WELL
HMH	DENOTES HYDRO MANHOLE
HP/LS	DENOTES HYDRO POLE WITH LAMP STANDARD
HP/LS/TL	DENOTES HYDRO POLE WITH LAMP STANDARD AND TRAFFIC LIGHT
LS	DENOTES LAMP STANDARD
MH	DENOTES MANHOLE
POST	DENOTES POST
SIAMESE	DENOTES SIAMESE CONNECTION
SN	DENOTES SIGN
TEL	DENOTES TELEPHONE BOOTH
UBOX	DENOTES UTILITY BOX
TL	DENOTES TRAFFIC LIGHT
WV	DENOTES WATER VALVE

SURVEY REPORT

1. THE RE-ESTABLISHMENT OF THE SUBJECT PROPERTY BOUNDARIES IS BASED ON INFORMATION CONTAINED IN THE RELEVANT TITLE DOCUMENTS, REGISTERED PLANS AND ON THE EVIDENCE OF PRIOR SURVEYS FOUND DURING THE COURSE OF PREPARING THE SUBJECT SURVEY.
2. THE TYPE AND LOCATION OF THE EXISTING BUILDINGS AND OTHER IMPROVEMENTS, FENCES ETC., ON OR NEAR THE SUBJECT PROPERTY ARE AS SHOWN ON THE SURVEY PLAN.
3. COMPLIANCE WITH MUNICIPAL ZONING REQUIREMENTS IS NOT CERTIFIED BY THIS REPORT.
4. SUBJECT LAND COMPRISES ALL OF PIN 21328-0519(LT).
5. SUBJECT TO EASEMENT OVER PART 2, EXPROPRIATION PLAN AT3576186 AS IN INST. AT3476186.

TOTAL SITE AREA = 1.0374 ha

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 11th DAY OF MAY, 2022

DATE MAY 12, 2022

S.N. RAMSAMOOJ
ONTARIO LAND SURVEYOR

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V-26173

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR in accordance with Regulation 1026, Section 29(3).

MUNICIPAL ADDRESS: No. 2400 DUNDAS STREET WEST, TORONTO

FIELD:	D.L./L.D.	DRAWN:	C.L.	CHECKED:	S.N.R.	JOB NO:	11-019
DWG NAME:	11-019BT02	PLOT INFO:	09:31 12/May/2022			WORK ORDER NO:	36266

1137 Centre Street Thornhill ON L4J 3M6 905.738.0053 F 905.738.9221 www.krcmar.ca

PLAN AVAILABLE AT www.ProtectYourBoundaries.ca

KRCMAR

2400 DUNDAS STREET WEST Date: 2024-05-10
PROJECT STATISTICS [BY-LAW 569-2013]

	FLR LVL	GROSS CONST AREA		GFA DEDUCTIONS		AMNT DEDUCTIONS		TOTAL GFA		RESIDENTIAL GFA		NON-RES GFA		UNIT							TOTAL ROOF AREA		PRIV TERRACE		OUTDR AMNT		APPL ROOF		GREEN ROOF		FLR LVL
		m²	sf	m²	sf	m²	sf	m²	sf	m²	sf	m²	sf	ST	1BD	1BD+D	2BD	3BD	TOTAL		m²	sf	m²	sf	m²	sf	m²	sf	m²	sf	
PODIUM	1	5,817.2	62,615	1,987.4	21,392	-	-	3,829.8	41,223	2,441.6	26,281	1,388.2	14,942	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	1
	MEZZ	1,883.0	20,269	1,688.6	18,176	-	-	194.4	2,093	69.8	752	124.6	1,341	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	MEZZ
	2	5,642.6	60,736	329.9	3,551	425.5	4,580	4,887.2	52,605	124.1	1,336	4,763.1	51,270	-	-	-	-	-	-		425.2	4,577	-	-	-	-	425.2	4,577	194.9	2,098	2
TOWERS A+B1+B2	3	2,443.6	26,302	191.1	2,057	2,034.1	21,895	218.3	2,350	218.3	2,350	-	-	-	-	-	-	-	-		2,835.5	30,522	-	-	2,428.2	26,137	564.8	6,080	-	-	3
	4	2,292.6	24,677	174.7	1,881	-	-	2,117.9	22,797	2,117.9	22,797	-	-	4	16	6	3	3	37		279.9	3,012	-	-	-	-	279.9	3,012	264.5	2,847	4
	5	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	14	8	8	3	39		-	-	-	-	-	-	-	-	-	-	5
	6	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	14	8	8	3	39		-	-	-	-	-	-	-	-	-	-	6
	7	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	14	8	8	3	39		-	-	-	-	-	-	-	-	-	-	7
	8	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	14	8	8	3	39		-	-	-	-	-	-	-	-	-	-	8
	9	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	14	8	8	3	39		-	-	-	-	-	-	-	-	-	-	9
	10	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	14	8	8	3	39		-	-	-	-	-	-	-	-	-	-	10
	11	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	14	8	8	3	39		-	-	-	-	-	-	-	-	-	-	11
	12	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	14	8	8	3	39		-	-	-	-	-	-	-	-	-	-	12
	13	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	14	8	8	3	39		-	-	-	-	-	-	-	-	-	-	13
	14	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	14	8	8	3	39		-	-	-	-	-	-	-	-	-	-	14
	15	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	14	8	8	3	39		-	-	-	-	-	-	-	-	-	-	15
	16	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	14	8	8	3	39		-	-	-	-	-	-	-	-	-	-	16
	17	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	14	8	8	3	39		-	-	-	-	-	-	-	-	-	-	17
	18	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	14	8	8	3	39		-	-	-	-	-	-	-	-	-	-	18
	19	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	14	8	8	3	39		-	-	-	-	-	-	-	-	-	-	19
	20	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	14	8	8	3	39		-	-	-	-	-	-	-	-	-	-	20
	21	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	14	8	8	3	39		-	-	-	-	-	-	-	-	-	-	21
	22	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	13	7	8	4	38		-	-	-	-	-	-	-	-	-	-	22
	23	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	13	7	8	4	38		-	-	-	-	-	-	-	-	-	-	23
	24	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	11	7	8	5	37		-	-	-	-	-	-	-	-	-	-	24
	25	2,350.0	25,295	174.7	1,881	-	-	2,175.3	23,415	2,175.3	23,415	-	-	6	11	7	8	5	37		73.1	787	73.1	787	-	-	-	-	-	-	25
	26	1,600.0	17,222	120.4	1,296	-	-	1,479.6	15,926	1,479.6	15,926	-	-	5	8	5	8	3	26		-	-	-	-	-	-	-	-	-	-	26
	27	1,600.0	17,222	120.4	1,296	-	-	1,479.6	15,926	1,479.6	15,926	-	-	5	8	5	5	3	26		-	-	-	-	-	-	-	-	-	-	27
	28	1,542.6	16,604	120.4	1,296	-	-	1,422.2	15,308	1,422.2	15,308	-	-	3	12	3	5	2	25		-	-	-	-	-	-	-	-	-	-	28
	29	1,542.6	16,604	120.4	1,296	-	-	1,422.2	15,308	1,422.2	15,308	-	-	3	12	3	5	2	25		-	-	-	-	-	-	-	-	-	-	29
	30	1,600.0	17,222	120.4	1,296	-	-	1,479.6	15,926	1,479.6	15,926	-	-	5	8	5	5	3	26		-	-	-	-	-	-	-	-	-	-	30
	31	1,600.0	17,222	120.4	1,296	-	-	1,479.6	15,926	1,479.6	15,926	-	-	5	8	5	5	3	26		-	-	-	-	-	-	-	-	-	-	31
	32	1,600.0	17,222	120.4	1,296	-	-	1,479.6	15,926	1,479.6	15,926	-	-	4	7	5	5	4	25		-	-	-	-	-	-	-	-	-	-	32
	33	1,600.0	17,222	120.4	1,296	-	-	1,479.6	15,926	1,479.6	15,926	-	-	4	7	5	5	4	25		78.1	840	78.1	840	-	-	-	-	-	-	33
	34	1,600.0	17,222	120.4	1,296	-	-	1,479.6	15,926	1,479.6	15,926	-	-	4	7	5	5	4	25		-	-	-	-	-	-	-	-	-	-	34
	35	1,600.0	17,222	120.4	1,296	-	-	1,479.6	15,926	1,479.6	15,926	-	-	4	7	5	5	4	25		-	-	-	-	-	-	-	-	-	-	35
	36	1,600.0	17,222	120.4	1,296	-	-	1,479.6	15,926	1,479.6	15,926	-	-	4	7	5	5	4	25		-	-	-	-	-	-	-	-	-	-	36
	37	1,600.0	17,222	120.4	1,296	-	-	1,479.6	15,926	1,479.6	15,926	-	-	4	7	5	5	4	25		-	-	-	-	-	-	-	-	-	-	37
	38	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	1	4	2	5	2	12		-	-	-	-	-	-	-	-	-	-	38
	39	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	1	4	2	3	2	12		-	-	-	-	-	-	-	-	-	-	39
	40	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	1	4	2	3	2	12		-	-	-	-	-	-	-	-	-	-	40
	41	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	1	4	2	3	2	12		-	-	-	-	-	-	-	-	-	-	41
	42	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	1	4	2	3	2	12		-	-	-	-	-	-	-	-	-	-	42
												-	-								-	-	-	-	-	-	-	-	-	-	
	MECH	2,350.0	25,295	2,350.0	25,293	-	-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	MECH
	ROOF											-									2,396.9	25,800	750.0	8,073	-	-	1,646.9	17,727	1,290.7	13,893	ROOF
	ABV GR	92,864.1	999,581	12,135.9	130,629	2,459.6	26,475	78,268.7	842,477	71,992.8	774,924	6,275.9	67,553	185	420	236	251	122	1,214		6,088.6	65,538	901.1	9,700	2,428.2	26,137	2,916.8	31,396	1,750.1	18,838	
	U/G	9,390.3	101,076	9,390.3	101,076	-	-	-	-	-	-	-	-								-		-				-		-		U/G
	BLW GR	9,390.3	101,076	9,390.3	101,076	-	-	-	-	-	-	-	-								-		-				-		-		
	SUBTOTAL	102,254.4	1,100,657	21,526.2	231,706	2,459.6	26,475	78,268.7	842,477	71,992.8	774,924	6,275.9	67,553	185	420	236	251	122	1,214		6,088.6	65,538	901.1	9,700	2,428.2	26,137	2,916.8	31,396	1,750.1	18,838	
														15.2%	34.6%	19.4%	20.7%	10.0%													

TOTAL		
	78,268.7	842,477

TOTAL	
	1,214

- GFA deductions include parking, loading and bicycle parking, storage rooms, washrooms, electrical, utility, mechanical and ventilation rooms below grade, shower and change facilities as required for bicycle parking, amenity space, elevator shafts, garbage shafts, mechanical penthouse, and exit stairwells as per the City of Toronto by-law 569-2013.

DENSITY		
GFA	78,268.7	m²
TOTAL SITE	11,143.0	m²
2400 Dundas Street West	11,143.0	m²
FSI	7.0	

*SASP requires a min. 8% of total GFA to be employment GFA, within which a min. 51% shall include Core Employment Area (CEA) uses (e.g. office, artist studio, lab, r&d facilities, light manufacturing, media, information and technology facilities, cultural industry spaces, incubator and/or co-work space). Min. 1,850 SM of the employment GFA must be used to replace existing grocery store.

CAR PARKING		
Resident Required	-	
Residential Visitor Required	-	
Non-Residential Required	-	
TOTAL REQUIRED	10	
Residential Provided	105	
Non-Residential Provided	74	
TOTAL PROVIDED	179	
TOTAL E.V.S.E. PROVIDED	179	Percentage
Residential Provided	105	100%
Non-Residential Provided	74	100%

BICYCLE STORAGE (TGS Tier 1)	
Residential Long Term Required	1,094
Residential Short Term Required	244
Non-Res Long Term Required	14
Non-Res Short Term Required	26
TOTAL REQUIRED	1,378
Residential Long Term Provided	1,094
Residential Short Term Provided	244
Non Res. Long Term Provided	6
Non Res. Short Term Provided	26
TOTAL PROVIDED	1,370

GARBAGE & RECYCLING			m²
Garbage Room Required			
First 50 Units	25m³		50.0
Remaining Units	13m³ / additional 50 Units		####
Bulk Storage Required	10m³		20.0
TOTAL REQUIRED			####
Garbage Room Provided			####
Bulk Storage Provided			20.0
TOTAL PROVIDED			####

STAGING AREA		m²
Staging Area Req.	5m²/additional 50 Units	####
Staging Area Prov.		####

GREEN ROOF	m²
Gross floor area (as defined by Green roof bylaw)	89,981.1
Total Roof Area	6,088.6
Exempt Roof Area:	
Private Terrace	901.1
Outdoor Amenity	2,428.2
Total Exempt Roof Area	3,329.3
Applicable Roof Area	2,916.8
GREEN ROOF REQ. (60%)	1,750.1
GREEN ROOF PROVIDED	1,750.1

AMENITY AREA	m²	Ratio
Indoor Amenity Required	2,428.0	2.0m² / U
Outdoor Amenity Required	2,428.0	2.0m² / U
TOTAL REQUIRED	4,856.0	4.0m² / U
Indoor Amenity Provided	2,459.6	2.0
Outdoor Amenity Provided	2,428.2	2.0
TOTAL PROVIDED	4,887.8	4.0

BUILDING USE [BY-LAW 569-2013]			Percentage	Required
RES	71,992.8	m²	92%	
NON-RES	6,275.9	m²	8%	
Food store	2,863.0	m²	46%	(of Non-res
Retail	206.5	m²	3%	GFA)
CEA	3,206.4	m²	51%	
TOTAL	78,268.7	m²		

GFA BREAKDOWN (BY BUILDINGS) (M2)				
	BUILDING A		BUILDING B	
	RES.	NON- RES.	RES.	NON-RES.
PODIUM(Level 1-2)	1148.7	3318.7	1486.8	2957.2
TOWER	TOWER A1 Lvl 3 - 37		TOWER B1 Lvl 3 - 42	Tower B2 Lvl 3 -25
	25058.9		28934.0	15364.3
TOTAL	29526.4		48742.3	

Bicycle Storage Provided	Non-res Long term	Non-res Short term	Res. Short Term	Res. Long Term	Subtotal	Net floor area (m²)	Percentage (GCA of each floor)
BUILDING A							
MEZZ	0		0	287	287	374.4	54.3%
L1	8	17	92	126	243	381	12.8%
U/G	0	0	0	0	0		
	8	17	92	413	**530**		
BUILDING B							
MEZZ	0	0	0	562	562	864	72.37%
L1	6	9	152	119	286	504.7	17.79%
U/G	0	0	0	0	0		
	6	9	152	681	**848**		
Total Provided	14	26	244	1,094	**1,378**	0.0	
Electric Bike Provided (15% of long term spaces)					167		

Revision	Date

NOT FOR CONSTRUCTION

3	ISSUED FOR ZBA - DRAFT	24-05-29
2	ISSUED FOR COORDINATION	24-05-10
1	ISSUED FOR ZBA	23-03-10

Revision	Date

giannone petricone associates
Giannone Petricone Associates Inc. Architects
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2400-2440 DUNDAS STREET WEST
TORONTO, ONTARIO, CANADA

SHEET TITLE

OVERALL STATISTICS

DRAWN BY:	GPAIA
CHECKED BY:	GPAIA
PROJECT START DATE:	22-04-06
PROJECT NO.:	21115

SHEET NUMBER

A0.02

PLOT DATE: 2024-05-29 2:48:38 PM

BUILDING A
PROJECT STATISTICS [BY-LAW 569-2013]

	FLR LVL	GROSS CONST AREA		GFA DEDUCTIONS		AMNT DEDUCTIONS		TOTAL GFA		RESIDENTIAL GFA		NON-RES GFA		UNIT						TOTAL ROOF AREA		PRIV TERRACE		OUTDR AMNT		APPL ROOF		GREEN ROOF		FLR LVL
		m²	sf	m²	sf	m²	sf	m²	sf	m²	sf	m²	sf	ST	1BD	1BD+D	2BD	3BD	TOTAL	m²	sf	m²	sf	m²	sf	m²	sf	m²	sf	
PODIUM	1	2,980.0	32,076	1,080.2	11,627	-	-	1,899.8	20,449	1,123.4	12,092	776.4	8,357	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	MEZZ	689.4	7,421	539.5	5,807	-	-	149.9	1,614	25.3	273	124.6	1,341	-						-	-	-	-	-	-	-	-	-	-	MEZZ
	2	2,607.6	28,068	189.9	2,044	-	-	2,417.7	26,024	-	-	2,417.7	26,024	-						425.2	4,577	-	-	-	-	425.2	4,577	194.9	2,098	2
	3	1,102.7	11,869	73.0	786	944.2	10,163	85.4	919	85.4	919	-	-	-						1,480.8	15,939	-	-	916.0	9,860	564.8	6,080	-	-	3
TOWER A	4	742.6	7,993	60.4	650	-	-	682.2	7,343	682.2	7,343	-	-	1	7	1	2	1	12	279.9	3,012	-	-	-	-	279.9	3,012	264.5	2,847	4
	5	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	5
	6	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	6
	7	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	7
	8	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	8
	9	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	9
	10	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	10
	11	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	11
	12	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	12
	13	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	13
	14	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	14
	15	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	15
	16	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	16
	17	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	17
	18	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	18
	19	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	19
	20	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	20
	21	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	21
	22	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	22
	23	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	5	3	2	1	14	-	-	-	-	-	-	-	-	-	-	23
	24	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	3	3	2	2	13	-	-	-	-	-	-	-	-	-	-	24
	25	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	3	3	2	2	13	-	-	-	-	-	-	-	-	-	-	25
	26	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	3	3	2	2	13	-	-	-	-	-	-	-	-	-	-	26
	27	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	3	3	2	2	13	-	-	-	-	-	-	-	-	-	-	27
	28	742.6	7,993	60.4	650	-	-	682.2	7,343	682.2	7,343	-	-	1	7	1	2	1	12	-	-	-	-	-	-	-	-	-	-	28
	29	742.6	7,993	60.4	650	-	-	682.2	7,343	682.2	7,343	-	-	1	7	1	2	1	12	-	-	-	-	-	-	-	-	-	-	29
	30	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	3	3	2	2	13	-	-	-	-	-	-	-	-	-	-	30
	31	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	3	3	2	2	13	-	-	-	-	-	-	-	-	-	-	31
	32	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	3	3	2	2	13	-	-	-	-	-	-	-	-	-	-	32
	33	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	3	3	2	2	13	-	-	-	-	-	-	-	-	-	-	33
	34	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	3	3	2	2	13	-	-	-	-	-	-	-	-	-	-	34
	35	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	3	3	2	2	13	-	-	-	-	-	-	-	-	-	-	35
	36	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	3	3	2	2	13	-	-	-	-	-	-	-	-	-	-	36
	37	800.0	8,611	60.4	650	-	-	739.6	7,961	739.6	7,961	-	-	3	3	3	2	2	13	-	-	-	-	-	-	-	-	-	-	
	MECH	800.0	8,611	800.0	8,611	-	-	-	-	-	-	-	-							-	-	-	-	-	-	-	-	-	-	MECH
	ROOF																			846.9	9,116	-	-	-	-	846.9	9,116	810.7	8,726	ROOF
ABV GR		**35,207.4**	***378,970***	**4,736.9**	***50,987***	**944.2**	***10,163***	**29,526.4**	***317,819***	**26,207.7**	***282,097***	**3,318.7**	***35,722***	**96**	**152**	**96**	**68**	**46**	**458**	**3,032.8**	***32,644***	**-**	**-**	**916.0**	***9,860***	**2,116.8**	***22,785***	**1,270.1**	***13,671***	
	U/G	4,115.8	44,302	4,115.8	44,302	-	-	-	-	-	-	-	-																	U/G
		-	-	-	-	-	-	-	-	-	-	-	-																	
BLW GR		**4,115.8**	***44,302***	**4,115.8**	***44,302***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**																	
SUBTOTAL		**39,323.2**	***423,271***	**8,852.6**	***95,289***	**944.2**	***10,163***	**29,526.4**	***317,819***	**26,207.7**	***282,097***	**3,318.7**	***35,722***	**96**	**152**	**96**	**68**	**46**	**458**	**3,032.8**	***32,644***	**-**	**-**	**916.0**	***9,860***	**2,116.8**	***22,785***	**1,270.1**	***13,671***	
														21.0%	33.2%	21.0%	14.8%	10.0%												

TOTAL	**29,526.4** ***317,819***

- GFA deductions include parking, loading and bicycle parking, storage rooms, washrooms, electrical, utility, mechanical and ventilation rooms below grade, shower and change facilities as required for bicycle parking, amenity space, elevator shafts, garbage shafts, mechanical penthouse, and exit stairwells as per the City of Toronto by-law 569-2013.

TOTAL	**458**

GARBAGE & RECYCLING		m²
Garbage Room Required		
First 50 Units	25m²	25.0
Remaining Units	13m² / additional 50 U	106.1
Bulk Storage Required	10m²	10.0
TOTAL REQUIRED		141.1
Garbage Room Provided		
Bulk Storage Provided		
TOTAL PROVIDED		-

STAGING AREA		m²
Staging Area Req.	5m² / additional 50 Units	45.8
Staging Area Prov.		54.1

Revision Date

NOT FOR CONSTRUCTION

Revision	Date
3 ISSUED FOR ZBA - DRAFT	24-05-29
2 ISSUED FOR COORDINATION	24-05-10
1 ISSUED FOR ZBA	23-03-10

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TORONTO, ONTARIO, CANADA

SHEET TITLE

BUILDING A STATISTICS

DRAWN BY:	GPAIA
CHECKED BY:	GPAIA
PROJECT START DATE:	22-04-06
PROJECT NO.:	21115

SHEET NUMBER

A0.03

PLOT DATE: 2024-05-29 3:33:30 PM

BUILDING B + U/G PARKING LEVEL
PROJECT STATISTICS [BY-LAW 569-2013]

	FLR LVL	GROSS CONST AREA		GFA DEDUCTIONS		AMNT DEDUCTIONS		TOTAL GFA		RESIDENTIAL GFA		NON-RES GFA		UNIT						TOTAL ROOF AREA		PRIV TERRACE		OUTDR AMNT		APPL ROOF		GREEN ROOF		FLR LVL
		m²	sf	m²	sf	m²	sf	m²	sf	m²	sf	m²	sf	ST	1BD	1BD+D	2BD	3BD	TOTAL	m²	sf	m²	sf	m²	sf	m²	sf	m²	sf	
PODIUM	1	2,837.2	30,539	907.2	9,765	-	-	1,930.0	20,774	1,318.2	14,189	611.8	6,585	-	-	-	-	-	-											
	MEZZ	1,193.6	12,848	1,149.1	12,369	-	-	44.5	479	44.5	479	-	-	-	-	-	-	-	-											MEZZ
	2	3,035.0	32,668	140.0	1,507	425.5	4,580	2,469.5	26,581	124.1	1,336	2,345.4	25,246	-	-	-	-	-	-											2
TOWERS B1+B2	3	1,340.9	14,433	118.1	1,271	1,089.9	11,732	132.9	1,431	132.9	1,431	-	-	-	-	-	-	-	-	1,354.7	14,582	-	-	1,512.2	16,277	0	0	-	-	3
	4	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	4
	5	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	5
	6	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	6
	7	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	7
	8	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	8
	9	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	9
	10	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	10
	11	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	11
	12	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	12
	13	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	13
	14	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	14
	15	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	15
	16	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	16
	17	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	17
	18	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	18
	19	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	19
	20	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	20
	21	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	9	5	6	2	25	-	-	-	-	-	-	-	-	-	-	21
	22	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	8	4	6	3	24	-	-	-	-	-	-	-	-	-	-	22
	23	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	8	4	6	3	24	-	-	-	-	-	-	-	-	-	-	23
	24	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	8	4	6	3	24	-	-	-	-	-	-	-	-	-	-	24
	25	1,550.0	16,684	114.3	1,230	-	-	1,435.7	15,454	1,435.7	15,454	-	-	3	8	4	6	3	24	73.1	787	73.1	787	-	-	0	0	-	-	25
	26	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	2	5	2	3	1	13	-	-	-	-	-	-	-	-	-	-	26
	27	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	2	5	2	3	1	13	-	-	-	-	-	-	-	-	-	-	27
	28	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	2	5	2	3	1	13	-	-	-	-	-	-	-	-	-	-	28
	29	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	2	5	2	3	1	13	-	-	-	-	-	-	-	-	-	-	29
	30	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	2	5	2	3	1	13	-	-	-	-	-	-	-	-	-	-	30
	31	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	2	5	2	3	1	13	-	-	-	-	-	-	-	-	-	-	31
	32	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	1	4	2	3	2	12	-	-	-	-	-	-	-	-	-	-	32
	33	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	1	4	2	3	2	12	-	-	-	-	-	-	-	-	-	-	33
	34	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	1	4	2	3	2	12	-	-	-	-	-	-	-	-	-	-	34
	35	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	1	4	2	3	2	12	-	-	-	-	-	-	-	-	-	-	35
	36	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	1	4	2	3	2	12	-	-	-	-	-	-	-	-	-	-	36
	37	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	1	4	2	3	2	12	-	-	-	-	-	-	-	-	-	-	37
	38	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	1	4	2	3	2	12	-	-	-	-	-	-	-	-	-	-	38
	39	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	1	4	2	3	2	12	-	-	-	-	-	-	-	-	-	-	39
	40	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	1	4	2	3	2	12	-	-	-	-	-	-	-	-	-	-	40
	41	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	1	4	2	3	2	12	-	-	-	-	-	-	-	-	-	-	41
	42	800.0	8,611	60.0	646	-	-	740.0	7,965	740.0	7,965	-	-	1	4	2	3	2	12	78.1	840	78.1	840	-	-	-	-	-	-	42
	MECH	750.0	8,073	750.0	8,073	-	-	-	-	-	-	-	-							-	-	-	-	-	-	-	-	-	-	MECH
	ROOF																			1,550.0	16,684	750.0	8,073	-	-	800.0	8,611	480.0	5,167	ROOF
	ABV GR	**56,856.7**	**612,000**	**6,599.0**	**71,031**	**1,515.4**	**16,312**	**48,742.3**	**524,658**	**45,785.1**	**492,827**	**2,957.2**	**31,831**	**89**	**268**	**140**	**183**	**76**	**756**	**3,055.9**	**32,893**	**901.1**	**9,700**	**1,512.2**	**16,277**	**800.0**	**8,611**	**480.0**	**5,167**	
	U/G	10,501.3	113,035	10,501.3	113,035	-	-	-	-	-	-	-	-																	U/G
						-	-	-	-	-	-	-	-																	
	BLW GR	**10,501.3**	**113,035**	**10,501.3**	**113,035**	-	-	-	-	-	-	-	-																	
	SUBTOTAL	**67,358.0**	**725,035**	**17,100.3**	**184,066**	**1,515.4**	**16,312**	**48,742.3**	**524,658**	**45,785.1**	**492,827**	**2,957.2**	**31,831**	**89**	**268**	**140**	**183**	**76**	**756**	**3,055.9**	**32,893**	**901.1**	**9,700**	**1,512.2**	**16,277**	**800.0**	**8,611**	**480.0**	**5,167**	
														11.8%	35.4%	18.5%	24.2%	10.1%												

TOTAL		**48,742.3** **524,658**

- GFA deductions include parking, loading and bicycle parking, storage rooms, washrooms, electrical, utility, mechanical and ventilation rooms below grade, shower and change facilities as required for bicycle parking, amenity space, elevator shafts, garbage shafts, mechanical penthouse, and exit stairwells as per the City of Toronto by-law 569-2013.

TOTAL	**756**

GARBAGE & RECYCLING		
		m²
Garbage Room Required		
First 50 Units	25m²	25.0
Remaining Units	13m² / additional 50 U	106.1
Bulk Storage Required	10m²	10.0
TOTAL REQUIRED		141.1
Garbage Room Provided		
Bulk Storage Provided		
TOTAL PROVIDED		-

STAGING AREA		
		m²
Staging Area Req.	5m² / additional 50 Units	75.6
Staging Area Prov.		75.6

Revision Date

NOT FOR CONSTRUCTION

Revision	Date
3 ISSUED FOR ZBA - DRAFT	24-05-29
2 ISSUED FOR COORDINATION	24-05-10
1 ISSUED FOR ZBA	23-03-10

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TORONTO, ONTARIO, CANADA

SHEET TITLE

BUILDING B STATISTICS

DRAWN BY:	GPAIA
CHECKED BY:	GPAIA
PROJECT START DATE:	22-04-06
PROJECT NO.:	21115
SHEET NUMBER	

A0.04

PLOT DATE: 2024-05-29 3:33:31 PM

1 SITE PLAN
A0.06 1 : 400

Revision	Date

NOT FOR CONSTRUCTION

3	ISSUED FOR ZBA - DRAFT	24-05-29
2	ISSUED FOR COORDINATION	24-05-10
1	ISSUED FOR ZBA	23-03-10

Revision	Date

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TORONTO, ONTARIO, CANADA

SHEET TITLE

BLOCK PLAN

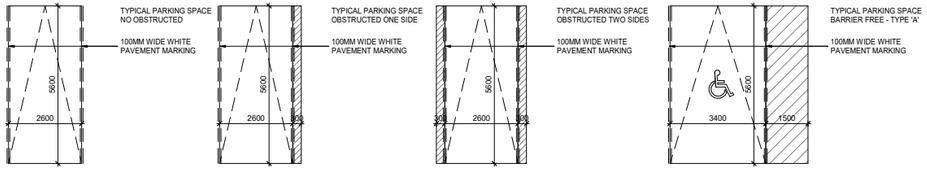
DRAWN BY:	Author
CHECKED BY:	Checker
PROJECT START DATE:	22-04-06
PROJECT NO.:	21115

SHEET NUMBER

A0.06

PLOT DATE: 2024-05-29 2:48:44 PM

PARKING LEGEND



NOTE:
- ALL PARKING SPACES MEET THESE DIMENSIONS UNLESS NOTED AS COMPACT
- PROVIDE 300MM CLEARANCE IF OBSTRUCTED

NOTE:
- ALL PARKING SPACES MARKED WITH BARRIER FREE SYMBOL MEET THE ABOVE DIMENSION
- PROVIDE 300MM CLEARANCE IF OBSTRUCTED

ELECTRIC VEHICLE INFRASTRUCTURE

ROUGHED-IN CONDUIT WILL BE PROVIDED FOR THE REAMING SPACES

C COMMERCIAL PARKING SPACES

CS CAR SHARE

V RESIDENTIAL VISITOR PARKING SPACES

NOTE
1. ALL RESIDENTIAL PARKING SPACES PROVIDED FOR DWELLING UNITS LOCATED IN AN APARTMENT BUILDING, MIXED USE BUILDING, MULTIPLE DWELLING UNIT BUILDING, EXCLUDING VISITOR PARKING SPACES, WILL INCLUDE AN ENERGIZED OUTLET CAPABLE OF PROVIDING LEVEL 2 CHARGING OR HIGHER TO THE PARKING SPACE. THE DISTRIBUTION STRATEGY (I.E. DEDICATED ELECTRICAL OUTLET, ETC.) WILL BE DETERMINED AT SPA STAGE.
2. LEVEL 2 CHARGING MEANS A LEVEL 2 ELECTRIC VEHICLE CHARGING LEVEL AS DEFINED BY SAE INTERNATIONAL'S J1772 STANDARD, AS AMENDED (208V TO 240V SINGLE-PHASE POWER, WITH MAXIMUM CURRENT OF 80A).
3. 25% OF ALL VISITOR RESIDENTIAL SPACES AND NON-RESIDENTIAL PARKING SPACES IN A BUILDING MUST INCLUDE AN ENERGIZED OUTLET CAPABLE OF PROVIDING LEVEL 2 CHARGING OR HIGHER.
4. ENERGIZED OUTLET MEANS A CONNECTED POINT IN AN ELECTRICAL WIRING INSTALLATION AT WHICH CURRENT IS TAKEN TO SUPPLY UTILIZATION EQUIPMENT FOR ELECTRIC VEHICLE CHARGING.

PARKING COUNT= 184 SPACES
RESIDENTIAL PARKING= 105 SPACES
COMMERCIAL PARKING= 79 SPACES

1 / A1.02 PARKING LEVEL 1 PLAN
1 : 250

Revision	Date

NOT FOR CONSTRUCTION

Revision	Date
3 ISSUED FOR ZBA - DRAFT	24-05-29
2 ISSUED FOR COORDINATION	24-05-10
1 ISSUED FOR ZBA	23-03-10

giannone petricone associates
Giannone Petricone Associates Inc. Architects
96 Spadina Avenue, Toronto, Canada M5V 2J6
T 416.591.7788 F 416.591.1293 E mail@gpaia.com

FORA
Fora Developments
200 - 2440 Dundas St. W., Toronto, ON, M6P 1W9
T 416.536.3600 info@foradevelopments.com

2400-2440 DUNDAS STREET WEST
TORONTO, ONTARIO, CANADA

SHEET TITLE

PARKING LEVEL 1 PLAN

DRAWN BY:	GPAIA
CHECKED BY:	GPAIA
PROJECT START DATE:	22-04-06
PROJECT NO.:	21115
SHEET NUMBER	

A1.02

PLOT DATE: 2024-05-29 2:48:51 PM

NOTES:

1. ACCESS DRIVEWAY HAS A MAXIMUM GRADIENT OF 8%, MINIMUM CLEARANCE OF 4.4M, MINIMUM WIDTH OF 4.5M.

2. A TRAINED ON SITE STAFF MEMEBER WILL BE AVALIABLE TO MANOUVER BINS FOR CITY COLLECTION DRIVER AND ALSO ACT AS A FLAGMAN WHEN THE TRUCK IS REVERSING. IN THE EVENT THAT ON-SITE STAFF IS UNAVALIABLE AT THE TIME THE CITY COLLECTION VEHICLE WILL LEAVE THE SITE AND NOT RETURN UNTIL NEXT SCHEDULED COLLECTION DAY.

3. IN ALL CASES WHERE COLLECTION VEHICLE IS REQUIRED TO DRIVE ONTO OR OVER A SUPPORTED STRUCTURE (SUCH AS AN UNDERGROUND PARKING GARAGE, INTAKE / OUTAKE GRILL, ETC.) THE STRUCTURE MUST BE DESIGNED TO SAFELY SUPPORT A FULLY LOADED COLLECTION VEHICLE (35,000 KILOGRAMS) AND CONFORMS TO THE FOLLOWING:

A) DESIGN CODE - ONTARIO BUILDING CODE.
B) DESIGN LOAD - CITY BULK LIFT VEHICLE IN ADDITION TO BUILDING CODE REQUIRMENTS.
C) IMPACT FACTOR - 5% FOR MAXIMUM VEHICULAR SPEEDS TO 15 KM/H AND 30% FOR HIGHER SPEEDS.

4. ALL ASPHALT WITHIN THE CITY RIGHT OF WAY IS TO BE SUPERPAVE MIX AS PER CITY STANDARDS

5. BEFORE SOLID WASTE COLLECTION SERVICES ARE TO BEGIN THE CITY WILL BE PROVIDED WITH LETTER CERTIFIED BY A PROFESSIONAL ENGINEER THAT IN CASES WHERE A COLLECTION VEHICLE IS REQUIRED TO DRIVE ONTO OR OVER A SUPPORTED STRUCTURE (SUCH AS UNDERGROUND PARKING GARAGE) CAN SAFETLY SUPPORT A FULLY LOADED COLLECTION VEHICLE (35,000 KILOGRAMS) AND CONFORMS TO THE FOLLOWING:

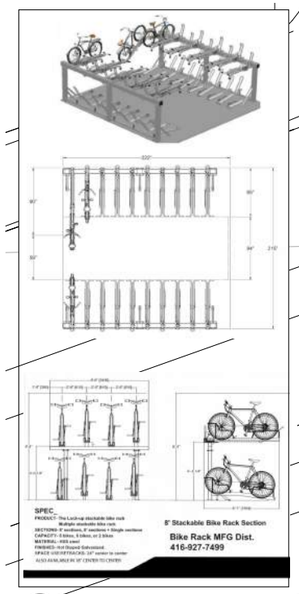
A) DESIGN CODE - ONTARIO BUILDING CODE.
B) DESIGN LOAD - CITY BULK LIFT VEHICLE IN ADDITION TO BUILDING CODE REQUIRMENTS.
C) IMPACT FACTOR - 5% FOR MAXIMUM VEHICULAR SPEEDS TO 15 KM/H AND 30% FOR HIGHER SPEEDS.

6. BULKY STORAGE ROOM, AREA: 10M² MINIMUM.

7. NON-RESIDENTIAL USE OF THE TYPE G LOADING SPACE WILL ONLY BE SCHEDULED FOR DAYS WHERE CITY WASTE COLLECTION DOES NOT TAKE PLACE.

