65-71 Agnes Street

29 Storey Condominium

Functional Servicing and Stormwater Management Report

Project Location:

65-71 Agnes Street Mississauga, Ontario

Prepared for:

Intentional Capital
147 Liberty Street Toronto, ON

Prepared by:

MTE Consultants
1016 Sutton Drive, Unit A
Burlington, ON, L7L 6B8

MTE File No.: 51157-100

April 29, 2022
Revised: June 6, 2024
Revised: September 20, 2024

Engineers, Scientists, Surveyors.

Contents

Figures

Tables

Appendices

1.0 Introduction

1.1 Overview

MTE Consultants Inc. were retained by Intentional Capital Real Estate to complete the site grading, servicing, and stormwater management design for the proposed 29-storey residential development located at 65-71 Agnes Street in the City of Mississauga (see **Figure 1** for Location Plan). This report will outline a functional servicing and stormwater management strategy for the proposed residential development.

The site is located on a 0.36ha parcel of land bounded by Agnes Street to the south, Cook Street to the east, residential housing to the north, and a residential building to the west. The property is currently occupied by two 1-storey residential buildings, the associated driveways, and landscaped areas surrounding the buildings. The proponent plans to remove the two existing residential buildings and construct a new 29-storey residential development with parking located within underground and above ground levels.

Existing municipal storm, sanitary and watermain services are located within the Agnes Street and Cook Street rights-of-way (ROWs) which will be utilized to service the proposed development.

1.2 Background Information

The following documents were referenced in the preparation of this report:

Ref. 1: *Ontario Building Code* (2024).

Ref. 2: *Geotechnical Investigation Proposed High-Rise Development – 65-71 Agnes Street, Mississauga, Ontario*, Sirati & Partners. (October 2021).

Ref. 3: *Hydrogeological Investigation Proposed High-Rise Development – 65-71 Agnes Street, Mississauga, Ontario*, Sirati & Partners. (October 2021).

Ref. 4: *Development Charges Background Study*, Region of Peel (2020).

Ref. 5: *Water Supply for Public Fire Protection*, Fire Underwriters Survey (2020).

Ref. 6: *Public Works Stormwater Design Criteria and Procedural Manual*, Region of Peel (Version 2.1 June 2019).

Ref. 7: *Public Works Design, Specifications & Procedures Manual – Linear Infrastructure*, Region of Peel (MODIFIED, March 2017)

Ref. 8: *Development Requirements Manual*, City of Mississauga Transportation and Works Department (September, 2016).

Ref. 9: *Stormwater Management Criteria*, Credit Valley Conservation (August 2012).

Ref. 10: *Low Impact Development Stormwater Management Planning and Design Guideline,* Credit Valley Conservation & Toronto and Region Conservation for the Living City, Version 1.0 (2012).

Ref. 11: *Design Guidelines for Drinking-Water Systems*, Ministry of the Environment and Climate Change (2008).

Ref. 12: *Design Guidelines for Sewage Works*, Ministry of the Environment and Climate Change (2008).

Ref. 13: *Erosion & Sediment Control Guideline for Urban Construction* (December, 2006).

Figure 1 – Location Plan

Ref. 14: *MOE Stormwater Management Practices Planning and Design Manual* (Ministry of Environment, March 2003).

1.3 Geotechnical Investigation

A geotechnical investigation was conducted by Sirati & Partners, dated October 27, 2021. Five (5) boreholes were drilled to depths ranging from approximately 4.8m to 21.2m below existing ground surface in the vicinity of the proposed residential building. Layers of fill consisting of top soil, probable fill, sand and bedrock (Georgian Bay Formation) was encountered in all boreholes at depth of approximately 3.2m.

Three (3) ground water monitoring wells were installed within the proposed development site in boreholes (BH1, BH3 and BH4) at the completion of the drilling to support in-situ hydrogeological testing. Approximately a week after installation, ground water was measured at depths of 5.3 and 3.2 metres below existing grade in boreholes 1 and 3 respectively. The approximate groundwater elevations are 108.0, 109.4, and 109.7 metres above mean sea level for boreholes 1, 3, and 4 respectively.

1.4 Hydrogeological Assessment

A Hydrogeological Assessment was prepared by Sirati & Partners Consultants Ltd. for the proposed residential building. This report discussed existing on-site groundwater conditions and the implications and considerations to take into the design. The field work was carried out from April 2021 to May 2021 and consisted of five (5) boreholes. The ground water elevation ranged from 108.03 to 109.65 metres above mean sea level and the report indicated a geometric mean hydraulic conductivity of 1.1×10^{-4} cm/sec which corresponds to an approximate infiltration rate of 47mm/hr as per Table C1 within the TRCA/CVC LID SWM Planning and Design Guide. Based on the Hydrogeological report short-term and long-term dewatering will be required for the site.

Groundwater quality was found to be in exceedance of the Region of Peel Storm Sewer Discharge Limits for manganese and zinc and in exceedance of the Storm and Sanitary Sewer Discharge Limits for total suspended solids (TSS). These exceedances are attributed to sediment within the samples and will be reduced to acceptable levels following treatment prior to discharge. Refer to the Hydrogeological Assessment for more details.

1.5 Long Term Groundwater Discharge

As per Section 8.3 within the Hydrogeological Assessment prepared by Sirati & Partners Consultants Ltd., the peak estimated groundwater discharge rate was calculated to be 84,068 L/day (0.001 m^3/s). It is the Owner's intention to install a perimeter foundation drainage system which will treat collected groundwater before discharging to the storm sewer. The groundwater discharge treatment system is to be designed by a Mechanical Engineer. For the purposes of the stormwater management design, this peak groundwater flow was considered as a permanent base flow and factored into the sizing of the control features.

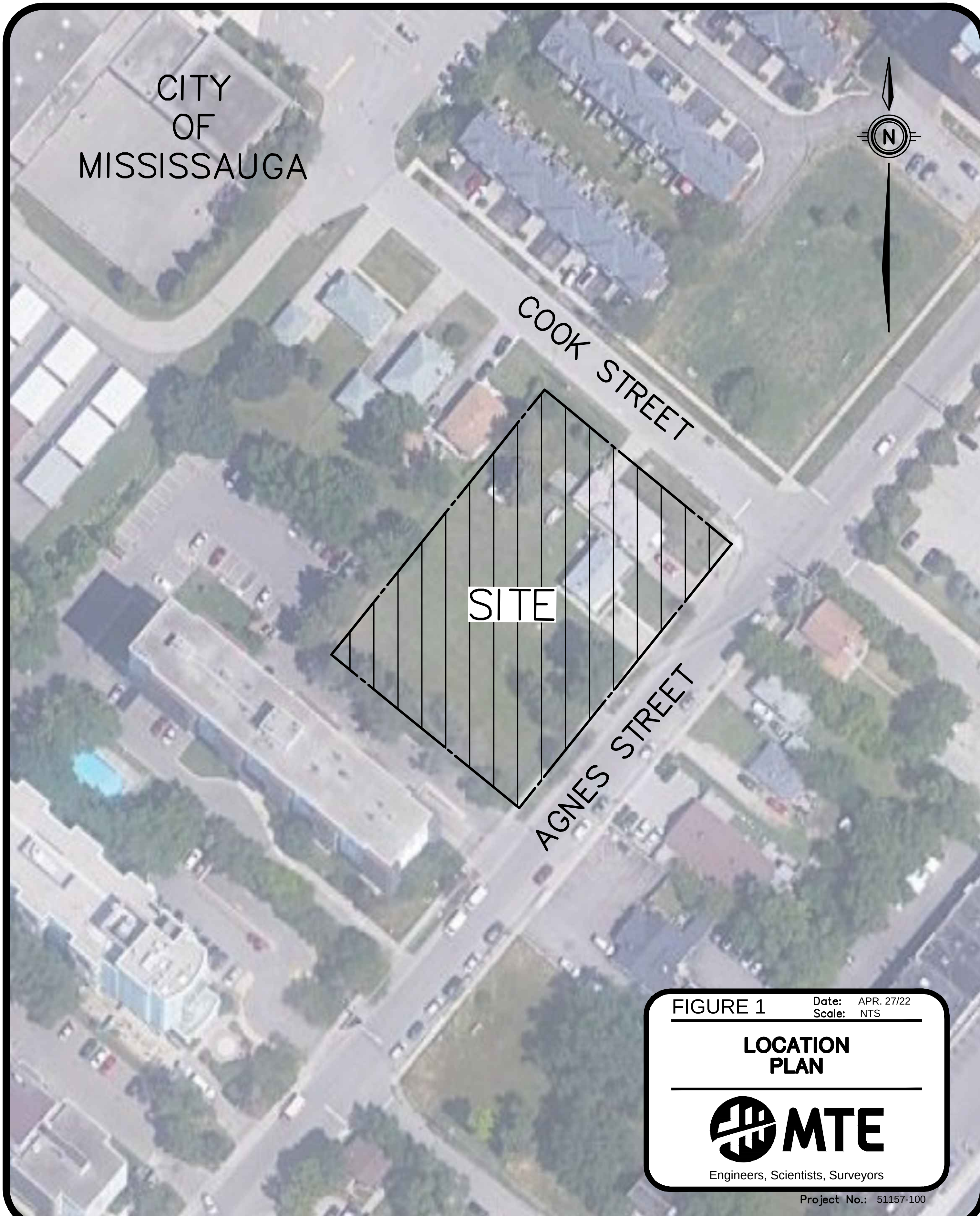


FIGURE 1
Date: APR. 27/22
Scale: NTS

LOCATION PLAN

MTE
Engineers, Scientists, Surveyors

Project No.: 51157-100

April 27, 2022 — 4:47 p.m. — Plotted By: LQalw   P:\P\51157\100\51157-100-F1.dwg

2.0 Stormwater Management

The following sections will describe the proposed stormwater management (SWM) plan for the site.

