CORPORATION OF THE TOWNSHIP OF EDWARDSBURGH/CARDINAL

BY-LAW NO. 2019-32

"BEING A BY-LAW TO AUTHORIZE AMENDMENT TO THE SITE PLAN CONTROL AGREEMENT REGISTERED AS INSTRUMENT PR177792 AS AUTHORIZED BY BY-LAW 2003-38"

WHEREAS the Council of the Corporation of the Township of Edwardsburgh/Cardinal entered into a Site Plan Control Agreement with B and M Carriers Limited by By-law 2003-38 at the regular meeting of Council on September 2, 2003, which Agreement was registered on November 3, 2003 as Instrument No. PR177792; and

WHEREAS the property described in the Site Plan Control Agreement was conveyed to the Owner by Transfer/Deed GC40767 on April 29, 2016; and

WHEREAS Authority is granted under Section 41 of the Planning Act, RSO 1990, c.P. 13, as amended to the Council of the Corporation of the Township of Edwardsburgh/Cardinal to enter into and amend such agreements; and

WHEREAS the Council of the Corporation of the Township of Edwardsburgh/Cardinal wishes to amend Schedules "A" through "C" to reflect the change in description, ownership and new use of the property.

NOW THEREFORE BE IT RESOLVED THAT the Council of the Corporation of the Township of Edwardsburgh Cardinal enacts as follows:

- 1. That Schedules "A", "B", and "C" of Site Plan Control Agreement, authorized by By-law 2003-38 and registered on title as Instrument No. PR177792 on November 3, 2003 shall be deleted and replaced with the attached Schedule "A", "B", and "C" which shall form part of this Agreement.
- 2. That all other provisions of Site Plan Control Agreement Instrument No. PR177792 shall remain in force and effect.
- 3. That this by-law shall come into force and effect upon passing.

Read a first and second time in open Council this 24th day of June, 2019.

Read a third and final time, passed, signed and sealed in open Council this 24th day of June, 2019.

Mayor **Deputy Clerk**



Exhibit 2

STORM WATER MANAGEMENT REPORT B & M CARRIERS

ENGINEERING REPORT STORM WATER MANAGEMENT

B & M CARRIERS

PART OF LOT 2 RANGE 1

TOWNSHIP OF EDWARDSBURG

REPORT PREPARED BY:

D. ENGINEERING SERVICES

ATT: DANIEL BESNER

986 ST-JACQUES

ROCKLAND, ON K4K 1C1

Our file number: BM 2003

August 1, 2003

8/21

PAGE

ENGINEERING REPORT STORM WATER MANAGEMENT

TABLE OF CONTENTS

1.0PURPOSE OF REPORT.32.0POST RUN-OFF COEFFICIENT "C" CALCULATION.43.0CULVERT # 1 DESIGN4 & 54.0CALCULATION OF PONDING REQUIREMENTS5 & 65.0POST-DEVELOPMENT FLOW (RATIONAL METHOD)66.0SEDIMENT AND EROSION CONTROL77.0CONCLUSION.8

APPENDIX "A": INTENSITY-DURATION FREQUENCY CURVE

APPENDIX "B": NOMOGRAGHS

APPENDIX "C": ONTARIO MINISTRY NATURAL RESOURCES MAP

ENGINEERING REPORT STORM WATER MANAGEMENT

1.0 PURPOSE OF REPORT

As requested by B & M CARRIERS, our firm has prepared a study for a 5year storm. 9121

The following report describes the drainage characteristics of the development. The 1.1934 hectares site is located in part of Lot 2 Range 1 in the Township of Edwardsburg.

The ground surface across the site is essentially sloping from North to South at about 1.90%. The entire site is covered with small bushes. The North, East & West adjacent properties are also covered with small to medium bushes. A paved area with a scale is in used by B & M CARRIERS on the adjacent South property.

A swale is proposed along all lot lines, which falls into a Retention pond.

In this report you will find our calculations for a proposed retention pond to support a 5 year storm event.