8. NON-RESIDENTIAL WASTE BINS WILL BE CLEARLY LABELLED FOR NON-RESIDENTIAL/COMMERCIAL/RETAIL USE ONLY

9. TYPE G LOADING AND STAGING PAD OS LEVEL (+/-2%) AND IS CONSTRUCTED OF A MINIMUM OF 200 MM REINFORCED CONCRETE



BICYCLE STACK RACK SYSTEM
NTS

Revision	Date

NOT FOR CONSTRUCTION

Revision	Date
3 ISSUED FOR ZBA - DRAFT	24-05-29
2 ISSUED FOR COORDINATION	24-05-10
1 ISSUED FOR ZBA	23-03-10

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2400-2440 DUNDAS STREET WEST
TORONTO, ONTARIO, CANADA

SHEET TITLE

GROUND FLOOR PLAN

DRAWN BY:	GPAIA
CHECKED BY:	GPAIA
PROJECT START DATE:	22-04-06
PROJECT NO.:	21115
SHEET NUMBER	

A1.03

PLOT DATE: 2024-05-29 2:48:57 PM

1 A1.03 GROUND FLOOR PLAN
1 : 250

AQUAFLOW TECHNOLOGY INC

226 WILKINSON ROAD, BRAMPTON, ONTARIO L6T 4N7
(905) 792-8169

COMBINED & STORM SEWER INVESTIGATION REPORT
DYE TEST

700x1050 MM COMBINED SEWER
&
100 MM - 600 MM DIAMETER STORM SEWER

FOR

2400 DUNDAS STREET WEST

CITY OF TORONTO

CONSULTING ENGINEER: IBI
CONSULTING ENGINEER'S REPRESENTATIVE: JASON JENKINS
CONSULTING ENGINEER'S REPRESENTATIVE: CASSIDY GOETZ
OWNER: FORA DEVELOPMENTS
OWNER'S REPRESENTATIVE: LYLE LEVINE

FRIDAY, NOVEMBER 11TH, 2022

INDEX:

SEWER CLEANING, VIDEO INSPECTION, INSITU REPAIRS &
MUNICIPAL ENGINEERING SERVICES

2. SUMMARY REPORT AND CONCLUSIONS:

The investigation of the combined & storm sewers at 2400 Dundas Street West was carried out by Steven Lostracco, P.Eng. of Aquaflow Technology, and was authorized by Jason Jenkins of IBI Group. The investigation was carried out on Friday November, 11th, 2022.

The purpose of this report was to determine which municipal sewer the storm drains connect to.

1. Shoppers Drugmart. All roof drains discharge through the side of the building to the parking lot which drains to the CB next to MH STM-3, which then drains to the 450 mm storm sewer on Dundas Street West.

2. All parking lot drainage flows into the CB's which outlets to the 450 mm storm sewer on Dundas Street West.
.
3. Freshco. All roof drains discharge into CBMH-2 which drains to the 450 mm storm sewer on Dundas Street West.

1. Shoppers Drugmart

2. Shoppers Drugmart


3. Shoppers Drugmart
Roof drainage discharges to the parking lot surface

4. Freshco

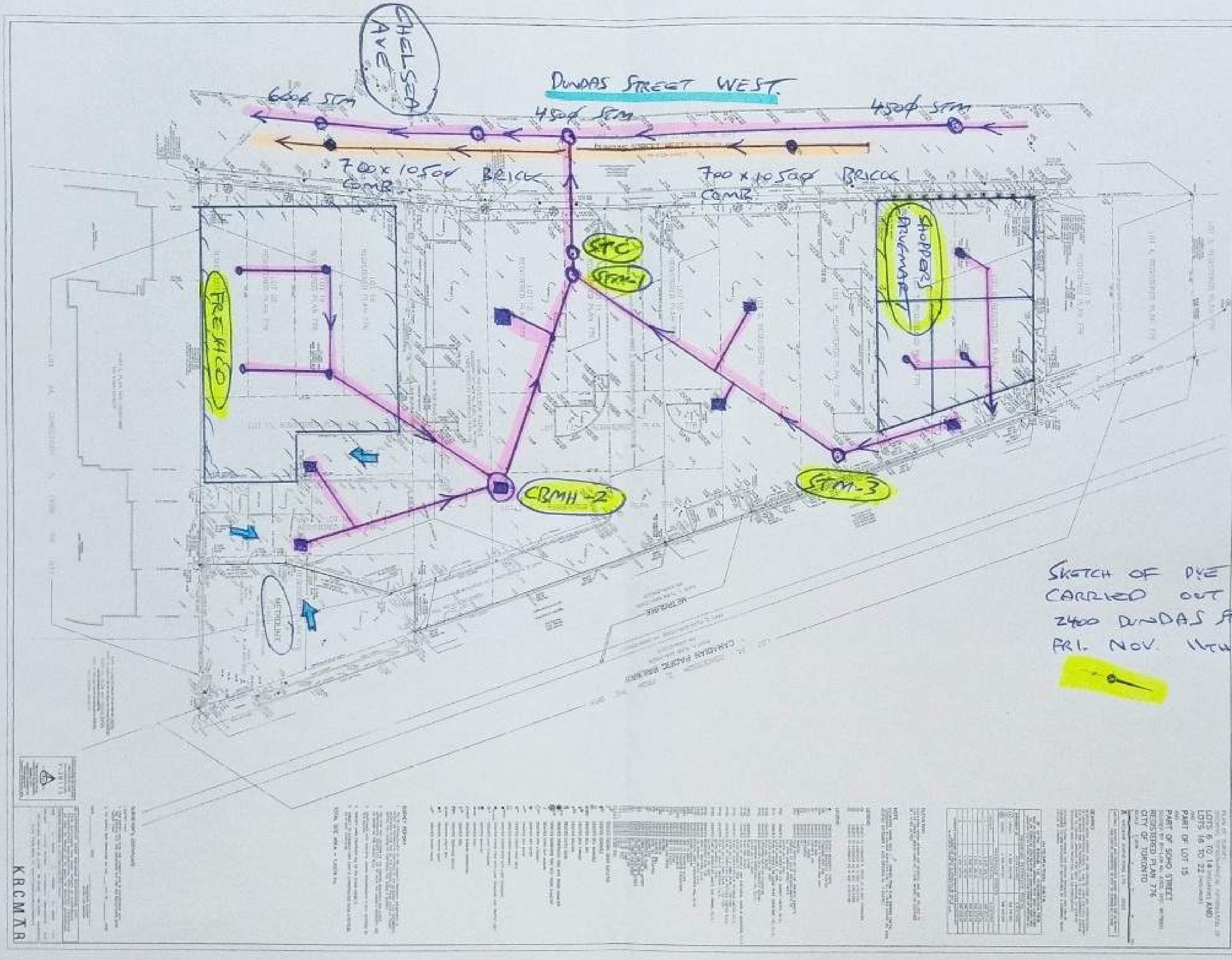

5. Freshco


6. Freshco


7. Freshco

Report Prepared by:

Steven Lostracco, P. Eng.



DUNDAS STREET WEST.
CHELSEA AVE
600ø STM
450ø STM
450ø STM
700 x 1050ø BRICK COMB.
700 x 1050ø BRICK COMB.
SHOPPERS DRUGMART
FRESHCO
STC
STM-1
CBMH-2
STM-3
METROLINX
SKETCH OF DYE TEST CARRIED OUT AT. 2400 DUNDAS ST. WEST. FRI. NOV. 11TH. 2022
KRCMAR

Appendix B
Foundation Drainage

Excerpt Hydrogeological Report (GEMS)

Hydrogeological Summary Form (GEMS)

Servicing Report Groundwater Summary

Groundwater Pumping Letter (MCW)

GEMS®

Groundwater Environmental Management Services

Hydrogeological Report

2400 – 2440 Dundas Street West, Toronto, Ontario

M6P 1W9

Project: 22-1465

June 6, 2023

Prepared For:
Fora Developments
2440 Dundas Street West
Toronto, ON, M6P 1W9

Prepared By:
Groundwater Environmental Management Services Inc.
150 Rivermede Road, Unit 9
Concord, ON, L4K 3M8

Contents

List of Figures

List of Appendices

Table 4.4: Hydraulic Conductivity Results from Single Well Response Tests

Well ID	Screened Unit	Screen Interval (masl)	SWRT	Hydraulic Conductivity (m/s)	Geometric Mean (m/s)
MW102D	Sandy Silt, Silt and Silty Sand	108.7 – 105.7	1	1.9×10^{-6}	1.3×10^{-6}
			2	2.1×10^{-6}	
			3	2.2×10^{-6}	
MW104D	Silty Sand	109.1 – 106.1	1	1.8×10^{-6}	1.8×10^{-6}
			2	1.8×10^{-6}	
			3	1.9×10^{-6}	
MW105	Silty Sand and Sandy Silt	111.7 – 108.7	1	3.1×10^{-6}	3.2×10^{-6}
			2	3.2×10^{-6}	
			3	3.5×10^{-6}	
Geometric Mean Hydraulic Conductivity (m/s) for all SWRTs					2.3×10^{-6}
Highest Hydraulic Conductivity (m/s) for all SWRTs					3.5×10^{-6}

The hydraulic conductivity results ranged from 1.8×10^{-6} m/s to 3.5×10^{-6} m/s, with an overall geometric mean of 2.3×10^{-6} m/s.

The borehole records (**Appendix B**) indicate that all tested wells are screened across the same water-bearing unit (Thorncliffe Formation) in materials, including silty sand, sandy silt, and silt. The geometric mean of hydraulic conductivity estimates observed is approximately 10^{-6} m/s and is within the textbook range for silty sand materials denoted by Freeze & Cherry (1979).

As a conservative estimate, GEMS recommends using the highest hydraulic conductivity result of 3.5×10^{-6} m/s to forecast the overburden dewatering rate.

4.5 Groundwater Quality

The water quality discharged by the dewatering system during construction is expected to be similar to in-situ groundwater quality.

On 2 September 2022, a groundwater sample was collected from borehole MW102D to characterize the in-situ groundwater quality at the Site. The water quality analysis results are included in **Appendix E**.

Water quality results were compared to the following criteria:

- City of Toronto Storm Sewer Discharge Use By-Law
- City of Toronto Sanitary and Combined Sewers Discharge Guidelines

The water quality met the City of Toronto Sanitary and Combined Sewers Discharge Guidelines for all parameters. It exceeded the City of Toronto Storm Sewer Discharge Use By-law criteria for Total Suspended Solids (TSS) and Total Manganese (Mn).

Exceedances to these criteria were identified and are summarized in **Table 4.5,** with the criteria exceeded in bold.

Table 4.5: Water Quality Results Exceeding Discharge Criteria

Water Quality Parameters	Units	MW102D Results	Storm Criteria	Sanitary Criteria
Total Suspended Solids (TSS)	mg/L	41	**15**	350
Total Manganese (Mn)	ug/L	170	**50**	5000

Groundwater quality should be expected to change over time during active construction dewatering. A dewatering contractor should assess the groundwater quality before any water-taking and discharging activities.

5.0 Short and Long-Term Discharge Rates

5.1 Short-Term Construction Dewatering

A construction dewatering system design may include well points, several sump pumps, and a network of gravity drains. Implementing a dewatering system is the responsibility of the property owner, and a qualified dewatering contractor with experience in construction dewatering should be retained to design and outline the methodology of the dewatering system.

Construction will require that the groundwater level be lowered to a depth of at least 1.0 m below the excavation invert.

Table 5.1: Dewatering Estimate Assumptions

Input Parameter	Value	Notes
Ground Surface Elevation	114.0 masl	Highest surface elevation based on provided geotechnical borehole logs (**Appendix B**).
Finished Floor Elevation (FFE)	110.0 masl	The lowest finished floor elevation was based on the depth of the P1 underground as presented in the provided building cross sections (**Appendix A**).
Excavation Invert	109.0 masl	Assumed 1 metre below FFE for raft slab.
Dewatering Target Elevation	108.0 masl	Assumed to be 1.0 metre below the excavation invert.
Excavation Area	85 m x 128 m	Simplified "rectangular" dimensions of the excavation, with an area equal to the proposed dimensions.
Max. Anticipated Groundwater Elevation	112.63 masl	Highest measured groundwater elevation at the Site 111.33 masl (MW104S 05/15/2024) + 1.3 m fluctuation allowance based on the City of Toronto Foundation Drainage guidelines.
Base of Aquifer	52.0 masl	Bedrock depth based on borehole logs (**Appendix B**).
Hydraulic Conductivity (K)	3.5×10^{-6} m/s	Highest K value estimated from SWRT tests (MW105).

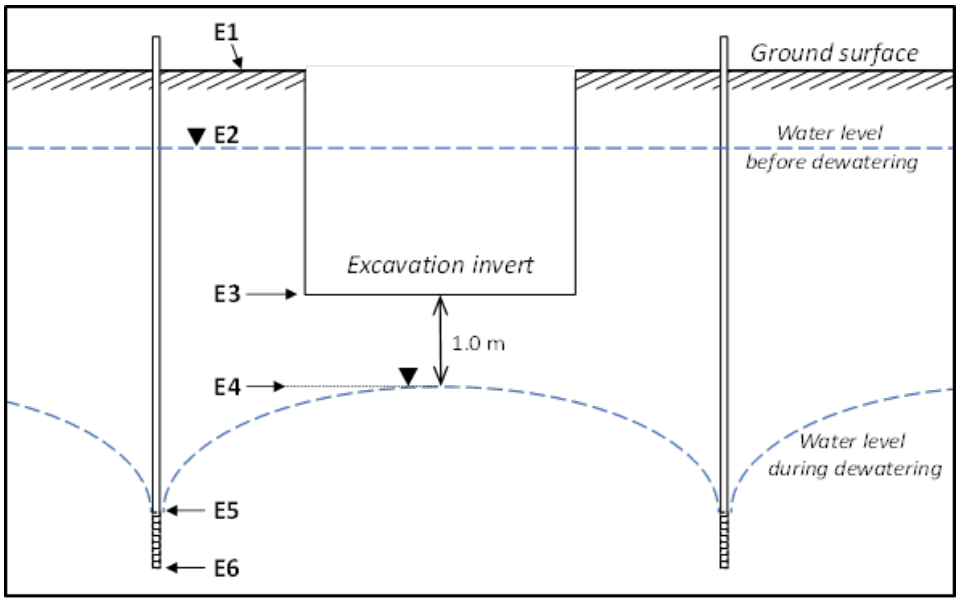
Dewatering estimates have been calculated assuming an excavation invert of 109.0 masl. On-Site water level measurements show the water table ranges between approximately 109.8 and 111.33 masl. The maximum anticipated groundwater level was 111.33, based on the highest measured water levels throughout the monitoring period (MW104S, 05/15/2024) plus a 1.3 m fluctuation allowance.

The maximum anticipated groundwater elevation is 4.63 meters above the assumed excavation invert, and therefore, short-term construction dewatering is anticipated.

A conceptual well-point dewatering model has been used to forecast the dewatering rates. As such, a greater drawdown would be required at the pumping wells themselves to achieve the target level in the central area of the base of the excavation. For calculations, the bottom tips of dewatering wells have been assumed to be located 3.0 m deeper than the excavation invert, with water levels in those dewatering wells 2.0 m below the excavation invert.

A schematic diagram of a section of loop dewatering is shown below in **Drawing 1**. The values for indicated parameters are as follows:

E1 =	Approximate ground level	114.00 masl
E2 =	Maximum hydraulic head	112.63 masl
E3 =	Lowest point of excavation	109.00 masl
E4 =	Target water level below excavation	108.00 masl
E5 =	Target water level in wellpoints	107.00 masl
E6 =	Dewatering wellpoint tips	106.00 masl



Drawing 5.1 Schematic diagram showing a cross-section of loop dewatering at two well points on opposite sides of the property.

5.2 Radius of Influence

Calculations for dewatering effects require an estimation of the radius of influence (ROI). Estimates of ROI for a rectangular excavation are calculated using the following formula adapted from the Jacob equation without recharge (Cooper, 1946).

$$R_o = r_w + \sqrt{\frac{T \cdot t}{C_4 \cdot C_s}}$$

Where:

- t = Duration of Dewatering

- T = Transmissivity in m2/sec
- C_s = Storage Coefficient (no units)
- C_4 = Constant (4790) (no units)
- r_w = Effective well radius of open excavation in metres.

The effective radius of the open rectangular excavation has dimensions of a and b:

$$r_w = \frac{a + b}{\pi}$$

Because the analytical solutions used to estimate dewatering volumes are based on a rectangular excavation, the Site's irregular shape was simplified for the purpose of the calculations. This was achieved by using a rectangle with an area equal to that of the proposed excavation (11,000 m^2).

Simplified dimensions:

- Dewatering Area: 85 m x 128 m

Assuming 40 days of pumping for the steady-state drawdown, the ROI extending outward from the perimeter of the excavation is estimated to be 93 m. This ROI is depicted by the Zone of Influence (ZOI) shown in **Figure 4**. This is the maximum possible ROI assuming:

I. No recharge;

II. Wells are located around the perimeter of the rectangular excavation; and,

III. The bottom tips of wells are approximately 3.0 m deeper than the assumed foundation invert depth.

It should be noted that ROI estimates are based on simplified standard textbook modelling and are approximations of complex geological conditions that do not account for recharge effects. Based on observations and the documented Site condition, a typical recharge effect is anticipated. Subsurface materials are variable in structure, soil texture, thickness, and other factors, and thus conditions affecting the extent of the ROI may be present which were not identified by Site boreholes.

A conservative approach to forecasting the maximum pumping rates and associated ROI was taken to account for uncertainties associated with varying subsurface soil conditions and fluctuations in groundwater elevations. The value inputs to the equation were conservatively biased to predict the maximum pumping rates of dewatering required to draw down groundwater to the target levels. This conservative approach reduces the possibility of unforeseen hydrogeological conditions encountered, which may require a higher dewatering rate.

5.3 Pumping Rate Calculations

The calculation for a rectangular excavation is based on a scenario that models radial flow into a well with a calculated equivalent radius reflective of the area to be dewatered. Dewatering was simulated by analyzing radial flow to a well in an unconfined aquifer. Flows toward the well were simulated using the following formula (J.P.Powers, 2007):

$$Q = \frac{\pi \cdot K\left(H^2 - h^2\right)}{\ln\left(\frac{R_o}{r_w}\right)}$$

Where the symbols and input values are as follows:

- Q = Discharge flow (L/min)
- K = Hydraulic conductivity = 3.5 x 10^{-6} m/s
- H = Pre-construction static water level = 112.63 masl
- h = Target water level = 108.0 masl
- R_o = Radius of influence
- r_w = Effective well radius of open excavation

The simplified shape of the excavation used for the pumping rate calculations is assumed to account for the full dimensions of the underground structure, as displayed in **Figure 4**.

5.4 Construction Dewatering Rates

Assuming the dewatering wells are installed to elevations of 106.0 masl, the estimated maximum dewatering rate for initial drawdown (7 days) is 289,687 L/day (201 L/min), and during steady-state drawdown (40 days) is 132,206 L/day (92 L/min). The dewatering calculations are provided in **Appendix F.**

For the purpose of permitting applications for dewatering, GEMS recommends using the forecasted 7-day pumping rate with the application of a 1.5 safety factor. The resulting pumping rate after applying the safety factor is 434,530 L/day (302 L/min). This forecasted dewatering pumping rate will allow for uncertainties and variability in the range of hydraulic conductivity.

Additionally, it is necessary to account for contributions to the dewatering volume from significant precipitation events. Assuming a rectangular excavation with dimensions of 85 m x 128 m for underground parking, the total surface area of the excavation will be 10,880 m^2. Anticipating a 15 mm daily rainfall event, the volume of rainwater contributed to this area would be 163,200 L.

After applying the safety factor, adding the rainfall contribution to the dewatering rate brings the forecast maximum pumping rate to 597,730 L/day (415 L/min).

A dewatering contractor should be retained to evaluate the dewatering methods. If dewatering wells deeper than 3.0 m below the assumed excavation invert depth are required, the discharge rates should be re-evaluated by GEMS.

A summary of the construction dewatering rates is outlined in **Table 5.3.**

Table 5.3 Summary of Construction Dewatering Rates

Dewatering	Excavation Area	
	Dewatering Rate	1.5 Safety Factor
15 mm Rainfall Contribution	163,200 L/day (113 L/min)	-
Initial Drawdown for Excavation	289,687 L/day (201 L/min)	434,530 L/day (302 L/min)
Maximum with safety factor	597,730 L/day* (415 L/min)	

**Rounded for permitting*

Based on the above estimate, a Permit to take Water is required for water taking during the dewatering and construction of the proposed development, as the forecast dewatering rate is greater than 400,000 L/day.

A short-term discharge agreement with the City of Toronto will be required before discharging water into any sewers owned by the City.

5.5 Long-Term Seepage Rates

As of January 1, 2022, all new development applications are subject to the conditions of the Foundation Drainage Policy and Guidelines.

The Site is seeking an exemption to the Foundation Drainage Policy and Guidelines due to the Site's constraint in building underground the underground structure and in a phased approach. An expansion joint must be used for the length of the overall structure but has not been known of any successful implementation of a phased, watertight, expansion joint below the water table. If the waterproofed expansion joint was to fail, there is no known solution/remediation to the leakage.

We understand that the Site will install caisson/shoring into a low permeable clayey silt layer. This will limit the ingress of groundwater to the Site.

The post-construction maximum permanent seepage has been estimated using an assumed pumping time of 365 days. Similar to the short-term dewatering rates, the long-term seepage rate assumes all of the same conditions described in **Section 5.1**.

The long-term seepage rate forecast at 365 days of continuous pumping is 21,132 L/day (15 L/min) without caissons. With caisson to the low permeable layer, the seepage is predicted to reduce by 75%, therefore, a rate of 5,283 L/day (4 L/min).

A safety factor of 1.3 is recommended to account for seasonal fluctuations and variability in hydrogeological conditions. Therefore, the forecast long-term seepage rate for 365 days is 6,868 L/day (5 L/min).

Since the long-term forecast is below 50,000 L/day, a Permit to Take Water (PTTW) will not be required for long-term discharge of groundwater from the permanent Private Water Drainage System.

To more accurately forecast the long-term seepage, GEMS recommends that seepage rates are reevaluated once construction methods, footing depths, and weeping tile locations have been finalized.

6.0 Potential for Adverse Effects

The following section identifies the potential for adverse environmental effects resulting from the proposed construction dewatering program.

6.1 Regulated and Sensitive Areas

According to The Ministry of Environment, Conservation and Parks' (MECP) Source Protection Information Atlas (MECP, 2021), the Site is not located in an area of development control as defined by the Niagara Escarpment Planning & Development Act. The Site is also not located in the Oak Ridges Moraine Conservation Area as defined by the Oak Moraine Conservation Plan.

There is no Toronto and Region Conservation Authority (TRCA) regulated areas within the zone of influence of the Site.

6.2 MECP Well Records and Groundwater Resources

The area within 500 m of the Site is serviced by the City of Toronto municipal water. The City of Toronto obtains its water supply from Lake Ontario. Therefore, there is no potential for groundwater interference complaints during construction dewatering activities.

A copy of the Ministry of Environment, Conservation and Parks (MECP) well listings within 500 m of the Site are provided in **Appendix G**. The wells within 500 m of the Site are displayed in **Figure 3**.

There are seventy-nine (79) wells identified within the 500 m area surrounding the Site. There are seventeen (17) monitoring wells, nineteen (19) monitoring and test holes, nine (9) test holes, and one (1) municipal well used as an observation well. The remaining thirty-three (33) wells are not available or not used. Therefore, no water supply wells or domestic wells are expected to be impacted by construction dewatering. Water-taking activities related to construction dewatering are not expected to impact any wells near the Site, and no monitoring is recommended.

An MECP-licensed drill contractor should properly decommission all monitoring wells at the Site prior to the demolition of the existing building.

6.3 Settlement

Expectations regarding settlement are to be addressed in a separate report provided by Terrapex Environmental Ltd.

6.4 Recommended Additional Fieldwork and Monitoring

The proposed monitoring and additional fieldwork are recommended during temporary construction dewatering:

August 2018

HYDROLOGICAL REVIEW SUMMARY

The form is to be completed by the Professional that prepared the Hydrological Review.
Use of the form by the City of Toronto is not to be construed as verification of engineering/hydrological content.

Refer to the Terms of Reference, Hydrological Review: Link to Terms of Reference Hydrological Review

For City Staff Use Only:	
Name of ECS Case Manager (Please print)	
Date Review Summary provided to to TW, EM&P	

IF ANY OF THE REQUIREMENTS LISTED BELOW HAVE NOT BEEN INLCUDED IN THE HYDROLOGICAL REVIEW, THE REVIEW WILL BE CONSIDERED INCOMPLETE.
THE GREY SHADED BOXES WILL REQUIRE A CONSISTANCY CHECK BY THE ECS CASE MANAGER.

Summary of Key Information:

SITE INFORMATION		**Page # & Section # of Review**	**Review Includes this Information City Staff (Check)**
Site Address	2400 – 2440 Dundas St West, Toronto, Ontario	Sec 1. Pg 2	
Postal Code	M6P 1W9	Pg 1	
Property Owner (on request for comments memo)	Fora Developments	Sec 1. Pg 2	
Proposed description of the project (if applicable) (point towers, number of podiums)	2 buildings with a total of three towers (25, 37, and 42 storeys)	Sec 2. Pg 3	
Land Use (ex. commercial, residential, mixed, institutional, industrial)	The Site is currently zoned as employment residential and mixed residential and commercial	Sec 1. Pg 2	
Number of below-grade levels for the proposed structure	One (1) level of underground	Sec 2. Pg 3	

August 2018

HYDROLOGICAL REVIEW INFORMATION			
Date Hydrological Review was prepared:	June 7, 2024	Pg 1	
Who Performed the Hydrological Review (Consulting Firm)	GEMS	Pg 1	
Name of Author of Hydrological Review	Kimberly Tran/Dan Menard	Sec 9 Pg 23	

HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
Check the directories on the website for Professional Geoscientists and/or Professional Engineers of Ontario been checked to ensure that the Hydrological Report has been prepared by a qualified person who is a licensed Professional Geoscientist as set out in the Professional Geoscientist Act of Ontario or a Professional Engineer? PEO: Professional Engineers of Ontario APGO: Association of Professional Geoscientists of Ontario		N/A	

Has the Hydrological Review been prepared in accordance with all the following: • Ontario Water Resources Act • Ontario Regulation 387/04 • Toronto Municipal Code Chapter 681-Sewers	Yes		
		Page # & Section # of every occurrence in the Review	**Review Includes this Information City Staff (Check)**

HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		**Page # & Section # of Review**	**Review Includes this Information City Staff (Check)**
Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) **with safety factor included**	597,730 L/day What safety factor was used? 1.5	Section 5.4 Pg 18	

August 2018

Total Volume (L/day) Short Term Discharge of groundwater (construction dewatering) **without safety factor included**	289,687 L/day	Section 5.4 Pg 18	
Total Volume (L/day) Long Term drainage of groundwater (from foundation drainage, weeping tiles, sub slab drainage) **with safety factor included** If the development is part of a multiple tower complex, include total volume for each separate tower	6,868 L/day What safety factor was used? 1.3	Section 5.5 Pg 19	
List the nearest surface water (river, creek, lake)	Grenadier Pond (1.9km) Lake Ontario (2.4km)	Section 4.2 Pg 7	

HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
Lowest basement elevation	109.0 m asl	Section 5.1 Page 14	

August 2018

Foundation elevation	109.0 m asl	Section 5.1 Page 14	
Ground elevation	114.0 m asl	Section 5.1 Page 14	
STUDY AREA MAP		**Page # & Section # of every occurrence in the Review**	**Review Includes this Information City Staff (Check)**
Study area map(s) have been included in the report.	**(X) Yes**	Figure 1 Pg. 26	N/A
Study area map(s) been prepared according to the Hydrological Review Terms of Reference.	**(X) Yes**	Figure 1 Pg. 26	N/A
WATER LEVEL AND WELLS		**Page # & Section # of every occurrence**	**Review Includes this Information (City Staff Initial)**

HYDROLOGICAL REVIEW SUMMARY

August 2018

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
		in the Review	
The groundwater level has been monitored using all wells located on site (within property boundary).	Yes	Section 4.3 Page 7	
The static water level measurements have been monitored at all monitoring wells for a minimum of 3 months with samples taken every 2 weeks for a minimum of 6 samples. The intent is for the qualified professional to use professional judgement to estimate the seasonally high groundwater level.	15 Monitoring wells Water levels taken 7 times in each well from September to November 2022 and once in May 2024	Section 4.3 Page 7	
All water levels in the wells have been measured with respect to masl.	Yes	Section 4.3 Page 7	
A table of geology/soil stratigraphy for the property has been included.	Yes	Table 4.1 Page 6	
GEOLOGY AND PHYSICAL HYDROLOGY		**Page # & Section # of every occurrence in the Review**	**Review Includes this Information (City Staff Initial)**
The review has made reference to the soil materials including thickness, composition and texture, and bedrock environments.	Yes Analysis of subsurface materials based on the logs from 15 boreholes	Section 4.2 Page 6	

Key aquifers and the site's proximity to nearby surface water has been identified.	**(X) Yes**	Section 4.2 Page 7	N/A

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HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
PUMP TEST/SLUG TEST/DRAWDOWN ANALYSIS		**Page # & Section # of every occurrence in the Review**	**Review Includes this Information City Staff (Check)**
A summary of the pumping test data and analysis is included in the review.	A pumping test was not completed for this site – Please see next section	Sec 4.4 Pg 11 Appendix D	
The pump test been carried out for at least 24 hours if possible. If not, has a slug test been conducted?	A pumping test was not conducted – Rising head tests were completed in 3 monitoring wells	Sec 4.4 Pg 11 Appendix D	
Have the monitoring well(s) have been monitored using digital devices? If yes how frequently?	Yes – Three wells, 6 tests, 15 second intervals	Sec 4.4 Pg 11 Appendix D	
If a slug or pump test has been conducted has the static groundwater level been monitored at all monitoring well(s) multiple times to measure recovery? -prior to the slug or pumping test(s)? -post slug or pumping test(s)?	**(X) Yes** Recovery was measured following the removal of a slug in three monitoring wells using digital device in 15 second intervals.	Sec 4.4 Pg 11 Appendix D	N/A
The above noted slug or pump tests have been included in the report.	**(X) Yes**	Sec 4.4 Pg 11 Appendix D	

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WATER QUALITY		Page # & Section # of every occurrence in the Review	Review Includes this Information City Staff (Check)

HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
The report includes baseline water quality samples from a laboratory. The water quality must be analyzed for all parameters listed in Tables 1 and 2 of Chapter 681 Sewers of the Toronto Municipal Code (found in Appendix A) and the samples must have to be taken unfiltered within 9 months of the date of submission.	Baseline water quality data provided in Tables provided by Toronto Water	Section 4.5 Page 12	
The water quality data templates in Appendix A have been completed for each sample taken for both sanitary/combined and storm sewer limits.	For sanitary discharge- See the sanitary/combined sewer parameter limit template For storm discharge- See the storm sewer parameter limit template		

Qualified professional to list all sample parameters that have violated the Bylaw limits for each sample taken for the sanitary/combined Bylaw limits **If there are any sample parameter Exceedances the groundwater can't be discharged as is.**	Exceedances listed in report	Section 4.5 Page 12	
Qualified professional to list all sample parameters that have violated the Bylaw limits for each sample taken for the storm Bylaw limits. **If there are any sample parameter exceedances the groundwater can't be discharged as is.**	Exceedances listed in report	Section 4.5 Page 12	
The water quality samples have been analyzed by a Canadian laboratory accredited and licensed by Standards Council of Canada and/or Canadian Association for Laboratory Accreditation.	**(X) Yes**	Appendix E	N/A

HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		**Page # & Section # of Review**	**Review Includes this Information City Staff (Check)**
List of Canadian accredited laboratories: Standards Council of Canada			
A chain of custody record for the samples is included with the report.	Yes	Appendix E	

Has the chain of custody reference any filtered sample? If yes, the report has to be amended and re-submitted to include only non-filtered samples.	No filtered samples		
List any of the sample parameters that exceed the Bylaw limits with the reporting detection limit (RDL) included.	Total Suspended Solids (TSS) - RDL 10 Total Manganese (Mn) - RDL 2.0	Appendix E	
A true copy of the Certificate of Analysis report, is included with the report.	Yes	Appendix E	
EVALUATION OF IMPACT		**Page # & Section # of every occurrence in the Review**	**Review Includes this Information City Staff (Check)**
Does the report recommend a back-up system or relief safety valve(s)? Does the associated Geotechnical report recommend a back-up system or relief safety valve(s)?	◯ **Yes** **(X) No** ◯ **Yes** **(X) No**		
The taking and discharging of groundwater on site has been analyzed to ensure that no negative	**(X) Yes**		N/A

HYDROLOGICAL REVIEW SUMMARY

SITE INFORMATION		Page # & Section # of Review	Review Includes this Information City Staff (Check)
impacts will occur to: the City sewage works in terms of quality and quantity (including existing infrastructure), the natural environment, and settlement issues.	The hydrogeology report has provided information on the anticipated quantities and quality of groundwater. Short term dewatering of groundwater for excavation is anticipated.		
Has it been determined that there will be a negative impact to the natural environment, City sewage works, or surrounding properties has the study identified the following: the extent of the negative impact, the detail of the precondition state of all the infrastructure, City sewage works, and natural environment within the effected zone and the proposed remediation and monitoring plan?	◯ **Yes** **If yes, identify impact:** **(X) No**		N/A

Summary of Additional Information and Key Items (if applicable):

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HYDROLOGICAL REVIEW SUMMARY

Appendix A:

SANITARY/COMBINED **Sample Location:**

Inorganics		Sample Result	Sample Result with upper RDL included	
Parameter	mg/L	mg/L	mg/L	ug/L
BOD	300	ND	2	300,000
Fluoride	10	0.12	0.10	10,000
TKN	100	0.20	0.10	100,000
pH	6.0 - 11.5	7.67		6.0 - 11.5
Phenolics 4AAP	1	0.0012	0.0010	1,000
TSS	350	**41**	10	350,000
Total Cyanide	2	ND	0.0050	2,000
Metals		ug/L	ug/L	
Chromium Hexavalent	2	0.76	0.50	2,000
Mercury	0.01	ND	0.00010	10
Total Aluminum	50	460	4.9	50,000
Total Antimony	5	ND	0.50	5,000
Total Arsenic	1	1.3	1.0	1,000
Total Cadmium	0.7	ND	0.090	700
Total Chromium	4	ND	5.0	4,000
Total Cobalt	5	ND	0.50	5,000
Total Copper	2	1.8	0.90	2,000
Total Lead	1	0.62	0.50	1,000
Total Manganese	5	**170**	2.0	5,000
Total Molybdenum	5	1.9	0.50	5,000

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Total Nickel	2	3.4	1.0	2,000
Total Phosphorus	10	ND	100	10,000
Total Selenium	1	ND	2.0	1,000
Total Silver	5	ND	0.090	5,000
Total Tin	5	2.2	1.0	5,000
Total Titanium	5	15	5.0	5,000
Total Zinc	2	21	5.0	2,000
Petroleum Hydrocarbons				
Animal/Vegetable Oil & Grease	150	ND	0.50	150,000
Mineral/Synthetic Oil & Grease	15	ND	0.50	15,000

HYDROLOGICAL REVIEW SUMMARY

Volatile Organics		**Sample Result**	**Sample Result with upper RDL included**	
Parameter	**mg/L**	**ug/L**	**ug/L**	**ug/L**
Benzene	0.01	ND	0.40	10
Chloroform	0.04	ND	0.40	40
1,2-Dichlorobenzene	0.05	ND	0.80	50
1,4-Dichlorobenzene	0.08	ND	0.80	80
Cis-1,2-Dichloroethylene	4	ND	1.0	4,000
Trans-1,3-Dichloropropylene	0.14	ND	0.80	140
Ethyl Benzene	0.16	ND	0.40	160
Methylene Chloride	2	ND	4.0	2,000
1,1,2,2-Tetrachloroethane	1.4	ND	0.80	1,400
Tetrachloroethylene	1	ND	0.40	1,000
Toluene	0.016	ND	0.40	16
Trichloroethylene	0.4	ND	0.40	400
Total Xylenes	1.4	ND	0.40	1,400
Semi-Volatile **Organics**		ug/L	ug/L	

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Di-n-butyl Phthalate	0.08	ND	2	80
Bis (2-ethylhexyl) Phthalate	0.012	3	2	12
3,3'-Dichlorobenzidine	0.002	ND	0.8	2
Pentachlorophenol	0.005	ND	1	5
Total PAHs	0.005	ND	1	5
Misc **Parameters**		mg/L	mg/L	
Nonylphenols	0.02	ND	0.005	20
Nonylphenol Ethoxylates	0.2	ND	0.001	200

Sample Collected:
Temperature:

HYDROLOGICAL REVIEW SUMMARY

STORM **Sample Location:**

Inorganics		**Sample Result**	**Sample Result with upper RDL included**	
Parameter	**mg/L**			**ug/L**
pH	6.0 - 9.5	7.67		
BOD	15	ND	2	15,000
Phenolics 4AAP	0.008	0.0012	0.0010	8
TSS	15	**41**	10	15,000
Total Cyanide	0.02	ND	0.0050	20
Metals		ug/L	ug/L	
Total Arsenic	0.02	1.3	1.0	20
Total Cadmium	0.008	ND	0.090	8
Total Chromium	0.08	ND	5.0	80
Chromium Hexavalent	0.04	ND	0.50	40
Total Copper	0.04	1.8	0.90	40
Total Lead	0.12	0.62	0.50	120
Total Manganese	0.05	**170**	2.0	50
Total Mercury	0.0004	ND	0.10	0.4
Total Nickel	0.08	3.4	1.0	80
Total Phosphorus	0.4	ND	100	400

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Total Selenium	0.02	ND	2.0	20
Total Silver	0.12	ND	0.090	120
Total Zinc	0.04	21	5.0	40
Microbiology		CFU/100mL	CFU/100mL	
E.coli	200	<10	10	200,000
Volatile Organics		ug/L	ug/L	
Parameter	**mg/L**	ug/L	ug/L	**ug/L**
Benzene	0.002	ND	0.40	2
Chloroform	0.002	ND	0.40	2
1,2-Dichlorobenzene	0.0056	ND	0.80	6
1,4-Dichlorobenzene	0.0068	ND	0.80	7
Cis-1,2-Dichloroethylene	0.0056	ND	1.0	6
Trans-1,3-Dichloropropylene	0.0056	ND	0.80	6
Ethyl Benzene	0.002	ND	0.40	2
Methylene Chloride	0.0052	ND	4.0	5
1,1,2,2-Tetrachloroethane	0.017	ND	0.80	17
Tetrachloroethylene	0.0044	ND	0.40	4
Toluene	0.002	ND	0.40	2
Trichloroethylene	0.0076	ND	0.40	8
Total Xylenes	0.0044	ND	0.40	4

HYDROLOGICAL REVIEW SUMMARY

Semi-Volatile Organics		**Sample Result**	**Sample Result with upper RDL included**	
Di-n-butyl Phthalate	0.015	ND	2	5
Bis (2-ethylhexyl) Phthalate	0.0088	3	2	8.8
3,3'-Dichlorobenzidine	0.0008	ND	0.8	0.8
Pentachlorophenol	0.002	ND	1	2
Total PAHs	0.002	ND	1	2
PCBs	0.0004	ND	0.05	0.4

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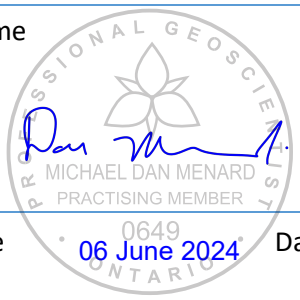
Misc Parameters		mg/L	mg/L	
Nonylphenols	0.001	ND	0.005	1
Nonylphenol Ethoxylates	0.01	ND	0.001	10

Sample Collected: 2022/09/02
Temperature: 11.3°C

Consulting Firm that prepared Hydrological Report: Groundwater Environmental Management Services

Qualified Professional who completed the report summary: Dan Menard
Print Name

Qualified Professional who completed the report summary:
Signature



Date & Stamp

October 2017

SERVICING REPORT GROUNDWATER SUMMARY

The form is to be completed by the Professional that prepared the Servicing Report.
Use of the form by the City of Toronto is not to be construed as verification of engineering/hydrological content.

