Stormwater Management Report and Servicing Brief

Block 9 – Apartment Buildings
280 Eric Czapnik Way
Ottawa, Ontario

Prepared for:

Landric Homes Inc.
63 Chemin de Montrèal
Gatineau, Quebec
J8M 1K3

Attention: Mr. Eric Danis

LRL File No.: 200041
Site Plan Control No.: D07-12-20-0104

July 17th, 2020
Rev 2, February 11th, 2021

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1 INTRODUCTION AND SITE DESCRIPTION

LRL Associates Ltd. was retained by Landric Homes Inc. to complete a Stormwater Management Analysis and Servicing Brief for two proposed four (4) storey residential buildings located at 280 Eric Czapnik Way in Ottawa, Ontario. The property is legally described as Concession 1 Lot 35, City Ward 1 (Orleans) and is zoned R5Z[1363]. The location of the proposed development can be viewed in **Figure 1** below.

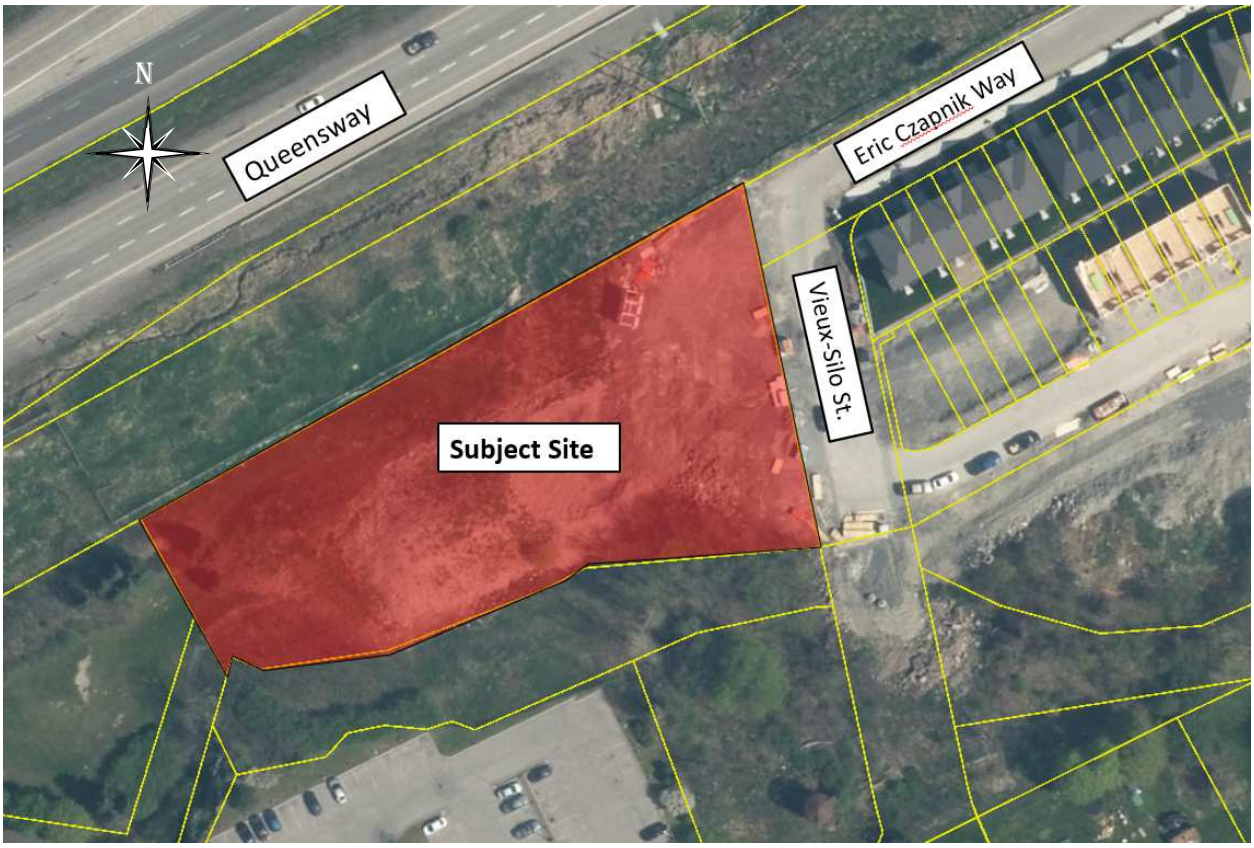

Figure 1: Arial View of Proposed Development

The development proposes two new four (4) storey residential buildings consisting of 72 units, sharing a one (1) storey podium and one level of underground parking. The site will also encompass a paved parking area at the rear (south side) of the lot. The proposed development will have a vehicular entrance at the northeast corner of the site from Eric Czapnik Way that leads to the underground parking ramp. Another vehicular entrance leading to paved parking lot at the southeast corner of the site from Vieux-Silo street is also proposed. Refer to a copy of the ***Site Plan*** included in ***Appendix F***.

This report has been prepared in consideration of the terms and conditions noted above and with the civil drawings prepared for the new development. Should there be any changes in the design features, which may relate to the stormwater considerations, LRL Associates Ltd. should be advised to review the report recommendations.

2 EXISTING SITE AND DRAINAGE DESCRIPTION

The subject site measures ***0.517 ha*** and is currently undeveloped, consisting of grassed area and gravel. Elevations of existing site range between 69.04 at southeast corner to 61.98 at the northwest corner of the site.

Sewer and watermain mapping, along with as-built information collected from the City of Ottawa indicate the following existing infrastructure located within the adjacent right-of-way:

Vieux-Silo Street:

- 203 mm diameter PVC watermain
- 200 mm diameter PVC sanitary sewer
- 450 mm diameter concrete storm sewer

Existing 300 mm diameter storm stub, 200 mm diameter sanitary stub and 150 mm diameter water service stub has been provided to service the site at the northeast corner.

3 SCOPE OF WORK

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

Stormwater management

- Calculate the allowable stormwater release rate.
- Calculate the anticipated post-development stormwater release rates.
- Demonstrate how the target quantity objectives will be achieved.

Water services

- Calculate the expected water supply demand at average and peak conditions.
- Calculate the required fire flow as per the Fire Underwriters Survey (FUS) method.
- Confirm the adequacy of water supply and pressure during peak flow and fire flow.
- Describe the proposed water distribution network and connection to the existing system.

Sanitary services

- Describe the existing sanitary sewers available to receive wastewater from the building.
- Calculate peak flow rates from the development.
- Describe the proposed sanitary sewer system.
- Review impact of increased sanitary flow on downstream sanitary sewer.

4 REGULATORY APPROVALS

An Environmental Compliance Approval (ECA) is not expected to be required for installation of the proposed storm and sanitary sewers within the site. A Permit to Take Water is not anticipated to be required for pumping requirements for sewer installation. The Rideau Valley Conservation

Authority will need to be consulted in order to obtain municipal approval for site development. No other approval requirements from other regulatory agencies are anticipated.

5 WATER SUPPLY AND FIRE PROTECTION

5.1 Existing Water Supply Services and Fire Hydrant Coverage

The subject property lies within the City of Ottawa 1E water distribution network pressure zone. The subject property is located to the west of an existing 200 mm dia. watermain along Vieux-Silo Street. A 150 mm diameter water service stub extends to the subject property line. There are currently three existing fire hydrants near the property within 150 m from proposed building entrances. Refer to ***Appendix B*** for the location of fire hydrants.

5.2 Water Supply Servicing Design

According to the City of Ottawa Water Distribution Guidelines (Technical Bulletin ISDTB-2014-02), since the subject site has more than 50 residential units, it is required to be connected with two water service laterals, separated by an isolation valve, for redundancy and to avoid creation of vulnerable service area. Inside the building the service laterals will be looped in coordination with the mechanical engineer at detailed design stage. The subject property is proposed to be serviced, for both domestic and fire protection water service, via a dual 150 mm diameter watermain service connections to the existing 200 mm watermain located within Vieux-Silo Street at the southeast corner of the site. Refer to Site Servicing Plan C.401 in ***Appendix E*** for servicing layout. Table 1 summarizes the City of Ottawa Design Guidelines design parameters employed in the preparation of the water demand estimate.

Table 1: ***City of Ottawa Design Guidelines Design Parameters***

Design Parameters	Value
Residential Bachelor / 1 Bedroom Apartment	1.4 P/unit
Residential 2 Bedroom Apartment	2.1 P/unit
Average Daily Demand	280 L/d/per
Minimum Depth of Cover	2.4 m from top of watermain to finished grade
Desired operating pressure range during normal operating conditions	350 kPa and 480 kPa
During normal operating conditions pressure must not drop below	275 kPa
During normal operating conditions pressure shall not exceed	552 kPa
During fire flow operating conditions pressure must not drop below	140 kPa

The interior layout and architectural floor plans have been reviewed, and it was determined that the building will house 36 studio/1-bedroom apartments, and 36 2-bedroom apartments. Based on the City of Ottawa Design guidelines for population projection, this translates to

approximately126 residents. Table 2 below summarizes the proposed development as interpreted using table 4.1 of the City of Ottawa Design Guidelines-Water Distribution (2010).

Table 2: ***Development Residential Population Estimate***

Proposed Unit type	Persons Per Unit	Number of Units	Population
Studio/1 Bedroom	1.4	36	50.4
2 Bedroom Apartment	2.1	36	75.6
		Total Residential Population	126.0

The required water supply requirements for the residential units in proposed building have been calculated using the following formula:

Where:

$$Q = (q \times P \times M)$$

q = average water consumption (L/capita/day)
P = design population (capita)
M = peak factor
Using a calculated maximum day factor and peak hour factor of 5.2 and 7.8 respectively as per Table 3-3 in the *MOE Design Guidelines*, anticipated demands were calculated as follows:

- Average daily domestic water demand is **0.41** L/s,
- Maximum daily demand is **2.12** L/s, and
- Maximum hourly is **16.58** L/s.

The City of Ottawa was contacted to obtain boundary conditions associated with the estimated water demand, as indicated in the boundary request correspondence included in ***Appendix B***. Table 3 below summarizes boundary conditions for the proposed development.

Table 3: ***Summary of Boundary Conditions***

Design Parameter	Anticipated Demand (L/min)	Boundary Conditions @ Vieux-Silo Street	
		Connection 1* (m H2O / kPa)	Connection 2* (m H2O / kPa)
Average Daily Demand	25.0	114.0 / 473.0	114.0 / 473.0
Max Day + Fire Flow (per FUS)	127.0 + 13,000	300 L/s available @ min pressure of 140 kPa	
Peak Hour	995.0	107.1 / 406.1	107.1 / 406.1
**Connection 1 & 2 assumed ground elevation = 65.7 m.*			
Water demand calculation per City of Ottawa Water Design guidelines. ***See Appendix B*** *for details.*			

As indicated in Table 3, pressures in all scenarios meet the required pressure range stated in Table 1 as per City of Ottawa Design Guidelines. Refer to ***Appendix B*** for Boundary Conditions. The estimated fire flow for the proposed buildings was calculated in accordance with *ISTB-2018-02*. The following parameters were provided by the Architect, see ***Appendix A*** for collaborating correspondence:

- Type of construction – Wood Frame Construction;
- Occupancy type – Limited Combustibility; and
- Sprinkler Protection – Automatic Fully Supervised Sprinkler System.

The estimated fire flow demand was estimated to be **13,000 L/min**, see ***Appendix B*** for details.

A new fire hydrant is proposed in the paved parking lot within 45 m from the entrance of both buildings. Additionally, there are existing fire hydrants in close proximity to the proposed buildings that are available to provide the required fire flow demands of 13,000 L/min. Refer to **Appendix B** for fire hydrant locations.

Table 4 below summarizes the aggregate fire flow of the contributing hydrants in close proximity to the proposed development based on Table 18.5.4.3 of *ISTB-2018-02*.

Table 4: ***Fire Protection Summary Table***

Building	Fire Flow Demand (L/min)	Fire Hydrants(s) within 75m	Fire Hydrant(s) within 150m	Fire Hydrant(s) within 300m	Available Combined Fire Flow (L/min)
Proposed 4 Storey Development	13,000	1	3	2	(1 x 5678) + (3 x 3785) + (2 x 2839) = 22,711

The total available fire flow from contributing hydrants is equal to 22,711 L/min which is sufficient to provide adequate fire flow for the proposed development. A certified fire protection system specialist will need to be employed to design the building's fire suppression system and confirm the actual fire flow demand.

The proposed water supply design conforms to all relevant City Guidelines and Policies.

6 SANITARY SERVICE

6.1 Existing Sanitary Sewer Services

There is an existing 200 mm dia. sanitary sewer service stub extending to the property line from Vieux-Silo Street at the northeast corner of the subject site. The wastewater is ultimately conveyed to the Gloucester Cumberland Collector trunk sewer.

Wastewater flows from the existing site was contemplated in the *Serviceability and Stormwater Management Report for the Orleans Town Centre East Lands (OTCEL Report)* prepared by Novatech, dated rev June 9, 2011. A total wet wastewater flow of **1.07 L/s** was contemplated from the site, for refer to existing sanitary design sheet in **Appendix C**.

The post-development total flow was calculated to be is **1.80 L/s** as a result of proposed residential population and a small portion of infiltration. Refer to Appendix C for further information on the calculated sanitary flows. The post-development conditions increase contemplated wastewater flow by approximately **0.73 L/s** as a result of additional residential population from pre-development conditions. Based on design sheet extracted from *OTCEL Report,* the most restrictive section of the local downstream sewer system has a residual capacity of **26.8 L/s**. Therefore, it is anticipated that the existing local sewer network has sufficient capacity to accommodate the proposed development.

6.2 Sanitary Sewer Servicing Design

The proposed development will be serviced via a network of 200 mm dia. sanitary sewers which will connect to the existing 200 mm dia. sanitary service stub extending to the subject site's property line at the northeast corner. Refer to LRL drawing C.401 for the proposed sanitary servicing.

The parameters used to calculate the anticipated sanitary flows are:; residential average population per unit of 1.4 person for single units and 2.1 persons for double units, a residential daily demand of 280 L/p/day, a residential peaking factor of 4.0 and an infiltration rate of 0.33 L/s/ha. Based on these parameters and the total site area of 0.517 ha, the total anticipated sanitary flow was estimated to **1.80 L/s**. Refer to ***Appendix C*** for the site sanitary sewer design sheet.

7 STORMWATER MANAGEMENT

7.1 Existing Stormwater Infrastructure

The subject property lies within the Ottawa River East sub-watershed. There is an existing 300 mm diameter storm sewer stub extending to the property line at the northwest corner of the site from Vieux-Silo Street. The storm sewer will ultimately convey stormwater to the 1200 mm dia. trunk sewer located east of Tenth Line Road.

In pre-development conditions, the stormwater runoff would flow uncontrolled overland to north of the site towards Queensway right-of-way. Refer to ***Appendix D*** for pre- and post-development watershed information.

7.2 Design Criteria

The stormwater management criteria for this development are based on the *OTCEL Report* prepared by Novatech as well as pre consultation with City of Ottawa officials, the City of Ottawa Sewer Design Guidelines including City of Ottawa Stormwater Management Design Guidelines,

2012 (City standards), as well as the Ministry of the Environment's Stormwater Planning and Design Manual, 2003 (SWMPD Manual).

7.2.1 Water Quality

The subject property lies within the Ottawa River East sub-watershed and is therefore subject to review by the Rideau Valley Conservation Authority (RVCA). Based on the correspondence with RVCA, it was determined that a treatment level of 80% TSS removal would be required to meet the water quality objective. Correspondence with RVCA is included in **Appendix A**.

A Stormceptor model EF04 Oil/Grit Separator (OGS) is proposed downstream of STM MH05 to provide the required 80% TSS removal level of treatment from collected runoff. Refer to **Appendix D** for details on OGS.

7.2.2 Water Quantity

The allowable release rate for the site has been contemplated in the *OTCEL Report* and was determined to be **127 L/s/ha**. Refer to *Stormwater Criteria for Future Development Blocks Plan* by Novatech in ***Appendix D***.

The allowable release rate for the subject site was calculated to be **65.72 L/s** (127 L/s/ha x 0.517 ha = 65.72 L/s).

7.3 Method of Analysis

The Modified Rational Method has been used to calculate the runoff rate from the site and to quantify the detention storages required to meet quantity control objective of the proposed development. Refer to **Appendix D** for storage calculations.

7.4 Proposed Stormwater Quantity Controls

The proposed stormwater management quantity control for this development will be accomplished using a flow restrictor in the storm sewer, as well as roof drains restricting the flow leaving the rooftop. Ponding required as a result of quantity control will be accomplished through a combination of rooftop storage and surface storage in the parking lot.

A network of 250 mm storm diameter sewers is proposed to service the site and outlet to the existing storm manhole within Vieux-silo street located at the northeast corner of the site. The proposed site storm sewer and stormwater management system are shown on drawing C.401 and detailed calculations, including the design sheet, can be found in ***Appendix D***.

The existing site is delineated by catchments EWS-01 which currently drains uncontrolled towards the north of the property.

The site has been analyzed and post-development watersheds have been allocated. Watershed WS-01 (0.143 ha), consisting of grass and pavers, will flow uncontrolled towards north as it did in pre-development condition. The water will be conveyed to the Queensway right-of-way, as per the grading plan, and will be captured by the existing roadside ditch.

Overland flow within watershed WS-03 (0.082 ha) will be captured by CBMH02. Overland flow within WS-04 (0.083 ha) will be captured by CBMH01. An HYDROVEX 75VHV-1 (or approved equivalent) Inlet Control Device (ICD) is proposed at CBMH01 to restrict the collected runoff. Grading proposed will provide positive overland drainage to the proposed storm water quantity control systems.

Overland water from the roof, delineated by Watershed WS-02 (0.210 ha), will be captured by the proposed roof drainage. Stormwater captured on the rooftop will be controlled by the roof drains, and conveyed to the storm sewer network, downstream of the ICD.

Table 5 below summarizes post-development drainage areas. Calculations can be found in ***Appendix D.***

Table 5: ***Drainage Areas***

Drainage Area Name	Area (ha)	Weighted Runoff Coefficient	100 Year Weighted Runoff Coefficient (25% increase)
WS-01 (uncontrolled)	0.143	0.32	0.40
WS-02 (controlled)	0.210	0.90	1.0
WS-03 (controlled)	0.082	0.50	0.63
WS-04 (controlled)	0.083	0.75	0.93

Rooftop detention of stormwater is provided with outlet control through twelve (12) proposed roof drains. The buildings' rooftop along with the rooftop of the one-storey podium was analysed divided into ponding areas. A total of twelve (12) roof drains, each of which is restricting the discharge rate to 2.4 L/s, resulting in a total release rate from the roof of 28.8 L/s. The roof drain flow control device has been selected to provide a flow rate of 2.4 L/s at a maximum flow depth of 0.15 m. Proposed roof drain to be Murphco Ultra Copper Drain with three (3) holes moulded control flow dome strainer (or approved equivalent). See **Appendix D** for more information about the selected roof drain and flow restrictor.

The total available roof storage (m^3) has been calculated using the following formula:

$$V = (\frac{D_{Sl} * A_{Eff}}{3})$$

Where:

V = available (provided) rooftop storage (m^3)
D_{Sl} = slope ponding depth (m)
A_{Eff} = effective roof area (m^2)

Based on the equation above, it was calculated that **72.72 m³** of rooftop storage is available in the 100-year event. For additional details on the calculations for available area of rooftop storage, refer to ***Appendix D***.

All overland water captured will ultimately be conveyed, via underground storm sewers, to the City storm sewer running along Eric Czapnik Way at a maximum release rate of **37.48 L/s** (calculated controlled flow). The remaining uncontrolled overland runoff on site will be directed to the Queensway right-of-way at a maximum release rate of **28.24 L/s**.

Table 6 below summarize the release rates and storage volumes required to meet the allowable release rate for the 100-year storm.

Table 6: ***Stormwater Release Rate & Storage Volume Summary (100 Year)***

Catchment Area	Drainage Area (ha)	100-year Release Rate (L/s)	100-Year Required Storage (m^3)	Total Available Storage (m^3)
WS-01 (Un-controlled)	0.143	28.24	0	0
WS-02 (Roof Controls)	0.210	28.80	49.59	72.72
WS-03 & WS-04	0.165	8.68	43.58	49.01
TOTAL	**0.517**	**65.72**	**93.17**	**121.73**

It is calculated that a total of **93.17 m³** of storage will be required to attenuate flows to the total allowable release rate of **65.72 L/s**. The project runoff exceeding the allowable release rate will be stored on-site via surficial ponding and the building rooftop. The 100-year maximum ponding elevation and depths can be found on drawing "C601 – Stormwater Management Plan" of ***Appendix E***.

8 Erosion and Sediment Control

During construction, erosion and sediment controls will be provided primarily via a sediment control fence to be erected along the perimeter of the site where runoff has the potential of leaving the site. Inlet sediment control devices are also to be provided in any catch basin and/or manholes in and around the site that may be impacted by the site construction. Construction and maintenance requirements for erosion and sediment controls are to comply with Ontario Provincial Standard Specification OPSS 577. Refer to LRL Associates drawing C.101 for erosion and sediment control details.

9 CONCLUSION

This Stormwater Management and Servicing Report for the development proposed at 280 Eric Czapnik Way presents the rationale and details for the servicing requirements for the subject property.

In accordance with the report objectives, the servicing requirements for the development are summarized below:

Water Service

- The anticipated maximum domestic hourly water demand of the proposed development based on proposed population is 16.58 L/s.
- The maximum required fire flow water demand was calculated at 13,000.0 L/min using the FUS method.
- There is one (1) proposed new fire hydrant and five (5) existing fire hydrants available to service the proposed development. They will provide a combined fire flow of 22,711 L/min to the site which exceeds the required fire flow demand.
- The proposed development will be serviced with a dual 150 mm diameter watermain servicing connections to the existing 200mmΦ watermain on Vieux-Silo Street.

Sanitary Service

- The anticipated sanitary flow from the proposed development is 1.80 L/s.
- The proposed development will be serviced by a network of 200 mm sanitary sewers that connect to the existing 200mm dia. sanitary stub extended into the site property.

Stormwater Management

- Stormwater quality control requirements of 80% TSS removal will be met via the use of an Oil/Grit Separator.
- The stormwater release rates from the proposed development will meet contemplated allowable release rate of 65.72 L/s, which consists of 37.48 L/s of controlled flow to the City storm sewer along Eric Czapnik Way and 28.24 L/s of uncontrolled flow towards Queensway right-of-way.
- Stormwater quantity control objectives will be met through on-site storm water ponding on the roof and surface ponding on the parking lot.

10 REPORT CONDITIONS AND LIMITATIONS

The report conclusions are applicable only to this specific project described in the preceding pages. Any changes, modifications or additions will require a subsequent review by LRL Associates Ltd. to ensure the compatibility with the recommendations contained in this document. If you have any questions or comments, please contact the undersigned.

Prepared by:
LRL Associates Ltd.

Mohan Basnet, P. Eng.
Civil Engineer

Amr Salem
Civil Designer

APPENDIX A

Pre-consultation / Correspondence

Mohan Basnet

From: Paul Robinson <probinson@probinsonconsulting.com>
Sent: April 6, 2020 5:55 PM
To: Virginia Johnson; Toon Dreessen; Eric Danis; David Lashley
Subject: Fwd: Pre-con Follow-up - 280 Eric Czapnik Way
Attachments: MFP38223202625202002281047O7_E4958ED9.pdf

Hello all..as a follow up to our conference call today, attached are the City notes after we had the pre consult a while ago.

The engineering comments come from Will Curry.

Not sure who the 'Environmental' comments come from. Landscaping requirements wasn't discussed much at the meeting.

Regards

Paul

Paul Robinson, RPP
P H Robinson Consulting
100 Palomino Drive
Ottawa, Ontario
K2M 1N3
613 599 9216 (cell)

---------- Forwarded message ---------
From: **Belan, Steve** <Steve.Belan@ottawa.ca>
Date: Fri, 28 Feb 2020 at 10:53
Subject: Pre-con Follow-up - 280 Eric Czapnik Way
To: Paul Robinson <probinson@probinsonconsulting.com>

Hello Paul,

Please refer to the below regarding the Pre-Application Consultation (pre-con) Meeting held on February 24, 2020 for the property at 280 Eric Czapnik Way for a Site Plan Control application in order to allow the development of two 4-storey apartment buildings with 44 units each over 1 level of underground parking. I have also attached the required Plans & Study List for application submission.

Below or attached are staff's preliminary comments based on the information available at the time of pre-con meeting:

Planning

- Mixed use area, part of the Cumberland Town Centre

- Property is zoned R5Z [1363]

- Committee of Adjustment / variances required to address the maximum density permitted in exception 1363 if you have questions you should contact Lucy Ramirez, ext. 23808

- My main concerns are making this fit into the neighourhood so despite the parking requirement in the Z subzone I would insist that parking spaces and unit counts be at a 1 to 1 ratio. Garbage would need to be internal and remove with a private contractor. Amenity space should be usable and protected from highway noise.

Urban Design

- Urban Design Review

The site is located within a Design Priority Area. However, the current development proposal is exempted from the UDRP review because of the proposed maximum height (4 storeys).

- Urban Design Observations

- Explore alternative development and massing options, including (but not limited to):
- a one-building option that has the main entrance facing public street (rather than two separate entrances facing parking lot);
- two buildings connected by a shared lobby
- The design should support pedestrian connectivity from the site to the rest of the community. If the main entrance is not located on the public street, it should be highly visible from the street and connected to the street through a dedicated pedestrian walkway. There may also be opportunities to connect this dedicated walkway with the pathways in the adjacent City parks.
- Urban design has concerns about the micro climate conditions of the exterior amenity space between the two buildings.
- The east façade should be articulated to be an attractive front face of the development.
- Appropriate landscaping design and maintenance are required to mitigate the visual impacts of the exposed blank wall of the basement (parking structure) along the highway.

Engineering

- Required Plans and Reports:

Site Plan

Topographical Plan of Survey Plan with a published Bench Mark

Grading & Drainage Plan

General Plan of Services

Erosion & Sediment Control Plan

Design Brief and Stormwater Management Report

Catchment Plans

Geotechnical Report

Lighting Plan or and Memo

Noise Study, Stationary

Water Data Card completed with 1st submission

- Design Criteria

Coordinate with the RVCA

Coordinate with Hydro

Municipal addressing

- Pre to post

Post C of .5

Pre tc 15; post tc 10

Onsite, design for 2-year pipe minimum, 5-year pipe and store up to 100-year on site.

Permissible ponding of 350mm for 100-year

At 100-year ponding elevation you must spill to City ROW

Spill elevation must be 300mm lower than any building opening (includes ramps).

ECA will be required-to be discussed with City PM further if need be.

- Minimum Drawing and File Requirements- All Plans

  Plans are to be submitted on standard A1 size (594mm x 841mm) sheets, utilizing an appropriate Metric scale (1:200, 1:250, 1:300, 1:400, or 1:500).

  With all submitted hard copies provide individual PDF of the DWGs and for reports please provide one PDF file of the reports. All PDF documents are to be unlocked and flattened.

Feel free to contact Infrastructure Project Manager, Will Curry, at 16214, for follow-up questions.

Transportation

- TIA scoping form submitted, no further traffic information required.

- Noise report to address traffic noise form Highway 174 and any stationary noise created by the buildings mechanical systems.

Feel free to contact Transportation Project Manager, Mike Giampa, at ext. 23657, for follow-up questions.

Environmental

- Tree preservation / distinctive trees should be assessed and shown in the Tree Conservation Report and Landscape Plan

Parkland

- Parkland dedication has already been taken /Cash-in-lieu of parkland will not be required

Conservation Authority

- The Conservation Authority will comment on the following

  - Stormwater runoff quality criteria
  - Area specific stormwater runoff criteria

Other

- You are encouraged to contact the Ward Councillor, Councillor Luloff, about the proposal.

Please refer to the links to "Guide to preparing studies and plans" and fees for further 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-con 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,

Steve Belan

Steve Belan, MCIP, RPP

Planner Planning Services, Development Review Services

Planning, Infrastructure and Economic Development

City of Ottawa / Ville d'Ottawa

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Amr Salem

From: Toon Dreessen <tdreessen@architectsDCA.com>
Sent: July 3, 2020 11:21 AM
To: Amr Salem
Cc: Maxime Longtin; Mohan Basnet; Derek Ruddy
Subject: RE: Block 9 , 280 Eric Czapnik Way - Fire Flow Calcs
Attachments: 2020-06-29_3206_Hillside_SPA_Markup_TD.pdf

Here you go.

My count is that each block has

Ground:
Three – 2 bed units
Five – 1 bed units with den
One - bachelor unit

Second – third – fourth floor each have

Five – 2 bed units
Three – 1 bed with den
One – 1 bed

Regards,
Toon Dreessen, Architect, OAA, FRAIC, AIA, LEED AP
President
Architects DCA
1350 Wellington Street West, Ottawa, ON K1Y 3C1
tel: 613-725-2294 ext.241
email: tdreessen@architectsDCA.com

From: Amr Salem <asalem@lrl.ca>
Sent: Friday, July 3, 2020 11:08 AM
To: Toon Dreessen <tdreessen@architectsDCA.com>
Cc: Maxime Longtin <mlongtin@lrl.ca>; Mohan Basnet <mbasnet@lrl.ca>; Derek Ruddy <druddy@architectsDCA.com>
Subject: RE: Block 9 , 280 Eric Czapnik Way - Fire Flow Calcs

Good morning Toon,

Thanks for your answers below. Could you please help clarify a few questions in the markup attached?

Can you also please confirm unit count; I counted a total of 36 2-bdrm units and 36 1-bdrm/bachelor.

Thank you,

Amr Salem
Civil Designer
LRL Associates Ltd.
5430 Canotek Road
Ottawa, Ontario K1J 9G2
T (613) 842-3434 or (877) 632-5664 ext 248
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E asalem@lrl.ca
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From: Toon Dreessen <tdreessen@architectsDCA.com>
Sent: June 30, 2020 11:23 AM
To: Amr Salem <asalem@lrl.ca>
Cc: Maxime Longtin <mlongtin@lrl.ca>; Mohan Basnet <mbasnet@lrl.ca>; Derek Ruddy <druddy@architectsDCA.com>
Subject: RE: Block 9 , 280 Eric Czapnik Way - Fire Flow Calcs

Hello

1. The gross building area is indicated on the site plan at 902.9 sq m; over four floors, this would be 3,612 sq m per building plus parking garage and common area. Do you need those figures?
2. Both buildings are sprinklered. Please ask mechanical what kind of system.
3. The building is a wood frame structure with a mixture of brick and metal siding

Regards,
Toon Dreessen, Architect, OAA, FRAIC, AIA, LEED AP
President
Architects DCA
1350 Wellington Street West, Ottawa, ON K1Y 3C1
tel: 613-725-2294 ext.241
email: tdreessen@architectsDCA.com

Connect with us!
Twitter
Linkedin
Facebook

From: Amr Salem <asalem@lrl.ca>
Sent: Tuesday, June 30, 2020 11:14 AM
To: Toon Dreessen <tdreessen@architectsDCA.com>
Cc: Maxime Longtin <mlongtin@lrl.ca>; Mohan Basnet <mbasnet@lrl.ca>
Subject: Block 9 , 280 Eric Czapnik Way - Fire Flow Calcs
Importance: High

Good morning Toon,

Were' hoping to get the following information today to help us finalize our fireflow demand calculations for the proposed development;

- Can you please confirm the total floor area for each building?
- Can you confirm if sprinklers are proposed for both buildings? If yes, please specify if sprinkler system is ***fully supervised***, ***automatic***, or ***standard***?
- Kindly provide the **ISO class** for each building as per ISO Guide sections 1, 2 and 3. I have included a brief summary of ISO Guide (review chapter 2 for construction types) as well as the section from the City's technical bulletin. Note that ISO refers only to fire-resistive for fire ratings not less than 1-hour.

A. *Determine the type of construction.*

- Coefficient *C* in the FUS method is equivalent to coefficient *F* in the ISO method:

Correspondence between FUS and ISO construction coefficients

FUS type of construction	ISO class of construction	Coefficient *C*
Fire-resistive construction	Class 6 (fire resistive)	0.6
	Class 5 (modified fire resistive)	0.6
Non-combustible construction	Class 4 (masonry non-combustible)	0.8
	Class 3 (non-combustible)	0.8
Ordinary construction	Class 2 (joisted masonry)	1.0
Wood frame construction	Class 1 (frame)	1.5

However, the FUS definition of fire-resistive construction is more restrictive than those of ISO construction classes 5 and 6 (modified fire resistive and fire resistive). FUS requires structural members and floors in buildings of fire-resistive construction to have a fire-resistance rating of 3 hours or longer.

- With the exception of fire-resistive construction that is defined differently by FUS and ISO, practitioners can refer to the definitions of the ISO construction classes (and the supporting definitions of the types of materials and assemblies that make up the ISO construction classes) found in the current ISO guide [4] (see Annex i) to help select coefficient *C*.
- To identify the most appropriate type of construction for buildings of mixed construction, the rules included in the current ISO guide [4] can be followed (see Annex i). For a building to be assigned a given classification, the rules require ⅔ (67%) or more of the total wall area and ⅔ (67%) or more of the total floor and roof area of the building to be constructed according to the given construction class or a higher class.
- New residential developments (less than 4 storeys) are predominantly of wood frame construction ($C = 1.5$) or ordinary construction ($C = 1.0$) if exterior walls are of brick or masonry. Residential buildings with exterior walls of brick or masonry veneer and those with less than ⅔ (67%) of their exterior walls made of brick or masonry are considered wood frame construction ($C = 1.5$).

Please feel free to contact me if you have any questions.

Thank you,

Amr Salem
Civil Designer
LRL Associates Ltd.
5430 Canotek Road
Ottawa, Ontario K1J 9G2
T (613) 842-3434 or (877) 632-5664 ext 248
F (613) 842-4338
E asalem@lrl.ca
W www.lrl.ca

*si nous avons satisfait vos attentes en remplissant notre **sondage sur la satisfaction de la clientèle***

Amr Salem

From: Jamie Batchelor <jamie.batchelor@rvca.ca>
Sent: July 9, 2020 11:37 AM
To: Amr Salem
Subject: RE: 280 Eric Czapnik Way Development - Quality Controls

Follow Up Flag: Follow up
Flag Status: Flagged

Good Morning Amr,

Based on the distance of the outlet to Taylor's Creek, the water quality objective is 80% TSS removal. All quantity controls would be at the discretion of the City if it is outletting to the municipal storm sewer.

Jamie Batchelor, MCIP, RPP
Planner, ext. 1191
Jamie.batchelor@rvca.ca

Rideau Valley Conservation Authority
3889 Rideau Valley Drive
PO Box 599, Manotick ON K4M 1A5
T 613-692-3571 | 1-800-267-3504 F 613-692-0831 | www.rvca.ca

From: Amr Salem <asalem@lrl.ca>
Sent: Monday, July 6, 2020 11:41 AM
To: Jamie Batchelor <jamie.batchelor@rvca.ca>
Subject: RE: 280 Eric Czapnik Way Development - Quality Controls

Hello Jamie,

Just following up on my e-mail below. Can you please advise?

Thank you,

Amr Salem
Civil Designer
LRL Associates Ltd.
5430 Canotek Road
Ottawa, Ontario K1J 9G2
T (613) 842-3434 or (877) 632-5664 ext 248
F (613) 842-4338

E asalem@lrl.ca
W www.lrl.ca

From: Amr Salem
Sent: June 29, 2020 12:12 PM
To: Jamie.batchelor@rvca.ca
Cc: Maxime Longtin <mlongtin@lrl.ca>
Subject: 280 Eric Czapnik Way Development - Quality Controls

Good morning Jamie,

I wanted to consult with you regarding a residential development we are working on located at 280 Eric Czapnik Way.

Existing runoff from the site drains into municipal sewer along Eric Czapnik Way and travels approx. 650m before discharging into Taylor Creek. Runoff travels a further 1.5kms approx. before outlet at the Ottawa River.

The development proposed one 3-storey and one 4-storey building, sharing underground parking, and a paved surface parking lot providing 26 surface parking spots. The site will be landscape with stormwater coming primarily from rooftop and paved surface parking lot.

Existing site area is undeveloped and consists of gravel and grassed area.

