Robinson
Land Development

# Fernbank North OCSB Elementary School
# 620 Triangle Street
# Stittsville, ON
# Servicing & Stormwater Management Report

Prepared For:

Ottawa Catholic School Board

Prepared By:

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## TABLE OF CONTENTS

LEGAL NOTIFICATION ..... I
1.0 INTRODUCTION ..... 1
2.0 GUIDELINES, STUDIES AND REPORTS ..... 1
3.0 EXISTING CONDITIONS ..... 2
4.0 DEVELOPMENT PROPOSAL ..... 3
5.0 WATER SERVICING ..... 3
5.1 Existing System ..... 3
5.2 Existing System Allocation ..... 3
5.3 Water Demands ..... 4
5.4 Proposed System ..... 4
5.5 Hydraulic Model ..... 5
5.6 Proposed System Pressures ..... 5
5.7 Fire Flows ..... 5
5.8 Hydrant Coverage ..... 6
6.0 SANITARY SERVICING ..... 7
6.1 Existing System ..... 7
6.2 Existing System Allocation ..... 7
6.3 Design Criteria ..... 8
6.4 Sanitary Design Flows ..... 8
6.5 Sanitary Sewer Design ..... 8
6.6 Downstream Assessment ..... 9
6.7 Hydraulic Grade Line (HGL) Assessment ..... 9
7.0 STORM SERVICING ..... 10
7.1 Existing System ..... 10
7.2 Existing System Allocation ..... 10
7.3 Design Criteria ..... 10
7.4 Storm Sewer Design (Minor System) ..... 11
7.5 Foundation Drainage System ..... 11
7.6 Landscape Drainage System ..... 11
7.7 Roof Drainage ..... 11
8.0 STORMWATER MANAGEMENT ..... 11
8.1 Design Criteria ..... 11
8.2 Allowable Release Rates ..... 12
8.3 Quantity Control ..... 12
8.4 Quantity Storage ..... 14
8.5 Stress Test (100-YR + 20%) ..... 14
8.6 Major System ..... 15
8.7 Infiltration Target ..... 15
8.8 Quality Control ..... 16
9.0 EROSION AND SEDIMENT CONTROL ..... 16
10.0 CONCLUSIONS ..... 17

LIST OF FIGURES

Figure 1.0 Key Plan ..... Following Page 1
Figure 2.0 Existing Conditions ..... Page 2
Figure 3.0 Hydraulic Water Model ..... Appendix C
Figure 4.0 Hydrant Coverage Plan ..... Appendix C

## TABLE OF CONTENTS CONTINUED

LIST OF TABLES

Table 5.1 Domestic Water Demands ..... Page 4
Table 5.2 System Pressures at Building Junction ..... Page 5
Table 5.3 Total Required Fire Flow ..... Page 6
Table 5.4 Hydrant Coverage ..... Page 7
Table 6.1 Peak Sanitary Design Flows ..... Page 8
Table 6.2 Downstream Sanitary Sewer Assessment ..... Page 9
Table 8.1 Allowable Release Rates ..... Page 12
Table 8.2 Stormwater Outflows ..... Page 13
Table 8.3 100-Year Surface Storage Volumes & Ponding Depths ..... Page 14
Table 8.4 Maximum Ponding Details ..... Page 15

LIST OF APPENDICES

Appendix A Pre-Consultation Notes
Topographic Plan of Survey (prepared by Stantec)
As-Built Site Servicing Plans (prepared by Stantec)

Appendix B Site Plan (prepared by PRTY)
Servicing Plan (DWG. 24093-S1)
Grading Plan (DWG. 24093-GR1)
Erosion and Sediment Control Plan (DWG. 24093-ESC1)
Notes & Details (DWG. 24093-N1)
Existing Conditions and Removals Plan (DWG. 24093-R1)

Appendix C Stantec Report Excerpts
Water Demand Calculations (Site Area)
Water Demand Calculations (Number of Students)
Boundary Conditions
Figure 3.0: Hydraulic Water Model
Table C1: Peak Hour Junction Outputs
Table C2: Max. Day Junction Outputs
Table C3: Max. Day Plus Fire Flow Outputs
Table C4: Pipe Report
Fire Flow Calculations
Figure 4.0: Hydrant Coverage Plan

Appendix D Hazeldean Craig Subdivision Sanitary Drainage Area Plan (prepared by Stantec)
Hazeldean Craig Subdivision Sanitary Sewer Design Sheet (prepared by Stantec)
Sanitary Sewer Design Sheet
Sanitary Sewer Design Sheet (School Population)
Building Matrix
Hazeldean Pump Station Excerpt (prepared by Stantec)

Appendix E Hazeldean Craig Subdivision Storm Drainage Area Plan (prepared by Stantec)
Hazeldean Craig Subdivision Storm Sewer Design Sheet (prepared by Stantec)
*Table 14: Outlet & Storage Parameters* (prepared by Stantec)
Storm Drainage Area Plan (DWG. 24093-STM1)
Storm Sewer Design Sheet
Runoff Coefficient Calculations

**TABLE OF CONTENTS CONTINUED**

Appendix F Plumbing Roof Drawing (prepared by GWAL)
Table F1: Ponding and Orifice Calculations
Tempest LMF Flow Curves
Free Flow Calculations
Ponding Area Plan (DWG. 24093-PA1)
Storage Volume Tables
Fernbank SWM Pond 3 ECA
Borehole Information (prepared by Paterson)
Groundwater Memo (prepared by Paterson)

## LEGAL NOTIFICATION

This report was prepared by Robinson Land Development for the account of **Ottawa Catholic School Board.**

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. **Robinson Land Development** accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project

## 1.0 INTRODUCTION

Robinson Land Development have been retained by the Ottawa Catholic School Board (OCSB) to prepare detailed servicing and stormwater management designs in support of the proposed development of the Fernbank North Elementary School. The subject site is located at 620 Triangle Street in the community of Stittsville and is bound by Cranesbill Road to the north, Triangle Street to the west, Honeylocust Avenue to the south and existing residential properties to the east (refer to **Figure 1.0 – Key Plan** following page 1).

This report will detail the proposed means of servicing the site and will provide details on how the stormwater management requirements will be achieved in accordance with overarching reports and current City of Ottawa guidelines.

## 2.0 GUIDELINES, STUDIES AND REPORTS

The servicing and stormwater management designs for the subject site have been prepared in keeping with the following documents:

- **Sewer Design Guidelines**, City of Ottawa, Second Edition, October 2012 (herein referred to as OSDG).
  - **Technical Bulletin ISD-2010-1,** City of Ottawa, September 28, 2010.
  - **Technical Bulletin ISD-2011-2,** City of Ottawa, October 6, 2011.
  - **Technical Bulletin ISD-2012-1,** City of Ottawa, January 31, 2012.
  - **Technical Bulletin ISD-2012-4,** City of Ottawa, June 20, 2012.
  - **Technical Bulletin ISD-2012-6,** City of Ottawa, October 31, 2012.
  - **Technical Bulletin ISDTB-2014-01,** City of Ottawa, February 5, 2014.
  - **Technical Bulletin PIEDTB-2016-01,** City of Ottawa, September 6, 2016.
  - **Technical Bulletin ISTB-2018-01**, City of Ottawa, March 21, 2018.
  - **Technical Bulletin ISTB-2018-03,** City of Ottawa, March 21, 2018.
  - **Technical Bulletin ISTB-2018-04**, City of Ottawa, June 27, 2018.
  - **Technical Bulletin ISTB-2019-02,** City of Ottawa, July 08, 2019.
  - **Technical Bulletin IWSTB-2024-04,** City of Ottawa, September 12, 2024.

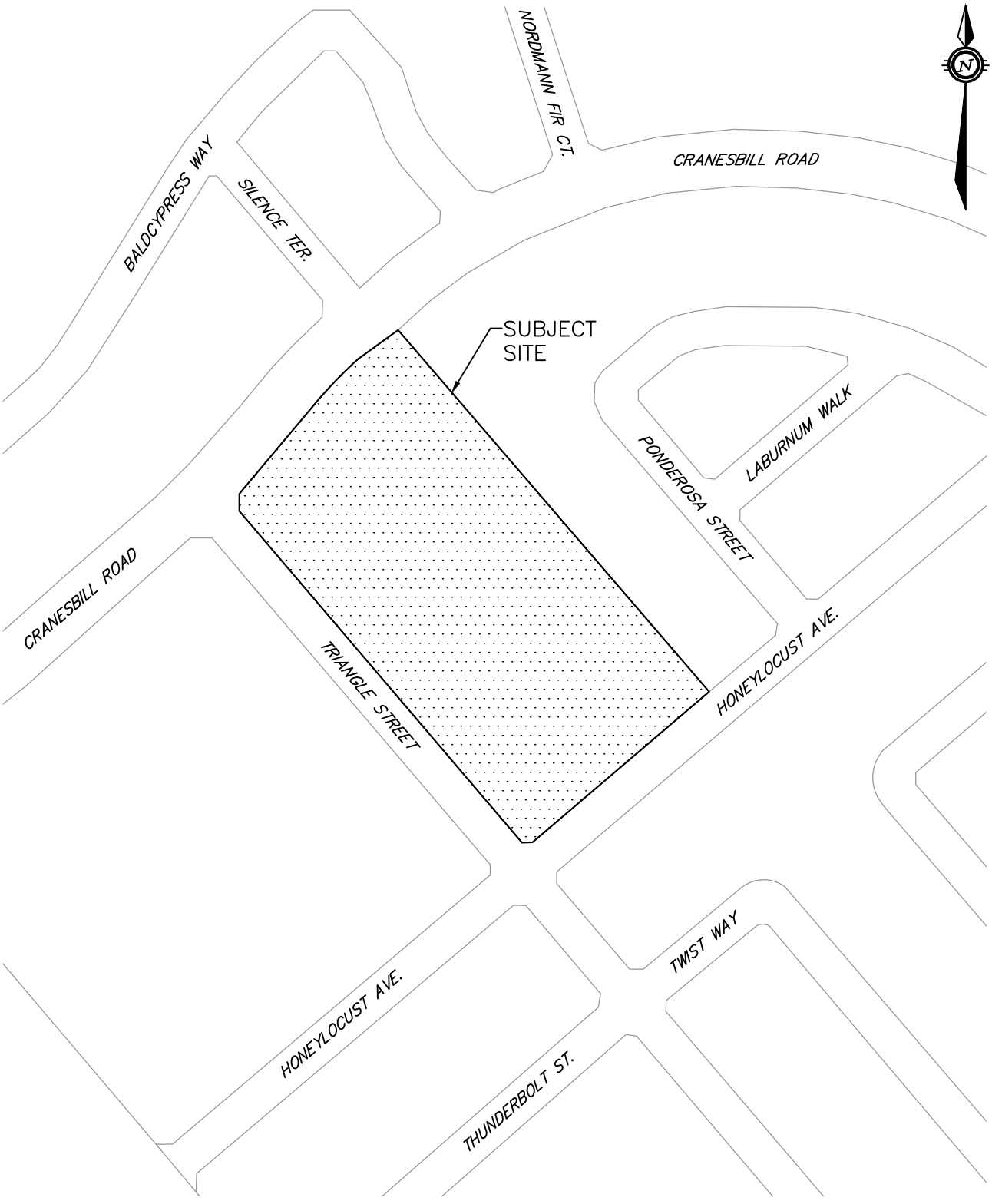
- **Ottawa Design Guidelines, Water Distribution**, City of Ottawa, First Edition, July 2010 (herein referred to as OWDG).
  - **Technical Bulletin ISD-2010-2,** City of Ottawa, December 15, 2010.
  - **Technical Bulletin ISDTB-2014-02,** City of Ottawa, May 27, 2014.
  - **Technical Bulletin ISTB-2018-02,** City of Ottawa, March 21, 2018.
  - **Technical Bulletin ISTB-2021-03,** City of Ottawa, August 18, 2021.
  - **Technical Bulletin IWSTB-2024-05,** City of Ottawa, November 18, 2024.

- **Design Guidelines for Sewage Works**, Ministry of the Environment, 2008 (herein referred to as MECP Design Guidelines).

- **Design Guidelines for Drinking-Water Systems**, Ministry of the Environment, 2008 (herein referred to as MECP Water Design Guidelines).

- **Stormwater Planning and Design Manual,** Ministry of the Environment, March 2003 (herein referred to as MECP SWM Design Guidelines).

- **Water Supply for Public Fire Protection**, Fire Underwriters Survey, 2020 (herein referred to as FUS Guidelines).

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| | | |
|---|---|---|
| scale N.T.S. | 620 TRIANGLE STREET, STITTSVILLE | project no. 24093 |
| date 29/01/25 | | |
| drawn by LR | KEY PLAN | FIG 1.0 |

- **Ontario Building Code Compendium**, Ministry of Municipal Affairs and Housing Building Development Branch, January 1, 2010 (herein referred to as OBC).
- **Low Impact Development Stormwater Management Planning and Design Guide,** CVC, TRCA, 2010 (herein referred to as LID Design Guidelines).
- **Runoff Volume Control Targets for Ontario Final Report,** Aquafor Beech Ltd. & Earthfx Inc., October 27, 2016 (herein referred to as the Aquafor Beech Report).
- **Servicing and Stormwater Management Report – Hazeldean Craig Subdivision – Phase 1**, Stantec Consulting Ltd., September 5, 2017 (herein referred to as the Stantec Report).
- **Geotechnical Investigation**, Paterson Group, September 9, 2024 (herein referred to as the Paterson Report)

A pre-consultation meeting was held with the City of Ottawa on November 26, 2024 to discuss requirements for the proposed development. Refer to pre-consultation notes provided under **Appendix A** for more details.

## 3.0 EXISTING CONDITIONS

The 2.71-hectare property is zoned minor institutional (I1A) and was designated as a future elementary school block within Phase 1 of the Hazeldean Craig Subdivision. The subject site is identified as Block 116 (0.37 ha) and Block 204 (2.34 ha) on the Topographic Plan of Survey prepared by Stantec (provided under **Appendix A**). The property is currently grass covered and undeveloped. The adjacent municipal right-of-ways and residential properties have been fully constructed. Refer to **Figure 2.0** below for an aerial view of the site under its current development state.

**Figure 2.0: Existing Conditions**

The topography of the property is generally flat and slopes toward the north. Existing municipal infrastructure is available within the adjacent right-of-ways as detailed in the sections below.

## 4.0 DEVELOPMENT PROPOSAL

The Owner is proposing to develop the subject site to accommodate a new elementary school. The new 1-storey school building will have a footprint of approximately 4,690 square metres. The developed site will include a new parking lot, access roads, provision for future portables, designated play areas, and landscaping features. Refer to the Site Plan, prepared by Pye & Richards – Temprano & Young Architects (PRTY), under **Appendix B** for more details.

The subject site will be provided with new water, sanitary and storm infrastructure via connections to the existing municipal systems as detailed in the sections below.

## 5.0 WATER SERVICING

### 5.1 Existing System

Existing municipal watermains are available in proximity to the subject site as follows:

- A 203mm diameter PVC watermain within the Honeylocust Avenue right-of-way.
- A 203mm diameter PVC watermain within the Triangle Street right-of-way.
- A 305mm diameter PVC watermain within the Cranesbill Road right-of-way.

In addition to the above noted municipal watermains, a 203mm diameter watermain stub was installed off the 305mm diameter watermain at the intersection Cranesbill Road and Silence Terrace to service the subject site. Refer to the as-built Site Servicing Plans, prepared by Stantec, for the Hazeldean Craig Subdivision under **Appendix A**.

### 5.2 Existing System Allocation

The design of the watermain distribution system for the Hazeldean Craig Subdivision is detailed in the overarching Stantec Report. The following design criteria, parameters and demands from the Stantec Report were established for the subject site:

| | | |
|---|---|---|
| • Basic Day (BSDY) Demand | 28,000 L/ha/d | *(S3.5)* |
| • Maximum Day (MXDY) Demand | BSDY x 1.5 | *(S3.5)* |
| • Peak Hour (PKHR) Demand | MXDY x 1.8 | *(S3.5)* |
| • Area | 0.45 ha | *(Table 2)* |
| • BSDY | 0.15 L/s | *(Table 2)* |
| • MXDY | 0.22 L/s | *(Table 2)* |
| • PKHR | 0.48 L/s | *(Table 2)* |
| • Desired Pressure Range | 50 to 80 psi | *(S3.7.1)* |
| • Required Fire Flow | 9,000 L/min | *(S3.7.2)* |

Although *Section 3.5* of the Stantec Report notes that the peak hour demand was calculated using a maximum day multiplier of 1.8, it appears that the value provided in *Table 2* used a multiplier of 2.2 which corresponds to the typical parameter used for residential demands rather than institutional. As noted under *Section 3.7.2* of the Stantec Report, the area of the future school building was estimated to be approximately 4,500 square metres (0.45 ha) which was used in calculating the basic day demand and the required fire flow. The hydraulic analysis

completed by Stantec concluded that a fire flow of 10,000 L/min can be achieved at all locations within the Phase 1 distribution system. Refer to excerpts from the Stantec Report under **Appendix C**.

### 5.3 Water Demands

Domestic water demands have been calculated for the subject site in accordance with the current Ottawa Water Design Guidelines (OWDG). Design criteria from the overarching Stantec Report have been utilized with the exception that the total block area has been used in calculating demands rather than the area of the school building itself which provides more conservative results. The calculated water demands have been summarized in the table below:

**Table 5.1: Domestic Water Demands**

| Institutional Area (ha) | Basic Day Demand (L/s) | Maximum Day Demand (L/s) | Peak Hour Demand (L/s) | Basic Day Demand ($m^3$/day) |
|---|---|---|---|---|
| 2.71 | 0.88 | 1.32 | 2.37 | 75.9 |

Notes:
1. BSDY = 28,000 L/ha/day
2. MXDY = BSDY x 1.5
3. PKHR = MXDY x 1.8

The calculated water demands in the table above exceed the assumed demands listed under **Section 5.2** since the Stantec Report used a much smaller institutional area in their calculations. Water demands were also assessed based on the projected number of students, however, the demands were found to be lower and therefore the more conservative values have been utilized in the design. Refer to the water demand calculations provided under **Appendix C** for more details.

### 5.4 Proposed System

As part of the construction of the Hazeldean Craig Subdivision, a 203mm diameter watermain stub was installed off the 305mm diameter watermain at the intersection Cranesbill Road and Silence Terrace to service the subject site. Given the distance between the proposed building water room and the existing stub location, the existing service stub will be abandoned and a new connection to the existing municipal watermain system on Honeylocust Avenue will be provided.

The proposed school building will receive water supply via new twin water service connections to the existing 203mm diameter watermain on Honeylocust Avenue. In accordance with City of Ottawa Technical Bulletin ISTB-2021-03, institutional service areas with a basic day demand greater than 50 $m^3$/day shall be connected with a minimum of two water services, separated by an isolation valve, to avoid the creation of a vulnerable service area (VSA). Since the basic day demand will exceed 50 $m^3$/day, two water service connections are proposed including a new isolation valve on the existing 203mm diameter watermain. The water service with a direct connection to the building is proposed to be 102mm in diameter. The secondary water service which also provides water supply to the future fire hydrant (refer to additional discussion under **Section 5.8**) is proposed to be 152mm in diameter (reducing to 102mm before entry into the building).

### 5.5 Hydraulic Model

A water distribution hydraulic model has been created for the subject site using EPANET2 software. The hydraulic model has incorporated the proposed watermain layout, proposed hydrant locations, boundary conditions (provided by the City of Ottawa), and a C-Factor of 100 (OWDG Table 4.4). Refer to **Figure 3.0: Hydraulic Water Model** and the boundary conditions provided under **Appendix C** for more details.

### 5.6 Proposed System Pressures

The developed hydraulic model was used to assess the anticipated pressures within the proposed system under the peak hour and maximum day boundary conditions. To simulate a worst-case scenario, where one of the two building services is out of service, simulations have been run for each service with the demands assigned to the corresponding building junction. The model outputs for the building junctions are summarized in the table below:

**Table 5.2: System Pressures at Building Junction**

| Model Junction | Peak Hour (psi) | Max. Day (psi) |
|---|---|---|
| BLDG1[*2] | 81.06 | 86.92 |
| BLDG2[*3] | 81.01 | 86.91 |

Notes:
1. Outputs modelled using EPANET2 software.
2. BLDG1 is associated with 152mm diameter service connection to main.
3. BLDG2 is associated with 102mm diameter service connection to main.

As shown in the table above, the minimum pressures modelled at the building junctions exceed the desired minimum operating pressure of 50 psi and therefore is in accordance with the current OWDG. The maximum pressures modelled at the building junctions exceed the desired maximum pressure of 80 psi and therefore pressure reducing valves (PRVs) will be required. Refer to the hydraulic model outputs (**Table C1** & **C2**) provided under **Appendix C**.

### 5.7 Fire Flows

The total required fire flow for the subject site has been calculated in accordance with the FUS guidelines. The following input parameters have been used in the fire flow calculations:

School Building:

- Type of Construction: Ordinary Construction
- Effective Floor Area: Based on floor area as per Site Plan
- Occupancy Class: Combustible
- Sprinkler Protection: Automatic sprinkler protection
  Full supervision of sprinkler system
- Exposure Distances: Building separations as per Site Plan

Portables:

- Type of Construction: Wood frame
- Effective Floor Area: Based on footprints as per Site Plan
  <3m separation between portables considered as single fire area

- Occupancy Class: Combustible
- Sprinkler Protection: No automatic sprinkler protection
- Exposure Distances: Building separations as per Site Plan

Using the parameters above, the total required fire flow has been calculated for the school building and the future portables. Note that portable structures with less than a 3.0 metre separation have been considered as a single fire area. The total required fire flows have been summarized in the table below:

**Table 5.3: Total Required Fire Flow**

| Structure | Total Required Fire Flow (L/min) |
|---|---|
| School | 8,000 |
| Portables | 7,000 |

The total required fire flow for the school building and portable structures has been calculated to be 8,000 L/min and 7,000 L/min respectively. These values are below the 9,000 L/min value estimated in the overarching Stantec Report. Refer to the supporting fire flow calculations provided under **Appendix C** for more details.

A fire flow analysis was completed using the developed hydraulic model for the subject site under the maximum day plus fire flow boundary condition. The analysis has determined that the available fire flow from the proposed on-site hydrant is 6,944 L/min (at a reference pressure of 20 psi) which is below the total required fire flows calculated above, however, the value exceeds the required fire flow contribution (3,800 L/min) as demonstrated under **Table 5.4** below. Refer to the max. day plus fire flow outputs (**Table C3**) provided under **Appendix C**.

## 5.8 Hydrant Coverage

Pressure losses (due to friction) in firehoses are proportional to the firehose length. Therefore, the actual fire flow delivered by the nozzle at the end of a long firehose will be less compared to a shorter firehose connected to the same hydrant. In accordance with City of Ottawa Technical Bulletin ISTB-2018-02, the aggregate fire flow capacity of all contributing fire hydrants within 150 m of a building shall not be less than the required fire flow. In some instances, involving dead-end watermains, standard spacing requirements may not be sufficient to meet the required fire flow. The contribution to the required fire flow is dependent on the distance from the hydrant to building being considered. A flow of 5,700 L/min should be assigned to all hydrants with a distance of less than or equal to 75 m from the building being considered and 3,800 L/min to all hydrants with a distance between 75 m and 150 m from the building being considered (as per *Table 1* from ISTB-2018-02 for AA rated hydrants). Coverage for the school building will be provided by the existing hydrants on Triangle Street. Since the school building will be sprinklered, a hydrant must be located within 45 m of the building's siamese connection in accordance with the Ontario Building Code (OBC). Coverage for the portable structures will be provided by the existing hydrant on Honeylocust Avenue and by the proposed on-site hydrant. The contributing fire flows have been summarized in the table below:

**Table 5.4: Hydrant Coverage**

| Structure | Distance to Hydrant (m) | Hydrant Contrib. (L/min) | Distance to Hydrant (m) | Hydrant Contrib. (L/min) | Total Fire Flow Contrib. (L/min) |
|---|---|---|---|---|---|
| School | 13 | 5,700 | 84 | 3,800 | 9,500 |
| Portable | 116[*1] | 3,800 | 148[*1] | 3,800 | 7,600 |

Notes:
1. Distance measured along path of travel from furthest portable structure to hydrant.

As shown in the table above, the contributing fire flows from the existing hydrants in combination with the proposed on-site hydrant exceeds the total required fire flows (refer to **Table 5.3**) and therefore adequate fire protection coverage for the school building and the portable structures has been demonstrated. Refer to **Figure 4.0: Hydrant Coverage Plan** provided under **Appendix C**.

## 6.0 SANITARY SERVICING

### 6.1 Existing System

Existing municipal sanitary sewers are available in proximity to the subject site as follows:

- A 200mm diameter PVC sanitary sewer within the Honeylocust Avenue right-of-way.
- A 200mm diameter PVC sanitary sewer within the Triangle Street right-of-way.
- A 300mm diameter PVC sanitary sewer within the Cranesbill Road right-of-way (identified as a 250mm diameter sewer on the sanitary sewer design sheet from the Stantec Report; increased to 300mm diameter sewer on as-built plans).

In addition to the above noted municipal sanitary sewers, a 200mm diameter sanitary sewer stub was installed to the south of the existing sanitary maintenance hole (denoted as EXSANMH 1) at the intersection Cranesbill Road and Silence Terrace to service the subject site. Refer to the as-built Site Servicing Plans, prepared by Stantec, for the Hazeldean Craig Subdivision under **Appendix A**.

### 6.2 Existing System Allocation

The design of the sanitary sewer system for Phase 1 of the Hazeldean Craig Subdivision is detailed in the overarching Stantec Report. At the time of the Stantec Report, the institutional block within Phase 1 (denoted as Block 204) had an area of 2.34 ha. The adjacent 0.37 ha block (denoted as Block 116) formed part of the Mattamy Subdivision (Abbottsville Crossing) to east and was therefore not included as part of the institutional area in Phase 1. The Block 204 portion of the subject site is identified as Area I2A in the Stantec Report. Institutional peak flows were calculated using the following design criteria:

- Institutional Flow 50,000 L/ha/day
- Institutional Peaking Factor 1.5
- Infiltration Allowance 0.28 L/s/ha

Using the design criteria above, a peak sanitary design flow of 2.69 L/s was allocated for the subject site within the existing sanitary sewer system on Cranesbill Road (pipe run MH2 to MH1). This peak flow was based on an institutional area of 2.34 ha and did not include flows

from the adjacent 0.37 ha block which now forms part of the subject site. It should be noted that the design criteria used in the design of the sanitary sewer system for the Hazeldean Craig Subdivision is now considered outdated based on the current City of Ottawa Sewer Design Guidelines (OSDG). Refer to the *Sanitary Drainage Area Plan* and *sanitary sewer design sheet* prepared by Stantec for the Hazeldean Craig Subdivision under **Appendix D** for more details.

### 6.3 Design Criteria

Peak sanitary design flows for the subject site have been calculated in accordance with the current OSDG using the following design criteria:

- Institutional Flow 28,000 L/ha/day (ISTB-2018-01)
- Institutional Peaking Factor 1.5 (ISTB-2018-01)
- Infiltration Allowance 0.33 L/s/ha (ISTB-2018-01)
- Minimum Full Flow Velocity 0.60 m/s (OSDG S6.1.2.2)
- Maximum Full Flow Velocity 3.0 m/s (OSDG S6.1.2.2)
- Manning's 'n' Value 0.013 (OSDG S6.1.8.2)
- Schools 90 L/person/day (OSDG App. 4-A)
- Projected Population 1042 (Building Matrix)

The above design criteria differ from the values used in the overarching Stantec Report, however, they are aligned with current City of Ottawa guidelines and are therefore considered appropriate for the on-site design.

### 6.4 Sanitary Design Flows

Using the design criteria listed under **Section 6.3**, the peak sanitary design flow for the subject site has been calculated and summarized in the table below. For comparison, peak design flows have also been calculated using the criteria from the Stantec Report (**Section 6.2**) and based on daily flow rates for school populations from Appendix 4-A of the OSDG.

**Table 6.1: Peak Sanitary Design Flow**

| Design Criteria | Peak Institutional Flow (L/s) | Infiltration Allowance (L/s) | Total Peak Design Flow (L/s) |
|---|---|---|---|
| Stantec Report | 2.35 | 0.76 | 3.11 |
| Current OSDG | 1.32 | 0.89 | 2.21 |
| Population | 1.63 | 0.89 | 2.52 |

As shown in the table above, a peak sanitary design flow of 2.21 L/s has been calculated for the subject site based on an institutional flow rate per hectare. The value increases to 2.52 L/s based on flow rates per school population (refer to building matrix provided by Architect under **Appendix D**). Both values are below the peak sanitary design flow allocated in the Stantec Report. Since the value calculated based on population is more conservative it has been utilized in the downstream assessment (**Section 6.6**).

### 6.5 Sanitary Sewer Design

A 200mm diameter sanitary sewer stub was installed to the south of the existing sanitary maintenance hole (denoted as EXSANMH 1) at the intersection Cranesbill Road and Silence Terrace to service the subject site. Given the distance between the proposed building and the existing stub location, the existing service stub will be abandoned (in accordance with City Std.

S11.4) and a new connection to the existing municipal sanitary sewer system on Triangle Street will be provided.

Sanitary flows from the proposed school building will be conveyed via a new 150mm diameter sanitary service to the existing 200mm diameter sanitary sewer system on Triangle Street. The proposed sanitary service will outlet to the existing sanitary sewer approximately 3.1 metres northwest of EXSANMH 14. The proposed sanitary service has been designed with adequate capacity to convey the peak sanitary design flow and to meet the allowable full flow velocities for self-cleansing in accordance with the current OSDG. As requested by the City, a monitoring maintenance hole will be installed inside the property line. Refer to the sanitary sewer design sheets provided under **Appendix D** for more details.

### 6.6 Downstream Assessment

Since the proposed sanitary sewer outlet for the subject site (upstream of EXSANMH 2) will be located upstream of the outlet location (EXSANMH 2) assumed in the Stantec Report, a downstream assessment has been completed to ensure that there will be no adverse impacts to the existing sewer system. The results of the assessment have been summarized in the table below.

**Table 6.2: Downstream Sanitary Sewer Assessment**

| Street | Pipe Run | Pipe Capacity*1 (L/s) | Peak Design Flow*2 (L/s) | Percent Full (%) |
|---|---|---|---|---|
| Triangle | MH14 to MH2 | 21.35 | 5.84 | 27.37 |
| Cranesbill | MH2 to MH1 | 40.83 | 8.62 | 21.11 |

Notes:
1. Pipe capacities are based on as-built sewer information.
2. Peak design flows are based on current City of Ottawa design criteria and daily flow rate for school population.

As shown in the table above, the existing sanitary sewers downstream of the proposed sanitary outlet have adequate capacity to convey peak design flows from the subject site. Refer to the sanitary sewer design sheets provided under **Appendix D** for more details.

### 6.7 Hydraulic Grade Line (HGL) Assessment

The existing sanitary sewer system ultimately discharges to the Hazeldean Pump Station (HPS) located on Didsbury Road. As part of the Stantec Report, a hydraulic grade line (HGL) analysis was completed to assess impacts on the proposed subdivision in the event of a failure at the HPS. At the proposed sanitary outlet for the subject site (downstream of EXSANMH 14), the anticipated HGL under a pump station failure scenario occurs at an elevation of 96.90 metres. Since the proposed building will not have a basement and the finished floor has an elevation of 99.85 metres, there is sufficient freeboard (2.95m) provided and no risk of HGL impacts. Refer to the Hazeldean pump station excerpt from the Stantec Report under **Appendix D**.

# 7.0 STORM SERVICING

## 7.1 Existing System

Existing municipal storm sewers are available in proximity to the subject site as follows:

- A 450mm diameter conc. storm sewer within the Honeylocust Avenue right-of-way.
- A 600mm diameter conc. storm sewer within the Triangle Street right-of-way.
- A 900mm-1350mm diameter conc. storm sewers within the Cranesbill Road right-of-way.

In addition to the above noted municipal storm sewers, a 600mm diameter storm sewer stub was installed to the south of the existing storm maintenance hole at the intersection Cranesbill Road and Silence Terrace to service the subject site. Refer to the as-built Site Servicing Plans, prepared by Stantec, for the Hazeldean Craig Subdivision under **Appendix A**.

The existing minor storm sewer systems on Triangle Street and Cranesbill Road convey stormwater in a northeast direction before discharging into the existing stormwater management (SWM) facility located approximately 210 metres downstream of the subject site. The existing SWM facility was constructed as part of the Abbottsville Crossing Subdivision to provide stormwater controls for a catchment area of approximately 98 hectares. Refer to additional discussion on the existing SWM facility under **Section 8.8.**

## 7.2 Existing System Allocation

Minor system flows from the subject site have been allocated for within the existing storm sewer system on Cranesbill Road, downstream of EXSTMH 301 located at the intersection of Silence Terrace. The subject site is identified as Area L301A in the Stantec Report. *Table 14* from the Stantec Report (provided under **Appendix E**) lists outlet and storage parameters for the various development blocks within the subdivision. For the subject site (L301A), the 2-year discharge rate is noted as 370 L/s. This value roughly corresponds to a 2-year unrestricted peak flow calculated using the Rational Method.

## 7.3 Design Criteria

The proposed storm sewer (minor) system for the subject site has been designed using the following design criteria in accordance with the current OSDG:

| | | |
|---|---|---|
| • Peak Flow (Q) | 2.78CiA (Rational Method) | |
| • Rainfall Intensity (i) | City of Ottawa IDF Curve Equations | |
| • Runoff Coefficient (C) | | |
| ▪ Pervious Areas | 0.20 | |
| ▪ Impervious Areas | 0.90 | |
| ▪ Gravel Areas | 0.80 | |
| ▪ 100-Year C | C + 25% (Max. 1.0) | |
| • Inlet Time | 10 minutes | (OSDG S5.1.4) |
| • Minimum Full Flow Velocity | 0.80 m/s | (OSDG S6.1.2.1) |
| • Maximum Full Flow Velocity | 3.0 m/s | (OSDG S6.1.2.1) |
| • Minimum Sewer Diameter | 250 mm | (OSDG S6.1.1.2) |
| • Minimum Catch Basin Lead | 200 mm | (OSDG S5.6.7) |
| • Manning's 'n' Value | 0.013 | (OSDG S6.1.8.1) |
| • Design Level of Service | 2-Year Event | (PIEDTB-2016-01) |

### 7.4 Storm Sewer Design (Minor System)

Stormwater runoff from the subject site will be captured by surface inlets and conveyed to the proposed on-site storm sewer system. The storm sewer system will outlet to the existing 600mm diameter storm sewer stub (south of EXSTMH 301) previously installed during the construction of Phase 1 of the Hazeldean Craig Subdivision. The storm sewers have been designed with adequate capacity to convey the unrestricted 2-year peak flow from the subject site. The unrestricted 2-year peak flow to the minor system has been calculated to be 286.51 L/s which is less than the value allocated in the Stantec Report. The storm sewers have also been designed with adequate capacity to convey with 100-year restricted peak flow without surcharging of the system. The storm sewers have been designed to meet the allowable full flow velocities for self-cleansing in accordance with the current OSDG. Refer to the Storm Drainage Area Plan (DWG. 24093-STM1) and the storm sewer design sheet provided under **Appendix E** for more details.

The area designated for the future portables has been assumed to have a final gravel surface to account for increased runoff when the area is eventually converted from grass to gravel surface. Refer to the supporting runoff coefficient calculations under **Appendix D**.

### 7.5 Foundation Drainage System

In accordance with the Geotechnical Investigation, a perimeter foundation drainage system is recommended for the proposed building. A 100mm diameter perforated subdrain will be provided around the exterior perimeter of the building foundation at the footing level. The foundation drainage system will outlet to the proposed storm manhole structure (STMMH 205) located on the east side of the building. The outlet to the manhole will be equipped with a 7070 terminal backwater valve (or approved equivalent) to prevent stormwater backup into the foundation drainage system.

### 7.6 Landscape Drainage System

In accordance with the landscape design, the proposed mulch and artificial turf play areas will require perimeter drainage systems. 100mm diameter perforated subdrains will be provided around the perimeters of the play areas. The perforated subdrains will outlet to the nearest catch basin structure (CB 3) located along the rear access road.

### 7.7 Roof Drainage

The proposed building will incorporate a flat roof design. Stormwater runoff will be captured by roof drains and conveyed to the building storm service. Based on mechanical design requirements, the pipe outlet from the roof is required to be minimum 375mm in diameter. Refer to **Section 8.3** for additional details on the roof controls.

## 8.0 STORMWATER MANAGEMENT

### 8.1 Design Criteria

In accordance with the overarching Stantec Report and pre-consultation with the City of Ottawa, the following stormwater management design criteria have been implemented into the on-site design:

- Control post-development outflows to the allowable release rates established in the overarching Stantec Report.

- Provide on-site storage (in excess of the allowable release rates) for all storm events up to and including the 100-year event.
- No surface ponding during the 2-year design event.
- Maximum surface ponding depth of 350mm.
- Minimum 300mm of freeboard between 100-year spill elevation and any building openings.
- No spill from stress test (100-year + 20%) onto permanent structures.
- Minimum 150mm of freeboard between spill elevations and ground elevation at building envelope (in proximity to flow route or ponding area).
- Provide a major overland flow route to the adjacent municipal right-of-ways.
- Infiltration target of 100mm/year.
- Water quality control via existing stormwater management (SWM) facility.

## 8.2 Allowable Release Rates

Under pre-development conditions, the topography of the property is generally flat and slopes toward the north. Stormwater runoff is conveyed uncontrolled to the municipal right-of-ways via surface sheet flow. The existing base plan for the adjacent Abbottsville Crossing Subdivision indicates that a temporary ditch inlet catch basin (DICB) was to be installed within Block 116 with an outlet to the existing 1350mm storm sewer on Cranesbill Road. However, the recent topographic survey collected for the site indicates that the DICB structure was not installed.

The subject site is contained within a dedicated block created as part of a Plan of Subdivision application. Therefore, the allowable release rates for the site development shall be based on the allocated outflows from the overarching Stantec Report rather than through an assessment of pre-development outflows. The subject site is identified as Area L301A in the Stantec Report. *Table 14* from the Stantec Report (provided under **Appendix E**) lists outlet and storage parameters for the various development blocks within the subdivision. For the subject site (L301A), the allowable release rates for the 2-year through 100-year design events from Stantec Report have been summarized in the table below.

**Table 8.1: Allowable Release Rates**

| 2-Year Outflow (L/s) | 5-Year Outflow (L/s) | 100-Year Outflow (L/s) |
|---|---|---|
| 370 | 384 | 405 |

Notes:
1. Outflows as per *Table 14* from the Stantec Report (Area L301A).

Stormwater outflows from the subject site must be controlled to the rates noted in the table above in accordance with the overarching Stantec Report.

## 8.3 Quantity Control

In order to restrict stormwater outflows to the established allowable release rates, quantity controls will be required. Drainage areas STM1-STM9 comprise the majority of the site area and consist of both impervious and pervious surface treatments. Areas STM1-STM9 will each be restricted by an inlet control device (ICD) installed within the outlet pipe of the proposed catch basin structure for each respective catchment. The ICDs have been sized using the orifice equation based on the 2-year head and assigned 2-year outflow to eliminate surface ponding during the 2-year design event. The ICDs for drainage area STM6 (CB 6) and STM9 (CBMH 207) are proposed to be Tempest LMF types since a standard circular orifice would

be below the minimum orifice diameter of 83mm based on the assigned outflow. Refer to the Tempest LMF flow curves under **Appendix F** for more details.

Drainage area R1 is comprised of the building roof and will be restricted by roof drain controls. A total of 22 roof drains will be provided with a release rate of 18.7 L/s each, equating to an average release rate of 40 L/s/ha over the total roof area. The roof drain design has been prepared by the Mechanical Engineer. Refer to the Plumbing Roof drawing (prepared by GWAL) under **Appendix F**.

Drainage area FF1 is comprised of the free flow areas along the western perimeter of the site which will be conveyed uncontrolled to the Triangle Street right-of-way. Drainage area FF2 is comprised of the free flow area along the southern perimeter of the site which will be conveyed uncontrolled to the Honeylocust Avenue right-of-way. Drainage area FF3 is comprised of the free flow area along the northern perimeter of the site which will be conveyed uncontrolled to the Cranesbill Road right-of-way.

Stormwater outflows for the on-site drainage areas for the 2-year through 100-year design events have been summarized in the table below.

**Table 8.2: Stormwater Outflows**

| Drainage Area | 2-Year Outflow (L/s) | 5-Year Outflow (L/s) | 100-Year Outflow (L/s) | Flow Control |
|---|---|---|---|---|
| STM1 | 30.0 | 31.1 | 31.9 | ICD |
| STM2 | 60.0 | 62.4 | 64.2 | ICD |
| STM3 | 20.0 | 21.1 | 21.9 | ICD |
| STM4 | 40.0 | 40.0 | 43.6 | ICD |
| STM5 | 30.0 | 31.6 | 32.5 | ICD |
| STM6 | 11.7 | 12.3 | 12.8 | ICD |
| STM7 | 20.0 | 21.4 | 22.0 | ICD |
| STM8 | 87.0 | 87.0 | 92.4 | ICD |
| STM9 | 10.4 | 10.4 | 11.3 | ICD |
| R1[*1] | 18.7 | 18.7 | 18.7 | Roof Drain |
| FF1[*2] | 10.1 | 13.7 | 29.4 | Uncontrolled |
| FF2[*2] | 6.6 | 9.0 | 19.3 | Uncontrolled |
| FF3[*2] | 1.2 | 1.6 | 3.3 | Uncontrolled |
| **Total** | **345.7** | **360.2** | **403.4** | |
| **Allowable[*3]** | **370.0** | **384.0** | **405.0** | |

Notes:
1. Outflows for roof area (R1) are based on roof drain release rate of 40 L/s/ha.
2. Outflows for free flow areas (FF1-FF3) are calculated using the Rational Method at a time of concentration of 10 minutes.
3. Allowable release rates as per Stantec Report.

As shown in the table above, the total outflows from the subject site during the 2-year through 100-year design events will not exceed the allowable release rates established in the overarching Stantec Report. Refer to **Table F1: Ponding and Orifice Calculations** and free flow calculations under **Appendix F** for more details.

### 8.4 Quantity Storage

In order to restrict stormwater outflows to the rates provided in **Table 8.2**, on-site storage will be required. On-site storage (in excess of the allowable release rates) will be required for all storm events up to and including the 100-year event. In accordance with the current OSDG, there will be no surface ponding during the 2-year event and the maximum ponding depth will not exceed 350mm. Required storage volumes have been calculated using the Modified Rational Method and the allowable release rates provided in **Table 8.2**. Storage volume and ponding depths for the on-site catchment areas during the 100-year design event have been summarized in the table below.

**Table 8.3: 100-Year Surface Storage Volumes & Ponding Depths**

| Drainage Area | 100-Year | | |
|---|---|---|---|
| | Required Storage Volume ($m^3$) | Provided Storage Volume[*2,3] ($m^3$) | Ponding Depth[*1] (m) |
| STM1 | 23.6 | 28.6 | 0.18 |
| STM2 | 55.6 | 62.3 | 0.20 |
| STM3 | 20.2 | 22.5 | 0.26 |
| STM4 | 21.7 | 23.9 | 0.25 |
| STM5 | 25.7 | 28.8 | 0.24 |
| STM6 | 10.2 | 10.4 | 0.25 |
| STM7 | 18.9 | 21.1 | 0.19 |
| STM8 | 3.5 | 5.9 | 0.17 |
| STM9 | 9.4 | 12.3 | 0.30 |

Notes:
1. Ponding depths are measured from the ponding elevation to the top of grate elevation.
2. Provided storage volumes are calculated using AutoCAD Civil3D by Autodesk.
3. Provided storage volumes only account for surface storage.

As shown in the table above, adequate on-site storage has been provided to detain the 100-year event to the allowable release rate established in the overarching Stantec Report. Refer to the Ponding Area Plan (DWG. 24093-PA1) and storage volume tables provided under **Appendix F** for more details.

### 8.5 Stress Test (100-YR + 20%)

As requested by the City, the stress test (100-year + 20%) event must be assessed to ensure that that ponding limits do not encroach onto permanent structures. Flows and required storage volumes for the stress test event are shown on the storage volume tables provided under **Appendix F**. Except for drainage areas STM1-2 and STM5-6 which have available surface storage beyond the 100-year event, the maximum static ponding elevation (before spilling occurs) corresponds to the 100-year ponding elevation. The table below demonstrates the provided freeboard between the maximum static ponding elevation (before spillage) and the proposed ground surface elevation at the perimeter of the closest permanent structure adjacent to the ponding area.

**Table 8.4: Maximum Ponding Details**

| Drainage Area | Max. Ponding Elev.[*1] (m) | Ground Surface Elev.[*2] (m) | Freeboard[*3] (m) |
|---|---|---|---|
| STM1 | 99.12 | 99.70 | 0.58 |
| STM2 | 99.22 | 99.70 | 0.48 |
| STM3 | 99.41 | 99.70 | 0.29 |
| STM4 | 99.35 | 99.55 | 0.20 |
| STM5 | 99.30 | 99.64 | 0.34 |
| STM6 | 99.00 | 99.42 | 0.42 |
| STM7 | 98.40 | 99.70 | 1.30 |
| STM8 | 98.40 | 99.28[*3] | 0.88 |
| STM9 | 98.20 | 98.55[*4] | 0.35 |

Notes:
1. Maximum ponding elevation corresponds to maximum static elevation before spill occurs.
2. Ground surface elevation at perimeter of closest permanent structure adjacent to ponding area.
3. Freeboard between ground surface elevation and max. ponding elevation.
4. Ground surface elevation at perimeter of future portables.
5. Garage grade for adjacent residential lot in Abbottsville Crossing Subdivision.

As demonstrated in the table above, the ponding elevations during the stress test event will not encroach onto permanent structures in accordance with the design criteria outlined for the site. Refer to the Ponding Area Plan (DWG. 24093-PA1) provided under **Appendix F** for more details.

## 8.6 Major System

The major system for the subject site has been designed to cascade overland flow from the individual catchment areas to the adjacent municipal right-of-ways. The highest spill elevation occurs for drainage area STM3 at an elevation of 99.41 m. A minimum freeboard of 0.44 m has been provided between the spill elevations and the building finished floor elevation (99.85 m). A minimum freeboard of 0.20 m has also been provided between the spill elevations and the proposed ground elevation at the building perimeter (in proximity to flow route or ponding area). Therefore, the major system design is in accordance with the design criteria outlined for the site.

## 8.7 Infiltration Target

The overarching Stantec Report did not provide any discussion or requirements for the implementation of infiltration measures within the Hazeldean Craig Subdivision. During pre-consultation with the City, an infiltration target of 100 mm/year was requested to align with the recommendations from the Carp River Watershed Subwatershed Study (CRWSS). City of Ottawa Technical Bulletin IWSTB-2024-04, notes that infiltration/exfiltration systems will not be permitted on sites with clay/silt soils due to their poor hydraulic properties. Based on the Geotechnical Investigation completed by Paterson, silty clay is anticipated to be encountered throughout the subject site (refer to borehole information provided under **Appendix F**). The technical bulletin also recommends a minimum 1.0 metre separation between the seasonally high (pre-development) groundwater level and the bottom of the infiltration practice. Recent geotechnical investigations (completed by Paterson in spring 2025) indicate that measured groundwater levels under seasonally high conditions are near the original ground surface due to the native clay/silt soils on-site (refer to groundwater memo provided under **Appendix F**).

Therefore, in accordance with IWSTB-2024-04 infiltration/exfiltration practices are not suitable for the subject site.

Approximately 37 percent of the total site area will be conveyed to perforated subdrain systems located in landscape areas. The subdrain systems have been designed in keeping with the City's standard detail S29 which is required in locations where swale slopes are less than 1.5%, regardless of native soil conditions. Similar subdrain systems have been installed throughout the adjacent Hazeldean Craig and Abbottsville Crossing Subdivisions. Although infiltration will be limited due to the native soil hydraulic properties and seasonally high groundwater levels, some degree of infiltration will still be achievable. The perforated subdrain systems will provide a best management approach to achieving at source infiltration on-site.

### 8.8 Quality Control

The existing minor storm sewer systems on Triangle Street and Cranesbill Road convey stormwater in a northeast direction before discharging into the existing stormwater management (SWM) facility located approximately 210 metres downstream of the subject site. The existing SWM facility was constructed as part of the Abbottsville Crossing Subdivision to provide stormwater controls for a catchment area of approximately 98 hectares (which includes the subject site). The SWM facility (Fernbank SWM Pond 3) was designed as a wet pond to provide normal level water quality control, erosion protection, and attenuation of peaks flows for the catchment area before discharging to the Carp River. The facility was issued an Environmental Compliance Approval (ECA) from the MECP in December 2016 (provided under **Appendix F**). Since quality control will be provided by the existing SWM facility, no additional on-site measures are required.

## 9.0 EROSION AND SEDIMENT CONTROL

Prior to construction and until vegetation has been re-established in disturbed areas, temporary erosion and sediment control measures must be implemented to mitigate the impact of construction on receiving watercourses and existing infrastructure. The following erosion and sediment control (ESC) measures have been proposed for the subject site:

- Limiting the extent of exposed soils at any given time.
- Erosion and sediment control measures shall be maintained until vegetation has been re-established in all disturbed areas. Re-vegetate disturbed areas in accordance with approved Landscape Plan as soon as possible.
- Stockpile soil away (15 metres or greater) from watercourses, drainage features and top of steep slopes.
- Installation of silt sacks between frame and cover on all proposed and existing catch basins and open cover storm manholes until construction is completed.
- Silt fence barriers to be installed and maintained along property boundaries and where indicated on the erosion and sediment control plans.
- Installation of mud mats at all construction entrances.
- For dry weather periods (active and/or inactive construction phases) inspections of ESC measures shall be undertaken on a weekly basis.
- Inspection of ESC measures shall be undertaken immediately after major storm events (>25mm of rain in 24 hour period), significant snowmelt events (melting of snow at a rate which adversely affects the performance and function of the system), and extreme weather events.
- Visual inspections shall also be undertaken in anticipation of large storm events (or a series of rainfall and/or snowmelt days) that could potentially yield significant runoff volumes.

- Identify and rectify any deficiencies and undertake necessary maintenance measures as soon as possible.
- Inspections and maintenance of temporary ESC measures shall continue until they are no longer required.
- The Contractor shall ensure that records of inspection are taken, including at a minimum:
  - the inspector's name;
  - date of inspection;
  - visual observations;
  - any necessary remedial measures taken to maintain the interim ESC measures.
- Care shall be taken to prevent damage to ESC during construction operations.
- In some cases, barriers may be removed temporarily to accommodate construction operations. The affected barriers shall be reinstated immediately after construction operations are completed.
- ESC should be adjusted during construction to adapt to site features as the site becomes developed.
- ESC shall be cleaned of accumulated sedimentation as required and replaced as necessary.
- During the course of construction, if the Engineer believes that additional prevention methods are required to control erosion and sedimentation, the Contractor shall implement additional measures, as required, to the satisfaction of the Engineer.
- Construction and maintenance requirements for erosion and sediment controls are to comply with Ontario Provincial Standard Specification (OPSS) 805.

Refer to the Erosion and Sediment Control Plan (DWG. 24093-ESC1) under **Appendix B** for more details.

## 10.0 CONCLUSIONS

It has been demonstrated that the proposed Fernbank North School can be serviced and stormwater management requirements can be achieved in accordance with current City of Ottawa guidelines and overarching reports. Specifically, the development of the site will include the following key servicing and stormwater management design features:

- Water supply will be provided by new 102mm and 152mm diameter watermain connections (separated by an isolation valve) to the existing 203mm diameter watermain on Honeylocust Avenue.
- Water supply for fire protection will be provided by the existing municipal hydrants and a new on-site hydrant.
- Sanitary flows will be conveyed to the existing sanitary sewer system on Triangle Street via a new 150mm diameter connection to existing sewer downstream of EXSANMH 14.
- Stormwater runoff (minor system) will be captured and conveyed by an on-site storm sewer system to the existing 600mm storm stub at the intersection of Cranesbill Road and Silence Terrace.
- Stormwater outflows will be restricted to the release rates established in the overarching Stantec Report prepared for the Hazeldean Craig Subdivision.
- Adequate on-site storage will be provided for all events up to and including the 100-year design event.
- The major system design will convey overland flow to the adjacent municipal right-of-ways.

- Quality control of stormwater runoff will be provided by the existing Fernbank SWM Pond 3 facility.
- Erosion and sediment control measures will be implemented prior to construction and maintained until vegetation has been re-established in disturbed areas.

Report Prepared By:

Brandon MacKechnie, P.Eng.
Project Engineer

Appendix A

Pre-Consultation Notes

Topographic Plan of Survey
(prepared by Stantec)

As-Built Site Servicing Plans
(prepared by Stantec)

File No.: PC2024-0447

December 6, 2024

Isabel Richer
Pye & Richards -Temprano & Young Architects Inc.
Via email: isabel.richer@prty.ca

**Subject:** **Pre-Consultation: Meeting Feedback**
**Proposed Complex Site Plan Control Application – 620 Triangle Street**

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on November 26, 2024.

## Pre-Consultation Preliminary Assessment

| | | | | |
|---|---|---|---|---|
| **1** ☐ | **2** ☐ | **3** ☐ | **4** ☒ | **5** ☐ |

One (1) indicates that considerable major revisions are required while five (5) suggests that the proposal appears to meet the City's key land use policies and guidelines. This assessment is purely advisory and does not consider technical aspects of the proposal or in any way guarantee application approval.

## Next Steps

1. A review of the proposal and materials submitted for the above-noted pre-consultation has been undertaken.

2. Please proceed to complete a Phase 2 if your building location and other site elements (e.g. parking area, portables, soccer field) change. If there is any redesign of the site regarding the locations proposed for the parking lot, laybys, building, soccer fields and future portables, and submit it together with the necessary studies and/or plans to planningcirculations@ottawa.ca.

3. Please proceed to Phase 3 Pre-consultation Application Form and submit it together with the necessary studies and/or plans to planningcirculations@ottawa.ca if the concept and site plan introduced in Phase 1 remains the same.

4. In your subsequent pre-consultation submission, please ensure that all comments or issues detailed herein are addressed. A detailed cover letter stating how each issue has been addressed must be included with the submission materials. Please coordinate the numbering of your responses within the cover letter with the comment number(s) herein.

## Supporting Information and Material Requirements

1. The attached **Study and Plan Identification List** outlines the information and material that has been identified, during this phase of pre-consultation, as either required (R) or advised (A) as part of a future complete application submission.

    a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.

## Consultation with Technical Agencies

1. You are encouraged to consult with technical agencies early in the development process and throughout the development of your project concept. A list of technical agencies and their contact information is enclosed.

## Planning

Comments:

1. Policies and provisions, PPS, OP, CDP

    Settlement Area

    OP – Suburban Transect West, Neighbourhood Designation

    CDP – Fernbank Community Design Plan

    Zoning: I1A

    (Ward 6 - Glen Gower)

2. Landscape requirements – require large canopy trees along streets

3. Parking requirements – asking for more parking spaces than by-law requires.

4. Easements – public access easements may be required for sidewalks and/or trees

5. Recommend wider width for lay-bys within a cross-section that will theoretically accommodate a parked school bus (with mirrors), 2-way circulation that allows for example 2 OC Transpo buses passing beside parked school bus, and parked cars on the opposite side.

6. Having part of sidewalk width on (as well as street trees) on private property would be advisable (which would need public access easement) if lay-bys are

creating pinch points or conflict with 2-way travel in the ROW (see point 5) and parking on the other side.

7. Note, laybys trigger RMA process –a RMA process requires councilor's concurrence and this may pose a risk to the school's construction timelines.

8. Your site plan site statistics table indicates 620 Triangle has a I1A[2530] zone and R3Y but this parcel is zoned I1A only.

9. Here is a confirmation of the setbacks applicable to 620 Triangle Street, as defined in the Zoning By-law.

Please feel free to contact Shoma Murshid, Planner II, for follow up questions.

## Urban Design

Comments:

10. As part of a complete application, staff require detailed architectural plans including a Site Plan, Building Elevations, and a Landscape Plan. An Urban Design Brief is not required.

11. If the site is reorganized for servicing, ensure that the main school building engages with one of the public streets.

12. Please provide street trees along public streets.

Please feel free to contact Nader Kadri, Planner III, for follow-up questions.

