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Project No. 2141686A

Site Servicing and Stormwater Management Report

Barrhaven South Catholic Elementary School

Street 7, Ottawa, Ontario

Prepared for

City of Ottawa
Infrastructure Services and Community Sustainability
110 Laurier Ave. West, 4th floor, Mail Code 01-14
Ottawa, Ontario, K1P 1J1

SUBMISSION November 23, 2021

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1 Introduction

Jp2g Consultants Inc. was retained by Pye & Richards – Temprano & Young Architects Inc.. to complete a Site Servicing and Stormwater Management Report suitable for the City of Ottawa Site Plan Control Application, for the Ottawa Catholic School Board development located at the north east corner of Street 7 and Flagstaff Drive Ottawa, ON.

The site is approximately **2.41 ha** in size and is bound by Street 7 and Flagstaff Street on the west and south property limits respectively. The proposed development includes the construction of a new **4647 m²** one-storey school with no basement, and associated parking and landscaped areas.

A Pre-Consultation meeting was held with City of Ottawa staff on August 11, 2021, to determine the project constraints and requirements. The following report details the site servicing & stormwater management calculations used for capacity, water quantity and quality control in accordance with the City of Ottawa's requirements.

1.1 Design Drawings

The following reference civil design drawings are included.

- C1 – Site Servicing Plan
- C2 – Grading Plan
- C3 – Details
- Figure 1 – Pre-Development Storm Drainage Areas
- Figure 2 – Post-Development Storm Drainage Areas

2 Objective

This study will outline the servicing requirements for the development and identify the impact of the development on the existing municipal services, including water, storm and sanitary.

The stormwater management plan is to control post-development peak flows to pre-determined levels, and detain onsite, stormwater up to and including the 100-year storm event with a 25% increase of rainfall intensity (hereby referred to as 100-year* storm event) without affecting adjacent lands, and to provide clean runoff to minimize pollution of the downstream receiving watercourse.

3 Stormwater Management

3.1 Pre-Development Conditions

The existing site in an undeveloped parcel, and it currently undergoing a pre-loaded program for the 2021 Winter period. The school will be bounded by future residential developments on all sides. A **675mm** storm sewer at **0.35%** slope connecting to new storm sewer manhole **MH1001** will be constructed by others on Street 7 at the northwest corner.

3.2 Allowable Release Rate

The stormwater management design criteria for this site are based on the DSEL's storm drainage plan for Flagstaff Subdivison Phase 2 dated April 23, 2021. According to the storm drainage plan a post-development runoff coefficient of 0.7 was allocated for the school site and an allowable release rate of **$Q_{allowable}$ = 489.6 l/s** was determined, see attached **Appendix B**.

3.3 Post-Development Conditions

The proposed site development includes a new school building, asphalt parking, hard surface walkways and landscaped areas. Site storm drainage will be conveyed through the new storm sewer manhole MH1001 extending

from Street 7 and will be managed to limit the 100-year post-development flow rate to the pre-allocated release rate identified in section 3.2.

The site development area is approximately 2.41 ha with a post-development average weighted run-off coefficient of **C = 0.41** and **C = 0.48** for the 5-year and 100-year storm events, respectively. Refer to calculations in **Appendix B**. Stormwater management techniques are required to reduce peak flows from the area, given that post-development peak flows will exceed the pre-allocated allowable release rate of **489.6 l/s**.

3.4 Storm Sewer Pipe Design

Pipe diameter sizing was based on the **5-year** storm event, in accordance with City requirements. Under 5-year conditions, the storm sewers are not in surcharged conditions (i.e. flow/capacity <100%).

3.5 Stormwater Quality Control

Based on the pre-consultation meeting, no additional stormwater quality control is required for this site.

We understand that the existing storm sewer system will connect to an OGS unit downstream of the site.

3.6 Stormwater Quantity Control

Post-development peak flows will be controlled in the proposed parking area and in the school yard by installing a flow restrictor, (Tempest MHF, or equivalent approved product), at the outlet of storm structures CB-1, CB-2 and CB-3, limiting the outlet discharge for all structures and overland flow to **489.6 l/s**.

Table 1: Allowable Release Rate Breakdown

ID	Description	Flows	
		5-Year Event	100-Year Event
	Allowable Release Rate (Section 3.2)	**489.6 L/s**	**489.6 L/s**
1.2.1	Uncontrolled overland surface flow	**106.4 L/s**	**211.9 L/s**
1.2.2	Net-allowable release rate	**383.2 L/s**	**277.7 L/s***

* Note: Must be controlled to net-allowable 100-year.

To meet the net-allowable release rate for storm sewers, post-development flows will be controlled in the new parking lot at the north end of the property, in the east field area. The total resulting peak controlled flow is **277.7 L/s** for both the **5-year and 100-year**. which is equal to the net-allowable release rate.

Table 2: Controlled Flow Breakdown

ID	Description	Controlled Flows	Head (m)	Surface Storage (m^3)		
				5-Year Requirement	100-Year Requirement	Maximum Available
	Net-allowable controlled release rate (Table 1)	**277.7 L/s**				
1.3.1	Building Roof	**230.0 L/s**	**-**	**N/A**	**0**	**233**
1.3.2	East Field	**30.0 L/s**	**1.32**	**14**	**52**	**153**
1.3.3	Parking Lot South (CB-2)	**10.0 L/s**	**1.78**	**20**	**53**	**65**
1.3.4	Parking Lot North (CB-1)	**7.7 L/s**	**1.78**	**18**	**47**	**69**

Refer to **Appendix B** for full calculations.

Overall on-site storage requirements were calculated to be **152m³** for the 100-year storm event and **52m³** for the 5-year storm event. The maximum ponding depth in parking lots is up to 350mm which is in accordance to the City of Ottawa requirements.The maximum ponding limits generated from the ICD's are indicated on drawing **C2 – Grading Plan**. In the event the capacity of this system is exceeded, emergency runoff will overflow onto Street 7 from the north west parking lot entrance. Flow control on the roof is not required for this site.

4 Sanitary Servicing

A **200mm** sanitary sewer at a **0.65%** slope connecting to a sanitary manhole **MH1001A** will be constructed by others on Street 7 at the northwest corner. A new **200mm** sanitary sewer will connect to MH1001A and will convey sanitary flows from the new building. Refer to drawing **C1 – Site Servicing Plan**.

Peak sanitary flow for the site is calculated to be **1.96 l/s**. The new **200mm** sanitary sewers at minimum **0.65%** slope will have a full flow capacity of **26.4 l/s**. The sanitary flows allocated for our subject property is **1.96 l/s** based on DSEL's sanitary sewer design sheet in Appendix D of Design Brief, Flagstaff Phase 2 Glenview Homes (Cedarview Ltd.) dated September 3, 2021. The full flow capacities indicate it is sufficient to handle the new development sanitary flows. The sanitary demand was calculated based on the *City of Ottawa Sewer Design Guidelines 2012* and *Technical Bulletins 2018.* Refer to **Appendix C** for full calculations.

5 Water

A **200mm** watermain stub will be constructed by others on the south side of the subject property. The service connects to the municipal **300mm** watermain running along Flagstaff Drive. Additionally, there is a municipal **300mm** watermain running along Street 7. A new **200mm** watermain will service the new school and connect to the **200mm** watermain stub.

5.1 Domestic Water Demand

The water demand for the new school is calculated based on Table 4.2 of the *City of Ottawa Design Guidelines for Water Distribution*.

Design Criteria:

- Average daily demand for schools = 70 l/student/day
- School day = 8 hours
- Maximum school occupancy = 583 persons (staff and students)
- Maximum Day Factor = 1.5
- Maximum Hour Factor = 1.8

Average Daily Demand: $\frac{70 \text{ l/student/day} \times 583 \text{ students}}{24 \text{ hrs/day} \times 3600 \text{ s/hr}} = 0.47 \text{ l/s}$

Maximum Daily Demand: 0.47 l/s x 1.5 = 0.71 l/s

Maximum Hour Demand: 0.71 l/s x 1.8 = 1.28 l/s

The max hour water demand allocated for our subject property is **2.10 l/s** based on DSEL's domestic water demand calculations in Appendix C of Design Brief, Flagstaff Phase 2 Glenview Homes (Cedarview Ltd.) dated September 3, 2021. Therefore, the allocated domestic water demand is sufficient for the subject property.

5.2 Fire Flow Demand

There are Five (5) fire hydrants along the frontage of the property to be constructed by others which will provide fire protection to the site. Three (3) along Flagstaff Drive and another two (2) across the road along Street 7. The new building will be equipped with an automatic sprinkler system. Based on the Fire Underwriters Survey Method, the fire flow demand for the new school is calculated to be:

Fire Flow Demand: **100.0 l/s** (Refer to Appendix B – Fire Flow Calculations).

The available fire flow for our subject property is **250.0 l/s** based on DSEL's domestic water demand calculations in Appendix C of Design Brief, Flagstaff Phase 2 Glenview Homes (Cedarview Ltd.) dated September 3, 2021.

End of Site Servicing and Stormwater Management Report.

Please contact the undersigned should you require any clarification.

Prepared By:

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Reviewed By:

David Nguyen, P.Eng., ing.
Project Manager

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Appendix A - Drawings and Figures

LEGEND

- PROPERTY LINE
- PROPOSED BUILDING
- NEW LIGHT DUTY ASPHALT PER DETAIL 1/C3
- NEW HEAVY DUTY ASPHALT PER DETAIL 2/C3
- NEW CONCRETE SIDEWALK
- NEW GRASS
- TERRACING
- EX–CB — EXISTING CATCHBASIN
- EXISTING MANHOLE
- SD — NEW SUBDRAIN
- ST — NEW STORM SEWER
- SA — NEW SANITARY SEWER
- W — NEW WATERMAIN
- NEW LANDSCAPE DRAIN
- CB-# — NEW CATCHBASIN
- CBMH-# — NEW CATCHBASIN MANHOLE
- SAMH-# — NEW SANITARY MANHOLE
- STMH-# — NEW STORM MANHOLE
- WV — NEW WATER VALVE
- CROSSING LOCATION IDENTIFIER
- NEW SILT FENCE
- SC — NEW ROOF SCUPPER
- RD — NEW ROOF DRAIN

GENERAL NOTES

1. DESIGN AND CONSTRUCTION IS TO BE IN ACCORDANCE WITH MOST RECENT ONTARIO BUILDING CODE.
2. THE CONTRACTOR IS RESPONSIBLE FOR CHECKING AND VERIFYING ALL DIMENSIONS WITH RESPECT TO SITE CONDITIONS AND ALL MATERIALS TO THE PROJECT. ANY DISCREPANCY SHALL BE REPORTED TO THE ENGINEER.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL MATERIAL RELEVANT TO THE PROJECT.
4. ADDITIONAL DRAWINGS MAY BE ISSUED FOR CLARIFICATION TO ASSIST PROPER EXECUTION OF WORK. SUCH DRAWINGS WILL HAVE THE SAME MEANING AND INTENT AS IF THEY WERE INCLUDED WITH THE CONTRACT DOCUMENTS.
5. CONTRACTOR MUST COMPLY WITH LOCAL BY-LAWS, ONTARIO OCCUPATIONAL HEALTH AND SAFETY ACT AND ALL REGULATIONS SET BY AUTHORITIES HAVING JURISDICTION. IN CASE OF CONFLICT OR DISCREPANCY, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.
6. CONTRACTOR RESPONSIBLE FOR OBTAINING ALL REQUIRED UTILITY LOCATES, DAYLIGHTING, INSPECTIONS, PERMITS, AND APPROVALS, INCLUDING ALL ASSOCIATED COSTS. LOCATION OF EXISTING UTILITIES ARE APPROXIMATE ONLY AND BASED ON BEST AVAILABLE INFORMATION.

EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATER COURSE, DURING CONSTRUCTION ACTIVITIES; THIS INCLUDES LIMITING THE AMOUNT OF EXPOSED SOIL, INSTALLING SILT FENCES AND OTHER EFFECTIVE SEDIMENT TRAPS, AND INSTALLING AND MAINTAINING MUD MATS FOR OUTGOING CONSTRUCTION TRAFFIC DURING CONSTRUCTION ACTIVITIES.
2. PREVENT SOIL LOSS DURING CONSTRUCTION (BY STORM WATER RUNOFF OR WIND EROSION).
3. PROTECT TOPSOIL BY STOCKPILING FOR REUSE.
4. PREVENT SEDIMENTATION OF STORM SEWERS AND RECEIVING STREAMS.
5. PREVENT AIR POLLUTION FROM DUST AND PARTICULATE MATTER.
6. ALL STORM MANHOLES AND CATCHBASIN MANHOLES TO HAVE 300mm SUMPS; ALL CATCHBASINS TO HAVE 600mm SUMPS.
7. INSTALL FILTER BAG INSERT IN ALL STORM MANHOLES AND CATCH BASINS IMPACTED DURING CONSTRUCTION, INCLUDING CATCH BASINS IN THE RIGHT OF WAY.
8. SEDIMENT AND EROSION CONTROL MEASURES MAY BE MODIFIED IN THE FIELD AT THE DISCRETION OF THE CITY OF OTTAWA INSPECTOR OR CONSERVATION AUTHORITY.
9. STORM WATER PUMPED INTO CITY SERVICE SHALL FLOW THROUGH A FILTER SOCK.
10. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENTATION CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.

DRAWING NOTES

01 SUPPLY AND INSTALL NEW 200mm Ø PVC DR18 WATER MAIN SERVICE, MINIMUM 2.4m COVER, OTHERWISE PROVIDE HL40 THERMAL INSULATION IN ACCORDANCE WITH CITY OF OTTAWA STANDARD DETAIL DRAWING W22. COORDINATE NEW WATER SERVICE CONNECTION WITH MECHANICAL PLANS.

02 SUPPLY AND INSTALL NEW 525mm STORM SEWER AND CONNECT TO STORM SEWER MANHOLE MH1001 AT INVERT 91.53. PROVIDE WATERTIGHT CONNECTION. CONNECTION SHALL BE MADE WITH CORE DRILLING. MH1001 TO BE INSTALLED BY OTHERS. CONTRACTOR TO HYDROVAC TO CONFIRM NEW AND EXISTING INVERTS PRIOR TO CONSTRUCTION.

03 SUPPLY AND INSTALL NEW 200mm SANITARY SEWER SEWER AND CONNECT TO SANITARY SEWER MANHOLE MH1001A AT INVERT 90.34. PROVIDE WATERTIGHT CONNECTION. CONNECTIONG SHALL BE MADE WITH CORE DRILLING. MH1001A TO BE INSTALLED BY OTHERS. CONTRACTOR TO HYDROVAC TO CONFIRM INVERT PRIOR TO CONSTRUCTION.

