FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

1315 Silver Spear Road

City of Mississauga

Prepared for

Starlight Group Property Holdings Inc.

Project #: 23-314W

July 2025

Urbantech® Consulting, A Division of Leighton-Zec West Ltd. | 2030 Bristol Circle, Suite 105 • Oakville • ON • L6H 0H2 905.829.8818

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1. INTRODUCTION

Urbantech has been retained as consulting engineers by Starlight Group Property Holdings Inc. to complete a Functional Servicing and Stormwater Management Report in support of re-zoning for the 0.85 ha development located at 1315 Sliver Spear Road in the City of Mississauga.

The site is bounded:

- To the north by Burnhamthorpe Road East
- To the south by Silver Spear Road
- To the west by existing residential buildings
- To the east by the Burnhamthorpe Public Library

The legal description of the site is Block A, Registered Plan 750, City of Mississauga, as shown on Lloyd & Purcell Ltd. Plan of Survey, dated October 24, 2017.

The site is currently occupied by existing 8-storey residential apartment building (which is to remain) with surface parking. The proposed development consists of 14-storey building, 4 levels of underground parking and some alterations to the surface parking.

The subject development lies within Etobicoke Creek catchment 208 of the Toronto and Region Conservation Authority (TRCA). The site falls within the City of Mississauga Ward 3 area.

1.1 Study Purpose

The objective of this study is to outline the servicing requirements of the subject lands at a functional design level. This study will:

1. Recommend site grading, water supply and wastewater servicing strategies for the site.
2. Demonstrate compliance with City, Conservation and MECP design criteria for municipal services and stormwater management (SWM) measures.

The functional servicing design has been prepared in accordance with design criteria and requirements of the City of Mississauga, Region of Peel and Toronto and Region Conservation Authority. The information in this report is intended to assist the regulatory agencies in their review of the planning applications for the proposed development.

2. DEVELOPMENT CONCEPT

Refer to the development concept plan prepared by John D. Rogers and Associates Inc, dated February 5th, 2025. The proposed development plan consists of:

1. 14-storey building with 255 units, including 36 accessible units.
2. 4 levels of underground parking.
3. 0.59 ha of landscape area.

The existing development consists of:

1. 8-storey building with 93 units.
2. 0.46 ha of landscape area.
3. Surface parking area.

The proposed development will connect to Burnhamthorpe Road East on North via private driveway and there is an existing connection to the Silver Spear Road on South via private driveway.

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3. GRADING DESIGN

3.1 Design Standards

The proposed grading design for the site takes into consideration the following requirements and constraints:

1. Conforms to the City of Mississauga design criteria.
2. Match existing boundary lot and road grading conditions to be compatible with abutting properties.
3. Provides overland flow conveyance for major storm conditions.
4. Provides appropriate cover for proposed servicing.
5. Ensures compatibility of driveway access to surrounding public streets.

3.2 Grading Design

A grading plan for the subject property has been prepared in conjunction with the storm, sanitary, and water servicing system design for the subject development.

Drawings 201 illustrate the proposed grading plan for the site.

4. STORM DRAINAGE AND STORMWATER MANAGEMENT

4.1 Drainage Criteria

The City of Mississauga and Toronto and Region Conservation Authority outline the following design criteria for the site as follows:

1. Limiting the 100-year post-development stormwater discharge to pre-development 2-year storm event which is the capacity of the storm sewers.
2. TRCA targets for the proposed 2-year – 50-year storm events are calculated based on the peak runoff rates in from Etobicoke Creek subcatchment 208 (site location) in Table I1 from the TRCA Stormwater Management Criteria.
3. Pre-development runoff coefficients are to not exceed 0.5 for a site that is already developed.
4. Ensure minimum 80% TSS removal on site for quality control.
5. First 5 mm of runoff to be retained on-site.
6. Provide safe overland flow conveyance of the 100-year event.

4.2 Storm Sewer Design

Under the current development, an existing 8-storey apartment building and a surface parking drains South to the existing storm sewer located on Silver Spear Road. Under the proposed development, a 14-storey building, and underground parking will be added with some changes to the surface parking spaces, while the existing 8-storey building remains. The drainage from the proposed building and adjacent surface parking area will drain to the proposed SWM Tank located South-West of the site. Refer to the Storm Drainage Plan **Drawing 301.**

Storm sewers within the site will be sized to convey the 100-year storm in accordance with the City of Mississauga standards including the use of a 15 minute time of concentration. The site is full coverage with an underground parking. All surface drainage will be collected by area drains and catchbasins that are connected to the building plumbing system. Routing of the storm sewers within the proposed building will be determined later as the building design is advanced.

Flows from the proposed SWM tank will drain to Proposed MH 2 and eventually connect to the existing 300 mm storm sewer on the Silver Spear Road via 300 mm storm sewer connection as shown on **Drawing 301.**

4.3 Quality Control

As identified in section 4.1 above, the proposed 0.547 ha site is required to meet a minimum of 80% TSS removal on site for quality control. To achieve the required TSS removal an Oil Grit Separator (OGS) will be used upstream of the proposed storage tank. **Table 1** below outlines preliminary sizing for the OGS devices. Sizing specifications are to be verified by the manufacturer during detailed design.

Table 1 OGS Parameters

OGS #	Size	Area (ha)	Efficiency (%)
1	EF4	0.547	85

Refer to **Appendix B** for the Stormceptor Sizing Report.

4.4 Quantity Control

A Visual Otthymo 6.2 (VO6) model was created to simulate the drainage from the site to determine the target flow rates for the 0.547 ha area draining to Silver Spear Road. As the site is fully developed under existing conditions and due to downstream controls, a runoff coefficient of 0.5 was used as prescribed by the City of Mississauga standards.

A 6-hour AES rainfall distribution was used to simulate the rainfall on the site as per the TRCA guidelines. Peak runoff rates from catchment 208 were used and derived from Table I1 in the TRCA Stormwater Management Criteria manual.

Due to capacity constraints in the downstream sewer, the City of Mississauga requested that post development 100-year flows be limited to the pre-development 2-year event. **Table 2** below outlines the pre-development 2-year flow.

Table 2: 2-year Pre-development Target

Scenario	Area (ha)	Runoff Coefficient	2-year (m^3/s)
Pre- Development	0.547	0.5	0.028

In addition to the City of Mississauga's target flow for the 100-year event, as the property is located within the TRCA's Little Etobicoke Creek the following unit flow rates apply to the property for the 2 to 100-year events.

Table 3: TRCA Flow Targets and Unit Rates

Storm	Unit Runoff Rates (l/s/ha)	Target Flow (l/s)	Target Flow (m^3/s)
2-Year	21.5	11.76	0.012
5-Year	33	18.05	0.018
10-Year	41	22.43	0.022
25-Year	55	30.09	0.030
50-Year	62.7	34.30	0.034
100-Year	71.8	39.27	0.039

The most stringent of the target flows rates for the 100-year storm has been utilized, as well as ensuring the TRCA 2 to 50-year target flows are not exceeded.

The proposed SWM tank will be located on the South-West corner of the site and discharges flows to the existing storm sewer system on Silver Spear Road, providing water quantity control for the proposed 0.547 ha site. The tank has a provided volume of 260 m^3. The 0.3 ha of existing 8-storey building will continue to drain South, uncontrolled to the existing storm sewer system on the Silver Spear Road.

Table 4 summarizes the flow and storage values required for proposed development based on the VO6 calculations.

Table 4: Proposed Development - Flow and Required Storage Volume Results

Storm	Target Flow Rate (m^3/s)	Proposed Flow Rate (m^3/s)	Required Volume (VO6 Results) (m^3)
2-Year Storm	0.012	0.011	114
5-Year Storm	0.018	0.016	153
10-Year Storm	0.022	0.020	177
25-Year Storm	0.030	0.024	208
50-Year Storm	0.034	0.026	234
100-Year Storm	0.028	0.028	259

Refer to SWM Calculations in **Appendix B** for supporting calculations and **Drawing 301** for Storm Drainage Plan.

4.5 Water Balance

The City of Mississauga requires retention of the first 5 mm of runoff to promote water balance and erosion control. Based on the proposed site development area of 0.547 ha and 100% imperviousness, approximately 27 m^3 should be retained on site. An infiltration gallery is proposed below the surface parking to the south of the new building. The infiltration gallery has been sized to provide to provide the required water balance for the development, and has approximately 9 m of separation from the bottom of the gallery to the ground water level.

Refer to **Drawing 101** for infiltration gallery location and dimensions.

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5. WASTEWATER SERVICING

5.1 Design Criteria

Wastewater sewers will be designed in accordance with Region of Peel standards and specifications. The following criteria were used:

- 3.1 people/unit for large apartments (>1 bedroom)
- 1.7 people/unit for small apartments (<= 1 bedroom)
- 0.2 L/s/ha for infiltration
- 302.8 L/person/day for domestic sewage flow

5.2 Existing Conditions

The existing sanitary sewer in proximity to the site is as follows:

1. 250 mm diameter sanitary sewer located within Silver Spear Road.

There is an existing sanitary connection made to the 250 mm sanitary sewer on the Silver Spear Road via a 200 mm diameter sanitary sewer, serving the existing the 8-storey apartment building. The location of the existing sewer and sanitary connection is shown on **Drawing 101**.

5.3 Local Wastewater Design

The estimated sanitary flow from the entire site is 12.29 L/s. Refer to Wastewater Demand Calculations in **Appendix C** for calculations and Region of Peel Multi Use Demand Table.

Sanitary servicing within the site will be designed by the project mechanical engineer as the building design advances. Proposed sanitary flows from the proposed development will be conveyed via a new 200 mm sanitary sewer connection to the existing sanitary plug on the site and eventually discharge to the 250 mm sanitary sewer on the Silver Spear Road. Refer to **Drawings 101 and 302** for the anticipated connection location and drainage areas.

6. WATER SERVICING

6.1 Design Criteria

The proposed watermain design will comply with the Region of Peel design criteria as follows:

- Residential Consumption = 280 l/c/day, max day = 2.0
- Residential and Commercial Peak Hour = 3
- Minimum operating pressure = 40 psi
- Maximum operating pressure = 100 psi

6.2 Existing Conditions

The existing water network, which falls under the jurisdiction of the Region of Peel, in the vicinity of the site includes:

1. A 300 mm local watermain on Silver Spear Road.

There is an existing 100 mm and 150 mm watermain connection for domestic and firefighting requirements respectively, to the 300 mm watermain on the Silver Spear Road, serving the existing the 8-storey apartment building. The location of the existing watermain and watermain connections are shown on **Drawing 101**.

6.3 Local Watermains

The proposed development will be serviced by a 200 mm domestic and 150 mm fire-fighting watermain plugs on the site, which is serviced by an existing 300 mm watermain on Silver Spear Road as shown on **Drawing 101**. The onsite water supply system will be designed by the project mechanical engineer as the building design advances.

Table 5 below outlines the water demand calculations for the development.

Table 5: Water Demand

Fire Flow (L/s)	Domestic (L/s)	
	Max Daily Demand	Max Peak Hour
183.3	5.6	8.4

A hydrant flow test was undertaken on July 8, 2025. Results are included in **Appendix D**.

Water demand, internal servicing and proposed connection points are to be provided to the Region of Peel to identify if there are any water capacity constraints.

Refer to **Appendix D** for water demand calculation results.

7. EROSION AND SEDIMENT CONTROL AND CONSTRUCTION DEWATERING

Erosion and sediment controls measures as follows:

1. Installing heavy duty silt control fencing along the perimeter of the site at strategic locations.
2. Installing a temporary mud mat at the construction site entrance.
3. Wrapping the tops of all inlet structures with filter fabric and using install silt sacks.
4. Inspecting all sediment and erosion control controls to maintain them in good repair until such time as the Engineer or the City approves their removal.
5. Safe discharge of construction water in accordance with City and provincial guidelines.

Refer to **Drawing 1001 for** site-specific erosion and sediment control measures for the property.

8. CONCLUSIONS

This report has demonstrated that:

- The proposed site will be graded to match to existing elevations at all property lines.
- Building storm drains will be designed by the project mechanical engineer at the building permit stage.
- Water quality will be provided using an OGS device upstream of the stormwater tank.
- Storm water quantity control for the 0.547 ha of proposed development estimated to be 259 m^3 and will be required to control flows from the post development 100-year storm to the predevelopment 2-year as per the City of Mississauga.
- The 0.3 ha of the existing building will continue to drain uncontrolled to the existing storm sewers on Silver Spear Road.
- Proposed SWM Tank will be located on the South-West corner of the site.
- The site will utilize an existing storm sewer connection to the existing MH2.
- Water balance objectives will be met by proposing an infiltration gallery below the surface parking to the south of the new building.
- Wastewater servicing to the si
- te is provided by an existing 200 mm diameter sanitary connection to the sewer on Silver Spear Road. Wastewater servicing for the proposed development will be done by plugging to the existing sanitary connection for current development.
- Water servicing to the site is provided by existing 200 mm domestic and 150 mm fire-fighting watermain connections to the watermain on Silver Spear Road. Water servicing for the proposed development will be done by extending the existing watermain connections from current development.
- Erosion and sediment control and groundwater control measures will be implemented during construction in accordance with City and Provincial requirements.

Report Prepared by:

Rob Merwin, P.Eng.
Senior Associate, Land Development

APPENDIX A
Drawings and Figures

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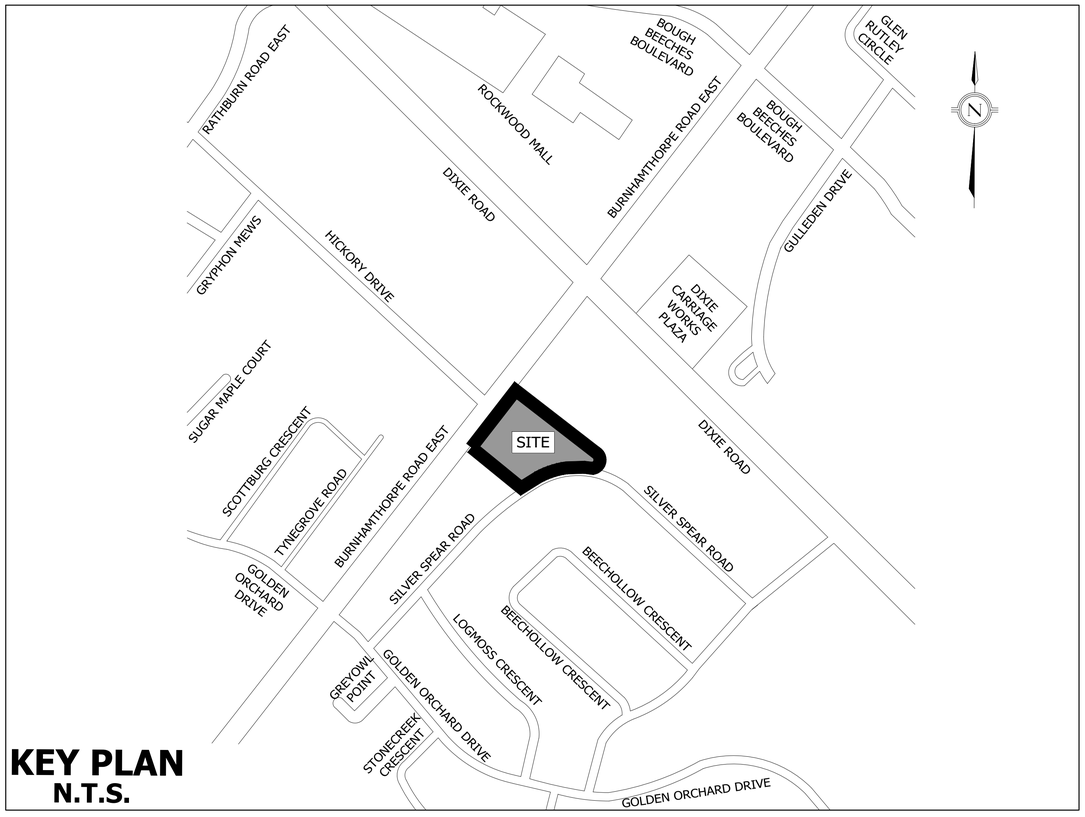
CITY OF MISSISSAUGA

1315 SILVER SPEAR ROAD

REGION FILE No.: C-XXXXXX

ZBA3 SUBMISSION - JULY 18, 2025



KEY PLAN
N.T.S.

LIST OF DRAWINGS

LEGEND:

LIMIT OF PROPERTY

URBANTECH®

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MISSISSAUGA

Region of Peel
working with you

OWNER :
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1400-3280 BLOOR STREET WEST
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M8X 2X3

GENERAL NOTES

STORM SEWERS:

1. ALL CONCRETE PIPE SMALLER THAN 450mm DIAMETER SHALL BE C-14, CLASS 2, CONCRETE PIPE 450mm DIAMETER AND LARGER SHALL BE C-76, CLASS 65-D, UNLESS OTHERWISE NOTED.
2. ALL POLYVINYL CHLORIDE (PVC.) PIPE SHALL MEET THE C.S.A. REQUIREMENTS AS NOTED WITHIN OPSS. 1841. THE PIPE MATERIAL SHALL HAVE A CELL CLASSIFICATION OF 12454-B OR 12454-C OR ASTM. STD. D-3034 & OPSS. 1841.
3. ALL CONCRETE SEWER PIPES SHALL HAVE RUBBER GASKET JOINTS.
4. CLASS "B" BEDDING IS TO BE USED AS PER CITY STANDARD 2112.08 SEWER BEDDING AND COVER MATERIAL SHALL CONFIRM WITH CITY STANDARDS 2112.09 AND 2112.10. IF WATER IS PRESENT IN THE TRENCH EXCAVATION THEN 19mm. CLEAR STONE IS TO BE USED FOR BEDDING IN ACCORDANCE WITH CITY STANDARD 2112.11 AND 2112.14 RESPECTIVELY. WHERE WET OR SOFT TRENCH SUBGRADE CONDITIONS ARE ENCOUNTERED, FURTHER ON-SITE GEOTECHNICAL ASSESSMENT MAY BE REQUIRED TO DETERMINE THE APPROPRIATE BEDDING IN ORDER TO STABILIZE THE SUBGRADE FOR SEWER CONSTRUCTION.
5. MANHOLE STEPS SHALL BE AS PER OPSD. 405.010.
6. MANHOLE COVERS AND FRAMES SHALL BE AS PER OPSD. 401.010.
7. SINGLE CATCHBASINS WITHIN ROAD ALLOWANCES SHALL BE AS PER OPSD. 705.010, WITH A 250mm DIAMETER LEAD, DOUBLE CATCHBASINS WITHIN ROAD ALLOWANCES SHALL BE AS PER OPSD. 705.020, WITH A 300mm DIAMETER LEAD.
8. ALL CATCHBASIN FRAME AND GRATES SHALL BE AS PER OPSD. 400.020.
9. THE TRENCH WIDTH AT THE TOP OF PIPE SHALL BE AS PER STD. 2112.08. IF THE MAXIMUM TRENCH WIDTH IS EXCEEDED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING EXTRA BEDDING AND/OR STRONGER PIPE AS REQUIRED.
10. ALL STORM SEWER AND APPURTENANCES SHALL BE CONSTRUCTED IN ACCORDANCE WITH CURRENT CITY OF MISSISSAUGA STANDARDS AND SPECIFICATIONS.
11. STORM SERVICE CONNECTION IS TO BE ON THE LEFT OF SANITARY SERVICE FACING THE HOUSE. (EXCEPT AS NOTED)
12. SERVICE CONNECTION AT THE STREET LINE IS TO BE HIGHER THAN THE SANITARY CONNECTION AT THAT POINT.
13. ALL CATCHBASINS ARE TO BE PLACED ON GRANULAR BEDDING (MINIMUM DEPTH 150mm).
14. TRENCH BACKFILLING ON PROPOSED ROADS SHALL WITH CITY'S ENGINEERING POLICY STATEMENT AS PROVIDED IN THE "DEVELOPMENT REQUIREMENTS MANUAL" (SECTION 4.02.06-TRENCH BACKFILLING ON ROADS). TRENCH BACKFILL SHALL BE COMPACTED TO A MINIMUM OF 95% S.P.D. WITHIN 2.0% OF THE OPTIMUM CONTENT.
15. SAND BACKFILLING IS REQUIRED ADJACENT TO MANHOLES, CATCHBASINS AND SERVICE CROSSING.

GENERAL:

1. ANY RELOCATION OF EXISTING UTILITIES REQUIRED BY THE DEVELOPMENT OF THE SUBJECT LANDS, IS TO BE UNDERTAKEN AT DEVELOPER'S EXPENSE.
2. ALL UNDERGROUND SERVICE CONNECTIONS WITHIN PAVED PORTION OF ANY EXISTING ROAD TO BE BACKFILLED WITH UNSHRINKABLE FILL TO THE LATEST CITY OF MISSISSAUGA OR REGION OF PEEL SPECIFICATIONS.
3. SNOW FENCE AND SEDIMENT TRAP CONTROL FENCE ARE TO BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY SITE CONSTRUCTION AND SHALL REMAIN IN PLACE AND IN GOOD REPAIR THROUGHOUT THE CONSTRUCTION AND GRADING PHASES.
4. PRIOR TO THE START OF CONSTRUCTION, SNOW FENCING IS TO BE ERECTED ALONG THE PROPERTY BOUNDARIES ADJACENT TO ALL EXISTING RESIDENTIAL LOTS, PARKS AND ALL EXISTING SCHOOL BLOCKS.
5. THE LOCATION AND ELEVATION OF ALL EXISTING SERVICES AND UTILITIES ARE TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE RESTORATION TO THE REPAIR OF EXISTING UTILITIES DISTURBED DURING CONSTRUCTION.
6. ALL AREAS BEYOND THE PLAN OF SUBDIVISION WHICH ARE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION AT THE CONTRACTOR'S EXPENSE.
7. ALL CONSTRUCTION SIGNING MUST CONFORM TO THE M.T.O. MANUAL OF "UNIFORM TRAFFIC CONTROL DEVICES".
8. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE "OCCUPATIONAL HEALTH AND SAFETY ACT". THE GENERAL CONTRACTOR SHALL BE DEEMED TO BE THE CONSTRUCTOR AS DEFINED IN THE ACT.

BOREHOLES:

1. BOREHOLE LOGS SHOWN ARE FOR GENERAL INFORMATION ONLY AND LOCATIONS ARE APPROXIMATE. CONTRACTOR IS TO VERIFY AND SATISFY HIMSELF AS TO THE NATURE OF THE SUBSURFACE CONDITIONS.

ROADWORKS:

1. ALL FILL WITHIN ROAD ALLOWANCE TO BE COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY. THE SUITABILITY AND COMPACTION OF ALL FILL MATERIALS ARE TO BE CONFIRMED BY A RECOGNIZED SOIL CONSULTANT TO THE CITY ENGINEER PRIOR TO THE INSTALLATION OF ANY ROAD BASE MATERIALS.
2. ALL CONNECTIONS WITHIN PAVED PORTION OF ANY EXISTING ROAD TO BE BACKFILLED WITH GRANULAR MATERIAL AND/OR UNSHRINKABLE FILL AS PER THE LATEST OF CITY OF MISSISSAUGA STANDARDS AND SPECIFICATIONS.
3.
   a. TRENCH BACKFILLING ON PROPOSED ROADS SHALL COMPLY WITH THE CITY'S ENGINEERING POLICY STATEMENTS PROVIDED IN THE "DEVELOPMENT REQUIREMENTS MANUAL" (SECTION 4.02.06 - TRENCH BACKFILLING ON ROADS).
   b. ALL BACKFILL FOR SEWERS, WATERMAINS AND UTILITIES WITHIN ROAD ALLOWANCE SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY WITHIN 2% OF THE OPTIMUM MOISTURE CONTENT.
   c. THE TOP 1000mm OF THE SUB-GRADE IS TO BE COMPACTED TO A MINIMUM 98% STANDARD PROCTOR DENSITY WITHIN 2% OF THE OPTIMUM MOISTURE CONTENT.
4. ALL ROADWORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF MISSISSAUGA STANDARDS AND SPECIFICATIONS.
5. ALL INTERSECTING ROADS SHALL BE PROVIDED WITH AN ADDITIONAL 150mm THICKNESS OF OPSS. GRANULAR "B". THIS EXTRA DEPTH SHALL EXTEND FOR A MINIMUM OF 15m BEYOND PROPERTY LINE OF INTERSECTING STREET , AS NOTED.
6. SUB-DRAINS ARE TO BE INSTALLED AS PER CITY STANDARD 2220.04 ALONG THE ENTIRE LENGTH OF THE ROAD.
7. PAVEMENT THICKNESS AND COMPOSITION TO BE AS SHOWN ON INDIVIDUAL PLAN AND PROFILE DRAWINGS.
8. CONCRETE CURB & GUTTER OPSD. 600.070.
9. SAND BACKFILL IS TO BE USED ADJACENT TO MANHOLES, CATCHBASINS AND SERVICE CROSSINGS.

EXISTING WATERCOURSE/GREENBELT:

1. PRIOR TO COMMENCEMENT OF ANY GRADING OR CONSTRUCTION, TEMPORARY SNOW FENCE AND SILT FENCE TO BE ERECTED ALONG ALL LOTS AND BLOCKS ADJACENT TO THE EXISTING WATERCOURSE/GREENBELT, PARKS AND MAINTAINED UNTIL COMPLETION OF CONSTRUCTION.
2. NO STOCKPILES OF FILL MATERIAL ARE TO BE PLACED WITHIN 10.0m OF THE EXISTING WATERCOURSE BLOCK.

TOPSOIL STOCKPILE PROTECTION:

ALL TOPSOIL STOCKPILE CONTAINING MORE THAN 100m³ OF MATERIAL SHALL BE LOCATED A MINIMUM OF 10m AWAY FROM A ROADWAY, DRAINAGE CHANNEL OR AN OCCUPIED RESIDENTIAL LOT. THE MAXIMUM SIDE SLOPES FOR TOPSOIL STOCKPILES SHALL BE 1.5 HORIZONTAL TO 1.0 VERTICAL.

RUNOFF FROM ALL TOPSOIL STOCKPILES SHALL BE CONTROLLED BY A SEDIMENT CONTROL FENCE OR OTHER APPROVED DEVICES. IF REMAINING FOR MORE THAN 30 DAYS, TOPSOIL STOCKPILES SHALL BE STABILIZED BY VEGETATIVE COVER, OR OTHER MEANS.

REGION OF PEEL

GENERAL NOTES:

1. THE APPLICANT, APPLICANT'S REPRESENTATIVE, CONSULTANT, CONTRACTOR AND SUB CONTRACTORS ARE RESPONSIBLE TO ENSURE THAT THEIR DESIGN MATERIALS AND CONSTRUCTION PRACTICES CONFORM TO THE LATEST REGION OF PEEL'S WEBSITE (www.peelregion.ca/pw/standards). IN THE ABSENCE OF REGION SPECIFICATIONS, THE ONTARIO PROVINCIAL STANDARDS SPECIFICATIONS (OPSS) SHALL APPLY.
2. ALL WORKS SHALL BE COMPLETED IN ACCORDANCE WITH THE "OCCUPATIONAL HEALTH AND SAFETY ACT". THE GENERAL CONTRACTOR SHALL BE DEEMED TO BE THE CONSTRUCTOR AS DEFINED IN THE ACT.
3. THE CONTRACTOR AT THEIR EXPENSE SHALL VERIFY THE LOCATION, DIMENSION AND ELEVATION OF ALL EXISTING SERVICES AND UTILITIES IN THE FIELD.
4. PRIOR TO EXCAVATION OR BORING CONTRACTOR AT THEIR EXPENSE SHALL EXPOSE AND VERIFY THE LOCATION AND ELEVATION OF ALL EXISTING UTILITIES AND SERVICES TO BE CROSSED AND MUST NOTIFY THE DESIGN ENGINEER AND THE AGENCY FIELD INSPECTOR AND/OR PROJECT MANAGER IMMEDIATELY, IN WRITING, OF ANY CONFLICTS OR DISCREPANCIES. CONTRACTOR SHALL BE RESPONSIBLE FOR EXPOSING THE EXISTING UTILITIES FAR ENOUGH IN ADVANCE OF CONSTRUCTION TO MAKE NECESSARY DESIGN MODIFICATIONS FOR REVIEW AND APPROVAL, IF REQUIRED, WITHOUT DELAYING THE WORK.
5. THE CONTRACTOR, AT THEIR EXPENSE AND TO THE SATISFACTION OF THE REGION OF PEEL, SHALL BE RESPONSIBLE FOR THE RESTORATION AND THE REPAIR OF THE EXISTING UTILITIES AND ALL AREAS BEYOND THE PLAN OF SUBDIVISION DISTURBED DURING CONSTRUCTION.
6. THE SUPPORT OF ALL UTILITIES SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
7. ALL BACKFILL FOR SEWERS, WATERMAINS AND UTILITIES ON THE ROAD ALLOWANCE MUST BE MECHANICALLY COMPACTED.
8. ALL BOREHOLES SHOWN ON DRAWING ARE FOR INFORMATION ONLY. REFER TO GEOTECHNICAL REPORT.
9. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SPECIFIED.

