

THORNY BRAE TOWNHOUSE DEVELOPMENT
1775 Thorny Brae Place
Mississauga, Ontario

Functional Servicing & Stormwater Management
Report

Prepared for:

KINGRIDE DEVELOPMENTS

Prepared by:



MGM Consulting Inc.
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Suite 201
Milton, Ontario
L9T 5E1

File No. 2025-004

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Appendix B – Oil and Grit Separator and Treatment Train Calculations

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FUNCTIONAL SERVICING & STORMWATER MANAGEMENT REPORT
Proposed Residential Development
1775 Thorny Brae Place, Mississauga Ontario

1 Introduction

MGM Consulting Inc. has been retained by Kingridge Developments to prepare a Functional Servicing & Stormwater Management Report in support of a Site Plan Approval submission for the proposed Thorny Brae Townhouse Development, located at 1775 Thorny Brae Place, Mississauga Ontario.

The proposed development will consist of 9 stacked townhouse blocks and 2 traditional townhouse blocks, providing a total of 95 residential units with an anticipated population of 323 residents. A new asphalt access road will connect the site to Mississauga Road, with sidewalks, parking spaces, and landscaped amenity areas. The primary fire route access for the development will be provided from Mississauga Road.

The objective of this report is to provide details on the required site servicing, grading and drainage and stormwater management features as required meet the objectives of the City and Region's design criteria.

The site is identified in the location plan in Figure 1.

2 Existing Conditions

The total site area is 1.53 ha with four vacant one-story residential buildings. The existing topography gradually slopes from west to east with steeper slopes in the east portion of the site. Elevations range from approximately 147.9m in the northwest, down to approximately 144.9 m in the east, approximately mid-lot.

The existing site is identified in Figure 2.

3 Proposed Site Grading

The proposed site grading will consider the existing topography, perimeter grades, the proposed vehicular access from Mississauga Road, provide sufficient frost cover for site servicing, and as required to meet the stormwater management and servicing objectives of the City and Municipal design criteria.

The proposed Grading Plan is indicated on the appended Drawing CV-2.

4 Existing Municipal Servicing

The existing municipal servicing include:

- A storm sewer located within the storm sewer easement bisecting the site, ranging in size from 675 to 750mm with an outlet invert of 140.28m,
- A 250mm sanitary sewer with an outlet invert of 143.52, located adjacent to the existing storm sewer easement within the site,
- A 400mm watermain located within the Mississauga Road right of way.

5 Proposed Storm Design

5.1 Minor Storm Servicing



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Storm flows from the site will be conveyed to the existing storm sewer system located within the storm sewer easement which bisects the site. Site storm sewers are designed to convey the 10-year storm flows, without surcharging, using the City of Mississauga Intensity-Duration Frequency (IDF) curves. The internal storm system will consist of a series of underground storm sewers, manholes and catch basins as indicated on the appended Site Servicing Plan, Drawing CV-3.

The minor system is designed based on the Rational Method using a time of concentration of 10 minutes and the City of Mississauga's IDF curve with a 10-year return period.

The storm sewer design sheet has been included in Appendix A.

4.2 Major Storm Servicing

In the event of a major storm or the storm system becoming blocked, the proposed grading will be designed to ensure emergency overland flow is directed towards the Mississauga Road right of way, on the southwest side of the site.

The proposed overland spill elevation of 147.09 is 3.22m below the proposed lowest finished-floor elevation of the Townhouse Units.

5. Stormwater Management

5.1 Proposed Rate Controls

According to the City of Mississauga's Transportation and Works Development Requirements Manual, Section 8, the subject site is located in the Credit River Subwatershed. Per Section 8, sites located within the Credit River Subwatershed between Norval and Port Credit, no quantity stormwater management control is required. Therefore, no rate controls are to be implemented for this site.

However, despite no rate control imposed directly on the site, Low Impact Development (LID) measures such as 300mm deep topsoil layer will be implemented to reduce surface runoff and promote infiltration and rooftop rainwater leaders of the rear-draining building areas will be collectively directed to rear yard infiltration facilities.

5.2 Proposed Quality Control

Options for stormwater quality controls include wet ponds, wetlands, bio-treatment areas, flatly graded grass swales, and package treatment units. Given the nature of the development, the limited available areas for a quality control feature and the impact that a quality control feature would have on the use of the property, the required stormwater quality objectives will be achieved using a "treatment train" approach which includes the installation of catch basin shields installed in all catch basins and double catch basins and the installation of a HydroDome model HD 8 treatment unit, located at the downstream limit of the proposed internal storm system.



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The proposed treatment unit will be installed at the outlet from the internal storm system, and as such, it will provide the required stormwater quality treatment for runoff from all areas of the site.

The combined treatment train consisting of catch basin shields and the OGS unit will provide an anticipated combined TSS removal of 80%.

Refer to Appendix B for the treatment unit sizing and for projected treatment train TSS removal calculation. Additionally, Appendix B includes the proposed OGS unit and Catch Basin Shield design specifications.

5.3 Proposed Runoff Volume Reduction

Current objectives are to retain 100% of runoff generated from a minimum 5 mm depth of rainfall from all impervious site surfaces through infiltration, evapotranspiration, water harvesting and reuse. Based on a proposed impervious area of 1.047 Ha, the required volume for infiltration is approximately 53.0 m³.

The runoff volume will be provided by three GreenStorm Stormwater Crates which will collect roof runoff from Blocks 3,4,7,8,9 & 10.

Runoff volume reduction calculations are provided in Appendix C.

6. Sediment and Erosion Controls During Construction

In 2006, The Greater Golden Horseshoe Area Conservation Authorities prepared a guideline entitled "Erosion & Sediment Control Guideline for Urban Construction". Based on the guideline, all projects involving the removal of topsoil or site alteration requires an ESC (Erosion and Sediment Control) Plan in place prior to commencing construction. Failure to adhere to the plan could lead to the potential for prosecution under the various pieces of environmental legislation.

The following principles assist in creating an effective ESC Plan. (Ref. Erosion and Sediment Control Guidelines for Urban Construction)

Adopt a multi-barrier approach to provide erosion and sediment control through erosion controls first.

- Retain existing ground cover and stabilize exposed soils with vegetation where possible.
- Limit the duration of soil exposure and phase construction where possible.
- Limit the size of disturbed areas by minimizing nonessential clearing and grading.
- Minimize slope length and gradient of disturbed areas.
- Maintain overland sheet flow and avoid concentrated flows.
- Store/stockpile soil away (e.g. greater than 15 meters) from watercourses, drainage features and top of steep slopes.
- Ensure contractors and all involved in the ESC practices are trained in ESC Plan, implementation, inspections, maintenance, and repairs.
- Adjust ESC Plan at construction site to adapt to site features.
- Assess all ESC practices before and after all rainfall and significant snowmelt events.



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Sediment and erosion controls proposed for the subject development include:

- Construction of a mud mat at the construction entrance, which will assist in the removal of mud from construction vehicle tires before they exit the site,
 - The installation of catchbasin sediment protection on any existing catchbasins in the vicinity of the site,
 - The installation of silt control fencing around the perimeter of the site
- The proposed Erosion & Sediment Control Plan is indicated on the appended Drawing CV-1.

7. Sanitary Servicing

Sanitary servicing for the proposed development will be provided by a proposed 250mm PVC sanitary sewer connecting to the existing sanitary manhole on the west side of the site which outlets to the existing 250mm sanitary sewer located within the Mississauga Road right-of-way. Based on the available outlet elevation of 143.52, a gravity-based sanitary system that provides drainage from the proposed residential development can be provided.

The maximum sanitary flow, including infiltration allowance & peaking factor is 4.7 L/s.

Sanitary flow calculations are provided in Appendix D.

The proposed sanitary servicing is indicated on Drawing CV-3.

8. Water Servicing

Water servicing for the proposed development will include a 150mm PVC watermain which will provide firefighting protection and domestic use to Blocks 6 & 7. Four looped 50mm copper watermain services will also provide domestic water supply to Blocks 1,2,3,4,5,8,9,10 & 11. The water service connection for the site is to be made to the existing 400mm watermain, east of the site within the Mississauga Road right of way.

In accordance with Peel Region's Municipal Design Criteria, the peak hour demand is 3.16 l/sec.

Fire Flow Calculations, included in Appendix E, indicate a minimum flow of 17000 L/minute, 283 l/sec is required to meet the fire flow demand.

Based on the above, the total water demand, peak water demand per day plus fire flow for the site is 286.0 l/sec.

On June 14, 2024, hydrant flow testing has been conducted at the neighboring property, 4601 Mississauga Road which is included in Appendix F. Based on the test, the watermain has a theoretical flow of 383 L/s at 20 psi, therefore adequate water supply is available to meet the water demand of 286.6 l/sec.

The proposed water servicing for the site is indicated on Drawing CV-3.



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9. Summary

The following summarizes the findings and recommendations based on the preceding analyses;

- An internal underground storm sewer system, designed to convey the 10-year storm without surcharging, is proposed, which will convey storm flows to the existing 750mm storm sewer within the storm sewer easement which bisects the site,
- Emergency storm flows are directed towards the Mississauga Road right of way at an elevation of 147.09,
- The proposed runoff volume reduction quantity will be provided by three GreenStorm Stormwater Crates which will collect roof runoff from Blocks 3,4,7,8,9 & 10,
- Sanitary servicing can be provided by connecting to the existing sanitary manhole, located at the west side of the site, adjacent to Mississauga Road,
- Water servicing as required for fire protection and domestic water supply can be provided from the existing 400 mm municipal watermain within the Mississauga Road right of way,
- Sediment and erosion controls as indicated on the Removals/Sediment and Erosion Control Plan are to be implemented prior to construction and maintained until the site is stabilized,

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MGM CONSULTING INC.

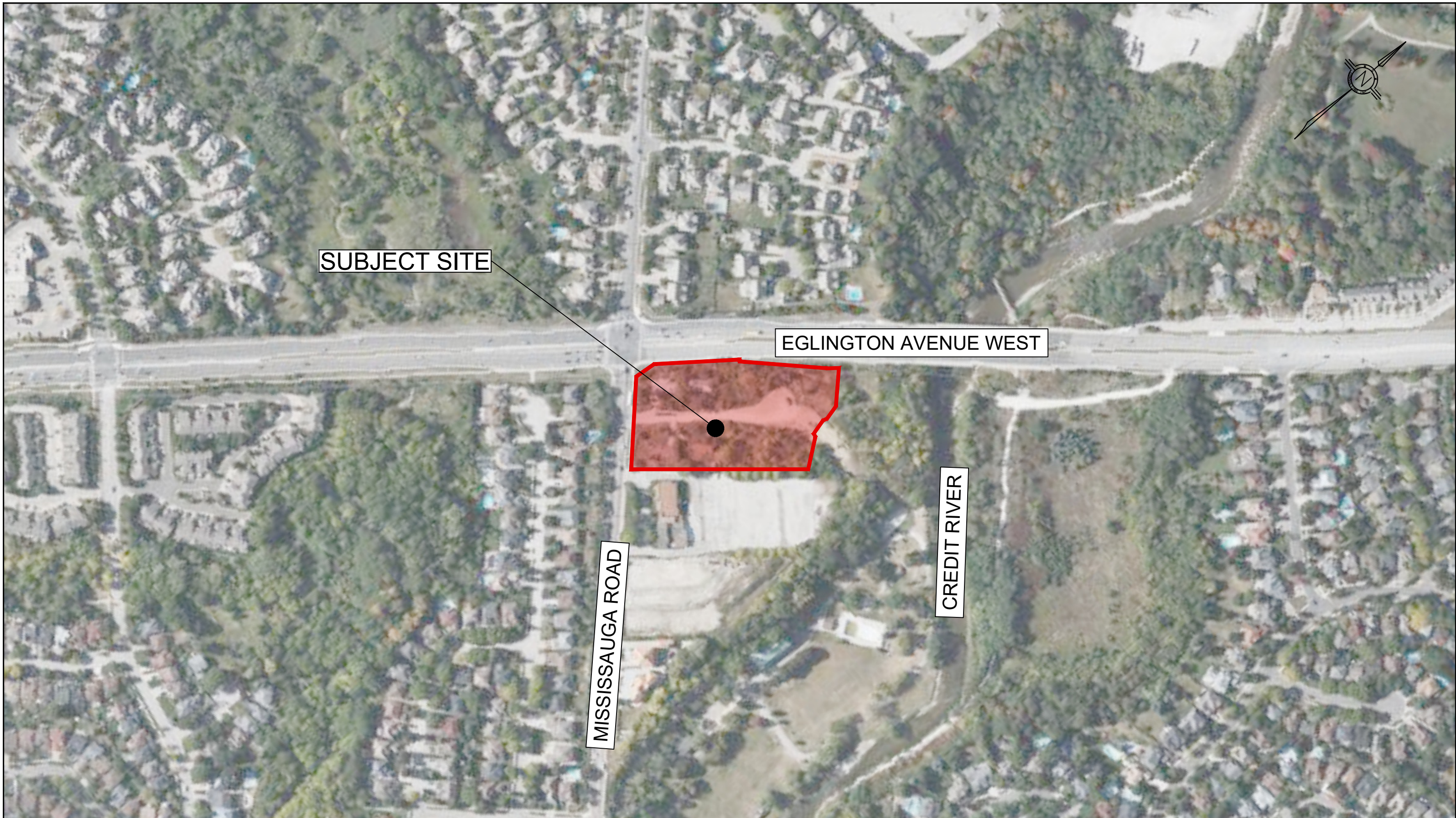


Blair Nock, CET



Figures

N: \PROJECTS\2025-004\WORKING FOLDERS\DESIGN\FIGURES\2025-005 - C1 - LOCATION PLAN.DWG



MULTI-UNIT RESIDENTIAL TOWNHOUSE DEVELOPMENT
1765, 1775 THORNY BRAE PLACE, MISSISSAUGA, ONTARIO

LOCATION PLAN



Consulting Engineering & Project Management
555 Industrial Drive
Suite 201
Milton, Ontario
L9T 0H7
Tel: (905) 667-8678
Fax: (905) 675-1339
Email: mgm@mgn.on.ca
www.mgm.on.ca

FIGURE 1

DATE: JUNE 23, 2025
SCALE: 1:3000
DWG#: 2025-004


N: \\PROJECTS\\2025-004\\WORKING FOLDERS\\DESIGN\\FIGURES\\2025-005 - C1 - EXISTING CONDITIONS.DWG



MULTI-UNIT RESIDENTIAL TOWNHOUSE DEVELOPMENT
1765, 1775 THORNY BRAE PLACE, MISSISSAUGA, ONTARIO
EXISTING CONDITION

N: \\PROJECTS\\2025-004\\WORKING FOLDERS\\DESIGN\\FIGURES\\2025-005 - C1 SITE PLAN.DWG





Chamberlain Architect
Services Limited

4671 Palladium Way (Unit 1)
Burlington, Ontario L7M 0W9
CANADA

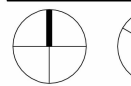
Phone: 905.631.7777
www.chamberlainPD.com

NO.	ISSUED	DATE
1	CLIENT REVIEW	24-04-17
2	CLIENT REVIEW	24-08-14
3	CLIENT REVIEW	24-08-28
4	CLIENT REVIEW	24-09-27
5	CLIENT REVIEW	24-10-25
6	CLIENT REVIEW	25-01-15
7	CLIENT REVIEW	25-05-14
8	CLIENT REVIEW	25-05-27
9	CONSULTANT COORDINATION	25-06-02
	OWNER SUBMISSION	25-06-13

DO NOT SCALE DRAWINGS. USE ONLY DRAWINGS
MARKED "ISSUED FOR CONSTRUCTION". VERIFY
CONFIGURATIONS AND DIMENSIONS ON SITE BEFORE
BEGINNING WORK. NOTIFY ARCHITECT IMMEDIATELY
OF ANY DISCREPANCIES, OMISSIONS OR DISCREPANCIES.
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CHAMBERLAIN CONSTRUCTION SERVICES LIMITED
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SEAL



CONSTRUCTION NORTH TRUE NORTH

THORNY BRAE

1765, 1775 THORNY BRAE
PLACE
MISSISSAUGA, ON

SHEET NAME

SITE PLAN

START DATE APRIL 2024

DRAWN BY MR/MW/HK

CHECKED BY CMC

SCALE 1 : 250

PROJECT NO. 124015

DRAWING

A001

MULTI-UNIT RESIDENTIAL TOWNHOUSE DEVELOPMENT
1765, 1775 THORNY BRAE PLACE, MISSISSAUGA, ONTARIO

PROPOSED SITE PLAN



MGM
CONSULTING INC.

