

EDWARD J. CUHACI AND ASSOCIATES ARCHITECTS INC.

**ÉCOLE ÉLÉMENTAIRE CATHOLIQUE  
AVALON III  
TENTH LINE ROAD, OTTAWA, ON  
SERVICING AND STORMWATER  
MANAGEMENT REPORT**

FEBRUARY 16, 2024







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AVALON III  
TENTH LINE ROAD,  
OTTAWA, ON  
SERVICING AND STORMWATER  
MANAGEMENT REPORT**

**EDWARD J. CUHACI AND ASSOCIATES  
ARCHITECTS INC.**

**SITE PLAN APPLICATION**

**PROJECT NO.: 221-12984-00  
DATE: FEBRUARY 2024**

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# 1 GENERAL

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## 1.1 EXECUTIVE SUMMARY

WSP was retained by Edward J. Cuhaci and Associates Architects Inc. to provide servicing, grading and stormwater management design services for the proposed new Avalon III Ecole Catholique Elementarie School on a 1.747 ha site located at the southwest corner of Tenth Line Road and Sweetvalley Drive, in the proposed Summerside South Phase 1 subdivision development within the Mer Bleue Community in Orleans Ottawa. The construction of services and base course asphalt is complete on Sweetvalley Drive, on which the school property will front. All services for the school site will be available from Sweetvalley Drive. The subjected development is bounded by the Phase 1 of the subdivision development to the north, McKinnon's Creek channel block to the west and Existing residential block to the south. The future McKinnon's Creek channel block will be designed by the subdivision developer in a later date. This report outlines findings and calculations pertaining to the servicing of the proposed building with a gross building area of 2,308.8 square metres.

The proposed school building is a two storey school building with gross floor area of 2,862.8 square metre and maximum building height will not be higher than 18 metres which is located at the northeast corner of the subjected site, southwest corner of the Tenth Line Road and Sweetvalley Drive intersection. To the south of the proposed school building, there will be future portable classroom. These portable classrooms will be removed when the addition to the school is needed. East of the school, it's Tenth Line Road. Tenth Line Road will be widened in the future. Southwest of the school, there will be playground and practise football/soccer field. West of the school, there will be parking spots for the staff and visitors. Since the proposed school and portable classrooms are located close to the Sweetvalley Drive and Tenth Line Road R.O.W. These streets will be used as the fire route to service the school building and portable classrooms area.

There will be three future additional parking spots to the west of the proposed parking areas will be constructed at a later time. The current grading and servicing design have been provided to allow for the future site plan changes with minimal changes to grading and servicing modifications only within the areas that will be impacted by the future development.

The surrounding neighbourhood is being developed by Mattamy Home Mer Bleue 2 Limited. with David Schaefer Engineering Ltd providing engineering design services. Information regarding the proposed municipal services was provided by DSEL, as described in Design Brief – Summerside South – Phase 1, 2464 Tenth Line Road, Project: 15-766, Revised June 24, 2019. Excerpts from the Design Brief are provided in Appendix A of this report.

Currently the land proposed for the building abuts the collector road Sweetvalley Drive which is located to the north of the subject site. The natural topography of the property in the vicinity of the collector road slopes from both east and west towards Pewee Place. Currently the land is vacant and half grass covered and half abandoned storage warehouse. The total study area was considered to be 1.747 ha in size. It is part of lot 5, concession 11, geographic Township of Cumberland in City of Ottawa. Based on the topographic survey, portion of the site is sloping from the northeast corner to the southwest corner and will be draining toward McKinnon's Creek Channel block. The east portion of the site is slopping toward Tenth Line Road. The south portion of the site is slopping toward the existing residential block to the south. The existing piped stormwater system within Summerside South phase 1 subdivision development conveys drainage to expanded Avalon West SWM Facility then discharges to the McKinnon's Creek.



As per the Summerside South Phase 1 Design Brief by DSEL, the following criteria apply: runoff from all storm events up to and including the 1:100 year event must be restricted to a calculated rate based on an imperviousness ratio of 0.50, 2 year simulated flow of 567 l/s. The subject site must provide sufficient storage to accommodate runoff from the 1:100 year event. Stormwater quality control is not required for this site. Design of a drainage and stormwater management system in this development must be prepared in accordance with the following documents:

- Sewer Design Guidelines, City of Ottawa, October 2012;
- Stormwater Management Planning and Design Manual, Ministry of the Environment, March 2003; and
- Stormwater Management Facility Design Guidelines, City of Ottawa, April 2012

This report was prepared utilizing servicing design criteria obtained from the City of Ottawa and outlines the design for water, sanitary wastewater, and stormwater facilities, including stormwater management.

The format of this report matches that of the servicing study checklist found in Section 4 of the City of Ottawa's Servicing Study Guidelines for Development Applications, November 2009.

The following municipal services are available at the north property line as recorded from drawings received from IBI Group: Sweetvalley Drive:

- 900 mm storm sewer 1800 mm storm sewer, 200mm sanitary sewer and 300mm watermain.

It is proposed that:

- On-site stormwater management systems, employing surface storage and roof storage will be provided to attenuate flow rates leaving the school site. Existing drainage patterns previously established controlled flow rates and storm sewers will be maintained.
- The subject site maintains emergency overland flow routes for flows deriving from storm events in excess of the maximum design event to the proposed municipal rights-of-way at the southern boundaries of the subdivision development as depicted in DSEL Drawing 34, which attached to Appendix A for reference.

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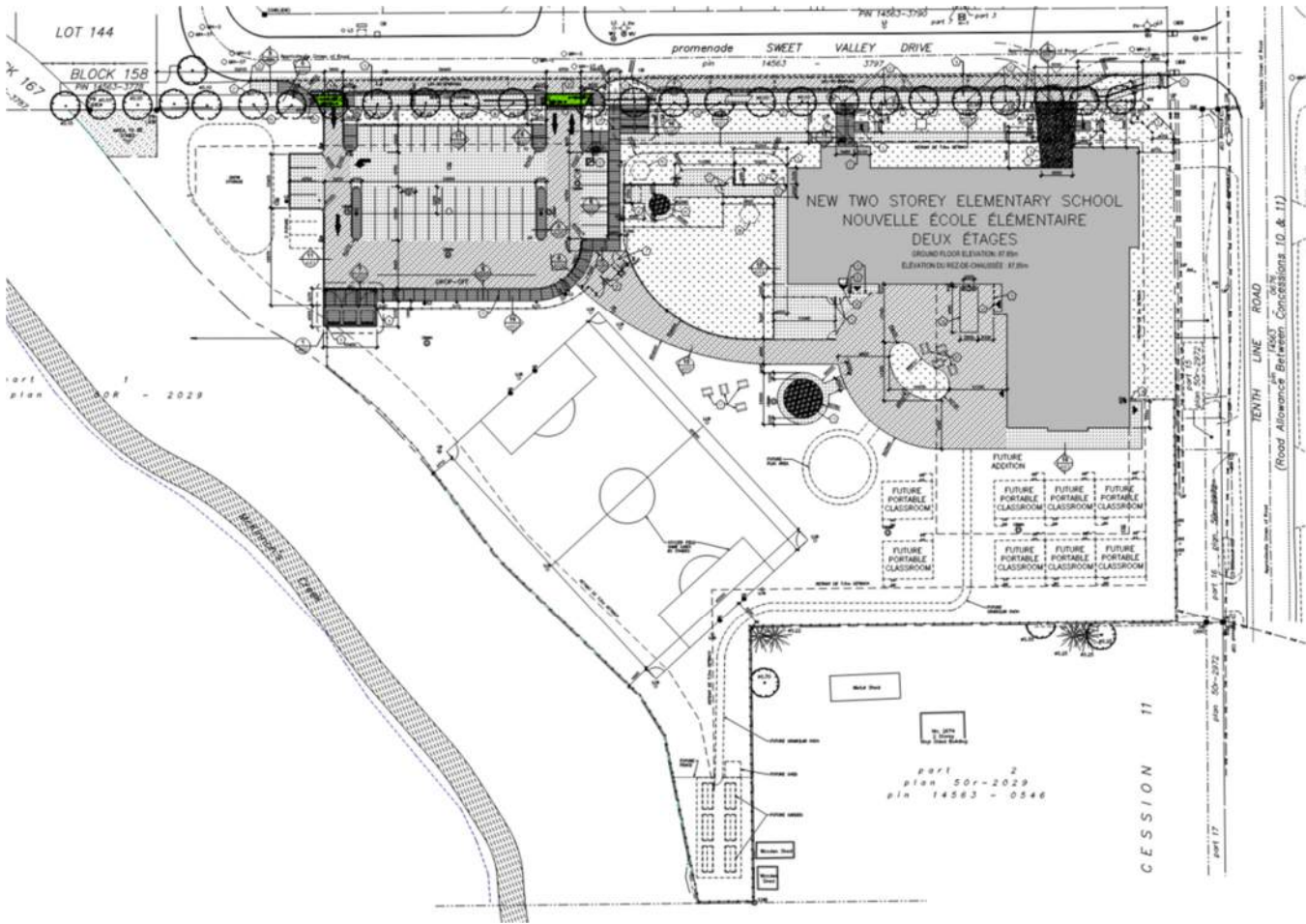
## 1.2 DATE AND REVISION NUMBER

This version of the report is the second revision, dated February 15, 2024.

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## 1.3 LOCATION MAP AND PLAN

The proposed institutional development is located at 700 Cope Drive, Stittsville, Ontario at the location shown in Figure 1-1 below.



**Figure 1-1 Site Location**

## 1.4 ADHERENCE TO ZONING AND RELATED REQUIREMENTS

The proposed property use will be in conformance with zoning and related requirements prior to approval and construction and is understood to be in conformance with current zoning.

## 1.5 PRE-CONSULTATION MEETINGS

A pre-consultation meeting was held with the City of Ottawa on August 23, 2022. Notes from this meeting are provided in Appendix A.

## 1.6 HIGHER LEVEL STUDIES

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

- Ottawa Sewer Design Guidelines, Second Edition, Document SDG002, October 2012, City of Ottawa including:

- Technical Bulletin ISDTB-2012-4 (20 June 2012)
- Technical Bulletin ISDTB-2014-01 (05 February 2014)
- Technical Bulletin PIEDTB-2016-01 (September 6, 2018)
- Technical Bulletin ISDTB-2018-01 (21 March 2018)
- Technical Bulletin ISDTB-2018-04 (27 June 2018)
- Ottawa Design Guidelines – Water Distribution, July 2010 (WDG001), including:
  - Technical Bulletin ISDTB-2014-02 (May 27, 2014)
  - Technical Bulletin ISTB-2018-02 (21 March 2018)
- Stormwater Management Planning and Design Manual, Ontario Ministry of the Environment and Climate Change, March 2003 (SMPDM).
- Design Brief – Summerside South -Phase 1 2464 Tenth Line Road, DSEL, Project 15-766, Revised June 24, 2019. (Includes water, sanitary and storm servicing.)
- Stormwater Management Report for Summerside South Phase 1, JFSA, Project 1102-13, Revised June 2019.
- Design Guidelines for Drinking-Water Systems, Ontario Ministry of the Environment and Climate Change, 2008 (GDWS).
- Fire Underwriters Survey, Water Supply for Public Fire Protection (FUS), 2020.

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## 1.7 STATEMENT OF OBJECTIVES AND SERVICING CRITERIA

The objective of the site servicing is to meet the requirements for the proposed modification of the site while adhering to the stipulations of the applicable higher-level studies and City of Ottawa servicing design guidelines.

---

## 1.8 AVAILABLE EXISTING AND PROPOSED INFRASTRUCTURE

Existing storm sewer and watermain stubs have been provided from Sweetvalley Drive to the north of frontage of the site. The sanitary sewer can also be extended from the existing 200mm diameter sanitary along Sweetvalley Drive to the proposed Elementary School next to the existing storm stub. The storm sewer will be connected to the existing 900 mm stub, and flows from south to north. Water and storm sewer stubs have already been provided to the property boundary during the time of construction of Sweetvalley Drive. The works provided by the subdivision developer have already included the water valve and box at the property line, and all work within the right of way, excluding the driveway entrances, water service will be routed to the water entry room from the existing stub. Ultimately, the storm flows from Sweetvalley Drive (servicing the school site) to the Pewee Place storm sewer are intended to be directed to a permanent Avalon West SWM Facility that will provide quality and quantity treatment for Summerside South Phase 1 subdivision, and including the school site. Quality control is not required on the school site, but quantity control is required to restrict the discharge for all events up to a 100 year event to the 2 year flow rate provided by DSEL.

Site access for vehicles will be provided from Sweetvalley Drive. The driveways being provided are two-way entrances at the centre north boundary.

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## 1.9 ENVIRONMENTALLY SIGNIFICANT AREAS, WATERCOURSES AND MUNICIPAL DRAINS

The proposed development site is surrounded by residential and commercial lands. The west boundary is abutting the McKinnon's Creek Channel Block. Existing Runoff from the site is currently draining overland toward McKinnon's Creek. However, post development runoff toward the creek will be reduced significantly.

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## **1.10 CONCEPT LEVEL MASTER GRADING PLAN**

The existing and proposed grading are shown on Drawings C02 - Grading Plan. Existing grading was identified in a topographic survey and is noted in the background of Drawings C02. The proposed grading will be reviewed by the geotechnical engineer. The geotechnical investigation was completed in March 07, 2023 by Exp Service Inc. The site topographic survey, provides evidence of direction of overland flow of the site. Minor grade changes will be made to grades at the development perimeter for the proposed bus drop off lay-by and entrances location.

Grading will employ terraced slopes of 3H:1V to provide transitions from the new work areas to existing grades. No changes will be made to grades at the property perimeter other than the north boundary.

---

## **1.11 DEVELOPMENT PHASING**

The proposed development includes future portable classrooms and building addition. The impervious area associated with the future development has been taken into account in the stormwater management calculations. The future hard surfaces take up a bit of the green space than the current condition, and therefore were conservatively used in the calculation of runoff.

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## **1.12 GEOTECHNICAL SUTDY**

A geotechnical investigation report has been prepared by Exp Services Inc. (Project OTT-22017859-A0, March 07, 2023), and its recommendations has been taken into account in developing the engineering specifications.

## 2 WATER DISTRIBUTION

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

The site is bounded to the Summerside South Subdivision Phase 1. SSS Phase 1 is located within Zone 2E of the City's water distribution system, which is fed by two booster pumping stations and the Innes Road elevated storage tank at Belcourt Boulevard, providing balancing, fire, and emergency storage. There is an existing 305mm diameter municipal watermain along Sweetvalley Drive providing water to the property. The new elementary school will be protected with a supervised automatic fire protection sprinkler system and will require a 203mm diameter water service. The fire department connection is located at the north side of the building at the main entrance fronting Sweetvalley Drive. It is 45m away from the existing municipal FH on Sweetvalley Drive. No changes are required to the existing City water distribution system to allow servicing for this property. A single 203mm water service and an isolation valve in between will be made to the existing 203mm diameter stub at the north boundary from Sweetvalley Drive for the proposed development site. The 203mm diameter private watermain services connecting the existing 305mm municipal watermain will provide redundancy for the school building. Water can be supplied from both side of Sweetvalley Drive and Pewee Place. The 203mm dia. water service will be extended to the building mechanical room.

---

### 2.2 SYSTEM CONSTRAINTS AND BOUNDARY CONDITIONS

Boundary conditions have been provided by the City of Ottawa at the connection at Sweetvalley Drive. The fire flow of 133.3 l/s (8,000 l/min) was estimated for the proposed school with using the FUS calculation method and is included in Appendix B.

**Table 2-1 Boundary Condition**

BOUNDARY CONDITIONS AT COPE DRIVE		
SCENARIO	Head (m)	Pressure (psi)
Basic Day (MAX HGL)	130.3	62.9
Peak Hour (MIN HGL)	126.0	56.9
Max Day + Fire Flow (ICI)	126.3	57.3

---

### 2.3 CONFIRMATION OF ADEQUATE DOMESTIC SUPPLY AND PRESSURE

Water demands are based on Table 4.2 of the Ottawa Design Guidelines – Water Distribution. As previously noted, the development is considered as institutional development, consisting of classroom, gymnasium and kitchen. A water demand calculation sheet is included in Appendix B, and the total water demands are summarized as follows:

	WSP
Average Day	0.57 l/s
Maximum Day	0.86 l/s
Peak Hour	1.55 l/s

The 2010 City of Ottawa Water Distribution Guidelines stated that the preferred practice for design of a new distribution system is to have normal operating pressures range between 345 kPa (50 psi) and 552 kPa (80 psi) under maximum daily flow conditions. Other pressure criteria identified in the guidelines are as follows:

Minimum Pressure	Minimum system pressure under peak hour demand conditions shall not be less than 276 kPa (40 psi)
Fire Flow	During the period of maximum day demand, the system pressure shall not be less than 140 kPa (20 psi) during a fire flow event.
Maximum Pressure	Maximum pressure at any point the distribution system shall not exceed 689 kPa (100 psi). In accordance with the Ontario Building/Plumbing Code, the maximum pressure should not exceed 552 kPa (80 psi). Pressure reduction controls may be required for buildings where it is not possible/feasible to maintain the system pressure below 552 kPa.

Water pressure at municipal connections check:

Min. HGL @ Connection 1 – Pavement elevation = 126.0m – 87.08m = 38.92m = 381.58 kPa

Water pressure at building connection (at average day) check:

Max. HGL @ Connection 1 – Finished floor elevation = 130.3m – 87.85 = 53.04m = 146.19 kPa

Water pressure at building connection (at max. hour demand) check:

Min. HGL @ Connection 1 – Finished floor elevation = 126.0m-87.85m = 38.15m = 374.03 kPa

Water pressure at building connection (at max. day + fire demand):

(Max Day + Fire) HGL @ Connection 1 – Finished floor elevation = 126.3m-87.85m = 38.45m = 376.97 kPa

The minimum water pressure inside the building at the connection is determined with the minimum HGL condition, resulting in a pressure of 374.03 kPa which exceed the minimum requirement of 276 kPa per the guidelines.

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## 2.4 CONFIRMATION OF ADEQUATE FIRE FLOW PROTECTION

The fire flow rate has been calculated using the Fire Underwriters Survey (FUS) method. The method takes into account the type of building construction, the building occupancy, the use of sprinklers and the exposures to adjacent structures. Assuming fire resistive construction and a fully supervised sprinkler system, a fire flow demand of 8,000 l/min for the new high school. The fire flow rate of 6,000 l/min (100 l/s) is calculated for the future portable classrooms. Copy of the FUS calculations are included in Appendix D.

The demand of 8,000 l/min can be delivered through two fire hydrants. The existing two public hydrants are located at the northside of Sweetvalley Drive, one of them is within 45 m to the building Siamese, and is rated at 5,700 l/min., the other one is within 75 m to the building and is rated at 5,700 l/min. The two hydrants have a combined total of 11,400 l/min.

The demand of 6,000 l/min from the future portable classrooms can also be met through the combination of two fire hydrants from Sweetvalley Drive, they are within 100m to the future portable classrooms, and are rated at 3,800 l/min each. The combined total of 7,600 l/min. And there will be future fire hydrants along Tenth Line Road to the east when the watermain system, expansion is completed.

The proposed building on site will be serviced by a single 203 mm service off the existing 203 mm watermain extended from the Sweetvalley Drive and Pewee Place intersection. The service will run into the water entry room. The proposed building will be fully sprinklered and fire protection will be provided with the fire department Siamese connection within 45 m of the existing municipal fire hydrant at Sweetvalley Drive. The Siamese connection is located on the north side of the building.

The boundary condition for Maximum Day and Fire Flow results in a pressure of 376.97 kPa at the ground floor level. In the guidelines, a minimum residual pressure of 140 kPa must be maintained in the distribution system for a fire flow and maximum day event. As a pressure of 376.97 kPa is achieved, the fire flow requirement is exceeded.

---

## **2.5 CHECK OF HIGH PRESSURE**

High pressure is not a concern. The maximum water pressure inside the building at the connection is determined with the maximum HGL condition, resulting in a pressure of 381.58 kPa which is less than the 552 kPa threshold in the guideline in which pressure control is required. Based on this result, pressure control is not required for this building.

---

## **2.6 PHASING CONSTRAINTS**

No development phasing has been detailed for the site. The site plan does indicate possible future development of additional parking lots. The projected occupancy load has been taken into account in the fire demand and water demand calculations. No phasing constraints exist.

---

## **2.7 RELIABILITY REQUIREMENTS**

One shut off valve is provided for the private watermain at the study boundary from Sweetvalley Drive. Water can be supplied from both sides of Sweetvalley Drive and Pewee Place, west, east and north can be isolated.

---

## **2.8 CAPABILITY OF MAJOR INFRASTRUCTURE TO SUPPLY SUFFICIENT WATER**

The existing infrastructure for the Summerside South Phase 1 Subdivision is capable of meeting the domestic demand based on City requirements and fire demand as determined by FUS requirements for the proposed residential units.

---

## **2.9 DESCRIPTION OF PROPOSED WATER DISTRIBUTION NETWORK**

A 203 mm private water service is proposed to be extended into the proposed elementary school from the existing stub. The 203 mm private water service will be split inside the building, one branch will be connected to the water meter, the other branch will be connected to the fire suppression system. No private hydrant is required for this site.

---

## **2.10 OFF-SITE REQUIREMENTS**

No off-site improvements to watermains, feeder mains, pumping stations, or other water infrastructure are required to maintain existing conditions and service the adjacent buildings, other than the connection of the new private watermain to the City watermain in the south frontage of the site.

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## **2.11 CALCULATION OF WATER DEMANDS**

Water demands were calculated as described in Sections 2.3 and 2.4 above and is also attached in Appendix B.

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## 2.12 MODEL SCHEMATIC

The water works consist single building service, a model schematic is not required for this development.

---

## 2.13 WATER SUPPLY CONCLUSION

The proposed school will be serviced internally by 203 mm water service, which will be connected to the existing 203 mm watermain stub from Sweetvally Drive. A detailed hydraulic calculation has been completed above to confirm that the proposed water network can deliver all domestic and fire flows as per the Ministry of the Environment, City of Ottawa and Fire Underwriters criteria.

The proposed water supply design conforms to all relevant City guidelines and policies.



## 3 WASTEWATER DISPOSAL

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### 3.1 DESIGN CRITERIA

In accordance with the City of Ottawa's Sewer Design Guidelines, the following design criteria have been utilized in order to predict wastewater flows generated by the subject site and complete the sewer design;

• Minimum Velocity	0.6 m/s
• Maximum Velocity	3.0 m/s
• Manning Roughness Coefficient	0.013
• Total est. hectares institutional use	1.747
• Average sanitary flow for institutional use	28,000 L/Ha/day
• Commercial/Institutional Peaking Factor	1.5
• Infiltration Allowance (Total)	0.33 L/Ha/s
• Minimum Sewer Slopes – 200 mm diameter	0.32%

The area of 1.747 ha represents the lot area of the new building and immediate surrounding area to the sides of the new building. This is the sanitary collection area that is being considered to contribute to the new 200mm sanitary service extending from the existing 200mm sanitary sewer from Sweetvalley Drive and Pewee Place intersection to the new building.

---

### 3.2 CONSISTENCY WITH MASTER SERVICING STUDY

The outlet for the sanitary service from the proposed building is the 200 mm diameter municipal sewer at Sweetvalley Drive and Pewee Place intersection. The Ottawa Sewer Design Guidelines provide estimates of sewage flows based on institutional development.

The criteria to determine anticipated actual peak flow based on site used as described in Ottawa Sewer Design Guidelines Appendix 4-A are as follows.

- Institutional  $28000 \text{ L/Ha/day} = 0.324 \text{ L/Ha/s}$
- Peak flow =  $(0.324 \text{ L/Ha/s} \times 1.765 \text{ ha} \times 1.5 \text{ peaking factor}) + 0.33 \text{ l/Ha/s} \times 1.765 \text{ ha} = 1.01 \text{ L/s}$

The on-site sanitary sewer network has been designed in accordance with 5.35 L/s as described above.

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### 3.3 DESCRIPTION OF EXISTING SANITARY SEWER

The existing sanitary outlet for Summerside South Phase 1 is the Tenth Line Road Pump Station (TLPS), which in turn outlets by forcemain to the Esprit Drive Collector. The TLPS is located above the north east corner of SSS Phase 1, at Tenth Line Road.

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### 3.4 VERIFICATION OF AVAILABLE CAPACITY IN DOWNSTREAM SEWER

The capacity of the downstream 250 mm diameter sewer to existing sanitary manhole 110A has 34% left capacity base on DSEL sanitary sewer design sheet, which is adequate for the flow assumptions from the proposed site as noted above. The servicing pipe capacity is capable to handle the estimated peak sanitary flow rate of 1.01 L/s for the proposed development site. Please refer to sanitary sewer design sheet in Appendix C.

---

### 3.5 CALCULATIONS FOR NEW SANITARY SEWER

The 200 mm diameter sanitary service from the sanitary manhole 100 to the building will have a slope of 1.0 %, and a capacity of 32.80 l/s, with a velocity of 1.04 m/s. The 200 mm diameter sanitary service from the sanitary manhole 100 to sanitary manhole 101 have a slope of 0.50%, and a capacity of 23.19 l/s with a velocity of 0.74 m/s. And it will be the same from sanitary manhole to existing sanitary manhole 402A on Sweetvalley Drive. The servicing pipe capacity exceeds the estimated peak sanitary flow rate of 1.01 L/s for the proposed development site.

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### 3.6 DESCRIPTION OF PROPOSED SEWER NETWORK

The proposed sanitary sewer network on site will consist of a 200 mm diameter building service, and two new 1200 mm diameter manholes.

## 4 SITE STORM SERVICING

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### 4.1 EXISTING CONDITION

The subject site is located within the McKinnon's Creek Watershed and is subject to regulations of the South Nation Conservation (SNC).

The site is currently undeveloped, consisting of grass covered partially agricultural lands and storage warehouse with McKinnon's Creek to the west of the property. The site is sloping from north to south and slightly below the grade of Sweetvalley Drive.

The existing Avalon West SWM Facility, originally designed to service Avalon West Neighbourhood 5, north of Summerside Lands, was revised to accommodate SSW Phases 1, 2 and 3. An expansion of the existing Avalon West SWM Facility has been completed and has the capacity to service SSS Phase 1 and the subject site.

Pre-development drainage area plan C05 has illustrated the existing drainage pattern that the runoff from area P1 and P2 of 0.811 ha and 0.225 ha respectively are draining overland toward McKinnon's Creek. Runoff from area P4 of 0.518 ha is draining toward the existing property 2680 Tenth Line Road to the south. Runoff will be further directed toward the ROW via the existing swales along the property lines. And the runoff from area P2 of 0.209 ha will sheet drain toward Tenth Line Road ROW.

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### 4.2 ANALYSIS OF AVAILABLE CAPACITY IN PUBLIC INFRASTRUCTURE

Using the Rational Method, with coefficient of 0.25 for pervious areas, 0.90 for asphalt and concrete pavement, and 1.0 for building roof, and a 10-minute time of concentration, results in an estimated 2-year flow of 186.51 l/s from this area. The receiving 900 mm diameter storm sewer has been designed with the capacity to accept 567 l/s from the school site. Capacity in the minor system is not a concern.

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### 4.3 DRAINAGE DRAWING

Drawing C03 shows the detail site sewer network. Drawings C02 provides proposed grading and drainage, and include existing grading information. Drawing C05 and C06 provides a pre and post-construction drainage sub-area plan. Site sub-area information is also provided on the storm sewer design sheet attached in Appendix C.

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### 4.4 WATER QUANTITY CONTROL OBJECTIVE

The water quantity objective for the site is to limit the flow release to 186.51 l/s. Excess flows above this limit for the school site up to those generated by the 100 year storm event from drainage on the school site are temporarily stored on site.

No provision is required on the school's site to accommodate any flow from the adjacent lands. All flows exceeding the defined minor system capacity and on-site storage capability will enter the major system, with overflow to the City right of way, on the north boundaries of the site.

The maximum overland runoff spill elevation for this site is 87.25, and a 180 mm dia. circular plate ICDs are proposed to be used on the outlet inside CBMH108 to restrict the flow rate leaving the site to 119.27 l/s at 3.11 m head, based on the 100 year elevation of 87.20. In theory, the runoff water will be detained on site up to the 100-yr rainfall event, and for those scenarios exceeding 100-yr rainfall event, the runoff water will be discharged offsite once all the available storage areas have reached their maximum capacities. The school site can provide a total of 163.69m<sup>3</sup> of surface storage volume, but the required storage for 100-yr will be only 124.26 m<sup>3</sup>. The ponded water will not reach the max spill elevation under 100 year and lesser events. The site has more storage capacity than required as a result of the grading design. This will allow extra

detention of water on the site during extreme events, and will reduce stress on the downstream stormwater management pond. If rain falls at a rate higher than the soccer field soil can absorb, then there will be surface ponding at the designated locations shown on the drawings. If the soccer field and landscaped areas allow for infiltration, the available surface storage volume will be further increased. In theory, the use of lower runoff coefficients for landscaped surfaces already accounts for a certain degree of absorption in these areas.

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## 4.5 WATER QUALITY CONTROL OBJECTIVE

The site is not required to achieve water quality objectives. Water quality objectives are achieved through downstream works as noted in the DSEL Design Brief.