04 INSTALL 3.0m LONG 100mm Ø PERFORATED SUBDRAIN WRAPPED IN GEOTEXTILE SOCK EXTENDING FROM STORM STRUCTURE AT PAVEMENT SUBGRADE LEVEL. PROVIDE WATERTIGHT CONNECTION.

05 CONNECT NEW SERVICE TO EXISTING 200mm WATERMAIN STUB. APPROXIMATE TOP OF EXISTING WATERMAIN ELEVATION: 90.70. CONTRACTOR TO HYDROVAC TO CONFIRM OBVERT AND EXISTING WATER VALVE PRIOR TO CONSTRUCTION. CONTRACTOR TO COORDINATE WITH CITY OF OTTAWA FORCES.

06 CONNECT SERVICES TO INTERIOR PLUMBING 1.0m FROM BUILDING FOUNDATION. PERIMETER FOUNDATION DRAIN TO BE CONNECTED TO NEW STORM SEWER SERVICE. REFER TO MECHANICAL AND ARCHITECTURAL PLANS.

07 SUPPLY AND INSTALL NEW INLET CONTROL DEVICE FLOW REGULATOR AT CATCHBASIN, CB-1 OUTLET. MAXIMUM DISCHARGE 7.7 l/s AT 1.78m HEAD AND ORIFICE DIAMETER AT 52mm.

08 SUPPLY AND INSTALL NEW INLET CONTROL DEVICE FLOW REGULATOR AT CATCHBASIN, CB-2OUTLET. MAXIMUM DISCHARGE 10.0 l/s AT 1.56m HEAD AND ORIFICE DIAMETER AT 61mm.

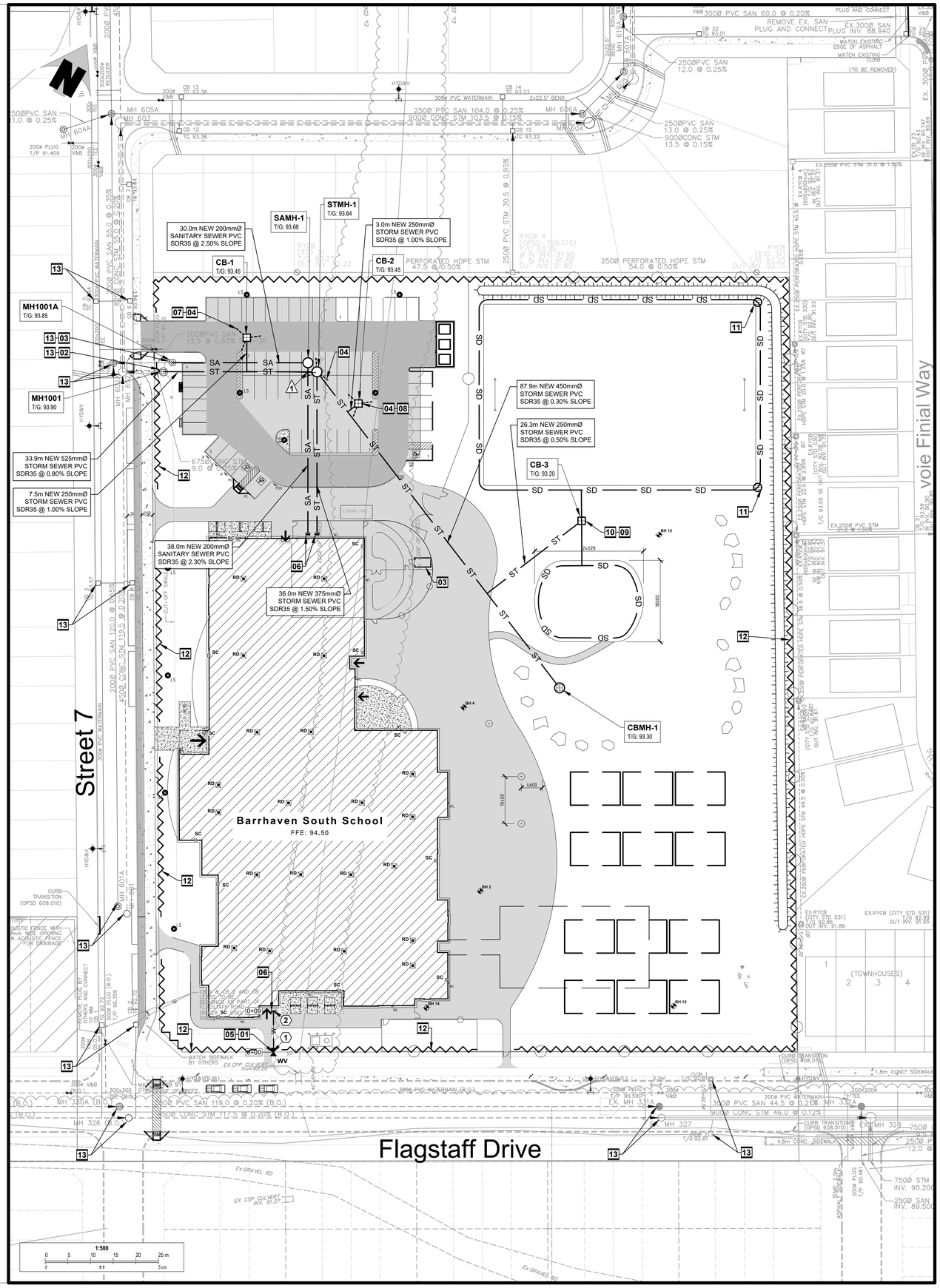
09 SUPPLY AND INSTALL NEW INLET CONTROL DEVICE FLOW REGULATOR AT CATCHBASIN, CB-3OUTLET. MAXIMUM DISCHARGE 30.0 l/s AT 1.32m HEAD AND ORIFICE DIAMETER AT 111mm.

10 SUPPLY AND INSTALL NEW 150mm Ø PERFORATED DRAIN PIPE c/w FILTER SOCK. CONNECT PLAY AREA AND FIELD SUBDRAIN TO CB-3. PROVIDE WATERTIGHT CONNECTION.

11 SUPPLY AND INSTALL NEW LANDSCAPE DRAIN AS PER CITY OF OTTAWA STANDARD DETAIL S30.

12 SUPPLY AND INSTALL SILT FENCE IN ACCORDANCE WITH OPSD 219.130.

13 PROTECT EXISTING MANHOLES AND CATCHBASINS USING A FILTER SOCK OR FILTER BASED IN ACCORDANCE WITH DETAIL 4/C3.



No.	Description	YYYY-MM-DD
2	SITE PLAN CONTROL	2021-11-23
1	PRELIMINARY COORDINATION	2021-10-29

REGISTERED PROFESSIONAL ENGINEER
D.NGUYEN
100053149
Nov. 23, 2021
PROVINCE OF ONTARIO

OTTAWA CATHOLIC SCHOOL BOARD

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Jp2g No.: 20-1095B

Client

PYE & RICHARDS - TEMPRANO & YOUNG ARCHITECTS INC.
824 Meath St. Suite 200 Ottawa, ON K1Z 6E8
613. 724. 7700 info@prty.ca

Project

Barrhaven Catholic Elementary School

Street 7, Ottawa, Ontario

Drawing Title

Site Servicing, Erosion and Sediment Control Plan

Do not scale. Refer any dimensional errors and/or possible trade interference/conflict to the architects for clarification prior to commencement of the work. The conditions of the contract apply.

Project No.	Drawing No. C1
Scale: As shown	
Drawn By: R.W.	
Checked: P.H.	
Date	Revision No.

LEGEND

	PROPERTY LINE
	PROPOSED BUILDING
	NEW LIGHT DUTY ASPHALT PER DETAIL 1/C3
	NEW HEAVY DUTY ASPHALT PER DETAIL 2/C3
	NEW CONCRETE SIDEWALK
	NEW GRASS
	TERRACING
EX–CB	EXISTING CATCHBASIN
	EXISTING MANHOLE
	NEW LANDSCAPE DRAIN
CB-#	NEW CATCHBASIN
CBMH-#	NEW CATCHBASIN MANHOLE
SAMH-#	NEW SANITARY MANHOLE
STMH-#	NEW STORM MANHOLE
WV	NEW WATER VALVE
+54.83	EXISTING GRADE
+56.12	NEW GRADE
2.0%	NEW SLOPE
SC	NEW ROOF SCUPPER
RD	NEW ROOF DRAIN
	EMERGENCY OVERLAND FLOW DIRECTION

DRAWING NOTES

01 MATCH EXISTING GRADES AT PROPERTY LINE AND LIMITS OF WORK.

02 ANY DISTURBED AREA WITHIN THE RIGHT-OF-WAY SHALL BE REINSTATED TO EQUAL OR BETTER CONDITION TO THE SATISFACTION OF THE CITY OF OTTAWA.

03 TERMINATE NEW CURB LINE AND NEW PARKING LOT ASPHALT TO BE FLUSH WITH NEW GRASSED AREA.

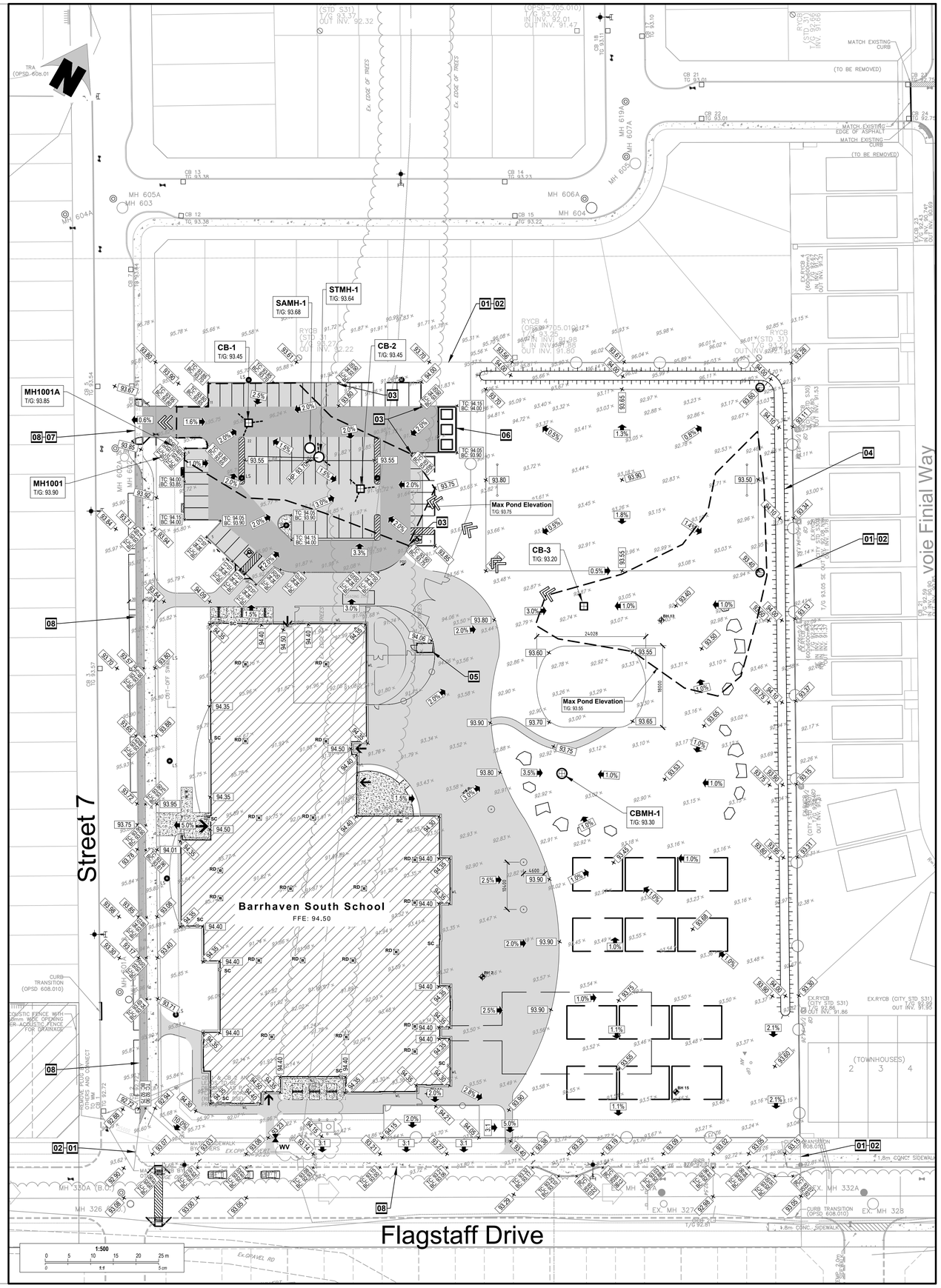
04 NEW 2.0m WIDE BERM. MAXIMUM 3:1 SLOPE BACK TO EXISTING.

05 SUPPLY AND INSTALL 200mm GRANULAR 'A' BEDDING FOR STORAGE SHED.

06 NEW CONCRETE SLAB TO BE 200mm THICK C/W 200mm GRANULAR 'A' BEDDING.

07 NEW CURB RETURN ENTRANCE AS PER CITY OF OTTAWA STANDARD DETAIL SC7.1.

08 NEW ASPHALT KEYJOINT PER DETAIL 3/C3.



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Project

Barrhaven Catholic Elementary School

Street 7, Ottawa, Ontario

Drawing Title

Grading and Drainage Plan

Do not scale. Refer any dimensional errors and/or possible trade interference/conflict to the architects for clarification prior to commencement of the work. The conditions of the contract apply.

Project No.	Drawing No.
Scale: As shown	C2
Drawn By: R.W.	
Checked: P.H.	
Date	Revision No.

