# STORMWATER MANAGEMENT REPORT

## 2345 - 2351 Mer Bleue Road, Ottawa

Prepared by

**EAU Structural & Environmental Services**

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Revision 0
December, 2021

# 1 Project Description:

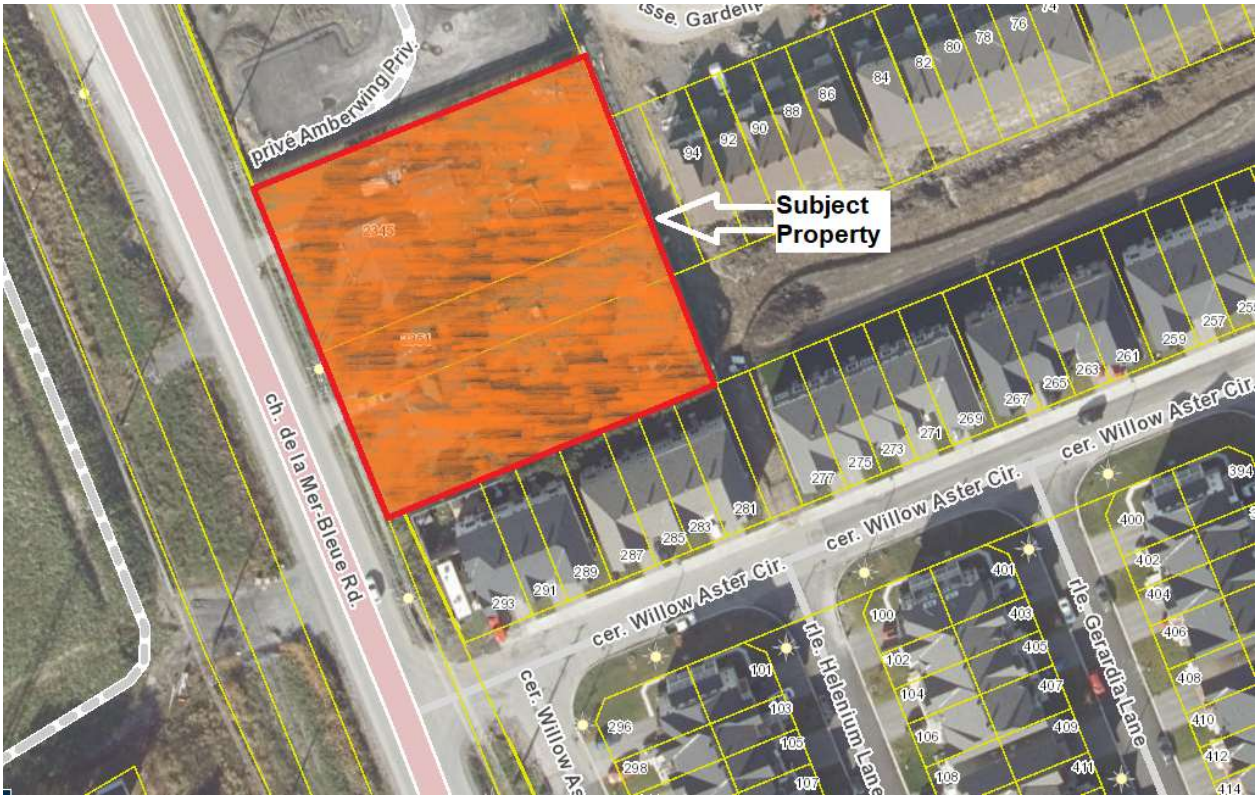
## 1.1. Introduction:

Property at 2345 - 2351 Mer Bleue Road is located close to intersection of Mer Bleue Road and Willow Aster Circle. Total of 2 lots merges 0.37 hectare in over-all.
Based on architectural drawings, two low rise apartment buildings will be constructed on the merged lots. Currently, two lots contain existing one story buildings built in circa 1970. Property at 2345 - 2351 Mer Bleue is currently DR Zoning. For the purpose of low high rise building which is the intent of this development application, change of zoning might be required.

This report will address the servicing (water, storm, sanitary) requirements associated with the proposed development located 2345 - 2351 Mer Bleue within the City of Ottawa. This report is prepared in response to the request from City of Ottawa Planning department.

## 1.2. Existing Conditions:

The property measure a total area of approximately 0.37 hectare. The site is fronting 406mm diameter PVC water main. There is no sanitary or storm main fronting this property. A 200mm diameter PVC sanitary main flowing on the rear of the property on Gardenpost Terrace. This sanitary main has been installed for a development by Minto Corporation on the west of 2345 - 2351 Mer Bleue . There is also a 1050mm diameter concrete storm main running adjacent north of 2345 - 2351 Mer Bleue.



### 1.3. Guidelines, Previous Studies, And Reports

The following studies were utilized in the preparation of this report:

- Ottawa Sewer Design Guidelines,
  City of Ottawa, SDG002, October 2012.
  (City Standards)
  - Technical Bulletin ISTB-2018-01
    City of Ottawa, March 21, 2018.
    (ISTB-2018-01)
  - Technical Bulletin ISTB-2019
    Technical Bulletin ISTB-2020
    City of Ottawa,

- Ottawa Design Guidelines Water Distribution
  City of Ottawa, July 2010.
  (Water Supply Guidelines)
  - Technical Bulletin ISD-2010-2
    City of Ottawa, December 15, 2010.
    (ISD-2010-2)
  - Technical Bulletin ISDTB-2014-02
    City of Ottawa, May 27, 2014.
    (ISDTB-2014-02)
  - Technical Bulletin ISTB-2018-02
    City of Ottawa, March 21, 2018.
    (ISTB-2018-02)
  - Technical Bulletin ISTB-2019
    Technical Bulletin ISTB-2020
    City of Ottawa,

- Design Guidelines for Sewage Works,
  Ministry of the Environment, 2008.
  (MOE Design Guidelines)

- Stormwater Planning and Design Manual,
  Ministry of the Environment, March 2003.
  (SWMP Design Manual)

- Minto Communities Inc.
  Stormwater Management and Site Servicing Design Brief
  Avalon Encore – Stage 6
  March 16, 2018 Revision 1

- Geotechnical Investigation

# 1. Stormwater Management

## Pre-development Stormwater Conditions:

Stormwater runoff from the subject property is tributary to the City of Ottawa sewer system and is located within the South Nation Conservation Authority. As such, approvals for proposed development within this area are under the approval authority of the City of Ottawa and the South Nation Conservation Authority for quality control.

The site is currently occupied by 2 existing dwellings with grass and driveway asphalt. Pre-development conditions will be considered as directed by the City of Ottawa Infrastructure Department for runoff coefficient of 0.5 and time of concentration of 10 min and store up to the 100 years storm event as per the City of Ottawa Sewer Design Guideline.
The area for runoff coefficients used for either pre-development or post-development conditions were based on actual areas measured in CAD. Runoff coefficients for surfaces such as roofs, were taken as 0.90, for permeable landscape were taken as 0.50. Refer to appendixes for detail

It was assumed that the existing development contained no stormwater management controls for flow attenuation. The estimated combined pre-development peak flows for the 5 storm events are calculated below:

## Allowable Release Rate:

- Time of Concentration = 10 minutes,
- Drainage Area = 0.37 ha

$$Q_{allow} = 2.78\ C\ I\ A$$

Where:

| | | |
|---|---|---|
| $Q_{allow}$ | = | Allowable release rate to storm sewer (L/sec) |
| C | = | Runoff Coefficient (dimensionless) =0.30 |
| I | = | Average Rainfall Intensity for return period (mm/hr) |
| | = | $998.071 / (TC + 6.053)^{0.814}$ =76.8 mm/hr (5-year) |
| TC | = | Time of concentration (minutes) =10 min |
| A | = | Drainage Area (hectares) = 0.37 |

**$Q_{Allow}$ = 23.7 L/sec** (5-year)

Therefore the allowable release rate from the site is 23.7 L/sec for 2-year storm event.

