FUNCTIONAL SERVICING & STORMWATER MANAGEMENT REPORT

142-148 QUEEN STREET SOUTH CONDOMINIUM DEVELOPMENT

CITY OF MISSISSAUGA
REGION OF PEEL

CENTRE PLAZA

PREPARED FOR:

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1.0 INTRODUCTION

C.F. Crozier & Associates Inc. (Crozier) was retained by De Zen Realty Company Limited to prepare a Functional Servicing and Stormwater Management Report in support of an Official Plan Amendment (OPA), Zoning By-Law Amendment (ZBA), and Draft Plan of Subdivision (DPoS) application for the proposed condominium development at 142-148 Queen Street South (Site) in the City of Mississauga (City). This report outlines the proposed functional servicing and stormwater management plan for the Site according to the requirements of the City and Region.

1.1 Project Background

The subject site covers an area of approximately 4.23 ha and currently consists of a commercial plaza of several 1-2 storey buildings and a large asphalt parking lot. The site is bound by Tannery Street to the south, a Canadian National Railway track to the west, residential properties and William Street to the north and Queen Street South to the east.

The site is located in a mixed residential/commercial neighbourhood, and is supported by existing municipal water, sanitary, and stormwater infrastructure.

The following reports, design criteria, and as-constructed drawings were referenced during the preparation of this report:

- Regional:
  - Region of Peel Linear Wastewater Standards (March 29, 2023).
  - Region of Peel Public Works, Design, Specifications & Procedures Manual - Watermain Design Criteria (June 2010)
- Municipal:
  - City of Mississauga Transportation & Works Department Development Requirements Manual, Section 8 – Storm Drainage Design Requirements (November 2020).
- As-constructed drawings:
  - 24856-D, 7448-D, and 7449-D: Sewers along Queen Street dated April 28, 1999 and May 1986.
  - C-12878 Queen Street Storm Sewer (October 1961)
  - C-49529 Tannery Street and Crumbie Street Plan & Profile (January 2013)
  - PP-1 Crumbie Street (November 1998)
  - 00-10-SG William Street Servicing Plan (March 2002)
- Other:
  - Topographic Survey by David B. Searles Surveying Ltd. (dated January 17th, 2023).
  - Hydrant Testing by HTO (dated June 19th, 2023).
  - Telecon Subsurface Utility Investigation by Telecon (dated February 27th, 2023).
  - Tannery Street Storm Sewer Design for Area Z-38W (City of Mississauga, October 2012).
  - Hydrogeological Assessment by Terrapex Environmental Ltd (February 2024).

2.0 PROPOSED DEVELOPMENT

Based on the Site Plan provided by SRM Architects + Urban Designers the proposed development consists of the following elements:

- Building 1A: 13 storeys, 283 units
- Building 1B: 13 storeys, 243 units
- Building 2A: 15 storeys, 268 units
- Building 2B: 2 storey commercial building (existing pub building)
- Building 3A: 15 storeys, 256 units
- Building 3B: 15 storeys, 256 units
- Building 3C: 12 storeys, 211 units
- Building 3D: 10 storeys, 141 units
- Building 4: 8 storeys, 150 units
- Underground parking structures below each building.
- Public Park (0.1 ha)
- Market Square (POPS) (~0.20 ha)
- 3 new Public Streets (A, B & C) with connections to Queen St, Williams St, and Crumbie St.

2.1 Equivalent Population

The Site equivalent population for the proposed development as summarized in **Table 1**. The architectural package has provided the total number of units for each building, however, the exact number of 1, 2, and 3 bedroom units is not determined at this time. SRM has advised that the anticipated unit split is approximately 72% 1-bedroom, 18% 2-bedroom, and 10% 3-bedroom units. Using equivalent unit populations of 1.8, 2.1, and 3.1 persons per 1, 2, and 3-bedroom units respectively, the average unit rate is equivalent to 2.1 persons per residential unit.

Table 1: Estimated Equivalent Population

Building	Residential Units	Persons per Unit	Residential Population	Non-Residential Area (m^2)	Density (ppha)	Non-Res Pop	Total Population
1A	283	2.1	594	1782	70	12	607
1B	243		510	1460		10	521
2A	268		563	0		0	563
2B	1		2	300		2	4
3A	256		538	0		0	538
3B	256		538	0		0	538
3C/D	352		739	0		0	739
4	150		315	379		3	318
Res Population			**3799**	**Non-Res Population**		**27**	**3826**

3.0 GROUNDWATER DRAINAGE CONDITIONS

A Hydrogeological Assessment report for the subject site was completed by Terrapex Environmental Ltd. which detailed the Site's subsurface and groundwater conditions. The major conclusions of the hydrogeological assessment are as follows:

- Groundwater exceeds City of Mississauga Quality levels for discharge to Storm Sewers with elevated phenolics and manganese.
- Short-Term (Construction) dewatering of Phase 1 = 251,000 L/d (2.9 L/s).
    - Note: The above rate is associated with Phase 1 Buildings 1A & 1B combined.
- Long-Term (Post-Construction) dewatering of Phase 1 (Building 1A & 1B) = 86,400 L/d (1.0 L/s)
    - Note: Based on the daily rate for Phase 1, it is estimated that the total long-term discharge rate for all buildings is approximately 5 L/s.

Please refer to the Hydrogeological Assessment prepared by Terrapex for further details.

Short-term de-watering is to be designed by the de-watering contractor, with de-watering operations taking place prior to and during any excavation. Any groundwater which is pumped to the City's sewers will require pre-treatment in order to meet the groundwater quality limits as specified in the City's Municipal Code. The dewatering contractor will confirm groundwater quality to assess the required level of pre-treatment necessary. The property owner should obtain short-term to discharge private water to the combined sewer, ensuring any short-term discharge follows the City's municipal code. All short-term discharge activity shall be terminated prior to building occupancy and such that short-term discharge will not simultaneously discharge with the proposed storm or sanitary flows from the building.

Long-term dewatering will be in the form of building foundation drainage (by structural) which will be collected, pumped (by mechanical), and treated for quality levels suitable for discharge to the municipal storm sewer system. The quality treatment design component will be done at the Site Plan stage for each respective Building and or Phase of the development.

It is proposed to discharge all groundwater and foundation drainage, in both the short and long term, to the municipal storm sewer system. The permanent discharge of groundwater in the long-term will be accounted for in the stormwater management design and quantity control targets for each individual Block and the Site as a whole. Refer to Section 6.0 & 7.0 for further details and discussion.

4.0 WATER SERVICING

The Region of Peel is responsible for the operation and maintenance of the public water system servicing the Site, and any private system connecting to this public system. The following sections outline the existing and proposed design of water servicing for the proposed development.

4.1 Existing Water Servicing

A review of the available as-constructed drawings indicates that there is an existing 300 mm diameter watermain located along Queen Street, 200mm diameter watermain located along Tannery Street, and a 150mm William Street all in proximity to the site. Municipal hydrants are located in close proximity to the site.

There are currently several water service connections and private lines which traverse through the site. Please refer to **Appendix A** for As-Builts, Telecon's investigation figure and **Drawing C102** for additional details on the location of the existing water infrastructure. It is anticipated that all existing water services will be capped, removed and/or abandoned through redevelopment of the site. The exception is Building E, the existing pub, which will remain in operation and continue to use all existing services from Queen Street.

4.2 Water Design Demand

The Region's Design Criteria for Linear Infrastructure was used to estimate the proposed water demands for both pre and post-development conditions. An average daily demand of 280 L/c/d for residential and 300 L/c/d for non-residential was used in accordance with Region criteria. A summary of the results is presented in **Table 2**, with detailed water design demand calculations provided in **Appendix B.**

Table 2: Existing and Proposed Domestic Water Demand

	Average Daily Demand (L/s)	Maximum Daily Demand (L/s)	Peak Hourly Demand (L/s)
Existing Water Demand	1.03	1.44	3.08
Proposed Water Demand	12.41	24.80	37.22
Increase in Water Demand	11.38	23.36	34.14

As shown in **Table 2**, the peak hourly water demand for the proposed development is 37.22 L/s. Refer to Appendix B for detailed water demand calculations for each building and the total site.

4.3 Fire Flow Demand

The Fire Underwriters Survey 2020 (FUS) was referenced to complete the fire flow demand analysis for the proposed development. It is assumed that all proposed buildings will be constructed with a minimum 2-hr fire resistance rating for all structural elements and will be designed with a minimum 1-hr fire resistance rating for all vertical openings and exterior vertical openings. As such, flow requirements were calculated based on fire-restrictive construction (C =0.60) and consider a fire area of the largest floor plus 25% of each of the two immediately adjoining floors. Refer to the latest FUS 2020 Guidelines and Site Statistics provided from the Architect in **Appendix A** for reference.

As the proposed building use is residential (low hazard) a "Limited-Combustible" occupancy hazard has been applied. The proposed building will have a fire line connection to the same municipal watermain system as the fire department connection and will be supported by an automatic and fully supervised fire suppression system in conformance with NFPA 13 sprinkler standards. Exposure charges were included in the calculations to account for various existing residential and commercial properties in proximity to the Site. The fire flow demands for each building are summarized in **Table 3**.

Table 3: Estimated Fire Flow Demand

Building	Contributing Area (m^2)	Construction Type (Coefficient)	Occupancy Surcharge (%)	Sprinkler Protection (%)	Fire Demand Flow (L/s)	Duration of Fire Flow (hr)
1A	2928	Fire-Resistive (0.6)	-15%	-50%	50.0	1.25
1B	2564	Fire-Resistive (0.6)	-15%	-50%	50.0	1.25
2A	2424	Fire-Resistive (0.6)	-15%	-50%	50.0	1.25
2B	14050	Ordinary (1.0)	0%	0%	100.0	2.00
3 (A-D)	2444	Fire-Resistive (0.6)	-15%	-50%	117.0	2.00
4	2424	Fire-Resistive (0.6)	-15%	-50%	50.0	1.25

As shown in **Table 3**, the proposed development requires fire flows ranging from approximately 50.00 L/s to 117 L/s for a duration of 1.25 to 2.0 hours per the FUS calculations.

Hydrant flow tests were conducted by Hydrant Testing Ontario (HTO) on June 19th, 2023 on the 300mm, 200mm, and 150mm watermains surrounding the Site. Results are summarized as follows:

Queen St 300mm = 341 L/s @ 20 psi, 64 psi static pressure
Tannery St 200mm = 239 L/s @ 20 psi, 69 psi static pressure
William St 150mm = 120 L/s @ 20 psi, 60 psi static pressure

As tested, both the Queen St and Tannery St watermains have substantial pressure and flow available. It is noted that the William St watermain is currently a dead-end system on a residential cul-de-sac. It is anticipated that, thru development of the site and connecting/looping of the proposed water network through the new Streets A & B that this will significantly improve the flow available on William Street and provide adequate flow through the development as a whole. The FUS calculations and hydrant flow test report are provided in **Appendix B.**

Note that the FUS value is a conservative estimate to assess the capacity of the municipal water supply system to provide fire protection for the proposed development. The Mechanical or Sprinkler Engineer for this development will complete the required analyses for building fire protection and the Architect will design fire separation methods per the determined fire flow rate in order to meet municipally available flows and pressures.

4.4 Proposed Water Servicing

New 300mm dia municipal watermains will be installed along the entire length of new Streets A, B and C. Connections will be made to Queen St, Tannery St, and William St, creating an internally looped and interconnected system with the existing surrounding network.

Proposed Buildings 1A and 1B, as it represents Phase 1 of the development, will be serviced from the existing 300mm watermain on Queen St. Due to its total building height, it will be supplied with 2 fire services, and is anticipated to be serviced with 2 domestic services, all from Queen Street.

Proposed Buildings 2A, 3A, 3B, 3C/D and 4 will all be serviced with domestic and fire connection(s) from the new watermains within Street A, B and C. Building 3A-D is anticipated to be supplied with 2 fire services due to its height and size.

Existing Building 2B will continue to utilize its existing water service connection from Queen Street.

All proposed water services shall enter the buildings in the mechanical/service rooms located in the underground P1 level. A water meter, backflow preventor and detector check assembly will be installed per mechanical details and specifications on all domestic lines, and a detector check valve will be installed on all fire services.

Municipal hydrants are proposed along Street A, B, and C at regular intervals as required by Peel Region standards.

Please refer to **Drawing C102** for the proposed servicing plan.

5.0 SANITARY SERVICING

The City of Mississauga is serviced by a network of local and trunk sanitary sewers. The Region of Peel is responsible for the operation and maintenance of the public sewage collection and treatment systems within its jurisdiction, and any private sewage system that connects to this public system.

5.1 Existing Sanitary Servicing

A review of active Region and City records, as-built drawings and field investigations site indicates that the Site is currently serviced by a private 200mm diameter sanitary sewer that connects to a 250mm diameter public sanitary sewer in Crumbie Street. There are also several service connections directly to the existing 300mm sewer in Queen St. All site sanitary flows ultimately are collected by a 3000mm diameter trunk sanitary sewer that leads to Clarkson Wastewater Treatment Plant.

Please refer to **Appendix A** and **Drawing C102** for further details on the location of the existing sanitary infrastructure. It is anticipated that all existing sanitary services will be capped, removed and/or abandoned through redevelopment of the site. The exception is Building E, the existing pub, which will remain in operation and continue to use all existing services from Queen Street.

5.2 Sanitary Design Flow

The Region of Peel's Linear Wastewater Standards (March 29, 2023) was used to estimate the existing and proposed sanitary design flows generated from the Site. As described in **Section 2.1,** the proposed development is anticipated to generate an equivalent residential population of 3836 people. An average sanitary flow of 290 L/c/d & 270 L/c/d is used to estimate average daily flow for residential and non-residential development populations. An infiltration rate of 0.26 L/s/ha is also added to all Site areas. A summary of the results is presented in **Table 4**, with detailed calculations provided in **Appendix C**.

Table 4: Existing and Proposed Sanitary Design Flows

	Average Flow (L/s)	**Peak Flow** (L/s)	**Infiltration Flow** (L/s)	**Total Peak Flow** (L/s)
Existing Flow	0.99	3.97	1.1	5.07
Proposed Flow	**12.8**	**43.0**	**1.1**	**44.1**
Increase Flow	11.81	39.03	0.00	39.03

As shown in **Table 4**, the total peak sanitary flow for the proposed development was estimated to be 44.1 L/s, representing an increase of 39.03 L/s from existing conditions.

The flows from the Site will outlet to either Queen Street or Crumbie Street, based on the proposed servicing configuration (see Section 5.3). The following is a summary of total peak flows by outlet:

Total Peak Flow to **Queen St** **= 18.2 L/s**
Total Peak Flow to **Crumbie St** **= 29.0 L/s**

Refer to Appendix C for detailed sanitary demand calculations for each building and the total site.

5.3 Proposed Sanitary Servicing

Proposed Buildings 1A and 1B, as it represents Phase 1 of the development, will be serviced from the existing 300-375mm sanitary sewers on Queen St and will therefore not require any of the future sewers to be constructed to Crumbie. Building 4 will also be serviced by the 300-375mm sewer on Queen Street as it has direct frontage. This is done to more evenly distribute the total development flows between both Queen Street and Crumbie Street.

Existing Building 2B will maintain its existing service connection to Queen Street.

New 200-250 mm diameter PVC sanitary sewers will be constructed within Streets B and C and will convey all wastewater towards the existing 250 mm diameter sanitary sewer on Crumbie Street. Proposed Buildings 3 A/B/C/D and 2A will be serviced by these new sewers, as well as the Public Park Block and Market Square.

All new sanitary service connections with control manhole at the property line per Region of Peel standards. Existing sanitary services will be decommissioned in accordance with Region criteria.

The following is a summary of the proposed Buildings and their respective connection points:

Building 1A	Queen St – existing 300mm
Building 1B	Queen St – existing 375mm
Building 2A	Street C – proposed 250mm
Building 2B	Queen St – existing 375mm (existing service to be maintained)
Building 3A	Street C – proposed 250mm
Building 3B	Street B – proposed 200mm
Building 3C/D	Street B – proposed 200mm
Building 4	Queen St – existing 300mm
Park	Street B – proposed 200mm
Market Square	Street C – proposed 200mm

Street A	No sanitary
Street B	Proposed 200mm, conveys to Street C
Street C	Proposed 250mm, discharge to ex 250mm in Crumbie Street

The proposed sanitary sewers and service connections are shown in **Drawing C102**.

6.0 STORM DRAINAGE

The following subsections detail the existing and proposed storm drainage conditions for the Site.

6.1 Existing Drainage Conditions and Storm Sewers

A review of City records, as-built drawings and field investigations site indicates that site drains via a combination of public sewers within adjacent roadways and internal easements as well as a network of private on-site sewers and catchbasins.

The existing 375mm Queen Street sewers fronting the site are tributary to an external upstream catchment area of approximately 4.38 ha (see **Figure 1** and the Tannery Street Storm Sewer Design for Area Z-38W, City of Mississauga, October 2012 record drawing).

The Site also drains a portion of its frontage overland directly to these sewers, which flows southward to an existing manhole (EX STM MH59) approximately 45m north of the southern-most property limit along Queen St. These sewers then turn westward into the site within an existing public easement and increase in size to 450mm diameter and convey flow to an existing 975mm storm sewer in Crumbie Street (see **Figure 2**).

The majority of the Site is capture by on-site catchbasins where a series of private sewers (varying in size from 150-675mm) conveys flow in a westerly and southerly direction, eventually joining with the 450mm public sewer at the existing 975mm Crumbie Street sewer (see **Figure 2**).

Ultimately, all flows are conveyed to the 975mm storm sewer in Crumbie Street before ultimately discharging to Mullet Creek via Tannery Street.

Per the Tannery Street Storm Sewer Design record drawing and design sheet, the existing 975mm storm sewer in Crumbie Street was designed to receive all of the external Queen St upstream and Site areas, a total of 9 ha at a runoff coefficient of 0.75. **Table 5** provides a summary of the pre-development drainage areas, runoff coefficients, and outlet destinations for the existing drainage conditions.

Table 5: Pre-Development Land Areas and Runoff Coefficients

Catchment	Land Use	Area (ha)	C	Outlet Destination
External Upstream Queen Street + Site Area	Commercial and Residential neighbourhood	8.99	0.75	Ex. 975mm diameter storm sewer on Crumbie Street

6.2 Proposed Drainage Condition Summary

Storm drainage for the proposed development will follow the existing conditions pattern and utilize the existing 975mm storm sewer in Crumbie Street as the primary outlet. This will be accomplished by the construction of new storm sewers within new public roads Streets A, B, and C that will convey stormwater southward to Crumbie Street. Additionally, the existing 450mm sewer within the on-site easement will be upsized to a 675mm sewer and reconstructed within Street C to continue discharging into Crumbie Street.

All private Blocks will be serviced with at least one storm service and provide on-site stormwater management. As noted in Section 3.0, all permanent foundation drainage from each Block/Building will discharge to the municipal storm system. Refer to Section 7.2 for further details.

6.2.1 Phase 1 Drainage Conditions

The Site is proposed to be built in a phased approach, starting with Phase 1 which consists of Building 1A and 1B fronting Queen Street. It is proposed that a storm service to Building 1A and Building 1B will be provided directly into the existing 375mm Queen St storm sewers, thereby utilizing the existing sewer infrastructure and not requiring the full build-out of any downstream sewers.

In order to not increase the net flow into the existing Queen St sewers in Phase 1, the allowable discharge rate of Phase 1 will be restricted to predevelopment rate of frontage area that is currently draining uncontrolled into Queen Street. Under existing conditions, only a small portion of the Phase 1 area drains to the existing Queen Street sewers, summarized in **Table 6**.

Table 6: Phase 1 Pre-Development Conditions for Phase 1 Allowable

Catchment	Area (ha)	C	Existing/Allowable Flow Rate (L/s)	Phase 1 Building
UNC1	0.04	0.90	9.9	1A
UNC2	0.02	0.90	5.0	1B

To maintain the existing flow rate from pre to post conditions in Phase 1, Building 1A and Building 1B will be required to provide stormwater management quantity control measures to reduce peak runoff rates such that they are equivalent to the predevelopment condition of UNC1. This will further be discussed and elaborated in Section 7.2.

6.2.2 Ultimate/Full Build-Out Drainage Conditions

It is anticipated that after Phase-1, development will require the buildout of Streets B and C, and therefore trigger the construction of the new storm sewers within proposed roads to the Crumbie Street outlet.

Per the Tannery Street Storm Sewer Design record drawing and design sheet, the existing 975mm storm sewer in Crumbie Street was designed to receive all of the external Queen St upstream and Site areas (total 9 ha), therefore all external and Site areas have been allocated a runoff coefficient of 0.75 (with the exception of the Site Park, C=0.30).

The Crumbie St 975mm storm sewer design was designed per municipal standards for the 10-year storm event. Therefore all proposed flows to the Crumbie Street sewer will be designed to not exceed this designed rate at the 10-year event.

The post-development sub catchment areas are shown in **Figure 3** and summarized in **Table 7** below.

Table 7: Post-Development Land Areas and Runoff Coefficients

Land Use	Area (ha)	C
EXT1A, EXT1B, EXT1C, EXT1D	4.38	0.75
Queen Street External	**4.38**	**0.75**
EXT2	0.06	0.75
EXT3	0.32	0.75
North West External	**0.38**	**0.75**
Site ROW	1.06	0.75
Site Private Blocks	3.08	0.75
Site Park	0.10	0.50
Total Site	**4.24**	**0.74**
TOTAL	**9.00**	**0.75**

Streets A, B and C will be graded to ensure both minor and major overland flow is directed towards the Crumbie Street ROW which is consistent with predevelopment conditions. The post-development private blocks (ie: Buildings 1-4) primarily consist of roof area coverage area which will be captured and controlled by private stormwater management infrastructure. The new public right-of-ways and the public Park block are all proposed to have no quantity controls.

The proposed storm sewers are designed to capture the 10-year design storm per City of Mississauga design standards. As per the Tannery Street Storm Sewer Design for Area Z-38W the allowable release rate from the 9 ha drainage catchment area in which the Site is situated is **1.46 m^3/s (=1458.8 L/s).** Refer to Appendix D for further information and Crumbie St storm sewer design info.

Refer to drawings **C102** and **PP1/PP2** for the proposed Servicing Plans and **C103** for the proposed Site Grading Plan.

7.0 STORMWATER MANAGEMENT

7.1 Stormwater Management Criteria

A summary of the stormwater management criteria applicable to the subject Site and development is as follows:

- **Quantity Control**: Flows from the Site will be controlled at the 10-year event to ensure compliance with the Tannery Street Storm Sewer Design record drawings (October 2012).
- **Erosion Control (Water Balance Target)**: Retain the first 5mm of runoff on-site through initial abstraction and water harvesting/re-use.
- **Quality Control**: 80% Total Suspended Solids (TSS) removal on annual loading basis of the stormwater runoff leaving the development per the MECP Enhanced Water Quality Control Criteria.

7.2 Stormwater Quantity Control

Using the Tannery Street Storm Sewer Design drawing as the basis of flows designed to enter the 975mm Crumbie Street sewer, a total allowable release rate of **1.46 m³/s (=1458.8 L/s)** at the 10-year event is identified. This total catchment includes both the entire site area (4.24 ha) and external area (4.76 ha), all allocated a runoff coefficient of 0.75. The External and Site Allowable discharge rates are therefore as follows:

Total Catchment rate = 1458.8 L/s (8.99 ha, C=0.75, i_{10} = 22.14 mm/hr)

External Areas flow rate = 772.4 L/s (4.76 ha, C=0.75, i_{10} = 22.14 mm/hr)

Site Area Allowable rate = 687.6 L/s (4.24 ha, C=0.75, i_{10} = 22.14 mm/hr)

The subject Site is comprised of private Blocks, public Streets, and a public Park. It is anticipated that both the public Streets and the park will have a runoff coefficient equal to or less than C=0.75, therefore no quantity controls will be implemented.

For the private Blocks (Buildings 1-4), stormwater quantity controls will be implemented to attenuate up to the 100-year flows to the 10-year allowable rate. Captured runoff within each private Block will be controlled using orifice tubes/plates with a detention storage volume provided as part of a SWM Facility in the basement levels of each building.

As noted in Section 3.0, it is estimated that approximately 5 L/s of permanent foundation drainage is anticipated over the entire site development. To be conservative, a total rate of 10 L/s over the whole site has been accounted for in the quantity control design. This 10 L/s rate has been evenly distributed over each development Block/Building based on its relative area.

The following Table 9 summarizes the allowable release rate at the 100-year event for each Private Block/Building equivalent to the 10-year allowable rate as well as the associated storage requirements.

Table 9: Private Block Allowable Discharge Rate

Site Catchment	Area (ha)	STM Target Release Rate @ 100-yr Event (L/s)	Approximate Storage Required @ 100yr (m^3)	Foundation Drainage Allowance to Storm (L/s)	Total Discharge to Storm (L/s)
Building 1A	0.44	8.5	219.4	1.4	9.9
Building 1B	0.29	4.0	161.5	1.0	5.0
Building 2A	0.29	46.1	54.2	0.9	47.1
Building 2B	0.27	42.9	50.5	0.9	43.8
Building 3A	0.44	70.0	82.2	1.4	71.4
Building 3B	0.41	65.2	76.6	1.3	66.5
Building 3C/D	0.65	103.4	121.5	2.1	105.5
Building 4	0.28	44.5	52.3	0.9	45.4
Total Site	**3.08**	**384.6**	**818.1**	**10.0**	**394.6**

The following **Table 10** summarizes the post-development quantity control results from the 2 to 100-year storm events to meet the allowable targets for both the individual Site area (4.24 ha) and the total catchment area (9.0 ha).

Table 10: Summary of Peak Flows, Storage Volume Required & Release Rates

Return Period	Post-Dev Site Rate (4.24 ha; incl. all Blocks, Park, ROW) (L/s)	Allowable Site Discharge Rate (L/s)	Total Rate (9.0 ha; incl. External + Site) (L/s)	Allowable Total Discharge Rate to Crumbie (L/s)
2 yr	379.0	415.3	845.5	881.1
5 yr	490.5	558.3	1117.6	1184.4
10 yr	**604.1**	**687.6**	**1376.5**	**1458.8**
25 yr	635.2	789.7	1522.3	1675.5
50 yr	663.3	882.5	1654.6	1872.2
100 yr	692.3	978.6	1791.6	2076.2

Preliminary design of the SWM facility and detention storage indicates that an approximate is 625.6 m^3 is required to be provided across the private Blocks within the Site. Detailed stormwater management calculations are provided in **Appendix D.**

7.3 Water Balance

Achieving the Site water balance criteria of capturing an equivalent 5mm depth of runoff from the site will be done through a combination of initial abstraction and rainwater harvesting. All surfaces have an inherent initial abstraction depth which is typically equivalent to 1mm for impermeable surfaces and 5mm for permeable surfaces. As all site catchments are comprised of a portion of impermeable area, additional rainfall harvesting will be required to meet the 5mm requirement.

It is proposed that no additional capture beyond initial abstraction will be done in the new public ROW's Street A, B and C. Therefore, the private Blocks (Buildings 1A-4) will harvest and additional depth beyond their own 5mm to compensate for the ROW's. Refer to **Table 11** for a summary of capture depths associated with each catchment.

Table 11: Summary of Water Balance

Catchment	Area (ha)	C	Required Abstraction (mm)	Initial Abstraction (mm)	Additional Capture Depth (mm)	Total WB Capture Depth (mm)
201A	0.44	0.75	5	1.86	4.23	6.08
201B	0.29	0.75		1.86	4.23	6.08
202A	0.29	0.75		1.86	4.23	6.08
202B	0.27	0.75		1.86	4.23	6.08
203A	0.44	0.75		1.86	4.23	6.08
203B	0.41	0.75		1.86	4.23	6.08
203C/D	0.65	0.75		1.86	4.23	6.08
204	0.28	0.75		1.86	4.23	6.08
PARK	0.10	0.50		3.29	1.71	5.00
ROW	1.06	0.75		1.86	0.00	1.86
Site Total	**4.24**	**0.74**	**5**	**80.13**	**3.11**	**5.00**

By capturing a total depth of 6.08mm within each private Block, the Site as a whole will meet the 5.0mm capture depth target. This additional capture depth is anticipated to be re-used within each private Block as irrigation for landscape/green-roofs or toilet flushing. The Park catchment will be provided with an infiltration basin to meet its own 5mm requirement.

7.4 Stormwater Quality Control

As outlined in the City of Mississauga design criteria "Enhanced Level of Protection" of 80% TSS removal is required to treat runoff leaving the Site. The majority of the private Blocks consists of rooftop area which inherently meets 80% levels of TSS removal. Additionally, each private Block will contain a stormwater management detention tank which will allow for particle settling and a water harvesting/re-use component which will retain at minimum the first 5mm of runoff from each private Block. Private Blocks will be assessed at the time of Site Plan Approval if additional quality treatment controls are required for at-grade parking or driveway areas. This may be in the form of a private oil-grit separator or media filtration unit.

To provide quality control for the new ROW's, Streets A, B and C, an oil-grit separator is proposed at the downstream end of the new storm sewer network prior to connection to the existing 975mm sewer in Crumbie Street. Additional "at-source" controls can be implemented within ROW catchbasins, such as CB Shields or Litta Traps, which can achieve 50-60% TSS removal and improve longevity of downstream OGS units.

The combination of private and public quality controls will satisfy the overall requirement for 80% TSS removal for the site.

8.0 EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION

Erosion and sediment controls will be installed prior to the commencement of any construction activities and will be maintained until the site is stabilized or as directed by the Site Engineer and/or the City of Mississauga. Controls will be inspected after each significant rainfall event and maintained in proper working condition. The following erosion and sediment controls will be provided during construction:

Silt Fencing

Silt fencing will be installed on the perimeter of the site to intercept sheet flow. Additional silt fence may be added based on field decisions by the Site Engineer and Owner, prior to, during and following construction.

Rock Mud Mat

A rock mud mat will be installed at the entrance of the construction zone in order to prevent mud tracking from the site onto the surrounding lands and perimeter roadway network. All construction traffic will be restricted to this access only.

Sediment Control Devices

A silt sack will be installed in all existing nearby storm sewer catch basins within the right of way. The silt sack will provide sediment control to prevent silt and sediment from entering the stormwater system.

A detailed Erosion and Sediment Controls plan will be submitted at the Site Plan stage.

9.0 PHASING DISCUSSION

As per the requirements set forth by the Region of Peel comments for project number DARC 22-493 W11; 120 & 146 Queen Street S and 169 Crumbie Street, the ownership and multi-use demand table for each proposed phase can be found in **Table 12** below.

Table 12: Multi-Use Demand & Phasing Table

Phase	Buildings	Usage	Ownership	Estimated Year of Construction	Peak San Demand (L/s)	Max Day Water Demand (L/s)	Fire Flow Demand (L/s)
Phase 1	1A	Multi (Res + Commercial, Office)	2	2026	8.1	3.9	50
	1B	Multi (Res + Commercial)			7.0	3.4	50
Phase 2	2A	Residential	1	2030	7.5	3.6	50
	2B (Existing)	Commercial	1		0.0	0.0	100
Phase 3	3A	Residential	3-4	2034	7.3	3.5	50
	3B	Residential			7.2	3.5	50
	3C/D	Residential			9.8	4.8	117
Phase 4	4	Multi (Res + Commercial)	2	2038	4.3	2.1	50
	Public Park	Park	City		0.03	TBD	-

10.0 CONCLUSIONS & RECOMMENDATIONS

Based on the information contained within this summary report, we offer the following conclusions:

1. Water servicing is proposed via a 300mm diameter looped water service connection from the existing 300mm diameter waterman in Queen Street to the 200mm diameter watermain in Crumbie Street and William Street.

2. A maximum fire flow demand of 117 L/s for 2 hours is required, which is met by an available fire suppression capacity of 341 L/s at 20 psi in the existing watermain per a hydrant flow test carried out on June 19th, 2023.

3. Sanitary flows from the Site will outlet to either Queen Street or Crumbie Street, based on the proposed servicing configuration.
   - Buildings 1A, 1B and 4 will be serviced by the existing 300-375mm diameter sanitary sewers in Queen Street to accommodate peak flow of 18.2 L/s.
   - Buildings 2A, 3A, 3B and 3C/D will be serviced by a proposed 200-250 mm sanitary sewer in Street A and B and discharge into the existing 250 mm diameter sanitary sewer on Crumbie Street to accommodate a peak flow of 29.0 L/s.

4. Stormwater management controls will reduce and control up to the 100-year post development peak flows to the allowable pre-development flow rates which is identified by the 'Tannery Street Storm Sewer Design' drawing dated October 2012. A total catchment peak flow of approximately 1458.8 L/s towards Crumbie Street is equal to the pre-development flow rate for minor (10-yr) capture.

5. Stormwater quantity controls will be implemented within private Blocks only. Each block will control up to the 100-year storm event and reduce discharge to the allowable 10-year rate, including any foundation drainage to the storm sewer system. This will be implemented via SWM tank facilities in the underground structure of each building and utilize orifice controls to restrict discharge. No stormwater controls are proposed in the new public ROW's (Streets A, B, C or in the Public Park.

6. Water balance measures will be implemented within each new private block and each block will overcompensate for the new public ROW's. Each private block will be required to capture a total depth of approximately 6.08 mm through initial abstraction, infiltration, and/or re-use. No additional water balance measures beyond initial abstraction are proposed in the new public ROW's.

7. The water quality control of 80% TSS removal from the Site is achieved in the form of 1) particle settling within the SWM storage tanks/cisterns in each block, 2) private OGS units (if required, to be evaluated at Site Plan stage), and 3) a public OGS unit within Street A at the downstream connection point to Crumbie Street and (based on City recommendation) the inclusion of at-source infrastructure such as CB Shields or Litta Traps within ROW catchbasins.

Based on the previously presented information and conclusions, we request consideration for approval of the OPA, ZBA, and DPoS from the perspective of servicing and stormwater management.

Respectfully submitted,

C.F. CROZIER & ASSOCIATES INC.

Gamsa Sivanantham, P.Eng.
Project Engineer

Rob Babic, P.Eng.
Project Manager

GS/rb

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APPENDIX A

Background Information

SKETCH ILLUSTRATING

TOPOGRAPHIC INFORMATION
128 QUEEN STREET SOUTH

CITY OF MISSISSAUGA

REGIONAL MUNICIPALITY OF PEEL

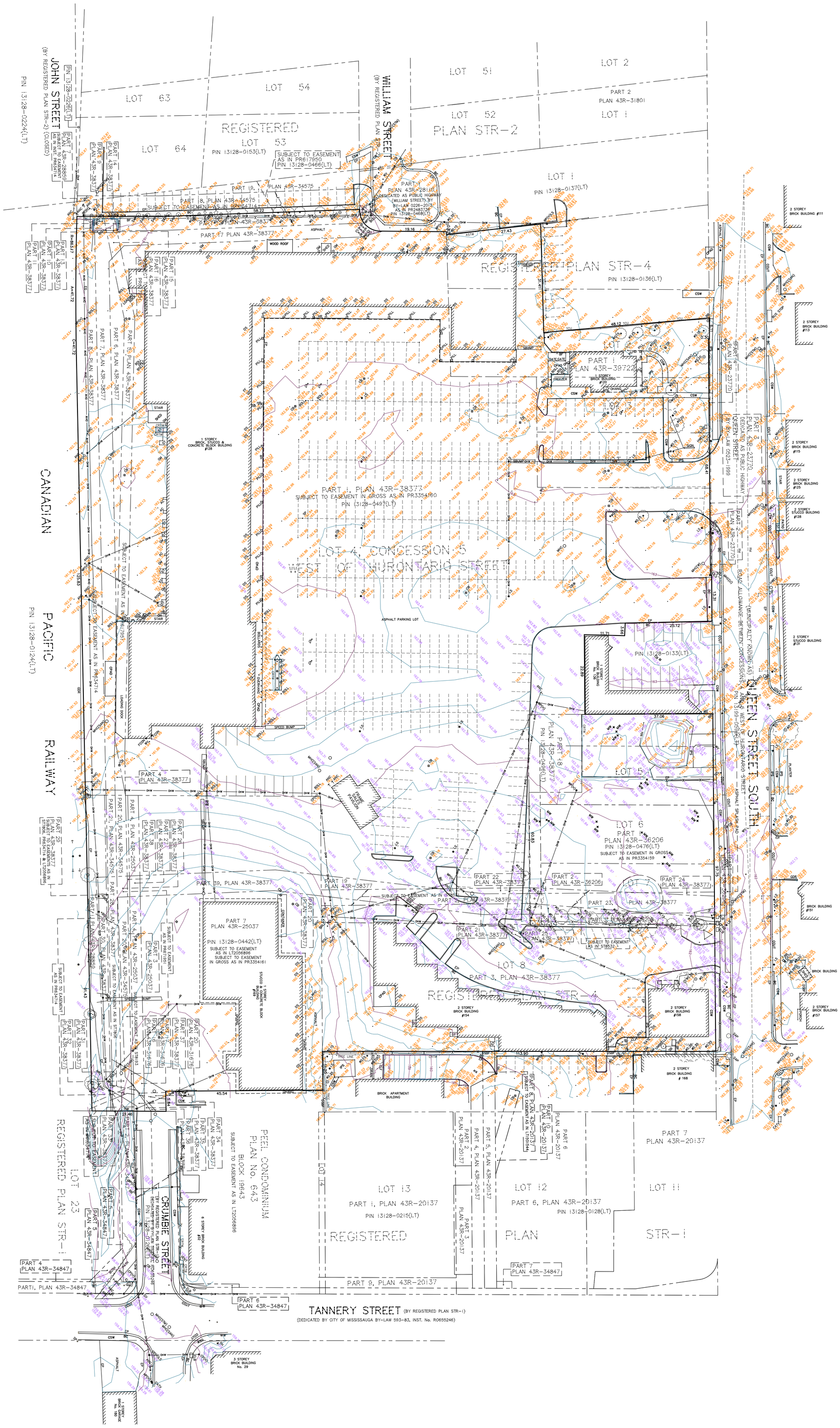
SCALE 1: 400

0 5 10 15 20 30 40 metres

David B. Searles Surveying Ltd.
ONTARIO LAND SURVEYORS

METRIC

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



LEGEND

AC	DENOTES	AIR CONDITIONER
ANC	DENOTES	ANCHOR
ASTW	DENOTES	ARMOUR STONE RETAINING WALL
BB	DENOTES	BELL BOX
BC	DENOTES	BACK OF CURB
BF	DENOTES	BOARD FENCE
BOLL	DENOTES	BOLLARD
BW	DENOTES	BRICK WALL
CATV	DENOTES	CABLE TELEVISION BOX
CB	DENOTES	CATCH BASIN
CCUT	DENOTES	CURB CUT
CLF	DENOTES	CHAIN LINK FENCE
CPAD	DENOTES	CONCRETE PAD
CP(H)	DENOTES	CONCRETE POLE (HYDRO)
CP(H)LS	DENOTES	CONCRETE POLE (HYDRO) WITH LIGHT STANDARD
CRTW	DENOTES	CONCRETE RETAINING WALL
CSW	DENOTES	CONCRETE SIDEWALK
DI	DENOTES	DITCH INLET
DS	DENOTES	DOOR SILL
DSBF	DENOTES	DOUBLE-SIDED BOARD FENCE
EG	DENOTES	EDGE OF GRAVEL
ELB	DENOTES	ELECTRICAL BOX
EP	DENOTES	EDGE OF ASPHALT
FCON	DENOTES	FIRE CONNECTION
FF	DENOTES	FINISHED FLOOR
FH	DENOTES	FIRE HYDRANT
GDR	DENOTES	GUARDRAIL
GM	DENOTES	GAS MAIN
GS	DENOTES	GARAGE SILL
GV	DENOTES	GAS VALVE
HR	DENOTES	HAND RAIL
HW	DENOTES	HEADWALL
HWELL	DENOTES	HANDWELL
IPS	DENOTES	INTERLOCKING PAVING STONES
ILB	DENOTES	INTERLOCKING BRICK
LS	DENOTES	LIGHT STANDARD
MHC	DENOTES	MAINTENANCE HOLE COVER
MHC(B)	DENOTES	MAINTENANCE HOLE COVER (BELL)
MHC(SAN)	DENOTES	MAINTENANCE HOLE COVER (SANITARY)
MHC(STM)	DENOTES	MAINTENANCE HOLE COVER (STORM)
MHC(U)	DENOTES	MAINTENANCE HOLE COVER (UTILITY)
MW	DENOTES	MONITORING WELL
OHANG	DENOTES	OVERHANG
PILL	DENOTES	PILLAR
PM	DENOTES	PARKING METER
PWF	DENOTES	POST AND WIRE FENCE
RM	DENOTES	ROAD MARKINGS
SAP	DENOTES	SAPLING
SB	DENOTES	SAND BOX
SBUMP	DENOTES	SPEED BUMP
SCL	DENOTES	SEWER CLEAN OUT
SP	DENOTES	SIGN POST
ST	DENOTES	STAIRS
TCU	DENOTES	TEMPORARY PARKING CURB
TLCB	DENOTES	TRAFFIC LIGHT CONTROL BOX
TLP	DENOTES	TRAFFIC LIGHT POLE
VP	DENOTES	VENT PIPE
WF	DENOTES	WROUGHT IRON FENCE
WP(H)	DENOTES	WOODEN POLE(HYDRO)
WP(H)LS	DENOTES	WOODEN POLE (HYDRO) WITH LIGHT STANDARD
WRTW	DENOTES	WOODEN RETAINING WALL
WV	DENOTES	WATER VALVE
ø	DENOTES	DIAMETER
TOS	DENOTES	TOP OF SLOPE
DL	DENOTES	DITCH LINE
BOS	DENOTES	BOTTOM OF SLOPE
OHW	DENOTES	OVERHEAD WIRES
	DENOTES	HANDICAP
	DENOTES	CONIFEROUS TREE
	DENOTES	DECIDUOUS TREE
	DENOTES	TREE LINE
162.04	DENOTES	FIELDWORK COMPLETED ON JANUARY 17, 2023.
162.04	DENOTES	FIELDWORK COMPLETED ON JANUARY 19, 2017. AND UPDATED ON FEBRUARY 4, 2022.