CROSSING TABLE

LOCATION	OVER / UNDER	INVERT (m)	OBVERT (m)	VERTICAL CLEARANCE (m)
1	STORM SEWER / SANITARY SEWER	91.78	91.38	0.40

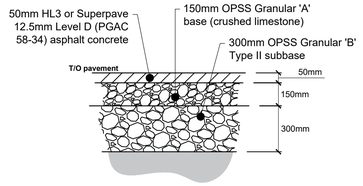
MANHOLE AND CATCHBASIN SCHEDULE

STRUCTURE ID	TOP OF FRAME ELEVATION (m)	PIPE INVERT ELEVATION (m)	STRUCTURE SIZE (mm) / OPSD No.	FRAME (OPSD)
MH1001A	93.85	Ex. 90.34 SW / New 90.34 NE	1200 / 701.010	-
SAMH-1	93.68	91.09 SW / 91.15 SE	1200 / 701.010	S25 / S24
MH1001	93.90	Ex. 91.38 SW / New 91.53 NE	1800 / 701.012	-
STMH-1	93.64	91.80 SW / 91.95 SE / 91.88 E	1500 / 701.011	S25/ S24.1
CBMH-1	93.30	92.14 NW	1200 / 701.010	S25 / S28.1
CB-1	93.45	92.00 NE	600 X 600 / 705.010	S25 / S19
CB-2	93.45	92.14 SW	600 X 600 / 705.010	S25 / S19
CB-3	93.20	92.30 SW	600 X 600 / 705.010	S25 / S19

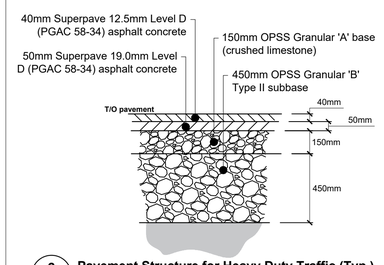
WATER SERVICE TABLE

ID	DESCRIPTION	FINISHED GRADE (m)	T/O WATERMAIN (m)	CHAINAGE (m)
1	MUNICIPAL STUB CONNECTION C/W GATE VALVE	93.23	90.70	0+00.00
2	BUILDING ENTRY	94.50	92.10	0+09.00

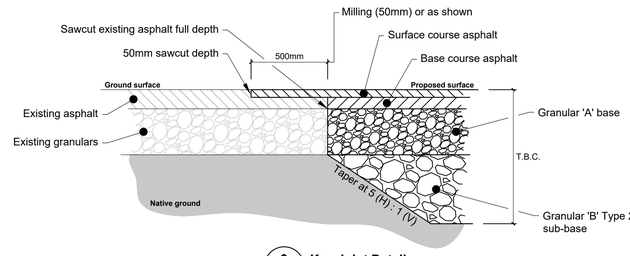
NOTE: PROVIDE MINIMUM 2.4m COVER OVER T/O WATERMAIN TO FINISHED GRADE, OTHERWISE PROVIDE THERMAL INSULATION HL40.



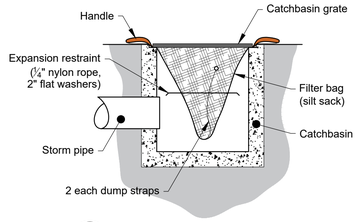
1 C3 **Pavement Structure for Light Duty Traffic (Typ.)**
Scale: **As shown**



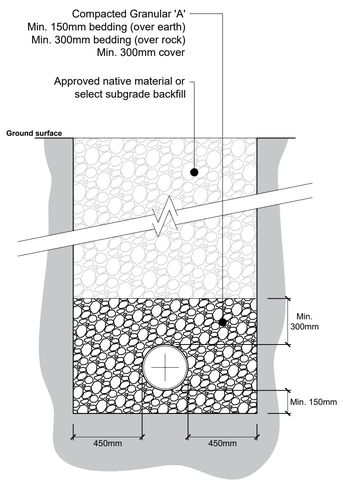
2 C3 **Pavement Structure for Heavy Duty Traffic (Typ.)**
Scale: **As shown**



3 C3 **Key Joint Detail**
Scale: **As shown**



4 C3 **Catchbasin Filter Bag / Insert**
Scale: **Not to scale**



5 C3 **Standard Watermain Trench Detail**
Scale: **As shown**

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Ottawa, ON K1Z 6E8 info@prty.ca

Project

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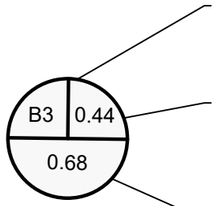
Street 7, Ottawa, Ontario

Drawing Title

Details

Project No.	Drawing No. **C3**
Scale **As shown**	
Drawn By **R.W.**	
Checked **P.H.**	
Date	Revision No.

LEGEND

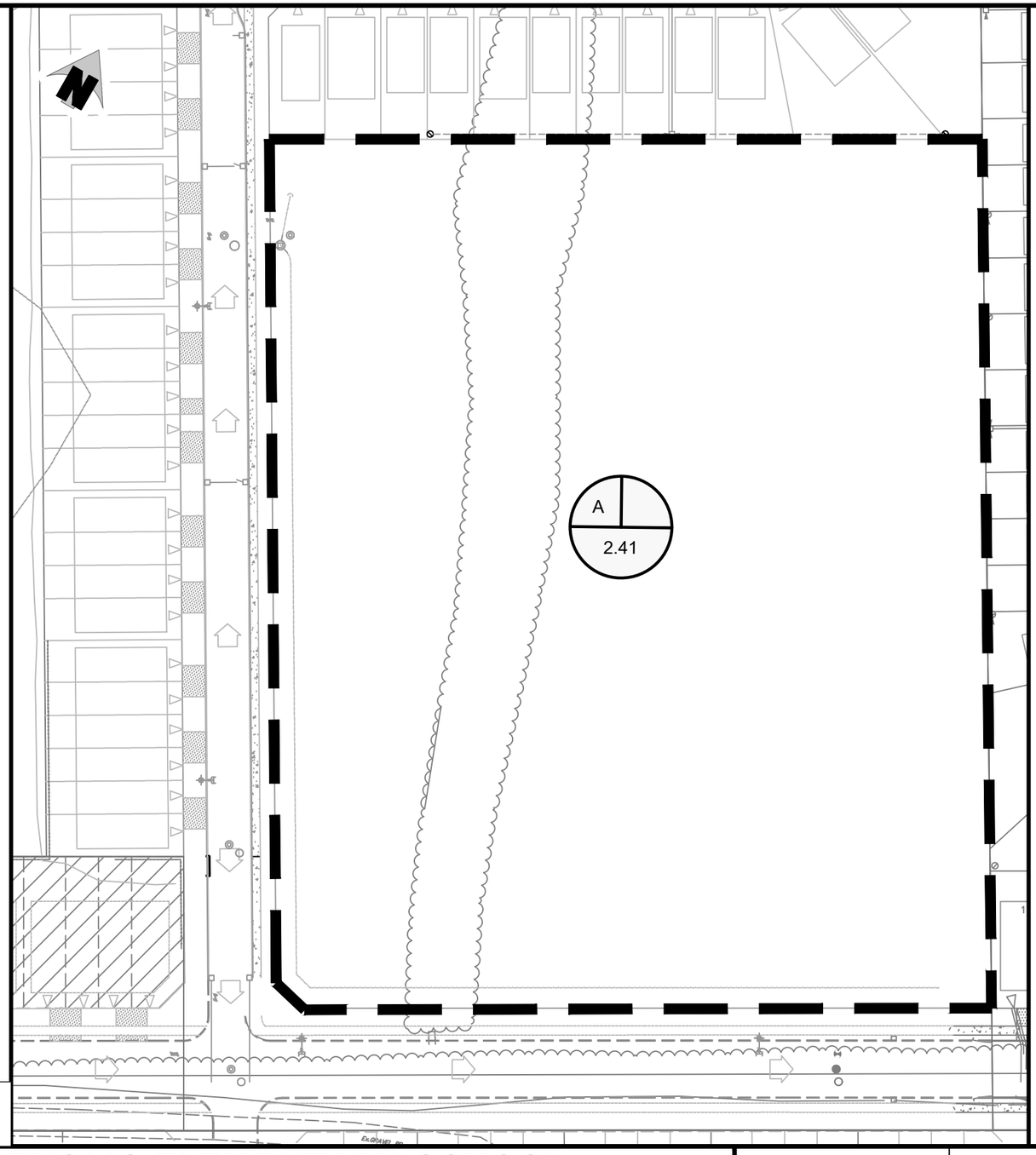


DRAINAGE AREA ID

WEIGHTED RUNOFF COEFFICIENT

DRAINAGE AREA HECTARES

DRAINAGE AREA LIMIT



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BARRHAVEN CATHOLIC ELEMENTARY SCHOOL

STREET 7, ONTARIO

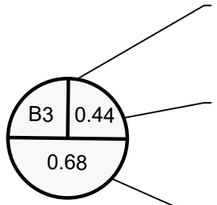
~

FIGURE 1 PRE-DEVELOPMENT DRAINAGE AREAS

DESIGNED: PH		PROJECT No.: 20-1095B
DRAFTED: PH		REVISION DATE:
CHECKED: DN	APPROVED: DN	REVISION No.: .
SCALE: 1:1000		

DWG NAME: J:\1-MULTIDISCIPLINE\2020\20-1095B - OCSB_ BARRHAVEN SOUTH SCHOOL\08 DRAWINGS\04 ONGOING\CIVIL BARRHAVEN V6 DRAFT.DWG LAYOUT: FIG. 1 PRE SAVED ON October 28, 2021

LEGEND



DRAINAGE AREA ID

WEIGHTED RUNOFF COEFFICIENT

DRAINAGE AREA HECTARES

DRAINAGE AREA LIMIT

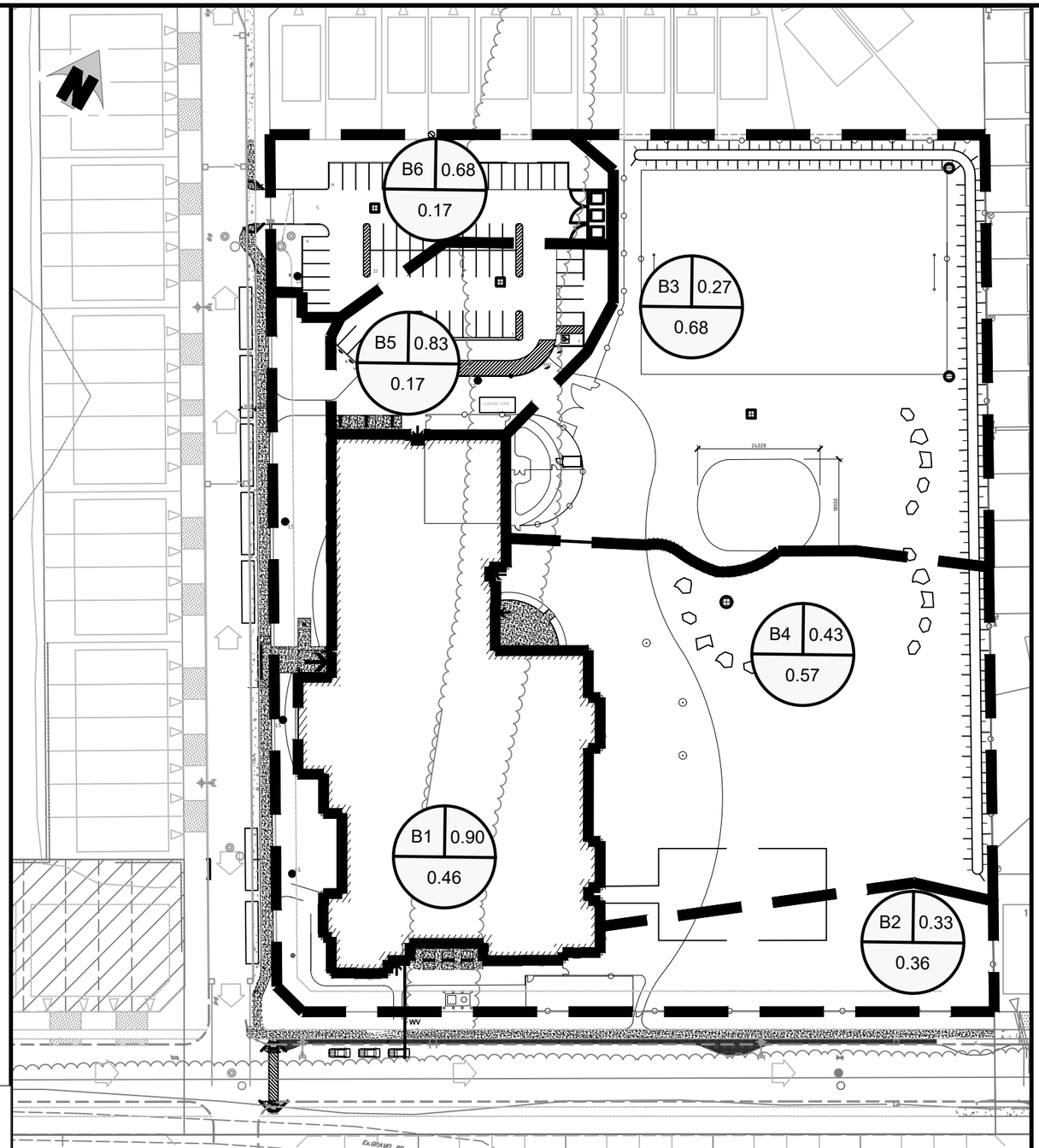


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FIGURE 2 POST-DEVELOPMENT DRAINAGE AREAS

DESIGNED: PH		PROJECT No.: 20-1095B
DRAFTED: PH		REVISION DATE:
CHECKED: DN	APPROVED: DN	REVISION No.: .
SCALE: 1:1000		

DWG NAME: J:\1-MULTIDISCIPLINE\2020\20-1095B - OCSB_ BARRHAVEN SOUTH SCHOOL\08 DRAWINGS\04 ONGOING\CIVIL BARRHAVEN V6 DRAFT.DWG LAYOUT: FIG. 2 POST SAVED ON October 28, 2021

Appendix B - Stormwater Management Calculations

Appendix B - Storm Sewer Design Sheet

B.1.1 - Allowable release rate

ID	Description	Type	Areas (m^2) $C_{0.90}$	Areas (m^2) $C_{0.20}$	Total (m^2)	$C_{pre\text{-}5\text{-}yr}$	$C_{pre\text{-}100\text{-}yr}$*
A	Property Grounds	uncontrolled	0	24143	24143	0.20	0.25
			0	**24143**	**24143**	**0.20**	**0.25**

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

Using the data for the site from the Abbot-Fernbank Holding Inc. Ferbank Crossing Stormwater Management Report (Phases 1 & 2) by Novatech Engineering Consultants Ltd. (August 17, 2012), the maximum allowable release rate allocated for this site is:

$Q_{allowable\ (5\text{-}year)}$ = **489.6** l/s ①

Total Area, A = **2.41** ha

B.1.2 - Post-development release rate

ID	Description	Type	Areas (m^2) $C_{0.90}$	Areas (m^2) $C_{0.20}$	Total (m^2)	$C_{post\text{-}5\text{-}yr}$	$C_{post\text{-}100\text{-}yr}$*
B1	Building Roof	controlled	4629	0	4629	0.90	1.00
B2	South & West Frontage	uncontrolled	655	2991	3646	0.33	0.38
B3	CB 3 Track	uncontrolled	673	6098	6771	0.27	0.32
B4	CB 4 East Wall	uncontrolled	1917	3795	5712	0.43	0.50
B5	CB 2 Parking Lot South	controlled	1495	169	1665	0.83	0.92
B6	CB 1 Parking Lot North	controlled	1171	549	1720	0.68	0.76
			10541	**13602**	**24143**	**0.41**	**0.48**
	**including 25% increase as per City of Ottawa Sewer Design Guidelines*		(A)	(B)	©	(D)	(E)