WATERMAIN NOTES:

1. THE REGION OF PEEL SHALL CONDUCT THE OPERATION OF EXISTING VALVES AND HYDRANTS IF REQUIRED.
2. CONTRACTOR MUST USE BATTER BOARD OR ROD-AND-LEVEL METHOD FOR WATERMAIN INSTALLATION.
3. ALL WATERMAINS SHALL HAVE 1.70m MINIMUM COVER FOR URBAN ROAD DESIGN AND 2.1m MINIMUM COVER FOR RURAL ROAD DESIGN.
4. ALL WATERMAINS SHALL MAINTAIN A MINIMUM 1.5m CLEARANCE FROM ALL MANHOLES AND CATCH BASINS, WHERE APPLICABLE.
5. FOR WATERMAIN CROSSING OVER OR UNDER SEWERS A MINIMUM 0.5m VERTICAL CLEARANCE SHALL BE PROVIDED.
6. FOR WATERMAIN CROSSING A SANITARY SEWER, WATERMAIN JOINTS ARE TO BE OFFSET A MINIMUM OF 2.5m HORIZONTALLY FROM THE CENTERLINE OF THE SANITARY SEWER.
7. WATERMAIN BEDDING SHOULD BE AS PER TRENCH DETAIL ON THE PLAN AND PROFILE DRAWING AND COMPACTED TO 100% SPD.
8. WATERMAINS TO BE INSTALLED TO GRADES AS SHOWN ON APPROVED PLANS, COPY OF GRADE SHEET MUST BE SUPPLIED TO THE REGION OF PEEL INSPECTOR PRIOR TO COMMENCEMENT OF WORK.
9. ANY JOINT DEFLECTION SHALL BE 50% OF MANUFACTURER'S SPECIFICATIONS. PIPE BARREL DEFLECTION IS PROHIBITED.
10. FIRE HYDRANTS TO BE INSTALLED AS PER REGION STD. DWG. 1-6-1 AND 1-6-2 WITH FLANGE SET BETWEEN 50mm AND 150mm ABOVE FINISHED GRADE.
11. ALL HYDRANTS SHALL HAVE 1.2m MINIMUM HORIZONTAL CLEARANCE FROM ALL OTHER UTILITIES AND STRUCTURES MEASURED FROM THE NEAREST POINT OF THE STRUCTURE.
12. MECHANICAL RESTRAINERS ARE REQUIRED FOR ALL FITTINGS, VALVES, DEAD ENDS, CAPS AND HYDRANTS ON ALL PVC WATERMAINS; MINIMUM RESTRAINED PIPE LENGTH AS PER REGION'S STANDARD DRAWING 1-5-9.
13. STAINLESS STEEL NUTS AND BOLTS ARE TO BE USED ON ALL METALLIC FITTINGS AND JOINT RESTRAINTS.
14. ALL METALLIC VALVES, FITTINGS, THROUGH WALL METAL PIPING AND JOINT RESTRAINTS TO BE C/W. DENSO PASTE, DENSO MASTIC & DENSO TAPE OR APPROVED EQUAL APPLIED TO MANUFACTURER'S RECOMMENDATIONS.
15. WHERE PLASTIC PIPE IS USED, INSTALL A 12 GAUGE TWU STRANDED COPPER, LIGHT COLOURED, PLASTIC COATED TRACER WIRE ATTACHED TO THE PIPE WITH APPROVED WIRE SPLICE. THE WIRE SHOULD BE BROUGHT TO THE SURFACE AT EACH SERVICE & VALVE BOX AND HYDRANT VALVES.
16. 50mm DIAMETER WATERMAIN SHALL BE TYPE K SOFT COPPER. WATERMAIN INSTALLATION IN CUL-DE-SACS TO BE INSTALLED AS PER REGION STD. DWG. 1-7-4.
17. A PHYSICAL SEPARATION MUST BE MAINTAINED AT ALL CONNECTION POINTS OF NEW WATERMAIN TO THE EXISTING SYSTEM UNTIL BACTERIOLOGICAL TESTS HAVE PASSED, AS PER STD. DWG. 1-7-7 AND 1-7-8.
18. PROVISION FOR FLUSHING OF NEW WATERMAINS PRIOR TO TESTING MUST BE PROVIDED WITH AT LEAST A 50mm OUTLET ON WATERMAINS SMALLER THAN 300mm IN DIAMETER,AND MINIMUM 100mm OUTLET ON WATERMAINS 300mm AND LARGER. COPPER WATERMAINS ARE TO HAVE FLUSHING POINTS AT THE END, THE SAME SIZE AS THE WATERMAIN, AS PER STD. DWG. 1-7-7 AND 1-7-8.
19. ALL SERVICE CONNECTIONS TO PVC PIPES ARE TO BE MADE USING APPROVED WIDE BAND SERVICE SADDLE. DIRECT TAPPING IS NOT ALLOWED.
20. ALL WATER SERVICES SHALL BE MINIMUM 25mm DIA.NOMINAL COPPER PIPE SIZE OR 32mm DIA. POLYETHYLENE PIPE. IN GENERAL, NON METALLIC SERVICES SHALL BE ONE SIZE LARGER THAN THE NOMINAL COPPER PIPE SIZE AS PER LATEST APPROVED REGIONAL PRODUCT LIST AND SIZES C/W. TRACER WIRE.
21. THE MINIMUM LATERAL DISTANCE BETWEEN WATER SERVICES AND OTHER UTILITIES SHALL BE 1.2m.
22. ALL RESIDENTIAL WATER SERVICE BOXES/CURB STOPS SHALL BE INSTALLED WITHIN SODDED AREAS WITH MINIMUM DISTANCE OF 1.0 METRES FROM THE EDGE OF THE DRIVEWAY, BE FLUSH WITH GRADE AND ACCESSIBLE AT ALL TIME.
23. VALVE AND BOXES SHALL BE CAST IRON SLIDING TYPE, COMPLETED WITH VALVE GUIDE PLATES INSTALLED AS PER REGION STD. 1-3-8.AND BOXES SHALL BE INSTALLED AS PER REGION STD. 1-3-8. MAINLINE VALVES TO BE RESTRAINED AS PER REGION STD. 1-3-3A. VALVES SHALL OPEN TO THE LEFT (COUNTER-CLOCKWISE).
24. ALL WATER SERVICES BOXES SHOULD BE "LEAD FREE" AS PER REGION'S MATERIAL SPECIFICATIONS.
25. THE REGION WILL COMPLETE THE NECESSARY WATER TESTING (PRESSURE TEST, FLUSHING, CHLORINATION AND SAMPLING). CONTRACTOR MAY PROCEED WITH HIS OWN PRESSURE TEST AND FLUSHING PRIOR TO REGION'S TESTING.
26. ALL METALLIC WATER PIPES INCLUDING 'K' COPPER WATER SERVICES, INSTALLED OR REPAIRED, SHALL HAVE ZINC ANODE AS PER REGION OF PEEL STANDARD 1-7-1, OPSS422 AND OPSD 1109.011 AND TO CONFORM TO ASTM B-418 TYPE.
27. WATERMAIN PIPES SHALL BE BROUGHT ON SITE WITH MANUFACTURER'S PLUGS AND STORED SO NO DEBRIS ENTER THE PIPE. THE CONTRACTOR IS NOT ALLOWED TO INSTALL ANY WATERMAIN UNTIL HE HAS A NIGHT PLUG ON SITE. THE NIGHT PLUG IS TO BE USED EVERY TIME WHEN WORK IS STOPPED.

WATERMAIN IN FILL AREA NOTES:

1. NO WATERMAIN TO BE LAID ON FILL UNTIL THE FIELD DENSITY TEST REPORTS HAVE BEEN SUBMITTED TO AND APPROVED BY THE REGION OF PEEL OR THE CONSULTING ENGINEER.
2. PIPE JOINTS DEFLECTIONS ARE NOT ALLOWED IN FILL AREA.
3. JOINTS SHALL BE MECHANICALLY RESTRAINED THE WHOLE LENGTH.
4. ALL HYDRANTS, TEE BRANCH VALVES AND HORIZONTAL BENDS ARE TO BE MECHANICALLY RESTRAINED WITH TIE RODS.
5. IN EXISTING MUNICIPAL RIGHT-OF-WAY OR EASEMENT, FILL TO BE PLACED TO 600mm MINIMUM ABOVE THE OBVERT OF THE WATERMAIN AND TO 300mm LIFTS; AND THEREAFTER, FOR EVERY 300mm LIFT ALONG THE CENTERLINE, AND 1.5m TO EITHER SIDE, OF WATERMAIN AT MAXIMUM INTERVAL OF 30.0m. TEST RESULTS MUST BE SUBMITTED TO AND APPROVED BY THE CONSULTANT OR AGENCY.

SANITARY SEWER NOTES:

1. ALL SANITARY SEWER BEDDING AS PER STD. 2-3-1.
2. MAINLINE SANITARY SEWER PIPE SIZE SHALL BE MINIMUM 250mm DIAMETER INSTALLED AT THE APPROVED DESIGN GRADE. PIPE CLASS AND APPURTENANCES AS PER REGION'S SPECIFICATIONS.
3. ALL SEWERS CONSTRUCTED WITH GRADES 0.5% OR LESS SHALL BE APPROVED BY THE ENGINEER AND THE AGENCY PROJECT MANAGER OR DESIGNATED AND BE INSTALLED WITH LASER AND CHECKED PRIOR TO BACKFILL.
4. MINIMUM SANITARY SEWER PIPE SLOPE FOR LAST LEG SHALL BE 1% AND DESIRABLE SLOPE 2%.
5. ALL MANHOLES SHALL BE AS PER REGION STD. DWG. 2-5-2, 2-5-3, 2-5-4, 2-5-5 AND 2-5-6 AND BENCHING AS PER STD. DWG. 2-5-20.
6. FRAME AND COVERS SHALL BE AS PER REGION STD. DWG. 2-5-13, 2-6-1 TO 2-6-8.
7. MANHOLE STEPS OR LADDERS TO BE AS PER REGION STD. DWG. 2-6-9 TO 2-6-11.
8. MANHOLES DEEPER THAN 5.0m MUST BE EQUIPPED WITH SAFETY PLATFORMS, AS PER STD. 2-6-13 AND 2-6-14.
9. MANHOLE DROP STRUCTURES SHALL BE AS PER REGION STD. DWG. 2-5-26 AND 2-5-27.
10. SANITARY SERVICE LATERALS SHALL BE MINIMUM 125mm DIAMETER.
    a. SANITARY SERVICE SHALL BE LOWER THAN AND TO THE RIGHT OF THE STORM SERVICE AT THE PROPERTY LINE WHEN FACING THE LOT FROM THE STREET.
    b. CONNECTIONS TO SEWERS SHALL BE MADE WITH MANUFACTURED TEES OR WYES WHERE APPLICABLE AND SHALL BE COLOUR CODED AS NON-WHITE, AS PER STD. DWG. 2-4-1, TO 2-4-7.

REGIONAL ROADS NOTES:

1. CONSTRUCTION AND DETOUR SIGNAGE MUST CONFORM TO "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" AND LATEST REVISION OF THE ONTARIO MINISTRY OF TRANSPORTATION "TRAFFIC CONTROL MANUAL FOR ROADWAY WORK OPERATIONS".
2. ALL TEMPORARY SIGNAGE AND TRAFFIC CONTROL MEASURES SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF ONTARIO TRAFFIC MANUAL, BOOK 7 "TEMPORARY CONDITIONS" AND OPS SPECIFICATIONS AND STANDARD DRAWINGS.
3. PAVEMENT MARKINGS MUST BE IN ACCORDANCE WITH THE ONTARIO TRAFFIC MANUAL, BOOK II "PAVEMENT HAZARD AND DELINEATION MARKINGS".
4. THE CONTRACTOR SHALL NOTIFY IN ADVANCE, AS REQUIRED, THE APPROPRIATE AUTHORITY HAVING JURISDICTION FOR THE ROAD PRIOR TO COMMENCING ANY WORK AND SHALL ACQUIRE AND SATISFY THE REQUIREMENTS OF APPROPRIATE PERMITS (FEES, INSPECTIONS, SIGNAGE, TRAFFIC, MAINTENANCE, DIVERSION, ETC...).
5. REGIONAL ROAD CLOSURE IS NOT PERMITTED AT ANY TIME UNLESS APPROVAL FROM REGIONAL COUNCIL WAS OBTAINED FOR THE WORKS, WHERE A MINIMUM TWO MONTH LEAD TIME IS REQUIRED, AS PER REGIONAL POLICY W30-12.
6. WORK OPERATIONS THAT REQUIRE DIVERTING TRAFFIC TO ONE LANE ARE SUBJECT TO TIME RESTRICTIONS AND /OR NIGHT TIME OPERATIONS AS SPECIFIED IN ROAD OCCUPANCY PERMIT. THROUGH LANES MUST BE MINIMUM 3.5m, UNLESS OTHERWISE APPROVED.
7. FOR TEMPORARY DELINEATION OF TRAFFIC IN OPPOSITE DIRECTIONS A YELLOW CENTRE LINE ON PAVEMENT MUST BE PAINTED. TRAFFIC CONTROL BARRELS (CONES) ARE NOT PERMITTED FOR THIS USE ON REGIONAL ROADS.
8. NEW JERSEY BARRIERS (NJB) WITH CRASH ATTENUATION DEVICES MUST BE USED ON LONG TERM PROJECTS AS OPPOSED TO TRAFFIC CONTROL DELINEATORS (BARRELS).
9. ACCESS TO EXISTING ENTRANCES AND SIDE STREETS, INCLUDING PEDESTRIAN ACCESS, SHALL BE MAINTAINED. ACCESS REQUIREMENTS MUST COMPLY WITH REGION OF PEEL CONTROLLED ACCESS BY-LAW.
10. LOCATION OF EXISTING UTILITIES TO BE ESTABLISHED BY THE CONTRACTOR. ALL EXISTING UTILITY ELEVATIONS (SANITARY AND WATERMAIN) INCLUDING CENTRE LINE OF THE ROAD ELEVATIONS HAVE TO BE VERIFIED BY CONTRACTOR PRIOR TO COMMENCING ANY WORK ON SITE. ANY DISCREPANCIES SHALL BE REPORTED TO THE REGION IMMEDIATELY.
11. THE CONTRACTOR(S) SHALL BE SOLELY RESPONSIBLE FOR LOCATING, SUPPORTING AND PROTECTING ALL UNDERGROUND AND OVERHEAD UTILITIES AND STRUCTURES EXISTING AT THE TIME OF CONSTRUCTION IN THE AREA OF HIS WORK, WHETHER SHOWN ON THE PLANS OR NOT, AND FOR ALL REPAIRS AND CONSEQUENCES RESULTING FROM DAMAGE TO SAME.
12. THE CONTRACTOR(S) SHALL BE SOLELY RESPONSIBLE TO GIVE 72 HOURS WRITTEN NOTICE TO UTILITY AUTHORITY PRIOR TO CROSSING SUCH UTILITIES FOR THE PURPOSE OF INSPECTION. THIS INSPECTION WILL BE FOR THE DURATION OF CONSTRUCTION WITH THE CONTRACTOR RESPONSIBLE FOR ALL COSTS ARISING FROM SUCH INSPECTIONS.
13. ALL ROAD BASE SHALL BE AS PER REGION OF PEEL STD. DWG. 5-1-1 AND 5-1-2.
14. ASPHALT PRESERVATIVE SEALER SUCH AS RE-CLIMATE OR APPROVED EQUIVALENT SHALL BE APPLIED AFTER THE ONE-YEAR MAINTENANCE PERIOD FOR THE TOP COURSE ASPHALT.
15. ALL EXISTING PAVEMENTS, CURBS, SIDEWALKS AND BOULEVARDS, AND OTHER AREAS DISTURBED BY THE WORK, TO BE REINSTATED EQUAL TO EXISTING AND TO THE SATISFACTION OF APPLICABLE AUTHORITY HAVING JURISDICTION OVER THE ROAD ALLOWANCE. EXISTING PAVEMENT AND CURBS TO BE SAW- CUT TO PROVIDE A SMOOTH JOINT.
16. EROSION CONTROL MEASURES TO BE IMPLEMENTED AS REQUIRED.
17. FOR ROAD PROJECTS THAT WILL NOT BE COMPLETED PRIOR TO THE END OF THE CONSTRUCTION SEASON, THE FOLLOWING WILL NEED TO BE CONSIDERED IN ORDER TO WINTERIZE THE CONSTRUCTION PROJECT TO ENSURE SAFE CONDITIONS DURING WINTER:
    a. WHERE APPLICABLE, CURB AND GUTTER SECTIONS ARE TO BE COMPLETED, THE BASE COURSE ASPHALT SHALL BE IN PLACE.
    b. CATCH BASINS AND MAINTENANCE HOLES SET TO EXISTING BASE GRADE.
    c. STEEL PLATING NOT PERMITTED.
    d. HOT MIX ASPHALT (HMA) ONLY.
    e. LANE DELINEATION AND PAVEMENT MARKING COMPLETED.
    f. WHERE NEW JERSEY BARRIERS USED, OFFSET NO LESS THAN 4.25m FROM EDGE OF TRAVELED LANE.
    g. ROAD AND BOULEVARD MUST BE FREE OF OBSTRUCTIONS AND ACCOMMODATE SAFE SNOW PLOW OPERATION CONSIDERING THAT A WING AND PLOW IS 6m WIDE AND 1.52m SNOW STORAGE MINIMUM REQUIRED.
    h. ALL CATCH BASIN GRATES SHALL BE SIDE INLET, OPSD 400.081 (LATEST VERSION) UNLESS OTHERWISE NOTED.
    i. WINTER SHUT-DOWN MEETINGS WITH THE REGION OF PEEL ROAD MAINTENANCE STAFF ARE REQUIRED PRIOR TO SEASONAL SHUT-DOWN AND SHALL BE ORGANIZED BY THE CONSULTANT OR PROJECT MANAGER OR DESIGNATE.

TRAFFIC SIGNS AND SIGNALS ON REGIONAL ROADS:

1. ALL REQUIRED TRAFFIC SIGNS, WHETHER REGULATORY, WARNING, TEMPORARY OR GUIDE/DIRECTIONAL IN NATURE SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARDS SPECIFICATIONS AND LEGISLATION CONTAINED IN THE OTM MANUALS, THE HTA AND REGION OF PEEL TRAFFIC BY-LAW.
2. ELECTRICAL WORKS SHALL CONFORM TO THE ONTARIO PROVINCIAL STANDARD DRAWINGS AND REGION OF PEEL STANDARD DRAWINGS AND SPECIFICATIONS.
3. TRAFFIC CONTROLLERS MUST BE INSTALLED AS PER APPROVED LOCATIONS. EQUIPMENT MUST NOT ENCROACH ON PRIVATE PROPERTY WITHOUT PERMISSION TO ENTER, EASEMENT, PERMANENT OR TEMPORARY UNDERTAKINGS.

GENERAL REFERENCES FOR DRAWINGS:

REGION OF PEEL STANDARD DRAWINGS DELETED - NOVEMBER 2011 REVISION AND APRIL 2014 REVISION:

DRAWING NUMBER	DRAWING TITLE	ORIGINAL DATE	REPLACED WITH NEW REGION OF PEEL STANDARD DRAWING	REPLACED WITH OPSD
1-1-1	CIRCULAR PRECAST CHAMBER	MAY 2009	1-1-5, 1-1-7	
1-1-2	SMALL CAST-IN-PLACE CHAMBER	MAY 2009	1-1-6	
1-1-3	750/900 DIA. WM. VALVE AND CHAMBER (CAST-IN-PLACE)	MAY 2009	1-1-6, 1-3-27 TO 1-3-40	
1-1-4	RECTANGULAR PRECAST CHAMBER	MAY 2009	1-1-6	
1-2-2	STANDARD HEAVY DUTY FRAME AND COVER	MAY 2009		401.030
1-2-5	STANDARD CHAMBER STEPS ALUMINUM	MAY 2009		405.020
1-3-3A	RESTRAINING OF 300mm DIAMETER AND SMALLER P.V.C. WATERMAIN AT IN-LINE VALVE	NOV. 2011	1-5-9	
1-3-5	AIR VALVE AND CHAMBER	APRIL 2009	1-1-5, 1-3-12, 1-3-13, 1-3-14	
1-3-6	DRAIN VALVE AND CHAMBER	MAY 2009	1-1-6, 1-3-15, 1-3-27, 1-3-28, 1-3-29	
1-3-7	VALVE SETTING FOR 400mm TO 600mm PIPE	MAY 2009	1-1-6, 1-3-18 TO 1-3-24	
1-3-10	PRESSURE ZONE BOUNDARY VALVE	MAY 2009	1-1-5, 1-3-16	
1-5-2	WATERMAIN SUPPORT BRIDGING DISTURBED GROUND	MAY 2009	N/A - As Per Contract Design	
1-5-3	CONCRETE THRUST COLLAR	MAY 2009	N/A - As Per Contract Design	
1-7-5	SWABBING OUTLET 100mm AND LARGER	MAY 2009	1-7-9	
1-3-23	TYPICAL LINE VALVE CHAMBER FOR 600 CPP WITH ISOLATION VALVE, DOUBLE DRAIN VALVE AND COMBINATION AIR RELEASE OR VACUUM VALVE	NOV. 2011	1-3-21, 1-3-22	

ONTARIO PROVINCIAL STANDARD DRAWING REFERENCES TO BE READ IN CONJUNCTION WITH REGION OF PEEL STANDARD DRAWINGS - NOVEMBER 2011 REVISION AND APRIL 2014 REVISION

DRAWING NUMBER	DRAWING TITLE
401.030	CAST IRON, SQUARE FRAME WITH CIRCULAR WATERTIGHT COVER FOR MAINTENANCE HOLES
402.030	CAST IRON, RECTANGULAR FRAME WITH TWO PIECE COVER FOR METER AN VALVE CHAMBERS
404.020	ALUMINUM SAFETY PLATFORM FOR CIRCULAR MAINTENANCE HOLES
404.022	ALUMINUM SAFETY PLATFORM FOR 1800mm CIRCULAR MAINTENANCE HOLES WITH DROP PIPE
405.020	MAINTENANCE HOLE STEPS SOLID
406.010	ALUMINUM LADDER FOR MAINTENANCE HOLES
704.010	PRECAST CONCRETE ADJUSTMENT UNITS FOR MAINTENANCE HOLES, CATCH BASINS AND VALVE CHAMBERS
1101.019	PRECAST CONCRETE VALVE CHAMBER WITH POURED-IN-PLACE THRUST BLOCKS 2400 x 3000mm CHIMNEY AND CAP
1101.020	VALVE OPERATOR
1109.010	CATHODIC PROTECTION FOR METALLIC WATERMAIN SYSTEMS

NOTE: THIS LIST INCLUDES OPSD REFERENCES THAT APPLY DIRECTLY TO THE NEW AND REVISED REGION OF PEEL STANDARD DRAWINGS, BUT IT DOES NOT PRECLUDE THE APPROVED USE OF ANY APPLICABLE OPSD REFERENCES NOT LISTED ABOVE.

GENERAL NOTES FOR PRECAST CONCRETE CHAMBERS:

1. ALL PRECAST CHAMBERS TO BE SUPPLIED BY A MANUFACTURER CERTIFIED UNDER THE OCPA PLANT PREQUALIFICATION PROGRAM.
2. SUBMIT SHOP DRAWINGS TO THE CONTRACT ADMINISTRATOR FOR INFORMATION. ALL DRAWINGS SHALL BEAR THE SIGNATURE AND SEAL OF A PROFESSIONAL ENGINEER LICENSED TO PRACTISE IN ONTARIO.
3. THE MANUFACTURER SHALL PROVIDE LETTERS SIGNED BY A PROFESSIONAL ENGINEER CERTIFYING THE FOLLOWING:
   i) THAT THE DESIGN OF THE PRECAST UNITS MEETS THE REQUIREMENTS OF THE SPECIFICATIONS
   ii) THAT THE PRECAST UNITS HAVE BEEN MANUFACTURED AS PER DESIGN AND INSPECTED IN ACCORDANCE WITH THE PLANT PREQUALIFICATION PROGRAM
4. PROVIDE CONCRETE WITH MINIMUM STRENGTH OF 35 MPa UNLESS A HIGHER STRENGTH IS REQUIRED BY THE MANUFACTURER OR DESIGNER.
5. REINFORCING STEEL SHALL BE IN ACCORDANCE WITH CSA G30.18 WITH A MINIMUM YIELD STRENGTH OF Fy=400 MPa.
6. REFER TO STANDARD DRAWINGS 1-1-5, 1-1-6, 1-1-7, 1-1-8, 1-2-1, 1-2-4, 1-2-6 AND 1-2-7 AND ONTARIO PROVINCIAL STANDARD DRAWINGS FOR CHAMBER DETAILS PERTAINING TO WATERPROOFING, JOINT SEALING, ADJUSTMENT UNITS, FRAME & COVERS, CHAMBER STEPS AND LADDERS, INSULATION, FROST STRAPS, VALVE STEM EXTENSION AND BRACKETS, SUMPS, VALVE AND PIPE SUPPORTS.
7. ALL PRECAST COMPONENTS SHALL BE DESIGNED AND MANUFACTURED TO CSA STANDARD A23.3 AND CSA STANDARD A23.4. FURTHER, ALL PRECAST CHAMBER COMPONENTS, INCLUDING ACCESS HATCHES AND TOP SLABS, SHALL ALSO MEET THE REQUIREMENTS OF CSA STANDARD S6 (CANADIAN HIGHWAY BRIDGE CODE).

GENERAL NOTES FOR PIPING:

1. MECHANICAL THRUST RESTRAINT DESIGN AND SPACING SHALL BEAR THE SIGNATURE AND SEAL OF A PROFESSIONAL ENGINEER LICENSED TO PRACTISE IN ONTARIO.
2. SUBMIT CONCRETE PRESSURE PIPE SHOP DRAWINGS TO THE CONTRACT ADMINISTRATOR FOR INFORMATION. ALL DRAWINGS SHALL BEAR THE SIGNATURE AND SEAL OF A PROFESSIONAL ENGINEER LICENSED TO PRACTISE IN ONTARIO.
3. ALL PIPING, FITTINGS, VALVES, APPURTENANCES AND MECHANICAL RESTRAINTS TO BE c/w DENSO PASTE, DENSO MASTIC AND DENSO TAPE OR APPROVED EQUAL, APPLIED TO MANUFACTURER'S RECOMMENDATIONS.

Region of Peel working with you — PUBLIC WORKS STANDARD DRAWING

REV. DATE: APRIL 2014

APPROVED BY	DRAWN BY
A.P.	AINLEY GROUP
STD. DWG. NUMBER	SCALE
1-1-0	N.T.S.

GENERAL NOTES AND REFERENCES

BENCHMARK NOTE

ELEVATIONS SHOWN ON THIS PLAN ARE GEODETIC AND ARE REFERRED TO CITY OF MISSISSAUGA BENCHMARK No.688, HAVING AN ELEVATION OF 143.902 METERS

TOPOGRAPHIC SURVEY PREPARED BY LLOYD & PURCELL LTD. ONTARIO LAND SURVEYORS ON OCT.23, 2023.

