FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

70 Park Street East

City of Mississauga

Prepared for

MPCT DIF 70 Park Street East LP

Project #: 22-293

January 2023

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 Dream Asset Management to complete a Functional Servicing Report in support of an Official Plan Amendment and Zoning Bylaw Approval for the proposed development located at 23, 25, 27, 29 and 31 Helene Street North, 53 Queen Street East, and 70 Park Street East in the City of Mississauga.

The site is bounded:

- To the north by Queen Street East
- To the south by an existing apartment building and Park Street East
- To the east by Helene Street North
- To the west by the existing apartment buildings

The legal description of the site is lots 4 and 5 east of Credit River, Park Street to Queen Street, registered plan PC-2 City of Mississauga as shown on J.D. Barnes Plan of Survey, dated September 21, 2022.

The site is currently occupied by a parking garage to the north with commercial businesses on the ground floor and an existing apartment building in the south portion of the property (to be retained).

The subject development is located within the Credit River – Norval to Port Credit subwatershed area. The site falls within the City of Mississauga Port Credit GO Mobility Hub 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 Credit Valley 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.

1.2 Development Concept

Refer to the development concept plan prepared by IBI Group Architects. The development plan consists of:

1. 38-storey building with 530 units.
2. 8 levels of underground parking.
3. 401 m^2 of daycare.
4. 463 m^2 of retail.
5. 2,821 m^2 of amenity space.

The proposed development will connect to Park Street East via a private driveway.

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2. GRADING DESIGN

2.1 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 on proposed servicing.
5. Ensures compatibility of driveway access to surrounding public streets.

2.2 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.

Due to perimeter grading constraints a portion of the subject property (approximately 0.018 ha) will drain uncontrolled to Helene Street North/Queen Street East. The storage tanks have been sized to account for this uncontrolled flow.

Drawings 201 illustrate the proposed grading plan for the site.

3. STORM DRAINAGE AND STORMWATER MANAGEMENT

3.1 Drainage Criteria

The City of Mississauga and Credit Valley Conservation outline the following design criteria for the site as follows:

1. The site is located within the Credit River – Norval to Port Credit subwatershed south of highway 407 which does not have quantity controls. Therefore, post-development stormwater discharge will be limited to pre-development 10-year storm event which is the capacity of the storm sewers.
2. Pre-development runoff coefficients are to not exceed 0.5 for a site that is already developed.
3. Ensure minimum 80% TSS removal on site for quality control.
4. First 5 mm of runoff to be retained on-site.
5. Provide safe overland flow conveyance of the 100-year event.

3.2 Storm Sewer Design

Storm sewers within the site will be sized to convey the 10-year storm in accordance with the City of Mississauga standards. The site is full coverage with underground parking. All surface drainage including the driveway connection to Park Street East will be collected by area drains and catchbasins that are connected to the building plumbing system. Routing of the storm sewers within the building will be determined at a later date as the building design is advanced. Flows from 0.018 ha of the site along the west corner of the site are not able to be captured by area drains and will flow uncontrolled towards Helene Street North/Queen Street East.

Aside from the west corner of the site, all stormwater is conveyed to the storage tank via area drains, which is situated adjacent to in the south west corner of the P1 level of the underground parkade. Flow from the tank will be conveyed to the 450 mm concrete storm sewer on Helene Street North with a 300 mm connection to EX. MH 22.

3.3 Quality Control

As identified in **Section 5.1** above, the 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 tanks within the parking garage. **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	EFO4	0.479	86

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

3.4 Quantity Control

A Visual Otthymo model was created to model the drainage from the site to determine the pre-development two-year flow. A 24-hour Chicago rainfall Distribution was used to simulate the rainfall on the site using the Pearson International Airport IDF parameters. As the site is fully developed under existing conditions, a runoff coefficient of 0.5 was used as prescribed by the City of Mississauga standards. **Table 2** below outlines the pre-development 10-year flow.

Table 2 - 10-year Pre-development Target

Area (ha)	Runoff Coefficient	10-year Target (m^3/s)
0.497	0.5	0.112

Refer to **Drawing 302** for the existing storm drainage plan.

Storm water quantity control will be achieved by using a storage tank. The tank will be located in the southwest corner of the site and will likely require a pump to discharge flows to the storm sewer system.

As noted in **Section 5.2** above, a 0.018 ha portion of the site drains uncontrolled to Helene Street North, to account for this uncontrolled flow, the tank flows are overcontrolled to ensure that the 10-year predevelopment target is not exceeded during the 100-year event. **Table 3** summarizes the flow and storage values required based on the VO6 calculations.

Table 3: Flow and Required Storage Volume Results

Outlet	Area (ha)	Runoff Coefficient	Post Development Flows m^3/s	Required Volume (m^3)
Tank (NHYD 9)	0.479	0.9	0.1	70
Uncontrolled (NHYD 8)	0.018	0.9	0.012	-
		Total (NHYD 10)	0.112	70

Refer to SWM Calculations in **Appendix B** for supporting calculations and **Drawing 302** for post development storm drainage plan.

3.5 Water Balance/Water Re-use

The City of Mississauga requires retention of the first 5 mm of runoff over the impervious area that is being developed to promote water balance and erosion control. Based on the site area being developed of 0.497 ha (refer to **Drawing 302**), approximately 25 m^3 should be retained on site. As the majority of the site plan is a full coverage building there are limited opportunities for infiltration on site as landscaped areas not above the parking garage are too close to the building to allow infiltration in accordance with the Ontario building code. Reusing the stormwater onsite is permitted where retention via infiltration is not feasible. **Table 4** outlines various measures that could be implemented for the subject development. Details of the design will be provided during site plan approvals.

Table 4: Potential 5 mm Retention Options

LID Measure	Notes
Landscaped Areas	The planting media within the proposed development will retain the first 5 mm of rainwater through initial abstraction and provide the opportunity for evapotranspiration.
Green Roofs	Green roof will be incorporated on the roofs of the proposed building. The benefits of green roofs could be attenuation of flows, filtration and increased water available for evapotranspiration. This would be an additional element including the stormwater tank and OGS.
Rainwater Harvesting - Irrigation	Rainwater not captured by the landscaped area or green roofs is collected in the sump of the storage tank and used for irrigation for the proposed landscaped areas and planters.
Rainwater Harvesting – Mechanical Uses	Water that is not able to be used for irrigation could be used for other mechanical re-use measures.

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4. WASTEWATER SERVICING

4.1 Design Criteria

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

- 3 people/unit for large apartments (larger than 750 square feet)
- 1.6 people/unit for small apartments (less than 750 square feet)
- 50 people/ha for commercial/retail/day care areas
- 0.2 L/s/ha for infiltration
- 302.8 L/person/day for domestic sewage flow

4.2 Existing Conditions

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

1. 150 mm diameter located within the north portion of Helene Street North.
2. 250 mm diameter located within the south portion of Helene Street North.
3. 250 mm diameter located within Park Street East.

The location of the existing is sewer is shown on **Drawing 101**.

4.3 Local Wastewater Design

The estimated sanitary flow from the subject lands is 15.39 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 site will be conveyed via a new 250 mm service connection to Helene Street North. Refer to **Drawings 101 and 301** for the anticipated connection location and drainage areas.

5. WATER SERVICING

5.1 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
- ICI Consumption = 300 l/employee/day, max day = 1.4
- Residential and Commercial Peak Hour = 3
- Minimum operating pressure = 40 psi
- Maximum operating pressure = 100 psi

5.2 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 200 mm local watermain on Queen Street East
2. A 250 mm local watermain on Helene Street North
3. A 300 mm local watermain on Park Street East

5.3 Local Watermains

The development will have one domestic water connection and two fire service connections as shown on **Drawing 101**. The water service sizes are estimated to be 200 mm which will connect to the existing 250 mm watermain on Helene Street North. The onsite water supply system will be designed by the project mechanical engineer as the building design advances.

Table 4 below outlines the water demand calculations for both phases of the development.

Table 5: Water Demand

Fire Flow (L/s)	Domestic (L/s)	
	Max Daily Demand	Max Peak Hour
116.7	7.56	11.35

A hydrant flow test will be undertaken on Helene Street North. Results will be provided to the Region of Peel once the test has been conducted.

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.

6. 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 **Drawings 601** and **602** for site-specific erosion and sediment control measures for the property.

7. 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 through the use of an OGS devices upstream of the stormwater tank.
- Storm water quantity control estimated to be 70 m^3 and will be required to control flows from the post development 100-year storm to the predevelopment 10-year storm in accordance with Mississauga standards.
- Storage will be provided with a tank located adjacent to the south-west corner of the underground parking structure.
- The site will utilize one new storm sewer connections to the existing MH22 and 450 mm storm sewer on Helene Street North.
- Water balance objectives will be met by retaining the first 5 mm of rain events onsite within the proposed landscaped areas, green roofs as well as in the storage tank. Retained water from the storage tank will be re-used.
- Wastewater servicing to the site will be provided by a new 250 mm diameter connection to the sewer on Helene Street North.
- Water servicing for both fire and domestic connections to the site will be provided by the existing 200 mm watermain on Helene Street North.
- Erosion and sediment control measures will be implemented during construction in accordance with City and Provincial requirements.

Report Prepared by:

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APPENDIX A
Drawings and Figures

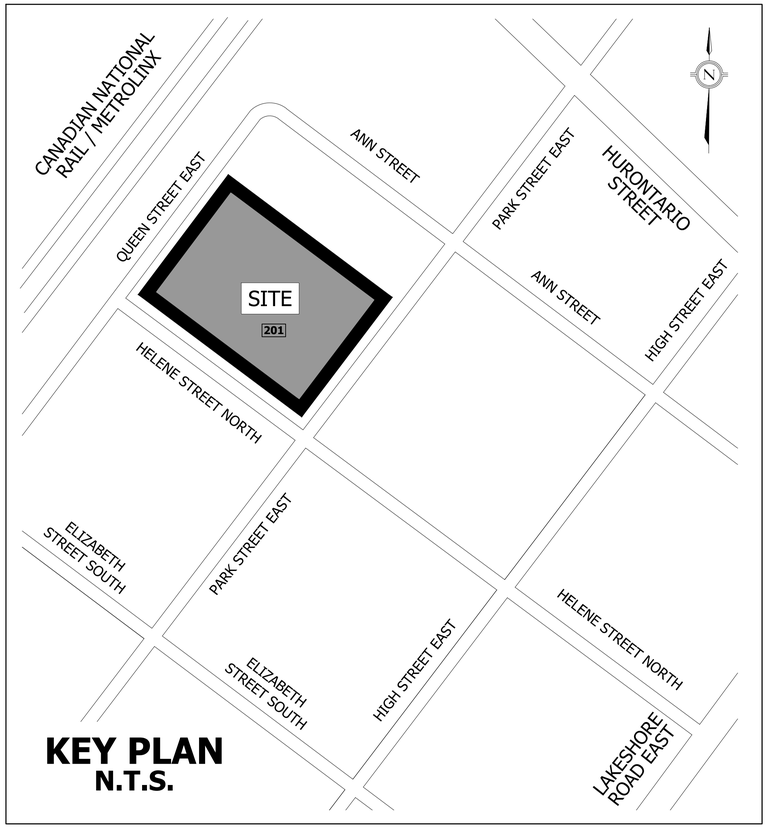
CITY OF MISSISSAUGA

70 PARK STREET EAST

LOTS 4 AND 5 EAST OF CREDIT RIVER PARK STREET TO QUEEN STREET REGISTERED PLAN PC-2

CITY FILE No. SP.XX-XX REGION FILE No.: C-XXXXXX

FIRST SUBMISSION - JAN. 23, 2023



KEY PLAN
N.T.S.

LIST OF DRAWINGS

LEGEND:

LIMIT OF PROPERTY

201 GRADING PLAN

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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 A.P.	DRAWN BY AINLEY GROUP
GENERAL NOTES AND REFERENCES	STD. DWG. NUMBER 1-1-0	SCALE N.T.S.

■ FIRST SUBMISSION DATE: JAN. 23, 2023	☐ SECOND DATE	☐ THIRD DATE	☐ FINAL DATE

REGISTERED PROFESSIONAL ENGINEER
R.B.T. MERWIN
100009772
JAN. 23, 2023
PROVINCE OF ONTARIO

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70 PARK STREET EAST

Region of Peel
working with you

MISSISSAUGA

GENERAL NOTES

REGION FILE No. XXX CITY FILE No. XXX

SCALE:	AREA Z-08-C5/D	PROJECT No. 22-293
DRAWN BY: A.G.	CHECKED BY: R.M./R.B.T.M	PLAN No. 100
DATE: DECEMBER 2022	SHEET OF	C-

SANITARY STRUCTURE TABLE

STRUCTURE:	DETAILS:	STANDARD:	TOP ELEV.:	INVERTS:
MH1A	1200 mm MH	(R.S.D. 2-5-2, 2-5-3)	TOP = 81.31	NW 78.79 SE 78.79 NE 78.88
MH2A	1200 mm MH	(R.S.D. 2-5-2, 2-5-3)	TOP = 81.38	SW 78.93 NE 78.96
PLUG1A				SW 79.00

STORM STRUCTURE TABLE

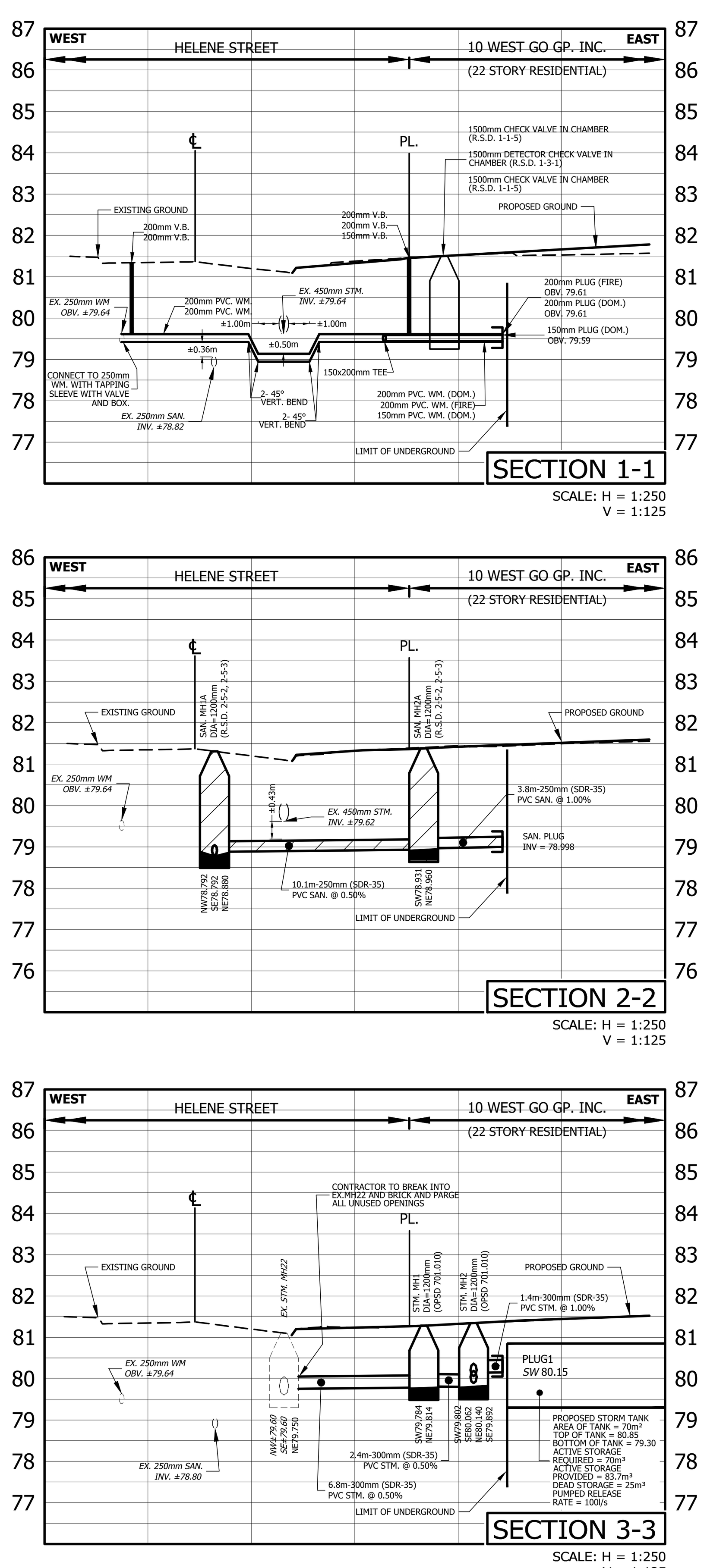
STRUCTURE:	DETAILS:	STANDARD:	TOP ELEV.:	INVERTS:
EX. MH22	1200 mm MH	(OPSD 701.010)	TOP = 81.10	NE 79.75
MH1	1200 mm MH	(OPSD 701.010)	TOP = 81.28	SW 79.78 NE 79.81
MH2	1200 mm MH	(OPSD 701.010)	TOP = 81.35	SW 79.80 SE 80.06 NE 80.14 SE 79.89
OGS1	1200 mm MH	(OPSD 701.010)	TOP = 81.25	NW 79.90 NW 80.05
PLUG1				SW 80.15

