STARLIGHT GROUP PROPERTY HOLDINGS INC.

1485 WILLIAMSPORT DR. & 3480 HAVENWOOD DR. CITY OF MISSISSAUGA

SITE SERVICING AND STORMWATER MANAGEMENT BRIEF

LEA Project No.18298

JUNE 1, 2018

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DRAWING (APPENDIX E)

1 INTRODUCTION

1.1 SCOPE OF THE SWM AND SERVICING REPORT

Starlight Group Property Holdings Inc. is proposing to redevelop a portion of an existing residential site located at 1485 Williamsport Drive and 3480 Havenwood Drive in City of Mississauga, Ontario. LEA Consulting Ltd. has been retained by Starlight Investment to prepare a Site Servicing and Stormwater Management Report for their proposed residential towers in the City of Mississauga. This servicing and stormwater management report shall:

- Examine the potential water quality and quantity impacts of the proposed towers, and summarize how each will be addressed in accordance with the City of Mississauga and Toronto Region Conservation Authority (TRCA) stormwater management requirements.
- Review the adequacy of the existing water supply, storm and sanitary services, and propose a site servicing plan.

1.2 SITE LOCATION AND PROPOSED DEVELOPMENT

The proposed development site is located at the northeast quadrant of Bloor Street West and Dixie Road, within the Etobicoke Creek watershed (Sub-catchment 208) and under the jurisdiction of Toronto Region Conservation Authority (TRCA).

Starlight Investment proposed to demolish the two existing parking lots west of 3480 Havenwood Drive and north of 1485 Williamsport Drive. An 8-storey building (Building C) with two levels of underground parking and another 8-storey building (Building D) with one level of underground parking will be constructed. Improvements to the landscaping, driveway and sidewalk for existing properties at 3480 Havenwood Drive and 1485 Williamsport Drive will also be made.

The development site is approximately 1.48 ha in area.

1.3 STORMWATER MANAGEMENT PLAN OBJECTIVES

The objectives of the stormwater management plan is to determine site specific stormwater management requirement, review the stormwater environment impact by the proposed residential development, and address the City's and TRCA's requirements for stormwater quantity control and quality control as required. A preliminary stormwater management design documenting the strategy along with the technical information necessary for the sizing of the proposed stormwater management practices will be prepared.

1.4 SWM DESIGN CRITERIA – TORONTO REGION CONSERVATION AUTHORITY

Toronto and Region Conservation Authority, in partnership with the Credit Valley Conservation Authority (CVC), has issued the Storm Water Management Criteria (August 2012) to provide direction on how to manage rainfall and runoff within TRCA's jurisdiction. A summary of the storm water management criteria applied for this project, is provided below:

- Storm Water Quality Control – Etobicoke Creek is classified as requiring an Enhanced level of protection (80% TSS removal) by TRCA quality control criteria.
- Flood Control (Water Quantity Control) – Control of post-development peak flow rate to pre-development levels for all storms up to and including the 100-year storm is required by TRCA within Etobicoke Creek watershed.
- Water Balance Control – Maintain pre-development groundwater recharge rates and appropriate distribution, ensuring the protection of related hydrologic and ecologic functions.
- Erosion Control – On-site detention of 5mm within Etobicoke Creek watershed.

2 EXISTING CONDITIONS

2.1 GENERAL

The existing site is bounded by Havenwood Drive to the east and Williamsport Drive to the north, west and south. According to the proposed development plan, the two existing parking lots west of 3480 Havenwood Drive and north of 1485 Williamsport Drive will be demolished and replaced with two 8-storey apartment buildings. The total development site area is 1.48 ha with an overall runoff coefficient of 0.61. The site currently does not accept any external drainage.

During more frequent rainfall events, surface rainfall runoff from the site is captured via existing catchbasins located in the parking lot, while major flow from the parking area is conveyed out of the site to Havenwood Drive and Williamsport Drive. **Figure 1** in **Appendix E** illustrates the existing drainage condition.

Based on our review of the topographic survey, there is no on-site stormwater management facility under existing condition.

2.2 ALLOWABLE PEAK FLOW RATES UNDER EXISTING CONDITION

Based on the existing site condition and rainfall parameters, the TRCA's Unit Peak Runoff Rates for Etobicoke Creek is adopted to calculate peak flows at different design storm events.

The peak flow rate for the pre-development site condition is calculated using the following equation:

$$Q = I \times A$$

Where; I = unit runoff rate in (L/s/ha),

A = development site area (ha)

The parameter, I, recommended for use in Catchment 208 in the Etobicoke Creek watershed is defined in Table I1 of the TRCA Storm Water Management Criteria, and is summarized in **TABLE 1**.

TABLE 1: UNIT PEAK RUNOFF RATES FOR CATCHMENT 208

Return Period	2 - Yr	5 - Yr	10 - Yr	25 - Yr	50 - Yr	100 - Yr
Unit Runoff Rate (L/s/ha)	21.5	33.0	41.0	55.0	62.7	71.8

The calculated peak flow rates for site in the pre-development condition are summarized below in **TABLE 2**. Detailed calculations are provided in **Appendix A**.

TABLE 2: PRE-DEVELOPMENT PEAK FLOW RATES (L/s)

Return Period (Year)	Peak Flow Rates (L/s)
2	31.18
10	59.46
50	93.06
100	104.13

3 POST-DEVELOPMENT CONDITIONS

3.1 GENERAL

The proposed project consists of the construction of two 8-storey buildings (Building C and D) with one and two levels of underground parking The proposed development will include soft landscaping courtyards and permeable pavement. Stormwater generated within the site will be retained and detained in the underground stormwater storage tank in the underground parking, then discharged into the City's storm sewer on Havenwood Drive at an allowable release rate. Refer to **Figure 2** in **Appendix E** for details of post-development drainage condition.

Based on the proposed land use, the composite runoff coefficients are estimated at 0.64. Refer to **Appendix A** for details.

The land use is provided below in **TABLE 3** for comparison between existing and proposed conditions.

TABLE 3: LAND-USE AREA BREAKDOWN

Impervious Area (m^2)		Pervious Area (m^2)	
Existing	Proposed	Existing	Proposed
8013.2	8843.2	6828.8	5999.0

TABLE 3 demonstrates that the impervious area will be increased by 5.6% after the construction of new buildings.

3.2 RAINFALL INFORMATION

The rainfall intensity for the post-development site condition was calculated using the following equation:

$$I = A / (T_c + B)^{0.78}$$

Where; I = rainfall intensity in mm/hr,

T_c = time of concentration in minutes,

A, B = constant parameters (see below)

The parameters (A and B) recommended for use in the City of Mississauga are defined in City Standard Drawing No. 2111.010, and are summarized in **TABLE 4**.

TABLE 4: RAINFALL PARAMETERS

Return Period (Year)	2 - Yr	5 - Yr	10 - Yr	25 - Yr	50 - Yr	100 - Yr
A	610	820	1010	1160	1300	1450
B	4.6	4.6	4.6	4.6	4.7	4.9

An initial time of concentration, T_C, of 15 minutes is recommended in the City's Development Requirements Manual.

3.3 PEAK FLOW RATES UNDER PROPOSED CONDITION

Based on the proposed site condition and rainfall parameters, the Rational Method is adopted to calculate peak flow rates at different design storm events.

The calculated peak flow rates for the proposed site area in the post-development condition are tabulated below in **TABLE 5**. Detailed calculations are provided in **Appendix A**.

TABLE 5: POST-DEVELOPMENT PEAK FLOW RATES (L/s)

Return Period (Year)	Rainfall Intensity (mm/hr)	Peak Flow Rates (L/s)
2	58.89	157.37
10	99.17	260.76
50	113.89	299.48
100	140.69	369.94

3.4 IMPACT ON WATER ENVIRONMENT

Based on the review and analysis of existing and proposed site conditions, **TABLE 6** summarizes the key hydrologic parameters under existing and proposed conditions.

TABLE 6: KEY HYDROLOGIC PARAMETERS

Imperviousness (%)		Runoff Coefficient		100-year Peak Flow Rate (L/s)	
Pre-Dev	Post-Dev	Pre-Dev	Post-Dev	Pre-Dev	Post-Dev
55.3	59.6	0.50	0.64	104.13	369.94

The actual pre-development runoff coefficient is 0. 6, however the maximum runoff coefficient of 0.50 will be considered under pre-development condition in accordance with City's design criteria. If actual runoff coefficient (0.66) were considered, there would be no significant difference between pre- and post-development condition, or negligible impact on stormwater.

However, mitigation measures are required in accordance with the TRCA's design criteria.

4 PROPOSED SWM PLAN

4.1 WATER BALANCE REQUIREMENT

Based on the water balance criteria, the minimum on-site runoff retention requires retaining all runoff of the first 5mm from each rainfall through infiltration and evapo-transpiration, etc. To satisfy the water balance criteria, an 80 m^3 on-site storage volume will be provided in P1 level of the underground parking area. Refer to **Appendix A** for detailed calculations.

The potential methods to address the water balance criteria are outlined as follows:

- Rainwater harvesting: Re-use of rainwater as grey water for toilet flushing, and
- Irrigation of trees and plants on the property.

The exact application and consumption rates will be determined at the next design stage in consultation with project design team architect and mechanical engineer.

4.2 WATER QUANTITY CONTROL REQUIREMENT

According to the TRCA's stormwater quantity control criteria for Etobicoke Creek – to control post-development peak flow rates to pre-development levels for all storms up to and including 100-year storm, the required on-site stormwater storage volumes for different design storm events are summarized in **TABLE 7** below.

TABLE 7: REQUIRED ON-SITE STORAGE VOLUMES (m^3)

Return Period (Year)	2 - Year	10 - Year	50 - Year	100 - Year
Storage Volume (m^3)	124.4	192.1	189.1	244.6

Based on the proposed site condition and on-site Stormwater retention & detention requirement, a 360 m^3 stormwater storage tank with a 165 mm orifice will be provided in P2 level of the underground parking. The exact tank and discharge details (pumps, backflow check valve, piping and valves, etc.) will be provided by the project team mechanical engineer in the next stage of design.

Detailed storage volume and orifice size calculations are provided in **Appendix A**.

4.3 WATER QUALITY CONTROL REQUIREMENT

In order to achieve the long-term average removal of 80% of Total Suspended Solids (TSS) on an annual basis from all runoff leaving the site, the following quality control measures will be provided:

- Clean building roofs;
- Landscaped Area;
- Oil Grit Separator.

