EDWARD J. CUHACI AND ASSOCIATES ARCHITECTS INC.

CEPEO ELEMENTARY SCHOOL
675 MONARDIA WAY, OTTAWA, ON

SERVICING AND STORMWATER MANAGEMENT REPORT

MAY 9, 2024

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SITE PLAN APPLICATION

PROJECT NO.: 221-06227-00
DATE: MAY 2024

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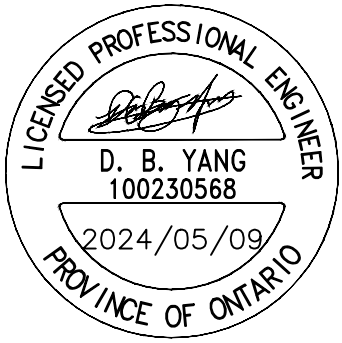

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1 GENERAL

1.1 EXECUTIVE SUMMARY

WSP was retained by Edward J. Cuhaci and Associates Architects to provide servicing, grading and stormwater management design services for the servicing of a proposed elementary school located on a 2.01 ha site at the south-west corner of Mer Bleue Road and Renaud Road within the Summerside West subdivision in the Avalon community. The sanitary and storm services for the school site will be available from the north-east corner of the site. The watermain service will be available from the north and north-east of the site. This report outlines findings and calculations pertaining to the servicing of the proposed building with a gross building area of 0.239 ha for the school and 0.05 ha for the future addition. The future addition has been considered in the design of the servicing and stormwater management for the site.

The proposed school is a two-storey building with a gross floor area of 2386 square metres and a maximum building height of 8.3m, located on the east side of the property. To the south of the proposed school, there will be a parking lot providing access onto Jerome Jodoin Drive. Twelve portable classrooms are proposed west of the addition. The fire route access to the school will be from the parking lot entrance fronting on Jerome Jodoin Drive.

The surrounding neighbourhood to the west and south-west will be developed as a future high school. This development has been considered in the storm sewer design of this school.

Currently the land proposed for the building is within the 675 Monardia Way site. Currently the reserved land for the proposed addition is grassed. The total study area is considered to be 2.01 hectares in size. The site is located at Part of Lots 30, 31 and 32, Part of Terrance Road (closed by Judge's Order INST.GL40441), Registered Plan 405, Part of Lot 15 Junction Gore, Geographic Township of Gloucester, Being Part of the Northerly and Westerly limits of PIN 04258-0412 in the City of Ottawa per the Plan of Survey dated December 21, 2022. Based on the topographic survey, the site is relatively flat with a slight slope to the east and south side of the site. Storm and sanitary maintenance holes are located at the north-east corner of the site. Stormwater collected by this maintenance hole is directed towards the Avalon West SWM facility located to the east of the site.

For the purposes of this report, properties formerly known as 2405, 2419 and 2431 Mer Bleue have been considered in the analysis for the future elementary and high schools. As noted in the *Stormwater Management Report for Summerside West Phases 2 and 3* Section 5, runoff from the external school block, including both the elementary and high schools, must be restricted to a rate of 1062 l/s. Flows exceeding this release rate up to the 100-year event must be temporary stored on site and released at a rate not exceeding 1062 l/s. 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-east property line as recorded from GeoOttawa.
Monardia Way:

- 200mm diameter sanitary sewer, 1200mm storm sewer and 203mm watermain.

Jerome Jodoin Drive:

- 525mm diameter storm sewer, 305mm 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.

1.2 DATE AND REVISION NUMBER

This version of the report is the fourth issue, dated May 9th, 2024.

1.3 LOCATION MAP AND PLAN

The proposed institutional development is located at 675 Monardia Way, Orleans, Ontario at the location shown in Figure 1-1 below.

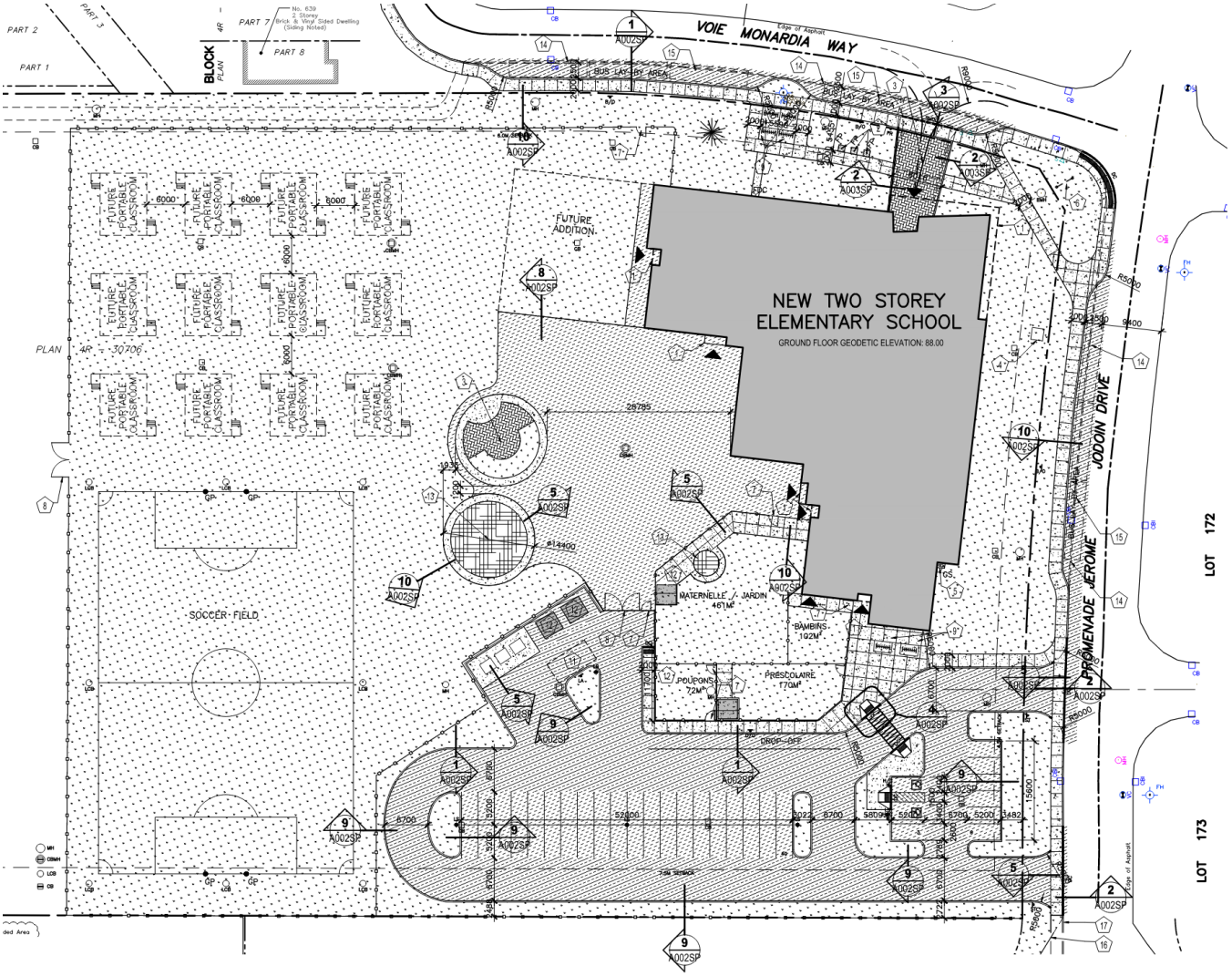


Figure 1-1 Site Location

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 April 12, 2023. 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).
- Stormwater Management Report for Summerside West Phases 2 and 3, prepared by JFSA, JFSA Ref. No. 1102-13, July 2016.
- Design Brief for Summerside West – Phase 2 Mer Bleue Road, prepared by DSEL, Proj. No. 15-808, April 2016.
- 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.

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. The site plan includes a new school, a new parking area, portables and a future addition.

1.8 AVAILABLE EXISTING AND PROPOSED INFRASTRUCTURE

There are existing sanitary and storm maintenance holes located at the north-east corner of the site which connects to an existing 200mm diameter sanitary sewer and 1200mm storm sewer respectively. The sanitary and storm services are proposed to connect to these maintenance holes. The storm sewer outlets into the Avalon West SWM facility. The sanitary sewer eventually outlets to the Tenth Line wastewater pumping station. Water service for the school is proposed to connect to the existing 203mm watermain on Monardia Way.

Site access is proposed from Jerome Jodoin Drive.

1.9 ENVIRONMENTALLY SIGNIFICANT AREAS, WATERCOURSES AND MUNICIPAL DRAINS

There are no watercourses, municipal drains or environmentally significant areas on the site. The proposed changes to the site will not require any additional approvals or amendments to approvals pertaining to environmentally significant areas, watercourses or municipal drains.

1.10 CONCEPT LEVEL MASTER GRADING PLAN

As the design is being submitted for site plan approval, the grading plan has been developed to the final design level. The existing and proposed grading are shown on Drawing C03 - Grading Plan. Existing grading information is based on a topographic survey of the site completed in May 2023 and is noted in the background of the Drawing C03. No changes in grading are proposed beyond the site boundaries. The proposed grading plan confirms the feasibility of the proposed stormwater management system, drainage, soil removal and fills. The geotechnical investigation was completed in 2023 by Paterson Group. The grading along the west and south boundaries are proposed to meet the existing grade until the future development of these sites.

1.11 IMPACTS ON PRIVATE SERVICES

There are no existing domestic private services (septic system and well) located on the site. There are no neighbouring properties using private services.

1.12 DEVELOPMENT PHASING

The site plan indicates a possible future addition to the school. These additional impervious areas have been taken into account in the stormwater management calculations. The future hard surfaces take up a small amount of the green space than the current condition, and therefore were conservatively used in the calculation of runoff.

1.13 GEOTECHNICAL STUDY

A geotechnical investigation report was previously prepared by Gemtec Consulting Engineers and Scientists Limited in 2018. A more recent report was prepared by Paterson Group on July 10, 2023. No additional geotechnical information was required for the design of the modified site services, including paving. This geotechnical report will be included with the contract documents to be issued for construction, and the recommendations of the reports will be referenced in the construction specifications. Flexible joints on piped services at the building walls have also been noted on the civil engineering drawings to allow for possible differential settlement.

1.14 DRAWING REQUIREMENT

The engineering plans submitted for site plan approval will be in compliance with City requirements.

2 WATER DISTRIBUTION

2.1 CONSISTENCY WITH MASTER SERVICING STUDY AND AVAILABILITY OF PUBLIC INFRASTRUCTURE

The water services for the proposed development is proposed to connect to the existing 203mm diameter municipal watermain along Monardia Way and to the 305mm watermain on Jerome Jodoin Drive to provide water to the property. The new school will be protected with a supervised automatic fire protection sprinkler system. The fire department connection is located at the north side of the school fronting to Monardia Way. It is 17m away from the existing municipal FH on Monardia Way. No changes are required to the existing City water distribution system to allow servicing for this property. The water entry room for the school is located in the northwest corner.

2.2 SYSTEM CONSTRAINTS AND BOUNDARY CONDITIONS

A boundary service request was submitted to the City of Ottawa and boundary conditions have been received and summarized below. A fire flow of 9,000 l/min (150 l/s) was estimated for the proposed building with the addition.

Table 2-1: Boundary Conditions

Boundary Conditions	
SCENARIO	Hydraulic Pressure (kPa)
Basic Day (MAX HGL)	429.5
Peak Hour (MIN HGL)	389.6
Max Day + Fire Flow	252.3

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. A water demand calculation sheet is included in Appendix B, and the total water demands are summarized as follows:

	WSP
Average Day	1.95 l/s
Maximum Day	2.93 l/s
Peak Hour	5.28 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. The minimum water pressure inside the building at the connection is determined with the minimum HGL condition, resulting in a pressure of 398.9 kPa which exceeds the minimum requirement of 276 kPa per the above guideline.

Table 2-2: Summary of minimum water pressure for the development under peak hour scenario

Peak Hour @ 126.3m Head	
ID	Hydraulic Pressure (kPa)
At connection elev = 85.60m	398.9

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.

For the school and the future addition, assuming non-combustible construction and a fully supervised sprinkler system, a fire flow demand of 9,000 l/min (150 l/s) has been calculated. A copy of the FUS calculations is included in Appendix B.

The demand of 9,000 l/min for the school and the addition can be delivered through three existing municipal fire hydrants. The building is serviced by the 203mm municipal watermain on Monardia Way and the watermain at the intersection of Monardia Way and Jerome Jodoin Drive. There is an existing hydrant located on Monardia Way 17m north of the future school and is rated at 5800 l/min. There is also one hydrant located on Jerome Jodoin Drive 75m from the Siamese connection and one hydrant located on Monardia Way 80m from the Siamese connection, rated at 5800 l/min and 3800 l/min respectively. The three hydrants have a combined total of 15,400 l/min.

The demand of 7,000 l/min for the portables can be delivered through the two existing hydrants located on Monardia Way north of the future school, 45m and 61m away from the portables, which are rated at 5,800 l/min and 3,800 l/min respectively. The two hydrants have a combined total of 9,600 l/min. The Siamese connection on the proposed school is 55m from the portables.

The residual pressure is determined as 238.1 kPa which exceeds the minimum residual pressure of 140 kPa. The fire flow requirement is achieved.

Table 2-3: Summary of the residual pressure for the development under max day + fire scenario

Max day + Fire @ 112.3m Head	
ID	Hydraulic Pressure (kPa)
At building FFE = 88.0m	238.1

2.5 CHECK OF HIGH PRESSURE

Using the maximum HGL condition, the maximum pressure inside the building is determined as 415.9 kPa which is below the maximum pressure of 552 kPa. There is no concern of high pressure.

Table 2-4: Summary of water pressure for the development under max HGL

Max HGL @ 130.4m Head	
ID	Hydraulic Pressure (kPa)

At building FFE = 88.0m	415.9

2.6 PHASING CONSTRAINTS

No development phasing constraint has been detailed for the site. The site plan does indicate a possible future development of an addition to the west side of the school. The projected occupancy load has been considered in the fire demand and water demand calculations. No phasing constraints exist.

2.7 RELIABILITY REQUIREMENTS

A shut off valve is provided for the private watermain at the study boundary from Monardia Way and for the private watermain at the study boundary to the Jerome Jodoin Drive. Water can be supplied from both sides of Monardia Way and Jerome Jodoin Drive.

2.8 NEED FOR PRESSURE ZONE BOUNDARY MODIFICATION

There is no need for a pressure zone boundary modification.

2.9 CAPABILITY OF MAJOR INFRASTRUCTURE TO SUPPLY SUFFICIENT WATER

The capability of the major infrastructure to supply sufficient water is confirmed.

2.10 DESCRIPTION OF PROPOSED WATER DISTRIBUTION NETWORK

Two new 203mm service mains are proposed to service the school and future addition from the 203mm watermain on Monardia Way and from the 305mm watermain on Jerome Jodoin Drive.

2.11 OFF-SITE REQUIREMENTS

No off-site improvements to watermains, feedermains, pumping stations, or other water infrastructure are required to maintain existing conditions and service the adjacent developments.

2.12 CALCULATION OF WATER DEMANDS

Water demands were calculated as described in Sections 2.3 and 2.4 above.

2.13 MODEL SCHEMATIC

A model schematic is not required.

3 WASTEWATER DISPOSAL

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 2.01
- 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 2.01 ha represents the lot area of the school. This is the sanitary collection area that is being considered to contribute to the proposed 200mm sanitary service connection to the municipal sanitary sewer.

3.2 CONSISTENCY WITH MASTER SERVICING STUDY

The outlet for the sanitary service from the existing building is the 200 mm diameter municipal sewer at the north-east corner of the Site between Monardia Way and Jerome Jodoin Drive. 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;

For the school and the addition:

- Institutional 28000 L/Ha/day = 0.324 L/Ha/s
- Peak flow = (0.324 L/Ha/s x 2.01 ha x 1.5 peaking factor) + 0.33 l/Ha/s x 2.01 ha = 1.64 L/s

3.3 REVIEW OF SOIL CONDITIONS

There are no specific local subsurface conditions that suggest the need for a higher extraneous flow allowance.
Soil conditions have been reviewed by Paterson Group. Bedding and backfill will be provided as recommended, conventional sewer materials will be utilized, and dewatering will be undertaken as necessary in accordance with the geotechnical recommendations and conditions encountered. The geotechnical report indicates that groundwater table was observed to be between 84.16 and 87.23 m. It is therefore expected that the groundwater impact on the sanitary sewer service will be minimal.

3.4 DESCRIPTION OF EXISTING SANITARY SEWER

The outlet sanitary sewer for the addition will be the 200mm sanitary sewer which is connected to the existing sanitary maintenance hole located at the north-east corner of the site. From there, a 200mm diameter sanitary sewer conveys sewage into the 200mm diameter sewer located on Jerome Jodoin Drive and ultimately discharges to the Tenth Line Wastewater Pumping Station.

3.5 VERIFICATION OF AVAILABLE CAPACITY IN DOWNSTREAM SEWER

The existing sanitary sewer from the site is a 200 mm diameter sewer at a slope of 0.5%. This size and slope of sewer provides a capacity of 23.2 L/s.

Based on the *Design Brief – Summerside West - Phase 2 Mer Bleue Road* Section 4.2.2, the peak flow from the school block (including the elementary school and high school) has been considered as 6.44 l/s in the design of the Phase 2 sanitary sewers based on a 5.61 hectare site and resulted in a flow of 6.44 l/s for the school block. Thus, it is understood that the downstream sanitary sewer network has been designed with adequate capacity for the sanitary discharge from the school site.

3.6 CALCULATIONS FOR NEW SANITARY SEWER

The new sanitary service from the site is a 200 mm diameter sewer at a slope of 2%. This size and slope of sewer provides a capacity of 46.4 L/s.

For the 2.01 ha site, the sanitary peak flow is calculated at 0.98 l/s with an infiltration flow of 0.66 l/s (based on a peak extraneous flow of 0.33 l/s/ha) for a total flow of 1.64 l/s. The existing sanitary sewer connection, with a capacity of 46.4 l/s is adequate to convey this flow.

The new sanitary service for the future high school is a 200mm diameter sewer at a slope of 0.35%. This size and slope of sewer provides a capacity of 19.40 l/s.

For the 4.43 ha future high school block, the sanitary peak flow is calculated at 2.15 l/s with an infiltration flow of 1.46 l/s (based on a peak extraneous flow of 0.33 l/s/ha) for a total flow of 3.61 l/s. The existing sanitary sewer connection, with a capacity of 46.4 l/s is adequate to convey this flow.

3.7 DESCRIPTION OF PROPOSED SEWER NETWORK

The proposed sanitary sewer network on site will consist of a 200mm sanitary service and one 1200mm maintenance hole.

3.8 ENVIRONMENTAL CONSTRAINTS

There are no previously identified environmental constraints that impact the sanitary servicing design in order to preserve the physical condition of watercourses, vegetation, or soil cover, or to manage water quantity or quality.

3.9 PUMPING REQUIREMENTS

The proposed development will have no impact on existing pumping stations and will not require new pumping facilities.

3.10 FORCEMAINS

There are no sanitary forcemains proposed on this site.

3.11 EMERGENCY OVERFLOWS FROM SANITARY PUMPING STATIONS

No sanitary pumping stations are proposed on this site.

3.12 SPECIAL CONSIDERATIONS

There is no known need for special considerations for sanitary sewer design related to existing site conditions.

4 SITE STORM SERVICING

4.1 EXISTING CONDITION

The subject property is located within the Summerside West Community Development area at the intersection of Monardia Way and Jerome Jodoin Drive. Most of the runoff from the institutional land is directed towards an existing 1200mm diameter storm sewer on the north-east boundary of the site. The sewer discharges to a treatment facility offsite.
Based on the *Stormwater Management Report for Summerside West Phases 2 and 3* Section 5, the allowable release rate from the site has been set to 1062 l/s for the sites of both the elementary school and high school. Flow exceeding this amount up to the 100-year storm must be retained on the site and released at a rate not exceeding 1062 l/s.

4.2 ANALYSIS OF AVAILABLE CAPACITY IN PUBLIC INFRASTRUCTURE

As the allowable release rate from the site will be unchanged and was determined in conjunction with the design of the public infrastructure, there are no concerns related to the adequacy and available capacity of the downstream network. Capacity in the minor system is not a concern.

4.3 DRAINAGE DRAWING

Drawing C04 shows the detailed site sewer network. Drawings C03 provides proposed grading and drainage and includes existing grading information. Drawing C05 provides a post-construction drainage sub-area plan, including both site and roof information. Site sub-area information is also provided on the storm sewer design sheet attached in Appendix C. An overall grading plan and Servicing plan have also been attached to Appendix C for reference.

4.4 WATER QUANTITY CONTROL OBJECTIVE

The water quantity objective for the site is to limit the flow release to 1062 l/s between the sites of the high school and the elementary school which together have a total site area of 6.44 hectares. Out of this total area, the proposed elementary school sits on 2.01 hectares and thus the design release rate for this portion of the site is calculated as 1062 l/s x (2.01/6.44) = 331 l/s. Excess flows above this limit for the school site up to those generated by the 100-year storm event are temporarily stored on site. 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 east boundary of the site.

The storm sewer on the north side of the site has been added to drain the future high school site located at 2419 and 2431Mer Bleue Road. The storm sewer has been sized to consider the 4.43 ha site at a runoff coefficient of 0.7 with a controlled release rate up to 731 l/s.

Stormwater storage calculations are shown in Section 4.10 of this report. Detention stormwater storage is proposed on the school roof and on ground surface (refer to Appendix C).

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 *Design Brief for Summerside West – Phase 2 Mer Bleue Road*, prepared by DSEL. The Avalon West SWM Facility has adequate capacity to meet the quality requirements for this site. Refer to Appendix C for an extract of the above-mentioned report.

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)	1:5 year return (Ottawa)
• Rational Method Sewer Sizing	
• Initial Time of Concentration	10 minutes
• Runoff Coefficients	
Landscaped Areas	C = 0.20
Playground Mulch Areas	C = 0.40
Gravel Areas	C = 0.70
Asphalt/Concrete	C = 0.90
Traditional Roof	C = 0.90
• Pipe Velocities	0.80 m/s to 6.0 m/s
• Minimum Pipe Size	250 mm diameter (200 mm CB Leads and service pipes)

4.7 PROPOSED MINOR SYSTEM

The detailed design for this site will maintain the existing storm sewer network to the existing stormwater management facility located east of the site. The drainage system consists of a series of manholes, catchbasins and storm sewers leading to the outlet manhole Ex.MH at the north-east 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. The roof drains for the proposed school are connected to the storm sewer that flows into the sewer in an uncontrolled capacity, 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.

4.8 STORMWATER MANAGEMENT

The subject site is currently limited to a release rate of 331 l/s, which is achieved through an inlet control device located within CBMH103 and controlled roof drains. The site if the future high school has been limited to a release rate of 731 l/s which is achieved through an inlet control device located within the temporary catchbasin maintenance hole TEMP CBMH.

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 350mm during a 1:100 year event. The maximum ponding elevation has been designed to be 87.60m as determined by the overland flow elevation, which is well below the building ground floor level of 88.00m.

No surface 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 or existing grade of neighbouring sites, 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.

4.9 INLET CONTROLS

As noted in Section 4.8, there is one inlet control device (ICD) located in CBMH103. While the majority of the site is controlled by this ICD, a portion of the site consisting of catchment areas 2, 3, 4, 5, 11, 12, 13 and 14 will drain directly to the existing storm maintenance hole uncontrolled. The rooftop of the future school (catchment area 1) will be controlled to a release rate of 14.52 l/s (refer to Table 4-2).

Q (uncontrolled) = 2.78 x C x I_{100yr} x A where:

C = 0.60 (Weighted average post-development C)

I_{100yr} = Intensity of 100-year storm event (mm/hr)

= 1735.688/((Tc+6.014)^(0.82)); where T_c = 10 minutes

A = Area = 0.433Ha

Therefore, the release to the right of way that is not controlled by an ICD can be determined as:

Catchment Area	Area (m^2)	Runoff Coefficient	100yr Runoff Coefficient	100yr design flow (l/s)
2	510	0.9	0.99	25.01
3	1101	0.33	0.42	21.06
4	475	0.20	0.25	5.89
5	337	0.41	0.52	7.89
11	886	0.36	0.45	18.31
13	440	0.20	0.25	5.46
14	327	0.20	0.25	4.06
12	252	0.63	0.79	8.86
			Total	96.54

The ICD located in STMH103 controls the release rate from the south of the site (catchment areas S6, S7, S8, S9, S10, S15, S16, S17, S18 and S19) to 155 l/s. Flow 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 C05. The proposed ICD dimensions are determined as:

Structure	Head (m)	Flow Rate (l/s)	Orifice Type
STMH103	2.59	155	Orifice plate 215mm
TEMP CBMH	1.25	731	Orifice plate 560mm

Therefore, the release rate is calculated to be 266.1 l/s and is within the limits of the maximum allowable release rate of 331 l/s from the site.

$$Q_{(release)} = Q_{(uncontrolled)} + Q_{(south)} + Q_{(roof)}$$
$$= 96.54 \text{ l/s} + 155 \text{ l/s} + 14.52 \text{ l/s}$$
$$= \mathbf{266.1 \text{ L/s}}$$

The controlled and uncontrolled areas can be summarized as follows:

	Catchment Area	Release Rate (l/s)	Required Ponding Volume (m^3)	Provided Ponding Volume (m^3)
Uncontrolled	2, 3, 4, 5, 11, 12, 13, 14	96.54	N/A	N/A
Controlled	6, 7, 8, 9, 10, 15, 16, 17, 18, 19, 20	155	123.94	168.5
Roof	1	14.52	83.58	84.31
Site of future high school	20, 21	731	N/A	N/A
Total		997.06 l/s		
Maximum allowable flow rate		1062 l/s		

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.

For the south side where stormwater ponding is controlled by the ICD located in STMH103, a total of 123.9m^3 of storage is required and 168.5m^3 of storage is provided.

For the rooftop, a total of 83.6m^3 of storage is required and 84.3m^3 of storage is provided with a maximum ponding depth of 150mm. The following Table summarizes the on-site storage requirements during the 1:100-year events.

Table 4-1: On-Site Storage Requirements

Catchment Area	Outlet Location	Proposed Ponding Area (m^2)	Proposed Ponding Depth (m)	Proposed Ponding Volume (m^3)
6	CBMH106	280	0.17	15.87
7	CBMH107	161	0.11	5.90
8	CB9	367	0.22	26.91

9	CB7	762	0.27	68.58
10	CB3	460	0.24	36.80
15	CB4	70	0.08	1.87
16	CBMH105	80	0.14	3.73
19	CB1	156	0.17	8.84
TOTAL		2336.0		168.5

Table 4-2: Roof Storage – School Addition

Roof Drain	Ponding Area (m^2)	Ponding Depth (m)	Theoretical Rooftop Storage Volume* (m^3)	Storage Volume Provided (m^3)	Maximum Flow Rate (l/s)
R1	41.6	0.05	0.7	0.6	0.32
R2	40.7	0.05	0.7	0.5	0.32
R3	36.6	0.06	0.7	0.6	0.66
R4	35.3	0.06	0.7	0.6	0.66
R5	276.6	0.15	13.8	11.1	0.95
R6	282.0	0.15	14.1	11.3	0.95
R7	84.2	0.11	3.1	2.5	0.82
R8	112.3	0.11	4.1	3.3	0.82
R9	157.0	0.15	7.9	6.3	0.95
R1O	177.0	0.15	8.9	7.1	0.95
R11	180.5	0.15	9.0	7.2	0.95
R12	230.8	0.15	11.5	9.2	0.95
R13	16.8	0.075	0.4	0.3	0.71
R14	102.8	0.15	5.1	4.1	0.95

R15	120.6	0.14	5.6	4.5	0.91
R16	245.3	0.15	12.3	9.8	0.95
R17	75.8	0.11	2.8	2.2	0.82
R18	91.0	0.13	3.9	3.2	0.88
TOTAL	2306.9			**84.3**	**14.52**

*Theoretical storage volume is reduced by 20% to account for rooftop equipment

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.

4.11 WATERCOURSES

There will be no modification to watercourses as a result of this proposed site plan.

4.12 PRE AND POST DEVELOPMENT PEAK FLOW RATES

The existing site has an allowable release rate of 331 l/s for up to the 100-year storm event. No modifications are proposed to this rate.

4.13 DIVERSION OF DRAINAGE CATCHMENT AREAS

There will be no diversion of existing drainage catchment areas arising from the proposed work described in this report.

4.14 DOWNSTREAM CAPACITY WHERE QUANTITY CONTROL IS NOT PROPOSED

This checklist item is not applicable to this development as quantity control is provided.

4.15 IMPACTS TO RECEIVING WATERCOURSES

No significant negative impact is anticipated to downstream receiving watercourses due to proposed quantity and quality control measures

4.16 MUNICIPAL DRAINS AND RELATED APPROVALS

There are no municipal drains on the site or associated with the drainage from the site.

4.17 MEANS OF CONVEYANCE AND STORAGE CAPACITY

The means of flow conveyance and storage capacity are described in Sections 4.7, 4.8, 4.9 and 4.10 above.

4.18 HYDRAULIC ANALYSIS

Hydraulic calculations for the site storm sewers are provided in the storm sewer design sheet.

4.19 IDENTIFICATION OF FLOODPLAINS

There are no designated floodplains on the site of this development.

4.20 FILL CONSTRAINTS

There are no known fill constraints applicable to this site related to any floodplain. The site is generally being raised higher relative to existing conditions. Fill on the site to not exceed 1m within 6m of building footprints and 1.3m for the remainder of the site per geotechnical report.

5 SEDIMENT AND EROSION CONTROL

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;

- Silt sacks 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 surround 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 C07 provided in Appendix D.

