CHANDOS CONSTRUCTION

# MISSISSIPPI MILLS CHILDCARE CENTRE

## SITE SERVICING AND STORMWATER MANAGEMENT REPORT

JUNE 27, 2025
1ST SUBMISSION

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## SITE SERVICING AND STORMWATER MANAGEMENT REPORT

CHANDOS CONSTRUCTION

SITE PLAN CONTROL APPLICATION
1ST SUBMISSION

PROJECT NO.: CA0038318.1602
DATE: JUNE 27, 2025

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June 27, 2025

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**Attention: Bryson Collins**

**Subject:** Mississippi Mills Childcare Centre – Site Servicing and Stormwater Management Report

Dear Bryson,

Please find enclosed our site servicing and stormwater management report for the Mississippi Mills Childcare Centre, issued to support the Municipality of Mississippi Mills Site Plan Control application submission.

If you have any questions, please do not hesitate to contact the undersigned.

Yours sincerely,

Spencer Manoryk, P.Eng.
Project Engineer

cc: Kathryn Kerker, Winston Yang

WSP ref.: CA0038318.1602

# REVISION HISTORY

FIRST ISSUE

| | | | | |
|---|---|---|---|---|
| June 27, 2025 | Site Plan Control Application | | | |
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# 1 INTRODUCTION

## 1.1 EXECUTIVE SUMMARY

WSP was retained by Chandos Construction to provide servicing, grading, and stormwater management design services in support of the site plan control application with the Municipality of Mississippi Mills. The proposed development will consist of a proposed childcare facility located at 34 Victoria Street in Almonte Ontario (hereafter referred to as the Site). The proposed single storey building will function as a childcare facility accommodating 151 children and 30 staff. The building will comprise mainly of childcare rooms and offices, with a primary mechanical and electrical room for service entry at the front (east) of the building.

The proposed Mississippi Mills Childcare Centre (hereafter referred to as MMCC) is to be located on a 0.6646ha plot of undeveloped land owned by the Municipality. The Site is bounded by St James St on the west, Menzie Street on the east, existing residential to the north, and undeveloped land to the south. The southern 0.1857ha of the proposed Site is presently an unopened road allowance for Victoria St extending from St James St to Menzie St. The road allowance contains municipal watermain and sanitary sewer, as well as private telecommunications conduits. Domestic water and sanitary servicing is to be provided to the MMCC by connection to the existing municipal services contained within the unopened Victoria Street road allowance. The Victoria Street Plan & Profile drawings have been included in **Appendix E** Background Information for reference.

Presently, the Site has an existing municipal drain that conveys storm runoff westerly by ditch through the Site towards a concrete headwall and 1050mm storm sewer outlet located along the northern property line. As part of the enabling works for this Site's development, the drain was proposed to be re-routed along the eastern property boundary adjacent to Menzie St and continue along the northern property boundary towards the existing headwall outlet. The municipal drain re-routing will have ditched and piped portions, with some retaining walls to ensure existing elevations are matched along the property boundaries and for future Site development. Refer to the Mississippi Mills Municipal Drain Abandonment Memo and design drawings as included in **Appendix E** for further reference.

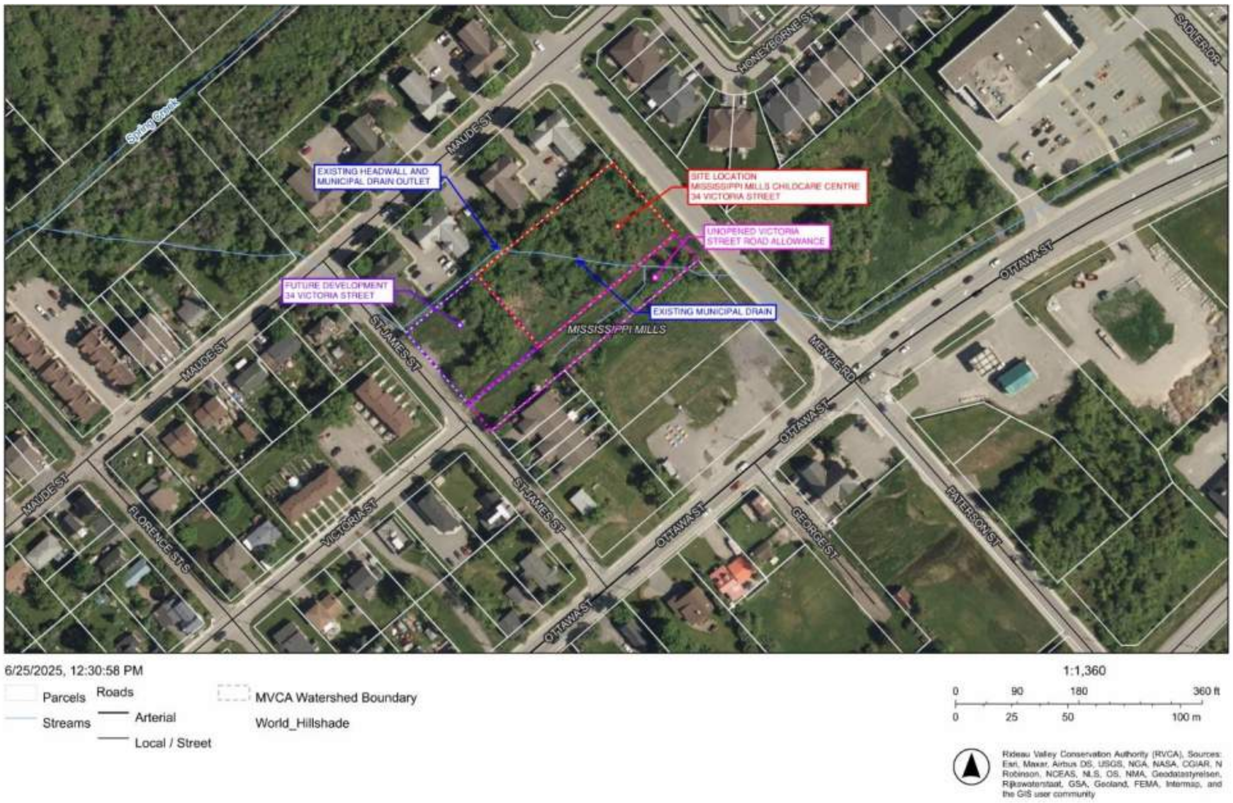
Based on the topographic survey, as included in **Appendix E**, the lot generally slopes north-westerly towards the existing concrete headwall outlet structure. The general strategy for the Site is to match existing drainage conveyance patterns, maintain existing grades along property boundaries, and match into the works completed as part of the municipal drain re-routing. All post-development storm runoffs up to and including the 100-year storm event shall be controlled to their respective pre-development runoff levels. On-site stormwater quantity control is to be provided through the mechanism of inlet control devices (ICD's) and utilizing parking lot surface storage, rear-swale surface storage, and underground storage within clear stone void space. Quality treatment of the parking lot storm runoff is to be provided through an on-site oil grit separator (OGS) unit, prior to discharge to the existing municipal system.

The western portion of the 34 Victoria St Site has been flagged as a future development opportunity for the Municipality, and as such will be relatively unaltered as part of this stage of development. The rear-swale for the MMCC has been centered along this potential severance line, and has been sized to accommodate flows for the ultimate Site buildout. Similarly, the sanitary sewer servicing the MMCC has been sized to accommodate flows from this future development. Refer to subsequent sections of this report for further details, and **Appendix E** for conceptual ultimate site plan layout as provided by the Municipality.

## 1.2 LOCATION MAP AND PLAN

The proposed MMCC building is to be located at 34 Victoria Street in Almonte within the Municipality of Mississippi Mills at the approximate location shown in **Figure 1-1** below.

**Figure 1-1 Site Location**




## 1.3 HIGHER LEVEL STUDIES

The review for servicing and stormwater management has been undertaken in conformance with, and utilizing information from the following documents:

- Mississippi Mills Water and Wastewater Infrastructure Master Plan, J.L. Richards, September 2024
- Municipality of Mississippi Mills Community Official Plan, May 2025
- 2024 Ontario Building Code, Ministry of Municipal Affairs and Housing, January 2025
- Design Guidelines for Sewage Works, Ministry of the Environment, 2008
- Design Guidelines for Drinking Water Systems, Ministry of the Environment, 2008
- Stormwater Management Planning and Design Manual, Ministry of the Environment, March 2003
- Fire Underwriters Survey, Water Supply for Public Fire Protection (FUS), 2020

## 1.4 AVAILABLE EXISTING AND PROPOSED INFRASTRUCTURE

The following municipal infrastructure will be available for the Site at the development stage:

- → Existing 300mm PVC DR-18 Class 150 Watermain
- → Existing 450mm PVC DR-35 Sanitary Sewer
- → Existing 1050mm HDPE Dual Wall Storm Sewer and perimeter surface swales as part of the Municipal Drain Re-routing

The following private servicing infrastructure is proposed as part of this development:

- → Proposed 150mm PVC water service connection to existing 300mm water main
- → Proposed 200mm PVC sanitary service connection to existing 450mm sanitary main
- → Proposed 250mm storm service connections to the Municipal Drain

## 1.5 GEOTECHNICAL STUDY

Gemtec completed a preliminary Geotechnical Investigation report for the Site. Key findings from this report pertaining to the civil site servicing and stormwater management design are summarised as follows:

**34 Victoria Street**

- → Excavator refusal was encountered at all test pits at depths ranging from 0.9m to 1.8m below surface grade.
- → Fractured bedrock was excavated between 0.9m to 1.2m below surface grade.
- → Groundwater was observed entering the open excavations at depths ranging from 0.6m to 1.1m below surface grade.
- → Groundwater inflow into excavation areas is anticipated and should be controlled by pumping.
- → Intallation of clay dykes will be required along the service trenches.
- → Perimeter drain and underfloor drainage systems are not considered necessary.
- → Soil cover or thermal equivalent is required to at least 1.8m in thickness.
- → Surficial layer of topsoil ranging from 0.1m to 0.3m in thickness.
- → Buried/former topsoil layer of 0.2m thickness, extending to depths ranging from 0.7m to 1.0m.
- → Inorganic overburden materials will be acceptable for reuse as trench backfill.
- → No practical limits to grade raise, Gemtec should be consulted if proposed to exceed 3.0m.

## 1.6 CONCEPT LEVEL MASTER GRADING PLAN

A detailed Grading Drawing C03 for the Site has been developed and provided in **Appendix D** for reference. Based on the topographic survey the lot generally slopes north-westerly towards the existing municipal drain's concrete headwall outlet structure. The existing municipal drain will be re-aligned as part of the enabling works for this Site's development. Perimeter ditches were proposed as part of this enabling works package as well as a 1050mm storm sewer to convey flows through dedicated easements towards the drains existing outlet structure. Retaining walls have been proposed as part of these enabling works to ensure grades along the property boundaries are maintained.

A major overland flow route for the Site has been developed to ensure localized ponding does not exceed 300mm, and that flows exceeding the Site controls established for the 100-year storm event are conveyed away from the Site towards the re-routed municipal drain. As such, the Site's existing drainage patterns are maintained post-development.

# 2 WATER DISTRIBUTION

## 2.1 CONSISTENCY WITH MASTER SERVICING STUDY AND AVAILABILITY OF PUBLIC INFRASTRUCTURE

The MMCC development proposed a single-storey childcare facility accommodating 151 children and 30 staff. The mechanical room along the front (east) of the building will serve as the domestic water entry for the building. Fire protection for the development will be adequately supplied by the municipal fire hydrants available within the Menzie Street right-of-way.

A hydrant flow test is scheduled for early July 2025 to confirm the municipal systems pressure/flow capacity adjacent to the Site. For the purpose of this report, the pressure/flow information as provided within the Mississippi Mills Water and Wastewater Infrastructure Master Plan (hereafter referred to as MMMP) and Appendices has been referenced.

No changes are required to the existing municipal water distribution system to allow servicing of this development.

## 2.2 SYSTEM CONSTRAINTS AND BOUNDARY CONDITIONS

A preliminary indication of available flows and pressure have been referenced from the short term (2023-2028) anticipated domestic water distribution system conditions, as outlined in the MMMP Appendix C Water Model Results, and as summarised in **Table 2-1** below.

**Table 2-1 System Boundary Constraints**

| Junction | Location | Watermain Elevation (m) | Avg. Day Pressure (kPa) | Peak Hour Pressure (kPa) | Max Day + Fire Flow (L/s) |
|---|---|---|---|---|---|
| J-559 | Menzie St | 138.83 | 383 | 388 | 234 |
| J-334 | St James St | 138.17 | 412 | 388 | 134 |

As previously outlined the system boundary conditions are to be verified by a subsequent hydrant flow test.

## 2.3 CONFIRMATION OF ADEQUATE DOMESTIC SUPPLY AND PRESSURE

Domestic water demand criteria and peaking factors are outlined in Section 4.2 of the MMMP, and are summarised as follows:

| | |
|---|---|
| Existing and Future Residential | 350 L/cap/day |
| Existing and Future Light Industrial | 35,000 L/ha/day |
| Existing and Future Commercial | 28,0000 L/ha/day |
| Residential Max Day Factor | 2.5 |
| Industrial/Commercial Max Day Factor | 1.5 |
| Residential Max Day Factor | 2.2 |
| Industrial/Commercial Max Day Factor | 1.8 |

As the proposed development is a childcare centre, average daily demands were instead calculated based on Table 8.2.1.3.-A of the 2024 Ontario Building Code, which estimates the daily demand for daycare facilities as 75 Litres per staff and child. A water demand calculation sheet has been included in **Appendix A** summarizing the total anticipated domestic water demands for the development, with key results as summarised in **Table 2-2** below.

**Table 2-2 Domestic Water Demands**

| Scenario | MMCC |
|---|---|
| Average Daily | 0.157 L/s |
| Maximum Daily | 0.393 L/s |
| Peak Hour | 0.864 L/s |

Since the average day demand of 0.157 L/s is less than 50,000 L/s (0.58 L/s), twin water services are not recommended. The site servicing drawing is provided in **Appendix D** for reference.

Per Section 10.2.2. of the Ministry of Environment's Drinking-Water Systems Guidelines, the distribution system shall be designed such that the following pressures are maintained:

- → The static pressure at any point in the distribution system shall not exceed 700 kPa (100 psi);
- → The static pressure at any point in the system shall not be less than 275 kPa (40 psi), excluding periods of fireflow demand; and
- → During periods of fireflow + maximum day demand, the static pressure at any point in the system shall not be less than 140 kPa (20 psi).

The municipal domestic water system boundary constraints as outlined in **Table 2-1** have been reviewed to ensure that anticipated domestic pressures are met for the average daily, peak hourly, and maximum daily + fire flow conditions.

With respect to an average day demand scenario, the MMMP model indicates that the anticipated 383 kPa pressure at the Menzie Street watermain meets the MOE's maximum 700 kPa static pressure requirement.

With respect to a peak hourly demand scenario, the MMMP model indicates that the anticipated 388 kPa pressure at the Menzie Street watermain meets the MOE's minimum 275 kPa static pressure requirement.

With respect to a maximum daily + fire flow demand scenario, the MMMP model assumes that a minimum pressure of 140 kPa will be available at every hydrant within the service area; therefore, the Menzie Street watermain meets the MOE's minimum 140 kPa static pressure requirement.

It is presumed since the Site is presently zoned as Residential Fourth Density, that the MMMP modelling allocated residential flows from the Site for the short term (2023-2028) anticipated system conditions. As the childcare facility may produce flows in excess of the MMMP short-term model allocations, it is recommended that the Municipality review these flows and confirm system capacity. As previously noted, a hydrant flow test is scheduled for July 2025 the results of which can be used to further confirm the flow/pressure available at the Site.

## 2.4 CONFIRMATION OF ADEQUATE FIRE FLOW PROTECTION

The fire flow rate has been calculated using the Fire Underwriters Survey (FUS) method, which takes into account factors such as the type of building construction, occupancy, the use of sprinklers, and exposure distances to adjacent structures. Assuming ordinary construction materials, limited combustible occupancy, and minimal (<1% building area) sprinkler coverage the fire flow demand is estimated at 9,000 L/min (150 L/s). Detailed FUS calculations and building design parameters as verified by the architect have been included in **Appendix A** for reference.

The public fire hydrants located in reasonable proximity of the Site are outlined in **Figure 2-1** below. Specifically, Hydrant 1 and 5 within the Menzie Street right-of-way are within respectively 50m and 125m clear access path to the MMCC main entrance. As such, the Menzie hydrants together provide adequate coverage for the Site's anticipated fire flow demand and Hydrant 1 satisfies the following OBC 3.2.5.5 requirement:

> b) for a building not provided with a fire department connection, a fire department pumper vehicle can be located so that the length of the access route from a hydrant to the vehicle plus the unobstructed path of travel for the firefighter from the vehicle to the building is not more that 90m, and
>
> c) the unobstructed path of travel for the firefighter from the vehicle to the building is not more than 45m

**Figure 2-1 Fire Flow Coverage Summary**

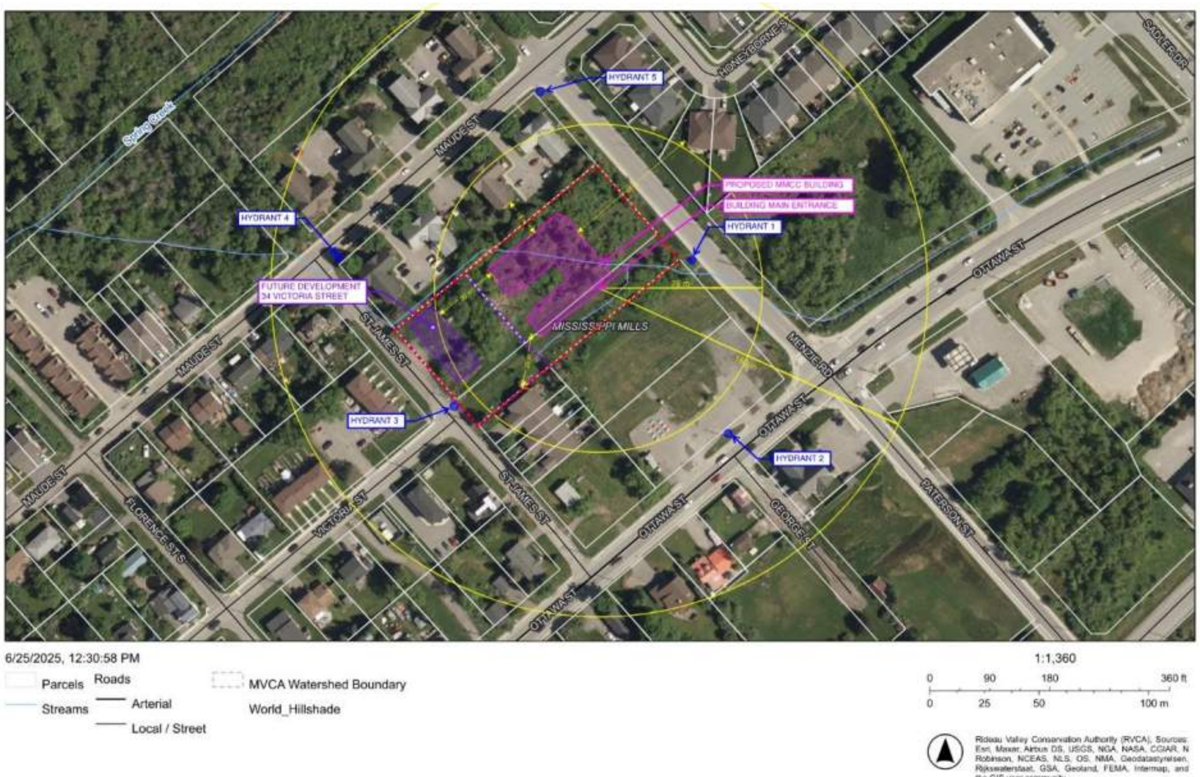



**Table 2-3 Fire Protection Summary**

| Building | Fire Flow Demand (L/s) | Fire Hydrant(s) within 75m (95 L/s Credit) | Fire Hydrant(s) between 75m-150m (63 L/s Credit) | Combined Fire Flow Available (L/s) |
|---|---|---|---|---|
| MMCC | 150 | 1 | 4 | 347 |

# 3 WASTEWATER DISPOSAL

## 3.1 DESIGN CRITERIA

In accordance with the design guidelines as outlined in **Section 1.3** the following design criteria have been utilized in order to predict wastewater flows generated by the Site and complete the sanitary sewer design:

- → Minimum Velocity 0.6 m/s
- → Maximum Velocity 3.0 m/s
- → Manning Roughness Coefficient 0.013
- → Average Sanitary Flow for Residential use 350 L/c/d
- → Average Sanitary flow for Childcare Facilities 75 L/c/d
- → Infiltration Allowance (Total) 0.33 L/ha/s
- → Minimum Sewer Slopes – 200mm diameter 0.28%

An area of 0.6646 ha represents the total lot area for the Site located at 34 Victoria Street, which will serve as the sanitary collection area for the proposed development. The proposed childcare centre, future development of the western portion of the Site, and extraneous infiltration flows generated over this total area will contribute to the proposed 200mm sanitary sewer connection to the municipal sanitary sewer system.

## 3.2 CONSISTENCY WITH MASTER SERVICING STUDY

The outlet for the proposed 200mm sanitary sewer is by connection to the existing sanitary manhole located within the right-of-way at the St. James and Victoria Street intersection.

The Ontario Building Code provides estimates for daily sewage flows per each staff/child as 75 L/s. Further, the Municipality of Mississippi Mills Water and Wastewater Infrastructure Master Plan provides estimates of sewage flows based on an average daily use of 350 L/s for residential developments.

As such, the total anticipated peak flow for the childcare centre is 0.55 L/s and the anticipated residential peak flow from the future western development of the Site is calculated to be 0.80 L/s. Total extraneous infiltrated flows over the 0.6646ha Site area are estimated at 0.22 L/s. Therefore, the total peak flow from the Site is anticipated at 1.57 L/s,

Sanitary demand calculations and sanitary sewer design sheet provided in **Appendix B**, and the layout of the proposed sanitary sewers are as shown on the site servicing plan as provided in **Appendix D**.

## 3.3 REVIEW OF SOIL CONDITIONS

Gemtec completed a preliminary Geotechnical Investigation report for the Site. Subsurface conditions indicate that the service trenches should be installed with a seepage barrier to prevent groundwater lowering. This could take the form of 1.5-metre-wide compacted silty clay dykes.

## 3.4 VERIFICATION OF AVAILABLE CAPACITY IN DOWNSTREAM SEWER

The capacity of the existing 450mm sanitary sewer in the Victoria Street right-of-way, with a slope of 1.67% is 368.44 L/s. The proposed total sanitary flows from the total Site are anticipated to be 1.57 L/s. Given this, the existing sanitary sewer is anticipated to have sufficient capacity to convey the peak flow from the proposed development.

# 4 SITE STORM SERVICING AND STORMWATER MANAGEMENT

## 4.1 DESIGN CRITERIA

Design criteria were obtained from the Mississippi Mills Community Official Plan Section 4.1.1.4.2. Criteria for 34 Victoria Street are as follows:

→ **Stormwater Quantity**

- The Major system shall be designed to manage the anticipated increase in stormwater runoff created by the development, over pre-development conditions. The Major system should accommodate the 1:100-year storm event and where necessary, shall require retention or temporary storage facilities to control discharge rates to pre-development levels.
- The Minor system shall accommodate stormwater runoff from more frequent storms (5-year events) up to the design capacity of an existing receiving system and shall require retention or storage facilities to control discharge rates to predevelopment levels.

→ **Stormwater Quality**

- Enhanced level of protection is required (80% TSS Removal).

## 4.2 RAINFALL INFORMATION

The rainfall intensity is calculated in accordance with the MTO IDF data for the project Site:

$$i = AT_D^B$$

Where;

- A, B = regression constants for each return period
- i = rainfall intensity (mm/hour)
- Td = storm duration (hour)

The IDF regression coefficients are as follows (**Table 4-1**):

**Table 4-1: IDF Regression Coefficients**

| RETURN PERIOD | A | B |
|---|---|---|
| 2-year | 20.1 | -0.699 |
| 5-year | 26.8 | -0.699 |
| 10-year | 31.1 | -0.699 |
| 25-year | 36.6 | -0.699 |
| 50-year | 40.7 | -0.699 |
| 100-year | 44.7 | -0.699 |

The Rational Method was used for all calculations within this report.

## 4.3 PRE-DEVELOPMENT CONDITIONS

The development area for the MMCC is 0.42 ha comprised of undeveloped grass area and a municipal drain that cuts across the property and discharges to Spring Creek. The municipal drain is being rerouted as part of a separate project and will be completed prior to construction of the childcare centre. Therefore, the pre-development condition for this project assumes the realigned municipal drain is in place and online. Design for the municipal drain re-routing can be found in the Mississippi Mills Municipal Drain Re-routing drawing package and memo completed by WSP and included in **Appendix E**.

### *4.3.1 ALLOWABLE FLOW RATES*

As noted in **Section 4.1**, the Site must match pre-development flow rates for the 5-year and 100-year return period events. The remainder of the 34 Victoria Street property parcel west of the proposed development will continue to be owned by the municipality, with potential for future residential development. The properties share a rear swale that will be used for stormwater management. As such, the area used to calculate the allowable release rates has been increased to include part of this future development. Therefore, calculations have been done using an area of 0.53 ha and runoff coefficient of 0.20. Further discussion on how runoff from this neighbouring development will be controlled is included in **Section 4.4.2.1**.

Rational method calculations were completed to determine the existing peak flows to the outlet and are shown in **Table 4-2**.

An existing conditions drainage area plan is shown in Exhibit 1 in **Appendix E**.

**Table 4-2: Pre-development Peak Flows**

| Return Period | Peak Flow ($m^3/s$) |
|---|---|
| 2-year | 0.021 |
| 5-year | 0.028 |
| 10-year | 0.033 |
| 25-year | 0.043 |
| 50-year | 0.052 |
| 100-year | 0.059 |

## 4.4 POST-DEVELOPMENT CONDITIONS

### 4.4.1 GENERAL

The proposed development includes the construction of the childcare facility and surface parking on an approximate 0.42 ha portion of the property. Vehicular access to the Site will be via a new entrance off Menzie Street. All stormwater runoff will ultimately discharge to the realigned municipal drain at the north of the Site. Drainage easements are present within the property boundary to accommodate the realigned municipal drain. Post development conditions, drainage areas, and runoff coefficients are shown in the Exhibit 2 (**Appendix D**) and summarized in **Table 4-3**.

**Table 4-3: Area Breakdown**

| Catchment ID | Area (ha) | Runoff Coefficient | Runoff Coefficient +25% | Description |
|---|---|---|---|---|
| S101 | 0.048 | 0.90 | 1.00 | Parking Lot |
| S102 | 0.064 | 0.90 | 1.00 | Parking Lot |
| S103 | 0.051 | 0.69 | 0.86 | Soth roof and pathway |
| S104 | 0.15 | 0.66 | 0.83 | Rear roof and play yard |
| S105 | 0.056 | 0.70 | 0.88 | North roof and pathway |
| S106 | 0.028 | 0.24 | 0.30 | Landscaped area between road and parking lot |
| S107 | 0.026 | 0.21 | 0.27 | South side landscaped area graded toward municipal drain |
| **Total Project Area** | 0.424 | 0.68 | 0.82 | Total project area |
| External | 0.110 | 0.90 | 1.0 | Adjacent site southwest of project area |

### 4.4.2 WATER QUANTITY

As noted previously, it is required that the post-development discharge rate from the Site match the pre-development discharge for the 5-year through 100-year return period.

Proposed features to achieve these targets include;

→ Surface storage with inlet control device (ICD) (HYDROVEX VHV or equivalent)

→ Swale and clearstone storage with outlet control

HydroCAD software was used to model the behaviour of the proposed SWM system. HydroCAD modelling results are included in **Appendix C**.

Surface ponding has been proposed on the parking lot at each catch basin low point, and within the proposed storm sewer. Ponding depths have been simulated in the model by routing runoff from the contributing sub-catchment area to a storage node. This was defined with a stage-storage relationship describing the ponding volume available based on proposed grading. Primary flow control is provided by a downstream Hydrovex VHV ICD, which is modelled using the supplier's head-discharge rating curve on the outlet of CBMH01. The specified Hydrovex model is shown in **Table 4-4**.

**Table 4-4:Flow control - Hydrovex Parameters**

| Location | ICD | Peak Head (m) | Peak Flow ($m^3/s$) |
|---|---|---|---|
| CBMH01 | 75-VHV1 | 1.575 | 0.007 |

The swale along the rear of the Site has been designed to provide quantity control for the south and rear of the Site, as well as part of the adjacent Site (see **Section 4.4.2.1** for details). The swale has a 1.2m flat bottom with 3:1 side slopes extending up to a maximum depth of 0.3m. Below the swale, clearstone and a 250mm subdrain are designed to provide additional storage. In the landscaped area south of the building, a landscape drain is provided to intercept runoff from the roof and pedestrian pathway. At the southwest corner of the Site, the landscape drain connects to the rear flat bottom swale subdrain system and conveys stormwater to the northwest corner of the Site. An orifice within a ditch inlet catch basin controls the discharge to the realigned municipal drain. An overflow weir with a 0.3m wide notch also provides control during extreme events. During the 5-year event there is almost no surface ponding in the swale, as stormwater is contained within the clearstone layer. During the 100-year event surface ponding occurs within the swale but has a drawdown time of less than 0.5 hours.

A summary of the HydroCAD results is shown in **Table 4-5** and in **Table 4-6**.

**Table 4-5: Summary of HydroCAD Modelling Results – Storage, Peak Flow, and Ponding Depths**

| Location | Return Period | | Maximum Available |
|---|---|---|---|
| | 5-Year | 100-Year | |
| Storage Utilized at CBMH01 and CB02 ($m^3$) | 8.9 | 25.0 | 54.1 |
| Ponding Depth at CBMH01 and CB02 (m) | 0.13 | 0.19 | 0.25 |
| Storage Utilized in Rear swale ($m^3$) | 34.8 | 66.1 | 67.2 |
| Surface Ponding Depth in Rear Swale (m) | 0.005 | 0.29 | 0.30 |

**Table 4-6: Post-development peak flows**

| Return Period | Pre-development peak flow ($m^3/s$) | Post-development peak flow ($m^3/s$) |
|---|---|---|
| 5-year | 0.028 | 0.028 |
| 100-year | 0.059 | 0.059 |

As shown in **Table 4-5** and **Table 4-6**, storage volumes and ponding depths remain below the maximum available for the 5-year through 100-year return period events. Post-development peak flows remain at or under the pre-development peak flows for the 5-year through 100-year return period events as required in the design criteria outlined in **Section 4.1**.

Subcatchments S105, S106, and S107 drain uncontrolled toward the municipal drain. The other areas of the Site are overcontrolled to account for these areas, so that the overall peak flow from the Site remains below the allowable peak flow for each return period.

#### 4.4.2.1 *EXTERNAL DRAINAGE AREA*

The adjacent land southwest of the project Site is part of the same property parcel (34 Victoria Street) owned by the Municipality of Mississippi Mills, and has the opportunity for future development. To accommodate future buildout of the Site and its stormwater management requirements, it was requested that the rear flat bottom swale be centred on this boundary between the childcare centre and the future development. As the rear swale is used for quantity control for the childcare centre, it has been sized assuming that it also provides some quantity control for the adjacent future development at the 34 Victoria Street Site.

The analysis presented in this report assumes that 0.11 ha of the adjacent land (approximately half of the total area) with a runoff coefficient of 0.9 discharges to the rear swale. The swale has been designed to have the capacity to control this developed area to pre-development conditions. The swale has not been designed to provide quality control for this area.

If the properties are severed or fall under different ownership in the future, a drainage easement and ECA may be required to ensure the infrastructure is adequately maintained and unaltered. The current design assumes that half the adjacent Site drains to the swale, and this area is used to determine the allowable release rate from the swale and remainder of the childcare Site. This will need to be considered in the stormwater management design for the affordable housing development, so that the overall peak flow for all of 34 Victoria Street does not exceed the pre-development peak flow to the municipal drain.

## 4.5 WATER QUALITY

As outlined in **Section 4.1**, it is required that post development runoff be treated to achieve 80% TSS removal. Areas such as roof, pedestrian pathways, and landscaping do not require treatment as they are not considered to be pollutant generating. Therefore, treatment is only required for the parking area.

Proposed features to achieve these targets include:

- → Suitably sized oil and grit separator (OGS) unit (Stormceptor EFO4 or equivalent)

Sizing documentation for the proposed OGS device is included in **Appendix C**.

## 4.6 DRAINAGE DRAWING

Pre- and post-development drainage sub-area plans for the Site are shown in Exhibits 1 and 2 in **Appendix C**. Drawings C03 and C04 as provided in **Appendix D** outline the proposed Site grading servicing layout including the proposed and receiving storm infrastructure.

