



**1258 Rebecca Street, Oakville**

## **Functional Servicing Report**

**January 2023**

**Submitted by:**

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**Project Number: 2480**

**TABLE OF CONTENTS**

	Page
1.0 INTRODUCTION .....	1
1.1 Purpose of the Report.....	1
1.2 Study Area .....	1
1.3 Background Servicing Information.....	2
2.0 STORM SERVICING.....	4
2.1 Existing Storm Sewer System .....	4
2.2 Proposed Storm Sewer System .....	4
3.0 STORMWATER MANAGEMENT .....	6
3.1 Stormwater Runoff Control Criteria.....	6
3.2 Existing Drainage .....	6
3.3 Allowable Release Rate .....	6
3.4 Stormwater Best Management Practices Selection.....	7
3.5 Proposed Storm Drainage .....	8
3.5.1 Quantity Control.....	9
3.5.2 Quality Control .....	9
3.5.3 Erosion Control.....	9
3.5.4 Water Balance .....	10
4.0 SANITARY SERVICING.....	11
4.1 Existing Sanitary Sewer System.....	11
4.2 Proposed Sanitary Sewer System.....	11
5.0 WATER SUPPLY AND DISTRIBUTION.....	13
5.1 Existing Water Distribution .....	13
5.2 Proposed Water System.....	13
6.0 GRADING .....	15
6.1 Existing Grading Conditions .....	15
6.2 Proposed Grading Concept .....	15
7.0 EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION .....	16
8.0 SUMMARY .....	17

**LIST OF TABLES**

Table 2.2 Rainfall Intensity Parameters  
Table 3.1 Stormwater Runoff Control Criteria  
Table 5.1 Water Demands and Required Pressure Ranges  
Table 5.2 Available Water Pressures

**LIST OF FIGURES**

Figure 1.1 Site Location Plan  
Figure 2.1 Preliminary Servicing Plan  
Figure 2.2 Preliminary Laneway Cross-Sections  
Figure 2.3 Preliminary Laneway Cross-Sections  
Figure 3.1 Existing Storm Drainage Plan  
Figure 3.2 Proposed Storm Drainage Plan  
Figure 6.1 Preliminary Grading Plan

**LIST OF APPENDICES**

Appendix A Site Plan  
Appendix B Record Drawings and Background Information  
Appendix C Topographic Survey  
Appendix D Storm Servicing Calculations  
Appendix E Stormwater Management Calculations  
Appendix F Sanitary Flow Calculations  
Appendix G Water Modelling Analysis

**SUBMISSION HISTORY**

Submission	Date	In Support Of	Distributed To
1 <sup>st</sup>	April 2022	Zoning By-law Amendment Application	Town of Oakville, Conservation Halton
Draft 2 <sup>nd</sup>	November 2022	Zoning By-law Amendment Application	Town of Oakville, Conservation Halton
2 <sup>nd</sup>	January 2023	Zoning By-law Amendment Application	Town of Oakville, Conservation Halton

## 1.0 INTRODUCTION

SCS Consulting Group Ltd. has been retained by Halton Region to prepare a Functional Servicing Report for a proposed assisted living development located at Rebecca Street and Warminster Drive in the Town of Oakville.

### 1.1 Purpose of the Report

The Functional Servicing and Stormwater Management (SWM) Report has been prepared in support of a Zoning By-law Amendment (ZBA) application for the proposed development. The Site Plan is provided in **Appendix A**.

The purpose of this report is to demonstrate that the proposed development can be graded and serviced in accordance with the Town of Oakville, Halton Region, Conservation Halton, Ontario Building Code (OBC), and the Ministry of Environment, Conservation and Parks (MECP) design criteria.

### 1.2 Study Area

The existing site is comprised of vacant open space located within the Fourteen Mile Creek watershed in the Town of Oakville. As shown on **Figure 1.1**, the study area is bound by:

- Rebecca Street to the north;
- Patricia-Picknell Elementary School to the south;
- Single-family residential area to the east; and
- Oakville Public Library and Paramedic Services Station to the west.

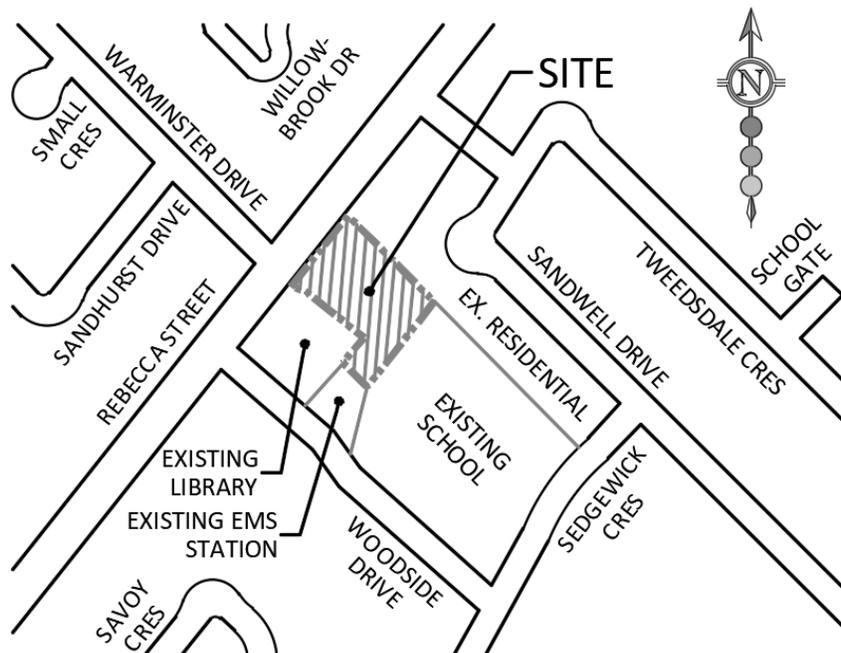


Figure 1.1: Site Location Plan

The proposed development is approximately 0.66 ha in size and consists of three single detached lots fronting onto Rebecca Street and fourteen single storey semi-detached units. The semi-detached units will serve as an affordable independent living community for seniors.

Each of the proposed single detached lots will have independent access onto Rebecca Street. These lots are intended to be sold as serviced lots and will be developed by others.

The independent living community is proposed to include a private laneway with access from Rebecca Street. Pedestrian connections to the neighbouring library will also be provided. The semi-detached units will be constructed as slab-on-grade and will not have basements.

Please refer to the Site Plan in **Appendix A** to view the proposed site layout.

### 1.3 Background Servicing Information

In preparation of the preliminary servicing and SWM strategies, the following design guidelines and standards were used:

- ➔ Town of Oakville, Development Engineering Procedures and Guidelines Manual;
- ➔ Development Engineering Procedures and Guidelines Manual Addendum #1 (January 2017);
- ➔ North Oakville Sustainable Development Checklist & User Guide – Subdivision and Site Level Design, prepared by the Town of Oakville (May 2008);
- ➔ Conservation Halton Policies and Guidelines for the Administration of Ontario Regulation 162/06 (November 2020);
- ➔ Conservation Halton Guidelines for Stormwater Management Engineering Submissions (May 2021);
- ➔ Halton Region, Water and Wastewater Linear Design Manual, version 4.0 (April 2019);
- ➔ Ministry of Environment, Conservation and Parks (MECP) Stormwater Management Planning and Design Manual (March 2003); and
- ➔ Ministry of Transportation (MTO) Drainage Management Manual (1997).

The preliminary site servicing and SWM strategies in this report are based on the following reports:

- ➔ Preliminary Geotechnical Investigation, prepared by WSP (February 2021); and
- ➔ Proposed Halton Region Paramedic Services – Station No. 15 Stormwater Management Report, prepared by MGM Consulting Inc. (August 2017).

The preliminary site servicing and SWM strategies are also based on the following approved Engineering Drawings:

- ➔ Woodside Drive – Storm Drainage Area Plan No. R-358-00-03, prepared by Trafalgar Engineering Ltd., dated March 2001;

- Woodside Drive – Rebecca to Sta. 0+320 No. 946P1, prepared by Trafalgar Engineering Ltd., dated March 2001;
- Rebecca Street – Watermain Replacement Drawing No. PR-1452, prepared by Marshall Macklin Monaghan Ltd., dated July 1993;
- Rebecca Street –Plan & Profile Showing Proposed Storm Sewer from Third Line Road to Fourteen Mile Creek Drawing No. 2, prepared by Franklin McArthur Associates Ltd., dated February 1958; and
- Utility Investigation, prepared by R&B Locating, dated December 2020.

The above listed drawings have been included in **Appendix B**.

## 2.0 STORM SERVICING

### 2.1 Existing Storm Sewer System

As indicated in the utility investigation prepared by R&B Locating and the record drawings (**Appendix B**), the sizes and locations of the existing municipal storm sewers surrounding the site are:

- ➔ An 1800 mm diameter concrete storm sewer on Rebecca Street flowing northeast; and
- ➔ A 375 mm diameter PVC storm sewer on Woodside Drive flowing southeast.

The existing lands drain southwest via overland flow to the neighbouring Patricia-Picknell Elementary School grounds, where the flows are captured by an existing ditch inlet catchbasin and conveyed to the existing 375 mm diameter storm sewer on Woodside Drive. Please refer to **Section 3.2** for further discussion of the existing drainage.

As presented in the Town of Oakville Stormwater Management Master Plan, the existing 1800 mm diameter sewer on Rebecca Street is surcharged in the 5 year storm event to an elevation above the pipe obvert but below the manhole rim elevation. Based on the Town's Construction Projects web page, there are no works planned in the near future to upgrade the existing storm sewer system. A figure showing the results of the Town's capacity assessment is included in **Appendix D**.

The design of the Woodside Drive sewer accounted for 0.33 ha of drainage from 1258 Rebecca Street, as shown in the drainage plan prepared by Trafalgar Engineering Ltd. (**Appendix B**), with a flow of 42.4 L/s. However, based on the site survey, the entire site area of 0.66 ha plus 0.04 ha of external area currently drains to the Woodside Drive sewer. The Existing Woodside Drive Design Sheet is included in **Appendix D**. The analysis shows that the downstream sewers on Woodside Drive and Sedgewick Drive (EX.MH4 to EX.HW) are surcharged at 102-120% of the pipe capacities during the 5 year storm event under existing conditions.

### 2.2 Proposed Storm Sewer System

The storm sewer system (minor system) for the proposed development will be designed for the 5 year return storm per the Town of Oakville standards. The storm sewer system will be designed in accordance with the Town of Oakville, Ontario Building Code and MECP guidelines, including the following:

- ➔ Minor System Conveyance: 5 Year
- ➔ Major System Conveyance: 100 Year
- ➔ Minimum Pipe Size: 300 mm diameter
- ➔ Minimum Slope: 0.30%
- ➔ Minimum / Maximum Velocity: 0.75 m/s - 4.0 m/s
- ➔ Minimum Pipe Cover: 1.20 m (frost cover)

The rainfall intensity will be determined using the values from Table 3.1 of the Town of Oakville Development Engineering Procedures and Guidelines Manual dated January 2011 as shown in **Table 2.2**:

**Table 2.2 – Rainfall Intensity Parameters**

Return Period Storm	A	B	C
2 Year	725	4.8	0.808
5 Year	1170	5.8	0.843
10 Year	1400	5.8	0.848
25 Year	1680	5.6	0.851
50 Year	1960	5.8	0.861
100 Year	2150	5.7	0.861

The preliminary storm sewer layout is shown on **Figure 2.1**. Flows captured from the independent living community are proposed to be conveyed to the existing 375 mm diameter Woodside Drive storm sewer. The proposed storm service connection for the independent living community will be routed through the neighbouring Paramedic Services Station property, which is owned by Halton Region. An easement through the neighbouring property will be required to allow for maintenance of the sewer. The proposed service connection will have sufficient depth to service the proposed development.

The installation of the storm connection through the Paramedic Services site was agreed to during a meeting on April 11, 2022 between Halton Region’s Paramedic Services Logistics and Housing Action teams. The minutes from that meeting are included in **Appendix D**.

Stormwater from the front yards of the three single family lots is proposed to drain via overland flow to the Rebecca Street right-of-way. Stormwater from the remaining area of the single family lots is proposed to drain via overland flow to the private storm sewer system within the independent living community and ultimately outlet to Woodside Drive. The proposed storm drainage is shown on **Figure 3.2**.

The allowable release rate to the Woodside Drive storm sewer will be 42.4 L/s based on the existing drainage area accounted for in the drainage plan prepared by Trafalgar Engineering Ltd. The Proposed Woodside Drive Design Sheet is included in **Appendix D**. The analysis shows that the proposed development will reduce the existing surcharging between EX.MH4 and EX.HW to 98-116% of the pipe capacities during the 5 year storm event. Please refer to **Section 3.3** for further discussion of the allowable release rate.

The front yards of the single-family lots are proposed to drain uncontrolled to the Rebecca Street right-of-way at a rate of 49.9 L/s in the 100 year storm. This flow corresponds to 1.0% of the existing 1800 mm diameter sewer capacity, and is only a marginal increase in flow. Therefore, the impact on the existing surcharged condition will be minimal. Please refer to the Proposed Rebecca Street Design Sheet in **Appendix D** for further details.

### 3.0 STORMWATER MANAGEMENT

#### 3.1 Stormwater Runoff Control Criteria

The following stormwater runoff control criteria have been established based on the greatest requirements of each of the design guidelines and standards listed in **Section 1.3**. The stormwater runoff criteria are summarized below in **Table 3.1**.

**Table 3.1: Stormwater Runoff Control Criteria**

Criteria	Control Measure
Quantity Control	Control proposed peak flows to existing peak flows for the 2 through 100 year storm events. Where runoff is conveyed to an existing storm sewer, limit the maximum peak flow to the existing 5 year storm event peak flow (Town of Oakville).
Quality Control	MECP Enhanced Level Protection (80% TSS Removal).
Erosion Control	Detention/retention of the 25 mm rainfall runoff for a minimum of 24 hours. For smaller sites, demonstrate that the use of pipe storage, infiltration, evapotranspiration, and on-site re-use of runoff has been applied to the extent feasible to reduce erosion potential (Conservation Halton).
Water Budget	Replicate/maintain as closely as possible existing hydrologic conditions by maintaining a balance between infiltration, runoff and evapotranspiration and minimize negative impacts to groundwater (Conservation Halton).

#### 3.2 Existing Drainage

Drainage from Catchment 101 and External Catchment EXT-1 (0.66 ha and 0.04 ha respectively, **Figure 3.1**) drain southwest via overland flow to an existing ditch at the southwest corner of the site. Flow in the existing ditch is captured via an existing ditch inlet catchbasin (DICB) which is connected to the existing 375 mm diameter storm sewer on Woodside Drive and outlets to the Sedgewick Forest and ultimately to Lake Ontario. Flows up to the 100 year storm event from Catchment EXT-2 flow southeast to the Woodside Drive sewer system via an existing storm sewer. Flows greater than the 100 year storm event from Catchment EXT-2 (0.41ha, **Figure 3.1**) drain southeast via overland flow to the existing ditch at the southwest corner of the site.

#### 3.3 Allowable Release Rate

The allowable release rate for the proposed development has been established based on controlling the proposed peak flows to existing peak flows for the 2 through 100 year storm events however, where runoff is conveyed to an existing storm sewer, the maximum peak flow is limited to the existing 5 year storm event peak flow. However, as outlined within

**Section 3.2**, the Woodside Drive storm sewer system was designed with a total drainage area of 0.33 ha. Therefore, the allowable release rate to the Woodside Drive storm sewer will be 42.4 L/s based on the existing drainage area accounted for in the Woodside Drive Reconstruction Storm Drainage Area Plan prepared by Trafalgar Engineering Ltd (March 2001), refer to **Appendix B**.

The rational method was used to determine the target release rate from the site based on Intensity-Duration-Frequency (IDF) rainfall curves from the Town of Oakville Design Standards. Supporting calculations are provided in **Appendix E**.

### 3.4 Stormwater Best Management Practices Selection

In accordance with the Ministry of Environment Stormwater Management Planning and Design Manual (2003), a review of stormwater management best practices was completed using a treatment train approach, which evaluated lot level, conveyance system and end-of-pipe alternatives. The potential best management practices were evaluated based on the stormwater management objectives listed in **Table 3.1**.