6 APPROVAL AND PERMIT REQUIREMENTS

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

7.1 CONCLUSIONS AND RECOMMENDATIONS

It is concluded that the proposed development can meet all provided servicing constraints and associated requirements. It is recommended that this report be submitted to the City of Ottawa in support of the application for site plan approval.

7.2 COMMENTS RECEIVED FROM REVIEW AGENCIES

Phase 3 Pre-Consultation Review Feedback for File No. PC2023-0271 was received October 27th, 2023. Comments were addressed in the 2nd version of the report submitted November 24th, 2023. This is the 4th version of the report.

APPENDIX

A

- PRE-CONSULTATION MEETING NOTES
- ARCHITECTURAL SITE PLAN
- TOPOGRAPHICAL SURVEY PLAN
- DSEL PLAN, PROFILE AND GRADING DRAWINGS

Pre-application Consultation PC2023-0006
1226 Place d'Orléans Boulevard

Site Plan Control

Follow up Meeting Notes, sent on May 2, 2023

Meeting Date: April 12, 2023

Location: Virtual meeting via Teams software

Attended:

CEPEO
-Michèle d'Aoust
-Said Menou
-Daniel Paquette

Edward J. Cuhaci & Associates Architects
-Xu Feng
-Zofia Jurewicz
-Cassandra Sims

WSP
-Winston Yang

City of Ottawa

Parks and Facilities Planning
-Phil Castro, Parks Planner
Development Review
-Kelsey Charie, Project Manager
-Michael Boughton, Senior Planner
-Evode Rwagasore, Planner

Commented:
(follow up internal meeting April 19, 2023)

City of Ottawa

Parks and facilities Planning
-Jessica Button
ROW, Heritage and UD
-Selma Hassan, Urban Designer
Forestry
-Hayley Murray
Development Review
-Josiane Gervais, Transportation Eng.

Proposal summary

The proposal is in a form of an institutional development that will consist of A new 2 storey Elementary School including outdoor play areas, soccer field, future portable classrooms. The proposed school development will be located at 2405 Mer Bleue Road.

To move forward this proposal will be treated through a Site Plan Control Application - New Complex requiring an agreement.

As part of Planning review, we will evaluate the proposed development against the Ottawa Official Plan, Zoning By-law 2008-250, and other relevant guidelines.

PLANNING COMMENTS _ **Evode Rwagasore** - Evode.Rwagasore@ottawa.ca

1. **Pedestrian Walkway** – The City and proponents will need to discuss further whether the pedestrian walkway to Mer Bleue Road is feasible or desirable.
2. **Street Trees** – Any public street trees to be impacted and removed because of the bus laybys will need to be replaced.
3. **Bus Laybys** – Is there a need for both bus laybys? The bus traffic to and from the bus layby along Monardia Way will need to travel along the residential streets. This is not preferred as it will cause disruption twice daily throughout the school year for residents along that street. Provide examples of other similar school sites where similar bus traffic routing through neighbourhood local streets may exist.

Application form, timeline and fees can be found through Development applications | City of Ottawa

Planning Application Fees
Please note fees increase each year.
. Site Plan Control Approval: New Complex + Initial Engineering Design Review and Inspection Fee, Ranges from $1000 to $10,000 dependent on value of hard and soft servicing + Conservation Authority Fee
Note 1: Additional Engineering Design Review and Inspection Fees of 4.5 % of the value of the hard servicing (road, sewers, watermains, sidewalks, curbs, stormwater, etc.) and 2.25 % of the soft servicing (landscaping, parking lot construction, etc.) are payable prior to the registration and should be forwarded to the Assigned Staff. The Engineering Design Review and Inspection Flat Rate Fee collected at submission will be credited to these fees. If the Site Plan process does not involve an agreement the Engineering Design Review and Inspection, Fee is required prior to Site Plan Approval.
Note 2: Each planning fee will be reduced by 10 % if two or more planning application are submitted at the same time and for the same lands. Conservation Authority, Engineering Design Review, Inspection fees and applications for Municipal Review and Concurrence of an Antenna System are not subject to this reduction.

Parkland Dedication
Any development application to which cash-in-lieu of parkland is applicable and for which an appraisal is required, will be subject to a fee for appraisal services as per the Parkland Dedication By-law.

SUBMISSION REQUIREMENTS

- Site Plan.
- Landscape Plan / Tree Conservation Report
- Planning Rationale (including Design Statement)
- Coloured Elevations
- Site Survey Plan
- Phase 1 ESA
- General Plan of Services
- Design Brief
- Geotechnical Report including a slope stability analysis
- USB stick (all submitted plans and reports in .pdf format).

ENGINEERING COMMENTS _ **Kelsey Charie** – Kelsey.Charie@ottawa.ca

- Comments to follow shortly.

TRANSPORTATION COMMENTS _ **Josiane Gervais** – Josiane.Gervais@ottawa.ca

- Follow Transportation Impact Assessment Guidelines:
    - Submit a Screening Form at your earliest convenience to josiane.gervais@ottawa.ca. A full Transportation Impact Assessment is required if any of the triggers on the screening form are satisfied.

      Screening Form.pdf

    - Request base mapping asap. Contact Engineering Services (https://ottawa.ca/en/city-hall/planning-and-development/engineering-services)
    - Start this process asap. The application will not be deemed complete until the submission of the draft step 1-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable).
    - An update to the *TRANS Trip Generation Manual* has been completed (October 2020). This manual is to be utilized for this TIA. A copy of this document can be provided upon request.
- The lay-by areas proposed would be reviewed along with the TIA. An RMA is required for the proposed lay-bys.
- The proposed pedestrian pathway to Mer Bleue will be reviewed as part of the application process.
- Ensure that the development proposal complies with the Right-of-Way protection requirements of the Official Plan's Schedule C16.
- Clear throat requirements for the access on a collector is 8 to 15m, depending on development size. Ensure this length is provided. The clear throat length is measured from the ends of the driveway curb return radii at the roadway and the point of first conflict on-site.
- Corner clearances should follow minimum distances set out within TAC Figure 8.8.2.
- Nearby DC intersections include:
    - Mer Bleue and Decoeur Dr
    - Mer Bleu and Renaud Rd
- TMP includes:
    - BRT along Brian Coburn (2031 Network Concept)
    - Transit Priority along Brian Coburn (2031 Affordable Network)
    - Widening of Mer Bleue Rd (Brian Coburn to Renaud Phase 1 Affordable Network)
    - Realignment of Mer Bleue Rd (Renaud to Navan, 2031 Network Concept)
- Note that the temporary access of Willow Aster Circle to Mer Bleue will be closed once Jerome Jodoin Drive is extended south to Mer Bleur Rd.
- As the proposed site is institutional AODA legislation applies.
    - Ensure all crosswalks located internally on the site provide a TWSI at the depressed curb, per requirements of the Integrated Accessibility Standards Regulation under the AODA.
    - Clearly define accessible parking stalls and ensure they meet AODA standards (include an access aisle next to the parking stall and a pedestrian curb ramp at the end of the access aisle, as required).
    - Please consider using the City's Accessibility Design Standards, which provide a summary of AODA requirements. https://ottawa.ca/en/city-hall/creating-equal-inclusive-and-diverse-city/accessibility-services/accessibility-design-standards-features#accessibility-design-standards
- On site plan:
    - Ensure site accesses meet the City's Private Approach Bylaw.
    - Show all details of the roads abutting the site; include such items as pavement markings, accesses and/or sidewalks.
    - Turning movement diagrams required for all accesses showing the largest vehicle to access/egress the site.

    - Turning movement diagrams required for internal movements (loading areas, garbage).
    - Show all curb radii measurements; ensure that all curb radii are reduced as much as possible and fall within TAC guidelines (Figure 8.5.1).
    - Show dimensions for site elements (i.e. lane/aisle widths, access width and throat length, parking stalls, sidewalks, pedestrian pathways, etc.)
    - Sidewalk is to be continuous across accesses as per City Specification 7.1.
- Noise Impact Studies required for the following:
    - Road, as the site is within proximity to Mer Bleue and Jerome Jodoin.

PARKS AND FACILITIES PLANNING _ **Jessica Button** – Jessica.Button@ottwa.ca

- The site is located to the south of George Fassylva Park. Within this park are pathway connections extending to the North / South, including a connection to the Recreational Trail to the north of Willow Aster Cir.
- The proposed bus loading zone on Monardia Way will directly block the ability of this connection to extend to the school site. The applicant is encouraged to strengthen this pedestrian connection, by locating the bus loading along Jerome Jodoin Drive.
- I will confirm any additional requirements found within the Subdivision Agreement once it has been forwarded for review.

FORESTRY _ **Hayley Murray** – Hayley.Murray@ottawa.ca

Project Comments

- A TCR and LP would be required for this site plan application.
- There are well established trees in the south west corner of the property surrounding an existing dwelling. Retaining as many of these trees as possible, that are in good condition, should be a priority. The Official Plan aims to reach 40% canopy cover and there are no other trees providing canopy cover on this site. The majority of these trees also appear to be outside of your draft plans building area.

LP Tree planting requirements

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.
- 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).

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

Tree Canopy

- 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.

URBAN DESIGN _ **Selma Hassan** – Selma.Hassan@ottawa.ca

1. The applicant will be required to submit a Design Brief with their application. The Terms of Reference for the Brief are attached. Any items highlighted in yellow must be addressed in the Design Brief.
2. The landscape plan is expected to include significant tree planting. This includes street trees along both public frontages, as well as within the school yard to provide shade for kids in the play areas. The trees should include a mix of deciduous and coniferous trees.
3. The Site Plan should show continuous sidewalks across all vehicular access points.
4. Where do the kids wait before getting on the bus? Can the applicant identify this area on the drawings?
5. Where will secure bike racks be located? These need to be in a visible location, but in an area(s) that does not conflict with bus and car movements.
6. The plans need to have clear circulation routes for cars, bikes and pedestrians, keeping kids walking or cycling to school safe (e.g. to kids cycling to school from the north, ride on the sidewalks once they get to the school grounds, or on the street beside the bus lay-by?).

Other points to note:

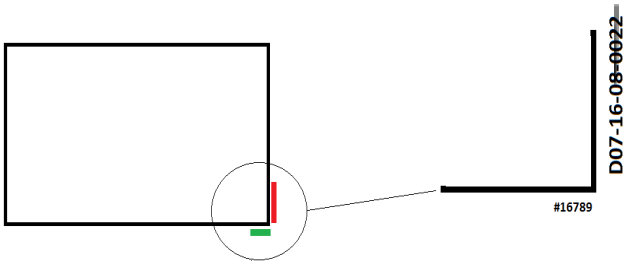
1. Contact the Conservation Authority (RVCA) Office for their requirements

2. As a suggestion, if you have not already done so, please contact and brief the Ward Councillor on your proposed application.

3. 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).

4. Please use the standard border (below)
A0.1 Place on all plans; DWG # and D07 # as per sample



Use **Bold Black text**:

Your Numbers are as per the colours listed here.
DWG **XXXXX** (place number on the bottom right)
D07 Number **D07-12-23-**

5. For information/question related to Development Charge, please contact AJ Mohmmand, Development Information Officer, Suburban East at DIOCentrum@ottawa.ca or 613-580-2424, ext. 29674

If you have any questions or require clarification with the above information, please contact me.

Sincerely,

Evode Rwagasore

List of Reports and Plans:

1. Site Servicing Plan
2. Site Grading and Ponding Plan
3. Erosion and Sediment Control Plan
4. Existing Condition Storm Drainage Plan
5. Post Development Storm Drainage Plan
6. Stormwater Management and Site Servicing Report
7. Geotechnical Investigation Report

Please note the following information regarding the engineering design submissions for the above noted site:

1. The Servicing Study Guidelines for Development Applications are available at the following address:

   https://ottawa.ca/en/city-hall/planning-and-development/how-develop-property/development-application-review-process-2/guide-preparing-studies-and-plans

2. Servicing and site works shall be in accordance with the following documents:

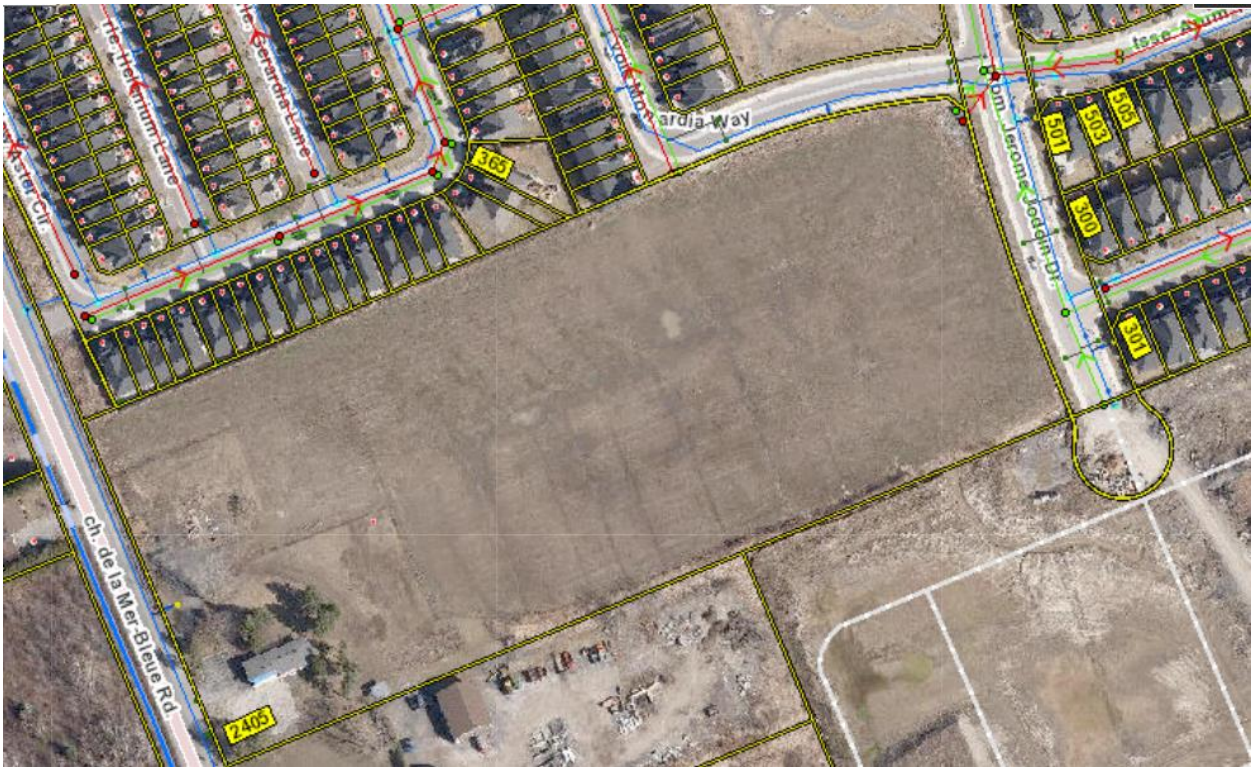
   - Ottawa Sewer Design Guidelines, Second Edition, (October 2012), including Technical Bulletins, ISDTB-2014-01, PIEDTB-2016-01, ISTB 2018-01, ISTB-2018-04, and ISTB-2019-02
   - Ottawa Design Guidelines – Water Distribution, First Edition, (July 2010), including Technical Bulletins ISD-2010-2, ISDTB-2014-02, ISTB-2018-02, and ISTB-2021-03
   - Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (Revised 2008)
   - City of Ottawa Slope Stability Guidelines for Development Applications (Revised 2012)
   - City of Ottawa Environmental Noise Control Guidelines (January, 2016)
   - City of Ottawa Hydrogeological and Terrain Analysis Guidelines (March 2021)
   - City of Ottawa Park and Pathway Development Manual (2012)
   - City of Ottawa Accessibility Design Standards (2012)
   - Ottawa Standard Tender Documents (latest version)
   - Ontario Provincial Standards for Roads & Public Works (2013)

3. Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-2424 x 44455

4. The Stormwater Management Criteria for the subject site is to be based on the following:

   - The Stormwater Management Report for Summerside West Phase 2 and 3
   - Flows to the storm sewer in excess of the 5-year pre-development storm release rate, up to and including the 100-year storm event, must be detained on site.
   - Ensure no overland flow for all storms up to and including the 100-year event. Provide adequate emergency overflow conveyance off-site

5. Deep Services:



Hydrants

Hydrant Laterals

Water Pipes
- Public
- Private

Valves
- Valve
- TVS, A, D

Trunk Sewers
- Sanitary Pipe
- Combined Pipe
- Storm Pipe

Storm Manholes

Storm Inlets

i. A plan view of the approximate services may be seen above. Services should ideally be grouped in a common trench to minimize the number of road cuts. The sizing of available future services is:

a. Connections (Johnson Road):

i. 305mm dia. water main on Jerome Jodoin
ii. 200mm dia. sanitary on Jerome Jodoin
iii. 525mm dia. storm sewer on Jerome Jodoin

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

iii. *Provide information on the monitoring manhole requirements – should be located in an accessible location on private property near the property line (ie. Not in a parking area).*

iv. *Provide information on the type of connection permitted*

Sewer connections to be made above the springline of the sewermain as per:

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

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

c. Std Dwg S11.2 (for rigid main sewers using bell end insert method) – *for larger diameter laterals where manufactured inserts are not available; lateral must be less that 50% the diameter of the sewermain,*

d. Connections to manholes permitted when the connection is to rigid main sewers where the lateral exceeds 50% the diameter of the sewermain. – Connect obvert to obvert with the outlet pipe unless pipes are a similar size.

e. *No submerged outlet connections.*

6. Civil consultant must request boundary conditions from the City's assigned Project Manager prior to first submission. Water Boundary condition requests must include the location of the service and the expected loads required by the proposed development. Please provide the following information:

   i. Location of service(s)
   ii. Type of development and the amount of fire flow required (as per FUS, 1999).
   iii. Average daily demand: ___ l/s.
   iv. Maximum daily demand: ___l/s.
   v. Maximum hourly daily demand: ___ l/s.
   vi. Hydrant location and spacing to meet City's Water Design guidelines.
   vii. Water supply redundancy will be required for more than 50 m3/day water demand.

7. Phase 1 ESAs and Phase 2 ESAs must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.

8. All development applications should be considered for an Environmental Compliance Approval (ECA) by the Ministry of the Environment, Conservation, and Parks (MECP);

   a. The consultants determine if an approval for sewage works under Section 53 of OWRA is required and determines what type of application. The City's project manager may help confirm and coordinate with the MECP as required.

   b. The project will be either transfer of review (standard), transfer of review (additional), direct submission, or exempt as per O. Reg. 525/98.

   c. Pre-consultation is not required if applying for standard or additional works (Schedule A of the Agreement) under Transfer Review.

d. Pre-consultation with local District office of MECP is recommended for direct submission.

e. Consultant completes an MECP request form for a pre-consultation. Send request to moeccottawasewage@ontario.ca

f. ECA applications are required to be submitted online through the MECP portal. A business account required to submit ECA application. For more information visit https://www.ontario.ca/page/environmental-compliance-approval

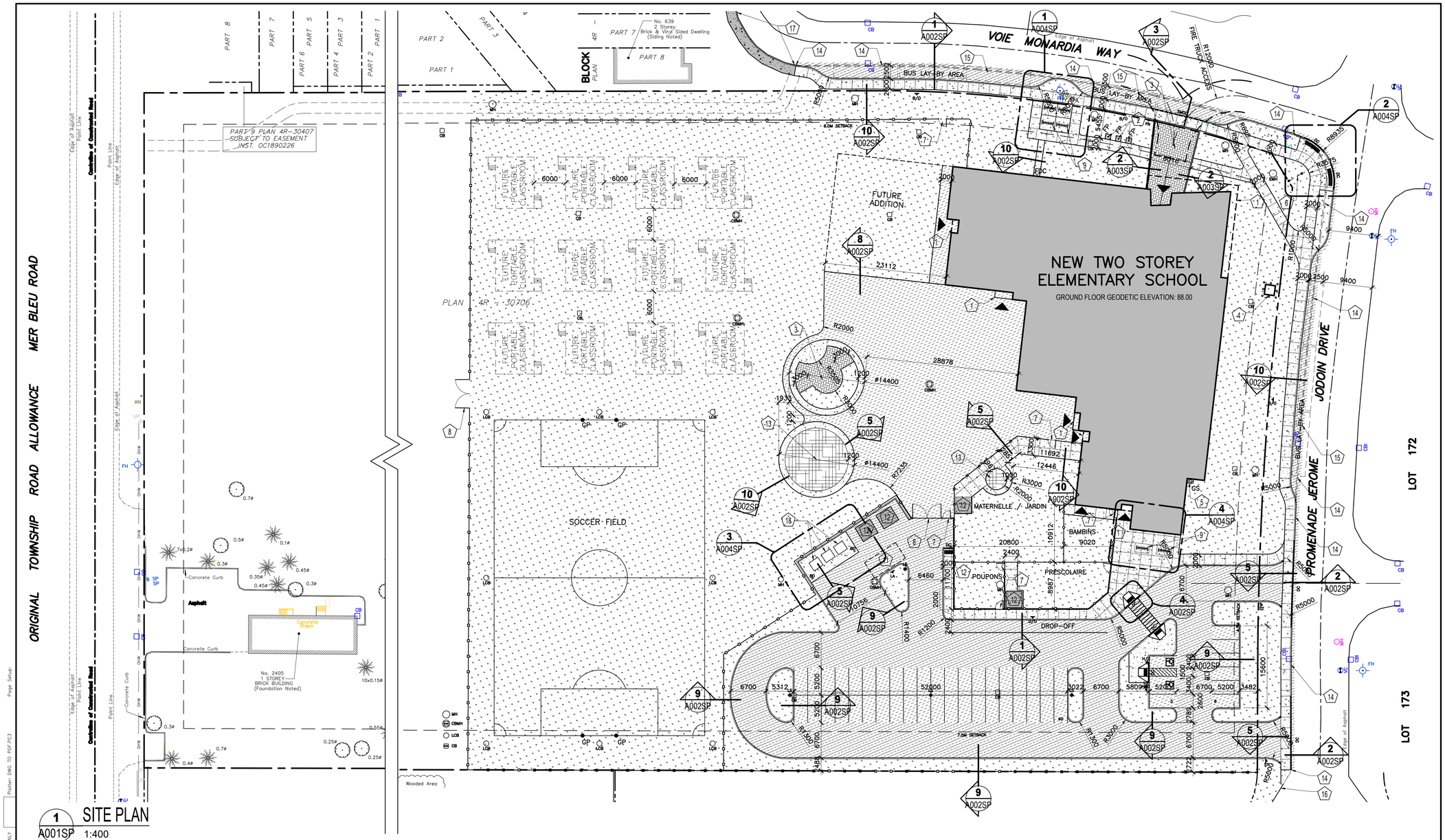
NOTE: Site Plan Approval, or Draft Approval, is required before an application is sent to the MECP.

9. General Engineering Submission requirements:

a. As per section 53 of the Professional Engineers Act, O. Reg 941/40, R.S.O. 1990, all documents prepared by engineers must be signed and dated on the seal.

b. All required plans are to be submitted on standard A1 size sheets (594mm x 841mm) sheets, utilizing a reasonable and appropriate metric scale as per City of Ottawa Servicing and Grading Plan Requirements: title blocks are to be placed on the right of the sheets and not along the bottom. Engineering plans may be combined, but the Site Plans must be provided separately. Plans shall include the survey monument used to confirm datum. Information shall be provided to enable a non-surveyor to locate the survey monument presented by the consultant.

c. All required plans & reports are to be provided in *.pdf format (at application submission and for any, and all, re-submissions)



1 A001SP SITE PLAN 1:400

SITE DATA

SITE AREA	40,483.9 m²
FOOTPRINT	
NEW SCHOOL FOOTPRINT	2,371.0 m²
PORTABLES FOOTPRINT	856.4 m²
SCHOOL W/ PORTABLES FOOTPRINT	3,227.4 m²
GROSS FLOOR AREA	
(AS PER CITY OF OTTAWA ZONING BY-LAW DEFINITION)	
NEW SCHOOL G.F.A. (INCLUDING DAYCARE)	2,560.4 m²
PORTABLES GROSS FLOOR AREA	856.4 m²
SCHOOL W/ PORTABLES GROSS FLOOR AREA	3,416.8 m²

TOPOGRAPHICAL AND SURVEY INFORMATION PROVIDED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
LEGAL DESCRIPTION: PART OF LOT 4, CONCESSION 11, Geographic Township of Cumberland, CITY OF OTTAWA

CITY OF OTTAWA ZONING

REQUIRED			PROVIDED
INSTITUTIONAL ZONE I1A(2530)			
LOT AREA	MIN.	400m²	40,483.9m²
FRONT YARD SETBACK	MIN.	6.0m	7.74m
CORNER SIDE YARD SETBACK	MIN.	4.5m	8.56m
INTERIOR SIDE YARD SETBACK	MIN.	7.5m	254.81m
REAR YARD SETBACK	MIN.	7.5m	45.09m
HEIGHT OF BUILDING	MAX.	20m	9.2m
LANDSCAPING PROVISION FOR PARKING LOTS	MIN.	15%	21%

PARKING CALCULATIONS

MOTOR VEHICLE PARKING

	USE	No. CLASS	SPACES PER	SPACES REQ'D
REQUIRED	ELEMENTARY SCHOOL	16	1.5/classroom	24
	FUTURE PORTABLE CLASSROOMS	12	1.5/classroom	18
	DAYCARE	262.0 m²	2/ 100 m²	6
	TOTAL REQUIRED PARKING SPACES			48 SPACES
	TOTAL REQUIRED ACCESSIBLE PARKING SPACES			1 SPACE
PROVIDED	SPACES @ 5.2mD X 2.6mW			47 SPACES
	TYPE A ACCESSIBLE PARKING SPACES @ 5.2mD X 3.4mW			1 SPACE
	TYPE B ACCESSIBLE PARKING SPACES @ 5.2mD X 2.4mW			1 SPACE
	TOTAL SPACES PROVIDED			49 SPACES

BICYCLE PARKING

	USE	GROSS AREA	SPACES PER	SPACES REQ'D
REQUIRED	SCHOOL	2,298.4 m²	1 per 100 m² of gross floor area	23 SPACES
	DAYCARE	262.0 m²	1 per 250 m² of gross floor area	2 SPACES
	PORTABLES	856.4 m²	1 per 100 m² of gross floor area	9 SPACES
	TOTAL REQUIRED BICYCLE PARKING SPACES			34 SPACES
PROVIDED	TOTAL BICYCLE SPACES PROVIDED			54 SPACES

LEGEND

- BARRIER FREE PARKING
- BUILDING ENTRANCE/EXIT
- CURB
- DC — DEPRESSED CURB
- SMDC — SEMI-MOUNTABLE DEPRESSED CURB
- NEW VINYL COATED CHAIN LINK FENCE, 1220 mm HIGH
- NEW VINYL COATED CHAIN LINK FENCE, 1830 mm HIGH
- ROAD CENTER LINE
- FIRE ROUTE
- SET BACK LINE
- PROPERTY LOT LINE
- BD — BOLLARD, SEE DETAIL 6/A002SP
- GP — GOAL POST, SEE DETAIL 4/A003SP
- LS — NEW LIGHT STANDARD, SEE DETAIL 1/A003SP AND ELECTRICAL DRAWINGS
- FH — EXISTING FIRE HYDRANT, SEE SURVEY
- FDC — FIRE DEPARTMENT CONNECTION, REFER TO MECHANICAL DRAWINGS
- MH — NEW MANHOLE, REFER TO CIVIL DRAWINGS
- CBMH — NEW CATCH BASIN MANHOLE, REFER TO CIVIL DRAWINGS
- LCB — NEW LANDSCAPE CATCH BASIN, REFER TO CIVIL DRAWINGS
- CB — NEW CATCH BASIN
- SIB — IRON BAR, REFER TO SURVEY
- FP — FLAG POLE BASE, SEE DETAIL 3/A003SP
- GS — NEW GAS STATION
- FR — FIRE ROUTE SIGN
- H/C — DISABLED PARKING PERMIT (Rb-93)
- D/O — DROP-OFF SIGN
- B/O — BUS LAY-BY ONLY SIGN
- LA — LOADING AREA SIGN
- NEW TWO STOREY ELEMENTARY SCHOOL AND STORAGE SHED
- CONCRETE WALK
- TYPE 1 ASPHALT: HEAVY DUTY
- TYPE 2 ASPHALT: LIGHT DUTY
- NEW SOD AND TOPSOIL (REFER TO LANDSCAPE DRAWING)
- UNIT PAVERS
- ENGINEERED WOOD FIBER
- EXISTING CONCRETE SIDEWALK

SITE PLAN NOTES

1. CANOPY OR 2ND FLOOR ABOVE.
2. FLAGPOLES
3. UNIT PAVERS
4. TRANSFORMER/SWITCHGEAR CONCRETE PAD C/W BOLLARDS AS PER HYDRO ONE STANDARDS. COORDINATE LOCATION AND SIZE WITH ELECTRICAL DRAWINGS AND HYDRO ONE.
5. GAS STATION CONCRETE PAD C/W CHAIN LINK FENCE AND TOP AS PER ENBRIDGE STANDARDS. COORDINATE LOCATION AND SIZE WITH MECHANICAL DRAWINGS AND ENBRIDGE.
6. SCHOOL SIGN, SEE SITE DETAILS.
7. NEW 1500mm WIDE GATE IN CHAIN LINK FENCE
8. NEW 6000mm WIDE DOUBLE GATE IN CHAIN LINK FENCE, C/W FOOTBOLT REST.
9. BIKE RACKS
10. CURB RAMP WITH FLARED SIDES AND DETECTABLE HAZARD INDICATOR, CONSTRUCTED TO CITY OF OTTAWA STANDARDS, SEE SPECIFICATIONS.
11. LOADING SPACE 3.5M x 7m
12. FUTURE STORAGE SHED N.I.C.
13. ENGINEERED WOOD FIBER PLAY AREA, SEE SPECIFICATIONS.
14. EXISTING ROAD CURB AND CONCRETE SIDEWALK TO BE REMOVED. ALSO REFER TO SURVEY DRAWINGS
15. PROVIDE DIAGONAL LINE PAINTING IN THE AREAS OF "BUS LAY-BY", 2500mm WIDE.
16. EDGE OF EXISTING TEMPORARY BUS TURN-AROUND
17. EXISTING CURB AND CONCRETE SIDEWALK TO REMAIN
18. SEMI-BURIED GARBAGE CONTAINER, REFER TO SPEC AND DETAILS

GENERAL NOTES

1. EXTENT OF CONTRACT IS LIMITED TO WITHIN SCHOOL AND PARK PROPERTIES, EXCEPT WHERE SHOWN OTHERWISE.
2. ALL WORK OUTSIDE PROPERTY LINE TO BE CONSTRUCTED TO CITY OF OTTAWA CONSTRUCTION STANDARDS.
3. PARKING STALL SIZE: 2600mm x 5200mm
   ACCESSIBLE PARKING STALL SIZE: 3700mm x 5200mm
4. FOR LANDSCAPING/PLANTING DETAILS SEE DRAWING AS PREPARED BY JAMES B. LENNOX AND ASSOCIATES.
5. FOR SITE GRADING INFORMATION SEE GRADING AND DRAINAGE DRAWING AS PREPARED BY WSP.
6. FOR SITE SERVICES INFORMATION SEE SITE SERVICES DRAWING AS PREPARED BY WSP.
7. FOR SOIL INVESTIGATION REPORT REFER TO REPORT PREPARED BY EXP SERVICES INC.
8. SLOPES OF CONCRETE/PAVING AT DEPRESSED CURBS SHALL NOT EXCEED 5%
9. CONTRACTOR TO VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY ERRORS TO THE ARCHITECT. CONTRACTOR TO COORDINATE WITH ALL DRAWINGS.
10. FOR SITE SURVEY INFORMATION, SEE TOPOGRAPHIC SURVEY DRAWINGS AS PREPARED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
11. PAINT PAVEMENT MARKINGS: PARKING SPACES AND SYMBOLS, PEDESTRIAN CROSSINGS AND WHERE SHOWN ON DRAWINGS.
12. CONTRACTOR SHALL REINSTATE ALL AREAS AND SITE ITEMS LOCATED OUTSIDE THE PROPERTY LINE DAMAGED AS A RESULT OF NEW CONSTRUCTION.

