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SITE SERVICING STUDY AND STORMWATER MANAGEMENT REPORT

FOR

IBER ROAD PROPERTY LIMITED
44 IBER ROAD (46 IBER ROAD)

CITY OF OTTAWA

PROJECT NO.: 16-900
APPLICATION FILE NO.: D07-12-17-0146

JANUARY 2019 – REV 6

SITE SERVICING STUDY AND STORMWATER MANAGEMENT REPORT
FOR
44 IBER ROAD (46 IBER ROAD)

IBER ROAD PROPERTY LIMITED

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1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has been retained by Iber Road Property Limited to prepare a Site Servicing Study and Stormwater Management report in support of their application for a Site Plan Control (SPC) at 44 Iber Road (46 Iber Road).

The subject property is located within the City of Ottawa urban boundary, in the Stittsville ward (Ward 6). As illustrated in ***Figure 1***, the subject property is located south east of the intersection of Iber Road and Hazeldean Road within the Stittsville Business Park. Comprised of a single parcel, the subject property measures approximately ***1.4 ha*** and is zoned Light Industrial (IL).

Figure 1: Site Location

The proposed SPC would allow for the development of a 1-storey ***1222 m²*** industrial building located behind the existing building with associated asphalt parking lots. No change in floor area is proposed to the existing building. A copy of the architectural Site plan is included in ***Drawings/Figures***.

The objective of this report is to provide sufficient detail to demonstrate that the proposed development is supported by existing municipal services.

1.1 Existing Conditions

The existing site includes an industrial building with asphalt parking lots and vegetated areas. The elevations range between 104.3 m and 104.9 m with a grade change of approximate 0.6 m from the Northeast to the Southwest corner of the property.

An existing 300 mm diameter sanitary sewer tributary to the Stittsville Trunk Collector and a 300 mm diameter watermain is available within Iber Road. The subject site currently directs stormwater runoff towards the existing stormwater storage area at the rear of the property, tributary to the Hazeldean Tributary, and towards the existing ditch along Iber Road.

As indicated by The *Land Titles Act – Easement LT379077* included in ***Drawings/Figures***, an existing 22.8 m easement exists within the rear of the property. The easement provides protection for the Stittsville Business Park drainage ditch which outlets to the Hazeldean Tributary. Refer to ***Drawings/Figures*** for further details.

J.F. Sabourin and Associates Inc. (JFSA) was engaged by a separate application to prepare a stormwater analysis of the Hazeldean Tributary at the outlet (***JFSA Report***). Based on the ***JFSA Report***, the 100-year water level of the Hazeldean Tributary has an elevation of approximately 103.34 m downstream of the site.

1.2 Required Permits / Approvals

The proposed development is subject to the site plan control approval process. The City of Ottawa must approve the engineering design drawings and reports prior to the issuance of site plan control.

As a result of the site's industrial zoning designation, OWRA s.53 approval is required from the Ministry of the Environment, Conservation and Parks (MOECP). The MOECP has been contacted to the development to determine the approval requirements. Correspondence with the MOECP and the City of Ottawa is included in ***Appendix A***.

Flows that influence the watershed in which the subject property is located are further reviewed by the principal authority. The subject property is located within the Carp River watershed, and is therefore subject to review by the Mississippi Valley Conservation Authority (MVCA). Consultation with the MVCA is located in ***Appendix A***.

1.3 Pre-consultation

Pre-consultation correspondence, along with the servicing guidelines checklist, is located in ***Appendix A***.

1.4 List of Proposed Deviations

Due to depth of the existing sanitary manhole onsite, the proposed sanitary sewer has a minimum cover of 1.07 m, deviating from Section 6.1.11 of the ***City Standards***. Paterson Group has prepared a memorandum, *PG4089-MEMO.03*, specifying the insulation required in order to support the proposed sanitary sewer. Please refer to *PG4089-MEMO.03* included in ***Appendix E*** for further details.

2.0 GUIDELINES, PREVIOUS STUDIES, AS-BUILTS AND REPORTS

2.1 Existing Studies, Guidelines, and Reports

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

- **Ottawa Sewer Design Guidelines**,
  City of Ottawa, *SDG002,* October 2012
  (City Standards)
    - **Technical Bulletin ISTB-2018-01**
      City of Ottawa, March 21, 2018.
      (*ISTB-2018-01*)
    - **Technical Bulletin ISTB-2018-04**
      City of Ottawa, June 27, 2018.
      (*ISTB-2018-04*)
- **Ottawa Design Guidelines – Water Distribution**
  City of Ottawa, July 2010.
  (Water Supply Guidelines)
    - **Technical Bulletin ISD-2010-2**
      City of Ottawa, December 15, 2010.
      (*ISD-2010-2*)
    - **Technical Bulletin ISDTB-2014-02**
      City of Ottawa, May 27, 2014.
      (*ISDTB-2014-02*)
    - **Technical Bulletin ISDTB-2018-02**
      City of Ottawa, March 21, 2018.
      (*ISDTB-2018-02*)
- **Design Guidelines for Sewage Works,**
  Ministry of the Environment, 2008.
  (MOECP* Design Guidelines*)
- **Stormwater Planning and Design Manual,**
  Ministry of the Environment, March 2003.
  (MOE SWM Manual)

- **Low Impact Development Stormwater Management Planning and Design Guide,**
  Toronto and Region Conservation Authority & Credit Valley Conservation Authority, 2010.
  (LID Guide)

- **Ontario Building Code Compendium**
  Ministry of Municipal Affairs and Housing Building Development Branch, January 1, 2010 Update.
  (OBC)

- **Water Supply for Public Fire Protection**
  Fire Underwriters Survey, 1999.
  (FUS)

- **Geotechnical Investigation, PG4089-1**
  Paterson Group, April 2017.
  (Geotechnical Report)

  - **Geotechnical Responses to City Comments**
    Paterson Group, January 30, 2018.
    (*PG4089-MEMO.01*)

  - **Grading Plan Review**
    Paterson Group, January 30, 2018.
    (*PG4089-MEMO.02*)

  - **Geotechnical Responses to City Comments**
    Paterson Group, June 1, 2018.
    (*PG4089-MEMO.03*)

  - **Geotechnical Responses to City Comments**
    Paterson Group, June 21, 2018.
    (*PG4089-MEMO.04*)

  - **Geotechnical Responses to City Comments**
    Paterson Group, September 10, 2018.
    (*PG4089-MEMO.05*)

- **Huntington Properties Development /**
  Proposed Realignment of Channel of 2 and 3 Iber Road
  J.F. Sabourin and Associates Inc., 1014-12, March 22, 2017.
  (JFSA Report)

2.2 As-Builts

The following as-builts were utilized in the preparation of the drawings.

- **HUNTMAR ROAD STA. 0+900 TO STA. 0+975. / EXIST. IBER ROAD (0+000 TO 0+220), PP-4**
  Stantec Consulting Ltd., January 2008.

- **EXIST. IBER ROAD STA. 0+220 TO STA. 0+520, PP-5**
  Stantec Consulting Ltd., October 2009.

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The subject property lies within the City of Ottawa 3W pressure zone, as shown by the Pressure Zone map in ***Appendix B***. A local 300 mm diameter watermain exists within the Iber Road right-of-way.

3.2 Water Supply Servicing Design

It is proposed that the development will connect to the existing municipal infrastructure via a 200 mm diameter water service. Servicing details for the proposed connection are shown by drawing ***SSP-1***.

Table 1, below, summarizes the ***Water Supply Guidelines*** employed in the preparation of the preliminary water demand estimate.

Table 1
Water Supply Design Criteria

Design Parameter	Value
Light Industrial Daily Demand**	35,000 L/gross ha/d
Industrial Maximum Daily Demand	1.5 x avg. day
Industrial Maximum Hour Demand	1.8 x avg. day
Minimum Watermain Size	150 mm diameter
Minimum Depth of Cover	2.4m from top of watermain to finished grade
During normal operating conditions desired operating pressure is within	350 kPa and 480 kPa
During normal operating conditions pressure must not drop below	275 kPa
During normal operating conditions pressure must not exceed	552 kPa
During fire flow operating pressure must not drop below	140 kPa
** Daily average based on Appendix 4-A from **Water Supply Guidelines*** *** Industrial Max. Daily and Max. Hourly peaking factors per* **Water Supply Guidelines**. *-Table updated to reflect ISD-2010-2*	

Table 2, below, summarizes the estimated water supply demand and boundary conditions for the proposed development based on the ***Water Supply Guidelines***.

Table 2
Water Demand and Boundary Conditions
Proposed Ultimate Conditions

Design Parameter	Estimated Demand[1] (L/min)	Boundary Condition[2] (m H_2O / kPa)
Average Daily Demand	7.5	58.2 / 570.9
Max Day + Fire Flow	11.3 + 8,000= 8,011.3	55.7 / 546.4
Peak Hour	20.3	54.8 / 537.6

1) Water demand calculation per ***Water Supply Guidelines***. See ***Appendix B*** for detailed calculations.
2) Boundary conditions supplied by the City of Ottawa for the demands indicated in the correspondence; assumed ground elevation 103m. See ***Appendix B.***

Fire flow requirements are to be determined in accordance with Local Guidelines (***FUS***), City of Ottawa ***Water Supply Guidelines***, and the Ontario Building Code.

Using the ***FUS*** method a conservative estimation of fire flow had been established. The following parameters were established by S.J. Lawrence Architect Inc:

- Type of construction – Non-combustible Construction
- Occupancy type – Limited Combustibility
- Sprinkler Protection – Non-Sprinkler System

The above assumptions result in an estimated fire flow of approximately ***8,000 L/min***, actual building materials selected will affect the estimated flow.

As specified by City of Ottawa Technical Bulletin ***ISTB-2018-02***, the maximum fire flow capacity of a fire hydrant is to be reviewed to ensure a sufficient number of hydrants are available within 150 m to service the proposed development.

Table 3
Maximum Flow from Local Fire Hydrants

	PROP. BLDG	EX. BLDG
Required Fire Flow Estimate	116.7 L/s (7,000 L/min)	133.3 L/s (8,000 L/min)
Hydrants within 75m **	FH	FH, EX. FH1, EX. FH2
Hydrants between 75-150m	EX. FH1	-
Maximum Flow Available *	158 L/s (9,500 L/min)	285 L/s (17,100 L/min)
Sufficient Hydrants to Provide RFF?	YES	YES

*Based on Appendix I: Table 1 of the City of Ottawa Technical Bulletin ISTB-2018-02, approximately 5,700 L/min (95 L/s) is available from a hydrant located less than 75m from the building and 3,800 L/min (63 L/s) is available from a hydrant located between 75m and 150m from the building.
Note that "FH" represents the proposed hydrant located onsite and "EX. FH1" represents the existing fire hydrant located on the East side of Iber Road adjacent to the existing building and "EX. FH2" represents the existing fire hydrant located on the East side of Iber Road, South East of the subject site, as illustrated by drawing ***EX-1*.

As demonstrated by ***Table 3***, there are a sufficient number of hydrants to support the proposed development.

As indicated in the boundary request correspondence included in ***Appendix B***, the City of Ottawa was contacted to obtain boundary conditions associated with the estimated water demand.

As indicated by the correspondence included in ***Appendix B***, the City provided both the anticipated minimum and maximum water pressures, as well as, the estimated water pressure during fire flow demand for the demands Initial boundary conditions obtained indicate residual pressures during average day demands exceed the required pressure range as specified in ***Table 1*** and the ***Water Supply Guidelines***.

3.2.1 EPANet Water Modelling

EPANet was utilized to determine pipe sizing and the availability of pressures throughout the system during average day demand, max day plus fire flow, and peak hour demands. The static model determines pressures based on the available head obtained from the boundary conditions provided by the City of Ottawa.

The model utilizes the Hazen-Williams equation to determine pressure drop, while the pipe properties, including friction factors, have been selected in accordance with Table 4.4 of the ***Water Supply Guidelines***. The model was prepared to assess the available pressure to the proposed building as well as the pressures the watermain provided the fire hydrant during fire flow conditions.

Table 4, below, summarizes the output reports and model schematics for each scenario.

Table 4
Model Simulation Output Summary

Location	Average Day (kPa)	Max Day + Fire Flow (kPa)	Peak Hour (kPa)
FHYD (FH)	578.4†	245.4	545.0
N1	578.7†	432.5	545.3
PROP.BLDG	574.5†	428.3	541.1
† indicates pressures exceeded required pressure values as outlined in ***Table 1***			

The model indicates that pressures during average day exceed the requirements of the ***Water Supply Guidelines***; thus pressure reducing valves will be required.

3.3 Water Supply Conclusion

Estimated water demand under proposed conditions was submitted to the City of Ottawa for establishing boundary conditions.

Based on the EPANET model, pressures during average day exceed the requirements of the ***Water Supply Guidelines***. As a result pressure reducing valves will be required.

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

4.0 WASTEWATER SERVICING

4.1 Existing Wastewater Services

The subject site lies within the Stittsville Trunk catchment area, as shown by the City sewer mapping included in ***Appendix C***. An existing 300 mm diameter sanitary sewer within Iber Road is available to service the proposed development.

Existing sanitary infrastructure within Iber Road was designed based on criteria outlined in the Stittsville Business Park Subdivision Agreement. As a result, existing site sanitary conditions and the downstream sanitary sewer network are to be evaluated in accordance with the Subdivision Agreement.

4.2 Wastewater Design

It is proposed that the development will connect to the existing SANMH within the subject site via a 200 mm diameter sanitary sewer, as shown by drawing ***SSP-1***. Due to the depth of the existing sanitary service, the proposed onsite sanitary sewers will have reduced cover and require a deviation from ***City Standards***. Refer to ***PG4089-MEMO.03*** prepared by Paterson Group and included in ***Appendix E,*** for insulation requirements.

Table 5, below, summarizes the ***City Standards*** employed in the design of the proposed wastewater sewer system.

Table 5
Wastewater Design Criteria

Design Parameter	Value
Water Closet	150 L/fixture/hour (12-Hour Operation)
Wash Basin	375 L/fixture/d
Infiltration and Inflow Allowance	0.28 L/s/ha
Industrial - Light	35,000 L/gross ha/d 45,000 L/gross ha /d (Existing Conditions)
Industrial Peaking Factor	6.5 per City of Ottawa Sewer Design Guidelines Appendix 4B
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Minimum Sewer Size	200 mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6m/s
Maximum Full Flowing Velocity	3.0m/s
Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012. *Existing design criteria extracted from the Subdivision Agreement for the Stittsville Business Park.*	

Table 6, below, demonstrates the estimated peak flow from the existing and proposed development, based on the Site Plan and Ground Floor Plan prepared by SJL Lawrence Architect Inc. See ***Appendix C*** for associated calculations.

Table 6
Summary of Estimated Peak Wastewater Flow

Design Parameter	Existing Building Flow (L/s) *	Proposed Building Flow (L/s) *	Total Flow (L/s)
Estimated Average Dry Weather Flow	0.10	0.20	**0.30**
Estimated Peak Dry Weather Flow	0.62	0.30	**0.92**
Estimated Peak Wet Weather Flow	0.81	0.49	**1.30**
**Please note that infiltration has been split between the estimated existing and proposed sanitary flows.*			

The estimated peak wet weather sanitary flow, based on the Site plan and Ground Floor Plan included in ***Drawings/Figures,*** is ***1.30 L/s***.

In order to assess the available capacity, a sanitary analysis was conducted for the local municipal sanitary sewers located across the frontage of the subject property. The catchment area serviced by the Iber Road sanitary sewer was identified and evaluated by reviewing existing development and zoning within the area. The analysis was conducted from the site to the upstream extents of the drainage area located near the intersection of Iber Road and Abbott Street, as shown by the sanitary drainage plan in ***Appendix C***.

The design criteria outlined in the Stittsville Business Park Subdivision Agreement were employed to generate a conservative estimate of the existing wastewater flow conditions within the sewer.

Based on the sanitary analysis, the controlling section of the local sewer system is located at the intersection of Iber Road and Harry Douglas Drive (section 1-2) with an available residual capacity of ***9.5 L/s***; detailed calculations are included in ***Appendix C***.

The analysis above indicates that sufficient capacity is available in the local sewers to accommodate the proposed development.

4.3 Wastewater Servicing Conclusions

The site is tributary to the Stittsville Trunk Collector sewer; based on the sanitary analysis sufficient capacity is available to accommodate the estimated ***1.30 L/s*** peak wet weather flow from the proposed development.

The proposed wastewater design conforms to all relevant ***City Standards***.

5.0 STORMWATER MANAGEMENT

5.1 Existing Stormwater Services

Stormwater runoff from the rear of the subject property is currently directed to a depressed storage area which attenuates flow before discharging to a drainage ditch located along the rear of the site. The swale is tributary to the Hazeldean Creek which outlets to the Carp River approximately 1.9 km downstream from the site.

Flows that influence the watershed in which the subject property is located are further reviewed by the Mississippi Valley Conservation Authority (MVCA). Consultation with the MVCA is located in ***Appendix A***.

Currently, runoff from the front portion of the site flows uncontrolled overland to the road side swale along Iber Road.

Based on consultation with City of Ottawa staff and the Stittsville Business Park, runoff from the rear yard will outlet to the existing rear yard drainage ditch. Currently, stormwater runoff from the existing peaked building, rear landscaped areas and parking stalls are directed towards the stormwater storage area at the rear of the property and ultimately to the existing drainage ditch. The rear yard drainage ditch outlets to the Hazeldean Creek approximately 80 m downstream.

The Airport Method and the SCS Method were analyzed in an effort to appropriately select the method in which time of concentration is calculated. The Airport Method is intended for developments that are primarily flat and asphalt and the SCS Method is intended for small urban basins under 2000 acres. Calculated time of concentrations are summarized in ***Table 7***, below.

Table 7
Summary of Calculated Time of Concentration

	Front Yard	Rear Yard
Area	**Time of Concentration (min)**	**Time of Concentration (min)**
Airport Method	10.3	17.8
SCS Method	4.8	8.4

Based on the time of concentration analysis, the Airport Method is utilized due to the type of development and to provide a conservative estimate of existing peak storm flow rates. The estimated pre-development peak flows in the front and rear yard for the 2, 5, and 100-year are summarized in ***Table 8***, below:

Table 8
Summary of Existing Peak Storm Flow Rates

	Front Yard	Rear Yard
City of Ottawa Design Storm	**Estimated Peak Flow Rate (L/s)**	**Estimated Peak Flow Rate (L/s)**
2-year	36.4	108.6
5-year	49.4	146.7
100-year	105.8	313.3

5.2 Post-development Stormwater Management Target

Stormwater management requirements for the proposed development were reviewed with the City of Ottawa and MVCA, where the proposed development is required to:

- Meet an allowable release rate based on a Rational Method Coefficient of 0.70, employing the City of Ottawa IDF parameters for a 5-year storm with a 20 minute time of concentration for the front yard up to 20 meters from the Iber road right-of-way.
- Meet an allowable release rate based on a Rational Method Coefficient of 0.20, employing the City of Ottawa IDF parameters for a 5-year storm with a 20 minute time of concentration for the rear lot and discharge into the existing rear yard swale.
- Attenuate all storms up to and including the City of Ottawa 100-year design event are to be attenuated on site.
- Include quality controls to a normal level of treatment (70% TSS removal) for the existing drainage ditch west of the subject site; correspondence with the MVCA is included in ***Appendix A***.

Table 9, below, summarizes the allowable release rates for the site based on the information above.

Table 9
Allowable Release Rates

	Front Yard	Rear Yard	Total
City of Ottawa Design Storm	**Estimated Peak Flow Rate (L/s)**	**Estimated Peak Flow Rate (L/s)**	**Estimated Peak Flow Rate (L/s)**
100-year	37.3	42.0	**77.5**

5.3 Proposed Stormwater Management System – Front Yard

Based on consultation with the City of Ottawa staff, runoff from the front yard up to 20 meters from the Iber Road right-of-way will outlet to the existing ditch along Iber Road. Currently, stormwater runoff from the existing peaked building, front landscaped areas and parking stalls are directed towards the existing ditch system along the west side of Iber Road. The front yard ditch outlets to the Hazeldean Creek approximately 270m downstream.

The proposed development will utilize surface storage to meet the stormwater objectives and to meet the established allowable release rate of ***37.3 L/s.***

A front yard swale with a ***250 mm*** HDPE culvert with a ***75 mm*** ICD complete with trash basket is proposed to restrict runoff into the existing ditch along Iber Road. Storms in excess of the 100-year storm event will be directed overland towards the existing ditch system. Additional details are included on drawing ***SSP-1***.

Table 10, below, summarizes post-development flow rates for the front yard.

Table 10
Stormwater Flow Rate Summary – Front Yard

Control Area	5-Year Release Rate	5-Year Storage	100-Year Release Rate	100-Year Required Storage	100-Year Available Storage
	(L/s)	(m^3)	(L/s)	(m^3)	(m^3)
Unattenuated Areas (U1)	18.5	0.0	39.5	0.0	0.0
Attenuated Areas (A1)	7.9	14.9	9.6	42.6	69.7
Total	**26.4**	**14.9**	**49.1**	**42.6**	**69.7**

As shown by ***Table 10***, the unattenuated area that outlets to the existing ditch exceeds the allowable release rate of ***37.3 L/s***, outlined in Section 5.2. A front yard swale complete with a culvert and an ICD are proposed to reduce stormwater runoff to the existing ditch system. As discussed with City staff, the front yard is capable of reducing runoff during a 100-year storm event to the pre-development 5-year storm event, resulting in a reduction of approximately 54% from the existing conditions.

5.4 Proposed Stormwater Management System – Rear Yard

The proposed development will utilize surface storage via a modified constructed wetland designed in general accordance with the ***MOE SWM Manual*** to meet the stormwater objectives. Quality controls and design objectives are discussed in *Section 5.4.1* of this report.

The rational method runoff coefficient for the rear yard was estimated to be ***0.65*** in the pre-development condition and ***0.68*** in the post-development condition. To compensate for the increase in impervious area, additional storage via the modified constructed wetland is proposed.

The proposed building will have a peaked rooftop and will direct runoff to the asphalt area, surface draining to the modified constructed wetland via the proposed curb cuts and enhanced grass swales. Multiple curb cuts are proposed in an effort to distribute stormwater runoff and provide redundant routes should some curb cuts be blocked. Enhanced grass swales at the rear and along the north property line are proposed to convey stormwater runoff towards the modified constructed wetland in addition to provide quality controls discussed in *Section 5.4.1*.

The modified constructed wetland will contain a catchbasin equipped with a ***135 mm ICD***, a trash basket and a Brentwood Storm shield (or an approved equivalent) within the DICB to attenuate to the allowable release rate before discharging to the existing drainage ditch via a ***675 mm diameter*** HDPE culvert. As the berm blocks flow to the existing drainage ditch, the ditch inlet catchbasin and outlet culvert have been sized to convey the uncontrolled pre-development 100-year flow rate to provide an emergency flow route to the outlet. The invert at the ditch was established based on existing conditions of the ditch, to provide additional depth within the existing storage area. Additional details and stormwater storage basin cross-section are included on drawing ***GP-1*** and ***SSP-1***.

Table 11, below, summarizes post-development flow rates for the rear yard.

Table 11
Stormwater Flow Rate Summary – Rear Yard

Control Area	5-Year Release Rate	5-Year Storage	100-Year Release Rate	100-Year Required Storage	100-Year Available Storage
	(L/s)	(m^3)	(L/s)	(m^3)	(m^3)
Unattenuated Areas (U2)	5.6	0.0	11.9	0.0	0.0
Attenuated Areas (B1)	22.8	153.0	29.9	385.4	386.9
Total	**28.3**	**153.0**	**41.8**	**385.4**	**386.9**

It was estimated that approximately ***385 m^3*** of storage is required in the rear yard to meet the established allowable release rate of ***42.0 L/s***, as outlined in Section 5.2; storage calculations are contained within ***Appendix D***.

5.4.1 Stormwater Quality Control

To reduce TSS, stormwater runoff from parking lots is proposed to be directed to landscaped areas, enhanced grass swales, vegetated depressed storage and a modified constructed wetland before discharging to the existing rear yard and road side swales.

Stormwater runoff from rooftops and parking areas will be directed to enhanced grass swales, designed to convey, treat, and attenuate stormwater runoff. As indicated within *Section 4.8* of the **LID Guide**, “Median pollutant mass removal rates of swales from available performance studies are 76% for total suspended solids, 55% for total phosphorus, and 50% for total nitrogen”.

Water quality within enhanced grass swales is improved if the design velocity is 0.5 m/s or less, with a longitudinal slope of less than 1%. The proposed swales were designed to convey stormwater at a maximum velocity of ***0.50 m/s***. In addition, check dams are proposed within the enhanced grass swales to promote sedimentation. Boulder clusters are proposed at the swale outlets to reduce velocities, increase flow spread, and promote the sedimentation of TSS. Refer to ***Appendix D*** of the report for detailed calculations and drawing ***GP-1*** for check dam and boulder cluster locations.

Based on the MOECP's *Stormwater Management Planning and Design Manual* (***MOE SWM Manual***), the modified constructed wetland is to be planted with vegetation that promotes an extended detention time to allow for the reduction of TSS. Refer to Landscape Plan prepared by James B. Lennox & Associates Inc. included in ***Drawings/Figures*** for further details.

The modified constructed wetland was designed using *Section 4.6.6, Table 4.9,* from the ***MOE SWM Manual***. ***Table 12,*** below, indicates how the design objectives are met.

Table 12
Modified Constructed Wetland Design Objectives

Target	Objective Achieved
A constructed wetland is intended for drainage areas greater than 5 hectares.	The rear yard drainage area tributary to the modified constructed wetland is approximately 0.95 hectares. In an effort to mitigate stagnant surface water, enhanced grass swales, boulder clusters, and check dams are proposed.
In accordance with *Table 3.2* of the ***MOE SWM Manual***, in order to provide a normal level of treatment (70% TSS removal) the stormwater storage area is required to provide 120 m^3/ha of storage.	In accordance with the ***MOE SWM Manual***, based on the tributary area and estimated imperviousness, the modified constructed wetland provides ***406 m^3/ha*** of storage. As a result, the proposed modified constructed wetland can provide an enhanced level of treatment.
A constructed wetland is to be designed to accommodate a 24 hour detention time and promote the settling of suspended solids.	As discussed within the Geotechnical memorandum (PG4089-MEMO.06) prepared by Paterson Group, a 24-hour detention with minor infiltration can be provided by the existing soil below the modified constructed wetland due to the hydraulic conductivity of the soils. Refer to Geotechnical memo included in ***Appendix E*** for reference.
A constructed wetland is intended to include a forebay for pre-treatment.	In an effort to provide pre-treatment to the stormwater discharging to the existing rear yard ditch, enhanced grass swales complete with boulder clusters, the modified constructed wetland complete with check dams, and a Ditch Inlet catch basin complete with a Brentwood Storm Shield or an approved equivalent is proposed.
The preferred length-to-width ratio for a constructed wetland is 3:1 overall and 2:1 for the forebay.	Due to the constraint of the proposed Site Plan, the modified constructed wetland has a length-to-width ratio of approximately 2.3:1. As indicated by the *Post-Development Rear Yard Drainage Area Plan* included in ***Appendix D***, stormwater runoff from 0.74 hectares of the total 0.95 hectares is directed towards enhanced grass swales prior to discharging to the modified constructed wetland. The remainder of the stormwater runoff within the proposed parking area will be directed towards boulder clusters proposed within the modified constructed wetland to encourage the sedimentation of TSS, reduce runoff velocities, and spread flow.

A constructed wetland is intended to have an average permanent pool depth of 150 mm to 300 mm.	The average permanent pool depth of the modified constructed wetland is 190 mm below the inlet of the ditch inlet catch basin, corresponding to an elevation of 103.51. In an effort to mitigate stagnant surface water, enhanced grass swales, boulder clusters, and check dams are proposed.
A constructed wetland storage depth is required to be a maximum of 1.0 m for all storms up and including the 10-year storm event.	The lowest elevation for active storage within the modified constructed wetland is 103.70 m. As indicated by the stormwater calculation sheet included in ***Appendix D***, the maximum storage elevation during a 10-year storm event is estimated as 104.08 m. As a result, it is estimated that the maximum active storage depth during a 10-year storm event is 0.38 m. The permanent was not accounted for in storage calculations. Refer to associated calculation sheet included in ***Appendix D***.
The constructed wetland is intended to have 5:1 side slopes for 3 m above and below the permanent pool and a maximum 3:1 side slopes.	As indicated by drawing ***GP-1***, 3:1 side slopes are proposed.
The inlet for the constructed wetland is intended to be a minimum diameter of 450 mm with a slope less than 1%.	As indicated by drawing ***GP-1***, enhanced grass swales and multiple curb cuts are proposed to direct stormwater towards the modified constructed wetland. The enhanced grass swales have been designed with a slope less than 1% to encourage the reduction of velocity, to increase flow spreading, and to promote the sedimentation of TSS. In addition, multiple curb cuts are proposed in an effort to distribute stormwater runoff and provide redundant routes should some curb cuts be blocked.
The outlet for the constructed wetland is intended to be a minimum diameter of 450 mm, at a slope less than 1%, complete with an ICD larger than 75 mm.	As discussed within Section 5.4, the modified constructed wetland will contain a catchbasin at the outlet equipped with a ***135 mm ICD***, a trash basket and a Brentwood Storm shield or an approved equivalent within the DICB. Stormwater will be discharged to the existing drainage ditch via a ***675 mm diameter*** HDPE culvert proposed at a 0.2% slope.
Maintenance access is to be provided to the constructed wetland.	Maintenance access is to be provided to the modified constructed wetland. As indicated by drawing ***GP-1***, the modified constructed wetland is located adjacent to the parking lot area which will provide maintenance access. In addition, boulder clusters within the basin are proposed at the inlet locations to act as sediment traps providing a suitable and convenient location to remove accumulated sediments as required.

To ensure contaminants from inside the building are not directed to the storm sewer, floor drains are to be directed to the sanitary sewer.

5.4.2 Stormwater Management System Maintenance/Best Management Practices

The following maintenance and best management practices will be implemented for the proposed development:

- Building rooftop runoff directed to landscaped areas or grass swales to separate clean roof runoff from general parking lot drainage;
- Regular maintenance of the site stormwater management system, including annual cleaning of catchbasin sumps, ICDs, inlets, outlets, and limiting the use of salt, sand and gravel in parking lots during the winter months, in addition to spring sweeping of parking areas;
- Recommend that grit be used rather than sodium de-icing solutions during winter months;
- The modified constructed wetland and grass swales will need to be inspected regularly and sediment accumulation removed as required;
- Any material storage (if required) on-site is to be provide adequate protection to ensure any spills do not enter the stormwater storage system.

5.5 Stormwater Servicing Conclusions

Post development stormwater runoff will be required to be restricted to the allowable target release rate for storm events up to and including the 100-year storm in accordance with City of Ottawa ***City Standards***.

Based on consultation with the City of Ottawa, due to the existing conditions the front yard release rate is currently being exceeded. By providing a ***69.7 m^3*** of storage, the front yard is capable of controlling the 100-year storm event to the estimated pre-development 5-year storm flow rate, improving the current conditions.

Based on consultation with the City of Ottawa, the post-development allowable release rate for the rear yard was calculated as ***42.0 L/s***. It is calculated that approximately ***385 m^3*** of storage provided by the modified constructed wetland in the rear yard will be required to meet the established release rate.

Based on consultation with the MVCA, quality controls are required to a normal level of treatment (70% TSS removal) for the proposed development. To meet quality objectives, stormwater will follow a treatment train approach directing stormwater to landscaped areas, enhanced grass swales and a modified constructed wetland.

The proposed stormwater design conforms to all relevant ***City Standards*** and Policies for approval.

6.0 UTILITIES

Gas, Hydro services currently exist within the Iber Road right-of-way. Utility servicing will be coordinated with the individual utility companies prior to site development.

7.0 EROSION AND SEDIMENT CONTROL

Soil erosion occurs naturally and is a function of soil type, climate and topography. The extent of erosion losses is exaggerated during construction where vegetation has been removed and the top layer of soil becomes agitated.

Prior to topsoil stripping, earthworks or underground construction, erosion and sediment controls will be implemented and will be maintained throughout construction.

Silt fence will be installed around the perimeter of the site and will be cleaned and maintained throughout construction. Silt fence will remain in place until the working areas have been stabilized and re-vegetated.

Catch basins will have SILTSACKs or an approved equivalent filter fabric installed under the grate during construction to protect from silt entering the storm sewer system.

A mud mat will be installed at the construction access in order to prevent mud tracking onto adjacent roads.

Erosion and sediment controls must be in place during construction. The following recommendations to the contractor will be included in contract documents.

- Limit extent of exposed soils at any given time.
- Re-vegetate exposed areas as soon as possible.
- Minimize the area to be cleared and grubbed.
- Protect exposed slopes with plastic or synthetic mulches.
- Install silt fence to prevent sediment from entering existing ditches.
- No refueling or cleaning of equipment near existing watercourses.
- Provide sediment traps and basins during dewatering.
- Install filter cloth between catch basins and frames.
- Plan construction at proper time to avoid flooding.

Establish material stockpiles away from watercourses, so that barriers and filters may be installed.

The contractor will, at every rainfall, complete inspections and guarantee proper performance. The inspection is to include:

- Verification that water is not flowing under silt barriers.
- Clean and change filter cloth at catch basins.

8.0 CONCLUSION AND RECOMMENDATIONS

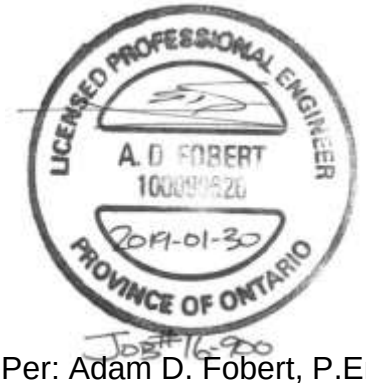
David Schaeffer Engineering Ltd. (DSEL) has been retained by Iber Road Property Limited to prepare a Site Servicing Study and Stormwater Management report in support of the application for a Site Plan Control (SPC) at 44 Iber Road (46 Iber Road). The preceding report outlines the following:

- Based on boundary conditions provided by the City, pressures during average day demands exceed the required pressure range as indicated by the ***Water Supply Guidelines***, thus pressure reducing valves will be required;
- The FUS method for estimating fire flow indicated ***8,000 L/min*** is required for the proposed development; Based on the EPANet analysis, sufficient flow from the municipal infrastructure is available;
- The development is estimated to have a peak wet weather flow of ***1.30 L/s***; Based on the sanitary analysis conducted the existing municipal sewer infrastructure has sufficient capacity to support the development;
- Based on consultation with the City of Ottawa staff, runoff from the front yard up to 20 meters from the Iber Road right-of-way will be required to attenuate post-development flows to an equivalent 5-year release rate of ***37.3 L/s*** for all storms up to and including the 100-year storm event;
- As coordinated with the City of Ottawa staff, efforts will be made to improve the existing conditions within the front yard. It is calculated that ***69.7 m^3*** of storage will be provided to meet the calculated 5-year storm event pre-development release rate of ***49.1 L/s***;
- Based on consultation with the City of Ottawa staff, the proposed development outletting to the existing drainage ditch will be required to attenuate post development flows to an equivalent 5-year release rate of ***42.0 L/s*** for all storms up to and including the 100-year storm event;
- Stormwater objectives are met through storm water retention via surface storage, it is calculated that ***385.4 m^3*** of storage is required in the rear yard to attenuate flow to the established release rate. ***386.9 m^3*** of storage is provided;
- Based on coordination with the MVCA, quality controls to a normal level of treatment (70% TSS removal) is required, this is provided via a treatment train approach.

Prepared by,
David Schaeffer Engineering Ltd.

Per: Alison J. Gosling, EIT

Reviewed by,
David Schaeffer Engineering Ltd.



Per: Adam D. Fobert, P.Eng

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APPENDIX A

Pre-Consultation

DEVELOPMENT SERVICING STUDY CHECKLIST

16-900 30/01/2019

4.1 General Content		
☐	Executive Summary (for larger reports only).	N/A
☒	Date and revision number of the report.	Report Cover Sheet
☒	Location map and plan showing municipal address, boundary, and layout of proposed development.	Drawings/Figures
☒	Plan showing the site and location of all existing services.	Figure 1
☒	Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	Section 1.0, 1.1
☒	Summary of Pre-consultation Meetings with City and other approval agencies.	Section 1.3
☒	Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.	Section 2.1, 2.2
☒	Statement of objectives and servicing criteria.	Section 1.0
☒	Identification of existing and proposed infrastructure available in the immediate area.	Sections 1.1, 3.1, 4.1, 5.1, EX-1
☐	Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	N/A
☒	Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	GP-1
☐	Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	N/A
☐	Proposed phasing of the development, if applicable.	N/A
☒	Reference to geotechnical studies and recommendations concerning servicing.	Section 2.1
☒	All preliminary and formal site plan submissions should have the following information: -Metric scale -North arrow (including construction North) -Key plan -Name and contact information of applicant and property owner -Property limits including bearings and dimensions -Existing and proposed structures and parking areas -Easements, road widening and rights-of-way -Adjacent street names	Drawings/Figures

4.2 Development Servicing Report: Water		
☐	Confirm consistency with Master Servicing Study, if available	N/A
☒	Availability of public infrastructure to service proposed development	Section 3.1
☒	Identification of system constraints	Section 3.1
☒	Identify boundary conditions	Section 3.1, 3.2
☒	Confirmation of adequate domestic supply and pressure	Section 3.3

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Section 3.2
☒	Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	Section 3.2, 3.3
☒	Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	Section 3.2
☐	Address reliability requirements such as appropriate location of shut-off valves	N/A
☐	Check on the necessity of a pressure zone boundary modification	N/A
☒	Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range	Section 3.2, 3.3
☒	Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	Section 3.2
☐	Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	N/A
☒	Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Section 3.2
☐	Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	N/A

4.3 Development Servicing Report: Wastewater

☒	Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	Section 4.2
☒	Confirm consistency with Master Servicing Study and/or justifications for deviations.	Section 4.2
☐	Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	N/A
☒	Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 4.1
☒	Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)	Section 4.2
☒	Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	Section 4.2, Appendix C
☒	Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 4.2
☐	Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	N/A

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☐	Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
☐	Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
☐	Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A
☐	Special considerations such as contamination, corrosive environment etc.	N/A

4.4 Development Servicing Report: Stormwater Checklist

☒	Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 5.1
☒	Analysis of available capacity in existing public infrastructure.	Section 5.1, Appendix D
☒	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Drawings/Figures
☒	Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Section 5.2, 5.5, 5.6
☒	Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 5.2
☒	Description of the stormwater management concept with facility locations and descriptions with references and supporting information	Section 5.3, 5.4
☐	Set-back from private sewage disposal systems.	N/A
☒	Watercourse and hazard lands setbacks.	EX-1, GP-1, SSP-1, EC-1
☒	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	Appendix A
☐	Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
☒	Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).	Section 5.3, 5.4
☐	Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	N/A
☒	Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Section 5.1, 5.7
☐	Any proposed diversion of drainage catchment areas from one outlet to another.	N/A
☐	Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	N/A
☐	If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	N/A
☐	Identification of potential impacts to receiving watercourses	N/A
☐	Identification of municipal drains and related approval requirements.	N/A

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 5.3, 5.4
☐	100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	N/A
☐	Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A
☒	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Section 7.0
☐	Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A
☐	Identification of fill constraints related to floodplain and geotechnical investigation.	N/A

4.5 Approval and Permit Requirements: Checklist

☒	Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement ct. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.	Section 1.2, 5.1, Appendix E
☐	Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	N/A
☐	Changes to Municipal Drains.	N/A
☐	Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	N/A

4.6 Conclusion Checklist

☒	Clearly stated conclusions and recommendations	Section 8.0
☒	Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	Appendix A
☐	All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

Alison Gosling

To: Matt McElligott
Subject: RE: 44 Iber Road- Pre-application Consultation

From: Bernier, John [mailto:John.Bernier@ottawa.ca]
Sent: Thursday, March 10, 2016 3:00 PM
To: dnoble@huntingtonproperties.ca; mcelligott@fotenn.com
Cc: Schmidt, Mike <Mike.Schmidt@ottawa.ca>; Balima, Nadege <Nadege.Balima@ottawa.ca>
Subject: 44 Iber Road- Pre-application Consultation

Good afternoon,

It was nice meeting you for a pre-consultation (PC2016-0054) on February 25, 2016, regarding 44 Iber Road. We met to discuss the possibility of adding an additional building at the rear of the subject property, for Office/Showroom use, approximately 20,000 square feet with 3 to 4 bays, a loading area, and 45 parking spaces.

