D.B. Gray Engineering Inc.

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

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SITE SERVICING & STORMWATER MANAGEMENT REPORT

1750 HEATHERINGTON ROAD
BUILDING 13
OTTAWA, ONTARIO

REPORT NO. 24135-13

AUGUST 17, 2026

CONTENTS

LIST OF APPENDICES

1.0 INTRODUCTION

This report has been prepared in support of the Site Plan Control application for the proposed 4-storey, 45-unit apartment building (Building 13) located at 1750 Heatherington Road in Ottawa, Ontario. This report describes the servicing for the proposed building and stormwater management for the 2,545 sq.m property.

This report forms part of the site servicing and stormwater management design for the proposed development. Also refer to drawings C-1 to C-22 prepared by D.B. Gray Engineering Inc.

2.0 WATER SERVICING

2.1 WATER SUPPLY FOR FIREFIGHTING

The proposed building will have a fully supervised sprinkler system with the fire department connection located on the Heatherington Road facade. The sprinkler system is to be designed, installed and maintained in accordance with NFPA standards and the Fire Underwriters Survey. Refer to Appendix A. There is an existing municipal Class AA fire hydrant located at the SE corner of the subject property. It is 25 m unobstructed distance to the proposed fire department connection, which is less than the maximum 45 m required by the Ontario Building Code.

When calculating the required fire flow where municipal pipe sizing is affected, the Fire Underwriters Survey Method is to be used. Using the Fire Underwriters Survey Method, the required fire flow is calculated to be 11,000 L/min (183.3 L/s). Refer to calculations in Appendix A.

The boundary conditions in the 200 mm Heatherington Road municipal watermain provided by the City of Ottawa for the 183.3 L/s fire flow at Connection 2 once the existing 150 mm Heatherington Road municipal watermain is upgraded to 250 mm indicate a hydraulic grade line (HGL) of 105.6 m. Refer to Appendix A. This HGL calculates to 189 kPa (27 psi). Since the pressure is above the Ontario Building Code's minimum required pressure of 140 kPa (20 psi), there will be an adequate water supply for firefighting.

The aggregate flow of all contributing fire hydrants within 150 m of the building shall not be less than the required fire flow. The existing municipal Class AA fire hydrant discussed above can contribute 5,700 L/min (95 L/s). The next two closest existing municipal fire hydrants are Class AA and are within between 75 m and 150 m of the proposed building; one is located at the NE corner of the subject property; and the other is located at the south intersection of Heatherington Road and Fairlea Crescent. Each can contribute 3,800 L/min (63.3 L/s). The aggregate flow of the three contributing fire hydrants is 13,300 L/min (221.7 L/s), which is greater than the required fire flow of 11,000 L/min (183.3 L/s).

2.2 DOMESTIC WATER SUPPLY

Based on the 31 – 1 bedroom apartment units and 14 – 2 bedroom apartment units, the average daily demand is calculated to be 0.2 L/s, the maximum daily demand is calculated to be 1.9 L/s and the maximum hourly demand is calculated to be 2.8 L/s. Refer to calculations in Appendix A.

The boundary conditions in the 200 mm Heatherington Road municipal watermain provided by the City of Ottawa at Connection 2 once the existing 150 mm Heatherington Road municipal watermain is upgraded to 250 mm indicate a minimum HGL of 124.0 m and a maximum HGL of 130.9 m. Refer to Appendix A. Based on these boundary conditions, the pressure at the water meter is calculated to vary between 346 kPa (50 psi) and 413 kPa (60 psi). This is an acceptable range for the proposed development.

A 150 mm water service connecting to the existing 200 mm Heatherington Road municipal watermain is proposed to service the sprinkler system. The same 150 mm water service will provide an adequate domestic water supply.

3.0 SANITARY SERVICING

Based on the 31 – 1 bedroom apartment units and 14 – 2 bedroom apartment units, the post-development sanitary flow rate is calculated to be 0.84 L/s. A 150 mm sanitary sewer service at 2% slope (21.54 L/s capacity) is proposed to service the development. At the design flow rate the sanitary sewer service will only be at 4% capacity. The proposed 150 mm sanitary sewer service will connect to the existing 375 mm Heatherington Road municipal sanitary sewer, which at 0.2% slope has a capacity of 78.41 L/s. Refer to calculations in Appendix B. The post-development increase in flow is expected to have an acceptable impact on the 375 mm Heatherington Road municipal sanitary sewer.

4.0 STORMWATER MANAGEMENT

4.1 QUANTITY CONTROL

The stormwater quantity control criterion is to control the post-development 100-year peak flow rate to 19.00 L/s. The Rational and Modified Rational Methods are used to calculate the post-development flow rates and corresponding storage volumes. The 2-year runoff coefficients are increased by 25% to a maximum of 1.00 to calculate the 100-year runoff coefficients. Refer to calculations in Appendix C.

Drainage Area I (Uncontrolled Flow Off Site – 353 sq.m)
Areas to the north and east of the property will drain uncontrolled off site. The flow rates are calculated at a time of concentration of 10 minutes.

	100-Year Event	2-Year Event
Maximum Flow Rate	7.17 L/s	2.63 L/s

Drainage Area II (Roof – 942 sq.m)
The 5 roof drains are to be flow control type roof drains, which will restrict the flow of stormwater and cause it to pond on the roof. Roof drains are to be Watts RD-100 c/w a Watts Adjustable Accutrol Weir in the ¼ open position and release 0.95 L/s at 150 mm (15 USgpm at 6”). The opening at the top of the flow control weir is to be a minimum 50 mm in diameter. A minimum of 8 scuppers each a minimum 450 mm wide are to be installed 150 mm above the roof drains. Refer to architectural for exact locations and details. The roof is to be designed to carry the load of water having a 50 mm depth at the scuppers (i.e. 200 mm depth at the roof drains). Refer to structural.

	100-Year Event	2-Year Event
Maximum Release Rate	4.60 L/s	3.83 L/s
Maximum Depth at Roof Drains	143 mm	94 mm
Maximum Volume Stored	36.43 cu.m	10.22 cu.m

Drainage Area III (1,250 sq.m)
An inlet control device (ICD) located in the outlet pipe of CB/MH-B3 will restrict the flow of stormwater and cause it to backup into the upstream infrastructure and pond above CB/MH-B1 and CB/MH-B3. The ICD will be a vortex style manufactured by Hydrovex or approved equivalent sized by the manufacturer for a release rate of 7.23 L/s at 2.58 m. It is determined that a 75 VHV-1 will restrict the maximum flow rate to 7.23 L/s at 2.58 m. Based on this orifice, the maximum flow rate during the 2-year event is calculated to be 7.12 L/s at 2.51 m.

	100-Year Event	2-Year Event
Maximum Release Rate	7.23 L/s	7.12 L/s
Maximum Water Elevation	87.51 m	87.44 m
Maximum Volume Stored	34.24 cu.m	7.73 cu.m

Summary
The maximum post-development release rate during the 100-year event is calculated to be 19.00 L/s, which is equal to the maximum allowable release rate. To achieve the maximum allowable release rate, a maximum storage volume of 70.67 cu.m is required and provided during the 100-year event. The maximum post-development release rate during the 2-year event is calculated to be 13.59 L/s, which is 28% less than the maximum allowable release rate. A maximum storage volume of 17.95 cu.m is required and provided during the 2-year event.

	100-Year Event	2-Year Event
Maximum Allowable Release Rate	19.00 L/s	19.00 L/s
Maximum Release Rate	19.00 L/s	13.59 L/s
Maximum Volume Required	70.67 cu.m	17.95 cu.m
Maximum Volume Stored	70.67 cu.m	17.95 cu.m

4.2 QUALITY CONTROL

The stormwater quality control criterion is to provide an enhanced (80% TSS removal) level of protection. An oil grit separator manhole (OGS MH-B4) is proposed to be located downstream of the ICD. Calculations by the manufacturer indicate that the CDS PMSU-2015-4 OGS will remove 94% of total suspended solids. Refer to calculations in Appendix C.

An Erosion & Sediment Control Plan has been developed to be implemented during construction. Refer to drawing C-17 and C-18, and notes on drawing C-22.

i. Sediment capture filter sock inserts are to be installed in all existing and proposed catch-basins and catch-basin/manholes adjacent to and within the site.
ii. A silt fence barrier is to be installed along the perimeter of the site.
iii. Any material deposited on the public road is to be removed.

4.3 STORM SERVICING

The peak unrestricted roof flow rate during the 2-year event is calculated to be 18.10 L/s. A 250 mm storm sewer service at 2% slope (84.10 L/s capacity) is proposed to service the building. At the peak unrestricted 2-year flow rate the storm sewer service would be at 22% capacity. The peak restricted roof flow rate during the 2-year event is calculated to be 3.83 L/s. At the peak restricted 2-year flow rate the storm sewer service will only be at 5% capacity. Refer to calculations in Appendix C. The proposed 250 mm storm sewer service will connect to the proposed private storm sewer system downstream of the ICD.

The peak unrestricted flow rate draining into the last sewer segment of the private storm sewer system during the 2-year event is calculated to be 35.60 L/s. A 250 mm storm sewer at 0.432% slope (39.09 L/s capacity) is proposed to connect to the existing 675 mm Heatherington Road municipal storm sewer, which at 0.3% slope has a capacity of 478.82 L/s. At the peak unrestricted 2-year flow rate the proposed 250 mm storm sewer would be at 91% capacity. The peak restricted flow rate draining into the last sewer segment of the private storm sewer system during the 2-year event is calculated to be 10.95 L/s. At the peak restricted 2-year flow rate the proposed 250 mm storm sewer will only be at 28% capacity. Refer to calculations in Appendix C.

The rainwater leaders inside the building are to be constructed to withstand the pressure from a water column the height of the rainwater leader. Pressure tests are to be performed on the systems in accordance with the mechanical engineer's instructions.

The foundation drain will drain to a storm sump and be pumped to a storm drain. Refer to mechanical.

5.0 CONCLUSIONS

1. There will be an adequate water supply for firefighting once the existing 150 mm Heatherington Road municipal watermain is upgraded to 250 mm.
2. There will be an acceptable range of water pressures once the existing 150 mm Heatherington Road municipal watermain is upgraded to 250 mm.

3. The post-development sanitary flow rates will be adequately handled by the proposed private sanitary sewer system.
4. The post-development increase in sanitary flow is expected to have an acceptable impact on the existing municipal sanitary sewer.
5. The maximum post-development release rate during the 100-year event will be equal to the maximum allowable release rate.
6. The proposed OGS will provide an enhanced (80% TSS removal) level of protection.
7. An Erosion & Sediment Control Plan has been developed to be implemented during construction.
8. The peak unrestricted flow rates during the 2-year event will be adequately handled by the proposed private storm sewer system.
9. The rainwater leaders inside the building are to be constructed to withstand the pressure from a water column the height of the rainwater leader. Pressure tests are to be performed on the systems in accordance with the mechanical engineer's instructions.