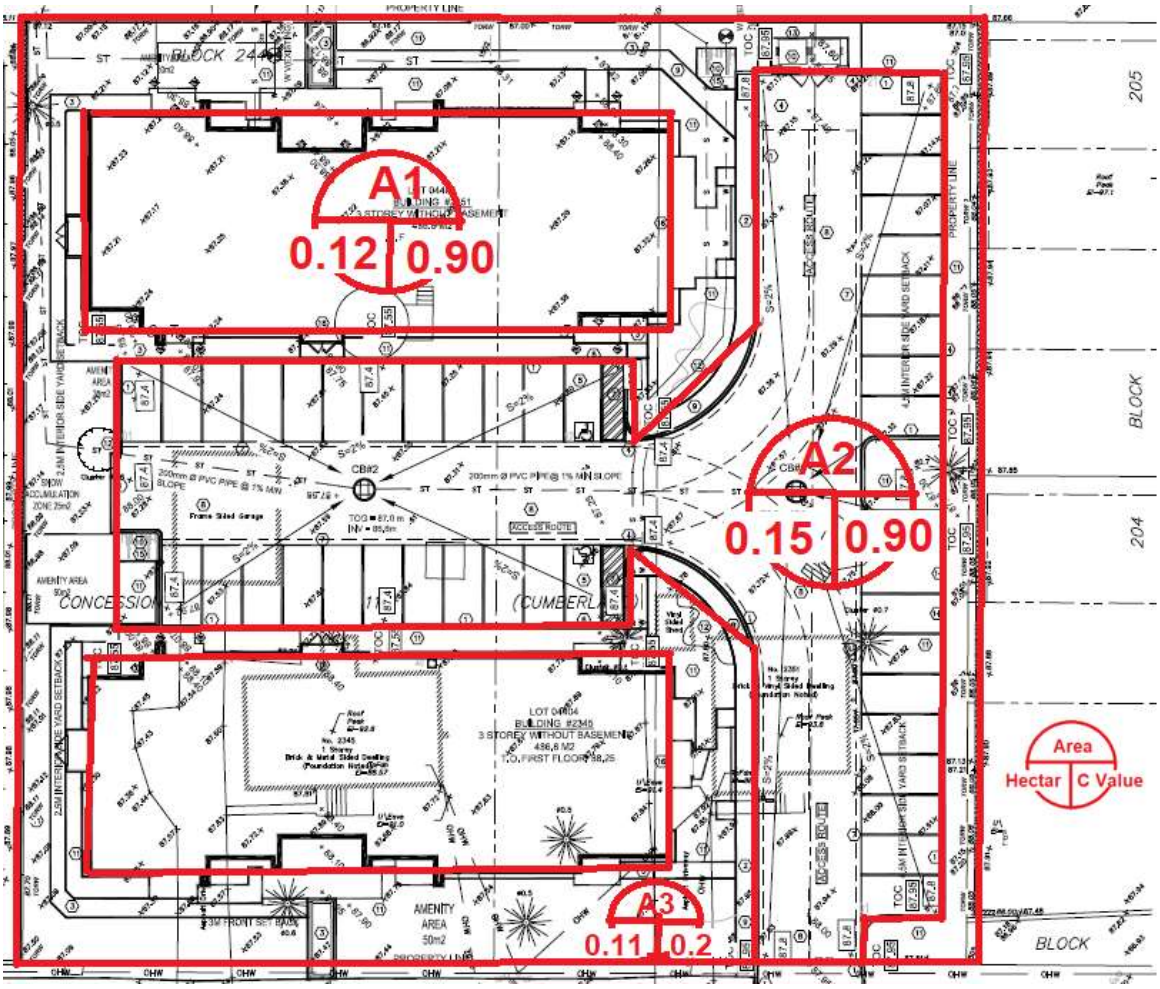
**Post-development Stormwater Management Target:**

Stormwater management requirements for the proposed development were reviewed with the City of Ottawa, generating the following requirements for the proposed development:

- Meet a total allowable release rate based on a Rational Method Coefficient of 0.30, employing the City of Ottawa IDF parameters for a 2-year storm with a time of concentration equal to or greater than 10 minutes
- Attenuate all storms up to and including the City of Ottawa 100-year design event on site. Post-development including 100-year storm event shall be controlled to the pre-development 2-year storm event.
- During all construction activities, erosion and sediment shall be controlled by techniques outlined in section 3 this report

**Storm Drain Area :**

The post development storm water management design, for this site has been divided to 3 general areas; Grass area, Roof and Parking area:



| C(max equiv) | I (mm/h) | Area (ha) |
|---|---|---|
| 0.3 | 76.8 | 0.370 |

Q(allow) 19.00 l/s

| I (mm/h) | I (100yr) mm/h |
|---|---|
| 76.8 | 179 |

| Area ID | Area (ha) | C (5yr) | A x C | C (100yr) (Max of 1.0) | A x C | Type of Flow (Controlled/Uncontrolled) |
|---|---|---|---|---|---|---|
| A1: Proposed Building | 0.110 | 0.9 | 0.10 | 1.00 | 0.11 | Controlled |
| A2: Landscape area | 0.150 | 0.9 | 0.14 | 1.00 | 0.15 | Controlled |
| A3: Grass area | 0.110 | 0.2 | 0.02 | 0.25 | 0.03 | Uncontrolled sheet drain |
| Total Site Area (ha) | 0.37 | --- | 0.26 | --- | 0.29 | Total |

C(avg) 5-year = 0.69
C(avg) 100-year = 0.78

**Post-development Stormwater Management:**

Post development storm water management design for this site includes 3 general areas; Grass area, Roof area and Parking Lot area.

- Grass area will sheet drain as per natural drainage pattern. Pre and post runoff for grass area remain the same.
- Roof area: runoff from the roofs will be discharged to the parking lot area through downspout as shown on the grading and drainage plan.
- Permeable parking lot area: Storm runoff during 2yrs and 100yrs storm event will be stored on the parking area. In order to ensure that the allowable release rate to the storm sewers is not exceeded, ICD or drain restrictors will be installed to limit the discharge rate at which storm runoff is released to the City storm system.

The extend and depth of ponding, resulting from the 100-year storm was determined using the cone formula equation; V=1/3 x A x H , A and H are area and height of pond, respectively. Detail of calculations can be found in appendixes. Below is the summary of our calculation:

**SUMMARY OF STORMWATER MANAGEMENT**

- Pre-development flow rate; 23.7 L/sec
- Grass area will sheet drain as per pre-development natural drainage patter. Uncontrolled release rate of 4.7 L/Sec is considered for grass area
- Allowable Release Rate = 23.7 L/s – 4.7 L/s = 19.0 L/s

- Based on the calculations, the volume associated to 100yr storm event that shall be retained at the site is 98.70 $m^3$. Please refer to appendixes for calculation details.
- Using cone formula, and considering maximum allowed ponding height of 300mm, the amount of surface storage on parking area is calculated as 150 $m^3$.
- Therefore, enough storage is provided on site.