2.1 Stormwater Management Criteria

The following SWM criteria will be applied to the site:

2.1.1 Quantity Control

Attenuation of the post-development peak flows for the 100-year storm event to the 2-year existing condition peak flow rate.

2.1.2 Quality Control

An enhanced (Level 1) water quality treatment (80% TSS Removal) is required for all impacted surface runoff prior to discharging to the receiving system.

2.1.3 Water Retention

Retention of the first 5mm of each storm event through infiltration, evapotranspiration, or rainwater reuse.

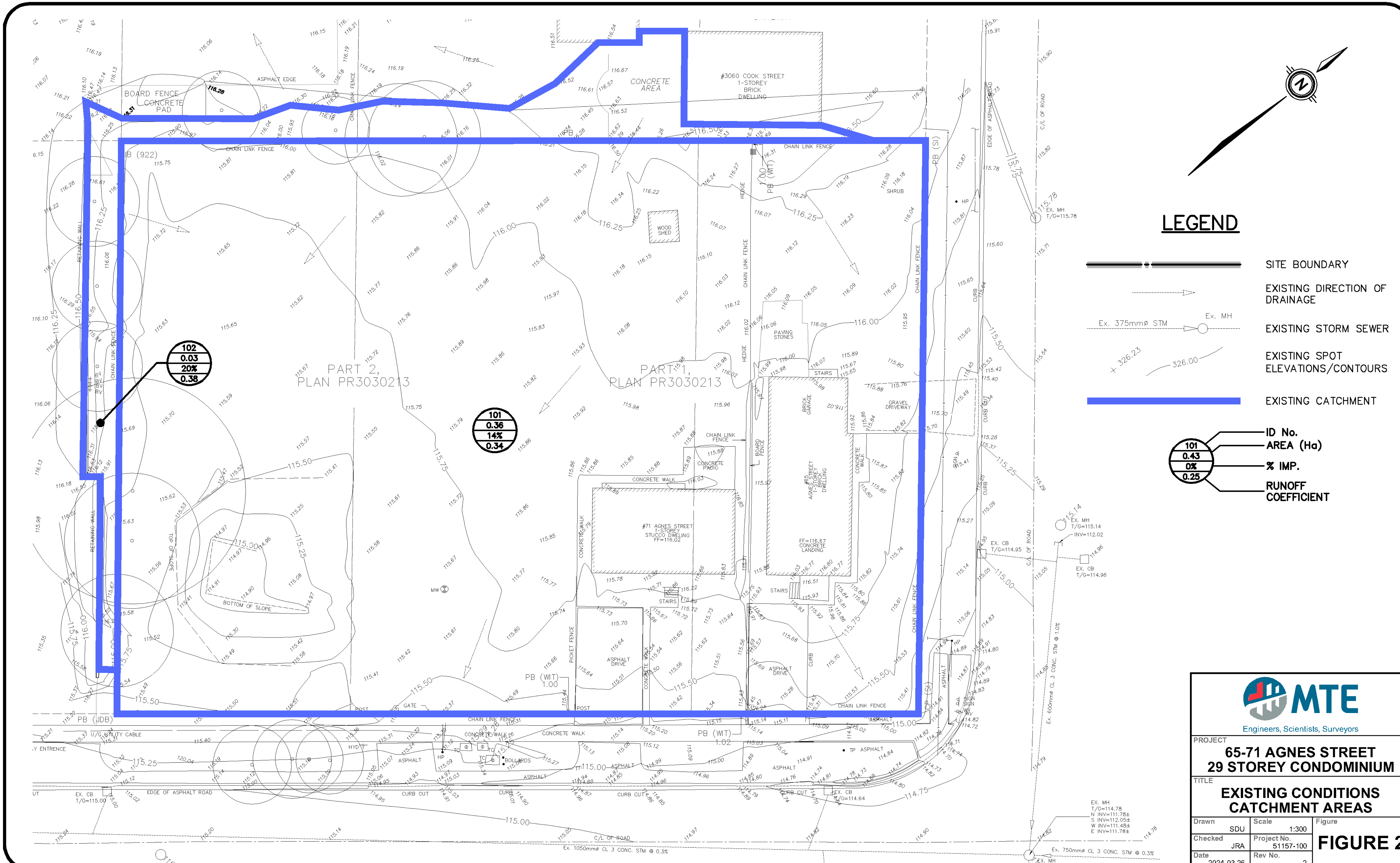
2.2 Existing Conditions

Under existing conditions, the site is comprised of two 1-storey residential buildings, driveways, and landscaped areas. There is an existing 1050mm diameter storm sewer flowing southwest at approximately 0.3% within the Agnes Street ROW and a 600mm diameter storm sewer flowing southeast at 1.0% along the Cook Street ROW. Storm runoff generated on site is conveyed via sheet flow southeast towards catchbasins located along the Agnes Street and Cook Street ROW. The site does not have any known on-site stormwater management quantity or quality controls. The existing conditions have been defined by two (2) catchment area (see **Table 2.1** and **Figure 2**). A topographic survey of areas external to the property was completed by J.D. Barnes Limited to confirm the extent of external drainage entering the site.

Table 2.1 – Existing Conditions Catchment Areas

Catchment ID	Description	Area (ha)	% Imp. [A]	'C' [A]
101	Existing Site Drainage	0.36	14	0.34
102	External Lands Draining to Site	0.03	20	0.38
	TOTAL	**0.39**	**15**	**0.35**
[A] See Appendix A for detailed breakdown.				

CAD: P:\P\51157\100\51157-100-F2.DWG



June 6, 2024 — 3:14 p.m. — Plotted By: JAsztalos

P:\P\51157\100\51157-100-F2.dwg

The allowable release rate to the existing Agnes Street storm sewer was assessed using the Rational Method and the 2-Year IDF parameters for the City of Mississauga. **Table 2.2** summarizes the site allowable release rate for the 2-year design storm event which was calculated as follows:

$$Q = 0.00278CiA$$

Where:

Q = runoff rate (m^3/s); C = Runoff Coefficient; i = Rainfall Intensity (mm/hr)

A = Catchment Area (ha)

Table 2.2 – Existing Conditions 2-Year Peak Flow Rate

Design Storm Event	IDF Parameters [A]			Allowable Release Rate to Agnes Street (Catchment 101 + 102) Q (m^3/s)
	A	B	C	
2-year	610	4.6	0.78	0.023 [B]

[A] IDF parameters from City of Mississauga Standard DWG No. 2111.010

[B] $i = \frac{A}{(T_c+B)^C}$, T_c = 15min, Q = 0.00278CiA. See Appendix A for detailed calculations.

