FUNCTIONAL SERVICING REPORT
PROPOSED RESIDENTIAL DEVELOPMENT
SIXTY SIX TWENTY
DI BLASIO HOMES
6620 ROTHSCHILD TRAIL
CITY OF MISSISSAUGA
REGIONAL MUNICIPALITY OF PEEL

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Our File No: 218-M14
Dated: July, 2018

EXECUTIVE SUMMARY

This Functional Servicing Report (FSR) has been prepared on behalf of Di Blasio Homes in support of a Re-Zoning application to facilitate a proposed infill residential development. This FSR presents a site servicing strategy for the proposed development that addresses the requirements of the applicable regulatory agencies and provides the basis for detailed servicing design. The servicing strategy for the proposed development is summarized as follows:

Transportation System

The proposed development will be efficiently serviced by Rothschild Trail, McLaughlin Road, Derry Road West and Courtneypark Drive West.

Water Servicing

The proposed development is to be serviced by a **200mm diameter** connection to the existing 200mm diameter PVC watermain located on the west side of Rothschild Trail. The water demand requirement for Maximum Day Demand plus Fire Flow is **8,019.78 L/min (133.663 l/s)**.

Sanitary Servicing

The proposed development is to be serviced by a new **200mm diameter** connection to the existing 250mm sanitary sewer located on an easement that traverses the property. The peak sanitary design flow of the proposed development is **2.21 l/s (0.00221 m^3/s)**.

Stormwater Servicing

Presently, the runoff from the site drains sheet flow in a northerly, westerly and southerly direction towards Fletcher's Creek and its tributary.

The proposed development will discharge the runoff into the existing Fletcher's Creek Tributary.

All foundation drains proposed for lower level parking including the ramp's storm trough will require sump pumps fitted with backwater valves and will be connected to on site storm sewer **(see Dwg. No. 218-M14)**.

The City of Mississauga and CVC standards identify the objectives for runoff from new development sites including water quantity, water quality and water balance.

Quantity

Quantity control will be provided for the proposed development as illustrated in Section 6.1.1 – Quantity Control, that is a sub-section of 6.1 – Stormwater Management.

Quality

Quality control was implemented for the site by providing an oil/grit separator **Type STC 300** manufactured by Stormceptor. The proposed unit is capable of treating **0.0141 m^3/s (1.41 l/s)** with **84%** TSS removal as illustrated in Section 6.1.2 – Quality Control.

Water Balance

A water balance of **23.03 m^3** is required and will be retained to be used for infiltration back into the ground as illustrated in Section 6.1.3 – Water Balance.

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1.0 INTRODUCTION

Skira & Associates Ltd. has been retained by Di Blasio Homes to investigate and prepare a Functional Servicing Report (FSR) to facilitate the proposed infill residential development. It is proposed to facilitate the construction of a residential four (4) storey apartment building.

The proposed development is located on Rothschild Trail in the City of Mississauga. **(See Figure No. 1)**.

It is intended that this FSR will assist in the assessment and review of the re-zoning application and later to guide the detailed design of the proposed redevelopment. The proposed design criteria is intended to meet the requirements of the City of Mississauga and any other relevant authorities.

2.0 STUDY AREA INFORMATION

The subject property is situated on Part of Lot 21 & 22, Registered Plan 43M-1710

The approximately 0.9287 hectare site is located on the end of Rothschild Trail. Presently, the area proposed for development is identified as 6620 Rothschild Trail. A 2 ½ storey brick, stone and stucco building is located on the property and is proposed for demolition. The subject site is bounded by Fletcher's Creek to the south and by a Fletcher's Creek Tributary to the north.

3.0 TRANSPORTATION SYSTEM

The site is in a good location being serviced by existing Rothschild Trail and McLaughlin Road running north-south. The existing nearby road system will provide a good access to Derry Road West and Courtneypark Drive West.

The proposed access to the site will be via a proposed 7.00m wide driveway connecting to Rothschild Trail.