Conseil des écoles publiques de l'Est de l'Ontario

ISSUE NO.	REV. NO.	DATE YYMMDD	ISSUE
5	2	2024/01/17	ISSUED FOR SITE PLAN CONTROL
4	1	2023/11/24	ISSUED FOR PHASE 3 SITE PLAN PRECONSULTATION
3	0	2023/09/28	ISSUED FOR BUILDING PERMIT
2	0	2023/09/21	ISSUED FOR SITE PLAN CONTROL
1	0	2023/07/19	ISSUED FOR SITE PLAN CONTROL

TRUE NORTH | PLAN NORTH

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 PUBLIQUE
ORLÉANS SUD
675 MONARDIA WAY
OTTAWA, ONTARIO

CONSEIL DES ÉCOLES PUBLIQUES
DE L'EST DE L'ONTARIO
2445 BOUL. ST-LAURENT, OTTAWA, ON

DRAWING TITLE/TITRE DU DESSIN
SITE PLAN

SCALE ECHELLE	AS SHOWN	PROJ. No 2316	ISSUE No 3 / REV. No 0
DRAWN BY DESSINE PAR	ST/DS	DRAWING/DESSIN	A001SP
CHECKED BY VERIFIE PAR	XF		
DATE	JUNE 2023	ACAD FILE/FICHIER: 2316-A001SP.DWG	

SHEET 1 OF 2

ELEVATION NOTES

1. Elevations shown are geodetic, derived from the Control Monument 001196530228 having an elevation of 86.486 metres and are referred to the CGVD28 geodetic datum.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.
4. Maintenance Hole (Sewer) marked by * and Underground services and Inverts are taken from City of Ottawa Engineering Plans J-32-14, J-32-16, J-32-20, J-32-22 and Plan 17133 Sheet 7 and 18.

TOPOGRAPHICAL PLAN OF SURVEY OF

PART OF LOT 4
CONCESSION 11
Geographic Township of Cumberland
CITY OF OTTAWA

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 400

16 12 8 4 0 8 16 Metres

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 and the Surveyors Act and the regulations made under them.
2. The survey was completed on the 4th day of April, 2023.

May 2, 2023
Date

E. H. Herweyer
Ontario Land Surveyor

Notes & Legend

	Denotes	
	"	Survey Monument Planted
	"	Survey Monument Found
SIB	"	Standard Iron Bar
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
CP	"	Concrete Pin
PB	"	Plastic Bar
Meas.	"	Measured
(AOG)	"	Annis, O'Sullivan, Vollebekk Ltd.
(P1)	"	Registered Plan 4M-1580
(P2)	"	Plan 4R-30706
(P3)	"	Plan 4R-31218
FH	"	Fire Hydrant
VC	"	Valve Chamber (Watermain)
WV	"	Water Valve
MH-ST	"	Maintenance Hole (Storm Sewer)
MH-S	"	Maintenance Hole (Sanitary)
MH	"	Maintenance Hole (Unidentified)
OHW	"	Overhead Wires
CB	"	Catch Basin
CBI	"	Catch Basin Inlet
UP	"	Utility Pole
AN	"	Anchor
HM	"	Hydro Meter
CSP	"	Corrugated Steel Pipe
T/P	"	Top of Pipe
S	"	Sign
CLF	"	Chain Link Fence
BF	"	Board Fence
Ø	"	Diameter
+ 65.00	"	Location of Elevations
+ 65.00*	"	Top of Concrete Curb Elevation
C/L	"	Centreline
	"	Property Line
T/G	"	Top of Grate
Inv.	"	Invert
	"	Deciduous Tree
	"	Coniferous Tree
SP	"	Water Stand Post
ST	"	Underground Storm Sewer
S	"	Underground Sanitary Sewer
W	"	Underground Water
P	"	Underground Power
G	"	Underground Gas
B	"	Underground Bell

SHEET 1 OF 2

SHEET 1 OF 2 : Topographical Plan of Survey

SHEET 2 OF 2 : Underground Services

Bearings are grid, derived from the southerly limit of Registered Plan 4M-1580 shown to be N67°18'30"E thereon and are referred to MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V-45099
THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29 (3).

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

Job No. E-3502-23 CEPEO PtLt 4 C II CU T D2 | ig

PAVEMENT DESIGN

40mm SUPERPAVE 12.5 ASPHALTIC CONCRETE
100mm SUPERPAVE 19.0 ASPHALTIC CONCRETE
150mm GRANULAR "A" CRUSHED STONE
600mm GRANULAR "B" TYPE II

NOTE: ICD
FOR ICD APPLICATION, REFER TO DRAWINGS No. 5 TO 6 & 43 TO 44 FOR DETAIL.

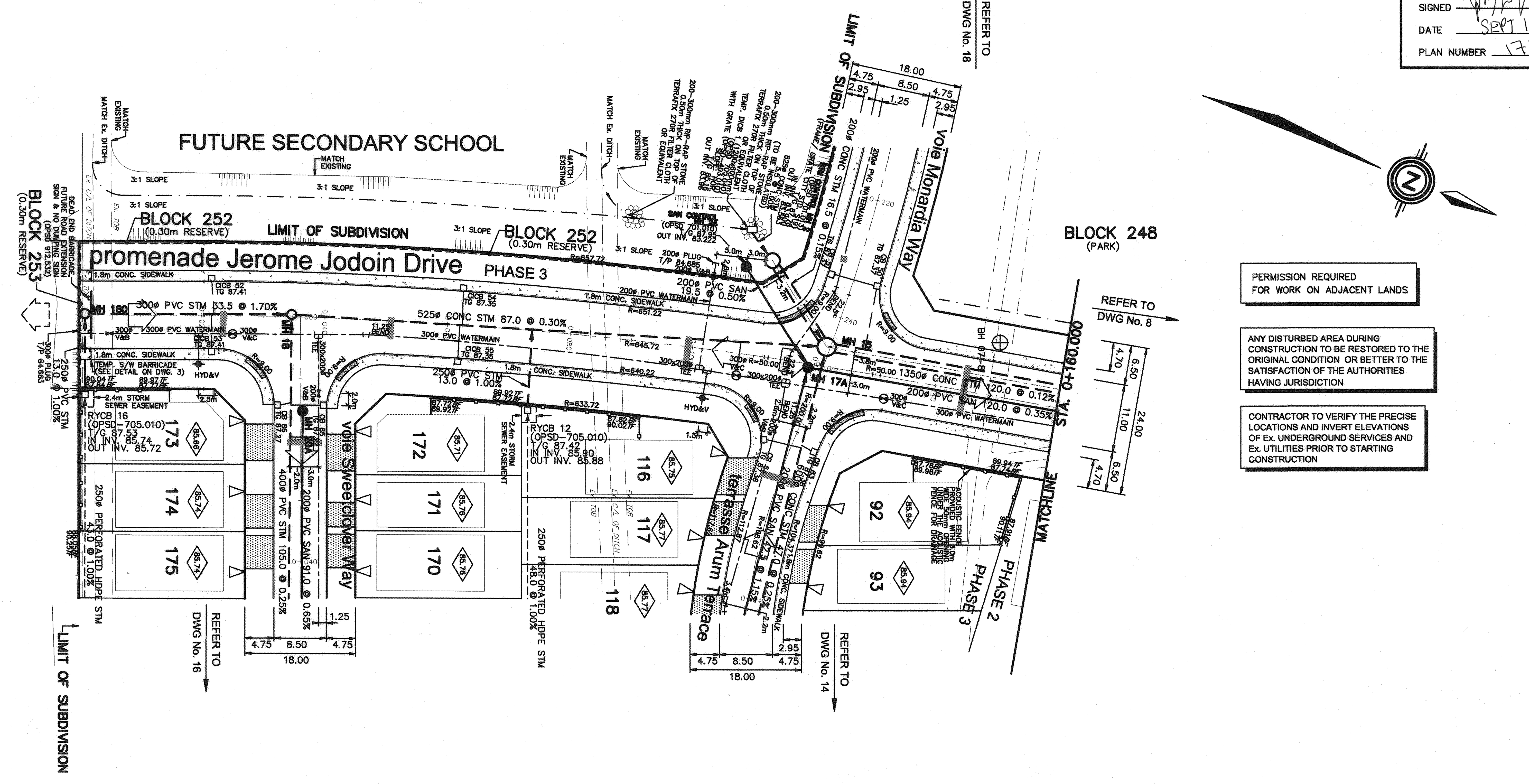
NOTE RE: THRUST BLOCK BEDDING
TO INCREASE THE VERTICAL ALLOWABLE BEARING CAPACITY TO 100 KPa OR GREATER, A MINIMUM 400mm GRANULAR 'A' OR OPSS GRANULAR 'B' TYPE II COMPACTED TO 95% SPMDD SHOULD BE INSTALLED AS THE BEDDING MATERIAL.

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.

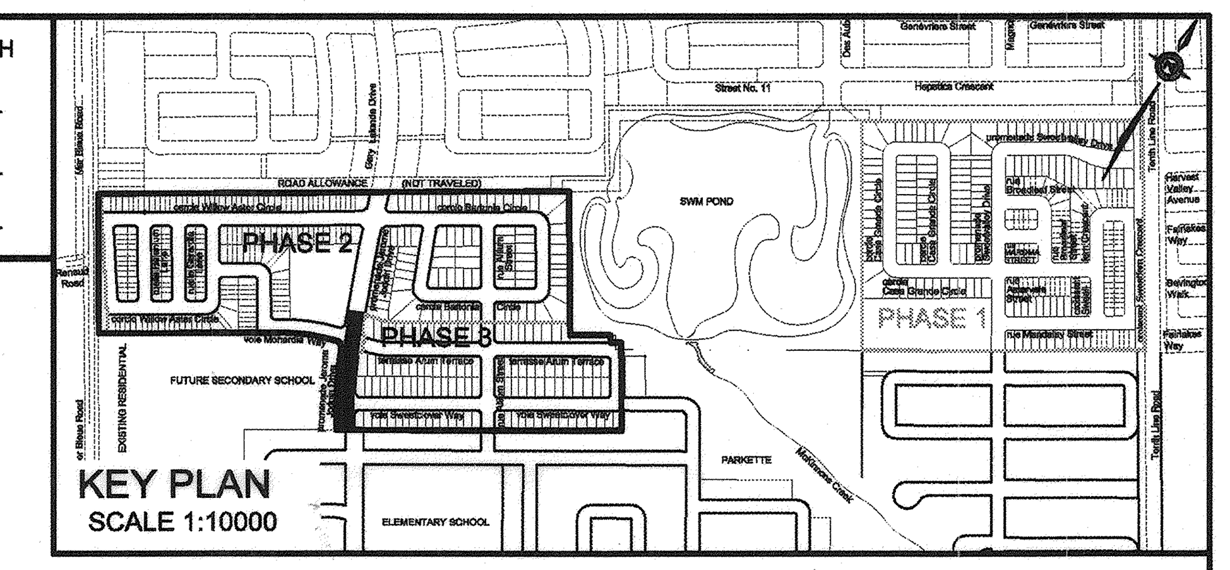
NOTE RE: WATERMAIN / WATER SERVICE
1. INSULATION REQUIRED FOR WATERMAIN / WATER SERVICE WHERE THE SEPARATION BETWEEN WATERMAIN / WATER SERVICE AND OTHER SERVICES AND STRUCTURES IS LESS THAN 1.2m AND THE COVER IS LESS THAN 2.4m. REFER TO CITY STD. W23 FOR DETAIL.
2. FOR SERVICE INSTALLATION AT SEWER CROSSING,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



REVIEWED BY DEVELOPMENT REVIEW BRANCH
SIGNED [signature]
DATE SEPT 19, 2016
PLAN NUMBER 17133



KEY PLAN
SCALE 1:10000

PERMISSION REQUIRED FOR WORK ON ADJACENT LANDS

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 LOCATIONS AND INVERT ELEVATIONS OF Ex. UNDERGROUND SERVICES AND Ex. UTILITIES PRIOR TO STARTING CONSTRUCTION

LEGEND

- CROSS
- 45° BEND
- LATERAL
- HYDRANT, VALVE & VB
- TEE
- VALVE & VC
- VALVE & VB
- 22.5° BEND
- 11.25° BEND
- REDUCER
- CAP
- SANITARY MAINTENANCE HOLE
- CAP
- STREET CATCHBASIN & LEAD
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- BOREHOLE (BH), TEST PIT (TP), AUGER HOLE (AH), MONITORING WELL LOCATION, CONCEPTUAL WELL LOCATION — AS PER GEOTECHNICAL REPORT
- TOP OF FOUNDATION ELEVATION
- FINISHED FLOOR ELEVATION
- UNDERSIDE OF FOOTING ELEVATION
- NUMBER OF RISERS
- UNITS REQUIRING PRESSURE REDUCING VALVES
- WALKOUT UNITS
- SLAB ON GRADE
- OVERLAND FLOW DIRECTION
- EXTERNAL OVERLAND FLOW DIRECTION

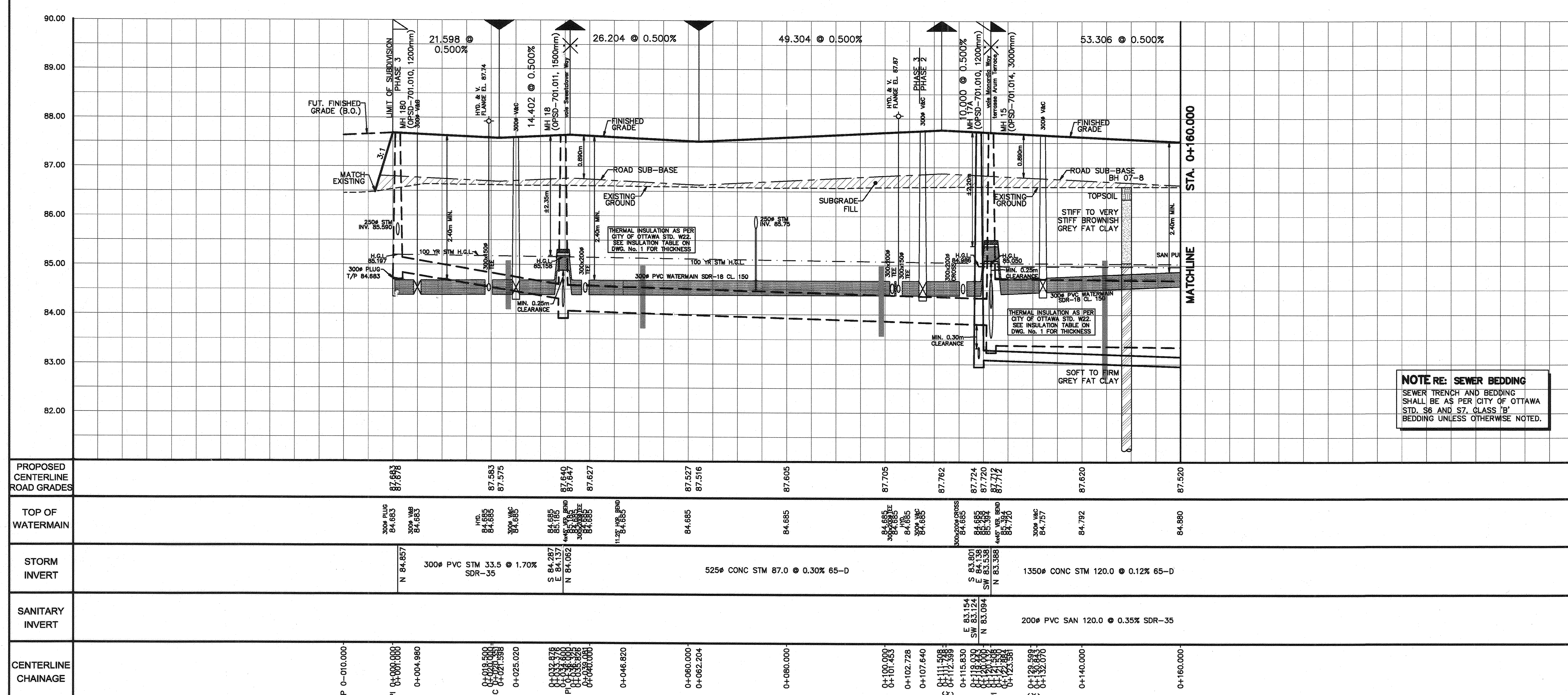
TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 8-10-989-02. SURVEY DATED JANUARY 30, 2015 &
PROJECT No. 8-10-989-02. SURVEY DATED DECEMBER 18, 2015.
PROJECT No. 8-10-989-02. SURVEY DATED APRIL 26, 2016.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 8-10-989-00 (PHASE 2), DATED JULY 24, 2016.

4th SUBMISSION 16-08-10



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.

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.	16-08-10	Z.L.	4th SUBMISSION
3.	16-07-29	Z.L.	3rd SUBMISSION
2.	16-07-13	Z.L.	2nd SUBMISSION
1.	16-04-29	Z.L.	1st SUBMISSION

Ottawa CITY OF OTTAWA

PROJECT No. 15-808

LICENSED PROFESSIONAL ENGINEER Z. LI 16-08-10 PROVINCE OF ONTARIO

PLAN AND PROFILE OF
promenade Jerome Jodoin Drive
(STA. 0+000.000 TO STA. 0+160.000) © DSEL

MATTAMY (MER BLEUE) LIMITED

SUMMERSIDE WEST
PHASES 2 & 3

DSEL
david schaeffer engineering ltd
120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

DRAWN BY: D.A.	CHECKED BY: C.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: C.M.	CHECKED BY: Z.L.		7
SCALE: H=1:500/V=1:50	DATE: APRIL 2016		

CITY FILE No. D07-16-14-0011PH2 CITY PLAN No. 17133

PAVEMENT DESIGN

40mm SUPERPAVE 12.5 ASPHALTIC CONCRETE
100mm SUPERPAVE 19.0 ASPHALTIC CONCRETE
150mm GRANULAR "A" CRUSHED STONE
600mm GRANULAR "B" TYPE II

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NOTE: ICD
FOR ICD APPLICATION, REFER TO DRAWINGS No. 5 TO 6 & 43 TO 44 FOR DETAIL.

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

NOTE RE: TEST PIT/BOREHOLE EXCAVATIONS
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2. FOR SERVICE INSTALLATION AT SEWER CROSSING, REFER TO CITY STD. W38 FOR DETAIL

NOTE
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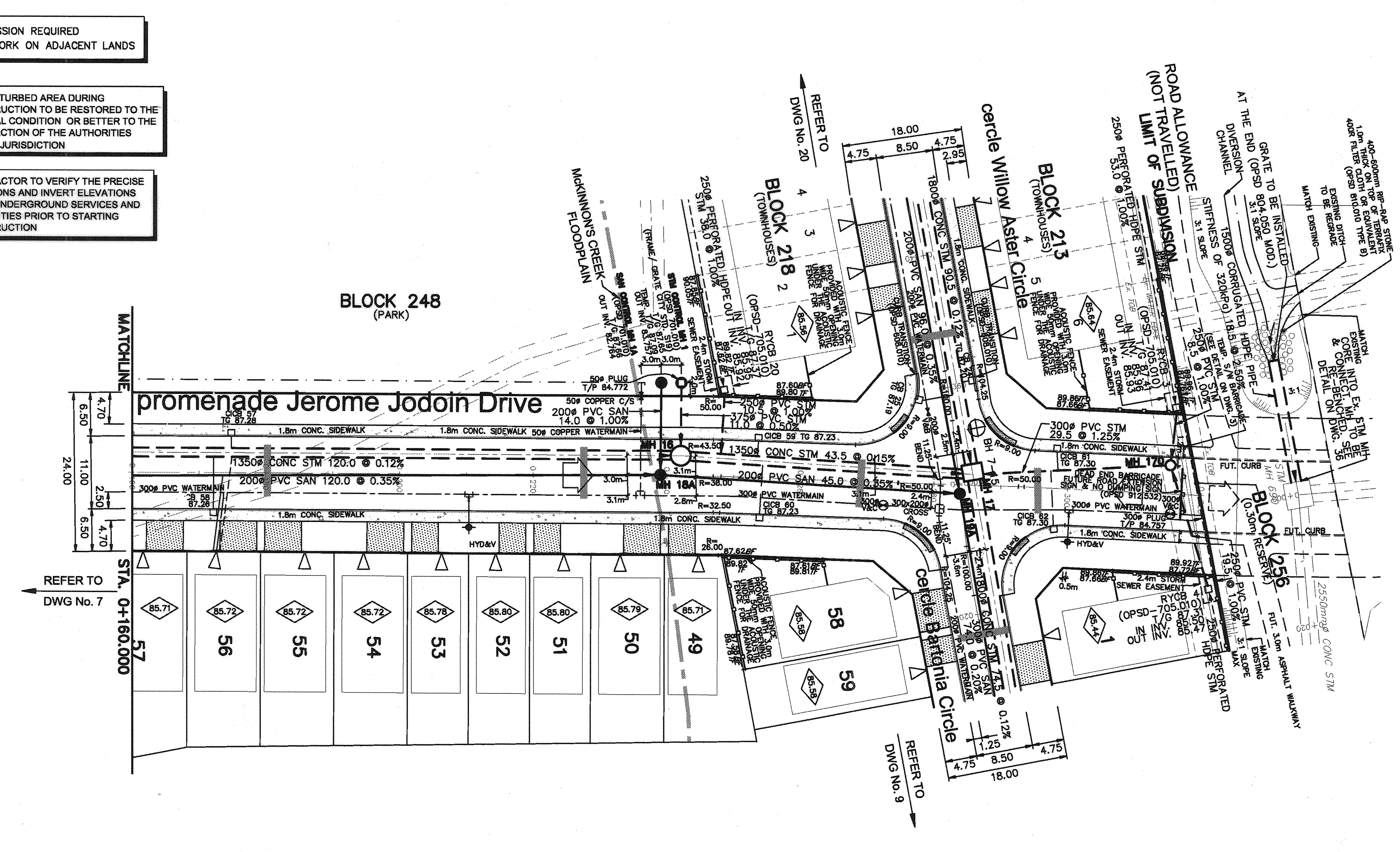
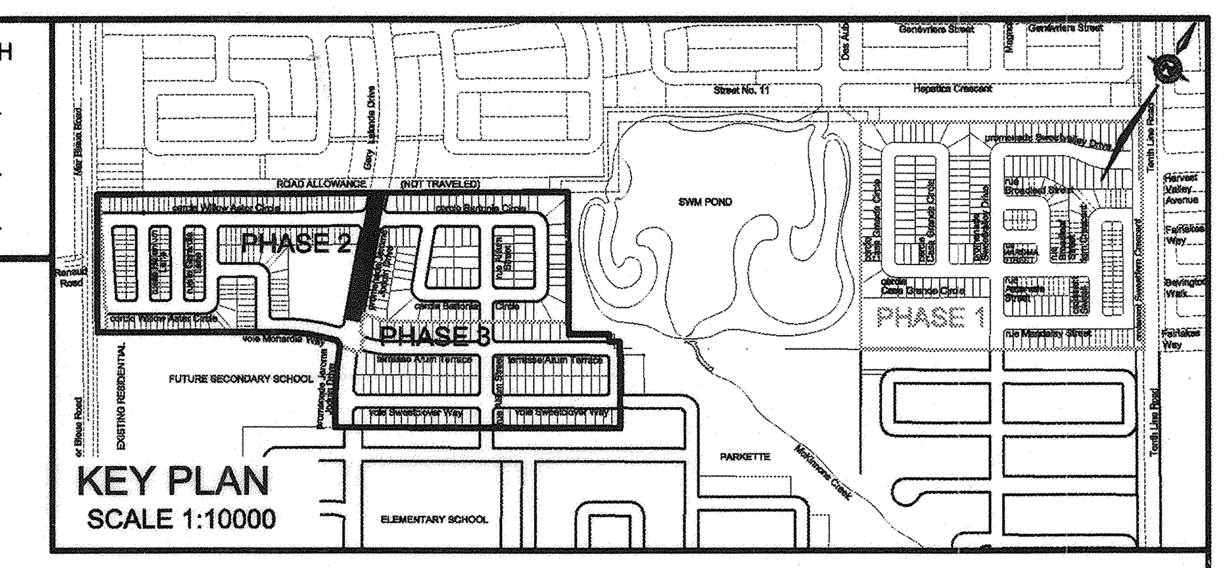


NEIGHBOURHOOD 5 AVALON WEST WESTERN TRUNK STORM SEWER REFER TO IBI GROUP PROJECT No. 30113

NOTE:
FOR MH17 BENCHING DETAIL REFER TO DRAWING No. 9

REVIEWED BY DEVELOPMENT REVIEW BRANCH
SIGNED
DATE SEPT 19, 2016
PLAN NUMBER 17133



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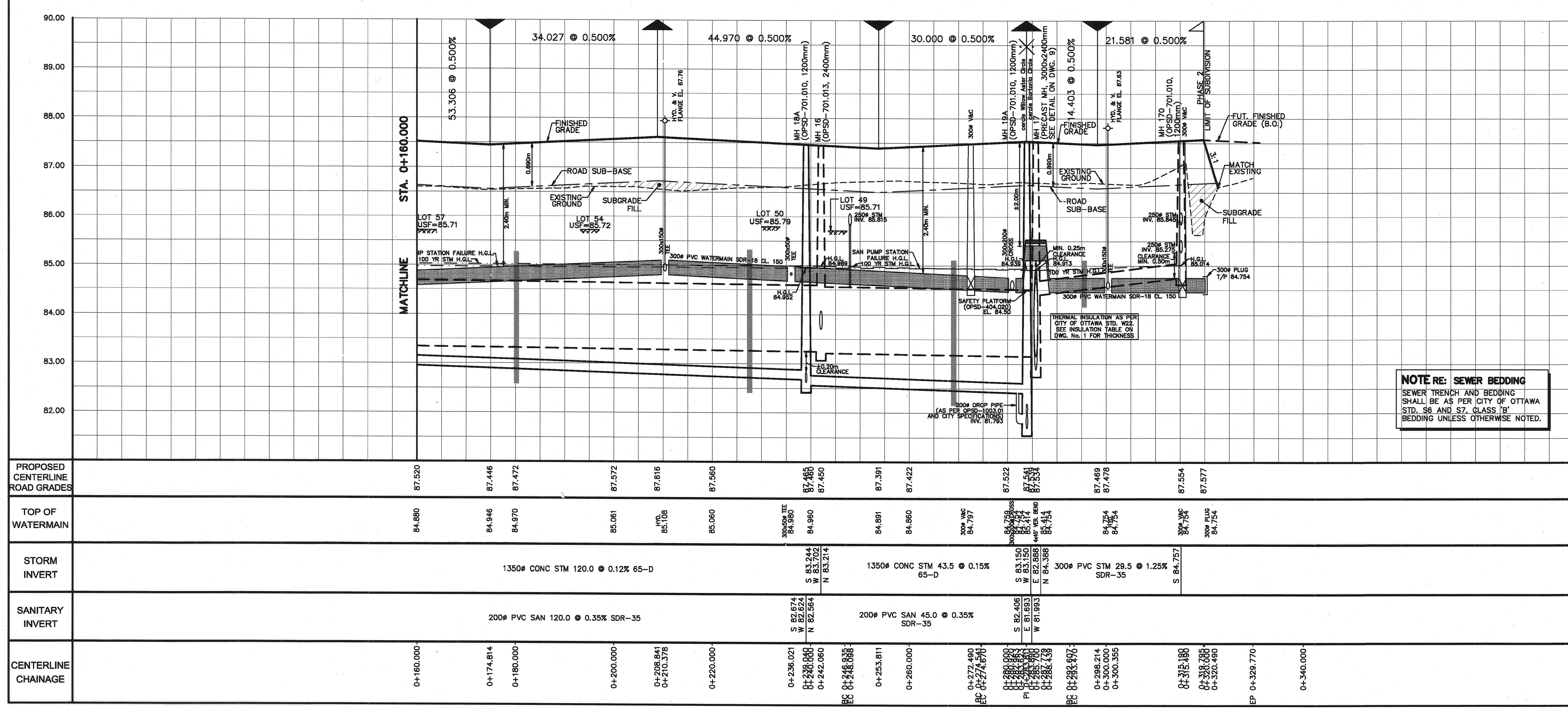


NOTE RE: SEWER BEDDING
SEWER TRENCH AND BEDDING SHALL BE AS PER CITY OF OTTAWA STD. S6 AND S7. CLASS 'B' BEDDING UNLESS OTHERWISE NOTED.

