BURNSIDE

Functional Servicing Report
13-21 John Street and 36-40 South Station Street, Toronto ON M9N 1J2

21 John Dev Inc.
31 Scarsdale Road, Unit 5
Toronto ON M3B 2R2

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R.J. Burnside & Associates Limited

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1.0 Introduction

1.1 General Information

R.J. Burnside & Associates Limited (Burnside) has been retained by Devron Developments to prepare a Functional Servicing Report for the proposed redevelopment of 13-21 John Street and 36-40 South Station Street in the City of Toronto.

Refer to Figure 1 for the proposed site location of the subject site. The four existing buildings on-site are to be demolished. The proposed development comprises of a 40-storey residential building with a podium including residential amenities, commercial retail space, three levels of underground parking and a 3-storey community centre.

A private laneway bisects the subject site and is not part of the proposed development. As such, the subject site will be developed as two separate parcels of land, referred to as Parcel A and Parcel B.

This Functional Servicing Report (FSR) will support the Rezoning Application and future Site Plan Applications for the proposed redevelopment of the subject site. The attached engineering designs and drawings related to site servicing and grading will incorporate the functional concepts outlined in this report.

1.2 Objectives

The objectives of this Functional Servicing Report (FSR) are:

- To evaluate and confirm adequate supply and on-site distribution of municipal water to meet domestic and fire flow requirements.
- To evaluate and confirm capacity for sanitary servicing including:
  - Review of the pre- and post-development sanitary flow under the design and wet weather flow conditions.
- To evaluate the stormwater management opportunities and constraints including:
  - Review of the existing quality and quantity control facilities for the subject site.
  - Determine suitable methods for attenuation and treatment of stormwater runoff.
  - Demonstrate compliance of the proposed stormwater control measures with the City of Toronto's Wet Weather Flow Management Guidelines (WWFMG) (November 2006) for stormwater management criteria.

The above will be completed in accordance with accepted engineering practices and governing criteria from the approval agencies in support of the redevelopment applications, including reference to the City of Toronto Design Criteria for Sewers and Watermains (January 2021) and the City of Toronto Sewer Capacity Assessment Guidelines (July 2021).

Site lighting, traffic, and parking considerations are not part of the scope of this report and will be addressed by others.

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Client

21 JOHN DEV INC.

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TORONTO, ON
M3B 2R2

Project Name

SITE DEVELOPMENT
13-21 JOHN ST & 36-40 SOUTH STATION ST
TORONTO, ON M9N 1J2

Drawing Title

SITE LOCATION PLAN

Drawn	Checked	Date	Drawing No.
JS	PM	21/11/25	**FIG1**
Scale		Project No.	
N.T.S.		300054203	

2.0 Background

2.1 Existing Conditions

The subject site is located at 13-21 John Street and 36-40 South Station Street in the City of Toronto. The subject site is located within Basement Flooding Study Area 51 of the City of Toronto's Basement Flooding Protection Program Map, for which the EA is still in progress. It is bound by John Street to the west, South Station Street to the north, and existing commercial properties to the east and to the south. The site is currently composed of four existing commercial, institutional, and residential buildings, and associated at-grade parking lots.

A private laneway bisects the subject site, passing between 36 South Station Street and 38-40 South Station Street, providing access from South Station Street to the rear of the existing properties at 1919-1925 Weston Road. As this laneway is not part of the proposed redevelopment of the subject site, the site will be developed as two separate parcels of land, referred to as Parcel A and Parcel B.

2.1.1 Parcel A Existing Conditions

Parcel A is approximately 0.28 ha and located southeast of the intersection of John Street and South Station Street. It currently contains three existing commercial and institutional buildings on-site, 13-21 John Street and 38-40 South Station Street, with associated street-level parking areas. The existing buildings will be demolished prior to the proposed redevelopment of the parcel. The existing features currently occupying the site are outlined in Table 1.

Table 1: Existing Site Breakdown for Parcel A

Existing Site Component	Area
Existing Building	0.08 ha
Existing Parking Lot	0.20 ha
Total Area	**0.28 ha**

The existing properties within Parcel A are serviced via storm and water connections within South Station Street, in addition to storm, sanitary and water connections within John Street. The existing infrastructure within the South Station Street and John Street Road Rights-of-Way (ROW) can be utilized for the proposed redevelopment of Parcel A.

Refer to Figure 2 for the existing site conditions. All existing buildings on Parcel A will be demolished prior to the proposed redevelopment of the site.

2.1.2 Parcel B Existing Conditions

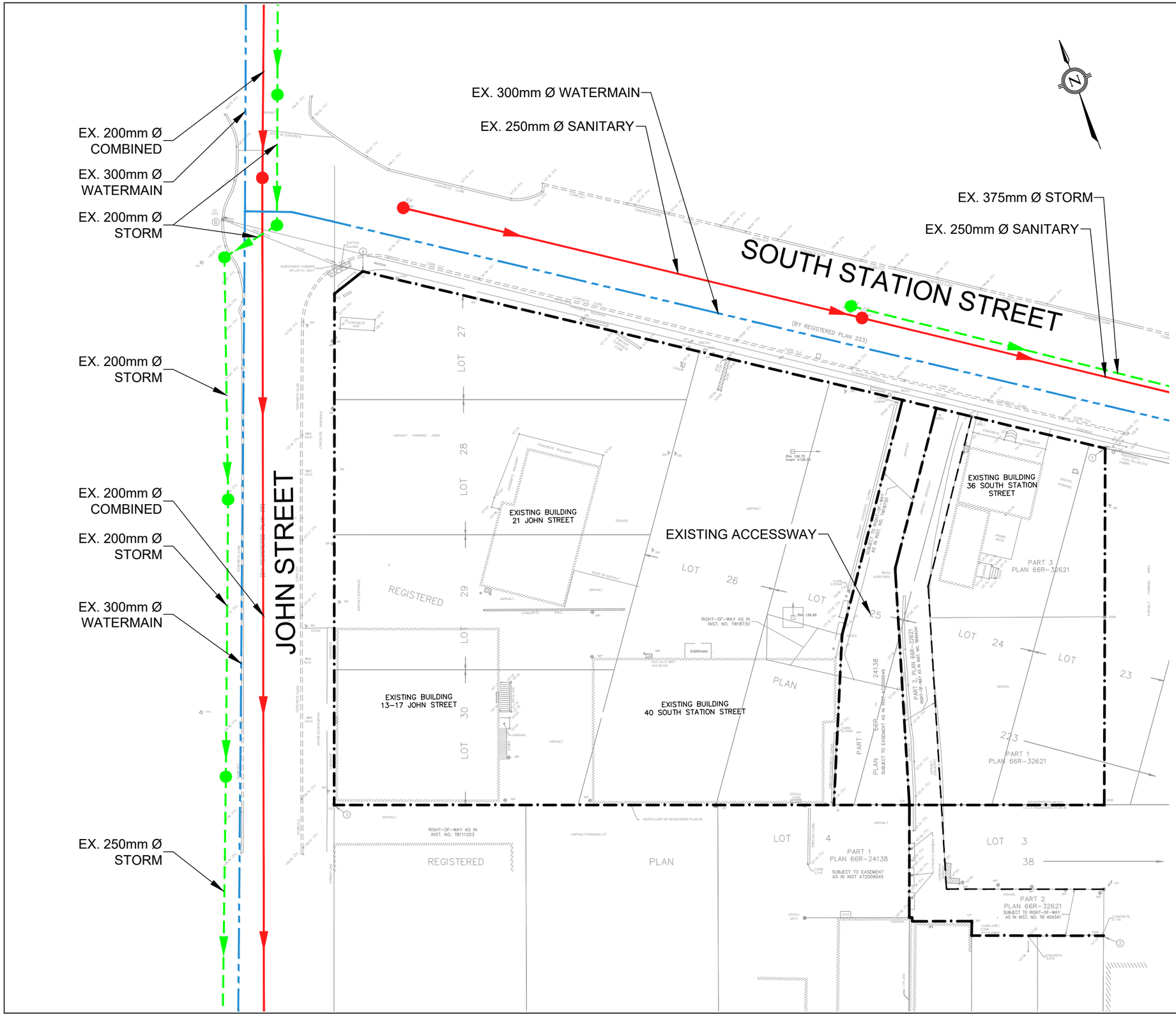
Parcel B is approximately 0.11 ha and is located at 36 South Station Street, east of the intersection of John Street and South Station Street. The existing residential building, 36 South Station Street, is to be demolished. Parcel B contains an easement on the west side of the property that provides access from South Station Street to the rear parking lots of existing commercial buildings at 1911-1917 Weston Road. This easement will be maintained in the post-development condition. Refer to Table 2 for the Existing Parcel B Site Breakdown.

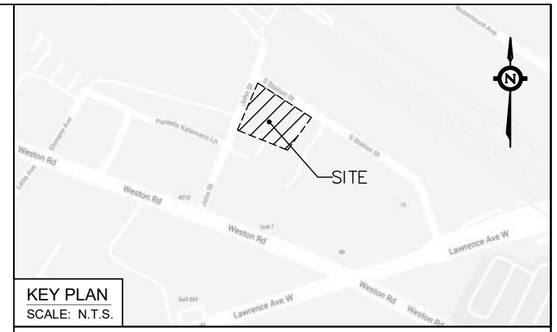
Table 2: Existing Site Breakdown for Parcel B

Existing Site Component	Area
Existing Building	0.01 ha
Existing Parking Lot	0.09 ha
Easement	0.01 ha
Total Area	**0.11 ha**

The existing property within Parcel B is serviced via sanitary and water connections within South Station Street. The existing infrastructure within the South Station Street Right-of-Way (ROW) can be utilized for the proposed redevelopment of Parcel B.

Refer to Figure 2 for the existing site conditions. The existing building will be demolished prior to the proposed redevelopment of the site.





KEY PLAN
SCALE: N.T.S.

Notes

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3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.

LEGEND:

- SITE PROPERTY LINE
- EXISTING STORM SEWER
- EXISTING SANITARY/COMB. SEWER
- EXISTING WATERMAIN

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21 JOHN DEV INC.

31 SCARSDALE ROAD, UNIT 5
TORONTO, ON
M3B 2R2

Project Name

SITE DEVELOPMENT
13-21 JOHN ST & 36-40 SOUTH STATION ST
TORONTO, ON M9N 1J2

Drawing Title

EXISTING CONDITIONS

Drawn	Checked	Date	Drawing No.
JS	PM	21/11/25	**FIG2**
Scale		Project No.	
1:400		300054203	

File Name: 054203 - FIG2.dwg Date Plotted: April 20, 2023 - 11:27 PM

2.2 Proposed Redevelopment

2.2.1 Parcel A Proposed Redevelopment

The proposed development of Parcel A will include the demolition of the three existing buildings on-site and the construction of a 40-storey residential building with a podium including residential amenities, commercial retail space, and three levels of underground parking. Refer to Table 3 for the proposed development components and Table 4 for the proposed site breakdown.

Table 3: Proposed Development Components for Parcel A

Site Component	Number of Floors
Tower	40
Podium	8
Parking	3

Table 4: Proposed Site Breakdown for Parcel A

Component	Area
Flat Roof	0.202 ha
Green Roof	0.004 ha
Hardscape	0.056 ha
Landscape	0.014 ha
Total	**0.276 ha**

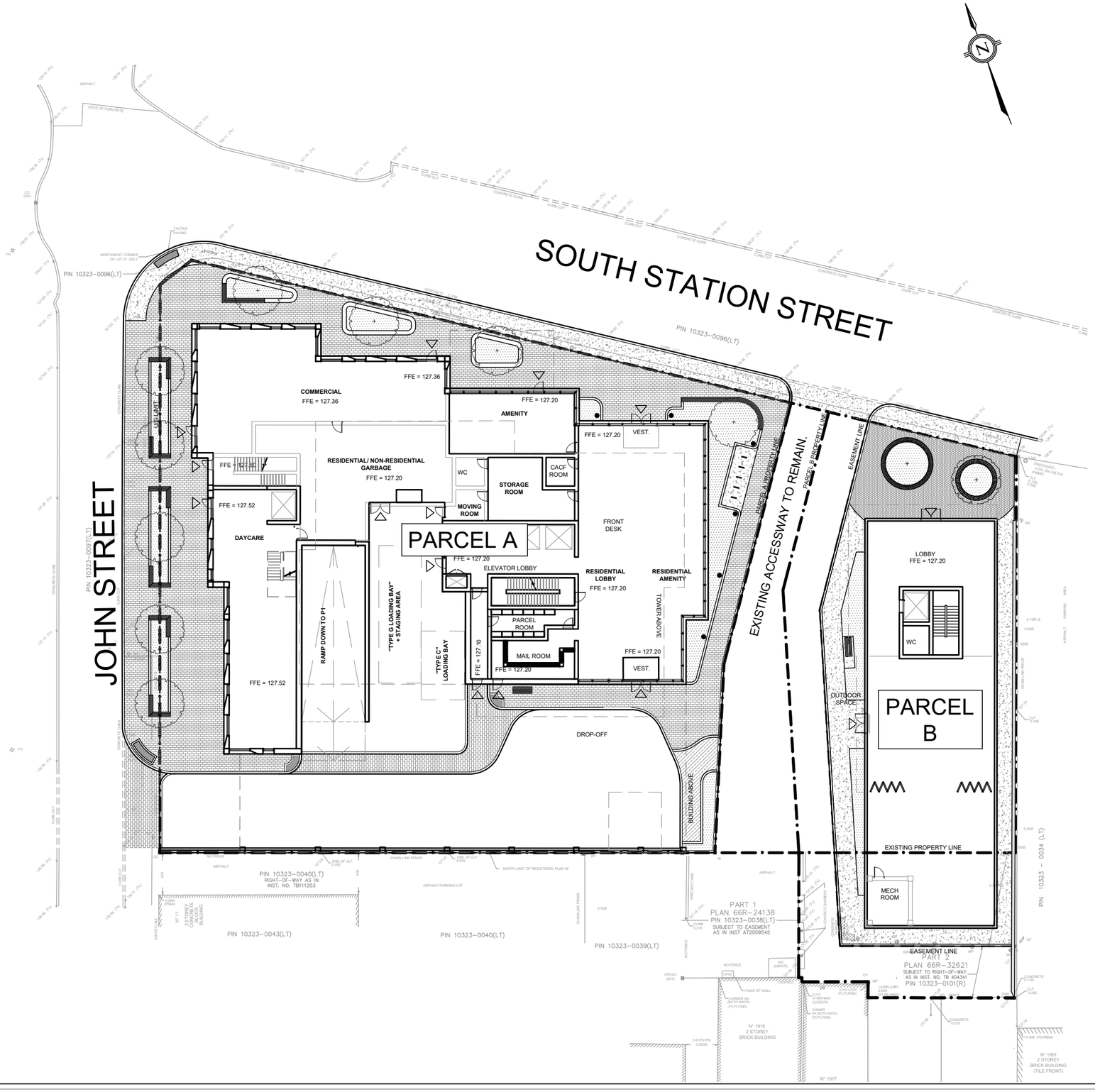
2.2.2 Parcel B Proposed Redevelopment

The proposed redevelopment of Parcel B will include the demolition of the existing building on-site and the construction of a 3-storey community centre building. The easement that runs parallel to the private laneway separating the subject site into two parcels will be maintained in the post-development condition. Refer Table 5 for the proposed site breakdown.

Table 5: Proposed Site Breakdown for Parcel B

Component	Area
Flat Roof	0.011 ha
Green Roof	0.037 ha
Hardscape	0.028 ha
Landscape	0.006 ha
Easement	0.027 ha
Total	**0.109 ha**

Refer to Figure 3 and Figure 4 for the proposed ground level and rooftop site plans, respectively.



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LEGEND:

SITE PROPERTY LINE

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Project Name

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Drawing Title

PROPOSED SITE PLAN

Drawn	Checked	Date	Drawing No.
JS	PM	21/11/25	**FIG3**
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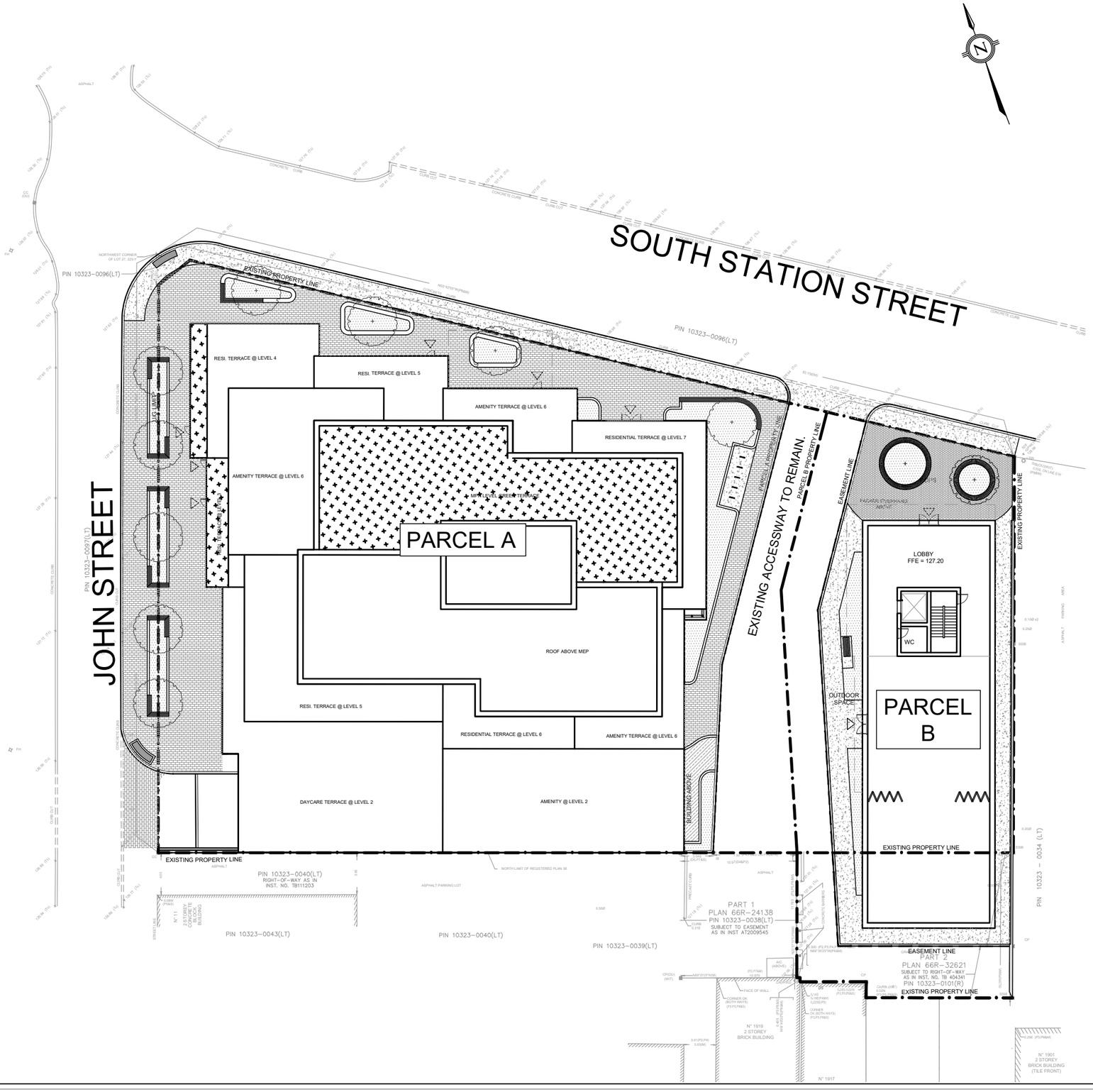
File Name: 054203 - FIG3.dwg Date Plotted: April 20, 2023 - 11:27 PM



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SITE PROPERTY LINE

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Drawing Title

PROPOSED ROOF PLAN

Drawn	Checked	Date	Drawing No.
JS	PM	21/11/25	FIG4
Scale		Project No.	
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File Name: 054203 - FIG4.dwg Date Plotted: April 20, 2023 - 11:28 PM

3.0 Water Supply and Distribution

3.1 Existing Water Infrastructure

The existing water infrastructure adjacent to the subject site includes:

- A 300 mm diameter watermain within the west side of John Street.
- A 300 mm diameter watermain within the south side of South Station Street.

A subsurface utility investigation completed by T2 Utility Engineers on September 29, 2022, confirms that the existing site is serviced via connections to the 300 mm diameter watermain within South Station Street and the 300 mm diameter watermain within John Street.

Refer to Figure 2 and Drawing C300 – Servicing Plan for the location of the existing watermains located near the proposed redevelopment. Refer to Appendix A for the CUMAP and existing plan and profiles obtained from the City of Toronto.

3.2 Proposed Water Infrastructure

3.2.1 Parcel A Water Infrastructure

The proposed redevelopment of Parcel A will include the demolition of the three existing buildings on-site and the construction of a 40-storey residential building with a podium including residential amenities, commercial retail space, and three levels of underground parking. The proposed residential tower has a height of 133.1 m. As per the Ontario Building Code (OBC) for buildings with more than 84 m in height, two fire services are required from two sources of public watermain. As such, two fire services will be provided for the proposed redevelopment to satisfy the OBC requirement.

The residential tower is proposed to be serviced via 200 mm diameter fire connection to the existing 300 mm diameter on the south side of South Station Street, and via 150 mm diameter domestic connection off the 200 mm diameter fire connection as per City of Toronto Standard T-1104.02-3.

To satisfy OBC requirements, a secondary 200 mm diameter fire connection is proposed to the existing 300 mm diameter on the west side of John Street as per City of Toronto Standard T-1104.02-3. An additional 150 mm diameter domestic connection off the 200 mm diameter fire connection is proposed to service the podium.

Each 200 mm diameter fire connection will be equipped with a detector check assembly in the building and each 150 mm diameter domestic connection will be equipped with a water meter and backflow preventor in the building as per applicable City of Toronto standards. Each proposed service connection will be equipped with a valve at the property line.

Fire protection will be provided utilizing the existing hydrants on nearby the site. One additional private hydrant has been proposed within the southeast corner of Parcel A to ensure adequate hydrant coverage. The proposed building will be equipped with an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards. The proposed building's fire department connection will be located within 45 m of a fire hydrant in accordance with the OBC.

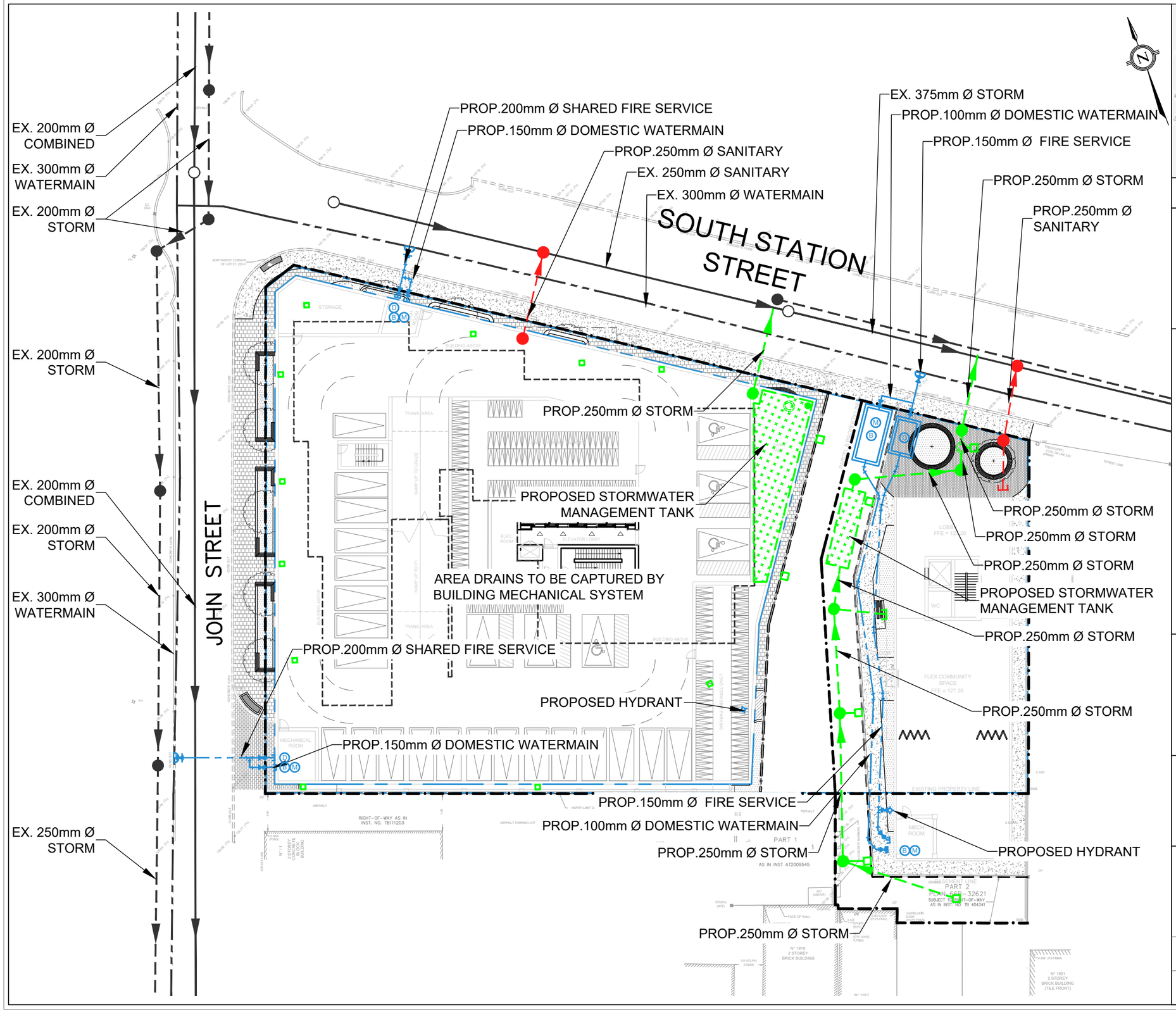
3.2.2 Parcel B Water Infrastructure

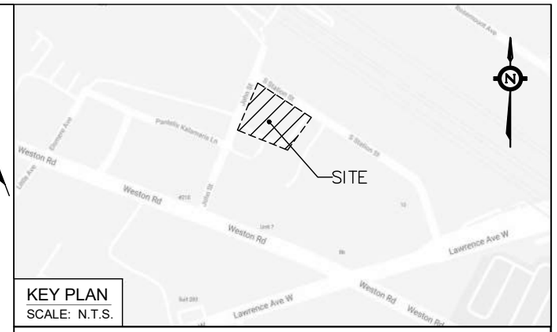
The proposed redevelopment of Parcel B will include the demolition of the existing building on-site and the construction of a 3-storey community centre. The community centre is proposed to be serviced via 150 mm diameter fire connection to the existing 300 mm diameter on the south side of South Station Street, and via 100 mm diameter domestic connection off the 150 mm diameter fire connection as per City of Toronto Standard T-1104.02-3.

The 150 mm diameter fire connection will be equipped with a double check detector assembly in chamber as per City of Toronto Standard T-1108.01-3. The 100 mm diameter domestic connection will be equipped with a water meter and backflow preventor in chamber at the property line as per City of Toronto Standard T-1107.02-1. Each proposed service connection will be equipped with a valve at the property line.

Fire protection will be provided utilizing the existing hydrants on nearby the site. One additional private hydrant has been proposed within the southwest portion of Parcel B to ensure adequate hydrant coverage. The proposed building will be equipped with an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards. The proposed building's fire department connection will be located within 45 m of a fire hydrant in accordance with the OBC.

Refer to Figure 5 and Drawing C300 – Servicing Plan for further details on the locations of the fire and domestic connection locations.





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LEGEND:

- SITE PROPERTY LINE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATERMAIN
- EXISTING HYDRANT AND VALVE
- VALVE & BOX
- WATER METER
- BACKFLOW PREVENTOR
- DETECTOR ASSEMBLY
- AREA DRAIN
- PROPOSED HYDRANT AND VALVE
- PROPOSED OGS
- PROPOSED STORM TANK

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Drawing Title

FUNCTIONAL SERVICING PLAN

Drawn	Checked	Date	Drawing No.
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3.3 Proposed Water Demand

3.3.1 Parcel A Water Demand

The fire flow for the proposed development will be calculated in accordance with the Fire Underwriters Survey (FUS) "Water Supply for Public Fire Protection, A Guide to Recommended Practice in Canada," dated 2020. The following assumptions were made for the fire flow calculations for Parcel A:

- The redevelopment will be fire-resistive construction and fully protected (Minimum 2-hour rating for all structural elements, walls, arches, floors and roofs) with a coefficient of 0.6.
- The largest floor area plus 25% of two adjoining floors have been considered.
- The buildings will contain limited combustible contents resulting in a 15% reduction.
- A reduction of 30% has been considered for all buildings to include an NFPA Sprinkler System.

Supporting letters have been prepared by Turner Fleischer Architects, the Architect of Record for the subject site confirming the construction coefficient of C=0.6. Refer to Appendix B for details.

As per the City of Toronto's Design Criteria for Sewers and Watermains (2nd Ed. 2021), an average consumption rate of 190 L/cap/day and a maximum hourly peaking factor of 2.5 were considered in the domestic flow calculation, and an average consumption rate of 250 L/cap/day and a maximum hourly peaking factor of 1.2 were considered in the commercial flow calculation, to determine the anticipated total water demand values for the proposed development of Parcel A.

The water demand calculation for the proposed redevelopment of Parcel A indicates that the domestic and fire flow requirements are 1,692 GPM (107 L/s). Refer to Appendix B for the fire flow calculations.

Hydrant flow testing was completed by L&D Waterworks Inc. on June 24, 2022, for two hydrants located near the subject site. The existing hydrants are located on the West side of John Street at Pantelis Kalamaris Lane, and on the south side of South Station Street at 40 South Station Street. The hydrant flow testing results indicated the following:

- A theoretical flow of 5,508 GPM at 20 psi within the 300 mm diameter watermain on the west side of John Street.
- A theoretical flow of 6,434 GPM at 20 psi within the 300 mm diameter watermain on the south side of South Station Street.

Hydrant flow testing confirms that the existing water infrastructure within South Station Street can support the proposed development of Parcel A and that no upgrades to the watermain are required. Refer to Appendix B for the hydrant flow testing results.

3.3.2 Parcel B Water Demand

The fire flow for the proposed development will be calculated in accordance with the Fire Underwriters Survey (FUS) "Water Supply for Public Fire Protection, A Guide to Recommended Practice in Canada," dated 2020. The following assumptions were made for the fire flow calculations for Parcel B:

- The redevelopment will be of ordinary construction with a coefficient of 1.0.
- The largest floor area plus 100% of all adjoining floors have been considered.
- The buildings will contain combustible contents resulting in a 0% reduction.
- A reduction of 30% has been considered for all buildings to include an NFPA Sprinkler System.

As per the City of Toronto's Design Criteria for Sewers and Watermains (2nd Ed. 2021), an average consumption rate of 250 L/cap/day and a maximum hourly peaking factor of 1.2 were considered in the commercial flow calculation for the proposed redevelopment of Parcel B.

The water demand calculation for the proposed redevelopment of Parcel B indicates that the domestic and fire flow requirements are 2,430 GPM (153 L/s). Refer to Appendix B for the water demand calculations.

Hydrant flow testing was completed by L&D Waterworks Inc. on June 24, 2022, for two hydrants located near the subject site. The existing hydrants are located on the West side of John Street at Pantelis Kalamaris Lane, and on the south side of South Station Street at 40 South Station Street. The hydrant flow testing results indicated the following:

- A theoretical flow of 5,508 GPM at 20 psi within the 300 mm diameter watermain on the west side of John Street.
- A theoretical flow of 6,434 GPM at 20 psi within the 300 mm diameter watermain on the south side of South Station Street.

Hydrant flow testing confirms that the existing water infrastructure within South Station Street can support the proposed development of Parcel B and that no upgrades to the watermain are required. Refer to Appendix B for the hydrant flow testing results.

4.0 Stormwater Management Analysis

4.1 Design Criteria

The proposed redevelopment is located within the City of Toronto and must comply with the City of Toronto's Wet Weather Flow Management Guidelines (WWFMG). Therefore, stormwater management design criteria for the site are as follows:

- Post-development flows must not exceed the 2-year pre-development flows with a runoff coefficient of C=0.50 (100-year post-development flows controlled to 2-year pre-development levels).
- Water balance controls are to retain the 5 mm rain event through infiltration, evapotranspiration, or rainwater re-use.
- The proposed redevelopment ensures no increase in erosion or downstream flooding.
- Provide an enhanced level of stormwater quality treatment (80% TSS Removal).

4.2 Method of Analysis

The Modified Rational Method (MRM) was used to calculate runoff rates from all drainage areas, to quantify the detention storage for all control measures, and to demonstrate the site's overall SWM compliance, as specified by the WWFMG. Intensity-Duration-Frequency curves from the City of Toronto were used to simulate rainfall data.

A private laneway passes between 36 South Station Street and 38-40 South Station Street that provides access from South Station Street to the rear of the existing properties at 1919-1925 Weston Road. As this laneway is not part of the proposed redevelopment of the site, the site will therefore be developed as two separate parcels of land, referred to as Parcel A and Parcel B. As such, the two parcels were considered as two separate drainage areas, and a separate stormwater connection and stormwater management system will be provided for each area.

4.3 Existing Stormwater Infrastructure

4.3.1 Parcel A Existing Infrastructure

The existing storm infrastructure adjacent to the Parcel A includes:

- A 375 mm diameter storm sewer traveling in a southeast direction in the center of South Station Street.
- A 200 mm to 250 mm diameter storm sewer traveling in a southwest direction in the west side of John Street.
- A 250 mm diameter combined sewer traveling in a southwest direction in the center of John Street.

A subsurface utility investigation completed by T2 Utility Engineers on September 29, 2022, confirms that the existing properties at 13-21 John Street and 38-40 South Station Street are serviced via connections to the 375 mm diameter storm sewer within South Station Street.

Based on a review of the plan and profiles and topographical survey information, it has been determined that the majority of the site's drainage is contained within the site and a minor amount of external drainage is expected to enter the site from the private laneway to the west.

Under existing conditions, the overland flow route for the site is split with the east portion draining in a northerly direction towards South Station Street and the remaining west portion draining in a westerly direction towards John Street. This overland flow route is to be maintained through the redevelopment of the site to ensure no negative impacts to the existing drainage patterns. Refer to Figure 6: Pre-Development Storm Drainage Plan for the existing drainage conditions.

4.3.2 Parcel B Existing Infrastructure

The existing storm infrastructure adjacent to the Parcel B includes:

- A 375 mm diameter storm sewer traveling in a southeast direction in the center of South Station Street.

A subsurface utility investigation completed by T2 Utility Engineers on September 29, 2022, confirms that the existing property at 36 South Station Street is not serviced via direct connections to existing stormwater infrastructure.

Based on the plan and profiles and topographical survey information, it has been determined that the majority of the site's drainage is contained within the site and a minor amount of external drainage is expected to enter the site from the private laneway to the west.

Under existing conditions, the overland flow route for the site is in a northerly direction towards South Station Street. This overland flow route is to be maintained through the redevelopment of the site to ensure no negative impacts to the existing drainage patterns. Refer to Figure 6: Pre-Development Storm Drainage Plan for the existing drainage conditions.

4.4 Allowable Release Rate

The pre-development peak flow rate for each drainage area was modelled using the Modified Rational Method at a runoff coefficient of C=0.50 as per the Wet Weather Flow Management Guidelines.

4.4.1 Parcel A Allowable Release Rate

The site area of 0.28 ha was considered to determine the 2-year pre-development runoff rate for the proposed redevelopment using a runoff coefficient of C=0.50. In accordance with the City of Toronto Design Criteria for Sewers and Watermains and the WWFMG, the 100-year post-development runoff rate for the site area must be controlled back to an allowable release rate equal to the 2-year pre-development runoff rate of 33.7 L/s.

Under existing conditions, the overland flow route across the subject site is divided with only the west portion draining to South Station Street. The 0.15 ha drainage area which outlets to South Station Street under the existing conditions has a 2-year pre-development flow of 34.4 L/s considering a runoff coefficient C=0.90. As the allowable release rate of 33.7 L/s is less than the existing condition, it will be considered for the stormwater calculations to ensure there are no negative impacts to the storm sewer downstream of the redevelopment.

In the proposed conditions, there is an external drainage area which will be conveyed through Parcel A. Runoff generated within a portion of the private laneway to the east will be collected and conveyed through the proposed stormwater management system. The allowable release rate for the proposed redevelopment has been adjusted to account for the external storm flow that is expected to enter the site. The 2-year pre-development runoff rate for this external area of 0.01 ha was calculated to be 7.6 L/s. The allowable release rate for Parcel A has been increased to account for this external runoff that will be conveyed through the site. As such, the allowable release rate from the subject site is 41.3 L/s (33.7 L/s + 7.6 L/s).

Refer to Figure 6 and Drawing C300 – Servicing Plan for details. Refer to Appendix C for stormwater calculations.

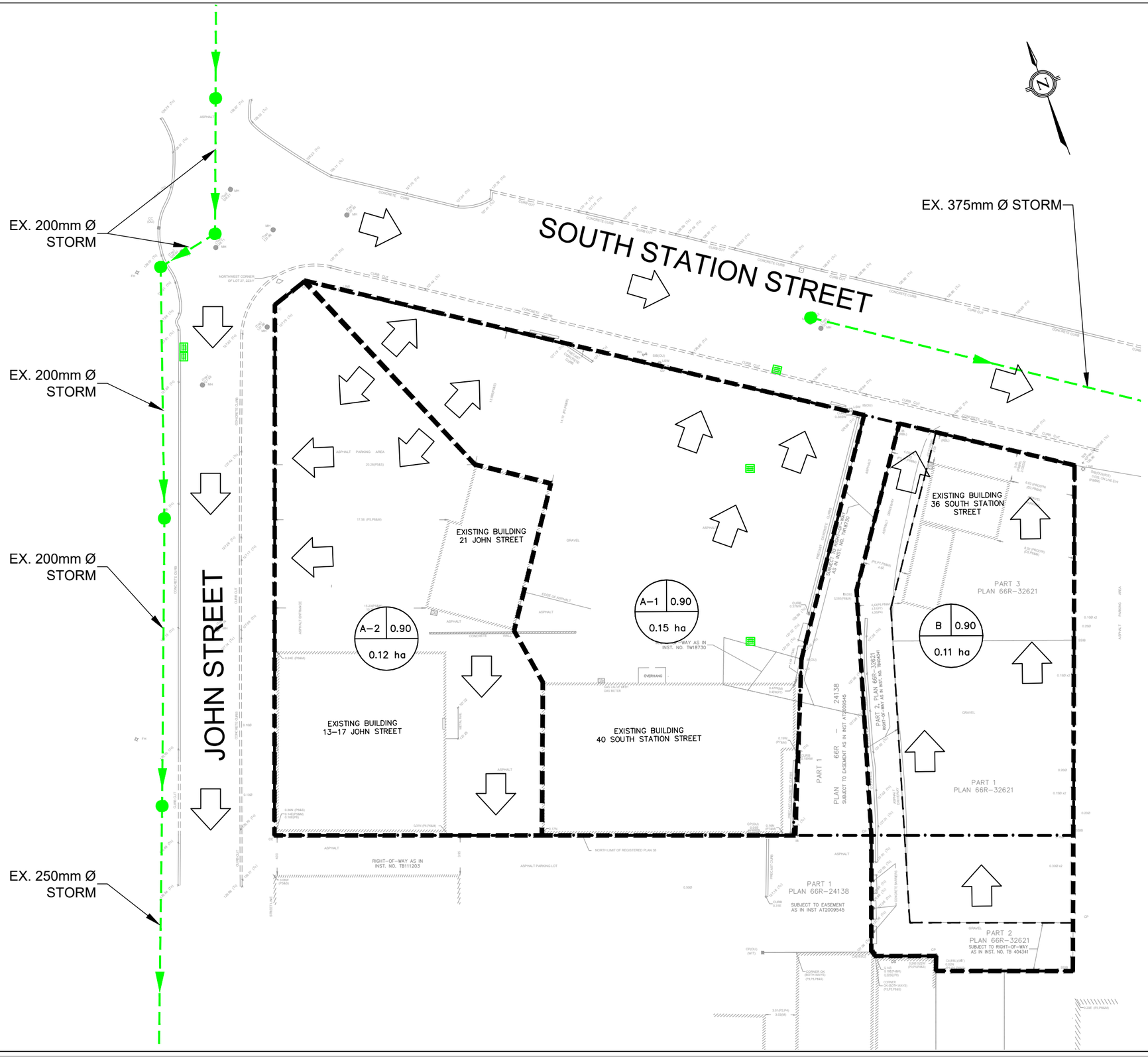
4.4.2 Parcel B Allowable Release Rate

A drainage area of 0.11 ha was considered to determine the 2-year pre-development runoff rate for the proposed Parcel B using a runoff coefficient of C=0.50. In accordance with the City of Toronto Design Criteria for Sewers and Watermains and the WWFMG, the 100-year post-development runoff rate for the site area must be controlled back to an allowable release rate equal to the 2-year pre-development runoff rate of 13.4 L/s.

In the proposed conditions, there is an external drainage area which will be conveyed through Parcel B. The runoff generated within a portion of the private laneway to the west will be collected and conveyed through the proposed stormwater management system. The allowable release rate for the proposed redevelopment has been adjusted to account for the external storm flow that is expected to enter the site. The 2-year pre-development runoff rate for this external area of 0.01 ha was calculated to be 6.3 L/s. The allowable release rate has been increased to account for the external runoff

that will be conveyed through the site. As such, the allowable release rate from the subject site is 19.7 L/s (13.4 L/s + 6.3 L/s).

Refer to Figure 6 and Drawing C300 – Servicing Plan for details. Refer to Appendix C for the stormwater calculations.



KEY PLAN
SCALE: N.T.S.

Notes

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2. The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.
3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.

LEGEND:

- SITE PROPERTY LINE
- DRAINAGE BOUNDARY
- EXTERNAL DRAINAGE BOUNDARY
- DRAINAGE AREA NUMBER
- EAST 0.90 / 0.26 ha — RUNOFF COEFFICIENT / DRAINAGE AREA (ha)
- OVERLAND FLOW ROUTE
- EXISTING CATCHBASIN / DOUBLE CATCHBASIN
- EXISTING STORM SEWER

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M3B 2R2

Project Name

SITE DEVELOPMENT
13-21 JOHN ST & 36-40 SOUTH STATION ST
TORONTO, ON M9N 1J2

Drawing Title

PRE-DEVELOPMENT STORM DRAINAGE PLAN

Drawn	Checked	Date	Drawing No.
JS	PM	21/11/25	**FIG6**
Scale		Project No.	
1:400		300054203	

File Name: 054203 - FIG6.dwg Date Plotted: April 20, 2023 - 11:28 PM

5.0 Proposed Stormwater Management

5.1 Stormwater Quantity Control

The proposed redevelopment has been designed with two drainage areas which each have an outlet to the existing storm sewer within South Station Street. Each drainage area has been designed to control the 100-year post-development flows to the 2-year pre-development flows and on-site storage has been provided accordingly.

There may be runoff from rainstorms that exceed the capacity of the City's storm service connections. Therefore, the Owner shall be responsible for providing flood protection or a safe overland flow route for the proposed redevelopment without causing damage to the proposed and adjacent public and private properties.

Existing drainage patterns on adjacent properties shall not be altered and stormwater runoff from the subject redevelopment shall not be directed to drain onto adjacent properties.

5.1.1 Parcel A Drainage Area

Parcel A Drainage Area is 0.28 ha in size and consists of a 40-storey residential building with a podium including residential amenities, commercial retail space, and three levels of underground parking. The target release rate for this area under the 2-year pre-development levels is 41.3 L/s. The runoff generated from the rooftop and private roadway will be collected and stored within a stormwater management tank located within the P1 level.

The controlled flow for Parcel A Drainage Area is proposed to outlet from proposed Control MH1, located at the property line and entirely within the site, via 250 mm diameter storm sewer connection to the existing 375 mm diameter storm sewer within South Station Street at EX.STM-MH1. In the proposed condition, there is an external area 0.012 ha in size that drains into the area. The runoff generated within this area will be conveyed uncontrolled through the site stormwater system. The stormwater system is sized to convey the 100-year storm runoff from this external area to the storm sewer within South Station Street.

Table 6 summarizes the stormwater quantity requirements to meet the allowable release rate for Parcel A Drainage Area. Refer to Figure 7 for the proposed stormwater design.

Table 6: Release Rates and Storage Volumes for Parcel A

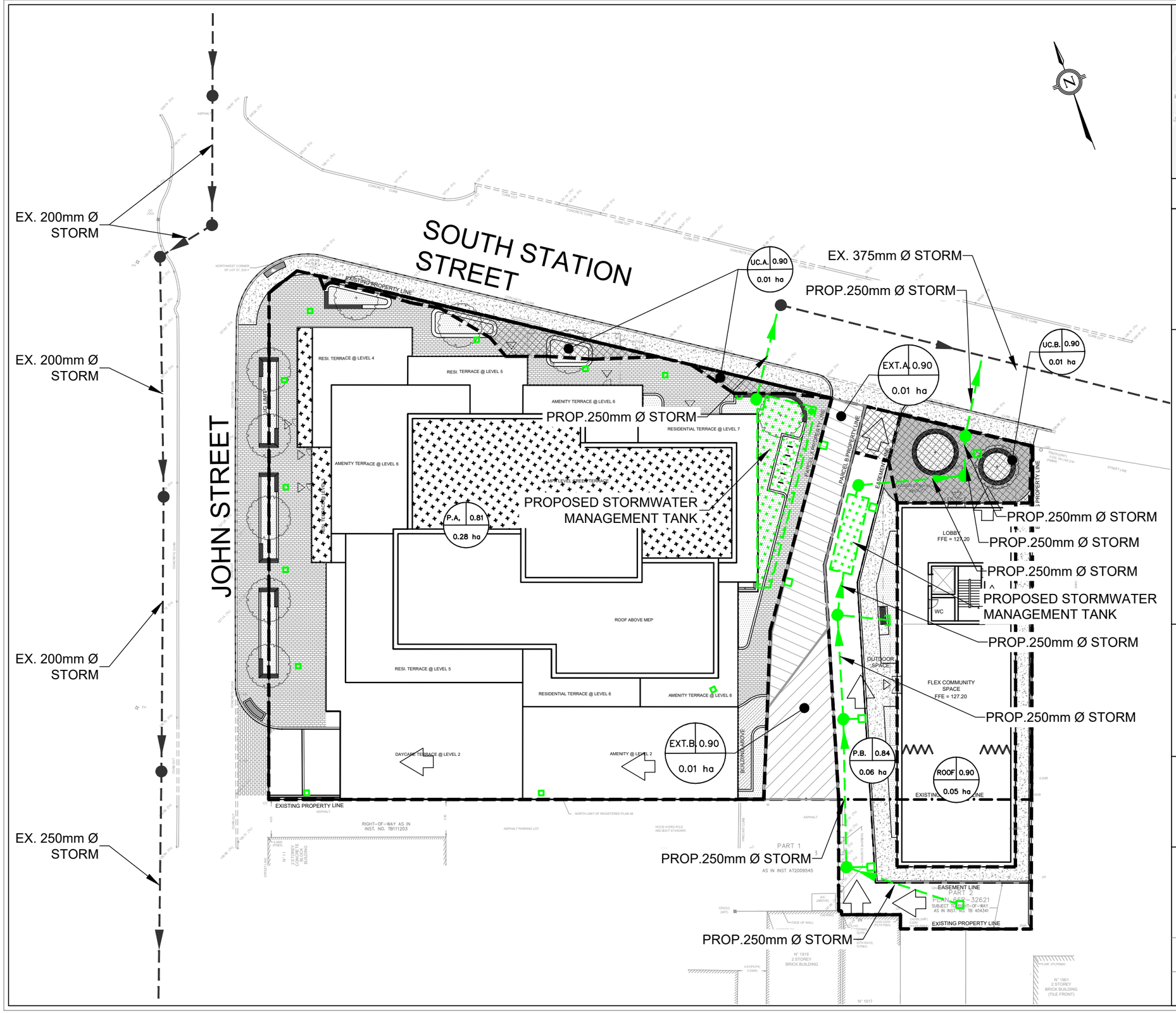
Area ID	Description	Area (ha)	Target Release Rate (L/s)	Actual Release Rate (L/s)	Active Storage Required (m^3)
EXT	External Area	0.012	41.34	35.35	76.2
DEV	Rooftop	0.165			
	Green Roof	0.041			
	Hardscape	0.049			
	Landscape	0.011			
UNC	Uncontrolled Area	0.010		5.95	-
Total		**0.288**	**41.34**	**41.30**	**76.2**

In the post-development condition, there is a minor area proposed to drain uncontrolled towards the ROW due to grading constraints. The 100-year post-development runoff rate for these areas is 5.9 L/s. The allowable release rate from the stormwater storage tank is reduced to 35.39 L/s (41.34 L/s – 5.95 L/s) to account for this.

To ensure that the outlet to the proposed storm sewer system discharges at or below the target release rate, the use of an outlet orifice control is necessary for Parcel A Drainage Area. The orifice that releases at a rate nearest the target release rate of 35.39 L/s is a 125 mm DR7.3 orifice tube with an inner diameter of 100.25 mm with a release rate of 35.35 L/s. The orifice tube will be placed upstream of the control manhole to control the flow to the South Station Street storm sewer.

The proposed stormwater storage tank will be located in the P1 level and is proposed to be pumped due to shallow depth of the tank outlet. The required active storage volume is 76.2 m^3. The required storage volume is based on an actual release rate of 35.35 L/s; should the release rate be controlled to less than 35.35 L/s, the required storage will be greater than 76.2 m^3. The internal mechanical piping within the building will need to be designed to convey the full 100-year storm event flows to the stormwater management tank.

No storm sewer infrastructure upgrades are required to support the development of Parcel A. Refer to Appendix C for the stormwater calculations, Figure 7, Drawing C300 - Servicing Plan, and Drawing C200 – Grading Plan for further details.



KEY PLAN
SCALE: N.T.S.

Notes

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3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.

LEGEND:

- SITE PROPERTY LINE
- DRAINAGE CATCHMENT AREAS
- EXISTING STORM SEWER AND MANHOLE
- PROPOSED STORM SEWER AND MANHOLE
- PROPOSED OGS
- PROPOSED STORM TANK
- EXTERNAL DRAINAGE BOUNDARY
- UNCONTROLLED DRAINAGE BOUNDARY
- DRAINAGE AREA NUMBER
- RUNOFF COEFFICIENT (DEV 0.82)
- DRAINAGE AREA (ha) (0.364 ha)
- OVERLAND FLOW ROUTE
- AREA DRAIN

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Project Name
SITE DEVELOPMENT
13-21 JOHN ST & 36-40 SOUTH STATION ST
TORONTO, ON M9N 1J2

Drawing Title
POST DEVELOPMENT DRAINAGE PLAN

Drawn	Checked	Date	Drawing No.
JS	PM	21/11/25	**FIG7**
Scale		Project No.	
1:400		300054203	

File Name: 054203 - FIG7.dwg Date Plotted: April 20, 2023 - 11:29 PM

5.1.2 Parcel B Drainage Area

Parcel B Drainage Area is 0.11 ha in size and consists of a 3-storey community centre. The target release rate for this area under the 2-year pre-development levels is 13.4 L/s. The runoff generated from the rooftop will be controlled to 42 L/s/ha and, with storage being provided on the rooftop. Flows generated within the private roadway and sidewalk areas will be collected and stored within an open-bottom infiltration tank located within the road easement area within the Parcel B property boundary.

The controlled flow for Parcel B Drainage Area is proposed to outlet via 250 mm diameter storm sewer connection from the proposed control manhole MH-B2, located at the property line and entirely within the site, to the existing 375 mm diameter storm sewer within South Station Street at proposed MH-B1. In the proposed condition, there is an external area 0.01 ha in size that drains into the area. The runoff generated within this area will be conveyed uncontrolled through the site stormwater system. The stormwater system is sized to convey the 100-year storm runoff from this external area to the storm sewer within South Station Street.

Table 7 summarizes the stormwater quantity requirements to meet the allowable release rate for Parcel B Drainage Area. Refer to Figure 7 for the proposed stormwater design.

Table 7: Release Rates and Storage Volumes for Parcel B

Area ID	Description	Area (ha)	Target Release Rate (L/s)	Actual Release Rate (L/s)	Active Storage Required (m^3)
DEV	Rooftop	0.048	19.73	11.46	22.0
	Hardscape	0.042			15.4
	Landscape	0.006			
EXT	External Area	0.010			
UNC	Uncontrolled Area	0.010		8.27	-
Total		**0.116**	**19.73**	**19.73**	**37.4**

There are minor areas throughout the perimeter of the site where runoff will drain uncontrolled towards the ROW due to grading constraints. The 100-year post-development runoff rate for these areas is 8.27 L/s of runoff. The allowable release rate has been reduced to 11.46 L/s (19.73 L/s – 8.27 L/s) to account for this. As such, the allowable release rate for Parcel A is 11.46 L/s.

To ensure that the outlet to the proposed storm sewer system discharges at or below the target release rate, the use of a Hydrovex is necessary for the Parcel B Drainage Area. A 125 VHV-1 Hydrovex will be placed downstream of the underground storage facility at MH-B3 to control the flow to the South Station Street storm sewer.

The required active storage volume to be stored in the underground storage tank is 15.4 m^3. The required storage volume is based on an actual release rate of 11.46 L/s.

No storm sewer infrastructure upgrades are required to support the development of Parcel B. Refer to Appendix C for the stormwater calculations Figure 7, Drawing C300 – Servicing Plan, and Drawing C200 – Grading Plan for further details.

5.2 Stormwater Retention (Water Balance)

5.2.1 Parcel A Water Balance

As per the City of Toronto Wet Weather Flow Management Guidelines, it is required that the 5 mm rainfall event be retained on-site through infiltration, evapotranspiration, or rainwater reuse.

The area of 0.38 ha has been considered in determining the minimum rainfall re-use volume to meet both the quality and water balance requirements for the proposed redevelopment of Parcel A. The following method has been considered in determining the minimum rainfall re-use volume:

Minimum Rainfall Re-Use = Site Area (m^2) x 5 mm

Minimum Rainfall Re-Use = (2,753) x (0.005) = 13.77 m^3

The initial abstraction for the subject site considers the proposed roof, green roof, hardscape, and landscape areas. These abstracted volumes are presented in Table 8.

Table 8: Initial Abstraction for Parcel A

Surface	Initial Abstraction (m)	Area (m^2)	Initial Abstraction Volume (m^3)
Impervious Roof	0.001	1645	1.65
Green Roof	0.005	414	2.07
Impervious Areas	0.001	557	0.56
Pervious Areas	0.005	138	0.69
Total		**2753**	**4.96**

The following method has been used to determine the minimum rainfall re-use volume following initial abstraction:

Minimum Rainfall Re-Use = Site Area (m^2) x 5 mm – IA

Minimum Rainfall Re-Use = 13.77 m^3 – 4.96 m^3 = 8.81 m^3

To achieve the water balance criteria, the required retention and reuse for the proposed site area of 0.28 ha is 8.81 m^3.

Dead storage will be provided within the stormwater storage tank to store and re-use the stormwater on-site. The proposed stormwater system will be designed to re-use the stormwater for irrigation (rainwater harvesting) on-site.

Refer to Appendix C for the stormwater calculations.

5.2.2 Parcel B Water Balance

As per the City of Toronto Wet Weather Flow Management Guidelines, it is required that the 5 mm rainfall event be retained on-site through infiltration, evapotranspiration, or rainwater reuse.

The site area of 0.11 ha has been considered in determining the minimum rainfall re-use volume to meet both the quality and water balance requirements for the proposed redevelopment of Parcel B. The following method has been considered in determining the minimum rainfall re-use volume:

Minimum Rainfall Re-Use = Site Area (m^2) x 5 mm

Minimum Rainfall Re-Use = (1,093) x (0.005) = 5.46 m^3

The initial abstraction for the subject site considers the proposed roof, green roof, hardscape, and landscape areas. These abstracted volumes are presented in Table 9.

Table 9: Initial Abstraction for Parcel B

Surface	Initial Abstraction (m)	Area (m^2)	Initial Abstraction Volume (m^3)
Impervious Roof	0.001	483	0.48
Impervious Areas	0.001	555	0.55
Pervious Areas	0.005	55	0.28
	Total	**1093**	**1.31**

The following method has been used to determine the minimum rainfall re-use volume following initial abstraction:

Minimum Rainfall Re-Use = Site Area (m^2) x 5 mm – IA

Minimum Rainfall Re-Use = 5.46 m^3 – 1.31 m^3 = 4.15 m^3

To achieve the water balance criteria, the required retention and reuse for the proposed site area of 0.11 ha is 4.15 m^3.

Dead storage will be provided within the stormwater storage tank to store and reuse the stormwater on site. Refer to Appendix C for the stormwater calculations.

5.2.3 Parcel A and B Stormwater Reuse

As noted above, both Parcel A and B will need to provide means of stormwater reuse to meet the water balance requirements. After initial abstraction, the total volume of stormwater to be reused is 12.96 m^3 (8.81 m^3 + 4.15 m^3). Stormwater is proposed to be reused on site through irrigation systems for the landscape on site in addition to the infiltration of stormwater.

Based on the Water Requirement Calculation prepared by Creative Irrigation Solutions Inc, found in Appendix C, the irrigation requirement for Parcel A and B within a 72-hour period is 7.40 m^3. This leaves a remaining 5.56 m^3 of stormwater required to be reused. Additional methods of reuse will be explored including greywater reuse during the detailed design stage.

5.3 Stormwater Quality Control

5.3.1 Parcel A Quality Control

As per the City of Toronto's Wet Weather Flow Management Guidelines and the Ministry of the Environment Stormwater Management Planning and Design Manual (March 2003), stormwater quality control is required to provide the long-term average removal of 80% of Total Suspended Solids (TSS) on an annual loading basis from all runoff leaving the proposed development site based on the post-development level of imperviousness. Stormwater quality treatment for the proposed development of Parcel A will be provided using a variety of water quality measures in a treatment train approach.

The annual TSS loading for the site was determined using the Ministry of the Environment Stormwater Management Planning and Design Manual (March 2003). Table 6.3: Annual Sediment Loadings identifies the annual sediment loading based on the post-development levels of imperviousness. The percent imperviousness for each post-development surface was calculated using the runoff coefficients.

Using the City of Toronto guidelines for TSS removal based on surface type, the TSS remaining of the annual loading was determined using the Parcel A area of 0.28 ha.

The quality control requirements for the proposed commercial site will be met by a treatment train approach consisting of an underground storage tank to capture the stormwater on site, retain the 5 mm rainfall event volume for reuse, and remove an additional 50% TSS via a Canadian ETV certified Oil/Grit Separator (OGS) unit upstream of the control manhole. Based on the WWFMG, the 5 mm rainfall event represents approximately 50% of the total annual rainfall depth. This volume being retained and reused on site, results in 50% of the annual rainfall being retained, removing 50% of the annual loading of TSS, as this runoff will not enter the storm sewer system.

When the runoff reduction is applied, the remaining TSS is treated to an additional 50% TSS removal. Based on the calculations, the proposed development achieves a TSS removal rate of 88% which exceeds the 80% TSS removal target. Refer to Table 10 below. Refer to Appendix C for details.

Table 10: Effective TSS Removal Rate for Parcel A

Catchment Area Description	Treated Drainage Area (m2)	RC	% Impervious	Annual TSS Loading (m^3/ha)*	Annual TSS Loading (m^3)	Removal Efficiency						
						Step 1		Step 2		Step 3		Total Efficiency
						Surface type**	TSS Remaining (m^3)	Oil/Grit Separator	TSS Remaining (m^3)	TSS Removal Using Runoff Reduction***	TSS Remaining (m^3)	
Controlled Hardscape	489.4	0.90	100%	4.8	0.23	0%	0.23	50%	0.12	50%	0.06	**75%**
Controlled Landscape	110.0	0.25	7%	0.001	0.00	80%	0.00	50%	0.00	50%	0.00	**95%**
Rooftop	1645.5	0.90	100%	4.8	0.79	80%	0.16	50%	0.08	50%	0.04	**95%**
Green Roof	413.5	0.50	43%	1.1	0.05	80%	0.01	50%	0.00	50%	0.00	**95%**
Uncontrolled Landscape	27.6	0.25	7%	0.001	0.00	80%	0.00	0%	0.00	0%	0.00	**80%**
Uncontrolled Hardscape	67.4	0.90	100%	4.8	0.03	0%	0.03	0%	0.03	0%	0.03	**0%**
Total	**2753.4**				**1.10**		**0.43**		**0.23**		**0.13**	**88%**

5.3.2 Parcel B Quality Control

As per the City of Toronto's Wet Weather Flow Management Guidelines and the Ministry of the Environment Stormwater Management Planning and Design Manual (March 2003), stormwater quality control is required to provide the long-term average removal of 80% of Total Suspended Solids (TSS) on an annual loading basis from all runoff leaving the proposed development site based on the post-development level of imperviousness. Stormwater quality treatment for the proposed development of Parcel B will be provided using a variety of water quality measures in a treatment train approach.

The annual TSS loading for the site was determined using the Ministry of the Environment Stormwater Management Planning and Design Manual (March 2003). Table 6.3: Annual Sediment Loadings identifies the annual sediment loading based on the post-development levels of imperviousness. The percent imperviousness for each post-development surface was calculated using the runoff coefficients.

Using the City of Toronto guidelines for TSS removal based on surface type, the TSS remaining of the annual loading was determined using the Parcel B area of 0.11 ha.

The quality control requirements for the proposed commercial site will be met by a treatment train approach consisting of an underground infiltration tank to capture the stormwater on site, retain the 5 mm rainfall event volume for reuse, and remove an additional 50% TSS via a Canadian ETV certified Oil/Grit Separator (OGS) unit upstream of the control manhole. Based on the WWFMG, the 5 mm rainfall event represents approximately 50% of the total annual rainfall depth. This volume being retained and reused on site, results in 50% of the annual rainfall being retained, removing 50% of the annual loading of TSS, as this runoff will not enter the storm sewer system.

When the runoff reduction is applied, the remaining TSS is treated to an additional 50% TSS removal provided by an isolator row within the storage tank and a further 50% TSS provided by an OGS unit. Based on the calculations, the proposed development achieves a TSS removal rate of 86% which exceeds the 80% TSS removal target. Refer to Table 11 below. Refer to Appendix C for details.

Table 11: Effective TSS Removal Rate for Parcel B

Catchment Area Description	Treated Drainage Area (m2)	RC	% Impervious	Annual TSS Loading (m^3/ha)*	Annual TSS Loading (m^3)	Removal Efficiency								Total Efficiency
						Step 1		Step 2		Step 3		Step 4		
						Surface type**	TSS Remaining (m^3)	Isolator Row within Infil. Tank	TSS Remaining (m^3)	TSS Removal Using Runoff Reduction***	TSS Remaining (m^3)	Oil/Grit Separator	TSS Remaining (m^3)	
Controlled & Treated Hardscape	422.6	0.90	100%	4.8	0.20	0%	0.20	50%	0.10	50%	0.05	50%	0.03	**88%**
Controlled Landscape	55.0	0.25	7%	0.001	0.00	80%	0.00	50%	0.00	50%	0.00	50%	0.00	**98%**
Rooftop	483.2	0.90	100%	4.8	0.23	80%	0.05	50%	0.02	50%	0.01	50%	0.01	**98%**
Uncontrolled & Treated Hardscape	113.6	0.90	100%	4.8	0.05	0%	0.05	0%	0.05	0%	0.05	50%	0.03	**50%**
Uncontrolled & Untreated Hardscape	18.6	0.90	100%	4.8	0.01	0%	0.01	0.00	0.01	0%	0.01	0%	0.01	**0%**
Total	**1093.0**				**0.50**		**0.31**		**0.19**		**0.13**		**0.07**	**86%**

6.0 Groundwater Management

A Hydrogeological Assessment Report is required at the Rezoning Application and Site Plan Application stages to determine the anticipated post-development and temporary construction flow rates and quality of the groundwater. If groundwater is proposed to be discharged to a municipal sewer in the short-term, the Property Owner is required to enter into a Sewer Discharge Agreement with Toronto Water, Environmental Monitoring and Protection for the temporary discharge of groundwater into a Municipal combined, storm, or sanitary sewer, and is required to submit a Groundwater Discharge Application to Toronto Water, Environmental Monitoring and Protection and obtain short-term discharge approval as per Toronto Municipal Code Chapter 681.