Based on the SWM design criteria, the building rooftop area is not subject to vehicular traffic, and the application of sand and de-icing salt constituents, petroleum hydrocarbons, and heavy metals. As such, runoff from the roof surface is generally considered to be clean. Therefore, roof water is considered to be clean. **TABLE 8** provides a preliminary estimate of TSS removal level of stormwater leaving the site.

TABLE 8: TSS REMOVAL ASSESSMENT

Land Use	Area (m^2)	TSS Removal Efficiency (%)	Composite TSS Removal Efficiency (%)
Roof	2545	80	13.7
Soft Landscaped Area	5999	80	32.3
Oil/Grit Separator	14842	50	50.0
Total	14842	-	**>80.0**

To achieve a TSS removal of 80%, a Stormwater quality treatment facility (Stormceptor STC 4000) is proposed. Sizing details are provided in **Appendix A**.

This quality treatment unit will be installed at the inlet / upstream of storage tank within the parking lot. The exact location will be determined by the project team mechanical engineer and architect.

4.4 EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION

During site construction, it is recommended that all erosion and sediment control Best Management Practices (BMPs) shall be installed and maintained in accordance with the Greater Golden Horseshoe Area Conservation Authorities' (GGHA CAs) *Erosion & Sediment Control Guideline for Urban Construction* (December 2006);

In Report, the measures below will be provided on site during the entire period of construction:

- Sediment control measures to prevent silt entry at all the existing area drains and catch basins;
- Granular mud-mats at all construction ingress / egress locations;
- An inspection and monitoring program following the GGHA CA's *Erosion & Sediment Control Guideline for Urban Construction* (December 2006).

5 SITE SERVICING

The purpose of this site servicing report is to review the site servicing requirement of the proposed new development, and propose a site servicing plan, including water supply, sanitary and storm services. Refer to **Dwg. C102**-Site Servicing Plan for details of the proposed site service connections.

5.1 EXISTING MUNICIPAL SERVICES

Existing underground municipal services/utilities on Havenwood Drive adjacent to the proposed development site are summarized below:

a) 675mm dia. and 750mm dia. concrete storm sewer;

b) 250mm dia. concrete sanitary sewer; and

c) 300mm dia. PVC watermain.

5.2 PROPOSED SITE SERVICE CONNECTIONS

Based on the project statistics of proposed development provided by the architect, and Peel Region's design criteria, sanitary flow and water demand are estimated in **Appendix B** and **Appendix C**. This information is summarized in **TABLE 9**. Site storm flow discharge rate have been provided in the previous section of this report.

TABLE 9: SITE SERVICING REQUIREMENT

Storm Discharge Rate (L/s)	Sanitary Discharge Rate (L/s)	Water Demand Building C & D (L/s)
104.13	13.30	153.54

Through discussion with design team mechanical engineer, the locations and sizes of the proposed site service connections have been determined to satisfy the requirements of the City of Mississauga, Peel Region and Ontario Building Code (OBC). In summary:

d) Sanitary Service: As requested by the project team mechanical engineer, a proposed 250mm Sanitary service connection will be installed to discharge sanitary flow to the exiting 250mm concreate sanitary sewer on Havenwood Drive at Proposed MH2A which is also connected to proposed control manhole MH 1A within the site.

e) Storm Service: Storm flow will be discharged at the allowable release rate to the existing storm manhole MH12 on Havenwood Drive via a 375mm dia. storm service connection, which is also connected to proposed control manhole MH 1.

f) Water service:

- Domestic Water Service: A 150mm dia. domestic water service connection will be installed to service the proposed buildings and connected to the proposed 200mm dia. fire

protection water service connection with a cut-in Tee.

- Fire Protection Service: A 200mm fire protection PVC water service will be installed.
- The 300mm watermain on Havenwood Drive will be utilized to service the proposed development site.

Refer to **Dwg. C102** for details of proposed service connections.

Adequacy of Existing Municipal Services

Based on the design criteria and the design records, assessment of existing 250mm sanitary sewer and 675mm and 750mm storm sewers are reviewed below:

250mm sanitary Sewer:

The full flow capacity of the existing 250mm sanitary sewers on the Havenwood Drive is estimated at 89.4 L/s based on Region's record drawing and anticipated to be adequate to accommodate the sanitary flow (13.3 L/s) from the proposed development.

Detailed calculations are provided in **Appendix B.**

675mm and 750mm storm sewer:

The existing 675mm and 750mm storm sewer, as shown on the City's record drawings are designed based on City of Mississauga 10-year design storm peak flow rate.

Under the proposed condition, SWM plan is implemented in accordance with TRCA's design criteria, i.e. control the post-development discharge flow rate to pre-development peak flow rate.

Under pre-development conditions, the Peak flow rates are calculated based on the flow rates for catchment No. 208 of Etobicoke watershed which are smaller than the 10-year design storm flow rate of the City's storm sewers.

In comparison, original design flow and controlled discharge flow rate from the development are provided below. Calculations are provided in **Appendix A**.

- City of Mississauga maximum allowable discharge rate (10-year flow based on the rational method with maximum runoff coefficient of 0.5): 204.58 L/s
- Controlled 100-yr discharge flow from site (based on the TRCA's flow rates): 106.57 L/s
- Decrease in discharge flow: 98.02 L/s

Therefore, the existing 675mm and 750mm storm sewers on Havenwood Drive are adequate to accommodate the proposed development.

300mm Watermain:

The design water demand is estimated as 118.47 L/s for Building C and 118.40 L/s for Building D based on the project statistics. In order to evaluate the adequacy of the 300mm watermain located on Havenwood Drive, a hydrant flow test was conducted on May 15, 2018 by Classic Fire Protection. Test results are included in **Appendix D**.

As shown by the test readings, the available water pressure ranges from 86 psi with a flow of 1205.9 US GPM to 83 psi with a flow of 2017.8 US GPM during the flow tests with a static pressure of 87 psi. At the design water demand of 153.54 L/s (or 2433.53 US GPM) generated from the development, the flow test results show a residual pressure of 79.4 psi, which is greater than the minimum requirement of 20 psi (150 kPa). Therefore, adequate water supply and pressure are available to serve the proposed development.

6 CONCLUSIONS

Stormwater Management Plan

- Under existing condition, there are no existing on-site stormwater management facilities.
- On-site storage volume of approximate 80 m^3 will be provided for retaining the first 5mm rainfall runoff as required to achieve water balance target. This portion of water shall be reused on site for irrigation, grey water, etc. The consumption rates will be provided by the project team mechanical engineer in the next stage of design.
- To satisfy the City's 80% TSS removal, an oil/grit separator (Stormceptor STC 4000) is required for the development site.
- On-site storage tank with approximate 360 m^3 in volume will be provided in order to control the post-development 100-year stormwater flows to 100-year pre-development level, and provide 5mm Stormwater retention.

Temporary Erosion & Sediment Control Measures:

Temporary erosion and sediment control measures will be provided before construction and maintained during construction in accordance with GGHA CA's *Erosion & Sediment Control Guideline for Urban Construction* (December 2006)

Site Servicing

Proposed site service connections for the proposed development site:

- Storm service: 375mm dia. PVC pipe;
- Sanitary service: 250mm dia. PVC pipe;
- Water service: 150mm dia. PVC pipe for domestic water supply;

7 NEXT STEP COORDINATION

Based on City's records, the separation between proposed 250mm dia. sanitary service and existing 675mm dia. storm is approx. 0.18m. Further field investigation will be required to confirm the constructability. Refer to Section B-B on Dwg. C-103;

- All existing public utilities (gasmain, Alectra, Telecommunication, etc.) and municipal services (watermains, sewers) information will need to be verified;

- Confirmation of water meter, double check valve backflow preventer, Stormwater storage tank and related discharge system (pumps, valves, etc.), and backflow check valves.

Prepared By:

LEA Consulting Ltd.

Michael Du, P.Eng.
Senior Municipal Engineer

Appendix A

Stormwater Peak Flow and Storage Calculation

LEA Consulting Ltd. Consulting Engineers and Planners	Land Use			
	Prepared:	D.P.	Page No.	A-01
	Checked:	M.D.		
Project: 1485 Williamsport Drive & 3480 Havenwood Drive	Proj. #	18298		
	Date:	May.31/18		

EXISTING CONDITIONS:

Existing Land Use	Area (m^2)
Building & Paved Area	8013.2
Landscape	6828.8
Total Site Area:	**14842.0**

PROPOSED DEVELOPMENT:

Proposed Land Use	Area (m^2)
Building & Paved Area	8843.0
Landscaped Area	5999.0
Total Site Area	**14842.0**

LEA Consulting Ltd. Consulting Engineers and Planners	Composite "C" Calculation			
	Prepared:	D.P.	Page No.	A-02
	Checked:	M.D.		
Project: 1485 Williamsport Drive & 3480 Havenwood Drive	Proj. #	18298		
	Date:	31-May-18		

Pre-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C	Composite "C"	
Building & Paved Area	0.801	0.90		
Landscape	0.683	0.25		
Total Site Area:	**1.484**		**0.60**	
			0.50	max. allowable by City of Mississauga
Imperviousness Percent:			**54.0**	

Post-Development Composite Runoff Coefficient "C"

Location	Area (ha)	C	Composite "C"
Building & Paved Area	0.884	0.90	
Landscaped Area	0.600	0.25	
Total Site Area	**1.484**		**0.64**
Imperviousness Percent:			**59.6**

LEA Consulting Ltd. Consulting Engineers and Planners	5mm Rainfall Retention Volume (Water Balance)			
	Prepared:	D.P.	Page No.	A-03
	Checked:	M.D.		
Project: 1485 Williamsport Drive & 3480 Havenwood Drive	Proj. #	18298		
	Date:	31-May-18		

According to the TRCA Guidelines, in order to achieve the water balance target, it is required to retain all runoff from a small event - typically 5mm (in Mississauga, storms with 24 hour volumes of 5mm or less contribute about 50% of the total average annual rainfall volume) through infiltration, evapotranspiration & rainwater reuse.