4.0 WATER DISTRIBUTION SYSTEM

The proposed development is to be serviced by a **200mm diameter** connection to the existing 200mm diameter PVC watermain located on the west side of Rothschild Trail. The **200mm diameter** watermain connection will provide water supply for the fire protection and domestic usage **(see Dwg. No. 218-M14)**. The water demand requirement for Maximum Day Demand plus Fire Flow is **8,019.78 L/min (133.663 l/s)**.

Maximum Day Demand Calculation
Average Day Demand – 191 L/capita/day (0.00221 L/cap/s)

Unit Type	Population Density
2 Bedroom plus Den Apartment	2.1 persons/unit

Building	Building Data (units)	Population (persons)	Average Day Flow (l/s)	Peak Hour, AD x PH[1] (l/s)	Max. Day AD x MD[2] (l/s)
2 Bedroom	43	90.3	0.200	0.496	0.330
TOTAL:		**90.3**	**0.200**	**0.496**	**0.330**

[1] Peak Hour Factor, PH, is 2.48 for residential and 1.20 for commercial
[2] Max Day Factor, MD, is 1.65 for residential and 1.10 for commercial

Maximum Day Demand = **19.80 L/min (0.330 l/s)**

Fire Flow = **8,000 L/min (133.333 L/s)** – see calculation in **Appendix "B"**

Total Water Demand = (Max. Day Demand + Fire Flow)

0.330 + 133.333 = **133.663 L/s (8,019.78) L/min)**

5.0 SANITARY DRAINAGE SYSTEM

The proposed development is to be serviced by a new **200mm** diameter sanitary connection **(see Dwg. No. 218-M14)**. The new gravity connection will service the entire building and will discharge the sewage into the existing 250mm diameter sewer located on an easement that traverses the property.

5.1 Sanitary Flow Calculations

Types of units breakdown:

- Two bedrooms plus den - 43

Persons per unit:

- Two bedrooms plus den - 2.1 persons/unit

Population:

- 43 units x 2.1 = 90.3 Say **91**

Average Waste Water Flow = 450 l/cap/day

Average Daily Flow = 450 l/cap/day x 91 persons = 40,950 l/day

Average Flow = 40,950/24hr/3600s = **0.474l/s**

Peak Factor $= 1 + \frac{14}{4 + P^{0.5}}$

Where, P = population in thousands

$= 1 + \frac{14}{4 + 0.091^{0.5}}$

$= 1 + \frac{14}{4 + 0.302}$

$= 1 + \frac{14}{4.302}$

$= 1 + 3.254 =$ **4.254**

Infiltration Allowance (Sub-Area "B" = 0.7466 ha)

Infiltration = 0.26 l/s/ha

= 0.26 x 0.7466 ha = **0.194 l/s**

Design Flow = average flow x peaking factor + infiltration allowance

= 0.474 x 4.254 + 0.194

= **2.21 l/s (0.00221 m³/s)**

6.0 STORM DRAINAGE SYSTEM

The purpose of this section is to provide a suitable storm drainage solution for the proposed development area in order to comply with the City of Mississauga and CVC requirements.

Presently, the runoff from the site drains sheet flow in a northerly, westerly and southerly direction toward Fletcher's Creek and its tributary.

The proposed development will discharge the runoff into existing Fletcher's Creek Tributary.

All foundation drains proposed for lower level parking including the ramp's frough will require sump pumps fitted with lock water valves and will be connected to on sites storm sewer **(see Dwg. No. 218-M14)**.

6.1 STORMWATER MANAGEMENT

6.1.1 QUANTITY CONTROL

The on-site stormwater management plan that applies to the proposed development is as follows:

- The on-site stormwater management will ensure that the **100-year** storm event post-development flows will not exceed the pre-development release rates of the **2 year** storm event under the existing site conditions.
- Maximum required storage volumes for the site was arrived at using the Modified Rational Method.