Please refer to the grading plan for more information and location of the ICD. A Hydrovax flow restrictor (100VHV-1) has been selected to limit the outflow rate to 19.0 L/S. The hydraulic head during the 100 year storm event is estimated at 1.8m.

## 2. Foundation/Footing Drain

Foundation drain is independently connected to storm main on Stewart Street. Please refer to Grading and Drainage plan.

## 3. Erosion and Sediment Control

Following methods will be unutilized to control erosion and sediment:

- Silt fence will be installed around the perimeter of the site and will be cleaned and maintained throughout construction. Silt fence will remain in place until the working areas have been stabilized and re-vegetated.
- Catch basins will have SILTSACKs or an approved equivalent installed under the grate during construction to protect from silt entering the storm sewer system.
- A mud mat will be installed at the construction access in order to prevent mud tracking onto adjacent roads.
- Erosion and sediment controls must be in place during construction. The following recommendations to the contractor will be included in contract documents:
    - Limit extent of exposed soils at any given time;
    - Re-vegetate exposed areas as soon as possible;
    - Minimize the area to be cleared and grubbed;
    - Protect exposed slopes with plastic or synthetic mulches;
    - Install silt fence to prevent sediment from entering existing ditches;
    - No refueling or cleaning of equipment near existing watercourses;
    - Provide sediment traps and basins during dewatering;
    - Install filter cloth between catch basins and frames;

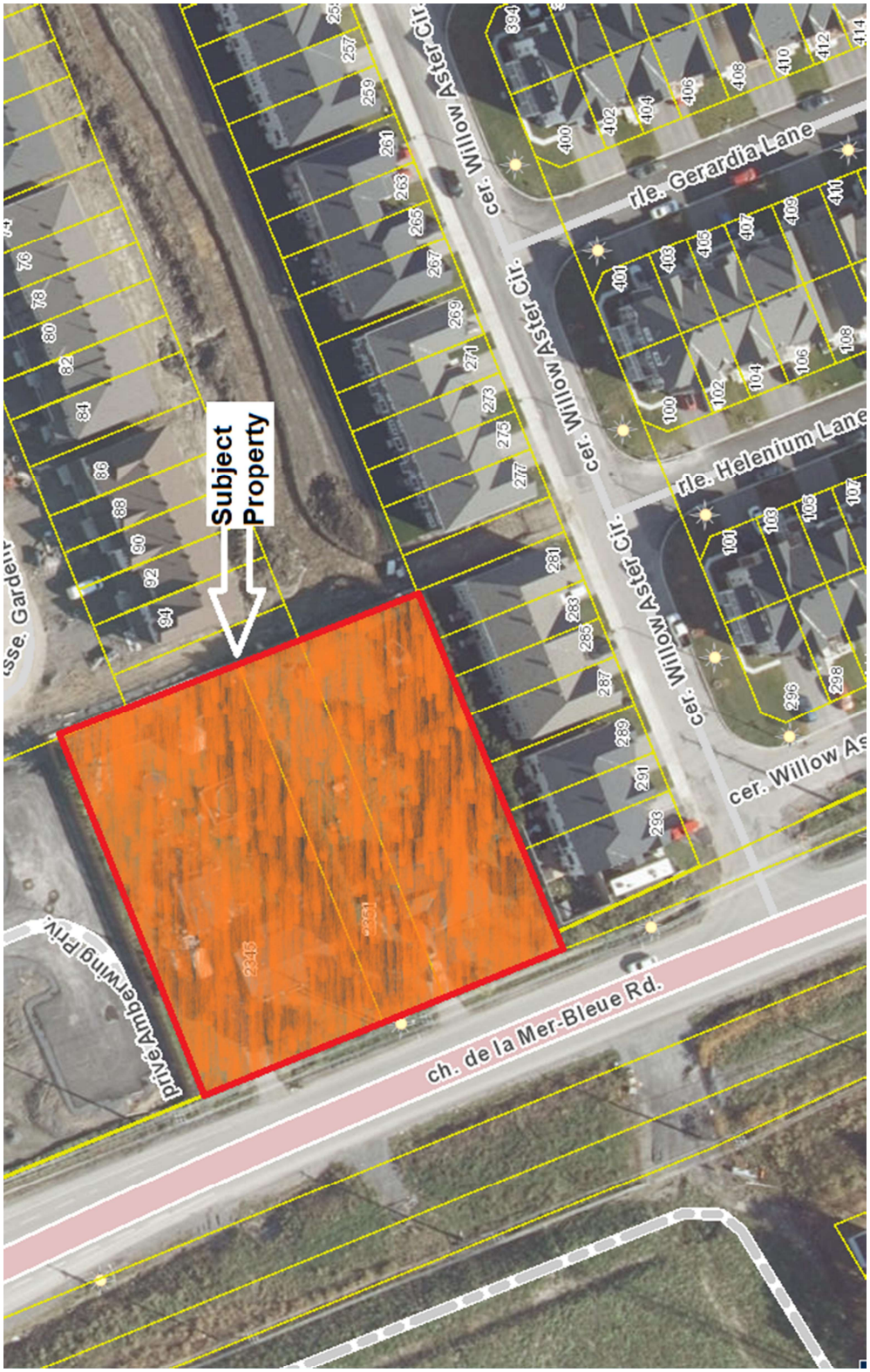
  - Plan construction at proper time to avoid flooding;
  - Establish material stockpiles away from watercourses, so that barriers and filters may be installed.
- The contractor will, at every rainfall, complete inspections and guarantee proper performance. The inspection is to include:
  - Verification that water is not flowing under silt barriers;
  - Clean and change filter cloth at catch basins.
- Construction and maintenance requirements for erosion and sediment controls to comply with Ontario Provincial Standard Specification OPSS 577, and City of Ottawa specifications.
- A visual inspection shall be completed daily on sediment control barriers and any damage repaired immediately. Care will be taken to prevent damage during construction operations.

Should you have any questions or comments, please feel free to contact undersigned.


Yours truly,
Derrick R. Clark, P. Eng.

# APPENDIX A:

## GeoOttawa Map


Subject Property
cer. Willow Aster Cir.
rle. Gerardia Lane
rle. Helenium Lane
ch. de la Mer-Bleue Rd.
privé Ambermoor Priv.