The following study area characteristics were taken into consideration:

- The existing site is mostly undeveloped open space with some existing paved areas;
- Based on the Geotechnical investigation, study area soils consist of 50 – 130 mm layers of topsoil over fill materials extending to depths of 0.8 m to 1.5m. The fill materials are overlain by native silty clay till extending to depths ranging from 1.9m to 2.6 m., which is underlain by shale bedrock;
- Within the installed site wells, groundwater was observed at depths ranging between 1.82 m to 2.77 m below existing grade; and
- The proposed site plan development is approximately 0.66 ha and consists of three single detached lots fronting onto Rebecca Street, fourteen single storey semi-detached units and a proposed laneway.

The following are examples of lot-level, conveyance and end-of-pipe controls that will be evaluated for use in the proposed development. While evaluating the following controls, cost, feasibility, groundwater and grading constraints will be taken into consideration.

#### Lot-Level Controls

Lot-level controls are at-source measures that reduce runoff prior to stormwater entering the conveyance system, such as:

- Increased topsoil depth;
- Roof leaders to grassed areas;
- At-source storage (i.e. rooftop or parking lot storage);
- Pervious pavements;

- Infiltration trenches/soak-away pits.

### Conveyance Controls

Conveyance controls provide treatment of stormwater during the transport of runoff from individual lots to the receiving watercourse or end-of-pipe facility. Examples of conveyance controls include:

- Grassed Swales;
- Pervious pipe system.

### End-of-Pipe Controls

End-of-pipe stormwater management facilities receive stormwater flows from a conveyance system (i.e., storm sewers or ditches) and provide treatment of stormwater prior to discharging flows to the receiving watercourse. Typical end-of-pipe controls include:

- Wet ponds;
- Wetlands;
- Dry ponds;
- Infiltration basins; and
- Underground storage.

A comprehensive assessment of LID practices will be provided in support of the Site Plan Application. The development consists of a private road, three single detached lots and fourteen single storey semi-detached units. It is noted that the site has high groundwater levels and the opportunity for infiltration based LIDs are limited. However, a large portion of the private road consists of permeable pavers, therefore infiltration opportunities within the permeable pavers will be explored at the Site Plan Application stage in addition to grassed swales within the single detached lots and increased topsoil depth.

At the detailed design stage, a water balance evaluation will be incorporated into the detailed stormwater management report that discusses the selection of LIDs in accordance with the Town of Oakville Engineering Design Criteria and Conservation Halton guidelines, and quantifies the proposed rainwater retention volume.

## **3.5 Proposed Storm Drainage**

The proposed major and minor system flow patterns and drainage areas are shown on **Figure 3.2**. As illustrated, runoff from the proposed development will be conveyed to the existing Woodside Drive storm sewer. Major and minor system flows Catchments 201, 202 and EXT-1 (0.42 ha, 0.11 ha and 0.04 ha, respectively, **Figure 3.2**) will be captured and conveyed to the existing Woodside Drive storm sewer via proposed internal storm sewer system. Major and minor system flows from Catchment 204 (0.02 ha, Figure 3.2) will be conveyed southwest, uncontrolled to Woodside Drive. Major and minor system flows from Catchment 203 (0.11 ha, Figure 3.2) will be conveyed north, uncontrolled to Rebecca Street.

### 3.5.1 Quantity Control

Quantity control for the proposed development will be required to control proposed runoff back to the allowable release rates to the existing Woodside Drive storm sewer. The allowable release rate for the proposed development, as identified in **Section 3.3**, is to be achieved by utilizing an orifice plate and providing on-site storage of stormwater. Preliminary calculations have been completed and approximately 187.4m<sup>3</sup> of storage is required to control the 100 year storm event, refer to calculations in **Appendix E**. This is proposed to be achieved through underground storage in the form of a, 0.9 m x 1.8 m box culvert. Details will be provided at the Site Plan application stage.

Due to grading constraints, it is not feasible to provide quantity controls for flows being conveyed to Rebecca Street (Catchment 203, **Figure 3.2**). It is important to note that the existing sewer on Rebecca Street is currently surcharging during a 5 year storm event. The additional flows from Catchment 203 (0.11 ha, **Figure 3.2**) represent 1.0% of the sewer's capacity in the 100-year storm and therefore, will not have a significant impact on the existing surcharge conditions.

### 3.5.2 Quality Control

Quality control for the proposed development will be required to be provided on-site. This will be achieved through a combination of on-site LID's and a manufactured treatment device.

Quality control for runoff from the proposed development, Catchments 201 and 202 (**Figure 3.2**) will be provided by a treatment train of Best Management (BMP) techniques which could include additional topsoil depth on all grassed areas, permeable pavers, and grassed swale with an end-of-pipe manufactured treatment device, i.e. Jellyfish Unit JF4-2-1 model or approved equivalent. The manufactured treatment device has been sized to achieve Enhanced level quality control (80% TSS removal) as requested by the Town of Oakville (correspondence provided in **Appendix B**).

### 3.5.3 Erosion Control

As mentioned within **Section 3.1**, detention/retention of the 25 mm rainfall runoff for a minimum of 24 hours is required. However, for smaller sites, demonstrate that the use of pipe storage, infiltration, and evapotranspiration, and on-site re-use of runoff has been applied to the extent feasible to reduce erosion potential. As the proposed site is 0.66 ha, detention/retention of the 25 mm storm event would be challenging. Every extent possible to detain/retain the 25 mm storm event will be investigated and detailed at the site plan application stage via on-site storage within the proposed superpipe and infiltration within the permeable pavers.

### 3.5.4 Water Balance

Where feasible, measures to minimize impacts on the water budget will be incorporated into the proposed development design.

As noted in **Section 2.1**, the minimum criteria is to maintain existing hydrology function. Proposed BMP's will be fully explored at site plan application stage and a water balance will be completed to determine the existing, proposed and proposed with mitigation infiltration values. As mentioned within **Section 3.4**, potential preliminary BMP's include infiltration within the permeable pavers, increased topsoil depth and grassed swales.

## 4.0 SANITARY SERVICING

### 4.1 Existing Sanitary Sewer System

As indicated in the utility investigation prepared by R&B Locating (**Appendix B**), the sizes and locations of the existing sanitary sewers surrounding the site are:

- ➔ A 525 mm diameter vitrified clay sanitary sewer on Rebecca Street flowing northeast;
- ➔ A 1350 mm diameter concrete sanitary sewer on Woodside Drive flowing south; and
- ➔ A 200 mm diameter PVC sanitary sewer on Woodside Drive flowing south.

The subject site previously had a church building which has now been demolished, but was serviced from the existing 525 mm diameter sewer on Rebecca Street, as shown in the record drawings. Based on the Town of Oakville design criteria, the church would have generated a peak flow of approximately 0.48 L/s. The sanitary flow calculations are included in **Appendix F**.

### 4.2 Proposed Sanitary Sewer System

The proposed sanitary sewer system for the subject development is illustrated on **Figure 2.1**. The independent living community is proposed to be serviced from the existing 525 mm sanitary sewer on Rebecca Street via a new control manhole at the property line. The three single family lots will also be provided with individual service connections to the 525 mm sanitary sewer per Halton Region standards. The proposed service connections will have approximately 2.5 m of cover at the property line, which is sufficient to service the development.

The sanitary sewers within the site will have slopes ranging between 0.5% and 2% (typically) and will be provided at 2.5 m to 1.5 m deep. The sanitary sewer system will be designed in accordance with the Halton Region and MECP criteria, including but not limited to:

- ➔ Residential Sanitary Generation Rate: 275 L/cap/day
- ➔ Residential Population Density:
  - 55 persons/ha (Single-family)
  - 100 persons/ha (Semi-detached)
- ➔ Peaking Factor: Modified Harmon's Equation (Min = 2.0)
- ➔ Infiltration Rate: 0.286 L/s/ha
- ➔ Minimum Pipe Size: 200 mm diameter
- ➔ Minimum Velocity: 0.6 m/s
- ➔ Maximum Velocity: 3.0 m/s

Based on the design criteria, the proposed site is expected to generate a flow of 0.96 L/s. The net increase in sanitary flow from the development is 0.47 L/s. This increase in flow corresponds to 0.2% of the existing 525 mm sewer capacity. The proposed flow rate is only marginally higher than the existing condition, and therefore the impact on the existing downstream system will be minimal.

Please refer to the sanitary flow calculations in **Appendix F** for further details.

## 5.0 WATER SUPPLY AND DISTRIBUTION

### 5.1 Existing Water Distribution

As indicated in the record drawings (**Appendix B**), the following existing watermains surround the site:

- A 600 mm diameter concrete watermain on the northwest side of Rebecca Street;
- A 150 mm diameter PVC watermain on the southeast side of Rebecca Street; and
- A 150 mm diameter watermain on the west side of Woodside Drive.

There are existing hydrants located on Rebecca Street approximately 20 m west and 63 m northeast of the subject site. A hydrant flow test was completed on October 26, 2022 by Ontario Clean Water Agency (OCWA) to confirm the available flow and pressure in the existing water distribution system. The results of the hydrant flow test are included in **Appendix G**.

### 5.2 Proposed Water System

The subject development is proposed to be serviced from the existing 150 mm watermain on the southeast side of Rebecca Street. The three single family lots will be provided with individual service connections and water meters per Halton Region standards. The independent living community will be provided with a private water distribution system, with individual meters for each unit. The preliminary watermain layout is shown on **Figure 2.1**.

The proposed private water distribution system will be designed in accordance with Halton Region and MECP criteria, including but not limited to the following:

- Average Daily Demand: 0.275 m<sup>3</sup> per capita
- Residential Population Density:
  - 100 persons/ha (semi-detached)
  - 55 persons/ha (single family)
- Peaking Factors:
  - Maximum Day = 2.25
  - Maximum Hour = 4.00
- Minimum Pipe Size: 150 mm diameter
- Minimum Pipe Cover: 1.70 m
- Maximum Hydrant Spacing: 150 m (Residential)

Water demand and Fire Underwriters Survey (FUS) calculations can be found in **Appendix G**. The demands for each scenario analysed can be found in **Table 5.1** below.

**Table 5.1: Water Demands and Required Pressure Ranges**

Scenario	Water Demand	Required Pressure Range
Average Day	0.18 L/s	350 – 550 kPa (Preferred) 275 – 700 kPa (Required)
Maximum Day	0.40 L/s	
Maximum Hour	0.71 L/s	
Fire Flow	6,000 L/min	≥ 140 kPa
Fire Flow + Maximum Day	6,024 L/min	

Based on the results of the hydrant flow test, the pressure available in the existing water distribution system was calculated for each water demand scenario. The results are summarized in **Table 5.2** below.

**Table 5.2: Available Water Pressures**

Scenario	Available Pressure
Average Day	444.0 kPa
Maximum Day	444.0 kPa
Maximum Hour	444.0 kPa
Fire Flow	427.0 kPa
Fire Flow + Maximum Day	426.9 kPa

As shown in the table above, the Average Day, Maximum Day and Maximum Hour demands can be provided within the Town’s preferred pressure range of 350-550 kPa. The Fire Flow + Maximum Day demand can be provided at a pressure above the Town’s minimum 140 kPa requirement.

Please refer to the calculations in **Appendix G** for further details.

## 6.0 GRADING

### 6.1 Existing Grading Conditions

The existing site is relatively flat, with slopes ranging from 1.0 – 3.0% on average. There is an existing ditch in the southeast section of the site which drains south to the existing Patricia-Picknell Elementary School grounds. The ground surface elevations range from 88.90 in the northwest corner of the site to 87.75 in the south corner of the site.

### 6.2 Proposed Grading Concept

In general, the proposed development has been graded in a manner which satisfies the Town of Oakville lot and road grading criteria, creates the required depth for the sanitary sewer, as well as provision of an efficient earthworks program, including:

- Minimum Road Grade: 0.5%
- Maximum Road Grade: 6.0%
- Minimum Lot Grade: 2%
- Maximum Lot Grade: 5%
- Minimum Driveway Grade: 2%
- Maximum Driveway Grade: 8%
- Minimize the need for retaining walls
- Minimize the volume of earth to be moved and minimize cut/fill differentials
- Minimize the need for rear lot catchbasins
- Achieve the stormwater management objectives required for the proposed development.

A preliminary grading plan is provided on **Figure 6.1**. Details will be provided at the site plan application stage.

At the detailed design stage, the preliminary grading shown on **Figure 6.1** will be subject to a more in-depth analysis in an attempt to balance the cut and fill volumes and minimize slopes and retaining walls.

## 7.0 EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION

Erosion and sediment control measures will be designed at the detailed design stage. These measures may include temporary sediment control fencing, a construction access driveway, check dams and temporary sediment control facilities where required. These measures will be designed and constructed as per the “Erosion and Sediment Control Guide for Urban Construction” document (TRCA, 2019).

The detailed erosion and sediment control plan will be approved by the Town of Oakville prior to any site alteration being undertaken. The plan will address phasing, inspection and monitoring aspects of erosion and sediment control. All reasonable measures will be taken to ensure sediment loading to the adjacent properties and storm sewers is minimized both during and following construction.

## 8.0 SUMMARY

This Functional Servicing Report has outlined the means by which:

- ➔ The proposed development can be serviced from the existing municipal services (i.e. storm, sanitary and water) within the Rebecca Street and Woodside Drive rights-of way;
- ➔ The stormwater management criteria can be achieved; and
- ➔ The proposed development can be graded in a manner which satisfies the Town of Oakville grading criteria and the stormwater management requirements for this development.

Respectfully Submitted:

**SCS Consulting Group Ltd.**

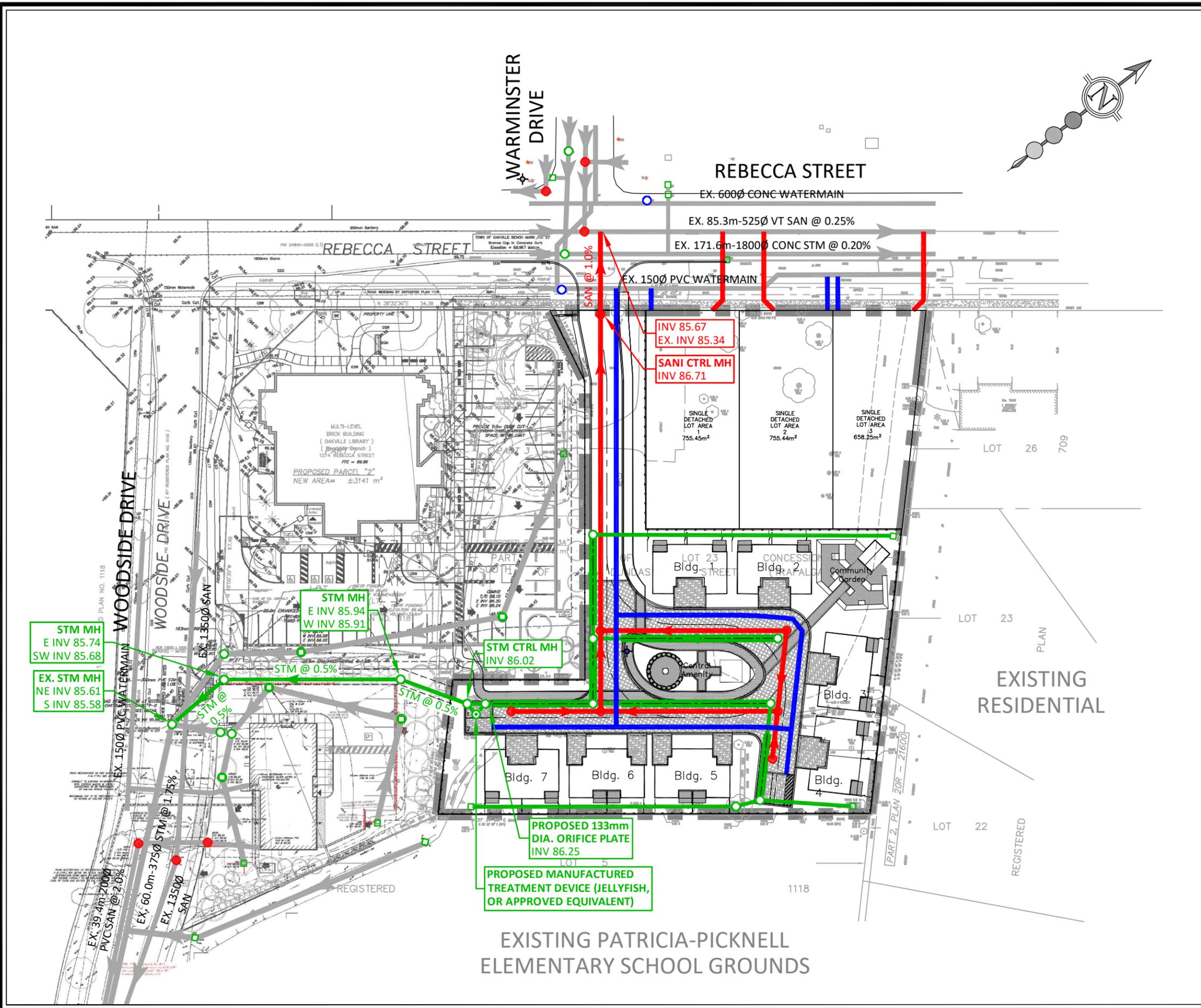


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### LEGEND:

- PROPERTY BOUNDARY
- PROPOSED STORM SEWER / MAINTENANCE HOLE
- PROPOSED JELLYFISH TREATMENT UNIT
- PROPOSED 1800x900 BOX CULVERT
- PROPOSED SANITARY SEWER / MAINTENANCE HOLE
- PROPOSED WATERMAIN
- PROPOSED HYDRANT
- EXISTING STORM SEWER / MAINTENANCE HOLE
- EXISTING SANITARY SEWER / MAINTENANCE HOLE
- EXISTING WATERMAIN / CHAMBER
- EXISTING HYDRANT
- PROPOSED PERMEABLE PAVERS

\*NOTE: LAYOUT IS SCHEMATIC ONLY, DETAILS TO BE PROVIDED AT DETAILED DESIGN STAGE.