■ ZBA3 SUBMISSION	■ ZBA4 SUBMISSION	☐ THIRD DATE	☐ FINAL DATE
DATE: MAR. 13, 2025	DATE: JULY 18, 2025		

REGISTERED PROFESSIONAL ENGINEER
R.B.T. MERWIN
100009772
JULY 18, 2025
PROVINCE OF ONTARIO

URBANTECH®
Urbantech® Consulting
A Division of Leighton-Zec West Ltd.
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TEL 905.829.8818 • urbantech.com

1315 SILVER SPEAR

Region of Peel working with you

MISSISSAUGA

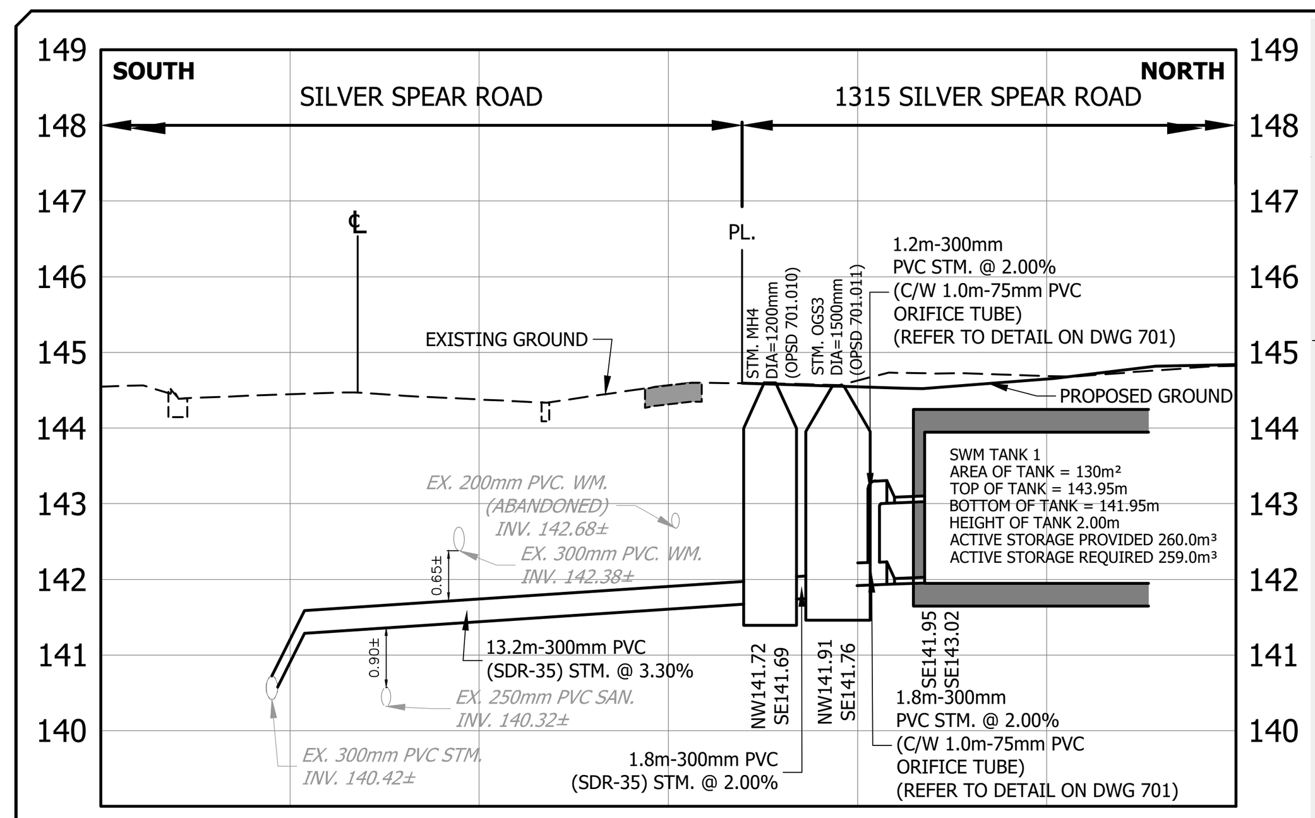
GENERAL NOTES

REGION FILE No. XXX

SCALE:	AREA	PROJECT No. 23-314
DRAWN BY: X.S.	CHECKED BY: R.M./R.B.T.M	PLAN No. 100
DATE: MARCH 2025	SHEET OF	C-

File: C:\DAROOT\JOBS\D85053A2FFFE4D02BB9D347C33062087\ADSKFILES\B.D398E561-1096-4D4D-920C-344EAB016539\PROJECT FILES\100 - COVER & GENERAL\100-GENERAL NOTES (ZBA).DWG

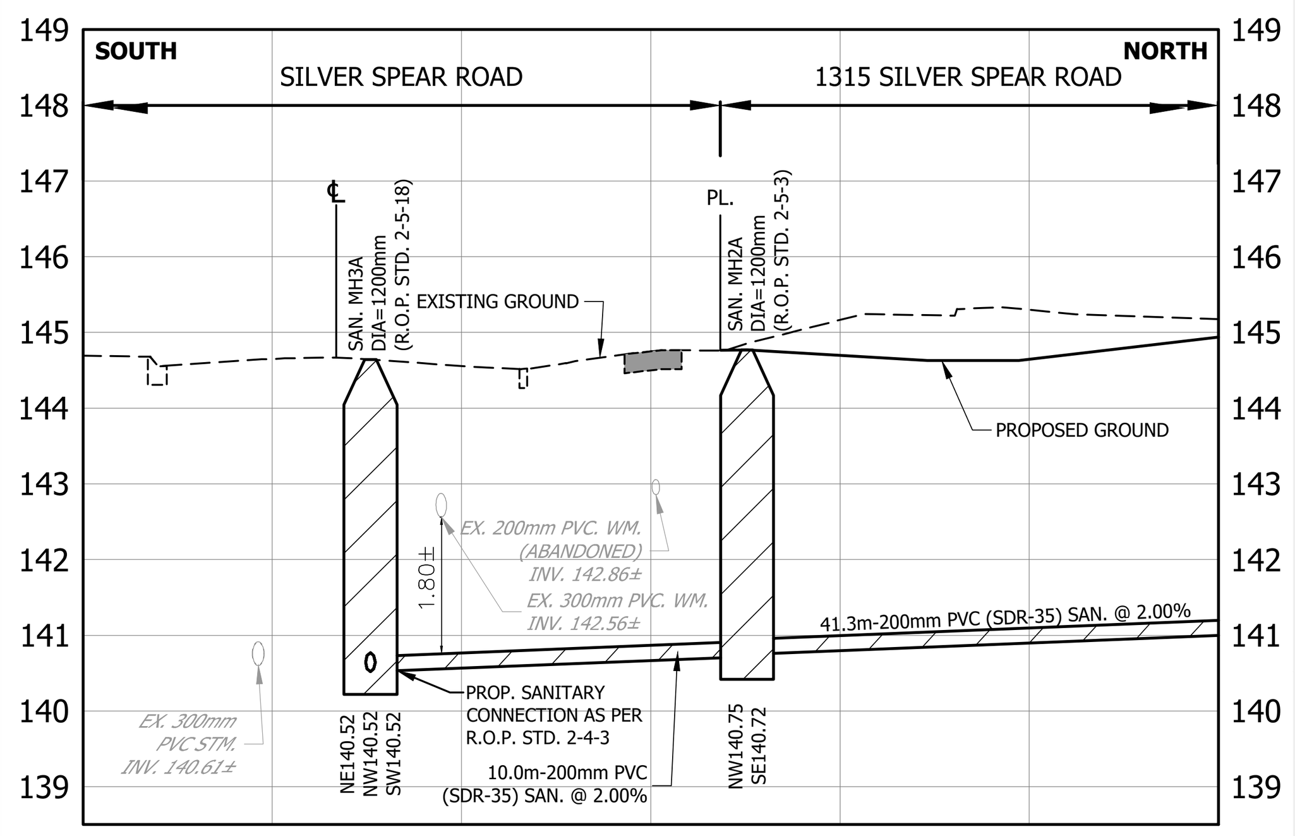
PLOT DATE:Friday, July 18, 2025 1:26:25 PM



SECTION 1-1

(STORM SERVICE CONNECTION)

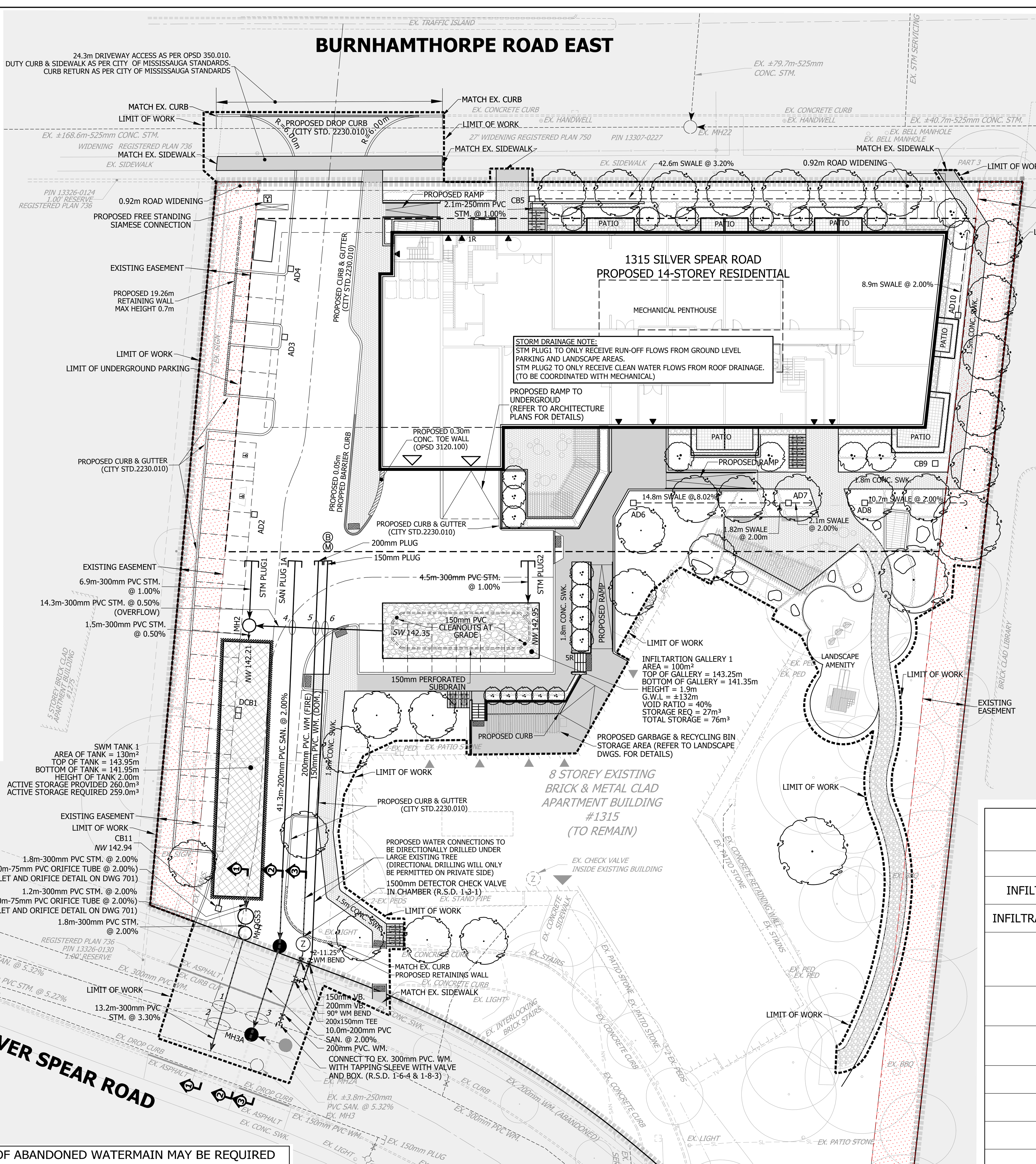
H = 1:200 V = 1:100



SECTION 2-2

(SANITARY SERVICE CONNECTION)

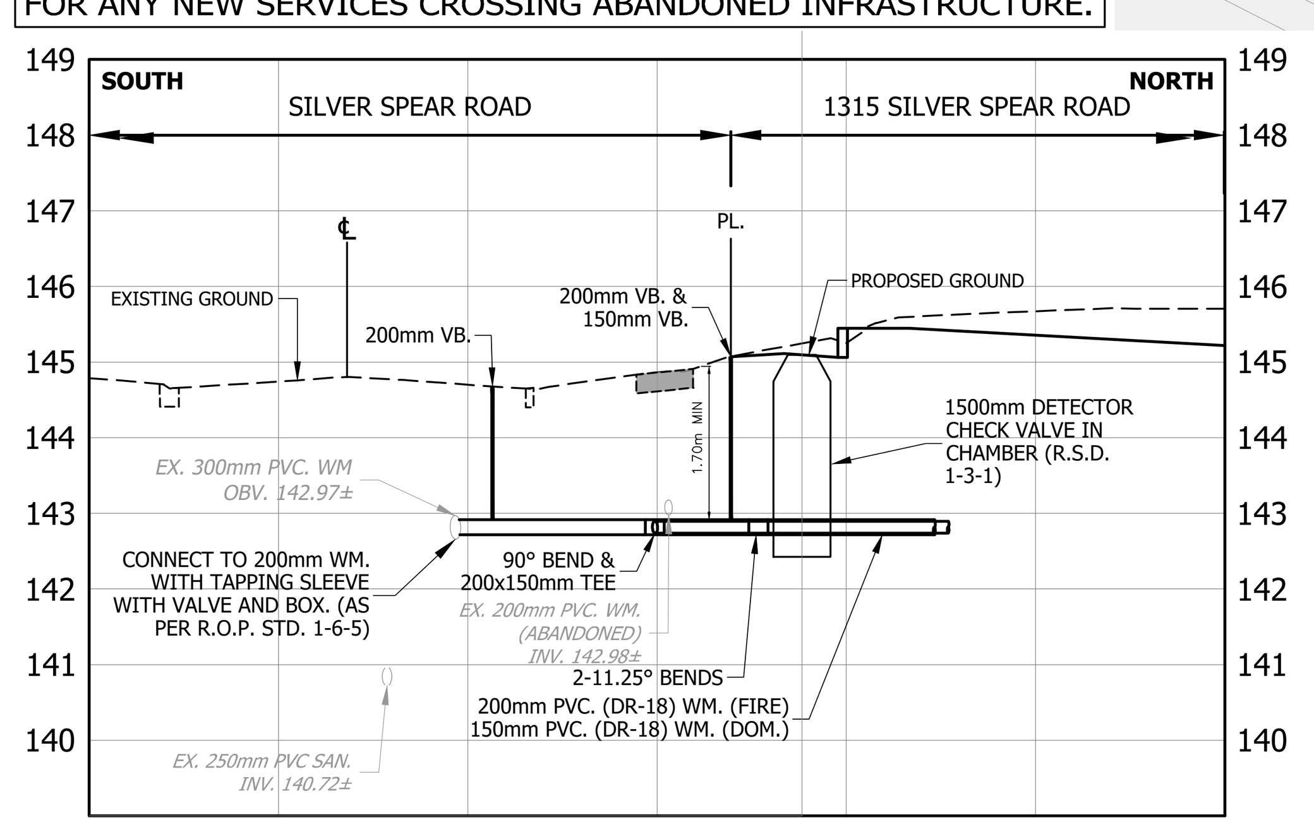
H = 1:200 V = 1:100



REGION NOTES:

1. PUBLIC AND PRIVATE SERVICES, APPURTENANCES, MATERIALS AND CONSTRUCTION METHODS MUST COMPLY WITH THE MOST CURRENT REGION OF PEEL STANDARDS AND SPECIFICATIONS, THE LOCAL MUNICIPALITY'S REQUIREMENTS FOR THE ONTARIO BUILDING CODE AND ONTARIO PROVINCIAL STANDARDS. ALL WORKS SHALL ADHERE TO ALL APPLICABLE LEGISLATION, INCLUDING REGIONAL BY-LAWS.
2. WATERMAIN AND / OR WATER SERVICE MATERIALS 100 mm (4") AND LARGER MUST BE PVC DR18 CONSTRUCTED AS PER AWWA C900-16. SIZE 50 MM (2") AND SMALLER MUST BE TYPE K SOFT COPPER CONSTRUCTED AS PER ASTM B88-49.
2. 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.
3. 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 PIPED TO ALLOW THE WATER TO DRAIN ONTO A PARKING LOT OR DOWN A DRAIN. ON FIRE LINES, FLUSHING OUTLET TO BE 100 mm (4") DIAMETER MINIMUM ON A HYDRANT.
4. ALL CURB STOPS TO BE 3.0 m (10') OFF THE FACE OF THE BUILDING UNLESS OTHERWISE NOTED.
5. 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.
6. 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.
7. 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.
8. ALL PROPOSED WATER PIPING MUST BE ISOLATED FROM EXISTING LINES IN ORDER TO ALLOW INDEPENDENT PRESSURE TESTING AND CHLORINATING FROM EXISTING SYSTEMS.
9. ALL LIVE TAPPING AND OPERATION OF REGION WATER VALVES SHALL BE ARRANGED THROUGH THE REGIONAL INSPECTOR ASSIGNED OR BY CONTACTING THE OPERATIONS AND MAINTENANCE DIVISION.
10. LOCATION OF ALL EXISTING UTILITIES IN THE FIELD TO BE ESTABLISHED BY THE CONTRACTOR.
11. THE CONTRACTOR(S) SHALL BE SOLELY RESPONSIBLE FOR LOCATES, EXPOSING, SUPPORTING AND PROTECTING OF ALL UNDERGROUND AND OVERHEAD UTILITIES AND STRUCTURES EXISTING AT THE TIME OF CONSTRUCTION IN THE AREA OF THEIR WORK. WHETHER SHOWN ON THE PLANS OR NOT AND FOR ALL REPAIRS AND CONSEQUENCES RESULTING FROM DAMAGE TO SAME.
12. THE CONTRACTOR(S) SHALL BE SOLELY RESPONSIBLE TO GIVE 72 HOURS WRITTEN NOTICE TO THE UTILITIES PRIOR TO CROSSING SUCH UTILITIES, FOR THE PURPOSE OF INSPECTION BY THE CONCERNED UTILITY. THIS INSPECTION WILL BE FOR THE DURATION OF THE CONSTRUCTION, WITH THE CONTRACTOR RESPONSIBLE FOR ALL COSTS ARISING FROM SUCH INSPECTION.
13. ALL PROPOSED WATER PIPING MUST BE ISOLATED THROUGH A TEMPORARY CONNECTION THAT SHALL INCLUDE AN APPROPRIATE CROSS-CONNECTION CONTROL DEVICE, CONSISTENT WITH THE DEGREE OF HAZARD, FOR BACKFLOW PREVENTION OF THE ACTIVE DISTRIBUTION SYSTEM, CONFORMING TO REGION OF PEEL STANDARDS 1-7-7 OR 1-7-8.
14. ALL WATER METERS MUST BE INSTALLED IN HEATED AND ACCESSIBLE SPACE.
15. PROPOSALS TO CONNECT TO AN EXISTING SERVICE LATERAL REQUIRES APPROVAL FROM THE REGION OF PEEL INSPECTOR AT CONSTRUCTION STAGE.

-CAP AND GROUT OF ABANDONED WATERMAIN MAY BE REQUIRED FOR ANY NEW SERVICES CROSSING ABANDONED INFRASTRUCTURE.



SECTION 3-3

(WATER SERVICE CONNECTION)

H = 1:200 V = 1:100

SANITARY STRUCTURE TABLE

STRUCTURE:	DETAILS:	STANDARD:	TOP ELEV.:	INVERTS:
EX. MH2A	1200 mm MH	(STD 2-1-1)	TOP=144.82	SW 140.79
EX. MH4A	1200 mm MH	(STD 2-1-1)	TOP=138.11	NE 137.60 SW 137.60

STORM STRUCTURE TABLE

STRUCTURE:	DETAILS:	STANDARD:	TOP ELEV.:	INVERTS:
EX. MH3	1200 mm MH	(OPSD 701.010)	TOP=144.70	SW 140.69 NW 140.85
EX. MH5	1200 mm MH	(OPSD 701.010)	TOP=138.18	NE 137.67 SW 137.62

SANITARY STRUCTURE TABLE

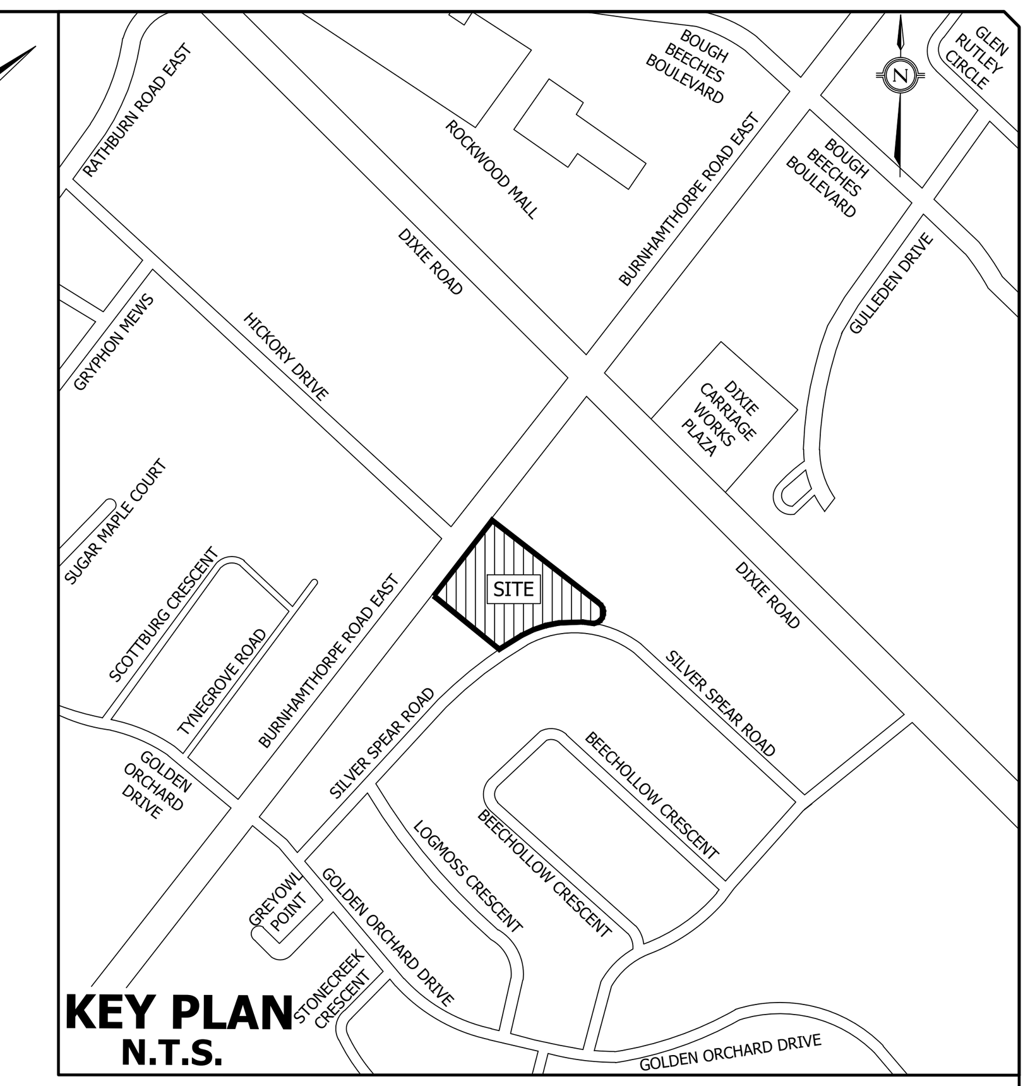
STRUCTURE:	DETAILS:	STANDARD:	TOP ELEV.:	INVERTS:
MH2A	1200 mm MH	(R.O.P. STD. 2-5-3)	TOP=144.77	NW 140.75 SE 140.72
MH3A	1200 mm MH	(R.O.P. STD. 2-5-18)	TOP=144.64	NE 140.52 NW 140.52 SW 140.52
SAN PLUG 1A	200mm PLUG	N/A	N/A	SE 141.58

STORM STRUCTURE TABLE

STRUCTURE:	DETAILS:	STANDARD:	TOP ELEV.:	INVERTS:
INFILTRATION GALLERY INLET	N/A	N/A	N/A	NW 142.95
INFILTRATION GALLERY OVERFLOW	N/A	N/A	N/A	SW 142.35
MH2	1200 mm MH	(OPSD 701.010)	TOP=144.84	NW 142.25 SE 142.22 NE 142.28
MH4	1200 mm MH	(OPSD 701.010)	TOP=144.60	NW 141.72 SE 141.69
OGS3	1500 mm MH (OGS)	(OPSD 701.011)	TOP=144.55	NW 141.91 SE 141.76
STM CONNECTION	N/A	BLIND CONNECTION	N/A	NW 141.26
STM PLUG1	300mm PLUG	N/A	N/A	SE 142.32
STM PLUG2	300mm PLUG	N/A	N/A	SE 143.00
STM TANK INLET	N/A	N/A	N/A	NW 142.21
STM TANK OUTLET	N/A	N/A	N/A	SE 141.95 SE 143.02

Pipe Interference Table

Crossing No.	PIPE 1	PIPE 2	Clearance
1	STM OBVERT 141.66	EX. WM INVERT 142.24	0.58m
2	EX. SAN OBVERT 140.46	STM INVERT 141.36	0.90m
3	SAN OBVERT 140.80	EX. WM INVERT 142.52	1.72m
4	SAN OBVERT 141.68	STM INVERT 142.32	0.64m
5	STM OBVERT 142.66	WM INVERT 143.20	0.54m
6	STM OBVERT 142.66	WM INVERT 143.19	0.55m



KEY PLAN
N.T.S.

LEGEND

- LIMIT OF PROPERTY
- LIMIT OF WORK
- STORM SEWER AND MANHOLE
- SANITARY SEWER AND MANHOLE
- EXISTING STORM SEWER AND MANHOLE
- EXISTING SANITARY SEWER AND MANHOLE
- PROPOSED CATCHBASIN
- EXISTING SINGLE CATCHBASIN
- EXISTING & PROPOSED DETECTOR CHECK VALVE IN CHAMBER (R.O.P. 1-3-1)
- PROPOSED WATER METER IN CHAMBER
- PROPOSED BACKFLOW VALVE IN CHAMBER
- VALVE AND BOX
- EXISTING VALVE AND BOX
- EXISTING HYDRANT & VALVE
- EXISTING TREE
- PROPOSED TREE
- SIDEWALK / WALKWAY
- PROPOSED TACTILE STRIP
- PROPOSED CURB CUT
- EXISTING EASEMENT
- EXISTING FENCE
- EXISTING HYODRO
- EXISTING UTILITY LINE
- PROPOSED WOOD FENCE
- PROPOSED PARKING SPACE
- PROPOSED VENT SHAFT
- PROPOSED BIKE RACK
- BUILDING ENTRANCE
- LIMIT OF UNDERGROUND LEVELS
- LIMIT OF BUILDING GROUND FLOOR
- EXISTING DEVELOPED LANDS
- SECTION MARKER
- EXISTING WATER CONNECTION
- EXISTING GAS
- EXISTING BELL
- EXISTING TV CABLE
- EXISTING ROGERS FIBRE OPTIC
- EXISTING COMMUNICATION CABLE
- EXISTING HYDRO CABLE
- EXISTING ELECTRICAL
- EXISTING STREET LIGHT CABLE
- EXISTING STORM CONNECTION
- EXISTING SANITARY CONNECTION

BENCHMARK NOTE

ELEVATIONS SHOWN ON THIS PLAN ARE GEODETIC AND ARE REFERRED TO CITY OF MISSISSAUGA BENCHMARK No.688, HAVING AN ELEVATION OF 143.902 METERS

TOPOGRAPHIC SURVEY PREPARED BY LLOYD & PURCELL LTD. ONTARIO LAND SURVEYORS ON OCT.23, 2023.

■ ZBA3 SUBMISSION	■ ZBA4 SUBMISSION	☐ THIRD DATE	☐ FINAL DATE
DATE: MAR. 13, 2025	DATE: JULY. 11, 2025		

REGISTERED PROFESSIONAL ENGINEER
R.B.T. MERWIN
100009772
JULY. 11, 2025
PROVINCE OF ONTARIO

URBANTECH®
Urbantech® Consulting
A Division of Leighton-Zec West Ltd.
2030 Bristol Circle, Suite 105
Oakville, ON. L6H 0H2
TEL 905.829.8818 • urbantech.com

1315 SILVER SPEAR

Region of Peel
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MISSISSAUGA

SERVICING PLAN

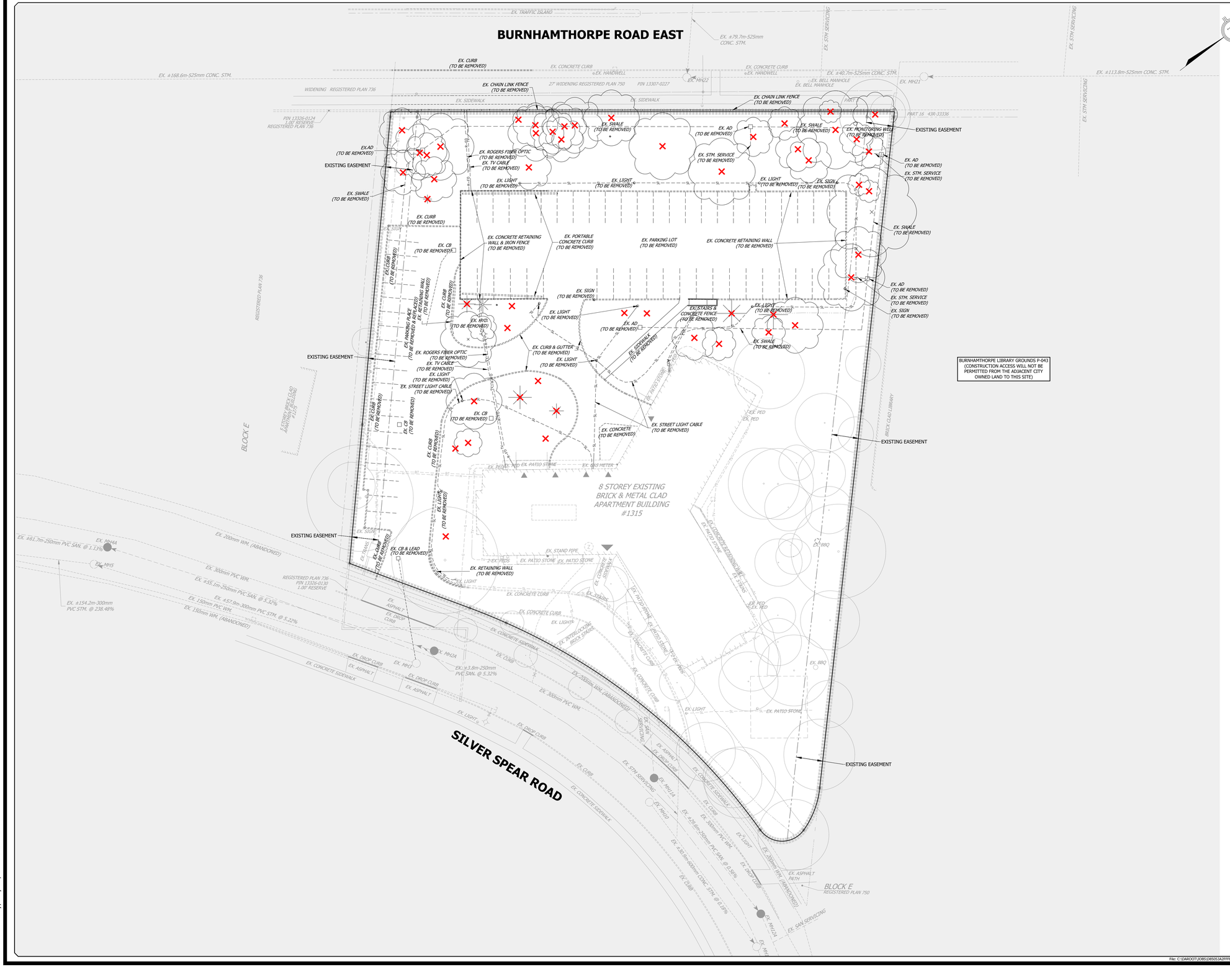
REGION FILE No. XXX

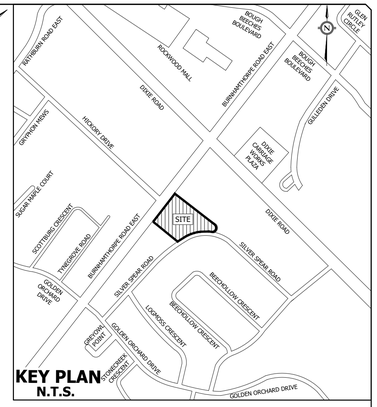
SCALE:	1:300	AREA		PROJECT No.	23-314
DRAWN BY:	X.S.	CHECKED BY:	R.M./R.B.T.M	PLAN No.	101
DATE:	MARCH 2025	SHEET	OF	C-	

File: C:\USERS\RMOIR\DC\ACCDOCS\URBANTECH\23-314W 1315 SILVER SPEAR (STARLIGHT)\PROJECT FILES\100 - COVER & GENERAL\101-SERVICING PLAN (ZBA).DWG

PLOT DATE:July 18, 2025 10:05:44 AM

BURNHAMTHORPE ROAD EAST





LEGEND

- EXISTING STORM SEWER AND MANHOLE
- EXISTING SANITARY SEWER AND MANHOLE
- EXISTING SINGLE CATCHBASIN
- EXISTING VALVE AND BOX
- EXISTING HYDRANT & VALVE
- EXISTING FENCE
- EXISTING HYDRO
- EXISTING UTILITY LINE
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- LIMIT OF PROPERTY
- EXISTING WATER CONNECTION
- EXISTING GAS
- EXISTING BELL
- EXISTING TV CABLE
- EXISTING ROGERS FIBRE OPTIC
- EXISTING COMMUNICATION CABLE
- EXISTING HYDRO CABLE
- EXISTING ELECTRICAL
- EXISTING STREET LIGHT CABLE
- EXISTING STORM CONNECTION
- EXISTING SANITARY CONNECTION
- EXISTING DEVELOPED LANDS

BENCHMARK NOTE

ELEVATIONS SHOWN ON THIS PLAN ARE GEODETIC AND ARE REFERRED TO CITY OF MISSISSAUGA BENCHMARK No.688, HAVING AN ELEVATION OF 143.902 METERS

TOPOGRAPHIC SURVEY PREPARED BY LLOYD & PURCELL LTD. ONTARIO LAND SURVEYORS ON OCT.23, 2023.

