

TOWN OF CALEDON  
PLANNING  
RECEIVED  
Nov.29, 2021

**SOSCIA**  
ENGINEERING LTD.

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PROFESSIONAL ENGINEERS & PROJECT MANAGERS

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**FUNCTIONAL SERVICING REPORT**

**PROPOSED STACKED TOWNHOUSE DEVELOPMENT**

**13656 EMIL KOLB PARKWAY  
CALEDON, ONTARIO**

**AUG 23, 2021**

**SPA 2021-0077**

**SOSCIA PROJECT # 20-007**

# **SOSCIA**

**ENGINEERING LTD.**

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## **PROFESSIONAL ENGINEERS & PROJECT MANAGERS**

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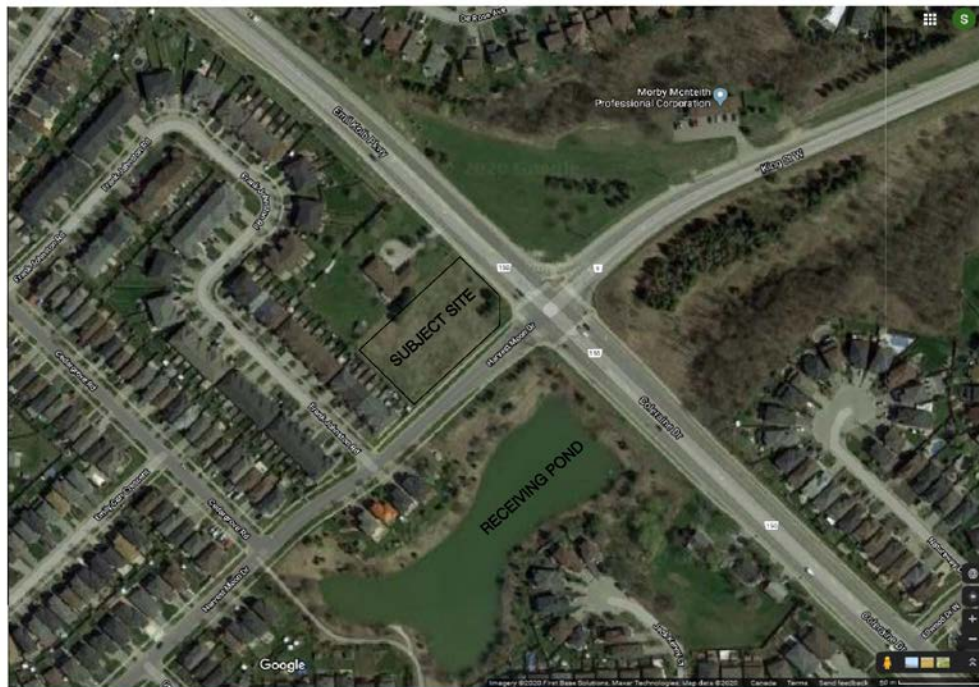
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## **1.0 SITE DESCRIPTION**

The subject property is located at the North-West corner of Harvest Moon Drive and Coleraine Drive. The subject lands are located upon Part of the East Half of Lot 9, Concession 5, Town of Caledon in the Regional Municipality of Peel. The property is currently vacant with approximately 0.4538 ha in area, bound by residential properties to the west and north.

The proposed development comprises of 45 condominium stacked townhouse units, with asphalt parking, concrete walkways, interlocking stones and landscaped areas. The road access to the development is through Harvest Moon Drive. The Site plan of the development is provided in Appendix A.

Soscia Professional Engineers Inc. aims to prepare the Functional Servicing Report discussing the Stormwater, Sanitary and Water servicing requirements for the proposed development. The grading and servicing plans have been prepared in accordance with the design criteria of Town of Caledon, Toronto Region and Conservation Authority (TRCA), and the Regional Municipality of Peel.



## **2.0 STORM SEWER MANAGEMENT PLAN**

### **2.1 DESIGN CRITERIA**

The Town of Caledon requires that the storm water drainage from the proposed development shall be controlled to the pre-development release rates for all storm events. The storm water management design is premised on controlling the 100 yr post-development flows to an allowable release of 180 l/ha/sec. This will be achieved by flow restrictor device provided at the outlet of Control Manhole (MH1). The Water Quality standards will be achieved by the removal 80% suspended solids. A water balance analysis is also carried out to retain at least 5mm of rainfall within the site by on site infiltration.

### **2.2 EXISTING CONDITION**

The property currently drains by sheet flow from the north west to the south east. The drainage ultimately ends up in a double catch basin in the north west corner of Harvest Moon Drive and Coleraine Drive. This will serve as the point of connection for the storm service from the site. This double catch basin outlets via a 300mm storm sewer which discharges to a municipal stormwater pond located south of Harvest Moon Drive.