NOTE

FIELDORK COMPLETED ON JANUARY 17, 2023.

BENCHMARK NOTE

ELEVATIONS ARE REFERRED TO THE CITY OF MISSISSAUGA BENCHMARK No. 970, BEING A PLATE MOUNTED HORIZONTALLY IN THE CONCRETE PAD IN FRONT OF THE TRAFFIC LIGHT CONTROL BOX LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF MISSISSAUGA ROAD AND EGLINTON AVENUE WEST, HAVING AN ELEVATION OF 148.702 m.

VERTICAL DATUM: CANADIAN GEODETIC DATUM, 1928
(NOT 1978 SOUTHERN ONTARIO READJUSTMENT)

CAUTION

THIS IS NOT A PLAN OF SURVEY AND SHALL NOT BE USED EXCEPT FOR THE PURPOSE INDICATED IN THE TITLE BLOCK.

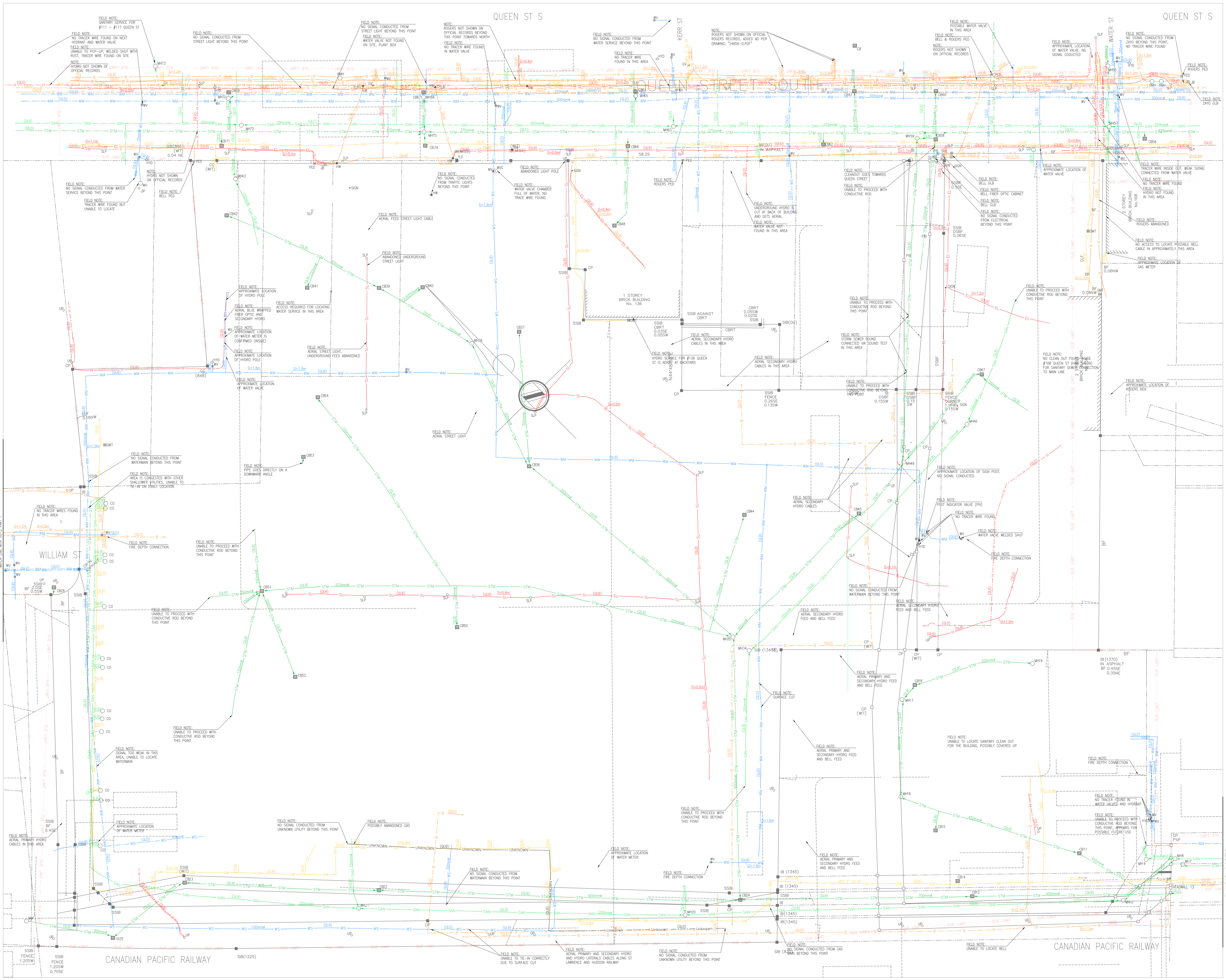
BOUNDARY INFORMATION ILLUSTRATED HEREON HAS BEEN COMPILED FROM REGISTRY OFFICE INFORMATION AND HAS NOT BEEN VERIFIED BY FIELD MEASUREMENT.

David B. Searles Surveying Ltd.
ONTARIO LAND SURVEYORS
4255 Sherwoodtowne Blvd., Suite 206, Mississauga, Ontario L4Z 1Y5
Tel: (905) 273-6840 Fax: (905) 896-4410
Email: info@dbsearles.ca

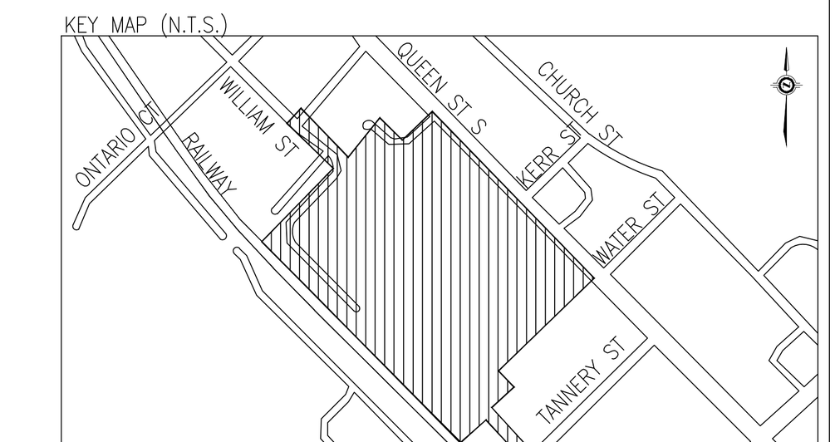
Calculator	Draftsperson
AV	IV
Editor	**Plan Index No.**
AV	V 15
Calculation File	**Drawing File**
64-2-12CAL.DWG	64-6-12.DWG
File No.	
64-6-12	

ANSI E (44.00 x 34.00 Inches)

PART 1



KEY MAP (N.T.S.)



GENERAL NOTES:

- THE SUE FIELD INVESTIGATION WAS COMPLETED IN FEBRUARY 2023 BY TELECON DESIGN INC. (TDI).
- THE FIELD VERIFICATION OF UTILITIES WAS COMPLETED USING A COMBINATION OF ELECTROMAGNETIC PIPE AND CABLE LOCATE EQUIPMENT.
- TELECON USED AVAILABLE MEANS IN AN ATTEMPT TO DETERMINE THE LOCATION OF UNDOCUMENTED UTILITIES. TELECON IS NOT RESPONSIBLE FOR INDICATING ALL UNDOCUMENTED UTILITIES UNLESS PROVIDED, SHOWN AND/OR AVAILABLE AND RECEIVED DIGITALLY OR BY HARDCOPY.
- THE TOPOGRAPHIC BASE PLAN PROVIDED BY OTHERS, AND IS NOT A PART OF THIS SUE INVESTIGATION COMPLETED BY TDI.
- UTILITY, MATERIAL, SIZE AND FLOW DIRECTION SHOWN ON THIS DRAWING ARE BASED ON RECORDS, PROFESSIONAL JUDGEMENT AND FIELD INVESTIGATIONS.

SUBSURFACE UTILITY ENGINEERING QUALITY LEVELS

☒ LEVEL D

INFORMATION DERIVED FROM EXISTING RECORDS OR VERBAL RECOLLECTIONS.

Line Style (Level D)

☒ LEVEL C

INFORMATION ACQUIRED BY SURVEYING AND PLOTTING VISIBLE ABOVE GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGEMENT IN CORRELATING THIS INFORMATION TO THE QUALITY Level "D".

Line Style (Level C)

☒ LEVEL B

INFORMATION ACQUIRED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL UTILITY LOCATING METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF THE SUBSURFACE UTILITIES WHICH IS THEN GEODETICALLY SURVEYED.

Line Style (Level B)

☐ LEVEL A

PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES OBTAINED BY THE ACTUAL EXPOSURE AND SUBSEQUENT MEASUREMENT AND/OR SURVEY OF SUBSURFACE UTILITIES.

Line Style (Level A)

REVISIONS

REV	DATE	DRAWN BY	APPROVED BY

LICENSED PROFESSIONAL ENGINEER
W. P. SHAMON
100034593
Feb. 27, 2023
PROVINCE OF ONTARIO

P.ENG STAMP HERE

telecon
design • build • connect
SUBSURFACE UTILITY ENGINEERING
7777 WESTON ROAD, 5TH FLOOR
VAUGHAN, ONTARIO L4L 0G9

THE ENGINEERS 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.

TELECON CLIENT

DE ZEN REALTY COMPANY LIMITED

SUE PROJECT

142–148 QUEEN STREET, MISSISSAUGA, ONTARIO

PROJECT/ WO#: 138097

TDI SURVEY LEGEND

CB	CATCH BASIN	HW	HANDWELL
DCB	DOUBLE CATCH BASIN	WV	WATER VALVE
MH	SANI/STORM MANHOLE	HYD	HYDRANT
WVC	WATER VALVE CHAMBER	GV	GAS VALVE
BMH	BELL MANHOLE	GMT	GAS METER
UP	UTILITY POLE	PED	PEDESTAL
TLP	TRAFFIC LIGHT POLE	SIGN	SIGN
SLP	STREET LIGHT POLE	JB	JUNCTION BOX

LEGEND:

GM	GAS MAIN	B	COMMUNICATION BELL	SAN	SANITARY SEWER
GS	GAS SERVICE	R	COMMUNICATION ROGERS	STM	STORM SEWER
FL	FUEL PIPE	COG	COMMUNICATION COGECO	COMB	COMBINED SEWER
H	HYDRO	ZAYO	COMMUNICATION ALLSTREAM	UNKNOWN	UNKNOWN UTILITY
HS	HYDRO SERVICE	TELUS	COMMUNICATION TELUS		END CAP (APPROXIMATE LOCATION)
EL	ELECTRICAL	GT	COMMUNICATION GT		FLOW DIRECTION
SL	STREET LIGHT	FO	FIBER OPTIC CABLE		DROP LEAD
WM	WATERMAIN	TS	TRAFFIC SIGNAL		TEST PIT LOCATION
WS	WATER SERVICE	OH	OVERHEAD WIRES		CHANGE OF SUE QUALITY LEVEL
CHEM	CHEMICAL			"D=0.00m"	APPROXIMATE DEPTH MEASUREMENT FROM LOCATE EQUIPMENT

SURVEY NOTE

THE GEODETIC ELEVATION LAYER IS TURNED OFF FOR PRESENTATION PURPOSES ONLY. ALL RELATIVE UTILITY ELEVATIONS ARE SHOWN IN THE AUTOCAD DIGITAL FILE (.DWG).

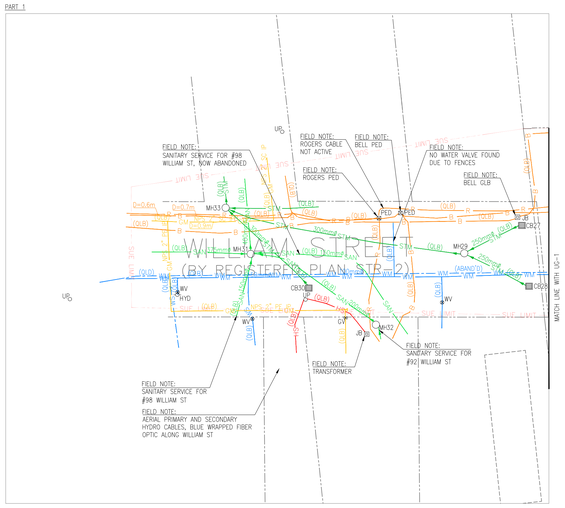
DISCLAIMER

- THIS DOCUMENT HAS BEEN PREPARED FOR THE NOTED TELECON CLIENT(S) REFERENCE AND USE, AND WHEN REQUIRED BY LAW, APPROPRIATE GOVERNMENT REVIEWING AGENCIES. THE DRAWING HAS BEEN PREPARED FOR THE USE OF TELECON'S CLIENT AND MAY NOT BE USED, REPRODUCED OR RELIED UPON BY THIRD PARTIES, UNLESS WRITTEN CONSENT HAS BEEN GRANTED.
- NOT TO BE USED FOR EXCAVATION PURPOSES
- CONTACT ONTARIO ONE CALL 1-800-400-2255 AND THE APPROPRIATE UTILITIES FOR EXCAVATION LOCATES.

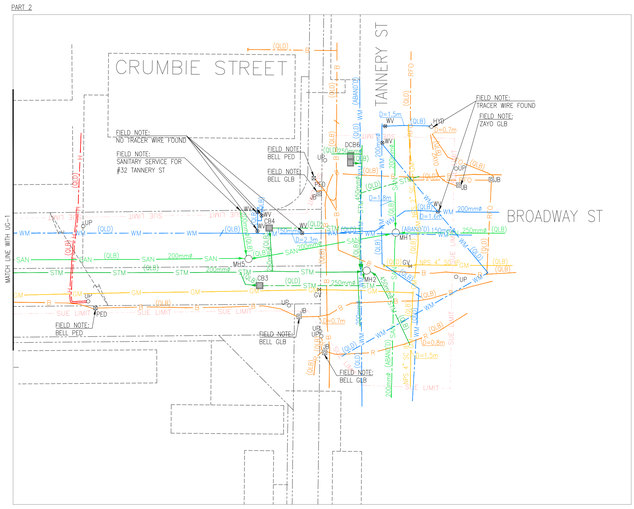
SURVEYED BY: R.YOGANATHAN	DATE:DEC.23.2022
DRAWN BY: M.AHMADI	DATE:FEB.13.2023
CHECKED BY: M.MALGAPO	DATE:FEB.15.2023
APPROVED BY: W.SHAMON	DATE:FEB.27.2023

DRAWING SCALE:	DRAWING NUMBER:
1:300	UG-1 of 2

PART 1



PART 2



TDI_SEWER INVERT TABLE – 142 – 148 QUEEN STREET, MISSISAUGA, ONTARIO

MH/CB #	Type of sewer	Grade Elevation (m)	Direction	Materials	Depth Inv (m)	Depth Obv (m)	Size (mm)	Flows to	Elevation Invert (m)	Elevation Obvert (m)	Remarks
MH1	Sanitary	159.16	S	Plastic	2.88	2.63	250	S	156.28	156.53	
		159.16	N	Plastic	2.87	2.62	250		156.29	156.54	Size as per records = 200mmØ
		159.16	E	Plastic	2.60	2.35	250		156.56	156.81	Size as per records = 200mmØ
MH2	Storm	159.24	SW	Plastic	1.21	1.01	200	W	N/A	N/A	Bottom of chamber = 3.77m
		159.24	N	Concrete	N/A	N/A	N/A		N/A	N/A	CSE required
		159.24	W	Concrete	N/A	N/A	N/A		N/A	N/A	
		159.24	E	Plastic	N/A	N/A	N/A		N/A	N/A	
		159.24	E	Concrete	N/A	N/A	N/A		N/A	N/A	
CB3	Storm	159.00	N	Plastic	1.37	1.12	250	N	157.63	157.88	
CB4	Storm	159.10	W	Plastic	1.19	0.94	250	W	157.91	158.16	Size as per measurement = 230mmØ
MH5	Sanitary	159.12	N	Plastic	2.60	2.35	250	S	156.52	156.77	Size as per records = 250mmØ
		159.12	S	Plastic	2.63	2.38	250		156.49	156.74	Size as per records = 200mmØ
		159.12	E	Plastic	2.61	2.41	200		156.51	156.71	
DCB6	Storm	159.19	S	Plastic	1.27	0.97	300	S	157.92	158.22	
MH7	Storm	159.62	S	Concrete	N/A	N/A	N/A	S	N/A	N/A	Bottom of chamber = 3.67m, CSE required
MH8	Sanitary	159.64	S	Plastic	2.76	2.51	250	S	156.88	157.13	Size as per records = 200mmØ
		159.64	N	Plastic	2.67	2.47	200		156.97	157.17	
		159.64	NW	Plastic	2.69	2.49	200		156.95	157.15	
MH9	Sanitary	159.74	S	Plastic	2.71	2.51	200	S	157.03	157.23	Possible future used
		159.74	E	Plastic	2.69	2.49	200		157.05	157.25	
MH10	Sanitary	160.10	N	Concrete	3.01	2.81	200	SE	157.09	157.29	
		160.10	SE	Plastic	3.02	2.82	200		157.08	157.28	
CB11	Storm	159.68	NE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Bottom of chamber = 1.21m, full of water, chamber dewatering required
CB12	Storm	160.35	N	Concrete	1.81	1.06	750	S	158.54	159.29	
		160.35	S	Concrete	1.74	1.09	N/A		158.61	159.26	Debris**, full of water, size as per records = 600mmØ
HEADWALL13	Storm	159.74	N	Concrete	N/A	0.78	N/A	S	N/A	N/A	Lead from headwall is completely submerged under water, unable to measure, debris**
CB14	Storm	160.32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Sump = 1.01m, debris**, catch basin is full o leaves and heavy debris**
CB15	Storm	160.08	E	Plastic	0.89	0.69	200	E	159.19	159.39	All other pipes inside catch basin are weeping tile.
MH16	Storm	160.22	SW	N/A	N/A	N/A	N/A	SW	N/A	N/A	Recessed lead*, size as per records = 200mmØ
		160.22	E	N/A	0.97	0.59	375		159.26	159.63	Size as per records = 450mmØ
MH17	Storm	160.45	W	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Size as per records = 450mmØ
		160.45	SE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	——
CB18	Storm	160.06	SE	Plastic	0.77	0.57	200	NW	159.29	159.49	
		160.06	NW	Plastic	0.74	0.54	200		159.32	159.52	
MH19	Storm	160.21	N	Plastic	0.59	0.39	200	N	159.62	159.82	
MH20	Sanitary	161.93	N	Clay	4.10	3.90	200	S	157.83	158.03	
		161.93	S	Clay	4.11	3.91	200		157.82	158.02	
		161.93	E	Clay	3.97	3.82	150		157.96	158.11	
MH21	Sanitary	162.20	N	Clay	3.87	3.67	200	S	158.33	158.53	
		162.20	S	Clay	3.88	3.68	200		158.32	158.52	
		162.20	E	Clay	3.79	3.64	150		158.41	158.56	
CB22	Storm	161.96	S	Concrete	2.45	1.85	600	S	159.51	160.11	
		161.96	N	Concrete	2.44	1.84	600		159.52	160.12	
CB23	Storm	162.77	NW	Concrete	2.72	2.42	300	S	160.05	160.35	
		162.77	S	Concrete	2.85	2.40	450		159.92	160.37	
CB24	Storm	161.61	N	Concrete	2.72	2.12	600	S	158.89	159.49	
		161.61	S	Concrete	2.77	2.02	750		158.84	159.59	
		161.61	E	Concrete	2.74	2.14	600		158.87	159.47	
DI25	Storm	162.42	SE	Plastic	2.23	1.93	300	SE	160.19	160.49	
		162.42	NE	Plastic	2.18	1.88	300		160.24	160.54	
CB26	Storm	162.84	W	Plastic	1.00	0.85	150	W	161.84	161.99	
CB27	Storm	163.48	NW	Plastic	0.62	0.37	250	NW	162.86	163.11	
CB28	Storm	163.50	NE	Plastic	0.54	0.24	300	NE	162.96	163.26	Size as per records = 300mmØ
MH29	Storm	163.70	N	Plastic	0.96	0.66	300	N	162.74	163.04	
		163.70	SW	Plastic	0.97	0.67	300		162.73	163.03	
		163.70	SE	Plastic	0.89	0.64	250		162.81	163.06	
CB30	Storm	163.79	NE	Concrete	1.02	0.72	300	NE	162.77	163.07	
MH31	Sanitary	164.00	N	Plastic	2.85	2.50	350	E	161.15	161.50	Size as per records = 375mmØ
		164.00	E	Plastic	2.92	2.52	400		161.08	161.48	Size as per measurement = 380mmØ
		164.00	W	Plastic	2.45	2.30	150		161.55	161.70	
		164.00	S	Plastic	2.77	2.62	150		161.23	161.38	Appears not to be in used, abandoned
		164.00	SW	Plastic	2.77	2.57	200		161.23	161.43	
MH32	Sanitary	163.97	NE	Plastic	2.70	2.50	200	NE	161.27	161.47	
		163.97	W	Plastic	2.67	2.47	200		161.30	161.50	
MH33	Storm	163.91	E	Plastic	N/A	N/A	N/A	E	N/A	N/A	Bottom of chamber = 1.03m, CSE required, but the space is extremely small and tight
		163.91	S	Plastic	N/A	N/A	N/A		N/A	N/A	
		163.91	SW	Plastic	N/A	N/A	N/A		N/A	N/A	
		163.91	SW	Plastic	N/A	N/A	N/A		N/A	N/A	
MH34	Sanitary	162.19	W	Clay	4.14	3.94	200	W	158.05	158.25	
		162.19	SE	Clay	4.09	3.94	150		158.10	158.25	
MH35	Storm	162.31	N	Concrete	3.08	2.56	525	W	159.23	159.76	
		162.31	W	Concrete	3.12	2.52	600		159.19	159.79	
		162.31	NE	Concrete	2.97	2.67	300		159.34	159.64	
		162.31	SE	Concrete	2.98	2.68	300		159.33	159.63	

Notes & Legend:

* Where one or more leads are recessed, measurements for invert and obvert are approximate. Confined Space Entry required in order to obtain accurate measurements.

** MH/CB or pipe opening contains debris. May require flushing or cleaning prior to obtaining measurements.

TDI_SEWER INVERT TABLE – 142 – 148 QUEEN STREET, MISSISAUGA, ONTARIO

MH/CB #	Type of sewer	Grade Elevation (m)	Direction	Materials	Depth Inv (m)	Depth Obv (m)	Size (mm)	Flows to	Elevation Invert (m)	Elevation Obvert (m)	Remarks
CB36	Storm	162.20	SW	Concrete	1.98	1.68	300	SW	160.22	160.52	
		162.20	NE	Plastic	1.59	1.29	300		160.61	160.91	
		162.20	E	Concrete	1.97	1.67	300		160.23	160.53	
CB37	Storm	162.40	W	Concrete	1.72	1.42	300	W	160.68	160.98	
MH38	Sanitary	162.57	SW	Plastic	1.76	1.46	300	SW	160.81	161.11	
		162.57	NE	Plastic	1.64	1.34	300		160.93	161.23	
CB39	Storm	163.11	SW	Plastic	1.70	1.40	300	SW	161.41	161.71	
		163.11	NE	Plastic	1.23	0.93	300		161.88	162.18	
CB40	Storm	162.87	NW	Plastic	0.99	0.74	250	NW	161.88	162.13	
CB41	Storm	163.25	SE	Plastic	1.11	0.86	250	SE	162.14	162.39	
CB42	Storm	163.17	SW	Plastic	0.73	0.43	300	SW	162.44	162.74	
MH43	Sanitary	163.79	E	Plastic	2.17	2.02	150	E	161.62	161.77	
		163.79	W	Plastic	2.15	2.00	150		161.64	161.79	
CB44	Storm	161.65	W	Plastic	1.14	0.99	150	W	160.51	160.66	Multiple weeping tile piping inside catch basin.
CB45	Storm	161.18	NW	Plastic	0.82	0.67	150	NW	160.36	160.51	
MH46	Sanitary	161.58	SE	Clay	3.15	3.05	100	NW	158.43	158.53	
		161.58	NW	Clay	3.2	3.05	150		158.38	158.53	
CB47	Storm	161.25	N	Concrete	1.2	0.9	300	N	160.05	160.35	
		161.25	SW	Plastic	1.00	0.85	150		160.25	160.40	
CB48	Storm	162.62	SE	Clay	1.16	1.01	150	SE	161.46	161.61	Other pipes inside catch basin are weeping tile.
MH49	Storm	161.85	E	Concrete	2.10	1.65	450	NW	159.75	160.20	Confirmed connection to MH59 via sound test.
		161.85	SE	Concrete	2.06	1.61	450		159.79	160.24	
		161.85	NW	Concrete	2.11	N/A	N/A		159.74	N/A	Unable to obtain obvert, CSE required
CB50	Storm	162.68	E	Plastic	1.03	0.88	150	E	161.65	161.80	Other pipes inside catch basin are weeping tile.
CB51	Storm	162.80	SW	Plastic	2.11	1.96	150	S	160.69	160.84	There is a second pipe, but it maybe weeping tile.
		162.80	N	Concrete	2.43	2.18	250		160.37	160.62	
		162.80	NW	Concrete	2.43	2.28	150		160.37	160.52	
		162.80	S	Concrete	2.55	2.03	525		160.25	160.78	
		162.80	E	Concrete	2.35	2.10	250		160.45	160.70	
		162.80	SW	Plastic	2.05	1.95	100		160.75	160.85	
CB52	Storm	162.76	NE	Plastic	1.08	0.93	150	NE	161.68	161.83	All other pipes inside catch basin are weeping tile.
CB53	Storm	162.73	NW	Clay	0.92	0.77	150	NW	161.81	161.96	All other pipes inside catch basin are weeping tile.
CB54	Storm	162.63	SW	Plastic	1.02	0.87	150	SE	161.61	161.76	
MH55	Sanitary	162.32	W	Plastic	2.85	2.48	375	E	159.47	159.85	Size as per records = 375mmØ
		162.32	E	Plastic	2.88	2.53	350		159.44	159.79	
CB56	Storm	162.21	E	Concrete	1.17	0.87	300	E	161.04	161.34	
MH57	Sanitary	162.27	N	Plastic	2.81	2.44	375	E	159.46	159.84	
		162.27	S	Plastic	2.77	2.52	250		159.50	159.75	
		162.27	W	Plastic	2.61	2.46	150		159.66	159.81	
		162.27	E	Plastic	2.84	2.47	375		159.43	159.81	
CB58	Storm	161.81	W	Concrete	1.20	0.95	250	S	160.61	160.86	Bottom of chamber is full of debris** unable to push rodder, needs to be cleaned/vacuumed to obtain better results
		161.81	E	Concrete	1.43	1.06	375		160.38	160.76	
		161.81	N	Concrete	1.21	0.84	375		160.60	160.98	
		161.81	N	Concrete	1.38	1.01	375		160.43	160.81	Possibly main storm line along Queen St
		161.81	S	Concrete	1.44	1.07	375		160.37	160.75	
MH59	Storm	161.89	W	Concrete	0.98	0.61	375	S	160.91	161.29	Possibly connects to manhole 49, possibly overflow manhole, flow directions are based on invert measurements
		161.89	S	Concrete	1.21	0.84	375		160.68	161.06	
CB60	Storm	161.92	W	Concrete	0.82	0.52	300	W	161.10	161.40	
CB61	Storm	161.87	W	Concrete	0.72	0.42	300	W	161.15	161.45	
		161.87	E	Clay	0.85	0.65	200		161.02	161.22	This lead is submerged in water
CB62	Storm	161.95	E	Concrete	0.75	0.45	300	E	161.20	161.50	
MH63	Sanitary	162.40	N	Plastic	2.59	2.29	300	S	159.81	160.11	
		162.40	S	Plastic	2.64	2.27	375		159.76	160.14	
		162.40	E	Plastic	2.68	2.48	200		159.72	159.92	
CB64	Storm	162.34	W	Concrete	0.57	0.27	300	W	161.77	162.07	
MH65	Storm	162.39	W	Concrete	0.93	0.63	300	W	161.46	161.76	
		162.39	E	Concrete	0.62	0.32	300		161.77	162.07	
CB66	Storm	162.29	W	Clay	1.23	1.08	150	E	161.06	161.21	
		162.29	E	Concrete	1.32	1.02	300		160.97	161.27	
CB67	Storm	162.86	W	Concrete	0.70	0.40	300	W	162.16	162.46	
MH68	Storm	162.91	W	Concrete	1.10	0.80	300	W	161.81	162.11	
		162.91	E	Concrete	0.78	0.48	300		162.13	162.43	
CB69	Storm	163.27	W	Concrete	0.67	0.37	300	W	162.60	162.90	
MH70	Storm	163.36	W	Plastic	1.46	1.16	300	W	161.90	162.20	
		163.36	E	Concrete	0.76	0.46	300		162.60	162.90	
		163.36	SE	Plastic	1.15	0.95	200		162.21	162.41	
CB71	Storm	163.26	E	Concrete	1.30	1.00	300	E	161.96	162.26	
MH72	Sanitary	163.44	N	Plastic	2.98	2.68	300	S	160.46	160.76	
		163.44	S	Plastic	3.03	2.73	300		160.41	160.71	
MH73	Sanitary	163.61	W	Plastic	2.85	2.70	150	W	160.76	160.91	
		163.61	E	Plastic	2.83	2.68	150		160.78	160.93	
CB74	Storm	162.94	E	Concrete	1.06	0.76	300	E	161.88	162.18	
MH75	Storm	163.01	N	Concrete	1.67	1.30	375	N	161.34	161.72	
		163.01	NW	Concrete	1.48	1.33	150		161.53	161.68	
		163.01	S	Concrete	1.65	1.28	375		161.36	161.74	
		163.01	E	Concrete	1.66	1.36	300		161.35	161.65	
		163.01	W	Concrete	N/A	N/A	N/A		N/A	N/A	Size as per measurement = 300mmØ, recessed lead*

Notes & Legend:

* Where one or more leads are recessed, measurements for invert and obvert are approximate. Confined Space Entry required in order to obtain accurate measurements.

** MH/CB or pipe opening contains debris. May require flushing or cleaning prior to obtaining measurements.

TDI SURVEY LEGEND

CB	CATCH BASIN	HW	HANDWELL
DCB	DOUBLE CATCH BASIN	WV	WATER VALVE
MH	SAN/STORM MANHOLE	HYD	HYDRANT
WVC	WATER VALVE CHAMBER	GV	GAS VALVE
BMH	BELL MANHOLE	GMT	GAS METER
UP	UTILITY POLE	PED	PEDESTAL
TLP	TRAFFIC LIGHT POLE	SIGN	SIGN
SLP	STREET LIGHT POLE	JB	JUNCTION BOX

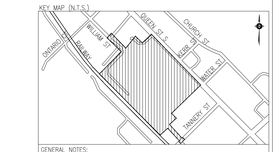
LEGEND:

GM	GAS MAIN	B	COMMUNICATION BELL	SAN	SANITARY SEWER
GS	GAS SERVICE	R	COMMUNICATION ROGERS	STM	STORM SEWER
FL	FUEL PIPE	COG	COMMUNICATION COGECO	CMB	COMBINED SEWER
H	HYDRO	ZAYO	COMMUNICATION ALLSTREAM	UNKNOWN	UNKNOWN UTILITY
HS	HYDRO SERVICE	TELUS	COMMUNICATION TELUS		END CAP (APPROXIMATE LOCATION)
EL	ELECTRICAL	GT	COMMUNICATION GT		FLOW DIRECTION
SL	STREET LIGHT	FO	FIBER OPTIC CABLE		DROP LEAD
WM	WATERMAIN	TS	TRAFFIC SIGNAL		TEST PIT LOCATION
WS	WATER SERVICE	OH	OVERHEAD WIRES		CHANGE OF SUE QUALITY LEVEL
CHEM	CHEMICAL			"D=0.00m"	APPROXIMATE DEPTH MEASUREMENT FROM LOCATE EQUIPMENT

SURVEY NOTE
THE GEODETIC ELEVATION LABEL IS TURNED OFF FOR PRESENTATION PURPOSES ONLY. ALL RELATIVE UTILITY ELEVATIONS ARE SHOWN IN THE AUTOCAD DIGITAL FILE (.DWG).

DISCLAIMER
- THIS DOCUMENT HAS BEEN PREPARED FOR THE NOTED TELECON CLIENT(S) REFERENCE AND USE, AND WHEN REQUIRED BY LAW, APPROPRIATE GOVERNMENT REVIEWING AGENCIES. THE DRAWING HAS BEEN PREPARED FOR THE USE OF TELECON'S CLIENT AND MAY NOT BE USED, REPRODUCED OR RELIED UPON BY OTHERS UNLESS WRITTEN CONSENT HAS BEEN GRANTED.
- NOT TO BE USED FOR EXCAVATION PURPOSES.
- CONTACT ONTARIO ONE CALL 1-800-400-2255 AND THE APPROPRIATE UTILITIES FOR EXCAVATION LOCATES.

KEY MAP (N.T.S.)



GENERAL NOTES:
- THE SUE FIELD INVESTIGATION WAS COMPLETED IN FEBRUARY 2023 BY TELECON DESIGN INC. (TDI).
- THE FIELD VERIFICATION OF UTILITIES WAS COMPLETED USING A COMBINATION OF ELECTROMAGNETIC PIPE AND CABLE LOCATE EQUIPMENT.
- TELECON USED AVAILABLE MEANS IN AN ATTEMPT TO DETERMINE THE LOCATION OF UNDOCUMENTED UTILITIES. TELECON IS NOT RESPONSIBLE FOR INDICATING ALL UNDOCUMENTED UTILITIES UNLESS PROVIDED, SHOWN AND/OR AVAILABLE AND RECEIVED DIGITALLY OR BY HARDCOPY.
- THE TOPOGRAPHIC BASE PLAN PROVIDED BY OTHERS, AND IS NOT A PART OF THIS SUE INVESTIGATION COMPLETED BY TDI.
- UTILITY, MATERIAL, SIZE AND FLOW DIRECTION SHOWN ON THIS DRAWING ARE BASED ON RECORDS, PROFESSIONAL JUDGEMENT AND FIELD INVESTIGATIONS.

SUBSURFACE UTILITY ENGINEERING QUALITY LEVELS

☒ LEVEL D

INFORMATION DERIVED FROM EXISTING RECORDS OR VERBAL RECOLLECTIONS.

Line Style (Level D) _____ _____ _____ _____ _____ _____

☒ LEVEL C

INFORMATION ACQUIRED BY SURVEYING AND PLOTTING VISIBLE ABOVE GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGEMENT IN CORRELATING THIS INFORMATION TO THE QUALITY Level "D".

Line Style (Level C) _____ _____ _____ _____ _____ _____

☒ LEVEL B

INFORMATION ACQUIRED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL UTILITY LOCATING METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF THE SUBSURFACE UTILITIES WHICH IS THEN GEODETICALLY SURVEYED.

Line Style (Level B) _____

☐ LEVEL A

PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES OBTAINED BY THE ACTUAL EXPOSURE AND SUBSEQUENT MEASUREMENT AND/OR SURVEY OF SUBSURFACE UTILITIES.

Line Style (Level A) _____ _ _ _____ _ _ _____ _ _ _____

REVISIONS

REV	DATE	DRAWN BY	APPROVED BY

LICENSED PROFESSIONAL ENGINEER
W.P. SHAMON
100034593
Feb. 27, 2023
PROVINCE OF ONTARIO

telecon
design • build • connect
SUBSURFACE UTILITY ENGINEERING
7777 WESTON ROAD, 5TH FLOOR
VAUGHAN, ONTARIO L4L 0G9

SEAL STAMP HERE

THE ENGINEERS 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.

TELECON CLIENT

DE ZEN REALTY COMPANY LIMITED

SUE PROJECT

142–148 QUEEN STREET, MISSISSAUGA, ONTARIO

PROJECT/ WO#: 138097

SURVEYED BY: R.YOGANATHAN DATE:DEC.23.2022

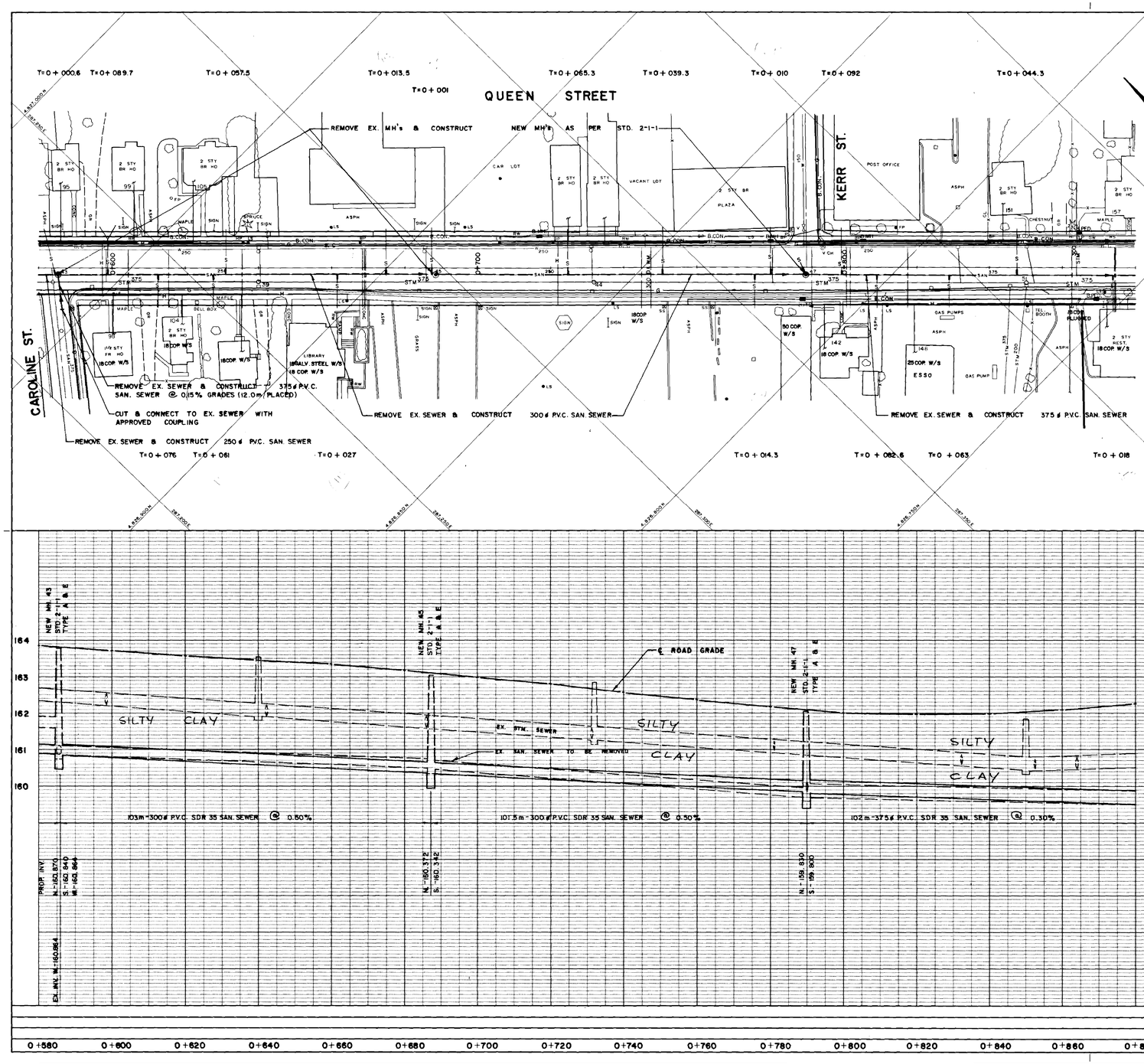
DRAWN BY: M.AHMADI DATE:FEB.13.2023

CHECKED BY: M.MALGAPO DATE:FEB.15.2023

APPROVED BY: W.SHAMON DATE:FEB.27.2023

DRAWING SCALE: 1:300

DRAWING NUMBER: UG-2 of 2



SERVICE DATA

SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN. SEWERS	AUG.15,1985	Y.C.	GAS MAINS	AUG 20, 1985	Y.C.
STORM SEWERS	JULY, 1985	Y.C.	BELL U/G CABLE	OCT 23, 1985	Y.C.
WATERMAINS			HYDRO U/G CABLE	AUG 20, 1985	Y.C.

REVISIONS

DATE	DETAILS	INIT.
FEB. 9, 1987	AS CONSTRUCTED	Y.C.

LEGEND

S — DENOTES EX. SAN. LATERALS TO BE TRANSFERRED TO NEW SEWER

General Notes

- All Driveways Gravel Unless Otherwise Noted.
- All Service Locations Are Approximate And Must Be Located Accurately in Field.
- Denotes Building - Not Located
- Denotes Building Located Type 'B' Bedding Unless Otherwise Noted (SAN.)

B.M. Nº Elev.

The Contractor is Responsible For Locating And Protecting All Existing Utilities Prior To And During Construction Location of Existing Utilities Approximate Only, To Be Verified in Field By Contractor.