## 4.7 PROPOSED MINOR SYSTEM

The proposed stormwater drainage system connects to the realigned municipal drain at two locations: one through a 200mm connection to the piped 1050mm municipal drain from the parking area, and a surface connection to the drainage ditch through a DICB at the northwest corner of the Site.

# 5 SEDIMENT AND EROSION CONTROL

## 5.1 GENERAL

Prior to topsoil stripping, earthworks or underground construction, erosion and sediment controls will be implemented and will be maintained throughout construction. Silt fences will be installed around the perimeter of the Site and will be cleaned and maintained throughout construction. Silt fences will remain in place until the working areas have been stabilized or re-vegetated. Catch basins and manholes will have filter fabric installed under the grate during construction to protect from silt entering the storm sewer system. A mud mat will be installed at the construction access in order to prevent mud from tracking onto adjacent roads.

Erosion and sediment controls must be in place during construction. Recommendations to the contractor are included in the erosion and sediment control plan C05 (**Appendix D)** and are summarized below.

During all construction activities, erosion and sedimentation shall be controlled by the following techniques:

Prior to Construction

- → Install silt fence along the perimeter of the property line.
- → Install filter fabric or silt sack filters in all catchbasins and manholes that exist within the vicinity of the Site.

During Construction

- → Minimize the extent disturbed areas and the duration of exposure and impacts to existing grading.
- → Perimeter vegetation to remain in place until permanent storm water management is in place; otherwise, immediately install silt fence when the existing Site is disturbed at the perimeter.
- → Protect disturbed areas from overland flow by providing temporary swales to the satisfaction of the field engineer. Tie-in temporary swale to existing catchbasins as required.
- → Provide temporary cover such as seeding or mulching if disturbed area will not be rehabilitated within 30 days.
- → Inspect silt fences, fabric filters, and catchbasin sumps weekly and within 24 hours after a storm event. Clean and repair when necessary.
- → Drawing to be reviewed and revised as required during construction.
- → Erosion control fencing to be installed around the base of all stockpiles.
- → Do not locate topsoil piles and excavation material closer than 2.5m from any paved surface, or one which is to be paved before the pile is removed. All topsoil piles are to be seeded if they are to remain on Site long enough for seeds to grow (longer than 30 days).
- → Control wind blown off-site dust by seeding topsoil piles and other areas temporarily (provide watering as required and to the satisfaction of the engineer).
- → No alternate methods of erosion protection shall be permitted unless approved by the field engineer.
- → City roadway and sidewalk to be cleaned of all sediment from vehicular traffic as required.
- → Provide gravel entrance (mud mat) wherever equipment leaves the Site to prevent mud tracking onto paved surfaces.
- → During wet conditions, tires of all vehicles/equipment leaving the Site are to be scraped.
- → Any mud/material tracked onto the road shall be removed immediately by hand or rubber tire loader.

→ Take all necessary steps to prevent building material, construction debris, or waste being spilled or tracked onto adjacent properties or public streets during construction and proceed immediately to clean up any areas which are affected.

→ All erosion control structures to remain in place until all disturbed ground surfaces have been stabilized either by paving or restoration of vegetative ground cover.

→ During the course of construction, if the engineer believes that additional prevention methods are required to control erosion and sedimentation, the contractor will install additional silt fences or other methods as required to the satisfaction of the engineer.

→ The contractor shall implement best management practices during construction activities to provide protection to all drainage systems and potential receiving watercourse. The contractor acknowledges that failure to implement appropriate erosion and sediment control measures may be subject to penalties imposed by any applicable regulatory agency.

Refer to the Erosion and Sediment Control Plan C05 provided in **Appendix D** for reference.

# 6 PERMITS, CONCLUSIONS, AND RECOMMENDATIONS

## 6.1 PERMITS AND APPROVALS

The proposed development is subject to Municipality of Mississippi Mills Site Plan Approval.

The proposed Municipal Drain re-routing is subject to Mississippi Valley Conservation Authority Permit Approval.

No permits or approvals are anticipated to be required from the Ontario Ministry of Transportation, National Capital Commission, Parks Canada, Public Works and Government Services Canada, or any other provincial or Federal Regulatory Agency.

## 6.2 CONCLUSIONS AND RECOMMENDATIONS

This site servicing and stormwater management report has been prepared for the proposed Mississippi Mills Childcare Centre located at 34 Victoria Street in Almonte. The conclusions for this proposed Site development can be summarized as follows:

- → The proposed building will be serviced by a 150mm domestic watermain. The existing municipal water distribution system will provide adequate flows and pressures to service the domestic demands for the development.
- → Fire access route and fire flow protection via existing municipal hydrants were found to meet the fire flow demands for the proposed development.
- → The proposed building will be serviced by a 200mm sanitary sewer complete with access maintenance hole, with connection at St. James Street to the existing municipal sanitary system. The sanitary sewer has been sized to adequately convey future flows from the buildout of the western portion of the Site.
- → The proposed stormwater system consisting of both quantity and quality control measures are designed to adequately control and treat post-development stormwater events to pre-development levels.
    - Post-development flow from the front portion of Site is conveyed overland towards two storm structures within the parking area. An inlet control device has been designed to restrict flows and provide surface storage of the stormwater. An oil grit separator has been proposed to treat the water prior to discharge to the municipal drain.
    - Post-development flows from the south and rear portion of the Site are conveyed towards a flat bottom swale. This swale has been oversized with a clearstone layer to provide subsurface storage for both the childcare facility and the potential future buildout of the western portion of the Site.
    - For extreme storms exceeding controls implemented for the 100-year event, the Site has been graded to adequately convey major overland flows towards the municipal drain.
- → Erosion and sediment control measures will be provided both prior to and throughout all construction activities.

It is concluded that the proposed development can meet all Site servicing, drainage, and stormwater management constraints. It is recommended that this report be submitted for Site Plan Approval application.

# APPENDIX

# A WATER

**Water Demand Calculation Sheet**

**Project:** Mississippi Mills Childcare Centre
**Project #:** CA0013767.4459
**Client:** Municipality of Mississippi Mills
**Address:** 34 Victoria Street, Almonte, ON
Date: 2025-06-26
Input By: Spencer Manoryk P.Eng
Reviewed By: Winston Yang P.Eng, PMP

| Proposed Buildings | Residential | | | | | | | Non-Residential | | Average Daily Demand (l/s) | | | Maximum Daily Demand (l/s) | | | Peak Hourly Demand (l/s) | | | Fire Demand (l/s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Units | | | | Establishment | | Total Pop. | Industrial (ha) | Commercial (ha) | | | | | | | | | | |
| | 1-Bed Apt | 2-Bed Apt | 3-Bed Apt | 4-Bed Apt | Staff | Children | | | | Res. | Non-Res. | Total | Res. | Non-Res. | Total | Res. | Non-Res. | Total | |
| Mississippi Mills Childcare Centre | 0 | 0 | 0 | 0 | 30 | 151 | 181 | 0.00 | 0.00 | 0.157 | 0.000 | **0.157** | 0.393 | 0.000 | **0.393** | 0.00 | 0.864 | **0.864** | **150** |

| Population Densities | | |
|---|---|---|
| Single Family | 3.4 | person/unit |
| Semi-Detached | 2.7 | person/unit |
| Duplex | 2.3 | person/unit |
| Townhome (Row) | 2.7 | person/unit |
| Bachelor Apartment | 1.4 | person/unit |
| 1 Bedroom Apartment | 1.4 | person/unit |
| 2 Bedroom Apartment | 2.1 | person/unit |
| 3 Bedroom Apartment | 3.1 | person/unit |

*City of Ottawa Water Distribution Design Guidelines (2010)
Table 4.1 - Per Unit Populations

| Employees Demands | | |
|---|---|---|
| Day Care Facility per person (staff and children) | 75 | L/person/day |
| Factory or plant workers per day or per shift – includes showers but no industrial | 125 | L/person/day |
| Factory or plant workers as | 75 | L/person/day |

* Ontario Building Code Compendium - Volume 1 (2024)
Table 8.2.1.3.-B - Other Occupancies

| Average Daily Demand | | | Maximum Daily Demand | | | Peak Hourly Demand | | |
|---|---|---|---|---|---|---|---|---|
| Residential | 350 | l/cap/day | Residential | 2.5 | x avg. day | Residential | 2.2 | x max. day |
| Light Industrial | 35000 | l/ha/day | Industrial | 1.5 | x avg. day | Industrial | 1.8 | x max. day |
| Commercial | 28000 | l/ha/day | Commercial | 1.5 | x avg. day | Commercial | 1.8 | x max. day |

*Mississippi Mills Water and Wastewater Infrastructure Master Plan (2024)
Table 7 - Design Criteria - Water Demand Rates

**Fire Flow Design Sheet (FUS)**
**Mississippi Mills Childcare Centre**
**34 Victoria Street, Almonte, ON**
**WSP Project No. CA0054341.9407**

Date: 2025-06-26
Input By: SM
Reviewed By: WY

## Mississippi Mills Childcare Centre
## Fire Flow Requirements Based on Fire Underwriters Survey (FUS) 2020

To estimate the amount of water required to confine and control a fire, FUS uses the following base formula:

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

**F** = Required Fire Flow in litres per minute
**C** = Construction Coefficient related to the type of construction of the building
**A** = Total Effective Floor Area in square meters of the building

### 1. Construction Material

| | Type | Description | Input | Coefficient | Value Used |
|---|---|---|---|---|---|
| C | **Type V** | Wood Frame Construction | | 1.5 | 1 |
| | **Type IV-A** | Mass Timber Construction | | 0.8 | |
| | **Type IV-B** | Mass Timber Construction | | 0.9 | |
| | **Type IV-C** | Mass Timber Construction | | 1.0 | |
| | **Type IV-D** | Mass Timber Construction | | 1.5 | |
| | **Type III** | Ordinary Construction | Yes | 1.0 | |
| | **Type II** | Non-combustible Construction | | 0.8 | |
| | **Type I** | Fire Resistive Construction | | 0.6 | |

### 2. Floor Area

| | Item | Input | Value Used |
|---|---|---|---|
| A | Building Footprint ($m^2$) | 1,211 | 1,211 |
| | Number of Floors | 1 | |
| | Protected Openings (1-hr) | Yes | |
| | Total Effective Floor Area ($m^2$) * | 1,211 | |

* 100% of all Floor Areas are considered

### 3. Base fire flow without adjustments

**F**

$F = 220 \times C \times \sqrt{A} =$ 8,000 **L/min**

### 4. Occupancy and Contents Adjustment Factor

| | Item | FUS Table 3 | Adjustment | Value Used |
|---|---|---|---|---|
| (1) | Non-combustible | | -25% | -15% |
| | Limited combustible | Yes | -15% | |
| | Combustible | | +0% | |
| | Free Burning | | +15% | |
| | Rapid Burning | | +25% | |

Adjustment of F due to Occupancy and Contents = 6,800 **L/min**

### 5. Automatic Sprinkler Protection

| | Item | FUS Table 4 | Adjustment | Value Used |
|---|---|---|---|---|
| (2) | % of Sprinkler Coverage | ±1.0 | | +0% |
| | Adequately Designed System (NFPA 13) | | -30% | |
| | Standard Water Supply | | -10% | |
| | Fully Supervised System | | -10% | |

Credit for Automatic Sprinkler Protection = 0 **L/min**

### 6. Exposure Surcharge

| | Item | Separation | FUS Table 5 | Value Used |
|---|---|---|---|---|
| (3) | North Exposure (m) | 18 | +15% | +35% |
| | East Exposure (m) | 64 | +0% | |
| | South Exposure (m) | 25 | +10% | |
| | West Exposure (m) | 30 | +10% | |

Surcharge for Exposure = +2,380 **L/min**

### 7. Total Required Fire Flow

**F**

$F = (1) + (2) + (3) =$ 9,000 **L/min**
or 150 **L/sec**
or 2,378 **GPM (US)**

---

Based on method described in:
"Water Supply for Public Fire Protection - A Guide to Recommended Practice", 2020
by Fire Underwriters Survey

## Manoryk, Spencer

**From:** Darryl Hood <hood@csv.ca>
**Sent:** June 25, 2025 11:38 AM
**To:** Manoryk, Spencer
**Cc:** Bryson Collins; Yang, Winston; Shivangi Sinha; Krysten Nicoll; Igor Kidisyuk
**Subject:** RE: 250100 MM Childcare - Fire Flow Paramaters

**Follow Up Flag:** Follow up
**Flag Status:** Flagged

Hi Spencer,

As we discussed, here is the information about the building that you should need for the FUS Parameters:

- The building will be facing Menzie Street (exact address to be determined).
- The proposed building is a one-storey building and has been designed under 2025 Ontario Building Code 3.2.2.25, and as such will be combustible construction with structural walls and columns having a 3/4 hour fire rating. The building does not have any unprotected vertical openings.
- An automatic sprinkler system is not required or proposed. That said, there is a requirements for the garbage room to be sprinklered. This will require less than 9 heads (likely 2-3) and therefore be connected to the domestic water as per 3.2.5.12.(4) & (5).

Please let me know if you need any further information.

Cheers.

**Darryl Hood**
Principal | B.Arch, B.A., OAA, FRAIC, LEED®AP BD+C, GGP, CPHD

CSV ARCHITECTS
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D 613-891-7094

www.csv.ca | sustainable design

*My working hours may not reflect yours. Please do not feel obligated to reply outside of your regular work schedule.*

---

**From:** Manoryk, Spencer <Spencer.Manoryk@wsp.com>
**Sent:** June 23, 2025 2:39 PM
**To:** Shivangi Sinha <sinha@csv.ca>; Darryl Hood <hood@csv.ca>
**Cc:** Bryson Collins <bcollins@chandos.com>; Yang, Winston <Winston.Yang@wsp.com>
**Subject:** MM Childcare - Fire Flow Paramaters

Good afternoon Daryl & Shiv,

For our site servicing report I will require an Architectural sealed letter outlining the following parameters relevant to our building's fire flow calculation

# APPENDIX

# B SANITARY

## Water Demand Calculation Sheet

**Project:** Mississippi Mills Childcare Centre
**Project #:** CA0013767.4459
**Client:** Municipality of Mississippi Mills
**Address:** 34 Victoria Street, Almonte, ON
Date: 2025-06-27
Input By: Spencer Manoryk P.Eng
Reviewed By: Winston Yang P.Eng, PMP

| Average Wastewater Flows: | | |
|---|---|---|
| Existing Residential* | 185 | L/c/d |
| Future Residential* | 350 | L/c/d |
| Future Industrial* | 35,000 | L/gross ha/d |
| Future Commercial* | 28,000 | L/gross ha/d |
| Day Care Facility**<br>per person<br>(staff and children) | 75 | L/c/d |

| Peaking Factors: | |
|---|---|
| Existing Residential* | 1.42 |
| Commercial (>20% Area)*** | 1.5 |
| Commercial (<20% Area)*** | 1.0 |
| Institutional (>20% Area)*** | 1.5 |
| Institutional (<20% Area)*** | 1.0 |
| Industrial*** | Per Figure in Appendix 4-B |

| Peak Extraneous Flows: | |
|---|---|
| Existing Residential* | 0.33 |
| Future Residential* | 0.33 |
| Future Industrial* | 0.33 |
| Future Commercial* | 0.33 |

Reference Information:
* Mississippi Mills Water and Wastewater Infrastructure Master Plan (2024)
Table 22 - Wastewater System Design Criteria

** Ontario Building Code Compendium - Volume 1 (2024)
Table 8.2.1.3.-B - Other Occupancies

***City of Ottawa Water Distribution Design Guidelines (2010)
Table 4.1 - Per Unit Populations
City of Ottawa Technical Bulletin ISTB-2018-01

Peaking Factor

$$P.F. = 1 + \left(\frac{14}{4 + \left(\frac{P}{1000}\right)^{0.5}}\right) * K$$

where P = population
K = correction factor = 0.8

| MM Chilfcare Centre - Population Densities | | | |
|---|---|---|---|
| Unit Type | Person Per Unit | Unit Count | Persons |
| **Homes:** | | | |
| Single Family*** | 3.4 | | |
| Semi-detached*** | 2.7 | | |
| Duplex*** | 2.3 | | |
| Townhouse (row)*** | 2.7 | | |
| **Apartments:** | | | |
| Studio*** | 1.4 | | |
| 1 Bedroom*** | 1.4 | | |
| 2 Bedroom*** | 2.1 | | |
| 3 Bedroom*** | 3.1 | | |
| Average Apt. | 1.8 | | |
| **Facilities:** | | | |
| Staff | | | 30 |
| Children | | | 151 |
| **Total Population** | | | **181** |

| 34 Victoria Street Future Residential - Population Densities | | | |
|---|---|---|---|
| Unit Type | Person Per Unit | Unit Count | Persons |
| **Homes:** | | | |
| Single Family*** | 3.4 | | |
| Semi-detached*** | 2.7 | | |
| Duplex*** | 2.3 | | |
| Townhouse (row)*** | 2.7 | | |
| **Apartments:** | | | |
| Studio*** | 1.4 | | |
| 1 Bedroom*** | 1.4 | 34 | 48 |
| 2 Bedroom*** | 2.1 | 3 | 6 |
| 3 Bedroom*** | 3.1 | | |
| Average Apt. | 1.8 | | |
| **Facilities:** | | | |
| Staff | | | |
| Children | | | |
| **Total Population** | | | **54** |

| | Mississippi Mills Childcare Centre | | |
|---|---|---|---|
| Demand Type= | **Day Care Facility**** | | |
| Average Day Demand= | 75 | | L/c/d |
| Population | **181** | | |
| Site Area (ha) | **0.442** | | |
| | 75 | x | 181 |
| | 13,575 | | L/day |
| **Average Daily Flow=** | **0.157** | | **L/s** |
| Peaking Factor Type | Day Care Facility** | | |
| Peaking Factor | 3.5 | | *Max=4 |
| | 3.5 | x | average day |
| | 3.5 | x | 13,575 |
| | 47,931 | | L/day |
| **Peak Daily Flow=** | **0.55** | | **L/s** |
| Infiltration Allowance | 0.33 | | |
| | 0.33 | x | lot area |
| | 0.33 | x | 0.442 |
| **Peak Extraneous Flow=** | **0.15** | | **L/s** |
| | peak daily flow | + | extraneous flow |
| | 0.55 | + | 0.15 |
| **Design Flow=** | **0.70** | | **L/s** |

| | 34 Victoria Street Future Residential | | |
|---|---|---|---|
| Demand Type= | **Future Residential*** | | |
| Average Day Demand= | 350 | | L/c/d |
| Population | **54** | | |
| Area (ha) | **0.223** | | |
| | 350 | x | 54 |
| | 18,900 | | L/day |
| **Average Daily Flow=** | **0.219** | | **L/s** |
| Peaking Factor Type | Future Residential* | | |
| Peaking Factor | 3.6 | | *Max=4 |
| | 3.6 | x | average day |
| | 3.6 | x | 18,900 |
| | 68,914 | | L/day |
| **Peak Daily Flow=** | **0.80** | | **L/s** |
| Infiltration Allowance | 0.33 | | |
| | 0.33 | x | lot area |
| | 0.33 | x | 0.223 |
| **Peak Extraneous Flow=** | **0.07** | | **L/s** |
| | peak daily flow | + | extraneous flow |
| | 0.80 | + | 0.07 |
| **Design Flow=** | **0.87** | | **L/s** |

| Total Peak Sanitary Flow | 1.57 | L/s |
|---|---|---|

**SANITARY SEWER DESIGN SHEET**

**Project:** Mississippi Mills Childcare Centre
**Location:** 34 Victoria Street, Almonte, Ontario
**WSP Project No.:** CA0054341.9407
**Date:** 2025-06-27

| LOCATION | | | | RESIDENTIAL AREA AND POPULATION | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | FROM M.H. | TO M.H. | SANITARY DRAINAGE AREA ID | INDV AREA (ha) | ACCU AREA (ha) | NUMBER OF UNITS: SINGLES | SEMIS | TOWNS | 1-BED APT. | 2-BED APT. | 3-BED APT. | POPULATION: INDIV POP. | ACCU POP. | PEAK FACT. | PEAK FLOW (l/s) |
| MMCC | BUILDING | SANMH01 | | 0.44 | 0.44 | | | | | | | 181 | 181 | 3.53 | 0.55 |
| FUTURE RESIDENTIAL | SANMH01 | EX. SANMH | | 0.22 | 0.67 | | | | 34 | 3 | | 54 | 235 | 3.50 | 1.31 |

| LOCATION | INDUSTRIAL | | | | COMMERCIAL | | INSTITUTIONAL | | I+C+I | INFILTRATION | | | | PIPE | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | GROSS AREA (ha) | DEVEL. AREA (ha) | ACCU. AREA (ha) | PEAK FACTOR | INDIV AREA (ha) | ACCU. AREA (ha) | AREA (ha) | Students* | PEAK FLOW (l/s) | INDIV AREA (ha) | ACCU. AREA (ha) | INFILT. FLOW (l/s) | TOTAL FLOW (l/s) | LENGTH (m) | DIA. (mm) | SLOPE (%) | CAP. (FULL) (l/s) | VEL. (FULL) (m/s) | AVAIL. CAP. (%) |
| MMCC | | | | | | | | | | 0.44 | 0.44 | 0.15 | **0.70** | *8.00* | *200* | *0.28* | 17.36 | 0.55 | **95.96%** |
| FUTURE RESIDENTIAL | | | | | | | | | | 0.22 | 0.67 | 0.22 | **1.53** | *90.00* | *200* | *0.28* | 17.36 | 0.55 | **91.17%** |

**DESIGN PARAMETERS**

| | | |
|---|---|---|
| DAYCARE FACILITY DAILY FLOW = | 75 | l/cap/day |
| RESIDENTIAL AVG. DAILY FLOW = | 350 | l/cap/day |
| COMMERCIAL AVG. DAILY FLOW = | 28,000 | l/ha/day |
| | 0.324 | l/ha/s |
| LIGHT INDUSTRIAL FLOW = | 35,000 | l/ha/day |
| | 0.405 | l/ha/s |

| | |
|---|---|
| COMMERCIAL PEAK FACTOR = | 1.5 |
| INSTITUTIONAL PEAK FACTOR = | 1.5 |
| INDUSTRIAL PEAK FACTOR = | * REFER TO MOE GUIDELINES |
| MANNING N = | 0.013 |
| PEAK EXTRANEOUS FLOW, I (l/s/ha) = | 0.33 |

PEAK POPULATION FLOW, Qp (l/s) = $Q = \frac{P \times q \times PF}{86,400}$

PEAK EXTRANEOUS FLOW, Qe (l/s) = $Q = 0.33 \times Ac$

RESIDENTIAL PEAKING FACTOR, M = $P.F. = 1 + \left(\frac{14}{4 + \left(\frac{P}{1000}\right)^{0.5}}\right) * K$

Ac = CUMULATIVE AREA (ha)

P = POPULATION

where P = population
K = correction factor = 0.8

SEWER CAPACITY, Qcap (l/s) = $Q = n^{-1} \times S^{0.5} \times R^{2/3} \times A$
(MANNING'S EQUATION)

| UNIT TYPE | PERSONS/UNIT |
|---|---|
| SINGLES | 3.4 |
| SEMI-DETACHED | 2.7 |
| TOWNHOMES | 2.7 |
| SINGLE APT. UNIT | 1.4 |
| 2-BED APT. UNIT | 2.1 |

| | NO. | REVISION | DATE |
|---|---|---|---|
| **DESIGNED:** Spencer Manoryk, P.Eng. | 1. | Site Plan Approval | 2025-06-27 |
| **CHECKED:** Winston Yang, P.Eng | | | |
| **PROJECT:** Mississippi Mills Childcare Centre | | | |
| **LOCATION:** Almonte, Ontario | | | |
| **PAGE NO:** 1 of 1 | **FILE & DWG. REFERENCE:** C04 Servicing Plan | | |

# APPENDIX

# C

STORMWATER

MANAGEMENT


Mississippi Mills

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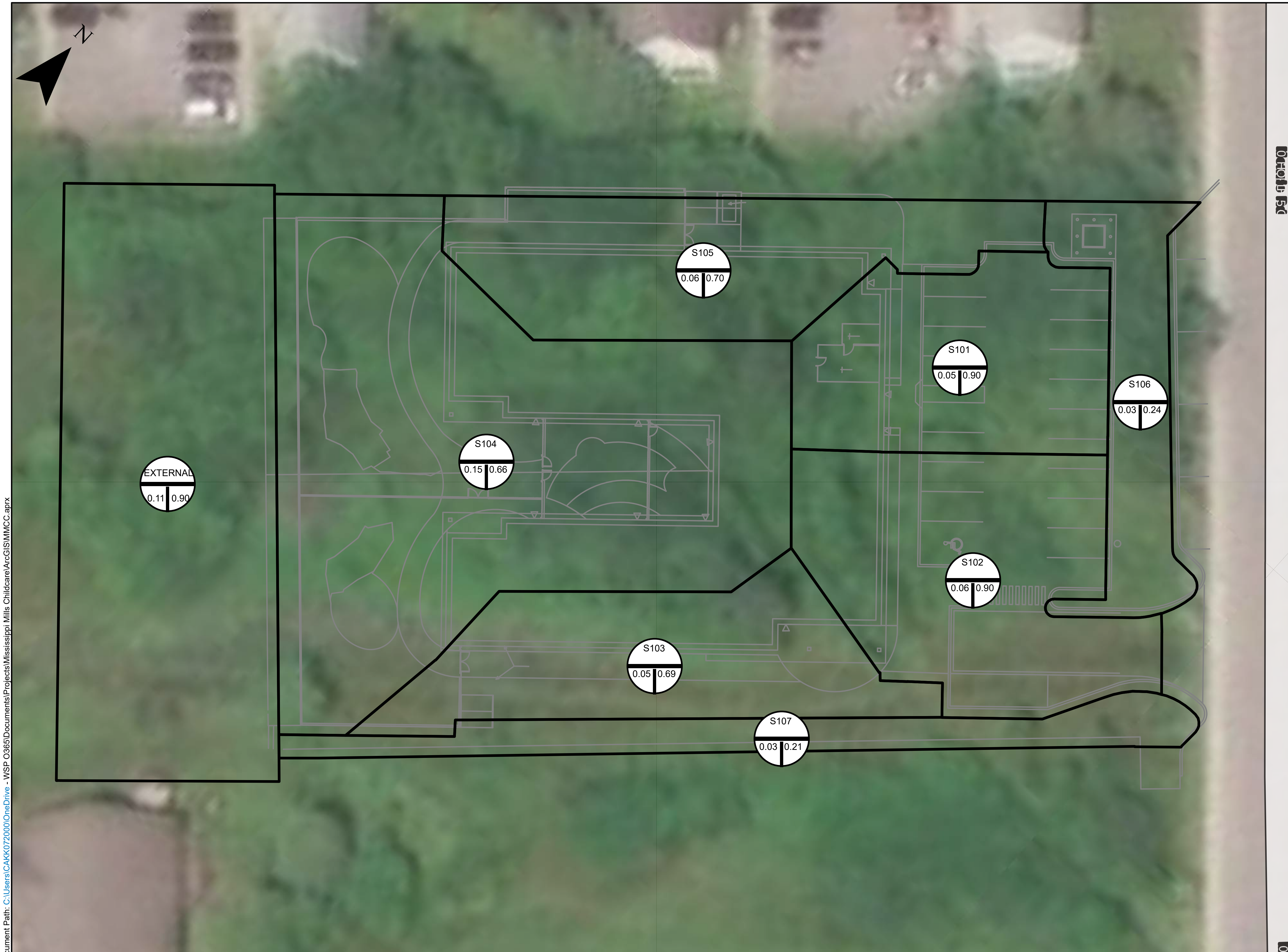



Mississippi Mills

CLIENT
THE MUNICIPALITY OF MISSISSIPPI MILLS

PROJECT
MISSISSIPPI MILLS CHILDCARE CENTRE

TITLE
**EXHIBIT 2**
**PROPOSED DRAINAGE AREAS**


LEGEND

Proposed Subcatchments

0 0 0.01 km

| | | | |
|---|---|---|---|
| DRAWN BY | KK | CHECKED BY | BO |
| June 2025 | | WSP | |
| NAD 1983 MTM 9 | | | |
| 1:350 | | | |

Document Path: C:\Users\CAKK072000\OneDrive - WSP O365\Documents\Projects\Mississippi Mills Childcare\ArcGIS\MMCC.aprx

Subject:

## SWM CALCULATIONS- Pre-Development Peak Flow

Calculation of existing runoff rate is undertaken using the Rational Method: $Q = 2.78CiA$

Where: Q = peak flow rate (litres/second)
C = runoff coefficient
i = rainfall intensity (mm/hour)
A = catchment area (hectares)

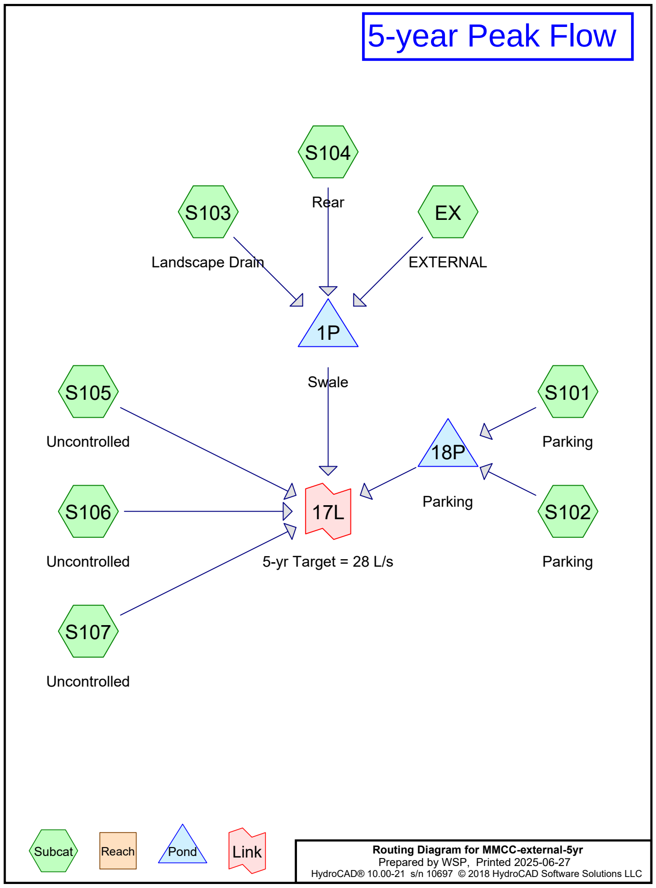
| | | |
|---|---|---|
| Site Area, A | 5,346 | $m^2$ |
| Site Area, A | 0.53 | hectares |
| Runoff Coefficient, C | 0.20 | |

Rainfall intensity calculated in accordance with the MTO IDF lookup tool:

$$i = AT_D^B$$

Where: A, B = regression constants for each return period
i = rainfall intensity (mm/hour)
Td = storm duration (hours) 10 minutes

| Return Period (Years) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| A | 20.1 | 26.8 | 31.1 | 36.6 | 40.7 | 44.7 |
| B | -0.699 | -0.699 | -0.699 | -0.699 | -0.699 | -0.699 |
| T (hours) | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| I (mm/hr) | 70.3 | 93.8 | 108.8 | 128.1 | 142.4 | 156.4 |
| Multiplier | 1.0 | 1.0 | 1.0 | 1.1 | 1.2 | 1.25 |
| Q (litres/sec) | 21 | 28 | 33 | 43 | 52 | 59 |
| Q (m3/sec) | 0.02 | 0.03 | 0.03 | 0.04 | 0.05 | 0.06 |






### Area Listing (all nodes)

| Area (hectares) | C | Description (subcatchment-numbers) |
|---|---|---|
| 0.2221 | 0.90 | (EX, S101, S102) |
| 0.0512 | 0.69 | (S103) |
| 0.1519 | 0.66 | (S104) |
| 0.0559 | 0.70 | (S105) |
| 0.0277 | 0.24 | (S106) |
| 0.0259 | 0.21 | (S107) |
| **0.5347** | **0.72** | **TOTAL AREA** |



Time span=0.00-3.00 hrs, dt=0.01 hrs, 301 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentEX: EXTERNAL** — Runoff Area=0.1104 ha Runoff Depth=14 mm
Tc=10.0 min C=0.90 Runoff=0.0254 m³/s 0.016 Ml

**SubcatchmentS101: Parking** — Runoff Area=0.0482 ha Runoff Depth=14 mm
Tc=10.0 min C=0.90 Runoff=0.0111 m³/s 0.007 Ml

**SubcatchmentS102: Parking** — Runoff Area=0.0635 ha Runoff Depth=14 mm
Tc=10.0 min C=0.90 Runoff=0.0146 m³/s 0.009 Ml

**SubcatchmentS103: Landscape Drain** — Runoff Area=0.0512 ha Runoff Depth=11 mm
Tc=10.0 min C=0.69 Runoff=0.0090 m³/s 0.006 Ml

**SubcatchmentS104: Rear** — Runoff Area=0.1519 ha Runoff Depth=10 mm
Tc=10.0 min C=0.66 Runoff=0.0257 m³/s 0.016 Ml

**SubcatchmentS105: Uncontrolled** — Runoff Area=0.0559 ha Runoff Depth=11 mm
Tc=10.0 min C=0.70 Runoff=0.0100 m³/s 0.006 Ml