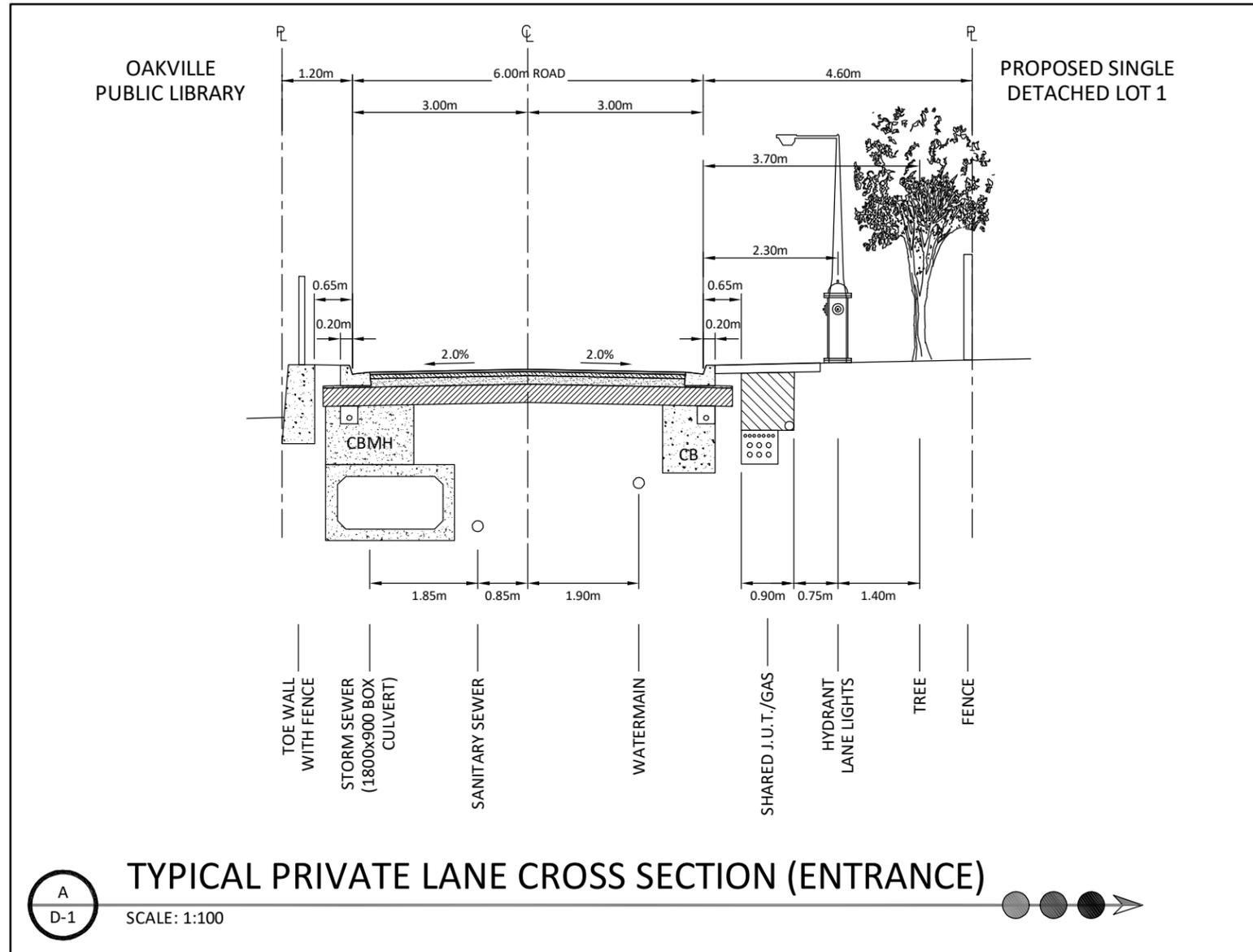
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**HALTON REGION**  
**1258 REBECCA STREET,**  
**OAKVILLE**

**PRELIMINARY SERVICING PLAN**

DESIGNED BY: M.L.M.	CHECKED BY: P.G.
SCALE: 1:750	DATE: JANUARY 2023
PROJECT No: <b>2480</b>	FIGURE No: <b>2.1</b>

**LEGEND:**



\*NOTE: LAYOUT IS SCHEMATIC ONLY, DETAILS TO BE PROVIDED AT DETAILED DESIGN STAGE.



30 CENTURIAN DRIVE, SUITE 100  
 MARKHAM, ONTARIO L3R 8B8  
 TEL: (905) 475-1900  
 FAX: (905) 475-8335

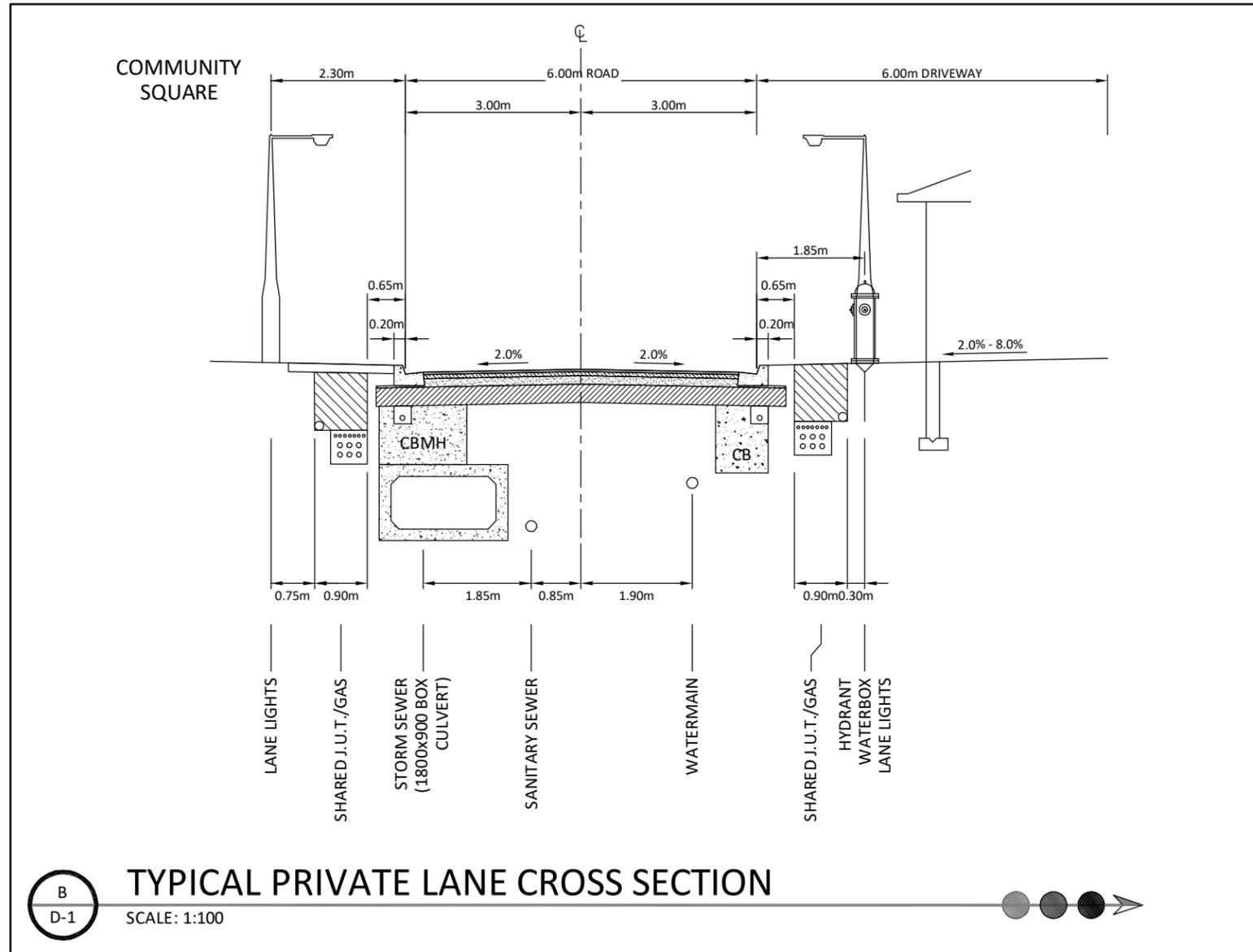
**HALTON REGION**

**1258 REBECCA STREET,  
 OAKVILLE**

**PRELIMINARY LANEWAY  
 CROSS-SECTIONS**

DESIGNED BY: M.L.M.	CHECKED BY: P.G.
SCALE: 1:100	DATE: JANUARY 2023
PROJECT No: <b>2480</b>	FIGURE No: <b>2.2</b>

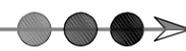
**LEGEND:**



B  
D-1

**TYPICAL PRIVATE LANE CROSS SECTION**

SCALE: 1:100



\*NOTE: LAYOUT IS SCHEMATIC ONLY, DETAILS TO BE PROVIDED AT DETAILED DESIGN STAGE.



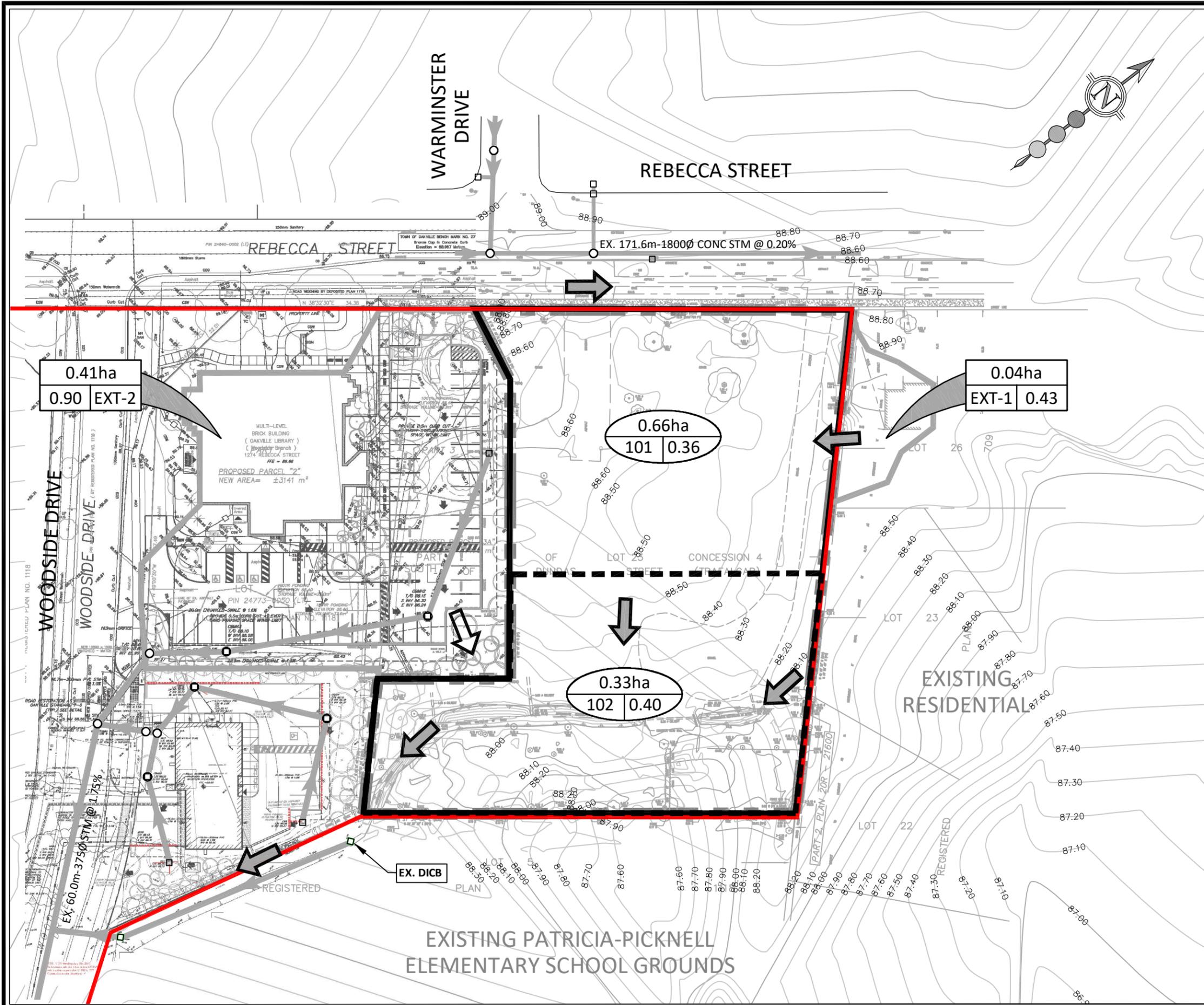
30 CENTURIAN DRIVE, SUITE 100  
MARKHAM, ONTARIO L3R 8B8  
TEL: (905) 475-1900  
FAX: (905) 475-8335