Site Area:	1.484	ha
Runoff Coefficient :	0.64	Post-development site conditions

Runoff volume from 5mm rainfall event on site:

$V = 1.484 \times 10 \times 5 \quad = 74.21 \quad m^3$

Required on-site retention volume for 5mm rainfall event: 74.21 m^3

LEA Consulting Ltd. Consulting Engineers and Planners	Pre-Development Peak Flow Rates Calculation			
	Prepared:	D.P.	Page No.	A-04
	Checked:	M.D.		
Project: 1485 Williamsport Drive & 3480 Havenwood Drive	Proj. #	18298		
	Date:	31-May-18		

Rational Formulae: Q = 2.78 CIA (L/s)

Site Area:	1.484	ha
Time of Concentration	15	minutes as per City Guidelines
Runoff Coefficient :	0.50	Pre-development condition

Unit Runoff Rates (L/s/ha): (TRCA - Table I1: 6 hr AES Rainfall Distribution)
(Etobicoke Watershed, Sub-Catchment 208)

Return Period:	2-yr	10-yr	50-yr	100-yr
Unit Runoff Rates (L/s/ha):	21.50	41.00	62.7	71.80

Peak Flow Rate (L/s):

Return Period:	2-yr	10-yr	50-yr	100-yr
Under existing site conditions (L/s):	31.91	60.85	93.06	106.57

Allowable discharge rate into municipal storm sewer (based on Rational Method):

Rainfall Intensity @ 10-year storm:	**99.17**	**mm/hr**
Runoff flow @ 10-year storm:	**204.58**	**L/s**

LEA Consulting Ltd. Consulting Engineers and Planners	Post-Development Peak Flow Rates Calculation (Uncontrolled)			
	Prepared:	D.P.	Page No.	A-05
	Checked:	M.D.		
Project: 1485 Williamsport Drive & 3480 Havenwood Drive	Proj. #	18298		
	Date:	31-May-18		

Rational Formulae: Q = 2.78 CIA (L/s)

Site Area:	1.484	ha
Time of Concentration	15	minutes as per City Guidelines
Runoff Coefficient :	0.64	Post-development

Rainfall Intensity: $I = a/(Tc+b)^c$ (City Std. 2111.010)

Return Period:	2-yr	10-yr	50-yr	100-yr
Rainfall Intensity (mm/hr):	59.89	99.17	113.89	140.69

Peak Flow Rate (L/s):

Return Period:	2-yr	10-yr	50-yr	100-yr
Under post-development conditions (L/s):	157.37	260.75	299.48	369.94

LEA Consulting Ltd. Consulting Engineers and Planners	On-Site Storage Calculation (2-Year Storm)			
	Prepared:	D.P.	Page No.	A-06
	Checked:	M.D.		
Project: 1485 Williamsport Drive & 3480 Havenwood Drive	Proj. #	18298		
	Date:	31-May-18		

Total Drainage Area (ha) = 1.484 ha
Drainage Area Composite C = 0.64
Allowable Release Rate (10-year) = 31.91 L/s
Return Period = 2 Year

Site storage Requirement:

Time (minutes)	Rainfall Intensity (mm/hr)	Peak Flow (L/s)	Storm Runoff Volume (m^3)	Release Rate (L/s)	Release Flow Volume (m^3)	Required Storage Volume (m^3)
15	59.89	157.37	141.63	31.91	28.72	112.91
20	50.16	131.81	158.17	31.91	38.29	119.88
25	43.42	114.10	171.15	31.91	47.87	123.28
30	38.45	101.02	181.83	31.91	57.44	124.39
35	34.60	90.92	190.94	31.91	67.01	123.93
40	31.54	82.87	198.89	31.91	76.58	122.31
45	29.03	76.28	205.95	31.91	86.16	119.79
50	26.94	70.77	212.32	31.91	95.73	116.59
55	25.16	66.10	218.12	31.91	105.30	112.82
60	23.62	62.07	223.46	31.91	114.88	108.58
65	22.29	58.57	228.41	31.91	124.45	103.96
70	21.12	55.48	233.02	31.91	134.02	99.00
75	20.07	52.74	237.35	31.91	143.60	93.75
80	19.14	50.30	241.42	31.91	153.17	88.25
85	18.30	48.09	245.27	31.91	162.74	82.53
90	17.54	46.10	248.93	31.91	172.32	76.61
95	16.85	44.28	252.41	31.91	181.89	70.52
100	16.22	42.62	255.74	31.91	191.46	64.28
105	15.64	41.10	258.92	31.91	201.04	57.88
110	15.11	39.69	261.98	31.91	210.61	51.37

Required Storage Volume = 124.39 m^3

LEA Consulting Ltd. Consulting Engineers and Planners	On-Site Storage Calculation (10-Year Storm)			
	Prepared:	D.P.	Page No.	A-07
	Checked:	M.D.		
Project: 1485 Williamsport Drive & 3480 Havenwood Drive	Proj. #	18298		
	Date:	31-May-18		

Total Drainage Area (ha) = 1.484 ha
Drainage Area Composite C = 0.64
Allowable Release Rate (10-year) = 60.85 L/s
Return Period = 10 Year

Site storage Requirement:

Time (minutes)	Rainfall Intensity (mm/hr)	Peak Flow (L/s)	Storm Runoff Volume (m^3)	Release Rate (L/s)	Release Flow Volume (m^3)	Required Storage Volume (m^3)
15	99.17	260.56	234.51	60.85	54.77	179.74
20	83.06	218.24	261.89	60.85	73.02	188.87
25	71.90	188.91	283.37	60.85	91.28	192.09
30	63.66	167.26	301.07	60.85	109.53	191.54
35	57.30	150.55	316.15	60.85	127.79	188.36
40	52.22	137.21	329.31	60.85	146.05	183.26
45	48.07	126.30	341.01	60.85	164.30	176.71
50	44.60	117.18	351.55	60.85	182.56	168.99
55	41.65	109.44	361.16	60.85	200.81	160.35
60	39.11	102.78	369.99	60.85	219.07	150.92
65	36.91	96.97	378.18	60.85	237.32	140.86
70	34.96	91.86	385.82	60.85	255.58	130.24
75	33.24	87.33	392.98	60.85	273.84	119.14
80	31.69	83.28	399.73	60.85	292.09	107.64
85	30.31	79.63	406.11	60.85	310.35	95.76
90	29.05	76.33	412.17	60.85	328.60	83.57
95	27.90	73.32	417.93	60.85	346.86	71.07
100	26.86	70.57	423.44	60.85	365.11	58.33
105	25.90	68.05	428.71	60.85	383.37	45.34
110	25.01	65.72	433.76	60.85	401.63	32.13

Required Storage Volume = 192.09 m^3

LEA Consulting Ltd. Consulting Engineers and Planners	On-Site Storage Calculation (10-Year Storm)			
	Prepared:	D.P.	Page No.	A-07
	Checked:	M.D.		
Project: 1485 Williamsport Drive & 3480 Havenwood Drive	Proj. #	18298		
	Date:	31-May-18		

Total Drainage Area (ha) = 1.484 ha
Drainage Area Composite C = 0.64
Allowable Release Rate (10-year) = 93.06 L/s
Return Period = 10 Year

Site storage Requirement:

Time (minutes)	Rainfall Intensity (mm/hr)	Peak Flow (L/s)	Storm Runoff Volume (m^3)	Release Rate (L/s)	Release Flow Volume (m^3)	Required Storage Volume (m^3)
15	113.89	299.26	269.33	93.06	83.75	185.58
20	95.40	250.66	300.79	93.06	111.67	189.12
25	82.58	216.97	325.46	93.06	139.59	185.87
30	73.11	192.10	345.78	93.06	167.51	178.27
35	65.80	172.90	363.10	93.06	195.43	167.67
40	59.98	157.59	378.22	93.06	223.34	154.88
45	55.21	145.06	391.65	93.06	251.26	140.39
50	51.22	134.59	403.76	93.06	279.18	124.58
55	47.84	125.69	414.79	93.06	307.10	107.69
60	44.92	118.04	424.94	93.06	335.01	89.93
65	42.39	111.37	434.35	93.06	362.93	71.42
70	40.15	105.51	443.12	93.06	390.85	52.27
75	38.17	100.30	451.35	93.06	418.77	32.58
80	36.40	95.64	459.09	93.06	446.69	12.40
85	34.81	91.46	466.42	93.06	474.60	-8.18
90	33.36	87.66	473.38	93.06	502.52	-29.14
95	32.05	84.21	480.00	93.06	530.44	-50.44
100	30.85	81.05	486.32	93.06	558.36	-72.04
105	29.74	78.16	492.38	93.06	586.28	-93.90
110	28.73	75.48	498.18	93.06	614.19	-116.01

Required Storage Volume = 189.12 m^3

LEA Consulting Ltd. Consulting Engineers and Planners	On-Site Storage Calculation (100 - Year Storm)			
	Prepared:	D.P.	Page No.	A-08
	Checked:	M.D.		
Project: 1485 Williamsport Drive & 3480 Havenwood Drive	Proj. #	18298		
	Date:	31-May-18		

Total Drainage Area (ha) = 1.484 ha
Drainage Area Composite C = 0.64
Allowable Release Rate (10-year) = 106.57 L/s
Return Period = 100 Year

Site storage Requirement:

Time (minutes)	Rainfall Intensity (mm/hr)	Peak Flow (L/s)	Storm Runoff Volume (m^3)	Release Rate (L/s)	Release Flow Volume (m^3)	Required Storage Volume (m^3)
15	140.69	369.67	332.70	106.57	95.91	236.79
20	118.12	310.37	372.45	106.57	127.88	244.57
25	102.41	269.09	403.63	106.57	159.85	243.78
30	90.77	238.52	429.33	106.57	191.82	237.51
35	81.77	214.86	451.21	106.57	223.79	227.42
40	74.58	195.96	470.30	106.57	255.76	214.54
45	68.68	180.47	487.26	106.57	287.73	199.53
50	63.75	167.51	502.54	106.57	319.70	182.84
55	59.56	156.50	516.46	106.57	351.67	164.79
60	55.95	147.02	529.26	106.57	383.64	145.62
65	52.81	138.75	541.12	106.57	415.61	125.51
70	50.03	131.47	552.17	106.57	447.58	104.59
75	47.58	125.01	562.53	106.57	479.55	82.98
80	45.38	119.23	572.29	106.57	511.52	60.77
85	43.39	114.02	581.51	106.57	543.49	38.02
90	41.60	109.31	590.26	106.57	575.46	14.80
95	39.97	105.02	598.60	106.57	607.42	-8.82
100	38.47	101.09	606.55	106.57	639.39	-32.84
105	37.10	97.49	614.16	106.57	671.36	-57.20
110	35.84	94.16	621.46	106.57	703.33	-81.87

Required Storage Volume = 244.57 m^3

LEA Consulting Ltd. Consulting Engineers and Planners	Orifice Plate Size Calculation (Water Tank Outlet)			
	Prepared:	D.P.	Page No.	A-09
	Checked:	M.D.		
Project: 1485 Williamsport Drive & 3480 Havenwood Drive	Proj. #	18298		
	Date:	31-May-18		