Currently the property has a single 20,000 square foot building with multiple tenants, used for offices and showrooms. 45 parking spaces are located beyond the building. A stormwater pond and treed berm are along the rear of the property.

The following is a brief summary of our meeting:

Planning Comments:

- The subdivision agreement (attached) requires a 22.8m buffer from the rear property line. Included in this is a 10m drainage easement.
- Please provide the most likely use for this building ahead of a formal application so that we may provide additional information on other applicable requirements.
- An easement is required for vehicular access and connections from the road to the back of the existing building. Detailed engineering may be required.
- Apply for a separate sign permit if you wish to have a pylon sign on the site. Please include the location of this in the Site Plan.
- A severance is needed to divide the buildings on the property for the future. If the intent is to separate the lot intotwo, the City requires details in the site plan. Think about how the sites are going to function separately.
- Outdoor Storage is prohibited in a Light Industrial Zone (IL). A major zoning by-law amendment application would be needed for this, as it is considered a separate use. I suggest an additional pre-application consultation for this. However, it would be unlikely that we would support this given the context.
- Note that the property to the south is not a City facility. Rather, it is a Volvo dealership, which permits *heavy equipment and vehicle sales, rental and servicing*, along with additional accessory uses.

Should you have any questions or require additional information, please contact me directly at (613) 580-2424, x 21576 or by email at John.Bernier@ottawa.ca . The Committee of Adjustment planner, Amanda Marsh, can be reached at extension 13409 or at Amanda.Marsh@ottawa.ca .

Engineering Comments:

General Information

- The Servicing Study Guidelines for Development Applications are available at the following address: http://ottawa.ca/en/development-application-review-process-0/servicing-study-guidelines-development-applications

- Servicing & site works shall be in accordance with the following documents:
  - ⇨ Ottawa Sewer Design Guidelines (2013)
  - ⇨ Ottawa Design Guidelines – Water Distribution (2010)
  - ⇨ Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
  - ⇨ City of Ottawa Slope Stability Guidelines for Development Applications (2004)
  - ⇨ City of Ottawa Environmental Noise Control Guidelines (2006)
  - ⇨ City of Ottawa Park and Pathway Development Manual (2012)
  - ⇨ City of Ottawa Accessibility Design Standards (2012)
  - ⇨ Ottawa Standard Tender Documents (2013)
  - ⇨ Ontario Provincial Standards for Roads & Public Works (2013)

- Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-2424 x.44455).

Stormwater Management

- The Stormwater Management Criteria for the subject site should be based on the criteria established for the existing subdivision (see attached grading and drainage plan for details):

a. Runoff from the front yard up to 20 meters from the Iber road right-of-way is to be directed to the Iber road roadside ditches with a release rate calculated based on a runoff coefficient of 0.7;
b. Runoff from 20 meters beyond the right-of-way to the rear lot property line is to be directed to an existing rear yard swale based on a runoff coefficient of 0.2; (correction from the information provided during the pre-consult based on additional information found)
c. The rear yard swale should provide positive drainage and tie into the existing drainage swale elevation of the property upstream and downstream from the this site;
d. Sufficient storage to accommodate the runoff from the 1:100 year storm should be provided on site;
e. If roof top storage is proposed for stormwater Roof Scuppers and Roof Flow Control Drains must be shown on the plan;
f. ICDs and flow restrictions must be shown on the plan.

Note: There may be other area specific SWM Criteria that apply. Check for any related SWM &/or Sub-watershed studies that may have been.

Storm sewer

- There are no existing storm sewers fronting on this site; the roadside ditch in the frontage of the property is the available outlet to be used to accommodate the site;
- The proponent is advised to contact the Mississippi Valley Conservation Authority to confirm their requirements relating to storm water quality and quantity; the rear yard swales outlet directly into an unnamed city ditch along the edge of the property at 2 Iber road and is a Tributary to Poole Creek ;

Sanitary Sewer

- There is a sanitary sewer starting at the southern corner of the site on Iber road;
- The proponent is required to demonstrate available capacity in the sanitary sewer at the location it intends to be serviced;
- Note that the existing sewer lines running north to the sanitary manhole on the southern corner of the site on Iber road are forcemains; as such, no connection is permitted in those pipes;
- Connections directly into manholes should be avoided;

Watermain

- The proponent is to demonstrate that capacity is available in the existing services to accommodate the proposed site;
- Water Boundary condition requests must include the location of the service and the expected loads required by the proposed development. Please provide the following information:

  i. Location of service
  ii. Type of development and the amount of fire flow required.
  iii. Average daily demand: ___ l/s.
  iv. Maximum daily demand: ___l/s.
  v. Maximum hourly daily demand: ___ l/s.

MOE ECA Requirements –

- A MOE Environmental Compliance Approval (Industrial Sewage Works) may be required for the proposed development. Please contact Ontario Ministry of the Environment and Climate Change, Ottawa District Office to arrange a pre-submission consultation and confirm their requirements:

For West of Rideau River: Jennifer Faria, Environmental Officer
(613) 521-3450, ext. 230
jennifer.faria@ontario.ca.

Other information

- Guide for completing phase one environmental site assessments under Ontario Regulation 153/04.

Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04, if applicable.

- Is the exterior Site Lighting is used a certification by a qualified engineer confirming the design complies with the following criteria needs to be provided:

g. It must be designed using only fixtures that meet the criteria for Full Cut-Off (Sharp cut-off) Classification, as recognized by the Illuminating Engineering Society of North America (IESNA or IES), and;

h. It must result in minimal light spillage onto adjacent properties. As a guideline, 0.5 foot-candle is normally the maximum allowable spillage.

i. The location of the fixtures, fixture types as in make, model and part number and the mounting heights must be shown on one of the approved plans or the Site Plan.

- Any portion of the subject property which is intended to be used for permanent or temporary snow storage shall be as shown on the approved site plan.

Snow storage shall not interfere with approved grading and drainage patterns or servicing.
Snow storage areas shall be setback from property lines, foundations, fencing or landscaping a minimum of 1.5 metres.
Snow storage areas shall not occupy driveways, aisles, required parking spaces or any portion of a road allowance.

- In the eventuality that the site is to be severed in the future, the proponent is informed that separate services will have to be demonstrated for each individual property unless there is a joint use and maintenance agreement in place; in other words, each property must be able to operate individually including from a servicing, access and grading and drainage perspective.

Should you have any questions or require additional information, please contact Nadege Balima directly at (613) 580-2424, x 13477 or by email at nadege.balima@ottawa.ca .

Environment Comments:

- A formal TCR is not required, but should be incorporated into the landscape plan. Identify existing trees and add a few hardwoods to replace dead or dying trees. Overall, improve the buffer for more screening from residential properties and parkland behind property.
- Please contact the Mississippi Valley Conservation Authority for further direction regarding the creek adjacent to the property.

Should you have any questions or require additional information regarding tree requirements, please contact Mark Richardson directly at (613) 580-2424, x 23839 or by email at Mark.Richardson@ottawa.ca

There is no Site Plan registered on file, therefore the proposal requires would require a full Site Plan Control (Manager Approval, Public Consultation) Application, which costs $20,648.31 (click here for exact fees), plus the engineering design review and inspection fee, as well as conservation authority fee.

Please find attached the “Applicant’s Study and Identification List” including the number of copies required for each in order for the application to be deemed complete. Here is the link to the guide for preparing studies and plans: http://ottawa.ca/en/development-application-review-process-0/guide-preparing-studies-and-plans

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

Best Regards,

John Bernier
Planner
Development Review
(Suburban Services - West)

City of Ottawa | Ville d'Ottawa
☎ 613.580.2424 ext/poste. 21576
ottawa.ca/planning / ottawa.ca/urbanisme

Alison Gosling

From: Fraser, Mark <Mark.Fraser@ottawa.ca>
Sent: Thursday, February 1, 2018 9:36 AM
To: Alison Gosling
Cc: Robert Freel
Subject: RE: 44 Iber Road - ECA Requirement
Attachments: MOE Pre-Submission Consultation Request Form-May 2017.doc

Hi Alison,

The City is in agreement that a new ECA for Industrial Sewage Works under a Direct Submission application will be required and not an amendment to an existing ECA if there is no existing ECA for the subject site. Please proceed with the submission of the *Pre-Submission Consultation Request Form* to the Ministry.

Regards,

Mark Fraser
Project Manager, Planning Services
Development Review West Branch
City of Ottawa | Ville d'Ottawa
Planning, Infrastructure and Economic Development Department
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1
Tel:613.580.2424 ext. 27791
Fax: 613-580-2576
Mail: Code 01-14
Email: Mark.Fraser@ottawa.ca

From: Alison Gosling [mailto:AGosling@dsel.ca]
Sent: February 01, 2018 9:22 AM
To: Fraser, Mark <Mark.Fraser@ottawa.ca>
Cc: Robert Freel <RFreel@dsel.ca>
Subject: RE: 44 Iber Road - ECA Requirement

Hi Mark,

Based on the Access Environment tool, there was an ECA for air quality at 44 Iber. Please see attached for the approval letter.

As a result, it will be a new ECA for sewage under Direct Submission due to the industrial zoning.

Thank you,

Alison Gosling, E.I.T.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103

Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.542
fax: (613) 836-7183
email: agosling@dsel.ca

From: Fraser, Mark [mailto:Mark.Fraser@ottawa.ca]
Sent: Wednesday, January 31, 2018 11:39 AM
To: Alison Gosling <AGosling@dsel.ca>
Cc: Robert Freel <RFreel@dsel.ca>
Subject: RE: 44 Iber Road - ECA Requirement

Hi Alison,

Please accept this email as confirmation that the City is in agreement with the below opinion that this project will be subject to an Environmental Compliance Approval (ECA) for Sewage Works under Section 53 of the Ontario Water Resources Act as the approval exemptions set out under Ontario Regulation 525/98: *Approval Exemptions* are not satisfied.

O. Reg. 525/98: Approval Exemptions under the OWRA
3. *Subsections 53 (1) and (3) of the Act do not apply to the use, operation, establishment, alteration, extension or replacement of or a change in a storm water management facility that,*
(a) is designed to service one lot or parcel of land;
(b) discharges into a storm sewer that is not a combined sewer;
(c) does not service industrial land or a structure located on industrial land; and
(d) is not located on industrial land.

"**Industrial Land**" *means land used for the production, processing, repair, maintenance or storage of goods or materials, or the processing, storage, transfer or disposal of waste, but does not include land used primarily for the purpose of buying or selling,*
(a) goods or materials other than fuel, or
(b) services other than vehicle repair services;

The City is of the opinion that the type of application required is a **Direct Submission for Industrial Sewage Works** and not Transfer of Review under Additional Works eligible as the works receive drainage from "*Industrial Land"*, where industrial land is defined by *Ontario Regulation 525/98*. However, please determine if the ECA application will be for a new ECA or an amendment to an existing ECA.

Search Access Environment:
http://www.accessenvironment.ene.gov.on.ca/AEWeb/ae/GoSearch.action?search=basic&lang=en

Please confirm you are in agreement with the above. Once concurrence has been provided and the type of application (new or amendment) has been established then you can proceed with the required pre-submission consultation with the local Ministry District Office in order to obtain clearance to proceed with the project under Direct Submission. Please note to request a pre-submission consultation with the Ministry the *Pre-Submission Consultation Request Form* is required to be completed and sent to the email MOECCOttawaSewage@ontario.ca.

Please note that the NEW Environmental Compliance Approval Application Form is required to be completed:
http://www.forms.ssb.gov.on.ca/mbs/ssb/forms/ssbforms.nsf/FormDetail?OpenForm&ACT=RDR&TAB=PROFILE&SRCH=&ENV=WWE&TIT=environmental+compliance+approval&NO=012-8551E

If you have any questions or require any clarification please let me know.

Regards,

Mark Fraser
Project Manager, Planning Services
Development Review West Branch
City of Ottawa | Ville d'Ottawa
Planning, Infrastructure and Economic Development Department
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1
Tel:613.580.2424 ext. 27791
Fax: 613-580-2576
Mail: Code 01-14
Email: Mark.Fraser@ottawa.ca

From: Alison Gosling [mailto:AGosling@dsel.ca]
Sent: January 31, 2018 9:17 AM
To: Fraser, Mark <Mark.Fraser@ottawa.ca>
Cc: Robert Freel <RFreel@dsel.ca>
Subject: 44 Iber Road - ECA Requirement

Good morning Mark,

We just wanted to touch base with you regarding the proposed development at 44 Iber Road.

Currently comprised a single parcel of land, the existing 1.4ha site currently consists an industrial building and is zoned Industrial. The development proposes to construct an additional 1,222 m² industrial building.

It appears that the existing stormwater management system currently directs flow towards the ditch along Iber Road and toward the existing stormwater pond located on-site. We understand that due to the site's industrial zoning designation, an MOE Environmental Compliance Approval is required under OWRA S.53. Can you confirm our assumptions above or advise with regards to ECA requirements for the proposed development.

Please feel free to contact us if you would like to discuss.

Thank you,

Alison Gosling, E.I.T.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.542
fax: (613) 836-7183
email: agosling@dsel.ca

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Alison Gosling

From: Diamond, Emily (MOECC) <Emily.Diamond@ontario.ca>
Sent: Thursday, April 20, 2017 9:57 AM
To: Alison Gosling
Cc: Robert Freel
Subject: RE: 44 Iber Road - ECA Requirement

Follow Up Flag: Follow up
Flag Status: Completed

Hi Alison,

From the information provided, an Environmental Compliance Approval for stormwater management would be required for the proposed project due to the industrial zoning and proposed building use. The project would not meet the approval exemption set out under Ontario Regulation 525/98.

Regards,

Emily Diamond
Environmental Officer
Ministry of the Environment and Climate Change

Ottawa District Office
2430 Don Reid Drive
Ottawa, Ontario, K1H 1E1
Tel: 613-521-3450 ext 238
Fax: 613-521-5437
e-mail: emily.diamond@ontario.ca

From: Alison Gosling [mailto:AGosling@dsel.ca]
Sent: April-04-17 2:43 PM
To: Diamond, Emily (MOECC)
Cc: Robert Freel
Subject: 44 Iber Road - ECA Requirement

Good afternoon Emily,

We just wanted to touch base with you regarding a proposed development we are working on located at 44 Iber Road.

Currently comprised a single parcel of land, the existing 1.4ha site currently consists an industrial building and is zoned Industrial Zone. The development proposes to construct an additional 1678 m² industrial building.

It appears that the existing stormwater management system currently directs flow towards the ditch along Iber Road and toward the existing stormwater pond located on-site. The stormwater management will attenuate to the release rate based on City of Ottawa requirements.

We understand that due to the site's industrial zoning designation, an MOE Environmental Compliance Approval is required under OWRA S.53. Can you confirm our assumptions above or advise with regards to ECA requirements for the proposed development.

Please feel free to contact us if you would like to discuss.

Thanks in advance,

Alison Gosling, E.I.T.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.542
fax: (613) 836-7183
email: agosling@DSEL.ca

Alison Gosling

From: Matt Craig <MCraig@mvc.on.ca>
Sent: Tuesday, April 4, 2017 3:52 PM
To: Alison Gosling
Subject: RE: 44 Iber Road - MVCA

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Alison

The Fernbank CDP identifies the watercourse as Hazeldean Creek. MVCA recommends a normal level of water quality treatment be provided.

Regards

Matt Craig | Manager of Planning and Regulations | Mississippi Valley Conservation Authority
www.mvc.on.ca |t. 613 253 0006 ext. 226| f. 613 253 0122 |mcraig@mvc.on.ca

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From: Alison Gosling [mailto:AGosling@dsel.ca]
Sent: Tuesday, April 4, 2017 2:41 PM
To: Matt Craig
Cc: Myra Van Die; Robert Freel
Subject: 44 Iber Road - MVCA

Good afternoon Matt,

We wanted to touch base with you regarding a development we are working on located at 44 Iber Road, Ottawa.

The stormwater collected from the site travels approximately 1.9 km to a direct outlet into the Carp River Municipal Drain.

The development proposes to construct an additional industrial building with associated aboveground parking. The development will maintain existing stormwater flow patterns.

Can you provide a comment regarding quality controls that maybe required for the site.

Please feel free to call if you have any questions or you would like to discuss.

Thanks in advance,

Alison Gosling, E.I.T.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.542
fax: (613) 836-7183
email: agosling@DSEL.ca

Alison Gosling

Subject: RE: 44 Iber Road - MVCA Coordination

From: Niall Oddie [mailto:NOddie@mvc.on.ca]
Sent: March 1, 2018 10:05 AM
To: Robert Freel <RFreel@dsel.ca>
Subject: FW: 44 Iber Road - MVCA Coordination

Bobby,

My apologies for not forwarding your these comments much earlier; they must have just gotten lost in the shuffle. My fault.

Please see below for additional comments from our water resources engineer.

Thanks,

Niall Oddie MCIP, RPP | Environmental Planner | Mississippi Valley Conservation Authority
10970 Highway 7, Carleton Place, Ontario K7C 3P1
www.mvc.on.ca |t. 613 253 0006 ext. 229| f. 613 253 0122 | noddie@mvc.on.ca

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From: Sobha Kunjikutty
Sent: Thursday, February 8, 2018 9:48 AM
To: Niall Oddie <NOddie@mvc.on.ca>
Subject: RE: 44 Iber Road - MVCA Coordination

Hi Niall,
I have reviewed the SWM report again. Please see my comments below.

It has given in the SWM report that to reduce the TSS, stormwater from the parking lot is proposed to direct to the landscaped areas and the vegetated storage area before discharging to the rear yard and road side swales. The grading and the landscaping plans confirm the proposal plan included vegetated swale and stormwater storage facility.
During pre-consultation, MVCA recommended a normal level of water quality treatment. As per the SWM planning and design manual (MOE, 2003), a normal level of protection requires the removal of 70% of TSS. Therefore,

i) The swale and the storage facility should be constructed according to the guidelines given in MOE's SWM Planning and Design Manual to remove desired amount of TSS.

ii) The design details should be shown either on the SWP or grading plan (SWM-1).
MVCA does not have any objection on the level of water quality treatment proposed when the proposed swales and vegetated storage facility construct and maintain according to the MOE's SWM manual.

Please let me know if you have any questions or comments.
Note: on my previous the SWM comment (dated Dec. 8, 2017) it should be '1.9km'instead of '1.9m' on the 2nd paragraph.
Sobha

Sobhalatha Kunjikutty, Ph.D., P.Eng.| Water Resources Engineer
Mississippi Valley Conservation Authority, 10970 Highway 7, Carleton Place, ON K7C 3P1
Tel: 613 253 0006 ext. 252| Fax: 613 253 0122 |Email: skunjikutty@mvc.on.ca |www.mvc.on.ca

From: Robert Freel [mailto:RFreel@dsel.ca]
Sent: Wednesday, February 7, 2018 1:52 PM
To: Niall Oddie <NOddie@mvc.on.ca>
Subject: 44 Iber Road - MVCA Coordination

Good afternoon Niall,

Further to our discussion, we are looking for some input from the MVCA regarding the proposed approach to water quality at 44 Iber Road. The current storm water management plan (attached) contemplates best management practices along with LIDs be implemented to reduce TSS and treat storm water.

Roof drainage from the proposed building will be directed to the parking lot surface. The parking lot area surface drains to vegetated swales which are directed to a depressed surface storage area. We have run these swales at shallow slopes to reduce velocities and promote infiltration and sedimentation. Storm water will be controlled via ICD in the vegetated storage area before discharging to the drainage swale running through the Iber Road business park, this drainage swale discharges to the Hazeldean Tributary downstream of the site.

Please feel free to contact me if there are any questions.

Thank you,

Bobby Freel, P.Eng.
Project Manager / Intermediate Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.558
cell: (613) 314-7675
email: rfreel@DSEL.ca

PROPERTY DESCRIPTION: PCL 1-2, SEC 4M-454, PT BLK 1, PL 4M-454, PT 2, 4R5435. S/T LT379077. GOULBOURN

PROPERTY REMARKS: CORRECTION: INSTRUMENT NUMBER LT402976 WAS ENTERED IN ERROR AGAINST THIS PROPERTY AND WAS REMOVED AND CERTIFIED ON 2001/05/03 BY GAIL BOUNSALL.
CORRECTION: INSTRUMENT NUMBER LT402976 WAS OMITTED FROM THIS PROPERTY IN ERROR AND WAS ADDED AND CERTIFIED ON 2003/02/07 BY DRAG TRICKOVIC.

ESTATE/QUALIFIER:	RECENTLY:	PIN CREATION DATE:
FEE SIMPLE ABSOLUTE	FIRST CONVERSION FROM BOOK	1997/02/24

OWNERS' NAMES	CAPACITY	SHARE
IBER ROAD PROPERTY LIMITED	GPAR	
IBER ROAD PROPERTY LIMITED PARTNERSHIP	FIRM	NIL

REG. NUM.	DATE	INSTRUMENT TYPE	AMOUNT	PARTIES FROM	PARTIES TO	CERT/ CHKD
EFFECTIVE 2000/07/29 THE NOTATION OF THE "BLOCK IMPLEMENTATION DATE" OF 1997/02/24 ON THIS PIN						
WAS REPLACED WITH THE "PIN CREATION DATE" OF 1997/02/24						
*** PRINTOUT INCLUDES ALL DOCUMENT TYPES (DELETED INSTRUMENTS NOT INCLUDED) ***						
*** RANGE SPECIFIED FOR SEARCH: FROM 2015/01/15 TO 2018/01/01 ***						
OC1654589	2015/01/22	TRANSFER	$3,067,000	1248800 ONTARIO INC.	IBER ROAD PROPERTY LIMITED IBER ROAD PROPERTY LIMITED PARTNERSHIP	C
	REMARKS: PLANNING ACT STATEMENTS.					
OC1654590	2015/01/22	CHARGE PARTNERSHIP	$2,146,900	IBER ROAD PROPERTY LIMITED IBER ROAD PROPERTY LIMITED PARTNERSHIP	ROYAL BANK OF CANADA	C
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	REMARKS: OC1654590.					

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Alison Gosling

From: Flay, Howard <Howard.Flay@ottawa.ca>
Sent: Friday, June 1, 2018 9:48 AM
To: Alison Gosling
Subject: RE: 44 Iber Road - Consent to Enter

Follow Up Flag: Follow up
Flag Status: Completed

A formal Consent to Enter must be prepared and executed by the City and the proponent.

From: Alison Gosling <AGosling@dsel.ca>
Sent: Friday, June 01, 2018 9:45 AM
To: Flay, Howard <Howard.Flay@ottawa.ca>
Cc: Millar, Kim <Kimberley.Millar@ottawa.ca>
Subject: RE: 44 Iber Road - Consent to Enter

Good morning Howard,

Great, thank you for the quick response. Can we use this email as confirmation of the Consent or will a formal letter be prepared

Thank you,

Alison Gosling, E.I.T.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.542
fax: (613) 836-7183
email: agosling@dsel.ca

From: Flay, Howard [mailto:Howard.Flay@ottawa.ca]
Sent: Friday, June 1, 2018 8:58 AM
To: Alison Gosling <AGosling@dsel.ca>
Cc: Millar, Kim <Kimberley.Millar@ottawa.ca>
Subject: FW: 44 Iber Road - Consent to Enter

Alison,

Section C-C on the attached plan show that you're proposing to construct a portion of the berm on City property. Therefore, before I can issue a Consent to Enter I require approval by our Planning staff of your proposal. In that regard, I have contacted Stream Shen who has just sent me the required approval. Accordingly, I'm now in a position to issue the Consent.

Please call me to discuss the details.

Howard Flay
Corporate Real Estate Office/ Bureau des biens immobiliers municipal
110 Laurier Avenue West, 5th Fl./110 avenue Laurier ouest, 5ième étage
Ottawa, Ontario K1P 1J1
✉ **Howard.Flay@ottawa.ca** / ☎ (613) 580-2424 x 25298 / 🖷 (613) 560-6051

From: Alison Gosling <AGosling@dsel.ca>
Sent: Thursday, May 31, 2018 2:03 PM
To: Millar, Kim <Kimberley.Millar@ottawa.ca>; Flay, Howard <Howard.Flay@ottawa.ca>
Cc: Robert Freel <RFreel@dsel.ca>
Subject: 44 Iber Road - Consent to Enter

Good afternoon Howard and Kimberley,

Similar to our previous conversation, we are proposing minor grading revisions along the property line of 44 Iber Road and 34 Iber Road (Fire Station) that will require a Consent to Enter.

Currently, there is a stormwater storage area/pond within the rear of 44 Iber that spills into the adjacent property. Due to the proposed development at 44 Iber, we are redefining the storage area. As shown by the attached Grading Plan, we are proposing to create a berm along the Northern property line to provide protection to the Fire Station property terracing. Please see attached for reference.

We understand that the Consent to Enter process does not take a long time, however we have received a comment from our reviewer asking for us to receive a preliminary confirmation for our proposal.

Please let us know if you have any questions.

Thank you,

Alison Gosling, E.I.T.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

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email: agosling@dsel.ca

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

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APPENDIX B

Water Supply

Iber Road Propery Limited
44 Iber Road (46 Iber Road)
Existing Site Conditions

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010

Institutional / Commercial / Industrial Demand

				Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**		**Units**	**m^3/d**	**L/min**	**m^3/d**	**L/min**	**m^3/d**	**L/min**
Commercial floor space	2.5	L/m^2/d		0.00	0.0	0.0	0.0	0.0	0.0
Office	75	L/9.3m^2/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Light	35,000	L/gross ha/d	0.186	6.52	4.5	9.8	6.8	17.6	12.2
Industrial - Heavy	55,000	L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
		Total I/CI Demand		6.5	4.5	9.8	6.8	17.6	12.2
		Total Demand		**6.5**	**4.5**	**9.8**	**6.8**	**17.6**	**12.2**

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010

Institutional / Commercial / Industrial Demand

				Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**		**Units**	**m^3/d**	**L/min**	**m^3/d**	**L/min**	**m^3/d**	**L/min**
Commercial floor space	2.5	$L/m^2/d$		0.00	0.0	0.0	0.0	0.0	0.0
Office	75	$L/9.3m^2/d$		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Light	35,000	L/gross ha/d	0.122	4.28	3.0	6.4	4.5	11.5	8.0
Industrial - Heavy	55,000	L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
		Total I/CI Demand		4.3	3.0	6.4	4.5	11.5	8.0
		Total Demand		**4.3**	**3.0**	**6.4**	**4.5**	**11.5**	**8.0**

Iber Road Propery Limited
44 Iber Road (46 Iber Road)
Proposed Site Conditions - Ultimate

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010

Institutional / Commercial / Industrial Demand

				Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**		**Units**	**m^3/d**	**L/min**	**m^3/d**	**L/min**	**m^3/d**	**L/min**
Commercial floor space	2.5	L/m^2/d		0.00	0.0	0.0	0.0	0.0	0.0
Office	75	L/9.3m^2/d		0.00	0.0	0.0	0.0	0.0	0.0
Ex. Industrial - Light	35,000	L/gross ha/d	0.186	6.52	4.5	9.8	6.8	17.6	12.2
Industrial - Light	35,000	L/gross ha/d	0.122	4.28	3.0	6.4	4.5	11.5	8.0
Industrial - Heavy	55,000	L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
			Total I/CI Demand	10.8	7.5	16.2	11.3	29.2	20.3
			Total Demand	**10.8**	**7.5**	**16.2**	**11.3**	**29.2**	**20.3**

Fire Flow Estimation per Fire Underwriters Survey

Water Supply For Public Fire Protection - 1999

Fire Flow Required

1. Base Requirement

$F = 220C\sqrt{A}$ L/min *Where **F** is the fire flow, **C** is the Type of construction and **A** is the Total floor area*

Type of Construction: Non-Combustible Construction

C	0.8		*Type of Construction Coefficient per FUS Part II, Section 1*
A	1,864.2	m^2	*Total floor area based on FUS Part II section 1*

Fire Flow	7599.1	L/min	
	8000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Adjustments

2. Reduction for Occupancy Type

Limited Combustible	-15%	
Fire Flow	**6800.0**	**L/min**

3. Reduction for Sprinkler Protection

Non-Sprinklered	0%	
Reduction	**0**	**L/min**

4. Increase for Separation Distance

N	30.1m-45m	5%	
S	20.1m-30m	10%	
E	>45m	0%	
W	30.1m-45m	5%	
	% Increase	**20%**	*value not to exceed 75% per FUS Part II, Section 4*
	Increase	**1360.0**	**L/min**

Total Fire Flow

Fire Flow	8160.0	L/min	*fire flow not to exceed 45,000 L/min nor be less than 2,000 L/min per FUS Section 4*
	8000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Notes:
-Type of construction, Occupancy Type and Sprinkler Protection information provided by S.J. Lawrence Architect Inc.
-Calculations based on Fire Underwriters Survey - Part II

Fire Flow Estimation per Fire Underwriters Survey

Water Supply For Public Fire Protection - 1999

Fire Flow Required

1. Base Requirement

$F = 220C\sqrt{A}$ L/min *Where **F** is the fire flow, **C** is the Type of construction and **A** is the Total floor area*

Type of Construction: Non-Combustible Construction

C	0.8		*Type of Construction Coefficient per FUS Part II, Section 1*
A	1,222.0	m^2	*Total floor area based on FUS Part II section 1*

Fire Flow	6152.5	L/min	
	6000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Adjustments

2. Reduction for Occupancy Type

Limited Combustible	-15%	
Fire Flow	**5100.0**	**L/min**

3. Reduction for Sprinkler Protection

Non-Sprinklered	0%	
Reduction	**0**	**L/min**

4. Increase for Separation Distance

N	10.1m-20m	15%	
S	20.1m-30m	10%	
E	30.1m-45m	5%	
W	>45m	0%	
	% Increase	**30%**	*value not to exceed 75% per FUS Part II, Section 4*
	Increase	**1530.0**	**L/min**

Total Fire Flow

Fire Flow	6630.0	L/min	*fire flow not to exceed 45,000 L/min nor be less than 2,000 L/min per FUS Section 4*
	7000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Notes:
-Type of construction, Occupancy Type and Sprinkler Protection information provided by S.J. Lawrence Architect Inc.
-Calculations based on Fire Underwriters Survey - Part II

44 Iber Road (46 Iber Road)
Boundary Conditions Unit Conversion

Boundary Conditions Unit Conversion

	Height (m)	Elevation (m)	m H_2O	PSI	kPa		L/s	L/min
Avg. DD	161.2	103	58.2	82.8	570.9	Fire Flow	133.3	8000
Fire Flow	158.7	103	55.7	79.2	546.4			
Peak Hour	157.8	103	54.8	78.0	537.6			

Minor Loss Coefficients

Fitting	Loss Coefficient
Globe valve, fully open	10
Angle valve, fully open	5
Swing check valve, fully open	2.5
Gate valve, fully open	0.2
Short-radius elbow	0.9
Medium-radius elbow	0.8
Long-radius elbow	0.6
45 degree elbow	0.4
Closed return bend	2.2
Standard tee - flow through run	0.6
Standard tee - flow through branch	1.8
Square Entrance	0.5
Exit	1

*Minor loss coefficients based on EPANET 2 USERS MANUAL, dated September 2000

Pipe Diameter vs. "C" Factor

Pipe Diameter (m)	C-Factor
150	100
200 to 250	110
300 to 600	120
Over 600	130

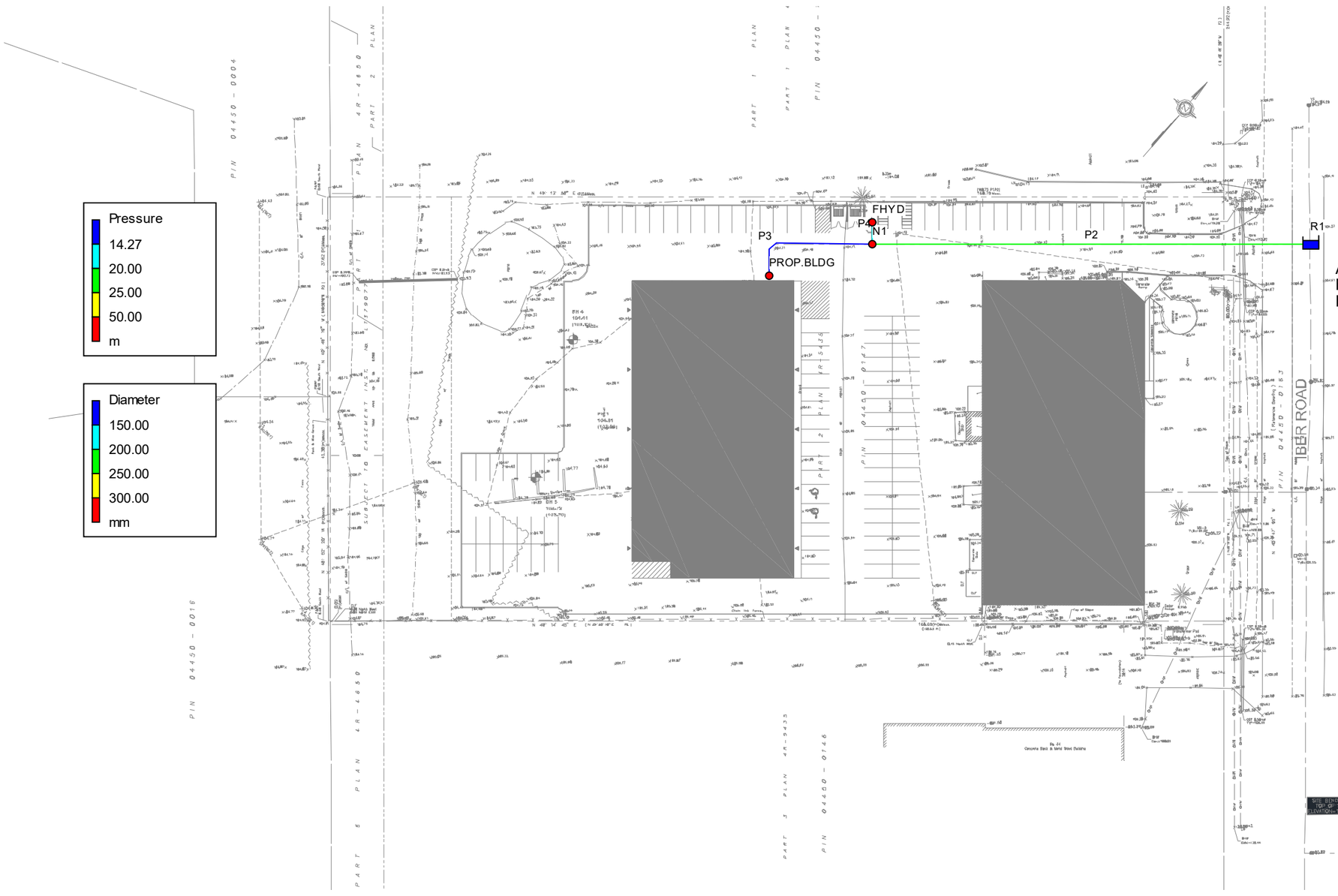
Node Pressures

Kpa	Pressure (kPa)	Pressure (m H20)
Max	552	56.3
Rec Max	480	49.0
Rec Min	350	35.7
Min	275	28.1

Location	Average Day (kPa)	Max Day + Fire Flow (kPa)	Peak Hour (kPa)
FHYD	578.4	245.4	545.0
N1	578.7	432.5	545.3
PROP.BLDG	574.5	428.3	541.1

46 IBER ROAD - AVERAGE DAY DEMAND

Day 1, 12:00 AM



```
**************************************************************
*                          E P A N E T                       *
*                  Hydraulic and Water Quality               *
*                  Analysis for Pipe Networks                *
*                        Version 2.0                         *
**************************************************************

Input File: AVERAGE DAY 2018-10-12_900.net
```

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
P2	R1	N1	82.3	200
P3	PROP.BLDG	N1	55.6	100
P4	N1	FHYD	3.7	150

Node Results:

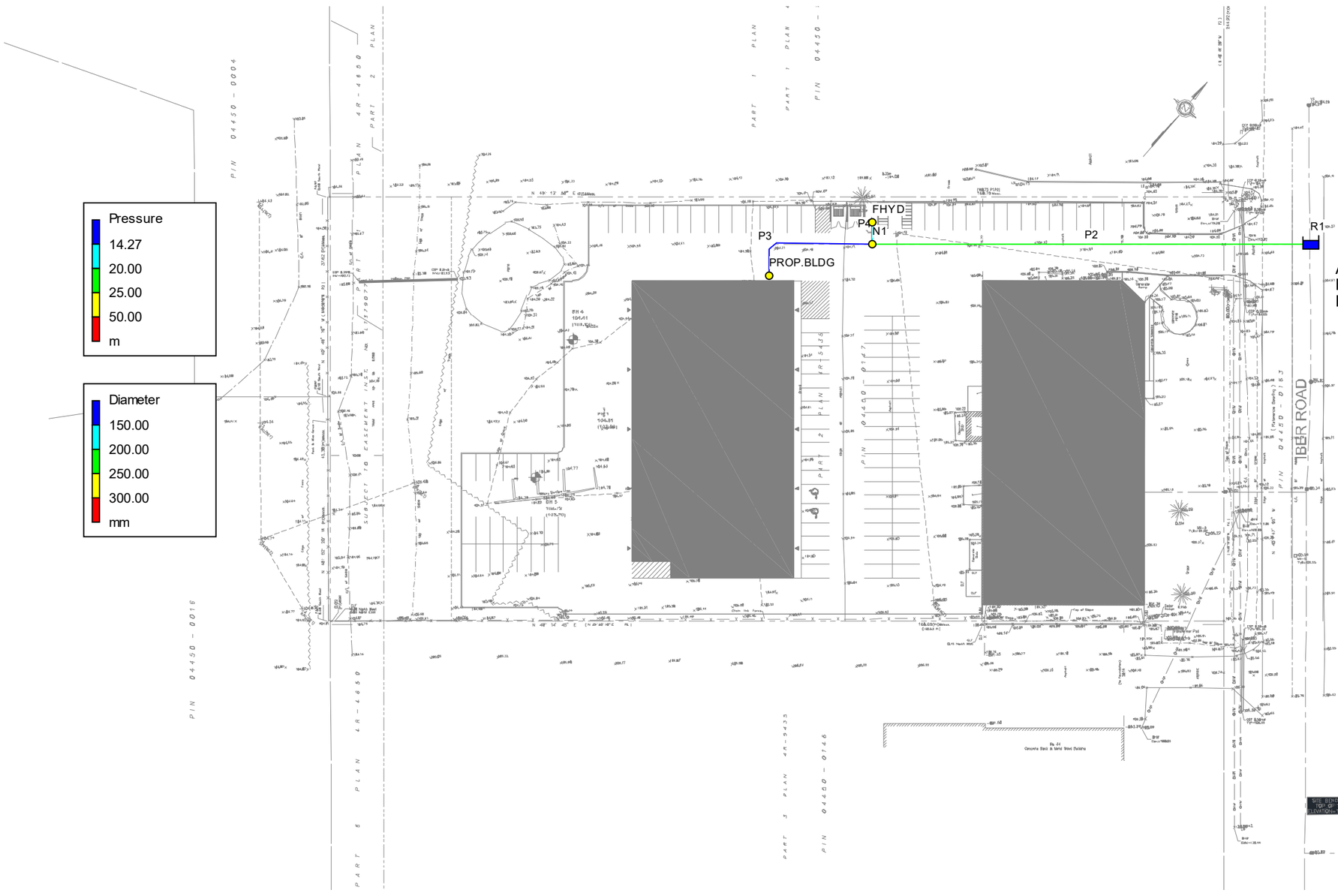
Node ID	Demand LPM	Head m	Pressure m	Quality	
PROP.BLDG	3.00	161.20	58.56	0.00	
N1	0.00	161.20	58.99	0.00	
FHYD	0.00	161.20	58.96	0.00	
R1	-3.00	161.20	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPM	Velocity m/s	Unit Headloss m/km	Status
P2	3.00	0.00	0.00	Open
P3	-3.00	0.01	0.00	Open
P4	0.00	0.00	0.00	Open

46 IBER ROAD - MAX DAY + FIRE FLOW DEMAND

Day 1, 12:00 AM



```
**********************************************************************
*                            E P A N E T                             *
*                     Hydraulic and Water Quality                    *
*                     Analysis for Pipe Networks                     *
*                           Version 2.0                              *
**********************************************************************

Input File: MAXDAY + FF  2018-10-12_900.net
```

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
P2	R1	N1	82.3	200
P3	PROP.BLDG	N1	55.6	100
P4	N1	FHYD	3.7	150

Node Results:

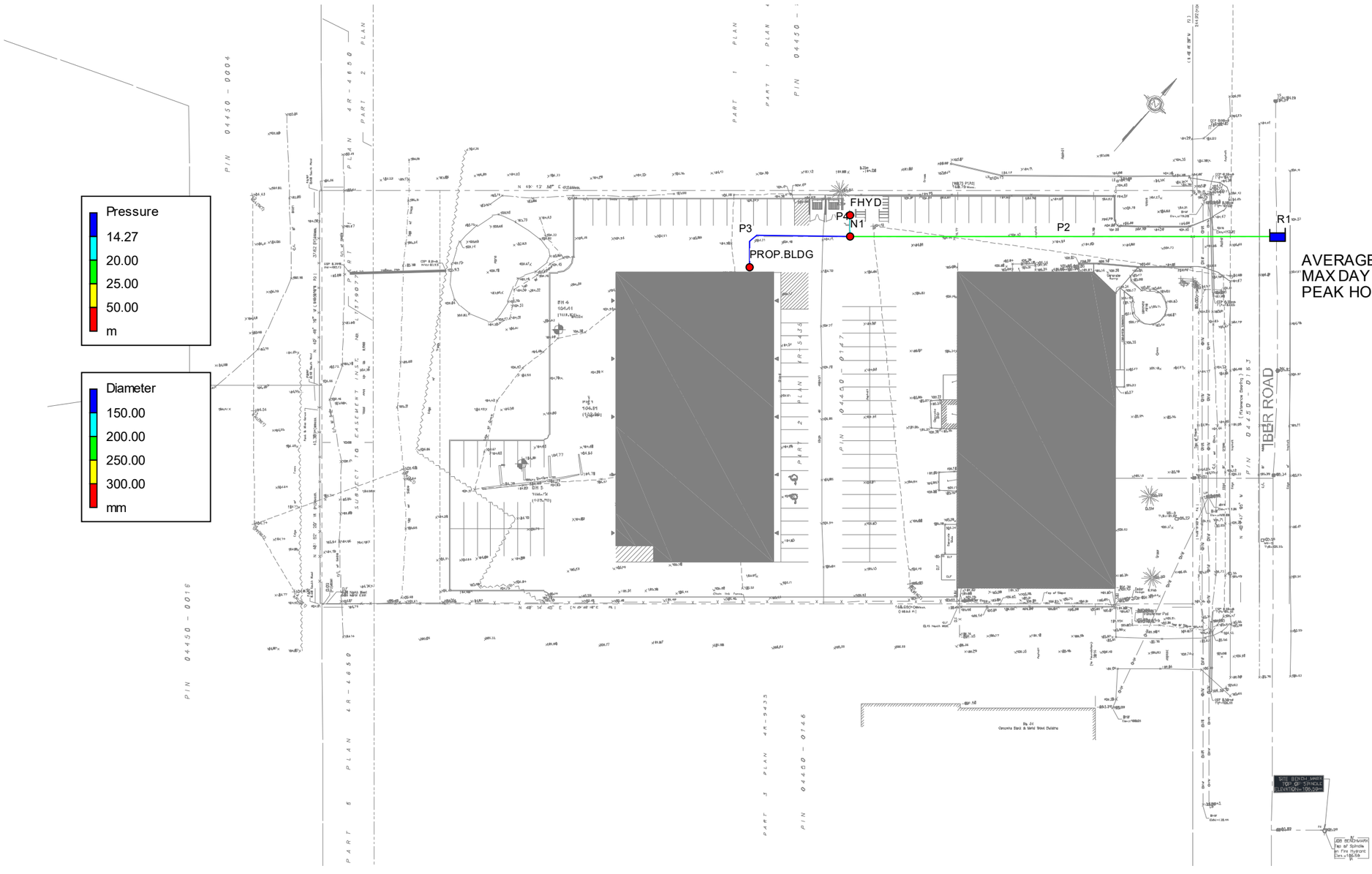
Node ID	Demand LPM	Head m	Pressure m	Quality	
PROP.BLDG	4.50	146.30	43.66	0.00	
N1	0.00	146.30	44.09	0.00	
FHYD	8000.00	127.26	25.02	0.00	
R1	-8004.50	158.70	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPM	Velocity m/s	Unit Headloss m/km	Status
P2	8004.50	4.25	150.72	Open
P3	-4.50	0.01	0.00	Open
P4	8000.00	7.55	5145.02	Open

46 IBER ROAD - PEAK HOUR DEMAND

Day 1, 12:00 AM



```
**********************************************************************
*                            E P A N E T                             *
*                     Hydraulic and Water Quality                    *
*                     Analysis for Pipe Networks                     *
*                           Version 2.0                              *
**********************************************************************

Input File: PEAK HOUR 2018-10-12_900.net
```

Link - Node Table:

Link ID	Start Node	End Node	Length m	Diameter mm
P2	R1	N1	82.3	200
P3	PROP.BLDG	N1	55.6	100
P4	N1	FHYD	3.7	150

Node Results:

Node ID	Demand LPM	Head m	Pressure m	Quality	
PROP.BLDG	8.00	157.80	55.16	0.00	
N1	0.00	157.80	55.59	0.00	
FHYD	0.00	157.80	55.56	0.00	
R1	-8.00	157.80	0.00	0.00	Reservoir

Link Results:

Link ID	Flow LPM	Velocity m/s	Unit Headloss m/km	Status
P2	8.00	0.00	0.00	Open
P3	-8.00	0.02	0.01	Open
P4	0.00	0.00	0.00	Open

Alison Gosling

From: Fraser, Mark <Mark.Fraser@ottawa.ca>
Sent: Wednesday, February 21, 2018 2:38 PM
To: Alison Gosling
Cc: Robert Freel
Subject: RE: 44 Iber Road - Boundary condition request
Attachments: 44 Iber Road.docx

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Alison,

Please find attached boundary conditions for hydraulic analysis based on the provided anticipated water demands:

Proposed Water Demands and Fire Flow Requirement:

Proposed Development Location: **44 Iber Road**
Average Daily Demand = 0.13L/s
Max Daily Demand = 0.19 L/s
Peak Hour Demand = 0.81 L/s
Fire Flow = (8,000 L/s) 133.3 L/s

City of Ottawa Boundary Conditions:

The following are boundary conditions for hydraulic analysis (Pressure Zone 3W) at the specified connection point:

Specified Connection Point: Iber Road (300mm dia.) [Connection 1]
Max HGL = 161.2m (82.6 psi)
PKHR = 157.8m (77.7 psi)
MXDY+FireFlow (8000 L/min.) = 158.7m (79.1 psi)

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

Please refer to *City of Ottawa, Ottawa Design Guidelines – Water Distribution, First Edition, July 2010, WDG001 Clause 4.2.2* for watermain pressure and demand objectives.

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.*

If you have any questions or require any clarification please let me know.

Regards,

Mark Fraser, P. Eng.
Project Manager, Planning Services
Development Review West Branch
City of Ottawa | Ville d'Ottawa
Planning, Infrastructure and Economic Development Department
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1
Tel:613.580.2424 ext. 27791
Fax: 613-580-2576
Mail: Code 01-14
Email: Mark.Fraser@ottawa.ca

From: Fraser, Mark
Sent: February 14, 2018 3:21 PM
To: 'Alison Gosling' <AGosling@dsel.ca>
Subject: RE: 44 Iber Road - Boundary condition request

Hi Alison,

Please accept this email as confirmation that updated boundary conditions for hydraulic analysis have been requested from the Infrastructure Planning Unit based on the water demands provided for the subject development. Please note that it takes approximately 5-10 business days to receive and provide you with boundary conditions.

Regards,

Mark Fraser
Project Manager, Planning Services
Development Review West Branch
City of Ottawa | Ville d'Ottawa
Planning, Infrastructure and Economic Development Department
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1
Tel:613.580.2424 ext. 27791
Fax: 613-580-2576
Mail: Code 01-14
Email: Mark.Fraser@ottawa.ca

From: Alison Gosling [mailto:AGosling@dsel.ca]
Sent: February 14, 2018 3:03 PM
To: Fraser, Mark <Mark.Fraser@ottawa.ca>
Subject: RE: 44 Iber Road - Boundary condition request

Good afternoon Mark,

We would like to request updated water boundary conditions for 44 Iber using the following proposed development demands:

1. Location of Service / Street Number: 44 Iber Road

2. Type of development and the amount of fire flow required for the proposed development:

- The subject site currently contains an existing 0.186ha industrial building. An additional 0.122ha industrial building is proposed.
- It is anticipated that the proposed development will have a connection to be serviced from the existing 300 mm diameter watermain within Iber Road, as shown by the attached map.
- A maximum fire flow of 8,000 L/min is anticipated.

3.

	Existing Building		Proposed Building		Total	
	L/min	L/min	L/s	L/s	L/s	L/s
Avg. Daily	4.5	0.08	3.0	0.05	**7.5**	**0.13**
Max Day	6.8	0.11	4.5	0.07	**11.3**	**0.19**
Peak Hour	29.5	0.49	19.3	0.32	**48.8**	**0.81**

It you have any questions please feel free to contact me.

Thanks in advance,

Alison Gosling, E.I.T.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.542
fax: (613) 836-7183
email: agosling@dsel.ca

From: Balima, Nadege [mailto:Nadege.Balima@ottawa.ca]
Sent: Thursday, April 13, 2017 4:48 PM
To: Alison Gosling <AGosling@dsel.ca>
Subject: RE: 44 Iber Road - Boundary condition request

Good afternoon Alison,
Please find attached the results of the requested boundary conditions.
Let me know if you have questions.
Thanks,

Nadège Balima, P.Eng., M.P.M., LEED Green Assoc.
Project Manager, Infrastructure Approvals
Development Review Services (West)
613.580.2424 ext. 13477

From: Alison Gosling [mailto:AGosling@dsel.ca]
Sent: Tuesday, April 11, 2017 12:59 PM
To: Balima, Nadege
Subject: RE: 44 Iber Road - Boundary condition request

Hi Nadege,

A maximum fire flow of 7,000 L/min is expected.

Thank you,

Alison Gosling, E.I.T.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.542
fax: (613) 836-7183
email: agosling@DSEL.ca

From: Balima, Nadege [mailto:Nadege.Balima@ottawa.ca]
Sent: Tuesday, April 11, 2017 11:58 AM
To: Alison Gosling <AGosling@dsel.ca>
Subject: RE: 44 Iber Road - Boundary condition request

Hi Alison,
We are only be able to provide boundary condition results once a requested fire flow is available.
Feel free to forward this request again once this information is available.
Also please take note that for any future boundary condition requests, a requested fire flow should be provided along with the avg day/max day/ peak hour information.
Let me know if you have questions.
Thanks,

Nadège Balima, P.Eng., M.P.M., LEED Green Assoc.
Project Manager, Infrastructure Approvals
Development Review Services (West)
613.580.2424 ext. 13477

From: Alison Gosling [mailto:AGosling@dsel.ca]
Sent: Tuesday, April 11, 2017 11:46 AM
To: Balima, Nadege
Subject: RE: 44 Iber Road - Boundary condition request

Thank you!

Alison Gosling, E.I.T.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.542
fax: (613) 836-7183
email: agosling@DSEL.ca

From: Balima, Nadege [mailto:Nadege.Balima@ottawa.ca]
Sent: Tuesday, April 11, 2017 11:44 AM
To: Alison Gosling <AGosling@dsel.ca>
Subject: RE: 44 Iber Road - Boundary condition request

Good morning Alison,
I have forwarded your request and will get back to you as soon as possible.
Regards,

Nadège Balima, P.Eng., M.P.M., LEED Green Assoc.
Project Manager, Infrastructure Approvals
Development Review Services (West)
613.580.2424 ext. 13477

From: Alison Gosling [mailto:AGosling@dsel.ca]
Sent: Tuesday, April 11, 2017 11:09 AM
To: Balima, Nadege
Subject: 44 Iber Road - Boundary condition request

Good morning Nadege,

We would like to request water boundary conditions for 44 Iber using the following proposed development demands:

1. Location of Service / Street Number: 44 Iber Road

2. Type of development and the amount of fire flow required for the proposed development:

- The subject site currently contains an existing 0.186ha industrial building. An additional 0.168ha industrial building is proposed.
- It is anticipated that the development will have a connection to be serviced from the existing 300 mm diameter watermain within Iber Road, as shown by the attached map.
- Fire demand based on FUS will be used to calculate fire demand, sufficient information is unavailable at this time to complete a calculation we would request that the available fire flow at 140 kPa be provided for later comparison and for water data card purposes.

3.

	L/min	L/s
Avg. Daily	8.6	0.14
Max Day	12.9	0.22
Peak Hour	56.0	0.93

It you have any questions please feel free to contact me.

Thanks in advance,

Alison Gosling, E.I.T.
Project Coordinator / Junior Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.542
fax: (613) 836-7183
email: agosling@DSEL.ca

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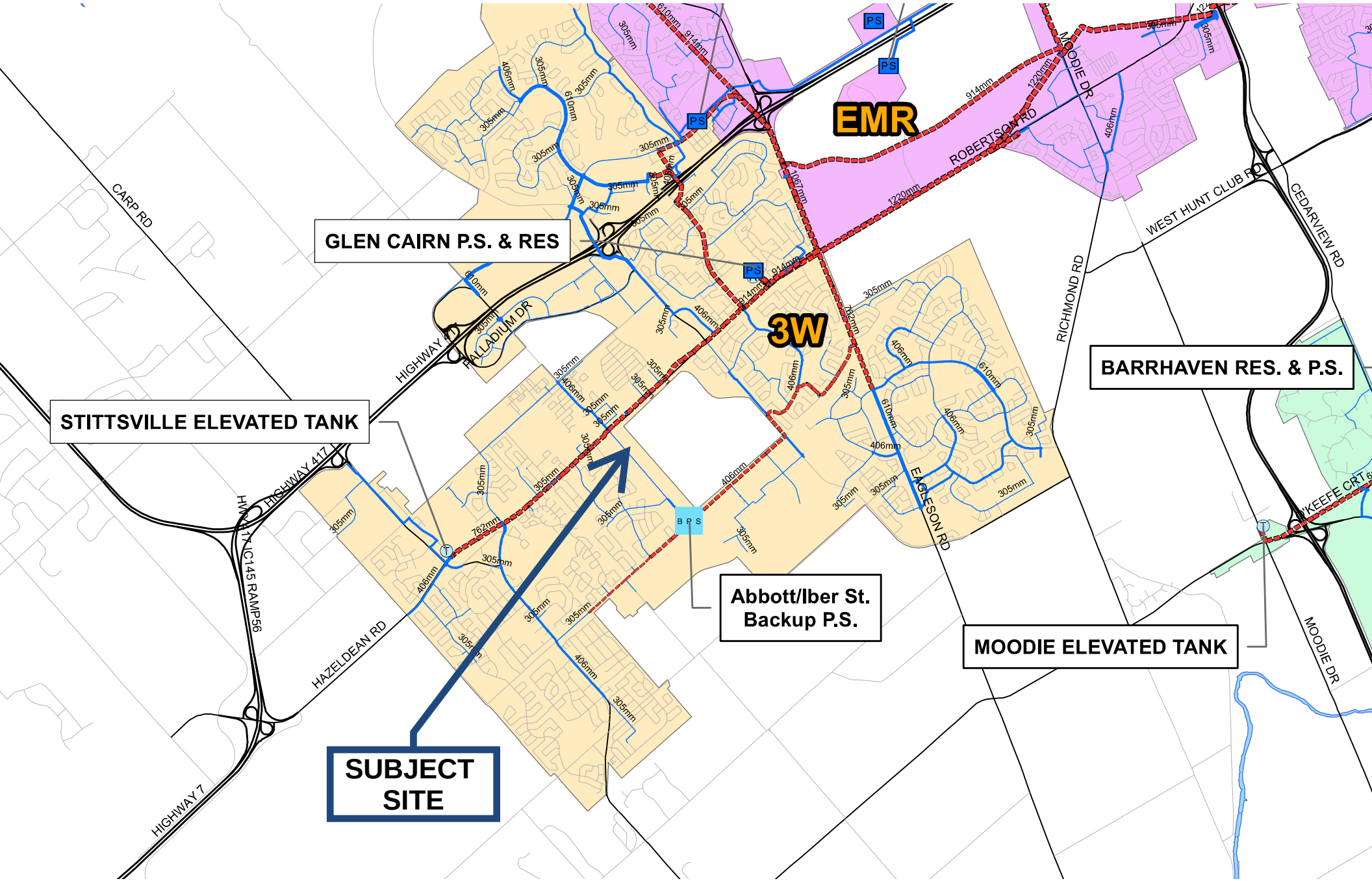
'

City of Ottawa - Water Distribution Systems



APPENDIX C

Wastewater Collection

44 Iber Road
Existing Site Conditions

Existing Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2004

Site Area 0.675 **ha**

Extraneous Flow Allowances

Infiltration / Inflow **0.19 L/s**

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate		No. of Units	Avg Wastewater (L/s)
Commercial floor space*	5	$L/m^2/d$		0.00
Hospitals	900	L/bed/d		0.00
School	70	L/student/d		0.00
Industrial - Light** (44 Iber)	45,000	L/gross ha/d	0.186	0.10
Industrial - Heavy**	55,000	L/gross ha/d		0.00

Average I/C/I Flow	**0.10**
I/C/I Peaking Factor	**6.4**
Peak Institutional / Commercial Flow	0.00
Peak Industrial Flow**	0.62
Peak I/C/I Flow	**0.62**

** assuming a 12 hour commercial operation*

*** peak industrial flow per City of Ottawa Sewer Design Guidelines Appendix 4B*

Total Estimated Average Dry Weather Flow Rate	**0.10 L/s**
Total Estimated Peak Dry Weather Flow Rate	**0.62 L/s**
Total Estimated Peak Wet Weather Flow Rate	**0.81 L/s**

Iber Road Property Limited
44 Iber Road (46 Iber Road)
Proposed Site Conditions

Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2004

Site Area 0.675 **ha**

Extraneous Flow Allowances

Infiltration / Inflow **0.19 L/s**

Institutional / Commercial / Industrial Contributions

Property Type	**Unit Rate**	**No. of Units**	**Avg Wastewater (L/s)**
Unit 01 - *Water Closet**	150 L/fixture/hour	2	0.04
Unit 02 - *Water Closet**	150 L/fixture/hour	2	0.04
Unit 02 - *Wash Basin*	375 L/fixture/d	1	0.004
Unit 04 - *Water Closet**	150 L/fixture/hour	2	0.04
Unit 04 - *Wash Basin*	375 L/fixture/d	1	0.004
Unit 05 - *Water Closet**	150 L/fixture/hour	3	0.06
Unit 05 - *Wash Basin*	375 L/fixture/d	1	0.004
Ex. Industrial - Light** (44 Iber)	45,000 L/gross ha/d		0.00
Industrial - Heavy**	55,000 L/gross ha/d		0.00

Average I/C/I Flow	**0.20**
I/C/I Peaking Factor	**6.4**
Peak Institutional / Commercial Flow	0.30
Peak Industrial Flow**	0.00
Peak I/C/I Flow	**0.30**

** assuming a 12 hour operation*

*** peak industrial flow per City of Ottawa Sewer Design Guidelines Appendix 4B*

Total Estimated Average Dry Weather Flow Rate	**0.20 L/s**
Total Estimated Peak Dry Weather Flow Rate	**0.30 L/s**
Total Estimated Peak Wet Weather Flow Rate	**0.49 L/s**

Iber Road Property Limited
44 Iber Road (46 Iber Road)
Ultimate Site Conditions

Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2004

Site Area 1.351 **ha**

Extraneous Flow Allowances

Infiltration / Inflow **0.38 L/s**

Institutional / Commercial / Industrial Contributions

Property Type	**Unit Rate**	**No. of Units**	**Avg Wastewater (L/s)**
Unit 01 - *Water Closet**	150 L/fixture/hour	2	0.04
Unit 02 - *Water Closet**	150 L/fixture/hour	2	0.04
Unit 02 - *Wash Basin*	375 L/fixture/d	1	0.004
Unit 04 - *Water Closet**	150 L/fixture/hour	2	0.04
Unit 04 - *Wash Basin*	375 L/fixture/d	1	0.004
Unit 05 - *Water Closet**	150 L/fixture/hour	3	0.06
Unit 05 - *Wash Basin*	375 L/fixture/d	1	0.004
Ex. Industrial - Light** (44 Iber)	45,000 L/gross ha/d	0.186	0.10
Industrial - Heavy**	55,000 L/gross ha/d		0.00

Average I/C/I Flow	**0.30**
I/C/I Peaking Factor	**6.4**
Peak Institutional / Commercial Flow	0.30
Peak Industrial Flow**	0.62
Peak I/C/I Flow	**0.92**

** assuming a 12 hour operation*

*** peak industrial flow per City of Ottawa Sewer Design Guidelines Appendix 4B*

Total Estimated Average Dry Weather Flow Rate	**0.30 L/s**
Total Estimated Peak Dry Weather Flow Rate	**0.92 L/s**
Total Estimated Peak Wet Weather Flow Rate	**1.30 L/s**

SANITARY SEWER CALCULATION SHEET (OFFSITE)

CLIENT: **IBER ROAD PROPERTY LIMITED**
LOCATION: **IBER ROAD**
FILE REF: **16-900**
DATE: **12-Oct-18**

DESIGN PARAMETERS

Avg. Daily Flow Res.	350	L/p/d	Peak Fact Res. Per Harmons: Min = 2.0, Max =4.0		Infiltration / Inflow	0.28	L/s/ha
Avg. Daily Flow Comm.	35,000	L/ha/d	Peak Fact. Comm.	1.5	Min. Pipe Velocity	0.60	m/s full flowing
Avg. Daily Flow Instit.	35,000	L/ha/d	Peak Fact. Instit.	1.5	Max. Pipe Velocity	3.00	m/s full flowing
Avg. Daily Flow Indust.	45,000	L/ha/d	Peak Fact. Indust. per MOE graph		Mannings N	0.013	

Location			Residential Area and Population										Commercial		Institutional		Industrial			Infiltration				Pipe Data							
Area ID	Up	Down	Area	Number of Units				Pop.	Cumulative		Peak.	Q_{res}	Area	Accu.	Area	Accu.	Area	Accu.	Q_{C+I+I}	Total	Accu.	Infiltration	Total	DIA	Slope	Length	$A_{hydraulic}$	R	Velocity	Q_{cap}	Q / Q full
				by type					Area	Pop.	Fact.			Area		Area		Area		Area	Area	Flow	Flow								
			(ha)	Singles	Semi's	Town's	Apt's		(ha)		(-)	(L/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(mm)	(%)	(m)	(m^2)	(m)	(m/s)	(L/s)	(-)
SITE	1	2	0.000					0.0	0.000	0.0	4.00	0.00		0.00		0.00	24.40	24.40	25.4	24.400	24.400	6.832	32.25	300	0.19		0.071	0.075	0.59	41.7	0.77
STITTSVILLE TRUNK	2	3	0.850	6				20.0	0.850	20.0	4.00	0.32		0.00		0.00	9.90	34.30	35.7	10.750	35.150	9.842	45.90	375	0.14		0.110	0.094	0.59	65.6	0.70

SANITARY SEWER CALCULATION SHEET (ONSITE)

CLIENT: **IBER ROAD PROPERTY LIMITED**
LOCATION: **44 IBER ROAD (46 IBER ROAD)**
FILE REF: **17-900**
DATE: **12-Oct-18**

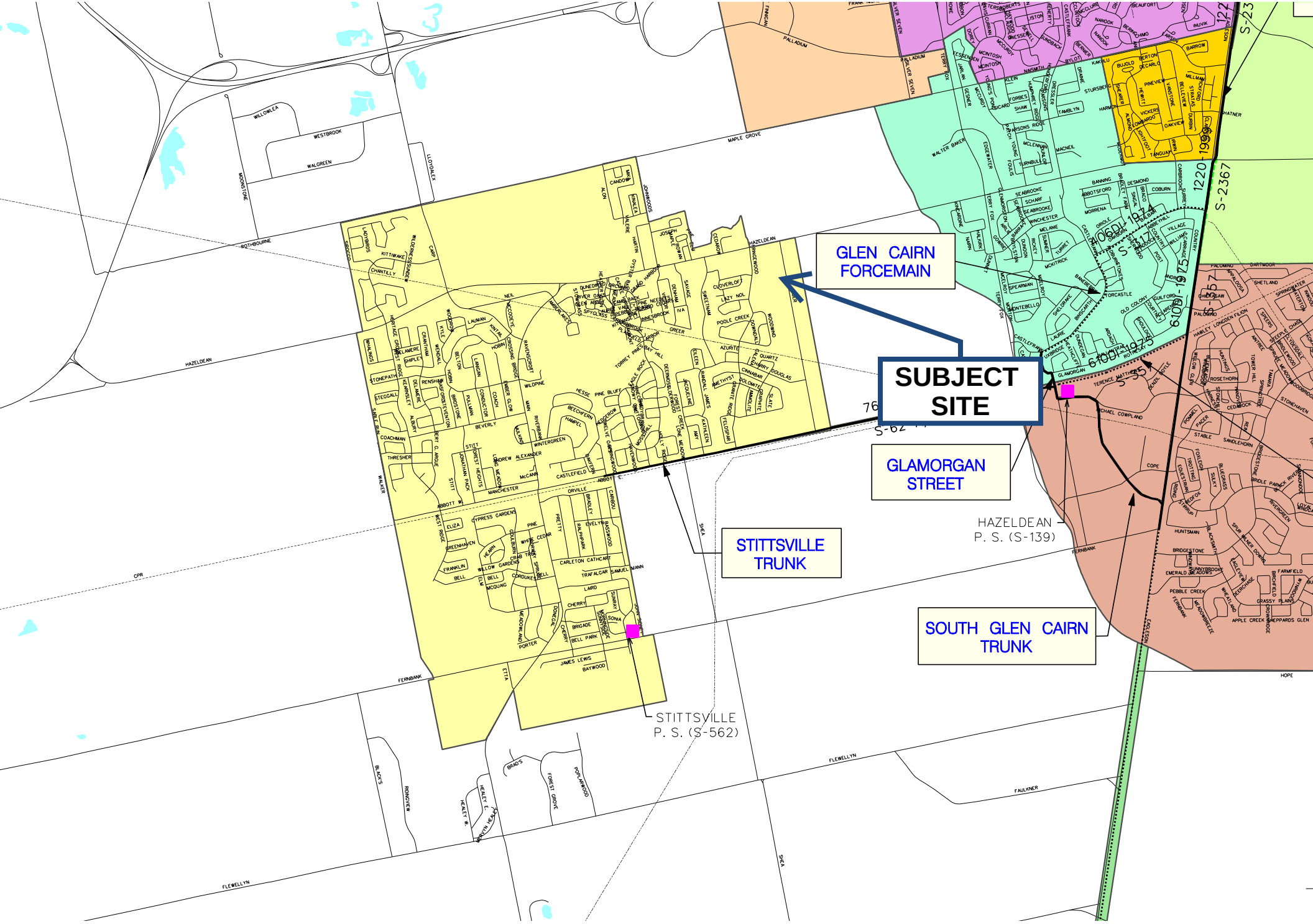
DESIGN PARAMETERS

Avg. Daily Flow Res.	350	L/p/d	Peak Fact Res. Per Harmons: Min = 2.0, Max =4.0		Infiltration / Inflow	0.28	L/s/ha
Avg. Daily Flow Comn	50,000	L/ha/d	Peak Fact. Comm.	1.5	Min. Pipe Velocity	0.60	m/s full flowing
Avg. Daily Flow Instit.	50,000	L/ha/d	Peak Fact. Instit.	1.5	Max. Pipe Velocity	3.00	m/s full flowing
Avg. Daily Flow Indus	35,000	L/ha/d	Peak Fact. Indust. per MOE graph		Mannings N	0.013	

Location			Residential Area and Population										Commercial		Institutional		Industrial			Infiltration				Pipe Data							
Area ID	Up	Down	Area	Number of Units by type				Pop.	Cumulative Area	Cumulative Pop.	Peak. Fact.	Q_{res}	Area	Accu. Area	Area	Accu. Area	Area	Accu. Area	Q_{C+I+I}	Total Area	Accu. Area	Infiltration Flow	Total Flow	DIA	Slope	Length	$A_{hydraulic}$	R	Velocity	Q_{cap}	Q / Q full
			(ha)	Singles	Semi's	Town's	Apt's		(ha)		(-)	(L/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(mm)	(%)	(m)	(m^2)	(m)	(m/s)	(L/s)	(-)
	SAN2	SAN1	1.229					0.0	1.229	0.0	4.00	0.00		0.00		0.00	0.122	0.12	0.1	1.351	1.351	0.378	0.48	200	0.24	80.2	0.031	0.050	0.51	16.1	0.03
	SAN1	EX. SAN	0.000					0.0	1.229	0.0	4.00	0.00		0.00		0.00		0.12	0.1	0.000	1.351	0.378	0.48	200	0.24	50.3	0.031	0.050	0.51	16.1	0.03


1
2
3
SITE
AREA A
24.4 ha
INDUSTRIAL
AREA B
9.9 ha
INDUSTRIAL
0.85 ha
RESIDENTIAL
9 SINGLE FAMILY
HOMES
STITTSVILLE
TRUNK
prom Sweetnam Dr
prom Harry Douglas Dr
ch Iber Rd
prom Fringewood Dr
cour Cloverdell Crt
cour Lazy Nor Crt
croiss Poole Creek Cres
croiss Woodwind Cres
voie Cinnabar Way
ch Graphite Rd
croiss Amethyst Cres
croiss Eileen Cres
prom Savage Dr
voie Denham Way
rue Victor St
500 m

TRUNK SANITARY SEWERS AND COLLECTION AREAS



SCHEDULE "F"

PART 1: SEWER AND SERVICE CONNECTIONS

(h) Detailed plans of the proposed connection valves and sump pump shall be submitted to the Township for approval prior to installation. The general guidelines outlined below shall govern:

(i) One sump pump shall be installed in each building unit.

(ii) The sump pump unit shall be a column-type with a minimum 1/3h.p. motor. Due to ground water conditions, the Township may require the use of a heavy-duty submersible unit.

(iii) The sump pump discharge shall be a minimum 40 mm (1-1/2 in.) diameter pipe equipped with an approved check valve.

(iv) The sump pit shall be a minimum of 0.6 metre (2 ft.) square and 0.6 metre (2 ft.) deep.

(i) All sanitary discharge from the building shall be connected directly to the sanitary service connection.

(j) All sanitary service connections shall be constructed in accordance with the requirements of the Township Sewer Use By-Law.

(E) Minimum Design Criteria, Sanitary Sewers

(a) The following are minimum flows to be used for design purposes. However, the Design Engineer shall use greater flows if required by the area under design.

(i) Commercial areas at least 35m3/ha/day (3,000 imp. gal/acre/day).

(ii) Industrial areas at least 45m3/ha/day (4,000 imp. gals/acre/day).

(iii) Infiltration allowance - 15m3/ha/day (1,200 imp. gal/acre/day).

PART 1: SEWERS AND SERVICE CONNECTIONS

(b) Industrial and commercial peak flow for design purposes shall be calculated using the following table, plus an allowance for infiltration.

Less than 2.0 ha. (5 ac) - 5.0 x average flow;
2.1 ha. (5 ac) to 10 ha. (25 ac) - 4.0 x ave. flow;
10.1 ha. (25.1 ac) to 20 ha. (50 ac) - 3.5 x ave. flow;
20.1 ha. (50.1 ac) to 60 ha (150 ac) - 3.0 x ave. flow;
60.1 ha, (150.1 ac) to 200 ha. (500 ac) - 2.5 x ave. flow;
Greater than 200 ha. (500 ac) - 2.0 x average flow.

Under certain circumstances the foregoing minimum flows may not apply, and a special study shall be conducted to determine anticipated peak flows.

(F) Design Criteria, Storm Drainage System

(a) Area 5 year rainfall curve for the Goulbourn Area.

(b) Maximum inlet time of 20 minutes.

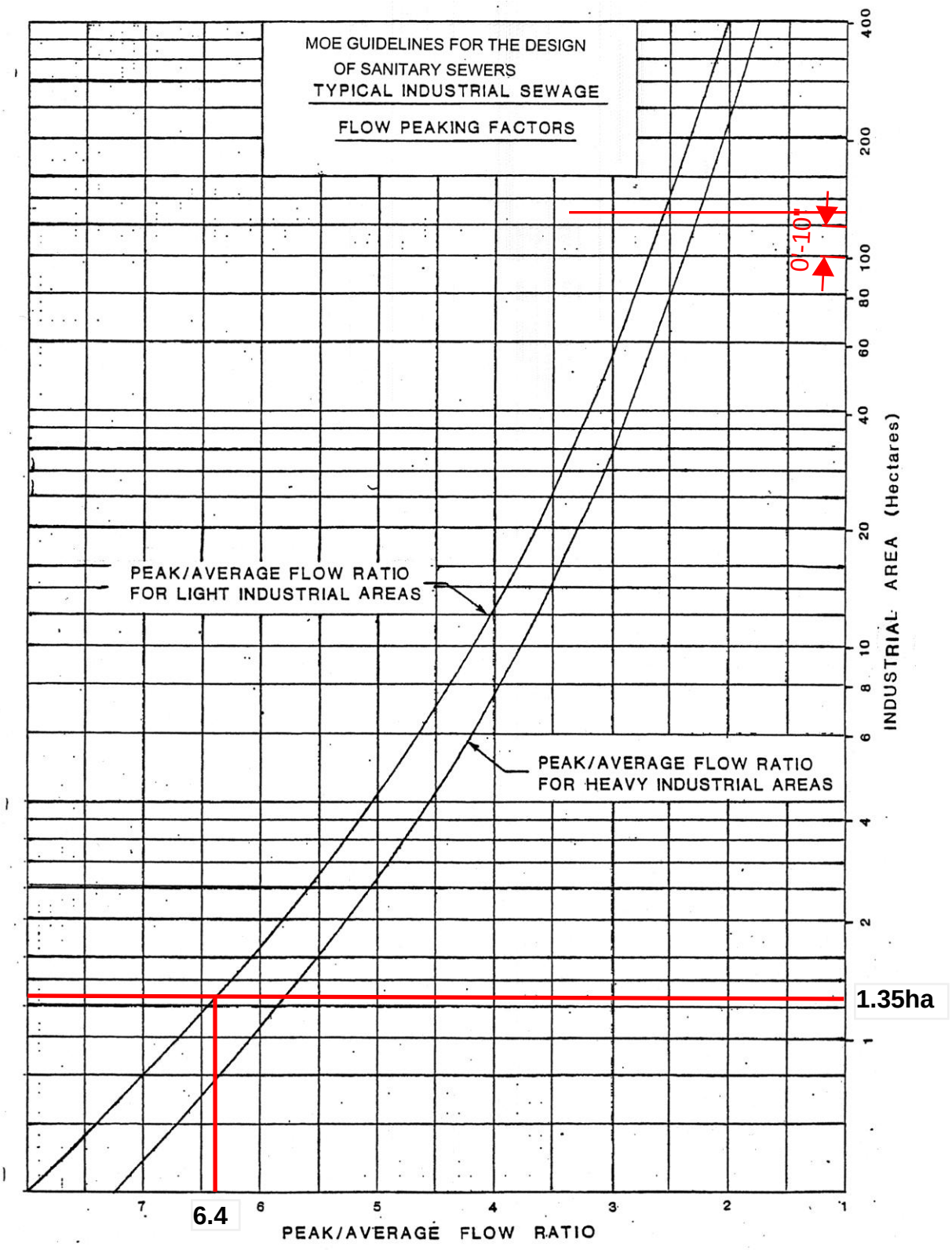
(c) Runoff co-efficients shall not be less than:
0.20 for parks, playgrounds and grassed boulevards
0.30 low density
0.35 medium-low density
0.40 for medium density
0.50 for high density
0.50 for institutional
0.70 for commercial and industrial
0.90 - 1.00 for bituminous and concrete pavement and roofs.

(G) Testing

(a) Prior to construction, samples of all pipe sizes to be used shall be subjected to strength tests as outlined in A.S.T.M. specifications C-76, as revised to date, and the performance tests specified in A.S.T.M. specification C-443. All costs of testing shall be borne by the Owner.

(b) All sanitary sewers shall be subjected to an infiltration test.