# APPENDIX C:

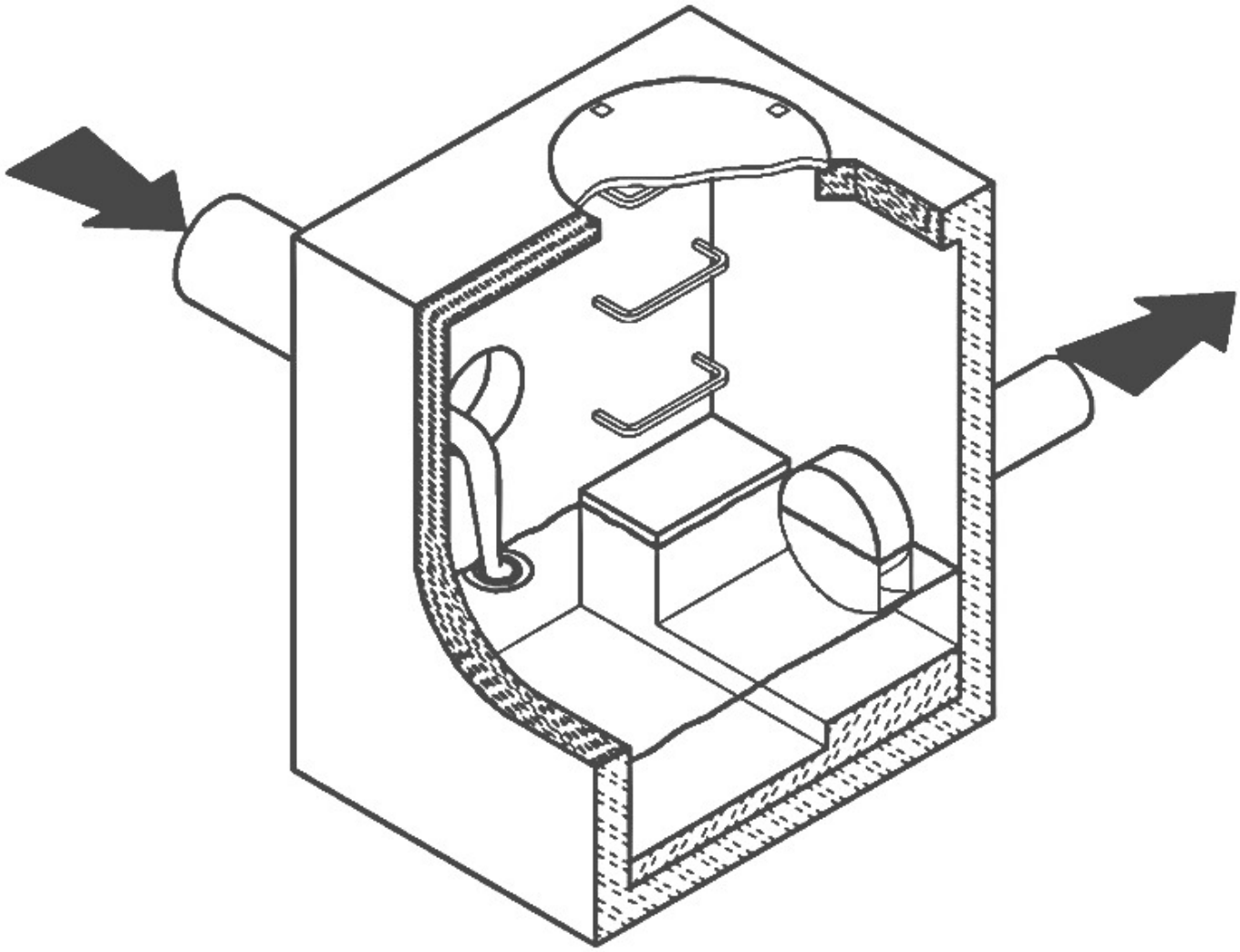
## Engineering Data Sheet

## & Drawings

CSO/STORMWATER MANAGEMENT

# HYDROVEX® VHV / SVHV

## Vertical Vortex Flow Regulator



JOHN MEUNIER

## APPLICATIONS

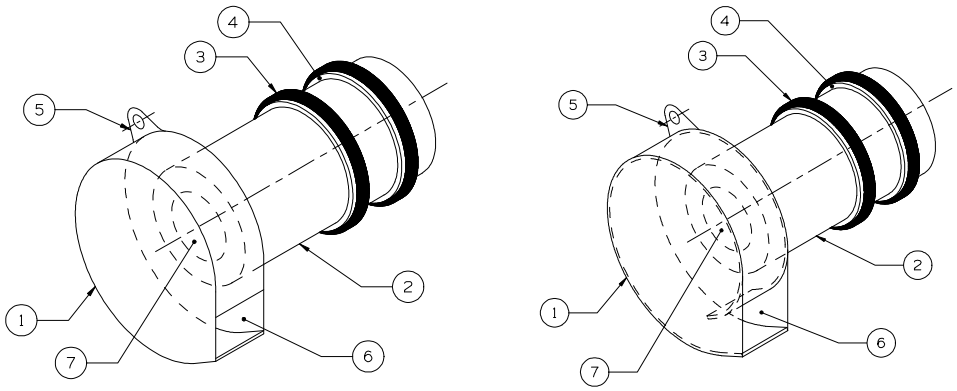
One of the major problems of urban wet weather flow management is the runoff generated after a heavy rainfall. During a storm event, uncontrolled flows may overload the drainage system and cause flooding. Sewer pipe wear and network deterioration are increased dramatically as a result of increased flow 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 water runoff is to control excessive flows at their point of origin, the manhole. **John Meunier Inc.** manufactures the **HYDROVEX® VHV / SVHV** line of vortex flow regulators for point source control of stormwater flows in sewer networks, as well as 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, thus minimizing maintenance. Although the concept is quite simple, over 12 years of research and testing have been invested in our vortex technology design in order to optimize its performance.

The **HYDROVEX® VHV / SVHV** Vertical Vortex Flow Regulators **(refer to Figure 1)** are manufactured entirely of stainless steel, and consist of a hollow body (**1**) (in which flow control takes place) and an outlet orifice (**7**). Two rubber "O" rings (**3**) seal and retain the unit inside the outlet pipe. Two stainless steel retaining rings (**4**) are welded on the outlet sleeve to ensure that there is no shifting of the "O" rings during installation and operation.

1. **BODY**
2. **SLEEVE**
3. **O-RING**
4. **RETAINING RINGS (SQUARE BAR)**
5. **ANCHOR PLATE**
6. **INLET**
7. **OUTLET ORIFICE**




***VHV*** ***SVHV***

***FIGURE 1: HYDROVEX® VHV-SVHV VERTICAL VORTREX FLOW REGULATORS***

## ADVANTAGES

- As a result of the air-filled vortex, a **HYDROVEX® VHV / SVHV** flow regulator will typically have an opening 4 to 6 times larger than an orifice plate. Larger opening sizes decrease the chance of blockage caused by sediments and debris found in stormwater flows. **Figure 2** shows the discharge curve of a vortex regulator compared to an equally sized orifice plate. One can see that for the same height of water and same opening size, the vortex regulator controls a flow approximately four times smaller than the orifice plate.
- Having no moving parts, they require minimal maintenance.
- Submerged inlet for floatables control.
- The **HYDROVEX® VHV / SVHV** line of flow regulators are manufactured entirely of stainless steel, making them durable and corrosion resistant.
- Installation of the **HYDROVEX® VHV / SVHV** flow regulators is quick and straightforward and is performed after all civil works are completed.
- Installation requires no assembly, special tools or equipment and may be carried out by any contractor.