Consulting Engineering & Project Management
555 Industrial Drive
Suite 201
Milton, Ontario
L9T 0H7

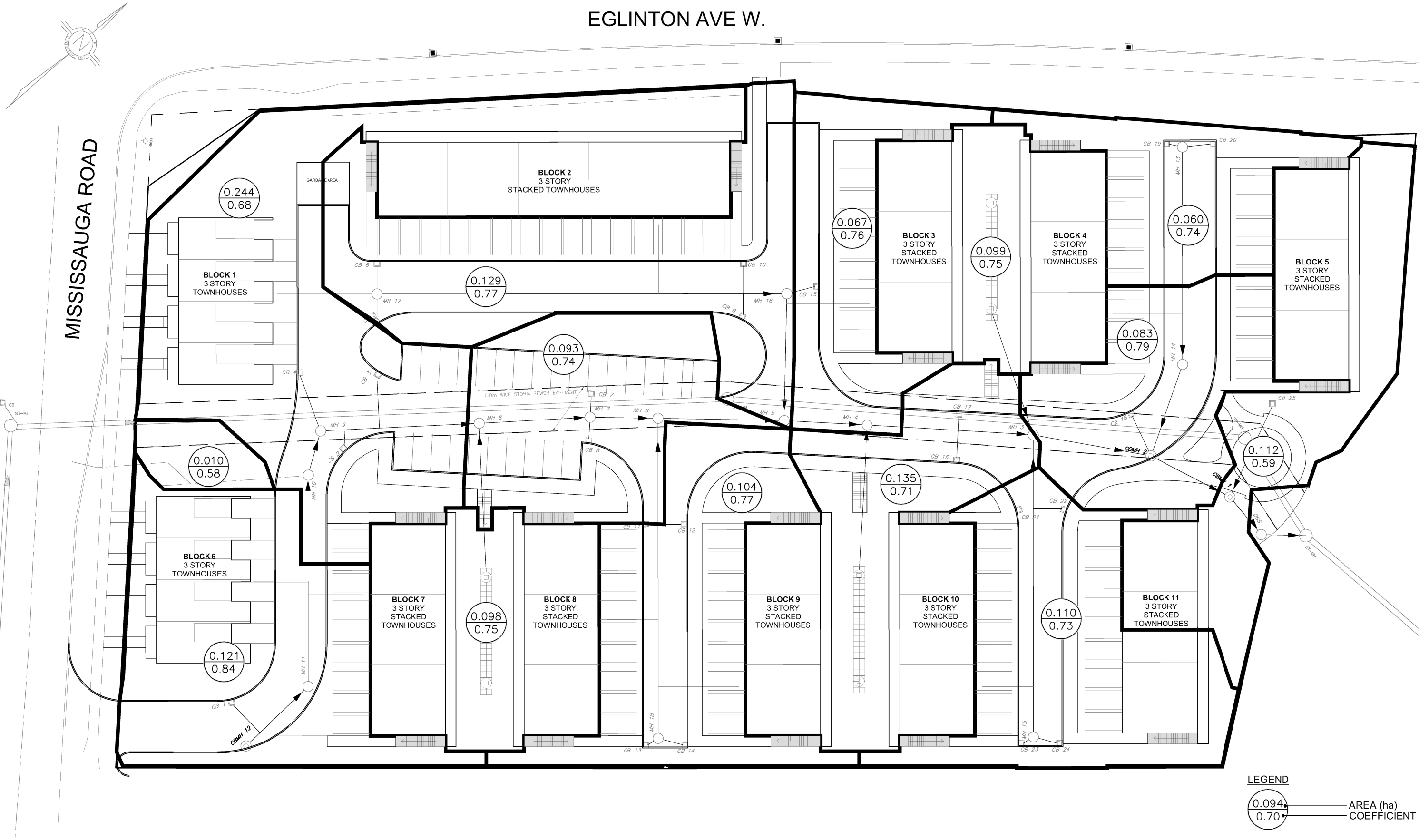
Tel: (905) 667-8678
Fax: (905) 675-1339
Email: mgm@mgm.on.ca
www.mgm.on.ca

FIGURE 3

DATE: JUNE 23, 2025
SCALE: NTS
DWG#: 2025-004

EGLINTON AVE W.

MISSISSAUGA ROAD



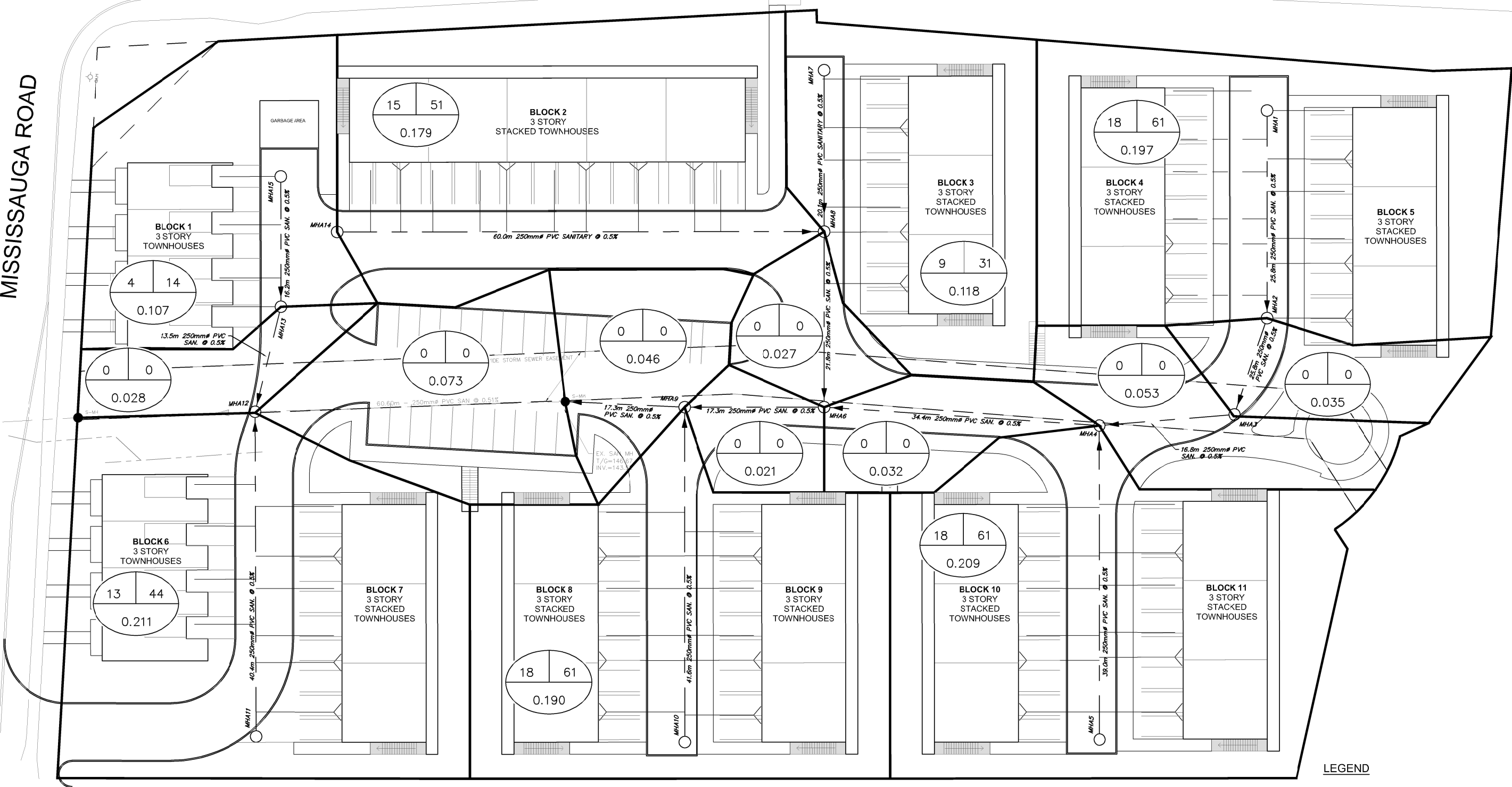
MULTI-UNIT RESIDENTIAL TOWNHOUSE DEVELOPMENT
1775 THORNY BRAE PLACE, MISSISSAUGA, ONTARIO
STORM DRAINAGE AREAS

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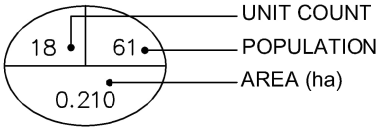
FIGURE 4
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EGLINTON AVE W.

MISSISSAUGA ROAD



LEGEND



MULTI-UNIT RESIDENTIAL TOWNHOUSE DEVELOPMENT
1775 THORNY BRAE PLACE, MISSISSAUGA, ONTARIO
SANITARY DRAINAGE AREAS

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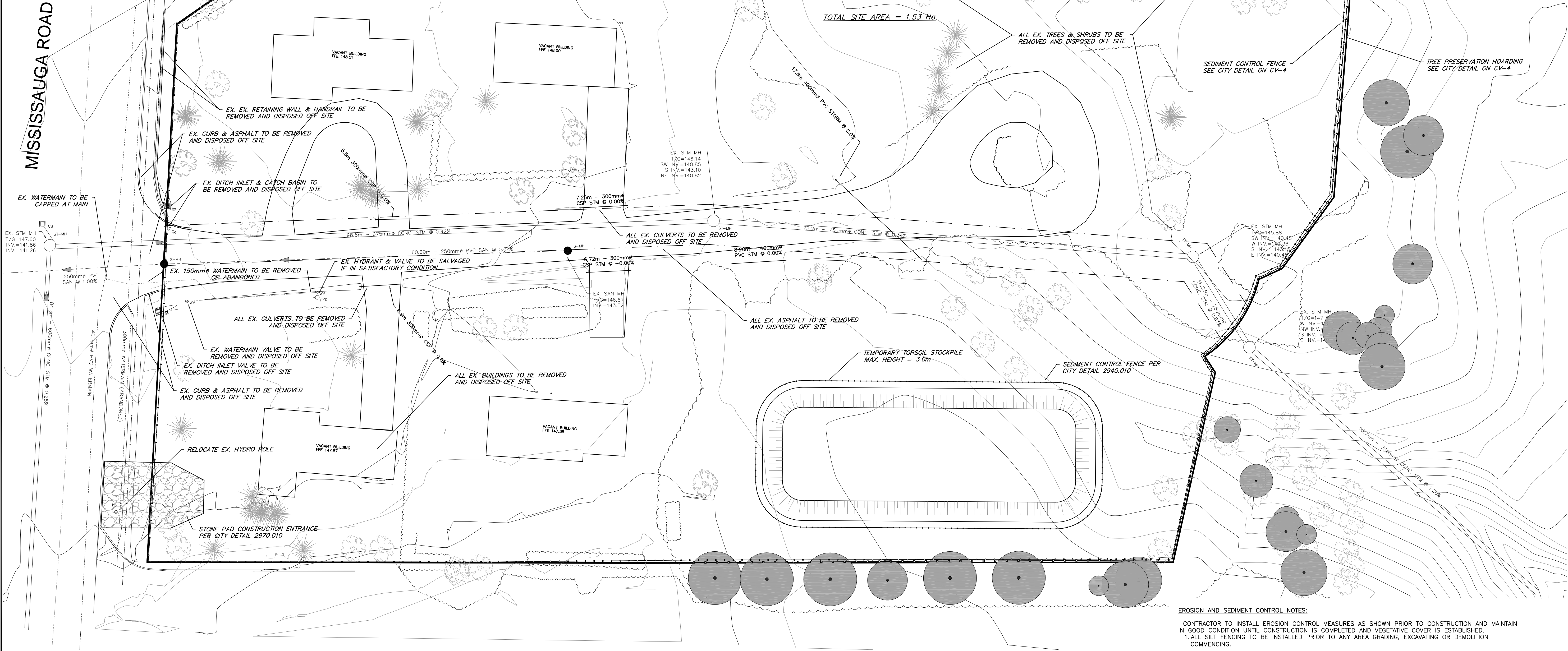
FIGURE 5

DATE: OCT.15, 2025
SCALE: 1:500
DWG#: 2025-004 C1



Civil Drawings

EGLINTON AVE W.