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## 4.6 DESIGN CRITERIA

The stormwater system was designed following the principles of dual drainage, making accommodation for both major and minor flow.

Some of the key criteria include the following:

- Design Storm (minor system) 1:2 year return (Ottawa)
- Rational Method Sewer Sizing
- Initial Time of Concentration 10 minutes
- Runoff Coefficients
  - Landscaped Areas C = 0.25
  - Playground Mulch Areas C = 0.40
  - Gravel Areas C = 0.75
  - Asphalt/Concrete C = 0.90
  - Traditional Roof C = 1.00
- Pipe Velocities 0.80 m/s to 6.0 m/s
- Minimum Pipe Size 250 mm diameter  
(200 mm CB Leads and service pipes)

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## 4.7 PROPOSED MINOR SYSTEM

The detailed design for this site will maintain the existing storm sewer network to Sweetvalley Drive and Pewee Place intersection of the development site. The drainage system consists of a series of manholes, catchbasins and storm sewers leading to the outlet manhole STMH110 at the north of the site. All drainage areas on the site are collected in the site piped drainage system.

It is also customary for larger buildings to be provided with piped storm services for roof drainage. There are no downspouts proposed. Separate outlet pipes are provided for foundation drains and roof drains, and therefore roof drainage will not negatively impact the foundation. The storm services are connected to the storm sewer downstream of CBMH108 which is downstream of the controlled flow point, ensuring an unobstructed flow for these areas.

Using the above noted criteria, the existing on-site storm sewers were sized accordingly. A detailed storm sewer design sheet and the associated post development storm sewer drainage area plan are included in Appendix C.

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## 4.8 STORMWATER MANAGEMENT

The subject site will be limited to a release rate of 186.51 l/s, this will be achieved through the inlet control devices at the downstream of CBMH108.

Flows generated that are in excess of the site's allowable release rate will be stored on site in surface storage areas or by the use of roof top storage and gradually released into the minor system so as not to exceed the site's allocation.

The maximum surface retention depth of the developed areas will be limited to 200mm during a 1:100 year event. Maximum ponding levels are 250mm prior to spill over. The maximum ponding elevation is 87.25m, which is well below the building ground floor level of 87.85m.

No surface ponding will occur during a 2 year event, and only minimal ponding will occur during a 5 year event.

Overland flow routes will be provided in the grading to permit emergency overland flow from the site. The overflow routes will eliminate any increase in ponding depth for events exceeding 100 years.

At certain locations within the site, the opportunity to store runoff is limited due to grading constraints and building geometry. These locations are located at the perimeter of the site where it is necessary to tie into public boulevards and existing property line elevation, and it is not always feasible to capture or store stormwater runoff.

The site grading and ponding has been designed to control water generated during the 1:100-year event, with no overflow leaving the site at this control level. Please refer to the SWM Calculations in Appendix C.

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## 4.9 INLET CONTROLS

As noted in previous sections, the maximum allowable release rate for the 1.747 Ha site is 186.51 L/s.

As noted in Section 4.8, small portion of the site will be left to discharge to the right of way and existing property line at an uncontrolled rate.

$Q$ (uncontrolled)	$= 2.78 \times C \times I_{100yr} \times A$	where:
$C$	$= 0.31$ (Weighted average post-development $C$ )	
$I_{100yr}$	$=$ Intensity of 100-year storm event (mm/hr)	
	$= 1735.688 / ((T_c + 6.014)^{0.82})$ ; where $T_c = 10$ minutes	
$A$	$=$ Area = 0.236 Ha	

Therefore, the uncontrolled release to the right of way can be determined as:

$$= 43.30 \text{ L/s}$$

The maximum allowable release rate from the remainder of the site can then be determined as:

$$\begin{aligned} Q \text{ (max allowable)} &= Q \text{ (total allowable)} - Q \text{ (uncontrolled)} \\ &= 186.51 \text{ L/s} - 43.30 \text{ L/s} \\ &= \mathbf{143.21 \text{ L/s}} \end{aligned}$$

Based on the flow allowance at the outlet location, CBMH108, inlet control devices (ICD) were chosen in the design. The design of the inlet control device is unique to the associated drainage areas and is determined based on a number of factors, including hydraulic head and allowable release rate. The inlet control device will be designed according to the manufacturer's design charts. The restrictions will cause the on-site catchbasins and manholes to surcharge, generating

surface ponding in the parking and landscaped areas. Ponding locations and elevations are summarized on the drainage areas plan C06.

## 4.10 ON-SITE DETENTION

Any excess storm water up to the 100-year event is to be stored on-site in order to not surcharge the downstream municipal storm sewer system. Detention will be provided in parking and landscape areas and building rooftops, where feasible. As previously noted, the volume of storage is dependent on the characteristics of each individual drainage area. It should be noted that greater than 0.30 m of vertical separation has been provided from all maximum ponding elevations to lowest building openings.

The following Table summarizes the on site storage requirements during the 1:100-year events.

**Table 4-1: On-Site Storage Requirements**

Total Area (Ha)	Location	Controlled/Uncontrolled	Runoff Coefficient		Outlet Location	Total Storage Provided (m <sup>3</sup> )	100-Year Controlled	
			2 & 5 Year	100 Year			Restricted Flow (L/s)	Required Storage (m <sup>3</sup> )
1.281	Surface	Controlled	0.44	0.51	CBMH108	163.69	106.47	133.66
0.231	Building Roof	Controlled	1.00	1.00	STMH110	80.00	17.64	74.44
0.267	R.O.W./Property	Uncontrolled	0.31	0.38			50.40	0
<b>TOTAL</b>						<b>243.69</b>	<b>174.51</b>	<b>208.10</b>

In all instances the required storage is met with surface ponds which retain the stormwater and discharge at the restricted flow rate to the sewer system. Refer to the grading plan for storage information.

The following Table summarizes the inlet control devices to be utilized on the site. ICD pre-set flow curves can be found in Appendix C.

**Table 4-2: ICD Type**

Structure ID	PROPOSED ICD			
	100-YR Head	Flow (L/s)	Type	OUTLET DIA.
CBMH108	3.12	106.47	170 mm Dia. Circular ICD	450 mm Dia. CONC.

As demonstrated above, the site uses new inlet control device to restrict the 100 year storm event to the criteria approved by the City of Ottawa. Restricted stormwater will be contained onsite by utilizing surface ponding storage. In the 100 year event, there will be no overflow off-site from restricted areas.

The sum of restrictions on the site is 174.51 L/s, which is less than the maximum allowable release of 186.51 L/s noted in Section 4.9.

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#### 4.11 IMPACTS TO ADJACENT PROPERTY

The property line along the southeast sharing with 2680 Tenth Line Road is acting as the swale to direct the runoff to the south as per the existing drainage pattern. As per the pre-development condition, runoff from area P4 of 0.518 ha is draining overland toward the existing swales along the southeast property line. As per the post development, uncontrolled area of U5 of 0.070 ha is draining overland toward the swales along the property line. A significant reduction of 67.5 L/s in 100 year overland flow toward the same swales.

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#### 4.12 PRE AND POST DEVELOPMENT PEAK FLOW RATES

Pre and post development peak flow rates for the impacted areas of the site have been noted in storm sewer design sheet.

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#### 4.13 IMPACTS TO RECEIVING WATERCOURSES

No significant negative impact is anticipated to downstream receiving watercourses due to proposed quantity and quality control measures, the separation of the site from the eventual receiving watercourse as a result of discharge through City owned sewers, and the Avalon SWM Pond Facility.

The major and minor system flows will be conveyed through the internal network, outletting to Sweetvalley Drive, and ultimately outlet to the Expanded Avalon SWM Pond Facility, where they are treated for an Enhanced Level of Protection (80% TSS removal) prior to release to McKinnon's Creek.

As per the pre-development condition, the sum of 100 year runoff from area P1 and P2 draining overland toward the McKinnon's Creek is 159.40 L/s. The 100 year runoff from the post development area U4 is 6.90 L/s, which there is a significant reduction in overland flows to McKinnon's Creek.

The reduction of release rate to McKinnon's Creel can then be determined as:

$$\begin{aligned} Q \text{ (reduction)} &= Q \text{ (pre-development)} - Q \text{ (post-development)} \\ &= 159.40 \text{ L/s} - 6.90 \text{ L/s} \\ &= \mathbf{152.5 \text{ L/s}} \end{aligned}$$

## 5 SEDIMENT AND EROSION CONTROL

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### 5.1 GENERAL

During construction, existing storm sewer system can be exposed to sediment loadings. A number of construction techniques designed to reduce unnecessary construction sediment loadings will be used including the following.

- Silt sack will remain on open surface structures such as manholes and catchbasins until these structures are commissioned and put into use.
- Installation of silt fence, where applicable, around the perimeter of the proposed work area.
- The installation of straw bales within existing drainage features surrounds the site.
- Bulkhead barriers will be installed in the outlet pipes.

During construction of the services, any trench dewatering using pumps will be fitted with a “filter sock.” Thus, any pumped groundwater will be filtered prior to release to the existing surface runoff. The contractor will inspect and maintain the filter sock as needed including sediment removal and disposal.

All catchbasins, and to a lesser degree, manholes, convey surface water to sewers. Consequently, until the surrounding surface has been completed, these structures will be covered to prevent sediment from entering the minor storm sewer system. These measures will stay in place and be maintained during construction and build-out until it is appropriate to remove them.

During construction of any development both imported and native soils are placed in stockpiles. Mitigative measures and proper management to prevent these materials entering the sewer system are needed.

During construction of the deeper watermains and sewers, imported granular bedding materials are temporarily stockpiled on site. These materials are however quickly used up and generally placed before any catchbasins are installed.

Refer to the Erosion and Sedimentation Control Plan C04 provided in Appendix E.



## 6 APPROVAL AND PERMIT REQUIREMENTS

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### 6.1 GENERAL

The proposed development is subject to site plan approval and building permit approval.

No approvals related to municipal drains are required.

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.

## 7 CONCLUSION CHECKLIST

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### 7.1 CONCLUSIONS AND RECOMMENDATIONS

WSP was retained by Edward J. Cuhaci and Associates Architects Inc. to provide this Servicing and SWM report in support of the Site Plan Application for the subject site Avalon III French Catholic Elementary School and planned two storey school building therein. The services investigated were water supply, wastewater servicing, and stormwater conveyance.

The water demand was calculated as 1.55 L/s peak hour domestic demand and 133 L/s max day plus fire flow. Per coordination with the City for the supply watermain boundary conditions, a 203mm watermain stub from Sweetvalley Drive, it was confirmed the existing system has sufficient capacity to supply the domestic and fire demands within system pressure limits.

The sanitary sewer demand was calculated as 0.86 L/s peak demand. A downstream capacity check has been completed; the downstream system has sufficient capacity to receive the proposed demand.

The site will be required by the city to limit the discharge rate of the stormwater to the pre-development 2yr storm rate, storing the stormwater up to the post-development 100yr storm. Estimates of the runoff rates lead to an approximate maximum site discharge rate of 180.21 L/s, with a required storage for approximately 198.17 m<sup>3</sup>.

Therefore, it is confirmed the existing infrastructure is sufficient to support the proposed development. It should be noted that all demand calculations are estimates based on conceptual architectural plans and are subject to change during the design phase.

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### 7.2 COMMENTS RECEIVED FROM REVIEW AGENCIES

This is the first submission, no city comments.

# APPENDIX

## A

- PRE-CONSULTATION MEETING NOTES
- DSEL DRAWINGS FOR SSS PHASE 1
- ARCHITECTURAL SITE PLAN
- TOPO SURVEY

**From:** Murshid, Shoma

**Sent:** September 06, 2022 10:50 AM

**To:** Zofia Jurewicz <[zofiaj@cuhaci.com](mailto:zofiaj@cuhaci.com)>; Paquette Planning Associates Ltd. <[paquetteplanning@sympatico.ca](mailto:paquetteplanning@sympatico.ca)>

**Cc:** Rasool, Rubina <[Rubina.Rasool@ottawa.ca](mailto:Rubina.Rasool@ottawa.ca)>; Giampa, Mike <[Mike.Giampa@ottawa.ca](mailto:Mike.Giampa@ottawa.ca)>; McAlpine, Anissa <[anissa.mcalpine@ottawa.ca](mailto:anissa.mcalpine@ottawa.ca)>; Ippersiel, Matthew <[Matthew.Ippersiel@ottawa.ca](mailto:Matthew.Ippersiel@ottawa.ca)>; Richardson, Mark <[Mark.Richardson@ottawa.ca](mailto:Mark.Richardson@ottawa.ca)>; James Holland <[jholland@nation.on.ca](mailto:jholland@nation.on.ca)>; Rehman, Sami <[Sami.Rehman@ottawa.ca](mailto:Sami.Rehman@ottawa.ca)>; Luc Poulin <[Poulil@ecolecatholique.ca](mailto:Poulil@ecolecatholique.ca)>; Denis Chabot <[chabod@ecolecatholique.ca](mailto:chabod@ecolecatholique.ca)>; Sclauzero, Cass <[cass.sclauzero@ottawa.ca](mailto:cass.sclauzero@ottawa.ca)>

**Subject:** [2666 Tenth Line Road](#) - CECCE Elementary School on Claridge Lands in Mer Bleue Expansion Urban Expansion Area 10

Good morning Dan and Zofia,

Thank you for meeting with us on August 23, 2022 to review your concept plan (2 attachments) for a one-storey elementary school for CECCE.

This proposal triggers a Zoning By-law Amendment (Major) and a New, Complex Site Plan Control development review applications.

If you do end up submitting both development applications concurrently, there will be a 10% deduction in the planning fee component for both applications.

The **Zoning By-law Amendment** category being triggered is Major and is public-consultation based. The submission fee for this application is \$22,472.80 + an initial Conservation Authority Fee of \$400.00. For the Zoning By-law Amendment to be deemed complete at the time of submission, a complete application form, fees and the following plans, studies and documentation will be required (all in PDF format):

Concept Plan, showing proposed uses and landscaping and/or Site Plan

Planning Rationale, including Design Statement

Survey Plan

Topographical Survey Plan

Elevations

Geotechnical Report

Servicing & Stormwater Management Reports

Phase 1 ESA (Phase 2 ESA if required)

Tree Conservation Report

EIS

Transportation Impact Assessment

Noise Study

For the **Site Plan Control application**, the category being triggered is 'Complex (Manager Approval, Public Consultation) and the submission fee for this is \$49,964.88 + Initial Engineering Design Review and Inspection Fee (based on a sliding scale for the value of the Infrastructure and Landscaping) and an initial Conservation Authority Fee of \$1,065.00. For the Site Plan Control application to be deemed complete at the time of submission, a complete application form, fees and the following plans and studies will be required (all in PDF format):

Site Plan

Landscape Plan/Tree Conservation Report (can be combined)

Site Servicing Plan

Survey Plan

Topographical Survey Plan

Planning Rationale, including design statement

Erosion and Sediment Control Plan (can be combined with the Grade Control and Drainage Plan)

Stormwater Management Report (can be combined with the Site Servicing Report)

Grade Control and Drainage Plan

Site Servicing Report

Stormwater Management Report

Geotechnical Report

Phase 1 ESA (Phase 2 if required)

TIA

Noise Study

EIS

Floor Plans

Elevations

### **City's General Urban Planning Comments:**

There is a Landowner's Agreement and Cost-Sharing Agreement in place, "Area 10 Funding Agreement & CSA". The trustee is Soloway Wright's Ursula Melinz. The landowners within this agreement must provide a clearance letter for this zoning by-law amendment application and site plan control application prior to their approvals.

### **Zoning By-law Amendments**

If a complete application is received by no later than the day before the new Official Plan is adopted (October 27, 2021), it will be processed on the basis of existing Official Plan policy provided it is consistent with the 2020 Provincial Policy Statement.

For complete applications received after the day before the new Official Plan is adopted on October 27, 2021), but before Ministry approval of the Official Plan, any reports going forward to Committee and Council under this circumstance must be evaluated against the

existing Official Plan and must also include an evaluation of the application against the Council approved new Official Plan (and the new Secondary Plan, where applicable). In the period between Council approval of the New OP and the Minister's approval of the New OP, City staff will apply whichever provision, as between the Current and New OP, is more restrictive.

### Zoning By-law amendments that conform to the new Official Plan but not the current Official Plan

Council can pass the by-law after the new Official Plan is adopted but it only comes into force if the relevant policies authorizing it are approved by the Minister. Pursuant to the Planning Act, section 24, subsections (2) and (2.1) Council may pass a by-law that does not conform with the official plan but will conform to the new Official Plan once it comes into effect. If the new Official Plan does not come into effect the by-law has no force and effect.

Please note there is an approved Mer Bleue Urban Expansion Area 10 Community Design Plan (CDP). The Mer Bleue Urban Expansion Area 10 Community Design Plan (CDP) has been prepared by the Mer Bleue Land Owners Group (MBLOG), in collaboration with the City of Ottawa. The CDP is intended to demonstrate how development of the Mer Bleue Urban Expansion Area 10 (MBUEA) will achieve the requirements of the Official Plan. The CDP also provides a planning framework for the implementation of Official Plan policy through the subsequent development approvals process and will therefore be used as a guide for the preparation and review of future applications for development. N.B. There is also an EMP and MSS for this same area.

### City Urban Design Comments:

- PRUD Staff support the decision to highlight the corner of the site with a prominent architectural feature.
- Explore the possibility of eliminating the need for the small parking lot on Sweet Valley Drive. This would reduce the amount of paving along the public frontage and would free up more space for landscaping adjacent to the main entrance.

- Please line the two public frontages with trees.
- Ensure that sidewalks are continuous and uninterrupted across vehicular apertures.
- If possible, please narrow the widths of the vehicular apertures and reduce the turning radii as much and possible. As designed, they may encourage higher speeds.
- If possible, please look to move the bicycle parking (4) closer to an entrance.
- Include a bicycle parking rack near the main entrance on Sweet Valley Drive.
- Please continue to study what the best approach for the interface between the schoolyard and McKinnon's Creek would be. Should the edge be fenced or not? Please be mindful of linking in to the community active transportation network and impacts on adjacencies to the soccer field.
- The full-size soccer field appears very tight where it is located. Consider that part of the game is played outside the boundaries (corner kicks, throw-ins), balls are often kicked out of bounds, and there is space needed for team benches and spectators. Whether fenced or not, consider a landscape buffer where the property abuts the creek to prevent balls from rolling away.
- Consider a formal pathway connecting to the gardens. Otherwise a goat trail will likely form, cutting across the soccer field.
- PRUD staff support the on-street laybys from an urban design perspective.
- An Urban Design Brief is required as a part of your submission. This may be combined with your Planning Rationale report. Please refer to the attached Urban Design Brief Terms of Reference to inform the content of the brief.
- Please reference any design direction in the CDP in the brief and demonstrate how the proposal conforms to its policies.
- This application is not subject to review by the Urban Design Review Panel.

### **City Engineering Comments:**

As mentioned, the applicant may be required to pay into the N5 Pond separately as there are no SWM DC charges. Gary Baker has confirmed the site is not subject to SWM DC charges.

Otherwise, please see attached for engineering comments.

Note, there is a moratorium on newly paved roads. Check attached engineering comments for further information.



## **City Transportation and Noise Comments:**

\*A 0.5 metre conveyance from the northern perimeter of the lot line is required in order to add it to the already conveyed 2.5 metre MUP land obtained directly north from Mattamy.

A TIA is warranted- please proceed to scoping.

The application will not be deemed complete until the submission of the draft step 2-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable).

Although a full review of the TIA Strategy report (Step 4) is not required prior to an application, it is strongly recommended.

Synchro files are required at Step 4.

ROW protection on Tenth Line Road is 37.5 m.

A Noise Impact Study is required

Clear throat requirements as per TAC guidelines.

Please note that all new applications (pre-consultation meetings dated after March 3, 2021) must use the NEW TRANS Trip Generation Manual when forecasting site generated trips using this manual.

The TRANS committee (a joint transportation planning committee serving the National Capital region) finalized a new manual early in March 2021. The document will be available in French and English on the TRANS website <http://www.ncr-trans-rcn.ca/surveys/2009-trip-generation>.

The new manual has simplified the conversion from vehicle trips to person trips and then trips by modal share. The City has also developed a spreadsheet that will apply the factors of location and building type to quickly provide the existing trip numbers by mode share. This spreadsheet has been attached.

\*Latest construction plans for ROW of Tenth Line Road and ROW of Sweet Valley Drive - Please contact Bill Harper, Program Manager (SAM) / City Surveyor at [bill.harper@ottawa.ca](mailto:bill.harper@ottawa.ca), or call 613-580-2424, ext. 21083.

A layby on Sweet Valley is possible but I'll need a design (RMA report, design submission, municipal consent). A layby on Tenth Line will not be supported.

A MUP should be at least 3m will be required along Sweet Valley Drive.

### **City Forestry Comments:**

#### **Planning Forester - TCR requirements:**

1. A Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City
  - a. an approved TCR is a requirement of Site Plan approval.
  - b. The TCR may be combined with the EIS provided all information is supplied
2. Any removal of privately-owned trees 10cm or larger in diameter, or city-owned trees of any diameter requires a tree permit issued under the Tree Protection Bylaw (Bylaw 2020 – 340); the permit will be based on an approved TCR and made available at or near plan approval.
3. The TCR must contain 2 separate plans:
  - a. Plan/Map 1 - show existing conditions with tree cover information
  - b. Plan/Map 2 - show proposed development with tree cover information
  - c. Please ensure retained trees are shown on the landscape plan

4. the TCR must list all trees on site, as well as off-site trees if the CRZ extends into the developed area, by species, diameter and health condition
5. please identify trees by ownership – private onsite, private on adjoining site, city owned, co-owned (trees on a property line)
6. If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained
7. All retained trees must be shown, and all retained trees within the area impacted by the development process must be protected as per City guidelines available at [Tree Protection Specification](#) or by searching Ottawa.ca
  - a. the location of tree protection fencing must be shown on the plan
  - b. show the critical root zone of the retained trees
8. the City encourages the retention of healthy trees; if possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.
9. For more information on the process or help with tree retention options, contact Mark Richardson [mark.richardson@ottawa.ca](mailto:mark.richardson@ottawa.ca) or on [City of Ottawa](#)

### LP tree planting requirements:

For additional information on the following please contact [tracy.smith@Ottawa.ca](mailto:tracy.smith@Ottawa.ca)

#### Minimum Setbacks

- Maintain 1.5m from sidewalk or MUP/cycle track or water service laterals.
- Maintain 2.5m from curb
- Coniferous species require a minimum 4.5m setback from curb, sidewalk or MUP/cycle track/pathway.
- Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing, except where otherwise approved in naturalization / afforestation areas. Adhere to Ottawa

Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.

#### Tree specifications

- Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.
- Maximize the use of large deciduous species wherever possible to maximize future canopy coverage
- Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; and include watering and warranty as described in the specification (can be provided by Forestry Services).
- Plant native trees whenever possible
- No root barriers, dead-man anchor systems, or planters are permitted.
- No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)

#### Hard surface planting

- Curb style planter is highly recommended
- No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.
- Trees are to be planted at grade

#### Soil Volume

- Please document on the LP that adequate soil volumes can be met:

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

Please note that these soil volumes are not applicable in cases with Sensitive Marine Clay.

Sensitive Marine Clay

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

#### **Tree Canopy Cover**

- The landscape plan shall show how the proposed tree planting will replace and increase canopy cover on the site over time, to support the City's 40% urban forest canopy cover target.
- At a site level, efforts shall be made to provide as much canopy cover as possible, through tree planting and tree retention, with an aim of 40% canopy cover at 40 years, as appropriate.
- Indicate on the plan the projected future canopy cover at 40 years for the site.

#### **City Environmental Policy Comments (these comments have not been updated since October 2021):**

The proposed development should confirm the servicing requirements and development approvals established as part of the subdivision approval and the master servicing study to the north.

If the proposal is permitted to proceed (as part of the subdivision to the north), then an EIS will be required for either a zoning amendment or a site plan control application. This stretch of McKinnon's creek is identified as part of the NHS, as per OP Schedule L.

The EIS will address the following items:

-explore the hazard lands and floodplain required for that stretch of the McKinnon's Creek.

-draw recommendations from the EMP (Mer Bleue Urban Expansion Study Area – Environmental Management Plan, Morrison-Hershfield Ltd, Dec2017)

-draw recommendations from the CDP (Mer Bleue Expansion Area – Community Design Plan, IBI Group, Jun 2017)

-provide recommendations for revegetation and enhancements to the riparian areas along McKinnon's Creek

-potential significant habitat for threatened or endangered species

-provide recommendations to increase energy and water efficiency based on landscaping and layout, as per OP 4.9

-if there is substantial glass proposed on the design, recommend drawing design elements from the City's bird-safe design guidelines (Sept 2020)

I would encourage the applicant to consult with South Nation Conservation Authority to determine if any permits or approvals are required under their regulations.

I would also recommend consulting with the engineer's report for the municipal drain because there are concerns about how the stormwater management for this area will impact and potentially contribute to flooding downstream.

### **City Parks Comments:**

- The applicant and land owners should be aware that parkland dedication will continue to be tracked through the development application process. Parkland dedication requirements remain unchanged from that detailed in the Community Design Plan.
- Please note, a school is exempted from parkland dedication as per our Parkland dedication by-law ( as approved by Council Aug 31, 2022) "where the school provides for the students' outdoor recreational needs on-site at the time of development and maintains sufficient outdoor recreational space on-site at the time of redevelopment"
- The Demonstration Plan in the Secondary plan, and the CDP show the Ecole Catholique being co-located with a neighbourhood park, south of Wall Road. It is unknown at this time, if there would be further opportunities to co-locate a school with the park block south of Wall Road. Please keep Park staff informed as development applications proceed in order for staff to comment on the location of the neighbourhood park block south of Wall Road.
- The opportunity to co-location school blocks and park blocks should continue to be sought by development applications within the Mer Bleue community expansion.

## **South Nation Conservation Authority Comments:**

Here are my comments for the August 23<sup>rd</sup> meeting concerning the French Catholic school proposal. They should be read in conjunction with our previous comments from October 2021 (FOUND below this section).

### Natural Heritage

- The Environmental Management Plan (EMP) indicates (8.1.2) that : For the protection of the common aquatic habitat observed in McKinnon's Creek, a setback consisting of the greater of 15 m from the top-of-slope or 30 m from the normal high water mark in the urban area (which may be refined through further study during preparation and review of the draft plan of subdivision), as recommended in the Official Plan, Section 4.7.3.2 and 4.7.3.6, and is identified on Figure 4.4.
- It is our understanding that this area will become a separate parcel (ie., separated from the school parcel) and placed in a restrictive Zone, as done for the subdivision to the north of this property. It is our understanding that the setback will include a Mixed Use Path (MUP) but that access to the creek will be limited to allow the riparian buffer to function.
- A landscaping plan for the full McKinnon's Creek corridor is required by the EMP; however, should this development proceed prior to the completion of this plan, a landscaping plan that meets the objectives of the EMP will be required for this property.
- An Environmental Impact Assessment is required for development adjacent to fish habitat. In addition, a headwater feature has been identified (Drain 14) along the north property boundary. The management recommendations for the headwater feature (outlined as an appendix to the EMP) should be addressed in the EIS. The Conservation Partners will provide a review of the EIS.
- The Conservation Partners support the development of a resource (similar to a Homeowner's Guide) that outlines the ecological significance, restoration and enhancement works and best management practices for the McKinnon's Creek Corridor. This could help to use raise awareness amongst school studies/staff in the future. The Conservation Partners can provide similar resources and background studies and can assist in the review of the resource.

### Stormwater Management

- The Conservation Partners do not object to an additional outlet to McKinnon's Creek in place of directing stormwater into existing infrastructure and ultimately to the existing stormwater pond if it can be shown to not have negative impacts on flooding and erosion, upstream and downstream of the outlet.
- Should the option for a new outlet be pursued, it may necessitate a revision to the McKinnon's Creek 100-year floodplain study, which will require review and approval from South Nation Conservation. The applicant may submit a scaled site plan and request a preliminary review to assess whether the change in land use differs from the SNC model, requiring further analyses.

- Should the option for a new outlet be pursued, the applicant will be responsible for stormwater treatment of runoff quality and quantity. The design must demonstrate a 80% TSS removal. The quantity must meet City of Ottawa requirements. The design package should include at a minimum, a report demonstrating how the quality/quantity targets will be achieved, a grading and drainage plan, and a sediment and erosion control plan. The Conservation Partners will provide a technical review.

#### Conservation Authority Regulation 170/06

- Any interference with a watercourse/headwater feature, including an outlet to McKinnon's Creek, will require a permit and restrictions may apply.
- There is a 100-year floodplain contained within the banks of McKinnon's Creek. The elevation of the floodplain at the north end of the property is 84.38 meters above sea level. Any development within or 15m adjacent to this elevation will require a permit and restrictions may apply. It is anticipated that this area will fall within the McKinnon's Creek Corridor and a restrictive Zone.

#### **SNCA – October 2021 follow-up notes:**

- The development should implement the direction approved through the Council-approved Master Servicing Study (MSS) and Environmental Impact Statement, prepared for the Mer Bleue Expansion Lands.