### **2.3 PROPOSED CONDITION**

The storm runoff from the subject site is collected by the proposed underground storm sewer system and directed to the existing Double Catch basin located at the intersection of Harvest Moon and Coleraine Drive. For the connection to be established, the DCB is to be upgraded to a 1500mm Double catch basin Manhole (DCBMH). *(Please refer Appendix A2 for the Site Servicing plan SW2).*

Apart from the controlled and uncontrolled flow from the site, the proposed DCBMH will also convey flow from the rear of residential lots on Frank Johnson Rd, a portion of road along Harvest Moon and Coleraine Drive. With reference to StormWater Management Report prepared for the lot by Urban Watershed Group Ltd. in 2014, an external storm sewer analysis was carried out to check the 2 year storm event capacity of exiting storm lines leading to the stormwater pond. *(Please refer to Table1 of Appendix B).* The internal storm sewer system is designed to 5 year storm sewer intensity *(Please refer to Table 2 of Appendix B).*

An orifice restrictor(100mm orifice plate) is proposed within the storm control Manhole in order to attenuate the 1 in 100 year flows from this development area. Attenuation of the 1 in 100 year flow will require on-site storage to be provided. The excess run-off will be stored above as well under ground.

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**Post Development Storage Required = 43.66 m<sup>3</sup>**

Storage Provided:

Surface Ponding = 18.79 cu.m

Cultec Chamber 280HD = 10.03 cu.m

Underground sewers = 22.93 cu.m

**Total Available storage = 51.75 m<sup>3</sup>**

The enhanced level of **Water Quality** for the proposed site is provided by installing an Oil/grit separator device downstream of the orifice control device. A stormceptor model EF4 (or approved equivalent) has been proposed allowing for 88% TSS removal and captures 90% of total runoff volume.

A **Water balance** analysis on site resulted in a storage requirement of 22.69m<sup>3</sup> to retain a minimum of 5mm of rainfall. The proposed CULTEC infiltration system will recharge the storm water providing a storage of 15.42m<sup>3</sup>. The remaining will be recharged through initial abstraction.

The design criteria also aims at adopting a set of Erosion and Sediment control techniques to implement Best Management Practices on site. *(Please refer to SWM Report (MAR,2021) prepared by Soscia Engineers for detailed storm water management design.)*

### **3.0 WATER SERVICING**

#### **3.1 EXISTING WATERMAIN**

An existing 300mm Water Main on Harvest Moon Drive will service the site.

#### **3.2 METHODOLOGY: WATER USAGE**

The estimated water demand generated from the proposed development is given below:

Total Townhouse units	= 45
Population (at 3.5ppu)	= 45*3.5 = 158
Average Consumption Rate	= 280 L/cap/day
Average Daily Demand(m <sup>3</sup> /day)	= 280x158
	= 44.24 m <sup>3</sup> /day
Peak Daily Demand (Daily Peak Factor:2)	= 88.48 m <sup>3</sup> /day
Peak Hourly Demand (Hourly Peak factor: 3)	= 132.72 m <sup>3</sup> /day

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### **3.3 PROPOSED WATERMAIN**

As shown on the servicing plan (SW2) (See Appendix A2), 150mm lateral connections are tapped from the existing 300mm Municipal Watermain at two separate locations to establish a looped system. The physical connection is made with a 300x150 tapping saddle, complete with check valve in chamber as per the Region of Peel standard drawing 1-8-2. Internally the 150mm PVC watermain will be reduced to 100mm pipe to service individual units with a 19mm diameter Type 'K' copper water connection and meter.

The maximum and minimum pressure under normal operating conditions shall be 700 kPa and 280 kPa respectively. The minimum system pressure under fire flow conditions shall not be less than 140 kPa.

### **3.4 HYDRANT COVERAGE**

The Site will be serviced by an existing City Fire Hydrant located on Harvest Moon Drive. The hydrant is currently located on the proposed Driveway which has to be relocated to the Boulevard. Additionally, the site will be serviced by a private hydrant located within the property.

All the 3 buildings meet the maximum coverage of 45m from the hydrants.

## **4.0 SANITARY SEWER PLAN**

### **4.1 EXISTING SANITARY SEWER**

An Existing 150mm Sanitary sewer stub has been allotted solely to service the subject site upon development from the existing 375mm CONC SAN sewer on Coleraine Drive.

### **4.2 METHODOLOGY: SANITARY DISCHARGE**

The proposed development consists of 45 stacked townhouse units in 0.4538 ha area. Sanitary discharge design flows for the development will be calculated based on the Region of Peel design parameters as outlined below.

The residential population density for townhouse units = 175 persons/ha  
Unit Domestic sewage flow = 302.8 L/cap.d

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### Peak Flow Design :

Total Population	= 0.4538 ha x 175persons/ha = 79 p
Average Domestic flow	= 302.8 L/p/day
Peaking Factor	= $1+14/(4+(P/1000)^{0.5}) = 4.26$
Site Area	= 0.4538 ha
Proposed Manholes	= 11 mh
Manhole Infiltration Rate	= $0.00028\text{m}^3/\text{s}/\text{mh} * 11\text{mh} = 3.08 \text{ L/s}$
Sewer Infiltration Rate	= $0.0002\text{m}^3/\text{s}/\text{ha} * 0.4538\text{ha} = 0.09\text{L/s}$
<b>Total Infiltration Rate</b>	<b>= 3.17 L/s</b>
<b>Peak Population Flow</b>	<b>= <math>PqM/86400</math></b>
	<b>= <math>(79*302.8*4.26)/86400</math></b>
	<b>= 1.18 L/s</b>
<b>Peak Design Flow</b>	<b>= 4.36 L/s</b>

### 4.3 PROPOSED SANITARY SEWERS

The sanitary servicing of the proposed townhouse development is designed based on Region of Peel standard servicing drawing 1-8-2 for Townhouses (*See Appendix C for attachment*). The detailed Sanitary servicing plan is outlined in SW2 (*Appendix A2*).