MISSISSAUGA ROAD

EX. WATERMAIN TO BE CAPPED AT MAIN

EX. STM MH
T/G=147.60
W INV.=141.86
S INV.=141.26

EX. STM MH
T/G=146.14
SW INV.=140.85
S INV.=143.10
NE INV.=140.82

EX. SAN MH
T/G=146.67
INV.=143.52

EX. STM MH
T/G=145.88
SW INV.=143.48
W INV.=140.56
S INV.=143.34
E INV.=140.56

EX. STM MH
T/G=147.10
W INV.=141.86
S INV.=141.26
E INV.=141.26

EX. STM MH
T/G=147.10
W INV.=141.86
S INV.=141.26
E INV.=141.26

EX. STM MH
T/G=147.10
W INV.=141.86
S INV.=141.26
E INV.=141.26

EX. STM MH
T/G=147.10
W INV.=141.86
S INV.=141.26
E INV.=141.26

EX. STM MH
T/G=147.10
W INV.=141.86
S INV.=141.26
E INV.=141.26

EX. STM MH
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EX. STM MH
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EX. STM MH
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EX. STM MH
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EX. STM MH
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EX. STM MH
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EX. STM MH
T/G=147.10
W INV.=141.86
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E INV.=141.26

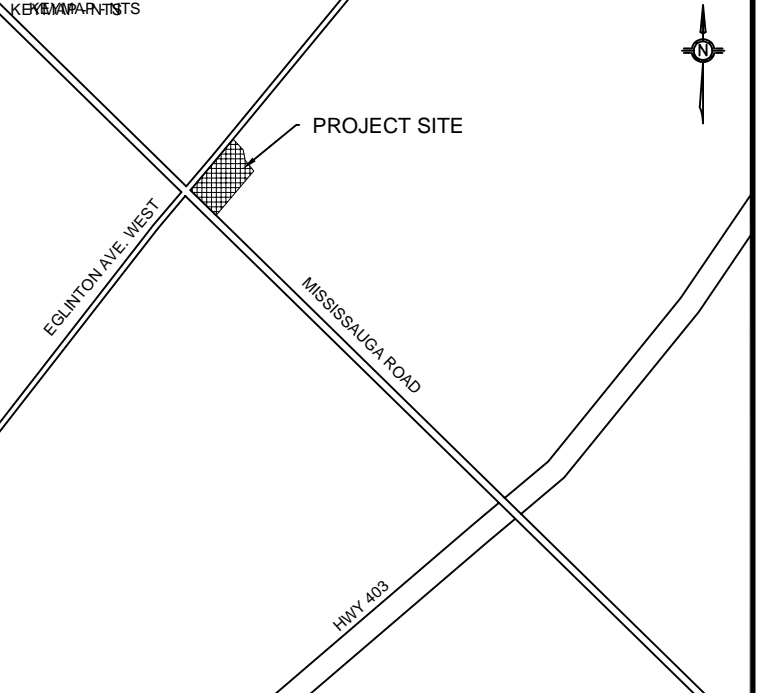
EX. STM MH
T/G=147.10
W INV.=141.86
S INV.=141.26
E INV.=141.26

- CITY OF MISSISSAUGA NOTES:**
- ALL SEDIMENT CONTROL FENCING IS TO BE ERECTED PRIOR TO THE COMMENCEMENT OF ANY SITE GRADING OPERATIONS, AS PER CITY OF MISSISSAUGA STANDARD 2940.01
 - ALL CATCHBASINS WITHIN LANDSCAPED AREAS TO HAVE SEDIMENT BARRIER (CITY OF MISSISSAUGA STANDARD 2930.02 OR 2930.03) ERECTED IMMEDIATELY AFTER CATCHBASIN INSTALLATION. SEDIMENT PROTECTION BARRIER TO BE MAINTAINED ON A REGULAR BASIS OR TO THE SATISFACTION OF THE CITY OF MISSISSAUGA.
 - ALL ROADSIDE CATCHBASINS TO HAVE SEDIMENT PROTECTION AS PER CITY OF MISSISSAUGA STANDARD 2930.04 INSTALLED IMMEDIATELY AFTER CATCHBASIN INSTALLATION. SEDIMENT PROTECTION BARRIER TO BE MAINTAINED ON A REGULAR BASIS OR TO THE SATISFACTION OF THE CITY OF MISSISSAUGA.
 - CONSTRUCTION SEQUENCE:
 - INITIAL SEDIMENT CONTROL INSTALLATION
 - SITE GRADING OPERATIONS
 - UNDERGROUND SERVICING OPERATIONS
 - BUILDING CONSTRUCTION
 - FINAL GRADING OPERATIONS
 - IF SITE CONSTRUCTION ACTIVITIES ARE INTERRUPTED AND/OR INACTIVITY EXCEEDS 30 DAYS, ALL STRIPPED AND/OR BARE SOIL AREAS ARE TO BE STABILIZED BY SODDING/SEEDING/MULCHING OR OTHER APPROVED METHOD, TO THE SATISFACTION OF THE CITY OF MISSISSAUGA.
 - THIS CONTROL PLAN IS PREPARED FOR SUBMISSION TO THE CITY MISSISSAUGA IN CONJUNCTION WITH AN APPLICATION FOR EROSION AND SEDIMENT CONTROL PERMIT NO. _____ UNDER THE EROSION AND SEDIMENT CONTROL BY-LAW NO 512-91, AS AMENDED.
 - ALL EROSION AND SEDIMENT CONTROL MEASURE ARE TO BE REGULARLY INSPECTED AND MAINTAINED, AS REQUIRED, TO THE SATISFACTION OF THE CITY OF MISSISSAUGA.
 - DURING ALL CONSTRUCTION PHASES, MUD TRACING CONTROL, CONSISTING OF FLUSHING AND SWEEPING ROADS, IS TO BE PROVIDED FOR ALL ROADS, AS WARRANTED, IN ACCORDANCE WITH THE CITY OF MISSISSAUGA MUD TRACKING CONTROL POLICY.

- NOTE:**
- CONTRACTOR TO CONTACT MGM CONSULTING INC. IMMEDIATELY SHOULD THERE BE ANY CONFLICTS BETWEEN EXISTING CONDITIONS AND PROPOSED GRADING AND/OR SERVICING DESIGN, OR CONFLICTS IN CONSTRUCTING THE WORK AS PER THE INTENT OF THE APPROVED DESIGN PRIOR TO CONSTRUCTION.
- NOTE:**
- ALL WORK TO CONFORM TO THE LATEST MUNICIPAL STANDARDS AND SPECIFICATIONS AS WELL AS THE LATEST ADOPTED ONTARIO PROVINCIAL STANDARD DRAWINGS AND SPECIFICATIONS.
 - ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER TO SATISFACTION OF THE MUNICIPALITY AND MGM CONSULTING INC.
 - CONTRACTOR TO LOCATE AND PROTECT ALL EXISTING SERVICES AND UTILITIES PRIOR TO AND DURING CONSTRUCTION
 - CONTRACTOR TO LOCATE AND CONFIRM ALL EXISTING UTILITIES AND SERVICE INFORMATION PRIOR TO CONSTRUCTION
 - CONTRACTOR TO ENSURE ADEQUATE CLEARANCE FROM ALL EXISTING SERVICES AND UTILITIES
 - CONTRACTOR TO CONFIRM ALL EXISTING INVERTS PRIOR TO INTERNAL SERVICING.
 - CONTRACTOR TO CONFIRM THE PAVEMENT STRUCTURE THICKNESS' BASED ON THE GEOTECHNICAL REPORT.

- EROSION AND SEDIMENT CONTROL NOTES:**
- CONTRACTOR TO INSTALL EROSION CONTROL MEASURES AS SHOWN PRIOR TO CONSTRUCTION AND MAINTAIN IN GOOD CONDITION UNTIL CONSTRUCTION IS COMPLETED AND VEGETATIVE COVER IS ESTABLISHED.
- ALL SILT FENCING TO BE INSTALLED PRIOR TO ANY AREA GRADING, EXCAVATING OR DEMOLITION COMMENCING.
 - EROSION CONTROL FENCING TO BE INSTALLED AROUND BASE OF ALL STOCKPILES
 - EROSION PROTECTION TO BE PROVIDED AROUND ALL STORM AND SANITARY MANHOLE AND CATCHBASINS
 - ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED AS SITE DEVELOPMENT PROGRESSES. CONTRACTOR TO PROVIDE ALL ADDITIONAL EROSION CONTROL STRUCTURES.
 - EROSION CONTROL STRUCTURES TO REMAIN IN PLACE UNTIL ALL DISTURBED GROUND SURFACES HAVE BEEN REESTABLISHED.
 - NO ALTERNATIVE METHODS OR EROSION PROTECTION SHALL BE PERMITTED UNLESS APPROVED BY THE ENGINEER
 - CONTRACTOR TO CLEAN ROADWAY AND SIDEWALKS OF SEDIMENT RESULTING FROM CONSTRUCTION TRAFFIC FROM THE SITE EACH DAY.
 - CONTRACTOR MUST REMOVE EROSION AND SEDIMENTATION FENCING PRIOR TO COMPLETION OF PROJECT. CONTRACTOR TO HAVE EROSION AND SEDIMENTATION FENCE INSPECTED WHEN VEGETATION HAS ESTABLISHED, BUT PRIOR TO FENCE BECOMING OVERGROWN. ENGINEER'S REPRESENTATIVE TO DETERMINE IF VEGETATION HAS REACHED THE CRITICAL POINT AND WILL THEN INSTRUCT CONTRACTOR TO REMOVE FENCE.
 - FOR DETAILS OF ALL ELECTRICAL REMOVALS INCLUDING LIGHT STANDARDS, AND UNDERGROUND DUCT AND WIRING, REFER TO ELECTRICAL DRAWINGS
 - FOR DETAILS ON TREE REMOVALS, AND PROTECTION REFER TO LANDSCAPING DRAWINGS
- MAINTENANCE RECOMMENDATIONS**
- EROSION CONTROL STRUCTURES TO BE MONITORED REGULARLY AND ANY DAMAGE REPAIRED IMMEDIATELY. SEDIMENTS TO BE REMOVED WHEN ACCUMULATIONS REACH A MAXIMUM OF 1/3 THE HEIGHT OF THE FENCE.
 - OWNERS REPRESENTATIVE TO MONITOR EROSION CONTROL STRUCTURES TO ENSURE FENCING IS INSTALLED AND MAINTENANCE IS PERFORMED TO CITY REQUIREMENTS.

- EROSION & SEDIMENT CONTROL SEQUENCES:**
- INSTALL CONSTRUCTION ENTRANCE MUD MAT
 - INSTALL SILT FENCE AROUND THE SITE PERIMETER. SINGLE ROW SILT FENCE DETAIL AS SHOWN ON THE SEDIMENT AND EROSION CONTROL PLAN ATTACHED.
 - DURING THE SERVICING CONSTRUCTION, LIMIT OPEN TRENCH LENGTHS TO MINIMIZE EROSION POTENTIAL.
 - DURING WORK STOPPAGES OR INCLEMENT WEATHER, PLUG ENDS OF OPEN SEWERS TO PREVENT DOWNSIDE SEDIMENTATION
 - PROVIDE CATCHBASIN SEDIMENT PROTECTION ON ALL CATCHBASIN AND CATCHBASIN MANHOLES FOR THE DURATION OF CONSTRUCTION.
 - ENSURE SILT LADEN WATER FROM TRUCK WASH AREAS ARE DIRECTED TO AREAS PROTECTED BY A FILTER RING AND AT LEAST 15 METERS FROM A WATERCOURSE.
 - ALL SILT LADEN WATER DURING DEWATERING OF TRENCHES TO BE DIRECTED TO AN AREA PROTECTED BY A FILTER RING OR TO A GEOTEXTILE FILTER BAG. FILTRATION TO BE A MINIMUM OF 15 METERS FROM A WATERCOURSE.
 - PROVIDE DUST CONTROL DURING DRY PERIODS AS DIRECTED BY THE SITE ENGINEER OR CONSERVATION
 - SWEEP EXTERNAL STREETS AS DIRECTED BY THE ENGINEER OR CONSERVATION.
 - FOLLOWING BASE COURSE ASPHALT, CATCHBASINS TO BE REWRAPPED WITH GEOTEXTILE.
 - PERIODIC STREET CLEANING AND CATCHBASIN CLEANOUT TO BE PERFORMED AS REQUIRED.



- LEGEND**
- EX. HYDRO POLE
 - EX. LIGHT STANDARD
 - EX. FIRE HYDRANT
 - EX. WATER VALVE
 - EX. CATCHBASIN
 - EX. MANHOLE
 - PROPOSED SILT FENCE
 - PROPOSED TREE PRESERVATION HOARDING

No.	DATE	DRAWING ISSUE DESCRIPTION
1	2025 06 23	FIRST SUBMISSION
2	2025 10 08	ISSUED FOR REVIEW
3	2025 10 16	SECOND SUBMISSION

LEGAL AND TOPOGRAPHICAL SURVEY PROVIDED BY:
SCHAEFFER DZALDOV BENNETT LTD.
JOB NO. 15-155-01, DATED JULY 21, 2015.

SITE BENCHMARK:
ELEVATIONS SHOWN HEREON ARE REFERRED TO CITY OF MISSISSAUGA BENCHMARK No. 970, HAVING A PUBLISHED ELEVATION OF 148.702 METRES.

