Site Servicing and Stormwater Management Report for Site Plan Control Application

ESP Pierre-de-Blois
Auditorium Addition
1310 Chapman Mills Dr.,
Ottawa, Ontario

Prepared for

Conseil des écoles publiques de l'Est de l'Ontario (CEPEO)

LRL File No.: 220512

January 16, 2026

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1 INTRODUCTION

LRL Associates Ltd. (LRL) has been retained by the Conseil des écoles publiques de L'Est de l'Ontario (CEPEO) to prepare a site servicing and stormwater management report in support of their site plan control application for a proposed new auditorium addition & site alterations to the existing Public High School, ESP Pierre-de-Blois, in Barrhaven.

This report aims to review the adequacy of the current site's water, sanitary and stormwater networks, and determine whether any changes / upgrades are required to accommodate the expected increase in demand & flow from the new addition & site changes.

This report is to be read in conjunction with the Site Servicing and Stormwater Management Report prepared for the initial school development, titled "Proposed New Public High School Barrhaven Center" prepared by LRL Engineering dated September 5th, 2019.

This report has been prepared in consideration of the survey carried out by Annis O'Sullivan Vollebekk Ltd. (AOV) in August 2017 and the master servicing study "Harmony Stage 1 Development for Minto Communites" prepared by J.L. Richards & Associates Limited and dated July 2017. Topographical data for the developed high school site has been pulled from high school development site grading as-builts, as prepared by LRL Engineering.

Should there be any discrepancies in the existing infrastructure, which may relate to the site servicing considerations, LRL should be advised in order to review the report recommendations. This report should be read in conjunction with the grading and drainage, site servicing, and stormwater management plans prepared by LRL.

2 SITE DESCRIPTION

The subject property is located within the urban boundary of the City of Ottawa, south of Strandherd Drive and west of Chapman Mills Drive, and has a total area of approximately 4.86 ha.

The site is currently occupied by the recently constructed Pierre-de-Blois High School, a three-storey slab-on-grade institutional building with an approximate footprint of 6,770 m². Site access is provided from Chapman Mills Drive. In addition to the school building, the site includes an internal access roadway, parking areas, playgrounds, a soccer field, and an area reserved for future portable classrooms. Prior to the development of the high school, the property consisted of vacant land.

Any site modifications associated with the proposed auditorium expansion will be designed and constructed by others in accordance with applicable municipal design criteria, while maintaining consistency with the master servicing design for the Harmony Stage 1 development, as

prepared by J.L. Richards & Associates Limited as part of the Harmony Stage 1 Development for Minto Communities, dated July 2017.

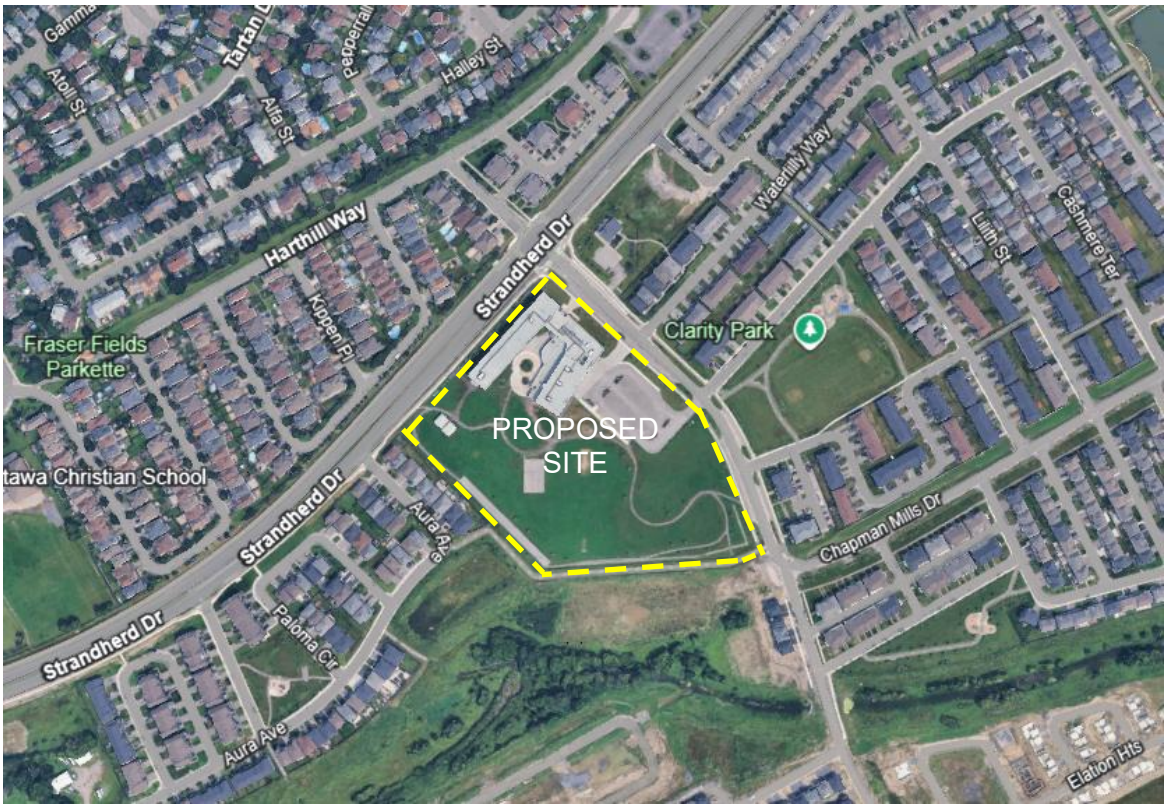


Figure 1 - Aerial view of the location of the proposed development (Google Earth)

3 SCOPE OF WORK

As per applicable guidelines, the scope of work includes the following:

Water services

- Calculate the anticipated domestic water demands under average and peak flow conditions, as well as the fire protection requirements, for the existing school and proposed addition.
- Review adequacy of the current on-site water distribution network based on new calculated water demand & fire flow.

Sanitary services

- Calculate the peak flow rates for the existing school and proposed addition.
- Review adequacy of the current on-site sanitary sewer based on new peak flow rates.

Stormwater management

- Calculate roof drain and storage requirements for the new auditorium addition, and determine feasibility of tying them to the exsiting on-site stormwater network
- Review adequacy of the current on-site stormwater network based on changes, including; pipe sizing, flow control, storage requirements and quality treatment based on new tributary drainage areas.

4 WATER SUPPLY AND FIRE PROTECTION

4.1 Existing Water Supply Services

Based on the civil drawing prepared for the school development, municipal as-builts and sewer and watermain mapping; it can be observed the current school building is serviced by an on-site 200mm dia. watermain. The watermain, branching off the north face of the school, follows the existing site parking lot and driveway to connect to the Chapman Mills Dr. 300mm diameter watermain, approximately 240m southeast of the Strandherd / Chapman Mills intersection.

There are currently four (4) municipal fire hydrants located within proximity to the site, along Chapman Mills Drive and within the residential subdivision east of the institutional lot. Two private fire hydrants have been installed on-site, branching off the private 200mm watermain to ensure compliance with OBC, placing a hydrant within 90m of the principal entrances, and within 45m of the building's Fire Department Connection. The hydrants are located just off the southwest corner, and the southwest corners, of the school.

Refer to C401 – Servicing Plan for the existing municipal infrastructure design.

4.2 Water Supply Demand

With the proposed building expansion comes an expected increase in water demand and fire protection requirements. Domestic water demand and fire protection demand requirements for the proposed building, including the new addition, are to be calculated to ensure adequacy of the existing on-site water distribution network.

The institutional water demand, based on the anticipated population, was determined using Table 4.2 of the City of Ottawa *Water Distribution Design Guidelines*. The water supply requirements for the institutional development have been calculated using the following formulas:

Where:
q = average water consumption (L/capita/day)
P = design population (# of students)
M = Peak factor

The existing building including the auditorium expansion is expected to have a student population of 700. *Table 4.2 of the City of Ottawa Water Distribution Design Guidelines* was used to determine the unit rate and peaking factors of the institutional space. A water consumption rate of **70L/student/day**, a Maximum Daily Demand Factor of **1.5** and a Maximum Hourly Demand Factor of **1.8** were used to perform the water demand calculations.

Using the peak factors, the anticipated institutional demands were calculated as follows:

- Average daily domestic water demand is **0.57 L/s,**
- Maximum daily demand is **0.85 L/s,** and
- Maximum hourly demand is **1.53 L/s.**

Detailed water demand calculations can be found in Appendix A.

4.3 Fire Flow Requirements

The estimated fire flow for the proposed buildings was calculated in accordance with *ISTB-2018-02,* evaluated in accordance with the Fire Underwriters Survey (FUS) design methodology. The following parameters were provided by the Architect:

- Type of construction – Non-combustible construction (Type II)
- Occupancy type – Limited Combustible
- Sprinkler Protection – None

The estimated fire flow demand was estimated to be **13,000 L/min (216.7 L/s),** see Appendix A for calculation details.

The calculated estimated fire flow is consistent with the value previously determined for the Pierre-de-Blois School development project.

Considering the calculated peak water demands of the existing building & auditorium, and noting the fire flow is consistent with the previous development, the existing private watermain is considered adequate to accommodate both existing and proposed water and fire flow demands.

4.4 Fire Hydrant Coverage & Aggregate Flow

There are four (4) existing fire hydrants in proximity to the proposed lot, and two (2) private hydrants within the site, that are available to contribute to the required fire flow demands.

Table 1 below summarizes the aggregate fire flow of the contributing hydrants in proximity to the proposed development, and private hydrants based on Table 18.5.4.3 of *ISTB-2018-02*.

Table 1: Fire Protection Summary Table

	Max. Fire Flow Demand (L/min)	Fire Hydrants(s) within 76m	Fire Hydrant(s) within 152m	Fire Hydrant(s) within 305m	Available Combined Fire Flow* (L/min)
Existing Development + Addition	13,000	3	3	0	(3 x 5678) + (3 x 3785) = 28,389

*assuming residual pressure of minimum 20 psi (139.9 kPa)

The total available fire flow from contributing hydrants is equal to **28,389 L/min,** which is sufficient to provide adequate fire flow for the proposed development.

As the previously installed southwest fire hydrant falls within a 45m radius of the new auditorium entrance, and sufficient aggregate flow is provided by nearby fire hydrants, and the proposed southwest private fire hydrant, no changes are required to the existing fire protection network.

4.5 Boundary Conditions

Boundary conditions were not assessed as part of this report. As the proposed addition results does not increase the estimated fire flow under post-development conditions, an evaluation of the adequacy of the existing municipal watermain for fire protection was considered unnecessary.

5 SANITARY DRAINAGE

5.1 Existing Sanitary Sewer Services

Based on the civil drawing prepared for the school development, municipal as-builts and sewer and watermain mapping; it can be observed the current school building is serviced by an on-site 250mm dia. sanitary sewer. The sanitary sewer, branching off the east face of the school, follows the existing site parking lot and driveway to connect to a sanitary manhole within the 900mm diameter sanitary sewer located on Chapman Mills Dr., approximately 240m southeast of the Strandherd / Chapman Mills intersection.

5.2 Sanitary Sewer Servicing Design

The peak design sanitary flow for the existing building and the proposed addition was calculated in accordance with Sections 4.4.1.2 (Institutional Flows), 4.4.1.4 (Extraneous Flows), and Appendix 4-A of the City of Ottawa Sewer Design Guidelines. The parameters used to estimate

the anticipated institutional sanitary flows include a total site area of 4.86 ha, an institutional peak flow rate of 28,000 L/day, an institutional peak factor of 1.5, and an extraneous flow allowance of 0.33 L/s/ha. Based on these parameters, the total anticipated wet weather sanitary flow was estimated to be **3.96 L/s**.

The existing on-site sanitary sewer consists of a 250 mm diameter pipe with an approximate total length of 120 m and a minimum longitudinal slope of 1.0%. The flow capacity of the existing sewer was calculated to be **59.47 L/s**, with a corresponding flow velocity of **1.21 m/s**. As the anticipated sanitary flow is well below the calculated pipe capacity and the flow velocity falls within the allowable range specified in the City of Ottawa Sewer Design Guidelines, the existing private sanitary sewer is considered adequate to accommodate both existing and proposed sanitary design flows.

Refer to Appendix B for the site sanitary sewer design calculations.

Table 2: Sanitary Sewer Design Criteria

Design Parameter	Value
Manning roughness coefficient (n)	0.013
Minimum velocity (full)	0.6 m/s
Maximum velocity (full)	3.0 m/s

6 STORMWATER MANAGEMENT

6.1 Existing Stormwater Infrastructure

Based on the 2019 civil drawing prepared for the school development, municipal as-builts and sewer and watermain mapping; it can be observed that a private stormwater network had been developed to services the current school building and site. Drainage from the site is captured by a series of roof drains, catchbasins, catchbasin manholes and perforated subdrains which conveys the stormwater to the existing 1,350mm diameter storm sewer on Chapman Mills Drive.

Stormwater quantity flow control is provided via flow-control roof drains on the existing school rooftop, an undersized 900mm diameter pipe at the site stormwater network outlet, and storage requirements are accommodated via an on-site infiltration gallery.

A Stormwater Management Facility Pond design by J.L. Richards & Associates Limited is located southeast of the subject site at the downstream end of Minto Harmony Community and provides enhanced protection, 80% Total Suspended Solids removal. Hence, no stormwater quality management is required on the site for the additon.

6.2 Proposed Management Concept

The proposed scope of work includes the addition of an auditorium to the existing school, along with several minor modifications to site grading and drainage to accommodate the addition and

associated site improvements. Five new roof drains and corresponding roof ponding areas are proposed for the new addition.

Stormwater tributary and catchment areas will be revised to reflect the proposed site changes. As a result of these modifications, the site stormwater management design—including the storm sewer network sizing, quantity control measures, and storage requirements—will be reviewed to confirm its adequacy under the proposed conditions.

6.3 Design Criteria – Water Quantity

Proposed development stormwater management quantity control will remain as constructed following the same criteria as the previous development. All storm events up to and including the 100-year event will continue to be controlled to the 5-year pre-development level. The site major overland flow route has been designed to ensure that storm events beyond the 100-year design storm can be safely conveyed overland towards the Chapman Mills Drive right-of-way. The minor system (storm sewer) within the site is sized to convey the 5-year storm event flows from the site to the municipal storm sewer on Chapman Mills Drive.

The Rational Method was used to calculate the runoff from the development. The Intensity-Duration-Frequency (IDF) curve formulas for the MacDonald-Cartier International Airport, in the city of Ottawa, were used to calculate the peak storm flows for the site.

This site is subject to stormwater management control where the allowable flow for the 5 and 100-year storm events are estimated at 1,055.8 L/s as per the design prepared by J.L. Richards & Associates Limited. The total allowable release rate will be restricted with an undersized pipe at the outlet that will throttle the total allowable release rate to **884L/s** as per J.L. Richards & Associates Limited design sheet. Refer to Appendix D - Supporting Documents.

6.4 Stormwater Quantity Controls

The existing stormwater management quantity control for this development have been accomplished through the use of:

- Existing undersized piping to throttle the flow rate,
- existing Zurn Control-Flo roof drains & roof top water storage,
- existing pipe, maintenance hole and infiltration gallery storage

The existing site storm sewer and stormwater management system are shown on drawing C401 – Servicing Plan within Appendix E of the report.

6.4.1 Rooftop Stormwater Management

In current conditions, the collected stormwater from the previously proposed catchment area WS-15 was regulated using thirty-five (35) one notch Zurn Control-Flo roof drains with a total maximum release rate of **15.11 L/s*m.** With the thirty-five (35) roof drains, the total anticipated

flow from the roof drains was **63.47 L/s**, and rooftop ponding could reach a maximum volume of **213 m^3** during the 100-year storm event. The controlled roof water was conveyed to storm manhole MH02 before outletting to Chapman Mills Drive.

The rooftop catchment area WS-15 was originally calculated using conservative assumptions to account for potential future additions to the school. With the footprint of the proposed auditorium now confirmed, the calculation has been revisited to reflect the actual footprint of the east addition rather than the previously assumed conservative area. As a result, the WS-15 catchment area has been reduced to 0.677 ha.