2.3 Proposed Conditions

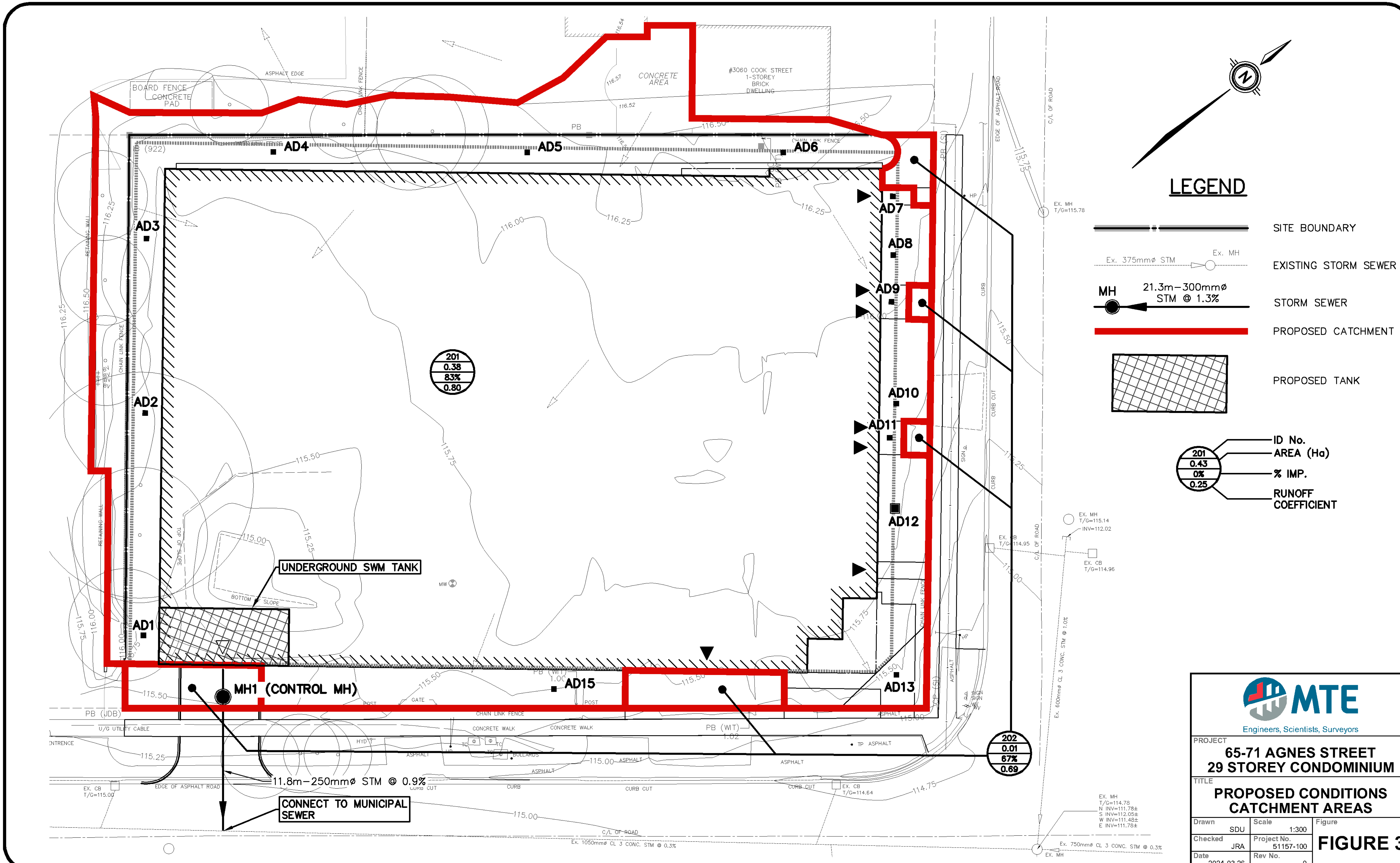
2.3.1 Quantity Control

Under proposed conditions, the proponent plans to construct a 29-story high-rise residential development with underground parking levels. The proposed condition is delineated by two (2) catchment areas. Stormwater runoff from the site will be collected via area drains along the perimeter of the site and roof drains. Stormwater runoff will be directed to a stormwater tank within the P1 parking level via internal plumbing. The stormwater will then outlet from the tank through an orifice and new storm service lateral, connecting to the existing storm sewer within the Agnes Street ROW. A small amount of perimeter landscaping will drain uncontrolled via sheet flow to the Agnes Street and Cook Street ROW's.

Table 2.3 provides a brief description of each catchment area as well as the size and impervious cover associated with each. **Figure 3** provides an illustration of the post-development catchment areas. Appendix A contains detailed information pertaining to the stormwater management model.

Table 2.3 – Proposed Conditions Catchment Areas

Catchment ID	Description	Area (ha)	% Imp.	'C'
201	Building and Perimeter Paved and Landscaped (Controlled)	0.38	83	0.80
202	Perimeter Paved and Landscaped (Uncontrolled)	0.01	67	0.69
	TOTAL	**0.39**	**0.83**	**0.80**



CAD: P:\P\51157\100\51157-100-F2.DWG
LEGEND
SITE BOUNDARY
Ex. 375mmø STM
Ex. MH
EXISTING STORM SEWER
MH
21.3m–300mmø STM @ 1.3%
STORM SEWER
PROPOSED CATCHMENT
PROPOSED TANK
201
0.43
0%
0.25
ID No.
AREA (Ha)
% IMP.
RUNOFF COEFFICIENT
201
0.38
83%
0.80
202
0.01
67%
0.69
AD1
AD2
AD3
AD4
AD5
AD6
AD7
AD8
AD9
AD10
AD11
AD12
AD13
AD15
MH1 (CONTROL MH)
UNDERGROUND SWM TANK
11.8m–250mmø STM @ 0.9%
CONNECT TO MUNICIPAL SEWER
#3060 COOK STREET 1-STOREY BRICK DWELLING
CONCRETE AREA
BOARD FENCE
CONCRETE PAD
ASPHALT EDGE
CHAIN LINK FENCE
RETAINING WALL
TOP OF SLOPE
BOTTOM OF SLOPE
CONCRETE WALK
EDGE OF ASPHALT ROAD
C/L OF ROAD
U/G UTILITY CABLE
ENTRANCE
Ex. 1050mmø CL 3 CONC. STM @ 0.3%
Ex. 750mmø CL 3 CONC. STM @ 0.3%
Ex. 600mmø CL 3 CONC. STM @ 1.0%
EX. MH T/G=115.78
EX. MH T/G=115.14 INV=112.02
EX. CB T/G=114.96
EX. CB T/G=114.64
EX. CB T/G=115.00
EX. MH T/G=114.78 N INV=111.78± S INV=112.05± W INV=111.48± E INV=111.78±
MTE
Engineers, Scientists, Surveyors
PROJECT
65-71 AGNES STREET
29 STOREY CONDOMINIUM
TITLE
PROPOSED CONDITIONS CATCHMENT AREAS
Drawn SDU
Scale 1:300
Checked JRA
Project No. 51157-100
Date 2024-03-26
Rev No. 0
Figure
FIGURE 3

Catchment 201

Catchment 201 represents the building area, perimeter landscaped areas, paved areas, and external drainage in which runoff will be captured and conveyed to the on-site stormwater network. A proposed storm tank complete with orifice controls within the P1 parking level will be constructed to control the proposed conditions 100-year discharge rate to the existing conditions 2-year discharge rate. The stormwater runoff from the tank will be controlled by a 75mm diameter orifice plate located at the outlet of the stormwater tank prior to discharge into the existing 1050mm diameter storm sewer along the Agnes Street ROW.

Catchment 202

Catchment 202 represents an area that will be comprised of landscaped and asphalt areas draining uncontrolled via overland sheet flow to the Agnes Street and Cook Street ROWs.

The proposed conditions were assessed using the SWMHYMO hydrologic modeling program developed by J.F. Sabourin & Associates for the 100-year City of Mississauga 24-hour Chicago Distribution design storm. Appendix A contains detailed hydrologic modeling parameters and input/output printouts for the proposed conditions.

Table 2.4 summarizes the stage-storage-discharge relationship for the underground storm tank.

Table 2.4 – Stage-Storage-Discharge Calculations for Underground Storm Tank

Elevation (m)	Head (m)	Cumulative Storage Volume (m^3) [A]	Discharge Q (m^3/s)[B]	Comments
111.80	0.00	0.0	0.000	Tank Outlet
111.84	0.00	0.0	0.000	C/L Orifice
113.17	1.33	76.3	0.0150	Middle of Tank
114.53	2.69	154.8	0.0213	Top of Tank

[A] Storage volume based on a tank with internal footprint of 57.5m^2 and an active storage height of 2.69m. See Appendix A and drawing C2.2 for more details.
[B] From orifice equation $Q = C_d A (2gH)^{0.5}$ for a 77mm diameter orifice plate [**invert=111.80**]
Where: C_d = 0.63, A=cross-sectional area, g=9.81, H=pressure head

Table 2.5 summarizes the proposed condition 100-year peak discharge rate for the site with the aforementioned stormwater management controls and compares it to the 2-year existing condition discharge rate. **Table 2.6** summarizes the proposed condition storage volume requirements and storage volume provided by the underground storm tank. The underground storm tank will provide sufficient storage volume to retain stormwater runoff up to the 100-year storm event prior to being released into the existing 1050mm diameter storm sewer along Agnes Street.

Table 2.5 – Proposed Condition Peak Discharge Rate to Agnes Street

Storm Event	Proposed Condition			Total Peak Discharge Rate from Site (m^3/s) B
	Peak Discharge Rate (Catchment 201) (m^3/s) A	Peak Discharge Rate (Catchment 202) (m^3/s) A	Total Peak Discharge Rate from Site (Catchment 201 + 202) (m^3/s) A	
100-yr	0.021	0.004	**0.023**	**0.023**
A Values taken from SWMHYMO Output File. B See Table 2.2				

As outlined above, the post-development 100-year peak flow rate matches the pre-development 2-year peak flow rate. Please refer to Appendix A for SWMHYMO modeling output files.