An Internal Sanitary sewer system with a combined length of 378m will individually service the units.

The anticipated sanitary discharge from the proposed development is estimated to be 4.36 L/s. Based on the Sanitary sewer design sheet, the last leg of the proposed pipe system is only 40% full at the design flow.

The design flow from the site will not add any additional load on the existing 150mm downstream stub connection from the 375 CONC SAN . (*See Appendix C for Sanitary sewer design sheet*).

### 5.0 CONCLUSIONS:

In summary, the functional servicing analysis established the following:

### STORMWATER SERVICING

The 100 year post development runoff from the site is controlled to the 2 year pre development rate by providing a 100mm orifice plate at the downstream control Manhole. Detention and Retention storage will be provided by a proposed Cultec System (280HD).

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A quality treatment unit (Stormceptor unit model EF4 or approved equivalent) will be installed to yield a minimum TSS removal rate of 80% for quality control purposes. The storm system from the site will discharge to an existing 300mm municipal line which eventually drain to an existing SWM pond.

### **WATER SUPPLY**

Water supply servicing will be provided from an existing 300 mm diameter water main located on Harvest Moon Drive. A 150mm Water service line is proposed to meet the domestic water demands. The existing city hydrant and proposed private Hydrant will be sufficient to meet the fire requirements of the 3 buildings.

### **SANITARY**

The anticipated sanitary discharge from the proposed development will be 4.36 L/s which will be carried by an existing 375mm CONC SAN on Coleraine Drive. Downstream sanitary analysis indicates there will be no surcharge in the municipal sewer system as a result of this development.

Sincerely,

**SOSCIA ENGINEERING LTD.**

**Sandro Soscia, P. Eng.**



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ENGINEERING LTD.

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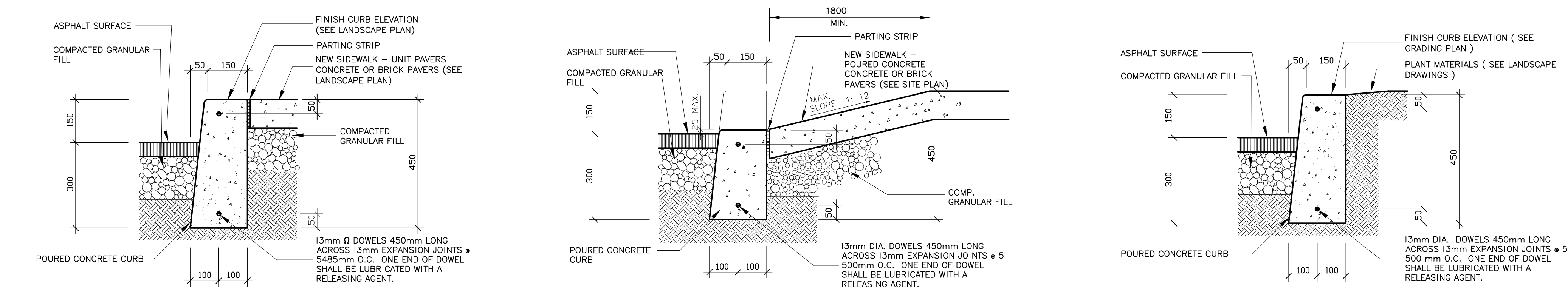
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**“APPENDIX”**