The permissable rate of infiltration of the sewers, its appurtances and connections shall not exceed 0.28 m3/mm inside diameter of pipe per kilometer


MOE GUIDELINES FOR THE DESIGN
OF SANITARY SEWERS
TYPICAL INDUSTRIAL SEWAGE
FLOW PEAKING FACTORS
PEAK/AVERAGE FLOW RATIO
FOR LIGHT INDUSTRIAL AREAS
PEAK/AVERAGE FLOW RATIO
FOR HEAVY INDUSTRIAL AREAS
INDUSTRIAL AREA (Hectares)
400
200
100
80
60
40
20
10
8
6
4
2
1
0-10%
1.35ha
7
6
5
4
3
2
1
6.4
PEAK/AVERAGE FLOW RATIO

APPENDIX D

Stormwater Management

Estimated Peak Stormwater Flow Rate
City of Ottawa Sewer Design Guidelines, 2012

1) Time of Concentration per Federal Aviation Administration

Existing Drainage Charateristics From Internal Site

Area ID	EX3	
Area	0.273	ha
C	0.63	Rational Method runoff coefficient
L	71.0	m
Up Elev	106.0	m
Dn Elev	104.6	m
Slope	2.0	%

5-Year	**Imp.**	**Perv.**	**Total**
Area	0.169	0.104	0.273
C	0.9	0.2	0.63

100-Year	**Imp.**	**Perv.**	**Total**
Area	0.169	0.104	0.273
C	1.125	0.25	0.79

$$t_c = \frac{1.8(1.1-C)L^{0.5}}{S^{0.333}}$$

tc, in minutes
C, rational method coefficient, (-)
L, length in ft
S, average watershed slope in %

Tc 10.3 min

2) Time of Concentration per SCS Method

Existing Drainage Charateristics From Internal Site

Area	0.273	ha
L	71.0	m
Up Elev	106.0	m
Dn Elev	104.6	m
Slope	2.0	%
CN (-)	91.0	

$$t_c = \frac{100L^{0.8}\left[\left(\frac{1000}{CN}\right)-9\right]^{0.7}}{1900S^{0.5}}$$

L, length in ft
CN, SCS runoff curve number
S, average watershed slope in (%)

Tc 4.8 min

3) Estimated Peak Flow (Airport Method)

	2-year	**5-year**	**100-year**	
i	75.8	102.8	176.2	mm/hr
Q	36.4	49.4	105.8	L/s

Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

Stormwater - Proposed Development
City of Ottawa Sewer Design Guidelines, 2012

Target Flow Rate - Front Yard

Area	0.273	ha
C	0.70	Rational Method runoff coefficient
t_c	20.0	min

5-year

i	70.3	mm/hr
Q	37.3	L/s

Estimated Post Development Peak Flow from Unattenuated Areas

Area ID **U1**
Total Area 0.085 ha
C 0.79 Rational Method runoff coefficient

5-YEAR	**Imp.**	**Perv.**	**Total**
Area	0.071	0.014	0.085
C	0.9	0.2	0.79

100-YEAR	**Imp.**	**Perv.**	**Total**
Area	0.071	0.014	0.085
C	1.125	0.25	0.98

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual}* (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
11.0	99.3	18.5	18.5	0.0	0.0	170.0	39.5	39.5	0.0	0.0

Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

Estimated Post Development Peak Flow from Attenuated Areas

Area ID **A1**
Available Storage

5-YEAR	**Imp.**	**Perv.**	**Total**
Area	0.095	0.093	0.188
C	0.9	0.2	0.55

100-YEAR	**Imp.**	**Perv.**	**Total**
Area	0.095	0.093	0.188
C	1.125	0.25	0.69

Stage Attenuated Areas Storage Summary

		Surface Storage			Surface and Subsurface Storage			
	Stage	**Ponding**	**h_o**	**delta d**	**V***	**V_{acc}****	**$Q_{release}$†**	**$V_{drawdown}$**
	(m)	**(m^2)**	**(m)**	**(m)**	**(m^3)**	**(m^3)**	**(L/s)**	**(hr)**
ICD INV	104.27	0	0.00			0.0	0.0	0.00
0.12 Ponding	104.69	86	0.42	0.42	13.0	13.0	7.7	0.47
0.22 Ponding	104.79	128	0.52	0.10	10.7	23.6	8.6	0.76
0.32 Ponding	104.89	153	0.62	0.10	14.0	37.6	9.4	1.11
0.42 Ponding	104.99	178	0.72	0.10	16.5	54.2	10.1	1.49
0.50 Ponding	105.07	211	0.80	0.08	15.5	69.7	10.7	1.81

* V=Incremental storage volume
**V_{acc}=Total surface and sub-surface
† $Q_{release}$ = Release rate calculated from orifice equation

$$Q = C_d \times A \times \sqrt{2 \times g \times (h_o - \frac{1}{2}D)}$$

Where *Q = Release rate (cms)*
C_d =Discharge Coefficient (0.61)
A= Area of the orifice(m^2) = 0.004 m²
g =gravitational constant (9.81m/s^2)
$h_{o\ eff}$ =Effective head above the orifice due to waterlevel at outlet
D=Diameter of the orifice (m)

$$Q = (0.61) * (0.004\ m^2) * \sqrt{(2) * \left(9.81\ {}^{m}/_{s^2}\right) * (0.80\ m - \frac{1}{2} * 0.075m)}$$

$h_{o\,eff}$ = 0.80 m
D = 75 m

$$Q = (0.61) * (0.004\ m^2) * \sqrt{14.96\ {}^{m^3}/_{s^2}}$$

$$Q = (0.61) * (0.004\ m^2) * (3.868\ {}^{m}/_{s})$$

$$Q = \left(0.01068\ {}^{m^3}/_{s}\right) = 10.7\ {}^{L}/_{s}$$

Orifice Location **CULVERT** **Dia** 75
Total Area 0.188 ha
C 0.55 Rational Method runoff coefficient *Note: Rational Method Coefficient "C" increased by 25% for 100-year calculations*

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual}‡ (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual}‡ (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10	104.2	30.2	7.9	22.3	13.4	178.6	64.7	9.6	55.1	33.0
15	83.6	24.2	7.9	16.3	14.7	142.9	51.8	9.6	42.1	37.9
20	70.3	20.4	7.9	12.5	14.9	120.0	43.5	9.6	33.8	40.6
25	60.9	17.6	7.9	9.7	14.6	103.8	37.6	9.6	28.0	42.0
30	53.9	15.6	7.9	7.7	13.9	91.9	33.3	9.6	23.7	42.6
35	48.5	14.1	7.9	6.2	12.9	82.6	29.9	9.6	20.3	42.6
40	44.2	12.8	7.9	4.9	11.8	75.1	27.2	9.6	17.6	42.2
45	40.6	11.8	7.9	3.9	10.5	69.1	25.0	9.6	15.4	41.6
50	37.7	10.9	7.9	3.0	9.0	64.0	23.2	9.6	13.5	40.6
55	35.1	10.2	7.9	2.3	7.5	59.6	21.6	9.6	12.0	39.5
60	32.9	9.5	7.9	1.6	5.9	55.9	20.2	9.6	10.6	38.3
65	31.0	9.0	7.9	1.1	4.3	52.6	19.1	9.6	9.4	36.9
70	29.4	8.5	7.9	0.6	2.6	49.8	18.0	9.6	8.4	35.3
75	27.9	8.1	7.9	0.2	0.8	47.3	17.1	9.6	7.5	33.7
80	26.6	7.7	7.7	0.0	0.0	45.0	16.3	9.6	6.7	32.0
85	25.4	7.4	7.4	0.0	0.0	43.0	15.6	9.6	5.9	30.3
90	24.3	7.0	7.0	0.0	0.0	41.1	14.9	9.6	5.3	28.5
95	23.3	6.8	6.8	0.0	0.0	39.4	14.3	9.6	4.7	26.6
100	22.4	6.5	6.5	0.0	0.0	37.9	13.7	9.6	4.1	24.6
105	21.6	6.3	6.3	0.0	0.0	36.5	13.2	9.6	3.6	22.7
110	20.8	6.0	6.0	0.0	0.0	35.2	12.8	9.6	3.1	20.7

5-year $Q_{attenuated}$ **7.90 L/s** | **100-year $Q_{attenuated}$** **9.62 L/s**
5-year Max. Storage Required **14.9 m^3** | **100-year Max. Storage Required** **42.6 m^3**
Est. 5-year Storage Elevation **104.71 m** | **Est. 100-year Storage Elevation** **104.92 m**

Summary of Release Rates and Storage Volumes

Control Area	5-Year Release Rate (L/s)	5-Year Required Storage (m^3)	100-Year Release Rate (L/s)	100-Year Required Storage (m^3)	100-Year Available Storage (m^3)
Unattenuated Areas	18.5	0.0	39.5	0.0	0.0
Attenutated Areas	7.9	14.9	9.6	42.6	69.7
Total	**26.4**	**14.9**	**49.1**	**42.6**	**69.7**

44 Iber Road (46 Iber Road)
Storm Ditch Calculation Sheet and Culvert Sizing
Swale 'A' - Front Yard

									Ditch Data												
Up	**Down**	**Area**	**C**	**Indiv AxC**	**Acc AxC**	**T_C**	**I**	**Q**	**depth**	**Side Slope**	**Bot. Width**	**Mannings**	**Slope**	**Length**	**A_{flow}**	**Wet. Per.**	**R**	**Velocity**	**Qcap**	**Time Flow**	**Q / Q full**
		(ha)	**(-)**			**(min)**	**(mm/hr)**	**(L/s)**	**(mm)**	**(X:1)**	**(m)**	**n**	**(%)**	**(m)**	**(m^2)**	**(m)**	**(m)**	**(m/s)**	**(L/s)**	**(min)**	**(-)**
		0.188	0.55	0.10	0.10	10.0	104.2	30.2	500	10	0.5	0.03	0.50	56.7	2.750	10.550	0.26	0.96	2,645.0	1.0	0.01
						11.0															

5-YEAR	**Imp.**	**Perv.**	**Total**
Area	0.095	0.093	0.188
C	0.9	0.2	0.55

100-YEAR	**Imp.**	**Perv.**	**Total**
Area	0.095	0.093	0.188
C	1.125	0.25	0.69

Culvert Sizing - 100-Year Storm Event
Full Flowing Capacity - Mannings

n	0.013	Mannings n		
S_o	1.6	%, slope of sewer		
D (mm)	**A (m^2)**	**R (m)**	**V (m/s)**	**Q (L/s)**
250	0.049	0.063	1.53	75.2

Note:
City of Ottawa SAN Sewers - Min = 0.6m/s Max = 3.0m/s
City of Ottawa STM Sewers - Min = 0.8m/s Max = 3.0m/s

Iber Road Property Limited
44 Iber Road (46 Iber Road)
Existing Site Conditions - Rear Yard

Estimated Peak Stormwater Flow Rate
City of Ottawa Sewer Design Guidelines, 2012

1) Time of Concentration per Federal Aviation Administration

Existing Drainage Charateristics From Internal Site

Area ID	EX1 & EX2	
Area	1.077	ha
C	0.65	Rational Method runoff coefficient
L	145.6	m
Up Elev	105.1	m
Dn Elev	103.6	m
Slope	1.0	%

5-Year	**Imp.**	**Perv.**	**Total**
Area	0.691	0.387	1.077
C	0.9	0.2	0.65

100-Year	**Imp.**	**Perv.**	**Total**
Area	0.691	0.387	1.077
C	1.125	0.25	0.81

$$t_c = \frac{1.8(1.1-C)L^{0.5}}{S^{0.333}}$$

tc, in minutes
C, rational method coefficient, (-)
L, length in ft
S, average watershed slope in %

Tc 17.8 min

2) Time of Concentration per SCS Method

Existing Drainage Charateristics From Internal Site

Area	1.077	ha
L	145.6	m
Up Elev	105.1	m
Dn Elev	103.6	m
Slope	1.0	%
CN (-)	98.0	

$$t_c = \frac{100L^{0.8}\left[\left(\frac{1000}{CN}\right)-9\right]^{0.7}}{1900S^{0.5}}$$

L, length in ft
CN, SCS runoff curve number
S, average watershed slope in (%)

Tc 8.4 min

3) Estimated Peak Flow (Airport Method)

	2-year	**5-year**	**100-year**	
i	55.9	75.6	129.1	mm/hr
Q	108.6	146.7	313.3	L/s

Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

Stormwater - Proposed Development
City of Ottawa Sewer Design Guidelines, 2012

Target Flow Rate

Area	1.077	ha
C	0.20	Rational Method runoff coefficient
t_c	20.0	min
	5-year	
i	70.3	mm/hr
Q	42.0	L/s

1) Time of Concentration per Federal Aviation Administration

Proposed Drainage Charateristics From Internal Site

Area	1.077	ha
C	0.68	Rational Method runoff coefficient
L	129.0	m
Up Elev	105.16	m
Dn Elev	104.01	m
Slope	0.9	%

5-Year	**Imp.**	**Perv.**	**Total**
Area	0.733	0.344	1.077
C	0.9	0.2	0.68

$$t_c = \frac{1.8(1.1-C)L^{0.5}}{S^{0.333}}$$

tc, in minutes
C, rational method coefficient, (-)
L, length in ft
S, average watershed slope in %

Tc 16.3 min

Estimated Post Development Peak Flow from Unattenuated Areas

Area ID	**U2**	
Total Area	0.126	ha
C	0.20	Rational Method runoff coefficient

5-YEAR	**Imp.**	**Perv.**	**Total**
Area	0.000	0.126	0.126
C	0.9	0.2	0.20

100-YEAR	**Imp.**	**Perv.**	**Total**
Area	0.000	0.126	0.126
C	1.125	0.25	0.25

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual}* (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
16.3	79.6	5.6	5.6	0.0	0.0	136.1	11.9	11.9	0.0	0.0

Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

Estimated Post Development Peak Flow from Attenuated Areas

Area ID	**B1**
Available Storage	

5-YEAR	**Imp.**	**Perv.**	**Total**
Area	0.733	0.218	0.952
C	0.9	0.2	0.74

100-YEAR	**Imp.**	**Perv.**	**Total**
Area	0.733	0.218	0.952
C	1.125	0.25	0.92

Stage Attenuated Areas Storage Summary

		Surface Storage			Surface and Subsurface Storage			
	Stage	**Ponding**	**h_o**	**delta d**	**V***	**V_{acc}****	**$Q_{release}$†**	**$V_{drawdown}$**
	(m)	(m^2)	(m)	(m)	(m^3)	(m^3)	(L/s)	(hr)
Orifice INV	103.70	0.0	0.00			0.0	0.0	0.00
0.15m Ponding	103.85	289.4	0.15	0.15	14.5	14.5	15.0	0.27
0.25m Ponding	103.95	843.0	0.25	0.10	54.2	68.7	19.3	0.99
0.35m Ponding	104.06	885.6	0.36	0.11	95.1	163.7	23.2	1.96
0.36m Ponding	104.07	889.5	0.37	0.01	8.9	172.6	23.5	2.04
Top of Storage Area	104.30	974.7	0.60	0.23	214.3	386.9	30.0	3.59

* V=Incremental storage volume
**V_{acc}=Total surface and sub-surface
† $Q_{release}$ = Release rate calculated from orifice equation

$$Q = C_d \times A \times \sqrt{2 \times g \times (h_o - \frac{1}{2}D)}$$

Where *Q = Release rate (cms)*
C_d =Discharge Coefficient (0.61)
A= Area of the orifice(m^2) = 1.43E-02 m²
g =gravitational constant (9.81m/s^2)
$h_{o\,eff}$ =Effective head above the orifice due to waterlevel at outlet
D=Diameter of the orifice (m)

$$Q = (0.61) * (0.014\,m^2) * \sqrt{(2) * \left(9.81\ {}^{m}/_{s^2}\right) * (0.60\,m - \frac{1}{2} * 0.135m)}$$

$h_{o\,eff}$ = 0.60 m
D = 0.135 m

$$Q = (0.61) * (143E-02\,m^2) * \sqrt{10.448\ {}^{m^3}/_{s^2}}$$

$$Q = (0.61) * (143E-02\,m^2) * (3.23\ {}^{m}/_{s})$$

$$Q = \left(0.02996\ {}^{m^3}/_{s}\right) = 30.0\ {}^{L}/_{s}$$

Orifice Location **DICB** **Dia** 135
Total Area 0.952 ha
C 0.74 Rational Method runoff coefficient *Note: Rational Method Coefficient "C" increased by 25% for 100-year calculations*

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual}‡ (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual}‡ (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10	104.2	203.7	22.8	180.9	108.5	178.6	436.3	29.9	406.4	243.8
15	83.6	163.3	22.8	140.6	126.5	142.9	349.2	29.9	319.3	287.3
20	70.3	137.3	22.8	114.6	137.5	120.0	293.1	29.9	263.2	315.8
25	60.9	119.0	22.8	96.3	144.4	103.8	253.8	29.9	223.8	335.8
30	53.9	105.4	22.8	82.7	148.8	91.9	224.5	29.9	194.6	350.2
35	48.5	94.8	22.8	72.1	151.4	82.6	201.8	29.9	171.9	360.9
40	44.2	86.4	22.8	63.6	152.7	75.1	183.6	29.9	153.7	368.9
45	40.6	79.4	22.8	56.7	153.0	69.1	168.7	29.9	138.8	374.8
50	37.7	73.6	22.8	50.8	152.5	64.0	156.3	29.9	126.4	379.1
55	35.1	68.7	22.8	45.9	151.5	59.6	145.7	29.9	115.8	382.1
60	32.9	64.4	22.8	41.6	149.9	55.9	136.6	29.9	106.7	384.0
65	31.0	60.7	22.8	37.9	147.9	52.6	128.6	29.9	98.7	385.1
70	29.4	57.4	22.8	34.7	145.5	49.8	121.7	29.9	91.8	385.4
75	27.9	54.5	22.8	31.8	142.9	47.3	115.5	29.9	85.6	385.0
80	26.6	51.9	22.8	29.2	140.0	45.0	109.9	29.9	80.0	384.1
85	25.4	49.6	22.8	26.8	136.8	43.0	105.0	29.9	75.0	382.8
90	24.3	47.5	22.8	24.7	133.5	41.1	100.5	29.9	70.5	380.9
95	23.3	45.6	22.8	22.8	129.9	39.4	96.4	29.9	66.5	378.8
100	22.4	43.8	22.8	21.0	126.2	37.9	92.6	29.9	62.7	376.2
105	21.6	42.2	22.8	19.4	122.4	36.5	89.2	29.9	59.3	373.4
110	20.8	40.7	22.8	17.9	118.4	35.2	86.0	29.9	56.1	370.3

5-year $Q_{attenuated}$ **22.77 L/s** **100-year $Q_{attenuated}$** **29.91 L/s**
5-year Max. Storage Required **153.0 m^3** **100-year Max. Storage Required** **385.4 m^3**
Est. 5-year Storage Elevation **104.05 m** **Est. 100-year Storage Elevation** **104.30 m**

Summary of Release Rates and Storage Volumes

Control Area	5-Year Release Rate (L/s)	5-Year Required Storage (m^3)	100-Year Release Rate (L/s)	100-Year Required Storage (m^3)	100-Year Available Storage (m^3)
Unattenuated Areas	5.6	0.0	11.9	0.0	0.0
Attenutated Areas	22.8	153.0	29.9	385.4	386.9
Total	**28.3**	**153.0**	**41.8**	**385.4**	**386.9**

Stormwater - Proposed Development
City of Ottawa Sewer Design Guidelines, 2012

Target Flow Rate

Site Area 1.08 ha

Estimated Post Development Peak Flow from Attenuated Areas

Area ID **B1**

Total Subsurface Storage (m^3) 386.9

Stage Attenuated Areas Storage Summary

		Surface Storage			Surface and Subsurface Storage			
	Stage	**Ponding**	**h_o**	**delta d**	**V***	**V_{acc}****	**$Q_{release}$†**	**$V_{drawdown}$**
	(m)	**(m^2)**	**(m)**	**(m)**	**(m^3)**	**(m^3)**	**(L/s)**	**(hr)**
Orifice INV	103.70	0.0	0.00	0.00		0.0	0.0	0.00
0.15m Ponding	103.85	289.4	0.15	0.15	14.5	14.5	15.0	0.27
0.25m Ponding	103.95	843.0	0.25	0.10	54.2	68.7	19.3	0.99
0.35m Ponding	104.06	885.6	0.36	0.11	95.1	163.7	23.2	1.96
0.36m Ponding	104.07	889.5	0.37	0.01	8.9	172.6	23.5	2.04
Top of Storage Area	104.30	974.7	0.60	0.23	214.3	386.9	30.0	3.59

* V=Incremental storage volume
**V_{acc}=Total surface and sub-surface
† $Q_{release}$ = Release rate calculated from orifice equation

Orifice Location **DICB** **Dia** 135
Total Area 0.952 ha
C 0.74 Rational Method runoff coefficient

	10-year				
t_c	**i**	**Q_{actual}‡**	**$Q_{release}$**	**Q_{stored}**	**V_{stored}**
(min)	**(mm/hr)**	**(L/s)**	**(L/s)**	**(L/s)**	**(m^3)**
10	122.1	238.8	23.9	214.8	128.9
15	97.9	191.3	23.9	167.4	150.6
20	82.2	160.7	23.9	136.8	164.1
25	71.2	139.2	23.9	115.3	173.0
30	63.0	123.2	23.9	99.3	178.8
35	56.7	110.8	23.9	86.9	182.5
40	51.6	100.9	23.9	77.0	184.8
45	47.5	92.8	23.9	68.8	185.9
50	44.0	85.9	23.9	62.0	186.1
55	41.0	80.2	23.9	56.2	185.6
60	38.5	75.2	23.9	51.2	184.5
65	36.2	70.8	23.9	46.9	182.9
70	34.3	67.0	23.9	43.1	180.9
75	32.5	63.6	23.9	39.7	178.5
80	31.0	60.6	23.9	36.6	175.9
85	29.6	57.8	23.9	33.9	172.9
90	28.3	55.4	23.9	31.4	169.8
95	27.2	53.1	23.9	29.2	166.4
100	26.1	51.1	23.9	27.1	162.8
105	25.2	49.2	23.9	25.3	159.1
110	24.3	47.4	23.9	23.5	155.2

10-year $Q_{attenuated}$ **23.93 L/s**
10-year Max. Storage Required **186.1 m^3**
Est.10-year Storage Elevation **104.08 m**

Preliminary Wet Pond Sizing Per MOE

Tributary Area	ha	0.95	
Estimated Imperviousness	(%)	77	
Volume Requirements	m^3/ha	133	<-- 40 m3/ha accounted for in ext. detention
Vol Req	m^3	126.4	

Table 3.2 Water Quality Storage Requirements based on Receiving Waters[1, 2]

Protection Level	SWMP Type	Storage Volume (m^3/ha) for Impervious Level			
		35%	55%	70%	85%
Enhanced 80% long-term S.S. removal	Infiltration	25	30	35	40
	Wetlands	80	105	120	140
	Hybrid Wet Pond/Wetland	110	150	175	195
	Wet Pond	140	190	225	250
Normal 70% long-term S.S. removal	Infiltration	20	20	25	30
	Wetlands	60	70	80	90
	Hybrid Wet Pond/Wetland	75	90	105	120
	Wet Pond	90	110	130	150
Basic 60% long-term S.S. removal	Infiltration	20	20	20	20
	Wetlands	60	60	60	60
	Hybrid Wet Pond/Wetland	60	70	75	80
	Wet Pond	60	75	85	95
	Dry Pond (Continuous Flow)	90	150	200	240

Source: Stormwater Management Planning and Design Manual prepared by the MOE, 2003

Condition 1: City of Ottawa IDF 5-Year Storm Event

									Ditch Data												
		Area	C	Indiv AxC	Acc AxC	T_C	I *	Q	depth	Side Slope	Bot. Width	Mannings	Slope	Length	A_{flow}	Wet. Per.	R	Velocity	Qcap	Time Flow	Q / Q full
		(ha)	(-)			(min)	(mm/hr)	(L/s)	(mm)	(X:1)	(m)	n	(%)	(m)	(m^2)	(m)	(m)	(m/s)	(L/s)	(min)	(-)
SWALE 'B'		0.385	0.88	0.34	0.34	10.0	104.2	98.1	220	3	0.25	0.03	0.37	50.7	0.200	1.641	0.12	0.50	99.8	1.7	0.98
						11.7															
SWALE 'C'		0.353	0.79	0.28	0.28	10.0	104.2	80.1	230	3	0.25	0.03	0.30	62.0	0.216	1.705	0.13	0.46	99.6	2.2	0.80
						12.2															

**** Infiltration rate for a City of Ottawa IDF 5-year storm event per Section 5.4.2 of the Ottawa Sewer Design Guidelines***

SWALE 'B'

	Imp.	Perv.	Total
Area	0.374	0.011	0.385
C	0.9	0.2	0.88

SWALE 'C'

	Imp.	Perv.	Total
Area	0.295	0.058	0.353
C	0.9	0.2	0.79

Condition 2: Chicago 4-Hour 25mm Storm

									Ditch Data												
		Area	C	Indiv AxC	Acc AxC	T_C	I *	Q	depth	Side Slope	Bot. Width	Mannings	Slope	Length	A_{flow}	Wet. Per.	R	Velocity	Qcap	Time Flow	Q / Q full
		(ha)	(-)			(min)	(mm/hr)	(L/s)	(mm)	(X:1)	(m)	n	(%)	(m)	(m^2)	(m)	(m)	(m/s)	(L/s)	(min)	(-)
SWALE 'B'		0.385	0.88	0.34	0.34	10.0	43.7	41.2	220	3	0.25	0.03	0.37	50.7	0.200	1.641	0.12	0.50	99.8	1.7	0.41
						11.7															
SWALE 'C'		0.353	0.79	0.28	0.28	10.0	39.7	30.5	230	3	0.25	0.03	0.30	62.0	0.216	1.705	0.13	0.46	99.6	2.2	0.31
						12.2															

**** Infiltration rate for a Chicago 4 hour 25mm storm event per Section 4.6.4 (Equation 4.9) of the MOE SWM Manual***

SWALE 'B'

	Imp.	Perv.	Total
Area	0.374	0.011	0.385
C	0.9	0.2	0.88

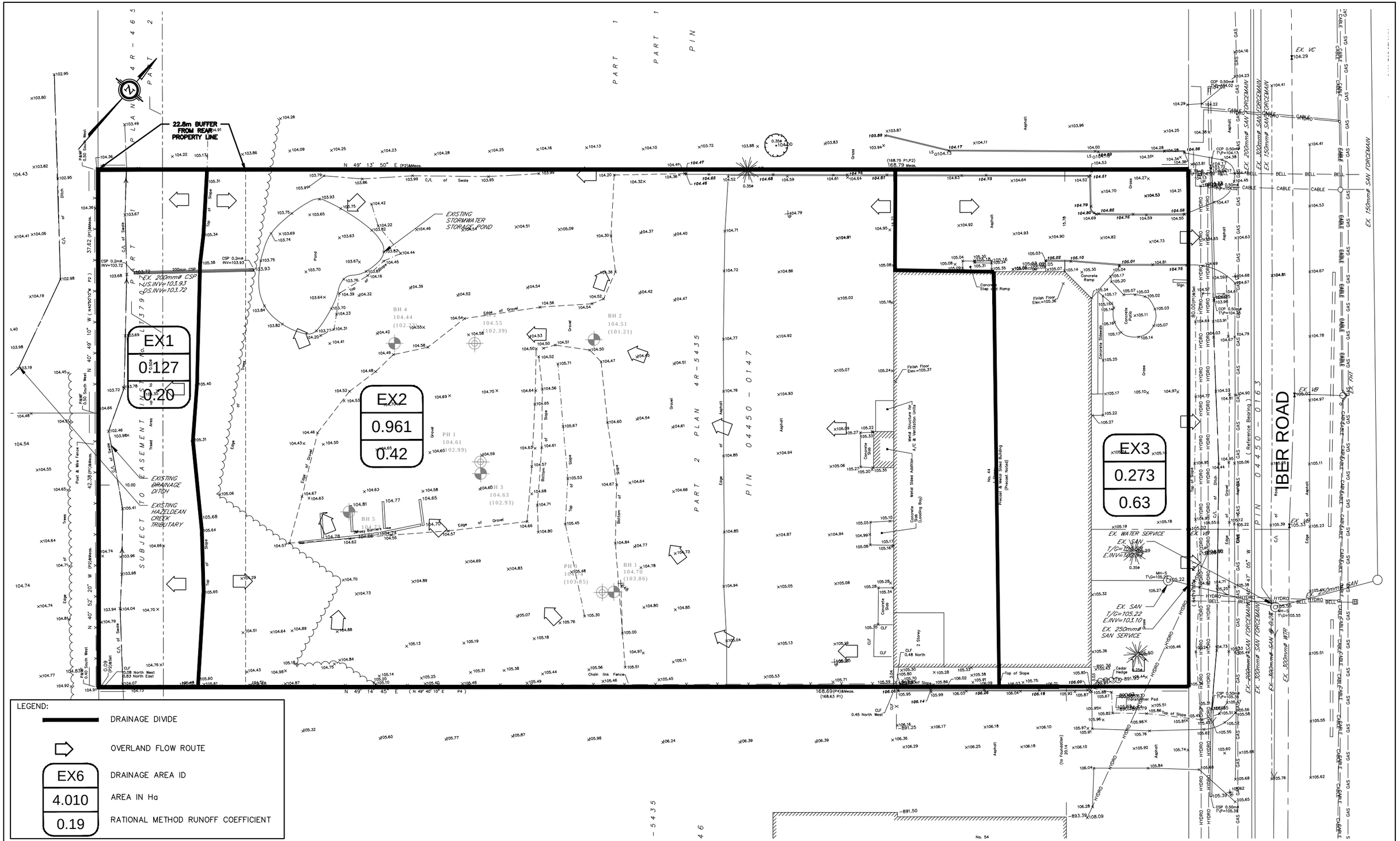
SWALE 'C'

	Imp.	Perv.	Total
Area	0.295	0.058	0.353
C	0.9	0.2	0.79

Culvert Sizing - 100-Year Storm Event
Full Flowing Capacity - Mannings

n	0.013	Mannings n		
S_o	0.2	%, slope of sewer		
D (mm)	**A (m^2)**	**R (m)**	**V (m/s)**	**Q (L/s)**
675	0.358	0.169	1.05	375.9

Note:
City of Ottawa SAN Sewers - Min = 0.6m/s Max = 3.0m/s
City of Ottawa STM Sewers - Min = 0.8m/s Max = 3.0m/s



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Stittsville, Ontario, K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

PRE-DEVELOPMENT DRAINAGE AREA PLAN

PROJ NO.:	16-900
DRAWN BY:	AJG/CMK
DATE:	2019-01-30
SCALE:	NTS
FIGURE NO.:	FIG-1

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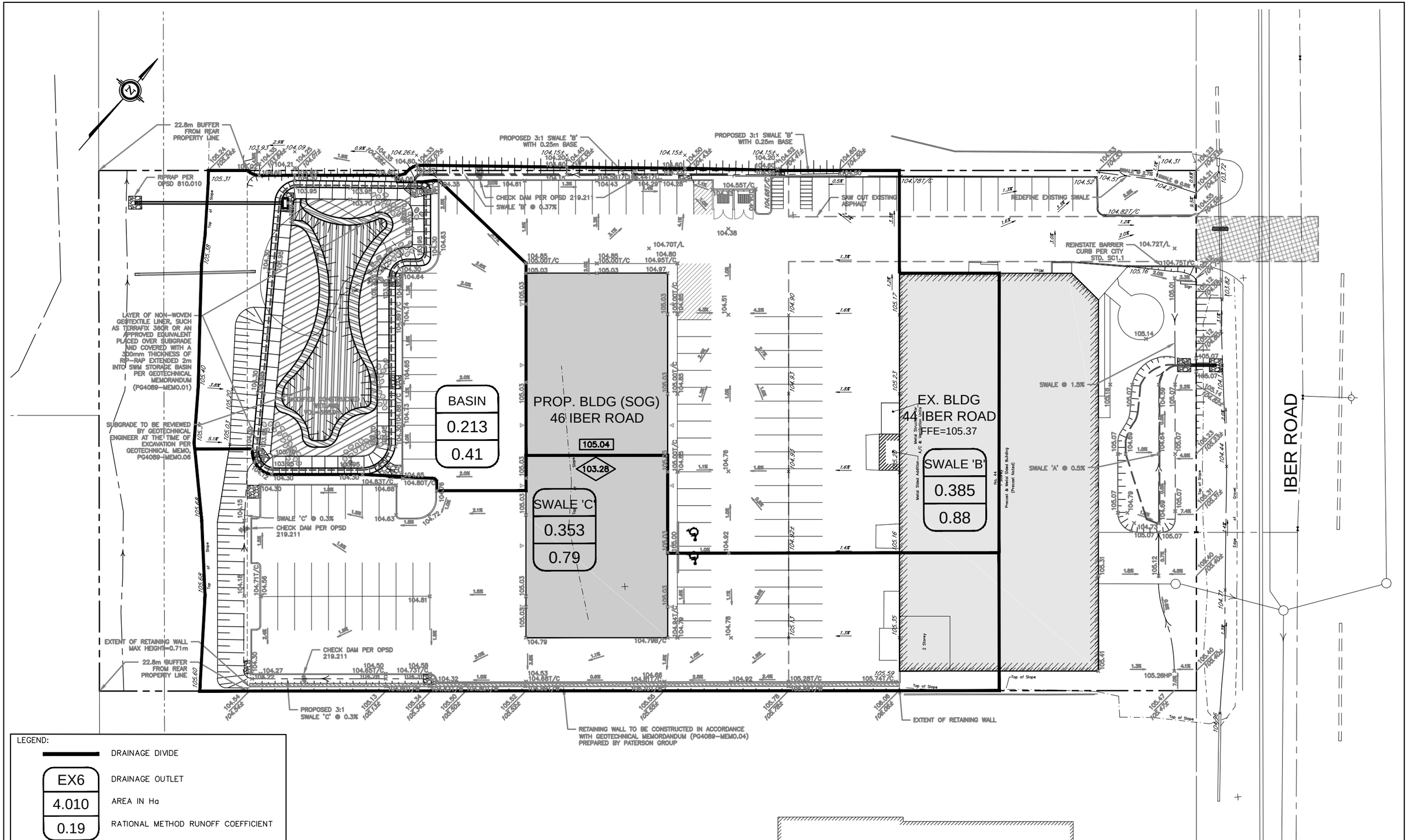

LEGEND:

- DRAINAGE DIVIDE
- EX6 / 4.010 / 0.19 — DRAINAGE OUTLET; AREA IN Ha; RATIONAL METHOD RUNOFF COEFFICIENT

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POST-DEVELOPMENT REAR YARD DRAINAGE AREA PLAN

PROJ NO.:	16-900
DRAWN BY:	AJG
DATE:	2019-01-30
SCALE:	NTS
FIGURE NO.:	FIG-2

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Low Impact Development Stormwater Management Planning and Design Guide

Toronto and Region Conservation Authority & Credit Valley Conservation Authority

ENHANCED GRASS SWALES

CVC/TRCA LOW IMPACT DEVELOPMENT
PLANNING AND DESIGN GUIDE - FACT SHEET

GENERAL DESCRIPTION

Enhanced grass swales are vegetated open channels designed to convey, treat and attenuate stormwater runoff (also referred to as enhanced vegetated swales). Check dams and vegetation in the swale slows the water to allow sedimentation, filtration through the root zone and soil matrix, evapotranspiration, and infiltration into the underlying native soil. Simple grass channels or ditches have long been used for stormwater conveyance, particularly for roadway drainage. Enhanced grass swales incorporate design features such as modified geometry and check dams that improve the contaminant removal and runoff reduction functions of simple grass channel and roadside ditch designs.

Where development density, topography and depth to water table permit, enhanced grass swales are a preferred alternative to both curb and gutter and storm drains as a stormwater conveyance system. When incorporated into a site design, they can reduce impervious cover, accent the natural landscape, and provide aesthetic benefits.

DESIGN GUIDANCE

GEOMETRY AND SITE LAYOUT

- Shape: Should be designed with a trapezoidal or parabolic cross section. Trapezoidal swales will generally evolve into parabolic swales over time, so the initial trapezoidal cross-section design should be checked for capacity and conveyance assuming it is a parabolic cross-section. Swale length between culverts should be 5 metres or greater.
- Bottom Width: Should be designed with a bottom width between 0.75 and 3.0 metres. Should allow for shallow flows and adequate water quality treatment, while preventing flows from concentrating and creating gullies.
- Longitudinal Slope: Slopes should be between 0.5% and 4%. Check dams should be incorporated on slopes greater than 3%.
- Length: When used to convey and treat road runoff, the length simply parallels the road, and therefore should be equal to, or greater than the contributing roadway length.
- Flow Depth: A maximum flow depth of 100 mm is recommended during a 4 hour, 25 mm Chicago storm event.
- Side Slopes: Should be as flat as possible to aid in providing pretreatment for lateral incoming flows and to maximize the swale filtering surface. Steeper side slopes are likely to have erosion gullying from incoming lateral flows. A maximum slope of 2.5:1 (H:V) is recommended and a 4:1 slope is preferred where space permits.

PRE-TREATMENT

A pea gravel diaphragm located along the top of each bank can be used to provide pretreatment of any runoff entering the swale laterally along its length. Vegetated filter strips or mild side slopes (3:1) also provide pretreatment for any lateral sheet flow entering the swale. Sedimentation forebays at inlets to the swale are also a pretreatment option.

CONVEYANCE AND OVERFLOW

Grass swales must be designed for a maximum velocity of 0.5 m/s or less for the 4 hour 25 mm Chicago storm event. The swale should also convey the locally required design storm (usually the 10 year storm) at non-erosive velocities.

SOIL AMENDMENTS

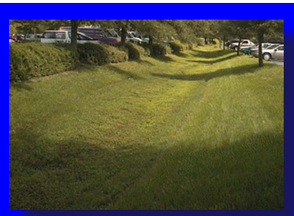
If soils along the location of the swale are highly compacted, or of such low fertility that vegetation cannot become established, they should be tilled to a depth of 300 mm and amended with compost to achieve an organic content of 8 to 15% by weight or 30 to 40% by volume.