For City Staff Use Only:	
Name of ECS Case Manager (please print)	
Date Review Summary provided to to TW	

A. SITE INFORMAITON		**Included in SR (reference page number)**	**Report Includes this information City staff (Check)**
Date Servicing Report was prepared:	June 2024	Cover Page	
Title of Servicing Report:	Functional Servicing & Stormwater Management	Cover Page	
Name of Consulting Firm that prepared Servicing Report:	Arcadis Professional Services (Canada) Inc.	Cover Page	
Site Address	2400- 2440 DUNDAS STREET WEST Toronto, Ontario	Page 1	
Postal Code	M6P 1W9	N/A	
Property Owner (identified on planning request for comments memo)	Fora Developments	Page 1	
Proposed description of the project (ex. number of point towers, number of podiums, etc.)	The proposed development will be three point towers (37, 42, and 25 storeys) with one underground level	Page 2	
Land Use (ex. commercial, residential, mixed, industrial, institutional) as defined by the Planning Act	Mixed use	Page 2	
Number of below grade levels	1 Level of Underground Parking	Page 2	

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SERVICING REPORT GROUNDWATER SUMMARY

Does the SR include a private water drainage system (PWDS)? **PWDS: Private Water Drainage System:** A subsurface drainage system which may consist of but is 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 or drainage system for disposal in a municipal sewer.	If **Yes** continue completing Section B (Information Relating to Groundwater) **ONLY** **If Yes, Number of PWDS?** 1 *(Each of these PWDS may require a separate Toronto Water agreement)* If **No** skip to Sections C (On-site Groundwater Containment) and/or D (Water Tight Requirements) as applicable	☉ YES ☐ NO	
B. INFORMATION RELATING TO GROUNDWATER		**Included in SR (reference page number)**	**Report Includes this information** **City Staff** **(Check)**
A copy of the pump schedule(s) for **ALL** groundwater sump pump(s) for the development site has been included in the FSR **or** A letter written by a Mechanical Consultant (signed and stamped by a Professional Engineer of Ontario) shall be attached to the SR stating the peak flow rate of the groundwater discharge for the development site for all groundwater sump pump(s). This peak flow rate must be based on the pump schedule(s) that have been designed by the Mechanical Consultant. A template of this letter is attached in Schedule A.	A letter from the mechanical consultant can be found in Appendix B	Appendix B	

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SERVICING REPORT GROUNDWATER SUMMARY

****If there is more than one sump they must ALL be included in the letters along with a combined flow****			
Is it proposed that the groundwater from the development site will be discharged to the sanitary, combined or storm sewer?	☐ Sanitary Sewer ☑ Combined Sewer ☐ Storm Sewer	7	
Will the proposed PWDS discharge from the site go to the Western Beaches Tunnel (WBT)? *Reference attached WBT drainage map*	☐ YES ☑ NO **If Yes, private water discharge fees will apply and site requires a sanitary discharge agreement.**		
What is the street name where the receiving sewer is located?	Dundas Street West	7	
What is the diameter of the receiving sewer?	700 x 1050mm egg-shape	7	
Is there capacity in the proposed local sewer system? ☑ YES ☐ NO	Are there any improvements required to the sewer system? If yes, identify them below and refer to the section and page number of the FSR where this information can be found. If a sewer upgrade is required, the owner is required to enter into an Agreement with the City to improve the infrastructure? ☐ YES	17, Appendix D	
Total allowable peak flow rate during a 100 year storm event (L/sec) to storm sewer When groundwater is to be discharged to the storm sewer the total groundwater and stormwater discharge shall not exceed the permissible peak flow rate during a 2 year pre development storm event, as per the City's	136.5 L/sec N/A	Page 8	

SERVICING REPORT GROUNDWATER SUMMARY

Wet Weather Flow Management Guidelines, dated 2006			
Short-Term Groundwater Discharge Provide proposed total flow rate to the sanitary/combined sewer in post-development scenario Total Flow (L/sec) = sanitary flow + peak short-term groundwater flow rate	Assumed 13 hours of pumping 16.0 L/sec	Page 6	
Long-Tem Groundwater Discharge Provide proposed total flow rate to the sanitary/combined sewer in post-development scenario Total Flow (L/sec) = sanitary flow + peak long-term groundwater flow rate	Peak DWF + GW flow + Inflitration = 21.5 L/S 21.5 L/sec	Page 16 & App. D	
Does the water quality meet the receiving sewer Bylaw limits? ☉ YES ☐ NO	If the water quality does not meet the applicable receiving sewer Bylaw limits and the applicant is proposing a treatment system the applicant will need to include a letter stating that a treatment system will be installed and the details of the treatment system will be included in the private water discharge application that will be submitted to TW EM&P.	Page 6	
C. ON-SITE GROUNDWATER CONTAINMENT		**Included in SR (reference page number)**	**Report Includes this information City Staff (Check)**
How is the site proposing to manage the groundwater discharge on site?	Discharge to Sanitary Control MH, connection to combined sewer within Dundas Street West	Page 7	

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SERVICING REPORT GROUNDWATER SUMMARY

Has the above proposal been approved by:	◯ TW-WIM And ◯ TW-EM&P And ◯ ECS		
If the site is proposing a groundwater infiltration gallery, has it been stated that the groundwater infiltration gallery will not be connected to the municipal sewer? A connection between the infiltration gallery/dry well and the municipal sewer is not permitted Please be advised if an infiltration gallery/dry well on site is not connected to the municipal sewer, the site **must** submit two letters using the templates in Schedule B and Schedule C.	☐ YES ☑ NO	n/a	
Confirm that the infiltration gallery can infiltrate 100% of the expected peak groundwater flow year round, ensure that the top of the infiltration trench is below the frost line (1.8m depth), not less than 5 m from the building foundation, bottom of the trench 1m above the seasonally high water table, and located so that the drainage is away from the building.	N/A	n/a	
D. WATER TIGHT REQUIREMENTS		**Included in SR (reference page number)**	**Report Includes this information City Staff**

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SERVICING REPORT GROUNDWATER SUMMARY

		(Check)
If the site is proposing a water tight structure: 1. The owner must submit a letter using the template in Schedule D. 2. A Professional Engineer (Structural), licensed to practice in Ontario and qualified in the subject must submit a letter using the template in Schedule E.	N/A	

Provide a copy of the approved SR to Toronto Water Environmental Monitoring & Protection Unit at pwapplication@toronto.ca.

Consulting Firm that prepared Servicing Report: Arcadis

Professional Engineer who completed the report summary: Jason Jenkins, PE, P.Eng.

Print Name

June 2024

Professional Engineer who completed the report summary: _____

Signature Date & Stamp

MCW Consultants Ltd.

Queen's Quay Terminal
207 Queen's Quay West,
Suite 615
Toronto, Ontario M5J 1A7

Phone (416) 598-2920
Fax (416) 598-5394
Internet: www.mcw.com

June 5th, 2024

Attention: Executive Director, Engineering and Construction Services

c/o Manager, Development Engineering

cc: General Manager, Toronto Water
c/o Manager, Environmental Monitoring & Protection Unit
2400-2440 Dundas Street West – Toronto, Ontario
FORA Developments

Dear Sir or Madam,

This letter is to confirm that the groundwater collection and drainage strategy for the above-mentioned projects has been updated. The groundwater from the Private Water Drainage System will now be collected and discharged into the sanitary control manhole of the Site located at 2400 Dundas Street West.

The long-term dewatering rate has been determined by others to be 6,868 L/s. As such groundwater sump pumps will be sized to either discharge at a rate of 0.08 L/sec (groundwater peak flow rate) and be expected to run 24 hours per day or at 0.16 L/sec and be expected to run for 12 hours per day.

This peak flow rate will be used for assessing capacity for the peak discharge flow into the City's sanitary sewer system.

Once the proposed groundwater peak flow rate of 0.08 L/sec is approved by Engineering Construction Services (ECS), City of Toronto, the property owner will not be allowed to amend this flow rate in the future. Should there be any amendment to the peak flow rate of 0.08 L/sec in future, the property owner shall re-submit either the updated pump schedule or a revised letter to ECS. In addition, the sewer capacity will need to be re-assessed.

Yours truly,

MCW Consultants Ltd.

Agustin Olt, P. Eng
Partner

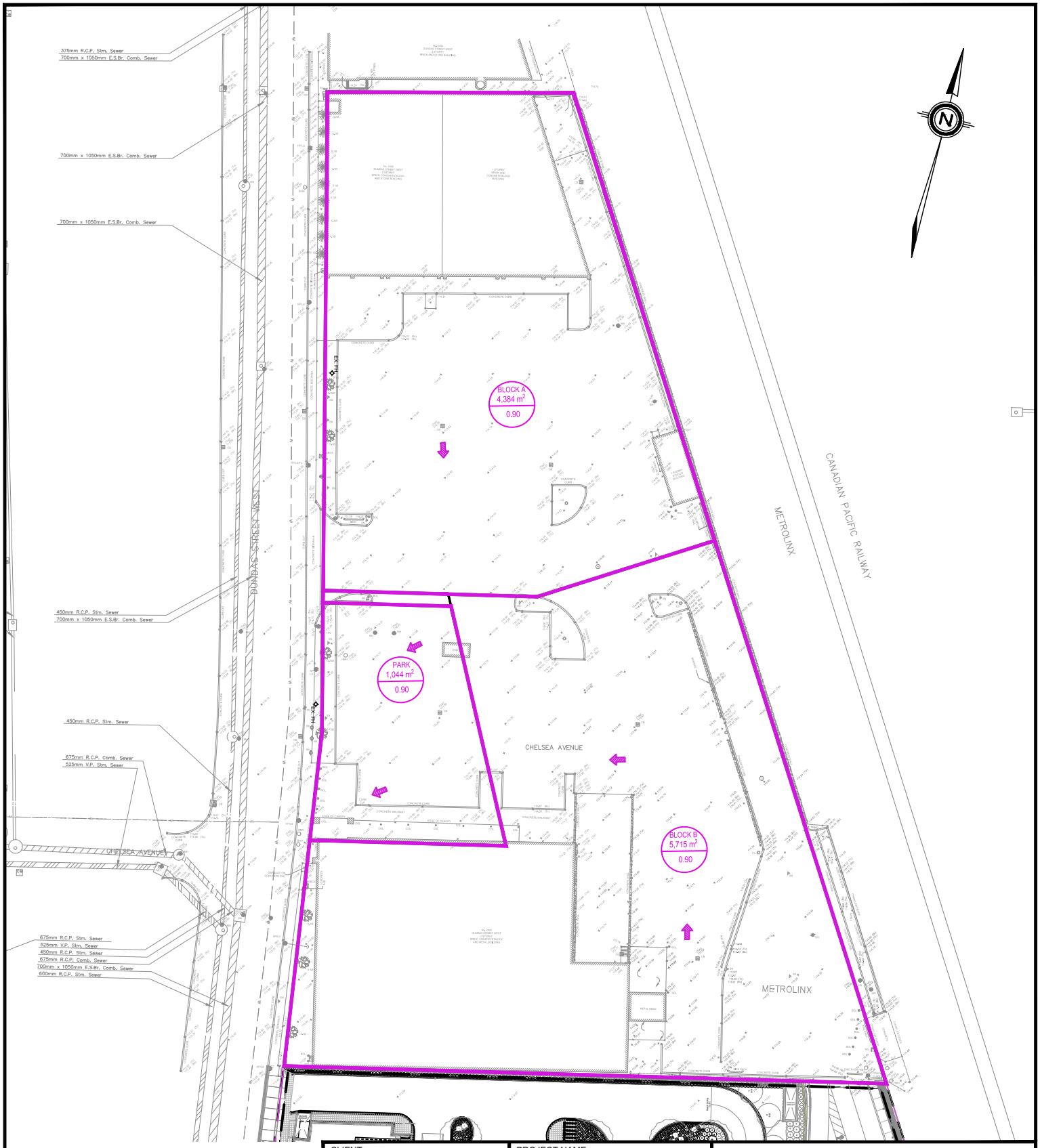
LICENSED PROFESSIONAL ENGINEER
2024/06/05
A.OLT
100506860
PROVINCE OF ONTARIO

Appendix C
Storm Sewer

Pre- and Post-Development Drainage Area Maps

Stormwater Design Calculations

Stormfilter Sizing and Sample Drawing (Contech)



LEGEND

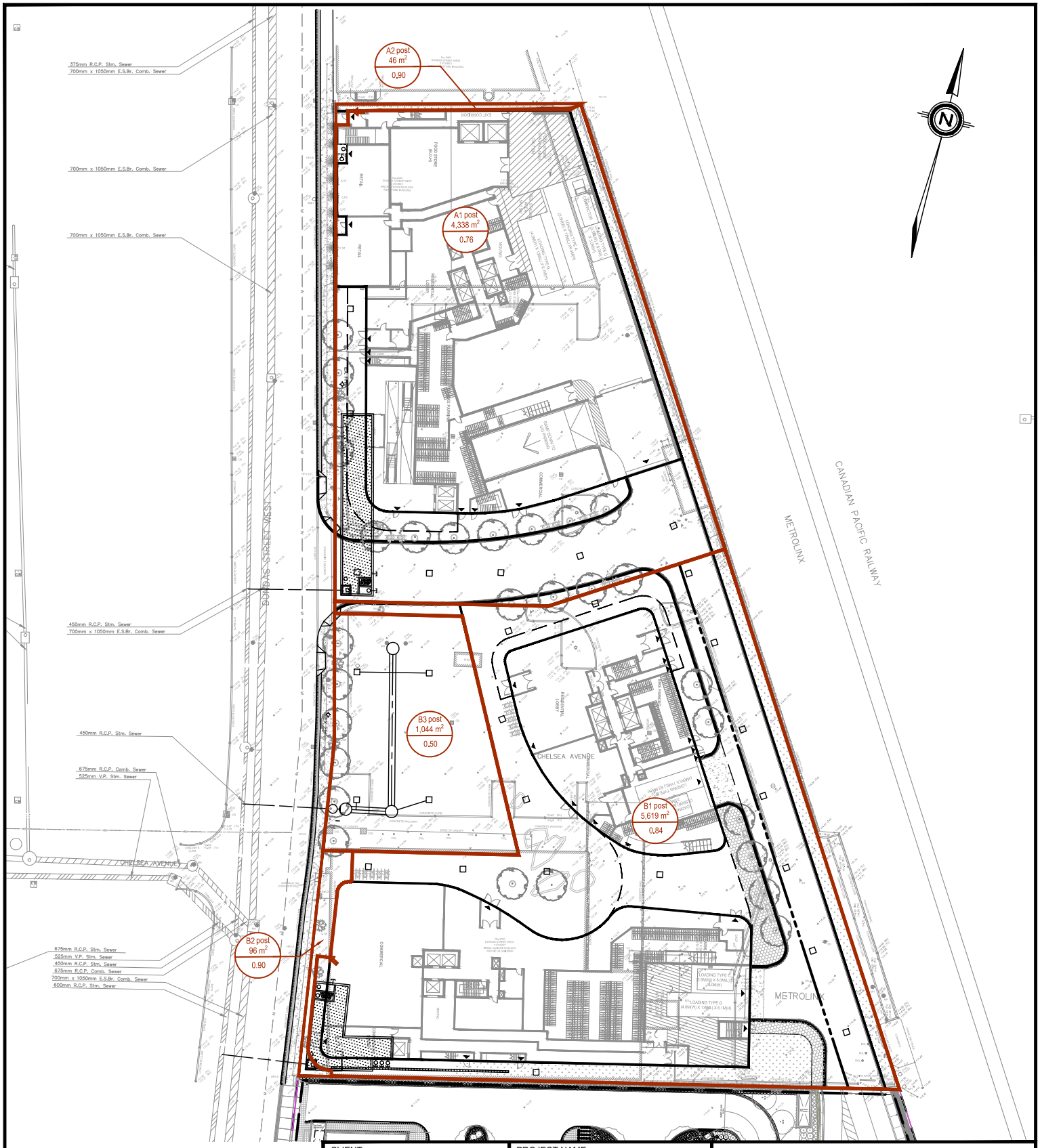
- PROPERTY LINE
- DRAINAGE BOUNDARY
- OVERLAND FLOW DIRECTION

CLIENT	DUNDAS LI PROPERTIES INC
	1840 EGLINTON AVE WEST, SUITE 202, TORONTO, ON, M6E 5B2
PROJECT NAME	2400 DUNDAS STREET WEST
SCALE:	NTS
DATE:	2024-06-06
PROJECT ENG:	JMJ
DRAWN BY:	SB
CHECKED BY:	JMJ
APPROVED BY:	JMJ
PROJECT NO:	141003
FIGURE NAME	PRE-DEVELOPMENT STORM DRAINAGE PLAN
FIGURE NO.	DAP-1
REVISION	1

ARCADIS

SCALE CHECK
1 in
10mm

File Location: J:\141003_2400Dundas\7.0_Production\7.03_Design\04_CivilSheets\Figures\SWM DAPs.dwg Last Saved: June 6, 2024, by shirley.beaudoin Plotted: Thursday, June 6, 2024 10:07:46 AM by Shirley Beaudoin



LEGEND

- PROPERTY LINE
- DRAINAGE BOUNDARY
- OVERLAND FLOW DIRECTION

CLIENT: DUNDAS LI PROPERTIES INC 1840 EGLINTON AVE WEST, SUITE 202, TORONTO, ON, M6E 5B2	PROJECT NAME: 2400 DUNDAS STREET WEST		
	SCALE: NTS	DATE: 2024-06-06	FIGURE NAME: POST-DEVELOPMENT STORM DRAINAGE PLAN
	PROJECT ENG: JMJ	DRAWN BY: SB	FIGURE NO.: DAP-2
	CHECKED BY: JMJ	APPROVED BY: JMJ	REVISION: 1
	PROJECT NO: 141003		

ARCADIS

SCALE CHECK 1 in 10mm

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2400 Dundas Street West
Mixed Use Development

ARCADIS

Pre-Development Runoff Coefficients

Project Name: 2400 Dundas Street West
Project Number: 141003
Date: 27 May 2024
Calc By: SB

Block A (Phase 1)				
Conventional Roof	1,650	37.6%	0.90	0.34
Landscape	0	0.0%	0.25	0.00
Impervious	2,734	62.4%	0.90	0.56
Total Area	**4,384**	100%		**0.90**

Block B (Phase 2)				
Conventional Roof	1,831	32.0%	0.90	0.29
Landscape	0	0.0%	0.25	0.00
Impervious	3,884	68.0%	0.90	0.61
Total Area	**5,715**	100%		**0.90**

Parkland Dedication				
Conventional Roof	0	0.0%	0.90	0.00
Landscape	0	0.0%	0.25	0.00
Impervious	1,044	100.0%	0.90	0.90
Total Area	**1,044**	100%		**0.90**

Pre-Development Total				
Conventional Roof	3,481	31.2%	0.90	0.28
Landscape	0	0.0%	0.25	0.00
Impervious	7,662	68.8%	0.90	0.62
Total Area	**11,143**	100%		**0.90**

2400 Dundas Street West
Mixed Use Development

ARCADIS

Post-Development Runoff Coefficients

Project Name: 2400 Dundas Street West
Project Number: 141003
Date: 27 May 2024
Calc By: SB

A1 Post: Block A (Phase 1) - Controlled				
Conventional Roof	1,764	40.7%	0.90	0.37
Extensive Green Roof	1,270	29.3%	0.50	0.15
Intensive Green Roof		0.0%	0.50	0.00
Landscape	163	3.8%	0.25	0.01
Landscape over P1		0.0%	0.45	0.00
Permeable Pavers		0.0%	0.55	0.00
Impervious (Dirty)	1,141	26.3%	0.90	0.24
Impervious (Clean)		0.0%	0.90	0.00
Total Area	**4,338**	100%		**0.76**

A2 Post: Block A (Phase 1) - Uncontrolled to Dundas				
Conventional Roof		0.0%	0.90	0.00
Extensive Green Roof		0.0%	0.50	0.00
Intensive Green Roof		0.0%	0.50	0.00
Landscape		0.0%	0.25	0.00
Landscape over P1		0.0%	0.45	0.00
Permeable Pavers		0.0%	0.55	0.00
Impervious (Dirty)		0.0%	0.90	0.00
Impervious (Clean)	46	100.0%	0.90	0.90
Total Area	**46**	100%		**0.90**

Block A Total				
Conventional Roof	1,764	40.2%	0.90	0.36
Extensive Green Roof	1,270	29.0%	0.50	0.14
Intensive Green Roof	0	0.0%	0.50	0.00
Landscape	163	3.7%	0.25	0.01
Landscape over P1	0	0.0%	0.45	0.00
Permeable Pavers	0	0.0%	0.55	0.00
Impervious (Dirty)	1,141	26.0%	0.90	0.23
Impervious (Clean)	46	1.0%	0.90	0.01
Total Area	**4,384**	100%		**0.76**

B3 Post: Parkland Dedication				
Conventional Roof	0	0.0%	0.90	0.00
Extensive Green Roof	0	0.0%	0.50	0.00
Intensive Green Roof	0	0.0%	0.50	0.00
Landscape	642	61.5%	0.25	0.15
Landscape over P1	0	0.0%	0.45	0.00
Permeable Pavers	0	0.0%	0.55	0.00
Impervious (Dirty)	0	0.0%	0.90	0.00
Impervious (Clean)	402	38.5%	0.90	0.35
Total Area	**1,044**	100%		**0.50**

Note: the detailed design of the park is by others at a later date. A runoff coefficient of 0.50 has been used to estimate the required stormwater controls at this stage.

B1 Post: Block B (Phase 2) - Controlled				
Conventional Roof	2,537	45.2%	0.90	0.41
Extensive Green Roof	480	8.5%	0.50	0.04
Intensive Green Roof		0.0%	0.50	0.00
Landscape	231	4.1%	0.25	0.01
Landscape over P1		0.0%	0.45	0.00
Permeable Pavers		0.0%	0.55	0.00
Impervious (Dirty)	1,180	21.0%	0.90	0.19
Impervious (Clean)	1,191	21.2%	0.90	0.19
Total Area	**5,619**	100%		**0.84**

B2 Post: Block B (Phase 2) - Uncontrolled to Dundas				
Conventional Roof		0.0%	0.90	0.00
Extensive Green Roof		0.0%	0.50	0.00
Intensive Green Roof		0.0%	0.50	0.00
Landscape		0.0%	0.25	0.00
Landscape over P1		0.0%	0.45	0.00
Permeable Pavers		0.0%	0.55	0.00
Impervious (Dirty)		0.0%	0.90	0.00
Impervious (Clean)	96	100.0%	0.90	0.90
Total Area	**96**	100%		**0.90**

Block B Total				
Conventional Roof	2,537	44.4%	0.90	0.40
Extensive Green Roof	480	8.4%	0.50	0.04
Intensive Green Roof	0	0.0%	0.50	0.00
Landscape	231	4.0%	0.25	0.01
Landscape over P1	0	0.0%	0.45	0.00
Permeable Pavers	0	0.0%	0.55	0.00
Impervious (Dirty)	1,180	20.6%	0.90	0.19
Impervious (Clean)	1,287	22.5%	0.90	0.20
Total Area	**5,715**	100%		**0.84**

Post Development Total				
Conventional Roof	4,301	38.6%	0.90	0.35
Extensive Green Roof	1,750	15.7%	0.50	0.08
Intensive Green Roof	0	0.0%	0.50	0.00
Landscape	1,036	9.3%	0.25	0.02
Landscape over P1	0	0.0%	0.45	0.00
Permeable Pavers	0	0.0%	0.55	0.00
Impervious (Dirty)	2,321	20.8%	0.90	0.19
Impervious (Clean)	1,735	15.6%	0.90	0.14
Total Area	**11,143**	100%		**0.78**

2400 Dundas Street West

Mixed Use Development

ARCADIS

ALLOWABLE RELEASE RATE AND STORM SERVICE DESIGN

2 / 100 -YEAR STORM SEWER DESIGN SHEET

$I_{2\text{-year}} = \frac{21.8}{(T)^{0.78}} = 88.19$ mm/hr

$I_{100\text{-year}} = \frac{59.7}{(T)^{0.80}} = 250.32$ mm/hr

Project Name: 2400 Dundas Street West
Project Number: 141003
Date: 27 May 2024
Calc By: SB

	From MH	To MH	DESIGN FLOW CALCULATIONS A (ha)	R	A x R	Accum. A x R	T_c (min)	I (mm/hr)	Q_{act} (l/s)	SEWER DESIGN & ANALYSIS Size of Pipe (mm)	Slope (%)	Nominal Capacity Q_{cap} (L/s)	Full Flow Velocity (m/s)	Actual Velocity (m/s)	Length (m)	Time in Sect. (min)	Total Time (min)	Percent of Full Flow (%)	Notes
ALLOWABLE RELEASE RATE																			
Allowable Release Rate (Block A/Phase 1)			0.4384	0.50	0.219	0.219	10.0	88.2	**53.7**										
Allowable Release Rate (Block B/Phase 2)			0.5715	0.50	0.286	0.286	10.0	88.2	**70.0**										
Allowable Release Rate (Park)			0.1044	0.50	0.052	0.052	10.0	88.2	**12.8**										
Allowable Release Rate (Total Site)			1.1143	0.50	0.557	0.557	10.0	88.2	**136.5**										
UNCONTROLLED FLOW																			
A2 Post: Phase 1 uncontrolled to Dundas			0.0046	0.90	0.004	0.004	10.0	250.3	**2.9**										
B2 Post: Phase 2 uncontrolled to Dundas			0.0096	0.90	0.009	0.009	10.0	250.3	**6.0**										
NET ALLOWABLE RELEASE RATE																			
Allowable Release Rate (Phase 1)			0.4384	0.50	0.219	0.219	10.0	88.2	**53.7**										
Phase 1 Uncontrolled Flow									**2.9**										
Net Allowable Release Rate									**50.8**										
Allowable Release Rate (Phase 2)			0.5715	0.50	0.286	0.286	10.0	88.2	**70.0**										
Phase 2 Uncontrolled Flow									**6.0**										
Net Allowable Release Rate									**64.0**										
Allowable Release Rate (Park)			0.1044	0.50	0.052	0.052	10.0	88.2	**12.8**										
Park Uncontrolled Flow									**0.0**										
Net Allowable Release Rate									**12.8**										
STORMFILTER / JELLYFISH SIZING: BLOCK A																			
2-year			0.1141	0.90	0.103	0.103	10.0	88.2	**25.2**										
5-year			0.1141	0.90	0.103	0.103	10.0	131.8	**37.6**										
100-year			0.1141	0.90	0.103	0.103	10.0	250.3	**71.4**										
STORMFILTER / JELLYFISH SIZING: BLOCK B																			
2-year			0.1180	0.90	0.106	0.106	10.0	88.2	**26.0**										
5-year			0.1180	0.90	0.106	0.106	10.0	131.8	**38.9**										
100-year			0.1180	0.90	0.106	0.106	10.0	250.3	**73.8**										
ORIFICE AND SERVICE DESIGN				k	Orif.(mm)	Area (m2)	depth (m)	head (m)	Q (L/s)										
Phase 1	MH1 (Cntrl MH)	450mm Storm		k=0.8	128	0.01287	0.83	0.77	**41.0**	250	2.00%	84.1	1.7	1.7	15.6	0.2	10.2	49%	
Phase 2	MH2 (Cntrl MH)	600mm Storm		k=0.8	128	0.01287	1.76	1.70	**60.9**	250	2.00%	84.1	1.7	1.9	14.8	0.1	10.1	72%	
Park	MH3 (Cntrl MH)	450mm Storm		k=0.6	75	0.00442	0.92	0.88	**11.6**	200	2.00%	46.4	1.5	1.2	14.9	0.2	10.2	25%	

2400 Dundas Street West | **Rational Method - 100 Year Storm**

Mixed Use Development | **Phase 1**

ARCADIS

$$I_{100\text{-year}} = \frac{59.7}{(10)^{0.80}} = 250.32 \text{ mm/hr}$$

Project Name:	2400 Dundas Street West	Controlled Area =	0.4338
Project Number:	141003	Weighed Runoff Coefficient =	0.76
Date:	27 May 2024	Orifice Discharge (L/s) =	41.0

Time (min)	Intensity (mm/hr)	Q-100 (L/s)	Q-stored (L/s)	Storage Volume (m^3)
0	0.0	0.000	0.000	0.000
10	250.3	228.782	187.757	112.654
20	143.8	131.401	90.375	108.450
30	103.9	95.000	53.975	97.155
40	82.6	75.470	34.445	82.667
50	69.1	63.131	22.106	66.318
60	59.7	54.563	13.538	48.737
70	52.8	48.233	7.208	30.272
80	47.4	43.346	2.321	11.140
90	43.2	39.448	0.000	0.000
100	39.7	36.259	0.000	0.000
110	36.8	33.598	0.000	0.000
120	34.3	31.338	0.000	0.000
130	32.2	29.395	0.000	0.000
140	30.3	27.703	0.000	0.000
150	28.7	26.215	0.000	0.000
160	27.2	24.896	0.000	0.000
170	25.9	23.717	0.000	0.000
180	24.8	22.657	0.000	0.000
190	23.7	21.698	0.000	0.000
200	22.8	20.826	0.000	0.000
210	21.9	20.028	0.000	0.000
220	21.1	19.297	0.000	0.000
230	20.4	18.623	0.000	0.000
240	19.7	17.999	0.000	0.000
250	19.1	17.421	0.000	0.000
260	18.5	16.883	0.000	0.000
270	17.9	16.381	0.000	0.000
280	17.4	15.911	0.000	0.000
290	16.9	15.470	0.000	0.000
300	16.5	15.057	0.000	0.000
310	16.0	14.667	0.000	0.000
320	15.6	14.299	0.000	0.000
330	15.3	13.951	0.000	0.000
340	14.9	13.622	0.000	0.000
350	14.6	13.310	0.000	0.000
360	14.2	13.013	0.000	0.000

Storage Volume Required (cu.m) =	**112.7**
Storage Volume Provided (cu.m) =	**141.8**
HGL Depth (m) =	0.8
Orifice Diameter (mm) =	128

2400 Dundas Street West | **Rational Method - 100 Year Storm**

Mixed Use Development | **Phase 2**

ARCADIS

$$I_{100\text{-year}} = \frac{59.7}{(10)^{0.80}} = 250.32 \text{ mm/hr}$$

Project Name:	2400 Dundas Street West	Controlled Area =	0.5619
Project Number:	141003	Weighed Runoff Coefficient =	0.84
Date:	27 May 2024	Orifice Discharge (L/s) =	60.9

Time (min)	Intensity (mm/hr)	Q-100 (L/s)	Q-stored (L/s)	Storage Volume (m^3)
0	0.0	0.000	0.000	0.000
10	250.3	327.846	266.978	160.187
20	143.8	188.298	127.431	152.917
30	103.9	136.136	75.268	135.483
40	82.6	108.149	47.281	113.475
50	69.1	90.468	29.600	88.801
60	59.7	78.190	17.322	62.359
70	52.8	69.118	8.250	34.652
80	47.4	62.115	1.248	5.989
90	43.2	56.530	0.000	0.000
100	39.7	51.960	0.000	0.000
110	36.8	48.146	0.000	0.000
120	34.3	44.908	0.000	0.000
130	32.2	42.123	0.000	0.000
140	30.3	39.698	0.000	0.000
150	28.7	37.566	0.000	0.000
160	27.2	35.676	0.000	0.000
170	25.9	33.987	0.000	0.000
180	24.8	32.468	0.000	0.000
190	23.7	31.093	0.000	0.000
200	22.8	29.843	0.000	0.000
210	21.9	28.701	0.000	0.000
220	21.1	27.652	0.000	0.000
230	20.4	26.686	0.000	0.000
240	19.7	25.793	0.000	0.000
250	19.1	24.964	0.000	0.000
260	18.5	24.193	0.000	0.000
270	17.9	23.474	0.000	0.000
280	17.4	22.800	0.000	0.000
290	16.9	22.169	0.000	0.000
300	16.5	21.576	0.000	0.000
310	16.0	21.017	0.000	0.000
320	15.6	20.490	0.000	0.000
330	15.3	19.992	0.000	0.000
340	14.9	19.520	0.000	0.000
350	14.6	19.073	0.000	0.000
360	14.2	18.648	0.000	0.000

Storage Volume Required (cu.m) =	**160.2**
Storage Volume Provided (cu.m) =	**176.9**
HGL Depth (m) =	1.8
Orifice Diameter (mm) =	128

2400 Dundas Street West | **Rational Method - 100 Year Storm**

Mixed Use Development | **Park**

ARCADIS

$$I_{100\text{-year}} = \frac{59.7}{(10)^{0.80}} = 250.32 \text{ mm/hr}$$

Project Name:	2400 Dundas Street West	Controlled Area =	0.1044
Project Number:	141003	Weighed Runoff Coefficient =	0.50
Date:	27 May 2024	Orifice Discharge (L/s) =	11.6