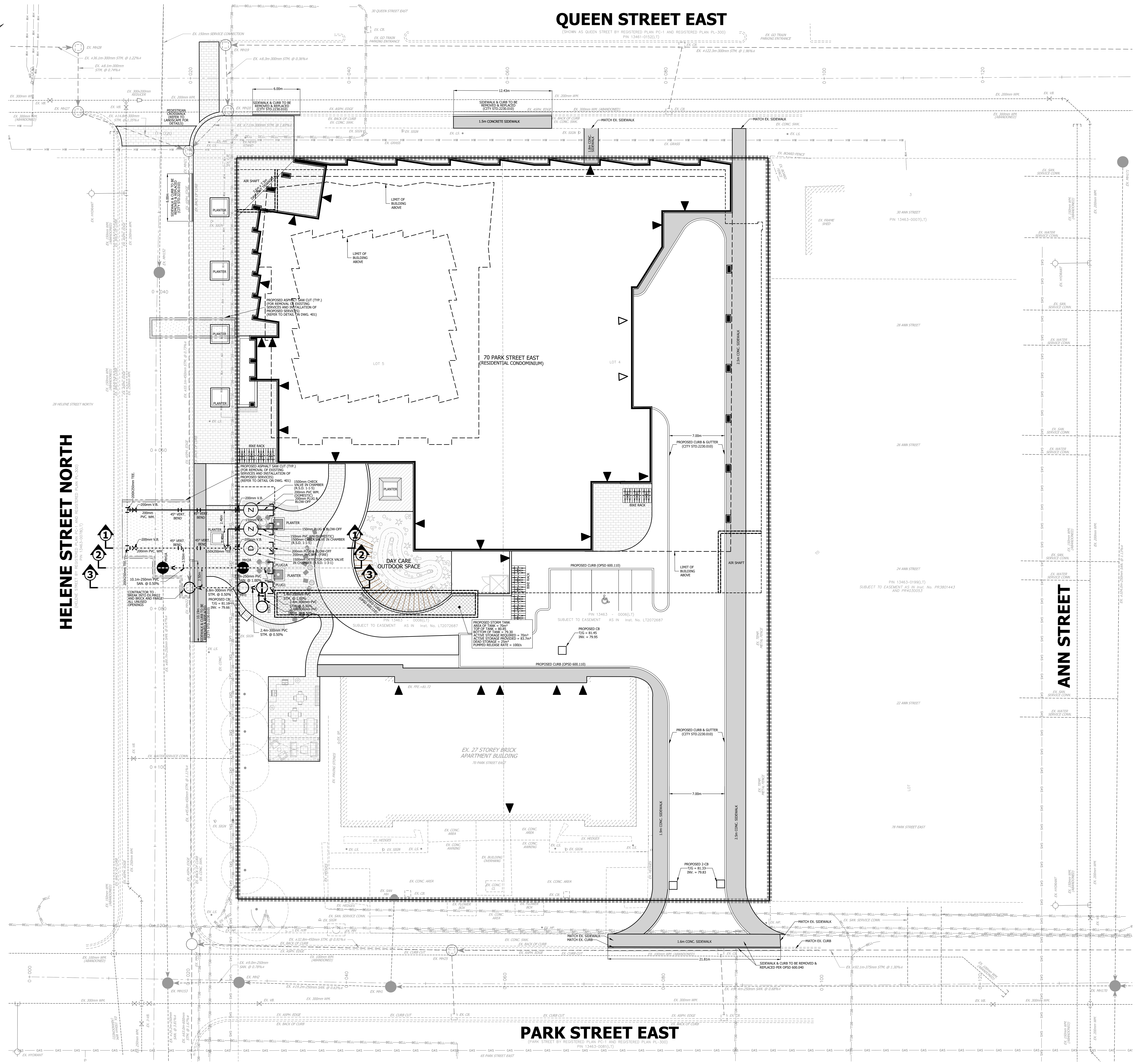
EXISTING SANITARY STRUCTURE TABLE

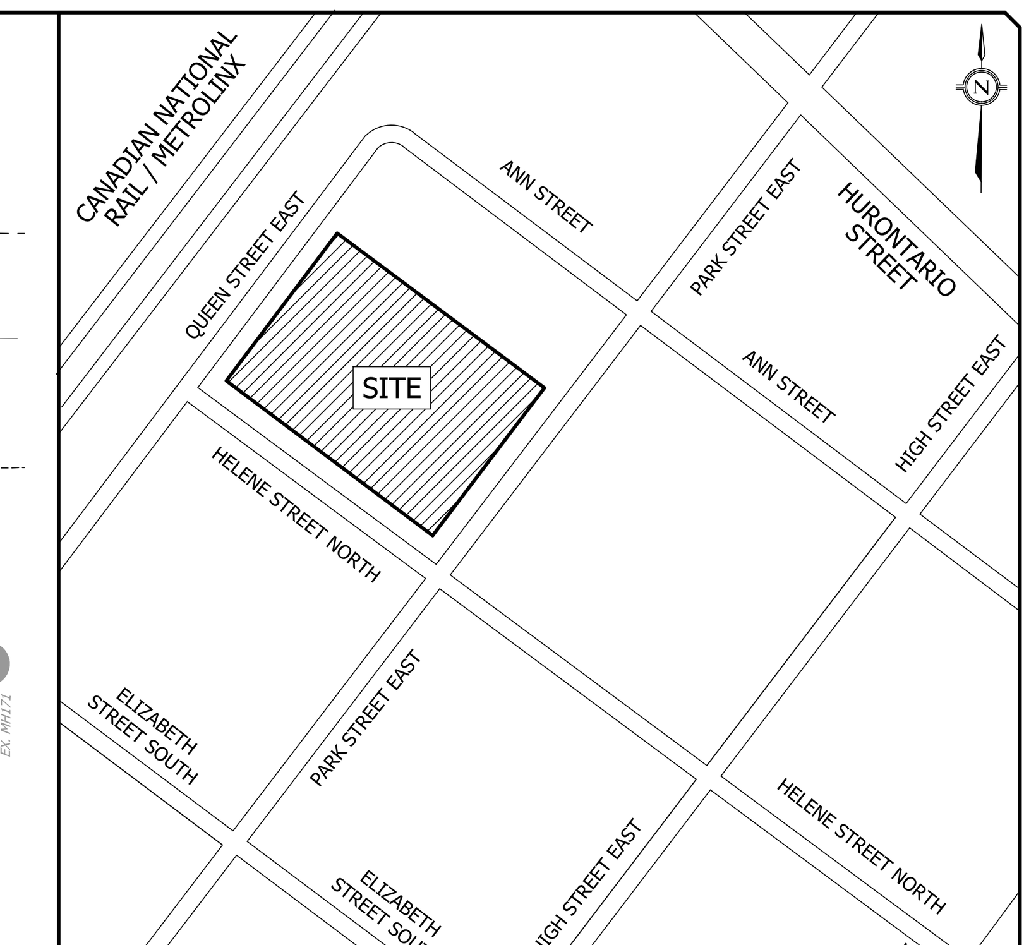
STRUCTURE:	INVERTS:
EX.MH1	NE 78.77± SW 78.76±
EX.MH2	NE 78.64± SW 78.64±
EX.MH3	NW 77.41±
EX.MH10	NW 79.74±
EX.MH11	SW 79.60±
EX.MH152	SE 78.98±
EX.MH153	NW 78.56± NE 78.57± SE 78.52±
EX.MH170	SW 79.39± NW 79.51± SE 79.42± NE 79.42±
EX.MH171	SE 80.69±

EXISTING STORM STRUCTURE TABLE

STRUCTURE:	INVERTS:
EX.MH14	SE 77.85± NE 79.10± NW 79.10±
EX.MH16	NW 76.80±
EX.MH18	SW 82.60±
EX.MH19	NE 80.20± SE 80.20±
EX.MH20	NW 80.17± S 80.17±
EX.MH21	N 80.05± SE 80.00± SW 80.00±
EX.MH22	NW 79.60± SE 79.60±
EX.MH24	SW 80.60±
EX.MH25	NE 79.40± SW 79.40±
EX.MH27	NE 80.20± NW 80.20±
EX.MH28	SE 80.26± SW 80.26±
EX.MH29	NE 80.70±







KEY PLAN
N.T.S.

LEGEND

- STORM SEWER AND MANHOLE
- SANITARY SEWER AND MANHOLE
- EXISTING STORM SEWER AND CATCH BASIN MANHOLE
- EXISTING STORM SEWER AND MANHOLE
- EXISTING SANITARY SEWER AND MANHOLE
- SINGLE CATCHBASIN
- EXISTING SINGLE CATCHBASIN
- D — DETECTOR CHECK VALVE IN CHAMBER (AS PER R.S.D. 1-3-1)
- Z — 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
- PROPOSED ASPHALT SAW CUT (TYP.) (REFER TO DETAIL ON DWG. 401)
- HW — EXISTING UNDERGROUND HYDRO LINE (APPROX. LOCATION)
- GAS — EXISTING GASMAIN (APPROX. LOCATION)
- BELL — EXISTING BELL LINE (APPROX. LOCATION)
- EXISTING TREE
- CONCRETE
- PRECAST UNIT PAVERS
- WOODEN DECK
- LIMIT OF PROPERTY
- PROPOSED CURB CUT
- 1 — SECTION MARKER

BENCHMARK NOTE

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO THE CANADIAN GEODETIC VERTICAL DATUM 1928, PRE 1978 ADJUSTMENT, AND ARE DERIVED FROM THE CITY OF MISSISSAUGA BENCHMARK No 732 HAVING A PUBLISHED ELEVATION OF 78.128 METERS

TOPOGRAPHIC SURVEY PREPARED BY J.D. BARNES LIMITED, SEPTEMBER 8TH, 2022.

■ FIRST SUBMISSION	☐ SECOND DATE	☐ THIRD DATE	☐ FINAL DATE
DATE: JAN. 23, 2023			

REGISTERED PROFESSIONAL ENGINEER
R.B.T. MERWIN
100009772
JAN. 23, 2023
PROVINCE OF ONTARIO

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70 PARK STREET EAST

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MISSISSAUGA

SERVICING PLAN

REGION FILE No. XXX — CITY FILE No. XXX

SCALE:	1:250	AREA	Z-08-C5/D	PROJECT No.	22-293
DRAWN BY:	A.G.	CHECKED BY:	R.M./R.B.T.M	PLAN No.	101
DATE:	DECEMBER 2022	SHEET	OF	C-	

File: F:\PROJECTS\22-293W - 70 PARK STREET, MISSISSAUGA (DREAM)\DRAWINGS\100 - COVER & GENERAL\101-SERVICING PLAN.DWG

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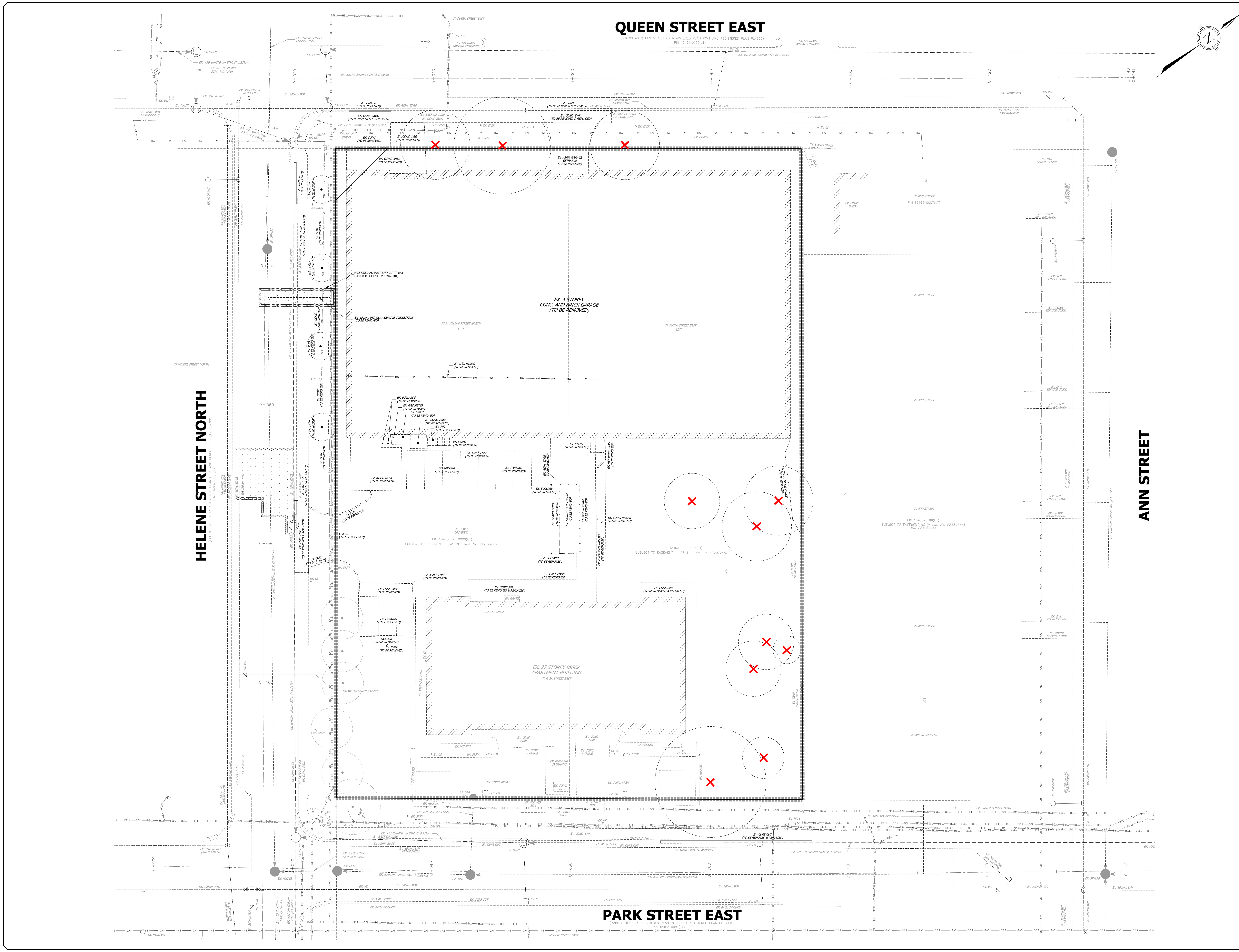

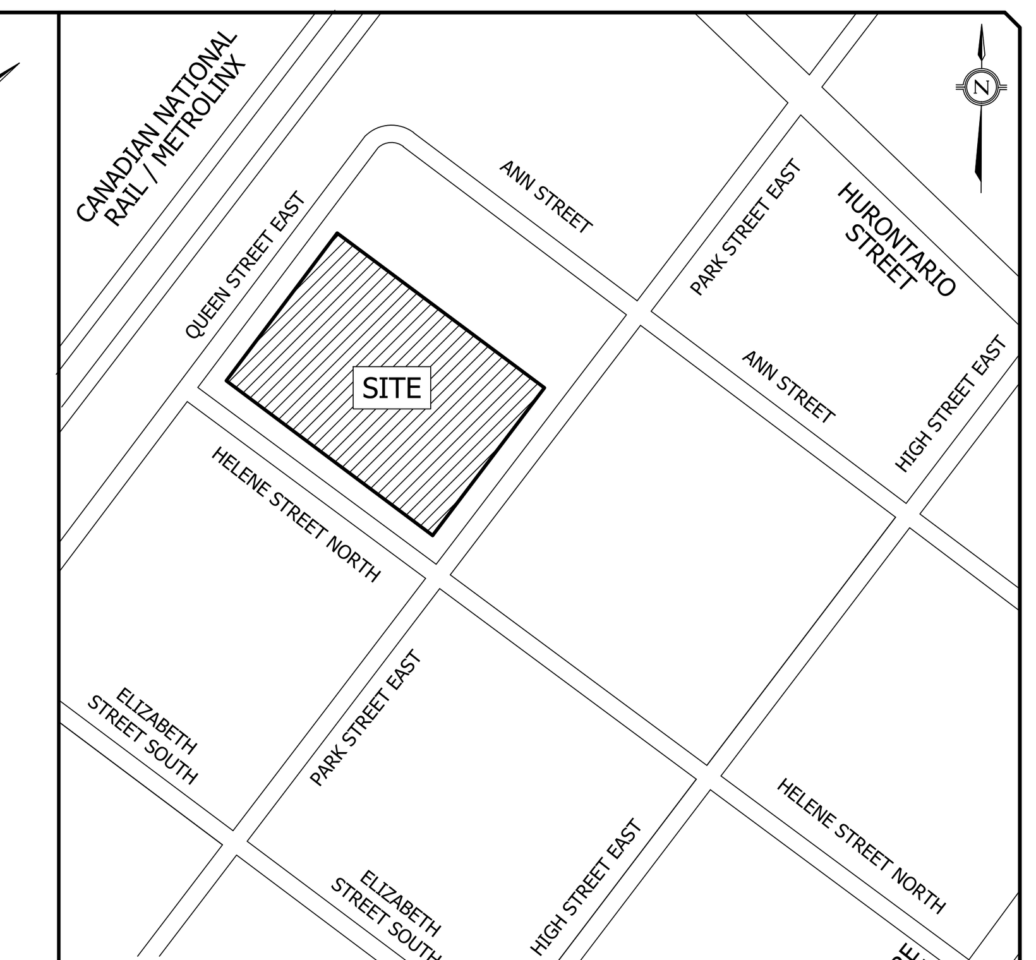

KEY PLAN
N.T.S.

LEGEND

- EXISTING STORM SEWER AND CATCH BASIN MANHOLE
- EXISTING STORM SEWER AND MANHOLE
- EXISTING SANITARY SEWER AND MANHOLE
- EXISTING SINGLE CATCHBASIN
- EXISTING VALVE AND BOX
- EXISTING HYDRANT & VALVE
- EXISTING FENCE
- EXISTING UNDERGROUND HYDRO LINE (APPROX. LOCATION)
- EXISTING GASMAIN (APPROX. LOCATION)
- EXISTING BELL LINE (APPROX. LOCATION)
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- LIMIT OF PROPERTY
- PROPOSED ASPHALT SAW CUT (TYP.) (REFER TO DETAIL ON DWG. 401)

BENCHMARK NOTE

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO THE CANADIAN GEODETIC VERTICAL DATUM 1928, PRE 1978 ADJUSTMENT, AND ARE DERIVED FROM THE CITY OF MISSISSAUGA BENCHMARK No 732 HAVING A PUBLISHED ELEVATION OF 78.128 METERS

TOPOGRAPHIC SURVEY PREPARED BY J.D. BARNES LIMITED, SEPTEMBER 8TH, 2022.

■ FIRST SUBMISSION	☐ SECOND DATE	☐ THIRD DATE	☐ FINAL DATE
DATE: JAN. 23, 2023			

REGISTERED PROFESSIONAL ENGINEER
R.B.T. MERWIN
100009772
JAN. 23, 2023
PROVINCE OF ONTARIO

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70 PARK STREET EAST

Region of Peel
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MISSISSAUGA

PHASING & REMOVALS PLAN

REGION FILE No. XXX
CITY FILE No. XXX

SCALE: 1:250	AREA Z-08-C5/D	PROJECT No. 22-293
DRAWN BY: A.G.	CHECKED BY: R.M./R.B.T.M	PLAN No. **102**
DATE: DECEMBER 2022	SHEET OF	C-

File: F:\PROJECTS\22-293W - 70 PARK STREET, MISSISSAUGA (DREAM)\DRAWINGS\100 - COVER & GENERAL\102-REMOVALS PLAN.DWG

PLOT DATE:January 23, 2023 3:48:34 PM

QUEEN STREET EAST

(KNOWN AS QUEEN STREET BY REGISTERED PLAN PO-1 AND REGISTERED PLAN PL-300)
PIN: 13463-0152(LT)

HELENE STREET NORTH

(KNOWN AS HELENE STREET BY REGISTERED PLAN PO-1 AND REGISTERED PLAN PL-300)

ANN STREET

PARK STREET EAST

(PARK STREET BY REGISTERED PLAN PO-1 AND REGISTERED PLAN PL-300)
PIN: 13463-0289(LT)

70 PARK STREET EAST
(RESIDENTIAL CONDOMINIUM)

EX. 27 STOREY BRICK APARTMENT BUILDING
70 PARK STREET EAST

DAY CARE OUTDOOR SPACE

LOT 5

LIMIT OF BUILDING ABOVE

AIR SHAFT

1.5m CONCRETE SIDEWALK

SIDEWALK & CURB TO BE REMOVED & REPLACED (CITY STD.2230.010)

PROPOSED CURB (OPSD 600.110)

PROPOSED CURB & GUTTER (CITY STD.2230.010)

1.6m CONC. SIDEWALK

MATCH EX. CURB

SUBJECT TO EASEMENT AS IN Inst. No. LT2072687

SUBJECT TO EASEMENT AS IN Inst. No. PR3801443 AND PR4250053

PIN: 13463-0090(LT)

PIN: 13463-0007(LT)

SECTION 1-1

SCALE: H = 1:250
V = 1:125

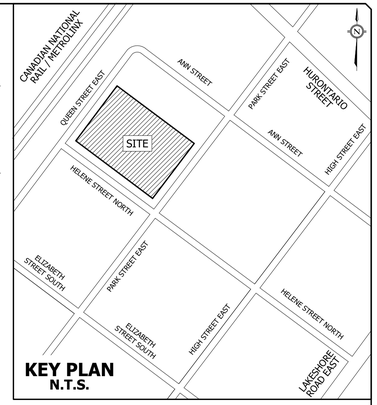
SECTION 2-2

SCALE: H = 1:250
V = 1:125

SECTION 3-3

SCALE: H = 1:250
V = 1:125

KEY PLAN
N.T.S.