Prepared by D.B. Gray Engineering Inc.

APPENDIX A

WATER SERVICING

D.B. Gray Engineering Inc.

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

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March 16, 2026

1750 Heatherington Road

4-Storey Apartment Building 13

Ottawa, Ontario

FIRE FLOW CALCULATIONS

FUS Method

RFF = Required Fire Flow in litres per minute
= $220CA^{0.5}$

C = Construction Coefficient related to the type of construction of the building
= 1.5 Type V Wood Frame Construction

A = Total Effective Floor Area in square meters of the building

4th Floor:	942	sq.m
3rd Floor:	942	sq.m
2nd Floor:	942	sq.m
1st Floor:	942	sq.m
	3,768	sq.m

RFF = 20,257 L/min
= 20,000 L/min (rounded to nearest 1,000 L/min)

Occupancy and Contents Adjustment Factor
-15% Limited Combustible Contents

= -3,000 L/min Occupancy and Contents Adjustment Factor

RFF = 17,000 L/min

Automatic Sprinkler Protection Credit

30%	Sprinkler system designed, installed and maintained in accordance with NFPA standards
10%	Standard water supply for both the sprinkler system and fire department hose lines
10%	Fully supervised sprinkler system

= 8,500 L/min Automatic Sprinkler Protection Credit

Exposure Adjustment Charge

Side	Charge	Distance	Construction	Length	Storeys	Factor
North	0%	20.1 m to 30 m	Type II	36	1	36
East	4%	20.1 m to 30 m	Type V	22	2	44
South	13%	10.1 m to 20 m	Type V	32	2	64
West	0%	over 30 m				

17% Exposure Adjustment Charge

= 2,890 L/min Exposure Adjustment Charge

RFF = 11,390 L/min
= 11,000 L/min (rounded to nearest 1,000 L/min)
= 183.3 L/s

183.3 L/s Fire Flow HGL: 105.6 m

Elevation at Fire Hydrant: 86.3 m

Static Pressure at Fire Hydrant: 19.3 m 189 kPa 27 psi

WATER SUPPLY
FOR
PUBLIC FIRE PROTECTION

A Guide to Recommended Practice in Canada

2020

Fire Underwriters Survey

Automatic Sprinkler Protection

The required fire flow may be reduced by up to 50 percent for complete Automatic Sprinkler Protection depending upon adequacy of the system. Where only part of a building is protected by Automatic Sprinkler Protection, credit should be interpolated by determining the percentage of the Total Floor Area being protected by the automatic sprinkler system.

To be able to apply the full 50 percent reduction, the following areas should be reviewed to determine the appropriate level of credit for having Automatic Sprinkler Protection as per the table below:

Table 4 Sprinkler Credits

Automatic Sprinkler System Design	Credit	
	With complete building coverage	With partial building coverage of X%
Automatic sprinkler protection designed and installed in accordance with NFPA 13	30%	30% × Percentage of Total Floor Area Serviced by Sprinkler System
Water supply is standard for both the system and Fire Department hose lines	10%	10% × Percentage of Total Floor Area Serviced by Sprinkler System
Fully supervised system	10%	10% × Percentage of Total Floor Area Serviced by Sprinkler System

Automatic Sprinkler Protection Designed and Installed in Accordance with Applicable NFPA Standards (30%)

The initial credit for Automatic Sprinkler Protection is a maximum of 30% based on the system being designed and installed in accordance with the applicable criteria of NFPA 13, *Standard for Installation of Sprinkler Systems,* NFPA 13R, *Standard for the Installation of Sprinkler Systems in Low-Rise Residential* Occupancies, or NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes* and being maintained in accordance with the applicable criteria of NFPA 25, *Standard for the Inspections, Testing and Maintenance of Water-Based Fire* (see Recognition of Automatic Sprinkler Protection).

Water Supply is Standard for both the Sprinkler System and Fire Department Hose Lines (10%)

To qualify to apply an additional 10% reduction, a water supply that is standard for both the sprinkler system and fire department hose lines is required, to qualify the following conditions should be satisfied:

a) Sprinkler system is supplied by a pressurized water supply system (public or private) that is designed and built with no major non-conformance issues (i.e. water supply system is designed in accordance with Part 1 of the Water Supply for Public Fire Protection to qualify for fire insurance grading recognition).

b) Calculated demand for maximum sprinkler design area operation in addition to hose stream requirements are below the available water supply curve (at the corresponding flow rate and pressure). An appropriate safety margin is used to take into account the difference between the available water supply curve at the time of hydrant flow testing as compared to the available water supply curve during Maximum Day Demand.

c) Volume of water available is adequate for the total flow rate including the maximum sprinkler design area operation plus required hose streams plus Maximum Day Demand for the full duration of the design fire event.
d) Residual pressure at all points in the water supply system can be maintained at not less than 150 kPa during the flowing of the sprinkler and required hose streams (plus Maximum Day Demand).

Fully Supervised System (10%)

To qualify to apply an additional 10% reduction, an automatic sprinkler system should be fully supervised. The purpose of the supervisory signal is to ensure that malfunctions of the automatic sprinkler system will be discovered and corrected promptly, while the water flow alarm serves to notify emergency services of the fire as soon as the automatic sprinkler system activates.

- a distinctive supervisory signal to indicate conditions that could impair the satisfactory operation of the sprinkler system (a fault alarm), which is to sound and be displayed, either at a location within the building that is constantly attended by qualified personnel (such as a security room), or at an approved remotely located receiving facility (such as a monitoring facility of the sprinkler system manufacturer); and
- a water flow alarm to indicate that the sprinkler system has been activated, which is to be transmitted to an approved, proprietary alarm-receiving facility, a remote station, a central station or the fire department.

Additional Reductions for Community Level Automatic Sprinkler Protection of Area

Buildings located within communities or subdivisions that are completely sprinkler protected may apply up to a maximum additional 25% reduction in required fire flows beyond the normal maximum of 50% reduction for sprinkler protection of an individual building.
This additional reduction may be applied where all the following conditions are met:

a) the community has a bylaw requiring all buildings that may be built within 30 m of the subject building to be fully sprinkler protected. I.e. future development will not create unsprinklered buildings within 30 m of the subject building, and
b) all buildings within 30 meters of the subject building are fully sprinkler protected with systems that are designed and installed in accordance with the applicable criteria of NFPA 13, *Standard for Installation of Sprinkler Systems,* NFPA 13R, *Standard for the Installation of Sprinkler Systems in Low-Rise Residential* Occupancies, or NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes,* and
c) the community has in place a Fire Prevention Program that provides a system of ensuring that installed fire sprinkler systems are inspected, tested, and maintained in accordance with NFPA 25: *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, and
d) the community maintains the pressure and flow rate requirements for fire sprinkler installations. I.e. the community does not make significant reductions to the operating pressures or flows across the distribution network.

Adjustment of Sprinkler Reductions for Community Level Oversight of Sprinkler Maintenance, Testing and Water Supply Requirements

The reduction in required fire flows for sprinkler protection may be reduced or eliminated if

a) the community does not have a Fire Prevention Program that provides a system of ensuring that installed fire sprinkler systems are inspected, tested, and maintained in accordance with NFPA 25: *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, or
b) the community does not maintain the pressure and flow rate requirements for fire sprinkler installations, or otherwise allows the flow rates and pressure levels that were available during sprinkler system design to significantly degrade, increasing the probability of inadequate water supply for effective sprinkler operation.

Recognition of Automatic Sprinkler Protection

A property should be considered as "sprinkler protected" for the purposes of determining required fire flows, if the building has an automatic fire sprinkler system:

- designed and installed throughout all areas in accordance with NFPA 13, *Standard for Installation of Sprinkler Systems*, and maintained in accordance with the NFPA 25, *Standard for the Inspections, Testing and Maintenance of Water-Based Fire Protection Systems*, and
- supplied by water infrastructure capable of meeting all pressure and flow requirements of the sprinkler system concurrently with Max Day Demand (if connected to a domestic system)

Evidence of the sprinkler system design, installation should be acquired from the party responsible for the building (the owner, building engineer or property manager) or the municipal fire prevention office.

On site, the sprinkler system should carry test tags verifying that a qualified person has conducted tests including:

- flushing and hydrostatic tests of both the underground and overhead piping in accordance with NFPA 13;
- full-flow main drain test within the previous 48 months.
- dry-pipe trip test (if applicable) conducted within the last 48 months
- fire-pump test (if applicable) conducted within the last 48 months

Items of Note for Sprinkler Systems

i. It is important to note that installation of automatic sprinkler systems provides a highly effective and reliable system of fire protection however, this does not preclude the need for manual fire flows entirely as some fires, for various reasons, grow beyond the capability of sprinkler protection to be effective, and in these cases, manual fire fighting intervention is required.

D.B. Gray Engineering Inc.

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

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March 16, 2026

1750 Heatherington Road

4-Storey Apartment Building 13

Ottawa, Ontario

WATER DEMAND CALCULATIONS

	Number of Units	Persons per Unit	Population
1 Bedroom:	31	1.4	43.4
2 Bedroom:	14	2.1	29.4
3 Bedroom:	0	3.1	0
Average:	0	1.8	0
Total:	45		72.8

Average Daily Demand:	280	L/capita/day				
	14.2	L/min	0.2	L/s	3.7	USgpm
Maximum Daily Demand:	7.9	(Peaking factor for a population of 72.8 interpolated from MOE Design Guidelines for Drinking Water Systems Table 3-3)				
	111.3	L/min	1.9	L/s	29.4	USgpm
Maximum Hourly Demand:	11.8	(Peaking factor for a population of 72.8 interpolated from MOE Design Guidelines for Drinking Water Systems Table 3-3)				
	167.6	L/min	2.8	L/s	44.3	USgpm

Elevation of Water Meter:	88.73	m				
Finished Floor Elevation:	87.83	m				
Minimum HGL:	124.0	m				
Static Pressure at Water Meter:	35.3	m	346	kPa	50	psi
Maximum HGL:	130.9	m				
Static Pressure at Water Meter:	42.2	m	413	kPa	60	psi

D.B. Gray Engineering Inc.