Designed by CHAD

Approved by

NOTICE TO CONTRACTOR

48 HOURS PRIOR TO COMMENCING WORK NOTIFY THE FOLLOWING

THE REGIONAL MUNICIPALITY OF PEEL
CITY OF MISSISSAUGA WORKS DEPT.
CITY OF BRAMPTON WORKS DEPT.
TOWN OF CALEDON WORKS DEPT.
BELL TELEPHONE COMPANY
CONSUMERS GAS COMPANY
MINISTRY OF TRANSPORTATION
MINISTRY OF ENVIRONMENT
HYDRO ELECTRIC POWER COMM. OF ONTARIO
HYDRO ELECTRIC COMM. CITY OF MISSISSAUGA
HYDRO ELECTRIC COMM. CITY OF BRAMPTON
HYDRO ELECTRIC COMM. PORT CREDIT
HYDRO ELECTRIC COMM. STREETSVILLE
CABLE TELEVISION

Region of Peel

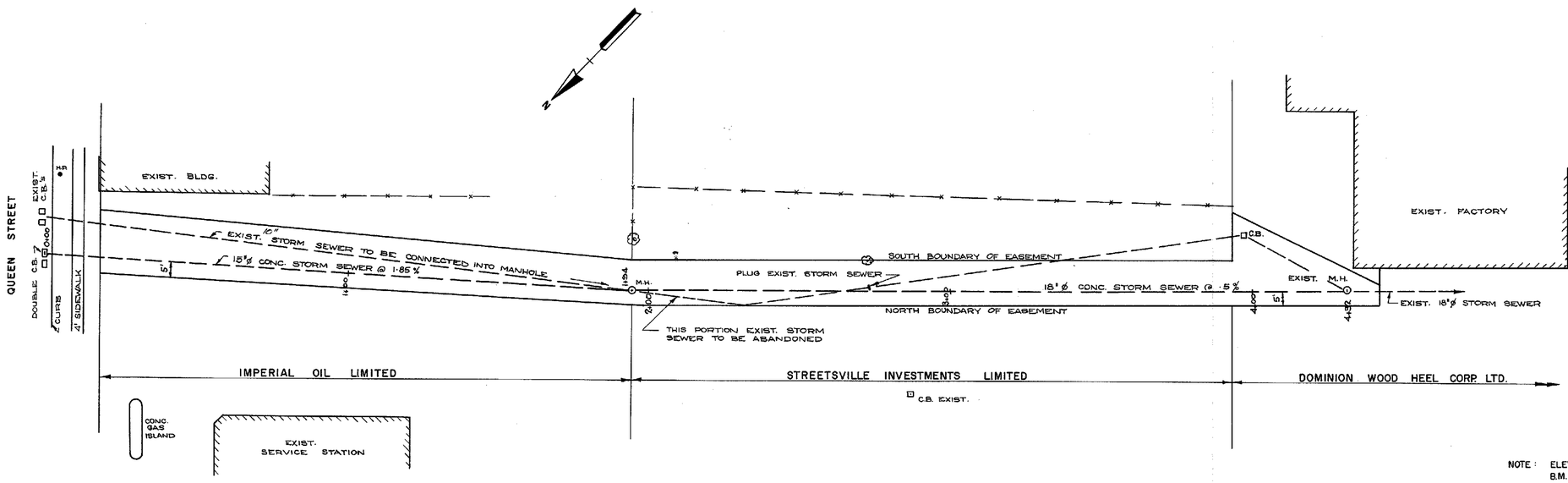
Department of Public Works

QUEEN STREET

Sta. 0+580 To Sta. 0+880

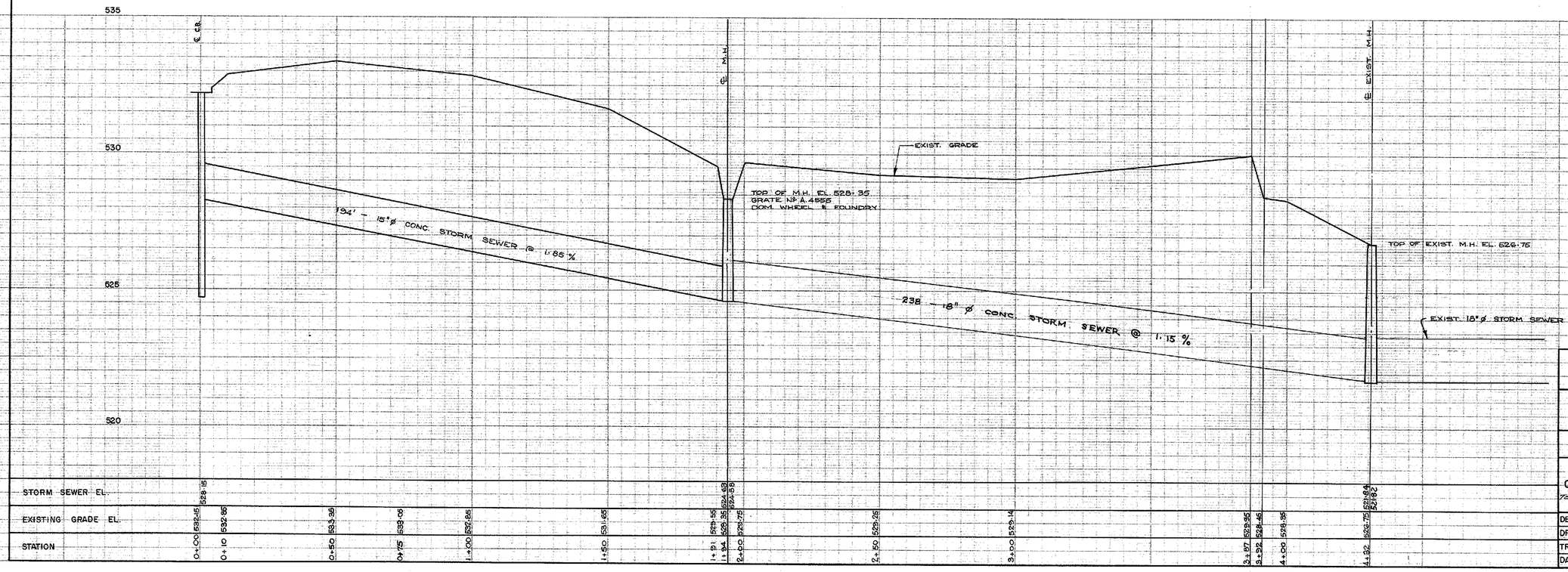
Lots	Area 2 - 38	Project No. 85-2310
Scale Hor. 1:500 Ver. 1:50	Drawn by Y.C.	Checked by
Date MAY, 1985	Sheet 3 of 7	Plan No. 7448-D

7448-D



NOTE: ELEVATIONS REFERRED TO TORONTO TOWNSHIP B.M. # 257 EL. 531·74

ALL TRENCHES TO BE BACKFILLED WITH GRANULAR MATERIAL AND DISTURBED ROAD SURFACES TO BE RESTORED TO ORIGINAL CONDITION



REGISTERED PROFESSIONAL ENGINEER — G. V. KLEINFELDT — PROVINCE OF ONTARIO

REGISTERED PROFESSIONAL ENGINEER — P. von BULOW — PROVINCE OF ONTARIO

VILLAGE OF STREETSVILLE

G.V. KLEINFELDT & ASSOCIATES LTD.
CONSULTING ENGINEERS
BRAMPTON ONTARIO

STORM SEWER

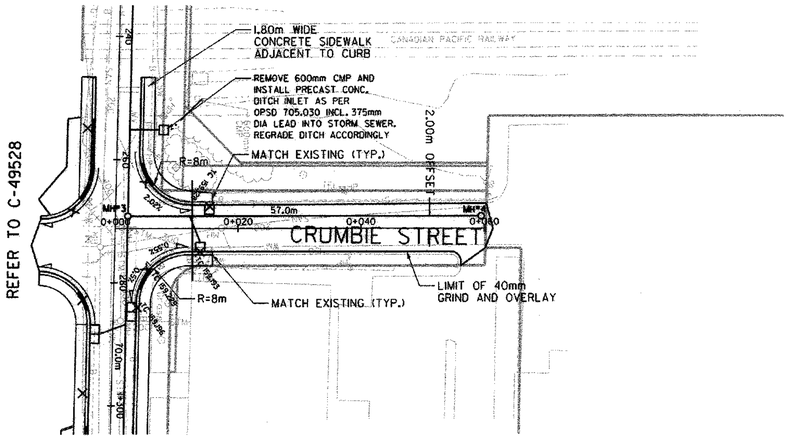
EASEMENT
QUEEN ST TO DOM. WOOD HEEL CORP LTD.
TO CROMBIE ST.
PLAN AND PROFILE

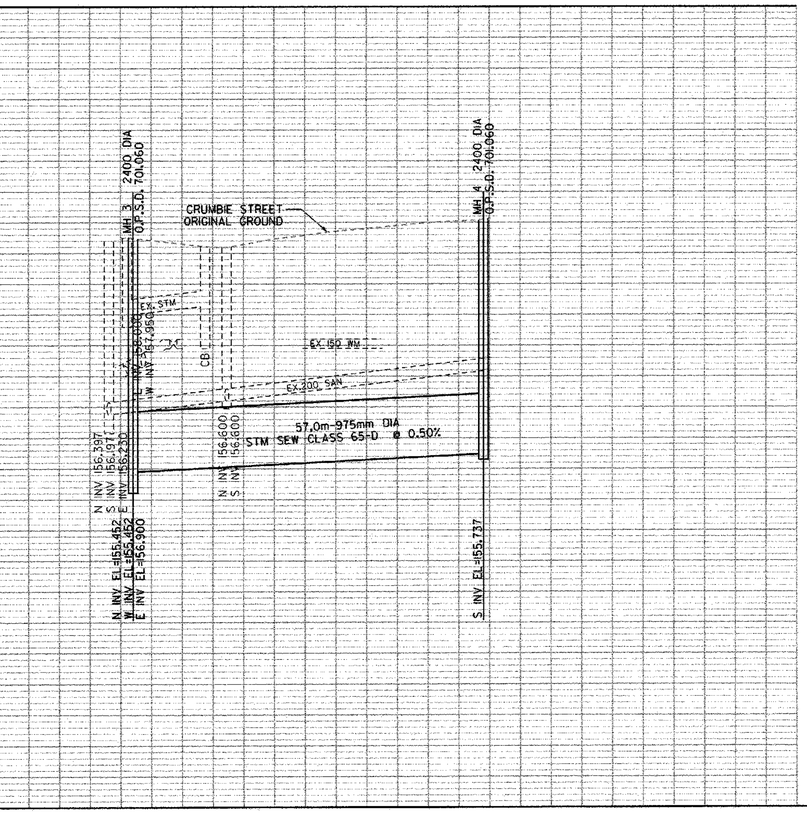
DESIGN: J.v.B.	CHECKED: J.v.B.	PROJECT NO. E-61-21	LATEST REVISION 0
DRAWN: J.T.	CHECKED: J.v.B.		
TRACED: K.A.C.	CHECKED: J.T.	DRAWING NO. 10	
DATE: OCT. 1961	SCALE: HOR: 1" = 20' VERT: 1" = 5'		

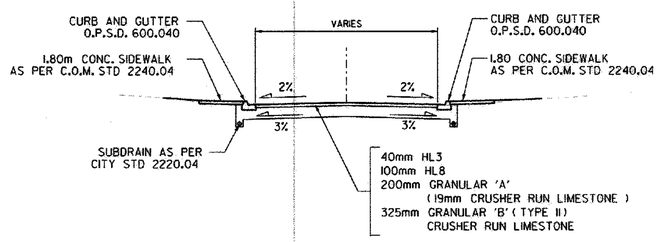
C-2878

CHARLES BRUNING COMPANY PLAN PROFILE PLATE A

FOR SANITARY SEWER INSTALLATION REFER TO REGION OF PEEL DRAWING D-43057-D

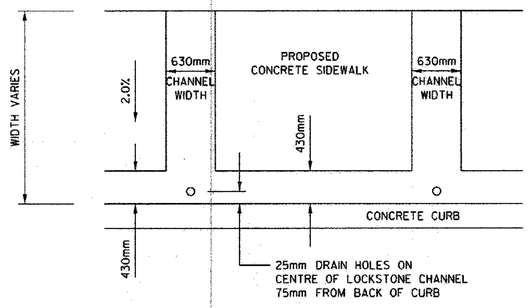


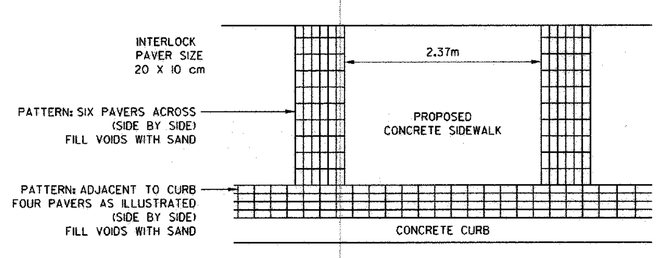


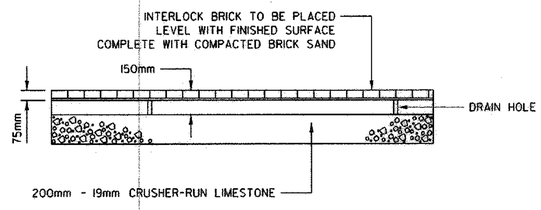


TYPICAL CROSS-SECTION

SCALE: N.T.S.







TANNERY STREET SIDEWALK/BOULEVARD PLAN AND PROFILE DETAIL

N.T.S.

SERVICE DATA

SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN. SEWERS			GAS MAINS		
STM. SEWERS			BELL U/G CABLE		
WATERMAINS			HYDRO U/G CABLE		
M.O.E.			ROGERS U/G CABLE		

REVISIONS

DATE	DETAILS	INIT.

GENERAL NOTES

1. ALL DRIVEWAYS ASPHALT UNLESS OTHERWISE NOTED
2. ALL SERVICE LOCATIONS ARE APPROXIMATE AND MUST BE LOCATED ACCURATELY IN FIELD
3. ALL MEASUREMENTS FOR THIS PROJECT ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE INDICATED
4. ALL SINGLE C.B. LATERALS TO BE 250mm Ø CL 65-D ALL OTHERS TO BE 300mm Ø CL 65-D
5. ALL TREES AND SHRUBS NOT MARKED IN THE FIELD FOR REMOVAL, TO BE PROTECTED
6. ALL SEWERS AND LATERALS TO HAVE CLASS 'B' BEDDING AND SAND COVER BACKFILL UNLESS OTHERWISE INDICATED
7. ALL UTILITY RELOCATION BY OTHERS
8. 'X' - DENOTES REMOVALS
9. DURING SEWER CONSTRUCTION, WATERMAINS TO BE PROTECTED TO THE SATISFACTION OF THE PUBLIC WORKS DEPARTMENT OF THE REGIONAL MUNICIPALITY OF PEEL
10. COLD GRINDS TO BE MAX. 50mm IN DEPTH UNLESS OTHERWISE NOTED
11. INFORMATION SHOWN HEREON IS FOR USE BY THE CITY OF MISSISSAUGA, TRANSPORTATION AND WORKS DEPARTMENT, AND IS NOT INTENDED FOR USE BY ANY OTHER PARTIES UNLESS EXPRESSED WRITTEN CONSENT IS OBTAINED. MEASUREMENTS SHOWN MUST BE CONFIRMED BY FIELD SURVEY BEFORE USE.
12.
13. THIS IS NOT A PLAN OF SURVEY
14. ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO CITY OF MISSISSAUGA DATUM

DESIGN BY
SCOTT HOLMES C.E.T.

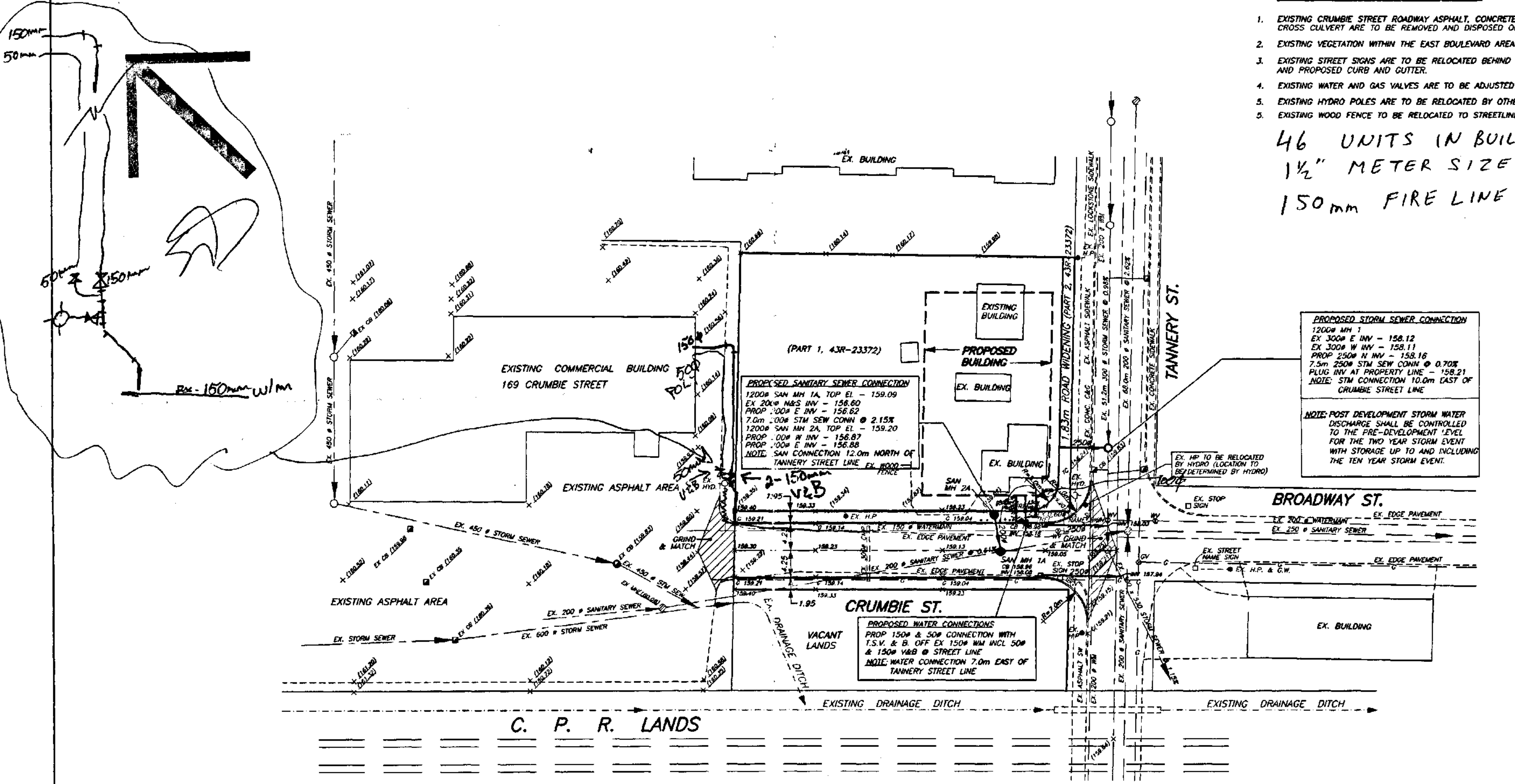
APPROVED BY
LICENSED PROFESSIONAL ENGINEER
Z. SUBIC
90519372
PROVINCE OF ONTARIO

DEPARTMENTAL APPROVAL
SILVIO CESARIO P.ENG.

MISSISSAUGA
Leading today for tomorrow
PRODUCED FOR - T&W, ENGINEERING AND WORKS

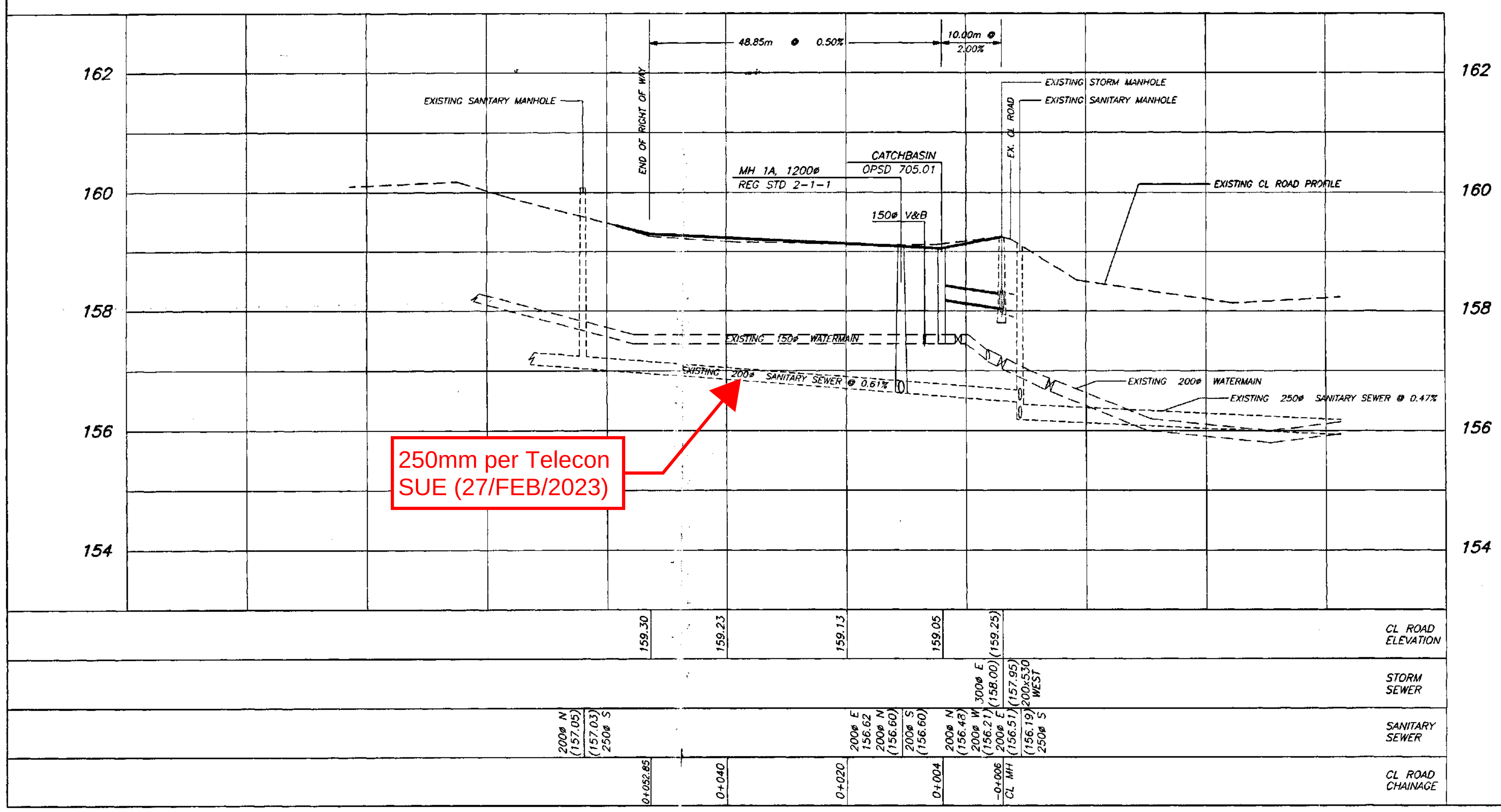
RECONSTRUCTION OF TANNERY STREET AND CRUMBIE STREET

FINAL RD. GR.	SCALE HOR. 1:500 VERT. 1:50	AREA Z-39E	PROJECT No. 11-100-1
EXIST RD. GR.	C.A.D.D. BY KK	CHECKED BY SH	PLAN No. C-49529
CHAINAGE	DATE JAN 2013	SHEET 3 OF 5	



REMOVALS AND ADJUSTMENTS

1. EXISTING CRUMBIE STREET ROADWAY ASPHALT, CONCRETE CURB AND GUTTER AND 300 DIA CMP CROSS CULVERT ARE TO BE REMOVED AND DISPOSED OFF SITE.
2. EXISTING VEGETATION WITHIN THE EAST BOULEVARD AREA OF CRUMBIE STREET IS TO BE REMOVED.
3. EXISTING STREET SIGNS ARE TO BE RELOCATED BEHIND PROPOSED EDGE OF PAVEMENT AND PROPOSED CURB AND GUTTER.
4. EXISTING WATER AND GAS VALVES ARE TO BE ADJUSTED TO MATCH PROPOSED GRADE ELEVATIONS.
5. EXISTING HYDRO POLES ARE TO BE RELOCATED BY OTHERS.
5. EXISTING WOOD FENCE TO BE RELOCATED TO STREETLINE OF CRUMBIE STREET.



GENERAL

1. CITY OF MISSISSAUGA, REGION OF PEEL AND ONTARIO PROVINCIAL STANDARD DRAWINGS TO BE CONSTITUTED AS PART OF THIS CONTRACT.
2. ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON SITE AND ANY DISCREPANCIES REPORTED TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
3. ANY UTILITY RELOCATIONS REQUIRED DUE TO THE DEVELOPMENT OF THE SUBJECT LANDS TO BE UNDERTAKEN BY THE CONCERNED UTILITY AT THE EXPENSE OF THE DEVELOPER.
4. BLASTING WILL NOT BE PERMITTED WITHOUT THE PRIOR WRITTEN AUTHORIZATION OF THE CITY OF MISSISSAUGA TRANSPORTATION AND WORKS DEPARTMENT.
5. THE LOCATION OF EXISTING POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND OR OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATIONS OF ALL SUCH UTILITIES AND STRUCTURES, AND HE SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.
6. ALL EXCAVATIONS WITHIN PAVED PORTIONS OF EXISTING ROADWAYS SHALL BE BACKFILLED WITH UNSHRINKABLE BACKFILL MATERIAL IN ACCORDANCE WITH CITY OF MISSISSAUGA SPECIFICATIONS UNLESS SPECIFIC PRIOR APPROVAL FOR OTHER BACKFILL MATERIAL HAS BEEN OBTAINED.
ALL OTHER EXCAVATIONS WITHIN EXISTING ROAD ALLOWANCES SHALL BE BACKFILLED TO SUBGRADE ELEVATION WITH GRANULAR "C" MATERIAL COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY.
SURFACE RESTORATION SHALL BE EQUAL TO OR BETTER THAN EXISTING CONDITION IN ACCORDANCE WITH OPSS 507.
7. BENCH MARK
MTC BENCH MARK No. 63-4 ELEVATION: 163.5?3m
ON THE NORTH FACE AT THE WEST CORNER OF THE WEST END OF THE TORONTO DOMINION BANK ON QUEEN ST. OPPOSITE TANNERY STREET.

SEWERS

1. SEWER BEDDING, UNLESS OTHERWISE NOTED ON THE DRAWINGS, SHALL BE AS FOLLOWS:–
STORM SEWERS: CLASS "B" AS PER CITY OF MISSISSAUGA STANDARD 2112.03 SEWER BEDDING AND COVER MATERIAL SHALL CONFORM WITH CITY STANDARDS 2112.09, 2112.10 AND 2112.11.
SANITARY SEWERS: CLASS "B" AS PER REGION OF PEEL STANDARD 2-3-1
2. STANDARD RUBBER GASKETS TO BE USED THROUGHOUT THE STORM SEWER SYSTEM AND PREMIUM RUBBER GASKETS THROUGHOUT THE SANITARY SEWER SYSTEM
3. MAXIMUM TRENCH WIDTH AT TOP OF PIPE TO BE AS PER CITY AND/OR REGION SPECIFICATIONS OR AS DETAILED ON THE DRAWINGS.
THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING EXTRA BEDDING AND/OR STRONGER PIPE SHOULD THE ACTUAL TRENCH WIDTH AT THE TOP OF THE PIPE EXCEED THE MAXIMUM WIDTH SPECIFIED.
4. PIPE CLASSES SHALL BE AS FOLLOWS:–
CONCRETE PIPE 450mm DIA AND LESS: A257.1 CLASS 3
CONCRETE PIPE GREATER THAN 450mm DIA: A257.2 CLASS AS NOTED
PVC PIPES: CLASS DR-35, AS PER ASTM D-3034, LATEST REVISION
THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT PVC PIPE DEFLECTION DOES NOT EXCEED FIVE PERCENT (5%)
5. STORM SEWER MANHOLES TO HAVE CLOSED COVERS UNLESS OTHERWISE NOTED ON THE DRAWINGS.
6. CONCRETE SEWER PIPE TO BE ENCASED IN 20 MPa CONCRETE FROM EACH MANHOLE TO THE FIRST JOINT OUTSIDE THE MANHOLE. ENCASEMENT TO EXTEND FROM UNDISTURBED GROUND TO A MINIMUM OF 300mm ABOVE THE TOP OF PIPE.
7. CLASS 'B' BEDDING IS TO USED AS PER CITY STANDARD 2112.08. SEWER BEDDING AND COVER MATERIAL SHALL CONFORM WITH CITY STANDARDS 2112.09 AND 2112.10 RESPECTIVELY. IF WATER IS PRESENT IN THE TRENCH EXCAVATION, THEN 19mm CLEAR STONE IS TO BE USED FOR BEDDING IN ACCORDANCE WITH CITY STANDARD 2112.11.
8. WHERE WET OR SOFT TRENCH SUBGRADE CONDITIONS ARE ENCOUNTERED, FURTHER ON-SITE GEOTECHNICAL ASSESSMENT MAY BE REQUIRED TO DETERMINE APPROPRIATE BEDDING IN ORDER TO STABILIZE THE SUBGRADE FOR SEWER CONSTRUCTION (i.e. INCREASE BEDDING THICKNESS; STONE IMMERSION TECHNIQUES; CLASS 'A' BEDDING; etc.).
9. TRENCH BACKFILLING ON PROPOSED ROADS SHALL COMPLY WITH THE CITY'S ENGINEERING POLICY STATEMENT AS PROVIDED IN THE "DEVELOPMENT REQUIREMENTS MANUAL" (SECTION 4.02.06 – TRENCH BACKFILLING ON ROADS)

MANHOLES & CATCHBASINS

1. PRECAST MANHOLES TO BE AS FOLLOWS:–
1200mm DIA – OPSD 701.01 & 701.03 or REGION STD 2-1-1
1500mm DIA – OPSD 701.02 & 701.04 or REGION STD 2-1-2
1800mm DIA – OPSD 701.02 & 701.05
2400mm DIA – OPSD 701.06
2. OTHER MANHOLE SIZES TO BE AS NOTED ON THE DRAWINGS.
3. MANHOLE FRAMES & GRATES TO BE AS PER OPSD 401.01 WITH CLOSED COVER UNLESS OTHERWISE NOTED ON THE DRAWINGS.
4. PRECAST CATCHBASINS TO BE AS FOLLOWS:–
DOUBLE – OPSD 705.01 WITH 300mm DIA LEAD
SINGLE – OPSD 705.02 WITH 250mm DIA LEAD
DITCH INLET – OPSD 705.04, LEAD SIZE AS NOTED.
5. CATCHBASIN FRAMES AND GRATES TO BE AS FOLLOWS:–
ROADWAY AND REAR LOT – OPSD 400.10
DITCH INLET – OPSD 403.01
6. CONNECTIONS TO MANHOLES, CATCHBASINS AND MAIN SEWER TO BE AS PER OPSD 708.01, 708.02 & 708.03.

WATERMAINS

1. ALL WATERMAINS, WATER SERVICES, SEWER MATERIALS AND CONSTRUCTION METHODS MUST CORRESPOND TO THE CURRENT REGION OF PEEL STANDARDS AND SPECIFICATIONS.
2. WATERMAIN AND/OR WATER SERVICE ARE TO HAVE MINIMUM COVER OF 1.70m (5'-6") WITH A MINIMUM HORIZONTAL SPACING OF 1.20m (4') FROM THEMSELVES AN ALL OTHER UTILITIES AND WHEN CROSSING WATERMAINS MUST HAVE A MINIMUM VERTICAL CLEARANCE OF 0.15m (6") OVER AND 0.30m (12") UNDER SEWERS AND ALL OTHER UTILITIES.
3. PROVISIONS FOR FLUSHING WATER LINES PRIOR TO TESTING MUST BE PROVIDED WITH AT LEAST A 50mm (2") OULET ON 100mm (4") AND LARGER LINES, COPPER LINES ARE TO HAVE FLUSHING POINTS AT THE END, THE SIZE AS THE LINE. THEY MUST ALSO BE PIPED TO ALLOW THE WATER TO DRAIN ONTO A PAVED AREA OR DOWN A DRAIN. ON FIRE LINES FLUSHING TO BE 100mm (4") DIAMETER MINIMUM OR A HYDRANT.
4. ALL CURB STOPS ON WATER LINES TO BE 3.0m (10') OFF FACE OF THE BUILDING UNLESS OTHERWISE NOTED.
5. ALL HYDRANTS SHALL HAVE PUMPER NOZZLE OUTLETS AND BRANCH VALVE SET TO REGION STD. 1-6-1 (8-5) DIMENSIONS A AND B, 0.70m (2') AND 0.90m (3').
6. ALL WATERMAINS, BENDS, TEES AND REDUCERS TO HAVE CONCRETE TRUST BLOCKS
7. WATERMAINS TO BE INSTALLED TO GRADES AS SHOWN ON APPROVED SITE PLAN. A COPY OF THE GRADE SHEET MUST BE SUPLIED TO THE INSPECTOR PRIOR TO COMMENCEMENT OF WORK, WHERE REQUESTED BY INSPECTOR.
8. ALL PROSED WATER PIPINGMUST BE ISOLATED FROM EXISTING LINES IN ORDER TO ALLOW INDEPENDENT PRESSURE TESTING AND CHLORINATING FROM EXISTING SYSTEMS.

SERVICE CONNECTIONS

1. SANITARY SEWER 150mm OR SMALLER TO BE P.V.C. SDR-28. SANITARY SEWER 200mm AND LARGER TO BE P.V.C.SDR-35 WITH TYPE 'B' BEDDING.
2. STORM SEWER 150mm OR SMALLER TO BE CONCRETE CL 3, VITRIFED CLAY OR P.V.C. ULTRA-RIB PIE WITH TYPE 'B' BEDDING.
3. WATER SERVICE MATERIAL TO BE P.V.C. CLASS 150 WITH IRON PIPE O.D. IN SIZES 100mm (4") UP TO AND INCLUDING 300mm (12"), MANUFACTED TO AWWA SPEC. C-900-75, COMPLETE WITH TRACER WIRE, SIZES 50mm (2") AND SMALLER ARE TO BE COPPER TYPE 'K'.

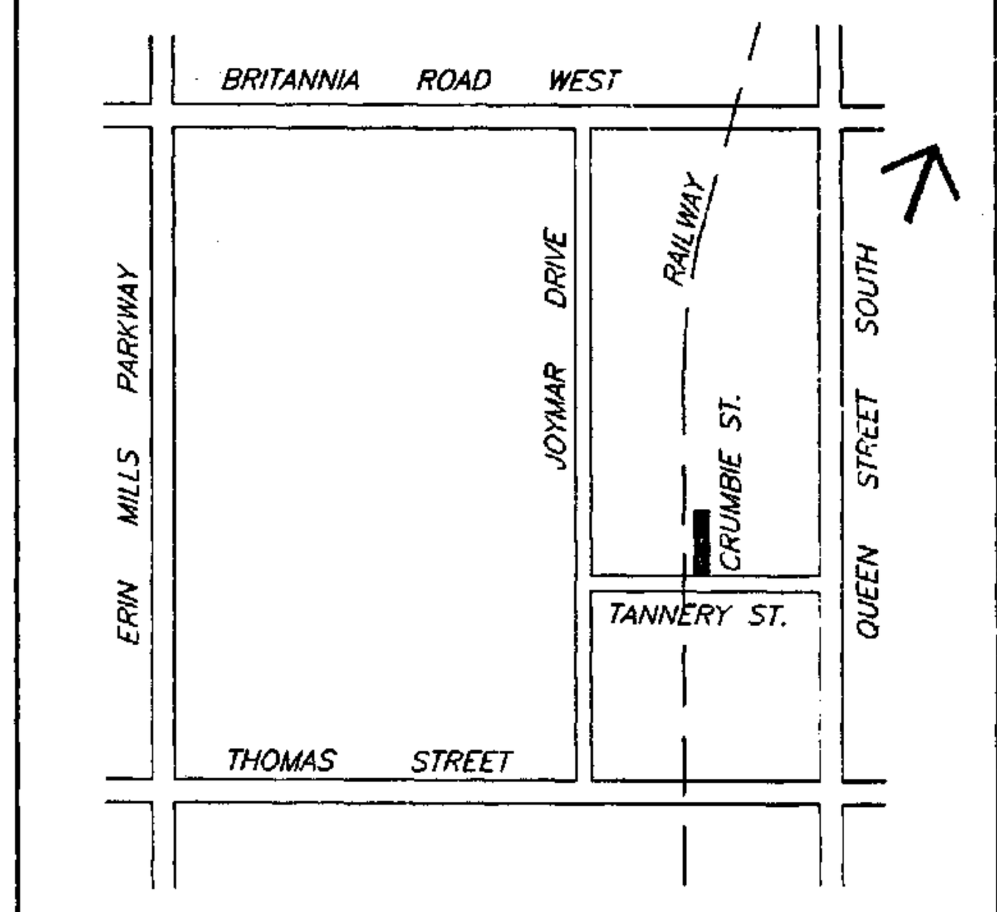
ROADS

1. CURB AND GUTTER IN ALL OTHER AREAS TO BE SINGLE STAGE AS PER OPSD 600.04, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
2. UNDERDRAINS AS PER CITY OF MISSISSAUGA STDS. 2220.04 & 2220.05 SHALL BE INSTALLED FOR THE FULL LENGTH OF ALL CURB AND GUTTER.
3. THE TOP 1000mm OF THE SUB-GRADE IS TO BE COMPACTED TO A MINIMUM 98% STANDARD PROCTOR DENSITY WITHIN 2% OF OPTIMUM MOISTURE CONTENT.

OTHER

1. TEMPORARY SNOW FENCING AND/OR HOARDING, WHERE REQUIRED, SHALL BE ERECTED PRIOR TO THE COMMENCEMENT OF GRADING OPERATIONS AND SHALL REMAIN IN PLACE AND IN GOOD REPAIR THROUGHOUT ALL CONSTRUCTION STAGES.
2. MANHOLES, CATCHBASINS, VALVE CHAMBERS AND SIMILAR STRUCTURES SHALL BE BACKFILLED WITH GRANULAR MATERIAL TO SUBGRADE ELEVATION.
3. TWO WAY TRAFFIC IS TO BE MAINTAINED AT ALL TIMES

REVISIONS		
Date	Details	Initial
JULY 13, 1999	150ø WATER SERVICE AND 150ø V&B ADDED AND CONNECTION LOCATION REVISED AS INDICATED	BAP



KEY PLAN
NTS

As Constructed By Desan Construction Oct /99
STAN DOMANSKI

PAVEMENT DESIGN:

HL3 ASPHALT	40mm
HL8 ASPHALT	100mm
20mm CR LIMESTONE	150mm
50mm CR LIMESTONE	410mm
TOTAL CONSTRUCTION DEPTH:	700mm

SUBMISSIONS:
FIRST: NOVEMBER 10, 1998. INTERIM:
SECOND: FEBRUARY 22, 1999. PRE-SERVICING:
FINAL: MARCH 8, 1999.