LEGEND

- STORM SEWER AND MANHOLE
- SANITARY SEWER AND MANHOLE
- EXISTING STORM SEWER AND CATCH BASIN MANHOLE
- EXISTING STORM SEWER AND MANHOLE
- EXISTING SANITARY SEWER AND MANHOLE
- SINGLE CATCHBASIN
- EXISTING SINGLE CATCHBASIN
- DETECTOR CHECK VALVE IN CHAMBER (AS PER R.S.D. 1-3-1)
- 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
- PROPOSED ASPHALT SAW CUT (TYP.) (REFER TO DETAIL ON DWG. 401)
- EXISTING UNDERGROUND HYDRO LINE (APPROX. LOCATION)
- EXISTING GASMAIN (APPROX. LOCATION)
- EXISTING BELL LINE (APPROX. LOCATION)
- EXISTING TREE
- PROPOSED TREE
- CONCRETE
- PRECAST UNIT PAVERS
- WOODEN DECK
- LIMIT OF PROPERTY
- PROPOSED CURB CUT
- SECTION MARKER

BENCHMARK NOTE

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TOPOGRAPHIC SURVEY PREPARED BY J.D. BARNES LIMITED, SEPTEMBER 8TH, 2022.

■ FIRST SUBMISSION	☐ SECOND DATE	☐ THIRD DATE	☐ FINAL DATE
DATE: JAN. 23, 2023			

REGISTERED PROFESSIONAL ENGINEER
R.B.T. MERWIN
1000097772
JAN. 23, 2023
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70 PARK STREET EAST

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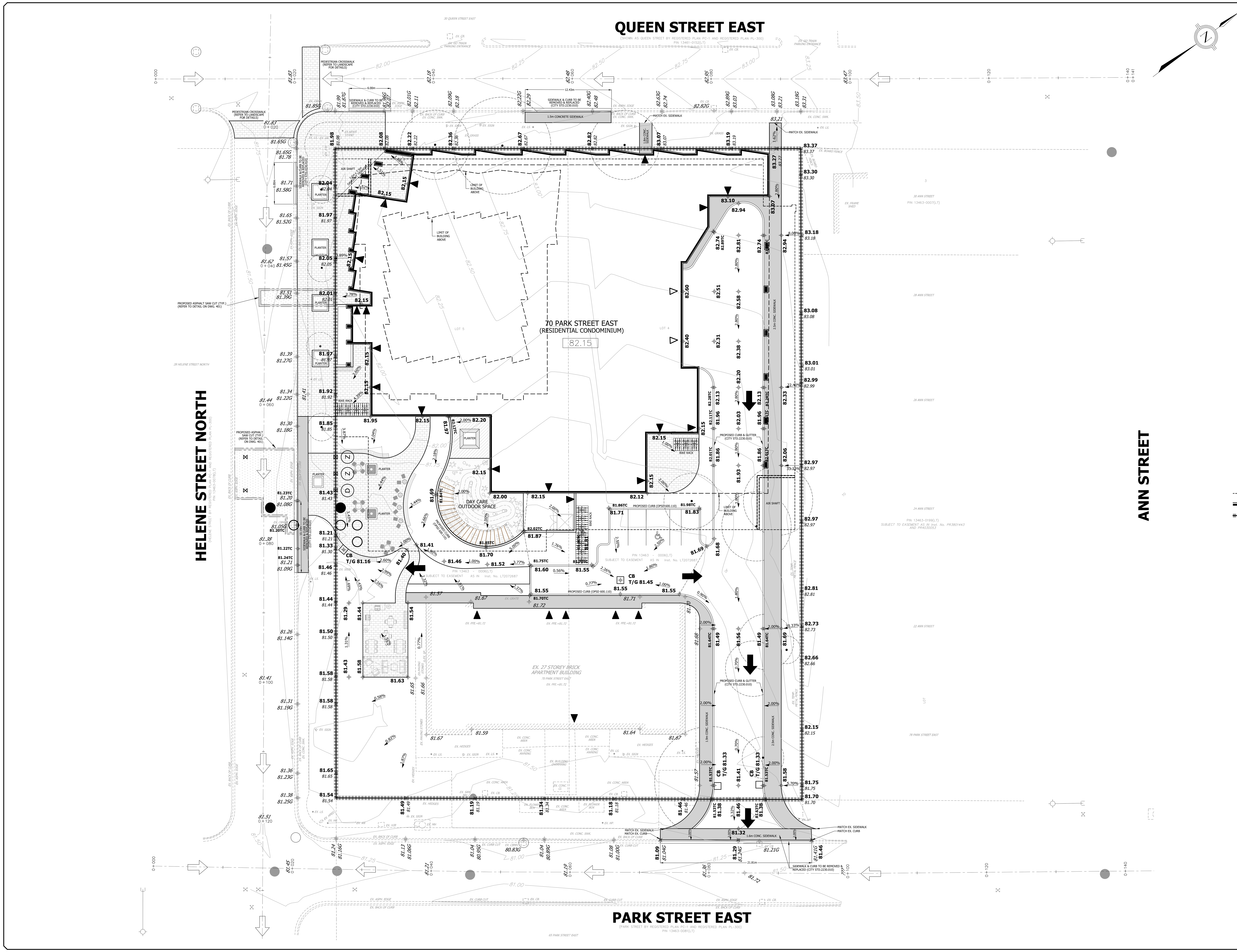
MISSISSAUGA

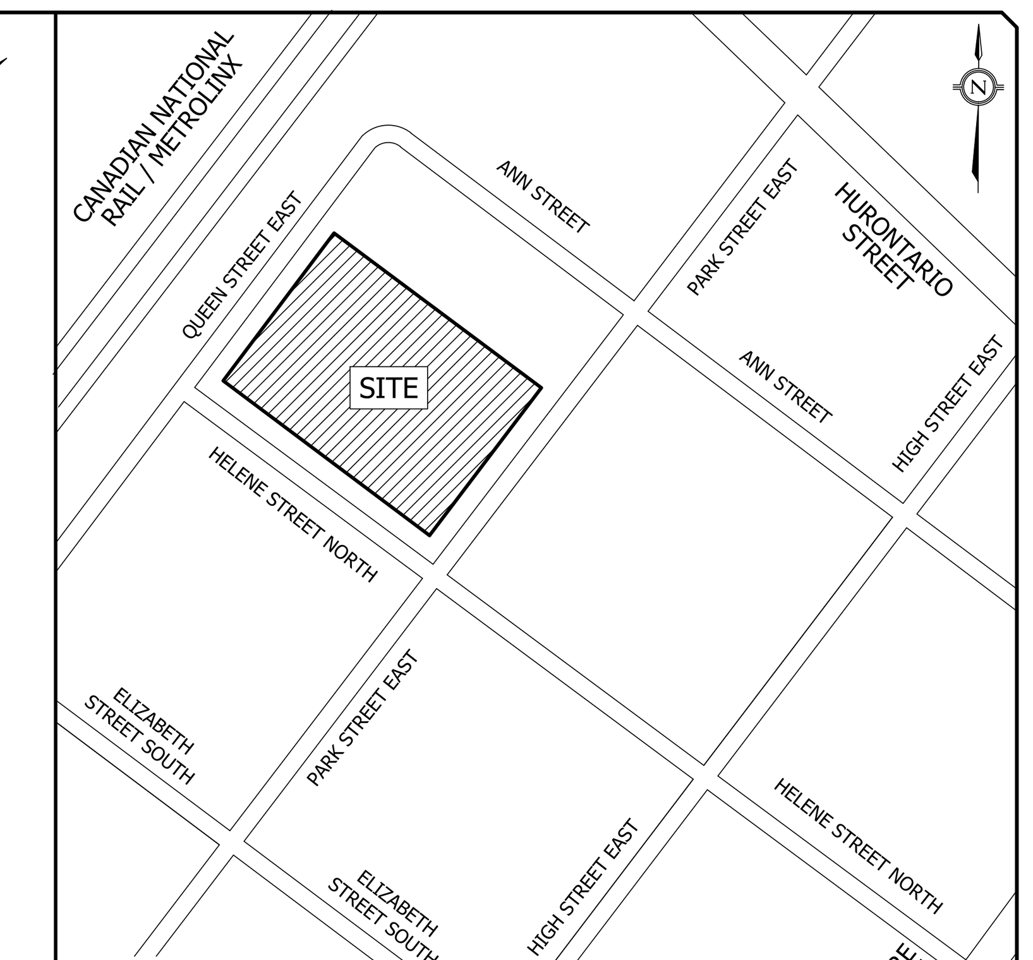
STREETSCAPE FEASIBILITY PLAN

REGION FILE No. XXX			CITY FILE No. XXX
SCALE: 1:250	AREA Z-08-CS/D	PROJECT No.	22-293
DRAWN BY: A.G.	CHECKED BY: R.M./R.B.T.M	PLAN No.	**103**
DATE: DECEMBER 2022	SHEET OF		C-

File: F:\PROJECTS\22-293W - 70 PARK STREET, MISSISSAUGA (DREAM)\DRAWINGS\100 - COVER & GENERAL\103-STREETSCAPE FEASIBILITY PLAN.DWG

PLOT DATE:January 23, 2023 3:54:31 PM





KEY PLAN
N.T.S.

LEGEND

- 87.00 — EXISTING CONTOUR AND ELEVATION
- 81.50 — EXISTING ELEVATION
- **81.30** — PROPOSED ELEVATION
- **(81.45)** — FUTURE ELEVATION
- **81.70TC** — TOP OF CURB ELEVATION
- PROPOSED SWALE
- MAXIMUM 3:1 SLOPE (UNLESS OTHERWISE NOTED)
- PROPOSED OVERLAND FLOW DIRECTION
- EXISTING OVERLAND FLOW DIRECTION
- STORM SEWER MANHOLE
- SANITARY MANHOLE
- EXISTING STORM CATCH BASIN MANHOLE
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- SINGLE CATCHBASIN
- EXISTING SINGLE CATCHBASIN
- D — DETECTOR CHECK VALVE IN CHAMBER (AS PER R.S.D. 1-3-1)
- Z — 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
- EXISTING TREE
- CONCRETE
- PRECAST UNIT PAVERS
- WOODEN DECK
- PROPOSED CURB CUT
- PROPOSED ASPHALT SAW CUT (TYP.) (REFER TO DETAIL ON DWG. 401)

BENCHMARK NOTE

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO THE CANADIAN GEODETIC VERTICAL DATUM 1928, PRE 1978 ADJUSTMENT, AND ARE DERIVED FROM THE CITY OF MISSISSAUGA BENCHMARK No 732 HAVING A PUBLISHED ELEVATION OF 78.128 METERS

TOPOGRAPHIC SURVEY PREPARED BY J.D. BARNES LIMITED, SEPTEMBER 8TH, 2022.

■ FIRST SUBMISSION	☐ SECOND DATE	☐ THIRD DATE	☐ FINAL DATE
DATE: JAN. 23, 2023			

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JAN. 23, 2023
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70 PARK STREET EAST

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MISSISSAUGA

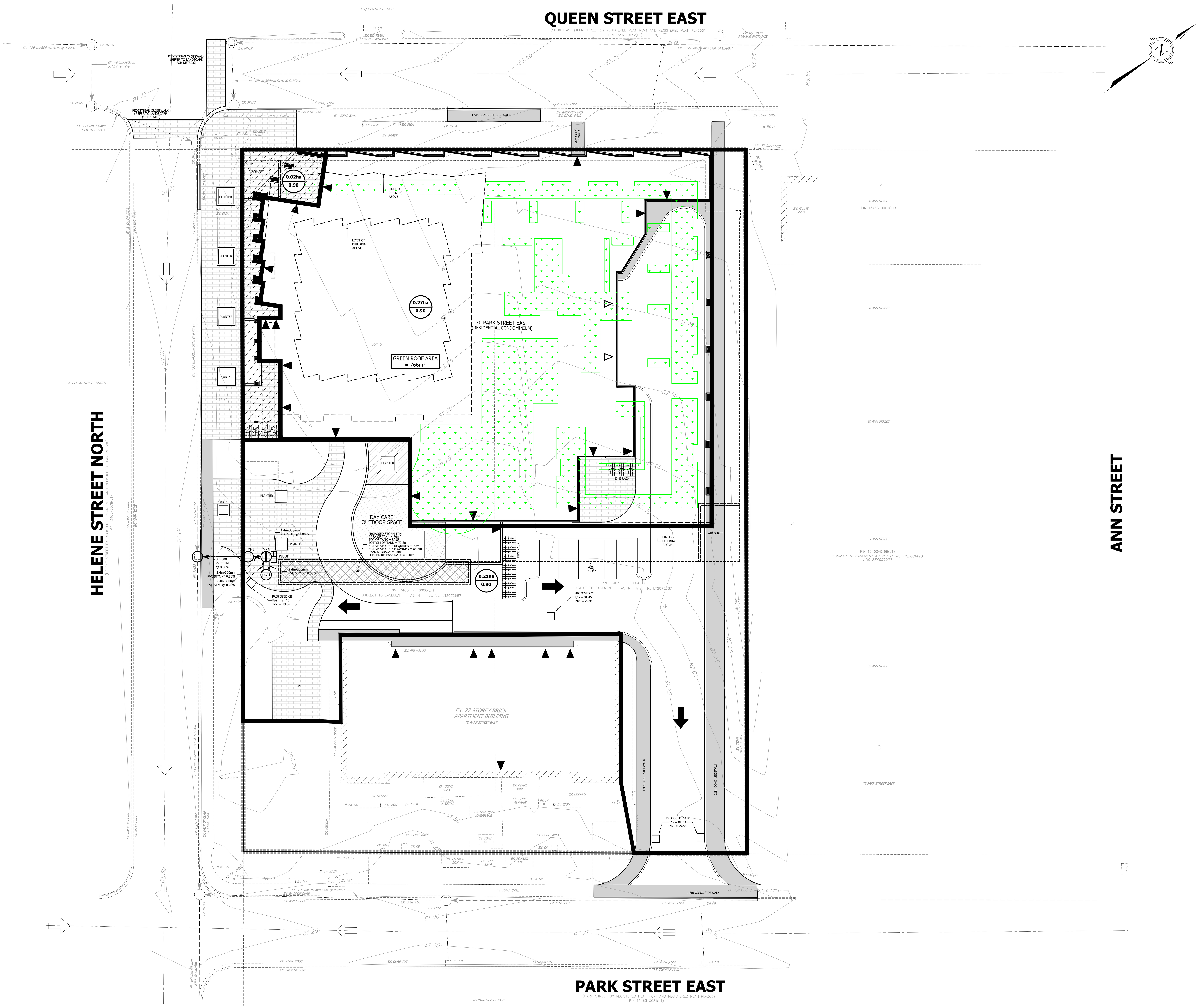
GRADING PLAN

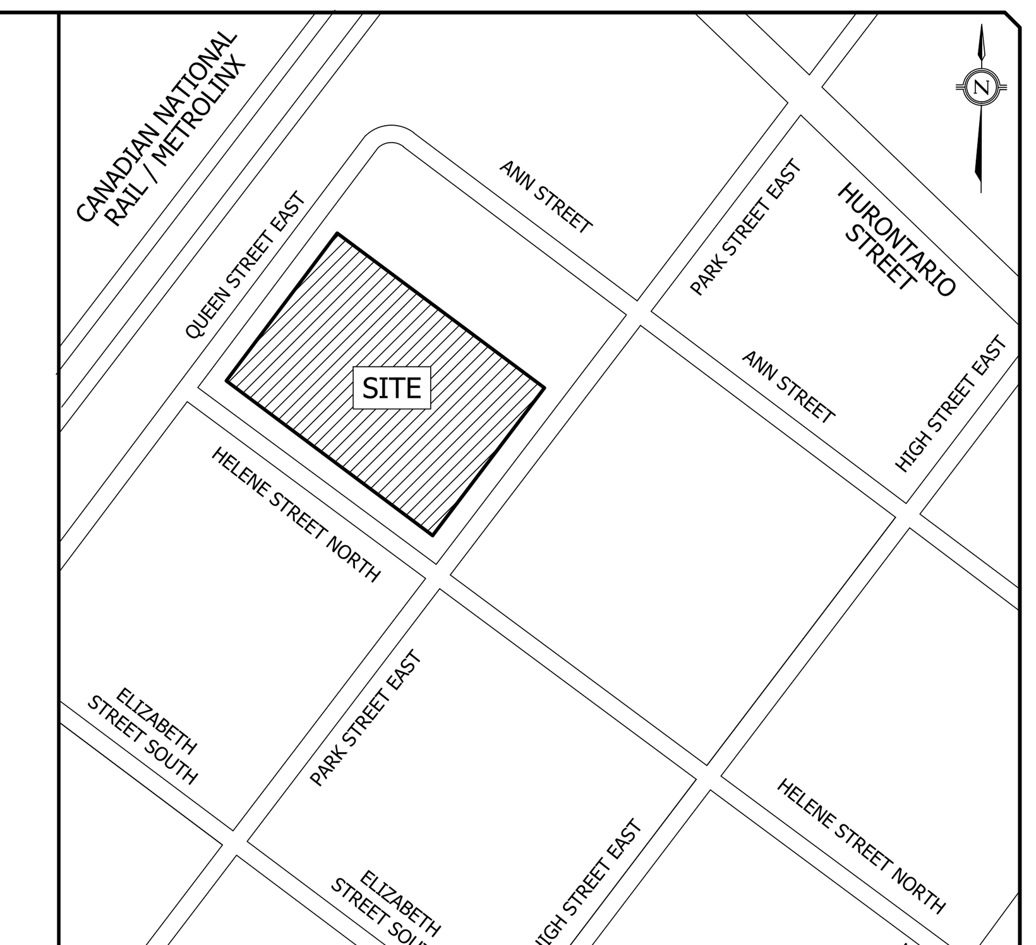
REGION FILE No. XXX | CITY FILE No. XXX

SCALE:	1:250	AREA	Z-08-C5/D	PROJECT No.	22-293
DRAWN BY:	A.G.	CHECKED BY:	R.M./R.B.T.M	PLAN No.	**201**
DATE:	DECEMBER 2022	SHEET	OF	C-	

File: F:\PROJECTS\22-293W - 70 PARK STREET, MISSISSAUGA (DREAM)\DRAWINGS\200 - GRADING\201-GRD.DWG

PLOT DATE:January 23, 2023 3:49:45 PM





KEY PLAN
N.T.S.

LEGEND

- STORM SEWER AND MANHOLE
- EXISTING STORM SEWER AND CATCH BASIN MANHOLE
- EXISTING STORM SEWER AND MANHOLE
- LIMIT OF UNDERGROUND LEVELS
- LIMIT OF BUILDING GROUND FLOORS
- CONCRETE
- PRECAST UNIT PAVERS
- WOODEN DECK
- LIMIT OF PROPERTY
- PROPOSED CURB CUT
- 0.27ha — PROPOSED DRAINAGE AREA (ha) FOR MINOR SYSTEM (5 YEAR) FLOW
- 0.90 — PROPOSED RUNOFF COEFFICIENT
- DRAINAGE AREA BOUNDARY
- 87.00 — EXISTING CONTOUR AND ELEVATION
- PROPOSED OVERLAND FLOW DIRECTION
- EXISTING OVERLAND FLOW DIRECTION
- UNCONTROLLED DRAINAGE
- GREEN ROOF

BENCHMARK NOTE

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TOPOGRAPHIC SURVEY PREPARED BY J.D. BARNES LIMITED, SEPTEMBER 8TH, 2022.