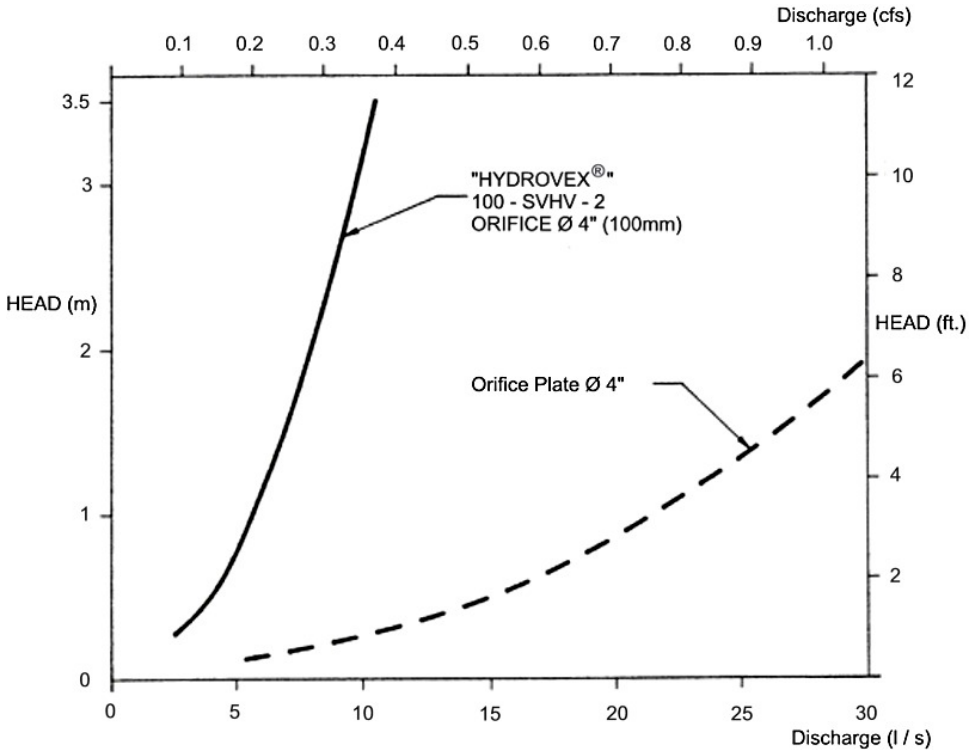



*FIGURE 2: DISCHARGE CURVE SHOWING A HYDROVEX® FLOW REGULATOR VS AN ORIFICE PLATE*

## SELECTION

Selecting a **VHV or SVHV** regulator is easily achieved using the selection chart found at the end of this brochure (refer to **Figure 3)**. Each selection is made using the maximum allowable discharge rate and the maximum allowable water pressure (head) retained upstream from the regulator. The area in which the design point falls will designate the required VHV/SVHV model. The maximum design head is calculated 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.

**Example:**

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

** It is important to verify the capacity of the manhole/catch basin outlet pipe. Should the outlet pipe be >80% full at design flow, the use of an air vent is required.

## INSTALLATION REQUIREMENTS

**HYDROVEX® VHV / SVHV** flow regulators can be installed in circular or square manholes. **Figure 4** lists the minimum dimensions 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.***

## SPECIFICATIONS

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

- The model number (ex: 75-VHV-1)
- The diameter and type of outlet pipe (ex: ø 6", SDR 35)
- The maximum discharge rate (ex: 6.0 L/s [0.21 CFS])
- The maximum upstream head (ex: 2.0 m [6.56 ft]) *
- The manhole diameter (ex: ø 900 mm [ø 36"])
- The minimum clearance "H" (ex: 150 mm [6 in]) as indicated in **Figure 4**
- The material type (ex: 304 stainless steel, standard)

* ***Upstream head is defined as the difference in elevation between the maximum upstream water level and the invert of the outlet pipe where the HYDROVEX® flow regulator is to be installed.***

***PLEASE NOTE THAT WHEN REQUESTING A PROPOSAL, WE SIMPLY REQUIRE THAT YOU PROVIDE US WITH THE FOLLOWING INFORMATION:***

- ***project design flow rate***
- ***pressure head***
- ***chamber's outlet pipe diameter and type***

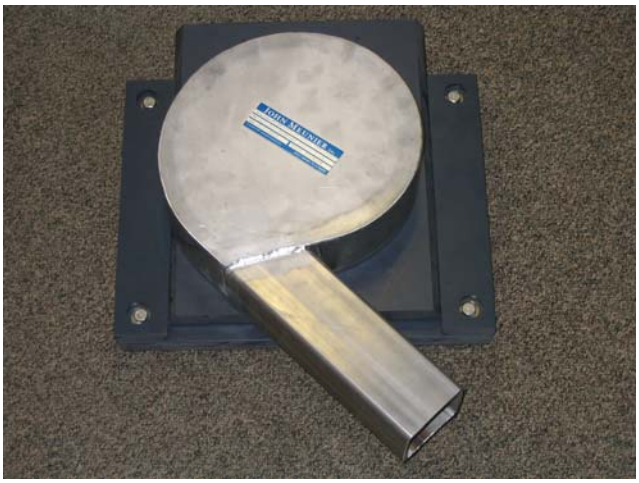
***Typical HYDROVEX® VHV model***

## OPTIONS

*VHV-1-O*
*(extended inlet for odor control)*

*FV–VHV*
*(mounted on sliding plate for emergency bypass)*

*VHV with Gooseneck assembly*
*(manhole without clearance below regulator)*



*FV–VHV-O*
*(sliding plate with extended inlet)*

*VHV with upstream air vent*
*(applications where outlet pipe is > 80% full at peak flow)*