## Engineering

Comments:

13. The Stormwater Management Criteria, for the subject site, is to be based on the following:
    a. Demonstrate the servicing strategy is consistent with higher-level studies and plans. Excerpts from relevant higher level studies and plans will need to be discussed and provided in the Appendix of the Site Servicing and SWM report as supporting documentation to the design. **Any deviations will require an update or addendum to the subdivision level MSS to support any changes at the discretion of the City.**

    b. Please note the following studies are related to this site and you may need them in preparing the servicing study for this application. You can review the list and request access as needed to the following higher-level subdivision studies for reference through geoinformation@ottawa.ca (additional studies and reports may be required):
        i. **Fernbank Community Design Plan Master Servicing Study Volume 1 and 2, prepared by Novatech Engineering Consultants Ltd, dated June 2009**
        ii. **Fernbank Community Design Plan Environmental Management Plan Volume 1 and 2, prepared by Novatech Engineering Consultants Ltd, dated June 2009**
        iii. **Carp River Wastershed/Subwatershed Study Volume I, prepared by Robinson Consultants Inc, Aquafor Beech Ltd, Lloyd Philips and Associates, Daniel Brunton Conulting Services, Project No. 00056, dated December 2004.**
        iv. **Geotechnical Investigation Proposed Residential Development 590 Hazeldean Road – Ottawa, Report: PG2930-1, Prepared by Paterson Group Inc, dated July 22, 2013**
        v. **Functional Servicing Report, prepared by Stantec Consulting Ltd, dated October 2013**
        vi. **Servicing and Stormwater Management Report – Hazeldean Craig Subdivision Phase 1, Project # 160401217, prepared by Stantec Consulting Ltd., dated September 2017**

    c. Approved drainage patterns shall be respected as part of the proposed SWM solution otherwise an update or addendum to the subdivision level MSS will be required to support the project.

    d. HGL Analysis to be completed and included as part of the Site Servicing and SWM report if basement levels are contemplated.

e. **Water Quality Control**: Provide enhanced levels of protection of 80% for total suspended solids removal. As stated in the higher-level studies, a downstream SWM pond provides the required level of protection. In that case, provide the appropriate reference and excerpt from the respective report(s) to support the design.

f. **Water Quantity Control**: As per the subdivision modelling, this school site is to control post-development runoff from the subject site, up to and including the 100-year storm event, to a **2-year storm using a runoff coefficient of 0.65.**

   i. **The allowable post development runoff release rate for the site shall be consistent with the values presented Servicing and Stormwater Management Report – Hazeldean Craig Subdivision Phase 1 and Sewer Design Guidelines.**

   ii. The time of concentration (Tc) used to determine the pre-development condition should be calculated. Tc should not be less than 10 min. since IDF curves become unrealistic at less than 10 min; **Tc of 10 minutes shall be used for all post-development calculations.**

   iii. **All storm events greater than the established 2-year allowable release rate, up to and including the 100-year storm event, shall be detained on-site.** For events greater than 100 years, spillage must be directed to a public ROW and not to neighboring private property.

g. Please provide a Pre-Development Drainage Area Plan to define the pre-development drainage areas/patterns. Existing drainage patterns shall be maintained and discussed as part of the proposed SWM solution.

h. Ponding Notes:
   i. 100-year spill elevation must be 300mm lower than any building opening or ramp.
   ii. Demonstrate that the stress test spill elevation (100-year +20% event) does not spill onto any permanent structures.
   iii. The maximum permissible ponding depth for the 100-year storm event is 350mm. No spilling to adjacent sites.
   iv. Please note that as per Technical Bulletin PIEDTB-2016-01 section 8.3.11.1 (p.12 of 14) there shall be no surface ponding on private parking areas during the 2-year storm rainfall event. 100-year spill elevation must be 300mm lower than any building opening or ramp.
   v. Ensure all ponding criteria noted in the subdivision master study is respected.

i. There must be at least **15cm of vertical clearance** between the spill elevation and the ground elevation at the building envelope that is in proximity of the flow route or ponding area.

j. Document how any foundation drainage system will be integrated into the servicing design and show the positive outlet on the plan. Foundation drainage is to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention. It is recommended that the foundation drainage system be drained by a sump pump connection to the storm sewer to minimize risk of basement flooding as it will provide the best protection from the uncontrolled sewer system compared to relying on the backwater valve.

k. Please note that the minimum orifice dia. for a plug style ICD is 83mm and the minimum flow rate from a vortex ICD is 6 L/s in order to reduce the likelihood of plugging.

l. If rooftop control and storage is proposed as part of the SWM solutions, sufficient details (Cl. 8.3.8.4) shall be discussed and documented in the report and on the plans. **Roof drains are to be connected downstream of any incorporated ICDs within the SWM system and not to the foundation drain system.** Provide a Roof Drain Plan as part of the submission.

m. Dry ponds are only to be functional for events that are greater than the 2-year storm event, a freeboard of 0.3m between the 100-year HWL elevation and the emergency overflow elevation and to be designed with a maximum depth of 1.5m with 3:1 side slopes. An emergency overland flow route to an appropriate outlet (Rideau River) from the SWM facility needs to be designed.

n. **Underground Storage**: Please note that the Modified Rational Method for storage computation in the Sewer Design Guidelines was originally intended to be used for above ground storage (i.e. parking lot) where the change in head over the orifice varied from 1.5 m to 1.2 m (assuming a 1.2 m deep CB and a max ponding depth of 0.3 m). This change in head was small and hence the release rate fluctuated little, therefore there was no need to use an average release rate.

    i. When underground storage is used, the release rate fluctuates from a maximum peak flow based on maximum head down to a release rate of zero. This difference is large and has a significant impact on storage requirements. We therefore require that an average release rate equal to 50% of the peak allowable rate shall be applied to estimate the required volume. Alternatively, the consultant may choose to use a submersible pump in the design to

ensure a constant release rate. In the event that there is a disagreement from the designer regarding the required storage, The City will require that the designer demonstrate their rationale utilizing dynamic modelling, that will then be reviewed by City modelers in the Water Resources Group. Regarding all proposed UG storage, ground water levels (and in particular HGW levels) will need to be reviewed to ensure that the proposed system does not become surcharged and thereby ineffective.

ii. Provide information on type of underground storage system including product name and model, number of chambers, chamber configuration, confirm invert of chamber system, top of chamber system, required cover over system and details, interior bottom slope (for self-cleansing), chart of storage values, length, width and height, capacity, entry ports (maintenance) etc. UG storage to provide actual 5- and 100-year event storage requirements.

14. Storm Sewer

a. An existing stub for a 600mm dia. Concrete storm sewer is available at the North-East corner of the property at the intersection of Cranesbill Road and Silence Terrace.

b. The proposed SWM design shall be consistent with higher-level studies and plans.

c. A storm sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) Monitoring Devices.

15. Sanitary Sewer

a. An existing stub for a 200mm dia. PVC Sanitary sewer is available at the North-East corner of the property at the intersection of Cranesbill Road and Silence Terrace.

**b. The proposed sanitary lateral connection into Triangle Street is permitted. The peak flow must not exceed the maximum allocated within the subdivision servicing report. The consultant must provide their justification for this connection and provide a downstream capacity analysis within their report. The report must discuss what will happen to the existing unused sanitary stub on the site fronting Cranesbill Road.**

**c. Sanitary laterals must be designed in accordance with anticipated demand and shall be sized to minimum requirements. The City will**

**not permit a private lateral to the public sewer connection to be of same size.**

d. The sanitary sewer network flows to the Hazeldean Pumping Station. As per the Servicing and Stormwater Management Report – Hazeldean Craig Subdivision Phase 1, there is allocated wastewater flow from this site. Please provide evidence to prove that the proposed developments peak wastewater flow is within the allocated amount and will be adequately accommodated by the Hazeldean Pumping Station.

**e. The proposed wastewater servicing design shall be consistent with higher-level studies and plans.**

f. If the proposed sanitary servicing strategy deviates from the Master servicing study for the subdivision, a block specific update memo will be required to support the design.

g. Please provide confirmation and documentation of available capacity in the receiving and downstream sewer system. If the estimated wastewater flow is determined to be in excess of the allowable (as defined in the subdivision level MSS) for the site it shall be demonstrated that the receiving and downstream wastewater system has adequate residual capacity to support and accommodate any increase in wastewater flow.

h. Include correspondence from the Architect within the Appendix of the report confirming the number of residential units per building and a unit type breakdown for each of the buildings to support the calculated building populations.

i. Please apply the wastewater design flow parameters in Technical Bulletin PIEDTB-2018-01.

j. Sanitary sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) Monitoring Devices.

k. A backwater valve is required on the sanitary service for protection.

16. Water:

a. An existing stub for a 203mm dia. PVC watermain is available at the North-East corner of the property at the intersection of Cranesbill Road and Silence Terrace.

b. Water Supply Redundancy: Residential buildings with a basic day demand greater than 50m3/day (0.57 L/s) or with 50+ units are required to be

connected to a minimum of two water services, with each their own meter, separated by an isolation valve to avoid a vulnerable service area.

c. Water Boundary condition requests must include the location of the service (map or plan with connection location(s) indicated) and the expected loads required by the proposed development, including calculations. Please provide the following information:

    i. Plan showing the proposed location of service(s).

    ii. Type of development and the amount of fire flow required (L/min). **Note: A maximum of 9000 L/min (150 L/s) fire flow was allocated for this school site as per the master servicing study.**

    iii. Average daily demand: __L/s.

    iv. Maximum daily demand: __L/s.

    v. Maximum hourly daily demand: __L/s.

    vi. Note: Use Table 3-3 of the MOE Design Guidelines for Drinking-Water System to determine Maximum Day and Maximum Hour peaking factors for 0 to 500 persons and use Table 4.2 of the Ottawa Design Guidelines, Water Distribution for 501 to 3,000 persons.

d. Please review Technical Bulletin ISTB-2018-02, maximum fire flow hydrant capacity is provided in Section 3 Table 1 of Appendix I. A hydrant coverage figure shall be provided and demonstrate there is adequate fire protection for the proposal.

**e. Anticipated water demand and fire flow capacity must be consistent with higher level master servicing studies.**

**f. The proposed relocation of the public hydrants on Triangle Steet into private property due to bus laybys requires easements and/or agreements with the City. The easement must extend a minimum of 3m on all sides of the hydrants to permit access and maintenance. More information about the required easements/agreements will be provided later once more information is received.**

g. A Water Data Card will have to be submitted to size the water meter.

h. Any proposed emergency route is to be to the satisfaction of Fire Services.

17. General Servicing

a. Additional site-specific servicing criteria not mentioned in this feedback form may be required as per the subdivision level master studies. Please review and reference the master studies within the report.

b. Provide existing servicing information and the recommended location for the proposed connections. Services should ideally be grouped in a common trench to minimize the number of road cuts.

c. If multiple buildings are proposed within one parcel of land, only one set of services (Storm, Sanitary and Water) will be allowed to connect to city infrastructure. Each building will have to be serviced from this one set of services. The one exception to this rule is for sites requiring water supply redundancy, where we will allow a second water connection to city watermain to meet this requirement.

d. Where servicing involves three or more service trenches, either a full road width or full lane width 40 mm asphalt overlay will be required, as per amended Road Activity By-Law 2003-445 and City Standard Detail Drawing R10. The extent of the overlay must be shown on the grading plan or a road reinstatement plan.

e. CCTV sewer inspection of city infrastructure is required to record pre and post construction conditions and ensure there is no damage to City Assets.

f. Existing buildings sewer laterals require a CCTV inspection and report to ensure existing services to be re-used are in good working order and meet current minimum size requirements.

g. Connections to trunk sewers, easement sewers and backbone watermains are typically not permitted.

h. Street catch basins are not to be located at any proposed entrances.

i. If severance is planned, this needs to be addressed in servicing to satisfy severance requirements. Where a large parcel with multiple buildings is planned, City will require an ultimate servicing plan so as to appropriately understand how severance requirements are being met.

j. Sewer connections to be made above the springline of the sewer main as per:

    i. Std Dwg S11.1 for flexible main sewers – connections made using approved tee or wye fittings.

    ii. Std Dwg S11 (For rigid main sewers) – lateral must be less that 50% the diameter of the sewermain.

iii. Std Dwg S11 (For rigid main sewers) – lateral must be less that 50% the diameter of the sewermain.

iv. No submerged outlet connections.

18. Water Balance

a. A water balance target of 100mm/year is required for all sites part of the Fernbank CDP and Carp River subwatershed study. Best management practices must be incorporated to provide infiltration for this site.

19. Grading and Erosion

a. Post-development site grading shall match existing property line grades in order to minimize disruption to the adjacent residential properties. A topographical plan of survey shall be provided as part of the submission and a note provided on the plans.

b. Erosion and sediment control plan must be provided.

c. Any portion of the subject property which is intended to be used for permanent or temporary snow storage shall be as shown on the approved site plan and grading plan. Snow storage shall not interfere with approved grading and drainage patters or servicing. Snow storage areas shall be setback from the property lines, foundations, fencing or landscaping a minimum of 1.5m. Snow storage areas shall not occupy driveways, aisles, required parking spaces or any portion of a road allowance. If snow is to be removed from the site, please indicate this on the plan(s).

d. Street catch basins are not to be located at any proposed entrances.

e. Depressed driveways are discouraged and are not allowed in sag locations. For other locations, the builder must ensure that the maximum depth of flow on the street during the 100-year and stress test events will not spill onto the depressed driveway.

f. If Window wells are proposed, they are to be indirectly connected to the footing drains. A detail of window well with indirect connection is required, as is a note at window well location speaking to indirect connection.

g. Rear yard at grade parking to be permeable pavement. Refer to City Standard Detail Drawings SC26 (maintenance/temp parking areas), SC27 or permeable asphalt materials. No gravel or stone dust parking areas permitted.

20. Environmental

a. A Phase I ESA is required to be completed in accordance with Ontario Regulation 153/04 in support of this development proposal to determine the potential for site contamination. Depending on the Phase I recommendations a Phase II ESA may be required.

b. The Phase I ESA shall provide all the required Environmental Source Information as required by O. Reg. 153/04. ERIS records are available to public at a reasonable cost and need to be included in the ESA report to comply with O.Reg. 153/04 and the Official Plan. The City will not be in a position to approve the Phase I ESA without the inclusion of the ERIS reports.

c. A remediation plan may be required as per the outcome of the Phase one study. If required, a complete Phase Two study with the remediation activities will need to be submitted for our review.

d. Official Plan: Section 10. Protection of Health and Safety (ottawa.ca)

21. Geotechnical

a. A Geotechnical Study/Investigation shall be prepared in support of this development proposal.

**b. Geotechnical recommendations and restrictions shall be respected as per the Geotechnical Investigation Proposed Residential Development 590 Hazeldean Road – Ottawa, Report: PG2930-1, Prepared by Paterson Group Inc, dated July 22, 2013**

**c. There is grade raise restriction noted for this site within the subdivision master studies noted above. Ensure the grade raise limit is respected.**

d. Reducing the groundwater level in this area can lead to potential damages to surrounding structures due to excessive differential settlements of the ground. The impact of groundwater lowering on adjacent properties needs to be discussed and investigated to ensure there will be no short term and long-term damages associated with lowering the groundwater in this area.

e. Geotechnical Study shall be consistent with the Geotechnical Investigation and Reporting Guidelines for Development Applications. Geotechnical Investigation and Reporting (ottawa.ca)

f. If Sensitive marine clay soils are present in this area that are susceptible to soil shrinkage that can lead to foundation and building damages. All six (6) conditions listed in the Tree Planting in Sensitive Marine Clay Soils-2017 Guidelines are required to be satisfied. Note that if the plasticity

index of the soil is determined to be less than 40% a minimum separation between a street tree and the proposed building foundations of 4.5m will need to be achieved. A memorandum addressing the Tree in Clay Soil Guidelines prepared by a geotechnical engineer is required to be provided to the City. Tree Planting in Sensitive Marine Clay Soils - 2017 Guidelines (ottawa.ca)

22. Slope Stability Assessment Reports

    a. The site seems mostly flat and therefore will not require a slope stability analysis. However, if any part of the site falls within the parameters below, then this study will be required. Please verify these requirements.

    b. A report addressing the stability of slopes, prepared by a qualified geotechnical engineer licensed in the Province of Ontario, should be provided wherever a site has slopes (existing or proposed) steeper than 5 horizontal to 1 vertical (i.e., 11 degree inclination from horizontal) and/or more than 2 meter in height.

    c. A report is also required for sites having retaining walls greater than 1 meter high, that addresses the global stability of the proposed retaining walls.

    d. Slope Stability Guidelines for Development Applications (ottawa.ca)

23. Exterior Site Lighting

    **a.** Any proposed light fixtures (both pole-mounted and wall mounted) must be part of the approved Site Plan. All external light fixtures must be designed using only fixtures that meet the criteria for full cut-off (sharp cut-off) classification, as recognized by the Illuminating Engineering Society of North America (IESNA or IES); and it must result in minimal light spillage onto adjacent properties. As a guideline, 0.5 fc is normally the maximum allowable spillage. In order to satisfy these criteria, the please provide the City with a **Certification (Statement) Letter** from an acceptable professional engineer stating that the design is compliant.

24. Regarding Quantity Estimates

    a. Please note that external Garbage and/or bicycle storage structures are to be added to QE under Landscaping as it is subject to securities. In addition, sump pumps for Sanitary and Storm laterals and/or cisterns are to be added to QE under Hard items as it is subject to securities, even though it is internal and is spoken to under SWM and Site Servicing Report and Plan.

    b. Quantity estimates dollar values are to be consistent with the most up to date Master Spec Code List provided by the City of Ottawa.

25. General

a. It is the sole responsibility of the consultant to investigate the location of existing underground utilities in the proposed servicing area and submit a request for locates to avoid conflict(s). The location of existing utilities and services shall be documented on an **Existing Conditions Plan**.

b. Any easements on the subject site shall be identified and respected by any development proposal and shall adhere to the conditions identified in the easement agreement. A **legal survey plan** shall be provided, and all easements shall be shown on the engineering plans.

c. As-built plans and reports (if available) can be requested for a fee by contacting geoinformation@ottawa.ca.

d. All underground and above ground building footprints and permanent walls need to be shown on the plans to confirm that any permanent structure does not extend either above or below into the existing property lines and sight triangles.

e. If information provided in this feedback contradicts the information within the subdivision master studies, please contact the undersigned to clarify which requirement shall govern.

f. **Construction approach** – Please contact the Right-of-Ways Permit Office TMconstruction@ottawa.ca early in the Site Plan process to determine the ability to construct site and copy File Lead on this request.

26. Noise Study Requirement

a. Please reach out to Transportation Project Manager.

Please refer to the City of Ottawa Guide to Preparing Studies and Plans [Engineering]: Planning application submission information and materials. The guide outlines the requirement for a statement to be provided on the plan about where the property boundaries have been derived from.

Feel free to contact Terenzo Giovannitti, Infrastructure Project Manager, for follow-up questions.

**Noise**

Comments:

27. A road noise study is required.

Feel free to contact Mike Giampa, Transportation Project Manager, for follow-up questions.

**Transportation**

Comments:

28. Right-of-way protection.

    a. See Schedule C16 of the Official Plan.

    a. Any requests for exceptions to ROW protection and/or corner triangle requirements must be discussed with Transportation Planning and concurrence provided by Transportation Planning management.

29. The new required corner triangle dimensions as of January 2024 are below:

    Arterial/Arterial: overlapping 5m x 15m triangles
    Arterial/Collector: overlapping 5m x 15m triangles
    Collector/Collector: overlapping 5m x 15m triangles
    Arterial/Local: 3m x 9m with the longer dimension along the arterial road
    Collector/Local: 3m x 9m with the longer dimension along the collector road
    Local/Local: 3m x 3m

30. A TIA is warranted- please proceed to Step 2 Scoping.

31. The application will not be deemed complete until the submission of the draft step 2-3, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable). Although a full review of the TIA Strategy report (Step 3) is not required prior to an application, it is strongly recommended. Synchro files are required at Step 3 to deem the submission complete.

32. Any changes to the existing roads (laybys) require a Road Modification Approval (RMA) report. Submit a functional plan for review. Once reviewed, the report will be drafted. Councilor concurrence is also required for any road modifications. Note that the RMA process (functional plan, report, detailed design, utility circulation) is lengthy and can take six to twelve months.

33. The location of the northerly Triangle (local) access is acceptable.

34. The intersection of Abbott and Terry Fox should be included in the study area.

Feel free to contact Mike Giampa, Transportation Project Manager, for follow-up questions.

**Environment**

Comments:

35. Site Design - Location of the playgrounds adjacent to drop-offs is not ideal due to vehicle idling and air pollution. Please look at this and consider options to either increase separation between the two or mitigate through landscaping.

36. Bird-Safe Design - Given the height of the proposal (mid to high rise) the proposal will need to review and incorporate bird safe design elements. Some of the risk factors include glass and related design traps such as corner glass and fly-through conditions, ventilation grates and open pipes, landscaping, light pollution. More guidance and solutions are available in the guidelines which can be found here: https://ottawa.ca/en/planning-development-and-construction/developing-property/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans .
37. Urban Heat Island - Please add features that reduce the urban heat island effect (see OP 10.3.3) produced by the parking lot and a building footprint. For example, this impact can be reduced by adding large canopy trees to shade areas of asphalt, green roofs or vegetation walls, or constructing the parking lot or building with low heat absorbing materials.

Feel free to contact Matthew Hayley, Environmental Planner, for follow-up questions.

**Forestry**

Comments:

38. Tree preservation / distinctive trees
    a. A Tree Conservation Report is not required – there are no existing trees
39. Landscape Plan - tree planting requirements:
    a. Please ensure all retained trees are shown on the LP.
    b. Minimum Setbacks
        i. Maintain 1.5m from sidewalk, MUP/cycle track, water service laterals.
        ii. Maintain 2.5m from curb.
        iii. Coniferous species require a minimum 4.5m setback from curb, sidewalk, or MUP/cycle track/pathway.
    b. Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing, except where otherwise approved in naturalization / afforestation areas.
    c. Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.
    d. Tree specifications
        i. Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.

ii. Maximize the use of large deciduous species wherever possible to maximize future canopy coverage.

e. Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; if possible, include watering and warranty as described in the specification.

f. No root barriers, dead-man anchor systems, or planters are permitted.

g. No tree stakes unless necessary

h. Hard surface planting

i. If there are hard surface plantings, a planting detail must be provided.

ii. Curb style planter is highly recommended.

iii. No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.

iv. Trees are to be planted at grade.

i. Soil Volume - Please demonstrate as per the **Landscape Plan Terms of Reference** that the available soil volumes for new plantings will meet or exceed the following:

| Tree Type/Size | Single Tree Soil Volume (m3) | Multiple Tree Soil Volume (m3/tree) |
|---|---|---|
| Ornamental | 15 | 9 |
| Columnar | 15 | 9 |
| Small | 20 | 12 |
| Medium | 25 | 15 |
| Large | 30 | 18 |
| Conifer | 25 | 15 |

j. Sensitive Marine Clay - Please follow the City's 2017 Tree Planting in Sensitive Marine Clay guidelines.

k. The city requests that consideration be given to planting native species where ever there is a high probability of survival to maturity.

l. Efforts shall be made to provide as much future canopy cover as possible at a site level, through tree planting and tree retention. The Landscape Plan shall show/document that the proposed tree planting and retention will contribute to the City's overall canopy cover over time. Please provide a projection of the future canopy cover for the site to 40 years.

m. Page 7 of the Landscape Plan Terms of Reference requires applicants to submit a digital, georeferenced CAD or GIS file of the final approved LP. Please follow this link to review the submission requirements: https://documents.ottawa.ca/sites/documents/files/landscape_tor_en.pdf . The file can be sent to the Planning Forester or Planning File Lead.

Feel free to contact Mark Richardson, Planning Forester, for follow-up questions.

**Parkland**

Comments:

40. Parkland comments may come in next phase of review.

**Other**

41. The High Performance Development Standard (HPDS) is a collection of voluntary and required standards that raise the performance of new building projects to achieve sustainable and resilient design and will be applicable to Site Plan Control and Plan of Subdivision applications.

    a. The HPDS was passed by Council on April 13, 2022, but is not in effect at this time, as Council has referred the 2023 HPDS Update Report back to staff with the direction to bring forward an updated report to Committee at a later date. The timing of an updated report to Committee is unknown at this time, and updates will be shared when they are available.

    b. Please refer to the HPDS information at ottawa.ca/HPDS for more information.

**Submission Requirements and Fees**

1. Outlines the application type/subtype required and the associated fees
    a. Additional information regarding fees related to planning applications can be found here.
2. The attached **Study and Plan Identification List** outlines the information and material that has been identified as either required (R) or advised (A) as part of a future complete application submission.
    a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.
3. All of the above comments or issues should be addressed to ensure the effectiveness of the application submission review.

Should there be any questions, please do not hesitate to contact myself or the contact identified for the above areas / disciplines.

Yours Truly,

Matthew Steeves
Student Planner
Development Review All Wards

Reviewed by:

Shoma Murshid
Planner II
Development Review All Wards

Encl. SPIL

c.c. Shoma Murshid, Nader Kadri, Terenzo Giovannitti, Abdul Mottalib, Mike Giampa, Matthew Hayley, Mark Richardson, Paul Landry

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# TOPOGRAPHIC PLAN OF SURVEY OF

# BLOCK 116 REGISTERED PLAN 4M-1628 AND BLOCK 204 REGISTERED PLAN 4M-1606

CITY OF OTTAWA

Scale 1:500

10 0 10 20 30 METRES

## METRIC CONVERSION

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

## BEARING NOTE

BEARINGS ARE GRID, DERIVED FROM CAN-NET VRS NETWORK GPS OBSERVATIONS ON NCC HORIZONTAL CONTROL MONUMENTS 19773035 AND 19680191, CENTRAL MERIDIAN, 76° 30' WEST LONGITUDE MTM ZONE 9, NAD83 (ORIGINAL).

19773035 N:5006060.42 E:324888.04
19680191 N:5033564.26 E:388064.94

## ELEVATION NOTE

ELEVATIONS SHOWN HEREON ARE GEODETIC (CGVD-1928:1978) AND ARE DERIVED FROM THE CAN-NET VRS NETWORK MONUMENT: OTTAWA ELEVATION=95.230.

## UTILITY NOTE

INFORMATION ON INVERTS AND PIPE DIAMETERS TAKEN FROM CITY OF OTTAWA P&P DRAWINGS PP-1, PP-5, & PP8

## LEGEND

| | | |
|---|---|---|
| ■ | DENOTES | FOUND MONUMENTS |
| □ | " | SET MONUMENTS |
| IB | " | IRON BAR |
| PB | " | PLASTIC BAR |
| SIB | " | STANDARD IRON BAR |
| SSIB | " | SHORT STANDARD IRON BAR |
| CC | " | CUT CROSS |
| CP | " | CONCRETE PIN |
| WIT | " | WITNESS |
| PIN | " | PROPERTY IDENTIFICATION NUMBER |
| MEAS, M | " | MEASURED |
| INST | " | INSTRUMENT |
| S | " | SET |
| OU | " | ORIGIN UNKNOWN |
| SG | " | STANTEC GEOMATICS LTD. |
| P1 | " | REGISTERED PLAN 4M-1628 |
| P2 | " | REGISTERED PLAN 4M-1606 |
| P3 | " | SRPR BY FMW DATED JULY 28, 2020 |
| P4 | " | SRPR BY AOV DATED JANUARY 20, 2020 |
| P5 | " | SRPR BY AOV DATED OCTOBER 24, 2019 |
| CB | " | CATCH BASIN |
| SICB | " | SIDE INLET CB |
| HYD | " | FIRE HYDRANT |
| LS | " | LIGHT STANDARD |
| MHSAN | " | MAINTENANCE HOLE SANITARY |
| MHSTM | " | MAINTENANCE HOLE STORM |
| SIGN | " | SIGN |
| VB | " | VALVE BOX |
| VC | " | VALVE CHAMBER |
| WV | " | WATER VALVE |
| EP | " | EDGE OF PAVEMENT |
| WW | " | WINDOW WELL |

WTM WTM WTM — WATERMAIN

STM STM STM — STORM SEWER

SAN SAN SAN — SANITARY SEWER

THE WIDTH OF THE STREET WERE MEASURED BETWEEN FRONT OF THE CURB.

## 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 THE 21st DAY OF AUGUST, 2024.

Oct. 8, 2024
DATE

FRANCIS LAU
ONTARIO LAND SURVEYOR

THIS PLAN OF SURVEY RELATES TO AOLS PLAN SUBMISSION FORM NUMBER V-75648.

Stantec Geomatics Ltd.
CANADA LANDS SURVEYORS
ONTARIO LAND SURVEYORS
1331 CLYDE AVENUE, SUITE 300
OTTAWA, ONTARIO, K2C 3G4
TEL 613.722.4420
stantec.com

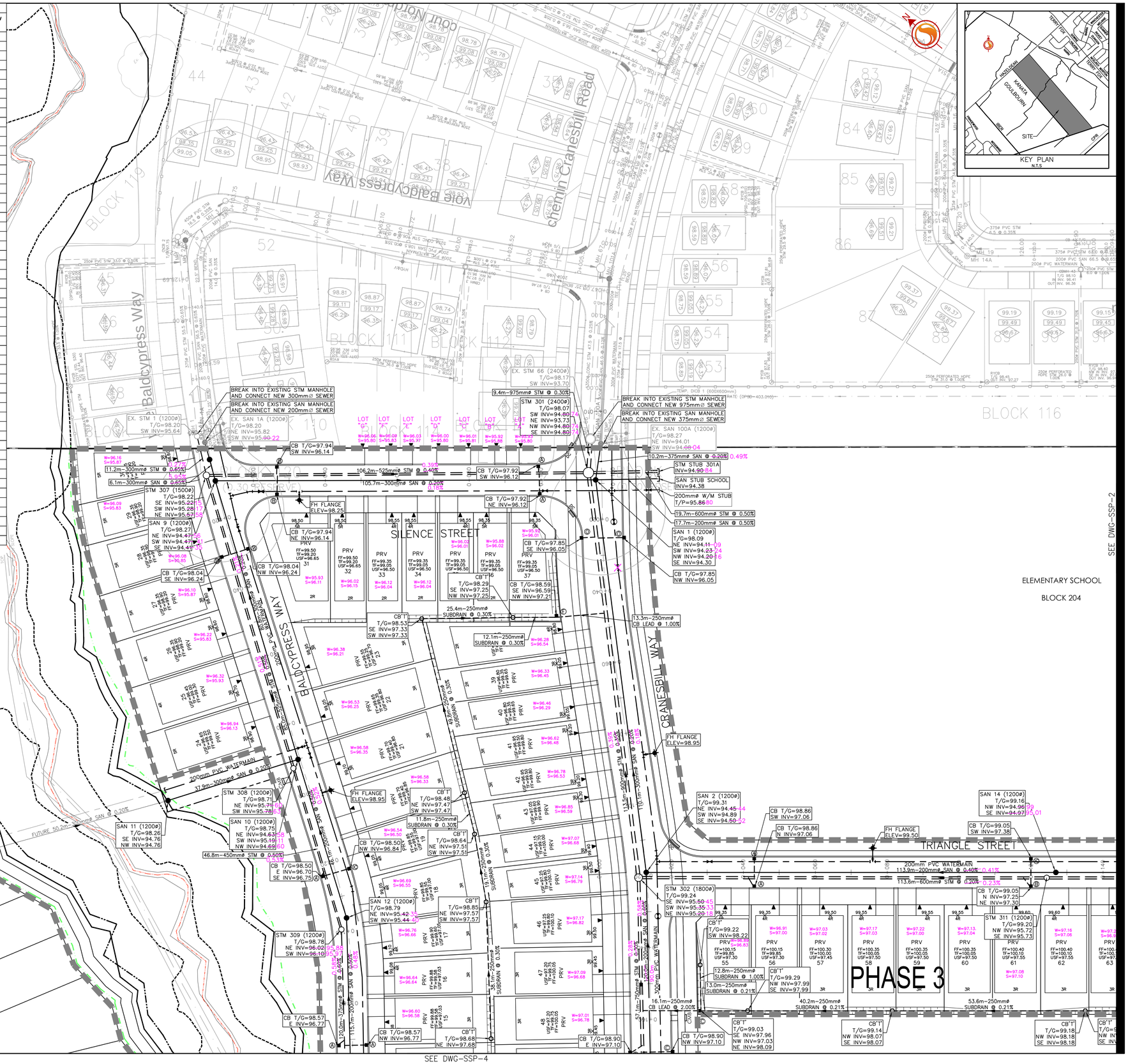
DRAWN: ME | CHECKED: CK | PM: FL | FIELD: CA | PROJECT No.: 161614812-110

8 October 2024 3:23 PM

W:\active\161614812\topographic\drawing\161614812-111_pl.dwg

## Schedule of Inlet Control Devices

| Area ID | Type | Invert | 100yr Head (m) | 100yr Flow (L/s) |
|---|---|---|---|---|
| C101A | 4 x 200mm CB Lead | 97.46 | 1.08 | 360 |
| C102A | 2 x Tempest 3.25", 2 x 5.5" | 97.72 | 2.01 | 146 |
| C103A | 2 x 250mm CB Lead | 97.86 | 1.90 | 378 |
| C103B | 2 x 250mm CB Lead | 98.33 | 2.15 | 69 |
| C105A | 2 x 200mm CB Lead | 98.50 | 1.69 | 382 |
| C302A | 2 x Tempest 7.5" | 96.05 | 1.95 | 198 |
| C303A | 2 x Tempest Type C | 97.10 | 1.88 | 92 |
| C304A | 2 x Tempest Type C | 97.53 | 1.92 | 93 |
| C305A | 1 x Tempest Type A | 98.64 | 1.80 | 24 |
| L102A | 1 x Tempest Type D | 98.14 | 1.67 | 63 |
| L102B | 1 x Tempest Type B | 98.20 | 1.66 | 33 |
| L103A | 1 x Tempest Type F | 98.53 | 1.71 | 85 |
| L103B | 1 x Tempest Type B | 98.70 | 1.66 | 34 |
| L105A | 1 x Tempest Type B | 99.13 | 1.66 | 33 |
| L107A | 2 x Tempest Type A | 97.76 | 2.07 | 52 |
| L108A | 2 x Tempest Type B | 97.90 | 2.09 | 74 |
| L109A | 2 x Tempest Type A | 98.26 | 1.98 | 51 |
| L109E | 2 x Tempest Type A | 98.27 | 1.97 | 51 |
| L109F | 1 x Tempest Type F | 97.88 | 1.62 | 83 |
| L110S | 2 x Tempest Type D | 97.55 | 1.90 | 134 |
| L111N | 2 x Tempest Type A | 97.75 | 1.98 | 51 |
| L111S | 2 x Tempest Type A | 97.65 | 2.02 | 51 |
| L112A | 2 x Tempest Type A | 97.73 | 1.98 | 51 |
| L113A | 2 x Tempest Type B | 97.65 | 1.93 | 71 |
| L113B | 1 x Tempest Type A | 97.87 | 1.89 | 25 |
| L113C | 1 x Tempest Type A | 97.79 | 1.97 | 25 |
| L114A | 2 x Tempest Type B | 98.51 | 2.04 | 73 |
| L114B | 1 x Tempest Type A | 98.47 | 1.93 | 25 |
| L114C | 1 x Tempest Type F | 98.55 | 1.72 | 85 |
| L115A | 2 x Tempest Type B | 98.92 | 1.93 | 71 |
| L116A | 2 x Tempest Type C | 98.18 | 2.10 | 97 |
| L116B | 1 x Tempest Type F | 98.87 | 1.72 | 85 |
| L117A | 1 x B, 1 x Tempest C | 98.89 | 1.96 | 83 |
| L118A | 2 x Tempest Type B | 98.24 | 1.96 | 71 |
| L118B | 1 x Tempest Type D | 98.82 | 1.72 | 64 |
| L119A | 2 x Tempest Type B | 99.00 | 1.97 | 72 |
| L120A | 2 x Tempest Type A | 98.65 | 1.85 | 49 |
| L122A | 2 x Tempest Type B | 98.07 | 1.88 | 70 |
| L201A | 2 x Tempest Type C | 97.36 | 0.19 | 28 |
| L202A | 1 x B, 1 x Tempest C | 97.80 | 2.04 | 84 |
| L202B | 1 x Tempest Type B | 98.48 | 1.66 | 33 |
| L302B | 1 x Tempest Type F | 96.59 | 2.23 | 97 |
| L303A | 1 x Tempest Type C | 97.03 | 2.30 | 50 |
| L307A | 2 x Tempest Type B | 96.14 | 2.00 | 72 |
| L307B | 2 x Tempest Type A | 96.12 | 1.89 | 49 |
| L308A | 2 x Tempest Type B | 96.24 | 1.92 | 71 |
| L309A | 1 x Tempest Type A | 96.70 | 1.99 | 25 |
| L310A | 2 x Tempest Type A | 96.77 | 2.00 | 47 |
| L310B | 2 x Tempest Type B | 97.51 | 1.99 | 72 |
| L311A | 2 x Tempest Type A | 97.06 | 1.94 | 50 |
| L311B | 1 x Tempest Type B | 97.25 | 2.05 | 37 |
| L312A | 2 x Tempest Type A | 97.25 | 2.12 | 52 |
| L313A | 2 x Tempest Type D | 96.96 | 1.86 | 132 |
| L315A | 2 x Tempest Type A | 98.74 | 1.95 | 49 |





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Legend

- PROPOSED WATERMAIN
- PROPOSED VALVE AND VALVE BOX
- PROPOSED VALVE CHAMBER
- PROPOSED REDUCER
- PROPOSED FIRE HYDRANT
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED CATCHBASIN MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED SUBDRAIN CATCHBASIN
- EXISTING WATERMAIN
- EXISTING VALVE AND VALVE BOX
- EXISTING VALVE CHAMBER
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- (A) (B) (C) (D) (E) (F) IPEX ICD TYPE AS NOTED OR EQUIVALENT
- (H) HYDROVEX ICD OR EQUIVALENT (SEE DWG SD-1)
- (I) CIRCULAR ORIFICE (SEE DWG SD-1)
- (K) CATCHBASINS TO BE INTERCONNECTED
- PROPOSED DEPRESSED CURB LOCATIONS
- 150 BARRIER_1_MOUNTABLE PROPOSED MOUNTABLE/BARRIER CURB LOCATION
- SERVICE LATERAL LOCATION (SANITARY, STORM AND WATER). SEE DRAWING DS-1 FOR TYPICAL SERVICING LATERAL LOCATIONS.
- SWALE
- TACTILE WALKING SURFACE INDICATOR
- TEMPORARY ASPHALT
- PHASING LINES

NOTES:

1. SINGLE LOTS 1-4 ARE ON HOLD UNTIL THE EXISTING DRAINAGE CHANNEL TO THE WEST IS FILLED IN AS PART OF FUTURE WORKS.
2. SINGLE LOTS 68, 69, 101-104, 138, 138, AND TOWNHOUSE LOTS 233-238, 239-244 ARE ON HOLD UNTIL THE TEMPORARY ACCESS ROAD CAN BE REMOVED.
3. TOWNHOUSE LOTS 283-238, AND 239-244 ARE ON HOLD UNTIL THE KIZZELL LANDS ARE DEVELOPED. TO BE SUBMITTED UNDER SITE PLAN SUBMISSION.

| | Revision | By | Appd. | YY.MM.DD |
|---|---|---|---|---|
| 15 | AS-RECORDED | DJC | GR | 19.05.31 |
| 14 | REVISED PER PART LOT CONTROL LOTS 51-54 | MJS | SG | 18.12.07 |
| 13 | ISSUED FOR COORDINATION | SG | SG | 18.10.09 |
| 12 | ISSUED FOR CONSTRUCTION | SG | SG | 18.09.13 |
| 11 | REVISED PER CITY COMMENTS | WAJ | SG | 18.02.14 |
| 10 | REVISED DRAFT PLAN | WAJ | SG | 17.12.18 |
| 9 | ISSUED FOR GRADING REVIEW | MJS | SG | 17.11.22 |
| 8 | REVISED SERVICING ABBOTT STREET | MJS | SG | 17.11.20 |
| 7 | ISSUED FOR EARLY SERVICING | MJS | SG | 17.10.31 |
| 6 | REVISED PER CITY COMMENTS | DCT | SG | 17.10.04 |
| 5 | REVISED MANHOLE SIZING | MJS | GR | 17.09.14 |
| 4 | ISSUED FOR MOE APPROVAL | MJS | SG | 17.09.11 |
| 3 | ISSUED FOR TENDER | MJS | SG | 17.09.06 |

| File Name: ACAD-160401217-SSP-MODEL | MS | SG | DT | 2016-12-15 |
|---|---|---|---|---|
| | Dwn. | Chkd. | Dsgn. | YY.MM.DD |

Permit-Seal

AS RECORDED

RECORD DRAWING

*DATE May 31, 2019*

Client/Project

2118356 ONTARIO INC.

HAZELDEAN CRAIG SUBDIVISION

OTTAWA, ON, CANADA

Title

SITE SERVICING PLAN

| Project No. | Scale | |
|---|---|---|
| 160401217 | 1:500 | 0 5 15 25m |
| Drawing No. | Sheet | Revision |
| SSP-1 | 2 of 49 | 15 |

D07-16-13-0036

DWG# 17514

## Schedule of Inlet Control Devices

| Area ID | Type | Invert | 100yr Head (m) | 100yr Flow (L/s) |
|---|---|---|---|---|
| C101A | 4 x 200mm CB Lead | 97.46 | 1.08 | 360 |
| C102A | 2 x Tempest 3.25", 2 x 5.5" | 97.72 | 2.01 | 146 |
| C103A | 2 x 250mm CB Lead | 97.86 | 1.90 | 378 |
| C103B | 2 x 250mm CB Lead | 98.33 | 2.15 | 69 |
| C105A | 2 x 200mm CB Lead | 98.50 | 1.69 | 382 |
| C302A | 2 x Tempest 7.5" | 96.05 | 1.95 | 198 |
| C303A | 2 x Tempest Type C | 97.10 | 1.88 | 92 |
| C304A | 2 x Tempest Type C | 97.53 | 1.92 | 93 |
| C305A | 1 x Tempest Type A | 98.64 | 1.80 | 24 |
| L102A | 1 x Tempest Type D | 98.14 | 1.67 | 63 |
| L102B | 1 x Tempest Type B | 98.20 | 1.66 | 33 |
| L103A | 1 x Tempest Type F | 98.53 | 1.71 | 85 |
| L103B | 1 x Tempest Type B | 98.70 | 1.66 | 34 |
| L105A | 1 x Tempest Type B | 99.13 | 1.66 | 33 |
| L107A | 2 x Tempest Type A | 97.76 | 2.07 | 52 |
| L108A | 2 x Tempest Type B | 97.90 | 2.09 | 74 |
| L109A | 2 x Tempest Type A | 98.26 | 1.98 | 51 |
| L109E | 2 x Tempest Type A | 98.27 | 1.97 | 51 |
| L109F | 1 x Tempest Type F | 97.88 | 1.62 | 83 |
| L110S | 2 x Tempest Type D | 97.55 | 1.90 | 134 |
| L111N | 2 x Tempest Type A | 97.75 | 1.98 | 51 |
| L111S | 2 x Tempest Type A | 97.65 | 2.02 | 51 |
| L112A | 2 x Tempest Type A | 97.73 | 1.98 | 51 |
| L113A | 2 x Tempest Type B | 97.65 | 1.93 | 71 |
| L113B | 1 x Tempest Type A | 97.87 | 1.89 | 25 |
| L113C | 1 x Tempest Type A | 97.79 | 1.97 | 25 |
| L114A | 2 x Tempest Type B | 98.51 | 2.04 | 73 |
| L114B | 1 x Tempest Type A | 98.47 | 1.93 | 25 |
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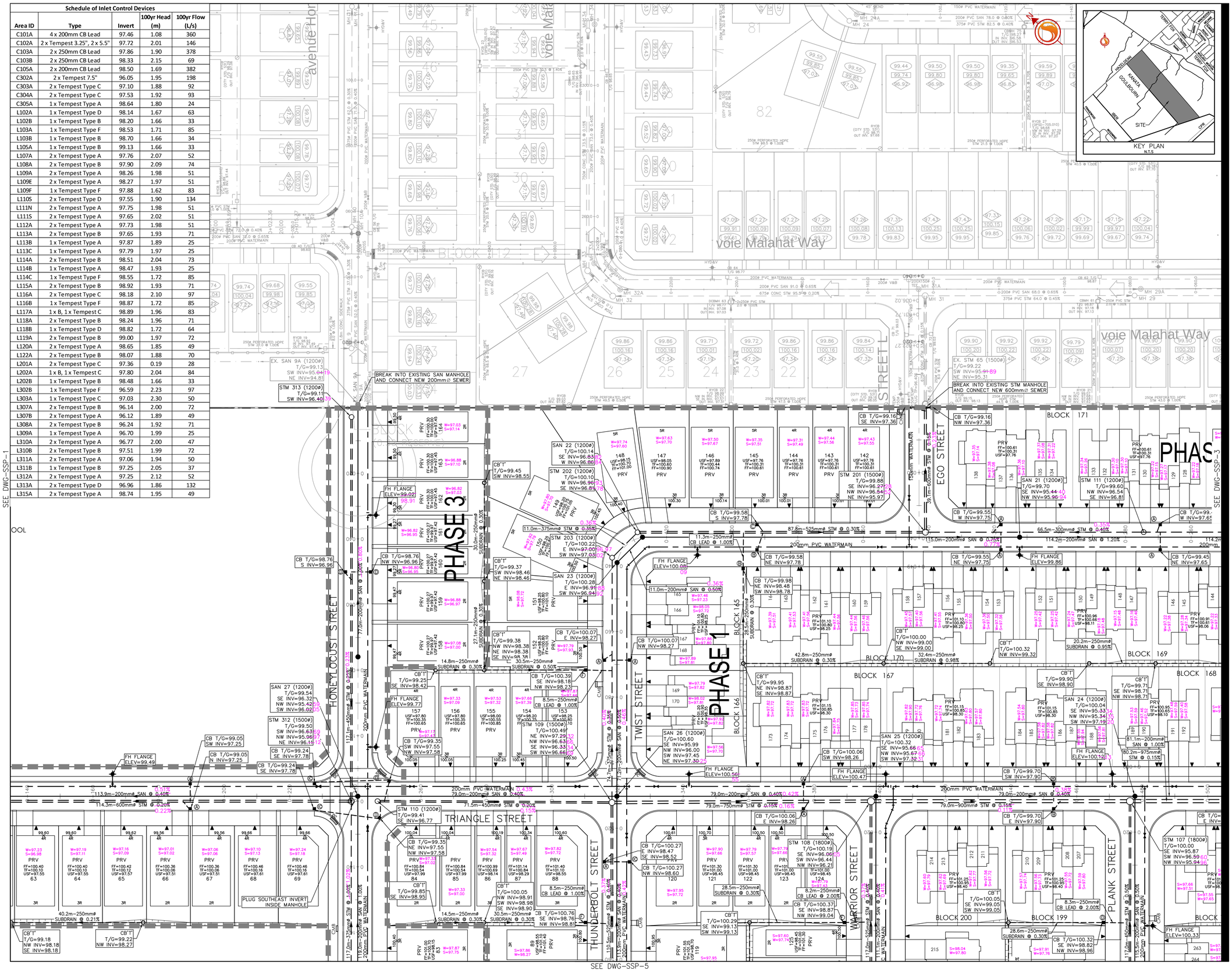



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| 6 | REVISED PER CITY COMMENTS | DCT | SG | 17.10.04 |
| 5 | REVISED MANHOLE SIZING | MJS | GR | 17.09.14 |
| 4 | ISSUED FOR MOE APPROVAL | MJS | SG | 17.09.11 |
| 3 | ISSUED FOR TENDER | MJS | SG | 17.09.06 |
| Revision | | By | Appd. | YY.MM.DD |

| File Name: ACAD-160401217-SSP-MODEL | MS | SG | DT | 2016-12-15 |
|---|---|---|---|---|
| | Dwn. | Chkd. | Dsgn. | YY.MM.DD |

Permit-Seal

AS RECORDED

RECORD DRAWING

*DATE May 31, 2019*

Client/Project

2118356 ONTARIO INC.

HAZELDEAN CRAIG SUBDIVISION

OTTAWA, ON, CANADA

Title

SITE SERVICING PLAN

| Project No. | Scale | Revision |
|---|---|---|
| 160401217 | 1:500 (0, 5, 15, 25m) | 15 |
| Drawing No. | Sheet | |
| SSP-2 | 3 of 49 | |

D07-16-13-0036

DWG# 17514

Appendix B

Site Plan (prepared by PRTY)

Servicing Plan (DWG. 24093-S1)

Grading Plan (DWG. 24093-GR1)

Erosion and Sediment Control Plan (DWG. 24093-ESC1)

Notes & Details (DWG. 24093-N1-N2)

Existing Conditions and Removals Plan (DWG. 24093-R1)

## ZONING CONFIRMATION REPORT

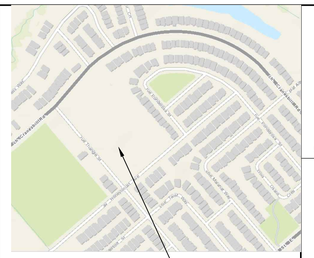
| | | | |
|---|---|---|---|
| **Municipality** | City of Ottawa | | |
| | | | |
| **Legal Description** | | | |
| Block 116 Registered Plan 4M-1628 and Block 204 Registered Plan | | City of Ottawa | |
| **Survey Information** | | | |
| Survey Information Prepared By: | Stantec Geomatics Ltd, dated 3 Sepember 2024 | | |
| | | | |
| **Common Address** | | | |
| 4140 Kelly Farm Dr | Ottawa, | Ontario | |
| **Project Information** | | | |
| Lot Size | 27,149.52 sm | | |
| Ground Floor Area | 4,690sm | | |
| | | | |
| **Zoning** | I1A | Institutional 1A | |
| | Bylaw Provisions | Proposed | Compliance |
| Minimum Lot Width | 15m | 126.45 | Complies |
| Minimum Lot Area | 400 sm | 7,149.52sm | Complies |
| Minimum Front Yard Setback | 7.5m | 93.6m | Complies |
| Minimum Rear Yard Setback | 7.5m | 8.9 | N/A |
| Minimum Interior Side Yard Setback | 7.5m | 62.7m | Complies |
| Minimum Corner Side Yard Setback | 4.5m | 4.52m | Complies |
| | | | |
| Maximum Building Height | 15.0m | 7.65m | Complies |

| | | | |
|---|---|---|---|
| Required Parking (Schedule 1A - Area C) Rate = 1.5 per classroom (includes 16 classrooms + 6 kindergartens) Childcare 2/100sm | 1.5 x 22 classrooms = 33 Spaces + 275sm Childcare/100smx2 = 6 Spaces 39 Total spaces required | 89 Spaces Proposed | Complies |
| Future Parking (18 future portables) | 1.5 x 18 portables= 27 additional Spaces total (27 + 39) = 66 Spaces | 89 Spaces Proposed | Complies |
| HC Parking Requirements | Based on 94 parking spaces provided | 4 HC Spaces Required 2 @ type A 2 @ type B | Complies |
| Required Bicycle Parking (1/100sm Gross Floor Area | 1/100sm X4,647sm =47 spaces required | 48 spaces (6 Bike Racks @ 8 spaces) | Complies |
| Required Loading Zones 1 per 1000-9999 sm of gross floor area | 1 Loading Zone = 3.5m(W) X 7m (L) x 4.2m (H) As per zoning Section 113 (4) & (5) | 1 | Complies |
| Minimium Width of Landscaped Area (Landscape Buffer) | Abutting A Street = 3.0m | 3.0m | Complies |
| | Abutting residential, institutional = 3.0m | 3.0m | |
| | Other Cases - None | N/A | |

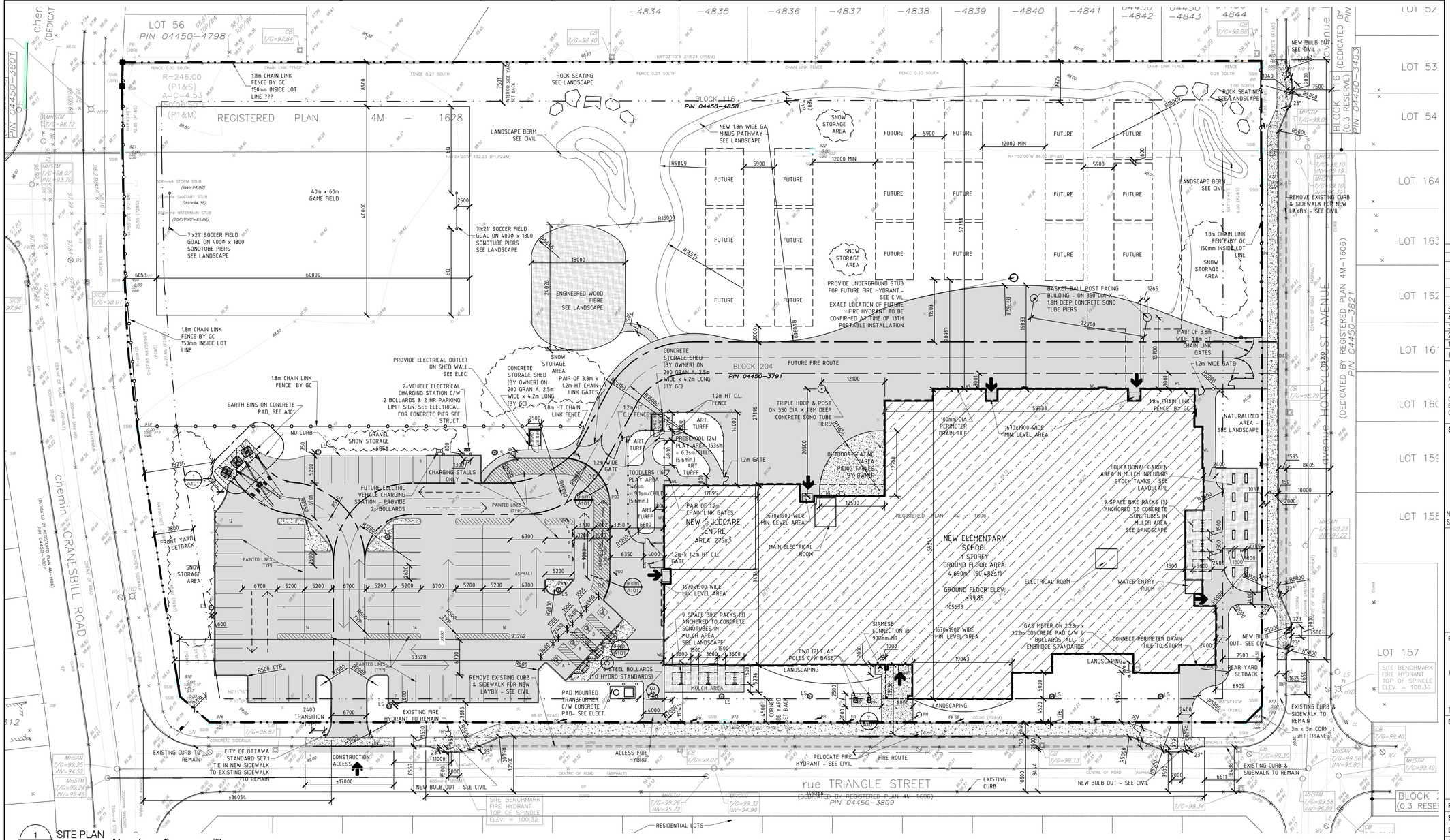
| | | | |
|---|---|---|---|
| Landscaped Provisions for Parking Lots | Landscape buffer width: 3m abbuting a street, 1.5m not abbuting a street | 3.6m | Complies |
| | Refuse collection areas must be minimum 9.0m from property line abutting a street | 13m | |
| | Refuse collection areas must be minimum 3.0m from other property lines | N/A | |
| | Refuse collection area must be screened with minimum 2.0m height screen | Earth bins provided, screened by soft landscaping | |
| | Minimum landscaped area of parking lot = 15% | Parking Lot Area =1782sm Landacape around Parking =478sm = >15% | |

### GENERAL NOTES:

1. SEE SITE SERVICES, ELECTRICAL & MECHANICAL DRAWINGS FOR UNDERGROUND UTILITIES LINES AND FOR NEW GRADING. EXCAVATE BACKFILL & PROVIDE CONCRETE TO REQUIREMENTS OF MECHANICAL, ELECTRICAL & SITE SERVICES DRAWINGS AND SPECIFICATIONS AND TO REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
2. PROVIDE 0.5M RADIUS FOR CONCRETE CURBS UNLESS OTHERWISE NOTED.
3. PERFORM LANDSCAPE & SITE WORKS INCLUDING WALKWAYS TIE INS WITHIN THE ROAD ALLOWANCE & SITE SERVICES AS INDICATED.
4. CONTRACTOR SHALL CONSTRUCT BUS LAY BY & CAR LAY BY, INCLUDING CURBS, WALKS, ASPHALT, PAVING, GRAN. BASES, TOPSOIL & SOD.
5. CONTRACTOR TO PROVIDE TEMPORARY CONSTRUCTION FENCING ALONG PROPERTY LINE TO PROTECT THE PUBLIC DURING CONSTRUCTION.
6. CONTRACTOR TO REPORT ANY ERRORS, OMISSIONS OR DISCREPANCIES ON SITE PLAN WITH ACTUAL SITE CONDITIONS TO THE ARCHITECT BEFORE PROCEEDING WITH CONSTRUCTION.
7. CONTRACTOR IS TO NOTIFY ALL UTILITY COMPANIES AND AUTHORITIES PRIOR TO ANY EXCAVATION AND ASCERTAIN LOCATIONS OF UNDERGROUND SERVICES.
8. CONTRACTOR IS TO COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.
9. CONTRACTOR TO MAINTAIN POSITIVE SURFACE RUN-OFF THROUGHOUT ENTIRE CONSTRUCTION PERIOD.