REGION OF PEEL
PUBLIC WORKS ENGINEERING & CONSTRUCTION DIVISION
WATER & SANITARY SEWER CONNECTIONS
APPROVED FOR CONSTRUCTION
SUBMITTED
MARKED
DATE 99.7.22

CITY OF MISSISSAUGA
Regional Municipality of Peel

678604 ONTARIO INC.
SP 98 203 OZ-017/95

C-403420

CRUMBIE STREET
Sta. 0+000 to 0+052.85

CITY OF MISSISSAUGA FIRE DEPARTMENT
REVIEWED BY:
DATE: July 15/99
SUPPLY ADEQUATE FOR FIREFIGHTING
HYDRANTS AND WATERMAINS ARE TO BE INSTALLED IN ACCORDANCE WITH N.F.P.A. 24
REVIEWED FOR FIRE PROTECTION ONLY

REGISTERED PROFESSIONAL ENGINEER
S.D. LAWSON
PROVINCE OF ONTARIO

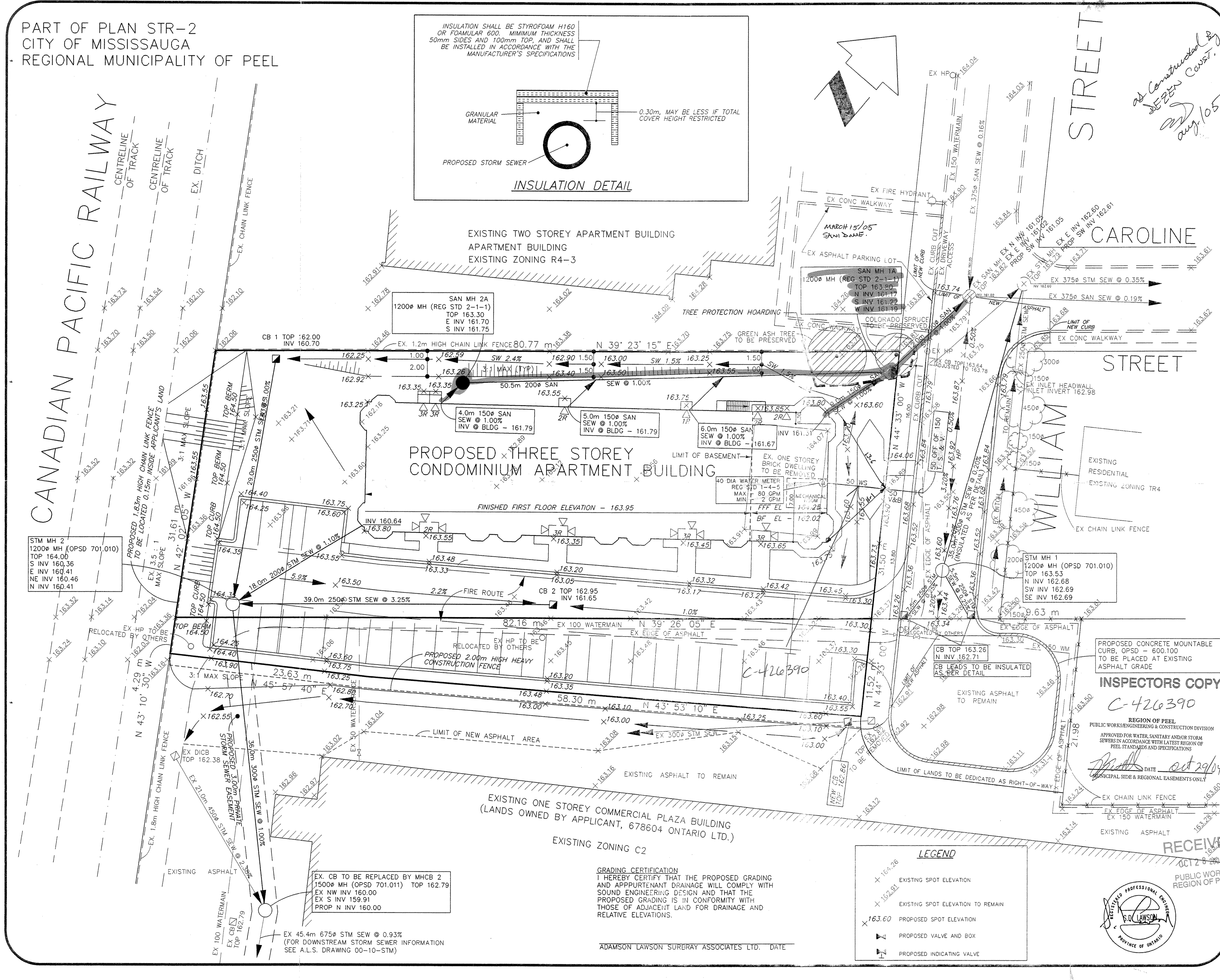
Adamson Lawson Surbray Associates Limited
Town Planners Engineering Consultants Project Managers
57 Village Centre Place Mississauga, Ontario L4Z 1V9

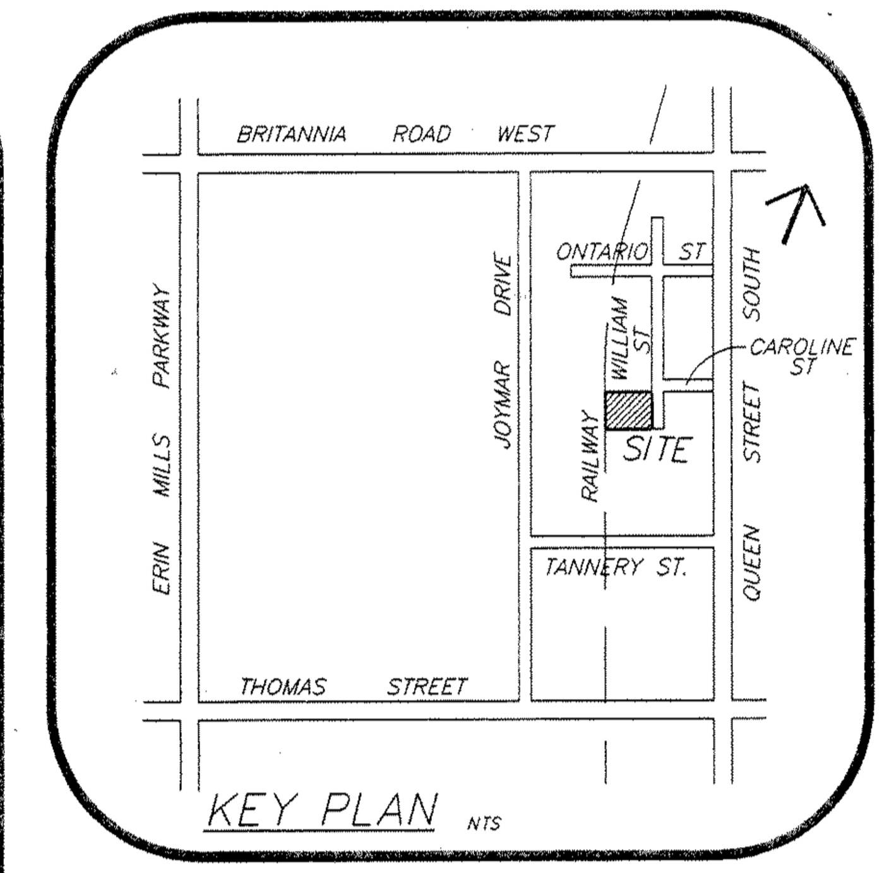
Project 95-12 Dwg No PP 1

Scale:	HOR 1:500 VER 1:50	Designed By:	GWL	City File:
Date:	NOVEMBER 1998	Drawn By:	GWL	OZ-017/95
Area:	Z 38 W	Checked By:	SDL	

INSPECTORS COPY

SANDRO Peng - 8E
JOHN OWNER





KEY PLAN NTS

NOTES:

GENERAL

1. INFORMATION ON UNDERGROUND SERVICES AND INVERT ELEVATIONS WERE TAKEN FROM OTHER SOURCES AND ITS CORRECTNESS CANNOT BE GUARANTEED.
2. ALL WORK TO BE DONE IN ACCORDANCE WITH THE LATEST CITY, REGION AND ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS.
3. CONTRACTOR MUST CHECK THE EXISTIMG UTILITIES ON SITE FOR EXACT LOCATION BEFORE UNDERTAKING NEW CONSTRUCTION OR REPAIR WORK TO AVOID DAMAGE TO EXISTING LINES.
4. ALL DIMENSIONS AND INVERTS MUST BE VERIFIED PRIOR TO CONSTRUCTION AND IN THE EVENT OF ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER.
5. BLASTING WILL NOT BE PERMITTED WITHOUT THE PRIOR WRITTEN AUTHORIZATION OF THE CITY OF MISSISSAUGA PUBLIC WORKS DEPARTMENT.
6. BENCHMARK NUMBER 773 – ELEVATION 163.653 METRES. ON THE W. FACE AT THE N. END OF A RED BRICK BUILDING (ROYAL CANADIAN LEGION) ON THE E. SIDE OF CHURCH ST. 300' S. OF ONTARIO ST.
7. SURVEY DATA OBTAINED FROM SKETCH PLAN PREPARED BY GUIDO PAPA SURVEYING LTD. REFERENCE NO. 95-052, DATED MARCH 25,1995.

SEWERS

1. ALL EXCAVATIONS WITHIN PAVED PORTIONS OF EXISTING ROADWAYS SHALL BE BACKFILLED WITH UNSHRINKABLE BACKFILL MATERIAL UNLESS SPECIFIC APPROVAL FOR OTHER BACKFILL MATERIAL HAS BEEN OBTAINED. ALL OTHER EXCAVATIONS WITHIN EXISTING ROAD ALLOWANCES SHALL BE BACKFILLED TO SUBGRADE ELEVATION WITH GRANULAR 'C' MATERIAL COMPACTED TO A MINIMUM OF 95% PROCTOR DENSITY. SURFACE RESTORATION SHALL BE EQUAL TO OR BETTER THAN EXISTING CONDITION IN ACCORDANCE WITH OPSS 507.
2. SANITARY SEWER 150mm OR SMALLER TO BE P.V.C. SDR-28. SANITARY SEWER 200mm AND LARGER TO BE P.V.C. SDR-35 WITH TYPE 'B' BEDDING.
3. STORM SEWER 150mm OR SMALLER TO BE CONCRETE CL 3, VITRIFIED CLAY OR P.V.C. SDR-28 PIPE. STORM SEWER 200mm AND LARGER TO BE CONCRETE CL 65-D OR P.V.C. ULTRA-RIB PIPE WITH TYPE 'B' BEDDING.
4. PROPOSED SANITARY MANHOLE TO BE AS PER REGION STD. DWG. NO. 2-1-1 UNLESS OTHERWISE NOTED. A MAX. OF 0.03m DROP ACROSS THE MANHOLE.
5. PROPOSED CATCHBASIN TO BE AS PER OPSD 705.01 & 705.02 WITH CB TOP AS OPSD 400.02.
6. PROPOSED STORM CATCHBASSIN MANHOLE AND MANHOLE TO BE AS PER OPSD 701.01 UNLESS OTHERWISE NOTED.
7. ALL CBMH'S TO HAVE 0.60m SUMP. TOP AS PER OPSD 400.02.

WATERMAINS

1. ALL WATERMAINS, WATER SERVICES, SEWER MATERIALS AND CONSTRUCTION METHODS MUST CORRESPOND TO THE CURRENT REGION OF PEEL STANDARDS AND SPECIFICATIONS.
2. WATERMAIN CONNECTION (INCL. 200mm V&B) FROM EXISTING MAINS TO STREETLINE TO BE INSTALLED BY THE REGION OF PEEL.
3. WATERMAIN AND /OR WATER SERVICE MATERIALS TO BE P.V.C. CLASS 150 WITH IRON PIPE O.D. IN SIZES 100mm (4") UP TO AND INCLUDING 300mm (12"), MANUFACTURED TO AWWA SPEC. C-900-75 COMPLETE WITH TRACER WIRE, SIZES 50mm (2") AND SMALLER ARE TO BE COPPER TYPE 'K'.
4. WATERMAIN AND/OR WATER SERVICES ARE TO HAVE A MINIMUM COVER OF 1.70m (5'-6") WITH A MINIMUM HORIZONTAL SPACING OF 1.20m (4') FROM THEMSELVES AND ALL OTHER UTILITIES AND WHEN CROSSING WATERMAINS MUST HAVE A MINIMUM VERTICAL CLEARANCE OF 0.15m (6") OVER AND 0.30m (12") UNDER SEWERS AND ALL OTHER UTILITIES.
5. PROVISIONS FOR FLUSHING WATER LINES PRIOR TO TESTING MUST BE PROVIDED WITH AT LEAST A 50mm (2") OUTLET ON 100mm (4") AND LARGER LINES. COPPER LINES ARE TO HAVE FLUSHING POINTS AT THE END, THE SAME SIZE AS THE LINE. THEY MUST ALSO BE PIPED TO ALLOW THE WATER TO DRAIN ONTO A PARKING LOT OR DOWN A DRAIN. ON FIRE LINES FLUSHING TO BE 100mm (4") DIAMETER MINIMUM OR A HYDRANT.
6. ALL CURB STOPS ON WATER LINES TO BE 3.0m (10') OFF THE FACE OF THE BUILDING UNLESS OTHERWISE NOTED.
7. ALL HYDRANTS TO HAVE PUMPER HOZZLE AND BRANCH VALVE SET TO REGION STD. 1-6-1 (8-5) DIMENSIONS A AND B, 0.70m (2') AND 0.90m (3').
8. ALL WATERMAINS , BENDS, TEES, AND REDUCERS TO HAVE CONCRETE THRUST BLOCKS.
9. WATERMAINS TO BE INSTALLED TO GRADES AS SHOWN ON APPROVED SITE PLAN. A COPY OF THE GRADE SHEET MUST BE SUPPLIED TO THE INSPECTOR PRIOR TO COMMENCEMENT OF WORK, WHERE REQUESTED BY INSPECTOR.
10. ALL PROPOSED WATER PIPING MUST BE ISOLATED FROM EXISTING LINES IN ORDER TO ALLOW INDEPENDENT PRESSURE TESTING AND CHLORINATING FROM EXISTING SYSTEMS.

GRADING

1. ALL SERVICE DRAINAGE TO BE SELF CONTAINED, COLLECTED AND DISCHARGED AT A LOCATION APPROVED PRIOR TO THE ISSUANCE OF PLUMBING PERMIT.
2. ALL ENTRANCES TO THE SITE WHERE THERE ARE MUNICIPAL SIDEWALKS AND CURBS, SHALL BE CONTINUOUS THROUGH THE DRIVEWAYS. THE SIDEWALK SHALL REMAIN AT ITS ORIGINAL GRADE. CURB DEPRESSIONS SHALL BE PROVIDED AT EACH ENTRANCE.
3. TOPSOIL AND FILL AREAS TO BE STRIPPED CLEAN. FILL TO BE PLACED AND COMPACTED TO 95% STD. PROCTOR DENSITY.
4. ALL GRADES TO BE WITHIN 33% MAX. SLOPE AT PROPERTY LINE AND WITHIN THE SITE.

REVISIONS

Date	Details	Initial
APR 14/04	SAN & STM CONNECTION INVERTS AT BUILDING	GWL
SEPT 30/04	WATER FIRE LINE REMOVED	GWL

REGIONAL MUNICIPALITY OF PEEL
CITY OF MISSISSAUGA

678604 ONTARIO LTD.

23 Windsor St, Toronto, Ontario M8Y 2V9
Telephone (416) 255-0890 Fax (416) 255-3246

PROPOSED THREE STOREY RESIDENTIAL APARTMENT BUILDING

SITE GRADING AND SERVICING PLAN

98 WILLIAM STREET
PART OF PLAN STR-2, CITY OF MISSISSAUGA
OZ 02/001 W6 SP 02/179 W6

Adamson Lawson Surbray Associates Limited
Town Planners Engineering Consultants Project Managers
2020 Winston Park Drive, Suite 102
Oakville, Ontario L6H 6X7
Telephone (905)829-8818 Fax (905)829-4804
e-mail : alsal@on.aibn.com

Scale: 1:200	Designed By: GWL	00-10-SG
Date: MAR 2002.	Drawn By: GWL	Drawing Number:
Area: Z-39E	Checked By: SDL	

C-426390

REMOVE EX. SEWER & REPLACE WITH 300ø P.V.C. SAN. SEWER @ 0.29% GRADES (14.9m PLACED)

CUT & CONNECT TO EX. SEWER WITH APPROVED COUPLING

REMOVE EX. MH's & CONSTRUCT NEW MH's AS PER STD. 2-1-1

QUEEN STREET

T=0+010 T=0+026.2 T=0+036 T=0+075 T=0+036.5 T=0+088 T=0+110 T=0+037.4 T=0+100.5

WATER ST. MAIDEN LANE MAIN ST. MILL ST. TANNERY ST. PEARL ST.

NEW MH AS PER STD. 2-1-1
REMOVE EX. MH

REMOVE EX. MH & CONSTRUCT NEW MH AS PER STD. 2-1-1

REMOVE EX. SEWER & CONSTRUCT 250 ø P.V.C. SAN. SEWER

REMOVE EX. SEWER & CONSTRUCT 250 ø P.V.C. SAN. SEWER

REMOVE EX. SEWER & CONSTRUCT . 375 ø P.V.C. SAN. SEWER

T=0+006.7 T=0+095.3 T=0+061 T=0+049 T=0+040 T=0+029.2 T=0+015

LEGEND

S — DENOTES EXISTING SAN. LATERALS TO BE TRANSFERRED TO NEW SEWER

SERVICE DATA

SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN. SEWERS	AUG 15, 1985	Y.C.	GAS MAINS	AUG 19, 1985	Y.C.
STORM SEWERS	JULY, 1985	Y.C.	BELL U/G CABLE	OCT 23, 1985	Y.C.
WATERMAINS			HYDRO U/G CABLE	AUG 19, 1985	Y.C.

REVISIONS

DATE	DETAILS	INIT.
FEB. 11, 1987	AS CONSTRUCTED	Y.C.

ROAD GRADE

SILTY CLAY

EX. STM. SEWER

EX. SAN. SEWER TO BE REMOVED.

NEW MH. 52 STD. 2-1-1 TYPE A & E

NEW MH. 53 STD. 2-1-1 TYPE A & E

NEW MH. 54A STD. 2-1-1 TYPE A & E

EX. MH. 54 REMOVE

NEW MH. 55 STD. 2-1-1 TYPE A & E

EX. SAN. TO BE SEWER REMOVED

76.5m - 250ø P.V.C. SDR 35 SAN. SEWER @ 0.41%

111.m - 250ø P.V.C. SDR 35 SAN. SEWER @ 0.40%

70m - 250ø P.V.C. SDR 35 SAN. SEWER @ 1.64%

PROP. INV.

N - 159.494
S - 159.334
E - 159.464

EX. MH'S E - 159.464

N - 159.819
S - 159.648

N - 160.248

S - 159.950

N - 158.859
S - 158.700

0+880 0+900 0+920 0+940 0+960 0+980 1+000 1+020 1+040 1+060 1+080 1+100 1+120 1+140 1+160 1+180

General Notes

- All Driveways Gravel Unless Otherwise Noted.
- All Service Locations Are Approximate And Must Be Located Accurately In Field.
- Denotes Building - Not Located
- Denotes Building Located

Type 'B' Bedding Unless Otherwise Noted (SAN)

B.M. N° Elev.

The Contractor is Responsible For Locating And Protecting All Existing Utilities Prior To And During Construction Location of Existing Utilities Approximate Only, To Be Verified In Field By Contractor.

Designed by CHKD.

Approved by

NOTICE TO CONTRACTOR

48 HOURS PRIOR TO COMMENCING WORK NOTIFY THE FOLLOWING

THE REGIONAL MUNICIPALITY OF PEEL
CITY OF MISSISSAUGA WORKS DEPT.
CITY OF BRAMPTON WORKS DEPT.
TOWN OF CALEDON WORKS DEPT.
BELL TELEPHONE COMPANY
CONSUMERS GAS COMPANY
MINISTRY OF TRANSPORTATION
MINISTRY OF ENVIRONMENT
HYDRO ELECTRIC POWER COMM. OF ONTARIO
HYDRO ELECTRIC COMM. CITY OF MISSISSAUGA
HYDRO ELECTRIC COMM. CITY OF BRAMPTON
HYDRO ELECTRIC COMM. PORT CREDIT
HYDRO ELECTRIC COMM. STREETSVILLE
CABLE TELEVISION

Region of Peel

Department of Public Works

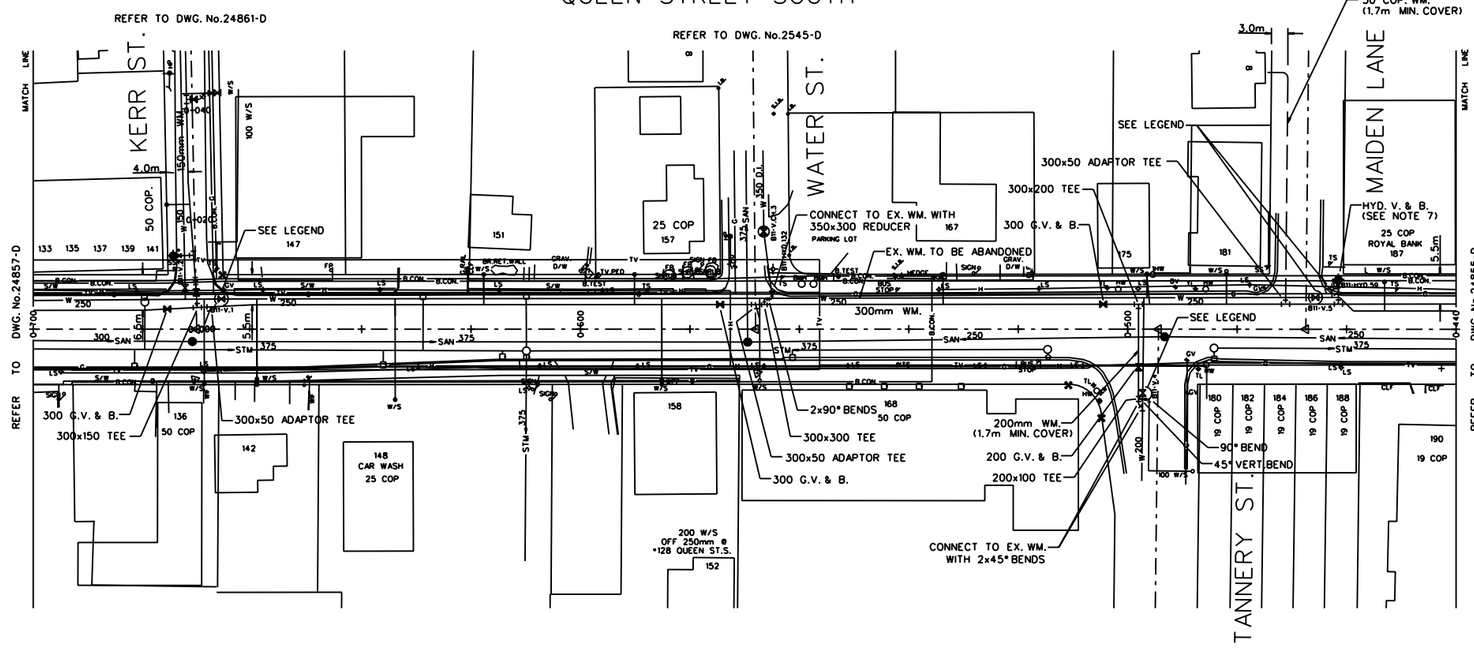
QUEEN STREET

Sta. 0+880 To Sta. 1+180

Lots	Area Z - 38	Project No. 85-2310
Scale Hor. 1:500 Ver. 1:50	Drawn by Y. C.	Checked by
Date MAY, 1986	Sheet 4 of 7	Plan No. 7449 - D

7449-D

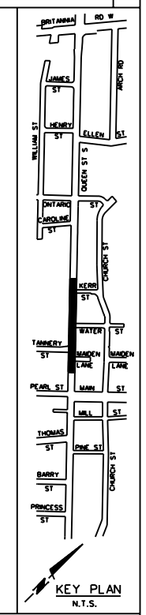
QUEEN STREET SOUTH

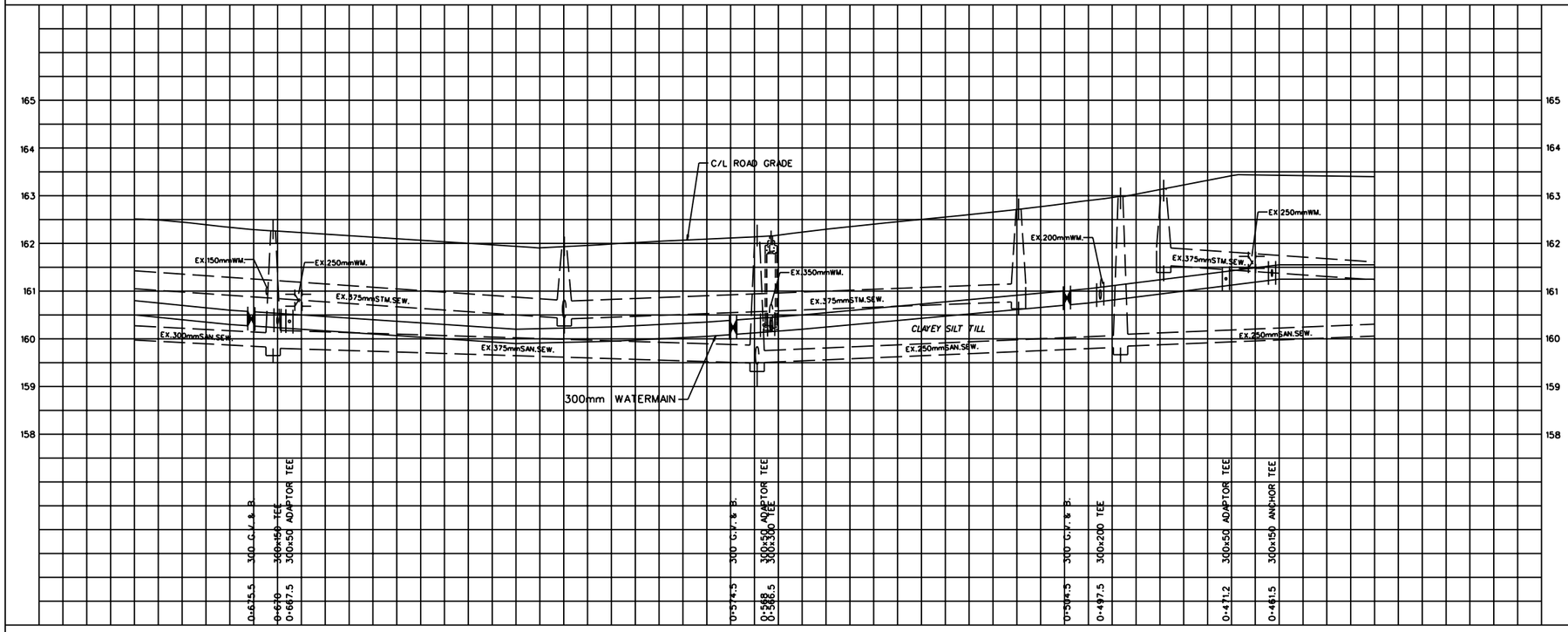


SERVICE DATA					
SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN SEWERS	APR. 28, 99	Y.C.	GAS MAINS	APR. 27, 99	Y.C.
STORM SEWERS	APR. 28, 99	Y.C.	BELL U/G CABLE	APR. 27, 99	Y.C.
WATERMAINS	APR. 28, 99	Y.C.	HYDRO U/G CABLE	APR. 27, 99	Y.C.
TRANSIT	APR. 27, 99	Y.C.	ONT. HYDRO	APR. 27, 99	Y.C.
PARKS & REC.	APR. 27, 99	Y.C.	CTV	APR. 27, 99	Y.C.
ONT. CLEAN WATER	APR. 27, 99	Y.C.			

REVISIONS		
DATE	DETAILS	INIT.
JULY 14, 2000	AS CONSTRUCTED	Y.C.

NOTE: FOR GENERAL NOTES, LEGEND, REINSTATEMENT DATAIL AND BEDDING AND BACKFILL DETAIL SEE DWG. No.24861-D





General Notes

- ALL DRIVEWAYS ASPHALT UNLESS OTHERWISE NOTED.
- ALL SERVICE LOCATIONS ARE APPROXIMATE AND MUST BE LOCATED ACCURATELY IN THE FIELD
- DENOTES BUILDING - NOT LOCATED
- DENOTES BUILDING LOCATED
- TYPE 'B' BEDDING UNLESS OTHERWISE NOTED (SAN)

B.M. NO. ELEV.

THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES PRIOR TO AND DURING CONSTRUCTION LOCATION OF EXISTING UTILITIES APPROXIMATE ONLY. TO BE VERIFIED IN FIELD BY CONTRACTOR.

DESIGNED BY | CHKD. | APPROVED BY

NOTICE TO CONTRACTOR

48 HOURS PRIOR TO COMMENCING WORK NOTIFY THE FOLLOWING

THE REGIONAL MUNICIPALITY OF PEEL
CITY OF MISSISSAUGA WORKS DEPT.
CITY OF BRAMPTON WORKS DEPT.
TOWN OF CALEDON WORKS DEPT.
BELL TELEPHONE COMPANY
CONSUMERS GAS COMPANY
MINISTRY OF TRANSPORTATION
ONTARIO CLEAN WATER AGENCY
HYDRO ELECTRIC POWER COMM. OF ONTARIO
HYDRO ELECTRIC COMM. CITY OF MISSISSAUGA
HYDRO ELECTRIC COMM. CITY OF BRAMPTON
CABLE TELEVISION

10m 0 10 20 30m HORIZONTAL SCALE

1m 0 1 2 3m VERTICAL SCALE

Region of Peel
Public Works

QUEEN STREET SOUTH

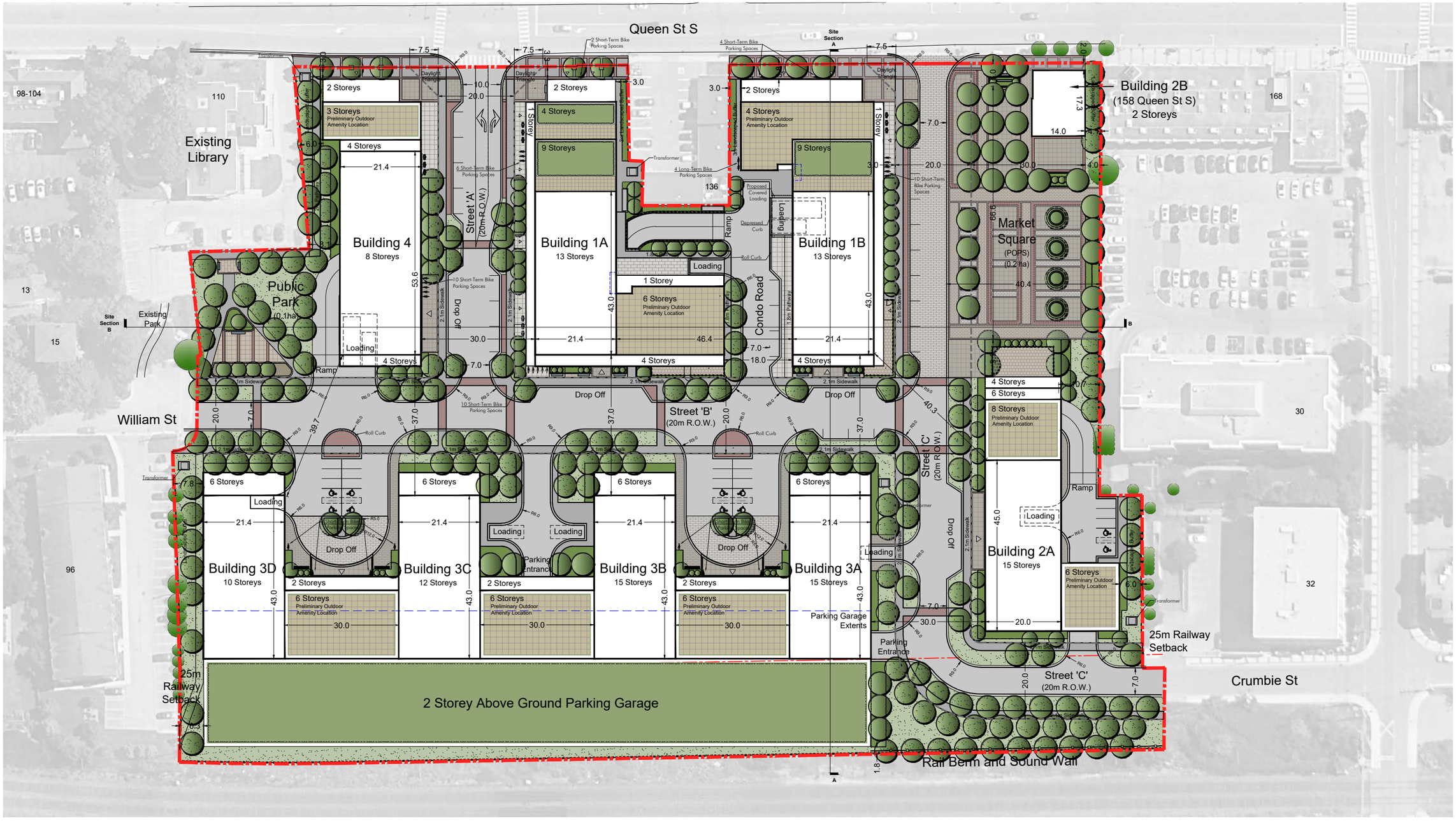
(FROM OLD PINE ST. TO BRITANNIA ST.W.)

300mm WATERMAIN

Sta. 0+440 **To Sta.** 0+700

LOTS	AREA Z-39	PROJECT NO. 99-1560	
CHECKED BY	DRAWN BY Y.C.	PLAN NO. 24856-D	
DATE APRIL 28, 99	SHEET 2 OF 5		

24856_d.dgn 15/08/08 11:07:32 AM



DeZen Realty SP0-1

Centre Plaza Redevelopment - Streetsville

142-148 Queen St S

Streetsville (Mississauga), On

Master Plan

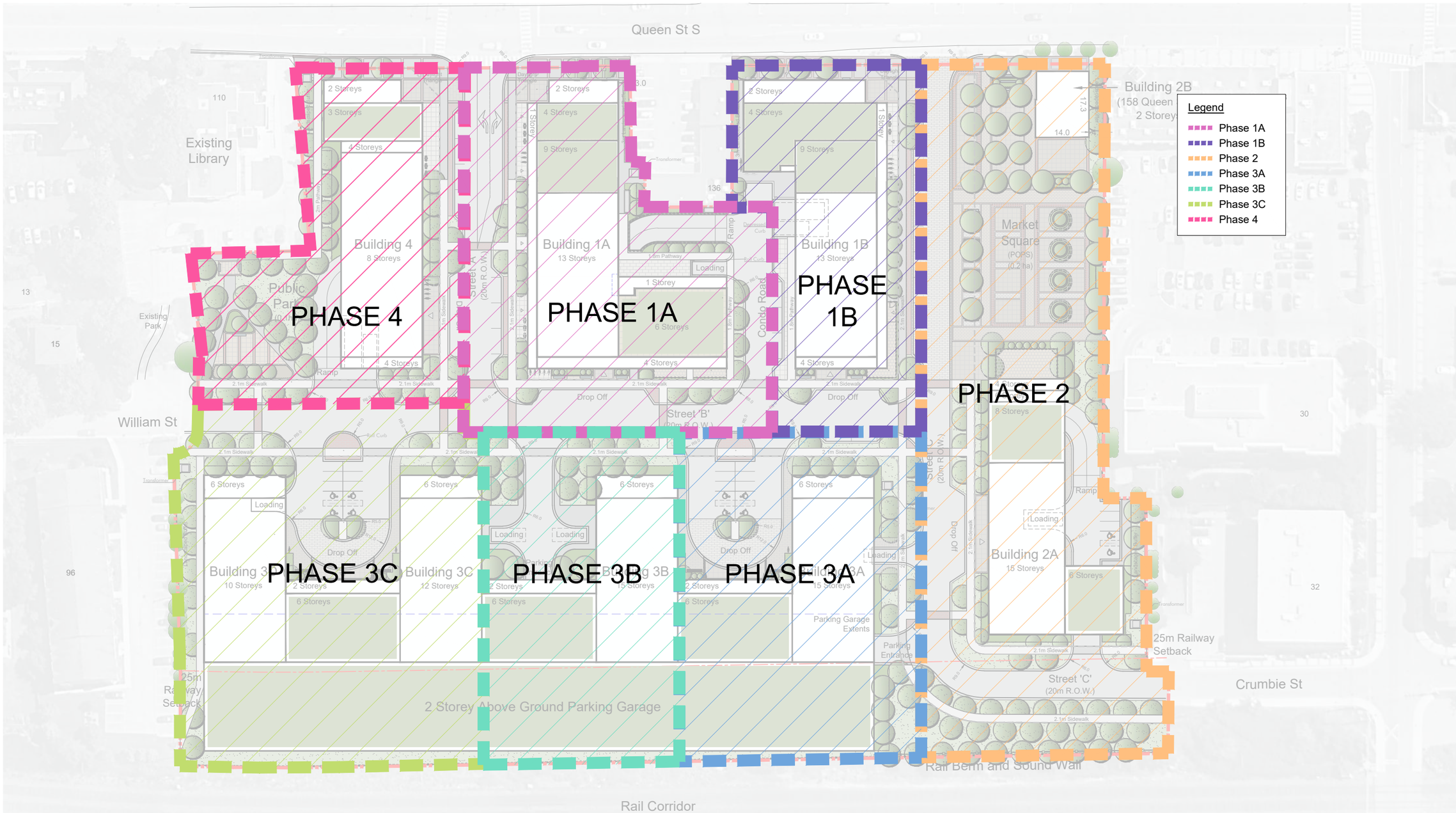
DRAFT

NOTE: Property line, buildings, drive access and street setbacks are all shown as approximate. A detailed site survey must be provided prior to finalizing all conditions. Dimensions used are all based on reference plans and are not intended as legally binding. Architect is not responsible for any changes that may occur due to verification of zoning, boundary conditions, OP, or other regulations. The enclosed drawing is for reference and information purposes only.

D2034

Mar. 08, 2024

SRM↗ architects+ urban×designers



DeZen Realty SP0-2

Centre Plaza Redevelopment - Streetsville

142-148 Queen St S

Streetsville (Mississauga), On

Phasing Plan

DRAFT

NOTE: Property line, buildings, drive access and street setbacks are all shown as approximate. A detailed site survey must be provided prior to finalizing all conditions. Dimensions used are all based on reference plans and are not intended as legally binding. Architect is not responsible for any changes that may occur due to verification of zoning, boundary conditions, OP, or other regulations. The enclosed drawing is for reference and information purposes only.

D2034

Mar. 08, 2024

SRM architects+ urban×designers

Site Statistics

Areas and Units		
Gross Site Area (m²)		42,343
*Net Site Area (m²)		31,673.00
Gross Construction Area (m²)		122,552.85
Gross Residential Area (m²)		92,749.16
Gross Commercial Area (m²)		3,292.00
Gross Potential Office Area (m²)		329.00
**Deductibles (m²)		12,800.46
***Gross Floor Area (m²)	±	109,752.39
Total Residential Units		1,808.00
FSI (Net)		3.87
Units/Hectare		426.99
ROW Area		9,638.00

Parking		
Required	Rate	Spaces
Residential	0.80	1,446.40
Commerical/Office/Visitor		297.50
Total		1,744.00
Provided		Spaces
Surface		25.00
On-Street		20.00
Underground		1,721.00
Total		1,766.00

Amenity Area		
Required	Rate	Area
Residential	5.60	10,124.80
Provided	Rate	Area
Total Provided Amenity	4.10	+/-7133

Public Spaces		
Public Park		1,031.00
Market Square (POPS)		2,148.00
Total		3,179.00
Landscaped Areas	24%	9,951.00

Bike Parking		
Residential	0.6	1,085.00
Residential (Class B)	0.05	91.00
Commercial	0.15	5.00
Commercial (Class B)	0.15	5.00
Office	0.1	1.00
Office (Class B)	0.1	1.00
Total Class A		1,091.00
Total Class B		97.00

Phase 01 (Building 1A and 1B)

Areas and Units		
Phase Area (m²)		10,565
Gross Construction Area (m²)		37,053.00
Gross Residential Area (m²)		26,494.83
Gross Commercial Area (m²)		2,913.00
Gross Potential Office Area (m²)		329.00
**Deductibles (m²)		4,410.17
***Gross Floor Area (m²)	±	32,642.83
Total Residential Units		526.00
FSI		3.51
Units/Hectare		496.23

Parking		
Required	Rate	Spaces
Residential	0.80	420.80
Commercial/Visitor/Office	0.20	105.20
Total		526.00
Provided		Spaces
Surface		-
On Street		14.00
Underground		524.00
Total		538.00

Amenity Area		
Required	Rate	Area
Residential	5.60	2,945.60
Provided	Rate	Area
Total Provided Amneity	4.05	2,131.00

Phase 02 (Building 2A and 2B)

Areas and Units		
Block Area (m²)		9,556
Gross Construction Area (m²)		18,047.46
Gross Residential Area (m²)		13,650.89
Gross Commercial Area (m²)		-
Gross Potential Office Area (m²)		-
**Deductibles (m²)		1,769.58
***Gross Floor Area (m²)	±	16,277.88
Total Residential Units		268.00
FSI		1.89
Units/Hectare		279.17

Parking		
Required	Rate	Spaces
Residential	0.80	214.40
Visitor/Commercial	0.15	40.20
Total		255.00
Provided		Spaces
Surface		5.00
On Street		-
Underground		255.00
Total		260.00

Amenity Area		
Required	Rate	Area
Residential	5.60	1,500.80
Provided	Rate	Area
Total Provided Amenity	4.00	+/-1072

Phase 03 (Building 3A, 3B, 3C, and 3D)

Areas and Units		
Block Area (m²)		17,398
Gross Construction Area (m²)		56,784.00
Gross Residential Area (m²)		44,937.80
Gross Commercial Area (m²)		-
Gross Potential Office Area (m²)		-
**Deductibles (m²)		5,404.24
***Gross Floor Area (m²)	±	51,379.76
Total Residential Units		864.00
FSI		3.26
Units/Hectare		496.55

Parking		
Required	Rate	Spaces
Residential	0.80	691.20
Visitor/Commercial	0.15	129.60
Total		821.00
Provided		Spaces
Surface		20.00
On Street		2.00
Underground		799.00
Total		821.00

Amenity Area		
Required	Rate	Area
Residential	5.60	4,838.40
Provided	Rate	Area
Total Provided Amenity	4.00	+/-3456

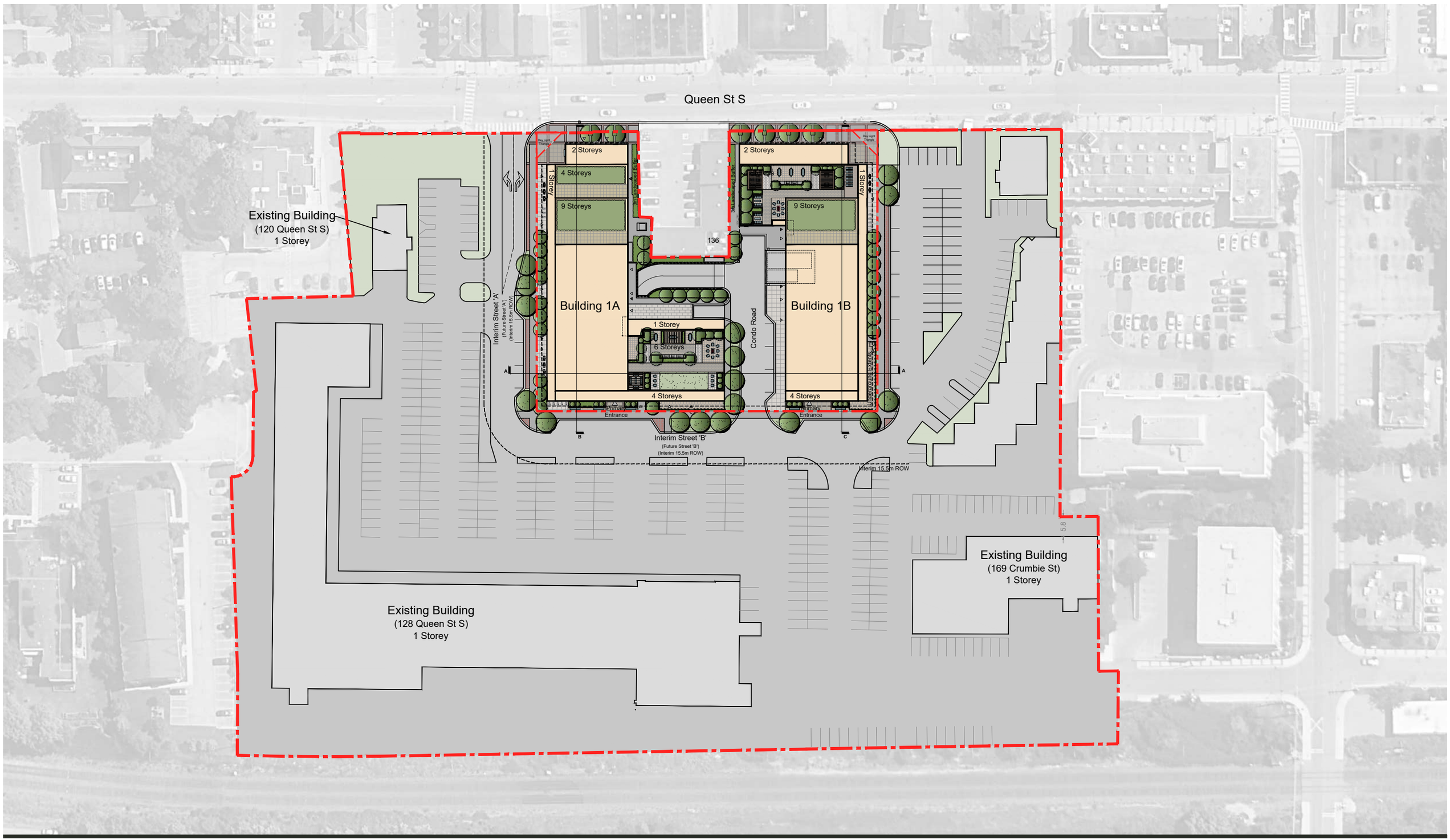
Phase 04 (Building 4)

Areas and Units		
Block Area (m²)		4,824
Gross Construction Area (m²)		10,668.39
Gross Residential Area (m²)		7,665.64
Gross Commercial Area (m²)		379.00
Gross Potential Office Area (m²)		-
**Deductibles (m²)		1,216.47
***Gross Floor Area (m²)	±	9,451.92
Total Residential Units		150.00
FSI		2.21
Units/Hectare		312.50

Parking		
Required	Rate	Spaces
Residential	0.80	120.00
Visitor/Commercial	0.15	22.50
Total		143.00
Provided		Spaces
Surface		-
On Street		4.00
Underground		143.00
Total		147.00

Amenity Area		
Required	Rate	Area
Residential	5.60	840.00
Provided	Rate	Area
Total Provided Amenity	4.00	+/-600

*Net Site Area does not include Public Roads or Park dedications. It does include the POPs and Private Roads.
** Deductibles Include: Mechanical, stairwells, elevators, parking, storage lockers, waste collection and chutes, common facilites and amenity areas.
*** GFA is an approximate calculation and will be further refined as the buildings develops



DeZen Reality Limited

Phase 01 Drawings

SP1-1

146 Queens St. South

Mississauga, On

Context Plan

DRAFT

Scale: 1:1000

NOTE: Property line, buildings, drive access and street setbacks are all shown as approximate. A detailed site survey must be provided prior to finalizing all conditions. Dimensions used are all based on reference plans and are not intended as legally binding. Architect is not responsible for any changes that may occur due to verification of zoning, boundary conditions, OP, or other regulations. The enclosed drawing is for reference and information purposes only.