Time (min)	Intensity (mm/hr)	Q-100 (L/s)	Q-stored (L/s)	Storage Volume (m^3)
0	0.0	0.000	0.000	0.000
10	250.3	36.296	24.715	14.829
20	143.8	20.847	9.265	11.119
30	103.9	15.072	3.490	6.283
40	82.6	11.973	0.392	0.941
50	69.1	10.016	0.000	0.000
60	59.7	8.657	0.000	0.000
70	52.8	7.652	0.000	0.000
80	47.4	6.877	0.000	0.000
90	43.2	6.258	0.000	0.000
100	39.7	5.753	0.000	0.000
110	36.8	5.330	0.000	0.000
120	34.3	4.972	0.000	0.000
130	32.2	4.663	0.000	0.000
140	30.3	4.395	0.000	0.000
150	28.7	4.159	0.000	0.000
160	27.2	3.950	0.000	0.000
170	25.9	3.763	0.000	0.000
180	24.8	3.595	0.000	0.000
190	23.7	3.442	0.000	0.000
200	22.8	3.304	0.000	0.000
210	21.9	3.178	0.000	0.000
220	21.1	3.061	0.000	0.000
230	20.4	2.954	0.000	0.000
240	19.7	2.856	0.000	0.000
250	19.1	2.764	0.000	0.000
260	18.5	2.678	0.000	0.000
270	17.9	2.599	0.000	0.000
280	17.4	2.524	0.000	0.000
290	16.9	2.454	0.000	0.000
300	16.5	2.389	0.000	0.000
310	16.0	2.327	0.000	0.000
320	15.6	2.269	0.000	0.000
330	15.3	2.213	0.000	0.000
340	14.9	2.161	0.000	0.000
350	14.6	2.112	0.000	0.000
360	14.2	2.065	0.000	0.000

Storage Volume Required (cu.m) =	**14.8**
Storage Volume Provided (cu.m) =	**31.0**
HGL Depth (m) =	0.9
Orifice Diameter (mm) =	75

2400 Dundas Street West
Mixed Use Development

ARCADIS

Water Quality Calculations
Phase 1

Project Name: 2400 Dundas Street West
Project Number: 141003
Date: 27 May 2024
Calc By: SB

TSS Removal (Un-treated)

Surface	Area (m^2)		Effective TSS Removal	Overall TSS Removal
Conventional Roof	1,764	40%	80	32.2
Extensive Green Roof	1,270	29%	80	23.2
Intensive Green Roof	0	0%	80	0.0
Landscape	163	4%	80	3.0
Landscape over P1	0	0%	80	0.0
Permeable Pavers	0	0%	80	0.0
Impervious (Dirty)	1,141	26%	0	0.0
Impervious (Clean)	46	1%	80	0.8
Total Area:	**4,384**	100%		**59.2**

Treatment Required

TSS Removal (With Treatment)

Surface	Area (m^2)		Effective TSS Removal	Overall TSS Removal
Landscape over P1	1,764	40%	80	32.2
Permeable Pavers	1,270	29%	80	23.2
Impervious (Dirty)	0	0%	80	0.0
Impervious (Clean)	163	4%	80	3.0
Total Area	0	0%	80	0.0
0	0	0%	80	0.0
#REF!	1,141	26%	80	20.8
#REF!	46	1%	80	0.8
Total Area:	**4,384**	100%		**80.0**

Site Meets 80% TSS Removal

2400 Dundas Street West
Mixed Use Development

ARCADIS

Water Quality Calculations
Phase 2

Project Name: 2400 Dundas Street West
Project Number: 141003
Date: 27 May 2024
Calc By: SB

TSS Removal (Un-treated)

Surface	Area (m^2)		Effective TSS Removal	Overall TSS Removal
Conventional Roof	2,537	44%	80	35.5
Extensive Green Roof	480	8%	80	6.7
Intensive Green Roof	0	0%	80	0.0
Landscape	231	4%	80	3.2
Landscape over P1	0	0%	80	0.0
Permeable Pavers	0	0%	80	0.0
Impervious (Dirty)	1,180	21%	0	0.0
Impervious (Clean)	1,287	23%	80	18.0
Total Area:	**5,715**	100%		**63.5**

Treatment Required

TSS Removal (With Treatment)

Surface	Area (m^2)		Effective TSS Removal	Overall TSS Removal
Landscape over P1	2,537	44%	80	35.5
Permeable Pavers	480	8%	80	6.7
Impervious (Dirty)	0	0%	80	0.0
Impervious (Clean)	231	4%	80	3.2
Total Area	0	0%	80	0.0
0	0	0%	80	0.0
#REF!	1,180	21%	80	16.5
#REF!	1,287	23%	80	18.0
Total Area:	**5,715**	100%		**80.0**

Site Meets 80% TSS Removal

2400 Dundas Street West

Mixed Use Development

ARCADIS

Water Balance Calculations

Phase 1

Project Name: 2400 Dundas Street West
Project Number: 141003
Date: 27 May 2024
Calc By: SB

Total Volume to be Retained	
Required Water Balance (mm):	5.0
Recall Site Area (m^2):	4,384
Total Water Balance to be Retained (m^3):	**21.9**

Volume Achieved Through Initial Abstraction				
Surface	**Area (m^2)**		**I.A.**	**Vol. (m^3)**
Conventional Roof	1,764		1	1.8
Extensive Green Roof	1,270		5	6.4
Intensive Green Roof	0		7	0.0
Landscape	163		5	0.8
Landscape over P1	0		5	0.0
Permeable Pavers	0		5	0.0
Impervious (Dirty)	1,141		1	1.1
Impervious (Clean)	46		1	0.0
Total Area:	**4,384**			**10.1**

Water Balance Summary	**Vol. (m^3)**
Recall Initial Abstraction (see above):	10.1
Water Re-Use (Irrigation):	11.8
Water Re-Use (Toilet Flushing):	0.0
Total Water Balance Achieved:	**21.9**

Site Meets City's Water Balance Criteria

Check Tank Capacity to Capture Re-Use Volume	
Area of SWM Tank (m^2):	100.0
Float Switch Operating Range (m):	0.12
Total Water Balance Achieved:	**11.8**

SWM Tank has sufficient capacity for Re-Use Volumes

2400 Dundas Street West

Mixed Use Development

ARCADIS

Water Balance Calculations

Phase 2

Project Name: 2400 Dundas Street West
Project Number: 141003
Date: 27 May 2024
Calc By: SB

Total Volume to be Retained	
Required Water Balance (mm):	5.0
Recall Site Area (m^2):	5,715
Total Water Balance to be Retained (m^3):	**28.6**

Volume Achieved Through Initial Abstraction				
Surface	**Area (m^2)**		**I.A.**	**Vol. (m^3)**
Conventional Roof	2,537		1	2.5
Extensive Green Roof	480		5	2.4
Intensive Green Roof	0		7	0.0
Landscape	231		5	1.2
Landscape over P1	0		5	0.0
Permeable Pavers	0		5	0.0
Impervious (Dirty)	1,180		1	1.2
Impervious (Clean)	1,287		1	1.3
Total Area:	**5,715**			**8.6**

Water Balance Summary	**Vol. (m^3)**
Recall Initial Abstraction (see above):	8.6
Water Re-Use (Irrigation):	20.0
Water Re-Use (Toilet Flushing):	0.0
Total Water Balance Achieved:	**28.6**

Site Meets City's Water Balance Criteria

Check Tank Capacity to Capture Re-Use Volume	
Area of SWM Tank (m^2):	100.0
Float Switch Operating Range (m):	0.20
Total Retention Volume Provided:	**20.0**

SWM Tank has sufficient capacity for Re-Use Volumes

Determining Number of Cartridges for Flow Based Systems

Date	**5/30/2024**	**Black Cells =**	**Calculation**

Site Information

Project Name	**2400 Dundas St W**		
Project Location	**Toronto, ON**		
OGS ID	**OGS - Tank B**		
Drainage Area, Ad	**0.29**	ac	(0.118 ha)
Impervious Area, Ai	**0.29**	ac	
Pervious Area, Ap	**0.00**		
% Impervious	**100%**		
Runoff Coefficient, Rc	**0.90**		
Treatment storm flow rate, Q_{treat}	**0.21**	cfs	(5.9 L/s)
Peak storm flow rate, Q_{peak}	**2.61**	cfs	(73.8 L/s)

Filter System

Filtration brand	**StormFilter**	
Cartridge height	**18**	in
Specific Flow Rate	**2.00**	gpm/ft²
Flow rate per cartridge	**15.00**	gpm

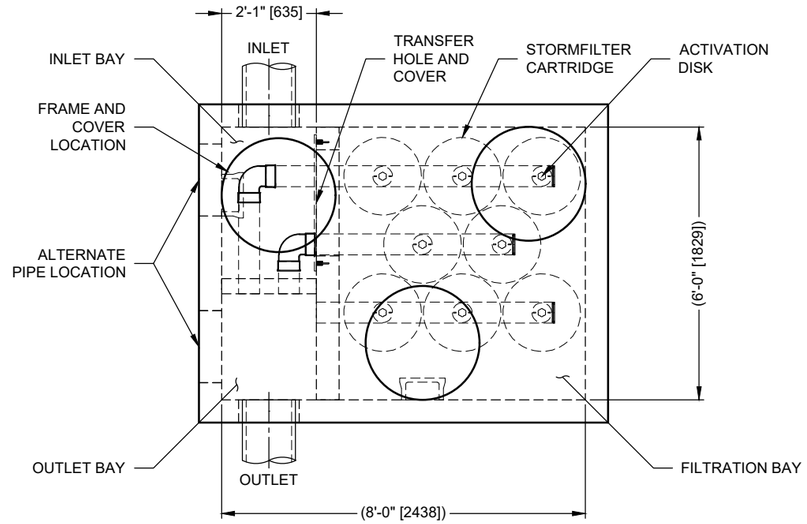
SUMMARY

Number of Cartridges	7
Media Type	Perlite

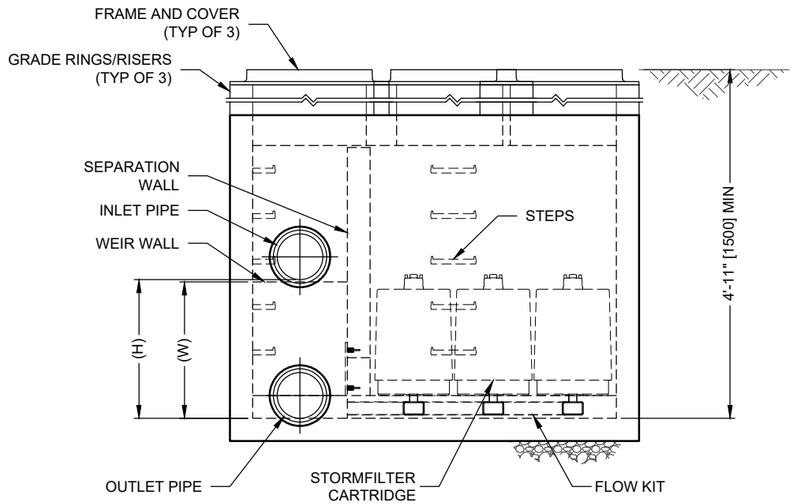
Event Mean Concentration (EMC)	**150**	mg/L
Annual TSS Removal	**80%**	
Percent Runoff Capture	**90%**	

Recommend SFPD0608 vault or CIP

200 Enterprise Drive
Scarborough, ME 04074
Phone 877-907-8676
Fax 207-885-9825



PLAN



ELEVATION

The Stormwater Management StormFilter®

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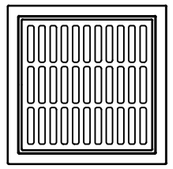

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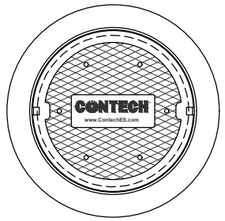

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SFPD0608 (6' x 8')
PEAK DIVERSION STORMFILTER
STANDARD DETAIL

Determining Number of Cartridges for Flow Based Systems

Date	**5/30/2024**	**Black Cells =**	**Calculation**

Site Information

Project Name	**2400 Dundas St W**		
Project Location	**Toronto, ON**		
OGS ID	**OGS - Tank A**		
Drainage Area, Ad	**0.28**	ac	(0.1141 ha)
Impervious Area, Ai	**0.28**	ac	
Pervious Area, Ap	**0.00**		
% Impervious	**100%**		
Runoff Coefficient, Rc	**0.90**		
Treatment storm flow rate, Q_{treat}	**0.20**	cfs	(5.7 L/s)
Peak storm flow rate, Q_{peak}	**2.52**	cfs	(71.4 L/s)

Filter System

Filtration brand	**StormFilter**	
Cartridge height	**18**	in
Specific Flow Rate	**2.00**	gpm/ft²
Flow rate per cartridge	**15.00**	gpm

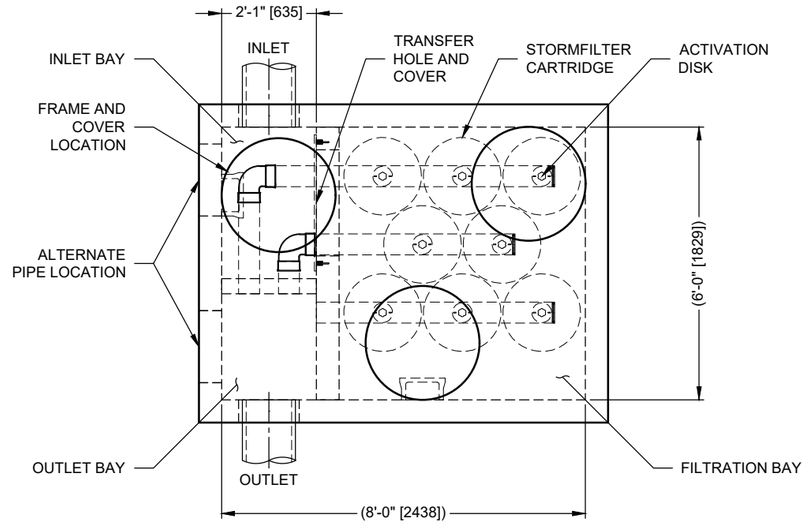
SUMMARY

Number of Cartridges	6
Media Type	Perlite

Event Mean Concentration (EMC)	**150**	mg/L
Annual TSS Removal	**80%**	
Percent Runoff Capture	**90%**	

Recommend SFPD0608 vault or CIP

200 Enterprise Drive
Scarborough, ME 04074
Phone 877-907-8676
Fax 207-885-9825



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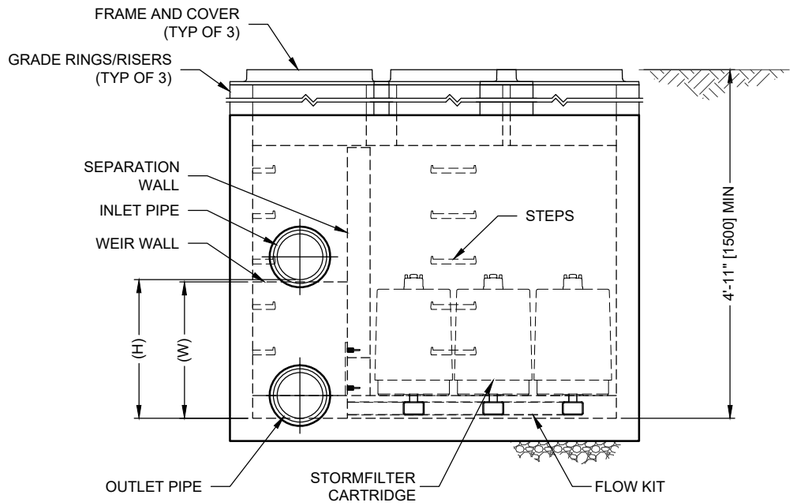

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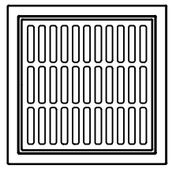

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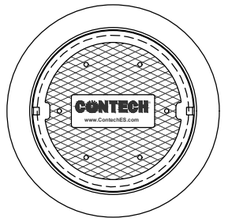

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PEAK DIVERSION STORMFILTER
STANDARD DETAIL

Appendix D
Sanitary Sewer

Sanitary Downstream Analysis Memo

Sanitary Service Design Calculations

Fora Developments

Sanitary Capacity Analysis

2400 - 2440 Dundas Street West, Toronto, ON

June 2024

Sanitary Capacity Analysis

2400 - 2440 Dundas Street West, Toronto, ON

June 5th, 2024

Prepared By:
Arcadis Professional Services (Canada) Inc.
8133 Warden Avenue, Unit 300
Markham, Ontario L6G 1B3
Canada
Phone: 905 763 2322

Prepared For:

Fora Developments
Toronto, ON, M6P 1W9
Canada
Phone: 416 536 3600

Our Ref:
145725

Will Heywood
Associate Manger , P.Eng

Michael Simone
Engineering Intern, E.I.T

Mark Mendrek
Engineering Intern, E.I.T

Version Control (optional)

Revision No.	Date Issued	Description	Reviewed By
V1	June 5, 2024	Issued for ZBA	Will Heywood

Contents

Tables

Figures

Appendices

Introduction

Arcadis Professional Services (Canada) Inc. (Arcadis) has been retained by Fora Developments (the “Owner”) to prepare a Functional Servicing Report to support the Zoning By Law Amendment (ZBA) process for a proposed mixed-use development located at 2400 - 2440 Dundas Street West (the “Subject Site”), in the City of Toronto (the “City”). The purpose of this report is to assess the downstream capacity of the receiving combined sewers pre and post development.

As part of the Sewer Assessment Guidelines (July 2021), the downstream capacity assessment has to the following criteria.

- Criterion 1 ("Design Function”)
  - Under proposed design flow conditions, plus contributing peak stormwater flows under the 2-yr design storm event, there shall be no surcharge in the sewer systems.
- Criterion 3 (WWF Mitigation”)
  - Under the 2-yr design storm event, off-site WWF and I&I mitigation measures will offset two times the proposed increase from on-site discharges to the system.
  - For systems containing CSO points for CSO control, ensure there will be no increase in peak overflow rate at the CSO point.

To meet both criteria, a proposed disconnection of three (3) catchbasins located on Campbell Avenue currently connected to the combined system will be redirected to the storm system located on Rankin Crescent.

1 Background

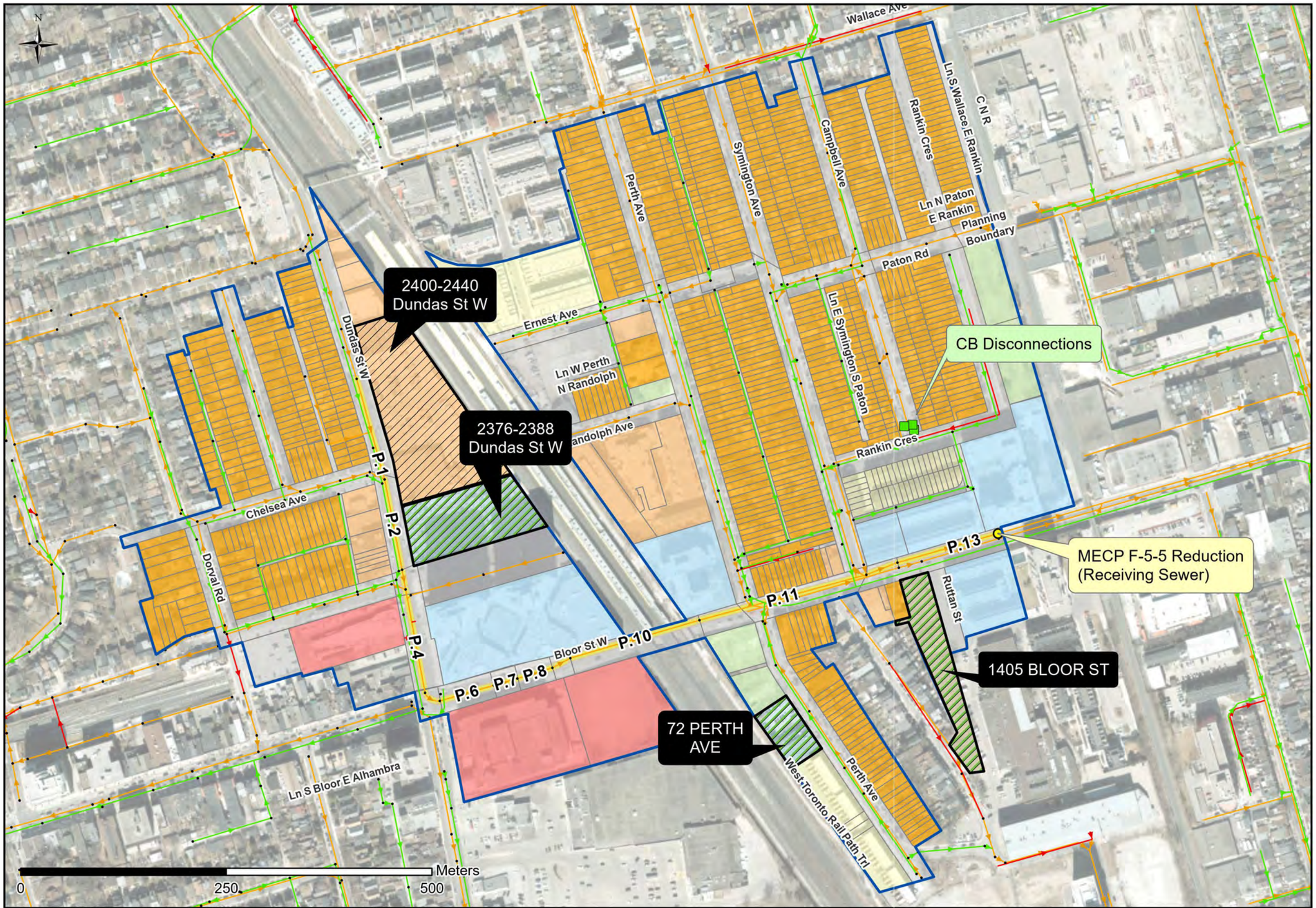
The development site location is located within the City's Basement Flooding Study Area 44 ("BF44"). The basement flooding model for BF44 is underway but not completed. Therefore, a custom *InfoWorks ICM*™ model was created and used to complete the sewer capacity analysis.

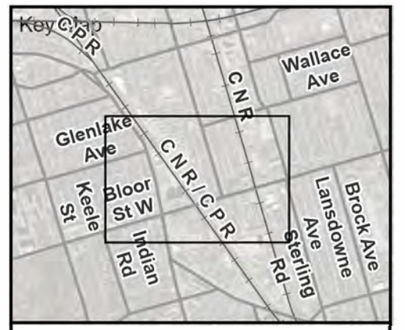
The following background and supporting information were used:

- As provided by the client; the City's GIS information including land parcels, combined sewers, and combined manholes.
- Historical aerial imagery from City of Toronto website.
- The Sewer Capacity Assessment Guidelines for the City of Toronto dated July 2021.
- The Design Criteria for Sewers and Watermains for the City of Toronto dated January 2021.
- Google Maps Overhead Satellite Imagery, Google Street View, & ESRI Base maps.

Figure 1-1 on the following page, shows the proposed site location, catchbasin disconnection locations, recent developments, analyzed sewers and land use.

Figure 1-1 - Combined Capacity Analysis Overview





Legend

- Development Site
- Recent Developments
- Drainage Area
- Catch Basin Disconnections
- Analyzed Line
- Maintaince Holes

Sewer Network

- Combined Sewer
- Sanitary Sewer
- Storm Sewer

Land Use

- Single Family Dwelling (0.65)
- Apartments (>148 units/ha) (0.75)
- Commercial or Retail (0.9)
- Institutional (0.75)
- Open Space (0.25)
- Roads (0.9)
- Town Homes (0.75)

2400-2440 Dundas St W
Combined Capacity Analysis
City of Toronto

ARCADIS

Project No.:	Date:
141003	June 2024

2024-05-24 J:\141003_2400Dundas\7.0_Production\7.07_Spatial_Design\GIS\Maps\2400_Dundas\2400_Dundas.aprx

2 Sanitary Drainage System

2.1 Existing Sanitary Infrastructure

Per the City's record information, circular and egg shape sanitary sewers ranging from 675 mm x 1050 mm to 1200 mm carry flows southwards along Dundas Street West and eastwards along Bloor Street West. Sewer flows are eventually conveyed to a combined sewer overflow (CSO) at Bartlett Ave & Bloor St W. The existing 1.11 ha site currently consists of commercial buildings, an asphalt parking surface Using the City's population density, the population calculations are shown in **Table 2-1**.

Table 2-1 Existing Site Populations

	GFA (m^2)	Rate	Population
Commercial Buildings	3125	1.1 pp/100 m^2	34
Total Proposed ICI Population			**34**

The corresponding pre-development peak sanitary flow is calculated as follows:

$$Q_{Pre\text{-}Dev.} = \left(\frac{250\ L/c{\cdot}d \cdot 34 \cdot}{86400\ s/day}\right) + (0.26\ \ L/s{\cdot}ha \cdot 1.11\ ha) \quad \mathbf{=0.39\ L/s}$$

2.2 Post-Development Sanitary Flows

The anticipated sanitary discharge flows for the proposed site were calculated based on the site statistics provided along with the City's design criteria. Additionally, the long-term dewatering rate of 0.16 L/s (running 24 hrs. per day) has been included in post development flows.

The population calculations are shown in **Table 2-2** and **Table 2-3.**

Table 2-2 Proposed Development Site Populations (Residential)

	Units/Area	Rate	Population
1 Bedroom	841	1.4 pp/unit	1178
2 Bedroom	251	2.1 pp/unit	528
3 Bedroom	122	3.1 pp/unit	379
Total Proposed Residential Population			**2085**

Table 2-3 Proposed Development Site Populations (ICII)

	Floor Area (m^2 GFA)	Rate	Population
Commercial/Retail	3069.5	1.1 pp/100m^2	34
Office Space	3206.4	3.3 pp/100m^2	106
Total Proposed Residential Population			**140**

The corresponding post-development sanitary sewer flow is calculated as follows:

$$Q_{Post\text{-}Dev} = Residential\ Flows + ICI\ Flows + Dewatering\ Rate$$

$$Q_{Post\text{-}Dev} = \left(\frac{240\ L/c{\cdot}d \cdot 2085\ pers \cdot 3.57_{P.F.}}{86400\ s/day}\right) + \left(\frac{250\ L/c{\cdot}d \cdot 140\ pers}{86400\ s/day}\right) + (0.26\ L/s{\cdot}ha \cdot 1.11\ ha) + 0.16\ L/s = \mathbf{21.53\ L/s}$$

The proposed development site discharges **21.37 L/s** of sanitary flow to the existing sewer system, which results in an increase of **21.14 L/s** (21.53 L/s – 0.39 L/s) under dry weather conditions. All construction is assumed to be conducted following the Ontario Building Code and therefore no elevated infiltration rate is expected to occur during extreme wet weather scenarios.

3 InfoWorks ICM Model Preparation

3.1 Model Build

Table 3-1 summarizes each component included in the model. A separate set of wastewater subcatchments and storm runoff subcatchments were developed. Storm subcatchments are only considered in areas exclusively serviced by combined sewers, while the remaining areas will be contributing storm runoff to the parallel storm system and therefore were not included in the model. Further details are provided in the sections below.

Figure 3-1 below shows a screenshot of the completed InfoWorks ICM model with pipe network and subcatchments.

Table 3-1 InfoWorks ICM Model Component Summary

Feature	Description	
Sewer Network	The City's shapefile data was used for the network characteristics including pipe size, shape, inverts, and manhole ground levels.	
Existing Population Flow	Peaked wastewater design flow values were applied as a constant peak value. No diurnal pattern was applied. Design per capita rates for residential and ICI populations were used:	
	Residential = **240 L/s/cap**	ICI = **250 L/s/cap**
Proposed Development Wastewater Flows	Proposed wastewater design flows from current development applications were added to the model based on available Functional Servicing Reports (FSRs) And Sanitary Servicing Reports.	
Infiltration Rate	A conservative infiltration generation rate of **5.0 L/s/ha** was used for the first 10 ha and a rate of **3.0 L/s** was used for the remaining area contributing to wastewater flows (excluding storm run-off subcatchments). Infiltration flow values (L/s) as calculated in the flow generation sheet were applied as baseflows (i.e. constant flow) to the corresponding catchment within the *InfoWorks* ICM model.	
Storm Runoff Flow	Storm water runoff contributing to the combined sewer was generated using SWMM parameters, Applied Rainfall Events (2-Year 6 Hour Chicago Design Storm), and area weighted runoff coefficients based on land use.	

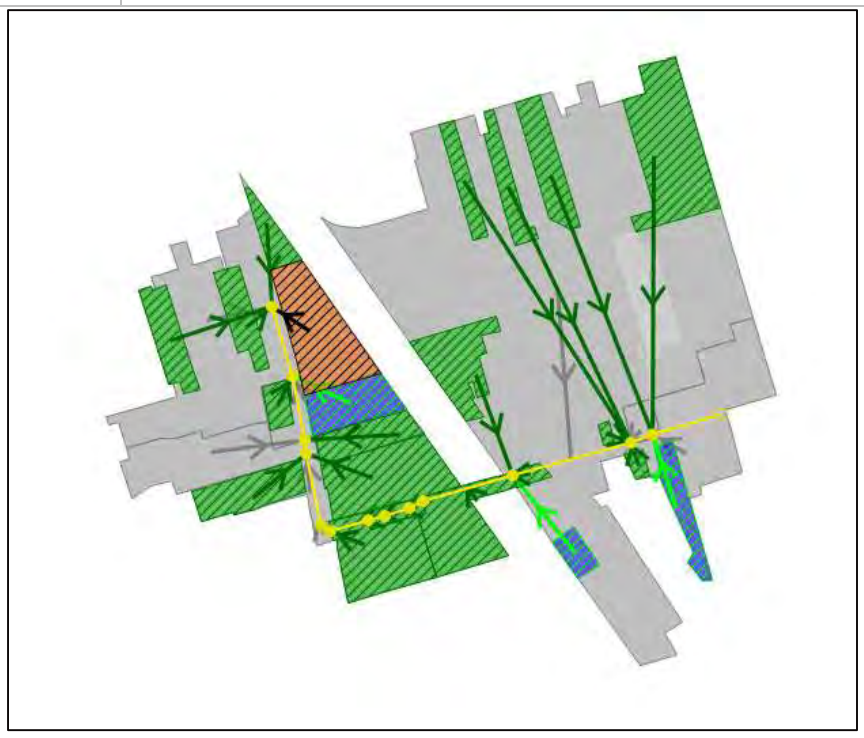


Figure 3-1 Custom InfoWorks ICM Model

3.2 Wastewater Flows

Populations were estimated based on land use, number of units within each residential lot and estimated ground floor area (GFA) for each ICI building. The flows generated from each building were then calculated using standard City design rates. Calculated flows were peaked based on the Harmon peaking factor. **Figure 1-1** shows the land use assignments used to calculate populations within the drainage area.

The flow rates for wastewater catchments in the drainage area were taken from flow generation sheets located in **Appendix SCA-2**. All contributing wastewater flows within the InfoWorks ICM model match the flows generated using the flow generation sheets.

3.2.1 Relevant Developments

Developments relevant to the analysis were included as “Relevant Developments” within the model. A relevant development is considered as any development with an approved, active or under review Site Plan Application.

Proposed increase in sanitary flows from active developments listed on the City’s website were included in all analyzed scenarios and are presented in **Table 3-2**.

Table 3-2 Relevant Developments

Property Address	Application Number	Increase in Site Flow (L/s)	Notes
2376-2388 DUNDAS ST W	20165478STE04SA	14.70	SCA Approved
72 PERTH AVE	18170127STE18OZ	2.66	Approved
1405 BLOOR ST W	20199975STE09OZ	12.50	Under Review

3.3 Wet Weather Flows

The wet weather flow component in this model is made up of:

- I/I contributing to all wastewater catchments (covers full combined sewer service area). A foundation drain allowance (I/I) rate of 5.0 L/s/ha for the first 10 ha and 3.0 L/s/ha for the remaining contributing area was used to conservatively estimate wet weather I/I flow to the combined sewers under the 2-year design events; and storm runoff for storm or combined sewers where applicable.

The following points describe the methodology and assumptions used for the storm runoff generation:

- Runoff from residential properties (i.e., Single Detached, Semi-Detached, Townhouses etc.) and roadways will be to the municipal right of way, and will be collected by:
  - The storm sewers where they have been installed (sewer separation), and
  - The combined sewers where no storm sewers are present.
- Runoff from properties with flat roofs (ICI or Apartments) will collect stormwater on site (via roof drains, catch basins) and discharge to the municipal sewers. The estimated age of the flat-roof buildings was reviewed using historical aerial imagery (provided in **Appendix SCA-1)** and compared against the installation year of the sewers servicing the property. The assumed connection points were:
  - To the storm sewer if the building construction date was newer than the storm sewer construction date; or

- To the combined sewer if the building was built before the construction of local storm sewers, or if no storm sewers are present.

Stormwater runoff subcatchments and their respective flows contributing to the analyzed combined sewer were generated using SWMM parameters, an area weighted runoff co-efficient based on land use and an applied storm event. **Figure 4-2** shows the applicable storm subcatchments and their runoff coefficients. All flow rates for storm water runoff catchments were generated in the model. SWMM parameters are detailed in **Table 3-3**.

Table 3-3 SWMM Parameters

Parameter	Description
Routing Model	SWMM
Initial Loss	Conservatively set to zero for all storm events applied.
Runoff Routing Volume Type	Fixed.
Runoff Routing type	Absolute. The Runoff Routing Value is the routing factor.
Runoff Routing value	0.013 based off Manning's n requirements in the City of Toronto Design Guidelines.
Fixed Runoff Co-efficient	Determined on a per storm catchment basis, by an area weighted runoff co-efficient based on land use. Area-weight runoff coefficients provided in **Figure 1-1**.
Width and Slope Parameters	Set to InfoWorks Default. Width calculated as the radius of a circle with area = subcatchment area.

4 MECP F-5-5

4.1 Pre-Development Storm Discharge

A dye test investigation was conducted by Aquaflow Technology Inc to determine existing drainage connectivity for the subject site. The results of this investigation show that all existing storm flows are directed to the existing 450 mm storm sewer within Dundas Street West, and no storm flows are directed to the existing 1,050 mm combined sewer. Accordingly, an off-site disconnection will be required to satisfy MECP Procedure F-5-5 which will be discussed in greater detail below. See **Appendix SCA-1** for a copy of the dye test investigation.

4.2 MECP F-5-5 Compliance

In order to comply with MECP F-5-5, the site must present an off-site flow reduction option to offset the increase at a 2:1 ratio. A dye test investigation was conducted by Aquaflow Technology Inc. to determine and confirm the location of several possible catchbasins, and to verify if the catchbasins were connected to local combined sewers. Based on this investigation, three catchbasins on Campbell Ave were chosen for disconnection. (see Appendix **SCA-1** for the full report)

Figure 4-1 provides an overview of the three (3) catchbasin disconnections located on Campbell Ave currently connected to the combined system and their drainage area. The catchbasins will be redirected to the storm system located on Rankin Crescent.

The drainage area of these catchbasins is represented in the model as a storm subcatchment (STM.19) with a total area of 0.72 ha. The peak runoff generated by the model for STM.19 under the two-year storm event (2-Year 6 Hour Chicago Design Storm) is **94.81 L/s**. The removal of this subcatchment in the post development scenario represents the disconnection of the three (3) catchbasins on Campbell Avenue.

As the proposed disconnection flow represents a flow more than double the proposed increase (21.14 L/s * 2 = 42.28 L/s) from the site, the site is in compliance with MECP F-5-5 and the City of Toronto Sanitary Capacity Guidelines (July 2021).

It is important to note that the sanitary discharge connection of the development site is to the combined sewer on Dundas Street West. The point of net decrease in the system is not met until the convergence of the combined sewers on Bloor Street W near the intersection of Symington Ave & Bloor St W. Therefore, the downstream capacity analysis will be conducted up to the intersection of the combined sewer on Bloor Street West.