**HALTON REGION**

**1258 REBECCA STREET,  
OAKVILLE**

**PRELIMINARY LANEWAY  
CROSS-SECTIONS**

DESIGNED BY: M.L.M.	CHECKED BY: P.G.
SCALE: 1:100	DATE: JANUARY 2023
PROJECT No: 2480	FIGURE No: 2.3



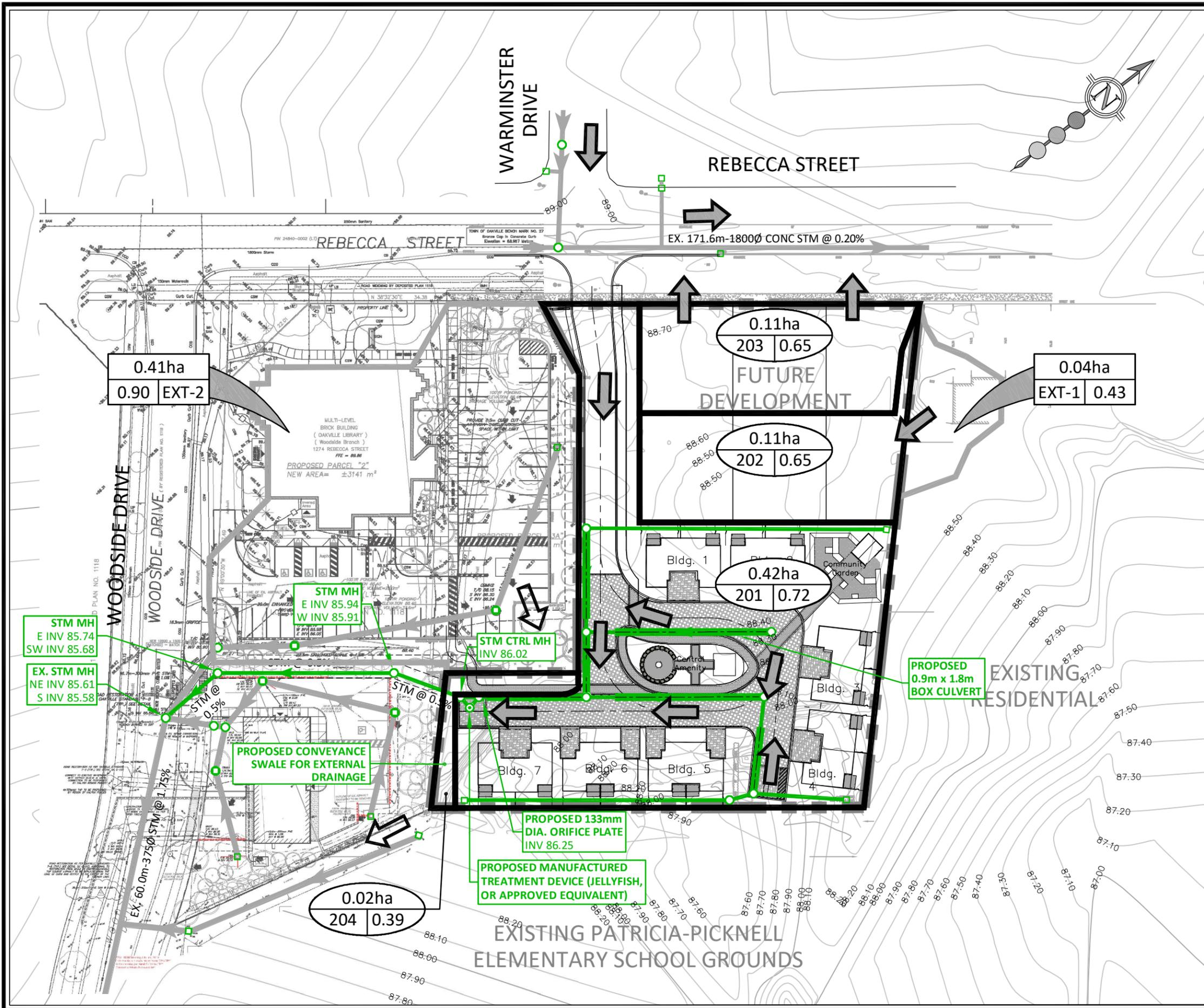
**LEGEND:**

- PROPERTY BOUNDARY
- STORM DRAINAGE BOUNDARY
- EXTERNAL STORM DRAINAGE BOUNDARY
- DRAINAGE AREA (HECTARES)  
RUNOFF COEFFICIENT  
CATCHMENT ID
- MAJOR SYSTEM FLOW
- EMERGENCY FLOW
- EXISTING CONTOUR
- EXISTING STORM SEWER AND MAINTENANCE HOLE
- EXTERNAL STORM DRAINAGE AREA (HECTARES)  
RUNOFF COEFFICIENT  
CATCHMENT ID
- DRAINAGE AREA ACCOUNTED FOR WITHIN WOODSIDE DRIVE SEWER PER MUNICIPAL DRAWING NO. R-358-00-03 PREPARED BY TRAFALGAR ENGINEERING LTD.
- PCSWMM MODEL SUB-CATCHMENT SCP-411

30 CENTURIAN DRIVE, SUITE 100  
MARKHAM, ONTARIO L3R 8B8  
TEL: (905) 475-1900 FAX: (905) 475-8335

**HALTON REGION**  
**1258 REBECCA STREET,  
OAKVILLE**  
**EXISTING  
STORM DRAINAGE PLAN**

DESIGNED BY: R.P.B.	CHECKED BY: P.A.T.
SCALE: 1:750	DATE: JANUARY 2023
PROJECT No: <b>2480</b>	FIGURE No: <b>3.1</b>



**LEGEND:**

- PROPERTY BOUNDARY
- PROPOSED STORM DRAINAGE BOUNDARY
- EXTERNAL STORM DRAINAGE BOUNDARY
- DRAINAGE AREA (HECTARES)
- RUNOFF COEFFICIENT
- CATCHMENT ID
- EXTERNAL STORM DRAINAGE AREA (HECTARES)
- RUNOFF COEFFICIENT
- CATCHMENT ID
- MAJOR SYSTEM FLOW
- EXISTING CONTOUR
- PROPOSED STORM SEWER / MAINTENANCE HOLE
- PROPOSED JELLYFISH TREATMENT UNIT
- PROPOSED 1800x900 BOX CULVERT
- EXISTING STORM SEWER AND MAINTENANCE HOLE
- EMERGENCY FLOW
- PERMEABLE PAVER

\*NOTE: LAYOUT IS SCHEMATIC ONLY, DETAILS TO BE PROVIDED AT DETAILED DESIGN STAGE.

30 CENTURIAN DRIVE, SUITE 100  
 MARKHAM, ONTARIO L3R 8B8  
 TEL: (905) 475-1900 FAX: (905) 475-8335

**HALTON REGION**  
**1258 REBECCA STREET,**  
**OAKVILLE**  
**PROPOSED**  
**STORM DRAINAGE PLAN**

DESIGNED BY: R.P.B.	CHECKED BY: P.A.T.
SCALE: 1:750	DATE: JANUARY 2023
PROJECT No: <b>2480</b>	FIGURE No: <b>3.2</b>



---

**APPENDIX A**

**SITE PLAN**

---

# 1258 REBECCA OAKVILLE CONCEPT PLAN

TOTAL SITE AREA: 6,597.00sm  
 18.0m SINGLE DETACHED: 2,169.14sm  
 SEMI DETACHED: 4,427.86sm

UNITS  
 SINGLE DETACHED: 3 units  
 SEMI (TWO SINGLE DWELLINGS): 14 units  
 TOTAL UNITS/DWELLINGS: 17 units

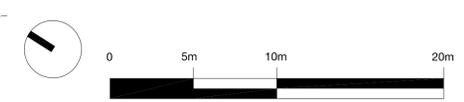
TOTAL FSI: 25.77 units/ha  
 SINGLE DETACHED FSI: 13.8 units/ha  
 SEMI FSI: 31.6 units/ha

LOT AREA (FLOORPLATE | COVERAGE)  
 SINGLE-DETACHED LOT 1 AREA:  
 755.45sm (333sm | 44%)

SINGLE-DETACHED LOT 2 AREA:  
 755.44sm (383sm | 51%)

SINGLE-DETACHED LOT 3 AREA:  
 658.25sm (297sm | 45%)

SEMI-DETACHED LOT AREA:  
 4,427.86sm (826sm | 19%)



No.	REVISION	DATE	BY

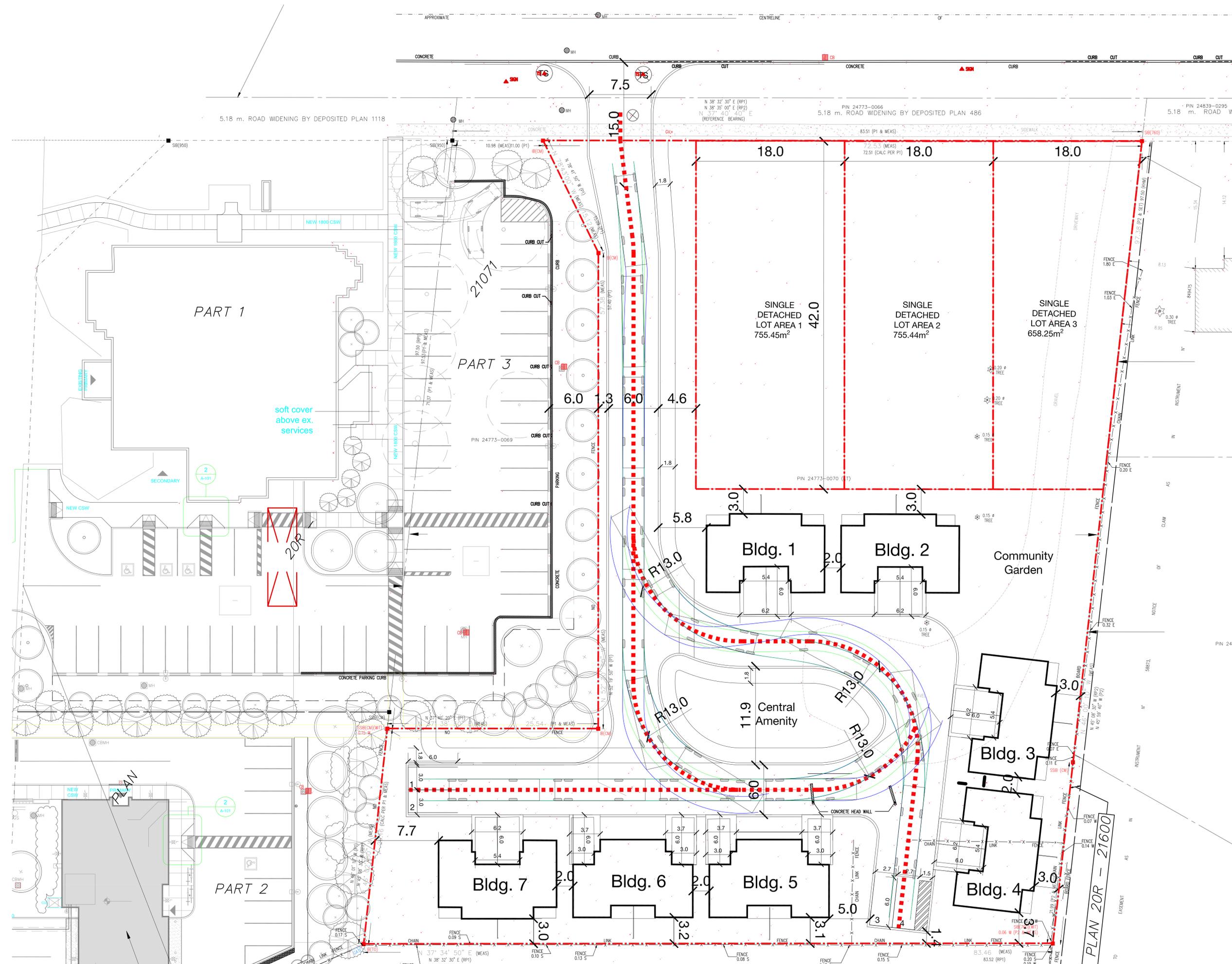
CLIENT  
**HALTON REGION**

**FOTENN**  
 Planning + Design

174 Spadina Ave, Suite 304, Toronto ON M5T 2C2  
 416.789.4530 www.fotenn.com

DESIGNED	UMG
REVIEWED	UMG
DATE	2022.10.25

**P4**

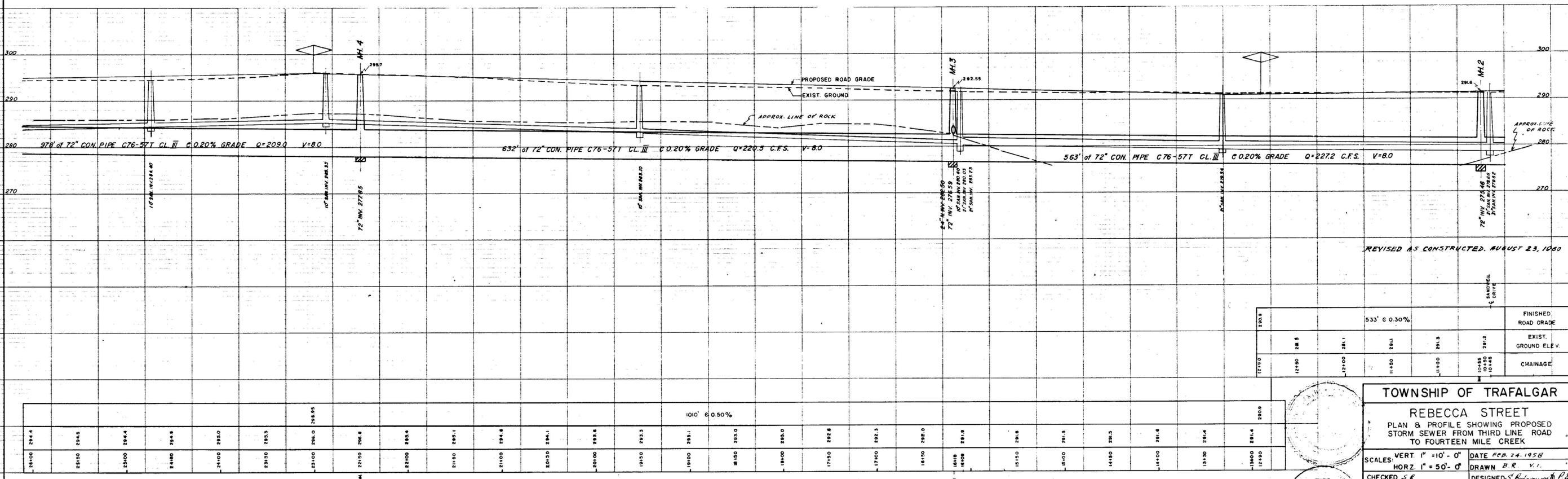
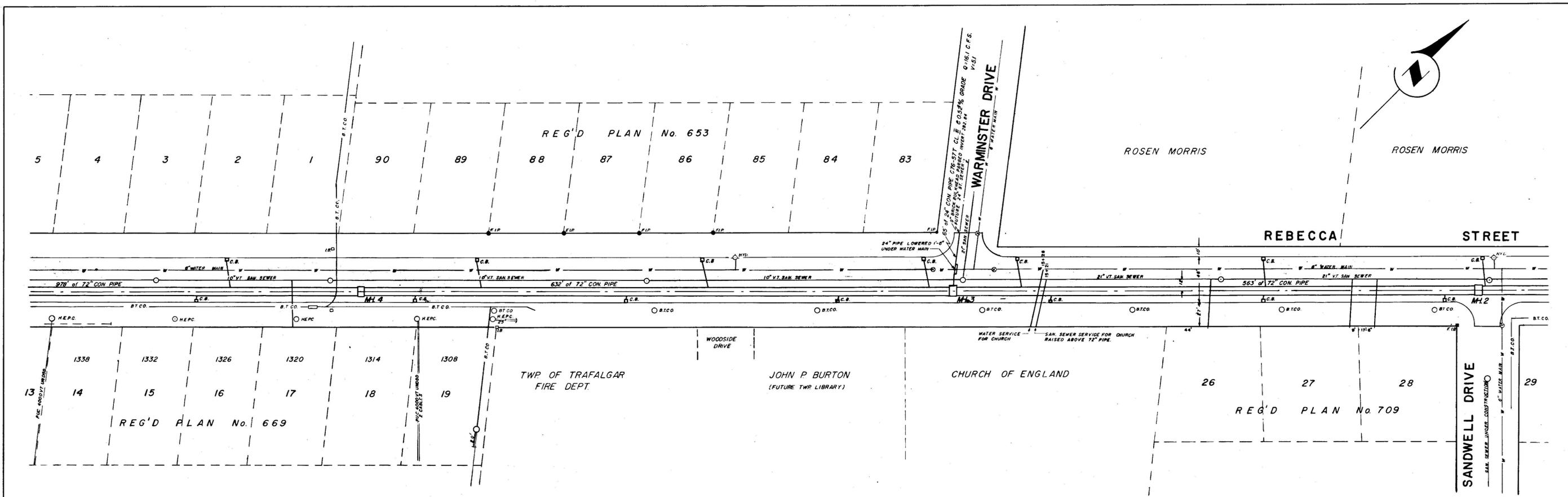


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**APPENDIX B**

**RECORD DRAWINGS AND BACKGROUND INFORMATION**

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2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200
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2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200
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REVISED AS CONSTRUCTED, AUGUST 23, 1960

**TOWNSHIP OF TRAFALGAR**  
**REBECCA STREET**  
 PLAN & PROFILE SHOWING PROPOSED STORM SEWER FROM THIRD LINE ROAD TO FOURTEEN MILE CREEK

SCALE: VERT. 1" = 10'-0" DATE FEB. 24, 1958  
 HORZ. 1" = 50'-0" DRAWN B.R.V.I.