2.0 POST RUN-OFF COEFFICIENT "C" CALCULATION

From Ontario Ministry of Natural Resources map, the Watershed is 3.77 hectares

Watershed area =	37700 sq.m.

Impervious area =	8800 sq.m.	C = 0.90
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Bushes area = 28900 sq.m. C = 0.20

Post Run-off coefficient

 $C = (28900 \times 0.20) + (8800 \times 0.90)$

37700

3.0 Culvert # 1 design

Time of Concentration (AIRPORT FORMULA)

tc = $3.26 (1.1-C) L^{-5}$ L = 270 m S = 2.93

0.33 S

tc = 41 minutes

Since 41 min. > than 15 min. and smaller time is more critical, we will use tc = 15 min. to size the culvert

C = 0.36

11 of 21

FLOW CALCULATION (RATIONAL METHOD)

Q = 2.78 CAI

Where for a 5-year storm

tc = 15 minutes I = 77 mm/hrs C = 0.36

A = 0.88 hectare

 $Q = 2.78 \times 0.36 \times 0.88 \times 77$

Q = 68 liters/second

Volume to be discharged by the culvert = 68 l/s.

Using Nomographin Appendix "B", a 500 mm Culvert with HW/D = 1 will discharge a volume of 200 l/s. Therefore, a 500 mm Culvert would be adequate.

4.0 CALCULATIONS OF PONDING REQUIREMENT

Where for a 5-year storm

PRE-DEVELOPMENT FLOW (RATIONAL METHOD)

Q = 2.78 CAI

tc = 15 minutes I = 77 mm/hrs

C = 0.20

Q = 2.78 X 0.20 X 3.77 X 77

Q = 161.4 liters/second

12 / 21

Consider installing a pond to collect storm water at the West end of the property. Given that the pre-development volume is of 161.4 l/s. An existing 300 mm dia. culvert can be used for the inlet control device. Using the normograph in appendix "B", the discharge of the culvert is 70 l/s and using a 5 year storm intensity frequency curve we have determine the peak reservoir requirements, as the following:

TIME	INTENSITY	DESIGN FLOW	ICD	NET FLOW	RESERVOIR
(min)	mm/hr	Q = I/sec	FLOW	l/sec	(L)
5	190	716.3	70	646.3	193890
10	105	395.85	70	325.85	195510
15	77	290.29	70	220.29	198261
20	63	237.51	70	167.51	201012
30	48	180.96	70	110.96	199728
40	38	143.26	70	73.26	175824
50	33	124.41	70	54.41	163230
60	28	105.56	70	35.56	128016
120	18	67.86	70	-2.14	-15408
180	15	56.55	70	-13.45	-145260
240	10	37.7	70	-32.3	-465120
300	9	33.93	70	-36.07	-649260
360	8	30.16	70	-39.84	-860544
420	7	26.39	70	-43.61	-1098972
480	5	18.85	70	-51.15	-1473120
540	4	15.08	70	-54.92	-1779408
600	3	11.31	70	-58.69	-2112840

POST-DEVELOPMENT FLOW (RATIONAL METHOD)

The maximum total gross volume for the ponding generated is during a 5-year storm after 20 minutes. This volume is 201012 liters or 201 cu. m. The proposed pond has a capacity of 500 cu m. which is more than adequate.

13 / 21

6.0 SEDIMENT AND EROSION REPORT

BEST MANAGEMENT PRATICES (BMPs)

During the construction period, the engineers will ensure that sediment traps be constructed. These traps shall be periodically inspected, cleaned and maintained for proper functions. Given relatively small storm water runoff anticipated in this development, we believe that the proposed sediment traps will ensure that sediment-laden runoff flows will not exit in this development.

This development is expected to produce runoff, which has insignificant concentrations of TSS and other pollutants. The vegetative BMPs in this development are a network of grassed swale, which will promote natural infiltration. Given the fact that the existing slopes are generally about 1.90 %, and that the groundwater table is approximately 0,5 meters below the existing ground elevation, we believe that these features will ensure that the BMPs which we have proposed will meet the requirements of stormwater quality management for this site.