Source: Delaware Department of Transportation

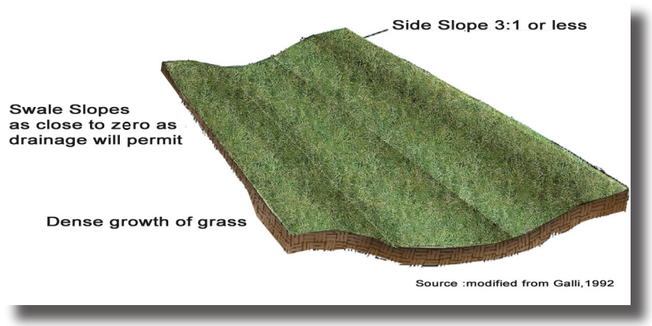
Source: Seattle Public Utilities


Source: Thomas Engineering


Source: Sue Donaldson

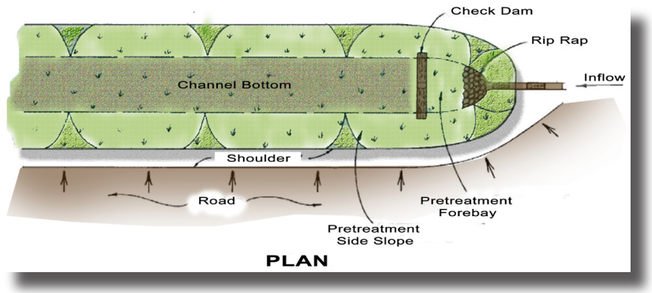


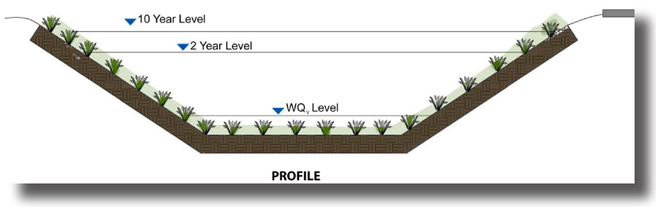

Source: CWP



Source :modified from Galli,1992

PLAN VIEW OF A GRASS SWALE





PLAN AND PROFILE VIEWS

ABILITY TO MEET SWM OBJECTIVES

BMP	Water Balance Benefit	Water Quality Improvement	Stream Channel Erosion Control Benefit
Enhanced Grass Swale	Partial - depends on soil infiltration rate	Yes, if design velocity is 0.5 m/s or less for a 4 hour, 25 mm Chicago storm	Partial - depends on soil infiltration rate

GENERAL SPECIFICATIONS

Component	Specification	Quantity
Check Dams	Constructed of a non-erosive material such as suitably sized aggregate, wood, gabions, riprap, or concrete. All check dams should be underlain with geotextile filter fabric. Wood used for check dams should consist of pressure treated logs or timbers, or water-resistant tree species such as cedar, hemlock, swamp oak or locust.	Spacing should be based on the longitudinal slope and desired ponding volume.
Gravel Diaphragm	Washed stone between 3 and 10 mm in diameter.	Minimum of 300 mm wide and 600 mm deep.

CONSTRUCTION CONSIDERATIONS

Grass swales should be clearly marked before site work begins to avoid disturbance during construction. No vehicular traffic, except that specifically used to construct the facility, should be allowed within the swale site. Any accumulation of sediment that does occur within the swale must be removed during the final stages of grading to achieve the design cross-section. Final grading and planting should not occur until the adjoining areas draining into the swale are stabilized. Flow should not be diverted into the swale until the banks are stabilized.

Preferably, the swale should be planted in the spring so that the vegetation can become established with minimal irrigation. Installation of erosion control matting or blanketing to stabilize soil during establishment of vegetation is highly recommended. If sod is used, it should be placed with staggered ends and secured by rolling the sod. This helps to prevent gullies.

OPERATION AND MAINTENANCE

Generally, routine maintenance will be the same as for any other landscaped area; weeding, pruning, and litter removal. Grassed swales should be mown at least twice yearly to maintain grass height between 75 and 150 mm. The lightest possible mowing equipment should be used to prevent soil compaction. Routine roadside ditch maintenance practices such as scraping and re-grading should be avoided. Regular watering may be required during the first two years until vegetation is established. Routine inspection is very important to ensure that dense vegetation cover is maintained and inlets and pretreatment devices are free of debris.

For the first two years following construction the swale should be inspected at least quarterly and after every major storm event (> 25 mm). Subsequently, inspections should be conducted in the spring and fall of each year and after major storm events. Inspect for vegetation density (at least 80% coverage), damage by foot or vehicular traffic, accumulation of debris, trash and sediment, and structural damage to pretreatment devices.

Trash and debris should be removed from pretreatment devices and the surface of the swale at least twice annually. Other maintenance activities include weeding, replacing dead vegetation, repairing eroded areas, dethatching and aerating as needed. Remove accumulated sediment on the swale surface when dry and exceeding 25 mm depth.

SITE CONSIDERATIONS

Available Space
Grass swales usually consume about 5 to 15% of their contributing drainage area. A width of at least 2 metres is needed.

Site Topography
Site topography constrains the application of grass swales. Longitudinal slopes between 0.5 and 6% are allowable. This prevents ponding while providing residence time and preventing erosion. On slopes steeper than 3%, check dams should be used.

Drainage Area & Runoff Volume
The conveyance capacity should match the drainage area. Sheet flow to the grass swale is preferable. If drainage areas are greater than 2 hectares, high discharge through the swale may not allow for filtering and infiltration, and may create erosive conditions. Typical ratios of impervious drainage area to treatment facility area range from 5:1 to 10:1.

Soil
Grass swales can be applied on sites with any type of soils.

Pollution Hot Spot Runoff
To protect groundwater from possible contamination, source areas where land uses or human activities have the potential to generate highly contaminated runoff (e.g., vehicle fueling, servicing and demolition areas, outdoor storage and handling areas for hazardous materials and some heavy industry sites) should not be treated by grass swales.

Proximity to Underground Utilities
Utilities running parallel to the grass swale should be offset from the centerline of the swale. Underground utilities below the bottom of the swale are not a problem.

Water Table
The bottom of the swale should be separated from the seasonally high water table or top of bedrock elevation by at least one (1) metre.

Setback from Buildings
Should be located a minimum of four (4) metres from building foundations to prevent water damage.

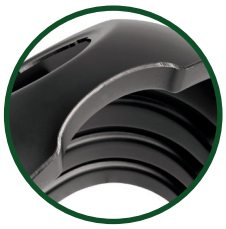
Toronto and Region Conservation for The Living City
CVC Credit Valley Conservation

FOR FURTHER DETAILS SEE SECTION 4.8 OF THE CVC/TRCA LID SWM GUIDE

STORMTANK® THE PREMIER MULTI-SOLUTION PROVIDER

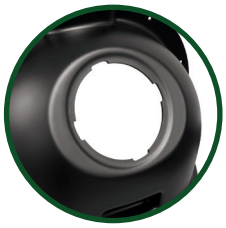
The Shield

Brentwood's StormTank Shield provides a low-cost solution for stormwater pretreatment by reducing pollutant discharge through gross sediment removal and oil/water separation. Once the Shield is installed, any contaminants with a density less than water are prevented from exiting the inlet. This improves treatment efficiency by increasing the flow length and time of concentration vital to particle settling.



Anti-Siphon Vent

Vortexes and siphoning are prevented by the built-in vent, which requires no additional parts or connections.

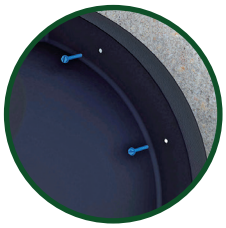


Access Port

The access port and slim profile simplify the cleaning process and ensure that nothing obstructs the discharge.

Hand Grip

The built-in hand grip makes the Shield easy to handle during the installation process.



Easy Installation

Pre-drilled mounting holes allow the Shield to be easily fastened over the outlet pipe. Conveniently available in 18-, 24-, and 30-inch sizes.

MADE IN THE USA

Additional StormTank Products:

The Module

The Brentwood StormTank Module is a subsurface stormwater storage unit load-rated for use under surfaces such as parking lots, athletic fields, and parks.

The Pack

The StormTank Pack is the light-duty solution for subsurface stormwater management.

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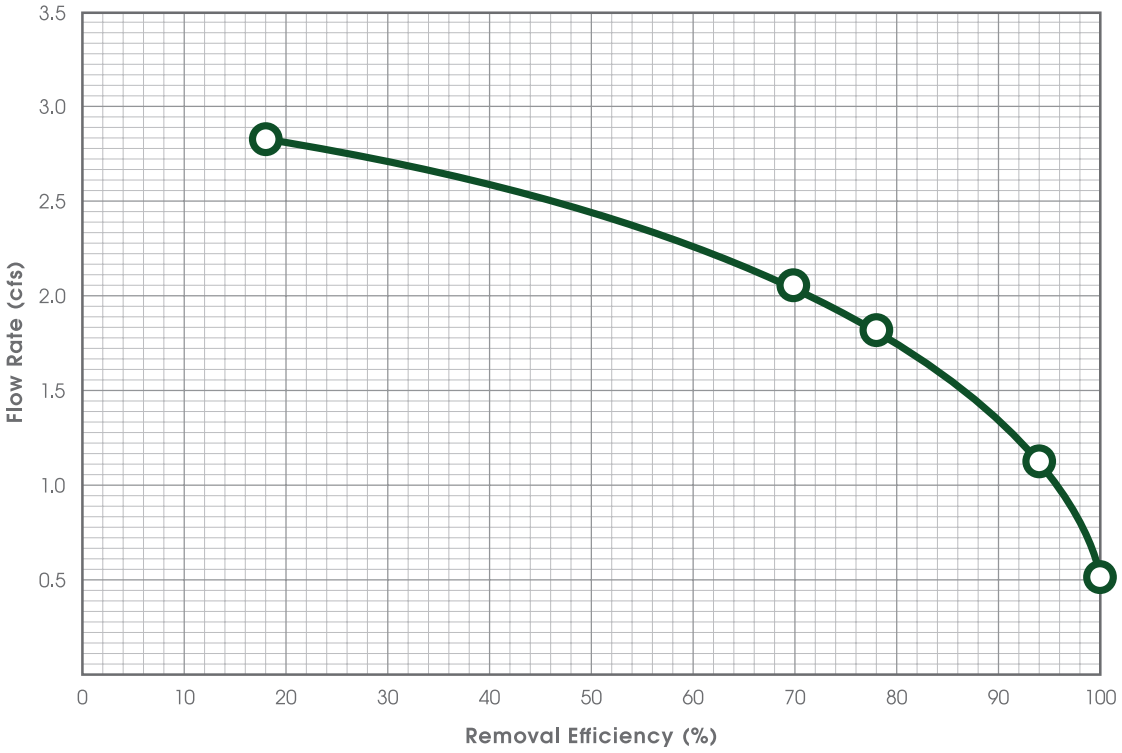
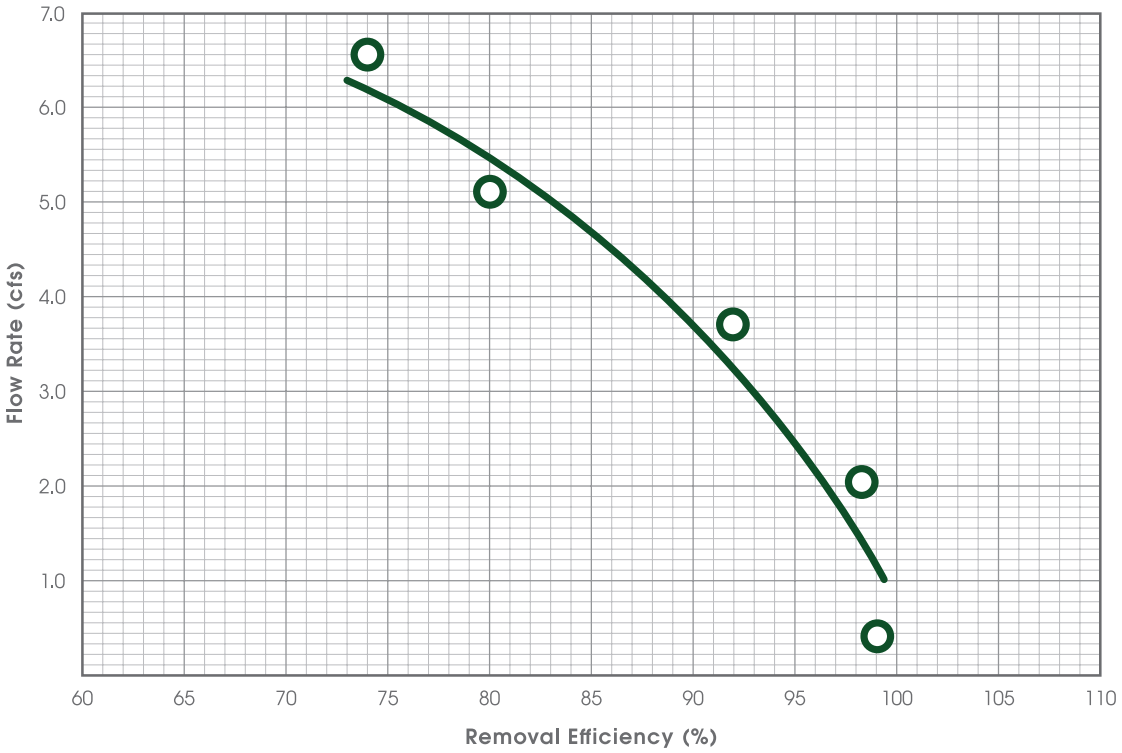
stormtank@brentw.com
+1.610.374.5109

REMOVAL EFFICIENCY CURVES

STKS-18, 4'x2' Tank, 1/16" Particles @ 200 mg/L



STKS-24, 4'x4' Tank, 1/16" Particles @ 200 mg/L



BRENTWOOD®

APPENDIX E

Supporting Documentation

Conservation Partners
Partenaires de conservation

Mississippi Valley Conservation Authority / Office de protection de la nature de la vallée Mississippi

Office de protection de la nature de la vallée Rideau / Rideau Valley Conservation Authority

South Nation Conservation / Conservation de la Nation Sud

File: PGLSP-75

May 22, 2018

Stream Shen
City of Ottawa
Development Review West
110 Laurier Avenue West, 4th floor
Ottawa, ON K1P 1J1

Dear Mr. Shen;

Re: Application for Site Plan Approval (D07-12-17-0146)
44 Iber Road, Ottawa (Stittsville)

The staff of Mississippi Valley Conservation Authority (MVCA) has reviewed the above noted site plan application for concerns relating to natural heritage, natural hazards and water quality and quantity for the subject property and surrounding lands. The scope of the natural heritage review includes wetlands, watercourses and significant valleylands, while the focus of the natural hazards review includes flood plain, unstable slopes and unstable soils.

MVCA engineering staff reviewed the following report: "Site Servicing Study & Stormwater Management Report for Huntington Properties, 44 Iber Road" prepared by David Schaeffer Engineering Ltd. Dated March 2018 (Rev.3). We are satisfied with the stormwater approach presented.

The recent submission has addressed the comments raised in our December 13, 2017 correspondence. However, we note that the site plan was not updated to include a note to retain existing vegetation along the rear of the property. It is understood that a portion of this area is protected by a drainage easement and requires vegetation removal to ensure adequate drainage. We do not object to the approval of site plan application D07-12-17-0146.

Thank you for the opportunity to review and comment on this application. Please contact the undersigned with any questions or concerns.

Regards,

Niall Oddie, MCIP, RPP
Environmental Planner

Enclosure: MVCA Technical Review Comments

Mississippi Valley Conservation Authority

File: 17-ST-SP

May 7, 2018

To: Niall Oddie, Environmental Planner

Re: Site Plan Application
44 Iber Road, Ottawa
City File No: D07-12-17-0146

Mississippi Valley Conservation Authority (MVCA) engineering staff have been circulated a revised site plan application for 44 Iber Road. The site is of 1.35ha area and the proposed development is to build a single story industrial building of 1222m^2 behind the existing building with associated asphalt parking lots. There is no change in the floor area of the existing building. Included in the circulation was the following:

- Site Servicing Study & Stormwater Management Report for Huntington Properties, 44 Iber Road (David Schaeffer Engineering Ltd, March 2018, Rev-3).

MVCA staff has reviewed the revised report with a focus on storm water quantity and quality management and in in response to MVCA technical review comments dated Dec 8, 2017.

The City of Ottawa, reviewed and provided the stormwater management requirements for the proposed development. The target release rates for the sites are based on the Rational Method equation employing the City of Ottawa IDF parameters, with 20 minutes of time of concentration and C values of 0.7 for the front yard and 0.2 for the rear yard, with appropriate increases for the 1:100 year storm calculations. For exceedance of the allowed release rates, the peak flows from the proposed site have to be attenuated on site for all the storms up to and including 1:100-year peak event.

Therefore, the allowable release rates were calculated as 37.3 L/s and 42.0 L/s for the front and the rear yards, respectively. The front yard has a peak flow of 39.5 L/s from the uncontrolled area for 1:100 year event, which is above the allowable release rate for the total front yard area. It has 0.19 ha of flow-attenuated area, where the 1:100 year flow is restricted to 9.6 L/s. Surface storage is provided in this area; a total storage of 69.7 m^3 provided at a maximum ponding depth of 0.5m. Based on the current site conditions in the front yard, the allowable release rate will not be meet, however the proposed front yard stormwater management

control for the attenuated area should improve the current conditions by reducing the peak flow by approximately 46% from the pre-development to the post development conditions for the 1: 100 year event.

Currently, the stormwater runoff from the rear property flows into a depressed storage area and is attenuated before discharging to the swale along the rear lot line. This swale is a tributary to Hazeldean Creek, which outlets to the Carp River approximately 1.9 m downstream. The proposed building and parking lots are at the rear portion of the property. The peak flow from the uncontrolled rear yard is 11.7 L/s. Therefore, the runoff from the remaining area of the rear yard must be controlled to a peak flow of 30.3 L/s to restrict the total allowable release rate to 42.0 L/s. A surface stormwater storage facility is proposed to attenuate flows up to 1:100-year, which provides 386.9 m^3 of detention storage.

The site is proposed with vegetated depressed storage areas and landscaped areas before discharge to swales, which should ensure the requested level of water quality control. MVCA's comment regarding the water quality of runoff from the rooftop drain directing to the existing ditch is addressed in the revised report.

Thank you for the opportunity to provide comments. Should any questions arise, please do not hesitate to contact the undersigned.

Regards,

Sobhalatha Kunjikutty, Ph.D., P. Eng.
Water Resources Engineer
613-253-0006 ext#252.

patersongroup **memorandum**

consulting engineers

re: **Geotechnical Responses to City Comments**
Proposed Commercial Development
46 Iber Road - Ottawa

to: Fotenn Consulting - **Mr. Matt McElligott** - mcelligott@fotenn.com

date: January 30, 2018

file: PG4089-MEMO.01

The present memorandum has been prepared to address the geotechnical items noted in the City of Ottawa comments prepared for the aforementioned site. The relevant comments were part of a series of comments contained in the letter entitled "Site Plan Control Comments" dated December 22, 2017 issued by Stream Shen with the City of Ottawa. Our responses are summarized below:

Geotechnical Investigation - Comment 1

Paterson Group (Paterson) has reviewed the final grading plan for the proposed development. Please find attached a memo sealed by a Professional Engineer in the Province of Ontario confirming that the final site grading is in conformance with the recommendations provided in the Geotechnical Investigation Report PG4089-1 dated April 27, 2017.

Geotechnical Investigation - Comment 2

Groundwater control considerations are provided in Subsection 6.5 of the Geotechnical Investigation Report PG4089-1 dated April 27, 2017, including a discussion that a permit to take water (PTTW) or an environmental activity and sector registry (EASR) may be required for the proposed project.

Based on our current information, an EASR is considered to be required for construction of the proposed development.

Geotechnical Investigation - Comment 3

Paterson has reviewed the Site Servicing Plan, drawing no. SSP-1, and the Grading Plan, drawing no. GP-1, revised July 18, 2017 for the rip-rap areas shown. It is recommended that where the swales drain into the SWM storage pond, that a layer of non-woven geotextile liner, such as Terrafix 360R or equivalent, be placed over the subgrade and subsequently covered with a 300 mm thickness of rip-rap which extends 2 m into the SWM storage pond. The rip-rap should consist of Ontario Provincial Standard Specification (OPSS) R-10 rip-rap.

For the outlet of the SWM storage pond, rip-rap per the Ontario Provincial Standard Drawing (OPSD) 810.010 is shown on drawing GP-1. It is recommended that the OPSD 810.010 “Type B - with Geotextile” detail be utilized. This detail has been reviewed and is considered sufficient from a geotechnical perspective.

Geotechnical Investigation - Comment 4

Although perched water was encountered in the piezometers at depths of up to 0.35 m, these groundwater levels could be due to rain water or spring melt water trapped within the backfilled boreholes.

Long-term groundwater levels can also be estimated based on the observed colouring, moisture levels and consistency of the recovered soil samples. Based on these observations, it is estimated that the long-term groundwater table can be expected between 2.5 to 3 m depth, corresponding to elevations of approximately 102 to 101.5 m, which are below the invert elevation of 103.70 m for the SWM storage outlet shown on drawing SSP-1 revised July 18, 2017.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Scott S. Dennis, P.E.

David J. Gilbert, P.Eng.

patersongroup **memorandum**

consulting engineers

re: **Grading Plan Review**
Proposed Commercial Development
46 Iber Road - Ottawa

to: Fotenn Consulting - **Mr. Matt McElligott** - mcelligott@fotenn.com

date: January 30, 2018

file: PG4089-MEMO.02

Further to your request and authorization, Paterson Group (Paterson) prepared the current memorandum to summarize our review of the grading plan for the proposed commercial development at 46 Iber Road in the City of Ottawa, Ontario.

This memorandum should be read in conjunction with Paterson Report PG4089-1 dated April 27, 2017, which provides a recommended permissible grade raise restriction of 2 m.

Grading Plan Review

Paterson reviewed the following grading plan prepared by David Schaeffer Engineering Ltd. (DSEL) regarding the aforementioned development:

❑ Grading Plan - Drawing No. GP-1 - Project 16-900 - Revision 2 dated July 18, 2017

Based on our review, the grading plan is acceptable from a geotechnical perspective, and there were no instances where the permissible grade raise was exceeded. Therefore, no lightweight fill is required at the subject site.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Scott S. Dennis, P.E.

David J. Gilbert, P.Eng.

Paterson Group Inc.

Head Office and Laboratory
154 Colonnade Road South
Ottawa - Ontario - K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

Northern Office and Laboratory
63 Gibson Street
North Bay - Ontario - P1B 8Z4
Tel: (705) 472-5331 Fax: (705) 472-2334

St. Lawrence Office
993 Princess Street - Suite 100
Kingston - Ontario - K7L 1H3
Tel: (613) 542-7381

patersongroup memorandum

consulting engineers

re: **Geotechnical Responses to City Comments**
Proposed Commercial Development
46 Iber Road - Ottawa

to: Fotenn Consulting - **Mr. Matt McElligott** - mcelligott@fotenn.com
cc: DSEL - Alison Gosling - agosling@dsel.ca
date: June 1, 2018
file: PG4089-MEMO.03

The present memorandum has been prepared to address the geotechnical items noted in the City of Ottawa comments prepared for the aforementioned site. The relevant comments were part of a series of comments contained in the letter entitled "Site Plan Control Comments" dated December 22, 2017 issued by Stream Shen with the City of Ottawa. Our responses are summarized below:

Paterson has reviewed the following drawings provided by DSEL as part of the present memorandum response:

- ❏ Grading Plan - Project No. 16-900 - Drawing No. GP-1 - Sheet 2 of 4 - Revision 3 dated March 5, 2018.
- ❏ Site Servicing Plan - Project No. 16-900 - Drawing No. SSP-1 - Sheet 3 of 4 - Revision 3 dated March 5, 2018.

Site Service Plan - Comment 12

Comment: *Thermal insulation is required for the proposed private sanitary sewers as the required depth of cover isn't achieved as per Ottawa Sewer Design Guidelines (SDG) SD002, October 2012, City of Ottawa, Clause 6.1.11. Please illustrate the limits on the drawing and note the required insulation thickness. The note on the drawing indicates the sewer is to be insulated as per the Geotechnical recommendations, however no geotechnical recommendations are provided. Also, please provide correspondence from the Owner acknowledging the lack of cover being proposed*.

Response: Based on the above noted Site Servicing Plan, the invert level of the proposed sanitary sewer pipe is approximately 1.3 m below finished grade along the sanitary sewer alignment. To prevent frost from penetrating the subgrade soils, it is recommended to place a 50 mm thick layer of SM rigid insulation directly above the top of the sewer pipe within the cover material backfill. The rigid insulation should extend a minimum horizontal distance of 1200 mm beyond the outside face of the sewer pipe in either direction.

Site Servicing Plan - Comment 14

Comment: *As per section 6.1 of the Geotechnical Report a perimeter foundation drainage system is recommended for the proposed structure. Please identify the foundation drain around the perimeter of the building and identify the outlet on the drawing. As no storm sewer outlet is available a foundation drain sump pump is anticipated to be required and details are to be clearly identified on the drawing and in the report. Please consult with the geotechnical engineer regarding a foundation drain. Please review Schedule "F" Part 1 (h) regarding sump pump requirements.*

Response: A perimeter drainage pipe is considered optional for the proposed building. It is expected that a perimeter drainage pipe would provide an outlet for surface water perched below the perimeter sidewalks. However, the presence of a perimeter drainage pipe is not critical for the subject building. Therefore, if no positive outlet is provided, the perimeter drainage pipe is not required.

Site Servicing Plan - Comment 15

Comment: *Please identify the foundation as Slab on Grade (SOG) and identify the shallow footing USF elevation on the drawing as a shallow footing is identified by the Geotechnical Engineer.*

Response: As requested by DSEL, Paterson has been requested to provide recommendations regarding the design underside of footing. Based on the above noted grading plan, the lowest finish grade elevation around the perimeter of the building is 104.78 m. Therefore, to achieve the minimum frost cover requirements of 1.5 m below finish grade, the underside of footing should be a maximum elevation of 103.28 m.

However, based on the results of the field investigation, practical refusal to augering on inferred bedrock was encountered slightly above this elevation within the southeast portion of the building footprint. The following options are recommended regarding the design underside of footing:

- ❏ Option A: Raise the underside of footing to the bedrock surface where bedrock is encountered by stepping the footing.
- ❏ Option B: Raise the underside of footing throughout the entire building footprint and provide rigid insulation below the underside of footing where bedrock is not present. Further recommendations could be provided if this option is selected.
- ❏ Option C: Leave the underside of footing at 1.5 m below finish grade and remove bedrock where bedrock is above the design underside of footing. It is expected that minimal bedrock removal would be required and could be done by hoe-ramming.

Grading Plan - Comment 18

Comment: *It is recommended that a layer of underground storage media with perforated pipe be installed within the SWM area to limit the area from becoming saturated for extended periods due to the presence of the underlying clay soil material and anticipated low percolation rate.*

Response: Saturation of the underlying clay within the SWMP is not detrimental to the soils along the SWMP sidewalls and base. Therefore, an underground storage media is not required from a geotechnical perspective.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Colin Belcourt, M.Eng.

David J. Gilbert, P.Eng.

patersongroup **memorandum**

consulting engineers

re: **Geotechnical Responses to City Comments**
Proposed Commercial Development
44 Iber Road - Ottawa

to: Huntington Properties - **Ms. Lisa Westphal** - lwestphal@huntingtonproperties.ca

to: Fotenn Consulting - **Mr. Matt McElligott** - mcelligott@fotenn.com

cc: DSEL - **Mr. Robert Freel** - rfreel@dsel.ca

date: June 21, 2018

file: PG4089-MEMO.04

The present memorandum has been prepared to address the geotechnical items noted in the City of Ottawa comments prepared for the aforementioned site. The relevant comments were part of a series of comments contained in the letter entitled "Site Plan Control Second Round of Comments" dated March 28, 2018 issued by Stream Shen with the City of Ottawa. Our responses are summarized below:

Paterson has reviewed the following drawings provided by DSEL as part of the present memorandum response:

- Grading Plan - Project No. 16-900 - Drawing No. GP-1 - Sheet 2 of 4 - Revision 3 dated March 5, 2018.

Grading Plan - Comment 1

Comment: *A retaining wall is proposed along the south property line. The top of wall elevations are shown to match existing elevations however the wall is proposed to hold back adjacent private property.*

This condition can only be approved after receiving written consent from the adjacent property owner or existing property line elevations shall be matched. This written consent must reference the final grading plan revision/date, but in order to move forward in the review of the site plan under the assumption of that approval, interim approval (in writing) is also required. Otherwise please match existing grades at the property line.

It has been identified that this has been noted and Huntington is in the process of contacting the adjacent property owner. This is required prior to Site Plan Approval.

Response: The proposed retaining wall structure and temporary excavation will be completed within the subject site. Therefore, no permission from the neighbouring property owner is required.

Based on the above noted grading plan, there are two applicable sections with different setback distances between the proposed concrete curb and the property line. Refer to the attached marked-up grading plan for these cross section locations.

Section D-D

At cross section D-D, there is approximately 1.2 m between the back of the curb and the property line. Currently, the face of the retaining wall is shown at approximately 0.6 m from the back of the curb and the back of the retaining wall is located directly at the property line.

- ❑ To provide an adequate setback distance from the property line, it is recommended that the retaining wall be moved such that the face of the wall is located directly at the back of the concrete curb.
- ❑ The excavation behind the proposed retaining wall will have a maximum height of 1 m and can be excavated at a near vertical side slope. This should be completed such that the excavation remains within the property line of the subject site. The excavation to place the bedding for the segmental block wall and the concrete curb should be completed at the same time for ease of construction.
- ❑ The retaining wall should consist of segmental blocks, which will require an embedment of 150 mm below the back of the curb. This can be achieved by extending the bedding area for the concrete curb towards the property line. Once the curb is placed, additional granular material can be placed behind the curb to bring the bedding elevation for the base block up to 150 mm below the top of curb.
- ❑ The remaining space between the excavation side slope and the back of the wall should be backfilled with free draining granular material, such as clear stone.

Section E-E

- ❑ Towards the west end of the retaining wall, the concrete curb alignment moves away from the face of the retaining wall creating additional space between the face of the wall and the curb. According to the drawings, a swale is to be placed within the area between the wall and the curb.
- ❑ The segmental block wall alignment should be continued straight from Section D-D where the wall is placed directly behind the curb. This will leave approximately 1.2 m between the face of the wall and the back of the curb for Section E-E.
- ❑ The swale can be placed within the available 1.2 m at a reduced width.

- ❑ The remaining components of the segmental block wall construction remain the same as described for Section D-D.

Refer to the attached sketches of Section D-D and Section E-E for additional information.

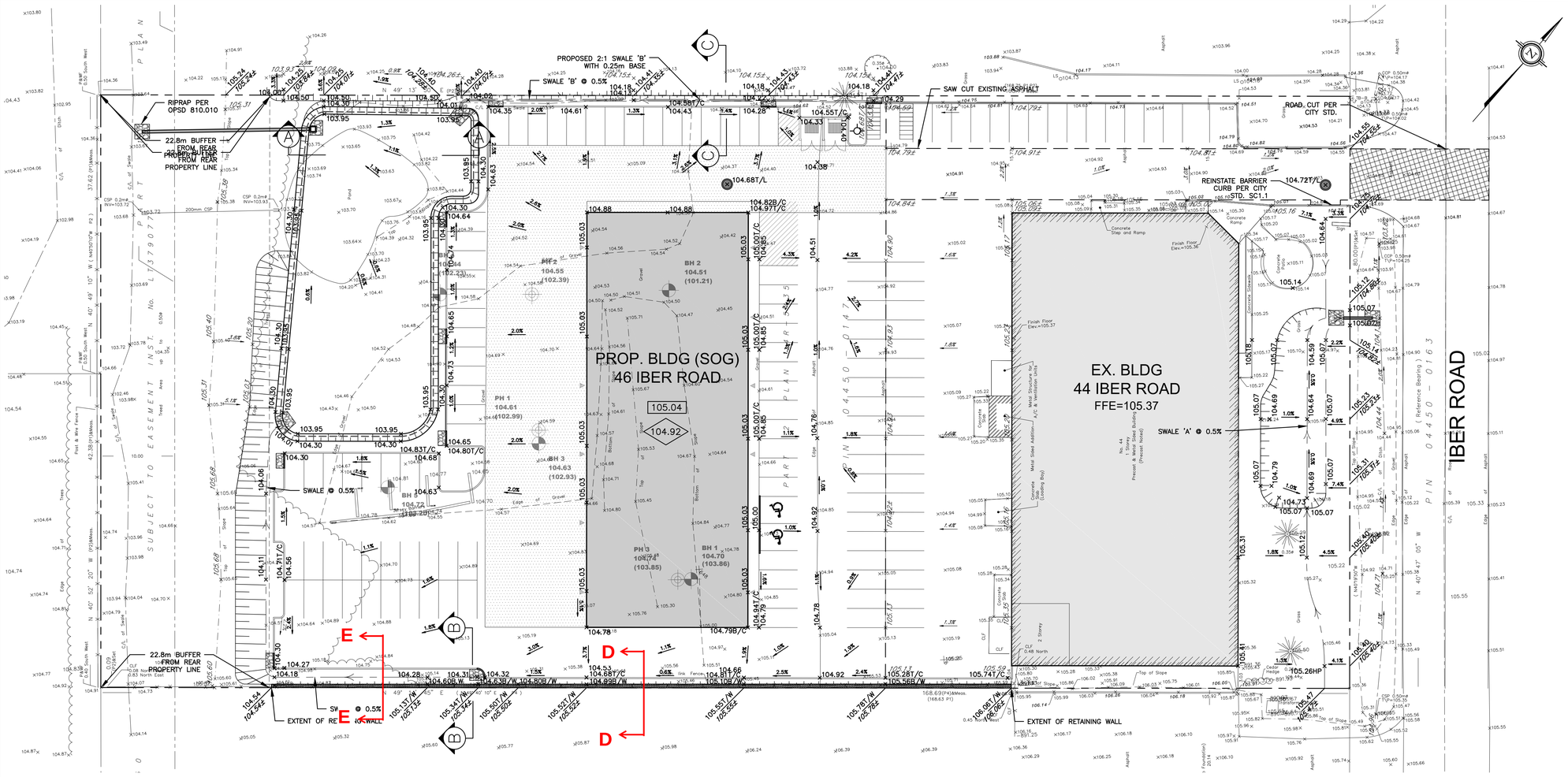
We trust that this information satisfies your immediate requirements.

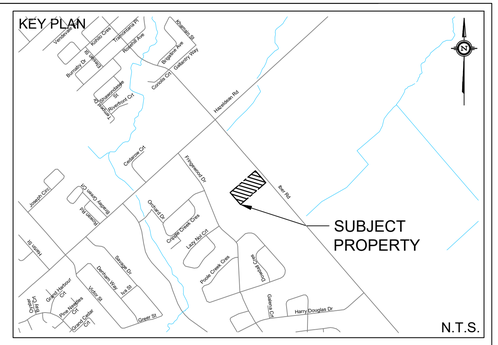
Best Regards,

Paterson Group Inc.

Colin Belcourt, M.Eng.

David J. Gilbert, P.Eng.





LEGEND

- PROPERTY LINE
- PROPOSED SWALE
- 100.00 EXISTING SPOT ELEVATION
- 100.00 PROPOSED SPOT ELEVATION
- 100.00T/C PROPOSED TOP OF CURB ELEVATION
- 100.00B/W PROPOSED BOTTOM OF WALL ELEVATION
- 100.00T/W PROPOSED TOP OF WALL ELEVATION
- 100.00T/L PROPOSED TOP OF LID ELEVATION
- 1.0% EXISTING GRADE AND DIRECTION
- 1.0% PROPOSED GRADE AND DIRECTION
- 3:1 SLOPE PROPOSED 3:1 TERRACING
- 100.00 / 102.00 PROPOSED/EXISTING SPOT ELEVATION
- PROPOSED SANITARY MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED FIRE HYDRANT
- MAJOR SYSTEM FLOW ROUTE
- HEAVY DUTY ASPHALT
- RIP-RAP SPLASH PAD
- TRENCH REINSTATEMENT PER CITY STD. R10
- 100.00 FINISHED FLOOR ELEVATION
- 74.33 SLAB ELEVATION

NOT FOR CONSTRUCTION

TOPOGRAPHIC INFORMATION
TOPOGRAPHIC INFORMATION PROVIDED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
PROJ. NO. 19230-16
DATED OCTOBER 7, 2016

SITE PLAN INFORMATION
SITE PLAN PROVIDED BY SJ LAWRENCE ARCHITECT INC.
PROJ. NO. SL-828-16
RECEIVED FEBRUARY 23, 2018

GEOTECHNICAL STUDY
GEOTECHNICAL RECOMMENDATIONS PROVIDED BY PATERSON GROUP
PROJ. NO. PG4089-1
DATED APRIL 27, 2017

SITE SERVICING AND STORMWATER MANAGEMENT STUDY
SERVICING AND STORMWATER MANAGEMENT RECOMMENDATIONS PROVIDED BY DSEL
PROJ. NO. 16-900
DATED MARCH 2018

BENCH MARK
TOP OF SPINDLE LOCATED AT THE HYDRANT SOUTH EAST OF THE SUBJECT SITE
ELEV=106.59

GENERAL NOTES

1. ALL WORKS AND MATERIALS SHALL CONFORM TO THE LATEST REVISION OF THE STANDARDS AND SPECIFICATIONS FOR THE CITY OF OTTAWA, ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS), WHERE APPLICABLE. LOCAL UTILITY STANDARDS AND MINISTRY OF TRANSPORTATION STANDARDS WILL APPLY WHERE REQUIRED.
2. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL EXISTING UTILITIES WITHIN THE SITE AND ADJACENT WORK AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ANY SERVICES OR UTILITIES DISTURBED DURING CONSTRUCTION, TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION.
3. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER. LOST TIME DUE TO FAILURE OF THE CONTRACTOR TO CONFIRM UTILITY LOCATIONS AND NOTIFY ENGINEER OF POSSIBLE CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT THE CONTRACTORS EXPENSE.
4. ANY AREAS BEYOND THE LIMIT OF THE SITE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION AT THE CONTRACTOR'S EXPENSE.
5. RELOCATION OF EXISTING SERVICES AND/OR UTILITIES SHALL BE AS SHOWN ON THE DRAWINGS OR DIRECTED BY THE ENGINEER AT THE EXPENSE OF THE DEVELOPER.
6. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE 'OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.' THE GENERAL CONTRACTOR SHALL BE DEEMED TO BE THE 'CONSTRUCTOR' AS DEFINED IN THE ACT.
7. ALL CONSTRUCTION SIGNAGE MUST CONFORM TO THE MINISTRY OF TRANSPORTATION OF ONTARIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PER LATEST AMENDMENT.
8. THE CONTRACTOR IS ADVISED THAT WORKS BY OTHERS MAY BE ONGOING DURING THE PERIOD OF THIS CONTRACT. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES TO PREVENT CONFLICTS.
9. ALL DIMENSIONS ARE IN METRES UNLESS SPECIFIED OTHERWISE.
10. THERE WILL BE NO SUBSTITUTION OF MATERIALS UNLESS PRIOR WRITTEN APPROVAL IS RECEIVED FROM THE ENGINEER.
11. ALL CONSTRUCTION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RECOMMENDATIONS MADE IN THE GEOTECHNICAL REPORT.
12. FOR DETAILS RELATING TO STORMWATER MANAGEMENT AND ROOF DRAINAGE REFER TO THE SITE SERVICING AND STORMWATER MANAGEMENT REPORT.
13. ALL SEWERS CONSTRUCTED WITH GRADES LESS THAN 1.0% SHALL BE INSTALLED USING LASER ALIGNMENT AND CHECKED WITH LEVEL INSTRUMENT PRIOR TO BACKFILLING.
14. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED AND TO BEAR THE COST OF THE SAME.
15. THE CONTRACTOR WILL BE RESPONSIBLE FOR ADDITIONAL BEDDING, OR ADDITIONAL STRENGTH PIPE IF THE MAXIMUM TRENCH WIDTH AS SPECIFIED BY OPSD IS EXCEEDED.
16. ALL PIPE / CULVERT SECTION SIZES REFER TO INSIDE DIMENSIONS.
17. SHOULD DEEPLY BURIED ARCHAEOLOGICAL REMAINS BE FOUND ON THE PROPERTY DURING CONSTRUCTION ACTIVITIES, THE HERITAGE OPERATIONS UNIT OF THE ONTARIO MINISTRY OF CULTURE MUST BE NOTIFIED IMMEDIATELY.
18. ALL NECESSARY CLEARING AND GRUBBING SHALL BE COMPLETED BY THE CONTRACTOR. REVIEW WITH CONTRACT ADMINISTRATOR AND THE CITY OF OTTAWA PRIOR TO ANY TREE CUTTING / REMOVAL.
19. DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE ARCHITECTURAL SITE PLAN.
20. THE CONTRACTOR SHALL PROVIDE THE PROJECT ENGINEER ONE SET OF AS CONSTRUCTED SITE SERVICING AND GRADING DRAWINGS.
21. BENCHMARKS: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THAT THE SITE BENCHMARK(S) HAS NOT BEEN ALTERED OR DISTURBED AND THAT ITS RELATIVE ELEVATION AND DESCRIPTION AGREES WITH THE INFORMATION DEPICTED ON THIS PLAN.