Please provide your input about quality controls that may be required for this site.


boul Jeanne-d'Arc Blvd N
prom Wincanton Dr
crois Lawlor Cres
ch Regional Rd 174
174
ch Tenth Line Rd
prom Mockingbird Dr
crois Tulip Cres
500 m

Thank you,

Amr Salem
Civil Designer
LRL Associates Ltd.
5430 Canotek Road
Ottawa, Ontario K1J 9G2
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F (613) 842-4338
E asalem@lrl.ca
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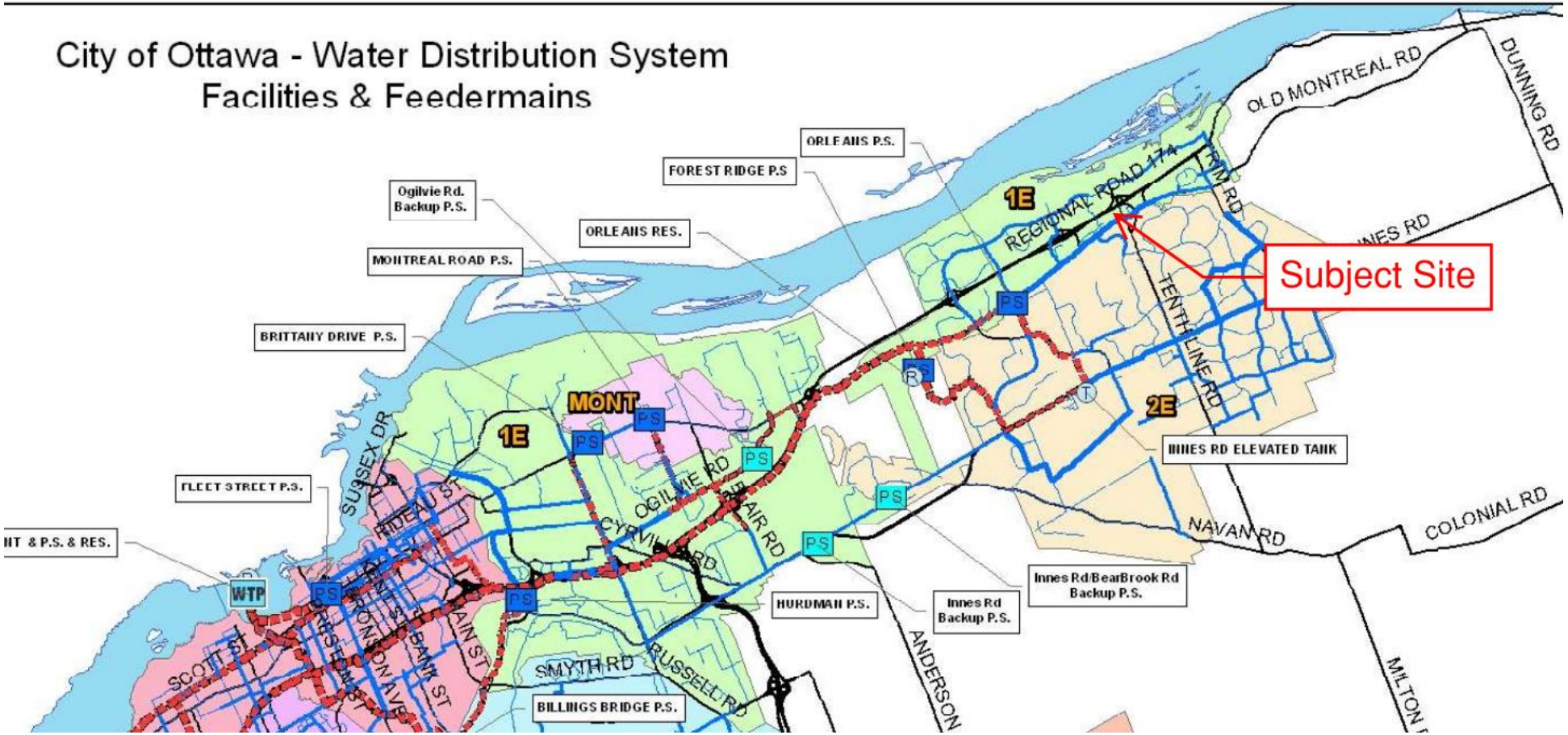
We care deeply, so let us know how we did by completing our Customer Satisfaction Survey.
Nous nous soucions profondément de votre opinion, nous vous invitons donc à nous faire savoir si nous avons satisfait vos attentes en remplissant notre sondage sur la satisfaction de la clientèle

APPENDIX B

Water Supply Calculations


City of Ottawa - Water Distribution System
Facilities & Feedermains
ORLEANS P.S.
FOREST RIDGE P.S
Ogilvie Rd. Backup P.S.
ORLEANS RES.
MONTREAL ROAD P.S.
BRITTANY DRIVE P.S.
FLEET STREET P.S.
NT & P.S. & RES.
WTP
1E
MONT
1E
2E
REGIONAL ROAD 174
OLD MONTREAL RD
DUNNING RD
TENTH LINE RD
INNES RD ELEVATED TANK
Subject Site
SUSSEX DR
RIDEAU ST
OGILVIE RD
CYRVILLE RD
BLAIR RD
MAIN ST
SCOTT ST
SMYTH RD
RUSSELL RD
BILLINGS BRIDGE P.S.
HURDMAN P.S.
Innes Rd Backup P.S.
Innes Rd/BearBrook Rd Backup P.S.
ANDERSON
NAVAN RD
COLONIAL RD
MILTON

Amr Salem

From: Curry, William <William.Curry@ottawa.ca>
Sent: December 16, 2020 6:52 AM
To: Amr Salem
Cc: Belan, Steve
Subject: 280 Eric Czapnick Way
Attachments: 280 Eric Czapnik Way_15Dec2020 .docx

Amr,

The City has made corrections to their software and now we provide BCs and request LRL to disregard all previous BCs that were provided.

Apologies for any inconveniences.

Please see the attached revised BC: from the 200mm private watermain with a maximum fire demand of 300 L/s - this would provide the min pressure of 20psi during Fire. Provide 2 connections.

Thanks

Please note I am off on Vacation from December 18 to January 4, 2021.
Je pars en vacances du 18 décembre au 4 janvier 2021.

Will Curry, C.E.T.

Planning, Infrastructure and Economic Development /
Planification, d'infrastructure et de développement économique
City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 16214
110 Laurier Ave., 4th Fl East;
Ottawa ON K1P 1J1

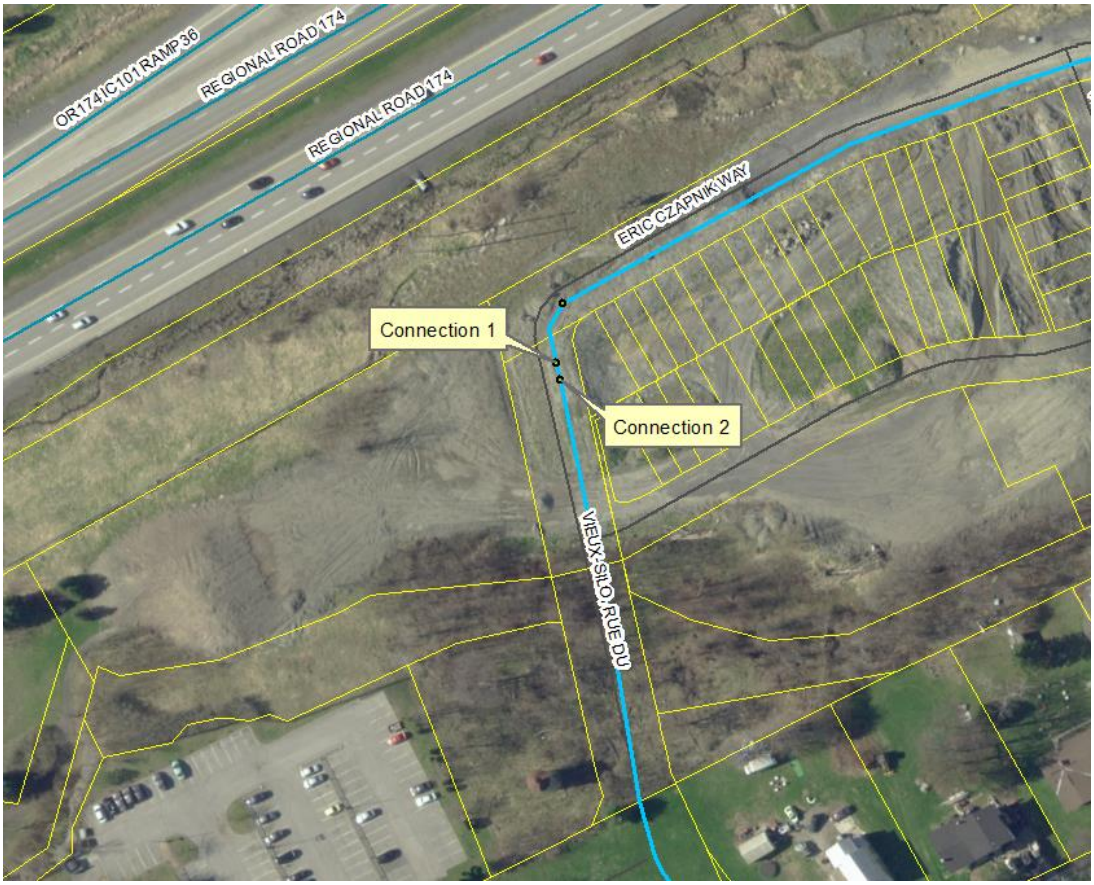
William.Curry@Ottawa.ca

Boundary Conditions
280 Eric Czapnik Way

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	25	0.41
Maximum Daily Demand	127	2.12
Peak Hour	995	16.58
Fire Flow Demand #1	18,000	300.00

Location



Results

Connection 1 – Eric Czapnik Way

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	114.0	68.6
Peak Hour	107.1	58.9
Max Day plus Fire 1	79.7	20.0

[1] Ground Elevation = 65.7 m

Connection 2 – Eric Czapnik Way

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	114.0	68.6
Peak Hour	107.1	58.9
Max Day plus Fire 1	80.5	21.0

[1] Ground Elevation = 65.7 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.

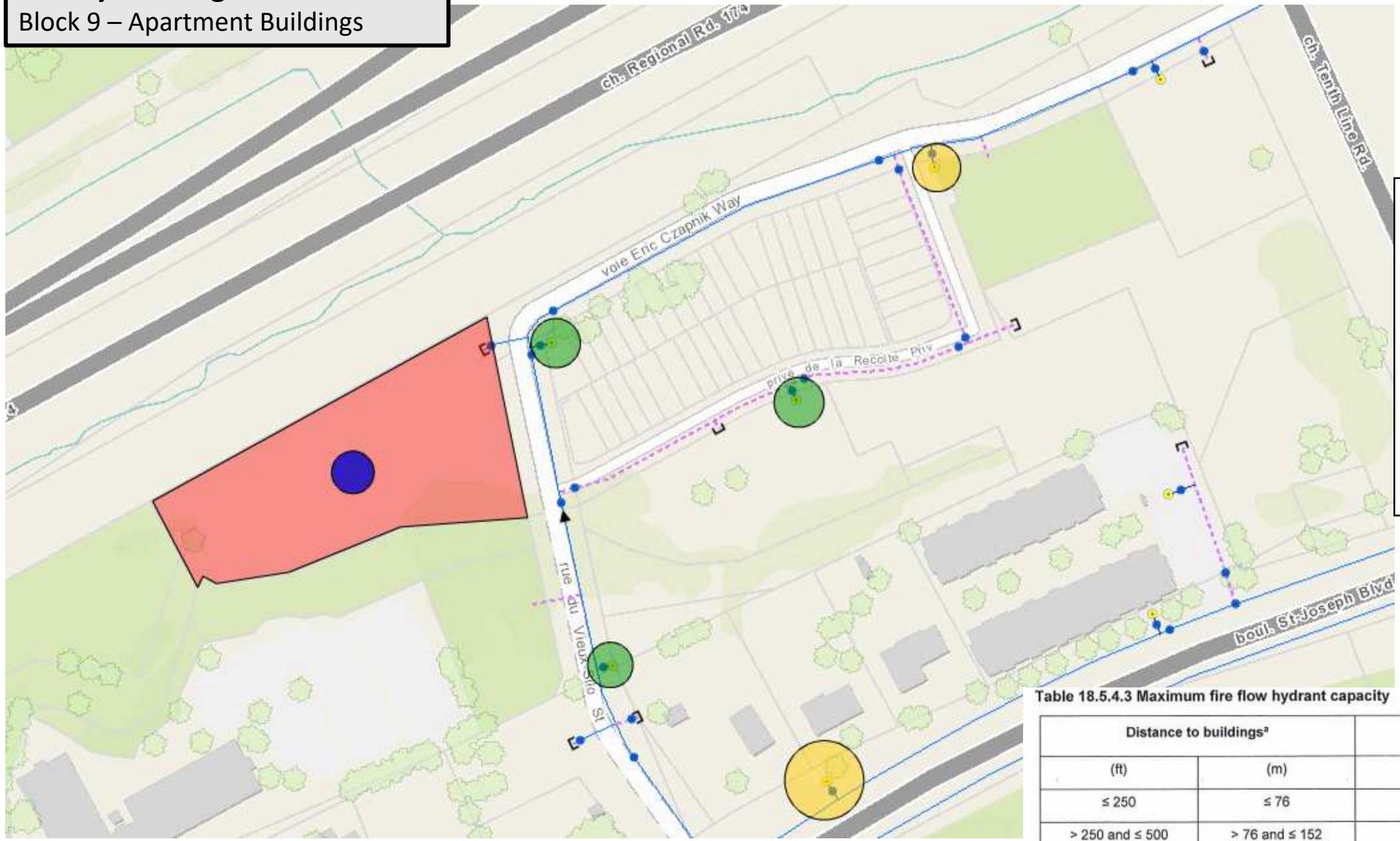
Fire Flow Calculations

LRL File No. 200041
Date July 3, 2020
Method Fire Underwriters Survey (FUS)
Prepared by Amr Salem

Step	Task	Term	Options	Multiplier	Choose:	Value	Unit	Fire Flow
Structural Framing Material								
1	Choose frame used for building	Coefficient C related to the type of construction	Wood Frame	1.5	Wood Frame	**1.5**		
			Ordinary Construction	1.0				
			Non-combustible construction	0.8				
			Fire resistive construction <2 hrs	0.7				
			Fire resistive construction >2 hrs	0.6				
Floor Space Area (A)								
2	Total area					**7,480**	m^2	
3	Obtain fire flow before reductions	Required fire flow	Fire Flow = 220 x C x $A^{0.5}$				L/min	**28,541**
Reductions or surcharge due to factors affecting burning								
4	Choose combustibility of contents	Occupancy hazard reduction or surcharge	Non-combustible	-25%	Limited combustible	**-15%**	L/min	**24,260**
			Limited combustible	-15%				
			Combustible	0%				
			Free burning	15%				
			Rapid burning	25%				
5	Choose reduction for sprinklers	Sprinkler reduction	Full automatic sprinklers	-30%	True	**-30%**	L/min	**12,130**
			Water supply is standard for both the system and fire department hose lines	-10%	True	-0.1		
			Fully supervised system	-10%	True	-0.1		
6	Choose separation	Exposure distance between units	North side	>30m	0%		L/min	**13,343**
			East side	20.1 to 30m	10%			
			South side	>30m	0%			
			West side	>30m	0%	**10%**		
Net required fire flow								
7	Obtain fire flow, duration, and volume				Minimum required fire flow rate (rounded to nearest 1000)		L/min	**13,000**
					Minimum required fire flow rate		L/s	**216.7**
					Required duration of fire flow		hr	**2.75**

Fire Hydrant Figure

Block 9 – Apartment Buildings



LEGEND

- Hydrants within 75m
- Hydrants within 150m
- Hydrants within 300m

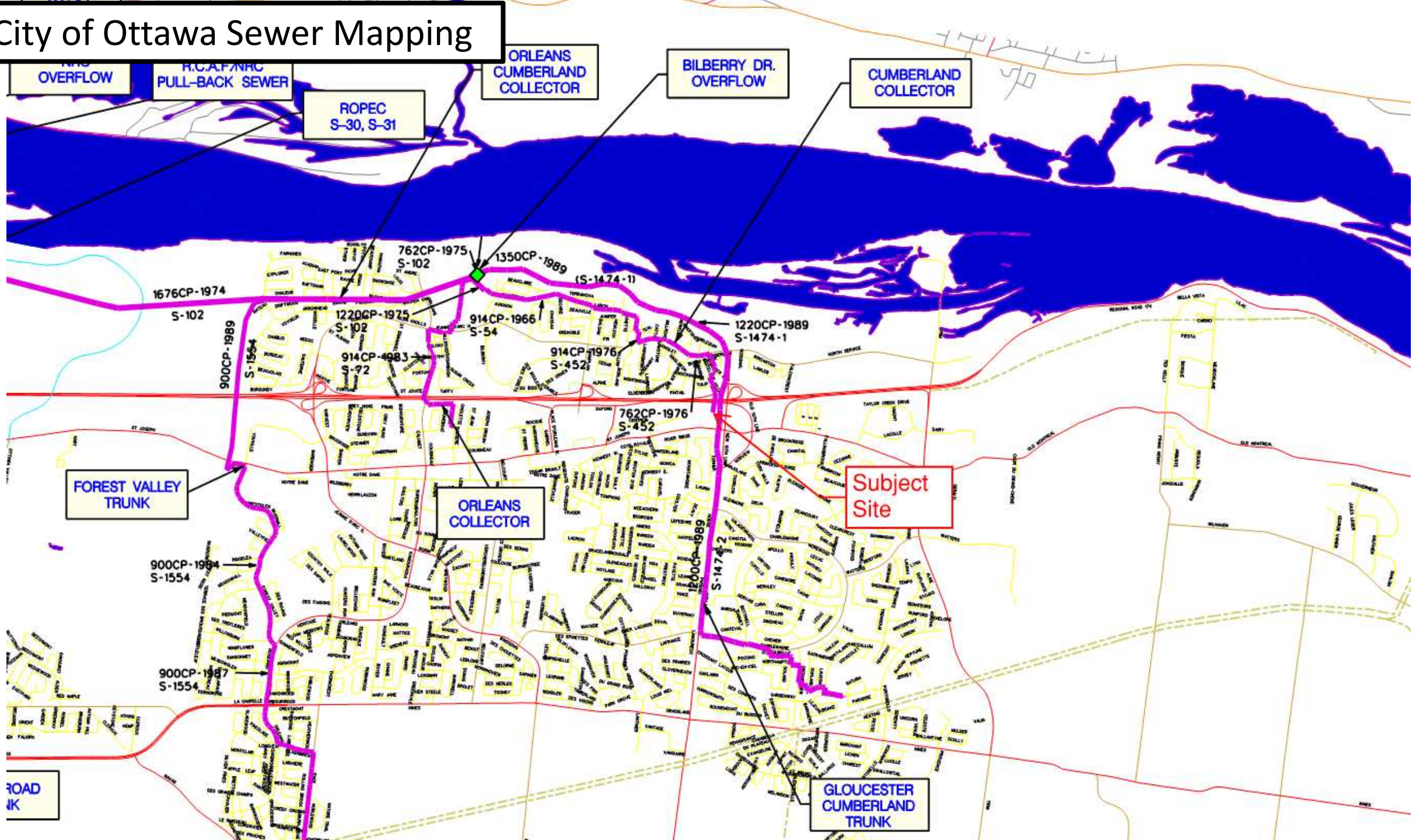
Table 18.5.4.3 Maximum fire flow hydrant capacity

Distance to buildings[a]		Maximum capacity[b]	
(ft)	(m)	(gpm)	(L/min)
≤ 250	≤ 76	1500	5678
> 250 and ≤ 500	> 76 and ≤ 152	1000	3785
> 500 and ≤ 1000	> 152 and ≤ 305	750	2839

APPENDIX C

Wastewater Collection Calculations

City of Ottawa Sewer Mapping



SANITARY SEWER DESIGN SHEET

DESIGNED BY : Mark Bowen
CHECKED BY : Melanie Riddell
DATE: April 19, 2011
PROJECT # 106011

PROJECT: Orleans Town Centre (EAST)
DEVELOPER: DCR Phoenix

LICENSED PROFESSIONAL ENGINEER — M.E. RIDDELL — 10CC40125 — PROVINCE OF ONTARIO

NOVATECH ENGINEERING CONSULTANTS LTD. — ENGINEERS & PLANNERS

Orleans Town Centre East Sanitary Sewers

FROM MH	TO MH	UNITS: Single	Town	Apt Condo	Future Apt/Condo (By Others)	INDIVIDUAL: Population (in 1000's)	AREA (ha.)	CUMULATIVE: Population (in 1000's)	AREA (ha.)	PEAK FACTOR (M)	POPULATION FLOW (p) (L/s)	PEAK EXTRAN. FLOW Q(i) (L/s)	PEAK DESIGN FLOW Q(d) (L/s)	PROPOSED SEWER: LENGTH (m)	PIPE SIZE (mm)	TYPE OF PIPE	GRADE %	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)
135	133	2	0	0	0	0.007	0.65	0.007	0.65	4.0	**0.11**	0.18	0.29	116.7	200	PVC	0.56	**25.61**	0.79
133	131	0	0	0	108	0.194	0.72	0.201	1.37	4.0	**3.26**	0.38	3.64	28.4	200	PVC	3.74	**66.17**	2.04
181	131	0	12	0	0	0.032	0.17	0.032	0.17	4.0	**0.53**	0.05	0.57	10.1	200	PVC	1.18	**37.17**	1.15
131	129	0	0	0	0	0.000	0.04	0.234	1.58	4.0	**3.79**	0.44	4.23	26.3	200	PVC	6.86	**89.62**	2.76
129	127	0	0	0	0	0.000	0.04	0.234	1.62	4.0	**3.79**	0.45	4.24	24.8	200	PVC	5.32	**78.92**	2.43
127	125	0	0	0	0	0.000	0.04	0.234	1.66	4.0	**3.79**	0.46	4.25	26.2	200	PVC	5.31	**78.85**	2.43
173	125	0	0	30	0	0.054	0.68	0.054	0.68	4.0	**0.88**	0.19	1.07	10.2	200	PVC	1.00	**34.22**	1.06
125	123	0	0	0	0	0.000	0.03	0.288	2.37	4.0	**4.66**	0.66	5.32	19.8	200	PVC	1.31	**39.16**	1.21
123	121	0	0	0	0	0.000	0.01	0.288	2.38	4.0	**4.66**	0.67	5.33	6.9	200	PVC	1.44	**41.06**	1.27
121	119	0	12	0	0	0.032	0.29	0.320	2.67	4.0	**5.19**	0.75	5.93	74.7	200	PVC	0.96	**33.53**	1.03
171A	171	0	16	18	0	0.076	0.64	0.076	0.64	4.0	**1.23**	0.18	1.40	71.0	200	PVC	1.00	**34.22**	1.06
171	169	0	1	0	0	0.003	0.06	0.078	0.70	4.0	**1.27**	0.20	1.46	31.8	200	PVC	3.00	**59.26**	1.83
169	Stub	0	3	0	0	0.008	0.08	0.086	0.78	4.0	**1.40**	0.22	1.62	35.4	200	PVC	3.00	**59.26**	1.83
Stub	119	0	0	0	0	0.000	0.00	0.086	0.78	4.0	**1.40**	0.22	1.62	10.2	200	PVC	0.69	**28.42**	0.88
119	115	0	8	0	0	0.022	0.18	0.428	3.63	4.0	**6.95**	1.02	7.97	54.5	200	PVC	1.49	**41.77**	1.29
165	163	0	0	0	80	0.144	0.53	0.144	0.53	4.0	**2.33**	0.15	2.48	17.4	200	PVC	3.00	**59.26**	1.83
163	161	0	0	0	0	0.000	0.09	0.144	0.62	4.0	**2.33**	0.17	2.51	45.0	200	PVC	3.00	**59.26**	1.83
161	159	0	0	0	0	0.000	0.01	0.144	0.63	4.0	**2.33**	0.18	2.51	9.6	200	PVC	3.00	**59.26**	1.83
159	157	0	0	0	0	0.000	0.02	0.144	0.65	4.0	**2.33**	0.18	4.70	23.9	200	PVC	4.18	**69.96**	2.16
171	157	0	18	0	0	0.049	0.33	0.049	0.33	4.0	**0.79**	0.09	0.88	60.4	200	PVC	1.00	**34.22**	1.06
157	155	0	0	0	0	0.000	0.02	0.193	0.02	4.0	**3.12**	0.01	3.13	9.0	200	PVC	1.50	**41.91**	1.29
157A	155	0	0	58	0	0.104	0.26	0.104	0.26	4.0	**1.69**	0.07	1.76	21.1	200	PVC	1.00	**34.22**	1.06
155	153	0	0	0	0	0.000	0.00	0.297	0.280	4.0	**4.81**	0.08	7.07	15.6	200	PVC	1.50	**41.91**	1.29
153	Stub	0	4	0	0	0.011	0.10	0.308	0.380	4.0	**4.99**	0.11	7.27	43.1	200	PVC	3.00	**59.26**	1.83
Stub	115	0	0	0	0	0.000	0.00	0.308	0.28	4.0	**4.99**	0.08	7.25	9.3	200	PVC	1.00	**34.22**	1.06
115	E6	0	0	0	0	0.000	0.34	0.736	4.35	3.9	**11.57**	1.22	14.97	54.5	200	PVC	1.49	**41.77**	1.29
E6	E1	0	0	0	0	0.000	0.00	0.736	4.35	3.9	**11.57**	1.22	14.97	24.3	300	PVC	3.33	**184.09**	2.52
				Total OTC East Flows							**11.57**	**1.22**	**14.97**						

Most restrictive leg downstream

LRL File No. 200041
Project: Block 9 - Apartment Buildings
Location: 280 Eric Czapnik Way
Date: February 10, 2021

Sanitary Design Parameters

Average Daily Flow = 280 L/p/day
Commercial & Institutional Flow = 28000 L/ha/day
Light Industrial Flow = 35000 L/ha/day
Heavy Industrial Flow = 55000 L/ha/day
Maximum Residential Peak Factor = 4.0
Commercial & Institutional Peak Factor = 1.5
Industrial Peak Factor = as per Appendix 4-B = 7
Extraneous Flow = 0.33 L/s/gross ha

Pipe Design Parameters

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

LOCATION			RESIDENTIAL AREA AND POPULATION						COMMERCIAL		INDUSTRIAL			INSTITUTIONAL		C+I+I	INFILTRATION			TOTAL FLOW (l/s)	PIPE					
STREET	FROM MH	TO MH	AREA (Ha)	POP.	CUMMULATIVE AREA (Ha)	CUMMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (Ha)	ACCU. AREA (Ha)	AREA (Ha)	ACCU. AREA (Ha)	PEAK FACT.	AREA (Ha)	ACCU. AREA (Ha)	PEAK FLOW (l/s)	TOTAL AREA (Ha)	ACCU. AREA (Ha)	INFILT. FLOW (l/s)		LENGTH (m)	DIA. (mm)	SLOPE (%)	MATERIAL	CAP. (FULL) (l/s)	VEL. (FULL) (m/s)
SITE	PROP. BLDG	SAN MH02	0.517	126.0	0.52	126.0	4.0	1.63	0.000	0.000	0.00	0.00	7.0	0.0	0.0	0.00	0.52	0.52	0.17	1.80	32.0	200	1.34%	PVC	37.97	1.21
SITE	SAN MH02	SAN MH03				126.0	4.0	1.63	0.000	0.000	0.00	0.00	7.0	0.0	0.0	0.00	0.00	0.52	0.17	1.80	23.3	200	2.48%	PVC	51.65	1.64
	SAN MH03	SAN MH04				126.0	4.0	1.63	0.000	0.000	0.00	0.00	7.0	0.0	0.0	0.00	0.00	0.52	0.17	1.80	22.4	200	1.79%	PVC	43.88	1.40
	SAN MH04	SAN MH5				126.0	4.0	1.63	0.000	0.000	0.00	0.00	7.0	0.0	0.0	0.00	0.00	0.52	0.17	1.80	20.3	200	2.96%	PVC	56.43	1.80
	SAN MH05	EX. STUB				126.0	4.0	1.63	0.000	0.000	0.00	0.00	7.0	0.0	0.0	0.00	0.00	0.52	0.17	1.80	2.3	200	2.20%	PVC	48.65	1.55

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

Designed: A.S.	PROJECT: Block 9 - Apartment Buildings		
Checked: M.B.	LOCATION: 280 Eric Czapnik Way		
Dwg. Reference: C.401	File Ref.: 200041	Date: 2021-02-10	Sheet No. 1 of 1

APPENDIX D

Stormwater Management Calculations

Table 2.2 – Future Development Blocks Allowable Release Rates

Block	Total Area	Runoff Coefficient	Allowable Release Rate	
	(ha)	(as per current concept)	(L/s/ha)	(L/s)
ROW1	0.145	0.64	158.5	22.9
ROW2	0.146	0.65	157.1	22.9
ROW3	0.146	0.72	122.9	17.9
ROW4	0.150	0.71	119.0	17.9
ROW5	0.084	0.72	214.4	17.9
ROW6	0.086	0.78	209.1	17.9
ROW7	0.080	0.82	224.6	17.9
ROW8	0.077	0.74	66.0	22.9
PARK	0.270	0.30		
ROW9	0.277	0.70	443.4	123.0
ROW10	0.146	0.68	172.7	25.2
ROW Total	**1.607**	**0.64**	**190.9**	**306.4**
EXT.1	0.360	0.70	150.0	54.0
EXT.2	0.560	0.65	150.0	84.0
EXT.3	0.160	0.75	150.0	23.3
BLK101	0.166	0.72	127.0	21.0
BLK102	0.560	0.65	150.0	84.0
BLK103	0.677	0.66	127.0	86.0
BLK104A	1.005	0.71	127.0	128.3
BLK104B	0.501	0.00	127.0	63.6
BLK105	0.502	0.72	127.0	63.7
BLK106	0.387	0.65	150.0	58.0
BLK107	0.250	0.71	150.0	37.5
BLK Total	**5.128**	**0.69**	**137.2**	**703.3**
TOWN	0.504	0.63	141.9	71.5
Total	**7.239**	**0.64**	**149.4**	**1081.2**

Note: Release rate for the Hillside Terrace Townhouse development (TOWN) includes 68.6L/s of minor system flows and 2.9 L/s of major system flows)

NOTES:
- THIS PLAN SHOULD BE READ IN CONJUNCTION WITH:
  - THE ORLEANS TOWN CENTRE EAST LANDS SERVICEABILITY AND STORMWATER MANAGEMENT REPORT, JAN. 2011
  - AMENDMENT TO THE ORLEANS TOWN CENTRE EAST LANDS SERVICEABILITY AND STORMWATER MANAGEMENT REPORT, JAN. 2011
- THE STORAGE VOLUMES AND RELEASE RATES (Q_A) SHOWN ON THIS PLAN HAVE BEEN CALCULATED BASED ON THE CONCEPT PLAN SHOWN ON THIS DRAWING.
- STORAGE VOLUMES AND RELEASE RATES FOR EACH BLOCK MUST BE CONFIRMED DURING DETAILED DESIGN
- STORAGE VOLUMES AND RELEASE RATES MAY CHANGE IF THE DESIGN DIFFERS FROM THAT SHOWN ON THIS DRAWING.
- RELEASE RATES FOR BLOCKS ARE CALCULATED USING THE MODIFIED RATIONAL METHODS
- RELEASE RATES FOR ROOFTOP AREAS ARE CALCULATED ASSUMING 4-5 ZURN ROOF DRAINS/ROOF AND ARE DESIGN TO MAXIMIZE THE USE OF ROOF STORAGE
- OTHER STORAGE IS EITHER SURFACE STORAGE OR UNDERGROUND STORAGE
- Q_A FOR OTHER STORAGE = Q_A (BLOCK) - Q_A (ROOF)
- PONDING VOLUMES ARE CALCULATED BASED ON PRELIMINARY GRADING AND MUST BE CONFIRMED DURING DETAILED DESIGN

M:\2006\106011\CAD\DESIGN - EAST\106011E-STM-SWC-MER.dwg, SWC

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
6.	ISSUED FOR MOE APPROVAL	JUN 7/11	MER
5.	ISSUED FOR PHASE 1 APPROVAL	APR 19/11	MER
4.	ISSUED WITH REVISED SUBDIVISION SUBMISSION	FEB 15/11	MER
3.	ISSUED FOR CITY APPROVAL	FEB 04/10	MER
2.	ISSUED FOR CITY APPROVAL	DEC 21/09	MER
1.	ISSUED FOR CITY APPROVAL	FEB 27/09	MER

SCALE
1:750
1:750
0 10 20 30

DESIGN MWB
CHECKED MER
DRAWN JPB
CHECKED MWB
APPROVED MER

LICENSED PROFESSIONAL ENGINEER
M.J. PETEPIECE
100079354
June 23/11
PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER
M.E. RIDDELL
100040125
PROVINCE OF ONTARIO

NOVATECH
ENGINEERING CONSULTANTS LTD.
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Facsimile (613) 254-5867
Email: novainfo@novatech-eng.com

LOCATION
CITY of OTTAWA
ORLEANS TOWN CENTRE (EAST)

DRAWING NAME
STORMWATER CRITERIA FOR FUTURE DEVELOPMENT BLOCKS

PROJECT No. 106011-00
REV REV # 6
DRAWING No. 106011E-SWC

PLANB1.DWG - 1000mmx707mm

LRL Associates Ltd.
Storm Watershed Summary

LRL File No.	200041
Project:	Block 9-Apartment Buildings
Location:	Eric Czapnik Way, Orleans
Date:	December 17, 2020
Designed:	Amr Salem
Drawing Reference:	C701/C702

Pre-Development Catchments

WATERSHED	C = 0.2	C = 0.80	C = 0.90	Total Area (m^2)	Total Area (ha)	Combined C
EWS-01	5174.0	0.0	0.0	5174.0	0.517	0.20
TOTAL	**5174.0**	**0.0**	**0.0**	**5174.0**	**0.517**	**0.20**

Post-Development Catchments

WATERSHED	C = 0.20	C = 0.80	C = 0.90	Total Area (m^2)	Total Area (ha)	Combined C
WS-01(UNCONTROLLED)	1182.0	0.0	243.0	1425.0	0.143	0.32
WS-02 (CONTROLLED)	0.0	0.0	2103.0	2103.0	0.210	0.90
WS-03 (CONTROLLED)	410.0	410.0	0.0	820.0	0.082	0.50
WS-04 (CONTROLLED)	165.0	123.0	538.0	826.0	0.083	0.75
TOTAL	**1757.0**	**533.0**	**2884.0**	**5174.0**	**0.517**	**0.65**

LRL File No. 200041
Project: Block 9-Apartment Buildings
Location: Eric Czapnik Way, Orleans
Date: December 17, 2020
Designed: Amr Salem
Drawing Ref.: C.601

Stormwater Management Design Sheet

Runoff Equation

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

Allowable Release Rate = 127 L/s/ha *(As determined by Serviceability and Stormwater management Report for the Orleans Town Centre East Lands (OTCEL Report) prepared by Novatech, dated rev June 9, 2011)*
A = 0.517 ha
Q = 65.72 L/s

Post-development Stormwater Management

					$\sum R_{100}$	$\sum R_{100}$
	Total Site Area =	**0.517**	ha	**ΣR=**	**0.65**	**0.81**
Controlled	WS-02 (Roof)	0.210	ha	R=	0.90	1.00
	WS-03	0.082	ha	R=	0.50	0.63
	WS-04	0.083	ha	R=	0.75	0.93
	Total Controlled =	**0.375**	**ha**	**ΣR=**	**0.78**	**0.97**
Un-controlled	WS-01	0.143	ha	R=	0.32	0.40
	Total Un-Controlled =	**0.143**	**ha**	**ΣR=**	**0.32**	**0.40**

Post-development Stormwater Management (Uncontrolled Catchment WS-01)

100 Year Storm Event:

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

Time (min)	Intensity (mm/hr)	Uncontrolled Runoff (L/s)	Controlled Release Rate Constant (L/s)	Total Release Rate (L/s)
10	178.6	28.24	0.00	28.24

Post-development Stormwater Management (WS-02 On Roof)

100 Year Storm Event:

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

		Storage Required				
Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate Constant (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.6	104.39	45.36	28.80	0.00	28.80
15	142.9	83.54	49.27	28.80	0.00	28.80
20	120.0	70.13	49.59	28.80	0.00	28.80
25	103.8	60.71	47.87	28.80	0.00	28.80
30	91.9	53.71	44.84	28.80	0.00	28.80
35	82.6	48.28	40.90	28.80	0.00	28.80
40	75.1	43.93	36.32	28.80	0.00	28.80
45	69.1	40.37	31.24	28.80	0.00	28.80
50	64.0	37.39	25.77	28.80	0.00	28.80
60	55.9	32.68	13.96	28.80	0.00	28.80
70	49.8	29.11	1.30	28.80	0.00	28.80
80	45.0	26.30	0.00	28.80	0.00	28.80
90	41.1	24.03	0.00	28.80	0.00	28.80
100	37.9	22.16	0.00	28.80	0.00	28.80
110	35.2	20.58	0.00	28.80	0.00	28.80
120	32.9	19.23	0.00	28.80	0.00	28.80

Summary of Roof Storage

V = (l*w)*h/3 = Ah/3

Maximum Roof Storage (100 Year) =	49.59	m^3	
Proposed Head =	150	mm	
Control Flow/Drain =	2.40	L/s	
Number of Roof Drains =	12		
Total Flow from Roof Drain =	28.80	L/s	
Available Roof Surface =	2100	m^2	
Effective Roof Surface =	1454	m^2	69 (% of total roof surface)
Available Roof Storage =	**72.72**	m^3	
Roof Drain Model =	Murphco Ultra Roof Drain, see Appendix D		

Total Storage Required = 49.59 m^3
Available Roof Storage = 72.72 m^3 refer to LRL Plan C.601

Post-development Stormwater Management (WS-03 & WS-04)

Inlet Control Device (ICD)
Discharge = 8.68 L/s
Head = 2.84 m

100 Year Storm Event:

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

		Storage Required				
Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate Constant (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.6	63.64	32.97	8.68	0.00	8.68
15	142.9	50.93	38.02	8.68	0.00	8.68
20	120.0	42.75	40.88	8.68	0.00	8.68
25	103.8	37.01	42.50	8.68	0.00	8.68
30	91.9	32.74	43.31	8.68	0.00	8.68
35	82.6	29.43	43.58	8.68	0.00	8.68
40	75.1	26.78	43.44	8.68	0.00	8.68
45	69.1	24.61	43.01	8.68	0.00	8.68
50	64.0	22.79	42.34	8.68	0.00	8.68
60	55.9	19.92	40.47	8.68	0.00	8.68
70	49.8	17.74	38.07	8.68	0.00	8.68
80	45.0	16.03	35.30	8.68	0.00	8.68
90	41.1	14.65	32.25	8.68	0.00	8.68
100	37.9	13.51	28.97	8.68	0.00	8.68
110	35.2	12.55	25.52	8.68	0.00	8.68
120	32.9	11.72	21.91	8.68	0.00	8.68

Total Storage Required = 43.58 m^3
Available Surface Storage = 49.01 m^3 refer to LRL Plan C.601

Summary of release Rates and Storage Volumes

Catchment Area	Drainage Area (ha)	100-year Release Rate (L/s)	100-Year Required Storage (m3)	Total Available Storage (m3)
WS-01 (Un-controlled)	0.143	28.24	0	0
WS-02 (Roof Controls)	0.210	28.80	49.59	72.72
WS-03 & WS-04	0.165	8.68	43.58	49.01
TOTAL	**0.517**	**65.72**	**93.17**	**121.73**

LRL Associates Ltd.
Storm Design Sheet

LRL File No. 200041
Project: Block 9-Apartment Buildings
Location: Eric Czapnik Way, Orleans
Date: February 10, 2021
Designed: Amr Salem
Drawing Reference: C.401

Storm Design Parameters

Rational Method Q = 2.78CIA

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

Runoff Coefficient (C)
Grass 0.20
Gravel 0.80
Asphalt / rooftop 0.90

Ottawa Macdonald-Cartier International Airport IDF curve equation (5 year event, intensity in mm/hr)
$I = 998.071 / (T_c + 6.053)^{0.814}$
Min. velocity = 0.80 m/s
Manning's "n" = 0.013

LOCATION			AREA (ha)			FLOW						STORM SEWER							
WATERSHED / STREET	From MH	To MH	C = 0.20	C = 0.80	C = 0.90	Indiv. 2.78AC	Accum. 2.78AC	Time of Conc. (min.)	Rainfall Intensity (mm/hr)	Peak Flow Q (L/s)	Controlled Flow Q (L/s)	Pipe Diameter (mm)	Type	Slope (%)	Length (m)	Capacity Full (L/s)	Velocity Full (m/s)	Time of Flow (min.)	Ratio (Q/Q_{FULL})
WS-03	CBMH02	CBMH01	0.041	0.041	0.000	0.114	0.11	10.00	104.2	11.88	N/A	250	PVC	1.09%	28.3	62.1	1.26	0.37	0.19
WS-04	CBMH01	STM MH03	0.017	0.012	0.054	0.171	0.29	10.37	102.3	29.16	8.68	250	PVC	1.11%	20.7	62.7	1.28	0.27	0.47
	STM MH03	STM MH04	0.000	0.000	0.000	0.000	0.29	10.64	100.9	28.77	8.68	250	PVC	2.00%	21.5	84.1	1.71	0.21	0.34
WS-02 - Roof Controls*	STM MH04	CBMH04B	0.000	0.000	0.210	0.525	0.81	10.85	99.9	109.77	37.48	300	PVC	3.60%	16.7	183.5	2.60	0.11	0.60
	CBMH04B	STM MH05	0.007	0.000	0.001	0.006	0.82	10.96	99.4	109.93	37.48	300	PVC	2.97%	6.7	166.7	2.36	0.05	0.66
	STM MH05	OGS	0.000	0.000	0.023	0.058	0.87	11.01	99.2	115.45	37.48	300	PVC	2.87%	2.4	163.8	2.32	0.02	0.70
	OGS	EX. STM MH	0.00	0.00	0.00	0.000	0.87	11.02	99.1	115.38	37.48	300	PVC	2.02%	10.4	137.4	1.94	0.09	0.84

**Building flow equal to the 100-Year Controlled Release Rate*

Stormceptor®

FORTERRA

Stormceptor® EF Sizing Report

STORMCEPTOR®
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

07/08/2020

Province:	Ontario
City:	Orléans
Nearest Rainfall Station:	OTTAWA MACDONALD-CARTIER INT'L AP
NCDC Rainfall Station Id:	6000
Years of Rainfall Data:	37

Site Name:	280 Eric Czapnik Way

Drainage Area (ha):	0.494
Runoff Coefficient 'c':	0.67

Particle Size Distribution:	Fine
Target TSS Removal (%):	80.0
Required Water Quality Runoff Volume Capture (%):	90.0

Oil / Fuel Spill Risk Site?	Yes
Upstream Flow Control?	No
Peak Conveyance (maximum) Flow Rate (L/s):	

Project Name:	280 Eric Czapnik Way
Project Number:	200041
Designer Name:	Brandon O'Leary
Designer Company:	Forterra
Designer Email:	brandon.oleary@forterrabp.com
Designer Phone:	905-630-0359
EOR Name:	Amr Salem
EOR Company:	LRL Associates Ltd.
EOR Email:	
EOR Phone:	

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EFO4	81
EFO6	86
EFO8	89
EFO10	91
EFO12	92

Recommended Stormceptor EFO Model: EFO4

Estimated Net Annual Sediment (TSS) Load Reduction (%): 81

Water Quality Runoff Volume Capture (%): > 90

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THIRD-PARTY TESTING AND VERIFICATION

►**Stormceptor® EF and Stormceptor® EFO** are the latest evolutions in the Stormceptor® oil-grit separator (OGS) technology series, and are designed to remove a wide variety of pollutants from stormwater and snowmelt runoff. These technologies have been third-party tested in accordance with the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** and performance has been third-party verified in accordance with the **ISO 14034 Environmental Technology Verification (ETV)** protocol.