CONTEXT MAP




1 / A100 SITE PLAN
SCALE - 1:400

0 1 5 10 20M

OTTAWA CATHOLIC SCHOOL BOARD

570 WEST HUNT CLUB ROAD, NEPEAN, ON, K2G 3K4 (613)224-4455

### SITE LEGEND

| | |
|---|---|
| FH | FIRE HYDRANT - SEE MECH |
| DC | DEPRESSED CURB - SEE CIVIL |
| | CONCRETE CURB - SEE CIVIL |
| | CONCRETE SIDEWALK - SEE CIVIL |
| | ASPHALT - SEE CIVIL |
| | TACTILE WALKING SURFACE INDICATOR (TWSI) |
| | ENGINEERED WOOD FIBRE - SEE LANDSCAPE |
| CB | CATCH BASIN, NEW - SEE CIVIL |
| MH | MAN HOLE, NEW - SEE CIVIL |
| OC | OC TRANSPO BUS STOP SIGN |
| HC | HANDICAP PARKING SIGN |
| FR | FIRE ROUTE SIGN RX512 @ 25m SPACING |
| OW | ONE WAY TRAFFIC SIGN |
| DN | DO NOT ENTER SIGN |
| NP | NO PARKING SIGN (RB-52) @ 25M SPACING |
| NP(2) | NO PARKING SIGN (RB-55R) |
| NP(3) | NO PARKING SIGN (RB-51) |
| SB | SCHOOL BUS STOPPING ZONE SIGN (RB89R) |
| PDO | PARENT DROP-OFF ZONE/NO IDLING SIGN - |
| PR | PARKING RESTRICTED 30 MIN. MON-FRI 7:00AM-4PM SIGN (RB-53R/RB-53L) @25M SPACING |
| R | RESERVED FOR DAYCARE SIGN |
| BH | BORE HOLE |
| TP | TEST PIT |
| LS | LIGHT STANDARD - SEE ELECTRICAL |
| W.L. | WALL MOUNT LIGHT FIXTURE - SEE ELEC. |
| FP | FLAG POLE |
| 86x23 | EXISTING GRADE |
| | 1.8m HT. GALVANIZED CHAIN LINK FENCE UNLESS OTHERWISE NOTED |
| | 1.2m HT. GALVANIZED CHAIN LINK FENCE |
| G | GAS METER |
| | ENTRANCE ARROW |
| | PAINTED LINES / NO PARKING |

| REV | REVISION DESCRIPTION | DATE |
|---|---|---|
| 5 | ISSUED FOR SITE PLAN CONTROL | 22/SEP/2025 |
| 4 | ISSUED FOR PHASE 3 SPC | 7/APR/2025 |
| 3 | ISSUED FOR 75% REVIEW | 12/MAR/2025 |
| 2 | ISSUED FOR SPC PRE-CONSULTATION | 22/OCT/2024 |
| 1 | ISSUED FOR CLIENT REVIEW | 25/SEP/2024 |

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**SEAL**

Not for construction unless SEALED and SIGNED

**PROJECT NORTH**

TRUE NORTH

PYE & RICHARDS - TEMPRANO & YOUNG ARCHITECTS INC.

824 Meath St. Suite 200
Ottawa, ON K1Z 6E8

613. 724. 7700
info@prty.ca

**PROJECT**

OCSB FERNBANK NORTH ELEMENTARY SCHOOL

Triangle Street — OTTAWA, ONTARIO

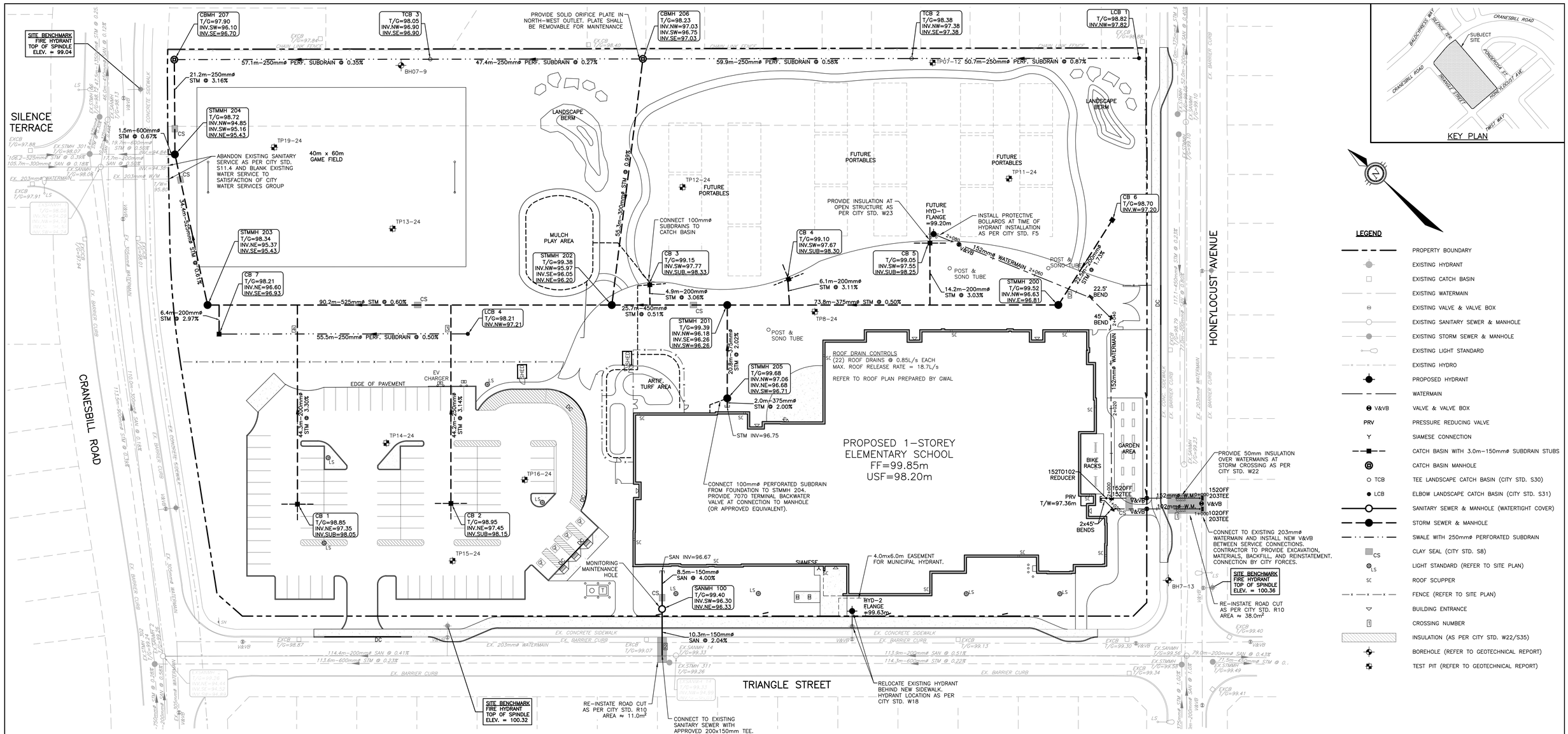
**DRAWING**

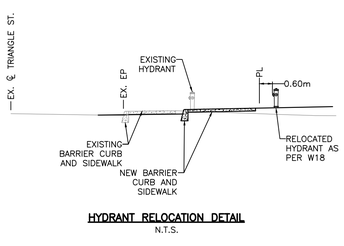
SITE PLAN
ZONING MATRIX

| | | | |
|---|---|---|---|
| **PROJECT NO.** | 24031 | DRAWING NO. | |
| **SCALE -** | AS NOTED | | A100 |
| **DRAWN -** | I.R. | | |
| **CHECKED -** | I.R. | | |
| **PLOT DATE -** | 22/09/2025 | **PLOTTED BY:** | |

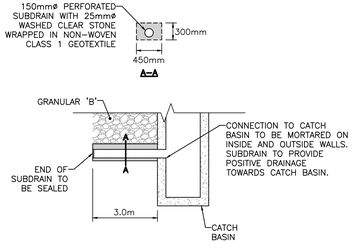
Dxxxxxx

#xxxxx

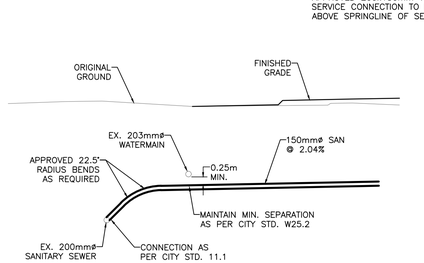



HYDRANT RELOCATION DETAIL
N.T.S.




CATCH BASIN SUBDRAIN DETAIL
N.T.S.




SANITARY SERVICE CONNECTION DETAIL
N.T.S.

| INLET CONTROL DEVICE (ICD) TABLE | | | | | |
|---|---|---|---|---|---|
| STRUCTURE | 2-YR HEAD (m) | 2-YR OUTFLOW (L/s) | ORIFICE DIAMETER (mm) | ORIFICE TYPE | |
| CB 1 | 1.40 | 30.0 | 109 | CIRCULAR, SLIDE | |
| CB 2 | 1.37 | 60.0 | 155 | CIRCULAR, SLIDE | |
| CB 3 | 1.28 | 20.0 | 91 | CIRCULAR, SLIDE | |
| CB 4 | 1.33 | 40.0 | 128 | CIRCULAR, SLIDE | |
| CB 5 | 1.40 | 30.0 | 109 | CIRCULAR, SLIDE | |
| CB 6 | 1.40 | 11.7 | n/a | TEMPEST LMF 105 | |
| CB 7 | 1.40 | 20.0 | 89 | CIRCULAR, SLIDE | |
| CBMH206 | 1.33 | 87.0 | 189 | CIRCULAR, SLIDE | |
| CBMH207 | 1.67 | 10.4 | n/a | TEMPEST LMF 95 | |

| CROSSING TABLE | | | |
|---|---|---|---|
| CROSSING No. | SERVICE | INVERT/OBVERT | SEPARATION (m) |
| 1 | WATER (TWIN) | 96.99 | 0.25 |
| | *EX STORM* | 96.74 | |
| 2 | *EX WATER* | 96.63 | 0.30 |
| | SANITARY | 96.33 | |
| 3 | SUBDRAIN | 97.17 | 0.65 |
| | STORM | 96.52 | |
| 4 | SUBDRAIN | 96.99 | 0.68 |
| | STORM | 96.31 | |
| 5 | STORM | 96.88 | 0.50 |
| | WATER | 96.38 | |

| 152mmø WATERMAIN GRADE TABLE - HYDRANT LEAD | | | | |
|---|---|---|---|---|
| STATION | FINISHED GRADE (m) | TOP OF WATER (m) | COVER DEPTH (m) | COMMENTS |
| 2+000 | 99.70 | 97.30 | 2.40 | 152mm OFF 203mm TEE |
| 2+010 | 99.49 | 97.09 | 2.40 | TOP OF WATERMAIN |
| 2+020 | 99.36 | 96.96 | 2.40 | TOP OF WATERMAIN |
| 2+030 | 99.35 | 96.95 | 2.40 | TOP OF WATERMAIN |
| 2+040.3 | 99.25 | 96.85 | 2.40 | 45° HORIZONTAL BEND |
| 2+046.6 | 99.24 | 96.84 | 2.40 | 22.5° HORIZONTAL BEND |
| 2+051.8 | 99.35 | 96.38 | 2.97 | STORM CROSSING |
| 2+060 | 99.42 | 97.02 | 2.40 | TOP OF WATERMAIN |
| 2+070 | 99.27 | 96.87 | 2.40 | TOP OF WATERMAIN |
| 2+078.2 | 99.13 | 96.73 | 2.40 | VALVE & VALVE BOX |
| 2+084.3 | 99.10 | 96.70 | 2.40 | HYDRANT |

| 152mmø WATERMAIN GRADE TABLE - BUILDING SERVICE 1 | | | | |
|---|---|---|---|---|
| STATION | FINISHED GRADE (m) | TOP OF WATER (m) | COVER DEPTH (m) | COMMENTS |
| 0+000 | 99.27 | 96.86 | 2.41 | 152mm OFF 203mm TEE |
| 0+004.7 | 99.37 | 97.14 | 2.23 | EXISTING STORM CROSSING |
| 0+012.2 | 99.47 | 97.07 | 2.40 | VALVE & VALVE BOX |
| 0+020.1 | 99.70 | 97.30 | 2.40 | 152mm OFF 152mm TEE |
| 0+021.6 | 99.74 | 97.34 | 2.40 | 152mm TO 102mm REDUCER |
| 0+022.6 | 99.76 | 97.36 | 2.40 | CAP |

| 102mmø WATERMAIN GRADE TABLE - BUILDING SERVICE 2 | | | | |
|---|---|---|---|---|
| STATION | FINISHED GRADE (m) | TOP OF WATER (m) | COVER DEPTH (m) | COMMENTS |
| 1+000 | 99.31 | 96.91 | 2.40 | 152mm OFF 203mm TEE |
| 1+004.7 | 99.41 | 97.14 | 2.27 | EXISTING STORM CROSSING |
| 1+012.2 | 99.56 | 97.16 | 2.40 | VALVE & VALVE BOX |
| 1+019.8 | 99.73 | 97.33 | 2.40 | 45° HORIZONTAL BEND |
| 1+021.5 | 99.75 | 97.35 | 2.40 | 45° HORIZONTAL BEND |
| 1+022.5 | 99.76 | 97.36 | 2.40 | CAP |

# NOT FOR CONSTRUCTION

NOTES

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| NO. | REVISION DESCRIPTION | DATE | BY |
|---|---|---|---|
| 2 | REVISED PER CITY COMMENTS | 23/09/25 | BLM |
| 1 | ISSUED FOR REVIEW | 03/04/25 | BLM |

SCALE
0 4m 8m 16m
HORIZONTAL 1:400

LICENSED PROFESSIONAL ENGINEER
B.L. MACKECHNIE
100199554
23 Sept. 25
PROVINCE OF ONTARIO

Robinson Land Development
350 Palladium Drive
Ottawa, ON K2V 1A8
(613) 592-6060 rcii.com

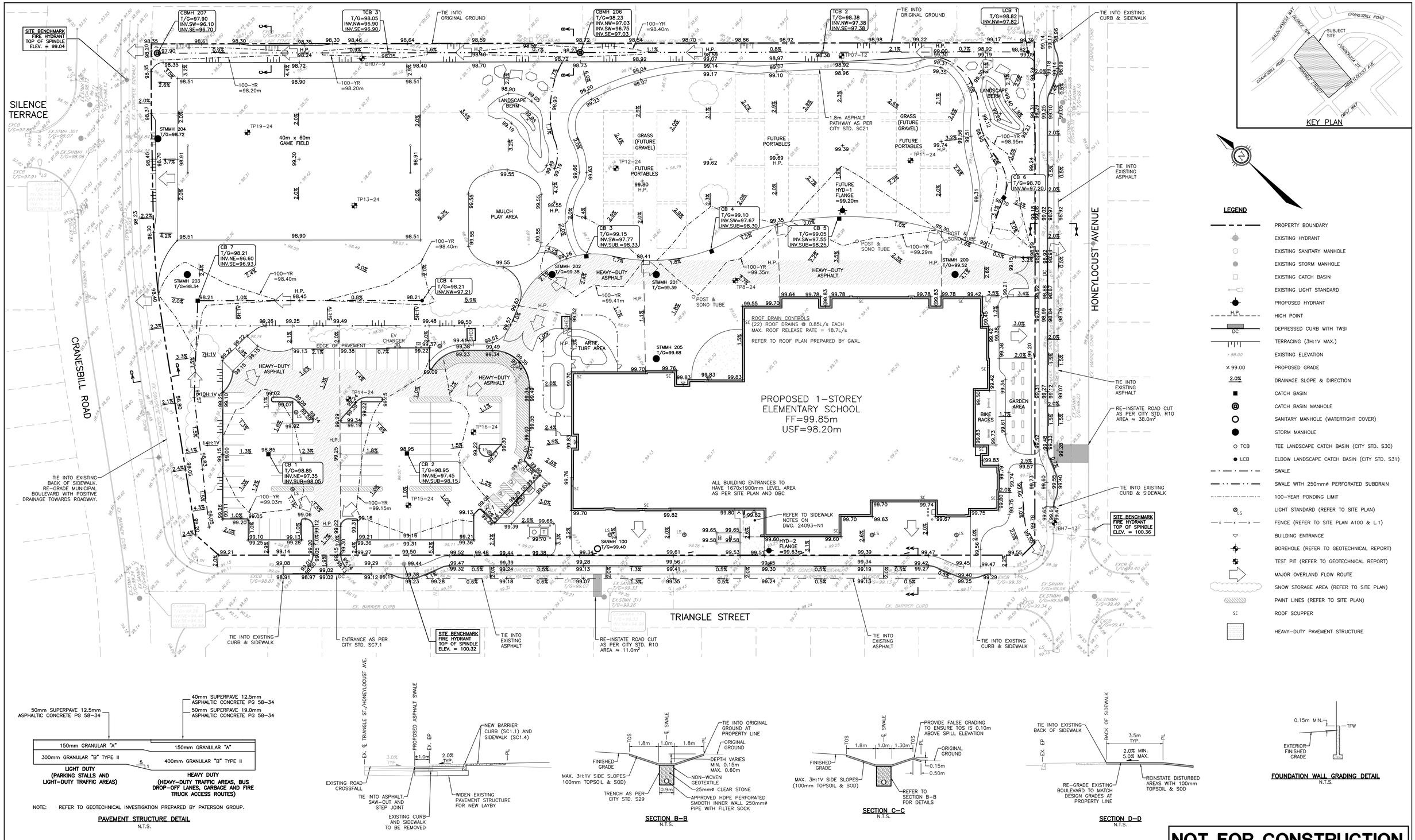
| | |
|---|---|
| DESIGN | BLM |
| CHECKED | BLM |
| DRAWN | BLM |
| CHECKED | BLM |
| APPROVED | BLM |

OTTAWA CATHOLIC SCHOOL BOARD

FERNBANK NORTH ELEMENTARY SCHOOL
620 TRIANGLE STREET, STITTSVILLE

SERVICING PLAN

| | |
|---|---|
| PROJECT No. | 24093 |
| SURVEY | STANTEC |
| DATED | SEPT. 2025 |
| DWG. No: | 24093-S1 |







## LEGEND

- PROPERTY BOUNDARY
- EXISTING HYDRANT
- EXISTING SANITARY MANHOLE
- EXISTING STORM MANHOLE
- EXISTING CATCH BASIN
- EXISTING LIGHT STANDARD
- PROPOSED HYDRANT
- H.P. — HIGH POINT
- DC — DEPRESSED CURB WITH TWSI
- TERRACING (3H:1V MAX.)
- × 98.00 — EXISTING ELEVATION
- × 99.00 — PROPOSED GRADE
- 2.0% — DRAINAGE SLOPE & DIRECTION
- CATCH BASIN
- CATCH BASIN MANHOLE
- SANITARY MANHOLE (WATERTIGHT COVER)
- STORM MANHOLE
- TCB — TEE LANDSCAPE CATCH BASIN (CITY STD. S30)
- LCB — ELBOW LANDSCAPE CATCH BASIN (CITY STD. S31)
- SWALE
- SWALE WITH 250mmø PERFORATED SUBDRAIN
- 100-YEAR PONDING LIMIT
- LS — LIGHT STANDARD (REFER TO SITE PLAN)
- FENCE (REFER TO SITE PLAN A100 & L.1)
- BUILDING ENTRANCE
- BOREHOLE (REFER TO GEOTECHNICAL REPORT)
- TEST PIT (REFER TO GEOTECHNICAL REPORT)
- MAJOR OVERLAND FLOW ROUTE
- SNOW STORAGE AREA (REFER TO SITE PLAN)
- PAINT LINES (REFER TO SITE PLAN)
- SC — ROOF SCUPPER
- HEAVY-DUTY PAVEMENT STRUCTURE




NOTE: REFER TO GEOTECHNICAL INVESTIGATION PREPARED BY PATERSON GROUP.

**PAVEMENT STRUCTURE DETAIL**
N.T.S.




**SECTION A–A**
N.T.S.




**SECTION B–B**
N.T.S.




**SECTION C–C**
N.T.S.




**SECTION D–D**
N.T.S.




**FOUNDATION WALL GRADING DETAIL**
N.T.S.

**NOT FOR CONSTRUCTION**

NOTES

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| DESIGN | BLM |
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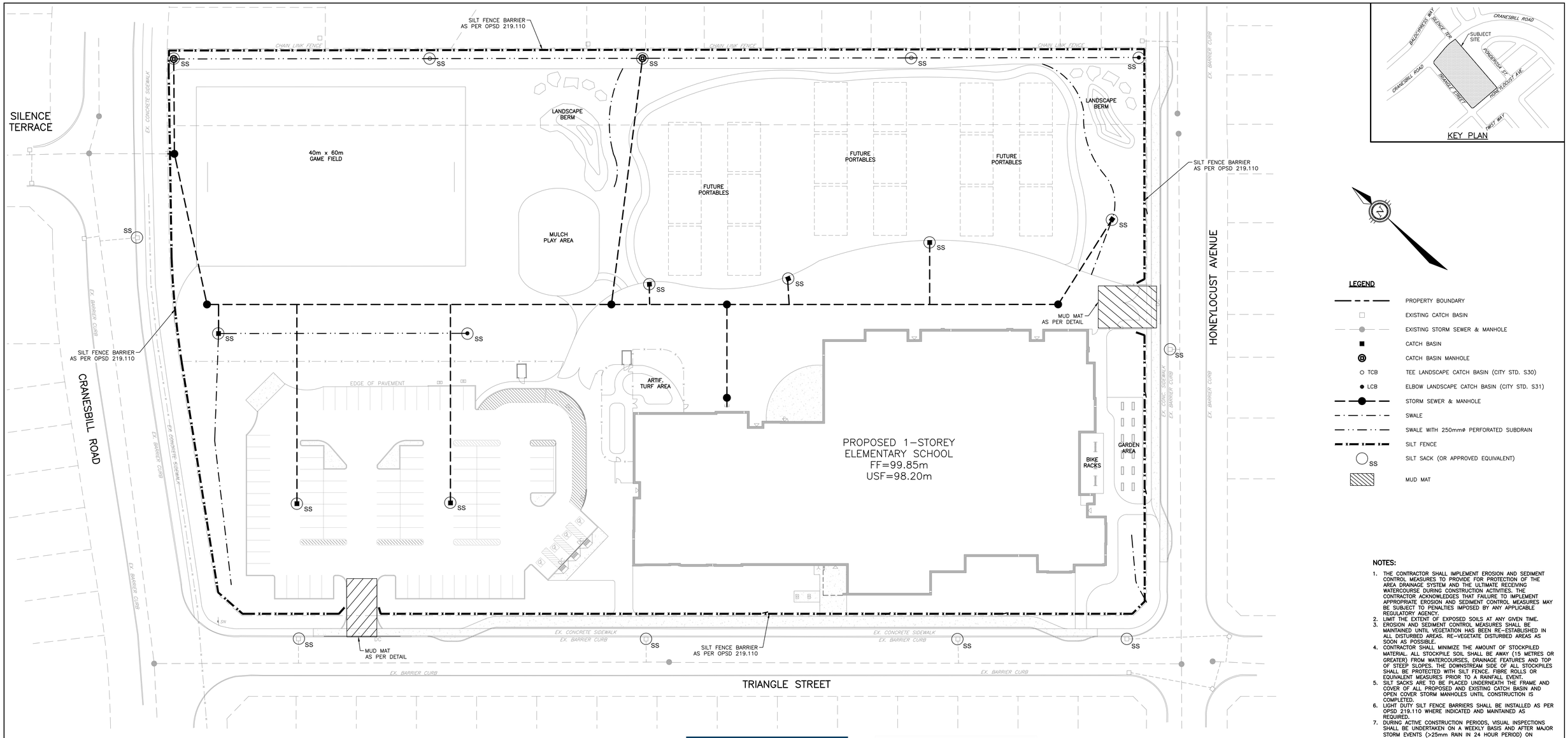
| APPROVED | BLM |

OTTAWA CATHOLIC SCHOOL BOARD

FERNBANK NORTH
ELEMENTARY SCHOOL
620 TRIANGLE STREET, STITTSVILLE

GRADING PLAN

| | |
|---|---|
| PROJECT No. | 24093 |
| SURVEY | STANTEC |
| DATED | SEPT. 2025 |
| DWG. No: | 24093-GR1 |







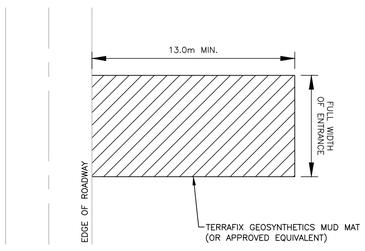


**LEGEND**

- PROPERTY BOUNDARY
- EXISTING CATCH BASIN
- EXISTING STORM SEWER & MANHOLE
- CATCH BASIN
- CATCH BASIN MANHOLE
- TCB — TEE LANDSCAPE CATCH BASIN (CITY STD. S30)
- LCB — ELBOW LANDSCAPE CATCH BASIN (CITY STD. S31)
- STORM SEWER & MANHOLE
- SWALE
- SWALE WITH 250mmø PERFORATED SUBDRAIN
- SILT FENCE
- SS — SILT SACK (OR APPROVED EQUIVALENT)
- MUD MAT

**NOTES:**

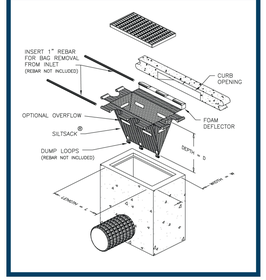
1. THE CONTRACTOR SHALL IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE ULTIMATE RECEIVING WATERCOURSE DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
2. LIMIT THE EXTENT OF EXPOSED SOILS AT ANY GIVEN TIME.
3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL VEGETATION HAS BEEN RE-ESTABLISHED IN ALL DISTURBED AREAS. RE-VEGETATE DISTURBED AREAS AS SOON AS POSSIBLE.
4. CONTRACTOR SHALL MINIMIZE THE AMOUNT OF STOCKPILED MATERIAL. ALL STOCKPILE SOIL SHALL BE AWAY (15 METRES OR GREATER) FROM WATERCOURSES, DRAINAGE FEATURES AND TOP OF STEEP SLOPES. THE DOWNSTREAM SIDE OF ALL STOCKPILES SHALL BE PROTECTED WITH SILT FENCE, FIBRE ROLLS OR EQUIVALENT MEASURES PRIOR TO A RAINFALL EVENT.
5. SILT SACKS ARE TO BE PLACED UNDERNEATH THE FRAME AND COVER OF ALL PROPOSED AND EXISTING CATCH BASIN AND OPEN COVER STORM MANHOLES UNTIL CONSTRUCTION IS COMPLETED.
6. LIGHT DUTY SILT FENCE BARRIERS SHALL BE INSTALLED AS PER OPSD 219.110 WHERE INDICATED AND MAINTAINED AS REQUIRED.
7. DURING ACTIVE CONSTRUCTION PERIODS, VISUAL INSPECTIONS SHALL BE UNDERTAKEN ON A WEEKLY BASIS AND AFTER MAJOR STORM EVENTS (>25mm RAIN IN 24 HOUR PERIOD) ON SEDIMENT CONTROL BARRIERS AND ANY DAMAGE REPAIRED IMMEDIATELY.
8. EROSION AND SEDIMENT CONTROL BARRIERS SHALL ALSO BE ASSESSED (AND REPAIRED AS REQUIRED) FOLLOWING SIGNIFICANT SNOWMELT EVENTS.
9. VISUAL INSPECTIONS SHALL ALSO BE UNDERTAKEN IN ANTICIPATION OF LARGE STORM EVENTS (OR A SERIES OF RAINFALL AND/OR SNOWMELT DAYS) THAT COULD POTENTIALLY YIELD SIGNIFICANT RUNOFF VOLUMES.
10. CARE SHALL BE TAKEN TO PREVENT DAMAGE TO EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION OPERATIONS.
11. IN SOME CASES, BARRIERS MAY BE REMOVED TEMPORARILY TO ACCOMMODATE THE CONSTRUCTION OPERATIONS. THE AFFECTED BARRIERS SHALL BE REINSTATED IMMEDIATELY AFTER CONSTRUCTION OPERATIONS ARE COMPLETED.
12. SEDIMENT CONTROL DEVICES SHALL BE CLEANED OF ACCUMULATED SEDIMENTATION AS REQUIRED AND REPLACED AS NECESSARY.
13. DURING THE COURSE OF CONSTRUCTION, IF THE ENGINEER BELIEVES THAT ADDITIONAL PREVENTION METHODS ARE REQUIRED TO CONTROL EROSION AND SEDIMENTATION, THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL MEASURES, AS REQUIRED, TO THE SATISFACTION OF THE ENGINEER.
14. CONSTRUCTION AND MAINTENANCE REQUIREMENTS FOR EROSION AND SEDIMENT CONTROLS ARE TO COMPLY WITH OPSS 805.
15. MUD MATS SHALL BE INSTALLED AT ALL CONSTRUCTION ENTRANCES.
16. INSPECTION AND MAINTENANCE OF TEMPORARY ESC MEASURES SHALL CONTINUE UNTIL THEY ARE NO LONGER REQUIRED.
17. THE CONTRACTOR SHALL ENSURE THAT RECORDS OF INSPECTION ARE TAKEN, INCLUDING INSPECTOR'S NAME, DATE OF INSPECTION, VISUAL OBSERVATIONS, AND ANY NECESSARY REMEDIAL MEASURES TAKEN TO MAINTAIN INTERIM ESC MEASURES.



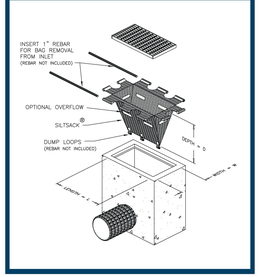

NOTES:
1. SEDIMENT SHALL BE CLEANED FROM ROADWAYS AS REQUIRED.

MUD MAT DETAIL
N.T.S.

**Typical Siltsack® Construction - Type A**




**Typical Siltsack® Construction - Type B**

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23 Sept. 25
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OTTAWA CATHOLIC SCHOOL BOARD

FERNBANK NORTH ELEMENTARY SCHOOL
620 TRIANGLE STREET, STITTSVILLE

EROSION AND SEDIMENT CONTROL PLAN

| | |
|---|---|
| PROJECT No. | 24093 |
| SURVEY | STANTEC |
| DATED | SEPT. 2025 |
| DWG. No: | 24093-ESC1 |

## GENERAL NOTES:

1. ALL WORKS AND MATERIALS SHALL CONFORM TO THE LATEST REVISIONS OF THE STANDARDS AND SPECIFICATIONS OF THE CITY OF OTTAWA AND ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS), AS AMENDED BY THE CITY OF OTTAWA.
2. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL EXISTING UTILITIES WITHIN THE SITE AND ADJACENT WORK AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY SERVICES OR UTILITIES DISTURBED DURING CONSTRUCTION, TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION.
3. ALL DIMENSIONS AND ELEVATIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER.
4. DESIGN ELEVATIONS GIVEN ARE TO BE ADHERED TO WITH NO CHANGES WITHOUT PRIOR WRITTEN APPROVAL BY ROBINSON LAND DEVELOPMENT.
5. ANY AREAS BEYOND THE LIMIT OF THE SITE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION AT THE CONTRACTOR'S EXPENSE.
6. RELOCATION OF EXISTING SERVICES AND/OR UTILITIES SHALL BE AS SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER AT THE EXPENSE OF THE CONTRACTOR.
7. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE "OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS". THE GENERAL CONTRACTOR SHALL BE DEEMED TO BE THE CONSTRUCTOR AS DEFINED IN THE ACT.
8. ALL CONSTRUCTION SIGNAGE MUST CONFORM TO THE M.T.O. MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (LATEST AMENDMENT).
9. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
10. THE SUPPORT OF ALL UTILITIES SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
11. THE CONTRACTOR WILL BE RESPONSIBLE FOR ADDITIONAL BEDDING OR ADDITIONAL STRENGTH PIPE IF THE MAXIMUM TRENCH WIDTH, AS SPECIFIED BY OPSD, IS EXCEEDED.
12. ALL NECESSARY CLEARING AND GRUBBING SHALL BE COMPLETED BY THE CONTRACTOR. REVIEW WITH THE CITY OF OTTAWA PRIOR TO AND TREE CUTTING.
13. REFER TO GEOTECHNICAL INVESTIGATION PREPARED BY PATERSON GROUP, DATED SEPTEMBER 9, 2024.
14. THE CONTRACTOR IS RESPONSIBLE FOR AND SHALL PROVIDE FOR DEWATERING, SUPPORT AND PROTECTION OF EXCAVATIONS AND TRENCHING AS WELL AS RELEASE OF ANY PUMPED GROUNDWATER IN A CONTROLLED AND APPROVED MANNER.
15. DO NOT CONSTRUCT USING DRAWINGS THAT ARE NOT MARKED "ISSUED FOR CONSTRUCTION".
16. CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT FOR CONSTRUCTION PURPOSES.
17. CLAY SEALS SHALL BE INSTALLED WITHIN SEWER TRENCHES IN ACCORDANCE WITH CITY STANDARD S8.
18. MOVEMENT OF MATERIAL ON AND/OR OFF SITE SHALL BE IN ACCORDANCE WITH ONTARIO EXCESS SOIL REGULATION O.REG. 406/19.
19. A POST-CONSTRUCTION TOPOGRAPHIC SURVEY SHALL BE COMPLETED BY AN ONTARIO LAND SURVEYOR. THE SURVEY SHALL IDENTIFY AS-BUILT ELEVATIONS OF ALL UNDERGROUND AND ABOVE GROUND INFRASTRUCTURE.
20. THE CONTRACTOR SHALL COMPLETE A CCTV INSPECTION OF ALL NEW SANITARY AND STORM SEWERS PRIOR TO PLACEMENT OF TOP LIFT ASPHALT. A COPY OF THE VIDEO INSPECTION SHALL BE PROVIDED TO THE ENGINEER FOR REVIEW.
21. THE CONTRACTOR SHALL COMPLETE CCTV INSPECTION OF EXISTING MUNICIPAL SEWERS IMMEDIATELY UPSTREAM AND DOWNSTREAM OF ANY PROPOSED CONNECTIONS, INCLUDING SEWER STUBS. THE CCTV INSPECTION IS REQUIRED PRE AND POST CONSTRUCTION.

## STORM SEWERS:

1. ALL REINFORCED CONCRETE STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH CSA A257.2 (LATEST AMENDMENT). ALL NON-REINFORCED CONCRETE STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH CSA A257.1 (LATEST AMENDMENT). PIPE SHALL BE JOINTED WITH STD. RUBBER GASKETS AS PER CSA A257.3 (LATEST AMENDMENT).
2. ALL STORM SEWER TRENCH AND BEDDING SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. S6 AND S7 CLASS 'B' UNLESS OTHERWISE SPECIFIED. BEDDING AND COVER MATERIAL SHALL BE SPECIFIED BY PROJECT GEOTECHNICAL ENGINEER.
3. ALL PVC STORM SEWERS ARE TO BE SDR 35 APPROVED PER C.S.A. B182.2 OR LATEST AMENDMENT, UNLESS OTHERWISE SPECIFIED.
4. STORM MANHOLE FRAME AND COVERS SHALL BE AS PER CITY OF OTTAWA STD. S24.1.
5. CATCH BASIN MANHOLE FRAME AND COVERS SHALL BE AS PER CITY OF OTTAWA STD. S28.1.
6. STORM SEWER MANHOLES SERVING SEWERS LESS THAN 900mm SHALL BE CONSTRUCTED WITH A 300mm SUMP. FOR STORM SEWERS 900mm AND OVER USE BENCHING IN ACCORDANCE WITH OPSD 701.021.
7. THE STORM SEWER CLASSES HAVE BEEN DESIGNED BASED ON BEDDING CONDITIONS SPECIFIED ABOVE. WHERE THE SPECIFIED TRENCH WIDTH IS EXCEEDED, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE ADDITIONAL BEDDING, A DIFFERENT TYPE OF BEDDING OR A HIGHER PIPE STRENGTH AT HIS OWN EXPENSE AND SHALL ALSO BE RESPONSIBLE FOR EXTRA TEMPORARY AND/OR PERMANENT REPAIRS MADE NECESSARY BY THE WIDENED TRENCH.
8. ALL STORM MANHOLES SHALL BE 1200mm DIAMETER AS PER OPSD 701.010 UNLESS OTHERWISE NOTED.
9. ALL CATCH BASINS SHALL BE 600mm X 600mm AS PER OPSD 705.010 UNLESS OTHERWISE NOTED.

## SANITARY SEWERS:

1. ALL SANITARY SEWERS SHALL BE PVC SDR 35, IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS.
2. SANITARY SEWER TRENCH AND BEDDING SHALL BE AS PER CITY OF OTTAWA STD. S6 AND S7, CLASS 'B' BEDDING UNLESS OTHERWISE NOTED.
3. ALL SANITARY SERVICES ARE TO BE EQUIPPED WITH APPROVED BACKWATER VALVES.
4. SANITARY MANHOLE FRAME AND COVERS SHALL BE WATERTIGHT AS PER CITY OF OTTAWA STD. S24.
5. SANITARY SEWER MANHOLES SHALL BE BENCHED AS PER OPSD 701.021.
6. SANITARY PRE-CAST MANHOLE SHALL BE CONSTRUCTED WITH A HIGHER PERCENTAGE OF SILICA FUME IN THE CONCRETE TO MAKE IT MORE DENSE AND LESS SUSCEPTIBLE TO CORROSION OR PINHOLE LEAKS.
7. FOR SANITARY MANHOLES, DEPENDING ON THE ELEVATION OF THE GROUNDWATER TABLE, AND BASED ON THE RECOMMENDATION OF THE PROJECT GEOTECHNICAL CONSULTANT, CRETEX SEALS, OR A SIMILAR PRODUCT, SHALL BE INSTALLED IN THE PRE-CAST MANHOLE SECTION TO JUST BELOW THE MANHOLE FRAME TO PREVENT INFILTRATION.
8. CONTRACTOR SHALL PERFORM LEAKAGE TESTING, IN THE PRESENCE OF THE CONSULTANT, FOR SANITARY SEWERS IN ACCORDANCE WITH OPSS 410 AND OPSS 407. CONTRACTOR SHALL PERFORM VIDEO INSPECTION OF ALL STORM AND SANITARY SEWERS. A COPY OF THE VIDEO AND INSPECTION REPORT SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

## WATER SUPPLY:

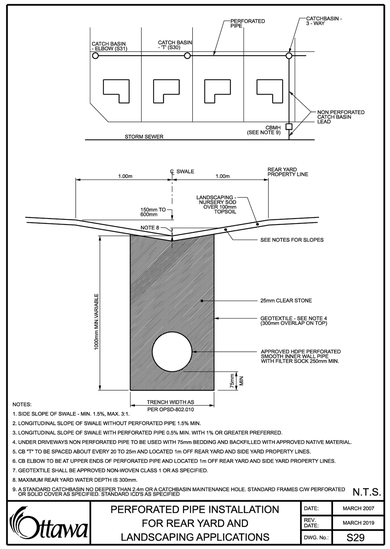
1. ALL PVC WATERMAINS SHALL BE EQUAL TO AWWA C-900 CLASS 150, SDR 18, OR APPROVED EQUAL.
2. WATERMAIN TRENCH AND BEDDING SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARD W17, UNLESS OTHERWISE SPECIFIED. BEDDING AND COVER MATERIAL SHALL BE SPECIFIED BY PROJECT GEOTECHNICAL ENGINEER.
3. ALL PVC WATERMAINS SHALL BE INSTALLED WITH A 10 GAUGE STRANDED COPPER TWU OR RWU TRACER WIRE IN ACCORDANCE WITH CITY OF OTTAWA STD. W36.
4. CATHODIC PROTECTION IS REQUIRED ON ALL METALLIC FITTINGS AS PER CITY OF OTTAWA STD. W40 AND W42.
5. CONTRACTOR TO SUPPLY HYDRANT EXTENSION TO ADJUST THE LENGTH OF HYDRANT BARREL IF REQUIRED.
6. FIRE HYDRANTS SHALL BE INSTALLED AS PER CITY OF OTTAWA STD. W19, AND LOCATED AS PER CITY STD. W18.
7. VALVE IN BOXES SHALL BE INSTALLED AS PER CITY OF OTTAWA STD. W24.
8. WATERMAIN IN FILL AREAS TO BE INSTALLED WITH RESTRAINED JOINTS AS PER CITY OF OTTAWA STD. W25.5 AND W25.6.
9. THRUST BLOCKING OF WATERMAIN TO BE INSTALLED AS PER CITY OF OTTAWA STD. W25.3 AND W25.4.
10. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY CAPS, PLUGS AND BLOW-OFFS AND NOZZLES REQUIRED FOR TESTING AND DISINFECTION OF THE WATERMAIN.
11. INSULATION FOR WATERMAIN CROSSING OVER AND BELOW SEWER SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. W25.2 AND W25, RESPECTIVELY, WHERE WATERMAIN COVER IS LESS THAN 2.4m.
12. AS PER CITY GUIDELINE, THE MINIMUM VERTICAL CLEARANCE BETWEEN WATERMAIN AND SEWER / UTILITY IS 0.2m FOR CROSSING OVER THE SEWER, AS PER CITY STD. W25.2. FOR CROSSING UNDER SEWER, ADEQUATE STRUCTURAL SUPPORT FOR THE SEWERS IS REQUIRED TO PREVENT EXCESSIVE DEFLECTION OF JOINTS AND SETTLING. THE LENGTH OF WATER PIPE SHALL BE CENTERED AT THE POINT OF CROSSING SO THAT THE JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER AS PER CITY STD. W25.
13. CONNECTION TO EXISTING WATERMAIN TO BE PERFORMED BY CITY FORCES. CONTRACTOR TO PROVIDE LABOUR, EQUIPMENT AND MATERIAL REQUIRED FOR EXCAVATION, BEDDING AND REINSTATEMENT.
14. SWABBING, DISINFECTION, AND HYDROSTATIC TESTING TO BE CONDUCTED AS PER CITY OF OTTAWA STANDARDS IN THE PRESENCE OF A CITY INSPECTOR AND/OR CONSULTANT.

## ROADWORK SPECIFICATIONS:

1. CONCRETE CURB SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. SC1.1 (BARRIER CURB). PROVISION SHALL BE MADE FOR CURB DEPRESSIONS AT SIDEWALKS AND DRIVEWAYS.
2. ALL BARRIER CURB TO BE 150mm ABOVE FINISHED ASPHALT GRADE UNLESS OTHERWISE NOTED.
3. CONCRETE SIDEWALK SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. SC1.4.
4. TWSIs SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF OTTAWA STD. SC7.3.
5. PAVEMENT REINSTATEMENT FOR SERVICE AND UTILITY CUTS SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. R10.
6. GRANULAR "A" SHALL BE PLACED TO A MINIMUM THICKNESS OF 300mm AROUND ALL STRUCTURES WITHIN PAVEMENT AREA.
7. ALL GRANULAR FOR ROADS SHALL BE COMPACTED TO A MINIMUM OF 98% STANDARD PROCTOR DENSITY.
8. ASPHALT WEAR COURSE SHALL NOT BE PLACED UNTIL THE VIDEO INSPECTION OF SEWERS & NECESSARY REPAIRS HAVE BEEN CARRIED OUT TO THE SATISFACTION OF THE ENGINEER.
9. SUB-EXCAVATE SOFT AREAS AND FILL WITH GRANULAR 'B' COMPACTED IN MAXIMUM 300mm LIFTS.
10. ALL EDGES OF DISTURBED PAVEMENT SHALL BE SAW-CUT TO FORM A NEAT AND STRAIGHT LINE PRIOR TO PLACING NEW ASPHALT.
11. PAVEMENT DESIGN AS PER GEOTECHNICAL RECOMMENDATIONS.

## CONCRETE SIDEWALKS ADJACENT TO BUILDINGS:

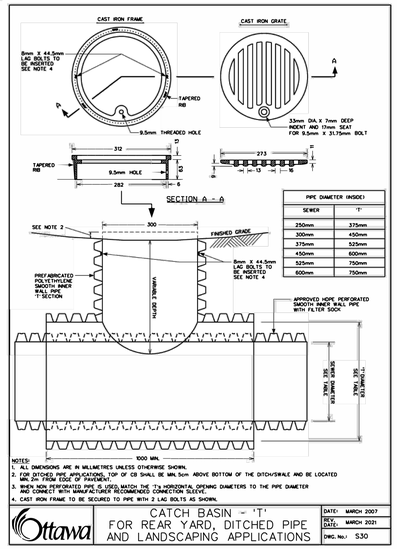
1. IT IS RECOMMENDED THAT THE UPPER 600mm OF BACKFILL PLACED BELOW THE CONCRETE SIDEWALKS ADJACENT TO THE BUILDING FOOTPRINTS TO CONSIST OF NON-FROST SUSCEPTIBLE MATERIAL SUCH AS OPSS GRANULAR A OR GRANULAR B TYPE II.
2. THE SIDEWALKS SHOULD BE UNDERLAIN BY A LAYER OF RIGID INSULATION AT ENTRANCEWAYS TO MINIMIZE THE POTENTIAL FOR THE SIDEWALKS TO RAISE IN RESPONSE TO FROST MIGRATION WITHIN THE SUBGRADE SOILS.
3. THE GRANULAR MATERIAL SHOULD BE PLACED IN MAXIMUM 300mm LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 98% OF THE MATERIAL'S SPMDD USING SUITABLE COMPACTION EQUIPMENT.
4. THE SUBGRADE MATERIAL SHOULD BE SHAPED TO PROMOTE POSITIVE DRAINAGE TOWARDS THE BUILDING'S PERIMETER DRAINAGE SYSTEM.
5. CONSIDERATION SHOULD BE GIVEN TO PLACING A LAYER OF RIGID INSULATION BELOW THE GRANULAR FILL LAYER, HOWEVER, SHOULD BE DETAILED BY PATERSON ONCE DESIGN DRAWINGS ARE BEING COMPLETE BY OTHERS.




NOTES:
1. SIDE SLOPE OF SWALE - MIN. 1.5%, MAX. 3:1.
2. LONGITUDINAL SLOPE OF SWALE WITHOUT PERFORATED PIPE 1.5% MIN.
3. LONGITUDINAL SLOPE OF SWALE WITH PERFORATED PIPE 0.5% MIN. WITH 1% OR GREATER PREFERRED.
4. UNDER DRIVEWAYS NON PERFORATED PIPE TO BE USED WITH 75mm BEDDING AND BACKFILLED WITH APPROVED NATIVE MATERIAL.
5. CB "T" TO BE SPACED ABOUT EVERY 20 TO 25m AND LOCATED 1m OFF REAR YARD AND SIDE YARD PROPERTY LINES.
6. CB ELBOW TO BE AT UPPER ENDS OF PERFORATED PIPE AND LOCATED 1m OFF REAR YARD AND SIDE YARD PROPERTY LINES.
7. GEOTEXTILE SHALL BE APPROVED NON-WOVEN CLASS 1 OR AS SPECIFIED.
8. MAXIMUM REAR YARD WATER DEPTH IS 300mm.
9. A STANDARD CATCHBASIN NO DEEPER THAN 2.4m OR A CATCHBASIN MAINTENANCE HOLE. STANDARD FRAMES C/W PERFORATED OR SOLID COVER AS SPECIFIED. STANDARD IOTA AS SPECIFIED

N.T.S.

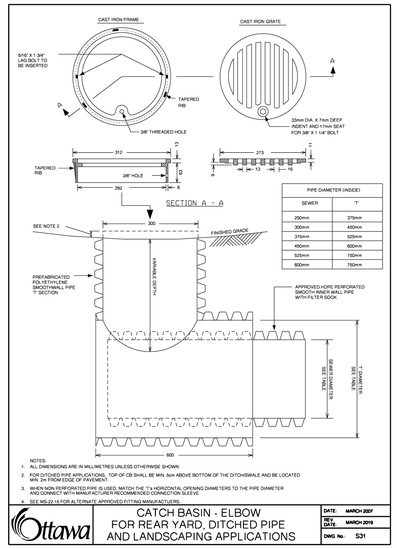
| Ottawa | PERFORATED PIPE INSTALLATION FOR REAR YARD AND LANDSCAPING APPLICATIONS | DATE: | MARCH 2007 |
|---|---|---|---|
| | | REV. DATE: | MARCH 2019 |
| | | DWG. No.: | S29 |




| PIPE DIAMETER (INSIDE) | |
|---|---|
| SEWER | 'T' |
| 250mm | 375mm |
| 300mm | 450mm |
| 375mm | 525mm |
| 450mm | 600mm |
| 525mm | 750mm |
| 600mm | 750mm |

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. FOR DITCHED PIPE APPLICATIONS, TOP OF CB SHALL BE MIN. 5cm ABOVE BOTTOM OF THE DITCH/SWALE AND BE LOCATED MIN. 2m FROM EDGE OF PAVEMENT.
3. WHEN NON PERFORATED PIPE IS USED, MATCH THE 'T's HORIZONTAL OPENING DIAMETERS TO THE PIPE DIAMETER AND CONNECT WITH MANUFACTURER RECOMMENDED CONNECTION SLEEVE.
4. CAST IRON FRAME TO BE SECURED TO PIPE WITH 2 LAG BOLTS AS SHOWN.

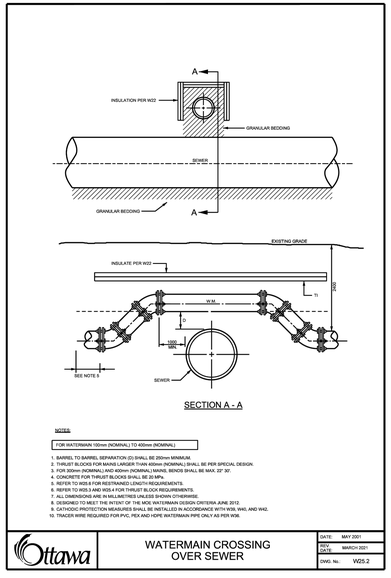
| Ottawa | CATCH BASIN - 'T' FOR REAR YARD, DITCHED PIPE AND LANDSCAPING APPLICATIONS | DATE: | MARCH 2007 |
|---|---|---|---|
| | | REV. DATE: | MARCH 2021 |
| | | DWG. No.: | S30 |




| PIPE DIAMETER (INSIDE) | |
|---|---|
| SEWER | 'T' |
| 250mm | 375mm |
| 300mm | 450mm |
| 375mm | 525mm |
| 450mm | 600mm |
| 525mm | 750mm |
| 600mm | 750mm |

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. FOR DITCHED PIPE APPLICATIONS, TOP OF CB SHALL BE MIN. 5cm ABOVE BOTTOM OF THE DITCH/SWALE AND BE LOCATED MIN. 2m FROM EDGE OF PAVEMENT.
3. WHEN NON PERFORATED PIPE IS USED, MATCH THE 'T's HORIZONTAL OPENING DIAMETERS TO THE PIPE DIAMETER AND CONNECT WITH MANUFACTURER RECOMMENDED CONNECTION SLEEVE.
4. SEE MS.22.15 FOR ALTERNATE APPROVED FITTING MANUFACTURERS.

| Ottawa | CATCH BASIN - ELBOW FOR REAR YARD, DITCHED PIPE AND LANDSCAPING APPLICATIONS | DATE: | MARCH 2007 |
|---|---|---|---|
| | | REV. DATE: | MARCH 2019 |
| | | DWG. No. | S31 |

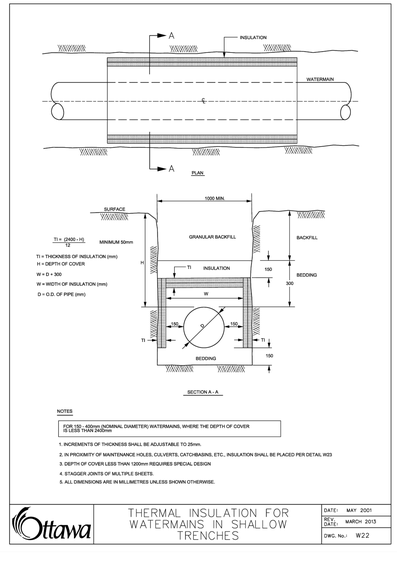



SECTION A - A

NOTES:

| FOR WATERMAIN 150mm (NOMINAL) TO 400mm (NOMINAL) | |
|---|---|
| 1. BARREL TO BARREL SEPARATION (S) SHALL BE 250mm MINIMUM. | |
| 2. THRUST BLOCKS FOR MAINS LARGER THAN 400mm (NOMINAL) SHALL BE PER SPECIAL DESIGN. | |
| 3. FOR 300mm (NOMINAL) AND 400mm (NOMINAL) MAINS, BEND0 SHALL BE MAX. 22° 30'. | |
| 4. CONCRETE FOR THRUST BLOCKS SHALL BE 20 MPa. | |
| 5. REFER TO W35.0 FOR RESTRAINED LENGTH REQUIREMENTS. | |
| 6. REFER TO W35.3 AND W35.4 FOR THRUST BLOCK REQUIREMENTS. | |
| 7. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE. | |
| 8. DESIGNED TO MEET THE INTENT OF THE MOE WATERMAIN DESIGN CRITERIA JUNE 2012 | |
| 9. CATHODIC PROTECTION MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH W35, W40, AND W42. | |
| 10. TRACER WIRE REQUIRED FOR PVC, PEX AND HDPE WATERMAIN PIPE ONLY AS PER W36 | |

| Ottawa | WATERMAIN CROSSING OVER SEWER | DATE: | MAY 2001 |
|---|---|---|---|
| | | REV. DATE: | MARCH 2021 |
| | | DWG. No. | W25.2 |



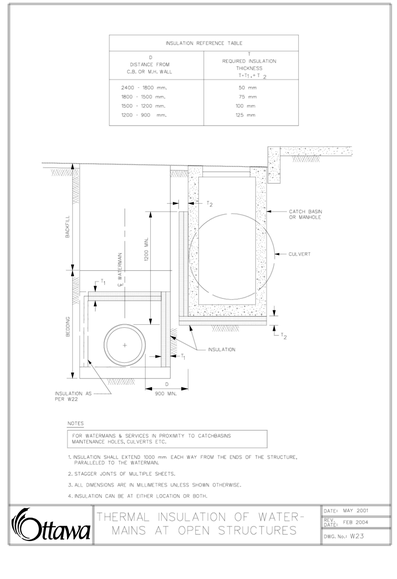

SECTION A - A

NOTES

| FOR 150 - 400mm (NOMINAL DIAMETER) WATERMAINS, WHERE THE DEPTH OF COVER IS LESS THAN 2400mm |
|---|

1. INCREMENTS OF THICKNESS SHALL BE ADJUSTABLE TO 25mm.
2. IN PROXIMITY OF MAINTENANCE HOLES, CULVERTS, CATCHBASINS, ETC., INSULATION SHALL BE PLACED PER DETAIL W23
3. DEPTH OF COVER LESS THAN 1200mm REQUIRES SPECIAL DESIGN
4. STAGGER JOINTS OF MULTIPLE SHEETS
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

| Ottawa | THERMAL INSULATION FOR WATERMAINS IN SHALLOW TRENCHES | DATE: | MAY 2001 |
|---|---|---|---|
| | | REV. DATE: | MARCH 2013 |
| | | DWG. No.: | W22 |



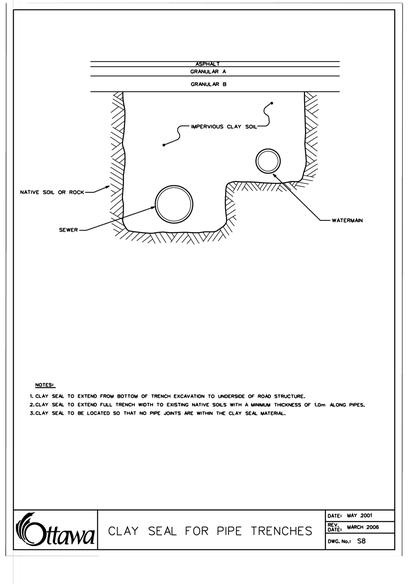
| INSULATION REFERENCE TABLE | |
|---|---|
| D DISTANCE FROM C.B. OR M.H. WALL | REQUIRED INSULATION THICKNESS T1=T2 |
| 2400 - 1800 mm. | 50 mm |
| 1800 - 1500 mm. | 75 mm |
| 1500 - 1200 mm. | 100 mm |
| 1200 - 900 mm. | 125 mm |



NOTES
FOR WATERMAINS & SERVICES IN PROXIMITY TO CATCHBASINS MAINTENANCE HOLES, CULVERTS ETC.

