

STORMWATER MANAGEMENT REPORT

1234 Prestone Drive
Ottawa, Ontario

Report No. 13036-SWM

November 13, 2013
Revised November 29, 2013
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NOT VALID UNLESS
SIGNED & DATED

D. B. GRAY ENGINEERING INC.

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

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STORMWATER MANAGEMENT REPORT

1234 Prestone Drive
Ottawa, Ontario

This report addresses the stormwater management requirements of a church property located on 9,114 sq.m. of land at 1234 Prestone Drive. Three additions totaling 351 sq.m. are proposed for the existing 584 sq.m. church.

This report forms part of the stormwater management design for the proposed development. Also refer to drawing SG-1 & SG-2 prepared by D. B. Gray Engineering Inc.

WATER QUALITY:

During construction, an erosion and sediment control plan has been developed (see notes 2.1 to 2.5 on drawing SG-1). In summary: to filter out construction sediment a silt fence barrier will be installed at the perimeter of construction; and geotextile fabric will be placed between the grate and frame of all existing catch basins adjacent to the site and all new catch basins as they are installed.

WATER QUANTITY:

The stormwater management criteria for quantity control are to control the post development peak flows for the 5-year and 100-year storm events to pre-development (existing) peak flows during the 5-year storm event. It is calculated that the pre-development conditions reflect a 5-year runoff coefficient of 0.42. Using the Airport Formula for sheet flow it is calculated that the existing time of concentration is 12.3 minutes. Based on the Rational Method the pre-development (existing) peak flow is 98.46 l/s.

Maximum Allowable Release Rate:

(Five-Year Event - Pre-development (Existing) Conditions):

The maximum permitted flow for the subject site is calculated as follows:

Area (A):	9114 sq.m.
Time of Concentration (T): (Based on the Airport Formula)	12.3 minutes
Rainfall Intensity (Five Year Event) (i):	93 mm/hr
Runoff Coefficient (C):	0.42
Maximum Allowable Release Rate:	98.46 l/s

As recommended in City of Ottawa Technical Bulletin ISDTB-2012-1, the drainage system has been “stress tested” using design storms calculated on the basis of a 20% increase of the City’s 1:100 year IDF curve rainfall values. The purpose of the stress test is to identify potential flooding of properties and, if necessary, to modify the proposed drainage system to prevent the flooding.

Calculations are based on the Rational Method. The runoff coefficients for the 100 year event were increased by 25% to maximum 1.00.

Stormwater will be stored within the development on the surface above catch basins in a car park and in a stormwater detention area (a depressed grassed landscaped area) and underground in catch basins, manholes and sewer pipes.

The entire site currently drains uncontrolled off the site. It is proposed that the perimeter and front entrance (Drainage Area I – 3133 sq.m.) will be allowed to flow uncontrolled off the site. The flow from these areas is calculated at 10 minutes concentration.

An inlet control device (ICD) located at the outlet pipe of catch basin / manhole CB/MH-6 will control the release of stormwater from the remainder of the property (Drainage Area II – 5981 sq.m.). The ICD will restrict the flow and force the stormwater to back up the upstream sewers onto the parking area above catch basin CB-1 and the stormwater detention area above catch basin CB-4A. The ICD shall be a plug style with a round orifice design manufactured by Pedro Plastics (or approved equal manufactured by IPEX) and shall be sized by the manufacturer for a discharge rate of 58.20 l/s at 3.19 m head. It is calculated that an orifice area of 12,061 sq.mm. (\pm 124 mm diameter) and a discharge coefficient of 0.61 will restrict the outflow rate to 58.20 l/s at 3.19 m. Based on this orifice the maximum outflow rate for the 1:5 year storm event is calculated to be 56.42 l/s at 3.00 m.

Stormwater released through the ICD in CB/MH-6 will be conveyed off the site via a proposed 375mm storm sewer connection which connects to an existing 750mm municipal storm in Prestone Drive.

Stress Test:

In the event that the 1:100 year IDF rainfall values are increased by 20%:

The stored water level will increase by 0.03 m to 87.53.

The depth of the water stored above CB-1 in parking area increases from 0.20 m depth at the catch basin to about 0.23 m depth.

The depth of the water stored above CB-4A in the stormwater detention area increases from 0.40 m average depth at the catch basin to about 0.43 m average depth.

The maximum flowrate off the site will increase by about 8% from 98.46 to 106.81 l/s.

The maximum volume of on-site storage will increase by about 32% from 118.77 to 157.19 cu.m.

There are no potential flooding issues and therefore the proposed drainage system does not need to be modified.

CONCLUSIONS:

WATER QUALITY:

An erosion and sediment control plan as been developed to be implemented during construction

WATER QUANTITY:

One Hundred Year Storm Event:

The maximum allowable release rate for the one hundred year storm event for the site is 98.46 l/s. The post-development release rate for the 100-year storm event is calculated to be 98.46 l/s. Therefore the maximum post development release rate for the 100-year storm event is equal to the maximum allowable release rate. A maximum stored volume of 118.77 cu.m. is required to achieve the post development release rate.

Five Year Storm Event:

The maximum allowable release rate for the five year storm event for the site is 98.46 l/s. The post-development release rate for the 5-year storm event is calculated to be 75.32 l/s. Therefore the maximum post development release rate for the 5-year storm event is less than the maximum allowable release rate. A maximum stored volume of 39.14 cu.m. is required to achieve the post development release rate.

Stress Test:

Increasing the 1:100 year IDF rainfall values by 20% does not identify any potential flooding issues and therefore the proposed drainage system does not need to be modified.