Calculations for post-development runoff coefficient

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

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

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

Calculations for average weighted runoff coefficient

$C_{post\text{-}5\text{-}yr}$ = ((6279*0.9)+(6538*0.2))/12817 = 0.41

$C_{post\text{-}100\text{-}yr}$ = ((6279*1.0)+(6538*0.2*1.25))/12817 = 0.48

Estimated time of concentration, t_c = **10.0** minutes ***As per City of Ottawa Sewer Design Guidelines (Section 5.4.5.2)**

Based on Ottawa IDF curve, $i_{5\text{-}years}$ = $998.071/(t_c+6.053)^{0.814}$

104.2 mm/hr

Based on Ottawa IDF curve, $i_{100\text{-}years}$ = $1735.688/(t_c+6.014)^{0.820}$

178.6 mm/hr

B.1.2.1 - Uncontrolled overland surface flow

Total uncontrolled area, B2 and B4 **0.936** ha

5-year Runoff coefficient, $_{5\text{-}yr\text{-}uncontrolled}$ **0.39**

100-year Runoff coefficient, $_{100\text{-}yr\text{--}uncontrolled}$ **0.46**

Uncontrolled overland surface Release Rate 5-year **106.4** l/s ②

Uncontrolled overland surface Release Rate 100-year **211.9** l/s ④

B.1.2.2 - Net-allowable release rate for storm sewers

$Q_{net\text{-}allowable\ 5\text{-}year}$ = **383.2** l/s ③ = ①-②

***$Q_{net\text{-}allowable\ 100\text{-}year}$ =** **277.7** l/s ⑤ = ①-④ * Must be controlled to net-allowable 100-year

B.1.3 - Post-development onsite storage in parking lot

B.1.3.1 - Estimated detention Roof (B1)

Area	**0.463**	ha
5-year Runoff coefficient	**0.90**	
100-year Runoff coefficient	**1.00**	
Roof Drains	**230.0**	l/s

Table 1.3.1a - 5-year estimated detention in parking area

	Time (minutes)	$i_{5\text{-years}}$ (mm/hr)	Q_{actual} (l/s)	$Q_{allowable}$ (l/s)	Q_{stored} (l/s)	V_{stored} (m^3)
peak V_{stored} →	10	104.2	120.7	230.0	-109.3	-65.6
	15	83.6	96.8	230.0	-133.2	-119.9
	20	70.3	81.4	230.0	-148.6	-178.4
	25	60.9	70.5	230.0	-159.5	-239.2
	30	53.9	62.5	230.0	-167.5	-301.6
	35	48.5	56.2	230.0	-173.8	-365.0
	40	44.2	51.2	230.0	-178.8	-429.2
	45	40.6	47.1	230.0	-182.9	-493.9
	50	37.7	43.6	230.0	-186.4	-559.2
	55	35.1	40.7	230.0	-189.3	-624.7
	60	32.9	38.2	230.0	-191.8	-690.6

Therefore **-66** m^3 estimated yard detention

Table 1.3.1b - 100-year estimated detention in parking area

	Time (min)	$i_{100\text{-years}}$ (mm/hr)	Q_{actual} (l/s)	$Q_{allowable}$ (l/s)	Q_{stored} (l/s)	V_{stored} (m^3)
	10	178.6	229.8	230.0	-0.2	-0.1
peak V_{stored} →	15	142.9	183.9	230.0	-46.1	-41.5
	20	120.0	154.4	230.0	-75.6	-90.8
	25	103.8	133.6	230.0	-96.4	-144.5
	30	91.9	118.2	230.0	-111.8	-201.2
	35	82.6	106.3	230.0	-123.7	-259.8
	40	75.1	96.7	230.0	-133.3	-319.9
	45	69.1	88.9	230.0	-141.1	-381.1
	50	64.0	82.3	230.0	-147.7	-443.1
	55	59.6	76.7	230.0	-153.3	-505.8
	60	55.9	71.9	230.0	-158.1	-569.0

Therefore **0** m^3 estimated yard detention

B.1.3.2 - Estimated detention East Field

Area	**0.677**	ha
5-year Runoff coefficient	**0.27**	
100-year Runoff coefficient	**0.32**	
Install flow control after in CB-3	**30.0**	l/s

Table 1.3.2a - 5-year estimated detention in parking area

	Time (minutes)	$i_{5\text{-years}}$ (mm/hr)	Q_{actual} (l/s)	$Q_{allowable}$ (l/s)	Q_{stored} (l/s)	V_{stored} (m^3)
peak V_{stored} →	10	104.2	52.9	30.0	22.9	13.7
	15	83.6	42.4	30.0	12.4	11.2
	20	70.3	35.6	30.0	5.6	6.8
	25	60.9	30.9	30.0	0.9	1.3
	30	53.9	27.4	30.0	-2.6	-4.8
	35	48.5	24.6	30.0	-5.4	-11.3
	40	44.2	22.4	30.0	-7.6	-18.2
	45	40.6	20.6	30.0	-9.4	-25.3
	50	37.7	19.1	30.0	-10.9	-32.7
	55	35.1	17.8	30.0	-12.2	-40.2

60	32.9	16.7	30.0	-13.3	-47.8

Therefore **14** m^3 estimated yard detention

Table 1.3.2b - 100-year estimated detention in parking area

	Time	$i_{100\text{-years}}$	Q_{actual}	$Q_{allowable}$	Q_{stored}	V_{stored}
	(min)	(mm/hr)	(l/s)	(l/s)	(l/s)	(m^3)
	10	178.6	109.1	30.0	79.1	47.4
peak V_{stored} →	15	142.9	87.3	30.0	57.3	51.6
	20	120.0	73.3	30.0	43.3	51.9
	25	103.8	63.4	30.0	33.4	50.1
	30	91.9	56.1	30.0	26.1	47.0
	35	82.6	50.4	30.0	20.4	42.9
	40	75.1	45.9	30.0	15.9	38.2
	45	69.1	42.2	30.0	12.2	32.9
	50	64.0	39.1	30.0	9.1	27.2
	55	59.6	36.4	30.0	6.4	21.2
	60	55.9	34.1	30.0	4.1	14.9

Therefore **52** m^3 estimated yard detention

B.1.3.3 - Estimated detention Parking Lot South

Area	**0.166**	ha
5-year Runoff coefficient	**0.83**	
100-year Runoff coefficient	**0.92**	
Install flow control after in CB-2	**10.0**	l/s

Table 1.3.3a - 5-year estimated detention in parking area

	Time	$i_{5\text{-years}}$	Q_{actual}	$Q_{allowable}$	Q_{stored}	V_{stored}
	(minutes)	(mm/hr)	(l/s)	(l/s)	(l/s)	(m^3)
peak V_{stored} →	10	104.2	40.0	10.0	30.0	18.0
	15	83.6	32.0	10.0	22.0	19.8
	20	70.3	26.9	10.0	16.9	20.3
	25	60.9	23.4	10.0	13.4	20.0
	30	53.9	20.7	10.0	10.7	19.2
	35	48.5	18.6	10.0	8.6	18.1
	40	44.2	16.9	10.0	6.9	16.7
	45	40.6	15.6	10.0	5.6	15.1
	50	37.7	14.4	10.0	4.4	13.3
	55	35.1	13.5	10.0	3.5	11.5
	60	32.9	12.6	10.0	2.6	9.5

Therefore **20** m^3 estimated yard detention

Table 1.3.3b - 100-year estimated detention in parking area

	Time	$i_{100\text{-years}}$	Q_{actual}	$Q_{allowable}$	Q_{stored}	V_{stored}
	(min)	(mm/hr)	(l/s)	(l/s)	(l/s)	(m^3)
	10	178.6	76.3	10.0	66.3	39.8
peak V_{stored} →	15	142.9	61.1	10.0	51.1	46.0
	20	120.0	51.3	10.0	41.3	49.5
	25	103.8	44.4	10.0	34.4	51.6
	30	91.9	39.3	10.0	29.3	52.7
	35	82.6	35.3	10.0	25.3	53.1
	40	75.1	32.1	10.0	22.1	53.1
	45	69.1	29.5	10.0	19.5	52.7
	50	64.0	27.3	10.0	17.3	52.0
	55	59.6	25.5	10.0	15.5	51.1
	60	55.9	23.9	10.0	13.9	50.0

Therefore **53** m^3 estimated yard detention

B.1.3.4 - Estimated detention Parking Lot North

Area	**0.172**	ha
5-year Runoff coefficient	**0.68**	
100-year Runoff coefficient	**0.76**	
Install flow control after in CB-1	**7.7**	l/s

Table 1.3.4a - 5-year estimated detention in parking area

	Time (minutes)	$i_{5\text{-years}}$ (mm/hr)	Q_{actual} (l/s)	$Q_{allowable}$ (l/s)	Q_{stored} (l/s)	V_{stored} (m^3)
peak V_{stored} →	10	104.2	33.7	7.7	26.0	15.6
	15	83.6	27.0	7.7	19.3	17.4
	20	70.3	22.7	7.7	15.0	18.0
	25	60.9	19.7	7.7	12.0	18.0
	30	53.9	17.4	7.7	9.7	17.5
	35	48.5	15.7	7.7	8.0	16.8
	40	44.2	14.3	7.7	6.6	15.8
	45	40.6	13.1	7.7	5.4	14.7
	50	37.7	12.2	7.7	4.5	13.4
	55	35.1	11.4	7.7	3.7	12.1
	60	32.9	10.7	7.7	3.0	10.7

Therefore **18** m^3 estimated yard detention

Table 1.3.4b - 100-year estimated detention in parking area

	Time (min)	$i_{100\text{-years}}$ (mm/hr)	Q_{actual} (l/s)	$Q_{allowable}$ (l/s)	Q_{stored} (l/s)	V_{stored} (m^3)
	10	178.6	64.9	7.7	57.2	34.3
peak V_{stored} →	15	142.9	52.0	7.7	44.3	39.8
	20	120.0	43.6	7.7	35.9	43.1
	25	103.8	37.8	7.7	30.1	45.1
	30	91.9	33.4	7.7	25.7	46.3
	35	82.6	30.0	7.7	22.3	46.9
	40	75.1	27.3	7.7	19.6	47.1
	45	69.1	25.1	7.7	17.4	47.0
	50	64.0	23.3	7.7	15.6	46.7
	55	59.6	21.7	7.7	14.0	46.2
	60	55.9	20.3	7.7	12.6	45.5

Therefore **47** m^3 estimated yard detention

B.1.4 - Site storage

	5-year required (m3)	100-year required (m3)	Ponding depth (m)	Ponding area (m2)	Max available (m3)
Roof Detention	**-66**	**0**	0.15	4660	**233**
East Field Detention	**14**	**52**	0.35	1310	**153**
Parking Lot South Detention	**20**	**53**	0.35	558	**65**
Parking Lot North Detention	**18**	**47**	0.35	593	**69**

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B.1.5 - Storm Sewer Pipe Design

Definitions		Rational Method	Notes
Manning's Coefficient =	0.013	Q = 2.78 CIA (l/s), where	1) Used City of Ottawa IDF Curve
Return Frequency (yrs) =	5	C= Runoff Coefficient	2) Min. velocity = 0.8 m/sec
1 acre = 0.4047 hectares		i = Rainfall Intensity (mm/hr)	3) Max. velocity = 6.0 m/sec
		A = Areas in Hectares (ha)	

LOCATION		AREA (ha)		FLOW					SEWER DATA									
		C=	C=	Individual	Cum.	tc	$i_{5\ years}$	$i_{100\ years}$	$Flow_{5\ years}$	$Flow_{100\ years}$	Dia.	Slope	Length	Capacity	Velocity	Sect.Time	Tot. Time	Utilization
From	To	0.90	0.20	2.78CA	2.78CA	(min.)	(mm/hr)	(mm/hr)	(l/s)	(l/s)	(mm)	(%)	(m)	(full) (l/s)	(full) (m/s)	(minutes)	(minutes)	(%)
CB 3	STMH 1	0.067	0.61	0.51	0.51	10.0	104.2	178.6	30.0	30.0	250	0.50	26.3	42.0	0.9	0.5	10.5	71
CBMH 1	STMH 1	0.192	0.38	0.69	1.20	10.0	104.2	178.6	102.0	153.3	450	0.30	87.9	156.1	1.0	1.5	11.5	65
Roof	STMH 1	0.463	0.000	1.16	1.16	10.0	104.2	178.6	120.7	206.8	375	1.50	36.5	214.7	1.9	0.3	10.3	56
CB 2	STMH 1	0.150	0.000	0.37	0.37	10.0	104.2	178.6	10.0	10.0	250	1.00	1.5	59.5	1.2	0.0	10.0	17
CB 1	Ex. STMH	0.117	0.017	0.30	0.30	10.0	104.2	178.6	7.7	7.7	250	1.00	7.5	59.5	1.2	0.1	10.1	13
STMH 1	Ex. STMH	0.000	0.055	0.03	3.06	11.5	96.9	166.0	243.3	382.9	525	0.80	33.9	384.6	1.8	0.3	11.8	63
Ex. STMH	Municipal Con.	0.000	0.000	0.00	3.06	11.8	95.5	163.6	243.3	382.9	675	0.35	9.0	497.3	1.4	0.1	11.9	49

Flow control installed at outlet

Orifice Diameter Calculation

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Design Parameters*

Pipe Area Formula: $A = Q/(C(2gh)^{0.5})$

Pipe Diameter Formula: $A = (\pi d^2)/4$
$d = \sqrt{4A/\pi}$

d = Orifice diameter (m)
A = Pipe area (m^2)
C = 0.61
g = 9.81 (m/s^2)
h = head of ponding from the centroid of the pipe invert (m)
Q = Max. flow through pipe (l/s)

CB-1

Elevation at Top of Ponding	Elevation at Pipe Invert	Size of Outlet Pipe	Head from Centroid (h)
(m)	(m)	(mm)	(m)
93.75	91.85	250.0	1.775

Max Flow (Q)	Coeffieicent (C)	g	Head from Centroid (h)	Pipe Area (A)	Orifice Diameter (d)	Orifice Diameter (d)
(l/s)	-	(m/s^2)	(m)	(m^2)	m	mm
7.7	0.61	9.8	1.78	0.002	0.052	52