**SubcatchmentS106: Uncontrolled** — Runoff Area=0.0277 ha Runoff Depth=4 mm
Tc=10.0 min C=0.24 Runoff=0.0017 m³/s 0.001 Ml

**SubcatchmentS107: Uncontrolled** — Runoff Area=0.0259 ha Runoff Depth=3 mm
Tc=10.0 min C=0.21 Runoff=0.0014 m³/s 0.001 Ml

**Pond 1P: Swale** — Peak Elev=137.677 m Storage=29.4 m³ Inflow=0.0601 m³/s 0.037 Ml
Outflow=0.0101 m³/s 0.036 Ml

**Pond 18P: Parking** — Peak Elev=138.276 m Storage=8.6 m³ Inflow=0.0257 m³/s 0.016 Ml
Outflow=0.0072 m³/s 0.016 Ml

**Link 17L: 5-yr Target = 28 L/s** — Inflow=0.0281 m³/s 0.059 Ml
Primary=0.0281 m³/s 0.059 Ml

**Total Runoff Area = 0.5347 ha Runoff Volume = 0.060 Ml Average Runoff Depth = 11 mm**



### Summary for Subcatchment EX: EXTERNAL

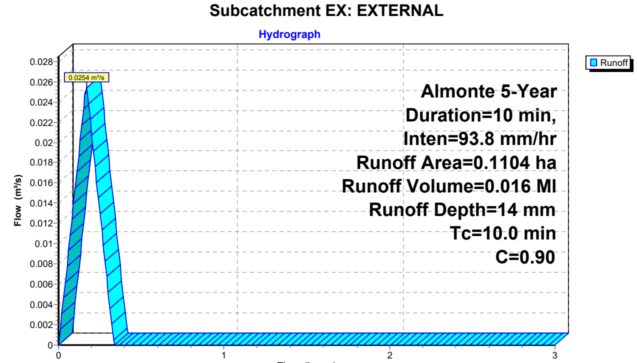
Runoff = 0.0254 m³/s @ 0.17 hrs, Volume= 0.016 Ml, Depth= 14 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 5-Year Duration=10 min, Inten=93.8 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.1104 | 0.90 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | **Direct Entry,** |

### Subcatchment EX: EXTERNAL



## Summary for Subcatchment S101: Parking

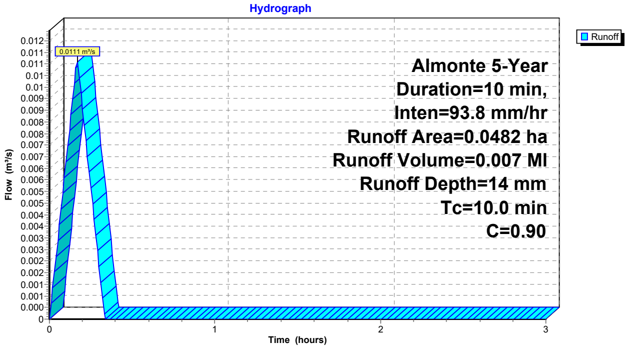
Runoff = 0.0111 m³/s @ 0.17 hrs, Volume= 0.007 Ml, Depth= 14 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 5-Year Duration=10 min, Inten=93.8 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.0482 | 0.90 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | Direct Entry, |

### Subcatchment S101: Parking






## Summary for Subcatchment S102: Parking

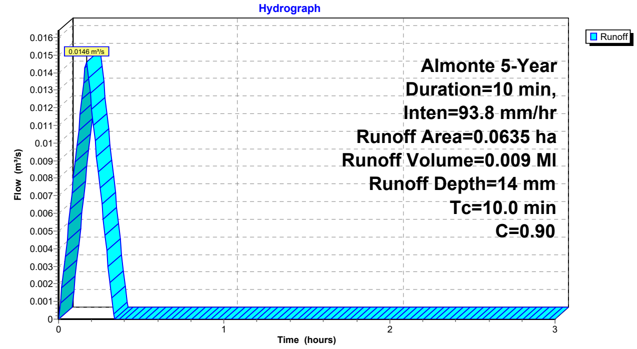
Runoff = 0.0146 m³/s @ 0.17 hrs, Volume= 0.009 Ml, Depth= 14 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 5-Year Duration=10 min, Inten=93.8 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.0635 | 0.90 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | Direct Entry, |

### Subcatchment S102: Parking






## Summary for Subcatchment S103: Landscape Drain

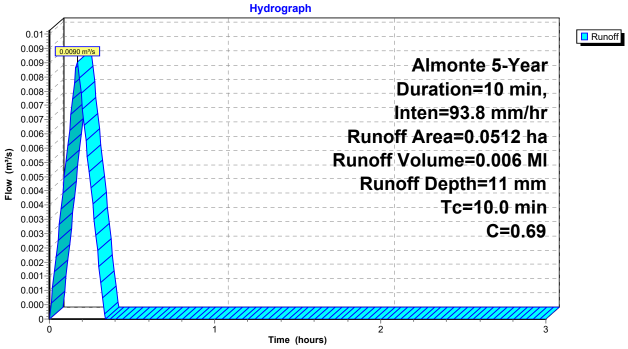
Runoff = 0.0090 m³/s @ 0.17 hrs, Volume= 0.006 Ml, Depth= 11 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 5-Year Duration=10 min, Inten=93.8 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.0512 | 0.69 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | Direct Entry, |

### Subcatchment S103: Landscape Drain






## Summary for Subcatchment S104: Rear

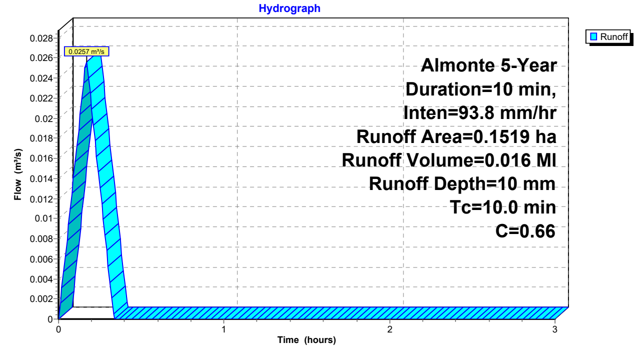
Runoff = 0.0257 m³/s @ 0.17 hrs, Volume= 0.016 Ml, Depth= 10 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 5-Year Duration=10 min, Inten=93.8 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.1519 | 0.66 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | Direct Entry, |

### Subcatchment S104: Rear



### Summary for Subcatchment S105: Uncontrolled

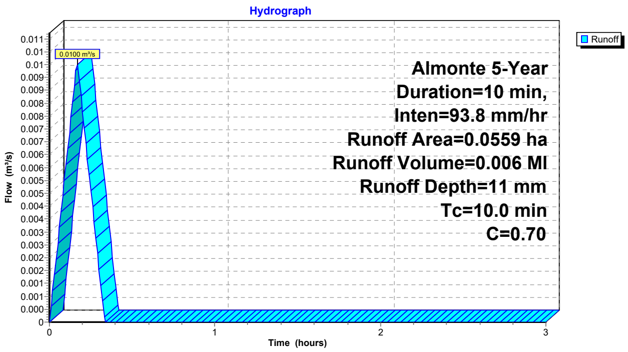
Runoff = 0.0100 m³/s @ 0.17 hrs, Volume= 0.006 Ml, Depth= 11 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 5-Year Duration=10 min, Inten=93.8 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.0559 | 0.70 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | Direct Entry, |

### Subcatchment S105: Uncontrolled






### Summary for Subcatchment S106: Uncontrolled

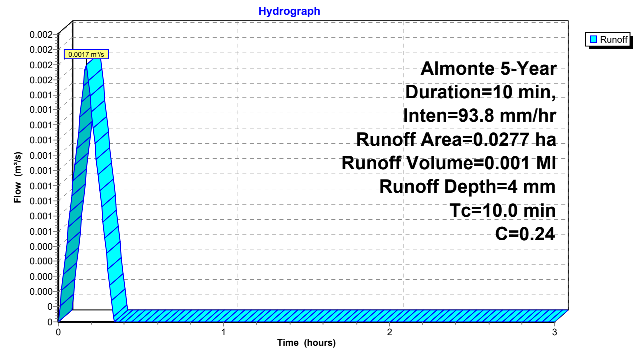
Runoff = 0.0017 m³/s @ 0.17 hrs, Volume= 0.001 Ml, Depth= 4 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 5-Year Duration=10 min, Inten=93.8 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.0277 | 0.24 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | Direct Entry, |

### Subcatchment S106: Uncontrolled






### Summary for Subcatchment S107: Uncontrolled

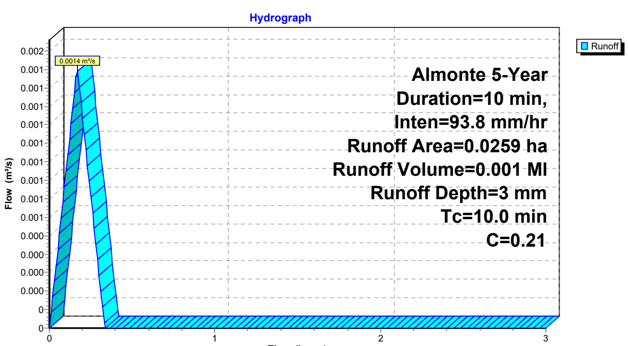
Runoff = 0.0014 m³/s @ 0.17 hrs, Volume= 0.001 Ml, Depth= 3 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 5-Year Duration=10 min, Inten=93.8 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.0259 | 0.21 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | Direct Entry, |

### Subcatchment S107: Uncontrolled






### Summary for Pond 1P: Swale

Inflow Area = 0.3135 ha, Inflow Depth = 12 mm for 5-Year event
Inflow = 0.0601 m³/s @ 0.17 hrs, Volume= 0.037 Ml
Outflow = 0.0101 m³/s @ 0.31 hrs, Volume= 0.036 Ml, Atten= 83%, Lag= 8.3 min
Primary = 0.0101 m³/s @ 0.31 hrs, Volume= 0.036 Ml

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 137.677 m @ 0.31 hrs Surf.Area= 106.0 m² Storage= 29.4 m³

Plug-Flow detention time= 32.0 min calculated for 0.036 Ml (97% of inflow)
Center-of-Mass det. time= 31.7 min ( 41.7 - 10.0 )

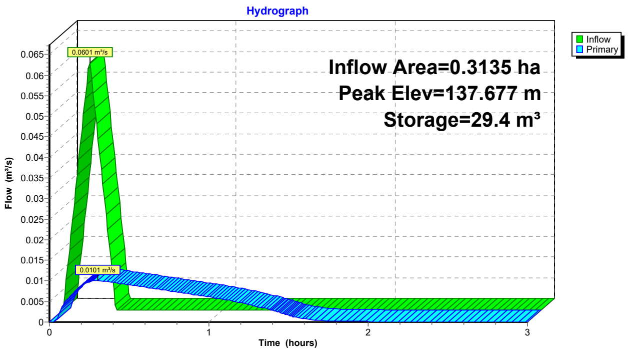
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 136.750 m | 20.2 m³ | **1,200 mm W x 1,050 mm H Box Pipe Storage**<br>L= 40.00 m S= 0.0050 m/m<br>50.4 m³ Overall x 40.0% Voids |
| #2 | 137.800 m | 17.4 m³ | **Custom Stage Data** Listed below |
| #3 | 136.950 m | 24.4 m³ | **1,000 mm W x 1,050 mm H Box Pipe Storage**<br>L= 58.00 m S= 0.0050 m/m<br>60.9 m³ Overall x 40.0% Voids |
| | | 61.9 m³ | Total Available Storage |

| Elevation (meters) | Cum.Store (cubic-meters) |
|---|---|
| 137.800 | 0.0 |
| 137.850 | 0.3 |
| 137.900 | 1.5 |
| 137.950 | 3.7 |
| 138.000 | 7.2 |
| 138.050 | 12.2 |
| 138.100 | 17.4 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 136.900 m | **75 mm Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 137.950 m | **0.40 m long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>0.20 m Crest Height |

**Primary OutFlow** Max=0.0101 m³/s @ 0.31 hrs HW=137.677 m (Free Discharge)
↑1=**Orifice/Grate** (Orifice Controls 0.0101 m³/s @ 2.29 m/s)
└2=**Sharp-Crested Rectangular Weir** ( Controls 0.0000 m³/s)

### Pond 1P: Swale






### Summary for Pond 18P: Parking

Inflow Area = 0.1117 ha, Inflow Depth = 14 mm for 5-Year event
Inflow = 0.0257 m³/s @ 0.17 hrs, Volume= 0.016 Ml
Outflow = 0.0072 m³/s @ 0.29 hrs, Volume= 0.016 Ml, Atten= 72%, Lag= 7.2 min
Primary = 0.0072 m³/s @ 0.29 hrs, Volume= 0.016 Ml

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 138.276 m @ 0.29 hrs Surf.Area= 188.8 m² Storage= 8.6 m³

Plug-Flow detention time= 11.3 min calculated for 0.016 Ml (100% of inflow)
Center-of-Mass det. time= 11.4 min ( 21.4 - 10.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 138.150 m | 54.1 m³ | **Custom Stage Data (Prismatic)** Listed below (Recalc) |
| #2 | 136.770 m | 0.6 m³ | **200 mm Round Pipe Storage** L= 18.55 m S= 0.0100 m/m |
| | | 54.7 m³ | Total Available Storage |

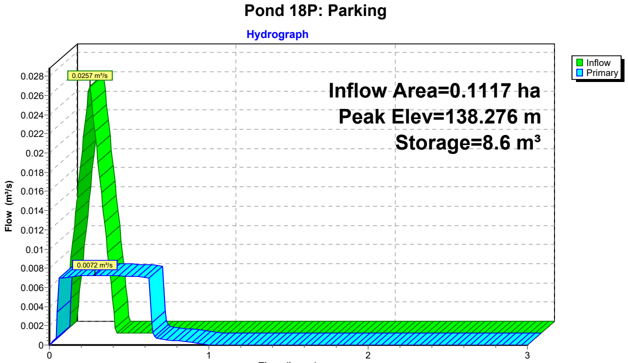
| Elevation (meters) | Surf.Area (sq-meters) | Inc.Store (cubic-meters) | Cum.Store (cubic-meters) |
|---|---|---|---|
| 138.150 | 0.0 | 0.0 | 0.0 |
| 138.200 | 28.1 | 0.7 | 0.7 |
| 138.250 | 111.7 | 3.5 | 4.2 |
| 138.300 | 261.7 | 9.3 | 13.5 |
| 138.350 | 407.1 | 16.7 | 30.3 |
| 138.400 | 545.8 | 23.8 | 54.1 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 136.760 m | **Hydrovex 75VHV-1** Head (meters) 0.000 0.250 0.360 0.500 1.000 1.500 2.000 2.500 3.000 3.500 4.000 4.500 5.000 5.500 6.000 Disch. (m³/s) 0.00000 0.00070 0.00300 0.00410 0.00588 0.00720 0.00833 0.00930 0.01022 0.01100 0.01180 0.01250 0.01316 0.01390 0.01450 |

**Primary OutFlow** Max=0.0072 m³/s @ 0.29 hrs HW=138.276 m (Free Discharge)
└**1=Hydrovex 75VHV-1** (Custom Controls 0.0072 m³/s)



### Pond 18P: Parking



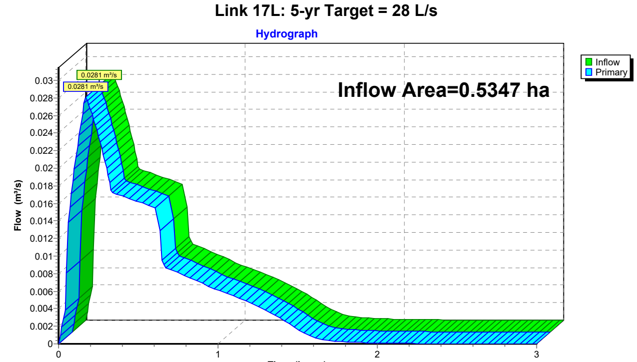


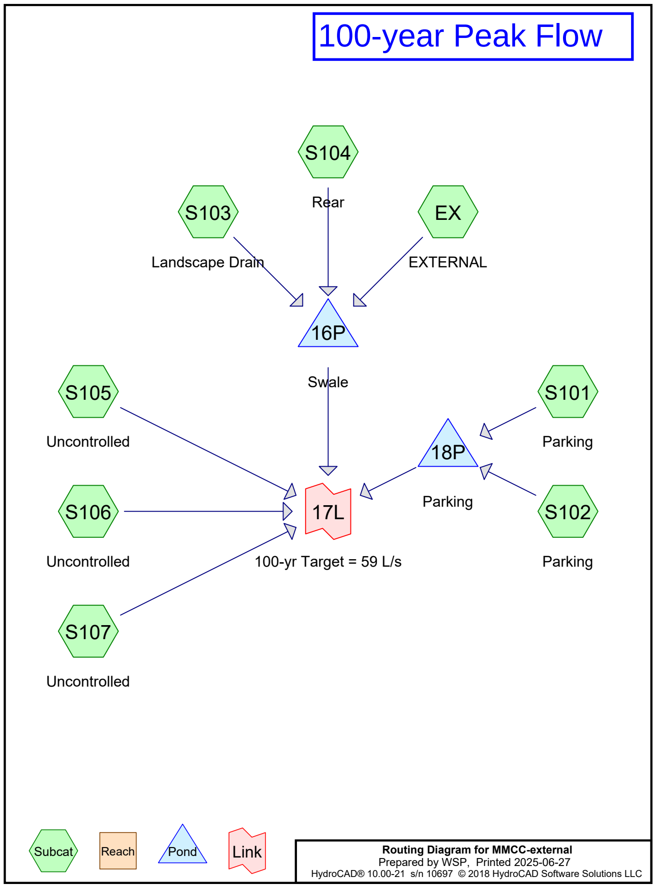

### Summary for Link 17L: 5-yr Target = 28 L/s

Inflow Area = 0.5347 ha, Inflow Depth > 11 mm for 5-Year event
Inflow = 0.0281 m³/s @ 0.17 hrs, Volume= 0.059 Ml
Primary = 0.0281 m³/s @ 0.17 hrs, Volume= 0.059 Ml, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

### Link 17L: 5-yr Target = 28 L/s








### Area Listing (all nodes)

| Area (hectares) | C | Description (subcatchment-numbers) |
|---|---|---|
| 0.2221 | 1.00 | (EX, S101, S102) |
| 0.0512 | 0.86 | (S103) |
| 0.1519 | 0.83 | (S104) |
| 0.0559 | 0.88 | (S105) |
| 0.0277 | 0.30 | (S106) |
| 0.0259 | 0.27 | (S107) |
| **0.5347** | **0.85** | **TOTAL AREA** |



Time span=0.00-3.00 hrs, dt=0.01 hrs, 301 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentEX: EXTERNAL** Runoff Area=0.1104 ha Runoff Depth=36 mm
Tc=10.0 min C=1.00 Runoff=0.0223 m³/s 0.040 Ml

**SubcatchmentS101: Parking** Runoff Area=0.0482 ha Runoff Depth=36 mm
Tc=10.0 min C=1.00 Runoff=0.0097 m³/s 0.017 Ml

**SubcatchmentS102: Parking** Runoff Area=0.0635 ha Runoff Depth=36 mm
Tc=10.0 min C=1.00 Runoff=0.0128 m³/s 0.023 Ml

**SubcatchmentS103: Landscape Drain** Runoff Area=0.0512 ha Runoff Depth=31 mm
Tc=10.0 min C=0.86 Runoff=0.0089 m³/s 0.016 Ml

**SubcatchmentS104: Rear** Runoff Area=0.1519 ha Runoff Depth=30 mm
Tc=10.0 min C=0.83 Runoff=0.0254 m³/s 0.046 Ml

**SubcatchmentS105: Uncontrolled** Runoff Area=0.0559 ha Runoff Depth=32 mm
Tc=10.0 min C=0.88 Runoff=0.0099 m³/s 0.018 Ml

**SubcatchmentS106: Uncontrolled** Runoff Area=0.0277 ha Runoff Depth=11 mm
Tc=10.0 min C=0.30 Runoff=0.0017 m³/s 0.003 Ml

**SubcatchmentS107: Uncontrolled** Runoff Area=0.0259 ha Runoff Depth=10 mm
Tc=10.0 min C=0.27 Runoff=0.0014 m³/s 0.003 Ml

**Pond 16P: Swale** Peak Elev=138.091 m Storage=66.1 m³ Inflow=0.0565 m³/s 0.102 Ml
Outflow=0.0409 m³/s 0.100 Ml

**Pond 18P: Parking** Peak Elev=138.335 m Storage=25.0 m³ Inflow=0.0225 m³/s 0.041 Ml
Outflow=0.0074 m³/s 0.041 Ml

**Link 17L: 100-yr Target = 59 L/s** Inflow=0.0586 m³/s 0.164 Ml
Primary=0.0586 m³/s 0.164 Ml

**Total Runoff Area = 0.5347 ha Runoff Volume = 0.166 Ml Average Runoff Depth = 31 mm**



### Summary for Subcatchment EX: EXTERNAL

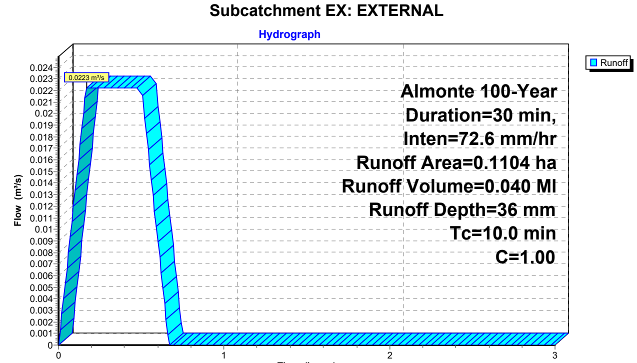
Runoff = 0.0223 m³/s @ 0.17 hrs, Volume= 0.040 Ml, Depth= 36 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 100-Year Duration=30 min, Inten=72.6 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.1104 | 1.00 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | Direct Entry, |

### Subcatchment EX: EXTERNAL



### Summary for Subcatchment S101: Parking

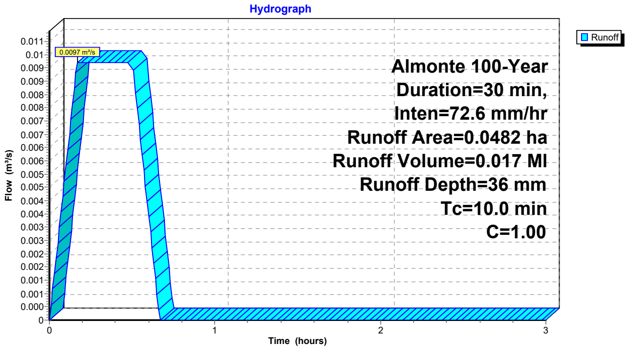
Runoff = 0.0097 m³/s @ 0.17 hrs, Volume= 0.017 Ml, Depth= 36 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 100-Year Duration=30 min, Inten=72.6 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.0482 | 1.00 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | Direct Entry, |

### Subcatchment S101: Parking






### Summary for Subcatchment S102: Parking

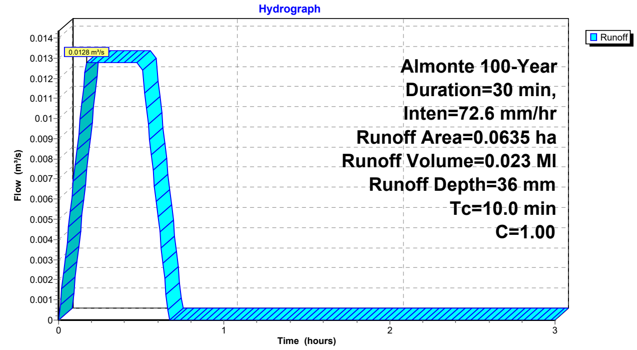
Runoff = 0.0128 m³/s @ 0.17 hrs, Volume= 0.023 Ml, Depth= 36 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 100-Year Duration=30 min, Inten=72.6 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.0635 | 1.00 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | Direct Entry, |

### Subcatchment S102: Parking






### Summary for Subcatchment S103: Landscape Drain

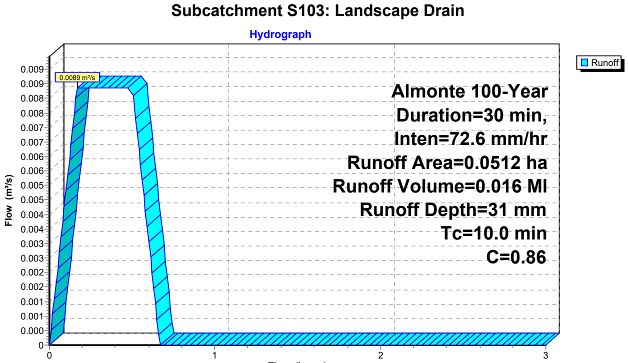
Runoff = 0.0089 m³/s @ 0.17 hrs, Volume= 0.016 Ml, Depth= 31 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 100-Year Duration=30 min, Inten=72.6 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.0512 | 0.86 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | Direct Entry, |

### Subcatchment S103: Landscape Drain






### Summary for Subcatchment S104: Rear

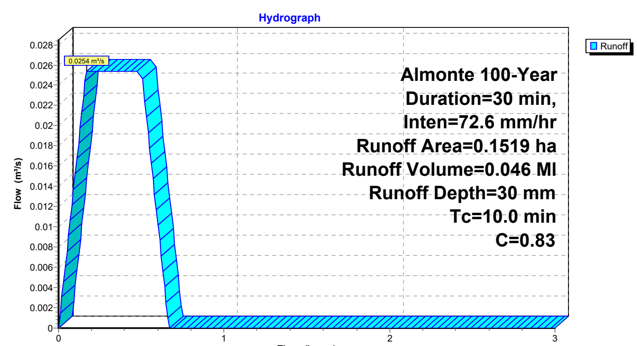
Runoff = 0.0254 m³/s @ 0.17 hrs, Volume= 0.046 Ml, Depth= 30 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 100-Year Duration=30 min, Inten=72.6 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.1519 | 0.83 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | Direct Entry, |

### Subcatchment S104: Rear



### Summary for Subcatchment S105: Uncontrolled

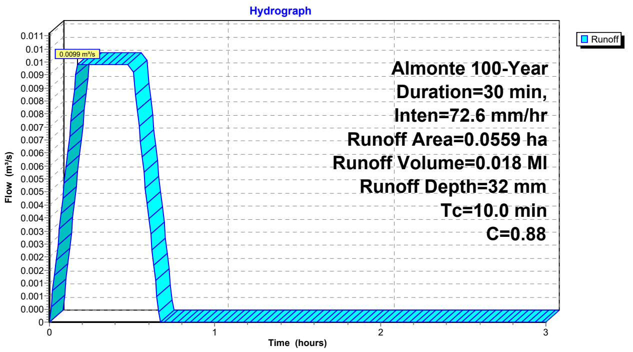
Runoff = 0.0099 m³/s @ 0.17 hrs, Volume= 0.018 Ml, Depth= 32 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 100-Year Duration=30 min, Inten=72.6 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.0559 | 0.88 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | **Direct Entry,** |

### Subcatchment S105: Uncontrolled






### Summary for Subcatchment S106: Uncontrolled

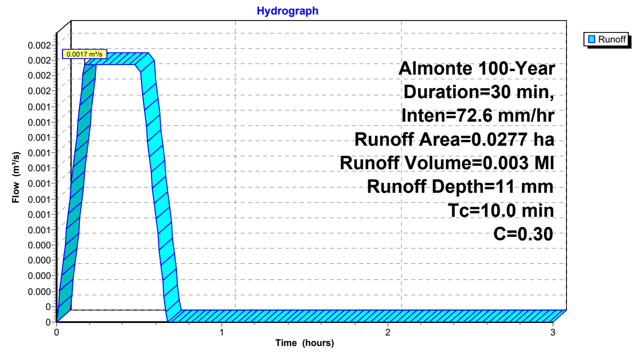
Runoff = 0.0017 m³/s @ 0.17 hrs, Volume= 0.003 Ml, Depth= 11 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 100-Year Duration=30 min, Inten=72.6 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.0277 | 0.30 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | **Direct Entry,** |

### Subcatchment S106: Uncontrolled






### Summary for Subcatchment S107: Uncontrolled

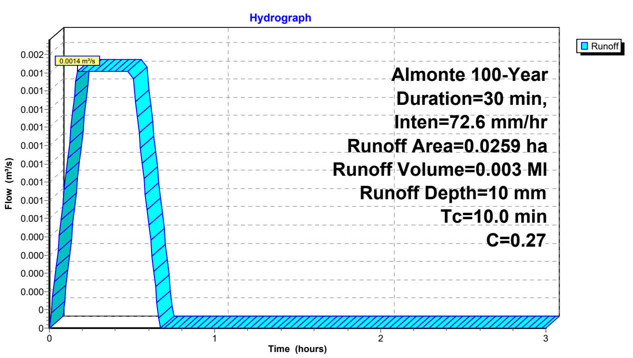
Runoff = 0.0014 m³/s @ 0.17 hrs, Volume= 0.003 Ml, Depth= 10 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 100-Year Duration=30 min, Inten=72.6 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.0259 | 0.27 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | **Direct Entry,** |

### Subcatchment S107: Uncontrolled






### Summary for Pond 16P: Swale

Inflow Area = 0.3135 ha, Inflow Depth = 32 mm for 100-Year event
Inflow = 0.0565 m³/s @ 0.17 hrs, Volume= 0.102 Ml
Outflow = 0.0409 m³/s @ 0.55 hrs, Volume= 0.100 Ml, Atten= 28%, Lag= 22.6 min
Primary = 0.0409 m³/s @ 0.55 hrs, Volume= 0.100 Ml

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 138.091 m @ 0.55 hrs Surf.Area= 122.0 m² Storage= 66.1 m³

Plug-Flow detention time= 41.2 min calculated for 0.100 Ml (98% of inflow)
Center-of-Mass det. time= 40.9 min ( 60.9 - 20.0 )

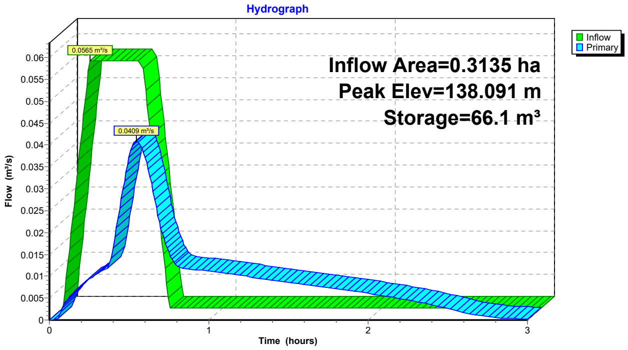
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 136.750 m | 26.9 m³ | **1,600 mm W x 1,050 mm H Box Pipe Storage**<br>L= 40.00 m S= 0.0050 m/m<br>67.2 m³ Overall x 40.0% Voids |
| #2 | 137.800 m | 17.4 m³ | **Custom Stage Data**Listed below |
| #3 | 136.950 m | 24.4 m³ | **1,000 mm W x 1,050 mm H Box Pipe Storage**<br>L= 58.00 m S= 0.0050 m/m<br>60.9 m³ Overall x 40.0% Voids |
| | | 68.6 m³ | Total Available Storage |

| Elevation (meters) | Cum.Store (cubic-meters) |
|---|---|
| 137.800 | 0.0 |
| 137.850 | 0.3 |
| 137.900 | 1.5 |
| 137.950 | 3.7 |
| 138.000 | 7.2 |
| 138.050 | 12.2 |
| 138.100 | 17.4 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 136.900 m | **75 mm Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 137.950 m | **0.30 m long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>0.20 m Crest Height |

**Primary OutFlow** Max=0.0409 m³/s @ 0.55 hrs HW=138.091 m (Free Discharge)
**1=Orifice/Grate** (Orifice Controls 0.0126 m³/s @ 2.85 m/s)
**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.0283 m³/s @ 0.74 m/s)

### Pond 16P: Swale






### Summary for Pond 18P: Parking

Inflow Area = 0.1117 ha, Inflow Depth = 36 mm for 100-Year event
Inflow = 0.0225 m³/s @ 0.17 hrs, Volume= 0.041 Ml
Outflow = 0.0074 m³/s @ 0.61 hrs, Volume= 0.041 Ml, Atten= 67%, Lag= 26.5 min
Primary = 0.0074 m³/s @ 0.61 hrs, Volume= 0.041 Ml

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 138.335 m @ 0.61 hrs Surf.Area= 363.0 m² Storage= 25.0 m³

