PROPOSED THREE-STOREY

RESIDENTIAL APARTMENT BUILDING SITE

PART OF LOT 43 AND PART OF 44

R-PLAN 294

1295 SUMMERVILLE AVENUE

CITY OF OTTAWA

APPLICATION FILE NUMBER D07-12-19-0048

STORM DRAINAGE REPORT

REPORT R-818-19 (REVISION 2)

JANUARY 2020

T.L. MAK ENGINEERING CONSULTANTS LTD.

FEBRUARY 2019

REFERENCE FILE NUMBER 818-19

Introduction

The proposed three-storey apartment building site is located on the north side of Summerville Avenue, and situated west of Silver Street and east of Prince Street. Its legal property description is Part of Lot 43 and Part of Lot 44 Registered Plan 294 City of Ottawa. At this time, the residential development area is currently vacant. The municipal address of the property is referenced as 1295 Summerville Avenue.

The residential lot area under consideration is approximately 762.2 square metres. The property proposed for development is for a three (3)-storey residential apartment building where the ground floor is approximately 50% below grade, and there are three (3) storeys above the ground-floor level. The total square footage of the proposed building [all four (4) floors] is 14,820.0 square feet (±1,376.0 square metres). See Site Plan details in Appendix A.

The building will house a total of 18 units consisting of three (3) bachelor, two (2) one (1)-bedroom, and thirteen (13) two (2)-bedroom apartments. The stormwater outlet for this site is the existing 300mm diameter storm sewer located within the Summerville Avenue road right of way. Stormwater from this sewer is then routed east to the existing 375mm diameter Silver Street storm sewer which in turn further routes flow to the north into the existing 750mm diameter storm sewer on Emperor Avenue.

From storm drainage criteria set by the staff at the City of Ottawa's Engineering Department, the allowable post-development runoff release rates shall not exceed the two (2)-year pre-development conditions. The allowable pre-development runoff coefficient is the lesser of the calculated "C" existing value or C=0.4 maximum. If the uncontrolled stormwater runoff exceeds the specified requirements, then on-site stormwater management (SWM) control measures are necessary. The post-development runoff coefficient for this site is estimated at C=0.67, which exceeds the pre-development allowable C=0.4(max) criteria for the Summerville Avenue storm sewer without on-site SWM control. Therefore, SWM measures are required. Refer to the attached Drainage Area Plan (Figure 1) as detailed in Appendix B.

This report will address and detail the grading, drainage, and stormwater management control measures required to develop this property. Based on the Proposed Site Grading and Servicing Plan (Dwg. No. 818-19 G-1) and the Proposed Rooftop Stormwater Management Plan (Dwg. No. 818-19, SWM-1), the stormwater of this lot will be controlled on site by means of building rooftop only.

The stormwater management calculations that follow will detail the extent of on-site SWM control to be implemented and the storage volume required on site to attain the appropriate runoff release that will conform to the City's established drainage criteria.

Site Data

1. Development Property Area

Post-Development Site Area Characteristics

Development Lot Area	= 762.2m^2
Roof Surface Area	= 354.0m^2
Semi-permeable Area	= 60.0m^2

Concrete/Paver Area = 60.18m^2
Grass Area = 228.82m^2
Asphalt Area = 59.2m^2

$$C = \frac{(354.0 \times 0.9) + (60.0 \times 0.6) + (60.18 \times 0.9) + (228.82 \times 0.2) + (59.2 \times 0.9)}{762.2}$$

$$C = \frac{507.81}{762.2}$$

$$C = 0.666$$

Say "C"=0.67

Therefore, the average post-development "C" for this site is 0.67.

2. Controlled Area Data

Roof Surface Area = 354.0m^2
Total Controlled Stormwater Area = 354.0m^2

$$C = \frac{(354.0 \times 0.9)}{354.0}$$

$$C = \frac{318.6}{354.0}$$

$$C = 0.90$$

Say "C"=0.90

Therefore, the post-development "C" for the controlled stormwater drainage area is 0.90.

3. Uncontrolled Area Data

Asphalt Area = 59.2m^2
Semi-permeable Area = 60.0m^2
Grass Area = 228.82m^2
Concrete Area = 60.18m^2
Total Uncontrolled Stormwater Area = 408.2m^2

$$C = \frac{(60.18 \times 0.9) + (228.82 \times 0.2) + (59.2 \times 0.9) + (60.0 \times 0.6)}{408.2}$$

$$C = \frac{189.21}{408.2}$$

$$C = 0.464$$

Say "C"=0.47

Therefore, the post-development "C" for the uncontrolled stormwater drainage area of the site is 0.47.

The tributary area consisting of approximately 408.2 square metres will be out-letting off site uncontrolled from the residential apartment building site.

The SWM area to be controlled is 354.0m^2. Refer to the attached "Drainage Area Plan" in Figure 1 as detailed in Appendix B.

Pre-Development Flow Estimation

Maximum allowable off-site flow: two (2)-year storm

Pre-Development Site Area Characteristics
Development Lot Area = 762.20m^2
Asphalt Area = 285.68m^2
Grass Area = 473.64m^2
Concrete Area = 2.88m^2

$$C = \frac{(285.68 \times 0.9) + (473.64 \times 0.2) + (2.88 \times 0.9)}{762.2}$$

$$C = \frac{354.432}{762.2}$$

$$C = 0.465$$

Use C_{pre}= 0.4 (max) allowable for redevelopment

T_c=D/V where D=42.0m, ΔH=0.7m, S=1.7%, and V=1.0feet/second=0.31m/s

Therefore,

$$T_c = \frac{42.0\text{m}}{0.31\text{m/s}}$$

T_c=2.26 minutes
Use T_c=10 minutes
I_2=77.10mm/hr [City of Ottawa, two (2)-year storm]

Using the Rational Method

Q=2.78 (0.40) (77.1) (0.07622)

Q=6.54L/s

Therefore, the maximum allowable flow off-site is 6.54 L/s.

The estimated **pre-development** flow of the five (5)-year and 100-year storm event draining to the front of the lot is as follows:

From review of the topographical survey carried out by the owner's surveyors see Dwg. #818-19 D-1 under pre-development conditions, we see that the entire lot drains from front to rear. Therefore, the pre-development flow draining the front of the lot is:

$Q_{5pre} = 0$

$Q_{100pre} = 0$

The estimated pre-development flow of the five (5)-year and 100-year storm event draining to the **rear** of the lot is as follows:

Where, $T_c = 10$ mins.

Node #101

$Q_{5pre} = 2.78\ (0.47)\ (104.2)\ (0.07622)$

$= 10.38$ L/s

$Q_{100pre} = 2.78\ (0.53)\ (178.6)\ (0.07622)$

$= 20.06$ L/s

A Google image and aerial photography of these current pre-development conditions along with the topographic survey of the site is provided in Appendix C of this report for reference.