D2034

Mar. 08, 2024

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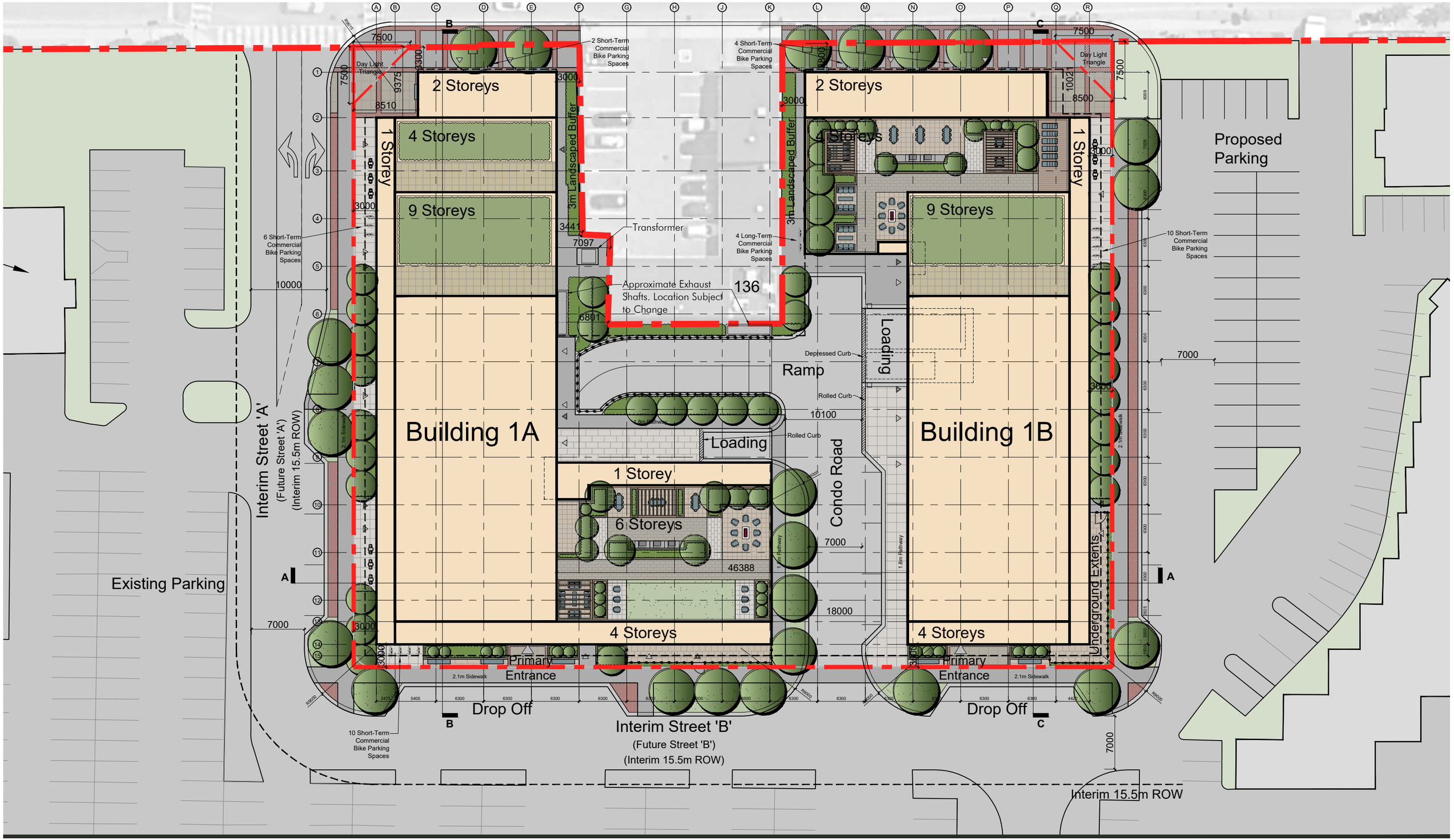

DeZen Reality Limited

Phase 01 Drawings

SP1-4

146 Queens St. South

Mississauga, On

Site Plan

DRAFT

Scale: 1:450

NOTE: Property line, buildings, drive access and street setbacks are all shown as approximate. A detailed site survey must be provided prior to finalizing all conditions. Dimensions used are all based on reference plans and are not intended as legally binding. Architect is not responsible for any changes that may occur due to verification of zoning, boundary conditions, OP, or other regulations. The enclosed drawing is for reference and information purposes only.

D2034

Mar. 08, 2024

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Phase 1

Building 1A

Floor	GCA (m²)	Residential	# of Units	Commercial	Office	Deductions
01	2,447.00	0	0.00	1,214.00	0.00	1,188.70
1b Mezzanine	239.00		0.00	239.00		
02	2,173.00	1,516.00	32	0.00	329.00	147.33
03	2,063.00	1,591.00	37	0.00	0.00	104.80
04	2,063.00	1,591.00	37	0.00	0.00	104.80
05	1,704.00	1,460.00	31	0.00	0.00	101.00
06	1,704.00	1,460.00	31	0.00	0.00	101.00
07	1,211.00	974.00	19	0.00	0.00	154.00
08	1,211.00	965.00	20	0.00	0.00	84.00
09	1,211.00	965.00	20	0.00	0.00	84.00
10	918.00	794.50	14	0.00	0.00	67.90
11	918.00	794.50	14	0.00	0.00	67.90
12	918.00	794.50	14			67.90
13	918.00	794.50	14	0.00	0.00	67.90
TOTAL	19,698.00	13,700.00	283	1,453.00	329.00	2,341.23

Building 1B

Floor	GCA (m²)	Residential	# of Units	Commercial	Office	Deductions
01	2,107.00	0	0.00	1,258.00	0.00	841.00
1b Mezzanine	202.00		0.00	202.00		
02	1,903.00	1,664.00	28.00	0.00	0.00	107.00
03	1,708.00	1,494.60	29.00	0.00	0.00	94.17
04	1,708.00	1,494.60	29.00	0.00	0.00	94.17
05	1,211.00	819.63	17.00	0.00	0.00	317.00
06	1,211.00	1,036.00	21.00	0.00	0.00	86.00
07	1,211.00	1,036.00	21.00	0.00	0.00	86.00
08	1,211.00	1,036.00	21.00	0.00	0.00	86.00
09	1,211.00	1,036.00	21.00	0.00	0.00	86.00
10	918.00	794.50	14.00	0.00	0.00	67.90
11	918.00	794.50	14.00	0.00	0.00	67.90
12	918.00	794.50	14.00			67.90
13	918.00	794.50	14.00	0.00	0.00	67.90
TOTAL	17,355.00	12,794.83	243.00	1,460.00	0.00	2,068.94

Total Phase	GCA (m²)	Residential	# of Units	Commercial	Office	Deductions
	37,053.00	26,494.83	526.00	2,913.00	329.00	4,410.17

Parking		
Required	Rate	Spaces
Residential	0.8	420.80
Commerical / Visitor/Office	0.2	105.20
Total		526.00

Required Amenity	
Ratio (m²/ Unit)	5.6
Units	526.00
Amenity Required (m²)	2945.6

Phase 2

Building 2A

Floor	GCA (m²)	Residential	# of Units	Commercial	Office	Deductions
01	1,615.97	0.00	0.00	0.00	0.00	484.79
02	1,615.97	1,373.57	27.00	0.00	0.00	129.28
03	1,615.97	1,373.57	27.00	0.00	0.00	129.28
04	1,615.97	1,373.57	27.00	0.00	0.00	129.28
05	1,555.98	1,322.58	26.00	0.00	0.00	124.48
06	1,555.98	1,322.58	26.00	0.00	0.00	124.48
07	900.00	765.00	15.00	0.00	0.00	72.00
08	900.00	765.00	15.00	0.00	0.00	72.00
09	900.00	765.00	15.00	0.00	0.00	72.00
10	900.00	765.00	15.00	0.00	0.00	72.00
11	900.00	765.00	15.00	0.00	0.00	72.00
12	900.00	765.00	15.00	0.00	0.00	72.00
13	900.00	765.00	15.00	0.00	0.00	72.00
14	900.00	765.00	15.00	0.00	0.00	72.00
15	900.00	765.00	15.00	0.00	0.00	72.00
TOTAL	17,675.84	13,650.89	268.00	0.00	0.00	1,769.58

Parking		
Required	Rate	Spaces
Residential	0.8	268.00
Visitor	0.15	40.20
Total Required		308.20

Required Amenity	
Ratio (m²/ Unit)	5.6
Units	268.00
Amenity Required (m²)	1500.8

Building E	
Floor	GCA (m²)
01	204.39
02	167.23
TOTAL	371.62

Total Phase	GCA (m²)
	18,047.46

Phase 3

Building 3A

Floor	GCA (m²)	Residential	# of Units	Commercial	Office	Deductions
01	1,046.00	0.00	0.00	0.00	0.00	313.80
02	1,046.00	889.10	17.00	0.00	0.00	83.68
03	1,588.00	1,349.80	26.00	0.00	0.00	127.04
04	1,588.00	1,349.80	26.00	0.00	0.00	127.04
05	1,588.00	1,349.80	26.00	0.00	0.00	127.04
06	1,588.00	1,349.80	26.00	0.00	0.00	127.04
07	918.00	780.30	15.00	0.00	0.00	73.44
08	918.00	780.30	15.00	0.00	0.00	73.44
09	918.00	780.30	15.00	0.00	0.00	73.44
10	918.00	780.30	15.00	0.00	0.00	73.44
11	918.00	780.30	15.00	0.00	0.00	73.44
12	918.00	780.30	15.00	0.00	0.00	73.44
13	918.00	780.30	15.00	0.00	0.00	73.44
14	918.00	780.30	15.00	0.00	0.00	73.44
15	918.00	780.30	15.00	0.00	0.00	73.44
TOTAL	16,706.00	13,311.00	256.00	0.00	0.00	1,566.60

Building 3B

Floor	GCA (m²)	Residential	# of Units	Commercial	Office	Deductions
01	1,046.00	0.00	0.00	0.00	0.00	313.80
02	1,046.00	889.10	17.00	0.00	0.00	83.68
03	1,588.00	1,349.80	26.00	0.00	0.00	127.04
04	1,588.00	1,349.80	26.00	0.00	0.00	127.04
05	1,588.00	1,349.80	26.00	0.00	0.00	127.04
06	1,588.00	1,349.80	26.00	0.00	0.00	127.04
07	918.00	780.30	15.00	0.00	0.00	73.44
08	918.00	780.30	15.00	0.00	0.00	73.44
09	918.00	780.30	15.00	0.00	0.00	73.44
10	918.00	780.30	15.00	0.00	0.00	73.44
11	918.00	780.30	15.00	0.00	0.00	73.44
12	918.00	780.30	15.00	0.00	0.00	73.44
13	918.00	780.30	15.00	0.00	0.00	73.44
14	918.00	780.30	15.00	0.00	0.00	73.44
15	918.00	780.30	15.00	0.00	0.00	73.44
TOTAL	16,706.00	13,311.00	256.00	0.00	0.00	1,566.60

Building 3C

Floor	GCA (m²)	Residential	# of Units	Commercial	Office	Deductions
01	1,046.00	0.00	0.00	0.00	0.00	313.80
02	1,046.00	889.10	17.00	0.00	0.00	83.68
03	1,588.00	1,349.80	26.00	0.00	0.00	127.04
04	1,588.00	1,349.80	26.00	0.00	0.00	127.04
05	1,588.00	1,349.80	26.00	0.00	0.00	127.04
06	1,588.00	1,349.80	26.00	0.00	0.00	127.04
07	918.00	780.30	15.00	0.00	0.00	73.44
08	918.00	780.30	15.00	0.00	0.00	73.44
09	918.00	780.30	15.00	0.00	0.00	73.44
10	918.00	780.30	15.00	0.00	0.00	73.44
11	918.00	780.30	15.00	0.00	0.00	73.44
12	918.00	780.30	15.00	0.00	0.00	73.44
TOTAL	13,952.00	10,970.10	211.00	0.00	0.00	1,346.28

Building 3D

Floor	GCA (m²)	Residential	# of Units	Commercial	Office	Deductions
01	778.00	0.00	0.00	0.00	0.00	233.40
02	778.00	661.30	13.00	0.00	0.00	62.24
03	1,048.00	890.80	17.00	0.00	0.00	83.84
04	1,048.00	890.80	17.00	0.00	0.00	83.84
05	1,048.00	890.80	17.00	0.00	0.00	83.84
06	1,048.00	890.80	17.00	0.00	0.00	83.84
07	918.00	780.30	15.00	0.00	0.00	73.44
08	918.00	780.30	15.00	0.00	0.00	73.44
09	918.00	780.30	15.00	0.00	0.00	73.44
10	918.00	780.30	15.00	0.00	0.00	73.44
TOTAL	9,420.00	7,345.70	141.00	0.00	0.00	924.76

Phase 4

Building 4

Floor	GCA (m²)	Residential	# of Units	Commercial	Office	Deductions
01	1,649.99	0.00	0.00	379.00	0.00	495.00
02	1,649.99	1,402.49	28.00	0.00	0.00	132.00
03	1,527.41	1,298.30	25.00	0.00	0.00	122.19
04	1,269.00	1,078.65	21.00	0.00	0.00	101.52
05	1,143.00	971.55	19.00	0.00	0.00	91.44
06	1,143.00	971.55	19.00	0.00	0.00	91.44
07	1,143.00	971.55	19.00	0.00	0.00	91.44
08	1,143.00	971.55	19.00	0.00	0.00	91.44
TOTAL	10,668.39	7,665.64	150.00	379.00	0.00	1,216.47

Parking		
Required	Rate	Spaces
Residential	0.8	120.00
Commerical / Visitor	0.15	22.50
Total Required		142.50

Required Amenity	
Ratio (m²/ Unit)	5.6
Units	150.00
Amenity Required (m²)	840

Population Summary

Catchment	Area (HA)	# of Units	Density (person/unit)	Res Pop	Non-Residential Area (m2)	Denisity (person/ha)	Non-Res Pop	Total Population	Notes & References
Building 1A	0.44	283	2.10	594	1782	70	12	607	R 1.0 Region of Peel Linear Wastewater Standards (March 29, 2023)
Building 1B	0.29	243		510	1460		10	521	
Building 2A	0.29	268		563	0		0	563	
Building 2B	0.00	1		2	242		2	4	
Building 3A	0.44	256		538	0		0	538	
Building 3B	0.41	256		538	0		0	538	
Building 3C/D	0.65	352		739	0		0	739	
Building 4	0.28	150		315	379		3	318	
TOTAL	**2.81**	**1809**		**3799**	**3863**		**27**	**3826**	

APPENDIX B

Water Demand Calculations
Fire Hydrant Flow Test
FUS Calculations

Project: Centre Plaza
Project No.: 1419-6615

Created By: GS
Checked By: RB

Date: 2023-05-19
Updated: 2024-03-11

Water Demand Summary

Catchment	Res Pop	Avg Res Rate	Daily Res Demand (L/d)	Daily Res Demand (L/s)	Non-Res Pop	Avg Non-Res Rate	Daily Non-Res Demand (L/d)	Daily Non-Res Demand (L/s)	Avg Daily Demand	Max Day Demand	Peak Hourly Demand
Building 1A	594	280	166404	1.93	12	300	3742	0.04	1.97	3.9	5.91
Building 1B	510		142884	1.65	10		3066	0.04	1.69	3.4	5.07
Building 2A	563		157584	1.82	0		0	0.00	1.82	3.6	5.47
Building 2B	2		588	0.01	2		508	0.01	0.01	0.0	0.04
Building 3A	538		150528	1.74	0		0	0.00	1.74	3.5	5.23
Building 3B	538		150528	1.74	0		0	0.00	1.74	3.5	5.23
Building 3C/D	739		206976	2.40	0		0	0.00	2.40	4.8	7.19
Building 4	315		88200	1.02	3		796	0.01	1.03	2.1	3.09
Total	**3799**	**280**	**1063692**	**12.31**	**27**	**300**	**8112**	**0.09**	**12.41**	**24.8**	**37.22**

Peaking Factors

Residential Max Day	2.0
Non-Res Max Day	1.4
Peak Hour	3.0

Region of Peel Public Works, Design, Specifications & Procedures Manual - Watermain Design Criteria (June 2010)

Centre Plaza
Fire Protection Volume Calculation
CFCA File: 1419-6615

Date: 27-Feb-2024
Designed By: GS
Checked By: RB

Water Supply for Public Fire Protection (2020)
Fire Underwriters Survey

Proposed Building: 1

Fire Flow per Fire Underwriter Survey 2020

1. An estimate of fire flow required for a given area may be determined by the formula:

$$RFF = 220 * C * \sqrt{A}$$

Where:

RFF = fire flow in litres per minute

C = coefficient related to the type of construction:

=	1.5	for type V wood frame construction (structure essentially all combustible)
=	0.8	for type IV-A mass timber construction
=	0.9	for type IV-B mass timber construction
=	1.0	for type IV-C mass timber construction
=	1.5	for type IV-D mass timber construction
=	1.0	for type III ordinary construction (brick or other masonry walls, combustible floor and interior)
=	0.8	for type II non-combustible construction (unprotected metal structural components)
=	0.6	for type I fire-resistive construction (fully protected frame, floors, roof)

A = The largest floor area in square meters (plus the following percentages of the total areas of the other floors).

For Construction Coefficient from 1.0 to 1.5:
= 100% of ALL Floor Areas
For Construction Coefficient below 1.0:
- Floors With Any Unprotected Vertical Openings in the Building
= two largest adjoining floors + 50% all floors immediately above (max 8 floors)
- Floors With Any Protected Vertical Openings and Protected Exterior Vertical Communications
= largest floor area + 25% each of two immediately adjoining floors

Proposed Buildings

		Area	%
Area:	Floor 1	2023.0	1.0
	Floor 2	1914.0	0.25
A= 2,928 sq.m	Floor 3	1704.0	0.25

C= 0.6 Type of construction as confirmed by architect.

Therefore RFF = 7,000 L/min (rounded to nearest 1000 L/min)

Fire flow determined above shall not exceed:
30000 L/min for wood frame construction
30000 L/min for ordinary construction
25000 L/min for non-combustible construction
25000 L/min for fire-resistive construction

Note: Maximum flows per ISO Guide for Determination of Needed Fire Flow, Chapter 2, Section 5 Maximum and Minimum Value of C (pg. 10).

2. Values obtained in No. 1 may be reduced by as much as 25% for occupancies having low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

*Non-Combustible	-25%	Free Burning	15%	Refer to Table 3 Recommended
Limited Combustible	-15%	Rapid Burning	25%	Occupancy/Contents Charges by Major Occupancy
Combustible	0%			Examples.

Occupancy Type: C Reduction %: -15%

- 1,050 L/min reduction

Therefore RFF = 5,950

Note: Flow determined shall not be less than 2,000 L/min per FUS Water Supply for Public Fire Protection (2020), Part 2 (pg. 33). Do not round to the nearest 1,000 LPM.

3. Sprinklers - The value obtained in No. 2 above may be reduced by up to 50% for complete automatic sprinkler protection.

Automatic Sprinkler Design System	Credit to part of building with coverage
Automatic sprinkler protection designed and installed in accordance with NFPA 13.	-30%
Water supply is standard for both the system and Fire Department hose lines.	-10%
Fully supervised system.	-10%

Reduction %: 50%

Total Reduced Flow = 2,975 L/min reduction

Note: Do not round to the nearest 1,000 LPM.

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 30 meters by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

Separation	Charge	Separation	Charge
0 to 3 m	5%	20.1 to 30 m	0%
3.1 to 10 m	4%	>30 m	0%
10.1 to 20 m	3%		

To minimize surcharges for exposure , refer to Table 6 Exposure Adjustment Charges for Subject Building considering Construction types of Exposed Building Face

Exposed buildings

Name	**Distance** (m)	**Charge**	**Surcharge** (L/min)
North	27	0%	0
East	26	0%	0
South	>30	0%	0
West	27	0%	0
Total Surcharge			**-**

Note: The maximum exposure adjustment charge to be applied to a subject building is 75%.

Determine Required Fire Flow

RFF	5,950			
Sprinkler Reduction	2,975	reduction		
Exposure Charge	0	surcharge		
RFF = Required Fire Flow:	**2,975**	**L/min**		
Rounded to nearest 1000 L/min:	**3,000**	**L/min**	or	**50 L/s**
				792 USGPM
Required Duration:	**1.25**	**Hr**		

Note: USGPM = 0.264*(L/min)

Required Duration of Fire Flow as per Part 1 (FUS 2020)	
Flow Required (L/min)	Duration (hours)
2,000 or less	1.00
3,000	**1.25**
4,000	1.50
5,000	1.75
6,000	2.00
8,000	2.00
10,000	2.00
12,000	2.50
14,000	3.00
16,000	3.50
18,000	4.00
20,000	4.50
22,000	5.00
24,000	5.50
26,000	6.00
28,000	6.50
30,000	7.00
32,000	7.50
34,000	8.00
36,000	8.50
38,000	9.00
40,000 and over	9.50

Centre Plaza
Fire Protection Volume Calculation
CFCA File: 1419-6615

Date: 27-Feb-2024
Designed By: CM
Checked By: RB

Water Supply for Public Fire Protection (2020)
Fire Underwriters Survey

Proposed Building: C

Fire Flow per Fire Underwriter Survey 2020

1. An estimate of fire flow required for a given area may be determined by the formula:

$$RFF = 220 * C * \sqrt{A}$$

Where:

RFF = fire flow in litres per minute

C = coefficient related to the type of construction:

=	1.5	for type V wood frame construction (structure essentially all combustible)
=	0.8	for type IV-A mass timber construction
=	0.9	for type IV-B mass timber construction
=	1.0	for type IV-C mass timber construction
=	1.5	for type IV-D mass timber construction
=	1.0	for type III ordinary construction (brick or other masonry walls, combustible floor and interior)
=	0.8	for type II non-combustible construction (unprotected metal structural components)
=	0.6	for type I fire-resistive construction (fully protected frame, floors, roof)

A = The largest floor area in square meters (plus the following percentages of the total areas of the other floors).

For Construction Coefficient from 1.0 to 1.5:
= 100% of ALL Floor Areas
For Construction Coefficient below 1.0:
- Floors With Any Unprotected Vertical Openings in the Building
= two largest adjoining floors + 50% all floors immediately above (max 8 floors)
- Floors With Any Protected Vertical Openings and Protected Exterior Vertical Communications
= largest floor area + 25% each of two immediately adjoining floors

Proposed Buildings

		Area	%
Area:	Floor 1	1838.0	1.0
	Floor 2	1644.0	0.25
A= 2,564 sq.m	Floor 3	1260.0	0.25

C= 0.6 Type of construction as confirmed by architect.

Therefore RFF = 7,000 L/min (rounded to nearest 1000 L/min)

Fire flow determined above shall not exceed:
30000 L/min for wood frame construction
30000 L/min for ordinary construction
25000 L/min for non-combustible construction
25000 L/min for fire-resistive construction

Note: Maximum flows per ISO Guide for Determination of Needed Fire Flow, Chapter 2, Section 5 Maximum and Minimum Value of C (pg. 10).

2. Values obtained in No. 1 may be reduced by as much as 25% for occupancies having low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

*Non-Combustible	-25%	Free Burning	15%	Refer to Table 3 Recommended
Limited Combustible	-15%	Rapid Burning	25%	Occupancy/Contents Charges by Major Occupancy
Combustible	0%			Examples.

Occupancy Type: C Reduction %: -15%

- 1,050 L/min reduction

Therefore RFF = 5,950

Note: Flow determined shall not be less than 2,000 L/min per FUS Water Supply for Public Fire Protection (2020), Part 2 (pg. 33). Do not round to the nearest 1,000 LPM.

3. Sprinklers - The value obtained in No. 2 above may be reduced by up to 50% for complete automatic sprinkler protection.

Automatic Sprinkler Design System	Credit to part of building with coverage
Automatic sprinkler protection designed and installed in accordance with NFPA 13.	-30%
Water supply is standard for both the system and Fire Department hose lines.	-10%
Fully supervised system.	-10%

Reduction %: 50%

Total Reduced Flow = 2,975 L/min reduction

Note: Do not round to the nearest 1,000 LPM.

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 30 meters by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

Separation	Charge	Separation	Charge
0 to 3 m	5%	20.1 to 30 m	0%
3.1 to 10 m	4%	>30 m	0%
10.1 to 20 m	3%		

To minimize surcharges for exposure , refer to Table 6 Exposure Adjustment Charges for Subject Building considering Construction types of Exposed Building Face

Exposed buildings

Name	**Distance** (m)	**Charge**	**Surcharge** (L/min)
North	18	3%	179
East	26	0%	0
South	>30	0%	0
West	28	0%	0
Total Surcharge			**179**

Note: The maximum exposure adjustment charge to be applied to a subject building is 75%.

Determine Required Fire Flow

RFF	5,950			
Sprinkler Reduction	2,975	reduction		
Exposure Charge	179	surcharge		
RFF = Required Fire Flow:	**3,154**	**L/min**		
Rounded to nearest 1000 L/min:	**3,000**	**L/min**	or	**50 L/s**
				792 USGPM
Required Duration:	**1.25**	**Hr**		

Note: USGPM = 0.264*(L/min)

Required Duration of Fire Flow as per Part 1 (FUS 2020)	
Flow Required (L/min)	Duration (hours)
2,000 or less	1.00
3,000	**1.25**
4,000	1.50
5,000	1.75
6,000	2.00
8,000	2.00
10,000	2.00
12,000	2.50
14,000	3.00
16,000	3.50
18,000	4.00
20,000	4.50
22,000	5.00
24,000	5.50
26,000	6.00
28,000	6.50
30,000	7.00
32,000	7.50
34,000	8.00
36,000	8.50
38,000	9.00
40,000 and over	9.50

Centre Plaza
Fire Protection Volume Calculation
CFCA File: 1419-6615

Date: 27-Feb-2024
Designed By: GS
Checked By: RB

Water Supply for Public Fire Protection (2020)
Fire Underwriters Survey

Proposed Building: 2A

Fire Flow per Fire Underwriter Survey 2020

1. An estimate of fire flow required for a given area may be determined by the formula:

$$RFF = 220 * C * \sqrt{A}$$

Where:

RFF = fire flow in litres per minute

C = coefficient related to the type of construction:

=	1.5	for type V wood frame construction (structure essentially all combustible)
=	0.8	for type IV-A mass timber construction
=	0.9	for type IV-B mass timber construction
=	1.0	for type IV-C mass timber construction
=	1.5	for type IV-D mass timber construction
=	1.0	for type III ordinary construction (brick or other masonry walls, combustible floor and interior)
=	0.8	for type II non-combustible construction (unprotected metal structural components)
=	0.6	for type I fire-resistive construction (fully protected frame, floors, roof)

A = The largest floor area in square meters (plus the following percentages of the total areas of the other floors).

For Construction Coefficient from 1.0 to 1.5:
= 100% of ALL Floor Areas
For Construction Coefficient below 1.0:
- Floors With Any Unprotected Vertical Openings in the Building
= two largest adjoining floors + 50% all floors immediately above (max 8 floors)
- Floors With Any Protected Vertical Openings and Protected Exterior Vertical Communications
= largest floor area + 25% each of two immediately adjoining floors

Proposed Buildings

Area:		Area	%
	Floor 1	1616.0	1.0
	Floor 2	1616.0	0.25
A= 2,424 sq.m	Floor 3	1616.0	0.25

C= 0.6 Type of construction as confirmed by architect.

Therefore RFF = 6,000 L/min (rounded to nearest 1000 L/min)

Fire flow determined above shall not exceed:
30000 L/min for wood frame construction
30000 L/min for ordinary construction
25000 L/min for non-combustible construction
25000 L/min for fire-resistive construction

Note: Maximum flows per ISO Guide for Determination of Needed Fire Flow, Chapter 2, Section 5 Maximum and Minimum Value of C (pg. 10).

2. Values obtained in No. 1 may be reduced by as much as 25% for occupancies having low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

*Non-Combustible	-25%	Free Burning	15%	Refer to Table 3 Recommended
Limited Combustible	-15%	Rapid Burning	25%	Occupancy/Contents Charges by Major Occupancy
Combustible	0%			Examples.

Occupancy Type: C Reduction %: -15%

- 900 L/min reduction

Therefore RFF = 5,100

Note: Flow determined shall not be less than 2,000 L/min per FUS Water Supply for Public Fire Protection (2020), Part 2 (pg. 33). Do not round to the nearest 1,000 LPM.

3. Sprinklers - The value obtained in No. 2 above may be reduced by up to 50% for complete automatic sprinkler protection.

Automatic Sprinkler Design System	Credit to part of building with coverage
Automatic sprinkler protection designed and installed in accordance with NFPA 13.	-30%
Water supply is standard for both the system and Fire Department hose lines.	-10%
Fully supervised system.	-10%

Reduction %: 50%

Total Reduced Flow = 2,550 L/min reduction

Note: Do not round to the nearest 1,000 LPM.

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 30 meters by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

Separation	Charge	Separation	Charge
0 to 3 m	5%	20.1 to 30 m	0%
3.1 to 10 m	4%	>30 m	0%
10.1 to 20 m	3%		

To minimize surcharges for exposure , refer to Table 6 Exposure Adjustment Charges for Subject Building considering Construction types of Exposed Building Face

Exposed buildings

Name	**Distance** (m)	**Charge**	**Surcharge** (L/min)
North	>30	3%	153
East	>30	0%	0
South	7	4%	204
West	>30	0%	0
Total Surcharge			**357**

Note: The maximum exposure adjustment charge to be applied to a subject building is 75%.

Determine Required Fire Flow

RFF	5,100			
Sprinkler Reduction	2,550	reduction		
Exposure Charge	357	surcharge		
RFF = Required Fire Flow:	**2,907**	**L/min**		
Rounded to nearest 1000 L/min:	**3,000**	**L/min**	or	**50 L/s**
				792 USGPM
Required Duration:	**1.25**	**Hr**		

Note: USGPM = 0.264*(L/min)

Required Duration of Fire Flow as per Part 1 (FUS 2020)	
Flow Required (L/min)	Duration (hours)
2,000 or less	1.00
3,000	**1.25**
4,000	1.50
5,000	1.75
6,000	2.00
8,000	2.00
10,000	2.00
12,000	2.50
14,000	3.00
16,000	3.50
18,000	4.00
20,000	4.50
22,000	5.00
24,000	5.50
26,000	6.00
28,000	6.50
30,000	7.00
32,000	7.50
34,000	8.00
36,000	8.50
38,000	9.00
40,000 and over	9.50

Centre Plaza
Fire Protection Volume Calculation
CFCA File: 1419-6615

Date: 27-Feb-2024
Designed By: GS
Checked By: RB

Water Supply for Public Fire Protection (2020)
Fire Underwriters Survey

Proposed Building: 2A

Fire Flow per Fire Underwriter Survey 2020

1. An estimate of fire flow required for a given area may be determined by the formula:

$$RFF = 220 * C * \sqrt{A}$$

Where:

RFF = fire flow in litres per minute

C = coefficient related to the type of construction:

=	1.5	for type V wood frame construction (structure essentially all combustible)
=	0.8	for type IV-A mass timber construction
=	0.9	for type IV-B mass timber construction
=	1.0	for type IV-C mass timber construction
=	1.5	for type IV-D mass timber construction
=	1.0	for type III ordinary construction (brick or other masonry walls, combustible floor and interior)
=	0.8	for type II non-combustible construction (unprotected metal structural components)
=	0.6	for type I fire-resistive construction (fully protected frame, floors, roof)

A = The largest floor area in square meters (plus the following percentages of the total areas of the other floors).

For Construction Coefficient from 1.0 to 1.5:
= 100% of ALL Floor Areas
For Construction Coefficient below 1.0:
- Floors With Any Unprotected Vertical Openings in the Building
= two largest adjoining floors + 50% all floors immediately above (max 8 floors)
- Floors With Any Protected Vertical Openings and Protected Exterior Vertical Communications
= largest floor area + 25% each of two immediately adjoining floors

Proposed Buildings

Area:

A= 744 sq.m Floor Area = 372m2, 2-storeys

C= 1.0

Therefore RFF = 6,000 L/min (rounded to nearest 1000 L/min)

Fire flow determined above shall not exceed:
30000 L/min for wood frame construction
30000 L/min for ordinary construction
25000 L/min for non-combustible construction
25000 L/min for fire-resistive construction

Note: Maximum flows per ISO Guide for Determination of Needed Fire Flow, Chapter 2, Section 5 Maximum and Minimum Value of C (pg. 10).

2. Values obtained in No. 1 may be reduced by as much as 25% for occupancies having low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

*Non-Combustible	-25%	Free Burning	15%	Refer to Table 3 Recommended
Limited Combustible	-15%	Rapid Burning	25%	Occupancy/Contents Charges by Major Occupancy
Combustible	0%			Examples.

Occupancy Type: C Surcharge %: 0%

- L/min surchage

Therefore RFF = 6,000

Note: Flow determined shall not be less than 2,000 L/min per FUS Water Supply for Public Fire Protection (2020), Part 2 (pg. 33). Do not round to the nearest 1,000 LPM.

3. Sprinklers - The value obtained in No. 2 above may be reduced by up to 50% for complete automatic sprinkler protection.

Automatic Sprinkler Design System	Credit to part of building with coverage
Automatic sprinkler protection designed and installed in accordance with NFPA 13.	-30%
Water supply is standard for both the system and Fire Department hose lines.	-10%
Fully supervised system.	-10%

Reduction %: 0%

Total Reduced Flow = - L/min reduction

Note: Do not round to the nearest 1,000 LPM.

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 30 meters by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

Separation	Charge	Separation	Charge
0 to 3 m	5%	20.1 to 30 m	0%
3.1 to 10 m	4%	>30 m	0%
10.1 to 20 m	3%		

To minimize surcharges for exposure , refer to Table 6 Exposure Adjustment Charges for Subject Building considering Construction types of Exposed Building Face

Exposed buildings

Name	**Distance** (m)	**Charge**	**Surcharge** (L/min)
North	>30	0%	0
East	25	0%	0
South	5	4%	240
West	>30	0%	0
Total Surcharge			**240**

Note: The maximum exposure adjustment charge to be applied to a subject building is 75%.

Determine Required Fire Flow

RFF	6,000			
Sprinkler Reduction	0	reduction		
Exposure Charge	240	surcharge		
RFF = Required Fire Flow:	**6,240**	**L/min**		
Rounded to nearest 1000 L/min:	**6,000**	**L/min**	or	**100 L/s**
				1,584 USGPM
Required Duration:	**2.00**	**Hr**		

Note: USGPM = 0.264*(L/min)

Required Duration of Fire Flow as per Part 1 (FUS 2020)	
Flow Required (L/min)	Duration (hours)
2,000 or less	1.00
3,000	1.25
4,000	1.50
5,000	1.75
6,000	**2.00**
8,000	2.00
10,000	2.00
12,000	2.50
14,000	3.00
16,000	3.50
18,000	4.00
20,000	4.50
22,000	5.00
24,000	5.50
26,000	6.00
28,000	6.50
30,000	7.00
32,000	7.50
34,000	8.00
36,000	8.50
38,000	9.00
40,000 and over	9.50

Centre Plaza
Fire Protection Volume Calculation
CFCA File: 1419-6615

Date: 27-Feb-2024
Designed By: GS
Checked By: RB

Water Supply for Public Fire Protection (2020)
Fire Underwriters Survey

Proposed Building: 3

Fire Flow per Fire Underwriter Survey 2020

1. An estimate of fire flow required for a given area may be determined by the formula:

$$RFF = 220 * C * \sqrt{A}$$

Where:

RFF = fire flow in litres per minute

C = coefficient related to the type of construction:

=	1.5	for type V wood frame construction (structure essentially all combustible)
=	0.8	for type IV-A mass timber construction
=	0.9	for type IV-B mass timber construction
=	1.0	for type IV-C mass timber construction
=	1.5	for type IV-D mass timber construction
=	1.0	for type III ordinary construction (brick or other masonry walls, combustible floor and interior)
=	0.8	for type II non-combustible construction (unprotected metal structural components)
=	0.6	for type I fire-resistive construction (fully protected frame, floors, roof)

A = The largest floor area in square meters (plus the following percentages of the total areas of the other floors).

For Construction Coefficient from 1.0 to 1.5:
= 100% of ALL Floor Areas
For Construction Coefficient below 1.0:
- Floors With Any Unprotected Vertical Openings in the Building
= two largest adjoining floors + 50% all floors immediately above (max 8 floors)
- Floors With Any Protected Vertical Openings and Protected Exterior Vertical Communications
= largest floor area + 25% each of two immediately adjoining floors

Proposed Buildings

		Area	%
Area:	Floor 1	10000.0	1.0
	Floor 2	10000.0	0.25
A= 14,050 sq.m	Floor 3	6200.0	0.25

C= 0.6 Type of construction as confirmed by architect.

Therefore RFF = 16,000 L/min (rounded to nearest 1000 L/min)

Fire flow determined above shall not exceed:
30000 L/min for wood frame construction
30000 L/min for ordinary construction
25000 L/min for non-combustible construction
25000 L/min for fire-resistive construction

Note: Maximum flows per ISO Guide for Determination of Needed Fire Flow, Chapter 2, Section 5 Maximum and Minimum Value of C (pg. 10).

2. Values obtained in No. 1 may be reduced by as much as 25% for occupancies having low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

*Non-Combustible	-25%	Free Burning	15%	Refer to Table 3 Recommended
Limited Combustible	-15%	Rapid Burning	25%	Occupancy/Contents Charges by Major Occupancy
Combustible	0%			Examples.

Occupancy Type: C Reduction %: -15%

- 2,400 L/min reduction

Therefore RFF = 13,600

Note: Flow determined shall not be less than 2,000 L/min per FUS Water Supply for Public Fire Protection (2020), Part 2 (pg. 33). Do not round to the nearest 1,000 LPM.

3. Sprinklers - The value obtained in No. 2 above may be reduced by up to 50% for complete automatic sprinkler protection.

Automatic Sprinkler Design System	Credit to part of building with coverage
Automatic sprinkler protection designed and installed in accordance with NFPA 13.	-30%
Water supply is standard for both the system and Fire Department hose lines.	-10%
Fully supervised system.	-10%

Reduction %: 50%

Total Reduced Flow = 6,800 L/min reduction

Note: Do not round to the nearest 1,000 LPM.

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 30 meters by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

Separation	Charge	Separation	Charge
0 to 3 m	5%	20.1 to 30 m	0%
3.1 to 10 m	4%	>30 m	0%
10.1 to 20 m	3%		

To minimize surcharges for exposure , refer to Table 6 Exposure Adjustment Charges for Subject Building considering Construction types of Exposed Building Face

Exposed buildings

Name	**Distance** (m)	**Charge**	**Surcharge** (L/min)
North	26	0%	0
East	26	0%	0
South	>30	0%	0
West	>30	0%	0
Total Surcharge			**-**

Note: The maximum exposure adjustment charge to be applied to a subject building is 75%.