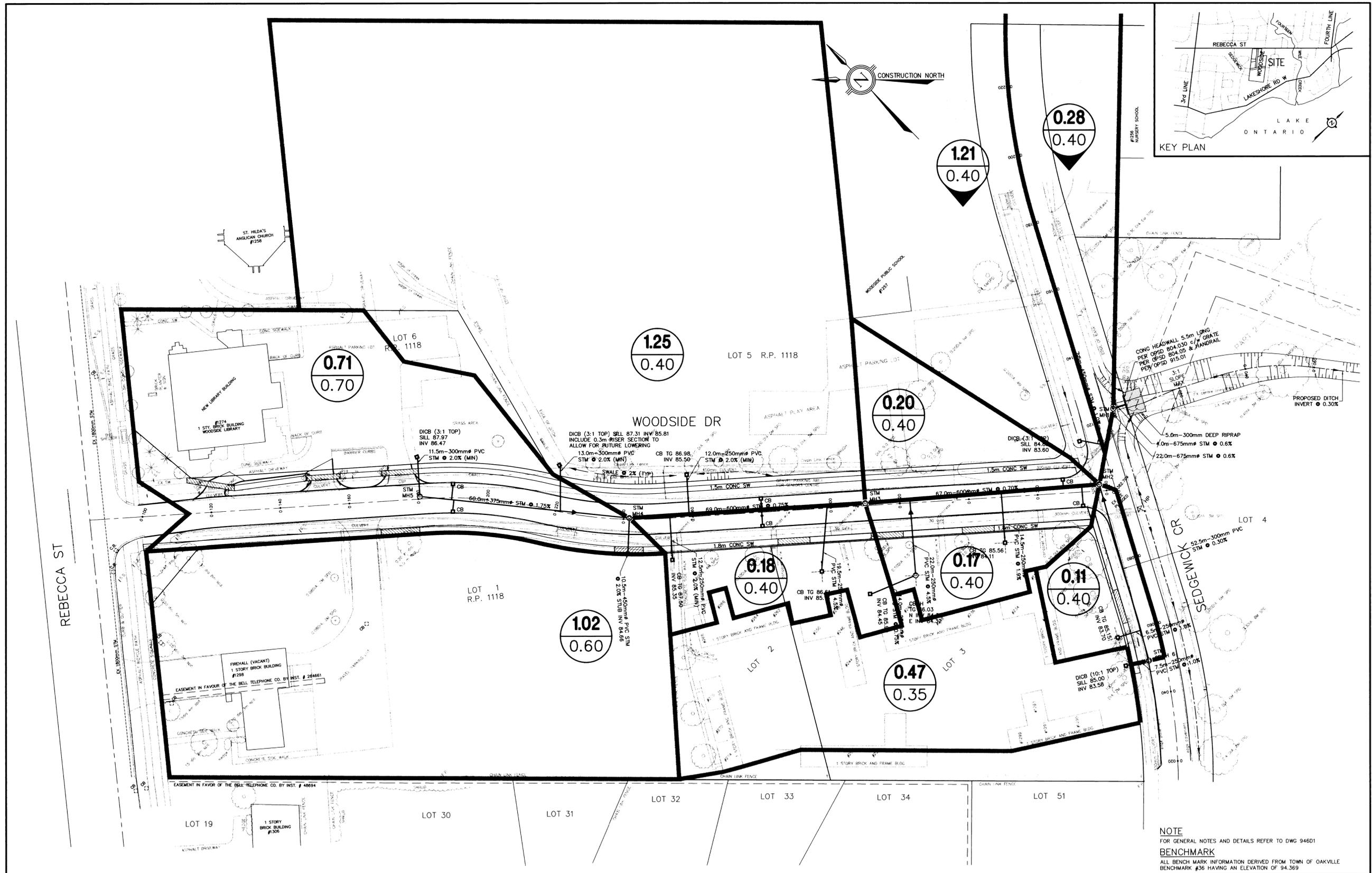
CHECKED S.R. DESIGNED S.R. & P.E.

FRANKLIN MARTHUR ASSOCIATES LIMITED  
 TORONTO CONSULTING ENGINEERS CH 1-1948

PROJ. NO. 57-1 DWG. NO. 2

TWP. FILE S-32





**NOTE**  
 FOR GENERAL NOTES AND DETAILS REFER TO DWG 94601  
**BENCHMARK**  
 ALL BENCH MARK INFORMATION DERIVED FROM TOWN OF OAKVILLE  
 BENCHMARK #36 HAVING AN ELEVATION OF 94.369

<p><b>LEGEND</b></p> <ul style="list-style-type: none"> <li>☐ PROPOSED CATCHBASIN</li> <li>⊙ PROPOSED STORM MANHOLE</li> <li>⊙ PROPOSED SANITARY MANHOLE</li> <li>⊙ PROPOSED FIRE HYDRANT</li> <li>⊙ PROPOSED VALVE &amp; BOX</li> <li>— PROPOSED STORM SEWER</li> <li>— PROPOSED SANITARY SEWER</li> </ul>	<p>1.02 0.60</p> <p>DRAINAGE AREA IN HECTARES              RUN-OFF COEFFICIENT              DRAINAGE BOUNDARY</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>No</td> <td>Date</td> <td>By/DRN</td> <td>REVISIONS</td> </tr> <tr> <td>2</td> <td>FEB/23/01</td> <td>SP/dk</td> <td>REVISED PER TOWN/REGION COMMENTS</td> </tr> <tr> <td>1</td> <td>JAN/16/01</td> <td>SP/dk</td> <td>REVISED PER TOWN/REGION COMMENTS</td> </tr> <tr> <td colspan="4" style="text-align: center;">                 REVISIONS                  Design DB Chk'd SP Cod File 946S3                  Drawn DK Chk'd SP Plot Date MAR/29/01             </td> </tr> </table>	No	Date	By/DRN	REVISIONS	2	FEB/23/01	SP/dk	REVISED PER TOWN/REGION COMMENTS	1	JAN/16/01	SP/dk	REVISED PER TOWN/REGION COMMENTS	REVISIONS Design DB Chk'd SP Cod File 946S3 Drawn DK Chk'd SP Plot Date MAR/29/01				<p>Municipal Approval              APPROVED IN PRINCIPLE SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO TOWN OF OAKVILLE STANDARDS AND SPECIFICATIONS.              R.G. GREEN, Director of Public Works              Date: March 30/01</p>	<p>Field Notes</p> <p>Bell <input type="checkbox"/> Hydro <input checked="" type="checkbox"/>              Gas <input type="checkbox"/> Cable <input checked="" type="checkbox"/>              Traf. <input type="checkbox"/> Water <input type="checkbox"/></p>	<p>Consultant  <b>TRAFALGAR ENGINEERING LTD.</b>              481 MORDEN ROAD OAKVILLE, ONTARIO L6K 3W6              TEL: (905) 338-3366 FAX: (905) 338-7734              trafalgareng@globalserve.net</p>	<p>Title  <b>WOODSIDE DRIVE              RECONSTRUCTION              STORM              DRAINAGE AREA PLAN</b></p>
No	Date	By/DRN	REVISIONS																			
2	FEB/23/01	SP/dk	REVISED PER TOWN/REGION COMMENTS																			
1	JAN/16/01	SP/dk	REVISED PER TOWN/REGION COMMENTS																			
REVISIONS Design DB Chk'd SP Cod File 946S3 Drawn DK Chk'd SP Plot Date MAR/29/01																						
		<p>Scale              1:500  </p>	<p>References</p>	<p>Professional Engineer              S. L. PUTTER              21-3-01              PROVINCE OF ONTARIO</p>	<p>Municipality  <b>TOWN OF OAKVILLE</b>              REGIONAL MUNICIPALITY OF HALTON</p>	<p>Municipal Drawing No.              R-358-00-03</p> <p>Contract No.              R-358-00</p>	<p>Consultant Drawing No.              946S3</p> <p>Sheet              1 of 1</p> <p>Regional File No.              DO-375</p>															



**NOTE:**  
 1. THIS PLAN MUST BE READ IN CONJUNCTION WITH SURVEY REPORT DATED NOVEMBER 30TH, 2020.  
 2. THIS PLAN AND REPORT WERE PREPARED FOR THE REGIONAL MUNICIPALITY OF HALTON AND THE UNDERSIGNED ACCEPTS NO RESPONSIBILITY FOR USE BY OTHER PARTIES.

**BEARING NOTE:**  
 BEARINGS ARE GRID AND ARE REFERRED TO THE SOUTHERLY LIMIT OF REBECCA STREET HAVING A BEARING OF N 37° 40' 40" E AS SHOWN ON PLAN 20R-21071.

**ELEVATION NOTE:**  
 ELEVATIONS ARE GEODETIC AND ARE REFERRED TO TOWN OF OAKVILLE BENCH MARK "N" 277 WITH A PUBLISHED ELEVATION OF 88.967 METRES.

**SURVEYOR'S REAL PROPERTY REPORT AND PLAN OF TOPOGRAPHY OF PART OF LOT 23, CONCESSION 4 SOUTH OF DUNDAS STREET**  
 GEOGRAPHIC TOWNSHIP OF TRAFALGAR  
 TOWN OF OAKVILLE  
 REGIONAL MUNICIPALITY OF HALTON  
 SCALE 1 : 250

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**METRIC NOTE:**  
 DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

**Buried Utility Legend**

Buried Utilities located by R&B Locating 2020-12-14 added to file based on offset measurements from local reference features shown on file. Geodetic, cadastral, and topographic accuracy of file not verified by R&B.

TV	TELEVISION_CABLE
B	TELEPHONE_CABLE
H	HYDRO_CABLE
TC	TRAFFIC_CONTROL
GM	GAS_MAIN
SAN	SANITARY_SEWER
STM	STORM_SEWER
WM	WATER_MAIN
WS	WATER_SERVICE

ASSOCIATION OF ONTARIO LAND SURVEYORS  
**PLAN SUBMISSION FORM 2147866**

THIS PLAN IS NOT VALID UNLESS IT IS AN UNCORRECTED ORIGINAL COPY ISSUED BY THE SURVEYOR  
 In accordance with Regulation 1026, Section 29(3)

**LEGEND**

■	DENOTES SURVEY MONUMENT FOUND
□	DENOTES SURVEY MONUMENT PLANTED
WT	DENOTES WITNESS
IB	DENOTES IRON BAR
SIB	DENOTES STANDARD IRON BAR
NSIB	DENOTES SHORT STANDARD IRON BAR
N	DENOTES NOT IDENTIFIED
RP1	DENOTES REGISTERED PLAN 1118
RP2	DENOTES REGISTERED PLAN 709
TO	DENOTES TOWN OF OAKVILLE
P1	DENOTES PLAN 20R-21071
P2	DENOTES PLAN 20R-21000
760	DENOTES K. H. MCCONNELL LTD., O.L.S.
CM/950	DENOTES GUNNINGHAM MCCONNELL LTD., O.L.S.
KHM	DENOTES PLAN OF SURVEY BY K. H. MCCONNELL O.L.S., DATED JUNE 5, 1957
PIN	DENOTES PROPERTY IDENTIFIER NUMBER
N.S.E.W.	DENOTES NORTH, SOUTH, EAST, WEST
MEAS	DENOTES MEASURED
CALC	DENOTES CALCULATED
INV/OBV	DENOTES INVERT/OBVERT
HP	DENOTES HYDRO POLE
O.H.W.	DENOTES OVERHEAD UTILITY CABLES
GW	DENOTES GUY WIRES
LS	DENOTES LIGHT STANDARD
TS	DENOTES TRAFFIC SIGN
MH	DENOTES MANHOLE
CS	DENOTES CATCH BASIN
DS	DENOTES DOOR SILL ELEVATION
TS/BC	DENOTES TOP/BOTTOM OF CURB
T.S.	DENOTES TOP OF SLOPE
GM	DENOTES GAS METER
WV	DENOTES WATER VALVE
φ	DENOTES DIAMETER

**SURVEYOR'S CERTIFICATE**  
 I CERTIFY THAT:  
 1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYORS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.  
 2. THE SURVEY WAS COMPLETED ON NOVEMBER 16TH, 2020.

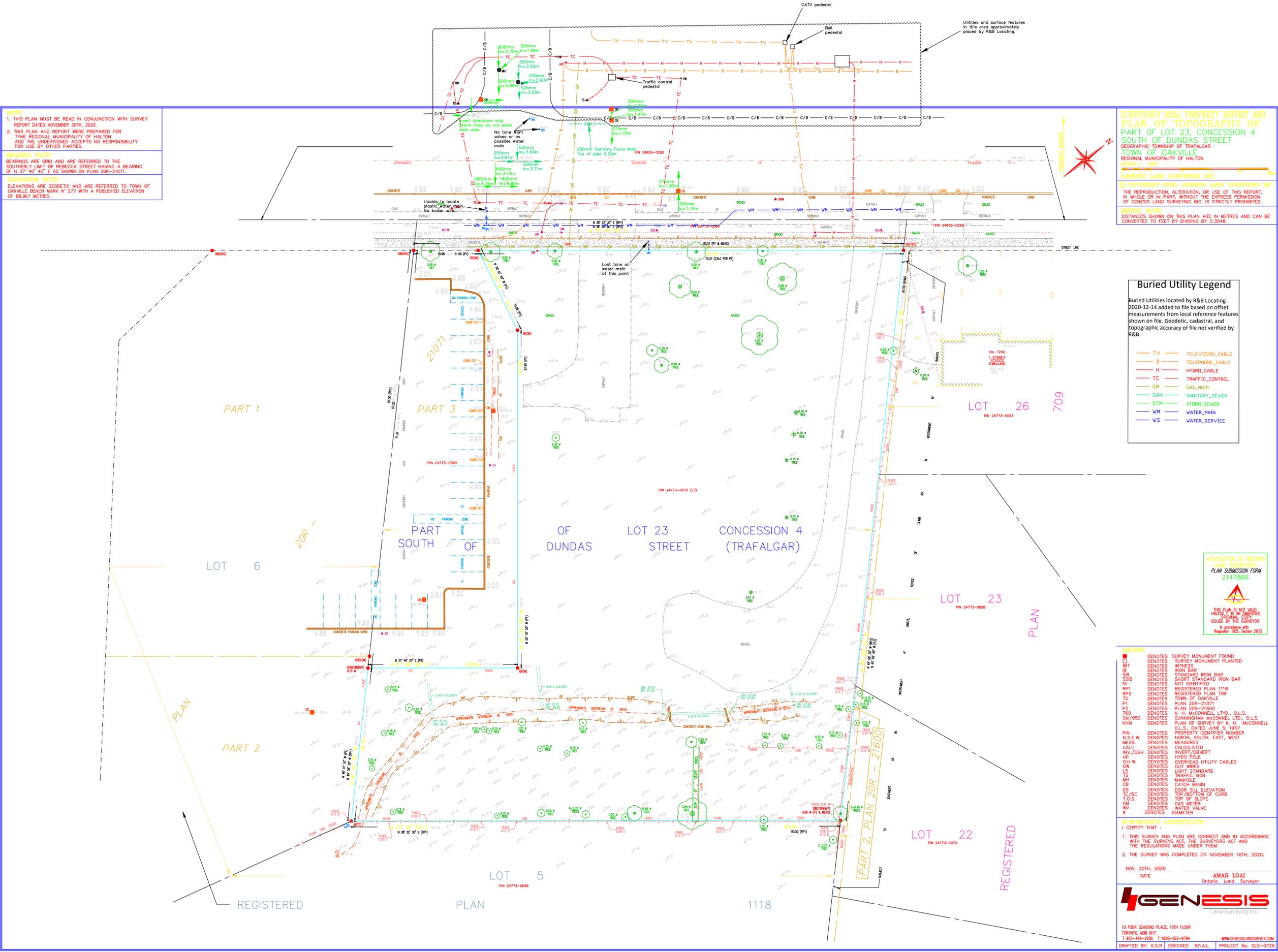
NOV. 30TH, 2020  
 DATE

AMAR LOAI  
 Ontario Land Surveyor

**GENESIS**  
 Land Surveying Inc.

10 FOUR SEASONS PLACE, 10TH FLOOR  
 TORONTO, M9B 6H7  
 T 905-499-2956 F 1-800-262-9784 WWW.GENESISLANDSURVEY.COM

DRAFTED BY: G.S.R. | CHECKED BY: A.L. | PROJECT No. GLS-0729





- MaintenanceHole    ● Hydrant
- SewerMain        — Watermain
- ServiceLateral    — ServiceLead
- ★ PumpingStation