#### Environmental

- The EMP Section 8.1.1 requires a Planting Plan at the subdivision stage to enhance the woody vegetation cover in McKinnon's Creek corridor where needed. Section 8.1.1 (final point, pg98) also indicates that a detailed design of the McKinnon's Creek will be undertaken as a single integrated design from the Avalon South pond outlet to the downstream extent of the proposed lowering just upstream of Navan Road. The planting plan for the subject property should be integrated with the detail design for the corridor.
- For the protection of aquatic habitat in McKinnon's Creek, the EMP Section 8.1.2 recommends a setback consisting of 15m from the top-of-slope or 30m from the normal high water mark, as identified on Figure 4.4 of the EMP. This setback should be clearly delineated on all plans.
- Figure 3-6 and Table 3.3 identify the drainage features along the north boundary of the parcel as Drain 14, and provides a management recommendation of 'mitigation'. The



feature should be discussed within the Environmental Impact statement, including how the management recommendation will be implemented.

- An Environmental Impact Statement and Landscaping Plan are recommended for the subject property to demonstrate how the recommendations of the EMP will be satisfied.

#### Stormwater Management

- Should stormwater be directed towards the Neighbourhood 5 stormwater pond, it must be demonstrated that the pond has capacity.
- The stormwater design should include at a minimum, a report demonstrating how water quality and quantity treatment standards will be achieved, a grading and drainage plan, and a sediment and erosion control plan.
- Note that when stormwater outlets to approved municipal infrastructure, the Conservation Partners do not undertake a technical review; however, we request to be included in the circulation of the stormwater design to confirm.
- Any modifications to the stormwater pond, including an alteration to the outlet or a change in outflows, will require a technical review by South Nation Conservation.
- Any changes to the outflow may require a revision to the McKinnon's Creek 100-year floodplain analysis, along with a technical review of the revision by South Nation Conservation.
- Likewise, should drainage be directed towards McKinnon's Creek directly via uncontrolled flow, a revision to the McKinnon's Creek 100-year analysis and a technical review by South Nation Conservation may be necessary.
- Any drainage from the subject site must demonstrate that there is legal and sufficient outlet for the additional flows. A Municipal Drain petition is currently underway to designate McKinnon's Creek a municipal drain.

#### Conservation Authority Regulations

- Any interference with a watercourse, including a headwater drainage feature (Drain 14, noted above) and an alteration to a stormwater outlet, may require a permit under O. Reg. 170/06 and restrictions may apply.

#### **Further items to consider for both site plan control and zoning amendment are:**

- Bird-safe safety design guidelines are now in effect.

<https://ottawa.ca/en/city-hall/public-engagement/projects/bird-friendly-design-guidelines>

<https://ottawa.ca/en/city-hall/public-engagement/projects/bird-friendly-design-guidelines#bird-friendly-design-guidelines>

- Consider the reduction of energy and water demands within your development proposal through lot layout and landscaping, as outlined in the OP Section 4.9.
- Plant locally appropriate native species along the southern and western boundaries of the property and along the parking lots. This will offer shaded parking spots and reduce the urban heat island effect.
- Staff would caution a reduction in the setbacks abutting the public realm. It still needs to be demonstrated that street tree planting of canopy shade trees can be accommodated through the site and particularly along the public RoWs (Sweetvalley Drive and Tenth Line Road).

### **Minimum Drawing and File Requirements - All Plans:**

Plans are to be submitted on standard **A1 size** (594mm x 841mm) sheets, utilizing an appropriate Metric scale (1:200, 1:250, 1:300, 1:400, or 1:500).

With all submitted hard copies provide **individual** PDF of the DWGs and for reports please provide one PDF file of each report. **All PDF documents are to be unlocked and flattened.**

### **Closing comments:**

In order to sever the lands, please seek a pre-consultation with a Committee of Adjustment Planner, Cass Sclauzero at [cass.sclauzero@ottawa.ca](mailto:cass.sclauzero@ottawa.ca) or at 613-580-2424-27597.

Best wishes,

## **Shoma Murshid, MCIP, RPP**

(she/ her/ elle)

### **File Lead, Planner II**

### **Responsable de dossier, urbaniste II**

City of Ottawa/ Ville d'Ottawa

Development Review (Suburban Services, East)/ Examen des projets d'aménagement (Services suburbains Est)

Planning, Real Estate and Economic Development Department / Direction générale de la planification, des biens immobiliers et du développement économique

[110 Laurier Avenue West, 4th Floor, Ottawa ON K1P 1J1/ 110, avenue Laurier Ouest, 4<sup>e</sup> étage, Ottawa \(Ontario\) K1P 1J1](#)

Mail Code/ Code de courrier : 01-14

Tel/ Tél: (613) 580-2424 ext. 15430

Fax/ Téléc. : (613) 580-4751

e-mail/ courriel : [shoma.murshid@ottawa.ca](mailto:shoma.murshid@ottawa.ca)

[www.ottawa.ca](http://www.ottawa.ca)



PART OF LOT 5 CONCESSION 11 Geographic Township of Cumberland CITY OF OTTAWA Surveyed by Annis, O'Sullivan, Vollebek Ltd.

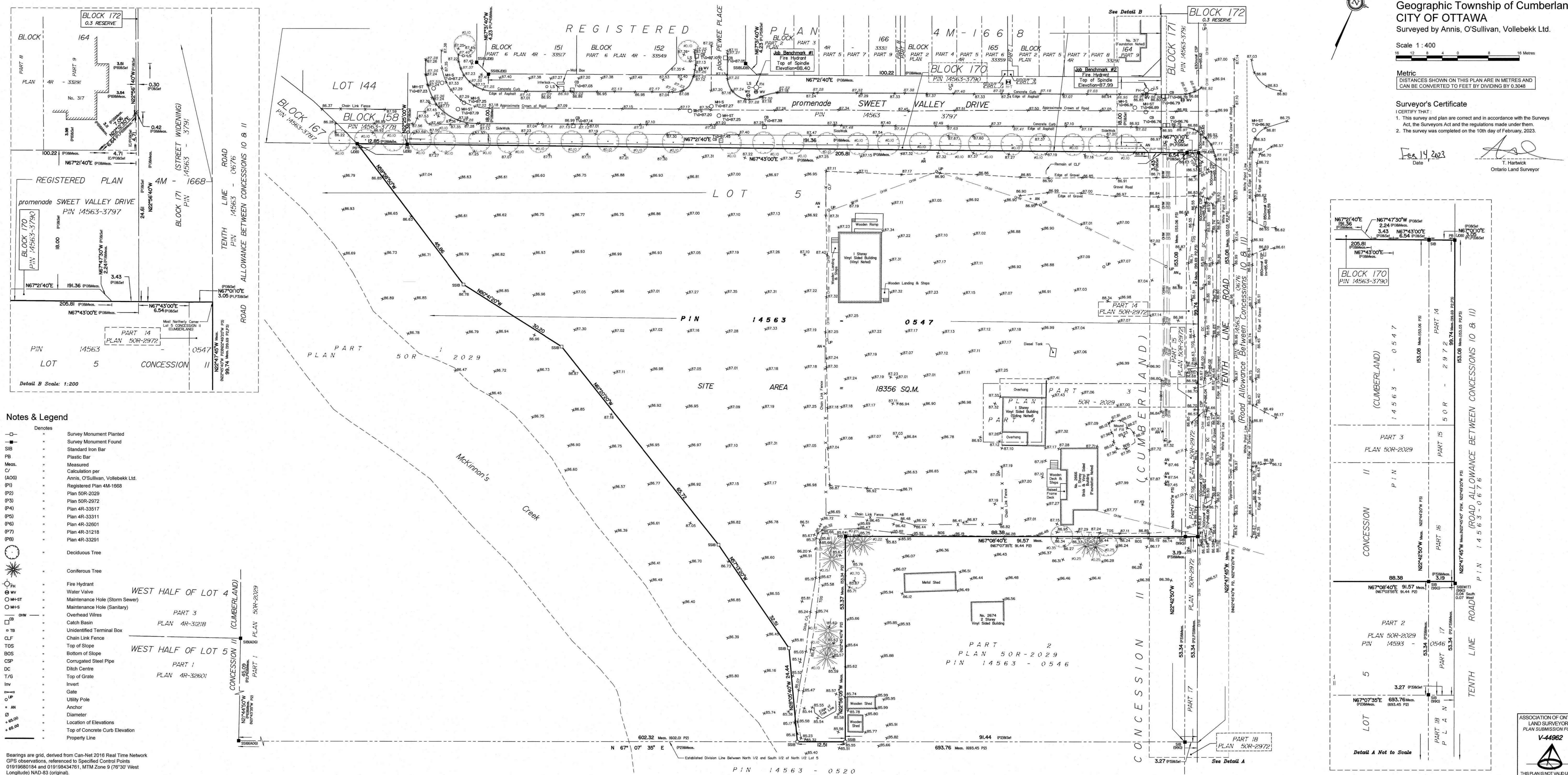
Scale 1:400

Metric DISTANCES 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 10th day of February, 2023.

Feb 14 2023 Date T. Hartwick Ontario Land Surveyor



Notes & Legend table with symbols for Survey Monument Planted, Standard Iron Bar, Plastic Bar, Measured Calculation per, Registered Plan 4M-1668, Plan 50R-2029, Plan 4R-3317, Plan 4R-3311, Plan 4R-3260, Plan 4R-3128, Plan 4R-3329, Deciduous Tree, Coniferous Tree, Fire Hydrant, Water Valve, Maintenance Hole (Storm Sewer), Maintenance Hole (Sanitary), Overhead Wires, Catch Basin, Unidentified Terminal Box, Chain Link Fence, Top of Slope, Bottom of Slope, Corrugated Steel Pipe, Ditch Centre, Top of Grate, Invert, Gate, Utility Pole, Anchor, Diameter, Location of Elevations, Top of Concrete Curb Elevation, Property Line.

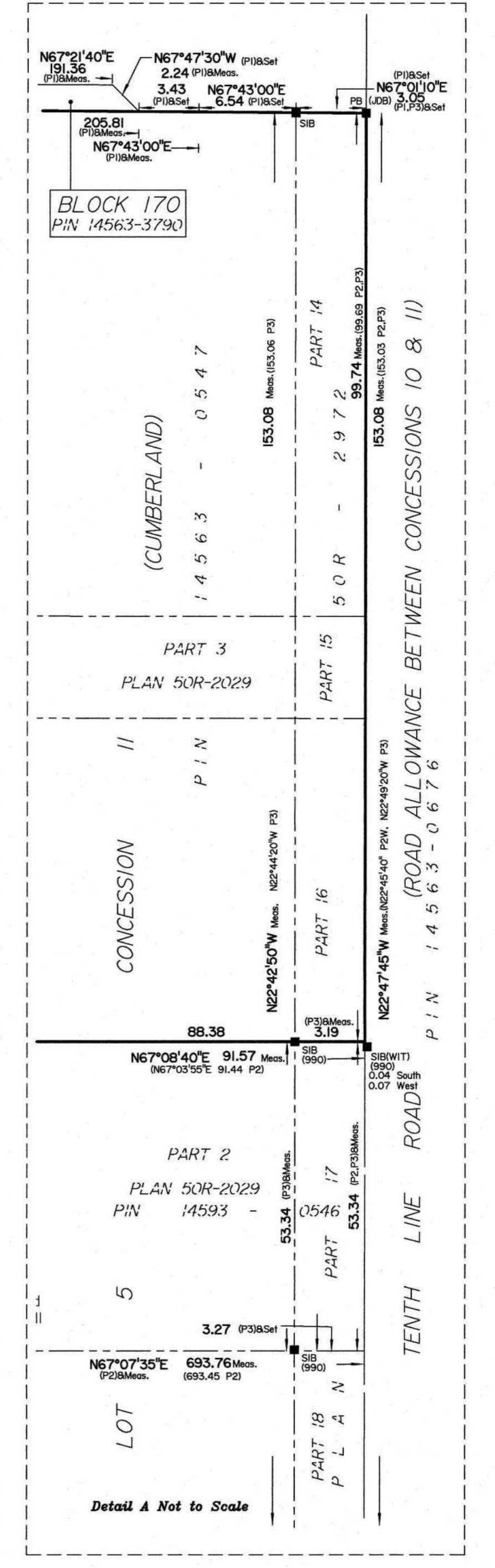
WEST HALF OF LOT 4 PART 3 PLAN 4R-3121B (CUMBERLAND) CONCESSION II PLAN 50R-2029 PART 1 PLAN 4R-3260I WEST HALF OF LOT 5 PART 1 PLAN 4R-3260I PART 2 PLAN 50R-2029 PIN 14593 - 0546 PART 3 PLAN 50R-2029 PART 4 PLAN 50R-2972 PART 5 PLAN 50R-2972 PART 6 PLAN 50R-2972 PART 7 PLAN 50R-2972 PART 8 PLAN 50R-2972 PART 9 PLAN 50R-2972 PART 10 PLAN 50R-2972 PART 11 PLAN 50R-2972 PART 12 PLAN 50R-2972 PART 13 PLAN 50R-2972 PART 14 PLAN 50R-2972 PART 15 PLAN 50R-2972 PART 16 PLAN 50R-2972 PART 17 PLAN 50R-2972 PART 18 PLAN 50R-2972

Bearings are grid, derived from Can-NET 2016 Real Time Network GPS observations, referenced to Specified Control Points 01919680184 and 019198434761, MTM Zone 9 (76°30' West Longitude) NAD-83 (original). For bearing comparisons, a rotation of 0°42'10" counter-clockwise was applied to bearings on plan (P2).

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

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 description has not been altered or disturbed and that its relative elevation and benchmark has not been altered or disturbed and that its relative elevation and benchmark agrees with the information shown on this drawing.

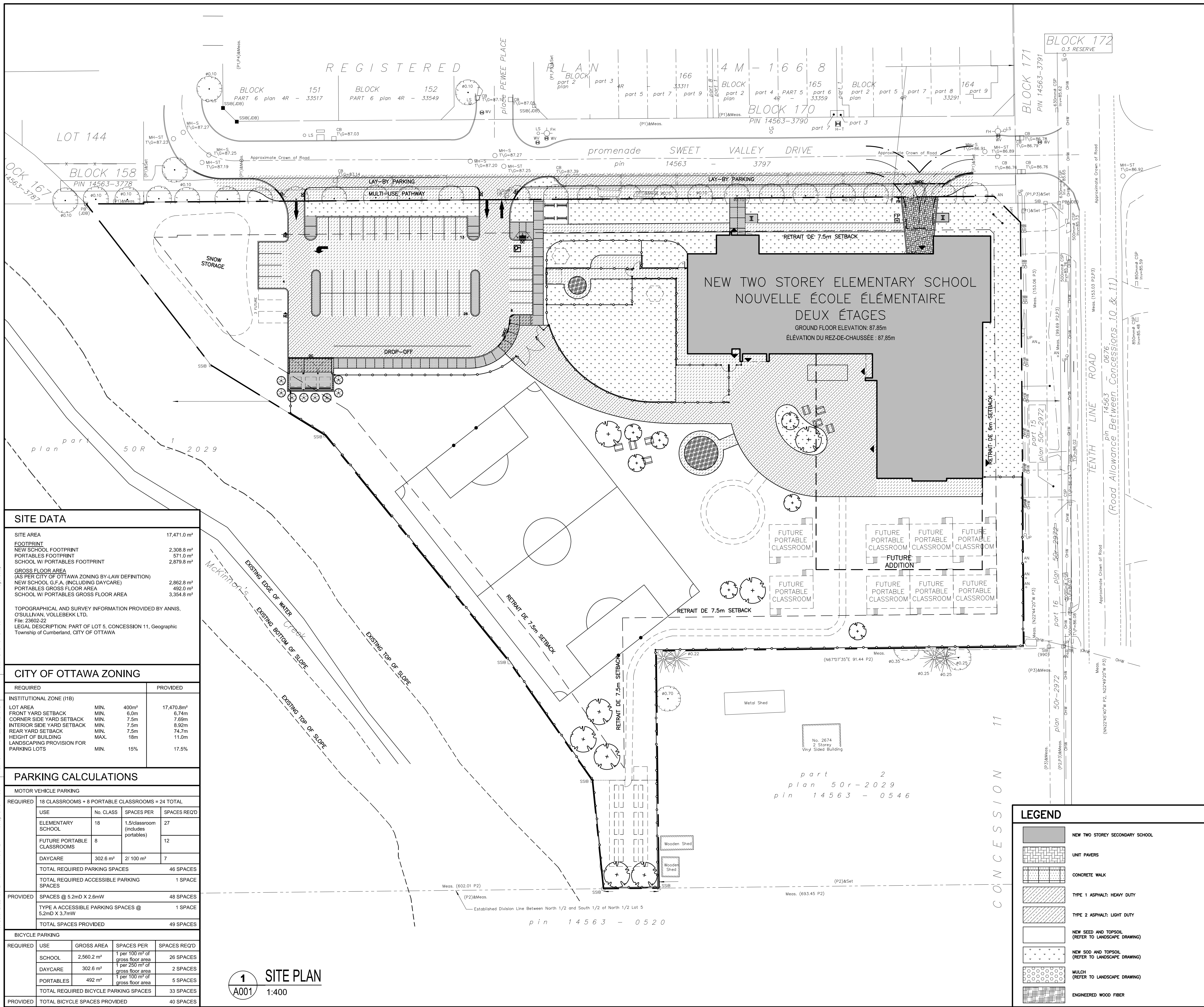
UTILITY NOTES 1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation. 2. Only visible surface utilities were located. 3. A field location of underground plant by the pertinent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



ASSOCIATION OF ONTARIO LAND SURVEYORS PLAN SUBMISSION FORM V-44962

ANNIS, O'SULLIVAN, VOLLEBEK LTD. 14 Concourse Drive, Suite 509 Nepean, Ont. K2E 7S6 Phone: (613) 727-0850 / Fax: (613) 727-1079 Email: Annis@annis.com





SITE DATA			
SITE AREA			17,471.0 m <sup>2</sup>
FOOTPRINT			
NEW SCHOOL FOOTPRINT			2,308.8 m <sup>2</sup>
PORTABLES FOOTPRINT			571.0 m <sup>2</sup>
SCHOOL W/ PORTABLES FOOTPRINT			2,879.8 m <sup>2</sup>
GROSS FLOOR AREA (AS PER CITY OF OTTAWA ZONING BY-LAW DEFINITION)			
NEW SCHOOL G.F.A. (INCLUDING DAYCARE)			2,862.8 m <sup>2</sup>
PORTABLES GROSS FLOOR AREA			492.0 m <sup>2</sup>
SCHOOL W/ PORTABLES GROSS FLOOR AREA			3,354.8 m <sup>2</sup>
TOPOGRAPHICAL AND SURVEY INFORMATION PROVIDED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD. File: 23602-22 LEGAL DESCRIPTION: PART OF LOT 5, CONCESSION 11, Geographic Township of Cumberland, CITY OF OTTAWA			
CITY OF OTTAWA ZONING			
REQUIRED		PROVIDED	
INSTITUTIONAL ZONE (I18)			
LOT AREA	MIN.	400m <sup>2</sup>	17,470.8m <sup>2</sup>
FRONT YARD SETBACK	MIN.	6.0m	6.74m
CORNER SIDE YARD SETBACK	MIN.	7.5m	7.69m
INTERIOR SIDE YARD SETBACK	MIN.	7.5m	8.92m
REAR YARD SETBACK	MIN.	7.5m	74.7m
HEIGHT OF BUILDING	MAX.	18m	11.0m
LANDSCAPING PROVISION FOR PARKING LOTS	MIN.	15%	17.5%
PARKING CALCULATIONS			
MOTOR VEHICLE PARKING			
REQUIRED	18 CLASSROOMS + 8 PORTABLE CLASSROOMS = 24 TOTAL		
USE	No. CLASS	SPACES PER CLASS	SPACES REQ'D
ELEMENTARY SCHOOL	18	1.5/classroom (includes portables)	27
FUTURE PORTABLE CLASSROOMS	8		12
DAYCARE	302.6 m <sup>2</sup>	2/ 100 m <sup>2</sup>	7
TOTAL REQUIRED PARKING SPACES 46 SPACES			
TOTAL REQUIRED ACCESSIBLE PARKING SPACES 1 SPACE			
PROVIDED	SPACES @ 5.2mD X 2.6mW 48 SPACES		
TYPE A ACCESSIBLE PARKING SPACES @ 5.2mD X 3.7mW 1 SPACE			
TOTAL SPACES PROVIDED 49 SPACES			
BICYCLE PARKING			
REQUIRED	USE	GROSS AREA	SPACES PER CLASS
	SCHOOL	2,560.2 m <sup>2</sup>	1 per 100 m <sup>2</sup> of gross floor area
	DAYCARE	302.6 m <sup>2</sup>	1 per 250 m <sup>2</sup> of gross floor area
	PORTABLES	492 m <sup>2</sup>	1 per 100 m <sup>2</sup> of gross floor area
TOTAL REQUIRED BICYCLE PARKING SPACES 33 SPACES			
PROVIDED	TOTAL BICYCLE SPACES PROVIDED 40 SPACES		

**1 SITE PLAN**  
A001 1:400

LEGEND	
	NEW TWO STOREY SECONDARY SCHOOL
	UNIT PAVERS
	CONCRETE WALK
	TYPE 1 ASPHALT: HEAVY DUTY
	TYPE 2 ASPHALT: LIGHT DUTY
	NEW SEED AND TOPSOIL (REFER TO LANDSCAPE DRAWING)
	NEW SOD AND TOPSOIL (REFER TO LANDSCAPE DRAWING)
	MULCH (REFER TO LANDSCAPE DRAWING)
	ENGINEERED WOOD FIBER

ISSUE NO.	REV. NO.	DATE	ISSUE
0	0	2023/05/16	ISSUED FOR INFORMATION

LES IDÉES, CONCEPTS, DISPOSITIONS ET PLANS MONTRÉS OU REPRÉSENTÉS PAR CE DESSIN APPARTIENNENT À EDWARD J. CUHACI AND ASSOCIATES ARCHITECTS INC. ET ONT ÉTÉ CRÉÉS ET DÉVELOPPÉS POUR ÊTRE UTILISÉS DANS LE CADRE DU PRÉSENT PROJET. ILS NE DOIVENT PAS ÊTRE UTILISÉS À D'AUTRES FINS NI COMMUNIQUÉS À QUI QUE CE SOIT SANS LA PERMISSION ÉCRITE DE EDWARD J. CUHACI AND ASSOCIATES ARCHITECTS INC.

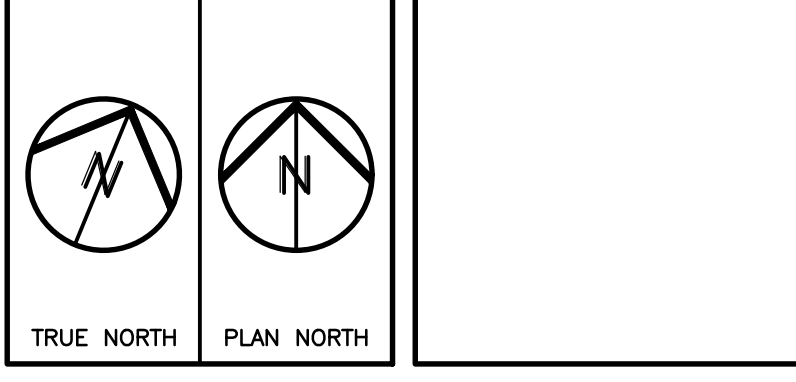
L'ARCHITECTE DÉCLINE TOUTE RESPONSABILITÉ DÉCOULANT DE PROBLÈMES FAISANT SUITE AU NON-RESPECT DES PLANS ET DEVIS OU DE L'INTENTION DU CONCEPT QU'ILS TRANSMETTENT OU DE TOUTS PROBLÈMES POUVANT RÉSULTER DU DÉFAUT DE TIERS D'OBTENIR OU DE SUIVRE LES INSTRUCTIONS DE L'ARCHITECTE RELATIVEMENT AUX ERREURS, OMISSIONS, INCOHÉRENCES, AMBIGUITÉS OU CONTRADICTIONS ALLÉGUÉES.

L'ENTREPRENEUR DOIT VÉRIFIER TOUTES LES DIMENSIONS SUR PLACE ET INFORMER L'ARCHITECTE DE TOUT ÉCART AVANT LE DÉBUT DES TRAVAUX. NE PAS MESURER LES DESSINS À L'ÉCHELLE.

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CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS



**EDWARD J. CUHACI & ASSOCIATES ARCHITECTS Inc.**  
171 Slater St., Suite 100, Ottawa, Ontario, K1P 5H7  
Fax: (613) 236-1944 Telephone: (613) 236-7135 E-mail: info@cuhaci.com

PROJECT TITLE/TITRE DU PROJET  
**ÉCOLE ÉLÉMENTAIRE CATHOLIQUE AVALON III**  
TENTH LINE ROAD  
OTTAWA, ON

CONSEIL DES ÉCOLES CATHOLIQUES DU CENTRE-EST  
4000, RUE LABELLE, OTTAWA, ON K1J 1A1

DRAWING TITLE/TITRE DU DESSIN  
**SITE PLAN**

SCALE	PROJ. No.	ISSUE No.	REV. No.
ÉCHELLE	1:400	2215	0
DRAWN BY	DESIGNÉ PAR	S.P.	DRAWING/DESSIN
CHECKED BY	VÉRIFIÉ PAR	S.R./Z.O.J.	<b>A001</b>
DATE	SEPTEMBER 2022		

Plot Date: 2022-08-27 Plot Time: 15:07:27 Plot By: SIMON BOUCHÉ  
 Project DWG: 10-102-AC3  
 Project Setup:



**PAVEMENT DESIGN**

40mm SUPERPAVE 12.5 ASPHALTIC CONCRETE  
 50mm SUPERPAVE 19.0 ASPHALTIC CONCRETE  
 50mm SUPERPAVE 19.0 ASPHALTIC CONCRETE  
 150mm GRANULAR "A" CRUSHED STONE  
 600mm GRANULAR "B" TYPE II

PERMISSION REQUIRED FOR WORK ON ADJACENT LANDS

**NOTE RE: THRUST BLOCK BEDDING**  
 TO INCREASE THE VERTICAL ALLOWABLE BEARING CAPACITY TO 100 KPa OR GREATER, A MINIMUM 400mm GRANULAR "A" OR SPSS GRANULAR "B" TYPE II COMPACTED TO 95% SPMD SHOULD BE INSTALLED AS THE BEDDING MATERIAL.