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DATE: JAN. 23, 2023			

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R.B.T. MERWIN
100009772
JAN. 23, 2023
PROVINCE OF ONTARIO

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70 PARK STREET EAST

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MISSISSAUGA

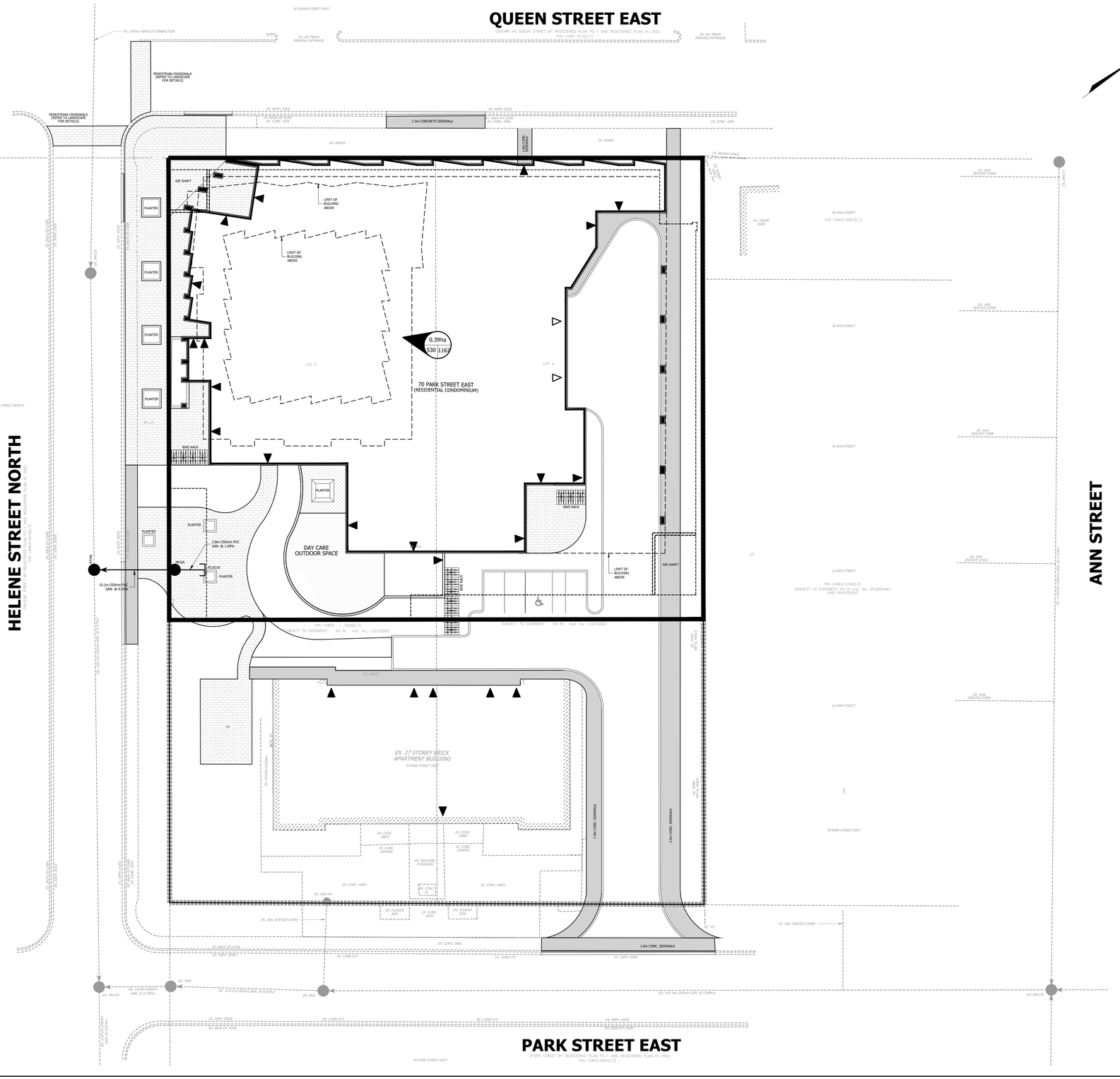
STORM DRAINAGE PLAN

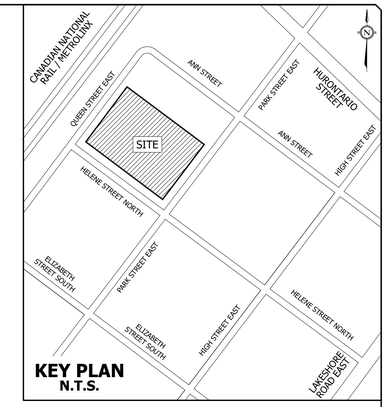
REGION FILE No. XXX — CITY FILE No. XXX

SCALE:	1:250	AREA	Z-08-C5/D	PROJECT No.	22-293
DRAWN BY:	A.G.	CHECKED BY:	R.M./R.B.T.M	PLAN No.	**301**
DATE:	DECEMBER 2022	SHEET	OF	C-	

File: F:\PROJECTS\22-293W - 70 PARK STREET, MISSISSAUGA (DREAM)\DRAWINGS\300 - DRAINAGE\301-STM.DWG

PLOT DATE:January 23, 2023 3:50:05 PM





LEGEND

- SANITARY SEWER AND MANHOLE
- EXISTING SANITARY SEWER AND MANHOLE
- LIMIT OF UNDERGROUND LEVELS
- LIMIT OF BUILDING GROUND FLOORS
- CONCRETE
- PRECAST UNIT PAVERS
- WOODEN DECK
- LIMIT OF PROPERTY
- PROPOSED CURB CUT
- 0.32ha / 530 / 1167 — DRAINAGE AREA (ha) / POPULATION / UNIT COUNT
- DRAINAGE AREA BOUNDARY

BENCHMARK NOTE

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DATE: JAN. 23, 2023			

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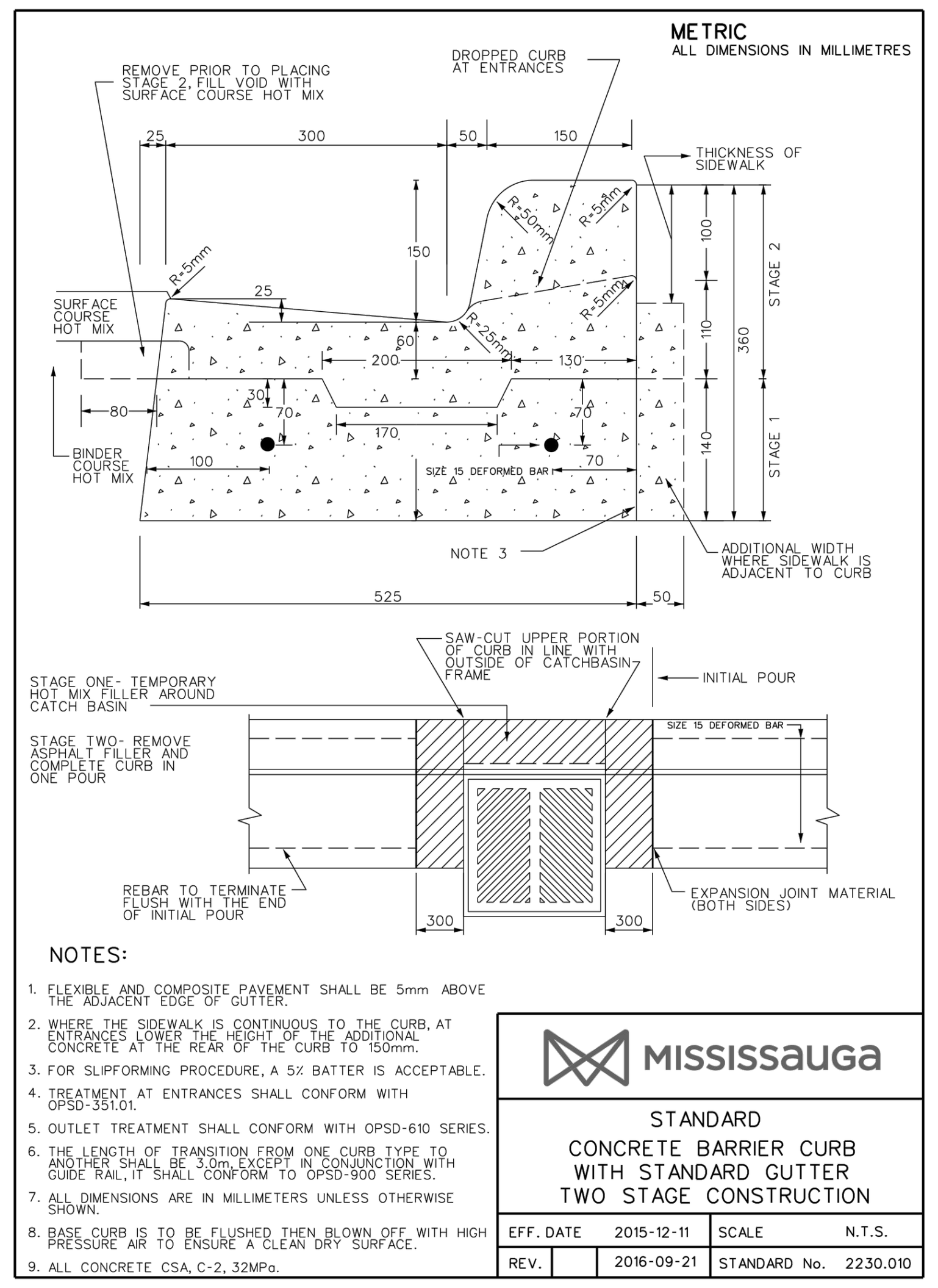
MISSISSAUGA

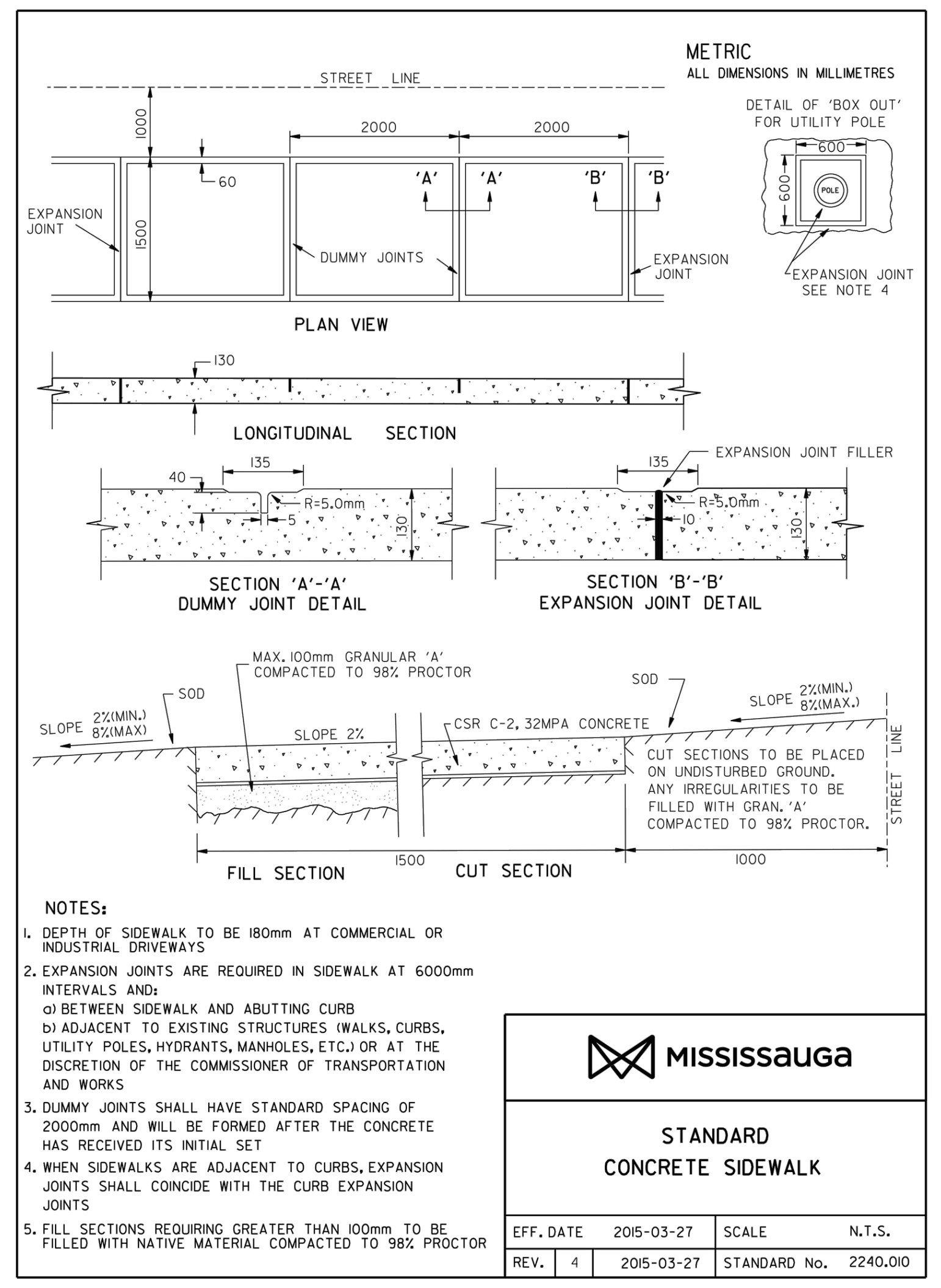
SANITARY DRAINAGE PLAN

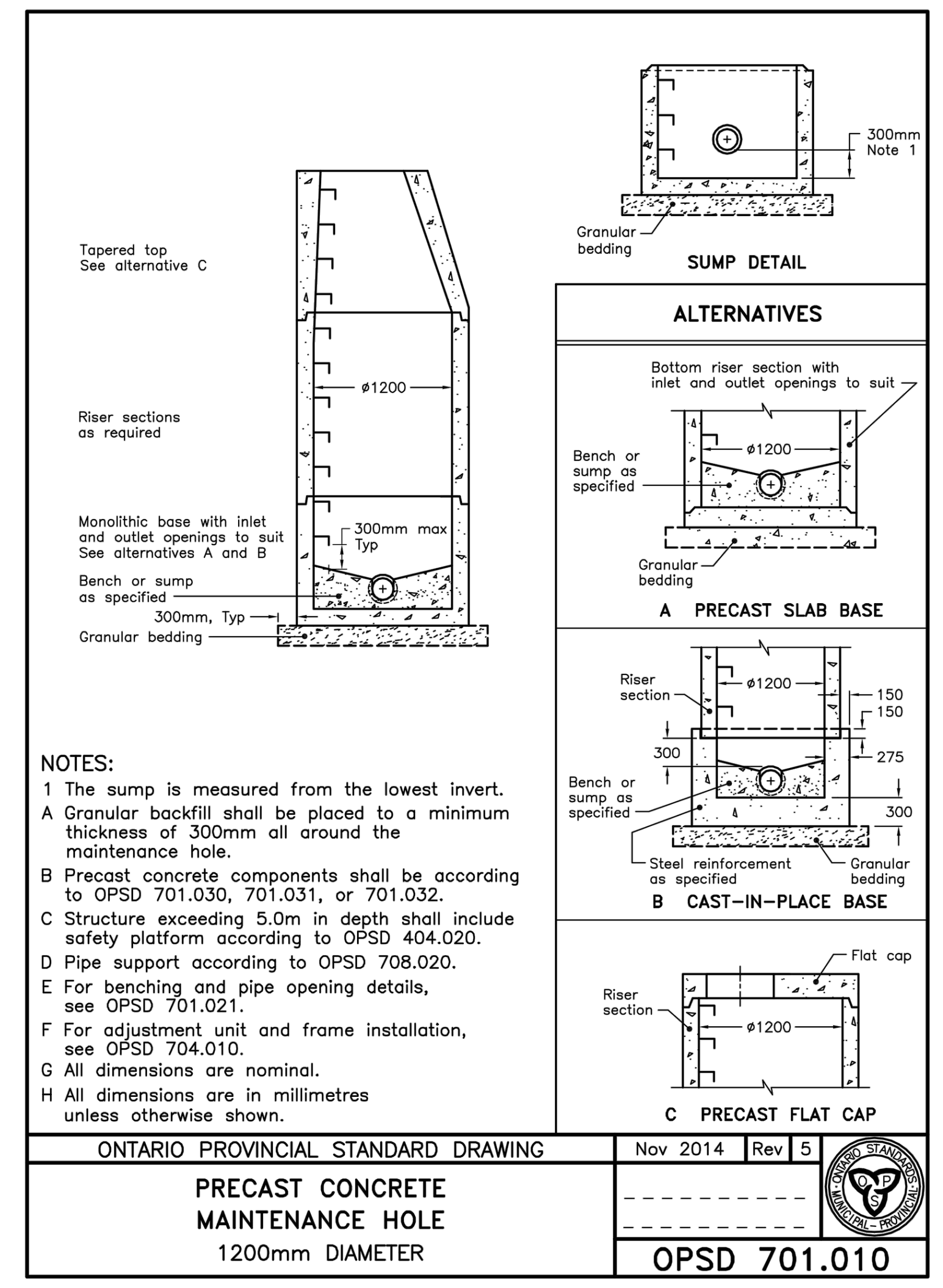
REGION FILE No. XXX			CITY FILE No. XXX
SCALE: 1:250	AREA Z-08-CS/D	PROJECT No.	22-293
DRAWN BY: A.G.	CHECKED BY: R.M./R.B.T.M	PLAN No.	302
DATE: DECEMBER 2022	SHEET OF	C-	

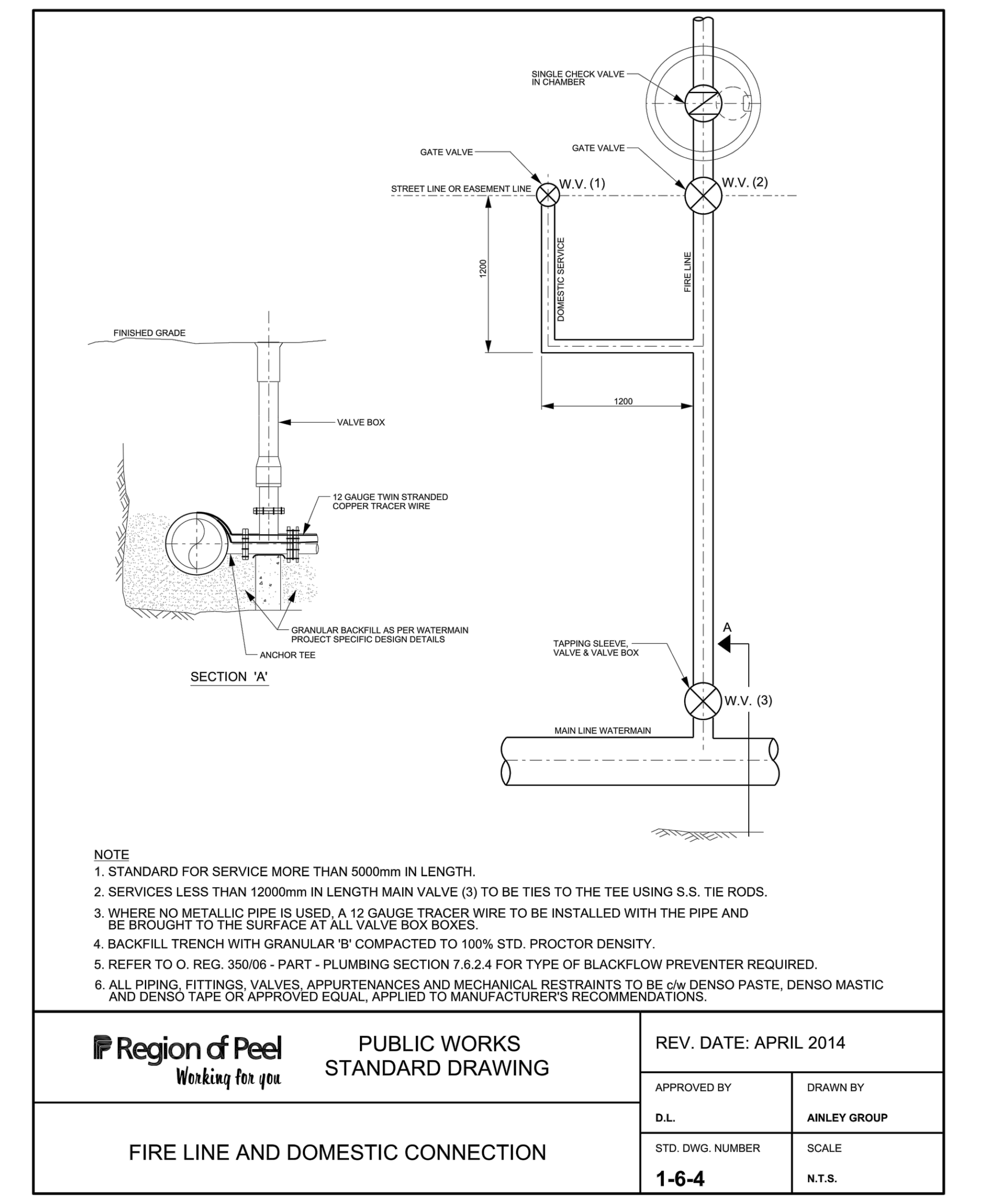
File: P:\PROJECTS\22-293W - 70 PARK STREET, MISSISSAUGA (DREAM)\DRAWINGS\300 - DRAINAGE\302-SAN.DWG