6.1.1.1 Existing Site Conditions

Total Site Area = 0.9287 Ha

Total Roof Area = 0.0372 Ha

Paved/Concrete Area = 0.0640 Ha

Landscaped Area = 0.8275 Ha

Weighted C = 0.25 x 0.8275/0.9287 + 0.90 x 0.1012/0.9287

= 0.223 + 0.098

= **0.321**

Site Imperviousness = 0.1012 / 0.9287 = **10.9%**

The site runoff developed by a **2 year** storm event is as follows:

A	= 0.9287 Ha	Q = CIA / 360	
C	= 0.321		
T_c	= 15.00 min	Q_{2yr}	= 0.321 x 59.89 x 0.9287/360
I_{2yr}	= 59.89 mm/hr	Q_{2yr}	= **0.0496 m³/s**

6.1.1.2 Post-Development Conditions

Total Site Area	= 0.9287 Ha
Total Roof Area	= 0.1939 Ha
Total Paved/Concrete Area	= 0.1480 Ha
Total Landscaped Area	= 0.5868 Ha

Maximum allowable discharge from entire site shall be as follows:

$Q_{2yrallow}$ = **0.0496 m³/s**

The post-development drainage area was divided into **two (2) Sub-Areas ("A" and "B")** that reflect the applied stormwater management concept for the property.

Sub-Area "A" – 0.1821 Ha (West Part Undeveloped)

Site Area	= 0.1821 Ha
Landscaped Area	= 0.1821 Ha

The site runoff developed by a **2-year** storm event is as follows:

T_c	= 15.00 min	Q	= CIA/360
I_{2yr}	= 59.89 mm/hr	Q_{2yr}	= 0.25 x 59.89 x 0.1821 / 360 = **0.0076 m³/s**
C	= 0.25		

Sub-Area "B" – 0.7466 Ha (East Part Re-Development)

Site Area	= 0.7466 Ha
Roof Area	= 0.1939 Ha
Paved / Concrete Area	= 0.1480 Ha
Landscaped Area	= 0.4047 Ha

Weighted C = 0.25 x 0.4047 / 0.7466 + 0.90 x 0.3419 / 0.7466

= 0.136 + 0.412

= **0.548**

The maximum allowable discharge from this sub-area shall be as follows:

Q_{2yr} = 0.0496 – 0.0076 (Sub-Area "A") = **0.0420 m³/s (42.0 l/s)**

A portion of the site comprising of landscaping area along the south and north property lines will be allowed to drain uncontrolled towards Fletcher's Creek.

Uncontrolled Drainage Area

Site Area = 0.2860 Ha

Landscaped Area = 0.2860 Ha

A = 0.2860 Ha

C = 0.25

T_c = 15.00 min

I_{100yr} = 140.69 mm/hr

Q = CIA / 360

Q_{100yr} = 0.25 x 140.69 x 0.2860 / 360

Q_{100yr} = **0.0279 m³/s**

Controlled Drainage Area

Site Area = 0.4606 Ha

Roof Area = 0.1939 Ha

Paved/Concrete Area = 0.1480 Ha

Landscaped Area = 0.1187 Ha

Imperviousness = 0.3419 / 0.4606 = **74.2%**

The maximum allowable discharge from this area shall be as follows:

Q_{2yr} = 0.0420 – 0.0279 (uncontrolled 100-yr) = **0.0141 m³/s (14.1 l/s)**

The building roof will be provided with controlled roof drains that will limit the runoff discharge to **35.0 l/s/ha (0.035 m³/s/ha)** of roof area.

Controlled Roof Area = 0.1939 Ha

Controlled Roof Discharge will be as follows:

0.1939 Ha x 0.035 m³/s/Ha = **0.0068 m³/s (6.80 l/s)**

YEAR
STORM
100
CITY
Mississauga

C = 0.900
A (ha) = 0.19390
Allow. Discharge Qa (m3/s) = 0.006800
Safety Factor Sf = 0%