A Hydrogeological Investigation was completed by EXP Services Inc., dated April 17, 2023, refer to Appendix D.

6.1 Permanent Private Water Drainage System (PWDS)

Based on the City of Toronto Foundation Drainage Policy which came into effect January 1, 2022, long-term discharge of foundation drainage to the City's sanitary sewer system will not be permitted. Long-term discharge of foundation drainage that contains any groundwater will not be permitted to the City's storm or combined sewer system. As such, the proposed substructure must be designed to be fully waterproofed without the need for a Private Water Drainage System (PWDS), and there will be no groundwater discharge from the redevelopment permitted to the municipal sewer system.

6.2 Short-Term Construction Dewatering

Groundwater will need to be managed during the construction phase either by discharging to the sewer, for which a Short-Term Construction Discharge Agreement with the City would be required, or by hauling water from the site.

The proposed development of the Parcel A site comprises of a 40-storey residential building with a podium including residential amenities, commercial retail space, three levels of underground parking and a 3-storey community centre.

A steady state dewatering requirement was estimated for the subject site at 194,000 L/day of total volume with a Safety Factor of 2 (excluding precipitation). As dewatering flow rates can be significantly higher during and after precipitation events, a potential maximum dewatering requirement was also estimated to be 230,000 L/day of total volume with a Safety Factor of 2 (including precipitation).

If the total dewatering rate exceeds 400,000 L/day, a Permit to Take Water (PTTW) will be required from the Ministry of Environment, Conservation and Parks (MECP) under the Ontario Water Resources Act. If the total dewatering rate is between 50,000 to

400,000 L/day, the water taking must be registered with the Environmental Activity and Sector Registry (EASR), and if the total dewatering rate is less than 50,000 L/day, a permit is not required. While 230,000 L/day is the rate which will be required to be discharged to the municipal sewer system, the construction dewatering rate excluding the precipitation amount is the rate used for permit application. As 194,000 L/day is within the 50,000 to 400,000 L/day range, the water taking for this development will be registered with the EASR, but a PTTW is not required.

Discharge of groundwater to the sewer is subject to provisions of the Sewer Use By-Law, provided that the quality limits for discharging groundwater into the sanitary sewers satisfy the limits listed in Table 1 of Chapter 681, and the quality limits for discharging of groundwater into the storm sewers satisfy the limits as listed in Table 2 of Chapter 681. Groundwater chemistry sampling was undertaken to determine if any samples exhibit exceedances of City of Toronto Storm/Sanitary Sewer Use By-Law criteria limits. Based on the results of the groundwater sampling it is anticipated that TSS levels and other parameters in the pumped groundwater may exceed both the Sanitary and Storm Sewer Use By-Law limits. A suitable treatment method will be implemented to discharge to the applicable sewer system during construction.

7.0 Sanitary Servicing

7.1 Existing Sanitary Servicing

The existing sanitary infrastructure adjacent to the subject site includes:

- A 200 mm to 250 mm diameter combined sewer travelling in a southwest direction in the center of John Street.
- A 250 mm diameter sanitary sewer travelling in a southeast direction in the center of South Station Street.

Refer to Figure 6: Pre-Development Storm Drainage Plan and
Drawing C300 – Servicing Plan for the location of the existing sanitary sewer and combined sewer.

7.2 Existing Sanitary Sewer Flow

A subsurface utility investigation completed by T2 Utility Engineers on September 29, 2022, confirms that the existing development at 13-21 John Street contributes to the combined sewer within John Street and the existing development at 36-40 South Station Street contributes to the sanitary sewer within South Station Street.

An equivalent population was calculated to determine the existing sanitary flow using the City of Toronto's Design Criteria for Sewer and Watermains (2nd Ed., 2021). The existing theoretical flow from the existing buildings, including an infiltration allowance, was calculated to be 0.15 L/s to the John Street combined sewer and 0.36 L/s to the South Station Street sanitary sewer.

Refer to Appendix E for the existing sanitary sewer calculations.

7.3 Proposed Sanitary Servicing

7.3.1 Parcel A Sanitary Servicing

An equivalent population was calculated to determine the proposed sanitary flow using population densities for the residential units and commercial areas proposed for Parcel A per the City of Toronto's Design Criteria for Sewer and Watermains (2nd Ed., 2021).

The residential sanitary flow for the proposed redevelopment was calculated using the following:

- Domestic sewage flow based upon a unit sewage flow of 240 L/cap/day for residential uses with a peaking factor (2.00<PF>4.00).
- Infiltration rate of 0.26 L/s/ha.

The commercial flows were calculated using the maximum of:

- Domestic sewage flows based upon an average flow of 180,000 L/floor ha/day for commercial uses (PF=1).
- Domestic sewage flows based upon a unit sewage flow of 250 L/cap/day for commercial uses with a peaking factor (PF=1).

Using these domestic sewage flows, the proposed sanitary contribution from Parcel A to the sanitary sewer within South Station Street was calculated to be 9.70 L/s, including an infiltration allowance. The proposed sanitary flow will be conveyed via one new 250 mm diameter sanitary connections to the existing 250 mm diameter sanitary sewer in South Station Street. A control manhole is to be provided for each proposed sanitary connection and will be located at the property line, entirely within the site.

Refer to Figure 5 and Drawing C300 – Servicing Plan for further details regarding the proposed connection locations. Refer to Appendix E for the proposed sanitary calculations.

7.3.2 Parcel B Sanitary Servicing

An equivalent population was calculated to determine the proposed sanitary flow using population densities for commercial areas proposed for Parcel B per the City of Toronto's Design Criteria for Sewer and Watermains (2nd Ed., 2021).

The commercial flows were calculated using the maximum of:

- Domestic sewage flows based upon an average flow of 180,000 L/floor ha/day for commercial uses (PF=1).
- Domestic sewage flows based upon a unit sewage flow of 250 L/cap/day for commercial uses with a peaking factor (PF=1).

Using these commercial sewage flows, the proposed sanitary contribution from Parcel B to the combined sewer within South Station Street was calculated to be 0.32 L/s, including an infiltration allowance. The proposed sanitary flow will be conveyed via one 250 mm diameter sanitary connection to the existing 250 mm diameter sanitary sewer in South Station Street. A control manhole is to be provided for the proposed sanitary connection and will be located at the property line, entirely within the site.

Refer to Figure 5 and Drawing C300 – Servicing Plan for further details regarding the proposed connection locations. Refer to Appendix E for the proposed sanitary calculations.

7.3.3 Proposed Sanitary Servicing Summary

The total sanitary contribution from the proposed development of Parcel A and Parcel B is 10.01 L/s (9.70 L/s + 0.32 L/s). This results in an increase of 9.29 L/s (10.01 L/s – 0.36 L/s) in sanitary flows to the sanitary sewer within South Station Street.

As the proposed redevelopment is causing an increase in flow to the existing sanitary sewer system, a downstream sewer analysis has been completed to confirm that there are no negative impacts to the existing sewer system. Refer to Section 8.0 for details. A review of MECP procedure F-5-5 requirements has also been prepared due to the proposed increase of flows to the combined sewer. Refer to Section 9.0 for details.

Refer to Figure 5 and Drawing C300 – Servicing Plan for further details regarding the proposed connection locations. Refer to Appendix E for the proposed sanitary calculations.

8.0 Downstream Sanitary Analysis

The subject site at 13-21 John Street and 36-40 South Station Street is located within Study Area 51 of the City of Toronto Basement Flooding Protection Program Map. The Basement Flooding Environmental Assessment for Study Area 51 began in 2019, as such, no InfoWorks model for the Study Area is available at this time.

A sanitary sewer analysis was completed to confirm if the existing sewer network to the downstream sanitary trunk has sufficient capacity to service the proposed redevelopment. The sanitary sewer network for this study starts at South Station Street and runs through Lawrence Avenue West where it connects to the existing 750 mm diameter trunk sewer at Humber River, southwest of Lawrence Avenue West and Hickory Tree Road.

As per Toronto Water's Sewer Capacity Assessment Criteria, analyses have been completed under the design flow and extreme wet weather flow conditions to determine the capacity constraints of the sanitary sewer system downstream of the proposed redevelopment to the trunk sewer located at Humber River, southwest of Lawrence Avenue West and Hickory Tree Road.

This downstream capacity analysis reviews the capacity of the municipal sewer system from the proposed redevelopment to the existing 750 mm diameter trunk sewer at Humber River, southwest of Lawrence Avenue West and Hickory Tree Road.

As per Toronto Water's Sewer Capacity Assessment Criteria, sufficient sanitary flow is defined such that:

- Under the dry weather flow scenario, the flow shall be less than the full pipe flow capacity meaning there is no surcharge in any section of the pipe.
- Under the wet weather flow scenario, the modelled hydraulic grade line (HGL) of the flow must be at least 1.8 m below the ground surface.

As per Toronto Water's Sewer Assessment Criteria, this analysis has been completed under the dry weather and wet weather flow conditions to determine the capacity constraints of the sanitary sewer system downstream of the proposed redevelopment.

8.1 Downstream Sanitary Sewer Capacity Analysis Assumptions and Considerations

The subject site is located within Basement Flooding Study Area 51 of the City of Toronto's Basement Flooding Protection Program Map. As the InfoWorks model for Study Area 51 has not yet been completed, design sheets were used to complete the analysis. The assumptions made to complete the analysis include:

- Existing plan and profiles were used to determine the existing invert, pipe sizes, and manhole top elevations for the analysis:
  - Note: The existing plan and profiles provided by the City of Toronto (prepared in 1955, 1967, and 1992) did not align with one another and had inverts which yielded up to 0.5 m differences.
- A review of the City of Toronto Infrastructure viewer was completed to ensure that the analysis correctly represents the current sewer system. It appears that there have been no sewer upgrades proposed to the sewer system in this area, though there is rehabilitation of some existing sewers proposed in some areas.
- The City of Toronto's Design Criteria was used to establish theoretical population flows generated within the Drainage Areas. GIS imagery and City of Toronto Zoning Maps were used to determine existing land-usage.
- Average per capita flow rates of 240 L/capita/day for residential population considering Harmon peaking factor, and 250 L/capita/day were applied for Industrial, Commercial, and Institutional (ICI) populations to determine contributing flow.
- Furthermore, the average flow rate of 180,000 L/floor ha/d was calculated for ICI contributing areas and compared to the flows generated by population to determine the maximum flow rate.
- The hydraulic gradeline (HGL) for this analysis was established to be the obvert of the downstream sanitary sewer at the trunk.
- Recent development application updates to the existing conditions including new buildings and sites with active and closed applications were considered using information publicly available from the City of Toronto Development Applications Website.
- Where groundwater flow data was available, it was included in the model as a constant flow.

At the time of writing this report, an infiltration rate of 3 L/s/ha was considered as a conservative estimate of the infiltration rate on site. Flow Monitoring data was requested from the City of Toronto, but the data available is not sufficient to estimate the I/I for the subject drainage area. A Flow Monitoring Plan will be developed and the completion of flow monitoring as per the City of Toronto's Sewer Capacity Assessment Guidelines will be undertaken. Once flow monitoring data is available, the downstream capacity analysis will be updated to reflect the infiltration rate calculated from the data and the conclusions will be updated accordingly.

The downstream sanitary sewer capacity analysis was completed taking the above noted assumptions into consideration from the proposed redevelopment at 13-21 John Street and 36-40 South Station Street to the 750 mm diameter trunk sewer at Humber River.

8.2 Existing Conditions Model

The sanitary flows contributing to the trunk sewer were analyzed using two scenarios based on the design (dry weather) and extreme wet weather flows for the pre-development conditions:

- Design (Dry Weather) Conditions (I/I = 0.26 L/s/ha).
- Extreme Wet Weather Conditions (I/I = 3.0 L/s/ha).

The following assumptions were made:

- The existing trunk sewer has sufficient capacity for the existing flows.
- The HGL connection to the trunk sewer has been set to the obvert of the connecting pipe.

The existing sanitary sewer capacity and hydraulic grade line elevations were examined from the proposed redevelopment to the trunk sewer. The results of the analysis are below.

8.2.1 Scenario 1: Pre-Development Sanitary Flow – Design Conditions (Dry Weather)

As per the Existing Condition Sanitary Sewer Design Sheet for dry weather, no downstream sewer has a pipe capacity exceeding 100%; as such, no pipe is surcharged.

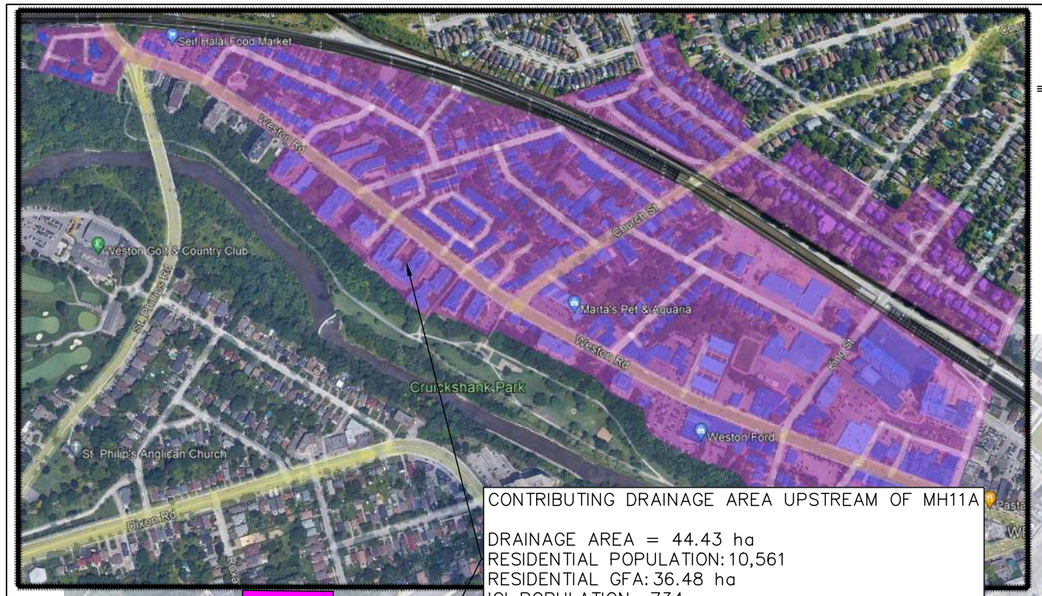
8.2.2 Scenario 2: Pre-Development Sanitary Flow – Extreme Wet Weather

As per the Existing Condition Sanitary Sewer Design Sheet for Extreme Wet Weather, there are three segments of sewer downstream of the subject site that have an HGL elevation less than 1.8 m from the surface. Refer to Table 12.

Table 12: Scenario 2 – Pre-Development

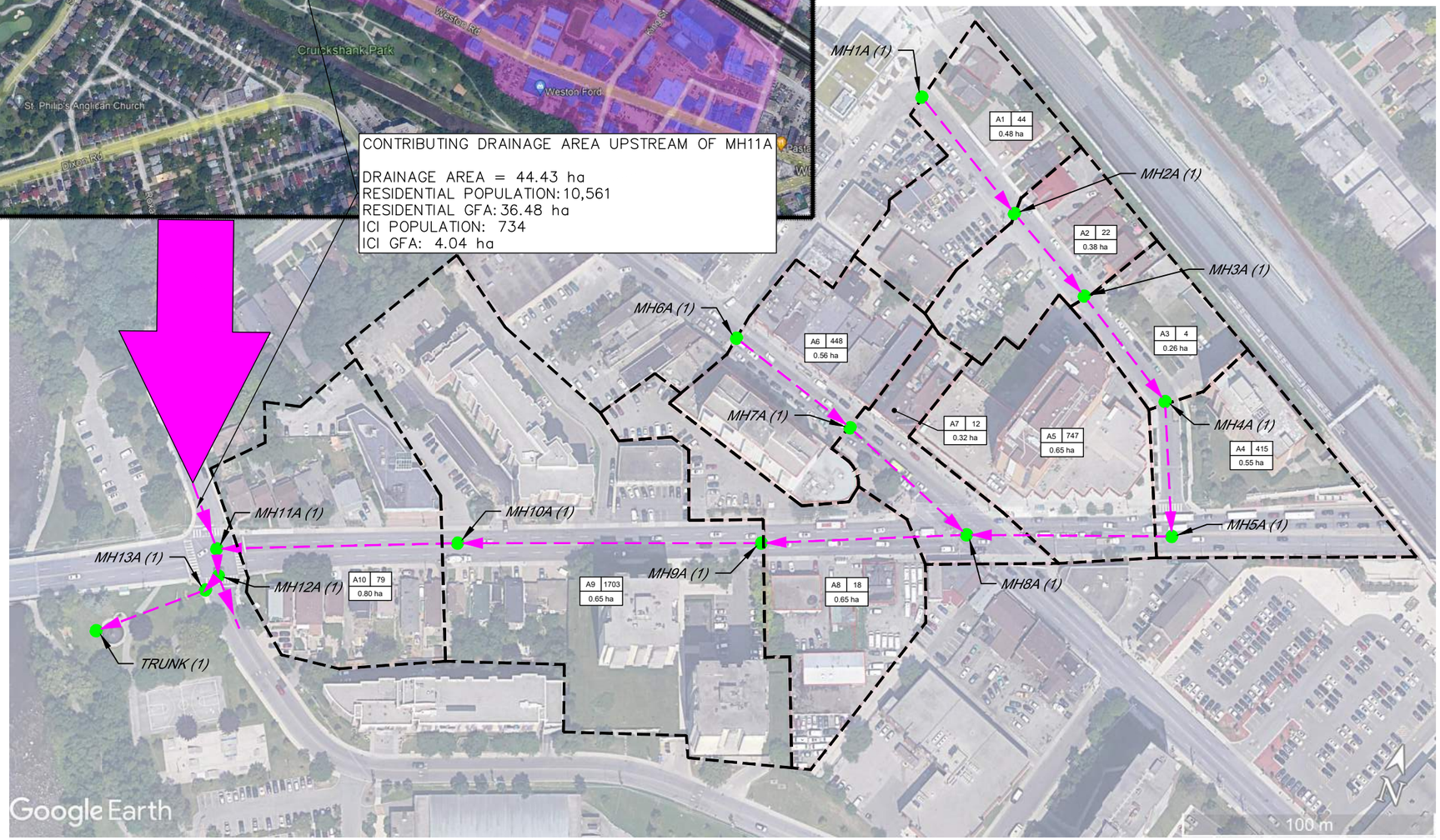
From	To	Diameter (mm)	Slope	Depth to HGL US (m)	Depth to HGL DS (m)
MH10A	MH11A	300	2.20%	1.91	1.44
MH11A	MH12A	450	0.38%	1.44	1.71
MH12A	MH13A	450	38.70%	1.71	2.82

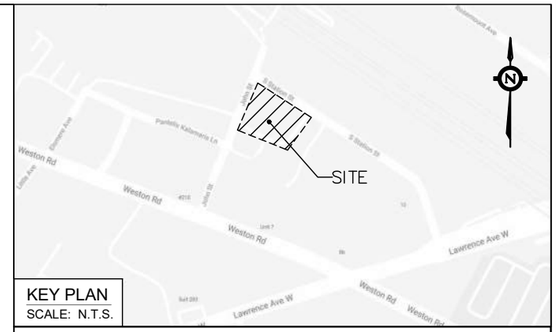
Refer to Appendix E and Figure 88 for details.



CONTRIBUTING DRAINAGE AREA UPSTREAM OF MH11A

DRAINAGE AREA = 44.43 ha
RESIDENTIAL POPULATION: 10,561
RESIDENTIAL GFA: 36.48 ha
ICI POPULATION: 734
ICI GFA: 4.04 ha





KEY PLAN
SCALE: N.T.S.

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LEGEND:

- DRAINAGE BOUNDARY
- EXISTING COMBINED SEWER
- BLOCK ID
- TOTAL POPULATION
- INFILTRATION AREA (ha)

A1 | 44
0.48 ha

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Client

21 JOHN DEV INC.

31 SCARSDALE ROAD, UNIT 5
TORONTO, ON
M3B 2R2

Project Name

SITE DEVELOPMENT
13-21 JOHN ST & 36-40 SOUTH STATION ST
TORONTO, ON M9N 1J2

Drawing Title

SANITARY DOWNSTREAM ANALYSIS EXISTING CONDITIONS

Drawn	Checked	Date	Drawing No.
AH	PM	21/11/25	**FIG8**
Scale		Project No.	
NOT TO SCALE		300054203	

File Name: 054203 - FIG8.dwg Date Plotted: April 20, 2023 - 11:29 PM

8.3 Existing Conditions + Recent Developments Model

To ensure that the downstream sanitary capacity analysis reflects the existing conditions today, the City of Toronto's Development Application Website was used to identify recent developments within the sewershed. The recent developments added to the existing condition can be found in Table 13 below.

Table 13: Recent Developments

Site Address	Land Use Type	Proposed Population	Sanitary Flow (L/s)	Groundwater (L/s)
2278 Weston Road	Residential	3	0.03	N/A
2270-2274 Weston Road	Residential	177	2.05	N/A
2179 Weston Road	Residential	40	0.48	N/A
64 King Street	Residential	7	0.09	N/A
1956 Weston Road	Mixed-Use	1,271	14.11	2.00

The developments listed above were added to the existing condition. Refer to Figure 9 and Appendix E for further details on the recent developments added to the analysis.

The sanitary sewers contributing to the trunk sewer were analyzed using two scenarios based on the design (dry weather) and extreme wet weather flows for the existing conditions plus recent developments model.

- Design (Dry Weather) Conditions (I/I = 0.26 L/s/ha).
- Extreme Wet Weather Conditions (I/I = 3.0 L/s/ha).

The following assumptions were made:

- The existing trunk sewer has sufficient capacity for the proposed flows.
- The HGL connection to the trunk sewer has been set to the obvert of the connecting pipe.

The proposed sanitary sewer capacity and hydraulic grade line elevations were examined from the proposed redevelopment to the trunk sewer. The results of the analysis are below.

8.3.1 Scenario 3: Existing Conditions + Recent Developments Sanitary Flow – Design Conditions (Dry Weather)

As per the Existing Condition + Recent Developments Sanitary Sewer Design Sheet for dry weather, no downstream sewer has a pipe capacity exceeding 100%; as such, no pipe is surcharged.

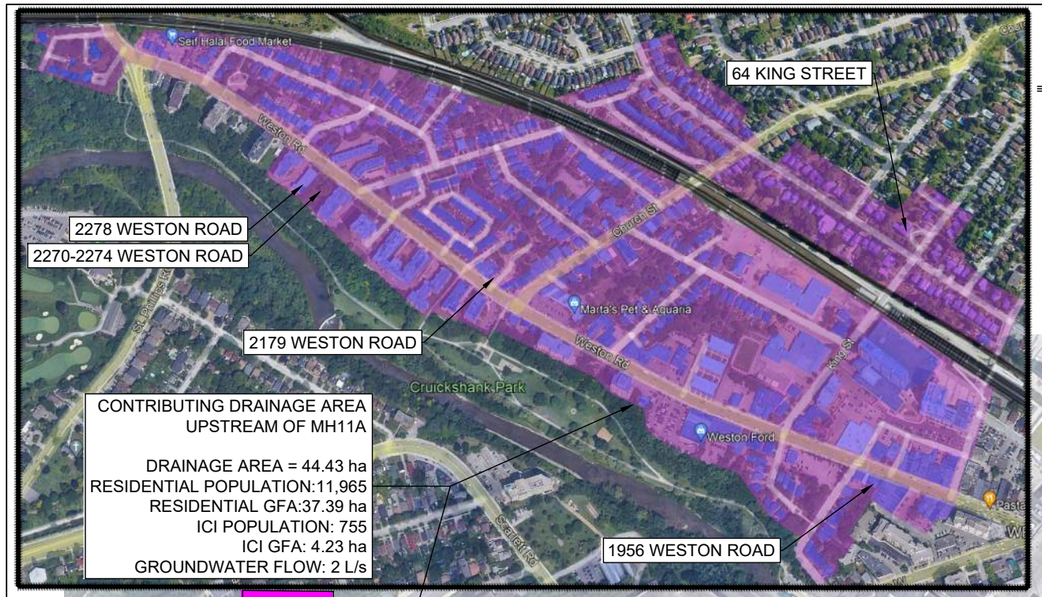
8.3.2 Scenario 4: Existing Conditions + Recent Developments Sanitary Flow – Extreme Wet Weather

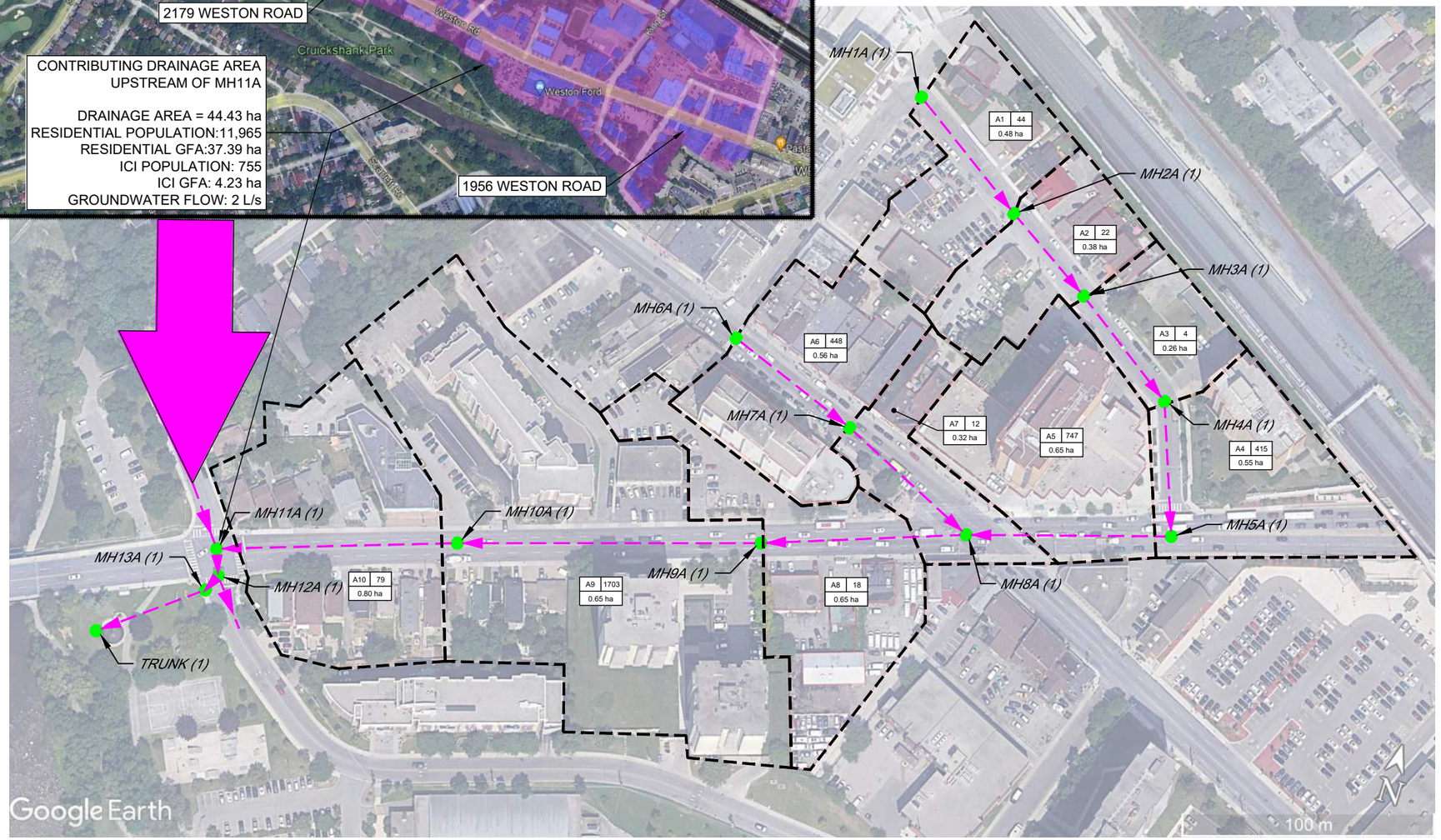
As per the Existing Condition + Recent Development Sanitary Sewer Design Sheet for Extreme Wet Weather, there are three segments of sewer downstream of the subject site that have an HGL elevation less than 1.8 m from the surface. Refer to Table 14 below.

Table 14: Scenario 4 – Pre-Development + Recent Developments

From	To	Diameter (mm)	Slope	Depth to HGL US (m)	Depth to HGL DS (m)
MH10A	MH11A	300	2.20%	1.91	1.42
MH11A	MH12A	450	0.38%	1.42	1.71
MH12A	MH13A	450	38.70%	1.71	2.82

Refer to Appendix E and Figure 9 for details.





KEY PLAN
SCALE: N.T.S.

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LEGEND:

- DRAINAGE BOUNDARY
- EXISTING COMBINED SEWER
- BLOCK ID
- TOTAL POPULATION
- INFILTRATION AREA (ha)

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21 JOHN DEV INC.

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Project Name

SITE DEVELOPMENT
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TORONTO, ON M9N 1J2

Drawing Title

SANITARY DOWNSTREAM ANALYSIS - EXISTING CONDITIONS + RECENT DEVELOPMENTS

Drawn	Checked	Date	Drawing No.
AH	PM	21/11/25	**FIG9**
Scale		Project No.	
NOT TO SCALE		300054203	

File Name: 054203 - FIG9.dwg Date Plotted: April 20, 2023 - 11:30 PM

8.4 Post-Development Sanitary Sewer Analysis

The total sanitary contribution from the proposed development of Parcel A and Parcel B of 10.01 L/s was added to the downstream capacity analysis to determine the impacts to the existing sanitary sewer system. Compared to existing conditions, the proposed development results in an increase of 9.29 L/s (10.01 L/s – 0.36 L/s) in sanitary flows to the sanitary sewer within South Station Street.

The sanitary sewers contributing to the trunk sewer were analyzed using two scenarios based on the design (dry weather) and extreme wet weather flows for the post-redevelopment conditions:

- Design (Dry Weather) Conditions (I/I = 0.26 L/s/ha).
- Extreme Wet Weather Conditions (I/I = 3.0 L/s/ha).

The following assumptions were made:

- The existing trunk sewer has sufficient capacity for the proposed flows.
- The HGL connection to the trunk sewer has been set to the obvert of the connecting pipe.

The proposed sanitary sewer capacity and hydraulic grade line elevations were examined from the proposed redevelopment to the trunk sewer. The results of the analysis are below.

8.4.1 Scenario 5: Post-Development Sanitary Flow – Design Conditions (Dry Weather)

As per the Proposed Condition Sanitary Sewer Design Sheet for dry weather, no downstream sewer has a pipe capacity exceeding 100%; as such, no pipe is surcharged.

8.4.2 Scenario 6: Post-Development Sanitary Flow – Extreme Wet Weather

As per the Post-Development Condition Sanitary Sewer Design Sheet for Extreme Wet Weather, there are three segments of sewer downstream of the subject site that have an HGL elevation less than 1.8 m from the surface. Refer to Table 15 below.

Table 15: Scenario 6 – Post-Development

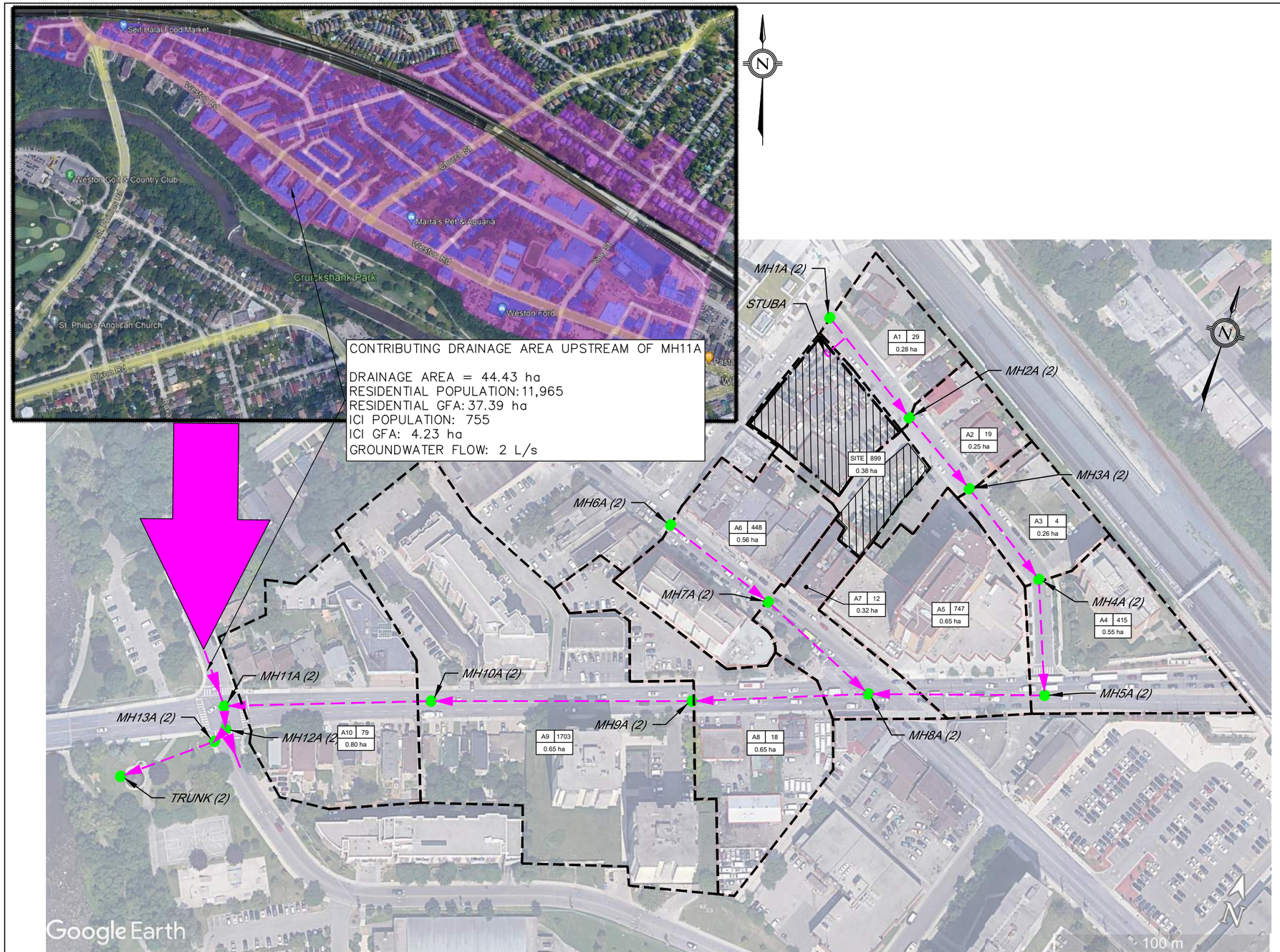
From	To	Diameter (mm)	Slope	Depth to HGL US (m)	Depth to HGL DS (m)
MH10A	MH11A	300	2.20%	1.91	1.41*
MH11A	MH12A	450	0.38%	1.41*	1.71
MH12A	MH13A	450	38.70%	1.71	2.82

*Note: HGL Depth decreased 0.01 m in this scenario

Based on the Post-Development Condition Sanitary Sewer Design Sheet for Extreme Wet Weather and Table 10 above, the additional 9.29 L/s from the proposed development does result in a 0.01 m increase in HGL elevation at MH11A.

As the increase in HGL, is located at the intersection of Little Avenue and Lawrence Avenue West, it is not anticipated to have direct service connections. As the proposed development increase in HGL is very minor, it is not anticipated to cause any negative impacts to the existing sanitary sewer system.

Refer to Appendix E and Figure 10 for details.



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SCALE: N.T.S.

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LEGEND:

- SITE PROPERTY LINE
- DRAINAGE BOUNDARY
- EXISTING COMBINED SEWER
- PROPOSED SANITARY SEWER
- SITE AREA
- BLOCK ID
- TOTAL POPULATION
- INFILTRATION AREA (ha)

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M3B 2R2

Project Name

SITE DEVELOPMENT
13-21 JOHN ST & 36-40 SOUTH STATION ST
TORONTO, ON M9N 1J2

Drawing Title

SANITARY DOWNSTREAM ANALYSIS POST DEVELOPMENT

Drawn	Checked	Date	Drawing No.
AH	PM	21/11/25	**FIG10**
Scale		Project No.	
NOT TO SCALE		300054203	

File Name: 054203 - FIG10.dwg Date Plotted: April 20, 2023 - 11:30 PM

8.5 Downstream Sanitary Sewer Capacity Analysis Conclusions

Our downstream sanitary capacity analysis conclusions for sanitary servicing for the proposed development is summarized as follows:

- The analysis was run under two scenarios for each phase: Dry Weather Conditions and Wet Weather Conditions.
- The existing conditions model was updated to include the sanitary flows for five recent developments noted in Table 13.
- Under the Existing Conditions Model – Dry Weather Condition, there are no segments of pipe downstream of the proposed development with a pipe capacity exceeding 100%.
- Under the Existing Conditions Model – Wet Weather Condition, there are three segments of sewer downstream of the subject site that have an HGL elevation less than 1.8 m from the surface.
- Under the Existing Conditions + Recent Developments Model – Dry Weather Condition, there are no segments of pipe downstream of the proposed development with a pipe capacity exceeding 100%.
- Under the Existing Conditions + Recent Developments Model – Wet Weather Condition, there are three segments of sewer downstream of the subject site that have an HGL elevation less than 1.8 m from the surface.
- Under Post-Development Model – Dry Weather Condition, there are no segments of pipe downstream of the proposed development with a pipe capacity exceeding 100%.
- Under the Existing Conditions + Recent Developments Model – Wet Weather Condition, there are three segments of sewer downstream of the subject site that have an HGL elevation less than 1.8 m from the surface.

Based on the above results, the proposed development resulted in a 0.01 m increase in HGL in the extreme wet weather conditions at the intersection of Little Avenue and Lawrence Avenue West and is not anticipated to have direct service connections. As the proposed development increase in HGL is very minor, it is not anticipated to cause any negative impacts to the existing sanitary sewer system.

Upon receipt of flow monitoring data, the analysis will be updated to reflect the infiltration rate calculated from the data and the conclusions will be updated accordingly.

9.0 F-5-5 Requirements

The subject site is located within Basement Flooding Study Area 51. The Basement Flooding Study for Study Area 51 commenced in 2019 but is still underway.

The subject site is proposed to outlet to the existing 250 mm diameter sanitary sewer in South Station Street which ultimately outlets to the 750 mm diameter Humber Trunk Sewer. The Humber Trunk Sewer is a combined trunk sewer, as such, the site ultimately will increase the flow in the combined trunk sewer by 9.29 L/s (See Section 7.3 for details) which would imply that the proposed development would need to comply with the Ministry of the Environment, Conservation and Parks (MECP) F-5-5 Determination of treatment requirements for municipal and private combined sewage systems.

As per the MECP F-5-5 requirements, no increase in combined sewer overflows to the storm sewer system is permitted. The increase in sanitary flow to the combined trunk sewer must be offset with improvements to the existing site or through the use of offsite improvements.

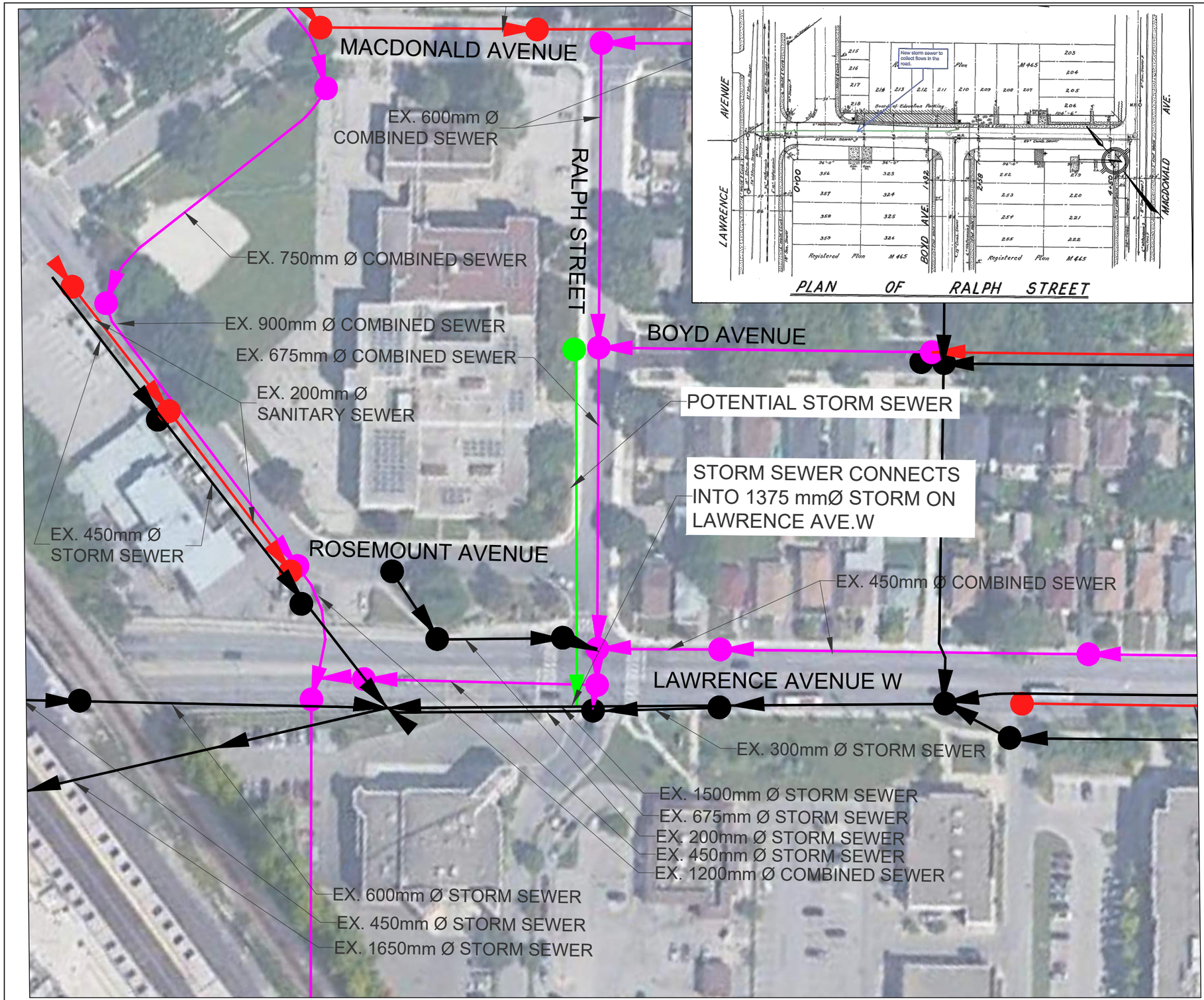
A review of potential areas to provide offsite improvements revealed an area upstream of the site, near Boyd Avenue and Ralph Street, where existing catchbasins outlet to the combined sewer within Ralph Street. Refer to Figure 11 for the location of proposed offsite improvements. A storm sewer system could be installed on Ralph Street, from Boyd Avenue to Lawrence Avenue West. This would redirect the flows from the existing combined sewer on Ralph Street into the new storm system.

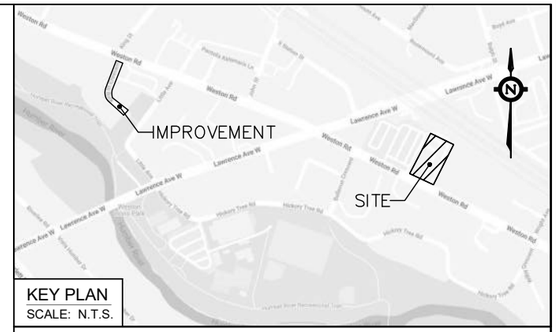
The existing area draining to the catchbasins in Ralph Street is 0.086 ha, which results in a 2-year storm flow of 19.0 L/s. As this flow of 19.0 L/s is greater than the 9.26 L/s increase in sanitary flow, it is sufficient to offset the additional flow from the proposed development.

However, it was also noted that this new storm system would be connecting back into the same storm sewer system on Lawrence Avenue which is two legs downstream of the existing combined sewer connection. This 1375 mm diameter storm sewer captures combined sewer flows from the existing 675 mm diameter combined sewer on Ralph Avenue. By redirecting the storm flows to a separate storm sewer in Ralph Avenue and connecting directly to the 1375 mm diameter storm sewer on Lawrence Avenue, there is no net change to the flows in the existing storm sewer. As such, a storm sewer downstream analysis would not be required as no additional flow has been introduced.

The existing storm sewer flows will be ultimately directed to the 1375 mm diameter storm sewer on Lawrence Avenue that is receiving the same storm flows today, as such there is no net improvement to the existing system today.

A review of the area near the site has determined that there are limited opportunities to complete offsite improvements as separate storm and sanitary sewers are present within the sewershed. This offsite improvement may not provide a net improvement in the current conditions, but in the event of future separation between the combined, sanitary and storm sewer systems, the installation of this storm sewer would help reduce the flows to the combined sewer system. Refer to Appendix C for the supporting calculations.





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LEGEND:

- EXISTING SWM DRAINAGE BOUNDARY
- EXISTING STORM SEWER
- EXISTING COMBINED SEWER
- EXISTING WATERMAIN
- PROPOSED STORM SEWER
- EXISTING CATCHBASIN

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31 SCARSDALE ROAD, UNIT 5
TORONTO, ON
M3B 2R2

Project Name
SITE DEVELOPMENT
13-21 JOHN ST & 36-40 SOUTH STATION ST
TORONTO, ON M9N 1J2

Drawing Title
PROPOSED OFFSITE IMPROVEMENTS

Drawn	Checked	Date	Drawing No.
JS	PM	21/11/25	FIG11
Scale		Project No.	
1:1000		300054203	

10.0 Erosion and Sediment Control

The Erosion and Sediment Control Plan for the site will be designed in conformance with the City of Toronto Guidelines. The erosion and sediment control strategy will include the following:

- Temporary sediment control fence at construction limits and/or downstream of any disturbed areas prior to grading.
- Gravel mud mats at construction vehicle access points to minimize off-site tracking of any sediments.
- Sediment traps in existing and proposed catch basins.
- Routine inspections, monitoring, and repair as necessary of all erosion and sediment control measures during construction.
- Removal of temporary controls once the areas they serve are restored and stable.

All reasonable measures will be taken to ensure that sediment loading is minimized both during and following construction. Refer to Drawing C100 (Erosion and Sediment Control Plan) for further details.

11.0 Conclusions and Recommendations

The servicing analysis provided above is summarized as follows:

11.1 Water Servicing

- Three connections to existing watermain will be provided to service the proposed redevelopment of Parcels A and B: One combined fire and domestic connection to the existing 300 mm diameter watermain within South Station Street and a secondary fire connection to the existing 300 mm diameter watermain within John Street to service Parcel A; and one combined fire and domestic connection to the existing 300 mm diameter watermain within John Street to service Parcel B.
- Fire protection will be accommodated through the use of existing hydrants within the John Street and South Station Street ROW, and one proposed private hydrant within each of proposed Parcels A and B.
- Both proposed developments, Parcel A and Parcel B, will be equipped with an adequately designed system conforming to NFP 13 and other NFPA sprinkler standards.
- Hydrant flow testing completed adjacent to the site in June 2022, can confirm that the existing water infrastructure can support the proposed redevelopment and that no upgrades to the existing watermain infrastructure are required.

11.2 Stormwater Management

- The proposed developments, Parcel A and Parcel B, will each control the 100-year flows to the pre-development 2-year flows at a runoff coefficient of 0.50 as per the WWFMG. Runoff from external areas will be conveyed uncontrolled through the site.
- Quantity control will be achieved through the use of an orifice control and Hydrovex controls downstream of the proposed stormwater storage tank.
- Quality control will be achieved using a treatment train approach and the implementation of an oil and grit separator (OGS). An enhanced TSS removal of 80% will be achieved on-site.
- Water balance will be achieved by retaining the 5 mm storm event and the stormwater tank will be designed for stormwater re-use. Re-use methods will be confirmed at the time of Site Plan Application.
- Refer to Table 16 below for a summary of the stormwater strategy for Parcel A and Parcel B.
- The existing stormwater infrastructure is sufficient to support the development and no upgrades are required.

Table 16: Stormwater Summary Table for Parcel A and Parcel B

Stormwater Design Summary	Parcel A	Parcel B
Allowable Release Rate	41.34	19.73
Actual Release Rate	41.30	19.73
Required Storage	83.7	15.37
Provided Storage	119.0	20.0
Orifice/Hydrovex Size	125 mm DR7.3	125 VHV-1
OGS Size	Stormceptor EF4	Stormceptor EF4

11.3 Groundwater Management

- The proposed substructure must be designed to the fully waterproofed without the need for a Private Water Drainage System (PWDS), and there will be no long-term groundwater discharge from the redevelopment to the municipal sewer system.
- Groundwater and rainwater totaling 230,000 L/day will be managed during the construction period either through hauling water from the site or discharge to the sewer. An EASR will be required to facilitate the construction dewatering program.
- As it is anticipated that TSS levels and some other parameters exceed the limits of the Sanitary and Storm Sewer Use By-law limits, suitable treatment methods will be implemented to discharge to the applicable sewer system.

11.4 Sanitary Servicing

- Sanitary drainage from the proposed redevelopment will be conveyed via two connections, one connection per parcel, to the existing 250 mm diameter sanitary sewer within South Station Street.
- The proposed redevelopment will generate an increase in peak sanitary flows of 9.29 L/s (9.65 L/s - 0.36 L/s), from the existing condition.

11.5 Downstream Sanitary Analysis

- A downstream analysis was completed for the subject site based on the information received to date.
- The proposed development resulted in a 0.01 m increase in HGL in the extreme wet weather conditions at the intersection of Little Avenue and Lawrence Avenue West and is not anticipated to have direct service connections. As the proposed development increase in HGL is very minor, it is not anticipated to cause any negative impacts to the existing sanitary sewer system.

In summary, flow monitoring will be required to confirm if the site can be serviced by the surrounding municipal infrastructure.

Accordingly, upon receipt and review of the above noted additional information, we hereby recommend the adoption of this report as it relates to the provision of servicing and stormwater management works, and for the purposes of this Rezoning Application and future Site Plan Applications.

BURNSIDE

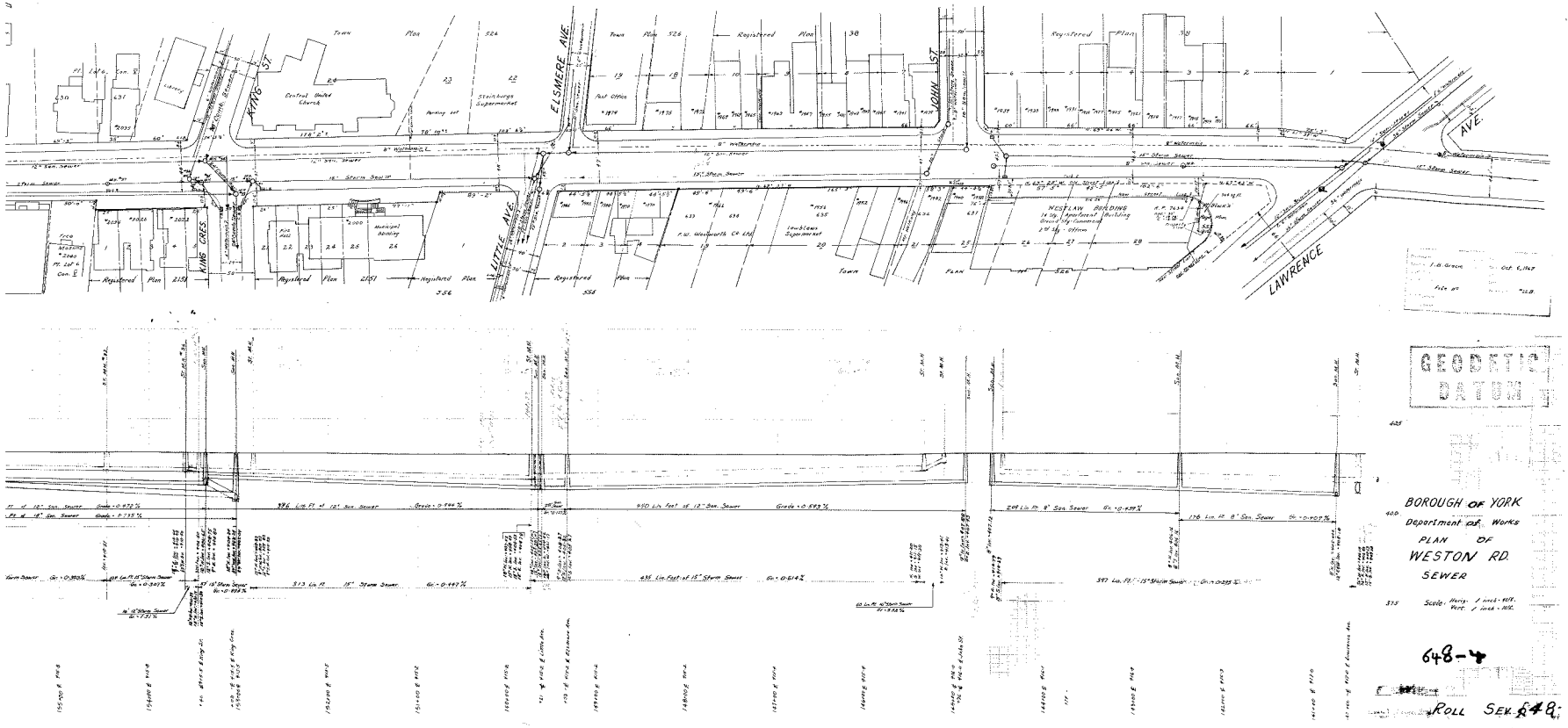
[THE DIFFERENCE IS OUR PEOPLE]

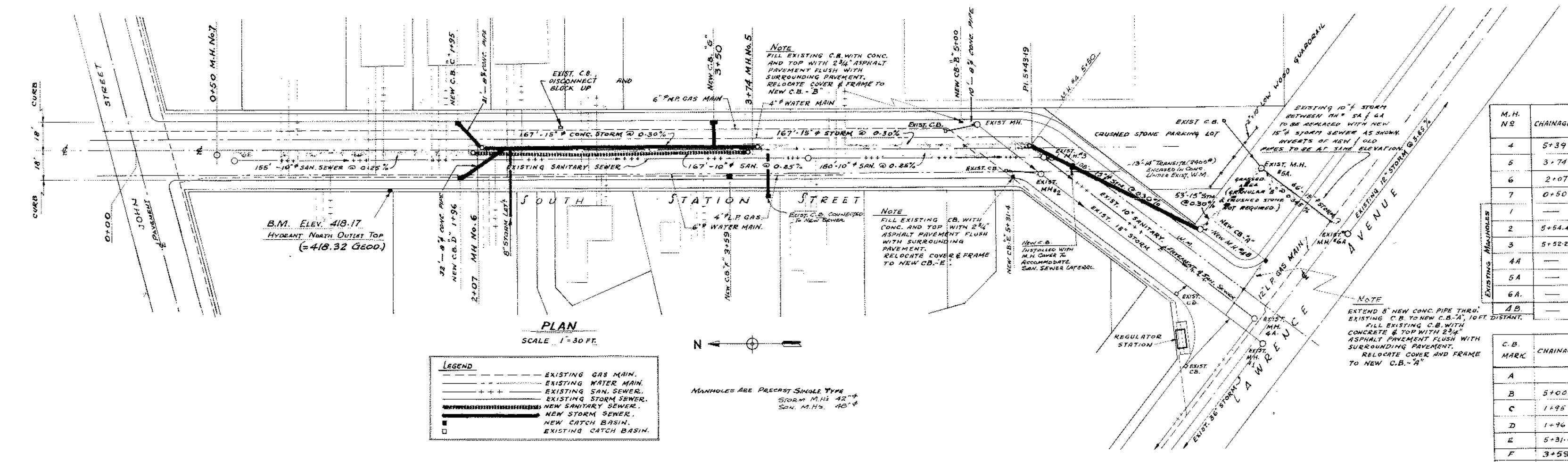
Appendix A

Background Information

CUMAP Drawing
Existing Plan and Profile Drawings


CONRON PLACE
CHURCH ST.
FERN AVE.
Registered Plan 1624
Registered Plan 1443
Plan 526
Concession Line Between Lots 6 and 7
Right of Way
Pt. Lot 6 Con. V
Cruikshank
12" San. Sewer
18" Storm Sewer
10" Watermain
15" Storm Sewer
8" Watermain
290 Lin. Ft. 12" San. Sewer Grade - 0.731 %
286 Lin. Ft. 12" San. Sewer Grade - 2.479 %
260 Lin. Ft. 12" San. Sewer Grade - 2.019 %
299 Lin. Ft. 12" Sanitary Sewer Gr. - 0.977 %
333 Lin. Ft. 18" Sanitary Sewer Gr. - 0.679 %
285 Lin. Ft. 12" Sanitary Sewer Grade - 0.270 %
198' 18" Sanitary Sewer Grade - 0.687 %
303 Lin. Ft. 12" Storm Sewer Gr. - 0.413 %
44 Lin. Ft. 12" Storm Sewer Gr. - 2.43 %
58' 15" Storm Sewer Gr. - 0.765 %
272.4 Lin. Ft. 15" Storm Sewer Gr. - 2.67 %
140 Lin. Ft. 15" Storm Sewer Gr. - 0.518 %
163 Lin. Ft. 15" Storm Sewer Gr. - 0.518 %
160 Lin. Ft. Storm Sewer Gr. - 0.164 %
90 Lin. Ft. 15" Storm Sewer Gr. - 0.164 %
195 Lin. Ft.


ELSMERE AVE
KING CRES
LITTLE AVE
JOHN ST
LAWRENCE AVE
Central United Church
Steinbergs Supermarket
Post Office
WESTLAW BUILDING
Municipal Building
Registered Plan
Town Plan
396 Lin. Ft. of 12" San. Sewer Grade = 0.596 %
950 Lin. Feet of 12" San. Sewer Grade = 0.593 %
249 Lin. Ft. 8" San. Sewer Gr. = 0.439 %
176 Lin. Ft. 8" San. Sewer Gr. = 0.407 %
313 Lin. Ft. 15" Storm Sewer Gr. = 0.697 %
435 Lin. Feet of 15" Storm Sewer Gr. = 0.614 %
397 Lin. Ft. 15" Storm Sewer Gr. = 0.338 %
GEODETIC DATUM
BOROUGH OF YORK
Department of Works
PLAN OF
WESTON RD.
SEWER
Scale: Horiz. 1 inch = 40 ft.
Vert. 1 inch = 10 ft.
648-4
ROLL SEK. 648

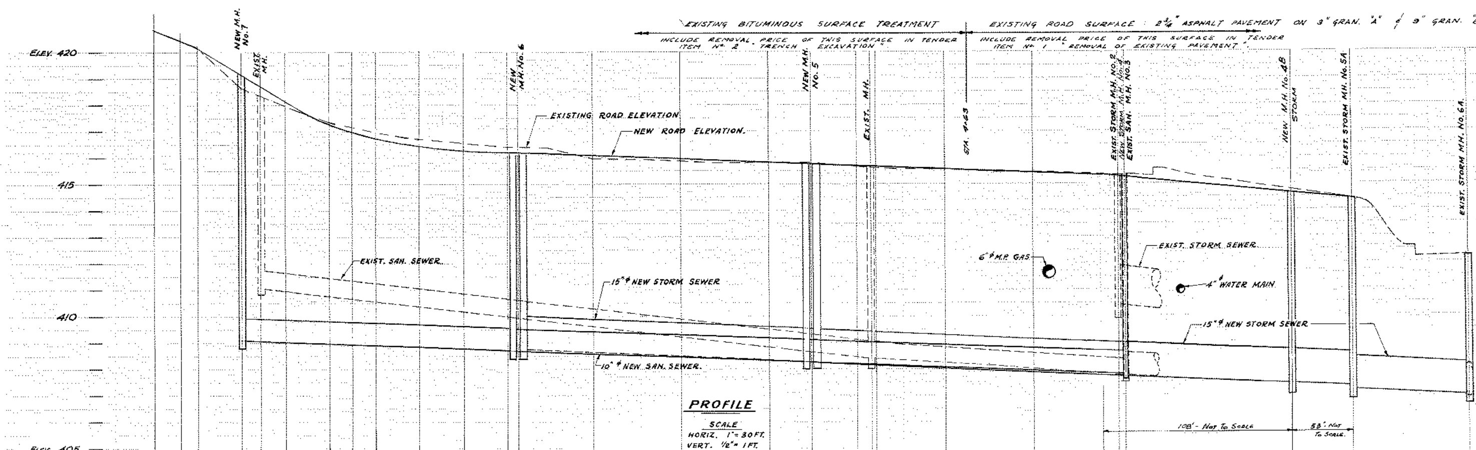


MANHOLE DATA.

M.H. No.	CHAINAGE	TOP ELEV.	INVERT ELEVATIONS. SAN. IN	SAN. OUT	STORM IN	STORM OUT
4	5+39	415.30	407.85	407.84	407.78	407.77
5	3+74	415.75	408.27	408.26	408.27	408.26
6	2+07	416.18	408.70	408.69	—	408.77
7	0+50	414.14	—	409.09	—	—
EXISTING MANHOLES 1	—	414.85			408.57	407.15
2	5+54.4±	415.29				410.27
3	5+52.2±	415.29	407.80	407.78		
4A	—	414.52	406.09	405.92		
5A	—	414.40			407.21	407.16
6A.	—	412.25			406.93	406.83
4B.	—	414.88±			407.43	407.37

NEW C.B. DATA

C.B. MARK	CHAINAGE	TOP ELEV.	REMARKS
A		413.20±	TOP ELEV. TO SUIT
B	5+00	415.52±	TOP ELEV. TO SUIT
C	1+95	415.82	
D	1+96	415.81	
E	5+31.4		TOP ELEV. TO SUIT
F	3+59	415.34	
G	3+50	415.36	



NEW ROAD ELEVATION.	420.87	420.53	420.14	419.09		418.07	417.26	416.94	416.70	416.39	416.28	416.21
EXISTING GROUND ELEVATION.	420.87	420.53	420.14	418.64		417.86	417.38		416.97	416.71	416.57	416.41
CHAINAGE ALONG ℄ SURVEY.	0+00	0+15	0+25	0+50	0+60.8	0+75	1+00	1+13	1+26	1+51	1+76	2+01 2+07

NEW ROAD ELEVATION.		415.97			415.72			415.47		414.40	412.25
EXISTING GROUND ELEVATION.	415.96	415.88	415.80		415.67		415.56	415.47			412.25
CHAINAGE ALONG ℄ SURVEY.	2+50	3+00	3+50	3+74	4+00	4+10.5	4+50	5+00	5+48 5+50±		

THE CONTRACTOR IS TO:-
(1) VERIFY LOCATIONS OF ALL UTILITIES & SUPPORT THEM AS REQUIRED BY EXISTING REGULATIONS.
(2) PROVIDE ADEQUATE PROTECTION FOR CATCH BASIN & HOUSE LATERALS DURING CONSTRUCTION.
(3) PROVIDE ADEQUATE SHORING AS REQUIRED.
(4) COMPACT BACKFILL TO 95% STANDARD PROCTOR DENSITY.

ALL STORM SEWER PIPE C14 EXTRA STRENGTH CLASS "B" BEDDING.