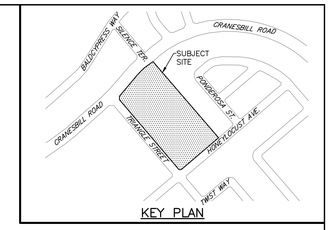
1. INSULATION SHALL EXTEND 1000 mm EACH WAY FROM THE ENDS OF THE STRUCTURE, PARALLELED TO THE WATERMAIN.
2. STAGGER JOINTS OF MULTIPLE SHEETS.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
4. INSULATION CAN BE AT EITHER LOCATION OR BOTH.

| Ottawa | THERMAL INSULATION OF WATER-MAINS AT OPEN STRUCTURES | DATE: | MAY 2001 |
|---|---|---|---|
| | | REV. DATE: | FEB 2004 |
| | | DWG. No.: | W23 |




NOTES:
1. CLAY SEAL TO EXTEND FROM BOTTOM OF TRENCH EXCAVATION TO UNDERSIDE OF ROAD STRUCTURE.
2. CLAY SEAL TO EXTEND FULL TRENCH WIDTH TO EXISTING NATIVE SOILS WITH A MINIMUM THICKNESS OF 1.0m ALONG PIPES.
3. CLAY SEAL TO BE LOCATED SO THAT NO PIPE JOINTS ARE WITHIN THE CLAY SEAL MATERIAL.

| Ottawa | CLAY SEAL FOR PIPE TRENCHES | DATE: | MAY 2001 |
|---|---|---|---|
| | | REV. DATE: | MARCH 2006 |
| | | DWG. No: | S8 |




KEY PLAN

**NOT FOR CONSTRUCTION**

NOTES

THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROPERTY BOUNDARIES HAVE BEEN DERIVED FROM THE TOPOGRAPHIC PLAN OF SURVEY OF BLOCK 116 REGISTERED PLAN 4M-1628 AND BLOCK 204 REGISTERED PLAN 4M-1606 CITY OF OTTAWA, PREPARED BY STANTEC GEOMATICS LTD., DATED OCTOBER 8, 2024. BEARINGS ARE DERIVED FROM FROM CAN-NET VRS NETWORK GPS OBSERVATIONS ON NCC HORIZONTAL CONTROL MONUMENTS 19773035 AND 19680191, MTM ZONE 9, NAD83 (ORIGINAL). ELEVATIONS ARE GEODETIC (CGVD-1928:1978) AND ARE DERIVED FROM THE CAN-NET VRS NETWORK MONUMENT: ELEVATION 95.230.

| NO. | REVISION DESCRIPTION | DATE | BY |
|---|---|---|---|
| 2 | REVISED PER CITY COMMENTS | 23/09/25 | BLM |
| 1 | ISSUED FOR REVIEW | 03/04/25 | BLM |

SCALE

LICENCED PROFESSIONAL ENGINEER — B. L. MACKECHNIE — 100199554 — 23 Sept. '25 — PROVINCE OF ONTARIO

**Robinson** Land Development
350 Palladium Drive
Ottawa, ON K2V 1A8
(613) 592-6060 rcii.com

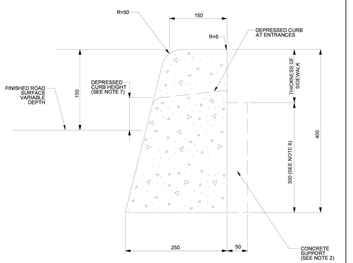
| | |
|---|---|
| DESIGN | BLM |
| CHECKED | BLM |
| DRAWN | BLM |
| CHECKED | BLM |
| APPROVED | BLM |

OTTAWA CATHOLIC SCHOOL BOARD

FERNBANK NORTH ELEMENTARY SCHOOL
620 TRIANGLE STREET, STITTSVILLE

NOTES & DETAILS

| | |
|---|---|
| PROJECT No. | 24093 |
| SURVEY | STANTEC |
| DATED | SEPT. 2025 |
| DWG. No: | 24093-N1 |

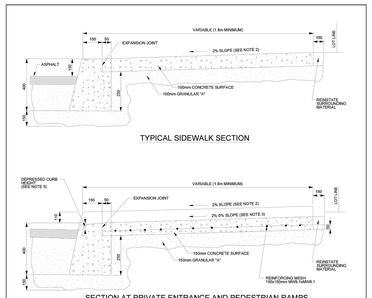



## CONCRETE BARRIER CURB

**NOTES:**

1. THE FULL CURB DEPTH SHALL BE CARRIED THROUGH THE DEPRESSED ACCESS CROSSING
2. A CONCRETE SUPPORT IS REQUIRED WHEN BUILT ADJACENT TO THE SIDEWALK
3. IF AN EXTRUSION CURBING MACHINE IS USED, THE EXPANSION BITUMINOUS MATERIAL AND THE #15 DOWELS ARE TO BE PLACED AT THE END OF THE EXTRUSION
4. ALL MEASUREMENTS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED
5. EXPANSION AND DUMMY JOINTS AS PER SC5
6. FOR DEPRESSED CURB AT ENTRANCES USE 250
7. DEPRESSED CURB HEIGHT - FOR PEDESTRIAN CURB RAMPS 0 TO 6 mm AND FOR PRIVATE ENTRANCES 0 TO 13mm

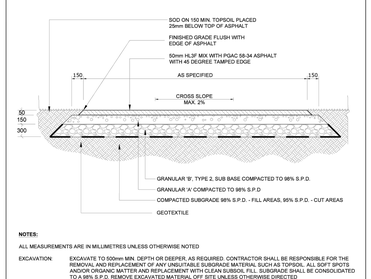
| | | | |
|---|---|---|---|
| Ottawa | TITLE: CONCRETE BARRIER CURB FOR GRANULAR BASE PAVEMENT (MODIFIED OPSD-600.110) | DATE: | JAN 2003 |
| | | REV: | MAR 2025 |
| | | DWG No: | SC1.1 |




**NOTES:**

1. ALL MEASUREMENTS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED
2. THE MAXIMUM SLOPE IS NOT TO EXCEED 2%
3. FOR CURB RAMPS, SLOPE OF 2% TO 5%, MAXIMUM 8%
4. EXPANSION AND DUMMY JOINTS AS PER SC5
5. DEPRESSED CURB HEIGHT - FOR PEDESTRIAN CURB RAMPS 0 TO 6 mm AND FOR PRIVATE ENTRANCES 0 TO 13mm

| | | | |
|---|---|---|---|
| Ottawa | TITLE: CONCRETE BARRIER CURB WITH SIDEWALK | DATE: | JAN 2003 |
| | | REV: | MAR 2025 |
| | | DWG No: | SC1.4 |




**NOTES:**

ALL MEASUREMENTS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED

EXCAVATION: EXCAVATE TO 500mm MIN. DEPTH OR DEEPER, AS REQUIRED. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF ANY UNSUITABLE SUBGRADE MATERIAL SUCH AS TOPSOIL, ALL SOFT SPOTS AND/OR ORGANIC MATTER AND REPLACEMENT WITH CLEAN SUBSOIL, FILL. SUBGRADE SHALL BE CONSOLIDATED TO A 98% S.P.D. REMOVE EXCAVATED MATERIAL OFF SITE UNLESS OTHERWISE DIRECTED

GRANULAR BASE: GRANULAR 'A' - 100% STANDARD PROCTOR DENSITY MIN., GRANULAR B, TYPE 2, SUB BASE GRANULARS TO OPSS

ASPHALT: 50mm TOP SURFACE LAYER (AFTER COMPACTION) OF HL3F MIX WITH PGAC 58-34 OR IN ACCORDANCE WITH O.P.S.S. STANDARDS

EDGE TREATMENT: ASPHALT EDGE TO BE 45 DEGREES WELL TAMPED TO FORM UNIFORMLY SMOOTH, CLEAN EDGES WITHOUT LATERAL DEVIATIONS. SOD TO FEATHER IN WITH EXISTING SOD AND GRADES AT A MAXIMUM SLOPE OF 4:1. ALL SODDED AREAS SHALL BE 25mm BELOW THE ASPHALT SURFACE. REPLACE ALL TOPSOIL AND SOD AS DIRECTED IN CUT AND FILL SITUATIONS

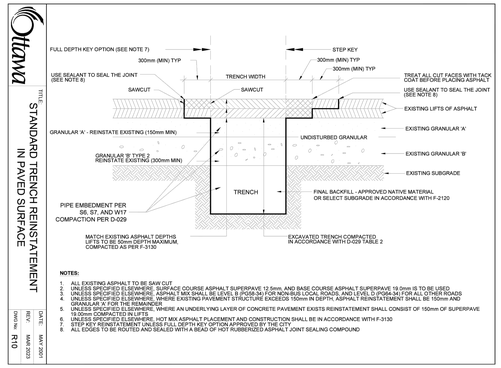
DRAINAGE: SLOPE TO BE A MINIMUM OF 2% ON CROWNED OR CROSS SLOPED PATHS AS DIRECTED ON SITE OR AS SHOWN IN DRAWINGS

SODDING: ALL DISTURBED AREAS ALONG ASPHALT WALKWAYS SHALL BE SODDED OVER 150mm TOPSOIL FOR A MINIMUM DISTANCE OF 900mm

GEOTEXTILE: GEOTEXTILE SHALL BE APPROVED NON-WOVEN CLASS 1 GEOTEXTILE AS PER MT-24.15

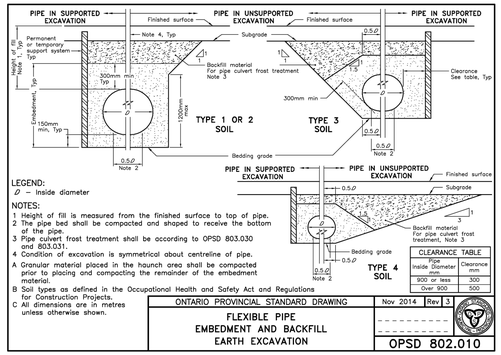
*NOTE: TO BE CONFIRMED WITH SOIL INVESTIGATIONS AND MODIFIED ACCORDINGLY*

| | | | |
|---|---|---|---|
| Ottawa | TITLE: ASPHALT PATHWAY/ SERVICE ACCESS | DATE: | FEB 2013 |
| | | REV: | MAR 2025 |
| | | DWG No: | SC21 |




**NOTES:**

1. ALL EXISTING ASPHALT TO BE SAW CUT
2. UNLESS SPECIFIED ELSEWHERE, SURFACE COURSE ASPHALT SUPERPAVE 12.5mm, AND BASE COURSE ASPHALT SUPERPAVE 19.0mm IS TO BE USED
3. UNLESS SPECIFIED ELSEWHERE, ASPHALT MIX SHALL BE LEVEL B (PG58-34) FOR NON-BUS LOCAL ROADS, AND LEVEL D (PG64-34) FOR ALL OTHER ROADS
4. UNLESS SPECIFIED ELSEWHERE, WHERE EXISTING PAVEMENT STRUCTURE EXCEEDS 150mm IN DEPTH, ASPHALT REINSTATEMENT SHALL BE 150mm AND GRANULAR 'A' FOR THE REMAINDER
5. UNLESS SPECIFIED ELSEWHERE, WHERE AN UNDERLYING LAYER OF CONCRETE PAVEMENT EXISTS REINSTATEMENT SHALL CONSIST OF 150mm OF SUPERPAVE 19.0mm COMPACTED IN LIFTS
6. UNLESS SPECIFIED ELSEWHERE, HOT MIX ASPHALT PLACEMENT AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH F-3130
7. STEP KEY REINSTATEMENT UNLESS ROAD DEPTH LESS THAN 300mm (MIN) THEN FULL DEPTH
8. ALL EDGES TO BE ROUTED AND SEALED WITH A BEAD OF HOT RUBBERIZED ASPHALT JOINT SEALING COMPOUND

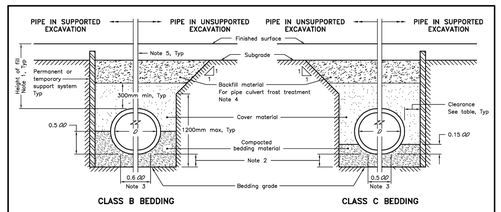



LEGEND:
Ø – Inside diameter

NOTES:
1 Height of fill is measured from the finished surface to top of pipe.
2 The pipe bed shall be compacted and shaped to receive the bottom of the pipe.
3 Pipe culvert frost treatment shall be according to OPSD 803.030 and 803.031.
4 Condition of excavation is symmetrical about centreline of pipe.
A Granular material placed in the haunch area shall be compacted prior to placing and compacting the remainder of the embedment material.
B Soil types as defined in the Occupational Health and Safety Act and Regulations for Construction Projects.
C All dimensions are in metres unless otherwise shown.

| CLEARANCE TABLE | |
|---|---|
| Pipe Inside Diameter mm | Clearance mm |
| 900 or less | 300 |
| Over 900 | 500 |

| | | | |
|---|---|---|---|
| | ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2014 | Rev 3 |
| | FLEXIBLE PIPE EMBEDMENT AND BACKFILL EARTH EXCAVATION | | |
| | | OPSD 802.010 | |

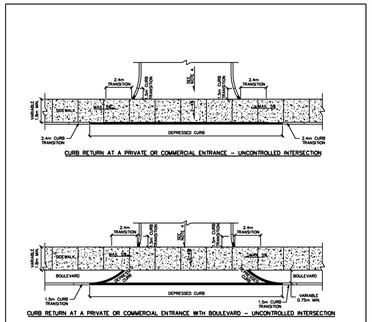



NOTES:
1 Height of fill is measured from the finished surface to top of pipe.
2 The minimum bedding depth below the pipe shall be 0.15Ø in no case shall this dimension be less than 150mm or greater than 300mm.
3 The pipe bed shall be compacted and shaped to receive the bottom of the pipe.
4 Pipe culvert frost treatment shall be according to OPSD 803.030 and 803.031.
5 Condition of excavation is symmetrical about centreline of pipe.
A Soil types as defined in the Occupational Health and Safety Act and Regulations for Construction Projects.
B All dimensions are in metres unless otherwise shown.

LEGEND:
Ø – Inside diameter
ØØ – Outside diameter

| CLEARANCE TABLE | |
|---|---|
| Pipe Inside Diameter mm | Clearance mm |
| 900 or less | 300 |
| Over 900 | 500 |

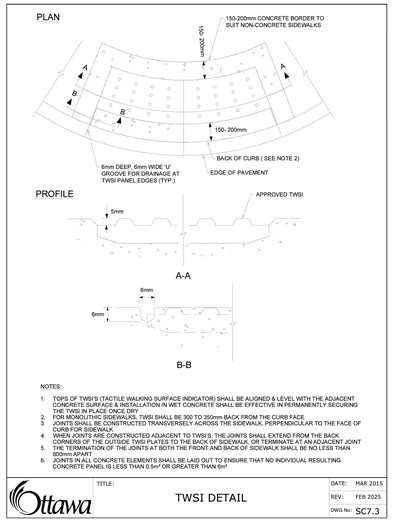
| | | | |
|---|---|---|---|
| | ONTARIO PROVINCIAL STANDARD DRAWING | Nov 2015 | Rev 3 |
| | RIGID PIPE BEDDING, COVER, AND BACKFILL TYPE 1 OR 2 SOIL – EARTH EXCAVATION | | |
| | | OPSD 802.030 | |




**NOTES:**

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. CURB DETAILS SEE SC1.1, SC1.2 AND SC1.3.
3. SIDEWALK DETAILS SEE SC2 AND SC3.
4. MAXIMUM SLOPE VARIES, SEE PRIVATE APPROACH BYLAW.
5. UNCONTROLLED INTERSECTION MEANS AN ENTRANCE NOT LOCATED AT A TRAFFIC SIGNAL OR ALL-WAY STOP CONTROL.

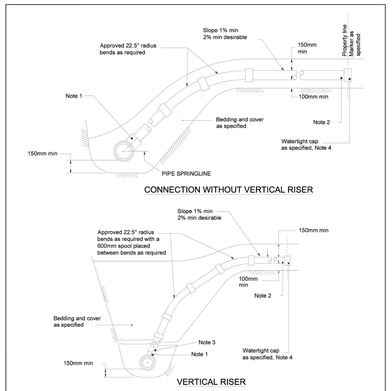
| | | | |
|---|---|---|---|
| Ottawa | TITLE: CURB RETURN ENTRANCES - UNCONTROLLED INTERSECTIONS | DATE: | MARCH 2007 |
| | | REV: DATE: | MARCH 2021 |
| | | DWG No.: | SC7.1 |




NOTES:

1. TOPS OF TWSI'S (TACTILE WALKING SURFACE INDICATOR) SHALL BE ALIGNED & LEVEL WITH THE ADJACENT CONCRETE SURFACE. INSTALLATION IN WET CONCRETE SHALL BE EFFECTIVE IN PERMANENTLY SECURING TWSI'S IN PLACE. EMCB SERIES
2. FOR MONOLITHIC SIDEWALKS, TWSI SHALL BE 300 TO 350mm BACK FROM THE CURB FACE
3. JOINTS SHALL BE CONSTRUCTED TRANSVERSELY ACROSS THE SIDEWALK, PERPENDICULAR TO THE FACE OF CURB FOR SIDEWALK
4. WHEN JOINTS ARE CONSTRUCTED ADJACENT TO TWSI'S, THE JOINTS SHALL EXTEND FROM THE BACK CORNERS OF THE OUTSIDE TWSI PLATES TO THE BACK OF SIDEWALK, OR TERMINATE AT AN ADJACENT JOINT
5. THE TERMINATION OF THE JOINTS AT BOTH THE FRONT AND BACK OF SIDEWALK SHALL BE NO LESS THAN 600mm APART
6. JOINTS IN ALL CONCRETE ELEMENTS SHALL BE LAID OUT TO ENSURE THAT NO INDIVIDUAL RESULTING CONCRETE PANEL IS LESS THAN 0.5m² OR GREATER THAN 9m²

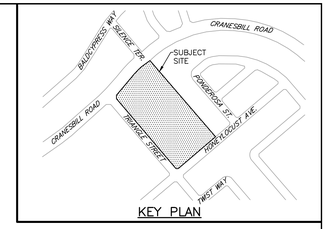
| | | | |
|---|---|---|---|
| Ottawa | TITLE: TWSI DETAIL | DATE: | MAR 2015 |
| | | REV: | FEB 2025 |
| | | DWG No: | SC7.3 |




**NOTES:**

1. DIAMETER OF SERVICE CONNECTIONS SHALL BE NO GREATER THAN 50% OF THE DIAMETER OF THE FLEXIBLE SEWER MAIN. DIAMETER, THE CONNECTION SHALL BE MADE USING AN APPROVED TEE OR WYE FITTINGS. INVERT OF SERVICE CONNECTION SHALL BE AT THE SAME ELEVATION OR GREATER THAN THE ELEVATION OF THE SPRINGLINE OF THE SEWER MAIN.
2. ALL BENDS TO BE APPROVED CSA B182.2, SDR35 PRODUCTS UNLESS SPECIFIED OTHERWISE. SERVICE PIPE AND RADIUS BENDS TO BE APPROVED CSA B182.2, SDR35 PRODUCTS UNLESS SPECIFIED OTHERWISE
3. APPROVED CONTROLLED SETTLEMENT JOINTS OPTIONAL FOR SERVICE CONNECTIONS TO MAIN SEWERS UP TO 5m DEEP. WHERE APPROVED, CONNECTIONS TO SEWERS OVER 5m DEEP REQUIRE APPROVED CONTROLLED SETTLEMENT JOINTS
4. CAP AT THE PROPERTY LINE SHALL BE ADEQUATELY BRACED TO WITHSTAND TESTING PRESSURE
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
6. RADIUS BENDS GREATER THAN 22.5° ARE NOT ALLOWED

| | | | |
|---|---|---|---|
| Ottawa | TITLE: SEWER SERVICE CONNECTIONS FOR FLEXIBLE MAIN SEWER PIPE | DATE: | MAR 2006 |
| | | REV: | MAR 2024 |
| | | DWG No: | S11.1 |




**NOT FOR CONSTRUCTION**

NOTES

THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROPERTY BOUNDARIES HAVE BEEN DERIVED FROM THE TOPOGRAPHIC PLAN OF SURVEY OF BLOCK 116 REGISTERED PLAN 4M-1628 AND BLOCK 204 REGISTERED PLAN 4M-1606 CITY OF OTTAWA, PREPARED BY STANTEC GEOMATICS LTD., DATED OCTOBER 8, 2024. BEARINGS ARE DERIVED FROM FROM CAN-NET VRS NETWORK GPS OBSERVATIONS ON NCC HORIZONTAL CONTROL MONUMENTS 19773035 AND 19680191, MTM ZONE 9, NAD83 (ORIGINAL). ELEVATIONS ARE GEODETIC (CGVD-1928:1978) AND ARE DERIVED FROM THE CAN-NET VRS NETWORK MONUMENT: ELEVATION 95.230.

| NO. | REVISION DESCRIPTION | DATE | BY |
|---|---|---|---|
| 2 | REVISED PER CITY COMMENTS | 23/09/25 | BLM |
| 1 | ISSUED FOR REVIEW | 03/04/25 | BLM |

SCALE

B.L. MACKECHNIE 100199554 LICENSED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO 23 Sept. 25

Robinson Land Development
350 Palladium Drive
Ottawa, ON K2V 1A8
(613) 592-6060 rcii.com

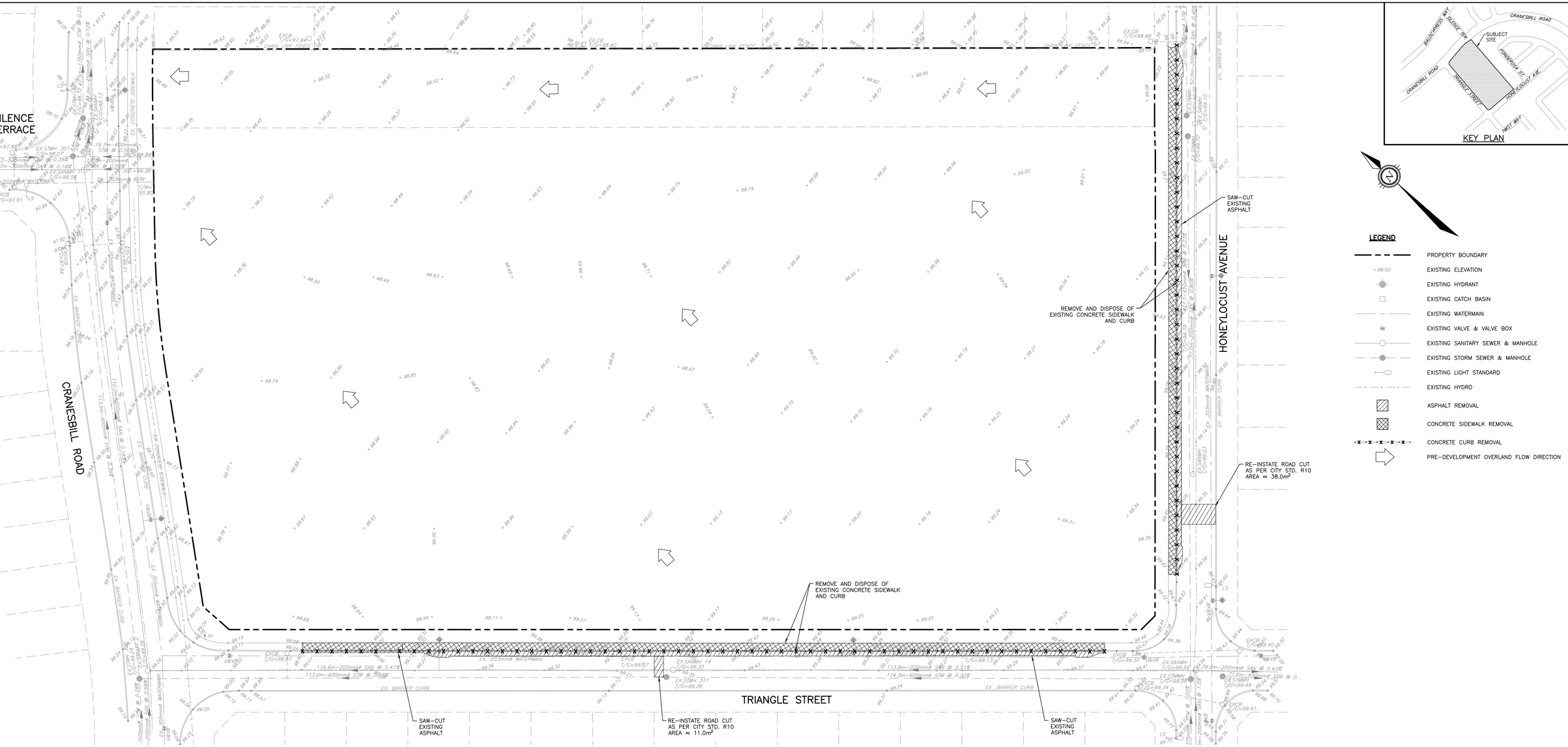
| | |
|---|---|
| DESIGN | BLM |
| CHECKED | BLM |
| DRAWN | BLM |
| CHECKED | BLM |
| APPROVED | BLM |

OTTAWA CATHOLIC SCHOOL BOARD

FERNBANK NORTH ELEMENTARY SCHOOL
620 TRIANGLE STREET, STITTSVILLE

NOTES & DETAILS

| | |
|---|---|
| PROJECT No. | 24093 |
| SURVEY | STANTEC |
| DATED | SEPT. 2025 |
| DWG. No: | 24093-N2 |


SILENCE TERRACE
CRANESBILL ROAD
HONEYLOCUST AVENUE
TRIANGLE STREET
SAW-CUT EXISTING ASPHALT
REMOVE AND DISPOSE OF EXISTING CONCRETE SIDEWALK AND CURB
RE-INSTATE ROAD CUT AS PER CITY STD. R10 AREA ≈ 38.0m²
REMOVE AND DISPOSE OF EXISTING CONCRETE SIDEWALK AND CURB
SAW-CUT EXISTING ASPHALT
RE-INSTATE ROAD CUT AS PER CITY STD. R10 AREA ≈ 11.0m²
SAW-CUT EXISTING ASPHALT
EX. BARRIER CURB
EX. CONCRETE SIDEWALK
CHAIN LINK FENCE
EX. 203mmø WATERMAIN
EX. 350mmø WATERMAIN
EX. 305mmø WATERMAIN
EX. 200mmø WATERMAIN
EX. 150mmø WATERMAIN
EX. 20.1mø WATERMAIN
114.4m–200mmø SAN @ 0.41%
113.6m–600mmø STM @ 0.22%
113.9m–200mmø SAN @ 0.51%
114.3m–600mmø STM @ 0.32%
79.0m–200mmø SAN @ 0.43%
105.7m–300mmø SAN @ 0.18%
110.0m–300mmø SAN @ 0.18%
111.5m–600mmø STM @ 0.12%
19.7m–600mmø STM @ 0.50%
EX.STMH 301 T/G=98.07
EX.STMH 311 T/G=99.26
EX.SANMH 14 T/G=99.33
EX.SANMH T/G=99.56
EX.STMMH T/G=99.49
EX.STMH T/G=99.34
EX.SANMH T/G=99.25
EX.SANMH T/G=99.30
EXCB T/G=98.87
EXCB T/G=98.40
EXCB T/G=97.84
EXCB T/G=97.91
EXCB T/G=99.07
EXCB T/G=99.41
EXCB T/G=99.40
EX.20.1mø WATERMAIN
EX. 150mmø STM
EX. 200mmø STM
EX. 250mmø SAN
EX. 300mmø SAN
EX. 600mmø STM
EX. 750mmø STM
EX. 1050mmø SAN
EX. 1200mmø SAN
EX. 1350mmø SAN
EX. 1500mmø SAN
EX. 1800mmø SAN
EX. 2100mmø SAN
EX. 2400mmø SAN
EX. 2700mmø SAN
EX. 3000mmø SAN
EX. 3300mmø SAN
EX. 3600mmø SAN
EX. 3900mmø SAN
EX. 4200mmø SAN
EX. 4500mmø SAN
EX. 4800mmø SAN
EX. 5100mmø SAN
EX.

Appendix C

Stantec Report Excerpts

Water Demand Calculations (Site Area)

Water Demand Calculations
(Number of Students)

Boundary Conditions

Figure 3.0: Hydraulic Water Model

Table C1: Peak Hour Junction Outputs

Table C2: Max. Day Junction Outputs

Table C3: Max. Day Plus
Fire Flow Outputs

Table C4: Pipe Report

Fire Flow Calculations

Figure 4.0: Hydrant Coverage Plan

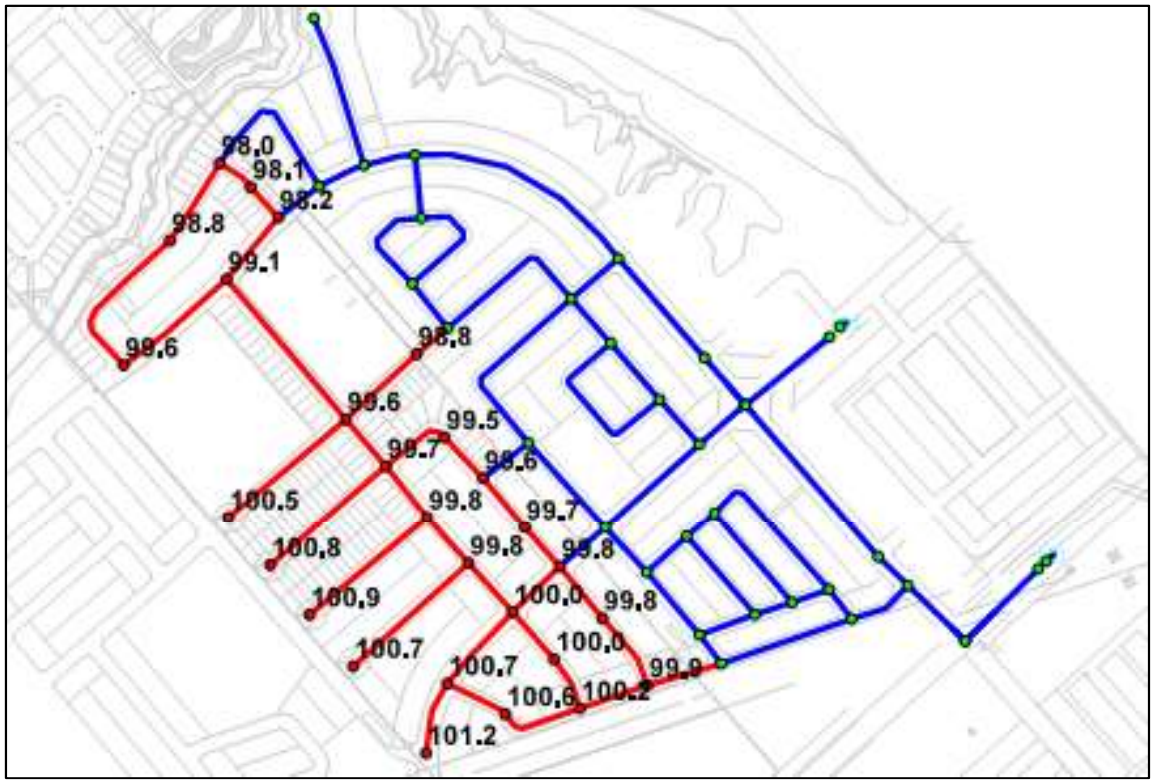



**Figure 3: Ground Elevation of the Proposed Phase 1 Site (in meters)**

## 3.5 WATER DEMANDS

The latest plan for the Phase 1 of the proposed development calls for a total **561** units and an estimated population of **1,687**. Water demands were estimated using the City of Ottawa's Water Distribution Design Guidelines (City of Ottawa, 2010). For residential demands, the basic day (BSDY) per capita water consumption rate is **350 L/cap/d**. For maximum day (MXDY) demand, BSDY is multiplied by a factor of 2.5 and for peak hour (PKHR) demand, MXDY is multiplied by a factor of 2.2. The calculated residential water consumption is represented in **Table 1**.

Phase 1 contains a proposed school and park. As such, non-residential demands were estimated based on the area of land use and is shown in **Table 2**. For MXDY demand, BSDY was multiplied by a factor of 1.5 and for PKHR demand, MXDY was multiplied by a factor of 1.8.

**Table 1: Residential Water Demands**

| Phase | Builder | Unit Type | Units | PPU | Persons | BSDY (L/s) | MXDY (L/s) | PKHR (L/s) |
|---|---|---|---|---|---|---|---|---|
| 1A | Richcraft | Town | 70 | 2.7 | 189 | 0.77 | 1.91 | 4.21 |
| | Urbandale | Town | 70 | 2.7 | 189 | 0.77 | 1.91 | 4.21 |
| | ***Phase 1A Total*** | | ***140*** | | ***378*** | ***1.53*** | ***3.83*** | ***8.42*** |
| 1B | Richcraft | Town | 88 | 2.7 | 238 | 0.96 | 2.41 | 5.29 |
| | Urbandale | Town | 88 | 2.7 | 238 | 0.96 | 2.41 | 5.29 |
| | ***Phase 1B Total*** | | ***176*** | | ***475*** | ***1.93*** | ***4.81*** | ***10.59*** |
| Remainder of Phase 1 | Richcraft | Singles | 83 | 3.4 | 282 | 1.14 | 2.86 | 6.29 |
| | Urbandale | Singles | 162 | 3.4 | 551 | 2.23 | 5.58 | 12.27 |
| | ***Remainder Phase 1 Total*** | | ***245*** | | ***833*** | ***3.37*** | ***8.44*** | ***18.56*** |
| | | ***Total*** | ***561*** | | ***1,686*** | ***6.83*** | ***17.08*** | ***37.57*** |

**Table 2: Non-Residential Water Demands**

| Land Use | Area (ha) | Consumption (L/ha/d) | BSDY (L/s) | MXDY (L/s) | PKHR (L/s) |
|---|---|---|---|---|---|
| **School** | 0.45 | 28,000 | 0.15 | 0.22 | 0.48 |
| **Park** | 3.83 | 1,000 | 0.04 | 0.07 | 0.15 |
| | | ***Total*** | ***0.19*** | ***0.29*** | ***0.51*** |

## 3.6 PROPOSED WATERMAIN SIZING AND LAYOUT

The proposed watermain alignment and sizing for Phase 1 is shown in **Figure 4** with 152mm diameter (blue), 203mm diameter (green), and 305mm diameter (red) piping. It should be noted that the pipe layout and sizing for the Mattamy site is assumed for this analysis.

The proposed piping in the development contains approximately 0.6km of 305mm diameter pipes and approximately 2.8 km of 203mm diameter pipes.

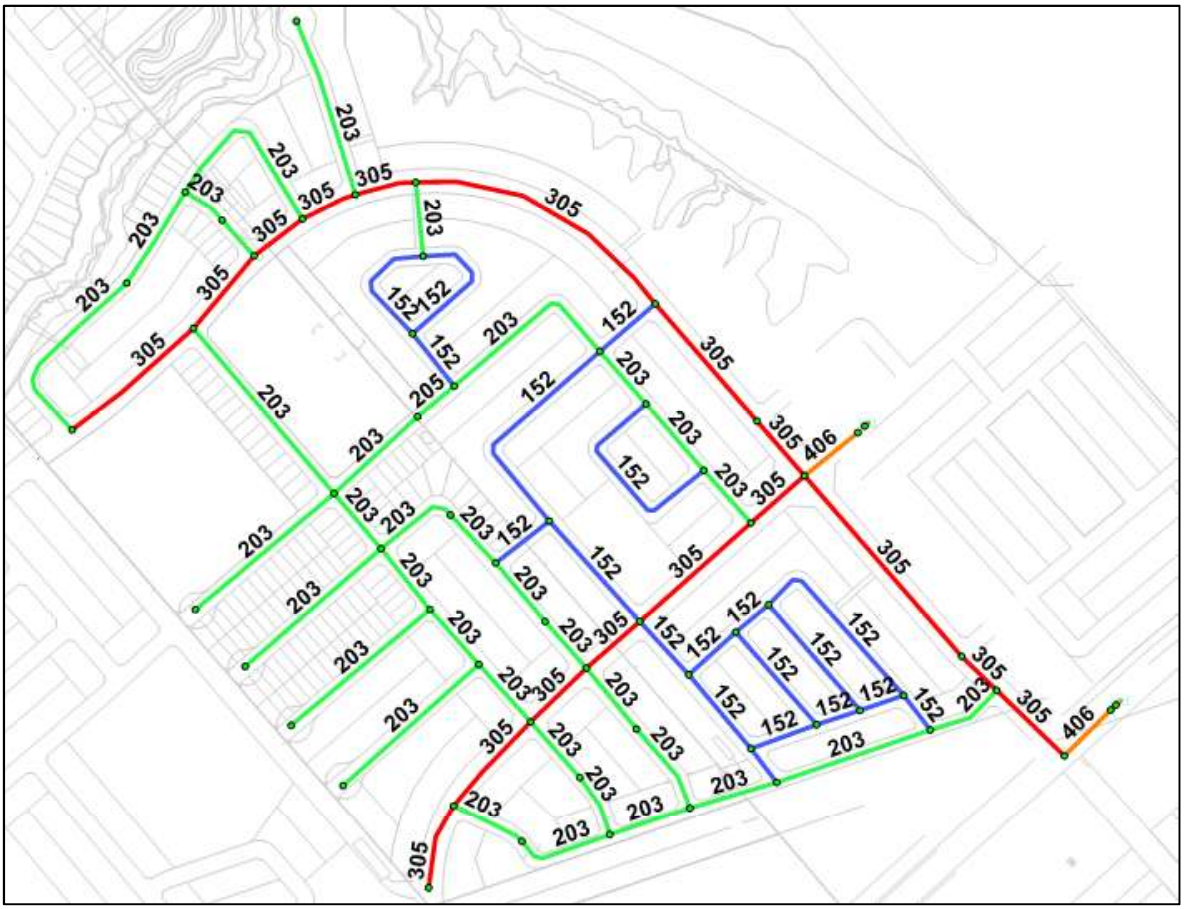



**Figure 4: Proposed Pipe Layout and Sizing in Phase 1**

## 3.7 LEVEL OF SERVICE

### 3.7.1 Allowable Pressures

The City of Ottawa Water Distribution Design Guidelines state that the desired range of system pressures under normal demand conditions (i.e. basic day, maximum day and peak hour) should be in the range of 350 to 552 kPa (50 to 80 psi) and no less than 275kPa (40 psi) at the ground elevation in the streets (i.e. at hydrant level). The maximum pressure at any point in the distribution system in occupied areas outside of the public right-of-way is 552kPa (80 psi). As per the Ontario Building Code (OBC) & Guide for Plumbing, if pressures greater than 552kPa (80 psi) are anticipated, pressure relief measures are required. The maximum pressure at any point in the distribution system in unoccupied areas shall not exceed 689 kPa (100 psi). Under emergency fire flow conditions, the minimum pressure objective in the distribution system is 138kPa (20 psi).

### 3.7.2 Fire Flow

A maximum fire flow of 18,000 L/min was determined for the Hazeldean Craig Subdivision based on the Fire Underwriters Survey (FUS) requirements. Refer to **Appendix A.3** for FUS fire flow calculations for typical connected townhouse requirements.

As per the City's technical bulletin ISDTB-2014-02 (City of Ottawa, 2014), in regards to fire flow, for traditional side-by-side townhomes constructed in accordance with the OBC and with a minimum separation of 10 meters between the back of adjacent units, fire flow shall be capped at 10,000 L/min.

Non-residential development in this area includes one school that will cover approximately 2.73ha. The area of the school building was estimated to be approximately 4,500m$^2$ (0.45 ha) and an FUS fire flow of 9,000 L/min required (**Appendix A.3**).

## 3.8 HYDRAULIC ANALYSIS

A hydraulic model was built by Stantec using the boundary conditions provided. Stantec assessed the anticipated pressures in this development to meet minimum servicing requirements (basic day and peak hour demands). A fire flow analysis was also performed under maximum day conditions. This analysis herein only assesses conditions for Phase 1.

### 3.8.1 Boundary Conditions

The boundary conditions provided by the City were based on computer model simulations and are summarized in **Table 3**. Boundary conditions requests and correspondence with the City are included in **Appendix A.1**.

Fixed head reservoirs simulating these boundary conditions were placed at Terry Fox, and the Trans Canada Trail connection locations as shown in **Figure 2** for Phase 1 analysis.

**Table 3: Boundary Conditions for Connections Points in Phase 1**

| Location | AVDY (m) | PKHR (m) | MXDY+FF (m) |
|---|---|---|---|
| Trans Canada Trail | 161.4 | 156.7 | 157.0 |
| Terry Fox | 161.6 | 157.0 | 157.9 |

### 3.8.2 Model Development

New watermains were added to the hydraulic model to simulate the proposed distribution system. Hazen-Williams coefficients ("C-Factors") were applied to the new watermain in accordance with the City of Ottawa's Water Distribution Design Guidelines (**Table 4**Table ).

### 3.9.2 Maximum Day Plus Fire Flow

An analysis was carried out using the hydraulic model to determine if the proposed development, under maximum day demands, can achieve a fire flow of 10,000 L/min (167 L/s) while maintaining a residual pressure of 138kPa (20 psi). This was accomplished using a steady-state maximum day demand scenario along with the automated fire flow simulation feature of the software. Fire flow analysis was only performed for the proposed site and excludes the Mattamy site. The available flows are shown in **Figure 7**.

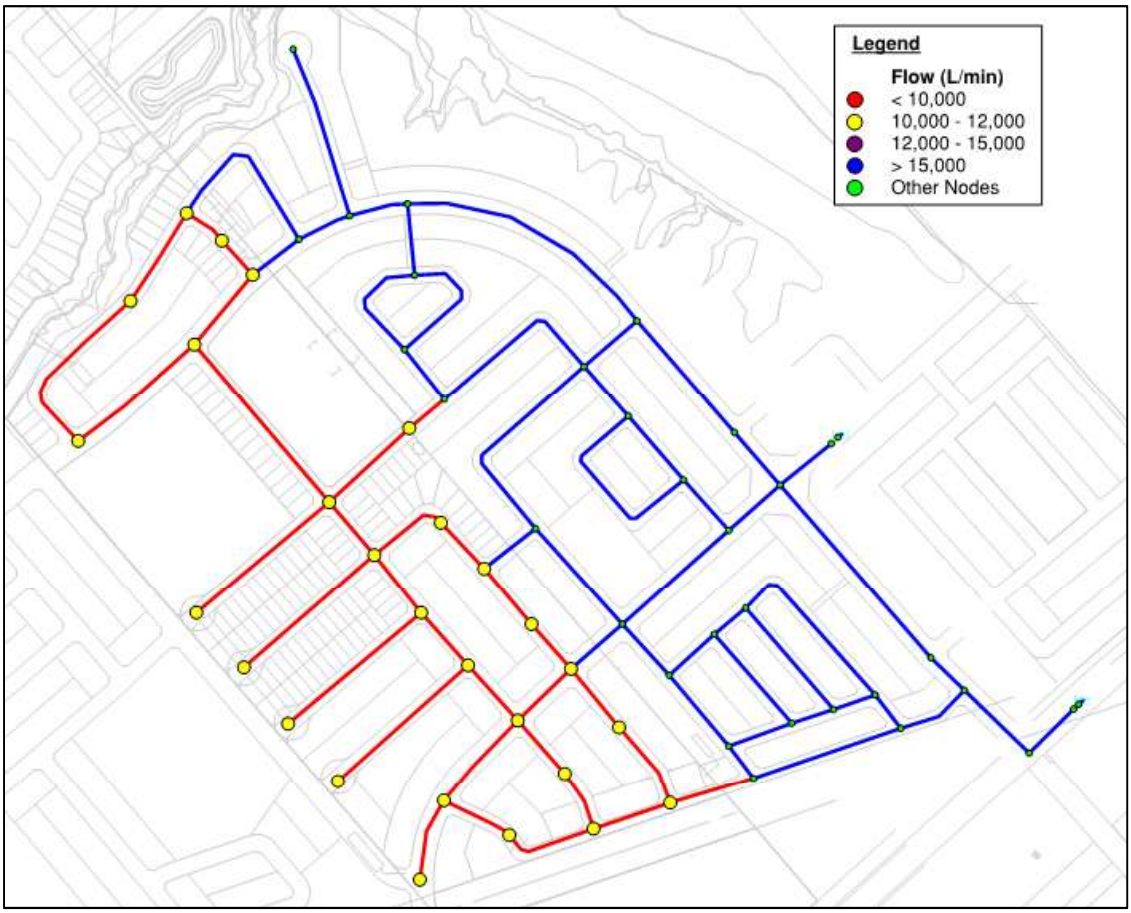



**Figure 7: Available Flow during MXDY Conditions**

Using the proposed pipe layout and sizing, a fire flow of 10,000 L/min can be achieved at all locations upon during Phase 1 in the proposed site.

## WATER DEMAND CALCULATIONS

620 Triangle Street, Fernbank North Elementary School
Project No. 24093

Robinson
Land Development

| JUNCTION NODE | RESIDENTIAL POPULATION | | | | COMMERCIAL AREA (ha) | INSTITUTIONAL AREA (ha) | AVG. DAY DEMAND (L/s) | | | | MAX. DAILY DEMAND (L/s) | | | | MAX. HOURLY DEMAND (L/s) | | | | AVG. DAY DEMAND ($m^3$/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | UNIT COUNT | | | TOTAL POPULATION | | | RES. | COMM. | INST. | TOTAL | RES. | COMM. | INST. | TOTAL | RES. | COMM. | INST. | TOTAL | |
| | SINGLE FAMILY | TOWNHOUSE | APARTMENTS | | | | | | | | | | | | | | | | |
| CONNECTION 1 | | | | | | 2.71 | | | 0.88 | 0.88 | | | 1.32 | 1.32 | | | 2.37 | 2.37 | 75.9 |
| **Total** | | | | | | **2.71** | | | **0.88** | **0.88** | | | **1.32** | **1.32** | | | **2.37** | **2.37** | **75.9** |

Notes:
1. Per unit populations as per OWDG Table 4.1.

| Per Unit Populations | | |
|---|---|---|
| Single Family = | 3.4 | persons/unit |
| Townhouses = | 2.7 | persons/unit |
| Apartments (2 bedroom) = | 2.1 | persons/unit |

| Avg. Day Demand: | | |
|---|---|---|
| Residential | 280 | L/person/day |
| Commercial | 35000 | L/ha/day |
| **Institutional** | **28000** | **L/ha/day** |

| Max. Daily Demand: | | |
|---|---|---|
| Residential | 2.5 | x Avg. Day |
| Commercial | 1.5 | x Avg. Day |
| **Institutional** | **1.5** | **x Avg. Day** |

| Max. Hourly Demand: | | |
|---|---|---|
| Residential | 2.2 | x Max. Day |
| Commercial | 1.8 | x Max. Day |
| **Institutional** | **1.8** | **x Max. Day** |

## WATER DEMAND CALCULATIONS

620 Triangle Street, Fernbank North Elementary School
Project No. 24093

Robinson
Land Development

| JUNCTION NODE | RESIDENTIAL POPULATION | | | | No. OF STUDENTS | COMMERCIAL AREA (ha) | INSTITUTIONAL AREA (ha) | AVG. DAY DEMAND (L/s) | | | | MAX. DAILY DEMAND (L/s) | | | | MAX. HOURLY DEMAND (L/s) | | | | AVG. DAY DEMAND ($m^3$/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | UNIT COUNT | | | TOTAL POPULATION | | | | RES. | COMM. | INST. | TOTAL | RES. | COMM. | INST. | TOTAL | RES. | COMM. | INST. | TOTAL | |
| | SINGLE FAMILY | TOWNHOUSE | APARTMENTS | | | | | | | | | | | | | | | | | |
| CONNECTION 1 | | | | | 938.0 | | | | | 0.76 | 0.76 | | | 1.14 | 1.14 | | | 2.05 | 2.05 | 65.7 |
| **Total** | | | | | | | | | | **0.76** | **0.76** | | | **1.14** | **1.14** | | | **2.05** | **2.05** | **65.7** |

Notes:
1. Per unit populations as per OWDG Table 4.1.
2. Demand as per Ottawa Water Distribution Design Guidelines (Reference Section 4.2.8)
3. Estimated number of students provided by Architect.

| Per Unit Populations | | |
|---|---|---|
| Single Family = | 3.4 | persons/unit |
| Townhouses = | 2.7 | persons/unit |
| Apartments (2 bedroom) = | 2.1 | persons/unit |

| Avg. Day Demand: | | |
|---|---|---|
| Residential | 280 | L/person/day |
| Commercial | 35000 | L/ha/day |
| Institutional | 28000 | L/ha/day |
| Schools | 70 | L/student/day |

| Max. Daily Demand: | | |
|---|---|---|
| Residential | 2.5 | x Avg. Day |
| Commercial | 1.5 | x Avg. Day |
| **Institutional** | **1.5** | **x Avg. Day** |

| Max. Hourly Demand: | | |
|---|---|---|
| Residential | 2.2 | x Max. Day |
| Commercial | 1.8 | x Max. Day |
| **Institutional** | **1.8** | **x Max. Day** |

# Boundary Conditions
# Triangle Street

## Provided Information

| Scenario | Demand | |
|---|---|---|
| | L/min | L/s |
| Average Daily Demand | 53 | 0.88 |
| Maximum Daily Demand | 79 | 1.32 |
| Peak Hour | 143 | 2.38 |
| Fire Flow Demand | 8,000 | 133.33 |

## Location

## Results

### Connection 1 – Honeylocust Avenue

| Demand Scenario | Head (m) | Pressure[1] (psi) |
|---|---|---|
| Maximum HGL | 160.7 | 87.3 |
| Peak Hour | 156.6 | 81.4 |
| Max Day plus Fire Flow #1 | 152.5 | 75.7 |

[1] Ground Elevation = 99.3 m

### Connection 2 – Triangle Street

| Demand Scenario | Head (m) | Pressure[1] (psi) |
|---|---|---|
| Maximum HGL | 160.7 | 87.5 |
| Peak Hour | 156.6 | 81.6 |
| Max Day plus Fire Flow #1 | 151.5 | 74.3 |

[1] Ground Elevation = 99.2 m

## Notes

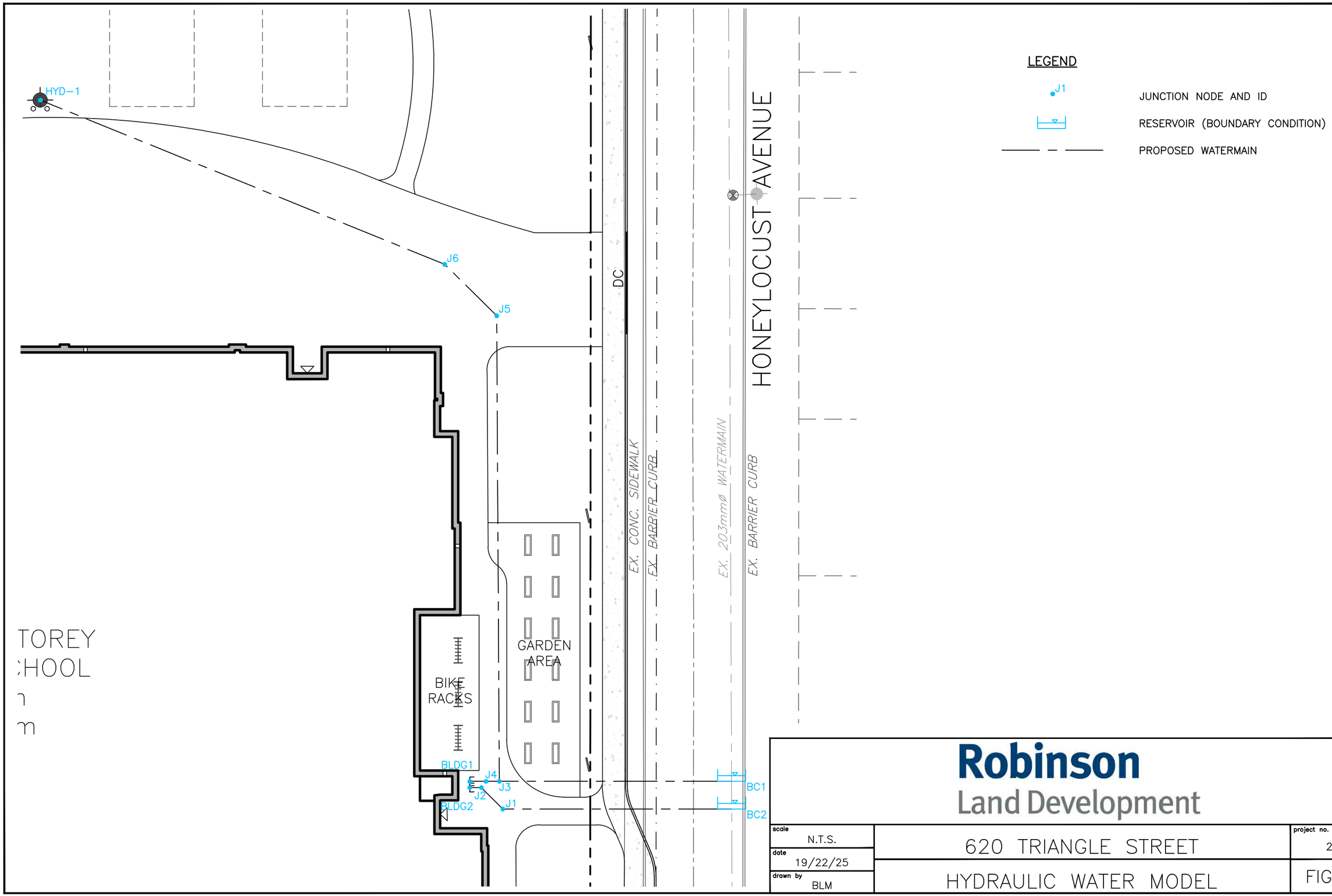
1. As per OWDG Technical Bulleting ISTB-2021-03 Section 4.3.1:

   Industrial, commercial, institutional service areas with a basic day demand greater than 50 $m^3$/day (0.58 L/s) and residential areas serving 50 or more dwellings shall be connected with a minimum of two watermains, separated by an isolation valve, to avoid the creation of a vulnerable service area. Individual residential facilities with a basic day demand greater than 50 m3/day shall be connected with a minimum of two water services, separated by an isolation valve, to avoid the creation of a vulnerable service area.

2. As per the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi.) Pressure control measures to be considered are as follows, in order of preference:
   - If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
   - Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/ building, located downstream of the meter so it is owner maintained.