CONSULTANT:

ENGINEER
J. KOZYM
100517316
OCT-16/2025
PROVINCE OF ONTARIO

MGM CONSULTING INC.
Consulting Engineering & Project Management
555 Industrial Drive
Suite 201
Mississauga, Ontario
L4T 1G1
Tel: (905) 887-8878
Fax: (905) 887-1338
Email: mgm@mgm.on.ca
www.mgm.on.ca

CLIENT:

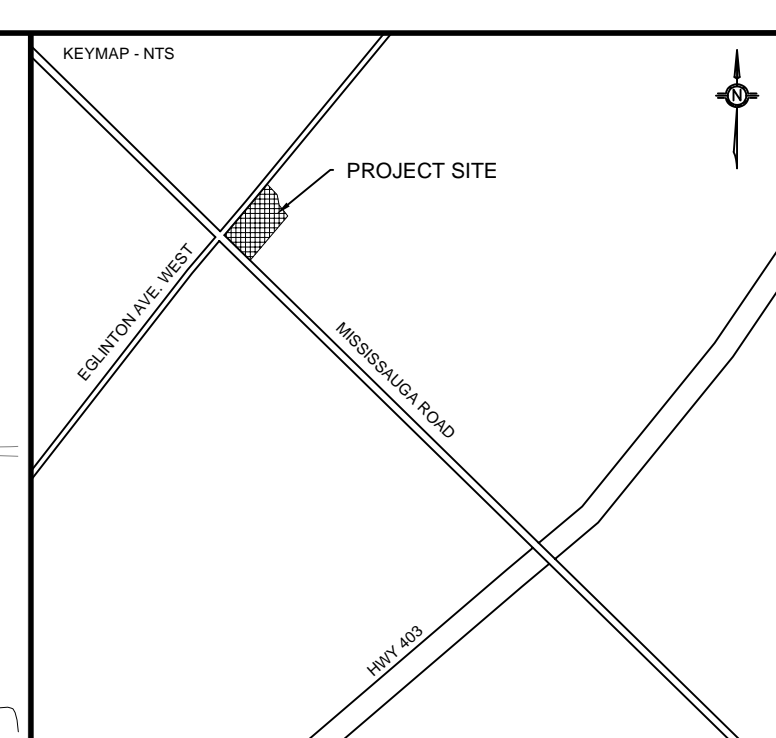
KINGRIDGE DEVELOPMENTS

OWNER INFO:
NAME: DAN MARION
E-MAIL: dan@kingridgedevelopments.ca
MAIL ADDRESS: 1660 NORTH SERVICE RD. EAST, SUITE 109-B
OXFORD, ON L6H 7G3
PHONE: 416-277-7466

PROJECT:
**THORNY BRAE TOWNHOUSE DEVELOPMENT
1775 THORNY BRAE PLACE MISSISSAUGA
ONTARIO**

DRAWING:
**REMOVALS & EROSION AND
SEDIMENT CONTROL PLAN**

DRAWN BY: BN	CHECKED BY: MLS	JOB CAPTAIN: JB
SCALE: 1:300	PROJECT NO.: 2025-004	SHEET NO.: CV-1
CURRENT ISSUE: 3	CURRENT REV.: 2	

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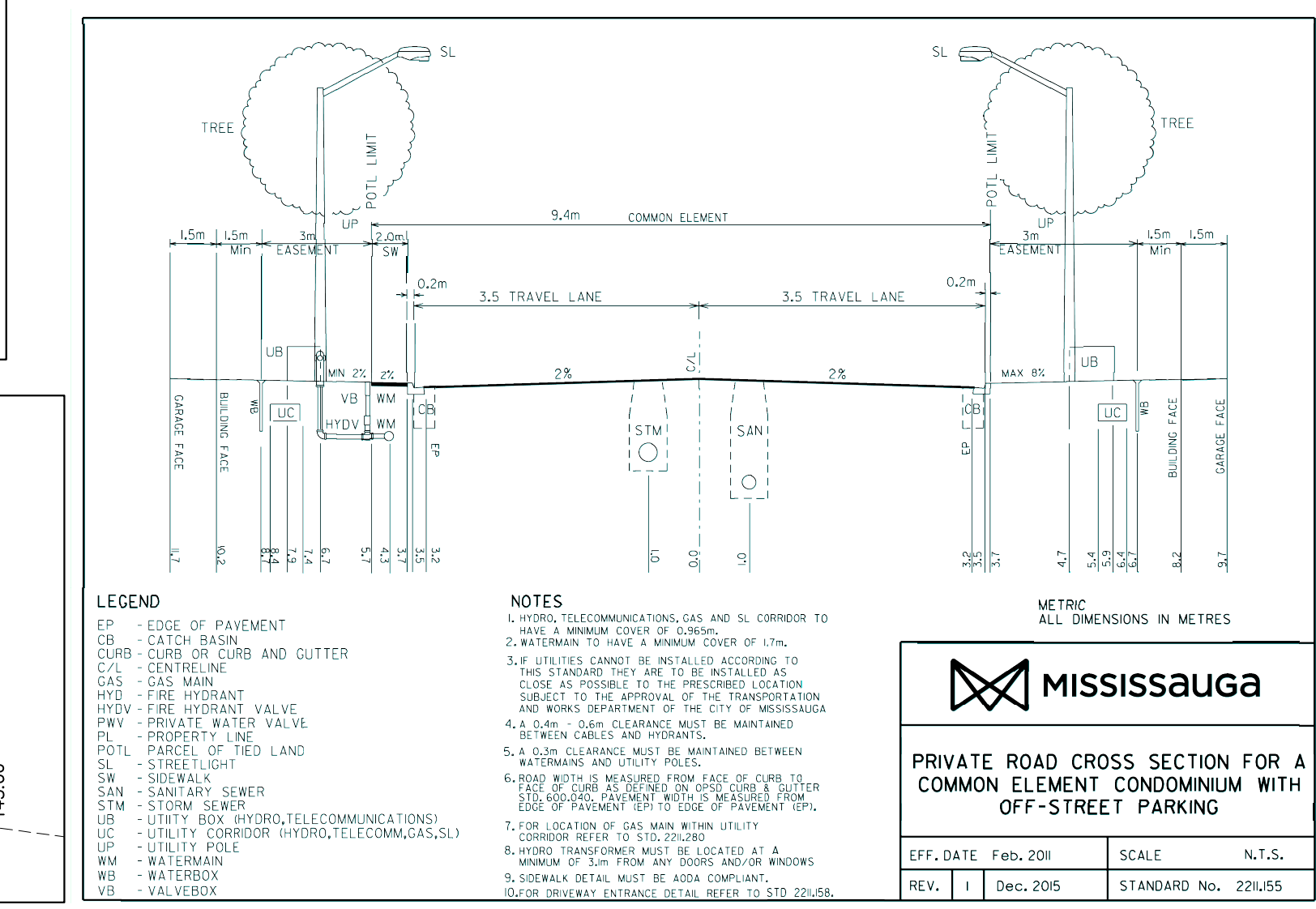
LEGAL AND TOPOGRAPHICAL SURVEY PROVIDED BY:
SCHAEFFER DZALDOV BENNETT LTD.
JOB NO. 15-155-01, DATED JULY 21, 2015.

SITE BENCHMARK:
ELEVATIONS SHOWN HEREON ARE REFERRED TO CITY
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PUBLISHED ELEVATION OF 148.702 METRES.

CLIENT:

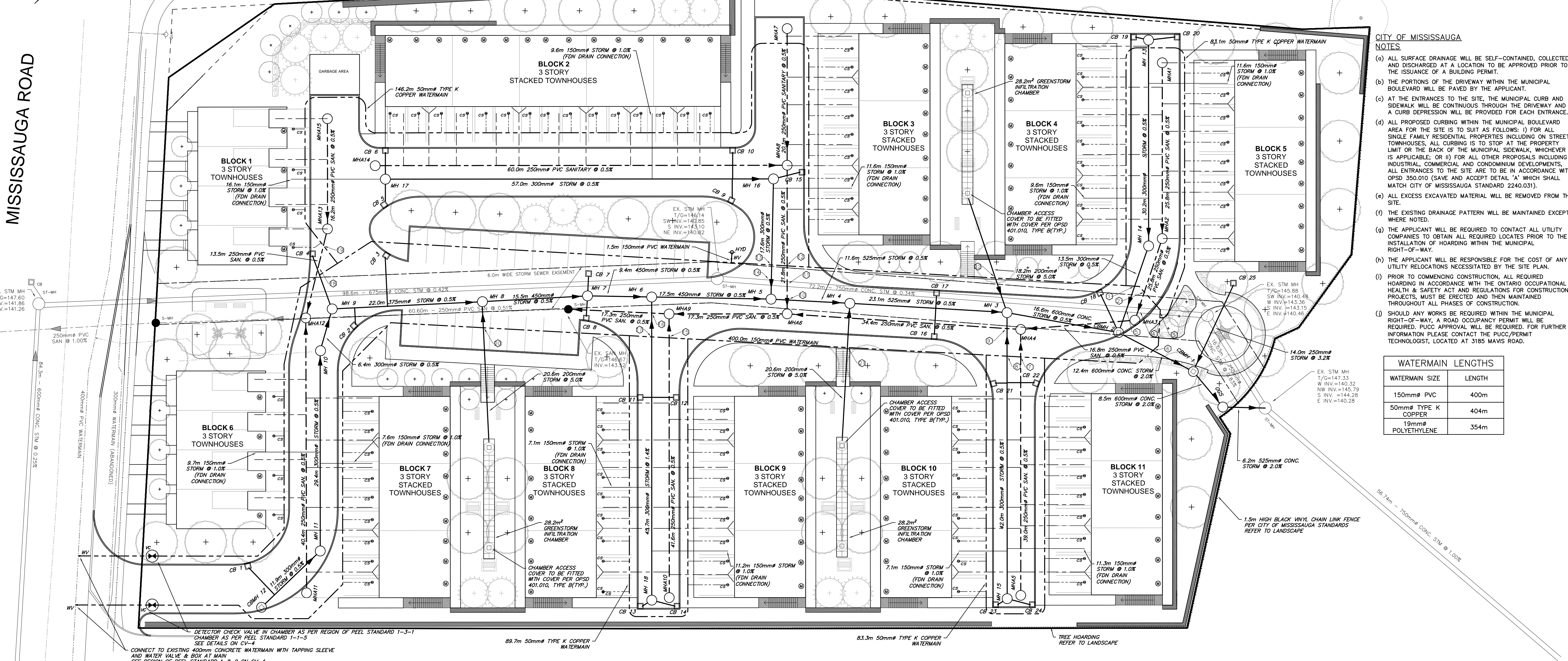
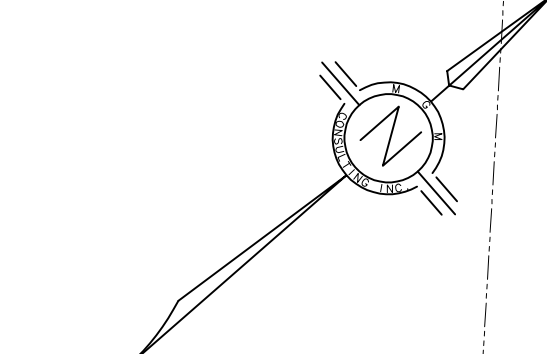
KINGRIDGE
DEVELOPMENTS

DRAWING:		
<h1 style="text-align: center;">GRADING PLAN</h1>		
DRAWN BY: BN	CHECKED BY: MLS	JOB PARTAIN: JB
SCALE: 1:300	PROJECT NO.: 2025-004	SHEET NO.:
CURRENT ISSUE: 3	CURRENT REV. 2	CV-2



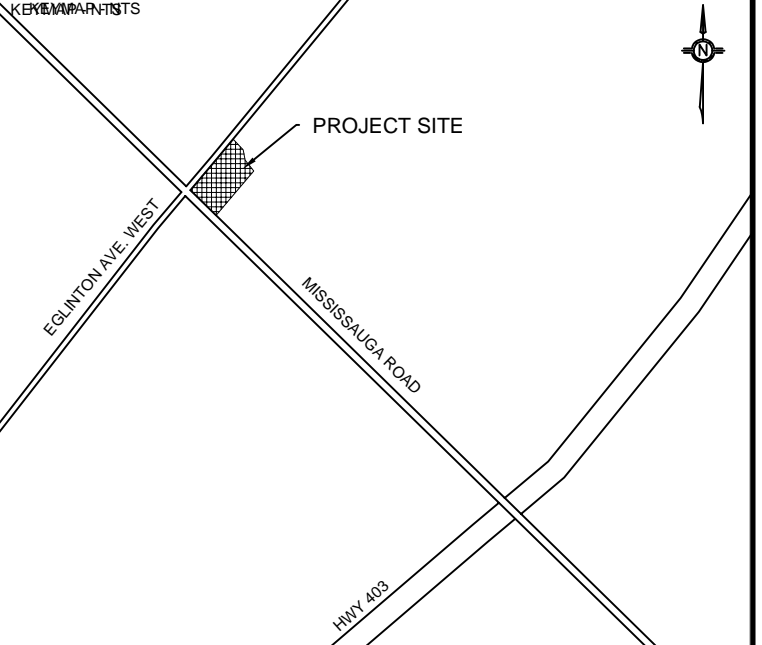
EGLINTON AVE W.

MISSISSAUGA ROAD



- CITY OF MISSISSAUGA NOTES**
- ALL SURFACE DRAINAGE WILL BE SELF-CONTAINED, COLLECTED AND DISCHARGED AT A LOCATION TO BE APPROVED PRIOR TO THE ISSUANCE OF A BUILDING PERMIT.
 - THE PORTIONS OF THE DRIVEWAY WITHIN THE MUNICIPAL BOULEVARD WILL BE PAVED BY THE APPLICANT.
 - AT THE ENTRANCES TO THE SITE, THE MUNICIPAL CURB AND SIDEWALK WILL BE CONTINUOUS THROUGH THE DRIVEWAY AND A CURB DEPRESSION WILL BE PROVIDED FOR EACH ENTRANCE.
 - ALL PROPOSED CURBING WITHIN THE MUNICIPAL BOULEVARD AREA FOR THE SITE IS TO SUIT AS FOLLOWS: 1) FOR ALL SINGLE FAMILY RESIDENTIAL PROPERTIES INCLUDING ON STREET TOWNHOUSES, ALL CURBING IS TO STOP AT THE PROPERTY LIMIT OR THE BACK OF THE MUNICIPAL SIDEWALK, WHICHEVER IS APPLICABLE; OR 1) FOR ALL OTHER PROPOSALS INCLUDING INDUSTRIAL, COMMERCIAL AND CONDOMINIUM DEVELOPMENTS, ALL ENTRANCES TO THE SITE ARE TO BE IN ACCORDANCE WITH OPSD 350.010 (SAVE AND ACCEPT DETAIL 'A' WHICH SHALL MATCH CITY OF MISSISSAUGA STANDARD 2240.031).
 - ALL EXCESS EXCAVATED MATERIAL WILL BE REMOVED FROM THE SITE.
 - THE EXISTING DRAINAGE PATTERN WILL BE MAINTAINED EXCEPT WHERE NOTED.
 - THE APPLICANT WILL BE REQUIRED TO CONTACT ALL UTILITY COMPANIES TO OBTAIN ALL REQUIRED LOCATES PRIOR TO THE INSTALLATION OF HOARDING WITHIN THE MUNICIPAL RIGHT-OF-WAY.
 - THE APPLICANT WILL BE RESPONSIBLE FOR THE COST OF ANY UTILITY RELOCATIONS NECESSITATED BY THE SITE PLAN.
 - PRIOR TO COMMENCING CONSTRUCTION, ALL REQUIRED HOARDING IN ACCORDANCE WITH THE ONTARIO OCCUPATIONAL HEALTH & SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS, MUST BE ERECTED AND THEN MAINTAINED THROUGHOUT ALL PHASES OF CONSTRUCTION.
 - SHOULD ANY WORKS BE REQUIRED WITHIN THE MUNICIPAL RIGHT-OF-WAY, A ROAD OCCUPANCY PERMIT WILL BE REQUIRED. PUCC APPROVAL WILL BE REQUIRED. FOR FURTHER INFORMATION PLEASE CONTACT THE PUCC/PERMIT TECHNOLOGIST, LOCATED AT 3185 MAVIS ROAD.