Max. Required Detention (m3) = ***73.90***

RAINFALL DURATION *Tc (min)*	**RAINFALL INTENSITY** *I (mm/hr)*	**TOTAL UNCONTROLLED RUNOFF** *Q=CIA/360 (m3/sec)*	**INFLOW VOLUME** Vi (m3)	**OUTFLOW VOLUME** Vo (m3)	**REQUIRED DETENTION VOLUME (m3)** *D=(Vi-Vo)*Sf*
15	140.69	0.0682	61.38	6.08	55.44
20	118.12	0.0573	68.71	8.08	60.78
25	102.41	0.0496	74.47	10.08	64.54
30	90.77	0.0440	79.21	12.09	67.29
35	81.77	0.0396	83.24	14.09	69.32
40	74.58	0.0362	86.77	16.10	70.84
45	68.68	0.0333	89.89	18.11	71.97
50	63.75	0.0309	92.71	20.11	72.78
55	59.56	0.0289	95.28	22.12	73.34
60	55.95	0.0271	97.64	24.13	73.70
65	52.81	0.0256	99.83	26.14	73.87
70	50.03	0.0243	101.87	28.15	**73.90**
75	47.58	0.0231	103.78	30.16	73.80
80	45.38	0.0220	105.58	32.17	73.59
85	43.39	0.0210	107.28	34.18	73.28
90	41.60	0.0202	108.90	36.19	72.88

Maximum Volume if detained temporarily on roof top represents water ponding depth of
73.90 m³ / 1939.0 m² = 0.038m (3.8cm)

The flat roof is to be equipped with Zurn Control – Flo Roof Drains

Maximum flow per 1 weir = 5.00 US GPM per 1 inch of head of water or
0.124 l/s per 1cm head of water

0.124 l/s/cm x 3.8cm = 0.471 l/s

Maximum discharge = 0.0068 m³/sec (6.8 l/s)

Number of weirs = 6.8 / 0.471 = 14.44 **say 15 weirs**

Number of roof drains: 3 drains with 5 weirs each

Controlled Roof Discharge = 15 x 0.471 = **7.1 l/s (0.0071 m³/s)**

Therefore, maximum allowable discharge from the remaining controlled area of the site (0.2667 ha) is as follows:

Q_{2yr} = 0.0141 – 0.0071 (controlled roof)

= **0.0070 m³/s (7.0 l/s)**

The runoff discharge from this area will be regulated by an orifice restrictor plate installed over the outlet pipe at the **CBMH-1** located just upstream the proposed oil/grit separator. The size of the orifice restrictor plate is **75mm diameter** with a **100 year** water ponding of **182.98 m**.

Orifice Restrictor Plate Discharge = **0.0141 m³/s (14.1 l/s) – See Appendix A**

Controlled Site Area = 0.2667 Ha

Paved/Concrete Area = 0.1480 Ha

Landscaped Area = 0.1187 Ha

Weighted C = 0.25 x 0.1187 / 0.2667 + 0.90 x 0.1480 / 0.2667

= 0.111 + 0.499

= 0.61

Imperviousness = 0.1480/0.2667 = **55.5%**

YEAR
STORM
100
CITY
Mississauga

C = **0.610**
A (ha) = **0.26670**
Allow. Discharge Qa (m3/s) = **0.007000**
Safety Factor Sf = **0%**

Max. Required Detention (m3) = ***66.39***

RAINFALL DURATION *Tc (min)*	**RAINFALL INTENSITY** *I (mm/hr)*	**TOTAL UNCONTROLLED RUNOFF** *Q=CIA/360 (m3/sec)*	**INFLOW VOLUME** Vi (m3)	**OUTFLOW VOLUME** Vo (m3)	**REQUIRED DETENTION VOLUME (m3)** *D=(Vi-Vo)*Sf*
15	140.69	0.0636	57.22	6.25	51.10
20	118.12	0.0534	64.06	8.31	55.89
25	102.41	0.0463	69.42	10.37	59.20
30	90.77	0.0410	73.84	12.43	61.57
35	81.77	0.0370	77.60	14.49	63.27
40	74.58	0.0337	80.89	16.55	64.50
45	68.68	0.0310	83.80	18.61	65.36
50	63.75	0.0288	86.43	20.67	65.92
55	59.56	0.0269	88.83	22.74	66.25
60	55.95	0.0253	91.03	24.80	**66.39**
65	52.81	0.0239	93.07	26.87	66.36
70	50.03	0.0226	94.97	28.93	66.20
75	47.58	0.0215	96.75	31.00	65.91
80	45.38	0.0205	98.43	33.07	65.52
85	43.39	0.0196	100.01	35.13	65.04
90	41.60	0.0188	101.52	37.20	64.48

Maximum storage required = **66.39 m³/s**

The required detention volumes will be provided inside the underground storm system and are as follows:

MANHOLE OR CATCHBASIN No.	MANHOLE OR CATCHBASIN TOP ELEVATION (m)	100YR PONDING ELEVATION (m)	100YR STORAGE AVAILABLE (m^3)	100YR STORAGE REQUIRED (m^3)
CBMH-1	183.75	182.98	1.75	
CB-2	184.15	182.98	0.25	
Cultec V8HD Chamber			67.40	
		TOTAL:	**69.40**	**66.39**

The total available storage volume of **69.40 m^3** satisfies the storage requirements.