Ryan Faith <r.faith@dbgrayengineering.com>

RE: Request for Boundary Conditions - 1770 Heatherington Rd

1 message

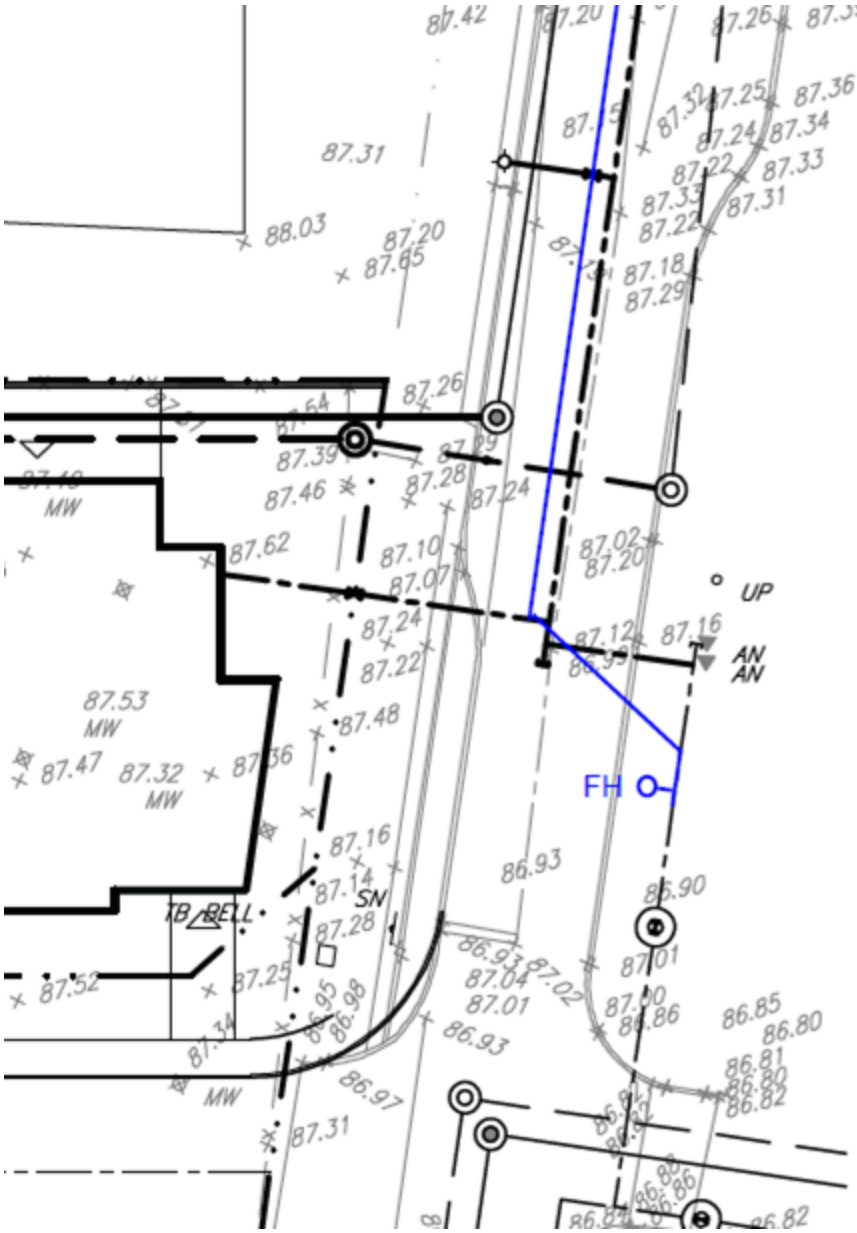
Duquette, Vincent <Vincent.Duquette@ottawa.ca> Mon, Mar 16, 2026 at 9:50 AM
To: "r.faith" <r.faith@dbgrayengineering.com>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>, "Grift, Justin" <justin.grift@ottawa.ca>

Hi Ryan,

You will find at bottom of this message the results of the water boundary conditions.

Furthermore, we circulated the proposed watermain upsizing to our water distribution group and they would like to see the modification listed below. I have also added a marked-up sketch illustrating these comments.

- The proposed 250mm watermain must be shifted to the west to meet the required 2.5m distance from the neighboring parallel storm and sanitary sewers.
- Replace the existing 90-degree bends with 45-degree bends with thrust blocks.
- The existing fire hydrant location does not meet our standards. We request relocating to the east side of Heatherington Rd, south of the bus station and utility pole, where there is sufficient greenspace to set it back from the curb line and private approaches.



The following are boundary conditions, HGL, for hydraulic analysis at 1770 Heatherington Road (zone 2W2C) assumed to be connected via two (2) connections as identified below while upsizing the existing watermain on Heatherington Road from Walkley to Fairlea from 152mm to 254mm (see attached PDF for location).

Connection 1 – Proposed 254 mm on Heatherington

Minimum HGL = 124.2 m

Maximum HGL = 130.9 m

Max Day + Fire Flow (183.3 L/s) = 122.2 m

Connection 2 – 203 mm on Heatherington

Minimum HGL = 124.0 m

Maximum HGL = 130.9 m

Max Day + Fire Flow (183.3 L/s) = 105.6 m

These are for current conditions and are based on computer model simulation.

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.

Best Regards,

Vincent Duquette, P.Eng

Project Manager, Infrastructure Approvals | Gestionnaire de projet, Projets d'infrastructure

Development Review – All Ward | Direction de l'examen des projets d'aménagement - Tous les quartiers

Planning, Development and Building Services Department (PDBS)| Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West | 110 avenue Laurier Ouest

Ottawa, ON K1P 1J1

613.580.2424 ext./poste 14048, vincent.duquette@ottawa.ca

From: Duquette, Vincent
Sent: Monday, February 23, 2026 7:27 PM
To: 'Ryan Faith' <r.faith@dbgrayengineering.com>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>; Dickinson, Mary <mary.dickinson@ottawa.ca>; Grift, Justin <justin.grift@ottawa.ca>
Subject: RE: Request for Boundary Conditions - 1770 Heatherington Rd

Hi Ryan,

Boundary conditions for all hydraulic scenarios have been requested.

Best Regards,

Vincent Duquette, P.Eng

Project Manager, Infrastructure Approvals | Gestionnaire de projet, Projets d'infrastructure

Development Review – All Ward | Direction de l'examen des projets d'aménagement - Tous les quartiers

Planning, Development and Building Services Department (PDBS)| Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)

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613.580.2424 ext./poste 14048, vincent.duquette@ottawa.ca

From: Ryan Faith <r.faith@dbgrayengineering.com>
Sent: Monday, February 23, 2026 4:18 PM
To: Duquette, Vincent <Vincent.Duquette@ottawa.ca>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>; Dickinson, Mary <mary.dickinson@ottawa.ca>; Grift, Justin <justin.grift@ottawa.ca>
Subject: Re: Request for Boundary Conditions - 1770 Heatherington Rd

Hi Vincent,

Yes please request all HGLs. It makes it easier to share with other consultants. The domestic demands were in Doug's original request below in yellow.

Thanks,

Ryan Faith
D.B. Gray Engineering Inc.
700 Long Point Circle
Ottawa, Ontario K1T 4E9
613-425-8044

On Mon, Feb 23, 2026 at 4:00 PM Duquette, Vincent <Vincent.Duquette@ottawa.ca> wrote:

> Hi Ryan,

Thee fireflow values provided below were for 20 psi at ground surface elevation of the connection points. I believe the site plan drawing you provided had topo shots which you should be able to infer the HGL elevation from.

If you are looking for the HGL under average day demand and peak hour demands, please provide domestic demands and I can ask for the HGLs for all hydraulic scenarios.

Best Regards,

Vincent Duquette, P.Eng

Project Manager, Infrastructure Approvals | Gestionnaire de projet, Projets d'infrastructure

Development Review – All Ward | Direction de l'examen des projets d'aménagement - Tous les quartiers

Planning, Development and Building Services Department (PDBS)| Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)

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613.580.2424 ext./poste 14048, vincent.duquette@ottawa.ca

From: Ryan Faith <r.faith@dbgrayengineering.com>
Sent: Monday, February 23, 2026 3:03 PM
To: Duquette, Vincent <Vincent.Duquette@ottawa.ca>
Cc: Douglas Gray <d.gray@dbgrayengineering.com>; Dickinson, Mary <mary.dickinson@ottawa.ca>; Grift, Justin <justin.grift@ottawa.ca>
Subject: Re: Request for Boundary Conditions - 1770 Heatherington Rd

Hi Vincent,

Can we get the HGLs?

Thanks,

Ryan Faith
D.B. Gray Engineering Inc.
700 Long Point Circle
Ottawa, Ontario K1T 4E9
613-425-8044

On Thu, Aug 21, 2025 at 6:59 PM Duquette, Vincent <Vincent.Duquette@ottawa.ca> wrote:

Hi Doug,

You have the right guy; I'm the one reviewing this application. The fireflow calculations and water demand calculation look good. Please note that the FUS fireflow demand will be used seeing as the OBC fireflow exceeds 9,000L/min.

I'm not sure if you aware of the background history for this application but boundary conditions were requested two years ago for the related subdivision and yielded an available fireflow of around 127 L/s on Heatherington. In order to increase the available fireflow for the subdivision, two offsite watermain upsizing scenarios were considered as shown on the attached plan. See below the theoretical results of those upsizing scenarios.

	Max available Fire Flow at 20 psi	Connection 1	Connection 2
Scenario 1	Upgrade 152mm to **203mm**	215 L/s	200 L/s
Scenario 2	Upgrade 152mm to **254mm**	250 L/s	230 L/s

Another question about this application, it was my understanding that building 1 and 13 are going through SPC ahead of the related subdivision application to fast track their approval. The proposed connection locations shown on the servicing plan are connected to the future subdivision watermain. If that is the case, the SPC approval won't be able proceed prior to subdivision approval. Please discuss with our housing group on what is their approval timing for the SPC application. If they wish to have the SPC application proceed ahead of the subdivision, servicing connections will have to come from Heatherington Rd and this will require either an offsite watermain upgrade or the buildings to significantly reduce their fireflow demand.

Let me know if you have any questions about this site.

Best Regards,

Please note that I will be away Friday August 21st.

Vincent Duquette, P.Eng

Project Manager, Infrastructure Approvals | Gestionnaire de projet, Projets d'infrastructure

Development Review – All Ward | Direction de l'examen des projets d'aménagement - Tous les quartiers

Planning, Development and Building Services Department (PDBS)| Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West | 110 avenue Laurier Ouest

Ottawa, ON K1P 1J1

613.580.2424 ext./poste 14048, vincent.duquette@ottawa.ca

From: Douglas Gray <d.gray@dbgrayengineering.com>
Sent: Thursday, August 21, 2025 11:19 AM
To: Duquette, Vincent <Vincent.Duquette@ottawa.ca>
Cc: r.faith <r.faith@dbgrayengineering.com>
Subject: Fwd: Request for Boundary Conditions - 1770 Heatherington Rd

Hi Vincent,

I sent this request to Tyler Cassidy but he is away until next week.