Figure 4-1 - Catchbasin Disconnection Overview

Legend

- Drainage Area
- Storm Subcatchments
- Catch Basin Disconnections
- Maintaince Holes

Sewer Network

- Combined Sewer
- Sanitary Sewer
- Storm Sewer

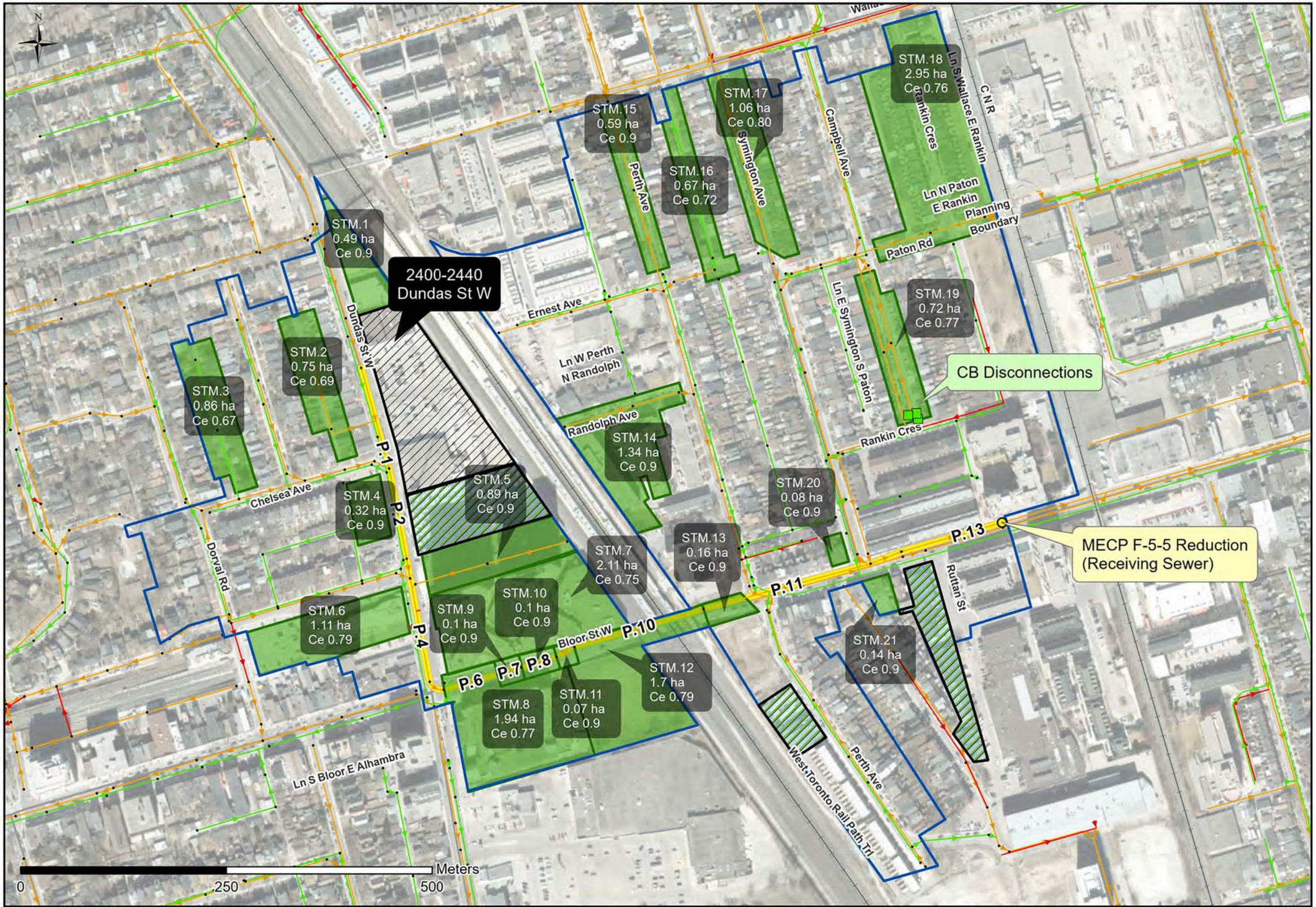
2400-2440 Dundas St W
Combined Capacity Analysis
City of Toronto

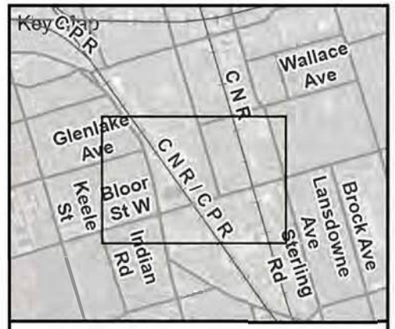
ARCADIS

Project No.:	Date:
141003	June 2024

2024-05-29 J:\141003_2400Dundas\7.0_Production\7.07_Spatial_Design\GIS\Maps\2400_Dundas\2400_Dundas.aprx

Figure 2 - Storm Runoff Analysis Overview





Legend

- Development Site
- Recent Developments
- Storm Subcatchments
- Drainage Area
- Catch Basin Disconnections
- Analyzed Line
- Maintaince Holes

Sewer Network

- Combined Sewer
- Sanitary Sewer
- Storm Sewer

2400-2440 Dundas St W
Combined Capacity Analysis
City of Toronto

ARCADIS

Project No.:	Date:
141003	June 2024

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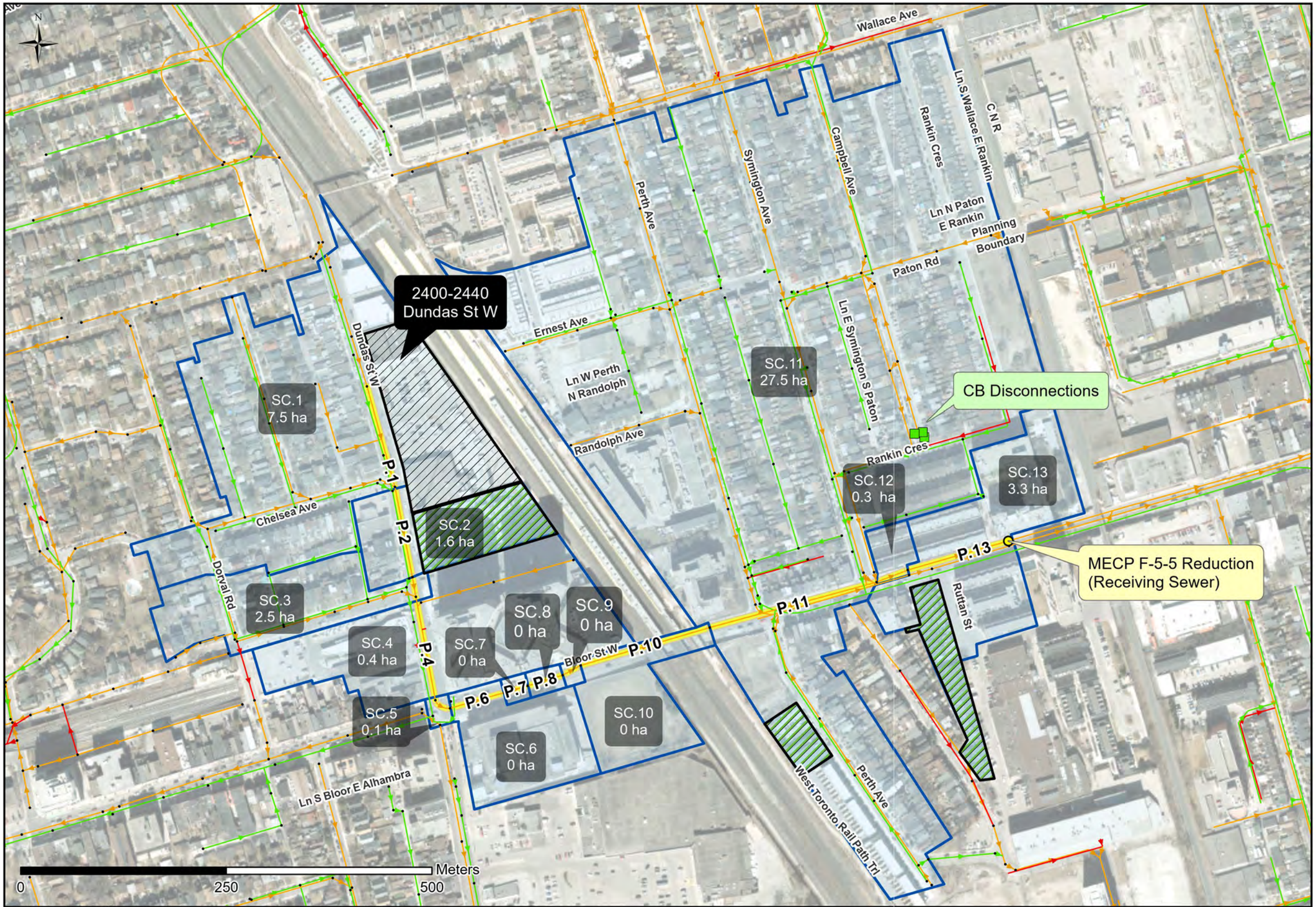
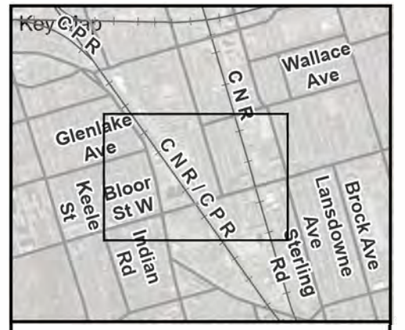
Figure 4-3 - Waste Water Analysis Overview





Legend

- Subcatchments
- Development Site
- Recent Developments
- Catch Basin Disconnections
- Analyzed Line
- Maintaince Holes

Sewer Network

- Combined Sewer
- Sanitary Sewer
- Storm Sewer

Note: Subcatchment area is reflective of storm runoff area reductions.

2400-2440 Dundas St W
Combined Capacity Analysis
City of Toronto

ARCADIS

Project No.:	Date:
141003	June 2024

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5 Modeling Analysis

Table 5-1 summaries each of the two (2) analysis scenarios. Under the proposed condition scenarios, the development site discharge of **21.37 L/**s is applied in addition to the MECP F-5-5 Reduction. The analysis will be conducted from the development site on Dundas Street West to the point of net decrease in the system, which occurs at the convergence of the combined sewers on Bloor Street West.

Table 5-1 Analysis Scenarios

Scenario	Development Site Discharge to Combined	Catch Basin Discharge to Combined	Development Site Discharge to Storm	Catch Basin Discharge to Storm	Rainfall Event Applied
Scenario 1: Existing Conditions (2-Yr Storm)	0.39 L/s	94.81 L/s	273 L/s	0 L/s	2-Year 6 Hour Chicago
Scenario 2:Proposed Conditions (2-Yr Storm)	21.14 L/s	0 L/s	136.5 L/s	94.81 L/s	2-Year 6 Hour Chicago

The results of each scenario are summarized in the following sections. **Appendix SCA-2** contains the detailed results sheets for each analysis scenario along with supporting flow generation sheets, and hydraulic grade line profiles (HGLs).

5.1 Scenario 1: Existing Conditions (2-Yr Storm)

This scenario evaluates the downstream sewer capacity under existing conditions with a 2-year storm applied. A foundation drain allowance (I/I) rate of 5.0 L/s/ha for the first 10 ha catchment areas and **3**.0 L/s for the remaining catchment areas were applied to wastewater subcatchments.

Simulation results for this scenario indicate that all existing combined sewers operate under free flow conditions, with the exception of pipe nine (P.9). Pipe nine (600 mm) has an extreme slope (16.2%) and has its downstream connection point lower than the mid-point of pipe ten. Due to the size of pipe ten (1200 mm), the downstream end of pipe nine is constantly surcharged (4.46 m of available freeboard) regardless of the upstream flow, while the upstream end of pipe nine is not experiencing any surcharging. Therefore, the surcharged conditions seen at pipe nine are considered acceptable and should not pose a risk to basement flooding in the area.

The maximum pipe diameter utilization of all sewers (except pipe nine) downstream of the development site is 93.6%.

5.2 Scenario 2: Proposed Conditions (2-Yr Storm)

This scenario evaluates the downstream sewer capacity under proposed conditions with a 2-year storm applied. A foundation drain allowance (I/I) rate of 5.0 L/s/ha for the first 10 ha catchment areas and 3.0 L/s for the remaining catchment areas were applied to wastewater subcatchments. The proposed disconnection of the three catchbasins on Campbell are modeled in the post development scenario by removing the storm subcatchment representing the drainage area of the catchbasins (STM.19).

Simulation results for this scenario indicate that all existing combined sewers operate under free flow conditions, with the exception of pipe nine (P.9). Pipe nine (600 mm) has an extreme slope (16.2%) and has its downstream connection point lower than the mid-point of pipe ten. Due to the size of pipe ten (1200 mm), the downstream end of pipe nine is constantly surcharged (4.46 m of available freeboard) regardless of the upstream flow, while the upstream end of pipe nine is not experiencing any surcharging. Therefore, the surcharged conditions seen at pipe nine are considered acceptable and should not pose a risk to basement flooding in the area.

The maximum pipe diameter utilization of all sewers (except pipe nine) downstream of the development site is 95%.

6 Conclusion

The downstream capacity of the receiving combined sewers for 2400 - 2440 Dundas Street West (the “Subject Site”) meets Criterion 1, as all existing combined sewers operate under free flow conditions with the exception of pipe nine (P.9). Pipe nine (600 mm) has an extreme slope (16.2%) and has its downstream connection point lower than the mid-point of pipe ten. Due to the size of pipe ten (1200 mm), the downstream end of pipe nine is constantly surcharged (4.46 m of available freeboard) regardless of the upstream flow, while the upstream end of pipe nine is not experiencing any surcharging. Therefore, the surcharged conditions seen at pipe nine are considered acceptable and should not pose a risk to basement flooding in the area.

Criterion 2 will be met by a proposed disconnection of three catchbasins on Campbell Ave from the combined system, which will be redirected to the storm system on Rankin Cres. This change is modeled in the post development scenario by removing the storm subcatchment representing the drainage area of the catchbasins (STM.19). The subcatchment generates a peak runoff of 94.81 L/s under a two-year storm event. Since the proposed disconnection flow exceeds the proposed site increase by more than double, the site complies with MECP F-5-5 and the City of Toronto Sanitary Capacity Guidelines (July 2021).

Appendix SCA-1

Background

Table SCA 1-1

Development Site Area: 1.11 ha

Existing Site Flows

Unit Count

	Floor Area (m2 GFA)	Rate (per 100m2)	Pop (persons)
Commerical Building	3125	1.1	34
		Total:	34

Flow Gen. Rate	250	L/cap/day		
Peaked DWF	0.10	L/s		
I-I Rate	0.26	L/s/ha	I-I Rate	3.00 L/s/ha
I-I Flow	0.29	L/s	I-I Flow	3.34 L/s
Total DWF:	**0.39**	L/s	**Total WWF:**	**3.44** L/s

Proposed Site Flows

Towers A + B1 + B2

	Count	Rate (per unit)	Pop (persons)
1 Bedroom	841	1.4	1178
2 Bedroom	251	2.1	528
3 Bedroom	122	3.1	379
Total:	1214	Total:	**2085**

ICI Flows

	Floor Area (m2 GFA)	Rate (per 100m2)	Pop (persons)
Commerical/Retail	3069.5	1.1	34
Office Space	3206.4	3.3	106
Total:	6275.9	Total:	**140**

Dewatering Rate	0.16	L/s
Peaking Factor	3.57	
Flow Gen. Rate (Res)	240	L/cap/day
Flow Gen. Rate (ICI)	250	L/cap/day
Peaked DWF	21.24	L/s
I-I Rate	0.26	L/s/ha
I-I Flow	0.29	L/s
Total DWF:	**21.53**	L/s
Total Increase in DWF:	**21.14**	L/s

ARCADIS

AQUAFLOW TECHNOLOGY INC

226 WILKINSON ROAD, BRAMPTON, ONTARIO L6T 4N7
(905) 792-8169

COMBINED & STORM SEWER INVESTIGATION REPORT
DYE TEST

200 MM - 375 MM DIAMETER COMBINED SEWERS
&
200 MM - 600 MM DIAMETER STORM SEWERS

FOR

2400 DUNDAS STREET WEST

CITY OF TORONTO

CONSULTING ENGINEER: ARCADIS
CONSULTING ENGINEER'S REPRESENTATIVE: MARK MENDREK

THURSDAY, MAY 9TH, 2024

INDEX:

SEWER CLEANING, VIDEO INSPECTION, INSITU REPAIRS &
MUNICIPAL ENGINEERING SERVICES

2. SUMMARY REPORT AND CONCLUSIONS:

The investigation of the combined and storm sewers at 2400 Dundas Sreet West was carried out by Steven Lostracco, P.Eng. of Aquaflow Technology, and was authorized by Mark Mendrek of Arcadis. The investigation was carried out on Thursday May 9th, 2024.

The purpose of this report was to determine which municipal sewer the street catchbasins connect to. Dye testing was carried out from each catchbasin to confirm which sewer they connect to.

1. CB-1 and CB-2 on Randolph connects to the 300 mm combined sewer. Green dye was pumped into the catchbasins and was observed at MH COMB-A.

2. CB-3 on Ernest connects to the 300 mm combined sewer. Green dye was pumped into the catchbasin and was observed at MH COMB-B.

3. CB-4, CB-5 and CB-7 on Campbell connect to the 300 mm combined sewer. Green dye was pumped into the catchbasins and was observed at MH COMB-C. Note, CB-6 could not be found, it is likely abandoned.

4. DCB-8 and DCB-9 on Rankin connect to the storm sewer on Rankin.

1. CB-1 and CB-2 on Randolph connect to COMB-A (Green dye)

2. CB-1 and CB-2 on Randolph connect to COMB-A (Green dye)

3. CB-1 and CB-2 on Randolph connect to COMB-A (Green dye)

4. CB-1 and CB-2 on Randolph connect to COMB-A (Green dye)

5. CB-3 Ernest connect to COMB-B (green dye)

6. CB-3 Ernest connect to COMB-B (green dye)

7. CB-3 Ernest connect to COMB-B (green dye)

8. CB-3 Ernest connect to COMB-B (green dye)

9. CB-4 and CB-5 on Campbell connect to COMB-C (green dye)

10. CB-4 and CB-5 on Campbell connect to COMB-C (green dye)

11. CB-4 and CB-5 on Campbell connect to COMB-C (green dye)

12. CB-4 and CB-5 on Campbell connect to COMB-C (green dye)

13. CB-7 on Campbell connects to COMB-D (green dye)

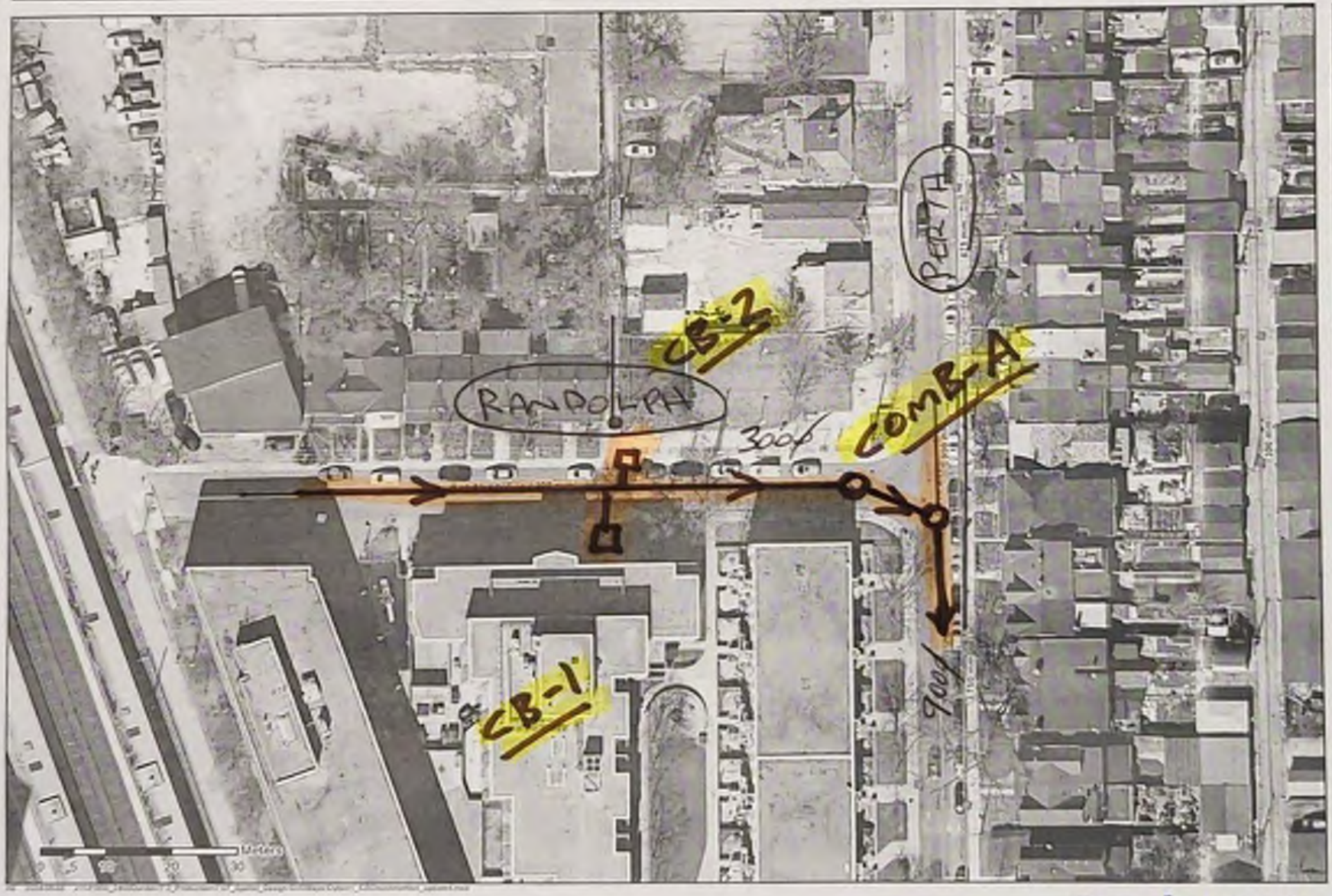
14. CB-7 on Campbell connects to COMB-D (green dye)


15. CB-7 on Campbell connects to COMB-D (green dye)

Report Prepared by:

Steven Lostracco, P. Eng.

Aquaflow - Catchbasin Disconnections Cluster 1



Key Map

Legend

- Catchbasin DYE TEST
- Catchbasin
- Combined Sewer
- Sanitary Sewer
- Storm Sewer
- Study Area

Catchbasin Disconnection
2400 Dundas Street West
City of Toronto

ARCADIS

Project No.	Date
141003	May 2024

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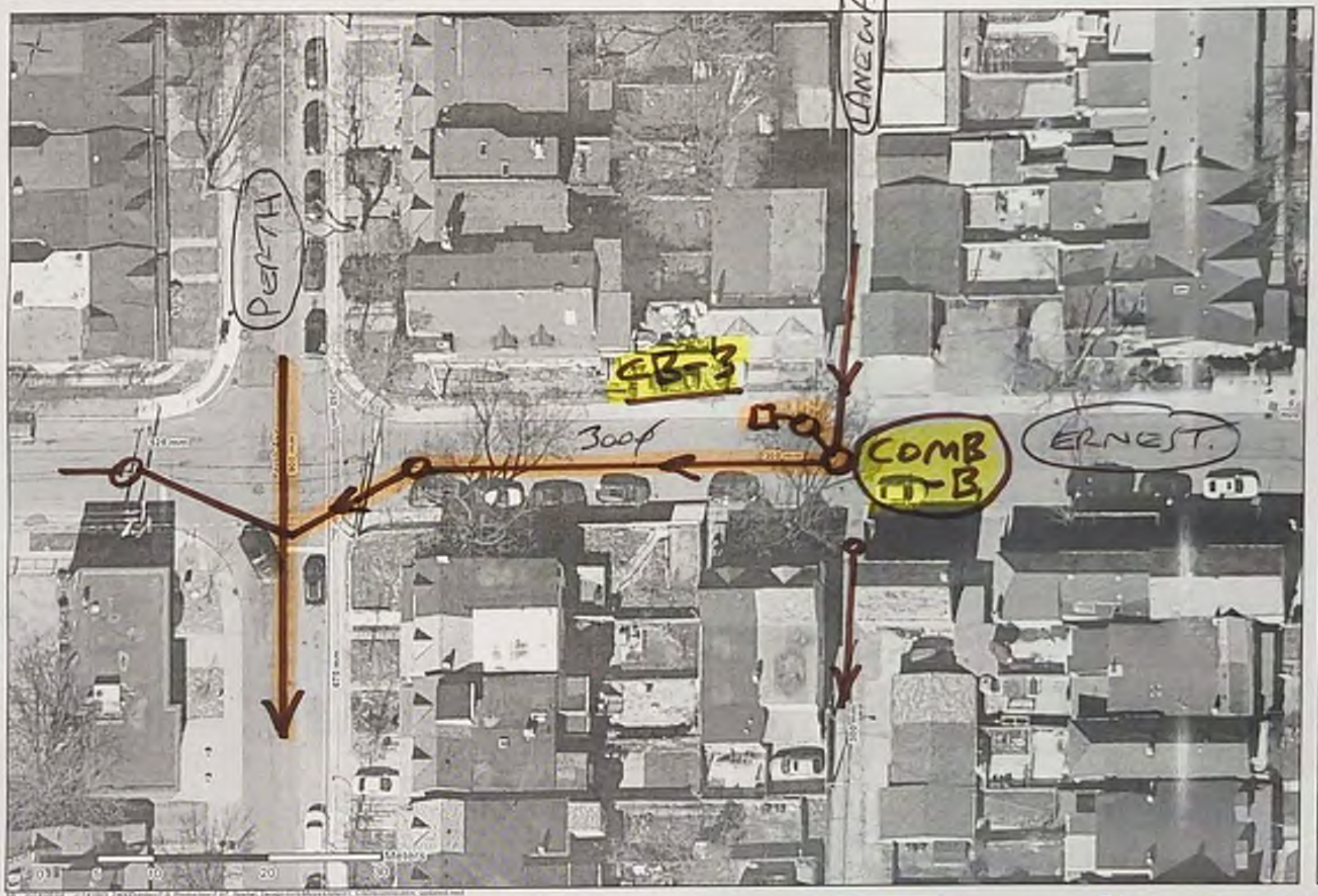
2400 DUNDAS ST. W
MAY. 9. 2024

Aquaflow - Catchbasin Disconnections Cluster 2



Legend

- Catchbasin DYE TEST
- Catchbasin
- Combined Sewer
- Sanitary Sewer
- Storm Sewer
- Study Area

Catchbasin Disconnection
2400 Dundas Street West
City of Toronto

ARCADIS

Project No.	Date
141003	May 2024

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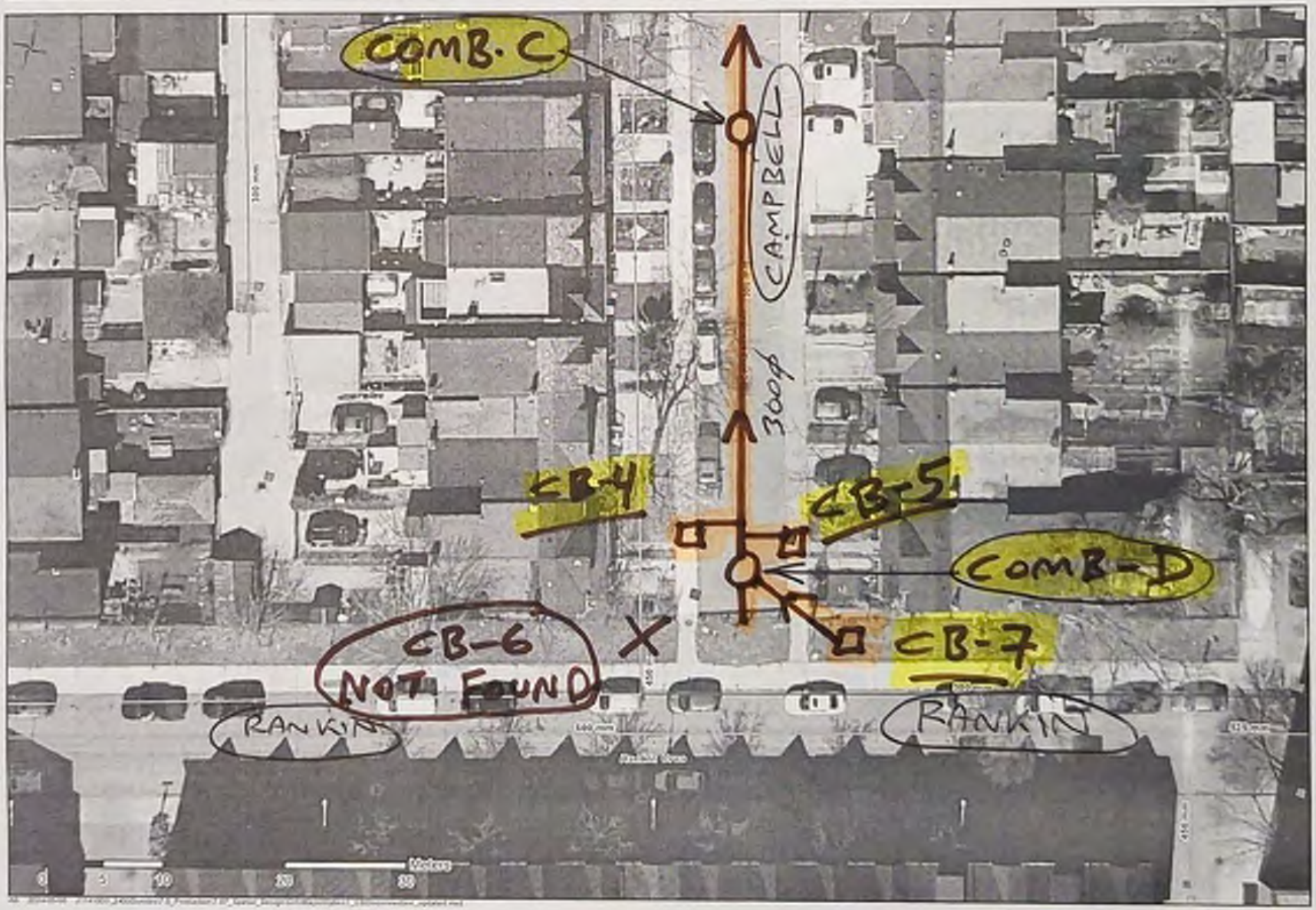
2400 DUNDAS. ST W
MAY. 9. 2024

Aquaflow - Catchbasin Disconnections Cluster 4



Legend

- Catchbasin DYE TEST
- Catchbasin
- Combined Sewer
- Sanitary Sewer
- Storm Sewer
- Study Area

Catchbasin Disconnections
2400 Dundas Street West
City of Toronto

ARCADIS

Project No.	Date
141003	May 2024

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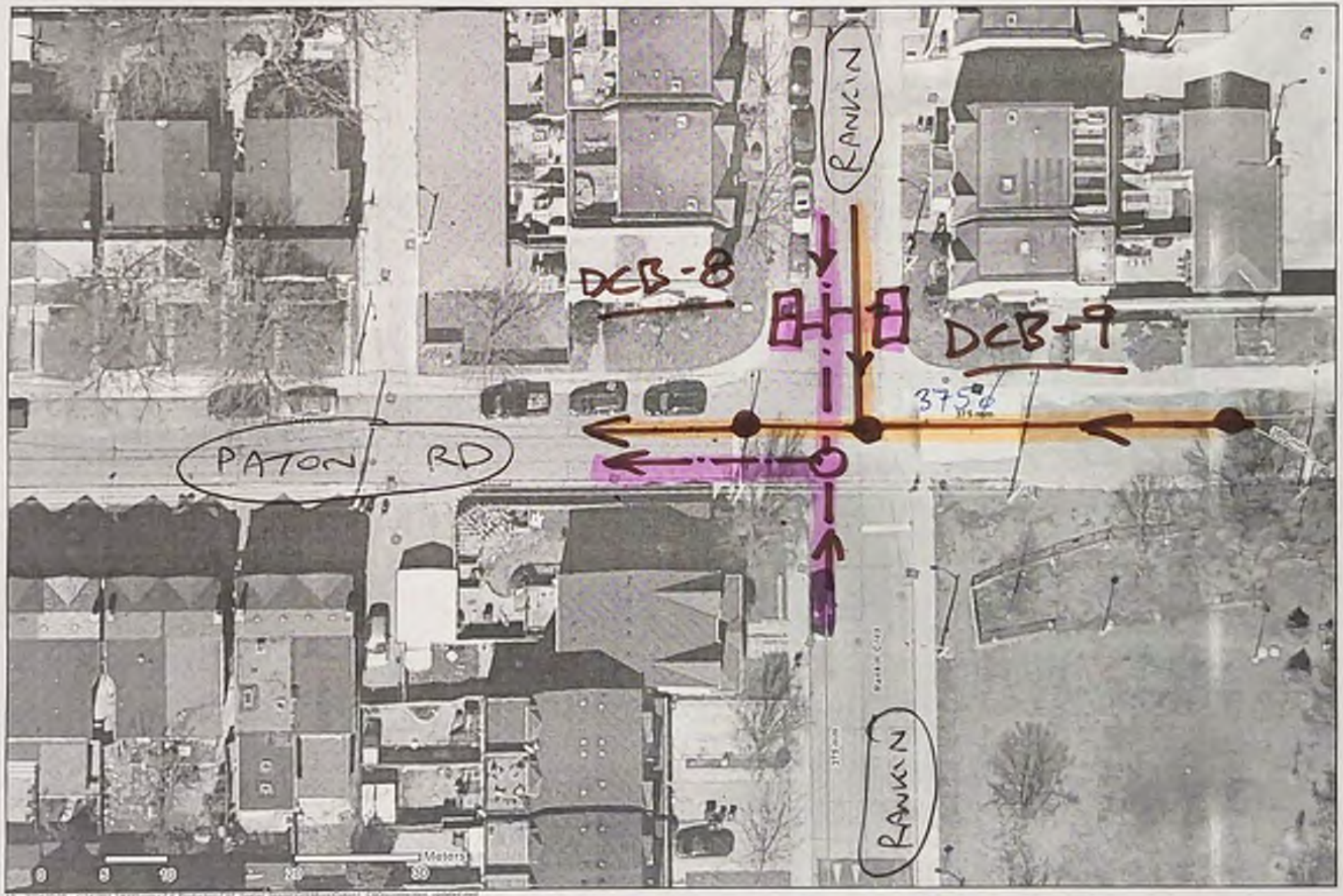
2400 DUNDAS ST. W
MAY. 9. 2024

Aquaflow - Catchbasin Disconnections Cluster 3



Legend

- Catchbasin DYE TEST
- Catchbasin
- Combined Sewer
- Sanitary Sewer
- Storm Sewer
- Study Area

Catchbasin Disconnection
2400 Dundas Street West
City of Toronto

ARCADIS

Project No.	Date
141003	May 2024

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2400 DUNDAS ST. W
MAY. 9. 2024

AQUAFLOW TECHNOLOGY INC

226 WILKINSON ROAD, BRAMPTON, ONTARIO L6T 4N7
(905) 792-8169

COMBINED & STORM SEWER INVESTIGATION REPORT
DYE TEST

700x1050 MM COMBINED SEWER
&
100 MM - 600 MM DIAMETER STORM SEWER

FOR

2400 DUNDAS STREET WEST

CITY OF TORONTO

CONSULTING ENGINEER: IBI
CONSULTING ENGINEER'S REPRESENTATIVE: JASON JENKINS
CONSULTING ENGINEER'S REPRESENTATIVE: CASSIDY GOETZ
OWNER: FORA DEVELOPMENTS
OWNER'S REPRESENTATIVE: LYLE LEVINE

FRIDAY, NOVEMBER 11TH, 2022

INDEX:

SEWER CLEANING, VIDEO INSPECTION, INSITU REPAIRS &
MUNICIPAL ENGINEERING SERVICES

2. SUMMARY REPORT AND CONCLUSIONS:

The investigation of the combined & storm sewers at 2400 Dundas Street West was carried out by Steven Lostracco, P.Eng. of Aquaflow Technology, and was authorized by Jason Jenkins of IBI Group. The investigation was carried out on Friday November, 11th, 2022.

The purpose of this report was to determine which municipal sewer the storm drains connect to.

1. Shoppers Drugmart. All roof drains discharge through the side of the building to the parking lot which drains to the CB next to MH STM-3, which then drains to the 450 mm storm sewer on Dundas Street West.

2. All parking lot drainage flows into the CB's which outlets to the 450 mm storm sewer on Dundas Street West.
.
3. Freshco. All roof drains discharge into CBMH-2 which drains to the 450 mm storm sewer on Dundas Street West.