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 ITS EMPLOYEES, OFFICERS AND AGENTS  
 ARE NOT RESPONSIBLE FOR ANY ERRORS,  
 OMISSIONS OR INACCURACIES, WHETHER  
 DUE TO THEIR NEGLIGENCE OR OTHERWISE.  
 ALL INFORMATION SHOULD BE VERIFIED

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2017 Orthophoto  
 Created: April 2020  
 Public Works Information

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**APPENDIX C**

**TOPOGRAPHIC SURVEY**

---



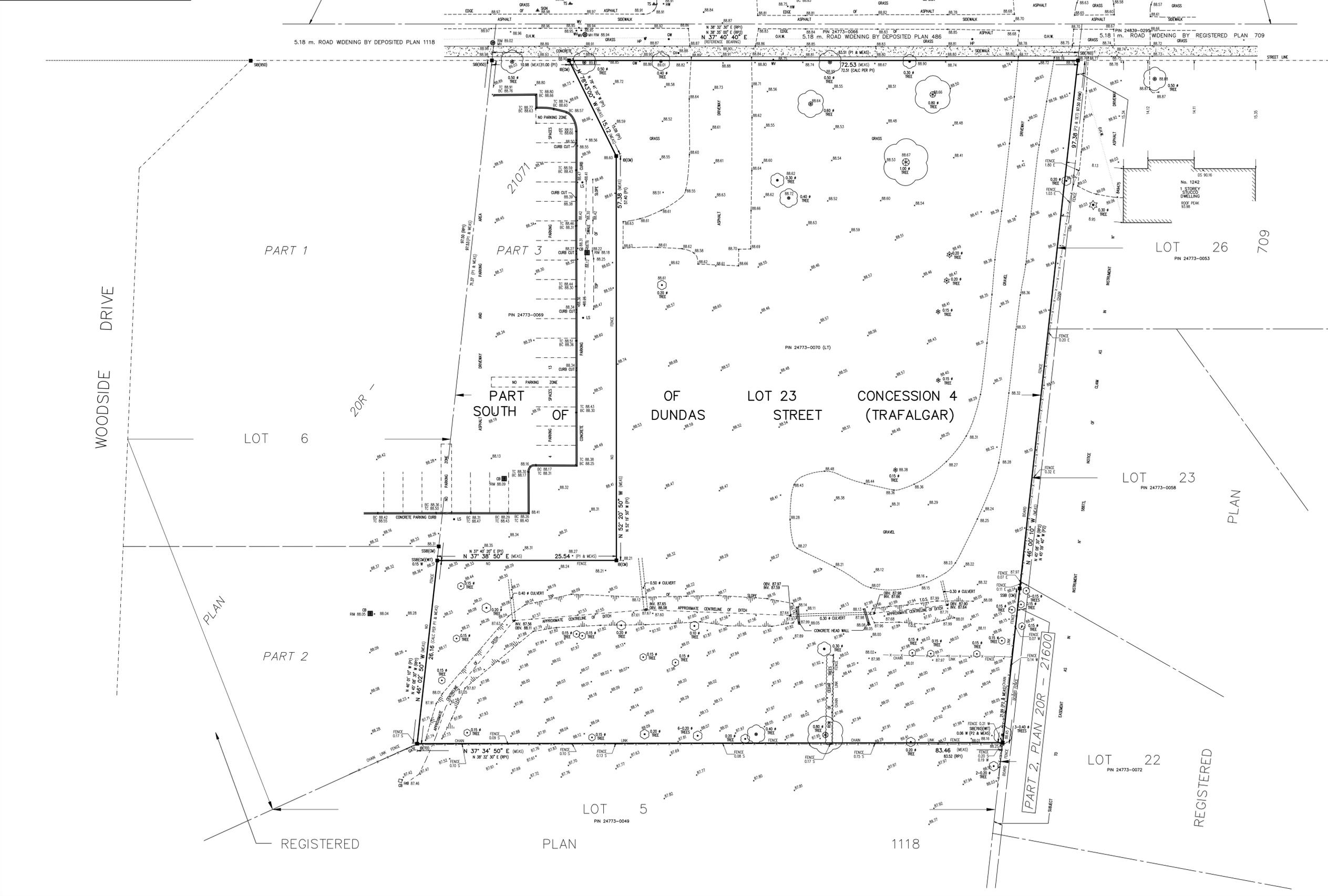
**NOTE**  
 1. THIS PLAN MUST BE READ IN CONJUNCTION WITH SURVEY REPORT DATED NOVEMBER 30TH, 2020.  
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**SURVEYOR'S REAL PROPERTY REPORT AND PLAN OF TOPOGRAPHY OF PART OF LOT 23, CONCESSION 4 SOUTH OF DUNDAS STREET**  
 GEOGRAPHIC TOWNSHIP OF TRAFALGAR  
 TOWN OF OAKVILLE  
 REGIONAL MUNICIPALITY OF HALTON  
 SCALE 1 : 250  
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**LEGEND**

■	DENOTES SURVEY MONUMENT FOUND
□	DENOTES SURVEY MONUMENT PLANTED
WT	DENOTES WITNESS
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SSIB	DENOTES SHORT STANDARD IRON BAR
N	DENOTES NOT IDENTIFIED
RP1	DENOTES REGISTERED PLAN 1118
RP2	DENOTES REGISTERED PLAN 709
TO	DENOTES TOWN OF OAKVILLE
P1	DENOTES PLAN 20R-21071
P2	DENOTES PLAN 20R-21600
K60	DENOTES K. H. MCCONNELL LTD., O.L.S.
CM/950	DENOTES CUNNINGHAM MCCONNELL LTD., O.L.S.
KHM	DENOTES PLAN OF SURVEY BY K. H. MCCONNELL O.L.S., DATED JUNE 5, 1957
PIN	DENOTES PROPERTY IDENTIFIER NUMBER
N.S.E.W.	DENOTES NORTH, SOUTH, EAST, WEST
MEAS.	DENOTES MEASURED
CALC.	DENOTES CALCULATED
INV/OBV.	DENOTES INVERT/OVERT
HP	DENOTES HYDRO POLE
O.H.W.	DENOTES OVERHEAD UTILITY CABLES
GW	DENOTES GUY WIRES
LS	DENOTES LIGHT STANDARD
TS	DENOTES TRAFFIC SIGN
MH	DENOTES MANHOLE
CB	DENOTES CATCH BASIN
DS	DENOTES DOOR SILL ELEVATION
TO/BC	DENOTES TOP/BOTTOM OF CURB
T.O.S.	DENOTES TOP OF SLOPE
GM	DENOTES GAS METER
WV	DENOTES WATER VALVE
Ø	DENOTES DIAMETER

**SURVEYOR'S CERTIFICATE**  
 I CERTIFY THAT:  
 1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.  
 2. THE SURVEY WAS COMPLETED ON NOVEMBER 16TH, 2020.

NOV. 30TH, 2020  
 DATE

*AMAR LOAI*  
 Ontario Land Surveyor

**GENESIS**  
 Land Surveying Inc.

10 FOUR SEASONS PLACE, 10TH FLOOR  
 TORONTO, M5B 6H7  
 T 905-499-2956 T 1800-262-9784 WWW.GENESISLANDSURVEY.COM

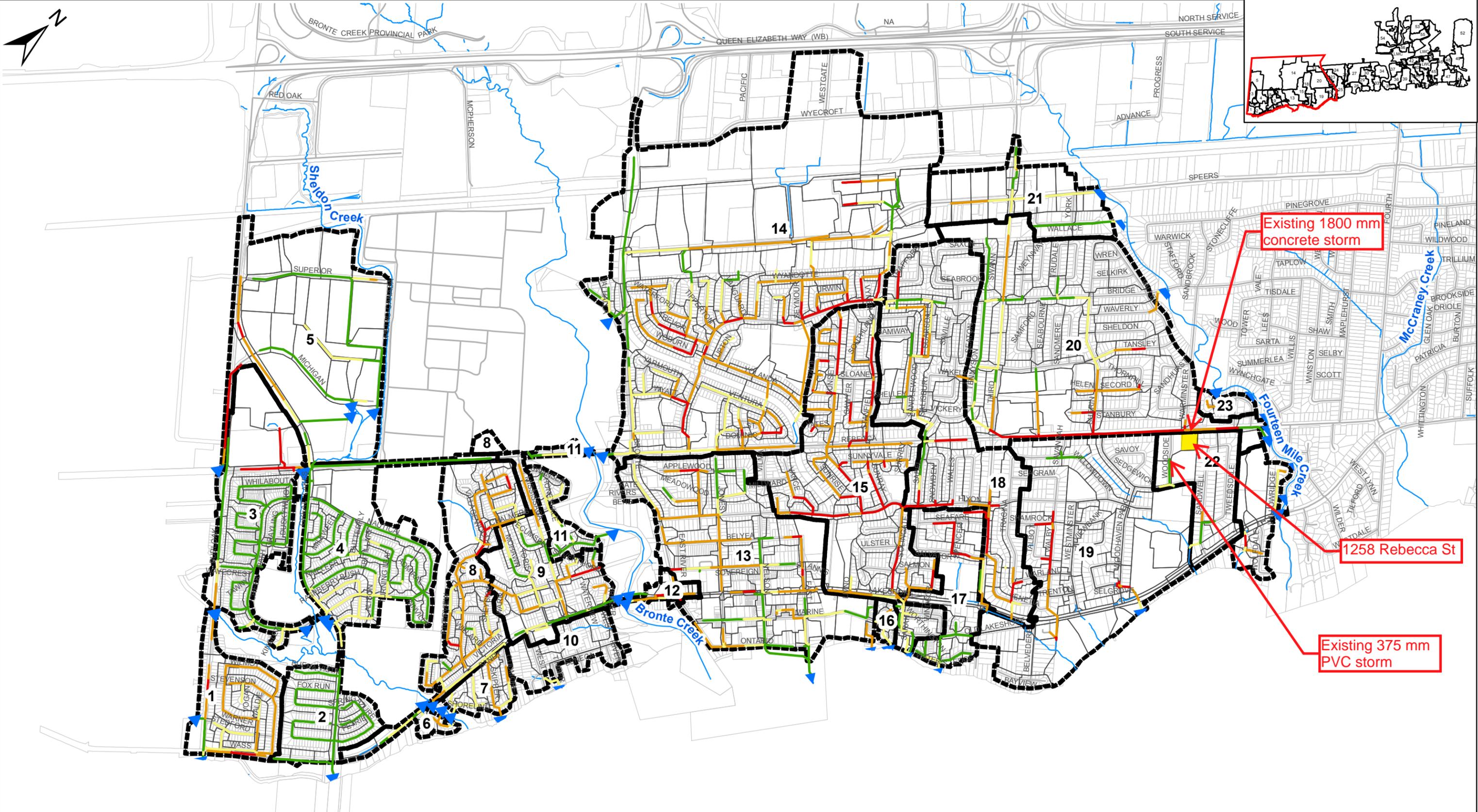
DRAFTED BY: G.S.R. CHECKED BY: A.L. PROJECT NO. GLS-0729

---

**APPENDIX D**

**STORM SERVICING CALCULATIONS**

---



**Legend**

	Network		Roads	<b>Minor System Performance</b>	
	Subcatchment		Streams		Unsurcharged
	Parcels		Outfalls		Below 1/2 Surcharging Depth and Above Obvert
					Above 1/2 Surcharging Depth and Below Rim Elevation
					Surcharged Above Rim Elevation

**Stormwater Management  
Master Plan**

**Phase 2**

**Town of Oakville**

**5 Year  
Minor System  
Performance Assessment**

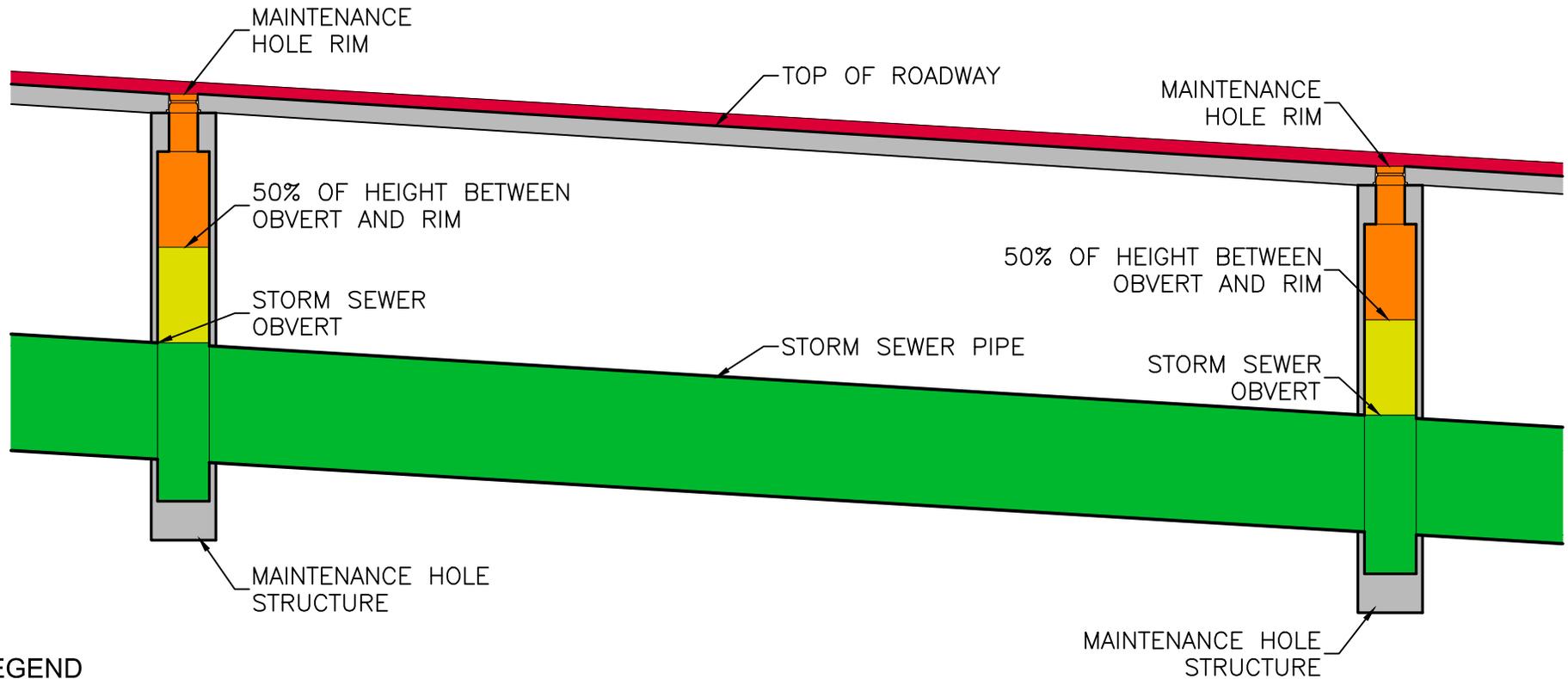
**-  
Existing Condition  
(Part 1)**



Scale **1:18,650**

Project No.  
**TP 115045**

Drawing No.  
**F1-1**



**LEGEND**

- FLOW WITHIN STORM SEWER
- SURCHARGE WITHIN MAINTENANCE HOLE TO 50% BETWEEN STORM SEWER OBVERT AND TOP OF RIM
- SURCHARGE TO MAINTENANCE HOLE RIM ELEVATION
- SPILL ONTO ROADWAY

SCALE VALID ONLY FOR LETTER VERSION

STORMWATER MANAGEMENT PLAN PHASE 2 TOWN OF OAKVILLE	SCHEMATIC OF MINOR SYSTEM LEVEL OF SERVICE CONDITIONS PERTAINING TO 5 YEAR STORM EVENT		Scale NOT TO SCALE Consultant File No. TP115045 Figure No. 7.1
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**5-Year Storm Design - Existing Woodside Drive  
Independent Living Facility  
1258 Rebecca Street  
Town of Oakville, Halton Region**

**Project: Independent Living Facility  
Project No. 2480  
Date: 12-Jan-23  
Designed By: M.L.M.  
Reviewed By: P.G.**

$$\text{Rainfall Intensity (i)} = \frac{A}{(T_c + B)^c}$$

A= 1170  
B= 5.8  
c= 0.843

= Includes Catchments 101 and EXT-1 (Figure 3.1)

Starting  $T_c$  (min)= 10

P:\2480 1258 Rebecca Street Oakville - Halton Region\Design\Pipe Design\Storm\2480-PRE Dev-Storm Design Sheet-Woodstream Drive Downstream Analysis.xlsm\Design