Plug-Flow detention time= 29.7 min calculated for 0.041 Ml (100% of inflow)
Center-of-Mass det. time= 29.6 min ( 49.6 - 20.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 138.150 m | 54.1 m³ | **Custom Stage Data (Prismatic)** Listed below (Recalc) |
| #2 | 136.770 m | 0.6 m³ | **200 mm Round Pipe Storage** L= 18.55 m S= 0.0100 m/m |
| | | 54.7 m³ | Total Available Storage |

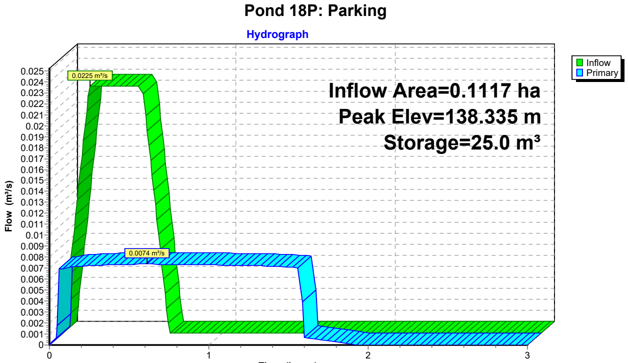
| Elevation (meters) | Surf.Area (sq-meters) | Inc.Store (cubic-meters) | Cum.Store (cubic-meters) |
|---|---|---|---|
| 138.150 | 0.0 | 0.0 | 0.0 |
| 138.200 | 28.1 | 0.7 | 0.7 |
| 138.250 | 111.7 | 3.5 | 4.2 |
| 138.300 | 261.7 | 9.3 | 13.5 |
| 138.350 | 407.1 | 16.7 | 30.3 |
| 138.400 | 545.8 | 23.8 | 54.1 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 136.760 m | **Hydrovex 75VHV-1** Head (meters) 0.000 0.250 0.360 0.500 1.000 1.500 2.000 2.500 3.000 3.500 4.000 4.500 5.000 5.500 6.000 Disch. (m³/s) 0.00000 0.00070 0.00300 0.00410 0.00588 0.00720 0.00833 0.00930 0.01022 0.01100 0.01180 0.01250 0.01316 0.01390 0.01450 |

**Primary OutFlow** Max=0.0074 m³/s @ 0.61 hrs HW=138.335 m (Free Discharge)
└**1=Hydrovex 75VHV-1** (Custom Controls 0.0074 m³/s)



### Pond 18P: Parking



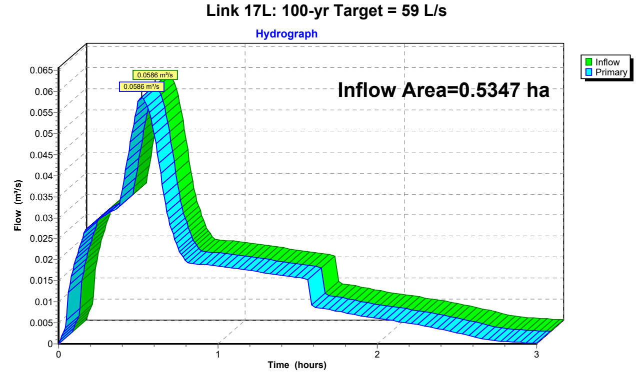


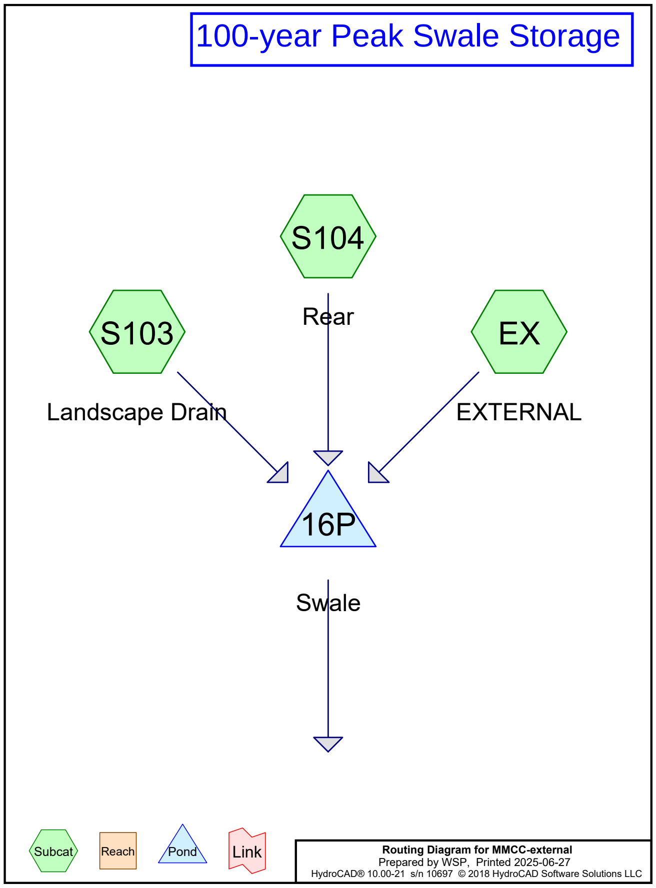

### Summary for Link 17L: 100-yr Target = 59 L/s

Inflow Area = 0.5347 ha, Inflow Depth > 31 mm for 100-Year event
Inflow = 0.0586 m³/s @ 0.52 hrs, Volume= 0.164 Ml
Primary = 0.0586 m³/s @ 0.52 hrs, Volume= 0.164 Ml, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

### Link 17L: 100-yr Target = 59 L/s








**Area Listing (selected nodes)**

| Area (hectares) | C | Description (subcatchment-numbers) |
|---|---|---|
| 0.1104 | 1.00 | (EX) |
| 0.0512 | 0.86 | (S103) |
| 0.1519 | 0.83 | (S104) |
| **0.3135** | **0.89** | **TOTAL AREA** |



Time span=0.00-3.00 hrs, dt=0.01 hrs, 301 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentEX: EXTERNAL** — Runoff Area=0.1104 ha Runoff Depth=36 mm
Tc=10.0 min C=1.00 Runoff=0.0223 m³/s 0.040 Ml

**SubcatchmentS103: Landscape Drain** — Runoff Area=0.0512 ha Runoff Depth=31 mm
Tc=10.0 min C=0.86 Runoff=0.0089 m³/s 0.016 Ml

**SubcatchmentS104: Rear** — Runoff Area=0.1519 ha Runoff Depth=30 mm
Tc=10.0 min C=0.83 Runoff=0.0254 m³/s 0.046 Ml

**Pond 16P: Swale** — Peak Elev=138.091 m Storage=66.1 m³ Inflow=0.0565 m³/s 0.102 Ml
Outflow=0.0409 m³/s 0.100 Ml

**Total Runoff Area = 0.3135 ha Runoff Volume = 0.102 Ml Average Runoff Depth = 32 mm**



**Summary for Subcatchment EX: EXTERNAL**

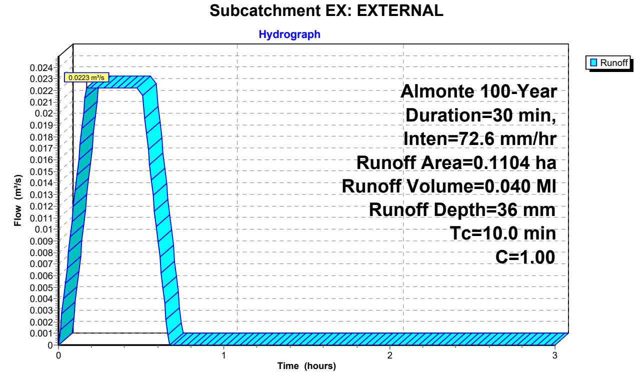
Runoff = 0.0223 m³/s @ 0.17 hrs, Volume= 0.040 Ml, Depth= 36 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 100-Year Duration=30 min, Inten=72.6 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.1104 | 1.00 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | Direct Entry, |

**Subcatchment EX: EXTERNAL**



## Summary for Subcatchment S103: Landscape Drain

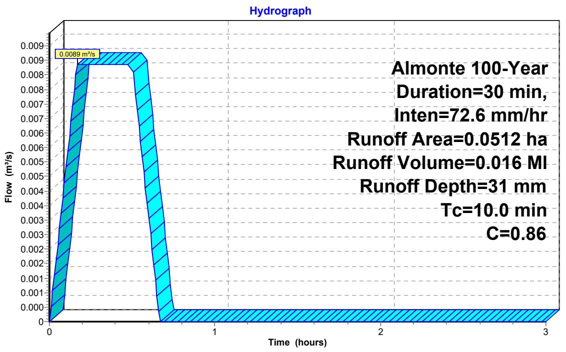
Runoff = 0.0089 m³/s @ 0.17 hrs, Volume= 0.016 Ml, Depth= 31 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 100-Year Duration=30 min, Inten=72.6 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.0512 | 0.86 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | **Direct Entry,** |

### Subcatchment S103: Landscape Drain






## Summary for Subcatchment S104: Rear

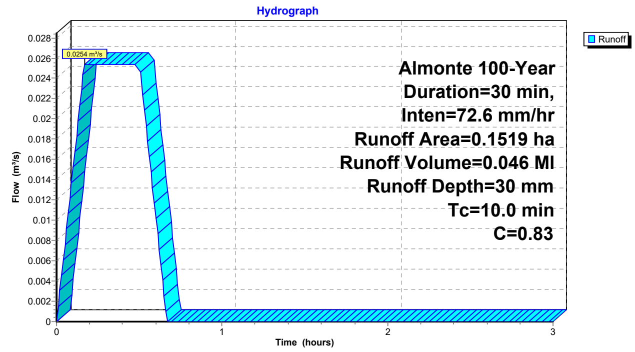
Runoff = 0.0254 m³/s @ 0.17 hrs, Volume= 0.046 Ml, Depth= 30 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 100-Year Duration=30 min, Inten=72.6 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.1519 | 0.83 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | **Direct Entry,** |

### Subcatchment S104: Rear






## Summary for Pond 16P: Swale

Inflow Area = 0.3135 ha, Inflow Depth = 32 mm for 100-Year event
Inflow = 0.0565 m³/s @ 0.17 hrs, Volume= 0.102 Ml
Outflow = 0.0409 m³/s @ 0.55 hrs, Volume= 0.100 Ml, Atten= 28%, Lag= 22.6 min
Primary = 0.0409 m³/s @ 0.55 hrs, Volume= 0.100 Ml

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 138.091 m @ 0.55 hrs Surf.Area= 122.0 m² Storage= 66.1 m³

Plug-Flow detention time= 41.2 min calculated for 0.100 Ml (98% of inflow)
Center-of-Mass det. time= 40.9 min ( 60.9 - 20.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 136.750 m | 26.9 m³ | **1,600 mm W x 1,050 mm H Box Pipe Storage**<br>L= 40.00 m S= 0.0050 m/m<br>67.2 m³ Overall x 40.0% Voids |
| #2 | 137.800 m | 17.4 m³ | **Custom Stage Data**Listed below |
| #3 | 136.950 m | 24.4 m³ | **1,000 mm W x 1,050 mm H Box Pipe Storage**<br>L= 58.00 m S= 0.0050 m/m<br>60.9 m³ Overall x 40.0% Voids |
| | | 68.6 m³ | Total Available Storage |

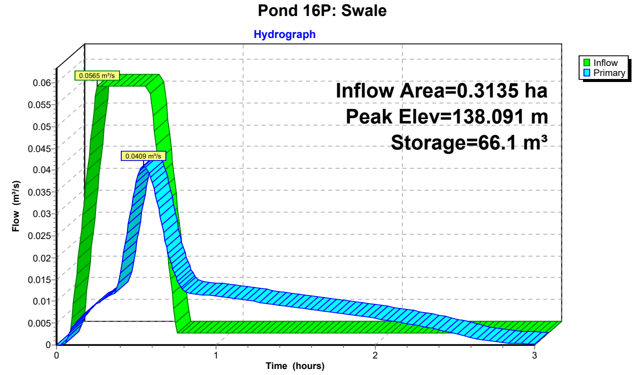
| Elevation (meters) | Cum.Store (cubic-meters) |
|---|---|
| 137.800 | 0.0 |
| 137.850 | 0.3 |
| 137.900 | 1.5 |
| 137.950 | 3.7 |
| 138.000 | 7.2 |
| 138.050 | 12.2 |
| 138.100 | 17.4 |

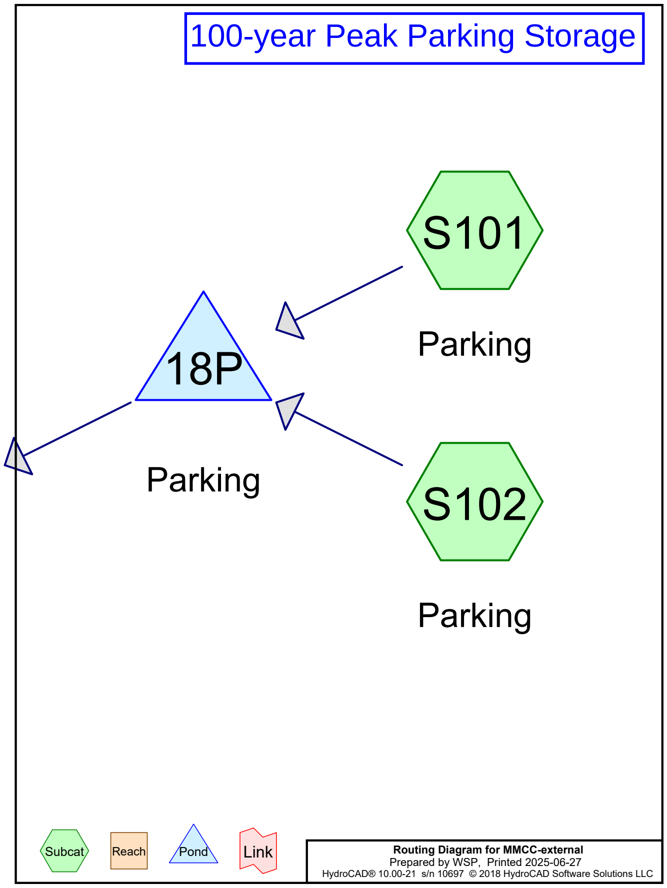
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 136.900 m | **75 mm Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 137.950 m | **0.30 m long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>0.20 m Crest Height |

**Primary OutFlow** Max=0.0409 m³/s @ 0.55 hrs HW=138.091 m (Free Discharge)
└1=**Orifice/Grate** (Orifice Controls 0.0126 m³/s @ 2.85 m/s)
└2=**Sharp-Crested Rectangular Weir**(Weir Controls 0.0283 m³/s @ 0.74 m/s)



### Pond 16P: Swale








**Area Listing (selected nodes)**

| Area (hectares) | C | Description (subcatchment-numbers) |
|---|---|---|
| 0.1117 | 1.00 | (S101, S102) |
| **0.1117** | **1.00** | **TOTAL AREA** |



Time span=0.00-3.00 hrs, dt=0.01 hrs, 301 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentS101: Parking** Runoff Area=0.0482 ha Runoff Depth=36 mm
Tc=10.0 min C=1.00 Runoff=0.0097 m³/s 0.017 Ml

**SubcatchmentS102: Parking** Runoff Area=0.0635 ha Runoff Depth=36 mm
Tc=10.0 min C=1.00 Runoff=0.0128 m³/s 0.023 Ml

**Pond 18P: Parking** Peak Elev=138.335 m Storage=25.0 m³ Inflow=0.0225 m³/s 0.041 Ml
Outflow=0.0074 m³/s 0.041 Ml

**Total Runoff Area = 0.1117 ha Runoff Volume = 0.041 Ml Average Runoff Depth = 36 mm**



**Summary for Subcatchment S101: Parking**

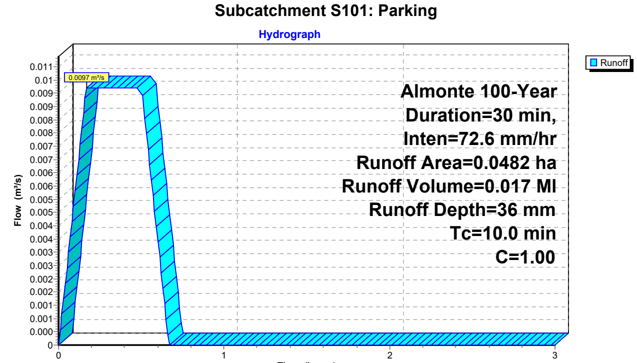
Runoff = 0.0097 m³/s @ 0.17 hrs, Volume= 0.017 Ml, Depth= 36 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 100-Year Duration=30 min, Inten=72.6 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.0482 | 1.00 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | **Direct Entry,** |

**Subcatchment S101: Parking**



## Summary for Subcatchment S102: Parking

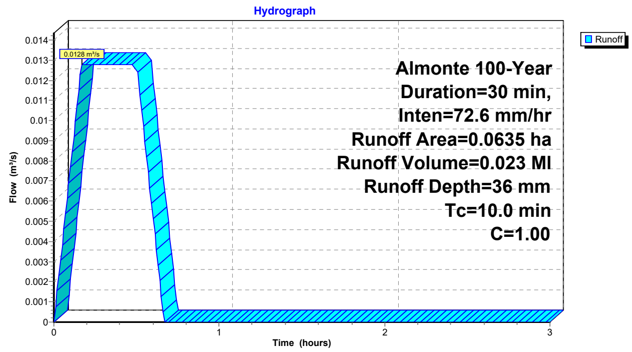
Runoff = 0.0128 m³/s @ 0.17 hrs, Volume= 0.023 Ml, Depth= 36 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Almonte 100-Year Duration=30 min, Inten=72.6 mm/hr

| Area (ha) | C | Description |
|---|---|---|
| 0.0635 | 1.00 | |

| Tc (min) | Length (meters) | Slope (m/m) | Velocity (m/sec) | Capacity (m³/s) | Description |
|---|---|---|---|---|---|
| 10.0 | | | | | **Direct Entry,** |

### Subcatchment S102: Parking






## Summary for Pond 18P: Parking

Inflow Area = 0.1117 ha, Inflow Depth = 36 mm for 100-Year event
Inflow = 0.0225 m³/s @ 0.17 hrs, Volume= 0.041 Ml
Outflow = 0.0074 m³/s @ 0.61 hrs, Volume= 0.041 Ml, Atten= 67%, Lag= 26.5 min
Primary = 0.0074 m³/s @ 0.61 hrs, Volume= 0.041 Ml

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 138.335 m @ 0.61 hrs Surf.Area= 363.0 m² Storage= 25.0 m³

Plug-Flow detention time= 29.7 min calculated for 0.041 Ml (100% of inflow)
Center-of-Mass det. time= 29.6 min ( 49.6 - 20.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 138.150 m | 54.1 m³ | **Custom Stage Data (Prismatic)** Listed below (Recalc) |
| #2 | 136.770 m | 0.6 m³ | **200 mm Round Pipe Storage** L= 18.55 m S= 0.0100 m/m |
| | | 54.7 m³ | Total Available Storage |

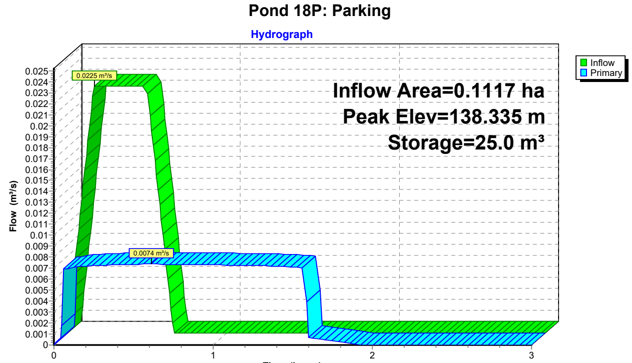
| Elevation (meters) | Surf.Area (sq-meters) | Inc.Store (cubic-meters) | Cum.Store (cubic-meters) |
|---|---|---|---|
| 138.150 | 0.0 | 0.0 | 0.0 |
| 138.200 | 28.1 | 0.7 | 0.7 |
| 138.250 | 111.7 | 3.5 | 4.2 |
| 138.300 | 261.7 | 9.3 | 13.5 |
| 138.350 | 407.1 | 16.7 | 30.3 |
| 138.400 | 545.8 | 23.8 | 54.1 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 136.760 m | **Hydrovex 75VHV-1** Head (meters) 0.000 0.250 0.360 0.500 1.000 1.500 2.000 2.500 3.000 3.500 4.000 4.500 5.000 5.500 6.000 Disch. (m³/s) 0.00000 0.00070 0.00300 0.00410 0.00588 0.00720 0.00833 0.00930 0.01022 0.01100 0.01180 0.01250 0.01316 0.01390 0.01450 |

**Primary OutFlow** Max=0.0074 m³/s @ 0.61 hrs HW=138.335 m (Free Discharge)
└─**1=Hydrovex 75VHV-1** (Custom Controls 0.0074 m³/s)



### Pond 18P: Parking



Stormceptor® EF Sizing Report

**Imbrium® Systems**

**ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION**

06/26/2025

| | |
|---|---|
| Province: | Ontario |
| City: | Mississippi Mills |
| Nearest Rainfall Station: | OTTAWA CDA RCS |
| Climate Station Id: | 6105978 |
| Years of Rainfall Data: | 20 |
| Site Name: | Mississippi Mills Childcare Centre |
| Drainage Area (ha): | 0.11 |
| Runoff Coefficient 'c': | 0.90 |
| Particle Size Distribution: | Fine |
| Target TSS Removal (%): | 80.0 |
| Required Water Quality Runoff Volume Capture (%): | 90.00 |
| Estimated Water Quality Flow Rate (L/s): | 3.20 |
| Oil / Fuel Spill Risk Site? | Yes |
| Upstream Flow Control? | Yes |
| Upstream Orifice Control Flow Rate to Stormceptor (L/s): | 7.00 |
| Peak Conveyance (maximum) Flow Rate (L/s): | |
| Influent TSS Concentration (mg/L): | 100 |
| Estimated Average Annual Sediment Load (kg/yr): | 73 |
| Estimated Average Annual Sediment Volume (L/yr): | 59 |

| | |
|---|---|
| Project Name: | Mississippi Mills Childcare Centre |
| Project Number: | 68157 |
| Designer Name: | Kathryn Kerker |
| Designer Company: | WSP |
| Designer Email: | kathryn.kerker@wsp.com |
| Designer Phone: | 613-690-1206 |
| EOR Name: | |
| EOR Company: | |
| EOR Email: | |
| EOR Phone: | |

**Net Annual Sediment (TSS) Load Reduction Sizing Summary**

| Stormceptor Model | TSS Removal Provided (%) |
|---|---|
| EFO4 | 97 |
| EFO5 | 99 |
| EFO6 | 100 |
| EFO8 | 100 |
| EFO10 | 100 |
| EFO12 | 100 |

**Recommended Stormceptor EFO Model:** **EFO4**

**Estimated Net Annual Sediment (TSS) Load Reduction (%):** **97**

**Water Quality Runoff Volume Capture (%):** **> 90**

## THIRD-PARTY TESTING AND VERIFICATION

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

## PERFORMANCE

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

## PARTICLE SIZE DISTRIBUTION (PSD)

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

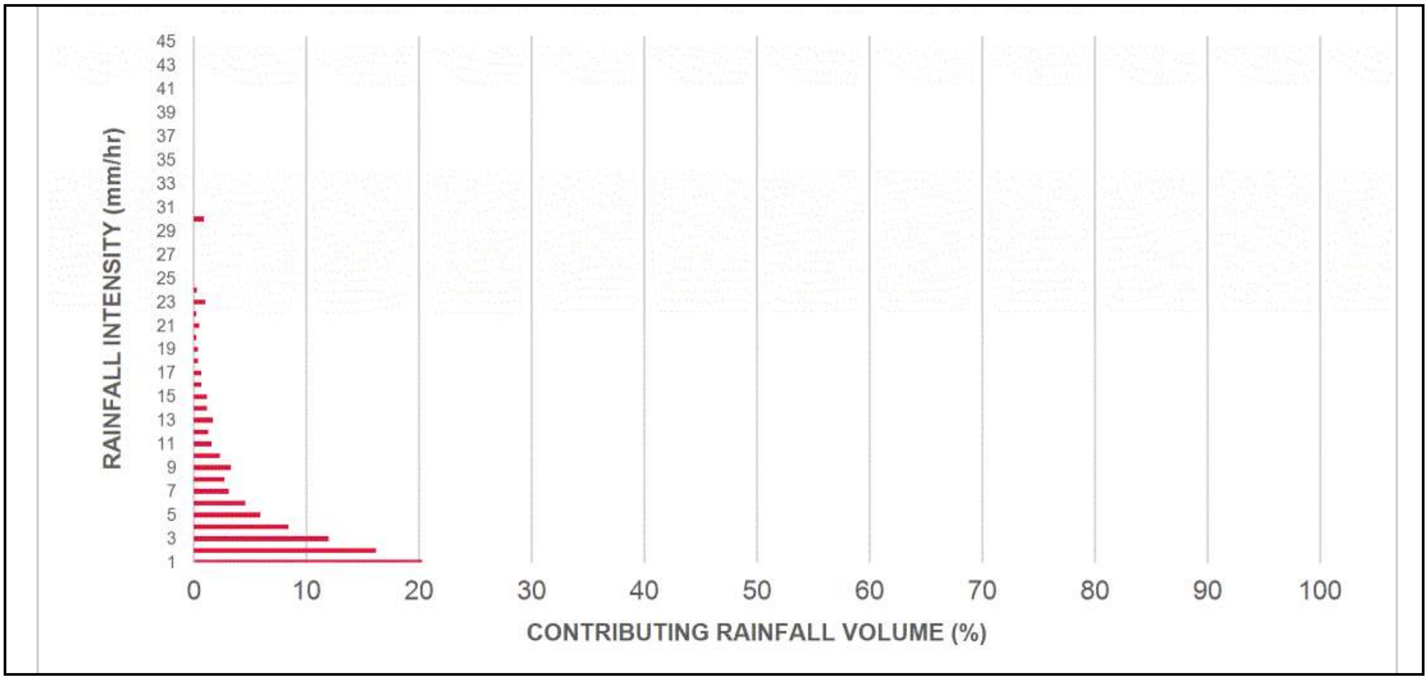
| Particle Size (µm) | Percent Less Than | Particle Size Fraction (µm) | Percent |
|---|---|---|---|
| 1000 | 100 | 500-1000 | 5 |
| 500 | 95 | 250-500 | 5 |
| 250 | 90 | 150-250 | 15 |
| 150 | 75 | 100-150 | 15 |
| 100 | 60 | 75-100 | 10 |
| 75 | 50 | 50-75 | 5 |
| 50 | 45 | 20-50 | 10 |
| 20 | 35 |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

## Upstream Flow Controlled Results

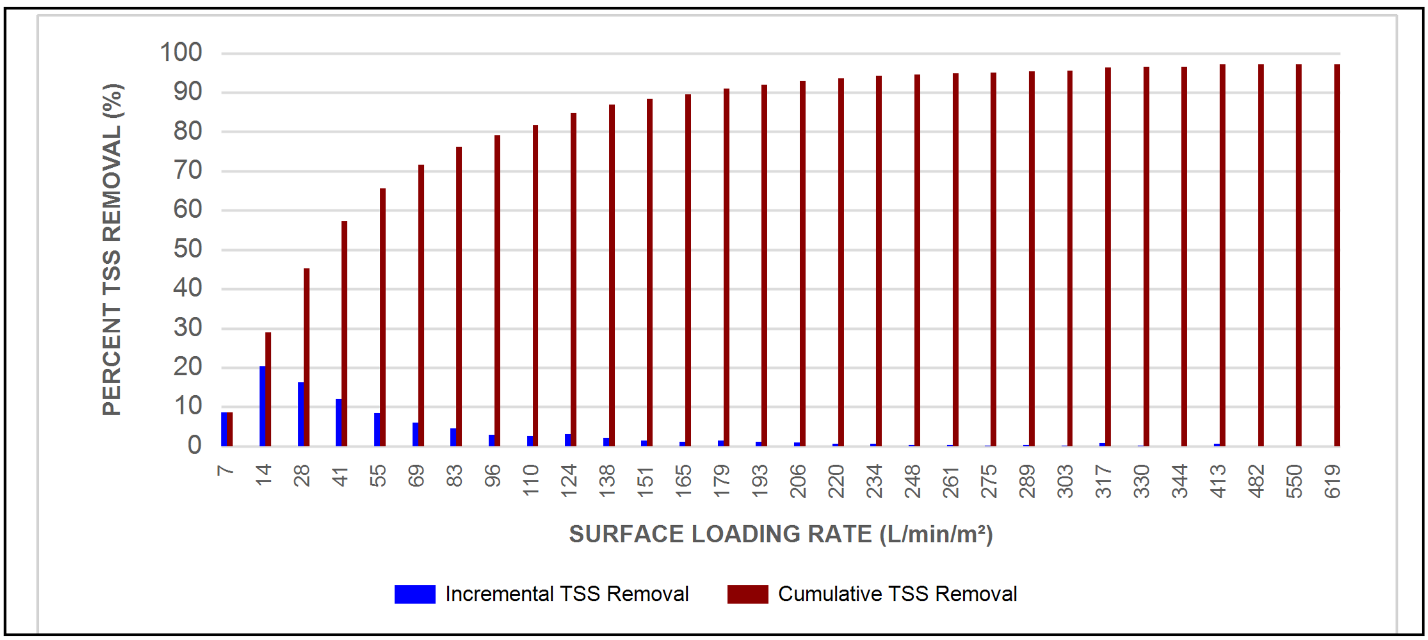
| Rainfall Intensity (mm / hr) | Percent Rainfall Volume (%) | Cumulative Rainfall Volume (%) | Flow Rate (L/s) | Flow Rate (L/min) | Surface Loading Rate (L/min/m²) | Removal Efficiency (%) | Incremental Removal (%) | Cumulative Removal (%) |
|---|---|---|---|---|---|---|---|---|
| 0.50 | 8.6 | 8.6 | 0.14 | 8.0 | 7.0 | 100 | 8.6 | 8.6 |
| 1.00 | 20.3 | 29.0 | 0.28 | 17.0 | 14.0 | 100 | 20.3 | 29.0 |
| 2.00 | 16.2 | 45.2 | 0.55 | 33.0 | 28.0 | 100 | 16.2 | 45.2 |
| 3.00 | 12.0 | 57.2 | 0.83 | 50.0 | 41.0 | 100 | 12.0 | 57.2 |
| 4.00 | 8.4 | 65.6 | 1.10 | 66.0 | 55.0 | 100 | 8.4 | 65.6 |
| 5.00 | 5.9 | 71.6 | 1.38 | 83.0 | 69.0 | 100 | 5.9 | 71.6 |
| 6.00 | 4.6 | 76.2 | 1.65 | 99.0 | 83.0 | 98 | 4.6 | 76.1 |
| 7.00 | 3.1 | 79.3 | 1.93 | 116.0 | 96.0 | 97 | 3.0 | 79.1 |
| 8.00 | 2.7 | 82.0 | 2.20 | 132.0 | 110.0 | 95 | 2.6 | 81.7 |
| 9.00 | 3.3 | 85.3 | 2.48 | 149.0 | 124.0 | 93 | 3.1 | 84.8 |
| 10.00 | 2.3 | 87.6 | 2.75 | 165.0 | 138.0 | 92 | 2.1 | 86.9 |
| 11.00 | 1.6 | 89.2 | 3.03 | 182.0 | 151.0 | 89 | 1.4 | 88.3 |
| 12.00 | 1.3 | 90.5 | 3.30 | 198.0 | 165.0 | 88 | 1.2 | 89.5 |
| 13.00 | 1.7 | 92.2 | 3.58 | 215.0 | 179.0 | 87 | 1.5 | 91.0 |
| 14.00 | 1.2 | 93.5 | 3.85 | 231.0 | 193.0 | 84 | 1.0 | 92.0 |
| 15.00 | 1.2 | 94.6 | 4.13 | 248.0 | 206.0 | 83 | 1.0 | 93.0 |
| 16.00 | 0.7 | 95.3 | 4.40 | 264.0 | 220.0 | 82 | 0.6 | 93.5 |
| 17.00 | 0.7 | 96.1 | 4.68 | 281.0 | 234.0 | 82 | 0.6 | 94.2 |
| 18.00 | 0.4 | 96.5 | 4.95 | 297.0 | 248.0 | 81 | 0.3 | 94.5 |
| 19.00 | 0.4 | 96.9 | 5.23 | 314.0 | 261.0 | 80 | 0.3 | 94.8 |
| 20.00 | 0.2 | 97.1 | 5.50 | 330.0 | 275.0 | 80 | 0.2 | 95.0 |
| 21.00 | 0.5 | 97.5 | 5.78 | 347.0 | 289.0 | 79 | 0.4 | 95.3 |
| 22.00 | 0.2 | 97.8 | 6.05 | 363.0 | 303.0 | 78 | 0.2 | 95.5 |
| 23.00 | 1.0 | 98.8 | 6.33 | 380.0 | 317.0 | 78 | 0.8 | 96.3 |
| 24.00 | 0.3 | 99.1 | 6.61 | 396.0 | 330.0 | 77 | 0.2 | 96.5 |
| 25.00 | 0.9 | 100.0 | 6.88 | 413.0 | 344.0 | 77 | 0.7 | 97.2 |
| 30.00 | 0.0 | 100.0 | 7.00 | 420.0 | 350.0 | 76 | 0.0 | 97.2 |
| 35.00 | 0.0 | 100.0 | 7.00 | 420.0 | 350.0 | 76 | 0.0 | 97.2 |
| 40.00 | 0.0 | 100.0 | 7.00 | 420.0 | 350.0 | 76 | 0.0 | 97.2 |
| 45.00 | 0.0 | 100.0 | 7.00 | 420.0 | 350.0 | 76 | 0.0 | 97.2 |
| **Estimated Net Annual Sediment (TSS) Load Reduction =** | | | | | | | | **97 %** |

*Climate Station ID*: 6105978 *Years of Rainfall Data*: 20

## RAINFALL DATA FROM OTTAWA CDA RCS RAINFALL STATION




## INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



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

## SCOUR PREVENTION AND ONLINE CONFIGURATION

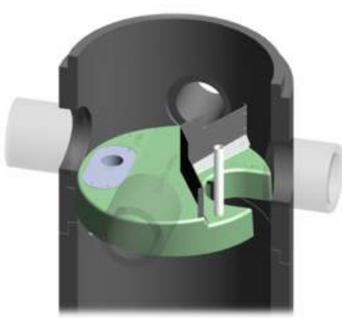
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test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

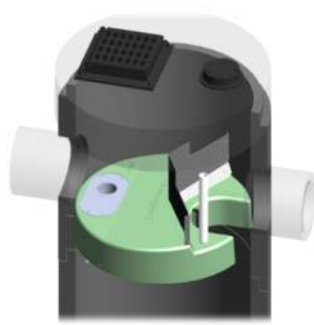
## DESIGN FLEXIBILITY

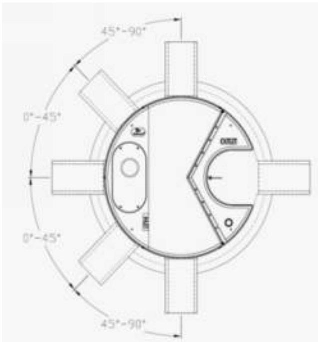
►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend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

## OIL CAPTURE AND RETENTION

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







**INLET-TO-OUTLET DROP**
Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.
0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.
45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

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

**Pollutant Capacity**

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

*Increased sump depth may be added to increase sediment storage capacity
** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/$ft^3$ )

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

**STANDARD STORMCEPTOR EF/EFO DRAWINGS**
For standard details, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

**STANDARD STORMCEPTOR EF/EFO SPECIFICATION**
For specifications, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

## STANDARD PERFORMANCE SPECIFICATION FOR “OIL GRIT SEPARATOR” (OGS) STORMWATER QUALITY TREAMENT DEVICE

### PART 1 – GENERAL

1.1 WORK INCLUDED

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

1.2 REFERENCE STANDARDS & PROCEDURES

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

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

1.3 SUBMITTALS

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

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

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

### PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

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

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

### PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

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

3.2 SIZING METHODOLOGY

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

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

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

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

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

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

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

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

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

3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid

Re-entrainment Simulation Testing in accordance with the Canadian ETV **Program's Procedure for Laboratory Testing of Oil-Grit Separators,** with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to assess whether light liquids captured after a spill are effectively retained at high flow rates.