ANY DISTURBED AREA DURING CONSTRUCTION TO RESTORED TO THE ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITIES HAVING JURISDICTION

CONTRACTOR TO VERIFY THE PRECISE LOCATIONS AND INVERT ELEVATIONS OF EX. UNDERGROUND SERVICES AND EX UTILITIES PRIOR TO STARTING CONSTRUCTION

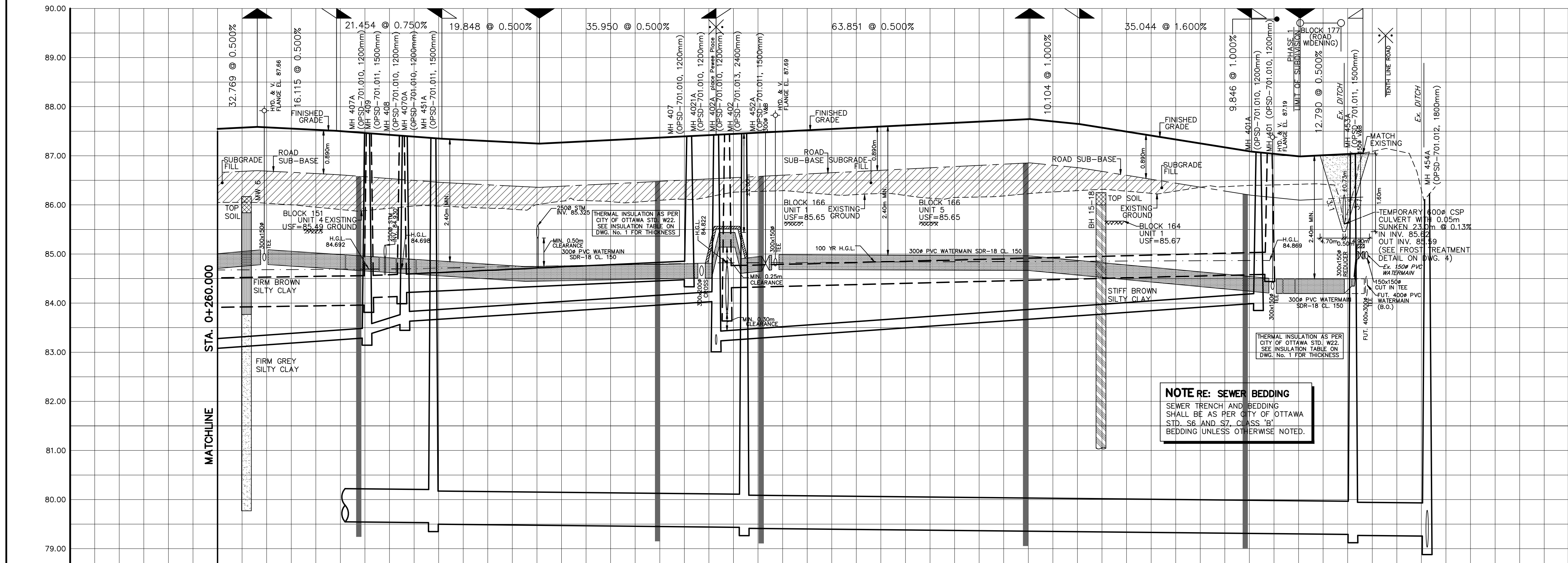
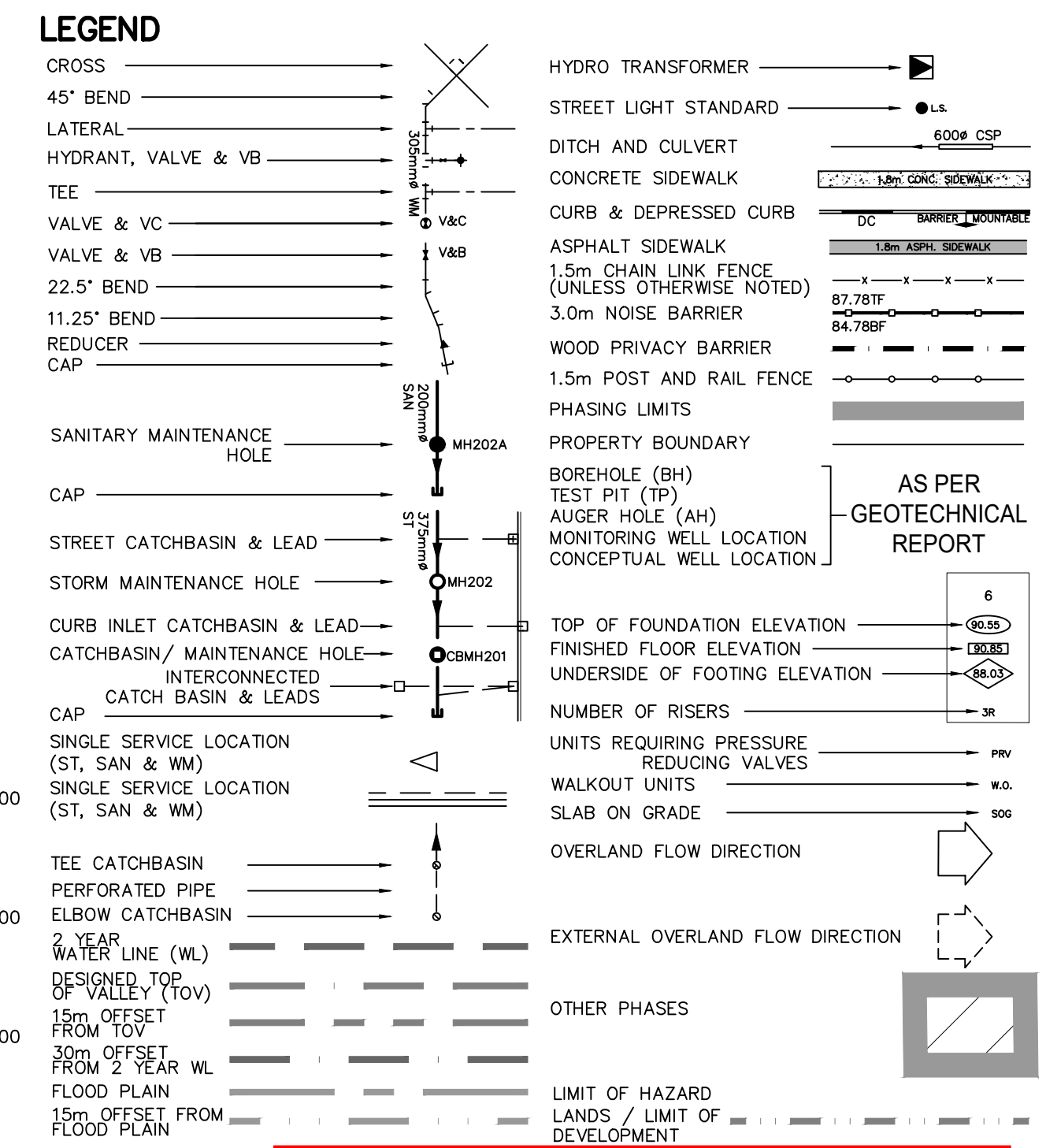
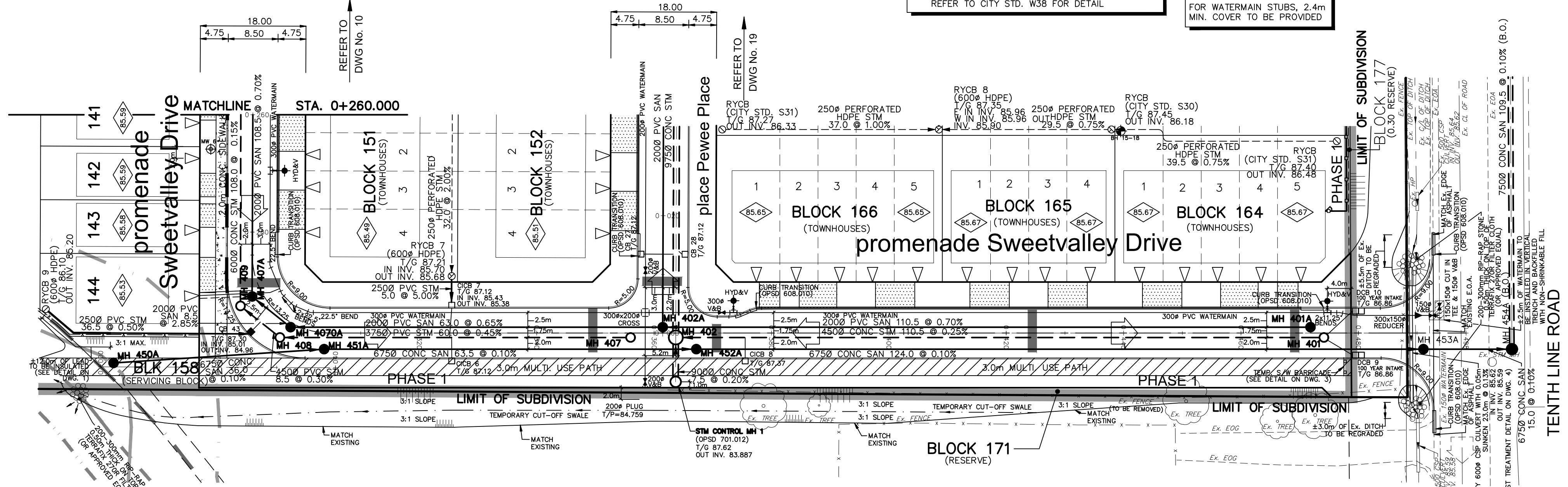
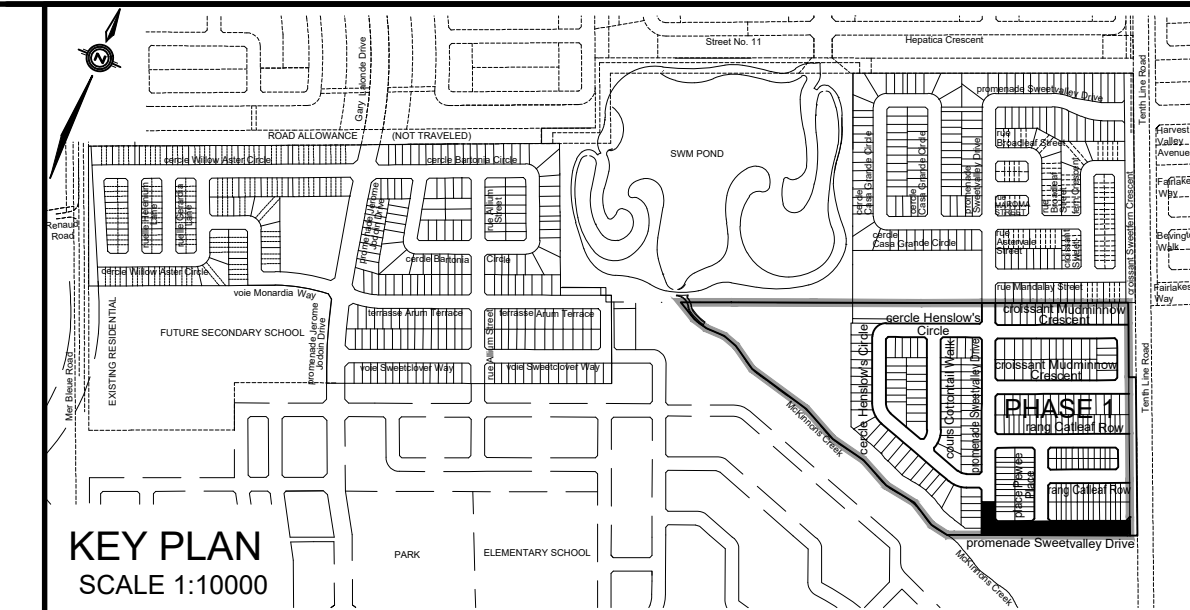
**NOTE RE: TEST PIT/BOREHOLE EXCAVATIONS**  
 ANY DISTURBED MATERIAL ENCOUNTERED BELOW THE SUBGRADE LEVEL WITHIN A BUILDING FOOTPRINT TO BE SUB-EXCAVATED AND BACKFILLED WITH COMPACTED ENGINEERED FILL AS PER GEOTECHNICAL ENGINEERS RECOMMENDATION.

**NOTE RE: WATERMAIN / WATER SERVICE**  
 1. INSULATION REQUIRED FOR WATERMAIN / WATER SERVICE WHERE THE SEPARATION BETWEEN WATERMAIN / WATER SERVICE AND OTHER SERVICES AND STRUCTURES IS LESS THAN 1.2m AND THE COVER IS LESS THAN 2.4m. REFER TO CITY STD. W23 FOR DETAIL.  
 2. FOR SERVICE INSTALLATION AT SEWER CROSSING, REFER TO CITY STD. W38 FOR DETAIL.

**NOTE**  
 FOR WATERMAIN CROSSING BELOW AND ABOVE SEWERS, REFER TO CITY STD. W25 AND W25.2, RESPECTIVELY, WHERE APPLICABLE

**NOTE**  
 FOR WATERMAIN STUBS, 2.4m MIN. COVER TO BE PROVIDED

**NOTE: ICD**  
 FOR ICD APPLICATION, REFER TO DRAWINGS No. 6 TO 9, 36 & 37 FOR DETAIL.



**NOTE RE: SEWER BEDDING**  
 SEWER TRENCH AND BEDDING SHALL BE AS PER CITY OF OTTAWA STD. S6 AND S7, CLASS B BEDDING UNLESS OTHERWISE NOTED.

PROPOSED GRADES	TOP OF WATERMAIN	STORM INVERT	SANITARY INVERT	SANITARY TRUNK INVERT	CENTERLINE CHAINAGE
87.547 87.586 87.528 87.507 87.463 87.438 87.408 87.389 87.368	85.006 85.091 85.022 84.983 84.938 84.881 84.881 84.881	6000 CONC STM 108.0 @ 0.15% 65-D 4500 PVC STM 8.5 @ 0.30% SDR-35	2000 PVC SAN 108.5 @ 0.70% SDR-35 2000 PVC SAN 8.5 @ 2.85% SDR-35	6750 CONC SAN 36.0 @ 0.10% 140-D 6750 CONC SAN 63.0 @ 0.65% SDR-35 2000 PVC SAN 63.0 @ 0.65% SDR-35 6750 CONC SAN 110.5 @ 0.70% SDR-35 6750 CONC SAN 124.0 @ 0.10% 140-D	0+260.000 0+265.099 0+269.513 0+280.000 0+283.044 0+286.044 0+290.492 0+292.893 0+297.372 0+300.472 0+305.667 0+320.000 0+322.656 0+325.515 0+340.000 0+346.600 0+347.470 0+348.170 0+349.170 0+350.170 0+351.170 0+352.170 0+353.170 0+354.170 0+355.170 0+356.170 0+357.170 0+358.170 0+359.170 0+360.000 0+371.516 0+373.516 0+380.000 0+400.000 0+420.000 0+425.916 0+435.420 0+440.000 0+460.000 0+470.464 0+471.534 0+472.716 0+476.814 0+480.000 0+485.310 0+490.999 0+491.999 0+492.999 0+493.000 0+493.000 0+493.000 0+506.160

**APPROVED**  
 By currywi at 8:25 am, Aug 20, 2019

No.	DATE	BY	DESCRIPTION
4.	19-08-07	W.L.	REVISED PER CITY COMMENTS
3.	19-07-05	W.L.	REVISED PER CITY COMMENTS
2.	19-06-21	W.L.	2nd SUBMISSION
1.	18-11-15	W.L.	1st SUBMISSION

**Ottawa CITY OF OTTAWA**

PROPOSED CENTERLINE ROAD GRADES	PROPOSED TOP OF WATERMAIN
---------------------------------	---------------------------

PLAN AND PROFILE OF  
**promenade Sweetvalley Drive**  
 (STA. 0+260.000 TO STA. 0+493.000) © DSEL

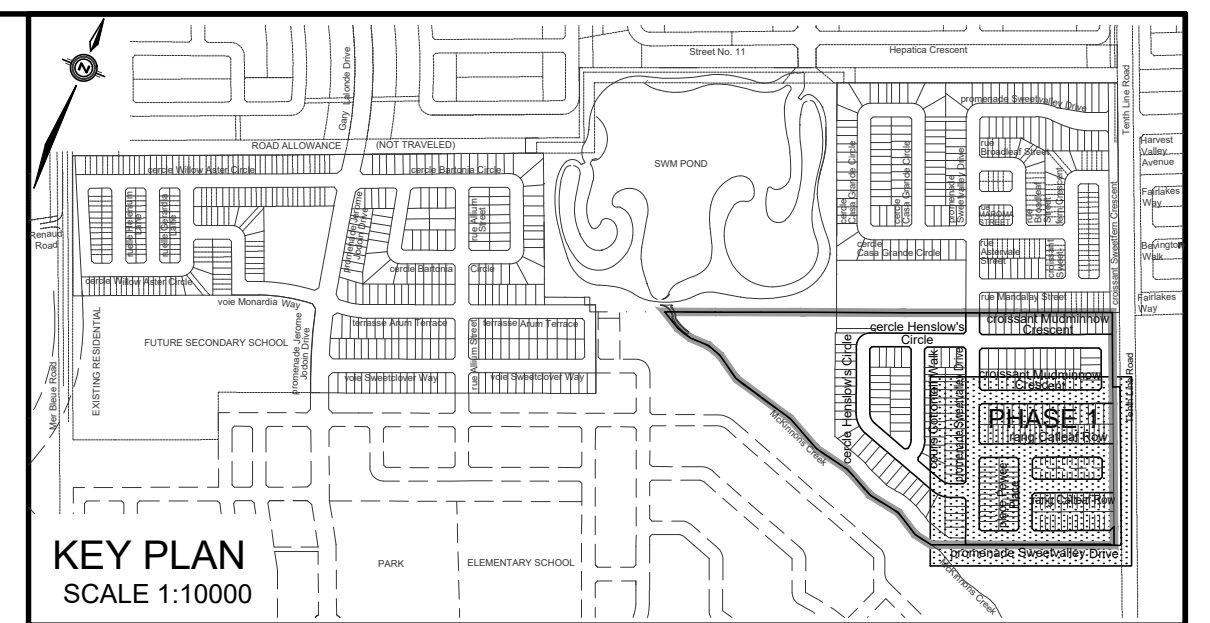
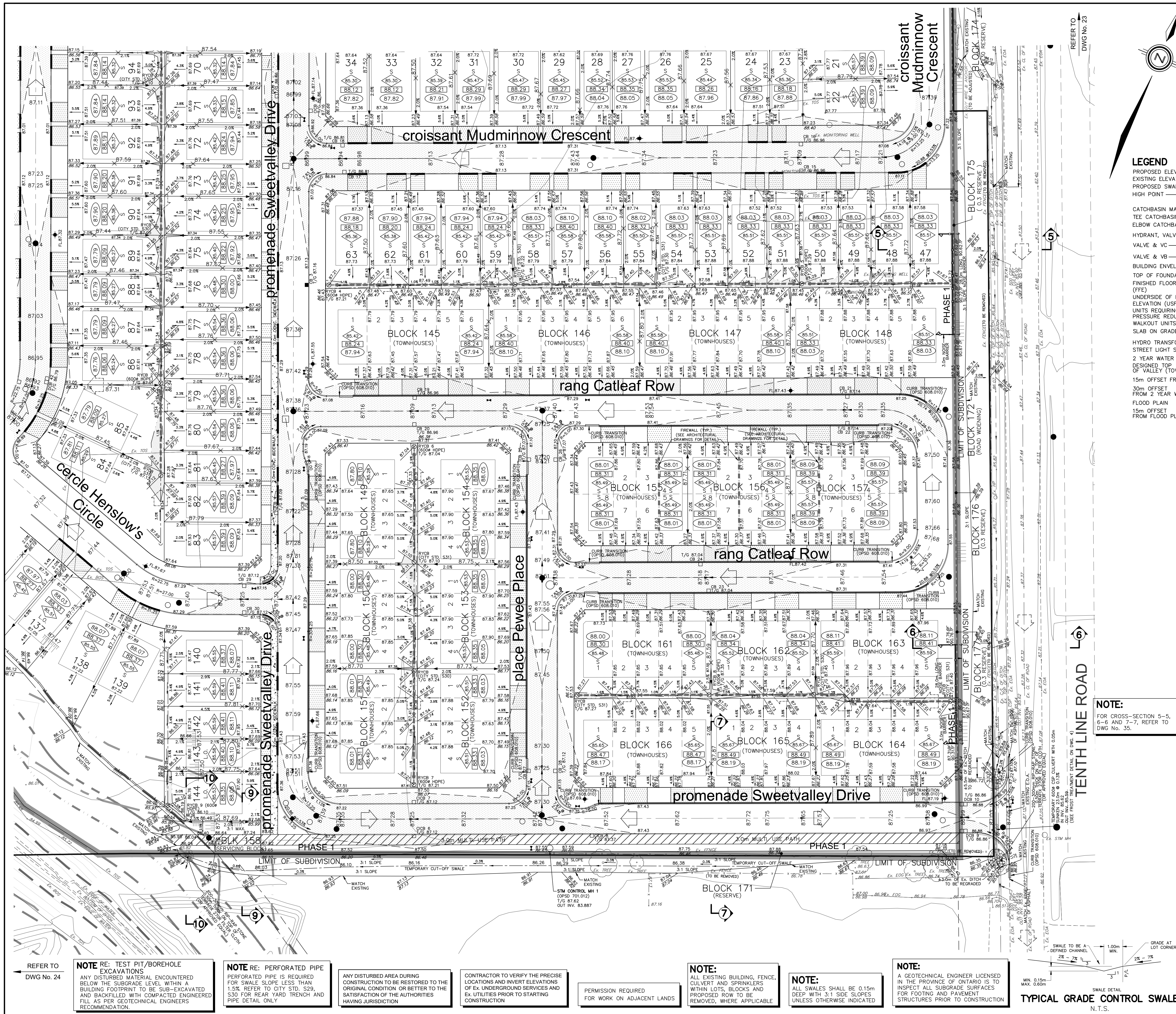
**MATTAMY (MER BLEUE 2) LIMITED** **SUMMERSIDE SOUTH PHASE 1**

**DSEL** david schaeffer engineering ltd

120 Iber Road, Unit 103  
 Stittville, ON K2S 1E9  
 Tel: (613) 838-8956  
 Fax: (613) 838-7183  
 www.DSEL.ca

DRAWN BY: V.V./S.L. CHECKED BY: P.P./C.M. DRAWING NO. SHEET NO.  
 DESIGNED BY: P.P./W.L. CHECKED BY: K.M.  
 SCALE: H=1:500/V=1:50 DATE: NOVEMBER 2018 **11**





**LEGEND**

PROPOSED ELEVATION	103.45	OVERLAND FLOW DIRECTION	
EXISTING ELEVATION	102.73	EXTERNAL OVERLAND FLOW DIRECTION	
PROPOSED SWALE GRADE	1.5%	REAR YARD OVERLAND FLOW DIRECTION	
HIGH POINT	102.16	RETAINING WALL AND ELEVATIONS	
CATCHBASIN MANHOLE		1.5m CHAIN LINK FENCE (UNLESS OTHERWISE NOTED)	
TEE CATCHBASIN		1.5m POST AND RAIL FENCE	
ELBOW CATCHBASIN		3.0m NOISE BARRIER (SEE LANDSCAPE DWG. FOR DETAILS)	
HYDRANT, VALVE & VB		PHASING LIMITS	
VALVE & VC		PROPERTY BOUNDARY	
VALVE & VB		3:1 TERRACING MAXIMUM SLOPE	
BUILDING ENVELOPE		PONDING AREA WITH SPILLWAY ELEVATION (MAXIMUM 0.30m)	
TOP OF FOUNDATION (TOF)		2508 PVC PERFORATED PIPE (REFER TO CITY STD S29 FOR REAR YARD TRENCH AND PIPE DETAILS ONLY)	
FINISHED FLOOR ELEVATION (FFE)		3:1 TERRACING MAXIMUM SLOPE	
UNDERSIDE OF FOOTING ELEVATION (USF)		PRV	
UNITS REQUIRING WATER PRESSURE REDUCING VALVES		W.O.	
WALKOUT UNITS		SOG	
SLAB ON GRADE		2 HOUR FIREWALL (SEE ARCHITECTURAL DRAWINGS FOR DETAIL)	
HYDRO TRANSFORMER			
STREET LIGHT STANDARD			
3 YEAR WATER LINE (WL)			
DESIGNED TOP OF VALLEY (TOV)			
15m OFFSET FROM TOV			
30m OFFSET FROM 2 YEAR WL			
FLOOD PLAN			
15m OFFSET FROM FLOOD PLAN			

*Will Curry*

**WILL CURRY**  
PROJECT MANAGER  
PLANNING, INFRASTRUCTURE & ECONOMIC  
DEVELOPMENT DEPARTMENT, CITY OF OTTAWA  
GRADING & DRAINAGE APPROVED

**TOPOGRAPHIC INFORMATION**  
TOPOGRAPHIC INFORMATION PROVIDED BY CITY OF OTTAWA 2K MAPPING, RECEIVED ON PROJECT No. 17-10-025-01, SURVEY DATUM CITY OF OTTAWA 2K MAPPING, RECEIVED ON PROJECT No. 17-10-025-00 M.P.I., RECEIVED ON JUNE 04, 2019.

**LEGAL INFORMATION**  
CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 17-10-025-00 M.P.I., RECEIVED ON JUNE 04, 2019.

3rd SUBMISSION 19-08-07

**BENCH MARK No. 01919680229** ELEVATION = 86.120 m  
ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM AND ARE DERIVED FROM THE NCC BENCH MARK No. 01919680229 HAVING A PUBLISHED ELEVATION OF 86.120 METRES.

TOWNSHIP: CUMBERLAND  
CONCRETE MONUMENT ON THE EAST SIDE OF MER BLEUE ROAD, 0.15KM NORTH OF ROAD INTERSECTION WITH NAVAN ROAD.

No.	DATE	BY	DESCRIPTION
4.	19-08-07	W.L.	REVISED PER CITY COMMENTS
3.	19-07-05	W.L.	REVISED PER CITY COMMENTS
2.	19-06-21	W.L.	2nd SUBMISSION
1.	18-11-15	W.L.	1st SUBMISSION

**Ottawa CITY OF OTTAWA**

PROJECT No. 15-766

**GRADING PLAN** © DSEL

**MATTAMY (MER BLEUE 2) LIMITED**

**SUMMERSIDE SOUTH PHASE 1**

**DSEL** david schaeffer engineering ltd

120 Ibar Road, Unit 103  
Stittville, ON K2S 1E9  
Tel: (613) 838-8866  
Fax: (613) 838-7183  
www.DSEL.ca

DRAWN BY: V.W./S.L. CHECKED BY: P.P./C.M. DRAWING NO. SHEET NO.  
DESIGNED BY: P.P./W.L. CHECKED BY: K.M. DATE: NOVEMBER 2018

SCALE: 1:500

25

**NOTE:**  
FOR CROSS-SECTION 5-5, 6-6 AND 7-7, REFER TO DWG No. 35.

**TYPICAL GRADE CONTROL SWALE**  
N.T.S.

**NOTE RE: TEST PIT/BOREHOLE EXCAVATIONS**  
ANY DISTURBED MATERIAL ENCOUNTERED BELOW THE SUBGRADE LEVEL WITHIN A BUILDING FOOTPRINT TO BE SUB-EXCAVATED AND BACKFILLED WITH COMPACTED ENGINEERED FILL AS PER GEOTECHNICAL ENGINEERS RECOMMENDATION.

**NOTE RE: PERFORATED PIPE**  
PERFORATED PIPE IS REQUIRED FOR SWALE SLOPE LESS THAN 1.5%. REFER TO CITY STD. S29, 1.5% FOR REAR YARD TRENCH AND PIPE DETAIL ONLY.

ANY DISTURBED AREA DURING CONSTRUCTION TO BE RESTORED TO THE ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITIES HAVING JURISDICTION.

CONTRACTOR TO VERIFY THE PRECISE LOCATION AND INVERT ELEVATIONS OF EX. UNDERGROUND SERVICES AND EX. UTILITIES PRIOR TO STARTING CONSTRUCTION.

PERMISSION REQUIRED FOR WORK ON ADJACENT LANDS.

**NOTE:**  
ALL EXISTING BUILDING, FENCE, CULVERT AND SPRINKLERS WITHIN LOTS, BLOCKS AND PROPOSED ROW TO BE REMOVED, WHERE APPLICABLE.

**NOTE:**  
ALL SWALES SHALL BE 0.15m DEEP WITH 3:1 SIDE SLOPES UNLESS OTHERWISE INDICATED.

**NOTE:**  
A GEOTECHNICAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO IS TO INSPECT ALL SUBGRADE SURFACES FOR FOOTING AND PAVEMENT STRUCTURES PRIOR TO CONSTRUCTION.