WATERMAIN LENGTHS	
WATERMAIN SIZE	LENGTH
150mm PVC	400m
50mm TYPE K COPPER	404m
19mm POLYETHYLENE	354m



- LEGEND**
- EXISTING HYDRO POLE
 - EXISTING LIGHT STANDARD
 - EXISTING FIRE HYDRANT
 - EXISTING WATER VALVE
 - EXISTING CATCHBASIN
 - EXISTING MANHOLE
 - EXISTING SANITARY SEWER
 - EXISTING WATERMAIN
 - EXISTING STORM SEWER
 - EXISTING OVERHEAD HYDRO
 - PROPOSED CB MANHOLE
 - PROPOSED STORM MANHOLE
 - PROPOSED CATCH BASIN
 - PROPOSED SANITARY MANHOLE
 - PROPOSED TREATMENT UNIT
 - PROPOSED 19mm TYPE K SOFT COPPER WATER SERVICE
 - PROPOSED WATER METER
 - PROPOSED 125mm PVC SANITARY SEWER
 - PROPOSED STORM SEWER
 - PROPOSED SANITARY SEWER
 - PROPOSED WATERMAIN

No.	DATE	DRAWING ISSUE DESCRIPTION
1	2025 06 23	FIRST SUBMISSION
2	2025 10 08	ISSUED FOR REVIEW
3	2025 10 16	SECOND SUBMISSION

STORM STRUCTURE TABLE					
STRUCTURE	STRUCTURE SIZE	STRUCTURE OPSD	FRAME/GRATE OPSD	RIM	INVERT
EX. MH	1800mm	701.012	401.010	147.04	W 140.32 SW 140.33 E 140.28
OGS	1200mm	701.010	400.010	147.00	NE 140.45 W 140.50
CBMH 1	1200mm	701.010	400.010	147.11	E 140.67 NW 144.54 SW 140.72 SW 141.85
CBMH 2	1200mm	701.010	400.010	146.84	NE 142.07 NW 143.27 W 143.27 SW 143.27
MH 3	1200mm	701.010	401.010	147.08	NE 143.34 SE 144.54 NW 144.54 SW 143.42
MH 4	1200mm	701.010	401.010	147.08	NE 143.56 SE 144.76 SW 143.58
MH 5	1200mm	701.010	401.010	147.18	NE 143.64 NW 144.50 SW 143.72
MH 6	1200mm	701.010	401.010	147.00	NE 143.81 SE 144.61 SW 143.84
MH 7	1200mm	701.010	401.010	147.00	NE 143.89 NW 145.09 SE 145.09 SW 143.97
MH 8	1200mm	701.010	401.010	147.00	NE 144.05 SE 145.25 SW 144.08
MH 9	1200mm	701.010	401.010	146.96	NE 144.19 NW 145.19 SE 144.24
MH 10	1200mm	701.010	401.010	146.96	NW 144.27 SW 145.25 SE 144.32
MH 11	1200mm	701.010	401.010	146.92	NW 144.47 SW 144.52
CBMH 12	1200mm	701.010	400.010	146.79	N 144.58

STORM STRUCTURE TABLE					
STRUCTURE	STRUCTURE SIZE	STRUCTURE OPSD	FRAME/GRATE OPSD	RIM	INVERT
MH 13	1200mm	701.010	401.010	146.98	NE 143.55 SW 144.75 SE 144.75
MH 14	1200mm	701.010	401.010	147.05	NW 143.40 SE 143.35
MH 15	1200mm	701.010	401.010	147.03	NW 144.75 S 145.30 E 145.30
MH 16	1200mm	701.010	401.010	146.92	SE 144.44 SW 144.49 NE 144.75 SE 144.49 NW 145.30
MH 17	1200mm	701.010	401.010	146.92	NE 144.84 S 145.45 NE 145.45
MH 18	1200mm	701.010	401.010	147.02	NW 144.84 S 145.45 NE 145.45
CB 1	600x600mm	705.010	400.010	146.79	145.34
CB 2	600x600mm	705.010	400.010	146.82	145.37
CB 3	600x600mm	705.010	400.010	146.79	145.34
CB 4	600x600mm	705.010	400.010	146.79	145.34
CB 5	600x600mm	705.010	400.010	146.88	145.43
CB 6	600x600mm	705.010	400.010	146.88	145.43
CB 7	600x600mm	705.010	400.010	146.80	145.33
CB 8	600x600mm	705.010	400.010	146.80	145.33
CB 9	600x600mm	705.010	400.010	146.86	145.39
CB 10	600x600mm	705.010	400.010	146.86	145.39
CB 11	600x600mm	705.010	400.010	146.96	145.49
CB 12	600x600mm	705.010	400.010	146.96	145.49
CB 13	600x600mm	705.010	400.010	146.96	145.49
CB 14	600x600mm	705.010	400.010	146.96	145.49
CB 15	600x600mm	705.010	400.010	146.87	145.40
CB 16	600x600mm	705.010	400.010	146.90	145.43
CB 17	600x600mm	705.010	400.010	146.80	145.43
CB 18	600x600mm	705.010	400.010	146.84	145.37
CB 19	600x600mm	705.010	400.010	146.93	145.46
CB 20	600x600mm	705.010	400.010	146.93	145.46
CB 21	600x600mm	705.010	400.010	146.89	145.42
CB 22	600x600mm	705.010	400.010	146.89	145.42
CB 23	600x600mm	705.010	400.010	146.97	145.50
CB 24	600x600mm	705.010	400.010	146.97	145.50
CB 25	600x600mm	705.010	400.010	147.21	145.74

NOTE:
ALL CATCH BASINS AND CATCH BASIN MANHOLES LOCATED IN ASPHALT AREAS TO BE FITTED WITH CATCH BASIN SHIELDS

SEWER CROSSING TABLE			
CROSSING #	INV. UPPER	OBV. LOWER	CLEARANCE
1	145.15-WM	143.61-STM	1.54m
2	145.10-WM	144.47-WM	0.63m
3	145.25-WM	141.36-STM	3.89m
4	144.26-SAN	141.37-STM	2.89m
5	143.31-STM	141.37-STM	1.94m
6	145.20-WM	142.72-STM	2.48m
7	145.15-WM	144.02-SAN	1.13m
8	145.15-WM	144.57-STM	0.58m
9	144.55-STM	143.95-SAN	0.60m
10	144.25-SAN	144.08-STM	0.17m
11	144.26-SAN	141.54-STM	2.72m
12	145.28-WM	144.53-SAN	0.75m
13	145.28-WM	144.82-STM	0.46m
14	144.51-STM	141.54-STM	2.97m
15	145.10-WM	144.52-SAN	0.58m
16	144.64-SAN	144.19-STM	0.45m
17	144.64-SAN	141.14-WM	0.50m
18	145.00-WM	143.65-SAN	1.35m
19	145.09-WM	143.68-SAN	1.41m
20	145.45-WM	144.95-WM	0.50m
21	145.09-STM	144.59-WM	0.50m
22	145.31-WM	145.01-STM	0.30m

SANITARY STRUCTURE TABLE					
STRUCTURE	STRUCTURE SIZE	STRUCTURE OPSD	FRAME/GRATE OPSD	RIM	INVERT
MHA1	1200mm	701.010	401.010	147.02	SE 144.50
MHA2	1200mm	701.010	401.010	147.04	NW 144.37 SE 144.32
MHA3	1200mm	701.010	401.010	146.87	NW 144.25 SW 144.20
MHA4	1200mm	701.010	401.010	147.05	NE 144.10 SE 143.80 SW 143.74
MHA5	1200mm	701.010	401.010	147.05	NW 144.00
MHA6	1200mm	701.010	401.010	147.17	NE 143.76 SW 143.74
MHA7	1200mm	701.010	401.010	147.28	SE 144.47
MHA8	1200mm	701.010	401.010	147.17	NW 144.37 SE 144.40 SW 144.35
MHA9	1200mm	701.010	401.010	146.92	NE 143.65 SE 143.68 NW 143.63
MHA10	1200mm	701.010	401.010	146.95	NW 144.50
MHA11	1200mm	701.010	401.010	146.93	NW 143.57
MHA12	1200mm	701.010	401.010	146.90	SE 143.37 NE 143.32 SW 143.32 NW 143.37
MHA13	1200mm	701.010	401.010	146.91	SE 143.44 NW 143.49
MHA14	1200mm	701.010	401.010	146.90	NE 144.66
MHA15	1200mm	701.010	401.010	147.05	SE 143.57

REGIONAL MUNICIPALITY OF PEEL CONSTRUCTION STANDARDS

- ALL MATERIALS AND CONSTRUCTION METHODS MUST CORRESPOND TO THE CURRENT PEEL PUBLIC WORKS STANDARDS AND SPECIFICATIONS.
- WATERMAIN AND / OR WATER SERVICE MATERIALS 100 MM (4") AND LARGER MUST BE DR 18 PVC PIPE MANUFACTURED TO A.W.W.A. SPEC. C900-16 SPEC COMPLETE WITH TRACER WIRE. SIZE 50 MM (2") AND SMALLER MUST BE TYPE K SOFT COPPER PIPE PER A.S.T.M. B88-49 SPECIFICATION.
- WATERMAINS AND / OR WATER SERVICES ARE TO HAVE A MINIMUM COVER OF 1.7 M (5'6") WITH A MINIMUM HORIZONTAL SPACING OF 1.2 M (4") FROM THEMSELVES AND ALL OTHER UTILITIES.
- PROVISIONS FOR FLUSHING WATER LINE PRIOR TO TESTING, ETC. MUST BE PROVIDED WITH AT LEAST A 50 MM (2") OUTLET ON 100 MM (4") AND LARGER LINES. COPPER LINES ARE TO HAVE FLUSHING POINTS AT THE END, THE SAME SIZE AS THE LINE, THEY MUST ALSO BE HOSED OR PIPE TO ALLOW THE WATER TO DRAIN INTO A PARKING LOT OR DOWN A DRAIN. ON FIRE LINES, FLUSHING OUTLET TO BE 100 MM (4") DIAMETER MINIMUM ON A HYDRANT.
- ALL CURB STOPS TO BE 3.0 M (10') OFF THE FACE OF THE BUILDING UNLESS OTHERWISE NOTED.
- HYDRANT AND VALVE SET TO REGION STANDARD 1 - 6 - 1 DIMENSION A AND B, 0.7 M (2') AND 0.9 M (3') AND TO HAVE PUMPER NOZZLE.
- WATERMAINS TO BE INSTALLED TO GRADES AS SHOWN ON APPROVED SITE PLAN. COPY OF GRADE SHEET MUST BE SUPPLIED TO INSPECTOR PRIOR TO COMMENCEMENT OF WORK, WHERE REQUESTED BY INSPECTOR.
- WATERMAINS MUST HAVE A MINIMUM VERTICAL CLEARANCE OF 0.3 M (12") OVER / 0.5 M (20") UNDER SEWERS AND ALL OTHER UTILITIES WHEN CROSSING.
- ALL PROPOSED WATER PIPING MUST BE IN ACCORDANCE WITH OPSD 1003, 1101, 1150 AND BE PLACED IN ACCORDANCE WITH OPSD 310.
- ALL CONCRETE FOR SIDEWALKS SHALL BE IN ACCORDANCE WITH OPSD 351 AND ALL CONCRETE FOR CURBING SHALL BE IN ACCORDANCE WITH OPSD 353. CONCRETE BARRIER CURB SHALL BE CONSTRUCTED AS PER OPSD 600.110. CONCRETE CURB AND GUTTER SHALL BE CONSTRUCTED AS PER OPSD 600.040.
- CONCRETE CURBS ON THE INSIDE OF THE SITE TO BE CONSTRUCTED AS PER OPSD 600.110.
- FOR EROSION AND SEDIMENT CONTROLS, REFER TO MGM DRAWING CV-1.
- ALL DISTURBED GRASSED AREAS ARE TO BE RESTORED WITH 150mm DEPTH OF TOPSOIL AND SOO.
- THE CONTRACT CONSISTS OF ALL WORK WITHIN THE PROPERTY LINE AND ANY WORK SPECIFICALLY NOTED OUTSIDE OF THE PROPERTY LINE.
- ALL AREAS AFFECTED BY THE PROPOSED WORKS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER.

- NOTE:**
- CONTRACTOR TO CONTACT MGM CONSULTING INC. IMMEDIATELY SHOULD THERE BE ANY CONFLICTS BETWEEN EXISTING CONDITIONS AND PROPOSED GRADING AND/OR SERVING DESIGN, OR CONFLICTS IN CONSTRUCTING THE WORK AS PER THE INTENT OF THE APPROVED DESIGN PRIOR TO CONSTRUCTION.
- NOTE:**
- ALL WORK TO CONFORM TO THE LATEST MUNICIPAL STANDARDS AND SPECIFICATIONS AS WELL AS THE LATEST ADOPTED ONTARIO PROVINCIAL STANDARD DRAWINGS AND SPECIFICATIONS.
 - ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER TO SATISFACTION OF THE MUNICIPALITY AND MGM CONSULTING INC.
 - CONTRACTOR TO LOCATE AND PROTECT ALL EXISTING SERVICES AND UTILITIES PRIOR TO AND DURING CONSTRUCTION.
 - CONTRACTOR TO LOCATE AND CONFIRM ALL EXISTING UTILITIES AND SERVICE INFORMATION PRIOR TO CONSTRUCTION.
 - CONTRACTOR TO ENSURE ADEQUATE CLEARANCE FROM ALL EXISTING SERVICES AND UTILITIES.
 - CONTRACTOR TO CONFIRM ALL EXISTING INVERTS PRIOR TO INTERNAL SERVING.
 - CONTRACTOR TO CONFIRM THE PAVEMENT STRUCTURE THICKNESS" BASED ON THE GEOTECHNICAL REPORT.