If you are not the correct person for this request please forward this email to the correct person.

Thanks, Doug

Douglas B. Gray, P.Eng.

D. B. Gray Engineering Inc.

700 Long Point Circle

Ottawa, ON K1T 4E9

613-425-8044

---------- Forwarded message ---------
From: **Douglas Gray** <d.gray@dbgrayengineering.com>
Date: Thu, Aug 21, 2025 at 11:11 AM
Subject: Request for Boundary Conditions - 1770 Heatherington Rd
To: Cassidy, Tyler <tyler.cassidy@ottawa.ca>
Cc: Ryan Faith <r.faith@dbgrayengineering.com>

Hi Tyler,

If you are not the correct person for this request please forward this email to the correct person.

We are working on a project for OCH at Heathington Rd. Specifically we are working on two 45-unit apartment buildings (Building 1 & Building 13).

Please provide the boundary conditions for the 200 mm Heatherington Rd municipal watermain. (I understand that this part of this watermain is being upgraded as part of the proposed Heathington subdivision.) We have calculated the following expected demands (they are identical for both buildings):

Fire flow demand: 183.3 L/s
Average daily demand: 0.2 L/s
Maximum daily demand: 1.9 L/s
Maximum hourly demand: 2.8 L/s

Calculations are attached.

Thanks, Doug

Douglas B. Gray, P.Eng.

D. B. Gray Engineering Inc.

700 Long Point Circle

Ottawa, ON K1T 4E9

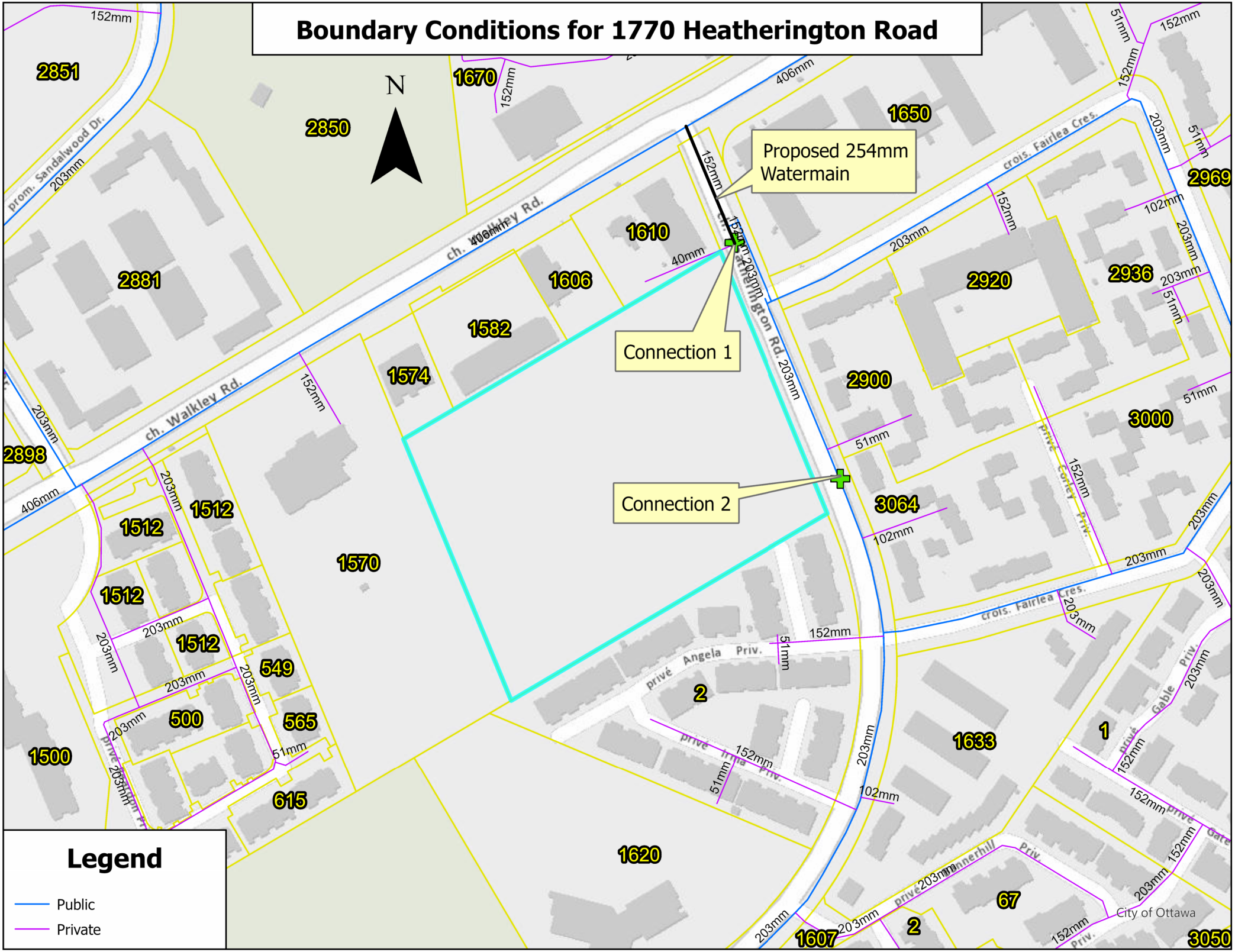
613-425-8044

'

'

This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

1770 Heatherington Road March 2026.pdf
3553K


Boundary Conditions for 1770 Heatherington Road
N
Proposed 254mm Watermain
Connection 1
Connection 2
Legend
Public
Private
ch. Walkley Rd.
Heatherington Rd.
crois. Fairlea Cres.
prom. Sandalwood Dr.
2851
2850
1670
1650
2881
1610
1606
1582
1574
2898
1512
1570
2900
2920
2936
2969
3000
3064
549
500
565
615
1500
1620
1633
1
67
2
1607
3050
City of Ottawa

APPENDIX B

SANITARY SERVICING

D.B. Gray Engineering Inc.

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

700 Long Point Circle
Ottawa, Ontario K1T 4E9

613-425-8044
d.gray@dbgrayengineering.com

SANITARY SEWER CALCULATIONS

Project: 1750 Heatherington Road
4-Storey Apartment Building 13
Ottawa, Ontario

Date: August 17, 2026

Residential Average Daily Flow:	280	L/capita/day	Residential Peaking Factor:	Harmon Formula	
Commercial Average Daily Flow:	28,000	L/ha/day	Harmon Formula Correction Factor:	0.8	
Institutional Average Daily Flow:	28,000	L/ha/day	Commercial Peaking Factor:	1.5	
Light Industrial Average Daily Flow:	35,000	L/ha/day	Institutional Peaking Factor:	1.5	
Heavy Industrial Average Daily Flow:	55,000	L/ha/day	Industrial Peaking Factor:	Ministry of the Environment	
Infiltration Allowance:	0.33	L/s/ha	Manning's Roughness Coefficient:	0.013	

		Residential													Commercial				Infiltration			Q	Sewer Data						
		Individual									Cumulative				Individual	Cumulative			Individual	Cumulative		Total							
Location		Single	Semi	Duplex	Apartment	Apartment	Apartment	Apartment	Area	Population	Area	Population	Peaking	Flow Rate	Area	Area	Peaking	Flow Rate	Area	Area	Flow Rate	Flow Rate	Length	Nominal Diameter	Actual Diameter	Slope	Velocity	Q_{Full} Capacity	
From	To	Family	Detached		(1 Bed)	(2 Bed)	(3 Bed)	(Average)	(ha)		(ha)		Factor	(L/s)	(ha)	(ha)	Factor	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(m)	(mm)	(mm)	(%)	(m/s)	(L/s)	Q / Q_{Full}
		ppu = 3.4	ppu = 2.7	ppu = 2.3	ppu = 1.4	ppu = 2.1	ppu = 3.1	ppu = 1.8																					
Building 13	375 SAN				31	14			0.2545	72.8	0.2545	72.8	3.2	0.75					0.2545	0.2545	0.08	0.84	15.7	150	150	2	1.22	21.54	4%
																							Existing 375 mm Heatherington Road Municipal Sanitary Sewer:						
																							375	375	0.2	0.71	78.41	

APPENDIX C

STORMWATER MANAGEMENT

SUMMARY TABLES

100-YEAR EVENT

Drainage Area	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)	-	7.17	-	-
AREA II (Roof)	-	4.60	36.43	36.43
AREA III	-	7.23	34.24	34.24
TOTAL	19.00	19.00	70.67	70.67

2-YEAR EVENT

Drainage Area	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)	-	2.63	-	-
AREA II (Roof)	-	3.83	10.22	10.22
AREA III	-	7.12	7.73	7.73
TOTAL	19.00	13.59	17.95	17.95

August 17, 2026

1750 Heatherington Road

4-Storey Apartment Building 13

Ottawa, Ontario

STORMWATER MANAGEMENT CALCULATIONS

Modified Rational Method

100-YEAR EVENT

DRAINAGE AREA I (Uncontrolled Flow Off Site)

(100-YEAR EVENT)

			C
Roof Area:	0	sq.m	1.00
Hard Area:	75	sq.m	1.00
Gravel Area:	0	sq.m	0.875
Soft Area:	278	sq.m	0.25
Total Catchment Area:	353	sq.m	0.41
Area (A):	353	sq.m	
Time of Concentration:	10	min	
Rainfall Intensity (i):	179	mm/hr	
Runoff Coeficient (C):	0.41		
Flow Rate (2.78AiC):	7.17	L/s	

DRAINAGE AREA II (Roof)

(100-YEAR EVENT)