ALL SANITARY SEWER PIPE ASBESTOS-CEMENT CLASS 2400 CLASS "B" BEDDING.

~~ALL POURED CONCRETE TO BE 3000 PSI @ 28 DAYS~~

DATE	ISSUED FOR	DATE	BY	REVISION
APR '63	AS BUILT		J.M.H.	
APR. 19/63	C.B's "F" & "G" ADDED.		J.M.H.	
SEPT. 26/62	TENDER CALL			

J. M. HALL

CLIENT: TOWN OF WESTON, ONTARIO

JOB TITLE: SOUTH STATION ST. WIDENING.

SHEET TITLE: PLAN & PROFILE FOR STORM & SANITARY SEWERS.

GIFFELS & VALLET OF CANADA, LTD. ENGINEERS

TORONTO, ONT. WINDSOR

DRAWN: F.E.W. DATE:

PROJ. EST. CHIEF: J. M. HALL.

JOB: C61-57-AX9

CHECKED: J.M.H.

IN CHARGE:

DESIGNED: K.E.S./J.M.H.

DATE:

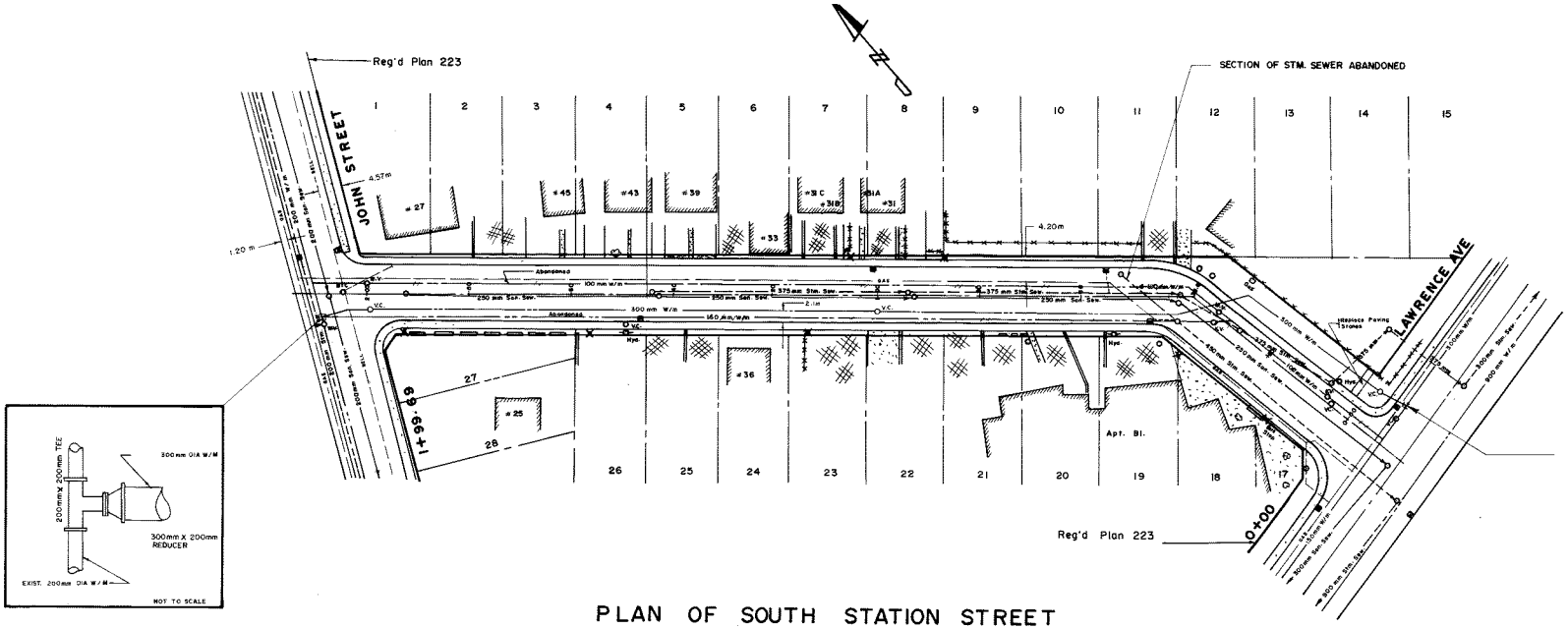
SHEET: 1

APPROVED:

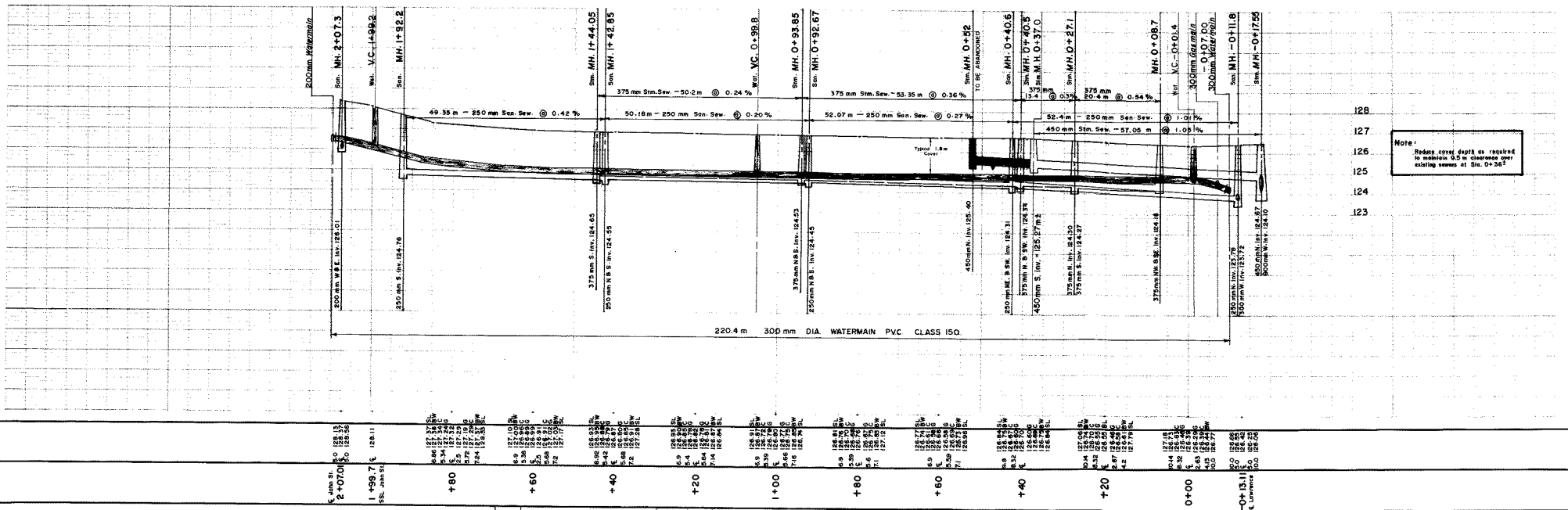
JOB CAPTAIN:

FILE No. 4-60-1

SEW. 561



PLAN OF SOUTH STATION STREET



GENERAL NOTE :

1. Existing 100mm and 150mm watermains to be abandoned. All existing services to be connected to new watermain.
2. Location of existing 300mm to 150mm reducer on Lawrence Avenue unknown.
3. Proposed 300mm watermain to be connected to existing 300mm watermain on Lawrence Avenue. Test pits to be excavated prior to start of pipelaying to ensure connection to 300mm watermain.
4. Test pit to be excavated to ensure elevation of 300mm gasmain on Lawrence Avenue.
5. CB leads to be redirected, as indicated on plan.

GENERAL NOTE:

Units are in meters except as noted.

NO.	REVISIONS	DATE	BY	APPROVED	DATE
3	As Constructed Contract 92-11	Feb./93	M.H.	T. Dodds	Feb./93
2	Re-locate Valve Chamber	June/92	J.N.D.	T. Dodds	June/92
1	Watermain re-location	May/92	G.Vass	T. Dodds	May/92

SURVEYED BY A. AZZOLI
DRAWN BY A. LEFEL & J. DORAZIO
DESIGNED BY J. DORAZIO
CHECKED BY T. DODDS
DATE MAR., 1992

REGISTERED PROFESSIONAL ENGINEER T. D. DODDS PROVINCE OF ONTARIO

CITY OF YORK • DEPARTMENT OF WORKS

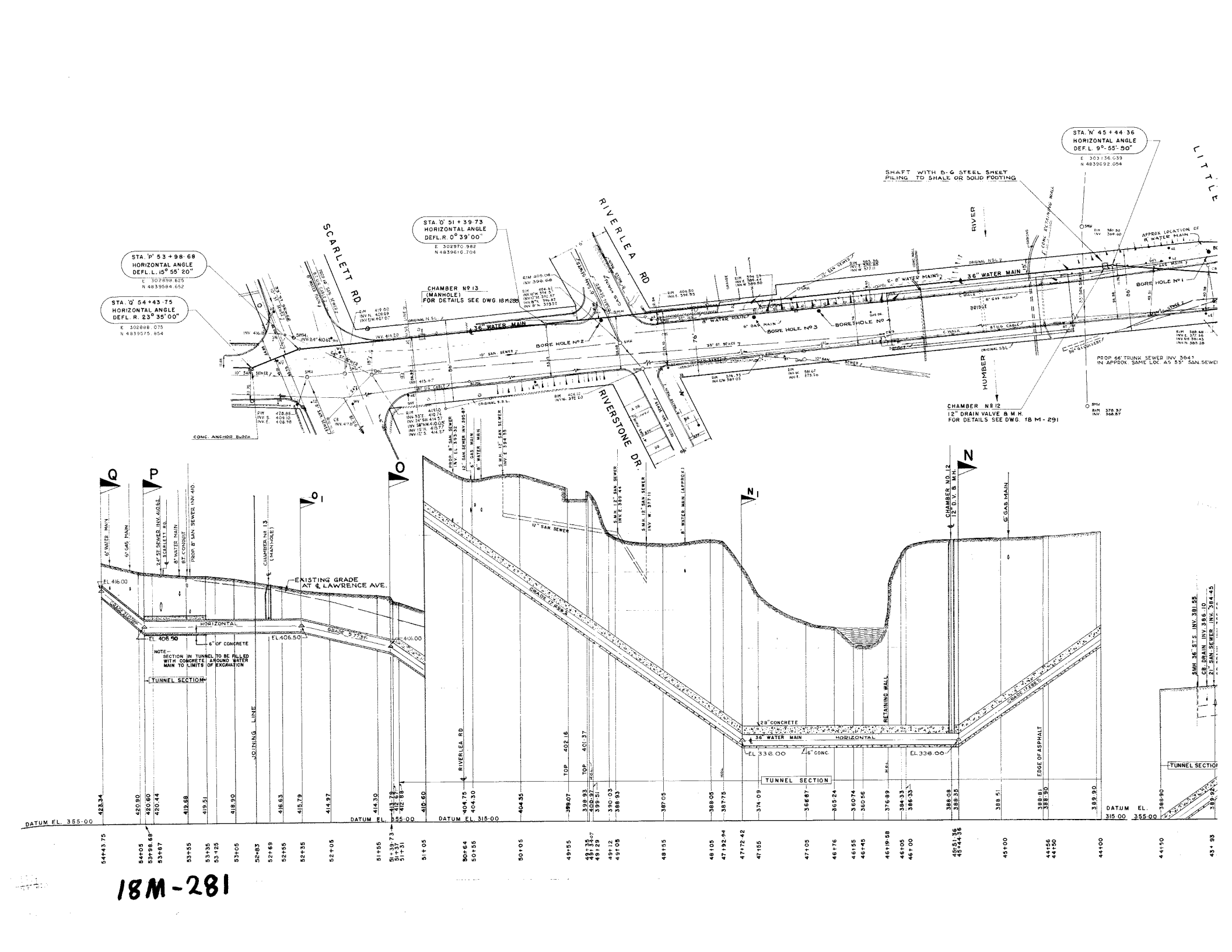
APPROVED

SCALES 1: 100 VERTICAL

SOUTH STATION STREET

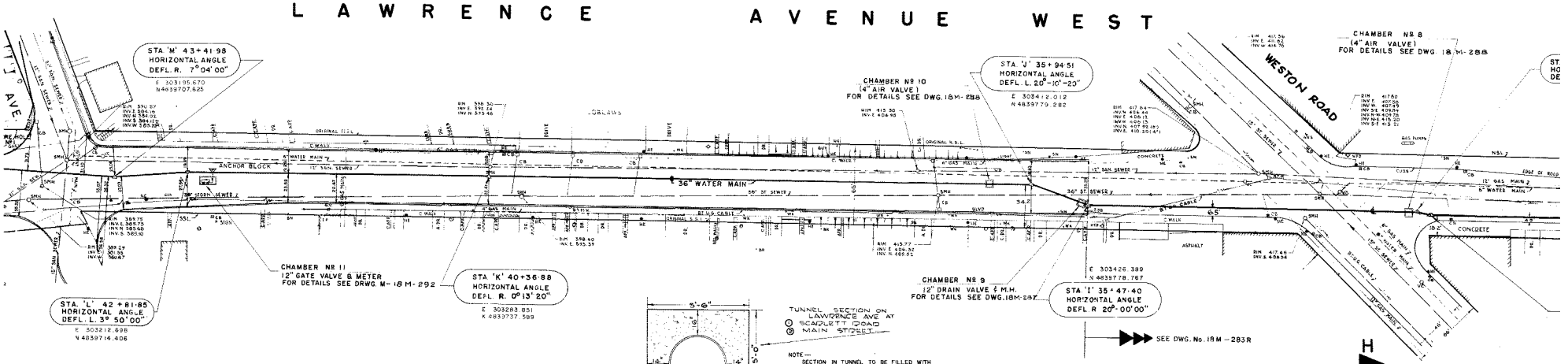
DRAWING NUMBER WAT. 561

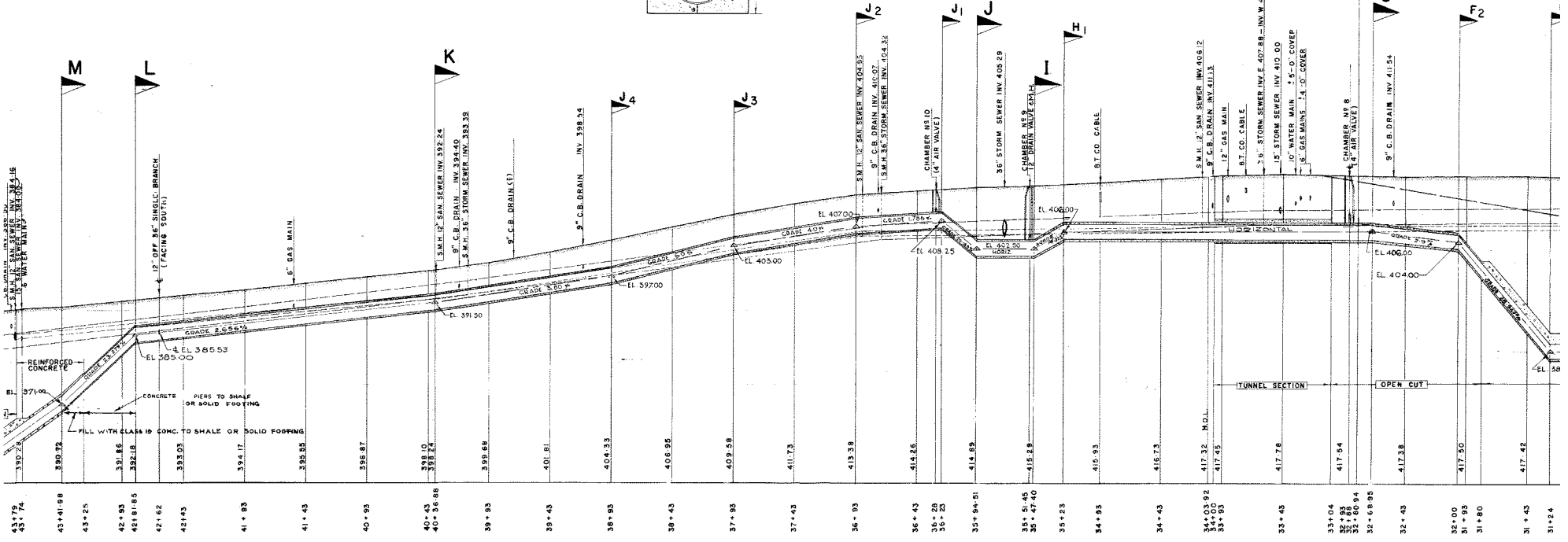
REV. 3


STA. 'P' 53+98.68
HORIZONTAL ANGLE
DEFL. L. 15° 55' 20"
E 302898.625
N 4839584.652
STA. 'O' 54+43.75
HORIZONTAL ANGLE
DEFL. R. 23° 35' 00"
E 302868.075
N 4839575.654
STA. 'O' 51+39.73
HORIZONTAL ANGLE
DEFL. R. 0° 39' 00"
E 302970.982
N 4839616.704
STA. 'N' 45+44.36
HORIZONTAL ANGLE
DEFL. L. 9°-55'-50"
E 303136.639
N 4839692.054
SCARLETT RD.
RIVERLEA RD.
RIVERSTONE DR.
HUMBER RIVER
LITTLE
CHAMBER Nº 13
(MANHOLE)
FOR DETAILS SEE DWG. 18M288
CHAMBER Nº 12
12" DRAIN VALVE & M.H.
FOR DETAILS SEE DWG. 18 M - 291
SHAFT WITH 5-G STEEL SHEET PILING TO SHALE OR SOLID FOOTING
36" WATER MAIN
8" WATER MAINS
6" GAS MAIN
BORE HOLE Nº 1
BORE HOLE Nº 2
BORE HOLE Nº 3
BORE HOLE Nº 4
10" SAN. SEWER
12" SAN. SEWER
BRIDGE
CONC. ANCHOR BLOCK
PROP. 66" TRUNK SEWER INV. 364.1 IN APPROX. SAME LOC. AS 33" SAN. SEWER
APPROX LOCATION OF 8" WATER MAIN
ORIGINAL N.S.L.
ORIGINAL S.S.L.
Q
P
O
O1
N
N1
EXISTING GRADE AT E LAWRENCE AVE.
EL 416.00
HORIZONTAL
GRADE 0.73%
EL 406.50
6" OF CONCRETE
EL.406.50
401.00
NOTE— SECTION IN TUNNEL TO BE FILLED WITH CONCRETE AROUND WATER MAIN TO LIMITS OF EXCAVATION
TUNNEL SECTION
JOINING LINE
RIVERLEA RD.
12" SAN SEWER
GRADE 12.50%
28" CONCRETE
36" WATER MAIN
HORIZONTAL
EL 336.00
6" CONC.
EL 336.00
RETAINING WALL
EDGE OF ASPHALT
TUNNEL SECTION
DATUM EL. 355.00
DATUM EL. 355.00
DATUM EL. 315.00
DATUM EL. 315.00
DATUM EL. 355.00

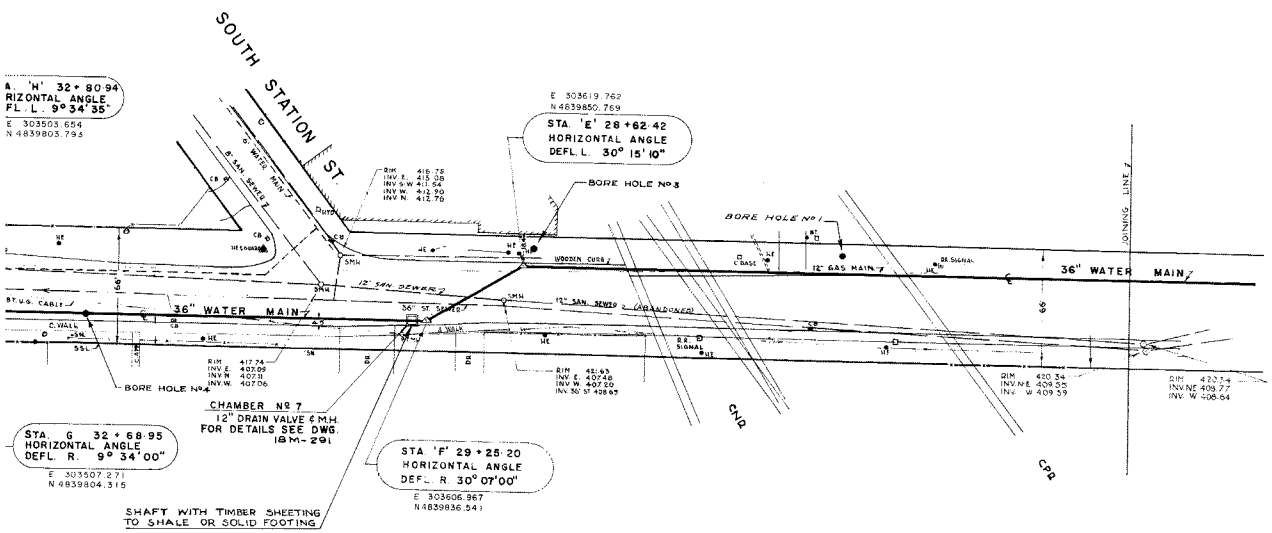
18M-281

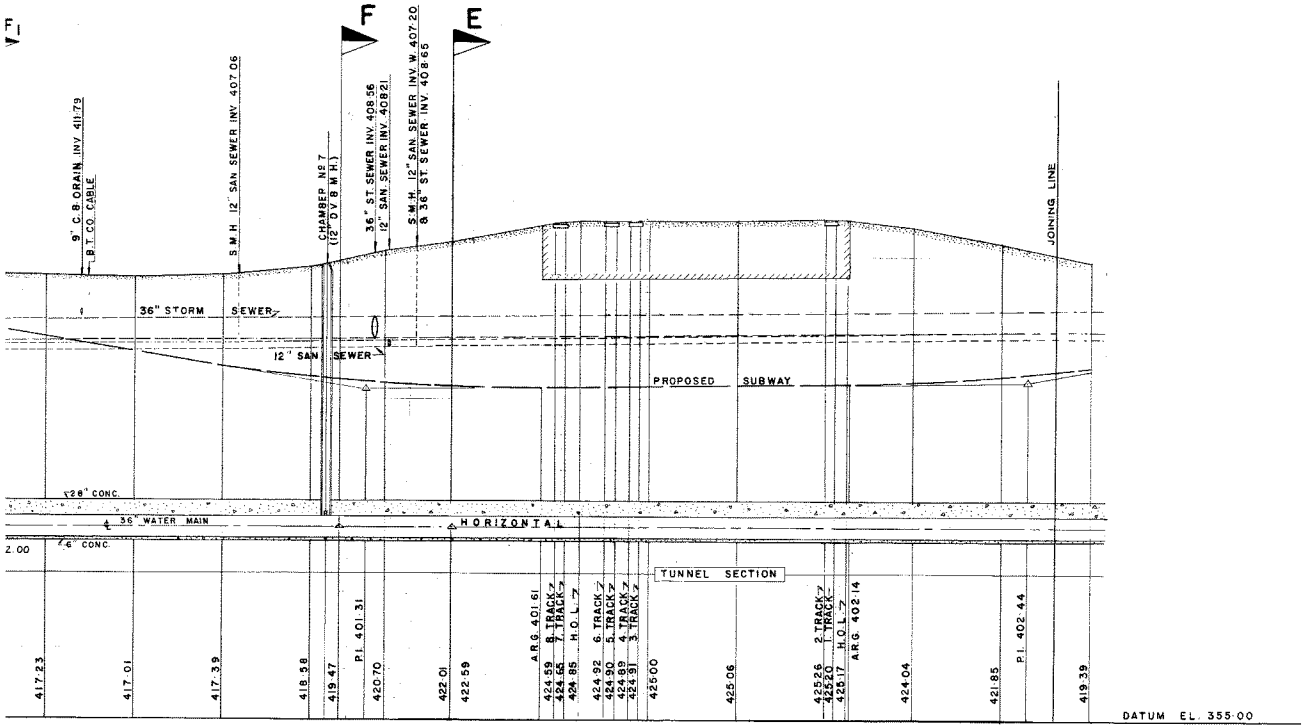
L A W R E N C E A V E N U E W E S T





18M-281





REVISION	DESCRIPTION	DATE	BY
	CURB LINES ADDED & TIES TO ℄ OF MAIN	NOV./64	W.I.

MUNICIPALITY OF METROPOLITAN TORONTO

DEPARTMENT OF WORKS WATER WORKS DIVISION

36" WATER MAIN
ON LAWRENCE AVE. FROM
JANE ST. TO ROYAL YORK RD.

GENERAL PLAN & PROFILE PART NO. 2.

DRAWN BY J. CEPUKAS

CHECKED BY A. FIELDS

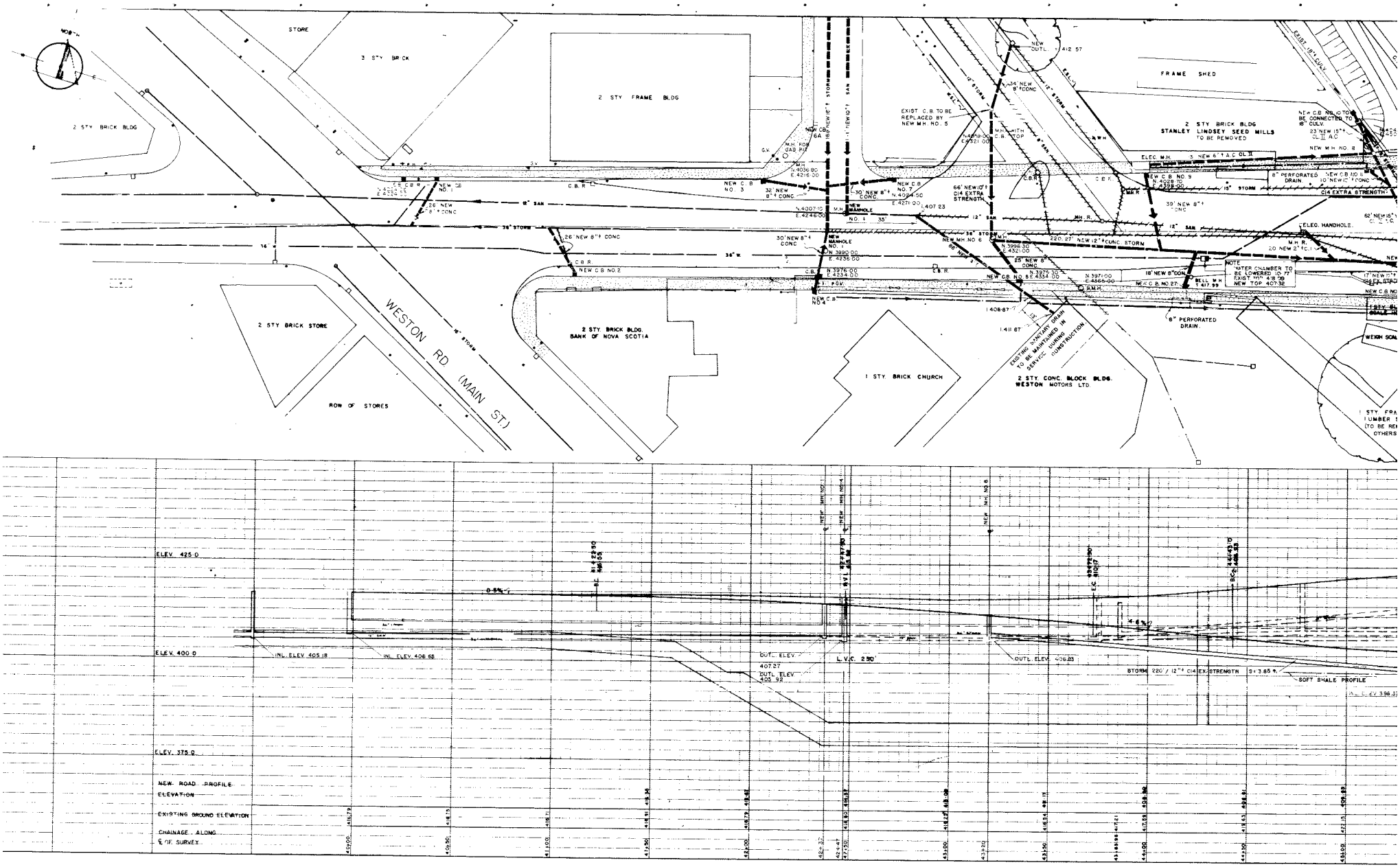
SCALE HORIZONTAL 1" = 40FT
VERTICAL - 1" = 10FT

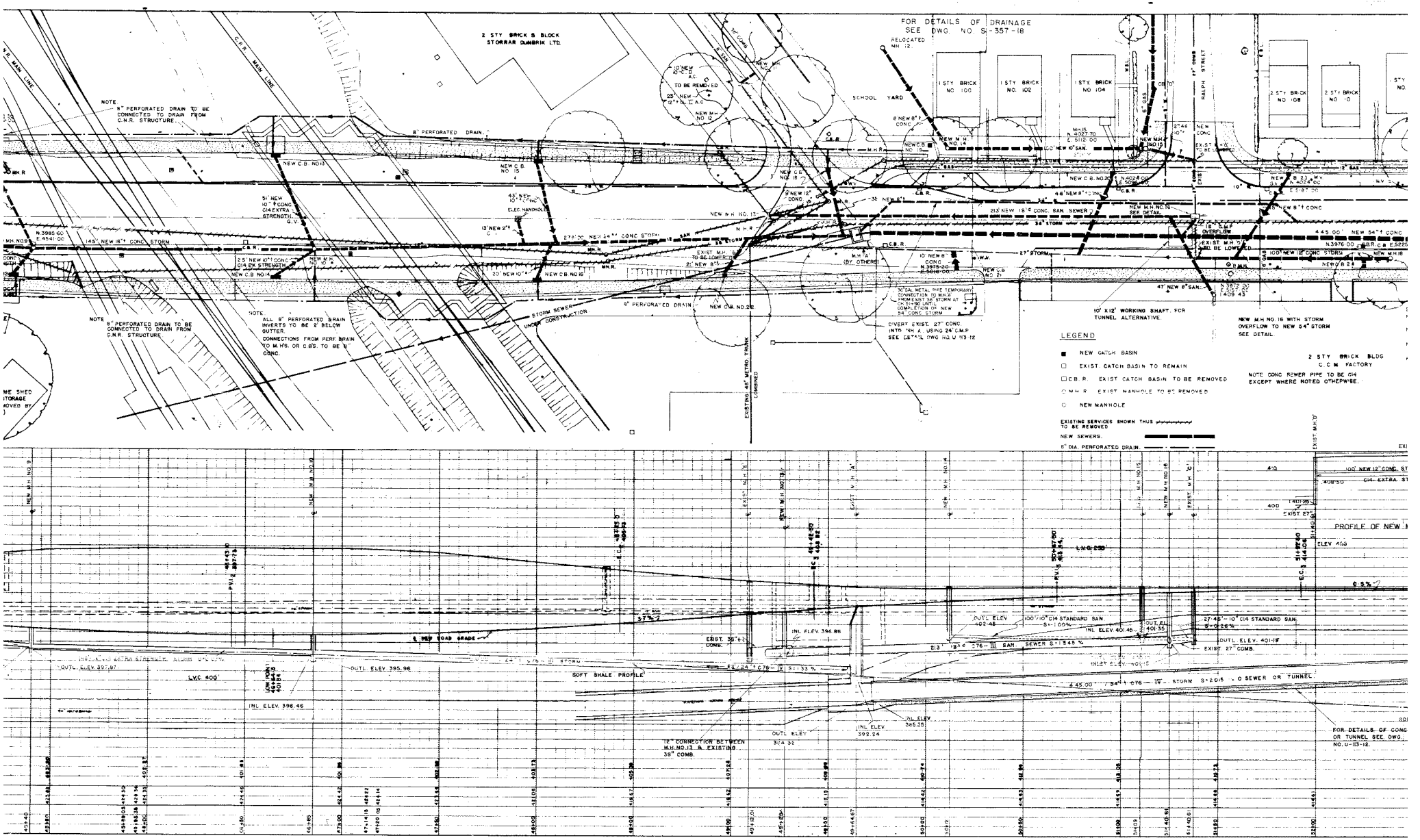
APPROVED BY [signature]

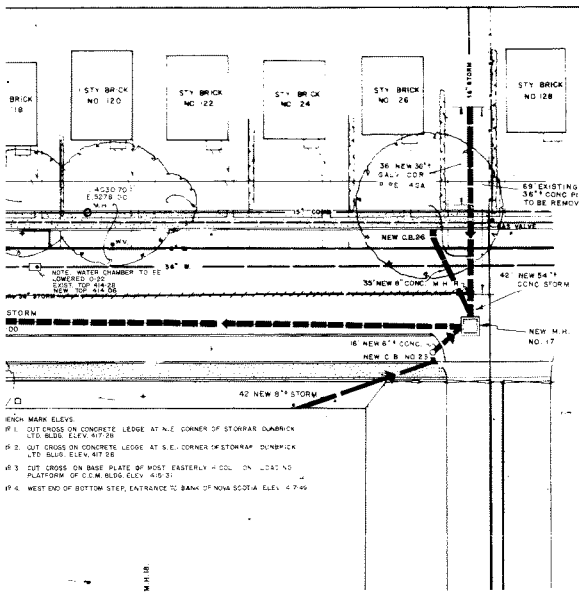
APPROVED BY [signature]

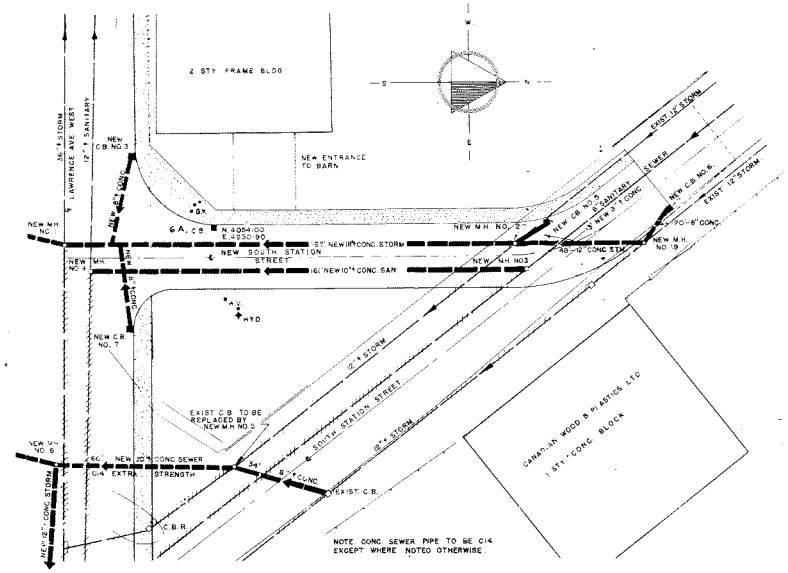
DATE DEC. 1955

DRAWING No 18M — 281


STORE
3 STY BRICK
2 STY FRAME BLDG
2 STY BRICK BLDG
EXIST. C.B. TO BE REPLACED BY NEW MH. NO. 5
NEW C.B. NO. 3
NEW C.B. NO. 7
NEW C.B. NO. 1
NEW C.B. NO. 2
NEW C.B. NO. 4
NEW C.B. NO. 8
NEW C.B. NO. 9
NEW C.B. NO. 10
NEW C.B. NO. 11
NEW MH. NO. 6
NEW MH. NO. 8
NEW OUTL.
FRAME SHED
2 STY BRICK BLDG STANLEY LINDSEY SEED MILLS TO BE REMOVED
8" PERFORATED DRAIN
ELEC. MH.
ELEC. HANDHOLE
BELL M.H.
NOTE WATER CHAMBER TO BE LOWERED 10.73' EXIST. TOP 418.29 NEW TOP 407.32
2 STY BRICK STORE
ROW OF STORES
WESTON RD. (MAIN ST.)
2 STY BRICK BLDG. BANK OF NOVA SCOTIA
1 STY BRICK CHURCH
2 STY. CONC. BLOCK BLDG. WESTON MOTORS LTD.
EXISTING SANITARY DRAIN TO BE MAINTAINED IN SERVICE DURING CONSTRUCTION
WEIGH SCALE
ELEV. 425.0
ELEV. 400.0
ELEV. 375.0
NEW ROAD PROFILE ELEVATION
EXISTING GROUND ELEVATION
CHAINAGE ALONG ℄ OF SURVEY
0.5%
INV. ELEV. 405.18
INV. ELEV. 406.68
OUTL. ELEV. 407.27
OUTL. ELEV. 405.92
L.V.C. 2.90'
OUTL. ELEV. 406.83
STORM 220' / 12"ø CI4 EX. STRENGTH
SOFT SHALE PROFILE

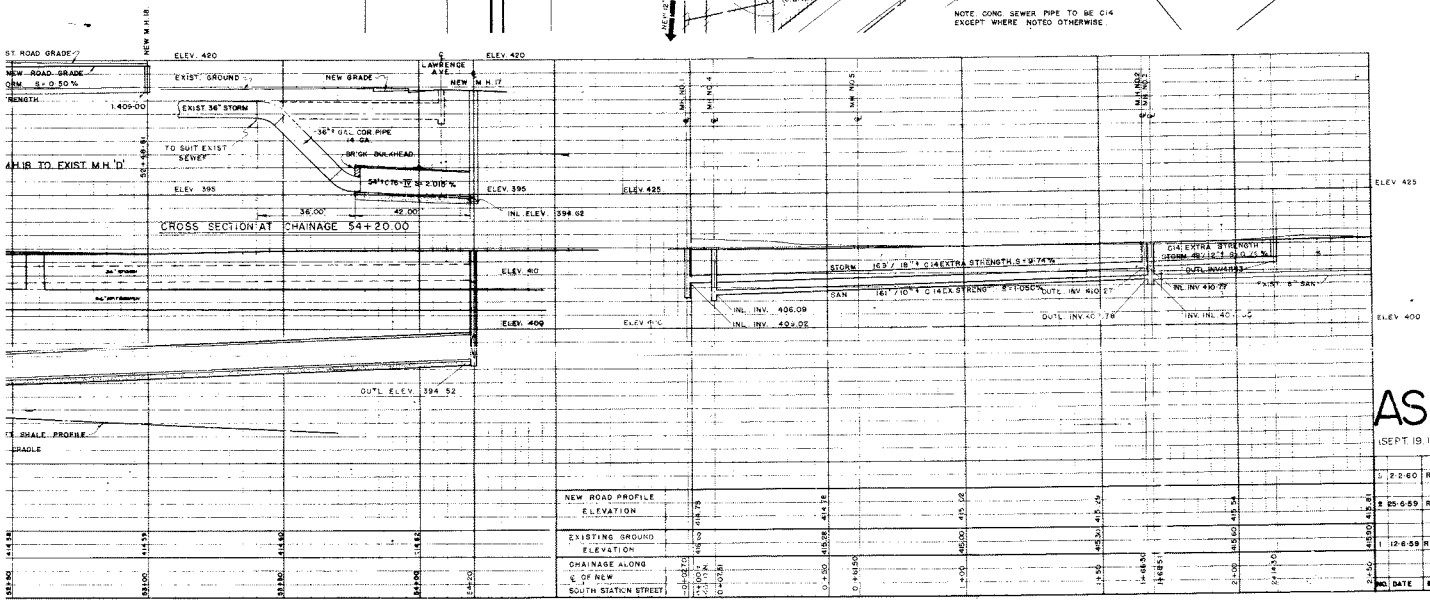

FOR DETAILS OF DRAINAGE SEE DWG. NO. S-357-18
2 STY. BRICK & BLOCK STORRAR DUNBRIK LTD.
C.N.R. MAIN LINE
SCHOOL YARD
1 STY. BRICK NO. 100
1 STY. BRICK NO. 102
1 STY. BRICK NO. 104
2 STY. BRICK NO. 108
2 STY. BRICK NO. 110
RALPH STREET
NOTE 8" PERFORATED DRAIN TO BE CONNECTED TO DRAIN FROM C.N.R. STRUCTURE.
8" PERFORATED DRAIN
NEW C.B. NO. 13
NEW C.B. NO. 15
NEW C.B. NO. 18
NEW C.B. NO. 16
NEW C.B. NO. 20
NEW C.B. NO. 21
NEW C.B. NO. 22
NEW C.B. NO. 23
NEW M.H. NO. 12
NEW M.H. NO. 13
NEW M.H. NO. 14
NEW M.H. NO. 15
NEW M.H. NO. 16
EXIST. M.H. TO BE LOWERED
EXIST. C.B. TO BE LOWERED
145' NEW 18" CONC. STORM
276' NEW 24" CONC. STORM
213' NEW 18" CONC. SAN. SEWER
445.00' NEW 54" CONC
100' NEW 12" CONC. STORM
47' NEW 8" SAN.
ELEC. HANDHOLE
NOTE ALL 8" PERFORATED DRAIN INVERTS TO BE 2' BELOW GUTTER. CONNECTIONS FROM PERF. DRAIN TO M.H'S. OR C.B'S. TO BE 8" CONC.
STORM SEWER UNDER CONSTRUCTION
EXISTING 48" METRO TRUNK COMBINED
DIVERT EXIST. 27" CONC. INTO MH. A USING 24" C.M.P. SEE DETAIL DWG NO. U-113-12
10' X 12' WORKING SHAFT FOR TUNNEL ALTERNATIVE.
NEW M.H. NO. 16 WITH STORM OVERFLOW TO NEW 54" STORM SEE DETAIL.
2 STY. BRICK BLDG C.C.M. FACTORY
NOTE CONC. SEWER PIPE TO BE C14 EXCEPT WHERE NOTED OTHERWISE.
LEGEND
NEW CATCH BASIN
EXIST. CATCH BASIN TO REMAIN
C.B.R. EXIST. CATCH BASIN TO BE REMOVED
M.H.R. EXIST. MANHOLE TO BE REMOVED
NEW MANHOLE
EXISTING SERVICES SHOWN THUS TO BE REMOVED
NEW SEWERS.
8" DIA. PERFORATED DRAIN.
PROFILE OF NEW
ELEV. 466
LVC 600'
LVC 230'
SOFT SHALE PROFILE
INL. ELEV. 396.46
OUTL. ELEV. 395.96
INL. ELEV. 396.86
OUTL. ELEV. 402.45
INL. ELEV. 401.45
OUTL. ELEV. 401.35
OUTL. ELEV. 401.15
EXIST. 27" COMB.
INL. ELEV. 392.24
OUTL. ELEV. 384.32
INL. ELEV. 385.35
12" CONNECTION BETWEEN M.H. NO. 13 & EXISTING 38" COMB.
FOR DETAILS OF CONC. OR TUNNEL SEE DWG. NO. U-113-12.





MANHOLE DATA

	M.H. NO.	NORTH CO-ORD	EAST CO-ORD	TOP ELEV	INVERT ELEVATIONS				REMARKS
NEW MANHOLES	1	3990.00	4236.00	414.85	408.57 N. INL.	417.00 S. INL.	407.15 W. OUTL.	—	LOCATION OF M.H. & INVERTS TO SUIT EXIST. SEWER.
	2	4172.69	4236.76	415.29	410.77 —	410.27 S. OUTL.	410.50 N.W. INL.	N. TO SUIT EXISTING SEWER.	SAME AS M.H. NO. 1 ABOVE.
	3	4168.51	4246.77	415.29	407.98 N.W. INL.	407.78 S. OUTL.	—	—	
	4	4007.10	4246.00	414.52	406.09 —	—	405.92 W. OUTL.	406.02 E. INL.	SAME AS M.H. NO. 1 ABOVE.
	5	4055.00	4321.00	414.40	412.40 N. INL.	407.16 S. OUTL.	—	410.40 N.E. INL.	TO HAVE 24"X24" CATCHBASIN COVER.
	6	3996.30	4321.00	412.25	406.93 N. INL.	406.73 S. INL.	—	406.83 E. OUTL.	
	8	4043.30	4509.00	409.00	405.00 N.W. INL.	399.26 S.E. OUTL.	400.00 W. INL.	400.00 E. INL.	
	9	3985.60	4541.00	403.13	398.02 N.W. INL.	398.80 S.W. INL.	398.37 W. INL.	398.87 E. OUTL.	
	10	3984.00	4595.00	401.56	397.00 N.W. INL.	397.00 S.W. INL.	396.46 W. INL.	395.96 E. OUTL.	INV. OF 8" CONC. FROM 8" PERF. DRAIN 397.00
	11	4070.00	4504.00	414.70±	408.50± N.W. INL.	408.40± S. OUTL.	—	—	
	12	4090.00	4979.70	414.402	—	408.83 S.E. OUTL.	409.00 W. INL.	397.10 N.E. INL.	
	13	4002.50	4928.00	408.28	—	—	396.76 W. OUTL.	396.86 E. INL.	
	14	4037.00	5012.00	414.00	—	—	405.00 W. INL.	402.45 E. OUTL.	
	15	4027.70	5112.00	414.00	402.00 N. INL.	—	401.45 W. INL.	401.35 E. OUTL.	
	16	4002.50	5140.61	413.96	401.15 N. INL.	400.90 S. OVERFLOW	400.16 W. OUTL.	—	
	17	3988.00	5420.00	414.39	394.62 N. INL.	400.00 S.W. INL.	394.52 W. OUTL.	400.50 N.W.	
	18	3983.00	5240.61	413.96	—	409.00 S.E.	409.00 W.	—	
	19	4214.79	4226.70	415.25	411.15 S. N.W. INL.	—	—	411.15 W. N.W. INL.	TO SUIT EXIST. SEWER
EXISTING MANHOLES	'A'	3992.00	4964.67	409.12	403.00 N. INL.	384.32 S.E. OUTL.	392.24 W. INL.	393.55 E. INL.	
	'B'	3985.90	4912.01	EXIST. 415.97 NEW 407.40	396.07 N. INL.	395.87 S. OUTL.	—	—	TOP TO BE LOWERED.
	'C'	4029.80	5140.61	EXIST. 414.28 NEW 414.08	401.44 N. INL.	401.19 S. OUTL.	401.28 N.W. INL.	401.33 E. INL.	DO.
	'D'	1978.90	5140.91	EXIST. 414.65 NEW 413.17	401.12 N. TO BE BRICKED UP	NO CHANGE	NO CHANGE	NO CHANGE	DO.



LIST OF NEW CATCH BASINS

C.B. NO.	NORTH CO-ORD	EAST CO-ORD.	TOP ELEV.	C.B. NO.	NORTH CO-ORD	EAST CO-ORD.	TOP ELEV.
1	4024.00	4040.00	416.16	14	3968.00	4685.00	401.15
2	3976.00	4110.00	415.97	15	4031.25	4800.00	403.05
3	4024.00	4205.00	414.97	16	3968.10	4800.00	403.05
4	3968.00	4238.50	415.30	6A	4054.00	4220.50	
5	4177.00±	4230.00±	415.10	18	3976.00	5225.00	408.76
6	4224.75	4222.33	416.97	19	4037.00	5001.80	410.85
7	4024.50	4271.00	413.45	20	4024.00	5096.00	412.40
8	3975.20	4334.00	411.30	21	3975.70	5016.00	410.84
9	4028.70	4398.00	408.46	22	3870.53	4896.89	406.46
10	4060.00	4503.00±	416.00	23	4024.00	5187.00	413.37
11	4031.85	4510.00	403.60	24	3976.00	5225.00	413.65
12	3968.45	4530.00	403.00	25	3976.00	5405.00	414.02
13	4032.00	4685.00	401.15	26	4024.05	5405.00	414.02

ASBUILT

(SEPT. 19. 1960)

NO.	DATE	BY	REVISIONS
3	2-2-60	R.K.	MH. 12 & CB. 17 RELOCATD
			CB'S A, B, C & D ADDED
2	25-6-59	R.B.	M.H.10-S.W., N.W. & DRAIN CON. INVS. REVISED
			M.H. 13 & 16 RELOCATED.
			21" CMP. O'FLOW FROM M.H. 16 ADDED.
1	12-6-59	R.B.	24" COMB. BECOMES 12" SAN.
			54" TUNNEL ALT. ADDED
			SOFT SHALE PROFILE RELOCATED.

MUNICIPALITY OF METROPOLITAN TORONTO
ROADS DEPARTMENT

LAWRENCE AVENUE W. SUBWAY
WESTON ONTARIO
C.P.R. MACTIER S/D MILE 3.60 C.N.R. BRAMPTON S/D MILE 8.44

STORM DRAINS & SEWER RELOCATIONS.

LAWRENCE AVE. W. — WESTON ROAD TO RALPH STREET.

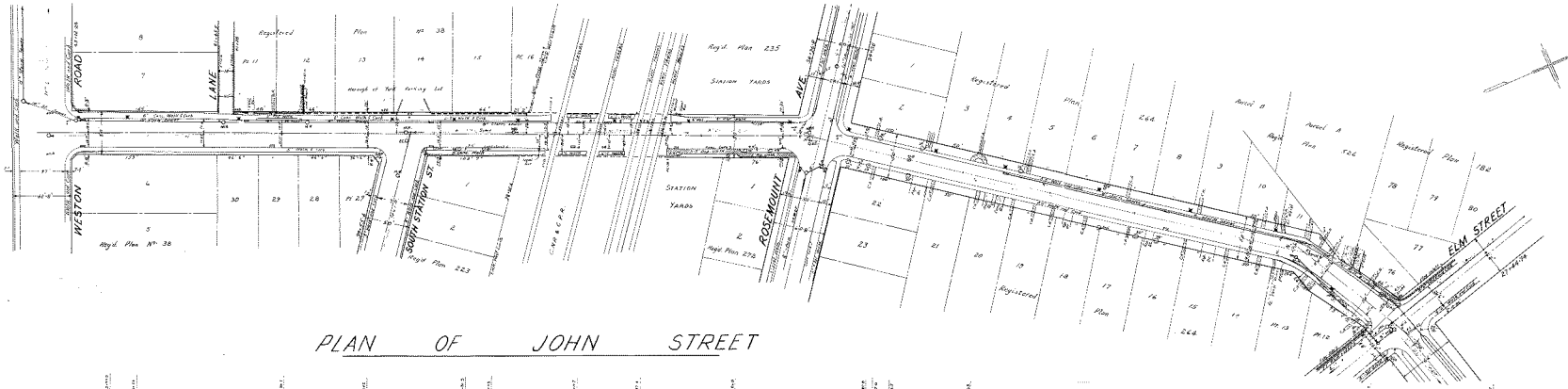
CONSULTING ENGINEERS:
M. M. DILLON & CO. LTD.
TORONTO TORONTO. LONDON

CHIEF DESIGN ENGINEER

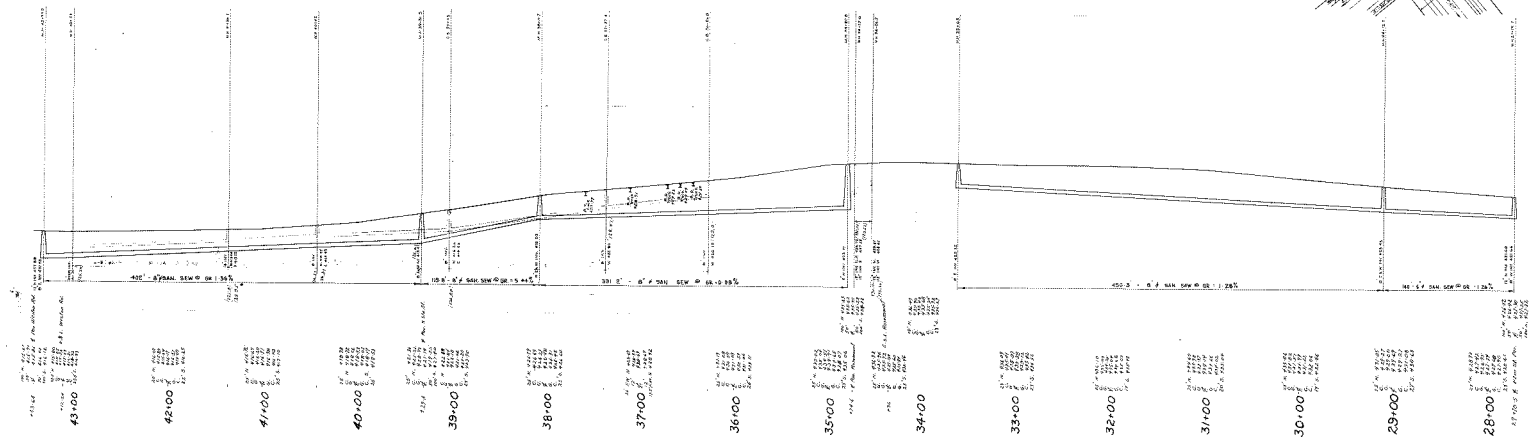
COMMISSIONER OF ROADS

JOB NO. 5478-5	DESIGNED BY W.K.C.		
DRAWN BY: K.M.	CHECKED BY: G.R.F.	DRWG. NO. U113-10	SHEET OF
DATE: MAR. 1959	SCALE: HORIZ. 1"=50' VERT. 1"=10'		

R.SEW. 386



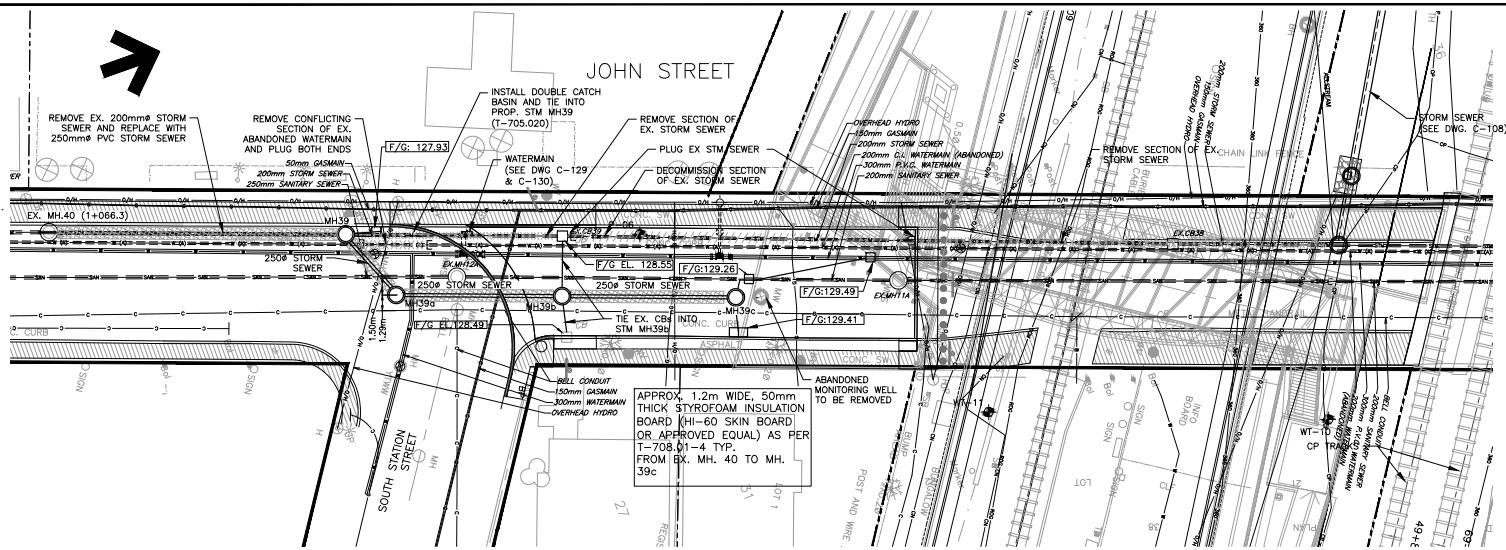
PLAN OF JOHN STREET

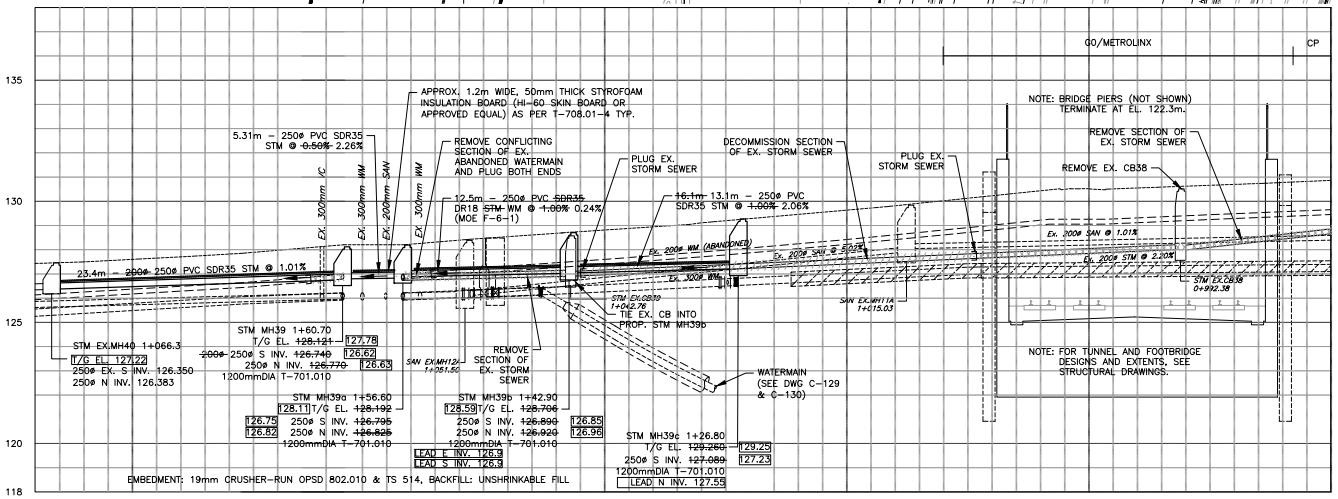


BOROUGH of YORK
DEPARTMENT of WORKS
PLAN AND PROFILE
OF
JOHN STREET

Scale: Horiz. 1 inch = 40 ft.
Vert. 1 inch = 10 ft.

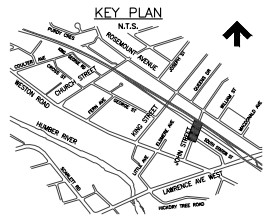
344-.





ESTIMATED EXISTING CROWN ELEVATION		128.21		128.21		128.61		129.63		130.52	130.86
STATION		1+060.7		1+056.6		1+040		1+020		1+000	0+980

KEY PLAN



LEGEND

- EXISTING WATERMAIN
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING VALVE CHAMBER
- PROPOSED WATERMAIN
- EXISTING STORM MAINTENANCE HOLE
- EXISTING STORM SEWER
- PROPOSED STORM MAINTENANCE HOLE
- PROPOSED STORM SEWER
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- EXISTING SANITARY MAINTENANCE HOLE
- EXISTING SANITARY SEWER
- PROPOSED SANITARY MAINTENANCE HOLE
- PROPOSED SANITARY SEWER
- EXISTING CURB
- EXISTING CONCRETE SIDEWALK
- MUNICIPAL PROPERTY LINE
- GO METROLINX PROPERTY LINE
- PRIVATE PROPERTY LINE
- EXISTING CENTER LINE OF TRACKS
- PROPOSED CENTER LINE OF TRACKS
- WT-07 BOREHOLE LOCATION AND ID
- XXXXXXX SEWER OR MH TO BE REMOVED
- SEWER OR MH TO BE DECOMMISSIONED
- STYROFOAM INSULATION

STM MH LOCATION COORDINATES (6 DEGREES UTM NAD 83)		
MH NO.	NORTHING	EASTING
MH39	4839798.247	619470.444
MH39a	4839800.592	619476.365
MH39b	4839813.468	619481.051
MH39c	4839828.568	619486.546

NOTES

1. SEE DRAWING C-100 FOR GENERAL NOTES.
2. ALL PIPE DIAMETERS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.
3. ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.
4. STORM SEWER PIPE LENGTHS ARE SHOWN FACE TO FACE OF M.H.

ENGINEERING AND CONSTRUCTION SERVICES

ACCEPTED TO BE IN ACCORDANCE WITH THE CITY OF TORONTO STANDARDS. THIS ACCEPTANCE IS NOT CONSTRUED AS VERIFICATION OF ENGINEERING CONTENT.

MANAGER, DEVELOPMENT ENGINEERING
CITY OF TORONTO

DATE

METROLINX PROJECT NO. 09-6703

REFERENCE DRAWINGS		ISSUE			REVISIONS		
					0	DEC 5, 2016	AS-BUILT
DWG NO.	TITLE	NO.	DATE	ISSUED FOR	REV.	DATE	

DRAWN BY:	DESIGNED BY:
XLS	XLS
CHECKED BY:	APPROVED BY:
FB	CM
SCALE:	FULL SIZE ONLY
1:200	HORIZONTAL
1:100	VERTICAL

PARSONS

AS-BUILT DRAWING PREPARED BY PARSONS PER MARK-UP BY OTHERS. INFORMATION NOT INDEPENDENTLY VERIFIED BY PARSONS.