The addition of the auditorium necessitates new roof drains to adequately control and manage rooftop stormwater. The proposed rooftop drainage system includes five (5) additional one-notch Zurn Control-Flo roof drains, providing a combined maximum release rate of **15.11 L/s·m**. With a revised total of forty (40) roof drains across the site, the total anticipated discharge from the roof drainage system is **70.72 L/s**. Under the 100-year storm event, rooftop ponding is anticipated to reach a maximum storage volume of **186.04 m³.**

Controlled roof runoff is conveyed to storm manhole MH02, downstream of the flow control structure, prior to discharging to Chapman Mills Drive.

Detailed rooftop calculations can be found in Appendix C.

6.4.2 Surface Stormwater Management

With the proposed changes to the addition footprint and site, some minor changes have been made to the previous site design's catchment area's / watershed. Table 3, included below, provides a summary of the new catchment areas to be used for the purposes of this report.

Table 3: Post-Development Estimated Areas & Runoff Coefficients

WATERSHED	Total Area (ha)	Weighted Runoff Coefficient (C)
RWS-01 (controlled)	0.074	0.90
WS-02 (controlled)	0.104	0.28
WS-03 (controlled)	0.284	0.76
WS-04 (controlled)	0.228	0.90
RWS-05 (controlled)	0.133	0.36
RWS-06 (controlled)	0.111	0.30
RWS-07 (controlled)	0.175	0.26
WS-08 (controlled)	0.186	0.75
WS-09 (controlled)	0.130	0.88
RWS-10 (controlled)	1.001	0.25
RWS-11 (controlled)	0.942	0.31
WS-12 (controlled)	0.333	0.50
RWS-13 (controlled)	0.325	0.34
WS-14 (controlled)	0.147	0.76

CA-15 (uncontrolled)	0.677	0.90
TOTAL	**4.850**	**0.50**

The surface currently consists of parking and driving area, landscaped area and playground area. Runoff from these catchment areas will be captured through a number of catchbasins and subdrains before being directed to the existing 825mm outlet on Chapman Mills Drive and controlled with the undersized 825mm diameter reinforced concrete pipe. The 825mm pipe is installed at a 0.29% slope, with a full capacity / allowable release rate of **769 L/s**.

In order to control the 100-year storm event with the new catchment areas, while still utilizing the existing flow control system, **253.20m^3** of on-site storage will be required.

Storage is currently being provided by the underground pipes, structures and infiltration gallery. With the revisions to the catchment areas, the existing stormwater network systems will provide the following storage volumes;

- **115.84** m^3 from on-site pipes and maintenance structures and
- **180.31** m^3 from the infiltration gallery.

As the available storage greatly exceeds the required, the existing stormwater management network is sufficient to accommodate the proposed changes in surface runoff, and will not require any modifications for the proposed works.

Refer to C401 – Servicing Plan and Appendix C for stormwater management design details.

7 EROSION AND SEDIMENT CONTROL

During the construction, erosion and sediment controls will be required primarily via a sediment control fence to be erected along the perimeter of the site where runoff has the potential of leaving the site. Inlet sediment control devices are also to be provided in any catchbasin and/or manholes on and around the site that may be impacted by the site construction activities. Construction and maintenance requirements for erosion and sediment controls are to comply with Ontario Provincial Standard Specification OPSS 577. Refer to LRL drawing C101 – Erosion and Sediment Control Plan for details.

8 CONCLUSIONS

In accordance with this report objectives, the analyses for the proposed development can be summarized as follows:

Water Service

- The anticipated average daily domestic water demand is **0.57 L/s,** maximum daily demand is **0.85 L/s,** and maximum hourly demand is **1.53 L/s.** This is only represents a minor increase in domestic water demand from the exsiting school.
- The required fire flow was calculated at **116.7 L/s** using the FUS method, same as it was for the existing school.
- Based on the expected water demands, fire flow and fire hydrant layout, it has been concluded the existing on-site watermain is adequate to accommodate the new addition.

Sanitary Service

- The anticipated sanitary flow from the proposed development is **3.96 L/s**.
- Based on the anticipated peak sanitary flow, it has been concluded the existing on-site sanitary sewer will have more than adequate to accommodate the additions flows.

Stormwater Management

- 5 new roof drains will be added to the auditorium rooftop, increasing total rooftop discharge to **70.72 L/s**, and providing a maximum rooftop storage of **186.04 m^3**.
- Some watersheds / catchment areas have been revised to accommodate the new building addition and minor site changes. It has been determined that the current stormwater network has adequate storage & pipe capacity to accommodate the change in catchment runoffs and rooftop discharge, all while keeping the existing flow control system.

9 LIMITATIONS AND USE OF REPORT

The report conclusions are applicable only to this project described in this report. Any changes may require a review by LRL Associates Ltd. to insure compatibility with the recommendations contained in this report. We trust the information presented meets your current requirements. Please do not hesitate to contact us should you have any questions or concerns.

Prepared by:

LRL Associates Ltd.

Kyle Herold
Civil Project Manager

Kelly Paradis, PEng, PMP
Senior Manager of Civil Engineering

APPENDIX A

Domestic Water Demand and Fire Flow Calculations & Boundary Conditions

Water Supply Calculations

LRL File No. : 220512-01
Project: Auditorium Addition - ESP Pierre-de-Blois
Location: 1310 Chapman Mills Dr, Ottawa
Date: 2026-01-16
Designed: K. Herold
Checked: K. Paradis
Dwg Reference: C401

Water Demand based on the City of Ottawa Design Guidelines-Water Distribution, 2010

Institutional / Commercial / Industrial Demand

Property Type	Unit Rate (L/student/d)	Student Capacity	Demand (L/d)
Institutional	**70**	**700**	**49000**

Average Day Demand	**49,000**	**L/d**	**0.567**	**L/s**
Maximum Day Factor	1.5		(Design Guidelines-Water Distribution Table 4.2)	
Maximum Daily Demand	**73,500**	**L/d**	**0.851**	**L/s**
Peak Hour Factor	1.8		(Design Guidelines-Water Distribution Table 4.2)	
Maximum Hour Demand	**132,300**	**L/d**	**1.531**	**L/s**

TOTAL DEMAND				
Average Day Demand	**49,000**	**L/d**	**0.57**	**L/s**
Maximum Daily Demand	**73,500**	**L/d**	**0.85**	**L/s**
Maximum Hour Demand	**132,300**	**L/d**	**1.53**	**L/s**

Water Service Pipe Sizing

Q = VA

Where: V = velocity (m/s)
A = area of pipe (m^2)
Q = flow rate (L/s)

Assuming a maximum velocity of 1.8m/s, the diameter of pipe is calculated as:

Minimum pipe diameter (d) =	$(4Q/\pi V)^{1/2}$	
=	0.033	m
=	33	mm
Proposed pipe diameter (d) =	**37.5**	mm
=	**1.5**	Inches

Fire Flow Calculations

LRL File No. 220512-01
Project: Auditorium Addition - ESP Pierre-de-Blois
Location: 1310 Chapman Mills Dr, Ottawa
Date: January 16, 2026
Method: Fire Underwriter's Survey (FUS)
Prepared by: K. Herold

Step	Task	Term	Options	Multiplier	Choose:	Value	Unit	Fire Flow
Construction Coefficient (C)								
1	Choose frame used for building	Coefficient C related to the type of construction	Wood Frame Construction (Type V)	1.5	Noncombustible Construction (Type II)	**0.8**		
			Mass Timber Construction (Type IV-A)	0.8				
			Mass Timber Construction (Type IV-B)	0.9				
			Mass Timber Construction (Type IV-C)	1.0				
			Mass Timber Construction (Type IV-D)	1.5				
			Ordinary Construction (Type III)	1.0				
			Noncombustible Construction (Type II)	0.8				
			Fire Resistive Construction (Type I)	0.6				
Floor Area (A)								
2	Total Effective Floor Area					**6,160**	m^2	
3	Obtain fire flow before reductions	Required fire flow (rounded to nearest 1000)	Fire Flow = 220 x C x $A^{0.5}$				L/min	**14,000**
Occupancy and Contents Adjustment								
4	Choose combustibility of contents	Occupancy hazard reduction or surcharge	Noncombustible	-25%	Limited combustible	**-15%**	L/min	**11,900**
			Limited combustible	-15%				
			Combustible	0%				
			Free burning	15%				
			Rapid burning	25%				
Sprinkler Protection								
5	Choose reduction for sprinklers	Sprinkler reduction	Automatic sprinkler protection designed & installed in accordance with NFPA 13	-30%	False	**0%**	L/min	**10,710**
			Water supply is standard for both the system and fire department hose lines	-10%	True	**-10%**		
			Fully supervised system	-10%	False	**0%**		
Exposure Adjustment								
6	Choose separation	Exposure distance	North side	3.1 to 10m	20%	**20%**	L/min	**13,090**
			East side	>30m	0%			
			South side	>30m	0%			
			West side	>30m	0%			
Net Required Fire Flow								
7	Obtain fire flow and duration	Minimum required fire flow (rounded to nearest 1000)					L/min	**13,000**
		Minimum required fire flow					L/s	**216.7**
		Required duration of fire flow					hr	**2.75**

APPENDIX B

Sanitary Servicing Calculation Sheet

LRL Associates Ltd.

Sanitary Sewer Design Sheet

LRL File No.: 220512-01
Project: Auditorium Addition - ESP Pierre-de-Blois
Location: 1310 Chapman Mills Dr., Ottawa
Designed: K. Herold
Checked: K. Paradis
Date: 2026-01-16
DWG. Reference: C401

Sanitary Design Parameters

Commercial & Institutional Flow = 28000 L/ha/day
Light Industrial Flow = 35000 L/ha/day
Heavy Industrial Flow = 55000 L/ha/day
Maximum Residential Peak Factor = 4.0
Commercial & Institutional Peak Factor = 1.5
Average Daily Flow = 280 L/p/day
Industrial Peak Factor = as per Appendix 4-B
Extraneous Flow = 0.33 L/s/ha

Pipe Design Parameters

Maximum Velocity = 3.00 m/s
Minimum Velocity = 0.60 m/s
Manning's n = 0.013

LOCATION			RESIDENTIAL						COMMERCIAL		INDUSTRIAL			INSTITUTIONAL		C+I+I	INFILTRATION			TOTAL FLOW, Q	PIPE						
STREET	FROM	TO	AREA	POP.	ACCU. AREA	ACCU. POP.	PEAK FACT.	PEAK FLOW	AREA	ACCU. AREA	AREA	ACCU. AREA	PEAK FACT.	AREA	ACCU. AREA	PEAK FLOW	TOTAL AREA	ACCU. AREA	INFILT. FLOW		LENGTH	DIA.	SLOPE	MATERIAL	CAP. Q(FULL)	VEL. V(FULL)	RATIO Q /QFULL
			(Ha)		(Ha)			(L/s)	(Ha)	(Ha)		(Ha)		(Ha)	(Ha)	(L/s)	(Ha)	(Ha)	(L/s)	(L/s)	(m)	(mm)	(%)		(L/s)	(m/s)	
	BLDG	Ex. SAN												4.858		2.36	4.858	4.858	1.60	3.96		250	1.00%	PVC	59.47	1.21	0.07

Notes: Existing inverts and slopes are estimated. They are to be confirmed on-site.

APPENDIX C

Stormwater Management Design Sheets

LRL File No.	220512-01
Project:	Auditorium Addition - ESP Paul-de-Blois
Location:	1310 Chapman Mills Dr, Ottawa
Date:	January 16, 2026
Designed:	K. Herold
Checked:	K. Paradis
Drawing Reference:	C701, C703

Post-Development Catchments

WATERSHED	C = 0.20	C = 0.80	C = 0.90	Total Area (ha)	Combined C
EWS-01	4.850	0.000	0.000	4.850	0.20

Post-Development Catchments (Post-Addition)

WATERSHED	C = 0.20	C = 0.80	C = 0.90	Total Area (ha)	Combined C
RWS-01	0.000	0.000	0.074	0.074	0.90
WS-02	0.092	0.000	0.012	0.104	0.28
WS-03	0.056	0.000	0.228	0.284	0.76
WS-04	0.000	0.000	0.228	0.228	0.90
RWS-05	0.103	0.000	0.030	0.133	0.36
RWS-06	0.095	0.000	0.016	0.111	0.30
RWS-07	0.160	0.000	0.015	0.175	0.26
WS-08	0.041	0.000	0.145	0.186	0.75
WS-09	0.003	0.000	0.127	0.130	0.88
RWS-10	0.934	0.000	0.067	1.001	0.25
RWS-11	0.796	0.000	0.146	0.942	0.31
WS-12	0.190	0.000	0.143	0.333	0.50
RWS-13	0.260	0.000	0.065	0.325	0.34
WS-14	0.030	0.000	0.117	0.147	0.76
RWS-15	0.000	0.000	0.677	0.677	0.90
TOTAL	2.760	0.000	2.090	4.850	0.50

*WS-XX (SAME AS PRE-ADDITION), RWS-XX (REVISED TO ACCOMODATE PROPOSED AUDITORIUM ADDITION + SITE CHANGES)

LRL File No.	220512-01
Project:	Auditorium Addition - ESP Paul-de-Blois
Location:	1310 Chapman Mills Dr, Ottawa
Date:	January 16, 2026
Designed:	K. Herold
Checked:	K. Paradis
Drawing Ref.:	C401

Stormwater Management Design Sheet

STORM - 5 YEAR

Runoff Equation

Q = 2.78CIA (L/s)
C = Runoff coefficient
I = Rainfall intensity (mm/hr) = $A / (Td + C)^B$
A = Area (ha)
T_c = Time of concentration (min)

Pre-Devlopment Catchments within Development Area

Allowable Release Rate 5 Year Pre-Development Flow Rate

$I_5 =$ **$998.071 / (Td + 6.053)^{0.814}$** **a = 998.071** **b = 0.814** **C = 6.053**

Allowable Release Rate= 884.00 L/s As Per JL Richards, Harmony Stage 1 Report Dated July 2017

Post-development Stormwater Management

					$\sum R_5$	$\sum R_{100}$
	Total Site Area =	**4.850**	ha	**∑R=**	**0.50**	**0.63**
Controlled	WS-01	0.074	ha	R=	0.90	1.00
	WS-02	0.104	ha	R=	0.28	0.35
	WS-03	0.284	ha	R=	0.76	0.95
	WS-04	0.228	ha	R=	0.90	1.00
	WS-05	0.133	ha	R=	0.36	0.45
	WS-06	0.111	ha	R=	0.30	0.38
	WS-07	0.175	ha	R=	0.26	0.33
	WS-08	0.186	ha	R=	0.75	0.93
	WS-09	0.130	ha	R=	0.88	1.00
	WS-10	1.001	ha	R=	0.25	0.31
	WS-11	0.942	ha	R=	0.31	0.39
	WS-12	0.333	ha	R=	0.50	0.63
	WS-13	0.325	ha	R=	0.34	0.43
	WS-14	0.147	ha	R=	0.76	0.95
	Total Flow to Storm Stub =	**4.173**	**ha**	**∑R=**	**0.44**	**0.55**
Roof Top	WS-15 (Controlled Rooftop Area)	0.677	ha	R=	0.90	1.00
	Total Flow to Storm Stub =	**0.677**	**ha**	**∑R=**	**0.90**	**1.00**

Post-development Stormwater Management

$I_{100} =$ **$1735.688 / (Td + 6.014)^{0.820}$** **a = 1735.688** **b = 0.82** **C = 6.014**