As shown on our plans, the cross-section of our drainage swales are shallow and wide (3: 1) side slopes will promote effective pollutant and TSS removal.

The monitoring of the swale maintenance will be regulated by the Township.

Unless major lot regarding is conducted after the development is completed, we expect the maintenance requirements to be minimal.

14 of 21

7.0 CONCLUSION

In conclusion, considering the small volume of water to be stored in the proposed retention pond, partly located West of the proposed site and the exceeding size of the retention pond,

We recommend that, this report be approved by the Township.

Note: This report shall be revised should B & M CARRIERS decide to develop his West property.



15 121

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APPENDIX "A"



17/21

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APPENDIX "B"



19 / 21

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APPENDIX "C"





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Exhibit 3



Exhibit 5

RIDEAU BULK TERMINAL TOWNSHIP OF EDWARDSBURG/CARDINAL, ON PREPARED FOR: GESTION IMMOBILIÈRE SETL

STORMWATER MANAGEMENT REPORT 3006 COUNTY ROAD 2, JOHNSTOWN

EASTERN ENGINEERING GROUP INC. APEX BUILDING 100 STROWGER BLVD, SUITE 207 BROCKVILLE, ON K6V 5J9

> MARCH 2019 REVISED MAY 2019

GESTION IMMOBILIÈRE SETL 3006 COUNTY ROAD 2, JOHNSTOWN, ON K0E 1T1

STORMWATER MANAGEMENT BRIEF

MARCH 2019

PROJECT

Rideau Bulk Terminal is located at 3006 County Road 2, Johnstown, ON in the Township of Edwardsburg/Cardinal. The site is currently a storage/loading area for different product. The property is owned by Gestion Immobilière SETL. The site is 1.1924 ha and located in part of Lot 2 Concession 1 in the Township.

Rideau Bulk Terminals is the operator of the site and would like to expand its operations. Rideau Bulk will manage the construction of a new asphalt pad with a tarp building on concrete blocks for storage of bulk material.

Both Gestion Immobilière SETL and Rideau Bulk Terminals are owned by Logistec Stevedoring Inc.

EXISTING CONDITIONS

The existing site currently has a large storage area being used for bulk storage of salt. The site has 2 buildings in the south eastern portion of the site. There was a previous stormwater management report created in August 2003 by D. Engineering Services for the addition of the buildings. This report focuses on the proposed development in 2019 on the western side of the site.

The area where the new asphalt pad will be constructed is currently open cut from previous construction.

A geotechnical report for the area was completed by St. Lawrence Testing and Inspection Company in August 2018. The report number is 18C262 and is attached to this report in the appendix.

The site conditions are a brown, dense silty sand till. Bedrock was encountered on all test pits completed at an average depth of +- 2m.

PROPOSED DEVELOPMENT

The proposed development is shown on Drawing 8569 - C1. It consists of the following:

- 8350 m² of asphalt including area below the storage building. This will be constructed on a gravel base as per the Geotechnical recommendations.
- New 2787 m2 tarp storage building on concrete block foundations.
- Regrading of surface around the asphalt pad to direct water to stormwater basin.
- New stormwater basin to store surface runoff from the newly developed area.

POST DEVELOPMENT DRAINAGE

The post development drainage has been designed to direct surface water for the new asphalt area to the new detention basin.

Development of the site will result in an increase in runoff. Stormwater detention for the 5 year to 100 year storm is provided by the basin.

STORMWATER MANAGEMENT

PRE-DEVELOPMENT RUNOFF

The calculations below are for the new asphalt area shown on 8569 - C1 at the west side of the existing asphalt area.

The pre-development flow for the drainage area is calculated using the Rational Method. We will assume Time of Concentration of 15 mins for the area.

The rainfall intensity for a 5 year storm event is 77mm/hr (from previous SWM report). The pre development runoff coefficient is dense packed soil, with bedrock within 2m of the surface. We will use a runoff coefficient of 0.75 for the packed soil. The area is 0.835 he of asphalt

The area is 0.835 ha of asphalt.

Q = 2.78 C I A	Q = flow volume, L/s
	c = runoff coefficient
	i = rainfall intensity, mm/hr.
	A = area, ha.