**Disclaimer**

*The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.*




Robinson
Land Development

| | | |
|---|---|---|
| scale N.T.S. | 620 TRIANGLE STREET | project no. 24093 |
| date 19/22/25 | | |
| drawn by BLM | HYDRAULIC WATER MODEL | FIG. 3.0 |

**Table C1: Peak Hour Junction Outputs**

| Junction ID | Demand (L/s) | Elevation (m) | Head (m) | Pressure (psi) |
|---|---|---|---|---|
| BLDG1 | 2.37 | 99.85 | 156.59 | 81.06 |
| HYD-1 | 0.00 | 99.10 | 156.59 | 82.13 |
| J3 | 0.00 | 99.70 | 156.59 | 81.28 |
| J4 | 0.00 | 99.74 | 156.59 | 81.22 |
| J5 | 0.00 | 99.25 | 156.59 | 81.92 |
| J6 | 0.00 | 99.24 | 156.59 | 81.93 |

| Junction ID | Demand (L/s) | Elevation (m) | Head (m) | Pressure (psi) |
|---|---|---|---|---|
| BLDG2 | 2.37 | 99.85 | 156.55 | 81.01 |
| J1 | 0.00 | 99.73 | 156.56 | 81.19 |
| J2 | 0.00 | 99.75 | 156.56 | 81.15 |

**Table C2: Max. Day Junction Outputs**

| Junction ID | Demand (L/s) | Elevation (m) | Head (m) | Pressure (psi) |
|---|---|---|---|---|
| BLDG1 | 1.32 | 99.85 | 160.70 | 86.92 |
| HYD-1 | 0.00 | 99.10 | 160.70 | 88.00 |
| J3 | 0.00 | 99.70 | 160.70 | 87.14 |
| J4 | 0.00 | 99.74 | 160.70 | 87.08 |
| J5 | 0.00 | 99.25 | 160.70 | 87.78 |
| J6 | 0.00 | 99.24 | 160.70 | 87.80 |

| Junction ID | Demand (L/s) | Elevation (m) | Head (m) | Pressure (psi) |
|---|---|---|---|---|
| BLDG2 | 1.32 | 99.85 | 160.69 | 86.91 |
| J1 | 0.00 | 99.73 | 160.69 | 87.08 |
| J2 | 0.00 | 99.75 | 160.69 | 87.05 |

**Table C3: Max. Day Plus Fire Flow Outputs**

| Junction ID | Available Fire Flow (L/s) | Available Fire Flow (L/min) | Available Flow Pressure (psi) |
|---|---|---|---|
| HYD-1 | 115.74 | 6,944.40 | 20.00 |

**Table C4: Pipe Report**

| Pipe ID | Inlet Junction | Outlet Junction | Length (m) | Diameter (mm) | Roughness |
|---|---|---|---|---|---|
| C1 | BC1 | J3 | 20.1 | 152 | 100 |
| C2 | J3 | J4 | 1.4 | 152 | 100 |
| C3 | J4 | BLDG1 | 1.2 | 102 | 100 |
| C4 | J3 | J5 | 40.3 | 152 | 100 |
| C5 | J5 | J6 | 6.3 | 152 | 100 |
| C6 | J6 | HYD-1 | 37.8 | 152 | 100 |
| C7 | BC2 | J1 | 19.8 | 102 | 100 |
| C8 | J1 | J2 | 2.6 | 102 | 100 |
| C9 | BLDG2 | J2 | 1.0 | 102 | 100 |

| | |
|---|---|
| **Project Name:** | Fernbank North Elementary School |
| **Project Location:** | 620 Triangle Street, Stittsville |
| **Project No:** | 24093 |
| **Date:** | Mar. 11, 2025 |
| **Building Type:** | School |
| **Building Being Considered:** | School Building |

Robinson Land Development

**Calculations for Total Required Fire Flow**

| Step | Parameter | | | | Value | |
|---|---|---|---|---|---|---|
| A | **Type of Construction** | **Options** | **C** | | | |
| | | Wood Frame (Type V) | 1.5 | Ordinary Construction (Type III) | 1.0 | |
| | | Ordinary Construction (Type III) | 1.0 | | | |
| | | Non-Combustible Construction (Type II) | 0.8 | | | |
| | | Fire Resistive Construction (Type I) | 0.6 | | | |
| B | Ground Floor Area | | | | 4690.0 | $m^2$ |
| | **Total Effective Floor Area** | | | | **4,690.0** | **$m^2$** |
| C | **Fire Flow** | | | | **15,000** | **L/min** |
| D | **Occupancy Class** | **Options** | **Charge** | | | |
| | | Non-combustible | -0.25 | Combustible | 0 | |
| | | Limited Combustible | -0.15 | | | |
| | | Combustible | 0.00 | | | |
| | | Free burning | 0.15 | | | |
| | | Rapid Burning | 0.25 | | | |
| | **Occupancy Adjustment** | | | | **0** | **L/min** |
| | **Fire Flow** | | | | **15,000** | **L/min** |
| E | **Sprinkler Protection** | **Options** | **Charge** | | | |
| | | Automatic Sprinkler Protection | -0.30 | Automatic Sprinkler Protection | -0.30 | |
| | | None | 0.00 | | | |
| | | Water Supply is Standard for System and Hose Lines | -0.10 | Yes | -0.10 | |
| | | Full Supervision of the Sprinker System | -0.10 | Yes | -0.10 | |
| | **Sprinkler Reduction** | | | | **-7,500** | **L/min** |
| F | **Exposures** | | | | | |
| | **West Side** | | | | | |
| | Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems | | | | No | |
| | Exposed Building Fully Protected with Automatic Sprinker Systems | | | | No | |
| | Exposed Wall Length | | | | 20.2 | m |
| | Exposed Wall No. of Storeys | | | | 2 | |
| | Length-Height Factor of Exposed Wall | | | | 40.4 | m.storeys |
| | Construction Type of Exposed Wall | **Options** | | Wood Frame | | |
| | | Wood Frame | | | | |
| | | Ordinary with Unprotected Openings | | | | |
| | | Ordinary without Unprotected Openings | | | | |
| | | Noncombustible or Fire Resistive with Unprotected Openings | | | | |
| | | Noncombustible or Fire Resistive without Unprotected Openings | | | | |
| | Separation Distance | | | | 25.8 | m |
| | **West Side Exposure Charge** | | | | **0.04** | |
| | **North Side** | | | | | |
| | Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems | | | | No | |
| | Exposed Building Fully Protected with Automatic Sprinker Systems | | | | No | |
| | Exposed Wall Length | | | | 0 | m |
| | Exposed Wall No. of Storeys | | | | 0 | |
| | Length-Height Factor of Exposed Wall | | | | 0 | m.storeys |
| | Construction Type of Exposed Wall | **Options** | | Wood Frame | | |
| | | Wood Frame | | | | |
| | | Ordinary with Unprotected Openings | | | | |
| | | Ordinary without Unprotected Openings | | | | |
| | | Noncombustible or Fire Resistive with Unprotected Openings | | | | |
| | | Noncombustible or Fire Resistive without Unprotected Openings | | | | |
| | Separation Distance | | | **>30m; No Exposure** | 123 | m |
| | **North Side Exposure Charge** | | | | **0.00** | |
| | **East Side** | | | | | |
| | Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems | | | | No | |
| | Exposed Building Fully Protected with Automatic Sprinker Systems | | | | No | |
| | Exposed Wall Length | | | | 7.3 | m |
| | Exposed Wall No. of Storeys | | | | 1 | |
| | Length-Height Factor of Exposed Wall | | | | 7.3 | m.storeys |
| | Construction Type of Exposed Wall | **Options** | | Wood Frame | | |
| | | Wood Frame | | | | |
| | | Ordinary with Unprotected Openings | | | | |
| | | Ordinary without Unprotected Openings | | | | |
| | | Noncombustible or Fire Resistive with Unprotected Openings | | | | |
| | | Noncombustible or Fire Resistive without Unprotected Openings | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | Separation Distance | | | 20.4 | m |
| | **East Side Exposure Charge** | | | **0.00** | |
| | **South Side** | | | | |
| | Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems | | | No | |
| | Exposed Building Fully Protected with Automatic Sprinker Systems | | | No | |
| | Exposed Wall Length | | | 18 | m |
| | Exposed Wall No. of Storeys | | | 2 | |
| | Length-Height Factor of Exposed Wall | | | 36 | m.storeys |
| | Construction Type of Exposed Wall | **Options** | Wood Frame | | |
| | | Wood Frame | | | |
| | | Ordinary with Unprotected Openings | | | |
| | | Ordinary without Unprotected Openings | | | |
| | | Noncombustible or Fire Resistive with Unprotected Openings | | | |
| | | Noncombustible or Fire Resistive without Unprotected Openings | | | |
| | Separation Distance | | | 28.8 | m |
| | **South Side Exposure Charge** | | | **0.02** | |
| | **Total Exposure Charage** | | | **0.06** | **< 0.75** |
| | **Increase for Exposures** | | | **900** | **L/min** |
| **G** | **Total Required Fire Flow** | | | **8,000** | **L/min** |

**Notes:**

**1. Fire flow calculations have been prepared in accordance with Fire Underwriters Survey (v. 2020)**

**2. Where buildings are at a diagonal to each other, the shortest separtion distance is increased by 3 metres and used as the exposure distance (Ref. FUS v.2020 pg.30).**

| | |
|---|---|
| **Project Name:** | Fernbank North Elementary School |
| **Project Location:** | 620 Triangle Street, Stittsville |
| **Project No:** | 24093 |
| **Date:** | Mar. 11-25 |
| **Building Type:** | Portable |
| **Building Being Considered:** | Portable |

Robinson Land Development

**Calculations for Total Required Fire Flow**

| Step | Parameter | | | | | | |
|---|---|---|---|---|---|---|---|
| A | **Type of Construction** | **Options** | **C** | | | | |
| | | Wood Frame (Type V) | 1.5 | Wood Frame (Type V) | 1.5 | | |
| | | Ordinary Construction (Type III) | 1.0 | | | | |
| | | Non-Combustible Construction (Type II) | 0.8 | | | | |
| | | Fire Resistive Construction (Type I) | 0.6 | | | | |
| B | Ground Floor Area | | | | 250.0 | $m^2$ | |
| | **Total Effective Floor Area** | | | | **250.0** | **$m^2$** | |
| C | **Fire Flow** | | | | **5,000** | **L/min** | |
| D | **Occupancy Class** | **Options** | **Charge** | | | | |
| | | Non-combustible | -0.25 | Combustible | 0 | | |
| | | Limited Combustible | -0.15 | | | | |
| | | Combustible | 0.00 | | | | |
| | | Free burning | 0.15 | | | | |
| | | Rapid Burning | 0.25 | | | | |
| | **Occupancy Adjustment** | | | | **0** | **L/min** | |
| | **Fire Flow** | | | | **5,000** | **L/min** | |
| E | **Sprinkler Protection** | **Options** | **Charge** | | | | |
| | | Automatic Sprinkler Protection | -0.30 | None | 0.00 | | |
| | | None | 0.00 | | | | |
| | | Water Supply is Standard for System and Hose Lines | -0.10 | No | 0.00 | | |
| | | Full Supervision of the Sprinker System | -0.10 | No | 0.00 | | |
| | **Sprinkler Reduction** | | | | **0** | **L/min** | |
| F | **Exposures** | | | | | | |
| | **West Side** | | | | | | |
| | Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems | | | | No | | |
| | Exposed Building Fully Protected with Automatic Sprinker Systems | | | | Yes | | |
| | Exposed Wall Length | | | | 60 | m | |
| | Exposed Wall No. of Storeys | | | | 1 | | |
| | Length-Height Factor of Exposed Wall | | | | 60 | m.storeys | |
| | Construction Type of Exposed Wall | **Options** | | Ordinary without Unprotected Openings | | | |
| | | Wood Frame | | | | | |
| | | Ordinary with Unprotected Openings | | | | | |
| | | Ordinary without Unprotected Openings | | | | | |
| | | Noncombustible or Fire Resistive with Unprotected Openings | | | | | |
| | | Noncombustible or Fire Resistive without Unprotected Openings | | | | | |
| | Separation Distance | | | | 20 | m | |
| | **West Side Exposure Charge** | | | | **0.00** | | |
| | **North Side** | | | | | | |
| | Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems | | | | No | | |
| | Exposed Building Fully Protected with Automatic Sprinker Systems | | | | No | | |
| | Exposed Wall Length | | | | 34.1 | m | |
| | Exposed Wall No. of Storeys | | | | 1 | | |
| | Length-Height Factor of Exposed Wall | | | | 34.1 | m.storeys | |
| | Construction Type of Exposed Wall | **Options** | | Wood Frame | | | |
| | | Wood Frame | | | | | |
| | | Ordinary with Unprotected Openings | | | | | |
| | | Ordinary without Unprotected Openings | | | | | |
| | | Noncombustible or Fire Resistive with Unprotected Openings | | | | | |
| | | Noncombustible or Fire Resistive without Unprotected Openings | | | | | |
| | Separation Distance | | | | 5.9 | m | |
| | **North Side Exposure Charge** | | | | **0.16** | | |
| | **East Side** | | | | | | |
| | Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems | | | | No | | |
| | Exposed Building Fully Protected with Automatic Sprinker Systems | | | | No | | |
| | Exposed Wall Length | | | | 9.7 | m | |
| | Exposed Wall No. of Storeys | | | | 2 | | |
| | Length-Height Factor of Exposed Wall | | | | 19.4 | m.storeys | |
| | Construction Type of Exposed Wall | **Options** | | Wood Frame | | | |
| | | Wood Frame | | | | | |
| | | Ordinary with Unprotected Openings | | | | | |
| | | Ordinary without Unprotected Openings | | | | | |
| | | Noncombustible or Fire Resistive with Unprotected Openings | | | | | |
| | | Noncombustible or Fire Resistive without Unprotected Openings | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | Separation Distance | | | 14.9 | m |
| | **East Side Exposure Charge** | | | **0.10** | |
| | **South Side** | | | | |
| | Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems | | | No | |
| | Exposed Building Fully Protected with Automatic Sprinker Systems | | | No | |
| | Exposed Wall Length | | | 34.1 | m |
| | Exposed Wall No. of Storeys | | | 1 | |
| | Length-Height Factor of Exposed Wall | | | 34.1 | m.storeys |
| | Construction Type of Exposed Wall | **Options** | Wood Frame | | |
| | | Wood Frame | | | |
| | | Ordinary with Unprotected Openings | | | |
| | | Ordinary without Unprotected Openings | | | |
| | | Noncombustible or Fire Resistive with Unprotected Openings | | | |
| | | Noncombustible or Fire Resistive without Unprotected Openings | | | |
| | Separation Distance | | | 12 | m |
| | **South Side Exposure Charge** | | | **0.11** | |
| | **Total Exposure Charage** | | | **0.37** | **< 0.75** |
| | **Increase for Exposures** | | | **1850** | **L/min** |
| **G** | **Total Required Fire Flow** | | | **7,000** | **L/min** |

**Notes:**

**1. Fire flow calculations have been prepared in accordance with Fire Underwriters Survey (v. 2020)**

**2. Where buildings are at a diagonal to each other, the shortest separtion distance is increased by 3 metres and used as the exposure distance (Ref. FUS v.2020 pg.30).**

40m x 60m
GAME FIELD

LANDSCAPE BERM

FUTURE PORTABLES

FUTURE PORTABLES

FUTURE PORTABLES

MULCH PLAY AREA

FUTURE HYD-1 FLANGE =99.20m

152mmø WATERMAIN

V&VB

150m

75m

150m

75m

22.5° BEND

45° BEND

152mmø WATERMAIN

HONEYLOCUST AVENUE

EX. CONC. SIDEWALK

EX. BARRIER CURB

EX. 203mmø WATERMAIN

EDGE OF PAVEMENT

DC

ARTIF. TURF AREA

PROPOSED 1-STOREY
ELEMENTARY SCHOOL
FF=99.85m
USF=98.20m

150m

75m

75m

BIKE RACKS

GARDEN AREA

152TO102 REDUCER

PRV
T/W=97.36m

152OFF
152TEE

152mmø W.M.

V&VB

152mmø W.M.

V&VB

V&VB

2x45° BENDS

152OFF
203TEE

V&VB

SITE BENCHMARK
FIRE HYDRANT
TOP OF SPINDLE
ELEV. = 100.36

LS

SIAMESE

HYD-2
FLANGE
=99.63m

EX. CONCRETE SIDEWALK

EX. BARRIER CURB

EX. CONCRETE SIDEWALK

EX. BARRIER CURB

EX. 203mmø WATERMAIN

EX. 305mmø WATERMAIN

SV

V&VB

EX. BARRIER CURB

EX. BARRIER CURB

TRIANGLE STREET

SITE BENCHMARK
FIRE HYDRANT
TOP OF SPINDLE
ELEV. = 100.32

Robinson
Land Development

| | | |
|---|---|---|
| scale 1:750 | 620 TRIANGLE STREET | project no. 24093 |
| date 22/09/25 | | |
| drawn by BLM | HYDRANT COVERAGE PLAN | FIG. 4.0 |

Appendix D

Hazeldean Craig Subdivision Sanitary Drainage Area Plan (prepared by Stantec)

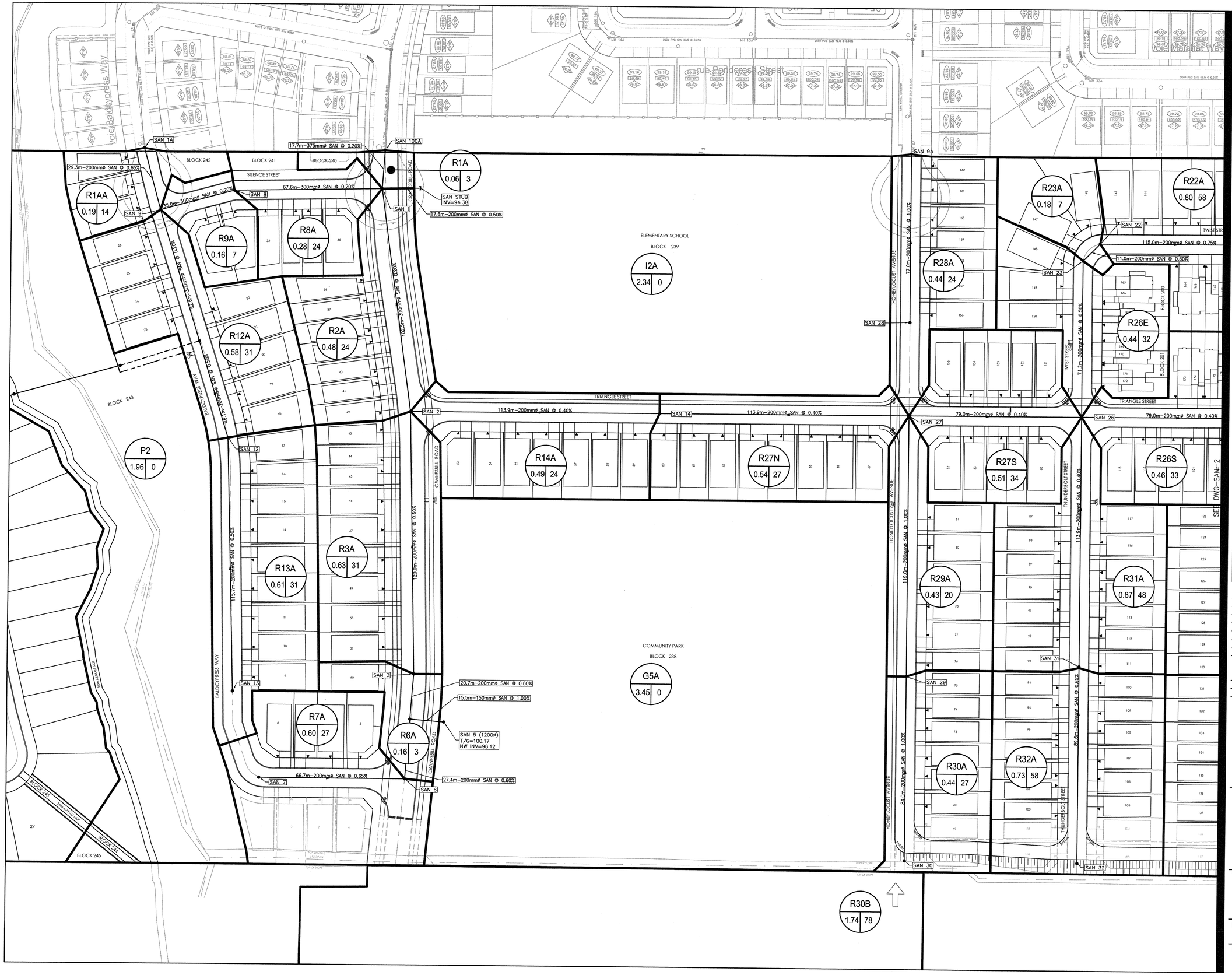
Hazeldean Craig Subdivision Sanitary Sewer Design Sheet (prepared by Stantec)

Sanitary Sewer Design Sheet

Sanitary Sewer Design Sheet (School Population)

Building Matrix

Hazeldean Pump Station Excerpt (prepared by Stantec)




Stantec

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400 - 1331 Clyde Avenue
Ottawa ON
Tel. 613.722.4420
www.stantec.com

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Legend

- PROPOSED SANITARY SEWER
- 1 / 0.38 / 14 — SANITARY DRAINAGE AREA ID# / POPULATION / SANITARY DRAINAGE AREA ha.
- SANITARY DRAINAGE AREA ha.
- SANITARY DRAINAGE AREA ha. FUTURE PHASE

REVIEWED BY DEVELOPMENT REVIEW BRANCH.
SIGNED
DATE 11/03/2017
PLAN NUMBER 17514

| | | | | |
|---|---|---|---|---|
| 7. | ISSUED FOR EARLY SERVICING | MJS | SG | 17.10.31 |
| 6. | REVISED PER CITY COMMENTS | DCT | SG | 17.10.04 |
| 5 | REVISED MANHOLE SIZING | MJS | GR | 17.09.14 |
| 4 | ISSUED FOR MOE APPROVAL | MJS | SG | 17.09.11 |
| 3 | ISSUED FOR TENDER | MJS | SG | 17.09.06 |
| 2 | REVISED AS PER CITY COMMENTS | MJS | DT | 17.07.06 |
| 1 | ISSUED TO CITY FOR REVIEW | MJS | DT | 17.02.22 |
| Revision | | By | Appd. | YY.MM.DD |

| | | | | |
|---|---|---|---|---|
| File Name: 160401217-SA | | MS | SG | DT | 17.01.10 |
| | | Dwn. | Chkd. | Dsgn. | YY.MM.DD |

Permit-Seal

LICENSED PROFESSIONAL ENGINEER
D. C. THIFFAULT
100186107
02/11/2017
PROVINCE OF ONTARIO

Client/Project
2118356 ONTARIO INC.

HAZELDEAN CRAIG SUBDIVISION

OTTAWA, ON, CANADA

Title
SANITARY DRAINAGE PLAN

| | | |
|---|---|---|
| Project No. 160401217 | Scale 1:750 (0, 7.5, 22.5, 37.5m) | DWG# 17514 |
| Drawing No. SAN-1 | Sheet 46 of 48 | Revision 7 |

D07-16-13-0038

Stantec

SUBDIVISION: **Hazeldean Craig Subdivision**

DATE: 6/9/2017
REVISION: 2
DESIGNED BY: DT
CHECKED BY: SG

# SANITARY SEWER DESIGN SHEET
(City of Ottawa)

**FILE NUMBER:** 160401217

**DESIGN PARAMETERS**

| | | | | | |
|---|---|---|---|---|---|
| MAX PEAK FACTOR (RES.)= | 4.0 | AVG. DAILY FLOW / PERSON | 350 l/p/day | MINIMUM VELOCITY | 0.60 m/s |
| MIN PEAK FACTOR (RES.)= | 2.0 | COMMERCIAL | 50,000 l/ha/day | MAXIMUM VELOCITY | 3.00 m/s |
| PEAKING FACTOR (INDUSTRIAL): | 2.4 | INDUSTRIAL (HEAVY) | 55,000 l/ha/day | MANNINGS n | 0.013 |
| PEAKING FACTOR (COMM., INST.): | 1.5 | INDUSTRIAL (LIGHT) | 35,000 l/ha/day | BEDDING CLASS | B |
| PERSONS / SINGLE | 3.4 | INSTITUTIONAL | 50,000 l/ha/day | MINIMUM COVER | 2.50 m |
| PERSONS / TOWNHOME | 2.7 | INFILTRATION | 0.28 l/s/Ha | | |
| PERSONS / APARTMENT | 1.8 | | | | |

| LOCATION | | | RESIDENTIAL AREA AND POPULATION | | | | | | | | | COMMERCIAL | | INDUSTRIAL (L) | | INDUSTRIAL (H) | | INSTITUTIONAL | | GREEN / UNUSED | | C+I+I | INFILTRATION | | | TOTAL | PIPE | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AREA ID NUMBER | FROM M.H. | TO M.H. | AREA | SINGLE | UNITS TOWN | APT | POP. | CUMULATIVE AREA | CUMULATIVE POP. | PEAK FACT. | PEAK FLOW | AREA | ACCU. AREA | AREA | ACCU. AREA | AREA | ACCU. AREA | AREA | ACCU. AREA | AREA | ACCU. AREA | PEAK FLOW | TOTAL AREA | ACCU. AREA | INFILT. FLOW | FLOW | LENGTH | DIA | MATERIAL | CLASS | SLOPE | CAP. (FULL) | CAP. V PEAK FLOW | VEL. (FULL) | VEL. (ACT.) |
| | | | (ha) | | | | | (ha) | | | (l/s) | (ha) | (ha) | (ha) | (ha) | (ha) | (ha) | (ha) | (ha) | (ha) | (ha) | (l/s) | (ha) | (ha) | (l/s) | (l/s) | (m) | (mm) | | | (%) | (l/s) | (%) | (m/s) | (m/s) |
| R7A | 7 | 6 | 0.60 | 8 | 0 | 0 | 27 | 0.60 | 27 | 4.00 | 0.4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.60 | 0.60 | 0.2 | 0.61 | 66.7 | 200 | PVC | SDR 35 | 0.65 | 27.0 | **2.26%** | 0.85 | 0.29 |
| R6A | 6 | 4 | 0.16 | 1 | 0 | 0 | 3 | 0.77 | 31 | 4.00 | 0.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.16 | 0.77 | 0.2 | 0.71 | 27.4 | 200 | PVC | SDR 35 | 0.60 | 25.9 | **2.74%** | 0.81 | 0.30 |
| G5A | 5 | 4 | 0.00 | 0 | 0 | 0 | 0 | 0.00 | 0 | 4.00 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.45 | 3.45 | 0.0 | 3.45 | 3.45 | 1.0 | 0.97 | 15.5 | 150 | PVC | DR 28 | 1.00 | 15.3 | **6.30%** | 0.86 | 0.41 |
| | 4 | 3 | 0.00 | 0 | 0 | 0 | 0 | 0.77 | 31 | 4.00 | 0.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.45 | 0.0 | 0.00 | 4.21 | 1.2 | 1.68 | 20.7 | 200 | PVC | SDR 35 | 0.60 | 25.9 | **6.47%** | 0.81 | 0.38 |
| R3A | 3 | 2 | 0.63 | 9 | 0 | 0 | 31 | 1.40 | 61 | 4.00 | 1.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.45 | 0.0 | 0.63 | 4.84 | 1.4 | 2.35 | 120.0 | 200 | PVC | SDR 35 | 0.60 | 25.9 | **9.07%** | 0.81 | 0.42 |
| R30A, R30B | 30 | 29 | 2.18 | 31 | 0 | 0 | 105 | 2.18 | 105 | 4.00 | 1.7 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 2.18 | 2.18 | 0.6 | 2.32 | 84.0 | 200 | PVC | SDR 35 | 1.00 | 33.4 | **6.93%** | 1.05 | 0.51 |
| R29A | 29 | 27 | 0.43 | 6 | 0 | 0 | 20 | 2.61 | 126 | 4.00 | 2.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.43 | 2.61 | 0.7 | 2.77 | 119.0 | 200 | PVC | SDR 35 | 1.00 | 33.4 | **8.28%** | 1.05 | 0.52 |
| R27N | 27 | 14 | 0.54 | 8 | 0 | 0 | 27 | 3.15 | 153 | 4.00 | 2.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.54 | 3.15 | 0.9 | 3.36 | 113.9 | 200 | PVC | SDR 35 | 0.40 | 21.1 | **15.90%** | 0.67 | 0.40 |
| R14A | 14 | 2 | 0.49 | 7 | 0 | 0 | 24 | 3.64 | 177 | 4.00 | 2.9 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.49 | 3.64 | 1.0 | 3.88 | 113.9 | 200 | PVC | SDR 35 | 0.40 | 21.1 | **18.37%** | 0.67 | 0.42 |
| R2A, I2A | 2 | 1 | 0.48 | 7 | 0 | 0 | 24 | 5.52 | 262 | 4.00 | 4.2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.34 | 2.34 | 0.00 | 3.45 | 2.0 | 2.82 | 11.30 | 3.2 | 9.44 | 102.5 | 250 | PVC | SDR 35 | 0.20 | 27.1 | **34.80%** | 0.55 | 0.42 |
| R1AA | 1A | 9 | 0.19 | 4 | 0 | 0 | 14 | 0.19 | 14 | 4.00 | 0.2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.19 | 0.19 | 0.1 | 0.27 | 29.3 | 200 | PVC | SDR 35 | 0.65 | 27.0 | **1.02%** | 0.85 | 0.23 |
| R13A | 13 | 12 | 0.61 | 9 | 0 | 0 | 31 | 0.61 | 31 | 4.00 | 0.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.61 | 0.61 | 0.2 | 0.67 | 115.7 | 200 | PVC | SDR 35 | 0.50 | 23.6 | **2.82%** | 0.74 | 0.27 |
| R12A | 12 | 10 | 0.58 | 9 | 0 | 0 | 31 | 1.20 | 61 | 4.00 | 1.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.58 | 1.20 | 0.3 | 1.33 | 46.1 | 200 | PVC | SDR 35 | 0.50 | 23.6 | **5.61%** | 0.74 | 0.34 |
| RP2A-E, CP2A-C, P2 | 11B | 11A | 21.39 | 51 | 296 | 206 | 1603 | 21.39 | 1603 | 3.66 | 23.8 | 6.35 | 6.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.96 | 1.96 | 5.5 | 29.70 | 29.70 | 8.3 | 37.59 | 44.1 | 300 | PVC | SDR 35 | 0.20 | 42.9 | **87.54%** | 0.61 | 0.62 |
| | 11A | 11 | 0.00 | 0 | 0 | 0 | 0 | 21.39 | 1603 | 3.66 | 23.8 | 0.00 | 6.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.96 | 5.5 | 0.00 | 29.70 | 8.3 | 37.59 | 50.2 | 300 | PVC | SDR 35 | 0.20 | 42.9 | **87.54%** | 0.61 | 0.62 |
| | 11 | 10 | 0.00 | 0 | 0 | 0 | 0 | 21.39 | 1603 | 3.66 | 23.8 | 0.00 | 6.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.96 | 5.5 | 0.00 | 29.70 | 8.3 | 37.59 | 37.9 | 300 | PVC | SDR 35 | 0.20 | 42.9 | **87.54%** | 0.61 | 0.62 |
| | 10 | 9 | 0.00 | 0 | 0 | 0 | 0 | 22.59 | 1665 | 3.65 | 24.6 | 0.00 | 6.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.96 | 5.5 | 0.00 | 30.90 | 8.7 | 38.75 | 62.6 | 300 | PVC | SDR 35 | 0.20 | 42.9 | **90.25%** | 0.61 | 0.62 |
| R9A | 9 | 8 | 0.16 | 2 | 0 | 0 | 7 | 22.94 | 1685 | 3.64 | 24.9 | 0.00 | 6.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.96 | 5.5 | 0.16 | 31.25 | 8.7 | 39.12 | 35.0 | 300 | PVC | SDR 35 | 0.20 | 42.9 | **91.11%** | 0.61 | 0.63 |
| R8A | 8 | 1 | 0.28 | 7 | 0 | 0 | 24 | 23.22 | 1709 | 3.64 | 25.2 | 0.00 | 6.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.96 | 5.5 | 0.28 | 31.53 | 8.8 | 39.52 | 67.6 | 300 | PVC | SDR 35 | 0.20 | 42.9 | **92.04%** | 0.61 | 0.63 |
| R1A | 1 | 100A | 0.06 | 1 | 0 | 0 | 3 | 28.79 | 1974 | 3.59 | 28.7 | 0.00 | 6.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.34 | 0.00 | 5.41 | 7.5 | 0.06 | 42.89 | 12.0 | 48.26 | 17.7 | 375 | PVC | SDR 35 | 0.20 | 72.6 | **66.49%** | 0.69 | 0.64 |
| | 100A | 101A | 0.00 | 0 | 0 | 0 | 0 | 28.79 | 1974 | 3.59 | 28.7 | 0.00 | 6.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.34 | 0.00 | 5.41 | 7.5 | 0.00 | 42.89 | 12.0 | 48.26 | 45.9 | 450 | CONCRETE | SDR 35 | 0.12 | 104.1 | **46.35%** | 0.63 | 0.53 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | 450 | | | | | | | |

**SANITARY SEWER DESIGN SHEET**
**620 TRIANGLE STREET, STITTSVILLE**

Robinson Land Development

| LOCATION | | | UNIT COUNT | | | RESIDENTIAL AREA AND POPULATION | | | | | | INSTITUTIONAL | | | | INFILTRATION | | | PEAK DESIGN FLOW (L/s) | PIPE | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | INDIVIDUAL | | CUMULATIVE | | PEAK FACTOR | PEAK POP. FLOW (L/s) | AREA (ha) | ACCU. AREA (ha) | PEAK FACTOR | PEAK FLOW (L/s) | AREA (ha) | ACCU. AREA (ha) | EXTRAN. FLOW (L/s) | | LENGTH (m) | DIAMETER (mm) | SLOPE (%) | CAPACITY (L/s) | FULL FLOW VELOCITY (m/s) | EXCESS CAPACITY (L/s) | PERCENT FULL |
| STREET | FROM MH | TO MH | SINGLE-FAMILY | TOWNHOUSE | APARTMENTS | POP. | AREA (ha) | POP. | AREA (ha) | | | | | | | | | | | | | | | | | |
| **TO TRIANGLE STREET SANITARY SEWER EXMH 14** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Triangle Street | BLDG | 100 | | | | 0.0 | 0.00 | 0.0 | 0.00 | 3.80 | 0.00 | 2.71 | 2.71 | 1.50 | 1.32 | 2.71 | 2.71 | 0.89 | 2.21 | 8.5 | 150.00 | 4.00 | 30.49 | 1.73 | 28.28 | 7.25 |
| Triangle Street | 100 | MAIN | | | | 0.0 | 0.00 | 0.0 | 0.00 | 3.80 | 0.00 | 0.00 | 2.71 | 1.50 | 1.32 | 0.00 | 2.71 | 0.89 | 2.21 | 10.3 | 150.00 | 2.04 | 21.77 | 1.23 | 19.56 | 10.16 |
| *Triangle Street* | *EXMH 14* | *EXMH 2* | *7* | | | *23.8* | *0.49* | *177.0* | *3.64* | *3.70* | *2.12* | *0.00* | *2.71* | *1.50* | *1.32* | *0.49* | *6.35* | *2.10* | *5.53* | *114.4* | *201.16* | *0.41* | *21.35* | *0.67* | *15.82* | *25.92* |
| *Cranesbill Road* | *EXMH 2* | *EXMH1* | *7* | | | *23.8* | *0.48* | *262.0* | *5.52* | *3.70* | *3.14* | *0.00* | *2.71* | *1.50* | *1.32* | *3.20* | *11.68* | *3.85* | *8.31* | *110.0* | *299.36* | *0.18* | *40.83* | *0.58* | *32.52* | *20.35* |

**DESIGN PARAMETERS**

| | | | | |
|---|---|---|---|---|
| | | | Per Unit Populations: | |
| Average Daily Flow = | 280 | L/person/day | Single Family | 3.4 persons/unit |
| **Institutional Flow =** | **28,000** | **L/ha/day** | Semi-detached | 2.7 persons/unit |
| Industrial Flow = | | | Duplex | 2.3 persons/unit |
| Maximum Residential Peak Factor = | 4.0 | | Townhouse | 2.7 persons/unit |
| Harmon - Correction Factor (K) = | 0.8 | | Apartments: | |
| **Institutional Peak Factor =** | **1.5** | | Bachelor | 1.4 persons/unit |
| **Extraneous Flow =** | **0.33** | **L/s/ha** | 1 Bedroom | 1.4 persons/unit |
| Minimum Velocity = | 0.6 | m/s | 2 Bedroom | 2.1 persons/unit |
| Maximum Velocity = | 3.0 | m/s | 3 Bedroom | 3.1 persons/unit |
| | | | Average Apt. | 1.8 persons/unit |

Reference: Hazeldean Craig Subdivision - Phase 1, Stantec, September 5, 2017.
Existing sewer information based on as-built plans prepared by Stantec, dated May 31, 2019.

**SANITARY SEWER DESIGN SHEET**
**620 TRIANGLE STREET, STITTSVILLE**

Robinson Land Development

| LOCATION | | | UNIT COUNT | | | RESIDENTIAL AREA AND POPULATION | | | | | | INSTITUTIONAL | | | | INFILTRATION | | | PEAK DESIGN FLOW (L/s) | PIPE | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | INDIVIDUAL | | CUMULATIVE | | PEAK FACTOR | PEAK POP. FLOW (L/s) | | | | | | | | | | | | | | | |
| STREET | FROM MH | TO MH | SINGLE-FAMILY | TOWNHOUSE | APARTMENTS | POP. | AREA (ha) | POP. | AREA (ha) | | | No. OF PEOPLE | ACCU. No. OF PEOPLE | PEAK FACTOR | PEAK FLOW (L/s) | AREA (ha) | ACCU. AREA (ha) | EXTRAN. FLOW (L/s) | | LENGTH (m) | DIAMETER (mm) | SLOPE (%) | CAPACITY (L/s) | FULL FLOW VELOCITY (m/s) | EXCESS CAPACITY (L/s) | PERCENT FULL |
| **TO TRIANGLE STREET SANITARY SEWER EXMH 14** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Triangle Street | BLDG | 100 | | | | 0.0 | 0.00 | 0.0 | 0.00 | 3.80 | 0.00 | 1042.0 | 1042.0 | 1.50 | 1.63 | 2.71 | 2.71 | 0.89 | 2.52 | 8.5 | 150.00 | 4.00 | 30.49 | 1.73 | 27.97 | 8.27 |
| Triangle Street | 100 | MAIN | | | | 0.0 | 0.00 | 0.0 | 0.00 | 3.80 | 0.00 | 0.0 | 1042.0 | 1.50 | 1.63 | 0.00 | 2.71 | 0.89 | 2.52 | 10.3 | 150.00 | 2.04 | 21.77 | 1.23 | 19.25 | 11.58 |
| *Triangle Street* | *EXMH 14* | *EXMH 2* | *7* | | | *23.8* | *0.49* | *177.0* | *3.64* | *3.70* | *2.12* | *0.0* | *1042.0* | *1.50* | *1.63* | *0.49* | *6.35* | *2.10* | *5.84* | *114.4* | *201.16* | *0.41* | *21.35* | *0.67* | *15.51* | *27.37* |
| *Cranesbill Road* | *EXMH 2* | *EXMH1* | *7* | | | *23.8* | *0.48* | *262.0* | *5.52* | *3.70* | *3.14* | *0.0* | *1042.0* | *1.50* | *1.63* | *3.20* | *11.68* | *3.85* | *8.62* | *110.0* | *299.36* | *0.18* | *40.83* | *0.58* | *32.21* | *21.11* |

**DESIGN PARAMETERS**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | Per Unit Populations: | | Schools: | | |
| Average Daily Flow = | 280 | L/person/day | Single Family | 3.4 persons/unit | 90 | L/person/day (OSDG Appendix 4-A) | Reference: Hazeldean Craig Subdivision - Phase 1, Stantec, September 5, 2017. |
| **Institutional Flow =** | **28,000** | **L/ha/day** | Semi-detached | 2.7 persons/unit | 1042 | persons (Building Matrix from Architect) | Existing sewer information based on as-built plans prepared by Stantec, dated May 31, 2019. |
| Industrial Flow = | | | Duplex | 2.3 persons/unit | | | |
| Maximum Residential Peak Factor = | 4.0 | | Townhouse | 2.7 persons/unit | | | |
| Harmon - Correction Factor (K) = | 0.8 | | Apartments: | | | | |
| **Institutional Peak Factor =** | **1.5** | | Bachelor | 1.4 persons/unit | | | |
| **Extraneous Flow =** | **0.33** | **L/s/ha** | 1 Bedroom | 1.4 persons/unit | | | |
| Minimum Velocity = | 0.6 | m/s | 2 Bedroom | 2.1 persons/unit | | | |
| Maximum Velocity = | 3.0 | m/s | 3 Bedroom | 3.1 persons/unit | | | |
| | | | Average Apt. | 1.8 persons/unit | | | |

| | |
|---|---|
| **NAME OF PRACTICE:** | **Pye & Richards -Temprano & Young Architects inc.**<br>200 - 824 MEATH STREET,<br>OTTAWA, ONTARIO. K1Z 6E8<br>T. 613-724-7700 F. 613-724-1289 info@prty.ca |
| **NAME OF PROJECT:** | FERNBANK NORTH CATHOLIC ELEMENTARY SCHOOL |
| **LOCATION:** | 620 TRIANGLE ST, OTTAWA |

**ONTARIO BUILDING CODE 2012**
**DATA MATRIX - PART 3**

| TITLE | DESCRIPTION | BC REFERENCE |
|---|---|---|
| PROJECT DESCRIPTION: | NEW 1 STOREY ELEMENTARY SCHOOL INCLUDING CHILD CARE CENTRE | 1.1.2 (A) |
| MAJOR OCCUPANCY(S): | GROUP A2 OCCUPANCY | 3.1.2.1.(1) |
| BUILDING AREA: | NEW: 4,690 SM | 1.4.1.2 (A) |
| GROSS AREA: | NEW: 4,690 SM | 1.4.1.2 (A) |
| NUMBER OF STOREYS: | ABOVE GRADE: 1, BELOW GRADE: 0 | 1.4.1.2 (A) & 3.2.1.1 |
| NUMBER OF STREETS: | 1 | 3.2.2.10 & 3.2.5 |
| BUILDING CLASSIFICATION: | GROUP A2, DIVISION 2, UP TO 6 STOREYS, ANY AREA, SPRINKLERED<br>Non Combustible Construction, 1 hr floor assemblies and supporting structure (N/A) | 3.2.2.24 |
| SPRINKLERS: | YES | 3.2.2.24 |
| STANDPIPE SYSTEM: | NOT REQUIRED BECAUSE IT WILL BE FULLY SPRINKLERED | 3.2.9 |
| FIRE ALARM SYSTEM: | REQUIRED - SINGLE STAGE NON-ADDRESSABLE FIRE ALARM SYSTEM | 3.2.4 |
| WATER SERVICE/SUPPLY ADEQUATE: | YES | 3.2.5.7 |
| HIGH BUILDING: | NO | 3.2.6 |
| CONSTRUCTION RESTRICTIONS: | NON-COMBUSTIBLE REQUIRED. | 3.2.2.24 |
| ACTUAL CONSTRUCTION: | NON-COMBUSTIBLE | 3.2.2.24 |
| MEZZANINES: | NONE | 3.2.1.1.(3)-(8) |
| OCCUPANT LOAD: | BASED ON AREA PER PERSON AS NOTED BELOW: | 3.1.17 |

| FLOOR | OCCUPANCY TYPE | AREA (SM) | RATE (SM/PERSON) | PERSONS |
|---|---|---|---|---|
| GROUND | CHILD CARE CENTRE ACTIVITY ROOM 18 MO TO 30 MO. | | N/A | 16 |
| | CHILD CARE CENTRE ACTIVITY ROOM 30 MO TO 59 MO. | | N/A | 24 |
| | 16 CLASSROOMS | | 16 C.R. X 23 KIDS | 368 |
| | 6 KINDERGARTEN | | 6 KG X 26 KIDS | 156 |
| | STAFF | | N/A | 46 (incl. 10 in childcare) |
| | **TOTAL FLOOR** | | | **610 (CURRENT** |
| | | | | |
| | FUTURE PORTABLES | | 18 F.P. X 23 KID | 414 (FUTURE) |
| | FUTURE PORTABLES STAFF | | 18 F.P. X 1 STAFF | 18 (FUTURE STAFF) |
| **TOTAL BUILDING OCCUPANCY LOAD** - * NOTE THAT THE GYM AND RESSOURCE ROOMS ARE OCCUPIED BY THE SAME PERSONS THAT OCCUPY THE CLASSROOMS AND THEREFORE THEIR TOTALS ARE NOT INCLUDED. | | | | **1042 Including future portables** |

| | | | |
|---|---|---|---|
| BARRIER FREE DESIGN | YES, AUTOMATIC DOOR OPERATORS ARE PROVIDED AT EXTERIOR AND INTERIOR DOORS OF MAIN ENTRANCE AND CHILD CARE ENTRANCE VESTIBULES | | 3.8 |
| HAZARDOUS SUBSTANCES | NO | | 3.3.1.2 & 3.3.1.19 |
| REQUIRED FIRE RESISTANCE RATINGS | FLOORS | N/A | 3.2.2.20-83 3.2.1.4 |
| | ROOF | NO RATING | 3.2.2.24 |
| | MEZZANINE | N/A | 3.2.2.24 |

| | | | |
|---|---|---|---|
| | SUPPORTING STRUCTURES | SUPPORTING FLOORS - N/A<br>SUPPORTING ROOF - NO RATING | 3.2.2.24 |
| REQUIRED FIRE SEPARATIONS | EXIT ENCLOSURES | N/A | 3.4.4.1 |
| | JANITOR'S ROOM | 0 HOUR | 3.3.1.20.(3) |
| | ELECTRICAL ROOMS | 1 HOUR | 3.6.2.1.(6) |
| | SERVICE ROOMS CONTAINING FUEL FIRED APPLIANCES | 1 HOUR(S) FIRE RESISTANCE RATING | 3.6.2.1.(1) |
| | SEPERATION OF SUITES (CHILD CARE) | 1HR | 3.3.1.1 |
| | VERTICAL SERVICE SPACES | N/A | 3.6.3.1.(1) |
| | CORRIDORS | NO FIRE SEPERATION | 3.3.2.5 (4) |
| | ROOF TOP ENCLOSURES | N/A | 3.2.2.14.(2) |

| SPATIAL SEPARATION / CONSTRUCTION OF EXTERIOR WALLS | | | | | | | 3.2.3 |
|---|---|---|---|---|---|---|---|
| | WALL | AREA OF EBF | L.D. (METRES) | PERMITTED MAX. % OF OPENINGS | PROPOSED % OF OPENINGS | FRR | NOTES |
| | NORT | | >9 | 100 | | | 3.2.3.10 |
| | SOUTH | | x | 100 | | | |
| | EAST | | X | 100 | | | 3.2.3.10 |
| | WEST | | >9 | 100 | | | |

PLUMBING FIXTURE REQUIREMENTS — 3.7

MALE/FEMALE @ 50%/50% SPLIT ASSUMED

| FLOOR | OCCUPANCY | RATE | OCCUPANT LOAD PER SEX | BUILDING CODE TABLE # | FIXTURES REQUIRED | | FIXTURES PROVIDED | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | M | F | M | F | U |
| GROUND | CHILD CARE | 1 PER 10 KIDS | 40 KIDS (REGARDLESS OF SEX) | 3.7.4.3.I | 4 (REGARDLESS OF SEX) | N/A | N/A | N/A | 4 |
| | CLASSROOMS | 30 FIXTURES PER MALE, 26 FIXTURES PER FEMALE | 644/2=322 (allowance for 12 portables is currently shown) | 3.7.4.3(14) | 11 | 13 | 11 | 13* 11 + UNI. W/R + W/R 162 | 2** |
| | KINDERGARTEN | 30 FIXTURES PER MALE, 26 FIXTURES PER FEMALE | 156 / 2 = 78 | 3.7.4.3(14) | 3 | 3 | 6 (ONE PER/CLASS | 6 (ONE PER CLASS) | 1 |
| | STAFF | 1-25 NUMBER OF PERSONS OF EACH SEX | 46 / 2 = 23 | 3.7.4.3 | 1 | 1 | 1 | 1 | 3 |

* 1 UNIVERSAL WASHROOM 117 AND W/R 161 ** UNISEX W/R IN HEALTH ROOM 118 &W /R 139

## 4.4 HAZELDEAN PUMP STATION

The proposed trunk sewer through the downstream Mattamy owned lands currently drains to the Hazeldean Pump Station (HPS) via connection to the Fernbank Trunk sewer. As the proposed site wastewater flows will ultimately discharge at the HPS, a hydraulic analysis of the site sewers was conducted to confirm impacts of a failure to the HPS under emergency conditions. The model considers two scenarios; the first applies a fixed boundary condition at the connection to the Fernbank Trunk of 95.05m, and requires a minimum of 0.30m freeboard from proposed underside of footing elevations within the proposed subdivision, whereas the second scenario is a sensitivity analysis considering a boundary condition of 95.30 as presented in the *Functional Servicing and Stormwater Management Report for the Dawson Lands*, and requires that proposed underside of footings are maintained above anticipated HGL levels within the receiving sanitary sewers. Results of the analyses are demonstrated in **Table 6** below, as well as within **Appendix B.2 and B.3**.

**Table 6: Pump Station Failure Sanitary HGL**

| Manhole | USF | HGL (95.30) | Freeboard | HGL (95.05) | Freeboard |
|---|---|---|---|---|---|
| 1 | 96.23 | 96.12 | 0.11 | 95.87 | 0.36 |
| 1A | 96.25 | 96.16 | 0.09 | 95.94 | 0.31 |
| 2 | 96.75 | 96.13 | 0.62 | 95.88 | 0.87 |
| 3 | 97.15 | 96.13 | 1.02 | 95.88 | 1.27 |
| 4 | 97.80 | 96.12 | 1.68 | 95.88 | 1.92 |
| 5 | 97.80 | 96.14 | 1.66 | 96.14 | 1.66 |
| 6 | 97.80 | 96.12 | 1.68 | 95.96 | 1.84 |
| 7 | 97.97 | 96.45 | 1.52 | 96.45 | 1.52 |
| 8 | 96.44 | 96.18 | 0.26 | 95.93 | 0.51 |
| 9 | 96.46 | 96.21 | 0.25 | 95.96 | 0.50 |
| 10 | 96.65 | 96.29 | 0.36 | 96.04 | 0.61 |
| 11 | 96.65 | 96.34 | 0.31 | 96.09 | 0.56 |
| 11A1 | 96.65 | 96.40 | 0.25 | 96.15 | 0.50 |
| 11B1 | 96.65 | 96.45 | 0.20 | 96.20 | 0.45 |
| 12 | 96.75 | 96.29 | 0.46 | 96.04 | 0.71 |
| 13 | 97.80 | 96.28 | 1.52 | 96.04 | 1.76 |
| 14 | 97.30 | 96.90 | 0.40 | 96.38 | 0.92 |
| 15 | 97.70 | 96.18 | 1.52 | 95.96 | 1.74 |
| 16 | 97.90 | 96.25 | 1.65 | 96.04 | 1.86 |
| 17 | 98.45 | 96.28 | 2.17 | 96.07 | 2.38 |
| 18 | 98.65 | 96.31 | 2.34 | 96.10 | 2.55 |

Appendix E

Hazeldean Craig Subdivision Storm Drainage Area Plan (prepared by Stantec)

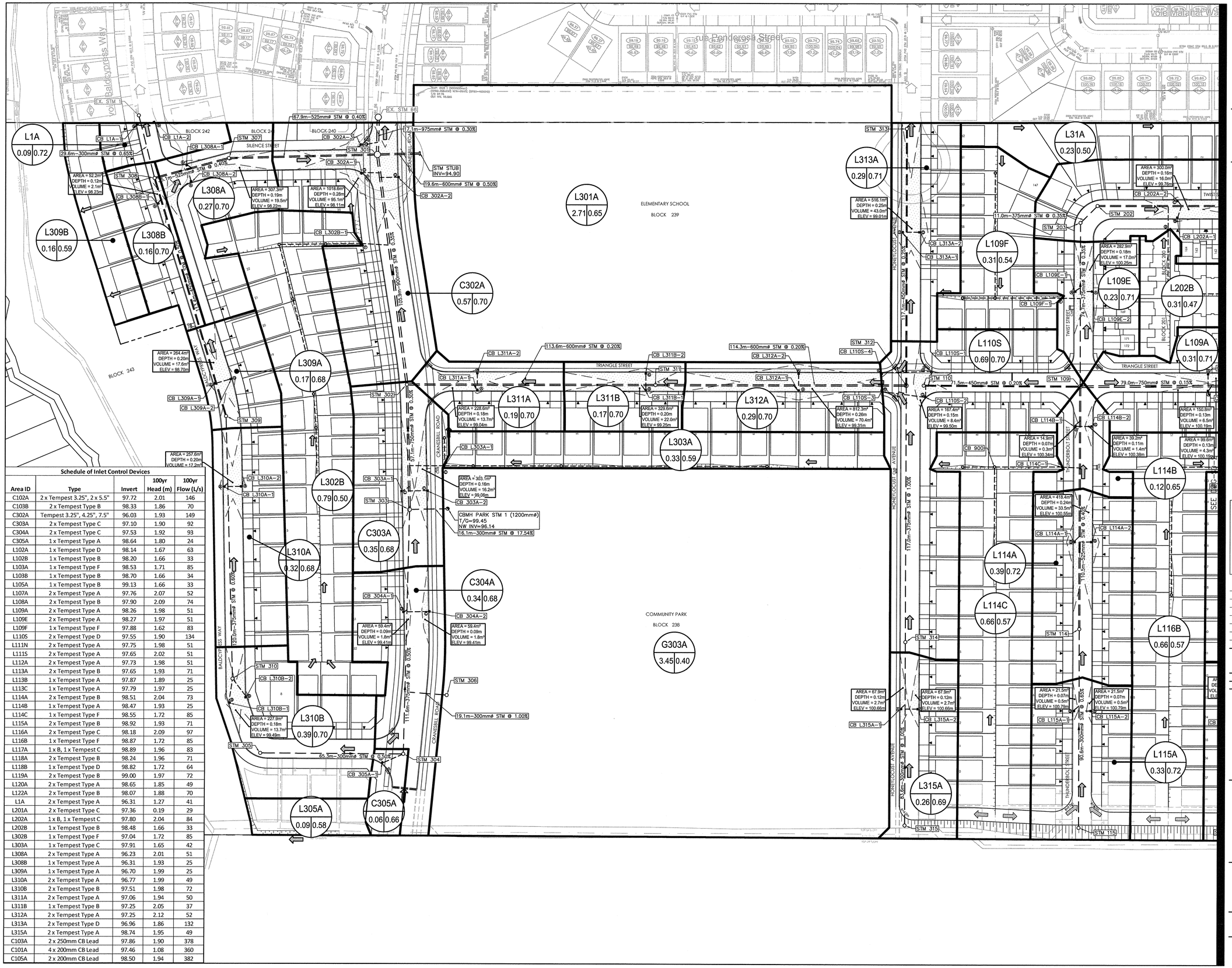
Hazeldean Craig Subdivision Storm Sewer Design Sheet (prepared by Stantec)

*Table 14: Outlet & Storage Parameters* (prepared by Stantec)

Storm Drainage Area Plan (DWG. 24093-STM1)

Storm Sewer Design Sheet

Runoff Coefficient Calculations




## Schedule of Inlet Control Devices

| Area ID | Type | Invert | 100yr Head (m) | 100yr Flow (L/s) |
|---|---|---|---|---|
| C102A | 2 x Tempest 3.25", 2 x 5.5" | 97.72 | 2.01 | 146 |
| C103B | 2 x Tempest Type B | 98.33 | 1.86 | 70 |
| C302A | Tempest 3.25", 4.25", 7.5" | 96.03 | 1.93 | 149 |
| C303A | 2 x Tempest Type C | 97.10 | 1.90 | 92 |
| C304A | 2 x Tempest Type C | 97.53 | 1.92 | 93 |
| C305A | 1 x Tempest Type A | 98.64 | 1.80 | 24 |
| L102A | 1 x Tempest Type D | 98.14 | 1.67 | 63 |
| L102B | 1 x Tempest Type B | 98.20 | 1.66 | 33 |
| L103A | 1 x Tempest Type F | 98.53 | 1.71 | 85 |
| L103B | 1 x Tempest Type B | 98.70 | 1.66 | 34 |
| L105A | 1 x Tempest Type B | 99.13 | 1.66 | 33 |
| L107A | 2 x Tempest Type A | 97.76 | 2.07 | 52 |
| L108A | 2 x Tempest Type B | 97.90 | 2.09 | 74 |
| L109A | 2 x Tempest Type A | 98.26 | 1.98 | 51 |
| L109E | 2 x Tempest Type A | 98.27 | 1.97 | 51 |
| L109F | 1 x Tempest Type F | 97.88 | 1.62 | 83 |
| L110S | 2 x Tempest Type D | 97.55 | 1.90 | 134 |
| L111N | 2 x Tempest Type A | 97.75 | 1.98 | 51 |
| L111S | 2 x Tempest Type A | 97.65 | 2.02 | 51 |
| L112A | 2 x Tempest Type A | 97.73 | 1.98 | 51 |
| L113A | 2 x Tempest Type B | 97.65 | 1.93 | 71 |
| L113B | 1 x Tempest Type A | 97.87 | 1.89 | 25 |
| L113C | 1 x Tempest Type A | 97.79 | 1.97 | 25 |
| L114A | 2 x Tempest Type B | 98.51 | 2.04 | 73 |
| L114B | 1 x Tempest Type A | 98.47 | 1.93 | 25 |
| L114C | 1 x Tempest Type F | 98.55 | 1.72 | 85 |
| L115A | 2 x Tempest Type B | 98.92 | 1.93 | 71 |
| L116A | 2 x Tempest Type C | 98.18 | 2.09 | 97 |
| L116B | 1 x Tempest Type F | 98.87 | 1.72 | 85 |
| L117A | 1 x B, 1 x Tempest C | 98.89 | 1.96 | 83 |
| L118A | 2 x Tempest Type B | 98.24 | 1.96 | 71 |
| L118B | 1 x Tempest Type D | 98.82 | 1.72 | 64 |
| L119A | 2 x Tempest Type B | 99.00 | 1.97 | 72 |
| L120A | 2 x Tempest Type A | 98.65 | 1.85 | 49 |
| L122A | 2 x Tempest Type B | 98.07 | 1.88 | 70 |
| L1A | 2 x Tempest Type A | 96.31 | 1.27 | 41 |
| L201A | 2 x Tempest Type C | 97.36 | 0.19 | 29 |
| L202A | 1 x B, 1 x Tempest C | 97.80 | 2.04 | 84 |
| L202B | 1 x Tempest Type B | 98.48 | 1.66 | 33 |
| L302B | 1 x Tempest Type F | 97.04 | 1.72 | 85 |
| L303A | 1 x Tempest Type C | 97.91 | 1.65 | 42 |
| L308A | 2 x Tempest Type A | 96.23 | 2.01 | 51 |
| L308B | 1 x Tempest Type A | 96.31 | 1.93 | 25 |
| L309A | 1 x Tempest Type A | 96.70 | 1.99 | 25 |
| L310A | 2 x Tempest Type A | 96.77 | 1.99 | 49 |
| L310B | 2 x Tempest Type B | 97.51 | 1.98 | 72 |
| L311A | 2 x Tempest Type A | 97.06 | 1.94 | 50 |
| L311B | 1 x Tempest Type B | 97.25 | 2.05 | 37 |
| L312A | 2 x Tempest Type A | 97.25 | 2.12 | 52 |
| L313A | 2 x Tempest Type D | 96.96 | 1.86 | 132 |
| L315A | 2 x Tempest Type A | 98.74 | 1.95 | 49 |
| C103A | 2 x 250mm CB Lead | 97.86 | 1.90 | 378 |
| C101A | 4 x 200mm CB Lead | 97.46 | 1.08 | 360 |
| C105A | 2 x 200mm CB Lead | 98.50 | 1.94 | 382 |


Stantec

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Legend

- L202A / 1.13 / 0.60 — AREA ID; RUNOFF COEFFICIENT
- STORM DRAINAGE AREA ha.
- STORM DRAINAGE BOUNDARY
- EXISTING/FUTURE STORM DRAINAGE BOUNDARY
- 1-8 / 135 / 0.61 — FUTURE MINOR DRAINAGE AREA; TYPICAL SERVICE LATERAL LOCATION
- MAXIMUM PONDING LIMITS
- DIRECTION OF OVERLAND FLOW
- PROPOSED STORM SEWER
- PROPOSED CATCHBASIN MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED DOUBLE CATCH BASIN
- PROPOSED SUB DRAIN CATCH BASIN AS PER CITY OF OTTAWA STANDARD DETAIL DRAWINGS L10 AND L11.
- PROPOSED PERFORATED SUBDRAIN
- EXISTING STORM SEWER
- EXISTING CATCHBASIN MANHOLE
- EXISTING CATCHBASIN
- EXISTING SUBDRAIN CATCHBASIN
- FUTURE STORM SEWER
- FUTURE CATCHBASIN MANHOLE
- FUTURE CATCHBASIN
- FUTURE SUBDRAIN CATCHBASIN
- (A) (B) (C) (D) (F) — IPEX ICD TYPE AS NOTED OR EQUIVALENT
- (H) — HYDROVEX ICD OR EQUIVALENT (SEE ICD TABLE SD-1/SD-2)
- (O) — CIRCULAR ORIFICE (SEE SEE ICD TABLE SD-1/SD-2)
- (C) — CATCHBASINS TO BE INTERCONNECTED

REVIEWED BY DEVELOPMENT REVIEW BRANCH.
SIGNED
DATE Mar 31/2017
PLAN NUMBER 17514

| Revision | By | Appd. | YY.MM.DD |
|---|---|---|---|
| 7. ISSUED FOR EARLY SERVICING | MJS | SG | 17.10.31 |
| 6. REVISED PER CITY COMMENTS | DCT | SG | 17.10.04 |
| 5 REVISED MANHOLE SIZING | MJS | GR | 17.09.14 |
| 4 ISSUED FOR MOE APPROVAL | MJS | SG | 17.09.11 |
| 3 ISSUED FOR TENDER | MJS | SG | 17.09.06 |
| 2 REVISED AS PER CITY COMMENTS | MJS | DT | 17.07.06 |
| 1 ISSUED TO CITY FOR REVIEW | MJS | DT | 17.02.22 |

| File Name: 160401217-SD | MS | SG | DT | 2016-12-15 |
|---|---|---|---|---|
| | Dwn. | Chkd. | Dsgn. | YY.MM.DD |

Permit-Seal

LICENSED PROFESSIONAL ENGINEER
D. C. THIFFAULT
100186107
02/11/2017
PROVINCE OF ONTARIO

Client/Project
2118356 ONTARIO INC.