CB-2

Elevation at Top of Ponding	Elevation at Pipe Invert	Size of Outlet Pipe	Head from Centroid (h)
(m)	(m)	(mm)	(m)
93.75	92.07	250.0	1.555

Max Flow (Q)	Coeffieicent (C)	g	Head from Centroid (h)	Pipe Area (A)	Orifice Diameter (d)	Orifice Diameter (d)
(l/s)	-	(m/s^2)	(m)	(m^2)	m	mm
10.0	0.61	9.8	1.56	0.003	0.061	61

CB-3

Elevation at Top of Ponding	Elevation at Pipe Invert	Size of Outlet Pipe	Head from Centroid (h)
(m)	(m)	(mm)	(m)
93.55	92.11	250.0	1.315

Max Flow (Q)	Coeffieicent (C)	g	Head from Centroid (h)	Pipe Area (A)	Orifice Diameter (d)	Orifice Diameter (d)
(l/s)	-	(m/s^2)	(m)	(m^2)	m	mm
30.0	0.61	9.8	1.32	0.010	0.111	111

Appendix C - Sanitary Servicing Calculations

New Barrhaven Elementary School

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Appendix C - Sanitary Sewer Design Sheet

C.1.1 - Peak Flow Design Based on Site Area

Definitions
Manning's Coefficient (n) = 0.013

Manning's Formula
Q = $A*R^{2/3}*S^{1/2}/n$ (l/s), where
A = Areas in Hectares (ha)
R = Hydraulic Radius (m)
S = Slope

Design Parameters*
1) Average Daily Flow = 280 L/p/day
2) Commercial/Institutional Flow = 28,000 L/ha/day
3) Maximum Residential Peak Factor = 4
4) Commercial/Institutional Peak Factor = 1.50
5) Extraneous Flow = 0.33L/s/ha
6) Minimum Velocity = 0.76 m/s

Designed PH
Checked DN

Location			Residential Flow							Institutional Flow				Infiltration Flow			Total Flow		Sewer Data				
						Cumulative		Average Flow	Peak Flow	Area (ha)		Average Flow	Peak Flow	Area (ha)		Inf. Flow	Average Flow	Peak Flow	Dia.	Slope	Capacity	Velocity	Utilization
Note	From	To	Area (ha)	Units	Population	Area	Population	(l/s)	(l/s)	Individual	Cumulative	(l/s)	(l/s)	Individual	Cumulative	(l/s)	(l/s)	(l/s)	(mm)		(full) (l/s)	(full) (m/s)	(%)
School	School	SAMH-1	0.00	0	0	0.00	0	0.00	0.00	2.4	2.4	0.78	1.17	2.40	2.40	0.79	1.57	1.96	200	2.30%	49.7	1.6	3.9
	SAMH-1	MH1001A	0.00	0	0	0.00	0	0.00	0.00	0.00	2.4	0.00	1.17	0.00	2.40	0.79	0.79	1.96	200	2.50%	51.9	1.7	3.8
Municipal Connection	MH1001A	MH602A	0.00	0	0	0.00	0	0.00	0.00	0.00	2.4	0.00	1.17	0.00	2.40	0.79	0.79	1.96	200	0.65%	26.4	0.8	7.4

Appendix D - Fire Flow Demand Calculations

New Barrhaven Elementary School

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Appendix D- Fire Flow Demand Requirements

D.1.1 - Fire Flow Demand Requirements (Fire Underwritters Survey (FUS Guidelines))

Fire Flow Formula

Estimated Fire Flow Formula: $F=220*C*A^{1/2}$(L/min)

Designed PH
Checked DN
Dwg. Reference C1
Jp2g project No 20-1095A

F = Required fire flow (L/min)
C = Coefficient related to the type of construction
$C_{1.5}$ = 1.5 for wood frame construction
$C_{1.0}$ = 1.0 for ordinary construction
$C_{0.8}$ = 0.8 for non-combustible construction
$C_{0.6}$ = 0.6 for fire-resistive construction
A = Total floor area in square metres

New School Building

Design Parameters*

Type of Building Construction = Non-combustible construction
Floor Area*** = 4647.0 m^2
Occupancy Class = Limited combustible
Sprinkler System = Automatic sprinkler system conforming to NFPA standards with standard water supply and full supervision
Sprinkler Building Coverage = Complete building coverage
Factor of Building Coverage X =
Number of Storeys = 1

Exposure Parameters*

	North West	South West	-	-	
Separation Distance =	26.0	40.0			m
Length of Exposed Wall =	17.0	5.0			m
Length-Height Factor =	17.0	5.0	0.0	0.0	m·storeys (up to a maximum of 5-storeys)

Building Construction	Floor Area***	Coefficient	A	Adjustments (increases or decreases)										Final Adjusted Fire Flow	Final Adjusted Fire Flow
			Fire Flow (F)	B = A +/- % Occupancy		C = B x % Sprinkler		D = B x % Exposure***							
	(m^2)		(L/min)	%	Adjusted Fire Flow(s) (L/min)	%	Fire Adjustment Flow(s) (L/min)	North West	South West	-	-	Total Exposure	Fire Adjustment Flow(s) (L/min)	E = B - C + D (L/min)*	(L/s)
Non-combustible construction	4,647.0	0.8	12,000.0	-0.15	10,200.0	50%	5,100.0	8%	5%	0%	0%	13%	1,326.0	6,000.0	100.0

*Water Supply for Public Protection (Fire Underwriters Survey, 1999).
***Including all stories

Appendix E - Subdivision Reference Documents and Drawings

david schaeffer engineering ltd

120 Iber Road, Suite 103
Ottawa, Ontario K2S 1E9
Tel. (613)836-0856
Fax (613) 836-7183
www.DSEL.ca

DESIGN BRIEF

FOR

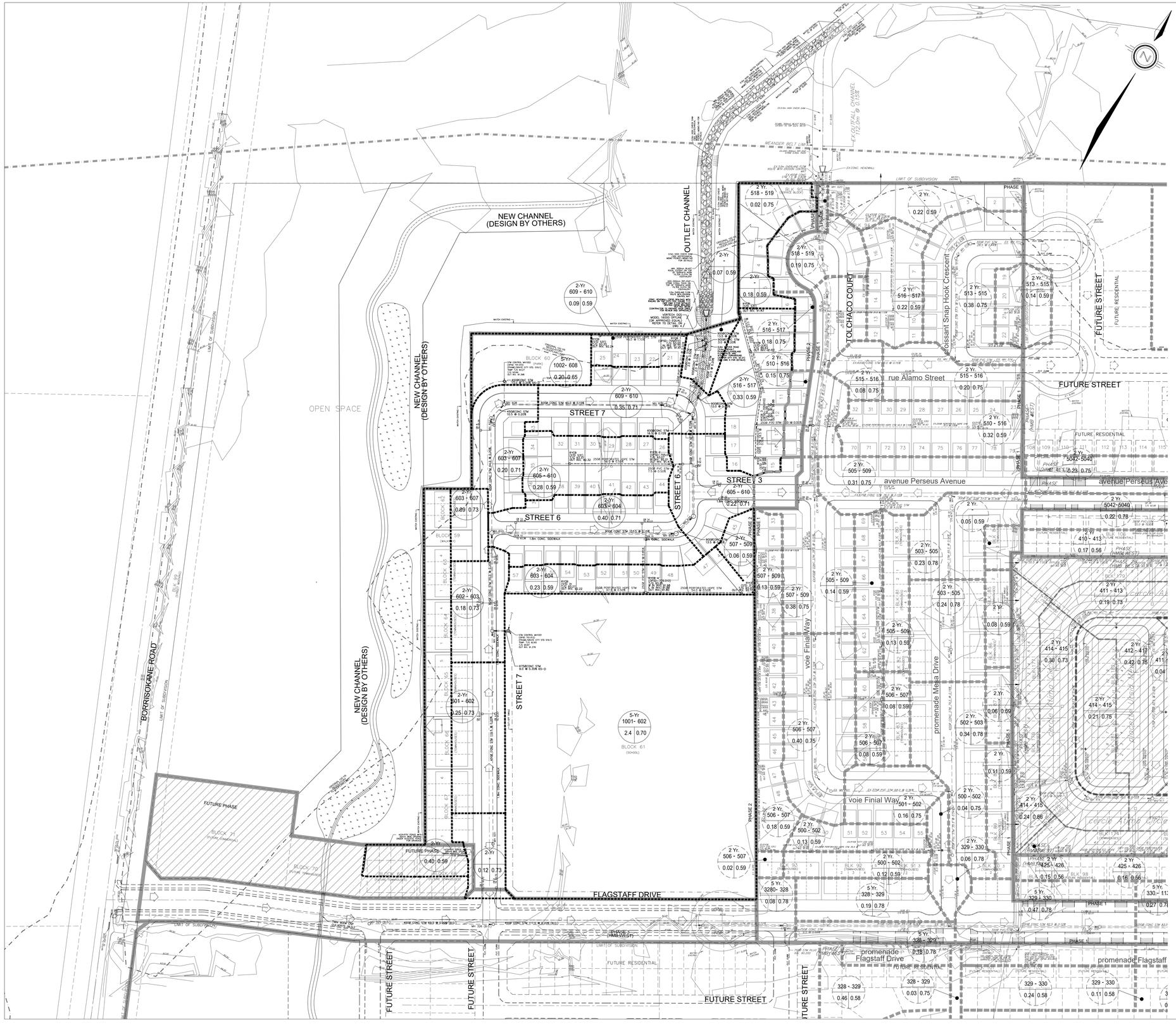
FLAGSTAFF
PHASE 2

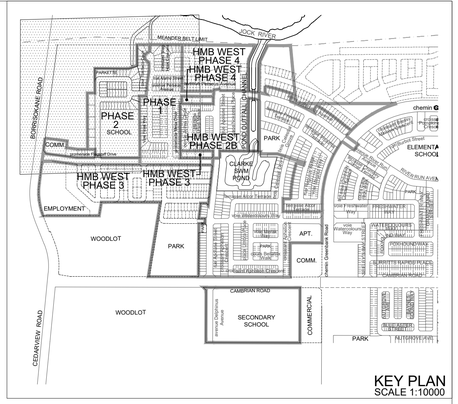
GLENVIEW HOMES (CEDARVIEW) LTD.

CITY OF OTTAWA

PROJECT NO.: 15-809

SEPTEMBER 2021
3RD SUBMISSION





LEGEND

- STORM DRAINAGE BOUNDARY
- STORM DRAINAGE BOUNDARY (OTHER PHASES)
- STORM FREQUENCY / UPSTREAM MH TO DOWNSTREAM MH — 2Yr. 43 - 44
- AREA IN HECTARES — 0.37
- RUNOFF COEFFICIENT — 0.51
- UPSTREAM MH TO DOWNSTREAM MH — 21 - 23
- AREA IN OTHER PHASES IN HECTARES — 0.28
- RUNOFF COEFFICIENT — 0.78
- STREET CATCHBASIN & LEAD / STREET CATCHBASIN WITH CLOSED LID & LEAD MAINTENANCE HOLE — STORMWATER ST, MH202
- CURB INLET CATCHBASIN & LEAD / CATCHBASIN/ MAINTENANCE HOLE — CBMH201
- INTERCONNECTED CATCH BASIN & LEADS
- CAP
- OVERLAND FLOW DIRECTION
- EXTERNAL OVERLAND FLOW DIRECTION
- EMERGENCY OVERLAND FLOW DIRECTION

NOT FOR CONSTRUCTION

No.	BY	DATE	DESCRIPTION
1	S.L.M.	21.04.23	1st SUBMISSION

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY ANNIS O'SULLIVAN, VOLLEBEKK LTD. JOB No. 16371-15, RECEIVED ON DECEMBER 12, 2015.
TOPOGRAPHIC INFORMATION PROVIDED BY STANTEC, JOB No. 161613485-111, RECEIVED ON JUNE 16, 2016.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY STANTEC, PROJECT No. 161614332-132, RECEIVED ON MARCH 25TH, 2021.

BENCH MARK

ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO THE CGVD28 GEODETIC DATUM

GLENVIEW HOMES (CEDARVIEW) LTD.

FLAGSTAFF SUBDIVISION PHASE 2

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

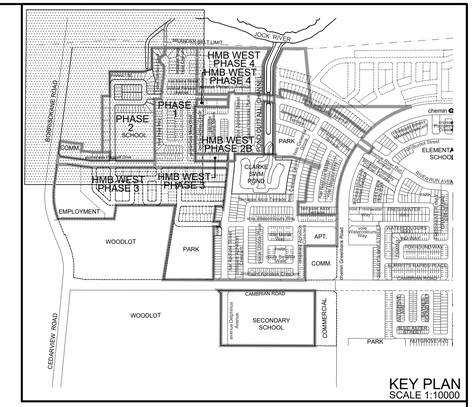
LICENSED PROFESSIONAL ENGINEER S. L. MERRICK 100186523 2021-04-23 PROVINCE OF ONTARIO

Ottawa CITY OF OTTAWA

STORM DRAINAGE PLAN

DRAWN BY: G.G.G.	CHECKED BY: A.D.F.	PROJECT No.	15-809
DESIGNED BY: S.L.M.	CHECKED BY: A.D.F.	SHEET No.	20
SCALE: 1:1000			

CITY FILE No. D07-XX-XX-XXXX CITY PLAN No. XXXXXX



LEGEND

SANITARY DRAINAGE BOUNDARY

SANITARY DRAINAGE BOUNDARY (OTHER PHASES)

UPSTREAM MH TO DOWNSTREAM MH
AREA IN HECTARES
POPULATION
TRIBUTARY TYPE

Example: 1001A-602A | 2.40 | 0 | SCHOOL

UPSTREAM MH TO DOWNSTREAM MH
AREA IN HECTARES
POPULATION

Example: 507A-508A | 0.18 | 14

MAINTENANCE HOLE — Example: MH202A

CAP

NOT FOR CONSTRUCTION

No.	BY	DATE	DESCRIPTION
1	S.L.M.	21.04.23	1st SUBMISSION

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LEGAL INFORMATION
CIRCULATED M-PLAN PROVIDED BY STANTEC, PROJECT No. 161614332-132, RECEIVED ON MARCH 25TH, 2021.