Table 2.6 – Proposed Conditions Storage Volume Requirements Summary (Storm Tank)

Storm Event	Storm Tank (Catchment 201)	
	Storage Volume Req. A (m^3)	Total Storage Volume Provided (m^3) B
100-yr	152.6	154.8
A Storage volume taken from SWMHYMO Output File (see Appendix A). B See Table 2.4		

The analysis indicates the following:

- The proposed conditions peak discharge rate to Agnes Street for 100-year storm event matches the 2-year existing conditions peak discharge rate.
- Sufficient storage volume is provided within the storm tank.

2.3.2 Quality Control

Due to grading constraints and the nature of the proposed development with the building taking up the majority of the subject site, there are limited opportunities for proposed low impact development (LID) features on the site. As the City considers roof water to be clean and there will be no runoff generated from surface parking areas, water quality controls are not proposed for this site as the development will not impact water quality for downstream receivers.

2.3.3 Water Retention

As per the City of Mississauga requirements, the site is required to provide 5mm of on-site retention via infiltration, reuse, or evapotranspiration. Based on the site area, the volume of water required to be retained on-site is calculated as follows:

Volume = Site Area (m^2) x Depth of Rainfall (m)

= $3600m^2$ x 0.005m

= 18.0 m^3

Due to the proposed underground parking level taking up most of the site, infiltration measures to retain the water on-site are not feasible. The volume required to be retained on site will therefore be achieved via greywater reuse. The bottom of the storm tank will be set approximately 0.32m below the outlet to retain the required volume. The water will be used for grey water and irrigation as designed by the mechanical engineer. The collected stormwater will be used within 72-hours of a rainfall event.

2.4 Sediment and Erosion Control

Sediment and erosion control measures are to be implemented on site during construction and are to conform to the Erosion & Sediment Control Guideline for Urban Construction and City of Mississauga Standards.

Sediment and erosion control measures will include:

- Installation of silt control fencing at strategic locations around the perimeter of the site where feasible.
- Preventing silt or sediment laden water from entering inlets (catchbasins / catchbasin manholes) by wrapping the inlet grates with filter fabric or installing silt sacks.
- Construction of a mud mat at the exit from the site to Agnes Street to mitigate the transportation of sediments to the surrounding roads.
- Maintaining sediment and erosion control structures in good repair (including periodic cleaning as required) until such time that the Engineer or City of Mississauga approves their removal. Erosion control measures to be inspected weekly and after any rainfall event.

3.0 Sanitary Sewer Servicing

3.1 Existing Conditions

There is an existing 250mm diameter sanitary sewer flowing northeast at approximately 0.7% within the Agnes Street ROW (full flow capacity of 49.7L/s). Additionally, there is an existing 250mm diameter sanitary sewer flowing southeast at approximately 1.4% within the Cook Street ROW (full flow capacity of 70.4 L/s). All capacities are based on Manning's Roughness Coefficient of 0.013.

3.2 Proposed Conditions

The anticipated sanitary discharge from the proposed development was estimated using Region of Peel design criteria. **Table 3.1** provides an estimate of the population for the site.

Table 3.1 – Population Estimate

Description	Units [A]	Population Density (ppha) [B]	Population [C]
1- Bedroom	262	1.6	419
2-Bedroom	112	1.6	179
3-Bedroom	25	3.0	75
Townhouse	6	3.4	20
		Total Estimated Population	**694**

[A] Unit Count referenced from Context Plan & Project Statistics prepared by Sweeny&Co Architects. Includes six 2-storey townhouse units.
[A] Population density based on Region of Peel Development Charges Study (2020).
[C] Population calculated as (Units) X (Population Density). Total population rounded up.

Region of Peel guidelines were used to calculate discharge rates from the proposed site. The sanitary sewer discharge rates from the development are summarized in **Table 3.2** and detailed calculations are found in Appendix B.

Table 3.2 – Sanitary Sewer Discharge from Site

Description	Population (people) [A]	Average Flow (L/s) [B]	Peak Flow (L/s) [C]
1- Bedroom	419	1.47	5.73
2-Bedroom	179	0.63	2.45
3-Bedroom	75	0.26	1.02
Townhouse	20	0.07	0.28
Total	**694**	**2.43**	**9.48**
Total Peak Sanitary Demand for Site (with infiltration allowance)			**9.55** [D]

[A] See Table 3.1.
[B] Average flow based on 302.8 L/ca/day, as outlined in the Region of Peel Sanitary Sewer Design Criteria (2009).
[C] Peak flow = Average Flow*PF, where Harmon Peaking Factor (PF) = 1 + (14/(4+$P^{1/2}$) where P = cumulative population in thousands.PF = 3.9
[D] Total Peak flow with infiltration = Total peak flow + infiltration allowance
Where infiltration allowance (IA) is based on 0.20 l/s/ha, as outlined in the Region of Peel Sanitary Sewer Design Criteria (2009).
IA = (0.2 L/s/ha) x (0.36ha) = 0.07 L/s

3.3 Proposed Sanitary Servicing Plan and Capacity Analysis

Sanitary servicing for the site will be provided by a 250mm diameter sanitary service at 2.0% connected to the existing 250mm diameter sanitary sewer on Cook Street. The full-flow capacity of a 250mm diameter pipe at a 2.0% slope is 84.1 L/s; the expected sanitary demand is below this limit. See Drawing C2.2 for details. The calculated sanitary discharge rate of 9.55 L/s (per **Table 3.2**) is less than the capacity of the Cook Street sanitary sewer (70.4 L/s) and represents approximately 14% of the total sewer capacity.

4.0 Domestic and Fire Water Supply Servicing

4.1 Existing Conditions

The existing municipal water distribution system around the site consists of a 400mm diameter watermain on Agnes Street ROW and a 150mm diameter watermain on Cook Street ROW. There is an existing hydrant located at the eastern site limit on Agnes Street.

4.2 Domestic Water Demands

The expected domestic water demand for the proposed development was estimated using the Region of Peel design criteria. **Table 4.1** summarizes the domestic water demand requirements for the Average Day, Maximum Day and Peak Hour demand scenarios and detailed calculations are provided in Appendix C. It should be noted that average day peak factor is 1.0, the max day peak factor is 2.0 and the peak hour factor is 3.0 in accordance with the Region of Peel standards.

Table 4.1 – Domestic Water Demands

Proposed Residential Demands		
Population:	694 people (see Table 3.1)	
Average Day Demand: [A]	280 L/day/person x 694 people =	**2.25 L/s**
Maximum Day Demand: [A]	2.0 x 2.25 L/s =	**4.50 L/s**
Peak Hour Demand: [A]	3.0 x 2.25 L/s =	**6.75 L/s**
[A] Refer to Appendix C for detailed calculations.		

4.3 Fire Flow Demand

Fire flow demands for the proposed development were determined using the methodology outlined in Water Supply for Public Fire Protection (Fire Underwriters Survey (FUS), 2020). The fire demands are summarized in **Table 4.2** and detailed calculations are provided in Appendix C.

Table 4.2 – FUS Fire Flow Requirements

Building	Fire Underwriters Survey (FUS) Flow Rate
Proposed Residential Development	183.3 L/s (11,000 L/min)
Ultimate Maximum Day + Fire Flow	**187.80 L/s (11,268 L/min)**

4.4 Proposed Water Servicing Plan and Analysis

As recommended by Region staff, fire water servicing for the site will consist of a looped system in which two water services; one connection off the Agnes Street watermain and one connection off the Cook Street watermain. The domestic service will be fed off the connection to Agnes Street watermain. The Agnes Street connection will consist of a 200mm diameter fire water service and 150mm diameter domestic service. The Cook Street connection will consist of a 150mm diameter fire water service. The water services are to be looped internal to the building and will be detailed by the Mechanical Engineer. For both fire watermains servicing the site, a detector check valve chamber has been provided prior to the building connection. Existing water service laterals for the existing buildings will be decommissioned per municipal standards.

A hydrant flow test was completed on March 26, 2024, by L&D Waterworks for the proposed development. The results indicate that there is enough pressure to meet the MECP and Region of Peel water distribution system requirements of maintaining a minimum residual pressure of 20psi (140kPa) when subject to Maximum Day + Fire Flow demands. See Appendix C for detailed calculations and the fire hydrant flow test results.

5.0 Conclusions

Based on the information provided herein, the following can be concluded:

i. The Site's stormwater management quantity control criteria can be met using a storage tank complete with orifice control.

ii. Quality control for the site is not required as runoff generated is inherently clean.

iii. Water retention for the site can be provided via a cistern and water reuse.

iv. Sanitary servicing for the site can be provided via a new service connection to the existing Cook Street sanitary sewer.

v. Water servicing for the development can be provided via new service connections teed off the existing Agnes Street and Cook Street watermains.