# APPENDIX

## B

- FIRE UNDERWRITERS SURVEY – FIRE FLOW CALCULATION FOR BUILDING
- FIRE UNDERWRITERS SURVEY – FIRE FLOW CALCULATION FOR PORTABLE CLASSROOM
- WATER DEMAND CALCULATION
- BOUNDARY CONDITION



**Proposed Avalon III (2-Storey school block)Elementary school**  
**Fire Flow Requirements Based on Fire Underwriters Survey (FUS) 2020**

1. An estimate of the Fire Flow required for a given fire area may be estimated by:  $F = 220 C \sqrt{A}$

- F = required fire flow in litres per minute
- C = coefficient related to the type of construction
  - 1.5 for **Type V** Wood Frame Construction
  - 0.8 for **Type IV-A** Mass Timber Construction
  - 0.9 for **Type IV-B** Mass Timber Construction
  - 1.0 for **Type IV-C** Mass Timber Construction
  - 1.5 for **Type IV-D** Mass Timber Construction
  - 1.0 for **Type III** Ordinary Construction
  - 0.8 for **Type II** Noncombustible Construction
  - 0.6 for **Type I** Fire resistive Construction

A = 2-b) The single largest Floor Area plus 25% of each of the two immediately adjoining floors

A = 2914 m<sup>2</sup>  
 C = 0.8  
 F = 9500.3 L/min

rounded off to 10,000 L/min (min value of 2000 L/min)

2. The value obtained in 1. may be reduced by as much as 25% for occupancies having a low contents fire hazard.

Non-combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Reduction due to low occupancy hazard  $-15\% \times 10,000 = 8,500$  L/min

3. The value obtained in 2. may be reduced by as much as 50% for buildings equipped with automatic sprinkler protection.

Adequate Sprinkler confirms to NFPA13	-30%
Water supply common for sprinklers & fire hoses	-10%
Fully supervised system	-10%
No Automatic Sprinkler System	0%

Reduction due to Sprinkler System  $-40\% \times 8,500 = 3,400$  L/min

4. The value obtained in 2. is increased for structures exposed within 45 metres by the fire area under consideration.

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20%
10.1 to 20 m	15%
20.1 to 30 m	10%
30.1 to 45 m	0%

Side 1	30	10% north side
Side 2	75	0% east side
Side 3	7.5	20% south side
Side 4	99	0% west side

30% (Total shall not exceed 75%)

Increase due to separation  $30\% \times 8,500 = 2,550$  L/min

5. The flow requirement is the value obtained in 2., minus the reduction in 3., plus the addition in 4.

The fire flow requirement is 8,000 L/min (Rounded to nearest 1000 L/min)  
 or **133 L/sec**  
 or 2,113 gpm (us)  
 or 1,760 gpm (uk)



**Proposed Avalon III (Portable Building)**  
**Elementary school**  
**Fire Flow Requirements Based on Fire Underwriters Survey (FUS) 2020**

1. An estimate of the Fire Flow required for a given fire area may be estimated by:  $F = 220 C \sqrt{A}$

- F = required fire flow in litres per minute
- C = coefficient related to the type of construction
  - 1.5 for **Type V** Wood Frame Construction
  - 0.8 for **Type IV-A** Mass Timber Construction
  - 0.9 for **Type IV-B** Mass Timber Construction
  - 1.0 for **Type IV-C** Mass Timber Construction
  - 1.5 for **Type IV-D** Mass Timber Construction
  - 1.0 for **Type III** Ordinary Construction
  - 0.8 for **Type II** Noncombustible Construction
  - 0.6 for **Type I** Fire resistive Construction

A = 2-b) The single largest Floor Area plus 25% of each of the two immediately adjoining floors

A = 214 m<sup>2</sup>  
 C = 1.5  
 F = 4828.7 L/min

rounded off to 5,000 L/min (min value of 2000 L/min)

2. The value obtained in 1. may be reduced by as much as 25% for occupancies having a low contents fire hazard.

Non-combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Reduction due to low occupancy hazard  $-15\% \times 5,000 = 4,250$  L/min

3. The value obtained in 2. may be reduced by as much as 50% for buildings equipped with automatic sprinkler protection.

Adequate Sprinkler conforms to NFPA13	-30%
Water supply common for sprinklers & fire hoses	-10%
Fully supervised system	-10%
No Automatic Sprinkler System	0%

Reduction due to Sprinkler System  $-10\% \times 4,250 = 425$  L/min

4. The value obtained in 2. is increased for structures exposed within 45 metres by the fire area under consideration.

<u>Separation</u>	<u>Charge</u>
0 to 3 m	25%
3.1 to 10 m	20%
10.1 to 20 m	15%
20.1 to 30 m	10%
30.1 to 45 m	0%

Side 1	6	20% north side
Side 2	75	0% east side
Side 3	3.6	20% south side
Side 4	99	0% west side

40% (Total shall not exceed 75%)

Increase due to separation  $40\% \times 4,250 = 1,700$  L/min

5. The flow requirement is the value obtained in 2., minus the reduction in 3., plus the addition in 4.

- The fire flow requirement is 6,000 L/min (Rounded to nearest 1000 L/min)
- or **100 L/sec**
- or 1,585 gpm (us)
- or 1,320 gpm (uk)

**Water Demand Calculation Sheet**

**Project:**

**Location:**

**WSP Project No.**

**Avalon III Elementary school**

**2666 Tenth Line Road, City of Ottawa, ON**

**221-12984-00**

**Date: 2023-03-16**

**Design: N.N.**

**Checked: D.B.Y**

**Page: 1 of 1**



Proposed Buildings	Residential			Beds	Non-Residential			Average Daily			Maximum Daily			Maximum Hourly			Fire Demand (l/min)	
	Units				Industrial	Institutional	Commercial	Demand (l/s)			Demand (l/s)			Demand (l/s)				
	SF	APT	ST		(ha)	(ha)	(ha)	Res.	Non-Res.	Total	Res.	Non-Res.	Total	Res.	Non-Res.	Total		
Proposed Two Storey Elementary School Bldg.						1.77				0.57	0.57		0.86	0.86		1.55	1.55	8,000

**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
4 Bedroom Apartment	4.1 person/unit
Avg. Apartment	1.8 person/unit

**Average Daily Demand**

Residential	280 l/cap/day
Industrial	35000 l/ha/day
Institutional	28000 l/ha/day
Commercial	28000 l/ha/day

**Maximum Daily Demand**

Residential	2.5 x avg. day
Industrial	1.5 x avg. day
Institutional	1.5 x avg. day
Commercial	1.5 x avg. day

**Maximum Hourly Demand**

Residential	2.2 x max. day
Industrial	1.8 x max. day
Institutional	1.8 x max. day
Commercial	1.8 x max. day

## Boundary Conditions 2666 Tenth Line Rd

### Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	34	0.57
Maximum Daily Demand	52	0.86
Peak Hour	93	1.55
Fire Flow Demand #1	8,000	133.33

### Location



### Results

#### Connection 1 – Sweetvalley Dr.

Demand Scenario	Head (m)	Pressure <sup>1</sup> (psi)
Maximum HGL	130.3	62.9
Peak Hour	126.0	56.9
Max Day plus Fire 1	126.3	57.3

<sup>1</sup> Ground Elevation = 86.1 m

### **Disclaimer**

*The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the*

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

## Yang, Winston

---

**From:** Rasool, Rubina <Rubina.Rasool@ottawa.ca>  
**Sent:** March 22, 2023 8:04 AM  
**To:** Yang, Winston; Murshid, Shoma  
**Cc:** Zofia Jurewicz; Nwanise, Nwanise  
**Subject:** RE: Boundary condition request for 2666 Tenth Line Rd - CECCE Elementary School on Claridge Lands in Mer Bleue Expansion Urban Expansion Area 10  
**Attachments:** 2666 Tenth Line Rd\_Boundary\_Condition(17March2023).docx

Hello Winston,

Please find attached the water boundary conditions,

Best,

**Rubina**

---

**Rubina Rasool**  
Project Manager  
Planning, Infrastructure and Economic Development Department  
Development Review – East Branch  
City of Ottawa  
110 Laurier Avenue West Ottawa, ON K1P 1J1  
[rubina.rasool@ottawa.ca](mailto:rubina.rasool@ottawa.ca)

---

**From:** Yang, Winston <Winston.Yang@wsp.com>  
**Sent:** March 17, 2023 12:49 AM  
**To:** Murshid, Shoma <Shoma.Murshid@ottawa.ca>; Rasool, Rubina <Rubina.Rasool@ottawa.ca>  
**Cc:** Zofia Jurewicz <zofiaj@cuhaci.com>; Nwanise, Nwanise <Nwanise.Nwanise@wsp.com>; Baird, Natasha <Natasha.Baird@ottawa.ca>  
**Subject:** Re: Boundary condition request for 2666 Tenth Line Rd - CECCE Elementary School on Claridge Lands in Mer Bleue Expansion Urban Expansion Area 10  
**Importance:** High

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**ATTENTION : Ce courriel provient d'un expéditeur externe. Ne cliquez sur aucun lien et n'ouvrez pas de pièce jointe, excepté si vous connaissez l'expéditeur.**

Hi Shoma,

As per the pre-consultation meeting direction, here is the water supply boundary condition request for the proposed Avalon III Elementary School Development at 2666 Tenth Line Road in Orleans.  
The site is proposed to be serviced from the existing 203mm diameter watermain stub from Sweetvalley Drive.

The proposed 2- storey elementary school block has the highest fire flow demand on the site and has been adopted as the worst case scenario. This building will be equipped with an automatic fire protection sprinkler system that complies with NFPA 13. There are two existing public fire hydrants on Sweetvalley Drive next to the subject site, both of which are within 45m of the building.





The domestic water demands were calculated using the City of Ottawa’s Water Design Guidelines while fire demands were calculated using FUS 2020. The results are summarized below:

Proposed Building	Average Daily Demand (l/s)	Maximum Daily Demand (l/s)	Maximum Hourly Demand (l/s)	Fire Demand (l/min)
Elementary School	0.57	0.86	1.55	8000

I have attached the Water demand, FUS calculation spreadsheet and Map showing conceptual water service connection for your review.

Thank you,



**Winston Ding Bang Yang, P.Eng., PMP**

Senior Civil Engineer  
Land Development and Municipal Engineering - Ottawa

T+ 1 613-690-0538  
M+ 1 647-628-8108

WSP Canada Inc.  
2611 Queensview Drive Suite 300



Ottawa, Ontario  
K2B 8K2

[wsp.com](http://wsp.com)

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-LAEhHhHzdJzBITWfa4Hgs7pbKl

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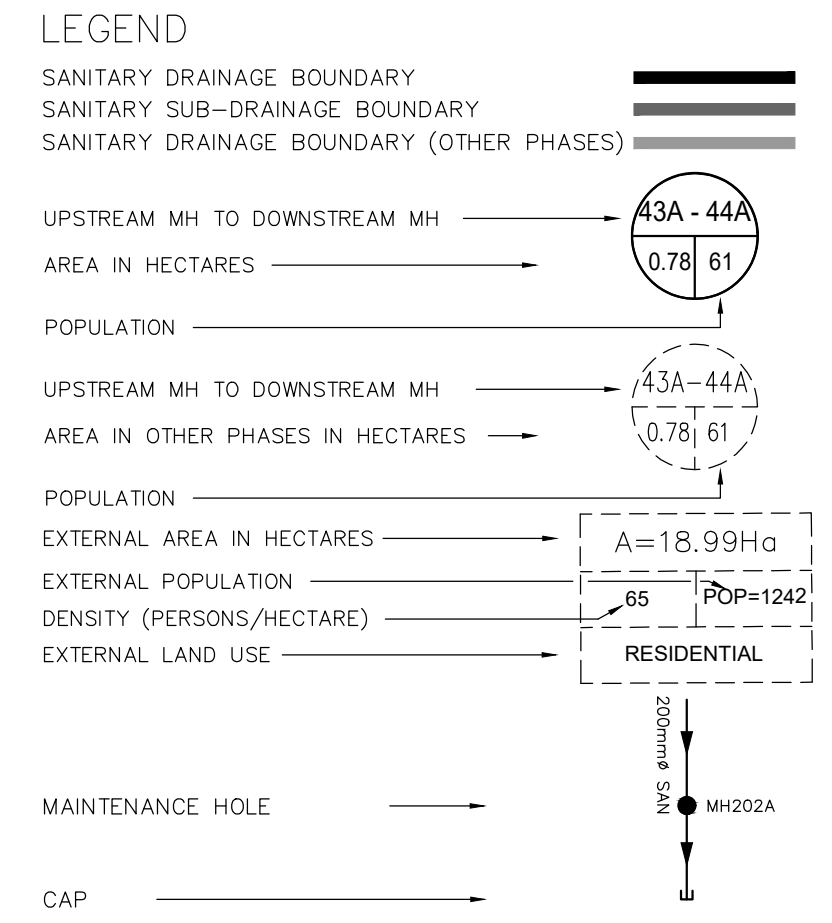
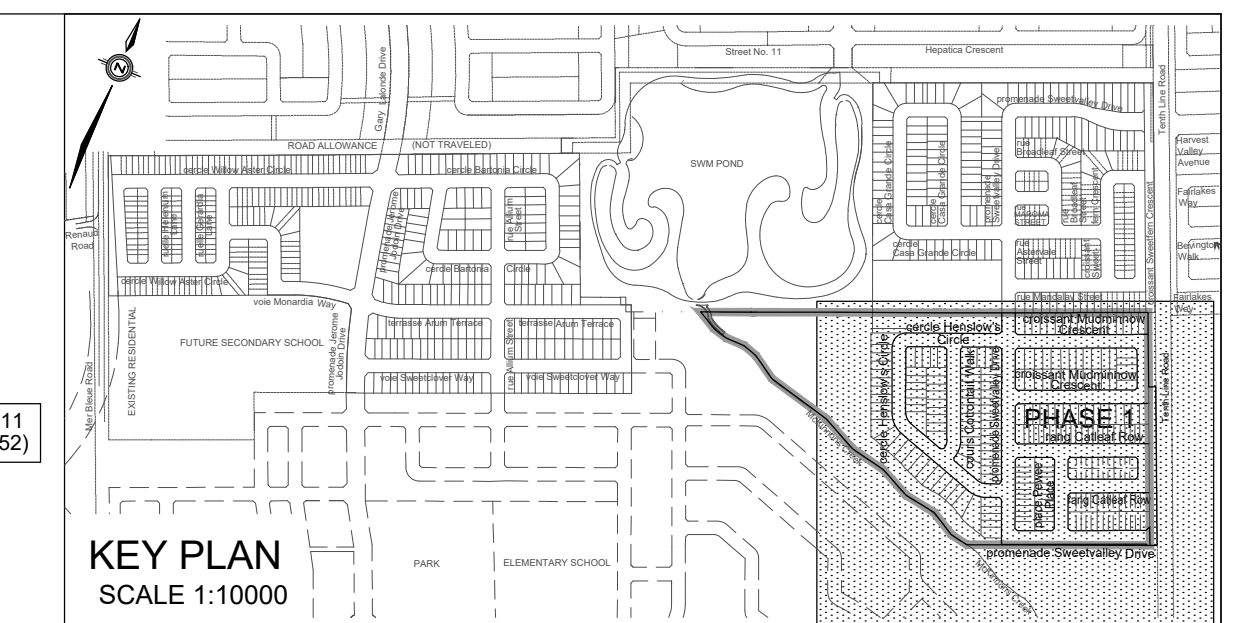
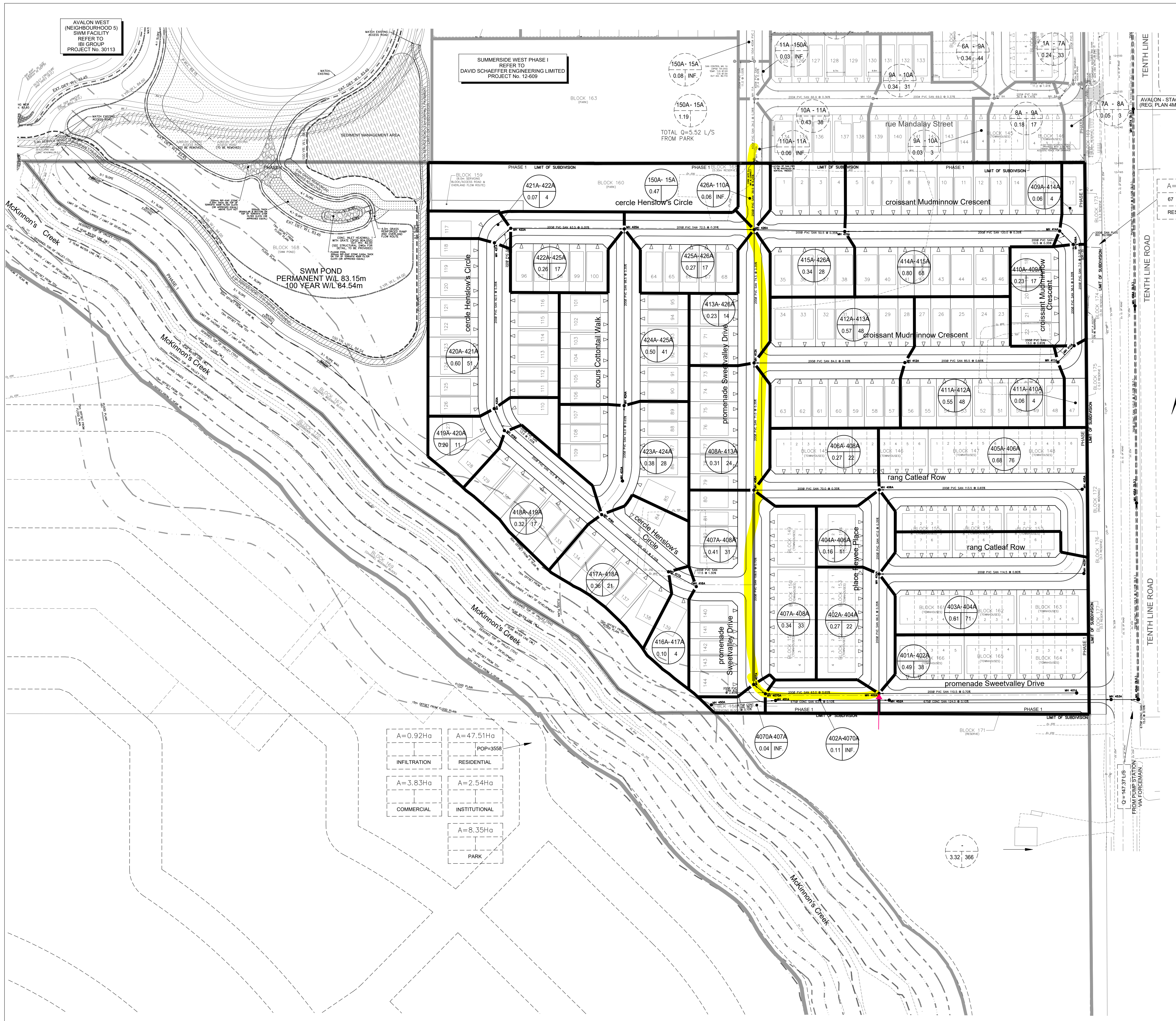
# APPENDIX

## C

- SANITARY SEWER DESIGN SHEET
- EXISTING SANITARY SEWER DESIGN SHEET BY DSEL







**TOPOGRAPHIC INFORMATION**  
 TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED,  
 PROJECT No. 17-10-025-01, SURVEY DATED AUGUST 01, 2018,  
 CITY OF OTTAWA 2K MAPPING, RECEIVED ON MARCH 04, 2013.

**LEGAL INFORMATION**  
 CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED,  
 PROJECT No. 17-10-025-00 MP1, RECEIVED ON JUNE 04, 2019.

2nd SUBMISSION 19-06-21  
**NOT FOR CONSTRUCTION**

BENCH MARK No. 01919680229 ELEVATION = 86.120 m  
 ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM AND ARE DERIVED FROM THE NCC  
 BENCH MARK No. 01919680229 HAVING A PUBLISHED ELEVATION OF 86.120 METRES.  
 TOWNSHIP: CUMBERLAND  
 CONCRETE MONUMENT ON THE EAST SIDE OF MER BLEUE ROAD, 0.15KM NORTH OF ROAD INTERSECTION WITH  
 NAVAN ROAD.

No.	DATE	BY	DESCRIPTION
2.	19-06-21	W.L.	2nd SUBMISSION
1.	18-11-15	W.L.	1st SUBMISSION

**Ottawa CITY OF OTTAWA**

PROJECT No. 15-766

**LICENSED PROFESSIONAL ENGINEER**  
 W. LIU  
 100167932  
 19-06-21  
 PROVINCE OF ONTARIO

**SANITARY DRAINAGE PLAN** © DSEL

MATTAMY (MER BLEUE 2) LIMITED      **SUMMERSIDE SOUTH PHASE 1**

**DSEL** david schaeffer engineering ltd

120 Ibor Road, Unit 103  
 Stittville, ON K2S 1E9  
 Tel: (613) 838-8956  
 Fax: (613) 838-7183  
 www.DSEL.ca

DRAWN BY: V.W./S.L.	CHECKED BY: P.P./C.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: P.P./W.L.	CHECKED BY: K.M.		
SCALE: 1:1000	DATE: NOVEMBER 2018		33





# SANITARY SEWER CALCULATION SHEET



Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION						COMM		INSTIT		PARK		I+C+I+P		INFILTRATION				PIPE											
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	UNITS Singles	UNITS Townhouse	POP.	CUMULATIVE		PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	ICI Ratio	ICI Peaking Factor	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL.		
								AREA (ha)	POP.																					(FULL) (m/s)	(ACT.) (m/s)	
<b>cours Cottontail Walk</b>																																
	423A	424A	0.38	8	8		28	0.38	28	3.69	0.33										0.38	0.38	0.13	0.46	42.0	200	0.65	26.44	0.02	0.84	0.32	
	424A	425A	0.50	12	12		41	0.88	69	3.63	0.81										0.50	0.88	0.29	1.10	98.5	200	0.35	19.40	0.06	0.62	0.33	
To cercle Henslow's Circle, Pipe 425A - 426A																																
								0.88	69													0.88										
<b>cercle Henslow's Circle</b>																																
	416A	417A	0.10	1	1		4	0.10	4	3.76	0.05										0.10	0.10	0.03	0.08	17.5	200	1.30	37.40	0.00	1.19	0.22	
	417A	418A	0.36	6	6		21	0.46	25	3.69	0.30										0.36	0.46	0.15	0.45	49.0	200	0.35	19.40	0.02	0.62	0.26	
	418A	419A	0.32	5	5		17	0.78	42	3.66	0.50										0.32	0.78	0.26	0.76	72.0	200	0.35	19.40	0.04	0.62	0.29	
	419A	420A	0.20	3	3		11	0.98	53	3.65	0.63										0.20	0.98	0.32	0.95	13.5	200	1.55	40.83	0.02	1.30	0.54	
	420A	421A	0.60	15	15		51	1.58	104	3.59	1.21										0.60	1.58	0.52	1.73	92.5	200	0.35	19.40	0.09	0.62	0.38	
	421A	422A	0.07	1	1		4	1.65	108	3.59	1.26										0.07	1.65	0.54	1.80	12.0	200	0.35	19.40	0.09	0.62	0.39	
	422A	425A	0.26	5	5		17	1.91	125	3.57	1.45										0.26	1.91	0.63	2.08	63.5	200	0.35	19.40	0.11	0.62	0.40	
Contribution From cours Cottontail Walk, Pipe 424A - 425A																																
								0.88	69												0.88	2.79										
	425A	426A	0.27	5	5		17	3.06	211	3.51	2.40										0.27	3.06	1.01	3.41	72.5	200	0.35	19.40	0.18	0.62	0.46	
To promenade Sweetvalley Drive, Pipe 426A - 110A																																
								3.06	211													3.06										
<b>croissant Mudminnow Crescent</b>																																
	411A	412A	0.55	14	14		48	0.55	48	3.65	0.57										0.55	0.55	0.18	0.75	85.5	200	0.65	26.44	0.03	0.84	0.37	
	412A	413A	0.57	14	14		48	1.12	96	3.60	1.12										0.57	1.12	0.37	1.49	84.0	200	0.35	19.40	0.08	0.62	0.36	
To promenade Sweetvalley Drive, Pipe 413A - 426A																																
								1.12	96													1.12										
	411A	410A	0.06	1	1		4	0.06	4	3.76	0.05										0.06	0.06	0.02	0.07	13.0	200	0.65	26.44	0.003	0.84	0.17	
	410A	409A	0.23	5	5		17	0.29	21	3.70	0.25										0.23	0.29	0.10	0.35	56.5	200	0.35	19.40	0.02	0.62	0.23	
Contribution From External																																
			8.34	1	1		560	8.63	581												8.34	8.63										
	409A	414A	0.06	1	1		4	8.69	585	3.35	6.35										0.06	8.69	2.87	9.22	10.5	200	0.35	19.40	0.48	0.62	0.61	
	414A	415A	0.80	20	20		68	9.49	653	3.33	7.05										0.80	9.49	3.13	10.18	120.0	200	0.35	19.40	0.52	0.62	0.62	
	415A	426A	0.34	8	8		28	9.83	681	3.32	7.33										0.34	9.83	3.24	10.57	50.5	200	0.35	19.40	0.54	0.62	0.63	
To promenade Sweetvalley Drive, Pipe 426A - 110A																																
								9.83	681													9.83										
<b>place Pewee Place</b>																																
Contribution From promenade Sweetvalley Drive, Pipe 401A - 402A																																
	402A	404A	0.27	8		8	22	0.76	60	3.64	0.71										0.49	0.49										
								0.61	71												0.27	0.76	0.25	0.96	66.5	200	0.35	19.40	0.05	0.62	0.32	
Contribution From rang Catleaf Row, Pipe 403A - 404A																																
	404A	406A	0.16	4		4	11	1.53	142	3.56	1.64										0.61	1.37										
To rang Catleaf Row, Pipe 406A - 408A																																
								1.53	142												0.16	1.53	0.50	2.14	47.0	200	0.35	19.40	0.11	0.62	0.40	
<b>rang Catleaf Row</b>																																
	403A	404A	0.61	26		26	71	0.61	71	3.63	0.83										0.61	0.61	0.20	1.04	114.5	200	0.80	29.34	0.04	0.93	0.43	
To place Pewee Place, Pipe 404A - 406A																																
								0.61	71													0.61										
	405A	406A	0.68	28		28	76	0.68	76	3.62	0.89										0.68	0.68	0.22	1.12	113.5	200	0.65	26.44	0.04	0.84	0.42	



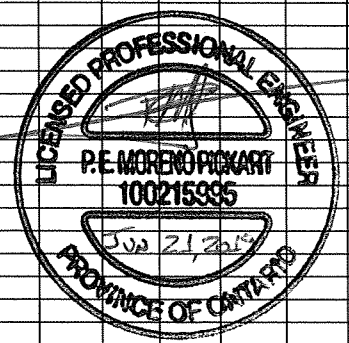
<b>DESIGN PARAMETERS</b> Park Flow = 9300 L/ha/da Average Daily Flow = 280 l/p/day Comm/Inst Flow = 28000 L/ha/da Industrial Flow = 35000 L/ha/da Max Res. Peak Factor = 4.00 Park Peak Factor = 1.50 Industrial Peak Factor = as per MOE Graph Extraneous Flow = 0.330 L/s/ha Minimum Velocity = 0.600 m/s Manning's n = (Conc) 0.013 (Pvc) 0.013 Townhouse coeff= 2.7 Single house coeff= 3.4										Designed: C.M.K. Checked: P.P. Dwg. Reference: Sanitary Drainage Plan, Dwg. No. 34					PROJECT: <b>SUMMERSIDE SOUTH PHASE 1</b> LOCATION: <b>City of Ottawa</b> File Ref: 15-766 Date: June, 2019 Sheet No. 1 of 2				
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# SANITARY SEWER CALCULATION SHEET



Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION					COMM		INSTIT		PARK		I-C+I-P		INFILTRATION				PIPE																			
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	UNITS Singles	UNITS Townhouse	POP.	CUMULATIVE		PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU AREA (ha)	AREA (ha)	ACCU AREA (ha)	AREA (ha)	ACCU AREA (ha)	ICI Ratio	ICI Peaking Factor	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL.									
								AREA (ha)	POP.																					(FULL) (m/s)	(ACT.) (m/s)								
Contribution From place Pewee Place, Pipe 404A - 406A								1.53	142													1.53	2.21																
	406A	408A	0.27	8		8	22	2.48	240	3.49	2.72									0.27	2.48	0.82	3.54	70.0	200	0.35	19.40	0.18	0.62	0.47									
To promenade Sweetvalley Drive, Pipe 408A - 413A								2.48	240														2.48																
promenade Sweetvalley Drive																																							
	401A	402A	0.49	14		14	38	0.49	38	3.67	0.45									0.49	0.49	0.16	0.61	110.5	200	0.70	27.44	0.02	0.87	0.35									
To place Pewee Place, Pipe 402A - 404A								0.49	38															0.49															
	402A	4070A	0.11					0.11	0											0.11	0.11	0.04	0.04	63.0	200	0.65	26.44	0.00	0.84	0.14									
	4070A	407A	0.04					0.15	0											0.04	0.15	0.05	0.05	8.5	200	2.85	55.37	0.00	1.76	0.25									
			0.34	12		12	33	0.49	33											0.34	0.49																		
	407A	408A	0.41	9	9		31	0.90	64	3.63	0.75									0.41	0.90	0.30	1.05	108.5	200	0.70	27.44	0.04	0.87	0.41									
Contribution From rang Catleaf Row, Pipe 406A - 408A								2.48	240													2.48	3.38																
	408A	413A	0.31	7	7		24	3.69	328	3.45	3.67									0.31	3.69	1.22	4.88	71.0	200	0.35	19.40	0.25	0.62	0.51									
Contribution From croissant Mudminnow Crescent, Pipe 412A - 413A								1.12	96															1.12	4.81														
	413A	426A	0.23	4	4		14	5.04	438	3.40	4.83									0.23	5.04	1.66	6.49	74.5	200	0.35	19.40	0.33	0.62	0.55									
Contribution From croissant Mudminnow Crescent, Pipe 415A - 426A								9.83	681															9.83	14.87														
Contribution From cercle Henslow's Circle, Pipe 425A - 426A								3.06	211																3.06	17.93													
	426A	Ex. 110A	0.06					17.99	1330	3.17	13.68									0.06	17.99	5.94	19.61	39.5	250	0.25	29.73	0.66	0.61	0.65									



<b>DESIGN PARAMETERS</b> Park Flow = 9300 L/ha/day Average Daily Flow = 280 l/p/day Comm/Inst Flow = 28000 L/ha/day Industrial Flow = 35000 L/ha/day Max Res. Peak Factor = 4.00 Park Peak Factor = 1.50 Industrial Peak Factor = as per MOE Graph Extraneous Flow = 0.330 L/s/ha Minimum Velocity = 0.600 m/s Manning's n = (Conc) 0.013 (Pvc) 0.013 Townhouse coeff= 2.7 Single house coeff= 3.4					Designed: C.M.K. Checked: P.P. Dwg. Reference: Sanitary Drainage Plan, Dwg. No. 34	PROJECT: <b>SUMMERSIDE SOUTH PHASE 1</b> LOCATION: <b>City of Ottawa</b> File Ref: 15-766 Date: June, 2019	Sheet No. 2 of 2
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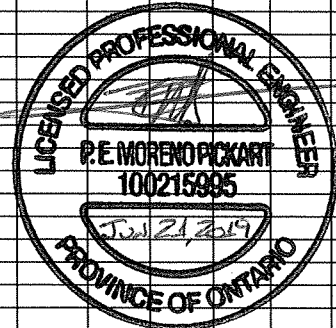