BENCH MARK
ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO THE CGVD28 GEODETIC DATUM

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LICENSED PROFESSIONAL ENGINEER S. L. MERRICK 100186523 2021-04-23 PROVINCE OF ONTARIO

Ottawa CITY OF OTTAWA

SANITARY DRAINAGE PLAN

DRAWN BY:	G.G.G.	CHECKED BY:	A.D.F.
DESIGNED BY:	S.L.M.	CHECKED BY:	A.D.F.
SCALE:	1:1000	PROJECT No.	15-809
		SHEET No.	19

CITY FILE No. D07-XX-XX-XXXX CITY PLAN No. XXXXXX

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	UNITS Singles	UNITS Townhouse	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 (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
OUTLET CHANNEL																													
	614A	618A	0.23	1	1		4	0.23	4	3.76	0.05		0.00		0.00		0.00	0.00	0.23	0.23	0.08	0.12	10.0	200	0.35	19.40	0.01	0.62	0.17
To TURNBUCKLE CRESCENT, Pipe 618A - 619A								0.23	4				0.00		0.00		0.00			0.23									
PARK BLOCK																													
	1002A	616A						0.00					0.00		0.00	0.20	0.20	0.03	0.20	0.20	0.07	0.10	13.0	200	0.65	26.44	0.00	0.84	0.19
To TURNBUCKLE CRESCENT, Pipe 616A - 617A								0.00	0				0.00		0.00		0.20			0.20									
BLOCK 61																													
	604A	6052A						0.00					0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	25.5	250	0.25	29.73	0.00	0.61	0.03
	6052A	605A						0.00	0				0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	11.0	250	0.25	29.73	0.00	0.61	0.03
To TURNBUCKLE CRESCENT, Pipe 605A - 606A								0.00	0				0.00		0.00		0.00			0.00									
SCHOOL BLOCK																													
	1001A	602A						0.00					0.00	2.40	2.40		0.00	1.17	2.40	2.40	0.79	1.96	13.5	200	0.65	26.44	0.07	0.84	0.49
To MAIN HALYARD LANE, Pipe 602A - 605A								0.00	0				0.00		2.40		0.00			2.40									
MAIN HALYARD LANE																													
	601A	6054A	0.32	10		10	27	0.32	27	3.69	0.32		0.00		0.00		0.00	0.00	0.32	0.32	0.11	0.43	68.5	200	0.65	26.44	0.02	0.84	0.30
	6054A	602A	0.26	8		8	22	0.58	49	3.65	0.58		0.00		0.00		0.00	0.00	0.26	0.58	0.19	0.77	57.0	200	0.35	19.40	0.04	0.62	0.30
Contribution From SCHOOL BLOCK, Pipe 1001A - 602A								0.00	0				0.00		2.40		0.00		2.40	2.98									
	602A	605A	0.21	5		5	14	0.79	63	3.63	0.74		0.00		2.40		0.00	1.17	0.21	3.19	1.05	2.96	49.0	200	0.35	19.40	0.15	0.62	0.44
To TURNBUCKLE CRESCENT, Pipe 605A - 606A								0.79	63				0.00		2.40		0.00			3.19									
			0.08	3		3	9	0.08	9				0.00		0.00		0.00		0.08	0.08									
	605A	615A	0.24	5	5		17	0.32	26	3.69	0.31		0.00		0.00		0.00	0.00	0.24	0.32	0.11	0.42	63.5	200	0.65	26.44	0.02	0.84	0.30
	615A	616A	0.02					0.34	26	3.69	0.31		0.00		0.00		0.00	0.00	0.02	0.34	0.11	0.42	9.0	200	0.35	19.40	0.02	0.62	0.25
To TURNBUCKLE CRESCENT, Pipe 616A - 617A								0.34	26				0.00		0.00		0.00			0.34									
TURNBUCKLE CRESCENT																													
Contribution From MAIN HALYARD LANE, Pipe 615A - 616A								0.34	26				0.00		0.00		0.00		0.34	0.34									
Contribution From PARK BLOCK, Pipe 1002A - 616A								0.00	0				0.00		0.00		0.20		0.20	0.20									
	616A	617A	0.47	11	11		38	0.81	64	3.63	0.75		0.00		0.00		0.20	0.03	0.47	1.01	0.33	1.12	97.0	200	0.35	19.40	0.06	0.62	0.33
	617A	618A	0.05	1	1		4	0.86	68	3.63	0.80		0.00		0.00		0.20	0.03	0.05	1.06	0.35	1.18	12.0	200	0.35	19.40	0.06	0.62	0.34
To TURNBUCKLE CRESCENT, Pipe 618A - 619A								0.86	68				0.00		0.00		0.20			1.06									
Contribution From OUTLET CHANNEL, Pipe 614A - 618A								0.23	4				0.00		0.00		0.00		0.23	0.23									
Contribution From MAIN HALYARD LANE, Pipe 617A - 618A								0.86	68				0.00		0.00		0.20		1.06	1.29									
	618A	619A	0.19	4	4		14	1.28	86	3.61	1.01		0.00		0.00		0.20	0.03	0.19	1.48	0.49	1.53	47.0	200	0.35	19.40	0.08	0.62	0.36
To PERSEUS AVENUE, Pipe 619A - 513A								1.28	86				0.00		0.00		0.20			1.48									
Contribution From MAIN HALYARD LANE, Pipe 602A - 605A								0.79	63				0.00		2.40		0.00		3.19	3.19									
Contribution From BLOCK 61, Pipe 6052A - 605A								0.00	0				0.00		0.00		0.00		0.00	3.19									
	605A	606A	0.64	17	17		58	1.43	121	3.58	1.40		0.00		2.40		0.00	1.17	0.64	3.83	1.26	3.83	104.0	250	0.25	29.73	0.13	0.61	0.41
	606A	607A	0.15	2	2		7	1.58	128	3.57	1.48		0.00		2.40		0.00	1.17	0.15	3.98	1.31	3.96	13.0	250	0.25	29.73	0.13	0.61	0.42
	607A	619A	0.06	1	1		4	1.64	132	3.57	1.53		0.00		2.40		0.00	1.17	0.06	4.04	1.33	4.03	12.0	250	0.25	29.73	0.14	0.61	0.42
To PERSEUS AVENUE, Pipe 619A - 513A								1.64	132				0.00		2.40		0.00			4.04									
PERSEUS AVENUE																													
Contribution From TURNBUCKLE CRESCENT, Pipe 607A - 619A								1.64	132				0.00		2.40		0.00		4.04	4.04									
Contribution From TURNBUCKLE CRESCENT, Pipe 618A - 619A								1.28	86				0.00		0.00		0.20		1.48	5.52									
	619A	EX Plug	0.11					3.03	218	3.51	2.48		0.00		2.40		0.20	1.20	0.11	5.63	1.86	5.53	60.0	300	0.20	43.25	0.13	0.61	0.42

DESIGN PARAMETERS

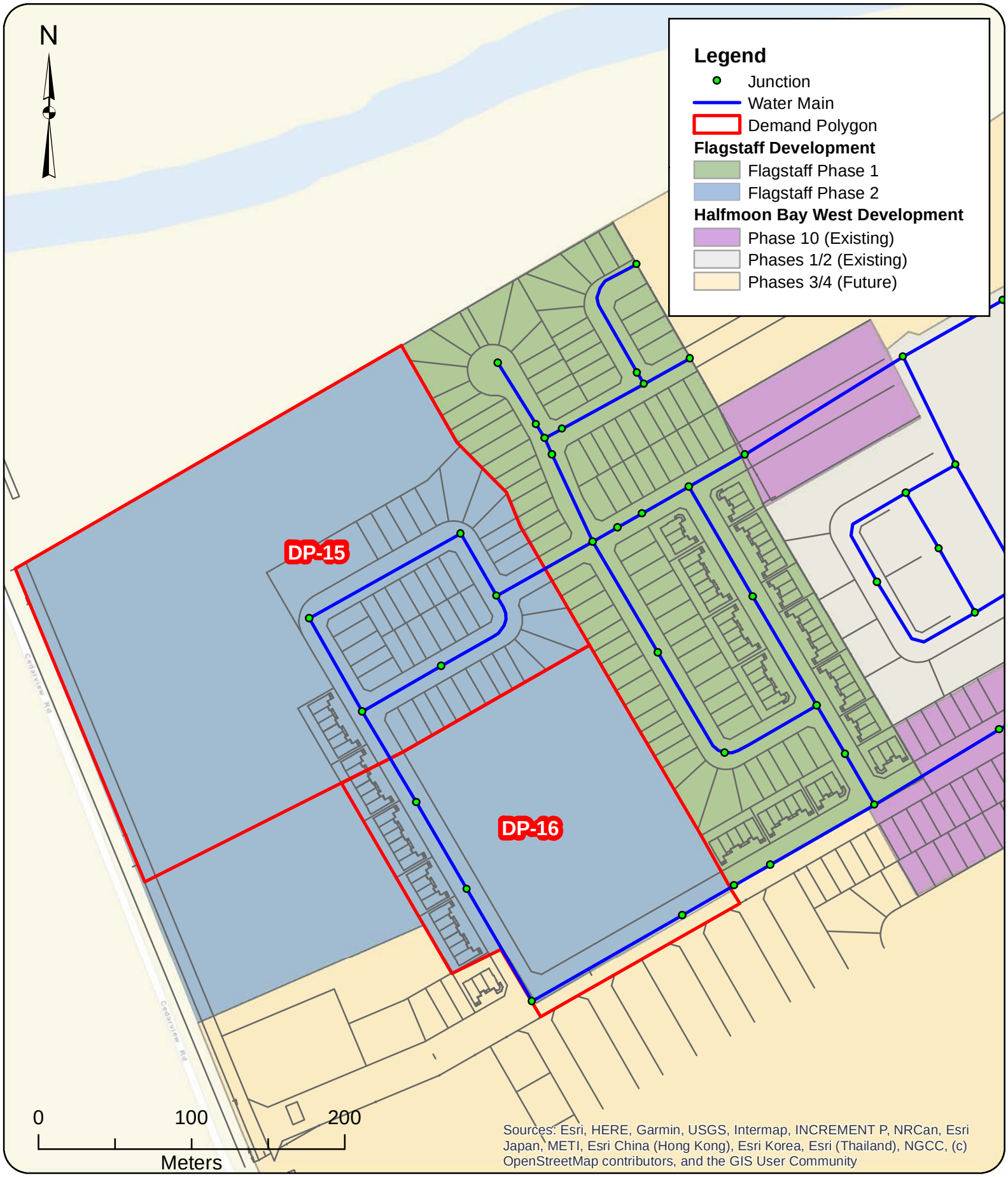
Park Flow =	9300	L/ha/da	0.10764 l/s/Ha
Average Daily Flow =	280	l/p/day	
Comm/Inst Flow =	28000	L/ha/da	0.3241 l/s/Ha
Industrial Flow =	35000	L/ha/da	0.40509 l/s/Ha
Max Res. Peak Factor =	4.00		
Commercial/Inst./Park Peak Factor =	1.50		
Institutional =	0.32	l/s/Ha	

Industrial Peak Factor = as per MOE Graph

Extraneous Flow =		0.330	L/s/ha	
Minimum Velocity =		0.600	m/s	
Manning's n =	(Conc)	0.013	(Pvc)	0.013
Townhouse coeff=		2.7		
Single house coeff=		3.4		

LICENSED PROFESSIONAL ENGINEER
S. L. MERRICK
100186523
21-08-06
PROVINCE OF ONTARIO
JOB # 15-809

Designed:	GGG	PROJECT:	GLENVIEW FLAGSTAFF PHASE 2
Checked:	SLM	LOCATION:	City of Ottawa
Dwg. Reference: Sanitary Drainage Plan, Dwg. No. 19		File Ref: 15-809	Date: 06 Aug 2021
		Sheet No.	1 of 1



GeoAdvice Engineering Inc.

Project: **Hydraulic Capacity and Modeling Analysis**
Flagstaff Phase 2
2021-023-DSE
Client: **David Schaeffer Engineering Ltd.**
Date: **April 2021**
Created by: **BL**
Reviewed by: **WdS**

Demand Allocation

Figure A.1

Consumer Water Demands

Flagstaff Phase 2 Residential Demands

Dwelling Type	Number of Units	Population		Average Day Demand			Max Day 2.5 x Avg. Day (L/s)	Fire Flow (L/s)	Peak Hour 2.2 x Max Day (L/s)	Min Hour 0.5 x Avg. Day (L/s)
		Persons per Unit	Population Per Dwelling Type	(L/c/d)	(L/d)	(L/s)				
Single Detached	42	3.4	143	280	40,040	0.46	1.16	167, 233	2.55	0.23
Traditional Townhome	26	2.7	71		19,880	0.23	0.58	167	1.27	0.12
Subtotal	**68**		**214**		**59,920**	**0.69**	**1.73**		**3.81**	**0.35**

Flagstaff Phase 2 Non Residential Demands

Property Type	Area (ha)		Average Day Demand			Max Day 1.5 x Avg. Day (L/s)	Fire Flow (L/s)	Peak Hour 1.8 x Max Day (L/s)	Min Hour 0.5 x Avg. Day (L/s)
			(L/ha/d)	(L/d)	(L/s)				
Institutional	2.40		28,000	67,200	0.78	1.17	250	2.10	0.39
Parkette	0.20		28,000	5,600	0.06	0.10	167	0.18	0.03
Subtotal	**2.60**			**72,800**	**0.84**	**1.26**		**2.28**	**0.42**

Flagstaff	Number of Units	Population	Non Residential Area (ha)		**ADD**	**MDD**	**PHD**	**MHD**
Phase 1 Total Demand:	155	485			1.57	3.93	8.64	0.79
Phase 2 Total Demand:	68	214	2.6		1.54	3.00	6.09	0.77

Half Moon Bay West (HMBW)	Number of Units	Population	Non Residential Area (ha)		**ADD**	**MDD**	**PHD**	**MHD**
Phase 1 Total Demand:	353	1,049	9.18		6.37	12.96	26.73	3.19
Phase 2A Total Demand:	156	502	1.00		1.95	4.55	9.82	0.98
Phase 2B Total Demand:	127	377			1.22	3.05	6.72	0.61
Phase 10 Total Demand:	60	171			0.55	1.39	3.05	0.28

Scenario Totals		**ADD**	**MDD**	**PHD**	**MHD**
Scenario 1	Flagstaff Phases 1 and 2, HMBW Phases 1, 2A, 2B, 10	**13.21**	**28.88**	**61.05**	**6.60**

Appendix F - Pre-Consultation & Development Servicing Study Checklist

Description:

A Design Brief is the core submission document that illustrates how the development is designed to work with its existing and planned context, to improve its surroundings and also demonstrate how the proposal supports the overall goals of the Official Plan, relevant secondary plans, Council approved plans and design guidelines. The purpose of the Terms of Reference is to assist the applicant to organize and substantiate the design justification in support of the proposed development and to assist staff and the public in the review of the proposal.