CONSTRUCTION NOTES:

- ALL SITE GRADING SHALL BE CARRIED OUT IN ACCORDANCE WITH OPSD 206.
- ALL MATERIALS ENCOUNTERED DURING EXCAVATION THAT ARE NOT SUITABLE FOR USE AS EARTH FILL ARE TO BE REMOVED AND DISPOSED OFF SITE, IN ACCORDANCE WITH CURRENT REGULATIONS.
- ALL GRANULAR MATERIALS SHALL CONFORM TO OPSD 1010 AND BE COMPACTED TO 100% STANDARD PROCTOR DENSITY.
- ALL ASPHALT MATERIALS SHALL BE IN ACCORDANCE WITH OPSD 1003, 1101, 1150 AND BE PLACED IN ACCORDANCE WITH OPSD 310.
- ALL CONCRETE FOR SIDEWALKS SHALL BE IN ACCORDANCE WITH OPSD 351 AND ALL CONCRETE FOR CURBING SHALL BE IN ACCORDANCE WITH OPSD 353. CONCRETE BARRIER CURB SHALL BE CONSTRUCTED AS PER OPSD 600.110. CONCRETE CURB AND GUTTER SHALL BE CONSTRUCTED AS PER OPSD 600.040.
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- ALL AREAS AFFECTED BY THE PROPOSED WORKS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER.

LEGAL AND TOPOGRAPHICAL SURVEY PROVIDED BY:
SCHAEFFER DZALDOV BENNETT LTD.
JOB NO. 15-155-01, DATED JULY 21, 2015.

SITE BENCHMARK:
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CONSULTANT:
KINGRIDGE DEVELOPMENTS
CONSULTING ENGINEER
OCT. 16/2025
PROVINCE OF ONTARIO

MGM CONSULTING INC.
Consulting Engineering & Project Management
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L4T 1G1
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Email: mgm@mgnm.com
www.mgm.com

CLIENT:
THORNY BRAE TOWNHOUSE DEVELOPMENT
1775 THORNY BRAE PLACE MISSISSAUGA ONTARIO

DRAWING:
SERVICING PLAN

DRAWN BY: BN	CHECKED BY: MLS	JOB CAPTAIN: JB
SCALE: 1:300	PROJECT NO.: 2025-004	SHEET NO.: CV-3
CURRENT ISSUE: 3	CURRENT REV: 2	



Appendix A

Storm Sewer Design Sheet



MGM CONSULTING Inc. STORM SEWER DESIGN SHEET

1775 Thorny Brae Place, Mississauga, ON.

By: AB
Date: October 2025

Location				Areas		A * C			Rainfall		Flow	Sewer Design						
Manhole from	Invert m.	Manhole to	Invert m.	Area ha	Cumulative Area ha	Weighted Coefficient C	Incremental A * C	Cumulative A * C	Time min	Intensity I10 mm/hr.	Q cms	Pipe Size mm.	Slope %	Max. Flow Q max cms	Max Velocity V max m./sec.	Length m.	Time in Section min.	Pipe Capacity % full
CBMH12		MH11		0.121	0.121	0.83	0.101	0.101	10.0	124.8	0.035	300	0.50	0.068	0.97	11.9	0.20	51
MH11		MH10		0.000	0.121		0.000	0.101	10.2	123.4	0.035	300	0.50	0.068	0.97	29.4	0.51	50
MH10		MH9		0.010	0.131	0.58	0.006	0.106	10.7	120.2	0.036	300	0.50	0.068	0.97	6.4	0.11	52
MH9		MH8		0.244	0.375	0.68	0.166	0.272	10.8	119.6	0.091	375	0.50	0.124	1.12	22.0	0.33	73
MH8		MH7		0.093	0.468	0.74	0.069	0.341	11.1	117.6	0.112	450	0.50	0.202	1.27	15.5	0.20	55
MH7		MH6		0.096	0.564	0.69	0.067	0.408	11.4	116.5	0.132	450	0.50	0.202	1.27	9.4	0.12	65
MH18		MH6		0.104	0.104	0.77	0.081	0.081	10.0	124.8	0.028	300	0.50	0.068	0.97	45.7	0.79	41
MH6		MH5		0.000	0.668	0.00	0.000	0.488	11.5	115.8	0.157	450	0.50	0.202	1.27	17.5	0.23	78
MH17		MH16		0.131	0.131	0.77	0.100	0.100	10.0	124.8	0.035	300	0.50	0.068	0.97	57.0	0.98	51
MH16		MH5		0.067	0.198	0.76	0.051	0.151	11.0	118.6	0.050	300	0.50	0.068	0.97	17.6	0.30	73
MH5		MH4		0.000	0.866	0.00	0.000	0.640	11.7	114.5	0.204	525	0.50	0.305	1.41	11.6	0.14	67
MH4		MH3		0.135	1.001	0.71	0.096	0.736	11.8	113.7	0.233	525	0.50	0.305	1.41	23.1	0.27	76
MH15		MH3		0.110	0.110	0.73	0.080	0.080	10.0	124.8	0.028	300	0.50	0.068	0.97	42.0	0.72	41
MH3		CBMH2		0.099	1.210	0.75	0.074	0.890	10.7	120.2	0.297	600	0.50	0.435	1.54	16.6	0.18	68
MH13		MH14		0.060	0.060	0.74	0.044	0.044	10.9	119.1	0.015	300	0.50	0.068	0.97	30.2	0.52	21
MH14		CBMH2		0.000	0.060	0.00	0.000	0.044	11.4	116.1	0.014	300	0.50	0.068	0.97	13.5	0.23	21
CBMH2		CBMH1		0.083	1.354	0.79	0.065	1.000	10.9	119.1	0.331	600	2.00	0.869	3.08	11.2	0.06	38
CBMH1		OGS		0.112	1.526	0.28	0.032	1.076	11.4	116.1	0.347	600	2.00	0.869	3.08	8.5	0.05	40
OGS		EX. MH		0.000	1.526	0.00	0.000	1.076	11.7	114.8	0.343	600	2.00	0.869	3.08	6.2	0.03	39

n = 0.013

Note: Calculated as per City's 10yr storm IDF curve.



Appendix B

Oil and Grit Separator and Treatment Train Calculations



Hydroworks Sizing Summary

Thorny Brae Townhouse Development

Mississauga

06-19-2025

Recommended Size: HydroDome HD 8

Hydroworks Sizing Program Version 5.8.5

A HydroDome HD 8 is recommended to provide 80 % annual TSS removal based on a drainage area of 1.526 (ha) with an imperviousness of 69 % and Toronto Central, Ontario rainfall for the ETV particle size distribution.

The recommended HydroDome HD 8 treats 100 % of the annual runoff and provides 80 % annual TSS removal for the Toronto Central rainfall records and ETV particle size distribution.

The HydroDome has a siphon which creates a discontinuity in headloss. Since a peak flow was not specified, headloss was calculated using the full pipe flow of .61 (m³/s) for the given 525 (mm) pipe diameter at 2% slope. The headloss was calculated to be 494 (mm) above the crown of the 525 (mm) outlet pipe.

This summary report provides the main parameters that were used for sizing. These parameters are shown on the summary tables and graphs provided in this report.

If you have any questions regarding this sizing summary please do not hesitate to contact Hydroworks at 888-290-7900 or email us at support@hydroworks.com.

The sizing program is for sizing purposes only and does not address any site specific parameters such as hydraulic gradeline, tailwater submergence, groundwater, soils bearing capacity, etc. Headloss calculations are not a hydraulic gradeline calculation since this requires a starting water level and an analysis of the entire system downstream of the HydroDome .

TSS Removal Sizing Summary

Hydroworks Siphon Separator Sizing Program - HydroDome

File Product Units CAD Video Help

Main Dimensions Rainfall Site TSS PSD TSS Load Site Storage By-Pass Custom CAD Video Other

Site Parameters
 Area (ha) 1.526
 Imperviousness (%) 69

Units
☐ U.S.
☒ Metric

Rainfall Station
 Toronto Central Ontario
 1982 To 1999 Rainfall Timestep = 15 min.

Project Title (2 lines)
 Thorny Brae Townhouse Development
 Mississauga

ETV Lab Testing Results ☐ Post Treatment Recharge

Outlet Pipe
 Diam. (mm) 525 Peak Design Flow (m3/s)
 Slope (%) 2

HydroDome Annual Sizing Results

Model #	Qlow (m3/s)	Qtot (m3/s)	Flow Capture (%)	TSS Removal (%)
Unavailable	.608	.608	100 %	48 %
HD 4	.608	.608	100 %	58 %
HD 5	.608	.608	100 %	66 %
HD 6	.608	.608	100 %	71 %
Unavailable	.608	.608	100 %	76 %
HD 8	.608	.608	100 %	80 %
HD 10	.608	.608	100 %	84 %
HD 12	.608	.608	100 %	89 %

Particle Size Distribution

Size (um)	%	SG
1	5	2.65
4	5	2.65
6	5	2.65
7	5	2.65
18	15	2.65
45	10	2.65
70	5	2.65
90	10	2.65
125	15	2.65
200	15	2.65

Note: Results vary significantly based on particle size distribution

Simulate

TSS Particle Size Distribution

Hydroworks Siphon Separator Sizing Program - HydroDome

File Product Units CAD Video Help

Main Dimensions Rainfall Site TSS PSD TSS Load Site Storage By-Pass Custom CAD Video Other

TSS Particle Size Distribution

Size (um)	%	SG
1	5	2.65
4	5	2.65
6	5	2.65
7	5	2.65
18	15	2.65
45	10	2.65
70	5	2.65
90	10	2.65
125	15	2.65
200	15	2.65
400	5	2.65
850	5	2.65
*		

Notes:

1. To change data just click a cell and type in the new value(s)
2. To add a row just go to the bottom of the table and start typing.
3. To delete a row, select the row by clicking on the first pointer column, then press delete
4. To sort the table click on one of the column headings

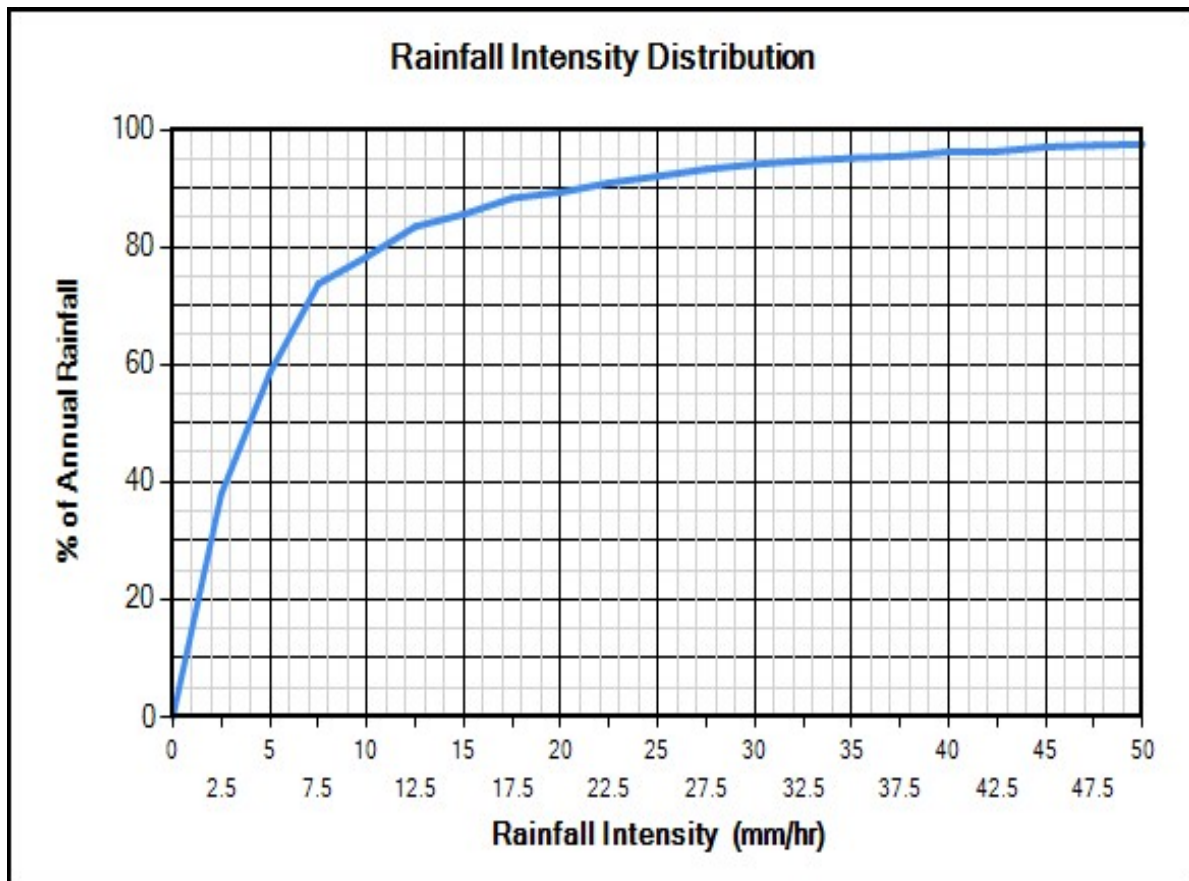
TSS Distributions

- ☒ ETV Canada
- ☐ Standard HDS Design
- ☐ Alden Laboratory
- ☐ OK110
- ☐ Toronto
- ☐ Ontario Fine
- ☐ ETV Canada (Calgary)
- ☐ Calgary Forebay
- ☐ Kitchener
- ☐ User Defined

Clear

You must select a particle size distribution for TSS to simulate TSS removal

Water Temp (C) 20



Site Physical Characteristics

Hydroworks Siphon Separator Sizing Program - HydroDome

File Product Units CAD Video Help

Main Dimensions Rainfall Site TSS PSD TSS Load Site Storage By-Pass Custom CAD Video Other

Catchment Parameters

Width (m) Imperv. Mannings n Maintenance Frequency (months)

Perv Mannings n

Slope (%) Imp. Depress. Storage (mm)

Perv. Depress. Storage (mm)

Daily Evaporation (mm/day)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	2.54	2.54	3.81	3.81	3.81	2.54	2.54	0	0

Infiltration

Max. Infiltration Rate (mm/hr)

Min. Infiltration Rate (mm/hr)

Infiltration Decay Rate (1/s)

Infiltration Regen. Rate (1/s)

Catch Basins

of Catch basins

Constant Baseflow

Roof Runoff (m3/s)

Resets all parameters excluding input catchment width.