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

# APPENDIX

# D

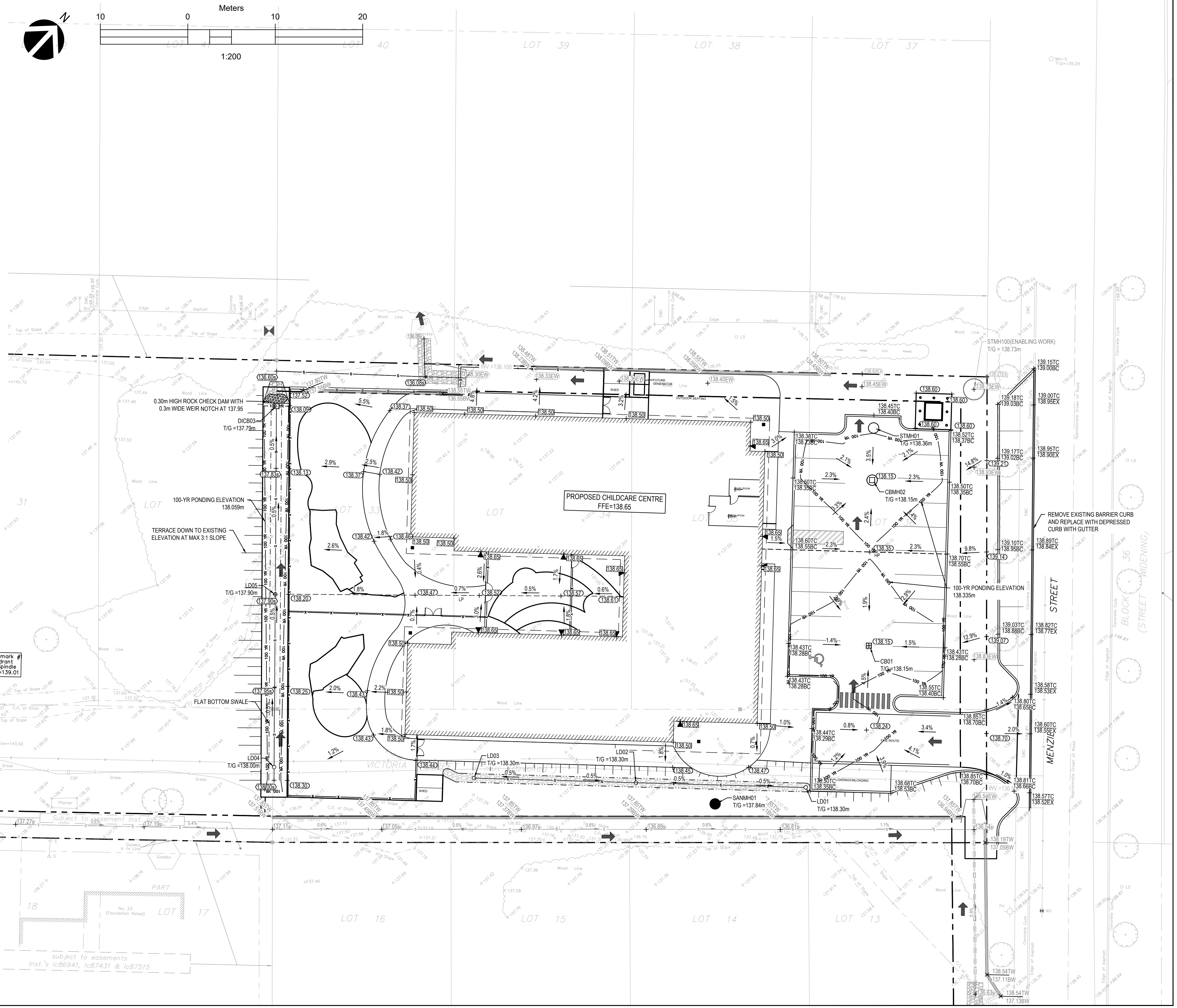
DRAWINGS

**EXISTING LEGEND:**

- PROPERTY BOUNDARY
- CENTERLINE OF ROAD
- EXISTING CURB
- EXISTING TOP OF SLOPE
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER
- EXISTING OVERHEAD WIRE
- EXISTING CABLE
- EXISTING TREE LINE
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING SANITARY MANHOLE
- EXISTING UTILITY POLE
- EXISTING LIGHT STANDARD
- EXISTING TREE

**PROPOSED LEGEND:**

- PROPOSED CURB
- PROPOSED FENCE
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATERMAIN
- PROPOSED SWALE
- HIGH POINT LINE
- HIGH POINT LINE
- 100-YR PONDING LIMIT
- TERRACING LINE
- PROPOSED STORM MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED LANDSCAPE DRAIN
- PROPOSED VALVE BOX
- PROPOSED BUILDING
- PROPOSED BUILDING ENTRANCE
- 138.50 PROPOSED ELEVATION
- 138.50 PROPOSED BUILDING ELEVATION
- 139.05TC 138.90BC PROPOSED CURB ELEVATION
- 2.5% PROPOSED SLOPE
- 138.54TW 137.11BW ENABLING WORK ELEVATION (RETAINING WALL)
- 138.45EW ENABLING WORK ELEVATION (PAVEMENT)
- 136.97s ENABLING WORK ELEVATION (SWALE)
- MAJOR OVERLAND FLOW ARROWS





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WWW.WSP.COM


PROJECT NUMBER: CA0054341.9407

CLIENT: CHANDOS

CLIENT REF. #:

REVISION:

| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 1 | 2025-06-27 | ISSUED FOR SITE PLAN APPLICATION | SM |

SEAL: LICENSED PROFESSIONAL ENGINEER S. MANUYK 100631937 2025-06-27 PROVINCE OF ONTARIO; LICENSED PROFESSIONAL ENGINEER D. B. YANG 100230568 2025-06-27 PROVINCE OF ONTARIO



ORIGINAL SCALE: 1:200
DATE: 2025-06-27
DRAWN BY: JT
CHECKED BY: SM
APPROVED BY: DY

IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE. 25mm

DISCIPLINE: CIVIL

PROJECT: MISSISSIPPI MILLS CHILDCARE CENTRE

TITLE: GRADING PLAN

DRAWING NUMBER: C03
REV.: 1

## EXISTING LEGEND:

- PROPERTY BOUNDARY
- CENTERLINE OF ROAD
- EXISTING CURB
- EXISTING TOP OF SLOPE
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER
- EXISTING OVERHEAD WIRE
- EXISTING CABLE
- EXISTING TREE LINE
- WV EXISTING WATER VALVE
- FH EXISTING FIRE HYDRANT
- MH–S EXISTING SANITARY MANHOLE
- UP EXISTING UTILITY POLE
- LS EXISTING LIGHT STANDARD
- EXISTING TREE

## PROPOSED LEGEND:

- PROPOSED CURB
- PROPOSED FENCE
- ST PROPOSED STORM SEWER
- SA PROPOSED SANITARY SEWER
- W PROPOSED WATERMAIN
- PROPOSED PERFORATED DRAIN
- PROPOSED STORM MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED LANDSCAPE DRAIN
- PROPOSED VALVE BOX
- PROPOSED TEE CONNECTION
- PROPOSED 45° BEND
- PROPOSED BUILDING
- PROPOSED BUILDING ENTRANCE

**STORM STRUCTURE TABLE**

| STRUCTURE | TOP OF GRATE ELEVATION | STRUCTURE INFO | | | | | | | OUTLET | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | INLET | INLET | INLET | OUTLET | SIZE | DETAIL | COVER | DIAMETER | TYPE |
| CB01 | 138.15 | | | | 136.950 | 600X600mm | OPSD 705.010 | OPSD 400.070 | 200 | PVC SDR-35 |
| CBMH02 | 138.15 | | | 136.770 | 136.760 | 1200mm DIA. | OPSD 701.010 | OPSD 400.070 | 200 | PVC SDR-35 |
| STMH01 | 138.36 | | | 136.730 | 136.730 | 1200mm DIA. | EFO4 | OPSD 401.010 TYPE A | 200 | PVC SDR-35 |
| DICB03 | 137.79 | | | 136.900 | 136.900 | 600X600mm | OPSD 705.030 | OPSD 403.010 | 250 | PVC SDR-35 |
| LD01 | 138.30 | | | | 137.400 | 300mm DIA. | DETAIL 2/C02 | DETAIL 2/C02 | 250 | HDPE |
| LD02 | 138.30 | | | 137.300 | 137.300 | 300mm DIA. | DETAIL 2/C02 | DETAIL 2/C02 | 250 | HDPE |
| LD03 | 138.30 | | | 137.200 | 137.200 | 300mm DIA. | DETAIL 2/C02 | DETAIL 2/C02 | 250 | HDPE |
| LD04 | 138.00 | | | 137.100 | 137.100 | 300mm DIA. | DETAIL 2/C02 | DETAIL 2/C02 | 250 | HDPE |
| LD05 | 137.90 | | | 137.000 | 137.000 | 300mm DIA. | DETAIL 2/C02 | DETAIL 2/C02 | 250 | HDPE |

**SAN STRUCTURE TABLE**

| STRUCTURE ID | TOP OF GRATE ELEVATION | INVERT | | | | DESCRIPTION | | |
|---|---|---|---|---|---|---|---|---|
| | | INLET | INLET | INLET | OUTLET | SIZE | COVER | OPSD |
| SANMH01 | 137.84 | | | 136.210 | 136.150 | 1200mm DIA. | OPSD 401.010 TYPE A | OPSD 701.010 |

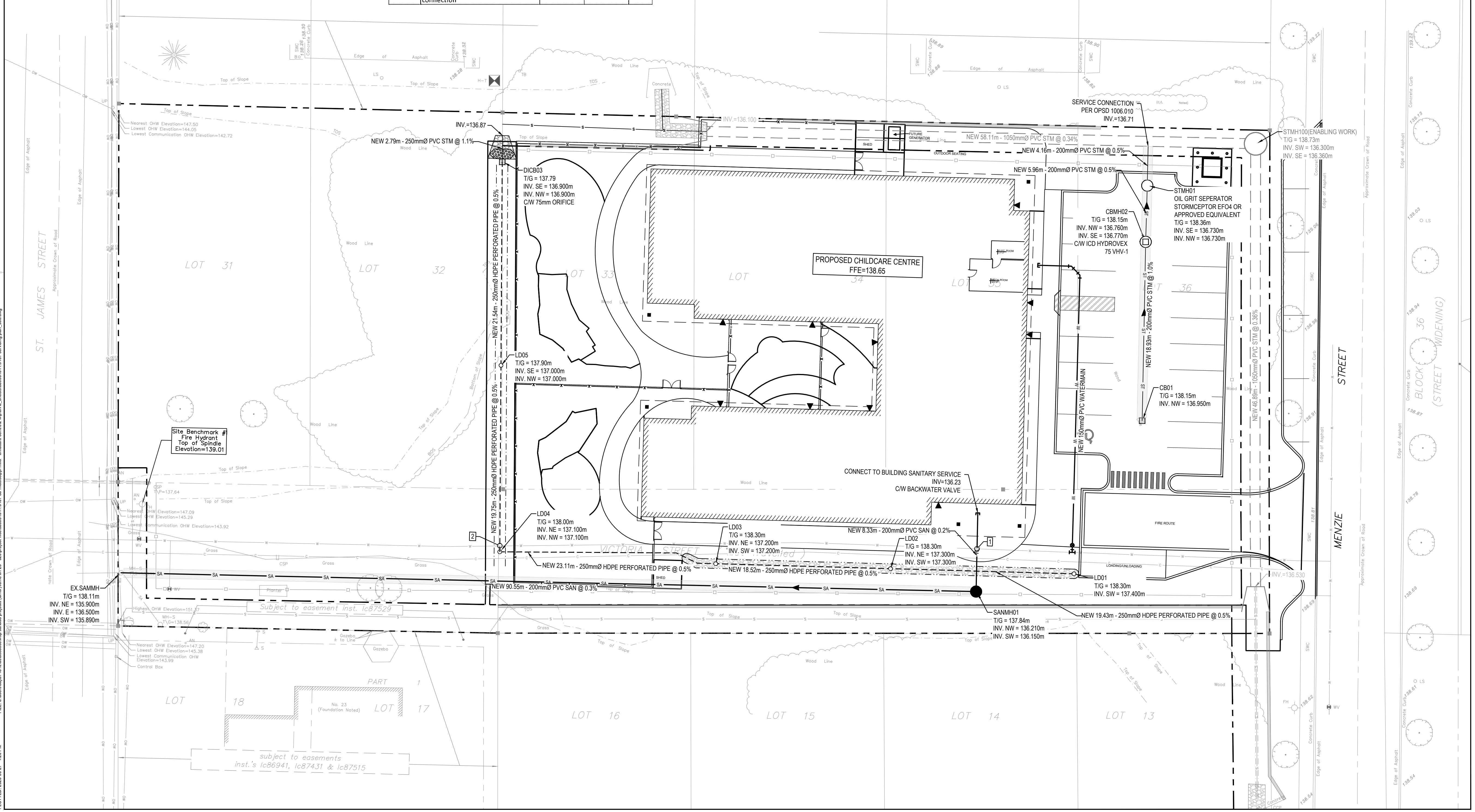
**WATERMAIN SCHEDULE**

| STATION | DESCRIPTION | FINISHED GRADE | TOP OF WATERMAIN | COVER |
|---|---|---|---|---|
| **150mm WATERMAIN SERVICE** | | | | |
| 0+000.00 | Connect to proposed building | 138.52 | 136.123 | 2.40 |
| 0+003.57 | 45° Bend | 138.39 | 135.994 | 2.40 |
| 0+004.87 | 45° Bend | 138.40 | 135.996 | 2.40 |
| 0+033.48 | 200mm VB | 138.37 | 135.969 | 2.40 |
| 0+034.23 | Connect to Ex.300 PVC w/m with Tee connection | 138.39 | 136.211 | 2.18 |

**PIPE CROSSING TABLE**

| | | Obvert | Invert | | | Obvert | Invert | |
|---|---|---|---|---|---|---|---|---|
| 1 | 200mmØ PVC SAN | 136.421 | 136.221 | 1.121 | Clearance Above | 135.100 | 134.800 | *EX.300mmØPVC W/M* |
| 2 | 250mmØ HDPE SUB DRAIN | 137.320 | 137.070 | 2.580 | Clearance Above | 134.490 | 134.680 | *EX.300mmØPVC W/M* |

Meters
10 0 10 20
1:200





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PROJECT NUMBER: CA0054341.9407

CLIENT: CHANDOS

CLIENT REF. #:


REVISION:

| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 1 | 2025-06-27 | ISSUED FOR SITE PLAN APPLICATION | SM |

SEAL:

LICENSED PROFESSIONAL ENGINEER
S. MANUHYK
100631937
2025-06-27
PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER
D. B. YANG
100230568
2025–06–27
PROVINCE OF ONTARIO



ORIGINAL SCALE: 1:200
DATE: 2025-06-27
DRAWN BY: JT
CHECKED BY: SM
APPROVED BY: DY

IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm

DISCIPLINE: CIVIL

PROJECT:
# MISSISSIPPI MILLS CHILDCARE CENTRE

TITLE:
## SERVICING PLAN

DRAWING NUMBER: C04
REV. 1

**EXISTING LEGEND:**

- PROPERTY BOUNDARY
- CENTERLINE OF ROAD
- EXISTING CURB
- EXISTING TOP OF SLOPE
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER
- EXISTING OVERHEAD WIRE
- EXISTING CABLE
- EXISTING TREE LINE
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING SANITARY MANHOLE
- EXISTING UTILITY POLE
- EXISTING LIGHT STANDARD
- EXISTING TREE

**PROPOSED LEGEND:**

- PROPOSED CURB
- PROPOSED FENCE
- PROPOSED SWALE
- PROPOSED STORM MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED VALVE BOX
- PROPOSED LANDSCAPE DRAIN
- PROPOSED BUILDING
- PROPOSED BUILDING ENTRANCE

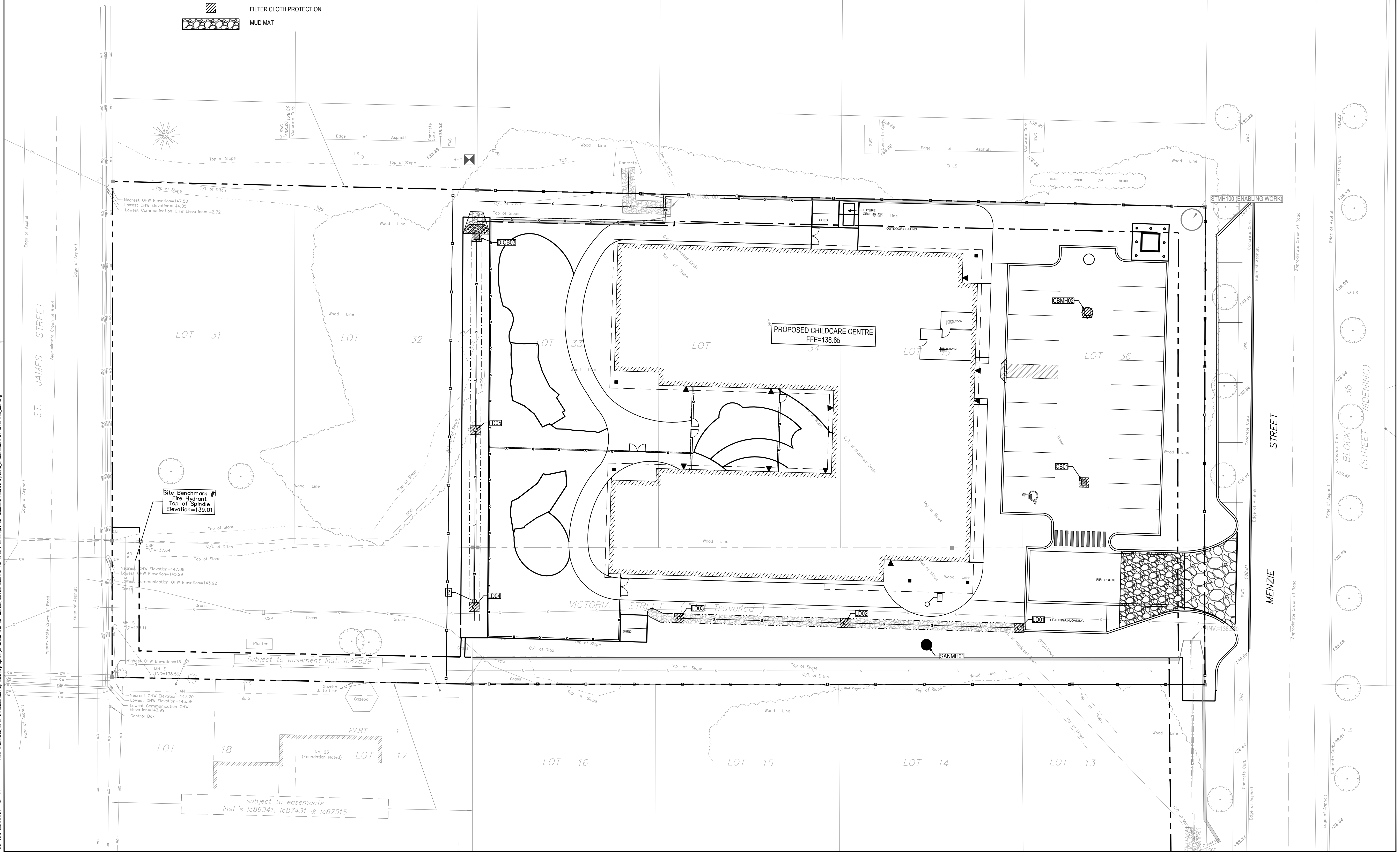
**ESC LEGEND:**

- SILT FENCE
- FILTER CLOTH PROTECTION
- MUD MAT

Meters

10 0 10 20

1:200





WSP CANADA INC.
2611 QUEENSVIEW DR 200, 300,400
OTTAWA, ONTARIO
CANADA K2B 6B7
PHONE: 613-829-2800
WWW.WSP.COM


PROJECT NUMBER: CA0054341.9407

CLIENT: CHANDOS

CLIENT REF. #:

SITE

| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 1 | 2025-06-27 | ISSUED FOR SITE PLAN APPLICATION | SM |

SEAL:

LICENSED PROFESSIONAL ENGINEER — S. MANUKYK — 100631937 — 2025-06-27 — PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER — D. B. YANG — 100230568 — 2025-06-27 — PROVINCE OF ONTARIO



ORIGINAL SCALE: 1:200
DATE: 2025-06-27
DRAWN BY: JT
CHECKED BY: SM
APPROVED BY: DY

IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.

25mm

DISCIPLINE: CIVIL

PROJECT:

MISSISSIPPI MILLS CHILDCARE CENTRE

TITLE:

EROSION AND SEDIMENT CONTROL PLAN

DRAWING NUMBER: C05

REV.: 1


CTB: wsp_kingston_24x36.ctb
PLOTTED: 2025-06-27 - 4:27 PM

# APPENDIX

# E

## BACKGROUND INFORMATION

**Municipality of Mississippi Mills**
Planning Department

14 Bridge Street, PO Box 400
Almonte, ON K0A 1A0
Phone: 613-256-2064 | Fax: 613-256-4887
www.mississippimills.ca

# Pre-Application Consultation Notes

**Subject Property:**

34 Victoria Street, Almonte

**Meeting Details:**

Virtual Meeting via Microsoft Teams, April 25, 2025, 10:00am

**Attendees:**

- James McCormack – Chandos
- Prateek Prashar – Chandos
- Alicia Phinney – Chandos
- Bryson Collines – Chandos
- Wil Foster – Chandos
- Tyler Petherick – Chandos
- Dan Cousineau – Facilities & Project Manager, Municipality of Mississippi Mills
- Drew Brennan - Senior Planner, Municipality of Mississippi Mills
- Melissa Fudge – Planning Technician, Municipality of Mississippi Mills

**Applicant's Proposal:**

- The Applicant is proposing to develop a new 12,000 sq.ft childcare facility to accommodate 151 CWELCC spaces and accompanying staff. The Applicant is acting on behalf of the Municipality in response to being selected as the successful proponent of a competitive RFP process.

**Preliminary Staff Comments:**

**Planning Comments:**

- The fee for a Major Site Plan Control application is $5,481.10 as per the 2025 Fees and Charges lists; please note that application fees are subject to change each year.
- A list of required plans and studies for the required application is provided below.
- The scope of the Transportation Impact Assessment shall be limited to a Brief that provides details on vehicular access, internal and external circulation (including emergency vehicles), and provides an estimate of future multi-modal demand from the development site (i.e. number of generated trips based on available daycare spaces & staffing).

- The Lighting Plan is to include the location of all existing and proposed lighting features. Notations shall be included to call out that exterior lighting fixtures are full cut-off. The Plan shall also provide all illumination levels in lux and demonstrate that illumination levels of 0.0 lux are measured at all property lines. A certification letter from a qualified professional engineer shall be provided attesting that all lighting conforms to the Municipality's Outdoor Illumination By-law.

For questions regarding the comments above, please contact Drew Brennan, Senior planner at dbrennan@mississippimills.ca.

---

Additional information related to planning applications , building permit applications and development charges can be found on our website. Be aware that other fees and permits may be required outside of the planning process.

These pre-application consultation comments are valid for one year. If you intend on submitting your development applications after this time, you may be required to meet for another pre-consultation meeting and the submission requirements may change. You are encouraged to contact us for a follow-up meeting if the plan or concept is further refined.

**List Legend:**

**APP** indicates that the study or plan is required with application submission as part of a complete application.

**POST** indicates that the study, plan or fees may be required in post approval stage to satisfy a condition of approval/draft approval.

| ENGINEERING (Include 1 Hard Copy + PDF) | APP/POST |
|---|---|
| Site Servicing Plan | **APP** |
| Grading and Drainage Plan | **APP** |
| Geotechnical Study (Municipality completing) | **APP** |
| Composite Utility Plan – If new lighting is proposed | |
| Groundwater Impact Study | |
| Servicing Options Report | |
| Wellhead Protection Study | |
| Transportation Impact Assessment (TIA) | **APP** |
| Erosion and Sediment Control Plan / Brief | |
| Stormwater Management Report / Brief | **APP** |

| | |
|---|---|
| Hydrogeological and Terrain Analysis | |
| Hydraulic Watermain Analysis | |
| Noise / Vibration / Odour / Dust Study | |
| Floodplain Management / Slope Stability Study | |
| Hydrogeological Study | |
| Environmental Compliance Approval | |
| As Built Plans | **POST** |

| **PLANNING / DESIGN / SURVEY (Include 1 Hard Copy + PDF)** | **APP/POST** |
|---|---|
| Draft Plan of Subdivision | |
| Draft Plan of Condominium | |
| Site Plan | **APP** |
| Concept Plan Showing Proposed Land Uses and Landscaping | |
| Minimum Distance Separation (MDS) | |
| Cultural Heritage Impact Statement | |
| Shadow Analysis | |
| Visual Impact Study | |
| Landscape Plan | **APP** |
| Planning Rationale | |
| Survey Plan (Municipality completing) | **APP** |
| Agricultural Soils Assessment/Impact Analysis | |
| Archaeological Resource Assessment | |
| Architectural Building Elevation Drawings (Dimensioned) | **APP** |
| Floor Plans | |
| Rural/Village / Urban Design Study | |

| **ENVIRONMENT (Include 1 Hard Copy + PDF)** | **APP/POST** |
|---|---|
| Phase 1 Environmental Site Assessment | **APP (Already Complete)** |
| Phase 2 Environmental Site Assessment<br>(Dependent on the outcome of Phase 1) | **N/A** |
| Record of Site Condition<br>(Dependent on the outcome of Phase 1) | |
| Tree Conservation Report / Tree Preservation Plan | **APP (Already Complete)** |
| Mine Hazard Study / Abandoned Pit or Quarry Study / Site Rehabilitation Plan | |
| Impact Assessment of Adjacent Waste Disposal / Former Landfill Site | |

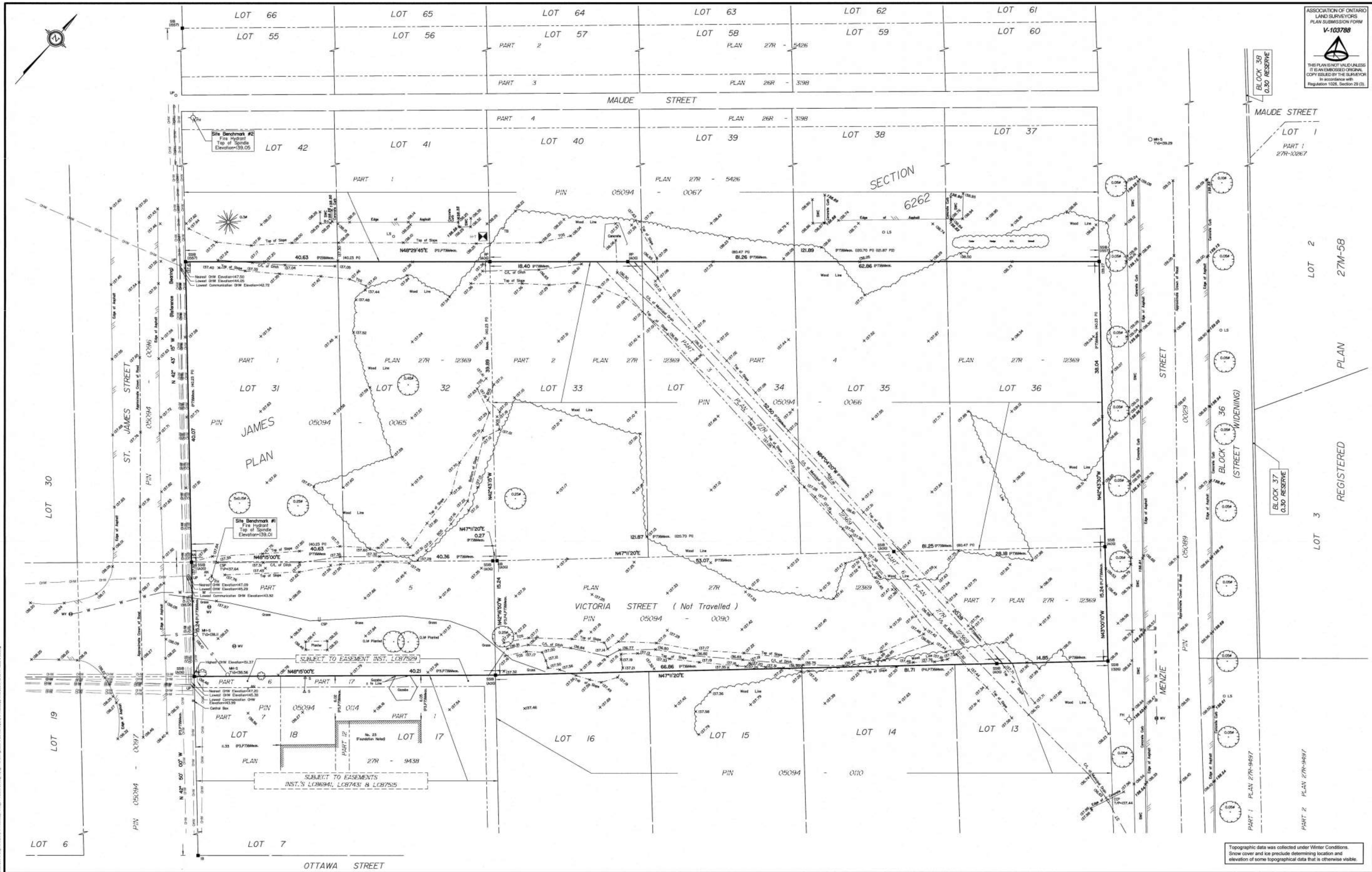
| | |
|---|---|
| Assessment of Landform Features | |
| Mineral Resource Impact Assessment / Aggregate Study | |
| Environmental Impact Statement / Impact Assessment of Endangered Species | |
| Natural Heritage Evaluation / Impact Study | |

| **ADDITIONAL REQUIREMENTS (Include 1 Hard Copy + PDF)** | **APP/POST** |
|---|---|
| Odour Study | |
| Site Lighting Plan and Certification Letter | **APP** |
| Solid Waste Management Plan | **APP** |
| Wildland Fire Hazard Assessment | |

For information and guidance on preparing required studies and plans refer to Section 5.3.17 of the Community Official Plan.