## **APPENDIX A1:**

### **SITE PLAN**



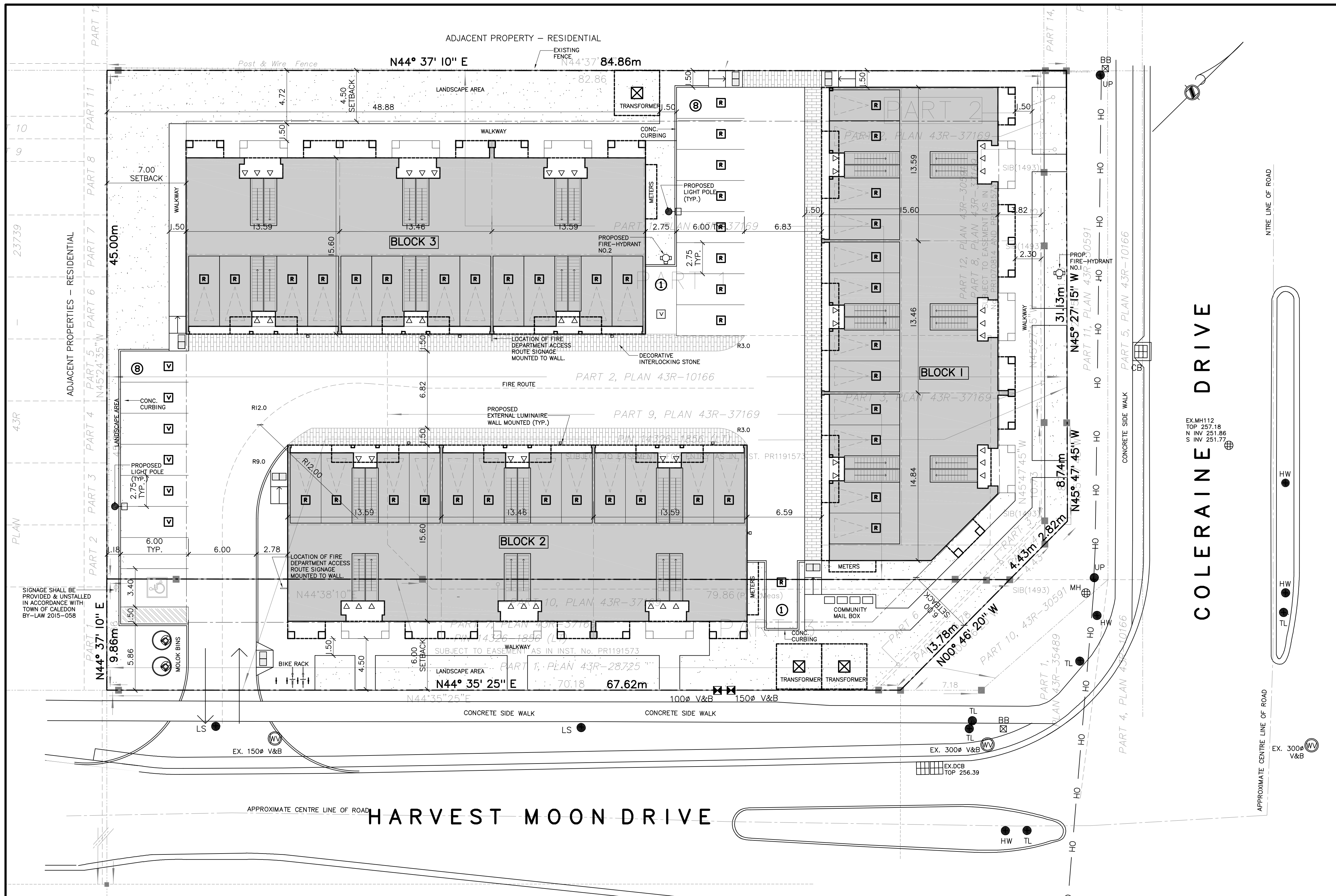


1 CONCRETE CURB/SIDEWALK  
SCALE: 1:10

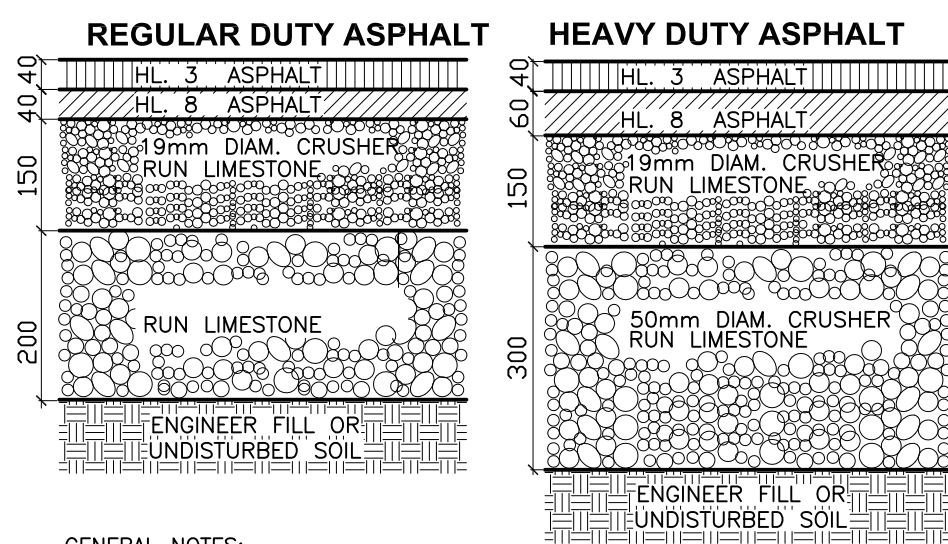
2 DEPRESSED CONC. CURB  
SCALE: 1:10

3 CONCRETE CURB DETAIL  
SCALE: 1:10

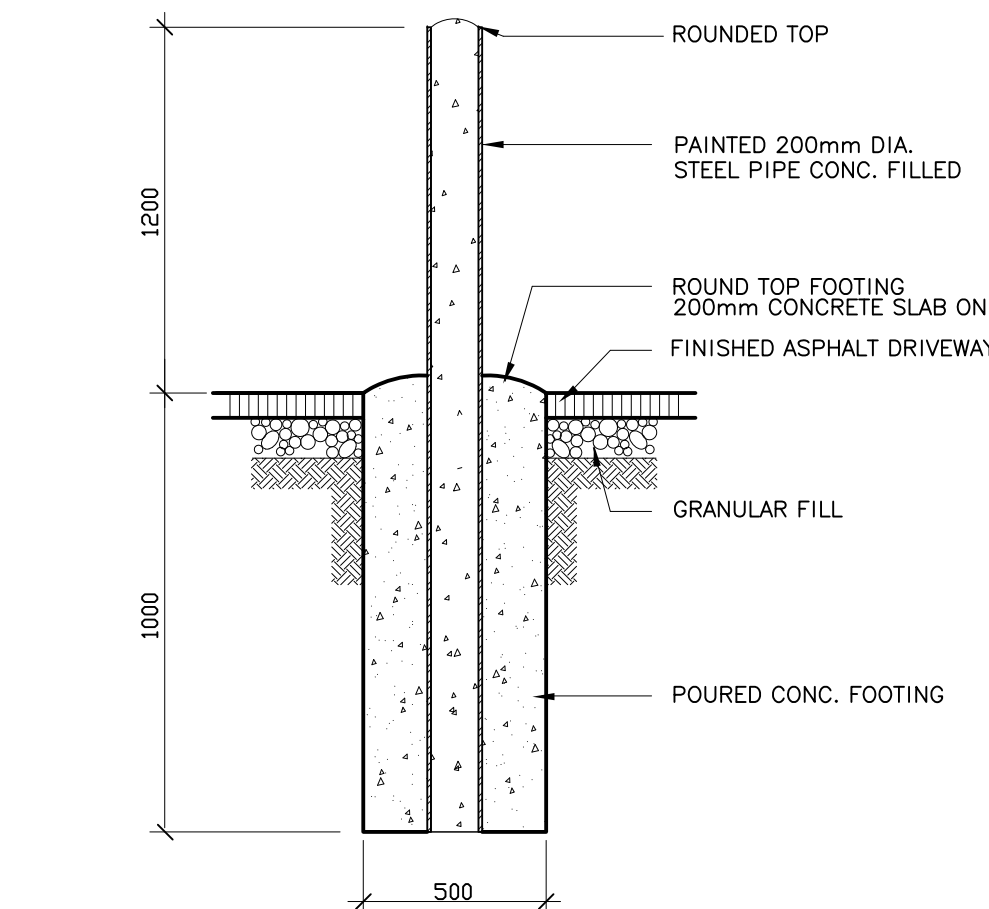
4 ASPHALT DETAILS  
SCALE: 1:10



1 SITE PLAN  
SCALE: 1:200



- GENERAL NOTES:
- ALL GRANULAR FILL MATERIAL SHALL BE COMPACTED TO 98% S.P.D.
  - TOPSOIL, DEBRIS & LOOSE MATERIALS TO BE REMOVED FROM ALL SUBBASE MATERIALS.
  - WHERE NEW PAVING ABUTS EXISTING ASPHALT PAVING, MATCH FINISH GRADE AND SLOPE.
  - PROVIDE PAVEMENT MARKINGS, SYMBOLS, DIRECTION ARROWS, AS INDICATED ON PLAN.



5 BOLLARD DETAIL  
SCALE: 1:10

#### SITE INFORMATION:

SITE AREA -	4537.89 m <sup>2</sup>
BUILDING AREA -	1905.59 m <sup>2</sup>
COVERAGE -	41.99%
TOTAL RESIDENTIAL UNITS -	45
PROVIDED PARKING -	54
RESIDENT PARKING -	45
VISITOR PARKING -	9
BARRIER FREE PARKING -	1 TYPE A
1 BEDROOM + DEN UNIT -	44
2 BEDROOMS UNIT -	44