 $Q = 2.78 \times 0.75 \times 77 \times 0.835 = 134.06 L/s$ Allowable.

POST DEVELOPMENT RUNOFF

The post development runoff coefficients are:

Asphalt

0.835 ha. @ 0.90

 $C_{avg.} = 0.90$

STORAGE

5 Year Storage

The 5 year storage is determined using the Modified Rational Method

Tc (min.)	I (mm/hr.)	Q L/s	Qallow. (L/s)	Qstored (L/s)	Storage (m ³)
5	133	277.86	134.06	143.80	43.14
10	105	219.36	134.06	85.30	51.18
15	77	160.87	134.06	26.81	24.13

The maximum total gross volume for the ponding requirements is during a 5 year storm event at 10 minutes. This volume is 51.18 m³.

100 Year Storage

Tc (min.)	I (mm/hr.)	Q L/s	Qallow. (L/s)	Qstored (L/S)	Storage (m ³)
15	149.0	311.3	134.06	177.24	159.51
20	128.0	267.4	134.06	133.36	160.04
25	112.4	234.7	134.06	100.268	151.02

The 100 year storage is determined using the Modified Rational Method

The maximum total gross volume for the ponding requirements is during a 100 year storm event at 20 minutes. This volume is 160.04 m³. The proposed pond is sized to hold 248 m³.

STORAGE PROVIDED

Proposed Basin

The basin will be constructed at the south west corner of the new asphalt pad. The runoff from both sides of the storage shed will run into the new basin. The basin is 20 m x 14 m and an average depth of 0.35 m. The calculated storage is 248 m3. This is above the required storage.

The outlet control will be a 300 mm dia PVC installed in the base of the bed at a slope of 1.7% which will allow 123 L/s from the basin.

The basin will be vegetated along with the swales leading to the basin.

QUALITY CONTROL

The site has limited site characteristics to provide TSS removal using conventional methods. The area being developed is currently a gravel/grassed area with shallow bedrock.

The treatment train approach will be used. The overland flow from the proposed asphalt will flow to a pre-treatment sediment forebay. The forebay will slow velocities of incoming stormwater. They are easily accessed for sediment removal from the asphalt areas. The forebays will be constructed below the outlet pipe in order to force water and sediment to filter in the forebay before reaching the stormwater detention basin. On the west side of the development, there will be a swale with three rock check dams constructed in the swale to force water to flow through the rock structure, before entering a sediment forebay. Beyond the forebay, the bottom of the detention basin will be constructed with a 0.5m deep sediment trap below the outlet pipe. This area will be accessible for cleaning.

EROSION AND SEDIMENT CONTROL MEASURES

During the construction period, the engineers will ensure that sediment traps are constructed. These traps will be periodically inspected, cleaned and maintained for proper function during construction. Give the relatively small storm water runoff anticipated in this phase of construction, the proposed sediment traps will ensure that the sediment laden runoff flows will not exit the development.

The development is expected to produce runoff, which as insignificant concentrations of TSS and other pollutants. The vegetative BMPs in this phase of construction are a grassed swale, which will promote natural infiltration, and the basin which will be vegetated. The groundwater table in this area is assumed to be at bedrock level which will give approximately 2m of earth to ensure the BMPs which are proposed will meet the requirements of SWM.

The following measures shall be enacted to provide erosion and sedimentation control:

- A light duty silt fence barrier shall be installed along the construction area prior to the start of construction.
- Disturbed earth surfaces shall be covered with granular (entrance, loading area, parking and access road) or 100 mm topsoil, seed and cover (all grass areas).
- Areas not required for construction shall not be disturbed.

The silt fence barrier shall remain in place until revegetation has been achieved. The barrier shall be monitored daily and maintained as required. The Contractor shall remove the sediment and erosion control measures upon completion of construction and after revegetation has occurred.

The Sediment and Erosion Control Plan shall be considered a 'living document' that may need to be changed or adjusted during the life of the project to be effective.

Submitted by:

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Colin A. Jardine, P.Eng