Determine Required Fire Flow

RFF	13,600			
Sprinkler Reduction	6,800	reduction		
Exposure Charge	0	surcharge		
RFF = Required Fire Flow:	**6,800**	**L/min**		
Rounded to nearest 1000 L/min:	**7,000**	**L/min**	or	**117 L/s**
				1,848 USGPM
Required Duration:	**2.00**	**Hr**		

Note: USGPM = 0.264*(L/min)

Required Duration of Fire Flow as per Part 1 (FUS 2020)

Flow Required (L/min)	Duration (hours)
2,000 or less	1.00
3,000	1.25
4,000	1.50
5,000	1.75
6,000	**2.00**
8,000	**2.00**
10,000	2.00
12,000	2.50
14,000	3.00
16,000	3.50
18,000	4.00
20,000	4.50
22,000	5.00
24,000	5.50
26,000	6.00
28,000	6.50
30,000	7.00
32,000	7.50
34,000	8.00
36,000	8.50
38,000	9.00
40,000 and over	9.50

Centre Plaza
Fire Protection Volume Calculation
CFCA File: 1419-6615

Date: 27-Feb-2024
Designed By: GS
Checked By: RB

Water Supply for Public Fire Protection (2020)
Fire Underwriters Survey

Proposed Building: 4

Fire Flow per Fire Underwriter Survey 2020

1. An estimate of fire flow required for a given area may be determined by the formula:

$$RFF = 220 * C * \sqrt{A}$$

Where:

RFF = fire flow in litres per minute

C = coefficient related to the type of construction:

=	1.5	for type V wood frame construction (structure essentially all combustible)
=	0.8	for type IV-A mass timber construction
=	0.9	for type IV-B mass timber construction
=	1.0	for type IV-C mass timber construction
=	1.5	for type IV-D mass timber construction
=	1.0	for type III ordinary construction (brick or other masonry walls, combustible floor and interior)
=	0.8	for type II non-combustible construction (unprotected metal structural components)
=	0.6	for type I fire-resistive construction (fully protected frame, floors, roof)

A = The largest floor area in square meters (plus the following percentages of the total areas of the other floors).

For Construction Coefficient from 1.0 to 1.5:
= 100% of ALL Floor Areas
For Construction Coefficient below 1.0:
- Floors With Any Unprotected Vertical Openings in the Building
= two largest adjoining floors + 50% all floors immediately above (max 8 floors)
- Floors With Any Protected Vertical Openings and Protected Exterior Vertical Communications
= largest floor area + 25% each of two immediately adjoining floors

Proposed Buildings

Area:		Area	%
	Floor 1	1650.0	1.0
	Floor 2	1650.0	0.25
A= 2,444 sq.m	Floor 3	1527.0	0.25

C= 0.6 Type of construction as confirmed by architect.

Therefore RFF = 7,000 L/min (rounded to nearest 1000 L/min)

Fire flow determined above shall not exceed:
30000 L/min for wood frame construction
30000 L/min for ordinary construction
25000 L/min for non-combustible construction
25000 L/min for fire-resistive construction

Note: Maximum flows per ISO Guide for Determination of Needed Fire Flow, Chapter 2, Section 5 Maximum and Minimum Value of C (pg. 10).

2. Values obtained in No. 1 may be reduced by as much as 25% for occupancies having low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

*Non-Combustible	-25%	Free Burning	15%	Refer to Table 3 Recommended
Limited Combustible	-15%	Rapid Burning	25%	Occupancy/Contents Charges by Major Occupancy
Combustible	0%			Examples.

Occupancy Type: C Reduction %: -15%

- 1,050 L/min reduction

Therefore RFF = 5,950

Note: Flow determined shall not be less than 2,000 L/min per FUS Water Supply for Public Fire Protection (2020), Part 2 (pg. 33). Do not round to the nearest 1,000 LPM.

3. Sprinklers - The value obtained in No. 2 above may be reduced by up to 50% for complete automatic sprinkler protection.

Automatic Sprinkler Design System	Credit to part of building with coverage
Automatic sprinkler protection designed and installed in accordance with NFPA 13.	-30%
Water supply is standard for both the system and Fire Department hose lines.	-10%
Fully supervised system.	-10%

Reduction %: 50%

Total Reduced Flow = 2,975 L/min reduction

Note: Do not round to the nearest 1,000 LPM.

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 30 meters by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

Separation	Charge	Separation	Charge
0 to 3 m	25%	20.1 to 30 m	10%
3.1 to 10 m	20%	>30 m	0%
10.1 to 20 m	15%		

To minimize surcharges for exposure , refer to Table 6 Exposure Adjustment Charges for Subject Building considering Construction types of Exposed Building Face

Exposed buildings

Name	**Distance** (m)	**Charge**	**Surcharge** (L/min)
North	>30	0%	0
East	26	0%	0
South	28	0%	0
West	28	0%	0
Total Surcharge			**-**

Note: The maximum exposure adjustment charge to be applied to a subject building is 75%.

Determine Required Fire Flow

RFF	5,950			
Sprinkler Reduction	2,975	reduction		
Exposure Charge	0	surcharge		
RFF = Required Fire Flow:	**2,975**	**L/min**		
Rounded to nearest 1000 L/min:	**3,000**	**L/min**	or	**50 L/s**
				792 USGPM
Required Duration:	**1.25**	**Hr**		

Note: USGPM = 0.264*(L/min)

Required Duration of Fire Flow as per Part 1 (FUS 2020)	
Flow Required (L/min)	Duration (hours)
2,000 or less	1.00
3,000	**1.25**
4,000	1.50
5,000	1.75
6,000	2.00
8,000	2.00
10,000	2.00
12,000	2.50
14,000	3.00
16,000	3.50
18,000	4.00
20,000	4.50
22,000	5.00
24,000	5.50
26,000	6.00
28,000	6.50
30,000	7.00
32,000	7.50
34,000	8.00
36,000	8.50
38,000	9.00
40,000 and over	9.50

Hydrant Testing Ontario
Tel: 289-354-1942
Info@HTOntario.ca

REPORT
N°. 2336

June 19, 2023

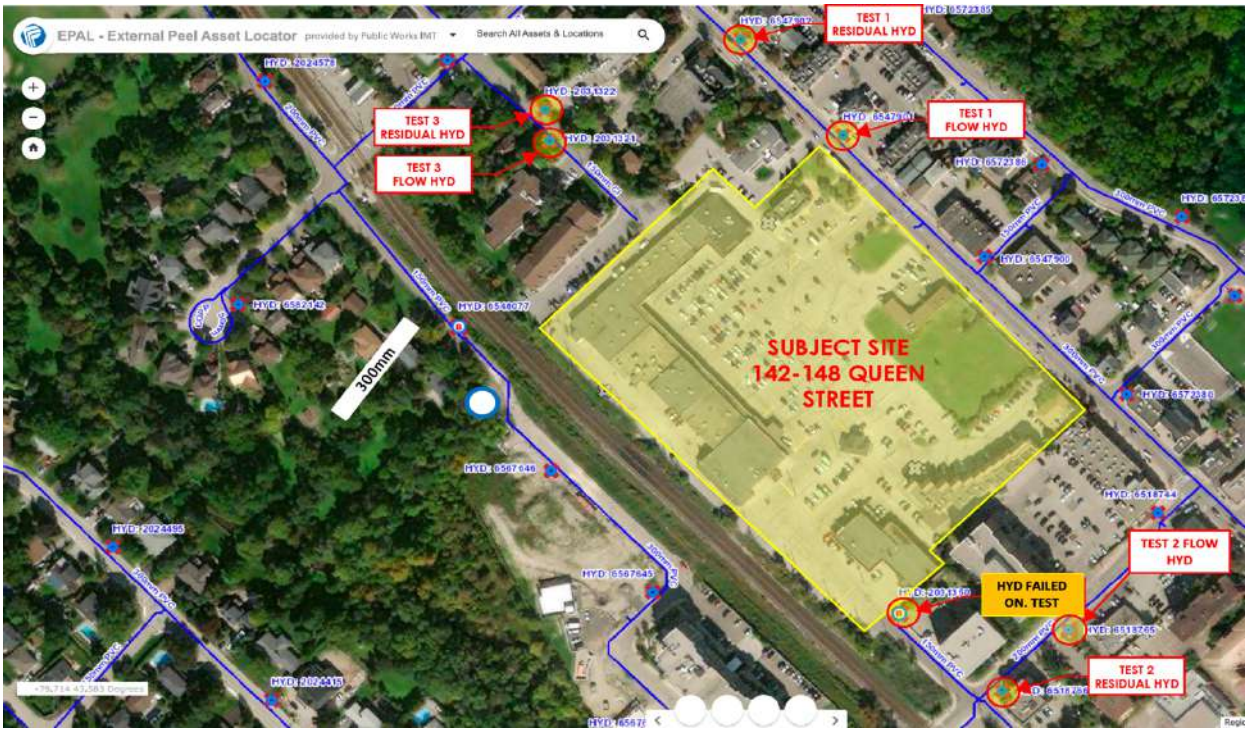
To: Mark Palmer
mark@dezenrealty.com
De Zen Realty Co. Ltd
4890 Tomken Road #1-4.
Mississauga, ON L4W 1J8

RE: Watermain Capacity Test - 142-148 Queen Street, Mississauga

Please find the Report for the following works

Scope: Conduct watermain Capacity Test as per NFPA291 / AWWA M17 recommendations and guidelines on the 300mm, 200mm and 150mm watermains including written report.

Hydrant Test Plan



HYDRANT TEST REPORT

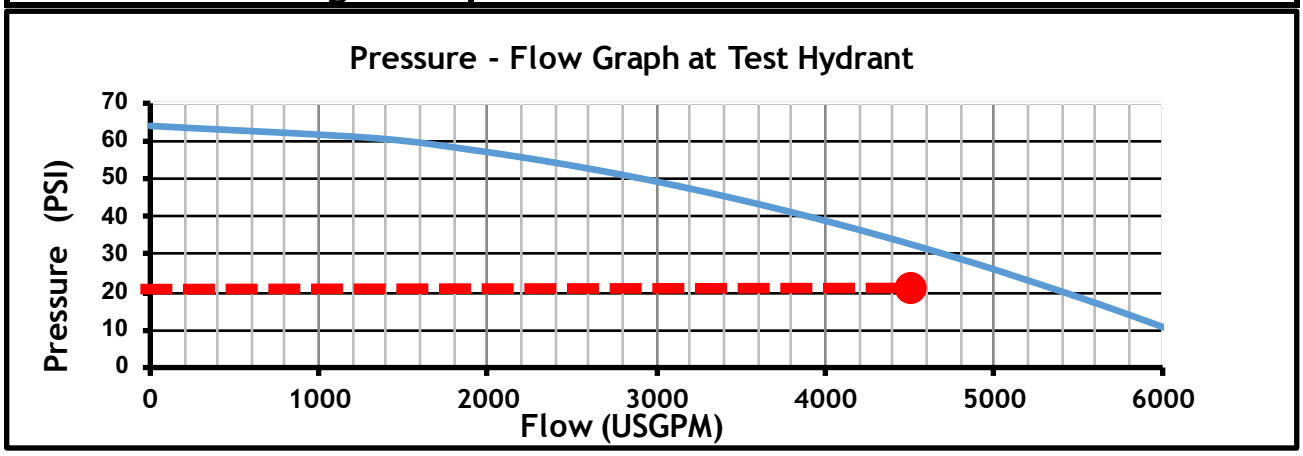
Zone ID	MISSISSAUGA			**TEST #**	1
DATE:	June 1, 2023	TIME:	8:45 AM	OPERATOR:	ROB GAMACHE
R -TEST HYDRANT	113 QUEEN STREET S			HYDRANT No.	6547902
HYDRANT MODEL:	McAVITY			COLOUR:	BLUE
STATIC PRESSURE psi : $(h_r - 20^{\wedge 0.54})$	64			VARIANCE:	6.25%
RESIDUAL PRESSURE psi : $(h_f - R^{\wedge 0.54})$	60				
Q - FLOW HYDRANT	99 QUEEN STREET S			HYDRANT No.	6547901
HYDRANT MODEL:	McAVITY			COLOUR:	BLUE

Logger Type	Nozzle Outlet Dia. (in.) (d^2)	Coefficient © 0.9	Nozzle PSI $(\sqrt{psi})$	Q = Flow (USGPM) $Q = 29.84\,(c)\,(d2)\,(\sqrt{psi})$
FM Approved Streamer Nozzle	2.5		15.8	741
FM Approved Streamer Nozzle	2.5		15.8	741
		Q_F = Total Flow (USGPM)		1482

Q_R = flow predicted @ 20 psi $Q_R = Q_F * (H_r - 20^{\wedge 0.54}) / (H_f - R^{\wedge 0.54})$

5412	USGPM	4473	IGPM
341	L/s		

NFPA Rating:	CLASS AA - BLUE



HYDRANT TEST REPORT

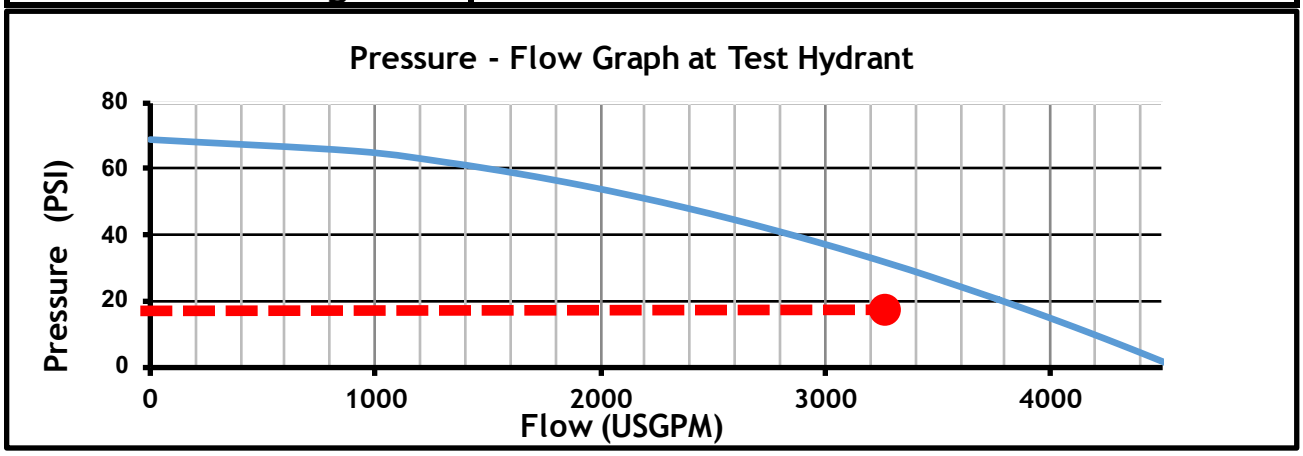
Zone ID	MISSISSAUGA			**TEST #**	**2**
DATE:	June 1, 2023	TIME:	9:36 AM	OPERATOR:	ROB GAMACHE
R -TEST HYDRANT	29 TANNERY STREET			HYDRANT No.	6518766
HYDRANT MODEL:	CENTURY			COLOUR:	BLUE
STATIC PRESSURE psi : $(h_r - 20^{\wedge 0.54})$	69			VARIANCE:	13.04%
RESIDUAL PRESSURE psi : $(h_f - R^{\wedge 0.54})$	60				
Q - FLOW HYDRANT	17 TANNERY STREET			HYDRANT No.	6518765
HYDRANT MODEL:	CENTURY			COLOUR:	BLUE

Logger Type	Nozzle Outlet Dia. (in.) (d^2)	Coefficient © 0.9	Nozzle PSI $(\sqrt{psi})$	Q = Flow (USGPM) $Q = 29.84\,(c)\,(d2)\,(\sqrt{psi})$
FM Approved Streamer Nozzle	2.5		16.6	760
FM Approved Streamer Nozzle	2.5		16.6	760
		Q_F = Total Flow (USGPM)		1520

Q_R = flow predicted @ 20 psi $Q_R = Q_F * (H_r - 20^{\wedge 0.54}) / (H_f - R^{\wedge 0.54})$

3794	USGPM	3136	IGPM
239	L/s		

NFPA Rating:	CLASS AA - BLUE



HYDRANT TEST REPORT

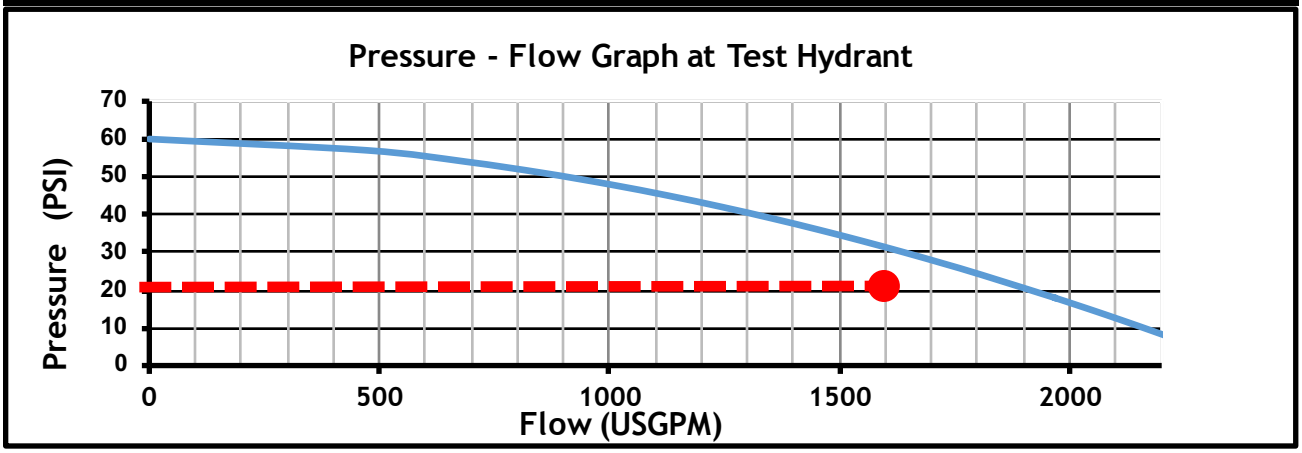
Zone ID	MISSISSAUGA			**TEST #**	**3**
DATE:	June 1, 2023	TIME:	10:05 AM	OPERATOR:	ROB GAMACHE
R -TEST HYDRANT	WILLIAM STREET			HYDRANT No.	2031322
HYDRANT MODEL:	McAVITY			COLOUR:	ORANGE
STATIC PRESSURE psi : $(h_r - 20^{\wedge 0.54})$	60			VARIANCE:	16.67%
RESIDUAL PRESSURE psi : $(h_f - R^{\wedge 0.54})$	50				
Q - FLOW HYDRANT	WILLIAM STREET			HYDRANT No.	2031321
HYDRANT MODEL:	McAVITY			COLOUR:	ORANGE

Logger Type	Nozzle Outlet Dia. (in.) (d^2)	Coefficient © 0.9	Nozzle PSI $(\sqrt{psi})$	Q = Flow (USGPM) $Q = 29.84\,(c)\,(d2)\,(\sqrt{psi})$
FM Approved Streamer Nozzle	2.5		5.9	453
	2.5		5.9	453
		Q_F = Total Flow (USGPM)		906

Q_R = flow predicted @ 20 psi $\quad Q_R = Q_F * (H_r - 20^{\wedge 0.54}) / (H_f - R^{\wedge 0.54})$

1915	USGPM	1583	IGPM
121	L/s		

NFPA Rating:	CLASS AA - BLUE



Test Conclusion

The system at the time of testing produced a projected theoretical flow rate of:

	L/s	USGPM	
TEST 1 - 300mm	341	5412	at 20 psi
TEST 2 - 200mm	239	3794	at 20 psi
TEST 3 - 150mm	121	1915	at 20 psi

Hydrants are classified in accordance with NFPA291 S.5.1.

COLOUR	CLASS	Available Flow @ 20psi
BLUE	**AA**	**1500 GPM or more**
GREEN	A	1000 – 1499 GPM
ORANGE	B	500 – 999 GPM
RED	C	Below 500 GPM

We strongly feel that all attempts have been made to ensure that the required data as stipulated was captured, stored and presented in an accurate, efficient and timely manner for the required period.

We look forward to working with you in the future.

Please feel free to contact the undersigned should you require any further

Best Regards

Rob Gamache E.P
Manager of Operations
Hydrant Testing Ontario
Info@HTOntario.ca

APPENDIX C

Sanitary Flow Calculations

Project: Centre Plaza
Project No.: 1419-6615

Created By: GS
Checked By: RB

Date: 2023-05-19
Updated: 2024-03-11

Sanitary Flow Summary

Catchment	Res Pop	Avg Res Rate	Comm Pop	Avg Comm Rate	Total Avg Flow (L/d)	Total Avg Flow (L/s)	Harmon Peak Factor	Peak Flow (L/s)	Block Area (m2)	Infiltration (L/s/ha)	Infiltration Rate (L/s)	Total Peak Flow (L/s)	Outlet
Building 1A	594	290	12	270	175715	2.03	3.93	8.0	0.44	0.26	0.12	8.1	Queen
Building 1B	510		10		150746	1.74	3.97	6.9	0.29		0.08	7.0	Queen
Building 2A	563		0		163212	1.89	3.95	7.5	0.29		0.08	7.5	Crumbie
Building 2B	2		2		1066	0.01	4.00	0.0	0.00		0.00	0.0	Queen
Building 3A	538		0		155904	1.80	3.96	7.1	0.44		0.11	7.3	Crumbie
Building 3B	538		0		155904	1.80	3.96	7.1	0.41		0.11	7.2	Crumbie
Building 3C/D	739		0		214368	2.48	3.88	9.6	0.65		0.17	9.8	Crumbie
Building 4	315		3		92066	1.07	4.00	4.3	0.28		0.07	4.3	Queen
Total	**3799**	**290**	**27**	**270**	**1108982**	**12.8**	**3.35**	**43.0**	**2.81**	**0.26**	**0.73**	**43.7**	
Public Park									0.10	0.26	0.03	0.0	Crumbie
ROW (ABC)									0.27		0.07	0.1	Crumbie
Market Square									1.06		0.28	0.3	Crumbie
Total									**1.43**	**0.26**	**0.37**	**0.4**	
Queen St	1422	290	27	270	419594	4.9	3.69	17.9	1.02	0.26	0.26	**18.2**	Queen
Crumbie St	2377		0		689388	8.0	3.53	28.1	3.22		0.84	**29.0**	Crumbie
TOTAL SITE	**3799**	**290**	**27**	**270**	1108982	**12.8**	**3.35**	**43.0**	**4.24**	**0.26**	**1.10**	**44.1**	

Region of Peel Linear Wastewater Standards (March 29, 2023)

CROZIER
CONSULTING ENGINEERS

PROJECT: Centre Plaza
PROJECT No.: 1419-6615
FILE: SAN Sewer Design Sheet
DATE: 12-Mar-2024
Design: GS
Checked: RB

PVC MANNINGS "n" (> 450mm dia.): 0.011
CONCRETE MANNINGS "n" (> 450mm dia.): 0.013

Drainage Area ID	Drainage Description	FR MH NO	TO MH NO	AREA ha	CUMULATIVE AREA ha	RESIDENTIAL POPULATION 290 L/cap/day	NON-RESIDENTIAL POPULATION 270 L/cap/day	PEAKING FACTOR	AVERAGE DRY WEATHER FLOW L/s	PEAK FLOW L/s	CUMMULATIVE PEAK FLOW L/s	CUMMULATIVE INFILTRATION L/s	DESIGN Q L/s	PIPE TYPE -	PIPE SLOPE %	PIPE DIA. mm	PIPE LENGTH m	FULL FLOW AREA m^2	WETTED PERIMETER m	HDRAULIC RADIUS m	FULL FLOW VEL. m/sec	Q/A m/sec	Hv m	TIME OF FLOW min	FULL FLOW CAPACITY L/s	PERCENTAGE FULL %
										STREET B																
UC1	Park			0.10	0.1	0	0	4.00	0.00	0.00	0.00	0.03	**0.03**													
203C	Buildings 3C/D			0.65	0.65	739	0	3.88	2.48	9.63	9.63	0.17	**9.80**													
R2	Street B	MH8A	MH1A	0.14	0.89	0	0	4.00	0.00	0.00	9.63	0.23	**9.86**	PVC	1.0	200	60.8	0.03	0.63	0.05	1.23	0.31	0.01	0.82	**38.8**	25
C203B	Building 3B			0.41	0.41	538	0	3.96	1.81	7.15	7.15	0.11	**7.25**													
R3	Street B	MH1A	MH2A	0.11	1.41	0	0	4.00	0.00	0.00	16.77	0.37	**17.14**	PVC	1.0	200	60.1	0.03	0.63	0.05	1.23	0.55	0.02	0.81	**38.8**	44
R4	Street B	MH2A	MH3A	0.10	1.51	0	0	4.00	0.00	0.00	16.77	0.39	**17.17**	PVC	1.0	200	60.1	0.03	0.63	0.05	1.23	0.55	0.02	0.81	**38.8**	44
										STREET C																
202B	Building 2B			0.27	0.27	0	2	4.00	0.01	0.03	0.03	0.07	**0.10**													
R5	Street C	MH9A	MH3A	0.16	0.43	0	0	4.00	0.00	0.00	0.03	0.11	**0.14**	PVC	1.0	200	63.0	0.03	0.63	0.05	1.23	0.00	0.00	0.85	**38.8**	0
C203A	Building 3A			0.44	0.44	538	0	3.96	1.81	7.15	7.15	0.11	**7.26**													
R6	Street C	MH3A	MH4A	0.14	2.52	0	0	4.00	0.00	0.00	23.94	0.66	**24.60**	PVC	1.0	250	50.9	0.05	0.79	0.06	1.43	0.50	0.01	0.59	**70.3**	35
-	Street C	MH4A	MH5A	0.03	2.55	0	0	4.00	0.00	0.00	23.94	0.66	**24.61**	PVC	1.0	250	8.4	0.05	0.79	0.06	1.43	0.50	0.01	0.10	**70.3**	35
-	Street C	MH5A	MH6A	0.05	2.60	0	0	4.00	0.00	0.00	23.94	0.68	**24.62**	PVC	1.0	250	8.4	0.05	0.79	0.06	1.43	0.50	0.01	0.10	**70.3**	35
C202A	Building 2A			0.29	0.29	563	3	3.95	1.90	7.49	7.49	0.08	**7.57**													
R7	Street C	MH6A	MH7A	0.15	3.04	0	0	4.00	0.00	0.00	31.44	0.79	**32.23**	PVC	1.0	250	44.6	0.05	0.79	0.06	1.43	0.66	0.02	0.52	**70.3**	46
										EXISTING DOWNSTREAM																
-	Crumbie Street	SAN MH7A	Ex (MH8)								Note: SUE identified 250mm dia sewer		**32.23**	PVC	0.86	250	42	0.05	0.79	0.06	1.33	0.66	0.02	0.53	**65.2**	49
	Crumbie Street	Ex (MH8)	Ex (MH1)								Note: SUE identified 250mm dia sewer		**32.23**	PVC	1.0	250	20	0.05	0.79	0.06	1.43	0.66	0.02	0.23	**70.3**	46
-	Broadway Street	Ex (MH1)	-										**32.23**	PVC	0.47	250		0.05	0.79	0.06	0.98	0.66	0.02	0.00	**48.2**	67

Notes: 1. Design criteria is based on Region of Peel Linear Wastewater Standards (2023).
2. Site statistics are based on Master Plan Study prepared by SRM Architects on June 09, 2023.

APPENDIX D

Stormwater Management Calculations

SERVICE DATA					
SERVICE	DATE	INIT.	SERVICE	DATE	INIT.
SAN. SEWERS			GAS MAINS		
STM. SEWERS			BELL U/G CABLE		
WATERMAINS			HYDRO U/G CABLE		
M.O.E.			ROGERS U/G CABLE		

REVISIONS		
DATE	DETAILS	INIT.

ONTARIO COURT
WILLIAM STREET
ONTARIO ST WEST
ONTARIO ST E
CAROLINE ST
CHURCH STREET
KERR ST
WATER STREET
MAIDEN LANE
QUEEN STREET SOUTH
CRUMBIE ST
TANNERY STREET
Canadian National Railway
CONCESSION 5 WHS
LOT 4

EXISTING 375 DIA. STORM SEWER

EXTERNAL LANDS
AREA = 4.76 ha

QUEEN ST SITE
AREA = 4.24 ha

8.99
0.75
Tc = 22.14

1.09
0.75

0.58
0.75

0.91
0.75

3.15
0.75

0.17
0.75

0.25
0.75

PROPOSED 69.5m. -1200 DIA. @ 0.60%
PROPOSED 70.5m. -1050 DIA. @ 0.50%
PROPOSED 70.5m. -525 DIA. @ 7.00%
PROPOSED 65.0m. -375 DIA. @ 2.00%
PROPOSED 45.0m. -1050 DIA. @ 0.50%
PROPOSED 10.0m. -1200 DIA. @ 0.00%
PROPOSED 11.0m. -1050 DIA. @ 0.50%
PROPOSED 12.0m. -1050 DIA. @ 0.50%
FUTURE STORM SEWER (BY OTHERS)
EXISTING 1.8m. - 1750 DIA. STORM SEWER
EXISTING 300 SAN
EXISTING 250 SAN
STUB
OUTLET
MH-1A
MH-1B
MH-1C
MH-1D
MH-1E
MH-1F
MH-1G
MH-1H

DESIGN BY		APPROVED BY
BORIS LENCE C.E.T.		LICENSED PROFESSIONAL ENGINEER Z. SUBIC 90519372 PROVINCE OF ONTARIO
DEPARTMENTAL APPROVAL		
SILVIO CESARIO P.ENG.		

MISSISSAUGA
Leading today for tomorrow
PRODUCED FOR - T&W, ENGINEERING AND WORKS

TANNERY STREET
STORM SEWER DESIGN

SCALE N.T.S.	AREA Z-38W	PROJECT No.
C.A.D.D. BY S.R.	CHECKED BY B.L.	PLAN No.
DATE: OCTOBER, 2012	SHEET 1 OF 1	

CITY OF MISSISSAUGA

STORM DRAINAGE DESIGN CHART
FOR CIRCULAR DRAINS FLOWING FULL

SUBDIVISION: TANNERY STREET
CONSULTANT:
MAJOR DRAINAGE AREA: Z-39E

SHEET No.
PROJECT No.
DESIGNED BY: BORIS LENCE C.E.T.

DATE: October, 2012

LINE #	LOCATION	MH	MH	DRAINAGE AREA	RUNOFF COEFF	IMP AREA	ACCUMM DRAINAGE AREA	ACCUMM IMP AREA	TIME OF FLOW	TIME OF ENTRY	TIME OF CONC.	RAINFALL INTENSITY	EXP FLOW	TYPE OF PIPE	MANNINGS COEFF	SLOPE	DIAMETER	LENGTH	VELOCITY	CAPACITY	UPSTREAM INVERT	DOWNSTREAM INVERT	TIME IN SECTION
	PROPOSED DESIGN	#	#	A	C	A*C	@SUM(A)	@SUM(A*C)	Tcf	Tci	Tc=Tcf+Tci	I	Q=IAC/360		n	S	D	L	V	Q			t=L/V*60
	(Design Based On Tannery Reconstruction)			(ha)			(ha)		(min)	(min)	(min)	(mm/hr)	(m3/sec)			(%)	(mm)	(m)	(m/sec)	(m3/sec)	(m)	(m)	(min)
1																							
2	Tannery Street @ Queen Street	-	1						*15.00*	-	*15.00*												
3	Tannery Street- East Of Crumbie Street	1	2	0.91	0.75	0.68	0.91	0.68	-	15.00	15.00	99	0.19	conc.	0.013	2.00	375	65.00	2.27	0.26	159.050	157.750	0.48
4	Tannery Street- East Of Crumbie Street	2	3	0.58	0.75	0.44	1.49	1.12	0.48	15.00	15.48	97	0.30	conc.	0.013	1.00	525	70.00	2.01	0.45	157.600	156.900	0.58
5																							
6	Lands N. Of Crumbie St./ E. of CN Rail	-	4	8.99	0.75	6.74	8.99	6.74	(Tc=22.14 - MH #310 to MH #313/403)				1.46										
7	Crumbie Street	4	3	0.17	0.75	0.13	9.16	6.87	0.38	22.14	22.52	77	1.47	conc.	0.013	0.50	975	57.00	2.15	1.65	155.737	155.452	0.44
8																							
9	Tannery Street- East Of Crumbie Street	3	5	1.09	0.75	0.82	11.74	8.81	0.44	22.52	22.96	76	1.86	conc.	0.013	0.50	1050	70.50	2.25	2.01	155.452	155.100	0.52
10	Tannery Street- East Of Crumbie Street	5	6	0.00	0.75	0.00	11.74	8.81	0.52	22.96	23.48	75	1.83	conc.	0.013	0.50	1050	6.72	2.25	2.01	155.099	155.065	0.05
11	Tannery Street- East Of Crumbie Street	6	7	0.00	0.75	0.00	11.74	8.81	0.05	23.48	23.53	75	1.83	conc.	0.013	0.50	1050	28.50	2.25	2.01	155.065	154.923	0.21
12																							
13		-	STUB	3.15	0.75	2.36	3.15	2.36	(Tc= 341 - 50 / 120 =2.43)														
14	Lands N. Of Crumbie St./ W. of CN Rail	STUB	7	0.00	0.75	0.00	3.15	2.36	2.43	15.00	17.43	91	0.59	conc.	0.013	0.50	675	16.00	1.68	0.62	155.007	154.927	0.16
15																							
16	Tannery Street- East Of Mullet Creek	7	8	0.25	0.75	0.19	15.14	11.36	0.21	23.53	23.74	74	2.35	conc.	0.013	0.50	1200	58.50	2.46	2.88	154.722	154.430	0.40
17	Tannery Street - East of Mullet Creek	8	OUTLET	0.00	0.75	0.00	15.14	11.36	0.40	23.74	24.14	74	2.32	conc.	0.013	0.50	1200	10.00	2.46	2.88	153.610	153.560	0.07
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CROZIER CONSULTING ENGINEERS

Project:	Centre Plaza	**Date:**	07-Jun-2023
Project No.:	1419-6615	**Revised:**	27-Feb-2024
		Designed By:	GS
		Checked By:	RB

STORMWATER CALCULATIONS - SUMMARY

Storm Data: City of Mississauga Development Requirements Manual, January 2020

Return Period	A	B	C	$I_{(Tc = 22.14 min)}$ (mm/hr)	$I_{(Tc = 18.06 min)}$ (mm/hr)	$I_{(Tc = 15 min)}$ (mm/hr)
2 yr	610	4.6	0.78	47.00	53.48	59.89
5 yr	820	4.6	0.78	63.19	71.90	80.51
10 yr	1010	4.6	0.78	77.83	88.56	99.17
25 yr	1160	4.6	0.78	89.39	101.71	113.89
50 yr	1300	4.7	0.78	99.88	113.59	127.13
100 yr	1450	4.9	0.78	110.77	125.84	140.69

Pre-Development Conditions

Land Use	Area (ha)	Area (m^2)	C	Weighted Average C
Tannery Street Catchment Area	8.99	89900	**0.75**	**0.75**
Total Site	**8.99**	**89900**	**0.75**	**0.75**

**Refer to Tannery Street Storm Sewer Design for Area Z-38W (City of Mississauga, October 2012).*

Post-Development Conditions

Land Use	Area (ha)	Area (m^2)	C	Weighted Average C	Tc
EXT1A, EXT1B, EXT1C, EXT1D	4.38	43800	0.75	0.75	22.14
Queen Street External	**4.38**	**43800**	**0.75**	**0.75**	**22.14**
EXT2	0.06	600	0.75	0.12	18.06
EXT3	0.32	3200	0.75	0.63	18.06
North West External	**0.38**	**3800**	**-**	**0.75**	**18.06**
Site ROW	1.06	10600	0.75	0.19	18.06
Site Private	3.08	30775	0.75	0.54	18.06
Site Park	0.10	1000	0.50	0.01	18.06
Total Site	**4.24**	**42375**		**0.74**	**18.06**

Equations:

Peak Flow
$Q_{post} = 0.00278 \cdot C_{post} \cdot i(T_d) \cdot A$

Intensity
$i(T_d) = A / (T + B)^C$

Allowable Crumbie Sewer Design Flow Summary

Return Perio	Total (L/s)	External Area Only (L/s)	Site Area Only (L/s)
2 yr	881.1	466.5	415.3
5 yr	1184.4	627.1	558.3
10 yr	**1458.8**	**772.4**	**687.6**
25 yr	1675.5	887.1	789.7
50 yr	1872.2	991.3	882.5
100 yr	2076.2	1099.3	978.6

Refer to City of Mississauga Storm Drainge Design Chart for Tannery Street, October 2012

Private Block/Building Stormwater Target Release Rates

Land Use	Area (ha)	C	STM Target Release Rate (L/s)	Storage Required (m3)	Foundation Drainage Allowance (L/s)
Building 1A (C201A)	0.444	0.75	8.5	219.4	1.4
Building 1B (C201B)	0.294	0.75	4.0	161.5	1.0
Building 2A (C202A)	0.290	0.75	46.1	54.2	0.9
Building 2B (C202B)	0.270	0.75	42.9	50.5	0.9
Building 3A (C203A)	0.440	0.75	70.0	82.2	1.4
Building 3B (C203B)	0.410	0.75	65.2	76.6	1.3
Building 3C/D (C203C)	0.650	0.75	103.4	121.5	2.1
Building 4 (C204)	0.280	0.75	44.5	52.3	0.9

Post Development Peak Flows Summary						Crumbie
Return Period	External Q (L/s)	Site ROW Q (L/s)	Site Private Q (L/s)	Site Park Q (L/s)	Total Q (L/s)	Allowable Q (L/s)
2 yr	466.5	132.4	**238.3**	8.3	845.5	881.1
5 yr	627.1	158.9	**320.4**	11.2	1117.6	1184.4
10 yr	772.4	195.7	**394.6**	13.8	**1376.5**	**1458.8**
25 yr	887.1	224.8	**394.6**	15.8	1522.3	1675.5
50 yr	991.3	251.1	**394.6**	17.7	1654.6	1872.2
100 yr	1099.3	278.1	**394.6**	19.6	1791.6	2076.2

CROZIER CONSULTING ENGINEERS

Project:	Centre Plaza	**Date:**	07-Jun-2023
Project No.:	1419-6615	**Revised:**	27-Feb-2024
		Designed By:	GS
		Checked By:	RB

PRIVATE BLOCK TARGET STORMWATER RELEASE RATES

BUILDING	AREA (ha)	Foundation Drainage Allowance (L/s)	STM Discharge Allowance (L/s)	Building Discharge Allowance (L/s)	Total BLOCK Foundation Allowance (L/s)	Total BLOCK Allowance (L/s)
1A	0.44	1.44	8.5	9.9	2.40	14.9
1B	0.29	0.96	4.0	5.0		
2A	0.29	0.94	46.1	47.1	1.82	90.9
2B	0.27	0.88	42.9	43.8		
3A	0.44	1.43	70.0	71.4	4.87	243.4
3B	0.41	1.33	65.2	66.5		
3CD	0.65	2.11	103.4	105.5		
4	0.28	0.91	44.5	45.4	0.91	45.4
Total	**3.08**	**10.00**	**384.6**	**394.6**	**10.00**	**394.6**

TOTAL SITE AREA:	3.08	ha	
TOTAL SITE MAX GROUNDWATER ALLOWANCE :	10	L/s	
GROUNDWATER RELEASE RATE ALLOWANCE:	3.25	L/s/ha	
TOTAL 10 YR SITE RELEASE RATE:	499.4	L/s	=2.78 * 0.75 * 77.83 * 3.08
10yr Release Rate less GW:	489.4	L/s	
Block Release Rate per HA:	159.0	L/s/ha	*except Block 1A & 1B, allowable per predeve below
Block 1A - Allowable Based on Predev			
- Predev A (UNC1) =	0.04	ha	
- Predev C (UNC1) =	0.90		
- 10yr Q =	9.9	L/s	=2.78 * 0.90 * 99.17 * 0.04
Block 1B - Allowable Based on Predev			
- Predev A (UNC2) =	0.02	ha	
- Predev C (UNC2) =	0.90		
- 10yr Q =	5.0	L/s	=2.78 * 0.90 * 99.17 * 0.02

CROZIER CONSULTING ENGINEERS

Project: Centre Plaza
Project No.: 1419-6615
Date: 07-Jun-2023
Revised: 27-Feb-2024
Designed By: GS
Checked By: RB

MODIFIED RATIONAL METHOD CALCULATIONS - 10 YEAR STORM EVENT

Intensity Adjustment: 1.0

Rainfall Intensity Equation:

$$I = \frac{A}{(T+b)^C}$$

City of Mississauga IDF (10-Year)	
a=	1010
b=	4.6
c=	0.78

	BUILDING 1A	BUILDING 1B	BUILDING 2A	BUILDING 2B	BUILDING 3A	BUILDING 3B	BUILDING 3C/D	BUILDING 4	TOTAL CONTROLLED AREA
	Drainage Area ID = C201A Drainage Area = 0.44 ha Runoff Coefficient = 0.75	Drainage Area ID = C201B Drainage Area = 0.29 ha Runoff Coefficient = 0.75	Drainage Area ID = C202A Drainage Area = 0.29 ha Runoff Coefficient = 0.75	Drainage Area ID = C202B Drainage Area = 0.27 ha Runoff Coefficient = 0.75	Drainage Area ID = C203A Drainage Area = 0.44 ha Runoff Coefficient = 0.75	Drainage Area ID = C203B Drainage Area = 0.41 ha Runoff Coefficient = 0.75	Drainage Area ID = C203C Drainage Area = 0.65 ha Runoff Coefficient = 0.75	Drainage Area ID = C204 Drainage Area = 0.28 ha Runoff Coefficient = 0.75	Drainage Area ID = TOTAL Drainage Area = 3.08 ha Runoff Coefficient = 0.75
	Allowable Release Rate = 8.5 L/s	**Allowable Release Rate = 4.0 L/s**	**Allowable Release Rate = 46.1 L/s**	**Allowable Release Rate = 42.9 L/s**	**Allowable Release Rate = 70.0 L/s**	**Allowable Release Rate = 65.2 L/s**	**Allowable Release Rate = 103.4 L/s**	**Allowable Release Rate = 44.5 L/s**	**Allowable Release Rate = 384.6 L/s**
	Max. Storage Volume Required = 100.3 m3	Max. Storage Volume Required = 74.6 m3	Max. Storage Volume Required = 17.6 m3	Max. Storage Volume Required = 16.4 m3	Max. Storage Volume Required = 26.7 m3	Max. Storage Volume Required = 24.9 m3	Max. Storage Volume Required = 39.4 m3	Max. Storage Volume Required = 17.0 m3	Max. Storage Volume Required = 252.6 m3