#### BUILDING AREA

BLOCK 1	636.49
BLOCK 2	634.55
BLOCK 3	634.55

#### PARKING REQUIREMENTS:

PARKING REQUIRED UNDER ZONING BY LAW

RESIDENTIAL (2 PER UNITS PLUS 0.25 PER VISITOR) - 102

ACCESSIBLE PARKING REQUIREMENT (LESS THAN 12, VISITOR) I TYPE A

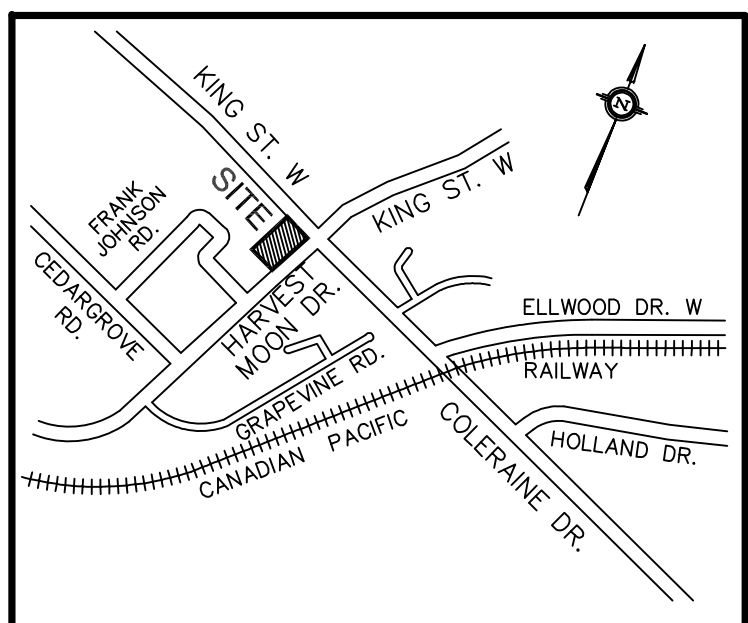
V	VISITOR PARKING
R	RESIDENT PARKING

#### SITE NOTES:

- PERFORM ALL CONSTRUCTION IN ACCORDANCE WITH THE ONTARIO BUILDING CODE LATEST EDITION
- ASPHALT PAVING WILL CONSIST OF THE FOLLOWING:
  - LIGHT DUTY PAVEMENT
  - 25 mm OF H3 ASPHALT-97% MARSHAL DENSITY
  - 50 mm OF H3 ASPHALT-97% MARSHAL DENSITY
  - 150mm OF 20mm CRUSHER RUN LIMESTONE BASE(OP.P.S.1010)
  - 200mm OF 50mm CRUSHER RUN LIMESTONE SUB-BASE(OP.P.S.1010)
  - MIN. 97% SPMD-COMPACTION REQUIREMENTS
- THE PORTION OF THE DRIVEWAYS WITHIN THE MUNICIPAL BOULEVARDS FROM BACK EDGE OF CURB TO PROPERTY LINE ALONG ENTIRE WIDTH OF FIRE ROUTE AND ALL HEAVY DUTY WILL BE PAVED AS FOLLOWS:
  - 40 mm OF H3 ASPHALT-97% MARSHAL DENSITY
  - 60 mm OF H3 ASPHALT-97% MARSHAL DENSITY
  - 150mm OF 20mm CRUSHER RUN LIMESTONE BASE(OP.P.S.1010)
  - 300mm OF 50mm CRUSHER RUN LIMESTONE SUB-BASE(OP.P.S.1010)
  - MIN. 97% SPMD-COMPACTION REQUIREMENTS

Contractor must check and verify all dimensions and be responsible for some, reporting any discrepancies to the Engineer and architect before commencing work.  
Prints shall not be used for construction until signed 'Approved For Construction' by the Engineer.  
Prints are not to be scaled.  
All drawings, prints and specifications are the property of the Engineer and shall be returned to him on completion of the work.  
All work shall be performed in accordance with the latest edition of the ONTARIO BUILDING CODE, NATIONAL BUILDING CODE and regulatory regulations of the Town of Caledon Building Department.  
These notes are to be read in conjunction with all drawings and specifications.

No.	Date:	Revision:	D'wg.	Ch'd.
1.	06/23/2021	ISSUED FOR SPA	N.R.	H.M.



#### KEY PLAN

SCALE: N.T.S.

#### LEGAL DESCRIPTION:

PART 2-SUBJECT TO EASEMENT IN GROSS AS IN INST. No. PR1070814 AND SUBJECT TO EASEMENT FOR ENTRY AS IN INST. No. PR1191573  
PART 3-SUBJECT TO EASEMENT FOR ENTRY AS IN INST. No. PR1191573

PLAN OF SURVEY OF  
PART OF LOT 9, CONCESSION 5  
(GEOGRAPHIC TOWNSHIP OF ALBION)  
TOWN OF CALEDON  
REGIONAL MUNICIPALITY OF PEEL

APPLICANT:  
HUMPHRIES PLANNING GROUP INC.  
190 PIPPIN ROAD, SUITE A  
VAUGHAN, ON L4K 4X9  
TEL: 905-264-7678 EXT. 244  
EMAIL: rhumphries@humphriesplanning.com

OWNER:  
HARVESTONE CENTRE INC.  
3 BROWNING COURT  
BOLTON, ON L7E 5S6  
TEL: 905-857-3266  
EMAIL: vince@boltonrailings.com

ARCHITECTS / ENGINEERS:  
SOSCIA PROFESSIONAL ENGINEERS INC  
10376 YONGE STREET, SUITE 307  
RICHMOND HILL, ON L4C 3B8  
TEL: 905 237 5410  
FAX: 905 237 5413  
CEL: 416 704 3868  
E-MAIL: hmo@sosciaeng.ca



Project:  
**PROPOSED:  
STACKED TOWNHOUSE  
DEVELOPMENT**  
**13656 EMIL KOLB PARKWAY**  
CALEDON, ONTARIO.  
SPA 2021-0077

Sheet title:	Job. no.
<b>SITE PLAN</b>	<b>20-007</b>
Scale: AS NOTED	Date: DEC 2020
Drawn: N.R.	Checked: H.M.
	AI of x