# ® HYDROVEX®

## VHV/SVHV Vortex Flow Regulator

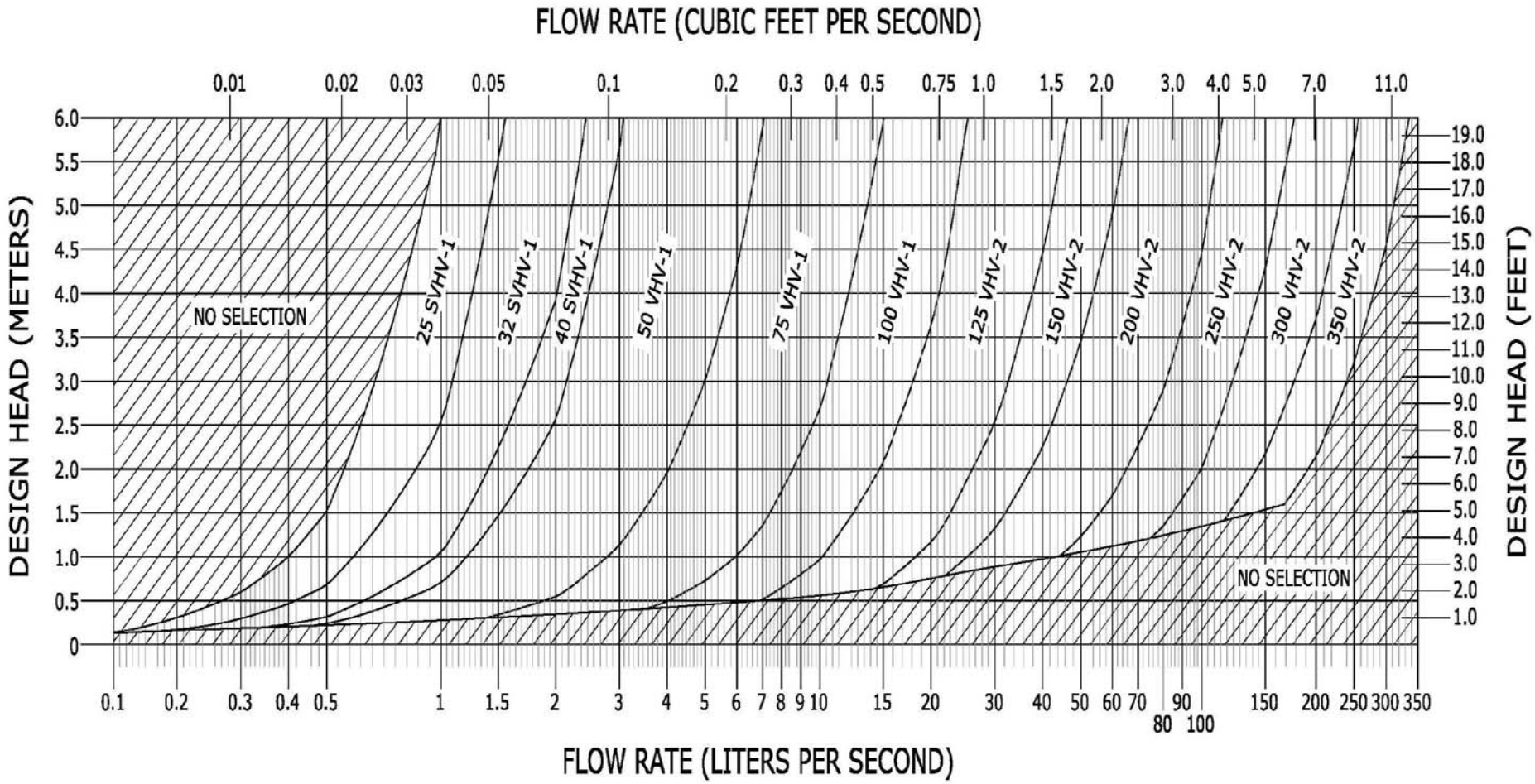


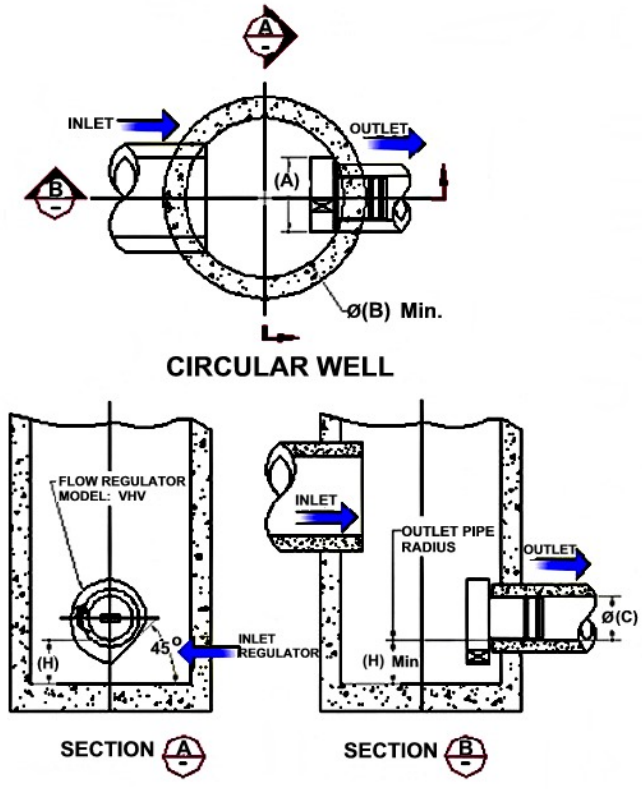

**FIGURE 3**

JOHN MEUNIER

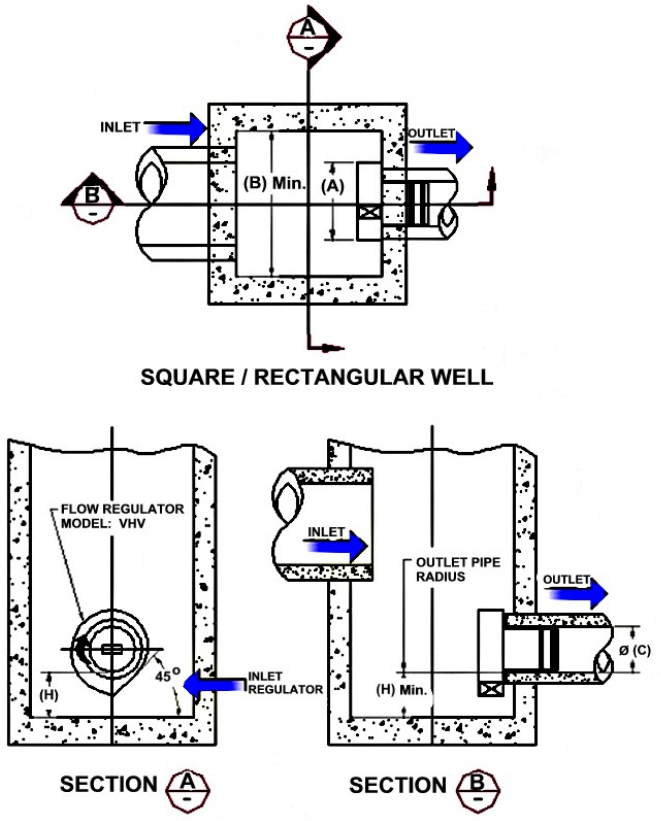
***TYPICAL INSTALLATION OF A VORTEX FLOW REGULATOR IN A CIRCULAR OR SQUARE/RECTANGULAR MANHOLE***
***FIGURE 4***

| 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] |
| 300VHV-2 | 675 [27] | 1600 [64] | 1200 [48] | 250 [10] | 400 [16] |
| 350VHV-2 | 800 [32] | 1800 [72] | 1200 [48] | 300 [12] | 500 [20] |

**Circular Manhole**




**Square / Rectangular Manhole**




***NOTE:*** ***In the case of a square manhole, the outlet pipe must be centered on the wall to ensure that there is enough clearance for installation of the regulator.***

## INSTALLATION

The installation of a **HYDROVEX®** regulator may begin once the manhole and piping are in place. Installation consists of simply sliding the regulator into the outlet pipe of the manhole and securing it to the wall with an anchor (supplied). **John Meunier Inc.** recommends applying a lubricant on the inner surface of the outlet pipe, in order to facilitate the insertion and the manipulation of the flow controller.

## MAINTENANCE

**HYDROVEX®** regulators are designed and manufactured to minimize maintenance requirements. We recommend a periodic visual inspection every 3-6 months (depending on local flow and sediment conditions) in order to ensure that neither the inlet nor the outlet has become blocked with debris. The manhole housing the vortex regulator should be inspected and cleaned with a vacuum truck periodically, especially after major storm events.

## GUARANTY

The **HYDROVEX®** line of **VHV / SVHV** regulators are guaranteed against both design and manufacturing defects for a period of 5 years after sale. Should a flow regulator be found to be defective within the guarantee period, **John Meunier Inc.** will modify or replace the defective unit.