PERFORMANCE

►**Stormceptor® EF and EFO** remove stormwater pollutants through gravity separation and floatation, and feature a patent-pending design that generates positive removal of total suspended solids (TSS) throughout each storm event, including high-intensity storms. Captured pollutants include sediment, free oils, and sediment-bound pollutants such as nutrients, heavy metals, and petroleum hydrocarbons. Stormceptor is sized to remove a high level of TSS from the frequent rainfall events that contribute the vast majority of annual runoff volume and pollutant load. The technology incorporates an internal bypass to convey excessive stormwater flows from high-intensity storms through the device without resuspension and washout (scour) of previously captured pollutants. Proper routine maintenance ensures high pollutant removal performance and protection of downstream waterways.

PARTICLE SIZE DISTRIBUTION (PSD)

►The **Canadian ETV PSD** shown in the table below was used, or in part, for this sizing. This is the identical PSD that is referenced in the Canadian ETV ***Procedure for Laboratory Testing of Oil-Grit Separators*** for both sediment removal testing and scour testing. The Canadian ETV PSD contains a wide range of particle sizes in the sand and silt fractions, and is considered reasonably representative of the particle size fractions found in typical urban stormwater runoff.

Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

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Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
1	51.3	51.3	0.91	55.0	46.0	93	47.7	47.7
2	8.7	60.0	1.83	110.0	91.0	88	7.6	55.4
3	5.8	65.8	2.74	164.0	137.0	84	4.8	60.2
4	4.6	70.4	3.65	219.0	183.0	78	3.6	63.8
5	4.2	74.6	4.56	274.0	228.0	74	3.1	66.9
6	3.2	77.8	5.48	329.0	274.0	70	2.2	69.1
7	2.6	80.4	6.39	383.0	319.0	65	1.7	70.8
8	2.4	82.8	7.30	438.0	365.0	62	1.5	72.3
9	1.9	84.7	8.21	493.0	411.0	58	1.1	73.4
10	1.6	86.3	9.13	548.0	456.0	57	0.9	74.3
11	1.3	87.6	10.04	602.0	502.0	55	0.7	75.0
12	1.1	88.7	10.95	657.0	548.0	54	0.6	75.6
13	1.3	90.0	11.86	712.0	593.0	52	0.7	76.3
14	1.1	91.1	12.78	767.0	639.0	52	0.6	76.9
15	0.6	91.7	13.69	821.0	685.0	52	0.3	77.2
16	0.8	92.5	14.60	876.0	730.0	51	0.4	77.6
17	0.7	93.2	15.52	931.0	776.0	51	0.4	78.0
18	0.5	93.7	16.43	986.0	821.0	51	0.3	78.2
19	0.6	94.3	17.34	1040.0	867.0	51	0.3	78.5
20	0.5	94.8	18.25	1095.0	913.0	50	0.3	78.8
21	0.2	95.0	19.17	1150.0	958.0	50	0.1	78.9
22	0.4	95.4	20.08	1205.0	1004.0	50	0.2	79.1
23	0.5	95.9	20.99	1259.0	1050.0	50	0.2	79.3
24	0.4	96.3	21.90	1314.0	1095.0	49	0.2	79.5
25	0.1	96.4	22.82	1369.0	1141.0	49	0.0	79.6

Stormceptor® EF Sizing Report

Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
26	0.3	96.7	23.73	1424.0	1186.0	48	0.1	79.7
27	0.4	97.1	24.64	1479.0	1232.0	48	0.2	79.9
28	0.2	97.3	25.55	1533.0	1278.0	47	0.1	80.0
29	0.2	97.5	26.47	1588.0	1323.0	47	0.1	80.1
30	0.2	97.7	27.38	1643.0	1369.0	46	0.1	80.2
31	0.1	97.8	28.29	1698.0	1415.0	46	0.0	80.2
32	0.2	98.0	29.21	1752.0	1460.0	44	0.1	80.3
33	0.1	98.1	30.12	1807.0	1506.0	43	0.0	80.4
34	0.1	98.2	31.03	1862.0	1552.0	42	0.0	80.4
35	0.1	98.3	31.94	1917.0	1597.0	41	0.0	80.4
36	0.2	98.5	32.86	1971.0	1643.0	39	0.1	80.5
37	0.0	98.5	33.77	2026.0	1688.0	38	0.0	80.5
38	0.1	98.6	34.68	2081.0	1734.0	37	0.0	80.6
39	0.1	98.7	35.59	2136.0	1780.0	36	0.0	80.6
40	0.1	98.8	36.51	2190.0	1825.0	35	0.0	80.6
41	0.1	98.9	37.42	2245.0	1871.0	34	0.0	80.7
42	0.1	99.0	38.33	2300.0	1917.0	34	0.0	80.7
43	0.2	99.2	39.24	2355.0	1962.0	33	0.1	80.8
44	0.1	99.3	40.16	2409.0	2008.0	32	0.0	80.8
45	0.1	99.4	41.07	2464.0	2054.0	31	0.0	80.8
46	0.0	99.4	41.98	2519.0	2099.0	31	0.0	80.8
47	0.1	99.5	42.90	2574.0	2145.0	30	0.0	80.9
48	0.0	99.5	43.81	2629.0	2190.0	29	0.0	80.9
49	0.0	99.5	44.72	2683.0	2236.0	29	0.0	80.9
50	0.0	99.5	45.63	2738.0	2282.0	28	0.0	80.9
Estimated Net Annual Sediment (TSS) Load Reduction =								**81 %**

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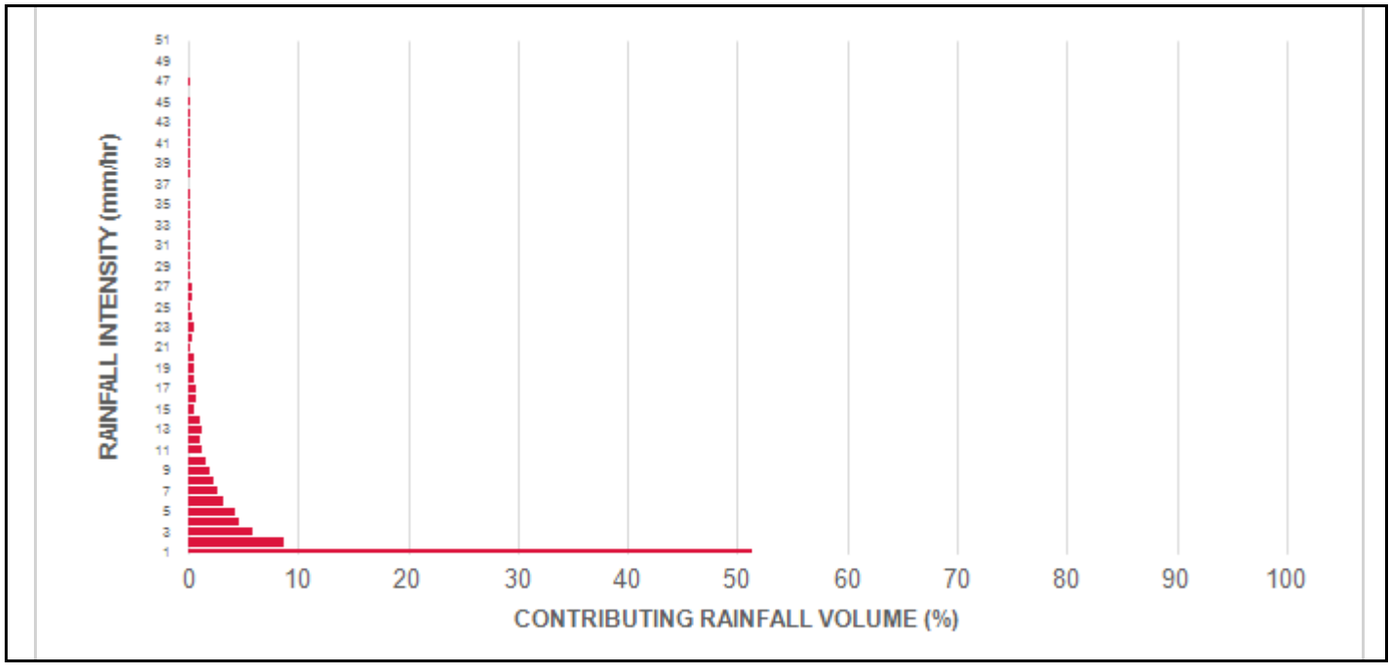
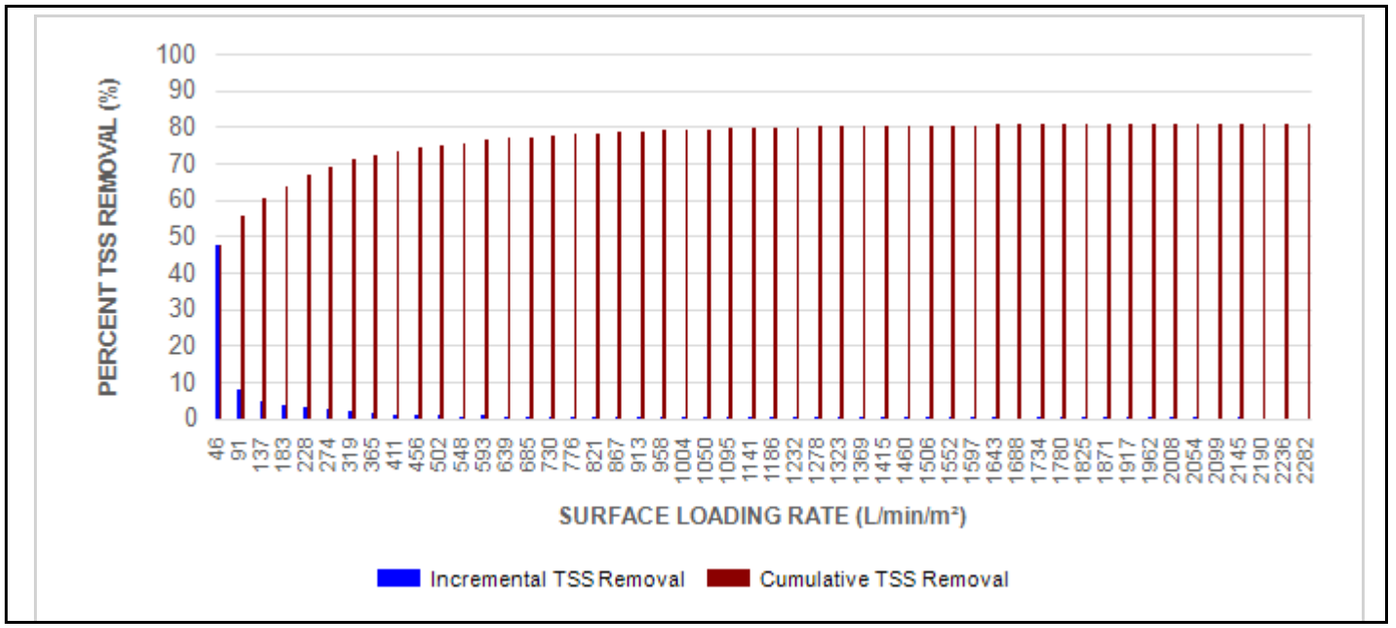
RAINFALL DATA FROM OTTAWA MACDONALD-CARTIER INT'L AP RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

SCOUR PREVENTION AND ONLINE CONFIGURATION

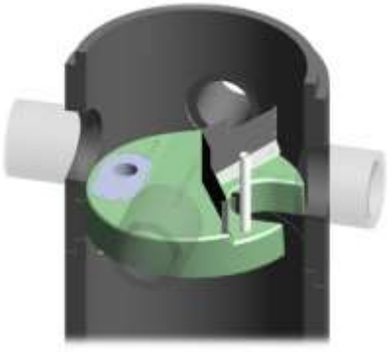
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test performance has been third-party verified in accordance with the ISO 14034 ETV protocol. As a result, Stormceptor EF and EFO are approved for online installation, eliminating the need for costly additional bypass structures, piping, and installation expense.

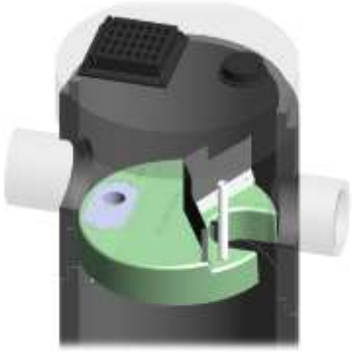
DESIGN FLEXIBILITY

►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle, and can be modified to ensure performance in submerged conditions.

OIL CAPTURE AND RETENTION

►While Stormceptor® EF will capture and retain oil from dry weather spills and low intensity runoff, **Stormceptor® EFO** has demonstrated superior oil capture and greater than 99% oil retention in third-party testing according to the light liquid re-entrainment testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**. Stormceptor EFO is recommended for sites where oil capture and retention is a requirement.





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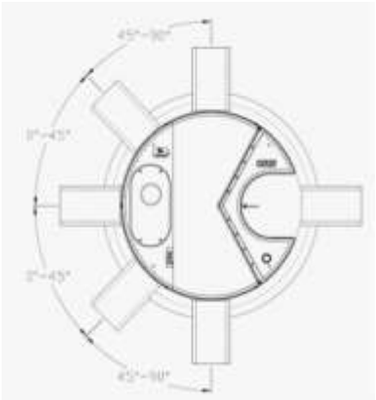

INLET-TO-OUTLET DROP

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.
0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.
45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure. The applicable K value for calculating minor losses through the unit is 1.1. For submerged conditions the applicable K value is 3.0.

Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft^3)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

*Increased sump depth may be added to increase sediment storage capacity
** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft^3)

Feature	Benefit	Feature Appeals To
Patent-pending enhanced flow treatment and scour prevention technology	Superior, verified third-party performance	Regulator, Specifying & Design Engineer
Third-party verified light liquid capture and retention for EFO version	Proven performance for fuel/oil hotspot locations	Regulator, Specifying & Design Engineer, Site Owner
Functions as bend, junction or inlet structure	Design flexibility	Specifying & Design Engineer
Minimal drop between inlet and outlet	Site installation ease	Contractor
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade	Maintenance Contractor & Site Owner

STANDARD STORMCEPTOR EF/EFO DRAWINGS

For standard details, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

For specifications, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

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STANDARD PERFORMANCE SPECIFICATION FOR "OIL GRIT SEPARATOR" (OGS) STORMWATER QUALITY TREATMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit** S**eparators**

1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The minimum sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1	4 ft (1219 mm) Diameter OGS Units:	1.19 m^3 sediment / 265 L oil
	6 ft (1829 mm) Diameter OGS Units:	3.48 m^3 sediment / 609 L oil
	8 ft (2438 mm) Diameter OGS Units:	8.78 m^3 sediment / 1,071 L oil
	10 ft (3048 mm) Diameter OGS Units:	17.78 m^3 sediment / 1,673 L oil
	12 ft (3657 mm) Diameter OGS Units:	31.23 m^3 sediment / 2,476 L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing shall be determined using historical rainfall data and a sediment removal performance curve derived from the actual third-party verified laboratory testing data. The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m^2.

3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV **Program's Procedure for Laboratory Testing of Oil-Grit Separators,** with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to assess whether light liquids captured after a spill are effectively retained at high flow rates.

3.4.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m2 to 2600 L/min/m2) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

STANDARD PERFORMANCE SPECIFICATION FOR "OIL GRIT SEPARATOR" (OGS) STORMWATER QUALITY TREAMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

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ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit Separators**

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1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

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2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The **minimum** sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1

4ft (1219mm) Diameter OGS Units:	1.19m^3 sediment / 265L oil
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8ft (2438mm) Diameter OGS Units:	8.78m^3 sediment / 1,071L oil
10ft (3048mm) Diameter OGS Units:	17.78m^3 sediment / 1,673L oil
12ft (3657mm) Diameter OGS Units:	31.23m^3 sediment / 2,476L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

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3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m^2.

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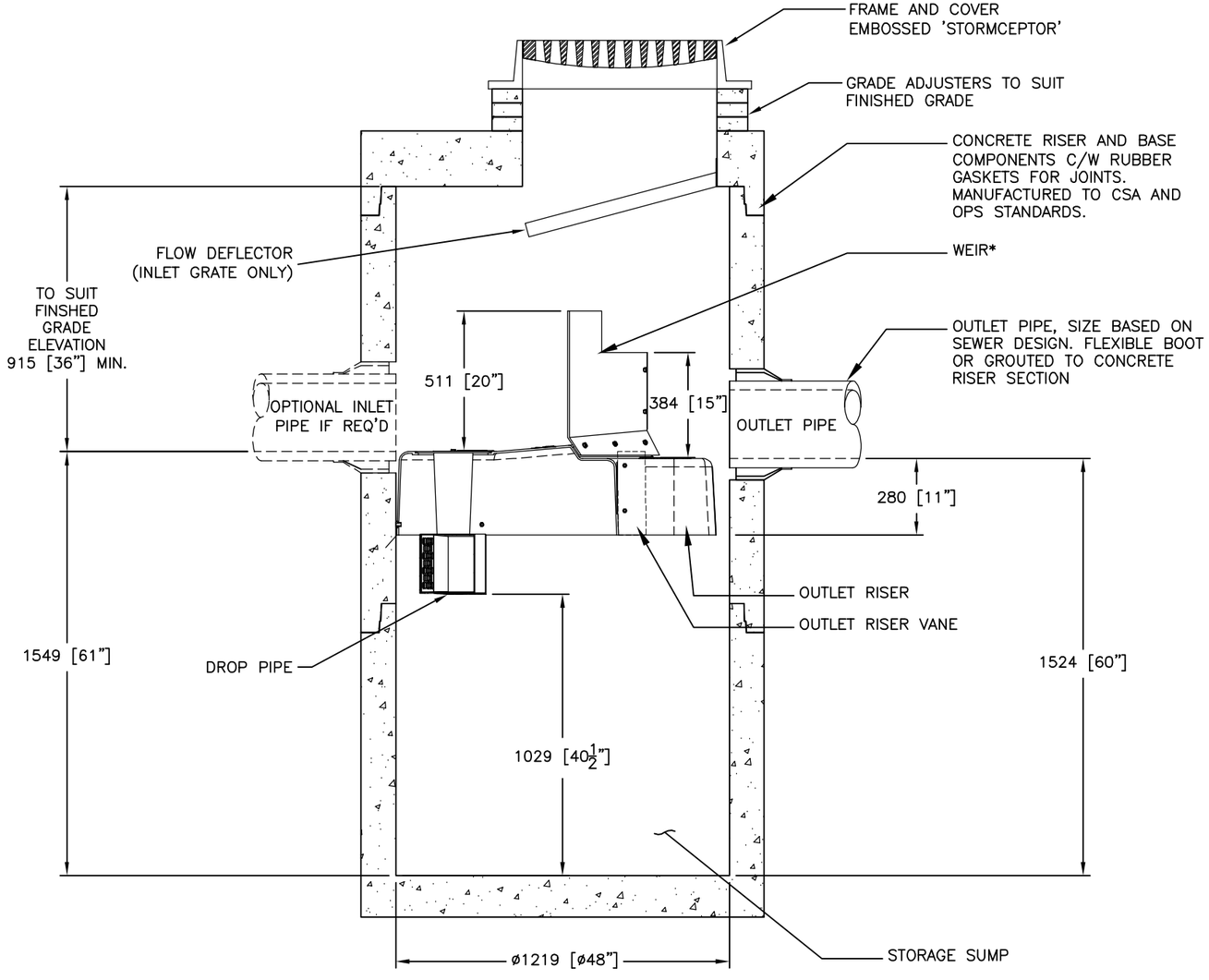
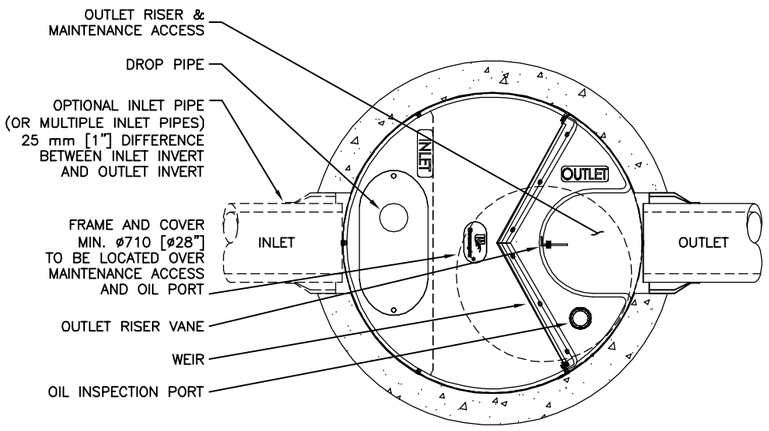
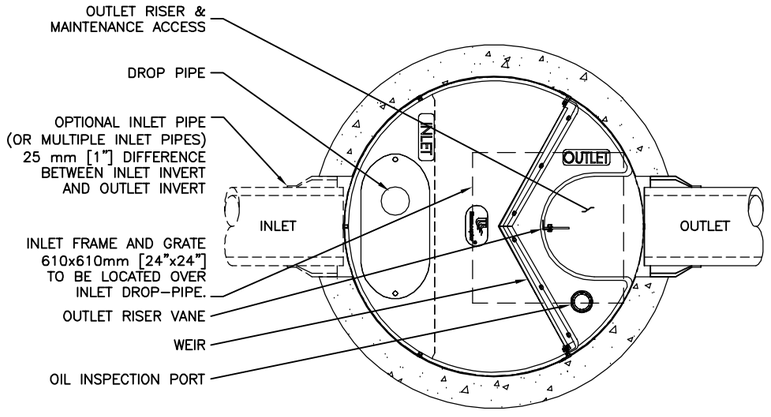


SECTION VIEW



PLAN VIEW (STANDARD)



PLAN VIEW (INLET TOP)

FOR SITE SPECIFIC DRAWINGS PLEASE CONTACT YOUR LOCAL STORMCEPTOR REPRESENTATIVE. SITE SPECIFIC DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION AT THE TIME. SOME FIELD REVISIONS TO THE SYSTEM LOCATION OR CONNECTION PIPING MAY BE NECESSARY BASED ON AVAILABLE SPACE OR SITE CONFIGURATION REVISIONS. ELEVATIONS SHOULD BE MAINTAINED EXCEPT WHERE NOTED ON BYPASS STRUCTURE (IF REQUIRED).

GENERAL NOTES:

* MAXIMUM SURFACE LOADING RATE (SLR) INTO LOWER CHAMBER THROUGH DROP PIPE IS 1135 L/min/m^2 (27.9 gpm/ft^2) FOR STORMCEPTOR EF4 AND 535 L/min/m^2 (13.1 gpm/ft^2) FOR STORMCEPTOR EFO4 (OIL CAPTURE CONFIGURATION). WEIR HEIGHT IS 150 mm (6 INCH) FOR EF04.

1. ALL DIMENSIONS INDICATED ARE IN MILLIMETERS (INCHES) UNLESS OTHERWISE SPECIFIED.
2. STORMCEPTOR STRUCTURE INLET AND OUTLET PIPE SIZE AND ORIENTATION SHOWN FOR INFORMATIONAL PURPOSES ONLY.
3. UNLESS OTHERWISE NOTED, BYPASS INFRASTRUCTURE, SUCH AS ALL UPSTREAM DIVERSION STRUCTURES, CONNECTING STRUCTURES, OR PIPE CONDUITS CONNECTING TO COMPLETE THE STORMCEPTOR SYSTEM SHALL BE PROVIDED AND ADDRESSED SEPARATELY.
4. DRAWING FOR INFORMATION PURPOSES ONLY. REFER TO ENGINEER'S SITE/UTILITY PLAN FOR STRUCTURE ORIENTATION.
5. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

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 STRUCTURE (LIFTING CLUTCHES PROVIDED)
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT)
D. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT THE DEVICE FROM CONSTRUCTION-RELATED EROSION RUNOFF.
E. DEVICE ACTIVATION, BY CONTRACTOR, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE STORMCEPTOR UNIT IS CLEAN AND FREE OF DEBRIS.

STANDARD DETAIL
NOT FOR CONSTRUCTION

SITE SPECIFIC DATA REQUIREMENTS

STORMCEPTOR MODEL	EF4				
STRUCTURE ID					*
WATER QUALITY FLOW RATE (L/s)					*
PEAK FLOW RATE (L/s)					*
RETURN PERIOD OF PEAK FLOW (yrs)					*
DRAINAGE AREA (HA)					*
DRAINAGE AREA IMPERVIOUSNESS (%)					*
PIPE DATA:	I.E.	MAT'L	DIA	SLOPE %	HGL
INLET #1	*	*	*	*	*
INLET #2	*	*	*	*	*
OUTLET	*	*	*	*	*

* PER ENGINEER OF RECORD

MARK	DATE	REVISION DESCRIPTION	BY
####	####	####	####
####	####	####	####
1	6/8/18	UPDATES	JSK
0	5/26/17	INITIAL RELEASE	JSK

Stormceptor® EF

SCALE = NTS

imbrium®
7007 RIDGE ROAD, SUITE 350, HANOVER, MD 21076
USA: 888-279-9828 CA: 800-386-4801 INTL: +1-416-960-9900

DATE: 5/26/2017

DESIGNED:	DRAWN:
JSK	JSK
CHECKED:	APPROVED:
BSF	SP
PROJECT No.:	SEQUENCE No.:
EF4	*

SHEET: 1 OF 1

ROOF DRAIN DEVICE

Les Produits MURPHCO Ltée

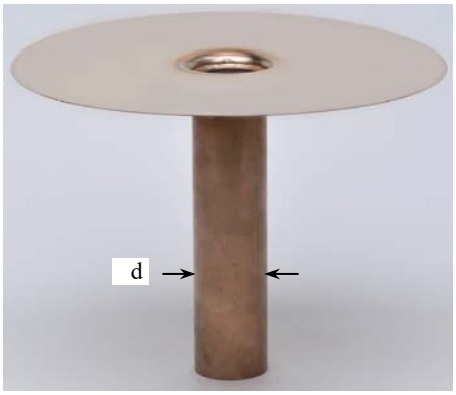
TECHNICAL DATA

MURPHCO ULTRA ROOF DRAINS

DESCRIPTION

ULTRA COPPER DRAIN

d :
2"
2 ⅝"
3"
3 ⅝"
4"
4 ⅝"
5"
5 ⅝"
6"



ULTRA ALUMINUM DRAIN

d :
2 ⅝"
3"
3 ⅝"
4"

The design of the joint between the flange and the sleeve makes it a very distinctive roof drain. The flange is folded down in the sleeve with the patented ***Murphco*** punch. Both pieces are then unified with a continuous ***"MIG"*** bronze solder joint, under the flange. This solder joint cannot be melted when heated by a blowtorch at the time of application of modified bitumen membranes so that the assembly remains permanently watertight. This method avoids any contact of water on the soldered joint, preventing any infiltration on account of solder defect.

Use: recommended for all types of flat roofs: industrial, commercial, and residential.

MATERIALS

	ULTRA COPPER DRAIN	**ULTRA ALUMINUM DRAIN**
FLANGE	32 oz copper, thickness : 0.042" (1.066 mm)	Rigid aluminum 3003-H14, MARINE TYPE; Thickness: 0.090" (2.29 mm)
SLEEVE	Rigid copper sleeve See table of diameters, page 3	Rigid aluminum sleeve, 3003-H14 grade, MARINE TYPE; ALLOY 6061 : 0.090" (2.29 mm) thick for all interior diameter sizes See table of interior diameters, page 3
STANDARDS	Rigid copper sleeve conforming with ASTM-B75	Rigid aluminum sleeve conforming with ASTM-B221.REV.14
GRADE	Commercial, DHP C12200	Marine vessels, pressure tanks
SOLDER	***"MIG"*** process	***"MIG"*** process

DIMENSIONS

	ULTRA COPPER DRAIN	**ULTRA ALUMINUM DRAIN**
FLANGE	CIRCULAR 16" DIA. (400 mm); square flange on request. (delivery delay)	CIRCULAR 16" DIA. (400 mm)
SLEEVE	Standard length: 12" (300 mm) and 18" (452 mm); longer sleeves available on request (delivery delay)	Standard length: 12" (300 mm) and 18" (452 mm); longer sleeves available on request (delivery delay)

Revision 00: july 2016

MURPHCO ULTRA ROOF DRAINS

INSTALLATION – COPPER DRAIN / ALUMINUM DRAIN

At the membrane level:
These types of roof drains are used on flat roofs covered with B.U.R. asphalt felt membranes, modified bitumen or E.P.D.M. roofing and waterproofing membranes.

To seal the drain to the membrane, it is recommended to prime the copper and/or aluminum flange on both sides with a compatible primer. Then, the flange is applied into a continuous layer of compatible and heavy duty bituminous cement, or specified adhesive.

To complete the flashing of the flange to an asphalt felt membrane, apply 2 plies of heavy duty cotton fabric and a top ply no.15 asphalt felt, each one applied into hot bitumen.

For a modified bitumen membrane, apply a reinforcing ply and extend the cap sheet membrane in accordance with the recommendation of the manufacturer.

For an E.P.D.M. membrane, strictly follow the installation procedures recommended by the membrane manufacturer.

Connection to the interior rainwater leader:
The connection of the roof drain sleeve to the interior rainwater leader may be made as per the following procedures:

1. If the rainwater leader is accessible by the interior, cut the roof drain sleeve to an appropriate length in order to install a clamp collar with 3" and 4" drains or a flexible coupling sleeve. This method may be made only with a rigid sleeve roof drain. In such a way. The water flow diameter is not reduced.

2. When using an appropriate interior drain diameter of 2⅝" (67 mm), 3⅝" (92 mm), 4 ⅝" (117 mm) and 5 ⅝" (143 mm), the drain sleeve may also be sealed to the interior pipe with a U-Flow$^{T.M.}$ seal, following the recommendation of U-Flow Inc., manufacturer.

3. The drain sleeve may also be sealed to the interior pipe with a heavy duty elastomeric cement applied on the exterior surface of the sleeve, before the drain installation. This interior pipe connection method is used only if the methods described in items 1 and 2 above are not possible.

FEATURES AND GUARANTY

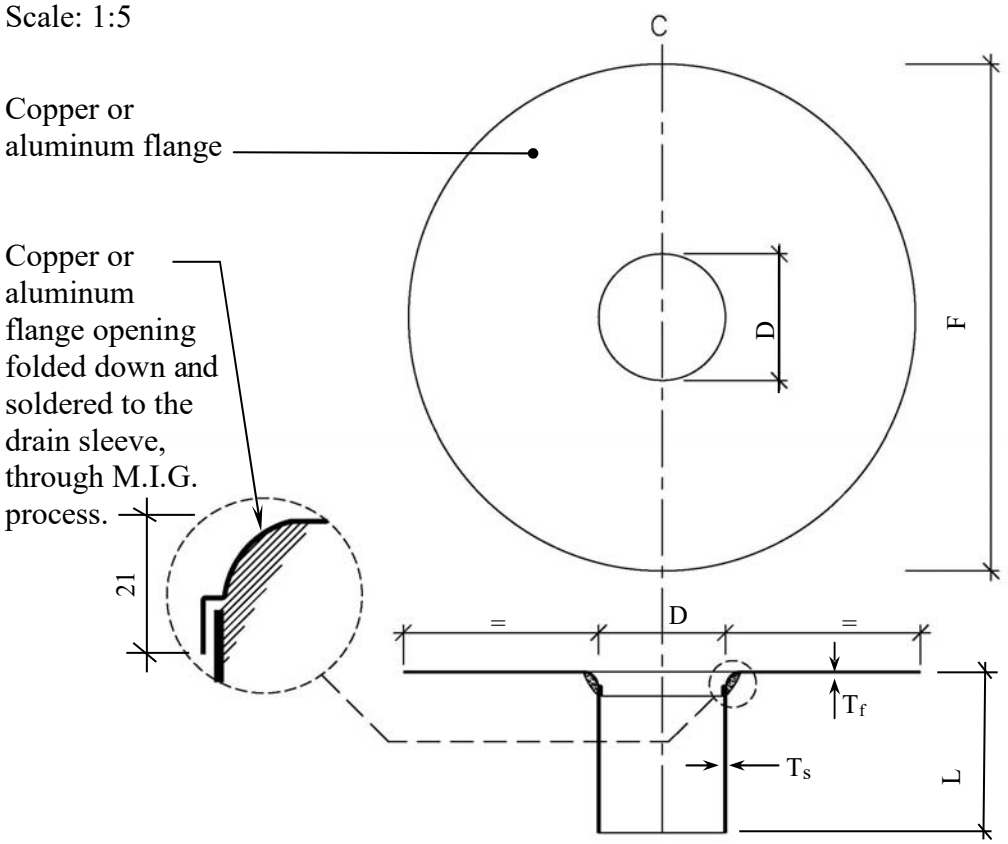
- Rigid copper or aluminum sleeve without joint, clip or vertical solder
- 32 oz copper flange or 0.090" (2.29 mm) aluminum flange folded down in the sleeve with the patented ***Murphco*** punch
- No joint or solder exposed to surface water
- Compatible with U-FLOW$^{T.M.}$ seal, clamp collar or flexible coupling sleeve for a maximum flow
- Durability, quality and commercial grade
- Guaranteed against corrosion and manufacturing defects (see note)

Note: Avoid any contact between the aluminum drain and pressure treated wood. Such contact shall invalidate the drain guaranty.