Post-Development Flow Estimation

Uncontrolled Drainage Areas (Node #2)

The estimated post-development flow of the five (5)-year and 100-year storm event draining to the **front** of the lot is as follows:

Where, $T_c = 10$ mins.

Node #2

$Q_{5pre} = 2.78\ (0.56)\ (104.2)\ (0.01606)$

$= 2.61$ L/s

$Q_{100pre} = 2.78\ (0.64)\ (178.6)\ (0.01606)$

$= 5.10$ L/s

The estimated post-development flow of the five (5)-year and 100-year storm event draining to the **rear** of the lot is as follows:

Where, T_c = 10 mins.

Node #3

Q_{5pre} = 2.78 (0.40) (104.2) (0.02476)

= 2.87 L/s

Q_{100pre} = 2.78 (0.49) (178.6) (0.02476)

= 6.02 L/s

For this site, because 408.2 square meter of the site area are drained uncontrolled off site, the net allowable discharge for this site into the existing sewer system using the two (2)-year storm event criteria at C = 0.4 (max) is calculated as follows: Q = {2.78 (0.4) (77.1) (0.07622) – [2.78 (0.47) (178.6) (0.04082)]} = 6.54 L/s – 9.53 L/s = -2.99 L/s. Therefore, according to this approach, the maximum allowable flow rate off-site is 6.54 L/s and the net allowable controlled flow rate off-site is -2.99 L/s. During discussions held with City, it was agreed that controlling flow to a net rate of -2.99 L/s is not practical in applying the two (2)-year storm event criteria for this Summerville Avenue proposed development.

Stormwater Management Analysis

Based on the above calculations and information presented, a practical stormwater management approach was discussed with the City Engineering Department and is presented here for this site in order to regulate and provide control of stormwater off-site.

Presently under present condition, the site drains entirely from front to rear. The calculated site pre-development flow are C_{5pre} = 10.38 L/s and C_{100pre} = 20.06 L/s. Under the present site development proposal the estimated post-development flow calculated draining uncontrolled to the **rear** of the lot is Q_{5post} = 2.87 L/s and $Q_{100post}$ = 6.02 L/s.

Therefore, the proposed development has improved and reduced stormwater drainage to the rear of lot because C_{5post} = 2.87 L/s < C_{5pre} = 10.38 L/s and during the 100-year event $C_{100post}$ = 6.02 L/s < C_{100pre} = 20.06 L/s.

The total calculated maximum allowable flow off-site is estimated at 6.54 L/s. The uncontrollable 100-year post-development flow draining to the front of the lot is 5.10 L/s. the net allowable flow (controlled flow) into the existing storm sewer will be calculated based on total allowable flow subtracting the uncontrollable 100-year post-development flow draining to the front of the site which is equal to 1.44 L/s. From our analysis, post-development flow to the **rear** of lot is improved by the proposed site development as $Q_{100post}$ = 6.02 L/s is less than Q_{100pre} 20.06 L/s. Therefore, by accounting for the 100-year

uncontrolled post development flow draining to the **front** as presented here in this report, rather than the entire site, is considered a practical approach to stormwater management for this site.

Thus, the net allowable discharge for this site into the existing 300mm dia. storm sewer is calculated as: Q = 2.78 (0.4) (77.1) (0.07622) – 2.78 (0.64) (178.6) (0.01606) = 6.54 L/s – 5.10 L/s = 1.44 L/s.

Therefore, the maximum allowable flow rate off-site is 6.54 L/s and the net allowable controlled flow rate off-site is 1.44 L/s.

At this site, a controlled flow rate of 1.26 L/s for on-site storm water management detention volume storage calculation will be used for this SWM analysis. This is accomplished by proposing two (2) controlled roof drains to restrict flow from the building at a rate of 2 x 0.63 L/s = 1.26 L/s into the Summerville Avenue storm sewer which does not exceed the calculated new allowable flow of 1.44 L/s. Controlled roof drain details are found on Dwg. No. 818-19 SWM-1 entitled Proposed Rooftop Stormwater Management Plan.

For this proposed site, the total maximum allowable two (2)-year release rate of 6.54 L/s will not be exceeded since the flow of 6.36 L/s (1.26 L/s + 5.10 L/s) is expected to enter into the existing 300mm dia. Summerville Avenue storm sewer for storm events up the and including 100-year. In order to control runoff that is greater than the allowable release rate, stormwater will therefore be stored on site at the flat rooftop of the proposed apartment building which will be used for stormwater detention puposes.

The post-development inflow rate during the five (5)-year and 100-year storms for the two rooftop areas can be calculated as follows.

To Calculate Roof Storage Requirements

The proposed flat roof of the apartment building on the property will incorporate two (2) roof drains to control flow off site. The smallest standard roof drain flow rate is each at 0.63L/s (10 US gal. /min.). The proposed (2) roof drains to be used at this site shall conform to the requirements of Ontario Building Code 2012 Sec. 7.4.10.4. Therefore, the minimum stormwater flow that can be controlled from this rooftop and outletted off site is 0.63L/s×2=1.26L/s.

C=0.9 will be used for sizing roof storage volume in this case.

Inflow rate (Q_A)=2.78 CIA, where C=0.9, A=surface area of roof, I=mm/hr

For Roof Area 1, Q_{A1}=2.78 CIA
Five (5)-Year Event
C_5=0.90
A=177.0m^2
I=mm/hr

Q_{A1}=2.78 (0.90)(0.0177ha.)I=0.0443I

100-Year Event
C_{100}=1.0
A=177.0m^2
I=mm/hr

Q_{A1}=2.78 (1.0)(0.0177ha.)I=0.0492I

For Roof Area 2, Q_{A2}=2.78 CIA
Five (5)-Year Event
C_5=0.90
A=177.0m^2
I=mm/hr

Q_{A1}=2.78 (0.90)(0.0177ha.)I=0.0443I
100-Year Event
C_{100}=1.0
A=208.77m^2
I=mm/hr

Q_{A1}=2.78 (1.0)(0.0177ha.)I=0.0492I

The summary results of the calculated inflow and the storage volume of the site and building's flat rooftop to store the five (5)-year and 100-year storm events are shown in Tables 1 to 4 inclusive.

Water Quality

For this site, based on the architect's site plan, Best Management Practices (BMPs) are proposed to be implemented for this site from details of the revised site plan.

In comparison to the current site conditions, the proposed building has a flat roof area of ±354.0 square metres which is approximately 47% of the site coverage and at the rear of building semi permeable material is proposed for the (4) parking spaces to promote infiltration. This added measure results in the site's stormwater currently draining to the rear being improved to that of the existing development conditions for TSS treatment. Combining the roof water, stormwater draining across the semi permeable surfaces at the rear and landscaped area at the front of the lot, all are considered to be clean for the purpose of water quality mitigation. Vegetative areas proposed at the front yard would also allow for infiltration.