The maximum allowable runoff release rate of **0.0141 m^3/s** will be achieved by the means of an orifice restrictor plate installed over the outlet pipe at the new **CBMH-1**. The size of the orifice restrictor plate is **75mm diameter. (See Dwg. No. 218-M14.)**

The orifice discharge rate was calculated by using FlowMaster computer program, developed by Haestad Methods Inc. (USA) and an output report is attached in **Appendix "A"**.

6.1.2 QUALITY CONTROL

Acceptable methods for stormwater treatment vary with size of the development, soil types and nature of proposed land use. All these must be balanced with the physical constrains imposed by the development site.

Taking in consideration of the size of the controlled drainage area of the site **(0.4606 ha)**, we have reviewed and selected the most suitable stormwater management practices (SWMP) to treat the stormwater runoff before it is released towards Fletcher's Creek.

Oil/Grit Separators (OGS)

Normally, these facilities operate based on the principle of sedimentation of the grit and phase separation of the oil. They are suitable for residential/institutional/commercial/industrial areas.

The stormwater runoff from the asphalt area will be intercepted and conveyed through the OGS prior to being discharged into the existing Fletcher's Creek Tributary.

The proposed oil/grit separator is **Type STC 300** manufactured by Stormceptor. The proposed unit is capable of treating **0.0141 m3/s (1.41 l/s)** with **84%** TSS removal.

Attached to this report is an output file created by Stormceptor software **(see attached Appendix "C")**.

The design principles for this type of separator (manhole type) are as follows: Low flows enter a lower chamber where sedimentation and oil separation can occur. High flows will bypass the low chamber, flowing through the upper chamber directly to the outlet pipe.

6.1.3 WATER BALANCE

The Credit Valley Conservation stormwater management plan contains a water balance target/criteria that requires the site to retain a **5mm** rainfall and allow it to evaporate, infiltrate back into the ground or re-use it for irrigation purposes.

The required volume is as follows:

Sub-Area "B" = 0.4606 hectares (landscaped area of uncontrolled drainage area is not included)

V_{5mm} = 4606.0 m² x 0.005m = **23.03 m³**

The Cultec Recharger V8HD System will provide means of storage and infiltration for area. The required infiltration volume will be stored within the stone base of the Cultec System.

Volume stored equals to:

12.61m x 5.49m x 0.40m = 27.69 m³
12.61m x 7.17m x 0.40m = 36.17 m³

Total = 63.86 m³

63.86 x 0.40 (porosity) = **25.54 m³**

Soil Engineers Ltd. has prepared in August 2014 a "Soil Investigation Report for 6620 Rothschild Trail". The native soil was found to be sandy silt, fill and silty sand, till.

The recommended percolation time (T) was T = 45 min/cm with percolation rate (P) of P = 0.0133m/hr (13.3mm/hr).

The expected time of percolation using area of contact and discharge rate was calculated using the following equation:

$t = V / P \times n \times A$

Where, t = time of percolation (hr)
V = volume to infiltrate (m³)
P = percolation rate (mm/hr)
n = porosity of storage media
A = area of contact (m²)

$$t = \frac{25.54}{0.0133 \times 0.40 \times 159.64}$$

= **30.07 hrs**

The report also found that no ground water was encountered at the depth of 5.0m below existing grade at the end of boreholes.

In addition to the Cultec Recharger System, the parking lot is designed to have Pervious Stable Surface to enhance water absorption levels on site by promoting infiltration.

The clear crushed stone below Eco-Priora or Ecolock by Unilock paving (A = 240.0 m²; depth = 0.45m) will provide the storage medium layer. Maximum volume provided is approximately **43.2m³**.