# SANITARY SEWER CALCULATION SHEET



Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION					COMM		INSTIT		PARK		I-C+I-P		INFILTRATION			PIPE														
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	UNITS Singles	UNITS Townhouse	POP.	CUMULATIVE		PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU AREA (ha)	AREA (ha)	ACCU AREA (ha)	AREA (ha)	ACCU AREA (ha)	ICI Ratio	ICI Peaking Factor	PEAK FLOW (l/s)	TOTAL	ACCU	INFILT	TOTAL	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL.			
								AREA (ha)	POP.												AREA (ha)	AREA (ha)	AREA (ha)	AREA (ha)						AREA (ha)	AREA (ha)	AREA (ha)	AREA (ha)
<b>Sanitary Trunk</b>																																	
Contribution From External								47.51	3558				3.83	2.54	8.35							62.23	62.23										
								0.92													0.92	63.15											
	450A	451A						48.43	3558	2.90	33.47	3.83	2.54	8.35	0.10	1.00	3.41	0.00	63.15	20.84	57.72	36.0	675	0.10	265.82	0.22	0.74	0.59					
	451A	452A						48.43	3558	2.90	33.47	3.83	2.54	8.35	0.10	1.00	3.41	0.00	63.15	20.84	57.72	63.5	675	0.10	265.82	0.22	0.74	0.59					
	452A	453A						48.43	3558	2.90	33.47	3.83	2.54	8.35	0.10	1.00	3.41	0.00	63.15	20.84	57.72	124.0	675	0.10	265.82	0.22	0.74	0.59					
	453A	454A						48.43	3558	2.90	33.47	3.83	2.54	8.35	0.10	1.00	3.41	0.00	63.15	20.84	57.72	15.0	675	0.10	265.82	0.22	0.74	0.59					
To TENTH LINE ROAD, Pipe 454A - 455A								48.43	3558				3.83	2.54	8.35							63.15											
<b>TENTH LINE ROAD</b>																																	
Contribution From promenade Sweetvalley Drive, Sanitary Trunk Pipe 453A - 454A (B.O.)								48.43	3558				3.83	2.54	8.35							63.15	63.15		147.37	(Flow from Pump Station Via Forcemain)							
	454A (B.O.)	455A (B.O.)	3.32				366	51.75	3924	2.87	36.53	3.83	2.54	8.35	0.10	1.00	3.41	3.32	66.47	21.94	209.25	109.5	750	0.10	352.05	0.59	0.80	0.83					



DESIGN PARAMETERS										Designed: C.M.K.					PROJECT: SUMMERSIDE SOUTH PHASE 1									
Park Flow =	9300	L/ha/da								Checked: P.P.					LOCATION: City of Ottawa									
Average Daily Flow =	280	l/p/day	Industrial Peak Factor = as per MOE Graph							Dwg. Reference: Sanitary Drainage Plan, Dwg. No. 34					File Ref: 15-766				Date: June, 2019				Sheet No. 1 of 1	
Comm/Inst Flow =	28000	L/ha/da	Extraneous Flow = 0.330 l/s/ha																					
Industrial Flow =	35000	L/ha/da	Minimum Velocity = 0.600 m/s																					
Max Res. Peak Factor =	4.00		Manning's n = (Conc) 0.013 (Pvc) 0.013																					
Park Peak Factor =	1.50		Townhouse coeff= 2.7																					
			Single house coeff= 3.4																					



# APPENDIX

## D

- STORM SEWER DESIGN SHEET
- EXISTING SEWER DESIGN SHEET BY DSEL
- DWG C05 – PRE-DEVELOPMENT DRAINAGE PLAN
- DWG C06 – POST-DEVELOPMENT DRAINAGE PLAN
- DWG C07 – ROOF DRAINAGE AREA PLAN
- STORMWATER MANAGEMENT CALCULATIONS



LOCATION				AREA (Ha)						RATIONAL DESIGN FLOW											PROPOSED SEWER DATA												
LOCATION	AREA ID	FROM	TO	C=	C=	C=	C=	C=	C=	IND	CUM	INLET	TOTAL	i (2)	i (5)	i (100)	BLDG	2yr PEAK	5yr PEAK	100yr PEAK	ICD FIXED	DESIGN	MODIFIED	MATERIAL	SIZE	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME	AVAIL CAP (2yr)		
				0.25	0.50	0.70	0.80	0.90	1.00	2.78AC	2.78 AC	(min)	(min)	(mm/hr)	(mm/hr)	(mm/hr)	FLOW (L/s)	FLOW (L/s)	FLOW (L/s)	FLOW (L/s)	FLOW (L/s)	FLOW (L/s)	DESIGN FLOW (L/s)	DESIGN FLOW (L/s)	PIPE	(mm)	(%)	(m)	(l/s)	(m/s)	IN PIPE	(L/s)	(%)
<b>To Sweetvalley Drive</b>																																	
SCHOOL SITE	S101	DICB01	CBMH100	0.073						0.051	0.051	20.00	20.23	52.03	70.25	119.95		2.64					2.64		PVC DR-35	200.0	1.00	14.39	32.83	1.04	0.23	30.19	91.96%
	S102	CBMH100	STMH102	0.011				0.048		0.128	0.178	20.23	20.62	51.66	69.75	119.09		9.22					9.22		PVC DR-35	300.0	0.35	19.10	57.27	0.81	0.39	48.05	83.90%
	S111	DICB03	CBMH111	0.141						0.098	0.098	20.00	20.29	52.03	70.25	119.95		5.10					5.10		PVC DR-35	250.0	1.00	20.73	59.53	1.21	0.29	54.43	91.43%
	S110	CBMH111	CBMH101	0.066						0.046	0.046	20.29	20.63	51.58	69.63	118.88		2.37					2.37		PVC DR-35	250.0	0.50	17.66	42.09	0.86	0.34	39.73	94.38%
	S104	CBMH101	STMH102					0.044		0.110	0.156	20.63	20.80	51.04	68.90	117.62		7.96					7.96		PVC DR-35	300.0	0.35	8.50	57.27	0.81	0.18	49.31	86.10%
	S103	CB02	STMH102					0.046		0.115	0.115	10.00	10.14	76.81	104.19	178.56		8.84					8.84		PVC DR-35	200.0	1.00	8.50	32.83	1.04	0.14	23.99	73.08%
		STMH102	CBMH103							0.000	0.450	20.80	21.20	50.77	68.53	116.99		22.82					22.82		PVC DR-35	300.0	0.35	19.40	57.27	0.81	0.40	34.44	60.14%
	S105	CBMH103	CBMH108					0.056		0.140	0.590	21.20	21.36	50.17	67.72	115.58		29.58					29.58		PVC DR-35	300.0	0.35	7.83	57.27	0.81	0.16	27.68	48.34%
	S112	DICB04	CBMH108	0.188				0.020		0.181	0.181	20.00	20.38	52.03	70.25	119.95		9.40					9.40		PVC DR-35	200.0	1.00	23.89	32.83	1.04	0.38	23.43	71.36%
	S117	CB05	CBMH104	0.071						0.049	0.049	10.00	10.32	76.81	104.19	178.56		3.79					3.79		PVC DR-35	200.0	1.00	20.31	32.83	1.04	0.32	29.04	88.46%
	S116	CBMH104	CBMH105	0.068				0.002		0.052	0.102	10.32	10.85	75.58	102.51	175.65		7.68					7.68		PVC DR-35	300.0	0.35	25.35	57.27	0.81	0.52	49.59	86.59%
	S115	CBMH105	CBMH106	0.088				0.006		0.076	0.178	10.85	11.54	73.70	99.93	171.18		13.10					13.10		PVC DR-35	300.0	0.35	33.70	57.27	0.81	0.69	44.16	77.12%
	S114	CB06	CBMH106	0.008				0.085		0.218	0.218	10.00	10.40	76.81	104.19	178.56		16.76					16.76		PVC DR-35	200.0	1.00	25.33	32.83	1.04	0.40	16.07	48.95%
	S113	CBMH106	CBMH107	0.060				0.035		0.129	0.525	11.54	12.50	71.36	96.71	165.61		37.46					37.46		PVC DR-35	375.0	0.26	46.40	89.49	0.81	0.96	52.03	58.14%
	S107	CB07	CBMH107	0.026				0.009		0.041	0.041	20.00	20.20	52.03	70.25	119.95		2.11					2.11		PVC DR-35	200.0	1.00	12.27	32.83	1.04	0.20	30.72	93.57%
	S106	CBMH107	CBMH108	0.062				0.018		0.088	0.654	20.20	20.59	51.72	69.82	119.21		33.80					33.80		PVC DR-35	375.0	0.26	19.13	89.49	0.81	0.39	55.69	62.23%
		CBMH108	STMH110							0.000	1.424	21.36	21.39	49.93	67.39	115.03		71.11					71.11		PVC DR-35	450.0	0.30	1.47	156.32	0.98	0.02	85.21	54.51%
		BLDG	STMH109						0.231	0.642	0.642	10.00	10.02	76.81	104.19	178.56		49.32					49.32		PVC DR-35	300.0	1.00	1.85	96.80	1.37	0.02	47.48	49.05%
		STMH109	STMH110							0.000	0.642	10.02	10.81	76.72	104.07	178.35		49.27					49.27		PVC DR-35	375.0	0.26	38.05	89.49	0.81	0.78	40.22	44.95%
		STMH110	EX STM CONTROL MH1							0.000	2.066	21.39	21.64	49.90	67.34	114.94		103.10					103.10		PVC DR-35	450.0	0.30	14.99	156.32	0.98	0.25	53.22	34.05%
SWEETVALLEY DRIVE		EX STM CONTROL MH1	EX STMH402A							0.000	2.066	21.64	21.74	49.53	66.84	114.07		102.33					102.33		CONC	900.0	0.20	7.50	810.41	1.27	0.10	708.08	87.37%

<b>Definition:</b> Q=2.78CIA, where: Q = Peak Flow in Litres per Second (L/s) A = Area in Hectares (Ha) i = Rainfall Intensity in millimeters per hour (mm/hr) i = 732.951/(TC+6.199)^0.810 i = 1174.184/(TC+6.014)^0.816 i = 1735.688/(TC+6.014)^0.820 2 Year 5 Year 100 Year	<b>Notes:</b> 1. Mannings coefficient (n) = 0.013  Time-of-Concentration in the Swale FAA Equation: $t \text{ (min)} = 3.258 [(1.1 - C) L^{0.5} / S^{0.33}]$ Where: Longest Watercourse Length, L (m). S (%) Runoff Coef. C = Impervious	<b>Designed:</b> M.S.  <b>Checked:</b> D.Y.  <b>Dwg. Reference:</b> C06	<b>No.</b>	<b>Revision</b>	<b>Date</b>
			1.	City Submission No. 1	2023-06-02
			2.	City Submission No. 2	2023-02-16
			<b>File Reference:</b> 221-12984-00	<b>Date:</b> 2023-02-16	<b>Sheet No:</b> 1 of 1





JOB BENCHMARK #1  
FIRE HYDRANT  
TOP OF SPINDLE  
ELEVATION=88.40

JOB BENCHMARK #2  
FIRE HYDRANT  
TOP OF SPINDLE  
ELEVATION=87.99

P1  
0.811 0.25

P2  
0.209 0.25

P3  
0.225 0.25

P4  
0.518 0.25



**EDWARD J CUHACI & ASSOCIATES ARCHITECTS Inc.**  
171 Slater St, Suite 100, Ottawa, Ontario, K1P 5H7  
Fax: (613) 236-1944 Telephone: (613) 236-7135 E-mail: info@cuhaci.com



300-2611 QUEENSWAY DRIVE  
OTTAWA ONTARIO CANADA K2B 8K2  
TEL: 1-613-829-2800 | FAX: 1-613-829-8299 | WWW.WSPGROUP.COM

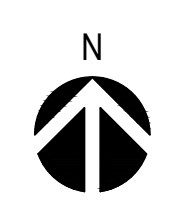
PROJECT:  
**AVOLON III**  
TENTH LINE ROAD  
OTTAWA, ON

CONSEIL DES ÉCOLES CATHOLIQUES DU CENTRE-EST  
4000, RUE LABELLE, OTTAWA, ON K1J 1A1



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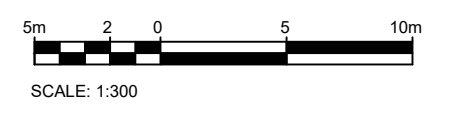
BEARING NOTE:  
BEARINGS ARE GRID, DERIVED FROM THE CAN-NET REAL TIME NETWORK GPS OBSERVATIONS,  
REFERENCED TO SPECIFIED CONTROL POINTS 0191980015M AND 0191980491M, MTM ZONE 9 (P3) WEST  
(CONTOUR HATCH ORIGINAL)  
BENCHMARK #1 N=5033945.03 E=344791.31 Z=88.40  
BENCHMARK #2 N=5033983.96 E=344895.08 Z=87.99



ISSUE NO.	DATE	DESCRIPTION
4	2024-02-16	REVISED AS PER CITY COMMENT
3	2023-12-18	ISSUED FOR BUILDING PERMIT
2	2023-07-21	ISSUED FOR BUILDING PERMIT
1	2023-06-02	ISSUED FOR SPA

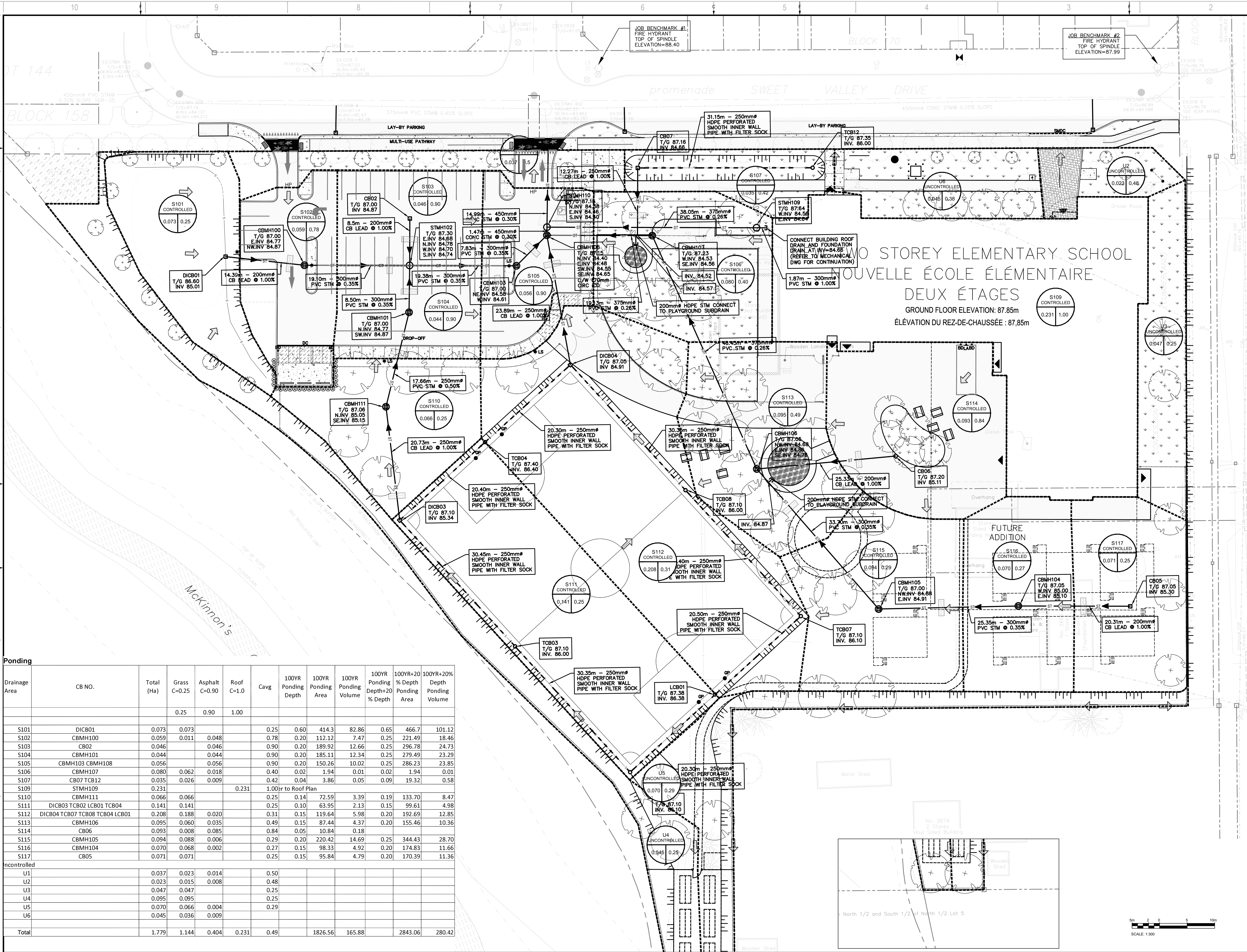
PROJECT NO:	221-12984-00	DATE:	2024-02-16
ORIGINAL SCALE:	1:300	IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.	
DESIGNED BY:	D.Y./M.S.		
DRAWN BY:	S.T.R.		
CHECKED BY:	D.Y.		

DISCIPLINE:	CIVIL
TITLE:	PRE-DEVELOPMENT DRAINAGE AREA PLAN
SHEET NUMBER:	C05
ISSUE:	ISSUED FOR BUILDING PERMIT
DATE OF:	2024-02-16
REV #:	0



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REMARKS: BEARING AND GRID DERIVED FROM THE CAN-NET REAL TIME NETWORK GPS OBSERVATIONS. REFERENCED TO SPECIFIED CONTROL POINTS 0191680154 AND 0191684611, MTM ZONE 9 (P) 30 WEST (CONTOUR HAD ORIGINAL). BENCHMARK #1 N:503345.03 E:344791.31 Z:88.40 BENCHMARK #2 N:503385.03 E:344805.02 Z:87.89

NORTHING:

ISSUED FOR - REVISION	NO.	DATE	DESCRIPTION
ISSUED FOR SPA	1	2023-06-02	ISSUED FOR SPA
ISSUED FOR BUILDING PERMIT	2	2023-07-21	ISSUED FOR BUILDING PERMIT
ISSUED FOR BUILDING PERMIT	3	2023-12-18	ISSUED FOR BUILDING PERMIT
REVISED AS PER CITY COMMENT	4	2024-02-16	REVISED AS PER CITY COMMENT

PROJECT NO.	DATE
221-12984-00	2024-02-16

ORIGINAL SCALE:	IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
1:300	

DESIGNED BY: D.Y.M.S.  
 DRAWN BY: S.T.R.  
 CHECKED BY: D.Y.

DISCIPLINE: CIVIL

TITLE:
STORM DRAINAGE AREA PLAN

SHEET NUMBER:
C06

ISSUE:	REV #
ISSUED FOR BUILDING PERMIT	0

DATE OF: 2024-02-16

Ponding											
Drainage Area	CB NO.	Total (Ha)	Grass C=0.25	Asphalt C=0.90	Roof C=1.0	Cavg	100YR Ponding Depth	100YR Ponding Area	100YR Ponding Volume	100YR Ponding Depth+20% Depth	100YR+20% Depth Ponding Volume
		0.25	0.90	1.00							
S101	DICB01	0.073	0.073			0.25	0.60	414.3	82.86	0.65	466.7
S102	CBMH100	0.059	0.011	0.048		0.78	0.20	112.12	7.47	0.25	221.49
S103	CB02	0.046		0.046		0.90	0.20	189.92	12.66	0.25	296.78
S104	CBMH101	0.044		0.044		0.90	0.20	185.11	12.34	0.25	279.49
S105	CBMH103 CBMH108	0.056		0.056		0.90	0.20	150.26	10.02	0.25	286.23
S106	CBMH107	0.080	0.062	0.018		0.40	0.02	1.94	0.01	0.02	1.94
S107	CB07 TCB12	0.035	0.026	0.009		0.42	0.04	3.86	0.05	0.09	19.32
S109	STMH109	0.231			0.231	1.00	to Roof Plan				
S110	CBMH111	0.066	0.066			0.25	0.14	72.59	3.39	0.19	133.70
S111	DICB03 TCB02 LCB01 TCB04	0.141	0.141			0.25	0.10	63.95	2.13	0.15	99.61
S112	DICB04 TCB07 TCB08 TCB04 LCB01	0.208	0.188	0.020		0.31	0.15	119.64	5.98	0.20	192.69
S113	CBMH106	0.095	0.060	0.035		0.49	0.15	87.44	4.37	0.20	155.46
S114	CB06	0.093	0.008	0.085		0.84	0.05	10.84	0.18		
S115	CBMH105	0.094	0.088	0.006		0.29	0.20	220.42	14.69	0.25	344.43
S116	CBMH104	0.070	0.068	0.002		0.27	0.15	98.33	4.92	0.20	174.83
S117	CB05	0.071	0.071			0.25	0.15	95.84	4.79	0.20	170.39
U1		0.037	0.023	0.014		0.50					
U2		0.023	0.015	0.008		0.48					
U3		0.047	0.047			0.25					
U4		0.095	0.095			0.25					
U5		0.070	0.066	0.004		0.29					
U6		0.045	0.036	0.009							
Total		1.779	1.144	0.404	0.231	0.49		1826.56	165.88		2843.06

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**WATTS** Adjustable Accutrol Weir Tag: \_\_\_\_\_ Adjustable Flow Control for Roof Drains

**ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)**

For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the flow rate for depths over 2" of head, set the slot in the adjustable upper cone according to the flow rate required. Refer to Table 1 below.

Note: Flow rates are directly proportional to the amount of weir opening that is exposed.

**EXAMPLE:**

For example, if the adjustable upper cone is set to cover 1/2 of the weir opening, flow rates above 2" of head will be restricted to 2-1/2 gpm per inch of head.

Therefore, at 3" of head, the flow rate through the Accutrol Weir that has 1/2 the slot exposed will be: [5 gpm (per inch of head) x 2 inches of head] + 2-1/2 gpm (for the third inch of head) = 12-1/2 gpm.

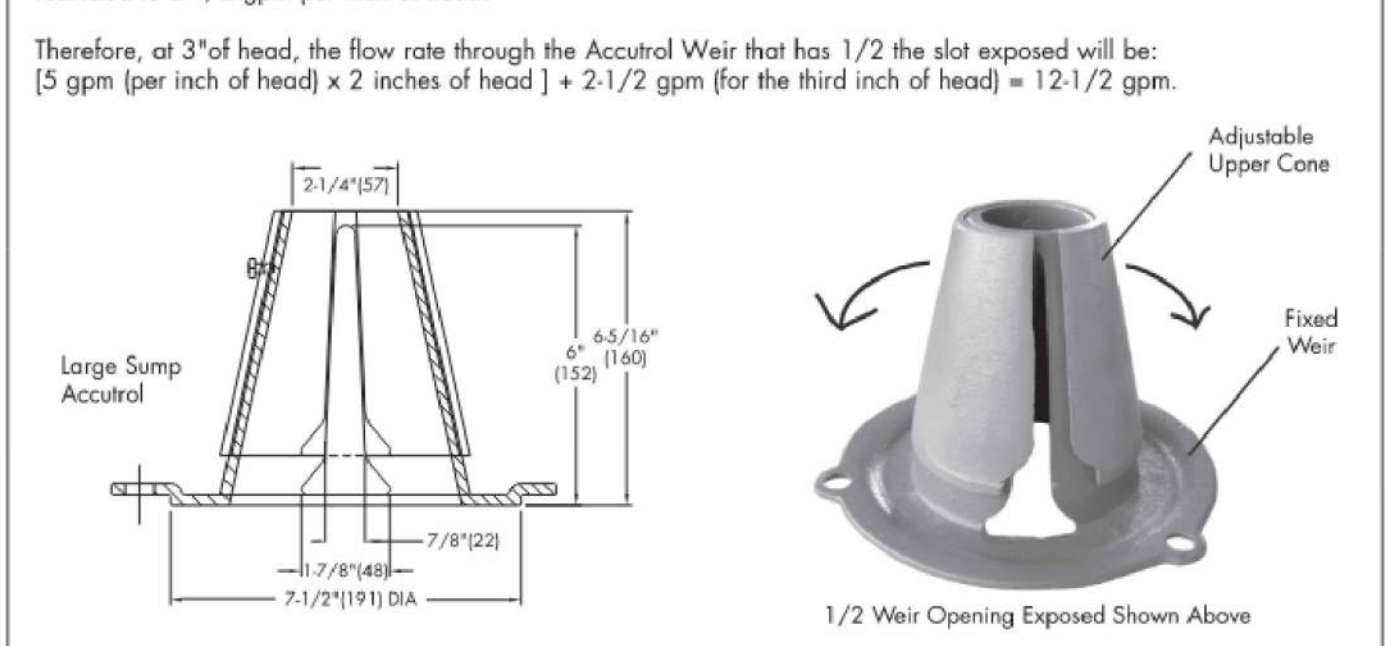


TABLE 1. Adjustable Accutrol Flow Rate Settings

Weir Opening Exposed	1"	2"	3"	4"	5"	6"
Fully Exposed	5	10	15	20	25	30
3/4	5	10	13.75	17.5	21.25	25
1/2	5	10	12.5	15	17.5	20
1/4	5	10	11.25	12.5	13.75	15
Closed	5	5	5	5	5	5

Job Name: \_\_\_\_\_ Contractor: \_\_\_\_\_  
 Job Location: \_\_\_\_\_ Contractor's P.O. No.: \_\_\_\_\_  
 Engineer: \_\_\_\_\_ Representative: \_\_\_\_\_

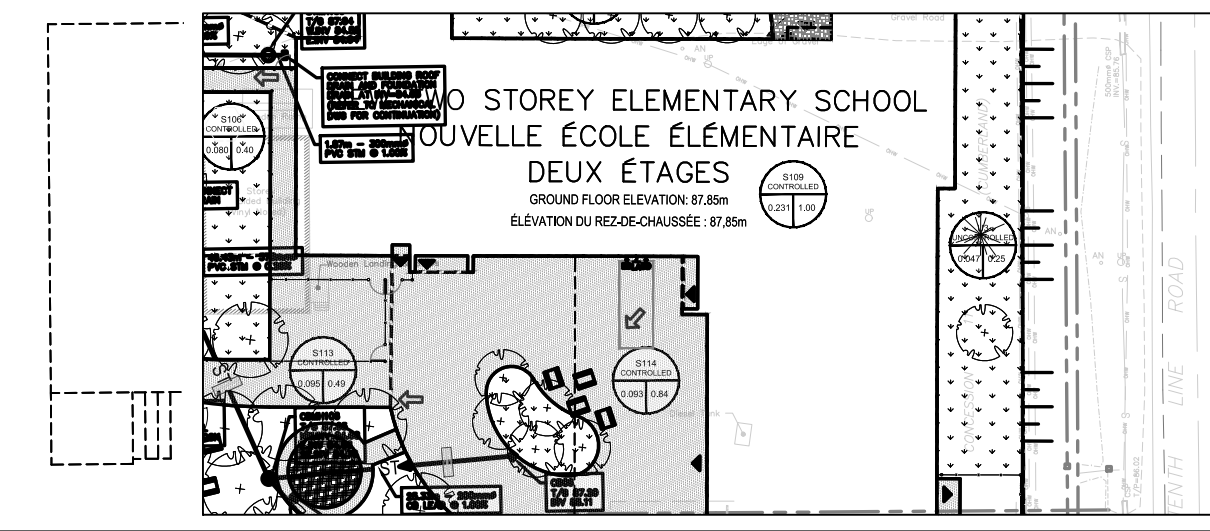
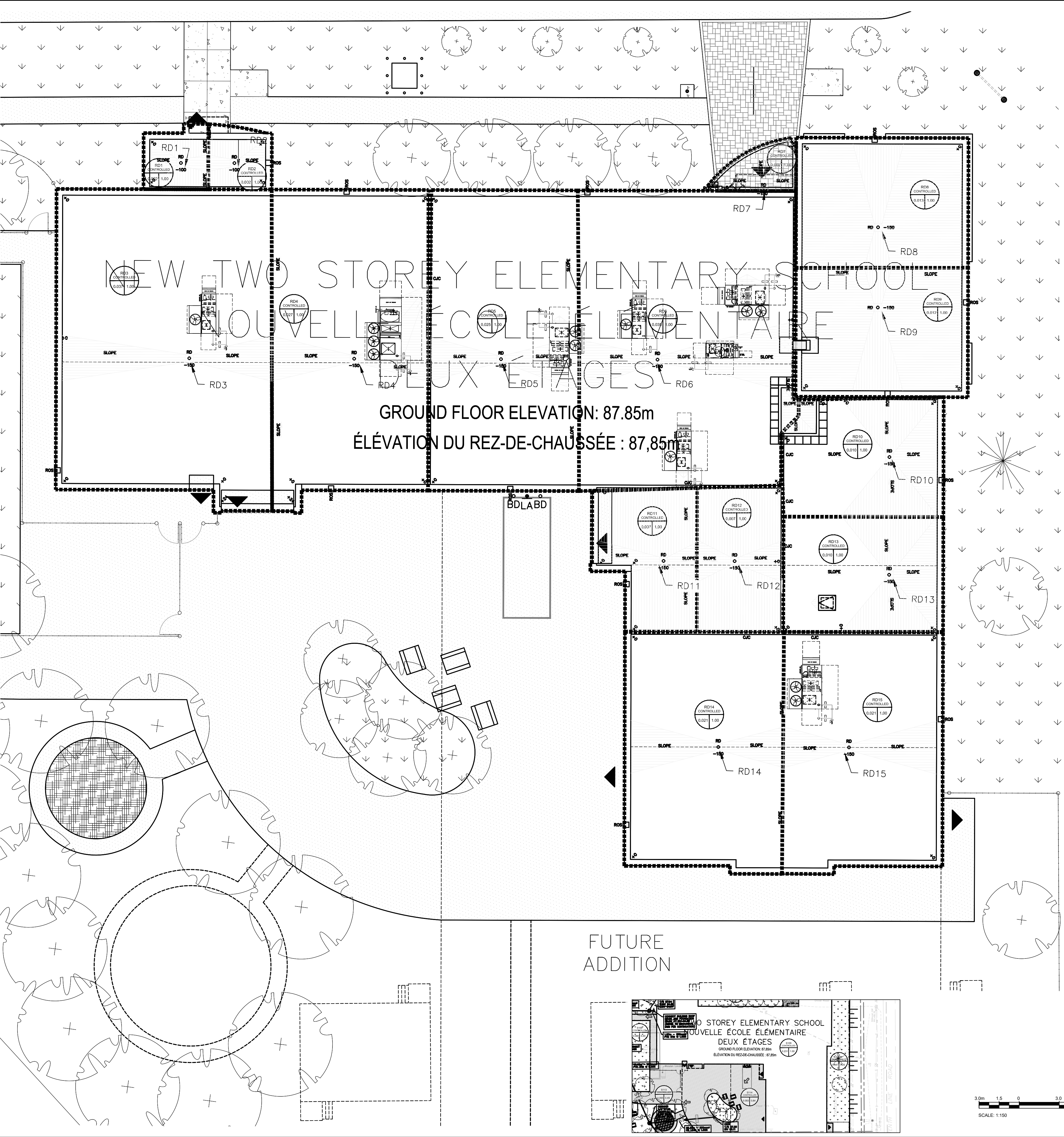
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Roof Drainage #	Roof Area m <sup>2</sup>	Ponding Area m <sup>2</sup>	Ponding Depth m	Ponding Volume m <sup>3</sup>	Release Rate L/s
RD1	20.00	15.00	0.15	0.75	1.26
RD2	20.00	15.00	0.15	0.75	1.26
RD3	370.00	277.50	0.15	13.88	1.26
RD4	270.00	202.50	0.15	10.13	1.26
RD5	250.00	187.50	0.15	9.38	1.26
RD6	350.00	262.50	0.15	13.13	1.26
RD7	20.00	15.00	0.15	0.75	1.26
RD8	130.00	97.50	0.15	4.88	1.26
RD9	120.00	90.00	0.15	4.50	1.26
RD10	100.00	75.00	0.15	3.75	1.26
RD11	70.00	52.50	0.15	2.63	1.26
RD12	70.00	52.50	0.15	2.63	1.26
RD13	100.00	75.00	0.15	3.75	1.26
RD14	210.00	157.50	0.15	7.88	1.26
RD15	210.00	157.50	0.15	7.88	1.26
Total	2310.0	1732.5		86.63	18.90