MURPHCO ULTRA ROOF DRAINS

DRAIN SECTION – COPPER DRAIN / ALUMINUM DRAIN

Scale: 1:5



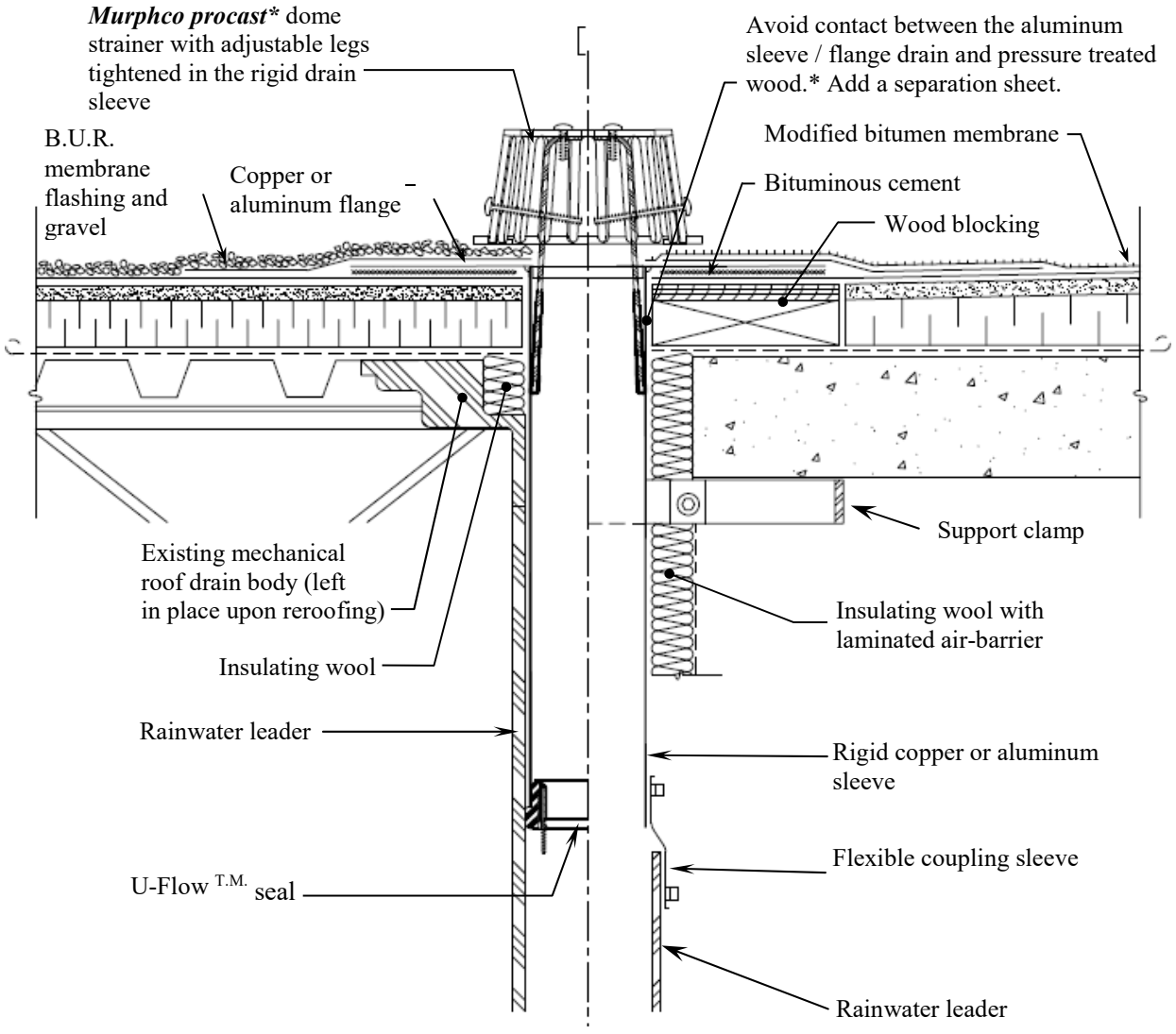
ULTRA COPPER DRAIN				
STANDARDS DIMENSIONS				
D (interior)	Ts	Tf	F	L
2" (51 mm)	0.050" (1.27 mm)	32 onces	Round 16" (400 mm)	12" & 18" (300 & 452 mm)
2 ⅝" (67 mm)	0.050" (1.27 mm)	32 onces		
3" (76 mm)	0.045" (1.14 mm)	32 onces		
3 ⅝" (92 mm)	0.078" (1.83 mm)	32 onces		
4" (102 mm)	0.058" (1.47 mm)	32 onces		
4 ⅝" (117 mm)	0.090" (2.29 mm)	32 onces		
5" (127 mm)	0.090" (2.29 mm)	32 onces		
5 ⅝" (143 mm)	0.090" (2.29 mm)	32 onces		
6" (152 mm)	0.090" (2.29 mm)	32 onces		

ULTRA ALUMINUM DRAIN				
STANDARDS DIMENSIONS				
D (interior)	Ts	Tf	F	L
2 ⅝" (67 mm)	0.090" (2.29 mm)	0.090" (2.29 mm)	Round 16" (400 mm)	12" & 18" (300 & 452 mm)
3" (76 mm)	0.090" (2.29 mm)	0.090" (2.29 mm)		
3 ⅝" (92 mm)	0.090" (2.29 mm)	0.090" (2.29 mm)		
4" (102 mm)	0.090" (2.29 mm)	0.090" (2.29 mm)		

MURPHCO ULTRA ROOF DRAINS

TYPICAL DETAIL – COPPER DRAIN / ALUMINUM DRAIN

Scale: 1:5



Notice to plumbing / roofing contractor: When a copper drain sleeve must be cut for adjustment to appropriate length, avoid the use of vibrating tools that could generate fissures in the copper flange or sleeve along the solder. Rather utilize a circular cutter.

*Note: Avoid any contact between the aluminum drain and pressure treated wood. Such contact shall invalidate the drain guaranty.

MURPHCO ULTRA ROOF DRAINS

DESIGNED AND MANUFACTURED BY LES PRODUITS MURPHCO LTÉE

Technical assistance or further information may be obtained from:

LES PRODUITS MURPHCO

Manufacturier et spécialiste de drains de toiture

Boutique de Métal en feuille

4955 Brock st, Montreal (Qc) H4E 1B5
Tel.: (514) 937-3275 • Fax: (514) 937-6797
Web: www.produitsmurphco.com • E-mail: nancy@produitsmurphco.com

DOCUMENTATION PRÉPARÉE AVEC LA COLLABORATION TECHNIQUE DE :

Englobe
1200, boul. Saint-Martin Ouest, bureau 400
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NOTICE

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MOULDED CONTROL FLOW DOME STRAINER

DESCRIPTION

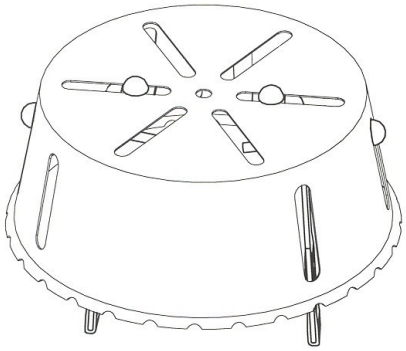
The control flow dome strainer is made of shop moulded aluminum and conceived for flat roof drains where hydraulic loads of the interior rainwater leaders must be restricted in order to meet the requirements of the current codes, the standards of certain municipalities and the drainage system capacity limits.

According to these requirements, the strainer may be modified to limit the water flow by reducing the number of openings, see tables on following pages.

The strainer is available in 2 sizes, small and medium, which are compatible with ***Murphco**** copper roof drains, being inserted inside the sleeves. Moreover, such strainers may adapt to all types of existing drains as their adjustable legs, coated with gripping rubber, are tightly adjusted inside the sleeve or body of the drain.

TECHNICAL DESCRIPTION OF FINISHED PRODUCT

Color : Aluminum (metallic grey)
Dome : Moulded aluminum
Series: 1100
Legs : Extruded aluminum
6063 T5 solid
Rounded end
Coating : Red plastic color Guard
No. 17545
Screws : Stainless steel
2 screws of ¼" x 3"
2 screws of ¼" x ¾"



Moulded control-flow dome strainer

SIZES		SMALL		MEDIUM	
Height		3½"	90 mm	3½"	90 mm
Maximum Width		6¾"	173 mm	9⅛"	232 mm
Legs height		6¾"	170 mm	6¾"	170 mm
Distance between the legs	min.	1"	25 mm	3⅜"	85 mm
	max.	6¾"	173 mm	9⅛"	232 mm

* Trade mark of Les Produits Murphco Ltée, see appropriate data sheet

MOULDED CONTROL FLOW DOME STRAINER

TABLE: WATER FLOW CORRESPONDING TO THE NUMBER OF OPENINGS FOR A MAXIMUM WATER DEPTH OF 3½"

Number of holes	Water flow (l/s) *	Water flow (gal/min)	Evacuation time **
1	0,9	11,9	24,0
2	1,3	17,2	17,3
3	1,7	22,5	13,2
4	2,1	27,7	10,7
5	2,5	33,0	9,0
6	2,9	38,3	7,8
7	3,3	43,6	6,8
8	3,7	48,9	6,1
9	4,1	54,2	5,5
10	4,5	59,5	5,0
11	4,9	64,7	4,6
12	5,3	70,0	4,2
13	5,7	75,3	3,9
14	6,1	80,6	3,7
15	6,5	85,9	3,5
16	6,9	91,2	3,3
17	7,3	96,5	3,1
18	7,7	101,8	2,9
19	8,1	107,0	2,8
20	8,5	112,3	2,6
21	8,9	117,6	2,5
22	9,3	122,9	2,4

Notes:

*: The water flow is calculated with a maximum water level of 90 mm (3½") at the drain.

**: Maximum evacuation time in hours for a maximum drainage area of 900 m^2 per drain so that the water depth does not exceed 90 mm (3½"). The complete drainage of water should not last more than 24 hours [article 4.10.4.2) of the 1995 National Plumbing Code of Canada].

MOULDED CONTROL FLOW DOME STRAINER

TABLE: WATER FLOW CORRESPONDING TO THE NUMBER OF OPENINGS FOR A MAXIMUM WATER DEPTH OF 6"

Number of holes	Water flow (l/s) *	Water flow (gal/min)	Evacuation time **
1	1,6	21,6	11,5
2	2,0	26,9	9,2
3	2,4	32,2	7,7
4	2,8	37,5	6,6
5	3,2	42,8	5,8
6	3,6	48,0	5,2
7	4,0	53,3	4,6
8	4,4	58,6	4,2
9	4,8	63,9	3,9
10	5,2	69,2	3,6
11	5,6	74,5	3,3
12	6,0	79,8	3,1
13	6,4	85,1	2,9
14	6,8	90,3	2,7
15	7,2	95,6	2,6
16	7,6	100,9	2,5
17	8,0	106,2	2,3
18	8,4	111,5	2,2
19	8,8	116,8	2,1
20	9,2	122,1	2,0
21	9,6	127,3	1,9
22	10,0	132,6	1,9

Notes:

*: The water flow is calculated with a maximum water level of 150 mm (6") at the drain.

**: Maximum evacuation time in hours for a maximum drainage area of 900 m^2 per drain so that the water depth does not exceed 150 mm (6"). The complete drainage of water should not last more than 24 hours [article 4.10.4.2) of the 1995 National Plumbing Code of Canada].

Example:

To drain an area of 900 m^2, with a maximum water flow of 2 l/s imposed by the mechanical engineer and a maximum water depth of 150 mm, it is necessary to install 2 drains, each one equipped with two openings in each dome strainer.

MOULDED CONTROL FLOW DOME STRAINER

DESIGNED AND MANUFACTURED BY LES PRODUITS MURPHCO LTÉE

Technical assistance or further information may be obtained from:

LES PRODUITS MURPHCO

Manufacturier et spécialiste de drains de toiture

Boutique de Métal en feuille

4955, rue Brock Montréal, Qc, H4E 1B5

Tél : (514) 937-3275 Fax : (514) 937-6797

Site web : www.produitsmurphco.com Courriel : info@produitsmurphco.com

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FLOW CONTROL ROOF DRAINAGE DECLARATION

THIS FORM TO BE COMPLETED BY THE MECHANICAL AND STRUCTURAL ENGINEERS RESPONSIBLE FOR DESIGN

Permit Application No.

Project Name:
200041 - Hillside Apartments

Building Location:
280 Eric Czapnik Way, Orleans

Municipality:
Ottawa

The roof drainage system has been designed in accordance with the following criteria: (please check one of the following).

M1. ❑ Conventionally drained roof (no flow control roof drains used).

M2. ☑ Flow control roof drains meeting the following conditions have been incorporated in this design:

(a) the maximum drain down time does not exceed 24h,
(b) one or more scuppers are installed so that the maximum depth of water on the roof cannot exceed 150mm,
(c) drains are located not more than 15m from the edge of roof and not more than 30m from adjacent drains, and
(d) there is at least one drain for each 900 sq.m.

M3. ❑ A flow control drainage system that does not meet the minimum drainage criteria described in M2 has been incorporated in this design.

PROFESSIONAL SEAL APPLIED BY:

Practitioner's Name:
Sebastien Soucy

Firm:
LRL Associates Ltd.

Phone #:
613-842-3434

City: Ottawa
Province: Ontario

Mechanical Engineer's Seal

S1. ❑ The design parameters incorporated into the overall structural design are consistent with the information provided by the Mechanical Engineer in M2. Loads due to rain are not considered to act simultaneously with loads due to snow as per Sentence 4.1.7.3 (3) OBC.

S2. ❑ The structure has been designed incorporating the additional structural loading due to rain acting simultaneously with the snow load. The design parameters are consistent with the control flow drainage system designed by the mechanical engineer.

PROFESSIONAL SEAL APPLIED BY:

Practitioner's Name:
Stephane Leclerc

Firm:
LRL Associates Ltd.

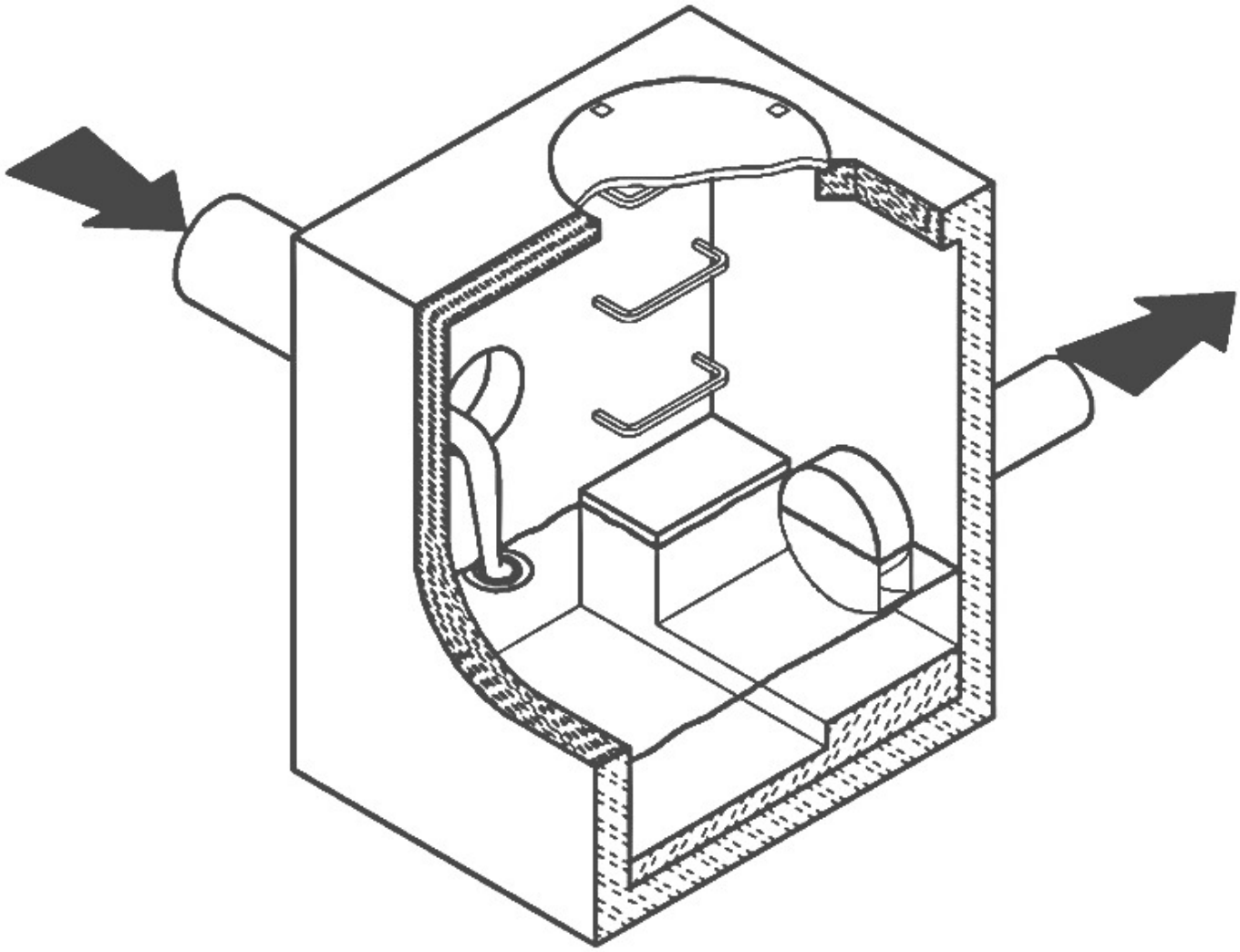
Phone #:
613-842-3434

City: Ottawa
Province: Ontario

Structural Engineer's Seal

CSO/STORMWATER MANAGEMENT

HYDROVEX® VHV / SVHV
Vertical Vortex Flow Regulator



JOHN MEUNIER

APPLICATIONS

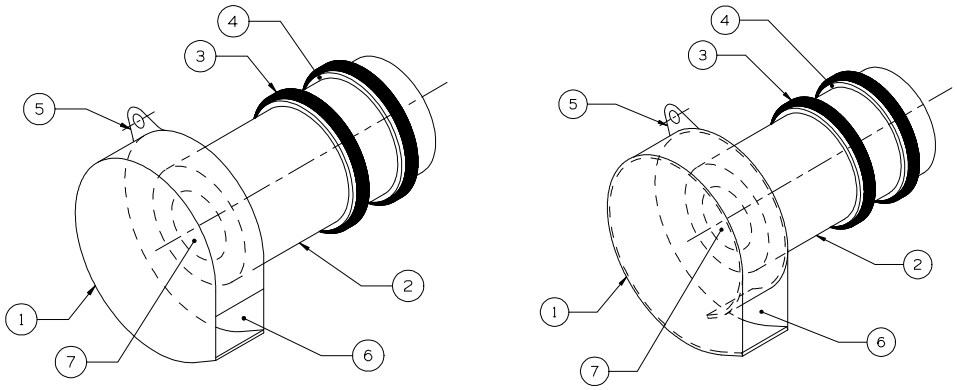
One of the major problems of urban wet weather flow management is the runoff generated after a heavy rainfall. During a storm, uncontrolled flows may overload the drainage system and cause flooding. Due to increased velocities, sewer pipe wear is increased dramatically and results in network deterioration. In a combined sewer system, the wastewater treatment plant may also experience significant increases in flows during storms, thereby losing its treatment efficiency.

A simple means of controlling excessive water runoff is by controlling excessive flows at their origin (manholes). **John Meunier Inc.** manufactures the **HYDROVEX® VHV / SVHV** line of vortex flow regulators to control stormwater flows in sewer networks, as well as manholes.

The vortex flow regulator design is based on the fluid mechanics principle of the forced vortex. This grants flow regulation without any moving parts, thus reducing maintenance. The operation of the regulator, depending on the upstream head and discharge, switches between orifice flow (gravity flow) and vortex flow. Although the concept is quite simple, over 12 years of research have been carried out in order to get a high 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 use.

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

- The **HYDROVEX® VHV / SVHV** line of flow regulators are manufactured entirely of stainless steel, making them durable and corrosion resistant.
- Having no moving parts, they require minimal maintenance.
- The geometry of the **HYDROVEX® VHV / SVHV** flow regulators allows a control equal to an orifice plate, having a cross section area 4 to 6 times smaller. This decreases the chance of blockage of the regulator, due to sediments and debris found in stormwater flows. **Figure 2** illustrates the comparison between a regulator model 100 SVHV-2 and an equivalent orifice plate. One can see that for the same height of water, the regulator controls a flow approximately four times smaller than an equivalent orifice plate.
- Installation of the **HYDROVEX® VHV / SVHV** flow regulators is quick and straightforward and is performed after all civil works are completed.
- Installation requires no special tools or equipment and may be carried out by any contractor.
- Installation may be carried out in existing structures.

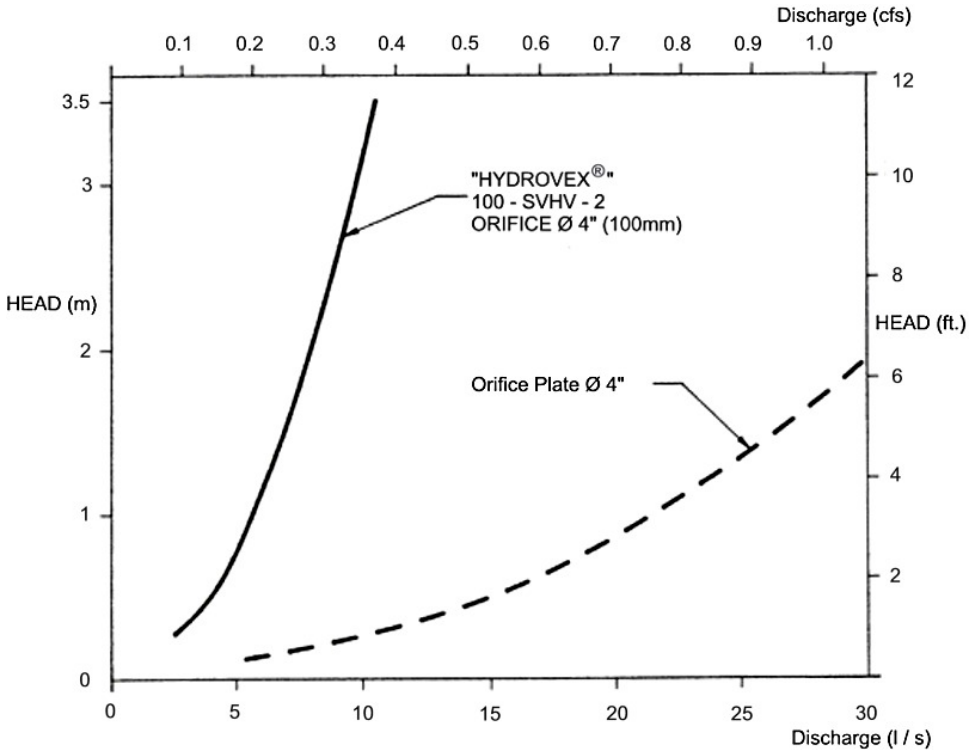


FIGURE 2: DISCHARGE CURVE SHOWING A HYDROVEX® FLOW REGULATOR VS AN ORIFICE PLATE

SELECTION

Selection of a **VHV or SVHV** regulator can be easily made using the selection charts found at the back of this brochure (see **Figure 3**). These charts are a graphical representation of the maximum upstream water pressure (head) and the maximum discharge at the manhole outlet. The maximum design head is the difference between the maximum upstream water level and the invert of the outlet pipe. All selections should be verified by John Meunier Inc. personnel prior to fabrication.

Example:

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

INSTALLATION REQUIREMENTS

All **HYDROVEX® VHV / SVHV** flow regulators can be installed in circular or square manholes. **Figure 4** gives the various minimum dimensions required for a given regulator. ***It is imperative to respect the minimum clearances shown to ensure easy installation and proper functioning of the regulator.***

SPECIFICATIONS

In order to specify a **HYDROVEX®** regulator, the following parameters must be defined:

- The model number (ex: 75-VHV-1)
- The diameter and type of outlet pipe (ex: 6" diam. SDR 35)
- The desired discharge (ex: 6 l/s or 0.21 CFS)
- The upstream head (ex: 2 m or 6.56 ft.) *
- The manhole diameter (ex: 36" diam.)
- The minimum clearance "H" (ex: 10 inches)
- The material type (ex: 304 s/s, 11 Ga. 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:

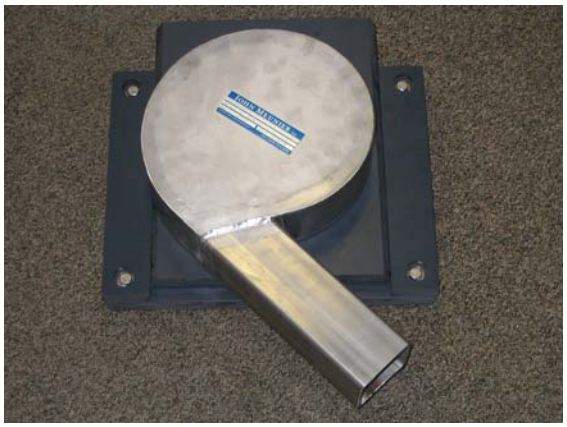
- ***project design flow rate***
- ***pressure head***
- ***chamber's outlet pipe diameter and type***

Typical VHV model in factory

OPTIONS

FV – SVHV (mounted on sliding plate)

VHV-1-O (standard model with odour control inlet)



FV – VHV-O (mounted on sliding plate with odour control inlet)

VHV with Gooseneck assembly in existing chamber without minimum release at the bottom

VHV with air vent for minimal slopes

HYDROVEX®

VHV Vertical Vortex Flow Regulator

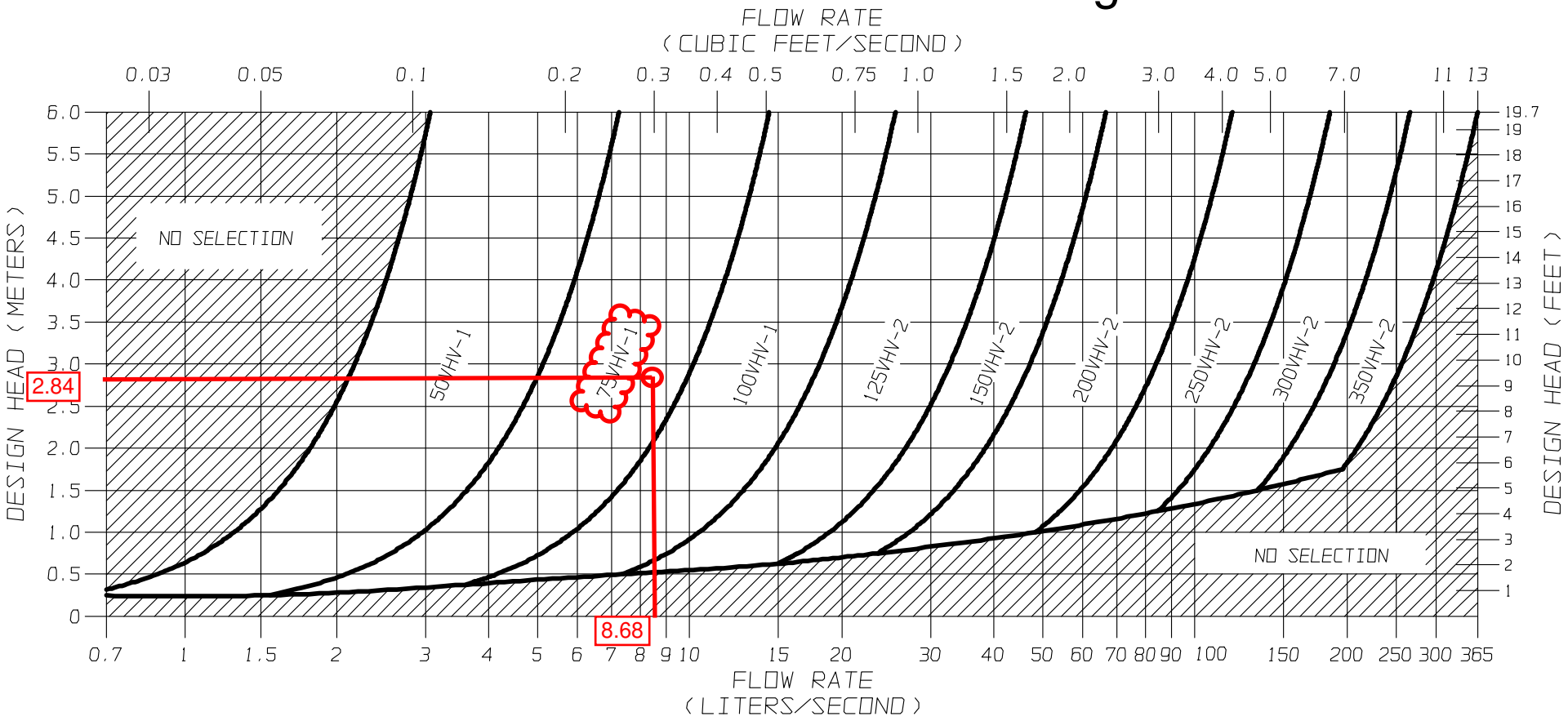
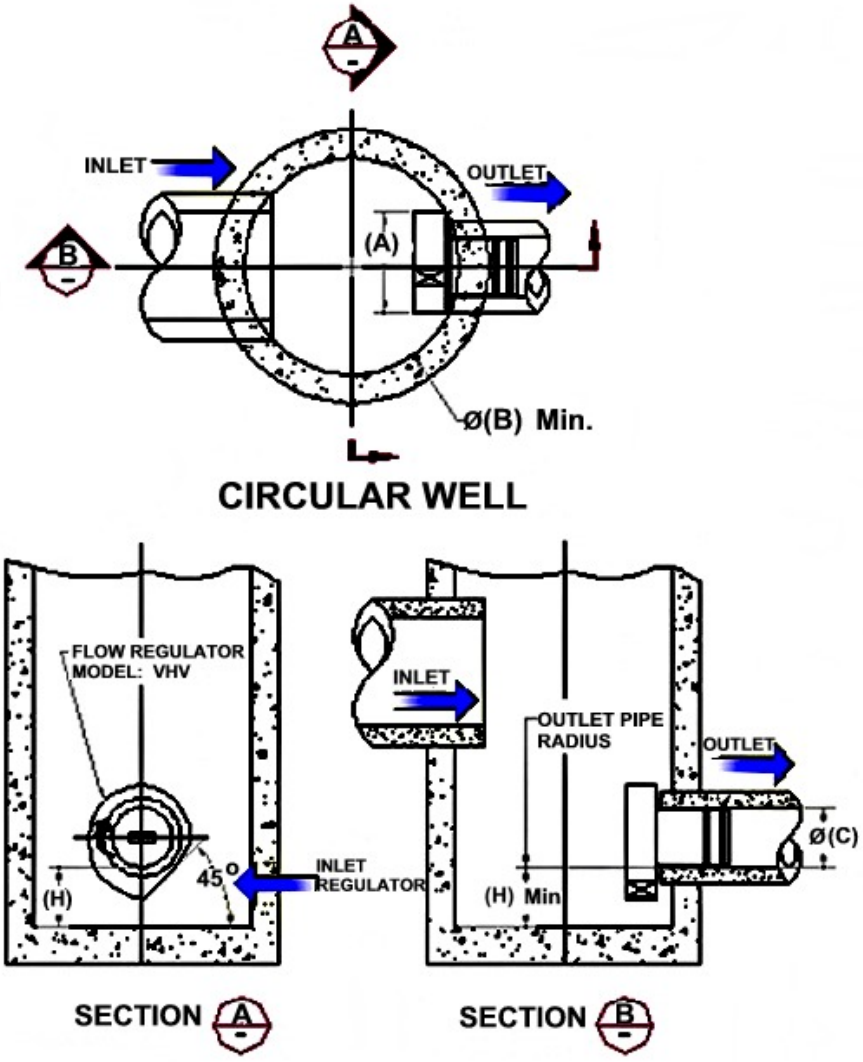


FIGURE 3 - VHV

JOHN MEUNIER

FLOW REGULATOR TYPICAL INSTALLATION IN CIRCULAR MANHOLE
FIGURE 4 (MODEL VHV)

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



INSTALLATION

The installation of a **HYDROVEX®** regulator may be undertaken once the manhole and piping is in place. Installation consists of simply fitting the regulator into the outlet pipe of the manhole. **John Meunier Inc.** recommends the use of a lubricant on the outlet pipe, in order to facilitate the insertion and orientation of the flow controller.

MAINTENANCE

HYDROVEX® regulators are manufactured in such a way as to be maintenance free; however, a periodic inspection (every 3-6 months) is suggested in order to ensure that neither the inlet nor the outlet has become blocked with debris. The manhole should undergo periodically, particularly after major storms, inspection and cleaning as established by the municipality

GUARANTY

The **HYDROVEX®** line of **VHV / SVHV** regulators are guaranteed against both design and manufacturing defects for a period of 5 years. Should a unit be defective, **John Meunier Inc.** is solely responsible for either modification or replacement of the unit.

John Meunier Inc.
ISO 9001 : 2008

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Revised: 2011-05-03

APPENDIX E

Civil Engineering Drawings

EROSION AND SEDIMENT CONTROL MEASURES:

** CONTRACTOR IS RESPONSIBLE FOR ALL INSTALLATION, MONITORING, REPAIR AND REMOVAL OF ALL EROSION AND SEDIMENT CONTROL FEATURES **

1. PRIOR TO START OF CONSTRUCTION:

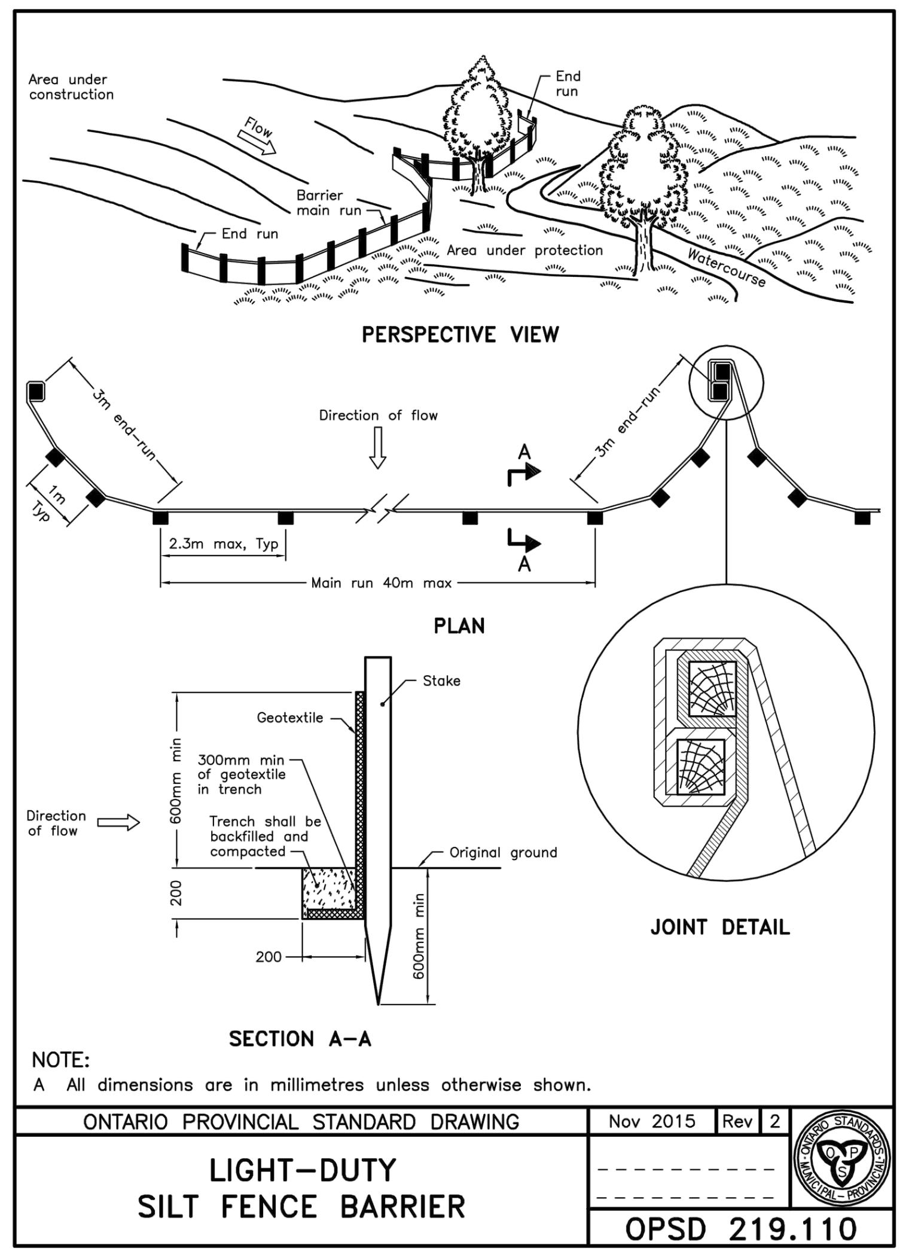
- PRIOR TO THE REMOVAL OF ANY VEGETATIVE COVER, MOVING OF SOIL AND CONSTRUCTION:
- INSTALL SILT FENCE IMMEDIATELY DOWNSTREAM FROM AREAS TO BE DISTURBED (SEE PLAN FOR LOCATION).
- INSTALL GEOSOCK INSERTS WITH AN OVERFLOW IN ALL THE DOWNSTREAM CATCHBASINS AND MANHOLES
- INSTALL SILTSACK FILTERS IN ALL CONCRETE CATCH BASINS STRUCTURES
- INSPECT MEASURES IMMEDIATELY AFTER INSTALLATION.