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 8-10-989-02. SURVEY DATED JANUARY 30, 2015 &
PROJECT No. 8-10-989-02. SURVEY DATED DECEMBER 18, 2015.
PROJECT No. 8-10-989-02. SURVEY DATED APRIL 26, 2016.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 8-10-989-00 (PHASE 2), DATED JULY 24, 2016.

4th SUBMISSION 16-08-10

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.	16-08-10	Z.L.	4th SUBMISSION
3.	16-07-29	Z.L.	3rd SUBMISSION
2.	16-07-13	Z.L.	2nd SUBMISSION
1.	16-04-29	Z.L.	1st SUBMISSION

CITY OF OTTAWA

Z. LI 16-08-10 LICENSED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO

PROJECT No. 15-808

PLAN AND PROFILE OF
promenade Jerome Jodoin Drive
(STA. 0+160.000 TO STA. 0+329.770)
© DSEL

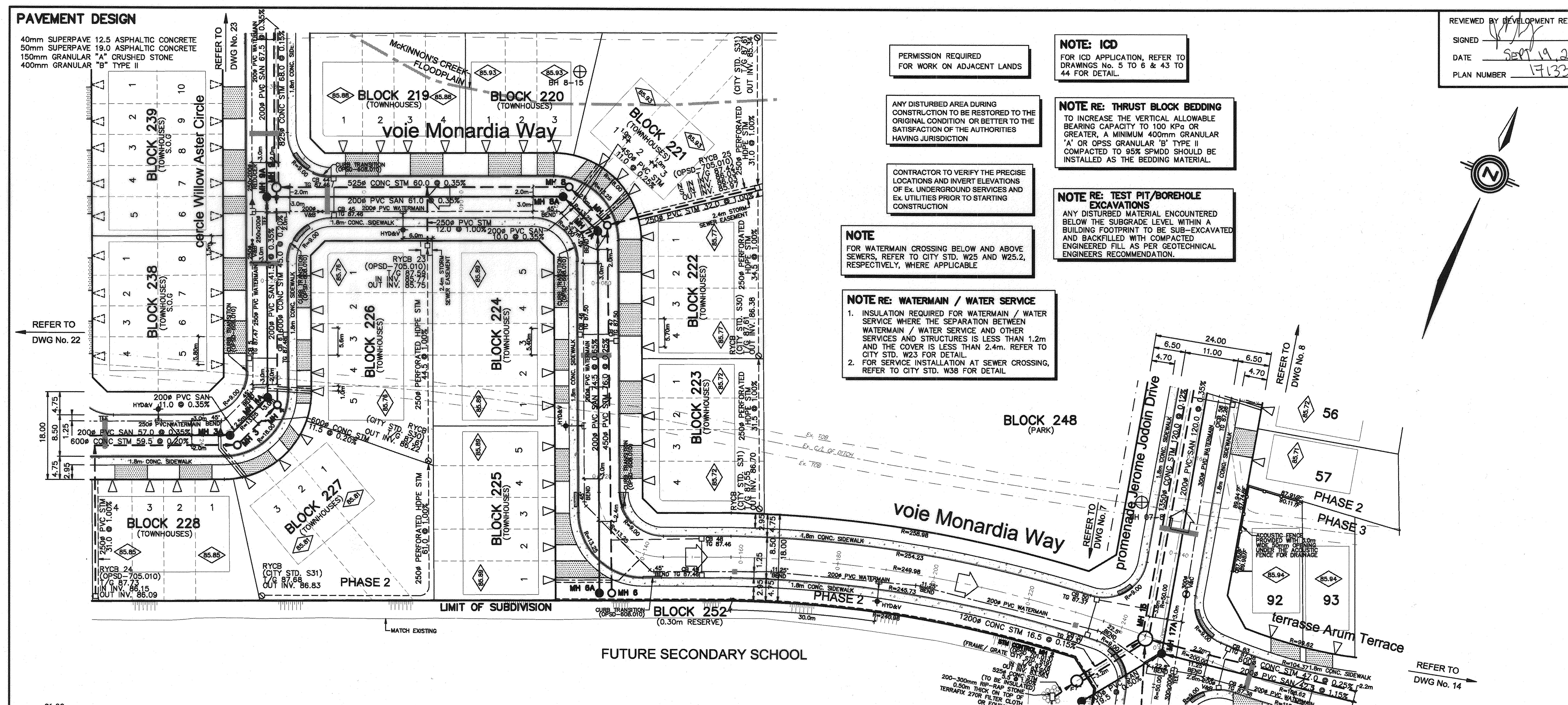
MATTAMY (MER BLEUE) LIMITED

SUMMERSIDE WEST
PHASES 2 & 3

DSEL david schaeffer engineering ltd
120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

DRAWN BY: D.A.	CHECKED BY: C.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: C.M.	CHECKED BY: Z.L.		8
SCALE: H=1:500/V=1:50	DATE: APRIL 2016		

CITY FILE No. D07-16-14-0011PH2 CITY PLAN No. 17133



PAVEMENT DESIGN

40mm SUPERPAVE 12.5 ASPHALTIC CONCRETE
50mm SUPERPAVE 19.0 ASPHALTIC CONCRETE
150mm GRANULAR "A" CRUSHED STONE
400mm GRANULAR "B" TYPE II

PERMISSION REQUIRED FOR WORK ON ADJACENT LANDS

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 LOCATIONS AND INVERT ELEVATIONS OF Ex. UNDERGROUND SERVICES AND Ex. UTILITIES PRIOR TO STARTING CONSTRUCTION

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

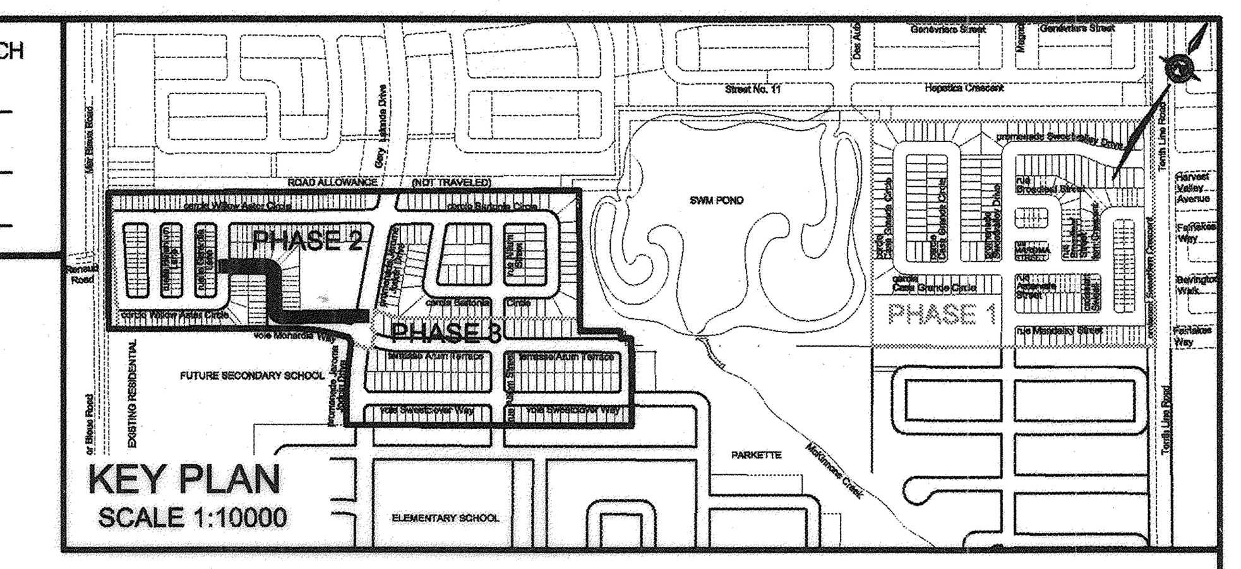
NOTE RE: WATERMAIN / WATER SERVICE
1. INSULATION REQUIRED FOR WATERMAIN / WATER SERVICE WHERE THE SEPARATION BETWEEN WATERMAIN / WATER SERVICE AND OTHER SERVICES AND STRUCTURES IS LESS THAN 1.2m AND THE COVER IS LESS THAN 2.4m. REFER TO CITY STD. W23 FOR DETAIL.
2. FOR SERVICE INSTALLATION AT SEWER CROSSING,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

NOTE: ICD
FOR ICD APPLICATION, REFER TO DRAWINGS No. 5 TO 6 & 43 TO 44 FOR DETAIL.

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

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.

REVIEWED BY DEVELOPMENT REVIEW BRANCH
SIGNED ______
DATE SEPT 19, 2016
PLAN NUMBER 17133



LEGEND

CROSS
45° BEND
LATERAL
HYDRANT, VALVE & VB
TEE
VALVE & VC
VALVE & VB
22.5° BEND
11.25° BEND
REDUCER
CAP
SANITARY MAINTENANCE HOLE
CAP
STREET CATCHBASIN & LEAD
STORM MAINTENANCE HOLE
CURB INLET CATCHBASIN & LEAD
CATCHBASIN/ MAINTENANCE HOLE
INTERCONNECTED CATCH BASIN & LEADS
CAP
SINGLE SERVICE LOCATION (ST, SAN & WM)
SINGLE SERVICE LOCATION (SAN & WM)
SINGLE SERVICE LOCATION (ST, SAN & WM)
TEE CATCHBASIN
PERFORATED PIPE
ELBOW CATCHBASIN
TACTILE WALKING SURFACE INDICATOR (AS PER CITY OF OTTAWA STD. SC6, SC7, SC7.1, SC7.2, SC7.3)
HYDRO TRANSFORMER
STREET LIGHT STANDARD
DITCH AND CULVERT
CONCRETE SIDEWALK
CURB & DEPRESSED CURB
ASPHALT SIDEWALK
CHAINLINK FENCE
NOISE BARRIER
WOOD PRIVACY BARRIER
POST AND RAIL FENCE
PHASING LIMITS
PROPERTY BOUNDARY
BOREHOLE (BH), TEST PIT (TP), AUGER HOLE (AH), MONITORING WELL LOCATION, CONCEPTUAL WELL LOCATION — AS PER GEOTECHNICAL REPORT
TOP OF FOUNDATION ELEVATION
FINISHED FLOOR ELEVATION
UNDERSIDE OF FOOTING ELEVATION
NUMBER OF RISERS
UNITS REQUIRING PRESSURE REDUCING VALVES
WALKOUT UNITS
SLAB ON GRADE
OVERLAND FLOW DIRECTION
EXTERNAL OVERLAND FLOW DIRECTION

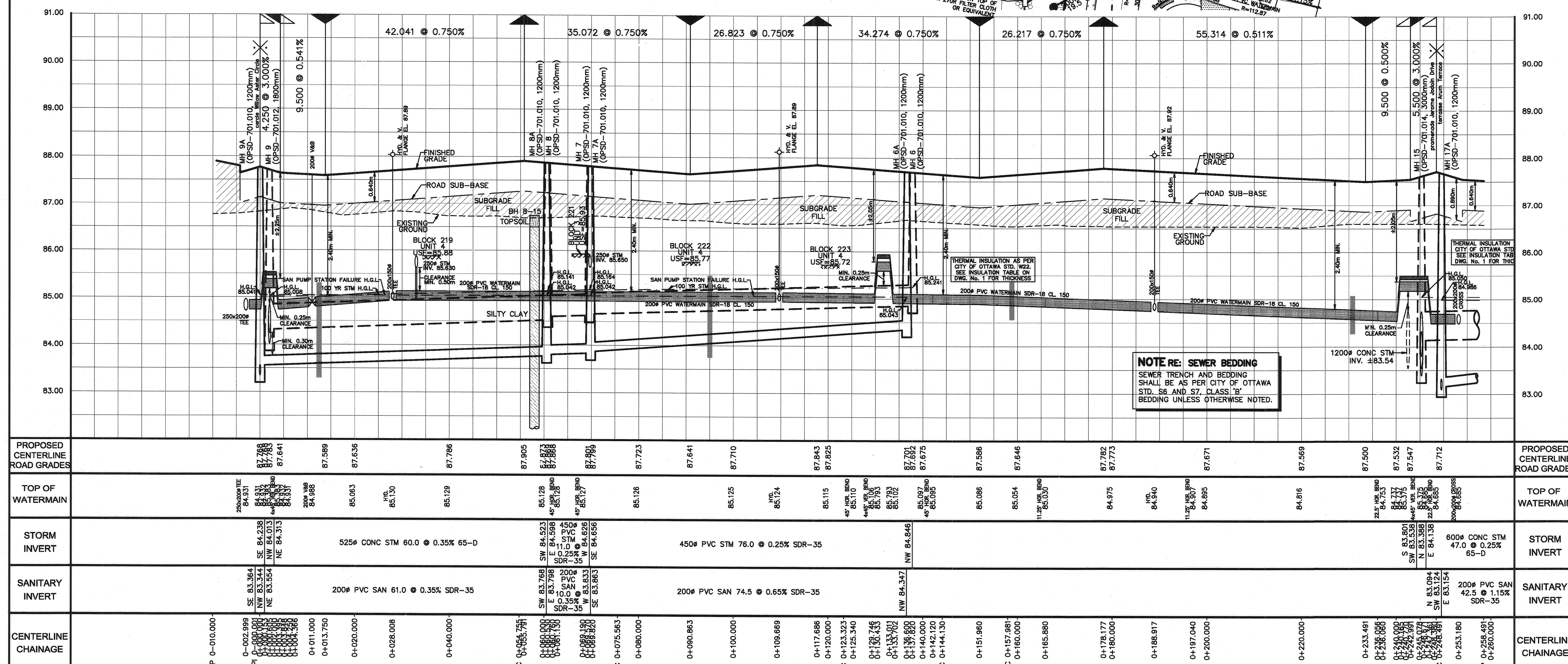
TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 8-10-989-02. SURVEY DATED JANUARY 30, 2015 &
PROJECT No. 8-10-989-02. SURVEY DATED DECEMBER 18, 2015.
PROJECT No. 8-10-989-02. SURVEY DATED APRIL 26, 2016.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 8-10-989-00 (PHASE 2), DATED JULY 24, 2016.

4th SUBMISSION 16-08-10



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.	16-08-10	Z.L.	4th SUBMISSION
3.	16-07-29	Z.L.	3rd SUBMISSION
2.	16-07-13	Z.L.	2nd SUBMISSION
1.	16-04-29	Z.L.	1st SUBMISSION

Ottawa CITY OF OTTAWA

PROJECT No. 15-808

LICENSED PROFESSIONAL ENGINEER Z. LI 16-08-10 PROVINCE OF ONTARIO

PLAN AND PROFILE OF
voie Monardia Way
(STA. 0+000.000 TO STA. 0+247.030)
© DSEL

MATTAMY (MER BLEUE) LIMITED

SUMMERSIDE WEST
PHASES 2 & 3

DSEL david schaeffer engineering ltd
120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

DRAWN BY: D.A.	CHECKED BY: C.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: C.M.	CHECKED BY: Z.L.		18
SCALE: H=1:500/V=1:50	DATE: APRIL 2016		

CITY FILE No. D07-16-14-0011PH2 CITY PLAN No. 17133

NOTE:
FOR CROSS-SECTION 5-5, 6-6, 7-7, 8-8, 23-23, 24-24 & 26-26, REFER TO DWG No. 32.

NOTE:
WATERMAIN CONNECTIONS AND DECOMMISSIONING TO EXISTING TO BE COMPLETED BY CITY FORCES. TRENCH BACKFILL/REINSTATEMENT TO BE COMPLETED BY THE CONTRACTOR TO THE SATISFACTION OF THE CITY OF OTTAWA.

PERMISSION REQUIRED FOR WORK ON ADJACENT LANDS

NOTE RE: PERFORATED PIPE
PERFORATED PIPE IS REQUIRED FOR SWALE SLOPE LESS THAN 1.5%. REFER TO CITY STD. S29, S30 FOR REAR YARD TRENCH AND PIPE DETAIL ONLY

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

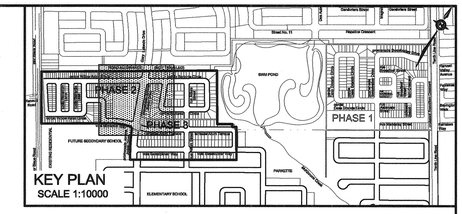
NOTE:
A GEOTECHNICAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO IS TO INSPECT ALL SUBGRADE SURFACES FOR FOOTING AND PAVEMENT STRUCTURES PRIOR TO CONSTRUCTION

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

NOTE:
EXISTING EXTERNAL DRAINAGE PATTERN TO BE VERIFIED AND MAINTAINED ONSITE.

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 LOCATIONS AND INVERT ELEVATIONS OF Ex. UNDERGROUND SERVICES AND Ex. UTILITIES PRIOR TO STARTING CONSTRUCTION



LEGEND

- PROPOSED ELEVATION — 103.45
- EXISTING ELEVATION — 102.73
- PROPOSED SWALE GRADE — 1.5%
- HIGH POINT — 102.16
- CATCHBASIN MANHOLE
- TEE CATCHBASIN
- ELBOW CATCHBASIN
- HYDRANT, VALVE & VB
- VALVE & VC
- VALVE & VB
- BUILDING ENVELOPE
- TOP OF FOUNDATION (TOF) — 94.70
- FINISHED FLOOR ELEVATION (FFE) — 95.00
- UNDERSIDE OF FOOTING ELEVATION (USF) — 92.00
- UNITS REQUIRING WATER PRESSURE REDUCING VALVES — PRV
- WALKOUT UNITS — W.O.
- SLAB ON GRADE — SOG
- HYDRO TRANSFORMER
- STREET LIGHT STANDARD — L.S.
- SWITCHGEAR
- TACTILE WALKING SURFACE INDICATOR (AS PER CITY OF OTTAWA STD. SC6, SC7, SC7.1, SC7.2, SC7.3)
- OVERLAND FLOW DIRECTION
- EXTERNAL OVERLAND FLOW DIRECTION
- EXTERNAL OVERLAND FLOW DIRECTION
- RETAINING WALL AND ELEVATIONS — T/Wall=103.10 B/Wall=102.44
- 1.8m HIGH CHAINLINK FENCE (UNLESS OTHERWISE NOTED)
- NOISE BARRIER (SEE LANDSCAPE DWG. FOR DETAILS) — 87.75TF 84.75BF
- 1.8m HIGH WOOD PRIVACY BARRIER
- 1.2m HIGH DECORATIVE FENCE
- PHASING LIMITS
- PROPERTY BOUNDARY
- 3:1 TERRACING MAXIMUM SLOPE — 100.00 99.00
- PONDING AREA WITH SPILLWAY ELEVATION (MAXIMUM 0.30m) — 88.64
- 250ø PVC PERFORATED PIPE (REFER TO CITY STD S29 FOR REAR YARD TRENCH AND PIPE DETAILS ONLY) (SUBDRAIN APPLIED FOR SLOPE LESS THAN 1.5%)
- FIREWALL (SEE ARCHITECTURAL DRAWINGS FOR DETAIL)

REFER TO DWG No. 29

GRADING & DRAINAGE APPROVED
SIGNED
DATE JAN 10, 2017

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 8-10-989-02. SURVEY DATED JANUARY 30, 2015 &
PROJECT No. 8-10-989-02. SURVEY DATED DECEMBER 18, 2015.
PROJECT No. 8-10-989-02. SURVEY DATED APRIL 26, 2016.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 8-10-989-00 (PHASE 2), DATED JULY 24, 2016.

5th SUBMISSION 16-12-01

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
5.	16-12-01	Z.L.	5th SUBMISSION
4.	16-08-10	Z.L.	4th SUBMISSION
3.	16-07-29	Z.L.	3rd SUBMISSION
2.	16-07-13	Z.L.	2nd SUBMISSION
1.	16-04-29	Z.L.	1st SUBMISSION

CITY OF OTTAWA

PROJECT No. 15-808

LICENSED PROFESSIONAL ENGINEER Z. LI 16-12-01 PROVINCE OF ONTARIO

GRADING PLAN

© DSEL

MATTAMY (MER BLEUE) LIMITED

SUMMERSIDE WEST
PHASES 2 & 3

DSEL david schaeffer engineering ltd
120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7163
www.DSEL.ca

DRAWN BY: I.V./W.L.	CHECKED BY: Z.L.	DRAWING NO.	SHEET NO.
DESIGNED BY: I.V./W.L.	CHECKED BY: Z.L.		28
SCALE: 1:500	DATE: APRIL 2016		

CITY FILE No. D07-16-14-0011PH2 CITY PLAN No. 17133

APPENDIX

B

- FIRE UNDERWRITERS SURVEY – FIRE FLOW CALCULATION FOR BUILDING
- FIRE UNDERWRITERS SURVEY – FIRE FLOW CALCULATION FOR BUILDING AND ADDITION
- FIRE UNDERWRITERS SURVEY – FIRE FLOW CALCULATION FOR PORTABLES
- WATER DEMAND CALCULATION
- UPDATED BOUNDARY CONDITION

Boundary Conditions
2405 Mer Bleue Road

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	111	1.85
Maximum Daily Demand	166	2.77
Peak Hour	299	4.99
Fire Flow Demand #1	16,002	266.70

Location

Results

Connection 1 – Monardia Way

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.4	62.3
Peak Hour	126.3	56.5
Max Day plus Fire Flow	112.3	36.6

[1] Ground Elevation = 86.6 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.

Fire Flow Design Sheet (FUS)
CEPEO Elementary School
675 Monardia Way
Project: CA0003850.9668
Date: **17/01/24**

New School and Future Addition
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 = 5798 m^2
C = 0.8
F = 13401.4 L/min

rounded off to 13,000 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% x 13,000 = 11,050 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% x 11,050 = -4,420 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	31	0%	north side
Side 2	35	5%	east side
Side 3	50	0%	south side
Side 4	15	15%	west side
		20%	(Total shall not exceed 75%)

Increase due to separation 20% x 11,050 = 2,210 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	9,000	L/min (Rounded to nearest 1000 L/min)
or	**150**	**L/sec**
or	2,378	gpm (us)
or	1,980	gpm (uk)

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

Fire Flow Design Sheet (FUS)
CEPEO Elementary School
675 Monardia Way
Project: CA0003850.9668
Date: **17/01/24**

New 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 = 4780 m^2
C = 0.8
F = 12168.2 L/min

rounded off to 12,000 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% x 12,000 = 10,200 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% x 10,200 = -4,080 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	31	0%	north side
Side 2	35	5%	east side
Side 3	50	0%	south side
Side 4	38	5%	west side
		10%	(Total shall not exceed 75%)

Increase due to separation 10% x 10,200 = 1,020 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	7,000	L/min	(Rounded to nearest 1000 L/min)
or	**117**	**L/sec**	
or	1,849	gpm (us)	
or	1,540	gpm (uk)	

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

Fire Flow Design Sheet (FUS)
CEPEO Elementary School
675 Monardia Way
Project: CA0003850.9668
Date: **17/01/24**

Portables (12 in 3 rows)
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 = 864 m^2
C = 1.0
F = 6466.7 L/min

rounded off to 6,000 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% x 6,000 = 5,100 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 0% x 5,100 = 0 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	15	15%	north side
Side 2	15	15%	east side
Side 3	80	0%	south side
Side 4	15	15%	west side
		45%	(Total shall not exceed 75%)

Increase due to separation 45% x 5,100 = 2,295 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	7,000	L/min	(Rounded to nearest 1000 L/min)
or	**117**	**L/sec**	
or	1,849	gpm (us)	
or	1,540	gpm (uk)	

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

Water Demand Calculation Sheet

Project:	**CEPEO Elementary School**	**Date:**	**2024-05-09**
Location:	**675 Monardia Way**	**Design:**	**VT**
WSP Project No.	**CA0003850.9668**	**Page:**	**1 of 1**

Proposed Buildings	Residential			School	Non-Residential			Average Daily			Maximum Daily			Maximum Hourly			Fire
	Units			per Student	Industrial	Institutional	Commercial	Demand (l/s)			Demand (l/s)			Demand (l/s)			Demand
	SF	APT	ST		(ha)	(ha)	(ha)	Res.	Non-Res.	Total	Res.	Non-Res.	Total	Res.	Non-Res.	Total	(l/min)
New School						0.24			0.23	0.23		0.35	0.35		0.63	0.63	7,000
New School and Future Addition						0.29			0.28	0.28		0.42	0.42		0.76	0.76	9,000
New School, Future Addition and portables						2.01			1.95	1.95		2.93	2.93		5.28	5.28	16,000

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
School	70	l/day/student

Assume: 8 hours of operating 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

APPENDIX

C

- STORM SEWER DESIGN SHEET
- STORM DRAINAGE AREA PLAN C05
- ROOF PLAN
- RESPONSE LETTER – SITE PLAN CONTROL APPLICATION
- FLOW CONTROL ROOF DRAINAGE DECLARATION
- STORMWATER MANAGEMENT CALCULATIONS
- SANITARY SEWER DESIGN SHEET
- DWG C03 – GRADING PLAN
- DWG C04 - SERVICING PLAN
- EXISTING DSEL STORM AND SANITARY PLANS
- EXISTING DSEL SEWER DESIGN SHEET
- EXTRACT - EXISTING DESIGN BRIEF FOR SUMMERSIDE WEST – PHASE 2 MER BLEUE ROAD

STORM SEWER DESIGN SHEET

CEPEO Elementary School
675 Monardia Way
Project: CA0003850.9668
Date: May 2024

LOCATION				AREA (Ha)						RATIONAL DESIGN FLOW									PROPSOED SEWER DATA								
STREET	AREA ID	FROM	TO	C= 0.20	C= 0.35	C= 0.40	C= 0.70	C= 0.80	C= 0.90	IND 2.78AC	CUM 2.78 AC	INLET (min)	TOTAL (min)	i (2) (mm/hr)	i (5) (mm/hr)	i (100) (mm/hr)	5yr PEAK FLOW (L/s)	DESIGN FLOW (L/s)	MATERIAL PIPE	SIZE (mm)	SLOPE (%)	LENGTH (m)	CAPACITY (l/s)	VELOCITY (m/s)	TIME IN PIPE	AVAIL CAP (5yr) (L/s)	AVAIL CAP (5yr) (%)
POST-DEVELOPMENT																											
*** SEE NOTE	S20	TEMP CBMH	STMH1	0.074			4.430			8.662	8.662	10.00	10.07	76.81	104.19	178.56	902.52	902.52	CON	900	0.50	8.00	1281.38	2.01	0.07	378.86	29.57%
		STMH1	STMH3							0.000	9.004	12.06	10.47	75.06	101.79	174.41	916.56	916.56	CON	1050	0.15	117.10	1058.67	1.22	1.60	142.11	13.42%
		STMH3	EX. MH							0.000	9.043	12.06	12.57	69.69	94.42	161.66	853.82	853.82	CON	1050	0.15	37.10	1058.67	1.22	0.51	204.85	19.35%
	S-19	CB1	CBMH106	0.071					0.029	0.111	0.111	10.00	10.48	76.81	104.19	178.56	11.60	11.60	PVC DR-35	200	1.00	30.00	32.83	1.04	0.48	21.23	64.67%
	S-6	CBMH106	CBMH107	0.077					0.031	0.121	0.232	10.48	11.14	75.01	101.73	174.30	23.63	23.63	PVC DR-35	300	0.50	38.60	68.45	0.97	0.67	44.82	65.47%
	S-7	CBMH107	STMH104						0.138	0.345	0.577	11.14	11.69	72.67	98.52	168.74	56.88	56.88	PVC DR-35	300	0.80	40.40	86.58	1.22	0.55	29.70	34.31%
	S-17	CB2	MAIN	0.056		0.011			0.008	0.063	0.063	10.00	10.30	76.81	104.19	178.56	6.56	6.56	PVC DR-35	200	1.00	19.10	32.83	1.04	0.30	26.27	80.02%
	S-8	CB9	CBMH105	0.031					0.050	0.143	0.143	10.00	10.46	76.81	104.19	178.56	14.86	14.86	PVC DR-35	300	0.50	26.50	68.45	0.97	0.46	53.58	78.29%
	S-9	CB7	STMH104	0.000					0.109	0.272	0.272	10.00	10.32	76.81	104.19	178.56	28.34	28.34	PVC DR-35	200	1.00	20.20	32.83	1.04	0.32	4.49	13.69%
	S-18	CBMH108	CBMH105	0.319						0.177	0.240	10.30	10.71	75.65	102.61	175.82	24.66	24.66	PVC DR-35	450	0.50	30.80	201.80	1.27	0.40	177.14	87.78%
	S-16	CBMH105	STMH104	0.004					0.056	0.142	0.525	10.71	11.02	74.18	100.59	172.32	52.84	52.84	PVC DR-35	450	0.50	23.50	201.80	1.27	0.31	148.97	73.82%
	S-15	CB4	MAIN	0.057		0.001			0.013	0.065	0.065	10.00	10.11	76.81	104.19	178.56	6.74	6.74	PVC DR-35	200	1.00	6.60	32.83	1.04	0.11	26.09	79.48%
	S-10	CB3	MAIN	0.019					0.135	0.349	0.349	10.00	10.18	76.81	104.19	178.56	36.34	36.34	PVC DR-35	200	2.00	15.90	46.43	1.48	0.18	10.09	21.73%
		STMH104	STMH103							0.000	1.788	11.69	12.22	70.86	96.02	164.42	171.69	171.69	PVC DR-35	450	0.60	43.40	221.07	1.39	0.52	49.37	22.33%
** SEE NOTE		STMH103	CBMH102							0.000	1.788	12.22	12.49	69.23	93.79	160.56	167.69	167.69	PVC DR-35	450	0.60	23.10	221.07	1.39	0.28	53.37	24.14%
	S-14	CBMH102	CBMH101A	0.033						0.018	1.806	12.49	12.88	68.40	92.64	158.59	167.34	167.34	PVC DR-35	450	0.60	31.90	221.07	1.39	0.38	53.73	24.31%
	S-13	CBMH101A	STMH101	0.044						0.024	1.831	12.88	12.98	67.28	91.12	155.95	166.80	166.80	PVC DR-35	450	0.60	8.70	221.07	1.39	0.10	54.26	24.55%
* SEE NOTE	S-1	BLDG	STMH101						0.239	0.597	0.597	10.00	10.07	76.81	104.19	178.56	62.20	62.20	PVC DR-35	300	1.00	6.00	96.80	1.37	0.07	34.60	35.74%
		STMH101	EX. MH							0.000	2.428	12.98	13.13	66.99	90.71	155.24	220.21	220.21	PVC DR-35	450	1.00	16.00	285.39	1.79	0.15	65.18	22.84%
	S-11	CB16	CBMH5	0.069					0.020	0.088	0.088	10.00	10.34	76.81	104.19	178.56	9.17	9.17	PVC DR-35	200	2.00	30.00	46.43	1.48	0.34	37.26	80.26%
	S-3	CBMH5	MAIN	0.090					0.020	0.100	0.188	10.34	10.47	75.53	102.44	175.52	19.30	19.30	PVC DR-35	300	0.50	7.40	68.45	0.97	0.13	49.15	71.81%
	S-5	CB17	STMH3	0.024					0.010	0.038	0.038	10.00	10.07	76.81	104.19	178.56	4.00	4.00	PVC DR-35	200	2.00	6.50	46.43	1.48	0.07	42.43	91.38%
	S-2	CB18	MAIN	0.000					0.051	0.127	0.127	10.00	10.22	76.81	104.19	178.56	13.27	13.27	PVC DR-35	200	2.00	19.40	46.43	1.48	0.22	33.16	71.42%
	S-4	CB19	MAIN	0.048					0.000	0.026	0.026	10.00	10.04	76.81	104.19	178.56	2.75	2.75	PVC DR-35	200	2.00	3.60	46.43	1.48	0.04	43.68	94.07%