We trust the information enclosed herein is satisfactory. Should you have any questions please do not hesitate to contact our office.

All of which is respectfully submitted,

MTE Consultants Inc.

Joseph Asztalos, P.Eng.
Manager, Design (Civil Engineering)
905-639-2552 ext. 2492
jasztalos@mte85.com

JRA:nxr

M:\51157\100\Reports\MTE\FSR\51157-100_Functional_Servicing_and_SWM_Report.docx

Appendix A

STORMWATER MANAGEMENT CALCULATIONS

65-71 Agnes Street
Mississauga, ONT
STORMWATER MANAGEMENT

Project Number: 51157-100
Date: March 15, 2024
Design By: NXR
File: Q:\51157\100\SWM\51157-100 SWM Calculations.xlsx

CALCULATION SHEET
Existing Flows

Existing Flow Rates
Rational Method Q=kCIA (L/s)

k= 2.78
C= runoff coefficient
I= rainfall intensity (mm/hr)
A= contribution area (ha)

Total Site Area (includes external)
A= 3,900 m^2
Site Area (A)= ***0.390*** ***ha***

Existing Breakdown	Area			%Imp	C
Catchment 101	Impervious	518	m^2	100%	0.90
	Pervious	3082	m^2	0%	0.25
	Subtotal	3600	m^2	14%	0.34
Catchment 102	Impervious	61	m^2	100%	0.90
	Pervious	239.0	m^2	0%	0.25
	Subtotal	300	m^2	20%	0.38
	Total/**Average**=	3,900	m^2	**15%**	**0.35**

Rainfall Intensity $I=A(t+B)^{-C}$ (mm/hr)

City of Mississauga, Peel Region

Rainfall Event	A	B	C	t (min)	Intensity (mm/hr)	$C^{(A)}$ (Existing)	Q Existing (L/s)
2-Year	610.0	4.6	0.780	15	59.892	0.35	23
5-Year	820.0	4.6	0.780	15	80.511	0.35	30
10-Year	1010.0	4.6	0.780	15	99.166	0.35	37
25-Year	1160.0	4.6	0.780	15	113.893	0.38	47
50-Year	1300.0	4.7	0.780	15	127.133	0.42	57
100-Year	1450.0	4.9	0.780	15	140.690	0.43	66

(A) Runoff Coefficients adjustment factors per Section 8.1.1 of the Development Requirements Manual by The City of Mississauga dated November 2020.
10 Year - 1.0
25 Year - 1.1
50 Year - 1.2
100 Year - 1.25

POST DEVELOPMENT CONDITIONS HYDROLOGIC MODELING PARAMETERS															
Catchment ID	Catchment Description	Hydrograph Method	Area (ha)	Perv. CN	Perv. Ia (mm)	Impervious (%)		Flow Length (m)		Manning "n"		Slope (%)		'C'
						TIMP	XIMP	Perv.	Imperv.	Perv.	Imperv.	Perv.	Imperv.	
201	Building and Perimeter Asphalt and Landscaped (Controlled)	STANDHYD	0.38	90	2.82	83	83	5	12	0.250	0.013	2.0	2.0	0.80
202	Perimeter Asphalt and Landscaped (Uncontrolled)	STANDHYD	0.01	90	2.82	67	67	5	5	0.250	0.013	2.0	2.0	0.69
			0.39			**83**								

Notes

- Pervious Initial Abstraction (Perv. Ia) = 0.1 x S ,   where S = (25400 / CN) - 254
- Depression Storage over Impervious areas (DPSI) = 1.0 mm

STAGE-STORAGE-DISCHARGE CALCULATIONS FOR SWM TANK

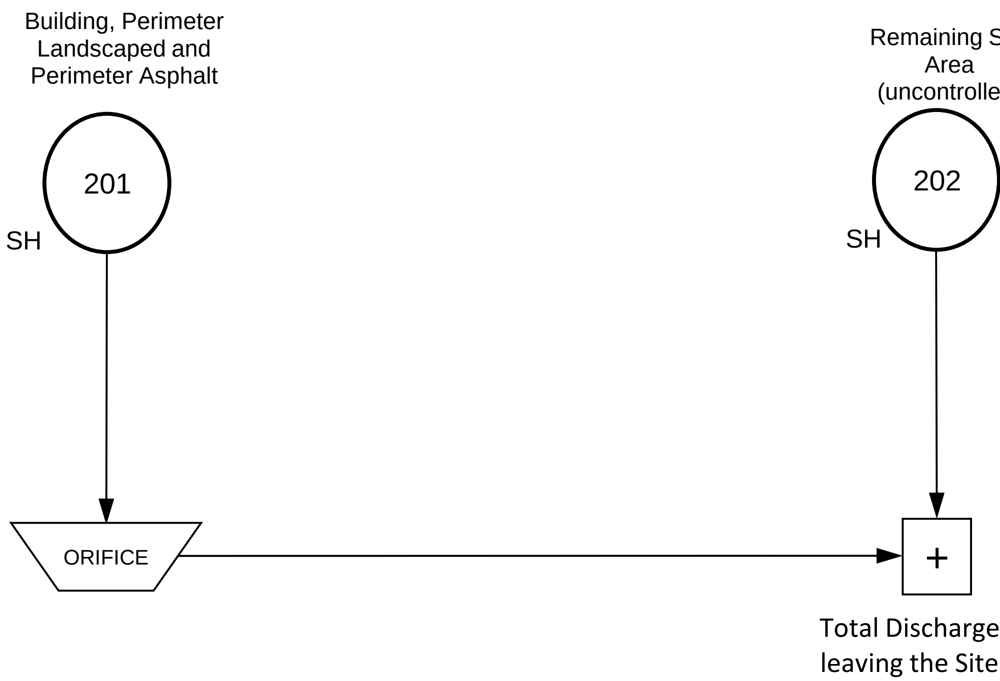
Outlet Device No. 1

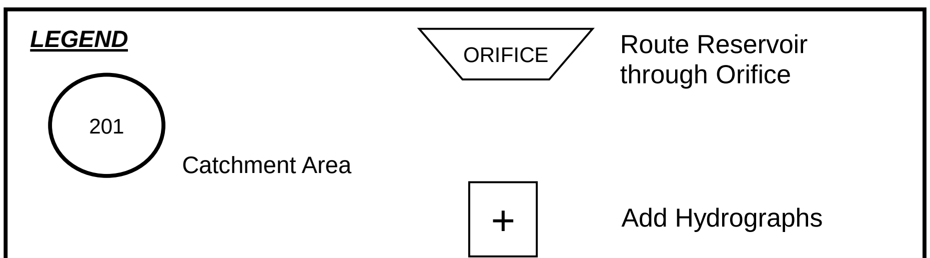
Type:	Plate
Diameter (mm)	77
Area (m^2)	0.00466
Invert Elev. (m)	111.80
C/L Elev. (m)	111.84
Disch. Coeff. (C_d)	0.63
Discharge (Q) =	$C_d A (2 g H)^{0.5}$
Number of Orifices:	1
SWM Tank footprint(m^2):	57.5

	SWM Tank Volumes				Outlet No. 1		
	Elevation m	Area m^2	Incremental Volume m^3	Cumulative Active Volume m^3	H m	Discharge m^3/s	Total Discharge m^3/s
Outlet Invert	111.80	57.5	0.0	0.0	0.00	0.000	0.000
C/L Orifice	111.84	57.5	0.0	0.0	0.00	0.0000	0.0000
Middle of Tank	113.17	57.5	76.3	76.3	1.33	0.0150	0.0150
Top of Tank	114.53	57.5	78.5	154.8	2.69	0.0213	0.0213