Therefore, the water quality for this site from rooftop attenuation and the use of semi permeable material (±60.0m^2) on-site including landscape areas ±228.82m^2 shall provide improvements to the existing site condition in which there are ±285.68m^2 of asphalt surfaces (parking spaces) that drain off-site at the rear of the property.

Erosion and Sediment Control

The contractor shall implement Best Management Practices to provide for protection of the receiving storm sewer during construction activities. These practices are required to ensure no sediment and/or associated pollutants are released to the receiving watercourse. These practices include installation of a silt fence barrier (as per OPSD 219.110 and associated specifications) along Summerville Avenue and all other areas that sheet drain off site. Maintenance hole sediment barriers to be AMOCO 4555 non-woven geotextile or approved equivalent.

Conclusion

For development of this residential site (±0.0762ha.) and in controlling the two (2)-year stormwater release rate off site to a net allowable rate of 1.26L/s (2 x 0.63L/s), a site storage volume of approximately 6.40m^3 minimum is required during the five (5)-year event. For this site, two (2) flat rooftop storage areas will be used for stormwater management attenuation.

During the five-year storm event for the flat rooftop storage, the ponding depth of Roof Area 1 and 2 is estimated at 110mm at the drain and 0mm at the roof perimeter assuming a 1.6% minimum roof pitch to the drain. The rooftop storage available at Roof Area 1 is 3.23m^3, the rooftop storage available at Roof Area 2 is 3.23m^3 for a total of 6.46m^3, which is greater than the required volume of 6.40m^3.

To control the 100-year stormwater release rate off site to a net allowable rate of 1.26L/s, a site storage volume of approximately 15.30m^3 minimum is required during the 100-year event.

During the 100-year storm event for the flat rooftop storage, the ponding depth of Roof Area 1 and 2 is estimated at 150mm at the drain and 0mm at the roof perimeter assuming a 1.6% minimum roof pitch to the drain. The rooftop storage available at Roof Area 1 is 7.94m^3, the rooftop storage available at Roof Area 2 is 7.94m^3 for a total of 15.88m^3, which is greater than the required volume of 15.30m^3.

Refer to Appendix D for detailed calculations for the five (5)-year and 100-year available storage volume.

Therefore, by means of flat building rooftop storage and grading the site to the proposed grades as shown on the Proposed Grading and Servicing Plan and Proposed Rooftop Stormwater Management Plan Dwg. 818-19 G-1 and 818-19 SWM-1 respectively, the desirable five (5)-year storm and 100-year storm event detention volume of 6.46m^3 and 15.88m^3 respectively will be available on site.

The building weeping tile drainage will outlet via its separate 150mm diameter PVC storm lateral and the roof drains will be outletted via a proposed 125mm PVC storm lateral where both laterals are connected directly to the existing Summerville Avenue 300mm diameter storm sewer.

PREPARED BY T.L. MAK ENGINEERING CONSULTANTS LTD.

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PROPOSED THREE-STOREY
RESIDENTIAL APARTMENT BUILDING SITE
PART OF LOT 43 AND PART OF 44
R-PLAN 294
1295 SUMMERVILLE AVENUE
CITY OF OTTAWA

TABLE 1

FIVE (5)-YEAR EVENT

REQUIRED BUILDING ROOF AREA 1 STORAGE VOLUME

t_c **TIME** (minutes)	I **FIVE (5)-YEAR** (mm/hr)	Q **ACTUAL** (L/s)	Q **ALLOW** (L/s)	Q **STORED** (L/s)	**VOLUME STORED** (m^3)
5	141.20	6.26	0.63	5.63	1.69
10	104.20	4.62	0.63	3.99	2.39
15	83.50	3.70	0.63	3.07	2.76
20	70.30	3.11	0.63	2.48	2.98
25	60.90	2.70	0.63	2.07	3.11
30	53.93	2.39	0.63	1.76	3.17
35	48.50	2.15	0.63	1.52	3.19
40	44.20	1.96	0.63	1.33	3.20
45	40.60	1.80	0.63	1.17	3.16
50	37.65	1.67	0.63	1.04	3.12
55	35.12	1.56	0.63	0.93	3.07

Therefore, the required storage volume is 3.20m^3.

PROPOSED THREE-STOREY
RESIDENTIAL APARTMENT BUILDING SITE
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TABLE 2

FIVE (5)-YEAR EVENT

REQUIRED BUILDING ROOF AREA 2 STORAGE VOLUME

t_c **TIME** (minutes)	I **FIVE (5)-YEAR** (mm/hr)	Q **ACTUAL** (L/s)	Q **ALLOW** (L/s)	Q **STORED** (L/s)	**VOLUME STORED** (m^3)
5	141.20	6.26	0.63	5.63	1.69
10	104.20	4.62	0.63	3.99	2.39
15	83.50	3.70	0.63	3.07	2.76
20	70.30	3.11	0.63	2.48	2.98
25	60.90	2.70	0.63	2.07	3.11
30	53.93	2.39	0.63	1.76	3.17
35	48.50	2.15	0.63	1.52	3.19
40	44.20	1.96	0.63	1.33	3.20
45	40.60	1.80	0.63	1.17	3.16
50	37.65	1.67	0.63	1.04	3.12
55	35.12	1.56	0.63	0.93	3.07

Therefore, the required storage volume is 3.20m^3.

PROPOSED THREE-STOREY
RESIDENTIAL APARTMENT BUILDING SITE
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TABLE 3

100-YEAR EVENT

REQUIRED BUILDING ROOF AREA 1 STORAGE VOLUME

t_c **TIME** (minutes)	I **100-YEAR** (mm/hr)	Q **ACTUAL** (L/s)	Q **ALLOW** (L/s)	Q **STORED** (L/s)	**VOLUME STORED** (m^3)
10	178.6	8.79	0.63	8.16	4.90
15	142.9	7.03	0.63	6.40	5.76
20	120.0	5.90	0.63	5.84	7.01
25	103.9	5.11	0.63	4.48	6.72
30	91.9	4.52	0.63	3.89	7.00
35	82.6	4.06	0.63	3.43	7.20
40	75.1	3.70	0.63	3.07	7.37
45	69.1	3.40	0.63	2.77	7.48
50	63.9	3.14	0.63	2.51	7.53
55	59.6	2.93	0.63	2.30	7.59
60	55.9	2.75	0.63	2.12	7.63
65	52.6	2.59	0.63	1.96	7.64
70	49.8	2.45	0.63	1.82	7.644
75	47.3	2.33	0.63	1.70	7.65
80	45.0	2.21	0.63	1.58	7.58
85	42.95	2.11	0.63	1.48	7.55

Therefore, the required storage volume is 7.65m^3.