Definition:
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 — 2 Year
i = 1174.184/(TC+6.014)^0.816 — 5 Year
i = 1735.688/(TC+6.014)^0.820 — 100 Year

Notes:
1. Mannings coefficient (n) = 0.013

* Flow from controlled roof drains is limited to 14.52 l/s

** Flow restricted to 155 l/s

*** Flow restricted to 731 l/s

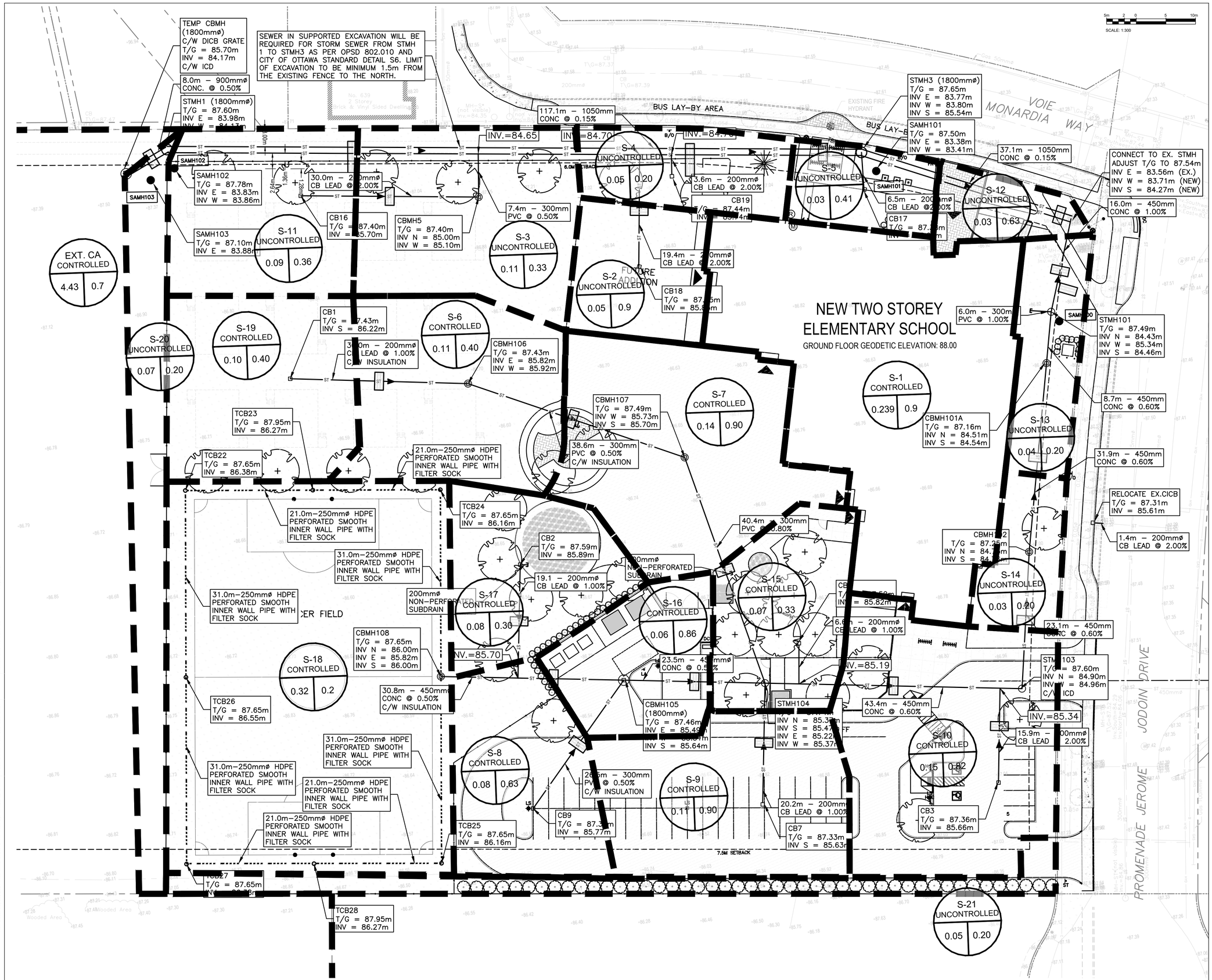
Time-of-Concentration in the Swale
FAA Equation: t (min) = 3.258 [(1.1 - C) L^0.5 / S^.33]
Where: Longest Watercourse Length, L (m). S (%)

No.	L (m)	S %	C	Tc (min)
1	98	1.50	0.50	20.00
2	83	1.30	0.50	20.00
3	76	1.00	0.40	20.00
4	51	1.00	0.40	20.00

Designed: V.T.
Checked: D.B.Y.
Dwg. Referenc C05

Revision	Date
City Submission No. 1	19/07/2023
City Submission No. 2	24/11/2023
City Submission No. 3	17/01/2024
City Submission No. 4	09/05/2024

File | **Date:** | **Sheet No:** 1 of 1



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LICENSED PROFESSIONAL ENGINEER
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CONSEIL DES ÉCOLES PUBLIQUES
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STORM DRAINAGE AREA PLAN

SCALE / ECHELLE	1:300	PROJ. No 0003850-9668	ISSUE No 8 / REV. No 0
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CHECKED BY / VERIFIE PAR	DY		
DATE	MAY 2024	ACAD FILE/FICHIER: 0003850-9668 C01-E.dwg	

D07-12-23-0102

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WATTS®	Adjustable Accutrol Weir Tag: _____	Adjustable Flow Control for Roof Drains

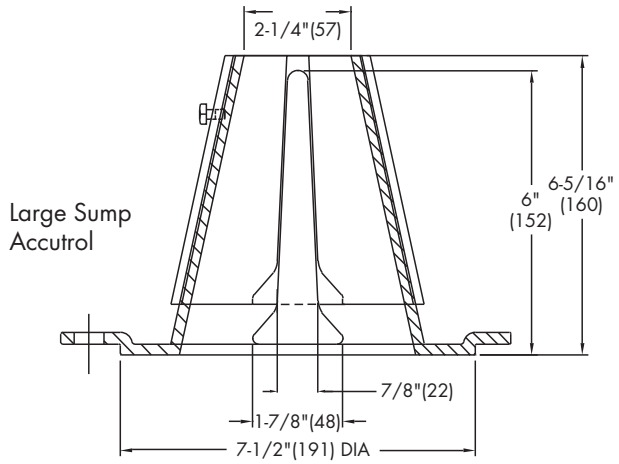
ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

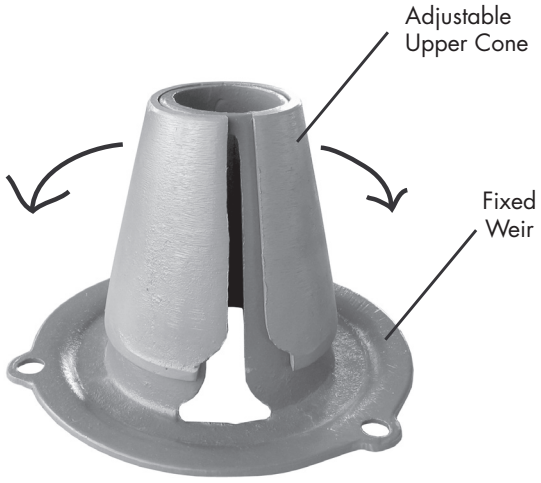
For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the 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.





1/2 Weir Opening Exposed Shown Above

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

Job Name _____ Contractor _____

Job Location _____ Contractor's P.O. No. _____

Engineer _____ Representative _____

USA: Tel: (800) 338-2581 • Fax: (828) 248-3929 • Watts.com
Canada: Tel: (905) 332-4090 • Fax: (905) 332-7068 • Watts.ca
Latin America: Tel: (52) 81-1001-8600 • Fax: (52) 81-8000-7091 • Watts.com

WATTS®
A Watts Water Technologies Company

Roof Drain	Area (m^2)	Depth (m)	Theoretical Rooftop Storage Volume (m^3)	Storage Volume (m^3)	Max Flow Rate (L/s)
1	41.6	0.05	0.7	0.6	0.32
2	40.7	0.05	0.7	0.5	0.32
3	36.6	0.06	0.7	0.6	0.66
4	35.3	0.06	0.7	0.6	0.66
5	276.6	0.15	13.8	11.1	0.95
6	282.0	0.15	14.1	11.3	0.95
7	84.2	0.11	3.1	2.5	0.82
8	112.3	0.11	4.1	3.3	0.82
9	157.0	0.15	7.9	6.3	0.95
10	177.0	0.15	8.9	7.1	0.95
11	180.5	0.15	9.0	7.2	0.95
12	230.8	0.15	11.5	9.2	0.95
13	16.8	0.075	0.4	0.3	0.71
14	102.8	0.15	5.1	4.1	0.95
15	120.6	0.14	5.6	4.5	0.91
16	245.3	0.15	12.3	9.8	0.95
17	75.8	0.11	2.8	2.2	0.82
18	91.0	0.13	3.9	3.2	0.88
Total	**2306.9**			**84.3**	**14.52**

ROOF DRAIN PER WATTS ADJUSTABLE FLOW CONTROL
FOR ROOF DRAINS OR APPROVED EQUIVALENT.

5m 2 0 5 10m
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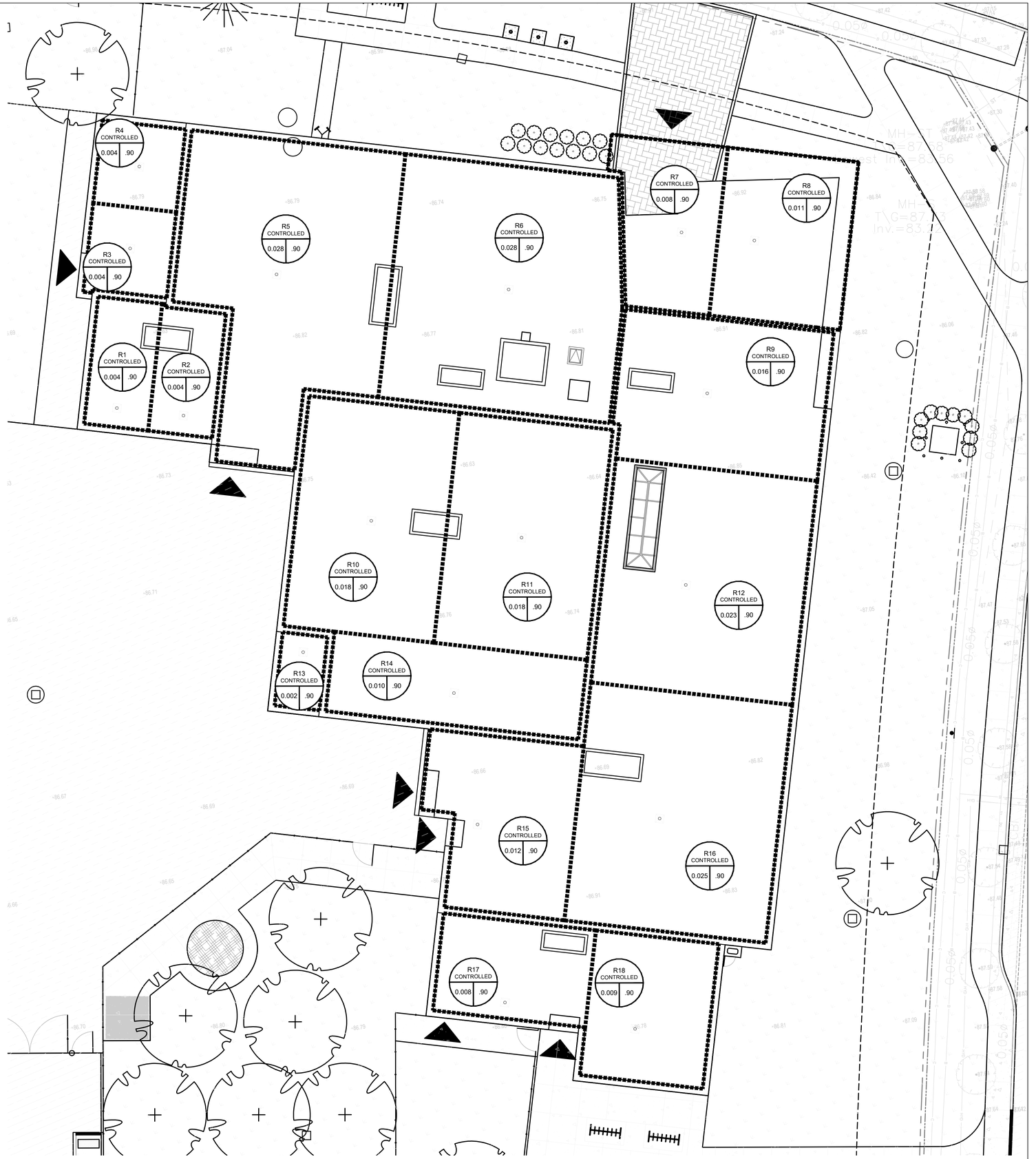

WATTS | Adjustable Accutrol Weir Tag: _____ | Adjustable Flow Control for Roof Drains

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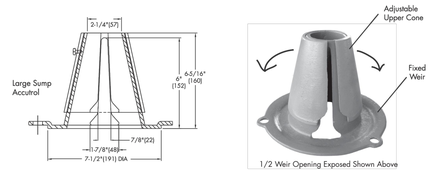

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1/2	5	10	12.5	15	17.5	20
1/4	5	10	11.25	12.5	13.75	15
Closed	5	5	5	5	5	5

Job Name _____ Contractor _____
Job Location _____ Contractor's P.O. No. _____
Engineer _____ Representative _____

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.

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ROOF DRAINAGE
AREA PLAN

SCALE / ECHELLE	1:150	PROJ. No 0003850-9668	ISSUE No 8 / REV. No 0
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DATE	MAY 2024	ACAD FILE/FICHIER: 0003850-9668 C01-8.dwg	

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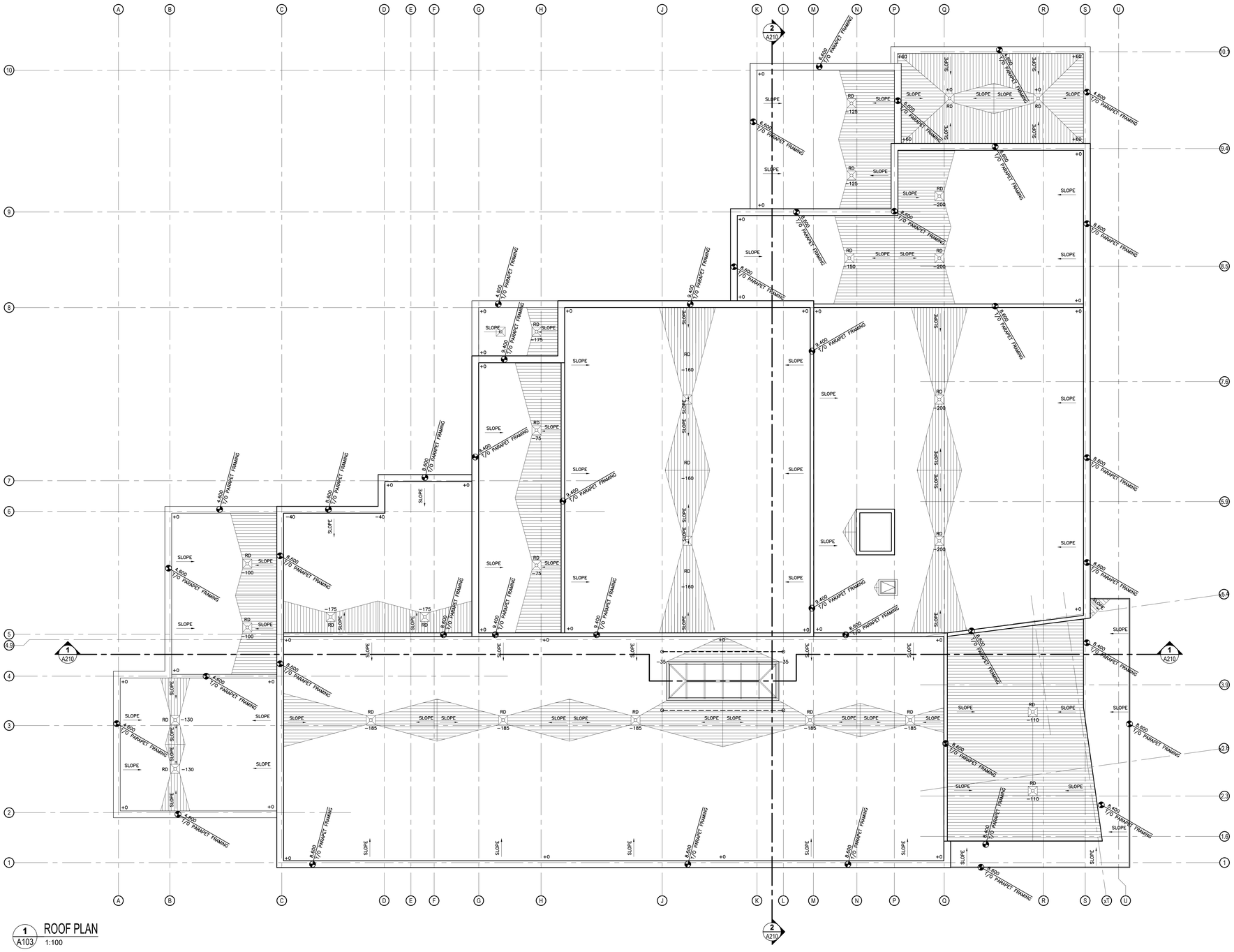

1 A103 ROOF PLAN
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ROOF PLAN

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CHECKED BY / VERIFIE PAR	XF	A103		
DATE	MAY 2023	ACAD FILE/FICHIER: 2316-A103.DWG		

CEPEO Elementary School
675 Monardia Way
Project: CA0003850.9668
Date: May 2024

TABLE 1 - Uncontrolled Flow

Post Dev run-off Coefficient "C"

			2 & 5 Year Event		100 Year Event	
Area	**Surface**	**Ha**	**"C"**	**C_{avg}**	**"C"+25%**	***C_{avg}**
Total	Asphalt	0.117	0.90	**0.39**	0.99	**0.45**
0.433	Roof	0.000	1.00		1.00	
	Grass	0.316	0.20		0.25	

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

Post Dev Free Flow
5 Year Event

Pre Dev.	**C**	**Intensity**	**Area**
5 Year	0.39	104.19	0.433
2.78CIA=	48.89		
48.90	L/S		

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

100 Year Event

Pre Dev.	**C**	**Intensity**	**Area**
100 Year	0.45	178.56	0.433
2.78CIA=	96.68		
96.70	L/S		

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

Equations:

Flow Equation

Q = 2.78 x C x I x A
Where:
C is the runoff coefficient
I is the intensity of rainfall, City of Ottawa IDF
A is the total drainage area

CEPEO Elementary School
675 Monardia Way
Project: CA0003850.9668
Date: May 2024

TABLE 2a - Total West Side Surface Storage Required for CEPEO Elementary School

Maximum Allowable Release Rate for the Site 731.00 l/s
Proposed Release rate: 731.00 l/s

Post Dev run-off Coefficient "C"

			2 & 5 Year Event		100 Year Event	
Area	Surface	Ha	"C"	C_{avg}	"C" x 1.25	$C_{100\ avg}$
Total	Asphalt	0.000	0.90	**0.70**	0.99	**0.88**
4.430	Gravel	4.430	0.70		0.88	
	Grass	0.000	0.20		0.25	

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

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

QUANTITY STORAGE REQUIREMENTS - 5 Year

4.430 = Area(ha)
0.70 = C
731.0 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^3	Storage Avail m^3
	10	**104.19**	**898.23**	**731.00**	**167.23**	**100.34**	**0.00**
	20	70.25	605.62	731.00	-125.38	-150.46	0.00
	30	53.93	464.90	731.00	-266.10	-478.98	0.00
5 YEAR	40	44.18	380.90	731.00	-350.10	-840.23	0.00
	50	37.65	324.60	731.00	-406.40	-1219.20	0.00
	60	32.94	284.00	731.00	-447.00	-1609.21	0.00

Orifice Sizing
TEMP CBMH

Event	Flow (L/s)	Head (m)	ORIFICE AREA(m^2)	SQUARE (1-side mm)	CIRC (mmØ)
5 Year	731.00	1.25	0.246	496	560
100 Year	731.00	1.25	0.246	496	560

Orifice Control Sizing
Q = 0.6 x A x (2gh)1/2
Where:
Q is the release rate in m^3/s
A is the orifice area in m^2
g is the acceleration due to gravity, $9.81 m/s^2$
h is the head of water above the orifice centre in m
d is the diameter of the orifice in m

QUANTITY STORAGE REQUIREMENTS - 100 Year

4.430 = Area(ha)
0.88 = *C
731.0 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^3	Storage Avail m^3
	10	178.56	1935.14	731.00	1204.14	722.49	0.00
	15	**142.89**	**1548.62**	**731.00**	**817.62**	**735.86**	**0.00**
100 YEAR	20	119.95	1299.97	731.00	568.97	682.76	0.00
	25	103.85	1125.45	731.00	394.45	591.67	0.00
	30	91.87	995.63	731.00	264.63	476.33	0.00
	35	82.58	894.95	731.00	163.95	344.29	0.00
	40	75.15	814.39	731.00	83.39	200.14	0.00

Orifice Invert =	84.170	m
Ponding Elevation @ 100 year=	85.700	m
Top of catchbasin elevation	85.700	m

Equations:

Flow Equation
Q = 2.78 x C x I x A
Where:
C is the runoff coefficient
I is the intensity of rainfall, City of Ottawa IDF
A is the total drainage area

CEPEO Elementary School
675 Monardia Way
Project: CA0003850.9668
Date: May 2024

TABLE 2b - Total South Side Storage Required for CEPEO Elementary School

Maximum Allowable Release Rate for the Site	331.00 l/s
Roof Drains Release Rate	14.52 l/s
Uncontrolled Release Rate	96.70 l/s
Maximum Allowable Release Rate to EX.MH:	219.78 l/s
Proposed release rate for south side:	**155.00 l/s**

Post Dev run-off Coefficient "C"

			2 & 5 Year Event		100 Year Event	
Area	Surface	Ha	"C"	C_{avg}	"C" x 1.25	$C_{100\ avg}$
Total	Asphalt	0.568	0.90	**0.53**	0.99	**0.60**
1.214	Gravel	0.013	0.70		0.88	
	Grass	0.633	0.20		0.25	

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

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

QUANTITY STORAGE REQUIREMENTS - 5 Year

1.214 = Area(ha)
0.53 = C
219.8 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^3	Storage Avail m^3
	10	**104.19**	**186.37**	**155.00**	**31.37**	**18.82**	**168.50**
	20	70.25	125.66	155.00	-29.34	-35.21	168.50
	30	53.93	96.46	155.00	-58.54	-105.37	168.50
5 YEAR	40	44.18	79.03	155.00	-75.97	-182.32	168.50
	50	37.65	67.35	155.00	-87.65	-262.95	168.50
	60	32.94	58.93	155.00	-96.07	-345.87	168.50

Orifice Sizing
STMH103

Event	Flow (L/s)	Head (m)	ORIFICE AREA(m^2)	SQUARE (1-side mm)	CIRC (mmØ)
5 Year	155.00	2.59	0.036	190	215
100 Year	155.00	2.59	0.036	190	215

Orifice Control Sizing
Q = 0.6 x A x (2gh)1/2
Where:
Q is the release rate in m^3/s
A is the orifice area in m^2
g is the acceleration due to gravity, $9.81 m/s^2$
h is the head of water above the orifice centre in m
d is the diameter of the orifice in m

QUANTITY STORAGE REQUIREMENTS - 100 Year

1.214 = Area(ha)
0.60 = *C
219.8 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^3	Storage Avail m^3
	10	**178.56**	**361.57**	**155.00**	**206.57**	**123.94**	**168.50**
	15	142.89	289.35	155.00	134.35	120.92	168.50
100 YEAR	20	119.95	242.89	155.00	87.89	105.47	168.50
	25	103.85	210.29	155.00	55.29	82.93	168.50
	30	91.87	186.03	155.00	31.03	55.85	168.50
	35	82.58	167.22	155.00	12.22	25.66	168.50
	40	75.15	152.17	155.00	-2.83	-6.80	168.50

Orifice Invert =	84.900 m
Ponding Elevation @ 100 year=	87.600 m
Top of catchbasin elevation	87.600 m

Equations:

Flow Equation
Q = 2.78 x C x I x A
Where:
C is the runoff coefficient
I is the intensity of rainfall, City of Ottawa IDF
A is the total drainage area

CEPEO Elementary School
675 Monardia Way
Project: CA0003850.9668
Date: January 2024

TABLE 1 - Proposed Roof Drains

Allowable Release Rate

Total Roof Area =	0.239	Ha
Total Roof Ponding Area =	0.239	m^2
Ponding Depth =	0.07 ~ 0.15	m
The flow rate through each Roof Drain will be =	5 ~ 25.0	gpm
	0.32 ~ 1.89	L/s
Number of Roof Drains =	18.00	
Total flow rate =	14.52	

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"

			2 & 5 Year Event		100 Year Event	
Area	Surface	Ha	"C"	C_{avg}	"C" x 1.25	$C_{100\ avg}$
Total	Asphalt		0.90	**0.90**	0.99	**0.99**
0.239	Roof	0.239	0.90		0.99	
	Grass		0.20		0.25	

*Areas are approximate based on Architectural site plan

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

QUANTITY STORAGE REQUIREMENTS - 5 Year

0.239 = Area(ha)
0.90 = 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^3)	Storage Available* (m^3)
	10	104.19	62.20	14.52	47.68	28.61	84.31
	20	**70.25**	**41.94**	**14.52**	**27.42**	**32.90**	**84.31**
5 YEAR	30	53.93	32.19	14.52	17.67	31.81	84.31
	40	44.18	26.38	14.52	11.86	28.46	84.31
	50	37.65	22.48	14.52	7.96	23.87	84.31

QUANTITY STORAGE REQUIREMENTS - 100 Year

0.239 = Area(ha)
0.99 = *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^3)	Storage Available (m^3)
	10	178.56	117.26	14.52	102.74	61.64	84.31
	20	119.95	78.77	14.52	64.25	77.10	84.31
100 YEAR	30	91.87	60.33	14.52	45.81	82.45	84.31
	40	**75.15**	**49.35**	**14.52**	**34.83**	**83.58**	**84.31**
	50	63.95	42.00	14.52	27.48	82.43	84.31
	60	55.89	36.70	14.52	22.18	79.86	84.31
	70	49.79	32.70	14.52	18.18	76.34	84.31