		Rooftop Storage			Overland Storage					
Time (min)	**Intensity (mm/hr)**	**Controlled Runoff (L/s)**	**Storage Volume (m^3)**	**Controlled Release Rate (L/s)**	**Controlled Runoff** (L/s)**	**Storage Volume (m^3)**	**Controlled Release Rate (L/s)**	**Uncontrolled Runoff (L/s)**	**Total Release Rate (L/s)**	**Height on Roof (m)**
10	178.6	336.06	165	60.44	1192.00	253	770.0	0.00	830	0.098
20	120.0	225.75	186	70.72	830.86	73	770.0	0.00	841	0.110
30	91.9	172.90	181	72.53	654.72	0	770.0	0.00	843	0.107
40	75.1	141.43	167	71.93	548.14	0	770.0	0.00	842	0.099
50	64.0	120.37	151	70.12	475.40	0	770.0	0.00	840	0.089
60	55.9	105.20	139	66.49	420.70	0	770.0	0.00	836	0.082
70	49.8	93.71	127	63.47	378.99	0	770.0	0.00	833	0.075
80	45.0	84.68	116	60.44	345.56	0	770.0	0.00	830	0.069
90	41.1	77.37	108	57.42	317.95	0	770.0	0.00	827	0.064
100	37.9	71.34	102	54.40	294.60	0	770.0	0.00	824	0.060
110	35.2	66.25	86	53.19	276.27	0	770.0	0.00	823	0.051
120	32.9	61.91	80	50.77	259.23	0	770.0	0.00	821	0.047
130	30.9	58.15	105	44.73	240.54	0	770.0	0.00	815	0.062

Infiltration Gallery - 280m

Pipe Storage	13.74	m^3	
Granular Storage	166.6	m^3	40% Void
Total Available Storage =	**180.31**	**m^3**	refer to Drawing C401 for detail

Rooftop Controls

Control-Flo Roof Drain Rate =	136	L/min
Max HWL =	0.150	m
Control-Flo Roof Drain Rate =	15.11	L/s·m
# of roof drains =	40	
Max Roof Storage =	186.0	m^3
Height =	0.110	m
Max Roof Rel. Rate =	70.72	L/s

Onsite Stormwater Retention

Total Storage Required =	**253.20**	**m^3**	
Pipe Storage =	101.37	m^3	refer to Storm Sewer Design Sheet
CB/MH Storage =	14.47	m^3	refer to Storm Sewer Design Sheet
Infiltration Gallery =	180.00	m^3	refer to Drawing C401
Total Available Storage =	**295.84**	**m^3**	

LRL File No.	220512-01
Project:	Auditorium Addition - ESP Paul-de-Blois
Location:	1310 Chapman Mills Dr, Ottawa
Date:	January 16, 2026
Designed:	K. Herold
Checked:	K. Paradis
Drawing Ref.:	C401

Stormwater Management Design Sheet

STORM - 5 YEAR

Runoff Equation

Q = 2.78CIA (L/s)
C = Runoff coefficient
I = Rainfall intensity (mm/hr) = $A / (Td + C)^B$
A = Area (ha)
T_c = Time of concentration (min)

Pre-Devlopment Catchments within Development Area

Allowable Release Rate 5 Year Pre-Development Flow Rate

$I_5 =$ **998.071 / (Td + 6.053)$^{0.814}$** **a = 998.071** **b = 0.814** **C = 6.053**

Allowable Release Rate= 884.00 L/s As Per JL Richards, Harmony Stage 1 Report Dated July 2017

Post-development Stormwater Management

					$\sum R_5$	$\sum R_{100}$
	Total Site Area =	**4.850**	ha	**∑R=**	**0.50**	**0.63**
Controlled	RWS-01	0.074	ha	R=	0.90	1.00
	WS-02	0.104	ha	R=	0.28	0.35
	WS-03	0.284	ha	R=	0.76	0.95
	WS-04	0.228	ha	R=	0.90	1.00
	RWS-05	0.133	ha	R=	0.36	0.45
	RWS-06	0.111	ha	R=	0.30	0.38
	RWS-07	0.175	ha	R=	0.26	0.33
	WS-08	0.186	ha	R=	0.75	0.93
	WS-09	0.130	ha	R=	0.88	1.00
	RWS-10	1.001	ha	R=	0.25	0.31
	RWS-11	0.942	ha	R=	0.31	0.39
	WS-12	0.333	ha	R=	0.50	0.63
	RWS-13	0.325	ha	R=	0.34	0.43
	WS-14	0.147	ha	R=	0.76	0.95
	Total Flow to Storm Stub =	**4.173**	**ha**	**∑R=**	**0.44**	**0.55**
Roof Top	RWS-15 (Controlled Rooftop Area)	0.677	ha	R=	0.90	1.00
	Total Flow to Storm Stub =	**0.677**	**ha**	**∑R=**	**0.90**	**1.00**

5 Year Stormwater Management Calculations

$I_5 =$ **998.071 / (Td + 6.053)$^{0.814}$** **a = 998.071** **b = 0.814** **C = 6.053**

		Rooftop Storage			Overland Storage					
Time (min)	**Intensity (mm/hr)**	**Controlled Runoff (L/s)**	**Storage Volume (m^3)**	**Controlled Release Rate (L/s)**	**Controlled Runoff (L/s)**	**Storage Volume (m^3)**	**Controlled Release Rate (L/s)**	**Uncontrolled Runoff (L/s)**	**Total Release Rate (L/s)**	**Height on Roof (m)**
10	104.2	176.49	87	31.43	559.66	0	770.00	0.00	801.43	0.051
20	70.3	119.00	98	37.48	393.63	0	770.00	0.00	807.48	0.058
30	53.9	91.35	96	38.08	311.48	0	770.00	0.00	808.08	0.057
40	44.2	74.84	90	37.48	261.48	0	770.00	0.00	807.48	0.053
50	37.7	63.78	83	36.27	227.16	0	770.00	0.00	806.27	0.049
60	32.9	55.80	75	35.06	202.07	0	770.00	0.00	805.06	0.044
70	29.4	49.75	67	33.85	182.76	0	770.00	0.00	803.85	0.039
80	26.6	44.99	62	32.04	166.70	0	770.00	0.00	802.04	0.037
90	24.3	41.14	56	30.83	153.96	0	770.00	0.00	800.83	0.033
100	22.4	37.95	50	29.62	143.22	0	770.00	0.00	799.62	0.030
110	20.8	35.27	45	28.41	133.97	0	770.00	0.00	798.41	0.027
120	19.5	32.98	42	27.20	125.89	0	770.00	0.00	797.20	0.025
130	18.3	30.99	39	25.99	118.74	0	770.00	0.00	795.99	0.023
260	10.6	17.95	0	22.97	76.70	0	770.00	0.00	792.97	0.000

Onsite Stormwater Retention

Total Storage Required =	**0.00 m^3**	
Pipe Storage =	101.37 m^3	refer to Storm Sewer Design Sheet
CB/MH Storage =	14.47 m^3	refer to Storm Sewer Design Sheet
Infiltration Gallery =	180.00 m^3	refer to Drawing C401
Total Available Storage =	**295.84 m^3**	

Rooftop Controls

Control-Flo Roof Drain Rate =	136	L/min
Max HWL =	0.15	m
Control-Flo Roof Drain Rate =	15.11	L/s·m
# of roof drains =	40	
Max Roof Storage =	97.8	m^3
Height =	0.058	m
Max Roof Rel. Rate =	37.48	L/s

LRL Associates Ltd.
5 year Storm Design Sheet

LRL File No.	220512-01
Project:	Auditorium Addition - ESP Paul-de-Blois
Location:	1310 Chapman Mills Dr, Ottawa
Date:	January 16, 2026
Designed:	K. Herold
Verified:	K. Paradis

Rational Method Q = 2.78CIA

Q = Peak flow in litres per second (L/s)
A = Drainage area in hectares (ha)
C = Runoff coefficient
I = Rainfall intensity (mm/hr)

Storm Design Parameters

Runoff Coefficient (C)	
Grass	0.20
Gravel	0.85
Asphalt / rooftop	0.90

LOCATION			AREA (ha)			FLOW					STORM SEWER							MANHOLE										
WATERSHED / STREET	From MH	To MH	C = 0.20	C = 0.80	C = 0.90	Indiv. 2.78AC	Accum. 2.78AC	Time of Conc. (min.)	Rainfall Intensity (mm/hr)	Peak Flow Q (l/s)	Pipe Diameter (mm)	Type	Slope (%)	Length (m)	Capacity Full (L/s)	Velocity Full (m/s)	Time of Flow (min.)	Ratio (Q/Q_{FULL})	Up Invert (m)	Down Invert (m)	T/G Up Stream (m)	T/G Down Stream	Up Depth obv (m)	Down Depth obv (m)	Up Depth inv (m)	Pipe Storage 100 year (m^3)	Upstream CB/MH Size (m)	Water Depth 100 year (m)	CB/MH Storage 100 year (m^3)
WS-14	CB08	CB07	0.030	0.000	0.117	0.31	0.31	10.00	104.19	32.24	250	PVC	0.50%	66.3	42.0	0.86	1.29	0.77	92.50	92.17	94.00	93.60	1.25	1.18	1.25	3.26	0.60	0.50	0.18
WS-13	CB07	CB06	0.260	0.000	0.065	0.31	0.62	11.29	97.84	60.33	250	PVC	0.50%	54.9	42.0	0.86	1.07	1.43	92.10	91.83	93.60	93.28	1.25	1.20	1.25	2.70	0.60	0.90	0.32
WS-13	CB06	CB05	0.000	0.000	0.000	0.00	0.62	12.36	93.19	57.46	250	PVC	0.50%	59.8	42.0	0.86	1.16	1.37	91.77	91.47	93.28	93.80	1.26	2.08	1.26	2.94	0.60	1.23	0.44
WS-05	CB05	CBMH04	0.103	0.000	0.030	0.13	0.75	13.52	88.66	66.40	300	PVC	0.35%	44.9	57.2	0.81	0.92	1.16	91.44	91.28	93.80	93.50	2.06	1.92	2.06	3.18	1.20	1.56	2.25
WS-02, WS-06	LCB19	CBMH09	0.187	0.000	0.028	0.17	0.17	10.00	104.19	18.16	300	PVC	0.85%	23.6	89.2	1.26	0.31	0.20	92.20	92.00	93.85	93.50	1.35	1.20	1.35	1.67	0.60	0.80	0.29
WS-03	CBMH09	CBMH04	0.056	0.000	0.228	0.60	0.78	10.31	102.57	79.55	375	PVC	0.30%	34.6	96.0	0.87	0.66	0.83	92.00	91.90	93.50	93.50	1.12	1.22	1.12	3.82	1.20	1.00	1.43
WS-04	CBMH04	MH03	0.000	0.000	0.228	0.57	2.09	14.45	85.39	258.38	600	CONC	0.15%	27.3	237.8	0.84	0.54	1.09	91.23	91.19	93.50	93.15	1.67	1.36	1.67	7.72	1.20	1.67	2.40
WS-01	CB26	MH03	0.000	0.000	0.074	0.19	0.19	10.00	104.19	19.29	250	PVC	0.75%	13.9	51.5	1.05	0.22	0.37	91.28	91.18	93.30	93.50	1.77	2.07	1.77	0.68	0.60	1.72	0.62
WS-12	LCB18	LCB17	0.190	0.000	0.143	0.46	0.46	10.00	104.19	48.29	250	SUB PVC	0.35%	86.8	35.2	0.72	2.02	1.37	93.00	92.70	93.75	93.30	0.50	0.35	0.50	0.76	0.60	0.00	0.00
WS-11	LCB17	LCB15	0.796	0.000	0.146	0.81	1.27	12.02	94.62	120.31	300	SUB PVC	0.35%	145.4	57.2	0.81	2.99	2.10	92.67	92.16	93.30	93.30	0.33	0.84	0.33	10.28	0.60	0.33	0.12
WS-10	LCB15	CBMH12	0.934	0.000	0.067	0.69	1.96	15.01	83.52	163.57	300	SUB PVC	0.35%	173.0	57.2	0.81	3.56	2.86	92.13	91.52	93.30	93.50	0.87	1.68	0.87	12.23	0.60	0.87	0.31
	CBMH12	CBMH11	0.000	0.000	0.000	0.00	1.96	18.57	73.54	144.03	450	PVC	0.35%	34.8	168.7	1.06	0.55	0.85	91.52	91.40	93.50	93.00	1.53	1.15	1.53	5.54	0.60	1.48	0.53
WS-09	CBMH11	CBMH10	0.003	0.000	0.127	0.32	2.28	19.12	72.24	164.60	450	PVC	0.35%	21.7	168.7	1.06	0.34	0.98	91.37	91.29	93.00	93.00	1.18	1.26	1.18	3.45	0.60	1.18	0.42
WS-08, WS-07	CBMH10	MH03	0.200	0.000	0.160	0.51	2.79	19.46	71.45	199.38	450	PVC	0.35%	23.8	168.7	1.06	0.37	1.18	91.26	91.18	93.20	93.50	1.49	1.87	1.49	3.79	0.60	1.49	0.53
	MH03	MH02	0.000	0.000	0.015	0.00	5.07	14.99	83.60	423.82	825	CONC	0.29%	23.8	769	1.44	0.28	0.55	91.16	91.09	93.15	93.50	1.16	1.58	1.16	12.73	1.20	1.16	1.68
WS-15	School	MH02	0.000	0.000	0.677	1.69	1.69	10.00	104.19	72.53	375	PVC	0.47%	89.0	120.2	1.09	1.36	0.60	91.51	91.09	94.55	93.49	2.66	2.02	2.66	9.83	0.60	1.49	0.54
	MH02	MH01	0.000	0.000	0.000	0.00	6.76	15.26	82.72	632.00	900	CONC	0.25%	26.4	912.4	1.43	0.31	0.69	91.03	90.97	93.59	94.30	1.66	2.43	1.66	16.80	1.20	1.66	2.39
	MH01	CITY	0.000	0.000	0.000	0.00	6.76	15.57	81.76	625.53	1,050	CONC	0.25%	0.5	884.0	1.02	0.01	0.71	90.94	90.93	94.30	94.30	2.31	2.32	2.31				
Notes: Maximum roof flow rate shown as per SWM design sheet																										**101.37**			**14.47**

Maximum roof flow rate shown as per SWM design sheet
Peak allowable flow rate as per JL Richards Design
Invert from JL Richards Design

HWL (100 Year)	93.00
Storage(100 year)	115.84

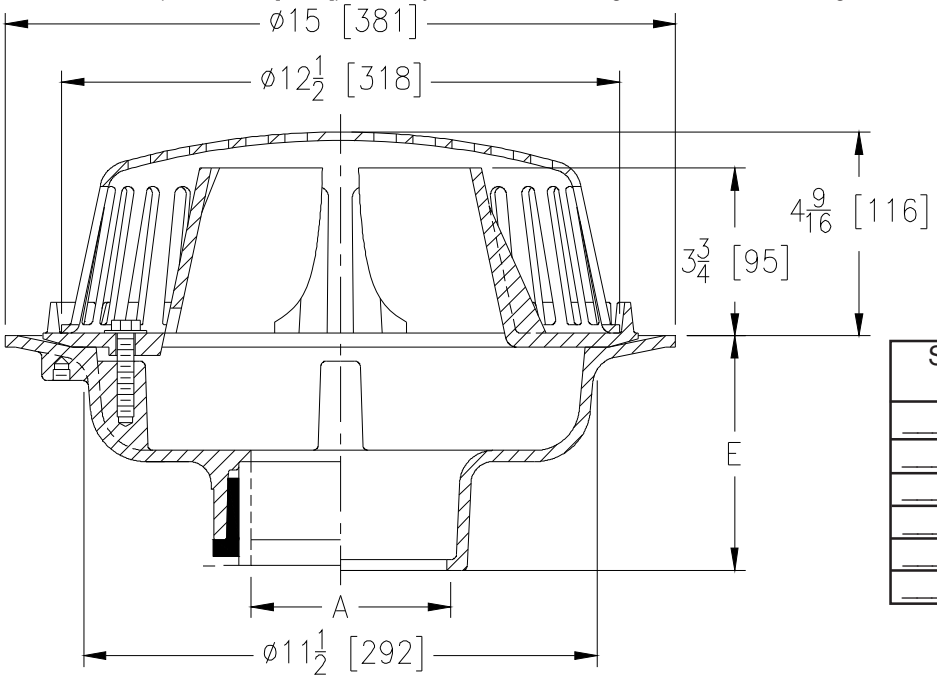
Z105

CONTROL-FLO ROOF DRAIN
W/ PARABOLIC WEIR

SPECIFICATION SHEET

TAG _____

Dimensional Data (inches and [mm]) are Subject to Manufacturing Tolerances and Change Without Notice



Specify Number of Notches in Weir	
___-N1	One Notch
___-N2	Two Notches
___-N3	Three Notches
___-N4	Four Notches
___-N5	Five Notches
___-N6	Six Notches

A- Pipe Size In.[mm]	Approx. Wt. Lbs. [kg]	Dome Open Area Sq. In. [cm²]
2,3,4 [51,76,102]	34 [15]	103 [665]

ENGINEERING SPECIFICATION: ZURN Z105
15" [381mm] Diameter Control-Flo roof drain for dead-level roof construction, Dura-Coated cast iron body, Control-Flo weir shall be linear functioning with integral membrane flashing clamp/gravel guard and Poly-Dome. All data shall be verified proportional to flow rates. Each notch will allow 10 GPM [LPM] of flow per 1" [25mm] of rain water build up above the drain.