PROPOSED THREE-STOREY
RESIDENTIAL APARTMENT BUILDING SITE
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CITY OF OTTAWA

TABLE 4

100-YEAR EVENT

REQUIRED BUILDING ROOF AREA 2 STORAGE VOLUME

t_c **TIME** (minutes)	I **100-YEAR** (mm/hr)	Q **ACTUAL** (L/s)	Q **ALLOW** (L/s)	Q **STORED** (L/s)	**VOLUME STORED** (m^3)
10	178.6	8.79	0.63	8.16	4.90
15	142.9	7.03	0.63	6.40	5.76
20	120.0	5.90	0.63	5.84	7.01
25	103.9	5.11	0.63	4.48	6.72
30	91.9	4.52	0.63	3.89	7.00
35	82.6	4.06	0.63	3.43	7.20
40	75.1	3.70	0.63	3.07	7.37
45	69.1	3.40	0.63	2.77	7.48
50	63.9	3.14	0.63	2.51	7.53
55	59.6	2.93	0.63	2.30	7.59
60	55.9	2.75	0.63	2.12	7.63
65	52.6	2.59	0.63	1.96	7.64
70	49.8	2.45	0.63	1.82	7.644
75	47.3	2.33	0.63	1.70	7.65
80	45.0	2.21	0.63	1.58	7.58
85	42.95	2.11	0.63	1.48	7.55

Therefore, the required storage volume is 7.65m^3.

PROPOSED THREE-STOREY

RESIDENTIAL APARTMENT BUILDING SITE

PART OF LOT 43 AND PART OF 44

R-PLAN 294

1295 SUMMERVILLE AVENUE

CITY OF OTTAWA

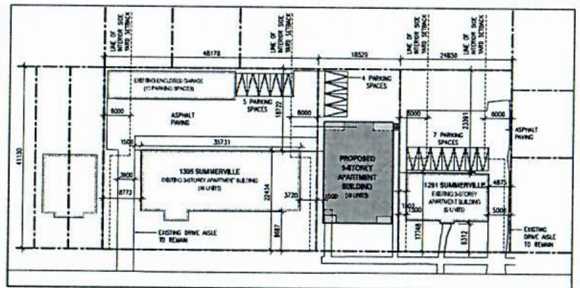
APPENDIX A

PROPOSED SITE PLAN

ZONING FOR EXISTING BUILDINGS
SCALE:

1305 SUMMERVILLE ZONING STATISTICS		
MECHANISM	REQUIREMENT	PROVIDED
Lot Width	15m	48.7m
Lot Area	450m	1,989.0m
Front Yard Setback	6m	8.7m
Int Side Yard Setback	1.5m for any part of the building located located within 21m of front lot line, otherwise 6m	8.7m West Side 2.7m East Side 3.7m East - Beyond 21m
Rear Yard Setback	12.3m a distance equal to 30 per cent of the lot depth which must comprise at least 25 percent of the area of the lot	18.7m
Total Amenity Area	98m2 6m2/ unit	138.0m2
Landscape Area	594.5m2 30% of the Lot Area	547.0m2 27.9% of the Lot Area
Landscape for Parking	119.7m2 15% of Parking Area	184.0m2

1291 SUMMERVILLE ZONING STATISTICS		
MECHANISM	REQUIREMENT	PROVIDED
Lot Width	15m	24.9m
Lot Area	450m	1,021.5m
Front Yard Setback	6m	6.3m
Int Side Yard Setback	1.5m for any part of the building located located within 21m of front lot line, otherwise 6m	1.5m - West Side 5.0m - East Side
Rear Yard Setback	12.3m a distance equal to 30 per cent of the lot depth which must comprise at least 25 percent of the area of the lot	23.4m
Total Amenity Area	30m2 6m2/ unit	247.1m2
Landscape Area	306.5m2 30% of the Lot Area	398.2m2 39% of the Lot Area
Landscape for Parking	50.4m2 15% of Parking Area	247.0m2



EXISTING ENCLOSED GARAGE (10 PARKING SPACES)
ASPHALT PAVING
5 PARKING SPACES
4 PARKING SPACES
1305 SUMMERVILLE EXISTING 3-STOREY APARTMENT BUILDING (44 UNITS)
PROPOSED 3-STOREY APARTMENT BUILDING 19 UNITS
7 PARKING SPACES
1291 SUMMERVILLE EXISTING 3-STOREY APARTMENT BUILDING (6 UNITS)
ASPHALT PAVING
EXISTING DRIVE AISLE TO REMAIN

6 SP-01 LOCATION PLAN
SCALE: 1:500

LEGEND
SCALE: NTS

- BUILDING ENTRANCE
- BUILDING EXIT
- NEW TREE
- TREE TO BE REMOVED
- INTERLOCKING PAVING STONE
- INTERLOCKING STAIR
- ELEVATION MARKER
- UTILITY POLE
- POST & RING BICYCLE RACK

LOCATION PLAN
SCALE: NTS

TOPOGRAPHIC PLAN OF SURVEY OF PART 1 OF PLAN OF LOT 13 AND PART OF LOT 14 (East Side of Henderson Avenue) REGISTERED PLAN 37221 CITY OF OTTAWA

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.

0 1 2 3 4 5 10

SURVEY INFO
SCALE: 1:100

ZONING & STATISTICS

ZONING DESIGNATION: R4N

ZONING REQUIREMENTS: APARTMENT DWELLING, LOW-RISE

PROJECT STATISTICS

DWELLING UNITS: 15 UNITS

BICYCLE PARKING CALCULATION
As per Table 111A

Dwelling Units: 18
Required Parking: 9 spaces
Total Parking Provided: 12 spaces

PARKING CALCULATION
As per Section 101 & Section 102

Parking Space Rate Area: Area X
Residential Units: 15 units
Required Parking: 3 spaces
0.5 spaces/unit beyond 12 units
Parking Provided: 3 spaces

Visitor Parking:
Required Parking: 1 spaces
0.1 spaces/unit beyond 12 units
Parking Provided: 1 spaces