Authority to Request a Design Brief:

The *Planning Act* gives municipalities the authority to require that a Design Brief be prepared. Under Sections 22(4), (5) and Section 41(4) of the *Planning Act*, a Council has the authority to request such other information or material that the authority needs in order to evaluate and make a decision on an application. Section 5.2.6 of the Official Plan sets out the general requirement for a Design Brief.

Preparation:

The Design Brief should be signed by an urban designer, licensed architect, landscape architect, or a full member of the Canadian Institute of Planners.

When Required:

A Design Brief is required for a Site Plan Control planning application.

A Scoped Design Brief* is required when the following planning applications are applied for and not accompanied by a Site Plan Control application:

- Official Plan Amendment
- Zoning By-law Amendment (exception: a change in use which does not result in an increase in height or massing)

The requirement and scope of a Design Brief will be determined at the formal pre-application consultation meeting. Should an application be required to go to the Urban Design Review Panel (UDRP), the Design Brief may be submitted as part of the submission materials to the panel.

Contents for Design Brief Submissions:

A Design Brief will contain and/or address the points identified during the pre-consultation meeting. Failure to address the critical elements identified in the pre-consultation meeting may result in the application being considered incomplete.

** A Scoped Design Brief is composed of:*

- *Section 1 should be combined into the Planning Rationale submission, and*
- *Section 2 items will be confirmed in the pre-application consultation meeting.*

SECTION 1

Application Submission:

Not Required	Required	
☐	☐	State the: type of application, legal description, municipal address, purpose of the application and provide an overall vision statement and goals for the proposal.

Response to City Documents:

Not Required	Required	
☐	☐	State the Official Plan land use designation for the subject property and demonstrate how the proposal conforms to the Official Plan as it relates to the design of the subject site. Reference specific policy numbers from the Official Plan to show consistency. Justify areas of non-compliance and explain why there is non-compliance.
☐	☐	State the applicable plans which apply to the subject proposal: community design plan, secondary plan, concept plan and design guideline. Reference the relevant design related polices within the applicable plans/guidelines and provide a comprehensive analysis asto how the proposed development incorporates the objectives or why it does not incorporate the objectives.

Context Plan:

Not Required	Required	
☐	☐	Provide a contextual analysis that discusses/illustrates abutting properties, key destinations and linkages within a 100 meter radius (a larger radius may be requested for larger/more complex projects), such as transit stations, transportation networks for cars, cyclists, and pedestrians, focal points/nodes, gateways; parks/open spaces, topography, views towards the site, the urban pattern (streets, blocks), future and current proposals (if applicable), public art and heritage resources.
☐	☐	Photographs to illustrate existing site conditions and surrounding contexts. Include a map pinpointing (with numbers) where each photo is taken and correspond these numbers with the site photos. Arrows illustrating the direction the photo is taken is also useful.

SECTION 2

Design Proposal:
The purpose of the Design Proposal is to show the building elevations, exterior details, transitions in form, treatment of the public realm and compatibility with adjacent buildings, using 3-D models, illustrations, diagrams, plans, and cross sections. Referencing Official Plan, Section 5.2.1, as determined at time of pre-application consultation meeting, submissions will need to address the following in the form of labelled graphics and written explanation:

Massing and Scale

Not Required	Required	
		Images which show:
		Building massing – from:
☐	☐	• at least two sides set within its current context (showing the entire height and width of the building) **OR**
☐	☐	• all four sides set within **its current and planned context** (showing the entire height and width of the building).
		Views – of the entire block, from:
☐	☐	• at least two perspectives to show how the proposed building is set within **its current and planned context OR**
☐	☐	• all four perspectives to show how the proposed building is set within its current context.
☐	☐	Building transition – to adjacent uses **(both existing and planned),** with labelled explanation of the transition measures used.
☐	☐	Grading – if grades are an issue.
☐	☐	Alternative building massing – additional imagery and site layouts considered and provide justification for the ultimate proposal sought.

Public Realm

Not Required	Required	
		Labelled graphics and a written explanation which show:
☐	☐	Streetscape – cross sections which illustrate the **private** street design and right of way (referencing the City's design manuals).
☐	☐	Relationship to the public realm – illustrating how the first few storeys of the proposed development responds to and relates to the existing context (e.g. through a podium plan and first floor plan). This is to include detailed explanation on: • Architectural responses • Landscaping details • Public art features (in accordance with Official Plan, Section 4.11) • For developments in Design Priority Areas, detail the building and site features, (in accordance with Official Plan, Section 4.11) which will enhance the public realm. Provide explanation for features which are not provided.

Building Design

Not Required	Required	
☐	☐	Labelled graphics (e.g. building elevations and floor plans) and a written explanation which document the proposed exterior architectural details and design (in accordance with Official Plan, Section 5.2.1).
☐	☐	For high-rise development applications, detail the building design and massing and scale elements and how they relate to the proposed high-rise development (in accordance with Official Plan, Section 5.2.1).

Sustainability

Not Required	Required	
☐	☐	Any sustainable design features to be incorporated, such as green roofs or walls, sun traps, reflective or permeable surfaces.

Heritage

Not Required	Required	
☐	☐	How the building relates to the historic details, materials, site and setting of any existing historic resources on or adjacent to the subject property (if applicable).

Additional Contents:

Some proponents may be requested to provide submission material which complements the Design Brief. These additional requirements could be incorporated into the Design Brief submission for ease of review. These will be identified at the time of application consultation meeting:

- Site Plan
- Landscape Plan
- Plan showing existing and proposed servicing
- Shadow Analysis
- Wind Analysis

Submission Requirements

- One digital copy

3387 Borrisokane, School (coner of Flagstaff and Street #7)
Meeting Summary Notes
Aug 11, Online Teams Meeting

Attendees:

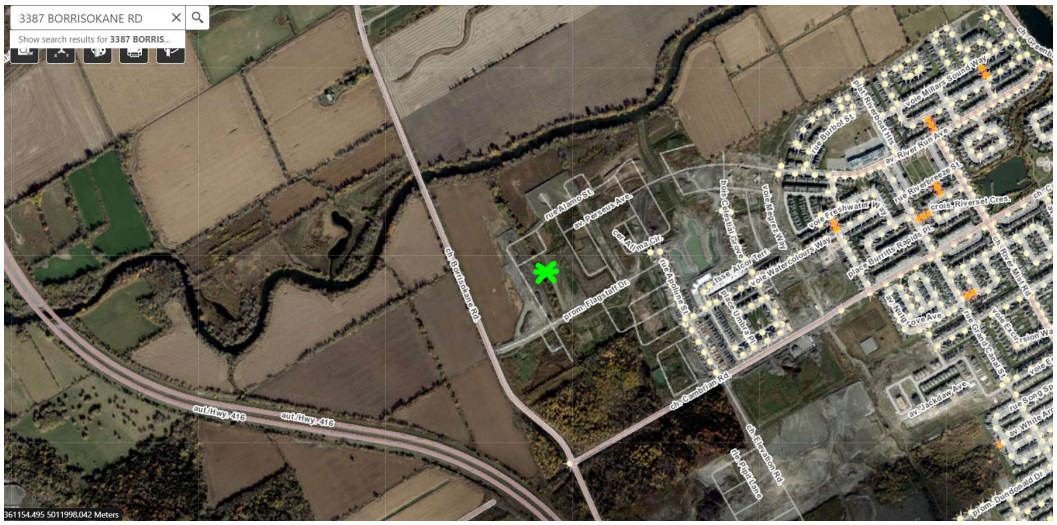
- Donald Wood, OCSB
- Isabel Richer, Architect Pye & Richards
- Doug Green, Dillon Consulting
- Jeff Probert, Dilon
- James Lennox, landscaping
- Patrick Ha, Jp2g, civil engineering

- Jeff Shillington (Project Manager, City of Ottawa)
- Eric Lalonde, RVCA
- Tracey Scaramozzino (File Lead, Planner, City of Ottawa)

- ~~Mark Richardson, Planning Forester~~
- ~~Needi Paudel (Transportation Project Manager, City of Ottawa)~~
- ~~Mark Young (Urban Designer, Architect, City of Ottawa)~~
- ~~Sami Rehman, Environmental Planner~~

Issue of Discussion:

- New elementary School with parking, bus layby, car layby, play yard and future portables or addition
- Site Plan required
- Within a current plan of subdivision



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1. **Official Plan -** designated “General Urban Area”.
2. **CDP:** Barrhaven South CDP
3. **Zoning Information:** 1A

4. **Infrastructure/Servicing (Bruce Bramah, Jeff Shillington):**
    a. Sanitary – the subdivision design has allocated a flow rate of 1.17 l/s for the 2.4 ha site.
    b. Storm – the subdivision design has allocated a runoff coefficient of 0.70 for the 5 year storm event for the 2.4 ha site. The subdivision design has incorporated an oil/grit separator at the subdivisions stormwater outlet to manage water quality for the school site . The design of the site should follow stormwater management best management practices.
    c. The subdivision design is progressing. We are expecting a 2nd submission any day and it is expected that this submission would be acceptable to send out for the MECP ECA. It is expected that Glenview would like to proceed with construction in the fall. (Please confirm with Glenview)
    d. The current design for the subdivision shows the services (water, sanitary and storm) at the north end of the site on Street 7. Any questions on the engineering design should be forwarded to Laura Maxwell at DSEL who is working on the subdivision design for Glenview. Her email is lmaxwell@dsel.ca.

5. Initial Planning Comments

1. Landscape around parking lot perimeter
2. Within bird hazard zone for Ottawa Airport. Ensure no bird-attractive plants/trees are used.
3. Ensure hvac system is well buffered against noise to abutting residential
4. Consider the ability to create ped connection to the residential streets abutting the site.
    a. At the preconsult, the school board representative indicated that parents were not in favour of their children walking through a path to reach the school site due to potential safety concerns.
    b. Perhaps some discussion with a planner and the police department regarding their CPTED (Crime Prevention Through Environmental Design) may be appropriate to try to resolve the concerns of the parents. Having children walk to school meets a lot of the policies goals in the City's Official Plan (reducing vehicular traffic and congestion especially in school zones, increasing pedestrian connectivity through communities, improved mental and physical health by the children (and adults) walking to school etc.
5. Ensure proposal is in line with the Barrhaven South CDP

6. Urban Design Comments (Mark Young):

1. A design brief is required. A terms of reference is provided.
2. The use of Lay-Bys on both public streets is supported. Given the existing travelled surfaces of both rights of way already accommodate for on-street

parking, can bulb-outs be utilized to define the lay-bys, vs. adding additional hard surface for peak periods? This is more of a concern on Flagstaff Drive, where there should be adequate room for on-street parking along the subject frontage. Perhaps a section could simply be dedicated for 15-minute parking during peak drop off periods, vs. the construction of a dedicated lay-by?

3. Please provide a direct pedestrian link between the sidewalk on Flagstaff Drive and the building entrance facing Flagstaff Drive.
4. Consideration should be given to orienting the soccer field in a north/south orientation vs. east west from a use perspective.

7. **Parks (Jeannette Krabicka):**
    a. n/a as parkland was already conveyed during the subdivision process

8. **Trees (Mark Richardson):**
    a. The Applicant has indicated that all of the trees have been removed from the site.

9. Environment (Sami Rehman):

- plant more locally appropriate native trees and vegetation on the property, as per OP Section 4.9 to be more energy efficient through design and layout, especially along the southern and western property boundaries. This will help in reducing energy demands, offer shading and help with air quality.

- Incorporate design elements from the City's bird-safe design guidelines to minimize bird collisions.
https://documents.ottawa.ca/sites/documents/files/birdsafedesign_guidelines_en.pdf

10. Conservation Authority (Eric Lalonde, RVCA):

- The RVCA generally has no concerns with the project.

- The subject lands are contingent on a watercourse being relocated. The RVCA has issued a permit to such effect and work has commenced on it. Completion of the watercourse relocation should be finalized prior to development commencing on site.

- The RVCA required enhanced water protection, which is being reviewed through the subdivision process. At this time water quality is intended to be handled through a OGS unit downstream of the site. Best management practices are encouraged on site to provide any additional protections where possible.

11. Transportation (Neeti Paudel):

- Follow Traffic Impact Assessment Guidelines
    - Reduced scope of the TIA is acceptable- Design Review Component and Module 4.5- Transportation Demand Management should be included for review.
    - Request base mapping asap if RMA is required. Contact Engineering Services (https://ottawa.ca/en/city-hall/planning-and-development/engineering-services)
- Flagstaff Road should be designed as per the City's approved Collector Road Guidelines. Instead of the lay-by, periodic bulbouts should be provided to organize on street parking into bays.
- To achieve a 30km/h operating speed on local streets, the City has developed a local residential streets 30km/h Design Toolbox. Please consider adding bulb outs at the proposed bus lay-by on Street 7 to avoid having a continuous wide street for when the lay-by is not occupied by buses.
- Site triangles at the following locations on the final plan will be required:
    - Local Road to Collector Road: 5 metre x 5 metres
- Noise Impact Studies required for the following:
    - Road
    - Stationary (if there will be any exposed mechanical equipment due to the proximity to neighbouring noise sensitive land uses)
- Provide clear throat length as per TAC guidelines.
- On site plan:
    - Show all details of the roads abutting the site up to and including the opposite curb; include such items as pavement markings, accesses and/or sidewalks.
    - Turning templates will be required for all accesses showing the largest vehicle to access the site; required for internal movements and at all access (entering and exiting and going in both directions).
    - Show all curb radii measurements; ensure that all curb radii are reduced as much as possible
    - Show lane/aisle widths.
    - Sidewalk is to be continuous across access as per City Specification 7.1.
- An update to the TRANS Trip Generation Manual has been completed (October 2020). This manual (attached) is to be utilized for this TIA.
- As the proposed site is institutional and for general public use, AODA legislation applies. Consider using the City's Accessibility Design Standards.

12. General Information

a. Ensure that all plans and studies are prepared as per City guidelines – as available online…

https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans

Appendix G Roof Drain and ICD Product Data Sheets

PRODUCT TECHNICAL SPECIFICATION

General

Inlet control devices (ICD's) are designed to provide flow control at a specified rate for a given water head level and also provide odour and floatable control. All ICD's will be IPEX Tempest or approved equal.

All devices shall be removable from a universal mounting plate. An operator from street level using only a T-bar with a hook will be able to retrieve the device while leaving the universal mounting plate secured to the catch basin wall face. The removal of the TEMPEST devices listed above must not require any unbolting or special manipulation or any special tools.

High Flow (HF) Sump devices will consist of a removable threaded cap which can be accessible from street level with out entry into the catchbasin (CB). The removal of the threaded cap shall not require any special tools other than the operator's hand.

ICD's shall have no moving parts.