*Storage available is calculated using roof ponding area multiplied by the maximum ponding depth, divided by 3 for a conical pond, reduced by 20% to account for roof top equipment
**Refer to roof drains area and storage volume table on DWG C08 for details

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

SANITARY SEWER DESIGN SHEET

CEPEO Elementary School
675 Monardia Way
Project: CA0003850.9668
Date: May 2024

LOCATION				RESIDENTIAL AREA AND POPULATION												INDUSTRIAL				COMMERCIAL		INSTITUTIONAL		I+C+I	INFILTRATION			TOTAL	PIPE					
LOCATION	FROM M.H.	TO M.H.	SANITARY DRAINAGE AREA ID	INDV AREA (ha)	ACCU AREA (ha)	NUMBER OF UNITS						POPULATION		PEAK FACT.	PEAK FLOW (l/s)	GROSS AREA (ha)	DEVEL. AREA (ha)	ACCU. AREA (ha)	PEAK FACTOR	INDIV AREA (ha)	ACCU. AREA (ha)	INDIV AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	INDIV AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	LENGTH (m)	DIA. (mm)	SLOPE (%)	CAP. (FULL) (l/s)	VEL. (FULL) (m/s)	AVAIL. CAP. (%)
						SINGLES	SEMIS	TOWNS	1-BED APT.	2-BED APT.	3-BED APT.	INDIV POP.	ACCU POP.																					
BASED ON AREA																																	
New School	BLDG	SAMH100																				2.01	2.01	0.98	2.01	2.01	0.66	**1.64**	*5.10*	*200*	*1.00*	32.80	1.04	**95.00%**
New School	SAMH100	*Ex. SAMH 1*																					2.01	0.98	0.00	2.01	0.66	**1.64**	*12.60*	*200*	*2.00*	46.38	1.48	**96.46%**
Future Development	SAM103	SAMH102																				4.43	4.43	2.15	4.43	4.43	1.46	**3.61**	*4.50*	*200*	*0.35*	19.40	0.62	**81.37%**
	SAMH102	SAMH101																					4.43	2.15	0.00	4.43	1.46	**3.61**	*118.60*	*200*	*0.35*	19.40	0.62	**81.37%**
	SAMH101	*Ex. SAMH 1*																					4.43	2.15	0.00	4.43	1.46	**3.61**	*36.40*	*200*	*0.35*	19.40	0.62	**81.37%**

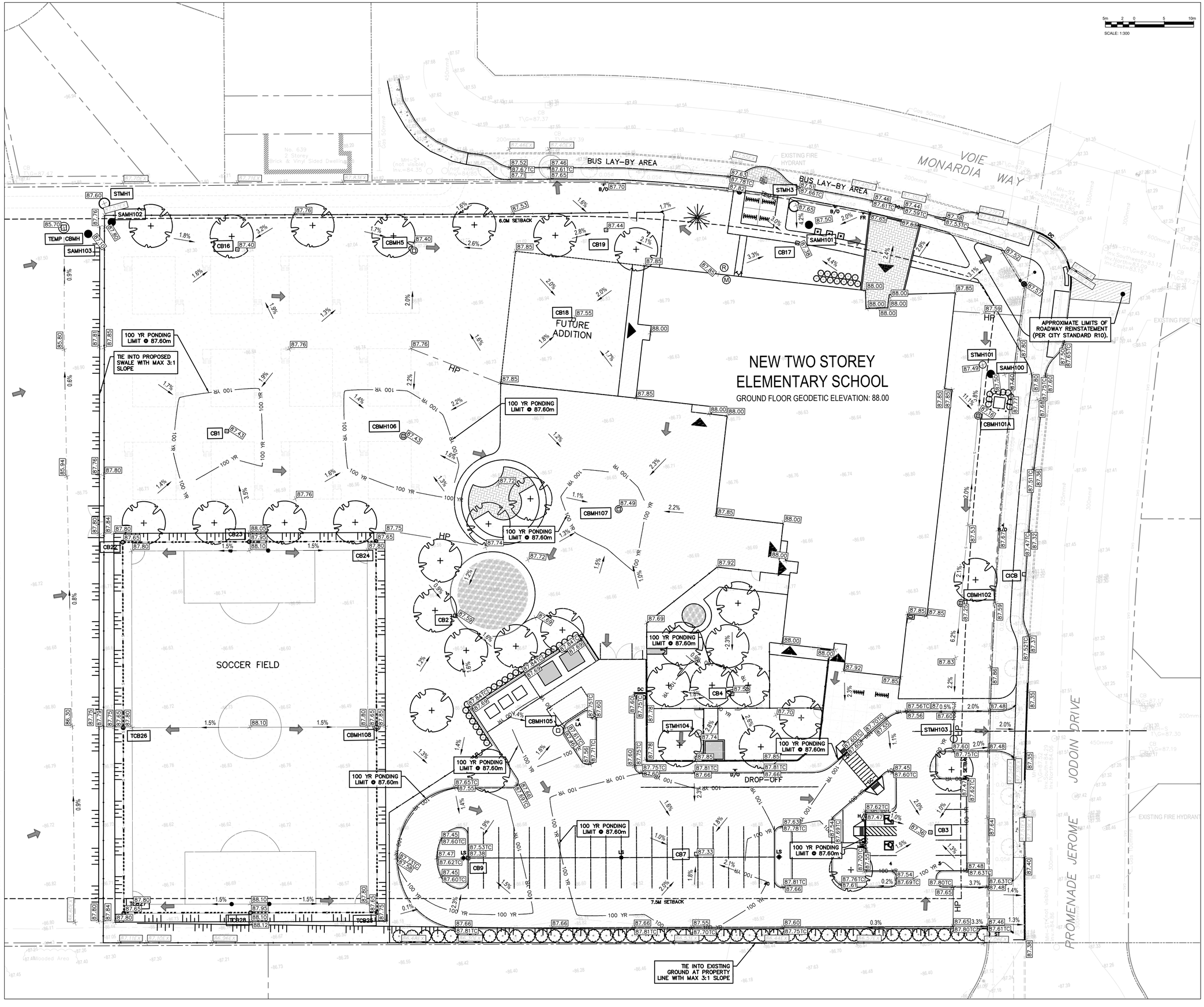
DESIGN PARAMETERS

RESIDENTIAL AVG. DAILY FLOW =	280	l/cap/day	COMMERCIAL PEAK FACTOR =	1.5	(WHEN AREA > 20%)	PEAK POPULATION FLOW, (l/s) =	P*q*M/86400	UNIT TYPE / PERSONS/UNIT
COMMERCIAL AVG. DAILY FLOW =	28,000	l/ha/day		1.0	(WHEN AREA < 20%)	PEAK EXTRANEOUS FLOW, (l/s) =	I*Ac	SINGLES 3.4
	0.324	l/ha/s				RESIDENTIAL PEAKING FACTOR, M =	1+(14/(4+P^0.5))*K	SEMI-DETACHED 2.7
INSTITUTIONAL AVG. DAILY FLOW =	28,000	l/ha/day	INSTITUTIONAL PEAK FACTOR =	1.5	(WHEN AREA > 20%)	Ac = CUMULATIVE AREA (ha)		TOWNHOMES 2.7
	0.324	l/ha/s		1.0	(WHEN AREA < 20%)	P = POPULATION (THOUSANDS)		SINGLE APT. UNIT 1.4
LIGHT INDUSTRIAL FLOW =	35,000	l/ha/day						2-BED APT. UNIT 2.1
	0.405	l/ha/s	RESIDENTIAL CORRECTION FACTOR, K =	0.80		SEWER CAPACITY, Qcap (l/s) =	1/N S^(1/2) R^(2/3) Ac	3-BED APT. UNIT 3.1
HEAVY INDUSTRIAL FLOW =	55,000	l/ha/day	MANNING N =	0.013		(MANNING'S EQUATION)		
	0.637	l/ha/s	PEAK EXTRANEOUS FLOW, I (l/s/ha) =	0.33				
INSTITUTIONAL AVG. DAILY FLOW =	70	l/student/day						

DESIGNED:	Victoria Teng, P.Eng
CHECKED:	Ding Bang Yang, P.Eng.
PROJECT:	CEPEO Elementary School
	675 Monardia Way
LOCATION:	Ottawa, Ontario
PAGE NO:	1 of 1

NO.	REVISION	DATE
1.	City Submission No.1	19/07/2023
2.	City Submission No.2	24/11/2023
3.	City Submission No.3	17/01/2024
4	City Submission No.4	09/05/2024

FILE & DWG. REFERENCE:



ISSUE NO.	REV. NO.	DATE YY/MM/DD	ISSUE
8	0	2024/05/09	ISSUED FOR RESUBMISSION TO CITY AND ADDENDUM
7	0	2024/04/23	ISSUED FOR TENDER
6	0	2024/01/17	ISSUED FOR SITE PLAN CONTROL
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4	0	2023/11/17	ISSUED FOR COORDINATION
3	0	2023/09/28	ISSUED FOR BUILDING PERMIT

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LICENSED PROFESSIONAL ENGINEER
D. B. YANG
100230568
2024/05/09
PROVINCE OF ONTARIO

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PROJECT TITLE/TITRE DU PROJET
ÉCOLE ÉLÉMENTAIRE PUBLIQUE
ORLÉANS SUD
675 MONARDIA WAY
OTTAWA, ONTARIO

CONSEIL DES ÉCOLES PUBLIQUES
DE L'EST DE L'ONTARIO
2445 BOUL. ST-LAURENT, OTTAWA, ON

DRAWING TITLE/TITRE DU DESSIN
GRADING PLAN

SCALE / ECHELLE	1:300	PROJ. No 0003850-9668	ISSUE No 8	REV. No 0
DRAWN BY / DESSINE PAR	ST-R/VT	DRAWING/DESSIN		
CHECKED BY / VERIFIE PAR	DY	C03		
DATE	MAY 2024	ACAD FILE/FICHIER: 0003850-9668 C01-fi.dwg		

D07-12-23-0102

#######

SCALE: 1:300

NEW TWO STOREY ELEMENTARY SCHOOL

GROUND FLOOR GEODETIC ELEVATION: 88.00

TEMP CBMH (1800mmø) C/W DICB GRATE T/G = 85.70m INV = 84.17m C/W ICD

8.0m – 900mmø CONC. @ 0.50%

STMH1 (1800mmø) T/G = 87.60m INV E = 83.98m INV W = 84.13m

SEWER IN SUPPORTED EXCAVATION WILL BE REQUIRED FOR STORM SEWER FROM STMH 1 TO STMH3 AS PER OPSD 802.010 AND CITY OF OTTAWA STANDARD DETAIL S6. LIMIT OF EXCAVATION TO BE MINIMUM 1.5m FROM THE EXISTING FENCE TO THE NORTH.

SAMH102 T/G = 87.78m INV E = 83.83m INV W = 83.86m

4.5m – 200mm PVC SAN @ 0.35%

SAMH103 T/G = 87.10m INV E = 83.88m

30.0m – 200mmø CB LEAD @ 2.00%

CB16 T/G = 87.40m INV = 85.70m

CBMH5 T/G = 87.40m INV N = 85.00m INV W = 85.10m

INV.=84.65

118.6m – 200mm PVC SAN @ 0.35%

7.4m – 300mm PVC @ 0.50%

INV.=84.70

117.1m – 1050mm CONC @ 0.15%

CONNECTION TO EX. 200mm W/M WITH 200X200 TEE BY CITY FORCES

200mmø V&VB

BUS LAY-BY AREA

6.0M SETBACK

3.6m – 200mmø CB LEAD @ 2.00%

CB19 T/G = 87.44m INV = 85.74m

19.4m – 200mmø CB LEAD @ 2.00%

CB18 T/G = 87.55m INV = 85.85m

FUTURE ADDITION

WATER SERVICE TO BE LOCALLY ADJUSTED PER CITY STD. W25.2 AND INSULATED ALONG THE LENGTH OF THE WATER SERVICE (WHERE COVER IS LESS THAN 2.4m) PER CITY STD. W22.

STMH3 (1800mmø) T/G = 87.65m INV E = 83.77m INV W = 83.80m INV S = 85.54m

SAMH101 T/G = 87.50m INV E = 83.38m INV W = 83.41m

6.5m – 200mmø CB LEAD @2.00%

CB17 T/G = 87.38m INV = 85.68m

CONNECT TO BUILDING WATER SERVICE (SEE MECHANICAL DWG FOR CONTINUATION). TOP OF W/M – 85.60m

CONNECT BUILDING ROOF DRAIN AND FOUNDATION DRAIN AT INV = 85.40m (REFER TO ARCHITECTURAL AND MECHANICAL DRAWING FOR CONTINUATION)

6.0m – 300mm PVC @ 1.00%

CONNECT BUILDING SANITARY SERVICE AT INV = 85.21m

5.1m – 200mm PVC SAN @ 1.00%

CBMH101A T/G = 87.16m INV N = 84.51m INV S = 84.54m

37.1m – 1050mm CONC @ 0.15%

36.4m – 200mm PVC SAN @ 0.35%

CONNECT TO EX. STMH ADJUST T/G TO 87.54m INV E = 83.56m (EX.) INV W = 83.71m (NEW) INV S = 84.27m (NEW)

16.0m – 450mm CONC @ 1.00%

200mmø V&VB

CONNECTION TO EX. 300mm W/M WITH 200X300 TEE BY CITY FORCES

CONNECT TO EX. SAMH ADJUST T/G TO 87.58m INV E = 83.22m (EX.) INV S = 84.39m (NEW) INV W = 83.25m (NEW)

12.6m – 200mm PVC SAN @ 2.00%

STMH101 T/G = 87.49m INV N = 84.43m INV W = 85.34m INV S = 84.46m

SAMH100 T/G = 87.50m INV N = 84.64m INV W = 85.11m

8.7m – 450mm CONC @ 0.60%

31.9m – 450mm CONC @ 0.60%

RELOCATE EX.CICB T/G = 87.31m INV = 85.61m

1.4m – 200mmø CB LEAD @ 2.00%

CBMH102 T/G = 87.25m INV N = 84.73m INV S = 84.76m

23.1m – 450mm CONC @ 0.60%

STMH103 T/G = 87.60m INV N = 84.90m INV W = 84.96m C/W ICD

INV.=85.34

15.9m – 200mmø CB LEAD @ 2.00%

CB1 T/G = 87.43m INV S = 86.22m

30.0m – 200mmø CB LEAD @ 1.00% C/W INSULATION

CBMH106 T/G = 87.43m INV E = 85.82m INV W = 85.92m

CBMH107 T/G = 87.49m INV W = 85.73m INV S = 85.70m

38.6m – 300mm PVC @ 0.50% C/W INSULATION

TCB23 T/G = 87.95m INV = 86.27m

TCB22 T/G = 87.65m INV = 86.38m

21.0m–250mmø HDPE PERFORATED SMOOTH INNER WALL PIPE WITH FILTER SOCK

TCB24 T/G = 87.65m INV = 86.16m

40.4m – 300mm PVC @ 0.80%

CB2 T/G = 87.59m INV = 85.89m

19.1 – 200mmø CB LEAD @ 1.00%

200mmø NON–PERFORATED SUBDRAIN

31.0m–250mmø HDPE PERFORATED SMOOTH INNER WALL PIPE WITH FILTER SOCK

CB4 T/G = 87.52m INV = 85.82m

6.6m – 200mmø CB LEAD @ 1.00%

CBMH108 T/G = 87.65m INV N = 86.00m INV E = 85.82m INV S = 86.00m

INV.=85.70

23.5m – 450mmø CONC @ 0.50%

INV.=85.19

43.4m – 450mm CONC @ 0.60%

CBMH105 (1800mmø) T/G = 87.46m INV E = 85.49m INV W = 85.51m INV S = 85.64m

STMH104 T/G = 87.74m INV N = 85.37m INV S = 85.47m INV E = 85.22m INV W = 85.37m

30.8m – 450mmø CONC @ 0.50% C/W INSULATION

TCB26 T/G = 87.65m INV = 86.55m

31.0m–250mmø HDPE PERFORATED SMOOTH INNER WALL PIPE WITH FILTER SOCK

26.5m – 300mm PVC @ 0.50% C/W INSULATION

20.2m – 200mmø CB LEAD @ 1.00%

CB9 T/G = 87.38m INV = 85.77m

CB7 T/G = 87.33m INV S = 85.63m

CB3 T/G = 87.36m INV = 85.66m

TCB25 T/G = 87.65m INV = 86.16m

7.5M SETBACK

TCB27 T/G = 87.65m INV = 86.38m

TCB28 T/G = 87.95m INV = 86.27m

VOIE MONARDIA WAY

JODOIN DRIVE

PROMENADE JEROME

EXISTING FIRE HYDRANT

ISSUE NO.	REV. NO.	DATE YY/MM/DD	ISSUE
8	0	2024/05/09	ISSUED FOR RESUBMISSION TO CITY AND ADDENDUM
7	0	2024/04/23	ISSUED FOR TENDER
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5	0	2023/11/24	ISSUED FOR SITE PLAN CONTROL
4	0	2023/11/17	ISSUED FOR COORDINATION
3	0	2023/09/28	ISSUED FOR BUILDING PERMIT

TRUE NORTH | PLAN NORTH

PROFESSIONAL ENGINEER D. B. YANG 100230568 2024/05/09 PROVINCE OF ONTARIO

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PROJECT TITLE/TITRE DU PROJET
ÉCOLE ÉLÉMENTAIRE PUBLIQUE ORLÉANS SUD
675 MONARDIA WAY
OTTAWA, ONTARIO

CONSEIL DES ÉCOLES PUBLIQUES DE L'EST DE L'ONTARIO
2445 BOUL. ST-LAURENT, OTTAWA, ON

DRAWING TITLE/TITRE DU DESSIN
SERVICING PLAN

SCALE ECHELLE	1:300	PROJ. No 0003850-9668	ISSUE No 8	REV. No 0
DRAWN BY DESSINE PAR	ST-R/VT	DRAWING/DESSIN		
CHECKED BY VERIFIE PAR	DY	C04		
DATE	MAY 2024	ACAD FILE/FICHIER: 0003850-9668 C01-8.dwg		

D07-12-23-0102

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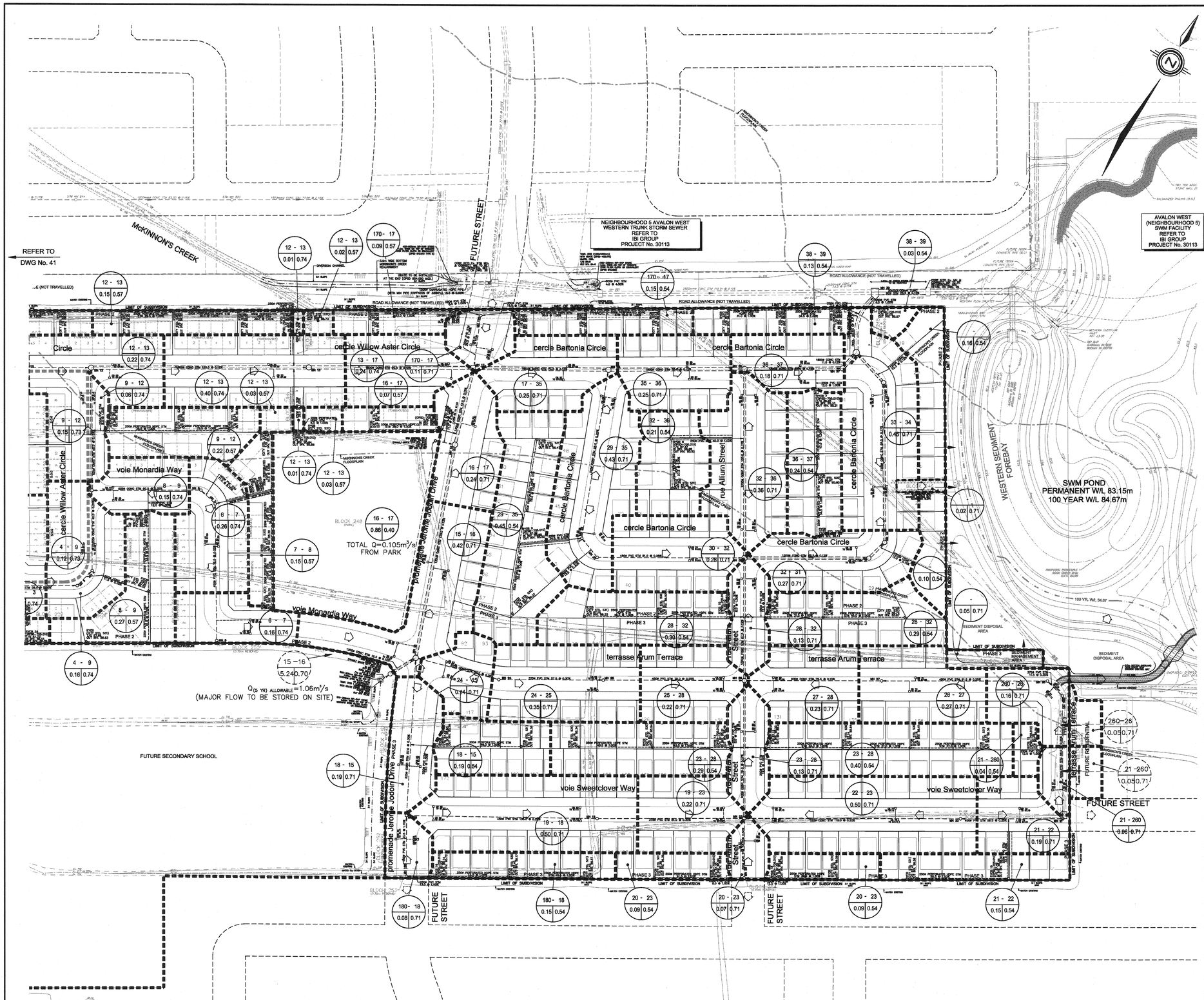
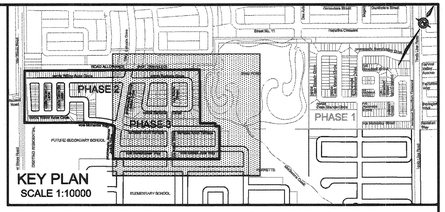




LEGEND

- STORM DRAINAGE BOUNDARY
- SUB-DRAINAGE BOUNDARY
- UPSTREAM MH TO DOWNSTREAM MH — 43 - 44
- AREA IN HECTARES — 0.37 | 0.51
- RUNOFF COEFFICIENT
- EXTERNAL 2.78AC = — 2.78AC=14.40
- EXTERNAL TIME OF CONCENTRATION — TC=14.5 MIN
- EXTERNAL BLENDED RUNOFF COEFFICIENT — C= 0.70
- UPSTREAM MH TO DOWNSTREAM MH — 21 - 23
- AREA IN OTHER PHASES IN HECTARES — 0.28 | 0.78
- RUNOFF COEFFICIENT
- STREET CATCHBASIN & LEAD
- MAINTENANCE HOLE — MH202
- CURB INLET CATCHBASIN & LEAD
- CATCHBASIN/ MAINTENANCE HOLE — CBMH201
- INTERCONNECTED CATCH BASIN & LEADS
- CAP
- OVERLAND FLOW DIRECTION
- EXTERNAL OVERLAND FLOW DIRECTION

REVIEWED BY DEVELOPMENT REVIEW BRANCH
SIGNED
DATE SEPT 19, 2016
PLAN NUMBER 17133

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 8-10-989-02. SURVEY DATED JANUARY 30, 2015 &
PROJECT No. 8-10-989-02. SURVEY DATED DECEMBER 18, 2015.
PROJECT No. 8-10-989-02. SURVEY DATED APRIL 26, 2016.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 8-10-989-00 (PHASE 2), DATED JULY 24, 2016.

4th SUBMISSION 16-08-10

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.	16-08-10	Z.L.	4th SUBMISSION
3.	16-07-29	Z.L.	3rd SUBMISSION
2.	16-07-13	Z.L.	2nd SUBMISSION
1.	16-04-29	Z.L.	1st SUBMISSION

Ottawa CITY OF OTTAWA

PROJECT No. 15-808

LICENSED PROFESSIONAL ENGINEER
Z. LI
16-08-10
PROVINCE OF ONTARIO

STORM DRAINAGE PLAN

© DSEL

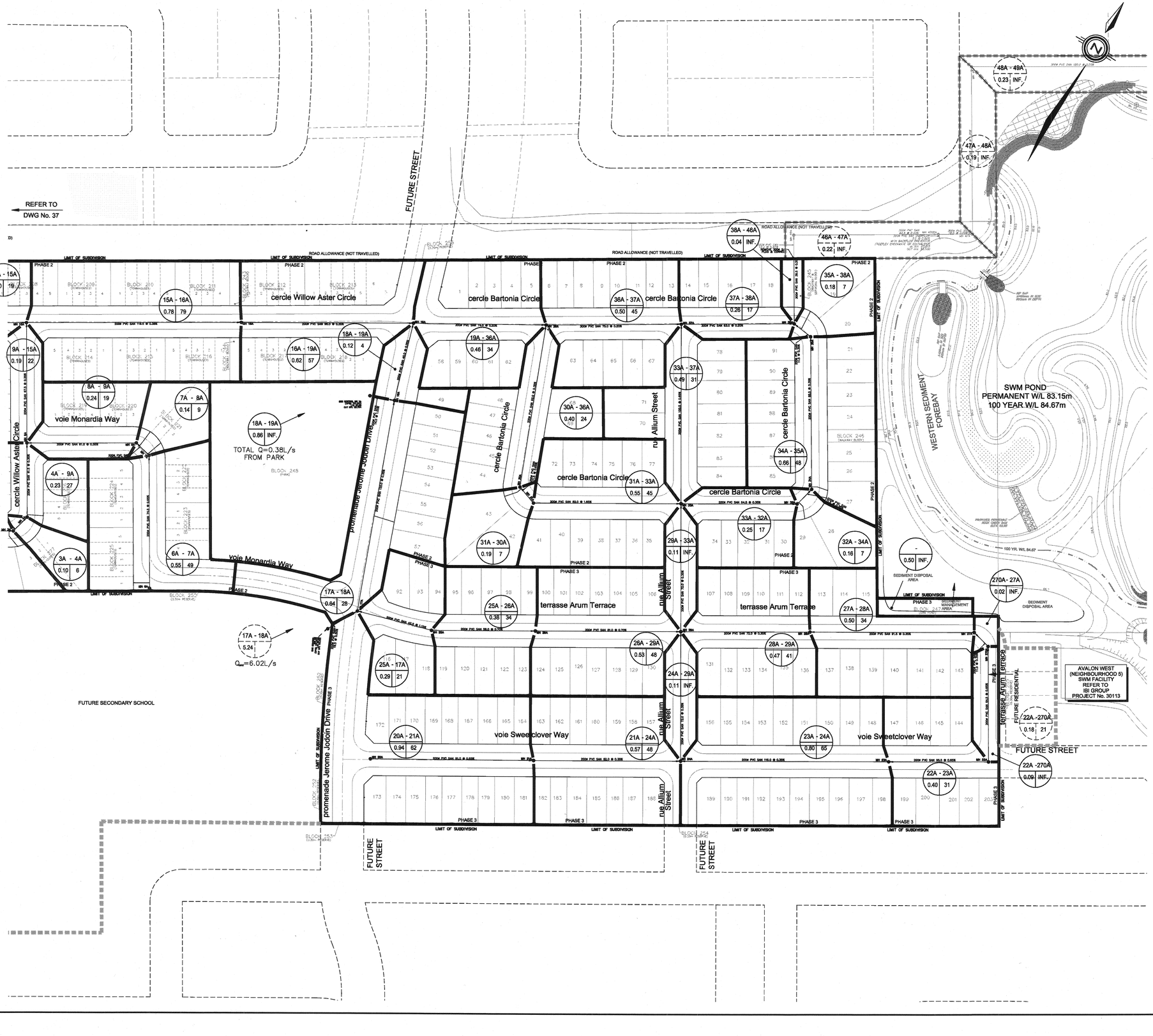
MATTAMY (MER BLEUE) LIMITED

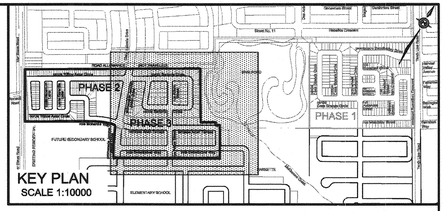
SUMMERSIDE WEST
PHASES 2 & 3

DSEL
david schaeffer engineering ltd
120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

DRAWN BY:	D.A.	CHECKED BY:	C.M.	DRAWING NO.	SHEET NO.
DESIGNED BY:	C.M.	CHECKED BY:	Z.L.		42
SCALE:	1:1000	DATE:	APRIL 2016		

CITY FILE No. D07-16-14-0011PH2 CITY PLAN No. 17133





LEGEND

- SANITARY DRAINAGE BOUNDARY
- EXTERNAL SANITARY DRAINAGE BOUNDARY
- UPSTREAM MH TO DOWNSTREAM MH — AREA IN HECTARES — POPULATION (e.g. 43A - 44A / 0.78 / 61)
- UPSTREAM MH TO DOWNSTREAM MH — AREA IN OTHER PHASES IN HECTARES — POPULATION (e.g. 43A - 44A / 0.78 / 61)
- MAINTENANCE HOLE (e.g. 200mmø SAN MH202A)
- CAP

REVIEWED BY DEVELOPMENT REVIEW BRANCH
SIGNED
DATE SEPT 19, 2016
PLAN NUMBER 17133

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 8-10-989-02. SURVEY DATED JANUARY 30, 2015 &
PROJECT No. 8-10-989-02. SURVEY DATED DECEMBER 18, 2015.
PROJECT No. 8-10-989-02. SURVEY DATED APRIL 26, 2016.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 8-10-989-00 (PHASE 2), DATED JULY 24, 2016.