Total Required Parking: 4 spaces
Total Parking Provided: 4 spaces

AMENITY AREA CALCULATION
As per Table 137

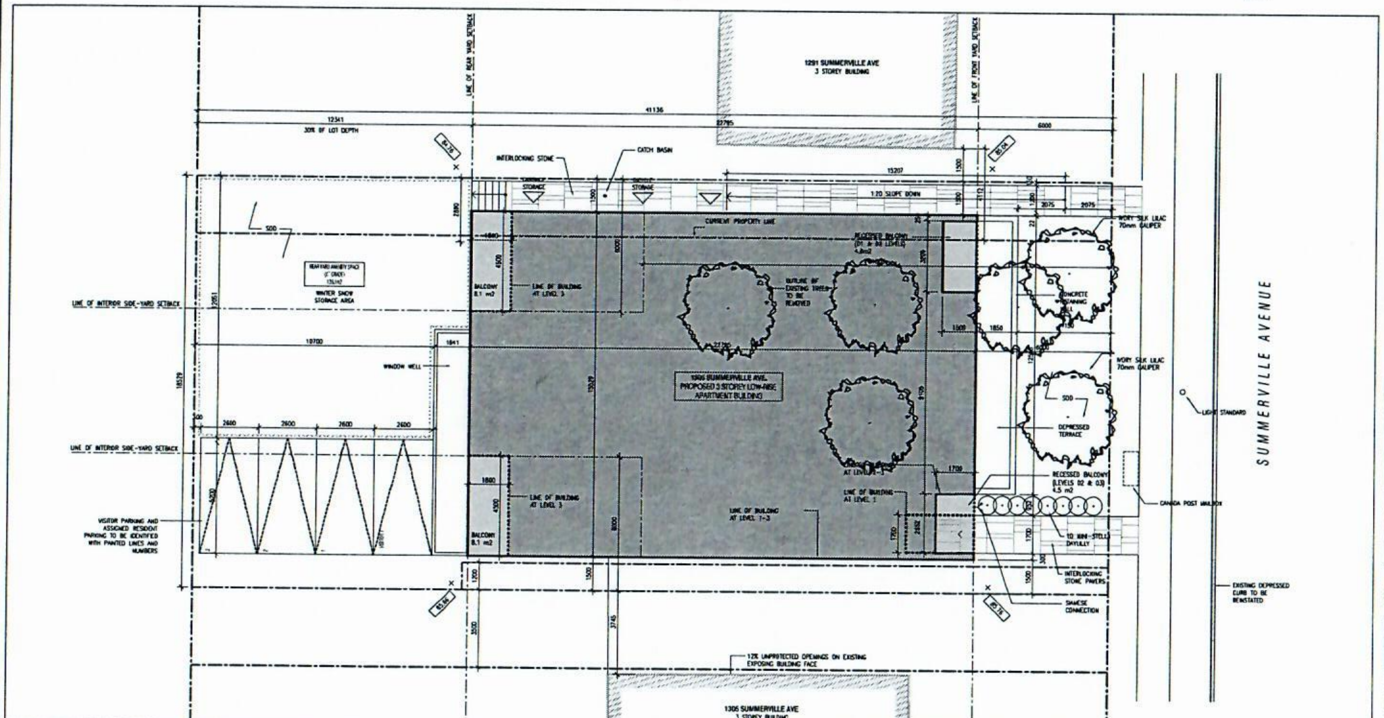
Total Amenity Area Req'd: 108 m2
Communal Amenity Req'd: 54 m2
Communal Amenity Provided: 139.1 m2
Private Amenity Provided: 40.2 m2
Balconies: 40.2m2
Total Amenity Area Provided: 179.3 m2

LANDSCAPE AREA CALCULATION
Landscape Area Req'd: 228.7 m2
Landscape Area Provided: 245.3 m2

BUILDING AREA CALCULATION
Gross Building Area:
Level 00: 343.74m2
Level 01: 343.74m2
Level 02: 344.21m2
Level 03: 332.13m2
TOTAL: 1,363.82m2

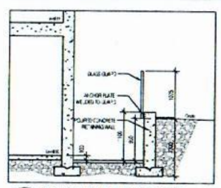
ADDITIONAL INFORMATION
Owner Information: Glen-Fran Holdings Ltd, 1305 Summerville Avenue
Applicant Information: Fotenn Consultants Inc, 223 McLeod Street, Ottawa, ON K2P 0Z8
Architect Information: Project1 Studio Inc, 260 St. Patrick Street - Suite 300, Ottawa, ON K1N 5K5
Civil Engineer: T.L. Mak Engineering Consultants Ltd, 1455 Youville Drive, Ottawa, ON K1C 6Z7

PROJECT STATISTICS
SCALE: NTS

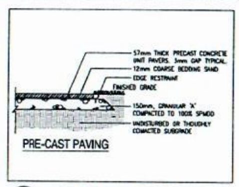


SUMMERVILLE AVENUE
1291 SUMMERVILLE AVE 3 STOREY BUILDING
1305 SUMMERVILLE AVE. PROPOSED 3 STOREY LOW-RISE APARTMENT BUILDING
1305 SUMMERVILLE AVE 3 STOREY BUILDING
LINE OF INTERIOR SIDE-YARD SETBACK
LINE OF REAR YARD SETBACK
LINE OF FRONT YARD SETBACK
CURRENT PROPERTY LINE
INTERLOCKING STONE
CATCH BASIN
WATER SNOW STORAGE AREA
WINDOW WELL
VISITOR PARKING AND ASSIGNED RESIDENT PARKING TO BE IDENTIFIED WITH PAINTED LINES AND NUMBERS
LINE OF BUILDING AT LEVEL 3
LINE OF BUILDING AT LEVEL 1-3
OUTLINE OF EXISTING TREES TO BE REMOVED
IVORY SILK LILAC 70mm CALIPER
DEPRESSED TERRACE
RECESSED BALCONY (LEVELS 02 & 03)
INTERLOCKING STONE PAVERS
SIAMESE CONNECTION
CANADA POST MAILBOX
LIGHT STANDARD
EXISTING DEPRESSED CURB TO BE REINSTATED
12% UNPROTECTED OPENINGS ON EXISTING EXPOSING BUILDING FACE
30% OF LOT DEPTH

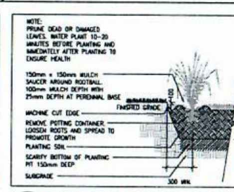
1 SP01 SITE PLAN
SCALE: 1:100



5 SP01 SECTION AT TERRACE
SCALE: 1:50

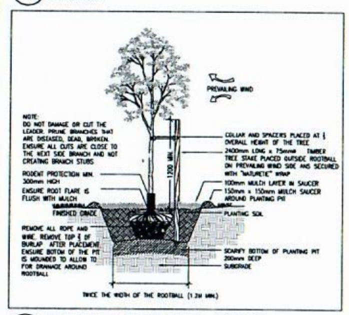


4 SP01 PRE-CAST PAVING
SCALE: 1:30



NOTE: PRUNE DEAD OR DAMAGED LEAVES. WATER PLANT 10-20 MINUTES BEFORE PLANTING AND IMMEDIATELY AFTER PLANTING TO ENSURE HEALTH
150mm x 150mm MULCH SAUCER AROUND ROOTBALL. 100mm MULCH DEPTH WITH 25mm DEPTH AT PERENNIAL BASE
MACHINE CUT EDGE
REMOVE POTTING CONTAINER. LOOSEN ROOTS AND SPREAD TO PROMOTE GROWTH
PLANTING SOIL
SCARIFY BOTTOM OF PLANTING PIT 150mm DEEP
SUBGRADE
FINISHED GRADE