OPTIONS (Check/specify appropriate options)

PIPE SIZE
3, 4 [76, 102]
2 , 3, 4 [51, 76, 102]
2 , 3, 4 [51, 76, 102]

(Specify size/type) **OUTLET**
_____ IC Inside Caulk
_____ NH No-Hub
_____ NL Neo-Loc

E BODY HT. DIM.
5-1/4 [133]
5-1/4 [133]
4-9/16 [116]

PREFIXES
_____ Z D.C.C.I. Body with Poly-Dome*
_____ ZA D.C.C.I. Body with Aluminum Dome
_____ ZC D.C.C.I. Body with Cast Iron Dome

SUFFIXES
_____ -C Underdeck Clamp
_____ -DP Top-Set® Deck Plate (Replaces both -C & -R)
_____ -E Static Extension 1 [25] thru 4 [102] (Specify Ht.)
_____ -EA Adjustable Extension Assembly 2-1/8 [54] thru 3-1/2 [89]
_____ -G Galvanized Cast Iron
_____ -R Roof Sump Receiver
_____ -TC Neo-Loc Test Cap Gasket (2,3,4 [51,76,102] NL Bottom Outlet Only)
_____ -VP Vandal Proof Secured Top
_____ -10 6 [152] High Parabolic Weir for Sloped Roof (ZC or ZA)

* Regularly furnished unless otherwise specified.

Zurn Industries, LLC | **Specification Drainage Operation**
1801 Pittsburgh Avenue, Erie, PA U.S.A. 16502 · Ph. 855-663-9876, Fax 814-454-7929
In Canada | **Zurn Industries Limited**
3544 Nashua Drive, Mississauga, Ontario L4V 1L2 · Ph. 905-405-8272, Fax 905-405-1292
www.zurn.com

Rev. K
Date: 09/25/17
C.N. No. 137793
Prod. | Dwg. No. Z105

APPENDIX D

Supporting Documents

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

HARMONY STAGE 1
4005 STRANDHERD DRIVE
CITY OF OTTAWA
MINTO COMMUNITIES INC.
JLR NO. 24051-01

STORM SEWER DESIGN SHEET

Designed by: J.W.
Checked by: K.F.
Date: July 2017

Manning's Coefficient, n =	0.013
IDF CURVE =	2 Year

Denotes Existing Storm Sewer (Mattamy Barrhaven Mews) - Per IBI As-Constructed Drawings dated February 2010

STREET	Maintenance Hole Number		DRAINAGE AREAS											In Pipe	2 YR PEAK FLOW				5 YR PEAK FLOW				TOTAL	PLUG FLOW	SEWER DATA							Residual	UPSTREAM					DOWNSTREAM				
										Total Area		Cum. Area 2 YR (ha)	Cum. Area 5 YR (ha)	Inlet Time (min.)	Flow Time (min.)	2.78AR	Cum. 2.78AR	2 Yr Intensity (mm/hr)	Peak Flow (L/s)	2.78AR	Cum. 2.78AR	5 Yr Intensity (mm/hr)	Peak Flow (L/s)	Peak Design Flow (L/s)	Peak ICD Flow (L/s)	PIPE							Capacity Q_{cap} - Q_d (L/s)	Center Line	Obvert	Invert	Cover	Center Line	Drop	Obvert	Invert	Cover
	FROM	TO	0.30	0.53	0.72	0.75	0.76	0.80	0.90	2 Yr	5 Yr															Dia (mm)	H (mm)	W (mm)	Slope (%)	Q full (L/s)	V full (m/s)	Length (m)										
Commercial (Block 105)	Stub	MH120							0.76		0.76	0.00	0.76	10.00	0.42						1.90	1.90	104.19	198.1	198.13	235.0	600			0.15	248.09	0.85	21.6	50.0	94.34	91.835	91.225	2.51	94.24	0.00	91.803	91.193	2.44
														10.42																											
Chapman Mills Drive	MH120	MH121			0.55						0.55	0.00	1.31	10.42	2.16						1.10	3.00	102.01	306.2	306.28	135.0	675			0.15	339.63	0.92	119.2	33.4	94.24	91.803	91.117	2.44	94.41	-0.34	91.624	90.938	2.79
														12.58																											
Future Institutional Block	Stub	MH121				4.86					4.86	0.00	4.86	10.00	0.14						10.13	10.13	104.19	1055.0	1055.80	884.0	050			0.25	1424.40	1.59	13.8	368.6	94.41	92.001	90.934	2.41	94.32	0.00	91.967	90.900	2.35
														10.14																											
Chapman Mills Drive	MH123	MH124			0.34						0.34	0.00	0.34	10.00	1.69						0.68	0.68	104.19	70.91	70.91	50.0	450			0.20	133.02	0.81	82.2	62.1	94.30	91.406	90.949	2.89	93.45	0.00	91.242	90.785	2.21
														11.69																											
High Density (Block 118)	Stub	MH125						0.32			0.32	0.00	0.32	10.00	0.19						0.71	0.71	104.19	74.15	74.15	89.0	375			0.35	108.21	0.95	10.6	34.1	94.40	91.588	91.207	2.81	94.28	0.06	91.551	91.170	2.73
Chakra (Street No. 6)	MH125	MH123			0.10					0.10		0.10	0.32	10.19	0.88	0.20	0.20	76.10	15.23		0.71	103.22	73.46	88.69	16.0	375			0.35	108.21	0.95	50.0	19.5	94.28	91.491	91.110	2.79	94.30	0.00	91.316	90.935	2.98
														11.06																											
Chapman Mills Drive	MH123	MH122			0.19						0.19	0.10	0.51	11.06	0.82		0.20	72.95	14.60		0.38	1.09	98.89	107.98	122.59	48.0	600			0.15	248.09	0.85	41.8	125.5	94.30	91.316	90.706	2.98	94.18	0.00	91.253	90.644	2.93
Chapman Mills Drive	MH122	MH121										0.10	0.51	11.88	0.63		0.20	70.26	14.06			1.09	95.20	103.95	118.02	0.0	600			0.15	248.09	0.85	32.3	130.1	94.18	91.253	90.644	2.93	94.32	-0.76	91.205	90.595	3.12
														12.52																											
Clarity (Street No. 5)	**MH121**	**MH115**			**0.34**					**0.34**		**0.44**	**6.68**	**12.58**	**1.22**	**0.68**	**0.88**	**68.13**	**60.00**			**14.23**	**92.28**	**1312.88**	**1372.88**	**54.0**	**1350**			**0.15**	**2156.55**	**1.46**	**106.5**	**783.7**	**94.32**	**91.967**	**90.595**	**2.35**	**94.22**	**0.00**	**91.807**	**90.435**	**2.41**
														13.80																											
Park (Block 117)	Stub	MH115	1.53								1.53	0.00	1.53	10.00	0.27						1.28	1.28	104.19	132.95	132.95	84.0	450			0.25	148.72	0.91	14.8	15.8	94.33	91.387	90.929	2.94	94.21	-0.46	91.350	90.893	2.86
														10.27																											
Clarity (Street No. 5)	**MH115**	**MH115A**		**0.42**	**0.41**					**0.83**		**1.27**	**8.21**	**13.80**	**0.88**	**1.44**	**2.32**	**64.76**	**150.24**			**15.50**	**87.65**	**1358.87**	**1509.12**	**66.0**	**1350**			**0.15**	**2156.55**	**1.46**	**77.3**	**647.4**	**94.22**	**91.807**	**90.435**	**2.41**	**94.10**	**-0.08**	**91.691**	**90.319**	**2.41**
														14.68																											
Waterlilly Way	MH118	MH117		0.17	0.39					0.56		0.56	0.00	10.00	1.49	1.03	1.03	76.81	79.19					79.19	62.0	600			0.20	286.47	0.98	87.5	207.3	94.50	92.214	91.604	2.29	94.30	0.00	92.039	91.429	2.26
Waterlilly Way	MH117	MH116			0.34					0.34		0.90	0.00	11.49	1.21	0.68	1.71	71.54	122.44					122.44	52.0	675			0.20	392.18	1.06	77.3	269.7	94.40	92.039	91.353	2.36	94.30	0.00	91.884	91.198	2.42
														12.70																											
Easement (Block 110)	MH116	MH115A										0.90	0.00	12.70	1.41		1.71	67.79	116.03					116.03	0.0	675			0.15	339.63	0.92	77.9	223.6	94.16	91.884	91.198	2.28	94.32	0.00	91.767	91.081	2.55
														14.11																											
Clarity (Street No. 5)	**MH115A**	**MH113**		**0.46**						**0.46**		**2.63**	**8.21**	**14.68**	**0.43**	**0.68**	**4.71**	**62.53**	**294.48**			**15.50**	**84.60**	**1311.58**	**1606.07**	**0.0**	**1500**			**0.15**	**2856.14**	**1.57**	**40.4**	**1250.1**	**94.22**	**91.767**	**90.243**	**2.45**	**94.10**	**0.00**	**91.707**	**90.183**	**2.39**
														15.11																											
Namaste (Street No. 4)	MH114	MH113		0.11	0.42					0.53		0.53	0.00	10.00	1.65	1.00	1.00	76.81	77.02					77.02	66.0	600			0.20	286.47	0.98	96.9	209.5	94.17	91.603	90.994	2.57	94.10	-0.30	91.409	90.800	2.69
														11.65																											
Clarity (Street No. 5)	**MH113**	**MH110**			**0.24**					**0.24**		**3.40**	**8.21**	**15.11**	**0.84**	**0.48**	**6.19**	**61.51**	**380.89**			**15.50**	**83.20**	**1289.87**	**1670.76**	**36.0**	**1500**			**0.15**	**2856.14**	**1.57**	**78.9**	**1185.4**	**94.10**	**91.707**	**90.183**	**2.39**	**94.02**	**0.00**	**91.588**	**90.064**	**2.43**
														15.95																											
Waterlilly Way	MH109A	EX. 21			0.13					0.13		0.13	0.00	10.00	1.65	0.26	0.26	76.81	19.99					19.99	18.0	300			0.35	59.68	0.82	80.8	39.7	94.60	92.393	92.088	2.21	94.77	0.00	92.110	91.805	2.66
Waterlilly Way	EX. 21	MH109			0.17		0.18			0.35		0.48	0.00	11.65	0.96	0.72	0.98	71.01	69.65					69.65	--	300			0.33	57.95	0.80	45.9	-11.7	94.77	92.110	91.805	2.66	95.00	0.45	91.959	91.654	3.04
Lilithe (Street No. 3)	MH109	MH110			0.22					0.22		0.70	0.00	12.60	1.27	0.44	1.42	68.07	96.74					96.74	34.0	450			0.35	175.96	1.07	81.7	79.2	95.00	91.508	91.051	3.49	94.02	-0.37	91.222	90.765	2.80
														13.87																											
Lilithe (Street No. 3)	MH112	MH111										0.00	0.00	10.00	1.30									0.00	0.0	375			0.25	91.46	0.80	62.7		94.14	91.545	91.164	2.59	93.80	0.00	91.388	91.007	2.41
Lilithe (Street No. 3)	MH111	MH110		0.27	0.53					0.80		0.80	0.00	11.30	1.16	1.46	1.46	72.14	105.23					105.23	84.0	600			0.16	256.22	0.88	60.9	151.0	93.80	91.388	90.779	2.41	94.02	-0.30	91.291	90.681	2.73
														12.46																											
Clarity (Street No. 5)	**MH110**	**MH110A**										**4.90**	**8.21**	**15.95**	**0.34**		**9.07**	**59.61**	**540.82**			**15.50**	**80.61**	**1249.67**	**1790.49**	**0.0**	**1500**			**0.15**	**2856.14**	**1.57**	**31.6**	**1065.6**	**94.02**	**91.588**	**90.064**	**2.43**	**93.68**	**0.00**	**91.541**	**90.017**	**2.14**
Clarity (Street No. 5)	**MH110A**	**MH106**			**0.23**					**0.23**		**5.13**	**8.21**	**16.29**	**0.47**	**0.46**	**9.53**	**58.89**	**561.37**			**15.50**	**79.62**	**1234.34**	**1795.71**	**34.0**	**1500**			**0.15**	**2856.14**	**1.57**	**44.0**	**1060.4**	**93.68**	**91.541**	**90.017**	**2.14**	**93.94**	**-0.04**	**91.475**	**89.951**	**2.46**
														16.75																											
Octave (Street No. 2)	MH108	MH107		0.33						0.33		0.33	0.00	10.00	1.30	0.49	0.49	76.81	37.34					37.34	0.0	375			0.25	91.46	0.80	62.7	54.1	94.02	91.769	91.388	2.25	93.75	0.00	91.612	91.231	2.14
Octave (Street No. 2)	MH107	MH106			0.56					0.56		0.89	0.00	11.30	1.33	1.12	1.61	72.14	115.94					115.94	90.0	525			0.16	179.46	0.80	64.3	63.5	93.75	91.612	91.079	2.14	93.94	0.00	91.510	90.976	2.43
														12.64																											
Clarity (Street No. 5)	**MH106**	**MH102**		**0.40**	**0.24**					**0.64**		**6.66**	**8.21**	**16.75**	**0.73**	**1.07**	**12.21**	**57.91**	**707.11**			**15.50**	**78.29**	**1213.69**	**1920.81**	**36.0**		**1585**	**2495**	**0.15**	**5749.47**	**1.87**	**82.2**	**3828.7**	**93.94**	**91.513**	**89.913**	**2.43**	**93.86**	**0.00**	**91.390**	**89.790**	**2.47**
														17.49																											
Waterlilly Way	MH109	EX. 20										0.00	0.00	10.00	0.16									0.00	--	300			0.33	57.95	0.80	7.7		95.00	91.960	91.656	3.04	94.96	-0.03	91.935	91.630	3.03
Waterlilly Way	EX. 20	EX. 19			0.16		0.17			0.33		0.33	0.00	10.16	1.40	0.68	0.68	76.19	51.77					51.77	--	375			0.24	89.05	0.80	67.4	37.3	94.96	91.961	91.580	3.00	94.68	0.04	91.801	91.420	2.88
Waterlilly Way	EX.19	MH101										0.33	0.00	11.57	1.59		0.68	71.27	48.43					48.43	--	375			0.28	96.96	0.85	81.2	48.5	94.68	91.761	91.380	2.92	93.94	0.36	91.533	91.152	2.41
Hamsa (Street No. 1)	MH101	MH102			0.19					0.19		0.52	0.00	13.16	1.42	0.38	1.06	66.49	70.46					70.46	28.0	450			0.25	148.72	0.91	77.2	78.3	94.00	91.171	90.714	2.83	93.86	-0.41	90.978	90.521	2.88
														14.58																											
Hamsa (Steet No. 1)	**MH102**	**MH103**			**0.22**					**0.22**		**7.40**	**8.21**	**17.49**	**0.33**	**0.44**	**13.71**	**56.46**	**774.00**			**15.50**	**76.29**	**1182.80**	**1956.79**	**32.0**		**1585**	**2495**	**0.15**	**5749.47**	**1.87**	**36.6**	**3792.7**	**93.86**	**91.390**	**89.790**	**2.47**	**93.37**	**-0.38**	**91.335**	**89.735**	**2.04**
														17.82																											
Hamsa (Street No. 1)	MH105	MH103		0.32	0.25					0.57		0.57	0.00	10.00	1.89	0.97	0.97	76.81	74.65					74.65	40.0	525			0.16	179.46	0.80	91.0	104.8	93.95	91.107	90.574	2.84	93.40	-0.75	90.961	90.428	2.44
														11.89																											
Easement (Block 116)	**MH103**	**MH104**										**7.97**	**8.21**	**17.82**	**0.33**		**14.68**	**55.83**	**819.72**			**15.50**	**75.44**	**1169.60**	**1989.32**	**0.0**	**1950**			**0.15**	**5749.47**	**1.87**	**36.4**	**3760.1**	**93.37**	**91.716**	**89.735**	**1.65**	**93.50**	**0.00**	**91.661**	**89.680**	**1.84**
Easement (Block 116)	**MH104**	**Pond**										**7.97**	**8.21**	**18.14**	**0.24**		**14.68**	**55.23**	**810.82**			**15.50**	**74.61**	**1156.77**	**1967.59**	**0.0**	**1950**			**0.15**	**5749.47**	**1.87**	**26.7**	**3781.9**	**93.50**	**91.661**	**89.680**	**1.84**	**93.50**	**0.00**	**91.621**	**89.640**	**1.88**
														18.38																											
																																								INVERT @ POND =	89.640	

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

HARMONY STAGE 1
4005 STRANDHERD DRIVE
CITY OF OTTAWA
MINTO COMMUNITIES INC.
JLR NO. 24051-001

SANITARY SEWER DESIGN SHEET

Designed by: J.W.
Checked by: K.F.