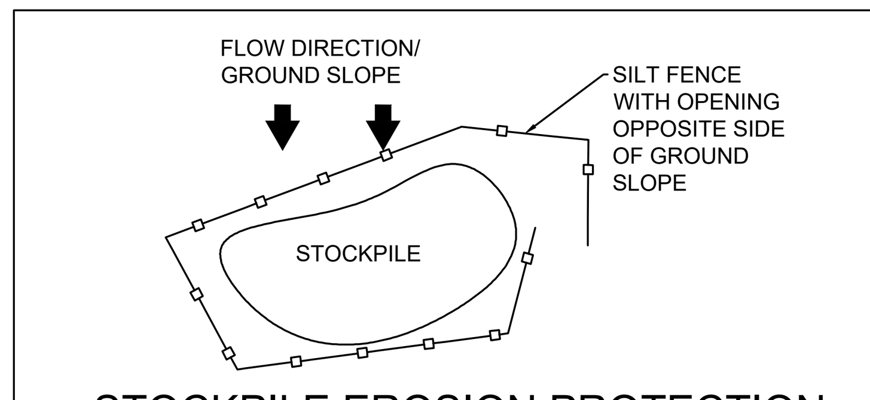
2. DURING CONSTRUCTION:

- WORK TO BE DONE IN THE VICINITY OF MAJOR WATERWAYS TO BE CARRIED OUT FROM JULY TO SEPTEMBER ONLY.
- MINIMIZE THE EXTENT OF DISTURBED AREAS AND THE DURATION OF EXPOSURE.
- PROTECT DISTURBED AREAS FROM RUNOFF.
- PROVIDE TEMPORARY COVER SUCH AS SEEDING OR MULCHING IF DISTURBED AREA WILL NOT BE REHABILITATED WITHIN 30 DAYS.
- INSPECT SILT FENCES, FILTER CLOTHS AND CATCH BASIN SUMPS WEEKLY AND AFTER EVERY MAJOR STORM EVENT. CLEAN AND REPAIR WHEN NECESSARY.
- CONSTRUCT SWALES AS PER DETAIL.
- PLAN TO BE REVIEWED AND REVISED AS REQUIRED DURING CONSTRUCTION
- EROSION CONTROL FENCING TO BE ALSO INSTALLED AROUND THE BASE OF ALL STOCKPILES.
- DO NOT LOCATE TOPSOIL PILES AND EXCAVATION MATERIAL CLOSER THAN 2.5m FROM ANY PAVED SURFACE, OR ONE WHICH IS TO BE PAVED BEFORE THE PILE IS REMOVED. ALL TOPSOIL PILES ARE TO BE SEEDED IF THEY ARE TO REMAIN ON SITE LONG ENOUGH FOR SEEDS TO GROW (LONGER THAN 30 DAYS).
- CONTROL WIND-BLOWN DUST OFF SITE TO ACCEPTABLE LEVELS BY SEEDING TOPSOIL PILES AND OTHER AREAS TEMPORARILY (PROVIDE WATERING AS REQUIRED).
- ALL EROSION CONTROL STRUCTURE TO REMAIN IN PLACE UNTIL ALL DISTURBED GROUND SURFACES HAVE BEEN STABILIZED EITHER BY PAVING OR RESTORATION OF VEGETATIVE GROUND COVER.
- NO ALTERNATE METHODS OF EROSION PROTECTION SHALL BE PERMITTED UNLESS APPROVED BY THIS CONSULTING ENGINEER AND THE CITY DEPARTMENT OF PUBLIC WORKS.
- CONTRACTOR RESPONSIBLE FOR CITY ROADWAY AND SIDEWALK TO BE CLEANED OF ALL SEDIMENT FROM VEHICULAR TRACKING ETC. AT THE END OF EACH WORK DAY.
- PROVIDE GRAVEL ENTRANCE WHEREVER EQUIPMENT LEAVES THE SITE TO PREVENT MUD TRACKING ONTO PAVED SURFACES. GRAVEL BED SHALL BE A MINIMUM OF 15m LONG, 4M WIDE AND 0.3m DEEP AND SHALL CONSIST OF COARSE (50mm CRUSHERT-RUN LIMESTONE) MATERIAL. MAINTAIN GRAVEL ENTRANCE IN CLEAN CONDITION.
- DURING WET CONDITIONS, TIRES OF ALL VEHICLES/EQUIPMENT LEAVING THE SITE ARE TO BE SCRAPED.
- ANY MUD/MATERIAL TRACKED ONTO THE ROAD SHALL BE REMOVED IMMEDIATELY BY HAND OR RUBBER TIRE LOADER.
- TAKE ALL NECESSARY STEPS TO PREVENT BUILDING MATERIAL, CONSTRUCTION DEBRIS OR WASTE BEING SPILLED OR TRACKED ONTO ABUTTING PROPERTIES OR PUBLIC STREETS DURING CONSTRUCTION AND PROCEED IMMEDIATELY TO CLEAN UP ANY AREAS SO AFFECTED.

3. AFTER CONSTRUCTION:

- PROVIDE PERMANENT COVER CONSISTING OF TOPSOIL AND SEED TO DISTURBED AREAS.
- REMOVE STRAW BALE FLOW CHECK DAMS, SILT FENCES AND FILTER CLOTHS ON CATCH BASINS AND MANHOLE COVERS AFTER DISTURBED AREAS HAVE BEEN REHABILITATED AND STABILIZED.
- INSPECT AND CLEAN CATCH BASIN SUMPS AND STORM SEWERS.



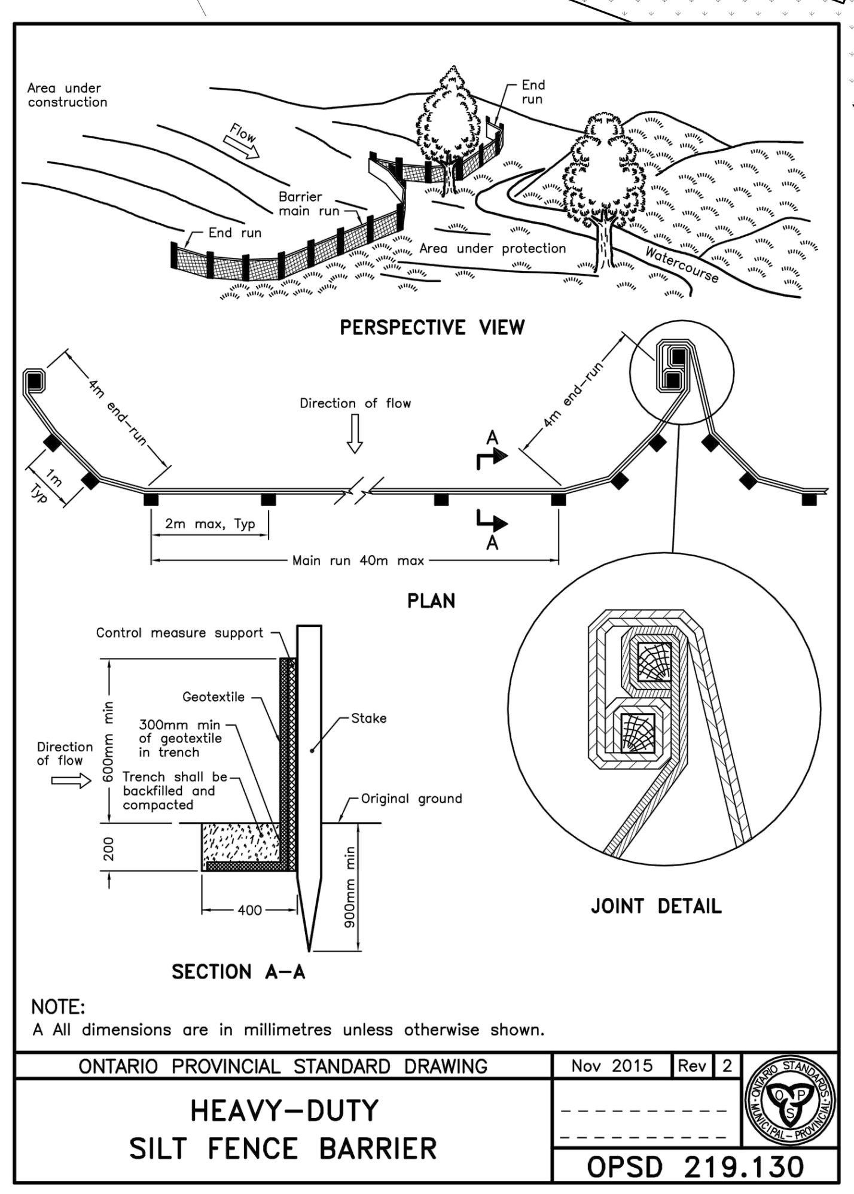


STOCKPILE EROSION PROTECTION

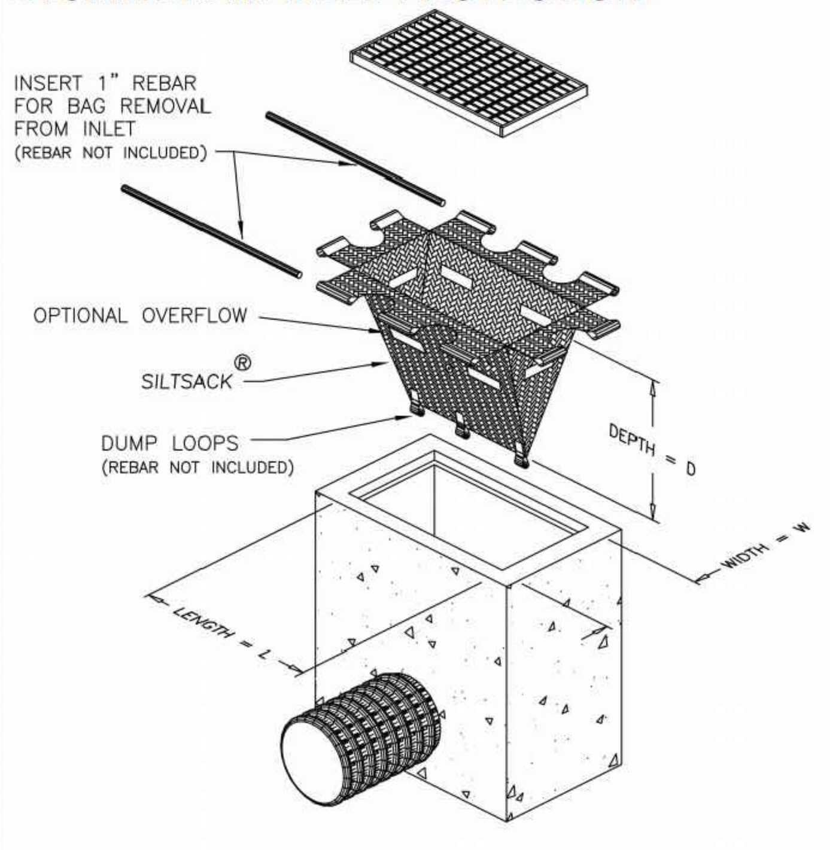
N.T.S.

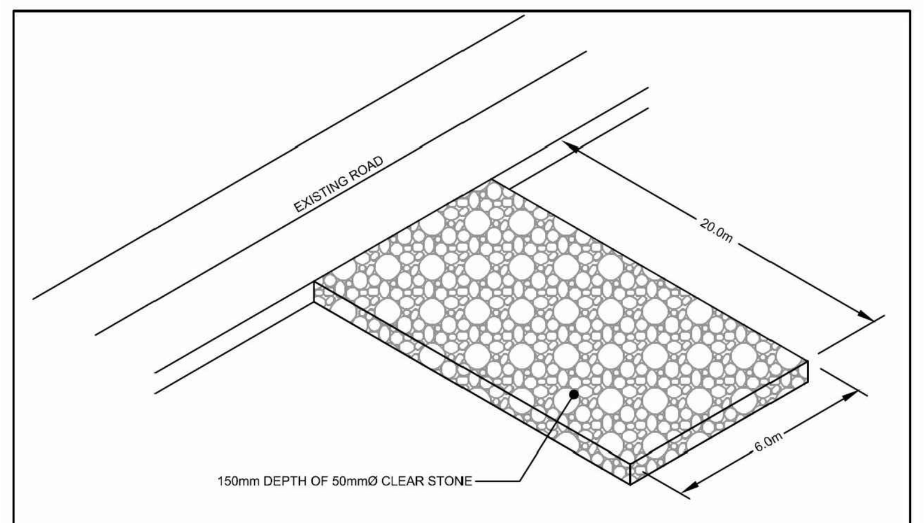
LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED TERRACING (3:1 MIN.)
- PROPOSED SILT FENCE
- PROPOSED FENCE
- PROPOSED DOOR ENTRANCE/EXIT
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED RIP RAP
- ×50.00 PROPOSED ELEVATION
- ×50.00HP PROPOSED HIGH POINT ELEVATION
- ×50.00S PROPOSED SWALE ELEVATION
- ×50.00BC PROPOSED BOTTOM OF CURB ELEVATION
- ×50.00TC PROPOSED TOP OF CURB ELEVATION
- ×50.00EX MATCH INTO EXISTING ELEVATION
- ×70.19 EXISTING ELEVATION
- PROPOSED OVERLAND MAJOR FLOW ROUTE
- SUB — PROPOSED PERFORATED SUBDRAIN
- STM — PROPOSED STORM SEWER
- SAN — PROPOSED SANITARY SEWER
- WTR — PROPOSED WATERMAIN
- STM — EXISTING STORM SEWER
- SAN — EXISTING SANITARY SEWER
- WTR — EXISTING WATERMAIN
- GAS — EXISTING GAS LINE
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED CURB STOP
- PROPOSED PIPE INSULATION
- PROPOSED 100 YEAR HIGH WATER LEVEL
- STORM WATERSHED EXTENT
- WS-XX / CONTROLLED / AREA / RUNOFF: WATERSHED NAME; RUNOFF COEFFICIENT; AREA IN HECTARES



STORM DRAIN INLET PROTECTION





MUD MAT - CONSTRUCTION ACCESS

NTS

KEY MAP

N.T.S.

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

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UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES. THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

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GENERAL NOTES:

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CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

5m 2 0 5m

SCALE: 1:200

NOT FOR CONSTRUCTION TENDER OR PERMIT

No.	REVISIONS	BY	DATE
02	ISSUED FOR APPROVAL	A.S.	11 FEB 2021
01	ISSUED FOR APPROVAL	A.S.	17 JUL 2020

LICENSED PROFESSIONAL ENGINEER
M. BASNET
100501996
2021-02-11
PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT
LANDRIC HOMES INC.

DESIGNED BY:	DRAWN BY:	APPROVED BY:
A.S.	A.S.	M.B.

PROJECT
BLOCK 9
APARTMENT BUILDINGS
ERIC CZAPNIK WAY, ORLEANS

DRAWING TITLE
EROSION AND SEDIMENT CONTROL PLAN

PROJECT NO.
200041

DATE
APRIL 2020

C101

D07-12-20-0104

#18200

GENERALGRADING NOTES

1. ANY MODIFICATIONS IN ELEVATION BETWEEN THE SURVEY AND CONSTRUCTION THAT WILL AFFECT THE PROJECT ARE TO BE COMMUNICATED WITH THE ENGINEER PRIOR TO START OF CONSTRUCTION.
2. PRIOR TO START OF ANY WORK ON SITE, THE CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY EXISTING GRADES AND ENSURE OVERLAND DRAINAGE IS FEASIBLE WITH ACTUAL SITE CONDITIONS.
3. ANY DISCREPANCIES ARE TO BE COMMUNICATED WITH THE ENGINEER PRIOR TO CONSTRUCTION.
4. NO EXCESS DRAINAGE, EITHER DURING OR AFTER CONSTRUCTION, WILL BE DIRECTED TOWARDS NEIGHBOURING PROPERTIES.
5. NO ALTERATION OF EXISTING GRADES AND DRAINAGE PATTERNS ON PROPERTY BOUNDARIES.
6. ENSURE POSITIVE DRAINAGE AWAY FROM FOUNDATION.

NOTE:

CONTRACTOR TO FIELD VERIFY ANY EXISTING FEATURES AND ENSURE THAT THE ENGINEERING DESIGN IS IN LINE WITH THE EXISTING CONDITIONS.

ANY DISCREPANCIES BETWEEN THE ENGINEERING PACKAGE AND FIELD CONDITIONS SHALL BE MENTIONED TO THE ENGINEER PRIOR TO THE START OF SITE WORK.

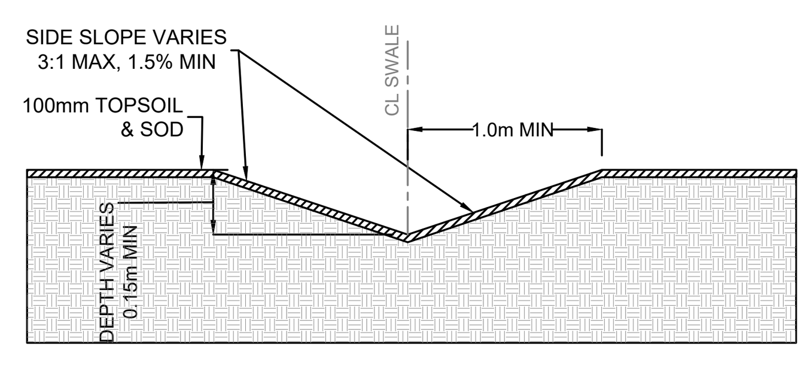
PAVEMENT STRUCTURE

COURSE	MATERIAL	THICKNESS (mm) AUTOMOBILE PARKING	THICKNESS (mm) HEAVY DUTY ASPHALT (TRUCK ROUTE)
SURFACE	HL3 A/C (PG 58-34)	50	40
BINDER	HL8 A/C (PG 58-34)	--	50
BASECOURSE	OPSS GRANULAR "A"	150	150
SUBBASE	OPSS GRANULAR "B" TYPE II	300	450*

NOTE:
*SUB-BASE THICKNESS MAY BE REDUCED TO 300mm IF SUBGRADE CONSISTS OF BEDROCK.

PAVEMENT STRUCTURE SHALL BE IN ACCORDANCE TO GEOTECHNICAL REPORT BY LRL DATED AUGUST 2020.

IN PREPARATION FOR PAVEMENT CONSTRUCTION AT THIS SITE, ANY SURFICIAL OR NEAR SURFACE/SUBGRADE LEVEL TOPSOIL AND ANY SOFT, WET OR DELETERIOUS MATERIALS SHOULD BE REMOVED FROM THE PROPOSED PAVED AREAS. THE EXPOSED SUBGRADE SHOULD BE INSPECTED AND APPROVED BY GEOTECHNICAL PERSONNEL AND ANY SOFT AREAS EVIDENT SHOULD BE SUBEXCAVATED AND REPLACED WITH SUITABLE EARTH BORROW APPROVED BY THE GEOTECHNICAL ENGINEER. THE SUBGRADE SHOULD BE SHAPED AND CROWNED TO PROMOTE DRAINAGE OF THE SITE DRAINAGE STRUCTURES. FOLLOWING APPROVAL OF THE PREPARATION OF THE SUBGRADE, THE PAVEMENT GRANULARS MAY BE PLACED.



TYPICAL SWALE CROSS-SECTION
FOR SLOPES ≥ 1.5%
(N.T.S.)

LEGEND:

EXISTING PROPERTY LINE TO REMAIN	PROPOSED OVERLAND MAJOR FLOW ROUTE
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PROPOSED DEPRESSED CURB	PROPOSED STORM SEWER
PROPOSED TERRACING (3:1 MIN.)	PROPOSED SANITARY SEWER
PROPOSED SILT FENCE	PROPOSED WATERMAIN
PROPOSED FENCE	EXISTING STORM SEWER
PROPOSED DOOR ENTRANCE/EXIT	EXISTING SANITARY SEWER
PROPOSED GRASS AREA (100mm TOP SOIL & SOD)	EXISTING WATERMAIN
PROPOSED CONCRETE FEATURES/SLAB	EXISTING GAS LINE
PROPOSED HEAVY DUTY ASPHALT	EXISTING MANHOLE
PROPOSED LIGHT DUTY ASPHALT	EXISTING CATCHBASIN
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×50.00TC PROPOSED TOP OF CURB ELEVATION	STORM WATERSHED EXTENT
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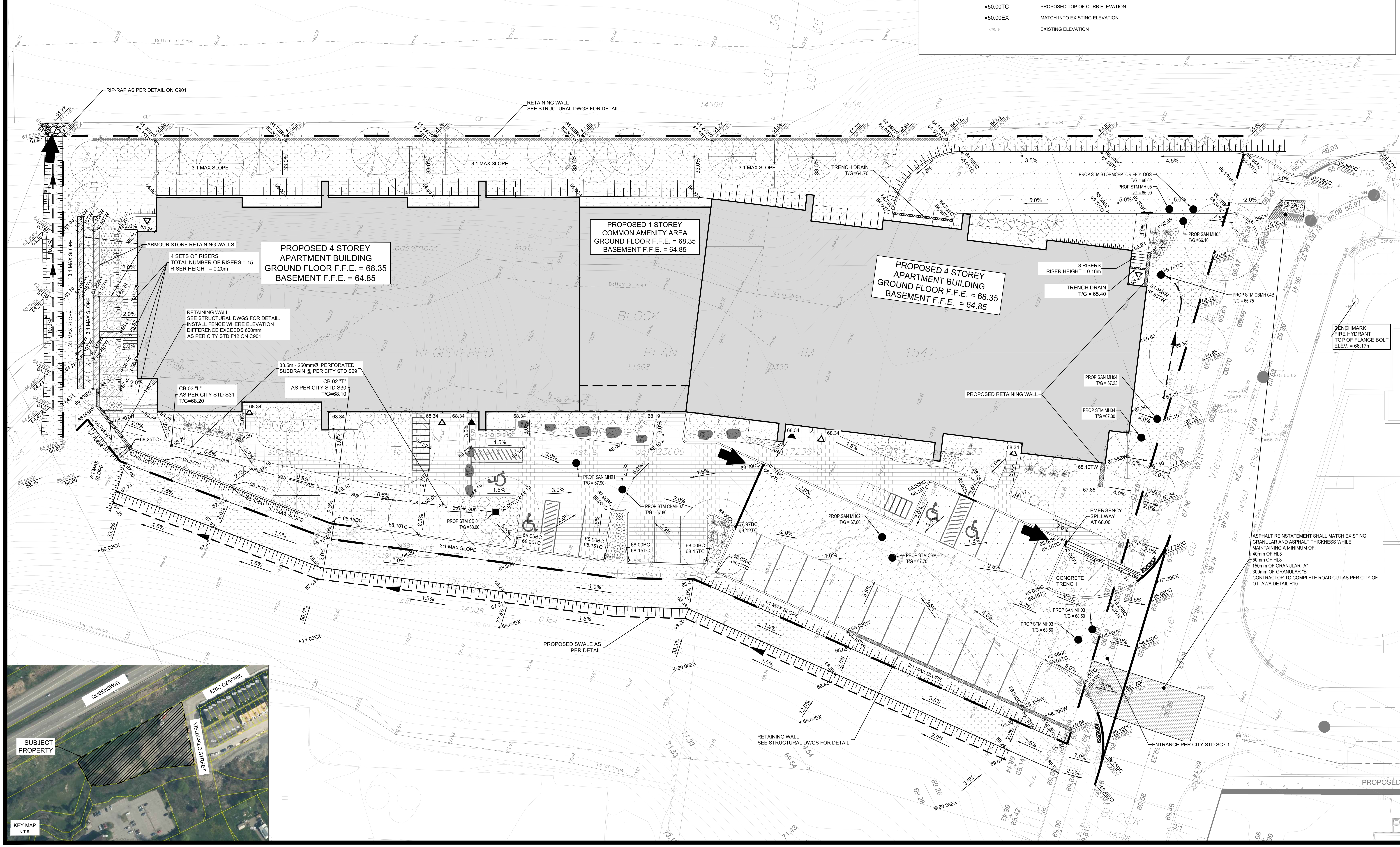
×70.19 EXISTING ELEVATION	RUNOFF: RUNOFF COEFFICIENT
	AREA: AREA IN HECTARES



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5m 2 0 5m
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01	ISSUED FOR APPROVAL	A.S.	17 JUL 2020

LICENSED PROFESSIONAL ENGINEER
M. BASNET
100501996
2021-02-11
PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

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CLIENT
LANDRIC HOMES INC.

DESIGNED BY:	DRAWN BY:	APPROVED BY:
A.S.	A.S.	M.B.

PROJECT
BLOCK 9
APARTMENT BUILDINGS
ERIC CZAPNIK WAY, ORLEANS

DRAWING TITLE
GRADING AND DRAINAGE PLAN

PROJECT NO.
200041

DATE
APRIL 2020

C301

D07-12-20-0104

#18200

NOTES: GENERAL

1. CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT FOR CONSTRUCTION PURPOSES.
2. ALL ELEVATIONS ARE GEODETIC AND UTILIZE METRIC UNITS.
3. JOB BENCH MARK - LOCATED AT FIRE HYDRANT. TOP OF FLANGE BOT ELEVATION = 66.17 m CONFIRM WITH LRL PRIOR TO UTILIZATION.
4. ALL GROUND SURFACES SHALL BE EVENLY GRADED WITHOUT PONDING AREAS AND WITHOUT LOW POINTS EXCEPT WHERE APPROVED SWALE, CATCH BASIN OUTLETS AND/OR STORM DETENTION AREAS ARE PROVIDED.
5. STRIP AND REMOVE ALL TOPSOIL FROM IMPROVED AREAS.
6. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
7. ALL EDGES OF DISTURBED PAVEMENT SHALL BE SAW CUT TO FORM A CLEAN STRAIGHT LINE PRIOR TO PLACING NEW PAVEMENT. PAVEMENT REINSTATEMENT SHALL BE WITH STEP JOINTS OF 500mm WIDTH MINIMUM.
8. CURBS TO BE BARRIER, CONSTRUCTED AS PER OPSD 600.110.
9. ALL MATERIAL SUPPLIED AND PLACED FOR PARKING LOT AND ACCESS ROAD CONSTRUCTION SHALL BE TO OPSS STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED. CONSTRUCTION TO OPSS 206, 310 & 314. MATERIALS TO OPSS 1001, 1003 & 1010.
10. ABUTTING PROPERTY GRADE TO BE MATCHED.
11. OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE MUNICIPAL AUTHORITIES PRIOR TO COMMENCING CONSTRUCTION.
12. MINIMIZE DISTURBANCE TO EXISTING VEGETATION DURING THE EXECUTION OF ALL WORKS.
13. *SILTSACK* OR APPROVED EQUIVALENT TO BE INSTALLED AND MAINTAINED BETWEEN THE FRAME AND COVER OF ALL CATCHBASINS, CATCHBASIN MANHOLES AND MANHOLES DURING THE CONSTRUCTION PERIOD TO MINIMIZE SEDIMENTS ENTERING THE STORM SEWER SYSTEM. ALL GRASSED AREAS MUST BE COMPLETED PRIOR TO THE REMOVAL OF PROTECTION IN THE DRAINAGE STRUCTURES.
14. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL UNLESS OTHERWISE DIRECTED FROM THE ENGINEER. EXCAVATE AND REMOVE ALL ORGANIC MATERIAL AND DEBRIS, IF ANY, LOCATED WITHIN THE PROPOSED BUILDING, PARKING AND ROADWAY LOCATIONS.
15. THE APPROVAL OF THIS PLAN DOES NOT EXEMPT THE CONTRACTOR FROM THE REQUIREMENTS TO OBTAIN THE VARIOUS PERMITS/APPROVALS REQUIRED TO COMPLETE A CONSTRUCTION PROJECT, SUCH AS BUT NOT LIMITED TO; ROAD CUT PERMITS, SEWER PERMITS, WATER PERMIT, ETC.
16. AT PROPOSED UTILITY CONNECTION POINTS AND CROSSINGS (I.E. STORM SEWER, SANITARY SEWER, WATER, ETC.) THE CONTRACTOR SHALL DETERMINE THE PRECISE LOCATION AND DEPTH OF EXISTING UTILITIES AND REPORT ANY DISCREPANCIES OR CONFLICTS TO THE ENGINEER BEFORE COMMENCING WORK.
17. ALL SIDEWALK CONSTRUCTION TO BE AS PER OPSD 310.010 & OPSD 310.050.

NOTES: SEWERS

1. SEWER BEDDING AS PER PIPE TRENCH DETAIL WITH GRANULAR 'A' BEDDING COMPACTED TO 95% OF ITS SPMDD.
2. ALL WORK SHALL BE PERFORMED, AS APPLICABLE IN ACCORDANCE WITH OPSS 407, AND 410.
3. CONTRACTOR TO CONFIRM ELEVATION OF EXISTING SEWERS AT PROPOSED CONNECTION POINTS AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE COMMENCING ANY WORK.
4. ALL SEWERS WITH LESS THAN 2.0m OF COVER ARE SUBJECT TO INSULATION DETAIL.

SANITARY

5. ALL SANITARY GRAVITY SEWER SHALL BE PVC SDR 35, IPEX 'RING-TITE' (OR APPROVED EQUIVALENT) PER CSA STANDARD B182.2 OR LATEST AMENDMENT, UNLESS SPECIFIED OTHERWISE.
6. EXISTING MAINTENANCE STRUCTURES TO BE RE-BENCHED WHERE A NEW CONNECTION IS MADE.
7. SANITARY GRAVITY SEWER TRENCH AND BEDDING SHALL BE PER CITY OF OTTAWA STD. S6 AND S7, CLASS 'B' BEDDING, UNLESS SPECIFIED OTHERWISE.
8. SANITARY MAINTENANCE STRUCTURE FRAME AND COVERS SHALL BE PER CITY OF OTTAWA STD. S24 AND S25.
9. SANITARY MAINTENANCE STRUCTURES SHALL BE BENCHED PER OPSD 701.021.

STORM

10. STORM GRAVITY SEWER TRENCH AND BEDDING SHALL BE PER CITY OF OTTAWA STD. S6 AND S7, CLASS 'B' BEDDING, UNLESS SPECIFIED OTHERWISE. BEDDING AND COVER MATERIAL TO BE SPECIFIED BY GEOTECHNICAL ENGINEER.
11. ALL PVC STORM SEWERS ARE TO BE SDR 35 APPROVED PER C.S.A. B182.2 OR LATEST AMENDMENT, UNLESS OTHERWISE SPECIFIED.
12. CATCH BASINS SHALL BE IN ACCORDANCE WITH OPSD 705.010.
13. CATCH BASIN LEADS SHALL BE 200mm DIA. AT 1.0% SLOPE (MIN) UNLESS SPECIFIED OTHERWISE.
14. ALL CATCH BASINS SHALL HAVE 600mm SUMPS, UNLESS SPECIFIED OTHERWISE.
15. ALL CATCH BASIN LEAD INVERTS TO BE 1.5m BELOW FINISHED GRADE UNLESS SPECIFIED OTHERWISE.
16. STORM MAINTENANCE STRUCTURE FRAME AND COVERS SHALL BE PER CITY OF OTTAWA STD 25 AND S24.1, UNLESS SPECIFIED OTHERWISE.
17. CATCHBASIN FRAME AND COVER SHALL BE PER OPSD 400.010 UNLESS OTHERWISE NOTED.

NOTES: WATERMAIN

1. PROPOSED WATER SERVICE TO BE 2.4m BELOW GRADE, OR INSULATED AS PER DETAIL ON C901.
2. ALL PVC WATERMAINS SHALL BE AWWA C-900 CLASS 150, SDR 18 OR APPROVED EQUIVALENT.
3. WATERMAIN TRENCH AND BEDDING SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARD W17, UNLESS SPECIFIED OTHERWISE. BEDDING AND COVER MATERIAL TO BE SPECIFIED BY GEOTECHNICAL ENGINEER.
4. CATHODIC PROTECTION IS REQUIRED ON ALL METALLIC FITTINGS PER CITY OF OTTAWA STANDARD W40.
5. FIRE HYDRANT INSTALLATION AS PER CITY STD W19, ALL BOTTOM OF HYDRANT FLANGE ELEVATIONS TO BE INSTALLED 0.10m ABOVE PROPOSED FINISHED GRADE AT HYDRANT; FIRE HYDRANT LOCATION AS PER STD DWG W18 UNLESS OTHERWISE NOTED.
6. BUILDING SERVICE TO BE CAPPED OFF 1.0m OFF THE FACE OF BUILDING UNLESS OTHERWISE NOTED AND MUST BE RESTRAINED A MINIMUM OF 12m BACK FROM STUB.
7. ALL WATERMAIN STUBS SHALL BE TERMINATED WITH A PLUG AND 500mm BLOW OFF UNLESS OTHERWISE NOTED.

LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED TERRACING (3:1 MIN.)
- PROPOSED SILT FENCE
- PROPOSED FENCE
- PROPOSED DOOR ENTRANCE/EXIT
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED RIP RAP
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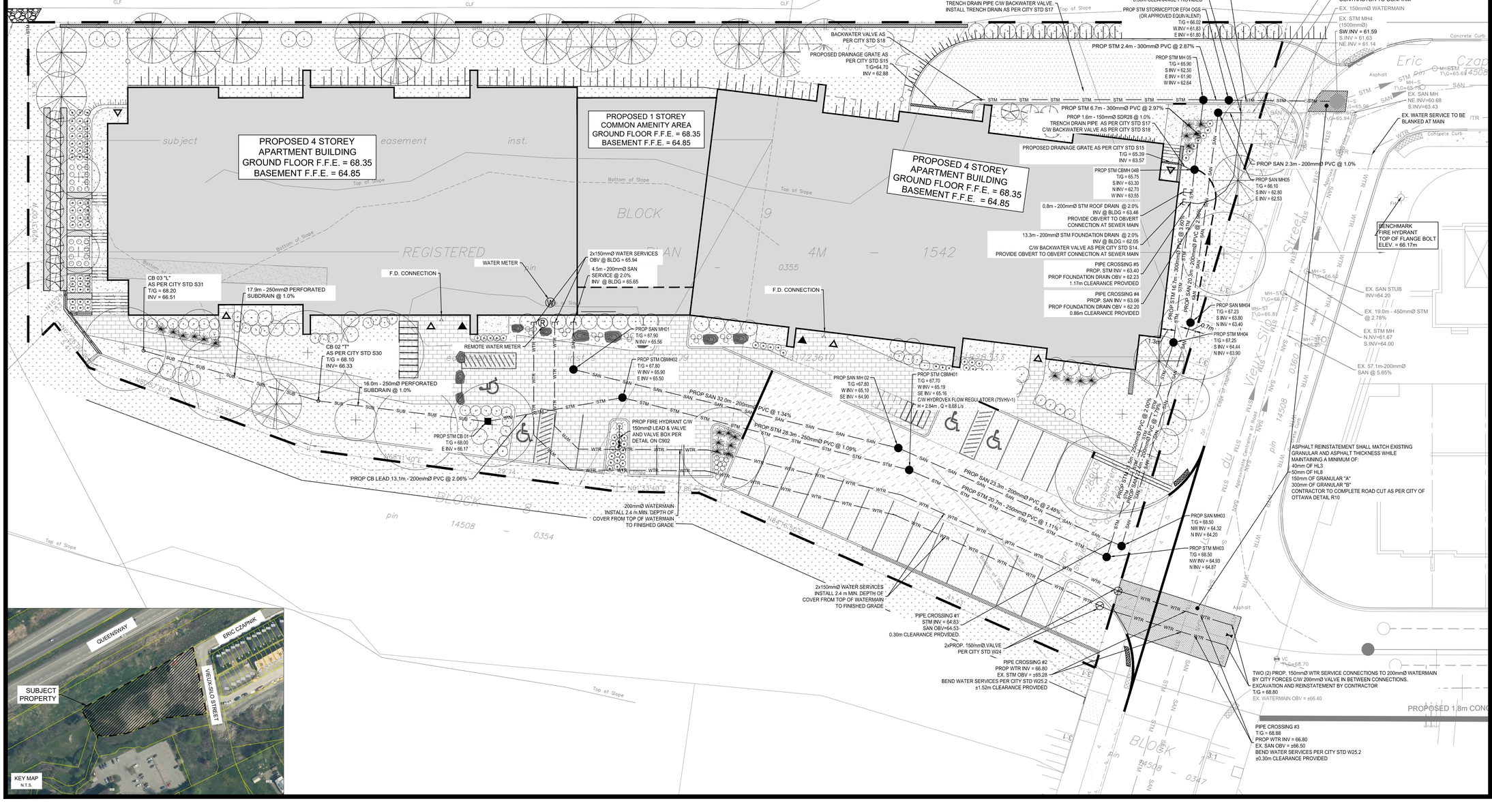
- ×70.19 EXISTING ELEVATION
- PROPOSED OVERLAND MAJOR FLOW ROUTE
- PROPOSED PERFORATED SUBDRAIN
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATERMAIN
- EXISTING STORM SEWER
- EXISTING SANITARY SEWER
- EXISTING WATERMAIN
- EXISTING GAS LINE
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED CURB STOP
- PROPOSED PIPE INSULATION
- PROPOSED 100 YEAR HIGH WATER LEVEL
- STORM WATERSHED EXTENT
- WS-XX CONTROLLED AREA / RUNOFF: WATERSHED NAME; RUNOFF COEFFICIENT; AREA IN HECTARES



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5m 2 0 5m
SCALE: 1:200

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02	ISSUED FOR APPROVAL	A.S.	11 FEB 2021
01	ISSUED FOR APPROVAL	A.S.	17 JUL 2020

LICENSED PROFESSIONAL ENGINEER M. BASNET 100501096 2021-02-17 PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT
LANDRIC HOMES INC.