			C
Total Catchment Area:	942	sq.m	1.00

No. of Roof Drains: 5
Wier Opening: 1/4

Depth at Roof Drains: 143 mm

Maximum Release Rate: 4.60 L/s

Pond Area: 763 sq.m

Maximum Volume Stored: 36.43 cu.m

Maximum Volume Required: 36.43 cu.m

Time (min)	i (mm/hr)	2.78AiC (L/s)	Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	179	46.76	4.60	42.16	25.29
15	143	37.42	4.60	32.82	29.54
20	120	31.41	4.60	26.81	32.17
25	104	27.20	4.60	22.59	33.89
30	92	24.06	4.60	19.45	35.02
35	83	21.63	4.60	17.02	35.75
40	75	19.68	4.60	15.08	36.18
45	69	18.08	4.60	13.48	36.39
50	64	16.75	4.60	12.14	36.43
55	60	15.61	4.60	11.01	36.34
60	56	14.64	4.60	10.03	36.12
65	53	13.79	4.60	9.18	35.82
70	50	13.04	4.60	8.44	35.43
75	47	12.38	4.60	7.77	34.97
80	45	11.78	4.60	7.18	34.46
85	43	11.25	4.60	6.65	33.89
90	41	10.77	4.60	6.16	33.28
95	39	10.33	4.60	5.72	32.62
100	38	9.93	4.60	5.32	31.94
105	36	9.56	4.60	4.95	31.21
110	35	9.22	4.60	4.62	30.46
115	34	8.91	4.60	4.30	29.68
120	33	8.61	4.60	4.01	28.88
125	32	8.34	4.60	3.74	28.05
130	31	8.09	4.60	3.49	27.21
135	30	7.86	4.60	3.25	26.34
140	29	7.63	4.60	3.03	25.46
145	28	7.43	4.60	2.82	24.56

DRAINAGE AREA III

(100-YEAR EVENT)

			C
Roof Area:	0	sq.m	1.00
Hard Area:	950	sq.m	1.00
Gravel Area:	0	sq.m	0.875
Soft Area:	300	sq.m	0.25
Total Catchment Area:	1,250	sq.m	0.82

Water Elevation:	87.51	m
Head:	2.59	m
Centroid of ICD Orifice:	84.92	m
Invert of Outlet Pipe of CB/MH-B3:	84.88	m
Orifice Diameter:	75	mm
Orifice Area:	4,418	sq.mm
Discharge Coefficient:	0.23	
Maximum Release Rate:	7.23	L/s

CB/MH	Top Area	Depth	Volume	
CB/MH-B1	476	0.18	28.91	cu.m
CB/MH-B3	69	0.23	5.33	cu.m
		Maximum Volume Stored:	34.24	cu.m
		Maximum Volume Required:	34.24	cu.m

DRAINAGE AREA III (Continued)

(100-YEAR EVENT)

Time (min)	i (mm/hr)	2.78AiC (L/s)	Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	179	50.88	7.23	43.65	26.19
15	143	40.72	7.23	33.49	30.14
20	120	34.18	7.23	26.95	32.34
25	104	29.59	7.23	22.36	33.55
30	92	26.18	7.23	18.95	34.11
35	83	23.53	7.23	16.30	34.24
40	75	21.41	7.23	14.19	34.04
45	69	19.68	7.23	12.45	33.61
50	64	18.22	7.23	11.00	32.99
55	60	16.99	7.23	9.76	32.22
60	56	15.93	7.23	8.70	31.32
65	53	15.00	7.23	7.77	30.32
70	50	14.19	7.23	6.96	29.23
75	47	13.47	7.23	6.24	28.07
80	45	12.82	7.23	5.59	26.84
85	43	12.24	7.23	5.01	25.56
90	41	11.71	7.23	4.49	24.23
95	39	11.24	7.23	4.01	22.85
100	38	10.80	7.23	3.57	21.44
105	36	10.40	7.23	3.17	19.99
110	35	10.03	7.23	2.80	18.50
115	34	9.69	7.23	2.46	16.99
120	33	9.37	7.23	2.15	15.45
125	32	9.08	7.23	1.85	13.89
130	31	8.80	7.23	1.58	12.30
135	30	8.55	7.23	1.32	10.69
140	29	8.31	7.23	1.08	9.07
145	28	8.08	7.23	0.85	7.42

2-YEAR EVENT

DRAINAGE AREA I (Uncontrolled Flow Off Site)

(2-YEAR EVENT)

			C
Roof Area:	0	sq.m	0.90
Hard Area:	75	sq.m	0.90
Gravel Area:	0	sq.m	0.70
Soft Area:	278	sq.m	0.20
Total Catchment Area:	353	sq.m	0.35
Area (A):	353	sq.m	
Time of Concentration:	10	min	
Rainfall Intensity (i):	77	mm/hr	
Runoff Coeficient (C):	0.35		
Flow Rate (2.78AiC):	2.63	L/s	

DRAINAGE AREA II (Roof)

(2-YEAR EVENT)

			C
Total Catchment Area:	942	sq.m	0.90

No. of Roof Drains: 5
Wier Opening: 1/4

Depth at Roof Drains: 94 mm

Maximum Release Rate: 3.83 L/s

Pond Area: 327 sq.m

Maximum Volume Stored: 10.22 cu.m

Maximum Volume Required: 10.22 cu.m

Time (min)	i (mm/hr)	2.78AiC (L/s)	Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	77	18.10	3.83	14.27	8.56
15	62	14.56	3.83	10.72	9.65
20	52	12.26	3.83	8.43	10.11
25	45	10.65	3.83	6.81	10.22
30	40	9.44	3.83	5.60	10.09
35	36	8.50	3.83	4.66	9.79
40	33	7.75	3.83	3.91	9.39
45	30	7.13	3.83	3.29	8.89
50	28	6.61	3.83	2.77	8.32
55	26	6.17	3.83	2.33	7.70
60	25	5.79	3.83	1.95	7.03
65	23	5.46	3.83	1.62	6.33
70	22	5.16	3.83	1.33	5.59
75	21	4.91	3.83	1.07	4.82
80	20	4.67	3.83	0.84	4.03
85	19	4.46	3.83	0.63	3.22
90	18	4.28	3.83	0.44	2.38
95	17	4.10	3.83	0.27	1.54
100	17	3.95	3.83	0.11	0.67
105	16	3.80	3.80	0.00	0.00
110	16	3.67	3.67	0.00	0.00
115	15	3.55	3.55	0.00	0.00
120	15	3.43	3.43	0.00	0.00
125	14	3.33	3.33	0.00	0.00
130	14	3.23	3.23	0.00	0.00
135	13	3.13	3.13	0.00	0.00
140	13	3.05	3.05	0.00	0.00
145	13	2.96	2.96	0.00	0.00

DRAINAGE AREA III

(2-YEAR EVENT)

			C
Roof Area:	0	sq.m	0.90
Hard Area:	950	sq.m	0.90
Gravel Area:	0	sq.m	0.70
Soft Area:	300	sq.m	0.20
Total Catchment Area:	1,250	sq.m	0.73

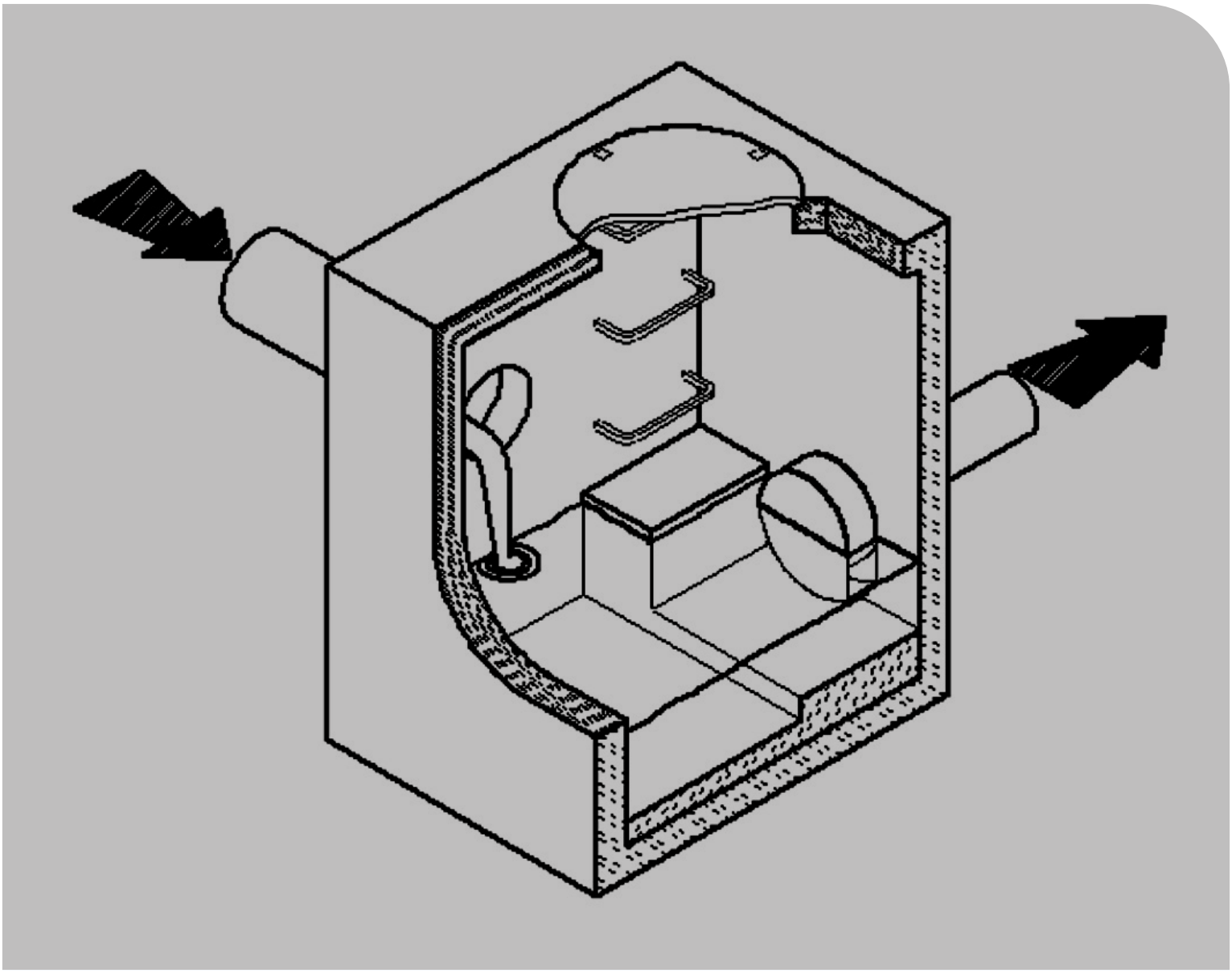
Water Elevation:	87.44	m
Head:	2.52	m
Centroid of ICD Orifice:	84.92	m
Invert of Outlet Pipe of CB/MH-B3:	84.88	m
Orifice Diameter:	75	mm
Orifice Area:	4,418	sq.mm
Discharge Coefficient:	0.23	
Maximum Release Rate:	7.12	L/s