Date : May 2017

Single Family	3.4	pers/unit	q =	350	L/cap/day
Semi-Detached/Townhouse (row)	2.7	pers/unit	I =	0.280	L/s/ha
			Inst. =	50000	L/ha/day
Manning's Coeff. N =	0.013				

Denotes Existing Sanitary Sewer (South Nepean Collector) - In accordance with City of Ottawa Drawings Contract No. ISD14-2033
Denotes Existing Sanitary Sewer (Mattamy Barrhaven Mews) - Per IBI As-Constructed Drawings dated February 2010
Denotes Future External Lands (Refer to South Nepean Collector - Phase 2 & 3 Sanitary Sewer Design Sheet prepared by Novatech, dated August 2015)

STREET	M.H. #		RESIDENTIAL							INSTITUTIONAL/COMMERCIAL					SEWER DATA					RESIDUAL	UPSTREAM					DOWNSTREAM				
			NUMBER OF UNITS			CUMULATIVE		PEAKING	POPUL.				PEAK EXTR.	PEAK DES.																
			SING.	MULT.	AREA	POPUL.	AREA	FACTOR	FLOW	AREA	CUMM. AREA	INST. FLOW	FLOW	FLOW	DIA.	SLOPE	CAPAC.	VEL.	LENGTH	CAP.	Center	Obvert	Invert	Cover	Center	Obvert	Obvert	Invert	Cover
	FROM	TO			ha	peop.	ha		l/s	ha	ha	l/s	l/s	l/s	mm	%	l/s	m/s	m	l/s	Line				Line	Drop			
Hamsa Street (Street No. 1)	MH1	MH2	10	0	0.48	34	0.48	4.00	0.55	0.00	0.00	0.00	0.13	0.69	200	0.35	20.2	0.62	64.5	19.56	94.06	92.191	91.988	1.87	93.86	1.00	91.965	91.762	1.89
Hamsa Street (Street No. 1)	MH5	MH3	15	0	0.69	51	0.69	4.00	0.83	0.00	0.00	0.00	0.19	1.02	200	0.35	20.2	0.62	88.9	19.22	93.88	91.462	91.259	2.42	93.47		91.151	90.947	2.32
Hamsa Street (Street No. 1)	MH3	MH2	5	0	0.26	68	0.95	4.00	1.10	0.00	0.00	0.00	0.27	1.37	200	0.35	20.2	0.62	37.0	18.87	93.47	91.151	90.947	2.32	93.86	0.06	91.021	90.818	2.84
Clarity Street (Street No. 5)	**MH2**	**MH6**	**4**	**0**	**0.25**	**116**	**1.68**	**4.00**	**1.87**	**0.00**	**0.00**	**0.00**	**0.47**	**2.34**	**200**	**0.35**	**20.2**	**0.62**	**76.1**	**17.90**	**93.86**	**90.961**	**90.758**	**2.90**	**93.94**		**90.695**	**90.491**	**3.25**
Octave Street (Street No. 2)	MH8	MH7	12	0	0.51	41	0.51	4.00	0.66	0.00	0.00	0.00	0.14	0.80	200	0.35	20.2	0.62	62.6	19.44	94.07	91.194	90.991	2.88	93.77		90.975	90.772	2.79
Octave Street (Street No. 2)	MH7	MH6	10	0	0.41	75	0.92	4.00	1.21	0.00	0.00	0.00	0.26	1.47	200	0.35	20.2	0.62	63.1	18.77	93.77	90.975	90.772	2.79	93.94	0.06	90.755	90.551	3.19
Clarity Street (Street No. 5)	**MH6**	**MH10A**	**4**	**0**	**0.24**	**204**	**2.84**	**4.00**	**3.31**	**0.00**	**0.00**	**0.00**	**0.80**	**4.10**	**200**	**0.35**	**20.2**	**0.62**	**51.0**	**16.14**	**93.94**	**90.695**	**90.491**	**3.25**	**93.76**		**90.516**	**90.313**	**3.24**
Clarity Street (Street No. 5)	**MH10A**	**MH10**	**0**	**0**	**0.00**	**204**	**2.84**	**4.00**	**3.31**	**0.00**	**0.00**	**0.00**	**0.80**	**4.10**	**200**	**0.35**	**20.2**	**0.62**	**25.4**	**16.14**	**93.76**	**90.516**	**90.313**	**3.24**	**94.02**		**90.427**	**90.224**	**3.59**
Lilith Street (Street No. 3)	MH9	MH10	0	14	0.46	38	0.46	4.00	0.61	0.00	0.00	0.00	0.13	0.74	200	0.35	20.2	0.62	65.5	19.50	95.00	92.343	92.139	2.66	94.02	1.69	92.113	91.910	1.91
Lilith Street (Street No. 3)	MH12	MH11	10	0	0.46	34	0.46	4.00	0.55	0.00	0.00	0.00	0.13	0.68	200	0.35	20.2	0.62	62.8	19.56	94.15	90.919	90.716	3.23	93.84		90.699	90.496	3.14
Lilith Street (Street No. 3)	MH11	MH10	9	0	0.41	65	0.87	4.00	1.05	0.00	0.00	0.00	0.24	1.29	200	0.35	20.2	0.62	60.5	18.95	93.84	90.699	90.496	3.14	94.02	0.06	90.487	90.284	3.53
Clarity Street (Street No. 5)	**MH10**	**MH13**	**0**	**6**	**0.27**	**323**	**4.44**	**4.00**	**5.23**	**0.00**	**0.00**	**0.00**	**1.24**	**6.47**	**200**	**0.35**	**20.2**	**0.62**	**78.5**	**13.77**	**94.02**	**90.427**	**90.224**	**3.59**	**94.10**		**90.153**	**89.949**	**3.95**
Namaste (Street No. 4)	MH14	MH13	14	0	0.69	48	0.69	4.00	0.77	0.00	0.00	0.00	0.19	0.96	200	0.35	20.2	0.62	97.1	19.28	94.20	90.552	90.349	3.65	94.10	0.06	90.213	90.009	3.89
Clarity Street (Street No. 5)	**MH13**	**MH15**	**0**	**17**	**0.59**	**416**	**5.72**	**4.00**	**6.74**	**0.00**	**0.00**	**0.00**	**1.60**	**8.34**	**200**	**0.35**	**20.2**	**0.62**	**117.4**	**11.90**	**94.10**	**90.153**	**89.949**	**3.95**	**94.22**	**-0.05**	**89.742**	**89.538**	**4.48**
Park (Block 117)	MH16	MH15	0	0	1.67	0	1.67	4.00	0.00	0.00	0.00	0.00	0.47	0.47	150	0.50	11.2	0.62	12.9	10.77	94.32	90.357	90.205	3.96	94.22	0.50	90.293	90.140	3.93
Clarity Street (Street No. 5)	**MH15**	**EX. CM 4**	**0**	**12**	**0.46**	**449**	**7.85**	**4.00**	**7.26**	**0.00**	**0.00**	**0.00**	**2.20**	**9.46**	**300**	**2.00**	**142.7**	**1.96**	**106.9**	**133.21**	**94.22**	**89.793**	**89.488**	**4.43**	**94.32**	**0.01**	**87.655**	**87.350**	**6.66**
Future Institutional (Block 127)	STUB	EX. CM 4	0	0	0.00	0	0.00	4.00	0.00	4.86 *	4.86	4.22	1.36	5.58	250	1.00	62.0	1.22	15.7	56.46	94.41	90.431	90.177	3.98	94.32	2.63	90.274	90.020	4.05
Upstream Mixed Use Development	--	EX. CM 1	--	--	105.84	10974	105.84	2.91	129.56	175.19	175.19	152.07	78.69	360.33															
Chapman Mills Drive	EX. CM 1	EX. CM 2	0	0	0.16	10974	106.00	2.91	129.56	0.00	175.19	152.07	78.73	360.37	900	0.10	597.2	0.91	60.9	236.85	95.03	87.833	86.918	7.20	94.43		87.772	86.857	6.66
Future Commercial (Block 105)	STUB	EX. CM 2	0	0	0.00	0	0.00	4.00	0.00	0.76	0.76	0.66	0.21	0.87	250	1.00	62.0	1.22	15.0	61.17	94.53	90.624	90.370	3.91	94.43	2.70	90.474	90.220	3.96
Chapman Mills Drive	EX. CM 2	EX. CM 3	0	0	0.16	10974	106.16	2.91	129.56	0.00	175.95	152.73	78.99	361.29	900	0.10	597.2	0.91	47.4	235.94	94.43	87.772	86.857	6.66	94.41		87.724	86.810	6.69
Waterlilly Way	EX. 22A	17	0	22	0.56	59	0.56	4.00	0.96	0.00	0.00	0.00	0.16	1.12	200	1.00	34.2	1.06	84.2	33.10	94.59	92.702	92.499	1.89	94.40	0.55	91.860	91.657	2.54
Waterlilly Way	17	EX. CM 3	5	17	0.70	122	1.26	4.00	1.98	0.00	0.00	0.00	0.35	2.33	250	1.00	62.0	1.22	105.6	59.70	94.40	91.310	91.056	3.09	94.41	2.53	90.254	90.000	4.16
Chapman Mills Drive	EX. CM 3	EX. CM 4	0	0	0.21	11096	107.63	2.91	130.79	0.00	175.95	152.73	79.40	362.93	900	0.10	597.2	0.91	76.1	234.30	94.41	87.724	86.810	6.69	94.32		87.648	86.734	6.67
Chapman Mills Drive	EX. CM 4	EX. CM 5	0	0	0.09	11545	115.57	2.89	135.27	0.00	180.81	156.95	82.99	375.21	900	0.10	597.2	0.91	32.0	222.01	94.32	87.648	86.734	6.67	94.20		87.616	86.702	6.58
Chapman Mills Drive	EX. CM 5	EX. CM 6	0	0	0.11	11545	115.68	2.89	135.27	0.00	180.81	156.95	83.02	375.24	900	0.10	597.2	0.91	42.3	221.98	94.20	87.616	86.702	6.58	94.30		87.574	86.660	6.73
High Density Residential (Block 118)	STUB	18	0	24	0.32	65	0.32	4.00	1.05	0.00	0.00	0.00	0.09	1.14	200	0.35	20.2	0.62	9.0	19.10	94.39	90.090	89.887	4.30	94.27	0.00	90.059	89.855	4.21
Chakra Street (Street No. 6)	18	EX. CM 6	0	0	0.10	65	0.42	4.00	1.05	0.00	0.00	0.00	0.12	1.17	300	4.00	201.8	2.77	46.8	200.60	94.27	90.059	89.754	4.21	94.30	0.61	88.185	87.880	6.11
Chapman Mills Drive	EX. CM 6	EX. CM 7	0	0	0.21	11610	116.31	2.89	135.92	0.00	180.81	156.95	83.19	376.06	900	0.10	597.2	0.91	74.0	221.16	94.30	87.574	86.660	6.73	93.40	0.01	87.500	86.586	5.90
Future Residential Development	STUB	EX. CM 7	0	0	8.83 *	1430 **	8.83	3.69	21.41	5.35	5.35	4.64	3.97	30.02	250	0.25	31.0	0.61	12.0	1.00	93.61	87.434	87.180	6.18	93.40	-0.09	87.404	87.150	6.00
Chapman Mills Drive	EX. CM 7	EX. CM 8	0	0	0.00	13040	125.14	2.84	149.99	0.00	186.16	161.59	87.16	398.75	900	0.10	597.2	0.91	25.7	198.48	93.40	87.490	86.576	5.91	93.38		87.464	86.550	5.92
																											INV =	**86.550**	

Notes:
* Institutional, Commercial and Residential Area taken from Draft Plan of Subdivision prepared by Annis, O'Sullivan, Vollebekk Ltd. (Residential Area inclusive of Future Transit Corridor (2.279 Ha) and Servicing Easement (0.112 Ha))
** Cumulative Population based on Medium Density Residential Land Use (162 pers/ha) as per Novatech's South Nepean Collector - Phase 2 & 3 Sanitary Sewer Design Sheet dated August 2015

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

HARMONY STAGE 1
4005 STRANDHERD DRIVE
CITY OF OTTAWA
MINTO COMMUNITIES INC.
JLR NO. 24051-001

SANITARY SEWER DESIGN SHEET

Designed by: J.W.
Checked by: K.F.