3 SP01 POTTED PLANT PLANTING
SCALE: 1:30



PREVAILING WIND
NOTE: DO NOT DAMAGE OR CUT THE LEADER. PRUNE BRANCHES THAT ARE DISEASED, DEAD, BROKEN. ENSURE ALL CUTS ARE CLOSE TO THE NEXT SIDE BRANCH AND NOT CREATING BRANCH STUBS
RODENT PROTECTION MIN. 300mm HIGH
ENSURE ROOT FLARE IS FLUSH WITH MULCH
FINISHED GRADE
REMOVE ALL ROPE AND WIRE. REMOVE TOP ⅓ OF BURLAP AFTER PLACEMENT. ENSURE BOTTOM OF THE PIT IS MOUNDED TO ALLOW FOR DRAINAGE AROUND ROOTBALL
COLLAR AND SPACERS PLACED AT ⅓ OVERALL HEIGHT OF THE TREE
2400mm LONG x 75mm TIMBER TREE STAKE PLACED OUTSIDE ROOTBALL ON PREVAILING WIND SIDE AND SECURED WITH "ARBORTIE" WRAP
100mm MULCH LAYER IN SAUCER
150mm x 150mm MULCH SAUCER AROUND PLANTING PIT
PLANTING SOIL
SCARIFY BOTTOM OF PLANTING PIT 200mm DEEP
SUBGRADE
TWICE THE WIDTH OF THE ROOTBALL (1.2M MIN)

2 SP01 DECIDUOUS TREE PLANTING
SCALE: 1:30

GENERAL ARCHITECTURAL NOTES:
1. This drawing is the property of the Architect and may not be reproduced or used without the expressed consent of the Architect.
2. Drawings are not to be scaled. The Contractor is responsible for checking and verifying all levels and dimensions and shall report all discrepancies to the Architect and obtain clarification prior to commencing work.
3. Upon notice in writing, the Architect will provide written/graphic clarification or supplementary information regarding the intent of the Contract Documents.
4. The Architectural drawings are to be read in conjunction with all other Contract Documents including Project Manuals and the Structural, Mechanical and Electrical Drawings.
5. Positions of exposed or finished Mechanical or Electrical devices, fittings and fixtures are indicated on the Architectural Drawings. Locations shown on the Architectural Drawings shall govern over Mechanical and Electrical Drawings. Mechanical and Electrical items not clearly located will be located as directed by the Architect.
6. These documents are not to be used for construction unless specifically noted for such purpose.

REVISION RECORD

RE-ISSUED FOR COMMITTEE OF ADJUSTMENT	2019-10-10
RE-ISSUED FOR COMMITTEE OF ADJUSTMENT	2019-09-05
ISSUED FOR COMMITTEE OF ADJUSTMENT	2019-08-30
ISSUED FOR COORDINATION	2019-06-14
RE-ISSUED FOR SITE PLAN CONTROL	2019-07-25
ISSUED FOR SITE PLAN CONTROL	2019-03-19

ISSUE RECORD

ONTARIO ASSOCIATION OF ARCHITECTS — LICENCE 7370

project1 studio
Project1 Studio Incorporated

1305 SUMMERVILLE AVE
1305 Summerville Ave
Ottawa, ON

PROJ	SCALE	DRAWN	REVIEWED
1838	NOTED	JDL	RMK

COMBINED SITE PLAN & LANDSCAPE PLAN

SP-01

D07-12-19-0048

PROPOSED THREE-STOREY

RESIDENTIAL APARTMENT BUILDING SITE

PART OF LOT 43 AND PART OF 44

R-PLAN 294

1295 SUMMERVILLE AVENUE

CITY OF OTTAWA

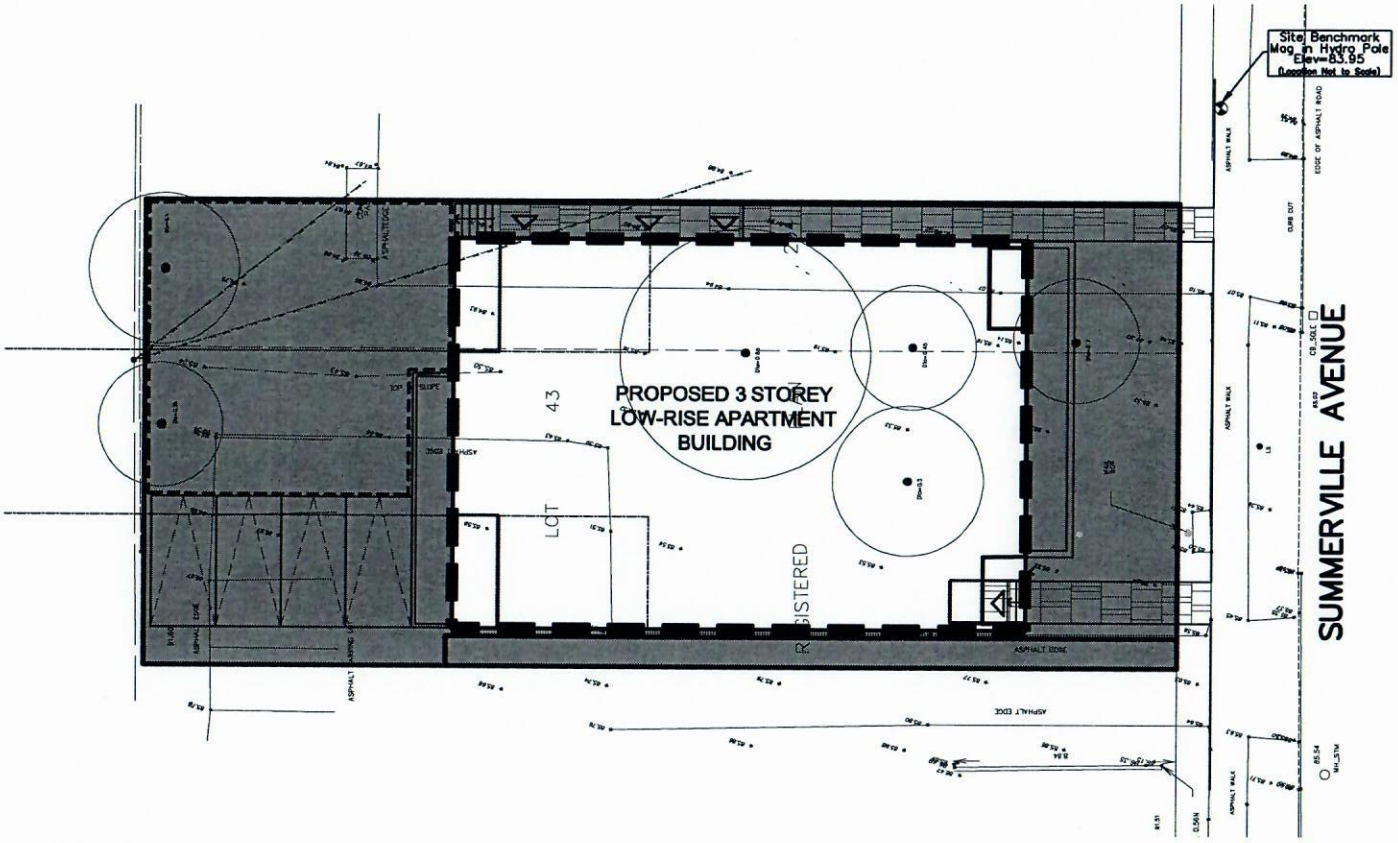
APPENDIX B

STORM DRAINAGE AREA PLAN

FIGURE 1

PROPOSED 1295 SUMMERVILLE AVENUE
SITE DEVELOPMENT
DRAINAGE AREA PLAN

N.T.S.