CB/MH	Top Area	Depth	Volume	
CB/MH-B1	168	0.11	6.05	cu.m
CB/MH-B3	32	0.16	1.68	cu.m
		Maximum Volume Stored:	7.73	cu.m
		Maximum Volume Required:	7.73	cu.m

DRAINAGE AREA III (Continued)

(2-YEAR EVENT)

Time (min)	i (mm/hr)	2.78AiC (L/s)	Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	77	19.54	7.12	12.41	7.45
15	62	15.71	7.12	8.59	7.73
20	52	13.24	7.12	6.11	7.33
25	45	11.49	7.12	4.37	6.55
30	40	10.19	7.12	3.06	5.51
35	36	9.17	7.12	2.05	4.30
40	33	8.36	7.12	1.24	2.97
45	30	7.69	7.12	0.57	1.53
50	28	7.13	7.12	0.01	0.03
55	26	6.66	6.66	0.00	0.00
60	25	6.25	6.25	0.00	0.00
65	23	5.89	5.89	0.00	0.00
70	22	5.57	5.57	0.00	0.00
75	21	5.29	5.29	0.00	0.00
80	20	5.04	5.04	0.00	0.00
85	19	4.82	4.82	0.00	0.00
90	18	4.62	4.62	0.00	0.00
95	17	4.43	4.43	0.00	0.00
100	17	4.26	4.26	0.00	0.00
105	16	4.10	4.10	0.00	0.00
110	16	3.96	3.96	0.00	0.00
115	15	3.83	3.83	0.00	0.00
120	15	3.70	3.70	0.00	0.00
125	14	3.59	3.59	0.00	0.00
130	14	3.48	3.48	0.00	0.00
135	13	3.38	3.38	0.00	0.00
140	13	3.29	3.29	0.00	0.00
145	13	3.20	3.20	0.00	0.00



VEOLIA

HYDROVEX® VHV/SVHV
Vertical Vortex Flow Regulator
CSO, SSO, Stormwater Management

WATER TECHNOLOGIES

HYDROVEX® VHV / SVHV Vertical Vortex Flow Regulator

Application

One of the major problems of urban wet weather flow management is the runoff generated by heavy rainfall. During a storm event, uncontrolled flows may overload the drainage system and cause flooding. Wear and deterioration on the network are increased dramatically as a result of increased flow velocities. In a combined sewer system, the wastewater treatment plant will experience a significant increase in flows during storms, thereby losing its treatment efficiency. A simple means of managing excessive storm water runoff is to control the flows at their point of origin, the manhole.

The HYDROVEX® VHV / SVHV line of vortex flow regulators is ideal for point source control of low to medium stormwater flows in manholes, catch basins and other retention structures. The HYDROVEX® VHV / SVHV design is based on the fluid mechanics principle of the forced vortex. The discharge is controlled by an air-filled vortex which reduces the effective water passage area without physically reducing orifice size. This effect grants precise flow regulation without the use of moving parts or electricity, and allows for larger inlet and outlet openings compared to the basic orifice. Although the concept is quite simple, many years of research and testing have been invested to optimize the performance of our vortex technology.

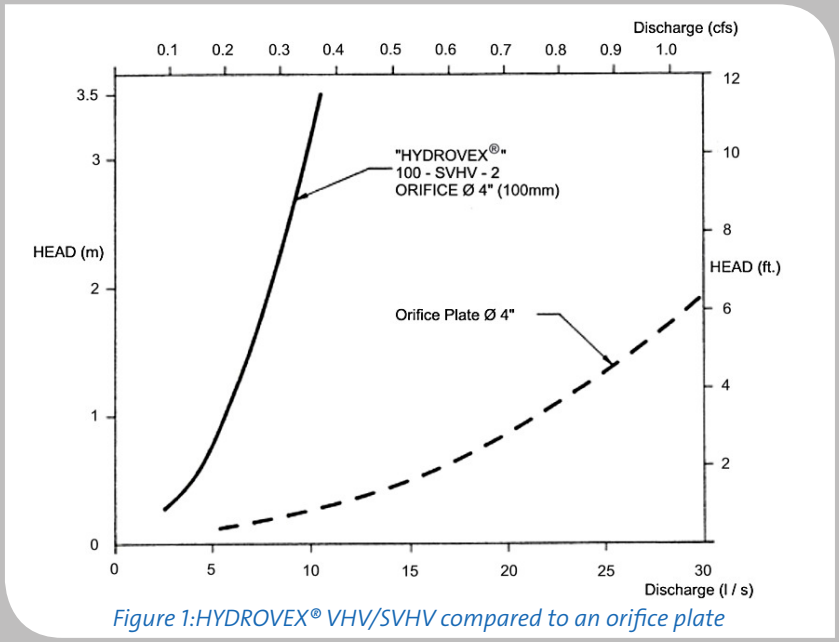


Figure 1:HYDROVEX® VHV/SVHV compared to an orifice plate

Vortex valves have openings typically 4 to 6 times larger than an orifice plate for the same design. Larger opening sizes decrease the chance of blockage caused by sediments and debris found in storm water flows. Figure 1 shows the discharge curve of a vortex regulator compared to an equally sized orifice plate. For an identical opening size, the flow is approximately four times smaller than the orifice plate for the same upstream water pressure.

Advantages

- Large inlet/outlet openings reduce the chance of clogging
- Openings typically 4-6 times larger than the basic orifice (Figure 1)
- Outlet orifice always equal or larger than inlet
- Ideal for precise control of low to medium stormwater flow applications
- Submerged inlet for floatables control
- No moving parts or electricity required
- Durable and robust stainless steel construction
- Minimal maintenance
- Easy to install

Selection

Selecting a VHV/SVHV regulator is easily achieved using Figure 3. Each selection is made using the maximum allowable flow rate and the maximum allowable upstream water pressure (head). The area in which the design point falls will designate the required model. The maximum design head is defined as the difference between the maximum upstream water level and the invert of the outlet pipe. All selections should be verified by a John Meunier Inc. representative prior to fabrication.

Design example:

- Maximum discharge: 6 L/s (0.2 cfs)*
- Maximum design head 2m (6.56 ft.)**
- Using Figure 3, model 75 VHV-1 is selected

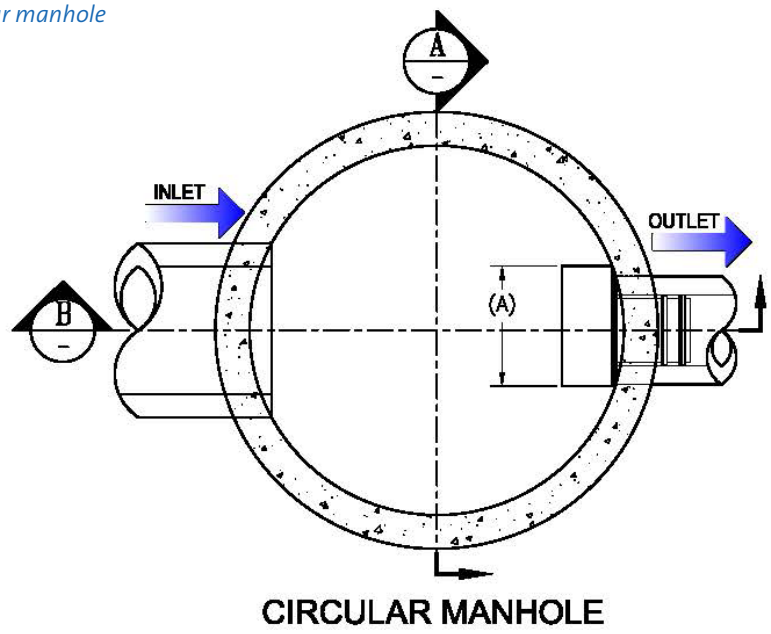
**The selection chart provided assumes free flowing downstream conditions. Should the outlet pipe be >80% full at design flow, a larger pipe diameter should be used. In the above example, the minimum outlet pipe diameter and slope would be 150mm (6in), 0.3%.*

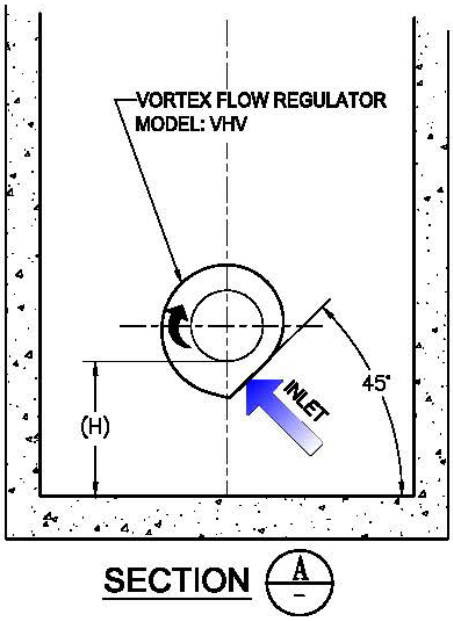
***The design head is defined as the difference between the maximum upstream water level and the outlet pipe invert.*

The HYDROVEX® VHV / SVHV vortex flow regulators can be installed in circular or square manholes. The table below lists the minimum dimensions and clearances required for each regulator model. It is imperative to respect the minimum clearances shown to ensure ease of installation and proper functioning of the regulator.