1. Shoppers Drugmart

2. Shoppers Drugmart


3. Shoppers Drugmart
Roof drainage discharges to the parking lot surface

4. Freshco

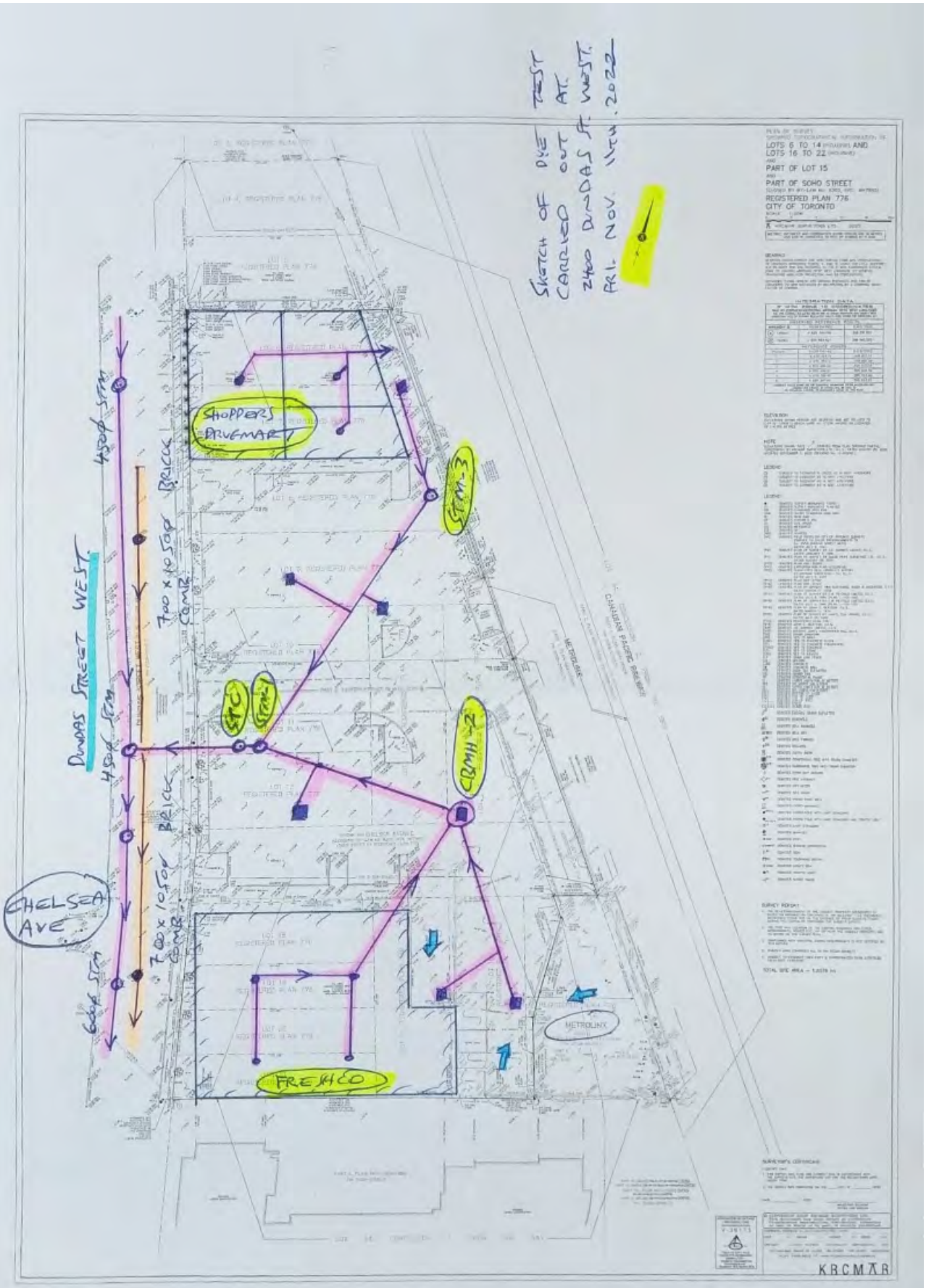
5. Freshco

6. Freshco

7. Freshco

Report Prepared by:

Steven Lostracco, P. Eng.

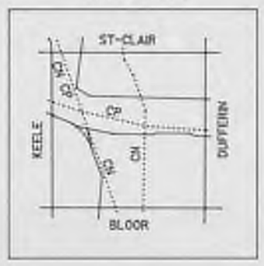

SKETCH OF DWG TEST
CARRIED OUT AT
2400 D/DAS AT WEST.
APL NOV. 11TH. 2022
LOTS 6 TO 14 INCLUSIVE AND
LOTS 16 TO 22 INCLUSIVE
PART OF LOT 15
PART OF SOHO STREET
REGISTERED PLAN 776
CITY OF TORONTO
SHOPPERS DRUGMART
FRESHCO
METROLINX
DUNDAS STREET WEST
CHELSEA AVE
CBMH-3
CBMH-2
STM-1
STC
450Ø STM
600Ø STM
700 x 1050 BRICK COMB.
KRCMAR

PHOTOMAP

The Municipality of Metropolitan Toronto

MANAGEMENT SERVICES DEPARTMENT
Central Mapping
3284 Yonge Street, Suite 300
Toronto, Ontario M4N 2L6 392-2506

Street Index



100m 0 100m 200m 300m 400m 500m

PHOTOMAP SCALE 1:5 000 (approx.)

Photomap Sheet Index

47K	48K	49K
47J	48J	49J
47H	48H	49H

SHEET 89-48J

AERIAL PHOTOGRAPHY
DATE FLOWN: APRIL 1989


1977
31

Appendix SCA-2

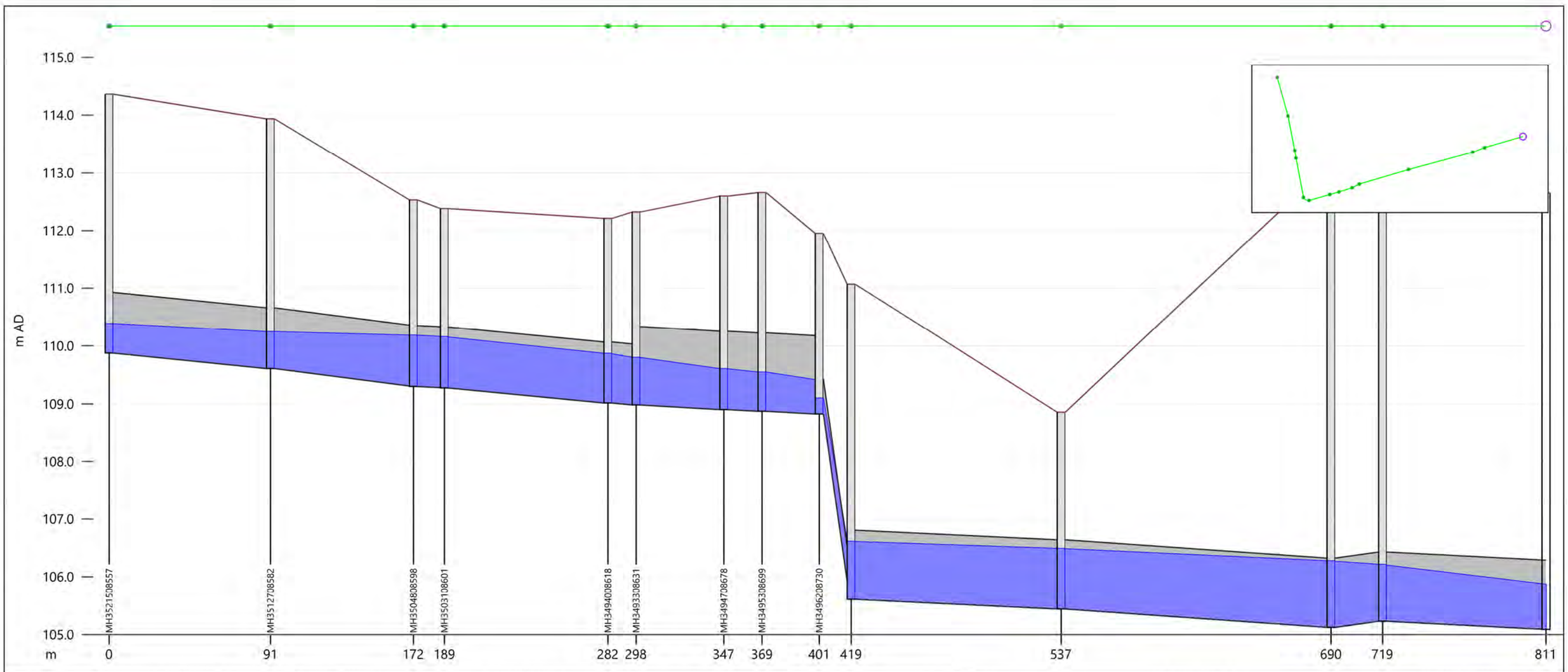
Hydraulic Modeling Results

Table SCA 1-2 | 2400 Dundas Sanitary Wet Weather Analysis Results

Pipe Data													InfoWorks Model Results											
													SC1: Existing Wet Weather Conditions (2-Yr Storm)							SC2 : Proposed Wet Weather Conditions (2-Yr Storm)						
Pipe ID	Map ID	Length (m)	Width (mm)	Height (mm)	Upstream Ground Level (m AD)	Upstream Invert (m AD)	Upstream Obvert (m AD)	Downstream Ground Level (m AD)	Downstream Invert (m AD)	Downstream Obvert (m AD)	Slope (%)	Full Flow Capacity (l/s)	Peak Flow (l/s)	Diameter Utilization (%)	Max Upstream HGL (m AD)	Max Downstream HGL (m AD)	Surcharge Status (m)	Maximum Surcharging (m)	Minimum Available Freeboard (m)	Peak Flow (l/s)	Diameter Utilization (%)	Max Upstream HGL (m AD)	Max Downstream HGL (m AD)	Surcharge Status (m)	Maximum Surcharging (m)	Minimum Available Freeboard (m)
Downstream Analyzed Pipes																										
MH3521508557.1	P.1	91.1	675	1050	114.36	109.88	110.93	113.93	109.61	110.66	0.29	780	317.2	50.1%	110.40	110.27	Free flow	None	N/A	296.0	48.1%	110.38	110.24	Free flow	None	N/A
MH3512708582.1	P.2	80.7	675	1050	113.93	109.61	110.66	112.53	109.31	110.36	0.37	875	373.8	62.3%	110.26	110.20	Free flow	None	N/A	353.1	60.3%	110.24	110.18	Free flow	None	N/A
MH3504808598.1	P.3	17.5	675	1050	112.53	109.30	110.35	112.38	109.28	110.33	0.10	461	495.2	85.3%	110.20	110.18	Free flow	None	N/A	474.8	83.6%	110.18	110.16	Free flow	None	N/A
MH3503108601.1	P.4	92.3	675	1050	112.38	109.28	110.33	112.21	109.02	110.07	0.28	762	774.9	84.7%	110.17	109.88	Free flow	None	N/A	754.4	83.1%	110.15	109.87	Free flow	None	N/A
MH3494008618.1	P.5	15.9	675	1050	112.21	109.02	110.07	112.33	108.98	110.03	0.21	665	765.8	81.1%	109.87	109.81	Free flow	None	N/A	745.3	80.1%	109.86	109.80	Free flow	None	N/A
MH3493308631.1	P.6	49.5	900	1350	112.33	108.98	110.33	112.60	108.91	110.26	0.16	1167	952.7	60.8%	109.81	109.61	Free flow	None	N/A	931.9	60.1%	109.80	109.60	Free flow	None	N/A
MH3494708678.1	P.7	21.6	900	1350	112.60	108.91	110.26	112.66	108.88	110.23	0.14	1455	963.4	52.3%	109.61	109.55	Free flow	None	N/A	942.6	51.7%	109.60	109.55	Free flow	None	N/A
MH3495308699.1	P.8	32.3	900	1350	112.66	108.88	110.23	111.95	108.83	110.18	0.14	1292	979.9	50.3%	109.55	109.42	Free flow	None	N/A	959.0	49.7%	109.55	109.42	Free flow	None	N/A
MH3496208730.1	P.9	18.0	600	600	111.95	108.83	109.43	111.07	105.92	106.52	16.19	2471	986.1	45.2%	109.10	106.60	Surcharging w. Freeboard > 1.8m	0.09	2.85	965.3	44.7%	109.10	106.61	Surcharging w. Freeboard > 1.8m	0.10	2.86
MH3497108746.1	P.10	118.5	1200	1200	111.07	105.61	106.81	108.86	105.44	106.64	0.14	1464	1145.7	82.6%	106.60	106.48	Free flow	None	N/A	1126.0	83.2%	106.61	106.49	Free flow	None	N/A
MH3500408860.1	P.11	152.4	1200	1200	108.86	105.44	106.64	113.10	105.13	106.33	0.21	1778	1433.4	85.7%	106.47	106.26	Free flow	None	N/A	1415.9	86.8%	106.49	106.28	Free flow	None	N/A
MH3504409007.1	P.12	29.1	1200	1200	113.10	105.13	106.33	113.25	105.23	106.43	-0.36	-2353	1584.7	93.6%	106.25	106.20	Free flow	None	N/A	1567.4	95.0%	106.27	106.21	Free flow	None	N/A
MH3505409034.1	P.13	92.2	1200	1200	113.25	105.23	106.43	112.65	105.09	106.29	0.16	1536	1962.1	79.1%	106.18	105.86	Free flow	None	N/A	2016.1	80.7%	106.20	105.87	Free flow	None	N/A

J:\141003_2400Dundas\6.0_Technical\6.04_Design-Analysis\Combined Analysis\[Infoworks Results Sheet - 2400 Dundas.xlsx]SC3

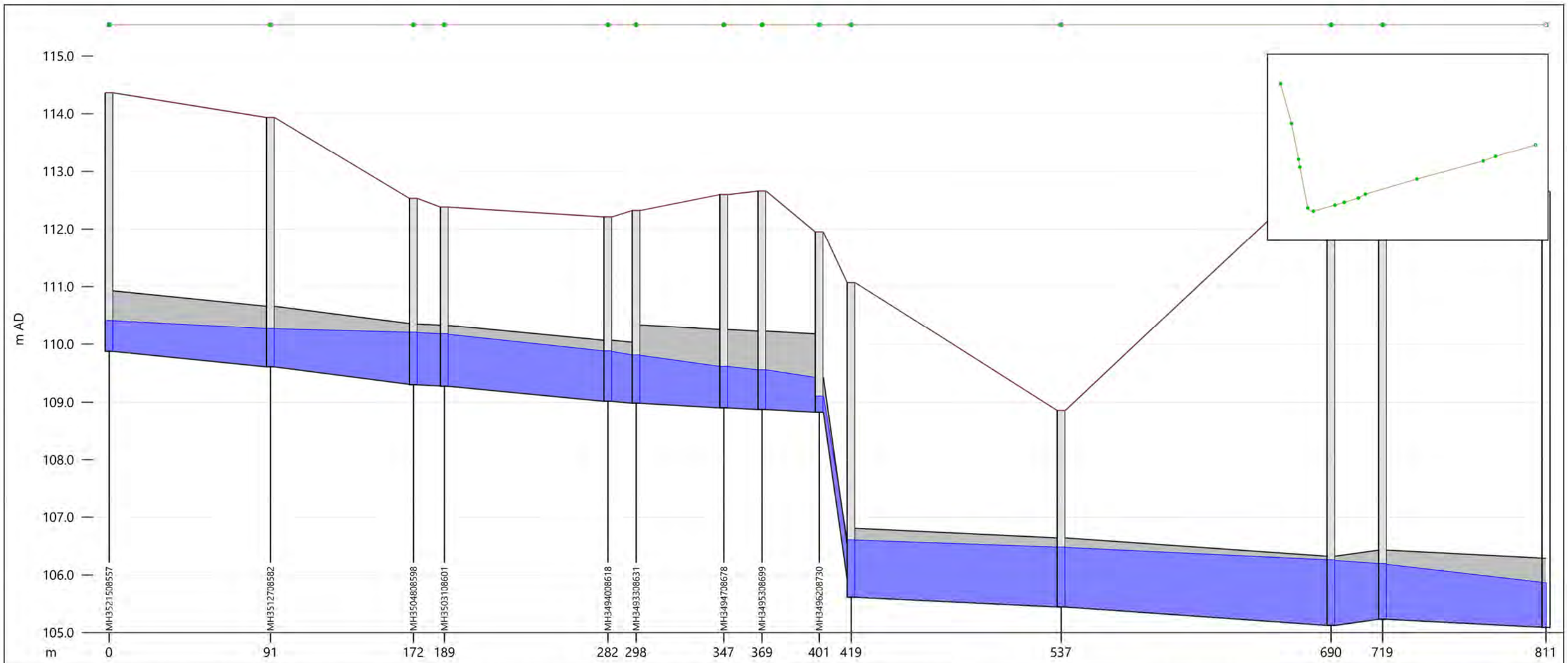
Existing Conditions (2-Yr Storm)



Link	MH3521508557.1	MH3512708582.1	-	MH3503108601.1	-	-	-	-	-	MH3497108746.1	MH3500408860.1	-	MH3505409034.1
US node ID	MH3521508557	MH3512708582	-	MH3503108601	-	MH3493308631	-	-	-	MH3497108746	MH3500408860	-	MH3505409034
ds node	MH3512708582	MH3504808598	-	MH3494008618	-	MH3494708678	-	-	-	MH3500408860	MH3504409007	-	MH3508009122
Shape ID	Egg	Egg	Egg	Egg	Egg	Egg	RECT	OVAL	CIRC	CIRC	CIRC	CIRC	CIRC
width (mm)	675	675	675	675	675	900	900	900	600	1200	1200	1200	1200
height (mm)	1050	1050	1050	1050	1050	1350	1350	1350	600	1200	1200	1200	1200
length (m)	91.1	80.7	17.5	92.3	15.9	49.5	21.6	32.3	18.0	118.5	152.4	29.1	92.2
us inv (m AD)	109.877	109.609	-	109.277	-	108.984	-	108.875	-	105.610	105.443	105.126	105.232
ds inv (m AD)	109.609	109.310	-	109.018	-	108.905	-	108.829	-	105.443	105.126	105.232	105.089
r.pfc (l/s)	780	875	461	762	665	1167	1455	1292	2471	1464	1778	-2353	1536
surc	0.60	0.83	0.84	0.83	0.80	0.60	0.52	0.50	1.00	0.87	0.96	0.95	0.81
DS flow (l/s)	273.65	338.87	-	745.05	-	928.91	941.90	958.35	-	1126.01	1415.94	1567.38	2013.93

Node	-	MH3512708582	-	MH3503108601	MH3494008618	-	-	-	-	MH3497108746	MH3500408860	MH3504409007	MH3505409034	-
ground (m AD)	114.361	113.934	112.532	112.383	112.212	112.325	112.599	-	-	111.069	108.859	113.102	113.248	112.654
expr:FB	3.98	3.69	2.35	2.22	2.34	2.53	3.00	3.11	2.86	4.46	2.37	6.83	7.03	

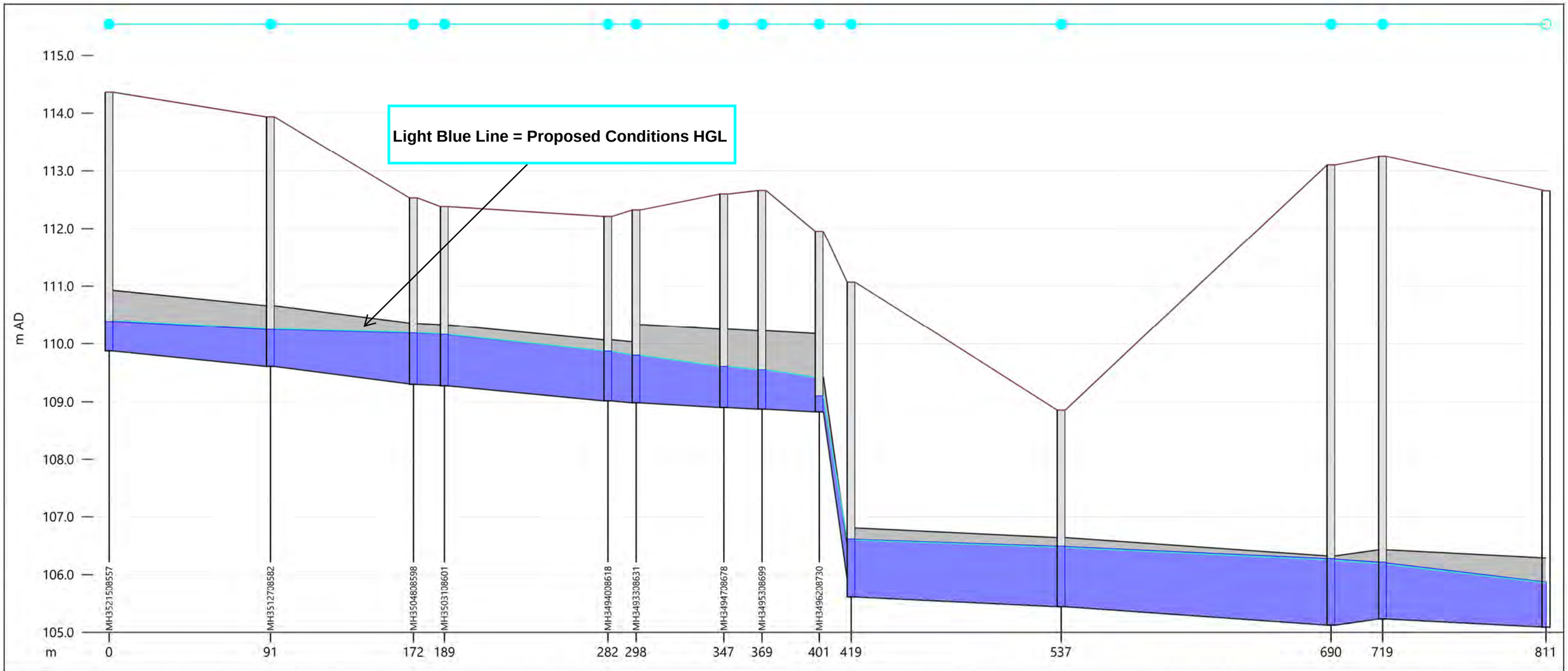
Proposed Conditions (2-Yr Storm)



Link	MH3521508557.1	MH3512708582.1	-	MH3503108601.1	-	-	-	-	-	MH3497108746.1	MH3500408860.1	-	MH3505409034.1
US node ID	MH3521508557	MH3512708582	-	MH3503108601	-	MH3493308631	-	-	-	MH3497108746	MH3500408860	-	MH3505409034
ds node	MH3512708582	MH3504808598	-	MH3494008618	-	MH3494708678	-	-	-	MH3500408860	MH3504409007	-	MH3508009122
Shape ID	Egg	Egg	Egg	Egg	Egg	Egg	RECT	OVAL	CIRC	CIRC	CIRC	CIRC	CIRC
width (mm)	675	675	675	675	675	900	900	900	600	1200	1200	1200	1200
height (mm)	1050	1050	1050	1050	1050	1350	1350	1350	600	1200	1200	1200	1200
length (m)	91.1	80.7	17.5	92.3	15.9	49.5	21.6	32.3	18.0	118.5	152.4	29.1	92.2
us inv (m AD)	109.877	109.609	-	109.277	-	108.984	-	108.875	-	105.610	105.443	105.126	105.232
ds inv (m AD)	109.609	109.310	-	109.018	-	108.905	-	108.829	-	105.443	105.126	105.232	105.089
r.pfc (l/s)	780	875	461	762	665	1167	1455	1292	2471	1464	1778	-2353	1536
surc	0.62	0.85	0.85	0.85	0.81	0.61	0.52	0.50	1.00	0.86	0.94	0.94	0.79
DS flow (l/s)	294.20	359.03	-	765.55	-	949.69	962.61	979.18	-	1145.70	1433.43	1584.70	1959.90

Node	-	MH3512708582	-	MH3503108601	MH3494008618	-	-	-	-	MH3497108746	MH3500408860	MH3504409007	MH3505409034	-
ground (m AD)	114.361	113.934	112.532	112.383	112.212	112.325	112.599	-	-	111.069	108.859	113.102	113.248	112.654
expr:FB	3.96	3.67	2.33	2.21	2.33	2.52	2.99	3.11	2.85	4.46	2.38	6.84	7.05	

Existing vs Proposed Conditions (2-Yr Storm)



Link	MH3521508557.1	MH3512708582.1	-	MH3503108601.1	-	-	-	-	-	MH3497108746.1	MH3500408860.1	-	MH3505409034.1
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ds node	MH3512708582	MH3504808598	-	MH3494008618	-	MH3494708678	-	-	-	MH3500408860	MH3504409007	-	MH3508009122
Shape ID	Egg	Egg	Egg	Egg	Egg	Egg	RECT	OVAL	CIRC	CIRC	CIRC	CIRC	CIRC
width (mm)	675	675	675	675	675	900	900	900	600	1200	1200	1200	1200
height (mm)	1050	1050	1050	1050	1050	1350	1350	1350	600	1200	1200	1200	1200
length (m)	91.1	80.7	17.5	92.3	15.9	49.5	21.6	32.3	18.0	118.5	152.4	29.1	92.2
us inv (m AD)	109.877	109.609	-	109.277	-	108.984	-	108.875	-	105.610	105.443	105.126	105.232
ds inv (m AD)	109.609	109.310	-	109.018	-	108.905	-	108.829	-	105.443	105.126	105.232	105.089
r.pfc (l/s)	780	875	461	762	665	1167	1455	1292	2471	1464	1778	-2353	1536
surc	0.60	0.83	0.84	0.83	0.80	0.60	0.52	0.50	1.00	0.87	0.96	0.95	0.81
DS flow (l/s)	273.65	338.87	-	745.05	-	928.91	941.90	958.35	-	1126.01	1415.94	1567.38	2013.93

Node	-	MH3512708582	-	MH3503108601	MH3494008618	-	-	-	-	MH3497108746	MH3500408860	MH3504409007	MH3505409034	-
ground (m AD)	114.361	113.934	112.532	112.383	112.212	112.325	112.599	-	-	111.069	108.859	113.102	113.248	112.654
expr:FB	-	-	-	-	-	-	-	-	-	-	SQL query has multiple clauses	-	-	-

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2400 Dundas Street West

Mixed-use development

ARCADIS

Sanitary Sewer Design Sheet

NOTES: Post-development domestic sewage flow based upon a unit flow of 450.0 Lpcd.
Maximum flow velocity for pipe flowing full = 3.0 m/s.
Minimum flow velocity for pipe flowing partially full (actual flow) = 0.6 m/s.
Infiltration= 0.26 L/s/ha
Mannings= 0.013

Project Name: 2400 Dundas Street West
Project Number: 141003
Date: May 29, 2024
Calc by: SB

	From	To	DESIGN FLOW CALCULATIONS: Area (ha)	Density	Population	Cumulative Area (ha)	Cumulative Population	Residential Peaking Factor	Sewage Flow (L/s) (1)	Infiltration Flow (L/s) (2)	Groundwater Flow (L/s) (3)	Total Flow, Qd (L/s) (1)+(2)+(3)	SEWER DESIGN & ANALYSIS: Nominal Diameter (mm)	Pipe Slope (%)	Pipe Length (m)	Full Flow Capacity, Qf (L/s)	Full Flow Velocity (m/s)	Actual Velocity V (m/s)	Percent of Full Flow (%)	Notes
Pre-Development																				
Ex. Comm. Bldg.			1.1100		34	1.1100	34	N/A	0.10	0.29		**0.4**								
Post-Development	**Services**																			
Tower A	MH1A	COMB	0.4384		801	0.4384	801	3.86	16.11	0.11	0.16	**16.4**	200	2.0%	7.0	48.4	1.49	1.35	34%	
Tower B1	MH2A	COMB	0.5715		861	0.5715	861	3.84	17.22	0.15		**17.4**	200	2.0%	5.9	48.4	1.49	1.37	36%	
Tower B2	MH3A	COMB	0.5715		456	0.5715	456	3.99	9.49	0.15		**9.6**	200	2.0%	3.1	48.4	1.49	1.16	20%	
Podium	MH4A	COMB	0.5715		106	0.5715	106	4.24	2.33	0.15		**2.5**	200	2.0%	7.4	48.4	1.49	0.78	5%	
Parkland	MH5A	COMB	0.1044		1	0.1044	1	4.47	0.03	0.03		**0.1**	150	2.0%	7.4	22.5	1.23	0.31	0%	

Pre-Development

	Units / Area	Density	Population
Retail	3125 m2	1.1 pp/100m2	34
			0
		Pop. =	**34**

Post-Development: Tower A

	Units / Area	Density	Population
1 Bedroom	344	1.4 pp/unit	482
2 Bedroom	68	2.1 pp/unit	143
3 Bedroom	46	3.1 pp/unit	143
Retail	3070 m2	1.1 pp/100m2	34
		Pop. =	**801**

Post-Development: Tower B1

	Units / Area	Density	Population
1 Bedroom	329	1.4 pp/unit	461
2 Bedroom	117	2.1 pp/unit	246
3 Bedroom	50	3.1 pp/unit	155
Retail	0 m2	1.1 pp/100m2	0
		Pop. =	**861**

Post-Development: Tower B2

	Units / Area	Density	Population
1 Bedroom	168	1.4 pp/unit	236
2 Bedroom	66	2.1 pp/unit	139
3 Bedroom	26	3.1 pp/unit	81
Retail	0 m2	1.1 pp/100m2	0
	Pop. =		**456**

Post-Development: Podium

	Units / Area	Density	Population
Retail	0	1.1 pp/100m2	0
Office	3206	3.3 pp/100m2	106
		Pop. =	**106**

Post-Development: Parkland

	Units / Area	Density	Population
Parkland	0.1086 ha	10.0 pp/ha	1
		Pop. =	**1**

Post-Development: Total

	Units / Area	Density	Population
1 Bedroom	841	1.4 pp/unit	1178
2 Bedroom	251	2.1 pp/unit	528
3 Bedroom	122	3.1 pp/unit	378
Retail	3070	1.1 pp/100m2	35
Office	3206	3.3 pp/100m2	106
	Pop. =		**2225**

Appendix E
Water Supply

Hydrant Flow Test

Water Demand, Fire Flow, and Hazen-Williams Calculations

Sprinkler Confirmation Letter

Fire Resistive Construction Confirmation Letter

Hydrant Flow Testing

NOTE: Hydrants tested according to NFPA 291: Recommended Practice for Fire Flow Testing and Marking of Hydrants

Date of Testing	08-Jun-23
Project Number:	141003
Test ID	H2023-026
Site Location / Address:	2400 Dundas St W
Region / Municipality	Toronto
Hydrants Opened By:	Toronto
Tested by:	Daniel S James W

HYDRANT TEST LOCATION - RESIDUAL HYDRANT=R, FLOW HYDRANT=F (NORTH AT TOP)

.

Test Data

Time of Test	11:31 AM
Pipe Size (mm)	300
Flow Hydrant Test Location (description)	2360 Dundas St W
Residual Hydrant Test Location (description)	2400 Dundas St W
Static Pressure(PSIG)	53

Q1 Test Data (1 Orifice)

# OUTLETS	ORIFICE SIZE(IN)	PITOT PRESSURE(PSIG)	FLOW(USGPM)	RESIDUAL PRESSURE(PSIG)
1	2.5	28	888	50

QT Test Data (2 Orifices)

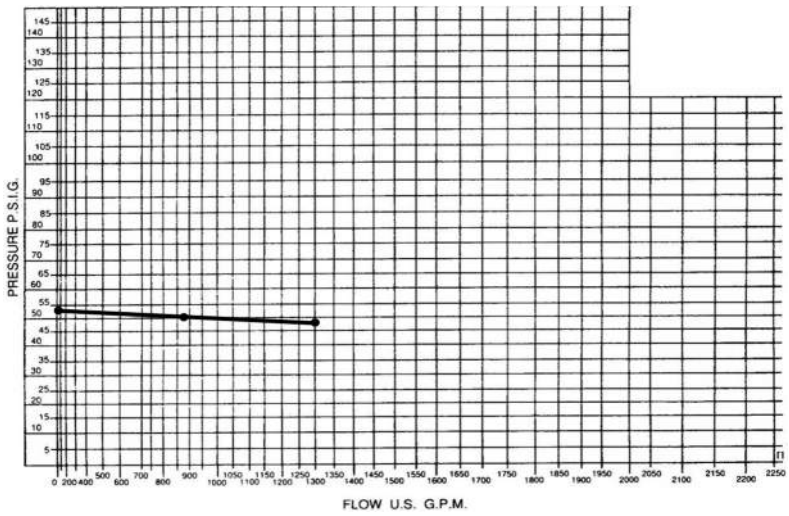
# OUTLETS	ORIFICE SIZE(IN)	PITOT PRESSURE(PSIG)	FLOW(USGPM)	RESIDUAL PRESSURE(PSIG)
2	2.5	15	1300	48

Calculations

FORMULA: Q= 29.83 cd^2√p.....Where: c- coefficient of discharge (1 in smooth pipe)
..... d- pipe diameter (inches)
.....p- pitot reading (psig)

Q1 - 1 Orifice(s)	Q1= (29.83)(0.9)(2.5)^2 √28=888
QT - 2 Orifice(s)	QT= 2(29.83)(0.9)(2.5)^2 √15=1300
Static Pressure(PSIG)	53

Test Results Plot



2400 Dundas Street W

Mixed-use development

ARCADIS

DOMESTIC WATER DEMAND CALCULATIONS

Project Name: 2400 Dundas Street W
Project Number: 141003
Date: May 29, 2024
Calc By: SB

1. Based on the City of Toronto Standards and
2. OBC, Part 8 "Sewage Systems", OBC Table 8.2.1.3.A and 8.2.1.3.B
3. ADD = 190 L/cap/day for residential uses

Peaking Factors		
Land Use	Peak Hour	Maximum Day
Residential	2.50	1.30
Commercial	1.20	1.10

					(ADDxP.F.)	*(ADDxP.F.)*
Tower A	Units	Density	Population	ADD (L/s)	PHD (L/s)	MDD (L/s)
1 Bedroom	344 units	1.4 pp/unit	482	1.1	2.6	1.4
2 Bedroom	68 units	2.1 pp/unit	143	0.3	0.8	0.4
3 Bedroom	46 units	3.1 pp/unit	143	0.3	0.8	0.4
Office	0 m2	3.3 pp/100m2	0	0.0	0.0	0.0
Retail	3070 m2	1.1 pp/100m2	34	0.1	0.1	0.1
Totals =	**458 units**		**801**	**1.69**	**4.22**	**2.19**

					(ADDxP.F.)	*(ADDxP.F.)*
Tower B1	Units	Density	Population	ADD (L/s)	PHD (L/s)	MDD (L/s)
1 Bedroom	329 units	1.4 pp/unit	461	1.0	2.5	1.3
2 Bedroom	117 units	2.1 pp/unit	246	0.5	1.4	0.7
3 Bedroom	50 units	3.1 pp/unit	155	0.3	0.9	0.4
Totals =	**496 units**		**861**	**1.89**	**4.74**	**2.46**

					(ADDxP.F.)	*(ADDxP.F.)*
Tower B2	Units	Density	Population	ADD (L/s)	PHD (L/s)	MDD (L/s)
1 Bedroom	168 units	1.4 pp/unit	236	0.5	1.3	0.7
2 Bedroom	66 units	2.1 pp/unit	139	0.3	0.8	0.4
3 Bedroom	26 units	3.1 pp/unit	81	0.2	0.4	0.2
Totals =	**260 units**		**456**	**1.00**	**2.50**	**1.30**

					(ADDxP.F.)	*(ADDxP.F.)*
Podium	Units	Density	Population	ADD (L/s)	PHD (L/s)	MDD (L/s)
Office	3206 m2	3.3 pp/100m2	106	0.2	0.3	0.3
Retail	0 m2	1.1 pp/100m2	0	0.0	0.0	0.0
Totals =	**3206 m2**		**106**	**0.23**	**0.28**	**0.26**

					(ADDxP.F.)	*(ADDxP.F.)*
Parkland	Area	Density	Population	ADD (L/s)	PHD (L/s)	MDD (L/s)
Parkland	0.1044 ha	10.0 pp/ha	1	0.0	0.0	0.0
Totals =	**0.1044 ha**		**1**	**0.00**	**0.00**	**0.00**

Population	ADD (L/s)	PHD (L/s)	MDD (L/s)
2,225	**4.82**	**11.74**	**6.22**

2400 Dundas Street W
Mixed-use development

ARCADIS

FIRE FLOW DEMAND CALCULATIONS
Phase 1/Block A

Project Name: 2400 Dundas Street W
Project Number: 141003
Date: May 29, 2024
Calc By: SB

Based on the Water Supply for Public Fire Protecetion Manual, 2020 by the Fire Underwriters Survey

Step 1: Calculate Fire Flow (based on area)

Construction Coefficient =	0.6	
Largest Floor Area =	2,607	m2
Floor Above =	1,103	m2
Floor Below =	2,980	m2
Area =	3,628	m2
Fire Flow (F) =	**8,000**	L/min

$$F = 220C\sqrt{A}$$

F = required fire flow (L/min)
C = coefficient related to type of construction
1.5 for Type V wood frame construction
0.8 - 1.5 for Type IV mass timber construction
1.0 for Type III ordinary construction
0.8 for Type II non-combustible construction
0.6 for Type I fire resistive construction
A = total floor area excluding basements 50% below grade

** If vertical openings are inadequately protected, consider two largest two largest adjoining floors plus 50% of each of any floors above up to eight floors.*
** If vertical openings are adequately protected (one hour rating), consider largest floor area + 25% of two immediately floors.*

Step 2: Adjustment for Building Occupancy (shall not be less than 2000 L/s)

Occupancy Adjustment =	-0.15	
F_1 = Fire Flow x Adjustment =	**6,800**	L/min

Non-Combust.	-25%	Free Burning	15%
Limited Comb.	-15%	Rapid Burning	25%
Combustable	No change		