PLEASE READ SITE PLAN, PREPARED BY SJL LAWRENCE ARCHITECT IN CONJUNCTION WITH GRADING PLAN.

STORMWATER STORAGE AREA TO BE CONSTRUCTED PER MOE'S STORMWATER MANAGEMENT PLANNING AND DESIGN MANUAL.

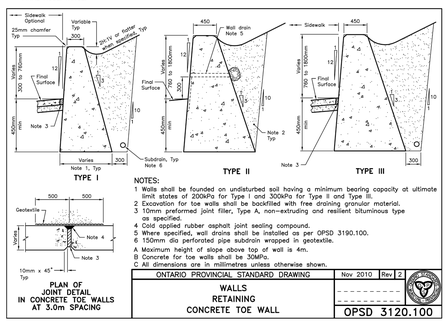
APPROVED ☐ REFUSED ☐

THIS ____ DAY OF _____, 20___

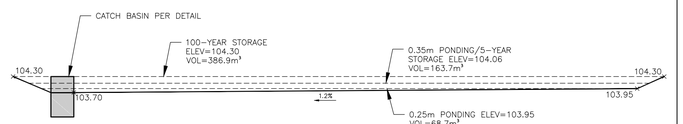
DERRICK MOODIE
MANAGER, DEVELOPMENT REVIEW - WEST
PLANNING, INFRASTRUCTURE AND ECONOMIC DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

SITE GRADING NOTES

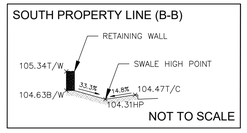
1. PRIOR TO THE COMMENCEMENT OF THE SITE GRADING WORKS, ALL SILTATION CONTROL DEVICES SHALL BE INSTALLED AND OPERATIONAL PER EROSION CONTROL PLAN.
2. ALL GRANULAR AND PAVEMENT FOR ROADS/PARKING AREAS SHALL BE CONSTRUCTED IN ACCORDANCE WITH GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
3. ALL TOPSOIL AND ORGANIC MATERIAL SHALL BE STRIPPED WITHIN THE ROAD AND PARKING AREAS ALLOWANCE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
4. CONCRETE CURB SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. SC1.1. PROVISION SHALL BE MADE FOR CURB DEPRESSIONS AS INDICATED ON ARCHITECTURAL SITE PLAN. CONCRETE SIDEWALK SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD SC1.4. ALL CURBS, CONCRETE ISLANDS, AND SIDEWALKS SHOWN ON THIS DRAWING ARE TO BE PRICED IN THE SITEWORKS PORTION OF THE CONTRACT.
5. PAVEMENT REINSTATEMENT FOR SERVICE AND UTILITY CUTS SHALL BE IN ACCORDANCE WITH THE CITY OF OTTAWA STD. R10 AND OPSD 509.010, AND OPSS 310.
6. GRANULAR 'A' SHALL BE PLACED TO A MINIMUM THICKNESS OF 300mm AROUND ALL STRUCTURES WITHIN THE PAVEMENT AREA.
7. SUB-EXCAVATE SOFT AREAS AND FILL WITH GRANULAR 'B' COMPACTED IN MAXIMUM 300mm LIFTS.
8. ALL WORK ON THE MUNICIPAL RIGHT OF WAY AND EASEMENTS TO BE INSPECTED BY THE MUNICIPALITY PRIOR TO BACKFILLING.
9. CONTRACTOR TO OBTAIN A ROAD OCCUPANCY PERMIT 48 HOURS PRIOR TO COMMENCING ANY WORK WITHIN THE MUNICIPAL ROAD ALLOWANCE, IF REQUIRED BY THE MUNICIPALITY.
10. ALL PAVEMENT MARKING FEATURES AND SITE SIGNAGE SHALL BE PLACED PER ARCHITECTURAL SITE PLAN. LINE PAINTING AND DIRECTIONAL SYMBOLS SHALL BE APPLIED WITH A MINIMUM OF TWO COATS OF ORGANIC SOLVENT PAINT.
11. REFER TO ARCHITECTURAL SITE PLAN FOR DIMENSIONS AND SITE DETAILS.
12. STEP JOINTS ARE TO BE USED WHERE PROPOSED ASPHALT MEETS EXISTING ASPHALT. ALL JOINTS MUST BE SEALED.
13. SIDEWALKS TO BE 1.5mm & BEVELED AT 2:1 OR 6mm WITH NO BEVEL REQUIRED BELOW THE FINISHED FLOOR SLAB ELEVATION AT ENTRANCES REQUIRED TO BE BARRIER-FREE, UNLESS OTHERWISE NOTED. ALL IN ACCORDANCE WITH OBC 3.8.1.3. & OTTAWA ACCESSIBILITY DESIGN STANDARDS.
14. WHERE APPLICABLE THE CONTRACTOR IS TO SUBMIT SHOP DRAWINGS FOR RETAINING WALL (INCLUDE RAILINGS IF APPLICABLE) TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. SHOP DRAWINGS MUST BE SITE SPECIFIC, SIGNED AND SEALED BY A LICENSED STRUCTURAL ENGINEER. THE CONTRACTOR WILL ALSO BE REQUIRED TO SUPPLY STRUCTURAL AND GEOTECHNICAL CERTIFICATION OF THE AS-CONSTRUCTED RETAINING WALL TO THE ENGINEER PRIOR TO FINAL ACCEPTANCE.



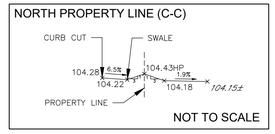
REAR YARD SWM STORAGE AREA (A-A)



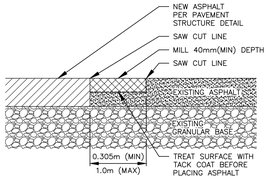
SOUTH PROPERTY LINE (B-B)



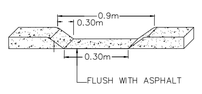
NORTH PROPERTY LINE (C-C)



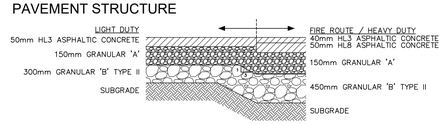
SAW CUT & KEY DETAIL



CURB CUT (TYPICAL)



PAVEMENT STRUCTURE



GEOTECHNICAL ENGINEER TO COMMENT ON SUITABILITY OF EXISTING PAVEMENT STRUCTURE FOR PROPOSED FIRE LANES

DRAFT

No.	BY	YY.MM.DD	DESCRIPTION
3	A.J.G.	18.03.05	ISSUED FOR MUNICIPAL REVIEW
2	A.J.G.	17.07.18	ISSUED FOR MUNICIPAL REVIEW
1	A.J.G.	17.05.12	ISSUED FOR MUNICIPAL REVIEW

PROJECT No. 16-900

GRADING PLAN
46 IBER ROAD

HUNTINGTON PROPERTIES
878 Boyd Avenue
Ottawa, Ontario, K2A 2E3
Tel. (613) 592-1818

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

DRAWN BY:	A.J.G.	CHECKED BY:	R.D.F.	DRAWING NO.	SHEET NO.
DESIGNED BY:	A.J.G.	CHECKED BY:	R.D.F.	GP-1	2 of 4
SCALE:	1:300	DATE:	FEBRUARY 2018		

D07-12-17-0146

PLAN NO.: #17540

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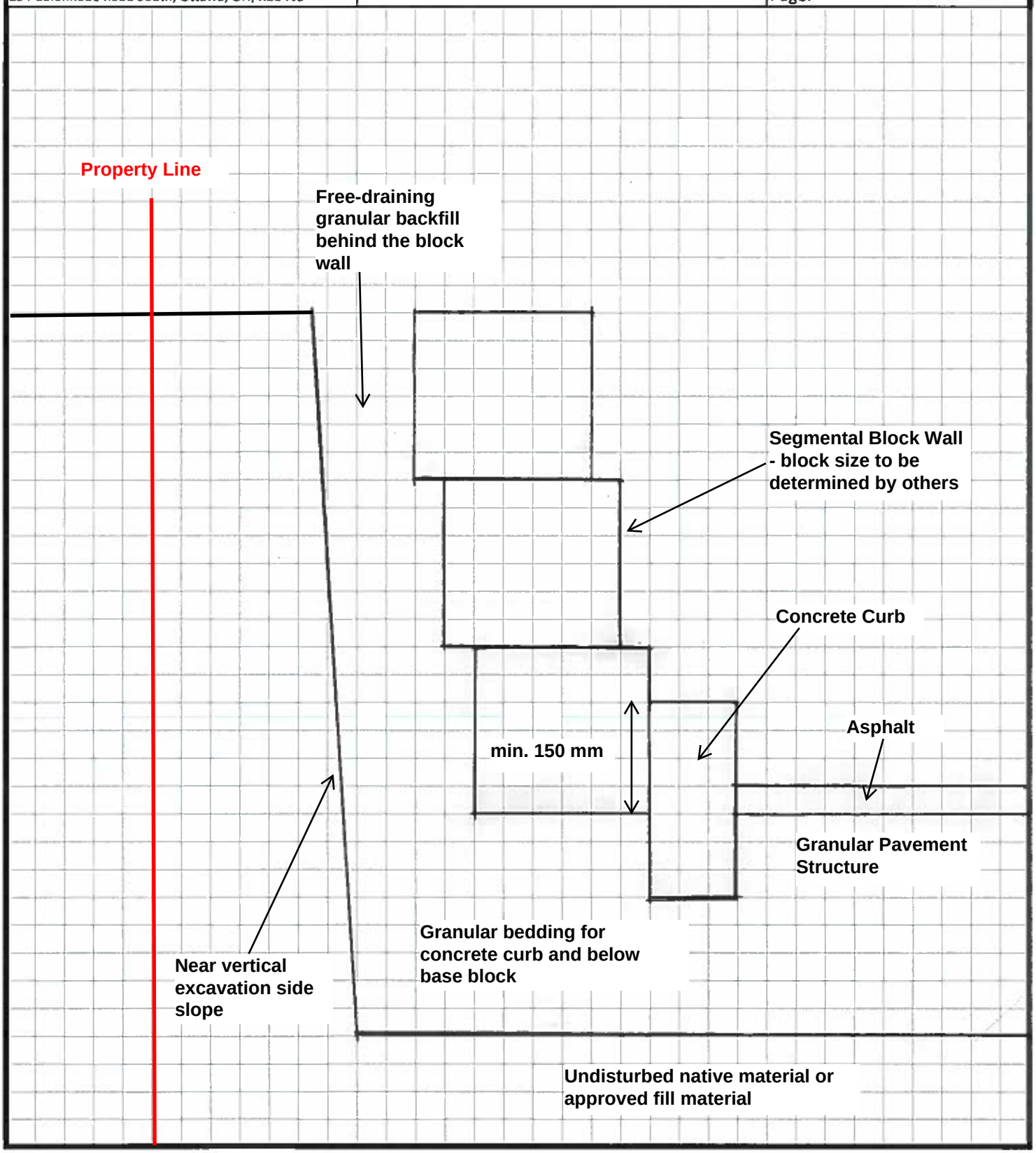
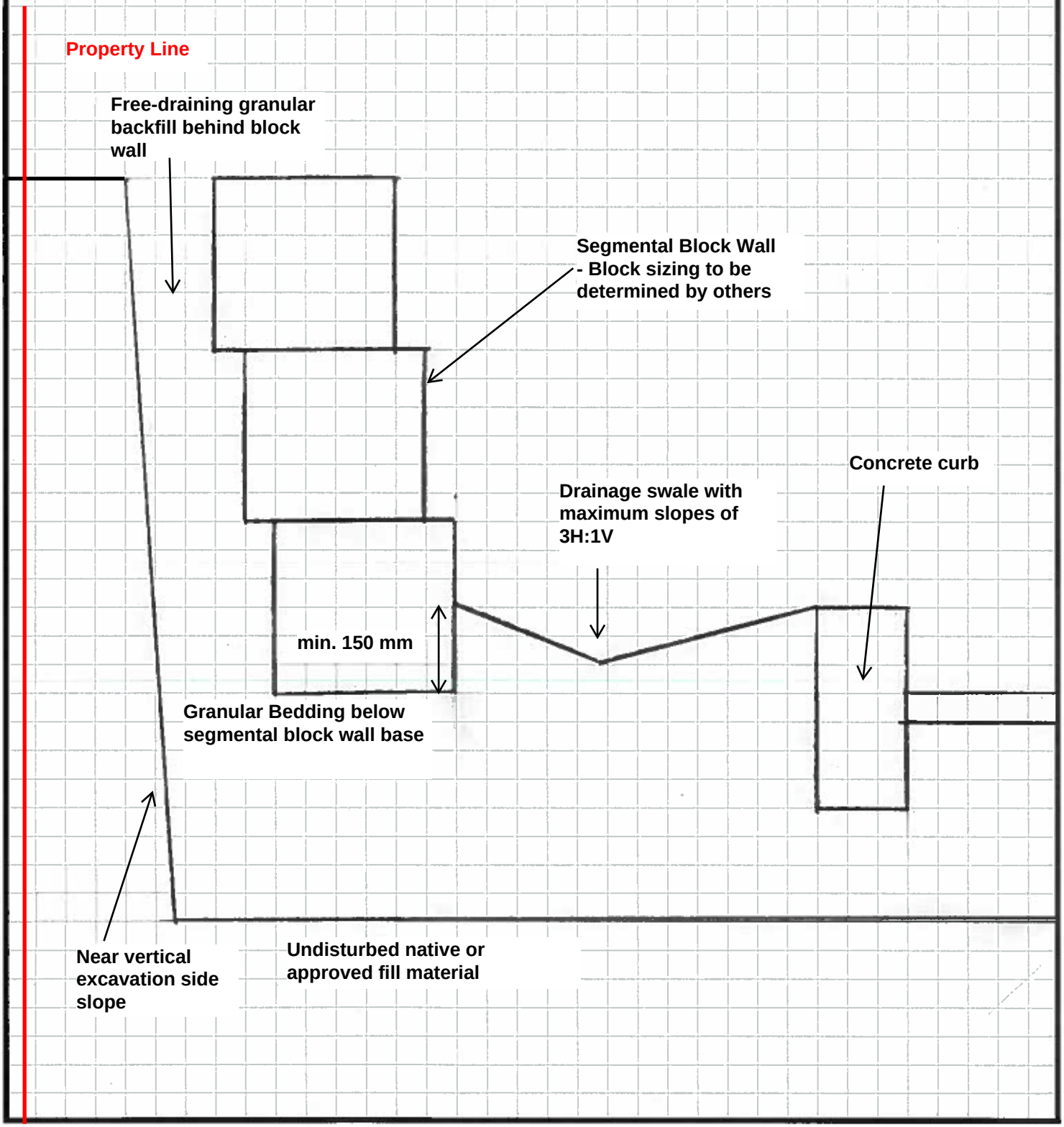
patersongroup consulting engineers 154 Colonnade Road South, Ottawa, ON, K2E 7J5	Huntington Properties	Job No. PG4089
	44 Iber Road	Date: June 20-2018
	South Retaining Wall Re-Alignment	Dwn: Not to Scale
	Section D-D	Page:



patersongroup consulting engineers 154 Colonnade Road South, Ottawa, ON, K2E 7J5	Huntington Properties	Job No. PG4089
	44 Iber Road	Date: June 20-2018
	South Retaining Wall Re-Alignment	Dwn: Not to Scale
	Section E-E	Page:



patersongroup memorandum

consulting engineers

re: **Geotechnical Responses to City Comments**
Proposed Commercial Development
46 Iber Road - Ottawa

to: Fotenn Consulting - **Mr. Matt McElligott** - mcelligott@fotenn.com
cc: DSEL - Robert Freel - rfreel@dsel.ca
date: September 10, 2018
file: PG4089-MEMO.05

The present memorandum has been prepared to address the geotechnical items noted in the City of Ottawa comments prepared for the aforementioned site. The relevant comments were part of the third round of review comments issued by the City of Ottawa. Our responses are summarized below:

Paterson has reviewed the following drawings provided by DSEL as part of the present memorandum response:

- ❏ Grading Plan - Project No. 16-900 - Drawing No. GP-1 - Sheet 2 of 4 - Revision 3 dated March 5, 2018.
- ❏ Site Servicing Plan - Project No. 16-900 - Drawing No. SSP-1 - Sheet 3 of 4 - Revision 3 dated March 5, 2018.

Comment 1 - Groundwater Levels

Comment: *The measured groundwater levels documented in Table 1 are above the proposed elevation of the bottom of the stormwater management area. The geotechnical engineer shall review and provide recommendations. The condition of the stormwater management area shall not remain saturated. The seasonally high water table shall be below the bottom of the stormwater management area.*

Response: The groundwater levels in the piezometers installed in the boreholes were recorded at ground surface or just below ground surface on March 30, 2017 (spring conditions). However, the following statement in section 4.3 of the geotechnical report should be noted: *"It should be noted that the water levels observed within the piezometers could be due to rain water or spring melt water trapped within the backfilled borehole. Long-term groundwater levels can also be estimated based on the observed colouring, moisture levels and consistency of the recovered soil samples. Based on these observations, it is estimated that the long-term groundwater table can be expected between **2.5 to 3 m** depth"*.

Based on the above noted drawings, the elevation of the bottom of the stormwater management area is as low as 103.7 m. Taking the actual groundwater level at 2.5 m below the ground surface at BH 4 (closest to the stormwater management area) the long term groundwater level is estimated at an elevation of 101.94 m which is significantly below the elevation of the bottom of the stormwater management area. Due to the low permeability of the underlying clay deposit, the seasonally high groundwater level can be considered to be 0.5 m above the long-term groundwater level, conservatively. Therefore, the condition of the stormwater management area is not anticipated to remain saturated and the design elevations are acceptable from a geotechnical perspective.

Comment 2 - Underground Storage Media

Comment: *A layer of underground storeage media is recommended to be installed within the SWMP area to limit the area from being saturated for extended periods due to the presence of underlying clay soil material and anticipated low percolation rate. It is acknowledged that saturation of the underlying clay soil is not detrimental to the soils along the SWMP sidewalls and base as stated by the geotechnical engineer. The concern is that the area will remain saturated for extended periods of time and the implementation of a granular layer below the landscaped surface would allow the base of the SWMP to remain dry after major storm events.*

Response: As noted in our response to comment 1 above, the area is not anticipated to remain saturated due to the groundwater table.

Since the area will not remain saturated and saturation of the underlying clay soil is not detrimental, it should be noted that the current design is acceptable from a geotechnical perspective. Therefore, an underground storage media is not required.

We trust that this information satisfies your immediate requirements.

Paterson Group Inc.

Colin Belcourt, P.Eng.

David J. Gilbert, P.Eng.

Paterson Group Inc.

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St. Lawrence Office
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Kingston - Ontario - K7L 1H3
Tel: (613) 542-7381

patersongroup memorandum

consulting engineers

re:	Geotechnical Review **Proposed Stormwater Management Pond (SWMP) - Wetland** **44 Iber Road - Ottawa**
to:	DSEL - **Ms. Alison Gosling** - AGosling@dsel.ca
to:	Huntington Construction and Development Inc. - **Ms. Lisa Westphal** - lwestphal@huntingtonproperties.ca
date:	January 7, 2019
file:	PG4089-MEMO.06

Further to your request, Paterson Group (Paterson) conducted a geotechnical review of the proposed stormwater management pond (SWMP) to be located at the aforementioned site. This memo should be read in conjunction with Paterson Report PG4089-1 dated April 27, 2017.

Proposed Project

It is our understanding that a SWMP (wetland) is to be constructed within the southwest corner the subject site. Based on preliminary drawings completed by David Schaeffer Engineering Ltd., the SWMP design includes a pond base elevation of 103.10 m and an operating water level elevation of 103.70 m.

Background Information

A geotechnical field investigation was carried out by Paterson at the subject site on March 24, 2017. At that time, 5 boreholes and 3 probeholes were completed across the subject site and were selected in a manner to provide general coverage of the proposed development.

Generally, the subsurface profile at BH 4 and BH 5, located within close proximity of the proposed SWMP, consists of crushed stone and/or brown silty clay with some sand and trace gravel. The fill material is underlain by a stiff to very stiff brown silty clay at an elevation of 103.7 to 104.2 m and is followed by a compact sandy silt and/or glacial till deposit at an elevation of 103.1 to 103.6 m. The glacial till is comprised of a sandy silt matrix with varying amounts varying amounts of gravel and cobbles. Practical refusal to augering was encountered between 1.5 and 2.2 m depth below existing ground surface.

Recommendations

Based on Paterson's geotechnical review of the proposed SWMP details, the subsurface material located below the operating water level elevation is anticipated to consist of brown silty clay, silty sand, glacial till and bedrock. Hydraulic conductivity values of the anticipated soils were conservatively estimated based upon previous experience at similar sites in the area, typical values for brown silty clay, compact sandy silt, compact glacial till with a sandy silt matrix and bedrock. These values typically range from 1×10^{-7} to 1×10^{-9} m/sec for stiff to very stiff clay, 1×10^{-5} to 1×10^{-7} m/sec for compact sandy silt and 1×10^{-5} to 1×10^{-7} m/sec for compact glacial till depending on the ratios of the various materials in the deposit. The hydraulic conductivity value for bedrock varies from 1×10^{-6} to 1×10^{-9} m/sec, with the variability resulting from the range in competency of the rock.

Due to the hydraulic conductivity of the anticipated soils/bedrock to be encountered below the proposed operating water level elevation, the subsurface material located within the proposed SWMP is considered an acceptable subgrade and a clay liner is not required. However, some minor infiltration will occur over a 24 hour period. To determine actual field saturated hydraulic conductivity rates, it is recommended to complete a series of permeameter tests. It is recommended the subgrade for the proposed SWMP be approved by the geotechnical consultant at the time of construction.

We trust that this information satisfies your immediate requirements.

Paterson Group Inc.

Nicholas Zulinski, P.Geo., géo.

David J. Gilbert, P.Eng.

Paterson Group Inc.

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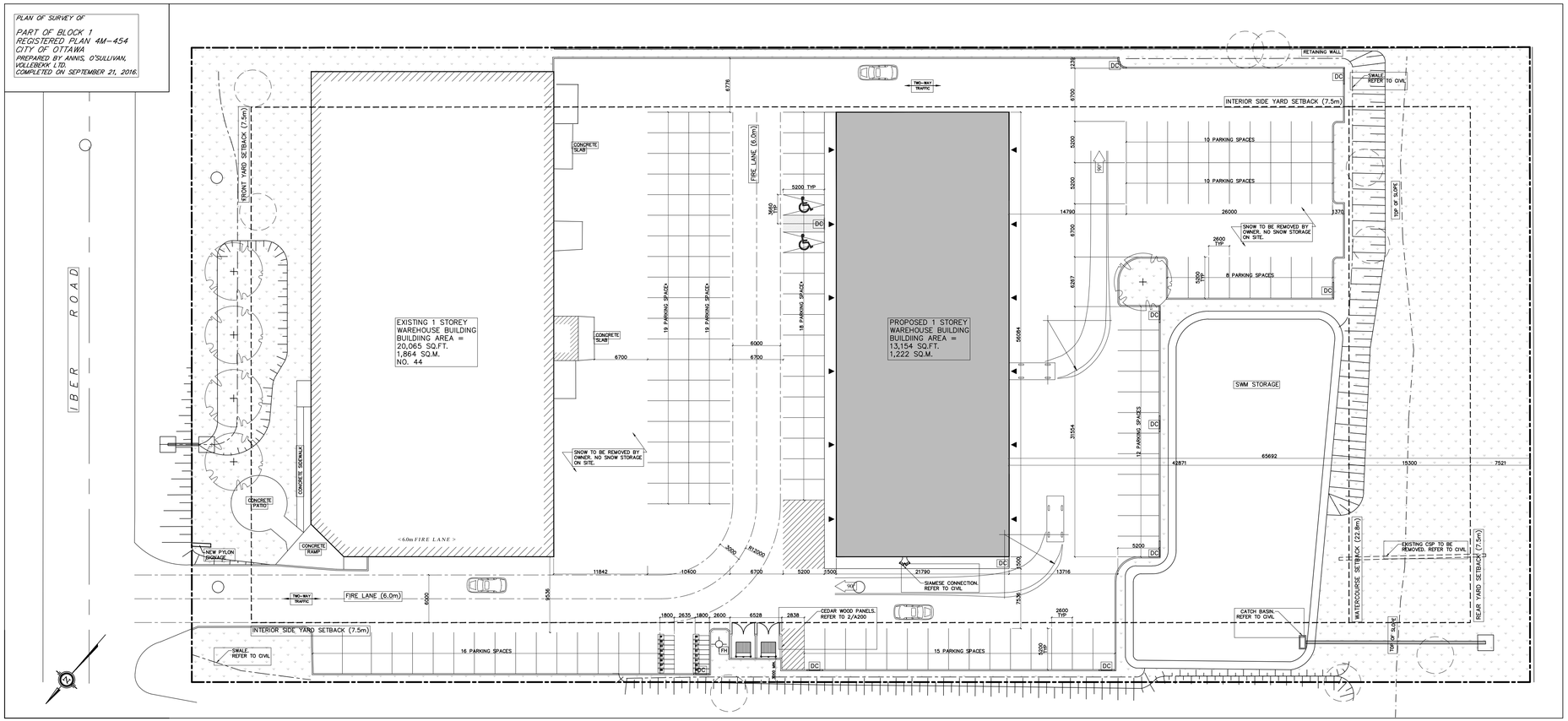
Tel: (613) 542-7381

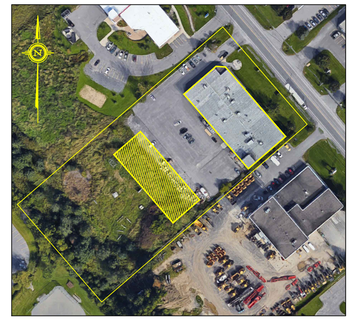
DRAWINGS / FIGURES

PLAN OF SURVEY OF

PART OF BLOCK 1
REGISTERED PLAN 4M-454
CITY OF OTTAWA
PREPARED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
COMPLETED ON SEPTEMBER 21, 2016.



01 SITE PLAN
A100 SCALE: 1: 300



KEYPLAN

APPROVED ☐ REFUSED ☐

THIS _____ DAY OF _____, 20__

DERRICK MOODIE
MANAGER, DEVELOPMENT REVIEW - WEST
PLANNING, INFRASTRUCTURE & ECONOMIC DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

Item	Iber Commercial Complex- 44 Iber Road, Ottawa, ON								OBC Reference		
1	Project Description:			☐ Change of Use	■ New ☐ Addition ☐ Alteration	☐ Part 11	11.1 to 11.4	■ Part 3	1.1.2. [A]	☐ Part 9	1.1.2. [A]§9.10.1.3.
2	Major Occupancy (s) Primary: D Secondary: F2								3.1.2.1. (1)		9.10.2.
3	Building Area (m²) Existing 0m² New 1,687m² Total 1,687m²								1.4.1.2. [A]		1.1.1.2. [A]
4	Gross Area (m²) Existing 0m² New 1,687m² Total 1,687m²								1.4.1.2. [A]		1.1.1.2. [A]
5	Number of Storeys Above Grade 1 Below Grade 0								1.4.1.2. [A] & 3.2.1.1.		1.1.1.2. [A] & 9.10.4.
6	Height of Building (m) +/- 5.1m										
7	Number of Streets/ Fire Fighter Access 1								3.2.2.10. & 3.2.5.		9.10.20.
8	Building Classification 3.2.2.53.								3.2.2.20. - .83		9.10.2.
9	Sprinkler System Proposed ☐ Entire Building ☐ Selected Compartments ☐ Selected Floor Areas ☐ Basement ☐ in lieu of roof rating ■ Not Required								3.2.2.20. - .83 3.2.1.5. 3.2.2.17. INDEX		9.10.8.2. INDEX
10	Standpipe Required							☐ Yes ■ No	3.2.9.		N/A
11	Fire Alarm Required							☐ Yes ■ No	3.2.4.		9.10.18.
12	Water Service/ Supply is adequate							■ Yes ☐ No	3.2.5.7.		N/A
13	High Building							☐ Yes ■ No	3.2.6.		N/A
14	Permitted Construction ■ Combustible ■ Non-Combustible Actual Construction ☐ Combustible ■ Non-Combustible								3.2.2.20. - .83		9.10.6.
15	Mezzanine(s) Area (m²) N/A								3.2.1.1. (3)-(8)		9.10.4.1.
16	Occupant load based on ☐ m²/person ■ Design of building Basement: Occupancy N/A Load N/A Persons 1st Floor: Occupancy Group "D" "F2" Load 90 Persons 2nd Floor: Occupancy N/A Load N/A Persons								3.1.17.1		9.9.1.3.
17	Barrier-free Design ■ Yes ☐ No								3.8.		9.5.2.
18	Hazardous Substances ☐ Yes ■ No								3.3.1.2. & 3.3.1.19		9.10.1.3. (4)
19	Required Fire Resistance Rating (FRR)	Horizontal Assemblies FRR (Hours)			Listed Design No. or Description (SG-2)				3.2.2.20. .83 & 3.2.1.4.		9.10.8. 9.10.9.
		Floors	0	Hour	Fire Separation						
		Roof	0	Hours							
		Mezzanine	0	Hours							
		FRR of Supporting Members			Listed Design No. or Description (SG-2)						
		Floors	0	Hour	Fire Separation						
		Roof	0	Hours							
		Mezzanine	0	Hours							
20	Spatial Separation								3.2.3.		9.10.14.

Wall	Area of EBF (m²)	L.D. (m)	L/H or H/L	Permitted Max % of openings	FRR (Hours)	Listed Design or Description	Construction Comb.	Construction NonComb.	Cladding Comb.	Cladding NonComb.
North	0	0	L/H, H/L	100%	0	OBC SB-0	☐	■	☐	■
South	0	0	L/H, H/L	100%	0	OBC SB-0	☐	■	☐	■
East	0	0	L/H, H/L	100%	0	OBC SB-0	☐	■	☐	■
West	0	0	L/H, H/L	100%	0	OBC SB-0	☐	■	☐	■

CONSTRUCTION NOTES:

1. PROVIDE SOILS REPORT TO INSPECTOR AT TIME OF INSPECTION STATED MIN. BEARING CAPACITY 75 KPA.
2. STRUCTURAL INFORMATION INCLUDED IN ASSEMBLY & CONSTRUCTION NOTES ARE SUPERSEDED BY STRUCTURAL NOTES. REFER TO STRUCTURAL NOTES, FOOTING SCHEDULES & DETAILS FOR CONCRETE WALL / FOOTING REINFORCING.
3. JOISTS TO BE DESIGNED BY SUPPLIER. JOIST SUPPLIER TO PROVIDE SHOP DRAWINGS INDICATING LAYOUT AND SPACING.
4. FILL BEAM POCKET CAVITIES AT TOP OF FOUNDATION WALL WITH NON-SHRINK GROUT.
5. REFER TO DRAWINGS FOR THICKNESS OF POURED CONCRETE FOUNDATION WALLS.
6. PROVIDE BRICK OR STONE TIES & WEEP VENT HOLES AS PER OBC 9.20.13.
7. PROVIDE FILTER CLOTH OVER WEEPING TILE.
8. PROVIDE CEMENT PARGING TO 8" BELOW GRADE ALL EXPOSED CONCRETE FOUNDATION WALLS.
9. PROVIDE TYPE S ROLL ROOFING ISOLATION MEMBRANE BETWEEN CONCRETE BELOW GRADE & WOOD FRAMING OR BATT INSULATION.
10. INTERIOR WOOD FRAMED WALLS USE 2"x4" @16" OC, UNLESS NOTED OTHERWISE.
11. EXTERIOR WOOD FRAMED WALLS USE 2"x6" @16" OC, UNLESS NOTED OTHERWISE.
12. TAPE & SEAL ALL JOINTS IN TYVEK AIR / MOISTURE BARRIER. PROVIDE AIR SEAL TO ALL OPENINGS IN ACCORDANCE WITH DETAILS 2/A203.
13. LAP & SEAL ALL JOINTS IN POLYETHYLENE VAPOUR BARRIER.
14. ALL GYPSUM BOARD WALLS & CEILINGS TO BE TAPED & SANDED FOR PAINT OR SPECIFIED INTERIOR FINISH. PRECEMEAL OF GYPSUM BOARD SHEETS IS NOT ACCEPTABLE.
15. PROVIDE MOISTURE RESISTANT GYPSUM BOARD IN ALL WET AREAS, WASHROOM, CEILINGS & WASHROOM WALLS. CEMENT BOARD TO BE USE ON ALL TUB DECKS & SHOWER ENCLOSURES.
16. PROVIDE 5/8" PLYWOOD UNDERLAY WITH 1/8" GAPS WHERE CERAMIC TILE IS TO BE INSTALLED AS PER OBC.
17. CERAMIC TILE ON ALL TUB AREAS WALLS TO UNDERSIDE OF BULKHEAD.
18. ALL TOILETS MUST HAVE A MAXIMUM 6 LITRES / FLUSH CAPACITY.
19. ALL BATHROOM / POWDER ROOM EXHAUST FANS MUST VENT TO EXTERIOR.
20. BACKING TO BE PROVIDED FOR ALL MILLWORK, WASHROOM ACCESSORIES, HAND RAILINGS, ETC. & TO BE COORDINATED ON SITE.
21. PROVIDE ALL CLOSETS WITH MIN. ONE (1) FULL WIDTH SHELF 12" DEEP & ONE (1) FULL WIDTH ROD.
22. ALL ATTIC ACCESS HATCHES MUST BE INSULATED.
23. DRYER VENT MUST EXHAUST TO EXTERIOR.
24. ALL INTERIOR GUARDRAILS MUST BE MIN. 42" HIGH. ALL STAIR HANDRAILS MUST BE MINIMUM 3'-0" & MAXIMUM 3'-2" ABOVE THE STAIR.
25. ALL PENETRATIONS THROUGH FIRERATED WALLS (PARTY WALLS, CORRIDOR WALLS, ETC) MUST BE SEALED TIGHT WITH A COMBINATION OF JOINT COMPOUND AND FIRE CAULK, TO ENSURE A CONTINUOUS FIRE RATING.
26. THICKEN WALLS AS REQUIRED TO ACCOMMODATE ELECTRICAL PANELS & MECHANICAL ITEMS. CONTRACTOR TO CONFIRM CODE COMPLIANCE WITH ARCHITECT BEFORE SITE WORK BEGINS.
27. FOR ASSEMBLIES REQUIRING TO CONFORM TO A LISTED ULC/UL RATING, MATERIALS WITHIN THE ASSEMBLY SHALL BE EXACTLY AS PER THE TESTED ASSEMBLY. ALL MATERIAL SHALL BE LABELED WITH ULC/UL IDENTIFICATION.
28. ALL ELECTRICAL SWITCHES ARE TO BE LOCATED BETWEEN 4"-8" FROM THE ENTRANCE DOOR TO A ROOM. LOCATE STUDS TO ACCOMMODATE THE LOCATION OF SWITCHES SHOWN ON DRAWINGS AND SUIT THE APPROVED SUITE MOCK-UP.
29. PROVIDE SCUPPERS AT EDGES OF ROOF WHERE OVER FLOW CONTROL ROOF DRAINS ARE SPECIFIED. CONFIRM LOCATIONS WITH ARCHITECT.
30. ALL FIRE DAMPER INSTALLATION TO BE PER MANUFACTURER INSTRUCTIONS - HVAC CONTRACTOR TO COORDINATE ON SITE WITH DRYWALL/FRAMING CONTRACTOR TO ENSURE INSTALLATION INSTRUCTIONS ARE FOLLOWED EXACTLY.
31. ANY WASHROOM WALLS ADJACENT TO LIVING SPACES/PUBLIC AREAS ARE TO HAVE SOUND ATTENUATING BATT INSULATION -ULC APPROVED- IN THE STUD CAVITIES (TO FILL CAVITY).
32. ALL GYPSUM BOARD IS TO EXTEND TO FULL HEIGHT OF PARTITION U.N.O.