V = 240.0 x 0.45 x 0.40 (porosity) = **43.2m³**

The expected time of percolation using area of contact of 240.0m² is as follows:

$$t = \frac{43.2}{0.0133 \times 0.40 \times 240.0}$$

= **33.83 hrs**

7.0 CONCLUSIONS

Based on our investigation of available information, technical analysis and design calculations we found that the proposed development can be fully serviced to the existing services on Rothschild Trail, sanitary sewer on easement and storm discharge to Fletcher's Creek.

The findings and recommendations were prepared in accordance with accepted professional engineering practices and principles. Based on the above, the proposed development can be adequately serviced in accordance with the City of Mississauga and CVC standards.

The following summarizes the foregoing analysis:

Transportation System

The proposed development will be efficiently serviced by Rothschild Trail, McLaughlin Road, Derry Road West and Courtneypark Drive West.

Water Servicing

The proposed development is to be serviced by a **200mm diameter** connection to the existing 200mm diameter PVC watermain located on the west side of Rothschild Trail. The water demand requirement for Maximum Day Demand plus Fire Flow is **8,019.78 L/min (133.663 l/s)**.

Sanitary Servicing

The proposed development is to be serviced by a new **200mm diameter** connection to the existing 250mm sanitary sewer located on an easement that traverses the property. The peak sanitary design flow of the proposed development is **2.21 l/s (0.00221m³/s)**.

Stormwater Servicing

Presently, the runoff from the site drains sheet flow in a northerly, westerly and southerly direction towards Fletcher's Creek and its tributary.

The proposed development will discharge the runoff into the existing Fletcher's Creek Tributary.

All foundation drains proposed for lower level parking including the ramp's storm trough will require sump pumps fitted with backwater valves and will be connected to on site storm sewer **(see Dwg. No. 218-M14)**.

The City of Mississauga and CVC standards identify the objectives for runoff from new development sites including water quantity, water quality and water balance.

Quantity

Quantity control will be provided for the proposed development as illustrated in Section 6.1.1 – Quantity Control, that is a sub-section of 6.1 – Stormwater Management.

Quality

Quality control was implemented for the site by providing an oil/grit separator **Type STC 300** manufactured by Stormceptor. The proposed unit is capable of treating **0.0141 m³/s (1.41 l/s)** with **84%** TSS removal as illustrated in Section 6.1.2 – Quality Control.

Water Balance

A water balance of **23.03 m³** is required and will be retained to be used for infiltration back into the ground as illustrated in Section 6.1.3 – Water Balance.

We respectfully submit this report and we trust the information provided meets with your requirements. The report's recommendations will be implemented in detail design during engineering submission for the proposed residential development.

Yours truly,

SKIRA & ASSOCIATES LTD.

Bill Savilo, B. Sc.
Associate
BS:ak

Roman Kerkusz, P. Eng.

NOTE: Limitation of Report

This report was prepared by **Skira & Associates Ltd.** for **Di Blasio Homes** for review and approvals by government agencies only.

In light of the information available at the time of preparation of this report, any use by a **Third Party** of this report are solely the responsibility of such **Third Party** and **Skira & Associates Ltd.** accepts no responsibility for any damages, if any, suffered by the **Third Party.**

APPENDIX A

ORIFICE RESTRICTOR PLATE
Computer Output

75mm dia. ORIFICE RESTRICTOR PLATE
Worksheet for Circular Orifice

PROJECT DESCRIPTION	
WORKSHEET	Orifice - 1
TYPE	Circular Orifice
SOLVE FOR	Headwater Elevation

INPUT DATA	
DISCHARGE	0.0141 m^3/s
CENTROID ELEVATION	181.48 m
TAILWATER ELEVATION	181.54 m
DISCHARGE COEFFICIENT	0.60
DIAMETER	75 mm

RESULTS	
HEADWATER ELEVATION	82.98 m
HEADWATER HEIGHT ABOVE CENTROID	1.50 m
TAILWATER HEIGHT ABOVE CENTROID	0.06 m
FLOW AREA	0.0044 m^2
VELOCITY	3.19 m/s