Model	Regulator Diameter A (mm) [in]	CIRCULAR Minimum Manhole Diameter B (mm) [in]	SQUARE Minimum Chamber Width B (mm) [in]	Minimum Outlet Pipe Diameter C (mm) [in]	Minimum Clearance H (mm) [in]
25 SVHV-1	125 [5]	600 [24]	600 [24]	150 [6]	150 [6]
32 SVHV-1	150 [6]	600 [24]	600 [24]	150 [6]	150 [6]
40 SVHV-1	200 [8]	600 [24]	600 [24]	150 [6]	150 [6]
50 VHV-1	150 [6]	600 [24]	600 [24]	150 [6]	150 [6]
75 VHV-1	250 [10]	600 [24]	600 [24]	150 [6]	150 [6]
100 VHV-1	325 [13]	900 [36]	600 [24]	150 [6]	200 [8]
125 VHV-2	275 [11]	900 [36]	600 [24]	150 [6]	200 [8]
150 VHV-2	350 [14]	900 [36]	600 [24]	150 [6]	225 [9]
200 VHV-2	450 [18]	1200 [48]	900 [36]	200 [8]	300 [12]
250 VHV-2	575 [23]	1200 [48]	900 [36]	250 [10]	350 [14]
300 VHV-2	675 [27]	1600 [64]	1200 [48]	250 [10]	400 [16]
350 VHV-2	800 [32]	1800 [72]	1200 [48]	300 [12]	500 [20]

Figure 2a: Minimum dimensions and clearances, circular manhole





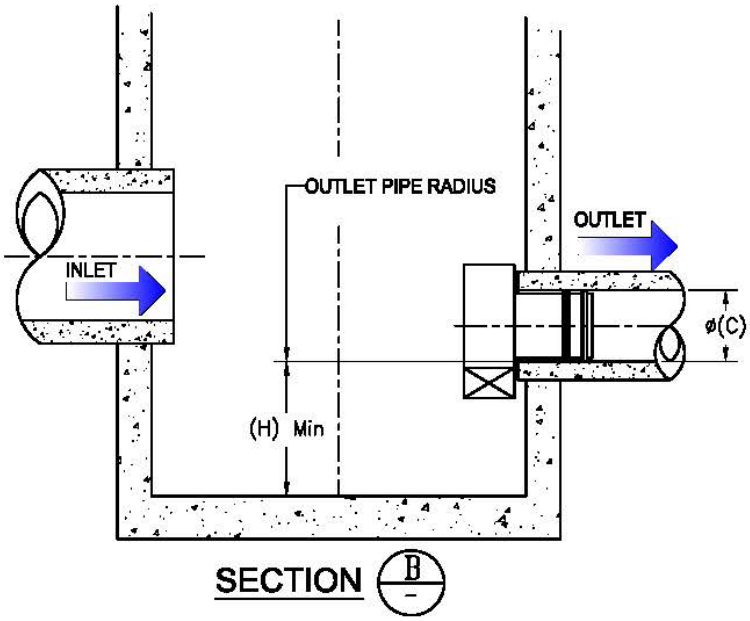
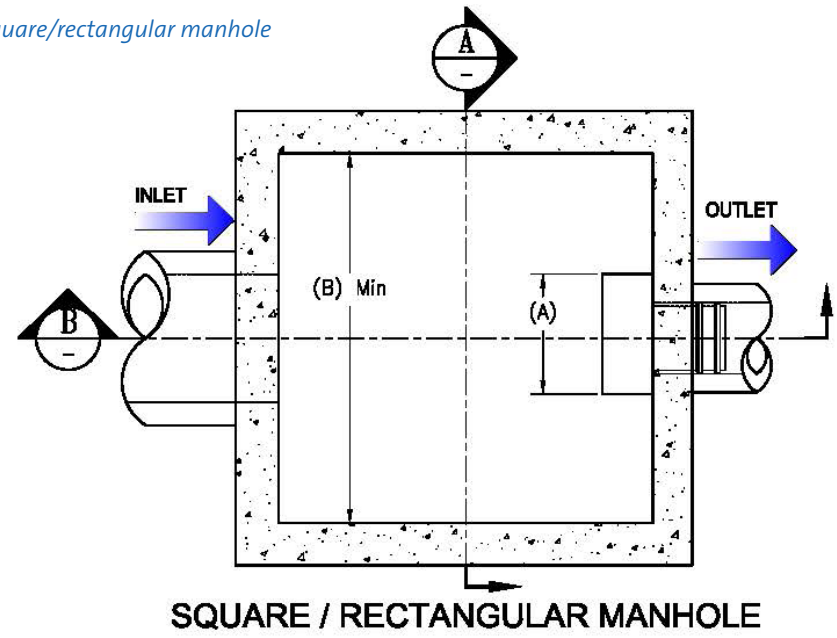
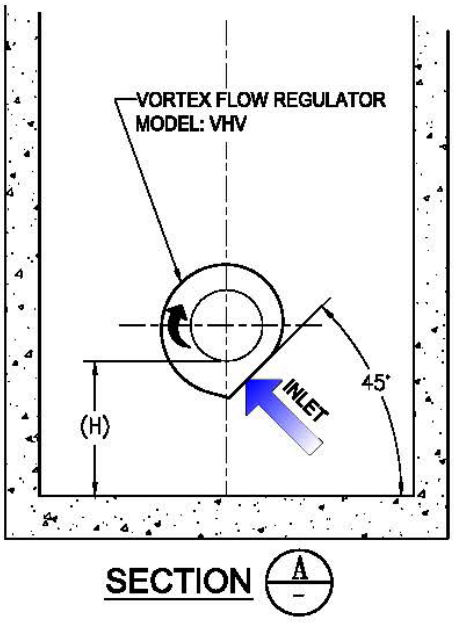
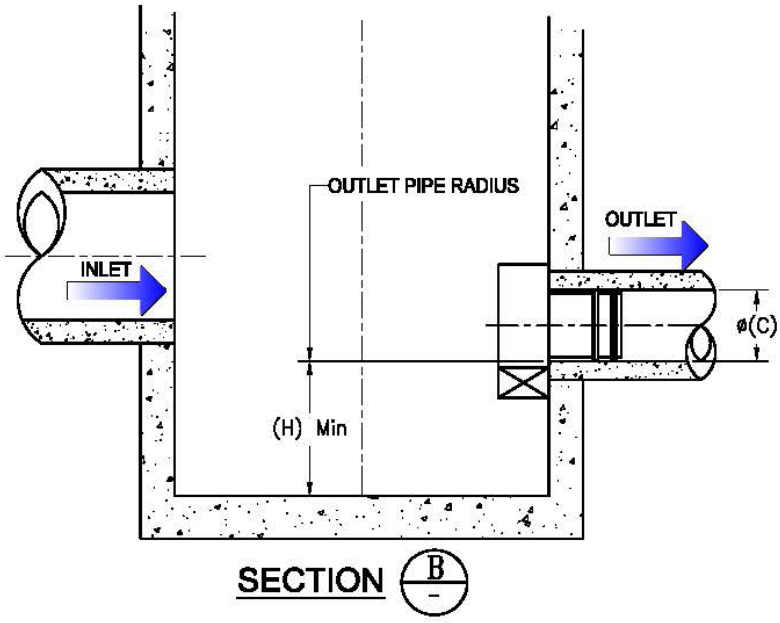


Figure 2b: Minimum dimensions and clearances, square/rectangular manhole







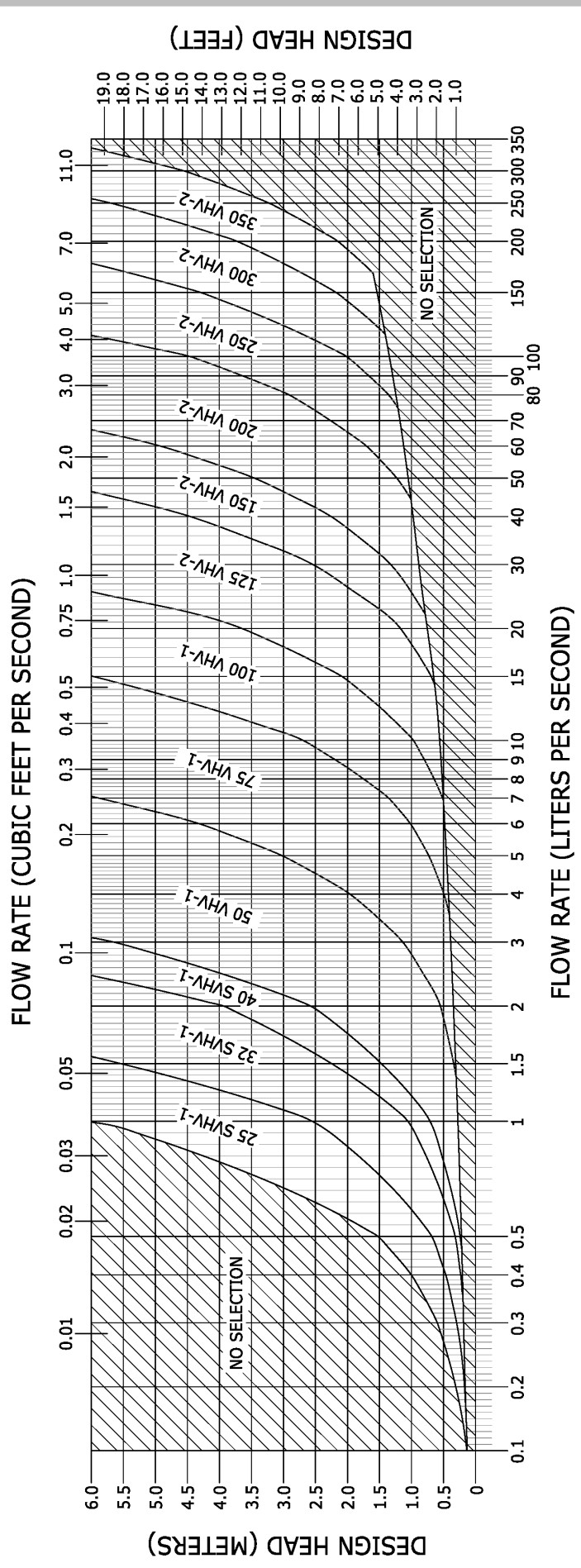


Figure 3 : HYDROVEX® VHV/SVHV Selection Chart

Options

A variety of options are available for the HYDROVEX® VHV / SVHV vortex flow regulators, including:

- Type O: extended inlet for odor control
- FV-VHV: sliding plate mounted
- Gooseneck: for shallow or no sump installations
- Vent: for low slope applications

DT: roof drainage applications

Specifications

In order to specify a HYDROVEX® VHV/SVHV flow regulator, the following parameters must be clearly indicated:

- Model number, ex: 75-VHV-1
- Outlet pipe diameter and type, ex: ø 150mm [6”], SDR 35
- Design discharge rate, ex: 6.0 L/s [0.21 CFS]
- Design head, ex: 2.0 m [6.56 ft] *
- Manhole diameter, ex: ø 900 mm [ø 36”]
- Minimum clearance “H”, ex: 150 mm [6 in]
- Construction material type (304 stainless steel standard)

**The design head is defined as the difference between the maximum upstream water level and the outlet pipe invert.*

Installation

The installation of a HYDROVEX® VHV/SVHV flow regulator can be accomplished quickly and does not require any special tools. The sleeve of the vortex flow regulator is simply inserted into the outlet pipe of the manhole and the unit is then secured to the concrete wall using the supplied anchor.

Maintenance

HYDROVEX® regulators are designed to minimize maintenance requirements. We recommend a periodic visual inspection in order to ensure that the unit is free of debris. The manhole sump beneath the unit should be inspected and cleaned with a vacuum truck periodically to remove accumulated sediments.

Guaranty

The HYDROVEX® line of VHV / SVHV regulators are guaranteed against both design and manufacturing defects for a period of 5 years after sale. The unit will be modified or replaced should it be found to be defective within the guarantee period.