SHEET INDEX:

DRAWING SYMBOLS

REFERENCE BUBBLE: A100 — A = DRAWING NUMBER; A100 = SHEET NUMBER

INTERIOR ELEVATION BUBBLE: 2 / A101 / 1 3 — DRAWING NUMBER; SHEET NUMBER

ROOM LABEL: MECH. 100 — ROOM NAME; ROOM NUMBER

DOOR LABEL: 116.1 — DOOR NUMBER

WINDOW LABEL: 102 — (B) =BASEMENT; (G) =GROUND FLOOR; (S) =SECOND FLOOR; # =WINDOW NUMBER

CONSTRUCTION ASSEMBLY LABEL: W2 — (W) = EXTERIOR WALL; (P) = INTERIOR WALL; (F) = ROOF; (R) = ROOF; # = ASSEMBLY NUMBER

CEILING ELEVATIONS: 114 — CEILING FINISH HEIGHT

GRID REFERENCE: 4 — GRID DESTINATION

ELEVATION HEIGHT: 174.25 — ELEVATION HEIGHT

LIST OF ABBREVIATIONS

ACT	ACOUSTIC CEILING TILE
AFF	ABOVE FINISHED FLOOR
ALUM	ALUMINUM
ARCH	ARCHITECTURAL
ASSY	ASSEMBLY
BD	BOARD
BG	BUILDING GRADE
BLDG	BUILDING
CB	CATCH BASIN
CC	CENTRE TO CENTRE
CJ	CONTROL JOINT
CL	CENTRE LINE
CLG	CEILING
CLR	CLEAR
COL	COLUMN
CONC	CONCRETE
CPT	CARPET
CR	CARD READER
CT	CERAMIC TILE
CW	CURTAIN WALL
DIM	DIMENSIONS
DO	HANDICAP DOOR OPERATOR
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EIFS	EXTERIOR INSULATION FINISH SYSTEM
EP	ELECTRICAL PANEL
EQ	EQUAL
ES	EMERGENCY SCUPPER
EX	EXISTING
EXP	EXPOSED
EXT	EXTERIOR
FA	FIRE ALARM
FD	FLOOR DRAIN
FEC	FIRE EXTINGUISHER CABINET
FHC	FIRE HOSE CABINET
FN	FINISH
FL	FLOOR
FRR	FIRE RESISTANCE RATED
GL	GLASS OR GLAZING
GR	GRAB BAR
GYP	GYPSUM WALLBOARD
HM	HOLLOW METAL
HWT	HOT WATER TANK
INT	INTERIOR
JT	JOINT
LTG	LIGHTING
MAX	MAXIMUM
MECH	MECHANICAL
MC	MEDICINE CABINET
MIN	MINIMUM
NBC	NATIONAL BUILDING CODE
NO	NUMBER
NTS	NOT TO SCALE
OC	ON CENTRE
OH	OVERHEAD
PT	PAINT
PLAM	PLASTIC LAMINATE
PSF	PRESSED STEEL FRAME
PVC	POLY VINYL CHLORIDE
RCP	REFLECTIVE CEILING PLAN
RD	ROOF DRAIN
REINF	REINFORCED
REQD	REQUIRED
RWL	RAIN WATER LEADER
SH	SHOWER
SIM	SIMILAR
SS	STAINLESS STEEL
T/O	TOP OF
TYP	TYPICAL
U/S	UNDERSIDE
VCT	VINYL COMPOSITION TILE
VEST	VESTIBULE
WC	WATER CLOSET

ZONING

EXISTING ZONING	IL [1559] LIGHT INDUSTRIAL	
	REQUIRED	PROPOSED
MIN. FRONT YARD SETBACK	7.5m	15.0m
MIN. REAR YARD SETBACK	7.5m	65.7m
MIN. INTERIOR YARD SETBACK	7.5m	8.2m
MAX. BUILDING HEIGHT	18.0m	±8.7m
MIN. LOT AREA	2,000m2	13,507m2
MAX LOT COVERAGE	65%	26%
MAX. FLOOR SPACE INDEX	2	1
MIN. WIDTH OF LANDSCAPE AREA		
ABUTTING A STREET	3m	15m
ALL OTHER CASES	NA	—
MIN. LOT WIDTH	NA	80m

LEGEND

A — EXTERIOR WALL MOUNTED LIGHT SCONCE
B — EXTERIOR SOFFIT LIGHT
C — EXTERIOR WALL MOUNTED LIGHT PACK
UNIT PAVER - TYPE 1 REFER TO LANDSCAPE PLAN

BUILDING AREA

	EXISTING	PROPOSED
BASEMENT	NA	NA
GROUND FLOOR	1,864m2	1,222m2
SECOND FLOOR	NA	NA

AUTOMOBILE PARKING SUMMARY

REQUIRED PARKING			
OFFICE UNITS	2.4 PARKING SPACES PER 100m2 EXISTING = (1,864/100) x 2.4 = 44.7 (45) PROPOSED = (1,222/100) x 2.4 = 29.3 (29)		
TOTAL	= 74 REQUIRED PARKING SPACES		
PROVIDED PARKING			
		UNDERGROUND	ABOVE GROUND
REGULAR SPACES	MIN. 2.6m x 5.2m	—	125
REDUCED SIZE SPACES	MIN. 2.4m x 4.6m	—	—
HANDICAP SPACES	MIN. 2.6m x 5.2m	—	2
TOTAL	= 127 PROVIDED PARKING SPACES		

BICYCLE PARKING SUMMARY

REQUIRED PARKING			
OFFICE UNITS	1 SPACE PER 250m2 EXISTING = 1,864/250 = 7.4 (7) PROPOSED = 1,222/250 = 4.8 (5)		
TOTAL	= 12 REQUIRED BICYCLE SPACES		
PROVIDED PARKING			
		UNDERGROUND	ABOVE GROUND
HORIZONTAL SPACES	MIN. 0.6m x 1.8m	—	16
VERTICAL SPACES	MIN. 0.5m x 1.5m	—	—
TOTAL	= 16		

OFFICE UNIT COUNT	EXISTING	PROPOSED
BASEMENT FLOOR	NA	NA
GROUND FLOOR	3 UNITS	6 UNITS
SECOND FLOOR	NA	NA
TOTAL	9 UNITS**	

Huntington PROPERTIES

NOTES:
1) ALL WORK TO BE IN COMPLIANCE WITH LOCAL BUILDING CODES, REGULATIONS AND BY-LAWS.
2) ADDITIONAL DRAWINGS MAY BE ISSUED FOR CLARIFICATION TO ASSIST IN PROPER EXECUTION OF WORK. SUCH DRAWINGS WILL BE CONSIDERED AS SUPPLEMENTARY TO THE CONTRACT AND SHALL BE INCLUDED WITH PLANS IN CONTRACT DOCUMENTS.
3) DO NOT SCALE DRAWINGS.
4) ALL SUB-CONTRACTORS TO TAKE THEIR OWN ON-SITE MEASUREMENTS AND BE RESPONSIBLE FOR THEIR ACCURACY.
5) NOTIFY SHAWN J. LAWRENCE ARCHITECT FOR ANY ERRORS AND/OR OMMISSIONS PRIOR TO START OF WORK.

FIRE RESISTANCE RATING LEGEND:

45 MIN. - FIRE RESISTANCE RATING

1 HOUR - FIRE RESISTANCE RATING

2 HOUR - FIRE RESISTANCE RATING

No.	DATE:	REVISION:
03	2018-07-20	RE-ISSUED FOR SPC
02	2018-02-23	RE-ISSUED FOR SPC
01	2017-07-04	ISSUED FOR SITE PLAN CONTROL

SJL LAWRENCE ARCHITECT INCORPORATED
18 Deakin Street, Suite 205 Ottawa, ON K2E 8B7
T: (613) 739.7776
F: (613) 739.7705
sjl@sjlarchitect.com

DRAWN BY:	CHECKED BY:
B.L.	S.J.L.
DATE:	CHECKED BY:
2016-09-29	S.J.L.
SCALE:	PLOT DATE:
AS NOTED	2018-07-20

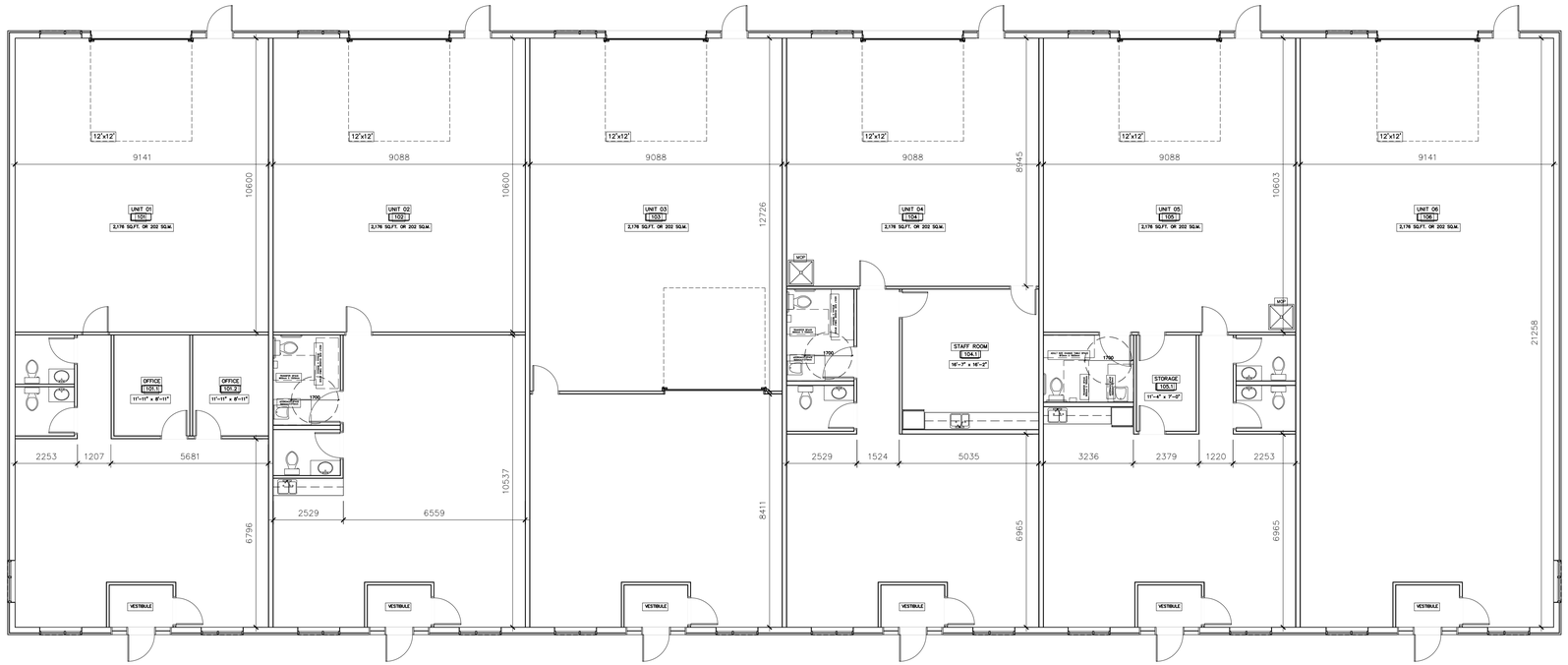
PROJECT:
IBER COMMERICAL COMPLEX
46 IBER ROAD, OTTAWA, ON.

JOB NUMBER: SL - 609 - 16

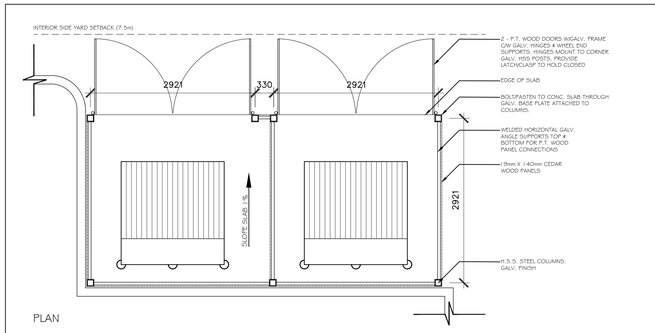
DRAWING TITLE:
SITE PLAN
(REFER TO CIVIL, LANDSCAPE, & M&E PLANS FOR FURTHER INFORMATION)

SHEET: A100

PLAN NO.: D07-12-17-0146



01 GROUND FLOOR PLAN [UNIT OPTION]
A200 SCALE: 1:100



02 GARBAGE ENCLOSURE
A200 SCALE: 1:50

APPROVED ☐ REFUSED ☐

THIS _____ DAY OF _____, 20__

DERRICK MOODIE
MANAGER, DEVELOPMENT REVIEW – WEST
PLANNING, INFRASTRUCTURE & ECONOMIC
DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

Huntington PROPERTIES

NOTES:
1) ALL WORK TO BE IN COMPLIANCE WITH LOCAL BUILDING CODES, REGULATIONS AND BY-LAWS.
2) ADDITIONAL DRAWINGS MAY BE ISSUED FOR CLARIFICATION TO ASSIST IN PROPER EXECUTION OF WORK. SUCH DRAWINGS WILL BECOME A PART OF THE CONTRACT DOCUMENTS AND SHALL BE INCLUDED WITH PLANS IN CONTRACT DOCUMENTS.
3) DO NOT SCALE DRAWINGS
4) ALL SUB-CONTRACTORS TO TAKE THEIR OWN ON-SITE MEASUREMENTS AND BE RESPONSIBLE FOR THEIR ACCURACY
5) NOTIFY SHAWN J. LAWRENCE ARCHITECT FOR ANY ERRORS AND/OR OMMISSIONS PRIOR TO START OF WORK

FIRE RESISTANCE RATING LEGEND:
45 MIN. - FIRE RESISTANCE RATING
1 HOUR - FIRE RESISTANCE RATING
2 HOUR - FIRE RESISTANCE RATING

STAMP

NORTH ARROW

No.	DATE:	REVISION:
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03	2018-07-20	RE-ISSUED FOR SPC
02	2018-02-23	RE-ISSUED FOR SPC
01	2017-07-04	ISSUED FOR SITE PLAN CONTROL

SJL LAWRENCE ARCHITECT INCORPORATED
18 Deakin Street, Suite 205
Ottawa, ON
K2E 8B7
T: (613) 739.7770
F: (613) 739.7703
sjl@sjlarchitect.com

DRAWN BY: B.L.	DESIGNED BY: S.J.L.
DATE: 2016-08-29	CHECKED BY: S.J.L.
SCALE: AS NOTED	PLOT DATE: 2018-07-20

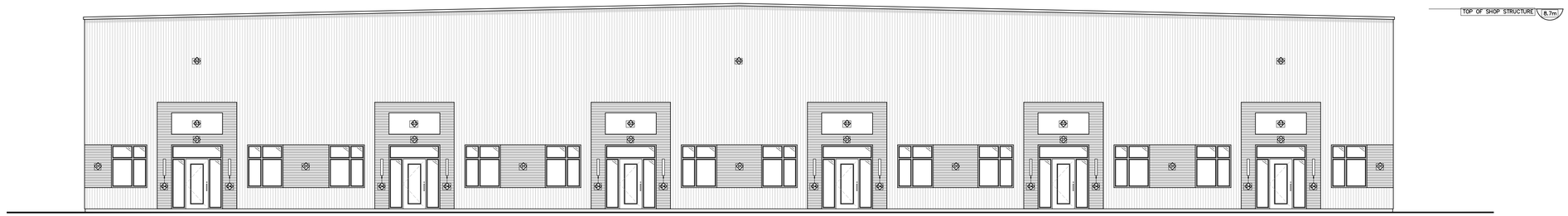
PROJECT:
IBER COMMERICAL COMPLEX
46 IBER ROAD, OTTAWA, ON.

JOB NUMBER: SL - IBR - 16

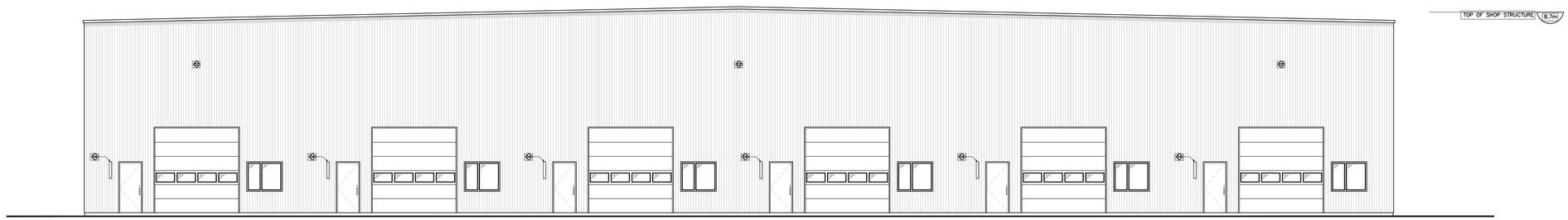
DRAWING TITLE:
GROUND FLOOR PLAN

SHEET:
A200

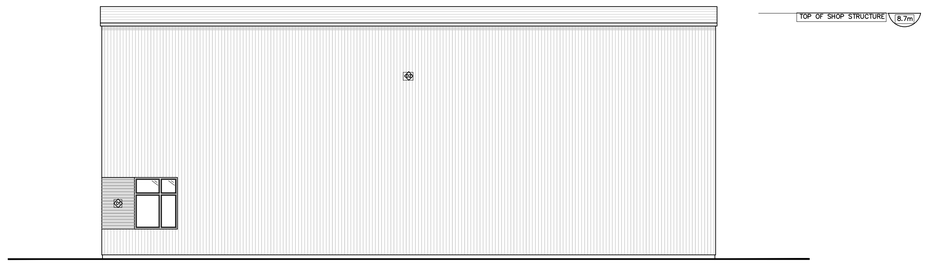
PLAN NO.: D07-12-17-0146



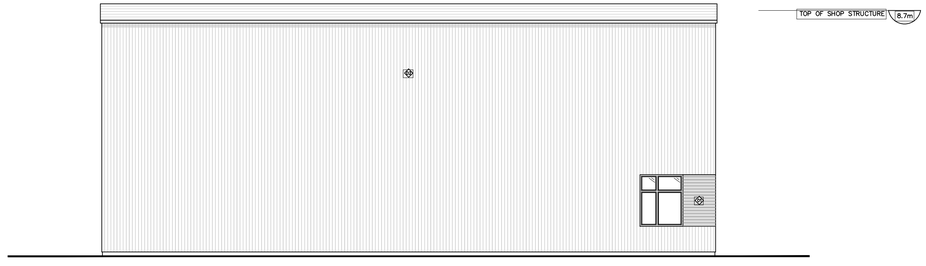
01 A400 FRONT [NORTH] ELEVATION
SCALE: 1:100



02 A400 REAR [SOUTH] ELEVATION
SCALE: 1:100



03 A400 SIDE [WEST] ELEVATION
SCALE: 1:100



04 A400 SIDE [EAST] ELEVATION
SCALE: 1:100

GLASS NOTES:

F.R.: FIRE RATED GLASS
"FIRELITE NT" BY TECHNICAL GLASS PRODUCT
STANDARD GRADE
TO CGSB STANDARDS
(DESIGNED FOR 45min CLOSER)
SP: INSULATED SPANDREL PANEL
GL: GLAZING
GWG: GEORGIAN WIRED GLASS
6mm THICK
TG: TEMPERED GLASS
CT: CLEAR TEMPERED GLASS
6mm THICK
FIXED GLASS
THERMAL PANE
DOUBLE GLAZED

+ ALL ALUMINUM FRAMES TO BE WHITE ANODIZED, U.N.O.
+ ALL EXTERIOR FRAMES & DOORS TO BE INSULATED
+ ALL EXTERIOR GLAZING UNITS TO BE CLEAR, DOUBLE GLAZING WITH LOW 'E' ARGON
+ ALL GLAZING IN ULC RATED DOORS & FRAMES TO BE GEORGIAN WIRED GLASS, U.N.O.

APPROVED ☐ REFUSED ☐

THIS ____ DAY OF _____, 20__

DERRICK MOODIE
MANAGER, DEVELOPMENT REVIEW – WEST
PLANNING, INFRASTRUCTURE & ECONOMIC
DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

Huntington PROPERTIES

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FIRE RESISTANCE RATING LEGEND:
45 MIN. - FIRE RESISTANCE RATING
1 HOUR - FIRE RESISTANCE RATING
2 HOUR - FIRE RESISTANCE RATING

MATERIALS LEGEND:

1 PRE-FINISHED METAL SIDING COLOUR & PROFILE TBD
2 PRE-FINISHED METAL SIDING COLOUR & PROFILE TBD
3 SIGNAGE
4 WALL SCONCE

STAMP

NORTH ARROW

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DATE: 2016-08-29	CHECKED BY: S.J.L.
SCALE: AS NOTED	PLOT DATE: 2018-07-20

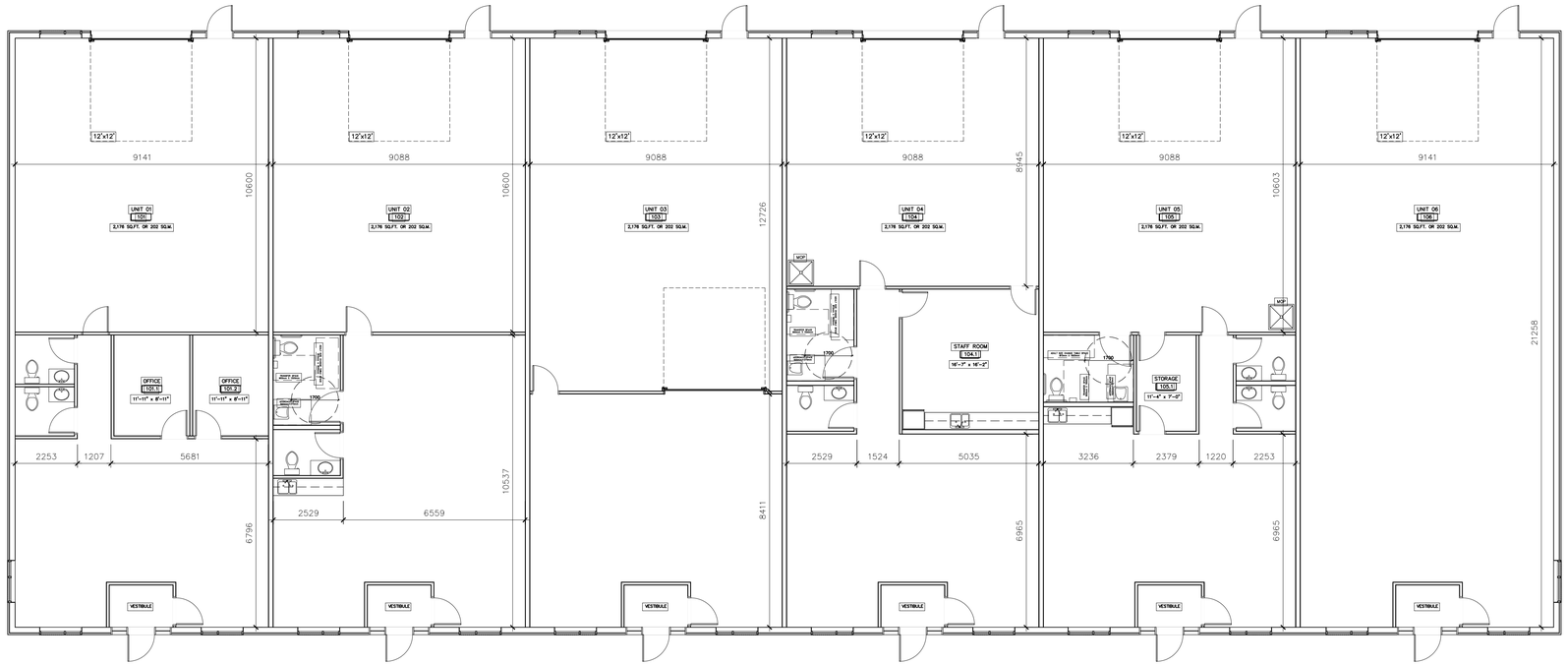
PROJECT:
IBER COMMERICAL COMPLEX
46 IBER ROAD,
OTTAWA, ON.

JOB NUMBER: SL - IBR - 16

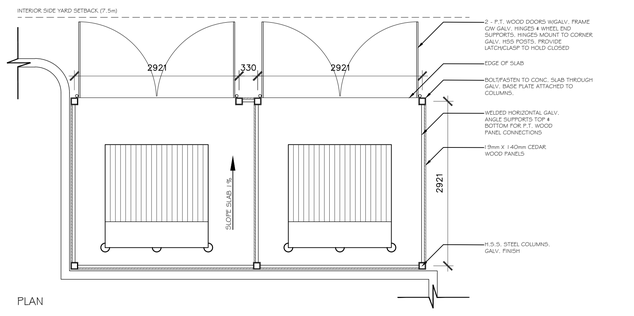
DRAWING TITLE:
ELEVATIONS

SHEET:
A400

PLAN NO.: D07-12-17-0146



01 A200 GROUND FLOOR PLAN [UNIT OPTION]
SCALE: 1:100



02 A200 GARBAGE ENCLOSURE
SCALE: 1:50

APPROVED ☐ REFUSED ☐

THIS _____ DAY OF _____, 20__

DERRICK MOODIE
MANAGER, DEVELOPMENT REVIEW – WEST
PLANNING, INFRASTRUCTURE & ECONOMIC
DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

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45 MIN. - FIRE RESISTANCE RATING
1 HOUR - FIRE RESISTANCE RATING
2 HOUR - FIRE RESISTANCE RATING

ONTARIO ASSOCIATION OF ARCHITECTS — SHAWN JAMES LAWRENCE — LICENCE 4442

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02	2018-02-23	RE-ISSUED FOR SPC
01	2017-07-04	ISSUED FOR SITE PLAN CONTROL
No.	DATE:	REVISION:

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DRAWN BY: B.L.	DESIGNED BY: S.J.L.
DATE: 2016-08-29	CHECKED BY: S.J.L.
SCALE: AS NOTED	PLOT DATE: 2018-02-23

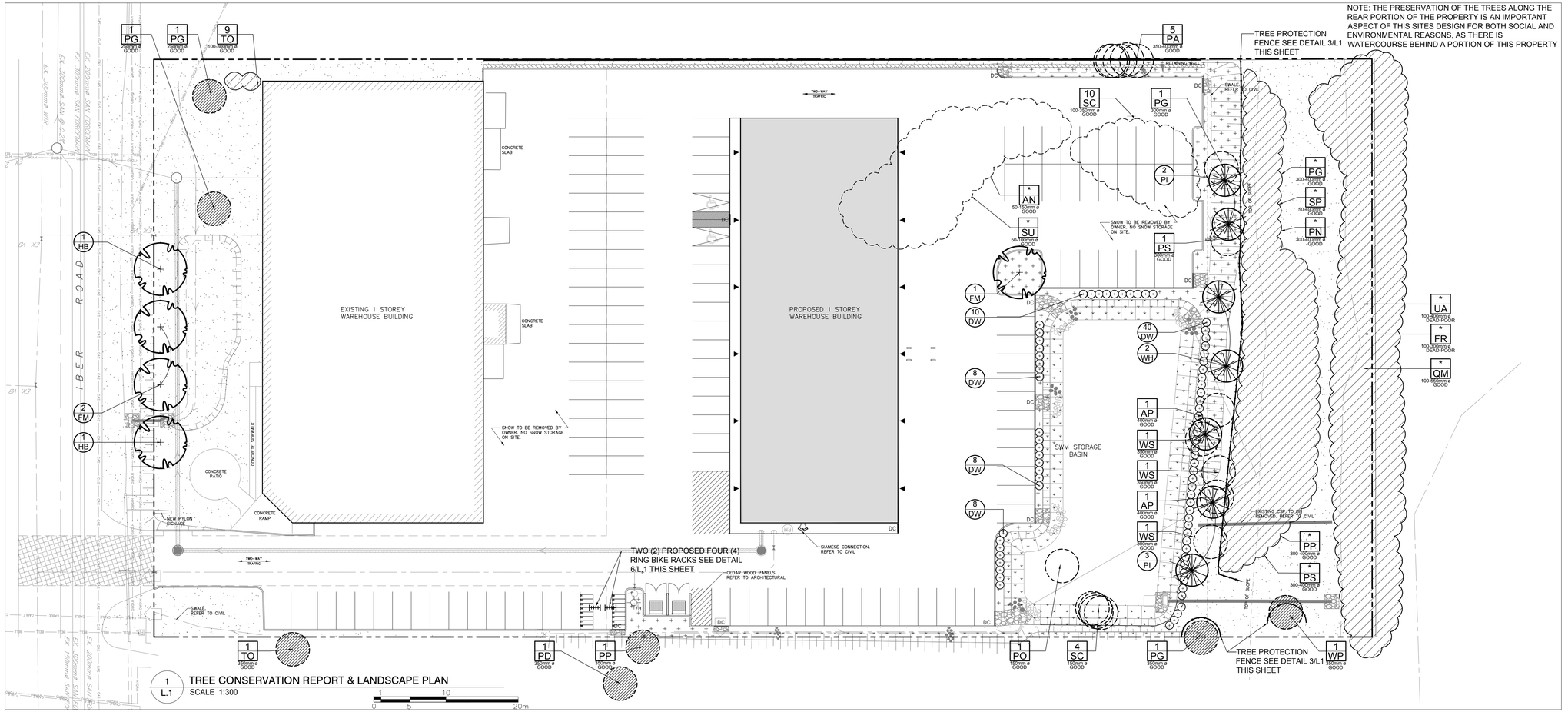
PROJECT:
IBER COMMERICAL COMPLEX
46 IBER ROAD, OTTAWA, ON.

JOB NUMBER: SL - 829 - 16

DRAWING TITLE:
GROUND FLOOR PLAN

SHEET:
A200

PLAN NO.: #17540 | FILE NO.: D07-12-14-0014



1 L.1 TREE CONSERVATION REPORT & LANDSCAPE PLAN
SCALE 1:300

0 5 10 20m

EXISTING TREE LIST

QTY / KEY / SIZE

KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	REMARKS
TREES						
AN	*	Acer negundo	Manitoba Maple	50-150mm ø	GOOD	To Remain
AP	2	Pinus nigra	Austrian Pine	400mm ø	GOOD	To Be Removed
FR	*	Fraxinus sp.	Ash	100-300mm ø	DEAD-POOR	To Remain
PA	5	Picea abies	Norway Spruce	350-400mm ø	GOOD	To Be Removed
PD	1	Populus deltoides	Cottonwood	350mm ø	GOOD	To Remain
PG	*	Picea glauca	White Spruce	300-400mm ø	GOOD	To Remain
PN	*	Pinus nigra	Austrian Pine	350-450mm ø	GOOD	To Remain
PO	1	Populus deltoides	Cottonwood	150mm ø	GOOD	To Be Removed
PP	*	Picea pungens	Colorado Spruce	300-400mm ø	GOOD	To Remain
PS	*	Pinus strobus	White Pine	300-400mm ø	GOOD	To Remain
QM	*	Quercus macrocarpa	Bur Oak	100-550mm ø	GOOD	To Remain
SC	14	Pinus sylvestris	Scots Pine	100-350mmø	GOOD	To Be Removed
SP	*	Pinus sylvestris	Scots Pine	50-400mm ø	GOOD	To Remain
SU	*	Rhus typhina	Staghorn Sumac	50-100mm ø	GOOD	To Remain
TO	9	Thuja occidentalis	White Cedar	100-300mm ø	GOOD	To Remain
UA	*	Ulmus americana	White Elm	100-400mm ø	DEAD-POOR	To Remain
WP	1	Pinus strobus	White Pine	350mm ø	GOOD	To Be Removed
WS	2	Picea glauca	White Spruce	350mm ø	GOOD	To Be Removed

* Denotes numerous

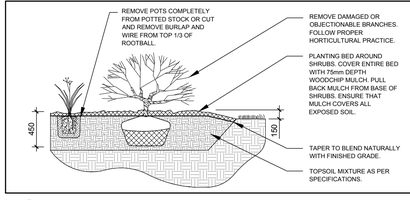
PROPOSED PLANT LIST

QTY / KEY

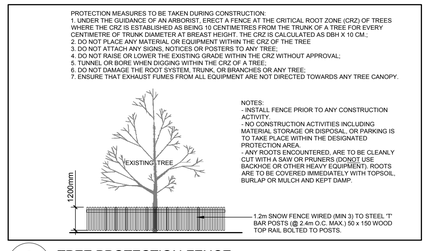
KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	REMARKS
TREES						
FM	3	Acer x freemanii	Freeman's Maple	60mm Cal.	B&B	
HB	2	Celtis occidentalis	Hackberry	60mm Cal.	B&B	
PI	5	Pinus strobus	White Pine	1.2m Ht.	Potted	
WH	2	Picea glauca	White Spruce	1.2m Ht.	Potted	
SHRUBS						
DW	74	Cornus sericea	Red Osier Dogwood	600mm Ht.	Potted/Bare Root	Space 1000mm O.C.

GENERAL NOTES:

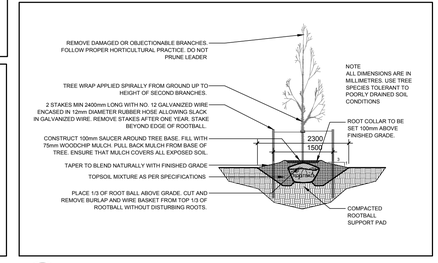
1. It is the responsibility of the appropriate contractor or official to report any errors, omissions or discrepancies on this plan with actual site conditions to the Landscape Architect before proceeding with construction.
2. The contractor is to notify all utility companies and authorities prior to any excavation and ascertain locations of underground services.
3. The contractor is to reinstate all areas and items damaged as a result of construction activity.
4. The contractor is to comply with all pertinent codes and by-laws.
5. The contractor is to maintain a positive surface run-off throughout the entire construction period.
6. The Landscape Architect is not responsible for subsurface conditions.
7. The contractor is to identify all existing trees to remain on site with the Landscape Architect prior to construction.
8. The contractor is to stake the proposed location of all plant material in conjunction with the Landscape Architect prior to excavation.
9. Minimum distances for selected deciduous trees are as follows:
   - Building Foundations 7.5m
   - Sidewalks 1.5m
   - Public Streets 2.5m
   - Underground Infrastructure 2.0m
10. All trees within 1m of underground utility trenches are to be excavated by hand.
11. Remove all protective wrapping from tree trunks after installation.
12. Staking of trees shall only be performed if necessary.
13. Ensure that mulch is pulled back a min. distance of 75mm from base of tree trunk.
14. A tree permit is required prior to the removal of the trees onsite. The contractor is to have the permit available onsite at all times during tree removal.



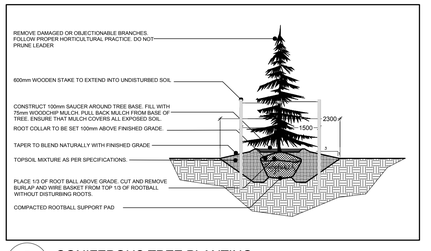
2 L.1 SHRUB/PERENNIAL PLANTING
SCALE: NTS



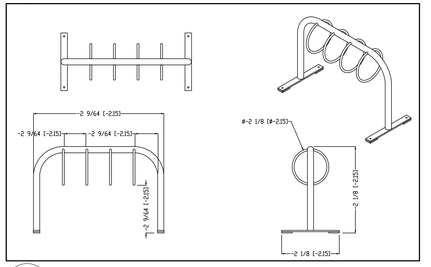
3 L.1 TREE PROTECTION FENCE
SCALE: NTS



4 L.1 DECIDUOUS TREE PLANTING
SCALE: NTS



5 L.1 CONIFEROUS TREE PLANTING
SCALE: NTS



6 L.1 FOUR (4) RING BIKE RACK
SCALE: NTS

CLIENT:
Huntington PROPERTIES

CONSULTANTS

ARCHITECTS:
S. J. LAWRENCE ARCHITECT INC.
18 DEAKIN STREET, SUITE 205, NEPEAN, ON K2E 8B7
Tel : (613) 739 7770

CIVIL ENGINEERS:
DAVID SCHAEFFER ENGINEERING LTD.
120 IBER ROAD, STITTSVILLE ON K2S 1E9
Tel : (613) 836 0856

LEGEND

- EXISTING TREE TO REMAIN
- GROUP OF EXISTING TREES TO REMAIN
- EXISTING TREE TO BE REMOVED
- GROUP OF EXISTING TREES TO BE REMOVED
- EXISTING GRASS TO REMAIN
- PROPOSED SEEDED GRASS AREA WITH EROSION CONTROL BLANKET
- PROPOSED SEEDED GRASS AREA FOR THE STORMWATER STORAGE BASIN
- PROPOSED SHRUBS
- PROPOSED DECIDUOUS TREE
- PROPOSED CONIFEROUS TREE

APPROVED ☐ REFUSED ☐

THIS _____DAY OF _____, 20____

DERRICK MOODIE,
MANAGER, DEVELOPMENT REVIEW - WEST,
PLANNING, INFRASTRUCTURE AND ECONOMIC
DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

No.	Issue	Date MM/DD/YY	DR	CK
6	PONDING AREA REVISED	12/17/2018	ML	JL
5	REVISED PER CITY COMMENTS	10/22/2018	ML	JL
4	REVISED PER CITY COMMENTS	03/08/2018	ML	JL
3	ISSUED FOR SITE PLAN CONTROL	07/18/2017	ML	JL
2	REVISED PER NEW SITE PLAN	06/26/2017	ML	JL
1	ISSUED FOR DISCUSSION AND REVIEW	05/03/2017	ML	JL

JAMES B. LENNOX & ASSOCIATES INC.
LANDSCAPE ARCHITECTS
3332 CARLING AVE. OTTAWA, ONTARIO K2H 5A8
Tel. (613) 722-5168 Fax. 1(866) 343-3942

PROJECT

IBER ROAD OFFICE CONDOS

46 IBER ROAD, STITTSVILLE ONTARIO

DRAWING

TREE CONSERVATION REPORT &

LANDSCAPE PLAN

STAMP

ONTARIO ASSOCIATION OF LANDSCAPE ARCHITECTS
JAMES B. LENNOX
MEMBER

SCALE: AS SHOWN

START DATE: MAY 2017

PROJECT NO.: 17-MIS-1746

PROJECT NORTH

DRAWING NO.: L.1

PLOT SIZE ARCH-D

D07-12-17-0146

17540

TOPOGRAPHICAL PLAN OF SURVEY OF

PART OF BLOCK 1
REGISTERED PLAN 4M-454
CITY OF OTTAWA

Prepared by Annis, O'Sullivan, Vollebekk Ltd.
Field Work Completed on September 21,2016.

Scale 1 : 250

10 7.5 5.0 2.5 0 5 10 Metres

Metric

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

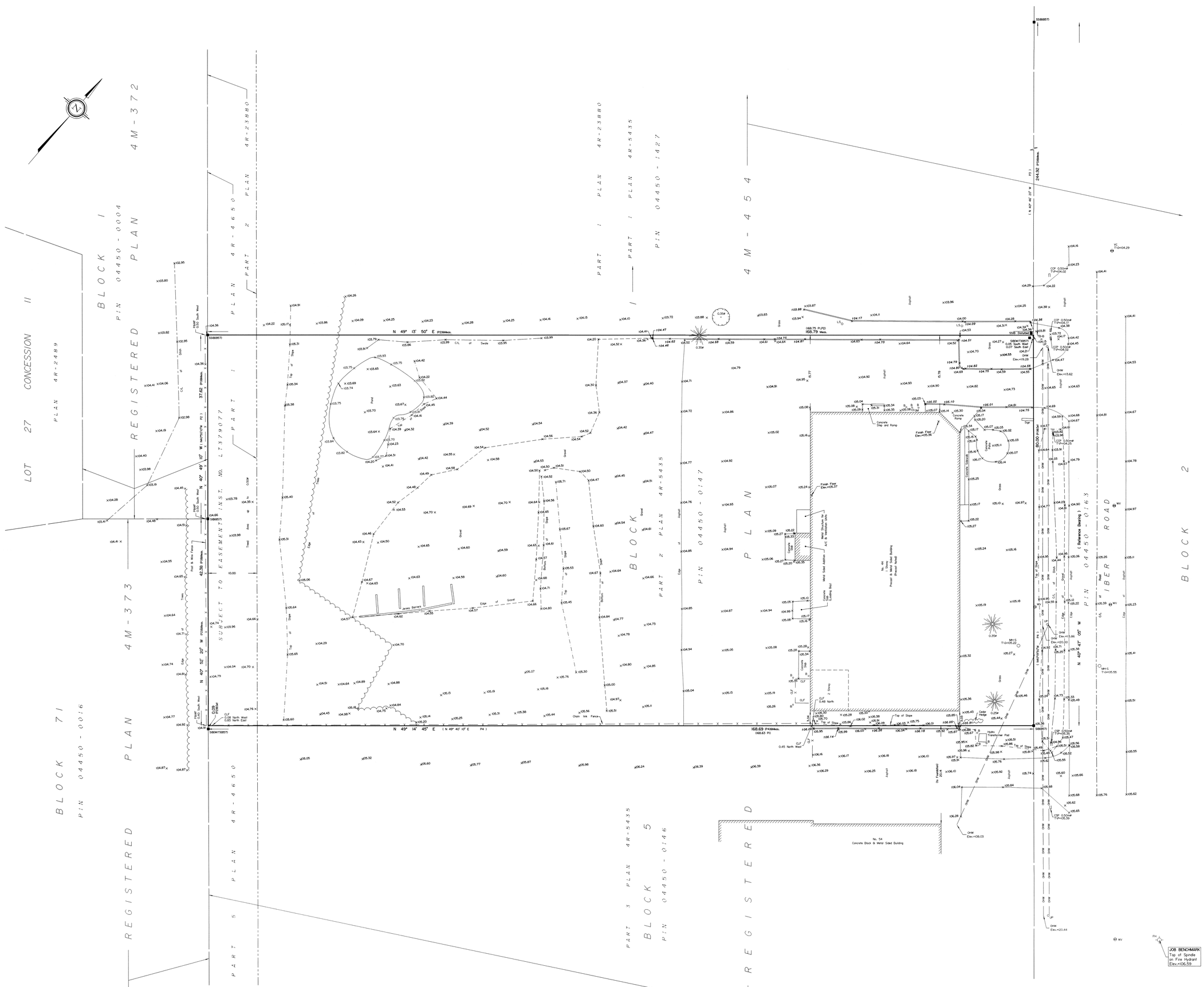
Surveyor's Certificate

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 21st day of September, 2016.