■ ZBA3 SUBMISSION	■ ZBA4 SUBMISSION	□ THIRD DATE	□ FINAL DATE
DATE: MAR. 13, 2025	DATE: JULY 18, 2025		

REGISTERED PROFESSIONAL ENGINEER
R.B.T. MERWIN
100009772
JULY 18, 2025
PROVINCE OF ONTARIO

Urbantech® Consulting
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2030 Bristol Circle, Suite 105
Oakville, ON. L6H 0H2
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REMOVING PLAN

REGION FILE No. XXX

SCALE: 1:300	AREA	PROJECT No.	23-314
DRAWN BY: X.S.	CHECKED BY: R.M./R.B.T.M	PLAN No.	**102**
DATE: MARCH 2025	SHEET OF	C-	

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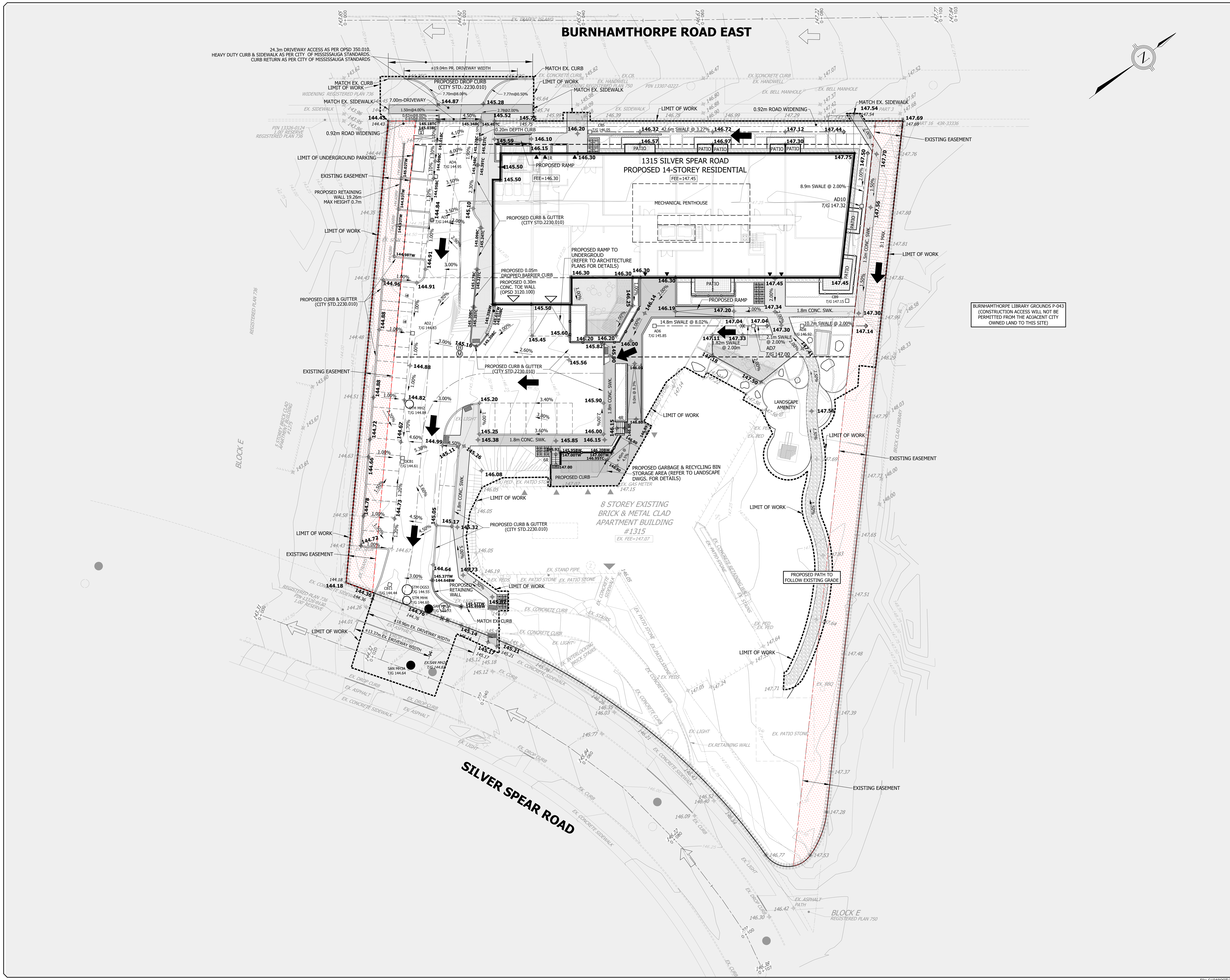

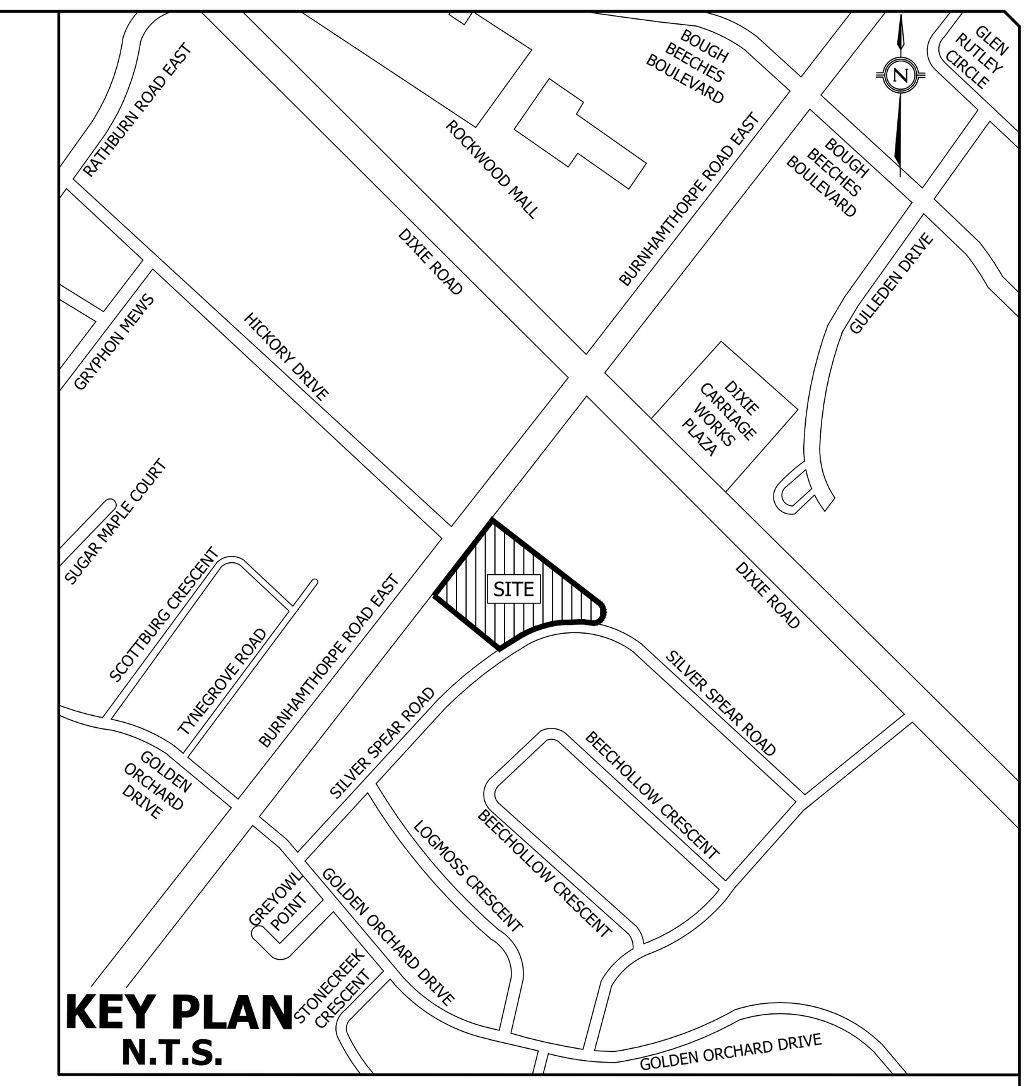

KEY PLAN
N.T.S.

LEGEND

- 141.50 — PROPOSED ELEVATION
- 141.50TC — TOP OF CURB ELEVATION
- 141.50TW — TOP OF WALL ELEVATION
- 141.00BW — BOTTOM OF WALL ELEVATION
- 141.00 — EXISTING ELEVATION
- 141.00G — EXISTING GUTTER ELEVATION
- 141.15BC — EXISTING BOTTOM OF CURB ELEVATION
- PROPOSED SWALE
- MAXIMUM 3:1 SLOPE (UNLESS OTHERWISE NOTED)
- STORM SEWER MANHOLE
- SANITARY MANHOLE
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- CATCH BASIN/AREA DRAIN
- EXISTING SINGLE CATCHBASIN
- EXISTING DETECTOR CHECK VALVE IN CHAMBER (AS PER R.S.D. 1-3-1)
- EXISTING CHECK VALVE IN CHAMBER (AS PER R.S.D. 1-1-5)
- VALVE AND BOX
- EXISTING VALVE AND BOX
- EXISTING HYDRANT & VALVE
- LIMIT OF UNDERGROUND LEVELS
- LIMIT OF BUILDING GROUND FLOORS
- LIMIT OF PROPERTY
- LIMIT OF WORK
- EXISTING EASEMENT
- EXISTING DEVELOPED LANDS
- SIDEWALK / WALKWAY
- PROPOSED TACTILE STRIP
- PROPOSED CURB CUT
- PROPOSED TRANSFORMER
- PROPOSED BIKE RACK
- VENT SHAFT
- 143.00 — EXISTING CONTOUR ELEVATION
- PROPOSED OVERLAND FLOW DIRECTION
- EXISTING OVERLAND FLOW DIRECTION
- EXISTING FENCE
- PROPOSED WOOD FENCE
- PROPOSED PARKING SPACE
- BUILDING ENTRANCE

BENCHMARK NOTE

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TOPOGRAPHIC SURVEY PREPARED BY LLOYD & PURCELL LTD. ONTARIO LAND SURVEYORS ON OCT.23, 2023.

■ ZBA3 SUBMISSION	■ ZBA4 SUBMISSION	☐ THIRD DATE	☐ FINAL DATE
DATE: MAR. 13, 2025	DATE: JULY 18, 2025		

REGISTERED PROFESSIONAL ENGINEER
R.B.T. MERWIN
100009772
JULY 18, 2025
PROVINCE OF ONTARIO

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GRDING PLAN

REGION FILE No. XXX

SCALE:	1:300	AREA		PROJECT No.	23-314
DRAWN BY:	X.S.	CHECKED BY:	R.M./R.B.T.M	PLAN No.	201
DATE:	MARCH 2025	SHEET	OF	C-	

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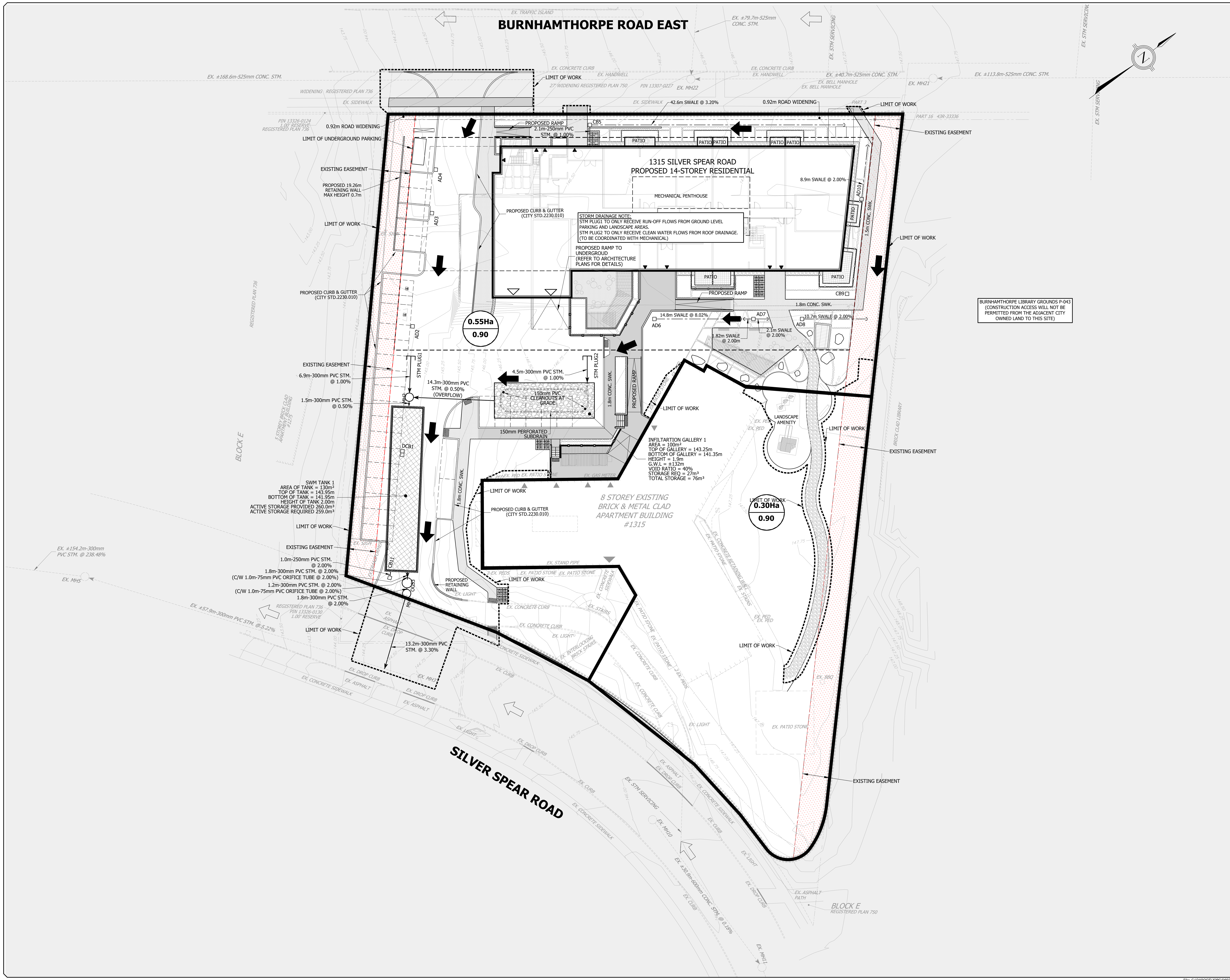

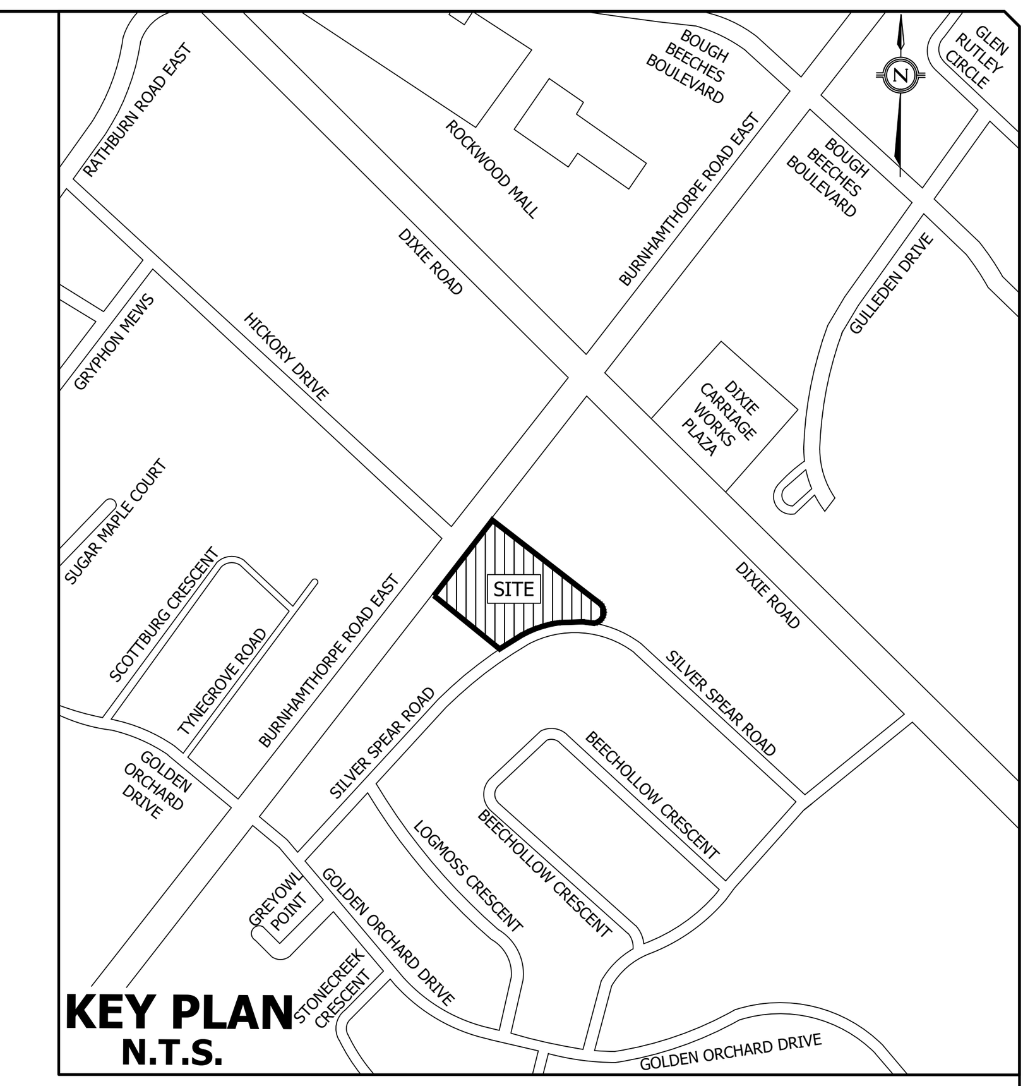

LEGEND

- STORM SEWER AND MANHOLE
- EXISTING STORM SEWER AND MANHOLE
- PROPOSED CATCHBASIN
- EXISTING SINGLE CATCHBASIN
- PROPOSED TACTILE STRIP
- PROPOSED PARKING SPACE
- PROPOSED BIKE RACK
- BUILDING ENTRANCE
- PROPOSED VENT SHAFT
- SIDEWALK / WALKWAY
- PROPOSED CURB CUT
- PROPOSED WOOD FENCE
- DRAINAGE AREA BOUNDARY
- EXTERNAL DRAINAGE AREA BOUNDARY
- LIMIT OF UNDERGROUND LEVELS
- LIMIT OF BUILDING GROUND FLOOR
- LIMIT OF PROPERTY
- LIMIT OF WORK
- EXISTING EASEMENT
- 0.30 — PROPOSED DRAINAGE AREA (ha) FOR MINOR SYSTEM (5 YEAR) FLOW
- 0.90 — PROPOSED RUNOFF COEFFICIENT
- 143.00 — EXISTING CONTOUR AND ELEVATION
- PROPOSED OVERLAND FLOW DIRECTION
- EXISTING OVERLAND FLOW DIRECTION
- EXISTING DEVELOPED LANDS

BENCHMARK NOTE

ELEVATIONS SHOWN ON THIS PLAN ARE GEODETIC AND ARE REFERRED TO CITY OF MISSISSAUGA BENCHMARK No.688, HAVING AN ELEVATION OF 143.902 METERS

TOPOGRAPHIC SURVEY PREPARED BY LLOYD & PURCELL LTD. ONTARIO LAND SURVEYORS ON OCT.23, 2023.

■ ZBA3 SUBMISSION	■ ZBA4 SUBMISSION	☐ THIRD DATE	☐ FINAL DATE
DATE: MAR. 13, 2025	DATE: JULY 18, 2025		

REGISTERED PROFESSIONAL ENGINEER
R.B.T. MERWIN
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JULY 18, 2025
PROVINCE OF ONTARIO

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STORM DRAINAGE PLAN

REGION FILE No. XXX

SCALE:	1:500	AREA		PROJECT No.	23-314
DRAWN BY:	X.S.	CHECKED BY:	R.M./R.B.T.M	PLAN No.	301
DATE:	MARCH 2025	SHEET	OF	C-	

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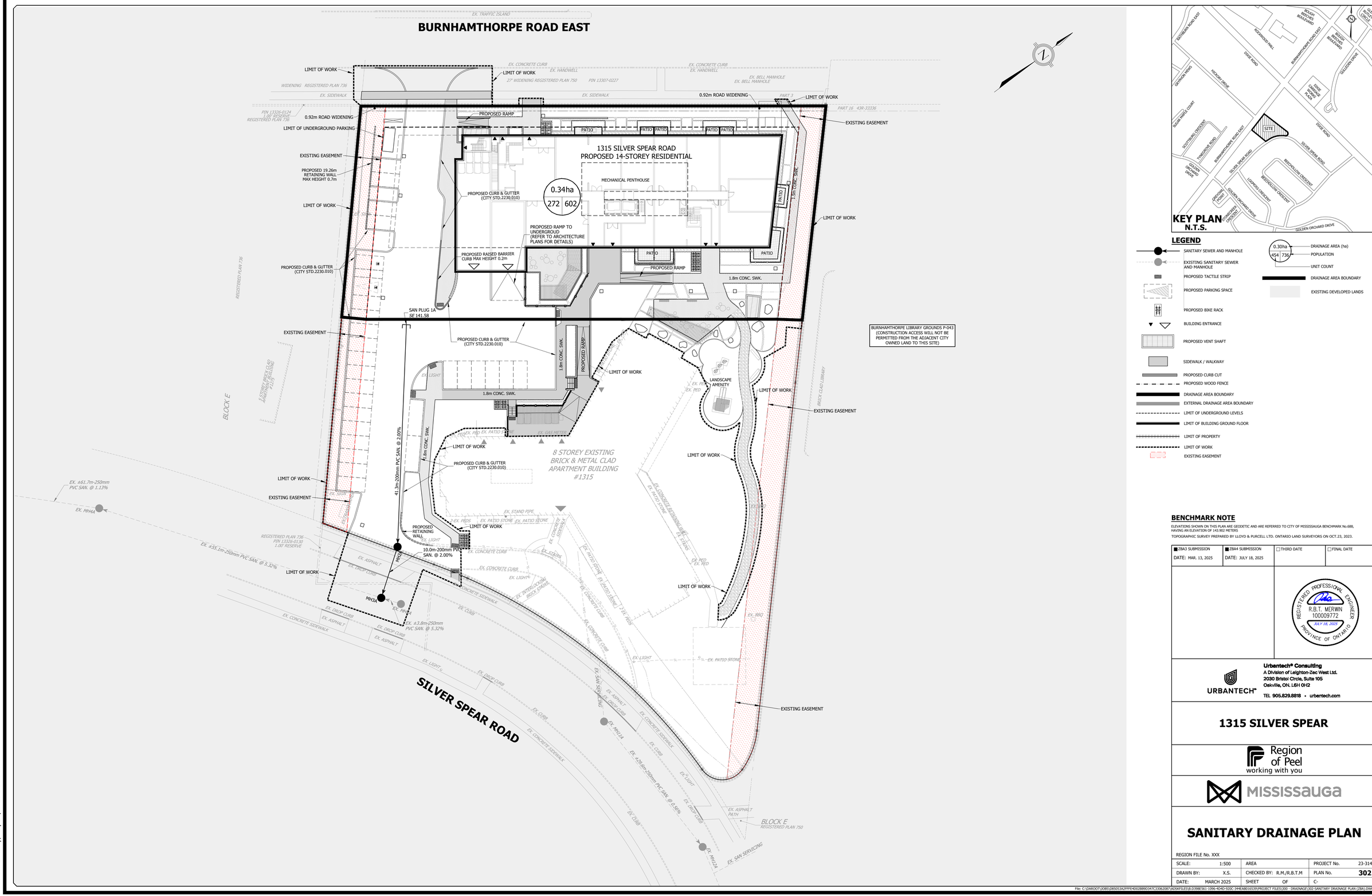

LEGEND

- SANITARY SEWER AND MANHOLE
- EXISTING SANITARY SEWER AND MANHOLE
- PROPOSED TACTILE STRIP
- PROPOSED PARKING SPACE
- PROPOSED BIKE RACK
- BUILDING ENTRANCE
- PROPOSED VENT SHAFT
- SIDEWALK / WALKWAY
- PROPOSED CURB CUT
- PROPOSED WOOD FENCE
- DRAINAGE AREA BOUNDARY
- EXTERNAL DRAINAGE AREA BOUNDARY
- LIMIT OF UNDERGROUND LEVELS
- LIMIT OF BUILDING GROUND FLOOR
- LIMIT OF PROPERTY
- LIMIT OF WORK
- EXISTING EASEMENT
- 0.30Ha / 454 | 736 — DRAINAGE AREA (ha) / POPULATION / UNIT COUNT
- DRAINAGE AREA BOUNDARY
- EXISTING DEVELOPED LANDS

BENCHMARK NOTE

ELEVATIONS SHOWN ON THIS PLAN ARE GEODETIC AND ARE REFERRED TO CITY OF MISSISSAUGA BENCHMARK No.688, HAVING AN ELEVATION OF 143.902 METERS
TOPOGRAPHIC SURVEY PREPARED BY LLOYD & PURCELL LTD. ONTARIO LAND SURVEYORS ON OCT.23, 2023.