Orifice Discharge Formula: $Q = CA \times \sqrt{2gh}$

Calculate Approximate Diameter			Calculate Flows		
Max. Flow:	106.57	L/s	Diameter:	165	mm
Max. Depth:	3.45	m	Area:	0.021	m^2
Req'd Area:	0.021	m^2	Coeff:	0.60	Orifice Plate
Req'd Dia.:	165	mm	Gravitational Accel:	9.81	m/s^2
Orifice C/L Elev.:	135.25	m	Orifice Inv.	135.17	
Water Level	138.70	m			

Depth (m)	Head (m)	Q (m^3/s)	Elevation (m)	Remarks
0.08	0.00	0.000	135.25	**Center Elev. of Orifice**
0.20	0.12	0.019	135.45	
0.40	0.32	0.032	135.65	
0.60	0.52	0.041	135.85	
0.80	0.72	0.048	136.05	
1.00	0.92	0.054	136.25	
1.20	1.12	0.060	136.45	
1.40	1.32	0.065	136.65	
1.60	1.52	0.070	136.85	
1.80	1.72	0.074	137.05	
2.00	1.92	0.079	137.25	
2.20	2.12	0.083	137.45	
2.40	2.32	0.087	137.65	
2.60	2.52	0.090	137.85	
2.80	2.72	0.094	138.05	
3.00	2.92	0.097	138.25	
3.20	3.12	0.100	138.45	
3.40	3.32	0.104	138.65	
3.44	**3.36**	**0.104**	**138.69**	**H.W.L.**
3.60	3.52	0.107	138.85	

Brief Stormceptor Sizing Report - Havenwood - Williamsport

Project Information & Location			
Project Name	Havenwood-Williamsport	**Project Number**	18298
City	Mississauga	**State/ Province**	Ontario
Country	Canada	**Date**	5/7/2018
Designer Information		**EOR Information (optional)**	
Name	Michael Du	**Name**	
Company	Lea Consulting Ltd.	**Company**	
Phone #	905-470-0015	**Phone #**	
Email	mdu@lea.ca	**Email**	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	Havenwood - Williamsport
Target TSS Removal (%)	80
TSS Removal (%) Provided	82
Recommended Stormceptor Model	STC 4000

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 300	59
STC 750	71
STC 1000	72
STC 1500	73
STC 2000	76
STC 3000	78
STC 4000	82
STC 5000	83
STC 6000	85
STC 9000	89
STC 10000	89
STC 14000	91
StormceptorMAX	Custom

Stormceptor®

FORTERRA

Sizing Details

Drainage Area

Total Area (ha)	1.484
Imperviousness %	59.6

Rainfall

Station Name	TORONTO CENTRAL
State/Province	Ontario
Station ID #	0100
Years of Records	18
Latitude	45°30'N
Longitude	90°30'W

Water Quality Objective

TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (L)	
Peak Conveyed Flow Rate (L/s)	
Water Quality Flow Rate (L/s)	

Up Stream Storage

Storage (ha-m)	Discharge (cms)
0.000	0.000

Up Stream Flow Diversion

Max. Flow to Stormceptor (cms)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

City of Toronto PSD

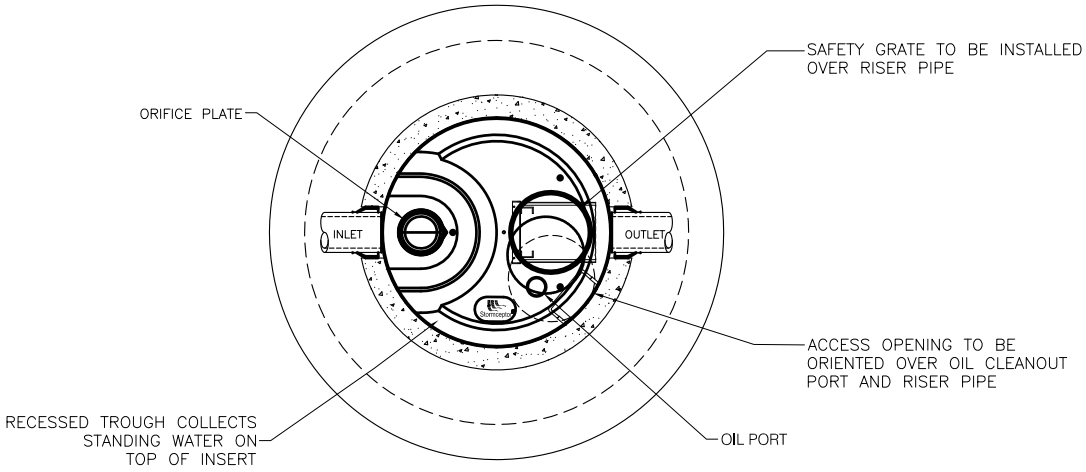
Particle Diameter (microns)	Distribution %	Specific Gravity
10.0	20.0	2.65
30.0	10.0	2.65
50.0	10.0	2.65
95.0	20.0	2.65
265.0	20.0	2.65
1000.0	20.0	2.65

Notes

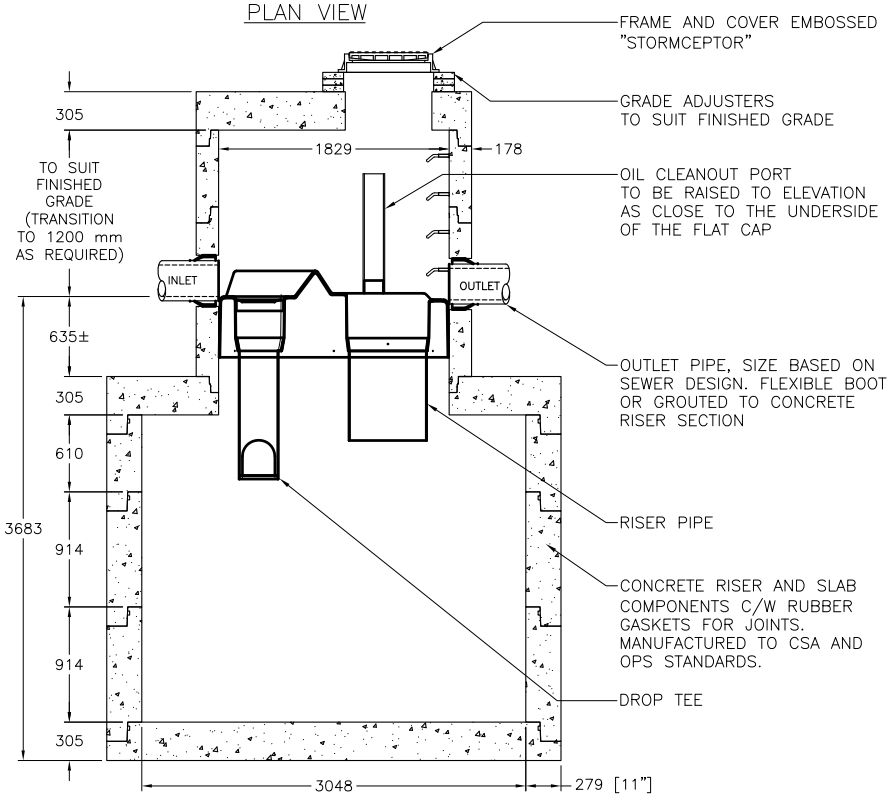
• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

For Stormceptor Specifications and Drawings Please Visit:
http://www.imbriumsystems.com/technical-specifications

DRAWING NOT TO BE USED FOR CONSTRUCTION



PLAN VIEW



SECTION VIEW

Stormceptor®

imbrium®
WWW.IMBRIUMSYSTEMS.COM
605 GLOBAL WAY, SUITE 113, LINTHICUM, MD 21231
USA 888-279-8826 CA 800-565-4801 INTL +1-416-960-9900

STC 4000
STANDARD MODEL
####

REV #	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER 1 OF 1

DATE:######## | SCALE: 50 | PROJECT No.: ##### | DRAWN: ### | CHECKED: ###

Appendix B

Sanitary Demand Calculation

LEA Consulting Ltd. Consulting Engineers and Planners	Sanitary Flow Rate Calculation			
	Prepared:	D.P,	Page No.	B-01
	Checked:	M.D.		
Project: 1485 Williamsport Drive & 3480 Havenwood Drive	Proj. #	18298		
	Date:	May.31/18		

BUILDING C, BUILDING D & AENITY BLOCK

POPULATION CALCULATION

(Based on Architect Statistics dated Apr. 06, 2018)

Site Area	14842	m^2
Proposed Total Residential GFA of Building C	9639	m^2
Proposed Total Residential GFA of Building D	7934	m^2
Proposed Amenity Indoor Space	324	m^2
Total Unit Count	202	Units

Proposed Building Type	Units	Density (P.P.U)	Population
Building C	103	2.7	278
Building D	99	2.7	267
Total	**202**	2.7	**545**

SANITARY FLOW CALCULATION

Harmon Peaking Factor: $M=1+14/(4+P^{0.5})$

Peaking Factor	3.95	
Average Daily Wastewater Flow	302.8	L/cap/day
Total Domestic Flow (For less than 1000 person shall be 13.0 L/sec)	13.00	L/sec
Infiltration Allowance (@ 0.2 L/sec/ha)	0.30	L/sec
Design Flow	**13.30**	L/sec
Full Flow Capacity of proposed 250mm @ 1.0% service connection	**59.47**	L/sec
Velocity of Full Flow	**1.21**	m/s
Q/Q_f	**22.4**	%

Appendix C

Water Demand Calculations

LEA Consulting Ltd. Consulting Engineers and Planners	Water Demand Calculation			
	Prepared:	D.P.	Page No.	C-01
	Checked:	M.D.		
Project: 1485 Williamsport Drive & 3480 Havenwood Drive (Building C & D)	Proj. #	18298		
	Date:	31-May-18		

This calculation is following the "Water Supply for Public Fire Protection"
by Fire Underwriters Survey.

Formula: $F = 220C\sqrt{A}$

where

F = the required fire flow in litres per minute
C = coefficient related to the type of construction.
= 0.8 for non-combustible comstruction
A = the total floor area in square metres. For fire resistive buildings, consider only the area of the largest floor plus 25% of each of the two immediately adjoining floors.

