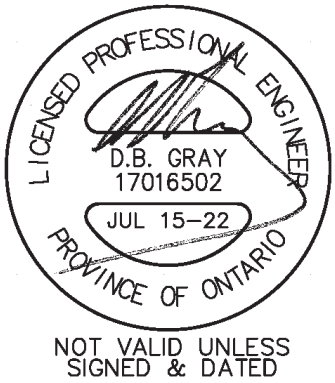
SERVICING BRIEF &
STORMWATER MANAGEMENT REPORT

1498 Stittsville Main Street
Ottawa, Ontario

Report No. 21029

May 7, 2021
Revised July 15, 2022



D.B. Gray Engineering Inc.

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

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SERVICING BRIEF &
STORMWATER MANAGEMENT REPORT

1498 Stittsville Main Street
Ottawa, Ontario

This report describes the services and addresses the stormwater management requirements of a 1,113 sq.m. property at 1498 Stittsville Main Street in Ottawa. It is an 'L-shaped' property that also has frontage on Manchester Street. A vacant building with a 230 sq.m. footprint is currently on the property and is to be demolished. A two-storey building with a 253 sq.m. footprint, to be used as a distillery, is proposed. An existing parking area with access onto Manchester Street in the rear is to be replaced with a new parking area.

This report forms part of the stormwater management design for the proposed development. Refer to drawing C-1 to C-7 also prepared by D. B. Gray Engineering Inc.

WATER SUPPLY FOR FIREFIGHTING:

The proposed building will be installed with a sprinkler system with the fire department connection (FDC) located on the façade of the proposed building facing Stittsville Main Street. To supply the sprinkler system a 150 mm water service, connecting to the 400 mm municipal watermain Stittsville Main Street, is proposed. There are two existing municipal fire hydrants in the vicinity of the property. One is located near the Stittsville Main / Manchester Street intersection about 40 m unobstructed distance to the FDC. The other is located near the Stittsville Main / Abbot Street intersection about 45 m unobstructed distance to the FDC. Since both hydrants are within 45 m of the FDC an additional private on-site fire hydrant is not required.

The proposed building will be built of non-combustible construction (with unprotected structural components) and requires a fire flow of 83.3 L/s (5,000 L/min), as calculated as per the Fire Underwriter Survey "Water Supply For Fire Protection".

The boundary conditions for the 83.3 L/s fire flow (based on the city's computer model of the municipal water distribution system) was received from the City. The HGL (hydraulic grade line) for this flow rate is 156.2 m in the 400 mm municipal watermain in Stittsville Main Street at the subject location. This HGL calculates to be 334 kPa (48 psi) at the Stittsville Main / Manchester Street hydrant. Since the pressure is above 138 kPa (20 psi) there is an adequate water supply for firefighting from the existing municipal water distribution system.

As per City of Ottawa Technical Bulletin ISTB-2018-02, the aggregate fire flow of all contributing fire hydrants within 150 m of the building can used to supply the required

fire flow. The two existing municipal hydrants in the vicinity are Class AA. Both hydrants are within 75 m and can contribute 5,700 L/min (95 L/s) each (as per Table 1 of ISTB-2018-02). Therefore, the aggregate flow from both hydrants is 11,400 L/min (190.0 L/s), which is greater than the required fire flow.

WATER SERVICE:

For the purposes of water demand it is assumed that the proposed use (a distillery) is heavy industrial, and as per the City of Ottawa Design Guidelines the daily average consumption rate is 55,000 litres per day per hectare. Based on an 8-hour day the maximum daily demand for the subject property is calculated to be 0.2 L/s. Based on a maximum daily peaking factor of 1.5 times the daily average demand and a maximum hourly peaking factor of 1.8 times the maximum daily demand, the maximum daily demand is 0.3 L/s and maximum hourly demand is 0.6 L/s.

The proposed 150 mm water service, sized to supply a sprinkler system, is adequate for the domestic demand.

To determine water pressure under these demands, boundary conditions, based on the City of Ottawa computer simulation of the water distribution system, at the subject location, are required. Based on the boundary conditions received from the City, the minimum HGL (hydraulic grade line) is 155.9 m and the maximum is 160.8 m. With these HGLs the water pressure at the water meter is calculated to vary from 361 kPa to 409 kPa (52 psi to 59 psi). This is an acceptable range of water pressures for the proposed development.

SANITARY SERVICE:

A 150mm sanitary sewer connection at 2% is proposed to connect to the 450 mm municipal sanitary sewer in Stittsville Main Street.

For the purposes of sewage flow it is assumed that the proposed use (a distillery) is heavy industrial; and based on the City of Ottawa Sewer Design Guidelines for such uses (55,000 L/ha/day; 1.5 peaking factor (and an 8-hour day); and a 0.33 L/s/ha infiltration flow) the post development peak flow is calculated to be 0.36 L/s. This flow will be adequately handled by the proposed sanitary sewer connection being only 2% full (150 mm at 2.0% - 22.47 L/s capacity).

The previous uses were commercial in nature and based on the City Sewer Guidelines for such uses (28,000 L/ha/day; 1.5 peaking factor (and an 8-hour day); and a 0.33 L/s/ha infiltration flow) the pre-development peak flow is calculated to be 0.20 L/s. The 0.16 L/s increase in sanitary flows contributing to the existing 450mm municipal sanitary sewer is expected to have an acceptable impact given its capacity of 103.03 L/s (at 0.12%).

STORMWATER MANAGEMENT:

Water Quality Control:

The Mississippi Valley Conservation Authority (MVCA) has commented on the subject property with respect to quality control: "*In regards to stormwater management, the following should be provided: The development is located in a high groundwater recharge area according to the Carp River Watershed Study (2004) and has an infiltration target of 262 mm/yr. Please incorporate infiltration into the design. Poole Creek is a cool water system and an enhanced level of protection (80% TSS removal) is required for water quality control."*

The City of Ottawa pre-consultation meeting notes state: *"… the site is subject to the Carp River Subwatershed Study which was prepared for the City by Robinson Consultants in 2004. This report outlines specific groundwater recharge (infiltration) targets for the site of 262 mm/yr infiltration. Realizing that this target infiltration rate may be difficult to achieve for a smaller site like this, please ensure that infiltration best management practices are incorporated into the site's stormwater management design in an attempt to follow the intentions of the Carp River Subwatershed Study as much as possible (i.e. direct surface flows to pervious (landscaped) areas prior to discharging into the storm sewer system, stormwater storage (ponding) in excess of the allowable release rate can be limited to pervious (landscaped areas), consider the implementation of infiltration LIDs such as rain gardens, etc)."*

Currently, virtually the entire property is impervious (i.e. roof, asphalt front yard, and a gravel parking area with a concrete pad in the rear). To promote infiltration almost the entire rear yard (car parking and staging area) will be constructed with permeable pavers.

To meet the water quality target of 80% TSS removal an oil/grit separator (OGS) manhole (manhole MH-2) is proposed to be located downstream of the inlet control device (ICD). Specifically, a CDS model PMSU20-15-4 is selected to achieve a minimum 80% TSS removal. Based on software supplied by the manufacturer, the CDS PMSU20-15-4 will remove approximately 92% of TSS from the runoff produced by the drainage area. Output from the manufacturer's software is attached to this report. The CDS PMSU20-15-4 has a sediment capacity of 0.7 cubic metres and an oil/debris capacity of 232 litres.

An erosion and sediment control plan has been developed to be implemented during construction, (see drawing C-4 and notes 2.1 to 2.5 on drawing C-5). In summary: to filter out construction sediment; sediment capture filter sock inserts will be installed at existing catch basins adjacent to the site and in all new catch basins as they are installed; and any material deposited on a public road will be removed at the end of each day.

Water Quantity Control:

The stormwater management criteria for quantity control are to control the post development peak flows for the 5-year and 100-year storm events to peak flows during the 5-year storm event using a pre-development runoff coefficient or runoff coefficient of 0.5, whichever is less; and a calculated time of concentration (but not less than 10 minutes). It is estimated that the pre-development conditions reflect a 5-year runoff coefficient of between 0.75; and a time of concentration of 4.5 minutes (using the Bransby Williams Formula). Therefore, based on a runoff coefficient of 0.50, a 10 minute time of concentration; and using the Rational Method; the maximum allowable release rate is 16.12 L/s for all storm events. The Modified Rational Method is used to calculate the required storage volume. The runoff coefficients for the 100-year event are increased by 25% to maximum 1.00.