65-71 Agnes Street
Mississauga, ONT
STORMWATER MANAGEMENT

POST-DEVELOPMENT CONDITIONS MODEL SCHEMATIC





- "NH" denotes NASHYD hydrograph command
- "SH" denotes STANDHYD hydrograph command

```
2     Metric units
*#*****************************************************************************
*#  Project Name: 65-71 Agnes Street, Missisauga, Ontario
*#  Date           : March, 2024
*#  Modeller    : NXR
*#  Company     : MTE Consultants Inc.
*#  License #   : 3053466
*#****************************************************************************|
*
START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[002]
                     MISSG100.STM
*
READ STORM           STORM_FILENAME "STORM.001"
*
*#*****************************************************************************|
*#############################################################################|
*#
*#                      POST-DEVELOPMENT CONDITIONS HYDROLOGIC MODELING
*#                 ====================================================
*#
*#############################################################################|
*# CATCHMENT 201 - Controlled Site Drainage
*
CALIB STANDHYD       ID=[1], NHYD=["201"], DT=[1](min), AREA=[0.38](ha),
                     XIMP=[0.83], TIMP=[0.83], DWF=[0.001](cms), LOSS=[2],
                     SCS curve number CN=[90],
                     Pervious   surfaces: IAper=[2.82](mm), SLPP=[2.0](%),
                                          LGP=[5](m), MNP=[0.250], SCP=[0](min),
                     Impervious surfaces: IAimp=[1.00](mm), SLPI=[2.0](%),
                                          LGI=[5](m), MNI=[0.013], SCI=[0](min),
                     RAINFALL=[ ,  ,  ,  also m/hr) ,  END=-1
*%-----------------|------------------------------------------------------------|
*COLLECT 18.0m3 FOR WATER REUSE
COMPUTE DUALHYD      IDin=[1], CINLET=[0.0001](cms), NINLET=[1],
                     MAJID=[2], MajNHYD=["OUT"],
                     MINID=[3], MinNHYD=["REUSE"],
                     TMJSTO=[18.0](cu-m)
*%-----------------|------------------------------------------------------------|
*#ORIFICE PLATE
*
ROUTE RESERVOIR      IDout=[4],   NHYD=["TOT-SWM"],  IDin=[2],
                     RDT=[1](min),
                           TABLE of ( OUTFLOW-STORAGE ) values
                                       (cms) - (ha-m)

 0.00000   0.0000
 0.01497   0.0076
 0.02132   0.0155
                                        -1       -1   (max twenty pts)
                           IDovf=[5], NHYDovf=["OVF-201"]
*%-----------------|------------------------------------------------------------|
*CATCHMENT 202 - UNCONTROLLED SITE AREA (PERIMETER)
*#****************************************************************************|
CALIB STANDHYD       ID=[6], NHYD=["202"], DT=[1](min), AREA=[0.01](ha),
                     XIMP=[0.67], TIMP=[0.67], DWF=[0](cms), LOSS=[2],
                     SCS curve number CN=[90],
                     Pervious   surfaces: IAper=[2.82](mm), SLPP=[2.0](%),
                                          LGP=[5](m), MNP=[0.250], SCP=[0](min),
                     Impervious surfaces: IAimp=[1.00](mm), SLPI=[2.0](%),
                                          LGI=[5](m), MNI=[0.013], SCI=[0](min),
                     RAINFALL=[ ,  ,  ,  also m/hr) ,  END=-1
*%-----------------|------------------------------------------------------------|
*# TOTAL DISCHARGE FROM THE SUBJECT PROPERTY (ALLOWABLE = 0.023 cu.m/s)
ADD HYD              IDsum=[7], NHYD=["TOT"], IDs to add=[4,5,6]
*%-----------------|------------------------------------------------------------|
*
FINISH
```

```
==============================================================================
  SSSSS  W   W  M   M  H   H  Y   Y  M   M   OOO        999    999    =========
  S       W W W  MM MM  H   H   Y Y   MM MM  O   O      9   9  9   9
  SSSSS  W W W  M M M  HHHHH    Y    M M M  O   O  ##  9   9  9   9   Ver  4.05
      S   W W   M   M  H   H    Y    M   M  O   O       9999   9999   Sept 2011
  SSSSS   W W   M   M  H   H    Y    M   M   OOO           9      9   =========
                                                       9   9  9   9   # 3053466
       StormWater Management HYdrologic Model           999    999    =========
 ******************************************************************************
 ***************************** SWMHYMO Ver/4.05 ******************************
 *********  A single event and continuous hydrologic simulation model  *********
 *********     based on the principles of HYMO and its successors      *********
 *********                   OTTHYMO-83 and OTTHYMO-89.                *********
 ******************************************************************************
 ********* Distributed by:  J.F. Sabourin and Associates Inc.          *********
 *********                  Ottawa,  Ontario: (613) 836-3884           *********
 *********                  Gatineau, Quebec: (819) 243-6858           *********
 *********                  E-Mail: swmhymo@jfsa.Com                   *********
 ******************************************************************************
 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 +++++++++ Licensed user: MTE Consultants Inc.                        +++++++++
 +++++++++                 Burlington            SERIAL#:3053466       +++++++++
 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 ******************************************************************************
 *********           ++++++ PROGRAM ARRAY DIMENSIONS ++++++            *********
 *********           Maximum value for ID numbers  :     10            *********
 *********           Max. number of rainfall points: 105408            *********
 *********           Max. number of flow points    : 105408            *********
 ******************************************************************************
 *********************   D E T A I L E D   O U T P U T   *********************
 ******************************************************************************
 *         DATE: 2024-06-06     TIME: 16:03:45     RUN COUNTER: 000746        *
 ******************************************************************************
 * Input   filename: Q:\51157\100\SWM\51157.DAT                               *
 * Output  filename: Q:\51157\100\SWM\51157.out                               *
 * Summary filename: Q:\51157\100\SWM\51157.sum                               *
 * User comments:                                                             *
 * 1:_________________________________________________________________________*
 * 2:_________________________________________________________________________*
 * 3:_________________________________________________________________________*
 ******************************************************************************
-------------------------------------------------------------------------------
001:0001-----------------------------------------------------------------------
*#*****************************************************************************
*#  Project Name: 65-71 Agnes Street, Missisauga, Ontario
*#  Date           : March, 2024
*#  Modeller    : NXR
*#  Company     : MTE Consultants Inc.
*#  License #   : 3053466
*#***************************************************************************|
*
  ** END OF RUN :   1
******************************************************************************
--------------------
| START             |  Project  dir.: Q:\51157\100\SWM\
--------------------  Rainfall dir.: Q:\51157\100\SWM\
    TZERO =   .00 hrs on        0
    METOUT=   2 (output = METRIC)
    NRUN  = 002
    NSTORM=   1
           #  1=MISSG100.STM
-------------------------------------------------------------------------------
002:0002-----------------------------------------------------------------------
*#*****************************************************************************
*#  Project Name: 65-71 Agnes Street, Missisauga, Ontario
*#  Date           : March, 2024
*#  Modeller    : NXR
*#  Company     : MTE Consultants Inc.
*#  License #   : 3053466
*#***************************************************************************|
*
-------------------------------------------------------------------------------
002:0002-----------------------------------------------------------------------
*
--------------------
| READ STORM        |    Filename: MISSISSAUGA 100-YR(A=1450 B=4.9 C=0.78)
| Ptotal=  74.18 mm|    Comments: MISSISSAUGA 100-YR(A=1450 B=4.9 C=0.78)
--------------------
              TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
               hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
               .25   6.785 |   1.00  29.140 |   1.75  18.449 |   2.50   8.259
               .50   8.807 |   1.25 140.690 |   2.00  12.841 |   2.75   7.079
               .75  13.024 |   1.50  35.407 |   2.25   9.996 |   3.00   6.223
-------------------------------------------------------------------------------
002:0003-----------------------------------------------------------------------
*
*#***************************************************************************|
*#############################################################################|
*#
*#                   POST-DEVELOPMENT CONDITIONS HYDROLOGIC MODELING
*#              ====================================================
*#
*#############################################################################|
*# CATCHMENT 201 - Controlled Site Drainage
*
----------------------
| CALIB STANDHYD     |   Area    (ha)=     .38
| 01:201    DT= 1.00 |   Total Imp(%)=   83.00   Dir. Conn.(%)=   83.00
----------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       .32          .06
     Dep. Storage     (mm)=      1.00         2.82
     Average Slope     (%)=      2.00         2.00
     Length            (m)=      5.00         5.00
     Mannings n          =       .013         .250
     Max.eff.Inten.(mm/hr)=    140.69       119.45
                over (min)       1.00         2.00
     Storage Coeff.  (min)=       .30 (ii)    2.19 (ii)
     Unit Hyd. Tpeak (min)=      1.00         2.00
     Unit Hyd. peak  (cms)=      1.64          .53
                                                           *TOTALS*
     PEAK FLOW       (cms)=       .12          .02           .144 (iii)
     TIME TO PEAK    (hrs)=      1.08         1.25          1.250
     RUNOFF VOLUME    (mm)=     73.17        51.13         69.428
     TOTAL RAINFALL   (mm)=     74.18        74.18         74.175
     RUNOFF COEFFICIENT   =       .99          .69           .936
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
            ACTUAL QPEAK: PEAK(     .14) + QBASE(   .00) =     .15  (cms)
-------------------------------------------------------------------------------
002:0004-----------------------------------------------------------------------
*COLLECT 18.0m3 FOR WATER REUSE
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .000  (cms)
| TotalHyd 01:201    |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity         =    .000  (cms)
                         Total major system storage [TMJSTO] =      18.(cu.m.)
                  ID: NHYD       AREA     QPEAK     TPEAK     R.V.      DWF
                                 (ha)     (cms)     (hrs)     (mm)     (cms)
     TOTAL HYD.   01:201          .38      .144     1.250   69.428     .001
     ====================================================================
     MAJOR SYST   02:OUT          .35      .144     1.250   69.428     .000
     MINOR SYST   03:REUSE        .03      .000    53.133   69.443     .001
     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
     ACTUAL TOTAL PEAK FLOW: PEAK (    .144) + BASE (  .001) =    .145  (cms)
     & MINOR SYS. PEAK FLOW: PEAK (    .000) + BASE (  .001) =    .001  (cms)
     Maximum MAJOR SYSTEM storage used =      18.(cu.m.)
      *** WARNING: Baseflow was left in minor system.
-------------------------------------------------------------------------------
002:0005-----------------------------------------------------------------------
*#ORIFICE PLATE
*
---------------------
| ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
|  IN>02:(OUT   )   |
| OUT<04:(TOT-SW)   |    =========  OUTLFOW STORAGE TABLE  =========
---------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                           (cms)    (ha.m.)   |    (cms)    (ha.m.)
                            .000  .0000E+00   |      .021  .1550E-01
                            .015  .7600E-02   |      .000  .0000E+00
     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------       (ha)     (cms)     (hrs)       (mm)
     INFLOW >02: (OUT   )        .35      .144     1.250     69.428
     OUTFLOW<04: (TOT-SW)        .35      .021     1.533     69.427
    OVERFLOW<05: (OVF-20)        .00      .000      .000       .000
                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=   14.671
                  TIME SHIFT OF PEAK FLOW         (min)=    17.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.1526E-01
-------------------------------------------------------------------------------
002:0006-----------------------------------------------------------------------
*CATCHMENT 202 - UNCONTROLLED SITE AREA (PERIMETER)
*#***************************************************************************|
----------------------
| CALIB STANDHYD     |   Area    (ha)=     .01
| 06:202    DT= 1.00 |   Total Imp(%)=   67.00   Dir. Conn.(%)=   67.00
----------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       .01          .00
     Dep. Storage     (mm)=      1.00         2.82
     Average Slope     (%)=      2.00         2.00
     Length            (m)=      5.00         5.00
     Mannings n          =       .013         .250
     Max.eff.Inten.(mm/hr)=    140.69       119.45
                over (min)       1.00         2.00
     Storage Coeff.  (min)=       .30 (ii)    2.19 (ii)
     Unit Hyd. Tpeak (min)=      1.00         2.00
     Unit Hyd. peak  (cms)=      1.64          .53
                                                           *TOTALS*
     PEAK FLOW       (cms)=       .00          .00           .004 (iii)
     TIME TO PEAK    (hrs)=      1.07         1.25          1.250
     RUNOFF VOLUME    (mm)=     73.17        51.13         65.901
     TOTAL RAINFALL   (mm)=     74.18        74.18         74.175
     RUNOFF COEFFICIENT   =       .99          .69           .888
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
-------------------------------------------------------------------------------
002:0007-----------------------------------------------------------------------
*# TOTAL DISCHARGE FROM THE SUBJECT PROPERTY (ALLOWABLE = 0.023 cu.m/s)
------------------------
| ADD HYD (TOT       ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 04:TOT-SWM          .35      .021    1.53  69.43    .000
                 +ID2 05:OVF-201          .00      .000     .00    .00    .000
                 +ID3 06:202              .01      .004    1.25  65.90    .000
                  ==========================================================
                  SUM 07:TOT              .36      .023    1.25  69.33    .000
   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
002:0008-----------------------------------------------------------------------
*
      FINISH
-------------------------------------------------------------------------------
*******************************************************************************
     WARNINGS / ERRORS / NOTES
     -------------------------
 002:0004 COMPUTE DUALHYD
      *** WARNING: Baseflow was left in minor system.
   Simulation ended on 2024-06-06     at 16:03:46
===============================================================================
```