According the building stats,		Area (m2)
GF	adjoining	2134
L-02	largest	2358
L-03	adjoining	2084
A		3413

Therefore, F = 10000 **l/min**

Occupancy reduction:

For limited combustible occupancy, the reduction rate is 15%,
Therefore: F = 8500 l/min

Reduction for sprinkler protection:

Using the NFPA sprinkler system, a reduction rate of 30% is used.
Therefore: F = 5950 l/min

Separation charge:

Charge for the separations on each side:

Separation	Charge	
Over 45 m	0%	North
10.1 to 20 m	15%	South
20.1 to 30 m	10%	East
20.1 to 30 m	10%	West
Total charge in %	35%	
Total charge in l/min	2975	

Required Fire Flow: 9000 l/min
or 150.00 l/s
or 2378 US GPM

LEA Consulting Ltd. Consulting Engineers and Planners	Water Demand Calculation			
	Prepared:	D.P.	Page No.	C-02
	Checked:	M.D.		
Project: 1485 Williamsport Drive & 3480 Havenwood Drive (Building C & D)	Proj. #	18298		
	Date:	31-May-18		

Proposed Building Type	Units	**Density** (P.P.U)	**Population**
Building C	103	2.7	278
Building D	99	2.7	267

Total Population in Proposed Buildings: **545**

Peak Hour Demand Calculation:

Residential Per Capita Demand	280	L/cap/day
Peaking Factor	3	
Peak Hour Demand	**5.30**	L/sec

Maximum Day Demand Calculation:

Residential Per Capita Demand	280	L/cap/day
Peaking Factor	2	
Maximum Day Demand	**3.54**	L/sec

Fire Flow for Residential: 150.00 L/sec

Max. Day Demand plus Fire Flow: **153.54** L/sec

Design Water Demand **153.54** L/sec

or **2433.53 US GPM**

Appendix D

Hydrant Flow Test data
And
Watermain Adequacy Assessment Data

LEA Consulting Ltd. Consulting Engineers and Planners	Residual Pressure			
	Prepared:	F.M	Page No.	C-05
	Checked:	M.D.		
Project: 1485 Williamsport Drive & 3480 Havenwood Drive	Proj. #	18298		
	Date:	31-May-18		

Hydrant Test Readings (300mm watermain, 3480 Havenwood Dr.) undertaken on June 15, 2018, by Classic Fire Protection

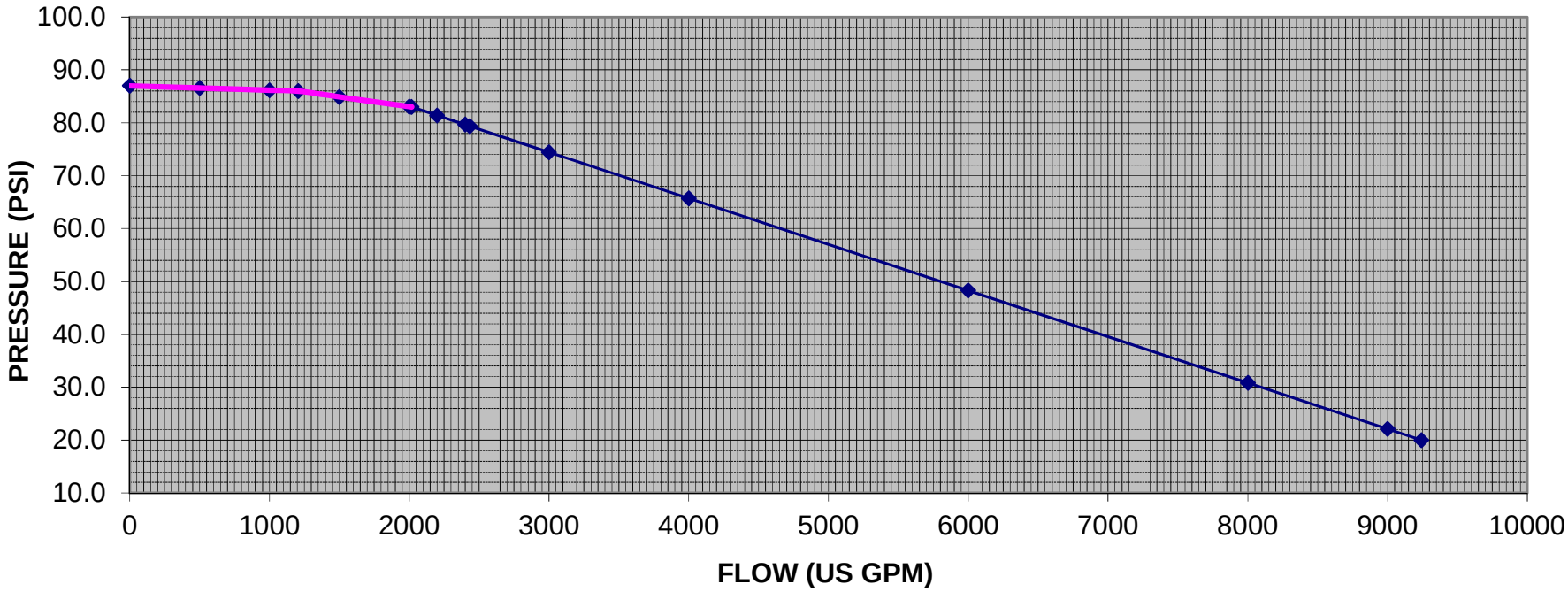
Flow		Residual Pressure		
0	US GPM	87	psi	
1205.9	US GPM	86	psi	
2017.8	US GPM	83	psi	
9243.6	US GPM	20	psi	Focus Fire Protection Estimate

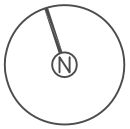
Interpolated

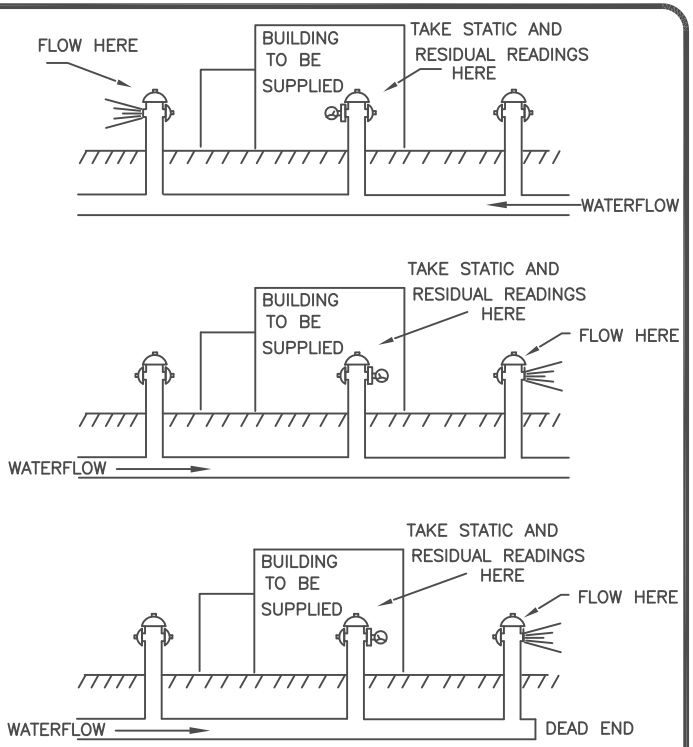
Flow (US GPM)	Residual Pressure (psi)
0	**87.0**
500	86.6
1000	86.2
1205.9	**86.0**
1500	84.9
2000	83.1
2017.8	**83.0**
2200	81.4
2400	79.7
2433.53	**79.4**
3000	74.4
4000	65.7
6000	48.3
8000	30.8
9000	22.1
9243.6	**20.0**

Existing 300mm Watermain on 3480 Havenwood drive, Mississauga

FLOW TEST CHART (BASED ON CLASSIC FIRE PROTECTION TEST, MAY 15, 2018)
Page: C-06

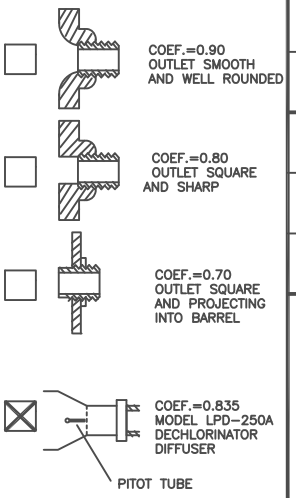






TEST:	PLAY PIPE	C=	STATIC(PSI)	RESIDUAL(PSI)	PITOT(PSI)	FLOW(USGPM)
	1x1 1/8					
	2x1 1/8					
	3x1 1/8					
	4x1 1/8					
	1x1 3/4					
	2x1 3/4					
	3x1 3/4					
	4x1 3/4					
	HYDRANT BUTT					
1	1x2 1/2	.835	87	86	60	1205.9
2	2x2 1/2	.835	87	83	42	2017.8
	3x2 1/2					
	4x2 1/2					
	FM NOZZLE					
	1x2 1/4	.88				
	2x2 1/4	.88				
	3x2 1/4	.88				
	4x2 1/4	.88				

OUTLET TYPE



Client:
LEA Consulting Ltd.