A Division of Metrolinx

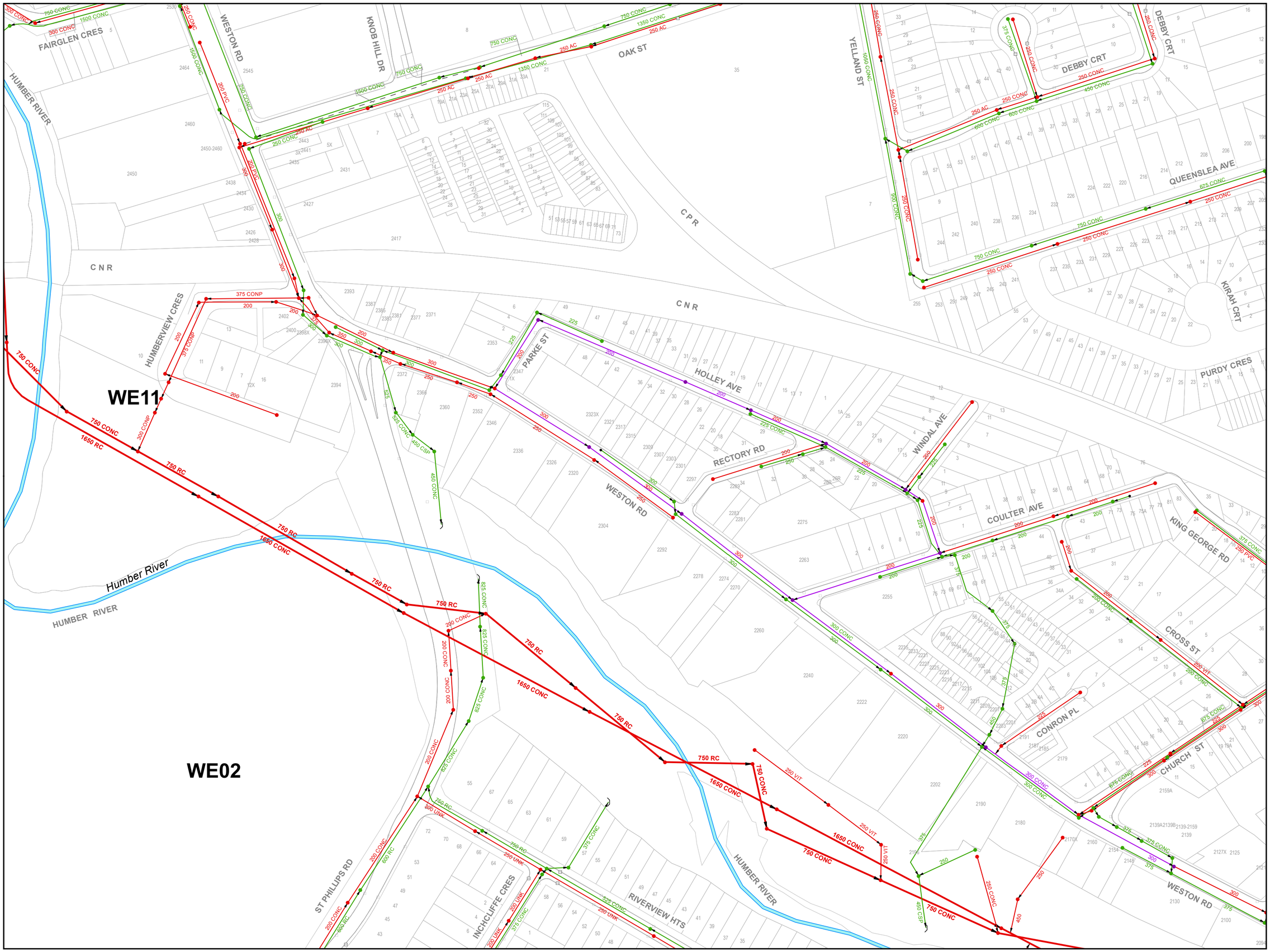
GTS-WESTON TUNNEL-PHASE 3

JOHN STREET

STORM SEWER PLAN AND PROFILE
FROM STA. 0+980 TO STA. 1+060

CONTRACT NO.	DWG. NO.	REV.	SHEET
IT-2011-CIG-003	C-108b	0	216B/239

J:\Division\Water\Projects\MARKHAM\BT3294 WESTON TUNNEL\CAD\As-Built_Design\C-108b\09-6703-C108b_CAD.dwg Dec 05, 2016 - 11:47am



Toronto Sewer Atlas

Manhole
- Combined
- Dual
- Sanitary
- Storm
- Foundation

Control Manhole
- Combined
- Dual
- Sanitary
- Storm

Outfall
- Outfall

Sewer Pump Station
- Sewer Pump Station

Catchbasin
- Other
- Twin Inlet Catchbasin

Sewer
- Foundation Drain
- Combined
- Sanitary
- Storm
- Combined Trunk
- Sanitary Trunk
- Storm Trunk
- Abandoned Sewer

- Large Chamber
- River
- Highway
- Curb
- Wards Boundary

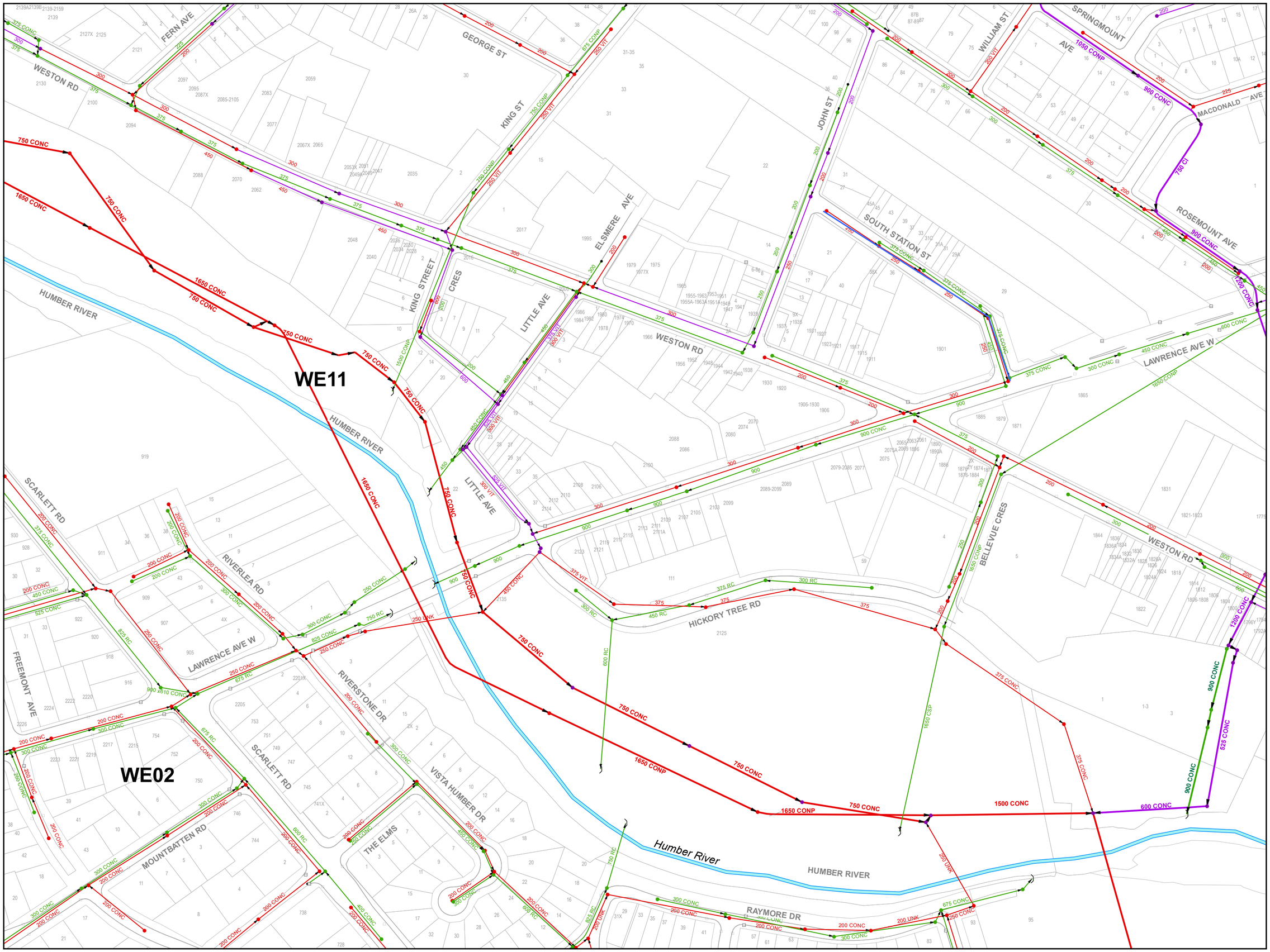
0 50 100 150 200 Metres

Third Edition
Date: 01/09/2010

General Notes:
- The maps were prepared based on the most current data available to Toronto Water as of the Map Source Date.
- These maps are for planning purpose only and must not be used for construction, or as a replacement for a utility locate.
- This drawing is not to be reproduced in whole or in part without the express written permission of the City.
- Any discrepancies, inaccuracies, errors and/or omissions in the maps should be reported to Toronto Water, Water Infrastructure Management. (18th Floor, Metro Hall, 55 John St, Toronto, ON, M5V 3C6) (Tel: 416-392-3957)

N W E S

184	219	254
185	**220**	255
186	221	256



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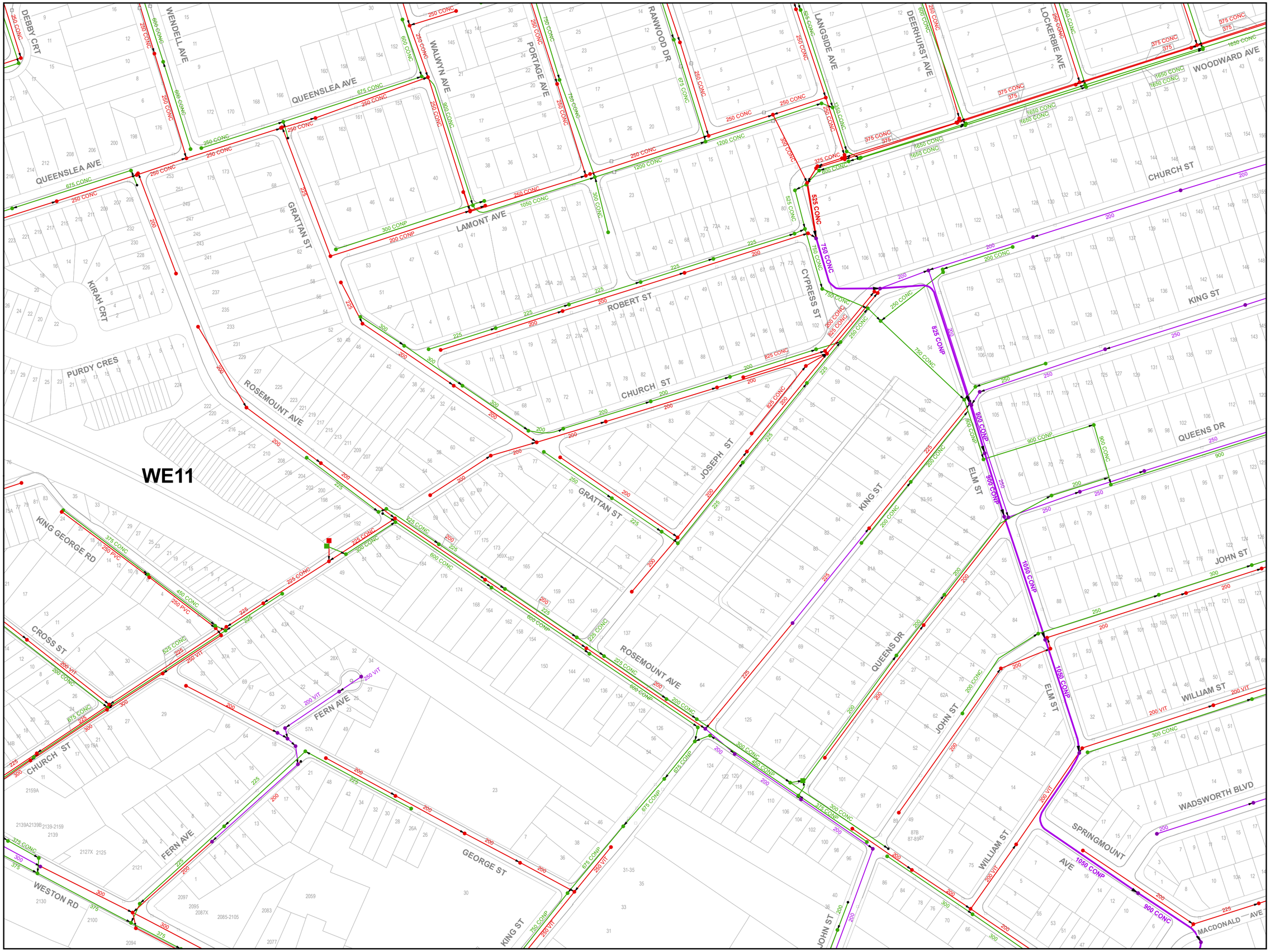
N W E S

220	255	290
221	256	291
222	257	292



Toronto Sewer Atlas

Large Chamber

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- Sanitary
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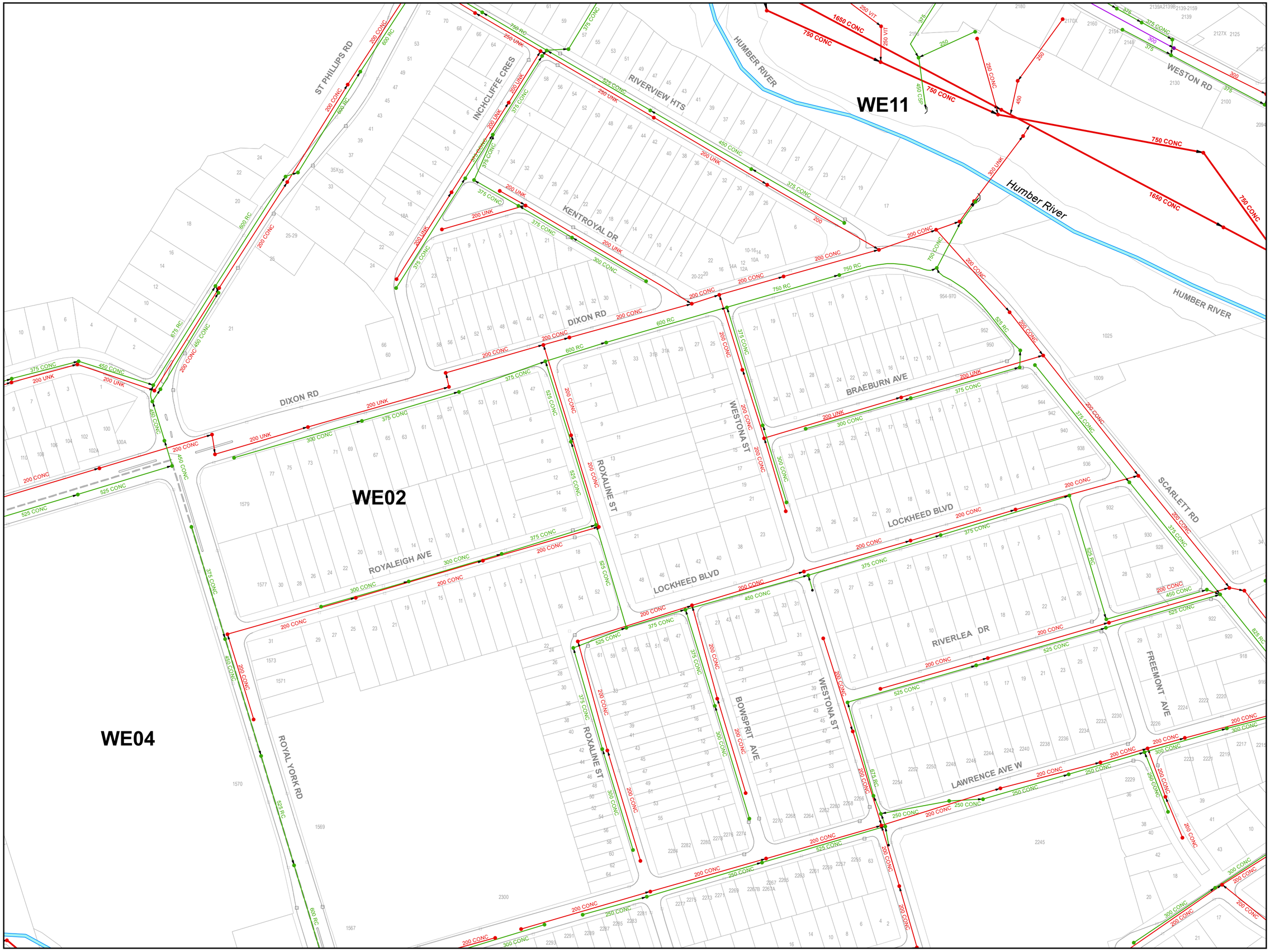
N W E S

219	254	289
220	255	290
221	256	291



Toronto Sewer Atlas

Manhole
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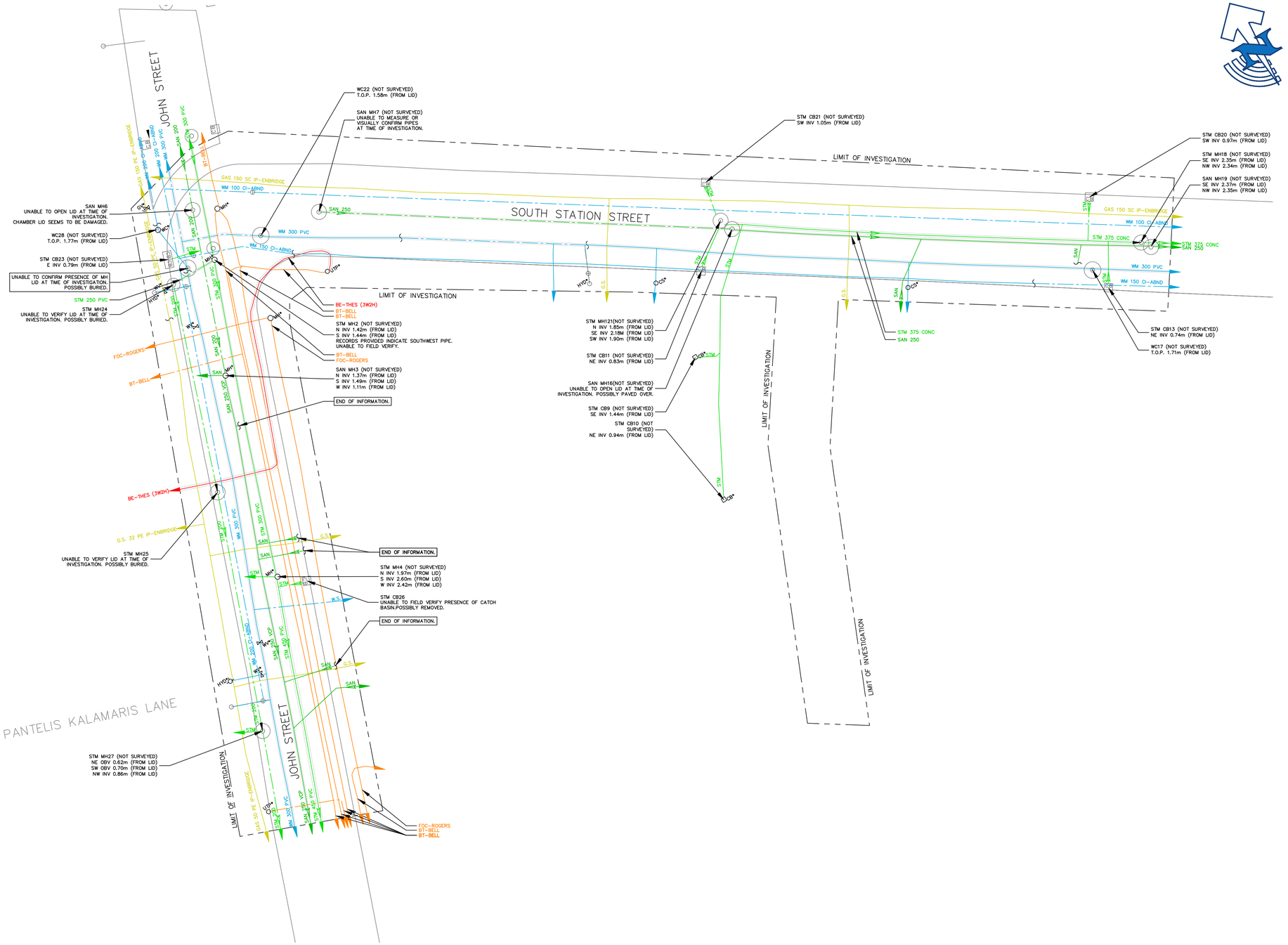
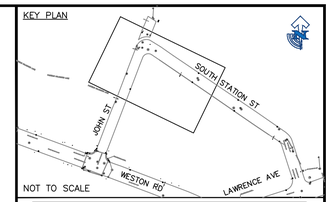
N W E S

185	220	255
186	221	256
187	222	257



KEY PLAN



NOT TO SCALE

GENERAL NOTES

1. T2UE'S SUE FIELD INVESTIGATION WAS PERFORMED AUGUST 2022. CHANGES TO UTILITIES THAT OCCURRED FOLLOWING OUR INVESTIGATION MAY NOT BE SHOWN. CONSIDERATION SHOULD BE GIVEN TO UPDATING THIS PLAN PRIOR TO FINAL DESIGN AND CONSTRUCTION.

2. LIMIT OF INVESTIGATION:

- RIGHT OF WAYS FRONTING 13-21 JOHN STREET AND 36-40 SOUTH STATION STREET – AS SHOWN ON DRAWING.

3. FIELD VERIFICATION OF UTILITIES WAS COMPLETED USING A COMBINATION OF ELECTROMAGNETIC PIPE AND CABLE LOCATE EQUIPMENT.

4. EMPTY CONDUITS, SERVICES, LATERALS TO BUILDINGS, ABANDONED FACILITIES SUCH AS STREET LIGHT CABLES, WITHIN THE INVESTIGATION AREA MAY NOT BE SHOWN ON THE DRAWING.

5. T2UE USED AVAILABLE MEANS IN AN ATTEMPT TO DETERMINE THE LOCATION OF UNDOCUMENTED UTILITIES HOWEVER CANNOT BE RESPONSIBLE FOR FINDING ALL UNDOCUMENTED UTILITIES.

6. THE BASEPLAN WAS PROVIDED BY THE CLIENT, THEREFORE T2UE IS NOT RESPONSIBLE FOR ITS ACCURACY.

7. UTILITY OWNERSHIP, MATERIAL, SIZES AND FLOW SHOWN ON DRAWING ARE BASED ON RECORDS INFORMATION RECEIVED, FIELD INVESTIGATION AND PROFESSIONAL JUDGEMENT.

8. UTILITY WIDTHS ON DRAWING ARE BASED ON RECORDS RECEIVED.

9. PIPE OFFSETS ARE SHOWN WHERE THE CENTER OF THE PIPE IS OFFSET FROM CENTER OF THE CHAMBER LID BASED ON RECORDS OR VISUAL VERIFICATION. DISTANCE SHOWN IS APPROXIMATE AND DIRECTION IS NOTED FROM THE CENTER OF THE LID.

10. PLANT SHOWN AS "ABANDONED (ABND)" ON THE DRAWINGS ARE BASED ON RECORD INFORMATION PROVIDED. STATUS OF THE UTILITY SHOULD TO BE CONFIRMED WITH THE UTILITY OWNER.

11. SEE PROJECT REPORT FOR ADDITIONAL INFORMATION.

ASCE QUALITY LEVELS

THE UTILITY INFORMATION SHOWN ON THIS DRAWING WAS COLLECTED IN ACCORDANCE TO ASCE STANDARD 38-02. THE INFORMATION IS SHOWN BY QUALITY LEVEL WHICH INDICATES THE LEVEL OF EFFORT USED TO DETERMINE THE LOCATION OF THE DATA

INCREASED QUALITY

QUALITY LEVEL "D" – INFORMATION DERIVED FROM EXISTING RECORDS OR VERBAL RECOLLECTIONS.

QUALITY LEVEL "C" – INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGEMENT IN CORRELATING THIS INFORMATION TO THE QUALITY LEVEL "D" INFORMATION.

QUALITY LEVEL "B" – INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF THE UTILITIES.

QUALITY LEVEL "A" – PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITES OBTAINED BY THE ACTUAL EXPOSURE AND SUBSEQUENT MEASUREMENT OF SUBSURFACE UTILITIES.

LEGEND

GAS	GAS
G.S.	GAS SERVICE
WM	WATER
W.S.	WATER SERVICE
SAN	SANITARY SEWER
SAN LAT.	SANITARY LATERAL
STM	STORM SEWER
STM LAT.	STORM LATERAL
BE	BURIED ELECTRIC
BE-SL	BURIED ELECTRIC STREET LIGHT
BE-TL	BURIED ELECTRIC TRAFFIC LIGHT
UNK	UNKNOWN CONDUCTIVE
FOC	FIBRE OPTIC CABLE
TV	BURIED TELEVISION CABLE
BT	BURIED TELECOMMUNICATIONS
o/h	OVERHEAD WIRE
	QUALITY LEVEL "B"
	QUALITY LEVEL "C"
	QUALITY LEVEL "D"
	LIMIT OF INVESTIGATION
	TEST HOLE QUALITY LEVEL "A"
	CONTINUATION ARROW
	FLOW ARROW
	END CAP
*	NOT SURVEYED, LOCATION BASED ON FIELD OBSERVATION
#	NOT SURVEYED, LOCATION BASED ON RECORD INFORMATION
O/S	OFFSET
	LOSS OF SIGNAL

REVISIONS

DISCLAIMER.

THIS DRAWING HAS BEEN PREPARED FOR THE USE OF T2UE'S CLIENT AND MAY NOT BE USED, REPRODUCED OR RELIED UPON BY THIRD PARTIES, EXCEPT AS AGREED BY T2UE AND ITS CLIENT, AS REQUIRED BY LAW OR FOR USE BY GOVERNMENT REVIEWING AGENCIES. T2UE ACCEPTS NO RESPONSIBILITY, AND DENIES ANY LIABILITY WHATSOEVER, TO ANY PARTY THAT MODIFIES THIS DRAWING WITHOUT T2UE'S EXPRESS WRITTEN CONSENT.

PREPARED BY.

T2 utility engineers
1-855-222-T2UE | WWW.T2UE.COM

THE ENGINEER'S SEAL HEREON IS TO CERTIFY THAT THE UTILITIES SHOWN HAVE BEEN INVESTIGATED IN ACCORDANCE WITH STANDARD SUE INDUSTRY PRACTICES. ALL OTHER INFORMATION HEREON HAS BEEN PROVIDED BY OTHERS AND IS NOT A PART OF THIS CERTIFICATION.

		DATE (MM/DD/YY)
DRAWN	C. SANCHEZ	09/21/22
CHECKED	H. YOUSSEF	09/22/22
APPROVED		

SCALE 1: 250 (0, 5, 10m)

PROJECT.
13-21 JOHN ST. AND 36-40 SOUTH STATION ST.
TORONTO ONTARIO

DRAWING.
SUBSURFACE UTILITY ENGINEERING
MAPPING SERVICES

CLIENT.
BURNSIDE

PROJECT NO. 61002461

SHEET NO. 01 OF 01

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix B

Fire Flow Calculations

BURNSIDE

CALCULATION SHEET

Project: **John Street and South Station Street**

Domestic and Fire Flow Calculations - Parcel A

Prepared by:	HH
Checked by:	JS
Project No:	300054203
Date:	April 20, 2023

Based on Fire Underwriters' Survey Water Supply for Public Fire Protection, A Guide to Recommended Practice in Canada, 2020

1 F= 220 C (sqrt (A))

Where F = Fire flow in Lpm
C = Construction type coefficient
= 0.6 Type I Fire Resistive Construction
A = Total Effective Area (Total floor area in sq.m. excluding basements, includes garage)

For C = 0.6, and all vertical openings and exterior vertical communications properly protected:
A = Single largest floor area plus 25% of each of the two immediately adjoining floors

Floor	Area (sq.m)	%
3	1,459.13	100%
2	1,433.90	25%
4	1,362.38	25%

A = 2,158 sq.m
F = 6,132 L/min

Round to nearest 1000 L/min
F = **6,000** Ll/min

2 Occupancy Reduction
15% reduction for normal residential occupancy
Reduction = 900 L/min
F = **5,100** L/min

3 Separation Charge

10%	North Side	20.1m to 30m
15%	East Side	10.1m to 20m
15%	South Side	10.1m to 20m
10%	West Side	20.1m to 30m
50%		

Note: Maximum Total Separation Charge is 75%

Total Separation Charge = **2550** L/min

4 Sprinkler Reduction
30% Reduction for NFPA Sprinkler System
Reduction = **1530** L/min

5 Domestic Flow Calculations

Population =	861	persons
Ave. Day Demand =	190	L/cap/day
	114	L/min
Max. Hourly Peaking Factor =	2.5	
Max. Domestic Flow Rate F_{dom} =	**284**	L/min
F_{dom} =	**289**	L/min

Commercial Flow Calculations

Population =	23	persons
Ave. Day Demand =	250	L/cap/day
	4	L/min
Max. Hourly Peaking Factor =	1.2	
Max. Domestic Flow Rate F_{dom} =	**5**	L/min

F = **7,650** - **1530** + **289** = **6,409** L/min
F = 107 L/s
F = **1692** GPM

BURNSIDE

CALCULATION SHEET

Project: **John Street and South Station Street**

Domestic and Fire Flow Calculations - Parcel B

Prepared by:	HH
Checked by:	JS
Project No:	300054203
Date:	April 19, 2023

Based on Fire Underwriters' Survey Water Supply for Public Fire Protection, A Guide to Recommended Practice in Canada, 2020

1 F= 220 C (sqrt (A))

Where F = Fire flow in Lpm
C = Construction type coefficient
= 1.0 Type III Ordinary Construction
A = Total Effective Area (Total floor area in sq.m. excluding basements, includes garage)

For C = 1.0
A = 100% of all Floor Areas

Floor	Area (sq.m)	%
1	460.58	100%
2	460.58	100%
3	460.58	100%

A = 1,382 sq.m
F = 8,178 L/min

Round to nearest 1000 L/min
F = **8,000** Ll/min

2 Occupancy Reduction
0% reduction for normal residential occupancy
Reduction = 0 L/min
F = **8,000** L/min

3 Separation Charge

10%	North Side	20.1m to 30m
0%	East Side	Greater than 30 m
20%	South Side	3.1m to 10m
15%	West Side	10.1m to 20m
45%		

Note: Maximum Total Separation Charge is 75%

Total Separation Charge = **3600** L/min

4 Sprinkler Reduction
30% Reduction for NFPA Sprinkler System
Reduction = **2400** L/min

5 Commercial Flow Calculations

Population = 15 persons
Ave. Day Demand = 250 L/cap/day
3 L/min
Max. Hourly Peaking Factor = 1.2
Max. Domestic Flow Rate F_{dom} = **3** L/min
F_{dom} = **3** L/min

F = **11,600** - **2400** + **3** = **9,203** L/min
F = 153 L/s
F = **2430** GPM

Hydrant Flow Test Report

SITE NAME:

SITE ADDRESS / MUNICIPALITY: **13-21 John Street Toronto, On**

TEST HYDRANT LOCATION : **Front of 40 South Station Street Hydrant ID# HY1057**

BASE HYDRANT LOCATION: **29 South Station Street, Hydrant ID# Hy1082**

TEST BY: Luzia Wood

TEST DATE: June 24,2022

TEST TIME: 8:30AM

TEST DATA

FLOW HYDRANT — Pipe Diam. (in / mm): 300mm P.V.C

	PITOT 1	PITOT 2
SIZE OPENING (inches):	2.5	2.5
COEFFICIENT (**note 1**):	0.90	0.90
PITOT READING (psi):	60	47 / 47
FLOW (usgpm):	**1300**	**2301**

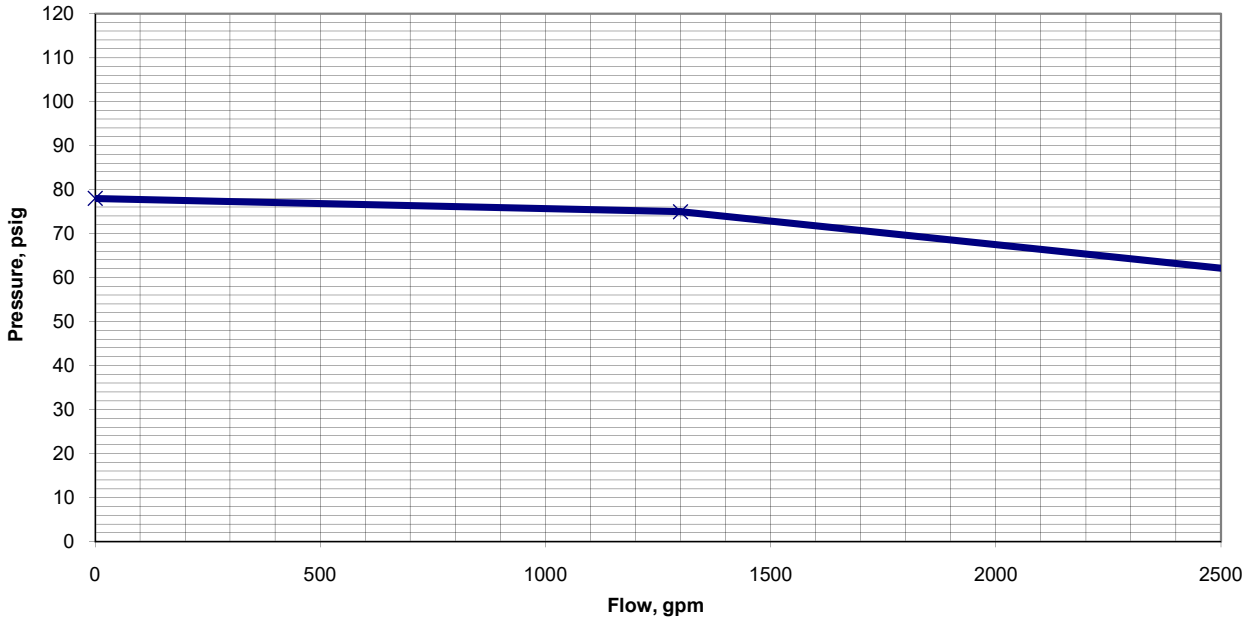
THEORETICAL FLOW @ 20 PSI 6434

BASE HYDRANT — Pipe Diam. (in / mm): 300mm P.V.C

STATIC READING (psi): 78 RESIDUAL 1 (psi): 75 RESIDUAL 2 (psi): 68

REMARKS:

NOTE 1: Conversion factor of .90 used for flow calculation based on rounded and flush internal nozzle configuration. No appreciable difference in pipe invert between flow and base hydrants.



491 Port Maitland Rd
Dunnville, ON N1A 2W6

Hydrant Flow Test Report

SITE NAME:

SITE ADDRESS / MUNICIPALITY: **13-21 John Street Toronto, On**

TEST HYDRANT LOCATION : **Front of 22 John Street Hydrant ID# HY3164**

BASE HYDRANT LOCATION: **John Street at Pantelis Kalamaris Ln, Hydrant ID# No ID**

TEST BY: Luzia Wood

TEST DATE: June 24,2022

TEST TIME: 8:00AM

TEST DATA

FLOW HYDRANT — Pipe Diam. (in / mm): 300mm P.V.C

	PITOT 1	PITOT 2
SIZE OPENING (inches):	2.5	2.5
COEFFICIENT (**note 1**):	0.90	0.90
PITOT READING (psi):	60	48 / 48
FLOW (usgpm):	**1300**	**2325**

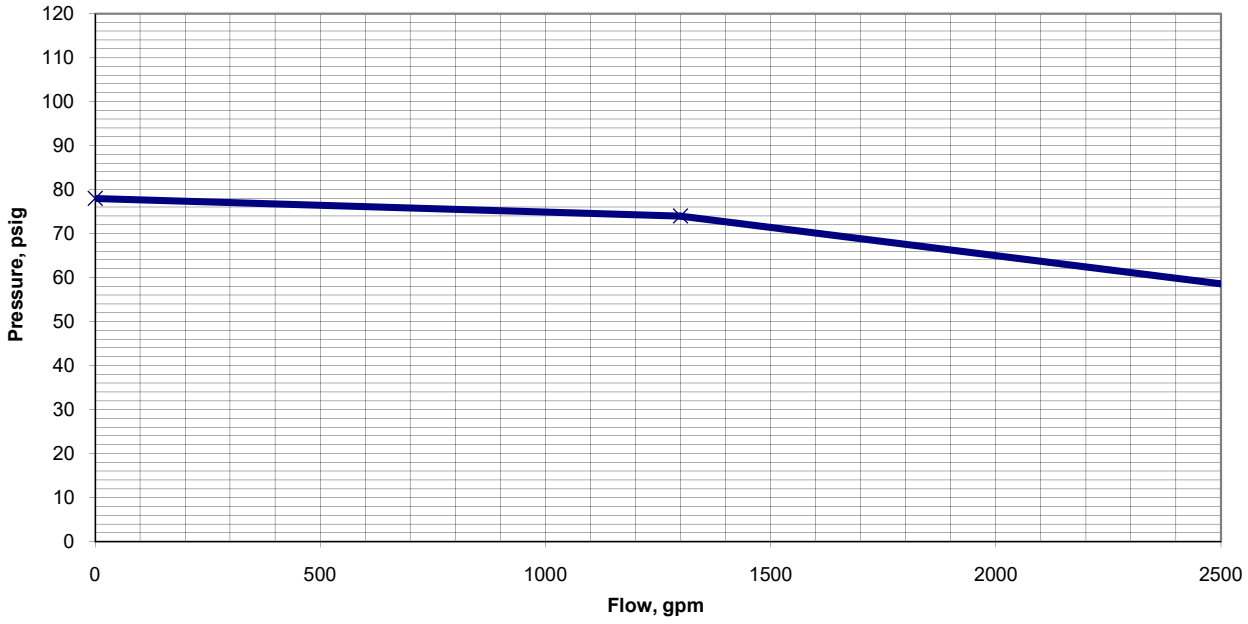
THEORETICAL FLOW @ 20 PSI 5508

BASE HYDRANT — Pipe Diam. (in / mm): 300mm P.V.C

STATIC READING (psi): 78 RESIDUAL 1 (psi): 74 RESIDUAL 2 (psi): 68

REMARKS:

NOTE 1: Conversion factor of .90 used for flow calculation based on rounded and flush internal nozzle configuration. No appreciable difference in pipe invert between flow and base hydrants.



491 Port Maitland Rd
Dunnville, ON N1A 2W6

Turner Fleischer Architects Inc.

67 Lesmill Road
Toronto ON, M3B 2T8
T 416 425 2222
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turnerfleischer.com

TURNER FLEISCHER

April 20, 2023

File: 21.225CS

Rabia Ahmed
Planner, Community Planner
City Planning Division | Etobicoke York District | Central Section
Etobicoke Civic Centre | 2 Civic Centre Court, 3rd Floor
Toronto, ON M9C 5A3
rabia.ahmed@toronto.ca

Re: 13-21 John St + 36-40 South Station St.
York, Ontario

On behalf of our client, Devron Developments, we are providing this letter is to confirm that all buildings will be constructed such that the vertical openings and external vertical communications are properly protected (one-hour rating).

We trust that this letter meets your needs. If you have any questions, please contact the undersigned.

Sincerely,

Russell Fleischer
Principal
OAA, MAA, AANB, NSAA, AAPEI, ARCHITECT AIBC, AAA, SAA, NWTAA, MRAIC

Turner Fleischer Architects Inc.

67 Lesmill Road
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TURNER FLEISCHER

April 20, 2023

Rabia Ahmed
Planner, Community Planner
City Planning Division | Etobicoke York District | Central Section
Etobicoke Civic Centre | 2 Civic Centre Court, 3rd Floor
Toronto, ON M9C 5A3
rabia.ahmed@toronto.ca

Re: 13-21 John St + 36-40 South Station St.
York, Ontario

On behalf of our client, Devron Developments, we are providing this letter in support of the Fire Resistive Classification of our buildings. As the architect, we confirm that structural elements and floor slabs will be designed as per the Fire Underwriters Survey (FUS) definition of Fire Resistive Construction.

We trust that this letter meets your needs. If you have any questions, please contact the undersigned.

Sincerely,

Russell Fleischer
Principal
OAA, MAA, AANB, NSAA, AAPEI, ARCHITECT AIBC, AAA, SAA, NWTAA, MRAIC

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix C

Stormwater Calculations

Created By: HH
Checked By: JS
Date: 4/14/2023

Project Title: John St. and South Station St.
Project #: 300054203

Existing Parcel A		
Description	**Area (sq.m)**	**Area (ha)**
Site	2753.4	0.28
Proposed Parcel A		
Description	**Area (sq.m)**	**Area (ha)**
External Site Area	122.1	0.012
Rooftop Area	1645.5	0.165
Green Roof	413.5	0.041
Controlled Hardscape	489.4	0.049
Controlled Landscape	110.0	0.011
Uncontrolled Hardscape	67.4	0.007
Uncontrolled Landscape	27.6	0.003
Total:	**2753.4**	**0.275**
Existing Parcel B		
Description	**Area (sq.m)**	**Area (ha)**
Site	1093.0	0.11
Proposed Parcel B		
External Site Area (Easement in Road)	101.1	0.01
Rooftop Area	483.2	0.048
Controlled Hardscape	422.6	0.042
Controlled Landscape	55.0	0.006
Uncontrolled Hardscape	132.2	0.013
Total:	**1093.0**	0.109

Project:	**John St. and South Station St.**	Prepared by:	**HH**
Task:	**Pre-Development Flows**	Checked by:	**JS**
Date:	**14-Apr-23**	Project no.:	**300054203**

2-year Pre-Development Flow

A	21.8	**Parcel A**
B	0	
C	0.78	
T	0.17	hr

Land Use Description	Runoff Coefficient	Intensity (mm/hr)	Area (ha)	Runoff (L/s)
Site Area	0.50	88.19	0.28	**33.7**
TOTAL			0.28	**33.7**

$$Q_{Allowable\ Release} = \frac{CiA}{0.36}$$

33.7 **L/s**

Project:	**John St. and South Station St.**	Prepared by:	**HH**
Task:	**Pre-Development Flows**	Checked by:	**JS**
Date:	**14-Apr-23**	Project no.:	**300054203**

2-year Pre-Development Flow

A	21.8	**Parcel B**
B	0	
C	0.78	
T	0.17	hr

Land Use Description	Runoff Coefficient	Intensity (mm/hr)	Area (ha)	Runoff (L/s)
Site Area	0.50	88.19	0.11	**13.4**
TOTAL			0.11	**13.4**

$$Q_{Allowable\ Release} = \frac{CiA}{0.36}$$

13.4 **L/s**

Composite Runoff Coefficient Calculations

Post-Development Flow **Parcel A**

Area ID	Area (ha)	RC	Area x RC
Rooftop	0.165	0.90	0.148
Green Roof	0.041	0.50	0.021
Controlled Hardscape	0.049	0.90	0.044
Controlled Landscape	0.011	0.25	0.003
Total:	0.27		0.216

Composite RC: 0.81

Composite Runoff Coefficient Calculations

Post-Development Flow **Parcel B**

Area ID	Area (ha)	RC	Area x RC
Rooftop	0.048	0.90	0.043
Controlled Hardscape	0.042	0.90	0.038
Controlled Landscape	0.006	0.25	0.001
Total:	0.10		0.083

Composite RC: 0.86

Composite Runoff Coefficient Calculations

Post-Development Flow **Parcel B - For Roof Storage Calculations**

Area ID	Area (ha)	RC	Area x RC
Rooftop	0.048	0.90	0.043
Total:	0.0483		0.043

Composite RC: 0.90

Composite Runoff Coefficient Calculations

Post-Development Flow — **Parcel B - For Tank Storage Calculations**

Area ID	Area (ha)	RC	Area x RC
	0.010	0.90	
External Site Area (Easement in Road)			0.009
Controlled Hardscape	0.042	0.90	0.038
Controlled Landscape	0.006	0.25	0.001
Total:	0.06		0.049

Composite RC: 0.84

Project: **John St. and South Station St.**
Task: **Post-Development**
Date: **14-Apr-23**

Prepared by: **HH**
Checked by: **JS**
Project no.: **300054203**

100-year Post-Development Flows

A	59.7	
B	0.0	**Parcel A**
C	0.80	
T	0.17	hr

Land Use Description	Runoff Coefficient	Intensity (mm/hr)	Area (ha)	Runoff (L/s)
Rooftop Area	0.90	250.32	0.165	103.0
Green Roof	0.50	250.32	0.041	14.4
Hardscape	0.90	250.32	0.049	30.6
Landscape	0.25	250.32	0.011	1.9
TOTAL			**0.27**	**149.9**

Uncontrolled Flow				
Uncontrolled Flow	0.90	250.32	0.010	5.9

$$Q_{Allowable\ Release} = \frac{CiA}{0.36}$$

155.8 **L/s**

Project: **John St. and South Station St.**
Task: **Post-Development**
Date: **14-Apr-23**

Prepared by: **HH**
Checked by: **JS**
Project no.: **300054203**

100-year Post-Development Flows

A	59.7	
B	0.0	**Parcel A - External Area**
C	0.80	
T	0.17	hr

Land Use Description	Runoff Coefficient	Intensity (mm/hr)	Area (ha)	Runoff (L/s)
Hardscape	0.90	250.32	0.012	7.6
TOTAL			**0.01**	**7.6**

$$Q_{Allowable\ Release} = \frac{CiA}{0.36}$$

7.6 **L/s**

Project: **John St. and South Station St.**
Task: **Post-Development**
Date: **14-Apr-23**

Prepared by: **HH**
Checked by: **JS**
Project no.: **300054203**

100-year Post-Development Flows

A	59.7	
B	0.0	**Parcel B**
C	0.80	
T	0.17	hr

Land Use Description	Runoff Coefficient	Intensity (mm/hr)	Area (ha)	Runoff (L/s)
Rooftop Area	0.90	250.32	0.048	30.2
Hardscape	0.90	250.32	0.042	26.4
Landscape	0.25	250.32	0.006	1.0
TOTAL			**0.10**	**57.6**

Uncontrolled Flow				
Uncontrolled Flow	0.90	250.32	0.01	8.3

$$Q_{Allowable\ Release} = \frac{CiA}{0.36}$$

65.9 **L/s**

Project:	**John St. and South Station St.**	Prepared by:	**HH**
Task:	**Post-Development**	Checked by:	**JS**
Date:	**14-Apr-23**	Project no.:	**300054203**

100-year Post-Development Flows

A	59.7	
B	0.0	**Parcel B - External Area**
C	0.80	
T	0.17	hr

Land Use Description	Runoff Coefficient	Intensity (mm/hr)	Area (ha)	Runoff (L/s)
Hardscape	0.90	250.32	0.010	6.3
TOTAL			**0.01**	**6.3**

$$Q_{\text{Allowable Release}} = \frac{CiA}{0.36}$$

6.3 **L/s**

Project: John St. and South Station St.
Project No.: 300054203
Modelled By: HH
Date: 2023/04/14

MODIFIED RATIONAL METHOD
POST-DEVELOPMENT CONTROLLED FLOWS
PARCEL A

Rainfall IDF Coefficients	100	-year		
A =	59.7		A =	
C =	-0.800		B =	
			C =	
Area =	0.28	ha	Controlled Site Area Plus External Area to be conveyed	
Runoff Coefficient, C =	0.81			
C*A =	0.23			
Time of Concentration, t_c =	10.0	min		
Storm Duration Increment =	10.0	min		
Target Release Rate =	41.34	L/s	2-Year Pre-Dev Rate plus 100-year Post-Dev Rate for External Area at RC=0.9	
Constant Inflow =	0.00	L/s	Roof Drainage = 42 L/s/ha	
Uncontrolled Outflow =	5.95	L/s		
Max. Allowable Outflow =	35.35	L/s		

Storm Duration (min)	Rainfall Intensity (mm/hr)	Max. Runoff Flow (L/s)	Runoff Volume (m^3)	Released Volume (m^3)	Storage Volume (m^3)	Max. Storage Volume Required (m^3)	Drawdown Time (hrs)
10.0	250.32	156.77	94	21	72.9		
20.0	143.77	90.04	108	32	76.2	76.2	1.29
30.0	103.94	65.10	117	42	74.8		
40.0	82.57	51.72	124	53	71.1		
50.0	69.07	43.26	130	64	66.2		
60.0	59.70	37.39	135	74	60.4		
70.0	52.77	33.05	139	85	54.0		
80.0	47.43	29.70	143	95	47.1		
90.0	43.16	27.03	146	106	39.9		
100.0	39.67	24.85	149	117	32.4		
110.0	36.76	23.02	152	127	24.7		
120.0	34.29	21.47	155	138	16.8		
130.0	32.16	20.14	157	148	8.7		
140.0	30.31	18.98	159	159	0.4		
150.0	28.68	17.96	162	170	0.0		
160.0	27.24	17.06	164	180	0.0		

Project: John St. and South Station St.
Project No.: 300054203
Modelled By: JS
Date: 2023/04/14

MODIFIED RATIONAL METHOD
POST-DEVELOPMENT CONTROLLED FLOWS
PARCEL B

Rainfall IDF Coefficients	100	-year		
A =	59.7		A =	
C =	-0.800		B =	
			C =	
Area =	0.0483	ha	Roof Area	
Runoff Coefficient, C =	0.90			
C*A =	0.04			
Time of Concentration, t_c =	10.0	min		
Storm Duration Increment =	10.0	min		
Target Release Rate =	2.0	L/s	* Rooftop Controlled Flow of 42 L/s/ha	
Constant Inflow =	0.0	L/s		
Uncontrolled Outflow =	0.0	L/s		
Max. Allowable Outflow =	2.0	L/s		

Storm Duration (min)	Rainfall Intensity (mm/hr)	Max. Runoff Flow (L/s)	Runoff Volume (m^3)	Released Volume (m^3)	Storage Volume (m^3)	Max. Storage Volume Required (m^3)	Drawdown Time (hrs)
10.0	250.32	30.24	18	1	16.9		
20.0	143.77	17.37	21	2	19.0		
30.0	103.94	12.56	23	2	20.2		
40.0	82.57	9.98	24	3	20.9		
50.0	69.07	8.34	25	4	21.4		
60.0	59.70	7.21	26	4	21.7		
70.0	52.77	6.38	27	5	21.9		
80.0	47.43	5.73	27	5	22.0		
90.0	43.16	5.21	28	6	22.1	22	6.11
100.0	39.67	4.79	29	7	22.1		
110.0	36.76	4.44	29	7	22.0		
120.0	34.29	4.14	30	8	21.9		
130.0	32.16	3.89	30	9	21.8		
140.0	30.31	3.66	31	9	21.6		
150.0	28.68	3.46	31	10	21.4		
160.0	27.24	3.29	32	10	21.2		

Project: John St. and South Station St.
Project No.: 300054203
Modelled By: HH
Date: 2023/04/14

MODIFIED RATIONAL METHOD
POST-DEVELOPMENT CONTROLLED FLOWS
PARCEL B

Rainfall IDF Coefficients	100	-year		
A =	59.7		A =	
C =	-0.800		B =	
			C =	
Area =	0.06	ha	Controlled Site Area Excluding Roof Plus Easement Area to be conveyed	
Runoff Coefficient, C =	0.84			
C*A =	0.05			
Time of Concentration, t_c =	10.0	min		
Storm Duration Increment =	5.0	min		
Target Release Rate =	19.73	L/s	2-Year Pre-Dev Rate plus 100-year Post-Dev Rate for Easement Area at RC=0.9	
Constant Inflow =	0.00	L/s		
Uncontrolled Outflow =	8.27	L/s		
Max. Allowable Outflow =	11.46	L/s		

Storm Duration (min)	Rainfall Intensity (mm/hr)	Max. Runoff Flow (L/s)	Runoff Volume (m^3)	Runoff Volume from Roof (m3)	Total Runoff Volume (m3)	Released Volume (m^3)	Storage Volume (m^3)	Max. Storage Volume Required (m^3)	Drawdown Time (hrs)
10.0	250.32	33.73	20	1	21	7	14.6		
15.0	180.98	24.39	22	2	24	9	15.2		
20.0	143.77	19.37	23	2	26	10	15.4	15.4	1.04
25.0	120.27	16.21	24	3	27	12	15.3		
30.0	103.94	14.01	25	4	29	14	15.1		
35.0	91.88	12.38	26	4	30	15	14.8		
40.0	82.57	11.13	27	5	32	17	14.4		
45.0	75.15	10.13	27	5	33	19	13.9		
50.0	69.07	9.31	28	6	34	21	13.4		
55.0	64.00	8.62	28	7	35	22	12.8		
60.0	59.70	8.04	29	7	36	24	12.2		
65.0	56.00	7.55	29	8	37	26	11.6		
70.0	52.77	7.11	30	9	38	27	10.9		
75.0	49.94	6.73	30	9	39	29	10.2		
80.0	47.43	6.39	31	10	40	31	9.5		
85.0	45.18	6.09	31	10	41	33	8.7		

Project:	**John St. and South Station St.**	Prepared by:	**HH**
Task:	**Orifice Sizing**	Checked by:	**JS**
Date:	**14-Apr-23**	Project no.:	**300054203.00**

Parcel A:	**Orifice Tube**	**Control MH1**			
Catch Basin top =		127.21			
Pipe Outlet Invert =		125.71			
Ponding Height at CB=		0			
Height =		1.45	m		
C =		0.84			
$d_{orifice}$ =		**100.25**	mm (minimum)		**DR7.3 125 mm**
$r_{orifice}$ =		50.125	mm		
$Q_{Orifice}$ =		**0.0353**	m^3/s	**35.35**	L/s

$Q = CA(\sqrt{2gh})$

Discharge Coefficients Plate = 0.62 ; Tube = 0.84 ; Tube w/ 90deg transition = 0.71

Project: **John St. and South Station St.**		Prepared by: **JS**
Task: **Retention Volume Calculations**		Checked by: **JS**
Date: **14-Apr-23**		Project no.: **300054203**

Retention Volume Calculations
Parcel A

Redevelopment Area		
Area =	2753	m^2
Rainfall depth =	5.00	mm
Required volume =	**13.77**	m^3

Initial Abstraction Calculations			
	Infiltration (m)	Area (m2)	Volume (m3)
IMPERVIOUS ROOF	0.001	1645	1.65
GREEN ROOF	0.005	414	2.07
HARDSCAPE	0.001	557	0.56
LANDSCAPE	0.005	138	0.69
Total		**2753**	**4.96**

Required retention volume = (Total vol) - (Total IA)

8.81

Project: **John St. and South Station St.**		Prepared by: **JS**
Task: **Retention Volume Calculations**		Checked by: **JS**
Date: **14-Apr-23**		Project no.: **300054203**

Retention Volume Calculations
Parcel B

Redevelopment Area		
Area =	1093	m^2
Rainfall depth =	5.00	mm
Required volume =	**5.46**	m^3

Initial Abstraction Calculations			
	Infiltration (m)	Area (m2)	Volume (m3)
IMPERVIOUS ROOF	0.001	483	0.48
HARDSCAPE	0.001	555	0.55
LANDSCAPE	0.005	55	0.28
Total		**1093**	**1.31**

Required retention volume = (Total vol) - (Total IA)

4.15

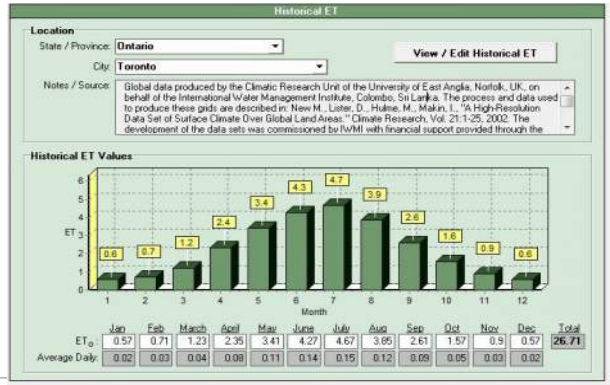
CIS
Creative Irrigation Solutions Inc.

The following is the water requirement calculation for **South Station Project, Toronto Ont**. An irrigations system will be design to distribute the water required to maintain plant life. The system, as well as the calculations, take into consideration the plant material and the different plant species water requirements.

Along with of the irrigation design, a pumping system will be and specified designed (by others) with the capacity to deliver the required flow rates and pressure to the all Points of Connections located on the irrigation plans.

This document will verify the irrigation system's portion in the water management process. The formula seen below is used world wide to determine landscape water requirements. The Landscape Coefficient is base on the plant material and in conjunction with the LEED standards and calculating system (Standard LEED Calculator). The Distribution Uniformity figures are base on the same criteria as the Landscape Coefficient and are in line with the manufactures data sheet claims . The Effective Rainfall is a constant % used in all Water Requirement calculations.

The Reference Evapotranspiration rate is based on the rates used by Rainbird for all their E.T. based Controllers in the City of Toronto and comes from Global data produced by the Climatic Research Unit of the University of East Anglia, Norfolk, UK, on behalf of the International Water Management Institute, Colombo, Sri Lanka. The process and data used to produce these grids are described in: New M., Lister, D., Hulme, M., Makin, I., "A High-Resolution Data Set of Surface Climate Over Global Land Areas." Climate Research, Vol. 21:1-25, 2002. The development of the data sets was commissioned by IWMI with financial support provided through the United States Assistance International Development (USAID) and the Official Development Assistance of the Government of Japan. The station data used in the data set have been collated over many years at the Climatic Research.



Water Requirement Calculations for South Station Project, Toronto Ont

$$WR = \frac{((ET0 \times KL) - Re) \times A}{DU \times EWM \times CU}$$

WR = Water Requirement
ET0 = Reference Evapotranspiration
KL = Landscape Coefficient
CU = Constant to Arrive at 1000's of Gallons
Re = Effective Rainfall
A = Area in Acres
DU = Distribution Uniformity

Total Combined WR in Cubic Metres

May	56.96
June	82.22
July	99.06
August	82.22
September	56.96
Total WR M^3:	377.43
Average Daily Water Use (153 Days)	2.47
Average 72 Hour Water Use	7.40

ET◦ (reference in mm)	ET◦ (reference in inches)	K_L Landscape Coefficent	Re.(50% effctive rainfall in mm	July Base Re.(50% effctive rainfa in inches	Area M^2	Area (Acres)	DU (Distributio Uniformity)	EWM (water manger efficiency-gooc	CU (convertion factor 1000's	WR (water requiren in 1000's of Gallons)	WR (in M^3)
118.618	4.67	0.7	33.02	1.30	699.82	0.172929	0.75	0.85	0.0368	14.51	54.94
118.618	4.67	0.65	33.02	1.30	294.57	0.07279	0.75	0.85	0.0368	5.38	20.38
118.618	4.67	0.65	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
118.618	4.67	0.65	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
118.618	4.67	0.65	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
118.618	4.67	0.77	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
118.618	4.67	0.65	33.02	1.30	411.58	0.101704	0.9	0.85	0.0368	6.27	23.73

May

Irrigation Area	% (persentage 0f July Referance)	ET$_o$ (reference in mm)	ET$_o$ (reference in inches)	K_L Landscape Coefficent	Re.(50% effctive rainf in mm	Re.(50% effctive rainfal in inches	Area M^2	Area (Acres)	DU (Distribution Uniformity)	EWM (water manger efficiency-good	CU (convertion factor 1000's	WR (water requirement in 1000's of Gallons)	WR (in M^3)
Trees	75%	88.9635	3.5025	0.7	33.02	1.30	699.82	0.1729291	0.75	0.85	0.0368	8.49	32.14
Mixed P	75%	88.9635	3.5025	0.65	33.02	1.30	294.57	0.0727898	0.75	0.85	0.0368	3.03	11.47
Planting	75%	88.9635	3.5025	0.65	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
Shrubs	75%	88.9635	3.5025	0.65	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
Grn/Cov	75%	88.9635	3.5025	0.65	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
Sod	75%	88.9635	3.5025	0.77	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
In.Gr Roof	75%	88.9635	3.5025	0.65	33.02	1.30	411.58	0.1017035	0.9	0.85	0.0368	3.53	13.36
												Total for Month	56.96
												Scheduled Irrigation Flow Per 72 Hours in M^3:	5.51

June

Irrigation Area	% (persentage 0f July Referance)	ET$_o$ (reference in mm)	ET$_o$ (reference in inches)	K_L Landscape Coefficent	Re.(50% effctive rainf in mm	Re.(50% effctive rainfal in inches	Area M^2	Area (Acres)	DU (Distribution Uniformity)	EWM (water manger efficiency-good	CU (convertion factor 1000's	WR (water requirement in 1000's of Gallons)	WR (in M^3)
Trees	90%	106.7562	4.203	0.7	33.02	1.30	699.82	0.1729291	0.75	0.85	0.0368	12.10	45.82
Mixed P	90%	106.7562	4.203	0.65	33.02	1.30	294.57	0.0727898	0.75	0.85	0.0368	4.44	16.82
Planting	90%	106.7562	4.203	0.65	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
Shrubs	90%	106.7562	4.203	0.65	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
Grn/Cov	90%	106.7562	4.203	0.65	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
Sod	90%	106.7562	4.203	0.77	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
In.Gr Roof	90%	106.7562	4.203	0.65	33.02	1.30	411.58	0.1017035	0.9	0.85	0.0368	5.17	19.58
												Total for Month	82.22
												Scheduled Irrigation Flow Per 72 Hours in M^3:	8.22

July

Irrigation Area	% (persentage 0f July Referance)	ET$_o$ (reference in mm)	ET$_o$ (reference in inches)	K_L Landscape Coefficent	Re.(50% effctive rainf in mm	Re.(50% effctive rainfal in inches	Area M^2	Area (Acres)	DU (Distribution Uniformity)	EWM (water manger efficiency-good	CU (convertion factor 1000's	WR (water requirement in 1000's of Gallons)	WR (in M^3)
Trees	100%	118.618	4.67	0.7	33.02	1.30	699.82	0.1729291	0.75	0.85	0.0368	14.51	54.94
Mixed P	100%	118.618	4.67	0.65	33.02	1.30	294.57	0.0727898	0.75	0.85	0.0368	5.38	20.38
Planting	100%	118.618	4.67	0.65	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
Shrubs	100%	118.618	4.67	0.65	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
Grn/Cov	100%	118.618	4.67	0.65	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
Sod	100%	118.618	4.67	0.77	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
In.Gr Roof	100%	118.618	4.67	0.65	33.02	1.30	411.58	0.1017035	0.9	0.85	0.0368	6.27	23.73

												Total for Month	99.06
												Scheduled Irrigation Flow Per 72 Hours in M^3:	9.59
Irrigation Area	% (persentage 0f July Referance)	ET。 (reference in mm)	ET。 (reference in inches)	K_L Landscape Coefficent	Re.(50% effctive rainf in mm	August Re.(50% effctive rainfal in inches	Area M^2	Area (Acres)	DU (Distribution Uniformity)	EWM (water manger efficiency-good	CU (convertion factor 1000's	WR (water requirement in 1000's of Gallons)	WR (in M^3)
Trees	90%	106.7562	4.203	0.7	33.02	1.30	699.82	0.1729291	0.75	0.85	0.0368	12.10	45.82
Mixed P	90%	106.7562	4.203	0.65	33.02	1.30	294.57	0.0727898	0.75	0.85	0.0368	4.44	16.82
Planting	90%	106.7562	4.203	0.65	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
Shrubs	90%	106.7562	4.203	0.65	33.02	1.30	0.00	0.0000	0.75	0.85	0.0368	0.00	0.00
Grn/Cov	90%	106.7562	4.203	0.65	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
Sod	90%	106.7562	4.203	0.77	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
In.Gr Roof	90%	106.7562	4.203	0.65	33.02	1.30	411.58	0.1017035	0.9	0.85	0.0368	5.17	19.58
												Total for Month	82.22
												Scheduled Irrigation Flow Per 72 Hours in M^3:	7.96

Irrigation Area	% (persentage 0f July Referance)	ET。 (reference in mm)	ET。 (reference in inches)	K_L Landscape Coefficent	Re.(50% effctive rainf in mm	September Re.(50% effctive rainfal in inches	Area M^2	Area (Acres)	DU (Distribution Uniformity)	EWM (water manger efficiency-good	CU (convertion factor 1000's	WR (water requirement in 1000's of Gallons)	WR (in M^3)
Trees	75%	88.9635	3.5025	0.7	33.02	1.30	699.82	0.1729291	0.75	0.85	0.0368	8.49	32.14
Mixed P	75%	88.9635	3.5025	0.65	33.02	1.30	294.57	0.0727898	0.75	0.85	0.0368	3.03	11.47
Planting	75%	88.9635	3.5025	0.65	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
Shrubs	75%	88.9635	3.5025	0.65	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
Grn/Cov	75%	88.9635	3.5025	0.65	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
Sod	75%	88.9635	3.5025	0.77	33.02	1.30	0.00	0	0.75	0.85	0.0368	0.00	0.00
In.Gr Roof	75%	88.9635	3.5025	0.65	33.02	1.30	411.58	0.1017035	0.9	0.85	0.0368	3.53	13.36
												Total for Month	56.96
												Scheduled Irrigation Flow Per 72 Hours in M^3:	5.70

Submitted by: Joe Carter 13-Apr-23

Joseph Carter
Creative Irrigation Solutions Inc.

Conserving Water is our Business. Serving Clients is our Focus. ®

Stormceptor® EF Sizing Report

STORMCEPTOR®
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

04/18/2023

Province:	Ontario
City:	Toronto
Nearest Rainfall Station:	TORONTO CITY
Climate Station Id:	6158355
Years of Rainfall Data:	20

Site Name:	Parcel A OGS

Drainage Area (ha):	0.28
% Imperviousness:	100.00

Runoff Coefficient 'c': 0.90

Particle Size Distribution:	CA ETV
Target TSS Removal (%):	60.0

Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	8.14
Oil / Fuel Spill Risk Site?	No
Upstream Flow Control?	Yes
Upstream Orifice Control Flow Rate to Stormceptor (L/s):	35.35
Peak Conveyance (maximum) Flow Rate (L/s):	
Site Sediment Transport Rate (kg/ha/yr):	

Project Name:	John and South Station Street - Parcel A
Project Number:	054203
Designer Name:	Jennifer Scherer
Designer Company:	R.J. Burnside & Associates Limited
Designer Email:	jennifer.scherer@rjburnside.com
Designer Phone:	289-545-1055
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EF4	61
EF6	66
EF8	68
EF10	69
EF12	70

Recommended Stormceptor EF Model: EF4

Estimated Net Annual Sediment (TSS) Load Reduction (%): 61

Water Quality Runoff Volume Capture (%): > 90

THIRD-PARTY TESTING AND VERIFICATION

►**Stormceptor® EF and Stormceptor® EFO** are the latest evolutions in the Stormceptor® oil-grit separator (OGS) technology series, and are designed to remove a wide variety of pollutants from stormwater and snowmelt runoff. These technologies have been third-party tested in accordance with the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** and performance has been third-party verified in accordance with the **ISO 14034 Environmental Technology Verification (ETV)** protocol.