Stormwater will be stored on the roof of the proposed building, and in the parking area above catch basin CB-1.

Drainage Area I (Uncontrolled Flow – 196 sq.m.):
The runoff from perimeter of the site will be allowed to flow uncontrolled. The flow from this area is calculated at 10 minutes concentration.

	100-year	5-year
Maximum flow rate:	5.34 L/s	2.72 L/s

Drainage Area II (Roof – 253 sq.m.):
The roof drain on the roof will be a flow control type which will restrict the flow and cause the stormwater to pond on the roof. The flow control type roof drain shall be installed with a parabolic shaped slotted weir (1 slot per weir drain at 0.0124 l/s per mm per slot - 5 USgpm per inch per slot); the opening at top of flow control weir shall be a minimum 50 mm in diameter: Watts roof drain with a Watts Accutrol Weir RD-100-A1 or equal. The roof drain will be installed at the low point of the roof which will be 150 mm lower than the perimeter of the roof. Four scuppers, each a minimum 185 mm wide and installed 150 mm above the roof drains, are required (refer to architectural for exact locations and details). The roof shall be designed to carry the load of water having a 50 mm depth at scupper and 200 mm depth at roof drain (refer to structural).

	100-year	5-year
The maximum release rate:	1.69 L/s	1.29 L/s
The maximum ponding depth:	136 mm	104 mm
The maximum stored volume:	8.65 cu.m.	3.85 cu.m.

Drainage Area III (664 sq.m.):
An inlet control device (ICD) located at the outlet pipe of catch basin CB-1 will control the release of stormwater from this drainage area. The ICD will restrict the flow and force the stormwater to back up onto the surface above the catch basin. The ICD shall be a Hydrovex "VHV Vertical Vortex Flow Regulator" (or approved equal) and shall be sized by the manufacturer for a discharge rate of 9.09 L/s at 2.26 m head. It is calculated that an orifice area of 7,854 sq.mm. (100 mm in diameter) and a discharge

coefficient of 0.174 will restrict the outflow rate to 9.09 L/s at 2.26 m. Based on this orifice the maximum outflow rate for the 1:5 year storm event is calculated to be 8.99 L/s at 2.20 m.

	100-year	5-year
Maximum release rate:	10.16 L/s	8.99 L/s
Maximum water elevation:	120.57 m	120.51 m
Maximum stored volume:	2.64 cu.m.	0.25 cu.m.

The Entire Site:

	100-year	5-year
Pre-development flow rate:	49.97 L/s	24.24 L/s
Maximum allowable release rate:	16.12 L/s	16.12 L/s
Maximum release rate:	16.12 L/s	12.99 L/s
Maximum stored volume:	11.35 cu.m.	4.09 cu.m.

Therefore, the maximum post-development release rate for the 100-year storm event is calculated to be equal to the maximum allowable and 68% less than the pre-development flow rate. The maximum post-development release rate for the 5-year storm event is calculated to be 19% less than the maximum allowable and 46% less than the pre-development flow rate.

Stormwater from the roof will be conveyed off the site via a 150 mm storm sewer (at a 2% slope) connecting to an existing 825 mm municipal storm sewer located in Stitsville Main Street. The unrestricted flowrate resulting from one in five-year storm event will produce a peak flow of 6.60 L/s which will be adequately handled by the proposed storm sewer connection as it only will be 29% full (and with the restricted flow through the flow control roof drains it will be only 6% full).

Stormwater from the parking area will be conveyed off the site via a 250 mm storm sewer (at a 0.43% slope) connecting to an existing 450 mm municipal storm sewer located in Manchester Street. The unrestricted flowrate resulting from one in five-year storm event will produce a peak flow of 6.31 L/s that will be adequately handled by the proposed storm sewer as it only will be 16% full.

The stormwater flows contributing to the municipal storm sewers is expected to have a positive impact given that there will be a 46% reduction in the flow rate during the 5-year event.

CONCLUSIONS:

1. The FDC for the proposed building is within 45 m of municipal fire hydrants; therefore, an additional private on-site fire hydrant is not required.

2. There is an adequate water supply for firefighting from the existing municipal water distribution system.

3. The aggregate flow from two municipal fire hydrants in the vicinity is greater than the required fire flow.

4. There is an acceptable range of water pressures in the municipal watermain for the proposed development.

5. The expected sanitary sewage flow rate will be adequately handled by the proposed sanitary sewer service connection.

6. The sanitary flow contributing to the existing municipal combined sewer is expected to have an acceptable impact.

7. Currently, virtually the entire property is impervious. To promote infiltration the almost the entire rear yard (car parking and staging area) will be constructed with permeable pavers.

8. Onsite water quality control of 80% TSS removal is required and provided with a proposed an oil/grit separator (OGS) manhole providing approximately 92% TSS removal.

9. An erosion and sediment control plan has been developed to be implemented during construction.

10. The stormwater management criteria for quantity control are to control the post development peak flows for the 5-year and 100-year storm events to peak flows during the 5-year storm event. The maximum post-development release rate for the 100-year storm event is calculated to be equal to the maximum allowable and 68% less than the pre-development flow rate. The maximum post-development release rate for the 5-year storm event is calculated to be 19% less than the maximum allowable and 46% less than the pre-development flow rate.

11. The unrestricted flowrate resulting from one in five-year storm event will produce a peak flow that will be adequately handled by the proposed site storm sewer system.

12. The flows contributing to the municipal storm sewer is expected to have a positive impact given the post-development flows from the site are being reduced by 46% during the 5-year event.

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26-Apr-21

REVISED 03-May-21

1498 Stittsville Main Street
Ottawa, Ontario

Fire Flow Requirements

Fire flow requirement as calculated as per Fire Underwriter Survey "Water Supply For Fire Protection".

F = 220 C $A^{0.5}$ = the required fire flow in litres per minute

C = coefficient related to the type of construction
= 0.8 Non-combustible Construction (unprotected structural components)

A = total floor area (all storeys excluding basements at least 50% below grade)

2nd Floor	254	sq.m.
Ground Floor	254	sq.m.
TOTAL FIRE AREA:	508	sq.m.

F = 3,967 L/min
= 4,000 L/min (rounded off to the nearest 1,000 L/min)

25% Charge for Rapid-burning or Flash-burning Occupancy

= 5,000 L/min

40% Reduction for Sprinkler System

= 2,000 L/min

Increase for Separation Exposed Buildings

			Adjacent Building			Length-Height Factor
			Constuction	Length m	Storeys	
17%	North	3.1 to 10m	W-F	13	2	26
0%	East	>45m				0
17%	South	3.1 to 10m	W-F	8	2	16
5%	West	30.1 to 45m				0
39%	Total Increase for Exposure (maximum 75%)					

= 1,950 L/min Increase

= 4,950 L/min
F = 5,000 L/min (rounded off to the nearest 1,000 L/min)
= 83.3 l/s

Elevation at Fire Hydrant 122.13 m ASL

			Static Pressure at Fire Hydrant			
83 l/s FIRE FLOW:	156.2	m ASL	48	psi	334	kPa

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26-Apr-21
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Water Demand

DAILY AVERAGE

INDUSTRIAL (Distillery)	55,000	L /gross ha / day (as per Ottawa Design Guidelines)				
	0.11	ha (land area)				
	6122	L / day				
	8	hour day				
	12.8	L/min	0.2	L/s	3.4	USgpm

MAXIMUM DAILY DEMAND	1.5	(Peaking Factor as per Ottawa Design Guidelines)				
	19.1	L/min	0.3	L/s	5.1	USgpm

MAXIMUM HOURLY DEMAND	1.8	(Peaking Factor as per Ottawa Design Guidelines)				
	34.4	L/min	0.6	L/s	9.1	USgpm

			Static Pressure at Water Meter			
Elevation of Water Meter:	119.07	m ASL				
Finish Floor Elevation:	118.17	m ASL				
MINIMUM HGL:	155.9	m ASL	52	psi	361	kPa
MAXIMUM HGL:	160.8	m ASL	59	psi	409	kPa