**John Meunier Inc.**
ISO 9001 : 2008

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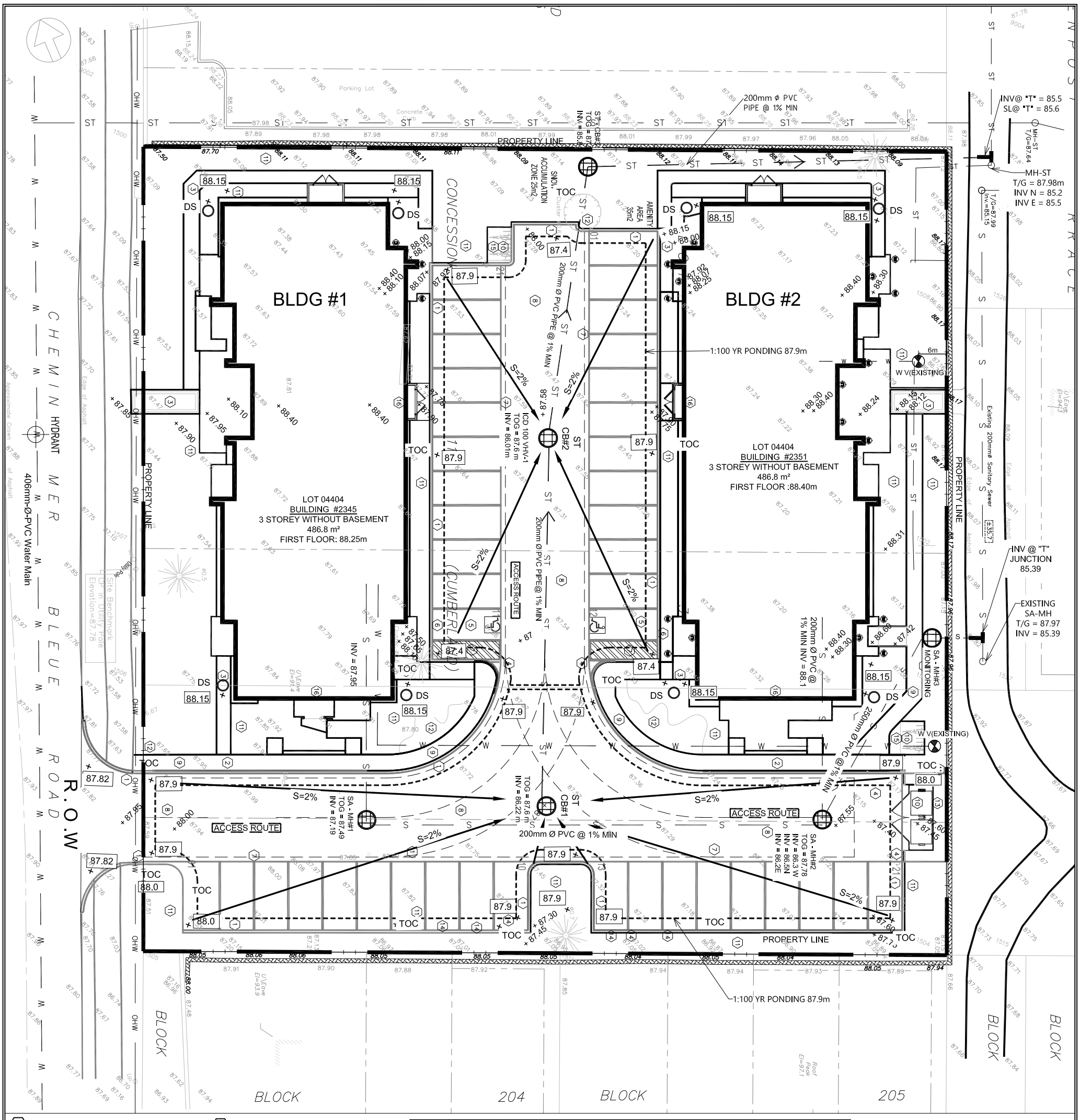
Revised: 2012-07-23




1. CONCRETE CURB
2. CONCRETE WALKWAY
3. INTERLOCK SIDEWALK
4. DEPRESSED SIDEWALK
5. PARKING SPACE FOR DISABLED
6. MUNICIPAL SIGN FOR DISABLED PARKING
7. PAINT MARKS
8. ASPHALT
9. CONCRETE PAVEMENT
10. SLAB ON GROUND CONCRETE
11. GRASS
12. LANDSCAPED AREA
13. 1.8M HEIGHT TRASH ENCLOSURE
14. VISITOR PARKING SIGN
15. 8 OUTDOOR BICYCLE STALLS
16. WALL MOUNTED LIGHTING ON BUILDING

CONSTRUCTION NOTES:

1) Metric Note:
Distances and coordinates on this plan are in metres and can be converted to feet by dividing by 0.3048.

2) Servicing to Be:
-50mm Ø soft copper, type K water service complete with curb stop located 300mm outside the property line within the boulevard.
(Water service to have more than 2.4m of cover or insulated as per City of Ottawa Standard W22)

-Min. cover to services 2.4m or insulation as per City of Ottawa drawing S14, S14.1, S14.2

3) Hard Surface Areas:
All proposed hard surface areas are to be permeable as per City of Ottawa Std. Dwg. SC27.

4) Trees to be protected before and during construction.

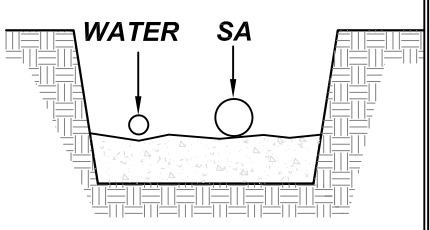
5) Downspouts (DS) within 1.5m of property line. Must be equipped with splash pad.

6) TOC or top of curb is as shown, curb detail to be as per conc barrier curb OPSD 600.110 drawing

7) Existing water lateral to be blocked at main. Existing sanitary to be blocked at property line.

| MAIN | DIA (mm) | LENGTH (m) | UP-STREAM INVERT (m) | SL LEVELS (m) | DOWN-STREAM INVERT(m) |
|---|---|---|---|---|---|
| SA | 200 PVC | 36 | 85.39 | 85.49 | 85.15 |

| | | | |
|---|---|---|---|
| ST-CB#1 | STANDARD | CB | 1.2X1.2 OR EQUIV CIRC |
| ST-CB#2 | STANDARD | CB | 1.2X1.2 OR EQUIV CIRC |
| ST-CB#3 | STANDARD | CB | 1.2X1.2 OR EQUIV CIRC |
| SA-MH#1 | STANDARD | MH | 1.2X1.2 OR EQUIV CIRC |
| SA-MH#2 | STANDARD | MH | 1.2X1.2 OR EQUIV CIRC |
| SA-MH#3 | STANDARD | MONITORING MH | 1.2X1.2 OR EQUIV CIRC |




NOTES & LEGEND

| | | |
|---|---|---|
| ST | Denotes | Underground Storm Sewer |
| S | " | Underground Sanitary Sewer |
| W | " | Underground Water |
| P | " | Underground Pipe |
| OHW | " | Overhead Wires |
| 65.00 | " | Location of Existing Elevations |
| 65.00 | " | Location of Proposed Elevations |
| TOC | " | Top of Concrete Curb = 88.0 |
| | " | Property Line (LL) |
| | " | 1:100 YR Ponding |
| | " | Proposed Building |
| | " | Existing Deciduous Tree |
| | " | Existing Coniferous Tree |
| | " | Proposed Tree |
| Gv | " | Gravel |
| Pv | " | Paved |
| Gr | " | Grass |
| As | " | Asphalt |