PERFORMANCE

►**Stormceptor® EF and EFO** remove stormwater pollutants through gravity separation and floatation, and feature a patent-pending design that generates positive removal of total suspended solids (TSS) throughout each storm event, including high-intensity storms. Captured pollutants include sediment, free oils, and sediment-bound pollutants such as nutrients, heavy metals, and petroleum hydrocarbons. Stormceptor is sized to remove a high level of TSS from the frequent rainfall events that contribute the vast majority of annual runoff volume and pollutant load. The technology incorporates an internal bypass to convey excessive stormwater flows from high-intensity storms through the device without resuspension and washout (scour) of previously captured pollutants. Proper routine maintenance ensures high pollutant removal performance and protection of downstream waterwavs.

PARTICLE SIZE DISTRIBUTION (PSD)

►The **Canadian ETV PSD** shown in the table below was used, or in part, for this sizing. This is the identical PSD that is referenced in the Canadian ETV ***Procedure for Laboratory Testing of Oil-Grit Separators*** for both sediment removal testing and scour testing. The Canadian ETV PSD contains a wide range of particle sizes in the sand and silt fractions, and is considered reasonably representative of the particle size fractions found in typical urban stormwater runoff.

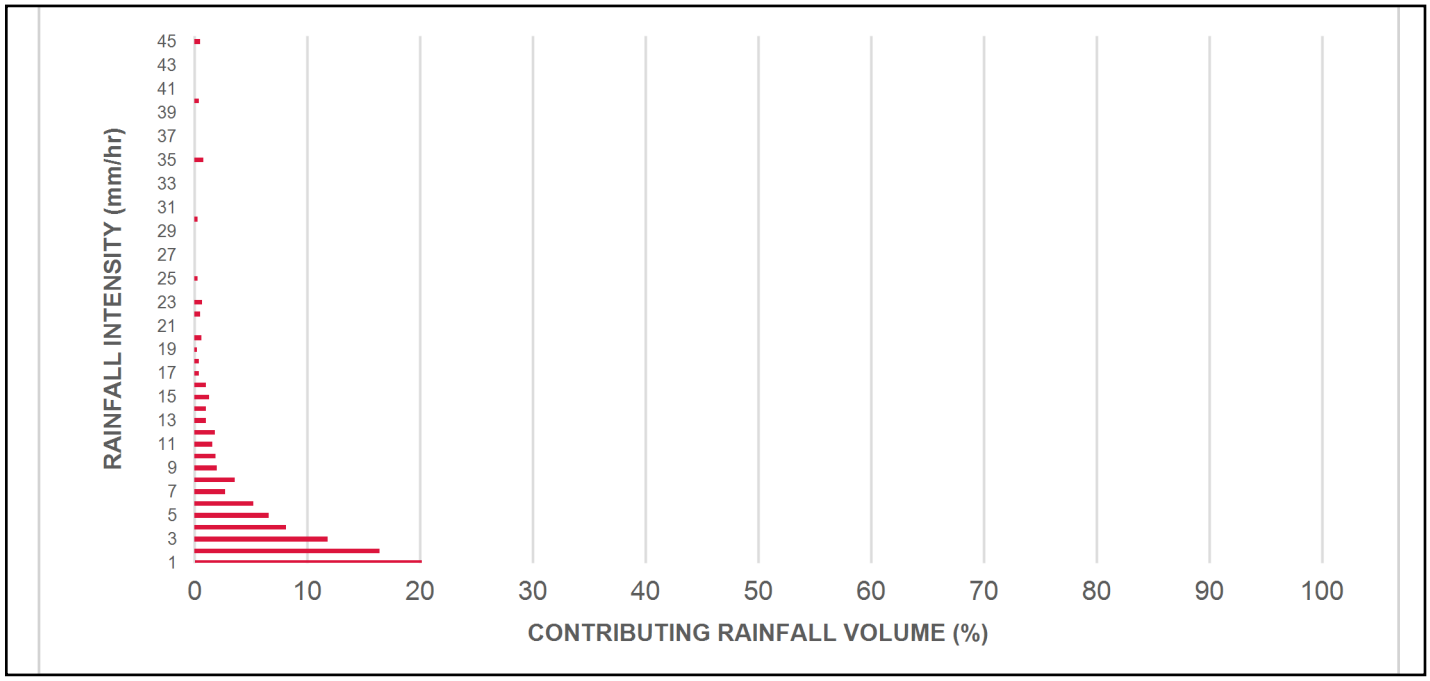
Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

Upstream Flow Controlled Results

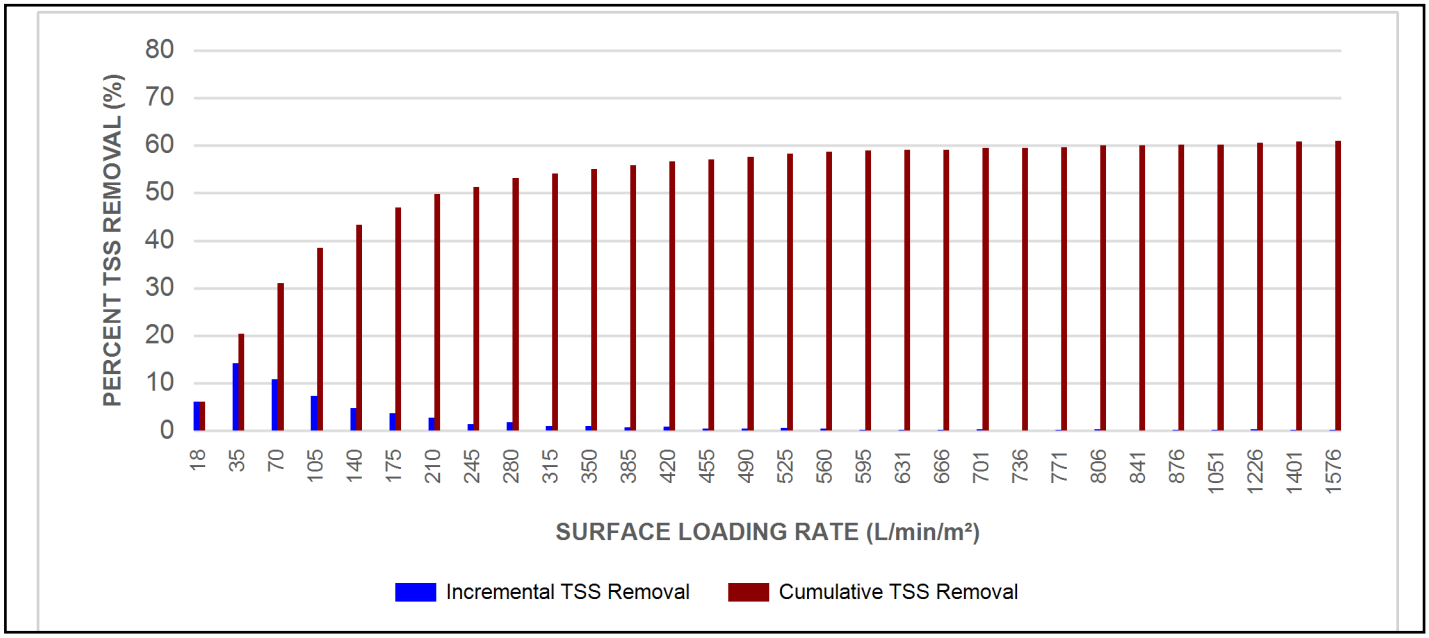
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.5	8.7	8.7	0.35	21.0	18.0	70	6.1	6.1
1	20.2	28.9	0.70	42.0	35.0	70	14.2	20.4
2	16.4	45.3	1.40	84.0	70.0	66	10.8	31.1
3	11.8	57.1	2.10	126.0	105.0	62	7.3	38.5
4	8.1	65.2	2.80	168.0	140.0	59	4.8	43.3
5	6.6	71.9	3.50	210.0	175.0	57	3.8	47.0
6	5.2	77.1	4.20	252.0	210.0	54	2.8	49.8
7	2.7	79.8	4.90	294.0	245.0	53	1.4	51.2
8	3.6	83.4	5.60	336.0	280.0	52	1.9	53.1
9	2.0	85.4	6.31	378.0	315.0	51	1.0	54.1
10	1.9	87.3	7.01	420.0	350.0	50	0.9	55.0
11	1.6	88.9	7.71	462.0	385.0	49	0.8	55.8
12	1.8	90.7	8.41	504.0	420.0	48	0.9	56.7
13	1.0	91.6	9.11	546.0	455.0	48	0.5	57.1
14	1.0	92.7	9.81	588.0	490.0	47	0.5	57.6
15	1.3	93.9	10.51	631.0	525.0	47	0.6	58.2
16	1.0	95.0	11.21	673.0	560.0	46	0.5	58.7
17	0.4	95.3	11.91	715.0	595.0	46	0.2	58.9
18	0.4	95.7	12.61	757.0	631.0	46	0.2	59.0
19	0.2	95.9	13.31	799.0	666.0	46	0.1	59.1
20	0.6	96.5	14.01	841.0	701.0	46	0.3	59.4
21	0.0	96.5	14.71	883.0	736.0	45	0.0	59.4
22	0.5	97.0	15.41	925.0	771.0	45	0.2	59.6
23	0.7	97.7	16.11	967.0	806.0	45	0.3	60.0
24	0.0	97.7	16.81	1009.0	841.0	45	0.0	60.0
25	0.3	98.0	17.51	1051.0	876.0	45	0.1	60.1
30	0.3	98.3	21.02	1261.0	1051.0	45	0.1	60.2
35	0.8	99.1	24.52	1471.0	1226.0	47	0.4	60.6
40	0.4	99.5	28.02	1681.0	1401.0	49	0.2	60.8
45	0.5	100.0	31.53	1892.0	1576.0	44	0.2	61.0
							Estimated Net Annual Sediment (TSS) Load Reduction =	**61 %**

Climate Station ID: 6158355 *Years of Rainfall Data*: 20

RAINFALL DATA FROM TORONTO CITY RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

SCOUR PREVENTION AND ONLINE CONFIGURATION

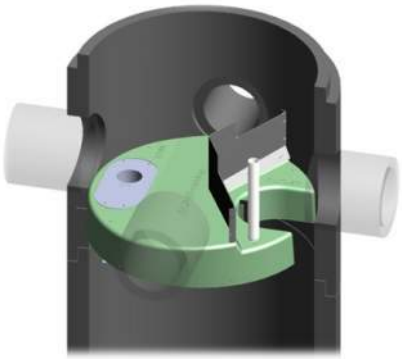
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test performance has been third-party verified in accordance with the ISO 14034 ETV protocol. As a result, Stormceptor EF and EFO are approved for online installation, eliminating the need for costly additional bypass structures, piping, and installation expense.

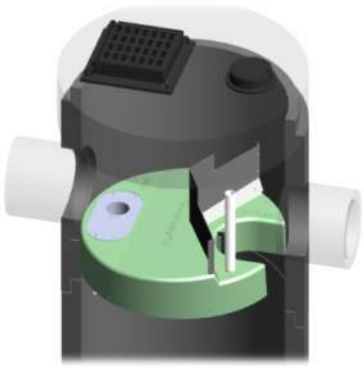
DESIGN FLEXIBILITY

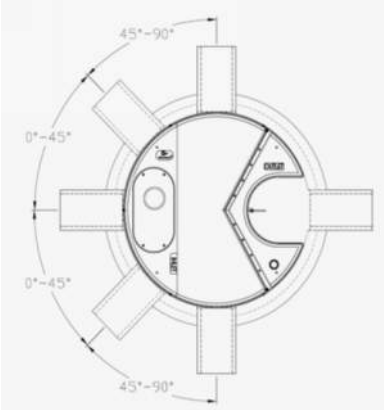
►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle, and can be modified to ensure performance in submerged conditions.

OIL CAPTURE AND RETENTION

►While Stormceptor® EF will capture and retain oil from dry weather spills and low intensity runoff, **Stormceptor® EFO** has demonstrated superior oil capture and greater than 99% oil retention in third-party testing according to the light liquid re-entrainment testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**. Stormceptor EFO is recommended for sites where oil capture and retention is a requirement.







INLET-TO-OUTLET DROP

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.
0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.
45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure. The applicable K value for calculating minor losses through the unit is 1.1. For submerged conditions the applicable K value is 3.0.

Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft^3)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

*Increased sump depth may be added to increase sediment storage capacity
** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft^3)

Feature	Benefit	Feature Appeals To
Patent-pending enhanced flow treatment and scour prevention technology	Superior, verified third-party performance	Regulator, Specifying & Design Engineer
Third-party verified light liquid capture and retention for EFO version	Proven performance for fuel/oil hotspot locations	Regulator, Specifying & Design Engineer, Site Owner
Functions as bend, junction or inlet structure	Design flexibility	Specifying & Design Engineer
Minimal drop between inlet and outlet	Site installation ease	Contractor
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade	Maintenance Contractor & Site Owner

STANDARD STORMCEPTOR EF/EFO DRAWINGS

For standard details, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

For specifications, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

Table of TSS Removal vs Surface Loading Rate Based on Third-Party Test Results
Stormceptor® EF

SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL
1	70	660	46	1320	48	1980	35
30	70	690	46	1350	48	2010	34
60	67	720	45	1380	49	2040	34
90	63	750	45	1410	49	2070	33
120	61	780	45	1440	48	2100	33
150	58	810	45	1470	47	2130	32
180	56	840	45	1500	46	2160	32
210	54	870	45	1530	45	2190	31
240	53	900	45	1560	44	2220	31
270	52	930	44	1590	43	2250	30
300	51	960	44	1620	42	2280	30
330	50	990	44	1650	42	2310	30
360	49	1020	44	1680	41	2340	29
390	48	1050	45	1710	40	2370	29
420	48	1080	45	1740	39	2400	29
450	48	1110	45	1770	39	2430	28
480	47	1140	46	1800	38	2460	28
510	47	1170	46	1830	37	2490	28
540	47	1200	47	1860	37	2520	27
570	46	1230	47	1890	36	2550	27
600	46	1260	47	1920	36	2580	27
630	46	1290	48	1950	35		

STANDARD PERFORMANCE SPECIFICATION FOR "OIL GRIT SEPARATOR" (OGS) STORMWATER QUALITY TREATMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The **minimum** sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1

4 ft (1219 mm) Diameter OGS Units:	1.19 m^3 sediment / 265 L oil
6 ft (1829 mm) Diameter OGS Units:	3.48 m^3 sediment / 609 L oil
8 ft (2438 mm) Diameter OGS Units:	8.78 m^3 sediment / 1,071 L oil
10 ft (3048 mm) Diameter OGS Units:	17.78 m^3 sediment / 1,673 L oil
12 ft (3657 mm) Diameter OGS Units:	31.23 m^3 sediment / 2,476 L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing of the OGS shall be determined by use of a minimum ten (10) years of local historical rainfall data provided by Environment Canada. Sizing shall also be determined by use of the sediment removal performance data derived from the ISO 14034 ETV third-party verified laboratory testing data from testing conducted in accordance with the Canadian ETV protocol Procedure for Laboratory Testing of Oil-Grit Separators, as follows:

3.2.1 Sediment removal efficiency for a given surface loading rate and its associated flow rate shall be based on sediment removal efficiency demonstrated at the seven (7) tested surface loading rates specified in the protocol, ranging 40 L/min/m^2 to 1400 L/min/m^2, and as stated in the ISO 14034 ETV Verification Statement for the OGS device.

3.2.2 Sediment removal efficiency for surface loading rates between 40 L/min/m^2 and 1400 L/min/m^2 shall be based on linear interpolation of data between consecutive tested surface loading rates.

3.2.3 Sediment removal efficiency for surface loading rates less than the lowest tested surface loading rate of 40 L/min/m^2 shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m^2. No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m^2.

3.2.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m^2 shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m^2, and shall be calculated using a simple proportioning formula, with 1400 L/min/m^2 in the numerator and the higher surface loading rate in the denominator, and multiplying the resulting fraction times the sediment removal efficiency at 1400 L/min/m^2.

The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m^2.

TSS Removal Efficiency - Treatment Train

Catchment Area Description	Treated Drainage Area (m2)	RC	% Impervious	Annual TSS Loading (m^3/ha)*	Annual TSS Loading (m^3)	Removal Efficiency						
						Step 1		Step 2		Step 3		Total Efficiency
						Surface type**	TSS Remaining (m^3)	Oil/Grit Separator	TSS Remaining (m^3)	TSS Removal Using Runoff Reduction***	TSS Remaining (m^3)	
Controlled Hardscape	489.4	0.90	100%	4.8	0.23	0%	0.23	50%	0.12	50%	0.06	**75%**
Controlled Landscape	110.0	0.25	7%	0.001	0.00	80%	0.00	50%	0.00	50%	0.00	**95%**
Rooftop	1645.5	0.90	100%	4.8	0.79	80%	0.16	50%	0.08	50%	0.04	**95%**
Green Roof	413.5	0.50	43%	1.1	0.05	80%	0.01	50%	0.00	50%	0.00	**95%**
Uncontrolled Landscape	27.6	0.25	7%	0.001	0.00	80%	0.00	0%	0.00	0%	0.00	**80%**
Uncontrolled Hardscape	67.4	0.90	100%	4.8	0.03	0%	0.03	0%	0.03	0%	0.03	**0%**
Total	**2753.4**				**1.10**		**0.43**		**0.23**		**0.13**	**88%**

* As per Table 6.3 Annual Sediment Loadings (shown below) in the SWM Planning & Design Manual, MOE, 2003

** As per City of Toronto standards (shown below), the TSS removal rates shown above can be applied

***Runoff reduction using 5mm retention, based on WWFMG 50% of rainfall will be infiltrated on site and removed as runoff by annually removing the 5mm event

Table 6.3: Annual Sediment Loadings

Catchment Imperviousness	Annual Loading (kg/ha)	Wet Density (kg/m^3)	Annual Loading (m^3/ha)
35%	770	1,230	0.6
55%	2,300	1,230	1.9
70%	3,495	1,230	2.8
85%	4,680	1,230	3.8

7% Impervious Extrapolated to be 0.001 m^3/ha

43% Impervious Extrapolated to be 1.1 m^3/ha

100% ImperviousExtrapolated to be 4.8 m^3/ha

Table Provided by the City of Toronto:

Surface Type	Initial Abstraction	TSS Removal	Runoff Coefficient
Impervious roof	1mm	80%	0.90
Asphalt pavement	1mm	0%	0.90
Landscape	5mm	80%	0.25
Green Roof	7mm max for intensive roofs otherwise 5mm	80%	0.45-0.5
Permeable Pavers	5mm	80% with storage bed otherwise 50%	0.40
Concrete pavers	1mm	0%	0.9
Grassed swale	5mm	50% for a min length of 16m	0.25

Stormceptor

FORTERRA

Stormceptor® EF Sizing Report

STORMCEPTOR®
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

04/18/2023

Province:	Ontario
City:	Toronto
Nearest Rainfall Station:	TORONTO CITY
Climate Station Id:	6158355
Years of Rainfall Data:	20

Site Name:	Parcel B

Drainage Area (ha):	0.11
% Imperviousness:	100.00

Runoff Coefficient 'c': 0.90

Particle Size Distribution:	CA ETV
Target TSS Removal (%):	60.0

Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	3.20
Oil / Fuel Spill Risk Site?	No
Upstream Flow Control?	Yes
Upstream Orifice Control Flow Rate to Stormceptor (L/s):	19.76
Peak Conveyance (maximum) Flow Rate (L/s):	
Site Sediment Transport Rate (kg/ha/yr):	

Project Name:	John and South Station Street - Parcel B
Project Number:	054203
Designer Name:	Jennifer Scherer
Designer Company:	R.J. Burnside & Associates Limited
Designer Email:	jennifer.scherer@rjburnside.com
Designer Phone:	289-545-1055
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EF4	67
EF6	69
EF8	70
EF10	70
EF12	70

Recommended Stormceptor EF Model: EF4

Estimated Net Annual Sediment (TSS) Load Reduction (%): 67

Water Quality Runoff Volume Capture (%): > 90

imbrium

THIRD-PARTY TESTING AND VERIFICATION

►**Stormceptor® EF and Stormceptor® EFO** are the latest evolutions in the Stormceptor® oil-grit separator (OGS) technology series, and are designed to remove a wide variety of pollutants from stormwater and snowmelt runoff. These technologies have been third-party tested in accordance with the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** and performance has been third-party verified in accordance with the **ISO 14034 Environmental Technology Verification (ETV)** protocol.

PERFORMANCE

►**Stormceptor® EF and EFO** remove stormwater pollutants through gravity separation and floatation, and feature a patent-pending design that generates positive removal of total suspended solids (TSS) throughout each storm event, including high-intensity storms. Captured pollutants include sediment, free oils, and sediment-bound pollutants such as nutrients, heavy metals, and petroleum hydrocarbons. Stormceptor is sized to remove a high level of TSS from the frequent rainfall events that contribute the vast majority of annual runoff volume and pollutant load. The technology incorporates an internal bypass to convey excessive stormwater flows from high-intensity storms through the device without resuspension and washout (scour) of previously captured pollutants. Proper routine maintenance ensures high pollutant removal performance and protection of downstream waterwavs.

PARTICLE SIZE DISTRIBUTION (PSD)

►The **Canadian ETV PSD** shown in the table below was used, or in part, for this sizing. This is the identical PSD that is referenced in the Canadian ETV ***Procedure for Laboratory Testing of Oil-Grit Separators*** for both sediment removal testing and scour testing. The Canadian ETV PSD contains a wide range of particle sizes in the sand and silt fractions, and is considered reasonably representative of the particle size fractions found in typical urban stormwater runoff.

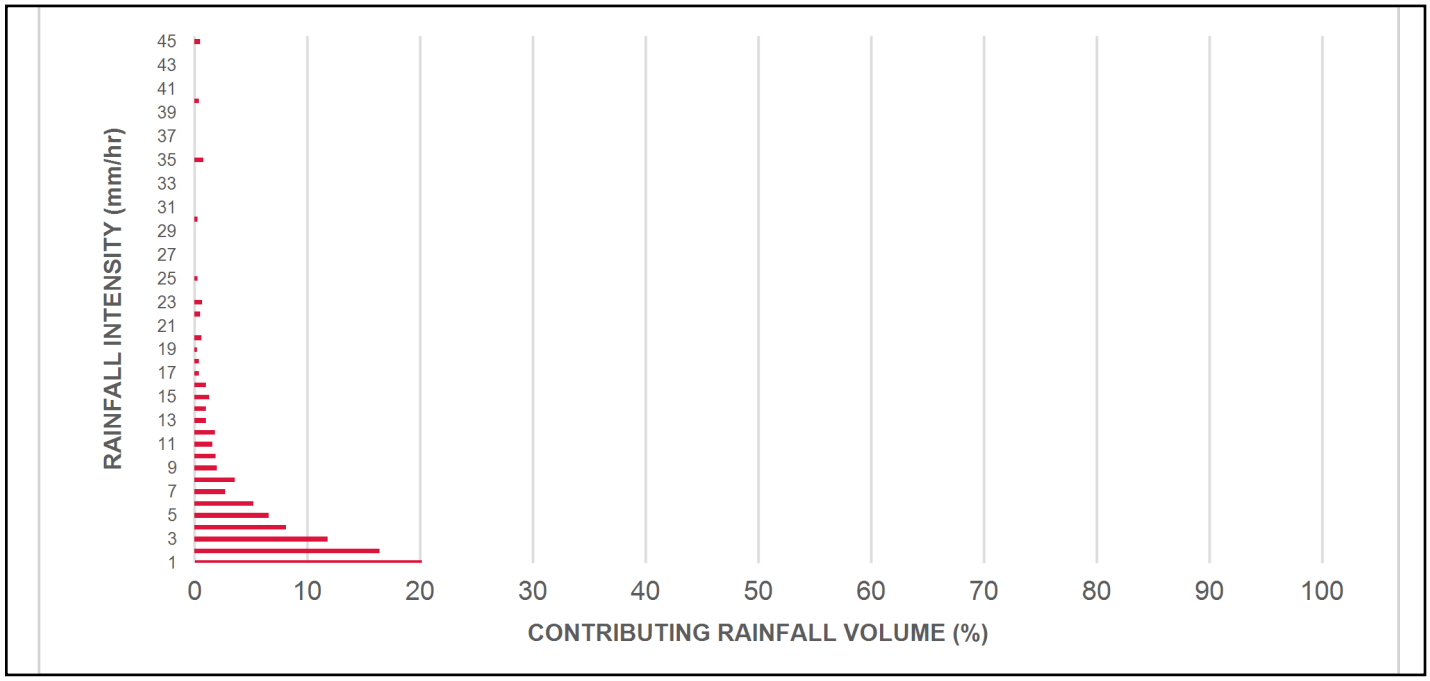
Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

Upstream Flow Controlled Results

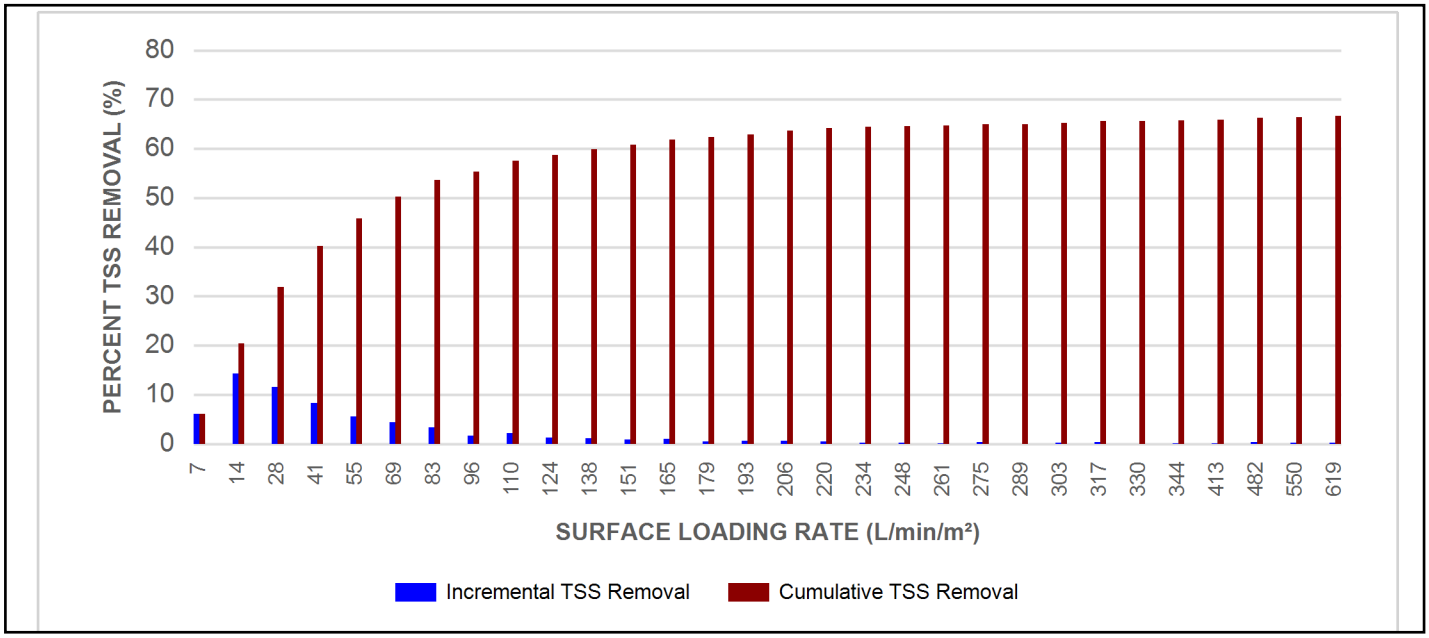
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.5	8.7	8.7	0.14	8.0	7.0	70	6.1	6.1
1	20.2	28.9	0.28	17.0	14.0	70	14.2	20.4
2	16.4	45.3	0.55	33.0	28.0	70	11.6	31.9
3	11.8	57.1	0.83	50.0	41.0	70	8.3	40.2
4	8.1	65.2	1.10	66.0	55.0	69	5.6	45.8
5	6.6	71.9	1.38	83.0	69.0	67	4.5	50.3
6	5.2	77.1	1.65	99.0	83.0	64	3.4	53.6
7	2.7	79.8	1.93	116.0	96.0	63	1.7	55.3
8	3.6	83.4	2.20	132.0	110.0	62	2.2	57.5
9	2.0	85.4	2.48	149.0	124.0	61	1.2	58.7
10	1.9	87.3	2.75	165.0	138.0	60	1.1	59.9
11	1.6	88.9	3.03	182.0	151.0	58	0.9	60.8
12	1.8	90.7	3.30	198.0	165.0	57	1.0	61.8
13	1.0	91.6	3.58	215.0	179.0	57	0.5	62.4
14	1.0	92.7	3.85	231.0	193.0	55	0.6	62.9
15	1.3	93.9	4.13	248.0	206.0	54	0.7	63.6
16	1.0	95.0	4.40	264.0	220.0	53	0.5	64.2
17	0.4	95.3	4.68	281.0	234.0	53	0.2	64.4
18	0.4	95.7	4.95	297.0	248.0	53	0.2	64.6
19	0.2	95.9	5.23	314.0	261.0	52	0.1	64.7
20	0.6	96.5	5.50	330.0	275.0	52	0.3	65.0
21	0.0	96.5	5.78	347.0	289.0	52	0.0	65.0
22	0.5	97.0	6.05	363.0	303.0	51	0.2	65.2
23	0.7	97.7	6.33	380.0	317.0	51	0.4	65.6
24	0.0	97.7	6.61	396.0	330.0	50	0.0	65.6
25	0.3	98.0	6.88	413.0	344.0	50	0.1	65.7
30	0.3	98.3	8.26	495.0	413.0	48	0.1	65.9
35	0.8	99.1	9.63	578.0	482.0	47	0.4	66.2
40	0.4	99.5	11.01	661.0	550.0	47	0.2	66.4
45	0.5	100.0	12.38	743.0	619.0	46	0.2	66.7
Estimated Net Annual Sediment (TSS) Load Reduction =								**67 %**

Climate Station ID: 6158355 *Years of Rainfall Data*: 20

RAINFALL DATA FROM TORONTO CITY RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

SCOUR PREVENTION AND ONLINE CONFIGURATION

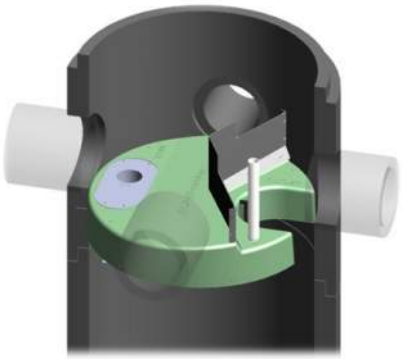
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test performance has been third-party verified in accordance with the ISO 14034 ETV protocol. As a result, Stormceptor EF and EFO are approved for online installation, eliminating the need for costly additional bypass structures, piping, and installation expense.

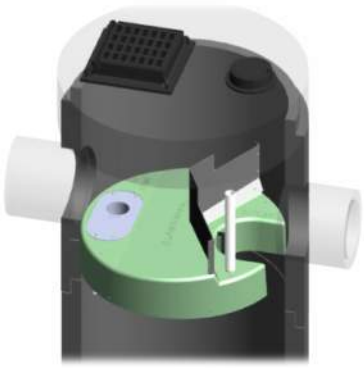
DESIGN FLEXIBILITY

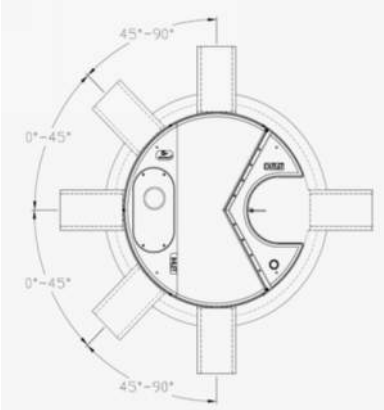
►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle, and can be modified to ensure performance in submerged conditions.

OIL CAPTURE AND RETENTION

►While Stormceptor® EF will capture and retain oil from dry weather spills and low intensity runoff, **Stormceptor® EFO** has demonstrated superior oil capture and greater than 99% oil retention in third-party testing according to the light liquid re-entrainment testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**. Stormceptor EFO is recommended for sites where oil capture and retention is a requirement.







INLET-TO-OUTLET DROP

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.
0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.
45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure. The applicable K value for calculating minor losses through the unit is 1.1. For submerged conditions the applicable K value is 3.0.

Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft^3)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

*Increased sump depth may be added to increase sediment storage capacity
** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft^3)

Feature	Benefit	Feature Appeals To
Patent-pending enhanced flow treatment and scour prevention technology	Superior, verified third-party performance	Regulator, Specifying & Design Engineer
Third-party verified light liquid capture and retention for EFO version	Proven performance for fuel/oil hotspot locations	Regulator, Specifying & Design Engineer, Site Owner
Functions as bend, junction or inlet structure	Design flexibility	Specifying & Design Engineer
Minimal drop between inlet and outlet	Site installation ease	Contractor
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade	Maintenance Contractor & Site Owner

STANDARD STORMCEPTOR EF/EFO DRAWINGS

For standard details, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

For specifications, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

Table of TSS Removal vs Surface Loading Rate Based on Third-Party Test Results
Stormceptor® EF

SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL
1	70	660	46	1320	48	1980	35
30	70	690	46	1350	48	2010	34
60	67	720	45	1380	49	2040	34
90	63	750	45	1410	49	2070	33
120	61	780	45	1440	48	2100	33
150	58	810	45	1470	47	2130	32
180	56	840	45	1500	46	2160	32
210	54	870	45	1530	45	2190	31
240	53	900	45	1560	44	2220	31
270	52	930	44	1590	43	2250	30
300	51	960	44	1620	42	2280	30
330	50	990	44	1650	42	2310	30
360	49	1020	44	1680	41	2340	29
390	48	1050	45	1710	40	2370	29
420	48	1080	45	1740	39	2400	29
450	48	1110	45	1770	39	2430	28
480	47	1140	46	1800	38	2460	28
510	47	1170	46	1830	37	2490	28
540	47	1200	47	1860	37	2520	27
570	46	1230	47	1890	36	2550	27
600	46	1260	47	1920	36	2580	27
630	46	1290	48	1950	35		

STANDARD PERFORMANCE SPECIFICATION FOR "OIL GRIT SEPARATOR" (OGS) STORMWATER QUALITY TREATMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The **minimum** sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1

4 ft (1219 mm) Diameter OGS Units:	1.19 m^3 sediment / 265 L oil
6 ft (1829 mm) Diameter OGS Units:	3.48 m^3 sediment / 609 L oil
8 ft (2438 mm) Diameter OGS Units:	8.78 m^3 sediment / 1,071 L oil
10 ft (3048 mm) Diameter OGS Units:	17.78 m^3 sediment / 1,673 L oil
12 ft (3657 mm) Diameter OGS Units:	31.23 m^3 sediment / 2,476 L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing of the OGS shall be determined by use of a minimum ten (10) years of local historical rainfall data provided by Environment Canada. Sizing shall also be determined by use of the sediment removal performance data derived from the ISO 14034 ETV third-party verified laboratory testing data from testing conducted in accordance with the Canadian ETV protocol Procedure for Laboratory Testing of Oil-Grit Separators, as follows:

3.2.1 Sediment removal efficiency for a given surface loading rate and its associated flow rate shall be based on sediment removal efficiency demonstrated at the seven (7) tested surface loading rates specified in the protocol, ranging 40 L/min/m^2 to 1400 L/min/m^2, and as stated in the ISO 14034 ETV Verification Statement for the OGS device.

3.2.2 Sediment removal efficiency for surface loading rates between 40 L/min/m^2 and 1400 L/min/m^2 shall be based on linear interpolation of data between consecutive tested surface loading rates.

3.2.3 Sediment removal efficiency for surface loading rates less than the lowest tested surface loading rate of 40 L/min/m^2 shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m^2. No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m^2.

3.2.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m^2 shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m^2, and shall be calculated using a simple proportioning formula, with 1400 L/min/m^2 in the numerator and the higher surface loading rate in the denominator, and multiplying the resulting fraction times the sediment removal efficiency at 1400 L/min/m^2.

The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m^2.

TSS Removal Efficiency - Treatment Train

Catchment Area Description	Treated Drainage Area (m2)	RC	% Impervious	Annual TSS Loading (m^3/ha)*	Annual TSS Loading (m^3)	Removal Efficiency								
						Step 1		Step 2		Step 3		Step 4		
						Surface type**	TSS Remaining (m^3)	Isolator Row within Infil. Tank	TSS Remaining (m^3)	TSS Removal Using Runoff Reduction***	TSS Remaining (m^3)	Oil/Grit Separator	TSS Remaining (m^3)	Total Efficiency
Controlled & Treated Hardscape	422.6	0.90	100%	4.8	0.20	0%	0.20	50%	0.10	50%	0.05	50%	0.03	**88%**
Controlled Landscape	55.0	0.25	7%	0.001	0.00	80%	0.00	50%	0.00	50%	0.00	50%	0.00	**98%**
Rooftop	483.2	0.90	100%	4.8	0.23	80%	0.05	50%	0.02	50%	0.01	50%	0.01	**98%**
Uncontrolled & Treated Hardscape	113.6	0.90	100%	4.8	0.05	0%	0.05	0%	0.05	0%	0.05	50%	0.03	**50%**
Uncontrolled & Untreated Hardscape	18.6	0.90	100%	4.8	0.01	0%	0.01	0.00	0.01	0%	0.01	0%	0.01	**0%**
Total	**1093.0**				**0.50**		**0.31**		**0.19**		**0.13**		**0.07**	**86%**

* As per Table 6.3 Annual Sediment Loadings (shown below) in the SWM Planning & Design Manual, MOE, 2003
** As per City of Toronto standards (shown below), the TSS removal rates shown above can be applied
***Runoff reduction using 5mm retention, based on WWFMG 50% of rainfall will be infiltrated on site and removed as runoff by annually removing the 5mm event

Table 6.3: Annual Sediment Loadings

Catchment Imperviousness	Annual Loading (kg/ha)	Wet Density (kg/m^3)	Annual Loading (m^3/ha)
35%	770	1,230	0.6
55%	2,300	1,230	1.9
70%	3,495	1,230	2.8
85%	4,680	1,230	3.8

7% Impervious Extrapolated to be 0.001 m^3/ha
43% Impervious Extrapolated to be 1.1 m^3/ha
100% ImperviousExtrapolated to be 4.8 m^3/ha

Table Provided by the City of Toronto:

Surface Type	Initial Abstraction	TSS Removal	Runoff Coefficient
Impervious roof	1mm	80%	0.90
Asphalt pavement	1mm	0%	0.90
Landscape	5mm	80%	0.25
Green Roof	7mm max for intensive roofs otherwise 5mm	80%	0.45-0.5
Permeable Pavers	5mm	80% with storage bed otherwise 50%	0.40
Concrete pavers	1mm	0%	0.9
Grassed swale	5mm	50% for a min length of 16m	0.25

BURNSIDE

CALCULATION SHEET

Project: **John St. and South Station St.**
Toronto, Ontario

Post Development Storm Flows to Area Drains

Prepared by:	JS
Checked by:	PM
Project No:	300054203
Date:	April 14, 2023

Runoff Equation Q = 2.78CIA (L/s)

where,
C = runoff coefficient
I = rainfall intensity (mm/hr)
A = area (ha)
2.78 = conversion factor

I = AT^c
I = Rainfall Intensity (mm/hr)
T= Time of concentration (hour)
(use T=10 min or 0.167 hour)

Drainage Area (to AD-A1)			C
Landscape	5	m^2	0.25
Hardscape	25	m^2	0.90
Total Area	30	m^2	0.79

Return Period	A	C	T	I	Q
100 year	59.7	-0.80	0.167 hr	250.32 mm/hr	1.6 L/s

Drainage Area (to AD-A2)			C
Landscape	0	m^2	0.25
Hardscape	25	m^2	0.90
Total Area	25	m^2	0.90

Return Period	A	C	T	I	Q
100 year	59.7	-0.80	0.167 hr	250.32 mm/hr	1.6 L/s

Drainage Area (to AD-A3)			C
Landscape	8	m^2	0.25
Hardscape	25	m^2	0.90
Total Area	33	m^2	0.74

Return Period	A	C	T	I	Q
100 year	59.7	-0.80	0.167 hr	250.32 mm/hr	1.7 L/s

Drainage Area (to AD-A4)			C
Landscape	1	m^2	0.25
Hardscape	17	m^2	0.90
Total Area	18	m^2	0.88

Return Period	A	C	T	I	Q
100 year	59.7	-0.80	0.167 hr	250.32 mm/hr	1.1 L/s

Drainage Area (to AD-A5)			C
Landscape	4	m^2	0.25
Hardscape	38	m^2	0.90
Total Area	42	m^2	0.84

Return Period	A	C	T	I	Q
100 year	59.7	-0.80	0.167 hr	250.32 mm/hr	2.4 L/s

BURNSIDE

CALCULATION SHEET

Project: **John St. and South Station St.**
Toronto, Ontario

Post Development Storm Flows to Area Drains

Prepared by:	JS
Checked by:	PM
Project No:	300054203
Date:	April 14, 2023

Drainage Area (to AD-A6)			C
Landscape	30	m^2	0.25
Hardscape	74	m^2	0.90
Total Area	104	m^2	0.71

Return Period	A	C	T	I	Q
100 year	59.7	-0.80	0.167 hr	250.32 mm/hr	5.1 L/s

Drainage Area (to AD-A7)			C
Landscape	0	m^2	0.25
Hardscape	120	m^2	0.90
Total Area	120	m^2	0.90

Return Period	A	C	T	I	Q
100 year	59.7	-0.80	0.167 hr	250.32 mm/hr	7.5 L/s

Drainage Area (to AD-A8)			C
Landscape	5	m^2	0.25
Hardscape	370	m^2	0.90
Total Area	375	m^2	0.89

Return Period	A	C	T	I	Q
100 year	59.7	-0.80	0.167 hr	250.32 mm/hr	23.3 L/s

Drainage Area (to AD-A9)			C
Landscape	0	m^2	0.25
Hardscape	184	m^2	0.90
Total Area	184	m^2	0.90

Return Period	A	C	T	I	Q
100 year	59.7	-0.80	0.167 hr	250.32 mm/hr	11.5 L/s

Drainage Area (to AD-A10)			C
Landscape	3	m^2	0.25
Hardscape	50	m^2	0.90
Total Area	53	m^2	0.87

Return Period	A	C	T	I	Q
100 year	59.7	-0.80	0.167 hr	250.32 mm/hr	3.2 L/s

Drainage Area (to AD-A11)			C
Landscape	6	m^2	0.25
Hardscape	41	m^2	0.90
Total Area	47	m^2	0.82

Return Period	A	C	T	I	Q
100 year	59.7	-0.80	0.167 hr	250.32 mm/hr	2.7 L/s

Drainage Area (to AD-A12)			C
Landscape	4	m^2	0.25
Hardscape	34	m^2	0.90
Total Area	38	m^2	0.83

Return Period	A	C	T	I	Q
100 year	59.7	-0.80	0.167 hr	250.32 mm/hr	2.2 L/s

BURNSIDE

CALCULATION SHEET

Project: **John St. and South Station St.**
Toronto, Ontario

Post Development Storm Flows to Area Drains

Prepared by:	JS
Checked by:	PM
Project No:	300054203
Date:	April 14, 2023

Drainage Area (to CB1)			C
Landscape	0	m^2	0.25
Hardscape	46	m^2	0.90
Total Area	46	m^2	0.90

Return Period	A	C	T	I	Q
100 year	59.7	-0.80	0.167 hr	250.32 mm/hr	2.9 L/s

Drainage Area (to CB2)			C
Landscape	0	m^2	0.25
Hardscape	50	m^2	0.90
Total Area	50	m^2	0.90

Return Period	A	C	T	I	Q
100 year	59.7	-0.80	0.167 hr	250.32 mm/hr	3.1 L/s

Proposed Area Drain Models									***50% blockage**	
	Model	Inside dia. (mm)	Grate Open Area (sq.m)	Area Drain Top (masl)	HWL (masl)	Head (m)	C	Max Q (L/s)	Design Q (L/s)	100-YR Q (L/s)
AD-A1	Zurn Z662	150	0.0342	127.63	127.64	0.01	0.6	9.1	4.5	1.6
AD-A2	Zurn Z662	150	0.0342	127.80	127.81	0.01	0.6	9.1	4.5	1.6
AD-A3	Zurn Z662	150	0.0342	127.33	127.34	0.01	0.6	9.1	4.5	1.7
AD-A4	Zurn Z662	150	0.0342	127.16	127.17	0.01	0.6	9.1	4.5	1.1
AD-A5	Zurn Z662	150	0.0342	127.06	127.08	0.02	0.6	12.9	6.4	2.4
AD-A6	Zurn Z662	150	0.0342	126.98	127.08	0.1	0.6	28.7	14.4	5.1
AD-A7	Zurn Z662	150	0.0342	126.97	127.05	0.08	0.6	25.7	12.9	7.5
AD-A8	Zurn Z662-HF	150	0.0665	126.82	126.91	0.09	0.6	53.0	26.5	23.3
AD-A9	Zurn Z662-HF	150	0.0665	126.76	126.78	0.02	0.6	25.0	12.5	11.5
AD-A10	Zurn Z662	150	0.0342	127.06	127.08	0.02	0.6	12.9	6.4	3.2
AD-A11	Zurn Z662	150	0.0342	127.24	127.25	0.01	0.6	9.1	4.5	2.7
AD-A12	Zurn Z663	150	0.0342	127.43	127.44	0.01	1.6	24.2	12.1	2.2

STORM SEWER DESIGN SHEET: (5 Year Storm)

Parcel B Storm Design Sheet
John and South Station Street, Toronto

Project #: 300054203.0
Date: 20-Apr-23
Designed: JS
Checked: PM

Min. Diameter = 250 mm
Mannings 'n'= 0.013
Starting Tc = 10 min
Factor of Safety = 10 %

Rainfall Intensity = $\frac{A}{(Tc+B)^c}$ *where Tc is in hours*

A = 32
B = 0
C = 0.79
(5 Yr)

NOMINAL PIPE SIZE USED

DESCRIPTION	FROM MH	TO MH	AREA (ha)	RUNOFF COEFFICIENT "R"	'AR'	ACCUM. 'AR'	RAINFALL INTENSITY (mm/hr)	FLOW (m3/s)	CONSTANT FLOW (m3/s)	ACCUM. CONSTANT FLOW (m3/s)	TOTAL FLOW (m3/s)	LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)	FULL FLOW VELOCITY (m/s)	INITIAL Tc (min)	TIME OF CONCENTRATION (min)	ACC. TIME OF CONCENTRATION (min)	PERCENT FULL (%)
CB-B5	CB-B5	MH-B7	0.01	0.90	0.01	0.01	131.8	0.003			0.003	12.7	0.40	250	0.038	0.77	10.00	0.28	10.28	8%
CB-B4	CB-B4	MH-B7	0.01	0.90	0.01	0.01	131.8	0.003			0.003	2.6	0.40	250	0.038	0.77	10.00	0.06	10.06	9%
	MH-B7	MH-B6				0.02	129.0	0.006			0.006	15.7	0.40	250	0.038	0.77	10.28	0.34	10.62	17%
CB-B3	CB-B3	MH-B6	0.02	0.90	0.02	0.02	131.8	0.008			0.008	2.0	0.40	250	0.038	0.77	10.00	0.04	10.04	21%
	MH-B6	MH-B5				0.04	125.7	0.014			0.014	11.1	0.40	250	0.038	0.77	10.62	0.24	10.86	37%
BUILDING	STUB B	MH-B5					131.8		0.002	0.002	0.002	5.6	2.00	250	0.084	1.71	10.00	0.05	10.05	2%
	MH-B5	TANK				0.04	123.5	0.014		0.002	0.016	4.5	0.40	250	0.038	0.77	10.86	0.10	10.96	42%
CB-B2	CB-B2	TANK	0.01	0.90	0.01	0.01	131.8	0.004			0.004	1.0	0.40	250	0.038	0.77	10.00	0.02	10.02	11%
	TANK	MH-B4				0.05	122.6	0.017		0.002	0.019	1.1	0.40	250	0.038	0.77	10.96	0.02	10.98	51%
	MH-B4	MH-B3				0.05	122.4	0.017		0.002	0.019	11.3	0.40	250	0.038	0.77	10.98	0.25	11.23	51%
	MH-B3'	OGS					131.8		0.011	0.011	0.011	2.4	0.40	250	0.038	0.77	10.00	0.05	10.05	30%
CB-B1	CB-B1	OGS	0.01	0.90	0.01	0.01	131.8	0.004			0.004	1.3	0.40	250	0.038	0.77	10.00	0.03	10.03	10%
	OGS	MH-B2				0.01	131.3	0.004		0.011	0.015	1.8	0.40	250	0.038	0.77	10.05	0.04	10.09	40%
	MH-B2	MH-B1				0.01	130.8	0.004		0.011	0.015	8.8	2.00	250	0.084	1.71	10.09	0.09	10.18	18%

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix D

Hydrogeological Assessment Report

13, 15, 17, 19, & 21 John Street and 36, 38, & 40 South Station Street, Toronto, Ontario

M9N 1J2

Hydrogeological Investigation

Client:
21 John Dev Inc.
31 Scardale Road, Unit 5
Toronto, ON, M3B 2R2

Attention: Stephanie Bonic

Type of Document:
Final Report

Project Name:
13, 15, 17, 19, & 21 John Street and 36, 38, & 40 South Station Street, Toronto, Ontario

Project Number:
BRM-21021990-A0

EXP Services Inc.
1595 Clark Boulevard
Brampton, ON, L6T 4V1
t: 905.793.9800
f: 905.793.0641

Date Submitted:
2021-12-17
Revision 1: 2021-12-23
Revision 2: 2022-09-13
Revision 3: 2022-10-07
Revision 4: 2023-04-17

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1 Introduction

1.1 Project Description

EXP Services Inc. (EXP) was retained by 21 John Dev Inc.. to prepare a Hydrogeological Investigation Report associated with the proposed development located at 13, 15, 17, 19 and 21 John Street and 36, 38 and 40 South Station Toronto, Ontario (hereinafter referred to as the 'Site').

It is our understanding that the proposed development plan is to demolish the existing structures and construct a forty (40) storey mixed-use building with three (3) levels of underground parking (P3). The architectural drawings are provided in Appendix H. The Site location plan is shown on Figure 1.

EXP conducted a Geotechnical Investigation in conjunction with this investigation. The pertinent information gathered from the noted investigation is utilized for this report.

1.2 Project Objectives

The main objectives of the Hydrogeological Investigation are as follows:

- Establish the local hydrogeological settings within the Site;
- Provide recommendations on construction (short--term) and post-construction (long-term) dewatering;
- Assess groundwater quality; and
- Prepare a Hydrogeological Investigation Report.

1.3 Scope of Work

To achieve the investigation objectives, EXP has completed the following scope of work:

- Reviewed available geological and hydrogeological information for the Site;
- Developed and conducted Single Well Response Tests (SWRT) on all five (5) monitoring wells installed in geotechnical boreholes during the geotechnical drilling program to assess hydraulic conductivities of the saturated soils at the Site;
- Completed nine (9) rounds of groundwater level measurements at all monitoring wells. As per the City of Toronto's requirements, a three (3)-month monitoring program was completed.
- Collected two (2) groundwater samples for analyses of parameters, as listed in the City of Toronto Sanitary and Storm Sewer Use By-Law;
- Evaluated the information collected during the field investigation program, including borehole geological information, Water Well Records (WWR), SWRT results, groundwater level measurements and groundwater water quality;
- Prepared site plans, cross sections, geological mapping and groundwater contour mapping for the Site;
- Estimated construction (short-term) and post-construction (long-term) dewatering flow rates;
- Provided recommendations on the Ministry of Environment, Conservation and Parks (MECP) Water Taking Permits and City of Toronto Sewer Discharge Agreements (SDA) for the construction and post-construction phases;
- Prepared a Hydrogeological Investigation Report; and
- As per the City's requirements, Hydrology Review Form is completed under a separate cover.

The Hydrogeological Investigation was prepared in accordance with the Ontario Water Resources Act, Ontario Regulation 387/04, and Toronto Municipal Code 681-Sewers. The scope of work outlined above was made to assess dewatering and did not include a review of Environmental Site Assessments (ESA).

Any past and/or future geotechnical, hydrogeological, environmental and risk assessments, and updated development/architectural plans should be provided to update this hydrogeological report prior to submission of permits and approvals by the municipalities and agencies.

1.4 Review of Previous Documents

The following documents were reviewed as part of this Hydrogeological Investigation:

- EXP Services Inc. (September 9, 2022), Supplementary Geotechnical Investigation, Proposed Multi-Storey Mixed-Use Development 13, 15, 17, 19 and 21 John Street and 36, 38 and 40 South Station Street, Toronto, Ontario, prepared for 21 John Dev Inc.
- 3XN USA LLC (July 22, 2022), Draft Architectural Drawings, South Station Street, 13-21 John Street / 30-40 South Station Street, Toronto, ON, prepared for Devron.
- EXP Services Inc. (December 9, 2021), Preliminary Geotechnical Investigation, Proposed Multi-Storey Mixed-Use Development 13, 15, 17, 19 and 21 John Street and 36, 38 and 40 South Station Street, Toronto, Ontario, prepared for Devron Developments.

Any past and/or future geotechnical, hydrogeological, environmental and risk assessments, and updated development/architectural plans should be provided to update this hydrogeological report prior to submission of permits and approvals by the municipalities and agencies.

2 Hydrogeological Setting

2.1 Regional Setting

2.1.1 Regional Physiography

The Site is within a physiographic region known as the Iroquois Plain. The physiographic landform is named Sand Plains. The South Slope lies to the north of the Iroquois Plain (Chapman & Putnam, 2007).

The Iroquois Plain was created along the shores of former Lake Iroquois, an ancient glacial lake. The noted Plain primarily consists of shallow water sandy deposits.

The topography of the Iroquois Plain is relatively flat with a gradual slope to the south, toward Lake Ontario.

2.1.2 Regional Geology and Hydrogeology

The surficial geology can be described as coarse textured (foreshore-basinal) glaciolacustrine deposits consisting of sand, gravel, minor silt and clay (Ministry of Northern Development and Mines, 2012). The surficial geology of the Site and surrounding areas is shown on Figure 2.

Based on the available regional geology maps, the subsurface stratigraphy of the Site from top to bottom is summarized in Table 2-1 (TRCA, 2008 and Oak Ridge Moraine Groundwater Program, 2022). The overburden thickness is approximately between 7 and 9 meters (Appendix G).

Table 2-1: Summary of Subsurface Stratigraphy

Stratigraphic Unit	General Description	Top Elevation of Stratigraphic Unit (masl)
Oak Ridges Moraine or Equivalent (Aquifer)	This geology unit mainly consists of interbedded fine-grained sand and silt deposits where coarse-grained sand and gravel along with clay laminae are locally reported.	127
Thorncliffe Formation (Aquifer)	This geology formation generally consists of glaciofluvial (sand, silty sand) or glaciolacustrine deposits (silt, sand, pebbly silt and clay).	126
Sunnybrook Formation (Aquitard)	This lithologic unit was deposited near an ice sheet. It predominately consists of silt and clay.	120
Georgian Bay Formation	Bedrock primarily consists of interbedded shale, limestone, dolostone and siltstone. It belongs to the Upper Ordovician, (Ministry of Northern Development and Mines, 2012).	119

Regional groundwater across the area flows south-southeast, towards Humber River and Lake Ontario, respectively (Oak Ridge Moraine Groundwater Program, 2022). Local deviation from the regional groundwater flow pattern may occur in response to changes in topography and/or soils, as well as the presence of surface water features and/or existing subsurface infrastructure.

2.1.3 Existing Water Well Survey

Water Well Records (WWRs) were compiled from the database maintained by the Ministry of the Environment, Conservation and Parks (MECP) and reviewed to determine the number of water wells documented within a 500-m radius of the Site centroid. The locations of the MECP WWRs within 500 m of the Site centroid are shown on Figure 3. A summary of the WWR is included in Appendix A.

The MECP WWR database indicates ninety-seven (97) offsite records (Figure 3 and Appendix A). Well distances are calculated relative to the Site centroid, therefore some distances exceed 500 m.

The database indicates that the offsite wells are at an approximate distance of forty-three (43) m or greater from the Site centroid. All offsite wells are reportedly identified as monitoring and observation wells, test holes, abandoned and/or listed with unknown use. The reported water levels ranged from depths of 0.4 m to 11.5 meters below ground surface (mbgs).

2.2 Site Setting

2.2.1 Site Topography

The Site is in an commercial land use setting. The topography is considered relatively flat with a regional gradual southerly slope towards Humber River.

As indicated on the borehole logs included in Appendix B, the surface elevation of the Site ranges between approximately 126.66 to 127.40 meters above sea level (masl).

2.2.2 Local Surface Water Features

The Site is within the Black Creek - Humber River Outlet watershed. No surface water features exist onsite. The nearest surface water feature is Humber River, approximately located 350 meters southwest of the Site boundary. Lake Ontario is approximately 8.5 km from the Site boundary to the southeast (Appendix G).

Based on the Toronto Region and Conservation Authority floodplain database, the Site is not within the floodplain areas (Appendix G).

2.2.3 Local Geology and Hydrogeology

A summary of subsurface soil stratigraphy is provided in the following paragraphs. The soil descriptions are based on the geotechnical investigation report (EXP, 2021 and 2022). They are summarized for the hydrogeological interpretations. As such, the information provided in this section shall not be used for construction design purposes.

The detailed soil profiles encountered in each borehole and the results of moisture content determinations are presented on the attached borehole logs (Appendix B). The interpreted geological cross-section is shown on Figure 5. The soil boundaries indicated on the borehole logs are inferred from non-continuous sampling and observations during drilling. These boundaries are intended to reflect approximate transition zones for the Hydrogeological Investigation and shall not be interpreted as exact planes of geological change.

The "Notes on Sample Description" preceding the borehole logs form an integral part of the logs and should be read in conjunction with this report. The following is a brief description of the soil conditions encountered during the investigation.

Based on the results of the geotechnical investigation, the general subsurface soil stratigraphy consists of the following units from top to bottom:

Pavement Structure

According to the EXP's geotechnical report issued in 2021, pavement structure comprising asphalt with thickness ranging from about 75 to 115 mm underlain by granular fill 150 to 300 mm in thickness was encountered at Borehole 1, 2, 3, 6 and 7 locations.

According to the EXP's geotechnical report issued in 2022, pavement structure comprising asphalt with thickness ranging from about 50 to 75 mm underlain by granular fill 75 to 175 mm in thickness was encountered at Borehole 201, 202 and 203.

Fill

According to the EXP's geotechnical report issued in 2021, fill was encountered at the surface of Borehole 4 and 5 locations and below the pavement structure in all other borehole locations. The fill extends to depths ranging from about 1.5 to 3 m below existing ground surface. The fill comprises a mix of clayey silt, silty clay, sandy silt and silty sand, with traces of gravel. Moisture contents in the fill ranged from approximately 4 to 24 percent. The samples were described to be in moist to very moist condition.

According to the EXP's geotechnical report issued in 2022, fill was encountered at the surface of Borehole 204 and 205 locations and below the pavement structure in all other borehole locations. The fill extends to depths ranging from about 1.5 to 2.3 m below existing ground surface. The fill comprises a mix of clayey silt, silty clay, sandy silt and silty sand, with traces of gravel. Moisture contents in the fill ranged from approximately 3 to 23 percent. The samples were described to be in moist to very moist condition.

Silty Clay

According to the EXP's geotechnical report issued in 2021, a silty clay deposit was encountered below the fill in Borehole 1, 2, 3, 5, 6 and 7 locations. The deposit was encountered at approximate depths of 1.5 to 2.3 m, and extended to depths of about 2.3 to 4.5 m. This deposit contains trace sand and gravel. It is brown in colour and has moisture contents of about 18 to 25 percent of dry mass indicating very moist condition. The silty clay has a firm to stiff consistency (recorded 'N'-values of 8 to 14).

Silty Clay Till

According to the EXP's geotechnical report issued in 2021, silty clay till was encountered below the silty clay in Boreholes 1, 2 and 3 and below the fill in Borehole 4. The silty clay till was encountered at approximate depths of 2.3 to 3 m and extends to depths of about 4 to 4.5 m below existing ground surface. This deposit contains some sand and trace gravel and is brown in colour. It has moisture contents of 13 to 18 percent of dry mass indicating moist condition. The silty clay till has a stiff to very stiff consistency (recorded 'N'-values of 12 to 17).

According to the EXP's geotechnical report issued in 2022, a silty clay deposit was encountered below the fill in all borehole locations. The deposit was encountered at approximate depths of 1.5 to 2.3 m and extended to depths of about 3.8 to 5.2m. This deposit contains trace sand and gravel. It is brown in colour, changing to grey with depth and has moisture contents of about 11 to 26 percent of dry mass indicating moist to very moist condition. The silty clay has a firm to firm to very stiff consistency (recorded 'N'-values of 8 to 28).

Shale Bedrock

According to the EXP's geotechnical report issued in 2021, shale bedrock was encountered below the silty clay till in Boreholes 1, 2, 3, and 4 and below the silty clay in Boreholes 5, 6, and 7. All boreholes were terminated by auger refusal in the shale bedrock. Highly weathered shale was encountered at approximate depths of about 4 to 4.5 m. The recorded 'N'-values in the shale were 50 blows for less than 150 mm of penetration.

According to the EXP's geotechnical report issued in 2022, shale bedrock was encountered below the silty clay till in all borehole locations. Highly weathered shale was encountered at approximate depths of about 3.8 to 5.3 m. The recorded 'N'-values in the shale were 50 blows for less than 150 mm of penetration. Upon encountering auger refusal, rock coring was initiated to verify bedrock conditions. The coring was carried out using 'H' sized double tube wireline equipment. The boreholes were terminated in the shale bedrock at depths ranging from about 15.1 to 15.5 m. The shale contains 71 to 84% shale, 3 to 8% limestone, 9 to 16% siltstone, and 0 to 1% clay seams.

3 Results

3.1 Monitoring Well Details

The monitoring well network was installed as part of the Geotechnical and Environmental Investigations at the Site. It consists of the following:

- Seven (7) shallow monitoring wells, including BH1 through BH 7 were installed to an approximate depth ranged from 3.8 mbgs to 5.8 mbgs;
- Five (5) deep monitoring wells, including BH201 through BH205 were installed to an approximate depth ranged from 15.1 mbgs to 15.4 mbgs.
- Each monitoring well is equipped with a 50-mm (2-inch) diameter PVC casing, a flush-mount, and a three (3)-meter long screen.

Borehole logs and monitoring well installation details are provided in Appendix B. The monitoring well locations are shown on Figure 4.

3.2 Water Level Monitoring

As part of the Hydrogeological Investigation, static water levels were recorded in nine (9) monitoring events between November 30, 2021, and October 20, 2022. A summary of all static water level data as it relates to the elevation survey is given in Appendix C. As per the City's requirements, a three (3)-month monitoring program was completed.

The groundwater elevation recorded for the shallow wells ranged from 124.78 masl (2.23 mbgs at BH 7 on January 18, 2022) to 125.84 masl (1.48 at BH 4 on November 30, 2021).

The groundwater elevation recorded for the deep wells ranged from 115.65 masl (11.30 mbgs at BH205 on August 4, 2022) to 118.70 masl (8.70 mbgs at BH201 on October 4, 2022).

Two (2) maps were created for the Site to show groundwater contours in the shallow and deep water-bearing zones (Figures 6A and 6B, respectively). Accordingly, the groundwater flow direction is interpreted to be south of the Site, towards Humber River.