Boundary Conditions
1498 Stittsville Main Street

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	12	0.20
Maximum Daily Demand	18	0.30
Peak Hour	36	0.60
Fire Flow Demand #1	5,000	83.33

Location

Results

Connection 1 – Stittsville Main St.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	160.8	56.0
Peak Hour	155.9	49.1
Max Day plus Fire 1	156.2	49.5

Ground Elevation = 121.4 m

Disclaimer

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

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SANITARY SEWER DESIGN FORM

Average Daily Flows
Residential: 280 L / capita / day
Commercial: 28000 L / ha / day
Instituational: 28000 L / ha / day
Light Industrial: 35000 L / ha / day
Heavy Industrial: 55000 L / ha / day

Infiltration Allowance: 0.33 l / s / ha

Peaking Factor:
Residential (Harmon Equation): $1 + \frac{14}{4 + P^{0.5}}$
P = Population / 1000
Harmon Correction Factor: 0.8
Commercial & Institutional: 1.5 If contrinbution > 20%
Commercial & Institutional: 1 If contrinbution < 20%
Industrial: As per Ottawa Guidelines Appendix 4-B

Project: 1498 Stittsville Main Street
Designed By: D.B.G
May 7, 2021
Page: 1 of 1
n = 0.013

Location		Section								Cumulative		Section			Cumulative					Sewer Data								Comments
		Single Family ppu = 3.4	Semi / Townhouse ppu = 2.7	Duplex / Triplex ppu = 2.3	Apartment (average) ppu = 1.8	Apartment (1 Bed) ppu = 1.4	Apartment (2 Bed) ppu = 2.1	Apartment (3 Bed) ppu = 3.1	Area	Residential		Non-Residential															
From	To	No. of Units	No. of Units	No. of Units	No. of Units	No. of Units	No. of Units	No. of Units	(ha)	Pop.	Peaking Factor	Area (ha)	Flow (L/ha/day)	Peaking Factor	Flow (L/s)	Area (ha)	Sewage Flow (L/s)	Infiltration Flow (L/s)	Total Flow (L/s)	Material	Actual Diameter (mm)	Nominal Diameter (mm)	Slope (%)	Length (m)	Capacity (L/s)	Velocity (m/s)	Ratio Q/Qfull	
		Pre-Development																										
Existing Building	Existing 450 SAN											0.1113	28000	4.5	0.16	0.1113	0.16	0.04	0.20									P.F = 1.5 x 24hrs / 8hrs
											(Assumed to be Commercial)																	
		Post-Development																										
Proposed Building	Existing 450 SAN											0.1113	55000	4.5	0.32	0.1113	0.32	0.04	0.36	PVC	152.4	150	2.00	13.5	22.47	1.23	0.02	P.F = 1.5 x 24hrs / 8hrs
											(Assumed to be equivalent to Heavy Industrial)																	
																					Existing 450 SAN in Stittsville Main Street							
																					457.2	450	0.12		103.03	0.63		

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION
BASED ON THE RATIONAL RAINFALL METHOD
BASED ON A FINE PARTICLE SIZE DISTRIBUTION

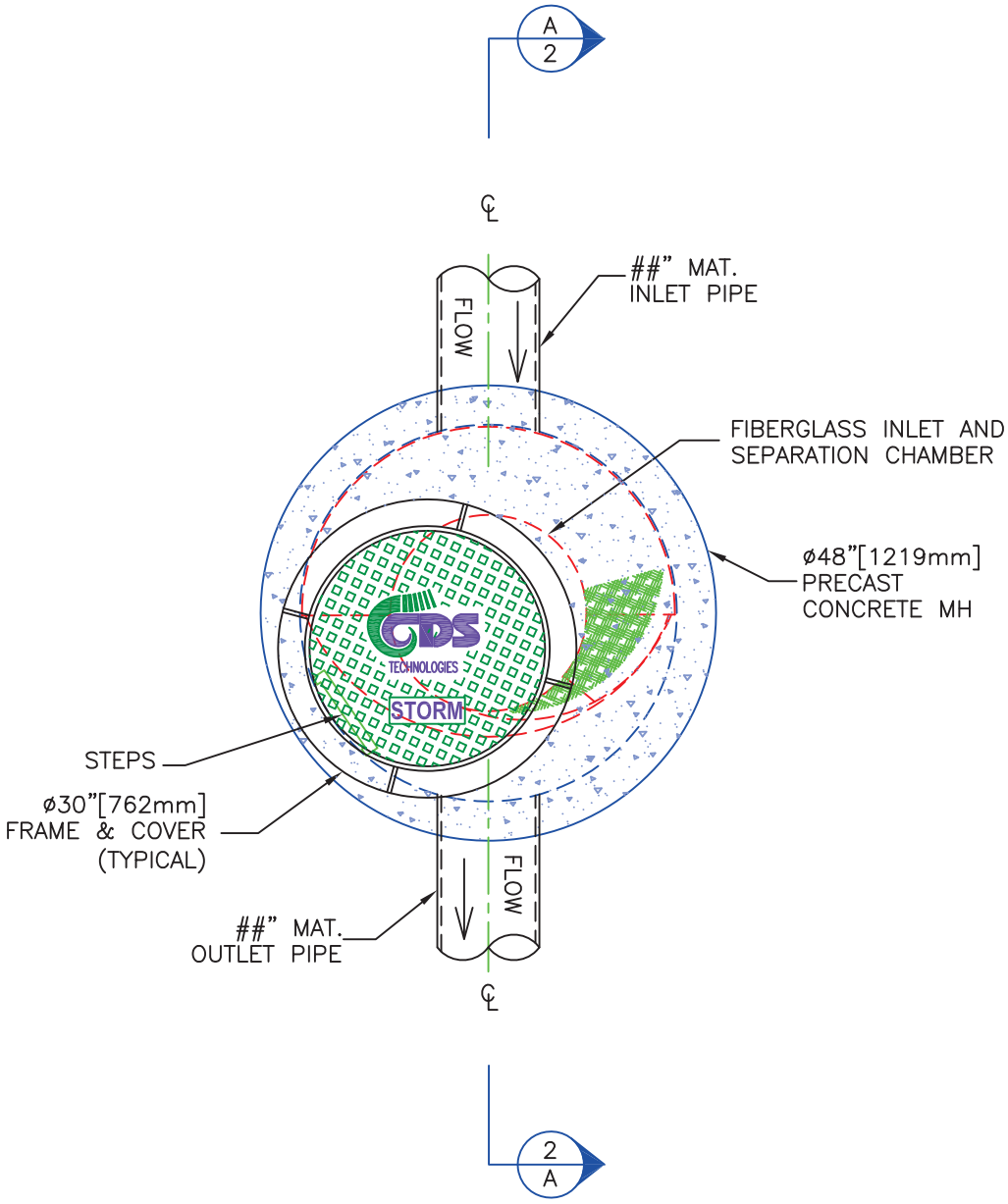
Project Name:	1498 Stittsville Main St	**Engineer:**	**D.B. Gray Engineering Inc.**
Location:	Ottawa, ON	**Contact:**	R. Faith
OGS #:	OGS	**Report Date:**	28-Apr-21

Area	0.075	ha	**Rainfall Station #**	215	
Weighted C	0.3		**Particle Size Distribution**	FINE	
CDS Model	2015-4		**CDS Treatment Capacity**	20	l/s