DESIGNED BY:	DRAWN BY:	APPROVED BY:
A.S.	A.S.	M.B.

PROJECT
BLOCK 9
APARTMENT BUILDINGS
ERIC CZAPNIK WAY, ORLEANS

DRAWING TITLE
SERVICING PLAN

PROJECT NO. 200041
DATE APRIL 2020
C401

D07-12-20-0104

#18200

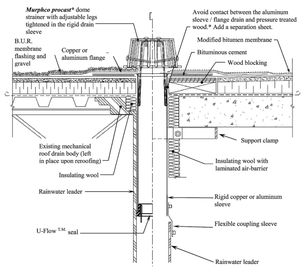
Les Produits MURPHCO Ltée

TECHNICAL DATA

MURPHCO ULTRA ROOF DRAINS

TYPICAL DETAIL – COPPER DRAIN / ALUMINUM DRAIN

Scale: 1:5



Catchment Area	ICD	Location	Head (m)	100-year Release Rate (L/s)	100-Year Required Storage (m3)	Total Available Storage (m3)
WS-01 (Un-controlled)	-	-	-	28.24	0	0
WS-02 (Roof Controls)	MURPHCO Roof Drains	Building Rooftop	0.150	28.80	49.59	72.72
WS-03 & WS-04	Hydrovex Flow Regulator 75VHV-1	STM CBMH01	2.840	8.68	43.58	49.01
TOTAL	-	-	-	**65.72**	**93.17**	**121.73**

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- PROPOSED FENCE
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- ×70.19 EXISTING ELEVATION
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- PROPOSED PERFORATED SUBDRAIN
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATERMAIN
- EXISTING STORM SEWER
- EXISTING SANITARY SEWER
- EXISTING WATERMAIN
- EXISTING GAS LINE
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- PROPOSED MANHOLE
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- STORM WATERSHED EXTENT
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- AREA IN HECTARES

REFER TO ARCHITECTURAL ROOF DRAINAGE PLAN PREPARED BY ARCHITECTS DCA FOR DETAILS ON ROOF DRAINAGE LAYOUT AND EMERGENCY FLOW ROOF SCUPPERS. BOTTOM OF SCUPPERS TO BE INSTALLED 0.15m ABOVE ROOF DRAINS.

INSTALL TWELVE (12) MURPHCO ULTRA COPPER DRAINS WITH THREE (3) HOLES MOULDED CONTROL FLOW DOME STRAINER
100-YR REQUIRED ROOFTOP STORAGE VOL = 49.59 m3
MAX AVAILABLE ROOFTOP STORAGE VOL = 72.72 m3
MAXIMUM PONDING DEPTH AVAILABLE = 0.15 m
FLOW PER DRAIN = 2.4 L/s
TOTAL 100-YR FLOW = 28.8 L/s

PROPOSED 4 STOREY APARTMENT BUILDING

PROPOSED 1 STOREY COMMON AMENITY AREA

PROPOSED 4 STOREY APARTMENT BUILDING

R.D.1 R.D.2 R.D.3 R.D.4 R.D.5 R.D.6 R.D.7 R.D.8 R.D.9 R.D.10 R.D.11 R.D.12

BENCHMARK
FIRE HYDRANT
TOP OF FLANGE BOLT
ELEV. = 66.17m

PROPOSED OVERLAND STORAGE EXTENT CBMH02
100 YEAR STORMPONDING EXTENT (HWL = 68.00)
PONDING DEPTH = 0.20m ; STORAGE = 11.44m³

PROPOSED OVERLAND STORAGE EXTENT CBMH01
100 YEAR STORMPONDING EXTENT (HWL = 68.00)
PONDING DEPTH = 0.30m ; STORAGE = 37.57m³

PROP STM CBMH01
T/G = 67.70
W INV = 65.19
SE INV = 65.16
C/W HYDROVEX FLOW REGULATOR 75VHV-1
H = 2.84m, Q = 8.68 L/s

PROPOSED 1.8m CONC

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LICENSED PROFESSIONAL ENGINEER
M. BAGNET
100501996
2021-02-11
PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRJ
ENGINEERING | INGÉNIERIE
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DESIGNED BY:	DRAWN BY:	APPROVED BY:
A.S.	A.S.	M.B.

PROJECT

BLOCK 9
APARTMENT BUILDINGS
ERIC CZAPNIK WAY, ORLEANS

DRAWING TITLE

STORMWATER MANAGEMENT PLAN

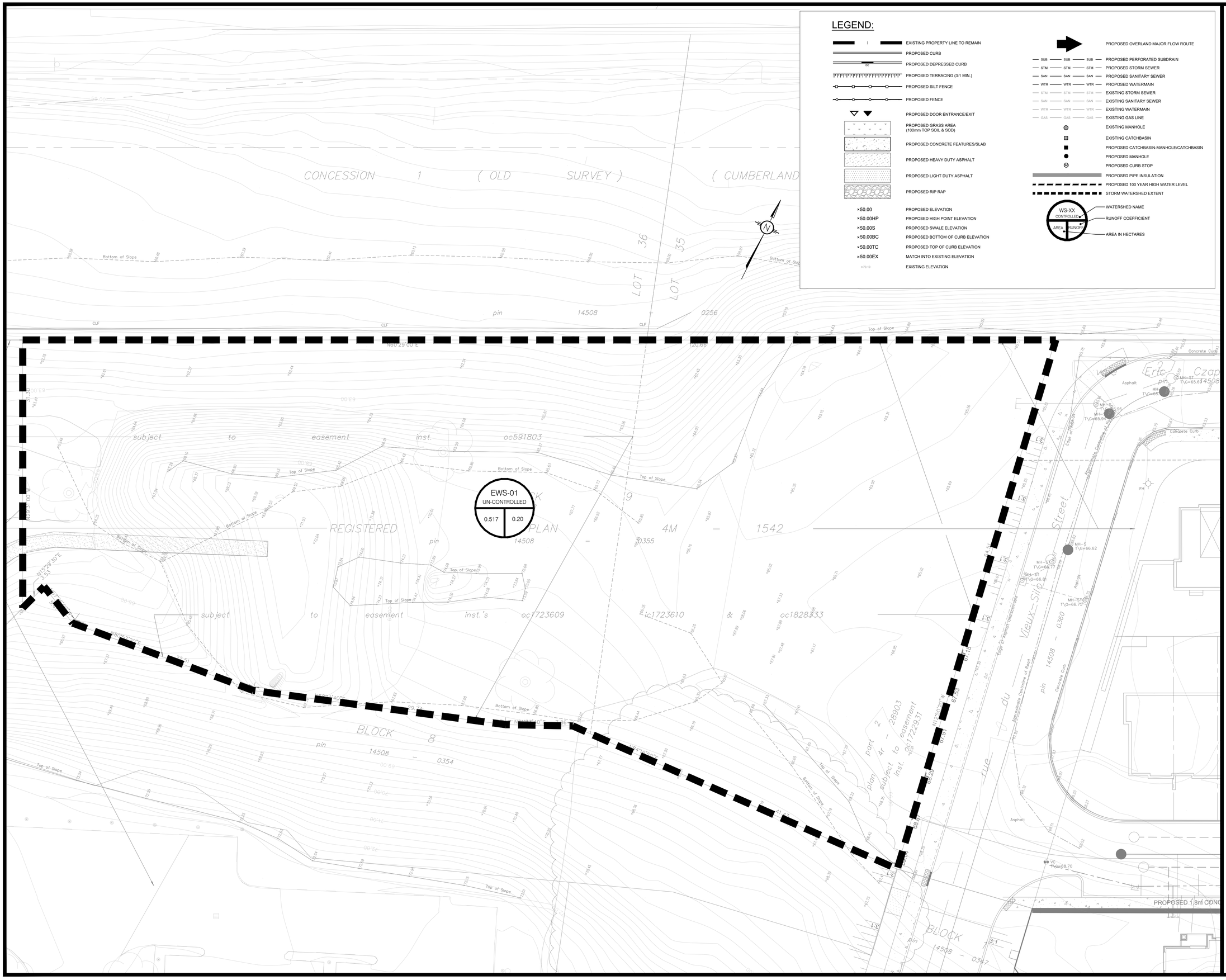
PROJECT NO. 200041

DATE APRIL 2020

C601

D07-12-20-0104

#18200



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5m 2 0 5m

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LICENSED PROFESSIONAL ENGINEER M. BASNET 100501096 2021-02-11 PROVINCE OF ONTARIO

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CLIENT

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DESIGNED BY:	DRAWN BY:	APPROVED BY:
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PROJECT

BLOCK 9
APARTMENT BUILDINGS
ERIC CZAPNIK WAY, ORLEANS

DRAWING TITLE

PRE-DEVELOPMENT
WATERSHED PLAN

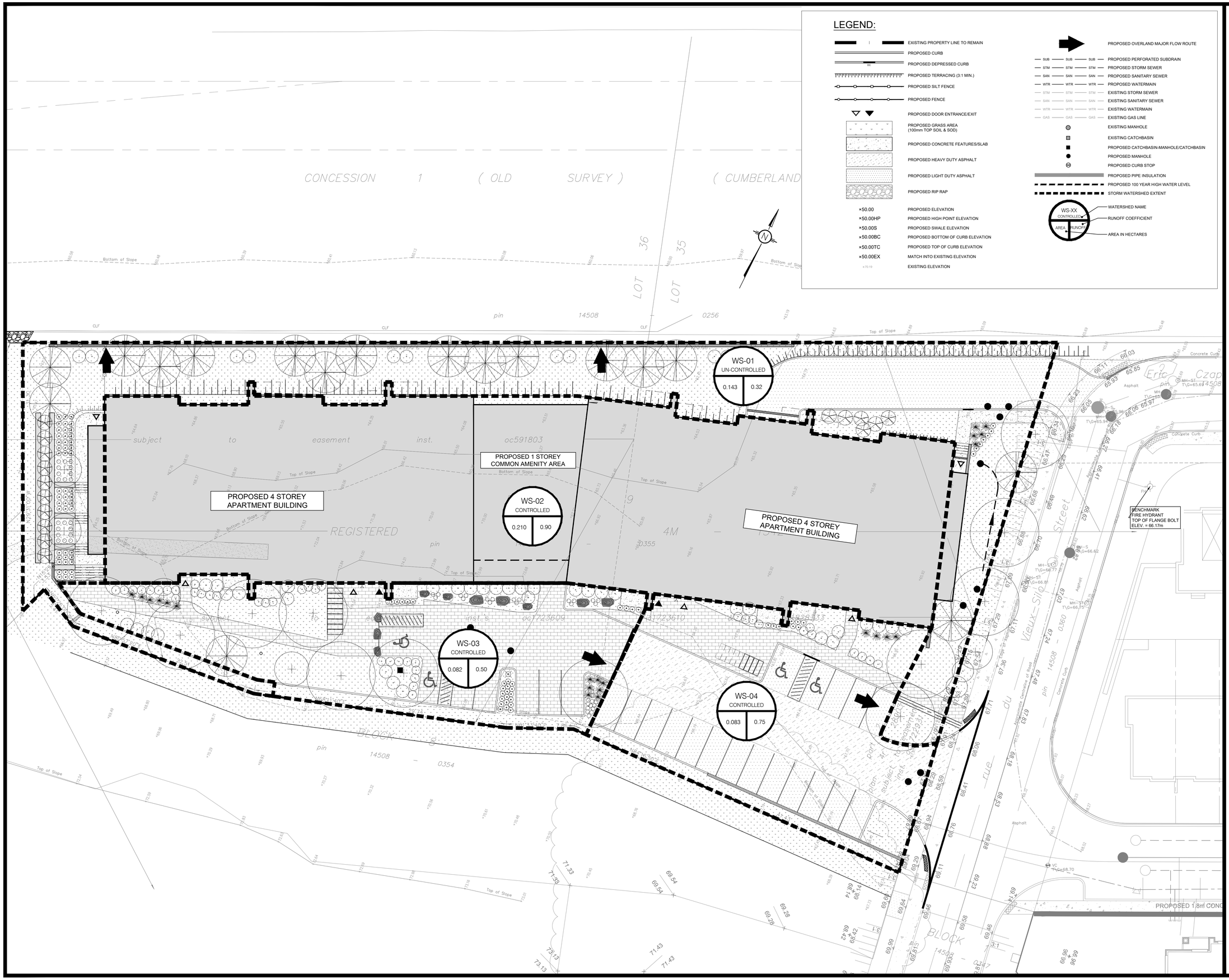
PROJECT NO. 200041

DATE APRIL 2020

C701

D07-12-20-0104

#18200



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01	ISSUED FOR APPROVAL	A.S.	17 JUL 2020

LICENSED PROFESSIONAL ENGINEER
M. BASNET
100501996
2021-02-11
PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT
LANDRIC HOMES INC.

DESIGNED BY:	DRAWN BY:	APPROVED BY:
A.S.	A.S.	M.B.

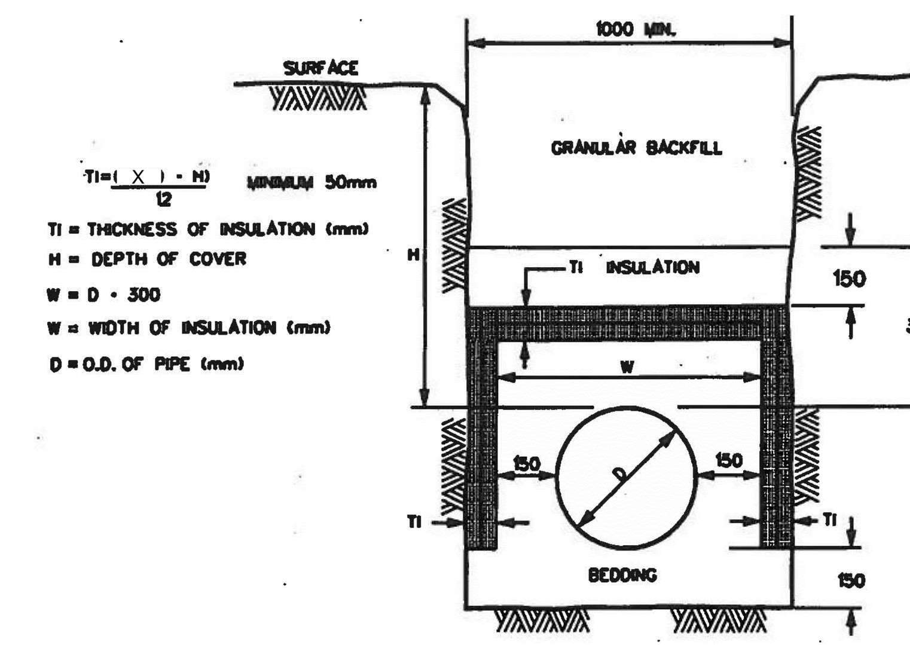
PROJECT
BLOCK 9
APARTMENT BUILDINGS
ERIC CZAPNIK WAY, ORLEANS

DRAWING TITLE
POST-DEVELOPMENT
WATERSHED PLAN

PROJECT NO. 200041
DATE APRIL 2020
C702

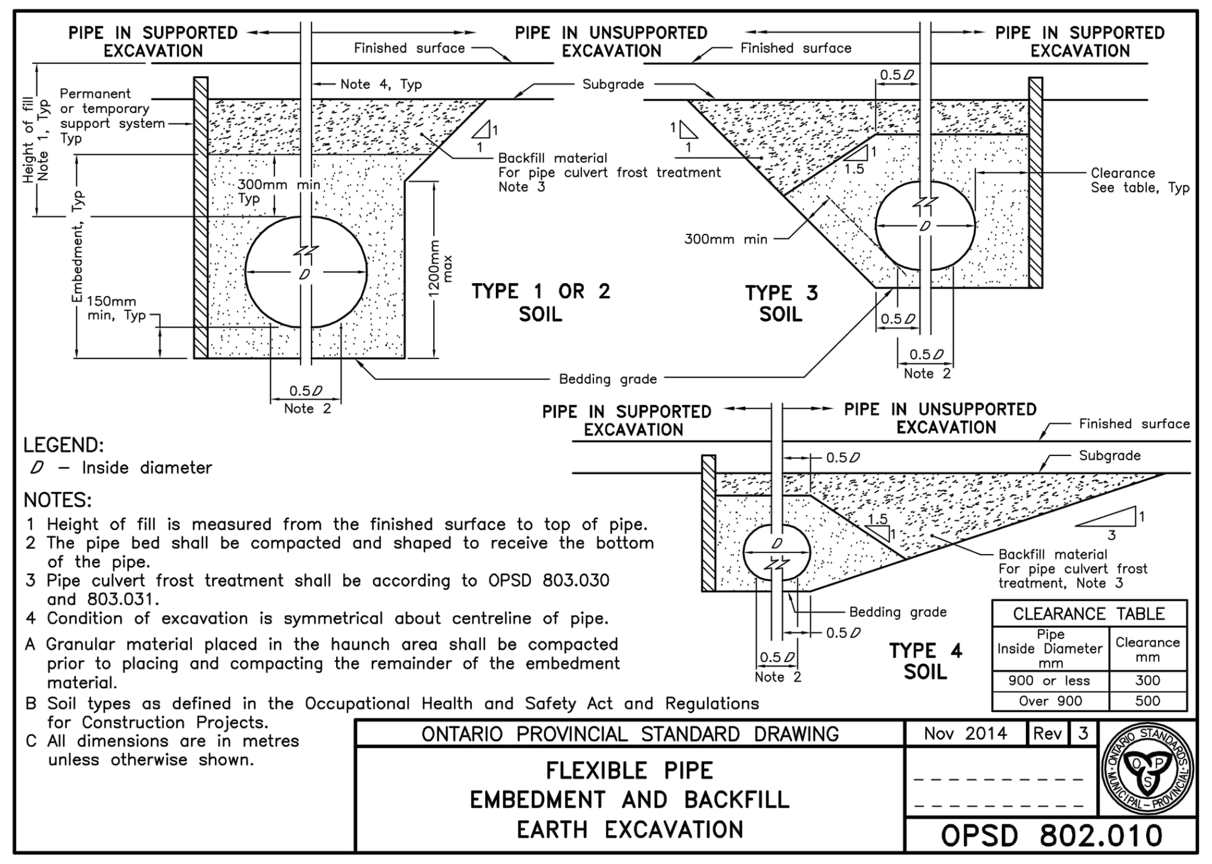
D07-12-20-0104

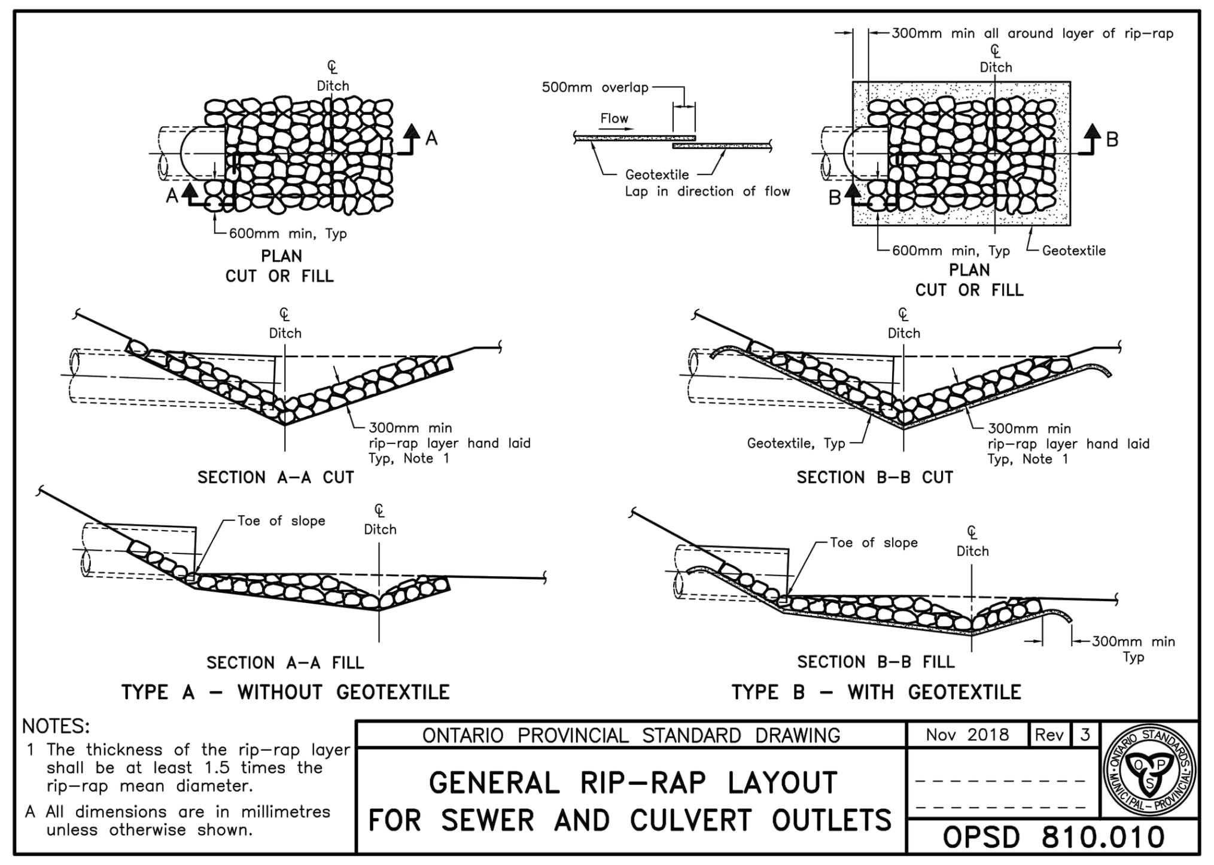
#18200

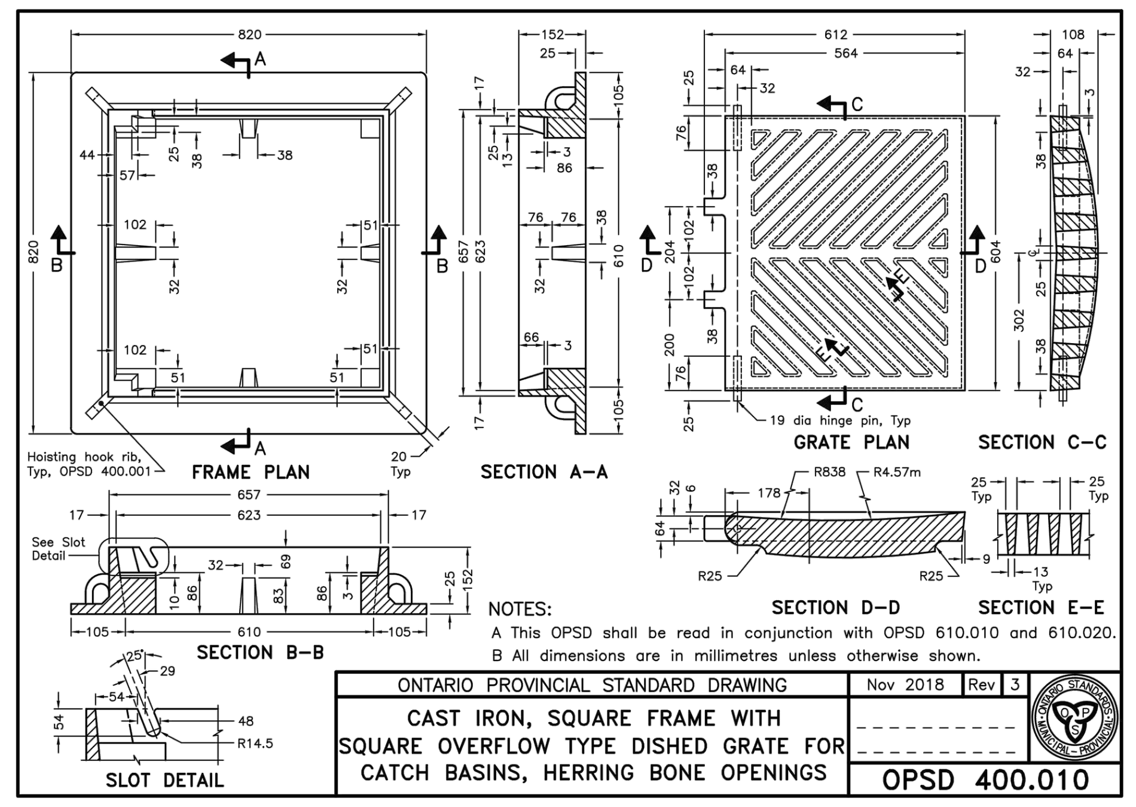


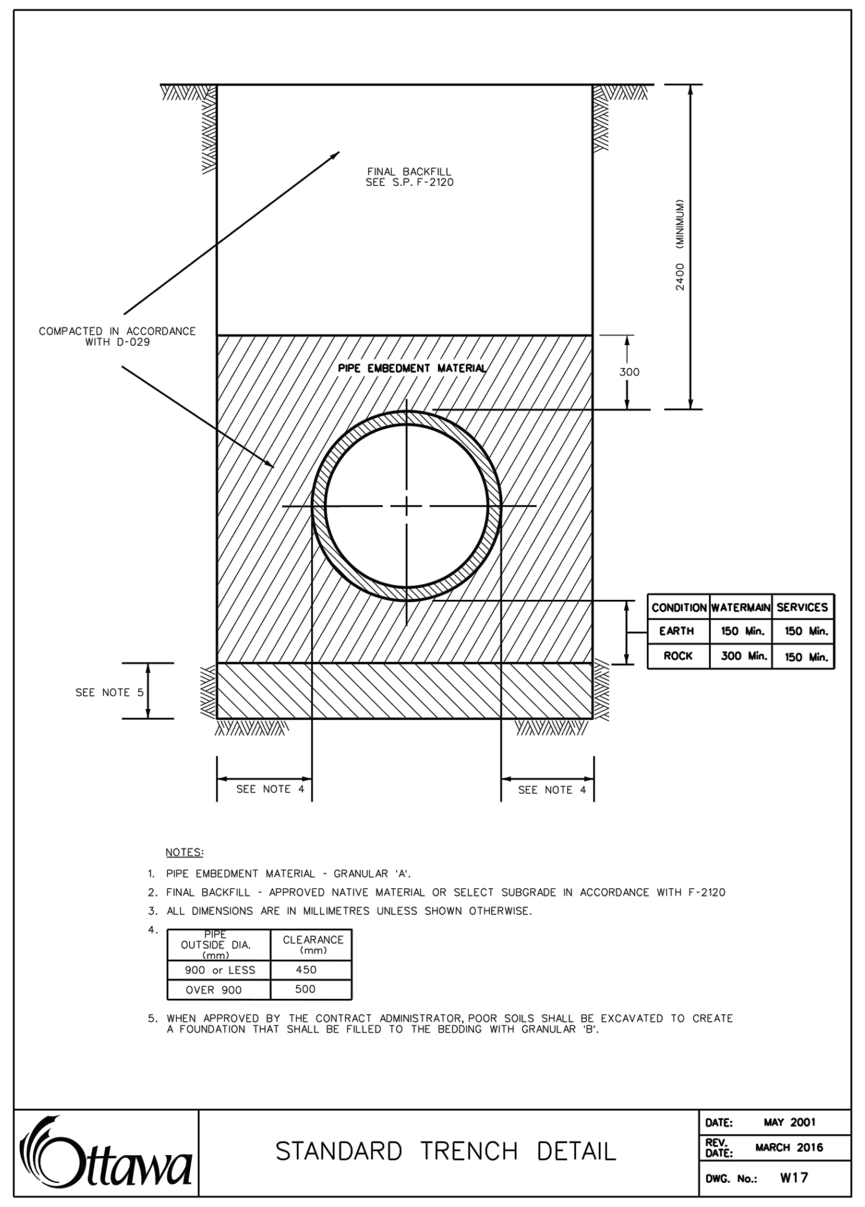
NOTES:
- FOR STORM INSULATION USE AN X VALUE OF 2000 IN THE ABOVE "TI" EQUATION.
- FOR SANITARY INSULATION USE AN X VALUE OF 2500 IN THE ABOVE "TI" EQUATION.
- FOR WATERMAIN INSULATION USE AN X VALUE OF 2400 IN THE ABOVE "TI" EQUATION.
- INCREMENTS OF INSULATION THICKNESS SHALL BE ADJUSTABLE TO 25mm.
- STAGGER JOINTS OF MULTIPLE SHEETS.
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS SHOWN OTHERWISE.

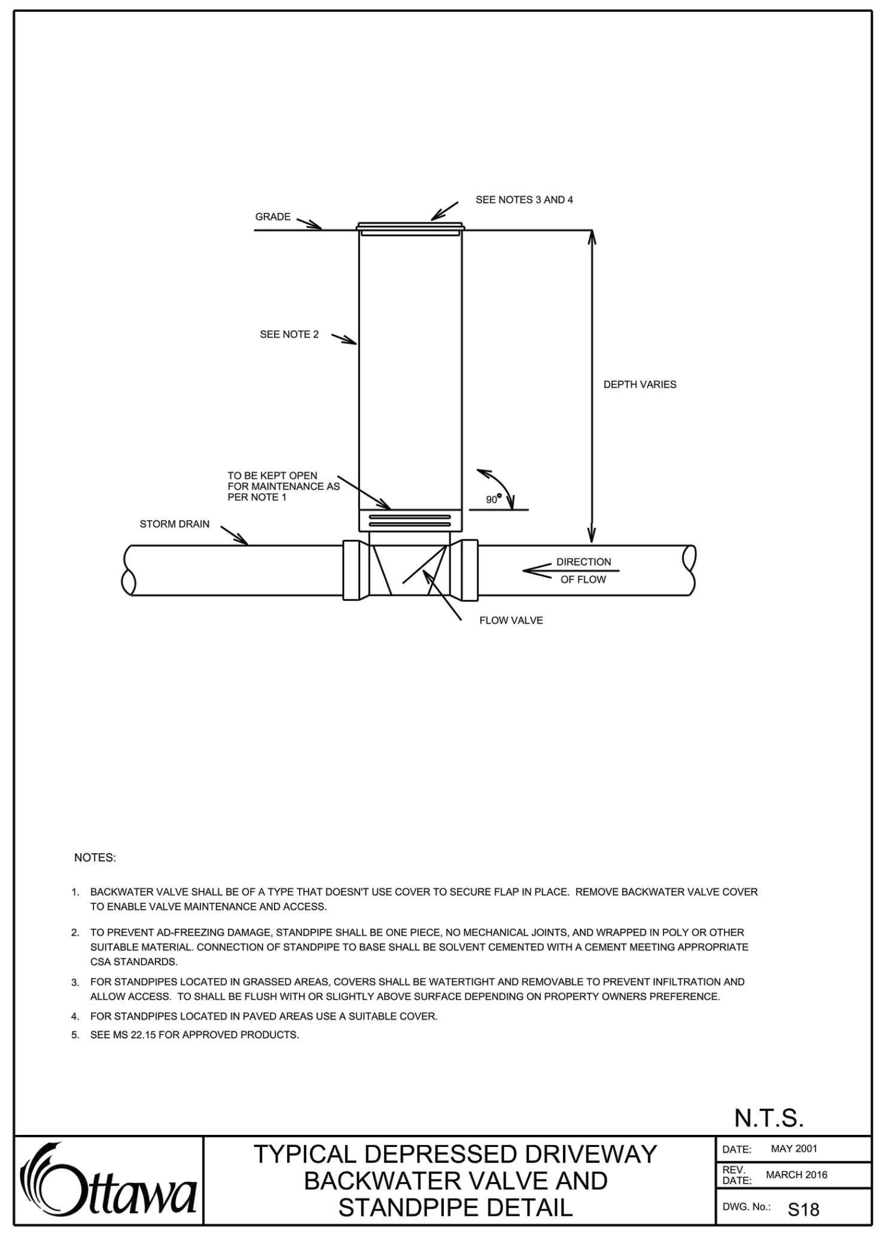
TYPICAL STORM AND SANITARYSEWER AND WATERMAIN INSULATION DETAIL
(N.T.S.)