KEY PLAN


LICENSED PROFESSIONAL ENGINEER
D. R. CLARK
PROVINCE OF ONTARIO

0m 5m 10m 20m 30metres

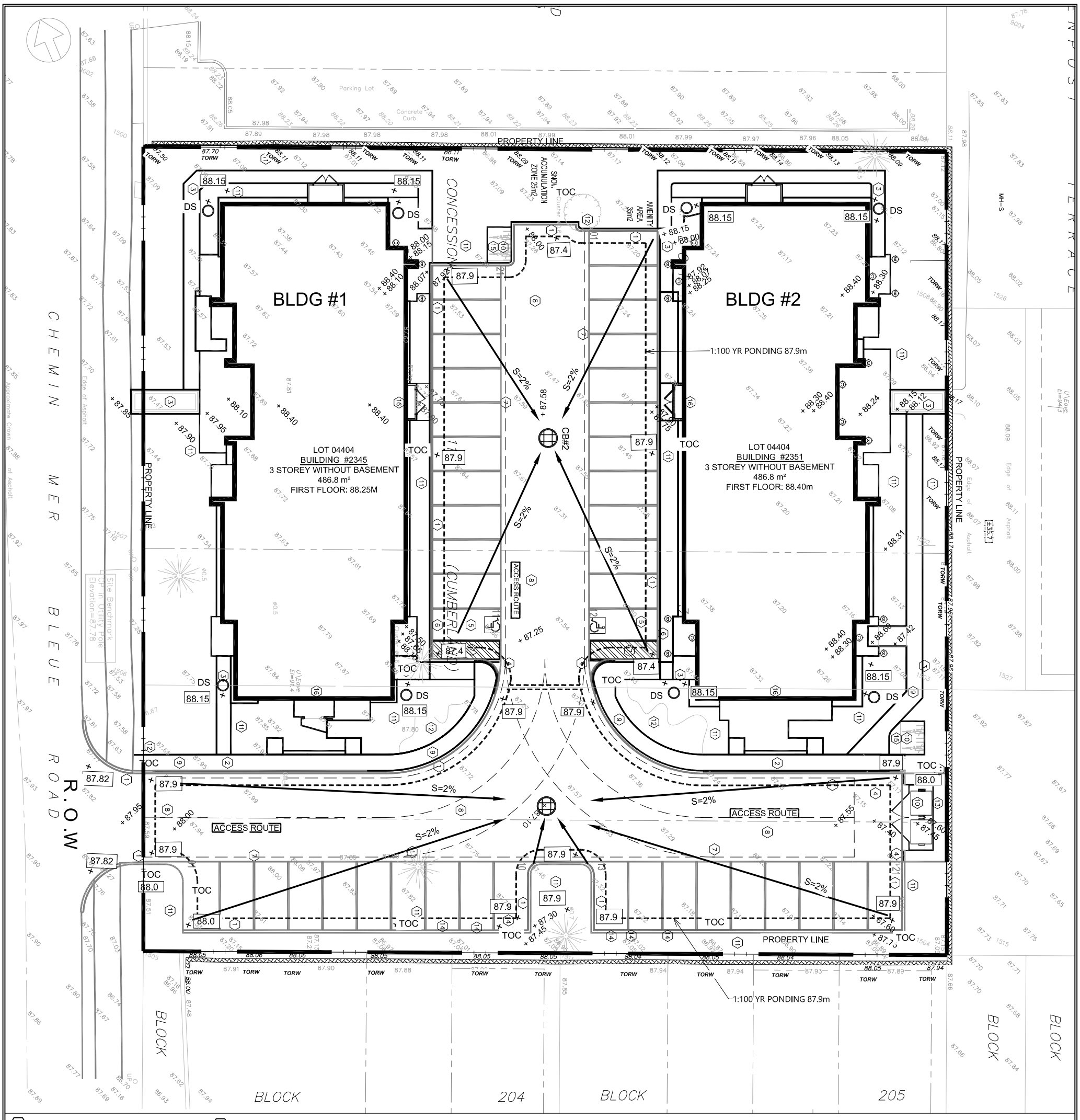
EAU STRUCTURAL & ENVIRONMENTAL SERVICES
Structural Environmental Services
Ottawa, ON
K1Y 4P9
Tel. : 613- 869- 0523

| No. | Revision | Date |
|---|---|---|
| 1 | For Review | NOV. 10, 2021 |

SERVICING PLAN
2345 MER-BLEUE RD ORLÉANS,
ORLÉANS, ON K4A 3T9

Drawn by: M.Y | Checked By: D.R.C.
Date:NOV 10, 2021 | Scale: 1:300

Plan number: C3




1 CONCRETE CURB
2 CONCRETE WALKWAY
3 INTERLOCK SIDEWALK
4 DEPRESSED SIDEWALK
5 PARKING SPACE FOR DISABLED
6 MUNICIPAL SIGN FOR DISABLED PARKING
7 PAINT MARKS
8 ASPHALT
9 CONCRETE PAVEMENT
10 SLAB ON GROUND CONCRETE
11 GRASS
12 LANDSCAPED AREA
13 1.8M HEIGHT TRASH ENCLOSURE
14 VISITOR PARKING SIGN
15 8 OUTDOOR BICYCLE STALLS
16 WALL MOUNTED LIGHTING ON BUILDING

CONSTRUCTION NOTES:

1) Metric Note:
Distances and coordinates on this plan are in metres and can be converted to feet by dividing by 0.3048.

2) Hard Surface Areas:
All proposed hard surface areas are to be permeable as per City of Ottawa Std. Dwg. SC27.

3) No proposed alterations to grade on or beyond property line.

4) Grading between 2%-7% or terrace to 3H:1V max.

5) Trees to be protected before and during construction.

6) Downspouts (DS) within 1.5m of property line. Must be equipped with splash pad.

7) TOC or top of curb is as shown, curb detail to be as per conc barrier curb OPSD 600.110 drawing

## NOTES & LEGEND

| | | |
|---|---|---|
| | Denotes | |
| 65.00 / 65.00 | " | Location of Existing Elevations / Location of Proposed Elevations |
| TOC | " | Top of Concrete Curb = 88.0 |
| | " | Property Line (LL) |
| | " | 1:100 YR Ponding |
| | " | Proposed Building |
| | " | Existing Deciduous Tree |
| | " | Existing Coniferous Tree |
| | " | Proposed Tree |
| Gv | " | Gravel |
| Pv | " | Paved |
| Gr | " | Grass |
| As | " | Asphalt |

KEY PLAN


PROFESSIONAL ENGINEER — D. R. CLARK — PROVINCE OF ONTARIO

0m 5m 10m 20m 30metres

EAU STRUCTURAL & ENVIRONMENTAL SERVICES
Structural Environmental Services
Ottawa, ON
K1Y 4P9
Tel. : 613- 869- 0523

| No. | Revision | Date |
|---|---|---|
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GRADING & DRAINAGE PLAN
2345 MER-BLEUE RD ORLÉANS,
ORLÉANS, ON K4A 3T9

| | |
|---|---|
| Drawn by: M.Y | Checked By: D.R.C. |
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Plan number: C1