Rainfall Intensity[1] (mm/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Total Flowrate (l/s)	Treated Flowrate (l/s)	Operating Rate (%)	Removal Efficiency (%)	Incremental Removal (%)
0.5	9.2%	9.2%	0.0	0.0	0.2	98.8	9.1
1.0	10.6%	19.8%	0.1	0.1	0.3	98.8	10.5
1.5	9.9%	29.7%	0.1	0.1	0.5	98.7	9.8
2.0	8.4%	38.1%	0.1	0.1	0.6	98.7	8.3
2.5	7.7%	45.8%	0.2	0.2	0.8	98.6	7.6
3.0	5.9%	51.7%	0.2	0.2	0.9	98.6	5.9
3.5	4.4%	56.1%	0.2	0.2	1.1	98.5	4.3
4.0	4.7%	60.7%	0.3	0.3	1.3	98.5	4.6
4.5	3.3%	64.0%	0.3	0.3	1.4	98.5	3.3
5.0	3.0%	67.1%	0.3	0.3	1.6	98.4	3.0
6.0	5.4%	72.4%	0.4	0.4	1.9	98.3	5.3
7.0	4.4%	76.8%	0.4	0.4	2.2	98.2	4.3
8.0	3.5%	80.3%	0.5	0.5	2.5	98.1	3.5
9.0	2.8%	83.2%	0.6	0.6	2.8	98.0	2.8
10.0	2.2%	85.3%	0.6	0.6	3.2	98.0	2.1
15.0	7.0%	92.3%	0.9	0.9	4.7	97.5	6.8
20.0	4.5%	96.9%	1.3	1.3	6.3	97.0	4.4
25.0	1.4%	98.3%	1.6	1.6	7.9	96.6	1.4
30.0	0.7%	99.0%	1.9	1.9	9.5	96.1	0.6
35.0	0.5%	99.5%	2.2	2.2	11.0	95.7	0.5
40.0	0.5%	100.0%	2.5	2.5	12.6	95.2	0.5
							98.3
						Removal Efficiency Adjustment[2] =	6.5%
						Predicted Net Annual Load Removal Efficiency =	**91.8%**
						Predicted % Annual Rainfall Treated =	**100.0%**

1 - Based on 42 years of hourly rainfall data from Canadian Station 6105976, Ottawa ON
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.
3 - CDS Efficiency based on testing conducted at the University of Central Florida
4 - CDS design flowrate and scaling based on standard manufacturer model & product specifications

PLAN VIEW

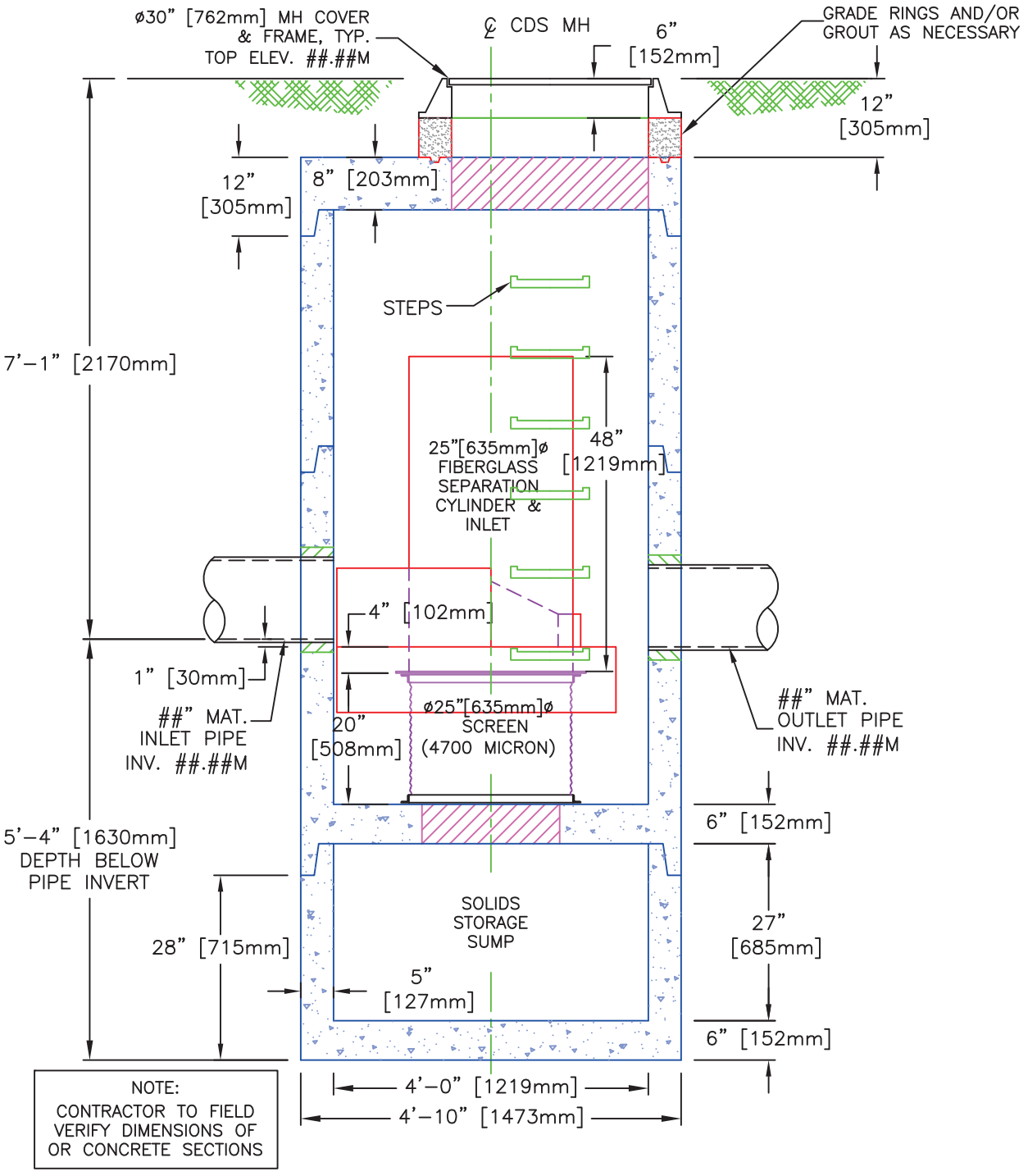


CDS MODEL PMSU20_15_4m
STORMWATER TREATMENT UNIT

CONTECH STORMWATER SOLUTIONS	PROJECT NAME CITY, STATE	JOB# XX-##-###	SCALE 1" = 2'
		DATE ##/##/##	SHEET 1
		DRAWN INITIALS	
		APPROV.	

Echelon Environmental 505 Hood Road, Unit 26, Markham, Ontario L3R 5V6 Tel: (905) 948-0000 Fax: (905) 948-0577
CONTECH Stormwater Solutions Inc. 930 Woodcock Road, Suite 101, Orlando, Florida 32803 Tel: (800) 848-9955

SECTION A–A
ELEVATION VIEW



CDS MODEL PMSU20_15_4m
STORMWATER TREATMENT UNIT

CONTECH STORMWATER SOLUTIONS	PROJECT NAME CITY, STATE	JOB# XX–##–###	SCALE 1" = 2'
		DATE ##/##/##	SHEET 2
		DRAWN INITIALS	
		APPROV.	

STORMWATER MANAGEMENT CALCULATIONS

The orifice calculations are based on the following formula:

$$Q = C_d \times A_o \sqrt{2gh} \times 1000$$

where:

- Q = flowrate in litres per second
- C_d = coefficient of discharge
- A_o = orifice area in sq.m.
- g = 9.81 m/s2
- h = head above orifice in meters

Flow control roof drain calculations are based on the following formula:

$$Q = N \times S \times d \times F$$

where:

- Q = flowrate in litres per second
- N = number of roof drains
- S = slots per weir
- d = pond depth at roof drain in mm
- F = flowrate through each slot
  0.0124 litres per second per mm pond depth (5 USgpm per inch)

Storage calculations on the roof and in the parking area are based on the following formula for volume of a cone:

$$V = (A \times d)/3$$

where:

- V = volume in cu.m.
- A = ponding area in sq.m.
- d = ponding depth in meters

Summary Tables

ONE-HUNDRED-YEAR EVENT					
Drainage Area	Pre-development Flow Rate (L/s)	Maximum Allowable Release Rate (L/s)	Maximum Release Rate (L/s)	Maximum Volume Required (cu.m)	Maximum Volume Stored (cu.m)
AREA I (Uncontrolled Flow Off Site)	-	-	5.34	-	-
AREA II (Roof)	-	-	1.69	8.65	8.65
AREA III	-	-	9.09	2.70	2.70
TOTAL	49.97	16.12	16.12	11.35	11.35