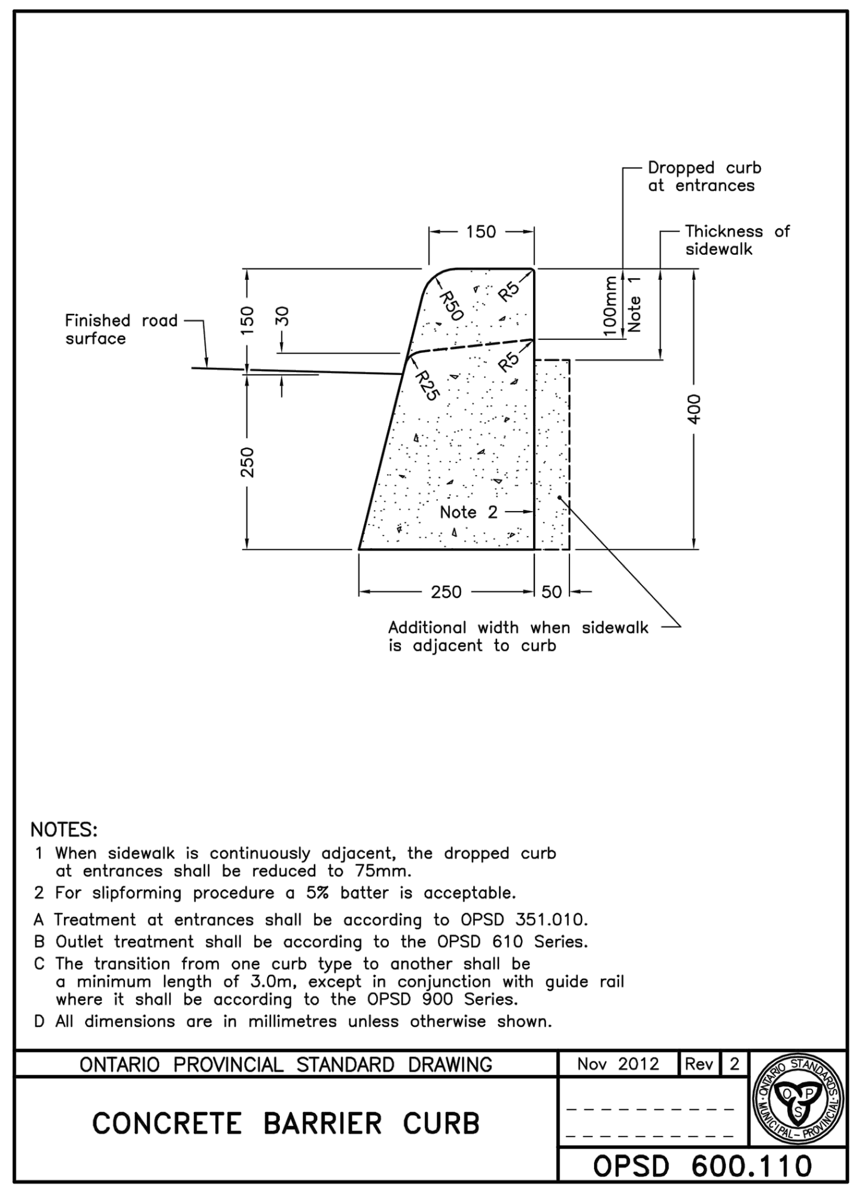


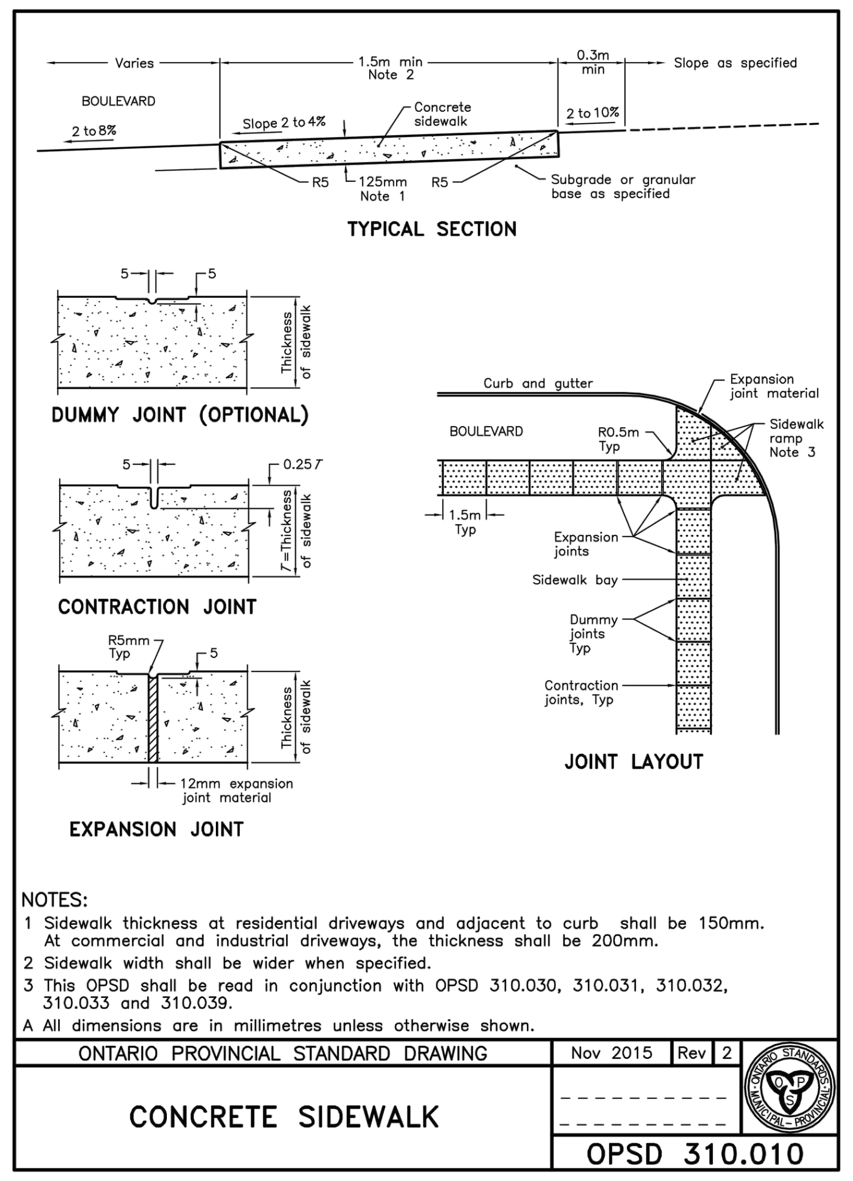


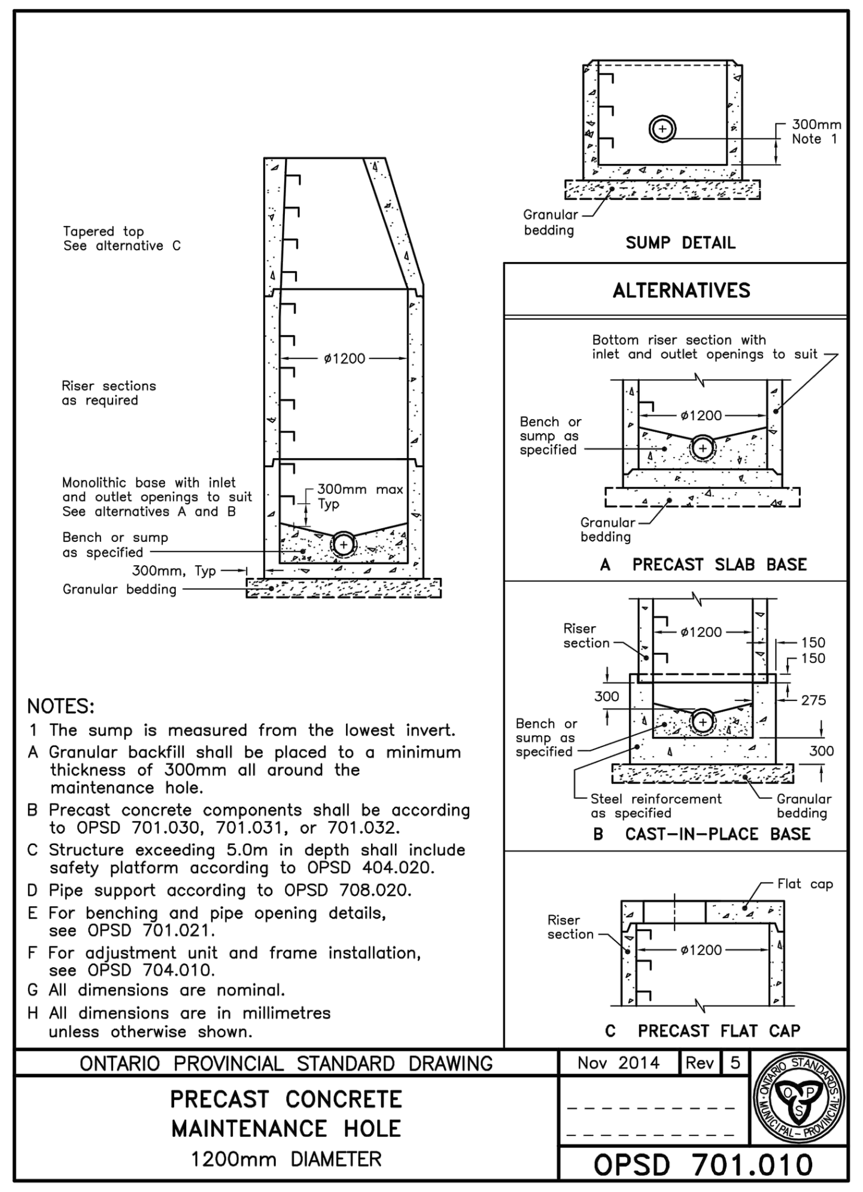


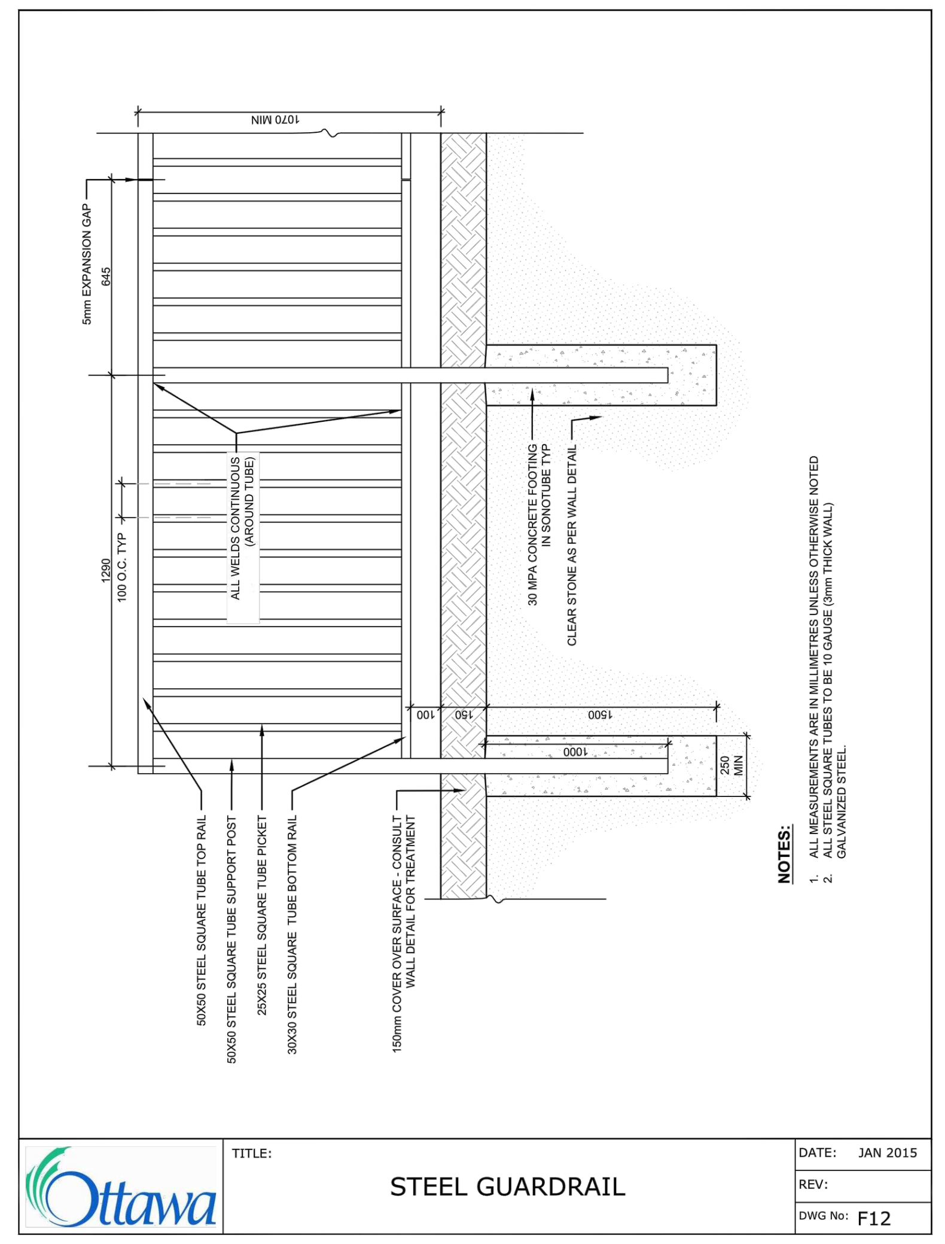


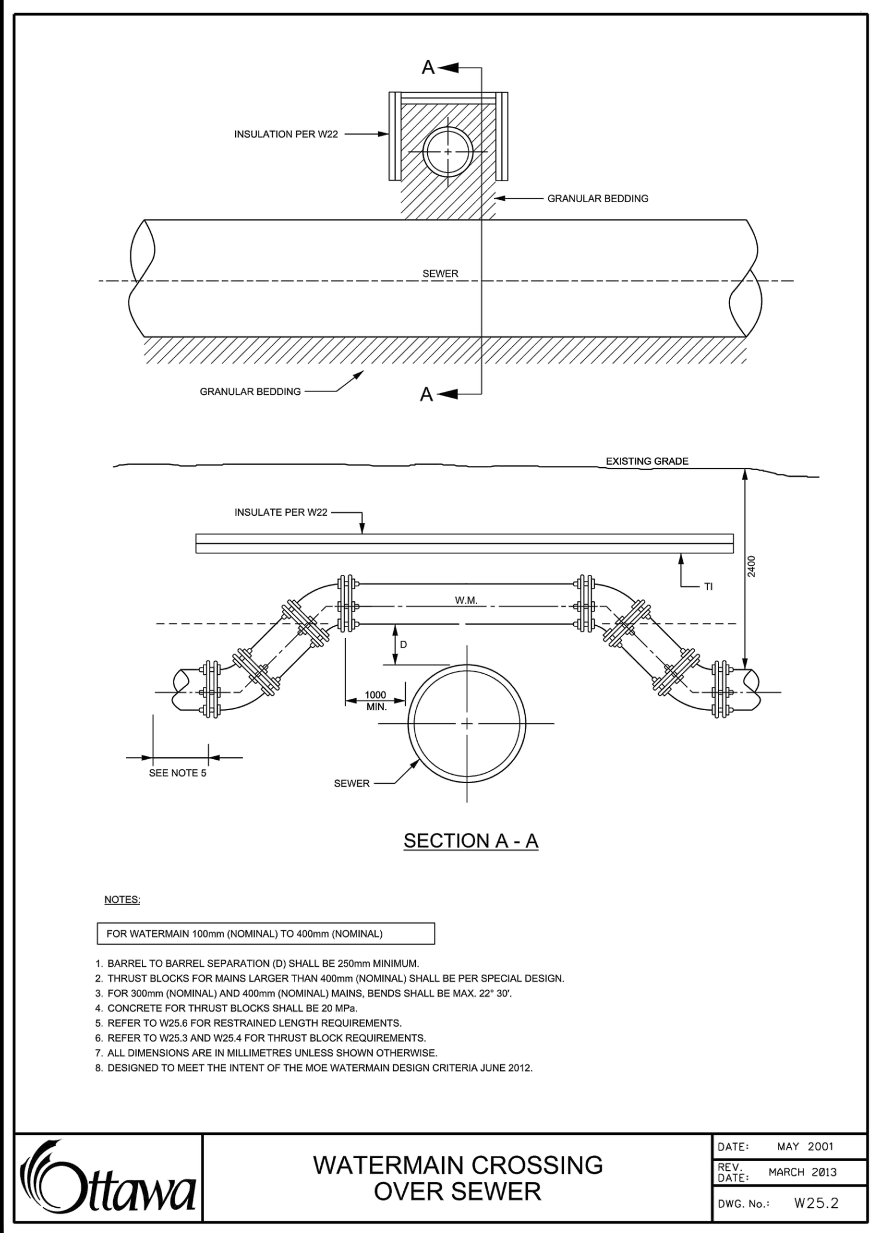


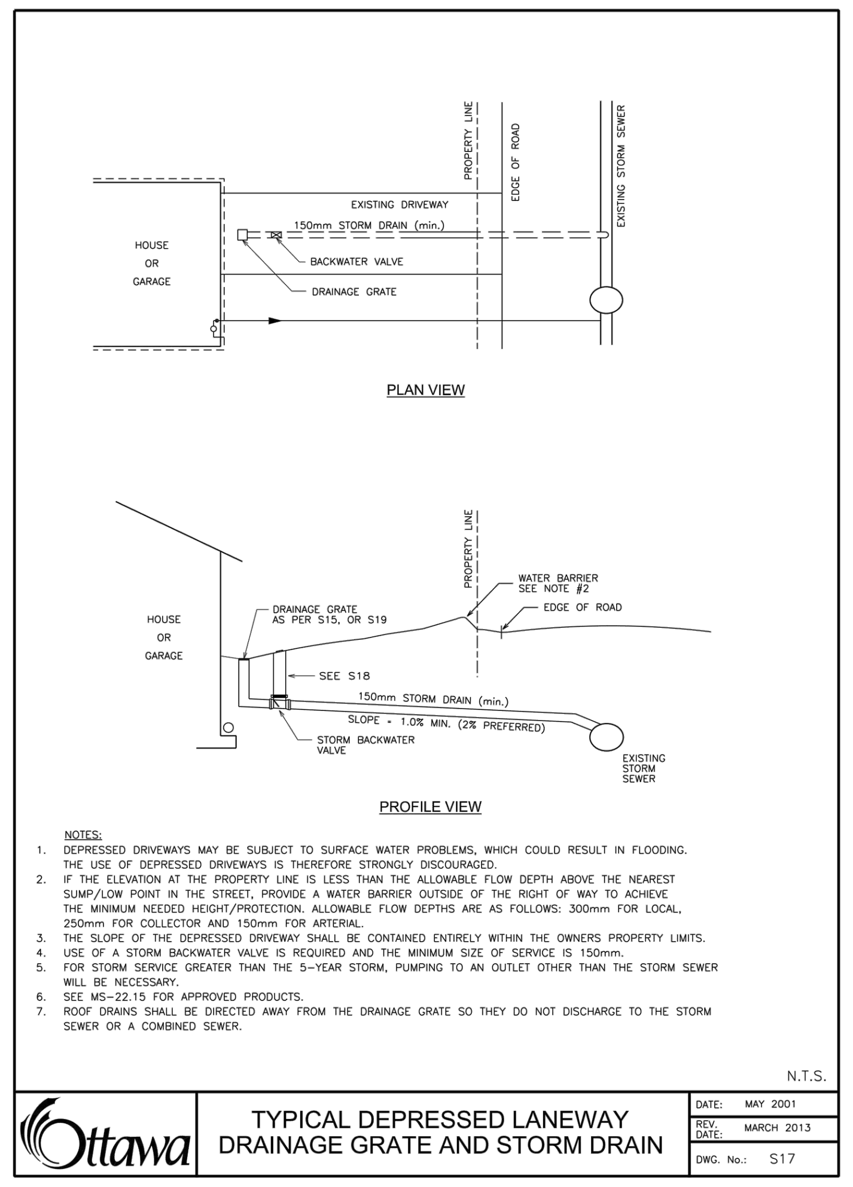


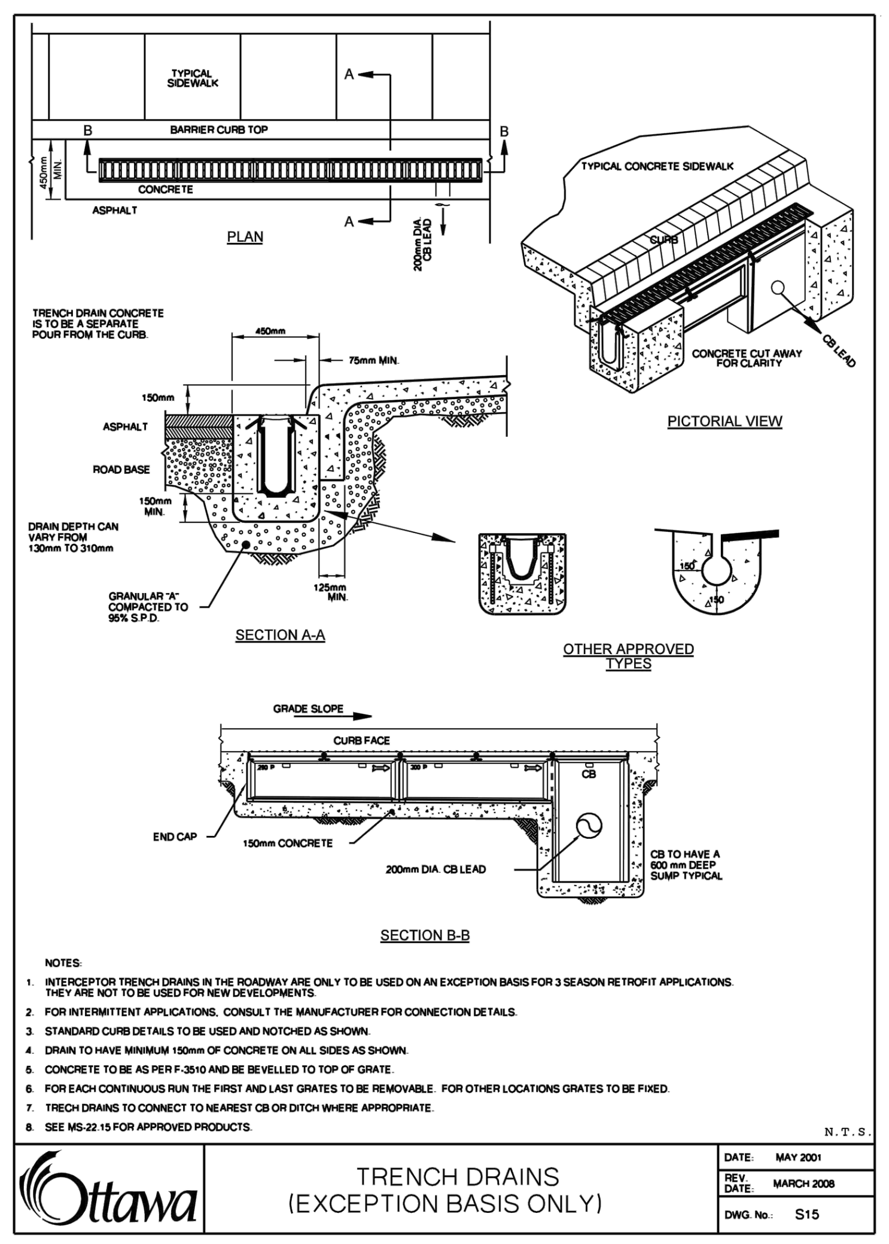


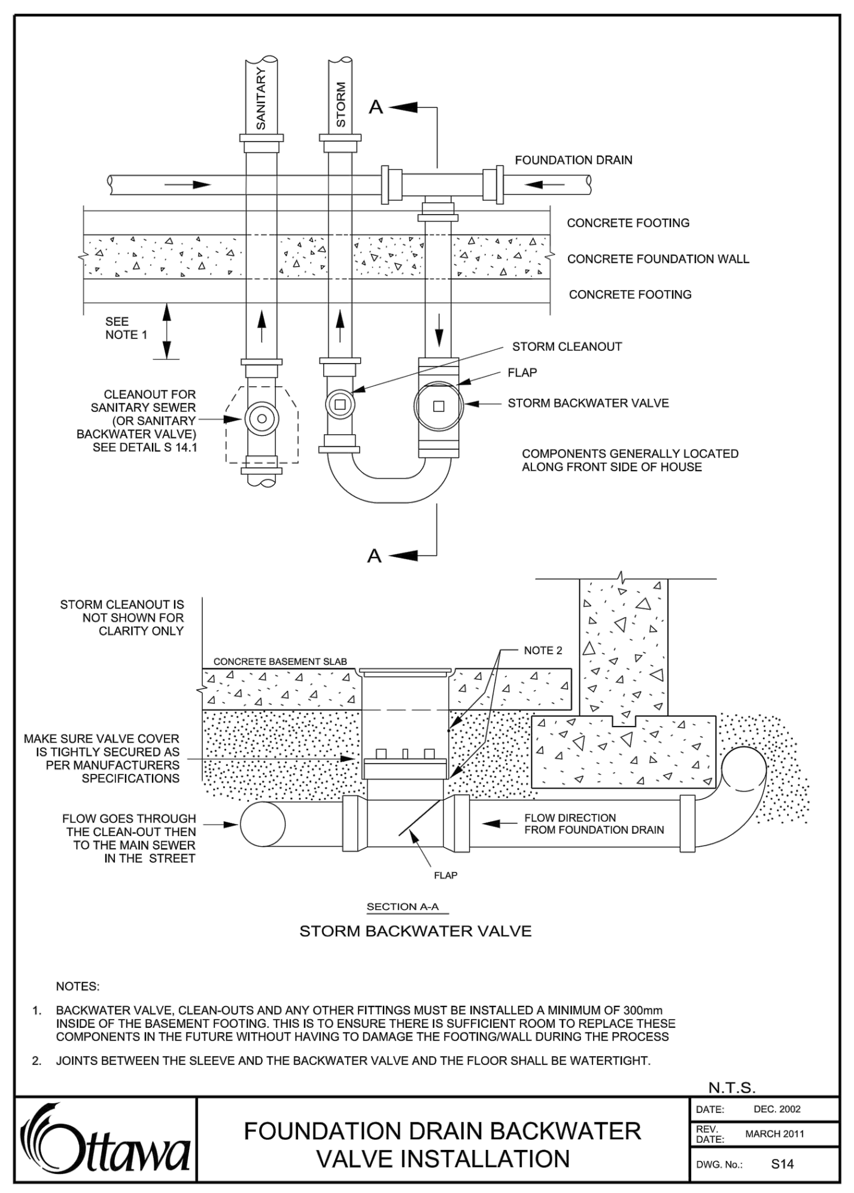


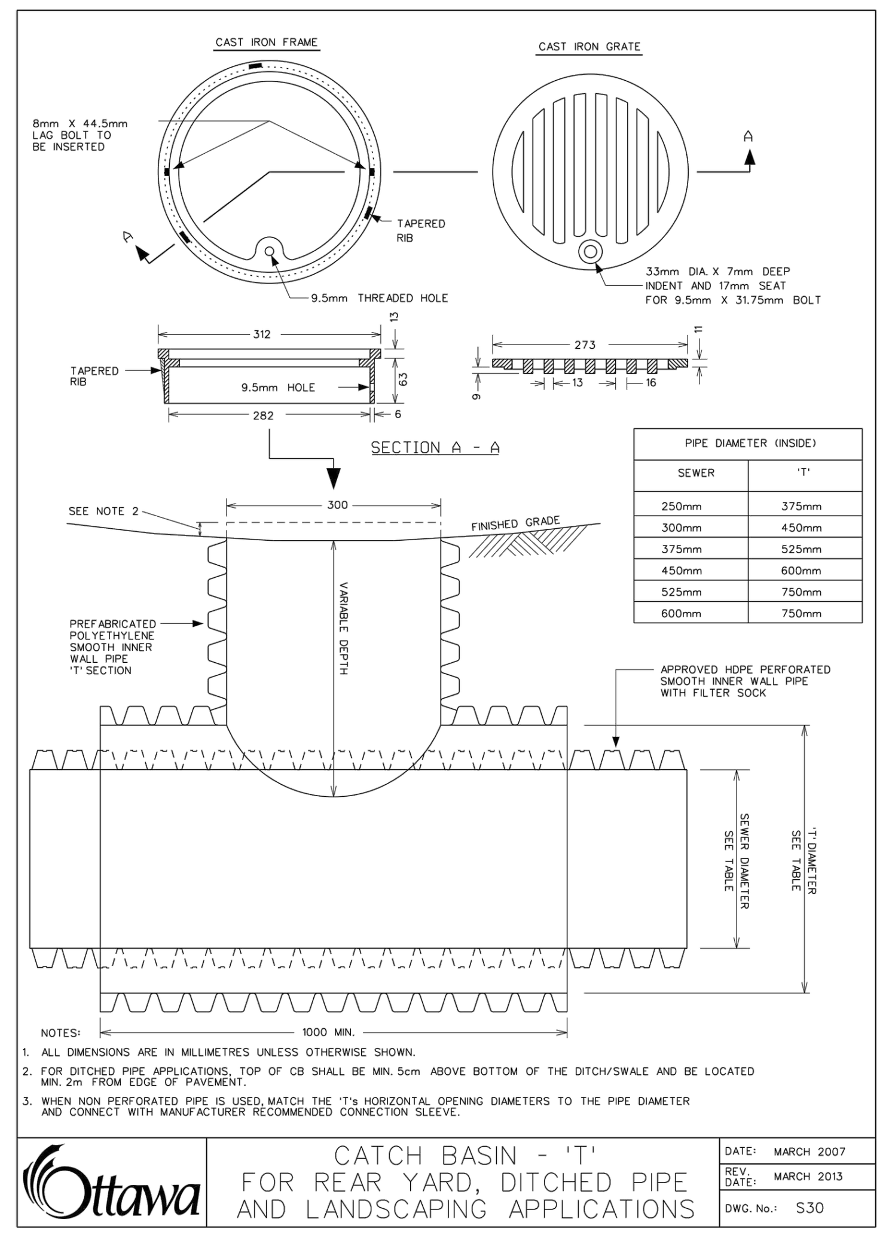


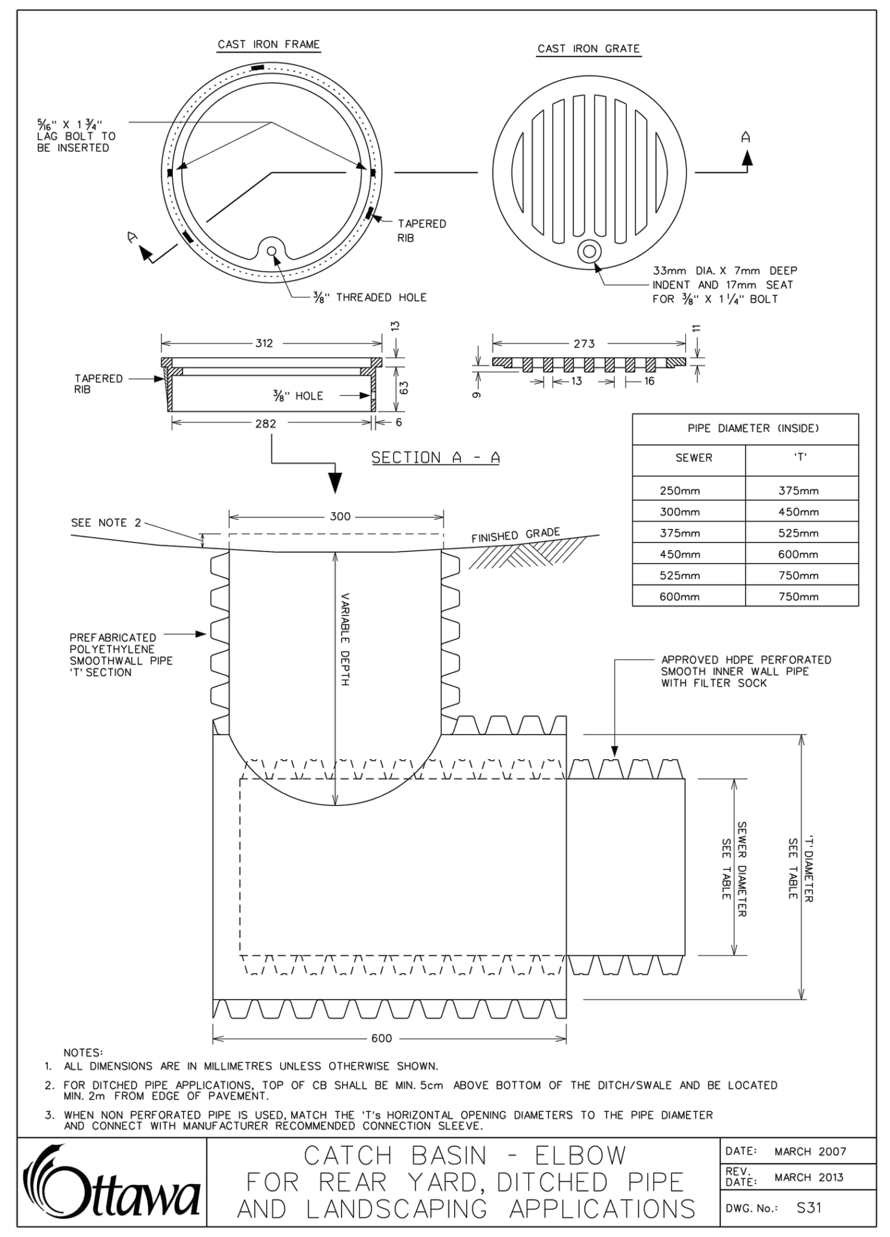












USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

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UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES. THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

NOT FOR CONSTRUCTION TENDER OR PERMIT

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100501996
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APARTMENT BUILDINGS
ERIC CZAPNIK WAY, ORLEANS

DRAWING TITLE
CONSTRUCTION DETAIL PLAN

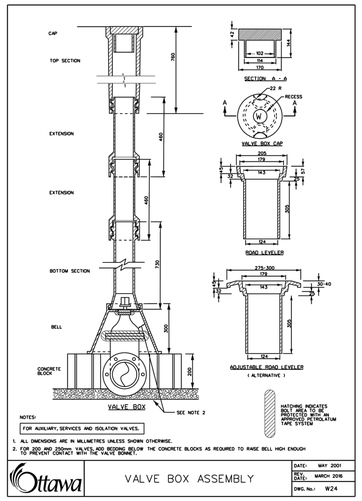
PROJECT NO.
200041

DATE
APRIL 2020

C901

D07-12-20-0104

#18200

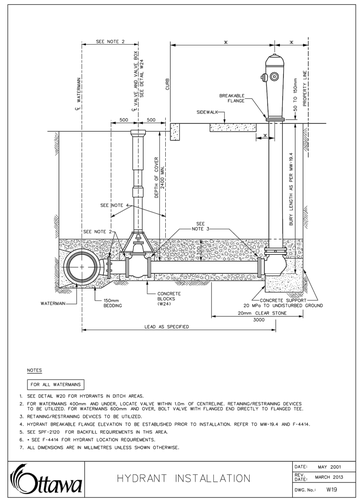


NOTES:

FOR AUXILIARY, SERVICES AND ISOLATION VALVES.

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. FOR 300 AND 350mm VALVES, ADD BEDDING BELOW THE CONCRETE BLOCKS AS REQUIRED TO RAISE BELL HIGH ENOUGH TO PREVENT CONTACT WITH THE VALVE BONNET.

Ottawa	VALVE BOX ASSEMBLY	DATE: MAY 2001 REV. DATE: MARCH 2016 DWG. No.: W24

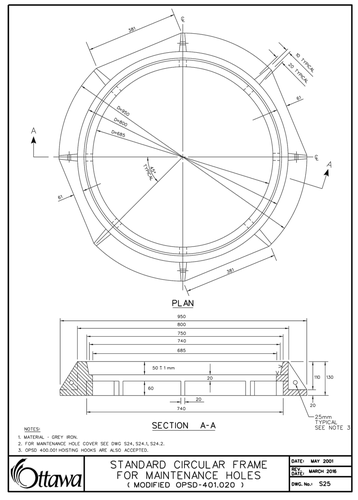


NOTES

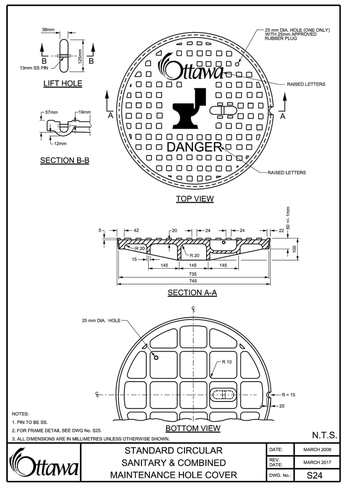
FOR ALL WATERMAINS

1. SEE DETAIL W20 FOR HYDRANTS IN DITCH AREAS.
2. FOR WATERMAINS 400mm AND UNDER, LOCATE VALVE WITHIN 1.0m OF CENTRELINE. RETAINING/RESTRAINING DEVICES TO BE UTILIZED. FOR WATERMAINS 600mm AND OVER, BOLT VALVE WITH FLANGED END DIRECTLY TO FLANGED TEE. RETAINING/RESTRAINING DEVICES TO BE UTILIZED.
3. HYDRANT BREAKABLE FLANGE ELEVATION TO BE ESTABLISHED PRIOR TO INSTALLATION. REFER TO MW-19.4 AND F-4414.
4. SEE SPF-2120 FOR BACKFILL REQUIREMENTS IN THIS AREA.
5. ∗ - SEE F-4414 FOR HYDRANT LOCATION REQUIREMENTS.
7. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

Ottawa	HYDRANT INSTALLATION	DATE: MAY 2003 REV. DATE: DWG. No.: W19



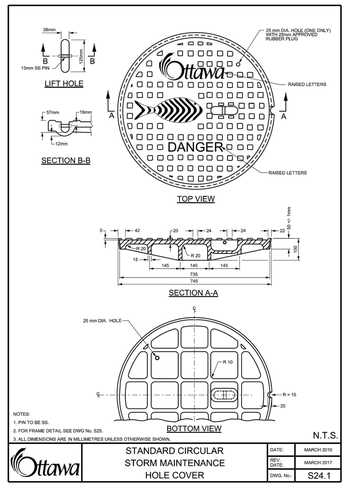
Ottawa	STANDARD CIRCULAR FRAME FOR MAINTENANCE HOLES (MODIFIED OPSD-401.020)	DATE: MAY 2001 REV. DATE: MARCH 2016 DWG. No.: S25



NOTES:
1. PIN TO BE SS.
2. FOR FRAME DETAIL SEE DWG No. S25.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

N.T.S.

Ottawa	STANDARD CIRCULAR SANITARY & COMBINED MAINTENANCE HOLE COVER	DATE: MARCH 2009 REV. DATE: MARCH 2017 DWG. No.: S24



NOTES:
1. PIN TO BE SS.
2. FOR FRAME DETAIL SEE DWG No. S25.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

N.T.S.

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

NOTES:
1. MATERIAL - GREY IRON.
2. FOR MAINTENANCE HOLE DETAIL SEE DETAIL DWG No. S25.
3. TOLERANCE: +/-1.0mm.
4. FOR CATCHBASIN MAINTENANCE HOLE APPLICATIONS ONLY.

Ottawa	CATCH BASIN MAINTENANCE HOLE COVER (MODIFIED OPSD-401.020)	DATE: MARCH 2009 REV. DATE: MARCH 2017 DWG. No.: S28.1

NOTES:
1. ALL DIMENSIONS SHOWN ARE FOR FINISHED CASTINGS ONLY. PATTERN MAKERS AND CASTING SHOP SHOULD MAKE ALLOWANCES ACCORDINGLY.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
3. FOR NEW CONSTRUCTION WHERE SURFACE INLETS ARE SPECIFIED.
4. COMPANIES WITH GRATE DIMENSIONS NOT EXACTLY THE SAME AS SHOWN ABOVE WILL ALSO BE CONSIDERED.
5. ALTERNATE SOLID COVER TO HAVE EYE 25mm Dia. HOLE WITH 25mm APPROVED PLUG

Ottawa	HEAVY DUTY "FISH" TYPE ROUND CATCH BASIN COVER (MODIFIED OPSD-400.07)	DATE: MAY 2005 REV. DATE: MARCH 2017 DWG. No.: S19

NOTES:
1. Outlet hole size 525mm diameter maximum, location as required.
2. 200mm diameter knockout to accommodate subdrain. Knockout shall be 60mm deep.
A Centre reinforcing in base slab and walls ±20mm
B Granular backfill shall be placed to a minimum thickness of 300mm all around the catch basin.
C Frame, grate, and adjustment units shall be installed according to OPSD 704.010.
D Pipe support to be according to OPSD 708.020.
E All dimensions are nominal.
F All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2019	Rev 4
PRECAST CONCRETE CATCH BASIN 600x600mm		OPSD 705.010

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01	ISSUED FOR APPROVAL	A.S.	11 FEB 2021

LICENSED PROFESSIONAL ENGINEER
M. BASMET
100501996
2021-02-11
PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

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DESIGNED BY:	DRAWN BY:	APPROVED BY:
A.S.	A.S.	M.B.