Appendix B

SANITARY DEMAND CALCULATIONS

MTE

65-71 Agnes Street

City of Mississauga

MTE Project #: 51157-100

Date: March 2024

By: NXR

Sanitary Demand Calculations

Land Use	Residential				Final Demand		
	Units [1]	Population Density [2]	Population (persons)	Demand (L/s)	Total Average Demand (L/s)	Total Peaked Demand (L/s)	Total Peaked Demand + Infiltration (L/s)
Proposed Condo Mix							
1 Bedroom	262	1.6	419	1.47	1.47	5.72	
2 Bedroom	112	1.6	179	0.63	0.63	2.45	
3 Bedroom	25	3.0	75	0.26	0.26	1.02	
Townhouse	6	3.4	20	0.07	0.07	0.28	
Total	**405**		**694**	**2.43**	**2.43**	**9.48**	**9.55**

Sanitary Demand		
Residential Daily Demands[3]	302.8	L/d/person
	0.0035	L/ca/s
Harmon Peaking Factor (Residential) [4]	3.9	
Site Area	0.36	ha
Infiltration Allowance [5]	0.2	L/s/ha
	0.072	L/s

Note 1: Room/Unit count breakdown provided by architect

Note 2: Population Density based on Region of Peel Development Charges Study (2020)

Note 3: Residential daily demands based on Region of Peel Standards

Note 4: Harmon Peaking Factor Kh = 1+(14/(4+P^(1/2))) where P = population in thousands

Note 5: Infiltration allowance based on Region of Peel Sanitary Sewer Design Criteria (2009)

Appendix C

WATER DEMAND CALCULATIONS & ANALYSIS

65-71 Agnes Street

City of Mississauga
Project No: 51157-100
6/6/2024
By: NXR

Res. Peaking Factors[1]:	
Avg. Day	1.0
Max. Day	2.0
Peak Hour	3.0

Demand Calculations

Location	Residential				Final Demand		
	Units	Population Density (person/unit)[2]	Population (persons)	Demand (l/s)	Avg Day Demand Qavg (l/s)	Max Day Demand Qmax.day (l/s)	Peak Hour Demand Qpeak (l/s)
Residential							
1 Bedroom	262	1.6	419	1.359	1.359	2.717	4.076
2 Bedroom	112	1.6	179	0.581	0.581	1.161	1.742
3 Bedroom	25	3.0	75	0.243	0.243	0.486	0.729
Townhouse	6	3.4	20	0.066	0.066	0.132	0.198
Totals	**405**		**694**	**2.25**	**2.25**	**4.50**	**6.75**

Water Demand	
Average Residential Daily Demands	280 l/d/person
	0.0032 l/s/person

Fire Flow[3]	
Fire Flow	11,000 l/min
	183.30 l/s

Max Day + Fire Flow Demand	
Qmax.day+fire	187.80 l/s

Note 1: Water Demands from Section 2.3 "Water Demands" of the Region of Peel Public Works Watermain Design Criteria (2010).
Note 2: Population Density based on Region of Peel Development Charges Study (2020)
Note 3: Fire flows from FUS (2020) - See attached worksheets

65-71 Agnes Street
City of Mississauga
Project No: 51157-100
6/6/2024
By: NXR

FIRE FLOW DEMAND REQUIREMENTS - FIRE UNDERWRITERS SURVEY (FUS GUIDELINES)

Fire flow demands for the FUS method is based on information and guidance provided in "Water Supply for Public Protection" (Fire Underwriters Survey, 2020).

An estimate of the fire flow required is given by the following formula:

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

where:

RFF = the required fire flow in litres per minute
C = coefficient related to the type of construction
= 1.5 for **Type V** Wood Frame Construction
= 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
= 0.8 for **Type II** Noncombustible Construction
= 0.6 for **Type I** Fire Resistive Construction
A = For a building classified with a Construction Coefficient below 1.0:
1) For Fire-Resistive Construction, consider the two largest adjoining floors plus 50% of each of any floors immediately above them up to 8.
For New Building: Two largest adjoining floors are level 5 & 6

Floor	GFA/Floor	Total GFA	Effective Area (A)
1st	818.56	818.56	0
2nd	517.03	517.03	0
3rd	1103.26	1103.26	0
4th	1103.26	1103.26	0
5th	1022.26	1022.26	1022
6th	1642.5	1642.5	1643
7th	717.78	717.78	359
8th	846.19	846.19	423
9th to 29th	846.19	17770.07	2539
TOTAL		**25541**	**5985.33**

Adjustments to the calculated fire flow can be made based on occupancy, sprinkler protection and exposure to other structures. The table below summarizes the adjustments made to the basic fire flow demand.