It is important to note that the need for additional studies and plans may result during application review. If following the submission of your application, it is determined that material that is not identified in this checklist is required to achieve complete application status, in accordance with the Planning Act and Official Plan requirements, the Planning Department will notify you of outstanding material required within the required 30-day period. Pre-consultation will not shorten the Municipality's standard processing timelines or guarantee that an application will be approved. It is intended to help educate and inform the applicant about submission requirements as well as municipal processes, policies, and key issues in advance of submitting a formal development application.

This list is valid for one year following the meeting date. If the application is not submitted within this timeframe the applicant must again pre-consult with the Planning Department.




Topographic data was collected under Winter Conditions. Snow cover and ice preclude determining location and elevation of some topographical data that is otherwise visible.

*TOPOGRAPHIC PLAN OF SURVEY OF*

# LOTS 31 to 36 (Inclusive) AND PART OF VICTORIA STREET JAMES SECTION PLAN 6262 FORMERLY TOWN OF ALMONTE MUNICIPALITY OF MISSISSIPPI MILLS COUNTY OF LANARK

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 200

8.0 6.0 4.0 2.0 0 4 8 Metres

## Metric

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

## 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 25th day of March, 2025.

March 26, 2025
Date

T. Hartwick
Ontario Land Surveyor

## Notes & Legend

| | | |
|---|---|---|
| —O— | Denotes | Survey Monument Planted |
| —■— | " | Survey Monument Found |
| SIB | " | Standard Iron Bar |
| SSIB | " | Short Standard Iron Bar |
| IB | " | Iron Bar |
| PB | " | Plastic Bar |
| RP | " | Rock Plug |
| (WIT) | " | Witness |
| Meas. | " | Measured |
| (AOG) | " | Annis, O'Sullivan, Vollebekk Ltd. |
| (P1) | " | Plan 6262 |
| (P2) | " | Plan 27R-5426 |
| (P3) | " | Plan 27R-9438 |
| (P4) | " | (1600) Plan dated October 24, 2006 |
| (P5) | " | Registered Plan 27M-58 |
| (P6) | " | Plan 27R-10267 |
| (P7) | " | Plan 27R-12369 |
| MH-S | " | Maintenance Hole (Sanitary) |
| —— ST —— | " | Underground Storm Sewer |
| —— S —— | " | Underground Sanitary Sewer |
| —— W —— | " | Underground Water |
| —— OHW —— | " | Overhead Wires |
| H-T | " | Hydro Transformer |
| UP | " | Utility Pole |
| AN | " | Anchor |
| LS | " | Light Standard |
| CSP | " | Corrugated Steel Pipe |
| CCP | " | Concrete Pipe |
| FH | " | Fire Hydrant |
| WV | " | Water Valve |
| T/P | " | Top of Pipe |
| T/G | " | Top of Grate |
| TB | " | Unidentified Terminal Box |
| B | " | Bollard |
| S | " | Sign |
| BF | " | Board Fence |
| SWC | " | Concrete Sidewalk |
| TOS | " | Top of Slope |
| BOS | " | Bottom of Slope |
| Inv. | " | Invert |
| Ø | " | Diameter |
| + 65.00 | " | Location of Elevations |
| + 65.00 | " | Top of Concrete Curb Elevation |
| C/L | " | Centreline |
| —— | " | Property Line |
| | " | Deciduous Tree |
| | " | Coniferous Tree |
| | " | Shrub |

Bearings are grid, derived from the easterly limit of St. James Street, having a bearing of N42°43'15"W and are referred to the Central Meridian of MTM Zone 9 NAD-83 (CSRS) (2010).

For comparison purposes, a rotation of 0°18'45" counter-clockwise was applied to bearings on plan (P2), a rotation of 0°13'00" counter-clockwise was applied to bearings on plan (P3), and a rotation of 0°13'45" counter-clockwise was applied to bearings on plan (P4).

## ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

## UTILITY NOTES

1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.



Ontario Land Surveyors
ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079


**PLAN 27R-12369**

Received and deposited

October 10th, 2024

Jayden Kruc

Representative for the Land Registrar for the Land Titles Division of Lanark (No.27)

| SCHEDULE | | | |
|---|---|---|---|
| PART | LOT | PLAN | |
| 1 | ALL OF 31 AND 32 | 6262 | ALL OF 05094-0065 |
| 2 | PART OF 33, 34 AND 35 | 6262 | ALL OF 05094-0066 |
| 3 | PART OF 33, 34 AND 35 | 6262 | ALL OF 05094-0066 |
| 4 | PART OF 33, 34 AND 35 / ALL OF 36 | 6262 | ALL OF 05094-0066 |
| 5 | PART OF VICTORIA STREET | 6262 | PART OF 05094-0090 |
| 6 | PART OF VICTORIA STREET | 6262 | PART OF 05094-0090 |
| 7 | PART OF VICTORIA STREET | 6262 | PART OF 05094-0090 |

Parts 2, 3 and 4: Comprise all of PIN 05094-0066

*PLAN OF SURVEY OF*

# LOTS 31 to 36 (Inclusive) AND PART OF VICTORIA STREET JAMES SECTION PLAN 6262 FORMERLY TOWN OF ALMONTE MUNICIPALITY OF MISSISSIPPI MILLS COUNTY OF LANARK

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 300

12 9 6 3 0 6 12 Metres

The intended plot size of the plan is 914 mm in width by 610 mm in height when plotted at a scale of 1:300.

Metric

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

## 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 Land Titles Act and the regulations made under them.
2. The survey was completed on the 8th day of October, 2024.

October 9, 2024 — Date

T. Hartwick — Ontario Land Surveyor

This plan of survey relates to AOLS Plan Submission Form Number V-84407.

## Notes & Legend

| | | |
|---|---|---|
| —□— | Denotes | Survey Monument Planted |
| —■— | " | Survey Monument Found |
| SIB | " | Standard Iron Bar |
| SSIB | " | Short Standard Iron Bar |
| IB | " | Iron Bar |
| RP | " | Rock Plug |
| (WIT) | " | Witness |
| Meas. | " | Measured |
| (AOG) | " | Annis, O'Sullivan, Vollebekk Ltd. |
| (P1) | " | Plan 6262 |
| (P2) | " | Plan 27R-5426 |
| (P3) | " | Plan 27R-9438 |
| (P4) | " | (1600) Plan dated October 24, 2006 |
| (P5) | " | Registered Plan 27M-58 |
| (P6) | " | Plan 27R-10267 |

Distances shown on this plan are ground distances and can be converted to grid distances by multiplying by the combined scale factor of 0.999886.

Bearings are grid, derived from the easterly limit of St. James Street, having a bearing of N42°46'00"W and are referred to the Central Meridian of MTM Zone 9 NAD-83 (CSRS) (2010).

For comparison purposes, a rotation of 0°18'45" counter-clockwise was applied to bearings on plan (P2), a rotation of 0°13'00" counter-clockwise was applied to bearings on plan (P3), and a rotation of 0°13'45" counter-clockwise was applied to bearings on plan (P4).

Coordinates are derived from Can-Net 2016 Real Time Network GPS observations and are referred to the Central Meridian of MTM Zone 9 NAD-83 (CSRS) (2010).

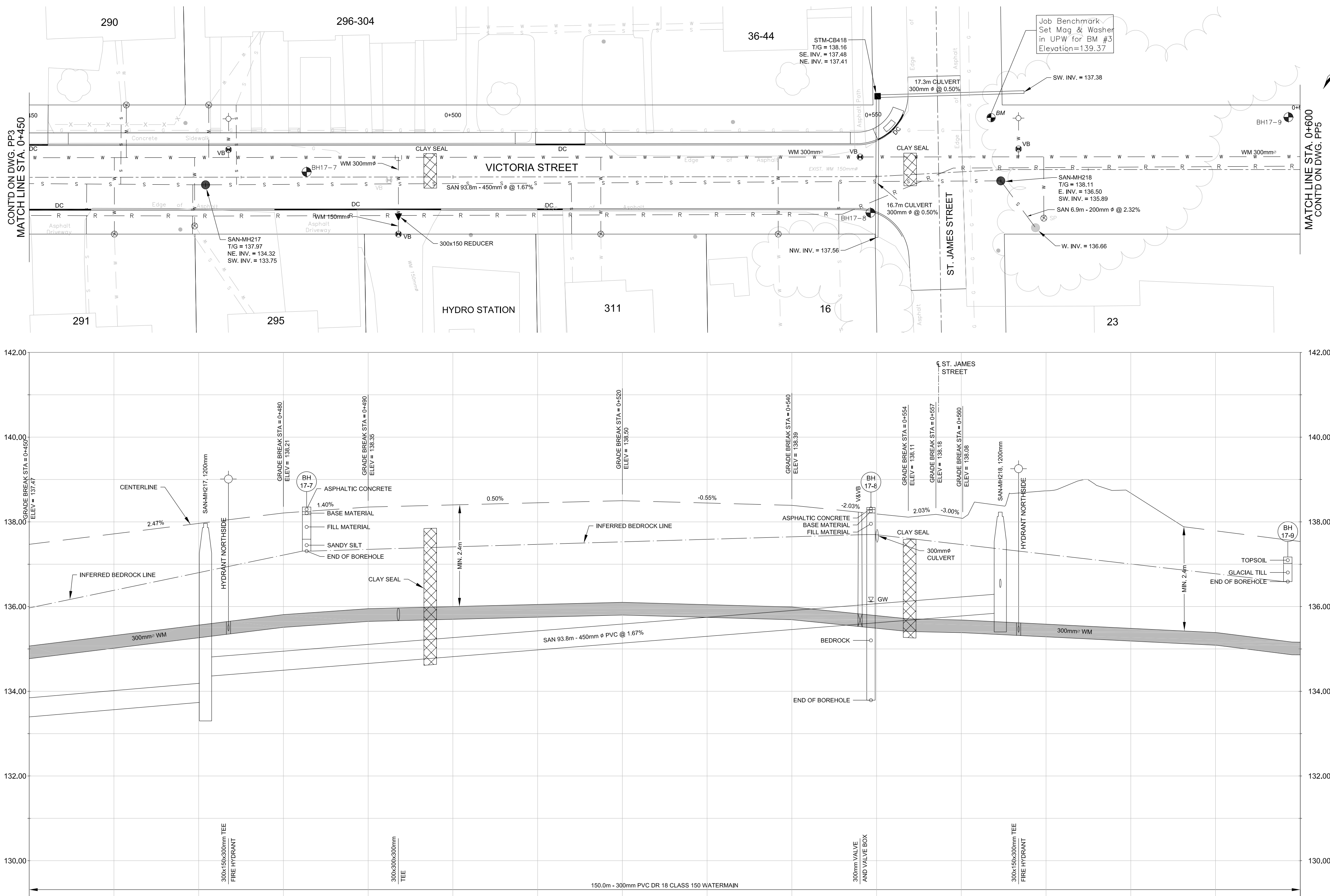
Coordinate values are to urban accuracy in accordance with O. Reg. 216/10.

| | | | | |
|---|---|---|---|---|
| . Point A | Northing | 5010365.26 | Easting | 329311.26 |
| . Point B | Northing | 5010534.79 | Easting | 329154.46 |

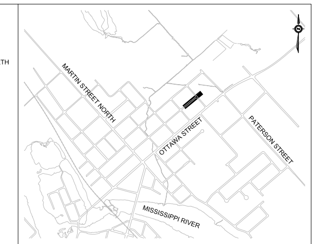
Caution: Coordinates cannot, in themselves, be used to re-establish corners or boundaries shown on this plan.


ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com
Ontario Land Surveyors


Job No. 25448-24 MississippiMills Lt31-36 Pl6262 R F | ISW




| | 0+460 | | 0+480 | | 0+500 | | 0+520 | | 0+540 | | 0+560 | | 0+580 | | 0+600 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ℄ PROFILE | | | | | | | | | | | | | | | |
| TOP OF WATERMAIN | 135.32 | 135.56 | 135.81 | 135.95 | 136.00 | 136.05 | 136.10 | 136.05 | 135.99 | 135.79 | 135.68 | 135.59 | 135.49 | 135.39 | |
| STORM INVERT | | | | | | | | | | | | | | | |
| SANITARY INVERT | 50.5m - 450mm ø PVC SDR-35 @ 1.70% | 133.75 / 134.32 | 93.8m - 450mm ø PVC SDR-35 @ 1.67% | | | | | | | | 135.89 | | | | |




**AS-BUILT DRAWING**

*THIS AS-BUILT DOCUMENT HAS BEEN PREPARED, IN PART, BASED UPON INFORMATION FURNISHED BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, THE PRACTITIONER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THIS AS-BUILT DOCUMENT, OR FOR ANY ERRORS OR OMISSIONS THAT MAY HAVE BEEN INCORPORATED INTO IT AS A RESULT OF INCORRECT INFORMATION PROVIDED TO THE PRACTITIONER. THOSE RELYING ON THIS AS-BUILT DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY.*

| No. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 10 | 15/07/2020 | AS-BUILTS | JP2G |
| 09 | 01/03/2019 | ISSUED FOR CONSTRUCTION | M.M. |
| 08 | 30/01/2019 | ISSUED FOR ADDENDUM 1 | M.M. |
| 07 | 23/01/2019 | ISSUED FOR TENDER | M.M. |
| 06 | 30/10/2018 | ISSUED FOR 99% CLIENT REVIEW | M.M. |
| 05 | 10/07/2018 | ISSUED FOR MOECC APPROVAL | M.M. |
| 04 | 11/04/2018 | ISSUED FOR UTILITY CIRCULATION | M.M. |
| 03 | 16/03/2018 | REISSUED FOR PRELIMINARY DESIGN | M.M. |
| 02 | 27/02/2018 | ISSUED FOR PRELIMINARY DESIGN | M.M. |
| 01 | 28/09/2017 | ISSUED FOR UTILITY CIRCULATION | M.M. |

REVISIONS

HORIZONTAL SCALE / ÉCHELLE HORIZONTALE: 1:250
VERTICAL SCALE / ÉCHELLE VERTICALE: 1:50

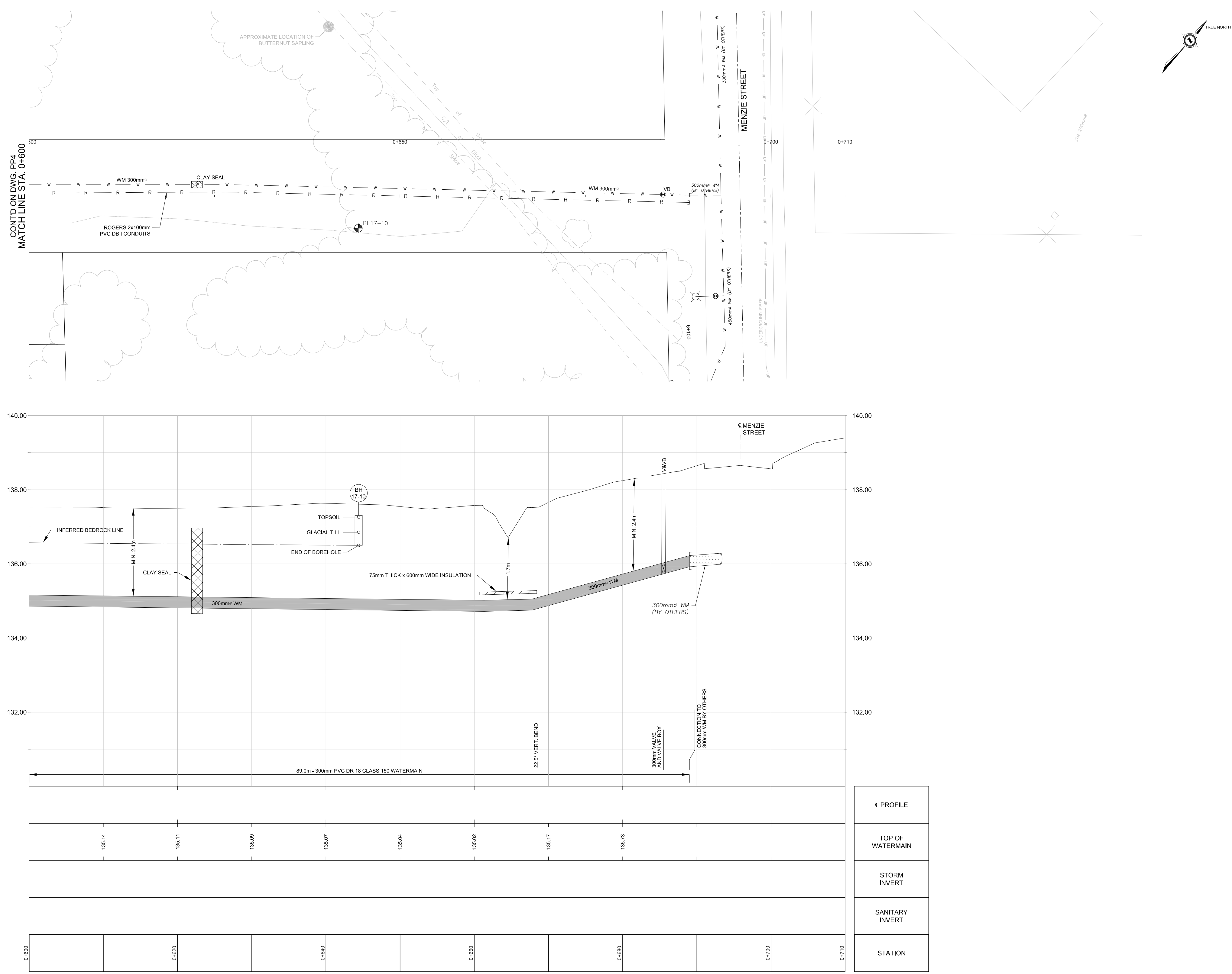

**PARSONS**
1223 Michael Street, Suite 100, Ottawa, Ontario, Canada K1J 7T2
Tel: (613) 738-4160 Fax: (613) 739-7105

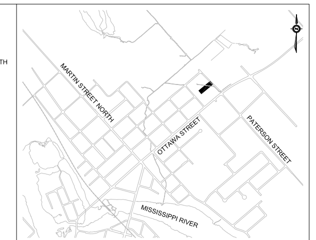

CLIENT
MUNICIPALITY OF MISSISSIPPI MILLS

PROJECT
VICTORIA STREET REHABILITATION

TITLE
PLAN & PROFILE 4
VICTORIA STREET
STA 0+450 TO STA 0+600

| | | | |
|---|---|---|---|
| DESIGNED BY | M.M. | PROJECT NO. | 476422 |
| DRAWN BY | S.S. | DRAWING NO. | 011 |
| CHECKED BY | M.T. | DRAWING | PP4 |
| DATE | SEPTEMBER 2017 | | |
| SCALE | 1:250 | | |




KEY PLAN

**AS-BUILT DRAWING**

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| No. | DATE | DESCRIPTION | BY |
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| 09 | 01/03/2019 | ISSUED FOR CONSTRUCTION | M.M. |
| 08 | 30/01/2019 | ISSUED FOR ADDENDUM 1 | M.M. |
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| 01 | 28/09/2017 | ISSUED FOR UTILITY CIRCULATION | M.M. |

REVISIONS

HORIZONTAL SCALE / ÉCHELLE HORIZONTALE: 1:250

VERTICAL SCALE / ÉCHELLE VERTICALE: 1:50

PARSONS

1223 Michael Street, Suite 100, Ottawa, Ontario, Canada K1J 7T2
Tel: (613) 738-4160 Fax: (613) 739-7105

CLIENT

MUNICIPALITY OF MISSISSIPPI MILLS

PROJECT

VICTORIA STREET REHABILITATION

TITLE

PLAN & PROFILE 5
VICTORIA STREET
STA 0+600 TO STA 0+710

| | |
|---|---|
| DESIGNED BY | M.M. |
| PROJECT NO. | 476422 |
| DRAWN BY | S.S. |
| CHECKED BY | M.T. |
| DATE | SEPTEMBER 2017 |
| SCALE | 1:250 |
| DRAWING NO. | 012 |
| DRAWING | PP5 |

MEMO

**TO:** Municipality of Mississippi Mills

**FROM:** Spencer Manoryk, P.Eng

Kathryn Kerker, M.A.Sc., P.Eng

**SUBJECT:** **Mississippi Mills Municipal Drain Abandonment Memo**

**DATE:** **June 19, 2025**

---

This memo details the design of a realigned portion of the Mississippi Mill's municipal drain to support future development at 34 Victoria Street.. The Conceptual Site Servicing & Stormwater Management Report by Jp2g Consultants Inc. provides an analysis of the contributing areas and existing peak flow in the municipal drain. This report has been used to inform the proposed design.

## EXISTING CONDITIONS AND DESIGN FLOWS

The Site has an existing municipal drain that conveys storm runoff westerly by ditch through the site towards a concrete headwall and 1050mm storm sewer outlet located along the northern property line.

Flows through the Site's municipal drain are primarily contributed from lands to the south and east, discharging to the Site at the Menzie Street culvert crossing. The Conceptual Site Servicing & Stormwater Management Report by Jp2g Consultants Inc. identifies the flow through this 900mm culvert as 768.05 L/s. The Jp2g report indicates that the existing drain does not have sufficient capacity for the total upstream flows, however due to the scope of this project and the upstream constrictions that will remain in place, this drain abandonment design aims to meet or exceed the current capacity of the municipal drain.

Based on the Jp2g Storm Drainage Plan, adjacent lands totally 2.18 ha immediately south and west denoted as A36, A37, A38, and A39 also contribute flow towards the Site and existing municipal drain. Flows from these areas have been included in rational method calculations in this memo, with the assumption that any future development will match existing peak flows.

## REALIGNED DRAIN

The municipal drain will primarily be realigned to run along the eastern property boundary adjacent to Menzie Street, turn south-westward continuing along the northern property boundary, and finally outlet at the existing 1050mm sewer pipe and headwall. The drain itself is proposed as a realigned ditch until reaching the 34 Victoria Street Site, after which it is proposed to be piped underground to accommodate future development.

Adjacent northern, western, and southern properties draining to 34 Victoria Street shall continue to do so under proposed Site conditions. Ditches along the property boundaries have been designed to match existing property line grades and convey storm runoff towards the re-routed municipal drain.

To accommodate the re-routing of the municipal drain, some retaining and landscaping walls will be required to match adjacent grading at property boundaries. This is to ensure existing flow paths are not disturbed, and that the piped portions of the municipal drain are designed with adequate soil cover for frost protection.

Any storm sewer infrastructure, conveyance ditches, and retaining wall structures designed to accommodate the re-routed municipal drain shall be contained within the proposed easements as delineated on EW-C02 and EW-C03. Figure 1 below shows a schematic of the location of the realigned municipal drain. Drawings showing the proposed design are attached at the end of this memo.


*Figure 1: Existing and proposed drain alignment*

## DITCH SIZING

Ditch sizing was completed for the ditches that run from west to east along the north and south property line. Ditch sizing was also completed for the realigned drain from the 900mm culvert parallel to Menzie Street. Sizing was done for the 100-year event using the rational method, with runoff coefficients increased by 25% to represent saturated soil conditions. Table 1 shows a summary of the calculated flow in each ditch along with the capacity based on the ditch geometry. As shown, all ditches have sufficient capacity to convey the 100-year return period event. The ditch sizing sheet is attached at the end of this memo.

*Table 1: Ditch Sizing Summary*

| Ditch ID | Description | Actual Flow (L/s) | Swale Flow Capacity (L/s) |
|---|---|---|---|
| S1 | Ditch at outlet of 900mm culvert | 768 | 914 |
| S2 | Ditch south of site from James Street | 334 | 340 |
| S3 | Ditch at northwest corner of site | 44 | 1210 |

## SEWER SIZING

Sewer sizing was completed for the new piped section of the realigned municipal drain. The storm sewers were designed in accordance with the Ottawa Sewer Design Guidelines, Design Guidelines for Sewage Work (MECP), and Stormwater Planning and Design Manual (MOE), along with flows from the Jp2g report. Two new lengths of storm sewer are proposed to convey the realigned drain. Sizing was done for the 100-year event using the rational method, with runoff coefficients increased by 25% to represent saturated soil conditions. Table 2 shows a summary of the calculated flow in each storm sewer along with the sewer capacity. As shown, the storm sewers are at 59% and 60% capacity during the 100-year event. The storm sewer sizing sheet is attached at the end of this memo.

*Table 2: Storm Sewer Sizing Summary*

| Sewer ID | Description | Actual Flow (L/s) | Sewer Flow Capacity (L/s) | Ratio Q/Qfull |
|---|---|---|---|---|
| C1 | 1050mm storm sewer parallel to Menzie Street | 1006 | 1685 | 0.60 |
| C2 | 1050mm storm sewer along northern property boundary | 1002 | 1685 | 0.59 |

## EROSION AND SEDIMENT CONTROL

Contractor to ensure environmental protection and best management practices during construction. The following ESC measures shall be implemented:

- Silt Fence around all disturbed and downslope areas
- Check Dams in temporary ditches to slow flow
- Stabilized Construction Entrance (Mud Mat) to reduce sediment track-out
- Sediment Traps or filter bags at storm inlets and low points
- Stockpile protection via tarping or temporary seeding
- Immediate revegetation of disturbed areas using native seed mixes
- Inspection and maintenance after rain events or as directed

All ESC measures will follow the MECP Stormwater Planning and Design Manual and Municipal Standards.

Refer to drawings for additional details on erosion and sediment control measures.

## DEWATERING REQUIREMENTS AND CONTROL MEASURES

Dewatering will be necessary during installation of piped section and excavation of ditches. Contractor to ensure the following measures will be taken:

- Pumps/sumps to remove groundwater
- Discharge into vegetated areas or approved outlets, subject to municipal approval
- Treatment of discharge using filter bags, settling tanks, or geo-textiles to remove sediment
- Permitting: if discharge exceed 50,000 L/days or greater than 30 days, an Environmental Compliance Approval (ECA) will be obtained.
- Monitoring of discharge for turbidity, erosion, and infrastructure impact.

The practices ensure compliance with Ontario Regulation and environmental guidelines.

## CONCLUSION

In conclusion, the realigned municipal drain has been designed to meet or exceed the existing drain capacity. Further, all elevations along property boundaries and existing flow paths shall be maintained. It is recommended that re-routing this drain should proceed, accommodating both existing and future developments.

If you have any questions, please do not hesitate to contact the undersigned.

Yours sincerely,

Kathryn Kerker, P.Eng
Water Resources Engineer

Spencer Manoryk, P.Eng.
Project Engineer



## ATTACHMENTS

- Enabling Work Servicing Plan and Profile Drawing
- Storm Sewer and Ditch Design Sheets
- Conceptual Site Servicing & Stormwater Management Report by Jp2g Consultants Inc.

# 100-year Swale Calculation Sheet

## Mississippi Mills Childcare Drain Abandonment

| | | | |
|---|---|---|---|
| **Designed by:** | Kathryn Kerker | **Date:** | 05-Jun-25 |
| **Checked by:** | Spencer Manoryk | **Date:** | 11-Jun-25 |
| **Approved by:** | | **Date:** | |
| **Drawing Ref:** | Enabling Work Servicing Plan and Profile | | |

## Standard Design Calculation Sheet (Rational Method)

**IDF equation**
**I = a/(Td)^b**

| | | | | |
|---|---|---|---|---|
| 5-Year | a= | 27.7 | b= | 0.695 |
| 10-Year | a= | 31.8 | b= | 0.689 |
| 25-Year | a= | 36.8 | b= | 0.682 |
| 50-Year | a= | 40.6 | b= | 0.679 |
| 100-Year | a= | 44.4 | b= | 0.676 |

| Location | | Drainage Area | Runoff Coefficient | Inlet Flow | Rational Method Runoff | | | | | | | Swale Data | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Street Name or Description | Drainage Areas | | | | Storm Event | Individual AC | Accum. AC | Time of Duration Td | Rainfall Intensity i | Q | Accum. Q | Side Slope | Bottom Width | Depth | Slope | Length | Upstream Invert | ownstrea Invert | Cap. | Vel. | Time of Flow |
| | | ha | | L/s | | | | hours | mm/h | L/s | L/s | x:1 | m | m | % | m | m | m | L/s | m/s | hours |
| S1 - Swale at outlet of 900mm culvert | Upstream of 900mm culvert | | | 768.05 | 100-Year | 0.00 | 0.00 | 0.36 | 87.9 | 0 | 768 | 3.0 | 0.50 | 0.50 | 0.50 | 20.1 | 136.63 | 136.53 | 914 | 0.91 | 0.01 |
| S2 - Swale south of site from James Street | A36, A37, A38, A39 (partial) | 1.63 | 0.49 | | 100-Year | 0.81 | 0.81 | 0.17 | 149.1 | 334 | 334 | 3.0 | 0.00 | 0.40 | 0.50 | 133.8 | 136.60 | 136.30 | 340 | 0.71 | 0.05 |
| S3 - Swale northwest corner of site | A39 (partial) | 0.33 | 0.33 | | 100-Year | 0.11 | 0.11 | 0.17 | 149.1 | 44 | 44 | 3.0 | 0.00 | 0.40 | 6.33 | 16.9 | 137.15 | 136.08 | 1210 | 2.52 | 0.00 |

Notes:

For Runoff Coefficient (C), grassed area = 0.2, gravel area = 0.7, paved area = 0.9
A minimum time of concentration of 10min shall be used
Channel protection in the form of sodding, gabion, armour stone, riprap, asphalt, and concrete lining may be required depending on design flow and velocities; and
Roughness Coefficient (n) = 0.035
Td calculated using the Kirpich method

# 100-year Sewer Calculation Sheet
## Mississippi Mills Childcare Drain Abandonment

**Designed by:** Kathryn Kerker **Date:** 2025-06-05
**Checked by:** Spencer Manoryk **Date:** 2025-06-11
**Approved by:** **Date:**
**Drawing Ref:** Enabling Work Servicing Plan and Profile

## Standard Design Calculation Sheet (Rational Method)

**IDF equation**
**I = a/(Td+c)^b**

| | | | | |
|---|---|---|---|---|
| 5-Year | a= | 27.7 | b= | 0.695 |
| 10-Year | a= | 31.8 | b= | 0.689 |
| 25-Year | a= | 36.8 | b= | 0.682 |
| 50-Year | a= | 40.6 | b= | 0.679 |
| 100-Year | a= | 44.4 | b= | 0.676 |

| Location: Street Name or Description | Location: From | Location: To | Drainage Areas, Runoff Coefficients 0.25 ha | Drainage Areas, Runoff Coefficients 0.45 ha | Drainage Areas, Runoff Coefficients 0.90 ha | Inlet Flow L/s | Rational Method Runoff: Storm Event | Individual AC | Accum. AC | Time of Duration Td hours | Rainfall Intensity i mm/h | Q L/s | Accum. Q L/s | Sewer Data: Type of Pipe | Diameter Nom. mm | Diameter Actual | Slope % | Length m | Upstream Invert m | Downstream Invert m | Cap. L/s | Vel. m/s | Time of Flow hours | Ratio Q/Qfull |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Realigned drain | STMH1 | | 2.18 | | 768.05 | 100-Year | 0.99 | 0.99 | 0.37 | 86.9 | 238 | 1006 | CONC | 1050 | 1067 | 0.35 | 48.3 | 136.53 | 136.36 | 1685 | 1.89 | 0.01 | 0.60 |
| | STMH1 | Outlet | | | | | 100-Year | | 0.99 | 0.38 | 85.4 | 234 | 1002 | CONC | 1050 | 1067 | 0.35 | 62.5 | 136.30 | 136.10 | 1685 | 1.89 | 0.01 | 0.59 |

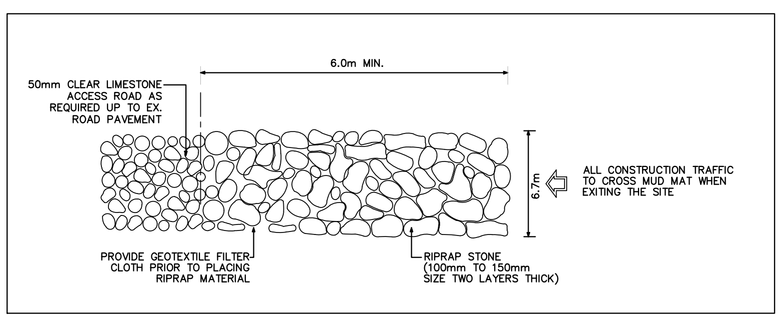
Notes:
Min velocity = 0.80 m/s, Velocity > 3.0 m/s requires protection measures, Max velocity = 6.0 m/s
Max spacing of maintenance holes = 120m
For Runoff Coefficient (C), grassed area = 0.2, ballast = 0.7, paved area = 0.9
Also for C, add 10% for 25-year storm event, 20% for 50-year storm event and 25% for 100-year storm event
A minimum time of concentration of 10min shall be used
Municipal Roadway = 5-year storm event
Municipal Freeway = 10-year storm event
Roughness Coefficient (n) = 0.013