LEGEND

LIMIT OF CONTROLLED STORM
DRAINAGE AREA = 354.0 SQ. M

UNCONTROLLED STORM
DRAINAGE AREA = 408.2 SQ. M

TOTAL DRAINAGE AREA =762.2 SQ. M

POST-DEVELOPMENT SITE
AVERAGE "C" = 0.67

T.L. MAK ENGINEERING CONSULTANTS LTD.
CONSULTING ENGINEERS

PROJECT No.	DATE	DRAWING No.
818-19	MARCH 2019	FIGURE 1

PROPOSED THREE-STOREY

RESIDENTIAL APARTMENT BUILDING SITE

PART OF LOT 43 AND PART OF 44

R-PLAN 294

1295 SUMMERVILLE AVENUE

CITY OF OTTAWA

APPENDIX C

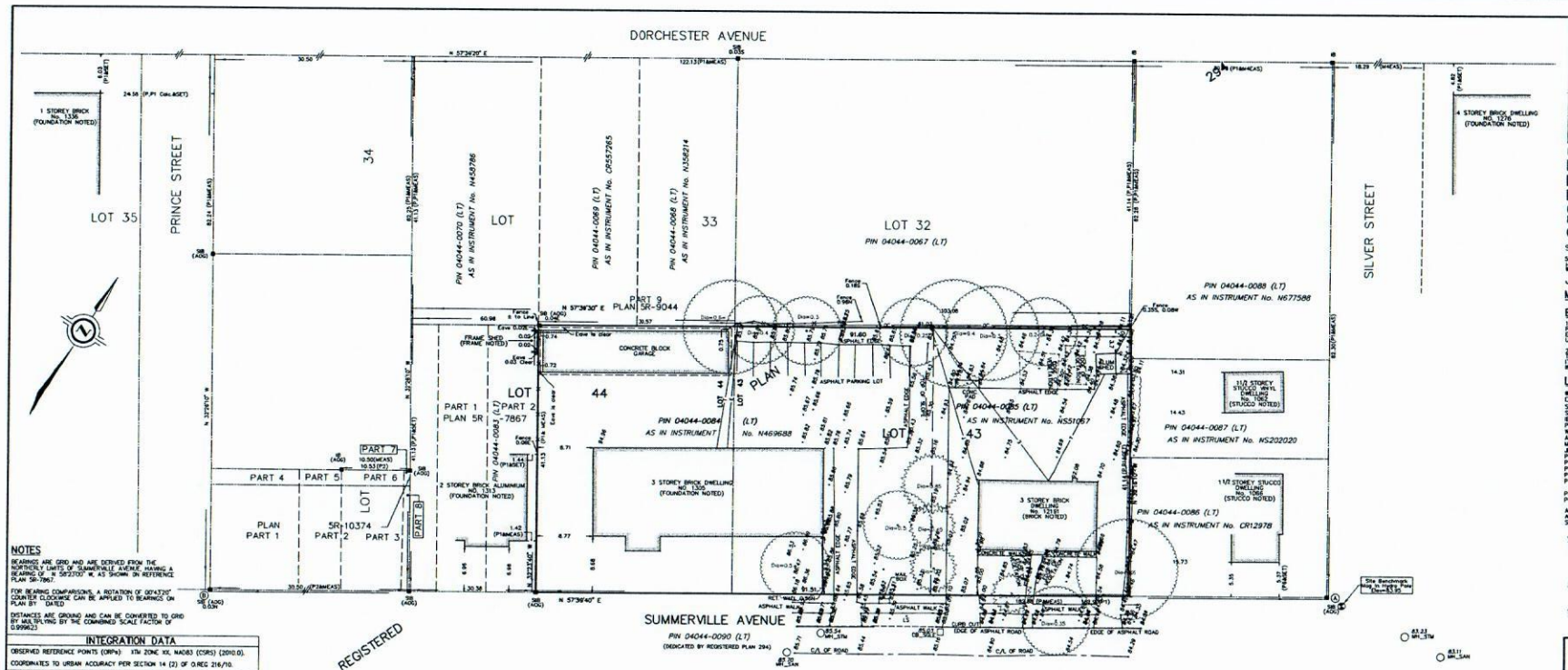
SITE PRE-DEVELOPMENT CONDITION

GOOGLE IMAGE (GEOOTTAWA 2015)

AND

TOPOGRAPHICAL SURVEY PLAN


1280
1058
1290
1062
1312
1066
1291
PROPOSED
SITE
1305
1294
1313
1298
1315
1317
1302
1304
1306
1308
1312
1310
1314
1301
1316
1305
1324



NOTES

BEARINGS ARE GRID AND ARE DERIVED FROM THE NORTHERLY LIMITS OF SUMMERVILLE AVENUE HAVING A BEARING OF N 58°27'00" W, AS SHOWN ON REFERENCE PLAN 5R-7867.

FOR BEARING COMPARISONS, A ROTATION OF 00°43'20" COUNTER CLOCKWISE CAN BE APPLIED TO BEARINGS ON PLAN BY DATED

DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.999823

INTEGRATION DATA

OBSERVED REFERENCE POINTS (ORPs) UTM ZONE XX, NAD83 (CSRS) (2010.0).

COORDINATES TO URBAN ACCURACY PER SECTION 14 (2) OF O.REG 216/10.

POINT ID	EASTING	NORTHING
ORP A	365 199.1601	5 0266 54.1951
ORP B	365 044.6522	5 0265 56.3775

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

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

DATE SEPTEMBER 11, 2017

GEORGE ZERVOS
ONTARIO LAND SURVEYOR

PLAN 4R-

RECEIVED AND DEPOSITED

DATE _____

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

PLAN OF SURVEY OF

PART OF LOT 43 AND PART OF LOT 44 REGISTERED PLAN 294

(FORMERLY THE TOWNSHIP OF NEPEAN)
NOW IN THE
CITY OF OTTAWA

SCALE 1 : 300

5 0 5 10 20 metres

J.D. BARNES LIMITED

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

ELEVATION NOTE

1. ELEVATIONS ARE GEODETIC AND ARE ESTABLISHED USING GLOBAL POSITIONING SYSTEM (GPS) TECHNIQUES TO DETERMINE ELLIPSOIDAL HEIGHTS. ELLIPSOIDAL HEIGHTS WERE TRANSFORMED TO CGVD-1928 DATUM (CGVD2013) USING THE FEDERAL HT2.0 HEIGHT TRANSFORMATION MODEL.