The groundwater monitoring data obtained from the Site indicates that vertical groundwater gradient at the Site is downward. However, based on the ORMGP's database mapping, the vertical groundwater gradient is shown upward (Appendix G).

Groundwater levels are expected to show seasonal fluctuations and vary in response to prevailing climate conditions. This may also affect the direction and rate of flow. It is recommended to conduct seasonal groundwater level measurements to provide more information on seasonal groundwater level fluctuations.

3.3 Hydraulic Conductivity Testing

Twelve (12) Single Well Response Tests (SWRT's) were completed on all monitoring wells on December 3, 2021, as well as August 4 and 18, 2022. The tests were completed to estimate the saturated hydraulic conductivity (K) of the lithologic units at the well screen depths. Water level in each well was recorded both manually and electronically. A pre-programmed data-logger was utilized to record the water displacements in one (1) second interval electronically.

The static water level within each monitoring well was measured prior to the start of testing. In advance of performing SWRTs, each monitoring well underwent development to remove fines introduced into the screens following construction. The development process involved purging of the monitoring wells to induce the flow of fresh formation water through the screen. Each monitoring well was permitted to fully recover prior to performing SWRTs.

Hydraulic conductivity values were calculated from the SWRT and constant rate test data as per Hvorslev's solution included in the Aqtesolv Pro. V.4.5 software package. The semi-log plots for normalized drawdown versus time are included in Appendix D. A summary of the hydraulic conductivities (K-values) estimated from the SWRTs are provided in Tables 3-1 and 3-2 below.

Table 3-1: Summary of Hydraulic Conductivity Test Results for Shallow Water-Bearing Zone

Monitoring Well	Well Depth (mbgs)*	Screen Interval (mbgs)*		Screened Lithology**	Estimated Hydraulic Conductivity (m/s)
		from	to		
BH 1	4.53	1.53	4.53	Fill (Clayey Silt/Silty Clay), Silty Clay/Silty Clay Till	7.7E-08
BH 2	4.34	1.34	4.34	Silty Clay / Silty Clay Till/ Weathered Shale	5.7E-07
BH 3	4.39	1.39	4.39	Fill (Silty Clay)/Silty Clay/Silty Clay Till/Weathered Shale	5.2E-07
BH 4	3.77	0.77	3.77	Fill (Silty Sand/Silty Clay)/Silty Clay Till/Weathered Shale	2.6E-06
BH 5	4.40	1.40	4.40	Silty Clay/Weathered Shale	2.8E-06
BH 6	5.80	2.80	5.80	Silty Clay/Weathered Shale	3.6E-06
BH 7	5.26	2.26	5.26	Silty Clay/Weathered Shale	1.5E-06
				Highest Estimated K-Value for Overburden and Weathered Bedrock	3.6E-06
				Arithmetic Mean of K-Values for Overburden and Weathered Bedrock	1.7E-06
				Geometric Mean of Estimated K-Values for Overburden and Weathered Bedrock	9.8E-07

Table 3-2: Summary of Hydraulic Conductivity Test Results for Deep Water-Bearing Zone (Sound Bedrock)

Monitoring Well	Well Depth (mbgs)*	Screen Interval (mbgs)*		Screened Lithology**	Estimated Hydraulic Conductivity (m/s)
		from	to		
BH201	15.43	12.43	15.43	Shale	2.4E-08
BH202	15.13	12.13	15.13	Shale	9.1E-08
BH203	15.27	12.27	15.27	Shale	3.5E-07
BH204	15.43	12.43	15.43	Shale	1.8E-08
BH205	15.34	12.34	15.34	Shale	7.4E-09
				Highest Estimated K-Value for Sound Bedrock	3.5E-07
				Arithmetic Mean of K-Values for Sound Bedrock	9.8E-08
				Geometric Mean of Estimated K-Values for Sound Bedrock	4.0E-08

Notes:
mbgs: meters below ground surface
*based on field measurements
**based on the geotechnical borehole logs (EXP, 20121 and 2022)

SWRTs provide K-estimates of the geological formation surrounding the well screens and may not be representative of bulk formation hydraulic conductivity. As shown on Table 3-1, the highest K-value of the tested shallow water-bearing zone (saturated overburden and weathered bedrock) is 3.6E-6 m/s. The geometric and arithmetic means of the K-values for the same zone are 9.8E-7 m/s and 1.7E-6 m/s, respectively. As shown on Table 3-2, the highest K-value for the tested deep water-bearing zone (saturated sound bedrock) is 3.5e-7 m/s. The geometric and arithmetic means of K-value for the same zone are

4.0E-8 m/s and 9.8E-8 m/s, respectively. Considering the approximate thicknesses of shallow and deep water-bearing zones as well as the arithmetic K-values for the noted zones, the weighted K-value is estimated 7.3E-7 m/s.

3.4 Groundwater Quality

To assess the suitability for discharging pumped groundwater into the sewers owned by the City of Toronto during dewatering activities, two (2) groundwater samples were collected from monitoring wells BH 7 on November 30, 2021, and BH 203 on August 4, 2022, using a peristaltic pump. Prior to collecting the noted water samples, approximately three (3) standing well volumes of groundwater were purged from the referred well. The samples were collected unfiltered and placed into pre-cleaned laboratory-supplied vials and/or bottles provided with analytical test group specific preservatives, as required. Dedicated nitrile gloves were used during sample handling. The groundwater samples were submitted for analysis to Bureau Veritas Laboratory, a CALA certified independent laboratory in Mississauga, Ontario. Analytical results are provided in Appendix E. Table 3-3 summarizes exceedance(s) of the Sanitary (Table 1) and Storm (Table 2) Sewer Use By-Law parameters.

When comparing the chemistry of the collected groundwater samples to the City of Toronto Sanitary and Combined Sewer Discharge Criteria (Table 1), there were no parameter exceedances to be reported.

When comparing the chemistry of the collected groundwater samples to the City of Toronto Storm Sewer Discharge Criteria (Table 2), the concentrations of Total Suspended Solids (TSS) and Total Manganese (Mn) exceeded the applicable guidelines.

Reporting detection limits (RDLs) were below the Sewer Use By-Law parameter criteria of Tables 1 and 2.

Table 3-3: Summary of Analytical Results

Parameter	Units	City of Toronto Sanitary and Combined Sewer Discharge Limit (Table 1)	City of Toronto Storm Sewer Discharge Limit (Table 2)	Concentration	
				BH 7 November 30, 2021	BH 203 August 4, 2022
Total Suspended Solids (TSS)	mg/L	350	15	**46**	**29**
Total Manganese (Mn)	µg/L	5,000	50	**1,640**	**52**

Notes:
Bold – Exceeds City of Toronto Storm Sewer Discharge Limit (Table 2).

For the short-term dewatering system (construction phase), it is anticipated that TSS levels and some other parameters (for example, Total Metals) in the pumped groundwater become elevated and exceed both Sanitary and Storm Sewer Use By-Law limits. To control the concentration of TSS and associated metals, it is recommended that a suitable treatment method be implemented (filtration or decantation facilities and/ or any other applicable treatment system) during construction dewatering activities prior to discharging to the applicable sewer system. The specifications of the treatment system will need to be adjusted to the reported water quality results by the treatment contractor/process engineer.

An agreement to discharge into the sewers owned by the City of Toronto will be required prior to releasing dewatering effluent.

4 Dewatering Assessment

The dimensions of the proposed structure to support the dewatering assessment are summarized in Table 4-1 below.

Table 4-1 Building Dimensions for Dewatering Assessment

Input Parameter	Assumption	Units	Notes
Number of Subgrade Levels	3 Levels (P3)	-	
Ground Surface Elevation	127.4	masl	Highest ground surface elevation at the Site (EXP, 2021 and 2022)
Top of Slab Elevation	116.9	masl	Based on the architectural drawings, the top of slab is anticipated to be 10.5 meters below ground surface (Appendix H).
Lowest Footing Elevation	115.40	masl	The lowest foundation elevation as per the geotechnical report (EXP, 2022)
Excavation Area (Length x Width)	~ 3,335 (50 x 49)	m^2 (m x m)	Approximate area (length x width) of Site for the proposed development as per parking level 3 and 2 drawing number A101 dated March 20, 2023 prepared by Design Architect 3XN USA LLc.

4.1 Dewatering Flow Rate Estimate and Zone of Influence

The Dupuit-Forcheimer equation for radial flow to both sides of an excavation through an unconfined aquifer resting on a horizontal impervious surface was used to obtain a flow rate estimate. Dewatering flow rate is expressed as follows:

$$Q_w = \frac{\pi K(H^2 - h^2)}{Ln\left[\frac{R_o}{r_e}\right]}$$

$$r_e = \frac{a+b}{\pi} \qquad R_o = R_{cj} + r_e$$

Where:

Qw = Rate of pumping (m^3/s)
X = Length of excavation (m)
K = Hydraulic conductivity (m/s)
H = Hydraulic head beyond the influence of pumping (static groundwater elevation) (m)
h = Hydraulic head above the base of aquifer in an excavation (m)
R_0 = Radius of influence (m)
R_{cj} = Cooper-Jacob's radius of influence (m)
r_e = Equivalent perimeter (m)
a = Length of the excavation area (m)
b = Width of the excavation area (m)

It is expected that the initial dewatering rate will be higher to remove groundwater from within the overburden formation. The dewatering rates are expected to decrease once the target water level is achieved in the excavation footprint as groundwater will have been removed, primarily from storage, resulting in lower seepage rates into the excavation.

4.2 Cooper-Jacob's Radius of Influence

The radius of influence (Rcj) for the construction dewatering was calculated based on Cooper-Jacob's equation. This equation is used to predict the distance at which the drawdown resulting from pumping is negligible.

The estimated radius of influence due to pumping is based on Cooper-Jacob's formula as follows:

$$R_{cj} = \sqrt{2.25KDt/s}$$

Where:

Ro = Estimated radius of influence (m)
D = Aquifer thickness (original saturated thickness) (m)
K = Hydraulic conductivity (m/s)
S = Storage coefficient
t = Duration of pumping (s)

4.3 Stormwater

Additional pumping capacity may be required to maintain dry conditions within the excavation during and following significant precipitation events. Therefore, the dewatering rates at the Site should also include removing stormwater from the excavation.

A 15 mm precipitation event was utilized for estimating the stormwater volume. The calculation of the stormwater volume is included in Appendix E.

The estimate of the stormwater volume only accounts for direct precipitation into the excavation. The dimensions of the excavation are considered in the dewatering calculations. Runoff which originated outside of the excavation's footprint is excluded and it should be directed away from the excavation.

During precipitation events greater than 15 mm (ex: 100-year storm), measures should be taken by the contractor to retain stormwater onsite in a safe manner to not exceed the allowable water taking and discharge limits, as necessary. A two (2) and a one hundred (100) year storm event over a 24-hour period are 57.0 and 124.4 mm, which would produce 191 m^3 and 417 m^3 stormwater volume (refer to Appendix F).

4.4 Results of Dewatering Rate Estimates

4.4.1 Construction Dewatering Rate Estimate

For this assessment, it was assumed that the proposed construction plans include an excavation with shoring extending to the Site boundaries. EXP should be retained to review the assumptions outlined in this section, should the assumed shoring design change. Short-term (construction) dewatering calculations are presented in Appendix F.

Pits (elevator, sump pits) are assumed to have the same excavation depth and dewatering target as the main excavation; deeper pits may require localized dewatering and revised dewatering estimates.

Based on the assumptions provided in this report, the results of the dewatering rate estimate can be summarized as follows:

Table 4-2 Summary of Construction Dewatering Rate

Dewatering Estimates	
Description	**With three (3) Levels of Underground Parking (L/day)**
Total Volume (L/day) Short Term Discharge of Groundwater (Construction dewatering) without Safety Factor (including precipitation)	134,000
Total Volume (L/day) Short Term Discharge of Groundwater (Construction dewatering) with Safety Factor of 2 (including precipitation)	230,000
Total Volume (L/day) Short Term Discharge of Groundwater (construction dewatering) with Safety Factor of 2 (excluding Precipitation) for EASR	194,000

The peak dewatering flow rates does not account for flow from utility beddings and variations in hydrogeological properties beyond those encountered during this investigation.

Local dewatering may be required for pits (elevator pits, sump pits), if these extend deeper than the dewatering target. Local dewatering is not considered to be part of this assessment. Dewatering estimates should be reviewed once the pit dimensions are available.

Local dewatering may be required for pits (elevator pits, sump pits, raft) and for localized areas with permeable, soft, or wet soil conditions. Local dewatering is not considered to be part of this assessment, but contractor should be ready to install additional system to manage such conditions. Dewatering estimates should be reviewed once the pit dimensions are available.

All grading around the perimeter of the excavation should be graded away from the shoring the systems and ramp/site access to redirect runoff away from excavation.

The dewatering assumptions are based on using shoring system without open cuts and sloped excavations.

If groundwater cutoff systems (ex: caisson walls, sheet piles) are installed, these should be designed for maximal hydrostatic pressure for shallow and deep water levels, without dewatering on the outer side of the groundwater cutoff. Soldier pile and lagging and caisson wall systems should be designed to account for shallow groundwater conditions and take into consideration that dewatering systems may not provide fully dewatered soil conditions.

All grading around the perimeter of the construction Site should be graded away from the shoring the system.

The contractor is responsible for the design of the dewatering systems (depth of wells, screen length, number of wells, spacing sand pack around screens, prevent soil loss etc.) to ensure that dry conditions are always maintained within the excavation at all costs.

Dewatering should be monitored using dedicated monitoring wells within and around the perimeter of the excavation, and these wells should be monitored using manual measurements and with electronic data loggers; records should be maintained on site to track dewatering progress. Discharge rates should be monitored using calibrated flow meters and records of dewatering progress, and daily precipitation as per MECP requirements should be maintained.

4.4.2 Post-Construction Dewatering Rate Estimate

Based on the newly adopted policy by the City of Toronto, effective from January 1, 2022, long-term groundwater discharge from foundation drainage systems will not be permitted to the City of Toronto storm, sanitary and combined sewer system.

Therefore, it is our understanding that considered area of the proposed underground parking will be constructed as a watertight (bathtub) structure, which will bear the hydrostatic pressure on underground floors and side walls during the post construction phase. It is assumed that pits (elevator, sump) will also be completed as watertight structures (without drainage).

Since the proposed watertight foundation prevents groundwater seeping into the underground areas, a sub-drain system and long-term dewatering will not be required to manage groundwater seepage during post-construction phase. As such, discharging groundwater into the City's sewer system will not be required from the underground areas, during the post development phase of the project.

4.5 MECP Water Taking Permits

4.5.1 Short-Term Discharge Rate (Construction Phase)

In accordance with the Ontario Water Resources Act, if the water taking for the construction dewatering is more than 50,000 L/day but less than 400,000 L/day, then an online registration in the Environmental Activity and Sector Registry (EASR) with the MECP will be required. If groundwater dewatering rates onsite exceed 400,000 L/day, a Category 3 Permit to Take Water (PTTW) will be required from the MECP.

As of July 1, 2021, an amendment of O. Reg. 63/16 has come into effect and replaced the former subsection 7 (5) such that the EASR water taking limit of 400,000 L/day would apply to groundwater takings of each dewatered work area only, excluding stormwater.

The dewatering estimate including a safety factor is greater than 50,000 L/day and less than 400, 000 L/day as shown in Table 4-2. The MECP construction dewatering rate excludes the precipitation amount and is the rate used for the permit application. Based on the MECP construction dewatering an EASR will be required to facilitate the construction dewatering program of the Site.

A Discharge Plan (dewatering sketch, sewer discharge agreement) must be developed and applied for any discharges from the Site. Monitoring of both water quantity and water quality must be carried out for the entire duration of the construction dewatering phase. During this phase, the Discharge Plan and the daily water taking records must be available onsite.

The EASR, Discharge Plan, hydrogeological investigation report, and geotechnical assessment of settlements must also be available at the construction Site during the entire construction dewatering. EXP should be notified immediately about any changes to the construction dewatering schedule or design, since the EASR will need to be updated to reflect these modifications. Altogether, the hydrogeological report, EASR, Discharge Plan and geotechnical assessment constitute the Water Taking Plan which needs to be available onsite during the construction dewatering.

4.5.2 Long-Term Discharge Rate (Post Construction Phase)

Since the proposed watertight foundation prevents groundwater seeping into the underground areas, a sub-drain system and long-term dewatering will not be required to manage groundwater seepage during post-construction phase. As such, PTTW and discharging groundwater into the City's sewer system will not be required from the underground areas, during the post development phase of the project.

5 Environmental Impact

5.1 Surface Water Features

The Site is within the Black Creek - Humber River Outlet watershed. No surface water features exist onsite. The nearest surface water feature is Humber River, approximately located 350 meters southwest of the Site boundary. Lake Ontario is approximately 8.5 km from the Site boundary to the southeast (Appendix G).

Based on the Toronto Region and Conservation Authority floodplain database, the Site is not within the floodplain areas (Appendix G).

Due to the limited extent of zone of influence and the wide distance to the nearest surface water feature, no detrimental impacts on surface water features are expected during construction activities.

5.2 Groundwater Sources

Well Records from the MECP Water Well Record (WWR) Database were reviewed to determine the presence and number of water supply wells within a 500 m radius of the Site boundaries. Given that the dewatering zone of influence is limited, no dewatering related impact is expected on the water wells in the area.

5.3 Geotechnical Considerations

As per the MECP technical requirement for PTTW and EASRs, the geotechnical assessment of the stability of the soils due to water taking (ex: settlement, soil loss, subsidence, etc.) is required. The water taking should not have unacceptable interference on soils and underground structures (foundations, utilities, etc.).

A letter related to geotechnical issues as it pertains to the Site is required to be completed under a separate cover.

5.4 Groundwater Quality

It is our understanding that the potential effluent from the dewatering system during the construction will be released to the municipal sewer system. As such, the quality of groundwater discharge is required to conform the City of Toronto Sewer Use By-Law.

Dewatering may induce migration of contaminants within the zone of influence and beyond due to changing hydraulic gradients, hydrogeological conditions beyond Site boundaries and preferential pathways in utility beddings etc. The water quality sampling conducted as part of this assessment was performed under static conditions. As a result, monitoring may be required during dewatering activities to monitor potential migration, and this should be performed more frequently during early dewatering stages.

For the Short-term (construction) discharge to the Sanitary/Storm sewer system (post-development phase) and based on the water quality results, it is recommended to implement a suitable pre-treatment, as required.

The water quality results presented in this report may not be representative of the long-term condition of groundwater quality onsite. As such, regular water quality monitoring is recommended for the post-construction phase as required by the City.

An agreement to discharge into the sewers owned by the City of Toronto will be required prior to releasing dewatering effluent.

5.5 Well Decommissioning

In conformance with Regulation 903 of the Ontario Water Resources Act, the installation and eventual decommissioning of any dewatering system wells or monitoring wells must be completed by a licensed well contractor. This will be required for all wells that are no longer in use.

6 Conclusions and Recommendations

Based on the findings of the Hydrogeological Investigation, the following conclusions and recommendations are provided:

- When comparing the chemistry of the collected groundwater samples to the City of Toronto Sanitary and Combined Sewer Discharge Criteria (Table 1), there were no parameter exceedances to be reported.
- When comparing the chemistry of the collected groundwater samples to the City of Toronto Storm Sewer Discharge Criteria (Table 2), the concentrations of Total Suspended Solids (TSS) and Total Manganese (Mn) exceeded the applicable guidelines..
- Based on the assumptions outlined in this report, the estimated peak dewatering rate for proposed construction activities is approximately 230,000 L/Day This is the rate which will be required to be discharged to the municipal sewer system.
- The estimated MECP dewatering rate for proposed construction activities is approximately194,000 L/Day. As the dewatering flow rate estimate is between 50,000 L/day and 400,000 L/day, an EASR will be required to facilitate the construction dewatering program for the Site.
- Since the proposed watertight foundation prevents groundwater seeping into the underground areas, a sub-drain system and long-term dewatering will not be required to manage groundwater seepage during post-construction phase. As such, PTTW and discharging groundwater into the City's sewer system will not be required from the underground areas, during the post development phase of the project.
- The construction dewatering discharge volume is based on the assumptions outlined in this report. Any variations in hydrogeological conditions beyond those encountered as part of this preliminary investigation may significantly influence the discharge volume.
- For the short-term dewatering system (construction phase), it is anticipated that TSS levels and some other parameters (for example, Total Metals) in the pumped groundwater may become elevated and exceed both, Sanitary and Storm Sewer Use By-Law limits. To control the concentration of TSS and associated metals, it is recommended that a suitable treatment method be implemented (filtration or decantation facilities and/ or any other applicable treatment system) during construction dewatering activities to discharge to the applicable sewer system. The specifications of the treatment system will need to be adjusted to the reported water quality results by the treatment contractor/process engineer.
- As per the MECP technical requirement for EASR, the geotechnical assessment of the stability of the soils due to water taking (ex: settlement, soil loss, subsidence etc.) is required. The water taking should not have unacceptable interference on soils and underground structures (foundations, utilities etc.). A letter related to geotechnical issues as it pertains to the Site is required to be completed under a separate cover.
- An agreement to discharge into the sewers owned by the City of Toronto will be required prior to releasing dewatering effluent.
- The EASR registration allows construction dewatering discharge of up to 400,000 L/day. A Discharge Plan (dewatering sketch, sewer discharge agreement) must be developed and applied for any discharges from the Site. The Discharge Plan and monitoring for both water quantity and water quality must be carried at the Site during the entire construction dewatering phase. The daily water taking records must be maintained onsite for the entire construction dewatering phase. The EASR, Discharge Plan, hydrogeological investigation report, and geotechnical assessment of settlements must always also be available at the construction Site for the entire construction dewatering. EXP should be notified immediately about any changes to the construction dewatering schedule or design, since EASR will need to be updated to reflect these modifications. The hydrogeological report, EASR, Discharge Plan and geotechnical assessment constitutes the Water Taking Plan which needs to be available onsite for the duration of construction dewatering.

- In conformance with Regulation 903 of the Ontario Water Resources Act, the installation and eventual decommissioning of any dewatering system wells or monitoring wells must be completed by a licensed well contractor. This will be required for all wells that are no longer in use.

The conclusions and recommendations provided above should be reviewed in conjunction with the entirety of the report. They assume that the present design concept described throughout the report will proceed to construction. This report is solely intended for the construction and long-term dewatering assessments. Any changes to the design concept may result in a modification to the recommendations provided in this report.

7 Limitations

This report is based on a limited investigation designed to provide information to support an assessment of the current hydrogeological conditions within the study area. The conclusions and recommendations presented within this report reflect Site conditions existing at the time of the assessment. EXP must be contacted immediately, if any unforeseen Site conditions are experienced during construction activities. This will allow EXP to review the new findings and provide appropriate recommendations to allow the construction to proceed in a timely and cost-effective manner.

Our undertaking at EXP, therefore, is to perform our work within limits prescribed by our clients, with the usual thoroughness and competence of the geoscience/engineering profession. No other warranty or representation, either expressed or implied, is included or intended in this report.

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We trust that this information is satisfactory for your purposes. Should you have any questions or comments, please do not hesitate to contact this office.

Sincerely,

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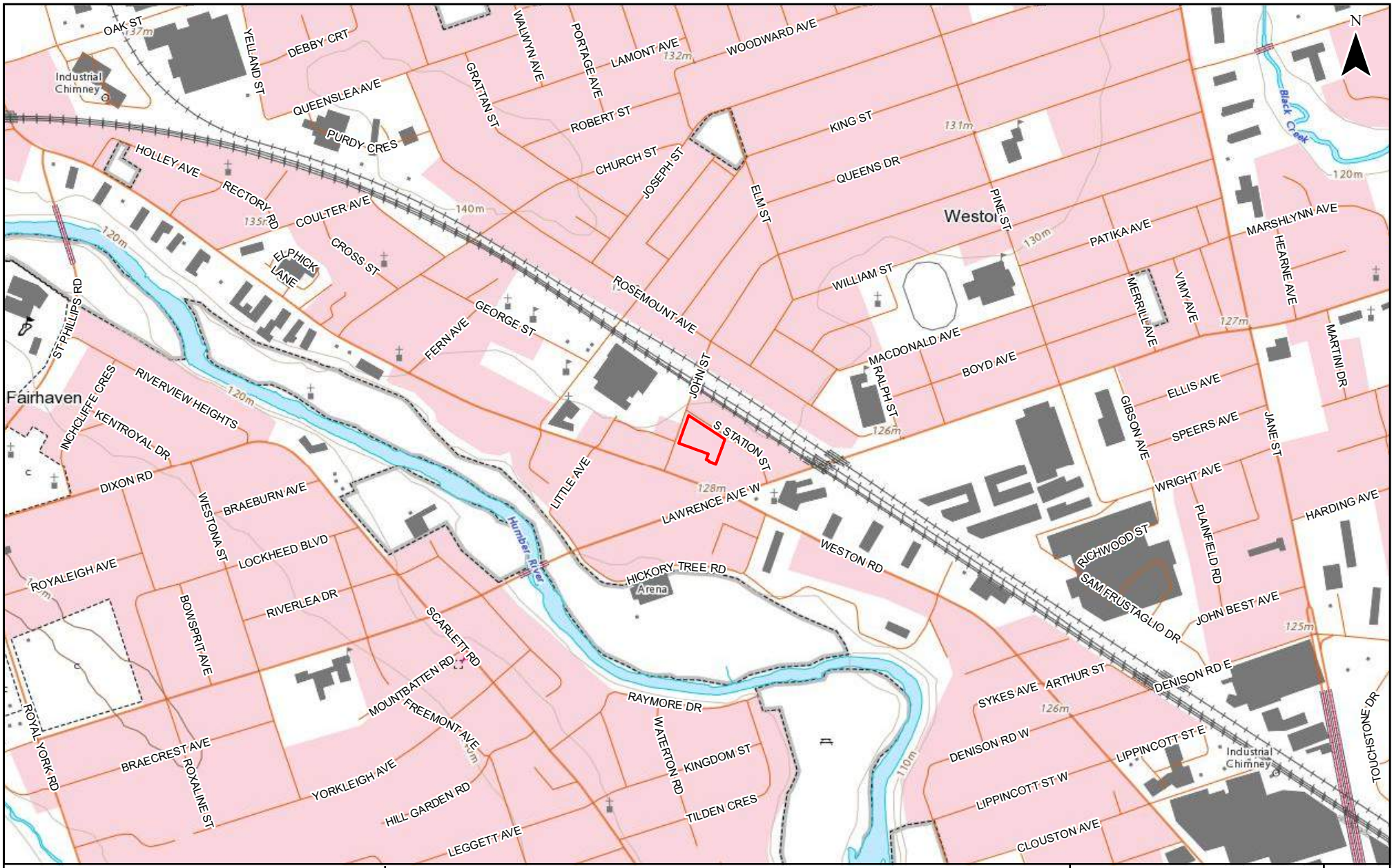
Figures



SCALE:

0 100 200 300 400 500 m

LEGEND:

APPROXIMATE SITE BOUNDARY

SITE LOCATION PLAN

FIGURE: 1

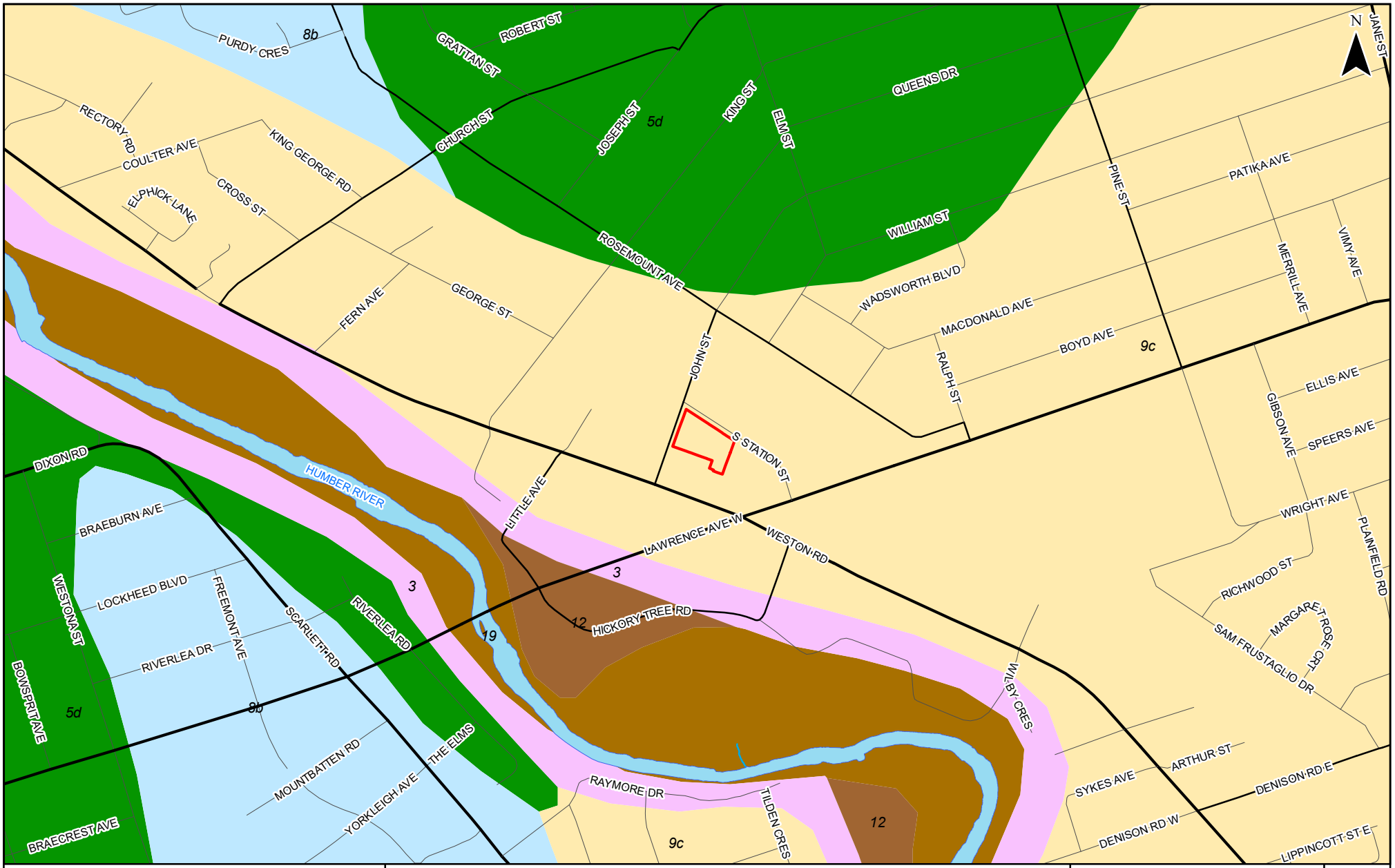
exp.

DRAWN BY:	CHECKED BY:
AC	FC

HYDROGEOLOGICAL INVESTIGATION
13, 15, 17 AND 21 JOHN STREET AND
36, 38, AND 40 SOUTH STATION STREET
TORONTO, ONTARIO

PROJECT NUMBER: BRM-21021990-A0

DATE: AUGUST 2022



SCALE:
0 100 200 300 400 500 m

SOURCE:
BASED ON ONTARIO GEOLOGICAL SURVEY DATA PUBLISHED IN 2010

exp.

DRAWN BY:	CHECKED BY:
AC	FC

LEGEND:
- APPROXIMATE SITE BOUNDARY
- 19: MODERN ALLUVIAL DEPOSITS
- 12: OLDER ALLUVIAL DEPOSITS
- 9C: COARSE-TEXTURED (FORESHORE-BASINAL) GLACIOLACUSTRINE DEPOSITS
- 8B: INTERBEDDED FLOW TILL, RAINOUT DEPOSITS AND SILT AND CLAY
- 5D: GLACIOLACUSTRINE-DERIVED SILTY TO CLAYEY TILL
- 3: PALEOZOIC BEDROCK

SURFICIAL GEOLOGY

FIGURE: 2

HYDROGEOLOGICAL INVESTIGATION
13, 15, 17 AND 21 JOHN STREET AND
36, 38, AND 40 SOUTH STATION STREET
TORONTO, ONTARIO

PROJECT NUMBER: BRM-21021990-A0 | DATE: AUGUST 2022

SCALE:

0 80 160 240 320 400 m

SOURCE:

BASED ON GOOGLE EARTH IMAGERY DATED 2020,
AVAILABLE WELL RECORD INFORMATION AS OF SEPTEMBER 2019

exp.

DRAWN BY:	CHECKED BY:
AC	FC

LEGEND:

- MONITORING WELL / TEST HOLE
- ABANDONED WELL
- UNCLASSIFIED / UNFINISHED WELL
- APPROXIMATE SITE BOUNDARY
- 500 m ZONE

MECP WATER WELL RECORDS MAP

FIGURE: 3

HYDROGEOLOGICAL INVESTIGATION
13, 15, 17 AND 21 JOHN STREET AND
36, 38, AND 40 SOUTH STATION STREET
TORONTO, ONTARIO

PROJECT NUMBER: BRM-21021990-A0

DATE: AUGUST 2022

SCALE:

0 10 20 30 40 50 m

LEGEND:

- BOREHOLE / MONITORING WELL (EXP, 2022)
- BOREHOLE / MONITORING WELL (EXP, 2021)
- CROSS SECTION AXIS
- APPROXIMATE SITE BOUNDARY

exp.

DRAWN BY:	CHECKED BY:
AC	FC

BOREHOLE / MONITORING WELL LOCATION PLAN

FIGURE: 4

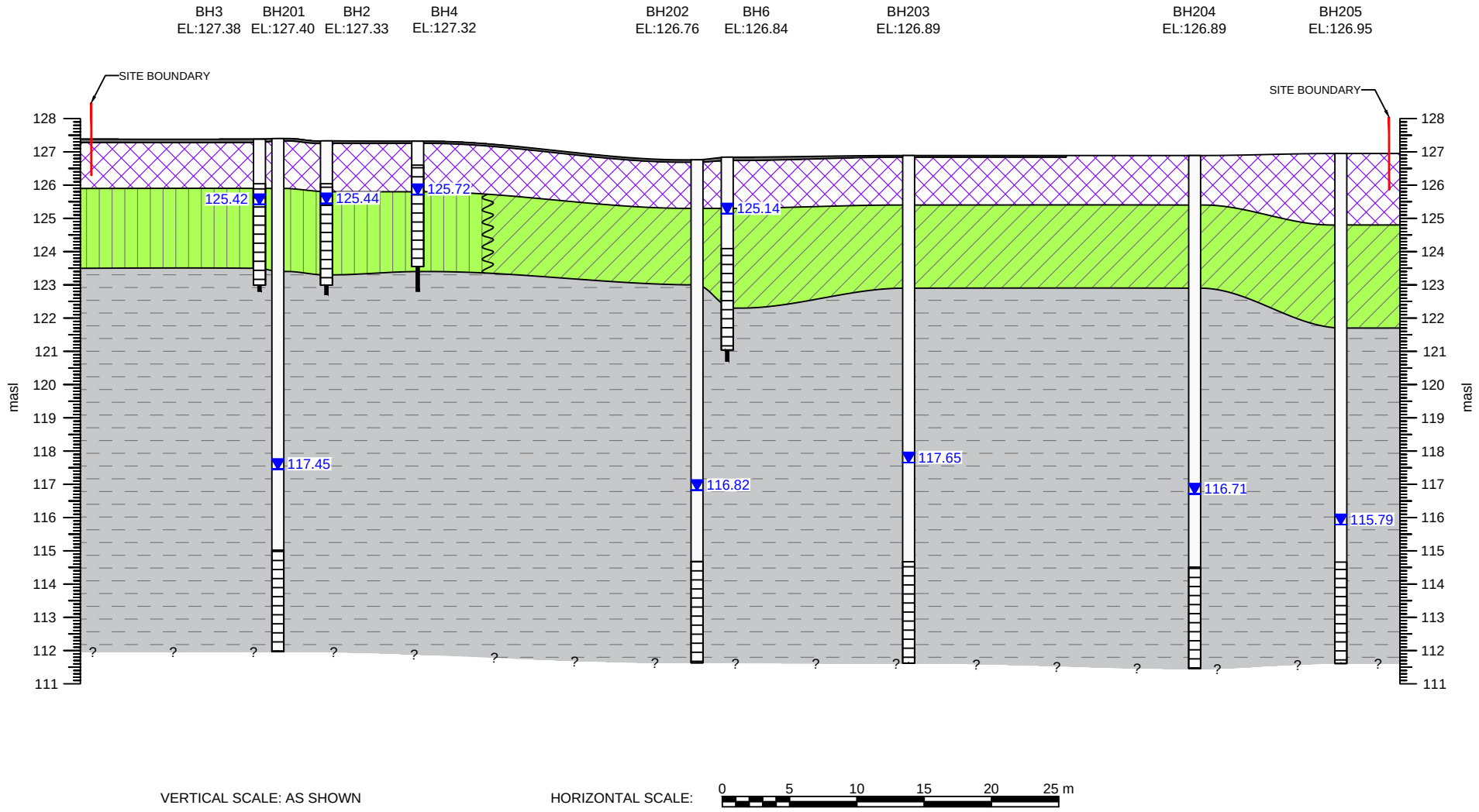
HYDROGEOLOGICAL INVESTIGATION
13, 15, 17 AND 21 JOHN STREET AND
36, 38, AND 40 SOUTH STATION STREET
TORONTO, ONTARIO

PROJECT NUMBER: BRM-21021990-A0

DATE: AUGUST 2022

A
NORTHWEST

A'
SOUTHEAST



VERTICAL SCALE: AS SHOWN

HORIZONTAL SCALE: 0 5 10 15 20 25 m

EXP Services Inc.
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1595 Clark Boulevard
Brampton, ON L6T 4V1
Canada
www.exp.com

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• INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •

LEGEND:

- ASPHALT
- FILL
- SILTY CLAY
- SILTY CLAY TILL
- SHALE BEDROCK
- GROUNDWATER ELEVATION (masl) AS MEASURED ON AUGUST 18, 2022

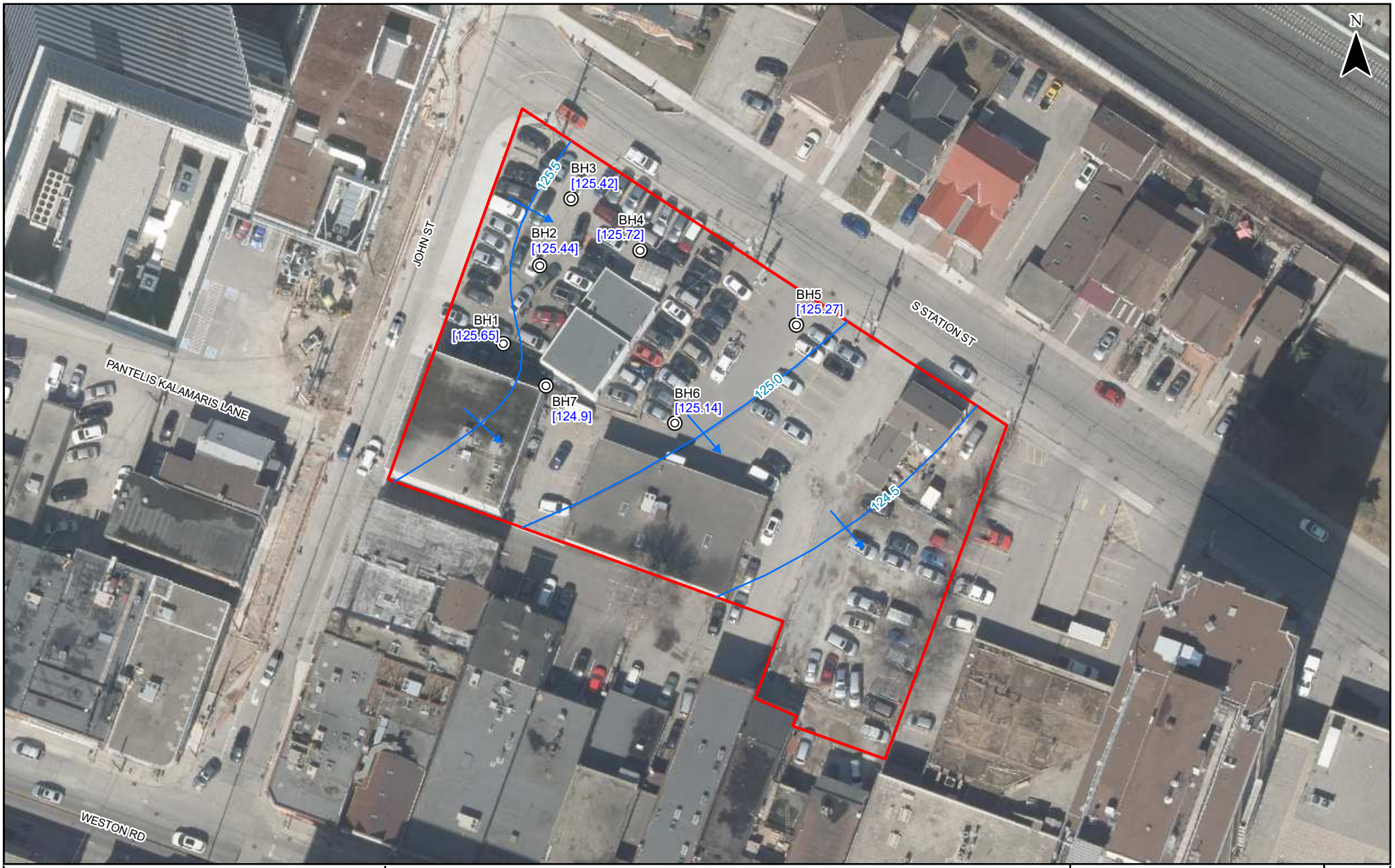
TITLE AND LOCATION:

CROSS SECTION A-A'

HYDROGEOLOGICAL INVESTIGATION
13 15, 17 AND 21 JOHN STREET AND
36, 38 AND 40 SOUTH STATION STREET
TORONTO, ONTARIO

PROJECT NO.: BRM-21021990-A0	DWN.: JA
SCALE: AS NOTED	CK: FC
DATE: AUGUST 2022	FIG. NO.: 5

E:\BRM\BRM-21021990-A0\60 Execution\65 Drawings\Cross Sections\BRM-21021990-A0.dwg



SCALE:

0 5 10 15 20 25 m

LEGEND:

- ◎ BOREHOLE / MONITORING WELL (EXP, 2021)
- [XX.XX] GROUNDWATER ELEVATION (m asl) AS MEASURED ON AUGUST 18, 2022
- GROUNDWATER CONTOUR
- GROUNDWATER FLOW DIRECTION
- APPROXIMATE SITE BOUNDARY

exp.

DRAWN BY:	CHECKED BY:
AC	FC

SHALLOW GROUNDWATER CONTOUR PLAN

FIGURE: 6A

HYDROGEOLOGICAL INVESTIGATION
13, 15, 17 AND 21 JOHN STREET AND
36, 38, AND 40 SOUTH STATION STREET
TORONTO, ONTARIO

PROJECT NUMBER: BRM-21021990-A0

DATE: AUGUST 2022

SCALE:

0 5 10 15 20 25 m

LEGEND:

- BOREHOLE / MONITORING WELL (EXP, 2022)
- [XX.XX] GROUNDWATER ELEVATION (m asl) AS MEASURED ON AUGUST 18, 2022
- GROUNDWATER CONTOUR
- GROUNDWATER FLOW DIRECTION
- APPROXIMATE SITE BOUNDARY

exp.

DRAWN BY:	CHECKED BY:
AC	FC

DEEP GROUNDWATER CONTOUR PLAN

FIGURE: 6B

HYDROGEOLOGICAL INVESTIGATION
13, 15, 17 AND 21 JOHN STREET AND
36, 38, AND 40 SOUTH STATION STREET
TORONTO, ONTARIO

PROJECT NUMBER: BRM-21021990-A0

DATE: AUGUST 2022

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:	October 2022 (Revised April 2023)	Title Page	
Title of Servicing Report:	Functional Servicing Report 13-21 John Street and 36-40 South Station Street	Title Page	
Name of Consulting Firm that prepared Servicing Report:	R.J. Burnside & Associates Limited	Title Page	
Site Address	13-21 John Street and 36-40 South Station Street Toronto, Ontario	Title Page	
Postal Code	M9N 1J2	Title Page	
Property Owner (identified on planning request for comments memo)	21 John Dev Inc.	Title Page	
Proposed description of the project (ex. number of point towers, number of podiums, etc.)	The proposed development of Parcel A will include a 40-storey residential building with a podium and Parcel B will include a 3-storey community centre.	Page 7	
Land Use (ex. commercial, residential, mixed, industrial, institutional) as defined by the Planning Act	Mixed Use	Page 7	
Number of below grade levels	Parcel A has three levels below grade, Parcel B is slab on grade.	Page 7	

TORONTO

October 2017

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?** _____ *(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	Page 31
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.			

TORONTO

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	_____ L/sec		

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	_____ L/sec		
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	_____ L/sec		
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.		
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?			

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		
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.			
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.		

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

Consulting Firm that prepared Servicing Report: R.J. Burnside & Associates Limited

Professional Engineer who completed the report summary: Jennifer Scherer
Print Name

Professional Engineer who completed the report summary: Jennifer Scherer
Signature

Schedule A: Template Letter from Mechanical Consultant confirming peak groundwater flow rate

[Mechanical Consultant Company Letterhead]
[Company Name]
[Company Address and Contact Information]

[Date]
Attention: Executive Director, Engineering and Construction Services
c/o Manager, Development Engineering
[ADDRESS]

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

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix E

Sanitary Sewer Calculations and Downstream Sanitary Analysis

BURNSIDE

CALCULATION SHEET

Project:	**John St & South Station St**	Prepared by:	AH
	Toronto, Ontario	Checked by:	JS
		Project No:	300054203
	Sanitary Servicing Analysis	Date:	April 19, 2023

Existing Site Flows Draining to John Street

13-21 John Street

Commercial

GFA (m^2)	GFA (ha)	P/m^2	Population
627	0.063	0.011	7

P=	7	persons	
Q=	250	L/cap/day	(ICI)
Q=	180000	L/floor ha/day	(ICI)

$Q_{(ICI)}$=	0.13	L/s

Infiltration Allowance=	0.26	L/s/ha
Area=	0.08	ha
$Q_{infiltration}$=	0.02	L/s

$Q_{Existing\ Total}$=	**0.15**	**L/s**

BURNSIDE

CALCULATION SHEET

Project:	**John St & South Station St**	Prepared by:	AH
	Toronto, Ontario	Checked by:	JS
		Project No:	300054203
	Sanitary Servicing Analysis	Date:	April 19, 2023

Existing Site Flows - South Station Street

36-40 South Station Street

Residential

Unit Type	Number of Units	Pop/Unit	Population
Single Family	1	3.5	4
Total	**1**		**4**

$$Q_{(Res.)} = \frac{PxQxM}{86400}$$

P= 4 persons

Q= 240 L/cap/day

$$M = 1 + \frac{14}{4+(P/1000)^{1/2}}$$

M= 4.45

$Q_{(Res.)}$= 0.04 L/s

Commercial

GFA (m^2)	GFA (ha)	P/m^2	Population
740	0.074	0.011	8

Office

GFA (m^2)	GFA (ha)	P/m^2	Population
402	0.040	0.033	13

P= 21 persons

Q= 250 L/cap/day (ICI)

Q= 180000 L/floor ha/day (ICI)

$Q_{(ICI)}$= 0.24 L/s

Infiltration Allowance= 0.26 L/s/ha

Area= 0.31 ha

$Q_{infiltration}$= 0.08 L/s

$Q_{Existing\ Total}$= 0.36 L/s

BURNSIDE

CALCULATION SHEET

Project:	**John St & South Station St**	Prepared by:	HH
	Toronto, Ontario	Checked by:	JS
		Project No:	300054203
	Sanitary Servicing Analysis	Date:	April 19, 2023

Proposed Site Flows - Parcel A

Residential

Unit Type	Number of Units	Pop/Unit	Population
Studio	51	1.4	71
1B	237	1.4	332
2B	150	2.1	315
3B	46	3.1	143
Total	**484**		**861**

$$Q_{(Res.)} = \frac{PxQxM}{86400}$$

P= 861 persons

Q= 240 L/cap/day

$$M = 1 + \frac{14}{4+(P/1000)^{1/2}}$$

M= 3.84

$Q_{(Res.)}$= 9.18 L/s

Commercial and Indoor Amenity

GFA (m^2)	GFA (ha)	P/m^2	Population
2,117	0.212	0.011	23

P= 23 persons

Q= 250 L/cap/day (ICI)

Q= 180000 L/floor ha/day (ICI)

$Q_{(ICI)}$= 0.44 L/s

Infiltration Allowance= 0.26 L/s/ha

Area= 0.28 ha

$Q_{infiltration}$= 0.07 L/s

$Q_{Proposed\ Total}$= 9.70 L/s

BURNSIDE

CALCULATION SHEET

Project:	**John St & South Station St**	Prepared by:	HH
	Toronto, Ontario	Checked by:	PM
		Project No:	300054203
	Sanitary Servicing Analysis	Date:	April 19, 2023

Proposed Site Flows - Parcel B

Commercial and Indoor Amenity

GFA (m^2)	GFA (ha)	P/m^2	Population
1,382	0.138	0.011	15

P=	15	persons	
Q=	250	L/cap/day	(ICI)
Q=	180000	L/floor ha/day	(ICI)

$Q_{(ICI)}$=	0.29	L/s

Infiltration Allowance=	0.26	L/s/ha
Area=	0.11	ha
$Q_{infiltration}$=	0.03	L/s

$Q_{Proposed\ Total}$=	**0.32**	**L/s**

F-5-5 Analysis

Flow Type	Pre-Development		Post-Development	Difference
	Drains to Combined Sewer on John St	Drains to Sanitary Sewer on South Station St	Drains to SanitarySewer on South Station St	
Sanitary Flow (L/s)	0.13	0.28	9.91	
Infiltration (L/s)	0.02	0.08	0.10	
Groundwater (L/s)	0.00	0.00	0.00	
Total Flow (L/s)	**0.15**	**0.36**	**10.01**	
Ultimate Flow to Combined System (L/s)	**0.51**		**10.01**	**9.50**

BURNSIDE

Project: **South Station Street**
Task: **Storm Flows on Ralph Street**
Date: **19-Apr-23**

Prepared by:	**AH**
Checked by:	**JS**
Project no.:	**300054203**

2-year Pre-Development Flow

Ralph St

A	21.8	
B	0	
C	0.78	
T	0.17	hr

Land Use Description	Runoff Coefficient	Intensity (mm/hr)	Area (ha)	Runoff (L/s)
Road/Pavement	0.90	88.19	0.086	**19.0**
TOTAL			0.086	**19.0**

$$Q_{Allowable\ Release} = \frac{CiA}{0.36}$$

19.0 **L/s**

BURNSIDE	Project: **South Station Street**	Prepared by:	**AH**
	Task: **Storm Flows on Fern Ave**	Checked by:	**JS**
	Date: **19-Apr-23**	Project no.:	**300054203**

2-year Pre-Development Flow

Fern Avenue Storm

A	21.8	
B	0	
C	0.78	
T	0.17	hr

Land Use Description	Runoff Coefficient	Intensity (mm/hr)	Area (ha)	Runoff (L/s)
Single Family	0.65	88.19	0.36	**57.3**
Road/Pavement	0.90	88.19	0.39	**86.1**
TOTAL			0.75	**143.4**

$$Q_{Allowable\ Release} = \frac{CiA}{0.36}$$

143.4 **L/s**

BURNSIDE

CALCULATION SHEET

Project:
John St & South Station St
Sanitary Sewer Population Analysis - Existing Condition

Prepared by:	**AH**
Checked by:	**JS**
Project No:	**300054203**
Date:	**19-Apr-23**

Type of Development	Density	Unit
Office	3.30	p/100sqm
Apartment	4.00	p/100sqm
Commercial	1.10	p/100sqm
Townhouse (Area)	1.70	p/100sqm
School/Church	2.58	p/100sqm
Institutional	3.33	p/100sqm
Industrial	2.72	p/100sqm

Type of housing	P/Unit
Single Family	3.5
Semi-detached	2.7
Townhouse (Unit)	2.7
Duplex	2.3
Triplex	3.7
Apartment - Bachelor	1.4
Apartment - 1 B	1.4
Apartment - 2 B	2.1
Apartment - 3 B	3.1
Apartment - 4 B	3.7

$$Qres = \frac{P \times Q \times M}{86400} + A \times I$$

Qres= 240 L/cap/day
Qici= 250 L/cap/day

$$M = 1 + \frac{14}{4 + (P/1000)^{1/2}}$$

I= 0.26 L/s/ha

*All Estimates are Based on City of Toronto Wet Weather Flow Management Guidelines (Nov 2006) and Design Criteria for Sewers and Watermains (Nov 2009 1st ed.)
*ICI stands for Industrial/Commercial/Institutional

Existing Buildings Contributing to Sanitary Sewer

Area 1 - Drains to MH1A

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
21 John St	144	1		Commercial	144	1.58
27 John St	166	3		Office	498	16.43
31 John St	141	1	1	Single Family	141	3.50
45 South Station St	165	3	2	Semi-detached	495	5.40
43 South Station St	136	2	1	Single Family	272	3.50
40 South Station St	402	1		Office	402	13.27
Total						**43.68**

Block Address	Area
Area 1	4,849
Total =	**4,849**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	12	132	0.0908
ICI:	32	307	0.1044

Area 2 - Drains to MH2A

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
37-39 South Station St	165	2	2	Semi-detached	330	5.40
33 South Station St	216	1		Commercial	216	2.38
31B - 31C South Station St	175	3	2	Semi-detached	525	5.40
31 - 31A South Station St	142	3	2	Semi-detached	426	5.40
36 South Station St	106	1	1	Single Family	106	3.50
Total						**22.08**

Block Address	Area
Area 2	3,803
Total =	**3,803**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	20	144	0.1387
ICI:	2	93	0.0216

Area 3 - Drains to MH3A

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
28A South Station St	72	3	1	Single Family	216	3.50
Total						**3.50**

Block Address	Area
Area 3	2,598
Total =	**2,598**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	4	185	0.0216
ICI:	0	0	0.0000

Area 4 - Drains to MH4A

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
29 South Station St	798	13		Apartment	10374	414.96
Total						**414.96**

Block Address	Area
Area 4	5,523
Total =	**5,523**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	415	400	1.0374
ICI:	0	0	0.0000

Area 5 - Drains to MH5A

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
1901 Lawrence Ave W - Commercial	2155	1		Commercial	2155	23.71
1901 Lawrence Ave W - Residential	1130	16		Apartment	18080	723.20
Total						**746.91**

Block Address	Area
Area 5	6,538
Total =	**6,538**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	723	400	1.808
ICI:	24	111	0.2155

BURNSIDE

CALCULATION SHEET

Project:
John St & South Station St
Sanitary Sewer Population Analysis - Existing Condition

Prepared by:	**AH**
Checked by:	**JS**
Project No:	**300054203**
Date:	**19-Apr-23**

Area 6 - ***Drains to MH6A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
1906-1930 Weston Rd - Commercial	1759	2		Commercial	3518	38.70
1906-1930 Weston Rd - Residential	761	12		Apartment	9132	365.28
1919-1937 Weston Rd	1992	2		Commercial	3984	43.82
Total						**447.80**

Block Address	Area
Area 6	5,644
Total =	**5,644**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	365	400	0.9132
ICI:	83	111	0.7502

Area 7 - ***Drains to MH7A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
1919-1937 Weston Rd	535	2		Commercial	1070	11.77
Total						**11.77**

Block Address	Area
Area 7	3,206
Total =	**3,206**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	0	0	0
ICI:	12	112	0.1070

Area 8 - ***Drains to MH8A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2079-2085 Lawrence Ave W	267	2		Commercial	534	5.87
2077 Lawrence Ave W	446	2		Commercial	892	9.81
2075 Lawrence Ave W	206	1		Commercial	206	2.27
Total						**17.95**

Block Address	Area
Area 8	6,488
Total =	**6,488**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	0	0	0
ICI:	18	110	0.1632

Area 9 - ***Drains to MH9A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2089 Lawrence Ave W	739	16		Apartment	11824	472.96
2099 Lawrence Ave W	785	16		Apartment	12560	502.40
2074 Lawrence Ave W	356	2		Commercial	712	7.83
2086 Lawrence Ave W	1603	11		Apartment	17633	705.32
2103 Lawrence Ave W	126	1		Institutional	126	4.20
2105 Lawrence Ave W	138	3	1	Single Family	414	3.50
2107 Lawrence Ave W	90.4	1	1	Single Family	90.4	3.50
2109 Lawrence Ave W	74	1	1	Single Family	74	3.50
Total						**1703.21**

Block Address	Area
Area 9	6,488
Total =	**6,488**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	1691	397	4.25954
ICI:	12	143	0.0838

Area 10 - ***Drains to MH10A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2100 Lawrence Ave W	764	2		Commercial	1528	16.81
2106 Lawrence Ave W	109	3	1	Single Family	327	3.50
2108 Lawrence Ave W	122	2	1	Single Family	244	3.50
2110 Lawrence Ave W	101	2.5	1	Single Family	252.5	3.50
2112 Lawrence Ave W	89.6	2.5	1	Single Family	224	3.50
37 Little Avenue	141	3	1	Single Family	423	3.50
2111 Lawrence Ave W	139	2	1	Single Family	278	3.50
2113 Lawrence Ave W	164	2	1	Single Family	328	3.50
2115 Lawrence Ave W	82.4	2	1	Single Family	164.8	3.50
2117 Lawrence Ave W	97.4	3	1	Single Family	292.2	3.50
2119 Lawrence Ave W	86.9	3	1	Single Family	260.7	3.50
2121 Lawrence Ave W	178	3	1	Single Family	534	3.50
2123 Lawrence Ave W	140	4		Apartment	560	22.40
Total						**77.71**

Block Address	Area
Area 10	8,010
Total =	**8,010**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	61	157	0.38882
ICI:	17	111	0.1528

BURNSIDE

CALCULATION SHEET

Project:
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Prepared by:	**AH**
Checked by:	**JS**
Project No:	**300054203**
Date:	**19-Apr-23**

SC1 - HUMBERVIEW CRESCENT

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
6	165	2	1	Single Family	330	3.50
11	122	2	1	Single Family	244	3.50
9	157	2	1	Single Family	314	3.50
7	11	2	1	Single Family	22	3.50
16	227	2	1	Single Family	454	3.50
2402	280	2	1	Single Family	560	3.50
Total						**21.00**

Block Address	Area
HUMBERVIEW CRESCENT	10,923
Total =	**10,923**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	21	109	0.1924
ICI:	0	0	0.0000

SC2 - WESTON ROAD 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2385	81	2	1	Single Family	162	3.50
2381-2383	142	2	2	Semi-detached	284	5.40
2377	102	2	1	Single Family	204	3.50
2375	110	2	2	Duplex	220	4.60
2371	797	1		Commercial	797	8.77
Total						**25.77**

Block Address	Area
WESTON ROAD 1	5,863
Total =	**5,863**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	17	195	0.087
ICI:	9	113	0.0797

SC3 - PARKE ST.