Date : May 2017

Single Family	3.4	pers/unit	q =	350	L/cap/day
Semi-Detached/Townhouse (row)	2.7	pers/unit	I =	0.280	L/s/ha
			Inst. =	50000	L/ha/day
Manning's Coeff. N =	0.013				

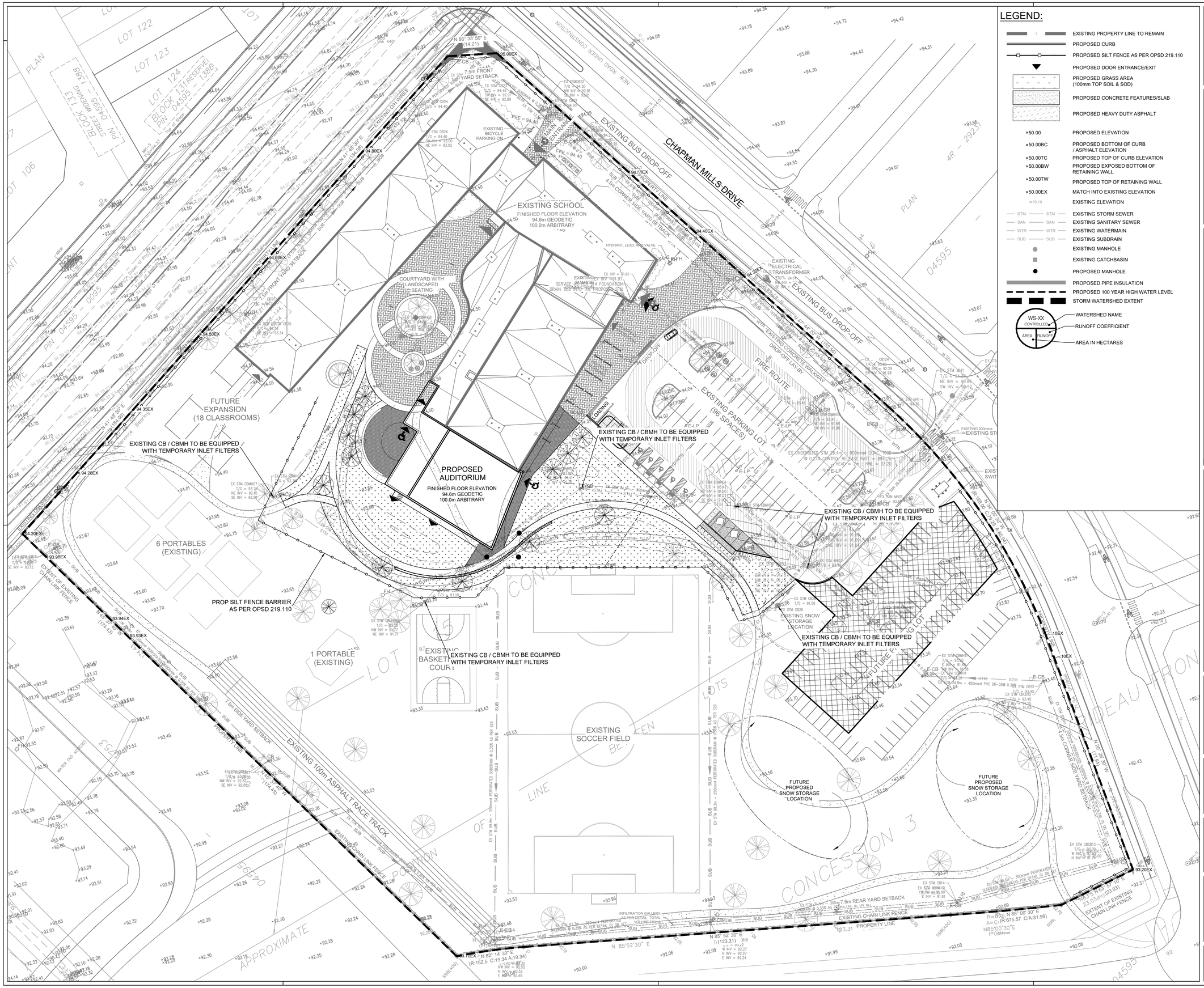
Denotes Existing Sanitary Sewer (South Nepean Collector) - In accordance with City of Ottawa Drawings Contract No. ISD14-2033
Denotes Existing Sanitary Sewer (Mattamy Barrhaven Mews) - Per IBI As-Constructed Drawings dated February 2010
Denotes Future External Lands (Refer to South Nepean Collector - Phase 2 & 3 Sanitary Sewer Design Sheet prepared by Novatech, dated August 2015)

STREET	M.H. #		RESIDENTIAL							INSTITUTIONAL/COMMERCIAL					SEWER DATA					RESIDUAL	UPSTREAM					DOWNSTREAM				
			NUMBER OF UNITS			CUMULATIVE		PEAKING	POPUL.				PEAK EXTR.	PEAK DES.																
			SING.	MULT.	AREA	POPUL.	AREA	FACTOR	FLOW	AREA	CUMM. AREA	INST. FLOW	FLOW	FLOW	DIA.	SLOPE	CAPAC.	VEL.	LENGTH	CAP.	Center	Obvert	Invert	Cover	Center	Obvert	Obvert	Invert	Cover
	FROM	TO			ha	peop.	ha		l/s	ha	ha	l/s	l/s	l/s	mm	%	l/s	m/s	m	l/s	Line				Line	Drop			
Hamsa Street (Street No. 1)	MH1	MH2	10	0	0.48	34	0.48	4.00	0.55	0.00	0.00	0.00	0.13	0.69	200	0.35	20.2	0.62	64.5	19.56	94.06	92.191	91.988	1.87	93.86	1.00	91.965	91.762	1.89
Hamsa Street (Street No. 1)	MH5	MH3	15	0	0.69	51	0.69	4.00	0.83	0.00	0.00	0.00	0.19	1.02	200	0.35	20.2	0.62	88.9	19.22	93.88	91.462	91.259	2.42	93.47		91.151	90.947	2.32
Hamsa Street (Street No. 1)	MH3	MH2	5	0	0.26	68	0.95	4.00	1.10	0.00	0.00	0.00	0.27	1.37	200	0.35	20.2	0.62	37.0	18.87	93.47	91.151	90.947	2.32	93.86	0.06	91.021	90.818	2.84
Clarity Street (Street No. 5)	**MH2**	**MH6**	**4**	**0**	**0.25**	**116**	**1.68**	**4.00**	**1.87**	**0.00**	**0.00**	**0.00**	**0.47**	**2.34**	**200**	**0.35**	**20.2**	**0.62**	**76.1**	**17.90**	**93.86**	**90.961**	**90.758**	**2.90**	**93.94**		**90.695**	**90.491**	**3.25**
Octave Street (Street No. 2)	MH8	MH7	12	0	0.51	41	0.51	4.00	0.66	0.00	0.00	0.00	0.14	0.80	200	0.35	20.2	0.62	62.6	19.44	94.07	91.194	90.991	2.88	93.77		90.975	90.772	2.79
Octave Street (Street No. 2)	MH7	MH6	10	0	0.41	75	0.92	4.00	1.21	0.00	0.00	0.00	0.26	1.47	200	0.35	20.2	0.62	63.1	18.77	93.77	90.975	90.772	2.79	93.94	0.06	90.755	90.551	3.19
Clarity Street (Street No. 5)	**MH6**	**MH10A**	**4**	**0**	**0.24**	**204**	**2.84**	**4.00**	**3.31**	**0.00**	**0.00**	**0.00**	**0.80**	**4.10**	**200**	**0.35**	**20.2**	**0.62**	**51.0**	**16.14**	**93.94**	**90.695**	**90.491**	**3.25**	**93.76**		**90.516**	**90.313**	**3.24**
Clarity Street (Street No. 5)	**MH10A**	**MH10**	**0**	**0**	**0.00**	**204**	**2.84**	**4.00**	**3.31**	**0.00**	**0.00**	**0.00**	**0.80**	**4.10**	**200**	**0.35**	**20.2**	**0.62**	**25.4**	**16.14**	**93.76**	**90.516**	**90.313**	**3.24**	**94.02**		**90.427**	**90.224**	**3.59**
Lilith Street (Street No. 3)	MH9	MH10	0	14	0.46	38	0.46	4.00	0.61	0.00	0.00	0.00	0.13	0.74	200	0.35	20.2	0.62	65.5	19.50	95.00	92.343	92.139	2.66	94.02	1.69	92.113	91.910	1.91
Lilith Street (Street No. 3)	MH12	MH11	10	0	0.46	34	0.46	4.00	0.55	0.00	0.00	0.00	0.13	0.68	200	0.35	20.2	0.62	62.8	19.56	94.15	90.919	90.716	3.23	93.84		90.699	90.496	3.14
Lilith Street (Street No. 3)	MH11	MH10	9	0	0.41	65	0.87	4.00	1.05	0.00	0.00	0.00	0.24	1.29	200	0.35	20.2	0.62	60.5	18.95	93.84	90.699	90.496	3.14	94.02	0.06	90.487	90.284	3.53
Clarity Street (Street No. 5)	**MH10**	**MH13**	**0**	**6**	**0.27**	**323**	**4.44**	**4.00**	**5.23**	**0.00**	**0.00**	**0.00**	**1.24**	**6.47**	**200**	**0.35**	**20.2**	**0.62**	**78.5**	**13.77**	**94.02**	**90.427**	**90.224**	**3.59**	**94.10**		**90.153**	**89.949**	**3.95**
Namaste (Street No. 4)	MH14	MH13	14	0	0.69	48	0.69	4.00	0.77	0.00	0.00	0.00	0.19	0.96	200	0.35	20.2	0.62	97.1	19.28	94.20	90.552	90.349	3.65	94.10	0.06	90.213	90.009	3.89
Clarity Street (Street No. 5)	**MH13**	**MH15**	**0**	**17**	**0.59**	**416**	**5.72**	**4.00**	**6.74**	**0.00**	**0.00**	**0.00**	**1.60**	**8.34**	**200**	**0.35**	**20.2**	**0.62**	**117.4**	**11.90**	**94.10**	**90.153**	**89.949**	**3.95**	**94.22**	**-0.05**	**89.742**	**89.538**	**4.48**
Park (Block 117)	MH16	MH15	0	0	1.67	0	1.67	4.00	0.00	0.00	0.00	0.00	0.47	0.47	150	0.50	11.2	0.62	12.9	10.77	94.32	90.357	90.205	3.96	94.22	0.50	90.293	90.140	3.93
Clarity Street (Street No. 5)	**MH15**	**EX. CM 4**	**0**	**12**	**0.46**	**449**	**7.85**	**4.00**	**7.26**	**0.00**	**0.00**	**0.00**	**2.20**	**9.46**	**300**	**2.00**	**142.7**	**1.96**	**106.9**	**133.21**	**94.22**	**89.793**	**89.488**	**4.43**	**94.32**	**0.01**	**87.655**	**87.350**	**6.66**
Future Institutional (Block 127)	STUB	EX. CM 4	0	0	0.00	0	0.00	4.00	0.00	4.86 *	4.86	4.22	1.36	5.58	250	1.00	62.0	1.22	15.7	56.46	94.41	90.431	90.177	3.98	94.32	2.63	90.274	90.020	4.05
Upstream Mixed Use Development	--	EX. CM 1	--	--	105.84	10974	105.84	2.91	129.56	175.19	175.19	152.07	78.69	360.33															
Chapman Mills Drive	EX. CM 1	EX. CM 2	0	0	0.16	10974	106.00	2.91	129.56	0.00	175.19	152.07	78.73	360.37	900	0.10	597.2	0.91	60.9	236.85	95.03	87.833	86.918	7.20	94.43		87.772	86.857	6.66
Future Commercial (Block 105)	STUB	EX. CM 2	0	0	0.00	0	0.00	4.00	0.00	0.76	0.76	0.66	0.21	0.87	250	1.00	62.0	1.22	15.0	61.17	94.53	90.624	90.370	3.91	94.43	2.70	90.474	90.220	3.96
Chapman Mills Drive	EX. CM 2	EX. CM 3	0	0	0.16	10974	106.16	2.91	129.56	0.00	175.95	152.73	78.99	361.29	900	0.10	597.2	0.91	47.4	235.94	94.43	87.772	86.857	6.66	94.41		87.724	86.810	6.69
Waterlilly Way	EX. 22A	17	0	22	0.56	59	0.56	4.00	0.96	0.00	0.00	0.00	0.16	1.12	200	1.00	34.2	1.06	84.2	33.10	94.59	92.702	92.499	1.89	94.40	0.55	91.860	91.657	2.54
Waterlilly Way	17	EX. CM 3	5	17	0.70	122	1.26	4.00	1.98	0.00	0.00	0.00	0.35	2.33	250	1.00	62.0	1.22	105.6	59.70	94.40	91.310	91.056	3.09	94.41	2.53	90.254	90.000	4.16
Chapman Mills Drive	EX. CM 3	EX. CM 4	0	0	0.21	11096	107.63	2.91	130.79	0.00	175.95	152.73	79.40	362.93	900	0.10	597.2	0.91	76.1	234.30	94.41	87.724	86.810	6.69	94.32		87.648	86.734	6.67
Chapman Mills Drive	EX. CM 4	EX. CM 5	0	0	0.09	11545	115.57	2.89	135.27	0.00	180.81	156.95	82.99	375.21	900	0.10	597.2	0.91	32.0	222.01	94.32	87.648	86.734	6.67	94.20		87.616	86.702	6.58
Chapman Mills Drive	EX. CM 5	EX. CM 6	0	0	0.11	11545	115.68	2.89	135.27	0.00	180.81	156.95	83.02	375.24	900	0.10	597.2	0.91	42.3	221.98	94.20	87.616	86.702	6.58	94.30		87.574	86.660	6.73
High Density Residential (Block 118)	STUB	18	0	24	0.32	65	0.32	4.00	1.05	0.00	0.00	0.00	0.09	1.14	200	0.35	20.2	0.62	9.0	19.10	94.39	90.090	89.887	4.30	94.27	0.00	90.059	89.855	4.21
Chakra Street (Street No. 6)	18	EX. CM 6	0	0	0.10	65	0.42	4.00	1.05	0.00	0.00	0.00	0.12	1.17	300	4.00	201.8	2.77	46.8	200.60	94.27	90.059	89.754	4.21	94.30	0.61	88.185	87.880	6.11
Chapman Mills Drive	EX. CM 6	EX. CM 7	0	0	0.21	11610	116.31	2.89	135.92	0.00	180.81	156.95	83.19	376.06	900	0.10	597.2	0.91	74.0	221.16	94.30	87.574	86.660	6.73	93.40	0.01	87.500	86.586	5.90
Future Residential Development	STUB	EX. CM 7	0	0	8.83 *	1430 **	8.83	3.69	21.41	5.35	5.35	4.64	3.97	30.02	250	0.25	31.0	0.61	12.0	1.00	93.61	87.434	87.180	6.18	93.40	-0.09	87.404	87.150	6.00
Chapman Mills Drive	EX. CM 7	EX. CM 8	0	0	0.00	13040	125.14	2.84	149.99	0.00	186.16	161.59	87.16	398.75	900	0.10	597.2	0.91	25.7	198.48	93.40	87.490	86.576	5.91	93.38		87.464	86.550	5.92
																											INV =	**86.550**	

Notes:
* Institutional, Commercial and Residential Area taken from Draft Plan of Subdivision prepared by Annis, O'Sullivan, Vollebekk Ltd. (Residential Area inclusive of Future Transit Corridor (2.279 Ha) and Servicing Easement (0.112 Ha))
** Cumulative Population based on Medium Density Residential Land Use (162 pers/ha) as per Novatech's South Nepean Collector - Phase 2 & 3 Sanitary Sewer Design Sheet dated August 2015

APPENDIX E

Engineering Drawings



LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED DOOR ENTRANCE/EXIT
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
- ×50.00 PROPOSED ELEVATION
- ×50.00BC PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
- ×50.00TC PROPOSED TOP OF CURB ELEVATION
- ×50.00BW PROPOSED EXPOSED BOTTOM OF RETAINING WALL
- ×50.00TW PROPOSED TOP OF RETAINING WALL
- ×50.00EX MATCH INTO EXISTING ELEVATION
- ×70.19 EXISTING ELEVATION
- STM STM EXISTING STORM SEWER
- SAN SAN EXISTING SANITARY SEWER
- WTR WTR EXISTING WATERMAIN
- SUB SUB EXISTING SUBDRAIN
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED PIPE INSULATION
- PROPOSED 100 YEAR HIGH WATER LEVEL
- STORM WATERSHED EXTENT
- WS-XX CONTROLLED / UNCONTROLLED — WATERSHED NAME
- AREA — RUNOFF — RUNOFF COEFFICIENT
- AREA IN HECTARES

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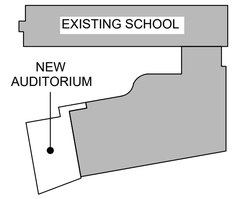
Conseil des école publique de l'Est de l'Ontario

key plan



no.	date	revision/issue	by
2	2026.01.16	ISSUED FOR SPC	K.H.
1	2025.12.19	33% COORDINATION	K.H.