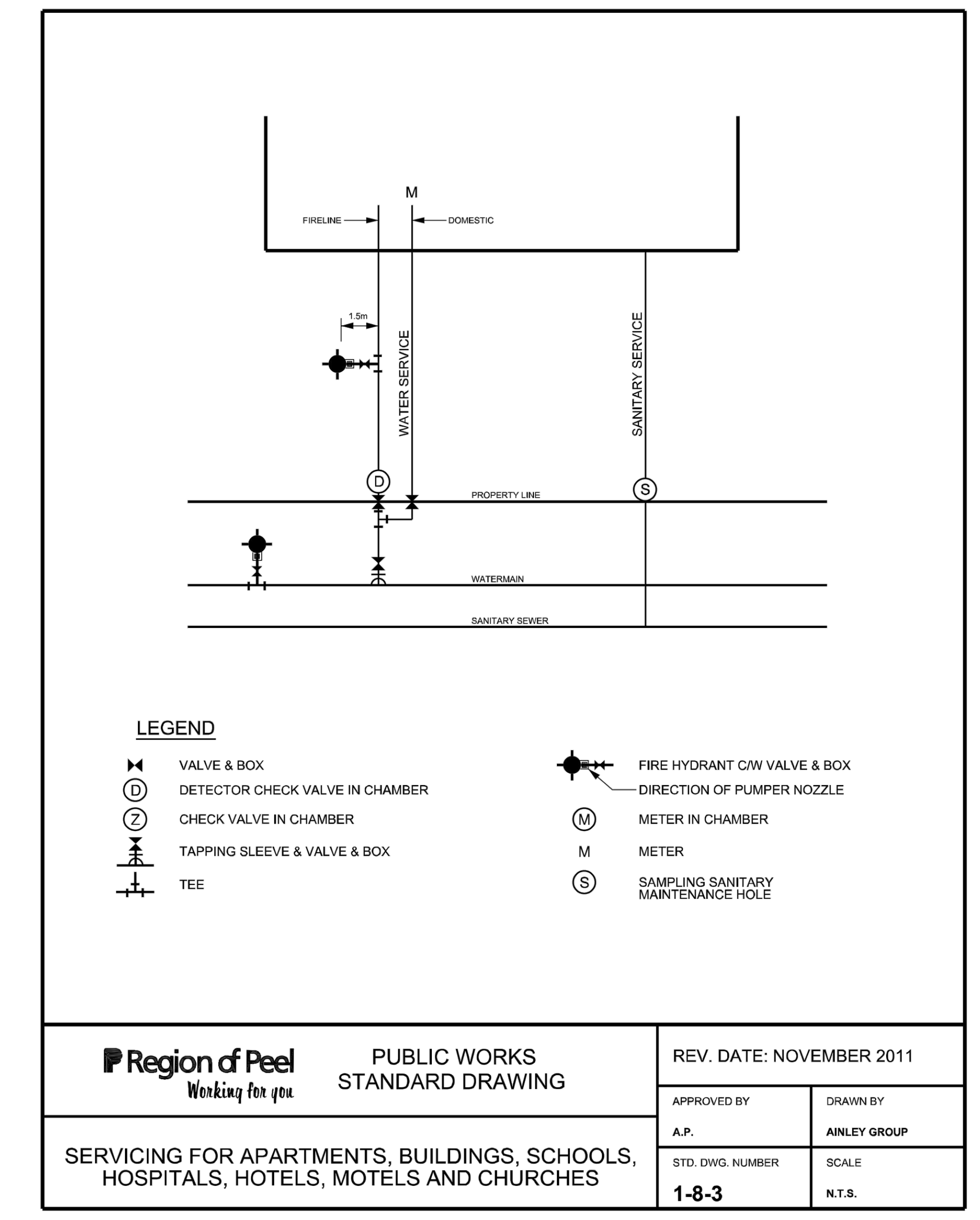
PLOT DATE:January 23, 2023 3:50:25 PM

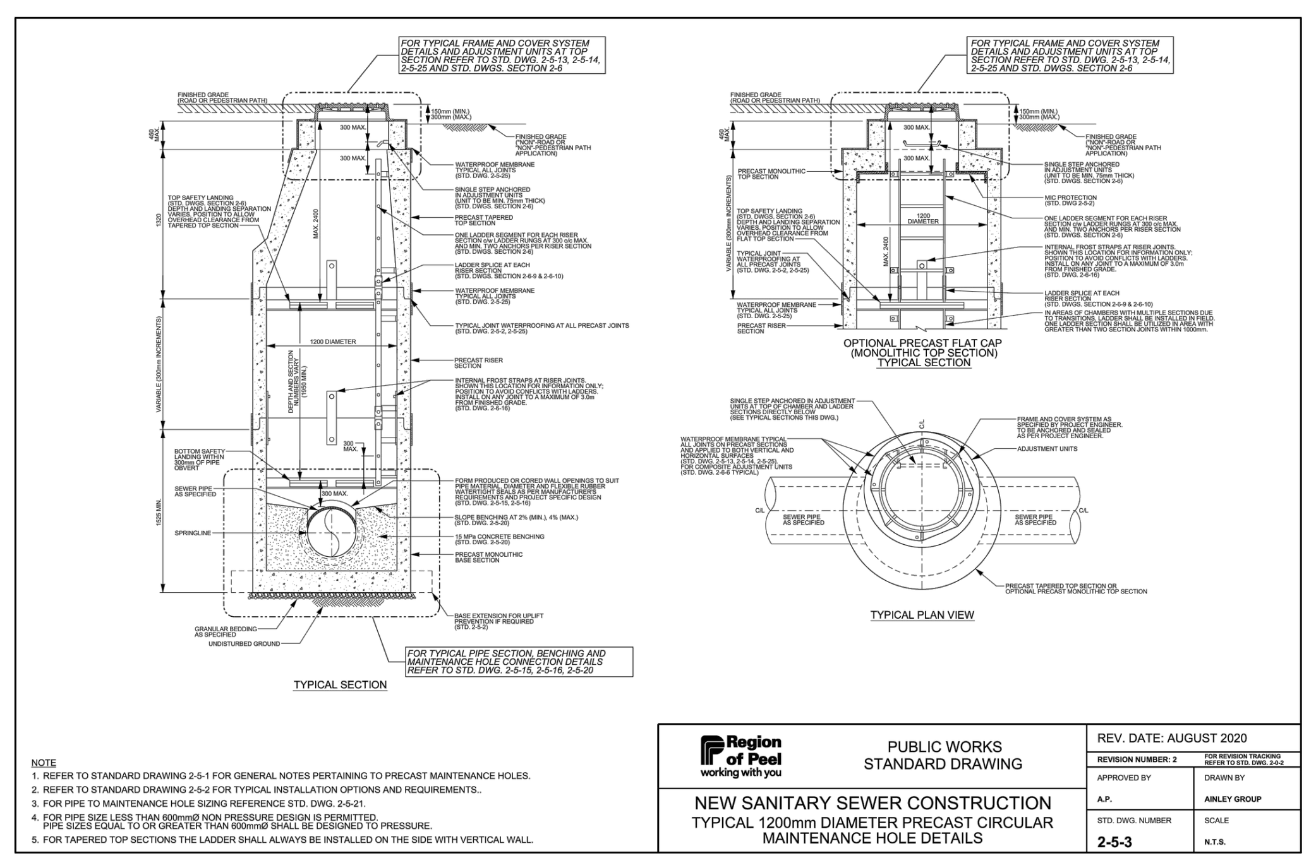


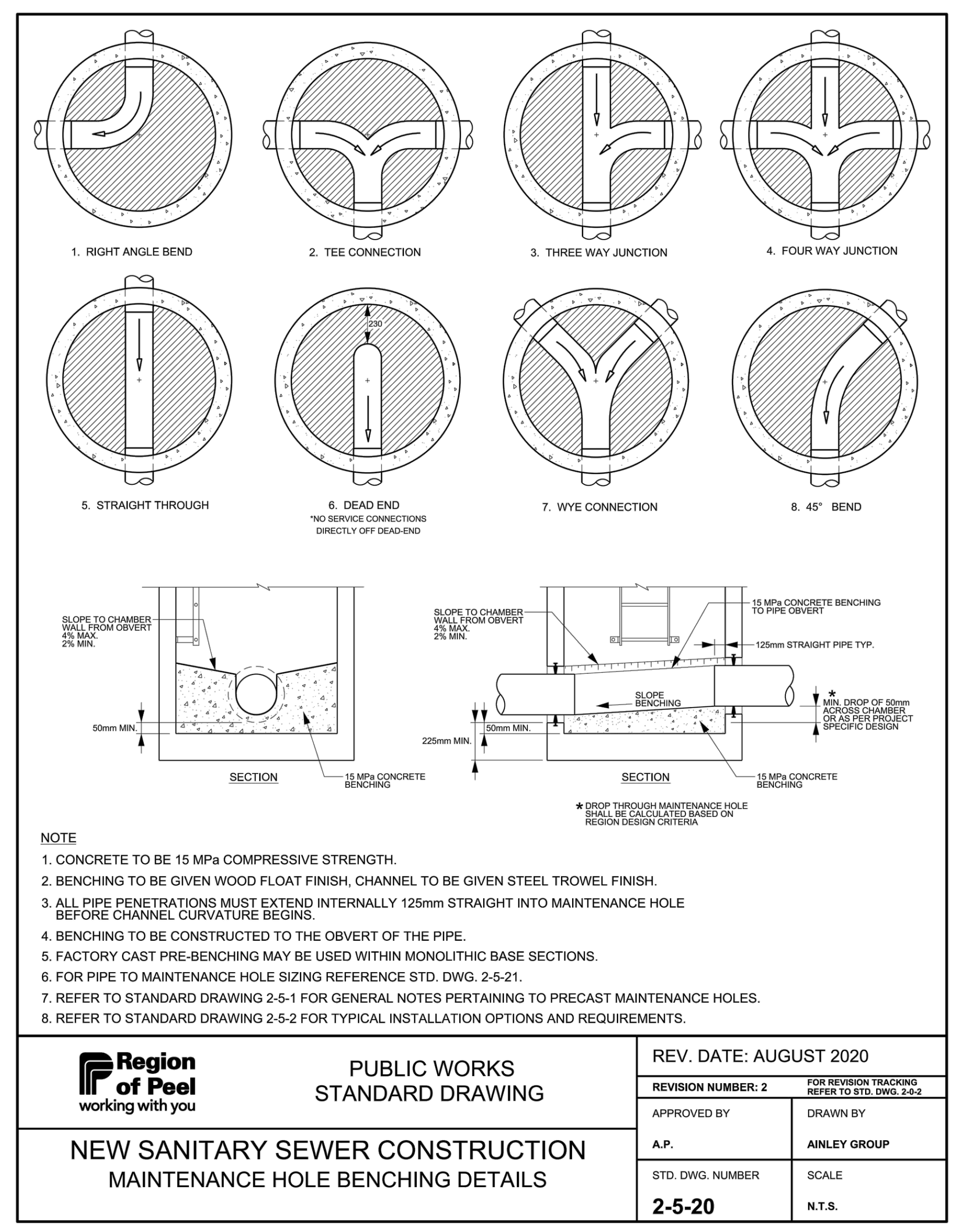


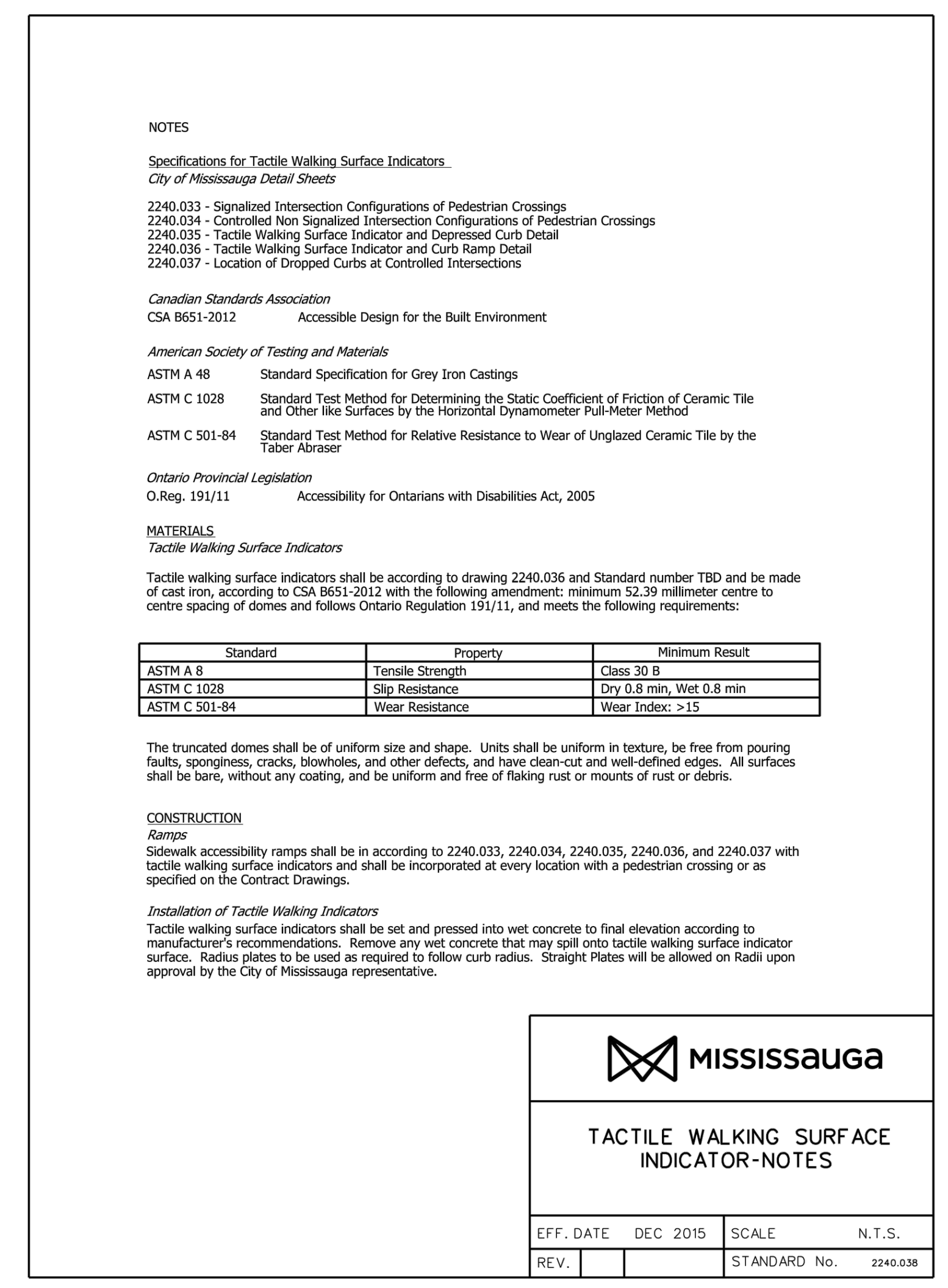


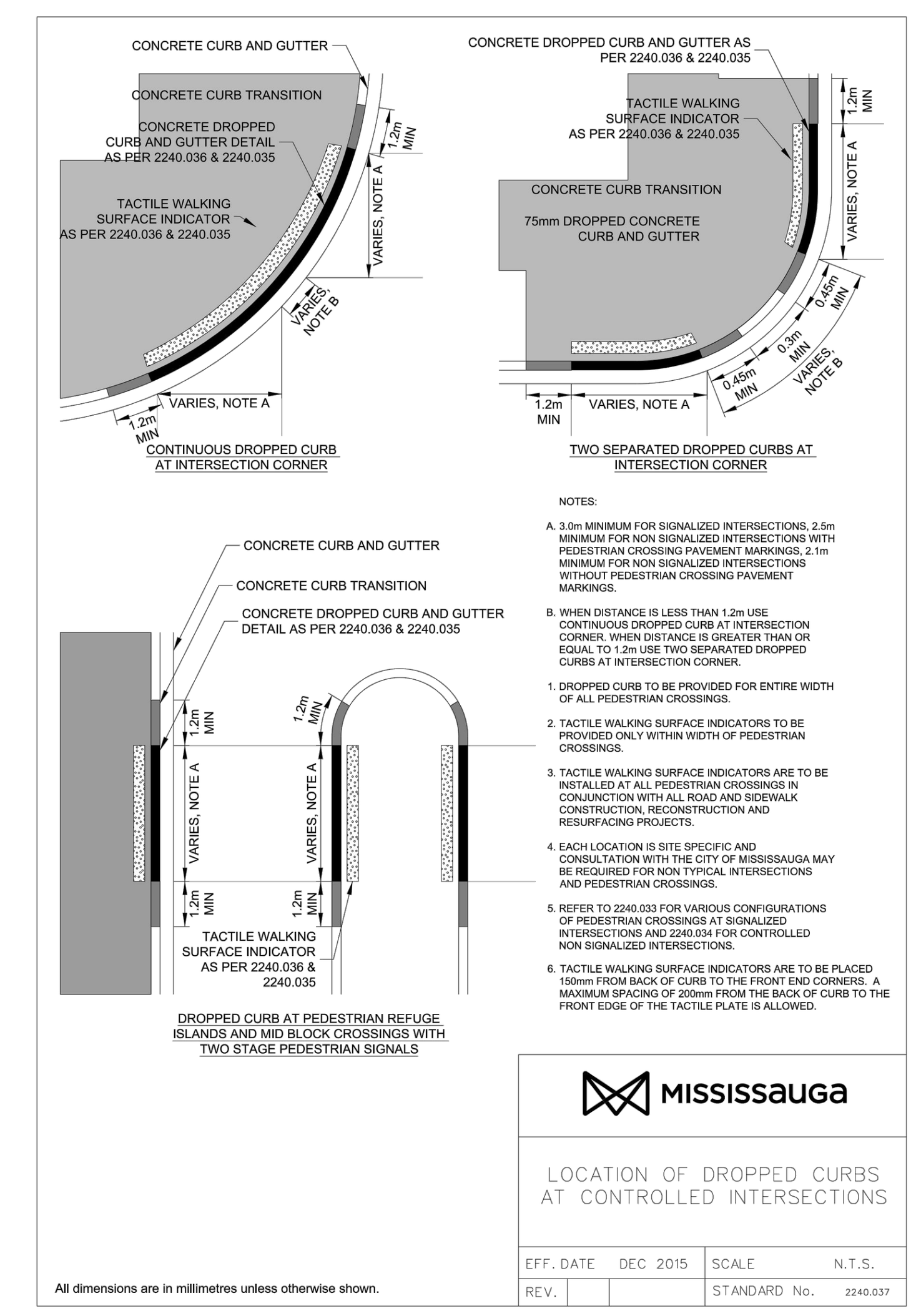


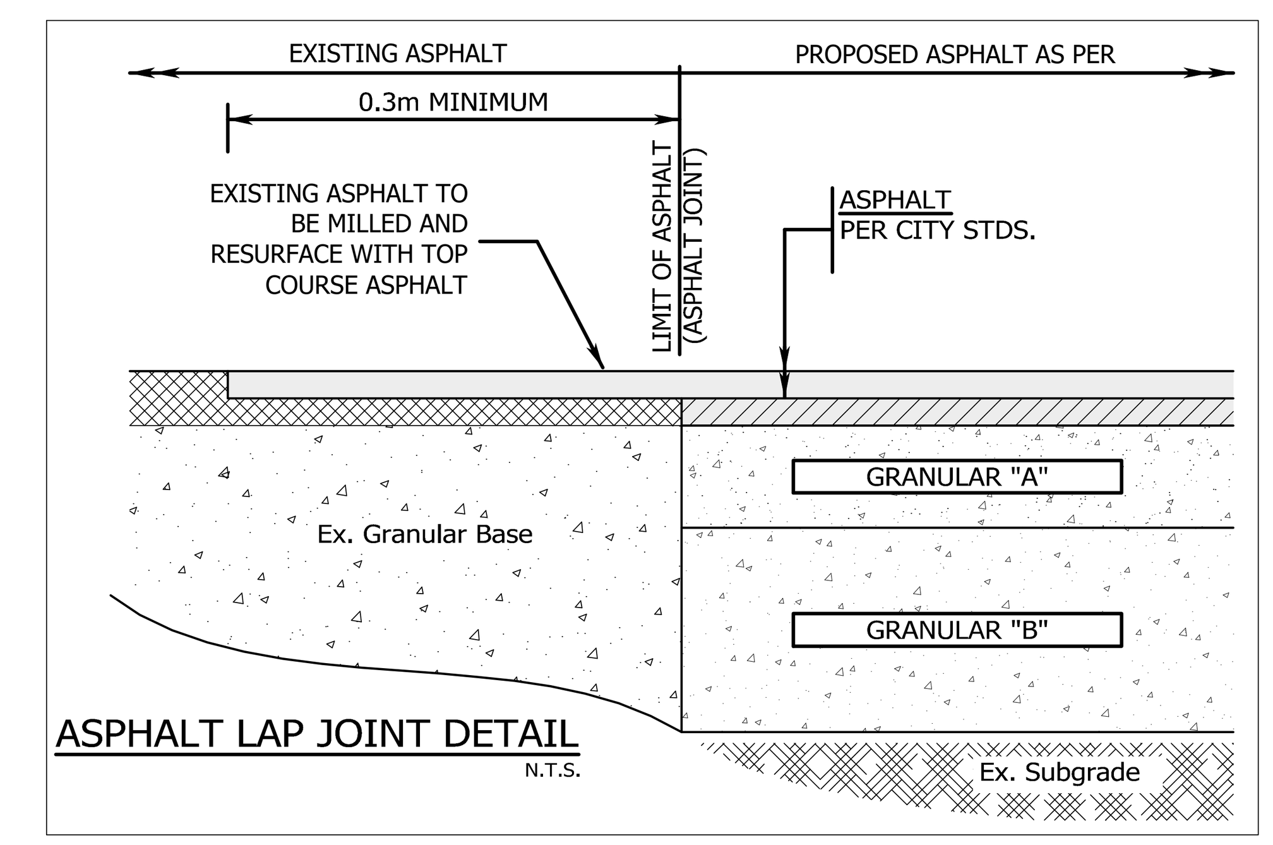


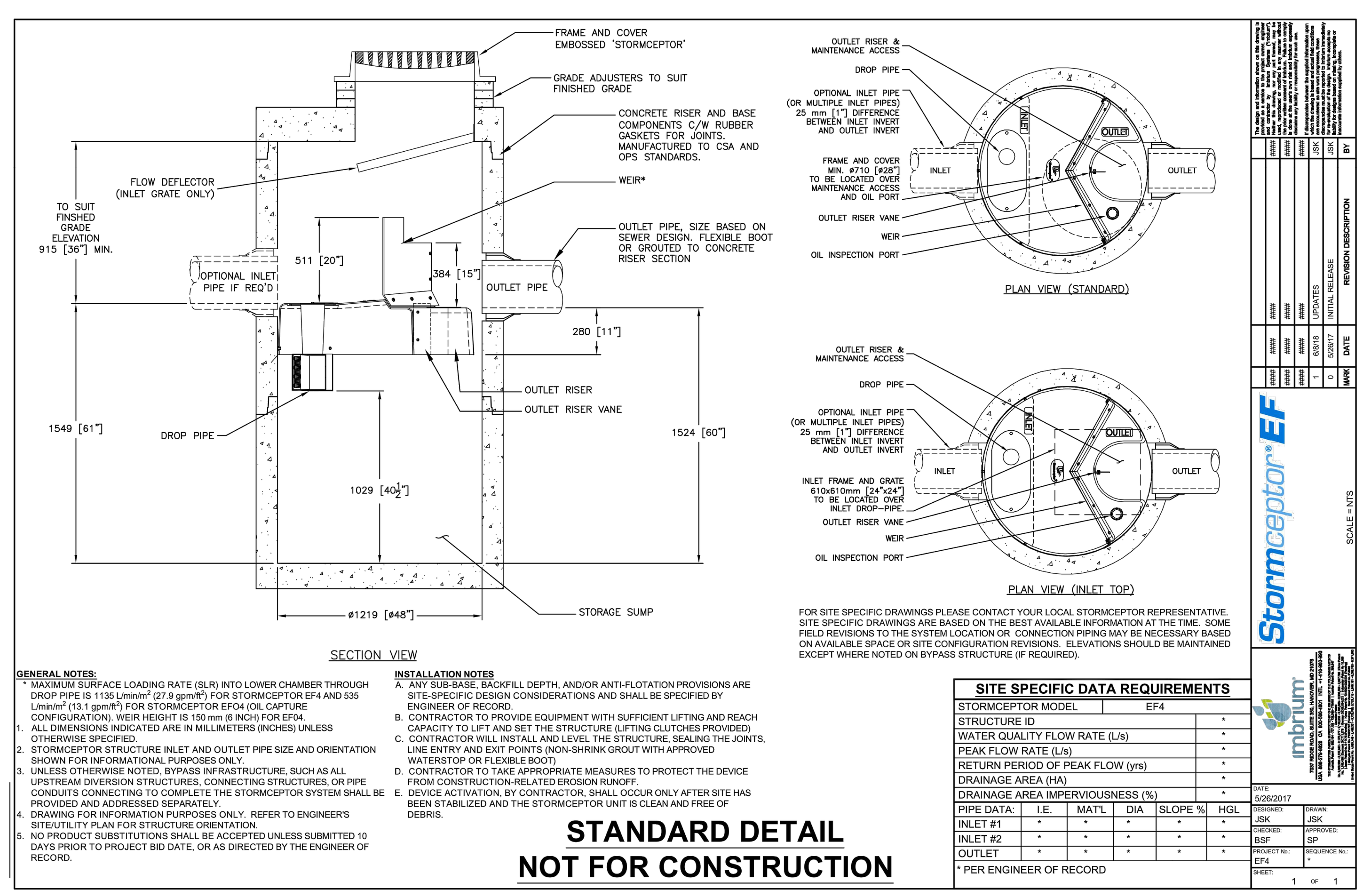


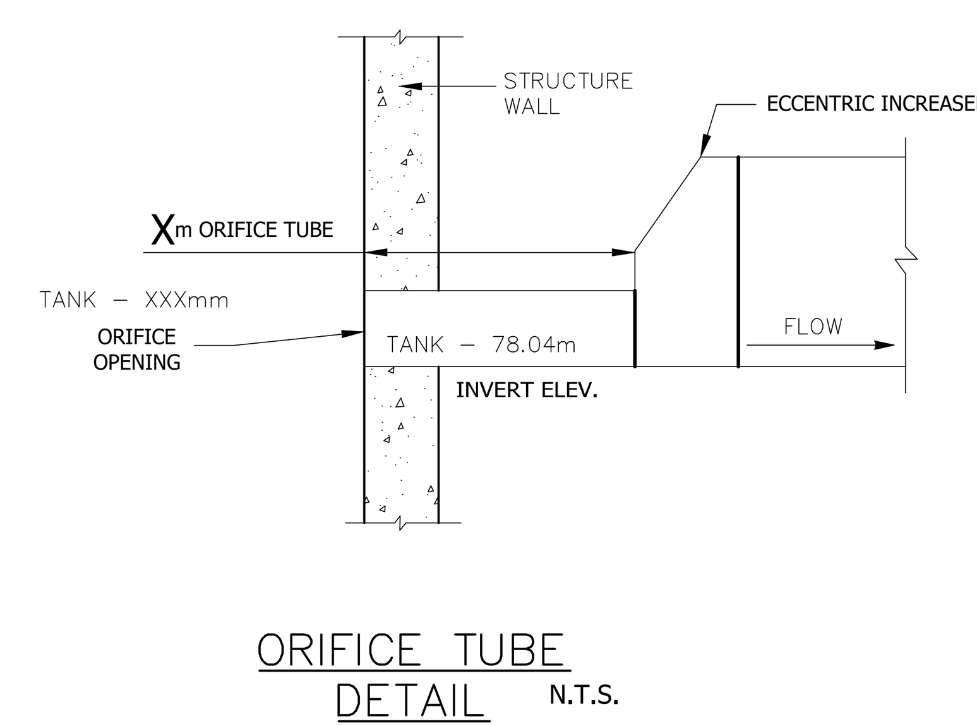












■ FIRST SUBMISSION	□ SECOND DATE	□ THIRD DATE	□ FINAL DATE
DATE: JAN. 23, 2023			

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70 PARK STREET EAST

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MISSISSAUGA

DETAILS

REGION FILE No. XXX		CITY FILE No. XXX
SCALE:	AREA Z-08-C5/D	PROJECT No. 22-293
DRAWN BY: A.G.	CHECKED BY: R.M./R.B.T.M	PLAN No. 401
DATE: DECEMBER 2022	SHEET OF	C-

File: F:\PROJECTS\22-293W - 70 PARK STREET, MISSISSAUGA (DREAM)\DRAWINGS\400 - DETAIL\401-DETAILS.DWG

PLOT DATE:January 23, 2023 3:50:34 PM

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 RESPONSIBILITY 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.

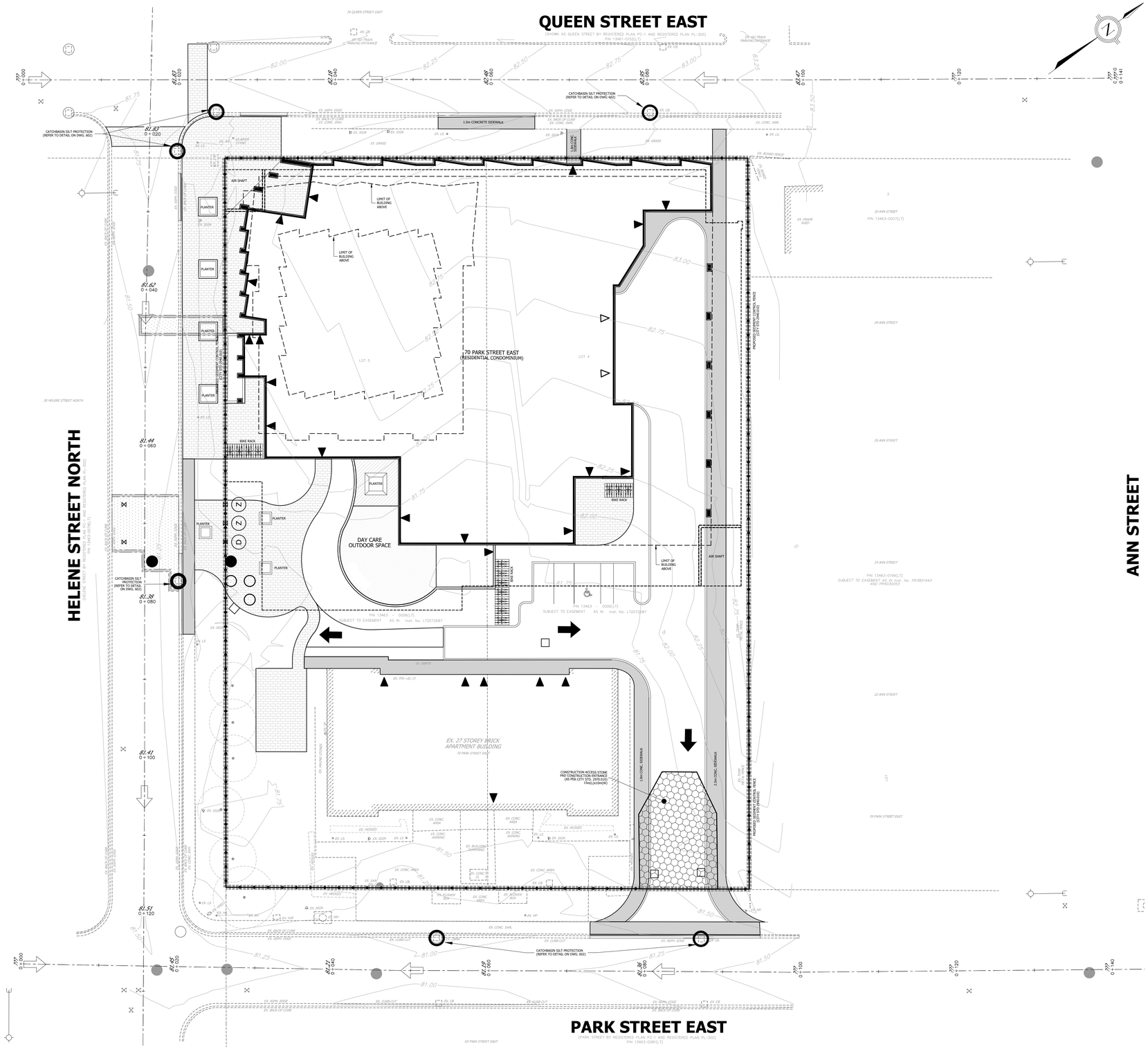
1.13. ALL EXTERNAL AREAS DISTURBED DUE TO CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE CITY OF MISSISSAUGA OR REGION OF PEEL.

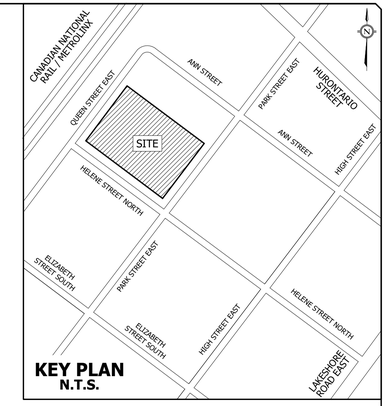
MAINTENANCE RECOMMENDATIONS

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 SEWER MANHOLE
- SANITARY MANHOLE
- EXISTING STORM CATCH BASIN MANHOLE
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- SINGLE CATCHBASIN
- EXISTING SINGLE CATCHBASIN
- DETECTOR CHECK VALVE IN CHAMBER (AS PER R.S.D. 1-3-1)
- 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
- PROPOSED OVERLAND FLOW DIRECTION
- EXISTING OVERLAND FLOW DIRECTION
- PROPOSED SEDIMENT CONTROL FENCE (AS PER CITY STD. 2940.010)
- TREE PROTECTION BARRIER (REFER TO DETAIL ON DWG. 602)