HAZELDEAN CRAIG SUBDIVISION

OTTAWA, ON, CANADA

Title
STORM DRAINAGE PLAN

| Project No. | Scale | Revision |
|---|---|---|
| 160401217 | 1:750 (0, 7.5, 22.5, 37.5) | 7 |
| Drawing No. | Sheet | |
| SD-1 | 44 of 48 | |

DWG# 17514
D07-16-13-0030

Stantec

Hazeldean Craig

DATE: 2017-09-06
REVISION: 3
DESIGNED BY:
CHECKED BY:

# STORM SEWER DESIGN SHEET
(City of Ottawa)

FILE NUMBER: 160401217

DESIGN PARAMETERS

$I = a / (t+b)^c$ (As per City of Ottawa Guidelines, 2012)

| | 1:2 yr | 1:5 yr | 1:10 yr | 1:100 yr | | | |
|---|---|---|---|---|---|---|---|
| a = | 732.951 | 998.071 | 1174.184 | 1735.688 | MANNING'S n = | 0.013 | BEDDING CLASS = B |
| b = | 6.199 | 6.053 | 6.014 | 6.014 | MINIMUM COVER: | 2.00 | m |
| c = | 0.810 | 0.814 | 0.816 | 0.820 | TIME OF ENTRY | 10 | min |

| LOCATION | | | DRAINAGE AREA | | | | | | | | | | | | | | | | | | | | | | PIPE SELECTION | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AREA ID NUMBER | FROM M.H. | TO M.H. | AREA (2-YEAR) (ha) | AREA (5-YEAR) (ha) | AREA (10-YEAR) (ha) | AREA (100-YEAR) (ha) | AREA (ROOF) (ha) | C (2-YEAR) (-) | C (5-YEAR) (-) | C (10-YEAR) (-) | C (100-YEAR) (-) | A x C (2-YEAR) (ha) | ACCUM AxC (2YR) (ha) | A x C (5-YEAR) (ha) | ACCUM. AxC (5YR) (ha) | A x C (10-YEAR) (ha) | ACCUM. AxC (10YR) (ha) | A x C (100-YEAR) (ha) | ACCUM. AxC (100YR) (ha) | T of C (min) | $I_{2\text{-YEAR}}$ (mm/h) | $I_{5\text{-YEAR}}$ (mm/h) | $I_{10\text{-YEAR}}$ (mm/h) | $I_{100\text{-YEAR}}$ (mm/h) | $Q_{CONTROL}$ (L/s) | ACCUM. $Q_{CONTROL}$ (L/s) | $Q_{ACT}$ (CIA/360) (L/s) | LENGTH (m) | PIPE WIDTH OR DIAMETEI (mm) | PIPE HEIGHT (mm) | PIPE SHAPE (-) | MATERIAL (-) | CLASS (-) | SLOPE % | $Q_{CAP}$ (FULL) (L/s) | % FULL (-) | VEL. (FULL) (m/s) | VEL. (ACT) (m/s) | TIME OF FLOW (min) |
| L111S | 111 | 101 | 0.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.71 | 0.00 | 0.00 | 0.00 | 0.191 | 0.191 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.00 | 76.81 | 104.19 | 122.14 | 178.56 | 0.0 | 0.0 | 40.8 | 73.9 | 300 | 300 | CIRCULAR | PVC | - | 0.40 | 60.8 | **67.23%** | 0.86 | 0.81 | 1.52 |
| | | | | | | | | | | | | | | | | | | | | **11.52** | | | | | | | | | | | | | | | | | | | |
| G113B, G113C | 113C | 113B | 0.00 | 0.00 | 0.00 | 5.73 | 0.00 | 0.00 | 0.00 | 0.00 | 0.20 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.146 | 1.146 | 15.00 | 61.77 | 83.56 | 97.85 | 142.89 | 0.0 | 0.0 | 454.8 | 50.3 | 825 | 825 | CIRCULAR | CONCRETE | - | 0.15 | 580.0 | **78.42%** | 1.05 | 1.03 | 0.81 |
| G113A | 113B | 113 | 0.00 | 0.00 | 0.00 | 1.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.20 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.321 | 1.467 | 15.81 | 59.91 | 81.02 | 94.86 | 138.51 | 0.0 | 0.0 | 564.3 | 6.3 | 900 | 900 | CIRCULAR | CONCRETE | - | 0.15 | 731.4 | **77.16%** | 1.11 | 1.08 | 0.10 |
| L113B, L113A, L113C | 113 | 112 | 0.65 | 0.00 | 0.00 | 0.00 | 0.00 | 0.67 | 0.00 | 0.00 | 0.00 | 0.434 | 0.434 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.467 | 15.91 | 59.70 | 80.73 | 94.52 | 138.01 | 0.0 | 0.0 | 634.3 | 99.2 | 900 | 900 | CIRCULAR | CONCRETE | - | 0.15 | 731.4 | **86.72%** | 1.11 | 1.12 | 1.48 |
| L112A | 112 | 101 | 0.29 | 0.00 | 0.00 | 0.00 | 0.00 | 0.70 | 0.00 | 0.00 | 0.00 | 0.200 | 0.635 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.467 | 17.39 | 56.66 | 76.57 | 89.63 | 130.84 | 0.0 | 0.0 | 632.9 | 97.3 | 900 | 900 | CIRCULAR | CONCRETE | - | 0.15 | 731.4 | **86.53%** | 1.11 | 1.12 | 1.45 |
| | | | | | | | | | | | | | | | | | | | | **18.83** | | | | | | | | | | | | | | | | | | | |
| L122A | 122 | 121 | 0.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.68 | 0.00 | 0.00 | 0.00 | 0.274 | 0.274 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.00 | 76.81 | 104.19 | 122.14 | 178.56 | 0.0 | 0.0 | 58.5 | 80.8 | 375 | 375 | CIRCULAR | PVC | - | 0.25 | 82.6 | **70.78%** | 0.78 | 0.74 | 1.81 |
| | 121 | 102 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.000 | 0.274 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 11.81 | 70.49 | 95.51 | 111.91 | 163.54 | 0.0 | 0.0 | 53.7 | 80.0 | 375 | 375 | CIRCULAR | PVC | - | 0.25 | 82.5 | **65.07%** | 0.78 | 0.72 | 1.85 |
| | | | | | | | | | | | | | | | | | | | | **13.66** | | | | | | | | | | | | | | | | | | | |
| L120A, L120B | 120 | 103 | 0.56 | 0.00 | 0.00 | 0.00 | 0.00 | 0.68 | 0.00 | 0.00 | 0.00 | 0.382 | 0.382 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.00 | 76.81 | 104.19 | 122.14 | 178.56 | 0.0 | 0.0 | 81.5 | 119.6 | 375 | 375 | CIRCULAR | PVC | - | 0.40 | 104.3 | **78.21%** | 0.99 | 0.97 | 2.06 |
| | | | | | | | | | | | | | | | | | | | | **12.06** | | | | | | | | | | | | | | | | | | | |
| G106C, L106A, C106A, G106A | 106A | 106 | 5.41 | 3.06 | 0.00 | 1.77 | 0.00 | 0.80 | 0.78 | 0.00 | 0.20 | 4.328 | 4.328 | 2.383 | 2.383 | 0.000 | 0.000 | 0.353 | 0.353 | 10.00 | 76.81 | 104.19 | 122.14 | 178.56 | 0.0 | 0.0 | 1788.1 | 18.1 | 1200 | 1200 | CIRCULAR | CONCRETE | - | 0.40 | 2572.4 | **69.51%** | 2.20 | 2.08 | 0.15 |
| | 106 | 105 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.000 | 4.328 | 0.000 | 2.383 | 0.000 | 0.000 | 0.000 | 0.353 | 10.15 | 76.25 | 103.43 | 121.24 | 177.24 | 0.0 | 0.0 | 1775.1 | 41.5 | 1200 | 1200 | CIRCULAR | CONCRETE | - | 0.40 | 2572.4 | **69.00%** | 2.20 | 2.08 | 0.33 |
| L105A, C105A | 105 | 104 | 0.39 | 0.60 | 0.00 | 0.00 | 0.00 | 0.38 | 0.67 | 0.00 | 0.00 | 0.150 | 4.478 | 0.403 | 2.786 | 0.000 | 0.000 | 0.000 | 0.353 | 10.48 | 75.01 | 101.73 | 119.24 | 174.30 | 0.0 | 0.0 | 1891.3 | 47.7 | 1200 | 1200 | CIRCULAR | CONCRETE | - | 0.40 | 2572.4 | **73.52%** | 2.20 | 2.12 | 0.37 |
| | 104 | 103 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.000 | 4.478 | 0.000 | 2.786 | 0.000 | 0.000 | 0.000 | 0.353 | 10.85 | 73.68 | 99.89 | 117.07 | 171.11 | 0.0 | 0.0 | 1857.2 | 46.6 | 1200 | 1200 | CIRCULAR | CONCRETE | - | 0.40 | 2572.4 | **72.20%** | 2.20 | 2.11 | 0.37 |
| | | | | | | | | | | | | | | | | | | | | **11.22** | | | | | | | | | | | | | | | | | | | |
| L103A, L103B, C103A | 103 | 102 | 1.12 | 0.32 | 0.00 | 0.00 | 0.00 | 0.42 | 0.71 | 0.00 | 0.00 | 0.473 | 5.333 | 0.229 | 3.015 | 0.000 | 0.000 | 0.000 | 0.353 | 12.06 | 69.71 | 94.45 | 110.66 | 161.70 | 0.0 | 0.0 | 1982.3 | 80.1 | 1350 | 1350 | CIRCULAR | CONCRETE | - | 0.25 | 2784.1 | **71.20%** | 1.88 | 1.79 | 0.75 |
| | | | | | | | | | | | | | | | | | | | | **12.81** | | | | | | | | | | | | | | | | | | | |
| L119A | 119 | 118 | 0.38 | 0.00 | 0.00 | 0.00 | 0.00 | 0.70 | 0.00 | 0.00 | 0.00 | 0.263 | 0.263 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.00 | 76.81 | 104.19 | 122.14 | 178.56 | 0.0 | 0.0 | 56.2 | 87.8 | 300 | 300 | CIRCULAR | PVC | - | 0.90 | 91.3 | **61.60%** | 1.30 | 1.18 | 1.24 |
| L118B, L118A | 118 | 107 | 0.95 | 0.00 | 0.00 | 0.00 | 0.00 | 0.55 | 0.00 | 0.00 | 0.00 | 0.520 | 0.783 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 11.24 | 72.34 | 98.06 | 114.91 | 167.94 | 0.0 | 0.0 | 157.4 | 117.0 | 450 | 450 | CIRCULAR | CONCRETE | - | 0.50 | 210.3 | **74.85%** | 1.28 | 1.24 | 1.57 |
| | | | | | | | | | | | | | | | | | | | | **12.82** | | | | | | | | | | | | | | | | | | | |
| L117A | 117 | 116 | 0.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.71 | 0.00 | 0.00 | 0.00 | 0.289 | 0.289 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.00 | 76.81 | 104.19 | 122.14 | 178.56 | 0.0 | 0.0 | 61.7 | 88.1 | 300 | 300 | CIRCULAR | PVC | - | 0.65 | 77.5 | **79.54%** | 1.10 | 1.09 | 1.35 |
| L116A, L116B | 116 | 108 | 1.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.63 | 0.00 | 0.00 | 0.00 | 0.685 | 0.974 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 11.35 | 71.97 | 97.55 | 114.32 | 167.06 | 0.0 | 0.0 | 194.8 | 117.0 | 525 | 525 | CIRCULAR | CONCRETE | - | 0.40 | 283.8 | **68.66%** | 1.27 | 1.20 | 1.63 |
| | | | | | | | | | | | | | | | | | | | | **12.98** | | | | | | | | | | | | | | | | | | | |
| L115A | 115 | 114 | 0.33 | 0.00 | 0.00 | 0.00 | 0.00 | 0.72 | 0.00 | 0.00 | 0.00 | 0.235 | 0.235 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.00 | 76.81 | 104.19 | 122.14 | 178.56 | 0.0 | 0.0 | 50.2 | 84.5 | 300 | 300 | CIRCULAR | PVC | - | 0.65 | 77.5 | **64.79%** | 1.10 | 1.02 | 1.39 |
| L114B, L114C, L114A | 114 | 109 | 1.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.63 | 0.00 | 0.00 | 0.00 | 0.741 | 0.976 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 11.39 | 71.86 | 97.40 | 114.14 | 166.80 | 0.0 | 0.0 | 194.8 | 116.6 | 525 | 525 | CIRCULAR | CONCRETE | - | 0.40 | 284.3 | **68.53%** | 1.27 | 1.20 | 1.62 |
| | | | | | | | | | | | | | | | | | | | | **13.01** | | | | | | | | | | | | | | | | | | | |
| L110S | 110 | 109 | 0.69 | 0.00 | 0.00 | 0.00 | 0.00 | 0.70 | 0.00 | 0.00 | 0.00 | 0.480 | 0.480 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.00 | 76.81 | 104.19 | 122.14 | 178.56 | 0.0 | 0.0 | 102.4 | 71.5 | 450 | 450 | CIRCULAR | CONCRETE | - | 0.20 | 133.0 | **76.95%** | 0.81 | 0.79 | 1.51 |
| | | | | | | | | | | | | | | | | | | | | **11.51** | | | | | | | | | | | | | | | | | | | |
| L109A | 109 | 108 | 0.31 | 0.00 | 0.00 | 0.00 | 0.00 | 0.71 | 0.00 | 0.00 | 0.00 | 0.217 | 1.673 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 13.01 | 66.91 | 90.60 | 106.14 | 155.06 | 0.0 | 0.0 | 310.9 | 79.0 | 750 | 750 | CIRCULAR | CONCRETE | - | 0.15 | 450.8 | **68.97%** | 0.99 | 0.93 | 1.41 |
| | | | | | | | | | | | | | | | | | | | | **14.42** | | | | | | | | | | | | | | | | | | | |
| L108A | 108 | 107 | 0.44 | 0.00 | 0.00 | 0.00 | 0.00 | 0.70 | 0.00 | 0.00 | 0.00 | 0.309 | 2.956 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 14.42 | 63.17 | 85.48 | 100.11 | 146.21 | 0.0 | 0.0 | 518.7 | 79.0 | 900 | 900 | CIRCULAR | CONCRETE | - | 0.15 | 733.0 | **70.76%** | 1.12 | 1.06 | 1.24 |
| | | | | | | | | | | | | | | | | | | | | **15.66** | | | | | | | | | | | | | | | | | | | |
| L107A | 107 | 102 | 0.31 | 0.00 | 0.00 | 0.00 | 0.00 | 0.70 | 0.00 | 0.00 | 0.00 | 0.215 | 3.955 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 15.66 | 60.25 | 81.48 | 95.40 | 139.30 | 0.0 | 0.0 | 661.8 | 80.2 | 975 | 975 | CIRCULAR | CONCRETE | - | 0.15 | 905.5 | **73.09%** | 1.17 | 1.13 | 1.18 |
| | | | | | | | | | | | | | | | | | | | | **16.85** | | | | | | | | | | | | | | | | | | | |
| C102A, L102B, L102A | 102 | 101 | 0.72 | 0.63 | 0.00 | 0.00 | 0.00 | 0.47 | 0.70 | 0.00 | 0.00 | 0.341 | 9.902 | 0.441 | 3.457 | 0.000 | 0.000 | 0.000 | 0.353 | 16.85 | 57.73 | 78.03 | 91.36 | 133.36 | 0.0 | 0.0 | 2468.0 | 82.0 | 1500 | 1500 | CIRCULAR | CONCRETE | - | 0.25 | 3687.2 | **66.93%** | 2.02 | 1.89 | 0.72 |
| | | | | | | | | | | | | | | | | | | | | **17.57** | | | | | | | | | | | | | | | | | | | |
| C101A | 101 | 57 | 0.00 | 0.47 | 0.00 | 0.00 | 0.00 | 0.00 | 0.65 | 0.00 | 0.00 | 0.000 | 10.728 | 0.304 | 3.761 | 0.000 | 0.000 | 0.000 | 1.820 | 18.83 | 53.99 | 72.92 | 85.35 | 124.55 | 0.0 | 0.0 | 3000.3 | 39.9 | 1650<br>1950 | 1650<br>1950 | CIRCULAR | CONCRETE | - | 0.16 | 3803.4 | **78.88%** | 1.72 | 1.69 | 0.39 |
| | | | | | | | | | | | | | | | | | | | | **19.23** | | | | | | | | | | | | | | | | | | | |
| L109E, L109F | 109 | 203 | 0.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.61 | 0.00 | 0.00 | 0.00 | 0.332 | 0.332 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.00 | 76.81 | 104.19 | 122.14 | 178.56 | 0.0 | 0.0 | 70.9 | 74.7 | 375 | 375 | CIRCULAR | PVC | - | 0.35 | 97.5 | **72.68%** | 0.92 | 0.88 | 1.41 |
| 203 | 202 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.000 | 0.332 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 11.41 | 71.79 | 97.30 | 114.02 | 166.63 | 0.0 | 0.0 | 66.3 | 11.0 | 375 | 375 | CIRCULAR | PVC | - | 0.35 | 97.5 | **67.94%** | 0.92 | 0.87 | 0.21 |
| L202A, L202B | 202 | 201 | 0.75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.59 | 0.00 | 0.00 | 0.00 | 0.444 | 0.776 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 11.62 | 71.10 | 96.35 | 112.91 | 165.00 | 0.0 | 0.0 | 153.2 | 87.8 | 525 | 525 | CIRCULAR | CONCRETE | - | 0.30 | 245.7 | **62.35%** | 1.10 | 1.01 | 1.45 |
| | | | | | | | | | | | | | | | | | | | | **13.07** | | | | | | | | | | | | | | | | | | | |
| L111N | 111 | 201 | 0.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.71 | 0.00 | 0.00 | 0.00 | 0.191 | 0.191 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.00 | 76.81 | 104.19 | 122.14 | 178.56 | 0.0 | 0.0 | 40.8 | 66.5 | 300 | 300 | CIRCULAR | CONCRETE | - | 0.40 | 60.8 | **67.14%** | 0.86 | 0.81 | 1.37 |
| | | | | | | | | | | | | | | | | | | | | **11.37** | | | | | | | | | | | | | | | | | | | |
| L201A | 201 | 65 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.58 | 0.00 | 0.00 | 0.00 | 0.042 | 1.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 13.07 | 66.72 | 90.35 | 105.84 | 154.62 | 0.0 | 0.0 | 187.1 | 39.1 | 600<br>675 | 600<br>675 | CIRCULAR | CONCRETE | - | 0.15 | 248.1 | **75.40%** | 0.85 | 0.82 | 0.79 |
| | | | | | | | | | | | | | | | | | | | | **13.87** | | | | | | | | | | | | | | | | | | | |
| C305A, L305A | 305 | 304 | 0.09 | 0.06 | 0.00 | 0.00 | 0.00 | 0.58 | 0.66 | 0.00 | 0.00 | 0.053 | 0.053 | 0.041 | 0.041 | 0.000 | 0.000 | 0.000 | 0.000 | 10.00 | 76.81 | 104.19 | 122.14 | 178.56 | 0.0 | 0.0 | 23.1 | 65.3 | 300 | 300 | CIRCULAR | PVC | - | 0.50 | 67.9 | **34.05%** | 0.97 | 0.73 | 1.49 |
| C304A | 304 | 303 | 0.00 | 0.34 | 0.00 | 0.00 | 0.00 | 0.00 | 0.68 | 0.00 | 0.00 | 0.000 | 0.053 | 0.232 | 0.273 | 0.000 | 0.000 | 0.000 | 0.000 | 11.49 | 71.53 | 96.95 | 113.61 | 166.03 | 0.0 | 0.0 | 84.1 | 111.6 | 375 | 375 | CIRCULAR | PVC | - | 0.50 | 116.6 | **72.14%** | 1.11 | 1.06 | 1.76 |
| G303A, C303A, L303A | 303 | 302 | 0.33 | 3.79 | 0.00 | 0.00 | 0.00 | 0.59 | 0.43 | 0.00 | 0.00 | 0.197 | 0.250 | 1.615 | 1.888 | 0.000 | 0.000 | 0.000 | 0.000 | 13.25 | 66.24 | 89.69 | 105.06 | 153.48 | 0.0 | 0.0 | 516.4 | 57.1 | 750 | 750 | CIRCULAR | CONCRETE | - | 0.30 | 635.7 | **81.23%** | 1.39 | 1.38 | 0.69 |
| | | | | | | | | | | | | | | | | | | | | **13.94** | | | | | | | | | | | | | | | | | | | |
| L313A | 313 | 312 | 0.29 | 0.00 | 0.00 | 0.00 | 0.00 | 0.71 | 0.00 | 0.00 | 0.00 | 0.208 | 0.208 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.00 | 76.81 | 104.19 | 122.14 | 178.56 | 0.0 | 0.0 | 44.3 | 117.1 | 450 | 450 | CIRCULAR | CONCRETE | - | 0.25 | 148.8 | **29.80%** | 0.91 | 0.66 | 2.95 |
| | | | | | | | | | | | | | | | | | | | | **12.95** | | | | | | | | | | | | | | | | | | | |
| L315A | 315 | 314 | 0.26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.69 | 0.00 | 0.00 | 0.00 | 0.180 | 0.180 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.00 | 76.81 | 104.19 | 122.14 | 178.56 | 0.0 | 0.0 | 38.4 | 83.6 | 300 | 300 | CIRCULAR | PVC | - | 1.00 | 96.2 | **39.91%** | 1.37 | 1.09 | 1.28 |
| | 314 | 312 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.000 | 0.180 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 11.28 | 72.21 | 97.88 | 114.70 | 167.64 | 0.0 | 0.0 | 36.1 | 117.0 | 375 | 375 | CIRCULAR | PVC | - | 1.00 | 164.8 | **21.89%** | 1.56 | 1.05 | 1.86 |
| | | | | | | | | | | | | | | | | | | | | **13.14** | | | | | | | | | | | | | | | | | | | |
| L312A | 312 | 311 | 0.29 | 0.00 | 0.00 | 0.00 | 0.00 | 0.70 | 0.00 | 0.00 | 0.00 | 0.202 | 0.590 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 13.14 | 66.53 | 90.08 | 105.52 | 154.15 | 0.0 | 0.0 | 109.0 | 114.3 | 600 | 600 | CIRCULAR | CONCRETE | - | 0.20 | 286.1 | **38.09%** | 0.98 | 0.77 | 2.47 |
| L311B, L311A | 311 | 302 | 0.37 | 0.00 | 0.00 | 0.00 | 0.00 | 0.70 | 0.00 | 0.00 | 0.00 | 0.258 | 0.847 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 15.61 | 60.35 | 81.62 | 95.58 | 139.55 | 0.0 | 0.0 | 142.0 | 113.6 | 600 | 600 | CIRCULAR | CONCRETE | - | 0.20 | 286.4 | **49.60%** | 0.98 | 0.84 | 2.26 |
| | | | | | | | | | | | | | | | | | | | | **17.87** | | | | | | | | | | | | | | | | | | | |
| C302A, L302B | 302 | 301 | 0.79 | 0.57 | 0.00 | 0.00 | 0.00 | 0.50 | 0.70 | 0.00 | 0.00 | 0.396 | 1.493 | 0.396 | 2.284 | 0.000 | 0.000 | 0.000 | 0.000 | 17.87 | 55.73 | 75.30 | 88.14 | 128.65 | 0.0 | 0.0 | 708.9 | 105.9 | 900 | 900 | CIRCULAR | CONCRETE | - | 0.35 | 1118.1 | **63.40%** | 1.70 | 1.56 | 1.13 |
| | | | | | | | | | | | | | | | | | | | | **19.00** | | | | | | | | | | | | | | | | | | | |
| L1A | 1 | 308 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.72 | 0.00 | 0.00 | 0.00 | 0.068 | 0.068 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.00 | 76.81 | 104.19 | 122.14 | 178.56 | 0.0 | 0.0 | 14.4 | 29.6 | 300 | 300 | CIRCULAR | PVC | - | 0.65 | 77.5 | **18.61%** | 1.10 | 0.70 | 0.70 |
| | | | | | | | | | | | | | | | | | | | | **10.70** | | | | | | | | | | | | | | | | | | | |
| L310A, L310B | 310 | 309 | 0.71 | 0.00 | 0.00 | 0.00 | 0.00 | 0.69 | 0.00 | 0.00 | 0.00 | 0.491 | 0.491 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.00 | 76.81 | 104.19 | 122.14 | 178.56 | 0.0 | 0.0 | 104.8 | 120.0 | 375 | 375 | CIRCULAR | PVC | - | 0.60 | 127.7 | **82.07%** | 1.21 | 1.20 | 1.67 |
| L309A, L309B | 309 | 308 | 0.32 | 0.00 | 0.00 | 0.00 | 0.00 | 0.64 | 0.00 | 0.00 | 0.00 | 0.206 | 0.697 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 11.67 | 70.95 | 96.14 | 112.66 | 164.63 | 0.0 | 0.0 | 137.4 | 113.4 | 450 | 450 | CIRCULAR | CONCRETE | - | 0.50 | 210.3 | **65.32%** | 1.28 | 1.19 | 1.59 |
| | | | | | | | | | | | | | | | | | | | | **13.25** | | | | | | | | | | | | | | | | | | | |
| L308A | 308 | 307 | 0.44 | 0.00 | 0.00 | 0.00 | 0.00 | 0.71 | 0.00 | 0.00 | 0.00 | 0.312 | 1.076 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 13.25 | 66.22 | 89.66 | 105.03 | 153.43 | 0.0 | 0.0 | 198.0 | 35.1 | 525 | 525 | CIRCULAR | CONCRETE | - | 0.40 | 283.2 | **69.90%** | 1.27 | 1.20 | 0.49 |
| 307 | 301 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.000 | 1.076 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 13.74 | 64.91 | 87.86 | 102.91 | 150.32 | 0.0 | 0.0 | 194.1 | 67.9 | 525 | 525 | CIRCULAR | CONCRETE | - | 0.40 | 284.1 | **68.31%** | 1.27 | 1.20 | 0.94 |
| | | | | | | | | | | | | | | | | | | | | **14.68** | | | | | | | | | | | | | | | | | | | |
| L301A | 301 | 66 | 2.71 | 0.00 | 0.00 | 0.00 | 0.00 | 0.65 | 0.00 | 0.00 | 0.00 | 1.763 | 4.333 | 0.000 | 2.284 | 0.000 | 0.000 | 0.000 | 0.000 | 19.00 | 53.69 | 72.52 | 84.88 | 123.86 | 0.0 | 0.0 | 1106.3 | 17.1 | 975<br>1350 | 975<br>1350 | CIRCULAR | CONCRETE | - | 0.30 | 1280.1 | **86.42%** | 1.66 | 1.67 | 0.17 |
| | | | | | | | | | | | | | | | | | | | | **19.17** | | | | | | | | | | | | | | | | | | | |
| | 52 | 52A | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.00 | 76.81 | 104.19 | 122.14 | 178.56 | 0.0 | 0.0 | 0.0 | 14.1 | 300<br>300 | 300<br>300 | CIRCULAR | PVC | - | 0.40 | 60.8 | **0.00%** | 0.86 | 0.00 | 0.00 |
| | | | | | | | | | | | | | | | | | | | | **10.00** | | | | | | | | | | | | | | | | | | | |

| Name | Inlet | Outlet | Inlet Elev. | Coefficient | ICD Configuration |
|---|---|---|---|---|---|
| L202A-O | L202A-S | 202 | 97.8 | 0.059 | 1 x B, 1 x Tempest C |
| L202B-O | L202B-S | 202 | 98.48 | 0.026 | 1 x Tempest Type B |
| L302B-O | L302B-S | 302 | 97.04 | 0.065 | 1 x Tempest Type F |
| L303A-O | L303A-S | 303 | 97.91 | 0.033 | 1 x Tempest Type C |
| L308A-O | L308A-S | 308 | 96.23 | 0.036 | 2 x Tempest Type A |
| L308B-O | L308B-S | 308 | 96.31 | 0.018 | 1 x Tempest Type A |
| L309A-O | L309A-S | 309 | 96.7 | 0.018 | 1 x Tempest Type A |
| L310A-O | L310A-S | 310 | 96.77 | 0.036 | 2 x Tempest Type A |
| L310B-O | L310B-S | 310 | 97.51 | 0.051 | 2 x Tempest Type B |
| L311A-O | L311A-S | 311 | 97.06 | 0.036 | 2 x Tempest Type A |
| L311B-O | L311B-S | 311 | 97.25 | 0.026 | 1 x Tempest Type B |
| L312A-O | L312A-S | 312 | 97.25 | 0.036 | 2 x Tempest Type A |
| L313A-O | L313A-S | 313 | 96.96 | 0.097 | 2 x Tempest Type D |
| L315A-O | L315A-S | 315 | 98.74 | 0.036 | 2 x Tempest Type A |

**Table 14: Outlet & Storage Parameters – Development Blocks, Parks and School**

| Name | 2yr Discharge (L/s) | 5yr Discharge (L/s) | 100yr Discharge (L/s) | 100yr +20% Discharge (L/s) | 100yr Storage Volume ($m^3$) |
|---|---|---|---|---|---|
| L301A | 370* | 384 | 405 | 408 | 322 |
| G303A | * | 309* | 338 | 341 | 214 |
| L106A | 987* | 1026 | 1079 | 1091 | 742 |
| C106A | * | 379* | 389 | 398 | 10 |
| G113C | * | 382* | 418 | 423 | 124 |
| G113B | * | * | * | 509* | 0 |

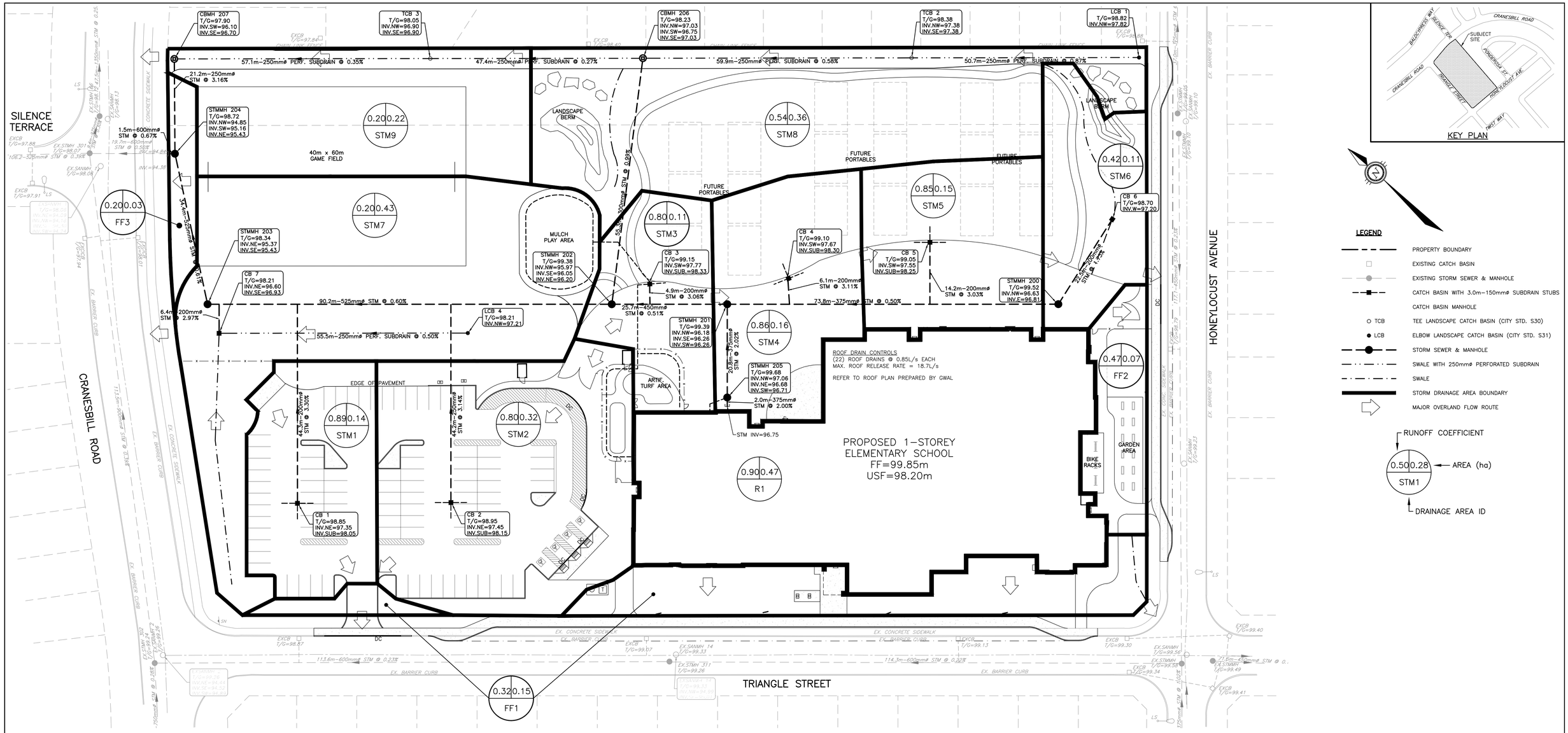
*Denotes unrestricted release rate.

### 5.3.4 Model Results

The following section summarizes the key hydrologic and hydraulic model results. For detailed model results or inputs please refer to the example input file in **Appendix C.2** and the electronic model files on the enclosed CD.

#### 5.3.4.1 Hydrologic Results

The following table demonstrates the peak outflow from each modeled connection point to downstream infrastructure during the design storm (3hr Chicago 2-100yr, 100yr SCS) events. A fixed backwater outfall condition has been modeled for these events to be conservative with


SILENCE TERRACE
CRANESBILL ROAD
HONEYLOCUST AVENUE
TRIANGLE STREET
CBMH 207
T/G=97.90
INV.SW=96.10
INV.SE=96.70
TCB 3
T/G=98.05
INV.NW=96.90
INV.SE=96.90
CBMH 206
T/G=98.23
INV.NW=97.03
INV.SW=96.75
INV.SE=97.03
TCB 2
T/G=98.38
INV.NW=97.38
INV.SE=97.38
LCB 1
T/G=98.82
INV.NW=97.82
57.1m–250mmø PERF. SUBDRAIN @ 0.35%
47.4m–250mmø PERF. SUBDRAIN @ 0.27%
59.9m–250mmø PERF. SUBDRAIN @ 0.58%
50.7m–250mmø PERF. SUBDRAIN @ 0.87%
21.2m–250mmø STM @ 3.16%
STMMH 204
T/G=98.72
INV.NW=94.85
INV.SW=95.16
INV.NE=95.43
1.5m–600mmø STM @ 0.67%
40m x 60m GAME FIELD
0.200.22 STM9
0.200.43 STM7
0.200.03 FF3
0.540.36 STM8
0.850.15 STM5
0.420.11 STM6
0.800.11 STM3
0.860.16 STM4
0.890.14 STM1
0.800.32 STM2
0.900.47 R1
0.470.07 FF2
0.320.15 FF1
LANDSCAPE BERM
FUTURE PORTABLES
MULCH PLAY AREA
STMMH 202
T/G=99.38
INV.NW=95.97
INV.SE=96.05
INV.NE=96.20
STMMH 203
T/G=98.34
INV.NE=95.37
INV.SE=95.43
CB 7
T/G=98.21
INV.NE=96.60
INV.SE=96.63
CB 3
T/G=99.15
INV.SW=97.77
INV.SUB=98.33
CB 4
T/G=99.10
INV.SW=97.67
INV.SUB=98.30
CB 5
T/G=99.05
INV.SW=97.55
INV.SUB=98.25
CB 6
T/G=98.70
INV.W=97.20
STMMH 200
T/G=99.52
INV.NW=96.63
INV.E=96.81
STMMH 201
T/G=99.39
INV.NW=96.18
INV.SE=96.26
INV.SW=96.26
STMMH 205
T/G=99.68
INV.NW=97.06
INV.NE=96.68
INV.SW=96.71
STM INV=96.75
ROOF DRAIN CONTROLS
(22) ROOF DRAINS @ 0.85L/s EACH
MAX. ROOF RELEASE RATE = 18.7L/s
REFER TO ROOF PLAN PREPARED BY GWAL
PROPOSED 1–STOREY
ELEMENTARY SCHOOL
FF=99.85m
USF=98.20m
ARTIF. TURF AREA
EDGE OF PAVEMENT
BIKE RACKS
GARDEN AREA
CB 1
T/G=98.85
INV.NE=97.35
INV.SUB=98.05
CB 2
T/G=98.95
INV.NE=97.45
INV.SUB=98.15
LCB 4
T/G=98.21
INV.NW=97.21
90.2m–525mmø STM @ 0.60%
55.5m–250mmø PERF. SUBDRAIN @ 0.50%
6.4m–200mmø STM @ 2.97%
25.7m–450mmø STM @ 0.51%
4.9m–200mmø STM @ 3.06%
6.1m–200mmø STM @ 3.11%
14.2m–200mmø STM @ 3.03%
73.8m–375mmø STM @ 0.50%
7.5m–200mmø STM @ 1.73%
20.8m–375mmø STM @ 2.02%
2.0m–375mmø STM @ 2.00%
44.2m–250mmø STM @ 3.30%
44.2m–250mmø STM @ 3.14%
58.3m–300mmø STM @ 0.89%
113.6m–600mmø STM @ 0.23%
114.3m–600mmø STM @ 0.32%
EX. CONCRETE SIDEWALK
EX. BARRIER CURB
EX. CURB GUTTER
EXCB T/G=98.87
EXCB T/G=99.07
EXCB T/G=99.13
EXCB T/G=99.30
EXCB T/G=99.34
EXCB T/G=99.40
EXCB T/G=99.41
EX.SANMH 14 T/G=99.33
EX.STMH 311 T/G=99.26
EX.SANMH T/G=99.56
EX.STMMH T/G=99.58
EX.STMMH T/G=99.49
EX.SANMH T/G=99.26 INV.NE=94.43 INV.SE=94.53 INV.SW=94.58
EX.SANMH T/G=99.23 INV.NE=94.30 INV.SE=94.40 INV.SW=94.45
EX.STMMH T/G=99.33 INV.NW=94.98
EX.STMH 301 T/G=98.07
EX.SANMH T/G=98.06
EX.STMH 310 T/G=98.13
EX.STMH 309 T/G=98.16
EX.STMH 308 T/G=98.23
EX.STMH 307 T/G=98.25
EX.STMH 306 T/G=98.26
EX.STMH 305 T/G=98.27
EX.STMH 304 T/G=98.28
EX.STMH 303 T/G=98.29
EX.STMH 302 T/G=98.30
EX.STMH 312 T/G=98.32
EX.STMH 313 T/G=98.33
EX.STMH 314 T/G=98.34
EX.STMH 315 T/G=98.35
EX.STMH 316 T/G=98.36
EX.STMH 317 T/G=98.37
EX.STMH 318 T/G=98.38
EX.STMH 319 T/G=98.39
EX.STMH 320 T/G=98.40
EX.STMH 321 T/G=98.41
EX.STMH 322 T/G=98.42
EX.STMH 323 T/G=98.43
EX.STMH 324 T/G=98.44
EX.STMH

**STORM SEWER DESIGN SHEET**
**FERNBANK NORTH SCHOOL, 620 TRIANGLE STREET, STITTSVILLE**

| LOCATION | | | AREA (ha) | C | C (100 YR) | 2-YR | | 100-YR | | TIME OF CONC. (min) | 2-YR RAINFALL INTENSITY (mm/hr) | 2-YR PEAK FLOW (L/s) | 100-YR RAINFALL INTENSITY (mm/hr) | 100-YR PEAK FLOW (L/s) | 100-YR RESTRICTED FLOW (L/s) | CUMULATIVE RESTRICTED FLOW (L/s) | PROPOSED SEWER | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DRAINAGE AREA | FROM MH | TO MH | | | | INDIV. 2.78AC | ACCUM. 2.78AC | INDIV. 2.78AC | ACCUM. 2.78AC | | | | | | | | PIPE DIA. (mm) | GRADE (%) | LENGTH (m) | CAPACITY (L/s) | FULL FLOW VELOCITY (m/s) | TIME OF FLOW (min) | 2-YR PERCENT FULL | 100-YR PERCENT FULL WITH RESTRICTED CONTROLS |
| **TO CRANESBILL ROAD STORM SEWER** | | | | | | | | | | | | | | | | | | | | | | | | |
| STM6 | CB 6 | 200 | 0.11 | 0.42 | 0.52 | 0.13 | 0.13 | 0.17 | 0.17 | 10.00 | 76.81 | 10.26 | 178.56 | 29.80 | 12.80 | 12.80 | 201.16 | 1.73 | 22.5 | 43.85 | 1.38 | 0.27 | 23% | 29% |
| STM5 | CB 5 | MAIN | 0.15 | 0.85 | 1.00 | 0.36 | 0.36 | 0.42 | 0.42 | 10.00 | 76.81 | 27.54 | 178.56 | 75.26 | 32.47 | 32.47 | 201.16 | 3.03 | 14.2 | 58.04 | 1.83 | 0.13 | 47% | 56% |
| STM4 | CB 4 | MAIN | 0.16 | 0.86 | 1.00 | 0.38 | 0.38 | 0.45 | 0.45 | 10.00 | 76.81 | 29.39 | 178.56 | 79.70 | 43.60 | 43.60 | 201.16 | 3.11 | 6.1 | 58.80 | 1.85 | 0.05 | 50% | 74% |
| | 200 | 201 | 0.00 | 0.00 | 0.00 | 0.00 | 0.87 | 0.00 | 1.03 | 10.27 | 75.78 | 66.29 | 176.11 | 182.23 | | 88.87 | 366.42 | 0.50 | 73.8 | 116.67 | 1.11 | 1.11 | 57% | 76% |
| R1 | BLDG | 205 | 0.47 | 0.90 | 1.00 | 1.17 | 1.17 | 1.30 | 1.30 | 10.00 | 76.81 | 89.99 | 178.56 | 232.46 | 18.73 | 18.73 | 366.42 | 2.00 | 2.0 | 233.35 | 2.21 | 0.02 | 39% | 8% |
| | 205 | 201 | 0.00 | 0.00 | 0.00 | 0.00 | 1.17 | 0.00 | 1.30 | 10.02 | 76.75 | 89.92 | 178.42 | 232.28 | | 18.73 | 366.42 | 2.02 | 20.8 | 234.51 | 2.22 | 0.16 | 38% | 8% |
| STM3 | CB 3 | MAIN | 0.11 | 0.80 | 1.00 | 0.25 | 0.25 | 0.31 | 0.31 | 10.00 | 76.81 | 19.08 | 178.56 | 55.45 | 21.94 | 21.94 | 201.16 | 3.06 | 4.9 | 58.32 | 1.84 | 0.04 | 33% | 38% |
| | 201 | 202 | 0.00 | 0.00 | 0.00 | 0.00 | 2.29 | 0.00 | 2.65 | 11.38 | 71.87 | 164.94 | 166.83 | 441.63 | | 129.54 | 457.00 | 0.51 | 25.7 | 212.38 | 1.29 | 0.33 | 78% | 61% |
| STM8 | 206 | 202 | 0.36 | 0.54 | 0.67 | 0.54 | 0.54 | 0.67 | 0.67 | 15.00 | 61.77 | 33.30 | 142.89 | 96.29 | 92.39 | 92.39 | 299.36 | 0.99 | 55.3 | 95.77 | 1.36 | 0.68 | 35% | 96% |
| STM2 | CB 2 | MAIN | 0.32 | 0.80 | 1.00 | 0.70 | 0.70 | 0.88 | 0.88 | 10.00 | 76.81 | 54.06 | 178.56 | 156.86 | 64.22 | 64.22 | 251.46 | 3.14 | 44.2 | 107.13 | 2.16 | 0.34 | 50% | 60% |
| STM1 | CB 1 | MAIN | 0.14 | 0.89 | 1.00 | 0.35 | 0.35 | 0.40 | 0.40 | 10.00 | 76.81 | 27.16 | 178.56 | 71.19 | 31.87 | 31.87 | 201.16 | 3.30 | 44.3 | 60.57 | 1.91 | 0.39 | 45% | 53% |
| STM7 | CB 7 | MAIN | 0.43 | 0.20 | 0.25 | 0.24 | 0.24 | 0.30 | 0.30 | 10.00 | 76.81 | 18.44 | 178.56 | 53.58 | 22.04 | 22.04 | 201.16 | 2.97 | 6.4 | 57.46 | 1.81 | 0.06 | 32% | 38% |
| | 202 | 203 | 0.00 | 0.00 | 0.00 | 0.00 | 4.13 | 0.00 | 4.90 | 11.71 | 70.80 | 292.48 | 164.27 | 804.66 | | 340.06 | 533.00 | 0.60 | 90.2 | 347.18 | 1.56 | 0.97 | 84% | 98% |
| | 203 | 204 | 0.00 | 0.00 | 0.00 | 0.00 | 4.13 | 0.00 | 4.90 | 12.68 | 67.85 | 280.30 | 157.28 | 770.39 | | 340.06 | 533.00 | 0.61 | 34.4 | 350.07 | 1.57 | 0.37 | 80% | 97% |
| STM9 | 207 | 204 | 0.22 | 0.20 | 0.25 | 0.12 | 0.12 | 0.15 | 0.15 | 15.00 | 61.77 | 7.51 | 142.89 | 21.72 | 11.30 | 11.30 | 251.46 | 3.16 | 21.2 | 107.47 | 2.16 | 0.16 | 7% | 11% |
| | 204 | STUB | 0.00 | 0.00 | 0.00 | 0.00 | 4.25 | 0.00 | 5.05 | 13.05 | 66.80 | 284.10 | 154.80 | 781.79 | | 351.36 | 610.00 | 0.67 | 1.5 | 525.77 | 1.80 | 0.01 | 54% | 67% |

**Design Parameters**

Notes:

1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Peak flows calculated using the Rational Method.
   Q = 2.78CIA, where:
   Q = Peak Flow (L/s)
   A = Drainage Area (ha)
   I = Rainfall Intensity (mm/hr)
   C = Runoff Coefficient
3. Manning's roughness coefficient = 0.013
4. Full flow velocity: MIN 0.8 m/s; MAX 3.0 m/s (City of Ottawa Sewer Design Guidelines, v.2012)

**IDF curve equations (Intensity in mm/hr)**

100 year Intensity = $1735.688 / (\text{Time in min} + 6.014)^{0.820}$
50 year Intensity = $1569.580 / (\text{Time in min} + 6.014)^{0.820}$
25 year Intensity = $1402.884 / (\text{Time in min} + 6.018)^{0.819}$
10 year Intensity = $1174.184 / (\text{Time in min} + 6.014)^{0.816}$
5 year Intensity = $998.071 / (\text{Time in min} + 6.053)^{0.814}$
2 year Intensity = $732.951 / (\text{Time in min} + 6.199)^{0.810}$

**Overall Runoff Coefficient Calculations**

| Development Condition | Impervious Area (ha) | Pervious Area (ha) | Gravel Area (ha) | Total Area (ha) | C | C (100 YR) | Percent Impervious (%) |
|---|---|---|---|---|---|---|---|
| PRE | 0.00 | 2.72 | 0.00 | 2.72 | 0.20 | 0.25 | 0.0 |
| POST | 1.17 | 1.13 | 0.42 | 2.72 | 0.59 | 0.74 | 58.4 |

**Drainage Area Runoff Coefficient Calculations**

| Drainage Area ID | Impervious Area (ha) | Pervious Area (ha) | Gravel Area (ha) | Total Area (ha) | C | C (100 YR) | Percent Impervious (%) |
|---|---|---|---|---|---|---|---|
| R1 | 0.47 | 0.00 | 0.00 | 0.47 | 0.90 | 1.00 | 100.0 |
| STM1 | 0.13 | 0.00 | 0.01 | 0.14 | 0.89 | 1.00 | 99.4 |
| STM2 | 0.25 | 0.04 | 0.02 | 0.32 | 0.80 | 1.00 | 86.9 |
| STM3 | 0.07 | 0.01 | 0.03 | 0.11 | 0.80 | 1.00 | 89.7 |
| STM4 | 0.09 | 0.00 | 0.07 | 0.16 | 0.86 | 1.00 | 100.0 |
| STM5 | 0.08 | 0.00 | 0.07 | 0.15 | 0.85 | 1.00 | 100.0 |
| STM6 | 0.01 | 0.07 | 0.03 | 0.11 | 0.42 | 0.52 | 34.5 |
| STM7 | 0.00 | 0.43 | 0.00 | 0.43 | 0.20 | 0.25 | 0.0 |
| STM8 | 0.02 | 0.16 | 0.18 | 0.36 | 0.54 | 0.67 | 55.6 |
| STM9 | 0.00 | 0.22 | 0.00 | 0.22 | 0.20 | 0.25 | 0.0 |
| FF1 | 0.03 | 0.12 | 0.00 | 0.15 | 0.32 | 0.40 | 17.0 |
| FF2 | 0.03 | 0.04 | 0.00 | 0.07 | 0.47 | 0.59 | 38.7 |
| FF3 | 0.00 | 0.03 | 0.00 | 0.03 | 0.20 | 0.25 | 0.0 |

Runoff Coefficients:

C impervious = 0.90

C pervious = 0.20

C gravel = 0.80

$C_{100}$ = C * 1.25 (Max. 1.0)

Appendix F

Plumbing Roof Drawing
(prepared by GWAL)

Table F1: Ponding and Orifice Calculations

Tempest LMF Flow Curves

Free Flow Calculations

Ponding Area Plan (DWG. 24093-PA1)

Storage Volume Tables

Fernbank SWM Pond 3 ECA

Borehole Information
(prepared by Paterson)

Groundwater Memo
(Prepared by Paterson)

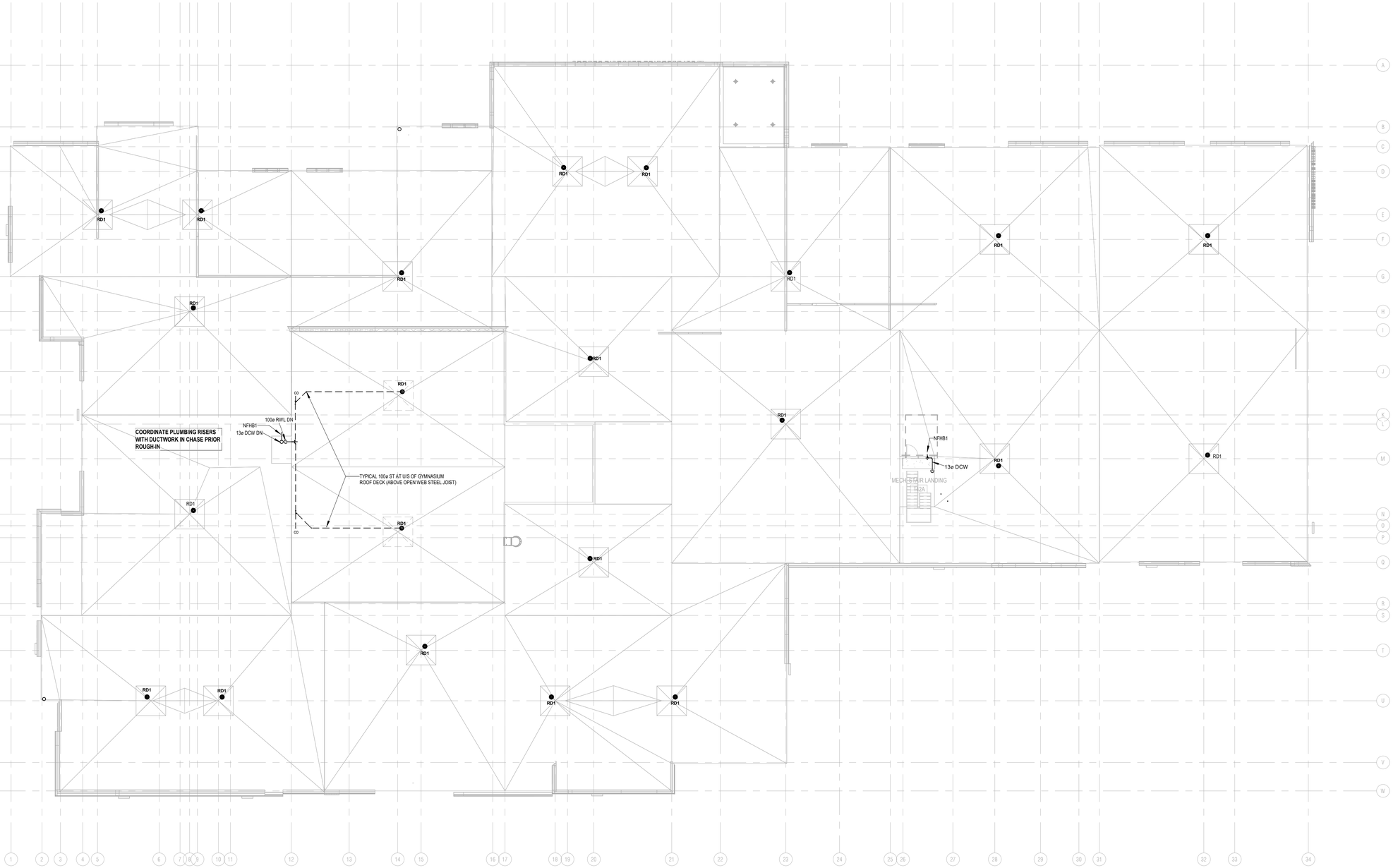

RD1
RD1
RD1

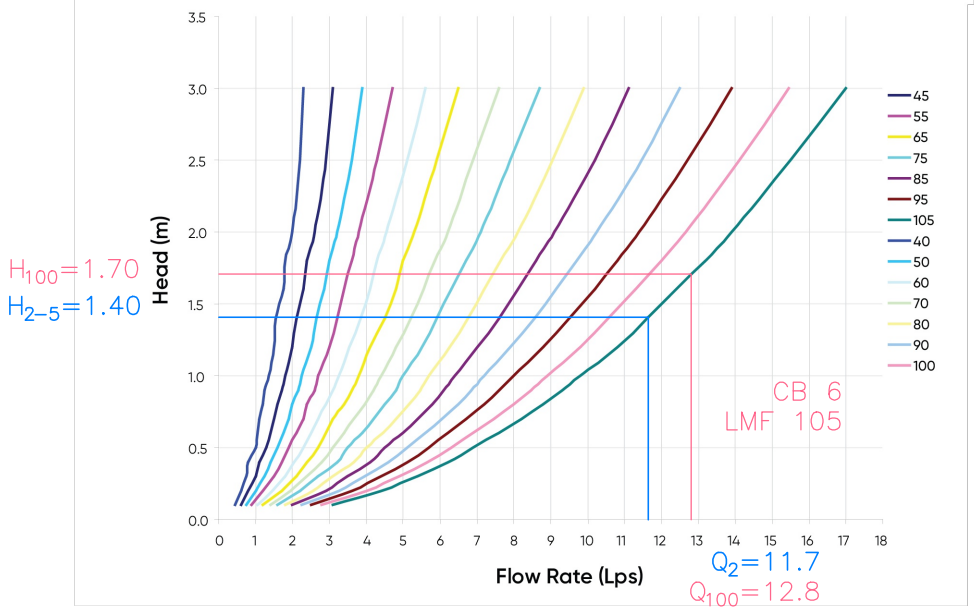
**Table F1: Ponding and Orifice Calculations**

| Structure | Drainage Area | Outlet Pipe Inv. Elev. (m) | Outlet Pipe Diam. (m) | C/L Orifice Elev. (m) | T/G Elev. (m) | 2-YR Ponding Depth (m) | 2-YR Ponding Elev. (m) | 2-YR Head (m) | 5-YR Ponding Depth (m) | 5-YR Ponding Elev. (m) | 5-YR Head (m) | 100-YR Ponding Depth (m) | 100-YR Ponding Elev. (m) | 100-YR Head (m) | 100-YR + 20% Ponding Depth (m) | 100-YR + 20% Ponding Elev. (m) | 100-YR + 20% Head (m) | 2-YR Outflow (L/s) | 5-YR Outflow (L/s) | 100-YR Outflow (L/s) | 100-YR + 20% Outflow (L/s) | Orifice Area ($m^2$) | Orifice Diameter (mm) | Orifice Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CB 1 | STM1 | 97.35 | 0.201 | 97.45 | 98.85 | 0.00 | 98.85 | 1.40 | 0.10 | 98.95 | 1.50 | 0.18 | 99.03 | 1.58 | 0.20 | 99.05 | 1.60 | 30.0 | 31.1 | 31.9 | 32.1 | 0.009 | 109 | Circular, slide |
| CB 2 | STM2 | 97.45 | 0.251 | 97.58 | 98.95 | 0.00 | 98.95 | 1.37 | 0.11 | 99.06 | 1.48 | 0.20 | 99.15 | 1.57 | 0.22 | 99.17 | 1.59 | 60.0 | 62.4 | 64.2 | 64.6 | 0.019 | 155 | Circular, slide |
| CB 3 | STM3 | 97.77 | 0.201 | 97.87 | 99.15 | 0.00 | 99.15 | 1.28 | 0.15 | 99.30 | 1.43 | 0.26 | 99.41 | 1.54 | 0.26 | 99.41 | 1.54 | 20.0 | 21.1 | 21.9 | 21.9 | 0.007 | 91 | Circular, slide |
| CB 4 | STM4 | 97.67 | 0.201 | 97.77 | 99.10 | 0.00 | 99.10 | 1.33 | 0.00 | 99.10 | 1.33 | 0.25 | 99.35 | 1.58 | 0.25 | 99.35 | 1.58 | 40.0 | 40.0 | 43.6 | 43.6 | 0.013 | 128 | Circular, slide |
| CB 5 | STM5 | 97.55 | 0.201 | 97.65 | 99.05 | 0.00 | 99.05 | 1.40 | 0.15 | 99.20 | 1.55 | 0.24 | 99.29 | 1.64 | 0.25 | 99.30 | 1.65 | 30.0 | 31.6 | 32.5 | 32.6 | 0.009 | 109 | Circular, slide |
| CB 6 | STM6 | 97.20 | 0.201 | 97.30 | 98.70 | 0.00 | 98.70 | 1.40 | 0.15 | 98.85 | 1.55 | 0.25 | 98.95 | 1.65 | 0.30 | 99.00 | 1.70 | 11.7 | 12.3 | 12.8 | 12.8 | 0.004 | n/a | Tempest LMF 105[*5] |
| CB 7 | STM7 | 96.60 | 0.201 | 96.70 | 98.10 | 0.00 | 98.10 | 1.40 | 0.20 | 98.30 | 1.60 | 0.30 | 98.40 | 1.70 | 0.30 | 98.40 | 1.70 | 20.0 | 21.4 | 22.0 | 22.0 | 0.006 | 89 | Circular, slide |
| CBMH 206 | STM8 | 96.75 | 0.299 | 96.90 | 98.23 | 0.00 | 98.23 | 1.33 | 0.00 | 98.23 | 1.33 | 0.17 | 98.40 | 1.50 | 0.17 | 98.40 | 1.50 | 87.0 | 87.0 | 92.4 | 92.4 | 0.028 | 189 | Circular, slide |
| CBMH 207 | STM9 | 96.10 | 0.251 | 96.23 | 97.90 | 0.00 | 97.90 | 1.67 | 0.00 | 97.90 | 1.67 | 0.30 | 98.20 | 1.97 | 0.30 | 98.20 | 1.97 | 10.4 | 10.4 | 11.3 | 11.3 | 0.003 | n/a | Tempest LMF 95[*5] |

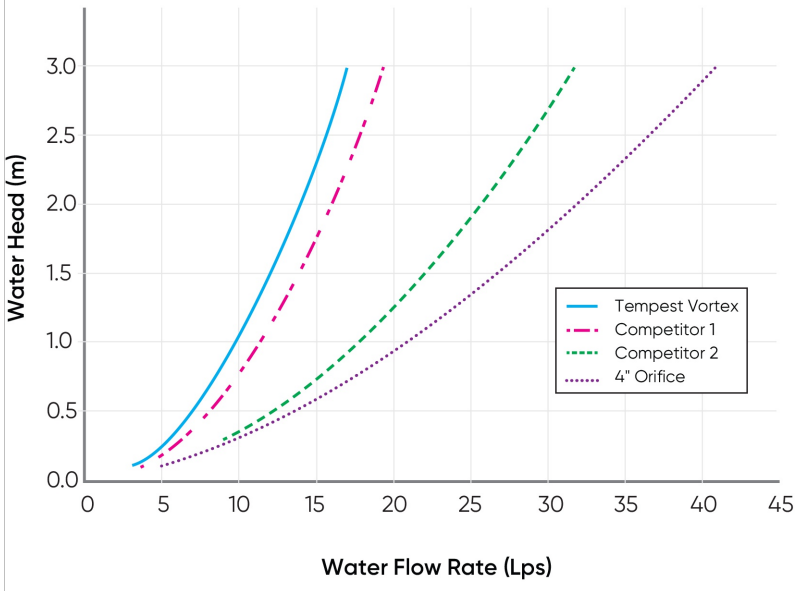
Notes:

1. Ponding depths are measured from the ponding elevation to the T/G elevation.
2. Heads are measured from the ponding elevation to the centreline of orifice elevation.
3. Orifice Area = (Q/1000) / 0.61(2*9.81*$H_{100}$)^0.5 (OSDG Section 8.3.8.1)
4. Orifice areas are calculated using 2-year head and outflow values.
5. Equivalent orifice diameter would be less than 83mm.