Step 3: Adjust F1 for Fire Supression System

Sprinkler Adjustment =	50%	
F_2 = F_1 x Adjustment =	**3,400**	L/min

Automatic Sprinklers per NFPA 13	-30%
Water supply is standard	-10%
Fully Supervised System	-10%

Step 4: Adjust F1 for Exposure / Proximity (shall not exceed 75%)

Proximity Adjustment =	45%	(max 75%)
F_3 = F_1 x Factor =	**3,060**	L/min
	(3m, 22m, 22m, >30m)	

Separation	Adjustment	Separation	Adjustment
0m to 3m	25%	20.1m to 30m	10%
3.1m to 10m	20%	Greater than 30m	0%
10.1m to 20m	15%		

Step 5: Calculate Adjusted Fire Flow (shall not be less than 2000 L/min or greater than 45,000 L/min)

F_1 =	6,800	L/min
- F_2 =	3,400	L/min
+ F3 =	3,060	L/min
Fire Flow =	6,000	L/min
Fire Flow =	**100.0**	L/s
Total Demand (Fire Flow + MDD) =	**106.2**	L/s

$$\text{Fire Flow} = F_1 - F_2 + F_3$$

Checks:
Fire Flow greater than 2000 L/min
Fire Flow less than 45,000 L/min

2400 Dundas Street W
Mixed-use development

ARCADIS

FIRE FLOW DEMAND CALCULATIONS
Phase 2/Block B

Project Name: 2400 Dundas Street W
Project Number: 141003
Date: May 29, 2024
Calc By: SB

Based on the Water Supply for Public Fire Protecetion Manual, 1999 by the Fire Underwriters Survey

Step 1: Calculate Fire Flow (based on area)

Construction Coefficient =	0.6	
Largest Floor Area =	3,035	m2
Floor Above =	1,341	m2
Floor Below =	2,837	m2
Area =	4,080	m2
Fire Flow (F) =	**8,000**	L/min

$$F = 220C\sqrt{A}$$

F = required fire flow (L/min)
C = coefficient related to type of construction
1.5 for Type V wood frame construction
0.8 - 1.5 for Type IV mass timber construction
1.0 for Type III ordinary construction
0.8 for Type II non-combustible construction
0.6 for Type I fire resistive construction
A = total floor area excluding basements 50% below grade

** If vertical openings are inadequately protected, consider two largest two largest adjoining floors plus 50% of each of any floors above up to eight floors.*
** If vertical openings are adequately protected (one hour rating), consider largest floor area + 25% of two immediately floors.*

Step 2: Adjustment for Building Occupancy (shall not be less than 2000 L/s)

Occupancy Adjustment =	-0.15	
F_1 = Fire Flow x Adjustment =	**6,800**	L/min

Non-Combust.	-25%	Free Burning	15%
Limited Comb.	-15%	Rapid Burning	25%
Combustable	No change		

Step 3: Adjust F1 for Fire Supression System

Sprinkler Adjustment =	50%	
F_2 = F_1 x Adjustment =	**3,400**	L/min

Automatic Sprinklers per NFPA 13	-30%
Water supply is standard	-10%
Fully Supervised System	-10%

Step 4: Adjust F1 for Exposure / Proximity (shall not exceed 75%)

Proximity Adjustment =	45%	(max 75%)
F_3 = F_1 x Factor =	**3,060**	L/min

(16m, 22m, 8m, >30m)

Separation	Adjustment	Separation	Adjustment
0m to 3m	25%	20.1m to 30m	10%
3.1m to 10m	20%	Greater than 30m	0%
10.1m to 20m	15%		

Step 5: Calculate Adjusted Fire Flow (shall not be less than 2000 L/min or greater than 45,000 L/min)

F_1 =	6,800	L/min
- F_2 =	3,400	L/min
+ F3 =	3,060	L/min
Fire Flow =	6,000	L/min
Fire Flow =	**100.0**	L/s
Total Demand (Fire Flow + MDD) =	**106.2**	L/s

$$\text{Fire Flow} = F_1 - F_2 + F_3$$

Checks:
Fire Flow greater than 2000 L/min
Fire Flow less than 45,000 L/min

2400 Dundas Street W

Mixed-use development

ARCADIS

HEAD LOSS CALCULATIONS

Project Name: 2400 Dundas Street W
Project Number: 141003
Date: May 29, 2024
Calc By: SB

Hydrant Flow Test

Flow (gpm)	Flow (L/s)	Flow (L/min)	Pressure (psi)	Pressure (kPa)
0	0.0	0	53	**365**
888	56.0	3,361	50	**345**
1,300	82.0	4,921	48	**331**

Residual Pressure at Main

Source: Walski, Thomas M. (2007): Advanced Water Distribution Modeling and Management

$$Q_R = Q_F \times \frac{hr^{0.54}}{hf^{0.54}}$$

where: Q_R = flow predicted at desired residual pressure
Q_F = total flow measured during test
h_r = pressure drop to desired residual pressure
h_f = pressure drop to measured during test

	Flow (gpm)	Flow (L/s)	Flow (L/min)	Residual Pressure @ Main (psi)	Residual Pressure @ Main (kPa)	
Domestic (PHD)	186	11.7	704	**53**	**364**	
Fire Flow (Fire+MDD)	1,684	106.2	6,373	**45**	**310**	Projecting Curve to Fire Flow
To 20 psi	3,602	227.2	13,634	**20**	**138**	Projecting Curve to 20 psi

(1 gal = 3.785 L) *(Goal Seek)*

Residual Pressure at Building

$$h_L = \frac{10.675 * L * Q^{1.85}}{C^{1.85} * D^{4.8655}}$$

where: h_L = Pressure Drop (m)
L = Length of Service (m)
Q = Flow Rate (m^3/s)
D = Pipe Diameter (m)
C = Roughness Coefficient

PHD Conditions

	Domestic	
L=	5.0	m
Q=	0.012	m^3/s
D=	150	mm
C=	100	
h_L=	**0.0**	m
h_L=	**1.1**	in
h_L=	**0.0**	psi
h_L=	**0.3**	kPa

Fire + MDD Conditions

	Fire Service	
L=	17.5	m
Q=	0.106	m^3/s
D=	200	mm
C=	110	
h_L=	**1.2**	m
h_L=	**48.9**	in
h_L=	**1.8**	psi
h_L=	**12.2**	kPa

	Flow (gpm)	Flow (L/s)	Flow (L/min)	Residual Pressure @ Bldg. (psi)	Residual Pressure @ Bldg. (kPa)
Domestic	186	11.7	704	**53**	**364**
Fire	1,684	106.2	6,373	**43**	**298**

Residual Pressure (DOMESTIC) at building is greater than 40 psi (276 kPa).

Residual Pressure (FIRE) at building is greater than 20 psi (140 kPa).

MCW Consultants Ltd.

Queen's Quay Terminal
207 Queen's Quay West,
Suite 615
Toronto, Ontario M5J 1A7

Phone (416) 598-2920
Fax (416) 598-5394
Internet: www.mcw.com

March 6th, 2023

Attention: Executive Director, Engineering and Construction Services

c/o Manager, Development Engineering

cc: General Manager, Toronto Water
c/o Manager, Development Engineering
2400-2440 Dundas Street West – Toronto, Ontario
FORA Developments

Dear Sir or Madam,

This letter is to confirm that the above referenced building will be fully sprinklered and designed to meet NFPA 13 and all applicable codes and standards.

The water supply will be standard for both sprinkler system and fire standpipe system required and the sprinkler system and standpipe system will be fully monitored and supervised.

In the event that you require any additional information please do not hesitate to contact us.

Yours truly,

Agustin Olt
P.Eng (Mechanical)
aolt@mcw.com

giannone petricone associates

96 Spadina Avenue, Suite 900
Toronto, Canada M5V 2J6

gpaia.com
416 591 7788

9 March 2023

Engineering & Construction Services
City of Toronto

Metro Hall, 16th Floor.
55 John Street
Toronto, ON

To whom it may concern,

Reference: 2400-2440 Dundas St W, Toronto, ON

Please be advised that the above-referenced building will be constructed in compliance with the 2015 Ontario Building Code (OBC), and equipped with a Fire Protection System conforming to the NFPA 13 Standards for Installation of Sprinkler Systems and specifically:

1. All structural members and floors will be of fire resistive construction per the Fire Underwriters Survey (FUS) 1999 with 2-hour ratings per the OBC.

2. All vertical openings and exterior vertical communications will be constructed with a 1-hour fire rating

Yours truly,

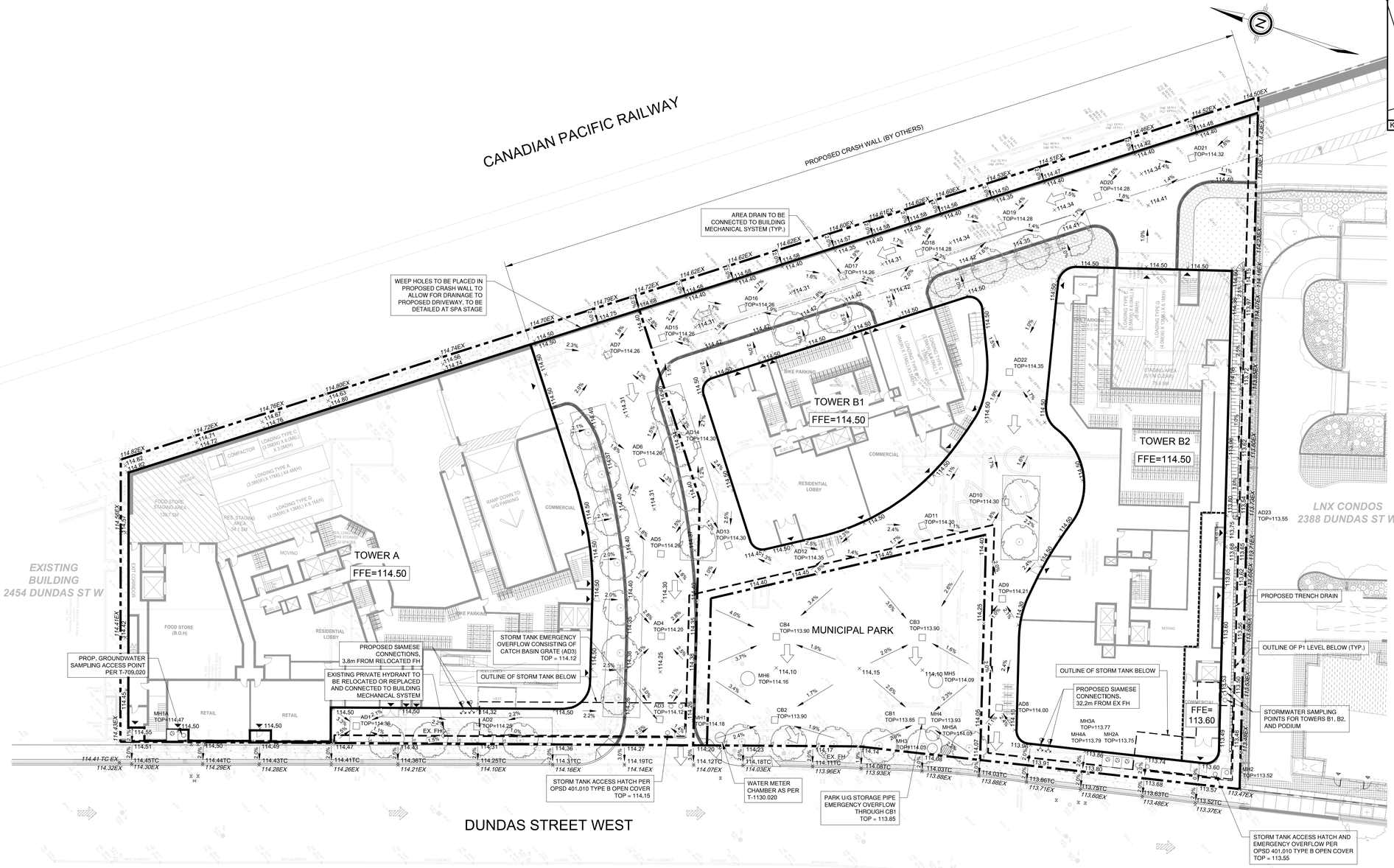
Carlo Odorico
Giannone Petricone Associates Inc. Architects
96 Spadina Avenue #900
Toronto, ON Canada M5V 2J6

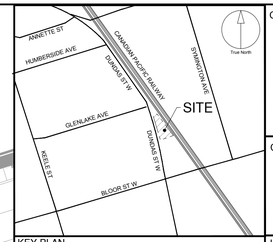
Appendix E
Exhibits

Site Servicing Exhibit

Site Grading Exhibit

Cross Sections





KEY PLAN

CLIENT

FORA DEVELOPMENTS

200-2400 DUNDAS STREET WEST
TORONTO, ON. M6P 1W9

ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR ZBA	MAR 10, 2023
2	ISSUED FOR ZBA	JUN 07, 2024

LEGEND

- PROPERTY LINE
- PROPOSED GRADE ×149.50
- EXISTING GRADE ×*149.33EX*
- PROPOSED STORM MANHOLE
- PROPOSED AREA DRAIN
- PROPOSED DOUBLE AREA DRAIN
- PROPOSED SANITARY MANHOLE
- PROPOSED VALVE AND BOX V&B
- PROPOSED SIAMESE CONNECTION
- PROPOSED GRADE (TOP OF CURB) ×149.65TC
- PROPOSED GRADE (BOTTOM OF CURB) ×149.50BC
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- EXISTING CATCH BASIN
- EMERGENCY OVERLAND FLOW ROUTE
- EXISTING OVERLAND FLOW ROUTE

SEAL

ARCADIS
8133 Warden Avenue - Unit 300
Markham ON L6G 1B3 Canada
tel 905 763 2322
www.arcadis.com

PROJECT

MIXED-USE DEVELOPMENT

2400-2440 DUNDAS STREET WEST
TORONTO, ON. M6P 1W9

LIST OF EXHIBITS
SG-01 - SITE GRADING EXHIBIT
SS-01 - SITE SERVICING EXHIBIT
XS-01 - CROSS SECTIONS
XS-02 - CROSS SECTIONS

PROJECT NO:	141003
DRAWN BY:	JZ
CHECKED BY:	JJ
PROJECT MGR:	JJ
APPROVED BY:	JJ

SITE PLAN INFORMATION
GIANNONE PETRICONE ASSOCIATES INC. ARCHITECTS
96 SPADINA AVE., SUITE 900
TORONTO, ON, M5V 2J6
PHONE: (416) 591-7788

SURVEYOR INFORMATION
KRCMAR SURVEYORS LTD.
1137 CENTRE STREET
THORNHILL ON L4J 3M6
PHONE: (905) 738-0053
WEBSITE: WWW.KRCMAR.CA

BENCHMARK INFORMATION:
ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE RELATED TO CITY OF TORONTO BENCH MARK NO. CT218, HAVING AN ELEVATION OF 114.759 METRES.

SCALE: 1:300 (5.0 0 5.0m 10.0m)

SHEET TITLE

SITE GRADING EXHIBIT

SHEET NUMBER	ISSUE
SG-01	02

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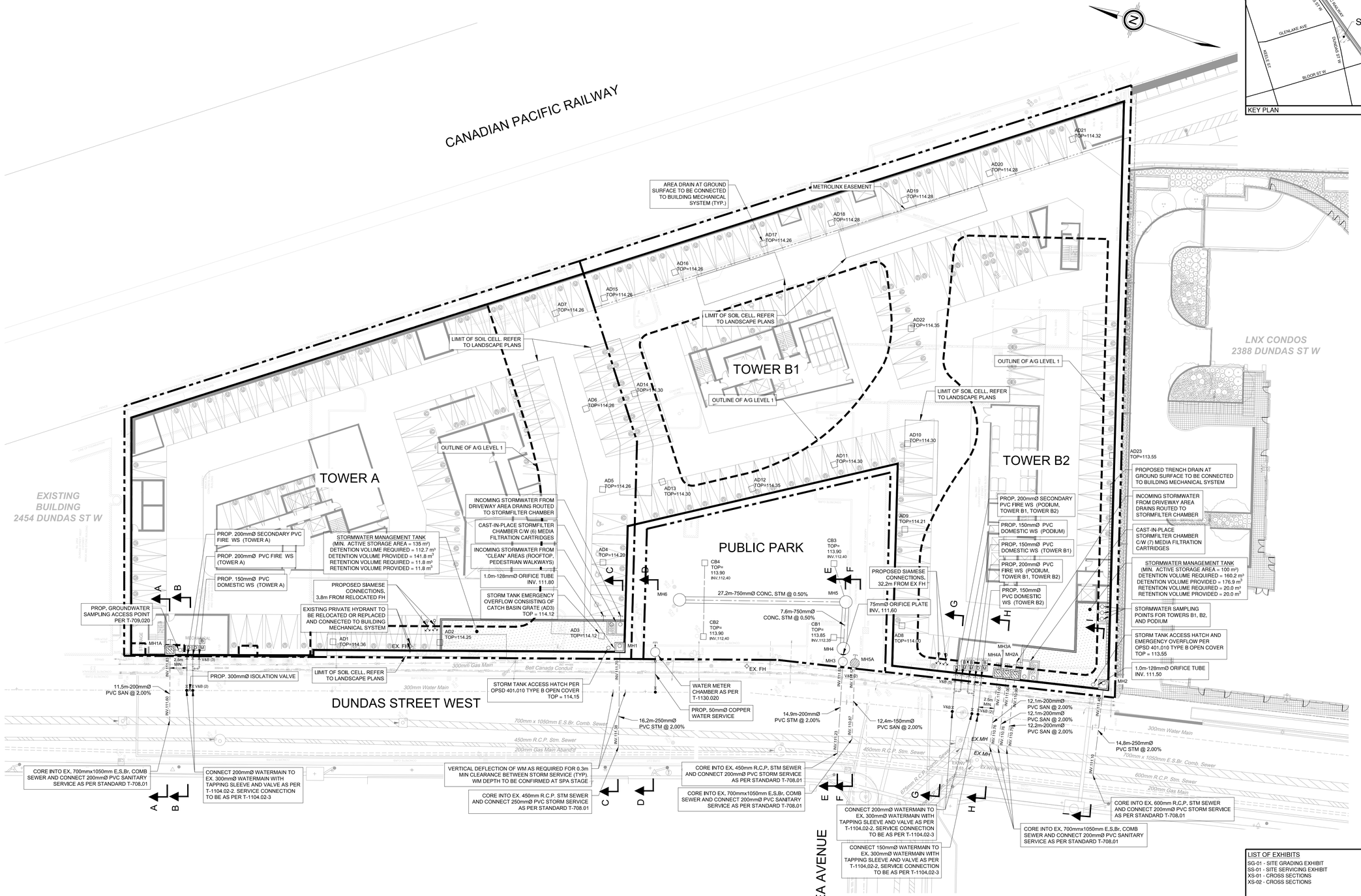

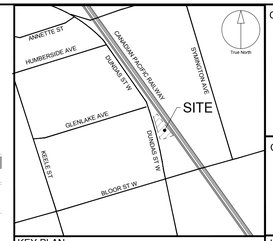

KEY PLAN

CLIENT

FORA DEVELOPMENTS

200-2400 DUNDAS STREET WEST
TORONTO, ON. M6P 1W9

ISSUES

No.	DESCRIPTION	DATE
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LEGEND

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- PROPOSED AREA DRAIN ⊠ AD
- EXISTING CATCH BASIN □
- PROPOSED VALVE AND BOX ⋈ V&B
- EXISTING FIRE HYDRANT ● EX.FH
- PROPOSED SIAMESE CONNECTION
- PROPOSED STORM
- PROPOSED SANITARY
- PROPOSED WATER
- EXISTING STORM
- EXISTING SANITARY
- EXISTING WATER
- PROPOSED DOMESTIC WATER METER [M]
- PROPOSED BACKFLOW PREVENTER [B]
- PROPOSED DOUBLE CHECK DETECTOR ASSEMBLY [D]
- DOORS

SEAL

ARCADIS
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Markham ON L6G 1B3 Canada
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www.arcadis.com

PROJECT

MIXED-USE DEVELOPMENT

2400-2440 DUNDAS STREET WEST
TORONTO, ON. M6P 1W9

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CHECKED BY:	JJ
PROJECT MGR:	JJ
APPROVED BY:	JJ

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SCALE: 1:300 (5.0 0 5.0m 10.0m)

SHEET TITLE

SITE SERVICING EXHIBIT

SHEET NUMBER	ISSUE
SS-01	02

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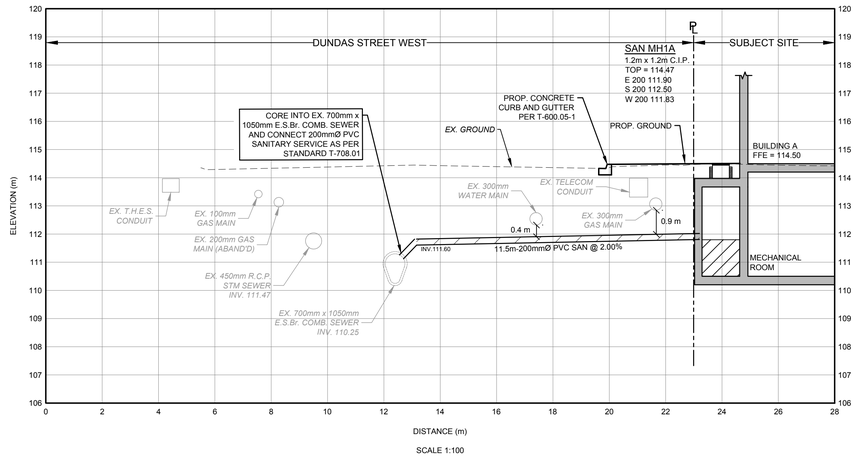

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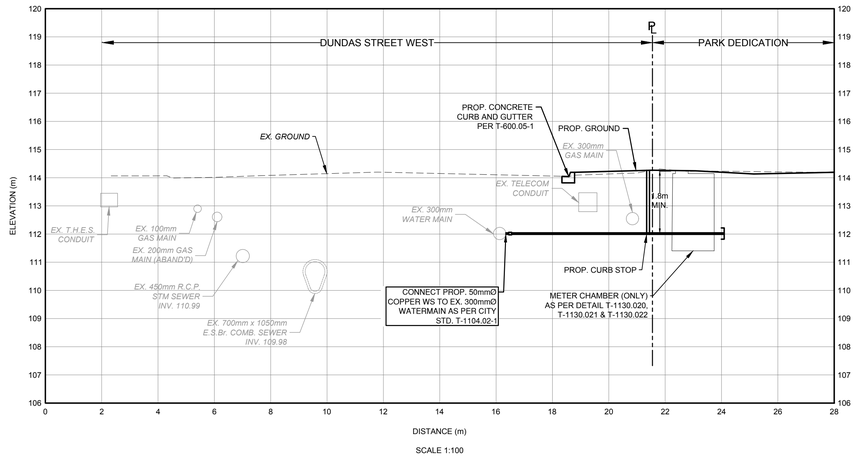
SECTION D-D (WATERMAIN CONNECTION - PARK)



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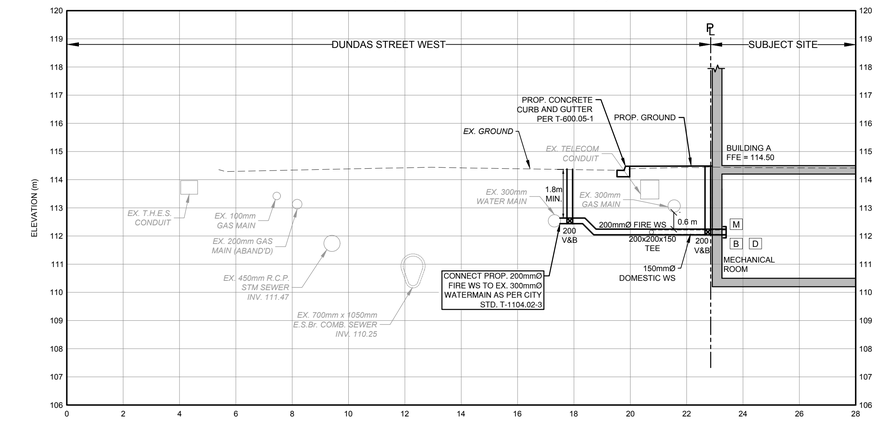
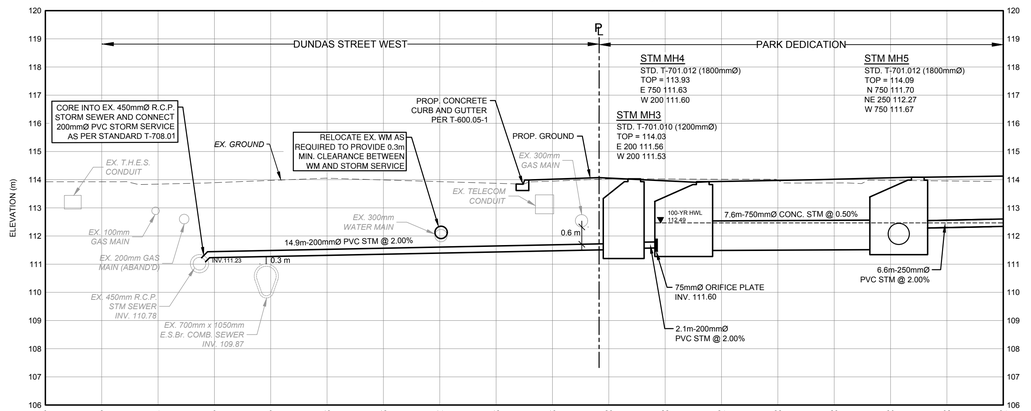
SECTION B-B (WATERMAIN CONNECTION - BLDG A)



SCALE 1:100

SECTION E-E - (STORM CONNECTION - PARK)



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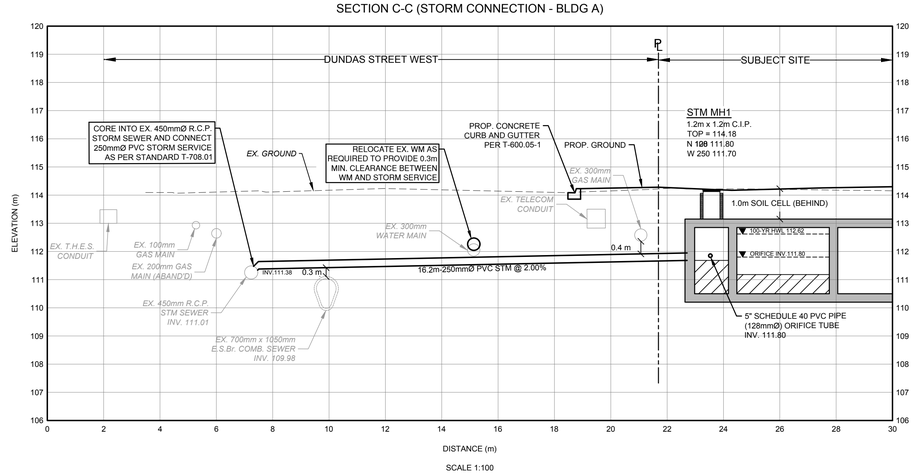
SECTION C-C (STORM CONNECTION - BLDG A)



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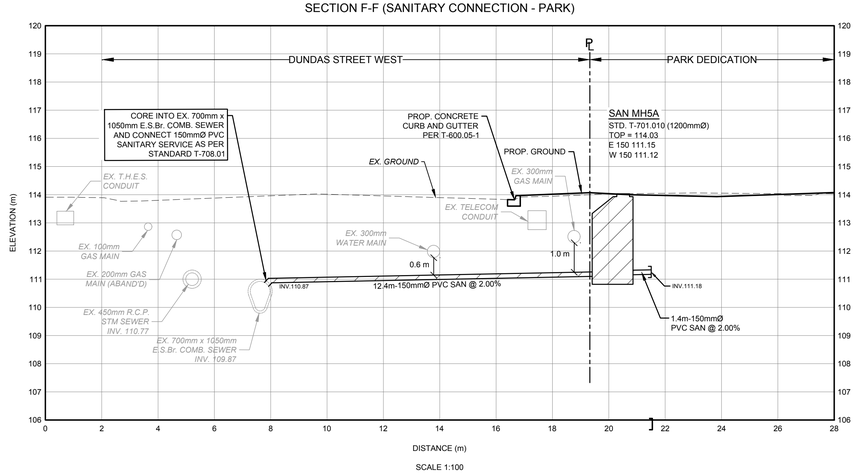
SECTION F-F (SANITARY CONNECTION - PARK)



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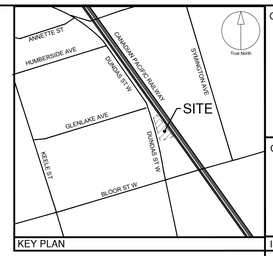

KEY PLAN

CLIENT

FORA DEVELOPMENTS

200-2400 DUNDAS STREET WEST
TORONTO, ON. M6P 1W9

ISSUES

No.	DESCRIPTION	DATE
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2	ISSUED FOR ZBA	JUN 07, 2024

LEGEND

SEAL

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tel 905 763 2322
www.arcadis.com

PROJECT

MIXED-USE DEVELOPMENT

2400-2440 DUNDAS STREET WEST
TORONTO, ON. M6P 1W9

LIST OF EXHIBITS

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SS-01 - SITE SERVICING EXHIBIT
XS-01 - CROSS SECTIONS
XS-02 - CROSS SECTIONS

PROJECT NO: 141003

DRAWN BY:	CHECKED BY:
JZ	JJ
PROJECT MGR:	APPROVED BY:
JJ	JJ

SITE PLAN INFORMATION

GIANNONE PETRICONE ASSOCIATES INC. ARCHITECTS
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SURVEYOR INFORMATION

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1107 CENTRE STREET
THORNHILL ON L4J 3M6
PHONE: (905) 738-0053
WEBSITE: WWW.KRCMAR.CA

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SCALE: 1:0 0 1.0m 2.0m 3.0m 4.0m 5.0m

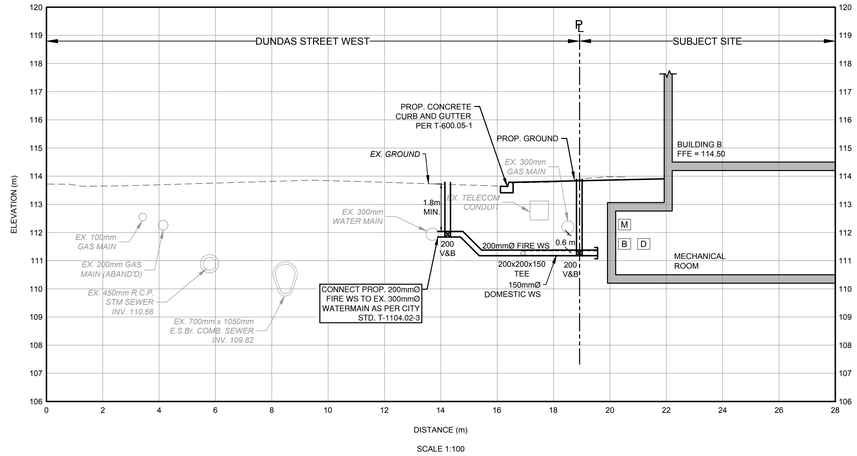
SHEET TITLE

CROSS SECTIONS

SHEET NUMBER: XS-01

ISSUE: 02

SECTION G-G (WATERMAIN CONNECTION - BLDG B)



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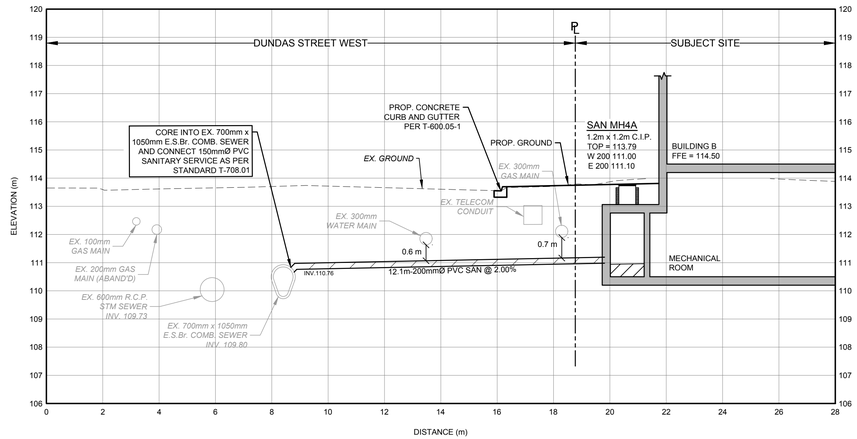
SECTION H-H (SANITARY CONNECTION - BLDG B)



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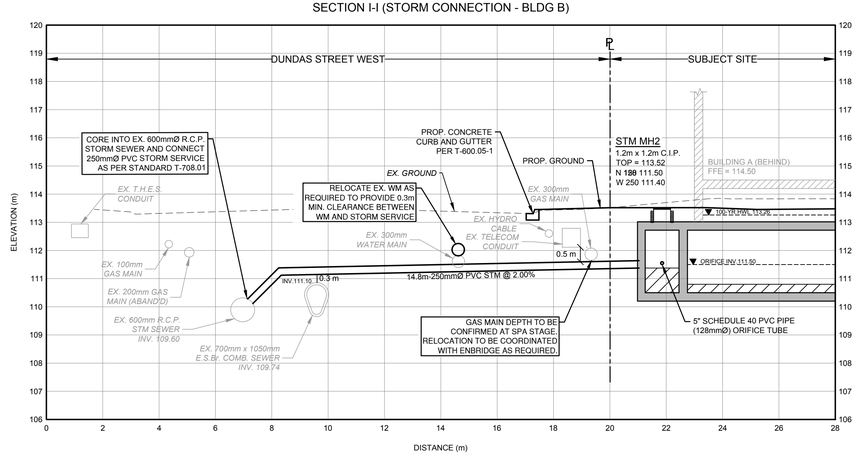
SECTION I-I (STORM CONNECTION - BLDG B)



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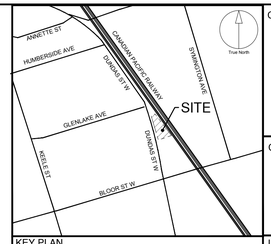

KEY PLAN

CLIENT

FORA DEVELOPMENTS

200-2400 DUNDAS STREET WEST
TORONTO, ON. M6P 1W9

ISSUES

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LEGEND

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PROJECT

MIXED-USE DEVELOPMENT

2400-2440 DUNDAS STREET WEST
TORONTO, ON. M6P 1W9

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PROJECT NO: 141003

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JZ	JJ
PROJECT MGR:	APPROVED BY:
JJ	JJ

SITE PLAN INFORMATION

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99 SPADINA AVE. SUITE 900
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SCALE: 1.0 0 1.0m 2.0m 3.0m 4.0m 5.0m

SHEET TITLE

CROSS SECTIONS

SHEET NUMBER	ISSUE
XS-02	02

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Arcadis Professional Services (Canada) Inc.
8133 Warden Avenue, Unit 300
Markham, Ontario L6G 1B3
Canada
Phone: 905 763 2322
Fax:
www.arcadis.com

ATTACHMENT #1

Final Report
Functional Servicing and Stormwater Management Report (FSR/SWM)

2400 – 2440 Dundas Street West, City of Toronto

Prepared for Fora Developments
by IBI Group
IBI Group Project #141003
March 10, 2023

1.2 Existing Site Description

Located in the City of Toronto, the 11,143 m^2 (1.11 ha) subject site is bounded by Dundas Street West to the west, railroad tracks to the east, a single storey retail space to the north, and a mixed-use high rise building to the south. Please see **Figure 1** following the report for an aerial view of the site.

The site currently hosts (1) one-story and (1) two-storey commercial buildings and an asphalt parking surface which are to be removed. The site slopes to the south with ground surface elevations ranging from 115.14 m to 113.83 m and is self-contained with no external drainage areas to consider.

The subject site is located within Basement Flooding Study Area (BFA) #44 which is slated to be completed in 2024, therefore, the no Infoworks model was available.

1.3 Site Proposal

The proposed development includes the construction of two buildings. The north building (Building A) will consist of a 25-storey tower and an 18-storey tower with a three-storey podium. The south building (Building B) will consistof a 36-storey tower with a four-storey podium. all buildings will be connected via a shared underground level which will contain parking, storage, and utility rooms. Sample architectural drawings can be found in **Appendix A** for reference.

1.4 Service Connections

Per the City's servicing requirements for point tower developments, separate storm sewer connections and SWM facilities are required for each point tower and the shared podium, or the buildings may share a SWM facility and storm connection if the internal mechanical piping for each building is separated with sampling ports for each system upstream of the connection point to the SWM facility. Accordingly, it is proposed that the entire development share a common SWM facility and storm connection.