FIVE-YEAR EVENT					
Drainage Area	Pre-development Flow Rate (L/s)	Maximum Allowable Release Rate (L/s)	Maximum Release Rate (L/s)	Maximum Volume Required (cu.m)	Maximum Volume Stored (cu.m)
AREA I (Uncontrolled Flow Off Site)	-	-	2.72	-	-
AREA II (Roof)	-	-	1.29	3.85	3.85
AREA III	-	-	8.99	0.25	0.25
TOTAL	24.24	16.12	12.99	4.09	4.09

April 27, 2021
REVISED July 15, 2022

1498 Stittsville Main Street

Ottawa, Ontario

STORMWATER MANAGEMENT CALCULATIONS
Rational Method and Modified Rational Method

PRE-DEVELOPMENT CONDITIONS

100-Year Flow Rate

			C
Roof Area:	230	sq.m	1.00
Asphalt/Concrete Area:	83	sq.m	1.00
Gravel Area:	790	sq.m	0.875
Landscaped Area:	10	sq.m	0.25
Total Catchment Area:	1113	sq.m	0.90

Bransby William Formula

$$Tc = \frac{0.057 \cdot L}{Sw^{0.2} \cdot A^{0.1}} \text{ min}$$

Sheet Flow Distance (L):	40	m	
Slope of Land (Sw):	0.1	%	
Area (A):	0.1113	ha	
Time of Concentration (Sheet Flow):	4.5	min	
Time of Concentration:	10	min	
Rainfall Intensity (i):	179	mm/hr	(100-year event)
100-Year Pre-Development Release Rate (2.78AiC):	49.97	L/s	

5-Year Flow Rate

			C
Roof Area:	230	sq.m	0.90
Asphalt/Concrete Area:	83	sq.m	0.90
Gravel Area:	790	sq.m	0.70
Landscaped Area:	10	sq.m	0.20
Total Catchment Area:	1113	sq.m	0.75
Time of Concentration:	10	min	
Rainfall Intensity (i):	104	mm/hr	(5-year event)
5-Year Pre-Development Release Rate (2.78AiC):	24.24	L/s	

Maximum Allowable Release Rate

Area (A):	1113	sq.m	
Time of Concentration:	10	min	
Rainfall Intensity (i):	104	mm/hr	(5-year event)
Runoff Coeficient (C):	0.50		
Maximum Allowable Release Rate (2.78AiC):	16.12	L/s	

ONE-HUNDRED-YEAR EVENT

DRAINAGE AREA I (Uncontrolled Flow Off Site)

(ONE-HUNDRED-YEAR EVENT)

			C
Roof Area:	35	sq.m	1.00
Asphalt/Concrete Area:	43	sq.m	1.00
Gravel Area:	0	sq.m	0.875
Permeable Pavers Area:	0	sq.m	0.375
Landscaped Area:	118	sq.m	0.25
Total Catchment Area:	196	sq.m	0.55
Time of Concentration:	10	min	
Rainfall Intensity (i):	179	mm/hr	
Release Rate (2.78AiC):	5.34	L/s	

DRAINAGE AREA II (Roof)

(ONE-HUNDRED-YEAR EVENT)

			C
Total Catchment Area:	253	sq.m	1.00

No. of Roof Drains:	1	
Slots per Wier:	1	0.0124 L/s/mm/slot (5 USGPM/in/slot)
Depth at Roof Drain:	136	mm
Maximum Release Rate:	1.69	L/s

Pond Area:	190	sq.m
Achieved Volume:	8.65	cu.m
Maximum Volume Required:	8.65	cu.m

Time (min)	i (mm/hr)	2.78AiC (L/s)	Release Rate (L/s)	Stored Rate (L/s)	Stored Volume (cu.m)
5	243	17.07	1.69	15.38	4.61
10	179	12.56	1.69	10.87	6.52
15	143	10.05	1.69	8.36	7.52
20	120	8.44	1.69	6.75	8.09
25	104	7.30	1.69	5.61	8.42
30	92	6.46	1.69	4.77	8.59
35	83	5.81	1.69	4.12	8.65
40	75	5.29	1.69	3.59	8.63
45	69	4.86	1.69	3.17	8.55
50	64	4.50	1.69	2.81	8.42
55	60	4.19	1.69	2.50	8.26
60	56	3.93	1.69	2.24	8.06
65	53	3.70	1.69	2.01	7.85
70	50	3.50	1.69	1.81	7.61
75	47	3.32	1.69	1.63	7.35
80	45	3.16	1.69	1.47	7.07
85	43	3.02	1.69	1.33	6.78
90	41	2.89	1.69	1.20	6.48
95	39	2.77	1.69	1.08	6.17
100	38	2.67	1.69	0.97	5.85
105	36	2.57	1.69	0.88	5.52
110	35	2.48	1.69	0.78	5.18
115	34	2.39	1.69	0.70	4.83
120	33	2.31	1.69	0.62	4.48
125	32	2.24	1.69	0.55	4.12
130	31	2.17	1.69	0.48	3.76
135	30	2.11	1.69	0.42	3.39
140	29	2.05	1.69	0.36	3.02
145	28	1.99	1.69	0.30	2.64
150	28	1.94	1.69	0.25	2.26
180	24	1.68	1.68	0.00	0.00

DRAINAGE AREA III

(ONE-HUNDRED-YEAR EVENT)

			C
Roof Area:	31	sq.m	1.00
Asphalt/Concrete Area:	0	sq.m	1.00
Gravel Area:	0	sq.m	0.875
Permeable Pavers Area:	633	sq.m	0.375
Landscaped Area:	0	sq.m	0.25
Total Catchment Area:	664	sq.m	0.40

Water Elevation:	120.57	m
Invert of Outlet Pipe - CB-1:	118.26	m
Centroid of ICD Orifice: (ICD in Outlet Pipe of CB-1)	118.31	m
Head:	2.26	m
Orifice Diameter:	100	mm
Orifice Area:	7854	sq.mm
Coefficient of Discharge:	0.174	
Maximum Release Rate:	9.09	L/s

CB/MH	Top Area (sq.m)	Depth (m)	Volume	
CB-1	84	0.10	2.70	cu.m
		Achieved Volume:	2.70	cu.m
		Maximum Volume Required:	2.70	cu.m

Time (min)	i (mm/hr)	2.78AiC (L/s)	Release Rate (L/s)	Stored Rate (L/s)	Stored Volume (cu.m)
1	351	26.22	9.09	17.12	1.03
2	315	23.50	9.09	14.41	1.73
3	286	21.34	9.09	12.25	2.20
4	262	19.58	9.09	10.48	2.52
5	243	18.11	9.09	9.01	2.70
10	179	13.32	9.09	4.23	2.54
15	143	10.66	9.09	1.57	1.41
20	120	8.95	8.95	0.00	0.00
25	104	7.75	7.75	0.00	0.00
30	92	6.85	6.85	0.00	0.00
35	83	6.16	6.16	0.00	0.00
40	75	5.61	5.61	0.00	0.00
45	69	5.15	5.15	0.00	0.00
50	64	4.77	4.77	0.00	0.00
55	60	4.45	4.45	0.00	0.00
60	56	4.17	4.17	0.00	0.00
65	53	3.93	3.93	0.00	0.00
70	50	3.71	3.71	0.00	0.00
75	47	3.53	3.53	0.00	0.00
80	45	3.36	3.36	0.00	0.00
85	43	3.20	3.20	0.00	0.00
90	41	3.07	3.07	0.00	0.00
95	39	2.94	2.94	0.00	0.00
100	38	2.83	2.83	0.00	0.00
105	36	2.72	2.72	0.00	0.00
110	35	2.63	2.63	0.00	0.00
115	34	2.54	2.54	0.00	0.00
120	33	2.45	2.45	0.00	0.00
125	32	2.38	2.38	0.00	0.00
130	31	2.31	2.31	0.00	0.00
135	30	2.24	2.24	0.00	0.00
140	29	2.17	2.17	0.00	0.00
145	28	2.12	2.12	0.00	0.00
150	28	2.06	2.06	0.00	0.00
180	24	1.78	1.78	0.00	0.00

FIVE-YEAR EVENT

DRAINAGE AREA I (Uncontrolled Flow Off Site)

(FIVE-YEAR EVENT)