NOTES: GENERAL

1. ALL SERVICES, MATERIALS, CONSTRUCTION METHODS AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND REGULATIONS OF THE: CITY OF OTTAWA STANDARD SPECIFICATIONS AND DRAWINGS, ONTARIO PROVINCIAL SPECIFICATION STANDARD SPECIFICATION (OPSS) AND ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD).
2. THE POSITION OF EXISTING POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND ABOVEGROUND UTILITIES, STRUCTURES AND APPURTENANCES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWING, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL SATISFY HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM DURING THE COURSE OF CONSTRUCTION. ANY RELOCATION OF EXISTING UTILITIES REQUIRED BY THE DEVELOPMENT OF SUBJECT LANDS IS TO BE UNDERTAKEN AT CONTRACTOR'S EXPENSE.
3. THE CONTRACTOR MUST NOTIFY ALL EXISTING UTILITY COMPANY OFFICIALS FIVE (5) BUSINESS DAYS PRIOR TO START OF CONSTRUCTION AND HAVE ALL EXISTING UTILITIES AND SERVICES LOCATED IN THE FIELD OR EXPOSED PRIOR TO THE START OF CONSTRUCTION, INCLUDING BUT NOT LIMITED TO HYDRO, BELL, CABLE TV, AND CONSUMERS GAS LINES.
4. ALL TRENCHING AND EXCAVATIONS TO BE IN ACCORDANCE WITH THE LATEST REVISIONS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.
5. FOR ANY STORMWATER MANAGEMENT INFORMATION, REFER TO DRAIN ABANDONMENT MEMO BY WSP, DATED JUNE 20, 2025.
6. TOPOGRAPHIC SURVEY COMPLETED AND PROVIDED BY ANNIS O' SULLIVAN VOLEBEKK LTD. DATED MARCH 26, 2025. CONTRACTOR TO VERIFY IN THE FIELD PRIOR TO CONSTRUCTION OF ANY WORK AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
7. ALL ELEVATIONS ARE GEODETIC AND UTILIZE METRIC UNITS UNLESS OTHERWISE NOTED.
8. ALL GROUND SURFACES SHALL BE EVENLY GRADED WITHOUT PONDING AREAS AND WITHOUT LOW POINTS EXCEPT WHERE APPROVED SWALE OR DRAIN OUTLETS ARE PROVIDED.
9. ALL EDGES OF DISTURBED PAVEMENT SHALL BE SAW CUT TO FORM A NEAT AND STRAIGHT LINE PRIOR TO PLACING NEW PAVEMENT. PAVEMENT REINSTATEMENT SHALL BE WITH STEP JOINTS OF 500mm WIDTH MINIMUM.
10. ALL DISTURBED AREAS OUTSIDE PROPOSED GRADING LIMITS TO BE RESTORED TO ORIGINAL ELEVATIONS AND CONDITIONS UNLESS OTHERWISE SPECIFIED. EXISTING PARKING LOT SHALL BE RE-ASPHALTED AT EXISTING GRADES EXCEPT AS NOTED TO EVEN OUT GRADES. ALL RESTORATION SHALL BE COMPLETED WITH THE GEOTECHNICAL REQUIREMENTS FOR BACKFILL AND COMPACTION.
11. ABUTTING PROPERTY GRADES TO BE MATCHED.
12. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE MUNICIPAL AUTHORITIES PRIOR TO COMMENCING CONSTRUCTION.
13. MINIMIZE DISTURBANCE TO EXISTING VEGETATION DURING THE EXECUTION OF ALL WORKS.
14. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL UNLESS OTHERWISE DIRECTED FROM THE ENGINEER. EXCAVATE AND REMOVE ALL ORGANIC MATERIAL AND DEBRIS LOCATED WITHIN THE PROPOSED WORK AREAS.
15. AT PROPOSED UTILITY CONNECTION POINTS AND CROSSINGS (I.E. STORM SEWER, SANITARY SEWER, WATER, ETC.) THE CONTRACTOR SHALL DETERMINE THE PRECISE LOCATION AND DEPTH OF EXISTING UTILITIES AND REPORT ANY DISCREPANCIES OR CONFLICTS TO THE ENGINEER BEFORE COMMENCING WORK.
16. PRIOR TO CONSTRUCTION, A GEOTECHNICAL ENGINEER REGISTERED IN THE PROVINCE OF ONTARIO IS TO INSPECT ALL SUB-SURFACES FOR FOOTINGS, SERVICES AND PAVEMENT STRUCTURES.
17. FOR ANY SOILS RELATED INFORMATION, REFER TO PRELIMINARY GEOTECHNICAL INVESTIGATION REPORT (103619.002) BY GEMTEC, DATED MAY 2, 2025.
18. CONTRACTOR TO OBTAIN POST-CONSTRUCTION TOPOGRAPHIC SURVEY PERFORMED BY CERTIFIED OLS OR P.ENG. CONFIRMING COMPLIANCE WITH DESIGN GRADING AND SERVICING. SURVEY IS TO INCLUDE LOCATION AND INVERTS FOR BURIED UTILITIES.

STORM SEWERS AND STRUCTURES

1. ALL STORM SEWER MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO THE CURRENT CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. PROVIDE CCTV INSPECTION REPORTS FOR ALL NEW STORM SEWERS.
2. STORM SEWER SHALL BE RIGID DUAL WALL HDPE PIPE, WITH SMOOTH INTERIOR AND CORRUGATED EXTERIOR WALL.
3. SEWER BEDDING AS PER CITY OF OTTAWA DETAIL S6.
4. ALL STORM MANHOLES TO BE 2400mmØ AS PER OPSD 701.030. MANHOLE FRAME AND TYPE 'A' COVER PER OPSD 401.010.
5. ALL CONCRETE HEADWALLS TO BE PER OPSD 804.040 AND SIZED FOR 1050mmØ PIPES.
6. ANY NEW OR EXISTING STORM SEWER WITH LESS THAN 2.0m COVER REQUIRES THERMAL INSULATION AS PER CITY OF OTTAWA STANDARD S35 OR APPROVED BY THE ENGINEER.
7. RIP-RAP SHALL BE R10 PER OPSS.MUNI 1004, COMPLETE WITH NON-WOVEN CLASS II GEOTEXTILE PER OPSS. MUNI 1860 WITH A MINIMUM FILTRATION OPENING SIZE OF 212 MICROMETERS.




1 EW-C01 MUD MAT DETAIL
SCALE: N.T.S

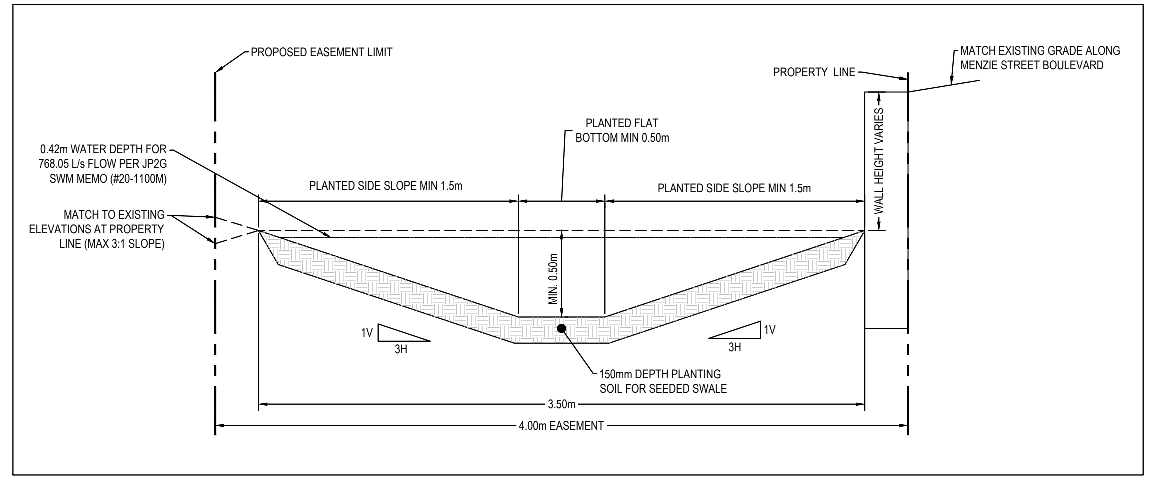
EROSION AND SEDIMENT CONTROL

** CONTRACTOR IS RESPONSIBLE FOR ALL INSTALLATION, MONITORING, REPAIR AND REMOVAL OF ALL EROSION AND SEDIMENT CONTROL FEATURES. **

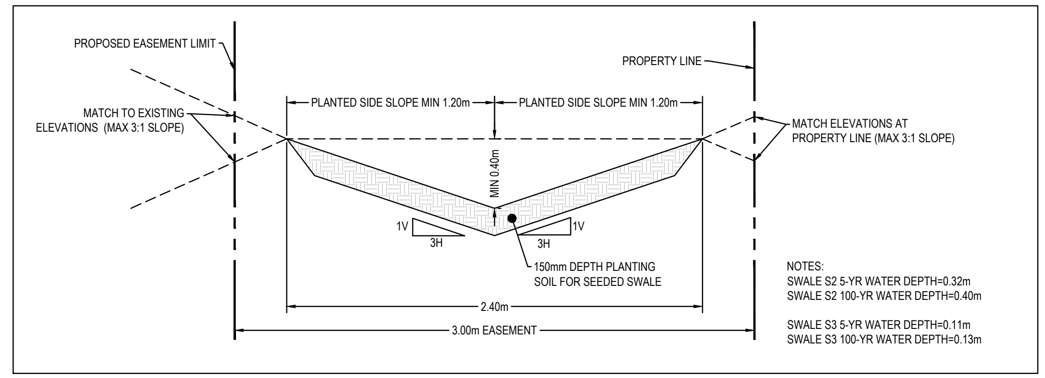
1. PRIOR TO START OF CONSTRUCTION:
   - 1.1. INSTALL SILT FENCE IN LOCATION SHOWN PER OPSD 219.110.
   - 1.2. INSPECT MEASURES IMMEDIATELY AFTER INSTALLATION.
   - 1.3. INSTALL MUD MAT AT CONSTRUCTION ENTRANCES.
   - 1.4. INSTALL STRAW BALE FLOW CHECK DAM PER OPSD 219.180.
2. DURING CONSTRUCTION:
   - 2.1. MINIMIZE THE EXTENT OF DISTURBED AREAS AND THE DURATION OF EXPOSURE AND IMPACTS TO EXISTING GRADING.
   - 2.2. PERIMETER VEGETATION TO REMAIN IN PLACE UNTIL PERMANENT STORM WATER MANAGEMENT IS IN PLACE. OTHERWISE, IMMEDIATELY INSTALL SILT FENCE WHEN THE EXISTING SITE IS DISTURBED AT THE PERIMETER.
   - 2.3. PROTECT DISTURBED AREAS FROM OVERLAND FLOW BY PROVIDING TEMPORARY SWALES TO THE SATISFACTION OF THE FIELD ENGINEER. TIE-IN TEMPORARY SWALE TO EXISTING CB'S AS REQUIRED.
   - 2.4. PROVIDE TEMPORARY COVER SUCH AS SEEDING OR MULCHING IF DISTURBED AREA WILL NOT BE REHABILITATED WITHIN 30 DAYS.
   - 2.5. INSPECT SILT FENCES, FILTER FABRIC FILTERS AND CATCH BASIN SUMPS WEEKLY AND WITHIN 24 HOURS AFTER A STORM EVENT. CLEAN AND REPAIR WHEN NECESSARY.
   - 2.6. DOWNSTREAM STORM INFRASTRUCTURE SHALL BE PROTECTED FROM UNFILTERED RUNOFF DURING ON-SITE STORM INFRASTRUCTURE DEMOLITION.
   - 2.7. DRAWING TO BE REVIEWED AND REVISED AS REQUIRED DURING CONSTRUCTION.
   - 2.8. EROSION CONTROL FENCING TO BE ALSO INSTALLED AROUND THE BASE OF ALL STOCKPILES.
   - 2.9. DO NOT LOCATE TOPSOIL PILES AND EXCAVATION MATERIAL CLOSER THAN 2.5m FROM ANY PAVED SURFACE, OR ONE WHICH IS TO BE PAVED BEFORE THE PILE IS REMOVED. ALL TOPSOIL PILES ARE TO BE SEEDED IF THEY ARE TO REMAIN ON SITE LONG ENOUGH FOR SEEDS TO GROW (LONGER THAN 30 DAYS).
   - 2.10. CONTROL WIND-BLOWN DUST OFF SITE BY SEEDING TOPSOIL PILES AND OTHER AREAS TEMPORARILY (PROVIDE WATERING AS REQUIRED AND TO THE SATISFACTION OF THE ENGINEER).
   - 2.11. NO ALTERNATE METHODS OF EROSION PROTECTION SHALL BE PERMITTED UNLESS APPROVED BY THE FIELD ENGINEER.
   - 2.12. CITY ROADWAY AND SIDEWALK TO BE CLEANED OF ALL SEDIMENT FROM VEHICULAR TRACKING AS REQUIRED.
   - 2.13. DURING WET CONDITIONS, TIRES OF ALL VEHICLES/EQUIPMENT LEAVING THE SITE ARE TO BE SCRAPED.
   - 2.14. ANY MUD/MATERIAL TRACKED ONTO THE ROAD SHALL BE REMOVED IMMEDIATELY BY HAND OR RUBBER TIRE LOADER.
   - 2.15. TAKE ALL NECESSARY STEPS TO PREVENT BUILDING MATERIAL, CONSTRUCTION DEBRIS OR WASTE BEING SPILLED OR TRACKED ONTO ABUTTING PROPERTIES OR PUBLIC STREETS DURING CONSTRUCTION AND PROCEED IMMEDIATELY TO CLEAN UP ANY AREAS SO AFFECTED.
   - 2.16. ALL EROSION CONTROL STRUCTURE TO REMAIN IN PLACE UNTIL ALL DISTURBED GROUND SURFACES HAVE BEEN STABILIZED EITHER BY PAVING OR RESTORATION OF VEGETATIVE GROUND COVER.
   - 2.17. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE 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.

DEWATERING REQUIREMENTS AND CONTROL MEASURES

1. DEWATERING WILL BE NECESSARY DURING INSTALLATION OF PIPED SECTION AND EXCAVATION OF DITCHES. CONTRACTOR TO ENSURE THE FOLLOWING MEASURES WILL BE TAKEN:
   - 1.1. PUMPS/ SUMPS TO REMOVE GROUNDWATER.
   - 1.2. DISCHARGE INTO VEGETATED AREAS OR APPROVED OUTLETS, SUBJECT TO MUNICIPAL APPROVAL.
   - 1.3. TREATMENT OF DISCHARGE USING FILTER BAGS, SETTLING TANKS, OR GEO-TEXTILES TO REMOVE SEDIMENT.
   - 1.4. PERMITTING: IF DISCHARGE EXCEED 50,000 L/days OR GREATER THAN 30 DAYS, AN ENVIRONMENTAL COMPLIANCE APPROVAL (ECA) WILL BE OBTAINED.
   - 1.5. MONITORING OF DISCHARGE FOR TURBIDITY, EROSION, AND INFRASTRUCTURE IMPACT.
2. THE PRACTICES ENSURE COMPLIANCE WITH ONTARIO REGULATION AND ENVIRONMENTAL GUIDELINES.
3. CONTRACTOR TO PROVIDE DEWATERING AND STAGING PLANS FOR TOWNSHIPS APPROVAL PRIOR TO CONSTRUCTION.




2 EW-C01 FLAT BOTTOM GRASS SWALE TYPICAL DETAIL
SCALE: N.T.S




3 EW-C01 'V' BOTTOM SWALE TYPICAL DETAIL
SCALE: N.T.S

EXISTING LEGEND:

- PROPERTY BOUNDARY
- CENTERLINE OF ROAD
- EXISTING CURB
- EXISTING TOP OF SLOPE
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER
- EXISTING OVERHEAD WIRE
- EXISTING TREE LINE
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING SANITARY MANHOLE
- EXISTING UTILITY POLE
- EXISTING LIGHT STANDARD
- EXISTING TREE

PROPOSED LEGEND:

- EASEMENT LIMITS
- PROPOSED SWALE
- PROPOSED 1050mmØ STORM SEWER
- TOP OF SLOPE
- BOTTOM OF SLOPE
- SILT FENCE
- PROPOSED 2400mmØ STORM MANHOLE
- STRAW BALE FLOW CHECK DAM
- RETAINING WALL
- 137.05 PROPOSED DITCH ELEVATION
- 2.50% PROPOSED SLOPE
- 2.50% EX. EXISTING SLOPE
- 137.58TW 137.37BW PROPOSED RETAINING WALL ELEVATION
- 137.55 BACKFILLED ELEVATION
- RIP-RAP PAD
- MAJOR OVERLAND FLOW DIRECTION

WSP CANADA INC.
2611 QUEENSVIEW DR 200, 300,400
OTTAWA, ONTARIO
CANADA K2B 6B7
PHONE: 613-829-2800
WWW.WSP.COM

PROJECT NUMBER: CA0054341.9407

CLIENT: Mississippi Mills

CLIENT REF. #:


REVISION:

| REV | DATE | DESCRIPTION | BY |
| --- | --- | --- | --- |
| 0A | 2025-06-20 | MVCA PERMIT SUBMISSION | SM |

SEAL:




ORIGINAL SCALE: NA
DRAWN BY: JT
CHECKED BY: SM
APPROVED BY: DY
DATE: 2025-06-20

IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm

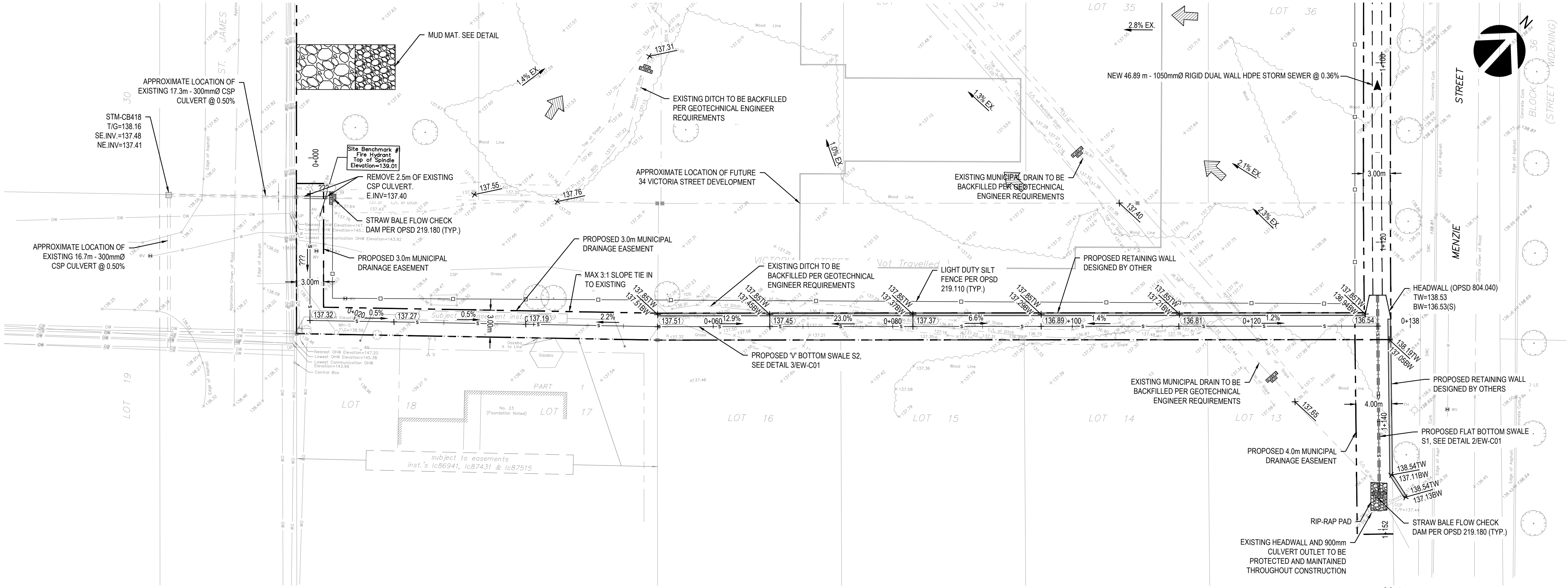
DISCIPLINE: CIVIL

PROJECT: MISSISSIPPI MILLS MUNICIPAL DRAIN RE-ROUTING

TITLE: ENABLING WORK - NOTES

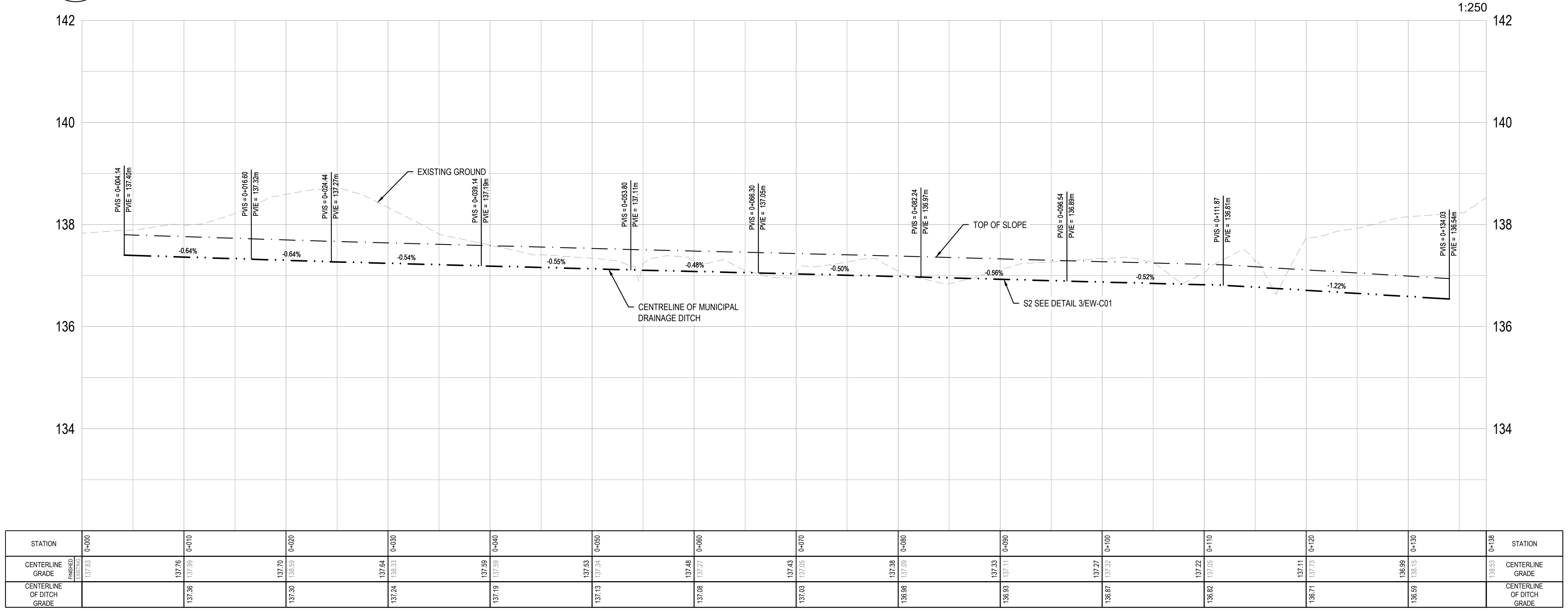
DRAWING NUMBER: EW-C01
REV.: 0A

FILE: c:\users\ca\...\ca-mississippi mills - childcare centre\2 wip\civ\c_sheets\ew_ca0054341.9407 notes.dwg
CTB: wsp_kingston_24x36.ctb
PLOTTED: 2025-06-19 - 1:56 PM




## 1 EW-C02 ENABLING WORK - SWALE S2 PLAN VIEW

SCALE: 1:250




## 2 EW-C02 ENABLING WORK - SWALE S2 PLAN VIEW

SCALE: H 1:250, V 1:50

Horizontal Scale (Meter) 12.5 0 12.5 25 1:250

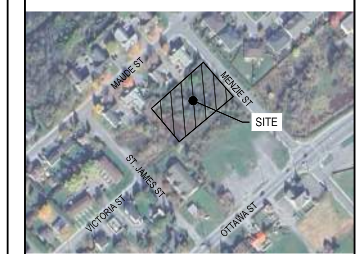
Vertical Scale (Meter) 2.5 0 2.5 5 1:50

WSP CANADA INC.
2611 QUEENSVIEW DR 200, 300,400
OTTAWA, ONTARIO
CANADA K2B 6B7
PHONE: 613-829-2800
WWW.WSP.COM

PROJECT NUMBER: CA0054341.9407

CLIENT: Mississippi Mills

CLIENT REF. #:




REVISION:

| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 0A | 2025-06-20 | MVCA PERMIT SUBMISSION | SM |

SEAL: LICENSED PROFESSIONAL ENGINEER S. MANDRYK 100631937 2025-06-20 PROVINCE OF ONTARIO

DISCLAIMER: THIS DRAWING AND DESIGN IS COPYRIGHT PROTECTED WHICH SHALL NOT BE USED, REPRODUCED OR REVISED WITHOUT WRITTEN PERMISSION BY WSP. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND UTILITY LOCATIONS AND REPORT ALL ERRORS AND OMISSIONS PRIOR TO COMMENCING WORK.

ORIGINAL SCALE: 1:200
DATE: 2025-06-20
DRAWN BY: JT
CHECKED BY: SM
APPROVED BY: DY

IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE. 25mm

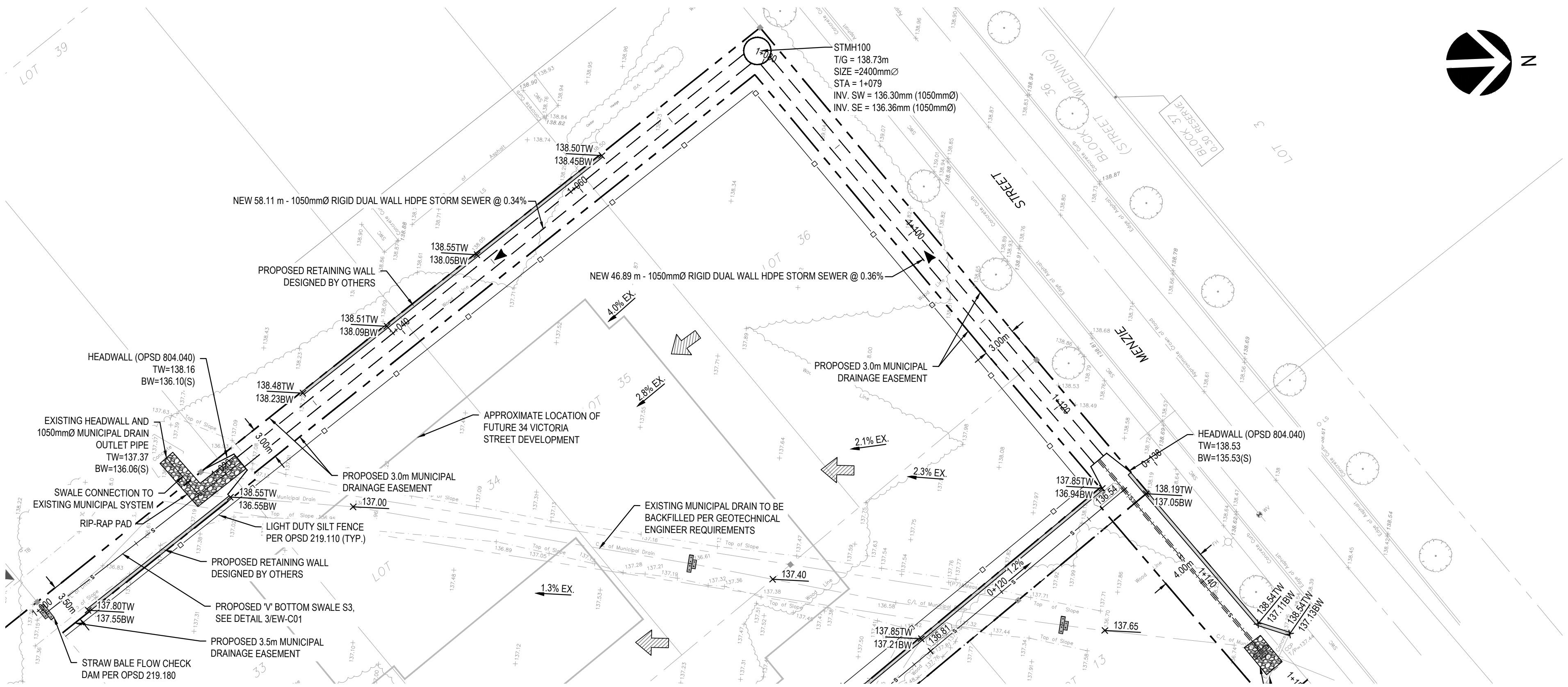
DISCIPLINE: CIVIL

PROJECT: MISSISSIPPI MILLS MUNICIPAL DRAIN RE-ROUTING

TITLE: ENABLING WORK MUNICIPAL DRAIN PLAN AND PROFILE 1

DRAWING NUMBER: EW-C02
REV. 0A

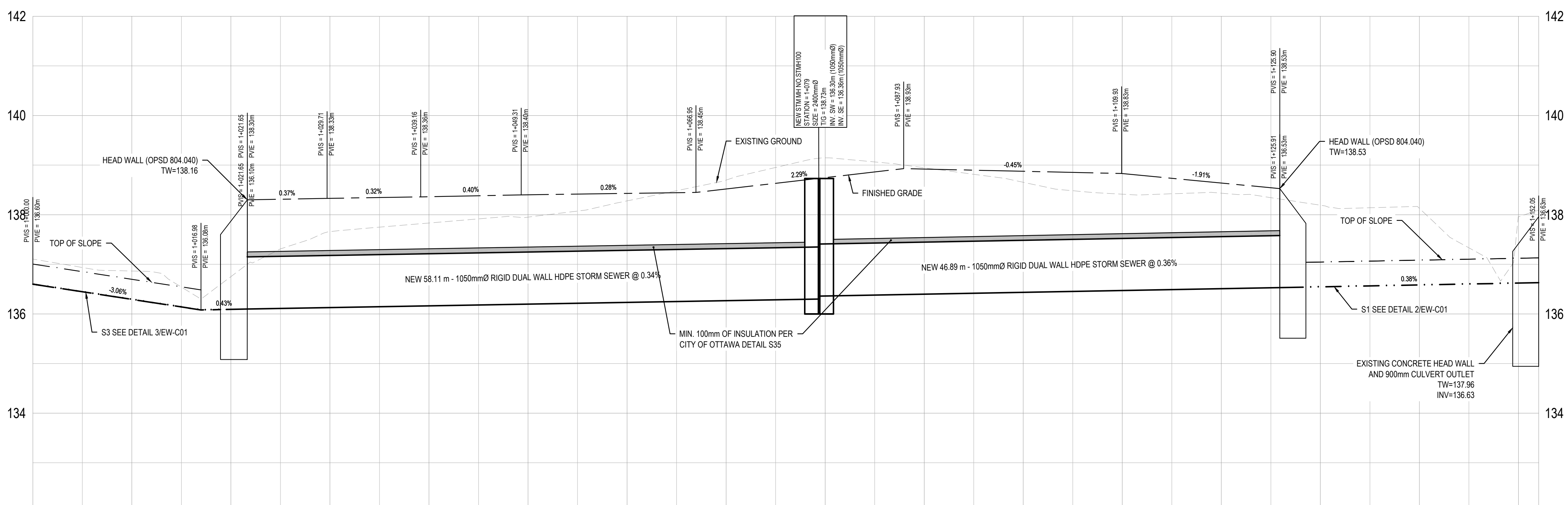
CTB: wsp_kingston_24x36.ctb
PLOTTED: 2025-06-19 - 2:00 PM



# 1 EW-C03 ENABLING WORK - SWALE S1, S3 AND STORM SEWER PLAN VIEW

SCALE: 1:250

Meters 12.5 0 12.5 25 — 1:250



| STATION | CENTERLINE GRADE FINISHED | CENTERLINE GRADE EXISTING | CENTERLINE OF DITCH GRADE |
|---|---|---|---|
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| 1+010 | 136.70 | 136.87 | 136.29 |
| 1+020 | | 136.75 | 136.09 |
| 1+030 | 138.33 | 137.66 | |
| 1+040 | 138.36 | 137.83 | |
| 1+050 | 138.40 | 137.95 | |
| 1+060 | 138.43 | 138.28 | |
| 1+070 | 138.52 | 138.70 | |
| 1+080 | 138.75 | 139.15 | |
| 1+090 | 138.92 | 138.95 | |
| 1+100 | 138.88 | 138.65 | |
| 1+110 | 138.83 | 138.41 | |
| 1+120 | 138.64 | 138.43 | |
| 1+130 | 137.05 | 138.19 | 136.55 |
| 1+140 | 137.08 | 138.13 | 136.58 |
| 1+150 | 137.12 | 137.96 | 136.62 |
| 1+152 | | 138.09 | 136.63 |

STORM SEWER INVERT: 136.10 — NEW 58.11m 1050mmØ RIGID DUAL WALL HDPE STORM SEWER @ 0.34% — 136.30 | 136.36 — NEW 46.89m 1050mmØ RIGID DUAL WALL HDPE STORM SEWER @ 0.36% — 136.53

# 2 EW-C03 ENABLING WORK - SWALE S1, S3 AND STORM SEWER PROFILE

SCALE: H 1:250, V 1:50

Horizontal Scale (Meter) 12.5 0 12.5 25 — 1:250

Vertical Scale (Meter) 2.5 0 2.5 5 — 1:50


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PROJECT NUMBER: CA0054341.9407

CLIENT: Mississippi Mills

CLIENT REF. #:

SITE

| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 0A | 2025-06-20 | MVCA PERMIT SUBMISSION | SM |

SEAL: LICENSED PROFESSIONAL ENGINEER S. RANDHAWA 100631937 2025-06-20 PROVINCE OF ONTARIO



ORIGINAL SCALE: 1:200
DATE: 2025-06-20
DRAWN BY: JT
CHECKED BY: SM
APPROVED BY: DY

IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE. 25mm

DISCIPLINE: CIVIL

PROJECT: MISSISSIPPI MILLS MUNICIPAL DRAIN RE-ROUTING

TITLE: ENABLING WORK MUNICIPAL DRAIN PLAN AND PROFILE 2

DRAWING NUMBER: EW-C03 REV. 0A

# Conceptual Site Servicing & Stormwater Management Report

Draft

## Servicing, Grading and SWM Plan
## 34 Victoria St., Almonte, Ontario

May 5, 2025

Jp2g Project # 20-1100M

Jp2g Consultants Inc.