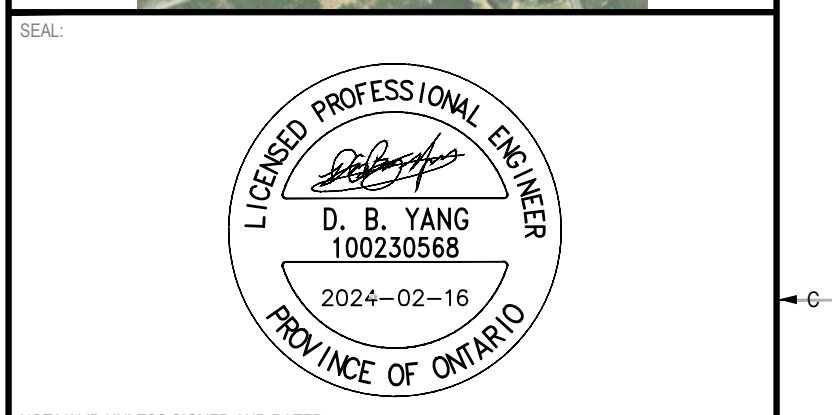
CLIENT REF. # \_\_\_\_\_ ARCHITECT: \_\_\_\_\_

**EDWARD J CUHACI & ASSOCIATES ARCHITECTS Inc.**  
 171 Slater St, Suite 100, Ottawa, Ontario, K1P 5H7  
 Fax: (613) 236-1944 Telephone: (613) 236-7135 E-mail: info@cuhaci.com



PROJECT: **ÉCOLE ÉLÉMENTAIRE CATHOLIQUE AVALON III**  
 TENTH LINE ROAD  
 OTTAWA, ON

CONSEIL DES ÉCOLES CATHOLIQUES DU CENTRE-EST  
 4000, RUE LABELLE, OTTAWA, ON K1J 1A1



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BEARING NOTE: BEARINGS ARE GRID DERIVED FROM THE CAN-NET REAL TIME NETWORK GPS OBSERVATIONS. REFERENCED TO SPECIFIED CONTROL POINTS 0191680154 AND 0191684491. MTM ZONE 9 (P) 30 WEST (CONTOUR MAPPED ORIGINAL) BENCHMARK # N-5032845 03 E-384791 31 Z-88.40 BENCHMARK # N-5032885 03 E-384895 28 Z-87.89

NORTHING:

ISSUED FOR - REVISION

NO.	DATE	DESCRIPTION
4	2024-02-16	REVISED AS PER CITY COMMENT
3	2023-12-18	ISSUED FOR BUILDING PERMIT
2	2023-07-21	ISSUED FOR BUILDING PERMIT
1	2023-06-02	ISSUED FOR SPA

PROJECT NO: 221-12984-00 DATE: 2024-02-16

ORIGINAL SCALE: 1:300 IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.

DESIGNED BY: D.Y.M.S.  
 DRAWN BY: S.T.R.  
 CHECKED BY: D.Y.

DISCIPLINE: CIVIL

TITLE: **ROOF DRAINAGE AREA PLAN**

SHEET NUMBER: C07

SHEET # OF: \_\_\_\_\_

ISSUE: **ISSUED FOR BUILDING PERMIT**

DATE OF: 2024-02-16

REV # **0**

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New Orleans Catholic ES  
 Avalon III - Institutional Development  
 Ottawa, ON  
 Project: 221-12984-00



**Stormwater Management Summary**

Drainage Area I.D.	Location	Sub Area (ha)	Avg. Composite 'C' 5 yr	Avg. Composite 'C' 100 yr	Outlet Location	5 Year Uncontrolled/ Controlled Release (L/s)	5 year Storage Required (m³)	100 Year Uncontrolled/ Controlled Release (L/s)	100 year Storage Required (m³)	Total Storage Provided (m³)
<b>Total Allowable Release Rate</b>								<b>186.51</b>		
<b>CONTROLLED</b>										
S101 - S117	CBMH108	1.281	0.44	0.51	Sweet Valley Drive	105.61	34.59	106.47	133.66	163.69
S109	STMH110	0.231	1.00	1.00	Sweet Valley Drive	17.64	32.97	17.64	73.48	80.00
<b>UNCONTROLLED</b>										
U1 - U6		0.267	0.31	0.38		24.00		50.40		
<b>Maximum Release Rate (WSP, 2023)</b>								<b>174.51</b>		
Total		1.779				147.25	67.56	174.51	207.14	243.69





**Table 1a - Allowable Release Rate (Pre-Development)**

**Runoff Coefficient Equation**

$$C = (A_{\text{hard}} \times 0.9 + A_{\text{soft}} \times 0.25) / A_{\text{tot}}$$

2 Year Event

	<b>C</b>	<b>Intensity</b>	<b>Area</b>
<b>5 Year</b>	0.50	76.81	1.747
2.78CIA=	186.51		
<b>186.51</b>		L/s	

\*Use a 10.00 minute time of concentration for 5 year

Design Parameters (DSEL & JFSA, June 2019)

<b>Area ID</b>	<b>Area (HA)</b>	<b>MH</b>	<b>D/S Segment</b>	<b>IMP Ratio</b>	<b>Storage Use (m³)</b>	<b>2 Year Simulated Flow (L/s)</b>
402 - 404	3.32	CTRL MH1	402	0.80	447.13	567

Note: \*Assumed ponding volume.

Assumes that on-site storage will be provided up to the 100 year 3 hour Chicago event

**Equations:**

Flow Equation

$$Q = 2.78 \times C \times I \times A$$

Where:

C is the runoff coefficient

I is the intensity of rainfall, City of Ottawa IDF

$$\text{Rainfall Intensity} = 732.951 / (T + 6.199)^{-0.810} \quad T = \text{time in minutes}$$

A is the total drainage area



**TABLE 2 - Uncontrolled Flow**

**Post Dev run-off Coefficient "C"**

Area	Surface	Ha	2 & 5 Year Event		100 Year Event	
			"C"	C <sub>avg</sub>	"C"+25%	*C <sub>avg</sub>
Total	Asphalt	0.026	0.90	0.31	0.99	0.38
0.267	Roof	0.000	1.00		1.00	
	Grass	0.241	0.25		0.31	

**Runoff Coefficient Equation**

$$C = (A_{\text{hard}} \times 0.9 + A_{\text{soft}} \times 0.2) / A_{\text{tot}}$$

$$*C = (A_{\text{hard}} \times 1.0 + A_{\text{soft}} \times 0.25) / A_{\text{tot}}$$

\*Runoff coefficients increased by 25% up to a maximum value of 0.99 for the 100-Year event

**Post Dev Free Flow**

**2 Year Event**

Pre Dev.	C	Intensity	Area
5 Year	0.31	104.19	0.267
2.78CIA= 23.97			
24.00 L/S			

\*\*Use a 10 minute time of concentration for 5 year

**100 Year Event**

Pre Dev.	C	Intensity	Area
100 Year	0.38	178.56	0.267
2.78CIA= 50.36			
50.40 L/S			

\*\*Use a 10 minute time of concentration for 100 year

**Equations:**

**Flow Equation**

$$Q = 2.78 \times C \times I \times A$$

Where:

C is the runoff coefficient

I is the intensity of rainfall, City of Ottawa IDF

A is the total drainage area



**TABLE 3 - Storage Required for New Avalon III ES**

Maximum Allowable Release Rate to Ex. CTRL MH1:  
136.11 l/s

Post Dev run-off Coefficient "C"

Area	Surface	Ha	2 & 5 Year Event		100 Year Event	
			"C"	C <sub>avg</sub>	"C" x 1.25	C <sub>100 avg</sub>
Total	Asphalt	0.381	0.90	0.44	0.99	0.51
1.281	Roof		1.00		1.00	
	Grass	0.900	0.25		0.31	

\*Areas are approximate based on Architectural site plan and Storm Drainage Area Plan

**QUANTITY STORAGE REQUIREMENTS - 5 Year**

1.281 = Area(ha)  
0.44 = C  
136.1 l/s = max allowable release rate

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Controlled Runoff (L/s)	Net Runoff To Be Stored (L/s)	Storage Req'd m <sup>3</sup>	Storage Avail m <sup>3</sup>
5 YEAR	10	104.19	163.26	105.61	57.65	34.59	163.69
	20	70.25	110.08	105.61	4.47	5.36	163.69
	30	53.93	84.50	105.61	-21.11	-38.00	163.69
	40	44.18	69.23	105.61	-36.38	-87.30	163.69
	50	37.65	59.00	105.61	-46.61	-139.83	163.69
	60	32.94	51.62	105.61	-53.99	-194.36	163.69

**QUANTITY STORAGE REQUIREMENTS - 100 Year**

1.281 = Area(ha)  
0.51 = C  
136.1 l/s = max allowable release rate

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Controlled Runoff (L/s)	Net Runoff To Be Stored (L/s)	Storage Req'd m <sup>3</sup>	Storage Avail m <sup>3</sup>
100 YEAR	10	178.56	324.30	106.47	217.83	130.70	163.69
	20	119.95	217.85	106.47	111.39	133.66	163.69
	30	91.87	166.85	106.47	60.38	108.69	163.69
	40	75.15	136.48	106.47	30.01	72.03	163.69
	50	63.95	116.15	106.47	9.69	29.06	163.69
	60	55.89	101.52	106.47	-4.95	-17.83	163.69
	70	49.79	90.43	106.47	-16.04	-67.37	163.69

**Equations:**

**Flow Equation**

$Q = 2.78 \times C \times I \times A$

Where:

C is the runoff coefficient

I is the intensity of rainfall, City of Ottawa IDF

A is the total drainage area

**Runoff Coefficient Equation**

$C = (A_{\text{hard}} \times 0.9 + A_{\text{soft}} \times 0.2) / A_{\text{tot}}$

$*C = (A_{\text{hard}} \times 1.0 + A_{\text{soft}} \times 0.25) / A_{\text{tot}}$

\*Runoff coefficients increased by 25% up to a maximum value of 0.99 for the 100-Year event

**Orifice #1 Sizing**

CBMH108

Event	Flow (L/s)	Head (m)	ORIFICE		
			AREA(m <sup>2</sup> )	SQUARE (1-side mm)	CIRC (mmØ)
5 Year	105.61	3.07	0.023	151	170
100 Year	106.47	3.12	0.023	151	170

**Orifice Control Sizing**

$Q = 0.6 \times A \times (2gh)^{1/2}$

Where:

Q is the release rate in m<sup>3</sup>/s

A is the orifice area in m<sup>2</sup>

g is the acceleration due to gravity, 9.81m/s<sup>2</sup>

h is the head of water above the orifice centre in m

d is the diameter of the orifice in m

Orifice Invert =	84.000 m
Ponding Elevation =	87.200 m
Top of CB Elevation =	87.150 m

Note: Orifice #1 is located on the downstream invert of CBMH108



**TABLE 4 - Proposed Roof Drains**

**Roof Drains Release Rate**

Total Roof Area = 0.231 Ha  
 Total Roof Ponding Area = 0.185 Ha  
 Ponding Depth = 0.07 ~ 0.15 m  
 The flow rate through each Roof Drain will be = 5 ~ 25.0 gpm  
 0.32 ~ 1.58 L/s  
 Estimated Number of Roof Drains = 14.00  
 Estimated Total flow rate = 17.64

TABLE 1. Adjustable Accutrol Flow Rate Settings

Weir Opening Exposed	1"	2"	3"	4"	5"	6"
	Flow Rate (gallons per minute)					
Fully Exposed	5	10	15	20	25	30
3/4	5	10	13.75	17.5	21.25	25
1/2	5	10	12.5	15	17.5	20
1/4	5	10	11.25	12.5	13.75	15
Closed	5	5	5	5	5	5

**Post Dev run-off Coefficient "C"**

Area	Surface	Ha	2 & 5 Year Event		100 Year Event	
			"C"	C <sub>avg</sub>	"C" x 1.25	C <sub>100 avg</sub>
Total 0.231	Asphalt		0.90	1.00	0.99	1.00
	Roof	0.231	1.00		1.00	
	Grass		0.25		0.31	

**Runoff Coefficient Equation**

$$C = (A_{hard} \times 0.9 + A_{soft} \times 0.2) / A_{tot}$$

$$*C = (A_{hard} \times 1.0 + A_{soft} \times 0.25) / A_{tot}$$

\*Runoff coefficients increased by 25% up to a maximum value of 0.99 for the 100-Year event

\*Areas are approximate based on Architectural site plan

**QUANTITY STORAGE REQUIREMENTS - 5 Year**

0.231 = Area(ha)  
 1.00 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Runoff To Be Stored (L/s)	Storage Req'd (m <sup>3</sup> )	Storage Available* (m <sup>3</sup> )
5 YEAR	10	104.19	66.91	17.64	49.27	29.56	80.00
	20	70.25	45.11	17.64	27.47	32.97	80.00
	30	53.93	34.63	17.64	16.99	30.58	80.00
	40	44.18	28.37	17.64	10.73	25.76	80.00
	50	37.65	24.18	17.64	6.54	19.62	80.00

257.340 40  
 345 54.1752

**QUANTITY STORAGE REQUIREMENTS - 100 Year**

0.231 = Area(ha)  
 1.00 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Runoff To Be Stored (L/s)	Storage Req'd (m <sup>3</sup> )	Storage Available* (m <sup>3</sup> )
100 YEAR	10	178.56	114.67	17.64	97.03	58.22	80.00
	20	119.95	77.03	17.64	59.39	71.27	80.00
	30	91.87	59.00	17.64	41.36	74.44	80.00
	40	75.15	48.26	17.64	30.62	73.48	80.00
	50	63.95	41.07	17.64	23.43	70.29	80.00
	60	55.89	35.89	17.64	18.25	65.72	80.00
	70	49.79	31.97	17.64	14.33	60.20	80.00

\*Storage available is calculated using roof ponding area multiplied by the maximum ponding depth, and divided by 3 for a conical pond.

**Equations:**

**Flow Equation**

$$Q = 2.78 \times C \times I \times A$$

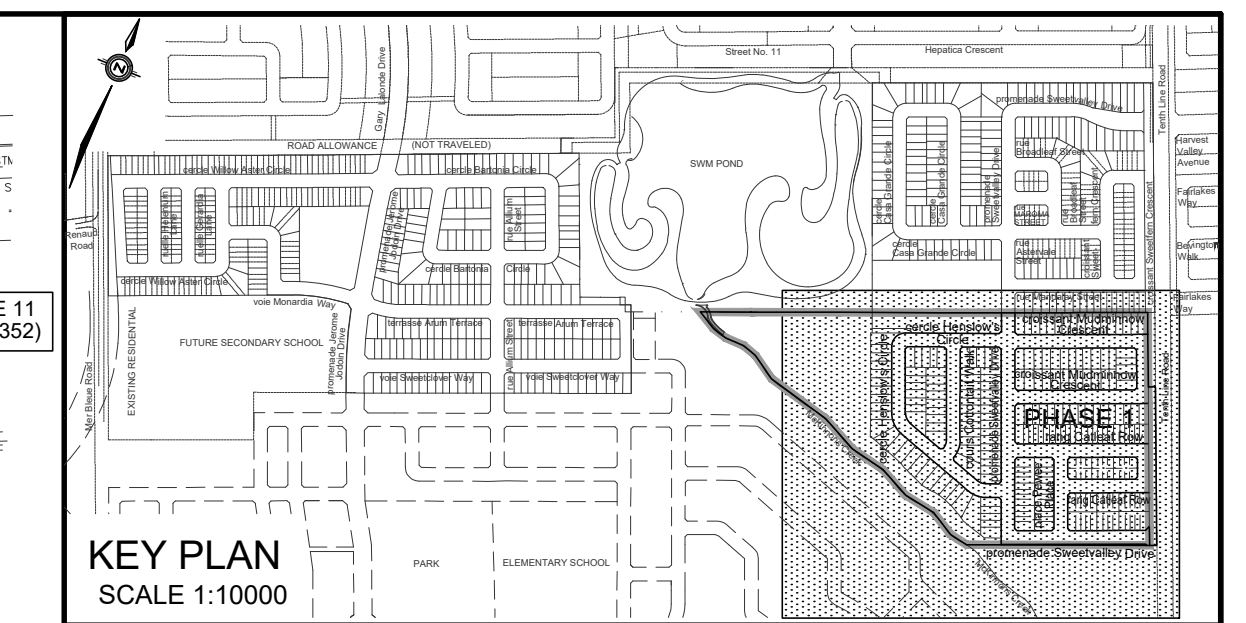
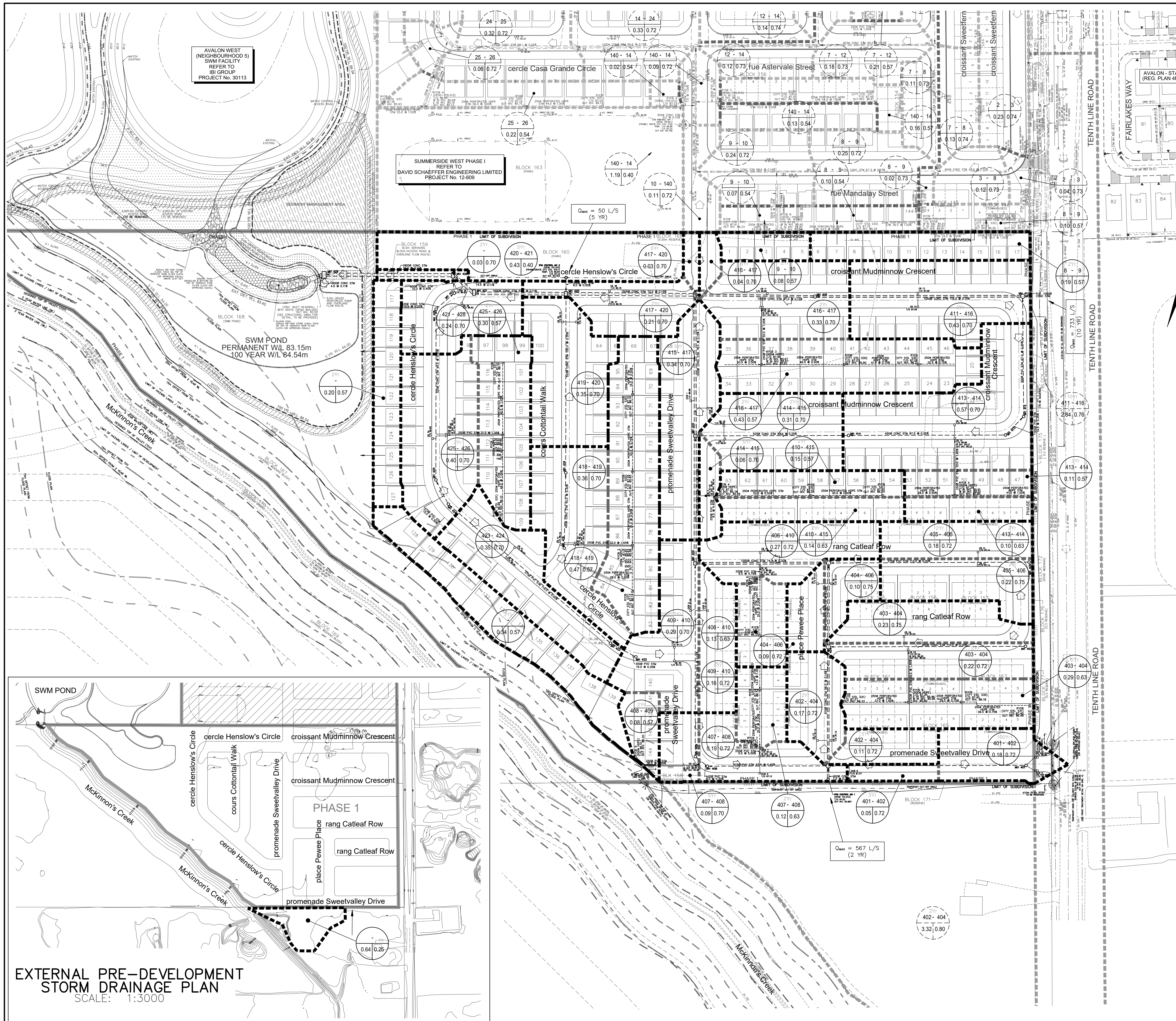
Where:

C is the runoff coefficient

I is the intensity of rainfall, City of Ottawa IDF

A is the total drainage area





**LEGEND**

- STORM DRAINAGE BOUNDARY
- SUB-DRAINAGE BOUNDARY
- STORM FREQUENCY
- UPSTREAM MH TO DOWNSTREAM MH
- AREA IN HECTARES
- RUNOFF COEFFICIENT
- EXTERNAL 2.78AC =
- EXTERNAL TIME OF CONCENTRATION
- EXTERNAL BLENDED RUNOFF COEFFICIENT
- UPSTREAM MH TO DOWNSTREAM MH
- AREA IN OTHER PHASES IN HECTARES
- RUNOFF COEFFICIENT
- STREET CATCHBASIN & LEAD
- MAINTENANCE HOLE
- CURB INLET CATCHBASIN & LEAD
- CATCHBASIN / MAINTENANCE HOLE
- INTERCONNECTED CATCH BASIN & LEADS
- CAP
- OVERLAND FLOW DIRECTION
- EXTERNAL OVERLAND FLOW DIRECTION

**TOPOGRAPHIC INFORMATION**  
 TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 17-10-025-01, SURVEY DATED AUGUST 01, 2018. CITY OF OTTAWA 2K MAPPING, RECEIVED ON MARCH 04, 2013.

**LEGAL INFORMATION**  
 CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 17-10-025-00 MP1, RECEIVED ON JUNE 04, 2019.

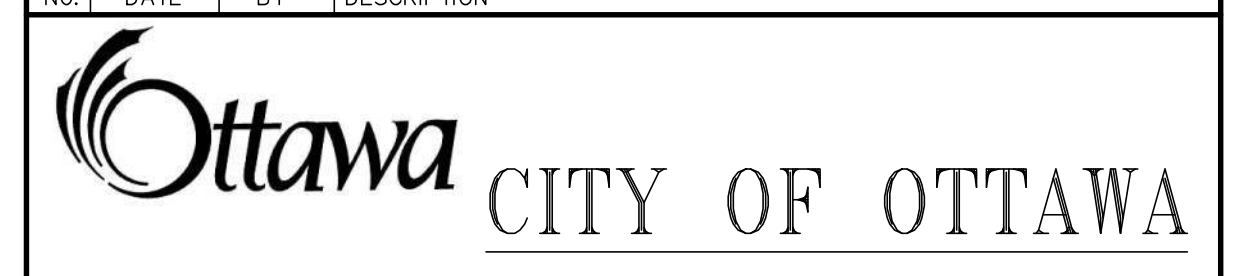
2nd SUBMISSION 19-06-21  
**NOT FOR CONSTRUCTION**

**BENCH MARK No. 01919680229** ELEVATION = 86.120 m

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM AND ARE DERIVED FROM THE NCC BENCH MARK No. 01919680229 HAVING A PUBLISHED ELEVATION OF 86.120 METRES.

TOWNSHIP: CUMBERLAND  
 CONCRETE MONUMENT ON THE EAST SIDE OF MER BLEUE ROAD, 0.15KM NORTH OF ROAD INTERSECTION WITH NAVAN ROAD.