Resourcing the world

Veolia Water Technologies

4105 Sartelon • Saint-Laurent, Quebec • H4S 2B3 Canada

T.: 514-334-7230 • F.: 514-334-5070 • Sales Direct Line: 1-855-564-3747

cso@veolia.com • www.veoliawatertechnologies.ca

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

Echelon Environmental

55 Albert Street, Suite #200 | Markham, ON, L3P 2T4

www.echelonenvironmental.ca info@echelonenvironmental.ca 905-948-0000

Project Name:	1770 Heatherington Rd.	**Engineer:**	**D. B. Gray Engineering**
Location:	Ottawa, ON	**Contact:**	Ryan Faith
OGS ID:	Lot 13	**Report Date:**	5-Aug-26

Area:	0.219	ha	**Rainfall Station #**	215	
C Value:	0.80		**Particle Size Distribution**	FINE	
CDS Model:	PMSU2015-4		**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%	0.2	0.2	1.2	96.6	8.8
1.0	10.6%	19.8%	0.5	0.5	2.4	96.3	10.2
1.5	9.9%	29.7%	0.7	0.7	3.6	96.1	9.5
2.0	8.4%	38.1%	1.0	1.0	4.8	95.8	8.0
2.5	7.7%	45.8%	1.2	1.2	6.1	95.6	7.3
3.0	5.9%	51.7%	1.5	1.5	7.3	95.3	5.7
3.5	4.4%	56.1%	1.7	1.7	8.5	95.1	4.1
4.0	4.7%	60.7%	2.0	2.0	9.7	94.8	4.4
4.5	3.3%	64.0%	2.2	2.2	10.9	94.6	3.1
5.0	3.0%	67.1%	2.4	2.4	12.1	94.3	2.9
6.0	5.4%	72.4%	2.9	2.9	14.5	93.8	5.1
7.0	4.4%	76.8%	3.4	3.4	17.0	93.3	4.1
8.0	3.5%	80.3%	3.9	3.9	19.4	92.8	3.3
9.0	2.8%	83.2%	4.4	4.4	21.8	92.4	2.6
10.0	2.2%	85.3%	4.9	4.9	24.2	91.9	2.0
15.0	7.0%	92.3%	7.3	7.3	36.4	89.4	6.2
20.0	4.5%	96.9%	9.8	9.8	48.5	86.9	4.0
25.0	1.4%	98.3%	12.2	12.2	60.6	84.4	1.2
30.0	0.7%	99.0%	14.6	14.6	72.7	81.9	0.6
35.0	0.5%	99.5%	17.1	17.1	84.9	79.5	0.4
40.0	0.5%	100.0%	19.5	19.5	97.0	77.0	0.4
45.0	0.0%	100.0%	21.9	20.1	100.0	70.0	0.0
50.0	0.0%	100.0%	24.4	20.1	100.0	63.0	0.0

Predicted Net Annual TSS Removal Efficiency = 94%

Predicted Annual Rainfall Treated = 99%

1 - Based on 42 years of hourly rainfall data from Canadian Station 6105976, Ottawa ON

2 - CDS Efficiency based on testing conducted at the University of Central Florida

3 - CDS design flowrate and scaling based on standard manufacturer model & product specifications

CDS PMSU 2015-4-C DESIGN NOTES

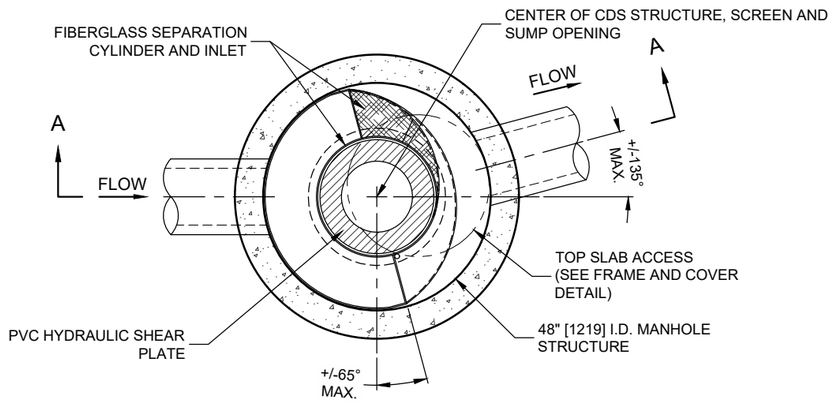
THE STANDARD CDS PMSU 2015-4-C CONFIGURATION IS SHOWN.

ANTI-BUOYANCY SLAB MAY BE INCLUDED (NOT SHOWN).

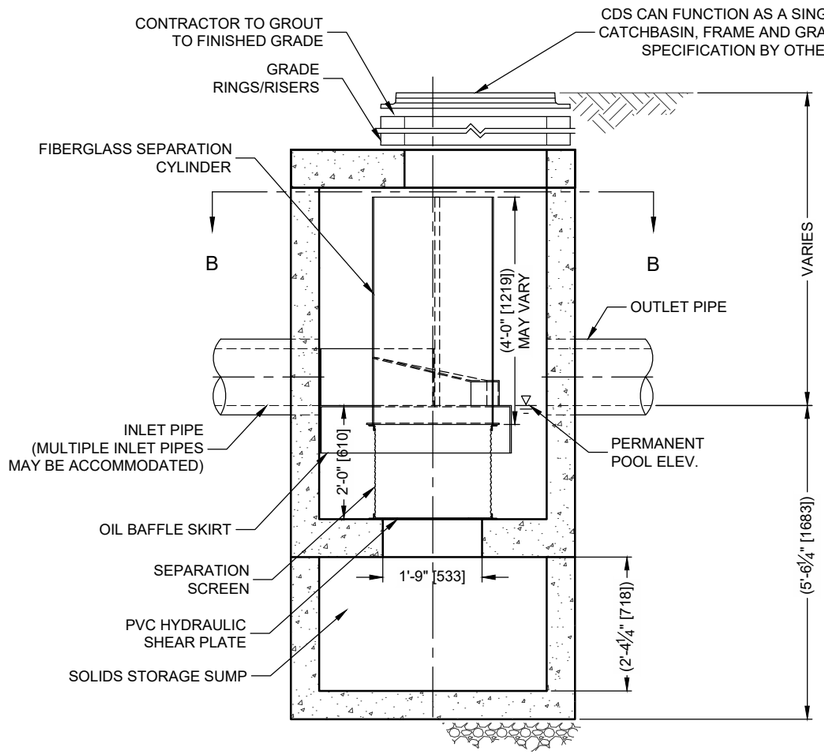
SUMP DEPTH SHOWN IS TYPICAL, CAN BE EXTENDED AS REQUIRED.

HYDRAULIC CHARACTERISTICS VARY BASED ON PIPE SIZE, MATERIAL, AND CDS UNIT SELECTION. FOR CUSTOM HYDRAULIC ANALYSIS PLEASE CONTACT ECHELON ENVIRONMENTAL.

FOR SITE SPECIFIC DRAWINGS PLEASE CONTACT ECHELON ENVIRONMENTAL.



PLAN VIEW B-B
N.T.S.



ELEVATION A-A
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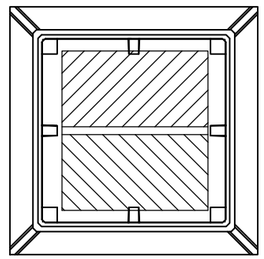
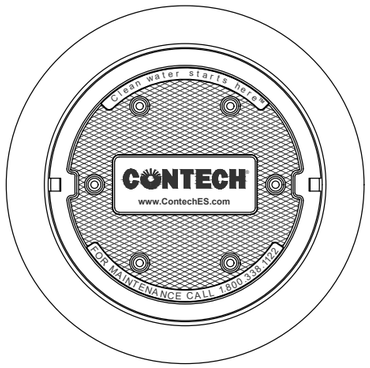


FRAME AND GRATE
(DIMENSIONS VARIES)
N.T.S.



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET HS20 (AASHTO M 306) AND BE CAST WITH THE CONTECH LOGO.
6. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

ECHELON ENVIRONMENTAL
55 ALBERT STREET, MARKHAM ON L3P2T4
CONTACT: INFO@ECHELONENVIRONMENTAL.CA
905-948-0000

CONTECH ENGINEERED SOLUTIONS LLC

CDS PMSU 2015-4-C
ONLINE CDS
STANDARD DETAIL

DATE: 13-FEB-25
REVISION:1
DRAWN BY: PG

D.B. Gray Engineering Inc.

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

700 Long Point Circle
Ottawa, Ontario K1T 4E9

613-425-8044
d.gray@dbgrayengineering.com

STORM SEWER CALCULATIONS

Rational Method

2-YEAR EVENT

Project: 1750 Heatherington Road
4-Storey Apartment Building 13
Ottawa, Ontario

Date: August 17, 2026

Manning's Roughness Coefficient: 0.013

Location		Individual					Cumulative				Sewer Data							
From	To	Roof C = 0.90 (ha)	Hard C = 0.90 (ha)	Gravel C = 0.80 (ha)	Soft C = 0.20 (ha)	2.78AC	2.78AC	Time (min)	Rainfall Intensity (mm/hr)	Q Flow Rate (L/s)	Length (m)	Nominal Diameter (mm)	Actual Diameter (mm)	Slope (%)	Velocity (m/s)	Q_{Full} Capacity (L/s)	Time (min)	Q / Q_{Full}
CB/MH-B1	CB/MH-B2		0.0800		0.0100	0.2057	0.2057	10.00	77	15.80	24.2	250	250	0.432	0.80	39.09	0.51	40%
CB/MH-B2	CB/MH-B3		0.0075			0.0188	0.2245	10.51	75	16.82	19	250	250	0.432	0.80	39.09	0.40	43%
Roof Drains	CB/MH-B3	0.0942				0.2357	0.2357	10.00	77	18.10	8.5	250	250	2	1.71	84.10	0.08	22%
							Flow through flow control roof drains:			3.83	8.5	250	250	2	1.71	84.10	0.08	5%
CB/MH-B3	MH-B4		0.0075		0.0200	0.0299	0.4901	10.90	73	36.02	28.2	250	250	2.4	1.88	92.13	0.25	39%
								Restricted upstream flow:		10.95	28.2	250	250	2.4	1.88	92.13	0.25	12%
MH-B4	ST MH-B					0.0000	0.4901	11.15	73	35.60	10	250	250	0.432	0.80	39.09	0.21	91%
								Restricted upstream flow:		10.95	10	250	250	0.432	0.80	39.09	0.21	28%
							Existing 675 mm Heatherington Road Municipal Storm Sewer:					675	685	0.3	1.30	478.82		