PROJECT
BLOCK 9
APARTMENT BUILDINGS
ERIC CZAPNIK WAY, ORLEANS

DRAWING TITLE
CONSTRUCTION DETAIL PLAN

PROJECT NO.
200041

DATE
APRIL 2020

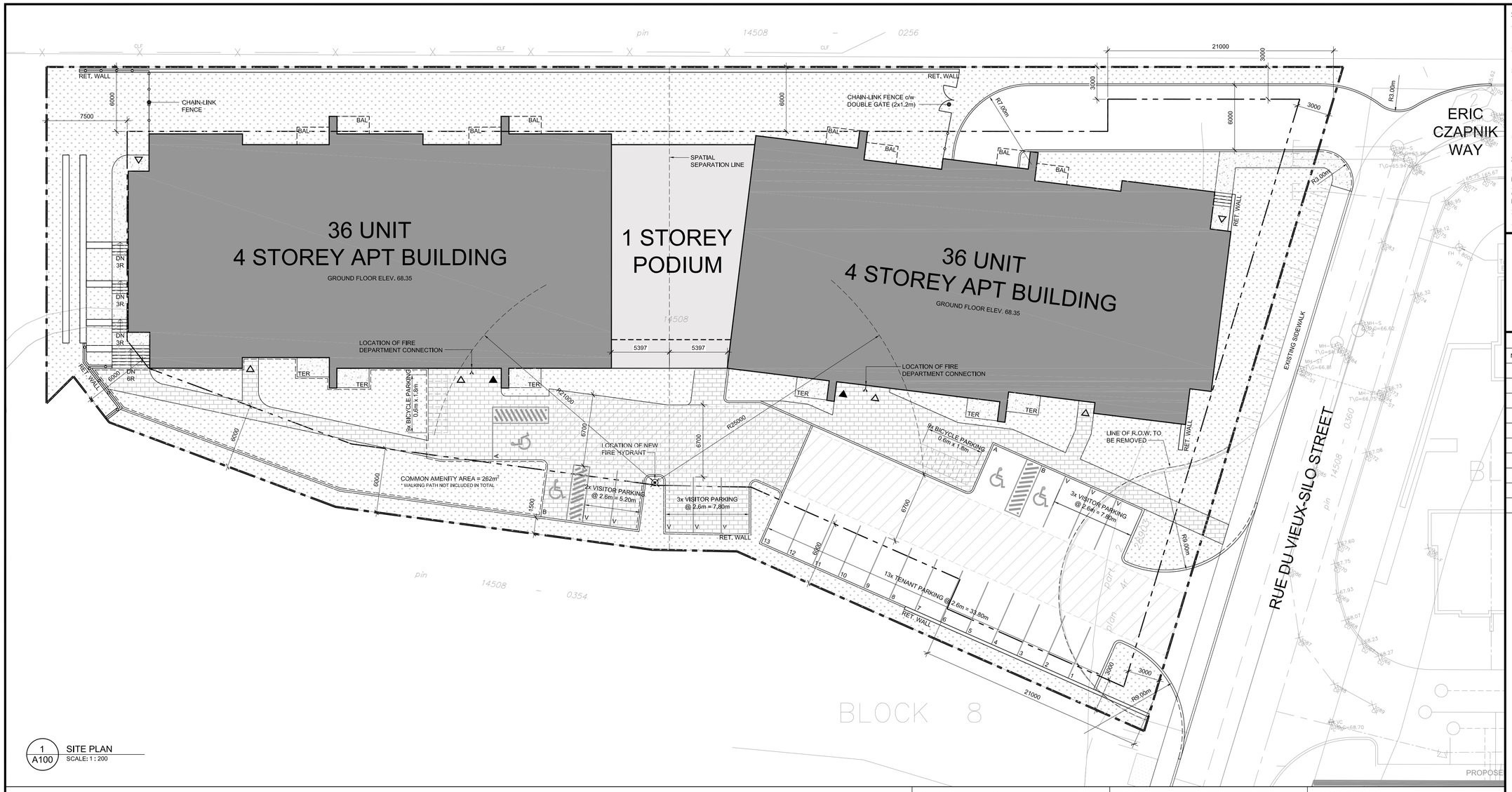
C.902

D07-12-20-0104

#18200

APPENDIX F

Proposed Site Plan
Survey



1 / A100 SITE PLAN
SCALE: 1 : 200

GENERAL NOTES

1. DO NOT SCALE DRAWINGS; ONLY FIGURED DIMENSIONS ARE TO BE USED. WHERE DOUBT EXISTS; FILE REQUEST FOR INTERPRETATION AND REQUEST CLARITY.
2. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO VERIFY DIMENSIONS ON SITE; REPORT DISCREPANCIES TO THE ARCHITECT PROMPTLY.
3. GENERAL CONTRACTOR TO TAKE INTO ACCOUNT CONSTRUCTION TOLERANCE; GENERAL CONTRACTOR TO COORDINATE THE WORK OF DIFFERENT TRADES TO COMPLY WITH DESIGN INTENT.
4. ALL WORK DESCRIBED IN THESE DRAWINGS AND SPECIFICATIONS ARE TO COMPLY WITH THE CURRENT EDITION OF THE ONTARIO BUILDING CODE (2012) OR NATIONAL BUILDING CODE (2010) INCLUDING MOST RECENT AMENDMENTS.
5. DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY AND ARE TO BE READ TOGETHER.

project north / ACTUAL NORTH

ISSUE RECORD:

NO.	DESCRIPTION	DATE
1	ISSUED FOR PRECONSULTATION	2020-02-07
2	ISSUED FOR CLIENT REVIEW	2020-03-17
3	ISSUED FOR CONSULTANT COORD.	2020-03-30
4	ISSUED FOR COORDINATION	2020-06-12
5	ISSUED FOR SITE PLAN APPLICATION	2020-06-29
6	ISSUED FOR 50% COORDINATION	2020-10-06
7	REISSUED FOR SITE PLAN APPLICATION	2020-10-15
8	ISSUED FOR PERMIT	2020-11-06
9	ISSUED FOR COORDINATION	2020-11-26
10	ISSUED FOR COORDINATION	2021-01-29

GENERAL SITE PLAN NOTES:

PROPERTY BOUNDARY INFORMATION, AND TOPOGRAPHICINFORMATION DERIVED FROM SURVEYOR'S REAL PROPERTY REPORT 4M-1542, CITY OF OTTAWA. PREPARED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD., SINGED AND DATED DECEMBER 06, 2019

SITE AND BUILDING DATA, 280 ERIC CZAPNIK WAY :

SITE AREA	1.3 acre / 5174.7m²
GROSS BUILDING AREA B1	2925.8m²
GROSS BUILDING AREA B2	2925.8m²
BUILDING AREA (OBC)	2189.7m²

ZONING:

PART 6 - RESIDENTIAL ZONES:
ZONE RSZ - RESIDENTIAL FIFTH DENSITY ZONE
AREA 2 ON SCHEDULE 1A

ZONING PROVISIONS
SETBACKS:

FRONT YARD:	3,0m MINIMUM
INTERIOR SIDE LOT LINE:	3,0m MINIMUM FOR FIRST 21,0m OF LOT DEPTH, 6m MINIMUM BEYOND
REAR YARD LOT LINE:	25% OF LOT DEPTH TO A MAXIMUM OF 7,5m

BUILDING HEIGHT:

MAXIMUM:	15.0m (OR 85,6m ABOVE SEA LEVEL)
PROPOSED:	12.3m (OR 80.7m ABOVE SEA LEVEL)

SITE: AREA: 5174.7m²

LANDSCAPING	REQUIRED	PROVIDED
AREA	30%	43,3% (2244,5m²)*

* TOTAL AREA INCLUDES SOFT AND HARD LANDSCAPING, REFER TO LANDSCAPING DRAWINGS FOR FINISHES

PARKING:

VEHICLE	REQUIRED	PROVIDED
TENANT PARKING	0	59 INTERIOR SPACES 13 EXTERIOR SPACES
VISITOR PARKING	0,1 / UNIT (7 TOTAL)	8
BARRIER FREE PARKING	2 TYPE A 2 TYPE B	2 TYPE A EXTERIOR 2 TYPE B EXTERIOR
TOTAL		84
BICYCLE PARKING	0,5 / UNIT (36 TOTAL)	18 EXTERIOR 18 INTERIOR

INTERIOR PARKING SPACE SIZES:

TOTAL INT. SPACES @ 2600mm	45
TOTAL INT. SPACES @ 2400mm	11
MAX. 40% OF INT. PARKING SPACES ALLOWED TO BE 2400mm	
% SPACES @ 2400mm	18.6%

AMENITY AREAS:

REQUIRED: 6m² PER UNIT | 72 UNITS x 6m² = 432m² MINIMUM
50% AMENITY AREA MUST BE COMMUNAL = 216m² MINIMUM

PRIVATE PROVIDED:

68 UNITS - EACH w/ BALCONY / TERRACE OF 5,4m² = 367,2m²

4 UNITS - EACH w/ BALCONY / TERRACE OF 12.3m² = 49.2m²

TOTAL: 416,4m² PRIVATE AMENITY

COMMON PROVIDED:

TOTAL: 282m² COMMUNAL
SEE SITE PLAN FOR LOCATION / AREA

GARBAGE ROOM REQUIREMENTS:

TYPE	REQUIRED	PROVIDED
GARBAGE	MAX. 0,231cu YARD / UNIT = 16.632cu YARDS	4x 4cu YARD CONTAINERS
FIBRE RECYCLING	MIN. 0.062cu YARD / UNIT = 4,46 cu YARDS	2x 3cu YARD CONTAINERS
GLASS RECYCLING	MIN. 0,018cu YARD / UNIT = 1,29 cu YARDS	2x 2cu YARD CONTAINERS
ORGANICS	1x 240L GREEN CONTAINER / 50 UNITS	2x 240L GREEN CONTAINER

* CALCULATIONS ARE BASED ON 72 RESIDENTIAL UNITS, DIVIDED BETWEEN 2x INTERIOR GARBAGE ROOMS

ABBREVIATIONS:

BAL: OUTLINE OF BALCONIES ABOVE *
RET. WALL: RETAINING WALL, REFER TO CIVIL
TER: GROUND FLOOR UNIT TERRACE SPACE
* NOTE: BALCONIES ARE CONSIDERED PERMITED PROJECTIONS

DRAWING LEGEND:

- PROPERTY LINE
- SET BACK LINE
- MAIN BUILDING ENTRANCE
- EXIT DOOR
- OUTLINE OF NEW 4 STORY BUILDING
- OUTLINE OF SINGLE STOREY PODIUM
- SOFT LANDSCAPING, REFER TO LANDSCAPING DRAWINGS
- HARD SURFACE LANDSCAPING, REFER TO LANDSCAPING DRAWINGS
- CONCRETE WALKING SURFACE, REFER TO CIVIL DRAWINGS
- EXTENT OF NEW FIRE ACCESS ROUTE (6m WIDE, MAXIMUM 90m LONG), REFER TO CIVIL DRAWINGS

CLIENT

LANDRIC HOMES
TEL: 819-593-4805
1173 CYRVILLE RD, SUITE 202
OTTAWA, ON, K1J 7S6

DCA
A GROUP OF ARCHITECTS
201-1339 WELLINGTON ST. WEST OTTAWA ON K1Y 3B8
WWW.ARCHITECTSDCA.COM 613.725.2294

PROJECT TITLE
HILLPARK APARTMENTS
70 & 80 SILO STREET
OTTAWA (ORLEANS), ON

DRAWING TITLE
SITE PLAN & PLANNING SCHEDULES

DATE	DRAWN	JOB NO.	DRAWING NO.
OCT. 2019	IC | DR	3206	A100
SCALE AS NOTED	REVIEWED TD		

ARCHITECTURAL

D07-12-20-0104

APPROVED UNDER SECTION 51 OF THE PLANNING ACT
BY THE CITY OF OTTAWA.

THIS 5th DAY OF AUGUST, 2015

MICHAEL MIZZI, MCIP RPP, ACTING GENERAL MANAGER
PLANNING AND GROWTH MANAGEMENT DEPARTMENT
PLANNING AND INFRASTRUCTURE PORTFOLIO
CITY OF OTTAWA

PLAN 4M- 1542

I CERTIFY THAT THIS PLAN
IS REGISTERED IN THE LAND REGISTRY OFFICE
FOR THE LAND TITLES DIVISION OF OTTAWA-CARLETON NO. 4
AT 13:14 O'CLOCK ON THE 06 DAY OF Aug 2015
AND ENTERED IN THE PARCEL REGISTER FOR
PROPERTY IDENTIFIERS 14508-0266,
14508-0324
AND THE REQUIRED CONSENTS ARE REGISTERED AS
PLAN DOCUMENT NO. OC1709105

R. HATTA
Representative For
LAND REGISTRAR

This plan comprises all of the land identified by PIN's 14508-0266 and 14508-0324.

PLAN OF SUBDIVISION OF
PART OF LOT 35
CONCESSION 1 (OLD SURVEY)
Geographic Township of Cumberland
And
BLOCK 1 AND
PART OF BLOCK 2
REGISTERED PLAN 50M-165
CITY OF OTTAWA
Surveyed by Annis , O'Sullivan , Vollebekk Ltd.

Scale 1 : 750
30 22.5 15 7.5 0 15 30 Metres

Metric

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act and the Land Titles Act and the regulations made under them.
2. The Survey was completed on the 15th day of July 2015.

June 30th/2015
Date

Edward M. Lancaster
Ontario Land Surveyor

OWNER'S CERTIFICATE

THIS IS TO CERTIFY THAT :

1. Blocks 1 to 13, both inclusive, the Streets, namely, rue du Vieux-Silo Street and voie Eric Czapnik Way have been laid out in accordance with my instructions.
2. The Streets are dedicated as public highway.

July 28th/15
Date

Cuckoo Kochar
President
Hillside Vista Inc.
I have the authority to bind the corporation.

NOTES AND LEGEND

—□—	Denotes	Survey Monument Planted.
—■—	"	Survey Monument Found
SIB	"	Standard Iron Bar.
SSIB	"	Short Standard Iron Bar.
RP	"	Rock Post
IB	"	Iron Bar.
CP	"	Concrete Pin
RB	"	Rock Bar
Meas.	"	Measured
CLF	"	Chain Link Fence
RW	"	Retaining Wall
(AOG)	"	Annis, O'Sullivan, Vollebekk Ltd.
(P1)	"	Plan 4R-24597
(P2)	"	Plan 50R-6873
(P3)	"	Plan 4R-21938
(P4)	"	Russell Condominium Plan No. 21
(P5)	"	Russell Condominium Plan No. 18
(P6)	"	Registered Plan 50M-165
(P7)	"	Plan 4R-20233
(P8)	"	Plan 4R-21940
(P9)	"	Plan 4R-25841
(P10)	"	Plan 4R-18385
(P11)	"	Plan 4R-22092
(P12)	"	Plan 4R-11043
(P13)	"	Plan 4R-26371

Distances shown on this plan are ground distances and can be converted to grid distances by multiplying by the combined scale factor of 0.99996.

Bearings are grid, derived from Can-Net 3.0 Real Time Network GPS observations on reference points A and B, shown hereon, having a bearing of N25°33'30"W and are referenced to Specified Control Points 01919680184 and 019198434761, MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

Coordinates are derived from Can-Net 3.0 Real Time Network GPS observations referenced to Specified Control Points 01919680184 and 019198434761, MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

Coordinate values are to urban accuracy in accordance with O. Reg. 216/10.

. 01919680184	Northing	5040610.16	Easting	384736.56
. 019198434761	Northing	5036178.12	Easting	372436.11
. Point A	Northing	5038742.62	Easting	382832.07
. Point B	Northing	5038840.49	Easting	382785.26

Caution: Coordinates cannot, in themselves, be used to re-establish corners or boundaries shown on this plan.

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com
Ontario Land Surveyors

Job No. 11820-11 Phoenix Pt Lts 34 35 CI OS CU SUB F | N

WATERMAIN NOTES:

1. SUPPLY AND CONSTRUCT ALL WATERMAINS AND APPURTENANCES IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. EXCAVATION, INSTALLATION, BACKFILL AND RESTORATION OF ALL WATERMAINS BY THE CONTRACTOR. ALL BLANKINGS AND CONNECTIONS TO THE WATER SYSTEM SHALL BE PERFORMED BY CITY OFFICIALS. NO WORK SHALL COMMENCE UNLESS A CITY WATER WORKS INSPECTOR IS ON SITE. REFER TO CITY OF OTTAWA SPECIFICATIONS F-7010, F-7011, F-7012, F-7013, F-7014, F-7016, AND ANY OTHER APPLICABLE SPECIFICATIONS.

2. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
WATERMAIN INSULATION	W22,W23	CITY OF OTTAWA
WATERMAIN CROSSING BELOW SEWER	W25	CITY OF OTTAWA
VALVE BOX	W24	CITY OF OTTAWA
WATERMAIN	PVC DR 18	

3. WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE UNLESS OTHERWISE INDICATED OR INSULATED.

4. INSULATE ALL WATERMAIN AT ALL CATCHBASINS AND LEADS AS PER W-23.

5. FIRE HYDRANTS AS PER CITY OF OTTAWA DETAILS W-18 AND W-19.

6. ALL WATERMAIN TO BE INSTALLED WITH THRUST BLOCKS AND RESTRAINING RINGS AS PER F-7091, W25.3, W25.4, W25.5 AND W25.6. NOTE LOCAL SOIL IS A CLAY WITH A BEARING CAPACITY BETWEEN 125 AND 175 kPa. THEREFORE, USE TABLES FOR BEARING CAPACITY OF 100-199 kPa.

7. THRUST BLOCKS TO BE INSTALLED ON ALL CAPS, TEES, CROSSES, HORIZONTAL BENDS, TAPPING VALVES, OTHER FITTINGS THAT STOP FLOW OR CHANGE DIRECTION OF FLOW AND HYDRANTS.

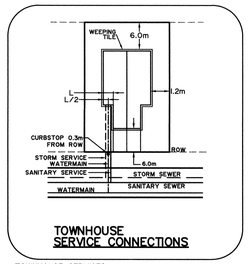
8. RESTRAINING RINGS TO BE INSTALLED ON ALL CAPS, TEES, CROSSES, HORIZONTAL AND VERTICAL BENDS, REDUCERS, SLEEVES, COUPLINGS, CURB-STUBS, AUXILIARY, ISOLATION/LINE/BRANCH VALVES, TAPPING VALVES, HYDRANTS, OTHER FITTINGS THAT STOP FLOW OR CHANGE DIRECTION AND PUSH ON JOINTS WITHIN RESTRAINED LENGTH.

9. WHERE WATERMAIN DEFLECTION IS REQUIRED, DEFLECT AT A MAXIMUM 1/2 THE MANUFACTURERS RECOMMENDATION, MAXIMUM 1.5 ° PER DEFLECTION.

10. IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARD W-18, NO DRIVEWAY SHALL BE LOCATED WITHIN 3.0m OF A FIRE HYDRANT. NO OBJECTS INCLUDING VEGETATION SHALL BE PLACED OR PLANTED WITHIN A 3.0m CORRIDOR BETWEEN A FIRE HYDRANT AND THE EDGE OF A ROADWAY OR A 1.5m RADIUS BESIDE OR BEHIND A FIRE HYDRANT.

11. CATHODIC PROTECTION REQUIRED FOR PVC WATERMAIN SYSTEMS AS PER CITY OF OTTAWA W40,W42, AND F-7093. ALL WATERMAIN TO BE INSTALLED COMPLETE WITH TRACER WIRE AS PER CITY OF OTTAWA W-36 AND F-7092.

12. WATERMAIN TESTING REQUIRED AS PER CITY OF OTTAWA SPECIFICATIONS F-7090 INCLUDING THE USE OF CHLORINATION NOZZLE AS PER CITY OF OTTAWA W46.



TOWNHOUSE SERVICE CONNECTIONS

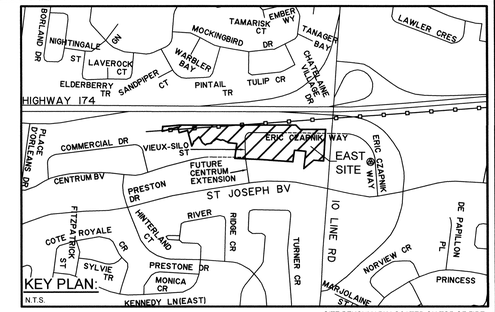
TOWNHOUSE SERVICES
▲ SANITARY- I-135mmø PVC DR 28 @ 1.0% (MIN)
STORM- I-100mmø PVC DR 28 @ 1.0% (MIN)
WATER- I-19mmø (TYPE K COPPER)

NOTE: ALL SANITARY AND STORM SERVICES ARE TO EQUIPPED WITH BACKWATER VALVES

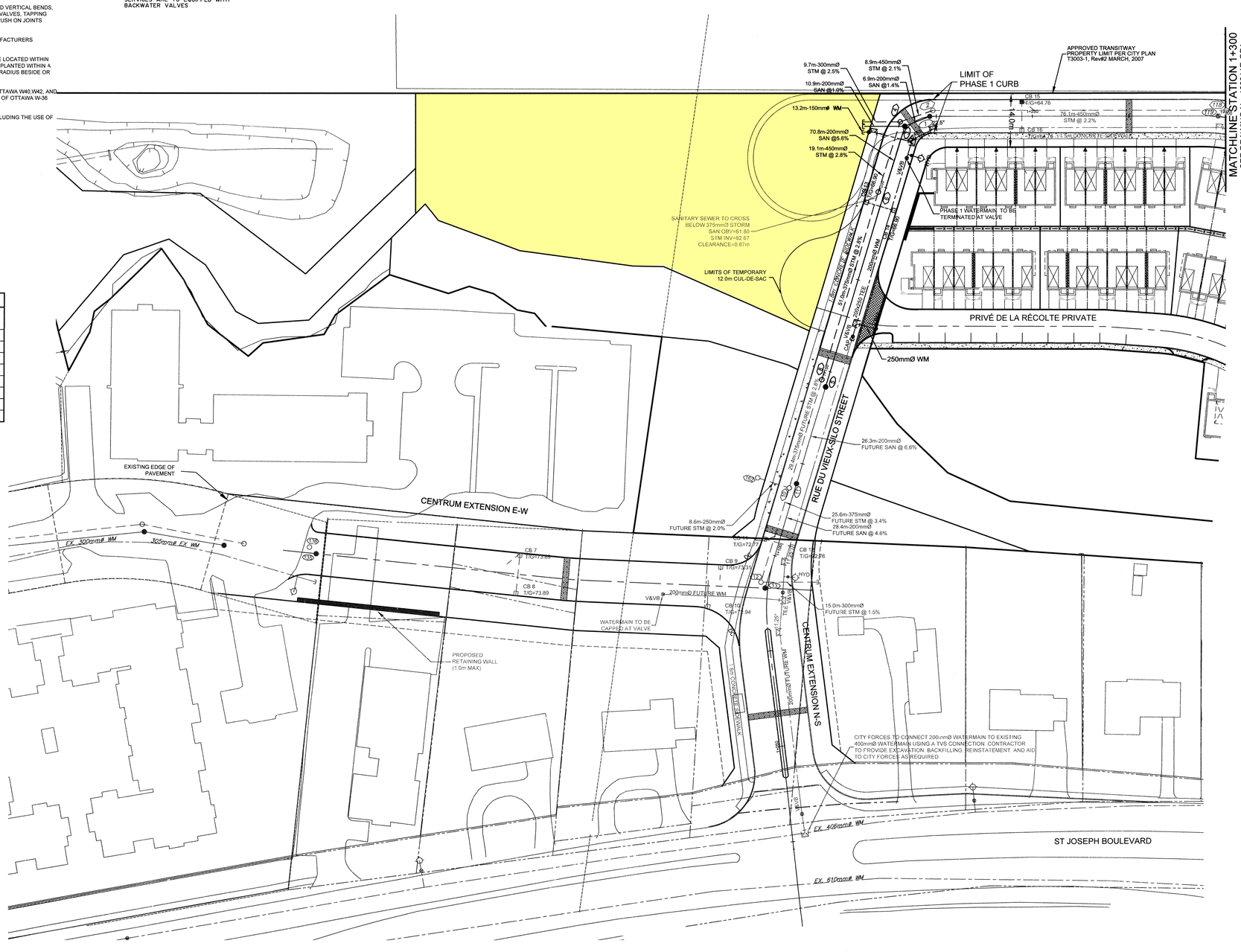
LEGEND

- 150mmø — PROPOSED WATERMAIN AND DIAMETER
- PROPOSED BEND AND THRUSTBLOCK
- V&VB — PROPOSED VALVE & VALVE BOX LOCATION
- PROPOSED FIRE HYDRANT
- PROPOSED SERVICE CAP
- 151 — 250mmø — PROPOSED SANITARY MH & SEWER WITH DIRECTION OF FLOW
- 100 — 300mmø — PROPOSED STORM MH & SEWER WITH DIRECTION OF FLOW
- CB 1 — PROPOSED CATCHBASIN
- CB 2 — PROPOSED CATCHBASIN WITH ICD
- 110 — PROPOSED CATCHBASIN MANHOLE
- RYCB 1 — PROPOSED REAR YARD CATCHBASIN
- PROPOSED CONCRETE SIDEWALK AS PER CITY OF OTTAWA STANDARD SC1.4
- SERVICE LOCATION
- PROPOSED CURB
- DC — PROPOSED CLAY SEAL
- PROPOSED DEPRESSED CURB
- x — x — PROPOSED CHAINLINK FENCE
- 173 — 250mmø — FUTURE SANITARY MH & SEWER WITH DIRECTION OF FLOW
- 155 — 300mmø — FUTURE STORM MH & SEWER WITH DIRECTION OF FLOW
- 750mmø SAN — EXISTING SANITARY MH & SEWER WITH DIRECTION OF FLOW
- 300mmø STM — EXISTING STORM MH & SEWER WITH DIRECTION OF FLOW
- EXISTING WATERMAIN
- x — x — x — REMOVAL

PROJECT NORTH



(A1) SITE BENCHMARK LOCATED ON TOP OF FIRE HYDRANT SPINDLE ON NORTHERN LIMITS OF EXISTING POLICE ROAD. (ELEVATION = 59.92m)



CATCH BASIN SCHEDULE

CB	T/G ELEVATION (m)	INVERT (m)	ICD (mm)	1:100 YEAR RELEASE RATE (L/s)
CB 7	73.86	72.66	94	22.9
CB 8	73.85	72.66	-	-
CB 9	72.53	71.33	94	22.9
CB 10	72.80	71.60	-	-
CB 11	71.91	70.71	83	17.9
CB 12	71.85	70.65	-	-
CB 13	65.38	64.18	83	17.9
CB 14	65.38	64.18	-	-

SANITARY MANHOLE SCHEDULE

MH I.D.	SIZE (mm)	T/G ELEVATION (m)	INVERT (m)	PIPE DIAMETER (mm)
135	1200Ø	71.74	N = 69.97 E = 69.91	N = 200 E = 200
13	1200Ø	73.48	N = 70.68	N = 200
11	1200Ø	72.06	N = 69.26 S = 69.36	N = 200 S = 200
5	1200Ø	70.22	N = 67.42 S = 67.52	N = 200 S = 200
3	1200Ø	66.12	SW=62.50 S=63.42 NE=60.68	SW=200 S=200 NE=200
1	1200Ø	65.87	NE = 59.98 SW = 60.58	NE = 200 SW = 200
175	1200Ø	66.50	E = 62.11 W = 62.11	E = 200 W = 200
181	1200Ø	72.09	E = 68.96 W = 68.96	E = 200 W = 200
179	1200Ø	71.87	E = 70.19	E = 200

STORM MANHOLE SCHEDULE

MH I.D.	SIZE (mm)	T/G ELEVATION (m)	INVERT (m)	PIPE DIAMETER (mm)
136	1200Ø	71.60	E = 68.93	E = 375
12	1200Ø	73.38	N = 70.38	N = 375
10	1200Ø	72.12	N = 68.23 W = 69.00 S = 69.50	N = 375 W = 250 S = 375
8	1200Ø	70.07	N = 65.40 S = 67.42	N = 375 S = 375
6	1500Ø	66.85	N = 62.14 S = 64.00	N = 450 S = 375
4	1500Ø	66.07	NE = 61.14 S=61.63 SW = 62.50	E = 450 S = 450 SW=250
2	1200Ø	65.79	N = 60.45 S= 60.95	E = 450 W = 450
162	1200Ø	73.59	E = 66.13 S = 66.13	E = 250 S = 250

GENERAL NOTES:

1. ALL WORK TO BE COMPLETED IN ACCORDANCE WITH CITY OF OTTAWA AND OPS DRAWINGS AND SPECIFICATIONS, UNLESS OTHERWISE NOTED.
2. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
3. CONTRACTOR IS TO PROCURE COPIES OF THE APPLICABLE STANDARDS AND KEEP ON SITE.
4. DIMENSIONS AND LAYOUT INFORMATION SHALL BE CONFIRMED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
5. THE ORIGINAL TOPOGRAPHY AND GROUND ELEVATIONS, SERVICING AND SURVEY INFORMATION SHOWN ON THIS PLAN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF ALL INFORMATION OBTAINED FROM THIS PLAN.
6. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
7. OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
8. BEFORE COMMENCING CONSTRUCTION, OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR $2,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED.
9. RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES, SURFACES, AND FENCES ON PUBLIC ROAD ALLOWANCES, PRIVATE SITES, AND ALONG ORC/HONI TRANSMISSION CORRIDOR TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
10. REMOVE FROM S/E ALL EXCESS EXCAVATED MATERIAL UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ALL ORGANIC MATERIAL AND DEBRIS.
11. ALL ELEVATIONS ARE GEODETIC AND UTILIZE METRIC UNITS.
12. REFER TO GEOTECHNICAL REPORT No. PG1743-1 GEOTECHNICAL INVESTIGATION - PROPOSED RESIDENTIAL DEVELOPMENT, ORLEANS TOWN CENTRE EAST, TENTH LINE, OTTAWA, ONTARIO (DEC 2006) PREPARED BY PATERSON GROUP INC. FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS AND GEOTECHNICAL INSPECTION REQUIREMENTS.
13. REFER TO ARCHITECTS DRAWING FOR BUILDING AND HARD SURFACE AREAS AND DIMENSIONS.
14. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GENERAL PLAN OF SERVICES INDICATING ALL SERVICING AS-BUILT INFORMATION SHOWN ON THIS PLAN. AS-BUILT INFORMATION MUST INCLUDE: PIPE MATERIAL, SIZES, LENGTHS, SLOPES, INVERT AND TIG ELEVATIONS, STRUCTURE LOCATIONS, VALVE AND HYDRANT LOCATIONS, T/WM ELEVATIONS AND ANY ALIGNMENT CHANGES, ETC.
15. SIDE SLOPES FOR ALL EXCAVATIONS ARE TO BE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT (ONTARIO REGULATION 213/91). ONSITE FILL IS CLASSIFIED AS TYPE 2 SOILS. THEREFORE, EXCAVATION SLOPES ARE TO BE MAXIMUM 1H:1.2V OR FLATTER PLUS CLAY IS CLASSIFIED AS TYPE 3 SOIL, SLOPES OF MAXIMUM 1H:1V OR FLATTER.
16. PRIOR TO ANY ROCK EXCAVATION THE CONTRACTOR IS REQUIRED TO COMPLETE A PRE-BLAST SURVEY ACCORDING TO CITY OF OTTAWA SPECIFICATION #F-1201, AND PROVINCIAL SPECIFICATION No. OPS #120.
17. PRIOR TO CONSTRUCTION ALL SUBGRADE SURFACES FOR FOOTING AND PAVEMENT STRUCTURES ARE TO BE INSPECTED BY A GEOTECHNICAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO.

SEWER NOTES:

1. ALL WORKS SHALL BE PERFORMED IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS AND SPECIFICATIONS F-4070, F-4080, F-4100 AND ANY OTHER APPLICABLE SPECIFICATION.
2. **SPECIFICATIONS:**

ITEM	SPEC. No.	REFERENCE
CATCHBASIN (600x600mm)	S1	CITY OF OTTAWA
STORM/SANITARY MANHOLE (1200Ø)	701.010	OPSD
STORM MANHOLE (1500Ø)	701.011	OPSD
STORM MANHOLE (1800Ø)	701.012	OPSD
STORM MANHOLE (2400Ø)	701.013	OPSD
CB AND CBMH, FRAME & COVER	S19, 400.02	CITY OF OTTAWA, OPSD
SANITARY & STORM MH FRAME & COVER	S24,S25	CITY OF OTTAWA
SEWER TRENCH - BEDDING (GRANULAR A) COVER (GRANULAR A OR SAND)	S6,S7 S6,S7	CITY OF OTTAWA CITY OF OTTAWA
STORM SEWER	PVC DR 35/ CONC	
SANITARY SEWER	PVC DR 35 WITH RUBBER GASKETS	
CATCHBASIN LEAD	PVC DR 35 MINIMUM 1%, 200mmØ	

3. STORM SEWER TYPE AND CLASS AS PER OPSD 807.01.
4. INSULATE ALL STORM AND SANITARY PIPES THAT HAVE LESS THAN 2.0m COVER AS PER CITY OF OTTAWA F-4102.
5. SEWER BEDDING SHALL BE CLASS 'B' AS PER CITY OF OTTAWA STANDARDS S6 AND S7. UNLESS OTHERWISE NOTED.
6. PIPE BEDDING, COVER AND BACKFILL ARE TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. THE USE OF CLEAR CRUSHED STONE AS A BEDDING LAYER SHALL NOT BE PERMITTED.
7. FLEXIBLE CONNECTIONS ARE REQUIRED FOR ALL CONNECTIONS TO MANHOLES AND CONCRETE PIPES. CONTRACTOR TO USE KOR-N-SEAL OR EQUIVALENT.
8. THE OWNER SHALL REQUIRE THAT THE SITE SERVICING CONTRACTOR PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. SPECIFICALLY THE LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.07.16 AND 407.07.25. THE FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF A CERTIFIED PROFESSIONAL ENGINEER WHO SHALL SUBMIT A CERTIFIED COPY OF THE TEST RESULTS.
9. STORM MANHOLES WITH PIPES LESS THAN 900mm DIAMETER TO HAVE 300mm SUMP. STORM MANHOLES WITH PIPES GREATER THAN 900mm TO BE BENCHED IN ACCORDANCE WITH OPSD 701.021.
10. ALL CATCHBASINS ARE TO HAVE 600mm SUMPS AND INCLUDE 3m OF SUBDRAIN EXTENDED IN TWO DIRECTIONS AND PARALLEL WITH THE CURB FACE.
11. SANITARY MANHOLE BENCHING DETAILS AS PER OPSD 701.021.
12. INSTALL SAFETY LANDINGS IN MANHOLES AS REQUIRED AS PER OPSD 404.020.
13. CONTRACTOR TO TELEVISE (CCTV) ALL PROPOSED SEWERS AS PER OPSS 409 AND CITY OF OTTAWA F-4090 AND DYE TEST SANITARY SEWERS.
14. SEWER TRENCHES TO BE BACKFILLED WITH NATIVE SOIL TO MATCH THE EXISTING SOIL PROFILE, IN ORDER TO MINIMIZE THE DIFFERENTIAL FROST HEAVING OVER THE SERVICES.
15. BEDDING AT THE ROCK/SOIL INTERFACE IS TO BE TRANSITIONED AT 5H:1V MINIMUM.
16. ONSITE FILL IS EXPECTED TO BE SUITABLE FOR SERVICING SUBGRADE. REMOVE ANY DELETERIOUS MATERIAL.
17. ALL SEWER PIPES INSTALLED TO A GRADIENT OF 0.50% OR LOWER USING A LASER DEVICE, SHALL BE CHECKED WITH A LEVEL INSTRUMENT PRIOR TO BACKFILLING.
18. CONTRACTOR TO INSTALL CLAY SEALS IN SERVICE TRENCHES WERE INDICATED. CLAY SEALS PER CITY OF OTTAWA STANDARD S8 AND MUST EXTEND A MINIMUM OF 1.5m.
19. ALL EXISTING SERVICES ARE TO BE ABANDONED AS PER CITY OF OTTAWA SPECIFICATION No. F-4104.

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

APPROVED ☑ REFUSED ☐
THIS 25th DAY OF AUGUST, 20 15
for FELICE PETTI, P.ENG., MANAGER
DEVELOPMENT REVIEW, SUBURBAN SERVICES

No.	REVISION	DATE	BY
10.	REVISED PER COMMENTS	JUL 3/15	MWB
9.	MINOR REVISIONS; ISSUED FOR SITE PLAN APPROVAL	JUN 8/15	MER
8.	CUL-DE-SAC ADDED, ISSUED FOR APPROVAL	JUN 1/15	MER
7.	SILO STREET MANHOLES REVISED, ISSUED FOR CONSTRUCTION	NOV 21/14	MER
6.	ISSUED FOR PHASE 1B CONSTRUCTION (SERVICE REV)	APR 9/12	MWB
5.	ISSUED FOR COMMENCE WORK ORDER	OCT 19/11	MER
4.	ISSUED FOR HYDRO ONE APPROVAL	SEPT 8/11	MER
3.	ISSUED FOR MOE APPROVAL	JUN 7/11	MER
2.	ISSUED FOR PHASE 1 APPROVAL	APR 19/11	MER
1.	ISSUED FOR DRAFT PLAN APPLICATION	JUL 14/08	MER

SCALE 1:500
1:500
0 5 10 15 20

DESIGN MWB
CHECKED MER
DRAWN JPB
CHECKED MWB
APPROVED MER

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LOCATION
CITY of OTTAWA
ORLEANS TOWN CENTRE (EAST)

DRAWING NAME
GENERAL PLAN OF SERVICES
PHASE 2

PROJECT No. 106011-00
REV # 10
DRAWING No. 106011E-GP2

PLAN # 16968

D07-12-13-0208

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