architecture

PROVENCHER_ROY

PROVENCHER ROY ASSOCIÉS ARCHITECTES INC. T 613 686.6339
47 Rue Clarence, Suite 440 T 613 680.6339
OTTAWA, ONTARIO, CANADA K1N 9K1 PROVENCHERROY.CA

consultants

JAMES B. LENNOX & ASSOCIATES LANDSCAPE ARCHITECTS

CUNLIFFE & ASSOCIATES CONSULTING STRUCTURAL ENGINEERS

LRJ ENGINEERING | MANAGEMENT

northpoint

professional stamp

LICENSED PROFESSIONAL ENGINEER — R. E. PARKES — 100045152 — 2026-01-16 — PROVINCE OF ONTARIO

project title

AUDITORIUM ADDITION

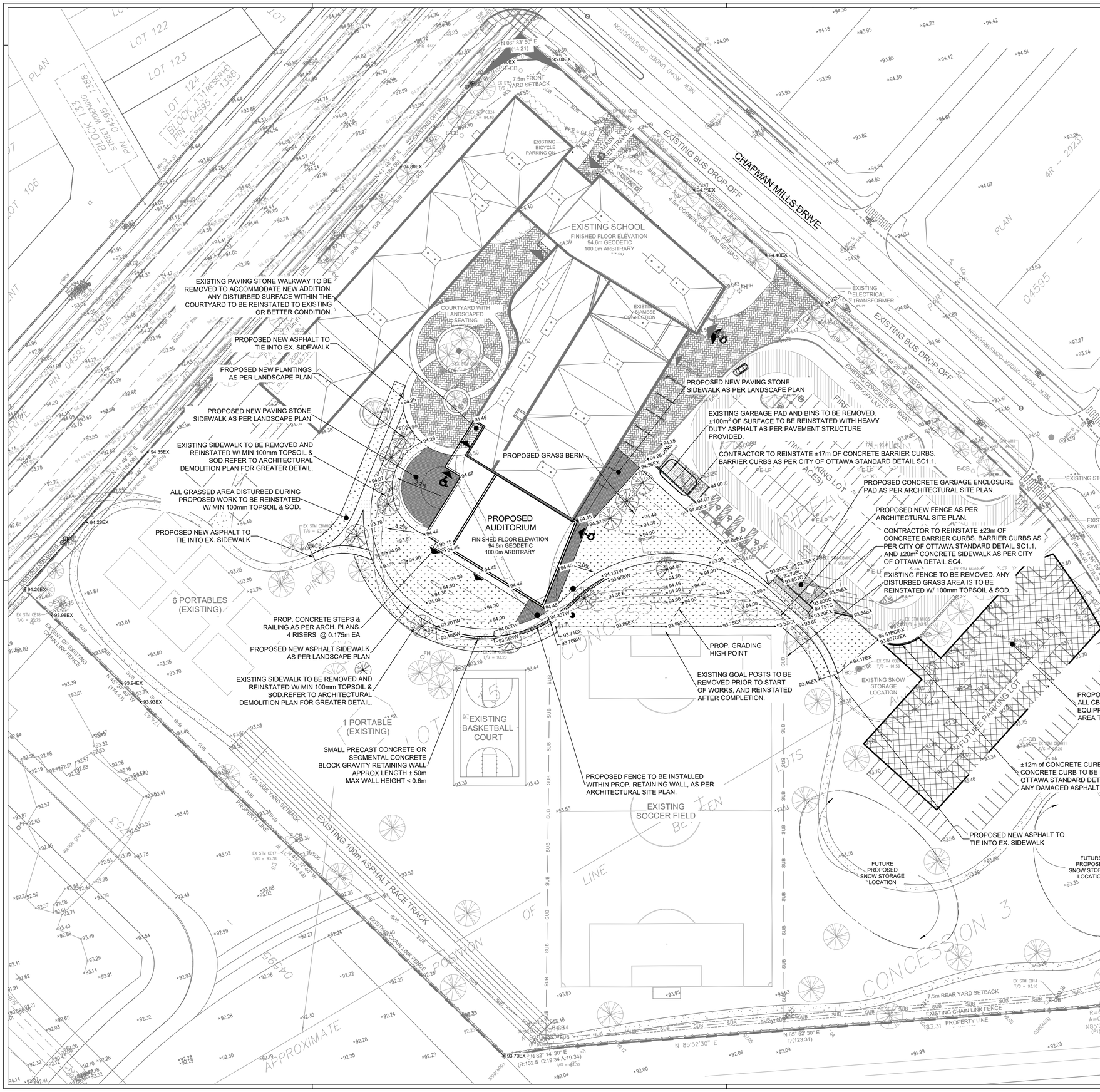
ESP PAUL-DE-BLOIS - 1310 CHAPMAN MILLS DR., OTTAWA, ON K2J 3T9

drawing title

EROSION & SEDIMENT CONTROL PLAN

date	Issue Date	job. no.	220512
scale	1 : 500		
drawn	K.H.	drawing no.	C101
approved	M.B.		
plot date	2025-12-19 12:30 PM		

1. DO NOT SCALE FROM THIS DRAWING
2. CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES BEFORE WORK COMMENCES
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE FOLLOWING DRAWINGS: STRUCTURAL, MECHANICAL, ELECTRICAL



LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED DOOR ENTRANCE/EXIT
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
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- STM STM EXISTING STORM SEWER
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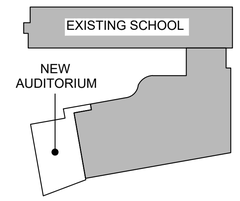
- WTR WTR EXISTING WATERMAIN
- SUB SUB EXISTING SUBDRAIN
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED PIPE INSULATION
- PROPOSED 100 YEAR HIGH WATER LEVEL
- STORM WATERSHED EXTENT
- WS-XX CONTROLLED / AREA / RUNOFF
  - WATERSHED NAME
  - RUNOFF COEFFICIENT
  - AREA IN HECTARES

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

Conseil des école publique de l'Est de l'Ontario

key plan



no.	date	revision/issue	by
2	2026.01.16	ISSUED FOR SPC	K.H.
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architecture

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CUNLIFFE & ASSOCIATES CONSULTING STRUCTURAL ENGINEERS

LRJ ENGINEERING | INGÉNIERIE

northpoint

professional stamp

LICENSED PROFESSIONAL ENGINEER R. E. PARKES 100045152 2026-01-16 PROVINCE OF ONTARIO

project title

AUDITORIUM ADDITION

ESP PAUL-DE-BLOIS - 1310 CHAPMAN MILLS DR., OTTAWA, ON K2J 3T9

drawing title

GRADING & DRAINAGE PLAN

date	Issue Date	job. no.	220512
scale	1 : 500		
drawn	K.H.	drawing no.	C301
approved	M.B.		
plot date	2025-12-19 12:30 PM		

1. DO NOT SCALE FROM THIS DRAWING
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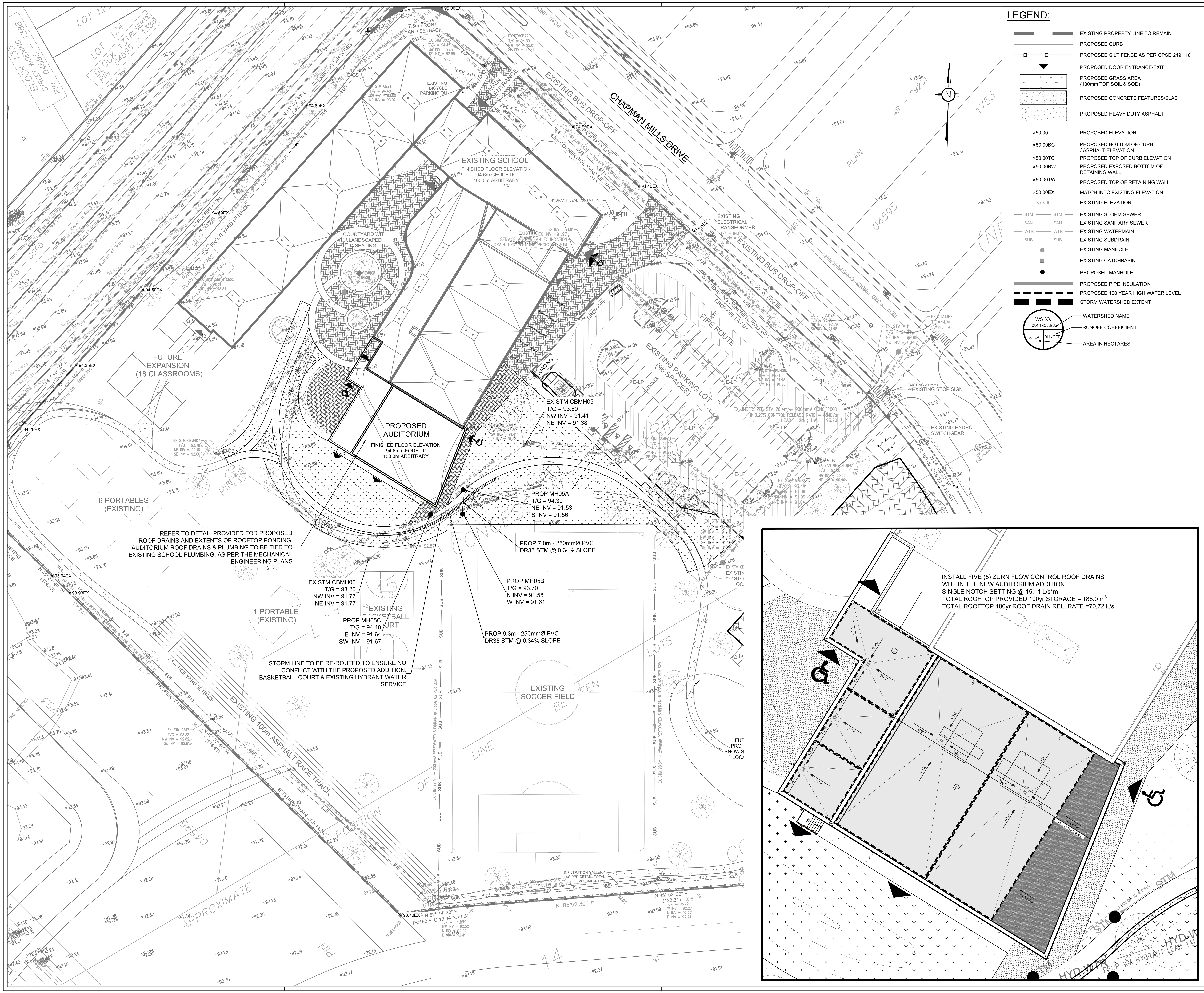

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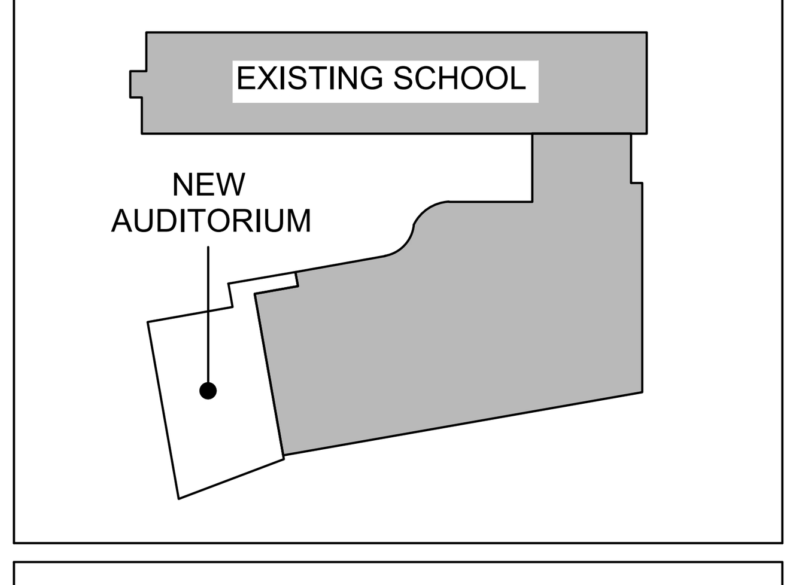
key plan



no.	date	revision/issue	by
2	2026.01.16	ISSUED FOR SPC	K.H.
1	2025.12.19	33% COORDINATION	K.H.

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CONSULTING STRUCTURAL ENGINEERS

LRJ

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professional stamp

K.L. PARADIS 100045152 2026-01-16 PROVINCE OF ONTARIO

project title

AUDITORIUM ADDITION

ESP PAUL-DE-BLOIS - 1310 CHAPMAN MILLS DR., OTTAWA, ON K2J 3T9

drawing title

SERVICING PLAN

date	Issue Date	job. no.	220512
scale	1 : 400		
drawn	K.H.	drawing no.	C401
approved	M.B.		
plot date	2025-12-19 12:30 PM		

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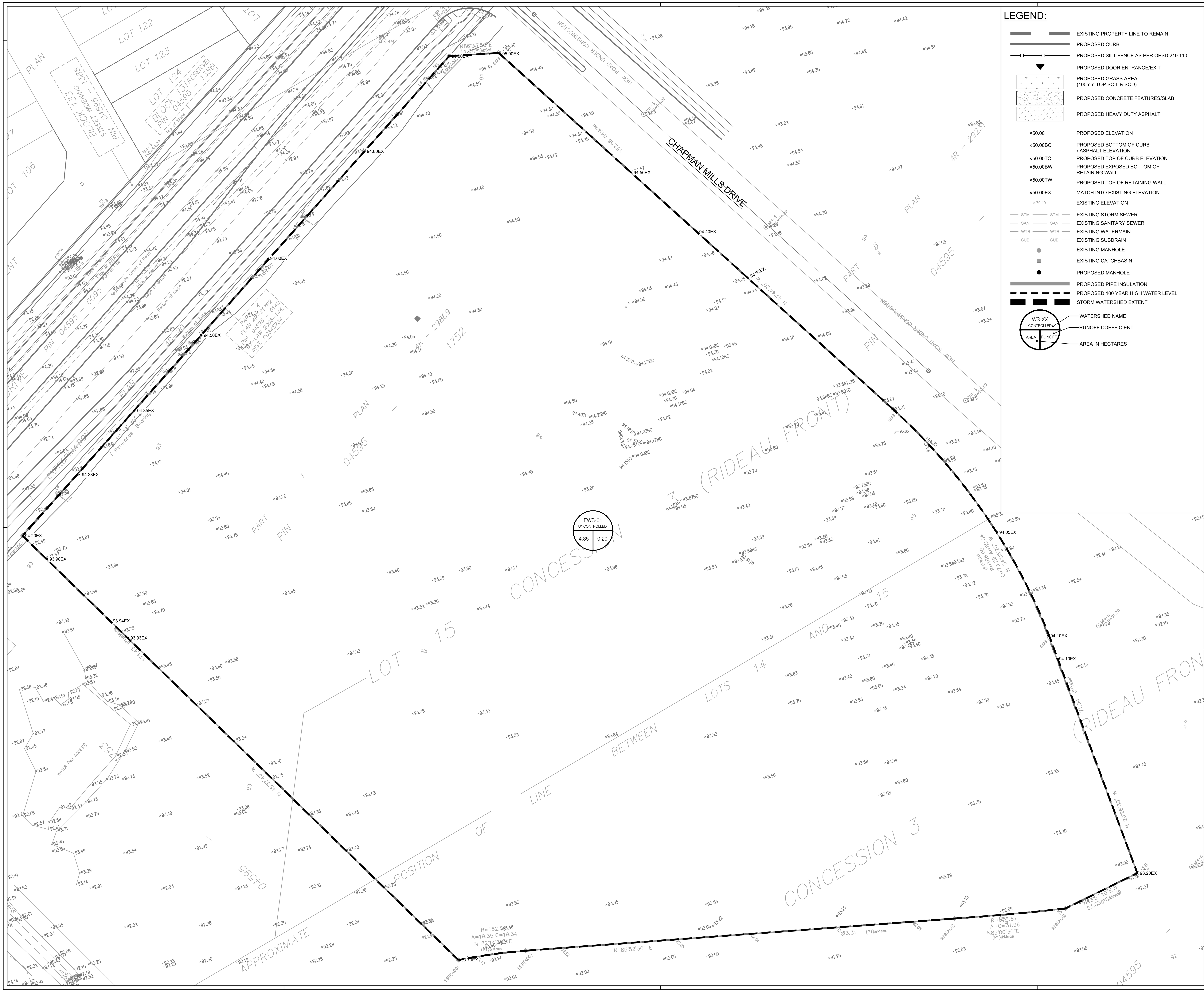

LEGEND:

	EXISTING PROPERTY LINE TO REMAIN
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	PROPOSED DOOR ENTRANCE/EXIT
	PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
	PROPOSED CONCRETE FEATURES/SLAB
	PROPOSED HEAVY DUTY ASPHALT
×50.00	PROPOSED ELEVATION
×50.00BC	PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
×50.00TC	PROPOSED TOP OF CURB ELEVATION
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×50.00TW	PROPOSED TOP OF RETAINING WALL
×50.00EX	MATCH INTO EXISTING ELEVATION
×70.19	EXISTING ELEVATION
STM	EXISTING STORM SEWER
SAN	EXISTING SANITARY SEWER
WTR	EXISTING WATERMAIN
SUB	EXISTING SUBDRAIN
	EXISTING MANHOLE
	EXISTING CATCHBASIN
	PROPOSED MANHOLE
	PROPOSED PIPE INSULATION
	PROPOSED 100 YEAR HIGH WATER LEVEL
	STORM WATERSHED EXTENT