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2353	183	1		Commercial	183	2.01
2	71.5	2.5	1	Single Family	178.75	3.50
4	65.8	2	1	Single Family	131.6	3.50
6	71.3	2	1	Single Family	142.6	3.50
2347	207	2.5		Commercial	517.5	5.69
Total						**18.21**

Block Address	Area
PARKE STREET	4,566
Total =	**4,566**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	11	243	0.045295
ICI:	7	100	0.0701

SC4 - HOLLEY AVENUE 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
49A	157	2	1	Single Family	314	3.50
49B	185	1	1	Single Family	185	3.50
47	110	2	1	Single Family	220	3.50
45	96.5	2	1	Single Family	193	3.50
43	88.2	3	1	Single Family	264.6	3.50
41	76.4	3	1	Single Family	229.2	3.50
39	111	3	1	Single Family	333	3.50
48	86	3	1	Single Family	258	3.50
44	104	3	1	Single Family	312	3.50
42	117	3	1	Single Family	351	3.50
Total						**35.00**

Block Address	Area
HOLLEY AVENUE 1	4,408
Total =	**4,408**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	35	132	0.26598
ICI:	0	0	0.0000

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SC5 - HOLLEY AVE 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
36	108	3	1	Single Family	324	3.50
34	115	2	1	Single Family	230	3.50
32	104	2	1	Single Family	208	3.50
30	98.3	3	1	Single Family	294.9	3.50
28	108	3	1	Single Family	324	3.50
26	99.2	2	1	Single Family	198.4	3.50
22	86.1	3	1	Single Family	258.3	3.50
37	61.6	3	1	Single Family	184.8	3.50
35	73.2	3	1	Single Family	219.6	3.50
33	84.2	3	1	Single Family	252.6	3.50
31	86.2	3	1	Single Family	258.6	3.50
29	76.7	3	1	Single Family	230.1	3.50
27	121	3	1	Single Family	363	3.50
25	87.6	3	1	Single Family	262.8	3.50
21	122	3	1	Single Family	366	3.50
Total						**52.50**

Block Address	Area
HOLLEY AVENUE 2	6,343
Total =	**6,343**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	53	133	0.39751
ICI:	0	0	0.0000

SC6 - HOLLEY AVE 3

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
20	63.4	3	1	Single Family	190.2	3.50
18	71.6	3	1	Single Family	214.8	3.50
19	106	3	1	Single Family	318	3.50
17	67.9	3	1	Single Family	203.7	3.50
15	64.1	3	1	Single Family	192.3	3.50
13	101	3	1	Single Family	303	3.50
7	248	3	1	Single Family	744	3.50
1	122	1	1	School/Church	122	3.15
1A	126	3	1	Single Family	378	3.50
25	106	2	1	Single Family	212	3.50
Total						**34.65**

Block Address	Area
HOLLEY AVENUE 3	7,259
Total =	**7,259**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	32	116	0.2756
ICI:	3	246	0.0122

SC7 - WESTON ROAD 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2321	109	3	1	Single Family	327	3.50
2317	94.4	3	1	Single Family	283.2	3.50
2315	110	3	1	Single Family	330	3.50
2309	187	3	1	Single Family	561	3.50
2307	124	3	1	Single Family	372	3.50
2303	118	2	1	Single Family	236	3.50
2301	92	2	1	Single Family	184	3.50
2297	206	3	1	Single Family	618	3.50
Total						**28.00**

Block Address	Area
WESTON ROAD 2	8,562
Total =	**8,562**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	28	96	0.29112
ICI:	0	0	0.0000

SC8 - RECTORY ROAD 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2289	120	3	1	Single Family	360	3.50
34	80.4	3	1	Single Family	241.2	3.50
32	128	2	1	Single Family	256	3.50
30	78.7	3	1	Single Family	236.1	3.50
26-28	135	3	2	Semi-detached	405	5.40
35	82.5	3	1	Single Family	247.5	3.50
31	169	3	1	Single Family	507	3.50
29	120	2	1	Single Family	240	3.50
Total						**29.90**

Block Address	Area
RECTORY ROAD 1	5,039
Total =	**5,039**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	30	120	0.24928
ICI:	0	0	0.0000

BURNSIDE

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SC9 - RECTORY ROAD 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
24	119	2.5	1	Single Family	297.5	3.50
22	89.7	2.5	1	Single Family	224.25	3.50
20	89.9	2.5	1	Single Family	224.75	3.50
8	84.6	3	1	Single Family	253.8	3.50
23	138	2	1	Single Family	276	3.50
21	129	2	1	Single Family	258	3.50
19	114	2	1	Single Family	228	3.50
17	145	2	1	Single Family	290	3.50
15	123	2	1	Single Family	246	3.50
11	72.4	1	1	Single Family	72.4	3.50
9	95.4	2.5	1	Single Family	238.5	3.50
7, 5, 3	111	3	2	Semi-detached	333	5.40
1	105	3	1	Single Family	315	3.50
Total						**47.40**

Block Address	Area
RECTORY ROAD 2	5,755
Total =	**5,755**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	47	144	0.32572
ICI:	0	0	0.0000

SC10 - WINDAL AVENUE

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
4	92	2	1	Single Family	184	3.50
6	115	2	1	Single Family	230	3.50
8	93.7	3	1	Single Family	281.1	3.50
10	116	3	1	Single Family	348	3.50
1	127	3	1	Single Family	381	3.50
3	96.4	3	1	Single Family	289.2	3.50
5	111	3	1	Single Family	333	3.50
7	166	3	1	Single Family	498	3.50
11	92.4	3	1	Single Family	277.2	3.50
Total						**31.50**

Block Address	Area
WINDAL AVENUE	6,652
Total =	**6,652**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	32	113	0.28215
ICI:	0	0	0.0000

SC11 - WESTON ROAD 3

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2292	696	8		Apartment	5568	222.72
2278	587	4		Apartment	2348	93.92
2260	1119	9		Apartment	10071	402.84
2281-2287	134	3	2	Semi-detached	402	5.40
2275	835	4		Apartment	3340	133.60
2263	677	4		Apartment	2708	108.32
Total						**966.80**

Block Address	Area
WESTON ROAD 3	15,783
Total =	**15,783**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	967	396	2.4437
ICI:	0	0	0.0000

SC12 - COULTER AVENUE 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2	67.8	3	1	Single Family	203.4	3.50
4	99	2	1	Single Family	198	3.50
6	111	2	1	Single Family	222	3.50
8	136	2	1	Single Family	272	3.50
10	123	2	1	Single Family	246	3.50
54	202	3		Apartment	606	24.24
38	70.2	3	1	Single Family	210.6	3.50
19	57.4	3	1	Single Family	172.2	3.50
21	66.2	3	1	Single Family	198.6	3.50
23	60.6	2.5	1	Single Family	151.5	3.50
25	58.5	2.5	1	Single Family	146.25	3.50
Total						**59.24**

Block Address	Area
COULTER AVENUE 1	7,465
Total =	**7,465**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	59	225	0.262655
ICI:	0	0	0.0000

BURNSIDE

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SC13 - COULTER AVENUE 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
52	163	3	1	Single Family	489	3.50
56	114	3	1	Single Family	342	3.50
58	88	2	1	Single Family	176	3.50
60	46.4	3	1	Single Family	139.2	3.50
54	93.7	3	1	Single Family	281.1	3.50
68-70	182	3	2	Semi-detached	546	5.40
74	84.2	3	1	Single Family	252.6	3.50
76	73.5	3	1	Single Family	220.5	3.50
71	81.5	3	1	Single Family	244.5	3.50
73	50	3	1	Single Family	150	3.50
75-75A	241	3	2	Semi-detached	723	5.40
77-79	236	2.5	2	Semi-detached	590	5.40
81-83	211	3	2	Semi-detached	633	5.40
Total						**53.10**

Block Address	Area
COULTER AVENUE 2	8,368
Total =	**8,368**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	53	111	0.47869
ICI:	0	0	0.0000

SC14 - WESTON ROAD 4

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2240	819	19		Apartment	15561	622.44
2220-2222	2522	6		Apartment	15132	605.28
2202	1370	5		Apartment	6850	274.00
2255	681	12		Apartment	8172	326.88
2215-2235	766	4	12	Townhouse (Unit)	3064	32.40
2201-2211	419	4	6	Townhouse (Unit)	1676	16.20
2A-4C	332	4	5	Townhouse (Unit)	1328	13.50
12-22	341	4	6	Townhouse (Unit)	1364	16.20
88-106	597	4	10	Townhouse (Unit)	2388	27.00
42-56	564	4	8	Townhouse (Unit)	2256	21.60
31-41	319	4	6	Townhouse (Unit)	1276	16.20
43-55	419	4	7	Townhouse (Unit)	1676	18.90
61-65	139	4	2	Semi-detached	556	5.40
67-69	137	4	2	Semi-detached	548	5.40
73-75	134	4	2	Semi-detached	536	5.40
Total						**2006.80**

Block Address	Area
WESTON ROAD 4	31,525
Total =	**31,525**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	2007	322	6.2383
ICI:	0	0	0.0000

SC15 - WESTON ROAD 5

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2190	768	8		Apartment	6144	245.76
2180	642	8		Apartment	5136	205.44
2160	197	2		Institutional	394	13.13
2154	87	3	2	Duplex	261	4.60
2148	85.6	2.5	1	Single Family	214	3.50
2130	828	14		Apartment	11592	463.68
6-7	120	3	2	Semi-detached	360	5.40
5	92.8	3	1	Single Family	278.4	3.50
3	150	2	1	Single Family	300	3.50
2204	180	1.5		Commercial	270	2.97
2181-2189	371	1		Commercial	371	4.08
2131-2159	1284	1		Commercial	1284	14.12
2131-2159-2	1200	1		Apartment	1200	48.00
2123-2	548	1		Institutional	548	18.27
2121	462	1		Commercial	462	5.08
Total						**1041.04**

Block Address	Area
WESTON ROAD 5	25,878
Total =	**25,878**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	983	386	2.54854
ICI:	58	174	0.3329

BURNSIDE

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SC16 - CHURCH STREET 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
5470	204	1		Commercial	204	2.24
8	140	3	2	Semi-detached	420	5.40
10	121	3	2	Semi-detached	363	5.40
12	108	3	1	Single Family	324	3.50
14	225	3	2	Semi-detached	675	5.40
16	200	3	2	Semi-detached	600	5.40
22	207	3	2	Semi-detached	621	5.40
24	148	3	1	Single Family	444	3.50
26	200	3	1	Single Family	600	3.50
11	113	3	1	Single Family	339	3.50
15	148	3	2	Semi-detached	444	5.40
17	84	3	1	Single Family	252	3.50
19	187	3	2	Semi-detached	561	5.40
21	68.7	3	1	Single Family	206.1	3.50
23	95	3	1	Single Family	285	3.50
27	236	2	2	Semi-detached	472	5.40
Total						**69.94**

Block Address	Area
CHURCH STREET 1	9,178
Total =	**9,178**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	68	103	0.66061
ICI:	2	98	0.0204

SC17 - CROSS ST

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
44	119	3		School/Church	357	9.21
40	65.7	3	1	Single Family	197.1	3.50
38	63.5	3	1	Single Family	190.5	3.50
36	53	3	1	Single Family	159	3.50
34	252	2	2	Semi-detached	504	5.40
32	139	3	1	Single Family	417	3.50
30	95	2	1	Single Family	190	3.50
24	128	2	1	Single Family	256	3.50
28	86	3	1	Single Family	258	3.50
18	95.4	2	1	Single Family	190.8	3.50
14	46.6	3	1	Single Family	139.8	3.50
12	177	2	1	Single Family	354	3.50
8-10	329	2	2	Semi-detached	658	5.40
6	209	2	1	Single Family	418	3.50
3	93.8	3	1	Single Family	281.4	3.50
7	918	1	1	Single Family	918	3.50
11	122	2	1	Single Family	244	3.50
13	93.4	3	1	Single Family	280.2	3.50
17	132	3	1	Single Family	396	3.50
21	171	3	1	Single Family	513	3.50
23	69.2	3	1	Single Family	207.6	3.50
31	210	3	1	Single Family	630	3.50
37	213	3	1	Single Family	639	3.50
41	119	3	1	Single Family	357	3.50
43	132	2	1	Single Family	264	3.50
Total						**97.01**

Block Address	Area
CROSS STREET	16,484
Total =	**16,484**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	88	102	0.86624
ICI:	9	252	0.0357

SC18 - KING GEORGE ROAD

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
24	70	3	1	Single Family	210	3.50
20	99.5	3	1	Single Family	298.5	3.50
18	176	2	1	Single Family	352	3.50
16	151	2	1	Single Family	302	3.50
14	180	2	1	Single Family	360	3.50
12	183	2	1	Single Family	366	3.50
10	98.5	3	1	Single Family	295.5	3.50
8	97.9	2	1	Single Family	195.8	3.50
6	66.4	3	1	Single Family	199.2	3.50
4	42.7	2.5	1	Single Family	106.75	3.50
1-3	153	3	2	Semi-detached	459	5.40
5-7	135	3	2	Semi-detached	405	5.40
9-11	140	3	2	Semi-detached	420	5.40
15-17	126	3	2	Semi-detached	378	5.40
19-21	171	3	2	Semi-detached	513	5.40
23-25	134	3	2	Semi-detached	402	5.40
27-29	155	3	2	Semi-detached	465	5.40
Total						**72.80**

Block Address	Area
KING GEORGE ROAD	8,703
Total =	**8,703**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	73	127	0.572775
ICI:	0	0	0.0000

BURNSIDE

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SC19 - CHURCH STREET 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
30	113	3	1	Single Family	339	3.50
36	608	6		Apartment	3648	145.92
40	84.6	2	1	Single Family	169.2	3.50
42	113	1.5	1	Single Family	169.5	3.50
29	651	1.5	1	Single Family	976.5	3.50
33	99.2	1	1	Single Family	99.2	3.50
35	179	3	2	Semi-detached	537	5.40
37	99.9	2	1	Single Family	199.8	3.50
31	66.8	23	1	Single Family	1536.4	3.50
39	137	3	1	Single Family	411	3.50
41	126	2	1	Single Family	252	3.50
43	156	2	1	Single Family	312	3.50
45	151	2	1	Single Family	302	3.50
Total						**189.82**

Block Address	Area
CHURCH STREET 2	11,825
Total =	**11,825**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	190	212	0.89516
ICI:	0	0	0.0000

SC20 - FERN AVENUE

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2	120	3	1	Single Family	360	3.50
4	101	2.5	1	Single Family	252.5	3.50
6	82.8	2.5	1	Single Family	207	3.50
8	99.8	3	1	Single Family	299.4	3.50
10	118	3	1	Single Family	354	3.50
12	128	3	1	Single Family	384	3.50
14	122	3	1	Single Family	366	3.50
16	176	3	1	Single Family	528	3.50
18	153	3	1	Single Family	459	3.50
1	76.9	2.5	1	Single Family	192.25	3.50
5	94.9	2	1	Single Family	189.8	3.50
7	107	3	1	Single Family	321	3.50
9	107	3	1	Single Family	321	3.50
11	105	3	1	Single Family	315	3.50
13	122	2.5	1	Single Family	305	3.50
15	119	3	1	Single Family	357	3.50
17	130	2.5	1	Single Family	325	3.50
19	112	3	1	Single Family	336	3.50
21	113	3	1	Single Family	339	3.50
Total						**66.50**

Block Address	Area
FERN AVENUE	15,647
Total =	**15,647**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	67	108	0.621095
ICI:	0	0	0.0000

SC21 = GEORGE AND FERN

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
69	155	3	2	Single Family	465	7.00
67	71.5	2	1	Single Family	143	3.50
65	105	1	1	Single Family	105	3.50
20	101	2	1	Single Family	202	3.50
22	109	3	1	Single Family	327	3.50
24	101	3	1	Single Family	303	3.50
26	84.9	3	1	Single Family	254.7	3.50
57	221	3	2	Duplex	663	4.60
49	177	3	1	Single Family	531	3.50
49-2	559	2	1	School/Church	1118	28.84
48	149	3	1	Single Family	447	3.50
42	147	3	1	Single Family	441	3.50
34	119	3	1	Single Family	357	3.50
Total						**75.44**

Block Address	Area
GEORGE AND FERN	11,542
Total =	**11,542**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	47	111	0.42387
ICI:	28	250	0.1118

BURNSIDE

CALCULATION SHEET

Project:
John St & South Station St
Sanitary Sewer Population Analysis - Existing Condition

Prepared by:	**AH**
Checked by:	**JS**
Project No:	**300054203**
Date:	**19-Apr-23**

SC22 - WESTON ROAD 6

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2100	586	21		Apartment	12306	492.24
2088	201	1		Commercial	201	2.21
2105	1288	2		Commercial	2576	28.34
2077	607	2		Institutional	1214	40.47
2065 (1-3)	2148	3	48	Townhouse (Unit)	6444	129.60
2062	1474	1		Commercial	1474	16.21
2050	1092	2		Commercial	2184	24.02
2040	292	1		Commercial	292	3.21
2032	460	1		Institutional	460	15.33
2032-2	460	1		Apartment	460	18.40
2035	1297	1.5		Commercial	1945.5	21.40
2047	253	1		Commercial	253	2.78
2047-2	253	1		Apartment	253	10.12
Total						**804.34**

Block Address	Area
WESTON ROAD 6	32,237
Total =	**32,237**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	650	334	1.9463
ICI:	154	145	1.0600

SC23 - GEORGE STREET

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
30 KING	3150	2		School/Church	6300	162.54
36	290	3	1	Single Family	870	3.50
38	244	3	1	Single Family	732	3.50
23	2566	3		School/Church	5293	136.56
32	119	3	1	Single Family	357	3.50
28	125	3	1	Single Family	375	3.50
26	172	3	1	Single Family	516	3.50
26	97.8	3	1	Single Family	293.4	3.50
25	129	3	1	Single Family	387	3.50
Total						**323.60**

Block Address	Area
GEORGE STREET	28,234
Total =	**28,234**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	25	71	0.35304
ICI:	299	258	1.1593

SC24 - KING STREET CRES

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
11	134	2	1	Single Family	268	3.50
9	124	3	1	Single Family	372	3.50
7	148	3	1	Single Family	444	3.50
3	102	3	1	Single Family	306	3.50
20	121	3	1	Single Family	363	3.50
14	122	3	1	Single Family	366	3.50
12	67.4	3	1	Single Family	202.2	3.50
10	136	2.5	1	Single Family	340	3.50
8	131	2.5	1	Single Family	327.5	3.50
6	135	3	1	Single Family	405	3.50
4	245	1		Institutional	245	8.17
2	247	2	1	Single Family	494	3.50
Total						**46.67**

Block Address	Area
KING STREET CRES	9,267
Total =	**9,267**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	39	100	0.38877
ICI:	8	327	0.0245

SC25 - KING STREET

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
1	1076	2		School/Church	2152	55.52
15	841	12		Apartment	10092	403.68
2	253	1		Commercial	253	2.78
18	244	1		Commercial	244	2.68
33-1	8605	3		Apartment	25815	1032.60
33-2	1319	27		Apartment	35613	1424.52
Total						**2921.79**

Block Address	Area
KING STREET	22,245
Total =	**22,245**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	2861	400	7.152
ICI:	61	230	0.2649

BURNSIDE

CALCULATION SHEET

Project:
John St & South Station St
Sanitary Sewer Population Analysis - Existing Condition

Prepared by:	**AH**
Checked by:	**JS**
Project No:	**300054203**
Date:	**19-Apr-23**

SC26 - WESTON 7

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2016	214	2		Commercial	428	4.71
1995	1592	1		Commercial	1592	17.51
1979	810	1		Commercial	810	8.91
1976-1986	2037	1		Commercial	2037	22.41
1976-1986-2	2037	1		Apartment	2037	81.48
1940-1952	1243	1		Commercial	1243	13.67
1940-1952-2	1243	1		Apartment	1243	49.72
1965-1971	2600	1		Apartment	2600	104.00
1965-1971-2	2600	1		Commercial	2600	28.60
Total						**331.01**

Block Address	Area
WESTON 7	24,448
Total =	**24,448**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	235	400	0.588
ICI:	96	110	0.8710

SC27 - JOHN STREET

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
22-1	1927	5		Apartment	9635	385.40
22-2	880	25		Apartment	22000	880.00
Total						**1265.40**

Block Address	Area
JOHN STREET	10,731
Total =	**10,731**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	1265	400	3.1635
ICI:	0	0	0.0000

SC28 - LITTLE AVENUE

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
3	158	2	2	Semi-detached	316	5.40
5	101	3	1	Single Family	303	3.50
7	103	2	1	Single Family	206	3.50
9	85.7	2	1	Single Family	171.4	3.50
11	96	2	1	Single Family	192	3.50
15	179	3	1	Single Family	537	3.50
19	145	3	1	Single Family	435	3.50
23	115	3	2	Semi-detached	345	5.40
25-27	155	3	2	Semi-detached	465	5.40
29-31	153	3	2	Semi-detached	459	5.40
33	75.6	3	2	Semi-detached	226.8	5.40
35	135	3	1	Single Family	405	3.50
Total						**51.50**

Block Address	Area
LITTLE AVENUE	8,158
Total =	**8,158**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	52	128	0.40612
ICI:	0	0	0.0000

BURNSIDE

CALCULATION SHEET

Project:
John St & South Station St
Sanitary Sewer Population Analysis - Existing Condition

Prepared by:	**AH**
Checked by:	**JS**
Project No:	**300054203**
Date:	**19-Apr-23**

SC29 - ROSEMOUNT 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
235	227	3	1	Single Family	681	3.50
233	128	2	1	Single Family	256	3.50
229	116	2	1	Single Family	232	3.50
227	110	2	1	Single Family	220	3.50
225	139	3	2	Semi-detached	417	5.40
223	199	3	1	Single Family	597	3.50
221	89.8	3	1	Single Family	269.4	3.50
219	110	3	1	Single Family	330	3.50
217	65.6	3	1	Single Family	196.8	3.50
215	78.2	2	1	Single Family	156.4	3.50
213	76	3	1	Single Family	228	3.50
211	79.6	3	1	Single Family	238.8	3.50
209	73.8	3	1	Single Family	221.4	3.50
207	96.9	3	1	Single Family	290.7	3.50
205	98.3	3	1	Single Family	294.9	3.50
203	97.7	3	1	Single Family	293.1	3.50
52	156	3	1	Single Family	468	3.50
224	2083	4	42	Townhouse (Unit)	8332	113.40
220-222	234	2	2	Semi-detached	468	5.40
216-218	208	2	2	Semi-detached	416	5.40
212-214	241	2	2	Semi-detached	482	5.40
208-210	227	2	2	Semi-detached	454	5.40
204-206	228	2	2	Semi-detached	456	5.40
200-202	261	2	2	Semi-detached	522	5.40
198	125	3	1	Single Family	375	3.50
196	139	3	1	Single Family	417	3.50
194	125	3	1	Single Family	375	3.50
192	125	3	1	Single Family	375	3.50
Total						**221.20**

Block Address	Area
ROSEMOUNT 1	29,341
Total =	**29,341**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	221	122	1.80625
ICI:	0	0	0.0000

SC31 - ROSEMOUNT 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
49	45.5	3	2	Semi-detached	136.5	5.40
51	87.6	1	1	Single Family	87.6	3.50
53	99.7	3	1	Single Family	299.1	3.50
55	75.4	3	1	Single Family	226.2	3.50
57	88.1	2	1	Single Family	176.2	3.50
184	89.6	3	1	Single Family	268.8	3.50
176	190	3	1	Single Family	570	3.50
174	92.9	2	1	Single Family	185.8	3.50
168	162	1.5	1	Single Family	243	3.50
164	127	2	1	Single Family	254	3.50
162	109	2	1	Single Family	218	3.50
158	98.8	3	1	Single Family	296.4	3.50
154	94.4	3	1	Single Family	283.2	3.50
152	480	5		Apartment	2400	96.00
150	92.1	3	1	Single Family	276.3	3.50
140	201	3	1	Single Family	603	3.50
136	148	3	1	Single Family	444	3.50
134	79.6	3	1	Single Family	238.8	3.50
130	119	2	1	Single Family	238	3.50
128	136	3	1	Single Family	408	3.50
54	112	2	1	Single Family	224	3.50
56	245	3	2	Semi-detached	735	5.40
177	89.2	2	2	Semi-detached	178.4	5.40
175	119	3	1	Single Family	357	3.50
173	117	3	1	Single Family	351	3.50
167	142	3	1	Single Family	426	3.50
165	128	3	1	Single Family	384	3.50
163	109	3	1	Single Family	327	3.50
159	130	3	1	Single Family	390	3.50
153	131	3	1	Single Family	393	3.50
149	110	3	1	Single Family	330	3.50
137	123	3	1	Single Family	369	3.50
135	179	3	1	Single Family	537	3.50
64	291	3	1	Single Family	873	3.50
68	76.5	3	1	Single Family	229.5	3.50
70	123	3	1	Single Family	369	3.50
72	144	3	1	Single Family	432	3.50
69	109	3	1	Single Family	327	3.50
67	96.4	3	1	Single Family	289.2	3.50
65	95.5	3	1	Single Family	286.5	3.50
125	185	3	1	Single Family	555	3.50
Total						**241.70**

Block Address	Area
ROSEMOUNT 2	37,565
Total =	**37,565**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	242	149	1.62155
ICI:	0	0	0.0000

BURNSIDE

CALCULATION SHEET

Project:
John St & South Station St
Sanitary Sewer Population Analysis - Existing Condition

Prepared by:	**AH**
Checked by:	**JS**
Project No:	**300054203**
Date:	**19-Apr-23**

SC32 - ROSEMOUNT 3

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
124	117	3	1	Single Family	351	3.50
120-122	200	3	1	Single Family	600	3.50
118	122	3	1	Single Family	366	3.50
116	110	3	1	Single Family	330	3.50
110	183	3	1	Single Family	549	3.50
106	136	3	1	Single Family	408	3.50
104	141	2	1	Single Family	282	3.50
102	142	2	1	Single Family	284	3.50
100	135	3	1	Single Family	405	3.50
98	114	2	1	Single Family	228	3.50
96	122	2	1	Single Family	244	3.50
40	183	1	1	Single Family	183	3.50
117	166	3.5	1	Single Family	581	3.50
115	135	3	1	Single Family	405	3.50
113	74.8	3	1	Single Family	224.4	3.50
101	162	2	1	Single Family	324	3.50
97	117	3	1	Single Family	351	3.50
91	113	2	1	Single Family	226	3.50
Total						**63.00**

Block Address	Area
ROSEMOUNT 3	14,315
Total =	**14,315**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	63	99	0.63414
ICI:	0	0	0.0000

SUMMARY TABLE

BLOCK ADDRESS	BLOCK AREA (m2)	RES POP	RES DENSITY	RES GFA (ha)	ICI POP	ICI DENSITY	ICI GFA (ha)
HUMBERVIEW CRESCENT	10923	21	109	0.19	0	0	0.00
WESTON ROAD 1	5,863	17	195	0.09	9	113	0.08
PARKE STREET	4,566	11	243	0.05	7	100	0.07
HOLLEY AVENUE 1	4,408	35	132	0.27	0	0	0.00
HOLLEY AVENUE 2	6,343	53	133	0.40	0	0	0.00
HOLLEY AVENUE 3	7,259	32	116	0.28	3	246	0.01
WESTON ROAD 2	8,562	28	96	0.29	0	0	0.00
RECTORY ROAD 1	5,039	30	120	0.25	0	0	0.00
RECTORY ROAD 2	5,755	47	144	0.33	0	0	0.00
WINDAL AVENUE	6,652	32	113	0.28	0	0	0.00
WESTON ROAD 3	15,783	967	396	2.44	0	0	0.00
COULTER AVENUE 1	7,465	59	225	0.26	0	0	0.00
COULTER AVENUE 2	8,368	53	111	0.48	0	0	0.00
WESTON ROAD 4	31,525	2007	322	6.24	0	0	0.00
WESTON ROAD 5	25,878	983	386	2.55	58	174	0.33
CHURCH STREET 1	9,178	68	103	0.66	2	98	0.02
CROSS STREET	16,484	88	102	0.87	9	252	0.04
KING GEORGE ROAD	8,703	73	127	0.57	0	0	0.00
CHURCH STREET 2	11,825	190	212	0.90	0	0	0.00
FERN AVENUE	15,647	67	108	0.62	0	0	0.00
GEORGE AND FERN	11,542	47	111	0.42	28	250	0.11
WESTON ROAD 6	32,237	650	334	1.95	154	145	1.06
GEORGE STREET	28,234	25	71	0.35	299	258	1.16
KING STREET CRES	9,267	39	100	0.39	8	327	0.02
KING STREET	22,245	2861	400	7.15	61	230	0.26
WESTON 7	24,448	235	400	0.59	96	110	0.87
JOHN STREET	10,731	1265	400	3.16	0	0	0.00
LITTLE AVENUE	8,158	52	128	0.41	0	0	0.00
ROSEMOUNT 1	29,341	221	122	1.81	0	0	0.00
ROSEMOUNT 2	37,565	242	149	1.62	0	0	0.00
ROSEMOUNT 3	14,315	63	99	0.63	0	0	0.00
TOTALS	**444309**	**10561**	**289.47**	**36.48**	**734**	**181.58**	**4.04**

OUTPUT DATA:

SANITARY SEWER DESIGN SHEET - DRY WEATHER

EXISTING CONDITION

John St & South Station St, Toronto

Project #: 300054203.0000
Date: 19-Apr-23
Designed: AH
Checked: JS

Min Diameter = 200 mm
Mannings 'n'= 0.013
Min. Velocity = 0.60 m/s
Max. Velocity = 3.00 m/s

Avg. Dom. Flow Res. = 240.0 l/c/d
Avg. Dom. Flow ICI. = Max 250.0 l/c/d And 180000 L/Floor ha/d
Infiltration = 0.260 l/s/ha

NOMINAL PIPE SIZE USED

DESCRIPTION	FROM MH	TO MH	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						INFILTRATION				FLOW CALCULATIONS							PIPE DATA				
			AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (p/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	BLOCK AREA (ha)	ACCUM. BLOCK AREA (ha)	NFILTRATIO (l/s)	ACCUM. INFILTRATION (l/s)	TOTAL ACCUM. POP.	RESIDENTIAL PEAKING FACTOR	POP. FLOW (l/s)	CONSTANT FLOW (l/s)	ACCUM. CONSTANT FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)
Area 1	MH1A	MH2A	0.09	0.09		132		12	12	0.10	0.10	307		32	32	0.5	0.5	0.1	0.1	44	4.41	0.4			0.5	0.42	250	38.5	0.79	0.27	1%
Area 2	MH2A	MH3A	0.14	0.23		144		20	32	0.02	0.13	93		2	34	0.4	0.9	0.1	0.2	66	4.35	0.6			0.9	0.20	250	26.6	0.54	0.25	3%
Area 3	MH3A	MH4A	0.02	0.25		185		4	36		0.13				34	0.3	1.1	0.1	0.3	70	4.34	0.7			1.0	0.27	250	30.9	0.63	0.29	3%
Area 4	MH4A	MH5A	1.04	1.29		400		415	451	0.00	0.13				34	0.6	1.7	0.1	0.4	485	4.00	5.3			5.7	1.01	250	59.8	1.22	0.77	10%
Area 5	MH5A	MH8A	1.81	3.10		400		723	1174	0.22	0.34	111		24	58	0.7	2.3	0.2	0.6	1232	3.75	13.0			13.6	0.26	300	49.3	0.70	0.60	28%
Area 6	MH6A	MH7A	0.91	0.91		400		365	365	0.75	0.75	111		83	83	0.6	0.6	0.1	0.1	448	4.04	5.7			5.8	0.46	250	40.3	0.82	0.58	14%
Area 7	MH7A	MH8A		0.91					365	0.11	0.86	112		12	95	0.3	0.9	0.1	0.2	460	4.04	5.9			6.1	0.41	250	38.0	0.77	0.57	16%
Area 8	MH8A	MH9A		4.01					1539	0.16	1.36	110		18	171	0.6	3.9	0.2	1.0	1710	3.67	18.5			19.5	0.42	300	62.7	0.89	0.78	31%
Area 9	MH9A	MH10A	4.26	8.27		397		1691	3230	0.08	1.45	143		12	183	0.6	4.5	0.2	1.2	3413	3.41	33.7			34.8	2.20	300	143.4	2.03	1.67	24%
Area 10	MH10A	MH11A	0.39	8.66		157		61	3291	0.15	1.60	111		17	200	0.8	5.3	0.2	1.4	3491	3.41	34.5			35.9	2.20	300	143.4	2.03	1.69	25%
	MH11A	MH12A	36.48	45.14		289		10561	13852	4.04	5.64	182		734	934	44.4	49.7	11.6	12.9	14786	2.81	120.0			132.9	0.38	450	175.8	1.11	1.21	76%
	MH12A	MH13A		45.14					13852		5.64				934		49.7		12.9	14786	2.81	120.0			132.9	38.70	450	1773.6	11.15	6.55	7%
	MH13A	TRUNK		45.14					13852		5.64				934		49.7		12.9	14786	2.81	120.0			132.9	3.35	450	521.8	3.28	2.74	25%

OUTPUT DATA:

SANITARY SEWER DESIGN SHEET - WET WEATHER

EXISTING CONDITION

John St & South Station St, Toronto

BURNSIDE
THE DIFFERENCE IS OUR PEOPLE

Project #: 300054203.0000
Date: 19-Apr-23
Designed: AH
Checked: JS

Min Diameter = 200 mm
Mannings 'n'= 0.013
Min. Velocity = 0.60 m/s
Max. Velocity = 3.00 m/s

Avg. Dom. Flow Res. = 240.0 l/c/d
Avg. Dom. Flow ICI. = Max 250.0 l/c/d And 180000 L/Floor ha/d
Infiltration = 3.000 l/s/ha

NOMINAL PIPE SIZE USED

DESCRIPTION	FROM MH	TO MH	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						INFILTRATION				FLOW CALCULATIONS							PIPE DATA				HGL DATA						
			AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (p/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	BLOCK AREA (ha)	ACCUM. BLOCK AREA (ha)	INFILTRATION (l/s)	ACCUM. INFILTRATION (l/s)	TOTAL ACCUM. POP.	RESIDENTIAL PEAKING FACTOR	POP. FLOW (l/s)	CONSTANT FLOW (l/s)	ACCUM. CONSTANT FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)	HGL U/S (m)	HGL D/S (m)	Surface Elevation U/S (m)	Surface Elevation D/S (m)	Depth to HGL U/S (m)	Depth to HGL D/S (m)	Surcharge U/S
Area 1	MH1A	MH2A	0.09	0.09		132		12	12	0.10	0.10	307		32	32	0.5	0.5	1.5	1.5	44	4.41	0.4			1.8	0.42	250	38.5	0.79	0.40	5%	125.01	124.80	127.70	126.88	2.69	2.08	0.00
Area 2	MH2A	MH3A	0.14	0.23		144		20	32	0.02	0.13	93		2	34	0.4	0.9	1.1	2.6	66	4.35	0.6			3.2	0.20	250	26.6	0.54	0.37	12%	124.80	124.70	126.88	126.77	2.08	2.07	0.00
Area 3	MH3A	MH4A	0.02	0.25		185		4	36		0.13				34	0.3	1.1	0.8	3.4	70	4.34	0.7			4.1	0.27	250	30.9	0.63	0.44	13%	124.70	124.56	126.77	126.72	2.07	2.16	0.00
Area 4	MH4A	MH5A	1.04	1.29		400		415	451	0.00	0.13				34	0.6	1.7	1.7	5.0	485	4.00	5.3			10.3	1.01	250	59.8	1.22	0.91	17%	124.56	124.03	126.72	126.44	2.16	2.41	0.00
Area 5	MH5A	MH8A	1.81	3.10		400		723	1174	0.22	0.34	111		24	58	0.7	2.3	2.0	7.0	1232	3.75	13.0			19.9	0.26	300	49.3	0.70	0.66	40%	124.03	123.80	126.44	127.11	2.41	3.31	0.00
Area 6	MH6A	MH7A	0.91	0.91		400		365	365	0.75	0.75	111		83	83	0.6	0.6	1.7	1.7	448	4.04	5.7			7.4	0.46	250	40.3	0.82	0.62	18%	124.34	124.05	126.81	126.95	2.47	2.90	0.00
Area 7	MH7A	MH8A		0.91					365	0.11	0.86	112		12	95	0.3	0.9	1.0	2.7	460	4.04	5.9			8.5	0.41	250	38.0	0.77	0.62	22%	124.05	123.83	126.95	127.11	2.90	3.28	0.00
Area 8	MH8A	MH9A		4.01					1539	0.16	1.36	110		18	171	0.6	3.9	1.9	11.6	1710	3.67	18.5			30.1	0.42	300	62.7	0.89	0.88	48%	123.80	123.44	127.11	125.80	3.31	2.36	0.00
Area 9	MH9A	MH10A	4.26	8.27		397		1691	3230	0.08	1.45	143		12	183	0.6	4.5	1.9	13.5	3413	3.41	33.7			47.2	2.20	300	143.4	2.03	1.82	33%	121.85	119.67	125.80	121.57	3.95	1.90	0.00
Area 10	MH10A	MH11A	0.39	8.66		157		61	3291	0.15	1.60	111		17	200	0.8	5.3	2.4	15.9	3491	3.41	34.5			50.4	2.20	300	143.4	2.03	1.85	35%	119.66	117.40	121.57	118.84	1.91	1.44	0.00
	MH11A	MH12A	36.48	45.14		289		10561	13852	4.04	5.64	182		734	934	44.4	49.7	133.3	149.2	14786	2.81	120.0	143.4	143.4	412.6	0.38	450	175.8	1.11		>100%	117.40	117.13	118.84	118.84	1.44	1.71	0.22
	MH12A	MH13A		45.14					13852		5.64				934		49.7		149.2	14786	2.81	120.0		143.4	412.6	38.70	450	1773.6	11.15	9.09	23%	117.13	115.97	118.84	118.79	1.71	2.82	0.00
	MH13A	TRUNK		45.14					13852		5.64				934		49.7		149.2	14786	2.81	120.0		143.4	412.6	3.35	450	521.8	3.28	3.64	79%	115.14	113.00	118.79	115.78	3.65	2.78	0.00

BURNSIDE

CALCULATION SHEET

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Checked by:	**JS**
Project No:	**300054203**
Date:	**19-Apr-23**

Type of Development	Density	Unit
Office	3.30	p/100sqm
Apartment	4.00	p/100sqm
Commercial	1.10	p/100sqm
Townhouse (Area)	1.70	p/100sqm
School/Church	2.58	p/100sqm
Institutional	3.33	p/100sqm
Industrial	2.72	p/100sqm

Type of housing	P/Unit
Single Family	3.5
Semi-detached	2.7
Townhouse (Unit)	2.7
Duplex	2.3
Triplex	3.7
Apartment - Bachelor	1.4
Apartment - 1 B	1.4
Apartment - 2 B	2.1
Apartment - 3 B	3.1
Apartment - 4 B	3.7

$$Qres = \frac{PxQxM}{86400} + AxI$$

Qres= 240 L/cap/day
Qici= 250 L/cap/day

$$M = 1 + \frac{14}{4+(P/1000)^{1/2}}$$

I= 0.26 L/s/ha

*All Estimates are Based on City of Toronto Wet Weather Flow Management Guidelines (Nov 2006) and Design Criteria for Sewers and Watermains (Nov 2009 1st ed.)
*ICI stands for Industrial/Commercial/Institutional

Existing Buildings Plus Recent Developments Contributing to Sanitary Sewer

Area 1 - ***Drains to MH1A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
21 John St	144	1		Commercial	144	1.58
27 John St	166	3		Office	498	16.43
31 John St	141	1	1	Single Family	141	3.50
45 South Station St	165	3	2	Semi-detached	495	5.40
43 South Station St	136	2	1	Single Family	272	3.50
40 South Station St	402	1		Office	402	13.27
Total						**43.68**

Block Address	Area
Area 1	4,849
Total =	**4,849**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	12	132	0.0908
ICI:	32	307	0.1044

Area 2 - ***Drains to MH2A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
37-39 South Station St	165	2	2	Semi-detached	330	5.40
33 South Station St	216	1		Commercial	216	2.38
31B - 31C South Station St	175	3	2	Semi-detached	525	5.40
31 - 31A South Station St	142	3	2	Semi-detached	426	5.40
36 South Station St	106	1	1	Single Family	106	3.50
Total						**22.08**

Block Address	Area
Area 2	3,803
Total =	**3,803**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	20	144	0.1387
ICI:	2	93	0.0216

Area 3 - ***Drains to MH3A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
28A South Station St	72	3	1	Single Family	216	3.50
Total						**3.50**

Block Address	Area
Area 3	2,598
Total =	**2,598**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	4	185	0.0216
ICI:	0	0	0.0000

Area 4 - ***Drains to MH4A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
29 South Station St	798	13		Apartment	10374	414.96
Total						**414.96**

Block Address	Area
Area 4	5,523
Total =	**5,523**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	415	400	1.0374
ICI:	0	0	0.0000

Area 5 - ***Drains to MH5A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
1901 Lawrence Ave W - Commercial	2155	1		Commercial	2155	23.71
1901 Lawrence Ave W - Residential	1130	16		Apartment	18080	723.20
Total						**746.91**

Block Address	Area
Area 5	6,538
Total =	**6,538**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	723	400	1.808
ICI:	24	111	0.2155

BURNSIDE

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Area 6 - ***Drains to MH6A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
1906-1930 Weston Rd - Commercial	1759	2		Commercial	3518	38.70
1906-1930 Weston Rd - Residential	761	12		Apartment	9132	365.28
1919-1937 Weston Rd	1992	2		Commercial	3984	43.82
Total						**447.80**

Block Address	Area
Area 6	5,644
Total =	**5,644**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	365	400	0.9132
ICI:	83	111	0.7502

Area 7 - ***Drains to MH7A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
1919-1937 Weston Rd	535	2		Commercial	1070	11.77
Total						**11.77**

Block Address	Area
Area 7	3,206
Total =	**3,206**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	0	0	0
ICI:	12	112	0.1070

Area 8 - ***Drains to MH8A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2079-2085 Lawrence Ave W	267	2		Commercial	534	5.87
2077 Lawrence Ave W	446	2		Commercial	892	9.81
2075 Lawrence Ave W	206	1		Commercial	206	2.27
Total						**17.95**

Block Address	Area
Area 8	6,488
Total =	**6,488**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	0	0	0
ICI:	18	110	0.1632

Area 9 - ***Drains to MH9A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2089 Lawrence Ave W	739	16		Apartment	11824	472.96
2099 Lawrence Ave W	785	16		Apartment	12560	502.40
2074 Lawrence Ave W	356	2		Commercial	712	7.83
2086 Lawrence Ave W	1603	11		Apartment	17633	705.32
2103 Lawrence Ave W	126	1		Institutional	126	4.20
2105 Lawrence Ave W	138	3	1	Single Family	414	3.50
2107 Lawrence Ave W	90.4	1	1	Single Family	90.4	3.50
2109 Lawrence Ave W	74	1	1	Single Family	74	3.50
Total						**1703.21**

Block Address	Area
Area 9	6,488
Total =	**6,488**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	1691	397	4.25954
ICI:	12	143	0.0838

Area 10 - ***Drains to MH10A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2100 Lawrence Ave W	764	2		Commercial	1528	16.81
2106 Lawrence Ave W	109	3	1	Single Family	327	3.50
2108 Lawrence Ave W	122	2	1	Single Family	244	3.50
2110 Lawrence Ave W	101	2.5	1	Single Family	252.5	3.50
2112 Lawrence Ave W	89.6	2.5	1	Single Family	224	3.50
37 Little Avenue	141	3	1	Single Family	423	3.50
2111 Lawrence Ave W	139	2	1	Single Family	278	3.50
2113 Lawrence Ave W	164	2	1	Single Family	328	3.50
2115 Lawrence Ave W	82.4	2	1	Single Family	164.8	3.50
2117 Lawrence Ave W	97.4	3	1	Single Family	292.2	3.50
2119 Lawrence Ave W	86.9	3	1	Single Family	260.7	3.50
2121 Lawrence Ave W	178	3	1	Single Family	534	3.50
2123 Lawrence Ave W	140	4		Apartment	560	22.40
Total						**77.71**

Block Address	Area
Area 10	8,010
Total =	**8,010**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	61	157	0.38882
ICI:	17	111	0.1528

BURNSIDE

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SC1 - HUMBERVIEW CRESCENT

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
6	165	2	1	Single Family	330	3.50
11	122	2	1	Single Family	244	3.50
9	157	2	1	Single Family	314	3.50
7	11	2	1	Single Family	22	3.50
16	227	2	1	Single Family	454	3.50
2402	280	2	1	Single Family	560	3.50
Total						**21.00**

Block Address	Area
HUMBERVIEW CRESCENT	10,923
Total =	**10,923**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	21	109	0.1924
ICI:	0	0	0.0000

SC2 - WESTON ROAD 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2385	81	2	1	Single Family	162	3.50
2381-2383	142	2	2	Semi-detached	284	5.40
2377	102	2	1	Single Family	204	3.50
2375	110	2	2	Duplex	220	4.60
2371	797	1		Commercial	797	8.77
Total						**25.77**

Block Address	Area
WESTON ROAD 1	5,863
Total =	**5,863**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	17	195	0.087
ICI:	9	113	0.0797

SC3 - PARKE ST.

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2353	183	1		Commercial	183	2.01
2	71.5	2.5	1	Single Family	178.75	3.50
4	65.8	2	1	Single Family	131.6	3.50
6	71.3	2	1	Single Family	142.6	3.50
2347	207	2.5		Commercial	517.5	5.69
Total						**18.21**

Block Address	Area
PARKE STREET	4,566
Total =	**4,566**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	11	243	0.045295
ICI:	7	100	0.0701

SC4 - HOLLEY AVENUE 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
49A	157	2	1	Single Family	314	3.50
49B	185	1	1	Single Family	185	3.50
47	110	2	1	Single Family	220	3.50
45	96.5	2	1	Single Family	193	3.50
43	88.2	3	1	Single Family	264.6	3.50
41	76.4	3	1	Single Family	229.2	3.50
39	111	3	1	Single Family	333	3.50
48	86	3	1	Single Family	258	3.50
44	104	3	1	Single Family	312	3.50
42	117	3	1	Single Family	351	3.50
Total						**35.00**

Block Address	Area
HOLLEY AVENUE 1	4,408
Total =	**4,408**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	35	132	0.26598
ICI:	0	0	0.0000

BURNSIDE

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SC5 - HOLLEY AVE 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
36	108	3	1	Single Family	324	3.50
34	115	2	1	Single Family	230	3.50
32	104	2	1	Single Family	208	3.50
30	98.3	3	1	Single Family	294.9	3.50
28	108	3	1	Single Family	324	3.50
26	99.2	2	1	Single Family	198.4	3.50
22	86.1	3	1	Single Family	258.3	3.50
37	61.6	3	1	Single Family	184.8	3.50
35	73.2	3	1	Single Family	219.6	3.50
33	84.2	3	1	Single Family	252.6	3.50
31	86.2	3	1	Single Family	258.6	3.50
29	76.7	3	1	Single Family	230.1	3.50
27	121	3	1	Single Family	363	3.50
25	87.6	3	1	Single Family	262.8	3.50
21	122	3	1	Single Family	366	3.50
Total						**52.50**

Block Address	Area
HOLLEY AVENUE 2	6,343
Total =	**6,343**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	53	133	0.39751
ICI:	0	0	0.0000

SC6 - HOLLEY AVE 3

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
20	63.4	3	1	Single Family	190.2	3.50
18	71.6	3	1	Single Family	214.8	3.50
19	106	3	1	Single Family	318	3.50
17	67.9	3	1	Single Family	203.7	3.50
15	64.1	3	1	Single Family	192.3	3.50
13	101	3	1	Single Family	303	3.50
7	248	3	1	Single Family	744	3.50
1	122	1	1	School/Church	122	3.15
1A	126	3	1	Single Family	378	3.50
25	106	2	1	Single Family	212	3.50
Total						**34.65**

Block Address	Area
HOLLEY AVENUE 3	7,259
Total =	**7,259**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	32	116	0.2756
ICI:	3	246	0.0122

SC7 - WESTON ROAD 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2321	109	3	1	Single Family	327	3.50
2317	94.4	3	1	Single Family	283.2	3.50
2315	110	3	1	Single Family	330	3.50
2309	187	3	1	Single Family	561	3.50
2307	124	3	1	Single Family	372	3.50
2303	118	2	1	Single Family	236	3.50
2301	92	2	1	Single Family	184	3.50
2297	206	3	1	Single Family	618	3.50
Total						**28.00**

Block Address	Area
WESTON ROAD 2	8,562
Total =	**8,562**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	28	96	0.29112
ICI:	0	0	0.0000

SC8 - RECTORY ROAD 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2289	120	3	1	Single Family	360	3.50
34	80.4	3	1	Single Family	241.2	3.50
32	128	2	1	Single Family	256	3.50
30	78.7	3	1	Single Family	236.1	3.50
26-28	135	3	2	Semi-detached	405	5.40
35	82.5	3	1	Single Family	247.5	3.50
31	169	3	1	Single Family	507	3.50
29	120	2	1	Single Family	240	3.50
Total						**29.90**

Block Address	Area
RECTORY ROAD 1	5,039
Total =	**5,039**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	30	120	0.24928
ICI:	0	0	0.0000

BURNSIDE

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SC9 - RECTORY ROAD 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
24	119	2.5	1	Single Family	297.5	3.50
22	89.7	2.5	1	Single Family	224.25	3.50
20	89.9	2.5	1	Single Family	224.75	3.50
8	84.6	3	1	Single Family	253.8	3.50
23	138	2	1	Single Family	276	3.50
21	129	2	1	Single Family	258	3.50
19	114	2	1	Single Family	228	3.50
17	145	2	1	Single Family	290	3.50
15	123	2	1	Single Family	246	3.50
11	72.4	1	1	Single Family	72.4	3.50
9	95.4	2.5	1	Single Family	238.5	3.50
7, 5, 3	111	3	2	Semi-detached	333	5.40
1	105	3	1	Single Family	315	3.50
Total						**47.40**

Block Address	Area
RECTORY ROAD 2	5,755
Total =	**5,755**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	47	144	0.32572
ICI:	0	0	0.0000

SC10 - WINDAL AVENUE

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
4	92	2	1	Single Family	184	3.50
6	115	2	1	Single Family	230	3.50
8	93.7	3	1	Single Family	281.1	3.50
10	116	3	1	Single Family	348	3.50
1	127	3	1	Single Family	381	3.50
3	96.4	3	1	Single Family	289.2	3.50
5	111	3	1	Single Family	333	3.50
7	166	3	1	Single Family	498	3.50
11	92.4	3	1	Single Family	277.2	3.50
Total						**31.50**

Block Address	Area
WINDAL AVENUE	6,652
Total =	**6,652**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	32	113	0.28215
ICI:	0	0	0.0000

SC11 - WESTON ROAD 3

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2292	696	8		Apartment	5568	222.72
2278	587	4		Apartment	2348	93.92
2278 - NEW	587		2	Apartment - 1 B	0	2.80
2260	1119	9		Apartment	10071	402.84
2281-2287	134	3	2	Semi-detached	402	5.40
2270-2274	824	12	68	Apartment - 1 B	12576	95.20
2270-2274			39	Apartment - 2 B	0	81.90
2275	835	4		Apartment	3340	133.60
2263	677	4		Apartment	2708	108.32
Total						**1146.70**

Block Address	Area
WESTON ROAD 3	15,783
Total =	**15,783**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	1147	310	3.7013
ICI:	0	0	0.0000

SC12 - COULTER AVENUE 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2	67.8	3	1	Single Family	203.4	3.50
4	99	2	1	Single Family	198	3.50
6	111	2	1	Single Family	222	3.50
8	136	2	1	Single Family	272	3.50
10	123	2	1	Single Family	246	3.50
54	202	3		Apartment	606	24.24
38	70.2	3	1	Single Family	210.6	3.50
19	57.4	3	1	Single Family	172.2	3.50
21	66.2	3	1	Single Family	198.6	3.50
23	60.6	2.5	1	Single Family	151.5	3.50
25	58.5	2.5	1	Single Family	146.25	3.50
Total						**59.24**

Block Address	Area
COULTER AVENUE 1	7,465
Total =	**7,465**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	59	225	0.262655
ICI:	0	0	0.0000

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CALCULATION SHEET

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Project No:	**300054203**
Date:	**19-Apr-23**

SC13 - COULTER AVENUE 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
52	163	3	1	Single Family	489	3.50
56	114	3	1	Single Family	342	3.50
58	88	2	1	Single Family	176	3.50
60	46.4	3	1	Single Family	139.2	3.50
54	93.7	3	1	Single Family	281.1	3.50
68-70	182	3	2	Semi-detached	546	5.40
74	84.2	3	1	Single Family	252.6	3.50
76	73.5	3	1	Single Family	220.5	3.50
71	81.5	3	1	Single Family	244.5	3.50
73	50	3	1	Single Family	150	3.50
75-75A	241	3	2	Semi-detached	723	5.40
77-79	236	2.5	2	Semi-detached	590	5.40
81-83	211	3	2	Semi-detached	633	5.40
Total						**53.10**

Block Address	Area
COULTER AVENUE 2	8,368
Total =	**8,368**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	53	111	0.47869
ICI:	0	0	0.0000

SC14 - WESTON ROAD 4

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2240	819	19		Apartment	15561	622.44
2220-2222	2522	6		Apartment	15132	605.28
2202	1370	5		Apartment	6850	274.00
2255	681	12		Apartment	8172	326.88
2215-2235	766	4	12	Townhouse (Unit)	3064	32.40
2201-2211	419	4	6	Townhouse (Unit)	1676	16.20
2A-4C	332	4	5	Townhouse (Unit)	1328	13.50
12-22	341	4	6	Townhouse (Unit)	1364	16.20
88-106	597	4	10	Townhouse (Unit)	2388	27.00
42-56	564	4	8	Townhouse (Unit)	2256	21.60
31-41	319	4	6	Townhouse (Unit)	1276	16.20
43-55	419	4	7	Townhouse (Unit)	1676	18.90
61-65	139	4	2	Semi-detached	556	5.40
67-69	137	4	2	Semi-detached	548	5.40
73-75	134	4	2	Semi-detached	536	5.40
Total						**2006.80**

Block Address	Area
WESTON ROAD 4	31,525
Total =	**31,525**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	2007	322	6.2383
ICI:	0	0	0.0000

SC15 - WESTON ROAD 5

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2190	768	8		Apartment	6144	245.76
2180	642	8		Apartment	5136	205.44
2160	197	2		Institutional	394	13.13
2154	87	3	2	Duplex	261	4.60
2148	85.6	2.5	1	Single Family	214	3.50
2130	828	14		Apartment	11592	463.68
6-7	120	3	2	Semi-detached	360	5.40
5	92.8	3	1	Single Family	278.4	3.50
3	150	2	1	Single Family	300	3.50
2204	180	1.5		Commercial	270	2.97
2179			3	Townhouse (Unit)	0	8.10
2179			9	Single Family	0	31.50
2181-2189	371	1		Commercial	371	4.08
2131-2159	1284	1		Commercial	1284	14.12
2131-2159-2	1200	1		Apartment	1200	48.00
2123-2	548	1		Institutional	548	18.27
2121	462	1		Commercial	462	5.08
Total						**1080.64**

Block Address	Area
WESTON ROAD 5	25,878
Total =	**25,878**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	1023	401	2.54854
ICI:	58	174	0.3329

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SC16 - CHURCH STREET 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
5470	204	1		Commercial	204	2.24
8	140	3	2	Semi-detached	420	5.40
10	121	3	2	Semi-detached	363	5.40
12	108	3	1	Single Family	324	3.50
14	225	3	2	Semi-detached	675	5.40
16	200	3	2	Semi-detached	600	5.40
22	207	3	2	Semi-detached	621	5.40
24	148	3	1	Single Family	444	3.50
26	200	3	1	Single Family	600	3.50
11	113	3	1	Single Family	339	3.50
15	148	3	2	Semi-detached	444	5.40
17	84	3	1	Single Family	252	3.50
19	187	3	2	Semi-detached	561	5.40
21	68.7	3	1	Single Family	206.1	3.50
23	95	3	1	Single Family	285	3.50
27	236	2	2	Semi-detached	472	5.40
Total						**69.94**

Block Address	Area
CHURCH STREET 1	9,178
Total =	**9,178**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	68	103	0.66061
ICI:	2	98	0.0204

SC17 - CROSS ST

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
44	119	3		School/Church	357	9.21
40	65.7	3	1	Single Family	197.1	3.50
38	63.5	3	1	Single Family	190.5	3.50
36	53	3	1	Single Family	159	3.50
34	252	2	2	Semi-detached	504	5.40
32	139	3	1	Single Family	417	3.50
30	95	2	1	Single Family	190	3.50
24	128	2	1	Single Family	256	3.50
28	86	3	1	Single Family	258	3.50
18	95.4	2	1	Single Family	190.8	3.50
14	46.6	3	1	Single Family	139.8	3.50
12	177	2	1	Single Family	354	3.50
8-10	329	2	2	Semi-detached	658	5.40
6	209	2	1	Single Family	418	3.50
3	93.8	3	1	Single Family	281.4	3.50
7	918	1	1	Single Family	918	3.50
11	122	2	1	Single Family	244	3.50
13	93.4	3	1	Single Family	280.2	3.50
17	132	3	1	Single Family	396	3.50
21	171	3	1	Single Family	513	3.50
23	69.2	3	1	Single Family	207.6	3.50
31	210	3	1	Single Family	630	3.50
37	213	3	1	Single Family	639	3.50
41	119	3	1	Single Family	357	3.50
43	132	2	1	Single Family	264	3.50
Total						**97.01**

Block Address	Area
CROSS STREET	16,484
Total =	**16,484**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	88	102	0.86624
ICI:	9	252	0.0357

SC18 - KING GEORGE ROAD

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
24	70	3	1	Single Family	210	3.50
20	99.5	3	1	Single Family	298.5	3.50
18	176	2	1	Single Family	352	3.50
16	151	2	1	Single Family	302	3.50
14	180	2	1	Single Family	360	3.50
12	183	2	1	Single Family	366	3.50
10	98.5	3	1	Single Family	295.5	3.50
8	97.9	2	1	Single Family	195.8	3.50
6	66.4	3	1	Single Family	199.2	3.50
4	42.7	2.5	1	Single Family	106.75	3.50
1-3	153	3	2	Semi-detached	459	5.40
5-7	135	3	2	Semi-detached	405	5.40
9-11	140	3	2	Semi-detached	420	5.40
15-17	126	3	2	Semi-detached	378	5.40
19-21	171	3	2	Semi-detached	513	5.40
23-25	134	3	2	Semi-detached	402	5.40
27-29	155	3	2	Semi-detached	465	5.40
Total						**72.80**

Block Address	Area
KING GEORGE ROAD	8,703
Total =	**8,703**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	73	127	0.572775
ICI:	0	0	0.0000

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SC19 - CHURCH STREET 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
30	113	3	1	Single Family	339	3.50
36	608	6		Apartment	3648	145.92
40	84.6	2	1	Single Family	169.2	3.50
42	113	1.5	1	Single Family	169.5	3.50
29	651	1.5	1	Single Family	976.5	3.50
33	99.2	1	1	Single Family	99.2	3.50
35	179	3	2	Semi-detached	537	5.40
37	99.9	2	1	Single Family	199.8	3.50
31	66.8	23	1	Single Family	1536.4	3.50
39	137	3	1	Single Family	411	3.50
41	126	2	1	Single Family	252	3.50
43	156	2	1	Single Family	312	3.50
45	151	2	1	Single Family	302	3.50
Total						**189.82**

Block Address	Area
CHURCH STREET 2	11,825
Total =	**11,825**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	190	212	0.89516
ICI:	0	0	0.0000

SC20 - FERN AVENUE

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2	120	3	1	Single Family	360	3.50
4	101	2.5	1	Single Family	252.5	3.50
6	82.8	2.5	1	Single Family	207	3.50
8	99.8	3	1	Single Family	299.4	3.50
10	118	3	1	Single Family	354	3.50
12	128	3	1	Single Family	384	3.50
14	122	3	1	Single Family	366	3.50
16	176	3	1	Single Family	528	3.50
18	153	3	1	Single Family	459	3.50
1	76.9	2.5	1	Single Family	192.25	3.50
5	94.9	2	1	Single Family	189.8	3.50
7	107	3	1	Single Family	321	3.50
9	107	3	1	Single Family	321	3.50
11	105	3	1	Single Family	315	3.50
13	122	2.5	1	Single Family	305	3.50
15	119	3	1	Single Family	357	3.50
17	130	2.5	1	Single Family	325	3.50
19	112	3	1	Single Family	336	3.50
21	113	3	1	Single Family	339	3.50
Total						**66.50**

Block Address	Area
FERN AVENUE	15,647
Total =	**15,647**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	67	108	0.621095
ICI:	0	0	0.0000

SC21 = GEORGE AND FERN

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
69	155	3	2	Single Family	465	7.00
67	71.5	2	1	Single Family	143	3.50
65	105	1	1	Single Family	105	3.50
20	101	2	1	Single Family	202	3.50
22	109	3	1	Single Family	327	3.50
24	101	3	1	Single Family	303	3.50
26	84.9	3	1	Single Family	254.7	3.50
57	221	3	2	Duplex	663	4.60
49	177	3	1	Single Family	531	3.50
49-2	559	2	1	School/Church	1118	28.84
48	149	3	1	Single Family	447	3.50
42	147	3	1	Single Family	441	3.50
34	119	3	1	Single Family	357	3.50
Total						**75.44**

Block Address	Area
GEORGE AND FERN	11,542
Total =	**11,542**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	47	111	0.42387
ICI:	28	250	0.1118

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SC22 - WESTON ROAD 6

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2100	586	21		Apartment	12306	492.24
2088	201	1		Commercial	201	2.21
2105	1288	2		Commercial	2576	28.34
2077	607	2		Institutional	1214	40.47
2065 (1-3)	2148	3	48	Townhouse (Unit)	6444	129.60
2062	1474	1		Commercial	1474	16.21
2050	1092	2		Commercial	2184	24.02
2040	292	1		Commercial	292	3.21
2032	460	1		Institutional	460	15.33
2032-2	460	1		Apartment	460	18.40
2035	1297	1.5		Commercial	1945.5	21.40
2047	253	1		Commercial	253	2.78
2047-2	253	1		Apartment	253	10.12
Total						**804.34**

Block Address	Area
WESTON ROAD 6	32,237
Total =	**32,237**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	650	334	1.9463
ICI:	154	145	1.0600

SC23 - GEORGE STREET

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
30 KING	3150	2		School/Church	6300	162.54
36	290	3	1	Single Family	870	3.50
38	244	3	1	Single Family	732	3.50
23	2566	3		School/Church	5293	136.56
32	119	3	1	Single Family	357	3.50
28	125	3	1	Single Family	375	3.50
26	172	3	1	Single Family	516	3.50
26	97.8	3	1	Single Family	293.4	3.50
25	129	3	1	Single Family	387	3.50
Total						**323.60**

Block Address	Area
GEORGE STREET	28,234
Total =	**28,234**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	25	71	0.35304
ICI:	299	258	1.1593

SC24 - KING STREET CRES

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
11	134	2	1	Single Family	268	3.50
9	124	3	1	Single Family	372	3.50
7	148	3	1	Single Family	444	3.50
3	102	3	1	Single Family	306	3.50
20	121	3	1	Single Family	363	3.50
14	122	3	1	Single Family	366	3.50
12	67.4	3	1	Single Family	202.2	3.50
10	136	2.5	1	Single Family	340	3.50
8	131	2.5	1	Single Family	327.5	3.50
6	135	3	1	Single Family	405	3.50
4	245	1		Institutional	245	8.17
2	247	2	1	Single Family	494	3.50
Total						**46.67**

Block Address	Area
KING STREET CRES	9,267
Total =	**9,267**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	39	100	0.38877
ICI:	8	327	0.0245

SC25 - KING STREET

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
1	1076	2		School/Church	2152	55.52
15	841	12		Apartment	10092	403.68
2	253	1		Commercial	253	2.78
18	244	1		Commercial	244	2.68
33-1	8605	3		Apartment	25815	1032.60
33-2	1319	27		Apartment	35613	1424.52
Total						**2921.79**

Block Address	Area
KING STREET	22,245
Total =	**22,245**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	2861	400	7.152
ICI:	61	230	0.2649

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SC26 - WESTON 7

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2016	214	2		Commercial	428	4.71
1995	1592	1		Commercial	1592	17.51
1979	810	1		Commercial	810	8.91
1956 Weston Road			507	Apartment - 1 B	0	709.80
1956 Weston Road			158	Apartment - 2 B	0	331.80
1956 Weston Road			74	Apartment - 3 B	0	229.40
1956 Weston Road				Commercial	3961	43.57
1940-1952	1243	1		Commercial	1243	13.67
1940-1952-2	1243	1		Apartment	1243	49.72
1965-1971	2600	1		Apartment	2600	104.00
1965-1971-2	2600	1		Commercial	2600	28.60
Total						**1541.69**

Block Address	Area
WESTON 7	24,448
Total =	**24,448**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	1425	3708	0.3843
ICI:	117	110	1.0634

Groundwater Flow (L/s)	2

SC27 - JOHN STREET

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
22-1	1927	5		Apartment	9635	385.40
22-2	880	25		Apartment	22000	880.00
Total						**1265.40**

Block Address	Area
JOHN STREET	10,731
Total =	**10,731**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	1265	400	3.1635
ICI:	0	0	0.0000

SC28 - LITTLE AVENUE

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
7	103	2	1	Single Family	206	3.50
9	85.7	2	1	Single Family	171.4	3.50
11	96	2	1	Single Family	192	3.50
15	179	3	1	Single Family	537	3.50
19	145	3	1	Single Family	435	3.50
23	115	3	2	Semi-detached	345	5.40
25-27	155	3	2	Semi-detached	465	5.40
29-31	153	3	2	Semi-detached	459	5.40
33	75.6	3	2	Semi-detached	226.8	5.40
35	135	3	1	Single Family	405	3.50
Total						**42.60**

Block Address	Area
LITTLE AVENUE	8,158
Total =	**8,158**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	43	125	0.34422
ICI:	0	0	0.0000

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SC29 - ROSEMOUNT 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
235	227	3	1	Single Family	681	3.50
233	128	2	1	Single Family	256	3.50
229	116	2	1	Single Family	232	3.50
227	110	2	1	Single Family	220	3.50
225	139	3	2	Semi-detached	417	5.40
223	199	3	1	Single Family	597	3.50
221	89.8	3	1	Single Family	269.4	3.50
219	110	3	1	Single Family	330	3.50
217	65.6	3	1	Single Family	196.8	3.50
215	78.2	2	1	Single Family	156.4	3.50
213	76	3	1	Single Family	228	3.50
211	79.6	3	1	Single Family	238.8	3.50
209	73.8	3	1	Single Family	221.4	3.50
207	96.9	3	1	Single Family	290.7	3.50
205	98.3	3	1	Single Family	294.9	3.50
203	97.7	3	1	Single Family	293.1	3.50
52	156	3	1	Single Family	468	3.50
224	2083	4	42	Townhouse (Unit)	8332	113.40
220-222	234	2	2	Semi-detached	468	5.40
216-218	208	2	2	Semi-detached	416	5.40
212-214	241	2	2	Semi-detached	482	5.40
208-210	227	2	2	Semi-detached	454	5.40
204-206	228	2	2	Semi-detached	456	5.40
200-202	261	2	2	Semi-detached	522	5.40
198	125	3	1	Single Family	375	3.50
196	139	3	1	Single Family	417	3.50
194	125	3	1	Single Family	375	3.50
192	125	3	1	Single Family	375	3.50
Total						**221.20**

Block Address	Area
ROSEMOUNT 1	29,341
Total =	**29,341**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	221	122	1.80625
ICI:	0	0	0.0000