Time	Rainfall Intensity	Q_{Runoff}	$Q_{Release}$	Storage Volume Required	Q_{Runoff}	$Q_{Release}$	Storage Volume Required	Q_{Runoff}	$Q_{Release}$	Storage Volume Required	Q_{Runoff}	$Q_{Release}$	Storage Volume Required	Q_{Runoff}	$Q_{Release}$	Storage Volume Required	Q_{Runoff}	$Q_{Release}$	Storage Volume Required	Q_{Runoff}	$Q_{Release}$	Storage Volume Required	Q_{Runoff}	$Q_{Release}$	Storage Volume Required	Q_{Runoff}	$Q_{Release}$	Storage Volume Required
(minutes)	(mm/hr)	(L/s)	(L/s)	(m^3)	(L/s)	(L/s)	(m^3)	(L/s)	(L/s)	(m^3)	(L/s)	(L/s)	(m^3)	(L/s)	(L/s)	(m^3)	(L/s)	(L/s)	(m^3)	(L/s)	(L/s)	(m^3)	(L/s)	(L/s)	(m^3)	(L/s)	(L/s)	(m^3)
5	173.0	160.2	8.5	45.5	105.9	4.0	30.6	104.6	46.1	17.6	97.4	42.9	16.3	158.7	70.0	26.6	147.9	65.2	24.8	234.5	103.4	39.3	101.0	44.5	16.9			
10	124.8	115.5	8.5	64.2	76.4	4.0	43.4	75.4	46.1	17.6	70.2	42.9	16.4	114.5	70.0	26.7	106.7	65.2	24.9	169.1	103.4	39.4	72.8	44.5	17.0			
15	99.2	91.8	8.5	75.0	60.7	4.0	51.0	60.0	46.1	12.5	55.8	42.9	11.6	91.0	70.0	18.9	84.8	65.2	17.6	134.4	103.4	27.9	57.9	44.5	12.0			
20	83.1	76.9	8.5	82.1	50.8	4.0	56.2	50.2	46.1	4.9	46.8	42.9	4.6	76.2	70.0	7.5	71.0	65.2	7.0	112.6	103.4	11.0	48.5	44.5	4.8			
25	71.9	66.6	8.5	87.1	44.0	4.0	60.0	43.5	43.5	0.0	40.5	40.5	0.0	66.0	66.0	0.0	61.5	61.5	0.0	97.4	97.4	0.0	42.0	42.0	0.0			
30	63.7	58.9	8.5	90.8	39.0	4.0	62.9	38.5	38.5	0.0	35.8	35.8	0.0	58.4	58.4	0.0	54.4	54.4	0.0	86.3	86.3	0.0	37.2	37.2	0.0			
45	48.1	44.5	8.5	97.2	29.4	4.0	68.6	29.1	29.1	0.0	27.1	27.1	0.0	44.1	44.1	0.0	41.1	41.1	0.0	65.1	65.1	0.0	28.1	28.1	0.0			
60	39.1	36.2	8.5	99.8	23.9	4.0	71.7	23.7	23.7	0.0	22.0	22.0	0.0	35.9	35.9	0.0	33.4	33.4	0.0	53.0	53.0	0.0	22.8	22.8	0.0			
75	33.2	30.8	8.5	100.3	20.3	4.0	73.5	20.1	20.1	0.0	18.7	18.7	0.0	30.5	30.5	0.0	28.4	28.4	0.0	45.0	45.0	0.0	19.4	19.4	0.0			
90	29.0	26.9	8.5	99.4	17.8	4.0	74.4	17.6	17.6	0.0	16.4	16.4	0.0	26.6	26.6	0.0	24.8	24.8	0.0	39.4	39.4	0.0	17.0	17.0	0.0			
105	25.9	24.0	8.5	97.6	15.8	4.0	74.6	15.7	15.7	0.0	14.6	14.6	0.0	23.8	23.8	0.0	22.1	22.1	0.0	35.1	35.1	0.0	15.1	15.1	0.0			
120	23.4	21.7	8.5	95.1	14.3	4.0	74.4	14.2	14.2	0.0	13.2	13.2	0.0	21.5	21.5	0.0	20.0	20.0	0.0	31.8	31.8	0.0	13.7	13.7	0.0			
135	21.4	19.9	8.5	92.1	13.1	4.0	73.8	13.0	13.0	0.0	12.1	12.1	0.0	19.7	19.7	0.0	18.3	18.3	0.0	29.1	29.1	0.0	12.5	12.5	0.0			
150	19.8	18.3	8.5	88.7	12.1	4.0	73.0	12.0	12.0	0.0	11.1	11.1	0.0	18.2	18.2	0.0	16.9	16.9	0.0	26.8	26.8	0.0	11.6	11.6	0.0			
165	18.4	17.1	8.5	84.9	11.3	4.0	71.9	11.1	11.1	0.0	10.4	10.4	0.0	16.9	16.9	0.0	15.7	15.7	0.0	25.0	25.0	0.0	10.8	10.8	0.0			
180	17.2	16.0	8.5	80.8	10.6	4.0	70.7	10.4	10.4	0.0	9.7	9.7	0.0	15.8	15.8	0.0	14.7	14.7	0.0	23.4	23.4	0.0	10.1	10.1	0.0			
195	16.2	15.0	8.5	76.5	9.9	4.0	69.3	9.8	9.8	0.0	9.1	9.1	0.0	14.9	14.9	0.0	13.9	13.9	0.0	22.0	22.0	0.0	9.5	9.5	0.0			
210	15.3	14.2	8.5	72.0	9.4	4.0	67.7	9.3	9.3	0.0	8.6	8.6	0.0	14.1	14.1	0.0	13.1	13.1	0.0	20.8	20.8	0.0	9.0	9.0	0.0			
225	14.5	13.5	8.5	67.3	8.9	4.0	66.1	8.8	8.8	0.0	8.2	8.2	0.0	13.3	13.3	0.0	12.4	12.4	0.0	19.7	19.7	0.0	8.5	8.5	0.0			
240	13.8	12.8	8.5	62.4	8.5	4.0	64.3	8.4	8.4	0.0	7.8	7.8	0.0	12.7	12.7	0.0	11.8	11.8	0.0	18.8	18.8	0.0	8.1	8.1	0.0			
255	13.2	12.2	8.5	57.4	8.1	4.0	62.4	8.0	8.0	0.0	7.4	7.4	0.0	12.1	12.1	0.0	11.3	11.3	0.0	17.9	17.9	0.0	7.7	7.7	0.0			
270	12.7	11.7	8.5	52.3	7.7	4.0	60.5	7.6	7.6	0.0	7.1	7.1	0.0	11.6	11.6	0.0	10.8	10.8	0.0	17.1	17.1	0.0	7.4	7.4	0.0			
285	12.1	11.2	8.5	47.1	7.4	4.0	58.5	7.3	7.3	0.0	6.8	6.8	0.0	11.1	11.1	0.0	10.4	10.4	0.0	16.4	16.4	0.0	7.1	7.1	0.0			
300	11.7	10.8	8.5	41.8	7.1	4.0	56.4	7.1	7.1	0.0	6.6	6.6	0.0	10.7	10.7	0.0	10.0	10.0	0.0	15.8	15.8	0.0	6.8	6.8	0.0			
315	11.2	10.4	8.5	36.3	6.9	4.0	54.3	6.8	6.8	0.0	6.3	6.3	0.0	10.3	10.3	0.0	9.6	9.6	0.0	15.2	15.2	0.0	6.6	6.6	0.0			
330	10.8	10.0	8.5	30.8	6.6	4.0	52.0	6.6	6.6	0.0	6.1	6.1	0.0	9.9	9.9	0.0	9.3	9.3	0.0	14.7	14.7	0.0	6.3	6.3	0.0			
345	10.5	9.7	8.5	25.2	6.4	4.0	49.8	6.3	6.3	0.0	5.9	5.9	0.0	9.6	9.6	0.0	9.0	9.0	0.0	14.2	14.2	0.0	6.1	6.1	0.0			
360	10.1	9.4	8.5	19.6	6.2	4.0	47.5	6.1	6.1	0.0	5.7	5.7	0.0	9.3	9.3	0.0	8.7	8.7	0.0	13.7	13.7	0.0	5.9	5.9	0.0			
375	9.8	9.1	8.5	13.8	6.0	4.0	45.2	5.9	5.9	0.0	5.5	5.5	0.0	9.0	9.0	0.0	8.4	8.4	0.0	13.3	13.3	0.0	5.7	5.7	0.0			
390	9.5	8.8	8.5	8.1	5.8	4.0	42.8	5.8	5.8	0.0	5.4	5.4	0.0	8.7	8.7	0.0	8.2	8.2	0.0	12.9	12.9	0.0	5.6	5.6	0.0			
405	9.3	8.6	8.5	2.2	5.7	4.0	40.3	5.6	5.6	0.0	5.2	5.2	0.0	8.5	8.5	0.0	7.9	7.9	0.0	12.6	12.6	0.0	5.4	5.4	0.0			
420	9.0	8.3	8.3	0.0	5.5	4.0	37.9	5.4	5.4	0.0	5.1	5.1	0.0	8.3	8.3	0.0	7.7	7.7	0.0	12.2	12.2	0.0	5.3	5.3	0.0			
435	8.8	8.1	8.1	0.0	5.4	4.0	35.4	5.3	5.3	0.0	4.9	4.9	0.0	8.0	8.0	0.0	7.5	7.5	0.0	11.9	11.9	0.0	5.1	5.1	0.0			

CROZIER CONSULTING ENGINEERS

Project:	Centre Plaza	**Date:**	07-Jun-2023
Project No.:	1419-6615	**Revised:**	27-Feb-2024
		Designed By:	GS
		Checked By:	RB

MODIFIED RATIONAL METHOD CALCULATIONS - 100 YEAR STORM EVENT

Intensity Adjustment: 1.25

Rainfall Intensity Equation:

$$I = \frac{A}{(T+b)^C}$$

City of Mississauga IDF (100-Year)	
a=	1450
b=	4.9
c=	0.78

	BUILDING 1A	BUILDING 1B	BUILDING 2A	BUILDING 2B	BUILDING 3A	BUILDING 3B	BUILDING 3C/D	BUILDING 4	TOTAL CONTROLLED AREA
	Drainage Area ID = C201A Drainage Area = 0.44 ha Runoff Coefficient = 0.75	Drainage Area ID = C201B Drainage Area = 0.29 ha Runoff Coefficient = 0.75	Drainage Area ID = C202A Drainage Area = 0.29 ha Runoff Coefficient = 0.75	Drainage Area ID = C202B Drainage Area = 0.27 ha Runoff Coefficient = 0.75	Drainage Area ID = C203A Drainage Area = 0.44 ha Runoff Coefficient = 0.75	Drainage Area ID = C203B Drainage Area = 0.41 ha Runoff Coefficient = 0.75	Drainage Area ID = C203C Drainage Area = 0.65 ha Runoff Coefficient = 0.75	Drainage Area ID = C204 Drainage Area = 0.28 ha Runoff Coefficient = 0.75	Drainage Area ID = TOTAL Drainage Area = 3.08 ha Runoff Coefficient = 0.75
	Allowable Release Rate = 8.5 L/s	**Allowable Release Rate = 4.0 L/s**	**Allowable Release Rate = 46.1 L/s**	**Allowable Release Rate = 42.9 L/s**	**Allowable Release Rate = 70.0 L/s**	**Allowable Release Rate = 65.2 L/s**	**Allowable Release Rate = 103.4 L/s**	**Allowable Release Rate = 44.5 L/s**	**Allowable Release Rate = 384.6 L/s**
	Max. Storage Volume Required = 219.4 m3	Max. Storage Volume Required = 161.5 m3	Max. Storage Volume Required = 54.2 m3	Max. Storage Volume Required = 50.5 m3	Max. Storage Volume Required = 82.2 m3	Max. Storage Volume Required = 76.6 m3	Max. Storage Volume Required = 121.5 m3	Max. Storage Volume Required = 52.3 m3	Max. Storage Volume Required = 620.0 m3

Time	Rainfall Intensity	BUILDING 1A			BUILDING 1B			BUILDING 2A			BUILDING 2B			BUILDING 3A			BUILDING 3B			BUILDING 3C/D			BUILDING 4			TOTAL CONTROLLED AREA		
		Q_{Runoff}	$Q_{Release}$	Storage Volume Required	Q_{Runoff}	$Q_{Release}$	Storage Volume Required	Q_{Runoff}	$Q_{Release}$	Storage Volume Required	Q_{Runoff}	$Q_{Release}$	Storage Volume Required	Q_{Runoff}	$Q_{Release}$	Storage Volume Required	Q_{Runoff}	$Q_{Release}$	Storage Volume Required	Q_{Runoff}	$Q_{Release}$	Storage Volume Required	Q_{Runoff}	$Q_{Release}$	Storage Volume Required	Q_{Runoff}	$Q_{Release}$	Storage Volume Required
(minutes)	(mm/hr)	(L/s)	(L/s)	(m^3)	(L/s)	(L/s)	(m^3)	(L/s)	(L/s)	(m^3)	(L/s)	(L/s)	(m^3)	(L/s)	(L/s)	(m^3)	(L/s)	(L/s)	(m^3)	(L/s)	(L/s)	(m^3)	(L/s)	(L/s)	(m^3)	(L/s)	(L/s)	(m^3)
5	303.2	280.7	8.5	81.7	185.5	4.0	54.5	183.3	46.1	41.2	170.7	42.9	38.3	278.1	70.0	62.4	259.2	65.2	58.2	410.9	103.4	92.3	177.0	44.5	39.7			
10	220.4	204.0	8.5	117.3	134.9	4.0	78.5	133.3	46.1	52.3	124.1	42.9	48.7	202.2	70.0	79.3	188.4	65.2	73.9	298.7	103.4	117.2	128.7	44.5	50.5			
15	175.9	162.8	8.5	138.9	107.6	4.0	93.3	106.3	46.1	54.2	99.0	42.9	50.5	161.3	70.0	82.2	150.3	65.2	76.6	238.3	103.4	121.5	102.7	44.5	52.3			
20	147.7	136.7	8.5	153.8	90.4	4.0	103.6	89.3	46.1	51.8	83.1	42.9	48.2	135.5	70.0	78.6	126.2	65.2	73.2	200.1	103.4	116.1	86.2	44.5	50.0			
25	128.0	118.5	8.5	165.0	78.3	4.0	111.5	77.4	46.1	46.9	72.1	42.9	43.7	117.4	70.0	71.2	109.4	65.2	66.3	173.5	103.4	105.2	74.7	44.5	45.3			
30	113.5	105.0	8.5	173.8	69.4	4.0	117.8	68.6	46.1	40.5	63.9	42.9	37.7	104.1	70.0	61.4	97.0	65.2	57.2	153.8	103.4	90.7	66.2	44.5	39.1			
45	85.9	79.5	8.5	191.7	52.5	4.0	131.0	51.9	46.1	15.6	48.3	42.9	14.6	78.8	70.0	23.7	73.4	65.2	22.1	116.4	103.4	35.1	50.1	44.5	15.1			
60	69.9	64.7	8.5	202.6	42.8	4.0	139.7	42.3	42.3	0.0	39.4	39.4	0.0	64.2	64.2	0.0	59.8	59.8	0.0	94.8	94.8	0.0	40.8	40.8	0.0			
75	59.5	55.1	8.5	209.6	36.4	4.0	145.7	36.0	36.0	0.0	33.5	33.5	0.0	54.6	54.6	0.0	50.8	50.8	0.0	80.6	80.6	0.0	34.7	34.7	0.0			
90	52.0	48.1	8.5	214.1	31.8	4.0	150.2	31.4	31.4	0.0	29.3	29.3	0.0	47.7	47.7	0.0	44.5	44.5	0.0	70.5	70.5	0.0	30.4	30.4	0.0			
105	46.4	42.9	8.5	217.0	28.4	4.0	153.5	28.0	28.0	0.0	26.1	26.1	0.0	42.5	42.5	0.0	39.6	39.6	0.0	62.9	62.9	0.0	27.1	27.1	0.0			
120	42.0	38.9	8.5	218.7	25.7	4.0	156.1	25.4	25.4	0.0	23.6	23.6	0.0	38.5	38.5	0.0	35.9	35.9	0.0	56.9	56.9	0.0	24.5	24.5	0.0			
135	38.4	35.6	8.5	219.4	23.5	4.0	158.0	23.2	23.2	0.0	21.6	21.6	0.0	35.2	35.2	0.0	32.8	32.8	0.0	52.1	52.1	0.0	22.4	22.4	0.0			
150	35.5	32.8	8.5	219.3	21.7	4.0	159.4	21.5	21.5	0.0	20.0	20.0	0.0	32.6	32.6	0.0	30.3	30.3	0.0	48.1	48.1	0.0	20.7	20.7	0.0			
165	33.0	30.6	8.5	218.6	20.2	4.0	160.3	20.0	20.0	0.0	18.6	18.6	0.0	30.3	30.3	0.0	28.2	28.2	0.0	44.7	44.7	0.0	19.3	19.3	0.0			
180	30.9	28.6	8.5	217.4	18.9	4.0	161.0	18.7	18.7	0.0	17.4	17.4	0.0	28.4	28.4	0.0	26.4	26.4	0.0	41.9	41.9	0.0	18.0	18.0	0.0			
195	29.1	26.9	8.5	215.8	17.8	4.0	161.3	17.6	17.6	0.0	16.4	16.4	0.0	26.7	26.7	0.0	24.9	24.9	0.0	39.4	39.4	0.0	17.0	17.0	0.0			
210	27.5	25.4	8.5	213.7	16.8	4.0	161.5	16.6	16.6	0.0	15.5	15.5	0.0	25.2	25.2	0.0	23.5	23.5	0.0	37.3	37.3	0.0	16.0	16.0	0.0			
225	26.1	24.1	8.5	211.4	16.0	4.0	161.3	15.8	15.8	0.0	14.7	14.7	0.0	23.9	23.9	0.0	22.3	22.3	0.0	35.3	35.3	0.0	15.2	15.2	0.0			
240	24.8	23.0	8.5	208.8	15.2	4.0	161.0	15.0	15.0	0.0	14.0	14.0	0.0	22.8	22.8	0.0	21.2	21.2	0.0	33.6	33.6	0.0	14.5	14.5	0.0			
255	23.7	21.9	8.5	205.9	14.5	4.0	160.6	14.3	14.3	0.0	13.3	13.3	0.0	21.7	21.7	0.0	20.3	20.3	0.0	32.1	32.1	0.0	13.8	13.8	0.0			
270	22.7	21.0	8.5	202.8	13.9	4.0	160.0	13.7	13.7	0.0	12.8	12.8	0.0	20.8	20.8	0.0	19.4	19.4	0.0	30.7	30.7	0.0	13.2	13.2	0.0			
285	21.8	20.1	8.5	199.5	13.3	4.0	159.2	13.2	13.2	0.0	12.3	12.3	0.0	20.0	20.0	0.0	18.6	18.6	0.0	29.5	29.5	0.0	12.7	12.7	0.0			
300	20.9	19.4	8.5	196.0	12.8	4.0	158.3	12.7	12.7	0.0	11.8	11.8	0.0	19.2	19.2	0.0	17.9	17.9	0.0	28.4	28.4	0.0	12.2	12.2	0.0			
315	20.2	18.7	8.5	192.3	12.3	4.0	157.4	12.2	12.2	0.0	11.3	11.3	0.0	18.5	18.5	0.0	17.2	17.2	0.0	27.3	27.3	0.0	11.8	11.8	0.0			
330	19.4	18.0	8.5	188.5	11.9	4.0	156.3	11.8	11.8	0.0	10.9	10.9	0.0	17.8	17.8	0.0	16.6	16.6	0.0	26.4	26.4	0.0	11.4	11.4	0.0			
345	18.8	17.4	8.5	184.5	11.5	4.0	155.1	11.4	11.4	0.0	10.6	10.6	0.0	17.2	17.2	0.0	16.1	16.1	0.0	25.5	25.5	0.0	11.0	11.0	0.0			
360	18.2	16.8	8.5	180.5	11.1	4.0	153.9	11.0	11.0	0.0	10.2	10.2	0.0	16.7	16.7	0.0	15.5	15.5	0.0	24.6	24.6	0.0	10.6	10.6	0.0			
375	17.6	16.3	8.5	176.3	10.8	4.0	152.5	10.7	10.7	0.0	9.9	9.9	0.0	16.2	16.2	0.0	15.1	15.1	0.0	23.9	23.9	0.0	10.3	10.3	0.0			
390	17.1	15.8	8.5	172.0	10.5	4.0	151.1	10.3	10.3	0.0	9.6	9.6	0.0	15.7	15.7	0.0	14.6	14.6	0.0	23.2	23.2	0.0	10.0	10.0	0.0			
405	16.6	15.4	8.5	167.5	10.2	4.0	149.6	10.0	10.0	0.0	9.4	9.4	0.0	15.2	15.2	0.0	14.2	14.2	0.0	22.5	22.5	0.0	9.7	9.7	0.0			
420	16.2	15.0	8.5	163.0	9.9	4.0	148.1	9.8	9.8	0.0	9.1	9.1	0.0	14.8	14.8	0.0	13.8	13.8	0.0	21.9	21.9	0.0	9.4	9.4	0.0			
435	15.7	14.6	8.5	158.4	9.6	4.0	146.5	9.5	9.5	0.0	8.8	8.8	0.0	14.4	14.4	0.0	13.4	13.4	0.0	21.3	21.3	0.0	9.2	9.2	0.0			

CROZIER CONSULTING ENGINEERS

Project: Centre Plaza
Project No.: 1419-6615

Date: 07-Jun-2023
Revised: 27-Feb-2024
Designed By: GS
Checked By: RB

WATER BALANCE CALCULATIONS

Catchment	Description	Land Use	Area (ha)	% Total Block Area	Area (m²)	C	% Imperviousness	Water Balance Requirement (mm)	Initial Abstraction (mm)	WB Deficit (mm)	Water Balance Deficit (m3)	Redistributed ROW Volume (m3)	TOTAL WB VOLUME AFTER REDISTRIBUTION (m3)	EQUIVALENT CAPTURE DEPTH (mm)	Total Water Balance Capture Depth (mm)
201A	Building 1A	Residential	0.44	14.4%	4,440	0.75	78.6%	5.0	1.86	3.14	14.0	4.8	18.8	4.23	6.08
201B	Building 1B	Residential	0.29	9.5%	2,935	0.75	78.6%	5.0	1.86	3.14	9.2	3.2	12.4	4.23	6.08
202A	Building 2A	Residential	0.29	9.4%	2,900	0.75	78.6%	5.0	1.86	3.14	9.1	3.1	12.3	4.23	6.08
202B	Building 2B	Residential	0.27	8.8%	2,700	0.75	78.6%	5.0	1.86	3.14	8.5	2.9	11.4	4.23	6.08
203A	Building 3A	Residential	0.44	14.3%	4,400	0.75	78.6%	5.0	1.86	3.14	13.8	4.8	18.6	4.23	6.08
203B	Building 3B	Residential	0.41	13.3%	4,100	0.75	78.6%	5.0	1.86	3.14	12.9	4.4	17.3	4.23	6.08
203C/D	Building 3C/D	Residential	0.65	21.1%	6,500	0.75	78.6%	5.0	1.86	3.14	20.4	7.0	27.5	4.23	6.08
204	Building 4	Residential	0.28	9.1%	2,800	0.75	78.6%	5.0	1.86	3.14	8.8	3.0	11.8	4.23	6.08
PARK	Parklands	Parklands	0.10	-	1,000	0.50	42.9%	5.0	3.29	1.71	1.7	0	1.7	1.71	5.00
ROW	Road	Public R.O.W.	1.06	-	10,600	0.75	78.6%	5.0	1.86	3.14	33.3	0	0.0	0.00	1.86
TOTAL			**4.24**	**-**	**42,375**	**-**		**5.0**	**1.89**	**3.11**	**131.8**	**33.3**	**131.8**	**3.11**	**5.0**

CROZIER CONSULTING ENGINEERS

Centre Plaza
STORM SEWER DESIGN SHEET

10-Year Minor Storm Conveyance - City of Mississauga
A: 1010 **B: 4.6** **C: 0.78**

PROJECT: Centre Plaza
PROJECT No.: 1419-6615
FILE: Storm Sewer Design Sheet- 10-YR
DATE: 27-Feb-2024
Design: CM
Checked: RB

PVC MANNINGS "n" (<= 450mm dia.) : 0.010
INITIAL TIME OF CONCENTRATION: 15.00 CONCRETE MANNINGS "n" (> 450mm dia.): 0.013

INFLUENT CATCHMENT AREA ID / DESCRIPTION	FR MH NO	TO MH NO	AREA (A) Ha	RUN-OFF COEFF.	A x C -	CUMMUL. A x C -	TIME OF CONC. min	I mm/hr	DESIGN Q l/sec	PIPE TYPE -	PIPE SLOPE %	PIPE DIA. mm	FULL FLOW VEL. m/sec	PIPE LENGTH m	TIME OF FLOW min	FULL FLOW CAPACITY l/sec	PERCENTAGE FULL %	Notes
Queen Street Existing 375mm Sewer																		
EXT1A	EX STM MH75	STM MH13	2.59	0.75	1.94	1.94	19.06	85.62	**462.4**	**Circular**	0.75	375	1.79	26.7	0.25	**197.39**	234	- Exsiting sewer
C201	-	STM MH13	0.44	0.75	-	-	-	-	**9.9**	**Circular**	1.00	200	1.36	8.0	0.10	**42.64**	23	- Building 1A service connection
EXT1B	EX STM CB66	EX STM MH59	0.09	0.75	0.07	0.07	15.00	99.17	**18.6**	**Circular**	1.00	150	1.12	-	-	**19.80**	94	- Existing Holdout Property
EXT1C	STM MH13	EX STM MH59	0.81	0.75	0.61	2.62	19.31	84.93	**627.9**	**Circular**	1.00	375	2.06	86.0	0.69	**227.93**	275	- Existing Sewer
STREET C																		
EXT1D	EX STM MH59	STM MH11	0.89	0.75	0.67	3.29	20.00	83.05	**758.4**	**Circular**	1.90	375	2.84	6.2	0.04	**314.18**	241	- Exsiting sewer
	STM MH11	STM MH10	0	0	0	3.29	20.04	82.96	**757.6**	**Circular**	2.00	675	3.32	6.5	0.03	**1188.77**	64	- Proposed sewer
C201B	-	STM MH10	0.29	0.75	-	-	-	-	**5.0**	**Circular**	2.00	250	2.23	-	-	**109.33**	5	- Building C201B service connection
C202B	-	STM MH4	0.27	0.75	-	-	-	-	**43.8**	**Circular**	2.00	250	2.23	-	-	**109.33**	40	- Building C202B service connection
R5	STM MH10	STM MH4	0.16	0.75	0.12	3.41	20.07	82.87	**843.1**	**Circular**	2.00	675	3.32	87.0	0.44	**1188.77**	71	- Proposed sewer
STREET A																		
C204	-	STM MH2	0.28	0.75	-	-	-	-	**44.5**	**Circular**	1.00	300	1.78	16.5	0.15	**125.71**	35	- Building 4 service connection
R1	STM MH1	STM MH2	0.18	0.75	0.14	0.14	15.00	99.17	**81.74**	**Circular**	1.00	375	2.06	38.4	0.31	**227.93**	36	- Proposed sewer
STREET B																		
EXT3	PR CB	STM MH9	0.32	0.75	0.24	0.24	15.00	99.17	**42.94**	**Circular**	1.00	300	1.78	7.9	0.07	**125.71**	34	- William St cul-de-sac
EXT2	STM MH12	STM MH9	0.06	0.75	0.05	0.05	15.00	99.17	**12.4**	**Circular**	0.40	300	1.12	80.8	1.20	**79.51**	16	- Private site
UC4	PARK	STM MH9	0.10	0.50	0.05	0.05	15.00	99.17	**13.8**	**Circular**	1.00	200	1.36	8.0	0.10	**42.64**	32	- Park block service
C203C	-	STM MH2	0.65	0.75	-	-	-	-	**105.5**	**Circular**	2.00	250	2.23	8.0	0.06	**109.33**	96	- Building C203C/D service connection
R2	STM MH9	STM MH2	0.14	0.75	0.11	0.44	16.20	94.68	**221.3**	**Circular**	1.00	450	2.33	71.1	0.51	**370.64**	60	- Proposed sewer
C203B	-	STM MH3	0.27	0.75	-	-	-	-	**66.5**	**Circular**	2.00	250	2.23	8.0	0.06	**109.33**	61	- Building C203B service connection
R3	STM MH2	STM MH3	0.11	0.75	0.08	0.66	16.71	92.92	**386.4**	**Circular**	1.00	525	1.99	60.1	0.50	**430.06**	90	- Proposed sewer
C203A	-	STM MH4	0.44	0.75	-	-	-	-	**71.4**	**Circular**	2.00	250	2.23	8.0	0.06	**109.33**	65	- Building C203A service connection
R4	STM MH3	STM MH4	0.14	0.75	0.11	0.76	17.21	91.24	**481.3**	**Circular**	1.00	600	2.17	60.1	0.46	**614.01**	78	- Proposed sewer
STREET C																		
R6	STM MH4	STM MH5	0.14	0.75	0.11	4.27	20.51	81.74	**1317.6**	**Circular**	1.00	825	2.69	55.7	0.35	**1435.44**	92	- Proposed sewer
-	STM MH5	STM MH6	0	0	0	4.27	20.85	80.88	**1307.2**	**Circular**	1.00	825	2.69	10.7	0.07	**1435.44**	91	- Proposed sewer
-	STM MH6	STM MH7	0	0	0	4.27	20.92	80.71	**1305.3**	**Circular**	1.00	825	2.69	10.7	0.07	**1435.44**	91	- Proposed sewer
C202A	-	STM MH8	0.29	0.75	-	-	-	-	**47.1**	**Circular**	1.00	250	1.57	8.0	0.08	**77.31**	61	- Building C202A service connection
R7	STM MH7	STM MH8	0.23	0.75	0.17	4.45	20.99	80.55	**1389.0**	**Circular**	1.00	900	2.85	44.6	0.26	**1810.31**	77	- Proposed sewer
-	STM MH8	EX STM MH	0	0	0	4.45	21.25	79.91	**1381.2**	**Circular**	1.00	900	2.85	6.6	0.04	**1810.31**	76	- Proposed sewer

Notes:

1. Storm design criteria referenced from the City of Mississauga Transportation & Works Department, Development Requirements Manual Section 8 – Storm Drainage Design Requirements (November 2020).
2. Design sheet referenced City of Mississauga Transportation and Works Standard No. 2112.030 Storm Drainage Design Chart.
3. All proposed buildings will implement stormwater management controls to reduce peak flows to pre development levels to align with the Tannery Street Storm Sewer Design for Area Z-38W (City of Mississauga, October 2012).

**Controlled release rate from proposed underground stormwater cistern.*

CROZIER CONSULTING ENGINEERS

Centre Plaza

STORM SEWER DESIGN SHEET

10-Year Minor Storm Conveyance - City of Mississauga

A: 1450 **B: 4.9** **C: 0.78**

PROJECT: Centre Plaza
PROJECT No.: 1419-6615
FILE: Storm Sewer Design Sheet- 10-YR
DATE: 27-Feb-2024
Design: CM
Checked: RB

PVC MANNINGS "n" (<= 450mm dia.) : 0.010

INITIAL TIME OF CONCENTRATION: 15.00

CONCRETE MANNINGS "n" (> 450mm dia.): 0.013

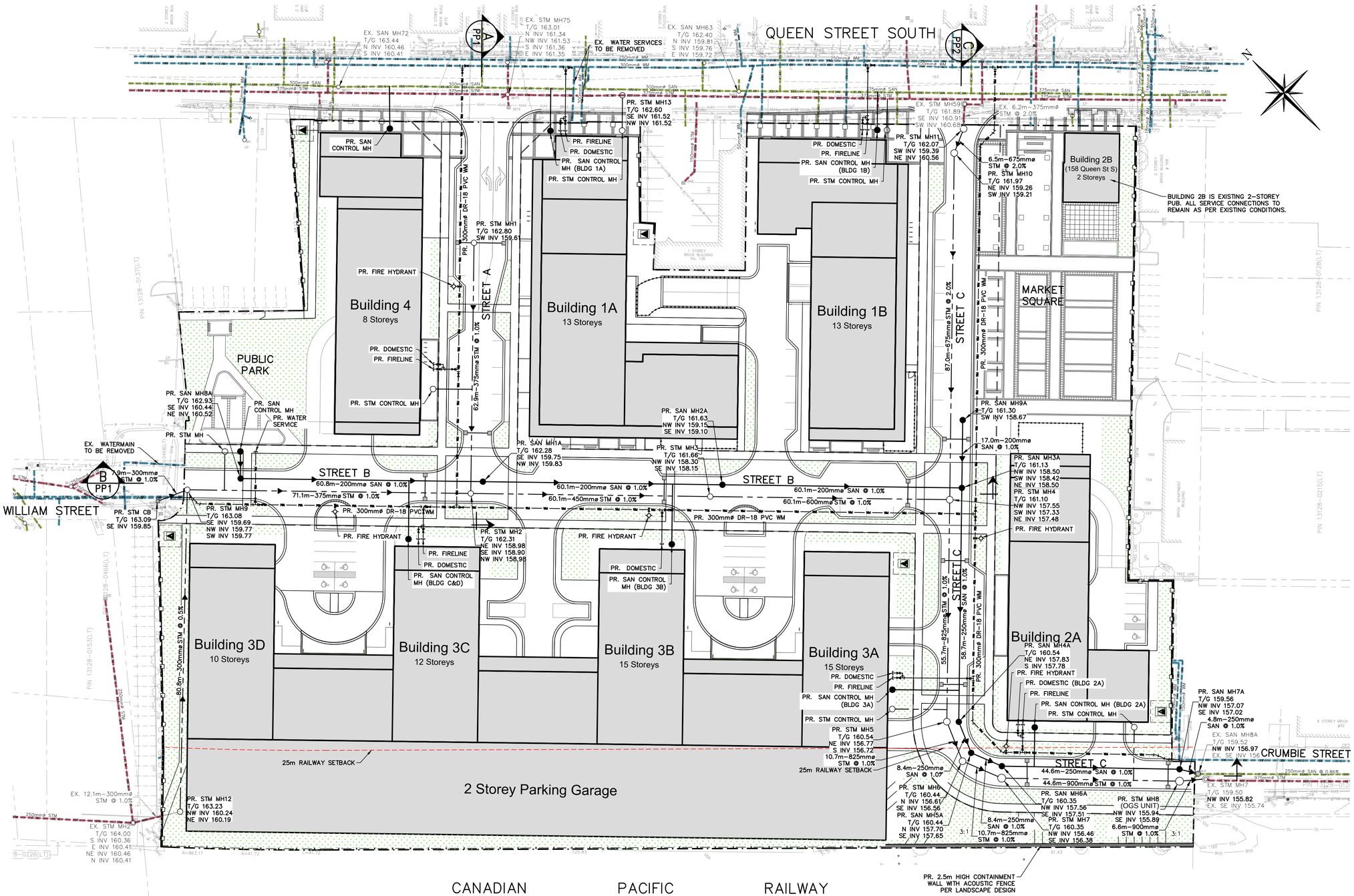
INFLUENT CATCHMENT AREA ID / DESCRIPTION	FR MH NO	TO MH NO	AREA (A) Ha	RUN-OFF COEFF.	A x C -	CUMMUL. A x C -	TIME OF CONC. min	I mm/hr	DESIGN Q l/sec	PIPE TYPE -	PIPE SLOPE %	PIPE DIA. mm	FULL FLOW VEL. m/sec	PIPE LENGTH m	TIME OF FLOW min	FULL FLOW CAPACITY l/sec	PERCENTAGE FULL %	Notes
Queen Street Existing 375mm Sewer																		
EXT1A	EX STM MH75	STM MH13	2.59	0.75	1.94	1.94	19.06	121.72	**657.3**	**Circular**	0.75	375	1.79	26.7	0.25	**197.39**	333	- Exsiting sewer
C201	-	STM MH13	0.44	0.75	-	-	-	-	**9.9**	**Circular**	1.00	200	1.36	8.0	0.10	**42.64**	23	- Building 1A service connection
EXT1B	EX STM CB66	EX STM MH59	0.09	0.75	0.07	0.07	15.00	140.69	**26.4**	**Circular**	1.00	150	1.12	-	-	**19.80**	133	- Existing Holdout Property
EXT1C	STM MH13	EX STM MH59	0.81	0.75	0.61	2.62	19.31	120.74	**888.5**	**Circular**	1.00	375	2.06	86.0	0.69	**227.93**	390	- Existing Sewer
STREET C																		
EXT1D	EX STM MH59	STM MH11	0.89	0.75	0.67	3.29	20.00	118.11	**1078.6**	**Circular**	1.90	375	2.84	6.2	0.04	**314.18**	343	- Exsiting sewer
	STM MH11	STM MH10	0	0	0	3.29	20.04	117.98	**1077.4**	**Circular**	2.00	675	3.32	6.5	0.03	**1188.77**	91	- Proposed sewer
C201B	-	STM MH10	0.29	0.75	-	-	-	-	**5.0**	**Circular**	2.00	250	2.23	-	-	**109.33**	5	- Building C201B service connection
C202B	-	STM MH4	0.27	0.75	-	-	-	-	**43.8**	**Circular**	2.00	250	2.23	-	-	**109.33**	40	- Building C202B service connection
R5	STM MH10	STM MH4	0.16	0.75	0.12	3.41	20.07	117.86	**1174.3**	**Circular**	2.00	675	3.32	87.0	0.44	**1188.77**	99	- Proposed sewer
STREET A																		
C204	-	STM MH2	0.28	0.75	-	-	-	-	**44.5**	**Circular**	1.00	300	1.78	16.5	0.15	**125.71**	35	- Building 4 service connection
R1	STM MH1	STM MH2	0.18	0.75	0.14	0.14	15.00	140.69	**97.33**	**Circular**	1.00	375	2.06	38.4	0.31	**227.93**	43	- Proposed sewer
STREET B																		
EXT3	PR CB	STM MH9	0.32	0.75	0.24	0.24	15.00	140.69	**42.94**	**Circular**	1.00	300	1.78	7.9	0.07	**125.71**	34	- William St cul-de-sac
EXT2	STM MH12	STM MH9	0.06	0.75	0.05	0.05	15.00	140.69	**17.6**	**Circular**	0.40	300	1.12	80.8	1.20	**79.51**	22	- Private site
UC4	PARK	STM MH9	0.10	0.50	0.05	0.05	15.00	140.69	**19.6**	**Circular**	1.00	200	1.36	8.0	0.10	**42.64**	46	- Park block service
C203C	-	STM MH2	0.65	0.75	-	-	-	-	**105.5**	**Circular**	2.00	250	2.23	8.0	0.06	**109.33**	96	- Building C203C/D service connection
R2	STM MH9	STM MH2	0.14	0.75	0.11	0.44	16.20	134.42	**269.9**	**Circular**	1.00	450	2.33	71.1	0.51	**370.64**	73	- Proposed sewer
C203B	-	STM MH3	0.27	0.75	-	-	-	-	**66.5**	**Circular**	2.00	250	2.23	8.0	0.06	**109.33**	61	- Building C203B service connection
R3	STM MH2	STM MH3	0.11	0.75	0.08	0.66	16.71	131.95	**457.7**	**Circular**	1.00	525	1.99	60.1	0.50	**430.06**	106	- Proposed sewer
C203A	-	STM MH4	0.44	0.75	-	-	-	-	**71.4**	**Circular**	2.00	250	2.23	8.0	0.06	**109.33**	65	- Building C203A service connection
R4	STM MH3	STM MH4	0.14	0.75	0.11	0.76	17.21	129.60	**562.6**	**Circular**	1.00	600	2.17	60.1	0.46	**614.01**	92	- Proposed sewer
STREET C																		
R6	STM MH4	STM MH5	0.14	0.75	0.11	4.27	20.51	116.27	**1727.7**	**Circular**	1.00	825	2.69	55.7	0.35	**1435.44**	120	- Proposed sewer
-	STM MH5	STM MH6	0	0	0	4.27	20.85	115.05	**1713.2**	**Circular**	1.00	825	2.69	10.7	0.07	**1435.44**	119	- Proposed sewer
-	STM MH6	STM MH7	0	0	0	4.27	20.92	114.82	**1710.4**	**Circular**	1.00	825	2.69	10.7	0.07	**1435.44**	119	- Proposed sewer
C202A	-	STM MH8	0.29	0.75	-	-	-	-	**47.1**	**Circular**	1.00	250	1.57	8.0	0.08	**77.31**	61	- Building C202A service connection
R7	STM MH7	STM MH8	0.23	0.75	0.17	4.45	20.99	114.59	**1809.7**	**Circular**	1.00	900	2.85	44.6	0.26	**1810.31**	100	- Proposed sewer
-	STM MH8	EX STM MH	0	0	0	4.45	21.25	113.70	**1798.7**	**Circular**	1.00	900	2.85	6.6	0.04	**1810.31**	99	- Proposed sewer

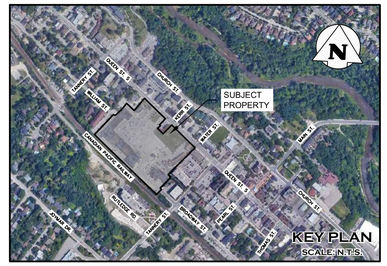
Notes:

1. Storm design criteria referenced from the City of Mississauga Transportation & Works Department, Development Requirements Manual Section 8 – Storm Drainage Design Requirements (November 2020).
2. Design sheet referenced City of Mississauga Transportation and Works Standard No. 2112.030 Storm Drainage Design Chart.
3. All proposed buildings will implement stormwater management controls to reduce peak flows to pre development levels to align with the Tannery Street Storm Sewer Design for Area Z-38W (City of Mississauga, October 2012).