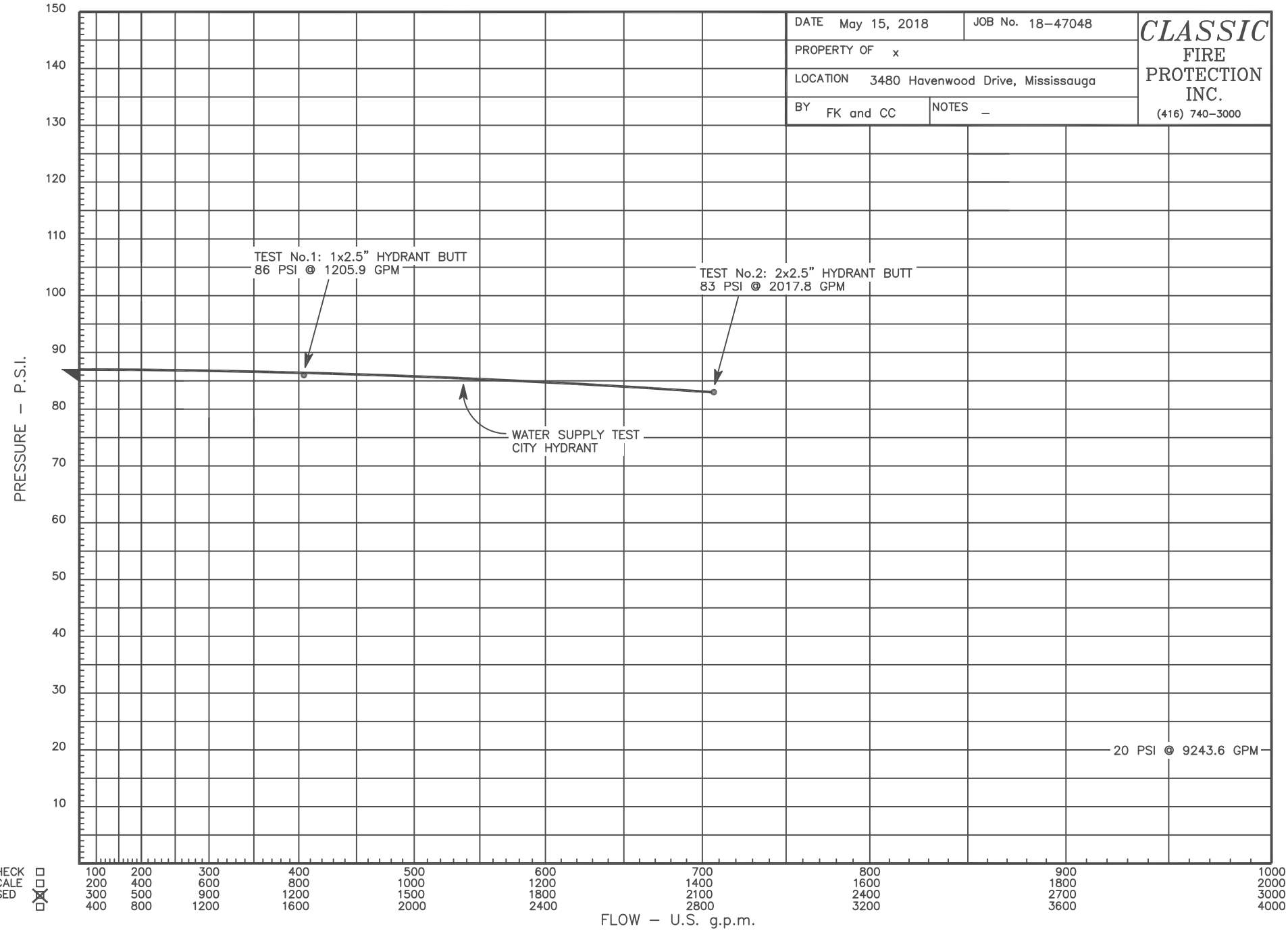
Location:
3480 Haveneood Drive
Mississauga, ON

DEDICATED SERVICE SINCE 1988
CLASSIC FIRE PROTECTION INC.
645 GARYRAY DR.
North York, ON
M9L 1P9
(416) 740-3000
Web: www.classicfire.com

WATER SUPPLY GRAPH

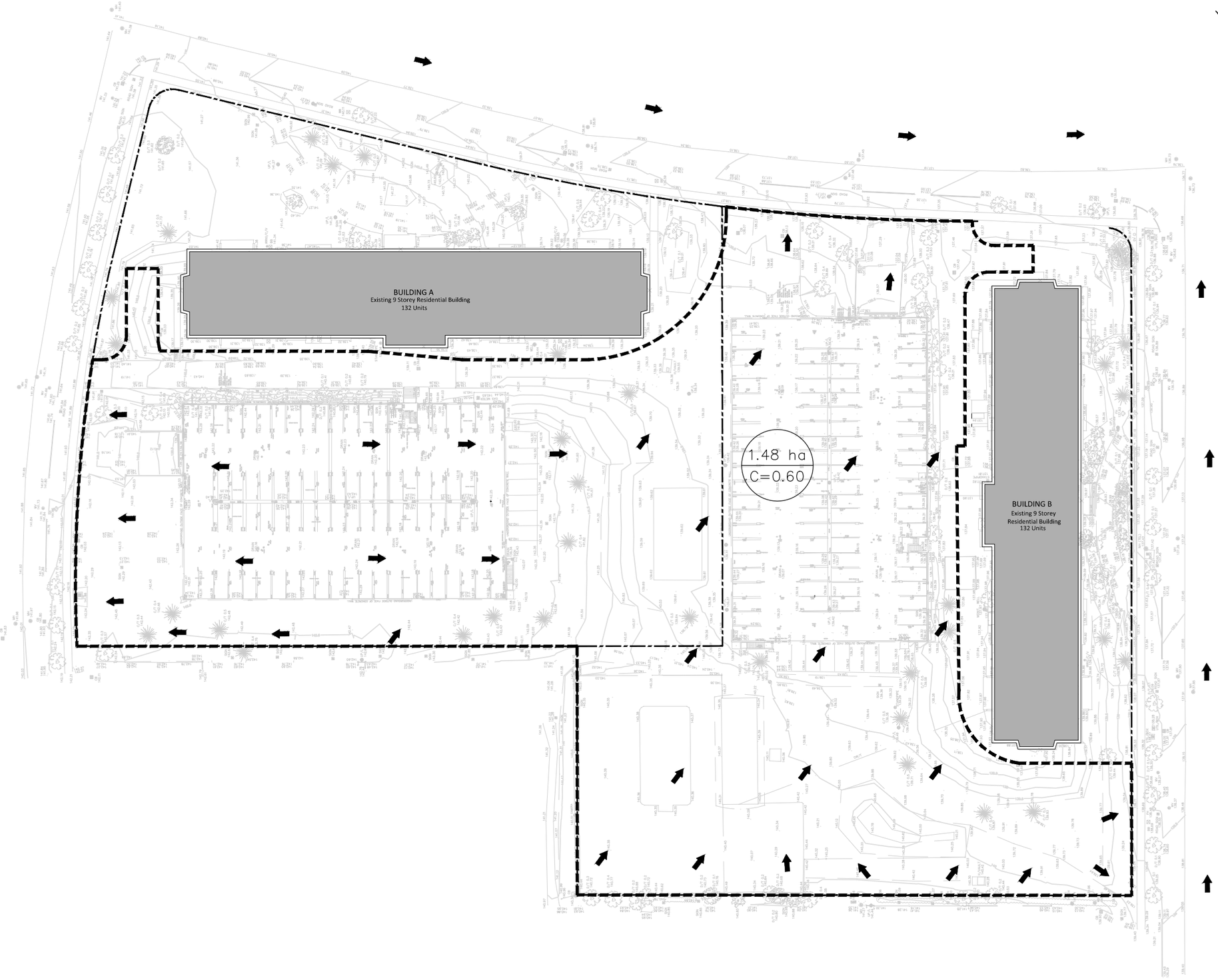
DATE May 15, 2018	JOB No. 18-47048
PROPERTY OF x	
LOCATION 3480 Havenwood Drive, Mississauga	
BY FK and CC	NOTES –

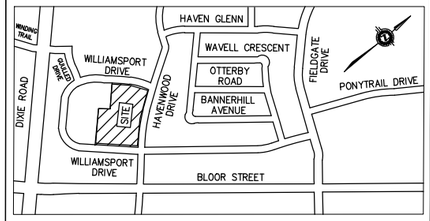
CLASSIC FIRE PROTECTION INC.
(416) 740-3000



Appendix E

Figures and Drawing





LEGEND

MH	EXISTING MANHOLE
CB	EXISTING CATCHBASIN
	EXISTING BELL BOX
MH (TEL)	EXISTING TELEPHONE MANHOLE
WV	EXISTING WATER VALVE
	EXISTING DECIDUOUS TREE 0.10m dia.
	EXISTING CONIFEROUS TREE 0.10m dia.
FH	EXISTING FIRE HYDRANT
	PROPERTY LINE
	DRAINAGE AREA BOUNDARY
	EXISTING OVERLAND FLOW DIRECTION
2.22 ha C=0.63	DRAINAGE AREA RUNOFF COEFFICIENT

CITY OF MISSISSAUGA
REGIONAL MUNICIPALITY OF PEEL

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625 Cochrane Drive, Suite 900
Markham, Ontario
L3R 9R9, Canada
Tel: (905)470-0015. Fax: (905)470-0030

LEA Consulting Ltd.
Consulting Engineers
and Planners
www.LEA.ca

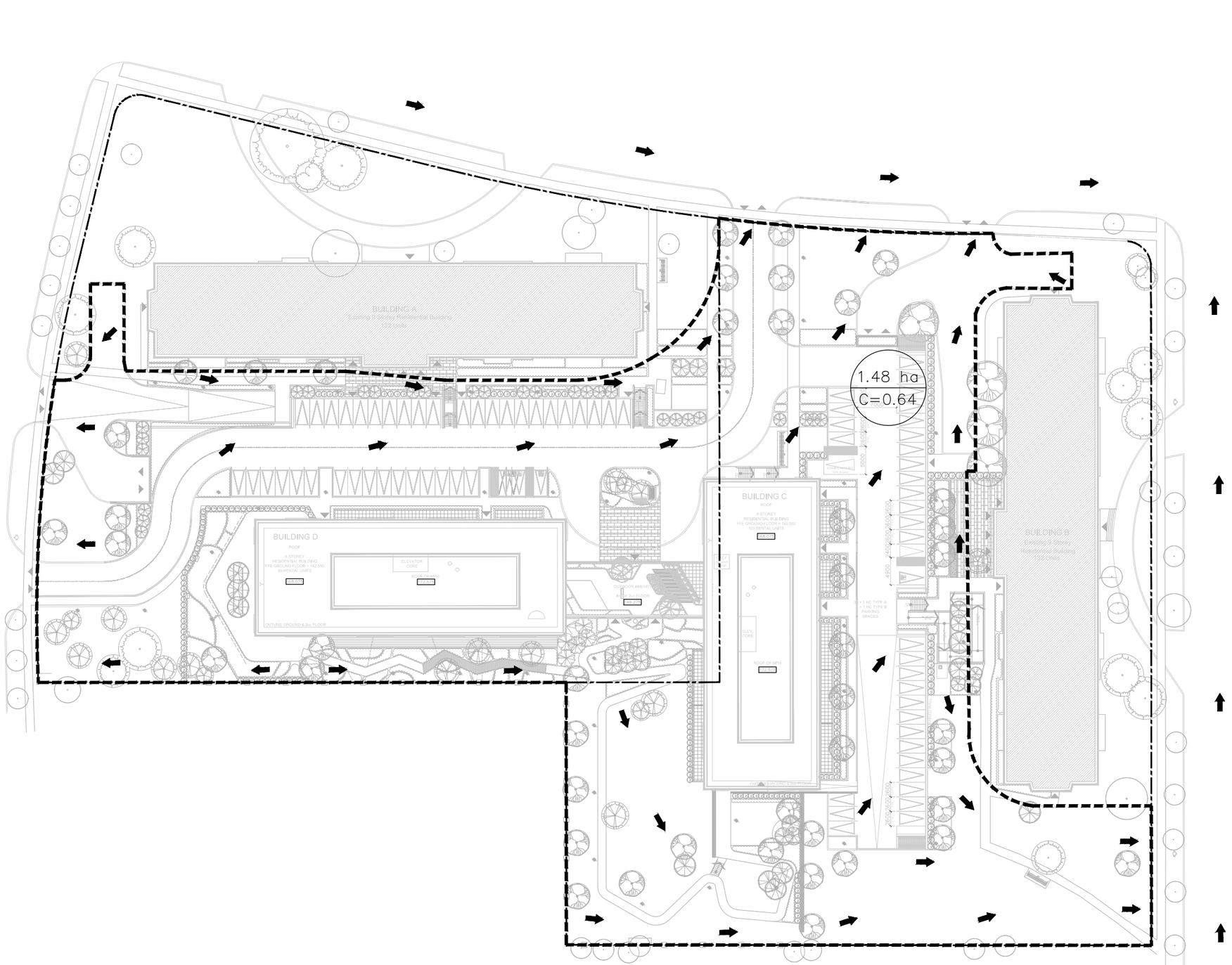
LICENSED PROFESSIONAL ENGINEER
Z. DU
JUNE 01, 2018
PROVINCE OF ONTARIO

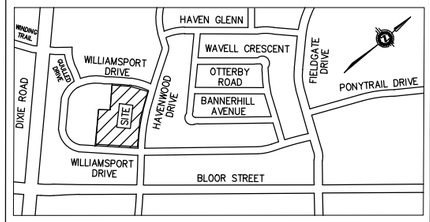
1485 WILLIAMSPORT DR & 3480 HAVENWOOD DR DEVELOPMENT