Per the City's servicing requirements, individual sanitary and domestic services are required for each built form. Accordingly, each tower and the podium shall be serviced independently for sanitary and domestic services.

Per the Ontario Building Code (OBC), two fire service connections separated by an isolation valve are required for any building above 84 m in height. As the proposed towers will exceed this threshold, a secondary fire line will be required to service the towers and podium.

In summary, the development site proposes one (1) storm service, four (4) sanitary services, four (4) domestic services, and two (2) fire services. Specific site servicing details will be further discussed in subsequent sections.

Four domestic service connections is correct.

For fire service, each cluster of buildings (A and B) has a fire connection, which is acceptable. However, as both A and B have towers over 84 m, each will need it's own secondary fire line.

Advisory: the secondary fire lines will require isolation valves separating them from the H connections.

Proposed service connections have been revised to provide a secondary fire service for each of Building A and Building B (total 4 fire services, one for each cluster of buildings). Please refer to Section 1.4 and the Site Servicing Exhibit which can be found in Appendix F.

15.7 L/s?

3 Groundwater Discharge

A hydrogeological assessment was carried out by Groundwater Environmental Management Services (GEMS), dated March 6, 2023, to assess existing groundwater conditions. Per the assessment, the groundwater quality was foul x B for an excel

The post-development sanitary flow has been revised per the latest architectural site statistics. Section 3.1 of the revised report has been updated accordingly. The post-development sanitary flow is higher than the short-term groundwater rate and conclusions remain the same.

3.1

The anti L/s). At the time of this report, a dewatering plan was not made available. It is therefore assumed that groundwater pumping will operate for 6 hours per day.

The peak post-development sanitary design flow has been estimated to be 16.1 L/s (please see Section 5) which exceeds the anticipated short-term pumping rate. Therefore the long-term rate governs and will be used to assess downstream sewer capacity and compliance with MECP F-5-5 which will be discussed in subsequent sections.

Table 3.1 summarizes the recommendations for groundwater discharge during construction. It should be noted that a Permit to Take Water (PTTW) application must be submitted to the Ministry of the Environment, Conservation and Parks (MCEP) if dewatering rates exceed 50 m^3/day.

Table 3.1 Short-Term Groundwater Discharge Summary

Average Discharge	Average Discharge	Hours Of Pumping	Peak Discharge	Connection Outlet	Treatment Required
751 m^3/Day	8.7 L/s	13 Hours	16.0 L/s	Combined	No

3.2 Long-Term Groundwater Discharge

Per the City's Foundation Drainage Policy, only infiltrated storm may be permitted to be discharged to the municipal system. As the foundation is expected to fall within the groundwater table, the proposed building will be designed as water-tight without the need for a foundation drain connection to the municipal sewer system. Confirmation letters regarding this approach have been provided by the property owner, the mechanical consultant, and the structural consultant, and can be found in **Appendix B** for reference.

Include discussion around timing of required offsite works (CB redirection from combined into storm) in order to clearly demonstrate that at no point will the flow into the combined sewer system be more than existing.

Section 3.1 has been revised to state that the off-site disconnection must be completed before short-term groundwater can be discharged to the combined sewer so that at no point will the flow into the combined sewer system be more than existing.

4 Stormwater Management

4.1 Pre-Development Conditions

There is one dedicated 450 mm storm sewer within Dundas Street West conveying flow south to Bloor Street West and eventually to High Park. As previously mentioned, the site currently hosts two existing buildings and an asphalt parking lot resulting in a pre-development runoff coefficient of 0.90, however, the allowable release rate will be calculated using 0.50 per the City's WWFMG's.

4.2 Grading

Under pre-development conditions, no external drainage enters the site and all drainage within the site is conveyed to the adjacent rights-of-way. Proposed grades and existing drainage patterns will be maintained along property lines to the extent practical. Emergency overland flow route in excess of a 100-year storm event will continue to be directed to the adjacent right-of-way matching pre-development conditions.

4.3 Gross and Net Allowable Release Rates

Using the City's IDF data for a 2-year storm event and a time of concentration of 10 minutes, the gross allowable release rate for the subject site is calculated as follows:

$$Q_{\text{Gross Allowable}} = \frac{(A \times R) * I_2}{360} = \frac{(1.1143 \text{ ha} \times 0.50) \times 88.2 \text{ mm / hr}}{360} \times \left(\frac{1000 \text{ L}}{\text{m}^3}\right) = \mathbf{136.5\ L/s}$$

As shown above, the gross allowable release rate from the subject site shall be limited to a maximum of **136.5 L/s**. The associated pre-development drainage area plan is shown on **Figure DAP-1** which can be found in **Appendix C** for reference.

Due to grading constraints, a small portion of the site will be released uncontrolled. Using the City's IDF data for a 100-year storm event and a time of concentration of 10 minutes, the un-controlled discharge is calculated as follows:

$$\text{A2 } Q_{\text{Un-Controlled}} = \frac{(A \times R) * I_{100}}{360} = \frac{(0.005 \text{ ha} \times 0.39) \times 250.3 \text{ mm / hr}}{360} \times \left(\frac{1000 \text{ L}}{\text{m}^3}\right) = \mathbf{1.4\ L/s}$$

$$\text{A3 } Q_{\text{Un-Controlled}} = \frac{(A \times R) * I_{100}}{360} = \frac{(0.035 \text{ ha} \times 0.25) \times 250.3 \text{ mm / hr}}{360} \times \left(\frac{1000 \text{ L}}{\text{m}^3}\right) = \mathbf{6.1\ L/s}$$

$$\text{A4 } Q_{\text{Un-Controlled}} = \frac{(A \times R) * I_{100}}{360} = \frac{(0.008 \text{ ha} \times 0.90) \times 250.3 \text{ mm / hr}}{360} \times \left(\frac{1000 \text{ L}}{\text{m}^3}\right) = \mathbf{5.0\ L/s}$$

Therefore, the net allowable release rate from the storage element is taken as **124.0 L/s** (136.5 L/s – 1.4 L/s– 6.1 L/s– 5.0 L/s). The detailed calculations can be found in **Appendix C** for reference. Details pertaining to the storage element will be discussed in subsequent sections.

A3 drains onto Metrolinx property. This could be problematic. Has Metrolinx accepted this proposed drainage condition? Written permission from landowner may be required.
Consideration to be given to collecting and conveying this area into the proposed SWM tank.

Duly noted. Preliminary grading design has been revised so that there is no flow from the subject site to the Metrolinx property. These flows will be conveyed to the stormwater management tanks in the P1 level. Please see Section 4.4 of the revised report for an updated discussion of uncontrolled flows from the subject site.

Storm?

4.7 Storm Service Connection

This was a typo which has been corrected to indicate flows are to the storm sewer.

It is proposed that a new 375 mm storm service at a 2.0 le at the property line to the existing 450 mm storm sewer within ates the peak flow and corresponding capacity of the service:

Table 4.4 Storm Service Performance

From	To	Pipe Size (mm)	Pipe Slope	Peak Flow (L/S)	Capacity (L/S)	Percent of Full Flow
Cntrl.MH	Combined	375	2.0 %	120.8	248.0	49 %

As shown above, the proposed storm service and existing storm service connection can convey the controlled discharge while operating at 50% (or less) of full flow capacity. Please refer to the detailed design calculations which can be found in **Appendix C**, and the design **Drawing SS-01**.

4.8 Emergency Overflow

It is recommended that rooftop scuppers be installed to ensure emergency overflow from roof areas should rooftop drains become plugged.

- All areas at grade level have been designed with positive drainage (away from the building).
- The stormwater management tank shall be designed with a catchbasin lid (open grate) to allow storm flows to spill to the adjacent municipal right-of-way in an emergency situation.
- Maximum ponding within the development site shall not exceed City requirements of 0.30 m.

4.9 Erosion and Sediment Control

It is recommended that a sediment control fence per T-219.130-1 be installed along the perimeter of the site as required during demolition activities. All existing and proposed catch basins within close proximity of the subject site shall be protected with a geotextile fabric. A mud mat shall be installed as required to minimize distribution of mud into the public realm.

City records indicate that this is a 1050 mm x 675 mm egg-shaped sewer

The sewer sizes have been revised. Please refer to Section 5.1

5 Sanitary Drainage System

5.1 Existing Sanitary Infrastructure

Per the City's record information, local sewer infrastructure consists of a 1,050 mm combined sewer within Dundas Street West which flows in a southerly direction and connects to a 1,350 mm combined sewer within Bloor Street West. Sewer flows are eventually conveyed to a combined sewer overflow (CSO).

Under the City's Sewer Capacity Assessment Guidelines (July 2021) for combined sewers, adequate local system capacity must be assessed, and the local network must be checked to determine if there is a local CSO point. Based on City guidelines and definitions, this combined network contains a local CSO point and therefore MECP Procedure F-5-5 shall apply to both municipal sewers.

City records indicate that this is a 1350 mm x 900 mm egg-shaped sewer

5.2 Combined Sewer Analysis / MECP F-5-5

Pre-Development Sanitary Discharge

As previously mentioned, the subject site currently hosts two retail buildings under pre-development conditions. Using the City's population density of 1.1 pp/100 m^2 for office space, the corresponding peak sanitary discharge is calculated as follows:

$$Q_{Pre\text{-}Dev.} = \left(\frac{250\ L/c{\cdot}d \cdot 34\ pers}{86400\ s/day}\right) + (0.26\ L/s\ ha \cdot 1.11\ ha) = \mathbf{0.4 L/s}$$

Pre-Development Storm Discharge

A dye test investigation was conducted by Aquaflow Technology Inc in order to determine existing drainage patterns for the subject site. The results of this investigation show that all existing storm flows are directed to the existing 450 mm storm sewer within Dundas Street West, and no storm flows are directed to the existing 1,050 mm combined sewer. Accordingly, an off-site disconnection will be required to satisfy MECP Procedure F-5-5 which will be discussed in greater detail below. Please see **Appendix A** for a copy of the dye test investigation.

Post-Development Sanitary Discharge

It is proposed to install all new sanitary connections to the existing 1,050 mm combined sewer within Dundas Street West. Using the provided site statistics along with the design criteria outlined in **Section 2.3**, the corresponding post-development sanitary sewer flow is calculated as follows:

$$Q_{Post\text{-}Dev.} = \left(\frac{240\ L/c{\cdot}d \cdot 1{,}504\ pers \cdot 3.67_{P.F.}}{86400\ s/day}\right) + \left(\frac{250\ L/c{\cdot}d \cdot 42\ pers}{86400\ s/day}\right) + (0.26\ L/s{\cdot}ha \cdot 1.11\ ha) = \mathbf{15.7\ L/s}^2$$

Post-Development Storm Discharge

As previously mentioned in **Section 4.4**, the storm service from the site will be directed to the 450 mm storm sewer within Dundas Street West.

Water and sanitary calculations have been revised to the latest site statistics provided by the architect. Populations include retail and office (CEA) space as indicated in the latest site statistics. Please note that details related to sewer capacity and MECP Procedure F-5-5 compliance are now provided in a separate memo which can be found in Appendix D.

Confirm population. Water calcs indicate 51 people. Additionally, arch plans indicate office use as well as retail use. Population counts are to be coordinated.

[2] As the foundation will be water tight, no long-term groundwater has been incorporated into the post-development flow.

MECP F-5-5 Compliance

Table 5.1 MECP F-5-5 Summary for 1,050 mm Combined Sewer

Condition	Sanitary (L/s)	2-Yr Storm (L/s)	Grnd.Wtr. (L/s)	Total (L/s)
Pre-Development	0.4	0.0	0.0	0.4
Post-Development	15.7	0.0	0.0	15.7
			Total Increase in Flow =	15.4

As shown above, the site represents an increase in flow to the 1,050 mm combined sewer within Dundas Street West. Therefore, in order to comply with MECP F-5-5, the site must present an off-site flow reduction option to offset the increase at a 2:1 ratio.

The disconnection option proposed is outlined in **Figure D-1**. By Installing a new storm sewer in the laneway and disconnecting the two catchbasins from the existing combined sewer, a total area of 1,848 m^2 can be reduced from the combined sewer drainage area. This is equivalent to a storm flow of 40.7 L/s.

As the proposed disconnection area represents a flow more than double the proposed increase from the site, the site is in compliance with MECP F-5-5 and the City of Toronto Sanitary Capacity Guidelines (July 2021).

Due to the fact that the disconnected area merges with the same pipe segment that the development site will be connecting all sanitary service connections to, there will not be an increase in flow to any pipe segment downstream of the site. Therefore, no capacity assessment is required on the combined sewers.

5.3 Sanitary Service Connections

It is p ewer within
Dund ections, the
corres

It was determined that the originally proposed CB redirection was not feasible for compliance with MECP Procedure F-5-5. It is now proposed to disconnect (3) catchbasins on Campbell Avenue from the combined system and redirect flows to the storm system located on Rankin Crescent. Dye testing was performed to confirm that these CBs are currently connected to the combined sewer and can be found in Appendix D.
As the proposed development includes stormwater controls that reduce the existing flow to the storm system, there is a net decrease in flows to the storm system, even after the redirection of flows from the CB redirection.
Plan and Profile Drawings for the proposed storm sewer shall be provided at the SPA stage.

$$Q_{Podium} = \left(\frac{450\ L/c{\cdot}d \cdot 106\ pers \cdot 4.24P.F.}{86400\ s/day}\right) + (0.26\ L/s{\cdot}ha \cdot 0.2775\ ha) = \mathbf{2.4\ L/s}$$

The CB redirection approach is ok in principal. However, more information is needed to demonstrate compliance. Please provide:
- Proof that the existing CBs in question contribute to the combined sewer (i.e. dye testing)
- Discussions on if a new storm sewer is to be installed and if the existing sewer in the lane way will remain, or if the existing laneway sewer will be removed. If removed, provide a CCTV of the existing line in order to demonstrate that there are no other connections into the combined sewer.
- As the CBs do not currently contribute to the storm sewer system, they are redirected flows into the storm sewer system. An analysis of the existing storm sewer system will be needed to demonstrate that it has the capacity to convey the new redirected flows.
- Discussions regarding stormwater quality for the redirected area
- Preliminary plan/profile drawings of the proposed storm sewer (based on field information) approx. 60% design. If the new sewer will be installed alongside the existing combined sewer in the laneway, then it must be demonstrated that both services can fit in the laneway with appropriate separation distances.

6 Water Supply System

6.1 Existing Water Infrastructure

Why St Clair Ave?

This has been corrected in the revised report.

Per the City's record information, local water infrastructure consis in Dundas Street West. In order to evaluate the municipal water supply network's , a hydrant flow test was conducted in accordance with NFPA 291 on October 28, 2022 and is summarized as follows:

Table 6.1 Hydrant Response Curve

St. Clair Ave. West (300 mm)			
Flow (Gpm)	Flow (L/S)	Pressure (Psi)	Pressure (Kpa)
0	0	51	352
712	44.9	49	338
671	42.3	46	317

As shown above, static pressure within the system is expected to be approximately 51 psi. A copy of the hydrant flow test can be found in **Appendix E** for reference.

6.2 Domestic Water Supply Demands

Using the criteria set in **Section 2.4** and the site statistics provided by the architect, the Average Day Demand (ADD), Peak Hour Demand (PHD), and Max Day Demand (MDD) have been calculated, and are summarized as follows:

Table 6.2 Domestic Water Demands

Building	Population	ADD (L/S)	PHD (L/S)	MDD (L/S)
1 Bedroom	837	1.8	4.6	2.4
2 Bedroom	391	0.9	2.1	1.1
3 Bedroom	276	0.6	1.5	0.8
Office	0	0.0	0.0	0.0
Retail	51	0.1	0.1	0.1
Total	**1,555**	**3.4**	**8.4**	**4.4**

The domestic supply line for the building will be designed based on PHD while maintaining a minimum available pressure of 40 psi (275 kPa) at the face of the building. Please see **Appendix E** for the detailed calculations.

Arch plans/stats do not indicate this. Please provide something in writing from the arch confirming fire resistive construction.

6.3 Fire Supply Demands

Please refer to Appendix E for a letter from the architect confirming fire resistive construction.

The recommended fire flow demand for the subject site has been c ɪ in the Water Supply for Public Fire Protection Manual, 1999 by the Fire

As the building will be constructed using fire resistive materials, the e oor area plus 25 % of the two adjacent floors.

- Effective Floor Area = Largest Floor Area + 25% (two adjoining floors)
- Effective Floor Area = 5,174 m^2 + 25% (3,186 m^2 + 6,018 m2)
- Effective Floor Area = 7,475 m^2

The following FUS factors will be applied to the water demand calculations:

Table 6.3 Fire Underwriters Survey Factors

Construction Coefficient	Building Occupancy	Sprinkler Adjustment	Proximity Factor
0.6 (Resistive)	- 15 % (Limited)	- 50 %	+ 55 %

Using the effective floor area for each building and the appropriate FUS factors, the required fire flow for each building is calculated as follows:

Table 6.4 Fire Demand Calculations

Fire Flow (F) Calculation	Applying Fus Factors	Adjusted Fire Flow	Total Demand (Td)
F = 220 · 0.6 √Area	F_1=F·0.85 = 9,350 L/min	Fire Flow = F_1 - F_2 + F_3	Td= Ff + MDD
F = 220 · 0.6 √7,475 m^2	F_2=F_1·0.50 = 4,675 L/min	FF= 10,000 L/Min (Rnd'd)	TD= 166.7 L/s + 4.4 L/s
F = 11,000 L/Min (Rnd'd)	F_3=F_1·0.55 = 5,143 L/min	FF = 166.7 L/s	TD= 171.1 L/s

The fire supply line for the building will be designed based on Total Demand (Fire Flow + MDD) while maintaining a minimum available pressure of 20 psi (140 kPa) at the face of the building. Please see **Appendix E** for the detailed calculations.

6.4 System Pressure Under Normal Operation

As previously mentioned, the domestic service shall be sized to convey domestic demands under normal system operating conditions (PHD) while maintaining a minimum available pressure of 40 psi (275 kPa). The residual pressure at the building is calculated by first interpolating the PHD residual pressure within the existing watermain, and then subtracting head losses within the system using the Hazen-Williams formula. The following table summarizes the residual pressure for the proposed domestic service:

Table 6.5 Residual Pressure Under PHD Conditions

Flow Conditions	PHD (L/s)	Domestic Service (mm)	Residual Pressure @ Main		Residual Pressure @ Bldg.	
			(Psi)	(Psi)	(Psi)	(Kpa)
PHD	8.4	150	51	350	51	350

As shown above, there is no appreciable head loss within the system, and the residual pressure at the building face is above the minimum acceptable pressure of 40 psi (275 kPa) under PHD conditions. Please see **Appendix E** for the detailed design calculations.

Please outline the theoretical flow (based on flow test) at 20 psi and compare to the required fire + max day value.

A new hydrant flow test was performed which resulted in a theoretical flow of 227 L/s at 20 psi, therefore it can be concluded that there is sufficient pressure for the required fire + MDD flow of 106.2 L/s

6.5 System Pressure Under Fire Flow

A hydrant flow test for this application was conducted by IBI Group however, the results demonstrated a sub-standard response than what would typically be expected within a well-connected 300 mm watermain network.

In order to obtain a better understanding of the water supply network, a review of adjacent development applications (1540-1550 Bloor Street West) and their respective hydrant flow tests was made. These adjacent tests reported response curves more in alignment of a typical watermain network, and in turn suggests that the hydrant flow test conducted by IBI Group may not be accurate due to a partially closed valve or other anomaly. This matter has been brought forward to the City Operation forces and is currently being further investigated. Further analysis will be made with the next submission.

Please provide with next submission.

6.6 Water Service Connection

To service the proposed development, two new 200 mr isting 300 mm watermain within Dundas Street West with a tapping sle estic services will also be provided. A new valve and box shall be insta ervice, and all required water meters, backflow preventers, and double chanical room within the proposed P1 level. These service sizes will b est.

A new hydrant flow test was performed which resulted in a theoretical flow of 227 L/s at 20 psi, therefore it can be concluded that there is sufficient pressure for the required fire + MDD flow of 106.2 L/s

As previously mentioned, the OBC requires two fire serv stalled for any building above 84 m. As the proposed building exceeds t vill be required and shall be connected to the existing 300 mm waterr en the two fire service connections.

The National Fire Protection Association (NFPA) considers any building over 23 m in height to be classified as a high-rise building and thus requires a remotely located secondary siamese connection for each zone. Accordingly, a second siamese connection has been provided.

6.7 Hydrant Coverage

Existing municipal hydrants are located on Dundas Street West and provide the required 45 m of coverage for all proposed siamese connections to satisfy OBC requirements. Please see **Drawing SS-01** for the location of all existing and proposed water infrastructure.

TORONTO

October 2017

SERVICING REPORT GROUNDWATER SUMMARY

The form is to be completed by the Professional that prepared the Servicing Report.
Use of the form by the City of Toronto is not to be construed as verification of engineering/hydrological content.

For City Staff Use Only:	
Name of ECS Case Manager (please print)	
Date Review Summary provided to to TW	

A. SITE INFORMAITON		Included in SR (reference page number)	Report Includes this information City staff (Check)
Date Servicing Report was prepared:	March, 2023	Cover Page	
Title of Servicing Report:	Functional Servicing & Stormwater Management	Cover Page	
Name of Consulting Firm that prepared Servicing Report:	IBI Group	Cover Page	
Site Address	2400- 2440 DUNDAS STREET WEST Toronto, Ontario	Page 1	
Postal Code	M6P 1W9	N/A	
Property Owner (identified on planning request for comments memo)	Fora Developments	Cover Page Not on cover. Page 1?	
Proposed description of the project (ex. number of point towers, number of podiums, etc.)	The proposed development will be three point towers (36, 35 and 18 storeys with one undergro	The Page number has been corrected	
Land Use (ex. commercial, residential, mixed, industrial, institutional) as defined by the Planning Act	Mixed use	Page 2 Page 1?	
Number of below grade levels	1 Level of Underground Parking	The Page number has been corrected	

SERVICING REPORT GROUNDWATER SUMMARY

Does the SR include a private water drainage system (PWDS)? **PWDS: Private Water Drainage System:** A subsurface drainage system which may consist of but is 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 or drainage system for disposal in a municipal sewer.	If **Yes** continue completing Section B (Information Relating to Groundwater) **ONLY** **If Yes, Number of PWDS?** 0 *(Each of these PWDS may require a separate Toronto Water agreement)* If **No** skip to Sections C (On-site Groundwater Containment) and/or D (Water Tight Requirements) as applicable	☐ YES ☉ NO	
B. INFORMATION RELATING TO GROUNDWATER		**Included in SR (reference page number)**	**Report Includes this information City Staff (Check)**
A copy of the pump schedule(s) for **ALL** groundwater sump pump(s) for the development site has been included in the FSR **or** A letter written by a Mechanical Consultant (signed and stamped by a Professional Engineer of Ontario) shall be attached to the SR stating the peak flow rate of the groundwater discharge for the development site for all groundwater sump pump(s). This peak flow rate must be based on the pump schedule(s) that have been designed by the Mechanical Consultant. A template of this letter is attached in Schedule A.			

October 2017

SERVICING REPORT GROUNDWATER SUMMARY

****If there is more than one sump they must ALL be included in the letters along with a combined flow****			
Is it proposed that the groundwater from the development site will be discharged to the sanitary, combined or storm sewer?	☐ Sanitary Sewer ☐ Combined Sewer ☐ Storm Sewer		
Will the proposed PWDS discharge from the site go to the Western Beaches Tunnel (WBT)? *Reference attached WBT drainage map*	☐ YES ☐ NO **If Yes, private water discharge fees will apply and site requires a sanitary discharge agreement.**		
What is the street name where the receiving sewer is located?			
What is the diameter of the receiving sewer?			
Is there capacity in the proposed local sewer system? ☐ YES ☐ NO	Are there any improvements required to the sewer system? If yes, identify them below and refer to the section and page number of the FSR where this information can be found. If a sewer upgrade is required, the owner is required to enter into an Agreement with the City to improve the infrastructure? ☐ YES		
Total allowable peak flow rate during a 100 year storm event (L/sec) to storm sewer When groundwater is to be discharged to the storm sewer the total groundwater and stormwater discharge shall not exceed the permissible peak flow rate during a 2 year pre development storm event, as per the City's	136.5 L/sec	Page 7	

SERVICING REPORT GROUNDWATER SUMMARY

Wet Weather Flow Management Guidelines, dated 2006			
Short-Term Groundwater Discharge Provide proposed total flow rate to the sanitary/combined sewer in post-development scenario Total Flow (L/sec) = sanitary flow + peak short-term groundwater flow rate	Assumed 13 hours of pumping 8.7 L/s? 16.0 L/sec 16.0 L/s is a peak flow based on 13 hours of pumping.	Page 5	
Long-Tem Groundwater Discharge Provide proposed total flow rate to the sanitary/combined sewer in post-development scenario Total Flow (L/sec) = sanitary flow + peak long-term groundwater flow rate	Peak DWF + GW flow + Inflitration = 15.5 L/s + 0 L/s + 0.3 L/s=15.7 L/s No long-term groundwater discharge to the sanitary sewer	Page 11 & App. D	
Does the water quality meet the receiving sewer Bylaw limits? ☑ YES ☐ NO	If the water quality does not meet the applicable receiving sewer Bylaw limits and the applicant is proposing a treatment system the applicant will need to include a letter stating that a treatment system will be installed and the details of the treatment system will be included in the private water discharge application that will be submitted to TW EM&P.	page 5	
C. ON-SITE GROUNDWATER CONTAINMENT		**Included in SR (reference page number)**	**Report Includes this information City Staff (Check)**
How is the site proposing to manage the groundwater discharge on site?	Watertight foundation	Page 5	

October 2017

SERVICING REPORT GROUNDWATER SUMMARY

Has the above proposal been approved by:	◯ TW-WIM And ◯ TW-EM&P And ◯ ECS		
If the site is proposing a groundwater infiltration gallery, has it been stated that the groundwater infiltration gallery will not be connected to the municipal sewer? A connection between the infiltration gallery/dry well and the municipal sewer is not permitted Please be advised if an infiltration gallery/dry well on site is not connected to the municipal sewer, the site **must** submit two letters using the templates in Schedule B and Schedule C.	☐ YES ☑ NO	n/a	
Confirm that the infiltration gallery can infiltrate 100% of the expected peak groundwater flow year round, ensure that the top of the infiltration trench is below the frost line (1.8m depth), not less than 5 m from the building foundation, bottom of the trench 1m above the seasonally high water table, and located so that the drainage is away from the building.	N/A	n/a	
D. WATER TIGHT REQUIREMENTS		**Included in SR (reference page number)**	**Report Includes this information City Staff**

October 2017

SERVICING REPORT GROUNDWATER SUMMARY

		(Check)
If the site is proposing a water tight structure: 1. The owner must submit a letter using the template in Schedule D. 2. A Professional Engineer (Structural), licensed to practice in Ontario and qualified in the subject must submit a letter using the template in Schedule E.	Page 5 Letters require some revisions.	

Provide a copy of the approved SR to Toronto Water Environmental Monitoring & Protection Unit at pwapplication@toronto.ca.

Consulting Firm that prepared Servicing Report: IBI Group

Professional Engineer who completed the report summary: Jason Jenkins, PE, P.

Print Name

Professional Engineer who completed the report summary: _____

Signature Date & Stamp

The site will be seeking an exemption to the FD Policy and as such the watertight letters have been removed from the appendix. Long-term discharge to the combined sewer is proposed. A pump letter from the mechanical consultant can be found in Appendix B. Please refer to the Hydrogeological Report by GEMS dated June 2024 for details related to the policy exemption.

MCW Consultants Ltd.

Queen's Quay Terminal
207 Queen's Quay West,
Suite 615
Toronto, Ontario M5J 1A7

Phone (416) 598-2920
Fax (416) 598-5394
Internet: www.mcw.com

March 6th, 2023

Attention: Executive Director, Engineering and Construction Services

c/o Manager, Development Engineering

cc: General Manager, Toronto Water
c/o Manager, Environmental Monitoring & Protection Unit
2400-2440 Dundas Street West – Toronto, Ontario
FORA Developments

Please outline what the emergency pump rate will be.

Dear Sir or Madam,

I Agustin Olt, confirm that all buildings on the subject lands at 2400-2440 Dundas Street West, in Toronto will be designed and constructed by others to be completely water-tight below grade in a manner that will resist hydrostatic pressure. However, as per good engineering practice, I will designed a drainage system for only the sub-floor in the event of any minor leaks or damage to the waterproofing system, which cannot be repaired after installation. The drainage system will not have any connections to the foundation wall and since the foundation is water-tight the water infiltration is expected to be null.

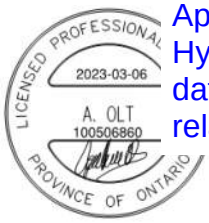
The back-up groundwater sump pumps will be sized at 0 L/sec (groundwater peak flow rate) and are expected to run approxima

This peak flow rate will be used for assessing into the City's sanitary sewer system.

The sub-floor drainage system will comply wi groundwater, so any water collected will be m Sanitary Discharge Agreement with the City c

The site will be seeking an exemption to the FD Policy and as such the watertight letters have been removed from the appendix. Long-term discharge to the combined sewer is proposed. A pump letter from the mechanical consultant can be found in Appendix B. Please refer to the Hydrogeological Report by GEMS dated June 2024 for details related to the policy exemption.

Agustin Olt
P.Eng (Mechanical)
aolt@mcw.com



Dundas Li Properties Inc.
1840 Eglinton Avenue West, Suite 202
Toronto, Ontario, M6E 2J4

March 6, 2023

Attention: Chief Engineer and Executive Director, Engineering and Construction Services
c/o Manager, Development Engineering
Toronto City Hall, 24th Floor E., 100 Queen Street W., Toronto, ON, M5H 2N2

cc: General Manager, Toronto Water
c/o Manager, Environmental Monitoring and Protection Unit
30 Dee Ave, Toronto ON M9N 1S9

Dear Sir or Madam,

I, Paolo Rovazzi , confirm and undertake that I will construct and maintain all building(s) on the subject lands at 2400-2440 Dundas Street West 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.

Paolo Rovazzi, A.S.O.

Name and Title

provazzi@li-limited.com

Email

PR

Signature

This is not the correct template for a water-tight with an emergency back up. Please provide a letter as per the template provided as Attachment #4.

The site will be seeking an exemption to the FD Policy and as such the watertight letters have been removed from the appendix. Long-term discharge to the combined sewer is proposed. A pump letter from the mechanical consultant can be found in Appendix B. Please refer to the Hydrogeological Report by GEMS dated June 2024 for details related to the policy exemption.

I, Paolo Rovazzi , have the authority to bind the corpor

I have attached the following documents, confirming t ɔn:

Corporation Profile Report obtained within 30 days

AND

Parcel Register obtained within 30 days

2400 Dundas Street W

Mixed use development

IBI

Sanitary Sewer Design Sheet

NOTES: Post-development domestic sewage flow based upon a unit flow of 240.0 Lpcd.
Maximum flow velocity for pipe flowing full = 3.0 m/s.
Minimum flow velocity for pipe flowing partially full (actual flow) = 0.6 m/s.
Infiltration= 0.26 L/s/ha
Mannings= 0.013

Project Name: 2400 Dundas Street W
Project Number: 141003
Date: March 10, 2023
Designed By: Cassidy Goetz, P.Eng.

	From	To	DESIGN FLOW CALCULATIONS: Area (ha)	Density	Population	Cumulative Area (ha)	ICI Population	Residential Population	Peaking Factor	Sewage Flow (L/s) (1)	Infiltration Flow (L/s) (2)	Ground Water (L/s) (3)	Stormwater Flow (L/s) (4)	Total Flow, Qd (L/s) (1)+(2)+(3)+(4)	SEWER DESIGN & ANALYSIS: Nominal Diameter (mm)	Pipe Slope (%)	Pipe Length (m)	Full Flow Capacity, Qf (L/s)	Full Flow Velocity (m/s)	Actual Velocity V (m/s)	Percent of Full Flow (%)	Notes
FLOWS TO 1050 mm COMBINED SEWER																						
Pre-Development																						
Sanitary Flows			1.1100		34	1.1100	34		4.34	0.10	0.29	0.0	0.0	0.4								
Storm Flows			0.0000	--	--	0.0000	--		--	--	--	--	0.0	0.0								
														0.4	← Total Pre-Development Flow to 1050 mm Combined Sewer							
Post-Development																						
Sanitary Flows			1.1100		1545	1.1100	42	1504	3.67	15.45	0.29	0.0	0.0	15.7								
Storm Flows														0.0								
														15.7	← Total Post-Development Flow to 1050 mm Combined Sewer							
Compliance with F-5-5																						
														-15.4	← Reduction in Flows (does not comply with F-5-5)							
Post-Development (Using 450 L/cd) For Sanitary Service Design																						
Sanitary Flows (Tower A1)			0.2775		289	0.2775	289		4.09	6.15	0.07	0.0	0.0	**6.2**	200	2.0%	10.0	48.4	1.49	1.03	12.9%	Serivce Design
Sanitary Flows (Tower A2)			0.2775		423	0.2775	423		4.01	8.84	0.07	0.0	0.0	**8.9**	200	2.0%	10.0	48.4	1.49	1.14	18.4%	Serivce Design
Sanitary Flows (Tower B)			0.2775		727	0.2775	727		3.88	14.71	0.07	0.0	0.0	**14.8**	200	2.0%	10.0	48.4	1.49	1.31	30.6%	Serivce Design
Sanitary Flows (Podium)			0.2775		106	0.2775	106		4.24	2.34	0.07	0.0	0.0	**2.4**	200	2.0%	10.0	48.4	1.49	0.77	5.0%	Serivce Design

Pre-Development

	Units / Area	Density	Population
Retail	3125 m2	1.1 pp/100m2	34
			0
	Total Pre-Dev. Population =		**34**

Post-Development (Tower A1)

	Units / Area	Density	Population
1 Bedroom	103	1.4 pp/unit	144
2 Bedroom	41	2.1 pp/unit	86
3 Bedroom	19	3.1 pp/unit	59
Total Units =	**163**		**289**

Post-Development (Tower A2)

	Units / Area	Density	Population
1 Bedroom	150	1.4 pp/unit	210
2 Bedroom	66	2.1 pp/unit	139
3 Bedroom	24	3.1 pp/unit	74
Total Units =	**240**		**423**

Post-Development (Tower B)

	Units / Area	Density	Population
1 Bedroom	317	1.4 pp/unit	444
2 Bedroom	70	2.1 pp/unit	147
3 Bedroom	44	3.1 pp/unit	136
Total Units =	**431**		**727**

Post-Development (Podium)

Retail	3793 m2	1.1 pp/100m2	42
1 Bedroom	28	1.4 pp/unit	39
2 Bedroom	9	2.1 pp/unit	19
3 Bedroom	2	3.1 pp/unit	6
	39		**106**

Arch plans and stats outline office and retail space. Confirm populations count calculations match site statistics

Water and sanitary calculations have been revised to the latest site statistics provided by the architect. Populations include retail and office (CEA) space as indicated in the latest site statistics.

2400 Dundas Street W

Mixed-use development

DOMESTIC WATER DEMAND CALCULATIONS

Project Name: 2400 Dundas Street W
Project Number: 141003
Date: March 10, 2023
Designed By: Cassidy Goetz, P.Eng.

1. Based on the City of Toronto Standards and
2. OBC, Part 8 "Sewage Systems", OBC Table 8.2.1.3.A and 8.2.1.3.B
3. ADD = 190 L/cap/day for residential uses

Peaking Factors		
Land Use	Peak Hour	Maximum Day
Residential	2.50	1.30
Commercial	1.20	1.10

					(ADDxP.F.)	*(ADDxP.F.)*
	Units	Density	Population	ADD (L/s)	PHD (L/s)	MDD (L/s)
1 Bedroom	598 units	1.4 pp/unit	837	1.8	4.6	2.4
2 Bedroom	186 units	2.1 pp/unit	391	0.9	2.1	1.1
3 Bedroom	89 units	3.1 pp/unit	276	0.6	1.5	0.8
Totals =	**873 units**		**1,504**	**3.31**	**8.27**	**4.30**

					(ADDxP.F.)	*(ADDxP.F.)*
	Area	Density	Population	ADD (L/s)	PHD (L/s)	MDD (L/s)
Office	0 m2	3.3 pp/100m2	0	0.0	0.0	0.0
Retail	4672 m2	1.1 pp/100m2	51	0.1	0.1	0.1
Totals =	**4672 m2**		**51**	**0.11**	**0.14**	**0.12**

Population	ADD (L/s)	PHD (L/s)	MDD (L/s)
1,555	**3.42**	**8.40**	**4.42**

Arch plans and stats outline office and retail space. Confirm populations count calculations match site statistics

Water and sanitary calculations have been revised to the latest site statistics provided by the architect. Populations include retail and office (CEA) space as indicated in the latest site statistics.