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APPENDIX B

FIRE FLOW CALCULATIONS

FIRE FLOW CALCULATION

An estimate of the required fire flow is determined by the following formula:

$F = 220C \sqrt{A}$

Where, F = the required fire flow in litres/minute

C = coefficient related to the type of construction

A = the total floor area in square metres

For this project:

C = 0.80 (for non-combustible construction)

A = 7,200 square metres

$F = 220 \times 0.80 \sqrt{7,200} = 15,000$ L/M (rounded off to nearest 1,000 L/M)

Reduction for fire hazard:

Non-combustible (25% reduction)

15,000 – 25% = 11,250 litres/minute

Reduction for complete automatic sprinkler protection:

30% reduction – sprinkler system conforming to NFPA

10% reduction – fully supervised system

Total of 40% reduction – 40% of 11,250 = 4,500 litres/minute

Percentage added for structures exposed within 45 metres

20.1 to 30m separation (10% increase)

10% of 11,250 = 1,125 litres/minute

11,250 – 4,500 + 1,125 = 8,000 litres/minute (rounded off to the nearest 1,000 L/M)

Estimated required Fire Flow is 8,000 litres/minute

APPENDIX C

STORMCEPTOR OIL/GRIT SEPARATOR
Computer Output

Stormceptor®

Stormceptor Design Summary

PCSWMM for Stormceptor

Project Information

Date	6/6/2018
Project Name	Sixty Six Twenty - Di Blasio Homes
Project Number	218-M14
Location	6620 Rothschilds Trail, Mississauga

Designer Information

Company	Skira & Associates Ltd.
Contact	Bill Savilo

Notes

N/A

Drainage Area

Total Area (ha)	0.4606
Imperviousness (%)	74.2

The Stormceptor System model STC 300 achieves the water quality objective removing 84% TSS for a Fine (organics, silts and sand) particle size distribution.

Rainfall

Name	TORONTO CENTRAL
State	ON
ID	100
Years of Records	1982 to 1999
Latitude	45°30'N
Longitude	90°30'W

Water Quality Objective

TSS Removal (%)	80

Upstream Storage

Storage (ha-m)	Discharge (L/s)
0.000	00.000
0.005	10.000
0.006	12.000
0.007	14.100

Stormceptor Sizing Summary

Stormceptor Model	TSS Removal %
STC 300	84
STC 750	90
STC 1000	89
STC 1500	89
STC 2000	92
STC 3000	92
STC 4000	94
STC 5000	94
STC 6000	95
STC 9000	97
STC 10000	96
STC 14000	97

Hanson

Stormceptor®

Particle Size Distribution

Removing silt particles from runoff ensures that the majority of the pollutants, such as hydrocarbons and heavy metals that adhere to fine particles, are not discharged into our natural water courses. The table below lists the particle size distribution used to define the annual TSS removal.

Fine (organics, silts and sand)

Particle Size µm	Distribution %	Specific Gravity	Settling Velocity m/s		Particle Size µm	Distribution %	Specific Gravity	Settling Velocity m/s
20	20	1.3	0.0004					
60	20	1.8	0.0016					
150	20	2.2	0.0108					
400	20	2.65	0.0647					
2000	20	2.65	0.2870					

Stormceptor Design Notes

- Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor version 1.0
- Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal.
- Only the STC 300 is adaptable to function with a catch basin inlet and/or inline pipes.
- Only the Stormceptor models STC 750 to STC 6000 may accommodate multiple inlet pipes.
- Inlet and outlet invert elevation differences are as follows:

Inlet and Outlet Pipe Invert Elevations Differences

Inlet Pipe Configuration	STC 300	STC 750 to STC 6000	STC 9000 to STC 14000
Single inlet pipe	75 mm	25 mm	75 mm
Multiple inlet pipes	75 mm	75 mm	Only one inlet pipe.

- Design estimates are based on stable site conditions only, after construction is completed.
- Design estimates assume that the storm drain is not submerged during zero flows. For submerged applications, please contact your local Stormceptor representative.
- Design estimates may be modified for specific spills controls. Please contact your local Stormceptor representative for further assistance.
- For pricing inquiries or assistance, please contact Hanson Pipe & Precast, 1-888-888-3222.

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