EXISTING DRAINAGE AREA PLAN

DESIGN	M.D.	DRAWN	D.P.	CHECKED	M.D.	CONTRACT No.	18298
SCALE:	1: 750 (FULL SIZE)					DRAWING NUMBER	FIG-01
DATE:	MAY 07, 2018						

DRAWING NAME: P:\18298 - 1485 William Spt Dr\Drafting\Contract Drawings\18201 - Existing Drainage Area.dwg, Jun 01, 2018 - 12:01pm





LEGEND

- PROPOSED TREE
- PROPOSED TREE
- PROPOSED TREE
- PROPERTY LINE
- DRAINAGE AREA BOUNDARY
- PROPOSED OVERLAND FLOW DIRECTION
- 2.22 ha C=0.42 — DRAINAGE AREA RUNOFF COEFFICIENT

CITY OF MISSISSAUGA
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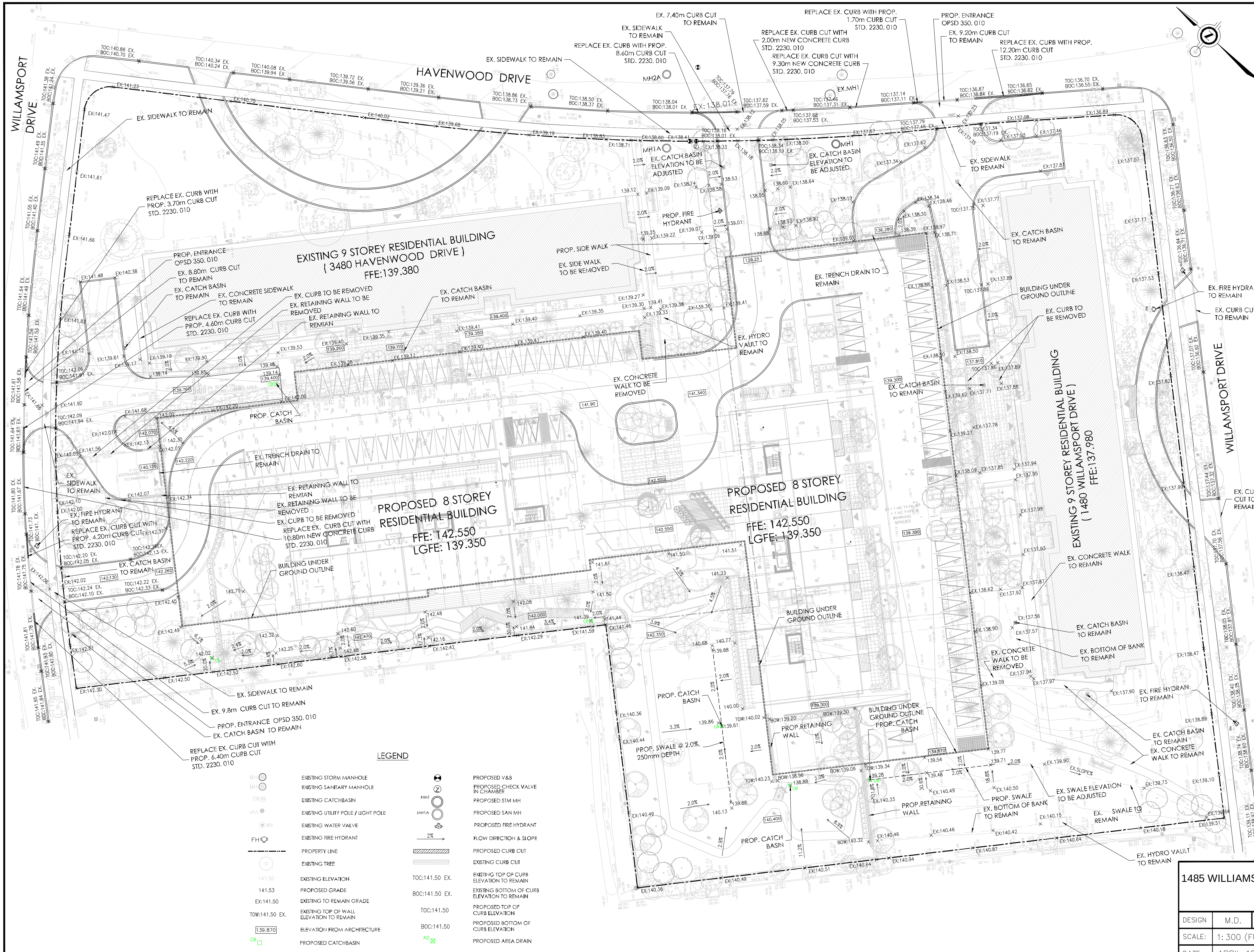
JUNE 01, 2018
PROVINCE OF ONTARIO

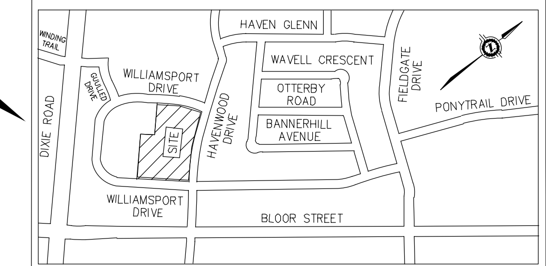
1485 WILLIAMSPORT DR & 3480 HAVENWOOD DR DEVELOPMENT

PROPOSED DRAINAGE AREA PLAN

DESIGN	M.D.	DRAWN	D.P.	CHECKED	M.D.	CONTRACT No. 18298
SCALE:	1: 750 (FULL SIZE)			DRAWING NUMBER		FIG-02
DATE:	MAY 07, 2018					

DRAWING NAME: F:\18298 – 1485 William Spt DA\Drafting\Contract Drawings\FIG02 – Proposed Drainage Aqua4ms, 2018–2:39pm





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PART OF BLOCKS G, REGISTERED PLAN 733, CITY OF MISSISSAUGA, REGIONAL MUNICIPALITY OF PEEL

SURVEYING INFORMATION IS REFERENCED FROM SCHAEFFER DZALDOV BENNETT LTD. - JOB NO. 16-132-00, DATED MAY 18, 2016.

BEARINGS ARE REFERRED TO PART OF THE NORTHEAST LIMIT OF BLOCK G, PLAN 43R-20680 AS MTM GRID. A BEARING OF N34°21'00"W AS SHOWN ON

BENCHMARK:
ELEVATIONS SHOWN HEREON ARE REFERRED TO MISSISSAUGA DATUM, REGISTERED PLAN 733, HAVING CITY OF MISSISSAUGA BENCHMARK No. 688,
HAVING A PUBLISHED ELEVATION OF 143.902 METRES.
CONTOUR INTERVAL 0.50m

ALL EXISTING FEATURE TO REMAIN UNLESS OTHERWISE NOTED.