Dimensions And Capacities

Hydroworks Siphon Separator Sizing Program - HydroDome

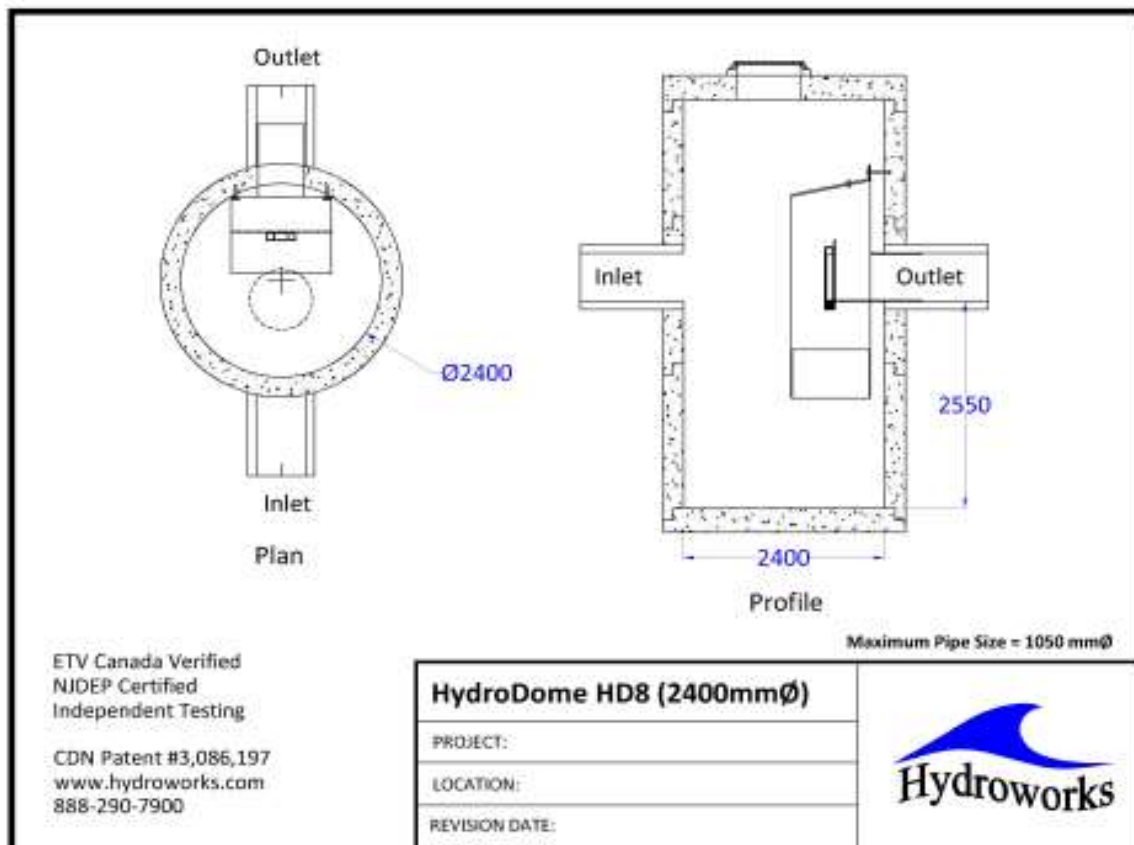
File Product Units CAD Video Help

Main Dimensions Rainfall Site TSS PSD TSS Load Site Storage By-Pass Custom CAD Video Other

Dimensions and Capacities					
Model	Diam. (m)	Depth (m)	Float. Vol. (L)	Sediment Vol. (m3)	Total Vol. (m3)
Unavailable	0.91	1.22	123	0.5	0.8
HD 4	1.22	1.37	266	0.9	1.6
HD 5	1.52	1.68	483	1.7	3.1
HD 6	1.83	1.98	803	2.9	5.2
Unavailable	2.13	2.29	1226	4.6	8.2
HD 8	2.44	2.8	1863	7.7	13.1
HD 10	3.05	3.2	3617	13	23.3
HD 12	3.66	3.81	6225	22.2	40

Depth = Depth from outlet invert to inside bottom of tank

Generic HD 8 CAD Drawing



TSS Buildup And Washoff

Hydroworks Siphon Separator Sizing Program - HydroDome

File Product Units CAD Video Help

Main Dimensions Rainfall Site TSS PSD TSS Load Site Storage By-Pass Custom CAD Video Other

TSS Buildup

☐ Power Linear
☒ Exponential
☐ Michaelis-Menton
☐ No Buildup Required

TSS Washoff

☒ Power-Exponential
☐ Rating Curve (no upper limit)
☐ Rating Curve (limited to buildup)
☐ Event Mean Concentration

Street Sweeping
Efficiency (%) 30
Start Month May
Stop Month Sep
Frequency (days) 30
Available Fraction .3

Soil Erosion
☐ Add Erosion to TSS

Reset to Default Values

TSS Buildup Parameters

Limit (kg/ha) 28.02
Coeff (kg/ha) 67.25
Exponent .5

TSS Washoff Parameters

Coefficient .0855
Exponent 1.1

TSS Buildup

☒ Based on Area
☐ Based on Curb Length

Upstream Quantity Storage

Hydroworks Siphon Separator Sizing Program - HydroDome

File Product Units CAD Video Help

Main Dimensions Rainfall Site TSS PSD TSS Load Site Storage By-Pass Custom CAD Video Other

Quantity Control Storage

	Storage (m3)	Discharge (m3/s)
▶	0	0
•		

Clear

Other Parameters

Hydroworks Siphon Separator Sizing Program - HydroDome

File Product Units CAD Video Help

Main Dimensions Rainfall Site TSS PSD TSS Load Site Storage By-Pass Custom CAD Video Other

Scaling Law

- ☒ Peclet Scaling based on diameter x depth
- ☐ Peclet Scaling based on surface area (diameter x diameter)

TSS Removal Extrapolation

- ☒ Extrapolate TSS Removal for flows lower than tested
- ☐ No TSS Removal extrapolation for flows lower than tested
- ☐ No TSS Removal extrapolation for lower flows or inter-event periods

Lab Testing

- ☐ Use NJDEP Lab Testing Results
- ☒ Use ETV Canada Lab Testing Results

HydroDome Design

- ☒ High Flow Weir
- ☐ Flow Control (parking lot storage)
Must add Quantity Storage Table

HD Hydraulics

HD Model HD 8

- ☐ Custom Insert Size

TSS Removal Results

☒ Required TSS Removal

☐ Choose Model #

TSS Removal Required

TSS Removal (%) 80.0 Enter required TSS Removal (%)

Flagged Issues

If there is underground detention storage upstream of the HydroDome please contact Hydroworks to ensure it has been modeled correctly.

Hydroworks Sizing Program - Version 5.8.5

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1-800-290-7900

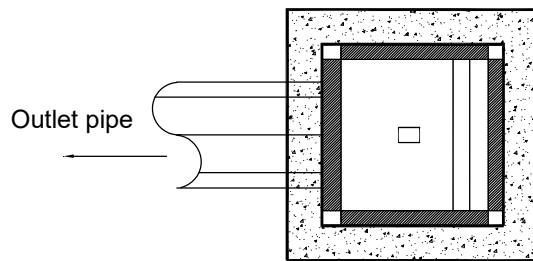
www.hydroworks.com

Notes

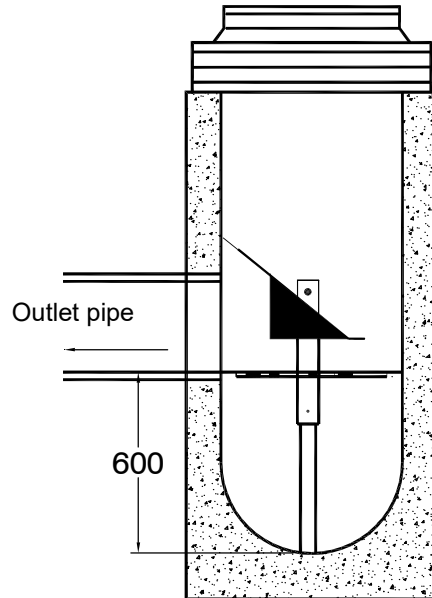
1 Recommended depth t/g - invert = 1.2m

Maximum depth t/g - invert = 2.4m

1. CB Shield to be installed in non frozen conditions.
2. The frame and cover should be well aligned with the catchbasin.
3. The sump must be clean before installation
4. The grate is at the same elevation as pipe invert.
5. Pipes must be cut flush with inside walls



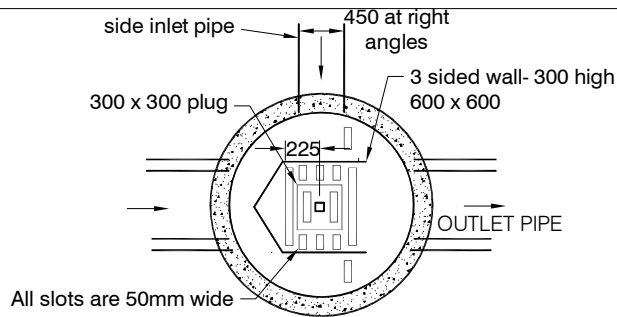
Top view



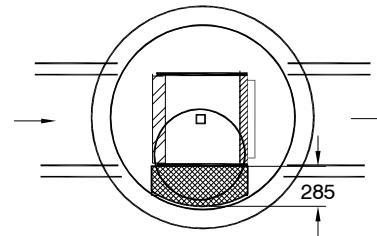
Profile view



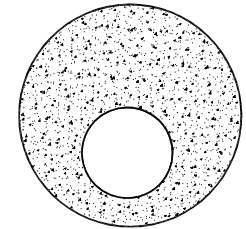
600 x 600 CB
CB Shield (600mm Sump)



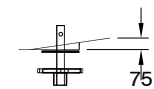
Grate plan view



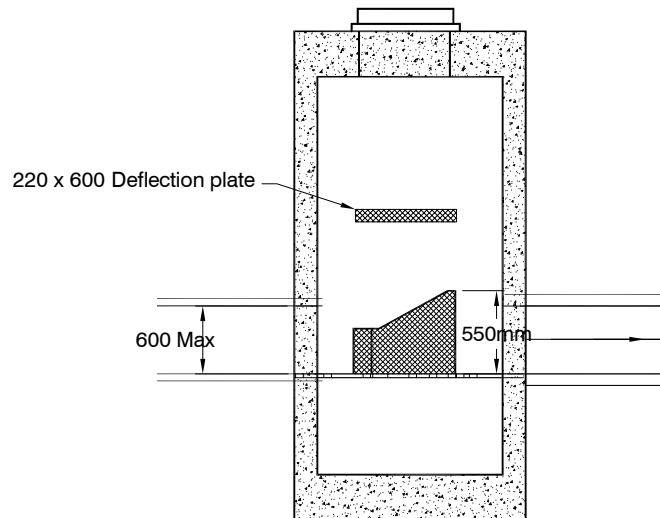
Inlet flow deflection plate
attached to wall



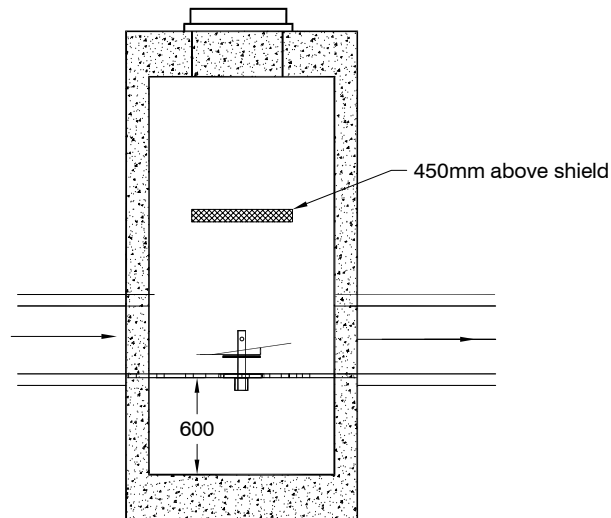
Standard Flat Cap



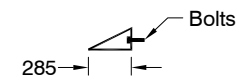
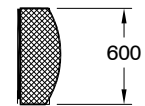
Shallow Sloped plate
with flexible skirt.



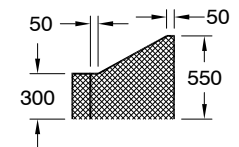
Side view of Deflection wall
and Deflection Plate (above)



Side view of Sloped plate
and Clean out plug



Deflection plate
Detail



Deflection wall dimensions



CBMH Shield-1200mm -Generic Drawing

Treatment Train Performance Calculation

Combined TSS Removal Calculations for Treatment Options in Series (Point Source Inlet Flows)

$$R = A + B - [(A \times B) / 100]$$

A= OGS HydroDome
B= CB Shield

R= Total TSS Removal Rate

A= First Removal (upstream)

B= Second Removal (downstream)

A = 50 %

B = 60 %

Total TSS
Removal
Rate = 80 %



Appendix C

Runoff Volume Reduction Calculations

Water Balance

Runoff Volume Reduction

On-site stormwater retention is achieved equivalent to capturing 5mm over the impervious site area.

Description	Area (m²)	Required Depth (m)	Volume (m³)
Impervious Surfaces	10470	5	52.4
Total	10470		52.4

Equivalent Depth of the Site Area = **5.0** mm.