4th SUBMISSION 16-08-10

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.	16-08-10	Z.L.	4th SUBMISSION
3.	16-07-29	Z.L.	3rd SUBMISSION
2.	16-07-13	Z.L.	2nd SUBMISSION
1.	16-04-29	Z.L.	1st SUBMISSION

CITY OF OTTAWA

PROFESSIONAL ENGINEER — Z. LI — 16-08-10 — PROVINCE OF ONTARIO

PROJECT No. 15-808

SANITARY DRAINAGE PLAN

© DSEL

MATTAMY (MER BLEUE) LIMITED

SUMMERSIDE WEST
PHASES 2 & 3

DSEL
david schaeffer engineering ltd
120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

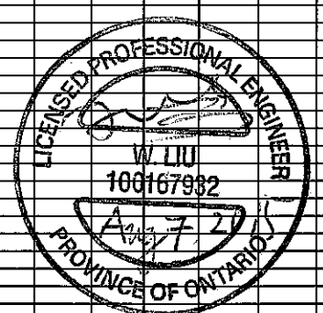
DRAWN BY:	D.A.	CHECKED BY:	C.M.	DRAWING NO.	SHEET NO.
DESIGNED BY:	C.M.	CHECKED BY:	Z.L.		38
SCALE:	1:1000	DATE:	APRIL 2016		

CITY FILE No. D07-16-14-0011PH2 CITY PLAN No. 17133

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION						COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA Nominal (mm)	DIA Actual (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)
cercle Casa Grande Circle																											
	24A	25A	0.91	21	71.4	0.91	71.4	4.00	1.16								0.91	0.91	0.255	1.42	119.5	200	200	0.65	26.44	0.05	0.84
	25A	26A	0.23	3	10.2	1.14	81.6	4.00	1.32								0.23	1.14	0.319	1.64	13.0	200	200	0.40	20.74	0.08	0.66
	26A	27A	0.43	10	34.0	1.57	115.6	4.00	1.87								0.43	1.57	0.440	2.31	71.5	200	200	0.40	20.74	0.11	0.66
	27A	28A	0.56	13	44.2	2.13	159.8	4.00	2.59								0.56	2.13	0.596	3.19	72.0	200	200	0.40	20.74	0.15	0.66
	28A	29A	0.17	2	6.8	2.30	166.6	4.00	2.70								0.17	2.30	0.644	3.34	12.5	200	200	0.40	20.74	0.16	0.66
	29A	33A	0.11	2	6.8	2.41	173.4	4.00	2.81								0.11	2.41	0.675	3.49	29.0	200	200	1.20	35.93	0.10	1.14
To BLOCK 166 (Servicing & Walkway BLOCK) , Pipe 33A - 52A						2.41	173.4																				
	30A	31A	0.89	23	78.2	0.89	78.2	4.00	1.27								0.89	0.89	0.249	1.52	113.5	200	200	1.10	34.40	0.04	1.09
	31A	32A	0.16	2	6.8	1.05	85.0	4.00	1.38								0.16	1.05	0.294	1.67	13.0	200	200	1.50	40.17	0.04	1.28
	32A	33A	0.10	2	6.8	1.15	91.8	4.00	1.49								0.10	1.15	0.322	1.81	25.5	200	200	2.00	46.38	0.04	1.48
To BLOCK 166 (Servicing & Walkway BLOCK) , Pipe 33A - 52A						1.15	91.8																				
BLOCK 166 (Servicing & Walkway BLOCK)																											
Contribution From cercle Casa Grande Circle, Pipe 29A - 33A						2.41	173.4										2.41	2.41									
Contribution From cercle Casa Grande Circle, Pipe 32A - 33A						1.15	91.8										1.15	3.56									
	33A	52A	0.04	0	0.0	3.60	265.2	4.00	4.30								0.04	3.60	1.008	5.31	42.0	200	200	0.40	20.74	0.26	0.66
To ROAD ALLOWANCE (TRUNK), Pipe 52A - 53A						3.60	265.2																				
croissant Sweetfern Crescent																											
	6A	9A	0.34	16	43.2	0.34	43.2	4.00	0.70								0.34	0.34	0.095	0.80	70.5	200	200	0.65	26.44	0.03	0.84
To rue Mandalay Street, Pipe 9A - 10A						0.34	43.2																				
	1A	7A	0.24	12	32.4	0.24	32.4	4.00	0.53								0.24	0.24	0.067	0.60	86.5	200	200	1.00	32.80	0.02	1.04
	7A	8A	0.05	1	2.7	0.29	35.1	4.00	0.57								0.05	0.29	0.081	0.65	11.0	200	200	1.00	32.80	0.02	1.04
To rue Mandalay Street, Pipe 8A - 9A						0.29	35.1																				
	1A	2A	0.10	5	13.5	0.10	13.5	4.00	0.22								0.10	0.10	0.028	0.25	38.0	200	200	1.00	32.80	0.01	1.04
	2A	3A	0.06	1	2.7	0.16	16.2	4.00	0.26								0.06	0.16	0.045	0.31	11.0	200	200	1.00	32.80	0.01	1.04
	3A	4A	0.12	4	10.8	0.28	27.0	4.00	0.44								0.12	0.28	0.078	0.52	28.5	200	200	1.00	32.80	0.02	1.04
	4A	5A	0.18	4	10.8	0.46	37.8	4.00	0.61								0.18	0.46	0.129	0.74	11.0	200	200	1.00	32.80	0.02	1.04
	5A	6A	0.32	15	40.5	0.78	78.3	4.00	1.27								0.32	0.78	0.218	1.49	62.0	200	200	0.90	31.12	0.05	0.99
To rue Astervale Street, Pipe 6A - 13A						0.78	78.3																				
rue Mandalay Street																											
Contribution From croissant Sweetfern Crescent, Pipe 7A - 8A						0.29	35.1										0.29	0.29									
	8A	9A	0.18	6	16.2	0.47	51.3	4.00	0.83								0.18	0.47	0.132	0.96	36.5	200	200	1.50	40.17	0.02	1.28
Contribution From croissant Sweetfern Crescent, Pipe 6A - 9A						0.34	43.2										0.34	0.81									
			0.03	1	2.7												0.03	0.84									
	9A	10A	0.34	9	30.6	1.18	127.8	4.00	2.07								0.34	1.18	0.330	2.40	67.5	200	200	0.40	20.74	0.12	0.66
	10A	11A	0.43	11	37.4	1.61	165.2	4.00	2.68								0.43	1.61	0.451	3.13	66.5	200	200	0.40	20.74	0.15	0.66
To promenade Sweetvalley Drive, Pipe 11A - 150A						1.61	165.2																				



DESIGN PARAMETERS

Average Daily Flow =	350	l/p/day	Industrial Peak Factor =	as per MOE Graph	
Commercial/Institution Flow =	50000	L/ha/da	Extraneous Flow =	0.280	L/s/ha
Industrial Flow =	35000	L/ha/da	Minimum Velocity =	0.60	m/s
Max Res. Peak Factor =	4.00		Manning's n =	0.013	
Commercial/Institution/Park Peak Factor =	1.50		Townhouse coeff=	2.7	
Park Average Flow =	9300	L/ha/da	Single house coeff=	3.4	

Designed: K.M.

Checked: Z.L.

Dwg. Reference: Sanitary Drainage Plan, Dwgs. No. 35 and 36

PROJECT: **SUMMERSIDE WEST PHASE 1**

LOCATION: **City of Ottawa**

File Ref: 12-609 | Date: August, 2015 | Sheet No. 1 of 3

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION						COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA Nominal (mm)	DIA Actual (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)
rue Astervale Street																											
Contribution From croissant Sweetfern Crescent, Pipe 5A - 6A						0.78	78.3										0.78	0.78									
	6A	13A	0.20	5	13.5	0.98	91.8	4.00	1.49								0.20	0.98	0.274	1.76	69.0	200	200	0.40	20.74	0.08	0.66
Contribution From rue Broadleaf Street, Pipe 12A - 13A						0.33	27.0										0.33	1.31									
	13A	15A	0.31	13	35.1	1.62	153.9	4.00	2.49								0.31	1.62	0.454	2.94	64.0	200	200	0.40	20.74	0.14	0.66
To promenade Sweetvalley Drive , Pipe 15A - 17A						1.62	153.9																				
rue Maroma Street																											
	16A	17A	0.21	12	32.4	0.21	32.4	4.00	0.53								0.21	0.21	0.059	0.59	51.0	200	200	0.65	26.44	0.02	0.84
To promenade Sweetvalley Drive , Pipe 17A - 18A						0.21	32.4																				
rue Broadleaf Street																											
	12A	14A	0.12	3	8.1	0.12	8.1	4.00	0.13								0.12	0.12	0.034	0.16	11.0	200	200	1.00	32.80	0.00	1.04
	14A	18A	0.32	13	35.1	0.44	43.2	4.00	0.70								0.32	0.44	0.123	0.82	55.5	200	200	1.00	32.80	0.03	1.04
To promenade Sweetvalley Drive , Pipe 18A - 19A						0.44	43.2																				
	12A	13A	0.33	10	27.0	0.33	27.0	4.00	0.44								0.33	0.33	0.092	0.53	62.5	200	200	1.60	41.49	0.01	1.32
To rue Astervale Street, Pipe 13A - 15A						0.33	27.0																				
promenade Sweetvalley Drive																											
	20A	21A	0.40	8	27.2	0.40	27.2	4.00	0.44								0.40	0.40	0.112	0.55	36.0	200	200	0.65	26.44	0.02	0.84
	21A	22A	0.44	9	30.6	0.84	57.8	4.00	0.94								0.44	0.84	0.235	1.18	53.0	200	200	0.40	20.74	0.06	0.66
	22A	23A	0.62	16	54.4	1.46	112.2	4.00	1.82								0.62	1.46	0.409	2.23	85.5	200	200	0.60	25.41	0.09	0.81
To BLOCK 168 (Servicing & Walkway BLOCK) , Pipe 23A - 53A						1.46	112.2																				
Contribution From South Area						15.57	1108.0										15.57	15.57									
	110A	11A	0.06	0	0.0	15.63	1108.0	3.77	16.92								0.06	15.63	4.376	21.30	33.5	375	375	0.30	96.03	0.22	0.87
Contribution From rue Mandalay Street, Pipe 10A - 11A						1.61	165.2										1.61	17.24									
	11A	150A	0.03	0	0.0	17.27	1273.2	3.73	19.24								0.03	17.27	4.836	24.08	21.0	375	375	0.30	96.03	0.25	0.87
Contribution from BLOCK 163 (PARK)																				5.00	Block 163 (Park) Splash Pad 5.0 L/s Flow Allowance						
San Control MH 1A		150A												1.19	1.19	0.19	1.19	1.19	0.333	5.52	11.0	200	200	1.00	32.80	0.17	1.04
	150A	15A	0.08	0	0.0	17.35	1273.2	3.73	19.24						1.19	0.19	0.08	18.54	5.191	29.62	49.5	375	375	0.30	96.03	0.31	0.87
Contribution From rue Astervale Street, Pipe 13A - 15A						1.62	153.9										1.62	20.16									
	15A	17A	0.09	1	3.4	19.06	1430.5	3.69	21.38						1.19	0.19	0.09	20.25	5.670	32.24	45.0	375	375	0.30	96.03	0.34	0.87
Contribution From rue Maroma Street, Pipe 16A - 17A						0.21	32.4										0.21	20.46									
	17A	18A	0.19	5	17.0	19.46	1479.9	3.68	22.06						1.19	0.19	0.19	20.65	5.782	33.03	45.0	375	375	0.30	96.03	0.34	0.87

DESIGN PARAMETERS

Average Daily Flow =	350 l/p/day	Industrial Peak Factor =	as per MOE Graph
Commercial/Institution Flow =	50000 L/ha/da	Extraneous Flow =	0.280 L/s/ha
Industrial Flow =	35000 L/ha/da	Minimum Velocity =	0.60 m/s
Max Res. Peak Factor =	4.00	Manning's n =	0.013
Commercial/Institution/Park Peak Factor =	1.50	Townhouse coeff=	2.7
Park Average Flow =	9300 L/ha/da	Single house coeff=	3.4

Designed: K.M.

Checked: Z.L.

Dwg. Reference: Sanitary Drainage Plan, Dwgs. No. 35 and 36

PROJECT: **SUMMERSIDE WEST PHASE 1**

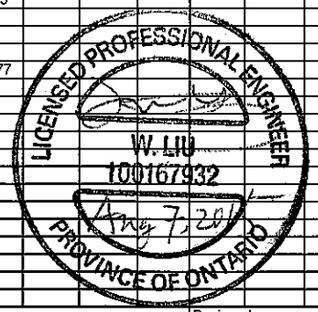
LOCATION: **City of Ottawa**

File Ref: 12-609 | Date: August, 2015 | Sheet No. 2 of 3

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION							COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA Nominal (mm)	DIA Actual (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)
Contribution From rue Broadleaf Street, Pipe 14A - 18A						0.44	43.2										0.44	21.09									
	18A	19A	0.33	6	20.4	20.23	1543.5	3.67	22.95						1.19	0.19	0.33	21.42	5.998	34.14	61.5	375	375	0.30	96.03	0.36	0.87
	19A	23A	0.11	1	3.4	20.34	1546.9	3.67	23.00						1.19	0.19	0.11	21.53	6.028	34.22	11.0	375	375	0.30	96.03	0.36	0.87
To BLOCK 168 (Servicing & Walkway BLOCK) , Pipe 23A - 53A						20.34	1546.9								1.19												
BLOCK 168 (Servicing & Walkway BLOCK)																											
Contribution From promenade Sweetvalley Drive, Pipe 22A - 23A						1.46	112.2										1.46	1.46									
Contribution From promenade Sweetvalley Drive, Pipe 19A - 23A						20.34	1546.9								1.19	0.19	21.53	22.99									
	23A	53A	0.04	0	0.0	21.84	1659.1	3.65	24.53						1.19	0.19	0.04	23.03	6.448	36.17	42.0	375	375	0.30	96.03	0.38	0.87
To ROAD ALLOWANCE (TRUNK), Pipe 53A - 54A						21.84	1659.1								1.19												
TRUNK																											
Contribution From FUTURE RESIDENTIAL AREA						9.70	679.0										9.70	9.70									
						10.55	950.0										10.55	20.25									
	Plug	46A	0.00	0	0.0	20.25	1629.0	3.65	24.09								0.00	20.25	5.670	29.76	13.0	300	300	0.20	43.25	0.69	0.61
	46A	47A	0.22	0	0.0	20.47	1629.0	3.65	24.09								0.22	20.47	5.732	29.82	102.0	300	300	0.20	43.25	0.69	0.61
	47A	48A	0.19	0	0.0	20.66	1629.0	3.65	24.09								0.19	20.66	5.785	29.88	93.5	300	300	0.20	43.25	0.69	0.61
	48A	49A	0.15	0	0.0	20.81	1629.0	3.65	24.09								0.15	20.81	5.827	29.92	78.0	300	300	0.20	43.25	0.69	0.61
	49A	50A	0.24	0	0.0	21.05	1629.0	3.65	24.09								0.24	21.05	5.894	29.98	120.0	300	300	0.20	43.25	0.69	0.61
	50A	51A	0.20	0	0.0	21.25	1629.0	3.65	24.09								0.20	21.25	5.950	30.04	98.5	300	300	0.20	43.25	0.69	0.61
	51A	510A	0.02	0	0.0	21.27	1629.0	2.00	13.20								0.02	21.27	5.956	19.16	13.0	300	300	0.20	43.25	0.44	0.61
	510A	52A	0.20	0	0.0	21.47	1629.0	3.65	24.09								0.20	21.47	6.012	30.10	101.0	300	300	0.20	43.246	0.70	0.61
Contribution From BLOCK 166 (Servicing & Walkway), Pipe 33A - 52A						3.60	265.2										3.60	25.07									
	52A	53A	0.22	0	0.0	25.29	1894.2	3.60	27.62								0.22	25.29	7.081	34.70	110.0	375	375	0.20	78.410	0.44	0.71
Contribution From BLOCK 168 (Servicing & Walkway), Pipe 23A - 53A						21.84	1659.1								1.19		23.03	48.32									
	53A	54A	0.21	0	0.0	47.34	3553.3	3.38	48.65						1.19	0.19	0.21	48.53	13.588	67.43	105.5	450	450	0.20	127.503	0.53	0.80
	54A	55A	0.18	0	0.0	47.52	3553.3	3.38	48.65						1.19	0.19	0.18	48.71	13.639	67.48	101.0	450	450	0.20	127.503	0.53	0.80
Contribution From Existing Alavon South						98.22	6997.0										98.22	146.93									
Contribution From AREA 10 (TENTH LINE)						117.93	10240.0										117.93	264.86									
Contribution From URBAN EXPANSION AREA						26.60	1785.0										26.60	291.46									
	55A	Ex. 10128	0.00	0	0.0	290.27	22575.3	2.60	237.77						1.19	0.19	0.00	291.46	81.609	324.57	19.0	675	675	0.50	594.386	0.55	1.66
To PUMPING STATION, Pipe Ex. 10128 - Pumping Station						290.27	22575.3								1.19												



DESIGN PARAMETERS

Average Daily Flow =	350	l/p/day	Industrial Peak Factor = as per MOE Graph		
Commercial/Institution Flow =	50000	L/ha/da	Extraneous Flow =	0.280	L/s/ha
Industrial Flow =	35000	L/ha/da	Minimum Velocity =	0.60	m/s
Max Res. Peak Factor =	4.00		Manning's n =	0.013	
Commercial/institution/Park Peak Factor =	1.50		Townhouse coeff=	2.7	
Park Average Flow =	9300	L/ha/da	Single house coeff=	3.4	

Designed: K.M.

Checked: Z.L.

Dwg. Reference: Sanitary Drainage Plan, Dwgs. No. 35 and 36

PROJECT: **SUMMERSIDE WEST PHASE 1**

LOCATION: **City of Ottawa**

File Ref: 12-609 | Date: August, 2015 | Sheet No. 3 of 3

IBI GROUP
400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
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ibigroup.com

STORM SEWER DESIGN SHEET
MER BLEUE Urban Expansion Area
MSS Preferred Concept
CITY OF OTTAWA
Owners Group

LOCATION				AREA (Ha)												RATIONAL DESIGN FLOW												SEWER DATA								
STREET	AREA ID	FROM	TO	C= 0.20	C= 0.30	C= 0.40	C= 0.54	C= 0.57	C= 0.70	C= 0.71	C= 0.73	C= 0.74	C= 0.70	C= 0.76	C= 0.80	IND 2.78AC	CUM 2.78AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (2) (mm/hr)	i (5) (mm/hr)	i (100) (mm/hr)	2yr PEAK FLOW (L/s)	5yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm) DIA	W	H	SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (2yr) (L/s)	(%)
OUTLET #4: New Central SWM Pond (North)																																				
MER BLEUE ROAD	4000A/B	MH4000	MH4001										0.40	1.46		3.86	3.86	13.67	0.78	14.45	65.10	88.12	150.76	251.47				251.47	626.37	44.75	900			0.11	0.954	374.90	59.85%
		MH4001	MH4002													0.00	3.86	14.45	0.77	15.22	63.09	85.37	146.02	243.73				243.73	626.37	43.86	900			0.11	0.954	382.64	61.09%
		MH4002	MH4010													0.00	3.86	15.22	0.79	16.01	61.26	82.86	141.69	236.64				236.64	626.37	45.49	900			0.11	0.954	389.73	62.22%
	4010	MH4010	MH4011										0.52			1.01	4.88	16.01	0.70	16.71	59.47	80.42	137.48	289.94				289.94	775.41	42.33	975			0.11	1.006	485.47	62.61%
		MH4011	MH4012													0.00	4.88	16.71	1.51	18.22	58.00	78.40	133.99	282.73				282.73	775.41	91.15	975			0.11	1.006	492.68	63.54%
	4110	MH4110	MH4111										0.92			1.79	1.79	10.00	1.79	11.79	76.81	104.19	178.56	137.51				137.51	239.68	88.06	600			0.14	0.821	102.17	42.63%
		MH4111	MH4112													0.00	1.79	11.79	0.14	11.93	70.56	95.61	163.72	126.33				126.33	239.68	6.82	600			0.14	0.821	113.35	47.29%
		MH4112	MH4113													0.00	1.79	11.93	0.77	12.69	70.13	95.01	162.68	125.55				125.55	239.68	37.74	600			0.14	0.821	114.13	47.62%
		MH4113	MH4121													0.00	1.79	12.69	0.84	13.53	67.81	91.84	157.20	121.41				121.41	239.68	41.15	600			0.14	0.821	118.27	49.34%
	4120	MH4120	MH4121										0.79			1.54	1.54	10.00	2.39	12.39	76.81	104.19	178.56	118.08				118.08	93.27	117.46	375			0.26	0.818	-24.81	-26.60%
	4121	MH4121	MH4131										0.31			0.60	3.93	13.53	1.44	14.97	65.48	88.64	151.67	257.39				257.39	496.66	77.96	825			0.11	0.900	239.27	48.18%
	4130	MH4130	MH4131										0.78			1.52	1.52	10.00	2.40	12.40	76.81	104.19	178.56	116.58				116.58	93.27	117.68	375			0.26	0.818	-23.31	-25.00%
	4132	MH4132	MH4131										0.12			0.23	0.23	10.00	1.45	11.45	76.81	104.19	178.56	17.94				17.94	93.27	71.02	375			0.26	0.818	75.33	80.77%
	4131	MH4131	MH4140										0.33			0.64	6.32	14.97	1.19	16.16	61.84	83.65	143.06	391.09				391.09	775.41	72.00	975			0.11	1.006	384.32	49.56%
	4100	MH4100	MH4101										0.10			0.19	0.19	10.00	1.19	11.19	76.81	104.19	178.56	14.95				14.95	496.66	64.10	825			0.11	0.900	481.72	96.99%
	4107	MH4107	MH4101										0.40			0.78	0.78	10.00	1.67	11.67	76.81	104.19	178.56	59.79				59.79	93.27	82.00	375			0.26	0.818	33.48	35.90%
	4101	MH4101	MH4102										1.16			2.26	3.23	11.67	0.80	12.47	70.94	96.13	164.61	229.15				229.15	496.66	43.26	825			0.11	0.900	267.52	53.86%
		MH4102	MH4103													0.00	3.23	12.47	0.90	13.37	68.46	92.73	158.73	221.15				221.15	496.66	48.72	825			0.11	0.900	275.51	55.47%
		MH4103	MH4104													0.00	3.23	13.37	0.99	14.37	65.89	89.21	152.65	212.86				212.86	496.66	53.73	825			0.11	0.900	283.81	57.14%
		MH4104	MH4105													0.00	3.23	14.37	0.63	15.00	63.30	85.65	146.51	204.48				204.48	496.66	33.89	825			0.11	0.900	292.19	58.83%
		MH4105	MH4106													0.00	3.23	15.00	0.86	15.85	61.78	83.57	142.91	199.56				199.56	496.66	46.18	825			0.11	0.900	297.11	59.82%
		MH4106	MH4140													0.00	3.23	15.85	1.69	17.54	59.83	80.90	138.32	193.27				193.27	496.66	91.06	825			0.11	0.900	303.40	61.09%
		MH4140	MH4012													0.00	9.55	17.54	0.19	17.73	56.36	76.16	130.14	538.53				538.53	944.84	12.08	1050			0.11	1.057	406.31	43.00%
		MH4012	MH4020													0.00	14.43	17.73	1.08	18.81	56.00	75.67	129.28	808.05				808.05	1,846.76	80.96	1350			0.11	1.250	1038.71	56.24%
	4200	MH4200	MH4201										0.80			1.56	1.56	10.00	2.08	12.08	76.81	104.19	178.56	119.57				119.57	385.20	105.31	750			0.11	0.845	265.63	68.96%
	4201	MH4201	MH4202										1.06			2.06	3.62	12.08	2.13	14.21	69.65	94.36	161.56	252.11				252.11	385.20	107.95	750			0.11	0.845	133.09	34.55%
		MH4202	MH4204													0.00	3.62	14.21	1.44	15.64	63.70	86.21	147.47	230.57				230.57	496.66	77.56	825			0.11	0.900	266.09	53.58%
		MH4204	MH4220													0.00	3.62	15.64	0.38	16.02	60.29	81.53	139.40	218.21				218.21	496.66	20.27	825			0.11	0.900	278.45	56.06%
	4212	MH4212	MH4213										0.99			1.93	1.93	10.00	0.73	10.73	76.81	104.19	178.56	147.97				147.97	303.78	35.90	675			0.12	0.822	155.81	51.29%
		MH4213	MH4220													0.00	1.93	10.73	0.53	11.26	74.12	100.50	172.17	142.79				142.79	303.78	26.26	675			0.12	0.822	160.98	52.99%
SCHOOL	4221	MH4221	MH4220												2.54	5.65	5.65	13.00	0.35	13.35	66.93	90.63	155.11	378.08				378.08	626.37	20.00	900			0.11	0.954	248.29	39.64%
	4220	MH4220	MH4222										1.01			1.97	13.16	16.02	0.83	16.85	59.46	80.40	137.45	782.54				782.54	1,348.97	57.40	1200			0.11	1.155	566.43	41.99%
		MH4222	MH4223													0.00	13.16	16.85	0.48	17.32	57.73	78.03	133.35	759.69				759.69	1,348.97	32.99	1200			0.11	1.155	589.28	43.68%
		MH4223	MH4224													0.00	13.16	17.32	0.54	17.87	56.78	76.73	131.12	747.22				747.22	1,348.97	37.75	1200			0.11	1.155	601.75	44.61%
		MH4224	MH4020													0.00	13.16	17.87	1.22	19.09	55.73	75.31	128.66	733.50				733.50	1,348.97	84.51	1200			0.11	1.155	615.48	45.63%
	4020	MH4020	MH4021										0.92			1.79	29.38	19.09	1.11	20.20	53.55	72.32	123.52	1,573.28				1,573.28	3,153.62	95.11	1650			0.11	1.429	1580.34	50.11%
		MH4021	MH4022													0.00	29.38	20.20	1.11	21.31	51.72	69.82	119.21	1,519.50				1,519.50	3,153.62	95.12	1650			0.11	1.429	1634.12	51.82%
PARK	4332	MH4023	MH4022		2.04											1.70	1.70	13.33	0.38	13.71	66.01	89.37	152.93	112.31				112.31	184.99	19.00	525			0.17	0.828	72.68	39.29%
	4022	MH4022	MH4024										0.89			1.73	32.81	21.31	0.83	22.14	50.02	67.51	115.23	1,641.40				1,641.40	3,153.62	71.11	1650			0.11	1.429	1512.23	47.95%
		MH4024	MH4025													0.00	32.81	22.14	0.85	22.99	48.83	65.89	112.44	1,602.37				1,602.37	3,153.62	72.87	1650			0.11	1.429	1551.26	49.19%
	4025	MH4025	MH4026										1.07			2.08	34.90	22.99	0.52	23.50	47.68	64.31	109.73	1,663.73				1,663.73	3,153.62	44.40	1650			0.11	1.429	1489.89	47.24%
		MH4026	MH4030													0.00	34.90	23.50	0.66	24.16	47.00	63.39	108.15	1,640.19				1,640.19	3,153.62	56.54	1650			0.11	1.429	1513.43	47.99%
	4030	MH4030	MH4031										1.13			2.20	37.10	24.16	0.51	24.68	46.17	62.27	106.20	1,712.81				1,712.81	3,153.62	44.06	1650			0.11	1.429	1440.82	45.69%
		MH4031	MH4032													0.00	37.10	24.68	0.57	25.25	45.55	61.42	104.74	1,689.67				1,689.67	3,153.62	49.23	1650			0.11	1.429	1463.95	46.42%
		MH4032	MH4040													0.00	37.10	25.25	0.67	25.92	44.87	60.50	103.16	1,664.64				1,664.64	3,977.22	60.53	1800			0.11	1.514	2312.58	58.15%
	4400	MH4400	MH4401										1.93			3.76	3.76	10.00	1.24	11.24	76.81	104.19	178.56	288.46				288.46	496.66	67.15	825			0.11	0.900	208.20	41.92%
		MH4401	MH4402													0.00	3.76	11.24	0.23	11.47	72.34	98.05	167.94	271.69				271.69	496.66	12.40	825			0.11	0.900	224.98	45.30%
		MH4402	MH4403													0.00	3.76	11.47	1.58	13.05	71.58	97.01	166.13	268.83				268.83	496.66	85.28	825			0.11	0.900	227.84	45.87%
		MH4403	MH4404													0.00	3.76	13.05	1.58	14.63	66.78	90.43	154.76	250.82				250.82	496.66	85.28	825			0.11	0.900	245.84	49.50%
	4404	MH4404	MH4405										2.20			4.28	8.04	14.63	1.54	16.17	62.65	84.77	144.98	503.53				503.53	775.41	92.82	975			0.11	1.006	271.88	35.06%
		MH4405	MH4406													0.00	8.04	16.17	0.69	16.86	59.14	79.96	136.69	475.30				475.30	775.41	41.72	975			0.11	1.006	300.11	38.70%
		MH4406	MH4407													0.00	8.04	16.86	0.50	17.36	57.70	77.99	133.29	463.73				463.73	775.41	29.92	975			0.11	1.006	311.68	40.20%
		MH4407	MH4408													0.00	8.04	17.36	0.72	18.08	56.71	76.65	130.97	455.81				455.81	775.41	43.43	975			0.11	1.006	319.60	41.22%
		MH4408	MH4440													0.00	8.04	18.08	0.60	18.68	55.35	74.78	127.76	444.84				444.84	775.41	36.52	975			0.11	1.006	330.57	42.63%