## Chart 1: LMF 14 Preset Flow Curves



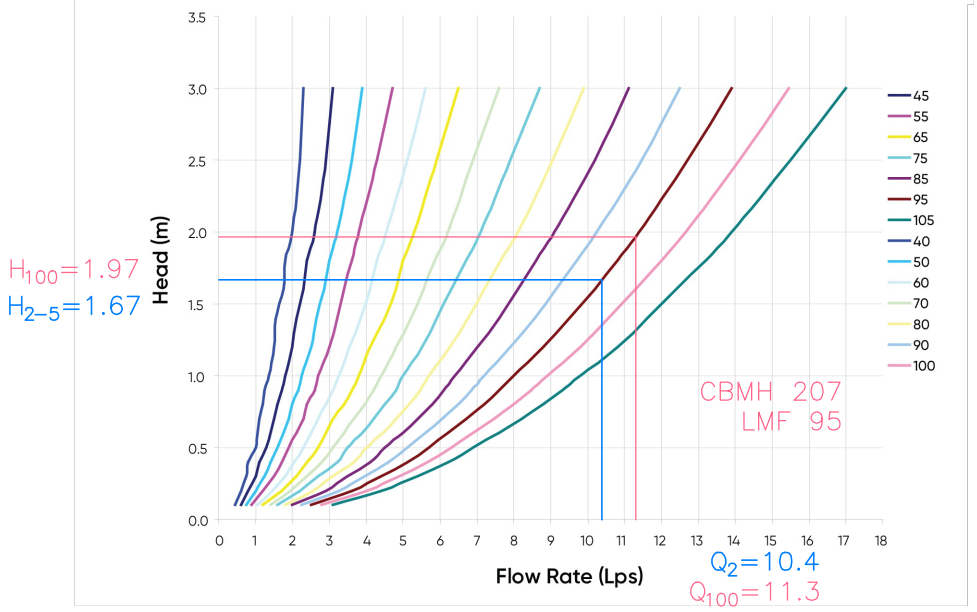

## Chart 2: LMF Flow vs. ICD Alternatives



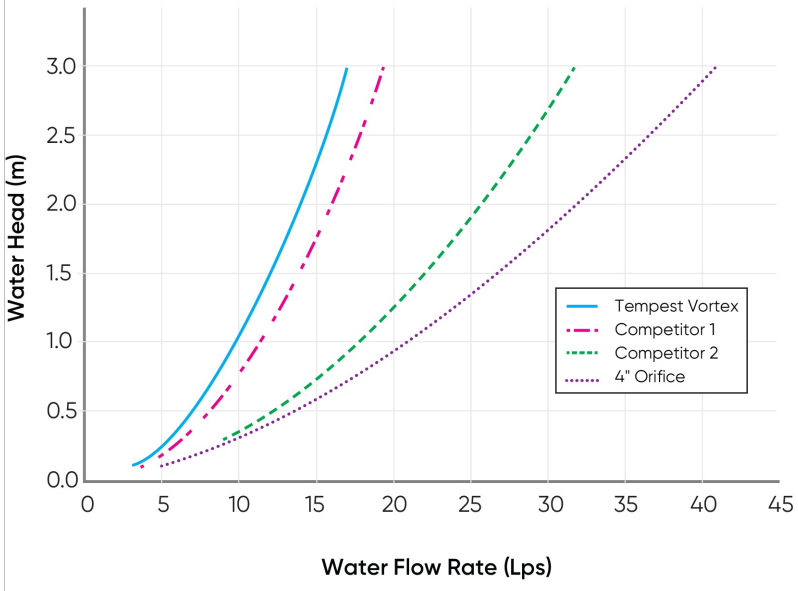



NOTE: Do not use or test the products in this manual with compressed air or other gases including air-over-water-boosters

## Chart 1: LMF 14 Preset Flow Curves




## Chart 2: LMF Flow vs. ICD Alternatives






NOTE: Do not use or test the products in this manual with compressed air or other gases including air-over-water-boosters

**Free Flow Calculations - Area FF1 (to Triangle Street)**

Area ID = FF1
Area (ha) = 0.15
C = 0.32
C (100 YR) = 0.40

| Design Event | Time (min) | Rainfall Intensity (mm/hr) | Flow (L/s) |
|---|---|---|---|
| 2 Year | **10** | **76.8** | **10.1** |
| | 15 | 61.8 | 8.1 |
| | 20 | 52.0 | 6.9 |
| | 25 | 45.2 | 5.9 |
| | 30 | 40.0 | 5.3 |
| | 35 | 36.1 | 4.7 |
| 5 Year | **10** | **104.2** | **13.7** |
| | 15 | 83.6 | 11.0 |
| | 20 | 70.3 | 9.3 |
| | 25 | 60.9 | 8.0 |
| | 30 | 53.9 | 7.1 |
| | 35 | 48.5 | 6.4 |
| 100 Year | **10** | **178.6** | **29.4** |
| | 15 | 142.9 | 23.5 |
| | 20 | 120.0 | 19.7 |
| | 25 | 103.8 | 17.1 |
| | 30 | 91.9 | 15.1 |
| | 35 | 82.6 | 13.6 |

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Flow calculated using the Rational Method. Q=2.78CiA
3. C (100 YR) = C + 25% (Max. 1.0)

**Free Flow Calculations - Area FF2 (to Honeylocust Ave.)**

Area ID = FF2
Area (ha) = 0.07
C = 0.47
C (100 YR) = 0.59

| Design Event | Time (min) | Rainfall Intensity (mm/hr) | Flow (L/s) |
|---|---|---|---|
| 2 Year | **10** | **76.8** | **6.6** |
| | 15 | 61.8 | 5.3 |
| | 20 | 52.0 | 4.5 |
| | 25 | 45.2 | 3.9 |
| | 30 | 40.0 | 3.5 |
| | 35 | 36.1 | 3.1 |
| 5 Year | **10** | **104.2** | **9.0** |
| | 15 | 83.6 | 7.2 |
| | 20 | 70.3 | 6.1 |
| | 25 | 60.9 | 5.3 |
| | 30 | 53.9 | 4.7 |
| | 35 | 48.5 | 4.2 |
| 100 Year | **10** | **178.6** | **19.3** |
| | 15 | 142.9 | 15.4 |
| | 20 | 120.0 | 12.9 |
| | 25 | 103.8 | 11.2 |
| | 30 | 91.9 | 9.9 |
| | 35 | 82.6 | 8.9 |

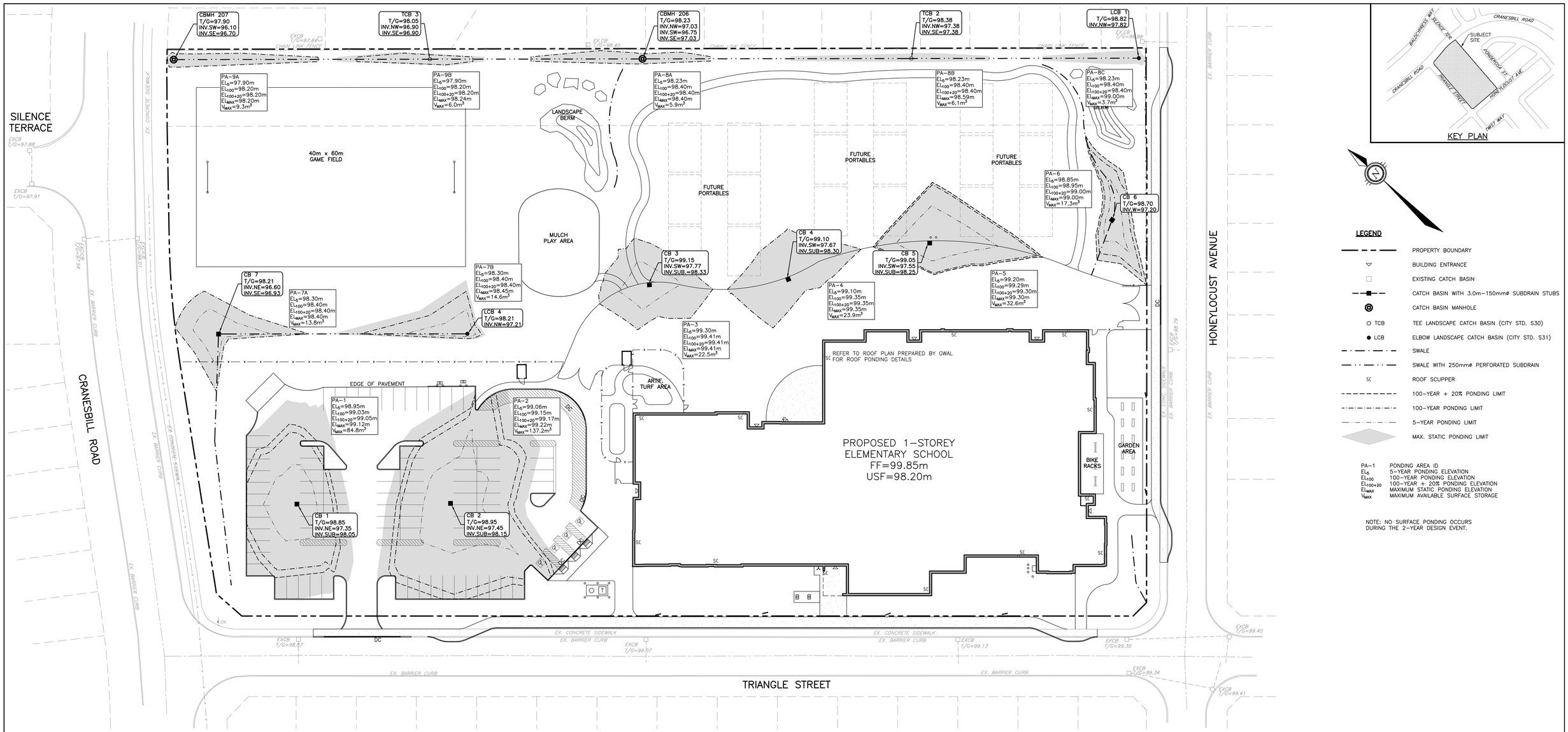
Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Flow calculated using the Rational Method. Q=2.78CiA
3. C (100 YR) = C + 25% (Max. 1.0)

**Free Flow Calculations - Area FF3 (to Cranesbill Road)**

Area ID = FF3
Area (ha) = 0.03
C = 0.20
C (100 YR) = 0.25

| Design Event | Time (min) | Rainfall Intensity (mm/hr) | Flow (L/s) |
|---|---|---|---|
| 2 Year | **10** | **76.8** | **1.2** |
| | 15 | 61.8 | 0.9 |
| | 20 | 52.0 | 0.8 |
| | 25 | 45.2 | 0.7 |
| | 30 | 40.0 | 0.6 |
| | 35 | 36.1 | 0.5 |
| 5 Year | **10** | **104.2** | **1.6** |
| | 15 | 83.6 | 1.3 |
| | 20 | 70.3 | 1.1 |
| | 25 | 60.9 | 0.9 |
| | 30 | 53.9 | 0.8 |
| | 35 | 48.5 | 0.7 |
| 100 Year | **10** | **178.6** | **3.3** |
| | 15 | 142.9 | 2.7 |
| | 20 | 120.0 | 2.2 |
| | 25 | 103.8 | 1.9 |
| | 30 | 91.9 | 1.7 |
| | 35 | 82.6 | 1.5 |

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Flow calculated using the Rational Method. Q=2.78CiA
3. C (100 YR) = C + 25% (Max. 1.0)







**LEGEND**

- PROPERTY BOUNDARY
- BUILDING ENTRANCE
- EXISTING CATCH BASIN
- CATCH BASIN WITH 3.0m–150mmø SUBDRAIN STUBS
- CATCH BASIN MANHOLE
- TCB — TEE LANDSCAPE CATCH BASIN (CITY STD. S30)
- LCB — ELBOW LANDSCAPE CATCH BASIN (CITY STD. S31)
- SWALE
- SWALE WITH 250mmø PERFORATED SUBDRAIN
- SC — ROOF SCUPPER
- 100–YEAR + 20% PONDING LIMIT
- 100–YEAR PONDING LIMIT
- 5–YEAR PONDING LIMIT
- MAX. STATIC PONDING LIMIT

| | |
|---|---|
| PA–1 | PONDING AREA ID |
| $EL_5$ | 5–YEAR PONDING ELEVATION |
| $EL_{100}$ | 100–YEAR PONDING ELEVATION |
| $EL_{100+20}$ | 100–YEAR + 20% PONDING ELEVATION |
| $EL_{MAX}$ | MAXIMUM STATIC PONDING ELEVATION |
| $V_{MAX}$ | MAXIMUM AVAILABLE SURFACE STORAGE |

NOTE: NO SURFACE PONDING OCCURS DURING THE 2–YEAR DESIGN EVENT.

**NOT FOR CONSTRUCTION**

NOTES

THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROPERTY BOUNDARIES HAVE BEEN DERIVED FROM THE TOPOGRAPHIC PLAN OF SURVEY OF BLOCK 116 REGISTERED PLAN 4M–1628 AND BLOCK 204 REGISTERED PLAN 4M–1606 CITY OF OTTAWA, PREPARED BY STANTEC GEOMATICS LTD., DATED OCTOBER 8, 2024. BEARINGS ARE DERIVED FROM FROM CAN–NET VRS NETWORK GPS OBSERVATIONS ON NCC HORIZONTAL CONTROL MONUMENTS 1977035 AND 19680191, MTM ZONE 9, NAD83 (ORIGINAL). ELEVATIONS ARE GEODETIC (CGVD–1928:1978) AND ARE DERIVED FROM THE CAN–NET VRS NETWORK MONUMENT: ELEVATION 95.230.

| NO. | REVISION DESCRIPTION | DATE | BY |
|---|---|---|---|
| 2 | REVISED PER CITY COMMENTS | 23/09/25 | BLM |
| 1 | ISSUED FOR REVIEW | 03/04/25 | BLM |

SCALE
0 4m 8m 16m
HORIZONTAL 1:400

LICENSED PROFESSIONAL ENGINEER
B. L. MACKECHNIE
100199554
23 Sept. '25
PROVINCE OF ONTARIO

Robinson Land Development
350 Palladium Drive
Ottawa, ON K2V 1A8
(613) 592-6060 rcii.com

| | |
|---|---|
| DESIGN | BLM |
| CHECKED | BLM |
| DRAWN | BLM |
| CHECKED | BLM |
| APPROVED | BLM |

OTTAWA CATHOLIC SCHOOL BOARD

FERNBANK NORTH
ELEMENTARY SCHOOL
620 TRIANGLE STREET, STITTSVILLE

PONDING AREA PLAN

| | |
|---|---|
| PROJECT No. | 24093 |
| SURVEY | STANTEC |
| DATED | SEPT. 2025 |
| DWG. No: | 24093-PA1 |

### Storage Volume Calculations - Area R1 (ROOF)

| | | | |
|---|---|---|---|
| Area ID = | R1 | 2-Year Release Rate (L/s) = | 18.7 |
| Area (ha) = | 0.47 | 5-Year Release Rate (L/s) = | 18.7 |
| C = | 0.90 | 100-Year Release Rate (L/s) = | 18.7 |
| C (100 YR) = | 1.00 | 100-Year + 20% Release Rate (L/s) = | 18.7 |
| | | Roof Drain Release Rate (L/s/ha) = | 40.0 |

| Design Event | Time (min) | Rainfall Intensity (mm/hr) | Flow (L/s) | Release Rate (L/s) | Net Runoff to be Stored (L/s) | Storage Required ($m^3$) |
|---|---|---|---|---|---|---|
| 2 Year | 15 | 61.8 | 72.4 | 18.7 | 53.6 | 48.3 |
| | 20 | 52.0 | 61.0 | 18.7 | 42.2 | 50.7 |
| | **25** | **45.2** | **52.9** | **18.7** | **34.2** | **51.3** |
| | 30 | 40.0 | 46.9 | 18.7 | 28.2 | 50.7 |
| | 35 | 36.1 | 42.3 | 18.7 | 23.5 | 49.4 |
| | 40 | 32.9 | 38.5 | 18.7 | 19.8 | 47.5 |
| 5 Year | 25 | 60.9 | 71.4 | 18.7 | 52.6 | 78.9 |
| | 30 | 53.9 | 63.2 | 18.7 | 44.5 | 80.0 |
| | **35** | **48.5** | **56.8** | **18.7** | **38.1** | **80.0** |
| | 40 | 44.2 | 51.8 | 18.7 | 33.0 | 79.3 |
| | 45 | 40.6 | 47.6 | 18.7 | 28.9 | 78.0 |
| | 50 | 37.7 | 44.1 | 18.7 | 25.4 | 76.2 |
| 100 Year | 50 | 64.0 | 83.3 | 18.7 | 64.5 | 193.6 |
| | 55 | 59.6 | 77.6 | 18.7 | 58.9 | 194.3 |
| | **60** | **55.9** | **72.8** | **18.7** | **54.0** | **194.5** |
| | 65 | 52.6 | 68.5 | 18.7 | 49.8 | 194.2 |
| | 70 | 49.8 | 64.8 | 18.7 | 46.1 | 193.6 |
| | 75 | 47.3 | 61.5 | 18.7 | 42.8 | 192.5 |
| 100 Year + 20% | 60 | 67.1 | 87.3 | 18.7 | 68.6 | 246.9 |
| | 65 | 63.2 | 82.2 | 18.7 | 63.5 | 247.7 |
| | **70** | **59.7** | **77.8** | **18.7** | **59.1** | **248.0** |
| | 75 | 56.7 | 73.8 | 18.7 | 55.1 | 247.9 |
| | 80 | 54.0 | 70.3 | 18.7 | 51.6 | 247.5 |
| | 85 | 51.5 | 67.1 | 18.7 | 48.4 | 246.7 |

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA
4. C (100 YR) = C + 25% (Max. 1.0)

### Storage Volume Calculations - Area STM1 (CB 1)

| | | | |
|---|---|---|---|
| Area ID = | STM1 | 2-Year Release Rate (L/s) = | 30.0 |
| Area (ha) = | 0.14 | 5-Year Release Rate (L/s) = | 31.1 |
| C = | 0.89 | 100-Year Release Rate (L/s) = | 31.9 |
| C (100 YR) = | 1.00 | 100-Year + 20% Release Rate (L/s) = | 32.1 |
| | | Available Storage Volume ($m^3$) = | 84.8 |

| Design Event | Time (min) | Rainfall Intensity (mm/hr) | Flow (L/s) | Release Rate (L/s) | Net Runoff to be Stored (L/s) | Storage Required ($m^3$) |
|---|---|---|---|---|---|---|
| 2 Year | 10 | 76.8 | 27.2 | 30.0 | -2.8 | -1.7 |
| | 15 | 61.8 | 21.8 | 30.0 | -8.2 | -7.3 |
| | 20 | 52.0 | 18.4 | 30.0 | -11.6 | -13.9 |
| | 25 | 45.2 | 16.0 | 30.0 | -14.0 | -21.0 |
| | 30 | 40.0 | 14.2 | 30.0 | -15.8 | -28.5 |
| | 35 | 36.1 | 12.8 | 30.0 | -17.2 | -36.2 |
| 5 Year | **10** | **104.2** | **36.8** | **31.1** | **5.8** | **3.5** |
| | 15 | 83.6 | 29.5 | 31.1 | -1.5 | -1.4 |
| | 20 | 70.3 | 24.8 | 31.1 | -6.2 | -7.5 |
| | 25 | 60.9 | 21.5 | 31.1 | -9.5 | -14.3 |
| | 30 | 53.9 | 19.1 | 31.1 | -12.0 | -21.6 |
| | 35 | 48.5 | 17.2 | 31.1 | -13.9 | -29.2 |
| 100 Year | **10** | **178.6** | **71.2** | **31.9** | **39.3** | **23.6** |
| | 15 | 142.9 | 57.0 | 31.9 | 25.1 | 22.6 |
| | 20 | 120.0 | 47.8 | 31.9 | 16.0 | 19.1 |
| | 25 | 103.8 | 41.4 | 31.9 | 9.5 | 14.3 |
| | 30 | 91.9 | 36.6 | 31.9 | 4.8 | 8.6 |
| | 35 | 82.6 | 32.9 | 31.9 | 1.1 | 2.2 |
| 100 Year + 20% | 10 | 214.3 | 85.4 | 32.1 | 53.4 | 32.0 |
| | **15** | **171.5** | **68.4** | **32.1** | **36.3** | **32.7** |
| | 20 | 143.9 | 57.4 | 32.1 | 25.3 | 30.4 |
| | 25 | 124.6 | 49.7 | 32.1 | 17.6 | 26.4 |
| | 30 | 110.2 | 44.0 | 32.1 | 11.9 | 21.4 |
| | 35 | 99.1 | 39.5 | 32.1 | 7.4 | 15.6 |

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA
4. C (100 YR) = C + 25% (Max. 1.0)

### Storage Volume Calculations - Area STM2 (CB 2)

| | | | |
|---|---|---|---|
| Area ID = | STM2 | 2-Year Release Rate (L/s) = | 60.0 |
| Area (ha) = | 0.32 | 5-Year Release Rate (L/s) = | 62.4 |
| C = | 0.80 | 100-Year Release Rate (L/s) = | 64.2 |
| C (100 YR) = | 1.00 | 100-Year + 20% Release Rate (L/s) = | 64.6 |
| | | Available Storage Volume ($m^3$) = | 137.2 |

| Design Event | Time (min) | Rainfall Intensity (mm/hr) | Flow (L/s) | Release Rate (L/s) | Net Runoff to be Stored (L/s) | Storage Required ($m^3$) |
|---|---|---|---|---|---|---|
| 2 Year | 10 | 76.8 | 54.1 | 60.0 | -5.9 | -3.6 |
| | 15 | 61.8 | 43.5 | 60.0 | -16.5 | -14.9 |
| | 20 | 52.0 | 36.6 | 60.0 | -23.4 | -28.1 |
| | 25 | 45.2 | 31.8 | 60.0 | -28.2 | -42.3 |
| | 30 | 40.0 | 28.2 | 60.0 | -31.8 | -57.3 |
| | 35 | 36.1 | 25.4 | 60.0 | -34.6 | -72.7 |
| 5 Year | **10** | **104.2** | **73.3** | **62.4** | **11.0** | **6.6** |
| | 15 | 83.6 | 58.8 | 62.4 | -3.5 | -3.2 |
| | 20 | 70.3 | 49.4 | 62.4 | -12.9 | -15.5 |
| | 25 | 60.9 | 42.9 | 62.4 | -19.5 | -29.2 |
| | 30 | 53.9 | 38.0 | 62.4 | -24.4 | -43.9 |
| | 35 | 48.5 | 34.1 | 62.4 | -28.2 | -59.2 |
| 100 Year | **10** | **178.6** | **156.9** | **64.2** | **92.6** | **55.6** |
| | 15 | 142.9 | 125.5 | 64.2 | 61.3 | 55.2 |
| | 20 | 120.0 | 105.4 | 64.2 | 41.2 | 49.4 |
| | 25 | 103.8 | 91.2 | 64.2 | 27.0 | 40.5 |
| | 30 | 91.9 | 80.7 | 64.2 | 16.5 | 29.7 |
| | 35 | 82.6 | 72.5 | 64.2 | 8.3 | 17.5 |
| 100 Year + 20% | 10 | 214.3 | 188.2 | 64.6 | 123.6 | 74.2 |
| | **15** | **171.5** | **150.6** | **64.6** | **86.0** | **77.4** |
| | 20 | 143.9 | 126.5 | 64.6 | 61.8 | 74.2 |
| | 25 | 124.6 | 109.5 | 64.6 | 44.9 | 67.3 |
| | 30 | 110.2 | 96.8 | 64.6 | 32.2 | 58.0 |
| | 35 | 99.1 | 87.1 | 64.6 | 22.4 | 47.1 |

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA
4. C (100 YR) = C + 25% (Max. 1.0)

### Storage Volume Calculations - Area STM3 (CB 3)

| | | | |
|---|---|---|---|
| Area ID = | STM3 | 2-Year Release Rate (L/s) = | 20.0 |
| Area (ha) = | 0.11 | 5-Year Release Rate (L/s) = | 21.1 |
| C = | 0.80 | 100-Year Release Rate (L/s) = | 21.9 |
| C (100 YR) = | 1.00 | 100-Year + 20% Release Rate (L/s) = | 21.9 |
| | | Available Storage Volume ($m^3$) = | 22.5 |

| Design Event | Time (min) | Rainfall Intensity (mm/hr) | Flow (L/s) | Release Rate (L/s) | Net Runoff to be Stored (L/s) | Storage Required ($m^3$) |
|---|---|---|---|---|---|---|
| 2 Year | 10 | 76.8 | 19.1 | 20.0 | -0.9 | -0.6 |
| | 15 | 61.8 | 15.3 | 20.0 | -4.7 | -4.2 |
| | 20 | 52.0 | 12.9 | 20.0 | -7.1 | -8.5 |
| | 25 | 45.2 | 11.2 | 20.0 | -8.8 | -13.2 |
| | 30 | 40.0 | 9.9 | 20.0 | -10.1 | -18.1 |
| | 35 | 36.1 | 9.0 | 20.0 | -11.0 | -23.2 |
| 5 Year | **10** | **104.2** | **25.9** | **21.1** | **4.7** | **2.8** |
| | 15 | 83.6 | 20.8 | 21.1 | -0.4 | -0.3 |
| | 20 | 70.3 | 17.5 | 21.1 | -3.7 | -4.4 |
| | 25 | 60.9 | 15.1 | 21.1 | -6.0 | -9.0 |
| | 30 | 53.9 | 13.4 | 21.1 | -7.7 | -13.9 |
| | 35 | 48.5 | 12.1 | 21.1 | -9.1 | -19.1 |
| 100 Year | 10 | 178.6 | 55.5 | 21.9 | 33.5 | 20.1 |
| | **15** | **142.9** | **44.4** | **21.9** | **22.4** | **20.2** |
| | 20 | 120.0 | 37.3 | 21.9 | 15.3 | 18.4 |
| | 25 | 103.8 | 32.3 | 21.9 | 10.3 | 15.5 |
| | 30 | 91.9 | 28.5 | 21.9 | 6.6 | 11.9 |
| | 35 | 82.6 | 25.6 | 21.9 | 3.7 | 7.8 |
| 100 Year + 20% | 10 | 214.3 | 66.5 | 21.9 | 44.6 | 26.8 |
| | **15** | **171.5** | **53.3** | **21.9** | **31.3** | **28.2** |
| | 20 | 143.9 | 44.7 | 21.9 | 22.8 | 27.3 |
| | 25 | 124.6 | 38.7 | 21.9 | 16.8 | 25.1 |
| | 30 | 110.2 | 34.2 | 21.9 | 12.3 | 22.1 |
| | 35 | 99.1 | 30.8 | 21.9 | 8.8 | 18.6 |

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA
4. C (100 YR) = C + 25% (Max. 1.0)

### Storage Volume Calculations - Area STM4 (CB 4)

| | | | |
|---|---|---|---|
| Area ID = | STM4 | 2-Year Release Rate (L/s) = | 40.0 |
| Area (ha) = | 0.16 | 5-Year Release Rate (L/s) = | 40.0 |
| C = | 0.86 | 100-Year Release Rate (L/s) = | 43.6 |
| C (100 YR) = | 1.00 | 100-Year + 20% Release Rate (L/s) = | 43.6 |
| | | Available Storage Volume ($m^3$) = | 23.9 |

| Design Event | Time (min) | Rainfall Intensity (mm/hr) | Flow (L/s) | Release Rate (L/s) | Net Runoff to be Stored (L/s) | Storage Required ($m^3$) |
|---|---|---|---|---|---|---|
| 2 Year | 10 | 76.8 | 29.4 | 40.0 | -10.6 | -6.4 |
| | 15 | 61.8 | 23.6 | 40.0 | -16.4 | -14.7 |
| | 20 | 52.0 | 19.9 | 40.0 | -20.1 | -24.1 |
| | 25 | 45.2 | 17.3 | 40.0 | -22.7 | -34.1 |
| | 30 | 40.0 | 15.3 | 40.0 | -24.7 | -44.4 |
| | 35 | 36.1 | 13.8 | 40.0 | -26.2 | -55.0 |
| 5 Year | 10 | 104.2 | 39.9 | 40.0 | -0.1 | -0.1 |
| | 15 | 83.6 | 32.0 | 40.0 | -8.0 | -7.2 |
| | 20 | 70.3 | 26.9 | 40.0 | -13.1 | -15.7 |
| | 25 | 60.9 | 23.3 | 40.0 | -16.7 | -25.0 |
| | 30 | 53.9 | 20.6 | 40.0 | -19.4 | -34.9 |
| | 35 | 48.5 | 18.6 | 40.0 | -21.4 | -45.0 |
| 100 Year | **10** | **178.6** | **79.7** | **43.6** | **36.1** | **21.7** |
| | 15 | 142.9 | 63.8 | 43.6 | 20.2 | 18.2 |
| | 20 | 120.0 | 53.5 | 43.6 | 9.9 | 11.9 |
| | 25 | 103.8 | 46.4 | 43.6 | 2.8 | 4.1 |
| | 30 | 91.9 | 41.0 | 43.6 | -2.6 | -4.7 |
| | 35 | 82.6 | 36.9 | 43.6 | -6.7 | -14.2 |
| 100 Year + 20% | **10** | **214.3** | **95.6** | **43.6** | **52.0** | **31.2** |
| | 15 | 171.5 | 76.5 | 43.6 | 32.9 | 29.6 |
| | 20 | 143.9 | 64.2 | 43.6 | 20.7 | 24.8 |
| | 25 | 124.6 | 55.6 | 43.6 | 12.0 | 18.0 |
| | 30 | 110.2 | 49.2 | 43.6 | 5.6 | 10.1 |
| | 35 | 99.1 | 44.2 | 43.6 | 0.6 | 1.3 |

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA
4. C (100 YR) = C + 25% (Max. 1.0)

### Storage Volume Calculations - Area STM5 (CB 5)

| | | | |
|---|---|---|---|
| Area ID = | STM5 | 2-Year Release Rate (L/s) = | 30.0 |
| Area (ha) = | 0.15 | 5-Year Release Rate (L/s) = | 31.6 |
| C = | 0.85 | 100-Year Release Rate (L/s) = | 32.5 |
| C (100 YR) = | 1.00 | 100-Year + 20% Release Rate (L/s) = | 32.6 |
| | | Available Storage Volume ($m^3$) = | 32.9 |

| Design Event | Time (min) | Rainfall Intensity (mm/hr) | Flow (L/s) | Release Rate (L/s) | Net Runoff to be Stored (L/s) | Storage Required ($m^3$) |
|---|---|---|---|---|---|---|
| 2 Year | 10 | 76.8 | 27.5 | 30.0 | -2.5 | -1.5 |
| | 15 | 61.8 | 22.1 | 30.0 | -7.9 | -7.1 |
| | 20 | 52.0 | 18.7 | 30.0 | -11.3 | -13.6 |
| | 25 | 45.2 | 16.2 | 30.0 | -13.8 | -20.7 |
| | 30 | 40.0 | 14.4 | 30.0 | -15.6 | -28.2 |
| | 35 | 36.1 | 12.9 | 30.0 | -17.1 | -35.9 |
| 5 Year | **10** | **104.2** | **37.4** | **31.6** | **5.8** | **3.5** |
| | 15 | 83.6 | 30.0 | 31.6 | -1.6 | -1.4 |
| | 20 | 70.3 | 25.2 | 31.6 | -6.4 | -7.7 |
| | 25 | 60.9 | 21.8 | 31.6 | -9.7 | -14.6 |
| | 30 | 53.9 | 19.3 | 31.6 | -12.2 | -22.0 |
| | 35 | 48.5 | 17.4 | 31.6 | -14.2 | -29.8 |
| 100 Year | **10** | **178.6** | **75.3** | **32.5** | **42.8** | **25.7** |
| | 15 | 142.9 | 60.2 | 32.5 | 27.8 | 25.0 |
| | 20 | 120.0 | 50.6 | 32.5 | 18.1 | 21.7 |
| | 25 | 103.8 | 43.8 | 32.5 | 11.3 | 16.9 |
| | 30 | 91.9 | 38.7 | 32.5 | 6.2 | 11.2 |
| | 35 | 82.6 | 34.8 | 32.5 | 2.3 | 4.9 |
| 100 Year + 20% | 10 | 214.3 | 90.3 | 32.6 | 57.7 | 34.6 |
| | **15** | **171.5** | **72.3** | **32.6** | **39.7** | **35.7** |
| | 20 | 143.9 | 60.7 | 32.6 | 28.1 | 33.7 |
| | 25 | 124.6 | 52.5 | 32.6 | 20.0 | 29.9 |
| | 30 | 110.2 | 46.5 | 32.6 | 13.9 | 25.0 |
| | 35 | 99.1 | 41.8 | 32.6 | 9.2 | 19.3 |

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA
4. C (100 YR) = C + 25% (Max. 1.0)

### Storage Volume Calculations - Area STM6 (CB 6)

Area ID = STM6
Area (ha) = 0.11
C = 0.42
C (100 YR) = 0.52

2-Year Release Rate (L/s) = 11.7
5-Year Release Rate (L/s) = 12.3
100-Year Release Rate (L/s) = 12.8
100-Year + 20% Release Rate (L/s) = 12.8
Available Storage Volume ($m^3$) = 17.3

| Design Event | Time (min) | Rainfall Intensity (mm/hr) | Flow (L/s) | Release Rate (L/s) | Net Runoff to be Stored (L/s) | Storage Required ($m^3$) |
|---|---|---|---|---|---|---|
| 2 Year | 10 | 76.8 | 10.3 | 11.7 | -1.4 | -0.9 |
| | 15 | 61.8 | 8.2 | 11.7 | -3.5 | -3.1 |
| | 20 | 52.0 | 6.9 | 11.7 | -4.8 | -5.7 |
| | 25 | 45.2 | 6.0 | 11.7 | -5.7 | -8.5 |
| | 30 | 40.0 | 5.3 | 11.7 | -6.4 | -11.4 |
| | 35 | 36.1 | 4.8 | 11.7 | -6.9 | -14.5 |
| 5 Year | **10** | **104.2** | **13.9** | **12.3** | **1.6** | **1.0** |
| | 15 | 83.6 | 11.2 | 12.3 | -1.2 | -1.0 |
| | 20 | 70.3 | 9.4 | 12.3 | -2.9 | -3.5 |
| | 25 | 60.9 | 8.1 | 12.3 | -4.2 | -6.3 |
| | 30 | 53.9 | 7.2 | 12.3 | -5.1 | -9.2 |
| | 35 | 48.5 | 6.5 | 12.3 | -5.8 | -12.2 |
| 100 Year | **10** | **178.6** | **29.8** | **12.8** | **17.0** | **10.2** |
| | 15 | 142.9 | 23.9 | 12.8 | 11.1 | 9.9 |
| | 20 | 120.0 | 20.0 | 12.8 | 7.2 | 8.7 |
| | 25 | 103.8 | 17.3 | 12.8 | 4.5 | 6.8 |
| | 30 | 91.9 | 15.3 | 12.8 | 2.5 | 4.6 |
| | 35 | 82.6 | 13.8 | 12.8 | 1.0 | 2.1 |
| 100 Year + 20% | 10 | 214.3 | 35.8 | 12.8 | 23.0 | 13.8 |
| | **15** | **171.5** | **28.6** | **12.8** | **15.8** | **14.2** |
| | 20 | 143.9 | 24.0 | 12.8 | 11.2 | 13.5 |
| | 25 | 124.6 | 20.8 | 12.8 | 8.0 | 12.0 |
| | 30 | 110.2 | 18.4 | 12.8 | 5.6 | 10.1 |
| | 35 | 99.1 | 16.5 | 12.8 | 3.7 | 7.9 |

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA
4. C (100 YR) = C + 25% (Max. 1.0)

### Storage Volume Calculations - Area STM7 (CB 7)

Area ID = STM7
Area (ha) = 0.43
C = 0.20
C (100 YR) = 0.25

2-Year Release Rate (L/s) = 20.0
5-Year Release Rate (L/s) = 21.4
100-Year Release Rate (L/s) = 22.0
100-Year + 20% Release Rate (L/s) = 22.0
Available Storage Volume (m3) = 28.4 (PA-7A + PA7B)

| Design Event | Time (min) | Rainfall Intensity (mm/hr) | Flow (L/s) | Release Rate (L/s) | Net Runoff to be Stored (L/s) | Storage Required (m3) |
|---|---|---|---|---|---|---|
| 2 Year | 10 | 76.8 | 18.4 | 20.0 | -1.6 | -0.9 |
| | 15 | 61.8 | 14.8 | 20.0 | -5.2 | -4.7 |
| | 20 | 52.0 | 12.5 | 20.0 | -7.5 | -9.0 |
| | 25 | 45.2 | 10.8 | 20.0 | -9.2 | -13.7 |
| | 30 | 40.0 | 9.6 | 20.0 | -10.4 | -18.7 |
| | 35 | 36.1 | 8.7 | 20.0 | -11.3 | -23.8 |
| 5 Year | **10** | **104.2** | **25.0** | **21.4** | **3.6** | **2.2** |
| | 15 | 83.6 | 20.1 | 21.4 | -1.3 | -1.2 |
| | 20 | 70.3 | 16.9 | 21.4 | -4.5 | -5.4 |
| | 25 | 60.9 | 14.6 | 21.4 | -6.8 | -10.1 |
| | 30 | 53.9 | 12.9 | 21.4 | -8.4 | -15.2 |
| | 35 | 48.5 | 11.6 | 21.4 | -9.7 | -20.4 |
| 100 Year | **10** | **178.6** | **53.6** | **22.0** | **31.5** | **18.9** |
| | 15 | 142.9 | 42.9 | 22.0 | 20.8 | 18.8 |
| | 20 | 120.0 | 36.0 | 22.0 | 14.0 | 16.7 |
| | 25 | 103.8 | 31.2 | 22.0 | 9.1 | 13.7 |
| | 30 | 91.9 | 27.6 | 22.0 | 5.5 | 10.0 |
| | 35 | 82.6 | 24.8 | 22.0 | 2.7 | 5.8 |
| 100 Year + 20% | 10 | 214.3 | 64.3 | 22.0 | 42.3 | 25.4 |
| | **15** | **171.5** | **51.5** | **22.0** | **29.4** | **26.5** |
| | 20 | 143.9 | 43.2 | 22.0 | 21.2 | 25.4 |
| | 25 | 124.6 | 37.4 | 22.0 | 15.4 | 23.0 |
| | 30 | 110.2 | 33.1 | 22.0 | 11.0 | 19.9 |
| | 35 | 99.1 | 29.7 | 22.0 | 7.7 | 16.2 |

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA
4. C (100 YR) = C + 25% (Max. 1.0)

### Storage Volume Calculations - Area STM8 (CBMH 206)

Area ID = STM8
Area (ha) = 0.36
C = 0.54
C (100 YR) = 0.67

2-Year Release Rate (L/s) = 87.0
5-Year Release Rate (L/s) = 87.0
100-Year Release Rate (L/s) = 92.4
100-Year + 20% Release Rate (L/s) = 92.4
Available Storage Volume (m3) = 5.9 (PA-8A)

| Design Event | Time (min) | Rainfall Intensity (mm/hr) | Flow (L/s) | Release Rate (L/s) | Net Runoff to be Stored (L/s) | Storage Required (m3) |
|---|---|---|---|---|---|---|
| 2 Year | 15 | 61.8 | 33.3 | 87.0 | -53.7 | -48.3 |
| | 20 | 52.0 | 28.0 | 87.0 | -59.0 | -70.7 |
| | 25 | 45.2 | 24.3 | 87.0 | -62.7 | -94.0 |
| | 30 | 40.0 | 21.6 | 87.0 | -65.4 | -117.7 |
| | 35 | 36.1 | 19.4 | 87.0 | -67.6 | -141.9 |
| | 40 | 32.9 | 17.7 | 87.0 | -69.3 | -166.3 |
| 5 Year | 15 | 83.6 | 45.0 | 87.0 | -42.0 | -37.8 |
| | 20 | 70.3 | 37.9 | 87.0 | -49.1 | -59.0 |
| | 25 | 60.9 | 32.8 | 87.0 | -54.2 | -81.3 |
| | 30 | 53.9 | 29.1 | 87.0 | -57.9 | -104.3 |
| | 35 | 48.5 | 26.2 | 87.0 | -60.8 | -127.8 |
| | 40 | 44.2 | 23.8 | 87.0 | -63.2 | -151.6 |
| 100 Year | **15** | **142.9** | **96.3** | **92.4** | **3.9** | **3.5** |
| | 20 | 120.0 | 80.8 | 92.4 | -11.6 | -13.9 |
| | 25 | 103.8 | 70.0 | 92.4 | -22.4 | -33.6 |
| | 30 | 91.9 | 61.9 | 92.4 | -30.5 | -54.9 |
| | 35 | 82.6 | 55.6 | 92.4 | -36.7 | -77.2 |
| | 40 | 75.1 | 50.6 | 92.4 | -41.8 | -100.2 |
| 100 Year + 20% | **15** | **171.5** | **115.5** | **92.4** | **23.2** | **20.8** |
| | 20 | 143.9 | 97.0 | 92.4 | 4.6 | 5.5 |
| | 25 | 124.6 | 84.0 | 92.4 | -8.4 | -12.6 |
| | 30 | 110.2 | 74.3 | 92.4 | -18.1 | -32.6 |
| | 35 | 99.1 | 66.8 | 92.4 | -25.6 | -53.8 |
| | 40 | 90.2 | 60.8 | 92.4 | -31.6 | -75.9 |

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA
4. C (100 YR) = C + 25% (Max. 1.0)

**Storage Volume Calculations - Area STM9 (CBMH 207)**

| | | | | |
|---|---|---|---|---|
| Area ID = | STM9 | 2-Year Release Rate (L/s) = | 10.4 | |
| Area (ha) = | 0.22 | 5-Year Release Rate (L/s) = | 10.4 | |
| C = | 0.20 | 100-Year Release Rate (L/s) = | 11.3 | |
| C (100 YR) = | 0.25 | 100-Year + 20% Release Rate (L/s) = | 11.3 | |
| | | Available Storage Volume ($m^3$) = | 15.3 | (PA-9A + PA-9B) |

| Design Event | Time (min) | Rainfall Intensity (mm/hr) | Flow (L/s) | Release Rate (L/s) | Net Runoff to be Stored (L/s) | Storage Required ($m^3$) |
|---|---|---|---|---|---|---|
| 2 Year | 15 | 61.8 | 7.5 | 10.4 | -2.9 | -2.6 |
| | 20 | 52.0 | 6.3 | 10.4 | -4.1 | -4.9 |
| | 25 | 45.2 | 5.5 | 10.4 | -4.9 | -7.4 |
| | 30 | 40.0 | 4.9 | 10.4 | -5.5 | -10.0 |
| | 35 | 36.1 | 4.4 | 10.4 | -6.0 | -12.6 |
| | 40 | 32.9 | 4.0 | 10.4 | -6.4 | -15.4 |
| 5 Year | 15 | 83.6 | 10.2 | 10.4 | -0.2 | -0.2 |
| | 20 | 70.3 | 8.5 | 10.4 | -1.9 | -2.2 |
| | 25 | 60.9 | 7.4 | 10.4 | -3.0 | -4.5 |
| | 30 | 53.9 | 6.6 | 10.4 | -3.8 | -6.9 |
| | 35 | 48.5 | 5.9 | 10.4 | -4.5 | -9.5 |
| | 40 | 44.2 | 5.4 | 10.4 | -5.0 | -12.1 |
| 100 Year | **15** | **142.9** | **21.7** | **11.3** | **10.4** | **9.4** |
| | 20 | 120.0 | 18.2 | 11.3 | 6.9 | 8.3 |
| | 25 | 103.8 | 15.8 | 11.3 | 4.5 | 6.7 |
| | 30 | 91.9 | 14.0 | 11.3 | 2.7 | 4.8 |
| | 35 | 82.6 | 12.6 | 11.3 | 1.3 | 2.6 |
| | 40 | 75.1 | 11.4 | 11.3 | 0.1 | 0.3 |
| 100 Year + 20% | 20 | 143.9 | 21.9 | 5.7 | 16.2 | 19.5 |
| | 25 | 124.6 | 18.9 | 5.7 | 13.3 | 19.9 |
| | **30** | **110.2** | **16.8** | **5.7** | **11.1** | **20.0** |
| | 35 | 99.1 | 15.1 | 5.7 | 9.4 | 19.8 |
| | 40 | 90.2 | 13.7 | 5.7 | 8.1 | 19.3 |
| | 45 | 82.9 | 12.6 | 5.7 | 6.9 | 18.8 |

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA
4. C (100 YR) = C + 25% (Max. 1.0)

**Content Copy Of Original**

Ontario

**Ministry of the Environment and Climate Change**
**Ministère de l'Environnement et de l'Action en matière de changement climatique**

**AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL**
NUMBER 1983-AG5PQD
Issue Date: December 13, 2016

Mattamy (Fernbank) Limited
50 Hines Road, Unit 100
Ottawa, Ontario
K2K 2M5

Site Location: 570 Hazeldean Road
Part of Lot 29, Concession 11 (JD Barnes M-Plan)
City of Ottawa, Ontario

*You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:*

establishment of stormwater management Works serving Phases 1, 2 and 3 of the Abbottsville Crossing residential subdivision development site and external lands, located west of Terry Fox Road and north of Trans-Canada Trail, within Carp River watershed, in the City of Ottawa, for the collection, treatment and disposal of stormwater run-off, providing Normal Level water quality control and erosion protection and attenuating post-development peak flows to the targeted release rates for the 10-year and 100-year storm events, consisting of the following:

## Proposed Works:

**stormwater management facility** (Fernbank SWM Pond 3 - catchment area approximately 98.33 hectares): one (1) wet pond with two (2) sediment forebays (east sediment forebay and west sediment forebay), located at the northeast corner of the site, within Block 433, having a permanent pool storage volume of 23,743 m 3 , an extended detention storage volume of 4,944 m 3 , and a total storage volume of 54,778 m 3 during the 100-year storm event, including the permanent pool storage volume, at a depth of approximately 3.64 m, complete with:

- an inlet structure consisting of a 1500 mm diameter inlet pipe, headwall and plunge pool with rip-rap over Terrafix filter fabric or equivalent, receiving inflow from on-site storm sewers, located within Block 433, discharging to the west sediment forebay;

- an inlet structure consisting of a 2400 mm diameter inlet pipe and a 1500 mm diameter inlet pipe, headwall and plunge pool with rip-rap over Terrafix filter fabric or equivalent, receiving inflow from on-site storm sewers, located within Block 121, discharging to the east sediment forebay;

- a 300 mm diameter conveyance pipe through the west sediment forebay berm including all maintenance structure, connecting the west sediment forebay to the main cell;

- a 300 mm diameter conveyance pipe through the east sediment forebay berm including all maintenance structure, connecting the east sediment forebay to the main cell;

- a 2400 mm by 3000 mm outlet structure, complete with a 400 mm by 400 mm opening controlled by a 300 mm diameter orifice plate, allowing a maximum release rate of 75 L/s at the extended detention

level, a 500 mm by 500 mm orifice and a 600 mm by 600 mm orifice, allowing a maximum combined orifices release rate of 1734 L/s during the 10-year storm event, discharging via a 1350 mm diameter pipe to an outlet channel;

- a 10 m sharp crested weir on top of the 2400 mm by 3000 mm outlet structure described above, a 40 m broad crested weir, combined with orifices described above, allowing a maximum release rate of 9458 L/s during the 100-year storm event;

- a 40 m broad crested weir described above, discharging emergency overflow to the main branch of Carp River, and ultimately to Carp River

**an outlet channel:** an approximately 245 m long outlet channel with a plunge pool, having a bottom width of 10 m and 30 m, 3:1 side slopes and a longitudinal slope of 0.118%, located on the north side of the Fernbank SWM Pond 3, within channel easement (Block 432, Block 433, and 560 Hazeldean Road), receiving inflow from a 1350 mm diameter inlet pipe described above, and inflow from future Fernbank SWM Pond 1 and future Fernbank SWM Pond 2, discharging to Carp River;

decommissioning of the temporary stormwater management Interim Works described as below;

## Previous Works:

temporary stormwater management Interim Works for the collection, treatment and disposal of stormwater run-off, and dewatering sewage, if necessary, directly related to the site grading and initial construction of the Mattamy Homes Dawson Property residential subdivision, located at 570 Hazeldean Road in the City of Ottawa, within the Carp River watershed, to provide Enhanced Level (80% Total Suspended Solids removal) water quality control and erosion protection during the development of the subdivision, consisting of three (3) temporary drainage swales and one (1) temporary sedimentation pond;

including erosion/sedimentation control measures during construction and all other controls and appurtenances essential for the proper operation of the aforementioned Works;

all in accordance with the submitted supporting documents listed in Schedule "A" forming part of this Approval.

*For the purpose of this environmental compliance approval, the following definitions apply:*

1. "Approval" means this Environmental Compliance Approval and any Schedules to it, including the application and supporting documentation;

2. "Director" means any Ministry employee appointed by the Minister pursuant to section 5 of the Part II.1 of the Environmental Protection Act;

3. "District Manager" means the District Manager of the appropriate local District Office of the Ministry, where the Works are geographically located;

4. "Ministry" means the Ontario Ministry of the Environment and Climate Change;

5. "Owner" means Mattamy (Fernbank) Limited, and includes its successors and assignees;

6. "Water Supervisor" means the Water Supervisor of the appropriate local office of the Safe Drinking Water Branch of the Ministry, where the Works are geographically located;

7. “Previous Works" means those portions of the sewage Works previously approved under an Approval;

8. "Works" means the sewage works described in the Owner's application, this Approval and in the supporting documentation referred to herein, to the extent approved by this Approval.

*You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:*

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

1.1 The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the Conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

1.2 Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with the description given in this Approval, and the application for approval of the Works.

1.3 Where there is a conflict between a provision of any submitted document referred to in this Approval and the Conditions of this Approval, the Conditions in this Approval shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

1.4 Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

1.5 The Conditions of this Approval are severable. If any Condition of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such Condition to other circumstances and the remainder of this Approval shall not be affected thereby.

1.6 The issuance of, and compliance with the Conditions of this Approval does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approval from the local conservation authority necessary to construct or operate the sewage Works; or

(b) limit in any way the authority of the Ministry to require certain steps be taken to require the Owner to furnish any further information related to compliance with this Approval.

1.7 This Approval includes the treatment and disposal of stormwater run-off from approximately 98.33 hectares catchment area draining to the stormwater management facility in the City of Ottawa, based on an average imperviousness of approximately 52%. Any changes within the drainage areas that might increase the required storage volumes or increase the flows to or from the stormwater management facility or any structural/physical changes to the stormwater management facility including the inlets or outlets will require an amendment to this Approval.