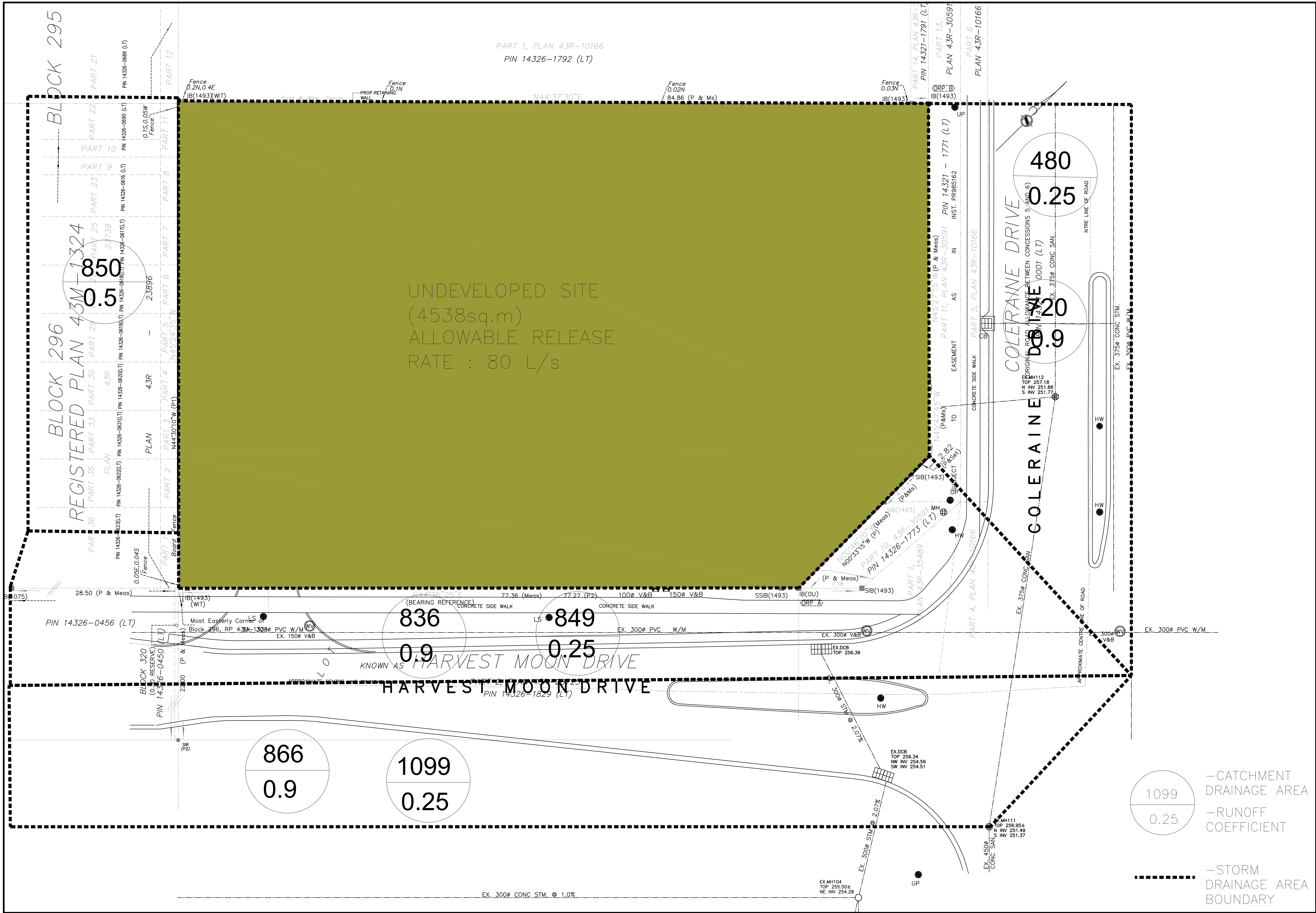
**APPENDIX A2:**

**SERVICING PLAN (SW2)**









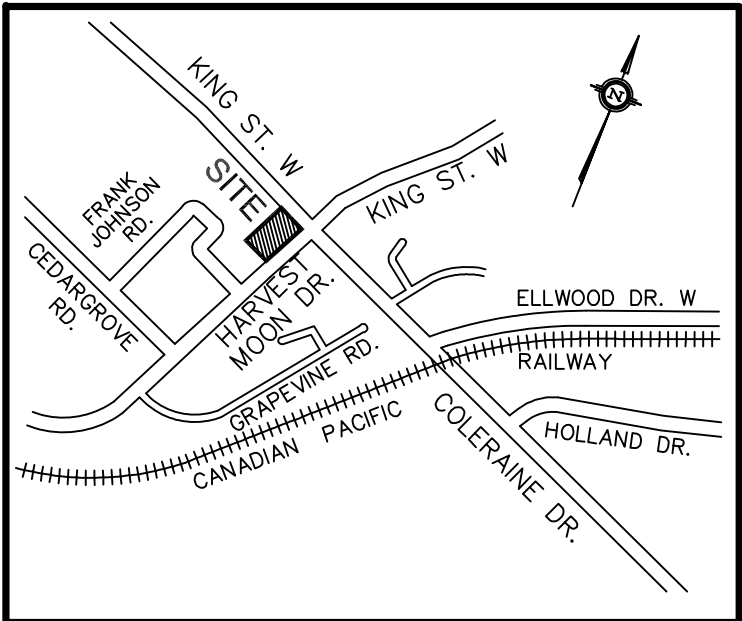
**PRE DEVELOPMENT DRAINAGE PLAN**  
SCALE: 1:200

THE GENERAL CONTRACTOR SHALL REPORT AND VERIFY ALL DIMENSIONS AND REPORT ERRORS AND OMISSIONS TO THE ARCHITECT.

DRAWINGS MUST NOT BE SCALED.

THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS COUNTERSIGNED BY:

No.	Date:	Revision:	D'wn.	Ch'd.
I.	08/23/2021	ISSUED FOR SPA	N.R.	S.S.