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION				RESIDENTIAL AREA AND POPULATION						COMM		INSTIT		PARK		C+I+I	INFILTRATION			TOTAL	PIPE						
STREET		FROM M.H.	TO M.H.	AREA (ha)	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
TRUNK 2																											
				0.30	33	0.30	33			0.21	0.21						0.51	0.51									
				0.42	47	0.72	80				0.21						0.42	0.93									
				0.13	15	0.85	95				0.21						0.13	1.06									
				0.31	35	1.16	130				0.21						0.31	1.37									
		550A	551A	1.19	131	2.35	261	3.28	2.78		0.21					0.10	1.19	2.56	0.84	3.72	90.0	200	0.35	19.40	0.19	0.62	0.47
				0.42	47	2.77	308				0.21						0.42	2.98									
				1.04	115	3.81	423				0.21						1.04	4.02									
		551A	552A	0.12	14	3.93	437	3.20	4.54		0.21					0.10	0.12	4.14	1.37	6.00	51.5	200	0.35	19.40	0.31	0.62	0.54
				0.19	21	4.12	458				0.21						0.19	4.33									
				0.66	73	4.78	531				0.21						0.66	4.99									
		552A	553A	1.04	115	5.82	646	3.13	6.56		0.21					0.10	1.04	6.03	1.99	8.65	79.5	250	0.25	29.73	0.29	0.61	0.52
				1.42	157	7.24	803				0.21						1.42	7.45									
		553A	567A	0.10	11	7.34	814	3.08	8.14		0.21					0.10	0.10	7.55	2.49	10.73	40.5	250	0.25	29.73	0.36	0.61	0.56
				0.20	22	7.54	836	2.00	5.42	3.62	3.83						3.82	11.37									
		567A	571A	1.56	172	9.10	1008	3.04	9.92		3.83					1.86	1.56	12.93	4.27	16.05	86.0	300	0.20	43.25	0.37	0.61	0.57
				0.51	34	9.61	1042				3.83						0.51	13.44									
		571A	572A	1.36	150	10.97	1192	3.00	11.59		3.83	2.60	2.60			3.13	3.96	17.40	5.74	20.46	115.0	300	0.20	43.25	0.47	0.61	0.60
		572A	573A	0.64	42	11.61	1234	2.99	11.96		3.83		2.60	1.87	1.87	3.43	2.51	19.91	6.57	21.96	115.0	300	0.20	43.25	0.51	0.61	0.61
		573A	588A	0.65	43	12.26	1277	2.98	12.35		3.83		2.60		1.87	3.43	0.65	20.56	6.78	22.56	115.0	300	0.20	43.25	0.52	0.61	0.62
TRUNK 2 (BY OTHERS)				0.54	60	12.80	1337				3.83		2.60		1.87		0.54	21.10									
		588A	589A	6.80	442	19.60	1779	2.90	16.72		3.83		2.60		1.87	3.43	6.80	27.90	9.21	29.35	59.5	300	0.20	43.25	0.68	0.61	0.66
		589A	590A	1.45	95	21.05	1874	2.89	17.53		3.83		2.60		1.87	3.43	1.45	29.35	9.69	30.64	49.5	375	0.15	67.91	0.45	0.61	0.60
		590A (B.O.)	591A (B.O.)	0.66	43	21.71	1917	2.88	17.89		3.83		2.60		1.87	3.43	0.66	30.01	9.90	31.22	79.0	375	0.15	67.91	0.46	0.61	0.60
		591A (B.O.)	592A (B.O.)	0.37	25	22.08	1942	2.88	18.10		3.83		2.60		1.87	3.43	0.37	30.38	10.03	31.56	48.0	375	0.15	67.91	0.46	0.61	0.60
				0.30	20	22.38	1962				3.83		2.60	6.31	8.18		6.61	36.99									
		592A (B.O.)	593A (B.O.)	12.50	813	34.88	2775	2.78	24.97		3.83		2.60		8.18	4.45	12.50	49.49	16.33	45.75	75.0	450	0.12	98.76	0.46	0.62	0.61
				0.14	10	35.02	2785				3.83		2.60		8.18		0.14	49.63									
				0.81	53	35.83	2838				3.83		2.60		8.18		0.81	50.44									
		593A (B.O.)	594A (B.O.)	1.94	127	37.77	2965	2.76	26.50		3.83		2.60		8.18	4.45	1.94	52.38	17.29	48.23	36.5	450	0.12	98.76	0.49	0.62	0.62
		594A	595A	0.12	8	37.89	2973	2.76	26.56		3.83		2.60		8.18	4.45	0.12	52.50	17.33	48.33	71.0	450	0.12	98.76	0.49	0.62	0.62
				0.68	45	38.57	3018				3.83		2.60	0.59	8.77		1.27	53.77									
				0.72	47	39.29	3065				3.83		2.60		8.77		0.72	54.49									
				1.23	80	40.52	3145				3.83		2.60		8.77		1.23	55.72									
				1.42	93	41.94	3238				3.83		2.60		8.77		1.42	57.14									
		595A (B.O.)	596A (B.O.)	2.73	178	44.67	3416	2.72	30.06		3.83		2.60		8.77	4.54	2.73	59.87	19.76	54.36	109.5	450	0.12	98.76	0.55	0.62	0.63
		596A (B.O.)	597A (B.O.)	0.26	17	44.93	3433	2.71	30.19		3.83		2.60		8.77	4.54	0.26	60.13	19.84	54.57	36.0	450	0.12	98.76	0.55	0.62	0.64
		597A (B.O.)	598A (B.O.)	0.48	32	45.41	3465	2.71	30.44		3.83		2.60		8.77	4.54	0.48	60.61	20.00	54.98	72.5	450	0.12	98.76	0.56	0.62	0.64
				0.10	7	45.51	3472				3.83		2.60		8.77		0.10	60.71									
		598A (B.O.)	599A (B.O.)	0.89	58	46.40	3530	2.71	30.95		3.83		2.60		8.77	4.54	0.89	61.60	20.33	55.82	58.0	675	0.10	265.82	0.21	0.74	0.59
		599A (B.O.)	600A (B.O.)	0.02	2	46.42	3532	2.70	30.96		3.83		2.60		8.77	4.54	0.02	61.62	20.33	55.84	10.5	675	0.10	265.82	0.21	0.74	0.59
		600A (B.O.)	601A (B.O.)	1.87	122	48.29	3654	2.69	31.91		3.83		2.60		8.77	4.54	1.87	63.49	20.95	57.40	114.0	675	0.10	265.82	0.22	0.74	0.59
		601A (B.O.)	8000A (B.O.)			48.29	3654	2.69	31.91		3.83		2.60		8.77	4.54	0.00	63.49	20.95	57.40	81.5	675	0.10	265.82	0.22	0.74	0.59
TRUNK 4 (BY OTHERS)																											
Contribution from Pump Station (via Forcemain)																		Fixed Flow =		147.37							
		8000A (B.O.)	8001A (B.O.)	3.17	349	51.46	4003	2.67	34.59		3.83		2.60		8.77	4.54	3.17	66.66	22.00	208.50	111.50	750	0.10	352.05	0.59	0.80	0.83
		8001A (B.O.)	8002A (B.O.)			51.46	4003	2.67	34.59		3.83		2.60		8.77	4.54	0.00	66.66	22.00	208.50	111.50	750	0.10	352.05	0.59	0.80	0.83
		8002A (B.O.)	8003A (B.O.)			51.46	4003	2.67	34.59		3.83		2.60		8.77	4.54	0.00	66.66	22.00	208.50	111.50	750	0.10	352.05	0.59	0.80	0.83
		8003A (B.O.)	8004A (B.O.)			51.46	4003	2.67	34.59		3.83		2.60		8.77	4.54	0.00	66.66	22.00	208.50	111.50	750	0.10	352.05	0.59	0.80	0.83
		8004A (B.O.)	8005A (B.O.)			51.46	4003	2.67	34.59		3.83		2.60		8.77	4.54	0.00	66.66	22.00	208.50	111.50	750	0.10	352.05	0.59	0.80	0.83
		8005A (B.O.)	8006A (B.O.)			51.46	4003	2.67	34.59		3.83		2.60		8.77	4.54	0.00	66.66	22.00	208.50	111.50	750	0.10	352.05	0.59	0.80	0.83
		8006A (B.O.)	8007A (B.O.)			51.46	4003	2.67	34.59		3.83		2.60		8.77	4.54	0.00	66.66	22.00	208.50	117.98	750	0.10	352.05	0.59	0.80	0.83
		8007A (B.O.)	514A (B.O.)			51.46	4003	2.67	34.59		3.83		2.60		8.77	4.54	0.00	66.66	22.00	208.50	370.07	750	0.10	352.05	0.59	0.80	0.83
		514A (B.O.)	8008A (B.O.)			51.46	4003	2.67	34.59		3.83		2.60		8.77	4.54	0.00	66.66	22.00	208.50	81.06	750	0.10	352.05	0.59	0.80	0.83
						51.46	4003											66.66		208.50							
TRUNK 1B																											
		403A	404A	0.50	55	0.50	55	3.44	0.61								0.50	0.50	0.17	0.78	118.0	200	0.34	19.12	0.04	0.61	0.29
		404A	405A	0.11	13	0.61	68	3.43	0.76								0.11	0.61	0.20	0.96	62.0	200	0.34	19.12	0.05	0.61	0.31
		405A	406A	0.04	5	0.65	73	3.42	0.81								0.04	0.65	0.21	1.02	11.0	200	0.34	19.12	0.05	0.61	0.32
		406A	412A	0.45	50	1.10	123	3.37	1.35								0.45	1.10	0.36	1.71	108.0	200	0.34	19.12	0.09	0.61	0.37
				1.99	219	3.09	342										1.99	3.09									
		412A	413A	0.31	21	3.40	363	3.23	3.80								0.31	3.40	1.12	4.93	71.0	200	0.34	19.12	0.26	0.61	0.51
		413A	428A	1.48	97	4.88	460	3.19	4.76								1.48	4.88	1.61	6.37	76.0	200	0.34	19.12	0.33	0.61	0.55
		428A	*Ex. 110A*	4.73	308	9.61	768	3.10	7.71					0.46	0.46	0.07	5.19	10.07	3.32	11.10	38.5	200	0.34	19.12	0.58	0.61	0.63
		Ex. 110A	*Ex. 11A*	0.06		9.67	768	3.10	7.71						0.46	0.07	0.06	10.13	3.34	11.12	*33.5*	*375*	*0.30*	96.03	0.12	0.87	0.57
						9.67	768											10.13		11.12							

DESIGN PARAMETERS

Park Flow =	9300	L/ha/day	Industrial Peak Factor = as per MOE Graph	
Average Daily Flow =	280	L/p/day	Extraneous Flow =	0.330 L/s/ha
Comm/Inst Flow =	28000	L/ha/day	Minimum Velocity =	0.600 m/s
Industrial Flow =	35000	L/ha/day	Manning's n = (Conc)	0.013 (Pvc) 0.013
Max Res. Peak Factor =	4.00		Townhouse coeff=	110 PPHa
Commercial/Inst./Park Peak Factor =	1.50		Single house coeff=	65 PPHa

Designed: P.P

Checked: C.M.K.

Dwg. Reference: Sanitary Servicing Plan, Figure No. 4

PROJECT: **Summerside West Phases 4, 5 & 6**

LOCATION: **City of Ottawa**

File Ref: 15-766

Date: November, 2018

Sheet No. 1 of 1

766_San5.xlsx

The sanitary flows from the park (Block 247) can be estimated based on the information contained in City of Ottawa Sewer Design Guidelines, Appendix 4-A - Daily Sewage Flow For Various Establishments. The amount of people estimated for this park is 75 people/acre and the estimated flow is 50 L/s/day. This calculates to be a peak flow of 9300 L/ha/day. For the park block with an area of 0.80 ha, the peak population flow is 0.35 L/s when applying a peaking factor of 1.5. An allowance of 5.0 L/s has been provided should the City want to incorporate a splash pad in the park. The sanitary drainage area plans and design sheets for Summerside West – Phase 1 are enclosed in ***Appendix C***.

A sanitary trunk was designed and constructed with Phase 1 through the existing SWM facility block to service Phase 2.

4.2.1 External Flows

There is a future school block southwest of Phase 2, which is serviced through the site. The flows are estimated as follows:

- Area = 5.61 ha
- Institutional average flow = 50,000 L/ha/day
- Institutional peak factor = 1.5
- Peak population flow = 4.87 L/s
- Peak infiltratrion flow = 1.57 L/s
- Total peak flow from future school block = 6.44 L/s

Refer to the sanitary drainage area plans and design sheets, enclosed in ***Appendix C***.

4.2.2 Design Flows

The peak sanitary flows from Summerside West – Phase 2 are as follows:

- Residential peak flow = 22.89 L/s;
- Park peak flow = 5.35 L/s (includes splash pad allowance); and
- School peak flow = 6.44 L/s

The total estimated sanitary peak flow from Summerside West – Phase 2 is 34.68 L/s. There is sufficient capacity in the downstream sanitary sewers and Tenth Line Road pump station.

4.2.3 Sanitary Overflow

Please note that the sanitary hydraulic grade line (HGL) was evaluated for pump station failure in accordance with the ***Sanitary Overflow Analysis for the Bisson Lands / Mer Bleue Road (Sanitary Overflow Analysis)*** by DSEL and JFSA dated August 2015.

- The design includes sanitary servicing for a school block, which is located south west of Phase 2. This deviates from the ***Bisson MSS*** as this south west corner was anticipated to be residential future lands.

- A new sanitary overflow has been added to the Avalon West SWM Pond to provide HGL protection for the Phase 2 lands.

- The peak flow from Summerside West, Phase 2 is calculated to be 34.68 L/s, which is in general conformance with the ***Bisson MSS*** estimate of 29.74 L/s. The additional flows can be attributed to the inclusion of the school block through the Phase 2 lands.

4.4 Wastewater Servicing Conclusion

Summerside West - Phase 2 outlets to the existing Tenth Line Road Pump Station via a trunk sewer which extends across the pond block and the Untraveled Road Allowance.

The sanitary sewers have been designed in accordance with City of Ottawa standards. The sanitary design generally conforms to the ***Bisson MSS*** with the exception being the sanitary servicing for the school block in the southwest corner, which was expected to be future residential. The sanitary sewers in Phase 1 were designed to accept flows from Summerside West – Phase 2.

The MOECC approved capacity of the Tenth Line Pump Station and downstream sewer system will support Summerside West – Phase 2.

5.0 STORMWATER CONVEYANCE

5.1 Existing Conditions

Summerside West – Phase 2 is located within the McKinnon's Creek Watershed and is subject to regulations of the South Nation Conservation (SNC).

Further details of the existing conditions of the overall site are contained in the ***Bisson MSS*** and ***Bisson ESMP***.

There is an existing interim SWM facility at the location of the ultimate SWM facility, on a block dedicated to the City of Ottawa by Mattamy Homes. The ultimate SWM facility is approved and currently under construction.

5.2 Minor System

Summerside West – Phase 2 will be serviced by a conventional storm sewer system which will be designed in accordance with City of Ottawa standards. The storm sewers

are sized using a 5-year return frequency and City of Ottawa IDF curves. The storm sewers outlet to the Avalon West (N5) SWM facility, which is currently under construction.

The inlet to the pond is depicted on ***Figure 5***.

Table 7 summarizes the relevant ***City Standards*** employed in the design of the proposed storm sewer system referred to as the minor system.

Table 7: Storm Sewer Design Criteria

Design Parameter	Value
Intensity Duration Frequency Curve (IDF) 5-year storm event. A = 998.071 B = 6.053 C = 0.814	$i = \frac{A}{(t_c + B)^C}$
Initial Time of Concentration	10 minutes
Rational Method	$Q = CiA$
Runoff coefficient for paved and roof areas	0.9
Runoff coefficient for landscaped areas	0.2
Storm sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Minimum Sewer Size	250 mm diameter
Minimum Manning's 'n'	0.013
Service Lateral Size	100 mm dia PVC SDR 28 with a minimum slope of 1.0%
Minimum Depth of Cover	2.0 m from crown of sewer to grade
Minimum Full Flowing Velocity	0.8 m/s
Maximum Full Flowing Velocity	3.0 m/s
Extracted from Sections 5 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012.	

The paved area and grassed area runoff coefficients of 0.9 and 0.2 were used to calculate average runoff coefficients that were applied across the site. The runoff coefficient calculations are enclosed in ***Appendix E*** for reference. The runoff calculations have been completed for Summerside West – Phase 2 to determine the average for each lot type.

The storm system has been designed with capacity to service the school block, which is 5.61 ha in size. The service is restricted to the 5-year flow in the storm system and the major system is designed to be controlled on-site, in conformance with the Avalon West SWM Facility design.

The storm drainage area plan and storm sewer design sheet are enclosed in ***Appendix F*** for reference. The peak flow based on the Rational Method from the trunk sewer to the SWM Facility is 2889 L/s.

Inlet control devices (ICDs) will be employed to ensure that storm flows entering the minor system are limited to the 5-year peak storm flow. A detailed hydraulic grade line (HGL) analysis has been completed and underside of footing elevations have been set at a minimum of 0.30 m above the 100-year HGL elevation. The HGL results are presented in the ***Stormwater Management Report for Summerside West Phase 2*** (J.F. Sabourin and Associates, April 2016).

It is noted that based on the Rational Method storm design sheets in ***Appendix F***, that some of the storm pipes are oversized for the 5-year storm. These storm sewers were oversized based on recommendations from JFSA to try to keep the HGL flat. This situation has occurred due to the pond level and the presence of submerged pipes.

5.2.1 McKinnon's Creek Diversion

As described in the ***Bisson MSS*** and ***Bisson ESMP***, McKinnon's Creek currently bisects the Summerside West Lands and there is flood plain associated as illustrated in the City of Ottawa's Zoning By-law. This section of McKinnon's Creek previously conveyed a 103.4 ha area, west of Mer Bleue Road, which was known as "Area 1". Ultimately, based on past studies, Area 1 will be diverted from the McKinnon's Creek watershed to the Mud Creek watershed. In the interim, McKinnon's Creek will be diverted along the Untraveled Road Allowance, discharging to the existing Western Trunk Sewer to the Avalon West (N5) SWM Pond. It has been confirmed that there is capacity in the Avalon West SWM Pond for the Area 1 flows.

Past studies have been completed to update regulatory floodplain levels, including a diversion of flows west of Mer Bleue Road (Area 1) from the McKinnon's Creek watershed to the Mud Creek watershed.

The details are of the plans to divert McKinnon's Creek are shown on the following drawings, which are enclosed in ***Appendix G***:

- Sheet 34 – Erosion and Sediment Control Plan Stage 1 (DSEL, Rev 1, 16-04-29); and
- Sheet 36 – Erosion and Sediment Control Plan Details (DSEL, Rev 1, 16-04-29)

As shown on Sheet 34, McKinnon's Creek will remain from Mer Bleue through the Minto Lands to the Untraveled Road Allowance (Existing McKinnon's Creek M-1). As previously noted, Minto and their consultants will have to confirm how the flows will be conveyed through or around the future Neighbourhood 5 development. McKinnon's

Creek cannot be completely redirected through the Untraveled Road Allowance due to presence of existing homes fronting Mer Bleue.

McKinnon's Creek will be redirected at the Untraveled Road Allowance via cut-off swales (Cut-Off Swale M-2 and Cut-Off Swale M-3) and discharge to a 1500 mm diameter culvert.

Flows captured are captured based on the existing ditches described above. It is proposed that Existing Ditch G-2 is conveyed across the construction access road via a culvert. The flows from Existing Ditch G-2 and G-1 converge and are conveyed to the Untraveled Road Allowance and discharge to a 1500 mm diameter culvert, which then discharges to the existing Western Storm Trunk at MH 690 to the Avalon West SWM Facility.

Refer to ***Appendix G*** for peak design flow and capacity calculations for the diversion ditches and proposed culvert. The peak 100-year flow to ditches M-2 and M-3 (McKinnon's Creek Realignment) is 5.288 m^3/s. The proposed ditches are 3.0 m wide, 1.5 m deep with 3:1 side slopes. The slope ranges from 0.38% to 0.43% providing capacities of 5.306 m^3/s and 5.368 m^3/s. This indicates that there is capacity in diversion channel M-2 and M-3 for the 100-year peak design flow.

The peak 5- year flows to the ditches to the north, along Gerry Lalonde Drive, are all conveyed through the existing and proposed ditches, which converge with the McKinnon's Creek diversion. Please refer to ***Appendix G*** for peak design flow and capacity calculations for existing ditches G-1, G-2, regraded ditch G-3 and proposed ditches G-4, G-5 and G-6.

The 1500 mm diameter CSP culvert has been designed conservatively to convey the 100-year peak flow from McKinnon's Creek. The capacity of the 1500 mm diameter pipe at 2.50% slope is 6054 L/s, which has capacity to convey the 100-year peak flow of 5288 L/s. Please refer to ***Appendix G*** for the Rational Method calculation sheet for the culvert.

5.2.2 Temporary Flow Controls

As per City of Ottawa Sewer Design Guidelines, temporary flow controls are required for both the sanitary and storm sewer during construction.

Temporary circular vertical orifices are proposed at the outlets of the storm MH 38 and sanitary MH 38A during construction. The details of the temporary flow controls for MH 38 and 38A are provided on Sheet 26 – Plan and Profile of Block 244. The details of the temporary flow controls for MH. The temporary flow control calculation sheets are enclosed in ***Appendix H*** for reference.

Before the temporary orifice controls are removed, the inlet control devices must be installed and certified in individual subdivision catch basins as per the approved design. The temporary orifice controls must be removed before any upstream homes are occupied.

5.3 Stormwater Management Design Criteria

5.3.1 Quality Control Targets

As established in the ***Bisson MSS*** (DSEL, November 2014), stormwater management (SWM) criteria have been established on the basis of aquatic habitat protection and the sensitivity of receiving watercourses. Based on the recommendations of background studies, post development stormwater runoff will generally be required to meet the following objectives:

- SWM facilities tributary to McKinnon's Creek are to be designed to provide an 'Enhanced' Level of Protection or 80% total suspended solids (TSS) removal in accordance with the MOE Stormwater Management Planning and Design Manual (March, 2003).

5.3.2 Quantity Control Targets

Based on recommendations of background studies, post development stormwater runoff will generally be required to meet the following objectives:

- Flow control is required in McKinnon's Creek at "Point C" as per the Avalon West (Neighbourhood 5) SWM Facility Design (south of Wall Road at the McKinnon's Creek sub-watershed boundary.

5.4 Stormwater Management

The stormwater management design is further detailed in the ***Stormwater Management Report for Summerside West Phase 2*** report by J.F. Sabourin and Associates, April 2016).

The Avalon West (Neighbourhood 5) Stormwater Management Facility has been designed by IBI Group. Refer to the **Avalon *West (Neighbourhood 5), Stormwater Management Facility Design*** by IBI Group, October 2013. The subsequent ***Update to Avalon West Stormwater Management Facility Design Report: Proposed Mattamy Bisson Lands*** by IBI Group, November 2014 established that the facility is sufficiently sized to service all of Summerside West, including the Phase 2 lands.

The modelling of the SWM facility and associated drainage area was updated by IBI Group in April 2016. Among other changes, IBI Group reduced the 103.4 ha rural area to 14.43 ha to reflect the future diversion of a portion of the drainage area to Mud Creek;

however, the DSEL engineering submission package estimates a more conservative reduction to 22.73 ha and the model was revised accordingly for the present study. It is expected, based on current approval status, that the external flows will be reduced prior to the completion of Summerside West – Phase 2.

The full update to the Avalon West SWM Facility Modeling is described in the ***Phase 2 SWM Report.***

5.4.1 Quality Control Analysis

As described in the ***Phase 2 SWM Report***, there is capacity in the Avalon West (N5) SWM Facility for Summerside West – Phase 2. It has been demonstrated that the Avalon West (N5) SWM facility adheres to the 2003 MOE SWM Design Guidelines and meets the design objectives, including quality and quantity control objectives for Summerside West – Phase 2.

As noted in the ***Phase 2 SWM Report,*** the overall urban lands (including Summerside West) tributary to the Avalon West (N5) SWM Facility is 214.18 ha at 58% imperviousness. For the purposes of calculating required quality control volumes, 103.4 ha of undeveloped Area 1 (rural area which will ultimately be developed and redirected to the Mud Creek watershed) and the 11.96 ha pond block were excluded.

The required permanent pool and active quality control volumes required to provide enhanced protection (80% long term total suspended solids removal) for this area are 33,626 m^3 and 8,593 m^3, respectively.

As per the November 2014 *Avalon West Report Update*, the proposed facility provides sufficient permanent pool and active quality control volumes of 110,786 m^3 and 23,213 m^3, respectively. Further characteristics of the Avalon West (N5) SWM Facility are detailed ***Avalon West Report***.

During the course of detailed design of the proposed development, it was determined that the proposed 15.95 ha Summerside West – Phase 2 development has an average imperviousness of 54%.

5.4.2 Quantity Control Analysis

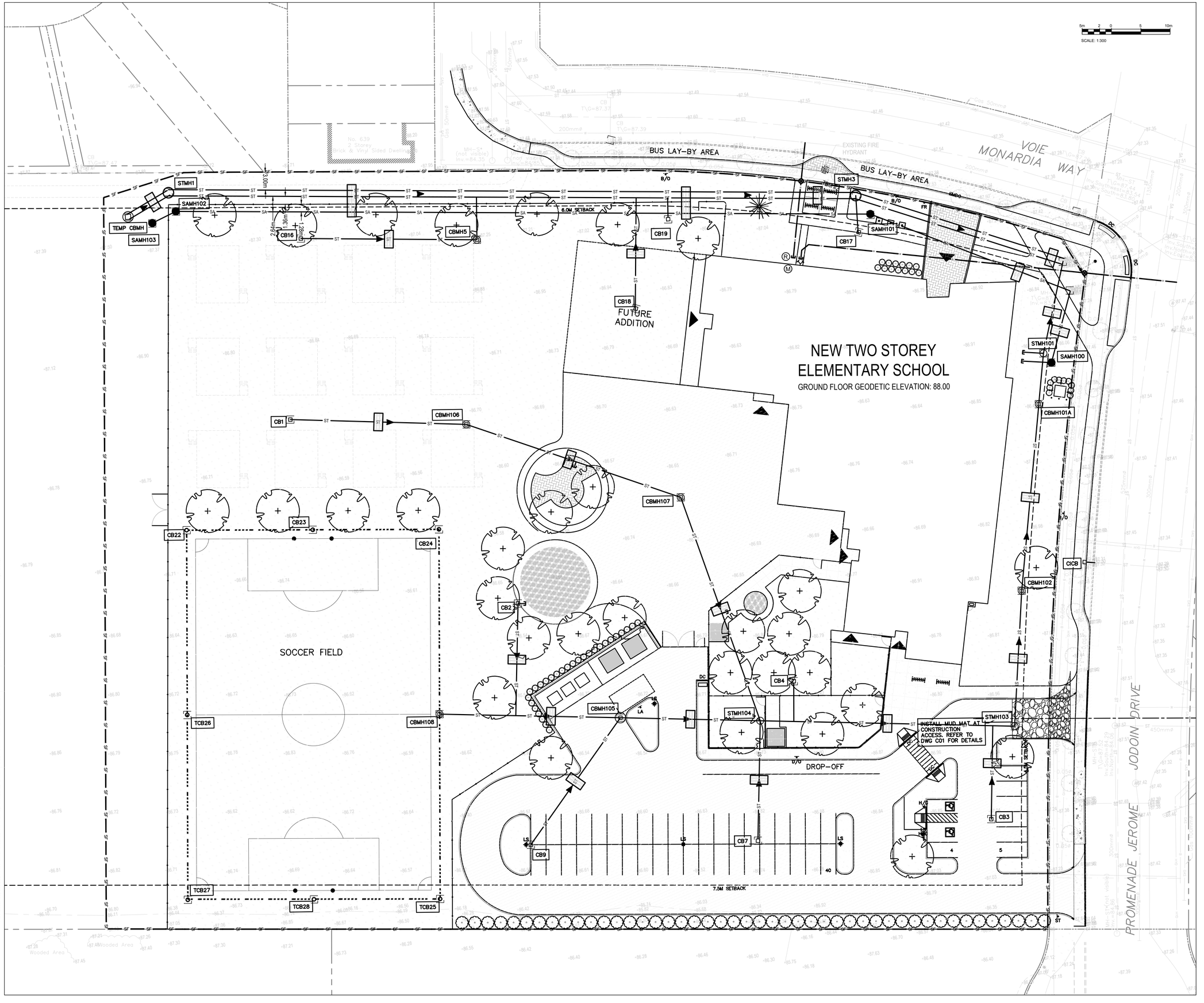
As noted in the ***Bisson MSS*** (DSEL, November 2014), the future post-development peak flows on McKinnon's Creek should be controlled to pre-development peak flows at Control Point C.

Refer to the ***Phase 2 SWM Report*** for a complete quantity control analysis. A comparison of the flows on McKinnon's Creek under pre-development, interim and post –development conditions is presented in ***Table 8***.

APPENDIX

D

- EROSION AND SEDIMENTATION CONTROL PLAN C07



ISSUE NO.	REV. NO.	DATE YY/MM/DD	ISSUE
8	0	2024/05/09	ISSUED FOR RESUBMISSION TO CITY AND ADDENDUM
7	0	2024/04/23	ISSUED FOR TENDER
6	0	2024/01/17	ISSUED FOR SITE PLAN CONTROL
5	0	2023/11/24	ISSUED FOR SITE PLAN CONTROL
4	0	2023/11/17	ISSUED FOR COORDINATION
3	0	2023/09/28	ISSUED FOR BUILDING PERMIT

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D. B. YANG
100230568
2024/05/09
PROVINCE OF ONTARIO

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APPENDIX

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- SUBMISSION CHECK LIST