WS-XX CONTROLLED — WATERSHED NAME; RUNOFF — RUNOFF COEFFICIENT; AREA — AREA IN HECTARES

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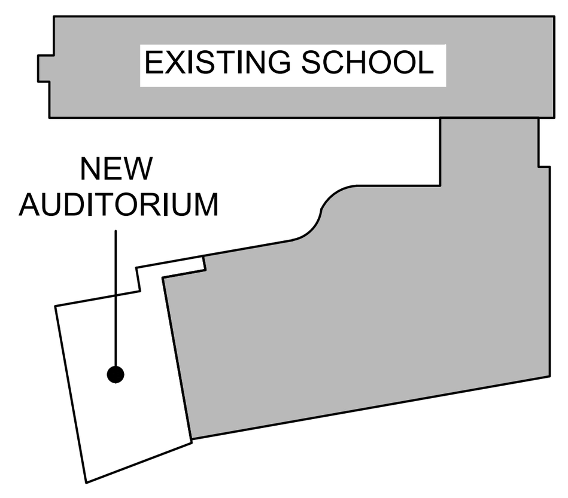
key plan



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professional stamp

LICENSED PROFESSIONAL ENGINEER K.L. PARDIS 100045152 2026-01-16 PROVINCE OF ONTARIO

project title

AUDITORIUM ADDITION

ESP PAUL-DE-BLOIS - 1310 CHAPMAN MILLS DR., OTTAWA, ON K2J 3T9

drawing title

PRE-DEVELOPMENT WATERSHED PLAN

date	Issue Date	job. no.	220512
scale	1 : 500		
drawn	K.H.	drawing no.	C701
approved	M.B.		
plot date	2025-12-19 12:30 PM		

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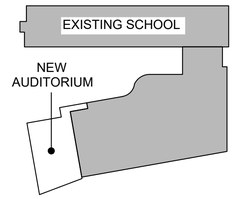

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professional stamp

LICENSED PROFESSIONAL ENGINEER
K. L. PARADIS
100045192
2026-01-16
PROVINCE OF ONTARIO

project title

AUDITORIUM ADDITION

ESP PAUL-DE-BLOIS - 1310 CHAPMAN MILLS DR., OTTAWA, ON K2J 3T9

drawing title

POST-DEVELOPMENT WATERSHED PLAN (PRE-ADDITION)

date	Issue Date	job. no.	220512
scale	1 : 500		
drawn	K.H.	drawing no.	C702
approved	M.B.		
plot date	2025-12-19 12:30 PM		

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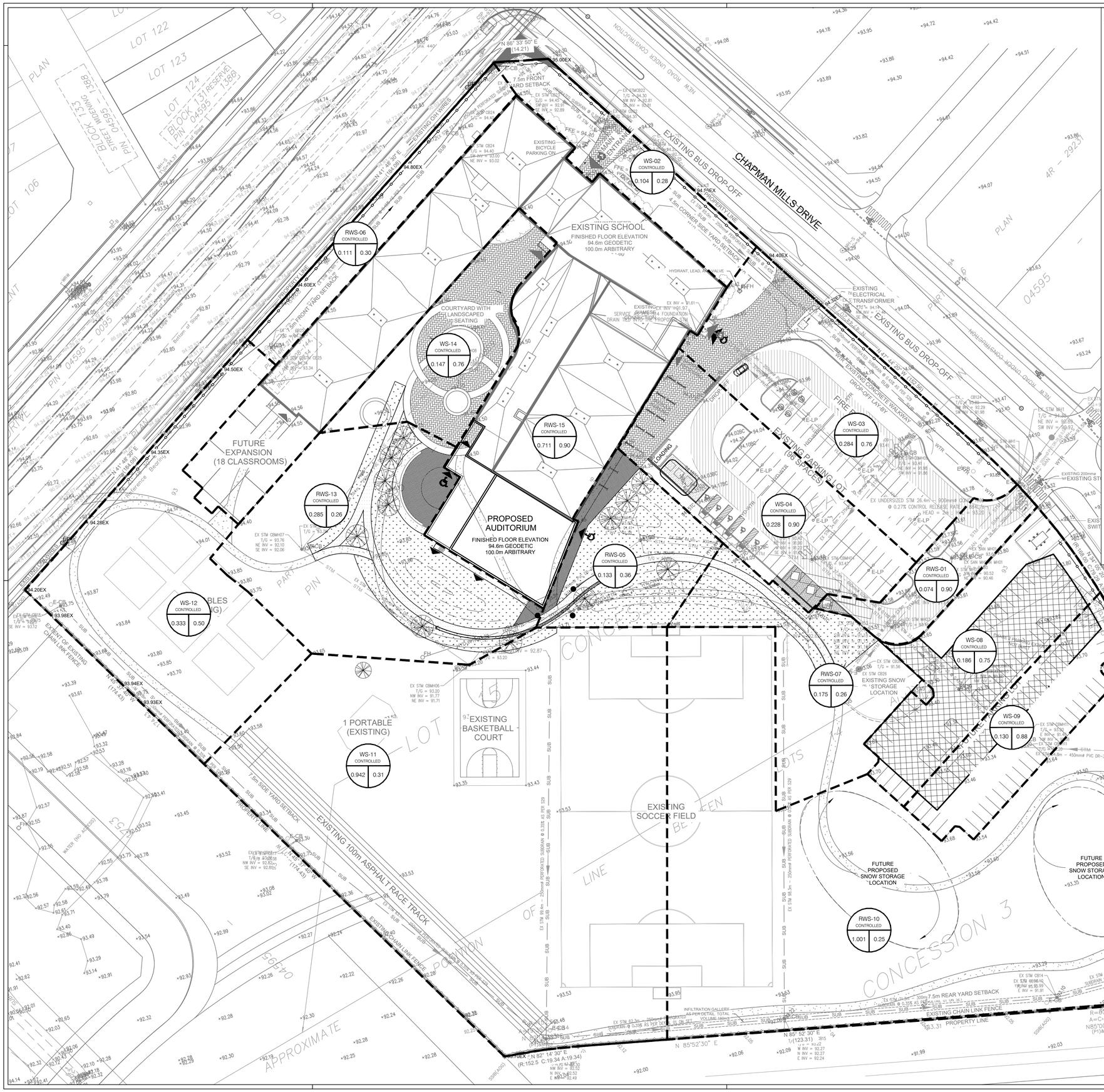

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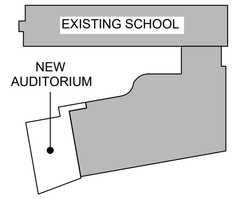

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LICENSED K.L. PAROBIS 100045152 2026-01-16 PROFESSIONAL ENGINEERS PROVINCE OF ONTARIO

project title

AUDITORIUM ADDITION

ESP PAUL-DE-BLOIS - 1310 CHAPMAN MILLS DR., OTTAWA, ON K2J 3T9

drawing title

POST-DEVELOPMENT WATERSHED PLAN (POST-ADDITION)

date	Issue Date	job. no.	220512
scale	1 : 500		
drawn	K.H.	drawing no.	C703
approved	M.B.		
plot date	2025-12-19 12:30 PM		

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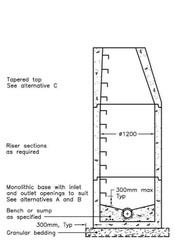
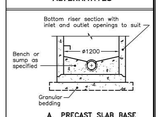
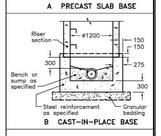


SUMP DETAIL

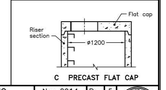
ALTERNATIVES



A PRECAST SLAB BASE



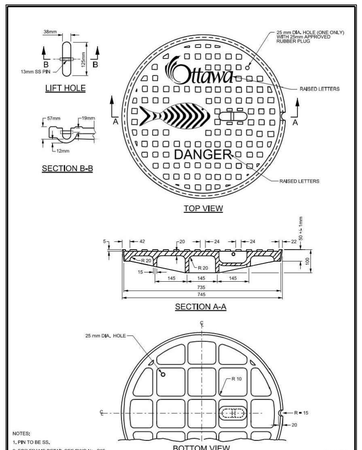
B CAST-IN-PLACE BASE



C PRECAST FLAT CAP

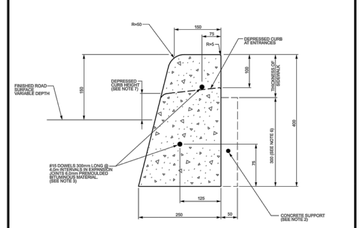
NOTES:
1 The sump is measured from the lowest invert.
A Granular backfill shall be placed to a minimum thickness of 300mm all around the maintenance hole.
B Precast concrete components shall be according to OPSD 701.030, 701.031, or 701.032.
C Structure exceeding 5.0m in depth shall include safety platform according to OPSD 404.020.
D Pipe support according to OPSD 708.020.
E For benching and pipe opening details, see OPSD 701.021.
F For adjustment unit and frame installation, see OPSD 704.010.
G All dimensions are nominal.
H All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 5
PRECAST CONCRETE MAINTENANCE HOLE 1200mm DIAMETER		
	OPSD 701.010	



N.T.S.

Ottawa	STANDARD CIRCULAR STORM MAINTENANCE HOLE COVER	DATE: MARCH 2010
		REV. DATE: MARCH 2017
		DWG. No.: S24.1

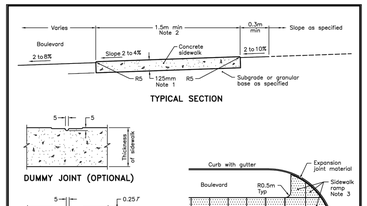


CONCRETE BARRIER CURB

NOTES:
1. THE FULL CURB DEPTH SHALL BE CARRIED THROUGH THE DEPRESSED ACCESS CROSSINGS.
2. A CONCRETE SUPPORT IS REQUIRED WHEN BUILT ADJACENT TO THE SIDEWALK.
3. IF AN EXTRUSION CURBING MACHINE IS USED, #15 DOWELS ARE TO BE PLACED AT THE END OF THE EXTRUSION.
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
5. DUMMY JOINTS SHALL BE 20mm DEEP, FRONT, BACK AND TOP OF SECTION AT 4m SPACING OR MATCH JOINTING WHERE SIDEWALK IS ADJACENT.
6. FOR DEPRESSED CURB AT ENTRANCES USE 200.
7. DEPRESSED CURB HEIGHT - FOR PEDESTRIAN CURB RAMPS 0 TO 6 mm AND FOR PRIVATE ENTRANCES 0 TO 13mm.

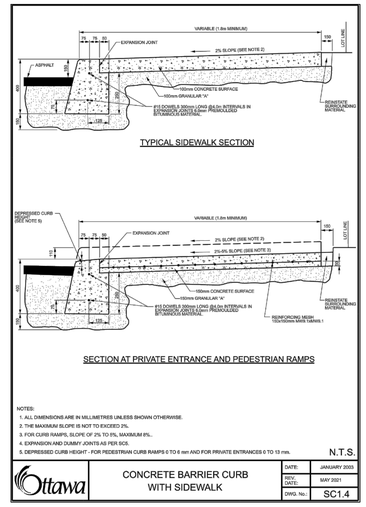
N.T.S.

Ottawa	CONCRETE BARRIER CURB FOR GRANULAR BASE PAVEMENT (MODIFIED OPSD-600.110)	DATE: JANUARY 2003
		REV. DATE: MARCH 2021
		DWG. No.: SC1.1



NOTES:
1 Sidewalk thickness at residential driveways and adjacent to curb shall be 150mm. At commercial and industrial driveways, the thickness shall be 200mm.
2 Sidewalk width shall be wider when specified.
3 This OPSD shall be read in conjunction with OPSD 310.030, 310.031, 310.033, and 310.039.
4 Contraction Joint may be tooled or sawcut.
A All dimensions are in millimetres unless otherwise shown.

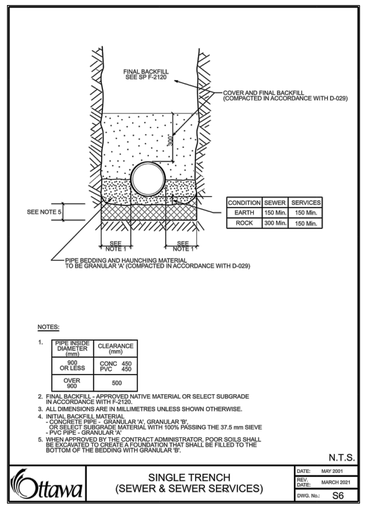
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2019	Rev 3
CONCRETE SIDEWALK		
	OPSD 310.010	



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

N.T.S.

Ottawa	CONCRETE BARRIER CURB WITH SIDEWALK	DATE: JANUARY 2003
		REV. DATE: MAY 2021
		DWG. No.: SC1.4



NOTES:

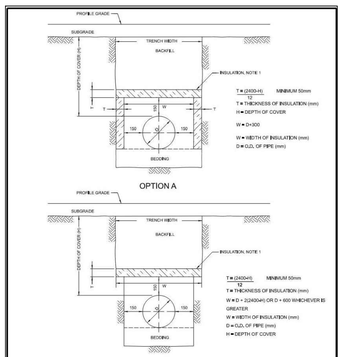
1.

PIPE INSIDE DIAMETER (mm)	CLEARANCE (mm)	
900 OR LESS	CONC	450
	PVC	450
OVER 900	500	

2. FINAL BACKFILL - APPROVED NATIVE MATERIAL OR SELECT SUBGRADE IN ACCORDANCE WITH D-029.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
4. INITIAL BACKFILL MATERIAL
- CONCRETE PIPE - GRANULAR 'A', GRANULAR 'B', OR SELECT SUBGRADE MATERIAL WITH 100% PASSING THE 37.5 mm SIEVE
- PVC PIPE - GRANULAR 'A'
5. WHEN APPROVED BY THE CONTRACT ADMINISTRATOR, POOR SOILS SHALL BE EXCAVATED TO CREATE A FOUNDATION THAT SHALL BE FILLED TO THE BOTTOM OF THE BEDDING WITH GRANULAR 'B'.

N.T.S.

Ottawa	SINGLE TRENCH (SEWER & SEWER SERVICES)	DATE: MAY 2001
		REV. DATE: MARCH 2021
		DWG. No.: S6



OPTION B
TYPICAL PIPE INSULATION DETAIL

NOTES:
1. THE INSULATION MATERIAL SHALL BE EXTRUDED POLYSTYRENE ACCORDING TO MNAI-IL15 WITH A MINIMUM COMPRESSIVE STRENGTH OF 275 KPA.
2. MINIMUM INSULATION THICKNESS SHALL BE 50MM.
3. JOINTS SHALL BE STAGGERED FOR MULTIPLE INSULATION SHEETS.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

Ottawa	INSULATION FOR SHALLOW SEWERS	DATE: MARCH 2005
		REV. DATE: —
		DWG. No.: S35

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Conseil des école publique de l'Est de l'Ontario

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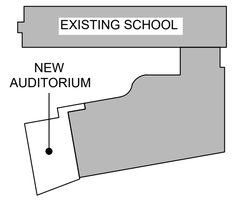

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CUNLIFFE & ASSOCIATES CONSULTING STRUCTURAL ENGINEERS

LRJ ENGINEERING INTERIORS

northpoint

professional stamp

project title

AUDITORIUM ADDITION

ESP PAUL-DE-BLOIS - 1310 CHAPMAN MILLS DR., OTTAWA, ON K2J 3T9

drawing title

CONSTRUCTION DETAILS PLAN

date	Issue Date	job. no.	220512
scale			
drawn	K.H.	drawing no.	C901
approved	M.B.		
plot date	2025-12-19 12:30 PM		

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