- PROPOSED CONSTRUCTION FENCE
- PROPOSED CONSTRUCTION ACCESS STONE PAD (AS PER CITY STD. 2970.010)
- CATCHBASIN SILT PROTECTION (REFER TO DETAIL ON DWG. 602)
- EXISTING TREE
- CONCRETE
- PRECAST UNIT PAVERS
- WOODEN DECK
- PROPOSED CURB CUT

BENCHMARK NOTE

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO THE CANADIAN GEODETIC VERTICAL DATUM 1928, PRE 1978 ADJUSTMENT, AND ARE DERIVED FROM THE CITY OF MISSISSAUGA BENCHMARK No 732 HAVING A PUBLISHED ELEVATION OF 78.128 METERS

TOPOGRAPHIC SURVEY PREPARED BY J.D. BARNES LIMITED, SEPTEMBER 8TH, 2022.

■ FIRST SUBMISSION	☐ SECOND DATE	☐ THIRD DATE	☐ FINAL DATE
DATE: JAN. 23, 2023			

REGISTERED PROFESSIONAL ENGINEER
R.B.T. MERWIN
100009772
JAN. 23, 2023
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

70 PARK STREET EAST

Region of Peel working with you

MISSISSAUGA

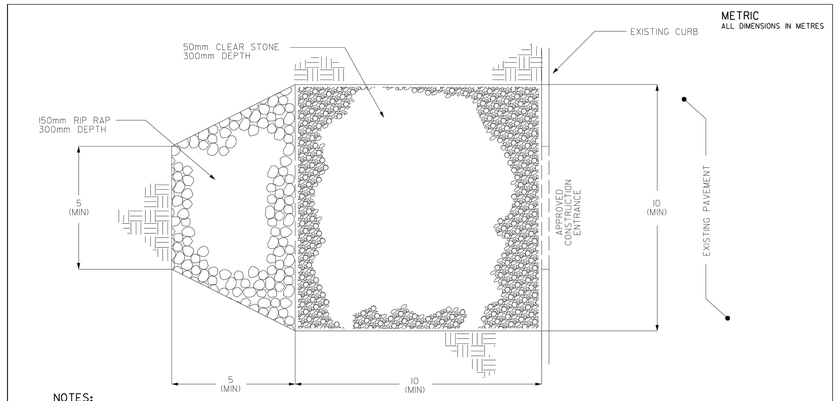
EROSION & SEDIMENT CONTROL PLAN

REGION FILE No. XXX — CITY FILE No. XXX

SCALE: 1:250	AREA Z-08-CS/D	PROJECT No.	22-293
DRAWN BY: A.G.	CHECKED BY: R.M./R.B.T.M	PLAN No.	601
DATE: DECEMBER 2022	SHEET OF		C-

File: F:\PROJECTS\22-293W - 70 PARK STREET, MISSISSAUGA (DREAM)\DRAWINGS\600 - EROSION\601-ESC PLAN.DWG

PLOT DATE:January 23, 2023 3:51:09 PM



NOTES:

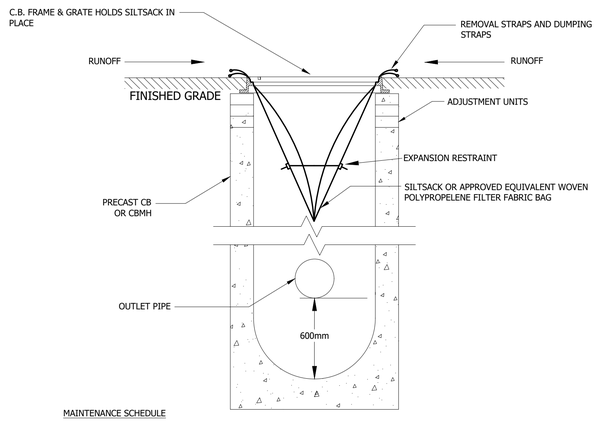
1. GRANULAR MATERIAL IS TO BE CLEAN APPROVED MATERIAL AND PLACED AT NOTED DIMENSIONS PRIOR TO LAND DISTURBANCE
2. GEOTEXTILE IS TO BE PLACED OVER THE ENTIRE AREA PRIOR TO STONE PLACEMENT
3. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL REDUCE TRACKING OR FLOWING OF SEDIMENT 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



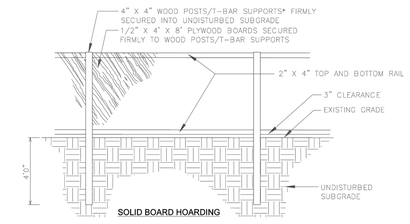
MAINTENANCE SCHEDULE

-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)

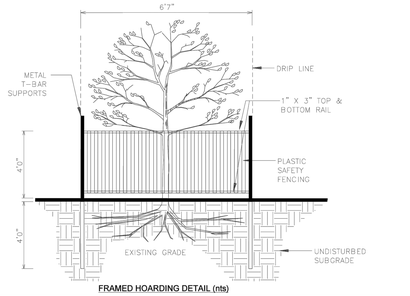
SILTSACK DETAIL

N.T.S.