**KEY PLAN**  
SCALE: N.T.S.

**LEGAL DESCRIPTION:**  
PART 2-SUBJECT TO EASEMENT IN GROSS AS IN INST. No. PR1070814 AND SUBJECT TO EASEMENT FOR ENTRY AS IN INST. No. PR1191573  
PART 3-SUBJECT TO EASEMENT FOR ENTRY AS IN INST. No. PR1191573  
  
PLAN OF SURVEY OF  
PART OF LOT 9, CONCESSION 5  
(GEOGRAPHIC TOWNSHIP OF ALBION)  
TOWN OF CALEDON  
REGIONAL MUNICIPALITY OF PEEL

**APPLICANT:**  
HUMPHRIES PLANNING GROUP INC.  
190 PIPPIN ROAD, SUITE A  
VAUGHAN, ON L4K 4X9  
TEL: 905-264-7678 EXT. 244  
EMAIL: rhumphries@humphriesplanning.com

**OWNER:**  
HARVESTONE CENTRE INC.  
3 BROWNING COURT  
BOLTON, ON L7E 5S6  
TEL: 905-857-3266  
EMAIL: vince@boltonrailings.com

**ARCHITECTS / ENGINEERS:**  
SOSCIA PROFESSIONAL ENGINEERS INC  
10376 YONGE STREET, SUITE 307  
RICHMOND HILL, ON L4C 3B8  
TEL: 905 237 5410  
FAX: 905 237 5413  
CEL: 416 704 3868  
E-MAIL: hmo@soscieng.ca



**Project:**  
**PROPOSED:**  
**STACKED TOWNHOUSE DEVELOPMENT**  
13656 EMIL KOLB PARKWAY  
CALEDON, ONTARIO.  
SPA 2021-0077

Sheet title: <b>PRE DEVELOPMENT DRAINAGE PLAN</b>	Job. no. 20-007
Scale: AS NOTED	Date: FEB 2021
Drawn: N.R.	Checked: S.S.
	D'I

**APPENDIX B**

**STORM SEWER DESIGN SHEETS**

**TABLE 1 : EXTERNAL STORM SEWER ANALYSIS**

SOSCIA FILE #: 20-007

Manning's Coeff = 0.013

[illegible]



# 5 YEAR - STORM SEWER DESIGN SHEET

## TABLE 2

PROJECT CONSULTANT: SOSCIA ENGINEERING  
PROJECT DESCRIPTION: COLERAINE-HARVEST MOON  
PROJECT LOCATION: CALEDON, ON  
SOSCIA FILE #: **20-007**

Design Parameters:  
 $N = 2.778$  given Area (ha) & Rainfall Intensity (mm/hr)  
 $5 \text{ YR Intensity} = 1593 / (tc + 11)^{0.878}$   $tc = 10$   
Manning's Coeff = 0.013

Revision Date: APR 08,2021[illegible]

MANNINGS COEFF 0.013

**APPENDIX C**

**SANITARY SEWER DESIGN SHEET**

## SANITARY SEWER DESIGN SHEET

PROJECT Coleraine-Harvest Moon-20-007  
 PREPARED BY : SOSCIA PROFESSIONAL ENGINEERS  
 DATE: 04-09-2021

q= average daily per capita flow (L/cap.d) = 302.8 L/cap/day  
 I= unit of peak extraneous flow (L/ha.s)= L/ha/s  
 Manhole Infiltration Rate=0.00028m3/s/mh 3.08 L/s  
 Sewer Infiltration Rate= 0.0002m3/ha 0.09 L/s  
 Q(p)= peak population flow (L/s) 1.188 L/s  
 Q(i) = peak extraneous flow/infiltration (L/s) 3.17 L/s  
**Q(d)= peak design flow (L/s) 4.36 L/s**

$$M = 1 + \frac{14}{4 + \sqrt{P}} \quad \text{where P is population in 1000's}$$

$$Q(i) = IA \text{ (L/s) where A = area in ha}$$

$$Q(p) = \frac{pqM}{86.4} \text{ (L/s)}$$

$$Q(d) = Q(p) + Q(i) \text{ (L/s)}$$

Mannings coeff 0.013

Location Street	Location From	Location To	DENSITY (ppha)	Individual Area A (hectares)	Population	Cumulative Pop.	Cumulative Area A (hectares)	Peaking Factor(M)	Pop.Flow	Peak extraneous flow Q(i) L/s	Peak design flow Q(d)	Existing Sewer Length (m)	Proposed Sewer Pipe	Proposed Sewer Grade%	Proposed Sewer Full Capacity(L/s) n =	Proposed Sewer Full flow velocity (m/s)	Percent Full	Proposed Sewer Actual velocity at Q(d)
									Q(p) L/s				Size(mm)					
	MH 3A	MH1A	175	0.4538	79	79	0.4538	4.27	1.188	3.17	4.36	25	150	0.5	10.77	0.61	40.5%	0.247
	MH 1A	Municipal connection	175	0.4538	79	79	0.4538	4.27	1.188	3.17	4.36	16.5	150	15	59.00	3.34	7.4%	0.247
											4.36							