LOCATION			5 YEAR						EXTERNAL FLOWS				TOTAL FLOW	PIPE DATA				TIME OF CONC.	ACCUM. TIME OF CONC.	
STREET	MAINTENANCE HOLE		5-YEAR AREA (ha)	RUNOFF COEFF. (R)	"AR"	ACCUM. "AR"	RAINFALL INTENSITY (mm/hr)	ACCUM. FLOW (m3/s)	AREA (ha)	FLOW RATE (l/s/ha)	EXT. FLOW (m3/s)	ACCUM. EXT. FLOW (m3/s)	TOTAL (Qdes) (m3/s)	LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)			FULL FLOW VELOCITY (m/s)
	FROM	TO																		
PATRICIA-PICKNELL SCHOOL GROUNDS	EX.DICB1	EX.MH5	0.70	0.31	0.21	0.21	114.21	0.068	0.000	0.000	0.000	0.000	0.068	13.0	2.00	300	0.137	1.935	0.11	10.11
WOODSIDE DRIVE	EX.MH5	EX.MH4	0.71	0.70	0.50	0.71	113.54	0.225	0.000	0.000	0.000	0.000	0.225	60.0	1.75	375	0.232	2.100	0.48	10.59
WOODSIDE DRIVE	EX.PLUG	EX.MH4	1.02	0.60	0.61	0.61	114.21	0.194	0.000	0.000	0.000	0.000	0.194	10.5	2.00	450	0.403	2.535	0.07	10.07
WOODSIDE DRIVE	EX.MH4	EX.MH3	1.10	0.40	0.44	1.76	110.75	0.543	0.000	0.000	0.000	0.000	0.543	69.0	0.75	600	0.531	1.881	0.61	11.20
WOODSIDE DRIVE	EX.MH3	EX.MH2	0.37	0.40	0.15	1.91	107.38	0.570	0.000	0.000	0.000	0.000	0.570	67.0	0.70	600	0.513	1.817	0.61	11.81
SEDGEWICK DRIVE	EX.DICB2	EX.CBMH6	0.47	0.35	0.16	0.16	114.21	0.052	0.000	0.000	0.000	0.000	0.052	7.5	1.00	250	0.059	1.211	0.10	10.10
SEDGEWICK DRIVE	EX.CBMH6	EX.MH2	0.11	0.40	0.04	0.21	113.59	0.066	0.000	0.000	0.000	0.000	0.066	52.5	0.30	300	0.053	0.749	1.17	11.27
SEDGEWICK DRIVE	EX.MH2	EX.MH1	1.21	0.40	0.48	2.60	104.21	0.754	0.000	0.000	0.000	0.000	0.754	22.0	0.60	675	0.651	1.820	0.20	12.02
SEDGEWICK FOREST OUTFALL	EX.MH1	EX.HW	0.28	0.40	0.11	2.72	103.22	0.779	0.000	0.000	0.000	0.000	0.779	4.0	0.60	675	0.651	1.820	0.04	12.05



**5-Year Storm Design - Proposed Woodside Drive  
Independent Living Facility  
1258 Rebecca Street  
Town of Oakville, Halton Region**

$$\text{Rainfall Intensity (i)} = \frac{A}{(T_c + B)^c}$$

A= 1170  
B= 5.8  
c= 0.843

Starting  $T_c$  (min)= 10

- = Includes Catchments 201, 202 and EXT-1 (Figure 3.2)
- = Allowable Release Rate
- = Includes Catchment 204 (Figure 3.2) and 0.71 ha from Trafalgar Engineering drainage plan

**Project: Independent Living Facility**  
**Project No. 2480**  
**Date: 12-Jan-23**  
**Designed By: M.L.M.**  
**Reviewed By: P.G.**

P:\2480 1258 Rebecca Street Oakville - Halton Region\Design\Pipe Design\Storm\2480-POST Dev-Storm Design Sheet-Woodstream Drive Downstream Analysis.xlsm\Design

LOCATION			5 YEAR						EXTERNAL FLOWS				TOTAL FLOW	PIPE DATA				TIME OF CONC.	ACCUM. TIME OF CONC.	
STREET	MAINTENANCE HOLE		5-YEAR AREA (ha)	RUNOFF COEFF. (R)	"AR"	ACCUM. "AR"	RAINFALL INTENSITY (mm/hr)	ACCUM. FLOW (m3/s)	AREA (ha)	FLOW RATE (l/s/ha)	EXT. FLOW (m3/s)	ACCUM. EXT. FLOW (m3/s)	TOTAL (Qdes) (m3/s)	LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)			FULL FLOW VELOCITY (m/s)
	FROM	TO																		
1258 REBECCA STREET	MH1	EX.MH5	0.00	0.00	0.00	0.00	114.21	0.000	0.57	74.39	0.042	0.042	0.042	15.0	0.50	375	0.124	1.123	0.22	10.22
WOODSIDE DRIVE	EX.MH5	EX.MH4	0.73	0.69	0.50	0.50	112.87	0.158	0.00	0.00	0.000	0.042	0.201	60.0	1.75	375	0.232	2.100	0.48	10.70
WOODSIDE DRIVE	EX.PLUG	EX.MH4	1.02	0.60	0.61	0.61	114.21	0.194	0.00	0.00	0.000	0.000	0.194	10.5	2.00	450	0.403	2.535	0.07	10.07
WOODSIDE DRIVE	EX.MH4	EX.MH3	1.10	0.40	0.44	1.56	110.12	0.476	0.00	0.00	0.000	0.042	0.519	69.0	0.75	600	0.531	1.881	0.61	11.31
WOODSIDE DRIVE	EX.MH3	EX.MH2	0.37	0.40	0.15	1.70	106.79	0.506	0.00	0.00	0.000	0.042	0.548	67.0	0.70	600	0.513	1.817	0.61	11.92
SEDGEWICK DRIVE	EX.DICB2	EX.CBMH6	0.47	0.35	0.16	0.16	114.21	0.052	0.00	0.00	0.000	0.000	0.052	7.5	1.00	250	0.059	1.211	0.10	10.10
SEDGEWICK DRIVE	EX.CBMH6	EX.MH2	0.11	0.40	0.04	0.21	113.59	0.066	0.00	0.00	0.000	0.000	0.066	52.5	0.30	300	0.053	0.749	1.17	11.27
SEDGEWICK DRIVE	EX.MH2	EX.MH1	1.21	0.40	0.48	2.40	103.66	0.690	0.00	0.00	0.000	0.042	0.733	22.0	0.60	675	0.651	1.820	0.20	12.13
SEDGEWICK FOREST OUTFALL	EX.MH1	EX.HW	0.28	0.40	0.11	2.51	102.68	0.716	0.00	0.00	0.000	0.042	0.758	4.0	0.60	675	0.651	1.820	0.04	12.16



**100-Year Storm Design - Proposed Rebecca Street  
Independent Living Facility  
1258 Rebecca Street  
Town of Oakville, Halton Region**

Project: Independent Living Facility  
Project No. 2480  
Date: 12-Jan-23  
Designed By: M.L.M.  
Reviewed By: P.G.

$$\text{Rainfall Intensity (i)} = \frac{A}{(T_c + B)^c}$$

A= 2150  
B= 5.7  
c= 0.861

Starting T<sub>c</sub> (min)= 10

= Includes Catchment 203 (Figure 3.2)  
 = Includes 100 Year Runoff Coefficient Increase Factor of 1.25

P:\2480 1258 Rebecca Street Oakville - Halton Region\Design\Pipe Design\Storm\2480-POST Dev-Storm Design Sheet-Rebecca Street.xlsm\Design

LOCATION			100 YEAR						EXTERNAL FLOWS				TOTAL FLOW	PIPE DATA					TIME OF CONC. (min)	ACCUM. TIME OF CONC. (min)	
STREET	MANHOLE		100-YEAR AREA (ha)	RUNOFF COEFF. "R"	"AR"	ACCUM. "AR"	RAINFALL INTENSITY (mm/hr)	ACCUM. FLOW (m3/s)	AREA (ha)	FLOW RATE (l/s/ha)	EXT. FLOW (m3/s)	ACCUM. EXT. FLOW (m3/s)	TOTAL (Q <sub>des</sub> ) (m3/s)	LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)	FULL FLOW VELOCITY (m/s)			
	FROM	TO																			
REBECCA STREET	EX.MH3	EX.MH2	0.11	0.81	0.089	0.089	200.80	0.050	0.000	0.000	0.000	0.000	0.050	171.6	0.20	1800	5.138	2.020	1.42	11.42	

## McClymont, Melissa

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**From:** Richards, Zach <Zach.Richards@halton.ca>  
**Sent:** Monday, April 11, 2022 3:34 PM  
**To:** Richards, Zach  
**Subject:** 220411 - Meeting Notes - we can connect through EMS Lands

- Joel:
  - We can close the one entrance to EMS
  - EMS trucks can back into the loading bays at the other entrance
  - Would close the one entrance off during road cut for new storm pipe
  - We are happy to accommodate your needs for your development
  - We need a parking space to the north (library)
    - Melissa: This is likely not feasible due to set backs
  - We need a parking space behind the northern most parking space (towards your site)
    - Melissa: This is a potential solution. Could go for a minor variance. Could extend your entire parking towards our site, but not on our site.
  - The handicap space took away the 8 parking space, we need at least 1 more space.
  - Staff typically go to parking at 6am and 6pm, maybe could use the library lands for a day or two while the storm pipe road cut takes place.
- Jason:
  - I am good with any solution. EMS lands works well
  - Can get a by-law exemption for parking on the road during the construction.

### Zach Richards, P.Eng.

**Project Manager III, Housing Action Team (H.A.T.)**

Performance, Emergency & Enterprise Risk Management

Legislative & Planning Services

**Halton Region**

905-825-6000, ext. 7108 | 1-866-442-5866



halton.ca ☎ 311

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**APPENDIX E**

**STORMWATER MANAGEMENT CALCULATIONS**

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<b>Catchment 101</b>		Outlets to: Woodside Drive	
	Runoff Coefficient	Area (ha)	Weighted Runoff Coefficient
Asphalt	0.90	0.03	0.04
Gravel	0.40	0.08	0.05
Grass	0.25	0.55	0.21
<b>TOTAL</b>		0.66	0.30

<b>Catchment EXT-1</b>		Outlets to: Woodside Drive	
	Runoff Coefficient	Area (ha)	Weighted Runoff Coefficient
Asphalt	0.90	0.003	0.07
Rooftops	0.90	0.01	0.18
Grass	0.25	0.03	0.18
<b>TOTAL</b>		0.04	0.43

5 Year storm

IDF Parameters\* {

**a = 1170**  
**t = 10**            min  
**b = 5.8**  
**c = 0.843**

Runoff Coefficient:                    **C1 = 0.40**

Allowable Release Rate Calculation				
Outlet	Area	time	Intensity	Flow
ID		t	$i=a/(t+b)^c$	$Q=CiA/360$
	ha	min	mm/hr	l/s
Woodside Drive	0.33	10.00	114.21	42.4

\* a,b,c's per Town of Oakville

As identified on the Woodside Drive Reconstruction Storm Drainage Area Plan prepared by Trafalgar Engineering Ltd. dated March 2001 (refer to Appendix B), approximately 0.33 ha of the existing site has been accounted for within the Woodside Drive storm sewer system.

## PROPOSED WEIGHTED RUNOFF COEFFICIENT

100 Year Runoff Coefficient Increase Factor: 1.25

**Catchment 201**                      Outlets to:    Woodside Drive

	Runoff Coefficient	Area (ha)	Weighted Runoff Coefficient	Weighted Runoff Coefficient (100 Year)
Asphalt	0.90	0.10	0.22	0.25
Rooftops	0.90	0.09	0.19	0.21
Permeable Pavement	0.90	0.11	0.24	0.27
Grass	0.25	0.12	0.07	0.09
<b>TOTAL</b>		0.42	0.72	0.81

**Catchment 202**                      Outlets to:    Woodside Drive

	Runoff Coefficient	Area (ha)	Weighted Runoff Coefficient	Weighted Runoff Coefficient (100 Year)
Future Residential Development	0.65	0.11	0.65	0.81
<b>TOTAL</b>		0.11	0.65	0.81

**Catchment EXT-1**                      Outlets to:    Woodside Drive

	Runoff Coefficient	Area (ha)	Weighted Runoff Coefficient	Weighted Runoff Coefficient (100 Year)
Asphalt	0.90	0.003	0.07	0.07
Rooftops	0.90	0.01	0.18	0.20
Grass	0.25	0.03	0.18	0.23
<b>TOTAL</b>		0.04	0.43	0.50

**Catchment 203**                      Outlets to:    Rebecca Street

	Runoff Coefficient	Area (ha)	Weighted Runoff Coefficient	Weighted Runoff Coefficient (100 Year)
Future Residential Development	0.65	0.11	0.65	0.81
<b>TOTAL</b>		0.11	0.65	0.81

**Catchment 204**                      Outlets to:    Woodside Drive

	Runoff Coefficient	Area (ha)	Weighted Runoff Coefficient	Weighted Runoff Coefficient (100 Year)
Permeable Pavement	0.90	0.004	0.20	0.22
Grass	0.25	0.014	0.19	0.24
<b>TOTAL</b>		0.02	0.39	0.47



# PROPOSED WEIGHTED RUNOFF COEFFICIENT

1258 Rebecca Street, Oakville  
Project Number: 2480  
Date: January 2023  
Designer Initials: P.A.T.

---

## Overall Total

Catchment	Runoff Coefficient	Area	Weighted Runoff Coefficient
201	0.72	0.42	0.44
202	0.65	0.11	0.10
EXT-1	0.43	0.04	0.02
203	0.65	0.11	0.10
204	0.39	0.02	0.01
<b>TOTAL</b>		<b>0.70</b>	<b>0.67</b>

## SUMMARY

Catchment ID	Routing	Runoff Coef.	Area (ha)	100 Year			Orifice Size (mm) <sup>3</sup>	Orifice Release Rate (L/s)	Uncontrolled Release Rate (L/s)
				Release Rate (L/s) <sup>1,2</sup>	Storage Required (m <sup>3</sup> ) <sup>1</sup>	Storage Available (m <sup>3</sup> ) <sup>3</sup>			
201	is routed through	0.81	0.42	37.7	187.4	194.4	133	37.7	
202	is routed through 201	0.81	0.11	49.9	0.0	0.0	uncontrolled	-	49.9
EXT-1	is routed through 201	0.50	0.04	11.1	0.0	0.0	uncontrolled	-	11.1
203	is routed through	0.81	0.11	49.9	0.0	0.0	uncontrolled	-	49.9
204	is routed through	0.47	0.02	4.7	0.0	0.0	uncontrolled	-	5
<b>Total</b>			0.70	153.3	187.4	194.4	-	-	

Woodside Drive Allowable Release Rate      42.4    L/s  
 Woodside Drive Proposed Release Rate      42.4    L/s  
  
 Rebecca Street Proposed Release Rate      49.9    L/s

Notes:

<sup>1</sup> Per Modified Rational Calculations (attached)

<sup>2</sup> The allowable release rate was determined using the area identified in the Woodside Drive Storm Drainage Area Reconstruction Plan (Trafalgar, March 2001)

<sup>3</sup> See attached for orifice details

**Area ID: 201**

Area = **0.424** ha  
 "C" = **0.81**  
 AC= **0.3442**  
 T<sub>c</sub> = **10.0** min  
 Time Increment = **3.0** min  
 Release Rate = **37.73** l/s  
 Max.Storage = **187.4** m<sup>3</sup>