			C
Roof Area:	35	sq.m	0.90
Asphalt/Concrete Area:	43	sq.m	0.90
Gravel Area:	0	sq.m	0.70
Landscaped Area:	118	sq.m	0.20
Total Catchment Area:	196	sq.m	0.48
Time of Concentration:	10	min	
Rainfall Intensity (i):	104	mm/hr	
Release Rate (2.78AiC):	2.72	L/s	

DRAINAGE AREA II (Roof)

(FIVE-YEAR EVENT)

			C
Total Catchment Area:	253	sq.m	0.90

No. of Roof Drains:	1	
Slots per Wier:	1	0.0124 L/s/mm/slot (5 USGPM/in/slot)
Depth at Roof Drain:	104	mm
Maximum Release Rate:	1.29	L/s

Pond Area:	111	sq.m
Achieved Volume:	3.85	cu.m
Maximum Volume Required:	3.85	cu.m

Time (min)	i (mm/hr)	2.78AiC (L/s)	Release Rate (L/s)	Stored Rate (L/s)	Stored Volume (cu.m)
5	141	8.94	1.29	7.65	2.29
10	104	6.60	1.29	5.30	3.18
15	84	5.29	1.29	4.00	3.60
20	70	4.45	1.29	3.16	3.79
25	61	3.85	1.29	2.56	3.85
30	54	3.41	1.29	2.12	3.82
35	49	3.07	1.29	1.78	3.74
40	44	2.80	1.29	1.51	3.61
45	41	2.57	1.29	1.28	3.46
50	38	2.38	1.29	1.09	3.28
55	35	2.22	1.29	0.93	3.08
60	33	2.09	1.29	0.79	2.86
65	31	1.97	1.29	0.67	2.63
70	29	1.86	1.29	0.57	2.39
75	28	1.77	1.29	0.47	2.13
80	27	1.68	1.29	0.39	1.87
85	25	1.61	1.29	0.31	1.61
90	24	1.54	1.29	0.25	1.33
95	23	1.48	1.29	0.18	1.05
100	22	1.42	1.29	0.13	0.76
105	22	1.37	1.29	0.08	0.47
110	21	1.32	1.29	0.03	0.18
115	20	1.27	1.27	0.00	0.00
120	19	1.23	1.23	0.00	0.00
125	19	1.19	1.19	0.00	0.00
130	18	1.16	1.16	0.00	0.00
135	18	1.12	1.12	0.00	0.00
140	17	1.09	1.09	0.00	0.00
145	17	1.06	1.06	0.00	0.00
150	16	1.04	1.04	0.00	0.00
180	14	0.90	0.90	0.00	0.00

DRAINAGE AREA III

(FIVE-YEAR EVENT)

			C
Roof Area:	31	sq.m	0.90
Asphalt/Concrete Area:	0	sq.m	0.90
Gravel Area:	0		0.70
Permeable Pavers Area:	633	sq.m	0.30
Landscaped Area:	0	sq.m	0.20
Total Catchment Area:	664	sq.m	0.33

Water Elevation: 120.51 m

Invert of Outlet Pipe - CB-1: 118.26 m

Centroid of ICD Orifice: 118.31 m
(ICD in Outlet Pipe of CB-1)

Head: 2.20 m

Orifice Diameter: 100 mm

Orifice Area: 7854 sq.mm

Coefficient of Discharge: 0.174

Maximum Release Rate: 8.99 L/s

CB/MH	Top Area (sq.m)	Depth (m)	Volume	
CB-1	17	0.04	0.25	cu.m
		Achieved Volume:	0.25	cu.m
		Maximum Volume Required:	0.25	cu.m

Time (min)	i (mm/hr)	2.78AiC (L/s)	Release Rate (L/s)	Stored Rate (L/s)	Stored Volume (cu.m)
1	204	12.32	8.99	3.34	0.20
2	183	11.06	8.99	2.08	0.25
3	166	10.06	8.99	1.07	0.19
4	153	9.23	8.99	0.25	0.06
5	141	8.55	8.55	0.00	0.00
10	104	6.31	6.31	0.00	0.00
15	84	5.06	5.06	0.00	0.00
20	70	4.25	4.25	0.00	0.00
25	61	3.69	3.69	0.00	0.00
30	54	3.27	3.27	0.00	0.00
35	49	2.94	2.94	0.00	0.00
40	44	2.68	2.68	0.00	0.00
45	41	2.46	2.46	0.00	0.00
50	38	2.28	2.28	0.00	0.00
55	35	2.13	2.13	0.00	0.00
60	33	1.99	1.99	0.00	0.00
65	31	1.88	1.88	0.00	0.00
70	29	1.78	1.78	0.00	0.00
75	28	1.69	1.69	0.00	0.00
80	27	1.61	1.61	0.00	0.00
85	25	1.54	1.54	0.00	0.00
90	24	1.47	1.47	0.00	0.00
95	23	1.41	1.41	0.00	0.00
100	22	1.36	1.36	0.00	0.00
105	22	1.31	1.31	0.00	0.00
110	21	1.26	1.26	0.00	0.00
115	20	1.22	1.22	0.00	0.00
120	19	1.18	1.18	0.00	0.00
125	19	1.14	1.14	0.00	0.00
130	18	1.11	1.11	0.00	0.00
135	18	1.08	1.08	0.00	0.00
140	17	1.05	1.05	0.00	0.00
145	17	1.02	1.02	0.00	0.00
150	16	0.99	0.99	0.00	0.00
180	14	0.86	0.86	0.00	0.00

STORM SEWER DESIGN FORM
Rational Method

FIVE YEAR EVENT
Q = 2.78 A i C

July 15, 2022

n = 0.013

Location		Areas (ha)				Individual	Accum.	Time of Conc.	Rainfall Intensity i	Peak Flow Q	Pipe Data									Notes
		Roof	Hard	P. Pavers	Landscape							Actual Diameter	Nominal Diameter	Slope	Length	Capacity	Velocity	Time of Flow	Ratio	
From	To	C = 0.9	C = 0.9	C = 0.3	C = 0.2	2.78AC	2.78AC	(min)	(mm/hr)	(L/s)	Material	(mm)	(mm)	(%)	(m)	(L/s)	(m/s)	(min)	Q/Qfull	
Roof Drains	Existing 825 ST	0.0253				0.0633	0.0633	10.00	104	6.60	PVC	152.4	150	2.00	6.5	22.5	1.23	0.09	0.29	
												Existing 825 ST in Stittsville Main Street								
												838.2	825	0.36		898.5	1.63			
CB-1	MH-2	0.0031		0.0633		0.0605	0.0605	10.00	104	6.31	PVC	254.0	250	0.43	7.5	40.7	0.80	0.16	0.16	
MH-2	Exist. MH						0.0605	10.16	103	6.26	PVC	254.0	250	0.43	4.8	40.7	0.80	0.10	0.15	
												Existing 450 ST in Manchester Street								
												457.2	450	0.68		245.3	1.49			

STORM SEWER DESIGN FORM — FIVE YEAR EVENT

Rational Method — Q = 2.78 A i C

May 7, 2021

n = 0.013

Location		Areas (ha)									Pipe Data									Notes
		Roof	Hard	P. Pavers	Landscape	Individual	Accum.	Time of Conc.	Rainfall Intensity i	Peak Flow Q		Actual Diameter	Nominal Diameter	Slope	Length	Capacity	Velocity	Time of Flow	Ratio	
From	To	C = 0.9	C = 0.9	C = 0.3	C = 0.2	2.78AC	2.78AC	(min)	(mm/hr)	(L/s)	Material	(mm)	(mm)	(%)	(m)	(L/s)	(m/s)	(min)	Q/Qfull	
Roof Drains	Existing 825 ST	0.0253				0.0633	0.0633	10.00	104	6.60	PVC	152.4	150	2.00	6.5	22.5	1.23	0.09	0.29	
												Existing 825 ST in Stittsville Main Street								
												838.2	825	0.36		898.5	1.63			
CB-1	MH-2			0.0750		0.0626	0.0626	10.00	104	6.52	PVC	254.0	250	0.43	3.2	40.7	0.80	0.07	0.16	
MH-2	Exist. MH						0.0626	10.07	104	6.50	PVC	254.0	250	0.43	4.8	40.7	0.80	0.10	0.16	
												Existing 450 ST in Manchester Street								
												457.2	450	0.68		245.3	1.49			

D.B. Gray Engineering Inc.