DEVELOPMENT & DESIGN CONSTRUCTION HOARDING



SOLID BOARD HOARDING



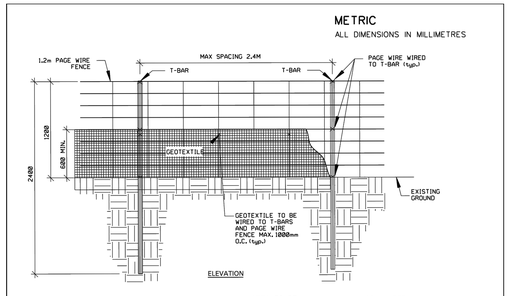
FRAMED HOARDING DETAIL (nts)

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



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 THROUGHOUT 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

■ FIRST SUBMISSION — DATE: JAN. 23, 2023
☐ SECOND DATE
☐ THIRD DATE
☐ FINAL DATE

REGISTERED PROFESSIONAL ENGINEER
R.B.T. MERWIN
100009772
JAN. 23, 2023
PROVINCE OF ONTARIO

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70 PARK STREET EAST

Region of Peel
working with you

MISSISSAUGA

EROSION & SEDIMENT CONTROL DETAILS

REGION FILE No. XXX — CITY FILE No. XXX

SCALE:	AREA Z-08-C5/D	PROJECT No.	22-293
DRAWN BY: A.G.	CHECKED BY: R.M./R.B.T.M	PLAN No.	**602**
DATE: DECEMBER 2022	SHEET OF	C-	

File: F:\PROJECTS\22-293W - 70 PARK STREET, MISSISSAUGA (DREAM)\DRAWINGS\600 - EROSION\602-ESC DETAILS.DWG

PLOT DATE:January 23, 2023 3:51:12 PM

APPENDIX B
SWM Calculations

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

Stormceptor®

FORTERRA

Stormceptor® EF Sizing Report

STORMCEPTOR®
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

01/11/2023

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

Site Name:	

Drainage Area (ha):	0.48
Runoff Coefficient 'c':	0.90

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

Required Water Quality Runoff Volume Capture (%):	
Estimated Water Quality Flow Rate (L/s):	13.43
Oil / Fuel Spill Risk Site?	Yes
Upstream Flow Control?	Yes
Upstream Orifice Control Flow Rate to Stormceptor (L/s):	100.00
Peak Conveyance (maximum) Flow Rate (L/s):	
Site Sediment Transport Rate (kg/ha/yr):	

Project Name:	70 Park Street East
Project Number:	60344
Designer Name:	Janna Ormond
Designer Company:	Urbantech
Designer Email:	jannaormond@urbantech.com
Designer Phone:	289-887-3057
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EFO4	85
EFO6	93
EFO8	97
EFO10	99
EFO12	100

Recommended Stormceptor EFO Model: EFO4

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

Water Quality Runoff Volume Capture (%): > 90

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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

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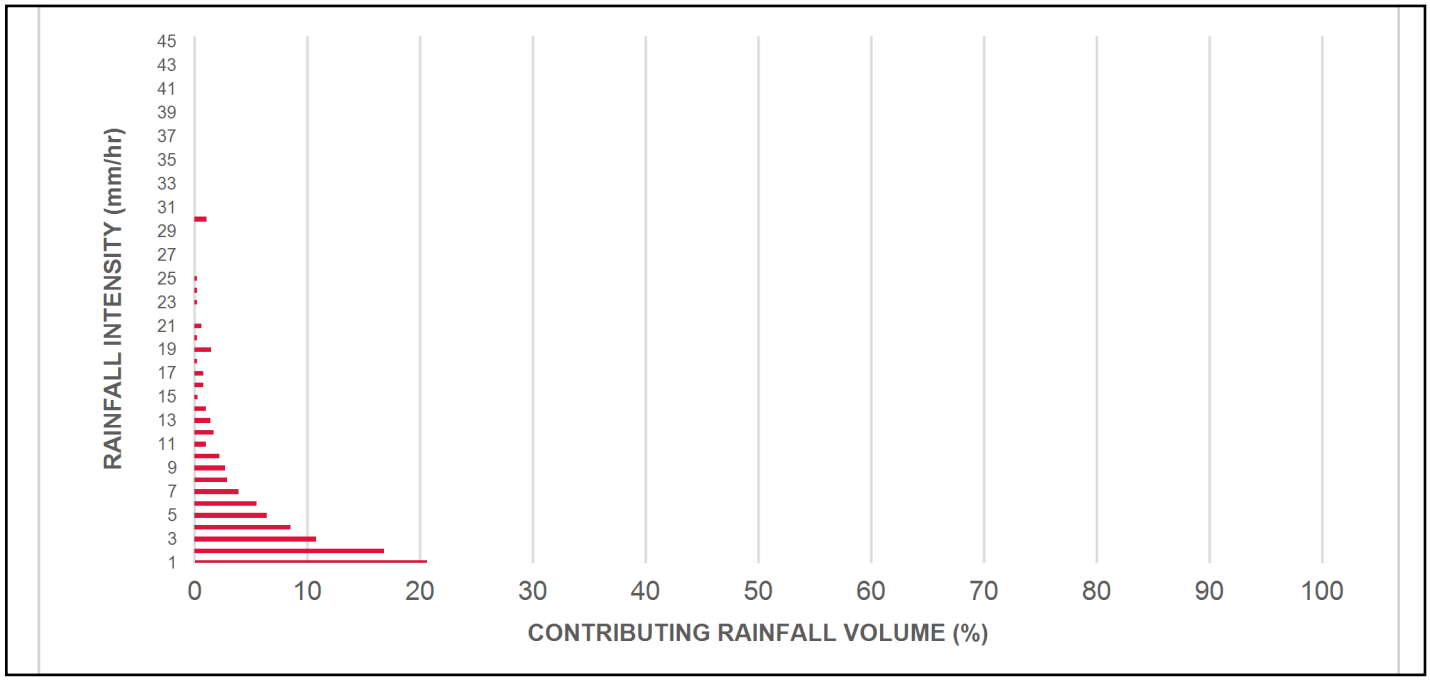
Upstream Flow Controlled Results

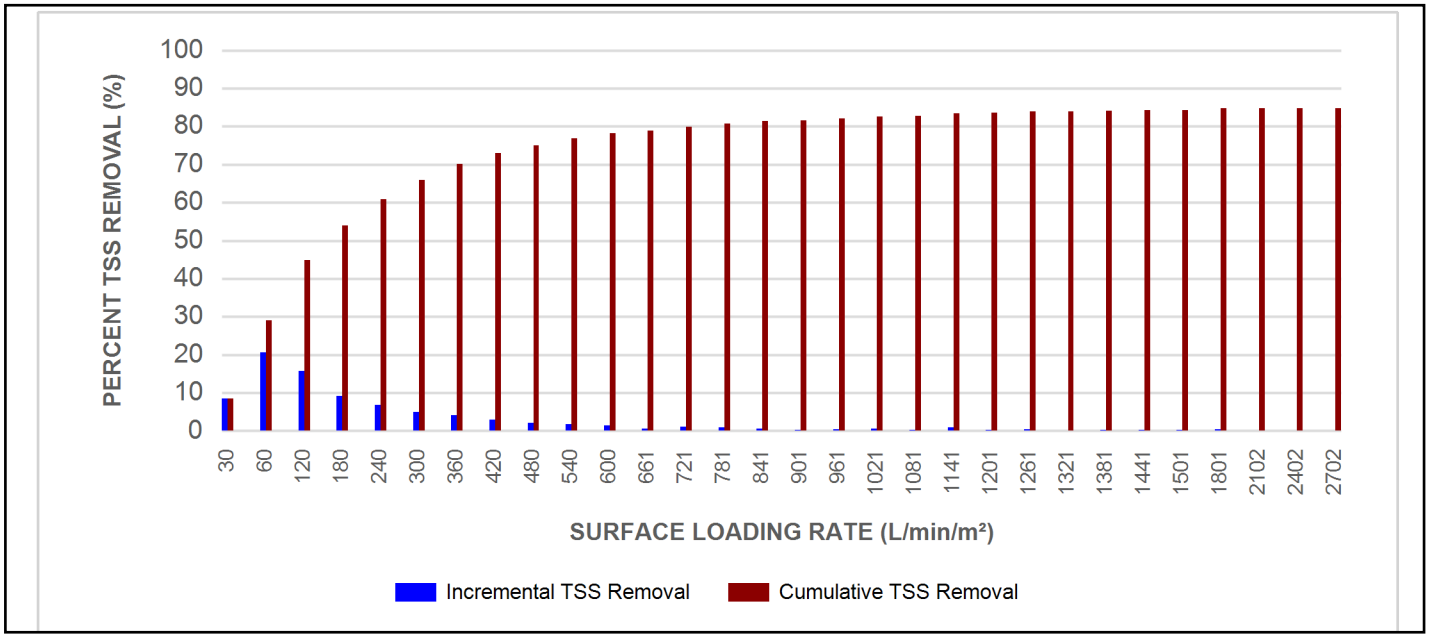
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.5	8.5	8.5	0.60	36.0	30.0	100	8.5	8.5
1	20.6	29.1	1.20	72.0	60.0	100	20.6	29.1
2	16.8	45.9	2.40	144.0	120.0	93	15.7	44.8
3	10.8	56.7	3.60	216.0	180.0	86	9.2	54.0
4	8.5	65.2	4.80	288.0	240.0	81	6.9	60.9
5	6.4	71.6	6.00	360.0	300.0	78	5.0	65.9
6	5.5	77.0	7.21	432.0	360.0	76	4.1	70.1
7	3.9	81.0	8.41	504.0	420.0	73	2.9	72.9
8	2.9	83.9	9.61	576.0	480.0	70	2.0	75.0
9	2.7	86.5	10.81	649.0	540.0	67	1.8	76.8
10	2.2	88.7	12.01	721.0	600.0	65	1.4	78.2
11	1.0	89.7	13.21	793.0	661.0	64	0.6	78.8
12	1.7	91.3	14.41	865.0	721.0	64	1.1	79.9
13	1.4	92.8	15.61	937.0	781.0	63	0.9	80.8
14	1.0	93.7	16.81	1009.0	841.0	63	0.6	81.4
15	0.3	94.0	18.01	1081.0	901.0	62	0.2	81.6
16	0.8	94.8	19.22	1153.0	961.0	62	0.5	82.0
17	0.8	95.7	20.42	1225.0	1021.0	61	0.5	82.6
18	0.2	95.8	21.62	1297.0	1081.0	60	0.1	82.7
19	1.5	97.3	22.82	1369.0	1141.0	58	0.9	83.5
20	0.2	97.5	24.02	1441.0	1201.0	57	0.1	83.6
21	0.6	98.2	25.22	1513.0	1261.0	56	0.3	84.0
22	1.8	100.0	26.42	1585.0	1321.0	54	1.0	85.0
23	0.2	100.2	27.62	1657.0	1381.0	53	0.1	85.1
24	0.2	100.5	28.82	1729.0	1441.0	51	0.1	85.2
25	0.2	100.7	30.02	1801.0	1501.0	49	0.1	85.3
30	1.1	101.8	36.03	2162.0	1801.0	41	0.5	85.8
35	-1.8	100.0	42.03	2522.0	2102.0	35	N/A	85.2
40	0.0	100.0	48.04	2882.0	2402.0	31	0.0	85.2
45	0.0	100.0	54.04	3243.0	2702.0	27	0.0	85.2
						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



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Maximum Pipe Diameter / Peak Conveyance

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

SCOUR PREVENTION AND ONLINE CONFIGURATION

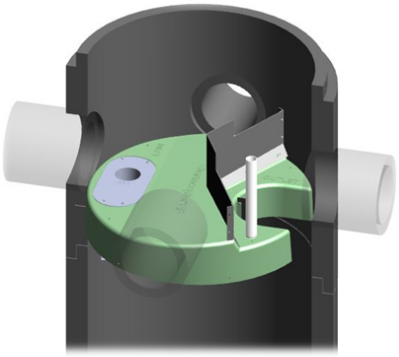
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test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

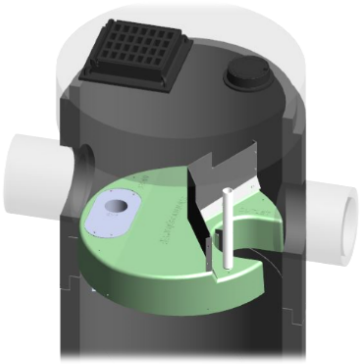
DESIGN FLEXIBILITY

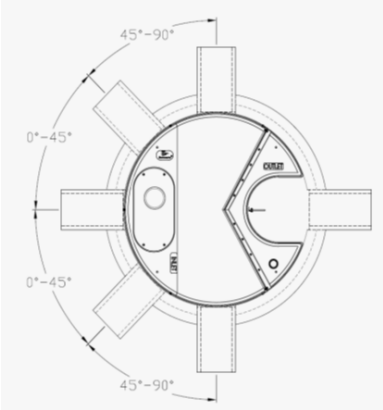
►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend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

OIL CAPTURE AND RETENTION

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







INLET-TO-OUTLET DROP

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

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

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

HEAD LOSS

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

Pollutant Capacity

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

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

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

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

STANDARD STORMCEPTOR EF/EFO DRAWINGS

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

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

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

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

PART 1 – GENERAL

1.1 WORK INCLUDED

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

1.2 REFERENCE STANDARDS & PROCEDURES

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

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

1.3 SUBMITTALS

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

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

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

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

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

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

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall

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

3.2 SIZING METHODOLOGY

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

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

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

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

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

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

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

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

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

3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV **Program's Procedure for Laboratory Testing of Oil-Grit Separators,** with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to

assess whether light liquids captured after a spill are effectively retained at high flow rates.

3.4.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m^2 to 2600 L/min/m^2) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.** However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

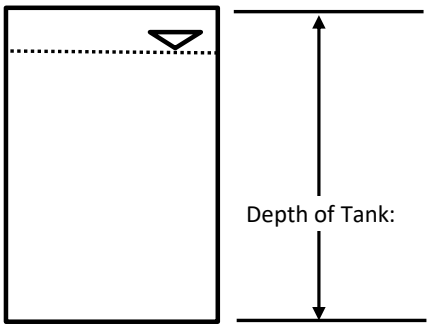
TANK SIZE
PUMP

URBANTECH

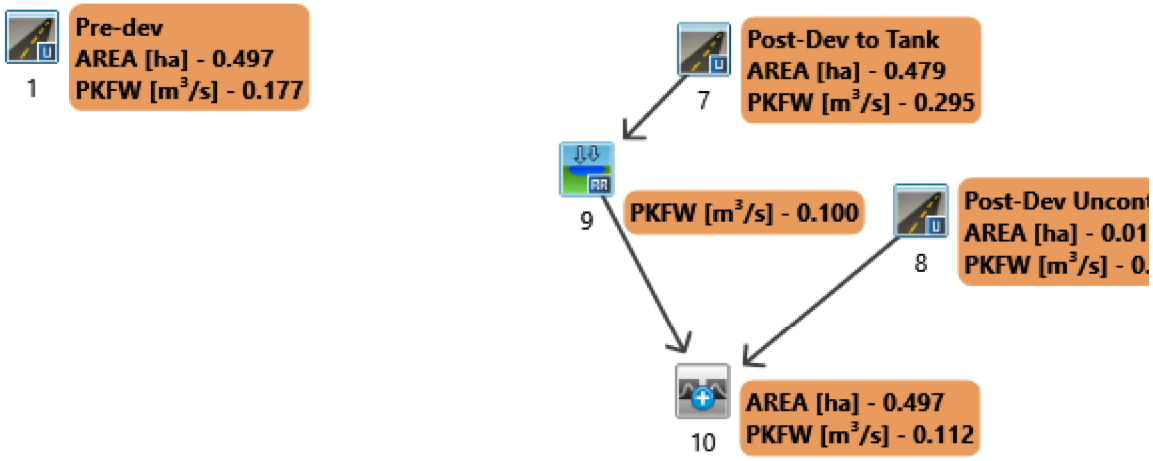
Project Name: 70 Park Street East
Municipality: City of Mississauga
Project No.: 22-293
Date: 11-Jan-23

Prepared by: JPO
Checked by: BM
Submission #: 1

Elevation (m)	Height (m)	Volume (m^3)	Flow rate (m^3/s)
Pump			
100.00	0.00	0.00	0.000
100.01	0.01	1.00	0.0990
101.00	1.00	70.00	0.100



Name	Description		Result
	Quantity control only		
	Storage tank footprint		**70** m^2
	Depth of Storage Tank		**1.00** m
	Provided Volume	70 m^3	
	Required Volume from VO6	67 m^3	