Town of Oakville 100 Year  
 a= 2150  
 b= 5.7  
 c= 0.861

Time (min)	Rainfall Intensity (mm/hr)	Storm Runoff (l/s)	Runoff Volume (m <sup>3</sup> )	Released Volume (m <sup>3</sup> )	Storage Volume (m <sup>3</sup> )
10.0	200.8	253.19	151.9	22.6	129.3
13.0	172.7	217.80	169.9	26.0	143.9
16.0	152.0	191.61	183.9	29.4	154.5
19.0	135.9	171.39	195.4	32.8	162.6
22.0	123.2	155.29	205.0	36.2	168.8
25.0	112.7	142.13	213.2	39.6	173.6
28.0	104.0	131.17	220.4	43.0	177.4
31.0	96.7	121.88	226.7	46.4	180.3
34.0	90.3	113.91	232.4	49.8	182.6
37.0	84.8	106.98	237.5	53.2	184.3
40.0	80.0	100.91	242.2	56.6	185.6
43.0	75.8	95.53	246.5	60.0	186.5
46.0	72.0	90.74	250.4	63.4	187.1
49.0	68.6	86.44	254.1	66.8	187.4
52.0	65.5	82.55	257.6	70.2	187.4
55.0	62.7	79.03	260.8	73.6	187.2
58.0	60.1	75.81	263.8	77.0	186.9
61.0	57.8	72.87	266.7	80.4	186.3
64.0	55.6	70.16	269.4	83.8	185.7
67.0	53.7	67.66	272.0	87.1	184.8
70.0	51.8	65.34	274.4	90.5	183.9
73.0	50.1	63.19	276.8	93.9	182.9
76.0	48.5	61.19	279.0	97.3	181.7
79.0	47.0	59.32	281.2	100.7	180.4

<<<<

<sup>1</sup> The storm runoff from Catchment 202 and EXT-1 has been added to the storm runoff of Catchment 201

**Area ID**                    201

*Orifice Equation:*     **$Q = C_d A(2gh)^{1/2}$**

Orifice Diameter:	133	mm
Area:	0.014	m <sup>2</sup>
g =	9.81	m/sec <sup>2</sup>
C <sub>d</sub> =	0.62	

<i>Type of Control:</i>	vertical
<i>Location:</i>	1

### ***Pipe Storage***

Diameter	Area	Length	Volume
(mm)	(m <sup>2</sup> )	(m)	(m <sup>3</sup> )
0.9 * 1.8 BOX	1.620	120	194.4
Total Volume			<b>194.4</b>

	Stage	Head	Storage	Discharge
	(m)	(m)	(m <sup>3</sup> )	(m <sup>3</sup> /s)
Invert E.L.	86.25	0.00	0.0	0.00
100 Year WL	87.30	0.98	194.4	0.038



**MODIFIED RATIONAL METHOD**

1258 Rebecca Street, Oakville  
 Project Number: 2480  
 Date: January 2023  
 Designer Initials: P.A.T.

**Area ID: 202**

Area = 0.110 ha  
 "C" = 0.81  
 AC= 0.0894  
 Tc = 10.0 min  
 Time Increment = 3.0 min  
 Release Rate = 49.89 l/s  
 Max.Storage = 0.0 m<sup>3</sup>

Town of Oakville 100 Year  
 a= 2150  
 b= 5.7  
 c= 0.861

**NOTE: Catchment 202 is routed through Catchment 201**

Time (min)	Rainfall Intensity (mm/hr)	Storm Runoff (l/s)	Runoff Volume (m <sup>3</sup> )	Released Volume (m <sup>3</sup> )	Storage Volume (m <sup>3</sup> )
10.0	200.8	49.89	29.9	29.9	0.0

<<<<

**Area ID: EXT-1**

Area =	<b>0.040</b> ha	
"C" =	<b>0.50</b>	
AC=	<b>0.0200</b>	
Tc =	<b>10.0</b> min	
Time Increment =	<b>3.0</b> min	
Release Rate =	<b>11.14</b> l/s	Town of Oakville 100 Year
Max.Storage =	<b>0.0</b> m <sup>3</sup>	a= 2150
		b= 5.7
		c= 0.861

**NOTE: Catchment EXT-1 is routed through Catchment 201**

Time (min)	Rainfall Intensity (mm/hr)	Storm Runoff (l/s)	Runoff Volume (m <sup>3</sup> )	Released Volume (m <sup>3</sup> )	Storage Volume (m <sup>3</sup> )
10.0	200.8	11.14	6.7	6.7	0.0

<<<<

## MODIFIED RATIONAL METHOD

**Area ID: 203**

Area =	0.110 ha		
"C" =	0.81		
AC=	0.0894		
Tc =	10.0 min		
Time Increment =	3.0 min		
Release Rate =	49.89 l/s	Town of Oakville	100 Year
Max.Storage =	0.0 m <sup>3</sup>	a=	2150
		b=	5.7
		c=	0.861

Time (min)	Rainfall Intensity (mm/hr)	Storm Runoff (l/s)	Runoff Volume (m <sup>3</sup> )	Released Volume (m <sup>3</sup> )	Storage Volume (m <sup>3</sup> )
10.0	200.8	49.89	29.9	29.9	0.0

<<<<

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**APPENDIX F**

**SANITARY FLOW CALCULATIONS**

---

**1258 Rebecca Street**

**Proposed Sanitary Flow Calculations**

Average Residential Flow Rate	275.0 litres/capita/day
Residential Population Density	
Single Family	55 persons/ha
Semi-detached	100 persons/ha
Residential Population	
Single Family (0.22 ha)	12 persons
Semi-detached (0.44 ha)	44 persons
<b>Total population</b>	<b>56 persons</b>
Peaking Factor	4.30
Residential Peak Flow	0.77 L/s
Site Area	0.66 ha
Infiltration (0.286 L/s/ha)	0.189 L/s

***Total Proposed Peak Sanitary Flow*** **0.96 L/s**

**Existing Sanitary Flow Calculations**

Community Services Flow Rate	11,000 litres/ha/day
Community Services Population Density	40 persons/ha
Community Services Population (0.66 ha)	<b>26.4 persons</b>
Peaking Factor	3.49
Existing Peak Flow	0.29 L/s
Site Area	0.66 ha
Infiltration (0.286 L/s/ha)	0.189 L/s

***Total Existing Peak Flow*** **0.48 L/s**

***Net Increase in Sanitary Peak Flow*** **0.47 L/s**



**Sanitary Design Sheet  
1258 Rebecca Street  
Halton Region  
Town of Oakville**

Project: 1258 Rebecca Street  
Project No. 2480  
Date: 12-Jan-23  
Designed By: M.M.  
Reviewed By: P.G.

Minimum Sewer Diameter (mm) = 200      Avg. Domestic Flow (l/cap/day) = 275  
 Mannings n = 0.013      Infiltration Rate (l/s/ha) = 0.286  
 Minimum Velocity (m/s) = 0.60      Max. Harmon Peaking Factor = 0.0  
 Maximum Velocity (m/s) = 3.65      Min. Harmon Peaking Factor = 2.0  
 Minimum Pipe Slope (%) = 0.50      NOMINAL PIPE SIZE USED

P:\2480 1258 Rebecca Street Oakville - Halton Region\Design\Pipe Design\Sanitary\2480-Sanitary Sheet Design.dwg\Design

LOCATION			RESIDENTIAL						INDUSTRIAL/COMMERCIAL/INSTITUTIONAL					FLOW CALCULATIONS								PIPE DATA					
STREET	MANHOLE		AREA (ha)	ACCUM. AREA (ha)	UNITS (#)	DENSITY		RESIDENTIAL POPULATION	ACCUM. RESIDENTIAL POPULATION	AREA (ha)	ACCUM. AREA (ha)	POPULATION DENSITY (p/ha)	FLOW RATE (l/s/ha)	ACCUM. EQUIV. POPULATION	INFILTRATION (L/s)	TOTAL ACCUM. POPULATION	AVG. DOMESTIC FLOW (L/s)	ACCUM. AVG. DOMESTIC FLOW (L/s)	PEAKING FACTOR	PEAKED RESIDENTIAL FLOW (L/s)	ICI FLOW (L/s)	TOTAL FLOW (L/s)	LENGTH (m)	PIPE DIAMETER (mm)	SLOPE (%)	FULL FLOW CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)
	FROM	TO				PER UNIT (p/unit)	PER HA (p/ha)																				
1258 REBECCA STREET	CTRL.MH	EX.MH1A	0.66	0.66	0		84.8	56	56	0	0	0	0	0	0.19	56	0.2	0.2	4.30	0.77	0.0	0.96	15.9	200	1.00	32.8	1.04
REBECCA STREET	EX.MH1A	EX.MH2A	0	0.66	0			0	56	0	0	0	0	0	0.19	56	0.0	0.2	4.30	0.77	0.0	0.96	85.3	525	0.25	214.9	0.99

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**APPENDIX G**

**WATER MODELLING ANALYSIS**

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# HYDRANT INSPECTION & FLOW REPORT



Prepared By: The Ontario Clean Water Agency  
 Prepared For: SCS Consulting  
 Residual Hyd Andrew Cruickshank  
 Flow Hyd(s) Kelly Smith

SUGGESTED NFPA RATING	
<b>BLUE</b>	<b>CLASS AA</b>
<b>7547 gpm @ 20 psi (138 kPa)</b>	

Date: 26-Oct-22 Time: 10:17 AM

## HYDRANT DESCRIPTION

Hydrant ID:	7517	Side of Street:	South	Make:	Concord	Open Dir:	Left
Address:	1234 Rebecca Street			Model:	Premier D-67M	Latitude:	
Location:	Oakville, ON			Year:	1995	Longitude:	

## GENERAL INSPECTION

OK - Good Condition    FR - Future Repair Required    N/A - Not Applicable    CF - Component Failure

Upper Section	OK	FR	N/A	CF	Mid Section	OK	FR	N/A	CF	General	OK	FR	N/A	CF
Bonnet	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Port Height	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Accessibility	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Operating Nut	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Caps / Nozzles	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Position / Height	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Gaskets / Bolts	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Chains	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Paint Cond	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
O-Ring(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Traffic Flange	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Drain Ports	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Hydrostatic Leak Testing			Maintenance			Auxiliary / Secondary Valve		
Hydrant Closed	Above Grade Leak	N/A	Lubricate Operating Nut		N/A	Located / Accessible		N/A
	Subsurface Leak	N/A	Lubricate & Clean Nozzle Threads		N/A	Operated/Exercised		N/A
Hydrant Open	Above Grade Leak	N/A	Lubricate & Clean Cap Threads		N/A	Number of Turns		N/A
	Subsurface Leak	N/A	Water Removed (if non-draining)		N/A	Open Direction		

Comments:

Auxiliary Valve Location:

## FLUSHING \*If hydrants are being flow tested, inspections and flushing are completed prior to testing

Hydrant Operated	Clear Flow Obtained	Cl2 Residual	Time Flushed	Flow	Total Flow	Dechlorinated
Yes - Easily Operated	Yes	N/A	5 minutes	1376 gal	6882 gal	Yes

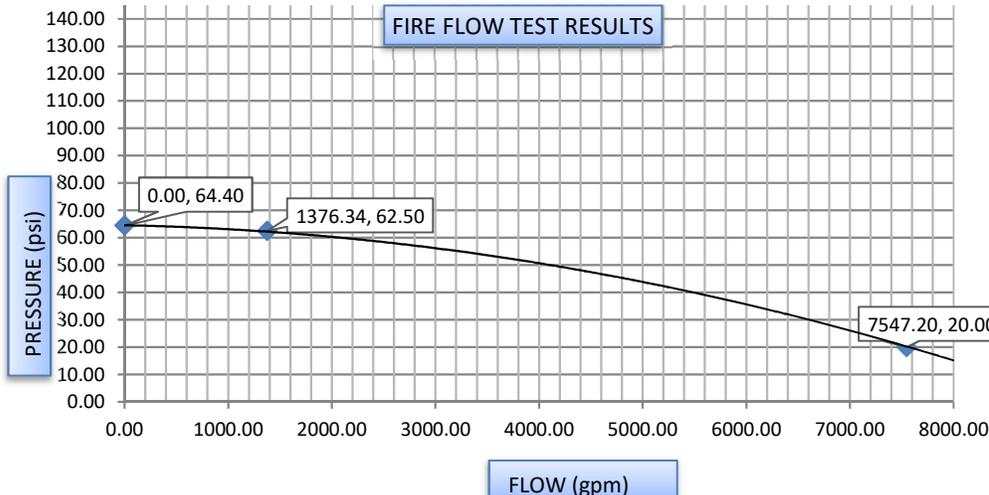
Comments:

**STATIC AFTER FLOW TEST WAS PERFORMED 64.32 PSI**

## FLOW TESTING \*Flow testing results may be from previous year(s). Note date & time

Date: 26-Oct-22 Time: 10:17 AM

Flow Hydrant								Test Hydrant		
ID	Flow Device Used	Size	Coefficient	Time Flushed	Flow	Total Flow	Pitot	ID	Static	Residual
16600	Pollard Diffuser	2.5"	0.832	5.0 minutes	776 gal	3878 gal	25 psi	7517	64.40	62.50
16600	Pollard Diffuser	2.5"	0.832	5.0 minutes	601 gal	3004 gal	15 psi			



Calculated Results	
Calculated Flow @ 20 psi	<b>7547 gpm</b>
Calculated Flow @ 0 psi	<b>9226 gpm</b>
Pressure Drop	<b>2.95%</b>

Comments:



#16600  
Flow Hydrant

#7517  
Test Hydrant

- MaintenanceHole    ● Hydrant
- SewerMain        — Watermain
- ServiceLateral    — ServiceLead
- ★ PumpingStation



REGIONAL MUNICIPALITY OF HALTON,  
ITS EMPLOYEES, OFFICERS AND AGENTS  
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OMISSIONS OR INACCURACIES, WHETHER  
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ALL INFORMATION SHOULD BE VERIFIED

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2017 Orthophoto  
Created: April 2020  
Public Works Information

# Multi Use Water Demand Table

Date: January 2023  
 Project No.: 2480  
 Prepared By: M.L.M.

WATER CONNECTION	
Connection Point	Rebecca Street
Residential Water Usage Rate	0.275 m <sup>3</sup> /ca/day
Single Family Population	12 persons
Semi-detached Population	44 persons
Hydrant flow test	October 26, 2022 by OCWA
Hydrant flow test location	Hydrants # 7517 (Test) and 16600 (Flow)

	Pressure		Flow		Time
	(kPa)	(psi)	(L/s)	(gpm)	
Minimum water pressure	430.9	62.5	86.8	1376	5 min
Maximum water pressure	444.0	64.4	0	0	0 min

WATER DEMANDS						
No.	Demand Type	Residential Peaking Factor	Single Family Demand (L/s)	Residential Peaking Factor	Semi-Detached Demand (L/s)	Total Demand (L/s)
1	Average Day	1.00	0.04	1.00	0.14	0.18
2	Maximum Day	2.25	0.09	2.25	0.32	0.40
3	Maximum Hour	4.00	0.15	4.00	0.56	0.71
5	Fire flow (see Note 1)	-	67 (4,000 L/min)	-	100 (6,000 L/min)	100.0 (6,000 L/min)
6	Maximum day plus fire flow	-	-	-	-	100.4 (6,024 L/min)

WATER PRESSURES				
No.	Demand Type	Preferred Pressure Range (kPa)	Required Pressure Range (kPa)	Available Pressure (kPa)
1	Average Day	350 - 550	275 - 700	444.0
2	Maximum Day	350 - 550	275 - 700	444.0
3	Maximum Hour	350 - 550	275 - 700	444.0
5	Fire flow	-	> 140	427.0
6	Maximum day plus fire flow	-	> 140	426.9

**Notes**

- Single Family fire demand is based on FUS Note J - "Short Method" for detached one family dwellings. Semi-Detached fire demand calculations are attached.

## PROJECT INFORMATION

Address: <u>1258 Rebecca Street</u> <u>Town of Oakville</u> <hr/>	Notes: <u>Semi-Detached homes</u> <u>Fire area is based on <b>Buildings 5-7</b>, wood</u> <u>frame structures separated by less than 3 m.</u> <hr/>
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## BASE FLOW CALCULATION FLOW (L/min)

A=	Effective area	335 m <sup>2</sup>	
C=	Wood frame	1.5	
F=	Required fire flow	6,040 L/min.	
"F"	Rounded to nearest 1,000	6,000 L/min.	6,000

## FLOW 'F' ADJUSTMENTS CREDITS    CHARGES    FLOW (L/min)

Occupancy Adjustments (F')	%				
Limited combustible	-15%	-900	-900		5,100

### Exposure Adjustments (E)

Exposure	Sep. (m)	Charge			
N	30	10%			
E	15	15%			
S	70	0%			
W	32	5%			
E = Total Exposure Charge		30%	1,530	1530	6,630

### Sprinkler Adjustments (S)

Sprinklered as per NFPA 13	No	0			6,630
Standard Water Supply	Yes	-510	-510		6,120
Fully supervised water supply	No	0			6,120

## REQUIRED FLOWS (F"=F+E+S) (L/min)    6,000

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