2. EXPIRY OF APPROVAL

This Approval will cease to apply to those parts of the proposed Works which have not been constructed within **five (5) years** of the date of this Approval.

3. CHANGE OF OWNER

3.1 The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within **thirty (30) days** of the change occurring:

(a) change of Owner;

(b) change of address of the Owner;

(c) change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c.B17 shall be included in the notification to the District Manager; and

(d) change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C39 shall be included in the notification to the District Manager.

3.2 Notwithstanding any other requirements in this Approval, upon transfer of the ownership or assumption of the Works to a municipality if applicable, any reference to the District Manager shall be replaced with the Water Supervisor.

4. OPERATION AND MAINTENANCE

4.1 The Owner shall ensure that the design storage volumes are maintained at all times.

4.2 The Owner shall inspect the Works at least **once a year** and, if necessary, clean and maintain the Works to prevent the excessive build-up of sediments and/or vegetation.

4.3 The Owner shall maintain a record the results of these inspections and any cleaning and maintenance operations undertaken. The record shall include the following:

(a) the name of the Works; and

(b) the date and results of each inspection, maintenance and cleaning, including an estimate of the quantity of any materials removed.

5. MONITORING AND REPORTING

5.1 The Owner shall prepare and carry out a monitoring program for the inspection and maintenance of the Works as per the standardized SWM monitoring program specified by the City of Ottawa for the Kanata West Area and the requirements of the Mississippi Valley Conservation Authority.

5.2 The Owner shall notify the District Manager of any changes of a monitoring program and copy the District Manager on any and all reports submitted to the City of Ottawa and/or the Mississippi Valley Conservation Authority related to the monitoring and maintenance program for the Works.

5.3 After the Owner obtains a minimum of **two (2) years** of monitoring results following completion of the Works, the requirement to copy the District Manager in Condition 5.2 may be modified by the District Manager upon written request.

6. TEMPORARY EROSION AND SEDIMENT CONTROL

6.1 The Owner shall install and maintain temporary sediment and erosion control measures during construction and conduct inspections once every **two (2) weeks** and after each significant storm event (a significant storm event is defined as a minimum of 25 mm of rain in any 24 hours period). The inspections and maintenance of the temporary sediment and erosion control measures shall continue until they are no longer required and at which time they shall be removed and all disturbed areas reinstated properly.

6.2 The Owner shall maintain records of inspections and maintenance which shall be made available for inspection by the Ministry, upon request. The record shall include the name of the inspector, date of inspection, and the remedial measures, if any, undertaken to maintain the temporary sediment and erosion control measures.

7. RECORD KEEPING

The Owner shall retain for a minimum of **five (5) years** from the date of their creation, all records and information related to or resulting from the operation and maintenance activities required by this Approval.

**Schedule "A"**

1. Application for Environmental Compliance Approval, dated September 8, 2016, including final plans and specifications prepared by David Schaeffer Engineering Ltd.

2. Design Brief for Fernbank Stormwater Management Pond 3 in the Abbottsville Crossing subdivision, City of Ottawa, January 2016, revised November 2016, prepared by David Schaeffer Engineering Ltd.

3. Engineering Drawings, stamped and dated December 2, 2016, prepared by David Schaeffer Engineering Ltd.

4. Emails dated November 25, 2016, December 1 and December 5, 2016 from Jennifer Ailey, P.Eng., David Schaeffer Engineering Ltd., including all supporting document.

*The reasons for the imposition of these terms and conditions are as follows:*

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which approval was granted. This Condition is also included to emphasize the precedence of Conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review.

2. Condition 2 is included to ensure that, when the Works are constructed, the Works will meet the standards that apply at the time of construction to ensure the ongoing protection of the environment.

3. Condition 3 is included to ensure that the Ministry records are kept accurate and current with respect to approved Works and to ensure that any subsequent Owner of the Works is made aware of the Approval and continue to operate the Works in compliance with it.

4. Condition 4 is included to require that the Works be properly operated and maintained such that the environment is protected.

5. Condition 5 is included to enable the Owner to evaluate and demonstrate the performance of the

Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives specified in the Approval and that the Works do not cause any impairment to the receiving watercourse.

6. Condition 6 is included as installation, regular inspection and maintenance of the temporary sediment and erosion control measures is required to mitigate the impact on the downstream receiving watercourse during construction, until they are no longer required.

7. Condition 7 is included to require that all records are retained for a sufficient time period to adequately evaluate the long-term operation and maintenance of the Works.

**Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 1350-A6QM2B issued on February 4, 2016.**

*In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:*

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

*Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.*

*The Notice should also include:*

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

*And the Notice should be signed and dated by the appellant.*

*This Notice must be served upon:*

The Secretary*****
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment and Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

*The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.*

DATED AT TORONTO this 13th day of December, 2016

Gregory Zimmer, P.Eng.
Director
appointed for the purposes of Part II.1 of the *Environmental Protection Act*

LW/
c: District Manager, MOECC Ottawa
Jennifer Ailey, P.Eng., David Schaeffer Engineering Ltd.

230-220 CRANESBILL ROAD
RESIDENTIAL

292-316 PONDEROSA STREET
RESIDENTIAL

CRANESBILL ROAD

BH 07-9

TP 07-12

TP 19-24
98.44

TP 13-24
98.58

TP 12-24
98.79

TP 11-24
98.93

620 TRIANGLE STREET

PROPOSED BUILDING

TP 8-24
98.98

TP 9-24
99.18

TP 20-24
99.25

BH 4-24
99.10
{86.76}

BH 12-24
99.10
{87.21}

BH 13-24
99.26
{88.36}

TP 7-24
99.21

TP 10-24
99.26

TP 1-24
99.29

BH 10-24
99.22
{87.94}

BH 11-24
99.26
{88.34}

BH 6-24
99.30
{88.43}

BH 14-24
99.34
{89.33}

TP 14-24
98.94

TP 16-24
98.94

BH 2-24
99.05
{86.15}

BH 9-24
99.14
{86.95}

TP 6-24
99.21

TP 17-24
99.06

BH 8-24
99.16
{86.69}

TP 18-24
99.19

BH 20-24
99.20
{89.29}

BH 7-24
99.21
{88.59}

TP 3-24
99.18

BH 16-24
99.26
{88.74}

TP 2-24
99.35

BH 19-24
99.25
{88.18}

BH 17-24
99.23
{89.05}

BH 5-24
99.34
{89.94}

TP 15-24
99.11

BH 1-24
99.18
{86.76}

BH 3-24
99.19
{87.76}

TP 5-24
99.26

TP 4-24
99.34

BH 18-24
99.30
{88.71}

BH 15-24
99.35
{90.21}

BH 7-13
99.49
{91.74}

HONEYLOCUST AVENUE

545-525 HONEYLOCUST STREET
RESIDENTIAL

TRIANGLE STREET

LEGEND:

- BOREHOLE LOCATION
- TEST PIT LOCATION
- BOREHOLE LOCATION (PATERSON GROUP REPORT PG2930, 2022)
- BOREHOLE LOCATION (PATERSON GROUP REPORT PG2660, 2017)
- TEST PIT LOCATION (PATERSON GROUP REPORT PG2660, 2017)
- 99.34 GROUND SURFACE ELEVATION (m)
- {89.33} PRACTICAL REFUSAL TO DCPT/AUGERING ELEV. (m)

CONCEPTUAL PKAN PROVIDED BY PYE & RICHARDS-TEMPRANO & YOUNG ARCHITECTS INC.

GROUND SURFACE ELEVATIONS AT TEST HOLE LOCATIONS ARE REFERENCED TO A GEODETIC DATUM.

SCALE: 1:750

0 10 20 30 50m

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

| NO. | REVISIONS | DATE | INITIAL |
|---|---|---|---|

OTTAWA CATHOLIC SCHOOL BOARD
GEOTECHNICAL INVESTIGATION
PROPOSED SCHOOL DEVELOPMENT
620 TRIANGLE STREET
OTTAWA, ONTARIO

Title:

# TEST HOLE LOCATION PLAN

| | |
|---|---|
| Scale: 1:750 | Date: 08/2024 |
| Drawn by: GK | Report No.: PG7249-1 |
| Checked by: KB | Dwg. No.: PG7249-1 |
| Approved by: DP | Revision No.: |

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11x17

# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352168.83 **NORTHING:** 5016146.21 **ELEVATION:** 99.18

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 19, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 1-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) / PL (%) WATER CONTENT (%) LL (%) | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **TOPSOIL** and organics | | | AU 1 | | | 18.23 | | | |
| 0.18m [ 99.00m ] | | | | | | | | | |
| Firm, brown **SILTY CLAY** | | 1 | SS 2 | 62 | 2-2-3-3 5 | 32.6 | | | 98 |
| 1.45m [ 97.73m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | 2 | SS 3 | 100 | P | 37.17 | | | 97 |
| - Grey by 3.0 m depth | | | SS 4 | 100 | P | 30.25 | | | |
| 3.05m [ 96.13m ] | | 3 | | | | | | | 96 |
| Dynamic Cone Penetration Test commenced at 3.05 m depth | | 4 | | | | | | | 95 |
| | | 5 | | | | | | | 94 |
| | | 6 | | | | | | | 93 |
| | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| | | 9 | | | | | | | 90 |
| | | 10 | | | | | | | 89 |
| | | 11 | | | | | | | 88 |
| | | 12 | | | | | | | 87 |
| 12.42m [ 86.76m ] | | | | | | | | | |
| End of Borehole | | 13 | | | | | | | 86 |
| Practical refusal to DCPT at 12.42 m depth | | 14 | | | | | | | 85 |
| DCPT pushed from 3.05 m to 12.42 m depth | | 15 | | | | | | | |

DISCLAIMER: THE DATA PRESENTED IN THIS LOG IS THE PROPERTY OF PATERSON GROUP AND THE CLIENT FOR WHO IT WAS PRODUCED. THIS LOG SHOULD BE READ IN CONJUNCTION WITH ITS COORESPONDING REPORT. PATERSON GROUP IS NOT RESPONSIBLE FOR THE UNAUTHORIZED USE OF THIS DATA.



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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352185.64 **NORTHING:** 5016160.89 **ELEVATION:** 99.05

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 19, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 2-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | SAMPLE WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **TOPSOIL** and organics, with gravel 0.15m [ 98.90m ] | | | AU 1 | | | 13.7 | | | |
| Brown **SILTY SAND**, trace cobbles 0.69m [ 98.36m ] | | 1 | SS 2 | 100 | 5-3-3-4 | 23.56 | | | 98 |
| Brown **SILTY CLAY** 0.94m [ 98.11m ] | | | | | 6 | 33.29 | | | |
| Very stiff to firm, brown **SILTY CLAY** | | 2 | SS 3 | 100 | 1-1-1-1 | 34.24 | | | 97 |
| | | | | | 2 | | | | |
| - Grey by 3.0 m depth | | 3 | | | | | 106.0 | 3.2 m 2027-08-06 | 96 |
| | | 4 | | | | | | | 95 |
| | | 5 | | | | | | | 94 |
| 6.10m [ 92.95m ] | | 6 | | | | | | | 93 |
| Dynamic Cone Penetration Test commenced at 6.10 m depth | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| | | 9 | | | | | | | 90 |
| | | 10 | | | | | | | 89 |
| | | 11 | | | | | | | 88 |
| | | 12 | | | | | | | 87 |
| 12.90m [ 86.15m ] | | 13 | | | | | | | 86 |
| End of Borehole | | | | | | | | | |
| Practical refusal to DCPT at 12.90 m depth | | 14 | | | | | | | 85 |
| DCPT pushed from 6.10 m to 12.80 m depth | | | | | | | | | |
| (GWL at 3.24 m depth - August 26, 2024) | | 15 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352181.36 **NORTHING:** 5016129.70 **ELEVATION:** 99.19

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 19, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 3-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | SAMPLE WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **TOPSOIL** and organics, some cobbles<br>0.15m [ 99.04m ] | | | AU 1 | | | 12.65 | | | |
| Brown **SILTY SAND**, with clay and gravel<br>0.69m [ 98.50m ] | | 1 | SS 2 | 100 | 6-3-3-2<br>6 | 29.85 | | | 98 |
| Stiff to firm, brown **SILTY CLAY** | | 2 | SS 3 | 100 | 2-1-1-1<br>2 | 39.5 | | | 97 |
| - Grey by 3.0 m depth | | 3 | | | | | | | 96 |
| 6.10m [ 93.09m ] | | 4 | | | | | | | 95 |
| Dynamic Cone Penetration Test commenced at 6.10 m depth | | 5 | | | | | | | 94 |
| | | 6 | | | | | | | 93 |
| | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| | | 9 | | | | | | | 90 |
| | | 10 | | | | | | | 89 |
| 11.51m [ 87.68m ] | | 11 | | | | | | | 88 |
| End of Borehole<br>Practical refusal to DCPT at 11.43 m depth<br>DCPT pushed from 6.10 m to 10.97 m depth<br>(Borehole dry - August 26, 2024) | | 12 | | | | | | | 87 |
| | | 13 | | | | | | | 86 |
| | | 14 | | | | | | | 85 |
| | | 15 | | | | | | | |

DISCLAIMER: THE DATA PRESENTED IN THIS LOG IS THE PROPERTY OF PATERSON GROUP AND THE CLIENT FOR WHO IT WAS PRODUCED. THIS LOG SHOULD BE READ IN CONJUNCTION WITH ITS COORESPONDING REPORT. PATERSON GROUP IS NOT RESPONSIBLE FOR THE UNAUTHORIZED USE OF THIS DATA.



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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352228.28 **NORTHING:** 5016136.00 **ELEVATION:** 99.10

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 19, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 4-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | SAMPLE WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **TOPSOIL** and orgaics<br>0.15m [ 98.95m ] | | | AU 1 | | | 14.0 | | | |
| Loose, Brown **SILTY SAND**, with gravel, trace clay<br>0.69m [ 98.41m ] | | 1 | SS 2 | 0 | 5-3-4-4<br>7 | | | | 98 |
| Stiff to firm, brown **SILTY CLAY** | | 2 | SS 3 | 100 | 1-1-2-1<br>3 | 39.8 | | | 97 |
| - Grey by 3.0 m depth | | 3 | | | | | | | 96 |
| | | 4 | | | | | | | 95 |
| | | 5 | | | | | | | 94 |
| 6.10m [ 93.00m ] | | 6 | | | | | | | 93 |
| Dynamic Cone Penetration Test commenced at 6.10 m depth | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| | | 9 | | | | | | | 90 |
| | | 10 | | | | | | | 89 |
| | | 11 | | | | | | | 88 |
| 12.34m [ 86.76m ] | | 12 | | | | | | | 87 |
| End of Borehole<br><br>Practical refusal to DCPT at 12.34 m depth<br>DCPT pushed from 6.10 m to 10.97 m depth<br>(GWL at 1.45 m depth - August 26, 2024) | | 13 | | | | | | | 86 |
| | | 14 | | | | | | | 85 |
| | | 15 | | | | | | 1.4 m 2024-08-26 | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352223.75 **NORTHING:** 5016089.88 **ELEVATION:** 99.34

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 20, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 5-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | SAMPLE WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **FILL:** Coarse to medium gravel | | | AU 1 | | | 12.72 | | | |
| 0.30m [ 99.04m ] | | | | | | | | | |
| Loose, brown **SILTY SAND**, with gravel, trace clay | | 1 | SS 2 | 100 | 2-2-3-3 5 | 28.59 | | | 98 |
| 0.69m [ 98.65m ] | | | | | | | | | |
| Stiff, brown **SILTY CLAY** | | 2 | SS 3 | 100 | 2-1-2-2 3 | 34.68 | | | 97 |
| - Grey by 3.0 m depth | | 3 | | | | | | 3.3 m 2024-08-26 | 96 |
| | | 4 | | | | | | | 95 |
| | | 5 | | | | | | | 94 |
| 6.10m [ 93.24m ] | | 6 | | | | | | | 93 |
| Dynamic Cone Penetration Test commenced at 6.10 m depth | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| | | 9 | | | | | | | 90 |
| 9.40m [ 89.94m ] | | | | | | | | | |
| End of Borehole | | 10 | | | | | | | 89 |
| Practical refusal to DCPT at 9.40 m depth | | 11 | | | | | | | 88 |
| DCPT pushed from 6.10 m to 9.40 m depth | | 12 | | | | | | | 87 |
| (GWL at 3.26 m depth - August 26, 2024) | | 13 | | | | | | | 86 |
| | | 14 | | | | | | | 85 |
| | | 15 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352239.44 **NORTHING:** 5016103.22 **ELEVATION:** 99.30

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 20, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 6-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | SAMPLE WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **FILL:** Coarse gravel, with cobbles 0.25m [ 99.05m ] | | | AU 1 | | | 13.45 | | | |
| Loose, brown **SILTY SAND**, trace gravel 0.69m [ 98.61m ] | | 1 | SS 2 | 92 | 2-1-2-3 3 | 32.48 | | | 98 |
| Stiff to firm, brown **SILTY CLAY** | | 2 | SS 3 | 83 | 2-2-3-2 5 | 43.41 | | | 97 |
| - Grey by 3.0 m depth | | 3 | | | | | | | 96 |
| 6.10m [ 93.20m ] | | 4 | | | | | | 4.1 m 2024-08-26 | 95 |
| Dynamic Cone Penetration Test commenced at 6.10 m depth | | 5 | | | | | | | 94 |
| 10.87m [ 88.43m ] | | 6 | | | | | | | 93 |
| End of Borehole | | 7 | | | | | | | 92 |
| Practical refusal to DCPT at 10.87 m depth | | 8 | | | | | | | 91 |
| DCPT pushed from 6.10 m to 10.87 m depth | | 9 | | | | | | | 90 |
| (GWL at 4.12 m depth - August 26, 2024) | | 10 | | | | | | | 89 |
| | | 11 | | | | | | | 88 |
| | | 12 | | | | | | | 87 |
| | | 13 | | | | | | | 86 |
| | | 14 | | | | | | | 85 |
| | | 15 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352211.96 **NORTHING:** 5016119.71 **ELEVATION:** 99.21

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 20, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 7-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | SAMPLE WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **TOPSOIL** and organics, trace cobbles<br>0.23m [ 98.98m ] | | | AU 1 | | | 16.87 | | | |
| Loose, brown **SILTY SAND**, with clay, trace gravel<br>0.69m [ 98.52m ] | | 1 | SS 2 | 100 | 6-4-5-4<br>9 | 30.81 | | | 98 |
| Stiff to firm, brown **SILTY CLAY** | | 2 | SS 3 | 100 | 1-1-2-1<br>3 | 37.7 | | | 97 |
| - Grey by 3.0 m depth | | 3 | | | | | | 3.4 m 2024-08-26 | 96 |
| 6.10m [ 93.11m ] | | 4 | | | | | | | 95 |
| Dynamic Cone Penetration Test commenced at 6.10 m depth | | 5 | | | | | | | 94 |
| | | 6 | | | | | | | 93 |
| 10.62m [ 88.59m ] | | 7 | | | | | | | 92 |
| End of Borehole | | 8 | | | | | | | 91 |
| Practical refusal to DCPT at 10.62 m depth | | 9 | | | | | | | 90 |
| DCPT pushed from 6.10 m to 10.62 m depth | | 10 | | | | | | | 89 |
| (GWL at 3.43 m depth - August 26, 2024) | | 11 | | | | | | | 88 |
| | | 12 | | | | | | | 87 |
| | | 13 | | | | | | | 86 |
| | | 14 | | | | | | | 85 |
| | | 15 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352183.08 **NORTHING:** 5016148.14 **ELEVATION:** 99.16

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 20, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 8-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **TOPSOIL** and organics 0.13m [ 99.03m ] | | | AU 1 | | | 15.94 | | | |
| Loose, brown **SILTY SAND**, trace clay and gravel 0.69m [ 98.47m ] | | 1 | SS 2 | 75 | 4-3-3-4 | 31.29 | | | 98 |
| Loose, brown **SILTY SAND**, with clay 1.45m [ 97.70m ] | | | | | 6 | | | | |
| Stiff to firm, brown **SILTY CLAY** | | 2 | SS 3 | 100 | 2-1-1-1 | 37.08 | | | 97 |
| - Grey by 3.0 m depth 3.05m [ 96.11m ] | | | | | 2 | | | | |
| Dynamic Cone Penetration Test commenced at 3.05 m depth | | 3 | | | | | | | 96 |
| | | 4 | | | | | | | 95 |
| | | 5 | | | | | | | 94 |
| | | 6 | | | | | | | 93 |
| | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| | | 9 | | | | | | | 90 |
| | | 10 | | | | | | | 89 |
| | | 11 | | | | | | | 88 |
| | | 12 | | | | | | | 87 |
| 12.47m [ 86.69m ] | | | | | | | | | |
| End of Borehole | | 13 | | | | | | | 86 |
| Practical refusal to DCPT at 12.47 m depth | | 14 | | | | | | | 85 |
| DCPT pushed from 6.10 m to 12.47 m depth | | 15 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352196.54 **NORTHING:** 5016145.96 **ELEVATION:** 99.14

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 20, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 9-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | SAMPLE WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **FILL:** Cobbles and boulders 0.18m [ 98.96m ] | | | AU 1 | | | 13.15 | | | |
| Loose, brown **SILTY SAND**, some gravel, trace clay 0.69m [ 98.45m ] | | 1 | SS 2 | 83 | 4-2-2-2 4 | 34.9 | | | 98 |
| Loose, brown **SILTY SAND** 1.45m [ 97.69m ] | | | SS 3 | 100 | 2-2-2-1 4 | 26.55 | | | 97 |
| Stiff to firm, brown **SILTY CLAY** | | 2 | | | | | | | |
| - Grey by 3.0 m depth 3.05m [ 96.09m ] | | 3 | | | | | | | 96 |
| Dynamic Cone Penetration Test commenced at 3.05 m depth | | 4 | | | | | | | 95 |
| | | 5 | | | | | | | 94 |
| | | 6 | | | | | | | 93 |
| | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| | | 9 | | | | | | | 90 |
| | | 10 | | | | | | | 89 |
| | | 11 | | | | | | | 88 |
| 12.19m [ 86.95m ] | | 12 | | | | | | | 87 |
| End of Borehole | | | | | | | | | |
| Practical refusal to DCPT at 12.19 m depth | | 13 | | | | | | | 86 |
| DCPT pushed from 3.05 m to 12.19 m depth | | 14 | | | | | | | 85 |
| | | 15 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352214.00 **NORTHING:** 5016132.98 **ELEVATION:** 99.22

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 10-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | SAMPLE WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | | | | |
| **TOPSOIL** and organics | | 0 | AU 1 | | | 12.49 | | | 99 |
| 0.20m [ 99.02m ] | | | | | | | | | |
| **FILL:** Compact, brown silt, trace clay and cruhsed stone | | 1 | SS 2 | 75 | 2-2-1-1 3 | 35.75 | | | 98 |
| 0.69m [ 98.53m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | 2 | SS 3 | 100 | 2-1-1-2 2 | 29.13 | 17 35 | | 97 |
| - Grey by 3.0 m depth | | | | | | | | | |
| 3.05m [ 96.17m ] | | 3 | | | | | | | 96 |
| Dynamic Cone Penetration Test commenced at 3.05 m depth | | 4 | | | | | | | 95 |
| | | 5 | | | | | | | 94 |
| | | 6 | | | | | | | 93 |
| | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| | | 9 | | | | | | | 90 |
| | | 10 | | | | | | | 89 |
| | | 11 | | | | | | | 88 |
| 11.28m [ 87.94m ] | | | | | | | | | |
| End of Borehole | | 12 | | | | | | | 87 |
| Practical refusal to DCPT at 11.28 m depth | | | | | | | | | |
| DCPT pushed from 3.05 m to 11.28 m depth | | 13 | | | | | | | 86 |
| | | 14 | | | | | | | 85 |
| | | 15 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352227.80 **NORTHING:** 5016116.50 **ELEVATION:** 99.26

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 11-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | SAMPLE WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **TOPSOIL** and organics, trace gravel 0.28m [ 98.98m ] | | | AU 1 | | | 17.63 | ○ | | |
| Stiff, brown **SILTY CLAY** 0.69m [ 98.57m ] | | 1 | SS 2 | 100 | 1-1-1-1 2 | 36.55 | ○ | | 98 |
| Stiff to firm, brown **SILTY CLAY** | | 2 | SS 3 | 100 | 1-1-1-1 2 | 28.4 | ○ | | 97 |
| - Grey by 3.0 m depth 3.05m [ 96.21m ] | | 3 | | | | | ▲ | | 96 |
| Dynamic Cone Penetration Test commenced at 3.05 m depth | | 4 | | | | | | | 95 |
| | | 5 | | | | | | | 94 |
| | | 6 | | | | | | | 93 |
| | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| | | 9 | | | | | | | 90 |
| | | 10 | | | | | | | 89 |
| 10.92m [ 88.34m ] | | 11 | | | | | | | 88 |
| End of Borehole | | 12 | | | | | | | 87 |
| Practical refusal to DCPT at 10.92 m depth | | 13 | | | | | | | 86 |
| DCPT pushed from 3.05 m to 10.92 m depth | | 14 | | | | | | | 85 |
| | | 15 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352243.47 **NORTHING:** 5016118.58 **ELEVATION:** 99.10

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 12-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | SAMPLE WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **TOPSOIL** and organics | | | AU 1 | | | 14.75 | ○ | | |
| 0.15m [ 98.95m ] | | 1 | SS 2 | 79 | 3-2-3-2 5 | 37.26 | ○ | | 98 |
| Stiff to firm, brown **SILTY CLAY** | | | SS 3 | 100 | 2-2-2-2 4 | 32.01 | ○ | | 97 |
| | | 2 | | | | | | | |
| - Grey by 3.0 m depth | | | | | | | | | 96 |
| 3.05m [ 96.05m ] | | 3 | | | | | ▲ | | |
| Dynamic Cone Penetration Test commenced at 3.05 m depth | | 4 | | | | | | | 95 |
| | | 5 | | | | | | | 94 |
| | | 6 | | | | | | | 93 |
| | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| | | 9 | | | | | | | 90 |
| | | 10 | | | | | | | 89 |
| | | 11 | | | | | | | 88 |
| 11.89m [ 87.21m ] | | 12 | | | | | | | 87 |
| End of Borehole | | | | | | | | | |
| Practical refusal to DCPT at 11.89 m depth | | 13 | | | | | | | 86 |
| DCPT pushed from 3.05 m to 11.89 m depth | | 14 | | | | | | | 85 |
| | | 15 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352254.87 **NORTHING:** 5016103.62 **ELEVATION:** 99.26

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 13-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **TOPSOIL** 0.20m [ 99.06m ] | | | AU 1 | | | 20.17 | | | |
| Stiff to firm, brown **SILTY CLAY** | | 1 | SS 2 | 100 | 2-2-2-2 4 | 30.63 | | | 98 |
| | | 2 | SS 3 | 100 | 1-1-2-1 3 | 31.02 | | | 97 |
| - Grey by 3.0 m depth 3.05m [ 96.21m ] | | 3 | | | | | | | 96 |
| Dynamic Cone Penetration Test commenced at 3.05 m depth | | 4 | | | | | | | 95 |
| | | 5 | | | | | | | 94 |
| | | 6 | | | | | | | 93 |
| | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| | | 9 | | | | | | | 90 |
| | | 10 | | | | | | | 89 |
| 10.90m [ 88.36m ] | | 11 | | | | | | | 88 |
| End of Borehole | | 12 | | | | | | | 87 |
| Practical refusal to DCPT at 10.90 m depth | | 13 | | | | | | | 86 |
| DCPT pushed from 3.05 m to 10.9 m depth | | 14 | | | | | | | 85 |
| | | 15 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352237.03 **NORTHING:** 5016089.92 **ELEVATION:** 99.34

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 14-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) / PL (%) WATER CONTENT (%) LL (%) | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | | 20 40 60 80 | | |
| **FILL:** Coarse to medium crushed stone | | 0 | AU 1 | | | 12.74 | ○ | | 99 |
| 0.33m [ 99.01m ] | | | | | | | | | |
| Stiff, brown **SILTY CLAY** | | 1 | SS 2 | 100 | 3-2-2-2 4 | 34.16 | ○ | | 98 |
| 0.69m [ 98.65m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | 2 | SS 3 | 100 | 2-1-1-2 2 | 40.41 | ○ | | 97 |
| - Grey by 3.0 m depth | | | | | | | | | |
| 3.05m [ 96.29m ] | | 3 | | | | | △ ▲ | | 96 |
| Dynamic Cone Penetration Test commenced at 3.05 m depth | | 4 | | | | | | | 95 |
| | | 5 | | | | | | | 94 |
| | | 6 | | | | | | | 93 |
| | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| | | 9 | | | | | | | 90 |
| 10.01m [ 89.33m ] | | 10 | | | | | | | 89 |
| End of Borehole | | 11 | | | | | | | 88 |
| Practical refusal to DCPT at 10.01 m depth | | 12 | | | | | | | 87 |
| DCPT pushed from 3.05 m to 10.01 m depth | | 13 | | | | | | | 86 |
| | | 14 | | | | | | | 85 |
| | | 15 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352225.69 **NORTHING:** 5016077.28 **ELEVATION:** 99.35

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 15-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **FILL:** Loose silty sand, with crushed stone<br>0.25m [ 99.10m ] | | | AU 1 | | | 19.29 | ○ | | |
| Stiff, brown **SILTY CLAY**<br>0.69m [ 98.66m ] | | 1 | SS 2 | 100 | 2-2-3-4<br>5 | 32.25 | ○ | | 98 |
| Stiff to firm, brown **SILTY CLAY** | | | SS 3 | 100 | 2-1-2-2<br>3 | 30.44 | ○ | | 97 |
| - Grey by 3.0 m depth<br>3.05m [ 96.30m ] | | 2 | | | | | | | |
| Dynamic Cone Penetration Test commenced at 3.05 m depth | | 3 | | | | | △ ▲ | | 96 |
| | | 4 | | | | | | | 95 |
| | | 5 | | | | | | | 94 |
| | | 6 | | | | | | | 93 |
| | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| 9.14m [ 90.21m ] | | 9 | | | | | | | 90 |
| End of Borehole<br>Practical refusal to DCPT at 9.14 m depth<br>DCPT pushed from 3.05 m to 9.14 m depth | | 10 | | | | | | | 89 |
| | | 11 | | | | | | | 88 |
| | | 12 | | | | | | | 87 |
| | | 13 | | | | | | | 86 |
| | | 14 | | | | | | | 85 |
| | | 15 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352224.72 **NORTHING:** 5016103.69 **ELEVATION:** 99.26

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 16-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / △ REMOULDED SHEAR STRENGTH, Cur (kPa) ▲ PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **FILL:** Compact, brown silty clay, with crushed stone | | | AU 1 | | | 21.49 | ○ | | |
| 0.25m [ 99.01m ] | | 1 | SS 2 | 100 | 2-2-3-2 5 | 31.26 | ○ | | 98 |
| Stiff to firm, brown **SILTY CLAY** | | | SS 3 | 100 | 1-1-1-1 2 | 31.77 | ○ | | |
| | | 2 | | | | | | | 97 |
| - Grey by 3.0 m depth | | | | | | | | | |
| 3.05m [ 96.21m ] | | 3 | | | | | △ ▲ | | 96 |
| Dynamic Cone Penetration Test commenced at 3.05 m depth | | 4 | | | | | | | 95 |
| | | 5 | | | | | | | 94 |
| | | 6 | | | | | | | 93 |
| | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| | | 9 | | | | | | | 90 |
| | | 10 | | | | | | | 89 |
| 10.52m [ 88.74m ] | | | | | | | | | |
| End of Borehole | | 11 | | | | | | | 88 |
| Practical refusal to DCPT at 10.52 m depth | | 12 | | | | | | | 87 |
| DCPT pushed from 3.05 m to 10.52 m depth | | 13 | | | | | | | 86 |
| | | 14 | | | | | | | 85 |
| | | 15 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352211.10 **NORTHING:** 5016102.88 **ELEVATION:** 99.23

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 17-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | SAMPLE WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **FILL:** Brown silty sand, with crushed stone, trace clay | | | AU 1 | | | 17.77 | | | |
| 0.25m [ 98.98m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | 1 | SS 2 | 100 | 3-3-3-2 6 | 29.77 | | | 98 |
| | | 2 | SS 3 | 100 | 2-2-1-1 3 | 36.7 | | | 97 |
| - Grey by 3.0 m depth | | | | | | | | | |
| 3.05m [ 96.19m ] | | 3 | | | | | | | 96 |
| Dynamic Cone Penetration Test commenced at 3.05 m depth | | 4 | | | | | | | 95 |
| | | 5 | | | | | | | 94 |
| | | 6 | | | | | | | 93 |
| | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| | | 9 | | | | | | | 90 |
| 10.19m [ 89.05m ] | | 10 | | | | | | | 89 |
| End of Borehole | | 11 | | | | | | | 88 |
| Practical refusal to DCPT at 10.19 m depth | | 12 | | | | | | | 87 |
| DCPT pushed from 3.05 m to 10.19 m depth | | 13 | | | | | | | 86 |
| | | 14 | | | | | | | 85 |
| | | 15 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352195.56 **NORTHING:** 5016105.27 **ELEVATION:** 99.30

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 18-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) / PL (%) WATER CONTENT (%) LL (%) | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | 20 40 60 80 | | 99 |
| **TOPSOIL** and organics 0.08m [ 99.22m ] | | | AU 1 | | | 17.84 | ○ | | |
| **FILL:** Brown silty sand, with crushed stone 0.28m [ 99.02m ] | | 1 | SS 2 | 100 | 3-3-4-3 7 | 21.98 | ○ | | 98 |
| Stiff to firm, brown **SILTY CLAY** | | 2 | SS 3 | 100 | 2-2-3-2 5 | 33.64 | ○ | | 97 |
| - Grey by 3.0 m depth 3.05m [ 96.25m ] | | 3 | | | | | △ ▲ | | 96 |
| Dynamic Cone Penetration Test commenced at 3.05 m depth | | 4 | | | | | | | 95 |
| | | 5 | | | | | | | 94 |
| | | 6 | | | | | | | 93 |
| | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| | | 9 | | | | | | | 90 |
| 10.59m [ 88.71m ] | | 10 | | | | | | | 89 |
| End of Borehole | | 11 | | | | | | | 88 |
| Practical refusal to DCPT at 10.59 m depth | | 12 | | | | | | | 87 |
| DCPT pushed from 3.05 m to 10.59 m depth | | 13 | | | | | | | 86 |
| | | 14 | | | | | | | 85 |
| | | 15 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352197.18 **NORTHING:** 5016118.92 **ELEVATION:** 99.25

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 19-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) ▲ PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **TOPSOIL** and organics | | | AU 1 | | | 19.04 | | | |
| 0.25m [ 99.00m ] | | | | | | | | | |
| Stiff, brown **SILTY CLAY** | | 1 | SS 2 | 92 | 2-3-3-3 6 | 29.93 | | | 98 |
| 0.69m [ 98.56m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | | SS 3 | 100 | 2-1-2-2 3 | 37.38 | | | 97 |
| | | 2 | | | | | | | |
| - Grey by 3.0 m depth | | | | | | | | | |
| 3.05m [ 96.20m ] | | 3 | | | | | | | 96 |
| Dynamic Cone Penetration Test commenced at 3.05 m depth | | | | | | | | | |
| | | 4 | | | | | | | 95 |
| | | 5 | | | | | | | 94 |
| | | 6 | | | | | | | 93 |
| | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| | | 9 | | | | | | | 90 |
| | | 10 | | | | | | | 89 |
| 11.07m [ 88.18m ] | | 11 | | | | | | | 88 |
| End of Borehole | | | | | | | | | |
| Practical refusal to DCPT at 11.07 m depth | | 12 | | | | | | | 87 |
| DCPT pushed from 3.05 m to 11.07 m depth | | 13 | | | | | | | 86 |
| | | 14 | | | | | | | 85 |
| | | 15 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352195.88 **NORTHING:** 5016131.91 **ELEVATION:** 99.20

**PROJECT:** Proposed School Development

**BORINGS BY:** Track-Mount Drill Rig

**REMARKS:**

**DATE:** August 22, 2024

**FILE NO. :** PG7249

**HOLE NO. :** BH 20-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) / PL (%) WATER CONTENT (%) LL (%) | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **TOPSOIL** and organics 0.18m [ 99.02m ] | | | AU 1 | | | 17.24 | | | |
| Stiff, brown **SILTY CLAY** 0.69m [ 98.51m ] | | 1 | SS 2 | 67 | 2-3-6-4 9 | 27.41 | | | 98 |
| Stiff to firm, brown **SILTY CLAY** | | 2 | SS 3 | 100 | 2-1-2-2 3 | 34.57 | | | 97 |
| - Grey by 3.0 m depth 3.05m [ 96.15m ] | | 3 | | | | | | | 96 |
| Dynamic Cone Penetration Test commenced at 3.05 m depth | | 4 | | | | | | | 95 |
| | | 5 | | | | | | | 94 |
| | | 6 | | | | | | | 93 |
| | | 7 | | | | | | | 92 |
| | | 8 | | | | | | | 91 |
| | | 9 | | | | | | | 90 |
| 9.91m [ 89.29m ] | | 10 | | | | | | | 89 |
| End of Borehole | | 11 | | | | | | | 88 |
| Practical refusal to DCPT at 9.91 m depth | | 12 | | | | | | | 87 |
| DCPT pushed from 3.05 m to 9.91 m depth | | 13 | | | | | | | 86 |
| | | 14 | | | | | | | 85 |
| | | 15 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352247.98 **NORTHING:** 5016096.31 **ELEVATION:** 99.29

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 1-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | | | | |
| **FILL:** Brown silty clay, with crushed stone and sand | | 0 | G 2 G 1 | | | 18.21 | | | 99 |
| 0.25m [ 99.04m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | | | | | 7.39 | | | |
| | | 1 | G 3 | | | 30.62 | | | 98 |
| 1.80m [ 97.49m ] | | | | | | | | | |
| End of Test Pit<br><br>No groundwater infiltration was observed upon completion of the test pit | | 2 | | | | | | | 97 |
| | | 3 | | | | | | | 96 |
| | | 4 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352231.21 **NORTHING:** 5016095.79 **ELEVATION:** 99.35

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 2-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | | | | |
| **FILL:** Brown silty clay, with crushed stone, sand and organics | | 0 | G 1 | | | | | | 99 |
| 0.20m [ 99.15m ] | | | G 2 | | | 19.45 | | | |
| Stiff to firm, brown **SILTY CLAY** | | | | | | 13.14 | | | |
| | | 1 | G 3 | | | | | | 98 |
| | | | G 4 | | | 35.91 | | | |
| 1.80m [ 97.55m ] | | | | | | | | | |
| End of Test Pit | | 2 | | | | | | | 97 |
| No groundwater infiltration was observed upon completion of the test pit | | 3 | | | | | | | 96 |
| | | 4 | | | | | | | |

DISCLAIMER: THE DATA PRESENTED IN THIS LOG IS THE PROPERTY OF PATERSON GROUP AND THE CLIENT FOR WHO IT WAS PRODUCED. THIS LOG SHOULD BE READ IN CONJUNCTION WITH ITS COORESPONDING REPORT. PATERSON GROUP IS NOT RESPONSIBLE FOR THE UNAUTHORIZED USE OF THIS DATA.



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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352216.09 **NORTHING:** 5016110.68 **ELEVATION:** 99.18

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 3-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | | | | |
| **FILL:** Compact, brown, silty clay, with crushed stone and organics | | 0 | G 1 | | | 20.23 | | | 99 |
| 0.50m [ 98.68m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | | G 2 | | | 18.25 | | | |
| | | 1 | G 3 | | | 32.05 | | | 98 |
| 1.80m [ 97.38m ] | | | | | | | | | |
| End of Test Pit<br><br>No groundwater infiltration was observed upon completion of the test pit | | 2 | | | | | | | 97 |
| | | 3 | | | | | | | 96 |
| | | 4 | | | | | | | |

DISCLAIMER: THE DATA PRESENTED IN THIS LOG IS THE PROPERTY OF PATERSON GROUP AND THE CLIENT FOR WHO IT WAS PRODUCED. THIS LOG SHOULD BE READ IN CONJUNCTION WITH ITS COORESPONDING REPORT. PATERSON GROUP IS NOT RESPONSIBLE FOR THE UNAUTHORIZED USE OF THIS DATA.



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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352203.01 **NORTHING:** 5016102.44 **ELEVATION:** 99.34

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 4-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | | | | |
| **FILL:** Compact, brown silty clay, with crushed stone and organics | | 0 | G 1 | | | 12.15 | | | 99 |
| 0.50m [ 98.84m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | | G 2 | | | 14.79 | | | |
| | | 1 | G 3 | | | 28.72 | | | 98 |
| 1.80m [ 97.54m ] | | | G 4 | | | 29.58 | | | |
| End of Test Pit<br><br>No groundwater infiltration was observed upon completion of the test pit | | 2 | | | | | | | 97 |
| | | 3 | | | | | | | 96 |
| | | 4 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352188.31 **NORTHING:** 5016124.61 **ELEVATION:** 99.26

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 5-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | | | | |
| **FILL:** Compact, brown silty clay, with organics, some crushed stone | | 0 | G 1 | | | 16.99 | | | 99 |
| 0.80m [ 98.46m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | | G 2 | | | 16.19 | | | |
| | | 1 | G 3 | | | 31.73 | | | 98 |
| 1.80m [ 97.46m ] | | | | | | | | | |
| End of Test Pit<br><br>No groundwater infiltration was observed upon completion of the test pit | | 2 | | | | | | | 97 |
| | | 3 | | | | | | | 96 |
| | | 4 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352205.09 **NORTHING:** 5016132.16 **ELEVATION:** 99.21

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 6-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **FILL:** Compact, brown silty clay, with gravel and organics | | | G 1 | | | 15.25 | | | |
| 0.40m [ 98.81m ] | | | | | | | | | |
| **FILL:** Compact, brown silty sand, with crushed stone | | | G 2 | | | 14.52 | | | |
| 0.80m [ 98.41m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | 1 | G 3 | | | 19.64 | | | 98 |
| | | | G 4 | | | 30.34 | | | |
| 1.80m [ 97.41m ] | | | | | | | | | |
| End of Test Pit<br><br>No groundwater infiltration was observed upon completion of the test pit | | 2 | | | | | | | 97 |
| | | 3 | | | | | | | 96 |
| | | 4 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352224.06 **NORTHING:** 5016127.85 **ELEVATION:** 99.21

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 7-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **FILL:** Compact, brown silty clay, with crushed stone, some to trace sand | | | G 1 | | | 11.35 | | | |
| 0.40m [ 98.81m ] | | | | | | | | | |
| Dense, brown **SILTY** fine **SAND**, trace clay<br>-Geotextile/cloth between 0.4 m 0.5 m depth | | | G 2 | | | 16.34 | | | |
| 0.90m [ 98.31m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | 1 | G 3 | | | 32.11 | | | 98 |
| 1.80m [ 97.41m ] | | | G 4 | | | 30.71 | 18 31 | | |
| End of Test Pit<br><br>No groundwater infiltration was observed upon completion of the test pit | | 2 | | | | | | | 97 |
| | | 3 | | | | | | | 96 |
| | | 4 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352228.51 **NORTHING:** 5016156.89 **ELEVATION:** 98.98

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 8-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | | | | |
| **FILL:** Compact, brown silty clay, with organics, some crushed stone, trace sand | | 0 | G 1 | | | 19.37 | | | 98 |
| 0.40m [ 98.58m ] | | | G 2 | | | 18.2 | | | |
| Stiff to firm, brown **SILTY CLAY** | | 1 | G 3 | | | 32.83 | | | 97 |
| 1.80m [ 97.18m ] | | 2 | | | | | | | 96 |
| End of Test Pit<br><br>Groundwater infiltration was observed upon completion of the test pit | | 3 | | | | | | | 95 |
| | | 4 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352238.98 **NORTHING:** 5016127.15 **ELEVATION:** 99.18

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 9-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | | | | |
| **FILL:** Compact, brown silty clay, with organics and crushed stone | | 0 | G 1 | | | 15.88 | | | 99 |
| 0.60m [ 98.58m ] | | | | | | | | | |
| Compact, brown **SAND**, trace clay | | | G 2 | | | 16.78 | | | |
| 0.90m [ 98.28m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | 1 | G 3 | | | 20.59 | | | 98 |
| 1.80m [ 97.38m ] | | | G 4 | | | 27.9 | | | |
| End of Test Pit<br><br>No groundwater infiltration was observed upon completion of the test pit | | 2 | | | | | | | 97 |
| | | 3 | | | | | | | 96 |
| | | 4 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352237.37 **NORTHING:** 5016112.60 **ELEVATION:** 99.26

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 10-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **FILL:** Brown, silty clay, with crushed stone, some organics | | | G 1 | | | 13.54 | | | |
| 0.40m [ 98.86m ] | | | | | | | | | |
| Compact, brown fine **SAND**, trace clay<br>-Geotextile/cloth at 0.4 m depth | | | G 2 | | | 17.49 | | | |
| 0.90m [ 98.36m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | 1 | G 3 | | | 32.3 | | | 98 |
| 1.80m [ 97.46m ] | | | G 4 | | | 35.68 | 17 35 | | |
| End of Test Pit<br><br>Groundwater infiltration was observed upon completion of the test pit | | 2 | | | | | | | 97 |
| | | 3 | | | | | | | 96 |
| | | 4 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352279.22 **NORTHING:** 5016143.29 **ELEVATION:** 98.93

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 11-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | | | | |
| **FILL:** Compact, brown silty clay, with organics | | 0 | G 1 | | | 24.95 | | | |
| 0.40m [ 98.53m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | | G 2 | | | 16.85 | | | |
| | | 1 | G 3 | | | 23.71 | | | 98 |
| 1.80m [ 97.13m ] | | | G 4 | | | 29.94 | | | |
| End of Test Pit | | 2 | | | | | | | 97 |
| Minimal groundwater infiltration was observed upon completion of the test pit | | 3 | | | | | | | 96 |
| | | 4 | | | | | | | 95 |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352230.51 **NORTHING:** 5016197.43 **ELEVATION:** 98.79

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 12-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 98 |
| **FILL:** Compact, brown silty clay, with organics | | | G 1 | | | 19.59 | | | |
| 0.50m [ 98.29m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | | G 2 | | | 15.82 | | | |
| | | 1 | G 3 | | | 28.44 | | | 97 |
| 1.80m [ 96.99m ] | | | G 4 | | | 30.31 | | | |
| End of Test Pit | | 2 | | | | | | | 96 |
| Groundwater infiltration was observed upon completion of the test pit | | 3 | | | | | | | 95 |
| | | 4 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352181.40 **NORTHING:** 5016240.50 **ELEVATION:** 98.58

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 13-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | | | | |
| **FILL:** Compact, brown silty clay, with organics, trace crushed stone | | 0 | G 1 | | | 18.25 | | | 98 |
| 0.60m [ 97.98m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | 1 | G 2 | | | 18.03 | 156.0 ▲ | | 97 |
| | | | G 3 | | | 30.78 | | | |
| 1.80m [ 96.78m ] | | | | | | | | | |
| End of Test Pit<br><br>No groundwater infiltration was observed upon completion of the test pit | | 2 | | | | | | | 96 |
| | | 3 | | | | | | | 95 |
| | | 4 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352144.14 **NORTHING:** 5016210.45 **ELEVATION:** 98.94

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 14-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 98.94 |
| **FILL:** Compact, brown silty clay, with crushed stone, trace organics | | | G 1 | | | 8.35 | | | |
| 0.50m [ 98.44m ] | | | | | | | | | |
| Stiff, brown **SILTY CLAY** -Geotextile/cloth at 0.5 m depth | | 1 | G 2 | | | 16.76 | | | 98 |
| 1.80m [ 97.14m ] | | | G 3 | | | 27.8 | | | |
| End of Test Pit<br><br>No groundwater infiltration was observed upon completion of the test pit | | 2 | | | | | | | 97 |
| | | 3 | | | | | | | 96 |
| | | 4 | | | | | | | 95 |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352133.74 **NORTHING:** 5016182.12 **ELEVATION:** 99.11

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 15-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | | | | |
| **FILL:** Compact, brown silty clay, with organics, trace crushed stone | | 0 | G 1 | | | 18.55 | | | 99 |
| 0.60m [ 98.51m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | | G 2 | | | 17.67 | | | |
| | | 1 | G 3 | | | 31.13 | | | 98 |
| 1.80m [ 97.31m ] | | | | | | | | | |
| End of Test Pit<br><br>No groundwater infiltration was observed upon completion of the test pit | | 2 | | | | | | | 97 |
| | | 3 | | | | | | | 96 |
| | | 4 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352157.97 **NORTHING:** 5016181.68 **ELEVATION:** 98.94

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 16-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 98 |
| **FILL:** Brown silty clay, with organics and crushed stone | | | G 1 | | | 18.56 | | | |
| 0.30m [ 98.64m ] | | | | | | | | | |
| **FILL:** Brown silty clay, with sand and crushed stone | | | G 2 | | | 12.7 | | | |
| 0.70m [ 98.24m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | | G 3 | | | 19.36 | | | |
| | | 1 | | | | | | | 97 |
| | | | G 4 | | | 46.55 | | | |
| 1.80m [ 97.14m ] | | | | | | | | | |
| End of Test Pit<br><br>Minimal groundwater infiltration was observed upon completion of the test pit | | 2 | | | | | | | 96 |
| | | 3 | | | | | | | 95 |
| | | 4 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352176.57 **NORTHING:** 5016155.26 **ELEVATION:** 99.06

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 17-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | | | | |
| **FILL:** Brown silty clay, with organics, some crushed stone | | 0 | G 1 | | | | | | 99 |
| 0.30m [ 98.76m ] | | | | | | | | | |
| **FILL:** Brown silty clay, with sand, trace crushed stone | | | G 2 | | | 14.5 | | | |
| 0.60m [ 98.46m ] | | | | | | 21.58 | | | |
| Stiff to firm, brown **SILTY CLAY** | | | G 3 | | | 19.22 | | | |
| | | 1 | | | | | | | 98 |
| | | | G 4 | | | 32.32 | | | |
| 1.90m [ 97.16m ] | | | | | | | | | |
| End of Test Pit | | 2 | | | | | | | 97 |
| No groundwater infiltration was observed upon completion of the test pit | | | | | | | | | |
| | | 3 | | | | | | | 96 |
| | | 4 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352188.59 **NORTHING:** 5016140.61 **ELEVATION:** 99.19

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 18-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 99 |
| **FILL:** Crushed stone | | | | | | | | | |
| 0.60m [ 98.59m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | 1 | G 1 | | | 27.57 | | | 98 |
| 1.80m [ 97.39m ] | | | G 2 | | | 38.64 | | | |
| End of Test Pit<br><br>Groundwater infiltration from sidewalls was observedat 0.6 m depth | | 2 | | | | | | | 97 |
| | | 3 | | | | | | | 96 |
| | | 4 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352178.02 **NORTHING:** 5016272.39 **ELEVATION:** 98.44

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 19-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | 0 | | | | | | | 98 |
| **FILL:** Brown silty clay, with organics, trace crushed stone | | | | | | | | | |
| 0.60m [ 97.84m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | 1 | G 1 | | | 22.21 | | | 97 |
| 1.80m [ 96.64m ] | | | G 2 | | | 28.92 | | | |
| End of Test Pit<br><br>No groundwater infiltration was observed upon completion of the test pit | | 2 | | | | | | | 96 |
| | | 3 | | | | | | | 95 |
| | | 4 | | | | | | | |

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# SOIL PROFILE AND TEST DATA

## Geotechnical Investigation

620 Triangle Street, Ottawa, Ontario

**COORD. SYS.:** MTM ZONE 9 **EASTING:** 352252.66 **NORTHING:** 5016111.69 **ELEVATION:** 99.25

**PROJECT:** Proposed School Development

**BORINGS BY:** Backhoe

**REMARKS:**

**DATE:** August 21, 2024

**FILE NO. :** PG7249

**HOLE NO. :** TP 20-24

| SAMPLE DESCRIPTION | STRATA PLOT | DEPTH (m) | SAMPLE TYPE AND NO. | SAMPLE RECOVERY (%) | SAMPLE N, Nc OR RQD | WATER CONTENT (%) | PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH, Cur (kPa) / PEAK SHEAR STRENGTH, Cu (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80 | PIEZOMETER CONSTRUCTION | ELEVATION (m) |
|---|---|---|---|---|---|---|---|---|---|
| GROUND SURFACE | | | | | | | | | |
| **FILL:** Brown silty clay, with crushed stone, trace sand and organics | | 0 | | | | | | | 99 |
| 0.60m [ 98.65m ] | | | | | | | | | |
| Stiff to firm, brown **SILTY CLAY** | | | G 1 | | | 16.84 | ○ | | |
| | | 1 | | | | | | | 98 |
| 1.80m [ 97.45m ] | | | G 2 | | | 32.9 | ○ | | |
| End of Test Pit<br><br>No groundwater infiltration was observed upon completion of the test pit | | 2 | | | | | | | 97 |
| | | 3 | | | | | | | 96 |
| | | 4 | | | | | | | |

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PATERSON GROUP

memorandum

**re:** **Geotechnical Review – Additional Groundwater Levels**
**Proposed School Development**
**620 Triangle Street – Ottawa, Ontario**
**to:** Robinson Consultants Inc. – **Brandon MacKechnie** – bmackechnie@rcii.com
**cc:** Ottawa Catholic School Board – **Donald Wood** – donald.wood@ocsb.ca
**date:** April 2, 2025
**file:** PG7249-MEMO.01

Further to your request and authorization, Paterson Group (Paterson) prepared the current memorandum to provide a review and summary of the groundwater observation program at the subject site.

## 1.0 Geotechnical Review and Commentary

Paterson completed piezometer water level measurements throughout March 2025 to supplement previous measurements taken during the August 2024 field investigation program. The additional readings are summarized below in Table 1:

**Table 1 – Measured Groundwater Levels**

| Test Hole Number | Method | Ground Surface Elevation (m) | Measured Groundwater Level | | Date |
|---|---|---|---|---|---|
| | | | Depth (m) | Elevation (m) | |
| BH 2-24 | Piezometer | 99.05 | 3.24 | 95.81 | August 26, 2024 |
| | | | 0.18* | 98.87* | March 19, 2025 |
| | | | 0.25* | 98.80* | March 21, 2025 |
| BH 3-24 | Piezometer | 99.19 | Dry | - | August 26, 2024 |
| | | | 0.04* | 99.15 | March 14, 2025 |
| | | | 0.10* | 99.09 | March 19, 2025 |
| | | | 0.51* | 98.68 | March 21, 2025 |
| BH 4-24 | Piezometer | 99.10 | 1.45 | 97.65 | August 26, 2024 |
| | | | 0.56 | 98.54 | March 19, 2025 |
| | | | 0.27 | 98.83 | March 21, 2025 |
| BH 5-24 | Piezometer | 99.34 | 3.26 | 96.08 | August 26, 2024 |
| | | | 1.53 | 97.81 | March 19, 2025 |
| | | | 1.41 | 97.93 | March 21, 2025 |
| BH 6-24 | Piezometer | 99.30 | 4.12 | 95.18 | August 26, 2024 |
| | | | 0.25* | 99.05 | March 19, 2025 |
| | | | 0.36* | 98.94 | March 21, 2025 |

**Table 1 (Continued) – Measured Groundwater Levels**

| Test Hole Number | Method | Ground Surface Elevation (m) | Measured Groundwater Level | | Date |
|---|---|---|---|---|---|
| | | | Depth (m) | Elevation (m) | |
| BH 7-24 | Piezometer | 99.21 | 3.43 | 95.78 | August 26, 2024 |
| | | | 0.17* | 99.04 | March 19, 2025 |
| | | | 0.36* | 98.85 | March 21, 2025 |

**NOTE**: The ground surface elevations at the test hole location of the current investigation were surveyed by Paterson using a high precision GPS unit and was referenced to a geodetic datum.

" * " – Denotes piezometer blocked with ice assumed to be present within the piezometer as a result of frozen subsoil conditions.

The above-noted water level readings are consistent with our experience of piezometers installed throughout clay deposits. Due to the nature of the in-situ clays, piezometer water levels are highly influenced by surface water infiltration into the borehole column by snowmelt and thawing saturated soils. The above-noted water levels are consistent with our expectation for water level fluctuations throughout the subject site such that the recommendations provided in the current Geotechnical Report remain valid and unchanged at this time.

Based on this, while the seasonally high groundwater level may not have fully developed to date, the above-noted water level readings are indicative of near-surface water levels during the spring-thaw period. The seasonally high-water level at the subject site may be considered to be at or very close to the existing ground surface for the assessment of sewer system designs that concern groundwater table fluctuations from a geotechnical perspective. Based on this, Paterson does not suggest completing additional piezometer readings to support spring freshet water level estimates for design purposes at this time.

Based on Paterson's review, due to the presence of a combination of clay and silt soils and relatively shallow levels of seasonally high-water levels, infiltration-type Low Impact Development (LID) measures are not considered suitable for the subject site from a geotechnical perspective and as advised by the City of Ottawa Technical Bulletin IWSTB-2024-04.

We trust that this information is satisfactory for your immediate requirements.

Best Regards,

**Paterson Group Inc.**

Nicholas F. R. Versolato, CPI, B.Eng.

Drew Petahtegoose, P.Eng