Date

Richard R. Gauthier
Ontario Land Surveyor



Notes & Legend

Denotes		
—□—	-	Survey Monument Planted
—■—	-	Survey Monument Found
SIB	-	Standard Iron Bar
SSIB	-	Shot Standard Iron Bar
IB	-	Iron Bar
CC	-	Cut Cross
CP	-	Concrete Pin
IB#	-	Round Iron Bar
(WIT)	-	Witness
Meas.	-	Measured
(AOG)	-	Annis, O'Sullivan, Vollebekk Ltd.
(P1)	-	Plan 4R-5435
(P2)	-	Plan 4R-23880
(P3)	-	Plan 4R-18324
(P4)	-	Plan by (AOG) Dated June 6, 1996

	-	Deciduous Tree
	-	Coniferous Tree
FH	-	Fire Hydrant
WV	-	Water Valve
MH-S	-	Maintenance Hole (Sanitary)
VC	-	Valve Chamber (Watermain)
CCP	-	Concrete Pipe
GM	-	Gas Meter
TB-B	-	Bell Terminal Box
B	-	Bollard
CLF	-	Chain Link Fence
UP	-	Utility Pole
LS	-	Light Standard
Ø	-	Diameter
x 60.00	-	Location of Elevations
+ 65.00	-	Top of Concrete Curb Elevation
T/P	-	Top of Pipe
C/L	-	Centreline
OHW	-	Overhead Wires
	-	Property Line

SITE AREA = 13 503 m² (1.35 ha)

BOUNDARY INFORMATION BASED ON FIELD SURVEY.

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

Distances shown on this plan are ground distances and can be converted to grid distances by multiplying by the combined scale factor of 0.999941.

Coordinates are derived from Can-Net 2016 Real Time Network GPS observations referenced to Specified Control Points 01919750705 and 01919770923, MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

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

.01919750705	Northing 5016816.93	Easting 360806.84
.01919770923	Northing 5013536.21	Easting 360775.92

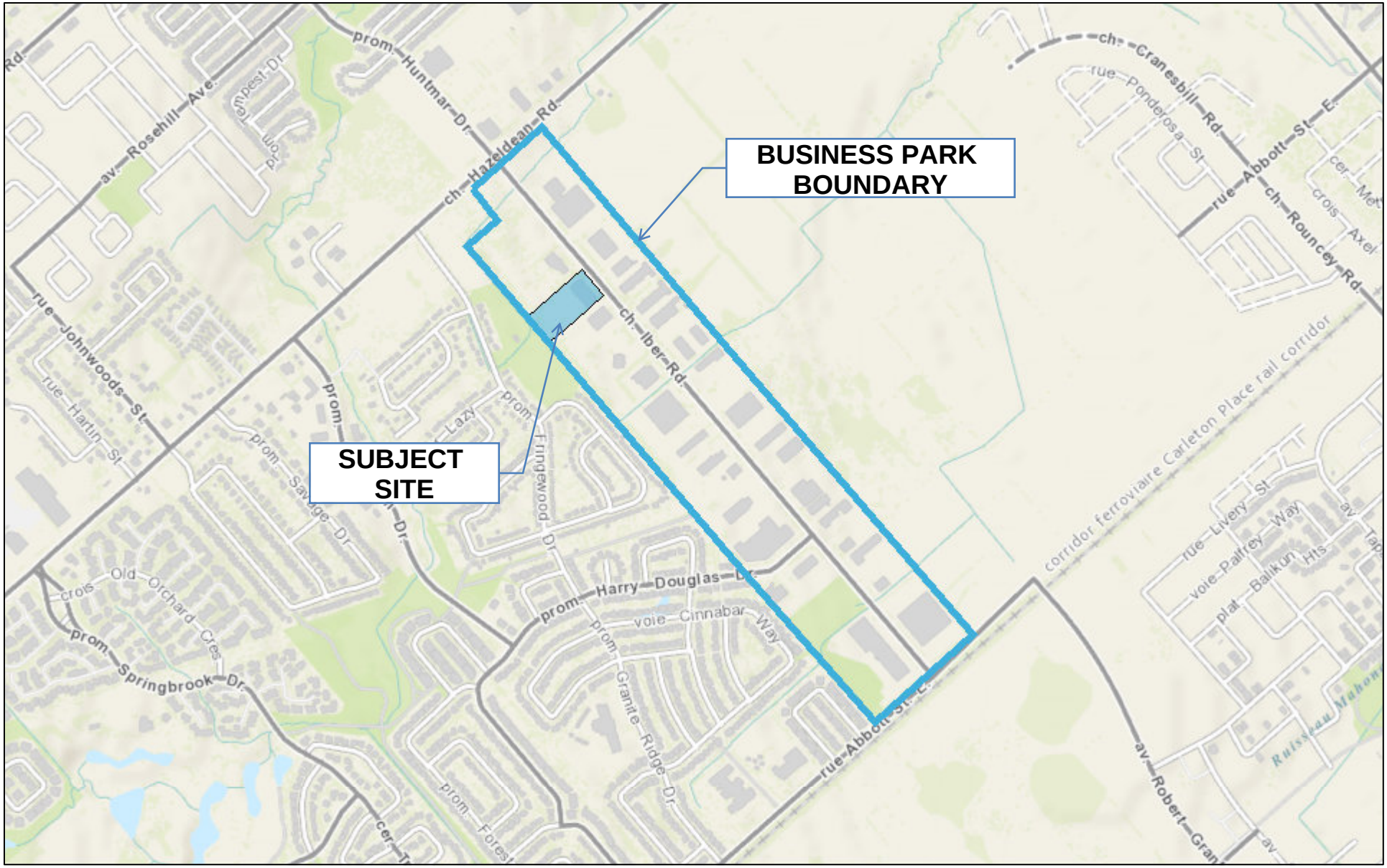
Caution: Coordinates cannot, in themselves, be used to re-establish corners or boundaries shown on this plan.

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

Ontario Land Surveyors

Job No. 19230-16 Huntington Pt. Bk. 1 Pl. 4M-454 D.D. A.M.

STITTSVILLE BUSINESS PARK



January 31, 2018

1:18,056

0 0.15 0.3 0.6 mi

0 0.25 0.5 1 km

City of Ottawa

LEGEND

+103.4 indicates proposed grades
+103.4 indicates ext'g. grades
D103.4 indicates proposed ditches & invert elevations
+103.4# indicates ext'g. grades to remain
indicates proposed grade same as ext'g.

Pond A
Size of base 77 x 16m
Ave bottom elev'n. 101.0
T.W.L. 102.0
T.W.L. 101.85
Outlet Pipe – 1-360ø CL50 Ductile Iron Pipe
Inv. 100.85

Creek
T.W.L. 101.27

END PHASE I & MATCH LINE CHAINAGE 6+99

P H A S E I

Boundary of Subdivision

Weir See Dwg No 561/10

100.9 Bottom Pond 66m

EASEMENT

10m Easement

B L O C K 2

115 m

BLOCK 3

BLOCK 4

End of berm

berm

Ditch grade 0.3%

Fill

Ditch Grade 0.3%

Approx Extent of Fill

T BM 102.883
Nail on West Side of H P 0.4m Above Ext'g Grade

A

Culvert

Sight Triangles

26m Road Allowance

Ext'g Gravel Road

REGIONAL ROAD 248

1.5m road widening

DRAINAGE EASEMENT

B L O C K 1

168 m±

BLOCK 13

10m Easement

Boundary of Subdivision

D102.86 D103.34 D103.62 D103.8 D103.98 D104.16 D104.34 D104.52 D104.7

SECTION A
DETAIL THRU SWALE

Edge of Ext'g Creek Easement
600
1 in 3±
1 in 3 max
1 in 3 max
Fin. Grade
Ext'g Grade
Ext'g Grade
600

TYPICAL DRAINAGE DETAIL
N.T.S.

boundary of property
Grading to suit development run-off restricted to coef 0.2
Run-off coef 0.7 – flow to roadside ditches
Grading to suit development run-off restricted to coef. 0.2
boundary of property
20.0 m
Road All'ce
20.0 m
Road
cut off ditch
Ext'g. Grade
sideslopes 1 in 3 max
2% min
2% min
swale
Ext'g. Grade
side slopes 1 in 3 max

NOTES

Notes on this drawing also apply to Drawings 9 & 10.

The storage ponds on Blocks 2, 7 & 8 contain the extra flow due to development from the road allowances & 20m on each side, at a run-off coefficient of 0.7. The remainder of the blocks will be developed to contain the extra flow due to development on each block by roof holding, pavement ponding or individual storage ponds. The extra flow from each block will discharge to the rear lot or road side ditches in a controlled manner not to exceed the present undeveloped run-off.

The elevation of any buildings will be set in relation to their location and the lot grading. The grading plan will be submitted to the Township by the Owner for Approval and Development Control Agreement.

Pond, Ditches & Swales

a) Max. side slopes 1 in 3

b) top & slopes of berms & bottom of sides of swales, ditches & ponds with 100mm topsoil & seed.

client. VALLEY VU REALTY LTD.

project. OTTAWA GOULBOURN BUSINESS PARK

NE 1/2 LOT 27, CON. XI TOWNSHIP OF GOULBOURN

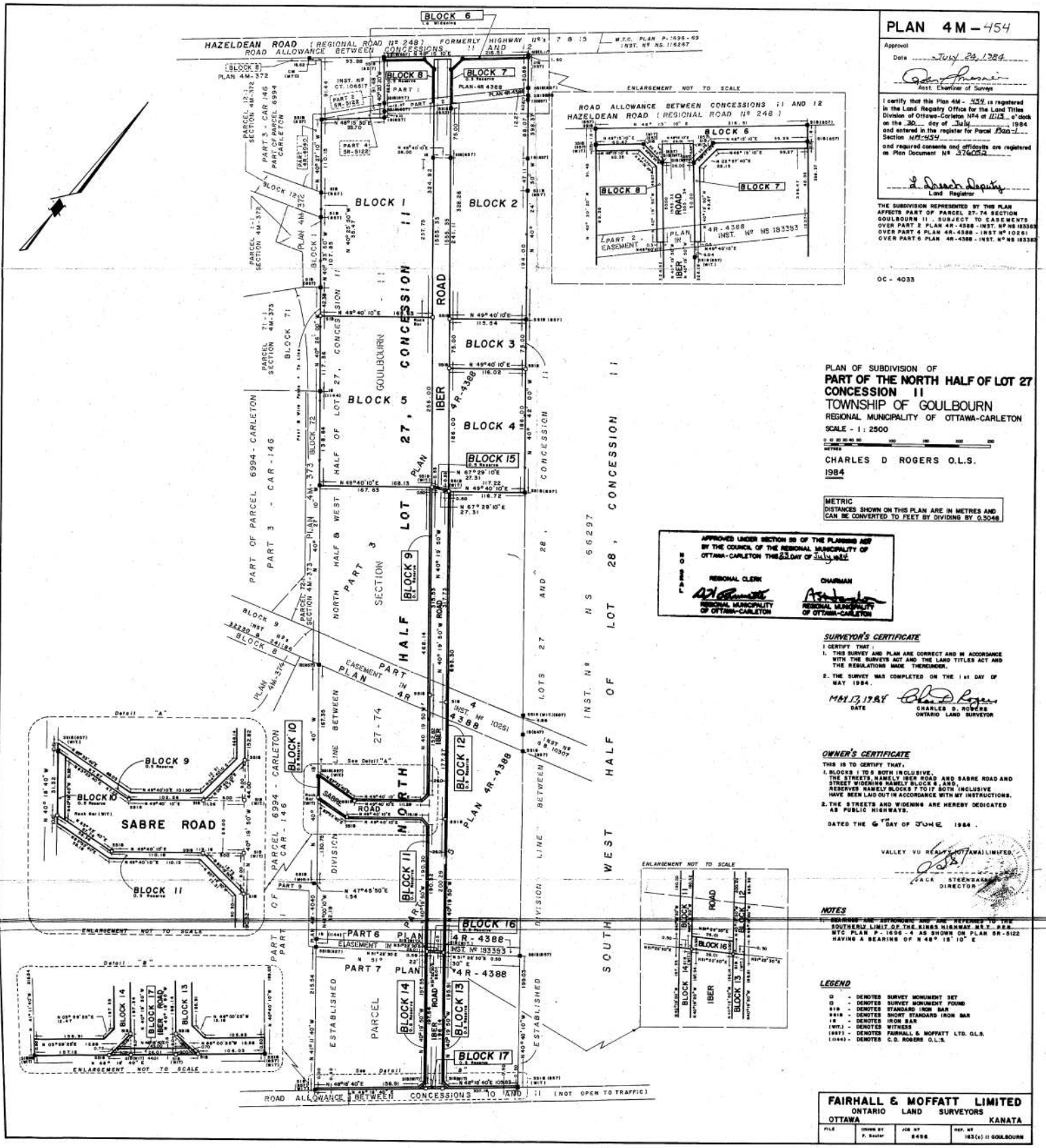
dwg description. EXISTING TOPOGRAPHY GRADING & DRAINAGE PLAN PHASE 1

SPENCER & ASSOCIATES CONSULTING ENGINEERS LTD.
3852 RICHMOND ROAD, OTTAWA. 828-5547.

drn by RT	scales 1:1000
chkd by	
trcd by	date SEPT 1983
project no. 561	
dwg no. 8	rev. B

No	REVISIONS	Date
A	Road crown and ditch grades changed. Pond A changed.	NOV 1983
B	Cross ditch moved to middle of easement	FEB 1984

2810



PLAN 4M-454

Approval

Date JULY 24, 1984

Asst. Examiner of Surveys

I certify that this Plan 4M-454 is registered in the Land Registry Office for the Land Titles Division of Ottawa-Carleton No4 at 11:15 o'clock on the 30 day of July 1984 and entered in the register for Parcel Plan-1 Section M/T-454

and required consents and affidavits are registered as Plan Document Nº 376052

L. Drasch Deputy
Land Registrar

THE SUBDIVISION REPRESENTED BY THIS PLAN AFFECTS PART OF PARCEL 27-74 SECTION GOULBOURN II, SUBJECT TO EASEMENTS OVER PART 2 PLAN 4R-4388 - INST. Nº WS 183393 OVER PART 4 PLAN 4R-4388 - INST Nº 10251 OVER PART 6 PLAN 4R-4388 - INST. Nº WS 183393

OC - 4033

PLAN OF SUBDIVISION OF
PART OF THE NORTH HALF OF LOT 27 CONCESSION II
TOWNSHIP OF GOULBOURN
REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
SCALE - 1 : 2500
METRES
CHARLES D ROGERS O.L.S.
1984

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

APPROVED UNDER SECTION 50 OF THE PLANNING ACT BY THE COUNCIL OF THE REGIONAL MUNICIPALITY OF OTTAWA-CARLETON THIS 23 DAY OF July 1984
REGIONAL CLERK — REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
CHAIRMAN — REGIONAL MUNICIPALITY OF OTTAWA-CARLETON

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :
1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE THEREUNDER.
2. THE SURVEY WAS COMPLETED ON THE 1 st DAY OF MAY 1984.

MAY 13, 1984 — DATE
CHARLES D. ROGERS — ONTARIO LAND SURVEYOR

OWNER'S CERTIFICATE

THIS IS TO CERTIFY THAT :
1. BLOCKS 1 TO 5 BOTH INCLUSIVE, THE STREETS, NAMELY IBER ROAD AND SABRE ROAD AND STREET WIDENING NAMELY BLOCK 6, AND, RESERVES NAMELY BLOCKS 7 TO 17 BOTH INCLUSIVE HAVE BEEN LAID OUT IN ACCORDANCE WITH MY INSTRUCTIONS.
2. THE STREETS AND WIDENING ARE HEREBY DEDICATED AS PUBLIC HIGHWAYS.

DATED THE 6 TH DAY OF JUNE 1984 .

VALLEY VU REALTY (OTTAWA) LIMITED
JACK SCHREIBMAN
DIRECTOR

NOTES

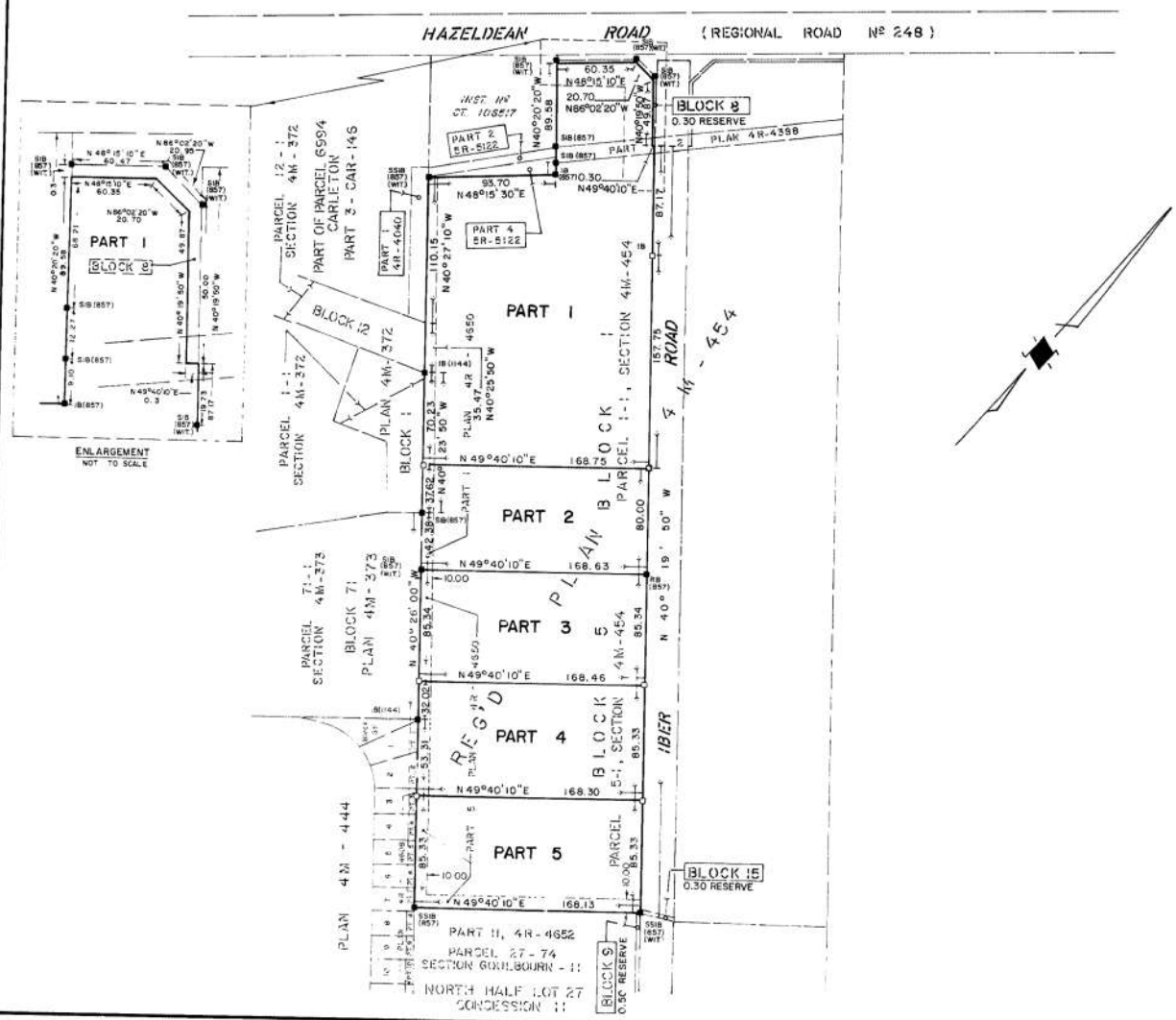
1. BEARINGS ARE ASTRONOMIC AND ARE REFERENCE TO THE SOUTHERLY LIMIT OF THE KINGS HIGHWAY N.S.T. B.S.R. MTC PLAN P-1696-4 AS SHOWN ON PLAN SR-5122 HAVING A BEARING OF N 48° 15' 10" E

LEGEND

○	- DENOTES SURVEY MONUMENT SET
●	- DENOTES SURVEY MONUMENT FOUND
519	- DENOTES STANDARD IRON BAR
5518	- DENOTES SHORT STANDARD IRON BAR
IB	- DENOTES IRON BAR
(WIT.)	- DENOTES WITNESS
(687)	- DENOTES FAIRHALL & MOFFATT LTD. O.L.S.
(1144)	- DENOTES C.D. ROGERS O.L.S.

FAIRHALL & MOFFATT LIMITED
ONTARIO LAND SURVEYORS
OTTAWA — KANATA

FILE	DRAWN BY	JOB Nº	REF. Nº
	P. Soulier	8496	163(c) II GOULBOURN



I REQUIRE THIS PLAN TO BE DEPOSITED UNDER THE LAND TITLES ACT.

DATE July 18, 1986

CHARLES D. ROGERS

PLAN 4R-5435

RECEIVED AND DEPOSITED

DATE 28 July 1986

J. Steele Asst. Dep

LAND REGISTRAR FOR THE LAND TITLES DIVISION OF OTTAWA-CARLETON (Nº 4)

PARTS 1 & 2 ALL OF PARCEL 1-1, SECTION 4M-454

PARTS 3, 4 & 5 ALL OF PARCEL 5-1, SECTION 4M-454.
PART 1 SUBJECT TO EASEMENT IN Nº NS 183383
PARTS 1-5 INCL. SUBECT TO EASEMENT IN Nº 379077

PLAN OF SURVEY OF
BLOCKS 1 & 5
REGISTERED PLAN 4M-454
TOWNSHIP OF GOULBOURN
REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
SCALE : 1 : 2500

0 10 20 30 40 50 100 150 METRES

CHARLES D. ROGERS, O.L.S.
1986

METRIC
DISTANCES 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 AND THE LAND TITLES ACT AND THE REGULATIONS MADE THEREUNDER.
2. THE SURVEY WAS COMPLETED ON THE 20th DAY OF JUNE, 1986.

July 18, 1986
DATE

CHARLES D. ROGERS
ONTARIO LAND SURVEYOR

NOTES

1. BEARINGS ARE ASTRONOMIC AND ARE REFERRED TO THE SOUTH-WESTERLY LIMIT OF IBER ROAD AS SHOWN ON REGISTERED PLAN 4M-454 HAVING A BEARING OF N 40°19'50"E.
2. ALL MONUMENTS SET ARE SSIB'S UNLESS OTHERWISE NOTED.

LEGEND

- ■ – DENOTES SURVEY MONUMENT FOUND
- □ – DENOTES SURVEY MONUMENT SET
- SIB – DENOTES STANDARD IRON BAR
- SSIB – DENOTES SHORT STANDARD IRON BAR
- IB – DENOTES IRON BAR
- 857 – DENOTES FAIRHALL & MOFFATT LTD. O.L.S.
- RB – DENOTES ROCK BAR

CAUTION THIS PLAN IS NOT A PLAN OF SUBDIVISION WITHIN THE MEANING OF THE PLANNING ACT

FAIRHALL, MOFFATT & WOODLAND LIMITED
ONTARIO LAND SURVEYORS
OTTAWA KANATA

FILE
JOB Nº 1506
REF Nº 10-4M-454

16X

379077

(3)

THE LAND TITLES ACT

VALLEY VU REALTY (OTTAWA) LIMITED, the registered owner of the freehold land registered in the Land Registry Office for the Land Titles Division of Ottawa-Carleton No. 4 as described in Schedule "A" in consideration of the sum of ONE DOLLAR ($1.00) paid to it transfers to THE CORPORATION OF THE TOWNSHIP OF GOULBOURN the free, uninterrupted and unobstructed right and easement, in perpetuity, upon, over, under, along and across the lands described in Schedule "A" for the following purposes:

1. To enter on and construct, repair and replace storm sewers and drainage works and equipment appurtenant thereto from time to time including all fixtures and equipment as the Township may from time to time or at any time hereafter deem requisite upon, over, under, along and across the lands described in Schedule "A" for the purposes of providing part of the drainage system of the Township of Goulbourn.

2. Together with the right of free and unimpeded access to the Township, its workmen, vehicles, supplies and equipment at all times and for all purposes necessary for or incidental to the exercise and enjoyment of the rights hereby transferred, over the lands described in Schedule "A" to and from the said storm sewers and drainage works and fixtures or any part or parts thereof which are to be constructed, repaired, replaced and maintained.

3. To trim, fell and remove any trees and brush necessary and incidental to permit access to construct, maintain and repair any part of the said storm sewer and drainage system.

The easements herein set forth are tranferred to the Township on the condition that the Township shall be responsible for any damage caused by it or its workmen, servants, agents or employees to the lands described in Schedule "A" and the Township covenants and agrees to replace as far as possible at its own expense any soil or turf removed in connection with any of its work herein referred to.

EXECUTIONS CLEAR

The easements herein set forth are to be used and enjoyed as appurtenant to the lands to the Township being composed of Part of Lot 22, Concession 8, of the Township of Goulbourn designated as Part 1 on a Reference Plan deposited in the Land Registry Office for the Registry Division of Ottawa-Carleton (No. 5) as Plan 5R-1711 for the purpose of enabling the Township to construct, operate, repair and maintain storm sewers and drainage works and equipment appurtenant thereto from the lands under its jurisdiction on the lands of the Transferor described in Schedule "A".

THIS TRANSFER OF EASEMENT and everything herein contained shall enure to the benefit of and be binding upon the parties hereto and their respective heirs, executors, administrators, successors and assigns.

DATED the 1st day of June, 1984.

IN WITNESS WHEREOF the Transferors have hereunto set their hands and seals or affixed its corporate seal duly attested to by its proper signing officers duly authorized in that behalf.

SIGNED, SEALED AND DELIVERED in the presence of

VALLEY VU [illegible] LIMITED

Per: _____
Authorized Signing Officer

Per: _____

SCHEDULE "A"

Parts of Blocks 1 to 5 inclusive on Plan 4M-454 registered in the Land Registry Office No. 4 for the Land Titles Division of Ottawa-Carleton at Ottawa designated as Parts 1 to 5 inclusive on a plan of survey of record deposited in the said office as Plan 4R-4650 being part of Parcels 1-1 to 5-1 inclusive in the Register for Section 4M-454.

CHARGEE'S CONSENT

AND the Chargee, THE ROYAL BANK OF CANADA, the registered owner of Charge No. 353894 in consideration of the sum of One Dollar ($1.00) of lawful money of Canada now paid by the Township to the Chargee, the receipt whereof is hereby acknowledged, hereby:

(a) consents to the registration of this agreement;

(b) agrees to the easements granted in this agreement to the Township, its successors and assigns subject to the terms and conditions set out in the agreement thereto;

(c) agrees that in the event it exercises any right of sale, possession or foreclosure or takes any other steps to enforce security in the sub-division:

(i) it will require any purchaser to, as a condition of its purchase, enter into an agreement with the Township in the form of this agreement;

(ii) in the event that it takes possession of the sub-division for the purposes of proceeding with its development, then it shall be bound by the provisions of this agreement as if it were named as the owner herein, provided that if it subsequently sells the sub-division or any part thereof, then, subject to compliance with the provisions of (i) above, the Chargee shall no longer be bound by the provisions of this agreement with respect to the sub-division or such part, as the case may be.

IN WITNESS WHEREOF the Chargee has executed this agreement by its duly authorized ~~officers~~ Attorneys as of the 25th day of June, 1984.

WITNESS: M E McMahon

THE ROYAL BANK OF CANADA

Per: [signature]

Per: [signature]

Power of Attorney No. 269408
registered on September 10, 1981

CHARGEE'S CONSENT

THE MANUFACTURERS LIFE INSURANCE COMPANY (the "Chargee") the registered owner of Charge No. 371145, in consideration of the sum of One ($1.00) Dollar of lawful money of Canada now paid by THE CORPORATION OF THE TOWNSHIP OF GOULBOURN, (the "Township"), the receipt whereof is hereby acknowledged, hereby consents to the registration of a Transfer of Easement dated June 1, 1984 transferring an easement for storm sewer and drainage purposes to the Township, made by VALLEY VU REALTY (OTTAWA) LIMITED.

IN WITNESS WHEREOF the Chargee has hereunto set its hand and seal.

DATED at Toronto this 27th day of July, 1984.

MUSE ACCT. NO. 72328

THE MANUFACTURERS LIFE INSURANCE COMPANY

THE MANUFACTURERS LIFE INSURANCE COMPANY

LAND TITLES ACT

AFFIDAVIT OF SUBSCRIBING WITNESS

I, Mehru E. Mahava

of the City of Etobicoke

in the Municipality of Metropolitan Toronto

make oath and say:

I am a subscribing witness to the attached instrument and I was present and saw it executed at Toronto by Michael E. Flaherty and Michael J. Dofort as attorneys for The Royal Bank of Canada.

I verily believe that the persons whose signatures I witnessed were authorized to execute the instrument as attorneys for The Royal Bank of Canada.

I know the said persons and they are, and at the time of the execution of the instrument they were, a Manager, Commercial Lending and Asst. Manager, Commercial Lending respectively, of The Royal Bank of Canada.

I am an employee of The Royal Bank of Canada and as such have personal knowledge of the matters deposed to herein.

SWORN BEFORE ME at the City of Toronto in the Municipality of Metropolitan Toronto this 25th day of June 19 84

M E Mahava

A Commissioner, etc. for taking affidavits

DOUGLAS P. CHANNELL,
A Commissioner, etc., Province of Ontario
for The Royal Bank of Canada
Expires July 10th, 1984.

AN AFFIDAVIT AS TO POWER OF ATTORNEY

I, Michael J. Dofort

of the City of Toronto

in the Regional Municipality of Metropolitan Toronto

make oath and say:

1. I am one of the attornies for The Royal Bank of Canada under Power of Attorney registered as No. 359408 in the Land Registry Office for the Land Titles Division of OTTAWA-CARLETON (NO. 4)

2. The Power of Attorney is in full force and effect and has not been revoked.

SWORN BEFORE ME at the City of Toronto in the Municipality of Metropolitan Toronto this 25th day of June, 1984

A Commissioner, etc. for taking affidavits.

DOUGLAS P. CHANNELL,
A Commissioner, etc., Province of Ontario
for The Royal Bank of Canada
Expires July 10th, 1984.

Sonary Co. Ltd.
2-/81

Form 1
Land Transfer Tax Act

REFER to all instructions on reverse side

AFFIDAVIT OF RESIDENCE AND OF VALUE OF THE CONSIDERATION

IN THE MATTER OF THE CONVEYANCE OF *(insert brief description of land)* Part of Blocks 1 to 5 inclusive as Parcels 1-1 to 5-1 inclusive in the Register for Section 4M-454 PART OF

BY *(print names of all transferors in full)* VALLEY VU REALTY (OTTAWA) LIMITED

TO *(see instruction 1 and print names of all transferees in full)* THE CORPORATION OF THE TOWNSHIP OF GOULBOURN

I, *(see instruction 2 and print name(s) in full)* JUDITH M. OYEN

MAKE OATH AND SAY THAT:

1. I am (place a clear mark within the square opposite that one of the following paragraphs that describes the capacity of the deponent(s)): *(see instruction 2)*
   - ☐ (a) A person in trust for whom the land conveyed in the above - described conveyance is being conveyed;
   - ☐ (b) A trustee named in the above - described conveyance to whom the land is being conveyed;
   - ☐ (c) A transferee named in the above - described conveyance;
   - ☒ (d) The authorized agent or solicitor acting in this transaction for THE CORPORATION OF THE TOWNSHIP OF GOULBOURN *(insert name(s) of principal(s))*

     described in paragraph(s) (a), (b), (c) above; *(strike out references to inapplicable paragraphs)*
   - ☐ (e) The President, Vice-President, Manager, Secretary, Director, or Treasurer authorized to act for *(insert name(s) of corporation(s))*

     described in paragraph(s) (a), (b), (c) above. *(strike out references to inapplicable paragraphs)*
   - ☐ (f) A transferee described in paragraph ( ) *(insert only one of paragraph (a), (b) or (c) above, as applicable)* and am making this affidavit on my own behalf and on behalf of *(insert name of spouse)*

     who is my spouse described in paragraph ( ). *(insert only one of paragraph (a), (b) or (c) above, as applicable)*

   and as such, I have personal knowledge of the facts herein deposed to.
2. I have read and considered the definitions of "non-resident corporation" and "non-resident person" set out respectively in clauses 1 (1)(i) and (g) of the Act. *(see instruction 3)*
3. The following persons to whom or in trust for whom the land conveyed in the above-described conveyance is being conveyed are non-resident persons within the meaning of the Act. *(see instruction 4)* none
4. THE TOTAL CONSIDERATION FOR THIS TRANSACTION IS ALLOCATED AS FOLLOWS:

(a) Monies paid or to be paid in cash	$ 1.00		ALL BLANKS MUST BE FILLED IN. INSERT "NIL" WHERE APPLICABLE
(b) Mortgages (i) Assumed *(show principal and interest to be credited against purchase price)*	$ nil		
(ii) Given back to vendor	$ nil		
(c) Property transferred in exchange *(detail below)*	$ nil		
(d) Securities transferred to the value of *(detail below)*	$ nil		
(e) Liens, legacies, annuities and maintenance charges to which transfer is subject	$ nil		
(f) Other valuable consideration subject to land transfer tax *(detail below)*	$ nil		
(g) VALUE OF LAND, BUILDING, FIXTURES AND GOODWILL SUBJECT TO LAND TRANSFER TAX *(total of (a) to (f))*	$ 1.00	$ 1.00	
(h) VALUE OF ALL CHATTELS – Items of tangible personal property *(Retail Sales Tax is payable on the value of all chattels unless exempt under the provisions of the Retail Sales Tax Act, R.S.O. 1980, c.454, as amended)*		$ nil	
(i) Other consideration for transaction not included in (g) or (h) above		$ nil	
(j) TOTAL CONSIDERATION		$ 1.00	

5. If consideration is nominal, describe relationship between transferor and transferee and state purpose of conveyance. *(see instruction 5)* Transfer to a municipality for storm sewer and drainage purposes
6. If the consideration is nominal, is the land subject to any encumbrance? nil
7. Other remarks and explanations, if necessary nil

SWORN before me at the City of Ottawa
in the Regional Municipality of Ottawa-Carleton
this 2nd day of August 1984

A Commissioner for taking Affidavits, etc.

Judith M. Oyen

PROPERTY INFORMATION RECORD

A. Describe nature of instrument... Transfer of Easement
   (i) Address of property being conveyed *(if available)* ... not available
   (ii) Assessment Roll # *(if available)* .. not available
B. Mailing address(es) for future Notices of Assessment under *the Assessment Act* for property being conveyed *(see instruction 6)*.
   Box 189, Stittsville, Ontario, K0A 3G0
C. (i) Registration number for last conveyance of property being conveyed *(if available)*.
   (ii) Legal description of property conveyed: Same as in C. (i) above. ☐ Yes ☐ No ☒ Not Known
D. Name(s) and address(es) of each transferee's solicitor
   Dale & Lessmann
   300-115 Lisgar Street
   Ottawa, Ontario
   K2P 0C2

JMO1sep

For Land Registry Office use only
REGISTRATION NO.
Land Registry Office No.
Registration Date

[redacted]

UNIPAX 1983
30 Production Drive
Scarborough, Ont. M1H 2X9

Form L130 Affidavit, Planning Act
For use under
Land Titles Act
and Registry Act
Revised Aug. 1983

Affidavit - Planning Act

IN THE MATTER OF THE PLANNING ACT, 1983

AND IN THE MATTER OF THE TITLE TO PARTS OF Blocks 1 to 5 inclusive as PARTS OF Parcels 1-1 to 5-1 inclusive in the Register for Section 4M-454.

Deed, Mortgage, Partial Discharge of Mortgage, Lease, Transfer, Charge etc.

AND IN THE MATTER OF A TRANSFER OF EASEMENT

THEREOF, FROM VALLEY VU REALTY (OTTAWA) LIMITED

TO THE CORPORATION OF THE TOWNSHIP OF GOULBOURN

DATED June 1, 19 84.

I, JUDITH M. OYEN

of the City of Ottawa in the Regional Municipality of Ottawa-Carleton

MAKE OATH AND SAY AS FOLLOWS:

1. I am the Solicitor for

the Township named in the above mentioned instrument, and have knowledge of the matters hereinafter sworn.

2. A consent under section 49 of the Planning Act, 1983, in respect of the said instrument is not required because.

Delete (a) if not applicable

[redacted]

State other reason if any

(b) The Transferee is a municipality exempt pursuant to Section 49(5)(b) of the Planning Act.

SWORN before me

at the City of Ottawa

in the Regional Municipality of Ottawa-Carleton

this 2nd

day of August 1984.

RONALD JOSEPH KARAM, Student-at-Law, a Commissioner, etc. in and for the Province of Ontario for Hall, Baker, Barristers and Solicitors. Expires August 7, 1987.

A COMMISSIONER FOR TAKING AFFIDAVITS ETC.

374077

379077

REGISTERED LAND TITLES
DIVISION OF OTTAWA-
CARLETON NO. 4 AT OTTAWA

'84 AUG 22 PM 4 12

B. Clarke
ASSISTANT
DEPUTY LAND REGISTRAR

LAND REGISTRY #4

REC. BY	JS
F.F. NO. OR PAGE	2409
ABST. BY	BAB
CHECKED BY	
RECRD. BY	

27.00 x 4 parcels
x 5 copies
Easement

(9)

DATED: June 1, 1984.

BETWEEN:

VALLEY VU REALTY (OTTAWA) LIMITED

AND:

THE CORPORATION OF THE
TOWNSHIP OF GOULBOURN

TRANSFER OF EASEMENT

Box 22

Bell, Baker
Barristers & Solicitors
116 Lisgar Street
Suite 500
Ottawa, Ontario
K2P 0C2

JHD:sep

[redacted]