■ ZBA3 SUBMISSION	■ ZBA4 SUBMISSION	□ THIRD DATE	□ FINAL DATE
DATE: MAR. 13, 2025	DATE: JULY 18, 2025		

REGISTERED PROFESSIONAL ENGINEER
R.B.T. MERWIN
100009772
JULY 18, 2025
PROVINCE OF ONTARIO

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MISSISSAUGA

SANITARY DRAINAGE PLAN

REGION FILE No. XXX

SCALE: 1:500	AREA	PROJECT No.	23-314
DRAWN BY: X.S.	CHECKED BY: R.M./R.B.T.M	PLAN No.	302
DATE: MARCH 2025	SHEET OF	C-	

PLOT DATE:Friday, July 18, 2025 1:26:54 PM

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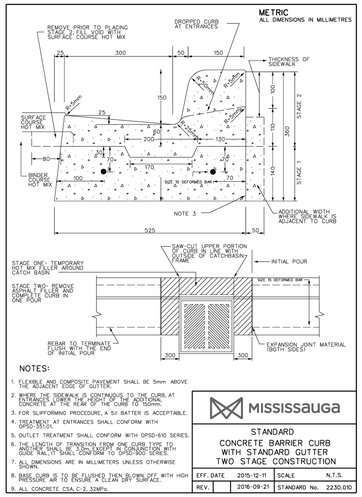
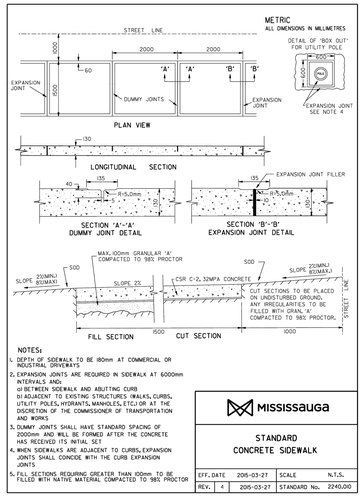
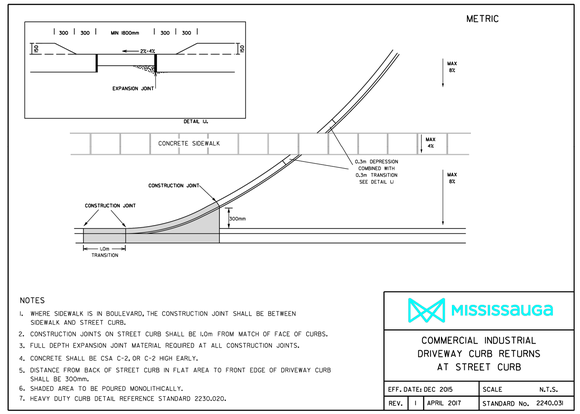






NOTES

Specifications for Tactile Walking Surface Indicators
City of Mississauga Detail Sheets

2240.033 - Signalized Intersection Configurations of Pedestrian Crossings
2240.034 - Controlled Non Signalized Intersection Configurations of Pedestrian Crossings
2240.035 - Tactile Walking Surface Indicator and Depressed Curb Detail
2240.036 - Tactile Walking Surface Indicator and Curb Ramp Detail
2240.037 - Location of Dropped Curbs at Controlled Intersections

Canadian Standards Association
CSA B651-2012 Accessible Design for the Built Environment

American Society of Testing and Materials
ASTM A 48 Standard Specification for Grey Iron Castings
ASTM C 1028 Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other like Surfaces by the Horizontal Dynamometer Pull-Meter Method
ASTM C 501-84 Standard Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser

Ontario Provincial Legislation
O.Reg. 191/11 Accessibility for Ontarians with Disabilities Act, 2005

MATERIALS
Tactile Walking Surface Indicators

Tactile walking surface indicators shall be according to drawing 2240.036 and Standard number TBD and be made of cast iron, according to CSA B651-2012 with the following amendment: minimum 52.39 millimeter centre to centre spacing of domes and follows Ontario Regulation 191/11, and meets the following requirements:

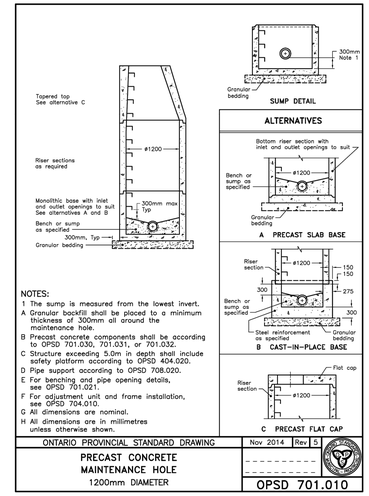
Standard	Property	Minimum Result
ASTM A 8	Tensile Strength	Class 30 B
ASTM C 1028	Slip Resistance	Dry 0.8 min, Wet 0.8 min
ASTM C 501-84	Wear Resistance	Wear Index: >15

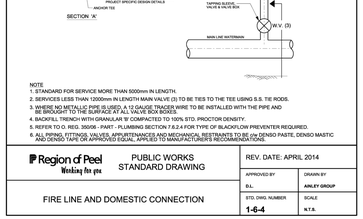
The truncated domes shall be of uniform size and shape. Units shall be uniform in texture, be free from pouring faults, sponginess, cracks, blowholes, and other defects, and have clean-cut and well-defined edges. All surfaces shall be bare, without any coating, and be uniform and free of flaking rust or mounts of rust or debris.

CONSTRUCTION
Ramps
Sidewalk accessibility ramps shall be in according to 2240.033, 2240.034, 2240.035, 2240.036, and 2240.037 with tactile walking surface indicators and shall be incorporated at every location with a pedestrian crossing or as specified on the Contract Drawings.

Installation of Tactile Walking Indicators
Tactile walking surface indicators shall be set and pressed into wet concrete to final elevation according to manufacturer's recommendations. Remove any wet concrete that may spill onto tactile walking surface indicator surface. Radius plates to be used as required to follow curb radius. Straight Plates will be allowed on Radii upon approval by the City of Mississauga representative.

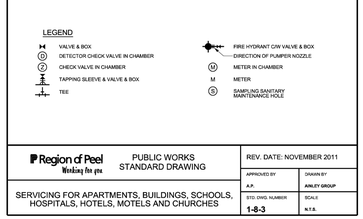
MISSISSAUGA
TACTILE WALKING SURFACE
INDICATOR-NOTES
EFF. DATE DEC 2015 SCALE N.T.S.
REV. STANDARD No. 2240.038





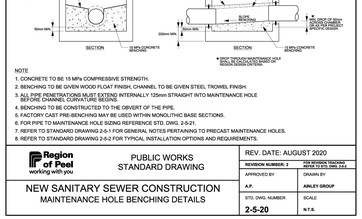
NOTE
1. STANDARD FOR SERVICE MORE THAN 5000mm IN LENGTH.
2. SERVICES LESS THAN 12000mm IN LENGTH MAIN VALVE (3) TO BE TIES TO THE TEE USING S.S. TIE RODS.
3. WHERE NO METALLIC PIPE IS USED, A 12 GAUGE TRACER WIRE TO BE INSTALLED WITH THE PIPE AND BE BROUGHT TO THE SURFACE AT ALL VALVE BOX BOXES.
4. BACKFILL TRENCH WITH GRANULAR 'B' COMPACTED TO 100% STD. PROCTOR DENSITY.
5. REFER TO O. REG. 350/06 - PART - PLUMBING SECTION 7.6.2.4 FOR TYPE OF BLACKFLOW PREVENTER REQUIRED.
6. ALL PIPING, FITTINGS, VALVES, APPURTENANCES AND MECHANICAL RESTRAINTS TO BE c/w DENSO PASTE, DENSO MASTIC AND DENSO TAPE OR APPROVED EQUAL, APPLIED TO MANUFACTURER'S RECOMMENDATIONS.

Region of Peel working with you
PUBLIC WORKS
STANDARD DRAWING
REV. DATE: APRIL 2014
APPROVED BY: B.L. DRAWN BY: ASHLEY GROUP
STD. DWG. NUMBER: 1-6-4 SCALE: N.T.S.
FIRE LINE AND DOMESTIC CONNECTION



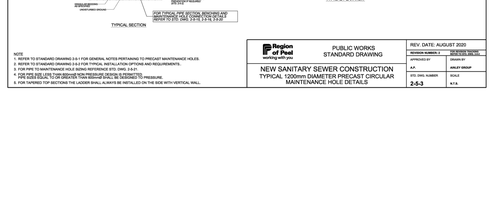
LEGEND
- VALVE & BOX
- DETECTOR CHECK VALVE IN CHAMBER
- CHECK VALVE IN CHAMBER
- TAPPING SLEEVE & VALVE & BOX
- TEE
- FIRE HYDRANT C/W VALVE & BOX
- DIRECTION OF PUMPER NOZZLE
- METER IN CHAMBER
- METER
- SAMPLING SANITARY MAINTENANCE HOLE

Region of Peel working with you
PUBLIC WORKS
STANDARD DRAWING
REV. DATE: NOVEMBER 2011
APPROVED BY: A.P. DRAWN BY: ASHLEY GROUP
STD. DWG. NUMBER: 1-8-3 SCALE: N.T.S.
SERVICING FOR APARTMENTS, BUILDINGS, SCHOOLS, HOSPITALS, HOTELS, MOTELS AND CHURCHES



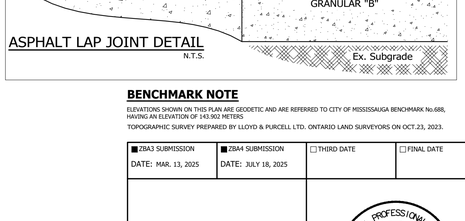
NOTE
1. CONCRETE TO BE 15 MPa COMPRESSIVE STRENGTH.
2. BENCHING TO BE GIVEN WOOD FLOAT FINISH, CHANNEL TO BE GIVEN STEEL TROWEL FINISH.
3. ALL PIPE PENETRATIONS MUST EXTEND INTERNALLY 125mm STRAIGHT INTO MAINTENANCE HOLE BEFORE CHANNEL CURVATURE BEGINS.
4. BENCHING TO BE CONSTRUCTED TO THE OBVERT OF THE PIPE.
5. FACTORY CAST PRE-BENCHING MAY BE USED WITHIN MONOLITHIC BASE SECTIONS.
6. FOR PIPE TO MAINTENANCE HOLE SIZING REFERENCE STD. DWG. 2-5-21.
7. REFER TO STANDARD DRAWING 2-5-1 FOR GENERAL NOTES PERTAINING TO PRECAST MAINTENANCE HOLES.
8. REFER TO STANDARD DRAWING 2-5-2 FOR TYPICAL INSTALLATION OPTIONS AND REQUIREMENTS.

Region of Peel working with you
PUBLIC WORKS
STANDARD DRAWING
REV. DATE: AUGUST 2020
REVISION NUMBER: 2 — REVISION TRACKING REFER TO STD. DWG. 2-5-0
APPROVED BY: A.P. DRAWN BY: ASHLEY GROUP
STD. DWG. NUMBER: 2-5-20 SCALE: N.T.S.
NEW SANITARY SEWER CONSTRUCTION
MAINTENANCE HOLE BENCHING DETAILS



NOTE
1. REFER TO STANDARD DRAWING 2-5-1 FOR GENERAL NOTES PERTAINING TO PRECAST MAINTENANCE HOLES.
2. REFER TO STANDARD DRAWING 2-5-2 FOR TYPICAL INSTALLATION OPTIONS AND REQUIREMENTS.
3. FOR PIPE TO MAINTENANCE HOLE SIZING REFERENCE STD. DWG. 2-5-21.
4. FOR PIPE SIZES LESS THAN 600mm NON PRESSURE DESIGN IS REQUIRED.
5. FOR PIPE SIZES 600mm AND GREATER DESIGN IS REQUIRED FOR 35 kPa PRESSURE.
6. FOR TAPPED TOP SECTIONS THE LADDER SHALL ALWAYS BE INSTALLED ON THE SIDE WITH VERTICAL WALL.

Region of Peel working with you
PUBLIC WORKS
STANDARD DRAWING
REV. DATE: AUGUST 2020
REVISION NUMBER: 0 — REVISION TRACKING REFER TO STD. DWG. 2-5-0
APPROVED BY: A.P. DRAWN BY: ASHLEY GROUP
STD. DWG. NUMBER: 2-5-3 SCALE: N.T.S.
NEW SANITARY SEWER CONSTRUCTION
MANHOLE DETAILS



ASPHALT LAP JOINT DETAIL
N.T.S.

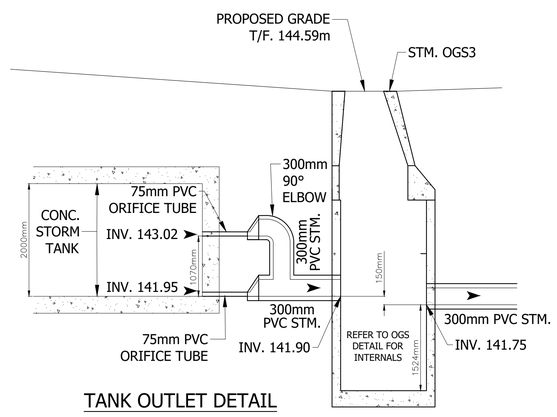
BENCHMARK NOTE

ELEVATIONS SHOWN ON THIS PLAN ARE GEODETIC AND ARE REFERRED TO CITY OF MISSISSAUGA BENCHMARK No.688, HAVING AN ELEVATION OF 143.902 METERS

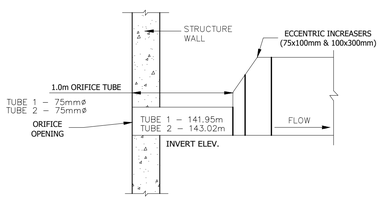
TOPOGRAPHIC SURVEY PREPARED BY LLOYD & PURCELL LTD. ONTARIO LAND SURVEYORS ON OCT.23, 2023.

■ ZBA3 SUBMISSION	■ ZBA4 SUBMISSION	☐ THIRD DATE	☐ FINAL DATE
DATE: MAR. 13, 2025	DATE: JULY 18, 2025		

REGISTERED PROFESSIONAL ENGINEER
R.B.T. MERWIN
100009772
JULY 18, 2025
PROVINCE OF ONTARIO



TANK OUTLET DETAIL
SCALE 1:50



ORIFICE TUBE DETAIL
N.T.S.

Urbantech® Consulting
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2030 Bristol Circle, Suite 105
Oakville, ON. L6H 0H2
TEL 905.829.8818 • urbantech.com

1315 SILVER SPEAR

Region of Peel working with you

MISSISSAUGA

GENERAL DETAILS

REGION FILE No. XXX

SCALE:	NTS	AREA		PROJECT No.	23-314
DRAWN BY:	X.S.	CHECKED BY:	R.M./R.B.T.M	PLAN No.	701
DATE:	MARCH 2025	SHEET	OF	C-	

PLOT DATE:Friday, July 18, 2025 1:27:05 PM

File: C:\DAROOT\JOBS\J25\053\A2FFE40D2BB9D347\C3306208\ADSKFILES\{8.D398E561-1096-4D4D-920C-344EA8016539}PROJECT FILES\700 - DETAILS\701-DETAILS (ZBA).DWG

EROSION AND SEDIMENT CONTROL

1.1. CONTRACTOR TO INSTALL EROSION CONTROL MEASURES AS SHOWN PRIOR TO CONSTRUCTION AND MAINTAIN IN GOOD CONDITION UNTIL CONSTRUCTION IS COMPLETED AND ALL DISTURBED GROUND SURFACES HAVE BEEN RESTABILIZED EITHER BY PAVING OR RESTORATION OF VEGETATIVE COVER.

1.2. ALL SILT FENCING TO BE INSTALLED PRIOR TO ANY AREA GRADING, EXCAVATING OR DEMOLITION COMMENCING.

1.3. EROSION CONTROL FENCING TO BE INSTALLED AROUND BASE OF ALL LONG TERM STOCKPILES. ALL STOCKPILES TO BE KEPT 2.5M MINIMUM FROM PROPERTY LINE.

1.4. EROSION PROTECTION TO BE PROVIDED AROUND ALL STORM CBS.

1.5. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED AS SITE DEVELOPMENT PROGRESSES. CONTRACTOR TO PROVIDE ALL ADDITIONAL EROSION CONTROL STRUCTURES.

1.6. EROSION CONTROL STRUCTURES TO REMAIN IN PLACE UNTIL ALL DISTURBED GROUND SURFACES HAVE BEEN RESTABILIZED.

1.7. NO ALTERNATE METHODS OF EROSION PROTECTION SHALL BE PERMITTED UNLESS APPROVED BY THE ENGINEER AND THE CITY.

1.8. CONTRACTOR TO CLEAN ROADWAY AND SIDEWALKS OF SEDIMENTS RESULTING FROM CONSTRUCTION TRAFFIC FROM THE SITE EACH DAY.

1.9. 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.

1.10. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE TO CONTROL DUST IN THE PROJECT AND SHALL PROVIDE, AT HIS OWN EXPENSE, CONTROLLING MEASURES AS DIRECTED BY THE ENGINEER AND THE CITY.

1.11. SHOULD EXCESSIVE MUD TRACKING BE NOTED ON THE CITY/REGION ROADS, IT MAY BE DIRECTED BY THE CITY/REGION ENGINEER TO INSTALL A WHEEL WASHING DEVICE WHICH WILL BE THE RESPONSIBLITY OF THE CONTRACTOR.

1.12. ALL SEDIMENT CONTROLS MUST BE MONITORED ON A WEEKLY BASIS BY THE THIRD PARTY AND A REPORT WILL BE SUBMITTED TO CVC, MNRF AND THE CITY OF MISSISSAUGA. DURING OR IMMEDIATELY AFTER A SIGNIFICANT RAINFALL EVENT AN INSPECTION MUST BE DONE, AND THE RECEIVING SYSTEM SHOULD BE INSPECTED FOR EXCESS SEDIMENT LOAD. IF EXCESS SEDIMENT LOAD IS NOTED, THE SEDIMENT EROSION CONTROL PLAN SHOULD BE ADJUSTED TO CONTROL EXCESS SEDIMENT TO THE EXTENT FEASIBLE AS SOON AS POSSIBLE. MODIFICATIONS & MAINTENANCE MAY BE REQUIRED AS SITE CONDITIONS WARRANT. THE CVC AND CITY OF MISSISSAUGA APPROVAL IS REQUIRED PRIOR TO MODIFICATIONS.

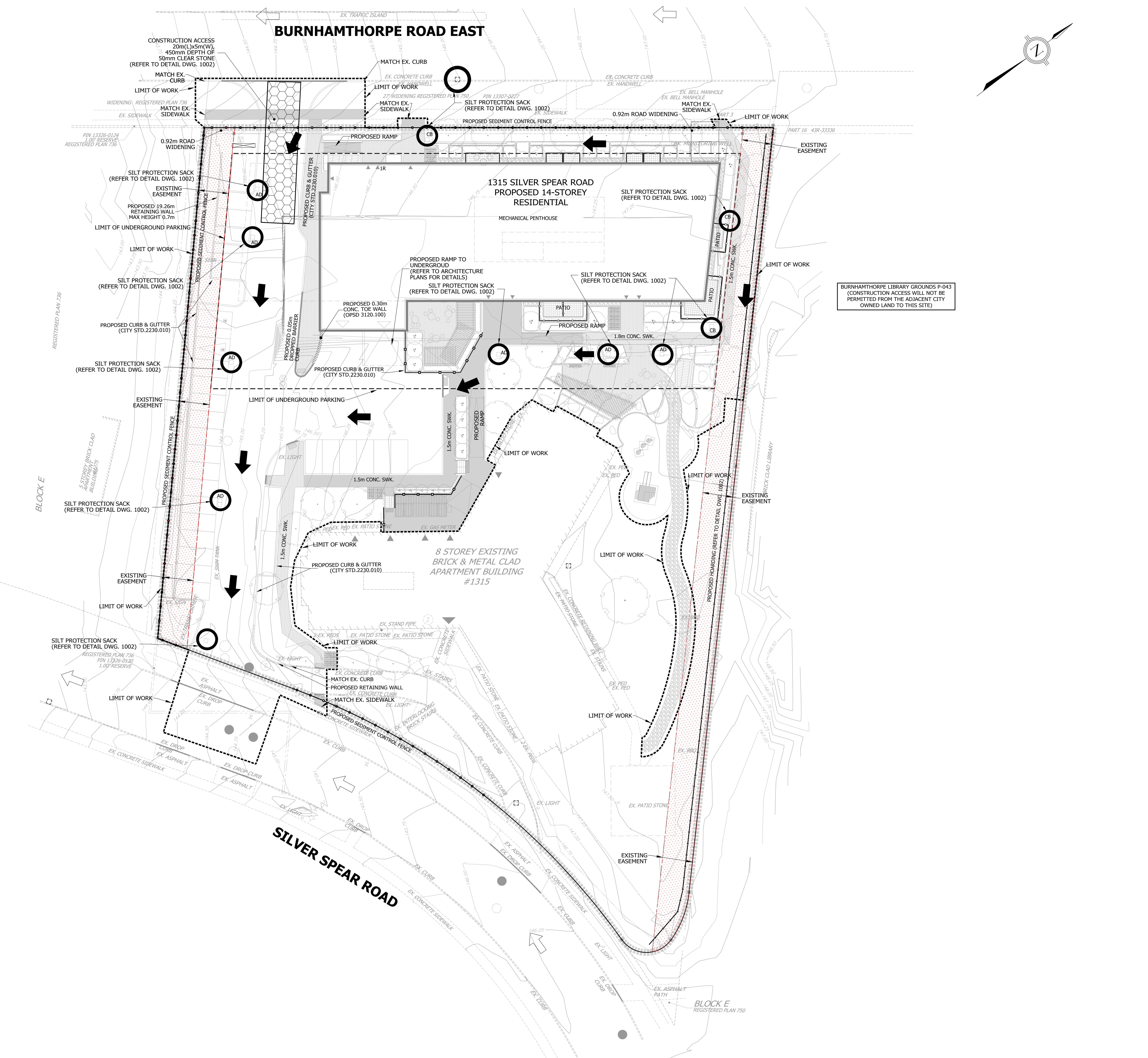
1.13. ALL EXTERNAL AREAS DISTURBED DUE TO CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE CITY OF MISSISSAUGA OR REGION OF PEEL.

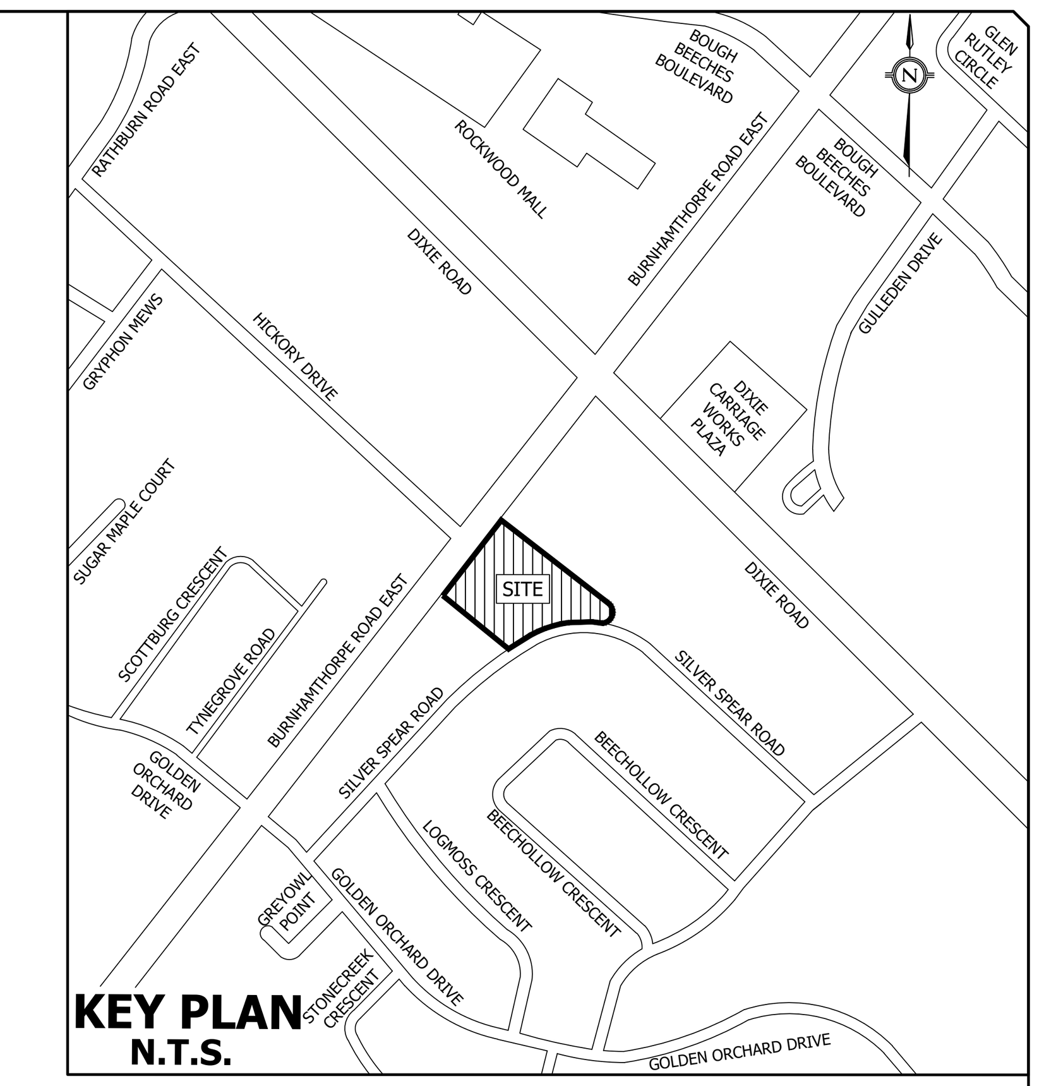
MAINTENANCE RECOMMENDATIONS

2.1. REMOVE SEDIMENT AND CONTAMINANTS ANNUALLY AND REINSTATE STORM WATER MANAGEMENT FACILITY ACCORDING TO THE DESIGN OUTLINED ON THIS PLAN.

2.2. 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.

2.3. OWNER'S REPRESENTATIVE TO MONITOR EROSION CONTROL STRUCTURES TO ENSURE FENCING IS INSTALLED AND MAINTENANCE IS PERFORMED TO CITY REQUIREMENTS.





LEGEND

STORM MANHOLE
SANITARY MANHOLE
EXISTING STORM MANHOLE
EXISTING SANITARY MANHOLE
PROPOSED CATCHBASIN
EXISTING SINGLE CATCHBASIN
DETECTOR CHECK VALVE IN CHAMBER
WATER METER IN CHAMBER
BACKFLOW VALVE IN CHAMBER
VALVE AND BOX
EXISTING VALVE AND BOX
EXISTING HYDRANT & VALVE
PROPOSED OVERLAND FLOW DIRECTION
EXISTING OVERLAND FLOW DIRECTION
PROPOSED SEDIMENT CONTROL FENCE (AS PER CITY STD. 2940.010)
PROPOSED CONSTRUCTION ACCESS STONE PAD (AS PER CITY STD. 2970.010)
CATCHBASIN SILT PROTECTION (REFER TO DETAIL ON DWG. 1002)
LIMIT OF UNDERGROUND LEVELS
LIMIT OF BUILDING GROUND FLOOR
EXISTING CONTOUR ELEVATION
LIMIT OF PROPERTY
LIMIT OF WORK
EXISTING FENCE
PROPOSED WOOD FENCE
EXISTING TREE
PROPOSED TREE
SIDEWALK / WALKWAY
PROPOSED TACTILE STRIP
PROPOSED CURB CUT
PROPOSED PARKING SPACE
PROPOSED VENT SHAFT
PROPOSED BIKE RACK
BUILDING ENTRANCE
EXISTING DEVELOPED LANDS
PROPOSED HOARDING (AS PER DETAIL ON DWG 1002)
EXISTING EASEMENT

BENCHMARK NOTE

ELEVATIONS SHOWN ON THIS PLAN ARE GEODETIC AND ARE REFERRED TO CITY OF MISSISSAUGA BENCHMARK No.688, HAVING AN ELEVATION OF 143.902 METERS

TOPOGRAPHIC SURVEY PREPARED BY LLOYD & PURCELL LTD. ONTARIO LAND SURVEYORS ON OCT.23, 2023.

■ ZBA3 SUBMISSION DATE: MAR. 13, 2025	■ ZBA4 SUBMISSION DATE: JULY 18, 2025	☐ THIRD DATE	☐ FINAL DATE

REGISTERED PROFESSIONAL ENGINEER
R.B.T. MERWIN
100009772
JULY 18, 2025
PROVINCE OF ONTARIO

Urbantech® Consulting
A Division of Leighton-Zec West Ltd.
2030 Bristol Circle, Suite 105
Oakville, ON. L6H 0H2
TEL 905.829.8818 • urbantech.com

1315 SILVER SPEAR

Region of Peel working with you

MISSISSAUGA

EROSION & SEDIMENT CONTROL PLAN

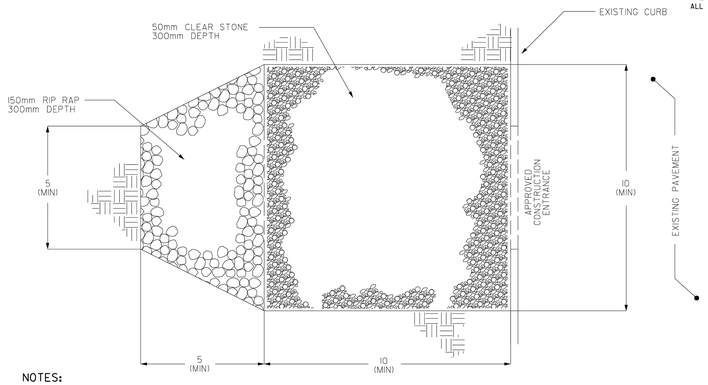
REGION FILE No. XXX

SCALE: 1:500	AREA	PROJECT No. 23-314
DRAWN BY: X.S.	CHECKED BY: R.M./R.B.T.M	PLAN No. 1001
DATE: MARCH 2025	SHEET OF	C-

File: C:\DAROOT\JOBS\D85053A2FFFE4D028B9D347C33062087\ADSKFILES\B.D398E561-1096-4D4D-920C-344EAB016539\PROJECT FILES\1000 - EROSION\1001-EROSION AND SEDIMENT CONTROL PLAN (ZBA).DWG

PLOT DATE:Friday, July 18, 2025 1:27:09 PM

METRIC
ALL DIMENSIONS IN METRES



NOTES:

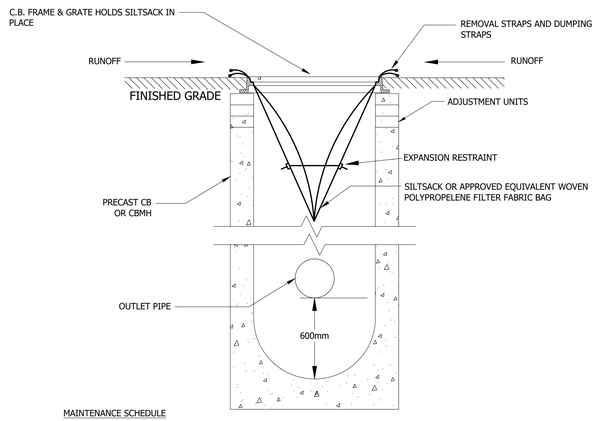
1. GRANULAR MATERIAL IS TO BE CLEAN APPROVED MATERIAL AND PLACED AT NOTED DIMENSIONS PRIOR TO LAND DISTURBANCE
2. GEOTEXTILE IS TO BE PLACED OVER THE ENTIRE AREA PRIOR TO STONE PLACEMENT
3. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL REDUCE TRACKING OR FLOWING OF SEDIMENT ONTO THE R.O.W. AND GRANULAR MATERIAL IS TO BE REPLACED AS WARRANTED OR DIRECTED BY THE TRANSPORTATION AND WORKS DEPARTMENT OF THE CITY OF MISSISSAUGA.
4. FOR SITE DEVELOPMENTS GREATER THAN 4.0ha IN SIZE **20m (MIN)** IS REQUIRED FOR 50mm CLEAR STONE AND **10m (MIN)** IS REQUIRED FOR 150mm RIP RAP.