Infiltration Rate (mm/hr) 15 (assumed for native soils)

Depth of Tank (mm) 660

Infiltration Time (hours) 44.0

Infiltration Trench Storage Sizing

Area of Infiltration Tank	84.5	m ²
Depth of Tank	660.0	mm
Porosity	97.0	-
Available Volume for Infiltration	54.1	m ³



Appendix D

Sanitary Sewer Design Sheet



**THE REGIONAL MUNICIPALITY OF PEEL
SANITARY SEWER DESIGN SHEET**

Project No. 2025-004
 Subdivision Thony Brae Place
 Date: 15-Oct-25
 Des. By: BN Chk. By: AK

Development Type	Persons/Unit	Daily per Capita Flow (l/cap/day)	Infiltration (l/s/Ha)
Residential (Townhouse)	3.4	290	0.26

		Tributary Area Hectare				Population Tributary				Average Increment L/s	Average Total L/s	Peaking Factor	Max. L/s	Infiltration L/s	Max. Flow L/s	SEWER					PIPE			REMARKS	
		Increment			Total ha	Increment			Total							mm.	%	Q L/s	Capacity %	V m/s		Type	n		Class
		Res. ha	Comm. ha	Ind. ha		Res. Units	Comm.	Ind.												Full Flow					
MHA 1	MHA 2	0.197			0.197	18			61	0.205	0.205	4.000	0.822	0.051	0.873	250	0.50	42.067	2.1	0.86	PVC	0.013	SDR35		
MHA 2	MHA 3	0.035			0.232	0				0.205	0.205	4.000	0.000	0.060	0.933	250	0.50	42.067	2.2	0.86	PVC	0.013	SDR35	Conveyance	
MHA 3	MHA 4	0.053			0.285	0				0.205	0.205	4.000	0.000	0.074	1.007	250	0.50	42.067	2.4	0.86	PVC	0.013	SDR35	Conveyance	
MHA 5	MHA 4	0.209			0.209	18			61	0.205	0.205	4.000	0.822	0.054	0.876	250	0.50	42.067	2.1	0.86	PVC	0.013	SDR35		
MHA 4	MHA 6	0.032			0.526	0			122		0.411	4.000	1.643	0.137	1.883	250	0.50	42.067	4.5	0.86	PVC	0.013	SDR35	Conveyance	
MHA 7	MHA 8	0.118			0.118	9			31	0.103	0.103	4.000	0.411	0.031	0.442	250	0.50	42.067	1.0	0.86	PVC	0.013	SDR35		
MHA 14	MHA 8	0.179			0.297	15			51	0.171	0.171	4.000	0.685	0.077	0.762	250	0.50	42.067	1.8	0.86	PVC	0.013	SDR35		
MHA 8	MHA 6	0.027			0.324	24			82		0.274	4.000	1.096	0.084	1.203	250	0.50	42.067	2.9	0.86	PVC	0.013	SDR35	Conveyance	
MHA 6	MHA 9	0.021			1.156	60			204		0.685	4.000	2.739	0.301	3.039	250	0.50	42.067	7.2	0.86	PVC	0.013	SDR35	Conveyance	
MHA 10	MHA 9	0.190			0.190	18			61	0.205	0.205	4.000	0.822	0.049	0.871	250	0.50	42.067	2.1	0.86	PVC	0.013	SDR35		
MHA 9	EX. SAN. MH	0.046			1.392	78			265		0.890	4.000	3.561	0.362	4.272	250	0.50	42.067	10.2	0.86	PVC	0.013	SDR35	Conveyance	
EX. SAN. MH	MHA 12	0.073			1.465	78			265		0.890	4.000	3.561	0.381	4.653	250	0.50	42.067	11.1	0.86	PVC	0.013	SDR35	Conveyance	
MHA 11	MHA 12	0.211			0.211	13			44	0.148	0.148	4.000	0.593	0.055	0.648	250	0.50	42.067	1.5	0.86	PVC	0.013	SDR35		
MHA 15	MHA 13	0.107			0.107	4			14	0.046	0.046	4.000	0.822	0.028	0.849	250	0.50	42.067	2.0	0.86	PVC	0.013	SDR35		
MHA 13	MHA 12	0.028			0.135				14		0.046	4.000	0.822	0.035	0.885	250	0.50	42.067	2.1	0.86	PVC	0.013	SDR35	Conveyance	
MHA 12	EX SAN MH				1.53	95			323		1.084	4.000	4.337	0.397	4.733	250	0.51	42.485	11.1	0.87	PVC	0.013	SDR35	Conveyance	



Appendix E

Fire Flow and Water Demand Calculations

Fire Flow Calculation

Thorny Brae Townhouse Development

The FUS requires that a minimum water supply source 'F' be provided at 140 kPa
The min flow 'F' can be calculated as such:

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

where:

F - Required fire flow in L/min

C - Coefficient related to construction

A - Total area in sq.m

$$C = 1.5 \text{ (Wood frame construction)}$$

For non-combustible construction, the area shall be a total of all floors (excluding basements at least 50 percent below grade) in the building being considered.

$$A = 2051.7 \text{ m}^2 \text{ (Block 2, Largest Townhouse Block in Development)}$$

Therefore,

$$\begin{aligned} F &= 14947.58 \text{ L/min} \\ &= 15000 \text{ L/min (rounded to nearest 1000)} \end{aligned}$$

Reduction Factors:

$$F' = F * f1 * f2$$

where:

f1 - Occupancy factor

Limited combustion, $f1 = 15\%$

Therefore, the reduction due to low hazard occupancy = 2250 l/min.
and $F = 12750 \text{ l/min}$

f2 - Sprinkler protection factor

Based on fully automated sprinkler system, maximum reduction = 0%

Reduction 0 L/min

Exposure Factors:

$$F'' = F' * f3$$

where:

f3- Exposure factor not to exceed 75%

Separation between subject building and other structures, and associated charges are as follows:

	<u>Distance (m)</u>	<u>Charge</u>
North Side	>30	0%
South Side	>30	0%
East Side	20	15%
West Side	15	15%
Total		30%

The total increase for exposures is 30%
and the increase due to exposures = 3825

The resulting required minimum flow, $F = 16575$ l/min

Therefore a minimum flow of approximately 17000 l/min (283 l/sec) must be available at the nearest hydrant with a minimum pressure of 140 kPa.



Appendix F

Hydrant Flow Test

Kingridge Developments

1786 Polaris Way, City of Mississauga

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

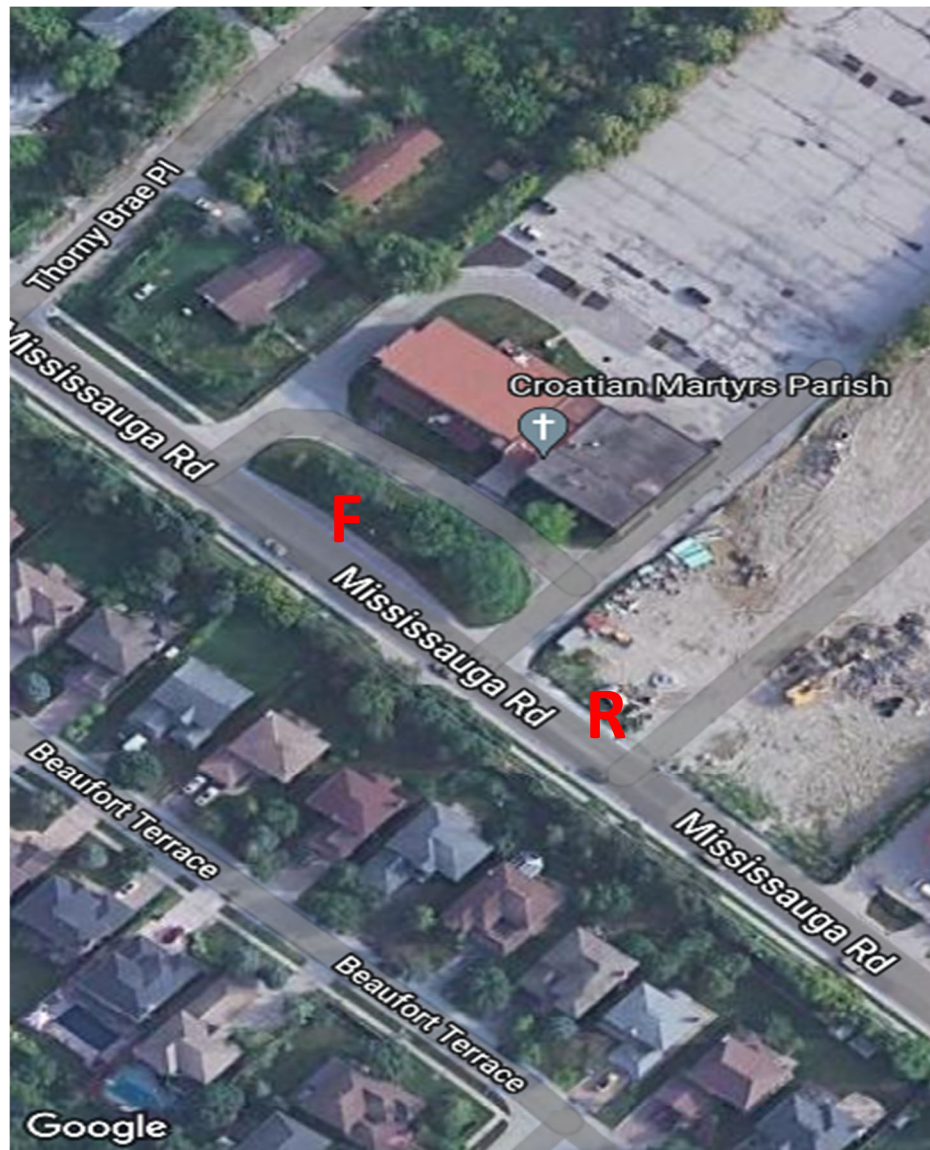
March 26, 2025

Hydrant Flow Testing

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

Date of Testing	14-Jun-2024
Project Number:	145121
Test ID	H2024-028
Site Location / Address:	1786 Polaris Rd, Miss
Region / Municipality	Peel Region
Hydrants Opened By:	Peel Region
Tested by:	James W

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



Test Data

Time of Test 11:11 AM
 Pipe Size (mm) -
 Flow Hydrant Test Location (description) 4601 Mississauga Rd
 Residual Hydrant Test Location (description) 4587 Mississauga Rd
 Static Pressure (PSIG) 90

Q1 Test Data (1 Orifice)

# OUTLETS	ORIFICE SIZE(IN)	PITOT PRESSURE(PSIG)	FLOW(USGPM)	RESIDUAL PRESSURE(PSIG)
1	2.5	60	1300	88

QT Test Data (2 Orifices)

# OUTLETS	ORIFICE SIZE(IN)	PITOT PRESSURE(PSIG)	FLOW(USGPM)	RESIDUAL PRESSURE(PSIG)
2	2.5	40	2122	86

Calculations

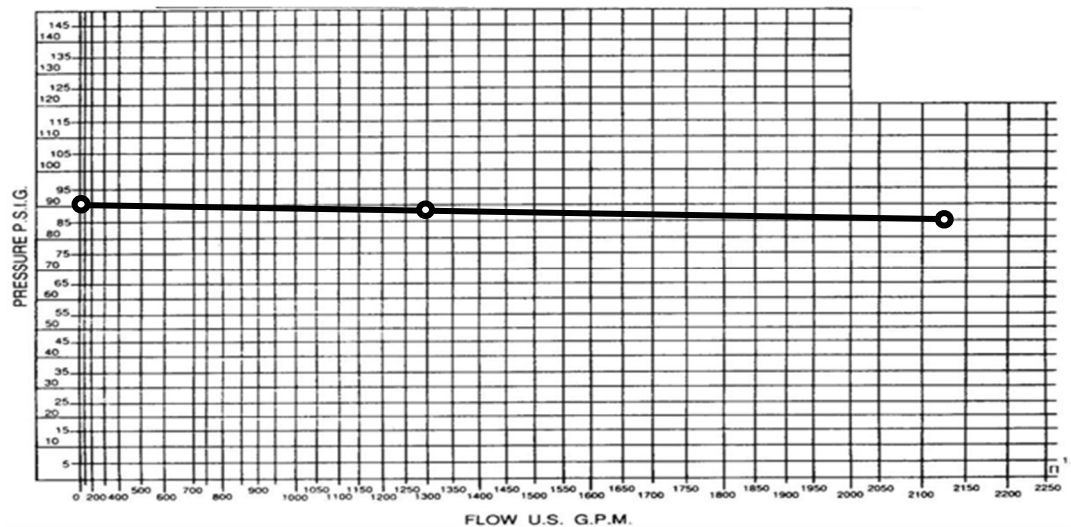
FORMULA: $Q = 29.83 \text{ cd}^2 \sqrt{p}$Where: c- coefficient of discharge (1 in smooth pipe)
 d- pipe diameter (inches)
p- pitot reading (psig)

Q1 - 1 Orifice(s) $Q1 = (29.83)(0.9)(2.5)^2 \sqrt{60} = 1300$

QT - 2 Orifice(s) $QT = 2(29.83)(0.9)(2.5)^2 \sqrt{40} = 2122$

Static Pressure (PSIG) 90

Test Results Plot



Appendix D.2 Estimated Available Pressure at Water Service Connection on Mississauga Road



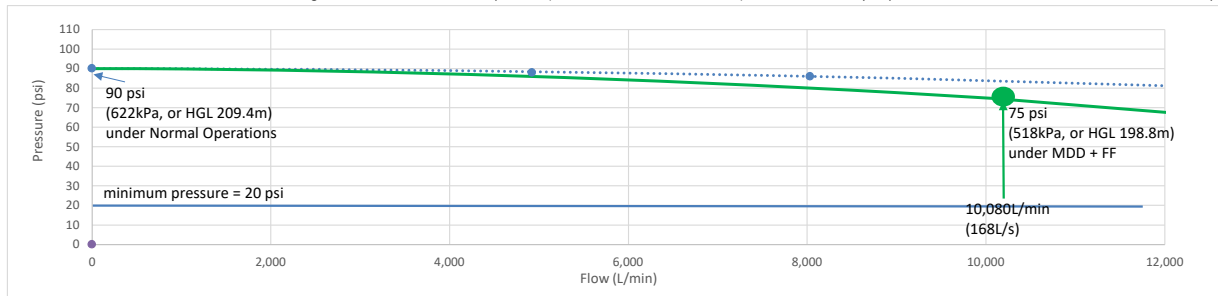
Project:	1786 Polaris Way, Mississauga	Proj.#	145121
Date:	2024-06-26		
Calc'd by:	SK		

Hydrant Flow Test Results			
Flow Hydrant Test Location:	4587 Mississauga Rd		
Residual Hydrant Test Location:	4601 Mississauga Rd		
Main Size:	300mm Diameter	Test Time:	11:11 AM
Test Date:	2024-06-14		
Tested By:	Peel Region		

Elev.(m)
146.0

Number of Outlets & Orifice Size	Pilot Pressure (psi)	Flow (US GPM)	Flow (L/min)	Residual Pressure (psi)	Estimated Residual Pressure* (psi)	Estimated HGL(m)
0	0	0	0	90	90	209.4
1 x 2.5"	60	1,300	4,921	88	88	208.0
2 x 2.5"	40	2,122	8,033	86	80	206.6

*Estimated Residual Pressure: For a conservative design, it assumed that the residual pressure (at the maximum tested flow rate) would be reduced by 10 psi, which was used to estimate the available flow at 20 psi.



Where,

$$Q_R = Q_T \left(\frac{P_s - P_r}{P_s - P_t} \right)^{0.54}$$

Q_r = Projected Flow Rate
 Q_T = Flow Rate from Flow Test = 8033 L/min
 P_s = Static Pressure = 90 psi
 P_r = Desired System Pressure
 P_t = Residual Pressure inTest = 80 psi

Pressure Under Fire Suppression (P_{r1}) =	20.0	psi	
Calculated Flow Rate (Q_{r1}) =	22,974	L/min	6,069 USGPM 383 L/s
Pressure Under Normal Operation (P_{r2}) =	40.0	psi	
Calculated Flow Rate (Q_{r2}) =	19,157	L/min	5,061 USGPM 319 L/s