Pre-dev
AREA [ha] - 0.497
PKFW [m³/s] - 0.177
1
Post-Dev to Tank
AREA [ha] - 0.479
PKFW [m³/s] - 0.295
7
9
PKFW [m³/s] - 0.100
Post-Dev Uncont
AREA [ha] - 0.01
PKFW [m³/s] - 0.
8
AREA [ha] - 0.497
PKFW [m³/s] - 0.112
10

```
================================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2006)
       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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5e965868-dae1-4df3-bb91-07acd5f62b1a\


DATE: 01-11-2023                          TIME: 02:14:46

USER:



COMMENTS: _____________________________________________________________


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  ***********************************************
  ** SIMULATION : 100-year 24 Hour Chicago - Mi **
  ***********************************************

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

3.58	1.78	9.58	7.21	15.58	2.00	21.58	1.26
3.67	1.80	9.67	6.90	15.67	1.98	21.67	1.25
3.75	1.83	9.75	6.62	15.75	1.97	21.75	1.25
3.83	1.86	9.83	6.37	15.83	1.95	21.83	1.24
3.92	1.89	9.92	6.13	15.92	1.93	21.92	1.24
4.00	1.92	10.00	5.92	16.00	1.92	22.00	1.23
4.08	1.96	10.08	5.72	16.08	1.90	22.08	1.22
4.17	1.99	10.17	5.54	16.17	1.89	22.17	1.22
4.25	2.02	10.25	5.37	16.25	1.87	22.25	1.21
4.33	2.06	10.33	5.21	16.33	1.86	22.33	1.21
4.42	2.10	10.42	5.06	16.42	1.84	22.42	1.20
4.50	2.14	10.50	4.92	16.50	1.83	22.50	1.20
4.58	2.18	10.58	4.78	16.58	1.81	22.58	1.19
4.67	2.23	10.67	4.66	16.67	1.80	22.67	1.19
4.75	2.27	10.75	4.54	16.75	1.79	22.75	1.18
4.83	2.32	10.83	4.43	16.83	1.77	22.83	1.18
4.92	2.37	10.92	4.33	16.92	1.76	22.92	1.17
5.00	2.42	11.00	4.23	17.00	1.75	23.00	1.16
5.08	2.48	11.08	4.14	17.08	1.73	23.08	1.16
5.17	2.54	11.17	4.05	17.17	1.72	23.17	1.15
5.25	2.60	11.25	3.96	17.25	1.71	23.25	1.15
5.33	2.67	11.33	3.88	17.33	1.70	23.33	1.14
5.42	2.74	11.42	3.80	17.42	1.68	23.42	1.14
5.50	2.81	11.50	3.73	17.50	1.67	23.50	1.14
5.58	2.89	11.58	3.66	17.58	1.66	23.58	1.13
5.67	2.97	11.67	3.59	17.67	1.65	23.67	1.13
5.75	3.06	11.75	3.53	17.75	1.64	23.75	1.12
5.83	3.16	11.83	3.46	17.83	1.63	23.83	1.12
5.92	3.26	11.92	3.40	17.92	1.62	23.92	1.11
6.00	3.37	12.00	3.35	18.00	1.61	24.00	1.11

CALIB	
STANDHYD (0001)	Area (ha)= 0.50
ID= 1 DT= 5.0 min	Total Imp(%)= 43.00 Dir. Conn.(%)= 43.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.21	0.28
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	57.56	52.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		242.53	110.97
over (min)		5.00	10.00
Storage Coeff. (min)=		1.29 (ii)	9.21 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.33	0.12

```
                                                                  *TOTALS*
     PEAK FLOW       (cms)=       0.14         0.06          0.177 (iii)
     TIME TO PEAK    (hrs)=       8.00         8.08           8.00
     RUNOFF VOLUME    (mm)=     118.37        75.20          93.75
     TOTAL RAINFALL   (mm)=     119.37       119.37         119.37
     RUNOFF COEFFICIENT   =       0.99         0.63           0.79

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  81.0    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.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0007)|   Area    (ha)=   0.48
|ID= 1 DT= 5.0 min |   Total Imp(%)=  86.00   Dir. Conn.(%)=  86.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.41         0.07
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      56.51        53.00
     Mannings n             =     0.013        0.250

     Max.Eff.Inten.(mm/hr)=     242.53     ********
                over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.27 (ii)    4.11 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.33         0.24
                                                                  *TOTALS*
     PEAK FLOW       (cms)=       0.27         0.02          0.295 (iii)
     TIME TO PEAK    (hrs)=       8.00         8.00           8.00
     RUNOFF VOLUME    (mm)=     118.37        75.20         112.32
     TOTAL RAINFALL   (mm)=     119.37       119.37         119.37
     RUNOFF COEFFICIENT   =       0.99         0.63           0.94

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  81.0    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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--------------------
```

```
| RESERVOIR(  0009)|     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   |   0.1000      0.0070
                          0.0990     0.0001   |   0.0000      0.0000

                                    AREA     QPEAK     TPEAK       R.V.
                                    (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0007)      0.479      0.295      8.00     112.32
   OUTFLOW: ID= 1 (  0009)      0.479      0.100      8.17     112.97

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 33.84
                  TIME SHIFT OF PEAK FLOW         (min)= 10.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0070

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0008)|   Area    (ha)=   0.02
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.02         0.00
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      10.95        28.00
     Mannings n             =     0.013        0.250

     Max.Eff.Inten.(mm/hr)=     242.53     ********
               over (min)        5.00         5.00
     Storage Coeff.  (min)=       0.48 (ii)    1.11 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.34         0.34
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.01         0.00          0.012 (iii)
     TIME TO PEAK    (hrs)=       8.00         8.00          8.00
     RUNOFF VOLUME    (mm)=     118.37        75.20        105.58
     TOTAL RAINFALL   (mm)=     119.37       119.37        119.37
     RUNOFF COEFFICIENT   =       0.99         0.63          0.88

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  81.0    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.

--------------------------------------------------------------------------------
```

```
--------------------
| ADD HYD  (  0010)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0008):     0.02   0.012     8.00   105.58
      + ID2= 2 (  0009):     0.48   0.100     8.17   112.97
        ================================================
        ID = 3 (  0010):     0.50   0.112     8.00   112.70

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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================================================================================
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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2006)
       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: 01-11-2023                          TIME: 02:14:46

USER:


COMMENTS: _____________________________________________________________
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  ***********************************************
  ** SIMULATION : 10-year 24 Hour Chicago - Mis **
  ***********************************************

--------------------
| 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    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.08    0.78 |  6.08    2.43 | 12.08    2.29 | 18.08    1.11
                  0.17    0.78 |  6.17    2.52 | 12.17    2.25 | 18.17    1.10
                  0.25    0.79 |  6.25    2.61 | 12.25    2.21 | 18.25    1.10
                  0.33    0.80 |  6.33    2.72 | 12.33    2.18 | 18.33    1.09
                  0.42    0.80 |  6.42    2.84 | 12.42    2.15 | 18.42    1.08
                  0.50    0.81 |  6.50    2.97 | 12.50    2.11 | 18.50    1.07
                  0.58    0.82 |  6.58    3.11 | 12.58    2.08 | 18.58    1.07
                  0.67    0.83 |  6.67    3.28 | 12.67    2.05 | 18.67    1.06
                  0.75    0.83 |  6.75    3.46 | 12.75    2.02 | 18.75    1.06
                  0.83    0.84 |  6.83    3.66 | 12.83    2.00 | 18.83    1.05
                  0.92    0.85 |  6.92    3.90 | 12.92    1.97 | 18.92    1.04
                  1.00    0.86 |  7.00    4.18 | 13.00    1.94 | 19.00    1.04
                  1.08    0.87 |  7.08    4.50 | 13.08    1.92 | 19.08    1.03
                  1.17    0.87 |  7.17    4.89 | 13.17    1.89 | 19.17    1.02
                  1.25    0.88 |  7.25    5.35 | 13.25    1.87 | 19.25    1.02
                  1.33    0.89 |  7.33    5.94 | 13.33    1.84 | 19.33    1.01
                  1.42    0.90 |  7.42    6.69 | 13.42    1.82 | 19.42    1.01
                  1.50    0.91 |  7.50    7.69 | 13.50    1.80 | 19.50    1.00
                  1.58    0.92 |  7.58    9.10 | 13.58    1.78 | 19.58    0.99
                  1.67    0.93 |  7.67   11.25 | 13.67    1.76 | 19.67    0.99
                  1.75    0.94 |  7.75   14.96 | 13.75    1.74 | 19.75    0.98
                  1.83    0.95 |  7.83   22.92 | 13.83    1.72 | 19.83    0.98
                  1.92    0.96 |  7.92   53.04 | 13.92    1.70 | 19.92    0.97
                  2.00    0.97 |  8.00  173.04 | 14.00    1.68 | 20.00    0.97
                  2.08    0.98 |  8.08   68.49 | 14.08    1.66 | 20.08    0.96
                  2.17    0.99 |  8.17   37.67 | 14.17    1.64 | 20.17    0.96
                  2.25    1.00 |  8.25   25.98 | 14.25    1.62 | 20.25    0.95
                  2.33    1.01 |  8.33   19.92 | 14.33    1.61 | 20.33    0.95
                  2.42    1.03 |  8.42   16.22 | 14.42    1.59 | 20.42    0.94
                  2.50    1.04 |  8.50   13.73 | 14.50    1.57 | 20.50    0.94
```

2.58	1.05	8.58	11.94	14.58	1.56	20.58	0.93
2.67	1.06	8.67	10.59	14.67	1.54	20.67	0.93
2.75	1.08	8.75	9.54	14.75	1.53	20.75	0.92
2.83	1.09	8.83	8.69	14.83	1.51	20.83	0.92
2.92	1.11	8.92	7.99	14.92	1.50	20.92	0.91
3.00	1.12	9.00	7.41	15.00	1.48	21.00	0.91
3.08	1.13	9.08	6.91	15.08	1.47	21.08	0.90
3.17	1.15	9.17	6.48	15.17	1.46	21.17	0.90
3.25	1.17	9.25	6.11	15.25	1.44	21.25	0.89
3.33	1.18	9.33	5.78	15.33	1.43	21.33	0.89
3.42	1.20	9.42	5.49	15.42	1.42	21.42	0.89
3.50	1.22	9.50	5.23	15.50	1.40	21.50	0.88
3.58	1.24	9.58	5.00	15.58	1.39	21.58	0.88
3.67	1.25	9.67	4.79	15.67	1.38	21.67	0.87
3.75	1.27	9.75	4.59	15.75	1.37	21.75	0.87
3.83	1.29	9.83	4.42	15.83	1.36	21.83	0.86
3.92	1.32	9.92	4.26	15.92	1.34	21.92	0.86
4.00	1.34	10.00	4.11	16.00	1.33	22.00	0.86
4.08	1.36	10.08	3.97	16.08	1.32	22.08	0.85
4.17	1.38	10.17	3.84	16.17	1.31	22.17	0.85
4.25	1.41	10.25	3.72	16.25	1.30	22.25	0.84
4.33	1.43	10.33	3.61	16.33	1.29	22.33	0.84
4.42	1.46	10.42	3.51	16.42	1.28	22.42	0.84
4.50	1.49	10.50	3.41	16.50	1.27	22.50	0.83
4.58	1.52	10.58	3.32	16.58	1.26	22.58	0.83
4.67	1.55	10.67	3.24	16.67	1.25	22.67	0.83
4.75	1.58	10.75	3.16	16.75	1.24	22.75	0.82
4.83	1.61	10.83	3.08	16.83	1.23	22.83	0.82
4.92	1.65	10.92	3.01	16.92	1.22	22.92	0.81
5.00	1.69	11.00	2.94	17.00	1.21	23.00	0.81
5.08	1.72	11.08	2.87	17.08	1.21	23.08	0.81
5.17	1.76	11.17	2.81	17.17	1.20	23.17	0.80
5.25	1.81	11.25	2.75	17.25	1.19	23.25	0.80
5.33	1.85	11.33	2.70	17.33	1.18	23.33	0.80
5.42	1.90	11.42	2.64	17.42	1.17	23.42	0.79
5.50	1.95	11.50	2.59	17.50	1.16	23.50	0.79
5.58	2.01	11.58	2.54	17.58	1.16	23.58	0.79
5.67	2.07	11.67	2.50	17.67	1.15	23.67	0.78
5.75	2.13	11.75	2.45	17.75	1.14	23.75	0.78
5.83	2.19	11.83	2.41	17.83	1.13	23.83	0.78
5.92	2.27	11.92	2.37	17.92	1.12	23.92	0.77
6.00	2.34	12.00	2.33	18.00	1.12	24.00	0.77

```
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   0.50
|ID= 1 DT= 5.0 min |   Total Imp(%)=  43.00   Dir. Conn.(%)=  43.00
--------------------
```

```
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.21         0.28
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      57.56        52.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     173.04        64.02
               over (min)         5.00        15.00
     Storage Coeff.  (min)=       1.47 (ii)   11.35 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.33         0.09
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.10         0.03          0.112 (iii)
     TIME TO PEAK    (hrs)=       8.00         8.17           8.00
     RUNOFF VOLUME    (mm)=      82.16        44.35          60.60
     TOTAL RAINFALL   (mm)=      83.16        83.16          83.16
     RUNOFF COEFFICIENT   =       0.99         0.53           0.73

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  81.0    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.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0007)|   Area    (ha)=   0.48
|ID= 1 DT= 5.0 min |   Total Imp(%)=  86.00   Dir. Conn.(%)=  86.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.41         0.07
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      56.51        53.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     173.04     ********
               over (min)         5.00         5.00
     Storage Coeff.  (min)=       1.46 (ii)    4.70 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.33         0.22
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.19         0.01          0.205 (iii)
     TIME TO PEAK    (hrs)=       8.00         8.00           8.00
     RUNOFF VOLUME    (mm)=      82.16        44.35          76.86
     TOTAL RAINFALL   (mm)=      83.16        83.16          83.16
```

```
     RUNOFF COEFFICIENT   =       0.99         0.53          0.92

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  81.0    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(  0009)|     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   |   0.1000      0.0070
                          0.0990     0.0001   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0007)      0.479      0.205      8.00       76.86
   OUTFLOW: ID= 1 (  0009)      0.479      0.099      8.08       76.94

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 48.49
                  TIME SHIFT OF PEAK FLOW         (min)=  5.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0033

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0008)|   Area    (ha)=   0.02
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.02         0.00
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      10.95        28.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     173.04     ********
               over (min)         5.00         5.00
     Storage Coeff.  (min)=       0.54 (ii)    1.27 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.34         0.33
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.01         0.00          0.009 (iii)
     TIME TO PEAK    (hrs)=       8.00         8.00           8.00
     RUNOFF VOLUME    (mm)=      82.16        44.35          68.63
```

```
     TOTAL RAINFALL   (mm)=      83.16        83.16          83.16
     RUNOFF COEFFICIENT   =       0.99         0.53           0.83

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  81.0    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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--------------------
| ADD HYD  (  0010)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0008):     0.02   0.009     8.00    68.63
      + ID2= 2 (  0009):     0.48   0.099     8.08    76.94
        ====================================================
        ID = 3 (  0010):     0.50   0.108     8.00    76.64

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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 FINISH
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APPENDIX C
Wastewater 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®

WASTEWATER DEMAND CALCULATIONS

Project Name: 70 Park Street East
Municipality: City of Mississauga
Project No.: 22-293

Prepared by: J.P.O
Last Revised: 11-Jan-23

Proposed Conditions

Residential

	# of Units	PPU
Small Apartments (<750 sq ft) =	316	1.6
Large Apartment (>750 sq ft) =	214	3.0
Total Units =	530	
Population =	1162	persons
Harmon Peak Factor for Site, Me =	$(1+14/(4+P^{0.5})$	
	3.76	
Unit Sewage Flow =	302.8	L/person/day
Domestic Sewage Flow =	15.30	L/s

Retail & Day Care

Population Denstity =	50	p/ha
Area =	0.10	ha
Population =	5	persons
Unit Sewage Flow =	302.8	L/person/day
Domestic Sewage Flow =	0.02	L/s
Site Area =	0.36	ha
Infiltration Allowance =	0.20	L/s/ha
Total Infiltration =	0.07	L/s

Total wastewater flow =	15.39	L/s

Urbantech Consulting, A Division of Leighton-Zec Ltd.
2030 Bristol Circle, Suite 201 Oakville, Ontario L6H OH2
TEL: 905.946.2472 FAX: 905.829.4804
www.urbantech.com

Connection Multi Use Demand Table

WATER CONNECTION

Connection point [3]				
Helene Street North				
Pressure zone of connection point			Zone 1	
Total equivalent population to be serviced [1]			1167	
Total lands to be serviced			0.36 ha	
Hydrant flow test				
	Hydrant flow test location			
Hydrant flow test to be conducted and provided to the Region				
		Pressure (kPa)	Flow (in l/s)	Time
	Minimum water pressure			
	Maximum water pressure			

No.	Water demands			
		Demand (in l/s)		
	Demand type	Use 1 [5]	Use 2 [5]	Total
1	Average day flow	3.77	0.017	3.787
2	Maximum day flow	7.53	0.03	7.56
3	Peak hour flow	11.299	0.051	11.35
4	Fire flow [2]			116.7
Analysis				
5	Maximum day plus fire flow			124.26

WASTEWATER CONNECTION

				Total
Connection point [4] MH1A		Residential	Retail	
Total equivalent population to be serviced [1]		1162	5	
Total lands to be serviced				0.36 ha
6	Wastewater sewer effluent (in l/s)	15.3	0.02	15.39

Including infiltration

[1] The calculations should be based on the development estimated population (employment and/or residential).

[2] Please reference the Fire Underwriters Survey Document

[3] Please specify the connection point ID

[4] Please specify the connection point (wastewater line or manhole ID)
Also, the "total equivalent popopulation to be serviced" and the "total lands to be serviced" should reference the connection point. (The FSR should contain one copy of Site Servicing Plan)

[5] Please complete as many uses are necessary for the development.
(Please specify the use)

Please include the graphs associated with the hydrant flow test information table
Please provide Professional Engineer's signature and stamp on the demand table
All required calculations must be submitted with the demand table submission.

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

WATER DEMAND CALCULATIONS

Project Name: 70 Park Street East
Municipality: City of Mississauga
Project No.: 22-292

Prepared by: J.P.O
Last Revised: 11-Jan-23

Fire Flow Calculations

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

Floor	Area (m^2)	%
Ground Floor	2,160	100%
Mezz	1,436	25%

= 2519 m^2

F = 6625 L/min
= 7000 L/min, rounded to the nearest 1000 L/min

URBANTECH®

WATER DEMAND CALCULATIONS

Project Name: 70 Park Street East
Municipality: City of Mississauga
Project No.: 22-292

Prepared by: J.P.O
Last Revised: 11-Jan-23

2 Occupancy Reduction

15% for low hazard occupancies (apartments)

F = 5950 L/min

3 Sprinkler Reduction

30% for adequately designed sprinkler protection conforming to NFPA 13 and other NFPA sprinkler standards

F = 4165 L/min

4 Separation Charge

Direction	Separation (m)	Charge
North	25.0	10%
West	25.0	10%
South	15.0	15%
East	15.0	15%

Total Charge = 50%

F = 2975 L/min

Required Fire Flow

F = 7140 L/min

= 7000 L/min, rounded to the nearest 1000 L/min

Fire Flow Demand =	116.7	L/s
=	1849	USGPM

WATER DEMAND CALCULATIONS

Project Name: 70 Park Street East
Municipality: City of Mississauga
Project No.: 22-292

Prepared by: J.P.O
Last Revised: 11-Jan-23

Domestic Flow Calculations

Residential Population =	1162	persons,	from Sanitary Calculations
Residential Average Day Demand =	280	L/person/day,	from Region of Peel design criteria
=	3.77	L/s	
Commercial Population =	5	persons,	from Sanitary Calculations
Commercial Average Day Demand =	300	L/employee/day,	from Region of Peel design criteria
=	0.017	L/s	

Use Peaking Factor the Greater of

Residential Max Daily Demand PF =	2	,	from Region of Peel design criteria
Commercial Max Daily Demand PF =	1.4	,	from Region of Peel design criteria
Max Daily Demand =	7.56	L/s	

or

Max Peak Hour PF =	3	,	from Region of Peel design criteria
Max Peak Hour Demand =	11.35	L/s	

Domestic Flow Demand =	11.35	L/s
=	180	USGPM