FOR SITE SERVICING SECTIONS AND NOTES INVERT REFER TO DWG. C-103

CITY OF MISSISSAUGA
REGIONAL MUNICIPALITY OF PEEL

No.	DATE	DESCRIPTION
1	JUNE 01, 2018	ISSUED FOR FIRST ZBA SUBMISSION

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Markham, Ontario
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LEA Consulting Ltd.
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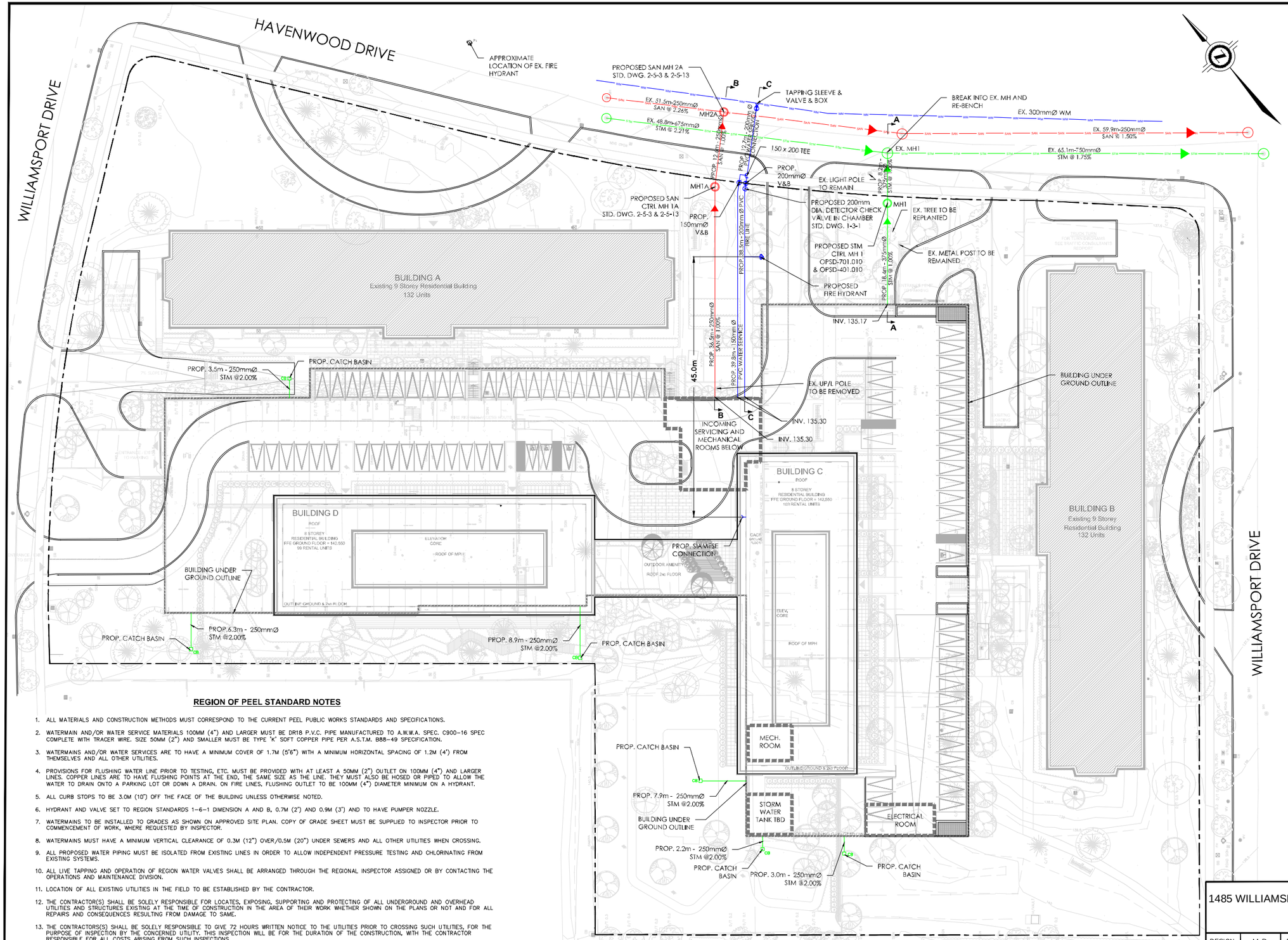
LICENSED PROFESSIONAL ENGINEER Z. DU JUNE.01, 2018 PROVINCE OF ONTARIO

1485 WILLIAMSPORT DR & 3480 HAVENWOOD DR DEVELOPMENT

PRELIMINARY SITE GRADING PLAN

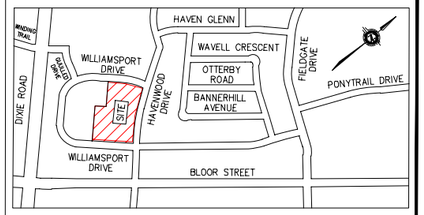
DESIGN	M.D.	DRAWN	J.W.	CHECKED	M.D.	CONTRACT No. 18298
SCALE:	1: 300 (FULL SIZE)	DRAWING NUMBER	C-101			
DATE:	APRIL 12, 2018					

DRAWING NAME: F:\18298 - 1485 William Spt Dr\Drafting\Contract Drawings\C101- Site Grading Plan.dwg Jun 01, 2018-4:29pm



REGION OF PEEL STANDARD NOTES

1. ALL MATERIALS AND CONSTRUCTION METHODS MUST CORRESPOND TO THE CURRENT PEEL PUBLIC WORKS STANDARDS AND SPECIFICATIONS.
2. WATERMAIN AND/OR WATER SERVICE MATERIALS 100MM (4") AND LARGER MUST BE DR18 P.V.C. PIPE MANUFACTURED TO A.W.W.A. SPEC. C900-16 SPEC COMPLETE WITH TRACER WIRE. SIZE 50MM (2") AND SMALLER MUST BE TYPE 'K' SOFT COPPER PIPE PER A.S.T.M. B88-49 SPECIFICATION.
3. WATERMAINS AND/OR WATER SERVICES ARE TO HAVE A MINIMUM COVER OF 1.7M (5'6") WITH A MINIMUM HORIZONTAL SPACING OF 1.2M (4') FROM THEMSELVES AND ALL OTHER UTILITIES.
4. PROVISIONS FOR FLUSHING WATER LINE PRIOR TO TESTING, ETC. MUST BE PROVIDED WITH AT LEAST A 50MM (2") OUTLET ON 100MM (4") AND LARGER LINES. COPPER LINES ARE TO HAVE FLUSHING POINTS AT THE END, THE SAME SIZE AS THE LINE. THEY MUST ALSO BE HOSED OR PIPED TO ALLOW THE WATER TO DRAIN ONTO A PARKING LOT OR DOWN A DRAIN. ON FIRE LINES, FLUSHING OUTLET TO BE 100MM (4") DIAMETER MINIMUM ON A HYDRANT.
5. ALL CURB STOPS TO BE 3.0M (10') OFF THE FACE OF THE BUILDING UNLESS OTHERWISE NOTED.
6. HYDRANT AND VALVE SET TO REGION STANDARDS 1-6-1 DIMENSION A AND B, 0.7M (2') AND 0.9M (3') AND TO HAVE PUMPER NOZZLE.
7. WATERMAINS TO BE INSTALLED TO GRADES AS SHOWN ON APPROVED SITE PLAN. COPY OF GRADE SHEET MUST BE SUPPLIED TO INSPECTOR PRIOR TO COMMENCEMENT OF WORK, WHERE REQUESTED BY INSPECTOR.
8. WATERMAINS MUST HAVE A MINIMUM VERTICAL CLEARANCE OF 0.3M (12") OVER/0.5M (20") UNDER SEWERS AND ALL OTHER UTILITIES WHEN CROSSING.
9. ALL PROPOSED WATER PIPING MUST BE ISOLATED FROM EXISTING LINES IN ORDER TO ALLOW INDEPENDENT PRESSURE TESTING AND CHLORINATING FROM EXISTING SYSTEMS.
10. ALL LIVE TAPPING AND OPERATION OF REGION WATER VALVES SHALL BE ARRANGED THROUGH THE REGIONAL INSPECTOR ASSIGNED OR BY CONTACTING THE OPERATIONS AND MAINTENANCE DIVISION.
11. LOCATION OF ALL EXISTING UTILITIES IN THE FIELD TO BE ESTABLISHED BY THE CONTRACTOR.
12. THE CONTRACTOR(S) SHALL BE SOLELY RESPONSIBLE FOR LOCATES, EXPOSING, SUPPORTING AND PROTECTING OF ALL UNDERGROUND AND OVERHEAD UTILITIES AND STRUCTURES EXISTING AT THE TIME OF CONSTRUCTION IN THE AREA OF THEIR WORK WHETHER SHOWN ON THE PLANS OR NOT AND FOR ALL REPAIRS AND CONSEQUENCES RESULTING FROM DAMAGE TO SAME.
13. THE CONTRACTORS(S) SHALL BE SOLELY RESPONSIBLE TO GIVE 72 HOURS WRITTEN NOTICE TO THE UTILITIES PRIOR TO CROSSING SUCH UTILITIES, FOR THE PURPOSE OF INSPECTION BY THE CONCERNED UTILITY. THIS INSPECTION WILL BE FOR THE DURATION OF THE CONSTRUCTION, WITH THE CONTRACTOR RESPONSIBLE FOR ALL COSTS ARISING FROM SUCH INSPECTIONS.
14. ALL PROPOSED WATER PIPING MUST BE ISOLATED THROUGH A TEMPORARY CONNECTION THAT SHALL INCLUDE AN APPROPRIATE CROSS-CONNECTION CONTROL DEVICE, CONSISTENT WITH THE DEGREE OF HAZARD, FOR BACKFLOW PREVENTION OF THE ACTIVE DISTRIBUTION SYSTEM, CONFORMING TO REGION OF PEEL STANDARDS 1-7-7 OR 1-7-8.



GENERAL NOTES

CONTRACTOR MUST CHECK & VERIFY ALL DIMENSIONS ON THE JOB.

DO NOT SCALE DRAWINGS.

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ARCHITECT.

PART OF BLOCKS G, REGISTERED PLAN 733, CITY OF MISSISSAUGA, REGIONAL MUNICIPALITY OF PEEL

SURVEYING INFORMATION IS REFERENCED FROM SCHAEFFER DZALDOV BENNETT LTD. - JO NO. 16-132-00, DATED MAY 18, 2016.

BEARINGS ARE REFERRED TO PART OF THE NORTHEAST LIMIT OF BLOCK G, PLAN 43R-20680 AS MTM GRID A BEARING OF N34°21'00"W AS SHOWN ON DRAWING

BENCHMARK:
ELEVATIONS SHOWN HERE ARE REFERRED TO THE CITY OF MISSISSAUGA DATUM, REGISTERED PLAN 733, HAVING A PUBLISHED ELEVATION OF 143.902 METERS.
CONTOUR INTERVAL 0.50m

ALL EXISTING FEATURE TO REMAIN UNLESS OTHERWISE NOTED.

FOR SITE SERVICING SECTIONS AND NOTES REFER TO DWG. C-103

LEGEND

- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- EXISTING CATCHBASIN
- LS EXISTING LIGHT STANDARD
- WV EXISTING WATER VALVE
- FH EXISTING FIRE HYDRANT
- STM EXISTING STORM SEWER
- SAN EXISTING SANITARY SEWER
- WM EXISTING WATER MAIN
- B EXISTING UNDERGROUND BELL CABLE
- E EXISTING UNDERGROUND ELECTRICAL SERVICE
- TV EXISTING UNDERGROUND TV SERVICE
- GAS EXISTING GAS MAIN
- X EXISTING FENCE
- PROPERTY LINE
- EXISTING TREE
- MH1 PROPOSED STORM MANHOLE
- MH1A PROPOSED SANITARY MANHOLE
- PROPOSED WATER SERVICE CONNECTION
- AD PROPOSED AREA DRAIN
- CB PROPOSED CATCHBASIN

MISSISSAUGA

CITY OF MISSISSAUGA
REGIONAL MUNICIPALITY OF PEEL

No.	DATE	DESCRIPTION
1	JUNE 01, 2018	ISSUED FOR FIRST ZBA SUBMISSION

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JUNE 01, 2018
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PRELIMINARY SITE SERVICING PLAN

DESIGN	M.D.	DRAWN	D.P.	CHECKED	M.D.	CONTRACT No. 18298
SCALE:	1:300 (FULL SIZE)			DRAWING NUMBER		C-102
DATE:	MAY 07, 2018					

DRAWING NAME: P:\18298 - 1485 Williams Spt Dr\Drafting\Contract Drawings\C102 - Site Servicing Plan.dgn 01, 2018 - 4:25pm