Materials

ICD's are to be manufactured from Polyvinyl Chloride (PVC) or Polyurethane material, designed to be durable enough to withstand multiple freeze-thaw cycles and exposure to harsh elements.

The inner ring seal will be manufactured using a Buna or Nitrile material with hardness between Duro 50 and Duro 70.

The wall seal is to be comprised of a 3/8" thick Neoprene Closed Cell Sponge gasket which is attached to the back of the wall plate.

All hardware will be made from 304 stainless steel.

Dimensioning

The Low Medium Flow (LMF), High Flow (HF) and the High Flow (HF) Sump shall allow for a minimum outlet pipe diameter of 200mm with a 600mm deep Catch Basin sump.

Installation

Contractor shall be responsible for securing, supporting and connecting the ICD's to the existing influent pipe and catchbasin/manhole structure as specified and designed by the Engineer.

PRODUCT INFORMATION: TEMPEST HF & MHF ICD

Product Description

Our HF, HF Sump and MHF ICD's are designed to accommodate catch basins or manholes with sewer outlet pipes 6" in diameter or larger. Any storm sewer larger than 12" may require custom modification. However, IPEX can custom build a TEMPEST device to accommodate virtually any storm sewer size.

Available in 5 preset flow curves, these ICDs have the ability to provide constant flow rates: 9lps (143 gpm) and greater

Product Function

TEMPEST HF (High Flow): designed to manage moderate to higher flows 15 L/s (240 gpm) or greater and prevent the propagation of odour and floatables. With this device, the cross-sectional area of the device is larger than the orifice diameter and has been designed to limit head losses. The HF ICD can also be ordered without flow control when only odour and floatable control is required.

TEMPEST HF (High Flow) Sump: The height of a sewer outlet pipe in a catch basin is not always conveniently located. At times it may be located very close to the catch basin floor, not providing enough sump for one of the other TEMPEST ICDs with universal back plate to be installed. In these applications, the HF Sump is offered. The HF Sump offers the same features and benefits as the HF ICD; however, is designed to raise the outlet in a square or round catch basin structure. When installed, the HF sump is fixed in place and not easily removed. Any required service to the device is performed through a clean-out located in the top of the device which can be often accessed from ground level.

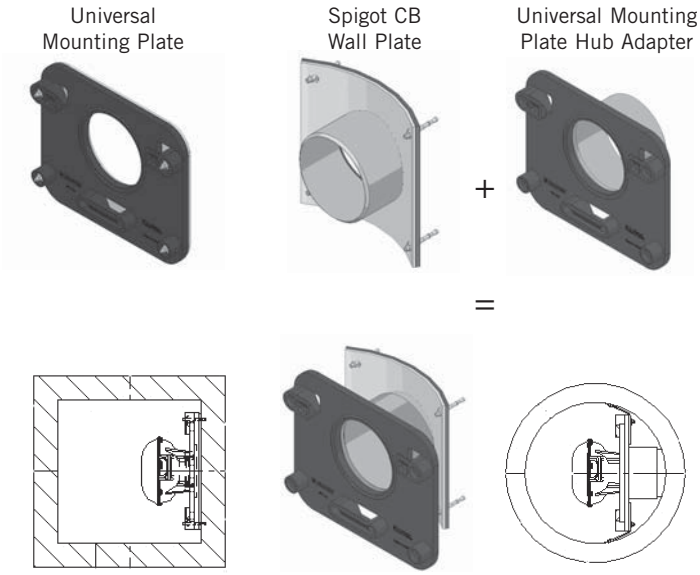
TEMPEST MHF (Medium to High Flow):
The MHF plate or plug is designed to control flow rates 9 L/s (143 gpm) or greater. It is not designed to prevent the propagation of odour and floatables.

Product Construction

The HF, HF Sump and MHF ICDs are built to be light weight at a maximum weight of 6.8 Kg (14.6 lbs).

Product Applications

The HF and MHF ICD's are available to accommodate both square and round applications:



The HF Sump is available to accommodate low to no sump applications in both square and round catch basins:

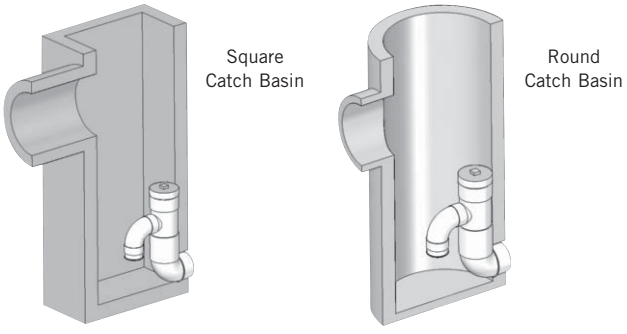
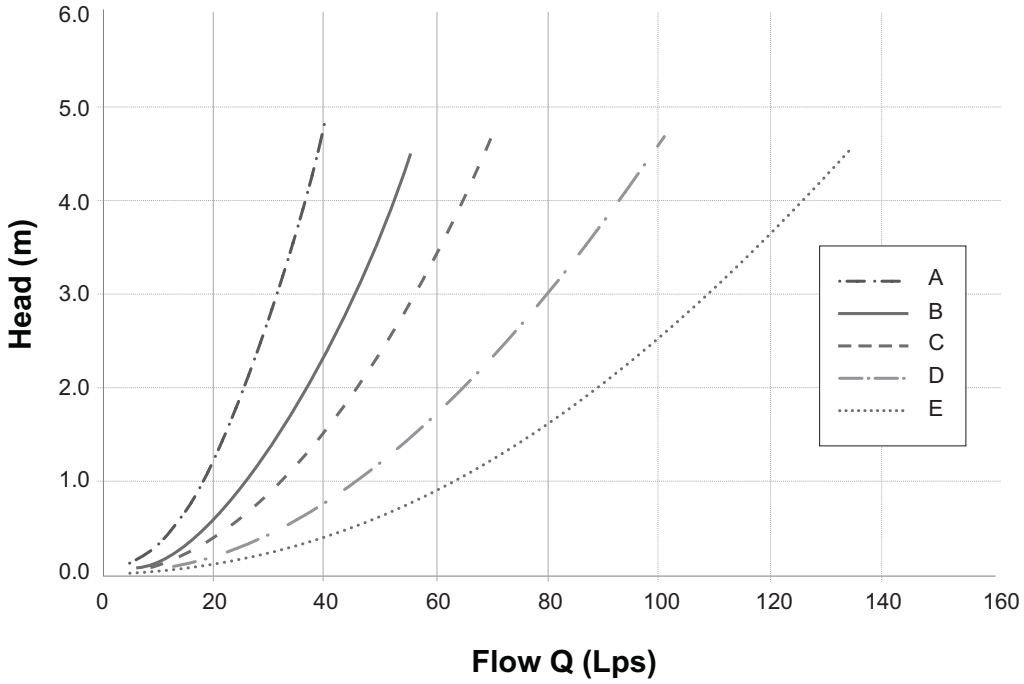


Chart 3: HF & MHF Preset Flow Curves



RD-100

Tag: _____

Large Capacity Roof Drain

Components:

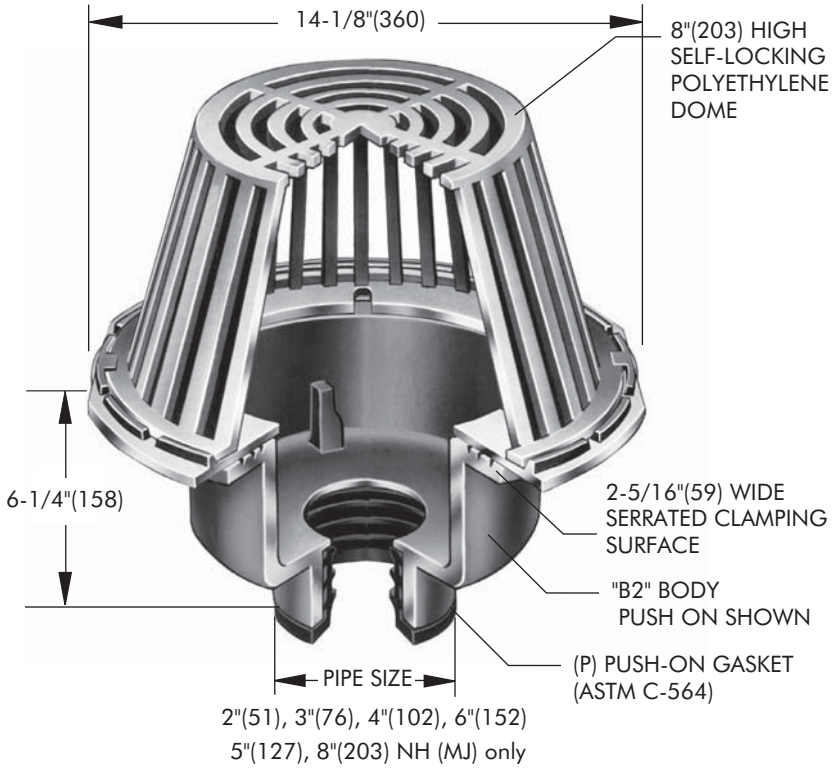

B2


B2-DM


B2-FLG


FC-2

SPECIFICATION: Watts Drainage Products RD-100 epoxy coated cast iron roof drain with deep sump, wide serrated flashing flange, flashing clamp device with integral gravel stop and self-locking polyethylene (standard) dome strainer.



Free Area Sq. In.
137

Deck opening 10" (254) with sump receiver 13-1/4" (337)

** Side Outlet (-SO) option only available in 2"(51), 3"(76), 4"(102) pipe sizes. Underdeck Clamp (-BED and -D options) are not available when -SO is selected.

Order Code: RD-10☐☐-☐-☐

Ex. RD-102P-K

Pipe Sizing (Select One)

Suffix	Description	
2	2"(51) Pipe Size	☐
3	3"(76) Pipe Size	☐
4	4"(102) Pipe Size	☐
5	5"(127) Pipe Size	☐
6	6"(152) Pipe Size	☐
8	8"(203) Pipe Size	☐

Outlet Type (Select One)

Suffix	Description	
NH	No Hub (MJ)	☐
P	Push On	☐
T	Threaded Outlet	☐
X	Inside Caulk	☐

Options (Select One or More)

Suffix	Description	
-A	Accutrol weir (specify # 1-6 slots)	☐
-B	Sump Receiver Flange	☐
-BED	Sump Receiver, Adj Ext., Deck Clamp	☐
-C	Secondary Membrane Clamp	☐
-D	Underdeck Clamp	☐
-E	Adjustable Extension	☐
-GSS	Stainless Steel Ballast Guard	☐
-H	Adj. to 6" IRMA Ballast Guard	☐
-K	Ductile Iron Dome	☐
-K80	Aluminum Dome	☐
-L	Vandal Proof Dome	☐
-R	2" High External Water Dam	☐
-SO	Side Outlet**	☐
-V	Fixed Extension (1-1/2",2",3",4")	☐
-W	Adj. Water Level Regulator	☐
-W-1	Waterproofing Flange	☐
-Z	Extended Integral Wide Flange	☐
-5	Sediment Bucket	☐
-12	Galvanized Dome	☐
-13	All Galvanized	☐
-83	Mesh Covered Dome	☐
-113M	Special Epoxy from 3M Range	☐

Optional Body Material (NH Only)

Suffix	Description	
-60	PVC Body w/Socket Outlet	☐
-61	ABS Body w/Socket Outlet	☐

Job Name _____ Contractor _____

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

Engineer _____ Representative _____

CANADA: 5435 North Service Road, Burlington, ON, L7L 5H7 TEL: 905-332-6718 TOLL-FREE: 1-888-208-8927 Website: www.wattsdrainage.ca

Accutrol Weirs

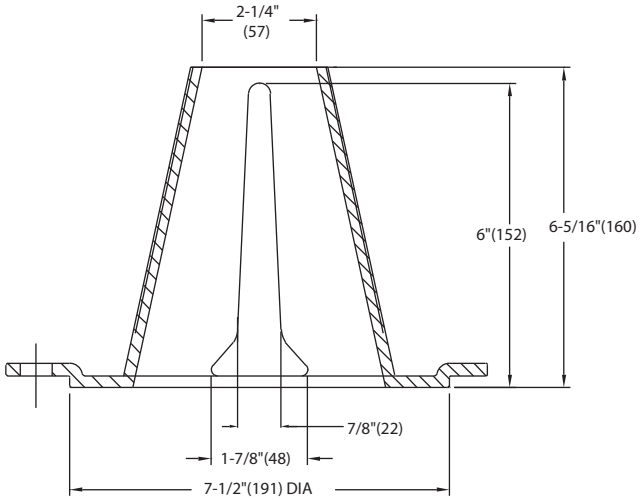
Tag: _____

Flow Control for Roof Drains

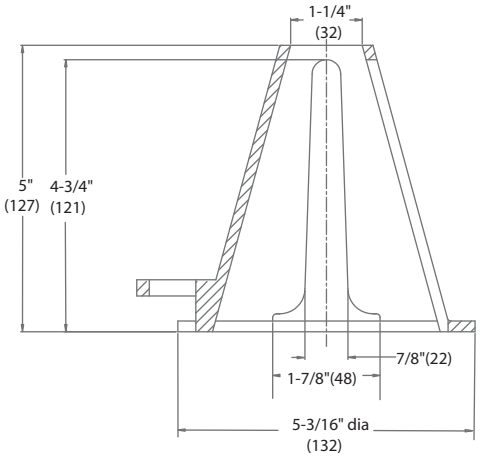
ACCUTROL WEIR FLOW CONTROL

SPECIFICATION: Watts Drainage Products epoxy coated cast iron Accutrol Weir is designed with parabolic openings which limit the flow of rain water off a roof. Each weir slot controls flow to 5 gpm per inch of head to a maximum of 30 gpm at 6" head(for large sump), 25 gpm at 5" head(for small sump) . The Accutrol Weir is secured to the flashing clamp of the roof drain. The Accutrol Weir is available with 1 to 4 slots for the large sump drain and up to 3 slots for the small sump drain.

For Large Sump Roof Drains Specify the "-A" option and number of slots required. (ie. "RD-100-A2" for two slot weir)
For Small Sump Roof Drains Specify the "-A" option and number of slots required. (ie. "RD-200-A1" for one slot weir)



LARGE SUMP ACCUTROL WEIR



SMALL SUMP ACCUTROL WEIR

Job Name _____ Contractor _____

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

Engineer _____ Representative _____

CANADA: 5435 North Service Road, Burlington, ON, L7L 5H7 TEL: 905-332-6718 TOLL-FREE: 1-888-208-8927 Website: www.wattsdrainage.ca