Ryan Faith <r.faith@dbgrayengineering.com>

RE: MVCA Stormwater Management Comments - 1498 Stittsville Main Street

1 message

Erica Ogden <eogden@mvc.on.ca> Mon, Apr 26, 2021 at 9:44 AM
To: Ryan Faith <r.faith@dbgrayengineering.com>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>

Hello Ryan,

Thank you for reaching out to MVCA. I can confirm that the subject property is not regulated by MVCA under Ontario Regulation 153/06.

In regards to stormwater management, the following should be provided:

- The development is located in a high groundwater recharge area according to the Carp River Watershed Study (2004) and has an infiltration target of 262 mm/yr. Please incorporate infiltration into the design.
- Poole Creek is a cool water system and an enhanced level of protection (80% TSS removal) is required for water quality control.

If you have any other questions, please feel free to contact me.

Thank you,

Erica C. Ogden, MCIP, RPP | Environmental Planner | Mississippi Valley Conservation Authority

10970 Highway 7, Carleton Place, ON K7C 3P1

www.mvc.on.ca |c. 613 451 0463 |o. 613 253 0006 ext. 229| eogden@mvc.on.ca

From: Ryan Faith <r.faith@dbgrayengineering.com>
Sent: April 23, 2021 10:59 AM
To: Erica Ogden <eogden@mvc.on.ca>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>
Subject: MVCA Stormwater Management Comments - 1498 Stittsville Main Street

Hi Erica,

We are working on a proposed 2 storey distillery on 1113 sq.m of land at 1498 Stittsville Main Street in Ottawa.

Please comment on the stormwater management for the site.

I have attached a site plan for your reference.

Thanks,

Ryan Faith

D.B. Gray Engineering Inc.

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

700 Long Point Circle 613-425-8044
Ottawa, Ontario r.faith@dbgrayengineering.com

Hi Mark,

Please refer to the below regarding the Pre-Application for 1498 Stittsville Mainstreet for a Site Plan Control Application. I have also attached the required Plans & Study List for application submission.

Planning / Urban Design

- Site Plan Control is required if the building exceeds a gross floor area of 600 square metres, or if a surface parking area adds more than nine spaces.
    - Should the building be larger than the above, a Standard Non-Rural (Staff Approval, No Public Consultation) Application is required (threshold types).
- Please ensure the proposed site design and building conform to the Stittsville Mainstreet Secondary Plan and Community Design Plan.
- A design brief is required as part of the submission.
    - A terms of reference is attached.
- All architectural plans should be stamped and signed by the professional that has prepared them.
- As discussed, the current building's footprint does not need to be replicated.
    - If you are constructing a new building, it can be larger provided it complies with the subject site's zoning provisions.
- The currently proposed built form appears to be high relative to the proposed footprint.
    - As discussed, if the footprint is able to be enlarged, consideration can be given to reducing the scale/height of the building to be more in keeping with a two-storey volume.
- The introduction of a patio space across the site's frontage is encouraged.
    - The patio space should be constructed of pavers or concrete, and should feature some element of softscape, be it two trees, landscape planters etc.
- The proposed garage door as discussed is not intended for loading or vehicular access- this is positive.
    - All loading and vehicular access should be from the rear of the site via Manchester Way.
- The proposed elevation should be designed to de-emphasize the vertical proportions and should not feature the number of breaks in material as currently proposed.
- The "exposed truss" feature should be removed.
- The overall architectural treatment should be simplified to be in keeping with the context.
    - An illustration is attached to provide a visual aid.
- The use of noble materials is encouraged (masonry, wood etc.).
    - The use of corrugated metal should be minimal.
- Please ensure all required landscape buffers are provided for the parking area at the rear.
- The parking area at the rear should be paved and curbed.
- Cash-in-lieu of Parkland will be required.
- Please consult the new Draft Official Plan for emerging directions.
- You are encouraged to contact the Ward Councillor, Councillor Glen Gower, regarding the proposal.

Engineering

- The Servicing Study Guidelines for Development Applications are available here.
- Servicing and site works shall be in accordance with the following documents:
    - Ottawa Sewer Design Guidelines (October 2012)
    - Ottawa Design Guidelines – Water Distribution (2010)
    - Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
    - City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)

- City of Ottawa Environmental Noise Control Guidelines (January, 2016)
- City of Ottawa Park and Pathway Development Manual (2012)
- City of Ottawa Accessibility Design Standards (2012)
- Ottawa Standard Tender Documents (latest version)
- Ontario Provincial Standards for Roads & Public Works (2013)

- Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-2424 x.44455).
- The Stormwater Management Criteria, for the subject site, is to be based on the following:
  i. The 5-yr storm event using the IDF information derived from the Meteorological Services of Canada rainfall data, taken from the MacDonald Cartier Airport, collected 1966 to 1997.
  ii. The pre-development runoff coefficient or a maximum equivalent 'C' of 0.5, whichever is less.
  iii. A calculated time of concentration (Cannot be less than 10 minutes).
  iv. Flows to the storm sewer in excess of the 5-year storm release rate, up to and including the 100-year storm event, must be detained on site.
  v. Following the pre-consultation meeting, it came to our attention that the site is subject to the Carp River Subwatershed Study which was prepared for the City by Robinson Consultants in 2004. This report outlines specific groundwater recharge (infiltration) targets for the site of 262 mm/yr infiltration. Realizing that this target infiltration rate may be difficult to achieve for a smaller site like this, please ensure that infiltration best management practices are incorporated into the site's stormwater management design in an attempt to follow the intentions of the Carp River Subwatershed Study as much as possible (i.e. direct surface flows to pervious (landscaped) areas prior to discharging into the storm sewer system, stormwater storage (ponding) in excess of the allowable release rate can be limited to pervious (landscaped areas), consider the implementation of infiltration LIDs such as rain gardens, etc).
  vi. Please contact the Mississippi Valley Conservation Authority (MVCA) in order to determine the level of stormwater quality control required for the site. Please include this correspondence in the stormwater management report with the Site Plan Control submission.
- Storm, Sanitary & Water Supply
  - Services available for connection:
    a. WATER – 406mm diam. – Ductile Iron – Stittsville Main Street
    b. SANITARY – 450mm diam. – Concrete – Stittsville Main Street
    c. STORM – 825mm diam. – Concrete – Stittsville Main Street
    d. STORM – 450mm diam. – Concrete – Manchester Street
  - Note: Services should be grouped in a common trench to minimize the number of road cuts.
  - As discussed during the pre-consultation meeting, three separate storm service connections may be required as a result of the on-site stormwater management (roof drains to Stittsville Main, foundation drains to Stittsville Main, parking lot to Manchester). The City's Asset Management Branch (AMB) has been circulated regarding this possibility and the applicant will be notified should there be an issue with this option. Note that as mentioned during the discussion, in order to limit connections to the City main, and if site conditions allow, it could be acceptable to tie the roof drains and/or foundation drains (connected separately) into the onsite storm sewer system downstream of the parking lot ICD.

- A sanitary monitoring maintenance hole is required and should be located in an accessible location on private property near the property line (ie. Not in a parking area).
- Sewer connections to be made above the springline of the sewermain as per:
    a. Std Dwg S11.1 for flexible main sewers
    b. Std Dwg S11 (For rigid main sewers)
    c. Std Dwg S11.2 (for rigid main sewers using bell end insert method)
    d. Connections to maintenance holes permitted when the connection is to rigid main sewers where the lateral exceeds 50% the diameter of the sewer main. – Connect obvert to obvert with the outlet pipe unless pipes are a similar size.