SC31 - ROSEMOUNT 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
49	45.5	3	2	Semi-detached	136.5	5.40
51	87.6	1	1	Single Family	87.6	3.50
53	99.7	3	1	Single Family	299.1	3.50
55	75.4	3	1	Single Family	226.2	3.50
57	88.1	2	1	Single Family	176.2	3.50
184	89.6	3	1	Single Family	268.8	3.50
176	190	3	1	Single Family	570	3.50
174	92.9	2	1	Single Family	185.8	3.50
168	162	1.5	1	Single Family	243	3.50
164	127	2	1	Single Family	254	3.50
162	109	2	1	Single Family	218	3.50
158	98.8	3	1	Single Family	296.4	3.50
154	94.4	3	1	Single Family	283.2	3.50
152	480	5		Apartment	2400	96.00
150	92.1	3	1	Single Family	276.3	3.50
140	201	3	1	Single Family	603	3.50
136	148	3	1	Single Family	444	3.50
134	79.6	3	1	Single Family	238.8	3.50
130	119	2	1	Single Family	238	3.50
128	136	3	1	Single Family	408	3.50
54	112	2	1	Single Family	224	3.50
56	245	3	2	Semi-detached	735	5.40
177	89.2	2	2	Semi-detached	178.4	5.40
175	119	3	1	Single Family	357	3.50
173	117	3	1	Single Family	351	3.50
167	142	3	1	Single Family	426	3.50
165	128	3	1	Single Family	384	3.50
163	109	3	1	Single Family	327	3.50
159	130	3	1	Single Family	390	3.50
153	131	3	1	Single Family	393	3.50
149	110	3	1	Single Family	330	3.50
137	123	3	1	Single Family	369	3.50
135	179	3	1	Single Family	537	3.50
64	291		2	Single Family	0	7.00
68	76.5	3	1	Single Family	229.5	3.50
70	123	3	1	Single Family	369	3.50
72	144	3	1	Single Family	432	3.50
69	109	3	1	Single Family	327	3.50
67	96.4	3	1	Single Family	289.2	3.50
65	95.5	3	1	Single Family	286.5	3.50
125	185	3	1	Single Family	555	3.50
Total						**245.20**

Block Address	Area
ROSEMOUNT 2	37,565
Total =	**37,565**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	245	160	1.53425
ICI:	0	0	0.0000

BURNSIDE

CALCULATION SHEET

Project:
John St & South Station St
Sanitary Sewer Population Analysis - Existing Condition Plus Recent Developments

Prepared by:	**AH**
Checked by:	**JS**
Project No:	**300054203**
Date:	**19-Apr-23**

SC32 - ROSEMOUNT 3

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
124	117	3	1	Single Family	351	3.50
120-122	200	3	1	Single Family	600	3.50
118	122	3	1	Single Family	366	3.50
116	110	3	1	Single Family	330	3.50
110	183	3	1	Single Family	549	3.50
106	136	3	1	Single Family	408	3.50
104	141	2	1	Single Family	282	3.50
102	142	2	1	Single Family	284	3.50
100	135	3	1	Single Family	405	3.50
98	114	2	1	Single Family	228	3.50
96	122	2	1	Single Family	244	3.50
40	183	1	1	Single Family	183	3.50
117	166	3.5	1	Single Family	581	3.50
115	135	3	1	Single Family	405	3.50
113	74.8	3	1	Single Family	224.4	3.50
101	162	2	1	Single Family	324	3.50
97	117	3	1	Single Family	351	3.50
91	113	2	1	Single Family	226	3.50
Total						**63.00**

Block Address	Area
ROSEMOUNT 3	14,315
Total =	**14,315**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	63	99	0.63414
ICI:	0	0	0.0000

SUMMARY TABLE

BLOCK ADDRESS	BLOCK AREA (m2)	RES POP	RES DENSITY	RES GFA (ha)	ICI POP	ICI DENSITY	ICI GFA (ha)
HUMBERVIEW CRESCENT	10923	21	109	0.19	0	0	0.00
WESTON ROAD 1	5,863	17	195	0.09	9	113	0.08
PARKE STREET	4,566	11	243	0.05	7	100	0.07
HOLLEY AVENUE 1	4,408	35	132	0.27	0	0	0.00
HOLLEY AVENUE 2	6,343	53	133	0.40	0	0	0.00
HOLLEY AVENUE 3	7,259	32	116	0.28	3	246	0.01
WESTON ROAD 2	8,562	28	96	0.29	0	0	0.00
RECTORY ROAD 1	5,039	30	120	0.25	0	0	0.00
RECTORY ROAD 2	5,755	47	144	0.33	0	0	0.00
WINDAL AVENUE	6,652	32	113	0.28	0	0	0.00
WESTON ROAD 3	15,783	1147	310	3.70	0	0	0.00
COULTER AVENUE 1	7,465	59	225	0.26	0	0	0.00
COULTER AVENUE 2	8,368	53	111	0.48	0	0	0.00
WESTON ROAD 4	31,525	2007	322	6.24	0	0	0.00
WESTON ROAD 5	25,878	1023	401	2.55	58	174	0.33
CHURCH STREET 1	9,178	68	103	0.66	2	98	0.02
CROSS STREET	16,484	88	102	0.87	9	252	0.04
KING GEORGE ROAD	8,703	73	127	0.57	0	0	0.00
CHURCH STREET 2	11,825	190	212	0.90	0	0	0.00
FERN AVENUE	15,647	67	108	0.62	0	0	0.00
GEORGE AND FERN	11,542	47	111	0.42	28	250	0.11
WESTON ROAD 6	32,237	650	334	1.95	154	145	1.06
GEORGE STREET	28,234	25	71	0.35	299	258	1.16
KING STREET CRES	9,267	39	100	0.39	8	327	0.02
KING STREET	22,245	2861	400	7.15	61	230	0.26
WESTON 7	24,448	1425	3708	0.38	117	110	1.06
JOHN STREET	10,731	1265	400	3.16	0	0	0.00
LITTLE AVENUE	8,158	43	125	0.34	0	0	0.00
ROSEMOUNT 1	29,341	221	122	1.81	0	0	0.00
ROSEMOUNT 2	37,565	245	160	1.53	0	0	0.00
ROSEMOUNT 3	14,315	63	99	0.63	0	0	0.00
TOTALS	**444309**	**11965**	**320.02**	**37.39**	**755**	**178.28**	**4.23**

BURNSIDE

CALCULATION SHEET

Project:	**John St & South Station St**	Prepared by:	JS
	Toronto, Ontario	Checked by:	PM
		Project No:	300054203
	Sanitary Servicing Analysis	Date:	April 19, 2023

Recent Development Site Flows

2278 Weston Road - Residential

Unit Type	Number of Units	Pop/Unit	Population
1B	2	1.4	3
Total	**2**		**3**

$$Q_{(Res.)} = \frac{PxQxM}{86400}$$

P= 3 persons

Q= 240 L/cap/day

$$M = 1 + \frac{14}{4+(P/1000)^{1/2}}$$

M= 4.45

$Q_{(Res.)}$= 0.03 L/s

2270-2274 Weston Road - Residential

Residential

Unit Type	Number of Units	Pop/Unit	Population
Studio	0	1.4	0
1B	68	1.4	95
2B	39	2.1	82
3B	0	3.1	0
Total	**107**		**177**

$$Q_{(Res.)} = \frac{PxQxM}{86400}$$

P= 177 persons

Q= 240 L/cap/day

$$M = 1 + \frac{14}{4+(P/1000)^{1/2}}$$

M= 4.17

$Q_{(Res.)}$= 2.05 L/s

2179 Weston Road - Residential

Residential

Unit Type	Number of Units	Pop/Unit	Population
Townhouse	3	2.7	8
Single Family	9	3.5	32
Total	**12**		**40**

$$Q_{(Res.)} = \frac{PxQxM}{86400}$$

P= 40 persons
Q= 240 L/cap/day

$$M = 1 + \frac{14}{4+(P/1000)^{1/2}}$$

M= 4.33

$Q_{(Res.)}$= 0.48 L/s

64 King Street - Residential

Residential

Unit Type	Number of Units	Pop/Unit	Population
Single Family	2	3.5	7
Total	**2**		**7**

$$Q_{(Res.)} = \frac{PxQxM}{86400}$$

P= 7 persons
Q= 240 L/cap/day

$$M = 1 + \frac{14}{4+(P/1000)^{1/2}}$$

M= 4.43

$Q_{(Res.)}$= 0.09 L/s

1956 Weston Road - Residential

Residential

Studio	0	1.4	0
1B	507	1.4	710
2B	158	2.1	332
3B	74	3.1	229
Total	**739**		**1,271**

$$Q_{(Res.)} = \frac{PxQxM}{86400}$$

P= 1271 persons

Q= 240 L/cap/day

$$M = 1 + \frac{14}{4+(P/1000)^{1/2}}$$

M= 3.73

$Q_{(Res.)}$=	13.17 L/s

Commercial and Indoor Amenity

GFA (m^2)	GFA (ha)	P/m^2	Population
3,961	0.396	0.011	44

P= 44 persons

Q= 250 L/cap/day (ICI)

Q= 180000 L/floor ha/day (ICI)

$Q_{(ICI)}$=	0.83 L/s

Infiltration Allowance=	0.26	L/s/ha
Area=	0.45	ha
$Q_{infiltration}$=	0.12	L/s

$Q_{Proposed\ Total}$=	**14.11**	**L/s**

OUTPUT DATA:

SANITARY SEWER DESIGN SHEET - DRY WEATHER

EXISTING CONDITION PLUS RECENT DEVELOPMENTS

John St & South Station St, Toronto

BURNSIDE
THE DIFFERENCE IS OUR PEOPLE

Project #: 300054203.0000
Date: 19-Apr-23
Designed: AH
Checked: JS

Min Diameter = 200 mm
Mannings 'n'= 0.013
Min. Velocity = 0.60 m/s
Max. Velocity = 3.00 m/s

Avg. Dom. Flow Res. = 240.0 l/c/d
Avg. Dom. Flow Icl. = Max 250.0 l/c/d And 180000 L/Floor ha/d
Infiltration = 0.260 l/s/ha

NOMINAL PIPE SIZE USED

DESCRIPTION	FROM MH	TO MH	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						INFILTRATION				FLOW CALCULATIONS							PIPE DATA				
			AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (p/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	BLOCK AREA (ha)	ACCUM. BLOCK AREA (ha)	NFILTRATIO (l/s)	ACCUM. INFILTRATION (l/s)	TOTAL ACCUM. POP.	RESIDENTIAL PEAKING FACTOR	POP. FLOW (l/s)	CONSTANT FLOW (l/s)	ACCUM. CONSTANT FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)
Area 1	MH1A	MH2A	0.09	0.09		132		12	12	0.10	0.10	307		32	32	0.5	0.5	0.1	0.1	44	4.41	0.4			0.5	0.42	250	38.5	0.79	0.27	1%
Area 2	MH2A	MH3A	0.14	0.23		144		20	32	0.02	0.13	93		2	34	0.4	0.9	0.1	0.2	66	4.35	0.6			0.9	0.20	250	26.6	0.54	0.25	3%
Area 3	MH3A	MH4A	0.02	0.25		185		4	36		0.13				34	0.3	1.1	0.1	0.3	70	4.34	0.7			1.0	0.27	250	30.9	0.63	0.29	3%
Area 4	MH4A	MH5A	1.04	1.29		400		415	451	0.00	0.13				34	0.6	1.7	0.1	0.4	485	4.00	5.3			5.7	1.01	250	59.8	1.22	0.77	10%
Area 5	MH5A	MH8A	1.81	3.10		400		723	1174	0.22	0.34	111		24	58	0.7	2.3	0.2	0.6	1232	3.75	13.0			13.6	0.26	300	49.3	0.70	0.60	28%
Area 6	MH6A	MH7A	0.91	0.91		400		365	365	0.75	0.75	111		83	83	0.6	0.6	0.1	0.1	448	4.04	5.7			5.8	0.46	250	40.3	0.82	0.58	14%
Area 7	MH7A	MH8A		0.91					365	0.11	0.86	112		12	95	0.3	0.9	0.1	0.2	460	4.04	5.9			6.1	0.41	250	38.0	0.77	0.57	16%
Area 8	MH8A	MH9A		4.01					1539	0.16	1.36	110		18	171	0.6	3.9	0.2	1.0	1710	3.67	18.5			19.5	0.42	300	62.7	0.89	0.78	31%
Area 9	MH9A	MH10A	4.26	8.27		397		1691	3230	0.08	1.45	143		12	183	0.6	4.5	0.2	1.2	3413	3.41	33.7			34.8	2.20	300	143.4	2.03	1.67	24%
Area 10	MH10A	MH11A	0.39	8.66		157		61	3291	0.15	1.60	111		17	200	0.8	5.3	0.2	1.4	3491	3.41	34.5			35.9	2.20	300	143.4	2.03	1.69	25%
	MH11A	MH12A	37.39	46.05		320		11965	15256	4.23	5.83	178		755	955	44.4	49.7	11.6	12.9	16211	2.77	129.6	2.0	2.0	144.5	0.38	450	175.8	1.11	1.23	82%
	MH12A	MH13A		46.05					15256		5.83				955		49.7		12.9	16211	2.77	129.6		2.0	144.5	38.70	450	1773.6	11.15	6.71	8%
	MH13A	TRUNK		46.05					15256		5.83				955		49.7		12.9	16211	2.77	129.6		2.0	144.5	3.35	450	521.8	3.28	2.81	28%

OUTPUT DATA:

SANITARY SEWER DESIGN SHEET - WET WEATHER

EXISTING CONDITION PLUS RECENT DEVELOPMENTS

John St & South Station St, Toronto

Project #: 300054203.0000
Date: 19-Apr-23
Designed: AH
Checked: JS

Min Diameter = 200 mm
Mannings 'n'= 0.013
Min. Velocity = 0.60 m/s
Max. Velocity = 3.00 m/s

Avg. Dom. Flow Res. = 240.0 l/c/d
Avg. Dom. Flow ICI. = Max 250.0 l/c/d And 180000 L/Floor ha/d
Infiltration = 3.000 l/s/ha

BURNSIDE
THE DIFFERENCE IS OUR PEOPLE

NOMINAL PIPE SIZE USED

DESCRIPTION	FROM MH	TO MH	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						INFILTRATION				FLOW CALCULATIONS							PIPE DATA				HGL DATA						
			AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (p/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	BLOCK AREA (ha)	ACCUM. BLOCK AREA (ha)	INFILTRATION (l/s)	ACCUM. INFILTRATION (l/s)	TOTAL ACCUM. POP.	RESIDENTIAL PEAKING FACTOR	POP. FLOW (l/s)	CONSTANT FLOW (l/s)	ACCUM. CONSTANT FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)	HGL U/S (m)	HGL D/S (m)	Surface Elevation U/S (m)	Surface Elevation D/S (m)	Depth to HGL U/S (m)	Depth to HGL D/S (m)	Surcharge U/S
Area 1	MH1A	MH2A	0.09	0.09		132		12	12	0.10	0.10	307		32	32	0.5	0.5	1.5	1.5	44	4.41	0.4			1.8	0.42	250	38.5	0.79	0.40	5%	125.01	124.80	127.70	126.88	2.69	2.08	0.00
Area 2	MH2A	MH3A	0.14	0.23		144		20	32	0.02	0.13	93		2	34	0.4	0.9	1.1	2.6	66	4.35	0.6			3.2	0.20	250	26.6	0.54	0.37	12%	124.80	124.70	126.88	126.77	2.08	2.07	0.00
Area 3	MH3A	MH4A	0.02	0.25		185		4	36		0.13				34	0.3	1.1	0.8	3.4	70	4.34	0.7			4.1	0.27	250	30.9	0.63	0.44	13%	124.70	124.56	126.77	126.72	2.07	2.16	0.00
Area 4	MH4A	MH5A	1.04	1.29		400		415	451	0.00	0.13				34	0.6	1.7	1.7	5.0	485	4.00	5.3			10.3	1.01	250	59.8	1.22	0.91	17%	124.56	124.03	126.72	126.44	2.16	2.41	0.00
Area 5	MH5A	MH8A	1.81	3.10		400		723	1174	0.22	0.34	111		24	58	0.7	2.3	2.0	7.0	1232	3.75	13.0			19.9	0.26	300	49.3	0.70	0.66	40%	124.03	123.80	126.44	127.11	2.41	3.31	0.00
Area 6	MH6A	MH7A	0.91	0.91		400		365	365	0.75	0.75	111		83	83	0.6	0.6	1.7	1.7	448	4.04	5.7			7.4	0.46	250	40.3	0.82	0.62	18%	124.34	124.05	126.81	126.95	2.47	2.90	0.00
Area 7	MH7A	MH8A		0.91					365	0.11	0.86	112		12	95	0.3	0.9	1.0	2.7	460	4.04	5.9			8.5	0.41	250	38.0	0.77	0.62	22%	124.05	123.83	126.95	127.11	2.90	3.28	0.00
Area 8	MH8A	MH9A		4.01					1539	0.16	1.36	110		18	171	0.6	3.9	1.9	11.6	1710	3.67	18.5			30.1	0.42	300	62.7	0.89	0.88	48%	123.80	123.44	127.11	125.80	3.31	2.36	0.00
Area 9	MH9A	MH10A	4.26	8.27		397		1691	3230	0.08	1.45	143		12	183	0.6	4.5	1.9	13.5	3413	3.41	33.7			47.2	2.20	300	143.4	2.03	1.82	33%	121.85	119.67	125.80	121.57	3.95	1.90	0.00
Area 10	MH10A	MH11A	0.39	8.66		157		61	3291	0.15	1.60	111		17	200	0.8	5.3	2.4	15.9	3491	3.41	34.5			50.4	2.20	300	143.4	2.03	1.85	35%	119.66	117.42	121.57	118.84	1.91	1.42	0.00
	MH11A	MH12A	37.39	46.05		320		11965	15256	4.23	5.83	178		755	955	44.4	49.7	133.3	149.2	16211	2.77	129.6	145.4	145.4	424.2	0.38	450	175.8	1.11		>100%	117.42	117.13	118.84	118.84	1.42	1.71	0.24
	MH12A	MH13A		46.05					15256		5.83				955		49.7		149.2	16211	2.77	129.6		145.4	424.2	38.70	450	1773.6	11.15	9.16	24%	117.13	115.97	118.84	118.79	1.71	2.82	0.00
	MH13A	TRUNK		46.05					15256		5.83				955		49.7		149.2	16211	2.77	129.6		145.4	424.2	3.35	450	521.8	3.28	3.66	81%	115.14	113.00	118.79	115.78	3.65	2.78	0.00

BURNSIDE

CALCULATION SHEET

Project:
John St & South Station St
Sanitary Sewer Population Analysis - Proposed Condition

Prepared by:	**AH**
Checked by:	**JS**
Project No:	**300054203**
Date:	**19-Apr-23**

Type of Development	Density	Unit
Office	3.30	p/100sqm
Apartment	4.00	p/100sqm
Commercial	1.10	p/100sqm
Townhouse (Area)	1.70	p/100sqm
School/Church	2.58	p/100sqm
Institutional	3.33	p/100sqm
Industrial	2.72	p/100sqm

Type of housing	P/Unit
Single Family	3.5
Semi-detached	2.7
Townhouse (Unit)	2.7
Duplex	2.3
Triplex	3.7
Apartment - Bachelor	1.4
Apartment - 1 B	1.4
Apartment - 2 B	2.1
Apartment - 3 B	3.1
Apartment - 4 B	3.7

$$Qres = \frac{PxQxM}{86400} + AxI$$

Qres= 240 L/cap/day
Qici= 250 L/cap/day
$$M = 1 + \frac{14}{4+(P/1000)^{1/2}}$$
I= 0.26 L/s/ha

*All Estimates are Based on City of Toronto Wet Weather Flow Management Guidelines (Nov 2006) and Design Criteria for Sewers and Watermains (Nov 2009 1st ed.)
*ICI stands for Industrial/Commercial/Institutional

Existing Buildings Plus Recent Developments & Proposed Site Contributing to Sanitary Sewer

Site - ***Drains to Stub A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
Site - 1 Bedroom	2059	40	237	Apartment - 1 B	33101.3	331.80
Site - 2 Bedroom			150	Apartment - 2 B		315.00
Site - 3 Bedroom			46	Apartment - 3 B		142.60
Site - Studio			51	Apartment - Bachelor		71.40
Site - Commercial, Indoor Amenity, and Lobby				Commercial	2,117	23.29
Community Centre	483	3		Commercial	1,382	15.20
Total					.	**899.29**

Block Address	Area
Site	3,846
Total =	**3,846**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	861	260	3.31013
ICI:	38	109	0.3499

Area 1 - ***Drains to MH1A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
21 John St	144	1		Commercial	144	1.58
27 John St	166	3		Office	498	16.43
31 John St	141	1	1	Single Family	141	3.50
45 South Station St	165	3	2	Semi-detached	495	5.40
43 South Station St	136	2	1	Single Family	272	3.50
40 South Station St	402	1		Office	402	13.27
Total						**43.68**

Block Address	Area
Area 1	4,849
Total =	**4,849**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	12	132	0.0908
ICI:	32	307	0.1044

Area 2 - ***Drains to MH2A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
37-39 South Station St	165	2	2	Semi-detached	330	5.40
33 South Station St	216	1		Commercial	216	2.38
31B - 31C South Station St	175	3	2	Semi-detached	525	5.40
31 - 31A South Station St	142	3	2	Semi-detached	426	5.40
36 South Station St	106	1	1	Single Family	106	3.50
Total						**22.08**

Block Address	Area
Area 2	3,803
Total =	**3,803**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	20	144	0.1387
ICI:	2	93	0.0216

Area 3 - ***Drains to MH3A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
28A South Station St	72	3	1	Single Family	216	3.50
Total						**3.50**

Block Address	Area
Area 3	2,598
Total =	**2,598**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	4	185	0.0216
ICI:	0	0	0.0000

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CALCULATION SHEET

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Checked by:	**JS**
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Area 4 - ***Drains to MH4A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
29 South Station St	798	13		Apartment	10374	414.96
Total						**414.96**

Block Address	Area
Area 4	5,523
Total =	**5,523**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	415	400	1.0374
ICI:	0	0	0.0000

Area 5 - ***Drains to MH5A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
1901 Lawrence Ave W - Commercial	2155	1		Commercial	2155	23.71
1901 Lawrence Ave W - Residential	1130	16		Apartment	18080	723.20
Total						**746.91**

Block Address	Area
Area 5	6,538
Total =	**6,538**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	723	400	1.808
ICI:	24	111	0.2155

Area 6 - ***Drains to MH6A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
1906-1930 Weston Rd - Commercial	1759	2		Commercial	3518	38.70
1906-1930 Weston Rd - Residential	761	12		Apartment	9132	365.28
1919-1937 Weston Rd	1992	2		Commercial	3984	43.82
Total						**447.80**

Block Address	Area
Area 6	5,644
Total =	**5,644**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	365	400	0.9132
ICI:	83	111	0.7502

Area 7 - ***Drains to MH7A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
1919-1937 Weston Rd	535	2		Commercial	1070	11.77
Total						**11.77**

Block Address	Area
Area 7	3,206
Total =	**3,206**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	0	0	0
ICI:	12	112	0.1070

Area 8 - ***Drains to MH8A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2079-2085 Lawrence Ave W	267	2		Commercial	534	5.87
2077 Lawrence Ave W	446	2		Commercial	892	9.81
2075 Lawrence Ave W	206	1		Commercial	206	2.27
Total						**17.95**

Block Address	Area
Area 8	6,488
Total =	**6,488**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	0	0	0
ICI:	18	110	0.1632

Area 9 - ***Drains to MH9A***

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2089 Lawrence Ave W	739	16		Apartment	11824	472.96
2099 Lawrence Ave W	785	16		Apartment	12560	502.40
2074 Lawrence Ave W	356	2		Commercial	712	7.83
2086 Lawrence Ave W	1603	11		Apartment	17633	705.32
2103 Lawrence Ave W	126	1		Institutional	126	4.20
2105 Lawrence Ave W	138	3	1	Single Family	414	3.50
2107 Lawrence Ave W	90.4	1	1	Single Family	90.4	3.50
2109 Lawrence Ave W	74	1	1	Single Family	74	3.50
Total						**1703.21**

Block Address	Area
Area 9	6,488
Total =	**6,488**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	1691	397	4.25954
ICI:	12	143	0.0838

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Area 10 - Drains to MH10A

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2100 Lawrence Ave W	764	2		Commercial	1528	16.81
2106 Lawrence Ave W	109	3	1	Single Family	327	3.50
2108 Lawrence Ave W	122	2	1	Single Family	244	3.50
2110 Lawrence Ave W	101	2.5	1	Single Family	252.5	3.50
2112 Lawrence Ave W	89.6	2.5	1	Single Family	224	3.50
37 Little Avenue	141	3	1	Single Family	423	3.50
2111 Lawrence Ave W	139	2	1	Single Family	278	3.50
2113 Lawrence Ave W	164	2	1	Single Family	328	3.50
2115 Lawrence Ave W	82.4	2	1	Single Family	164.8	3.50
2117 Lawrence Ave W	97.4	3	1	Single Family	292.2	3.50
2119 Lawrence Ave W	86.9	3	1	Single Family	260.7	3.50
2121 Lawrence Ave W	178	3	1	Single Family	534	3.50
2123 Lawrence Ave W	140	4		Apartment	560	22.40
Total						**77.71**

Block Address	Area
Area 10	8,010
Total =	**8,010**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	61	157	0.38882
ICI:	17	111	0.1528

SC1 - HUMBERVIEW CRESCENT

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
6	165	2	1	Single Family	330	3.50
11	122	2	1	Single Family	244	3.50
9	157	2	1	Single Family	314	3.50
7	11	2	1	Single Family	22	3.50
16	227	2	1	Single Family	454	3.50
2402	280	2	1	Single Family	560	3.50
Total						**21.00**

Block Address	Area
HUMBERVIEW CRESCENT	10,923
Total =	**10,923**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	21	109	0.1924
ICI:	0	0	0.0000

SC2 - WESTON ROAD 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2385	81	2	1	Single Family	162	3.50
2381-2383	142	2	2	Semi-detached	284	5.40
2377	102	2	1	Single Family	204	3.50
2375	110	2	2	Duplex	220	4.60
2371	797	1		Commercial	797	8.77
Total						**25.77**

Block Address	Area
WESTON ROAD 1	5,863
Total =	**5,863**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	17	195	0.087
ICI:	9	113	0.0797

SC3 - PARKE ST.

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2353	183	1		Commercial	183	2.01
2	71.5	2.5	1	Single Family	178.75	3.50
4	65.8	2	1	Single Family	131.6	3.50
6	71.3	2	1	Single Family	142.6	3.50
2347	207	2.5		Commercial	517.5	5.69
Total						**18.21**

Block Address	Area
PARKE STREET	4,566
Total =	**4,566**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	11	243	0.045295
ICI:	7	100	0.0701

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SC4 - HOLLEY AVENUE 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
49A	157	2	1	Single Family	314	3.50
49B	185	1	1	Single Family	185	3.50
47	110	2	1	Single Family	220	3.50
45	96.5	2	1	Single Family	193	3.50
43	88.2	3	1	Single Family	264.6	3.50
41	76.4	3	1	Single Family	229.2	3.50
39	111	3	1	Single Family	333	3.50
48	86	3	1	Single Family	258	3.50
44	104	3	1	Single Family	312	3.50
42	117	3	1	Single Family	351	3.50
Total						**35.00**

Block Address	Area
HOLLEY AVENUE 1	4,408
Total =	**4,408**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	35	132	0.26598
ICI:	0	0	0.0000

SC5 - HOLLEY AVE 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
36	108	3	1	Single Family	324	3.50
34	115	2	1	Single Family	230	3.50
32	104	2	1	Single Family	208	3.50
30	98.3	3	1	Single Family	294.9	3.50
28	108	3	1	Single Family	324	3.50
26	99.2	2	1	Single Family	198.4	3.50
22	86.1	3	1	Single Family	258.3	3.50
37	61.6	3	1	Single Family	184.8	3.50
35	73.2	3	1	Single Family	219.6	3.50
33	84.2	3	1	Single Family	252.6	3.50
31	86.2	3	1	Single Family	258.6	3.50
29	76.7	3	1	Single Family	230.1	3.50
27	121	3	1	Single Family	363	3.50
25	87.6	3	1	Single Family	262.8	3.50
21	122	3	1	Single Family	366	3.50
Total						**52.50**

Block Address	Area
HOLLEY AVENUE 2	6,343
Total =	**6,343**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	53	133	0.39751
ICI:	0	0	0.0000

SC6 - HOLLEY AVE 3

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
20	63.4	3	1	Single Family	190.2	3.50
18	71.6	3	1	Single Family	214.8	3.50
19	106	3	1	Single Family	318	3.50
17	67.9	3	1	Single Family	203.7	3.50
15	64.1	3	1	Single Family	192.3	3.50
13	101	3	1	Single Family	303	3.50
7	248	3	1	Single Family	744	3.50
1	122	1	1	School/Church	122	3.15
1A	126	3	1	Single Family	378	3.50
25	106	2	1	Single Family	212	3.50
Total						**34.65**

Block Address	Area
HOLLEY AVENUE 3	7,259
Total =	**7,259**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	32	116	0.2756
ICI:	3	246	0.0122

SC7 - WESTON ROAD 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2321	109	3	1	Single Family	327	3.50
2317	94.4	3	1	Single Family	283.2	3.50
2315	110	3	1	Single Family	330	3.50
2309	187	3	1	Single Family	561	3.50
2307	124	3	1	Single Family	372	3.50
2303	118	2	1	Single Family	236	3.50
2301	92	2	1	Single Family	184	3.50
2297	206	3	1	Single Family	618	3.50
Total						**28.00**

Block Address	Area
WESTON ROAD 2	8,562
Total =	**8,562**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	28	96	0.29112
ICI:	0	0	0.0000

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SC8 - RECTORY ROAD 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2289	120	3	1	Single Family	360	3.50
34	80.4	3	1	Single Family	241.2	3.50
32	128	2	1	Single Family	256	3.50
30	78.7	3	1	Single Family	236.1	3.50
26-28	135	3	2	Semi-detached	405	5.40
35	82.5	3	1	Single Family	247.5	3.50
31	169	3	1	Single Family	507	3.50
29	120	2	1	Single Family	240	3.50
Total						**29.90**

Block Address	Area
RECTORY ROAD 1	5,039
Total =	**5,039**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	30	120	0.24928
ICI:	0	0	0.0000

SC9 - RECTORY ROAD 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
24	119	2.5	1	Single Family	297.5	3.50
22	89.7	2.5	1	Single Family	224.25	3.50
20	89.9	2.5	1	Single Family	224.75	3.50
8	84.6	3	1	Single Family	253.8	3.50
23	138	2	1	Single Family	276	3.50
21	129	2	1	Single Family	258	3.50
19	114	2	1	Single Family	228	3.50
17	145	2	1	Single Family	290	3.50
15	123	2	1	Single Family	246	3.50
11	72.4	1	1	Single Family	72.4	3.50
9	95.4	2.5	1	Single Family	238.5	3.50
7, 5, 3	111	3	2	Semi-detached	333	5.40
1	105	3	1	Single Family	315	3.50
Total						**47.40**

Block Address	Area
RECTORY ROAD 2	5,755
Total =	**5,755**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	47	144	0.32572
ICI:	0	0	0.0000

SC10 - WINDAL AVENUE

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
4	92	2	1	Single Family	184	3.50
6	115	2	1	Single Family	230	3.50
8	93.7	3	1	Single Family	281.1	3.50
10	116	3	1	Single Family	348	3.50
1	127	3	1	Single Family	381	3.50
3	96.4	3	1	Single Family	289.2	3.50
5	111	3	1	Single Family	333	3.50
7	166	3	1	Single Family	498	3.50
11	92.4	3	1	Single Family	277.2	3.50
Total						**31.50**

Block Address	Area
WINDAL AVENUE	6,652
Total =	**6,652**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	32	113	0.28215
ICI:	0	0	0.0000

SC11 - WESTON ROAD 3

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2292	696	8		Apartment	5568	222.72
2278	587	4		Apartment	2348	93.92
2278 - NEW	587		2	Apartment - 1 B	0	2.80
2260	1119	9		Apartment	10071	402.84
2281-2287	134	3	2	Semi-detached	402	5.40
2270-2274	824	12	68	Apartment - 1 B	12576	95.20
2270-2274			39	Apartment - 2 B	0	81.90
2275	835	4		Apartment	3340	133.60
2263	677	4		Apartment	2708	108.32
Total						**1146.70**

Block Address	Area
WESTON ROAD 3	15,783
Total =	**15,783**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	1147	310	3.7013
ICI:	0	0	0.0000

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SC12 - COULTER AVENUE 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2	67.8	3	1	Single Family	203.4	3.50
4	99	2	1	Single Family	198	3.50
6	111	2	1	Single Family	222	3.50
8	136	2	1	Single Family	272	3.50
10	123	2	1	Single Family	246	3.50
54	202	3		Apartment	606	24.24
38	70.2	3	1	Single Family	210.6	3.50
19	57.4	3	1	Single Family	172.2	3.50
21	66.2	3	1	Single Family	198.6	3.50
23	60.6	2.5	1	Single Family	151.5	3.50
25	58.5	2.5	1	Single Family	146.25	3.50
Total						**59.24**

Block Address	Area
COULTER AVENUE 1	7,465
Total =	**7,465**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	59	225	0.262655
ICI:	0	0	0.0000

SC13 - COULTER AVENUE 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
52	163	3	1	Single Family	489	3.50
56	114	3	1	Single Family	342	3.50
58	88	2	1	Single Family	176	3.50
60	46.4	3	1	Single Family	139.2	3.50
54	93.7	3	1	Single Family	281.1	3.50
68-70	182	3	2	Semi-detached	546	5.40
74	84.2	3	1	Single Family	252.6	3.50
76	73.5	3	1	Single Family	220.5	3.50
71	81.5	3	1	Single Family	244.5	3.50
73	50	3	1	Single Family	150	3.50
75-75A	241	3	2	Semi-detached	723	5.40
77-79	236	2.5	2	Semi-detached	590	5.40
81-83	211	3	2	Semi-detached	633	5.40
Total						**53.10**

Block Address	Area
COULTER AVENUE 2	8,368
Total =	**8,368**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	53	111	0.47869
ICI:	0	0	0.0000

SC14 - WESTON ROAD 4

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2240	819	19		Apartment	15561	622.44
2220-2222	2522	6		Apartment	15132	605.28
2202	1370	5		Apartment	6850	274.00
2255	681	12		Apartment	8172	326.88
2215-2235	766	4	12	Townhouse (Unit)	3064	32.40
2201-2211	419	4	6	Townhouse (Unit)	1676	16.20
2A-4C	332	4	5	Townhouse (Unit)	1328	13.50
12-22	341	4	6	Townhouse (Unit)	1364	16.20
88-106	597	4	10	Townhouse (Unit)	2388	27.00
42-56	564	4	8	Townhouse (Unit)	2256	21.60
31-41	319	4	6	Townhouse (Unit)	1276	16.20
43-55	419	4	7	Townhouse (Unit)	1676	18.90
61-65	139	4	2	Semi-detached	556	5.40
67-69	137	4	2	Semi-detached	548	5.40
73-75	134	4	2	Semi-detached	536	5.40
Total						**2006.80**

Block Address	Area
WESTON ROAD 4	31,525
Total =	**31,525**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	2007	322	6.2383
ICI:	0	0	0.0000

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SC15 - WESTON ROAD 5

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2190	768	8		Apartment	6144	245.76
2180	642	8		Apartment	5136	205.44
2160	197	2		Institutional	394	13.13
2154	87	3	2	Duplex	261	4.60
2148	85.6	2.5	1	Single Family	214	3.50
2130	828	14		Apartment	11592	463.68
6-7	120	3	2	Semi-detached	360	5.40
5	92.8	3	1	Single Family	278.4	3.50
3	150	2	1	Single Family	300	3.50
2204	180	1.5		Commercial	270	2.97
2179			3	Townhouse (Unit)	0	8.10
2179			9	Single Family	0	31.50
2181-2189	371	1		Commercial	371	4.08
2131-2159	1284	1		Commercial	1284	14.12
2131-2159-2	1200	1		Apartment	1200	48.00
2123-2	548	1		Institutional	548	18.27
2121	462	1		Commercial	462	5.08
Total						**1080.64**

Block Address	Area
WESTON ROAD 5	25,878
Total =	**25,878**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	1023	401	2.54854
ICI:	58	174	0.3329

SC16 - CHURCH STREET 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
5470	204	1		Commercial	204	2.24
8	140	3	2	Semi-detached	420	5.40
10	121	3	2	Semi-detached	363	5.40
12	108	3	1	Single Family	324	3.50
14	225	3	2	Semi-detached	675	5.40
16	200	3	2	Semi-detached	600	5.40
22	207	3	2	Semi-detached	621	5.40
24	148	3	1	Single Family	444	3.50
26	200	3	1	Single Family	600	3.50
11	113	3	1	Single Family	339	3.50
15	148	3	2	Semi-detached	444	5.40
17	84	3	1	Single Family	252	3.50
19	187	3	2	Semi-detached	561	5.40
21	68.7	3	1	Single Family	206.1	3.50
23	95	3	1	Single Family	285	3.50
27	236	2	2	Semi-detached	472	5.40
Total						**69.94**

Block Address	Area
CHURCH STREET 1	9,178
Total =	**9,178**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	68	103	0.66061
ICI:	2	98	0.0204

SC17 - CROSS ST

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
44	119	3		School/Church	357	9.21
40	65.7	3	1	Single Family	197.1	3.50
38	63.5	3	1	Single Family	190.5	3.50
36	53	3	1	Single Family	159	3.50
34	252	2	2	Semi-detached	504	5.40
32	139	3	1	Single Family	417	3.50
30	95	2	1	Single Family	190	3.50
24	128	2	1	Single Family	256	3.50
28	86	3	1	Single Family	258	3.50
18	95.4	2	1	Single Family	190.8	3.50
14	46.6	3	1	Single Family	139.8	3.50
12	177	2	1	Single Family	354	3.50
8-10	329	2	2	Semi-detached	658	5.40
6	209	2	1	Single Family	418	3.50
3	93.8	3	1	Single Family	281.4	3.50
7	918	1	1	Single Family	918	3.50
11	122	2	1	Single Family	244	3.50
13	93.4	3	1	Single Family	280.2	3.50
17	132	3	1	Single Family	396	3.50
21	171	3	1	Single Family	513	3.50
23	69.2	3	1	Single Family	207.6	3.50
31	210	3	1	Single Family	630	3.50
37	213	3	1	Single Family	639	3.50
41	119	3	1	Single Family	357	3.50
43	132	2	1	Single Family	264	3.50
Total						**97.01**

Block Address	Area
CROSS STREET	16,484
Total =	**16,484**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	88	102	0.86624
ICI:	9	252	0.0357

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SC18 - KING GEORGE ROAD

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
24	70	3	1	Single Family	210	3.50
20	99.5	3	1	Single Family	298.5	3.50
18	176	2	1	Single Family	352	3.50
16	151	2	1	Single Family	302	3.50
14	180	2	1	Single Family	360	3.50
12	183	2	1	Single Family	366	3.50
10	98.5	3	1	Single Family	295.5	3.50
8	97.9	2	1	Single Family	195.8	3.50
6	66.4	3	1	Single Family	199.2	3.50
4	42.7	2.5	1	Single Family	106.75	3.50
1-3	153	3	2	Semi-detached	459	5.40
5-7	135	3	2	Semi-detached	405	5.40
9-11	140	3	2	Semi-detached	420	5.40
15-17	126	3	2	Semi-detached	378	5.40
19-21	171	3	2	Semi-detached	513	5.40
23-25	134	3	2	Semi-detached	402	5.40
27-29	155	3	2	Semi-detached	465	5.40
Total						**72.80**

Block Address	Area
KING GEORGE ROAD	8,703
Total =	**8,703**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	73	127	0.572775
ICI:	0	0	0.0000

SC19 - CHURCH STREET 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
30	113	3	1	Single Family	339	3.50
36	608	6		Apartment	3648	145.92
40	84.6	2	1	Single Family	169.2	3.50
42	113	1.5	1	Single Family	169.5	3.50
29	651	1.5	1	Single Family	976.5	3.50
33	99.2	1	1	Single Family	99.2	3.50
35	179	3	2	Semi-detached	537	5.40
37	99.9	2	1	Single Family	199.8	3.50
31	66.8	23	1	Single Family	1536.4	3.50
39	137	3	1	Single Family	411	3.50
41	126	2	1	Single Family	252	3.50
43	156	2	1	Single Family	312	3.50
45	151	2	1	Single Family	302	3.50
Total						**189.82**

Block Address	Area
CHURCH STREET 2	11,825
Total =	**11,825**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	190	212	0.89516
ICI:	0	0	0.0000

SC20 - FERN AVENUE

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2	120	3	1	Single Family	360	3.50
4	101	2.5	1	Single Family	252.5	3.50
6	82.8	2.5	1	Single Family	207	3.50
8	99.8	3	1	Single Family	299.4	3.50
10	118	3	1	Single Family	354	3.50
12	128	3	1	Single Family	384	3.50
14	122	3	1	Single Family	366	3.50
16	176	3	1	Single Family	528	3.50
18	153	3	1	Single Family	459	3.50
1	76.9	2.5	1	Single Family	192.25	3.50
5	94.9	2	1	Single Family	189.8	3.50
7	107	3	1	Single Family	321	3.50
9	107	3	1	Single Family	321	3.50
11	105	3	1	Single Family	315	3.50
13	122	2.5	1	Single Family	305	3.50
15	119	3	1	Single Family	357	3.50
17	130	2.5	1	Single Family	325	3.50
19	112	3	1	Single Family	336	3.50
21	113	3	1	Single Family	339	3.50
Total						**66.50**

Block Address	Area
FERN AVENUE	15,647
Total =	**15,647**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	67	108	0.621095
ICI:	0	0	0.0000

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SC21 = GEORGE AND FERN

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
69	155	3	2	Single Family	465	7.00
67	71.5	2	1	Single Family	143	3.50
65	105	1	1	Single Family	105	3.50
20	101	2	1	Single Family	202	3.50
22	109	3	1	Single Family	327	3.50
24	101	3	1	Single Family	303	3.50
26	84.9	3	1	Single Family	254.7	3.50
57	221	3	2	Duplex	663	4.60
49	177	3	1	Single Family	531	3.50
49-2	559	2	1	School/Church	1118	28.84
48	149	3	1	Single Family	447	3.50
42	147	3	1	Single Family	441	3.50
34	119	3	1	Single Family	357	3.50
Total						**75.44**

Block Address	Area
GEORGE AND FERN	11,542
Total =	**11,542**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	47	111	0.42387
ICI:	28	250	0.1118

SC22 - WESTON ROAD 6

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2100	586	21		Apartment	12306	492.24
2088	201	1		Commercial	201	2.21
2105	1288	2		Commercial	2576	28.34
2077	607	2		Institutional	1214	40.47
2065 (1-3)	2148	3	48	Townhouse (Unit)	6444	129.60
2062	1474	1		Commercial	1474	16.21
2050	1092	2		Commercial	2184	24.02
2040	292	1		Commercial	292	3.21
2032	460	1		Institutional	460	15.33
2032-2	460	1		Apartment	460	18.40
2035	1297	1.5		Commercial	1945.5	21.40
2047	253	1		Commercial	253	2.78
2047-2	253	1		Apartment	253	10.12
Total						**804.34**

Block Address	Area
WESTON ROAD 6	32,237
Total =	**32,237**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	650	334	1.9463
ICI:	154	145	1.0600

SC23 - GEORGE STREET

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
30 KING	3150	2		School/Church	6300	162.54
36	290	3	1	Single Family	870	3.50
38	244	3	1	Single Family	732	3.50
23	2566	3		School/Church	5293	136.56
32	119	3	1	Single Family	357	3.50
28	125	3	1	Single Family	375	3.50
26	172	3	1	Single Family	516	3.50
26	97.8	3	1	Single Family	293.4	3.50
25	129	3	1	Single Family	387	3.50
Total						**323.60**

Block Address	Area
GEORGE STREET	28,234
Total =	**28,234**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	25	71	0.35304
ICI:	299	258	1.1593

SC24 - KING STREET CRES

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
11	134	2	1	Single Family	268	3.50
9	124	3	1	Single Family	372	3.50
7	148	3	1	Single Family	444	3.50
3	102	3	1	Single Family	306	3.50
20	121	3	1	Single Family	363	3.50
14	122	3	1	Single Family	366	3.50
12	67.4	3	1	Single Family	202.2	3.50
10	136	2.5	1	Single Family	340	3.50
8	131	2.5	1	Single Family	327.5	3.50
6	135	3	1	Single Family	405	3.50
4	245	1		Institutional	245	8.17
2	247	2	1	Single Family	494	3.50
Total						**46.67**

Block Address	Area
KING STREET CRES	9,267
Total =	**9,267**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	39	100	0.38877
ICI:	8	327	0.0245

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SC25 - KING STREET

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
1	1076	2		School/Church	2152	55.52
15	841	12		Apartment	10092	403.68
2	253	1		Commercial	253	2.78
18	244	1		Commercial	244	2.68
33-1	8605	3		Apartment	25815	1032.60
33-2	1319	27		Apartment	35613	1424.52
Total						**2921.79**

Block Address	Area
KING STREET	22,245
Total =	**22,245**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	2861	400	7.152
ICI:	61	230	0.2649

SC26 - WESTON 7

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
2016	214	2		Commercial	428	4.71
1995	1592	1		Commercial	1592	17.51
1979	810	1		Commercial	810	8.91
1956 Weston Road			507	Apartment - 1 B	0	709.80
1956 Weston Road			158	Apartment - 2 B	0	331.80
1956 Weston Road			74	Apartment - 3 B	0	229.40
1956 Weston Road				Commercial	3961	43.57
1940-1952	1243	1		Commercial	1243	13.67
1940-1952-2	1243	1		Apartment	1243	49.72
1965-1971	2600	1		Apartment	2600	104.00
1965-1971-2	2600	1		Commercial	2600	28.60
Total						**1541.69**

Block Address	Area
WESTON 7	24,448
Total =	**24,448**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	1425	3708	0.3843
ICI:	117	110	1.0634

Groundwater Flow (L/s)	2

SC27 - JOHN STREET

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
22-1	1927	5		Apartment	9635	385.40
22-2	880	25		Apartment	22000	880.00
Total						**1265.40**

Block Address	Area
JOHN STREET	10,731
Total =	**10,731**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	1265	400	3.1635
ICI:	0	0	0.0000

SC28 - LITTLE AVENUE

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
7	103	2	1	Single Family	206	3.50
9	85.7	2	1	Single Family	171.4	3.50
11	96	2	1	Single Family	192	3.50
15	179	3	1	Single Family	537	3.50
19	145	3	1	Single Family	435	3.50
23	115	3	2	Semi-detached	345	5.40
25-27	155	3	2	Semi-detached	465	5.40
29-31	153	3	2	Semi-detached	459	5.40
33	75.6	3	2	Semi-detached	226.8	5.40
35	135	3	1	Single Family	405	3.50
Total						**42.60**

Block Address	Area
LITTLE AVENUE	8,158
Total =	**8,158**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	43	125	0.34422
ICI:	0	0	0.0000

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SC29 - ROSEMOUNT 1

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
235	227	3	1	Single Family	681	3.50
233	128	2	1	Single Family	256	3.50
229	116	2	1	Single Family	232	3.50
227	110	2	1	Single Family	220	3.50
225	139	3	2	Semi-detached	417	5.40
223	199	3	1	Single Family	597	3.50
221	89.8	3	1	Single Family	269.4	3.50
219	110	3	1	Single Family	330	3.50
217	65.6	3	1	Single Family	196.8	3.50
215	78.2	2	1	Single Family	156.4	3.50
213	76	3	1	Single Family	228	3.50
211	79.6	3	1	Single Family	238.8	3.50
209	73.8	3	1	Single Family	221.4	3.50
207	96.9	3	1	Single Family	290.7	3.50
205	98.3	3	1	Single Family	294.9	3.50
203	97.7	3	1	Single Family	293.1	3.50
52	156	3	1	Single Family	468	3.50
224	2083	4	42	Townhouse (Unit)	8332	113.40
220-222	234	2	2	Semi-detached	468	5.40
216-218	208	2	2	Semi-detached	416	5.40
212-214	241	2	2	Semi-detached	482	5.40
208-210	227	2	2	Semi-detached	454	5.40
204-206	228	2	2	Semi-detached	456	5.40
200-202	261	2	2	Semi-detached	522	5.40
198	125	3	1	Single Family	375	3.50
196	139	3	1	Single Family	417	3.50
194	125	3	1	Single Family	375	3.50
192	125	3	1	Single Family	375	3.50
Total						**221.20**

Block Address	Area
ROSEMOUNT 1	29,341
Total =	**29,341**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	221	122	1.80625
ICI:	0	0	0.0000

SC31 - ROSEMOUNT 2

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
49	45.5	3	2	Semi-detached	136.5	5.40
51	87.6	1	1	Single Family	87.6	3.50
53	99.7	3	1	Single Family	299.1	3.50
55	75.4	3	1	Single Family	226.2	3.50
57	88.1	2	1	Single Family	176.2	3.50
184	89.6	3	1	Single Family	268.8	3.50
176	190	3	1	Single Family	570	3.50
174	92.9	2	1	Single Family	185.8	3.50
168	162	1.5	1	Single Family	243	3.50
164	127	2	1	Single Family	254	3.50
162	109	2	1	Single Family	218	3.50
158	98.8	3	1	Single Family	296.4	3.50
154	94.4	3	1	Single Family	283.2	3.50
152	480	5		Apartment	2400	96.00
150	92.1	3	1	Single Family	276.3	3.50
140	201	3	1	Single Family	603	3.50
136	148	3	1	Single Family	444	3.50
134	79.6	3	1	Single Family	238.8	3.50
130	119	2	1	Single Family	238	3.50
128	136	3	1	Single Family	408	3.50
54	112	2	1	Single Family	224	3.50
56	245	3	2	Semi-detached	735	5.40
177	89.2	2	2	Semi-detached	178.4	5.40
175	119	3	1	Single Family	357	3.50
173	117	3	1	Single Family	351	3.50
167	142	3	1	Single Family	426	3.50
165	128	3	1	Single Family	384	3.50
163	109	3	1	Single Family	327	3.50
159	130	3	1	Single Family	390	3.50
153	131	3	1	Single Family	393	3.50
149	110	3	1	Single Family	330	3.50
137	123	3	1	Single Family	369	3.50
135	179	3	1	Single Family	537	3.50
64	291		2	Single Family	0	7.00
68	76.5	3	1	Single Family	229.5	3.50
70	123	3	1	Single Family	369	3.50
72	144	3	1	Single Family	432	3.50
69	109	3	1	Single Family	327	3.50
67	96.4	3	1	Single Family	289.2	3.50
65	95.5	3	1	Single Family	286.5	3.50
125	185	3	1	Single Family	555	3.50
Total						**245.20**

Block Address	Area
ROSEMOUNT 2	37,565
Total =	**37,565**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	245	160	1.53425
ICI:	0	0	0.0000

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SC32 - ROSEMOUNT 3

Building Address	Building Footprint (sq.m)	Stories	Unit No.	Land Use	GFA (sq.m)	Population
124	117	3	1	Single Family	351	3.50
120-122	200	3	1	Single Family	600	3.50
118	122	3	1	Single Family	366	3.50
116	110	3	1	Single Family	330	3.50
110	183	3	1	Single Family	549	3.50
106	136	3	1	Single Family	408	3.50
104	141	2	1	Single Family	282	3.50
102	142	2	1	Single Family	284	3.50
100	135	3	1	Single Family	405	3.50
98	114	2	1	Single Family	228	3.50
96	122	2	1	Single Family	244	3.50
40	183	1	1	Single Family	183	3.50
117	166	3.5	1	Single Family	581	3.50
115	135	3	1	Single Family	405	3.50
113	74.8	3	1	Single Family	224.4	3.50
101	162	2	1	Single Family	324	3.50
97	117	3	1	Single Family	351	3.50
91	113	2	1	Single Family	226	3.50
Total						**63.00**

Block Address	Area
ROSEMOUNT 3	14,315
Total =	**14,315**

Sanitary Pop. Stats	Pop.	Density (P/ha)	Area (ha)
Residential:	63	99	0.63414
ICI:	0	0	0.0000

SUMMARY TABLE

BLOCK ADDRESS	BLOCK AREA (m2)	RES POP	RES DENSITY	RES GFA (ha)	ICI POP	ICI DENSITY	ICI GFA (ha)
HUMBERVIEW CRESCENT	10923	21	109	0.19	0	0	0.00
WESTON ROAD 1	5,863	17	195	0.09	9	113	0.08
PARKE STREET	4,566	11	243	0.05	7	100	0.07
HOLLEY AVENUE 1	4,408	35	132	0.27	0	0	0.00
HOLLEY AVENUE 2	6,343	53	133	0.40	0	0	0.00
HOLLEY AVENUE 3	7,259	32	116	0.28	3	246	0.01
WESTON ROAD 2	8,562	28	96	0.29	0	0	0.00
RECTORY ROAD 1	5,039	30	120	0.25	0	0	0.00
RECTORY ROAD 2	5,755	47	144	0.33	0	0	0.00
WINDAL AVENUE	6,652	32	113	0.28	0	0	0.00
WESTON ROAD 3	15,783	1147	310	3.70	0	0	0.00
COULTER AVENUE 1	7,465	59	225	0.26	0	0	0.00
COULTER AVENUE 2	8,368	53	111	0.48	0	0	0.00
WESTON ROAD 4	31,525	2007	322	6.24	0	0	0.00
WESTON ROAD 5	25,878	1023	401	2.55	58	174	0.33
CHURCH STREET 1	9,178	68	103	0.66	2	98	0.02
CROSS STREET	16,484	88	102	0.87	9	252	0.04
KING GEORGE ROAD	8,703	73	127	0.57	0	0	0.00
CHURCH STREET 2	11,825	190	212	0.90	0	0	0.00
FERN AVENUE	15,647	67	108	0.62	0	0	0.00
GEORGE AND FERN	11,542	47	111	0.42	28	250	0.11
WESTON ROAD 6	32,237	650	334	1.95	154	145	1.06
GEORGE STREET	28,234	25	71	0.35	299	258	1.16
KING STREET CRES	9,267	39	100	0.39	8	327	0.02
KING STREET	22,245	2861	400	7.15	61	230	0.26
WESTON 7	24,448	1425	3708	0.38	117	110	1.06
JOHN STREET	10,731	1265	400	3.16	0	0	0.00
LITTLE AVENUE	8,158	43	125	0.34	0	0	0.00
ROSEMOUNT 1	29,341	221	122	1.81	0	0	0.00
ROSEMOUNT 2	37,565	245	160	1.53	0	0	0.00
ROSEMOUNT 3	14,315	63	99	0.63	0	0	0.00
TOTALS	**444309**	**11965**	**320.02**	**37.39**	**755**	**178.28**	**4.23**

OUTPUT DATA:

SANITARY SEWER DESIGN SHEET - DRY WEATHER

PROPOSED CONDITION
John St & South Station St, Toronto

BURNSIDE
[THE DIFFERENCE IS OUR PEOPLE]

Project #: 300054203.0000
Date: 19-Apr-23
Designed: AH
Checked: JS

Min Diameter = 200 mm
Mannings 'n'= 0.013
Min. Velocity = 0.60 m/s
Max. Velocity = 3.00 m/s

Avg. Dom. Flow Res. = 240.0 l/c/d
Avg. Dom. Flow ICI. = Max 250.0 l/c/d And 180000 L/Floor ha/d
Infiltration = 0.260 l/s/ha

NOMINAL PIPE SIZE USED

DESCRIPTION	FROM MH	TO MH	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						INFILTRATION				FLOW CALCULATIONS							PIPE DATA				
			AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (p/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	BLOCK AREA (ha)	ACCUM. BLOCK AREA (ha)	INFILTRATION (l/s)	ACCUM. INFILTRATION (l/s)	TOTAL ACCUM. POP.	RESIDENTIAL PEAKING FACTOR	POP. FLOW (l/s)	CONSTANT FLOW (l/s)	ACCUM. CONSTANT FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)
Site	StubA	MH1A	3.31	3.31	0	260	0	861	861	0.35	0.35	109	0.000	38	38	0.4	0.4	0.1	0.1	899	3.84	9.92	0.0	0.0	10.0	2.00	200	46.4	1.48	1.18	22%
Area 1	MH1A	MH2A	0.09	3.40		132		12	873	0.10	0.45	307		32	70	0.5	0.9	0.1	0.2	943	3.84	10.25			10.5	0.42	250	38.5	0.79	0.67	27%
Area 2	MH2A	MH3A	0.14	3.54		144		20	893	0.02	0.48	93		2	72	0.4	1.2	0.1	0.3	965	3.83	10.49			10.8	0.20	250	26.6	0.54	0.51	41%
Area 3	MH3A	MH4A	0.02	3.56		185		4	897		0.48				72	0.3	1.5	0.1	0.4	969	3.83	10.53			10.9	0.27	250	30.9	0.63	0.58	35%
Area 4	MH4A	MH5A	1.04	4.60		400		415	1312	0.00	0.48				72	0.6	2.1	0.1	0.5	1384	3.72	14.55			15.1	1.01	250	59.8	1.22	1.01	25%
Area 5	MH5A	MH8A	1.81	6.41		400		723	2035	0.22	0.69	111		24	96	0.7	2.7	0.2	0.7	2131	3.58	21.68			22.4	0.26	300	49.3	0.70	0.68	45%
Area 6	MH6A	MH7A	0.91	0.91		400		365	365	0.75	0.75	111		83	83	0.6	0.6	0.1	0.1	448	4.04	5.66			5.8	0.46	250	40.3	0.82	0.58	14%
Area 7	MH7A	MH8A		0.91					365	0.11	0.86	112		12	95	0.3	0.9	0.1	0.2	460	4.04	5.88			6.1	0.41	250	38.0	0.77	0.57	16%
Area 8	MH8A	MH9A		7.32					2400	0.16	1.71	110		18	209	0.6	4.2	0.2	1.1	2609	3.52	27.05			28.2	0.42	300	62.7	0.89	0.86	45%
Area 9	MH9A	MH10A	4.26	11.58		397		1691	4091	0.08	1.80	143		12	221	0.6	4.9	0.2	1.3	4312	3.32	41.52			42.8	2.20	300	143.4	2.03	1.77	30%
Area 10	MH10A	MH11A	0.39	11.97		157		61	4152	0.15	1.95	111		17	238	0.8	5.7	0.2	1.5	4390	3.32	42.34			43.8	2.20	300	143.4	2.03	1.78	31%
	MH11A	MH12A	37.39	49.36		320		11965	16117	4.23	6.18	178		755	993	44.4	50.1	11.6	13.0	17110	2.75	135.85	2.0	2.0	150.9	0.38	450	175.8	1.11	1.24	86%
	MH12A	MH13A		49.36					16117		6.18				993		50.1		13.0	17110	2.75	135.85		2.0	150.9	38.70	450	1773.6	11.15	6.80	9%
	MH13A	TRUNK		49.36					16117		6.18				993		50.1		13.0	17110	2.75	135.85		2.0	150.9	3.35	450	521.8	3.28	2.84	29%

OUTPUT DATA:

SANITARY SEWER DESIGN SHEET - EXTREME WET WEATHER

PROPOSED CONDITION
John St & South Station St, Toronto

Project #: 300054203.0000
Date: 19-Apr-23
Designed: AH
Checked: JS

Min Diameter = 200 mm
Mannings 'n'= 0.013
Min. Velocity = 0.60 m/s
Max. Velocity = 3.00 m/s

Infiltration (PR. Site) = 0.260 l/s/ha

Avg. Dom. Flow Res. = 240.0 l/c/d
Avg. Dom. Flow ICI. = Max 250.0 l/c/d And 180000 L/Floor ha/d
Infiltration = 3.000 l/s/ha

BURNSIDE
THE DIFFERENCE IS OUR PEOPLE

NOMINAL PIPE SIZE USED

DESCRIPTION	FROM MH	TO MH	RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						INFILTRATION				FLOW CALCULATIONS							PIPE DATA				HGL DATA						
			AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (p/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	BLOCK AREA (ha)	ACCUM. BLOCK AREA (ha)	INFILTRATION (l/s)	ACCUM. INFILTRATION (l/s)	TOTAL ACCUM. POP.	RESIDENTIAL PEAKING FACTOR	POP. FLOW (l/s)	CONSTANT FLOW (l/s)	ACCUM. CONSTANT FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)	HGL U/S (m)	HGL D/S (m)	Surface Elevation U/S (m)	Surface Elevation D/S (m)	Depth to HGL U/S (m)	Depth to HGL D/S (m)	Surcharge U/S
Site - Parcel A	StubA	MH1A	3.31	3.31	0	260	0	861	861	0.35	0.35	109	0.000	38	38	0.4	0.4	1.2	1.2	899	3.84	9.92	0.0	0.0	11.1	2.00	200	46.4	1.48	1.21	24%	125.25	125.05	128.00	127.70	2.75	2.65	0.00
Area 1	MH1A	MH2A	0.09	3.40		132		12	873	0.10	0.45	307		32	70	0.5	0.9	1.5	2.6	943	3.84	10.25			12.9	0.42	250	38.5	0.79	0.71	33%	125.01	124.80	127.70	126.88	2.69	2.08	0.00
Area 2	MH2A	MH3A	0.14	3.54		144		20	893	0.02	0.48	93		2	72	0.4	1.2	1.1	3.7	965	3.83	10.49			14.2	0.20	250	26.6	0.54	0.55	54%	124.80	124.70	126.88	126.77	2.08	2.07	0.00
Area 3	MH3A	MH4A	0.02	3.56		185		4	897		0.48				72	0.3	1.5	0.8	4.5	969	3.83	10.53			15.1	0.27	250	30.9	0.63	0.63	49%	124.70	124.56	126.77	126.72	2.07	2.16	0.00
Area 4	MH4A	MH5A	1.04	4.60		400		415	1312	0.00	0.48				72	0.6	2.1	1.7	6.2	1384	3.72	14.55			20.7	1.01	250	59.8	1.22	1.11	35%	124.56	124.03	126.72	126.44	2.16	2.41	0.00
Area 5	MH5A	MH8A	1.81	6.41		400		723	2035	0.22	0.69	111		24	96	0.7	2.7	2.0	8.1	2131	3.58	21.68			29.8	0.26	300	49.3	0.70	0.73	60%	124.03	123.80	126.44	127.11	2.41	3.31	0.00
Area 6	MH6A	MH7A	0.91	0.91		400		365	365	0.75	0.75	111		83	83	0.6	0.6	1.7	1.7	448	4.04	5.66			7.4	0.46	250	40.3	0.82	0.62	18%	124.34	124.05	126.81	126.95	2.47	2.90	0.00
Area 7	MH7A	MH8A		0.91					365	0.11	0.86	112		12	95	0.3	0.9	1.0	2.7	460	4.04	5.88			8.5	0.41	250	38.0	0.77	0.62	22%	124.05	123.83	126.95	127.11	2.90	3.28	0.00
Area 8	MH8A	MH9A		7.32					2400	0.16	1.71	110		18	209	0.6	4.2	1.9	12.7	2609	3.52	27.05			39.8	0.42	300	62.7	0.89	0.94	64%	123.80	123.44	127.11	125.80	3.31	2.36	0.00
Area 9	MH9A	MH10A	4.26	11.58		397		1691	4091	0.08	1.80	143		12	221	0.6	4.9	1.9	14.7	4312	3.32	41.52			56.2	2.20	300	143.4	2.03	1.91	39%	121.85	119.67	125.80	121.57	3.95	1.90	0.00
Area 10	MH10A	MH11A	0.39	11.97		157		61	4152	0.15	1.95	111		17	238	0.8	5.7	2.4	17.1	4390	3.32	42.34			59.4	2.20	300	143.4	2.03	1.93	41%	119.66	117.43	121.57	118.84	1.91	1.41	0.00
	MH11A	MH12A	37.39	49.36		320		11965	16117	4.23	6.18	178		755	993	44.4	50.1	133.3	150.4	17110	2.75	135.85	145.4	145.4	431.6	0.38	450	175.8	1.11		>100%	117.43	117.13	118.84	118.84	1.41	1.71	0.25
	MH12A	MH13A		49.36					16117		6.18				993		50.1		150.4	17110	2.75	135.85		145.4	431.6	38.70	450	1773.6	11.15	9.20	24%	117.13	115.97	118.84	118.79	1.71	2.82	0.00
	MH13A	TRUNK		49.36					16117		6.18				993		50.1		150.4	17110	2.75	135.85		145.4	431.6	3.35	450	521.8	3.28	3.67	83%	115.14	113.00	118.79	115.78	3.65	2.78	0.00

R.J. Burnside & Associates Limited