MISSISSAUGA
Transportation and Works

STANDARD

STONE PAD
CONSTRUCTION ENTRANCE

EFF. DATE	2002-01-01	SCALE	N.T.S
REV.		STANDARD No.	2970.010



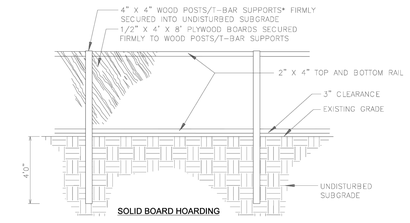
MAINTENANCE SCHEDULE

-INSPECT AFTER EVERY MAJOR RAIN EVENT.
-INSPECT EVERY 3 WEEKS MINIMUM.
-SILTSACK SHOULD NEVER BE OVER HALF FULL.
-FULL BAG CAN BE REMOVED, DUMPED, CLEANED AND REUSED
(TO REMOVE INSERT 25mm REBAR INTO REMOVAL FLAP POCKETS)
(TO DUMP INSERT 25mm REBAR INTO BOTH DUMPING STRAPS)

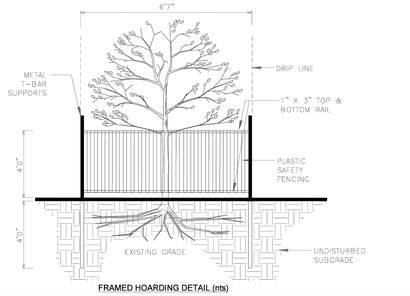
SILTSACK DETAIL

N.T.S.

DEVELOPMENT & DESIGN CONSTRUCTION HOARDING



SOLID BOARD HOARDING



FRAMED HOARDING DETAIL (nts)

NOTES:

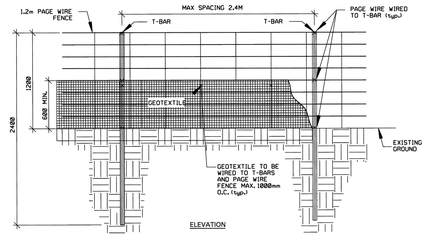
1. HOARDING DETAILS TO BE DETERMINED FOLLOWING INITIAL SITE INSPECTION.
2. HOARDING TO BE APPROVED BY DEVELOPMENT AND DESIGN.
3. HOARDING MUST BE SUPPLIED, INSTALLED AND MAINTAINED BY THE APPLICANT THROUGHOUT ALL PHASES OF CONSTRUCTION, UNTIL APPROVAL TO REMOVE HOARDING IS OBTAINED FROM DEVELOPMENT AND DESIGN.
4. DO NOT ALLOW WATER TO COLLECT AND POND BEHIND OR WITHIN HOARDING.

* T-BAR SUPPORTS FOR SOLID HOARDING WILL ONLY BE ALLOWED WITH PRE APPROVAL FROM DEVELOPMENT AND DESIGN.

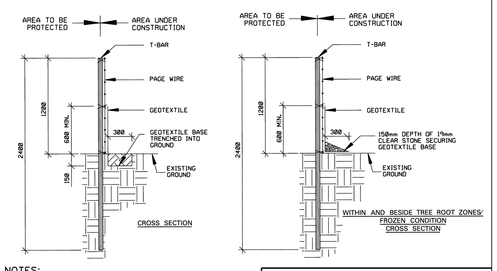
MISSISSAUGA
Development and Design

SCALE: N.T.S.
DATE: JAN, 2008

METRIC
ALL DIMENSIONS IN MILLIMETRES



ELEVATION



CROSS SECTION

WITHIN AND BESIDE TREE ROOT ZONES/ FROZEN CONDITION CROSS SECTION

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE NOTED.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN LOCATES OF ALL EXISTING UTILITIES AND SERVICING PRIOR TO INSTALLING HOARDING.
3. DO NOT DAMAGE VISIBLE TREE ROOTS WHEN INSTALLING T-BARS.
4. GEOTEXTILE TO WOVEN OR NON WOVEN, MINIMUM EQUIVALENT OPENING SIZE IS 0.15mm AND MAXIMUM EQUIVALENT OPENING SIZE IS 0.25mm.
5. GEOTEXTILE TO HAVE HORIZONTAL OVERLAP OF 1000mm MINIMUM AT JOINTS.
6. HOARDING MUST BE MAINTAINED IN SOUND CONDITION THROUGH ALL PHASES OF CONSTRUCTION UNTIL APPROVAL TO REMOVE HOARDING IS OBTAINED FROM THE COMMUNITY SERVICES DEPARTMENT.

MISSISSAUGA
Transportation and Works

STANDARD

SEDIMENT CONTROL FENCE

EFF. DATE	2002-01-01	SCALE	N.T.S.
REV.		STANDARD No.	2940.010

BENCHMARK NOTE

ELEVATIONS SHOWN ON THIS PLAN ARE GEODETIC AND ARE REFERRED TO CITY OF MISSISSAUGA BENCHMARK No.688, HAVING AN ELEVATION OF 143.902 METERS

TOPOGRAPHIC SURVEY PREPARED BY LLOYD & PURCELL LTD. ONTARIO LAND SURVEYORS ON OCT.23, 2023.

■ ZBA3 SUBMISSION	■ ZBA4 SUBMISSION	☐ THIRD DATE	☐ FINAL DATE
DATE: MAR. 13, 2025	DATE: JULY 18, 2025		

REGISTERED PROFESSIONAL ENGINEER
R.B.T. MERWIN
100097772
JULY 18, 2025
PROVINCE OF ONTARIO

URBANTECH

Urbantech® Consulting
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Oakville, ON. L6H 0H2
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1315 SILVER SPEAR

Region of Peel
working with you

MISSISSAUGA

EROSION & SEDIMENT CONTROL DETAILS

REGION FILE No. XXX

SCALE:	NTS	AREA		PROJECT No.	23-314
DRAWN BY:	X.S.	CHECKED BY:	R.M./R.B.T.M	PLAN No.	**1002**
DATE:	MARCH 2025	SHEET	OF		C-

PLOT DATE:Friday, July 18, 2025 1:27:14 PM

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APPENDIX B
SWM Calculations

Current Scenario

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================================================================================
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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2019)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


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DATE: 02-06-2025                          TIME: 11:53:23

USER:


COMMENTS: _____________________________________________________

--------------------------------------------------------------------------------
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  ************************************************
  ** SIMULATION : 10yr                          **
  ************************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1010.000
| Ptotal= 83.16 mm |                          B=   4.600
--------------------                          C=   0.780
```

used in: INTENSITY = A / (t + B)^C

Duration of storm = 24.00 hrs
Storm time step   = 5.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.78	6.00	2.43	12.00	2.29	18.00	1.11
0.08	0.78	6.08	2.52	12.08	2.25	18.08	1.10
0.17	0.79	6.17	2.61	12.17	2.21	18.17	1.10
0.25	0.80	6.25	2.72	12.25	2.18	18.25	1.09
0.33	0.80	6.33	2.84	12.33	2.15	18.33	1.08
0.42	0.81	6.42	2.97	12.42	2.11	18.42	1.07
0.50	0.82	6.50	3.11	12.50	2.08	18.50	1.07
0.58	0.83	6.58	3.28	12.58	2.05	18.58	1.06
0.67	0.83	6.67	3.46	12.67	2.02	18.67	1.06
0.75	0.84	6.75	3.66	12.75	2.00	18.75	1.05
0.83	0.85	6.83	3.90	12.83	1.97	18.83	1.04
0.92	0.86	6.92	4.18	12.92	1.94	18.92	1.04
1.00	0.87	7.00	4.50	13.00	1.92	19.00	1.03
1.08	0.87	7.08	4.89	13.08	1.89	19.08	1.02
1.17	0.88	7.17	5.35	13.17	1.87	19.17	1.02
1.25	0.89	7.25	5.94	13.25	1.84	19.25	1.01
1.33	0.90	7.33	6.69	13.33	1.82	19.33	1.01
1.42	0.91	7.42	7.69	13.42	1.80	19.42	1.00
1.50	0.92	7.50	9.10	13.50	1.78	19.50	0.99
1.58	0.93	7.58	11.25	13.58	1.76	19.58	0.99
1.67	0.94	7.67	14.96	13.67	1.74	19.67	0.98
1.75	0.95	7.75	22.92	13.75	1.72	19.75	0.98
1.83	0.96	7.83	53.04	13.83	1.70	19.83	0.97
1.92	0.97	7.92	173.04	13.92	1.68	19.92	0.97
2.00	0.98	8.00	68.49	14.00	1.66	20.00	0.96
2.08	0.99	8.08	37.67	14.08	1.64	20.08	0.96
2.17	1.00	8.17	25.98	14.17	1.62	20.17	0.95
2.25	1.01	8.25	19.92	14.25	1.61	20.25	0.95
2.33	1.03	8.33	16.22	14.33	1.59	20.33	0.94
2.42	1.04	8.42	13.73	14.42	1.57	20.42	0.94
2.50	1.05	8.50	11.94	14.50	1.56	20.50	0.93
2.58	1.06	8.58	10.59	14.58	1.54	20.58	0.93
2.67	1.08	8.67	9.54	14.67	1.53	20.67	0.92
2.75	1.09	8.75	8.69	14.75	1.51	20.75	0.92
2.83	1.11	8.83	7.99	14.83	1.50	20.83	0.91
2.92	1.12	8.92	7.41	14.92	1.48	20.92	0.91
3.00	1.13	9.00	6.91	15.00	1.47	21.00	0.90
3.08	1.15	9.08	6.48	15.08	1.46	21.08	0.90
3.17	1.17	9.17	6.11	15.17	1.44	21.17	0.89
3.25	1.18	9.25	5.78	15.25	1.43	21.25	0.89
3.33	1.20	9.33	5.49	15.33	1.42	21.33	0.89
3.42	1.22	9.42	5.23	15.42	1.40	21.42	0.88

3.50	1.24	9.50	5.00	15.50	1.39	21.50	0.88
3.58	1.25	9.58	4.79	15.58	1.38	21.58	0.87
3.67	1.27	9.67	4.59	15.67	1.37	21.67	0.87
3.75	1.29	9.75	4.42	15.75	1.36	21.75	0.86
3.83	1.32	9.83	4.26	15.83	1.34	21.83	0.86
3.92	1.34	9.92	4.11	15.92	1.33	21.92	0.86
4.00	1.36	10.00	3.97	16.00	1.32	22.00	0.85
4.08	1.38	10.08	3.84	16.08	1.31	22.08	0.85
4.17	1.41	10.17	3.72	16.17	1.30	22.17	0.84
4.25	1.43	10.25	3.61	16.25	1.29	22.25	0.84
4.33	1.46	10.33	3.51	16.33	1.28	22.33	0.84
4.42	1.49	10.42	3.41	16.42	1.27	22.42	0.83
4.50	1.52	10.50	3.32	16.50	1.26	22.50	0.83
4.58	1.55	10.58	3.24	16.58	1.25	22.58	0.83
4.67	1.58	10.67	3.16	16.67	1.24	22.67	0.82
4.75	1.61	10.75	3.08	16.75	1.23	22.75	0.82
4.83	1.65	10.83	3.01	16.83	1.22	22.83	0.81
4.92	1.69	10.92	2.94	16.92	1.21	22.92	0.81
5.00	1.72	11.00	2.87	17.00	1.21	23.00	0.81
5.08	1.76	11.08	2.81	17.08	1.20	23.08	0.80
5.17	1.81	11.17	2.75	17.17	1.19	23.17	0.80
5.25	1.85	11.25	2.70	17.25	1.18	23.25	0.80
5.33	1.90	11.33	2.64	17.33	1.17	23.33	0.79
5.42	1.95	11.42	2.59	17.42	1.16	23.42	0.79
5.50	2.01	11.50	2.54	17.50	1.16	23.50	0.79
5.58	2.07	11.58	2.50	17.58	1.15	23.58	0.78
5.67	2.13	11.67	2.45	17.67	1.14	23.67	0.78
5.75	2.19	11.75	2.41	17.75	1.13	23.75	0.78
5.83	2.27	11.83	2.37	17.83	1.12	23.83	0.77
5.92	2.34	11.92	2.33	17.92	1.12	23.92	0.77

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--------------------
| CALIB            |
| STANDHYD (  0002)|   Area    (ha)=   0.55
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.27         0.27
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      60.39        40.00
     Mannings n             =     0.013        0.250

     Max.Eff.Inten.(mm/hr)=     173.04        50.18
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       1.52 (ii)   10.82 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.33         0.09
```

```
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.13         0.02          0.136 (iii)
     TIME TO PEAK    (hrs)=       8.00         8.17          8.00
     RUNOFF VOLUME    (mm)=      82.16        36.49         59.32
     TOTAL RAINFALL   (mm)=      83.16        83.16         83.16
     RUNOFF COEFFICIENT   =       0.99         0.44          0.71

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  74.0    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.

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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2019)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\schhom\AppData\Local\Civica\VH5\330dbc01-652f-4134-9a76-fa0957765e60\146e
f6ce-1c2f-4072-b2b3-cee5022a1e51\scena
  Summary filename:
C:\Users\schhom\AppData\Local\Civica\VH5\330dbc01-652f-4134-9a76-fa0957765e60\146e
f6ce-1c2f-4072-b2b3-cee5022a1e51\scena


DATE: 02-06-2025                          TIME: 11:53:23

USER:
```

COMMENTS: _____

 ****
 ** SIMULATION : 2 Year 6 Hour AES (Bloor, TRC **
 ****

| READ STORM |
| Ptotal= 36.00 mm |

Filename: C:\Users\schhom\AppData\Local\Temp\78bc13fe-5945-44db-ab5c-f4dc9d3a7cf3\34aeef96
Comments: 2 Year 6 Hour AES (Bloor, TRCA)

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.00	1.75	12.24	3.50	5.04	5.25	0.72
0.25	0.72	2.00	12.24	3.75	2.88	5.50	0.72
0.50	0.72	2.25	33.12	4.00	2.88	5.75	0.72
0.75	0.72	2.50	33.12	4.25	1.44	6.00	0.72
1.00	0.72	2.75	9.36	4.50	1.44		
1.25	4.32	3.00	9.36	4.75	0.72		
1.50	4.32	3.25	5.04	5.00	0.72		

| CALIB |
| STANDHYD (0002) |
|ID= 1 DT= 5.0 min |

Area (ha)= 0.55
Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.27	0.27
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	60.39	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	4.32	3.250	9.36	4.83	0.72
0.167	0.00	1.750	4.32	3.333	5.04	4.92	0.72
0.250	0.00	1.833	12.24	3.417	5.04	5.00	0.72
0.333	0.72	1.917	12.24	3.500	5.04	5.08	0.72
0.417	0.72	2.000	12.24	3.583	5.04	5.17	0.72
0.500	0.72	2.083	12.24	3.667	5.04	5.25	0.72
0.583	0.72	2.167	12.24	3.750	5.04	5.33	0.72
0.667	0.72	2.250	12.24	3.833	2.88	5.42	0.72
0.750	0.72	2.333	33.12	3.917	2.88	5.50	0.72
0.833	0.72	2.417	33.12	4.000	2.88	5.58	0.72
0.917	0.72	2.500	33.12	4.083	2.88	5.67	0.72
1.000	0.72	2.583	33.12	4.167	2.88	5.75	0.72
1.083	0.72	2.667	33.12	4.250	2.88	5.83	0.72
1.167	0.72	2.750	33.12	4.333	1.44	5.92	0.72
1.250	0.72	2.833	9.36	4.417	1.44	6.00	0.72
1.333	4.32	2.917	9.36	4.500	1.44	6.08	0.72
1.417	4.32	3.000	9.36	4.583	1.44	6.17	0.72
1.500	4.32	3.083	9.36	4.667	1.44	6.25	0.72
1.583	4.32	3.167	9.36	4.750	1.44		

Max.Eff.Inten.(mm/hr)=		33.12	8.80	
over (min)		5.00	25.00	
Storage Coeff. (min)=		2.94 (ii)	21.60 (ii)	
Unit Hyd. Tpeak (min)=		5.00	25.00	
Unit Hyd. peak (cms)=		0.28	0.05	
				TOTALS
PEAK FLOW	(cms)=	0.03	0.00	0.028 (iii)
TIME TO PEAK	(hrs)=	2.75	3.00	2.75
RUNOFF VOLUME	(mm)=	35.00	7.99	21.47
TOTAL RAINFALL	(mm)=	36.00	36.00	36.00
RUNOFF COEFFICIENT	=	0.97	0.22	0.60

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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.

FINISH

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V V I SSSSS U U A L (v 6.2.2019)
V V I SS U U A A L

V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

OOO TTTTT TTTTT H H Y Y M M OOO TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
OOO T T H H Y M M OOO

***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

Output filename:
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Summary filename:
C:\Users\schhom\AppData\Local\Civica\VH5\330dbc01-652f-4134-9a76-fa0957765e60\128eb721-6ad2-4e11-b81c-b6560ddadcc2\scena

DATE: 02-06-2025 TIME: 11:53:23

USER:

COMMENTS: _____

 ****
 ** SIMULATION : City of Mississauga-2yr **
 ****

| CHICAGO STORM |
| Ptotal= 50.23 mm |

IDF curve parameters: A= 610.000
B= 4.600
C= 0.780
used in: INTENSITY = A / (t + B)^C

Duration of storm = 24.00 hrs
Storm time step = 5.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.47	6.00	1.47	12.00	1.38	18.00	0.67
0.08	0.47	6.08	1.52	12.08	1.36	18.08	0.67
0.17	0.48	6.17	1.58	12.17	1.34	18.17	0.66
0.25	0.48	6.25	1.64	12.25	1.32	18.25	0.66
0.33	0.49	6.33	1.71	12.33	1.30	18.33	0.65
0.42	0.49	6.42	1.79	12.42	1.28	18.42	0.65
0.50	0.49	6.50	1.88	12.50	1.26	18.50	0.65
0.58	0.50	6.58	1.98	12.58	1.24	18.58	0.64
0.67	0.50	6.67	2.09	12.67	1.22	18.67	0.64
0.75	0.51	6.75	2.21	12.75	1.21	18.75	0.63
0.83	0.51	6.83	2.36	12.83	1.19	18.83	0.63
0.92	0.52	6.92	2.52	12.92	1.17	18.92	0.63
1.00	0.52	7.00	2.72	13.00	1.16	19.00	0.62
1.08	0.53	7.08	2.95	13.08	1.14	19.08	0.62
1.17	0.53	7.17	3.23	13.17	1.13	19.17	0.61
1.25	0.54	7.25	3.59	13.25	1.11	19.25	0.61
1.33	0.54	7.33	4.04	13.33	1.10	19.33	0.61
1.42	0.55	7.42	4.65	13.42	1.09	19.42	0.60
1.50	0.55	7.50	5.50	13.50	1.07	19.50	0.60
1.58	0.56	7.58	6.80	13.58	1.06	19.58	0.60
1.67	0.57	7.67	9.03	13.67	1.05	19.67	0.59
1.75	0.57	7.75	13.85	13.75	1.04	19.75	0.59
1.83	0.58	7.83	32.04	13.83	1.02	19.83	0.59
1.92	0.59	7.92	104.51	13.92	1.01	19.92	0.58
2.00	0.59	8.00	41.36	14.00	1.00	20.00	0.58
2.08	0.60	8.08	22.75	14.08	0.99	20.08	0.58
2.17	0.61	8.17	15.69	14.17	0.98	20.17	0.57
2.25	0.61	8.25	12.03	14.25	0.97	20.25	0.57
2.33	0.62	8.33	9.80	14.33	0.96	20.33	0.57
2.42	0.63	8.42	8.29	14.42	0.95	20.42	0.57
2.50	0.63	8.50	7.21	14.50	0.94	20.50	0.56
2.58	0.64	8.58	6.40	14.58	0.93	20.58	0.56
2.67	0.65	8.67	5.76	14.67	0.92	20.67	0.56
2.75	0.66	8.75	5.25	14.75	0.91	20.75	0.55
2.83	0.67	8.83	4.83	14.83	0.90	20.83	0.55
2.92	0.68	8.92	4.47	14.92	0.90	20.92	0.55
3.00	0.69	9.00	4.17	15.00	0.89	21.00	0.55
3.08	0.69	9.08	3.92	15.08	0.88	21.08	0.54
3.17	0.70	9.17	3.69	15.17	0.87	21.17	0.54
3.25	0.71	9.25	3.49	15.25	0.86	21.25	0.54
3.33	0.72	9.33	3.32	15.33	0.86	21.33	0.53
3.42	0.74	9.42	3.16	15.42	0.85	21.42	0.53
3.50	0.75	9.50	3.02	15.50	0.84	21.50	0.53
3.58	0.76	9.58	2.89	15.58	0.83	21.58	0.53
3.67	0.77	9.67	2.77	15.67	0.83	21.67	0.52
3.75	0.78	9.75	2.67	15.75	0.82	21.75	0.52
3.83	0.79	9.83	2.57	15.83	0.81	21.83	0.52

3.92	0.81	9.92	2.48	15.92	0.81	21.92	0.52
4.00	0.82	10.00	2.40	16.00	0.80	22.00	0.51
4.08	0.84	10.08	2.32	16.08	0.79	22.08	0.51
4.17	0.85	10.17	2.25	16.17	0.79	22.17	0.51
4.25	0.87	10.25	2.18	16.25	0.78	22.25	0.51
4.33	0.88	10.33	2.12	16.33	0.77	22.33	0.51
4.42	0.90	10.42	2.06	16.42	0.77	22.42	0.50
4.50	0.92	10.50	2.01	16.50	0.76	22.50	0.50
4.58	0.94	10.58	1.95	16.58	0.76	22.58	0.50
4.67	0.95	10.67	1.91	16.67	0.75	22.67	0.50
4.75	0.97	10.75	1.86	16.75	0.74	22.75	0.49
4.83	1.00	10.83	1.82	16.83	0.74	22.83	0.49
4.92	1.02	10.92	1.77	16.92	0.73	22.92	0.49
5.00	1.04	11.00	1.74	17.00	0.73	23.00	0.49
5.08	1.07	11.08	1.70	17.08	0.72	23.08	0.49
5.17	1.09	11.17	1.66	17.17	0.72	23.17	0.48
5.25	1.12	11.25	1.63	17.25	0.71	23.25	0.48
5.33	1.15	11.33	1.60	17.33	0.71	23.33	0.48
5.42	1.18	11.42	1.57	17.42	0.70	23.42	0.48
5.50	1.21	11.50	1.54	17.50	0.70	23.50	0.48
5.58	1.25	11.58	1.51	17.58	0.69	23.58	0.47
5.67	1.29	11.67	1.48	17.67	0.69	23.67	0.47
5.75	1.33	11.75	1.45	17.75	0.68	23.75	0.47
5.83	1.37	11.83	1.43	17.83	0.68	23.83	0.47
5.92	1.41	11.92	1.40	17.92	0.67	23.92	0.47

CALIB STANDHYD (0002) ID= 1 DT= 5.0 min	Area (ha)= 0.55 Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.27	0.27	
Dep. Storage	(mm)=	1.00	5.00	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	60.39	40.00	
Mannings n	=	0.013	0.250	
Max.Eff.Inten.	(mm/hr)=	104.51	15.48	
over	(min)	5.00	20.00	
Storage Coeff.	(min)=	1.85 (ii)	16.74 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	20.00	
Unit Hyd. peak	(cms)=	0.32	0.06	
				TOTALS
PEAK FLOW	(cms)=	0.08	0.01	0.077 (iii)
TIME TO PEAK	(hrs)=	8.00	8.33	8.00
RUNOFF VOLUME	(mm)=	49.23	15.21	32.20
TOTAL RAINFALL	(mm)=	50.23	50.23	50.23

RUNOFF COEFFICIENT	=	0.98	0.30	0.64

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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.

Proposed Scenario

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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2019)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\schhom\AppData\Local\Civica\VH5\330dbc01-652f-4134-9a76-fa0957765e60\e7ed
f7cd-1648-4fba-98a6-2e99bab0aa0b\scena
  Summary filename:
C:\Users\schhom\AppData\Local\Civica\VH5\330dbc01-652f-4134-9a76-fa0957765e60\e7ed
f7cd-1648-4fba-98a6-2e99bab0aa0b\scena


DATE: 02-11-2025                          TIME: 03:53:01

USER:



COMMENTS: ________________________________________________________________


--------------------------------------------------------------------------------
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  ***********************************************
  ** SIMULATION : 10 Year 6 Hour AES (Bloor, TR **
  ***********************************************


--------------------
|    READ STORM    |    Filename: C:\Users\schhom\AppD
|                  |              ata\Local\Temp\
```

```
|                  |              b17e3307-dafe-44f0-bcd8-43a50c12cdea\9b4e3838
| Ptotal= 55.69 mm |    Comments: 10 Year 6 Hour AES (Bloor, TRCA)
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    0.00 |  1.75   18.94 |  3.50    7.80 |  5.25    1.11
                0.25    1.11 |  2.00   18.94 |  3.75    4.46 |  5.50    1.11
                0.50    1.11 |  2.25   51.24 |  4.00    4.46 |  5.75    1.11
                0.75    1.11 |  2.50   51.24 |  4.25    2.23 |  6.00    1.11
                1.00    1.11 |  2.75   14.48 |  4.50    2.23 |
                1.25    6.68 |  3.00   14.48 |  4.75    1.11 |
                1.50    6.68 |  3.25    7.80 |  5.00    1.11 |

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| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   0.55
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.54          0.01
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       1.00          2.00
     Length            (m)=      60.39         40.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    6.68 | 3.250   14.48 |  4.83    1.11
               0.167    0.00 | 1.750    6.68 | 3.333    7.80 |  4.92    1.11
               0.250    0.00 | 1.833   18.94 | 3.417    7.80 |  5.00    1.11
               0.333    1.11 | 1.917   18.94 | 3.500    7.80 |  5.08    1.11
               0.417    1.11 | 2.000   18.94 | 3.583    7.80 |  5.17    1.11
               0.500    1.11 | 2.083   18.94 | 3.667    7.80 |  5.25    1.11
               0.583    1.11 | 2.167   18.94 | 3.750    7.80 |  5.33    1.11
               0.667    1.11 | 2.250   18.94 | 3.833    4.46 |  5.42    1.11
               0.750    1.11 | 2.333   51.24 | 3.917    4.46 |  5.50    1.11
               0.833    1.11 | 2.417   51.24 | 4.000    4.46 |  5.58    1.11
               0.917    1.11 | 2.500   51.24 | 4.083    4.46 |  5.67    1.11
               1.000    1.11 | 2.583   51.24 | 4.167    4.46 |  5.75    1.11
               1.083    1.11 | 2.667   51.24 | 4.250    4.46 |  5.83    1.11
               1.167    1.11 | 2.750   51.24 | 4.333    2.23 |  5.92    1.11
               1.250    1.11 | 2.833   14.48 | 4.417    2.23 |  6.00    1.11
               1.333    6.68 | 2.917   14.48 | 4.500    2.23 |  6.08    1.11
               1.417    6.68 | 3.000   14.48 | 4.583    2.23 |  6.17    1.11
```

```
               1.500    6.68 | 3.083   14.48 | 4.667    2.23 |  6.25    1.11
               1.583    6.68 | 3.167   14.48 | 4.750    2.23 |

     Max.Eff.Inten.(mm/hr)=      51.24        22.63
               over (min)        5.00         5.00
     Storage Coeff.  (min)=      2.47 (ii)    3.93 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.30         0.24
                                                  *TOTALS*
     PEAK FLOW       (cms)=      0.08         0.00          0.077 (iii)
     TIME TO PEAK    (hrs)=      2.75         2.75          2.75
     RUNOFF VOLUME    (mm)=     54.69        18.36         54.32
     TOTAL RAINFALL   (mm)=     55.69        55.69         55.69
     RUNOFF COEFFICIENT   =      0.98         0.33          0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  74.0    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.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0013)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000      0.0000   |    0.0170      0.0156
                          0.0050      0.0026   |    0.0210      0.0182
                          0.0070      0.0052   |    0.0240      0.0208
                          0.0090      0.0078   |    0.0260      0.0234
                          0.0110      0.0104   |    0.0280      0.0260
                          0.0120      0.0130   |    0.0000      0.0000

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0003)     0.547     0.077      2.75      54.32
   OUTFLOW: ID= 1 (  0013)     0.547     0.020      3.25      54.10

                 PEAK   FLOW   REDUCTION [Qout/Qin](%)= 26.07
                 TIME SHIFT OF PEAK FLOW         (min)= 30.00
                 MAXIMUM  STORAGE   USED       (ha.m.)=  0.0177

--------------------------------------------------------------------------------
================================================================================
=========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2019)
```

```
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\schhom\AppData\Local\Civica\VH5\330dbc01-652f-4134-9a76-fa0957765e60\8243
8b98-cc40-4e58-a248-68b874116239\scena
  Summary filename:
C:\Users\schhom\AppData\Local\Civica\VH5\330dbc01-652f-4134-9a76-fa0957765e60\8243
8b98-cc40-4e58-a248-68b874116239\scena


DATE: 02-11-2025                          TIME: 03:53:02

USER:



COMMENTS: ________________________________________________________


--------------------------------------------------------------------------------
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  ***********************************************
  ** SIMULATION : 100 Year 6 Hour AES (Bloor, T **
  ***********************************************