ENGINEERS · PLANNERS · PROJECT MANAGERS

# Table of Contents

## Author and Review Panel

**Prepared by:**

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Civil Technologist

**Reviewed and Approved by:**

Stephen Arends, P.Eng.

Manager – Civil Engineering | Senior Civil Engineer

# 1 Introduction

Jp2g Consultants Inc. (Jp2g) was retained by The Municipality of Mississippi Mills to complete the assessment for conceptual servicing (water, storm and sanitary), stormwater management and municipal drain abandonment to support the planned new development at 34 Victoria Street, Almonte.

*Figure 1 – Site Area*


# 2 Objective and Requirements

The following report outlines the anticipated servicing requirements for the proposed development location and proposed alternatives to meet the requirements. This report also outlines high level requirements for abandoning the existing municipal drain that runs through the subject property.

The servicing requirements for this site are outlined as follows:

- Storm Servicing: Provide capture/conveyance of the stormwater runoff from the parking lot, building as well as foundation drains. Since this is a daycare, it is anticipated that stormwater ponding shall be avoided in the playground areas.
- Stormwater Management: Control post-development peak flows to pre-development levels. As well, provide stormwater quality control at an enhanced level. We understand the development is seeking LEED certification, so the design should support quality/quantity control should a LEED credit for these items be requested. The Municipality has confirmed that it is acceptable to utilize the unopened road allowance for stormwater treatment where available.
- Municipal Drain Abandonment: The Municipal Drain within the property is undergoing abandonment. It is intended to realign with a ditch and /or sewer to maintain conveyance of upstream flows.
- Sanitary Servicing: Provide sanitary service connection for this site including new sewer main where necessary to connect the existing network. Consideration should be given for future low-income housing development on the west half of the development parcel.

- Water Servicing: Provide water service connection for this site including new hydrants where necessary to ensure fire protection coverage. connect the existing network. Consideration should be given for future low-income housing development on the west half of the development parcel.
- Grading: Since this is a daycare, it is anticipated that parking lot and playground areas will require grading in the 2-5% range.

# 3 Stormwater

## 3.1 Design Criteria Used in Analysis

The design is to ensure that post-development peak flows during the 5-year and 100-year events do not adversely impact the adjacent lands, including offsite and onsite flooding and ponding in undesirable locations.

The Rational Method (Q=2.78CiA) was used to calculate flows for the municipal drain that conveys storm water through the property.

The Modified Rational Method was used to estimate onsite storage requirements for the proposed development. The coefficients of surface runoff were considered as follows: C = 0.20 for grassed and landscaped areas, C = 0.60 for granular surfaces and C=0.9 for paved and building areas.

The rainfall intensities used in this analysis are based on MTO IDF curves for the subject area. An initial time of concentration ($t_c$) of 10 minutes has been used.

## 3.2 Pre-development Conditions

The existing site is an undeveloped property with a municipal drain that runs through the middle of the property. The Northeast side of the site sheet drains towards the municipal drain that runs through the property, with an approximate slope of 3.00%. The southwest side of the site is generally flat with slopes of approximately 0.9%. The final outlet for the municipal drain is a 1050 concrete headwall located at the northern end of the site.

## 3.3 Allowable Release Rate

The pre-development runoff coefficient for the site was calculated to be C = 0.20 for the 5-year event and C = 0.25 for the 100-year event respectively resulting in the total allowable release rate from the site to be 34.6 L/s and 72.2 L/s for the 5-year and 100-year event respectively. Taking into account the future development area, the total post-development uncontrolled area of the site is 0.16ha, resulting in a net allowable release rate of 26.5 L/s and 55.3 L/s for the 5-year and 100-year events respectively. See Appendix 1 for supporting calculations.

## 3.4 Post-Development Conditions

The proposed site development includes the construction of a 1,110m2 Daycare, associated parking, and landscaped areas. The conceptual site grading and drainage were designed such that stormwater runoff will be directed to on site storm sewers and retention pond.

The site development area, including future development is approximately 0.66 ha and has a post-development average weighted runoff coefficient of C = 0.39 and C = 0.46 for the 5-year and 100-year events respectively. Controlling to the net allowable release rate of 26.5 L/s and 55.3 L/s for the 5-year and 100-year event results in a required onsite storage required of 25 $m^3$ for the 5-year and 46 $m^3$ for the 100-year event. A 200$m^2$ 0.5m deep storm retention pond in the unopened road allowance can be used on site to achieve 46$m^3$ of onsite storage that is required for the 100-year event. Additionally, more onsite storage can be achieve by utilizing storage in the on site parking lot, an additional 32.8$m^3$ can be achieved.

## 3.5 Municipal Drain

Currently the site has an existing municipal drain that cuts through the site from East to West. The entire drain was evaluated and all flows entering the drain were calculated. After the municipal drain was evaluated, it was determined that under current conditions the existing storm sewer and ditches on Ottawa street are undersized and to fully abandoned the municipal drain would require significant upgrades to the current system.

Upstream of the site, the Municipal Drain crosses Menzie Street through a 900mm CSP road crossing culvert and outlets from the site through a 1050mm concrete storm sewer. The 1050mm storm sewer directs flows to Maude St and ultimate re-enters the Municipal Drain at the intersection of St. James Street and Maude Street. The upstream flows directed to the Maude Street culvert total 3024.59 L/s; however, the culvert has a capacity of 768.05 L/s (current flows are at 394% capacity of the culvert). Therefore, the existing culvert is acting as a control structure for the flows directed to the proposed development site. The abandonment of the drain will maintain this constriction since upgrading existing culverts upstream of the property limits is outside the scope oft his project.

Jp2g recommends that the Municipality of Mississippi Mills include future servicing for the abandonment of the Municipal Drain as part of the overall Stormwater Master Plan Study. We understand from municipality staff that the master plan will be conducted within the next year or two.

# 4 Sanitary Servicing

Currently there is two (2) existing sanitary sewers located near the subject property. A 450mm diameter sanitary sewer on Victoria Street and a 250mm sanitary sewer on Menzie Street.

### 4.1.1 Option 1 (preferred)

A new 200mm diameter sanitary sewer system can be installed on the site to convey sewage flows from the proposed development to the existing Victoria Street sanitary sewer. The new sanitary sewer system would have an approximate total length of 60m to get it to the building face. One (1) new sanitary manhole would also be installed.

New 135 mm sanitary services would then need to be installed and convey flows from the new building to the new sanitary sewer. A service stub can be installed for the future low-income building west of the site.

If any requirements are brought forward in the Mississippi Mills Water & Wastewater Infrastructure Master Plan final report. The 200mm diameter sanitary sewer can be upgraded to a 450mm to match the existing sanitary on Vicotria St. if there is a requirement to extend the 450mm through the R.O.W.

### 4.1.2 Option 2

A new 200mm diameter sanitary sewer system can be installed on the site to convey sewage flows from the proposed development to the existing sanitary system on Menzie Street. The new sanitary sewer system would have an approximate total length of 90m to get it to the building face. One (1) new sanitary manhole would also be installed.

This option is not preferred as extending the sanitary sewer on Menzie would require the sanitary sewer being installed under an existing 900mm culvert and the reinstatement of the roadway.

# 5 Water Servicing

Water servicing for this building can be installed on site and connect to the existing 300mm watermain on the unopened Victoria Street R.O.W.

There are two (2) fire hydrants on either end of the unopened Victoria Street R.O.W each within 90m of the building.

# 6 Grading

Grading for this site is anticipated to be in the 2-5% range as the use for the site is a daycare. There are some limiting factors that effect the grading of this site.:

- The Northeast parking lot connection to Menzie will require a grade raise from current conditions to make it work. From there the site will need to be graded to tie into the existing properties along the southeast and northwest property lines.
- Roof drain connections to on site storm sewer can be installed with a slab on grade building. If building is to accommodate a basement grading, we will to be verified to confirm connections to onsite storm sewers.

A preliminary Geotechnical Investigation was completed on this site by GEMTEC and the finding of that report has indicated that there in no grade raise restrictions for this site. The proposed buildings should follow all preliminary design recommendations as outline in that report.

---

End of report.

# Appendix 1
# Stormwater Management Calculations

## Appendix 1 - Stormwater Management Calculations

### 1.1 - Allowable release rate

| ID | Description | Type | Areas ($m^2$) $C_{0.90}$ | $C_{0.60}$ | $C_{0.20}$ | Total ($m^2$) | $C_{pre\text{-}5\text{-}yr}$ | $C_{pre\text{-}100\text{-}yr}$* |
|---|---|---|---|---|---|---|---|---|
| A1 | Property Grounds | uncontrolled | 0 | 0 | 6646 | 6646 | 0.20 | 0.25 |
| | | | **0** | **0** | **6646** | **6646** | **0.20** | **0.25** |

**including 25% increase as per City of Ottawa Sewer Design Guidelines*

Calculations for pre-development runoff coefficient

$C_{pre\text{-}5\text{-}yr}$ = (column A * 0.9 + column B * 0.2) / column C

$C_{pre\text{-}100\text{-}yr}$ = (column A * 1.0 + column B * 0.2*1.25) / column C

Note: 0.90 x 1.25 = 1.125, use max. 1.0

Estimated time of concentration, $t_c$ = **10.0** minutes

Based on MTO IDF curve, $i_{5\text{-}years}$ = $r = At^B$

**93.8** mm/hr

Based on MTO IDF curve, $i_{100\text{-}years}$ = $r = At^B$

**156.4** mm/hr

| Return period | 5-yr | 100-yr |
|---|---|---|
| A | 26.8 | 44.7 |
| B | -0.699 | -0.699 |

Using the Rational Method, the maximum allowable release rate is therefore:

Total Area, A = **0.66** ha

5-year Runoff coefficient, **C** = **0.20**

$Q_{allowable}$ = ***2.78 C x i x A***

$Q_{allowable\ (5\text{-}year)}$ = **34.6** l/s ①

100-year Runoff coefficient, **C** = **0.25**

$Q_{allowable}$ = ***2.78 C x i x A***

$Q_{allowable\ (100\text{-}year)}$ = **72.2** l/s

### 1.1.2 - Post-development release rate

| ID | Description | Type | Areas ($m^2$) $C_{0.90}$ | $C_{0.60}$ | $C_{0.20}$ | Total ($m^2$) | $C_{post\text{-}5\text{-}yr}$ | $C_{post\text{-}100\text{-}yr}$* |
|---|---|---|---|---|---|---|---|---|
| B1 | Property Grounds | controlled | 1846 | 0 | 3237 | 5083 | 0.45 | 0.52 |
| B2 | Property Grounds | uncontrolled | 0 | 0 | 943 | 943 | 0.20 | 0.25 |
| B3 | Property Grounds | uncontrolled | 0 | 0 | 612 | 612 | 0.20 | 0.25 |
| | | | **1846** | **0** | **4792** | **6638** | **0.39** | **0.46** |
| | **including 25% increase as per City of Ottawa Sewer Design Guidelines* | | (A) | (B) | (C) | (D) | (E) | (F) |

#### 1.1.2.1 - Uncontrolled flow

Total uncontrolled area **0.156** ha

5-year Runoff coefficient **0.20**

100-year Runoff coefficient **0.25**

Uncontrolled Release Rate 5-year **8.1** l/s ②

Uncontrolled Release Rate 100-year **16.9** l/s ④

#### 1.1.2.2 - Net-allowable release rate

$Q_{net\text{-}allowable\ 5\text{-}year}$ = **26.5** l/s ③ = ①-②

*$Q_{net\text{-}allowable\ 100\text{-}year}$ = **55.3** l/s ⑤ = ①-④

### 1.1.3 - Post-development onsite storage

1.1.3.1 - Overall Storage requirement

| | | |
|---|---|---|
| Total controlled area | **0.664** | ha |
| 5-year Runoff coefficient | **0.39** | |
| 100-year Runoff coefficient | **0.46** | |
| 5-year Release rate | **26.5** | l/s |
| 100-year Release Rate | **55.3** | l/s |

**Table 1.1.3.1a - 5-year estimated detention**

| | Time (minutes) | $i_{5\text{-years}}$ (mm/hr) | $Q_{actual}$ (l/s) | $Q_{allowable}$ (l/s) | $Q_{stored}$ (l/s) | $V_{stored}$ ($m^3$) |
|---|---|---|---|---|---|---|
| *peak $V_{stored}$* → | 10 | 93.8 | 68.3 | 26.5 | 41.8 | 25.1 |
| | 15 | 70.6 | 51.4 | 26.5 | 24.9 | 22.4 |
| | 20 | 57.8 | 42.1 | 26.5 | 15.5 | 18.6 |
| | 25 | 49.4 | 36.0 | 26.5 | 9.5 | 14.2 |
| | 30 | 43.5 | 31.7 | 26.5 | 5.1 | 9.3 |
| | 35 | 39.1 | 28.4 | 26.5 | 1.9 | 4.0 |
| | 40 | 35.6 | 25.9 | 26.5 | -0.6 | -1.5 |
| | 45 | 32.8 | 23.9 | 26.5 | -2.7 | -7.2 |
| | 50 | 30.4 | 22.2 | 26.5 | -4.4 | -13.1 |
| | 55 | 28.5 | 20.7 | 26.5 | -5.8 | -19.1 |
| | 60 | 26.8 | 19.5 | 26.5 | -7.0 | -25.3 |

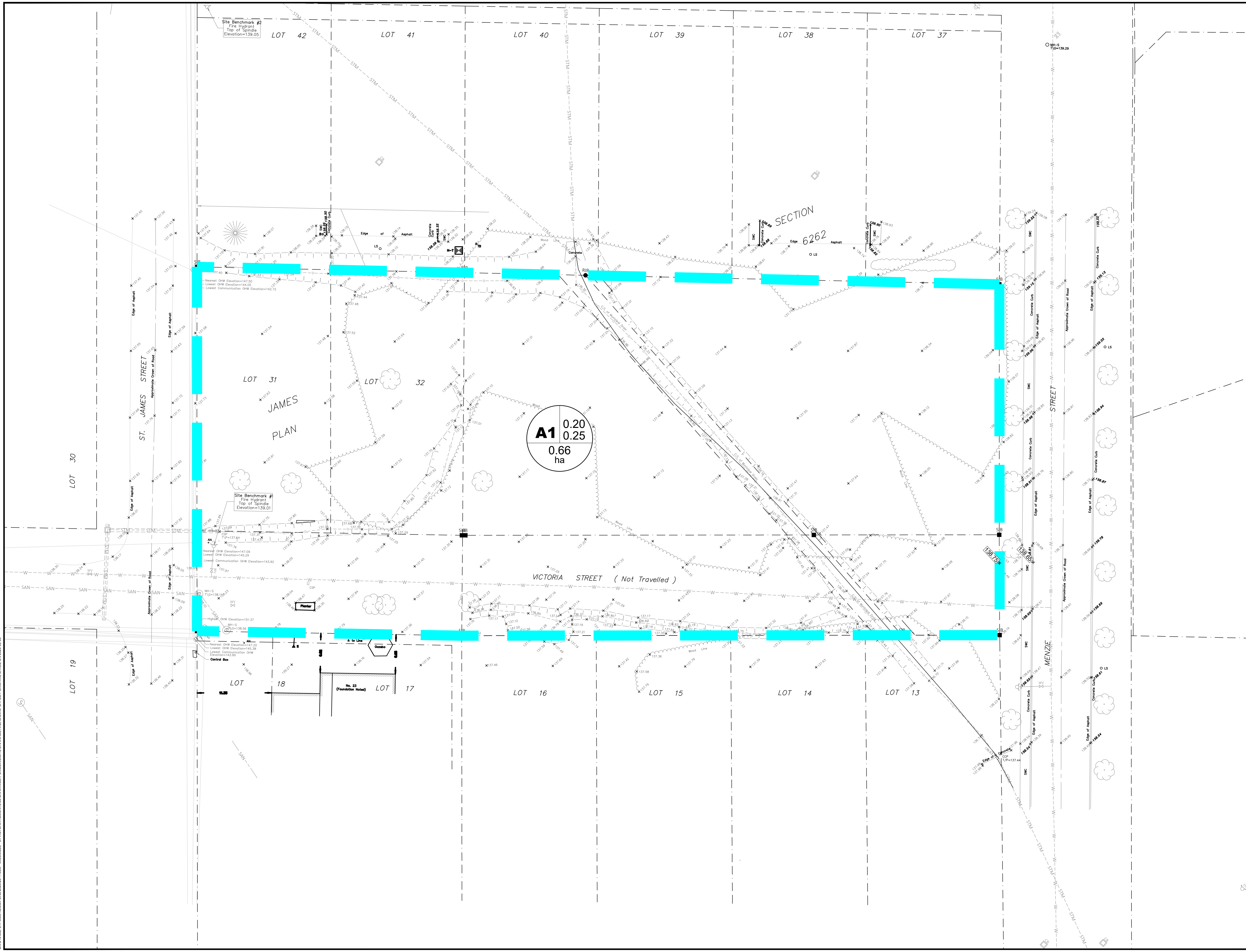
Therefore **25** $m^3$ estimated detention

**Table 1.1.3.1b - 100-year estimated detention**

| | Time (min) | $i_{100\text{-years}}$ (mm/hr) | $Q_{actual}$ (l/s) | $Q_{allowable}$ (l/s) | $Q_{stored}$ (l/s) | $V_{stored}$ ($m^3$) |
|---|---|---|---|---|---|---|
| *peak $V_{stored}$* → | 10 | 156.4 | 132.4 | 55.3 | 77.0 | 46.2 |
| | 15 | 117.8 | 99.7 | 55.3 | 44.3 | 39.9 |
| | 20 | 96.3 | 81.5 | 55.3 | 26.2 | 31.4 |
| | 25 | 82.4 | 69.8 | 55.3 | 14.4 | 21.6 |
| | 30 | 72.6 | 61.4 | 55.3 | 6.1 | 10.9 |
| | 35 | 65.2 | 55.1 | 55.3 | -0.2 | -0.4 |
| | 40 | 59.3 | 50.2 | 55.3 | -5.1 | -12.3 |
| | 45 | 54.7 | 46.3 | 55.3 | -9.1 | -24.5 |
| | 50 | 50.8 | 43.0 | 55.3 | -12.4 | -37.1 |
| | 55 | 47.5 | 40.2 | 55.3 | -15.1 | -50.0 |
| | 60 | 44.7 | 37.8 | 55.3 | -17.5 | -63.0 |

Therefore **46** $m^3$ estimated detention

# Appendix 2
# Drawings and Figures

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Jp2g Consultants Inc.
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Jp2g PROJECT No.: 20-1100M

NORTH

TRUE NORTH

CLIENT No.:

DRAFTED: CJ

DESIGNED: CJ

REVIEWED: SA

APPROVED: SA

SCALE 1:250

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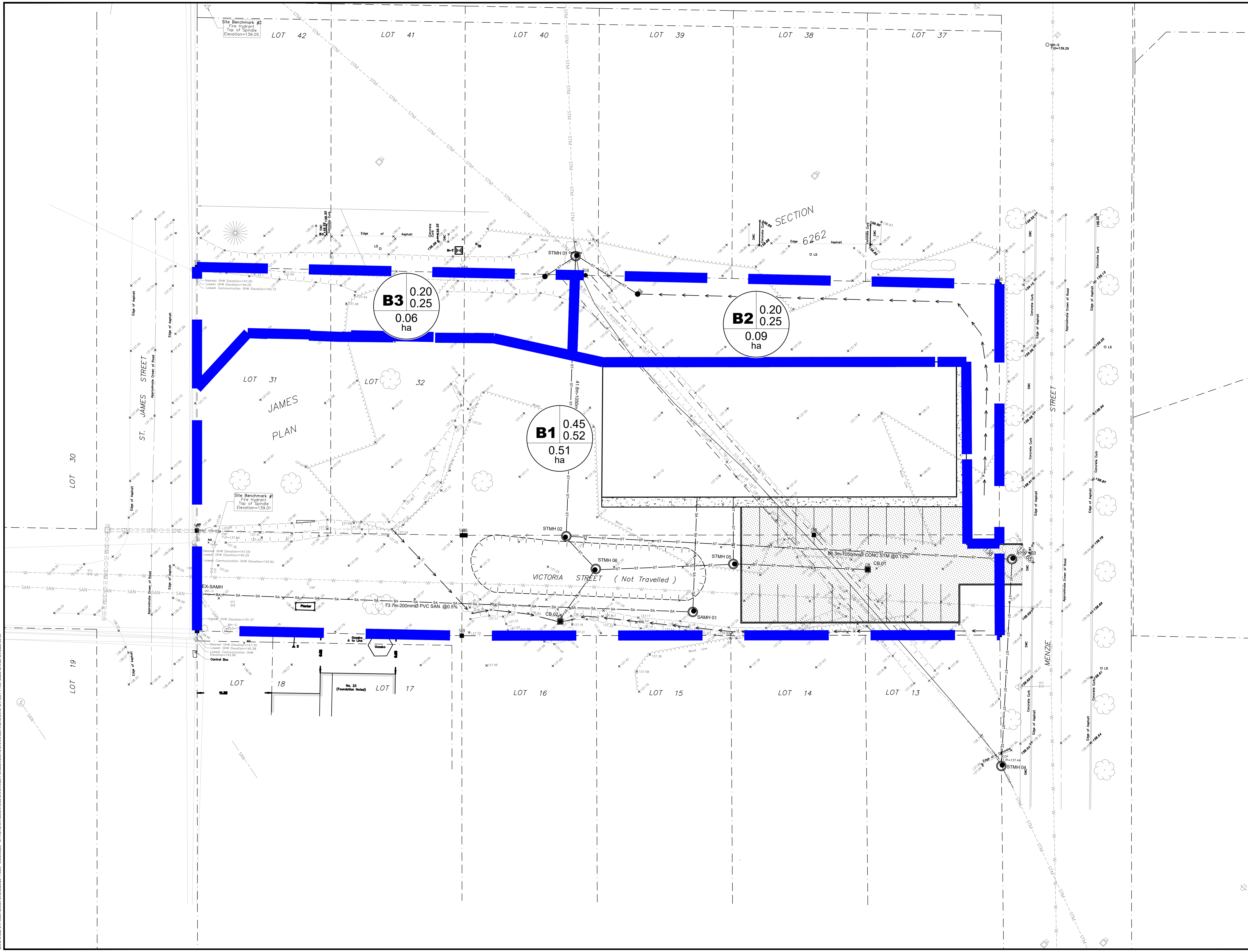


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34 VICTORIA STREET

ALMONTE, ON

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PROPOSED DRAINAGE AREAS


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Jp2g PROJECT No.: 20-1100M

NORTH

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CLIENT No.:
DRAFTED: CJ
DESIGNED: CJ
REVIEWED: SA
APPROVED: SA

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SHEET #
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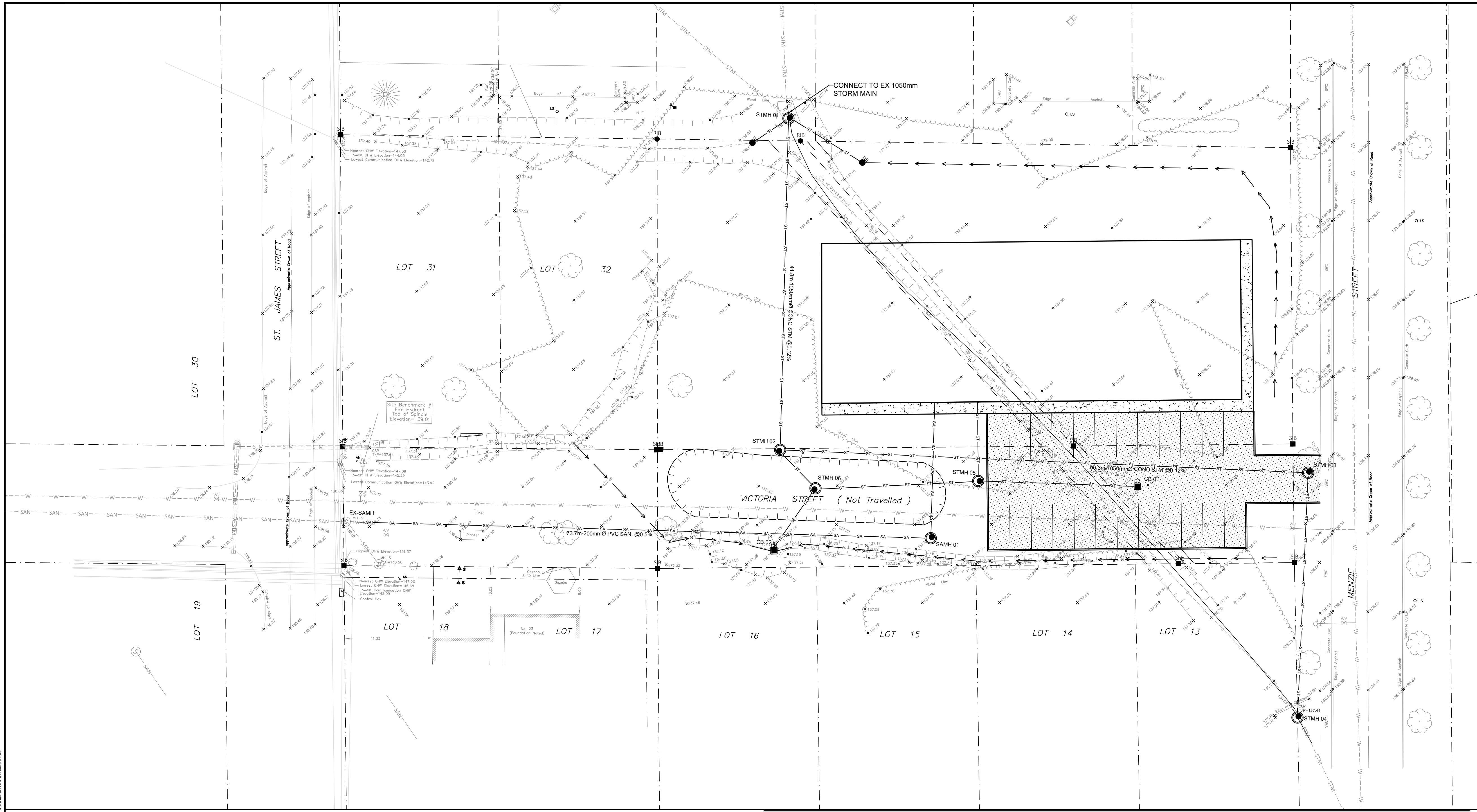


## STORM MANHOLE SCHEDULE

| STRUCTURE ID | TOP OF FRAME ELEVATION (m) | PIPE INVERT ELEVATION (m) | STRUCTURE DIAMETER (mm) / OPSD No. | FRAME (OPSD) |
|---|---|---|---|---|
| STMH-01 | | 136.06 NW / 136.07 SE / ###.##E / ###.## S | 1800 / 701.012 | 401.010 'B' |
| STMH-02 | | 136.12 NW / 136.13 NE / 136.15E | 2400 / 701.013 | 401.010 'B' |
| STMH-03 | | 136.42 SW / 136.43 SE | 2400 / 701.013 | 401.010 'B' |
| STMH-04 | | 136.54 NW / 136.55 SE | 2400 / 701.013 | 401.010 'B' |
| STMH-05 | 138.680 | 136.34 NE / 136.32 SW | 1200 / 701.010 | 401.010 'B' |
| STM-06 | 137.650 | 136.18W / 136.20 NE / 136.20 S | 1200 / 701.010 | 401.010 'B' |
| CB-01 | 138.150 | 136.93 SW | 600 x 600 / 705.010 | 400.020 |
| CB-02 | 136.870 | 136.40 N | 600 x 600 / 705.010 | 400.020 |

*CONTRACTOR TO CONFIRM INVERTS TO EX-STORM ON SITE.

## SANITARY MANHOLE SCHEDULE

| STRUCTURE ID | TOP OF FRAME ELEVATION (m) | PIPE INVERT ELEVATION (m) | STRUCTURE DIAMETER (mm) / OPSD No. | FRAME (OPSD) |
|---|---|---|---|---|
| EX-SAMH | 138.110 | 136.50 E/ 135.89 SW / 135.91 NE | EXISTING | EXISTING |
| SAMH 1 | 104.410 | 136.28 SW / 101.78 SE | 1200 / 701.010 | 401.010 'A' |

*CONTRACTOR TO CONFIRM INVERTS TO EX-SAMH ON SITE.

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SITE PLAN

Jp2g Consultants Inc.
ENGINEERS · PLANNERS · PROJECT MANAGERS
16 EDWARD STREET SOUTH, SUITE 211, ARNPRIOR, ON, K7S 3W4
T: 613-626-0780
ARNPRIOR@JP2G.COM

Jp2g PROJECT No.: 20-1100M

NORTH

TRUE NORTH

CLIENT No.:
DRAFTED: CJ
DESIGNED: CJ
REVIEWED: SA
APPROVED: SA

SCALE
1:250
0 m 2 4 6 8 10 m

SHEET #
C1

DWG NAME: J:\1-MULTIDISCIPLINE\2020\20-1100M - MISSMILLS - 34 VICTORIA ALMONTE\05 DRAWINGS\1 ONGOING\SITE PLAN - APRIL 30, 2025.DWG LAYOUT: D 24X36 SAVED ON 2025-05-05


CLIENT LOGO

KEYPLAN (NTS)

DISCLAIMER NOTES

1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ISSUES/PROBLEMS WHICH MAY OCCUR AS A RESULT OF A FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY.
2. WHERE THERE ARE ALLEGED ERRORS, OMISSIONS, INCONSISTENCIES OR AMBIGUITIES PRESENT IN THE CONTRACT DOCUMENTS, THE CONTRACTOR MUST SEEK CLARIFICATION FROM JP2G. ANY COSTS OR SCHEDULE DELAYS WHICH RESULT AS A FAILURE TO CONTACT JP2G FOR DIRECTION SHALL BE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
3. DO NOT SCALE DRAWINGS. REFER ANY DIMENSIONAL CLARIFICATIONS AND/OR POSSIBLE TRADE INTERFERENCE/CONFLICTS TO JP2G FOR CLARIFICATION PRIOR TO COMMENCEMENT OF THE WORK.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION WITH SUBTRADES AND SHALL ADDRESS CONSTRUCTION TEAM COORDINATION ITEMS PRIOR TO ISSUING REQUESTS FOR INFORMATION FROM JP2G.
5. THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWING, AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM THEMSELVES OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

LEGEND

A4 0.60 0.13 ha — DRAINAGE AREA ID; RUNOFF COEFFICIENT; AREA (ha)

FLOW DIRECTION

NOT FOR CONSTRUCTION

| No. | YYYY-MM-DD | BY | DESCRIPTION |
|---|---|---|---|

STAMP

STAMP

PROJECT

34 VICTORIA STREET

ALMONTE ON

DRAWING

STORM DRAINAGE PLAN

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