**Controlled release rate from proposed underground stormwater cistern.*

DRAWINGS & FIGURES





LEGEND

- PROPERTY LINE
- EXISTING CONTOUR (0.5m)
- EXISTING CONTOUR (1.0m)
- x 215.00 EXISTING GRADE
- EXISTING WATERMAIN & GATE VALVE
- EXISTING STORM SEWER & MANHOLE
- EXISTING SINGLE / DOUBLE CATCHBASIN
- EXISTING SANITARY SEWER & MANHOLE
- EX. FIRE HYDRANT & VALVE
- PROPOSED FIRE HYDRANT & GATE VALVE
- WM PROPOSED WATERMAIN & GATE VALVE
- PROPOSED STORM SEWER & MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED SANITARY SEWER & SANITARY MANHOLE
- PROPOSED RAIL BERM AND SOUND WALL (BY OTHERS)
- PROPOSED TRANSFORMER (BY OTHERS)

NOTE:
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No.	ISSUE / REVISION	YYYY/MMM/DD
1	ISSUED FOR DARC2	2024/MAR/12
0	ISSUED FOR DARC2	2023/JUL/05

ELEVATION NOTE:

ELEVATIONS ARE REFERRED TO THE CITY OF MISSISSAUGA BENCHMARK No. 970, BEING A PLATE MOUNTED HORIZONTALLY IN THE CONCRETE PAD IN FRONT OF THE TRAFFIC LIGHT CONTROL BOX LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF MISSISSAUGA ROAD AND EGLINTON AVENUE WEST, HAVING AN ELEVATION OF 148.702 m.
VERTICAL DATUM: CANADIAN GEODETIC DATUM, 1928
(NOT 1978 SOUTHERN ONTARIO READJUSTMENT)

SURVEY NOTES:

SURVEY COMPLETED BY DAVID B. SEARLES SURVEYING LTD. (2023/JAN/17)
FILE No.: 64-6-12.

SITE PLAN NOTES:

DESIGN ELEMENTS ARE BASED ON SITE PLAN BY SRM ARCHITECTS INC.
PROJECT No. D2034
DRAWING No. D2034, (MARCH 08, 2024)
DATE RECEIVED 2024/MAR/08

DRAWING NOTES:

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Project

142–148 QUEEN STREET SOUTH
CITY OF MISSISSAUGA

Drawing

PRELIMINARY SITE SERVICING PLAN

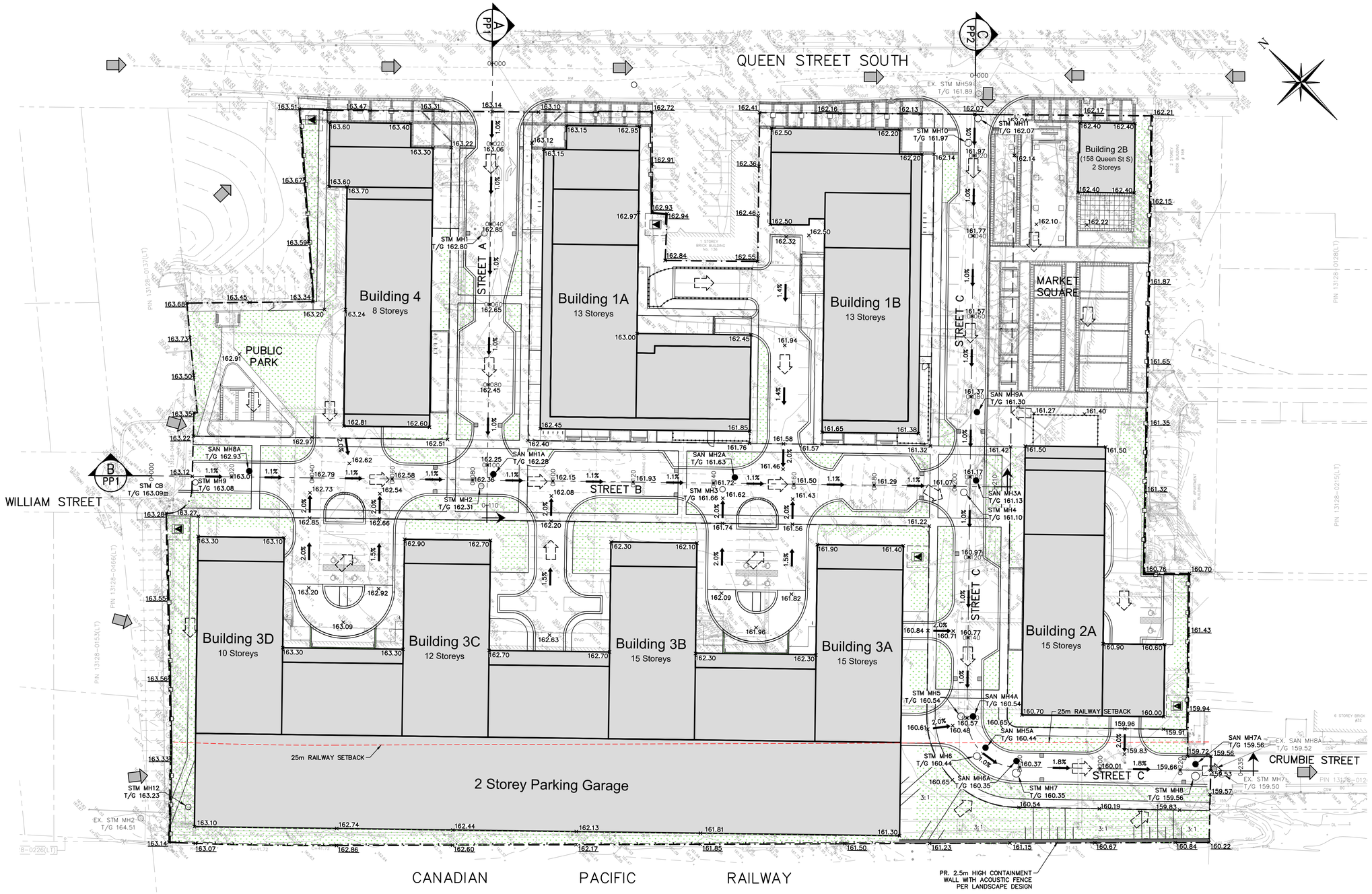
Stamp

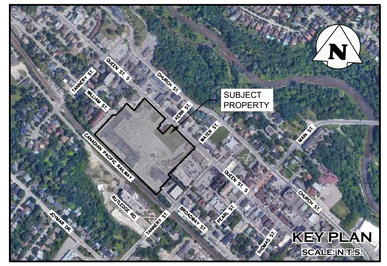
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

CROZIER & ASSOCIATES Consulting Engineers
2800 HIGH POINT DRIVE
SUITE 100
MILTON, ON L9T 6P4
905 875-0026 T
905 875-4915 F
WWW.CFCROZIER.CA

Drawn	R.L.	Design	C.M.	Project No.	1419–6615
Check	M.I.	Check	R.B.	Scale	1:500
				Dwg.	C102

J:\1400\1419-DeZen Realty Co Ltd\6615 - Centre Plaza\CAD\Civil_Sheets\6615_C102.dwg, 3/12/2024 1:37:15 PM, AutoCAD PDF (General Documentation).pc3





LEGEND

- PROPERTY LINE
- EXISTING CONTOUR (0.5m)
- EXISTING CONTOUR (1.0m)
- 215.00 EXISTING GRADE
- 215.00 PROPOSED GRADE
- 215.00 PROPOSED GRADE (TO MATCH EXISTING)
- 2.0% PROPOSED MINOR FLOW DIRECTION
- PROPOSED SLOPE (3:1 MAX.)
- PROPOSED OVERLAND FLOW DIRECTION
- EXISTING MAJOR OVERLAND FLOW DIRECTION
- 2.0% PROPOSED SWALE FLOW DIRECTION
- EXISTING SINGLE / DOUBLE CATCHBASIN
- EXISTING STORM MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED CATCHBASIN MANHOLE
- PROPOSED STORM MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED RAIL BERM AND SOUND WALL (BY OTHERS)
- PROPOSED TRANSFORMER (BY OTHERS)

NOTE:
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NOTE:
ALL CENTERLINE ROAD GRADES TO BE A MINIMUM 0.5% AS PER CITY OF MISSISSAUGA STANDARDS. CENTERLINE ROAD GRADES SHOWN AT LESS THAN 0.5% WILL UTILIZE A SAW-TOOTH SLOPE CONFIGURATION TO ACHIEVE MINIMUM GRADE. ALL ROAD GRADES AND ELEVATIONS ARE PRELIMINARY AND SUBJECT TO DETAILED DESIGN.

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Project

142–148 QUEEN STREET SOUTH CITY OF MISSISSAUGA

Drawing

PRELIMINARY SITE GRADING PLAN

Stamp

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Stamp

CROZIER & ASSOCIATES Consulting Engineers
2800 HIGH POINT DRIVE
SUITE 100
MILTON, ON L9T 6P4
905 875-0026 T
905 875-4915 F
WWW.CFCROZIER.CA

Drawn	Design	Project No.	
R.L.	C.M.		1419–6615
Check	Check	Scale	Dwg.
M.I.	R.B.	1:500	C103

QUEEN STREET SOUTH

WILLIAM STREET

CANADIAN PACIFIC RAILWAY

PIN 13128-0224(LT)

PIN 13128-0124(LT)

Existing Building
(120 Queen St S)
1 Storey

Existing Building
(128 Queen St S)
1 Storey

Existing Building
(158 Queen St S)
2-Storey

Existing Building
(154 Queen St S)
2-Storey

Existing Building
(169 Crumbie St)
1 Storey

Building 1A

Building 1B

Condo Road

DRIVEWAY A
(FUTURE STREET A)

DRIVEWAY B
(FUTURE STREET B)

DRIVEWAY C
(FUTURE STREET C)

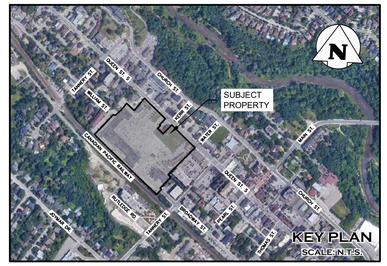
Proposed Parking

Existing Parking

Underground Extens.

CRUMBIE STREET

PR. FIRELINE
PR. DOMESTIC
PR. SAN CONTROL MH (BLDG 1A)
PR. STM CONTROL MH
PR. DOMESTIC
PR. FIRELINE
PR. SAN CONTROL MH (BLDG 1B)
PR. STM CONTROL MH
PR. 300mmø DR-18 PVC WM
PR. FIRE HYDRANT
TEMPORARY STM CONNECTION TO STREET A STM SYSTEM
TEMPORARY WATER SERVICE CONNECTION TO STREET A
TEMPORARY STM CONNECTION TO STREET A STM SYSTEM
62.9m-375mmø STM @ 1.0%
60.1m-200mmø SAN @ 1.0%
60.1m-450mmø STM @ 1.0%
60.1m-600mmø STM @ 1.0%
PR. 300mmø DR-18 PVC WM
PR. FIRE HYDRANT
TEMPORARY WATER SERVICE CONNECTION TO STREET B
PHASE 1 SAN SEWERS TO BE PRE-INSTALLED IN PHASE 1 ROW STREET B. SEWERS TO RECEIVE NO DOMESTIC FLOWS IN PHASE 1
TEMPORARY PHASE 1 SANITARY RECONNECTION TO BE REMOVED AFTER FUTURE PHASE CONSTRUCTION AND CONNECTION TO CRUMBIE ST.
FUTURE SEWERS - NOT REQUIRED FOR PHASE 1
STREET B STORM SEWERS TEMPORARY CONNECTION TO EXISTING STORM SEWERS
STREET B WATERMAIN TEMPORARY DEAD-END WITH SERVICE RE-CONNECTION TO EX 154 QUEEN ST 2-STOREY BLDG.
14.0m-200mmø SAN @ 1.0%
40.0m-200mmø SAN @ 1.0%
17.0m-200mmø SAN @ 1.0%
97mmø STM
250mmø SAN @ 0.86%
SAN MH1A
SAN MH2A
SAN MH3A
SAN MH9A
SAN MH10A
STM MH1
STM MH2
STM MH3
STM MH4



LEGEND

- PROPERTY LINE
- EXISTING CONTOUR (0.5m)
- EXISTING CONTOUR (1.0m)
- EXISTING GRADE
- EXISTING WATERMAIN & GATE VALVE
- EXISTING STORM SEWER & MANHOLE
- EXISTING SINGLE / DOUBLE CATCHBASIN
- EXISTING SANITARY SEWER & MANHOLE
- EXISTING FIRE HYDRANT & VALVE
- EXISTING GAS MAIN
- EXISTING TRAFFIC SIGNAL
- EXISTING STREET LIGHT
- EXISTING ELECTRICAL WIRE
- EXISTING COMMUNICATION ROGERS
- EXISTING COMMUNICATION BELL
- EXISTING HYDRO
- PROPOSED FIRE HYDRANT & GATE VALVE
- PROPOSED WATERMAIN & GATE VALVE
- PROPOSED STORM SEWER & MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED SANITARY SEWER & SANITARY MANHOLE
- LIMIT OF UNDERGROUND STRUCTURE
- PROPOSED TRANSFORMER (BY OTHERS)
- UNDERGROUND SERVICES TO BE REMOVED

NOTE:
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SURVEY NOTES:

SURVEY COMPLETED BY DAVID B. SEARLES SURVEYING LTD. (2023/JAN/17)
FILE No.: 64-6-12.

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PROJECT No. D2034
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DATE RECEIVED 2024/MAR/08

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Project

142-148 QUEEN STREET SOUTH
CITY OF MISSISSAUGA

Drawing

PHASE 1 INTERIM SERVICING PLAN

Stamp

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Stamp

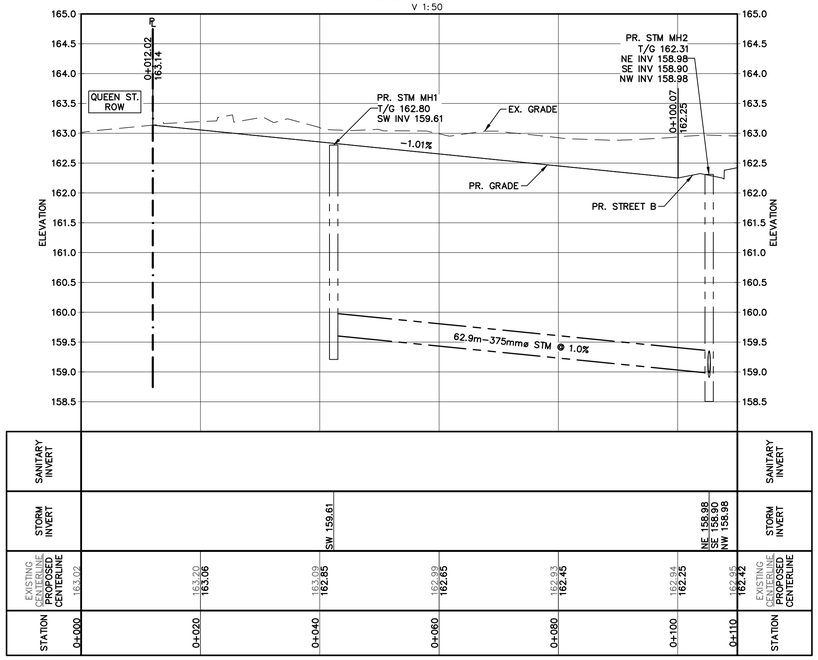
CROZIER & ASSOCIATES
Consulting Engineers
2800 HIGH POINT DRIVE
SUITE 100
MILTON, ON L9T 6P4
905 875-0026 T
905 875-4915 F
WWW.CFCROZIER.CA

Drawn	Design	Project No.	
R.L.	C.M.		1419-6615
Check	Check	Scale	Dwg.
M.I.	R.B.	1:500	C104

10 0m 10 20 30 40
SCALE: 1:500

STREET A

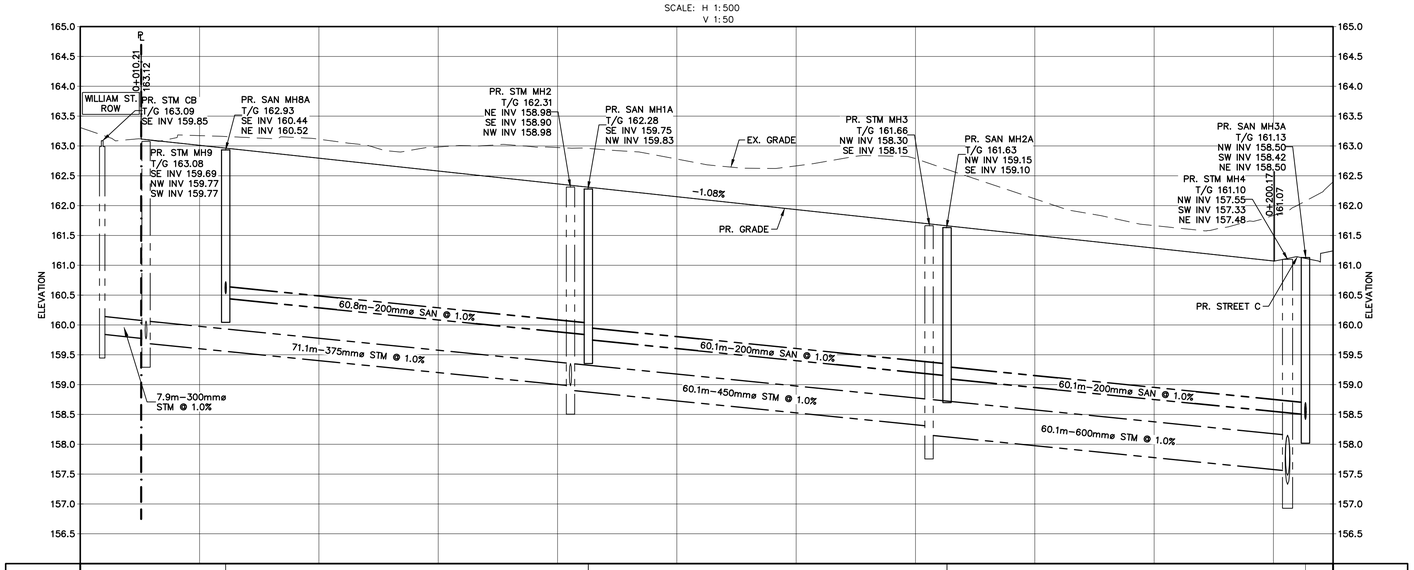
SCALE: H 1:500
V 1:50



STATION	EXISTING CENTERLINE	PROPOSED CENTERLINE	STORM INVERT	SANITARY INVERT
0+000	163.02			
0+020	163.20	163.06		
0+040	163.09	162.85	SW 159.61	
0+060	162.98	162.80		
0+080	162.93	162.45		
0+100	162.95	162.25		
0+110	162.95	162.42	NE 158.98 SE 158.90 NW 158.98	

STREET B

SCALE: H 1:500
V 1:50



STATION	EXISTING CENTERLINE	PROPOSED CENTERLINE	STORM INVERT	SANITARY INVERT
0+000	163.31		SE 159.85	
0+020	163.17	163.01	SE 159.69 NW 159.77 SW 159.77	SE 160.44 NE 160.52
0+040	163.11	162.79		
0+060	162.88	162.58		
0+080	162.97	162.36	NE 158.98 SE 158.90 NW 158.98	SE 159.75 NW 159.83
0+100	162.78	162.15		
0+120	162.67	161.93		
0+140	162.79	161.72	NW 158.30 SE 158.15	NW 159.15 SE 159.10
0+160	162.11	161.50		
0+180	161.66	161.29		
0+200	161.84	161.07	NW 157.55 SW 157.33 NE 157.48	NW 158.50 SW 158.42 NE 158.50
0+210	162.40	161.24		

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Project

142-148 QUEEN STREET SOUTH
CITY OF MISSISSAUGA

Drawing

STREET A&B PROFILE VIEW

Stamp

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

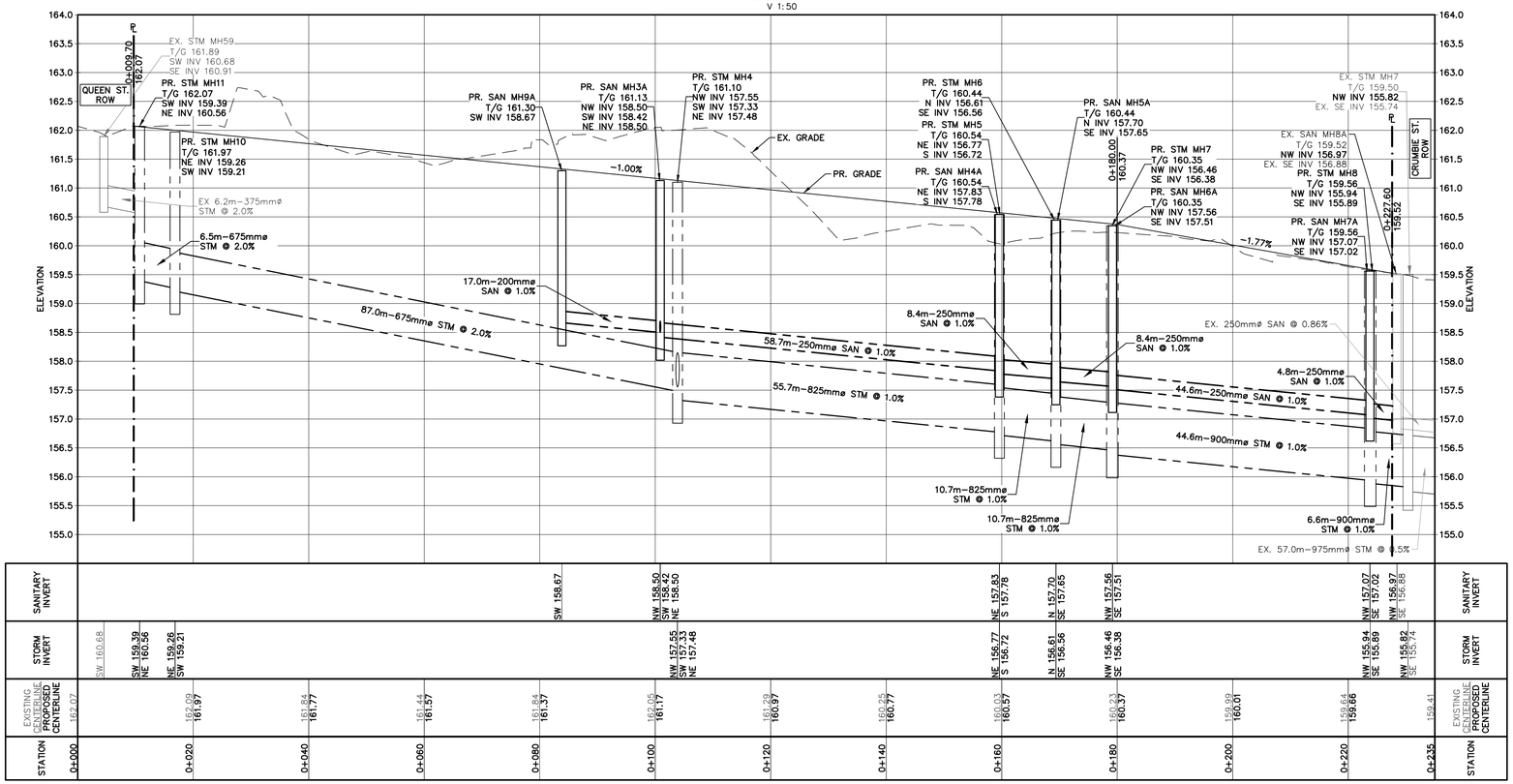
Stamp

CROZIER & ASSOCIATES
Consulting Engineers
2800 HIGH POINT DRIVE
SUITE 100
MILTON, ON L9T 6P4
905 875-0026 T
905 875-4915 F
WWW.CFCROZIER.CA

Drawn	Design	Project No.
R.L.	C.M.	1419-6615
Check	Check	Scale / Dwg.
M.I.	R.B.	1:500 / PP1

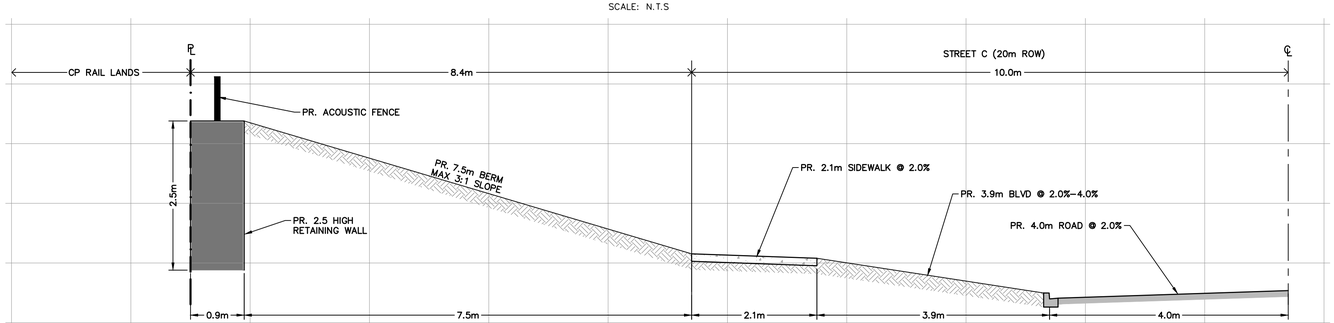
STREET C

SCALE: H 1:500
V 1:50



STREET C CP RAIL SIDE SECTION DETAIL

SCALE: N.T.S



No.	ISSUE / REVISION	YYYY/MMM/DD
1	ISSUED FOR DARC2	2024/MAR/12
0	ISSUED FOR DARC2	2023/JUL/05

ELEVATION NOTE:

ELEVATIONS ARE REFERRED TO THE CITY OF MISSISSAUGA BENCHMARK No. 970, BEING A PLATE MOUNTED HORIZONTALLY IN THE CONCRETE PAD IN FRONT OF THE TRAFFIC LIGHT CONTROL BOX LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF MISSISSAUGA ROAD AND EGLINTON AVENUE WEST, HAVING AN ELEVATION OF 148.702 m.
VERTICAL DATUM: CANADIAN GEODETIC DATUM, 1928
(NOT 1978 SOUTHERN ONTARIO READJUSTMENT)

SURVEY NOTES:

SURVEY COMPLETED BY DAVID B. SEARLES SURVEYING LTD. (2023/JAN/17)
FILE No.: 64–6–12.

SITE PLAN NOTES:

DESIGN ELEMENTS ARE BASED ON SITE PLAN BY SRM ARCHITECTS INC.
PROJECT No. D2034
DRAWING No. D2034, (MARCH 08, 2024)
DATE RECEIVED 2024/MAR/08

DRAWING NOTES:

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Project

142–148 QUEEN STREET SOUTH CITY OF MISSISSAUGA

Drawing

STREET C PROFILE VIEW

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Stamp

CROZIER & ASSOCIATES Consulting Engineers
2800 HIGH POINT DRIVE
SUITE 100
MILTON, ON L9T 6P4
905 875-0026 T
905 875-4915 F
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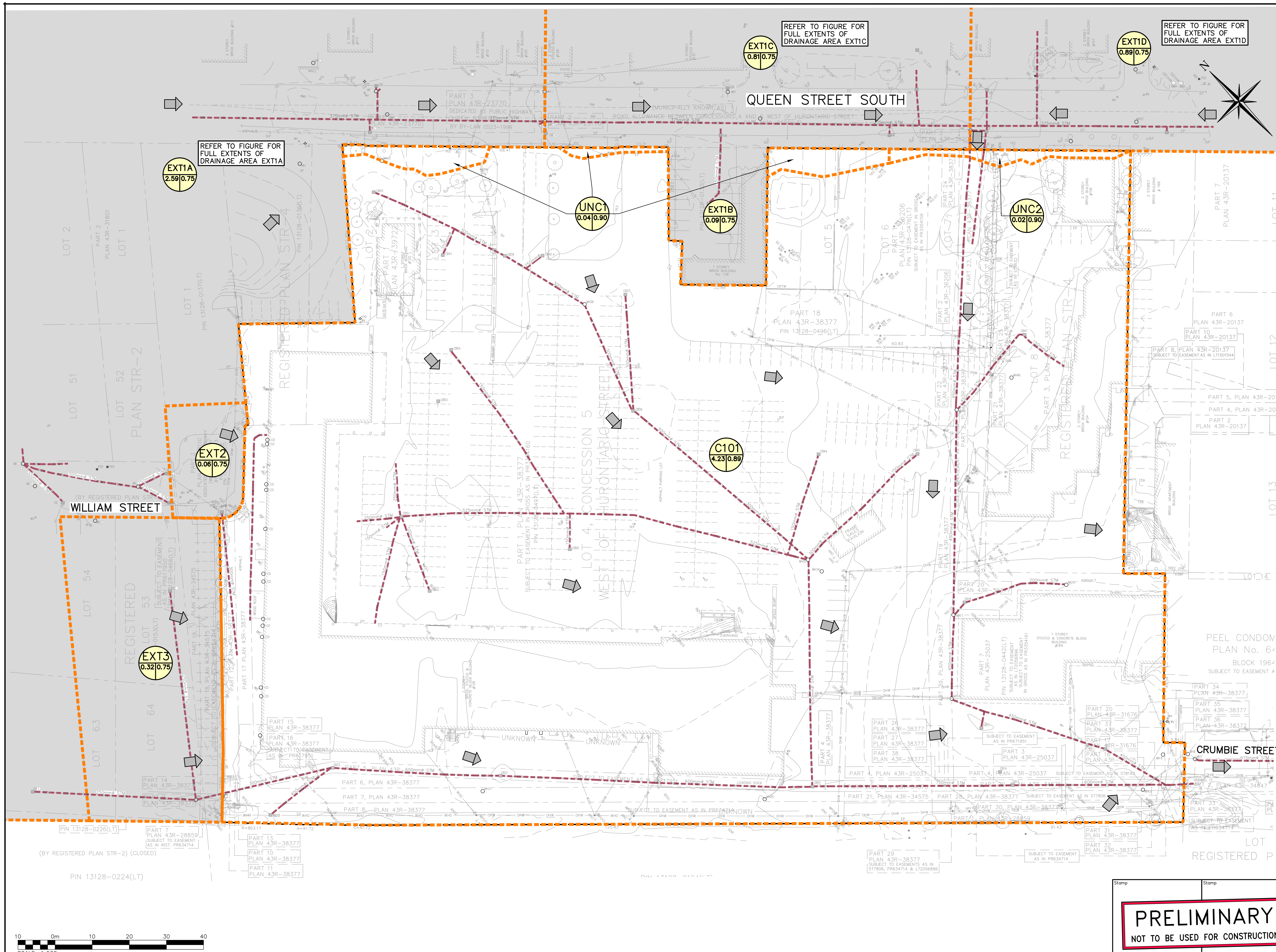
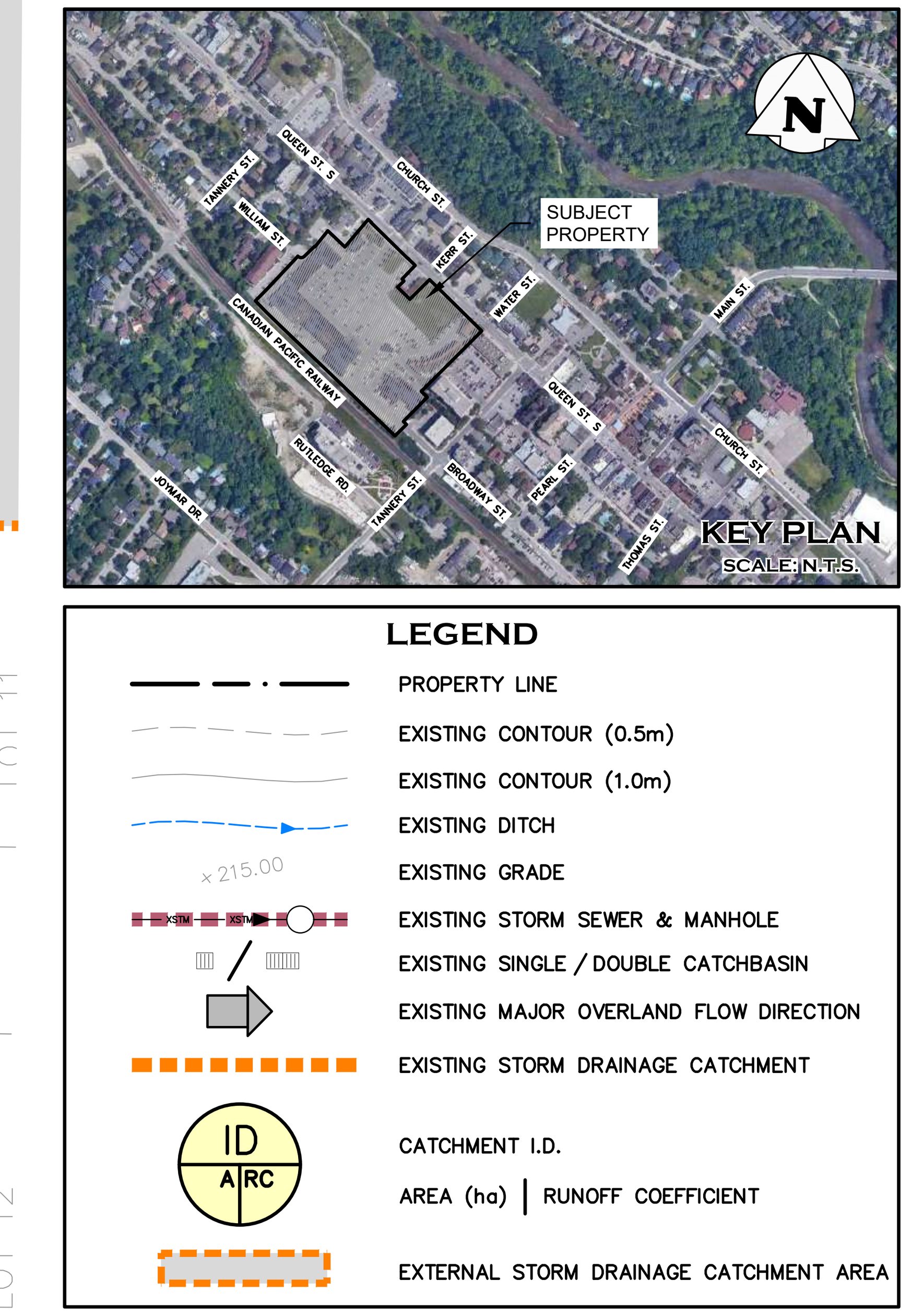
Drawn	Design	Project No.	
R.L.	C.M.		1419–6615
Check	Check	Scale	Dwg.
M.I.	R.B.	1: 500	PP2





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Project

142–148 QUEEN STREET SOUTH
CITY OF MISSISSAUGA

Drawing

PRE DEVELOPMENT DRAINAGE PLAN

Stamp | Stamp

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

CROZIER & ASSOCIATES Consulting Engineers
2800 HIGH POINT DRIVE
SUITE 100
MILTON, ON L9T 6P4
905 875-0026 T
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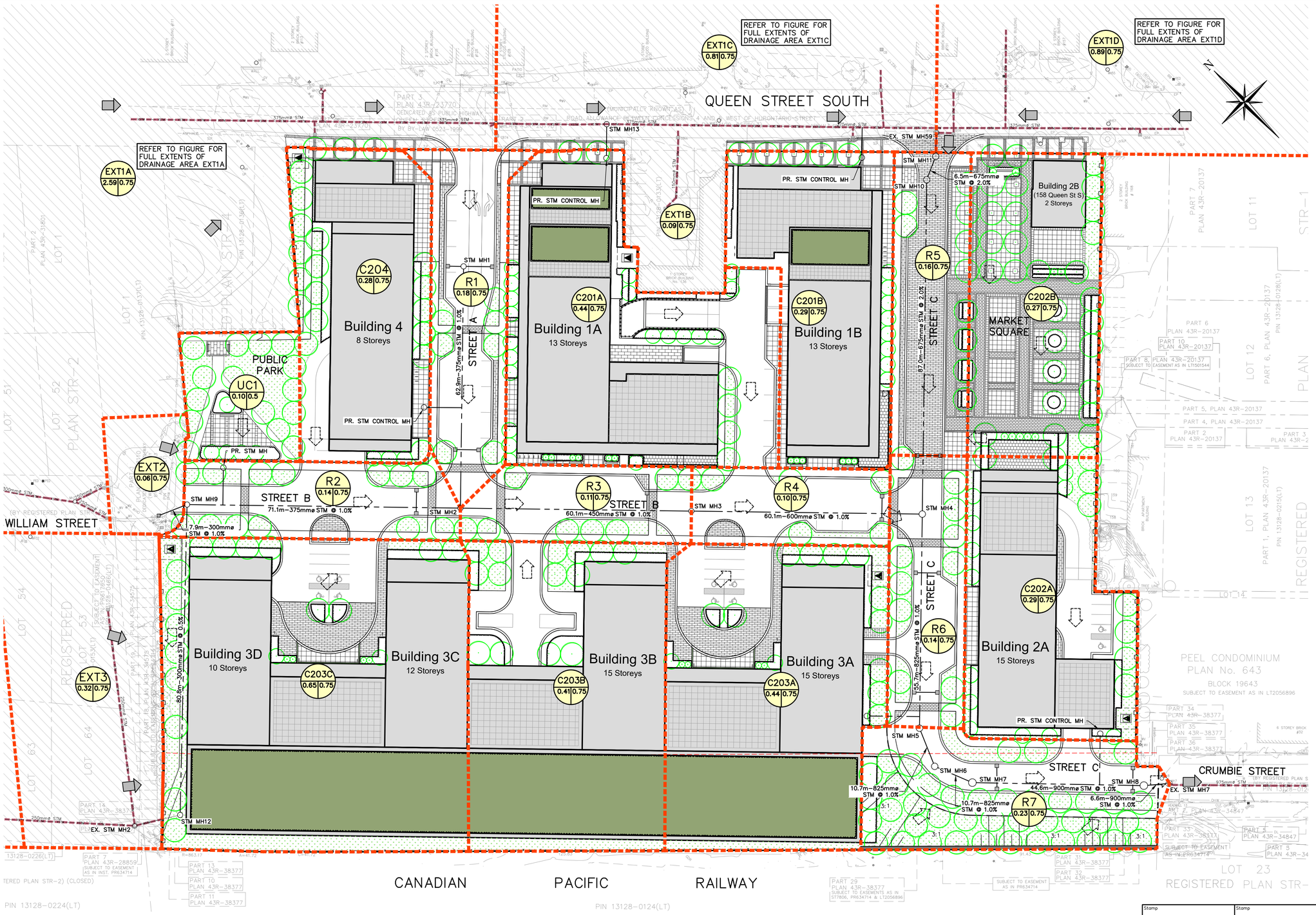
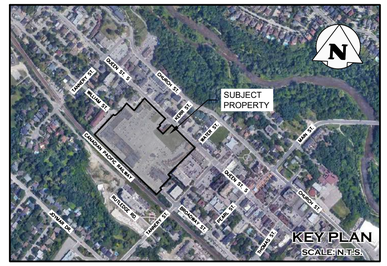
Drawn	R.L.	Design	C.M.	Project No.	1419–6615
Check	M.I.	Check	R.B.	Scale 1:500	Dwg. FIG2





LEGEND

- PROPERTY LINE
- EXISTING CONTOUR (0.5m)
- EXISTING CONTOUR (1.0m)
- x 215.00 EXISTING GRADE
- EXISTING STORM MANHOLE
- EXISTING STORM SEWER & MANHOLE
- EXISTING SINGLE / DOUBLE CATCHBASIN
- EXISTING OVERLAND FLOW DIRECTION
- PROPOSED OVERLAND FLOW DIRECTION
- PROPOSED STORM DRAINAGE CATCHMENT
- PROPOSED CATCHBASIN
- PROPOSED CATCHBASIN MANHOLE
- PROPOSED STORM SEWER & MANHOLE
- ID / A|RC CATCHMENT I.D. / AREA (ha) | RUNOFF COEFFICIENT
- PROPOSED STORM DRAINAGE CATCHMENT AREA

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Project

142–148 QUEEN STREET SOUTH CITY OF MISSISSAUGA

Drawing

POST DEVELOPMENT DRAINAGE PLAN

Stamp

PRELIMINARY
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CROZIER & ASSOCIATES Consulting Engineers
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Drawn	R.L.	Design	C.M.	Project No.	1419–6615
Check	M.I.	Check	R.B.	Scale	1:500
				Dwg.	FIG3

J:\1400\1419-DeZen Realty Co Ltd\6615 - Centre Plaza\CAD\Civil_Sheets\6615_FIG3.dwg 3/12/2024 1:45:30 PM, AutoCAD PDF (General Documentation).pc3