--------------------
|    READ STORM    |    Filename: C:\Users\schhom\AppD
|                  |              ata\Local\Temp\
|                  |              b17e3307-dafe-44f0-bcd8-43a50c12cdea\da07dc61
| Ptotal= 80.31 mm |    Comments: 100 Year 6 Hour AES (Bloor, TRCA)
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
```

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	1.75	27.30	3.50	11.24	5.25	1.61
0.25	1.61	2.00	27.30	3.75	6.42	5.50	1.61
0.50	1.61	2.25	73.88	4.00	6.42	5.75	1.61
0.75	1.61	2.50	73.88	4.25	3.21	6.00	1.61
1.00	1.61	2.75	20.88	4.50	3.21		
1.25	9.64	3.00	20.88	4.75	1.61		
1.50	9.64	3.25	11.24	5.00	1.61		

CALIB			
STANDHYD (0003)	Area (ha)= 0.55		
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00	Dir. Conn.(%)= 99.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.54	0.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	60.39	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	9.64	3.250	20.88	4.83	1.61
0.167	0.00	1.750	9.64	3.333	11.24	4.92	1.61
0.250	0.00	1.833	27.30	3.417	11.24	5.00	1.61
0.333	1.61	1.917	27.30	3.500	11.24	5.08	1.61
0.417	1.61	2.000	27.30	3.583	11.24	5.17	1.61
0.500	1.61	2.083	27.30	3.667	11.24	5.25	1.61
0.583	1.61	2.167	27.30	3.750	11.24	5.33	1.61
0.667	1.61	2.250	27.30	3.833	6.42	5.42	1.61
0.750	1.61	2.333	73.88	3.917	6.42	5.50	1.61
0.833	1.61	2.417	73.88	4.000	6.42	5.58	1.61
0.917	1.61	2.500	73.88	4.083	6.42	5.67	1.61
1.000	1.61	2.583	73.88	4.167	6.42	5.75	1.61
1.083	1.61	2.667	73.88	4.250	6.42	5.83	1.61
1.167	1.61	2.750	73.88	4.333	3.21	5.92	1.61
1.250	1.61	2.833	20.88	4.417	3.21	6.00	1.61
1.333	9.64	2.917	20.88	4.500	3.21	6.08	1.61
1.417	9.64	3.000	20.88	4.583	3.21	6.17	1.61
1.500	9.64	3.083	20.88	4.667	3.21	6.25	1.61
1.583	9.64	3.167	20.88	4.750	3.21		

Max.Eff.Inten.(mm/hr)=	73.88	41.58	
over (min)	5.00	5.00	
Storage Coeff. (min)=	2.13 (ii)	3.40 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.31	0.26	
			TOTALS
PEAK FLOW (cms)=	0.11	0.00	0.112 (iii)
TIME TO PEAK (hrs)=	2.75	2.75	2.75
RUNOFF VOLUME (mm)=	79.31	34.47	78.86
TOTAL RAINFALL (mm)=	80.31	80.31	80.31
RUNOFF COEFFICIENT =	0.99	0.43	0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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.

RESERVOIR(0013)	OVERFLOW IS OFF				
IN= 2---> OUT= 1					
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)	
	0.0000	0.0000	0.0170	0.0156	
	0.0050	0.0026	0.0210	0.0182	
	0.0070	0.0052	0.0240	0.0208	
	0.0090	0.0078	0.0260	0.0234	
	0.0110	0.0104	0.0280	0.0260	
	0.0120	0.0130	0.0000	0.0000	

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0003)	0.547	0.112	2.75	78.86
OUTFLOW: ID= 1 (0013)	0.547	0.028	3.25	78.63

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.95
TIME SHIFT OF PEAK FLOW (min)= 30.00
MAXIMUM STORAGE USED (ha.m.)= 0.0259

FINISH

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V V I SSSSS U U A L (v 6.2.2019)
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

OOO TTTTT TTTTT H H Y Y M M OOO TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
OOO T T H H Y M M OOO

***** D E T A I L E D O U T P U T *****

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Output filename:
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Summary filename:
C:\Users\schhom\AppData\Local\Civica\VH5\330dbc01-652f-4134-9a76-fa0957765e60\7eee4ae0-3d3b-41ad-87da-939cce1e4293\scena

DATE: 02-11-2025 TIME: 03:53:01

USER:

COMMENTS: _____

****
** SIMULATION : 100yr **
****

CHICAGO STORM	IDF curve parameters: A=1450.000
Ptotal=119.37 mm	B= 4.900
	C= 0.780

used in: INTENSITY = A / (t + B)^C

Duration of storm = 24.00 hrs

Storm time step = 5.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	1.12	6.00	3.49	12.00	3.29	18.00	1.59
0.08	1.13	6.08	3.62	12.08	3.24	18.08	1.58
0.17	1.14	6.17	3.76	12.17	3.18	18.17	1.57
0.25	1.15	6.25	3.92	12.25	3.14	18.25	1.56
0.33	1.16	6.33	4.09	12.33	3.09	18.33	1.55
0.42	1.17	6.42	4.27	12.42	3.04	18.42	1.54
0.50	1.18	6.50	4.48	12.50	3.00	18.50	1.53
0.58	1.19	6.58	4.72	12.58	2.95	18.58	1.53
0.67	1.20	6.67	4.98	12.67	2.91	18.67	1.52
0.75	1.21	6.75	5.28	12.75	2.87	18.75	1.51
0.83	1.22	6.83	5.62	12.83	2.83	18.83	1.50
0.92	1.23	6.92	6.02	12.92	2.79	18.92	1.49
1.00	1.24	7.00	6.49	13.00	2.76	19.00	1.48
1.08	1.26	7.08	7.05	13.08	2.72	19.08	1.47
1.17	1.27	7.17	7.72	13.17	2.69	19.17	1.46
1.25	1.28	7.25	8.57	13.25	2.65	19.25	1.45
1.33	1.29	7.33	9.66	13.33	2.62	19.33	1.45
1.42	1.31	7.42	11.12	13.42	2.59	19.42	1.44
1.50	1.32	7.50	13.17	13.50	2.56	19.50	1.43
1.58	1.33	7.58	16.30	13.58	2.53	19.58	1.42
1.67	1.35	7.67	21.69	13.67	2.50	19.67	1.41
1.75	1.36	7.75	33.28	13.75	2.47	19.75	1.40
1.83	1.38	7.83	76.62	13.83	2.44	19.83	1.40
1.92	1.39	7.92	242.53	13.92	2.41	19.92	1.39
2.00	1.41	8.00	98.69	14.00	2.39	20.00	1.38
2.08	1.42	8.08	54.64	14.08	2.36	20.08	1.37
2.17	1.44	8.17	37.73	14.17	2.33	20.17	1.37
2.25	1.46	8.25	28.91	14.25	2.31	20.25	1.36
2.33	1.47	8.33	23.53	14.33	2.29	20.33	1.35
2.42	1.49	8.42	19.90	14.42	2.26	20.42	1.35
2.50	1.51	8.50	17.30	14.50	2.24	20.50	1.34
2.58	1.53	8.58	15.34	14.58	2.22	20.58	1.33
2.67	1.55	8.67	13.80	14.67	2.20	20.67	1.32
2.75	1.57	8.75	12.57	14.75	2.17	20.75	1.32
2.83	1.59	8.83	11.55	14.83	2.15	20.83	1.31
2.92	1.61	8.92	10.71	14.92	2.13	20.92	1.30
3.00	1.63	9.00	9.98	15.00	2.11	21.00	1.30
3.08	1.65	9.08	9.36	15.08	2.09	21.08	1.29
3.17	1.68	9.17	8.82	15.17	2.07	21.17	1.28
3.25	1.70	9.25	8.35	15.25	2.05	21.25	1.28
3.33	1.72	9.33	7.92	15.33	2.04	21.33	1.27
3.42	1.75	9.42	7.55	15.42	2.02	21.42	1.27
3.50	1.78	9.50	7.21	15.50	2.00	21.50	1.26
3.58	1.80	9.58	6.90	15.58	1.98	21.58	1.25
3.67	1.83	9.67	6.62	15.67	1.97	21.67	1.25

3.75	1.86	9.75	6.37	15.75	1.95	21.75	1.24
3.83	1.89	9.83	6.13	15.83	1.93	21.83	1.24
3.92	1.92	9.92	5.92	15.92	1.92	21.92	1.23
4.00	1.96	10.00	5.72	16.00	1.90	22.00	1.22
4.08	1.99	10.08	5.54	16.08	1.89	22.08	1.22
4.17	2.02	10.17	5.37	16.17	1.87	22.17	1.21
4.25	2.06	10.25	5.21	16.25	1.86	22.25	1.21
4.33	2.10	10.33	5.06	16.33	1.84	22.33	1.20
4.42	2.14	10.42	4.92	16.42	1.83	22.42	1.20
4.50	2.18	10.50	4.78	16.50	1.81	22.50	1.19
4.58	2.23	10.58	4.66	16.58	1.80	22.58	1.19
4.67	2.27	10.67	4.54	16.67	1.79	22.67	1.18
4.75	2.32	10.75	4.43	16.75	1.77	22.75	1.18
4.83	2.37	10.83	4.33	16.83	1.76	22.83	1.17
4.92	2.42	10.92	4.23	16.92	1.75	22.92	1.16
5.00	2.48	11.00	4.14	17.00	1.73	23.00	1.16
5.08	2.54	11.08	4.05	17.08	1.72	23.08	1.15
5.17	2.60	11.17	3.96	17.17	1.71	23.17	1.15
5.25	2.67	11.25	3.88	17.25	1.70	23.25	1.14
5.33	2.74	11.33	3.80	17.33	1.68	23.33	1.14
5.42	2.81	11.42	3.73	17.42	1.67	23.42	1.14
5.50	2.89	11.50	3.66	17.50	1.66	23.50	1.13
5.58	2.97	11.58	3.59	17.58	1.65	23.58	1.13
5.67	3.06	11.67	3.53	17.67	1.64	23.67	1.12
5.75	3.16	11.75	3.46	17.75	1.63	23.75	1.12
5.83	3.26	11.83	3.40	17.83	1.62	23.83	1.11
5.92	3.37	11.92	3.35	17.92	1.61	23.92	1.11

CALIB					
STANDHYD (0003)	Area (ha)= 0.55				
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00	Dir. Conn.(%)= 99.00			

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.54	0.01	
Dep. Storage	(mm)=	1.00	5.00	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	60.39	40.00	
Mannings n	=	0.013	0.250	
Max.Eff.Inten.(mm/hr)=		242.53	91.02	
over (min)		5.00	5.00	
Storage Coeff. (min)=		1.32 (ii)	2.11 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.33	0.31	
				TOTALS
PEAK FLOW	(cms)=	0.36	0.00	0.361 (iii)
TIME TO PEAK	(hrs)=	8.00	8.00	8.00
RUNOFF VOLUME	(mm)=	118.37	64.24	117.83
TOTAL RAINFALL	(mm)=	119.37	119.37	119.37
RUNOFF COEFFICIENT	=	0.99	0.54	0.99

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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.

RESERVOIR(0013)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0170	0.0156
	0.0050	0.0026	0.0210	0.0182
	0.0070	0.0052	0.0240	0.0208
	0.0090	0.0078	0.0260	0.0234
	0.0110	0.0104	0.0280	0.0260
	0.0120	0.0130	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0003)	0.547	0.361	8.00	117.83
OUTFLOW: ID= 1 (0013)	0.547	0.029	8.50	117.60

PEAK FLOW REDUCTION [Qout/Qin](%)= 8.10
TIME SHIFT OF PEAK FLOW (min)= 30.00
MAXIMUM STORAGE USED (ha.m.)= 0.0276

V V I SSSSS U U A L (v 6.2.2019)
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

OOO TTTTT TTTTT H H Y Y M M OOO TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
OOO T T H H Y M M OOO

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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

Output filename:
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DATE: 02-11-2025 TIME: 03:53:01

USER:

COMMENTS: _____

** SIMULATION : 2 Year 6 Hour AES (Bloor, TRC **

READ STORM	Filename: C:\Users\schhom\AppData\Local\Temp\b17e3307-dafe-44f0-bcd8-43a50c12cdea\34aeef96
Ptotal= 36.00 mm	Comments: 2 Year 6 Hour AES (Bloor, TRCA)

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.00	1.75	12.24	3.50	5.04	5.25	0.72
0.25	0.72	2.00	12.24	3.75	2.88	5.50	0.72
0.50	0.72	2.25	33.12	4.00	2.88	5.75	0.72
0.75	0.72	2.50	33.12	4.25	1.44	6.00	0.72
1.00	0.72	2.75	9.36	4.50	1.44		
1.25	4.32	3.00	9.36	4.75	0.72		
1.50	4.32	3.25	5.04	5.00	0.72		

CALIB					
STANDHYD (0003)	Area (ha)= 0.55				
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00	Dir. Conn.(%)= 99.00			

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.54	0.01
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	60.39	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	4.32	3.250	9.36	4.83	0.72
0.167	0.00	1.750	4.32	3.333	5.04	4.92	0.72
0.250	0.00	1.833	12.24	3.417	5.04	5.00	0.72
0.333	0.72	1.917	12.24	3.500	5.04	5.08	0.72
0.417	0.72	2.000	12.24	3.583	5.04	5.17	0.72
0.500	0.72	2.083	12.24	3.667	5.04	5.25	0.72
0.583	0.72	2.167	12.24	3.750	5.04	5.33	0.72
0.667	0.72	2.250	12.24	3.833	2.88	5.42	0.72
0.750	0.72	2.333	33.12	3.917	2.88	5.50	0.72
0.833	0.72	2.417	33.12	4.000	2.88	5.58	0.72
0.917	0.72	2.500	33.12	4.083	2.88	5.67	0.72
1.000	0.72	2.583	33.12	4.167	2.88	5.75	0.72
1.083	0.72	2.667	33.12	4.250	2.88	5.83	0.72
1.167	0.72	2.750	33.12	4.333	1.44	5.92	0.72
1.250	0.72	2.833	9.36	4.417	1.44	6.00	0.72
1.333	4.32	2.917	9.36	4.500	1.44	6.08	0.72
1.417	4.32	3.000	9.36	4.583	1.44	6.17	0.72
1.500	4.32	3.083	9.36	4.667	1.44	6.25	0.72
1.583	4.32	3.167	9.36	4.750	1.44		

Max.Eff.Inten.(mm/hr)=		33.12	10.08	
over (min)		5.00	5.00	
Storage Coeff. (min)=		2.94 (ii)	4.68 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.28	0.22	
				TOTALS
PEAK FLOW	(cms)=	0.05	0.00	0.050 (iii)
TIME TO PEAK	(hrs)=	2.75	2.75	2.75
RUNOFF VOLUME	(mm)=	35.00	7.99	34.73
TOTAL RAINFALL	(mm)=	36.00	36.00	36.00
RUNOFF COEFFICIENT	=	0.97	0.22	0.96

```
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  74.0    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.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0013)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000      0.0000   |    0.0170      0.0156
                           0.0050      0.0026   |    0.0210      0.0182
                           0.0070      0.0052   |    0.0240      0.0208
                           0.0090      0.0078   |    0.0260      0.0234
                           0.0110      0.0104   |    0.0280      0.0260
                           0.0120      0.0130   |    0.0000      0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0003)      0.547     0.050      2.75      34.73
   OUTFLOW: ID= 1 (  0013)      0.547     0.011      3.33      34.49

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 22.74
                    TIME SHIFT OF PEAK FLOW         (min)= 35.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=  0.0114

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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2019)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                    *****  D E T A I L E D   O U T P U T *****
```

```
  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\schhom\AppData\Local\Civica\VH5\330dbc01-652f-4134-9a76-fa0957765e60\8918
98e9-38bd-4034-b2a6-1ebe59c41978\scena
  Summary filename:
C:\Users\schhom\AppData\Local\Civica\VH5\330dbc01-652f-4134-9a76-fa0957765e60\8918
98e9-38bd-4034-b2a6-1ebe59c41978\scena


DATE: 02-11-2025                          TIME: 03:53:01

USER:



COMMENTS: _____________________________________________________

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  ************************************************
 ** SIMULATION : 25 Year 6 Hour AES (Bloor, TR **
  ************************************************


--------------------
|    READ STORM    |    Filename: C:\Users\schhom\AppD
|                  |              ata\Local\Temp\
|                  |              b17e3307-dafe-44f0-bcd8-43a50c12cdea\9e9d990f
| Ptotal= 65.59 mm |    Comments: 25 Year 6 Hour AES (Bloor, TRCA)
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs  mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    0.00 |  1.75   22.30 |  3.50    9.18 |  5.25    1.31
                0.25    1.31 |  2.00   22.30 |  3.75    5.25 |  5.50    1.31
                0.50    1.31 |  2.25   60.35 |  4.00    5.25 |  5.75    1.31
                0.75    1.31 |  2.50   60.35 |  4.25    2.62 |  6.00    1.31
                1.00    1.31 |  2.75   17.06 |  4.50    2.62 |
                1.25    7.87 |  3.00   17.06 |  4.75    1.31 |
                1.50    7.87 |  3.25    9.18 |  5.00    1.31 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   0.55
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
```

```
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.54         0.01
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      60.39        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs  mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    7.87 | 3.250   17.06 |  4.83    1.31
               0.167    0.00 | 1.750    7.87 | 3.333    9.18 |  4.92    1.31
               0.250    0.00 | 1.833   22.30 | 3.417    9.18 |  5.00    1.31
               0.333    1.31 | 1.917   22.30 | 3.500    9.18 |  5.08    1.31
               0.417    1.31 | 2.000   22.30 | 3.583    9.18 |  5.17    1.31
               0.500    1.31 | 2.083   22.30 | 3.667    9.18 |  5.25    1.31
               0.583    1.31 | 2.167   22.30 | 3.750    9.18 |  5.33    1.31
               0.667    1.31 | 2.250   22.30 | 3.833    5.25 |  5.42    1.31
               0.750    1.31 | 2.333   60.35 | 3.917    5.25 |  5.50    1.31
               0.833    1.31 | 2.417   60.35 | 4.000    5.25 |  5.58    1.31
               0.917    1.31 | 2.500   60.35 | 4.083    5.25 |  5.67    1.31
               1.000    1.31 | 2.583   60.35 | 4.167    5.25 |  5.75    1.31
               1.083    1.31 | 2.667   60.35 | 4.250    5.25 |  5.83    1.31
               1.167    1.31 | 2.750   60.35 | 4.333    2.62 |  5.92    1.31
               1.250    1.31 | 2.833   17.06 | 4.417    2.62 |  6.00    1.31
               1.333    7.87 | 2.917   17.06 | 4.500    2.62 |  6.08    1.31
               1.417    7.87 | 3.000   17.06 | 4.583    2.62 |  6.17    1.31
               1.500    7.87 | 3.083   17.06 | 4.667    2.62 |  6.25    1.31
               1.583    7.87 | 3.167   17.06 | 4.750    2.62 |

     Max.Eff.Inten.(mm/hr)=      60.35        29.92
                 over (min)        5.00         5.00
     Storage Coeff.  (min)=       2.31 (ii)    3.68 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.30         0.25
                                                    *TOTALS*
     PEAK FLOW       (cms)=       0.09         0.00          0.091 (iii)
     TIME TO PEAK    (hrs)=       2.75         2.75           2.75
     RUNOFF VOLUME    (mm)=      64.59        24.50          64.19
     TOTAL RAINFALL   (mm)=      65.59        65.59          65.59
     RUNOFF COEFFICIENT   =       0.98         0.37           0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  74.0    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.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0013)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                           0.0000      0.0000   |    0.0170      0.0156
                           0.0050      0.0026   |    0.0210      0.0182
                           0.0070      0.0052   |    0.0240      0.0208
                           0.0090      0.0078   |    0.0260      0.0234
                           0.0110      0.0104   |    0.0280      0.0260
                           0.0120      0.0130   |    0.0000      0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0003)      0.547     0.091      2.75      64.19
   OUTFLOW: ID= 1 (  0013)      0.547     0.024      3.25      63.95

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 26.32
                    TIME SHIFT OF PEAK FLOW         (min)= 30.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=  0.0208

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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2019)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                    *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
```

```
  Output  filename:
C:\Users\schhom\AppData\Local\Civica\VH5\330dbc01-652f-4134-9a76-fa0957765e60\a362
6de3-a4b5-416f-aef4-4f8210978d33\scena
  Summary filename:
C:\Users\schhom\AppData\Local\Civica\VH5\330dbc01-652f-4134-9a76-fa0957765e60\a362
6de3-a4b5-416f-aef4-4f8210978d33\scena


DATE: 02-11-2025                          TIME: 03:53:01

USER:



COMMENTS: _____________________________________________________


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  ************************************************
 ** SIMULATION : 5 Year 6 Hour AES (Bloor, TRC **
  ************************************************


--------------------
|    READ STORM    |    Filename: C:\Users\schhom\AppD
|                  |              ata\Local\Temp\
|                  |              b17e3307-dafe-44f0-bcd8-43a50c12cdea\f240a638
| Ptotal= 47.81 mm |    Comments: 5 Year 6 Hour AES (Bloor, TRCA)
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.00    0.00 |  1.75   16.25 |  3.50    6.69 |  5.25    0.96
               0.25    0.96 |  2.00   16.25 |  3.75    3.82 |  5.50    0.96
               0.50    0.96 |  2.25   43.98 |  4.00    3.82 |  5.75    0.96
               0.75    0.96 |  2.50   43.98 |  4.25    1.91 |  6.00    0.96
               1.00    0.96 |  2.75   12.43 |  4.50    1.91 |
               1.25    5.74 |  3.00   12.43 |  4.75    0.96 |
               1.50    5.74 |  3.25    6.69 |  5.00    0.96 |

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--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   0.55
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.54         0.01
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope    (%)=       1.00         2.00
     Length           (m)=      60.39        40.00
     Mannings n            =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                                ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    0.00 | 1.667    5.74 | 3.250   12.43 |  4.83    0.96
                 0.167    0.00 | 1.750    5.74 | 3.333    6.69 |  4.92    0.96
                 0.250    0.00 | 1.833   16.25 | 3.417    6.69 |  5.00    0.96
                 0.333    0.96 | 1.917   16.25 | 3.500    6.69 |  5.08    0.96
                 0.417    0.96 | 2.000   16.25 | 3.583    6.69 |  5.17    0.96
                 0.500    0.96 | 2.083   16.25 | 3.667    6.69 |  5.25    0.96
                 0.583    0.96 | 2.167   16.25 | 3.750    6.69 |  5.33    0.96
                 0.667    0.96 | 2.250   16.25 | 3.833    3.82 |  5.42    0.96
                 0.750    0.96 | 2.333   43.98 | 3.917    3.82 |  5.50    0.96
                 0.833    0.96 | 2.417   43.98 | 4.000    3.82 |  5.58    0.96
                 0.917    0.96 | 2.500   43.98 | 4.083    3.82 |  5.67    0.96
                 1.000    0.96 | 2.583   43.98 | 4.167    3.82 |  5.75    0.96
                 1.083    0.96 | 2.667   43.98 | 4.250    3.82 |  5.83    0.96
                 1.167    0.96 | 2.750   43.98 | 4.333    1.91 |  5.92    0.96
                 1.250    0.96 | 2.833   12.43 | 4.417    1.91 |  6.00    0.96
                 1.333    5.74 | 2.917   12.43 | 4.500    1.91 |  6.08    0.96
                 1.417    5.74 | 3.000   12.43 | 4.583    1.91 |  6.17    0.96
                 1.500    5.74 | 3.083   12.43 | 4.667    1.91 |  6.25    0.96
                 1.583    5.74 | 3.167   12.43 | 4.750    1.91 |

     Max.Eff.Inten.(mm/hr)=      43.98        17.25
               over (min)        5.00         5.00
     Storage Coeff.  (min)=      2.62 (ii)    4.18 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.29         0.24
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.07         0.00         0.066 (iii)
     TIME TO PEAK    (hrs)=      2.75         2.75          2.75
     RUNOFF VOLUME    (mm)=     46.81        13.88         46.48
     TOTAL RAINFALL   (mm)=     47.81        47.81         47.81
     RUNOFF COEFFICIENT   =      0.98         0.29          0.97

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  74.0    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.


--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0013)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000      0.0000   |    0.0170      0.0156
                          0.0050      0.0026   |    0.0210      0.0182
                          0.0070      0.0052   |    0.0240      0.0208
                          0.0090      0.0078   |    0.0260      0.0234
                          0.0110      0.0104   |    0.0280      0.0260
                          0.0120      0.0130   |    0.0000      0.0000

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0003)     0.547     0.066      2.75      46.48
   OUTFLOW: ID= 1 (  0013)     0.547     0.016      3.25      46.25

                 PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.67
                 TIME SHIFT OF PEAK FLOW         (min)= 30.00
                 MAXIMUM  STORAGE   USED       (ha.m.)=  0.0153

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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2019)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\schhom\AppData\Local\Civica\VH5\330dbc01-652f-4134-9a76-fa0957765e60\40c2
a8c1-6f2f-46e0-9215-3679aab155cc\scena
  Summary filename:
C:\Users\schhom\AppData\Local\Civica\VH5\330dbc01-652f-4134-9a76-fa0957765e60\40c2
a8c1-6f2f-46e0-9215-3679aab155cc\scena


DATE: 02-11-2025                          TIME: 03:53:01

USER:



COMMENTS: _____________________________________________________


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  ************************************************
 ** SIMULATION : 50 Year 6 Hour AES (Bloor, TR **
  ************************************************