No.	DATE	BY	DESCRIPTION
2.	19-06-21	W.L.	2nd SUBMISSION
1.	18-11-15	W.L.	1st SUBMISSION



PROJECT No. 15-766

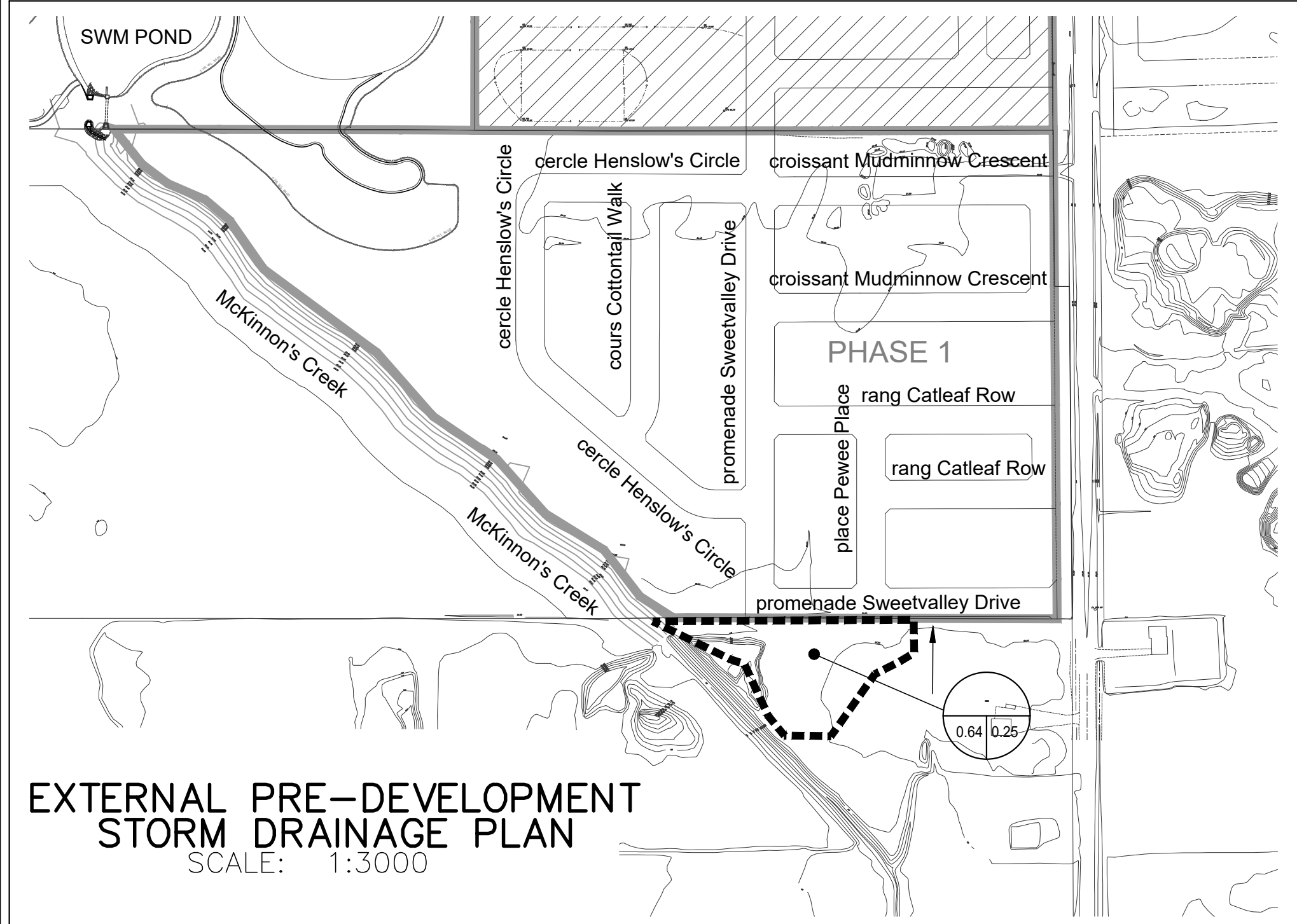
**STORM DRAINAGE PLAN** © DSEL

MATTAMY (MER BLEUE 2) LIMITED      **SUMMERSIDE SOUTH PHASE 1**

**DSEL** david schaeffer engineering ltd

120 Ibor Road, Unit 103  
 Siltville, ON K2S 1E9  
 Tel: (613) 838-0866  
 Fax: (613) 838-7183  
 www.DSEL.ca

DRAWN BY: V.V./S.L.    CHECKED BY: P.P./C.M.    DRAWING No.    SHEET No.  
 DESIGNED BY: P.P./W.L.    CHECKED BY: K.M.  
 SCALE: 1:1000    DATE: NOVEMBER 2018    **34**



**EXTERNAL PRE-DEVELOPMENT STORM DRAINAGE PLAN**  
 SCALE: 1:3000



**STORM SEWER CALCULATION SHEET (RATIONAL METHOD)**

Local Roads Return Frequency = 2 years  
 Collector Roads Return Frequency = 5 years  
 Arterial Roads Return Frequency = 10 years

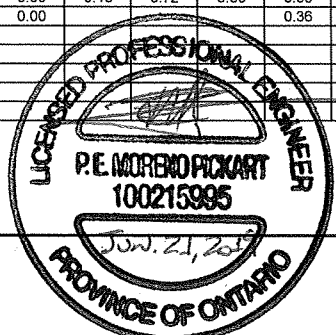


Manning 0.013

LOCATION		AREA (Ha)																FLOW					SEWER DATA															
Location	From Node	To Node	2 YEAR				5 YEAR				10 YEAR				100 YEAR				Time of Conc. (min)	Intensity 2 Year (mm/h)	Intensity 5 Year (mm/h)	Intensity 10 Year (mm/h)	Intensity 100 Year (mm/h)	Peak Flow Q (l/s)	DIA. (mm) (actual)	DIA. (mm) (nominal)	TYPE	SLOPE (%)	LENGTH (m)	CAPACITY (l/s)	VELOCITY (m/s)	TIME OF FLOW (min.)	RATIO Q/Q full					
			AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC																				
<b>cours Cottontail Walk</b>																																						
	Ctrl MH 2	420			0.00	0.00	0.43	0.40	0.48	0.48			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	50	300	300	PVC	0.50	9.0	68	0.97	0.16	0.73					
To cercle Henslow's Circle, Pipe 420 - 421																																						
			0.36	0.70	0.70	0.70			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	111	450	450	CONC	0.30	42.0	156	0.98	0.71	0.71					
	418	419	0.47	0.57	0.74	1.45			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	158	525	525	CONC	0.35	100.0	254	1.18	1.42	0.62					
	419	420	0.35	0.70	0.68	2.13			0.00	0.00			0.00	0.00			0.00	0.00	10.71	74.17	100.57	117.88	172.29															
To cercle Henslow's Circle, Pipe 420 - 421																																						
<b>croissant Mudminnow Crescent</b>																																						
			0.10	0.63	0.18	0.18			0.00	0.00			0.00	0.00			0.00	0.00																				
			0.11	0.57	0.17	0.35			0.00	0.00			0.00	0.00			0.00	0.00																				
	413	414	0.57	0.70	1.11	1.46			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	112	450	450	CONC	0.25	87.5	143	0.90	1.63	0.79									
					0.00	1.46	0.06	0.70	0.12	0.12			0.00	0.00			0.00	0.00																				
	414	415	0.31	0.70	0.60	2.06			0.00	0.12			0.00	0.00	11.63	71.08	96.32	112.87	164.94	158	525	525	CONC	0.25	85.5	215	0.99	1.43	0.73									
To promenade Sweetvalley Drive, Pipe 415 - 417																																						
					0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	0	300	300	PVC	0.35	14.5	57	0.81	0.30	0.00					
	412	411			0.00	0.00			0.00	0.00			0.00	0.00	10.30	75.68	102.64	120.31	175.87	0	300	300	PVC	0.35	67.0	57	0.81	1.38	0.00									
					0.00	0.00			0.00	0.00	2.84	0.76	6.00	6.00			0.00	0.00																				
	411	416	0.43	0.70	0.84	0.84			0.00	0.00			0.00	0.00	11.68	70.91	96.09	112.60	164.55	735	1050	1050	CONC	0.15	116.0	1058	1.22	1.58	0.69									
					0.00	0.84	0.04	0.70	0.08	0.08			0.00	0.00			0.00	0.00																				
			0.33	0.70	0.64	1.48			0.00	0.08			0.00	0.00			0.00	0.00																				
	416	417	0.43	0.57	0.68	2.16			0.00	0.08			0.00	0.00	13.26	66.20	89.63	105.00	153.38	780	1050	1050	CONC	0.15	67.0	1058	1.22	0.91	0.74									
To cercle Henslow's Circle, Pipe 417 - 420																																						
<b>place Pewee Place</b>																																						
	Ctrl MH 1	402	3.32	0.80	7.38	7.38			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	567	900	900	CONC	0.20	7.5	810	1.27	0.10	0.70					
Contribution From promenade Sweetvalley Drive, Pipe 401 - 402																																						
					0.00	7.38	0.11	0.72	0.22	0.32			0.00	0.00			0.00	0.36	12.05																			
	402	404	0.17	0.72	0.34	7.72			0.00	0.32			0.00	0.00	0.00	0.36	12.05	69.72	94.46	110.68	161.73	627	975	975	CONC	0.15	66.5	868	1.16	0.95	0.72							
Contribution From rang Catleaf Row, Pipe 403 - 404																																						
					0.09	9.33			0.00	0.32			0.00	0.00			0.00	0.36	11.87																			
	404	406	0.10	0.75	0.21	9.54			0.00	0.32			0.00	0.00	0.00	0.36	13.01	66.91	90.60	106.14	155.05	723	975	975	CONC	0.20	47.0	1002	1.34	0.58	0.72							
To rang Catleaf Row, Pipe 406 - 410																																						
						9.54				0.32			0.00	0.00			0.36	13.59																				
<b>rang Catleaf Row</b>																																						
			0.22	0.72	0.44	0.44			0.00	0.00			0.00	0.00			0.00	0.00																				
			0.23	0.75	0.48	0.92			0.00	0.00			0.00	0.00			0.00	0.00																				
	403	404	0.29	0.63	0.51	1.43			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	110	450	450	CONC	0.30	110.0	156	0.98	1.87	0.70									
To place Pewee Place, Pipe 404 - 406																																						
			0.18	0.72	0.36	0.36			0.00	0.00			0.00	0.00			0.00	0.00																				
	405	406	0.22	0.75	0.46	0.82			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	63	375	375	PVC	0.30	112.0	96	0.87	2.15	0.66									
Contribution From place Pewee Place, Pipe 404 - 406																																						
			0.13	0.63	0.23	10.59			0.00	0.32			0.00	0.00			0.00	0.36	13.59																			
	406	410	0.27	0.72	0.54	11.13			0.00	0.32			0.00	0.00	0.00	0.36	13.59	65.30	88.40	103.55	151.26	809	1050	1050	CONC	0.20	74.5	1221	1.41	0.88	0.66							
To promenade Sweetvalley Drive, Pipe 410 - 415																																						
<b>promenade Sweetvalley Drive</b>																																						
					0.00	0.00	0.05	0.72	0.10	0.10			0.00	0.00			0.00	0.00																				
	401	402			0.00	0.00			0.00	0.10			0.00	0.00	0.18	0.72	0.36	0.36	10.00	76.81	104.19	122.14	178.56	75	450	450	CONC	0.25	110.5	143	0.90	2.05	0.52					
To place Pewee Place, Pipe 402 - 404																																						

Definitions:  
 Q = 2.78 AIR, where  
 Q = Peak Flow in Litres per second (L/s)  
 A = Areas in hectares (ha)  
 I = Rainfall Intensity (mm/h)  
 R = Runoff Coefficient

Notes:  
 1) Ottawa Rainfall-Intensity Curve  
 2) Min. Velocity = 0.80 m/s



Designed: C.M.K. PROJECT: SUMMERSIDE SOUTH PHASE 1  
 Checked: P.P. LOCATION: City of Ottawa  
 Dwg. Reference: Storm Drainage Plan, Dwg. No. 35 File Ref: 15-766 Date: Jun 2019 Sheet No. SHEET 1 OF 2



**STORM SEWER CALCULATION SHEET (RATIONAL METHOD)**

Local Roads Return Frequency = 2 years  
 Collector Roads Return Frequency = 5 years  
 Arterial Roads Return Frequency = 10 years

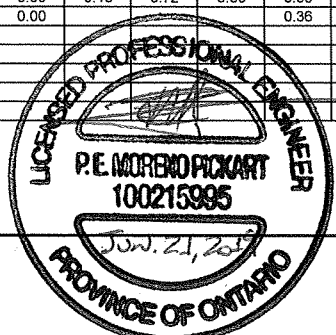


Manning 0.013

LOCATION		AREA (Ha)																FLOW					SEWER DATA														
Location	From Node	To Node	2 YEAR				5 YEAR				10 YEAR				100 YEAR				Time of Conc. (min)	Intensity 2 Year (mm/h)	Intensity 5 Year (mm/h)	Intensity 10 Year (mm/h)	Intensity 100 Year (mm/h)	Peak Flow Q (l/s)	DIA. (mm) (actual)	DIA. (mm) (nominal)	TYPE	SLOPE (%)	LENGTH (m)	CAPACITY (l/s)	VELOCITY (m/s)	TIME OF FLOW (min.)	RATIO Q/Q full				
			AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC																			
<b>cours Cottontail Walk</b>																																					
	Ctrl MH 2	420			0.00	0.00	0.43	0.40	0.48	0.48			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	50	300	300	PVC	0.50	9.0	68	0.97	0.16	0.73				
To cercle Henslow's Circle, Pipe 420 - 421																																					
			0.36	0.70	0.70	0.70			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	111	450	450	CONC	0.30	42.0	156	0.98	0.71	0.71				
	418	419	0.47	0.57	0.74	1.45			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	158	525	525	CONC	0.35	100.0	254	1.18	1.42	0.62				
	419	420	0.35	0.70	0.68	2.13			0.00	0.00			0.00	0.00			0.00	0.00	10.71	74.17	100.57	117.88	172.29														
To cercle Henslow's Circle, Pipe 420 - 421																																					
<b>croissant Mudminnow Crescent</b>																																					
			0.10	0.63	0.18	0.18			0.00	0.00			0.00	0.00			0.00	0.00																			
			0.11	0.57	0.17	0.35			0.00	0.00			0.00	0.00			0.00	0.00																			
	413	414	0.57	0.70	1.11	1.46			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	112	450	450	CONC	0.25	87.5	143	0.90	1.63	0.79								
					0.00	1.46	0.06	0.70	0.12	0.12			0.00	0.00			0.00	0.00																			
	414	415	0.31	0.70	0.60	2.06			0.00	0.12			0.00	0.00	11.63	71.08	96.32	112.87	164.94	158	525	525	CONC	0.25	85.5	215	0.99	1.43	0.73								
To promenade Sweetvalley Drive, Pipe 415 - 417																																					
					0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	0	300	300	PVC	0.35	14.5	57	0.81	0.30	0.00				
	412	411			0.00	0.00			0.00	0.00			0.00	0.00	10.30	75.68	102.64	120.31	175.87	0	300	300	PVC	0.35	67.0	57	0.81	1.38	0.00								
					0.00	0.00			0.00	0.00	2.84	0.76	6.00	6.00			0.00	0.00																			
	411	416	0.43	0.70	0.84	0.84			0.00	0.00			0.00	0.00	11.68	70.91	96.09	112.60	164.55	735	1050	1050	CONC	0.15	116.0	1058	1.22	1.58	0.69								
					0.00	0.84	0.04	0.70	0.08	0.08			0.00	0.00			0.00	0.00																			
			0.33	0.70	0.64	1.48			0.00	0.08			0.00	0.00			0.00	0.00																			
	416	417	0.43	0.57	0.68	2.16			0.00	0.08			0.00	0.00	13.26	66.20	89.63	105.00	153.38	780	1050	1050	CONC	0.15	67.0	1058	1.22	0.91	0.74								
To cercle Henslow's Circle, Pipe 417 - 420																																					
<b>place Pewee Place</b>																																					
	Ctrl MH 1	402	3.32	0.80	7.38	7.38			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	567	900	900	CONC	0.20	7.5	810	1.27	0.10	0.70								
Contribution From promenade Sweetvalley Drive, Pipe 401 - 402																																					
					0.00	7.38	0.11	0.72	0.22	0.32			0.00	0.00			0.00	0.36	12.05																		
	402	404	0.17	0.72	0.34	7.72			0.00	0.32			0.00	0.00	0.00	0.36	12.05	69.72	94.46	110.68	161.73	627	975	975	CONC	0.15	66.5	868	1.16	0.95	0.72						
Contribution From rang Catleaf Row, Pipe 403 - 404																																					
					0.09	9.33			0.00	0.32			0.00	0.00			0.00	0.36	11.87																		
	404	406	0.10	0.75	0.21	9.54			0.00	0.32			0.00	0.00	0.00	0.36	13.01	66.91	90.60	106.14	155.05	723	975	975	CONC	0.20	47.0	1002	1.34	0.58	0.72						
To rang Catleaf Row, Pipe 406 - 410																																					
						9.54				0.32			0.00	0.00			0.36	13.59																			
<b>rang Catleaf Row</b>																																					
			0.22	0.72	0.44	0.44			0.00	0.00			0.00	0.00			0.00	0.00																			
			0.23	0.75	0.48	0.92			0.00	0.00			0.00	0.00			0.00	0.00																			
	403	404	0.29	0.63	0.51	1.43			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	110	450	450	CONC	0.30	110.0	156	0.98	1.87	0.70								
To place Pewee Place, Pipe 404 - 406																																					
			0.18	0.72	0.36	0.36			0.00	0.00			0.00	0.00			0.00	0.00																			
	405	406	0.22	0.75	0.46	0.82			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	63	375	375	PVC	0.30	112.0	96	0.87	2.15	0.66								
Contribution From place Pewee Place, Pipe 404 - 406																																					
			0.13	0.63	0.23	10.59			0.00	0.32			0.00	0.00			0.00	0.36	13.59																		
	406	410	0.27	0.72	0.54	11.13			0.00	0.32			0.00	0.00	0.00	0.36	13.59	65.30	88.40	103.55	151.26	809	1050	1050	CONC	0.20	74.5	1221	1.41	0.88	0.66						
To promenade Sweetvalley Drive, Pipe 410 - 415																																					
<b>promenade Sweetvalley Drive</b>																																					
					0.00	0.00	0.05	0.72	0.10	0.10			0.00	0.00			0.00	0.00																			
	401	402			0.00	0.00			0.00	0.10			0.00	0.00	0.18	0.72	0.36	0.36	10.00	76.81	104.19	122.14	178.56	75	450	450	CONC	0.25	110.5	143	0.90	2.05	0.52				
To place Pewee Place, Pipe 402 - 404																																					

Definitions:  
 Q = 2.78 AIR, where  
 Q = Peak Flow in Litres per second (L/s)  
 A = Areas in hectares (ha)  
 I = Rainfall Intensity (mm/h)  
 R = Runoff Coefficient

Notes:  
 1) Ottawa Rainfall-Intensity Curve  
 2) Min. Velocity = 0.80 m/s



Designed: C.M.K. PROJECT: SUMMERSIDE SOUTH PHASE 1  
 Checked: P.P. LOCATION: City of Ottawa  
 Dwg. Reference: Storm Drainage Plan, Dwg. No. 35 File Ref: 15-766 Date: Jun 2019 Sheet No. SHEET 1 OF 2



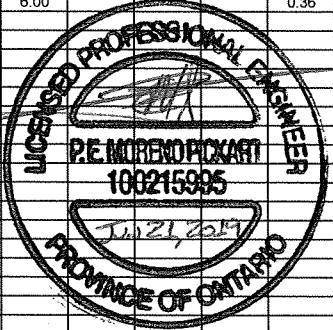
**STORM SEWER CALCULATION SHEET (RATIONAL METHOD)**

Local Roads Return Frequency = 2 years  
 Collector Roads Return Frequency = 5 years  
 Arterial Roads Return Frequency = 10 years



Manning 0.013

LOCATION			AREA (Ha)												FLOW										SEWER DATA														
			2 YEAR				5 YEAR				10 YEAR				100 YEAR				Time of	Intensity	Intensity	Intensity	Intensity	Peak Flow	DIA. (mm)	DIA. (mm)	TYPE	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME OF	RATIO						
Location	From Node	To Node	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC	Conc. (min)	2 Year (mm/h)	5 Year (mm/h)	10 Year (mm/h)	100 Year (mm/h)	Q (l/s)	(actual)	(nominal)	(%)	(m)	(l/s)	(m/s)	FLOW (min.)	Q/Q full							
					0.00	0.00	0.09	0.70	0.18	0.18																													
	407	408	0.12	0.63	0.21	0.21			0.00	0.18																													
	408	409	0.08	0.57	0.13	0.34			0.00	0.56									11.06	72.97	104.19	122.14	178.56	74	375	375	PVC	0.45	67.5	118	1.06	1.06	0.63						
					0.00	0.34			0.00	0.56																													
	409	410			0.00	0.34	0.16	0.72	0.32	0.88																													
Contribution From rang Catleaf Row, Pipe 406 - 410						11.13																																	
			0.14	0.63	0.25	11.71			0.00	1.76																													
	410	415	0.15	0.57	0.24	11.95			0.00	1.76																													
Contribution From croissant Mudminnow Crescent, Pipe 414 - 415						2.06																																	
			415	417	0.00	14.01	0.34	0.70	0.66	2.54																													
To cercle Henslow's Circle, Pipe 417 - 420						14.01																																	
cercle Henslow's Circle																																							
	422	423			0.00	0.00			0.00	0.00																													
	423	424	0.35	0.70	0.68	0.68			0.00	0.00																													
	424	425			0.00	0.68			0.00	0.00																													
			0.30	0.57	0.48	1.16			0.00	0.00																													
	425	426	0.40	0.70	0.78	1.93			0.00	0.00																													
	426	427			0.00	1.93			0.00	0.00																													
To Servicing Block, Pipe 427 - 428						1.93																																	
Contribution From promenade Sweetvalley Drive, Pipe 415 - 417						14.01				2.54																													
Contribution From croissant Mudminnow Crescent, Pipe 416 - 417						2.16				0.08																													
			417	420	0.00	16.17	0.03	0.70	0.06	2.67																													
			0.21	0.70	0.41	16.58			0.00	2.67																													
Contribution From cours Cottontail Walk, Pipe 419 - 420						2.13				0.00																													
Contribution From Park, Pipe Ctrl MH 2 - 420						0.00				0.48																													
			420	421	0.00	18.70			0.00	3.15																													
			421	428	0.24	19.17			0.00	3.15																													
To Servicing Block, Pipe 428 - 429						19.17				3.15																													
Servicing Block																																							
Contribution From cercle Henslow's Circle, Pipe 426 - 427						1.93				0.00																													
			427	428	0.00	1.93			0.00	0.00																													
Contribution From cercle Henslow's Circle, Pipe 421 - 428						19.17				3.15																													
			428	429	0.00	21.11			0.00	3.15																													
			429	Headwall	0.00	21.11			0.00	3.15																													
To SWM Pond						21.11				3.15																													



Definitions:  
 Q = 2.78 AIR, where  
 Q = Peak Flow in Litres per second (L/s)  
 A = Areas in hectares (ha)  
 I = Rainfall Intensity (mm/h)  
 R = Runoff Coefficient

Notes:  
 1) Ottawa Rainfall-Intensity Curve  
 2) Min. Velocity = 0.80 m/s

Designed:	C.M.K.	PROJECT:	SUMMERSIDE SOUTH PHASE 1
Checked:	P.P.	LOCATION:	City of Ottawa
Dwg. Reference:	Storm Drainage Plan, Dwg. No. 35	File Ref:	15-766
Date:	Jun 2019	Sheet No.:	SHEET 2 OF 2

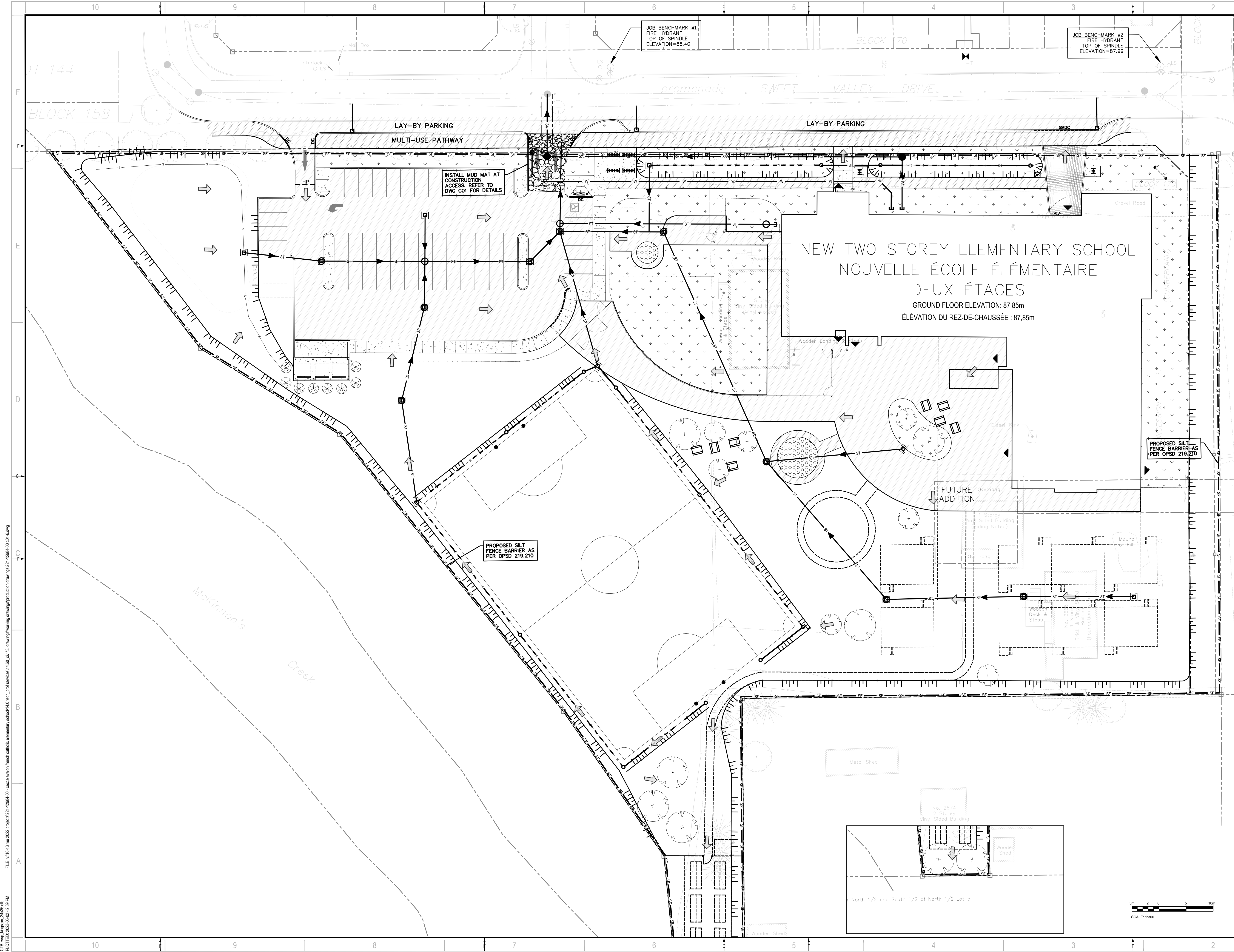



# APPENDIX

## E

- DWG C04 – EROSION AND SEDIMENT CONTROL PLAN





SEAL  
  
 NOT VALID UNLESS SIGNED AND DATED

DISCLAIMER: THIS DRAWING AND DESIGN IS COPYRIGHT PROTECTED WHICH SHALL NOT BE USED, REPRODUCED OR RESEMBLED 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. THIS DRAWING IS NOT TO BE SCALED.  
 BEARING NOTE: BEARINGS ARE GRID DERIVED FROM THE CAN-NET REAL TIME NETWORK GPS OBSERVATIONS, REFERENCED TO SPECIFIED CONTROL POINTS 019198015M AND 0191984341M, MTM ZONE 9 (9°30' WEST CONTOUR) (NAD83 ORIGINAL) BENCHMARK #1 N: 5032845.03 E: 384791.31 Z: 88.40 BENCHMARK #2 N: 5032885.03 E: 384895.02 Z: 87.99  
 ISSUED FOR: REVISION

NO.	DATE	DESCRIPTION
1	2023-06-02	ISSUED FOR SPA

PROJECT NO: 221-12984-00	DATE: 2023-06-01
ORIGINAL SCALE: 1:300	IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
DESIGNED BY: D.Y./M.S.	
DRAWN BY: S.T.R.	
CHECKED BY: D.Y.	

DISCIPLINE: CIVIL	TITLE: EROSION AND SEDIMENT CONTROL PLAN
SHEET NUMBER: C04	REV #: 0
ISSUE: ISSUED FOR SPA	DATE OF: 2023-06-02

C:\Users\helen.2428\OneDrive\Documents\221-12984-00 - écoles avalon french catholic elementary school\1.0\hch\_and\_seneca\11.60\_cuhaci\_erosion\_sediment\_control\11.60\_cuhaci\_erosion\_sediment\_control.dwg  
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 PLOTTED: 2023-06-02 2:39 PM





# APPENDIX

## F

- SUBMISSION CHECK LIST

## 4.1 General Content

- Executive Summary (for larger reports only).

*Comments:*

- Date and revision number of the report.

*Comments:*

- Location map and plan showing municipal address, boundary, and layout of proposed development.

*Comments:*

- Plan showing the site and location of all existing services.

*Comments:*

- Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.

*Comments:*

- Summary of Pre-consultation Meetings with City and other approval agencies.

*Comments:*

- Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defensible design criteria.

*Comments:*

- Statement of objectives and servicing criteria.

*Comments:*

- Identification of existing and proposed infrastructure available in the immediate area.

*Comments:*

- Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).

*Comments:*

- Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.

*Comments:*

- Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.

*Comments:*

- Proposed phasing of the development, if applicable.

*Comments:*

- Reference to geotechnical studies and recommendations concerning servicing.

*Comments:*

- All preliminary and formal site plan submissions should have the following information:

- Metric scale
- North arrow (including construction North)
- Key plan
- Name and contact information of applicant and property owner
- Property limits including bearings and dimensions
- Existing and proposed structures and parking areas
- Easements, road widening and rights-of-way
- Adjacent street names

*Comments:*



## 4.2 Development Servicing Report: Water

- Confirm consistency with Master Servicing Study, if available  
*Comments:*
- Availability of public infrastructure to service proposed development  
*Comments:*
- Identification of system constraints  
*Comments:*
- Identify boundary conditions  
*Comments:*
- Confirmation of adequate domestic supply and pressure  
*Comments:*
- Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.  
*Comments:*
- Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.  
*Comments:*
- Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design  
*Comments:*
- Address reliability requirements such as appropriate location of shut-off valves  
*Comments:*
- Check on the necessity of a pressure zone boundary modification.  
*Comments:*

- Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range

*Comments:*

- Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.

*Comments:*

- Description of off-site required feeder mains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.

*Comments:*

- Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.

*Comments:*

- Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.

*Comments:*

### 4.3 Development Servicing Report: Wastewater

- Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).

*Comments:*

- Confirm consistency with Master Servicing Study and/or justifications for deviations.

*Comments:*

- Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.

*Comments:*

- Description of existing sanitary sewer available for discharge of wastewater from proposed development.

*Comments:*

- Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)

*Comments:*

- Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.

*Comments:*

- Special considerations such as contamination, corrosive environment etc.

*Comments:*

## 4.4 Development Servicing Report: Stormwater

- Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)

*Comments:*

- Analysis of available capacity in existing public infrastructure.

*Comments:*

- A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.

*Comments:*

- Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.

*Comments:*

- Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.

*Comments:*

- Description of the stormwater management concept with facility locations and descriptions with references and supporting information.

*Comments:*

- Set-back from private sewage disposal systems.

*Comments:*

- Watercourse and hazard lands setbacks.

*Comments:*

- Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.

*Comments:*

- Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.

*Comments:*

- Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).

*Comments:*

- Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.

*Comments:*

- Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.

*Comments:*

- Any proposed diversion of drainage catchment areas from one outlet to another.

*Comments:*

- Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.

*Comments:*

- If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.

*Comments:*

- Identification of potential impacts to receiving watercourses

*Comments:*

- Identification of municipal drains and related approval requirements.

*Comments:*

- Descriptions of how the conveyance and storage capacity will be achieved for the development.

*Comments:*

- 100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.

*Comments:*

- Inclusion of hydraulic analysis including hydraulic grade line elevations.

*Comments:*

- Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.

*Comments:*

- Identification of floodplains - proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.

*Comments:*

- Identification of fill constraints related to floodplain and geotechnical investigation.

*Comments:*

## 4.5 Approval and Permit Requirements: Checklist

The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development as well as the relevant issues affecting each approval. The approval and permitting shall include but not be limited to the following:

- Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.

*Comments:*

- Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.

*Comments:*

- Changes to Municipal Drains.

*Comments:*

- Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)

*Comments:*

## 4.6 Conclusion Checklist

- Clearly stated conclusions and recommendations

*Comments:*

- Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.

*Comments:*

- All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario

*Comments:*