- Water Boundary condition requests must include the location of the service and the expected loads required by the proposed development. Please provide the following information:
    1. Location of service
    2. Type of development and the amount of fire flow required (as per FUS, 1999).
    3. Average daily demand: ___ l/s.
    4. Maximum daily demand: ___l/s.
    5. Maximum hourly daily demand: ___ l/s.
- A geotechnical investigation and accompanying geotechnical report are required with Site Plan Control submissions. However, due to the smaller size of the site, a limited investigation can be performed (i.e. two or three boreholes across the site with at least one or two in the area of the building's future foundation and one in the parking lot area). In place of a full geotechnical report, a geotechnical memo can be submitted which shall at the least make recommendations as it relates to building foundation, parking lot pavement structure, ground water, and infiltration potential/recommendations based on soil material.
- MOECC ECA Requirements
    - Provided that the 1148 Stittsville Main Street parcel and the 8 Manchester Street parcel are all under one ownership and have been merged on title, it is not anticipated that a stormwater ECA will be required.
    - It is also not anticipated that a sanitary ECA will be required as a result of the proposed building use, however, this should be confirmed with the Ministry of the Environment, Conservation and Parks (MECP).
    - Here is link for more information regarding ECA's and contact information for the MECP: Client Services and Permissions Branch: 416-314-8001 or 1-800-461-6290, e-mail.
- Phase 1 ESAs and Phase 2 ESAs must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.

Please contact Infrastructure Project Manager, Justin Armstrong for follow-up questions.

Transportation

- Access must be shown to operate safely in proximity to the traffic signal and auxiliary lane. If not, then it must be restricted to a right in/right out using the center median.
- Right-of-way protection on Stittsville Main is 23 metres.
- A Road Noise Impact Study is required.
- Clear throat requirements as per TAC guidelines.
- Submit a screening form.
- Follow Traffic Impact Assessment Guidelines:
    - If a TIA is warranted proceed to scoping.
    - Start this process asap. The application will not be deemed complete until the submission of the draft step 1-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable).
    - Request base mapping asap if RMA is required. Contact Engineering Services (https://ottawa.ca/en/city-hall/planning-and-development/engineering-services)

    - The application will not be deemed complete until the submission of the draft step 2-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable).
    - Although a full review of the TIA Strategy report (Step 4) is not required prior to an application, it is strongly recommended.
    - Synchro files are required at Step 4.
- 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 movement diagrams required for all accesses showing the largest vehicle to access/egress the site.
    - Turning movement diagrams required for internal movements (loading areas, garbage).
    - Show all curb radii measurements; ensure that all curb radii are reduced as much as possible
    - Show lane/aisle widths.
    - Sidewalk is to be continuous across access as per City Specification 7.1.
    - Grey out any area that will not be impacted by this application.
- As the proposed site is for general public use, AODA legislation applies.
- Consider using the City's Accessibility Design Standards.
- Please note that all new applications (pre-consultation meetings dated after March 3, 2021) must use the NEW TRANS Trip Generation Manual when forecasting site generated trips using this manual.
- The TRANS committee (a joint transportation planning committee serving the National Capital region) finalized a new manual early in March 2021.
    - The document will be available in French and English on the TRANS website http://www.ncr-trans-rcn.ca/surveys/2009-trip-generation.

Please contact Transportation Project Manager, Mike Giampa for follow-up questions.

Other

Please refer to the links to "Guide to preparing studies and plans" and fees for general information. Additional information is available related to building permits, development charges, and the Accessibility Design Standards. Be aware that other fees and permits may be required, outside of the development review process. You may obtain background drawings by contacting informationcentre@ottawa.ca.

These pre-consultation comments are valid for one year. If you submit a development application(s) after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.

Please do not hesitate to contact me if you have any questions.

Regards,
Laurel

Laurel McCreight MCIP, RPP
Planner
Development Review West
Urbaniste
Examen des demandes d'aménagement ouest

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613.580.2424 ext./poste 16587
ottawa.ca/planning / ottawa.ca/urbanisme

City of Ottawa Servicing Study Checklist

General Content

Executive Summary (for large reports only): not applicable

Date and revision number of the report: see page 1 of Servicing Brief and Stormwater Management Report

Location map and plan showing municipal address, boundary, and layout of proposed development: see drawings C-1 to C-7

Plan showing the site and location of all existing services: see drawings C-1 to C-7

Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere: not applicable

Summary of Pre-consultation Meetings with City and other approval agencies: not available

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

Statement of objectives and servicing criteria: see page 2 of Servicing Brief and Stormwater Management Report

Identification of existing and proposed infrastructure available in the immediate area: see drawings C-1 to C-7

Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available). see drawings C-1 to C-7

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

Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts: not applicable

Proposed phasing of the development, if applicable: not applicable

Reference to geotechnical studies and recommendations concerning servicing: see note 1.5 on drawing C-5

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

- **Metric scale:** included
- **North arrow:** included
    - **(including construction North):** not included

- **Key Plan:** included
- **Name and contact information of applicant and property owner:** not available
- **Property limits**: included
    - **including bearings and dimensions:** not included
- **Existing and proposed structures and parking areas:** included
- **Easements, road widening and rights-of-way:** included
- **Adjacent street names:** included

Development Servicing Report: Water

Confirm consistency with Master Servicing Study, if available: not applicable

Availability of public infrastructure to service proposed development: see page 2 & 3 of Servicing Brief

Identification of system constraints: see page 2 & 3 of Servicing Brief

Confirmation of adequate domestic supply and pressure: see page 2 & 3 of Servicing Brief

Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow locations throughout the development: see page 2,3 & 5 of Servicing Brief

Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves: see page 2 of Servicing Brief

Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design: not applicable

Address reliability requirements such as appropriate location of shut-off valves: not applicable

Check on the necessity of a pressure zone boundary modification:. not applicable

Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range: not applicable

Description of the proposed water distribution network, including locations of proposed connections to the existing systems, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions: not applicable

Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation: not applicable

Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines: see page 3 of Servicing Brief

Provision of a model schematic showing the boundary conditions locations, streets , parcels, and building locations for reference: not applicable

Development Servicing Report: Wastewater

Summary of proposed design criteria: see page 3 of Servicing Brief

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

Confirm consistency with Master Servicing Study and /or justification for deviations: not applicable

Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and conditions of sewers: not applicable

Descriptions of existing sanitary sewer available for discharge of wastewater from proposed development: see page 3 of Servicing Brief

Verify available capacity in downstream sanitary sewer and / or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable): not applicable

Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix C) format. see page 9 of Servicing Brief

Description of proposed sewer network including sewers, pumping stations, and forcemains: see page 3 of Servicing Brief

Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality): not applicable

Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development: not applicable

Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity: not applicable

Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding: not applicable

Special considerations such as contamination, corrosive environment etc: not applicable

Development Servicing Report: Stormwater Checklist

Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property): see page 4 of Servicing Brief and Stormwater Management Report

Analysis of available capacity in existing public infrastructure. not applicable

A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern: see drawing C-3 & C-7

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

Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements: Servicing Brief and Stormwater Management Report

Descriptions of the references and supporting information.
Set-back from private sewage disposal systems. not applicable

Watercourse and hazard lands setbacks: not applicable

Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed: the pre-application consultation record is not yet been issued

Confirm consistency with sub-waterched and Master Servicing Study, if applicable study exists: not applicable

Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period). see drawings C-1 to C-7 and Servicing Brief and Stormwater Management Report

Identification of watercourses within the proposed development and how watercourses will be protected, or , if necessary, altered by the proposed development with applicable approvals. see drawings C-1 to C-7 and Servicing Brief and Stormwater Management Report

Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions: see Servicing Brief and Stormwater Management Report

Any proposed diversion of drainage catchment areas from one outlet to another. : not applicable

Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities. : not applicable

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

Identification of potential impacts to receiving watercourses: Servicing Brief and Stormwater Management Report

Identification of municipal drains and related approval requirements. : not applicable

Descriptions of how the conveyance and storage capacity will be achieved for the development: see page 5 & 6 of Servicing Brief and Stormwater Management Report

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

Inclusion of hydraulic analysis including hydraulic grade line elevations. : not applicable

Description of approach to erosion and sediment control during construction for the protection of receiving watercourses of drainage corridors: see notes 2.1 to 2.5 on drawing C-5

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

Identification of fill constraints related to floodplain and geotechnical investigation. : not applicable

Approval and Permit Requirements: Checklist

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

Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act: see page 19 of Servicing Brief and Stormwater Management Report

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

Changes to Municipal Drains. : not applicable

Other permits (National Capital commission, Parks Canada, public Works and Government Services Canada, Ministry of transportation etc.) : not applicable

Conclusion Checklist

Clearly stated conclusions and recommendations: see page 6 & 7 of Servicing Brief

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

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