--------------------
|    READ STORM    |    Filename: C:\Users\schhom\AppD
|                  |              ata\Local\Temp\
|                  |              b17e3307-dafe-44f0-bcd8-43a50c12cdea\3c63aeaf
| Ptotal= 73.00 mm |    Comments: 50 Year 6 Hour AES (Bloor, TRCA)
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.00    0.00 |  1.75   24.82 |  3.50   10.22 |  5.25    1.46
               0.25    1.46 |  2.00   24.82 |  3.75    5.84 |  5.50    1.46
               0.50    1.46 |  2.25   67.16 |  4.00    5.84 |  5.75    1.46
               0.75    1.46 |  2.50   67.16 |  4.25    2.92 |  6.00    1.46
               1.00    1.46 |  2.75   18.98 |  4.50    2.92 |
               1.25    8.76 |  3.00   18.98 |  4.75    1.46 |
               1.50    8.76 |  3.25   10.22 |  5.00    1.46 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   0.55
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.54         0.01
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope    (%)=       1.00         2.00
     Length           (m)=      60.39        40.00
     Mannings n            =     0.013        0.250
```

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	1.667	8.76	3.250	18.98	4.83	1.46
0.167	0.00	1.750	8.76	3.333	10.22	4.92	1.46
0.250	0.00	1.833	24.82	3.417	10.22	5.00	1.46
0.333	1.46	1.917	24.82	3.500	10.22	5.08	1.46
0.417	1.46	2.000	24.82	3.583	10.22	5.17	1.46
0.500	1.46	2.083	24.82	3.667	10.22	5.25	1.46
0.583	1.46	2.167	24.82	3.750	10.22	5.33	1.46
0.667	1.46	2.250	24.82	3.833	5.84	5.42	1.46
0.750	1.46	2.333	67.16	3.917	5.84	5.50	1.46
0.833	1.46	2.417	67.16	4.000	5.84	5.58	1.46
0.917	1.46	2.500	67.16	4.083	5.84	5.67	1.46
1.000	1.46	2.583	67.16	4.167	5.84	5.75	1.46
1.083	1.46	2.667	67.16	4.250	5.84	5.83	1.46
1.167	1.46	2.750	67.16	4.333	2.92	5.92	1.46
1.250	1.46	2.833	18.98	4.417	2.92	6.00	1.46
1.333	8.76	2.917	18.98	4.500	2.92	6.08	1.46
1.417	8.76	3.000	18.98	4.583	2.92	6.17	1.46
1.500	8.76	3.083	18.98	4.667	2.92	6.25	1.46
1.583	8.76	3.167	18.98	4.750	2.92		

Max.Eff.Inten.(mm/hr)=	67.16	35.68	
over (min)	5.00	5.00	
Storage Coeff. (min)=	2.21 (ii)	3.53 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.30	0.26	
			TOTALS
PEAK FLOW (cms)=	0.10	0.00	0.102 (iii)
TIME TO PEAK (hrs)=	2.75	2.75	2.75
RUNOFF VOLUME (mm)=	72.00	29.41	71.57
TOTAL RAINFALL (mm)=	73.00	73.00	73.00
RUNOFF COEFFICIENT =	0.99	0.40	0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 74.0 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.

RESERVOIR(0013)| IN= 2---> OUT= 1	OVERFLOW IS OFF

DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0170	0.0156
	0.0050	0.0026	0.0210	0.0182
	0.0070	0.0052	0.0240	0.0208
	0.0090	0.0078	0.0260	0.0234
	0.0110	0.0104	0.0280	0.0260
	0.0120	0.0130	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0003)	0.547	0.102	2.75	71.57
OUTFLOW: ID= 1 (0013)	0.547	0.026	3.25	71.35

PEAK FLOW REDUCTION [Qout/Qin](%)= 25.55
TIME SHIFT OF PEAK FLOW (min)= 30.00
MAXIMUM STORAGE USED (ha.m.)= 0.0234

Stormceptor®

Rinker MATERIALS™

Stormceptor® EF Sizing Report

Imbrium® Systems
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

02/12/2025

Province:	Ontario
City:	Mississauga
Nearest Rainfall Station:	TORONTO INTL AP
Climate Station Id:	6158731
Years of Rainfall Data:	20

Site Name:	1315 Silver Spear

Drainage Area (ha):	0.55
% Imperviousness:	99.00

Runoff Coefficient 'c': 0.89

Particle Size Distribution:	Fine
Target TSS Removal (%):	80.0

Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	15.29
Oil / Fuel Spill Risk Site?	No
Upstream Flow Control?	No
Peak Conveyance (maximum) Flow Rate (L/s):	
Influent TSS Concentration (mg/L):	200
Estimated Average Annual Sediment Load (kg/yr):	568
Estimated Average Annual Sediment Volume (L/yr):	462

Project Name:	Silver Spear
Project Number:	66905
Designer Name:	Shania Chhom
Designer Company:	Urbantech
Designer Email:	schhom@urbantech.com
Designer Phone:	905-829-6911
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EF4	85
EF5	89
EF6	92
EF8	96
EF10	98
EF12	99

Recommended Stormceptor EF Model: EF4

Estimated Net Annual Sediment (TSS) Load Reduction (%): 85

Water Quality Runoff Volume Capture (%): > 90

imbrium

THIRD-PARTY TESTING AND VERIFICATION

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

PERFORMANCE

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

PARTICLE SIZE DISTRIBUTION (PSD)

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

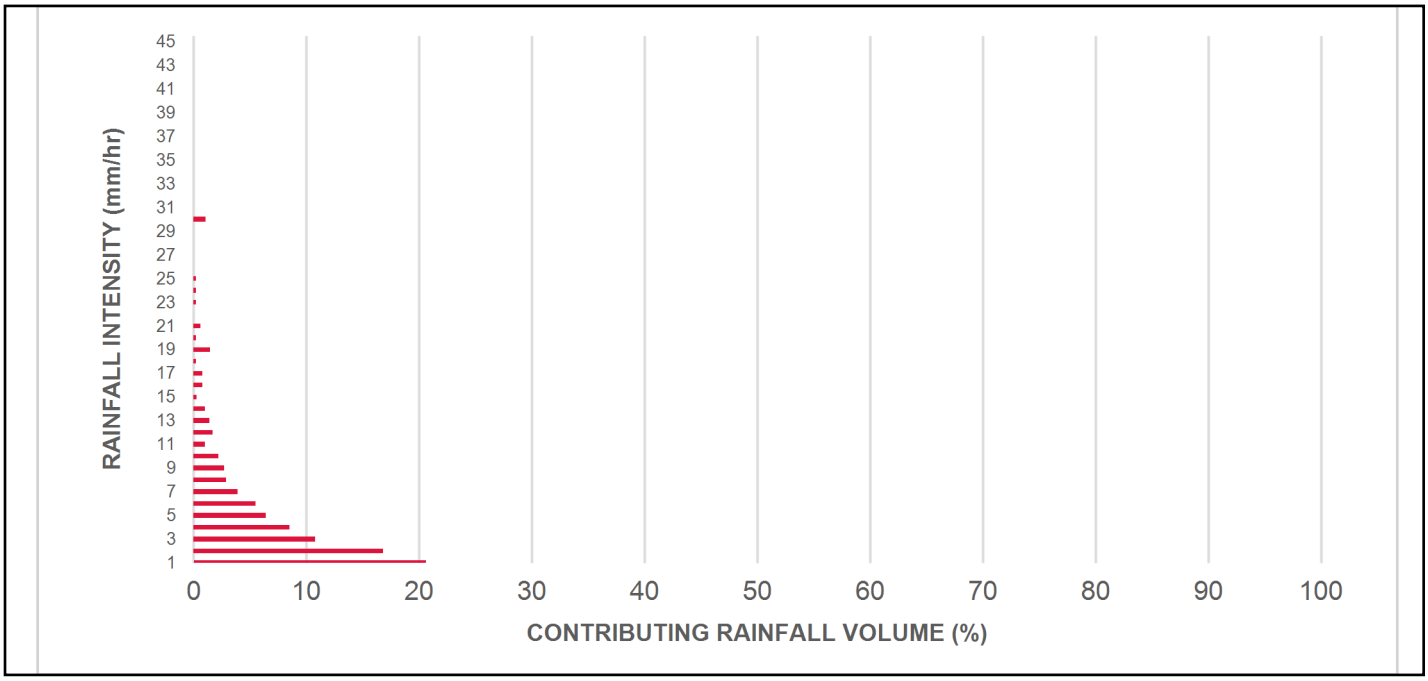
Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

Stormceptor® EF Sizing Report

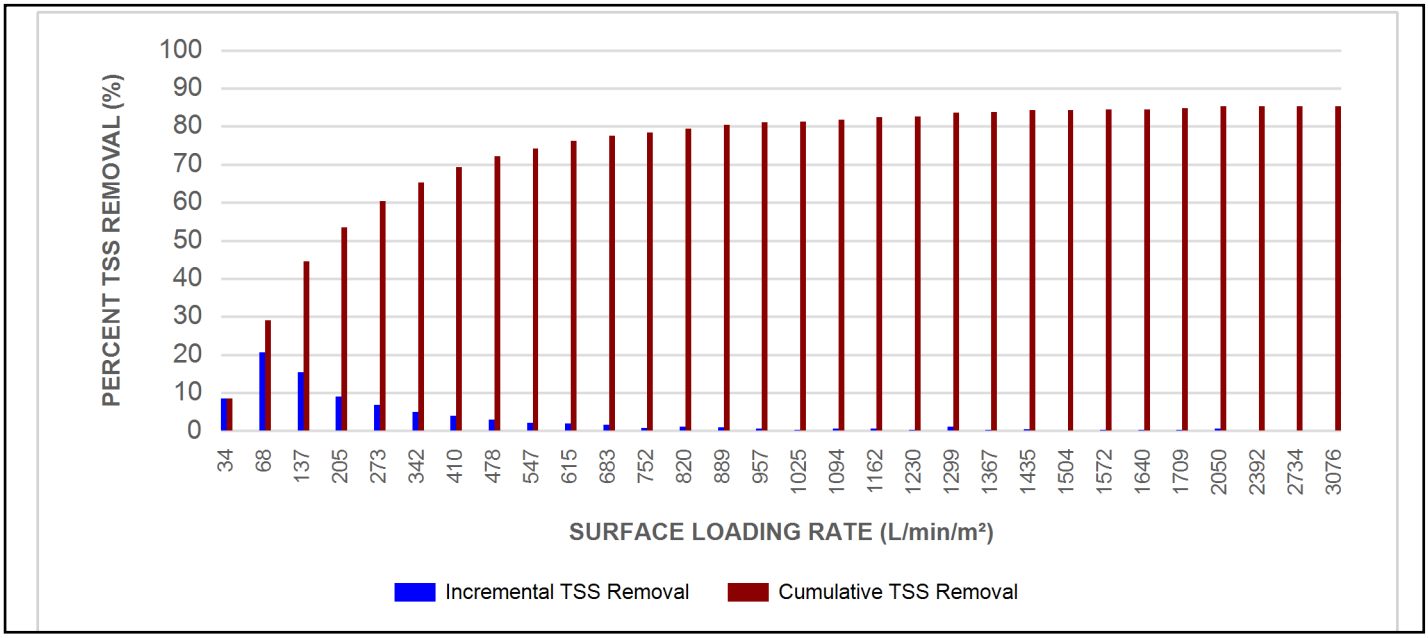
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.50	8.5	8.5	0.68	41.0	34.0	100	8.5	8.5
1.00	20.6	29.1	1.37	82.0	68.0	100	20.6	29.1
2.00	16.8	45.9	2.73	164.0	137.0	92	15.5	44.6
3.00	10.8	56.7	4.10	246.0	205.0	83	8.9	53.5
4.00	8.5	65.2	5.47	328.0	273.0	80	6.7	60.3
5.00	6.4	71.6	6.83	410.0	342.0	77	4.9	65.2
6.00	5.5	77.0	8.20	492.0	410.0	74	4.0	69.2
7.00	3.9	81.0	9.57	574.0	478.0	73	2.9	72.1
8.00	2.9	83.9	10.94	656.0	547.0	72	2.1	74.2
9.00	2.7	86.5	12.30	738.0	615.0	71	1.9	76.1
10.00	2.2	88.7	13.67	820.0	683.0	70	1.5	77.6
11.00	1.0	89.7	15.04	902.0	752.0	70	0.7	78.3
12.00	1.7	91.3	16.40	984.0	820.0	69	1.1	79.4
13.00	1.4	92.8	17.77	1066.0	889.0	69	1.0	80.4
14.00	1.0	93.7	19.14	1148.0	957.0	68	0.7	81.0
15.00	0.3	94.0	20.50	1230.0	1025.0	68	0.2	81.3
16.00	0.8	94.8	21.87	1312.0	1094.0	69	0.5	81.8
17.00	0.8	95.7	23.24	1394.0	1162.0	71	0.6	82.4
18.00	0.2	95.8	24.60	1476.0	1230.0	72	0.1	82.5
19.00	1.5	97.3	25.97	1558.0	1299.0	73	1.1	83.6
20.00	0.2	97.5	27.34	1640.0	1367.0	75	0.1	83.8
21.00	0.6	98.2	28.71	1722.0	1435.0	74	0.5	84.2
22.00	0.0	98.2	30.07	1804.0	1504.0	70	0.0	84.2
23.00	0.2	98.4	31.44	1886.0	1572.0	67	0.2	84.4
24.00	0.2	98.6	32.81	1968.0	1640.0	64	0.2	84.5
25.00	0.2	98.9	34.17	2050.0	1709.0	62	0.2	84.7
30.00	1.1	100.0	41.01	2460.0	2050.0	51	0.6	85.3
35.00	0.0	100.0	47.84	2871.0	2392.0	44	0.0	85.3
40.00	0.0	100.0	54.68	3281.0	2734.0	39	0.0	85.3
45.00	0.0	100.0	61.51	3691.0	3076.0	35	0.0	85.3
Estimated Net Annual Sediment (TSS) Load Reduction =								**85 %**

Climate Station ID: 6158731 *Years of Rainfall Data*: 20

RAINFALL DATA FROM TORONTO INTL AP RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF5 / EFO5	1.5	5	90	762	30	762	30	710	25
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

SCOUR PREVENTION AND ONLINE CONFIGURATION

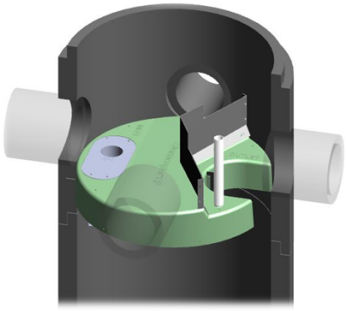
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test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

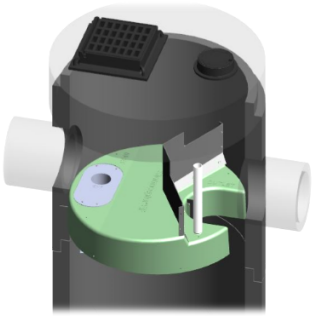
DESIGN FLEXIBILITY

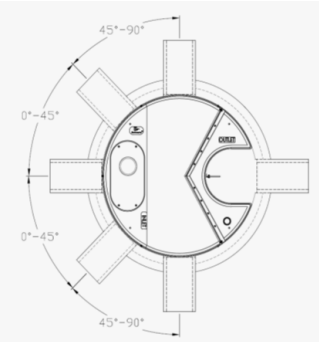
►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend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

OIL CAPTURE AND RETENTION

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







INLET-TO-OUTLET DROP

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.

0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.

45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

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

Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft^3)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF5 / EFO5	1.5	5	1.62	5.3	420	111	305	10	2124	75	2612	5758
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

*Increased sump depth may be added to increase sediment storage capacity

** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft^3)

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

STANDARD STORMCEPTOR EF/EFO DRAWINGS

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

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

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

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

PART 1 – GENERAL

1.1 WORK INCLUDED

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

1.2 REFERENCE STANDARDS & PROCEDURES

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

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

1.3 SUBMITTALS

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

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

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

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

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

2.1.1	4 ft (1219 mm) Diameter OGS Units:	1.19 m^3 sediment / 265 L oil
	5 ft (1524 mm) Diameter OGS Units:	1.95 m^3 sediment / 420L oil
	6 ft (1829 mm) Diameter OGS Units:	3.48 m^3 sediment / 609 L oil
	8 ft (2438 mm) Diameter OGS Units:	8.78 m^3 sediment / 1,071 L oil
	10 ft (3048 mm) Diameter OGS Units:	17.78 m^3 sediment / 1,673 L oil
	12 ft (3657 mm) Diameter OGS Units:	31.23 m^3 sediment / 2,476 L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

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

3.2 SIZING METHODOLOGY

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

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

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

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

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

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

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

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

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

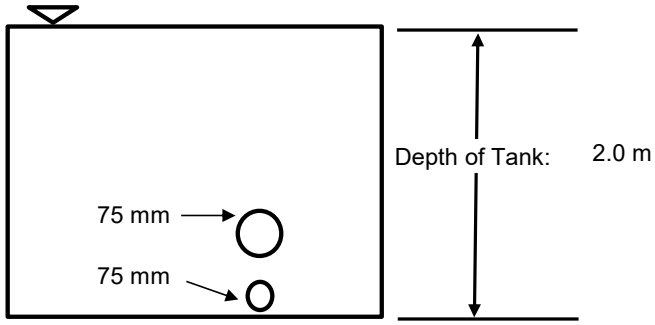
CALCULATION OF STORAGE SIZE AND RATING CURVE BASED ON ORIFICE SIZE

URBANTECH

Project Name: 1315 Silver Spear
Municipality: City of Mississauga
Project No.: 23-314W
Date: 12-Feb-25

Prepared by: J.P.O
Submission #: 1

Elevation (m)	Tank Height (m)	Volume (m³)	Flow rate (m³/s)
0.00	0.00	0.00	0.000
0.20	0.20	26.00	0.005
0.40	0.40	52.00	0.007
0.60	0.60	78.00	0.009
0.80	0.80	104.00	0.011
1.00	1.00	130.00	0.012
1.20	1.20	156.00	0.017
1.40	1.40	182.00	0.021
1.60	1.60	208.00	0.024
1.80	1.80	234.00	0.026
2.00	2.00	260.00	0.028
0.00	0.00	0.00	0.000
0.00	0.00	0.00	0.000
0.00	0.00	0.00	0.000
0.00	0.00	0.00	0.000
0.00	0.00	0.00	0.000



Calculation of Orifice

$A = \pi D^2 \div 4$	0.004	m²
$h = Depth\ of\ Tank\ - (\frac{D}{2})$	0.693	m
C	0.62	
$2g = 2 \times 9.81$	19.62	m/s²
$Q = CA\sqrt{2gh}$	0.000	m³/s
Q target (from VH model)	**0.028**	m³/s

Q and Q target are matched
Therefore, orifices are 75 mm and 75 mm

Orifice 2
Invert: **1.07** m
Orifice size: **75** mm

Orifice 1
Invert: **0.00** m
Orifice size: **75** mm

Name	Description			Result
	Depth of Storage Chambers			**2.00** m
	Provided Volume	Tank	260 m³	
	Required Volume from VO6		259 m³	

APPENDIX C
Wastewater Servicing

URBANTECH

WASTEWATER DEMAND CALCULATIONS

Project Name: 1315 Silver Spear Road
Municipality: City of Mississauga
Project No.: 23-314

Prepared by: S.C.
Checked by: J.O.
Last Revised: 13-Feb-25

Proposed Apartment

Residential

	# of Units	PPU
Small Apartments - Studio, 1B, 1B+D (<750 sq ft) =	143	1.7
Large Apartment - 2B and 3B (>750 sq ft) =	112	3.1
Total Units =	255	
Population =	592	persons
Harmon Peak Factor for Site, Me =	$(1+14/(4+P^{0.5})$	
	3.94	
Unit Sewage Flow =	302.8	L/person/day
Domestic Sewage Flow =	8.16	L/s

Existing Apartment

Residential

	# of Units	PPU
Small Apartments - Studio, 1B, 1B+D (<750 sq ft) =	9	1.7
Large Apartment - 2B and 3B (>750 sq ft) =	84	3.1
Total Units =	93	
Population =	276	persons
Harmon Peak Factor for Site, Me =	$(1+14/(4+P^{0.5})$	
	4.09	
Unit Sewage Flow =	302.8	L/person/day
Domestic Sewage Flow =	3.96	L/s
Site Area =	0.85	ha
Infiltration Allowance =	0.20	L/s/ha
Total Infiltration =	0.17	L/s
Total wastewater flow =	12.29	L/s

Urbantech Consulting, A Division of Leighton-Zec Ltd.
2030 Bristol Circle, Suite 201 Oakville, Ontario L6H OH2
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Region of Peel
working with you

Water and Wastewater Modelling Demand Table

Site Plan Applications

Version	Date	Description of Revision
1.0	January 10 2023	Posted to Peel Website
2.0	August 30 2024	Reflects 2023 Linear Wastewater Standards and ICI population estimates as per Peel 2020 DC background study

Introduction

Water and wastewater modelling may be required as a condition of the development approval process or prior to regional site servicing connection approval where intensification is proposed, where a possible increase in water demand or wastewater discharge is identified or where deemed necessary by Regional staff.

A completed table includes the Professional Engineer's signature and stamp as well as a site servicing concept. The table will be deemed complete once all the information below is submitted and/or included. Modelling will commence once the information is deemed complete. All required calculations must be submitted with the completed demand table. The calculations shall be based on the specific development proposal.

Application Information

Application Number:	
Address:	2030 Bristol Circle, Oakville, ON
Consulting Engineer:	Urbantech Consulting
Date Prepared:	July 11,2025

Population

Existing

		Units	Persons
1	Residential [8)]	93	276
2	Institutional/Employment [8)]		
3	Total		

WATER AND WASTEWATER MODELLING DEMAND TABLE

Proposed

			Units	Persons
4	Residential [1)]	singles/semis (4.2 ppu)		
5		Townhomes (3.4 ppu)		
6		Large apartments (>1 bedroom – 3.1 ppu)	112	348
7		Small apartments (<=1 bedroom – 1.7 ppu)	143	244
8		Total proposed residential	592	592
9	Proposed Institutional[2)]			
10	Proposed employment [3)]			
11	Total Proposed			592

Other

12	Existing gross floor area for commercial and/or retail (sqm)	
13	Proposed gross floor area for commercial and/or retail (sqm)	
14	Land area (ha)	

Water Connection

Hydrant flow test [4)]

15	Location 1	1355 Silver Spear Road Entrance
16	Location 2	1355 Silver Spear Road Parking

WATER AND WASTEWATER MODELLING DEMAND TABLE

		Pressure (kPa)	Flow (L/s)	Time
17	Minimum water pressure	579.16	89.58	1:05
18	Maximum water pressure	592.95	138.48	1:05

Water Demands (L/s)

		Use 1 [6]	Use 2 [6]	Use 3 [6]	Total
19	Existing fire flow [5] [8]				83.3
20	Proposed average day flow				1.9
21	Proposed maximum day flow				3.84
22	Proposed peak hour flow				5.76
23	Proposed fire flow [5]				100

Water calculations

Please use the following updated typical water demand criteria as per Peel's 2020 Development Charges background study.

Population Type	Unit	Average Consumption Rate	Max Day Factor	Peak Hour Factor
Residential	L/cap/d	270	1.8	3.0
Institutional/Commercial/ Industrial	L/emp/d	250	1.4	3.0

Wastewater Connection

Wastewater Effluent (L/s)

		Discharge location [7)]	Flow
24	Existing effluent [8)]	Silver Spear East Sanitary	3.96
25	Proposed effluent	Silver Spear West Sanitary	8.16
26	Proposed effluent		
27	Proposed effluent		
28	Proposed additional effluent [8)]		
29	Other proposed effluent*		
30	Total proposed effluent		12.29

*Please specify other proposed effluent (ex. occasional tank purges, off peak discharge, pool drainage)

Wastewater calculations

Please use the following updated daily per capita as per 2023 Peel Linear Wastewater Standards

Population Type	Unit	Average Day Demand	Min Peaking Factor	Max Peaking Factor	Inflow and Infiltration**
Residential	L/cap/d	290	2	4	0.26L/s/Ha
Non-residential	L/emp/d	270	2	4	0.26L/s/Ha

**For maintenance holes that are flood prone or located in low lying areas, an extra 0.28 L/s per maintenance hole may be added to the I&I calculation.

Notes

1) In accordance with Peel Linear Wastewater Standards and Region of Peel 2020 DC background Study
2) refer to Peel Linear Wastewater Standards
3) For the commercial and industrial design flow calculations, please refer to Schedule 8b on page A-9 of the Region of Peel 2020 DC background Study to determine population.
4) Please include the graphs associated with the hydrant flow test data. Hydrant flow tests should be performed within 2 years of submission to the Region. The Region will not permit hydrant flow tests during the winter, please contact Region Water Operations for scheduling. The Region reserves the right to request an updated hydrant flow test as required at any time.
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 multiple discharge locations
8) For Intensification, sites with additions to buildings or additional buildings please provide existing flow for existing buildings and the added flows for the new proposal, **if applicable**

APPENDIX D
Water Servicing

Urbantech® Consulting, A Division of Leighton-Zec West Ltd. | 2030 Bristol Circle, Suite 105 • Oakville • ON • L6H 0H2 | 905.829.8818
urbantech.com

URBANTECH

WATER DEMAND CALCULATIONS

Project Name: 1315 Silver Spear Road
Municipality: City of Mississauga
Project No.: 23-314W

Prepared by: S.C.
Checked by: J.O.
Last Revised: 5-Aug-25

Fire Flow Calculations

Proposed Conditions

Based on the *Water Supply for Public Fire Protection, 1999* by Fire Underwriters Survey

1 Estimate of Fire Flow

F = 220 C (A)1/2

F = Fire Flow (L/min)
C = Construction Type Coefficient
= 0.6 ,for fire-resistive construction (fully protected frame, floors, roof)
A = Total flow area (m^2)
= If vertical openings and exterior vertical communications are properly protected (one hour rating),
Largest Floor + 25% of two immediately adjoining floors

Proposed 14-storey Building

Floor	Area (m^2)	%
	1,298	25%
Ground Floor	1,298	100%
	1,298	25%

= 1946 m^2

F = 5823 L/min
= 6000 L/min, rounded to the nearest 1000 L/min

2 Occupancy Reduction

15% for low hazard occupancies (apartments)
F = 5100 L/min

3 Sprinkler Reduction

30% for adequately designed sprinkler protection conforming to NFPA 13 and other NFPA sprinkler standards
F = 3570 L/min

4 Separation Charge

Direction	Separation (m)	Charge
North	55.0	FALSE
West	13.0	15%
South	6.0	20%
East	8.0	20%

Total Charge = 55%
F = 2805 L/min

Required Fire Flow

F = 6375 L/min
= 6000 L/min, rounded to the nearest 1000 L/min

Fire Flow Demand (Proposed Development) =	100.0	L/s
=	1585	USGPM

URBANTECH

WATER DEMAND CALCULATIONS

Project Name: 1315 Silver Spear Road
Municipality: City of Mississauga
Project No.: 23-314W

Prepared by: S.C.
Checked by: J.O.
Last Revised: 5-Aug-25

Existing Conditions

Based on the *Water Supply for Public Fire Protection, 1999* by Fire Underwriters Survey

1 Estimate of Fire Flow

F = 220 C (A)1/2

F = Fire Flow (L/min)
C = Construction Type Coefficient
= 0.6 ,for fire-resistive construction (fully protected frame, floors, roof)
A = Total flow area (m^2)
= If vertical openings and exterior vertical communications are properly

Existing 8-storey Building

Floor	Area (m^2)	%
	1,134	25%
Ground Floor	1,134	100%
	1,134	25%

= 1701 m^2

F = 5444 L/min
= 5000 L/min, rounded to the nearest 1000 L/min

2 Occupancy Reduction

15% for low hazard occupancies (apartments)
F = 4250 L/min

3 Sprinkler Reduction

30% for adequately designed sprinkler protection conforming to NFPA 13 and other NFPA sprinkler standards
F = 2975 L/min

4 Separation Charge

Direction	Separation (m)	Charge
North	6.0	20%
West	33.0	5%
South	38.0	5%
East	20.0	15%

Total Charge = 45%
F = 1913 L/min

Required Fire Flow

F = 4888 L/min
= 5000 L/min, rounded to the nearest 1000 L/min

Fire Flow Demand (Existing Development) =	83.3	L/s
=	1321	USGPM

Total Fire Flow Demand =	183.3	L/s
=	2906	USGPM

WATER DEMAND CALCULATIONS

Project Name: 1315 Silver Spear Road
Municipality: City of Mississauga
Project No.: 23-314W

Prepared by: S.C.
Checked by: J.O.
Last Revised: 5-Aug-25

Domestic Flow Calculations

Proposed Condtions

Residential Population =	592	persons, from Sanitary Calculations
Residential Average Day Demand =	280	L/person/day, from Region of Peel design criteria
=	1.9	L/s

Use Peaking Factor the Greater of

Residential Max Daily Demand PF =	2	, from Region of Peel design criteria
Max Daily Demand =	3.84	L/s
or		
Max Peak Hour PF =	3	, from Region of Peel design criteria
Max Peak Hour Demand =	5.76	L/s

Domestic Flow Demand (Proposed Development) =	5.76	L/s
=	91	USGPM

Existing Condtions

Residential Population =	276	persons, from Sanitary Calculations
Residential Average Day Demand =	280	L/person/day, from Region of Peel design criteria
=	0.9	L/s

Use Peaking Factor the Greater of

Residential Max Daily Demand PF =	2	, from Region of Peel design criteria
Max Daily Demand =	1.79	L/s
or		
Max Peak Hour PF =	3	, from Region of Peel design criteria
Max Peak Hour Demand =	2.68	L/s

Domestic Flow Demand (Existing Development) =	2.68	L/s
=	43	USGPM

Total Max Daily Demand =	5.6	L/s
=	89	USGPM

Total Max Peak Hour Demand =	8.4	L/s
=	134	USGPM

Total Domestic Flow Demand =	8.4	L/s
=	134	USGPM

Total Domestic Demand+Fire Flow Demand =	191.8	L/s
=	3040	USGPM

5-200 Connie Cres. Concord ON L4K 1M1 Phone 416-883-9777 Fax 905-303-6977

FLOW TEST REPORT

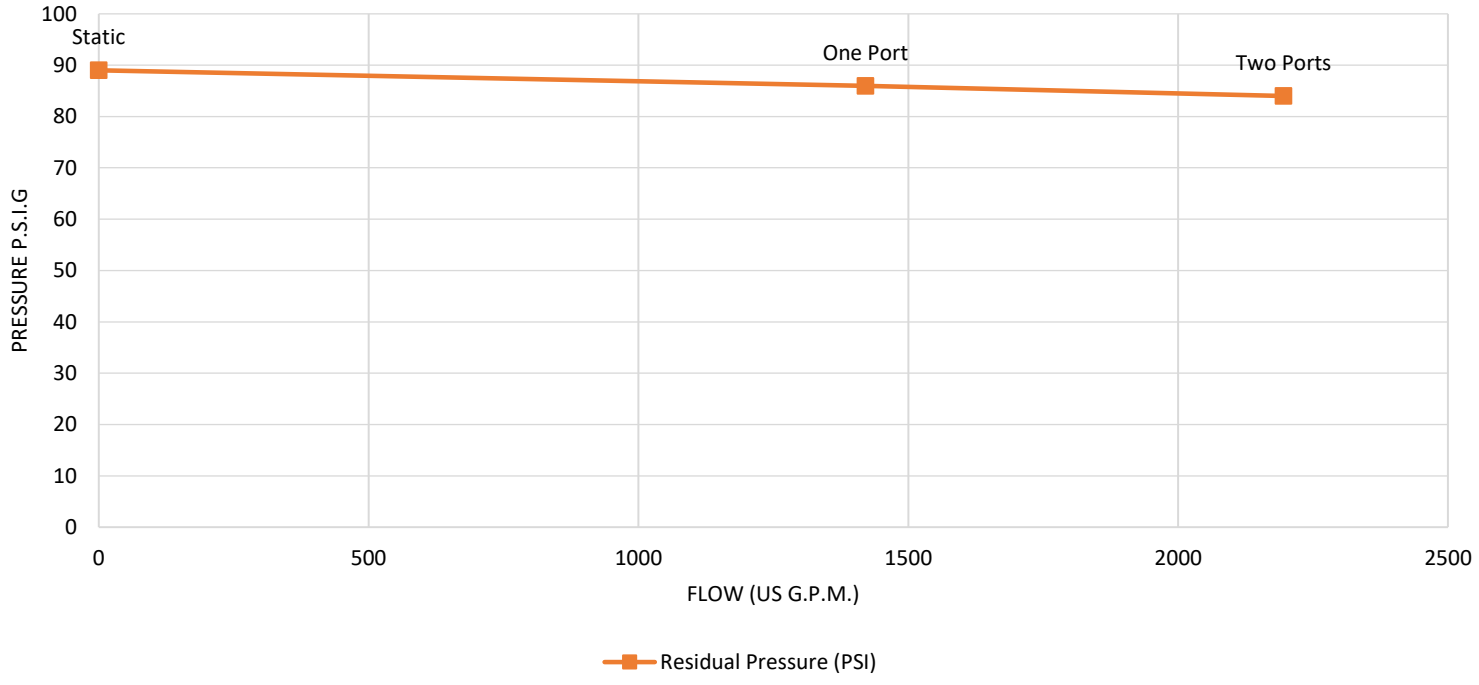
Location of Residual Hydrant : 1355 Silver Spear Road Entrance

Location of Flow Hydrant : 1355 Silver Spear Road Parking

Time of Test : 1:05 PM Watermain Size : 300 mm Static Pressure : 89 PSI

Number of Outlets	Pitot Pressure (PSI)	Flow (US G.P.M.)	Residual Pressure (PSI)
Static Pressure (Zero Port)	0	0	89
One 2½" Hydrant Port	72	1420	86
Two 2½" Hydrant Port	43	2195	84

FLOW TEST CHART



Project Location: 1355 Silver Spear Rd, Mississauga Date: 08-Jul-25

Company Name: Urbantech / Leighton-Zec Ltd. Aquazition Employee: Juan Carlos Castillo & Sebastian Castillo