2. IT IS THE RESPONSIBILITY OF THE USER OF THIS INFORMATION TO VERIFY THAT THE SITE BENCHMARK HAS NOT BEEN ALTERED OR DISTURBED AND THAT ITS RELATIVE ELEVATION AND DESCRIPTION AGREES WITH THE INFORMATION SHOWN ON THIS DRAWING, 8, 2002

LEGEND

●	DENOTES	SURVEY MONUMENT FOUND
□	DENOTES	SURVEY MONUMENT SET
SIB	DENOTES	STANDARD IRON BAR
SSIB	DENOTES	SHORT STANDARD IRON BAR
IB	DENOTES	IRON BAR
PB	DENOTES	PLASTIC BAR
WIT	DENOTES	WITNESS
ADG	DENOTES	ARNOLD GTSULLIVAN & VOLLEBEKK LTD.
MEAS	DENOTES	MEASURED
JDB	DENOTES	J.D. BARNES LIMITED
P	DENOTES	REGISTERED PLAN 294
P1	DENOTES	PLAN 5R-7867
P2	DENOTES	PLAN 5R-10574
P3	DENOTES	PLAN BY J.G. PAYETTE, DATED APRIL 22, 1968
P4	DENOTES	SURVEYORS REAL PROPERTY REPORT BY ARNOLD, O'SULLIVAN & VOLLEBEKK LTD. DATED JANUARY 5, 2000
P5	DENOTES	PLAN BY F.H. GOOCH, O.L.S. DATED MAY 28, 1964
P6	DENOTES	PLAN BY J. ERIC KIHL, O.L.S., DATED MAY 16, 1972

ALL SET SSIB AND PB MONUMENTS WERE USED DUE TO LACK OF OVERBURDEN AND/OR PROXIMITY OF UNDERGROUND UTILITIES IN ACCORDANCE WITH SECTION 11 (4) OF O.REG. 525/91.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON JULY 2, 2017.

SEPTEMBER 11, 2017
DATE

GEORGE ZERVOS
ONTARIO LAND SURVEYOR

J.D.BARNES LIMITED
LAND INFORMATION SPECIALISTS
SURVEYING MAPPING GIS
3439 DON REID DRIVE, SUITE 204, OTTAWA, ON K1V 1S1
T: (613) 731-7244 F: (613) 731-8955 www.jdbarnes.com

DRAWN BY:	CHECKED BY:	REFERENCE NO:
LH	GZ	17-10-079-00

FILE: G:\17-10-079\DGN\17-10-079_RPO - Copy.dgn DATED: mm/dd/yy

PLOTTED: 9/5/2019

PROPOSED THREE-STOREY

RESIDENTIAL APARTMENT BUILDING SITE

PART OF LOT 43 AND PART OF 44

R-PLAN 294

1295 SUMMERVILLE AVENUE

CITY OF OTTAWA

APPENDIX D

DETAILED CALCULATIONS

FOR FIVE (5)-YEAR AND 100-YEAR

AVAILABLE STORAGE VOLUME

AVAILABLE STORAGE VOLUME CALCULATIONS

Five (5)-Year Event

Roof Storage at Flat Roof Building

The flat Roof Area 1 and Roof Area 2 will be used for stormwater detention. Each roof area will be drained by a controlled drain designed for a release rate of 10U.S.gal./min. or 0.63L/s.

Roof Storage Area 1

Available flat roof area for storage =177.0m^2 @ roof slope of 1.6% minimum or 110mm of water height above Roof Drain 1. Therefore, the available roof area will store a volume as shown below using the reservoir volume equation.

$$V = \frac{(0.11\text{m})[88.29 + 4(22.0) + 0]}{6}$$

$$V = \frac{(0.11)(176.29)}{6}$$

$$V = 3.23\text{m}^3$$

The available Roof Area 1 storage volume of 3.23m^3 >required five (5)-year storage volume of 3.20m^3 from Table 1.

Roof Storage Area 2

Available flat roof area for storage =177.0m^2 @ roof slope of 1.6% minimum or 110mm of water height above Roof Drain 2. Therefore, the available roof area will store a volume as shown below using the reservoir volume equation.

$$V = \frac{(0.11\text{m})[88.29 + 4(22.0) + 0]}{6}$$

$$V = \frac{(0.11)(176.29)}{6}$$

$$V = 3.23\text{m}^3$$

The available Roof Area 2 storage volume of 3.23m^3 >required five (5)-year storage volume of 3.20m^3 from Table 2.

Therefore, the ponding depth at the drain location is approximately 0.11m (110mm), and the five (5)-year level is estimated not to reach the roof perimeter of the building.

Hence, Roof Area 1 and Roof Area 2 of the proposed residential building flat rooftop storage are adequate to store the minimum required five (5)-year storm event volume of 6.40m^3 given it can store up to 6.46m^3.

AVAILABLE STORAGE VOLUME CALCULATIONS

100-Year Event

Roof Storage at Flat Roof Building

The flat Roof Area 1 and Roof Area 2 will be used for stormwater detention. Each roof area will be drained by a controlled drain designed for a release rate of 10U.S.gal./min. or 0.63L/s.

Roof Storage Area 1

Available flat roof area for storage =177.0m^2 @ roof slope of 1.6% minimum or 150mm of fall from roof perimeter to Roof Drain 1. Therefore, the available roof area will store a volume as shown below using the reservoir volume equation.

$$V = \frac{(0.15\text{m})[162.8 + 4(38.69) + 0]}{6}$$

$$V = \frac{(0.15)(317.56)}{6}$$

$$V = 7.94\text{m}^3$$

The available Roof Area 1 storage volume of 7.94m^3 >required 100-year storage volume of 7.65m^3 from Table 3.

Roof Storage Area 2

Available flat roof area for storage =177.0m^2 @ roof slope of 1.6% minimum or 150mm of fall from roof perimeter to Roof Drain 2. Therefore, the available roof area will store a volume as shown below using the reservoir volume equation.

$$V = \frac{(0.15\text{m})[162.8 + 4(38.69) + 0]}{6}$$

$$V = \frac{(0.15)(317.56)}{6}$$

$$V = 7.94\text{m}^3$$

The available Roof Area 2 storage volume of 7.94m^3 >required 100-year storage volume of 7.65m^3 from Table 4.

Therefore, the ponding depth at the drain location is approximately 0.15m (150mm), and at the perimeter of the flat roof area is 0mm above the roof perimeter surface. Accordingly, it is recommended that four (4) roof scuppers as shown on Dwg. 818-19 G-1 and the architect's roof plan be installed at the perimeter height of the rooftop for emergency overflow purposes in case of blockage from debris buildup at the roof drain.

Hence, Roof Area 1 and Roof Area 2 of the proposed residential building flat rooftop storage are adequate to store the minimum required 100-year storm event volume of 15.30m^3 given it can store up to 15.88m^3.