Building	Area "A"	C	(1) Fire Flow "RFF"		(2) Occupancy		(3) Sprinkler		(4) Exposure		**Final Adjusted Fire Flow**		
	(m^2)	(Type II)	(l/min)	(l/s)	%	Adjusted Fire Flow (L/min)	%	Adjustment (L/min)	%	Adjustment (L/min)	**(L/min)**	**Rounded (L/min)**	**(L/s)**
Proposed Building	5,985.3	0.8	13,600	226.7	-15	11,560	-40	-4,624	35	4,046	10,982	11,000	**183.3**

(2) Occupancy

Non-Combustible	-25%
Limited Combustible	-15%
Combustible	No charge
Free Burning	15%
Rapid Burning	25%

(3) Sprinkler

-30% - Automatic sprinkler protection designed and installed in accordance with NFPA 13
-10% - Water supply is standard for both the system and Fire Department hose line
-10% - Fully supervised system

(4) Exposure

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

Calculate for all sides. Maximum charge shall not exceed 75%

Building A

Direction	**Distance**	**%**
N	4m	20
E	>30m	0
S	>30m	0
W	20.0	15
	Total	35

L & D Waterworks Inc.

491 Port Maitland Rd
Dunnville, ON N1A 2W6
Ph: 289.684.6747
Email: ldwaterworks2005@gmail.com

To: Umair Waseem **March 26,2024**

International Capital Real Estate

L & D Waterworks has recently completed fire hydrant flow test for 65-71 Agnes Street Mississauga, On.

We define the Test Hydrant as the one being flowed, and the Base Hydrant as the one where static and residual pressures are recorded. Wherever possible, we inspect the secondary valve for the Test Hydrant to make sure it is in the fully open position. Likewise, we count the number of turns needed to open the Test Hydrant (to make sure it is opening completely).

We do not use pitot conversion factors for different nozzle profiles. The Engineer may use these factors if desired and warranted.

The secondary valve for the Test Hydrant on Livingston Ave was fully open at the time of the test.

Testing was completed in accordance with NFPA 291 guidelines.

There were no irregularities to report.

Your truly.

L&D Waterworks Inc.

Hydrant Flow Test Report

SITE NAME:

SITE ADDRESS / MUNICIPALITY: **65-71 Agnes Street Mississauga, ON**

TEST HYDRANT LOCATION : **1st Fire Hydrant East of Cook St on Agnes St (Hydrant ID# 2020577)**

BASE HYDRANT LOCATION: **1st Fire Hydrant West of Cook St on Agnes St (Hydrant ID # 6548263)**

TEST BY: Luzia Wood

TEST DATE: March 26,2024

TEST TIME: 12:18PM

TEST DATA

FLOW HYDRANT — Pipe Diam. (in / mm): 400mm

	PITOT 1	PITOT 2
SIZE OPENING (inches):	2.5	2.5
COEFFICIENT (**note 1**):	0.90	0.90
PITOT READING (psi):	60	44 / 44
FLOW (usgpm):	**1300**	**2226**

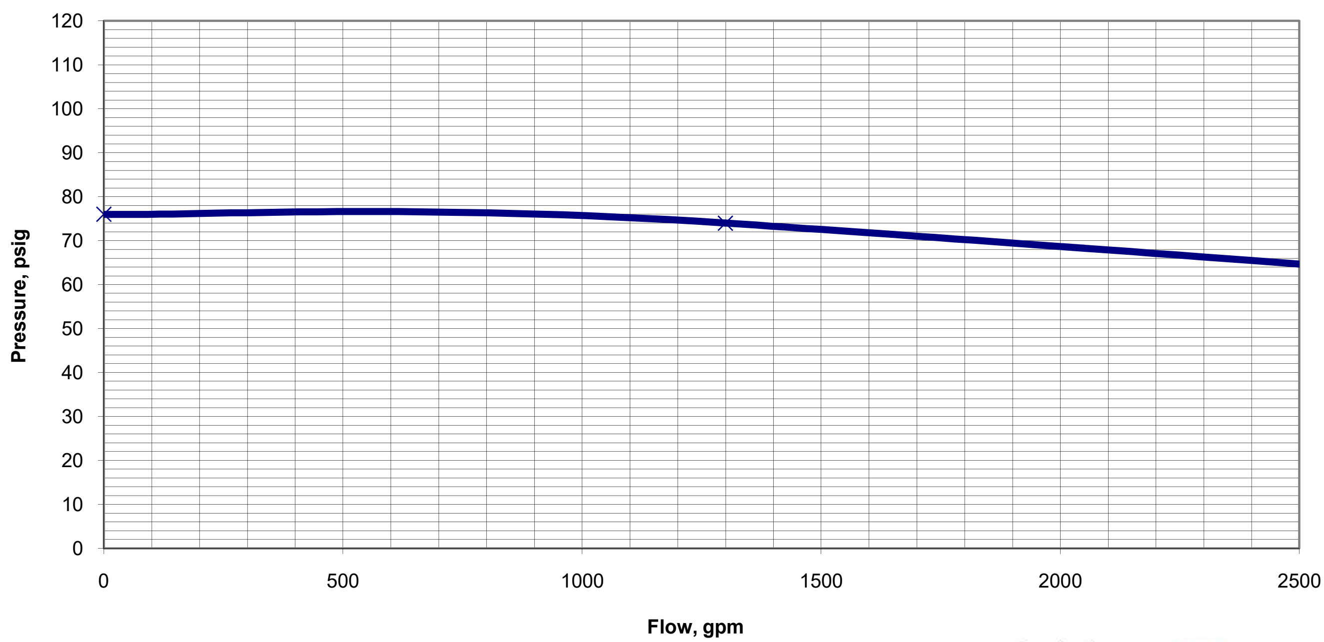
THEORETICAL FLOW @ 20 PSI: 7858

BASE HYDRANT — Pipe Diam. (in / mm): 400mm

STATIC READING (psi): 76 RESIDUAL 1 (psi): 74 RESIDUAL 2 (psi): 72

REMARKS:

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



L & D Waterworks Inc.
491 Port Maitland Rd
Dunnville, ON N1A 2W6
Ph: 289.684.6747

Appendix D

REGION OF PEEL WATER AND WASTEWATER MODELLING DEMAND TABLE

MTE

Water and Wastewater Modelling Demand Table - Site Plan applications

Version - January 2023

		units	persons
Proposed Residential[1]			
	Singles/Semis	——	——
	townhouses	6 Units	20 persons
	large apartments (>750sqft)	25 Units	75 persons
	small apartments (<=750sqft)	374 Units	598 persons
Total Proposed Residential		405 Units	694 persons
Proposed Institutional Population[2]			——
Proposed Employment Population[3]			——
Total		405 Units	694 persons

Proposed GFA (commercial/retail) (sqm)	0 sq.m

WATER CONNECTION

Hydrant flow test				
	Hydrant flow test locations [4]	——		
1st Fire Hydrant East of Cook St on Agnes St(Hydrant ID # 2020577)				
		Pressure (kPa)	Flow (in l/s)	Time
	Minimum water pressure	496.42	140.44 L/s	12:18PM
	Maximum water pressure	524.00	0 L/s	12:18PM

No.	Water demands				
		Demand (in l/s)			
	Demand type	Use 1 [6]	Use 2 [6]	Use 3 [6]	Total
1	Average day flow	2.25 L/s	——	——	2.25 L/s
2	Maximum day flow	4.50 L/s	——	——	4.50 L/s
3	Peak hour flow	6.75 L/s	——	——	6.75 L/s
4	Fire flow [5]	183.30 L/s	——	——	183.30 L/s
Analysis					
5	Maximum day plus fire flow	187.86 L/s	——	——	187.86 L/s

WASTEWATER CONNECTION

		Discharge Location[7]	Flow
6	Wastewater sewer effluent (in l/s)	Cook Street	9.55 L/s
7	Wastewater sewer effluent (in l/s)	——	——
8	Wastewater sewer effluent (in l/s)	——	——
9	Total Wastewater sewer effluent (in l/s)		9.55 L/s

[1] For the design flow calculations, please consider the following PPU's, which are found in the Region of Peel 2020 DC Background Study

☐Singles/Semi – 4.2

☐Multiples (Townhouses) – 3.4
☐Large Apartments (larger than 750 square feet) – 3.0
☐Small Apartments (equal to or less than 750 square feet) – 1.6

2) refer to Region of Peel design criteria

3) For the commercial and industrial design flow calculations, please use your site specific estimated population or the most current Ontario Building Code Occupant Load determination

4) Please include the graphs associated with the hydrant flow test information table

4) Hydrant flow tests should be performed within 2 years of submisison to the Region.
The Region will not permit hydrant flow tests during the winter, please check with the Region for scheduling

5) Please reference the Fire Underwriters Survey Document

6) Please identify the flows for each use type, if applicable

7) Please include drainage plan for mutliple discharge locations

The calculations should be based on the development proposal
All required calculations must be submitted with the demand table submission
Table shall include Professional Engineer's signature and stamp
Site servicing concept shall be included

This table will be deemed complete when all the above is submitted and/or included. Modelling will commence with a complete table.