Summary Tables

ONE HUNDRED YEAR EVENT				
Drainage Area	Maximum Allowable Release Rate	Maximum Release Rate	Maximum Volume Required	Maximum Volume Stored
	l/s	l/s	cu.m.	cu.m.
AREA I (Uncontrolled flow off site)	-	40.26	-	-
AREA II	-	58.20	118.77	118.77
TOTAL	98.46	98.46	118.77	118.77

FIVE YEAR EVENT				
Drainage Area	Maximum Allowable Release Rate	Maximum Release Rate	Maximum Volume Required	Maximum Volume Stored
	l/s	l/s	cu.m.	cu.m.
AREA I (Uncontrolled flow off site)	-	18.90	-	-
AREA II	-	56.42	39.14	39.14
TOTAL	98.46	75.32	39.14	39.14

STRESS TEST - 20% INCREASE TO ONE HUNDRED YEAR EVENT RAINFALL				
Drainage Area	Maximum Allowable Release Rate	Maximum Release Rate	Maximum Volume Required	Maximum Volume Stored
	l/s	l/s	cu.m.	cu.m.
AREA I (Uncontrolled flow off site)	-	48.31	-	-
AREA II	-	58.50	157.19	157.19
TOTAL	-	106.81	157.19	157.19

STORMWATER MANAGEMENT CALCULATIONS

The orifice calculations are based on the following formula:

$$Q = C_d \times A_o \sqrt{2gh} \times 1000$$

where:

Q = flowrate in litres per second

C_d = coefficient of discharge

A_o = orifice area in sq.m.

g = 9.81 m/s²

h = head above orifice in meters

Storage calculations for the stormwater detention area are based on the following formula for volume of a prismoidal shape (the formula is accurate if both length and width are changing proportionally):

$$V = (A_{top} + A_{bottom} + (A_{top} \times A_{bottom})^{0.5}) / 3 \times d$$

where:

V = volume in cu.m.

A_{top} = area of pond in sq.m.

A_{bottom} = area of bottom of depressed area

d = ponding depth in meters

Storage calculations in the parking area are based on the following formula for volume of a cone:

$$V = (A \times d)/3$$

where:

V = volume in cu.m.

A = ponding area in sq.m.

d = ponding depth in meters

Calculations for sub-surface storage (manholes and sewer pipes) are based on the following formula for volume of a cylinder:

$$V = L \times \text{Pi} \times (d/2)^2$$

where:

V = volume in cu.m.

L = depth of water in manhole or length of pipe in meters

d = diameter of manhole (1.22 m) or pipe in meters

1234 Prestone Drive
 Ottawa, Ontario

STORM WATER MANAGEMENT CALCULATIONS
 Rational Method

ONE HUNDRED YEAR EVENT

Maximum Allowable Flow Rate

Five Year Event Pre-development (Existing) Conditions

			C
Roof Area:	584	sq.m.	0.90
Asphalt/Concrete Area:	2234	sq.m.	0.90
Landscaped:	<u>6296</u>	<u>sq.m.</u>	<u>0.20</u>

Total Catchment Area 9114 sq.m. 0.42

Time of Concentration: Existing storm sewer system
 (from storm sewer design form)
 11.1 min

Time of Concentration: Sheet Flow

Airport Formula

$$T_c = \frac{3.26 (1.1 - C) (L)^{1/2}}{S_w^{0.33}} \text{ min}$$

Runoff Coefficient (C): 0.42 see above
 Sheet Flow Distance (L): 40 m
 Slope of Land (Sw): 1.5 %
 Time of Concentration (Sheet Flow): 12.3 min

Five Year Event Pre-development Flow
 (Maximum Allowable Flow Rate)

Area (A): 9114 sq.m.
 Time of Concentration: 12.3 min.
 Rainfall Intensity (i): 93 mm/hr (5 year event)
 Runoff Coefficient (C): 0.42
 Flow Rate (2.78AiC): 98.46 l/s

DRAINAGE AREA I (Uncontrolled Flow Off Site):

			C
Roof Area:	0	sq.m.	1.00
Asphalt/Concrete Area:	37	sq.m.	1.00
Landscaped:	<u>3096</u>	<u>sq.m.</u>	<u>0.25</u>

Total Catchment Area 3133 sq.m. 0.26

Area (A): 3133 sq.m.
 Time of Concentration: 10.0 min.
 Rainfall Intensity (i): 179 mm/hr (100 year event)
 Runoff Coefficient (C): 0.26

Flow Rate (2.78AiC): 40.26 l/s

DRAINAGE AREA II

(ONE HUNDRED YEAR EVENT)

			C
Roof Area:	935	sq.m.	1.00
Asphalt/Concrete Area:	3356	sq.m.	1.00
Landscaped:	1690	sq.m.	0.25
Total Catchment Area	5981	sq.m.	0.79

				Storage in MH's & CB's				
				Invert	Depth			
				m	m			
				CB-1	85.63	1.67	0.60	cu.m.
				CB/MH-2	84.40	3.10	3.51	cu.m.
Water Elevation:	87.50		m	CB-3	85.26	2.24	0.81	cu.m.
				CB-4A	84.75	2.70	0.97	cu.m.
				CB/MH-4	84.59	2.91	3.29	cu.m.
				CB/MH-5	84.53	2.97	3.36	cu.m.
ICD Invert:	84.31		m	CB/MH-6	84.31	3.19	3.61	cu.m.
(Outlet Pipe OF CB/MH-6):								

				Storage in Sewer Pipes			
				Diameter	Length		
Head:	3.19		m	200	36.9	1.16	cu.m.
				250	10.6	0.52	cu.m.
				300	56	3.96	cu.m.
				375	21.8	2.41	cu.m.

				Surface Storage Above Catch Basin				
				Area	Depth			
Orifice Diameter	124		mm	CB-1	887	0.20	59.05	cu.m.

				Detention Area				
				Bottom	Top	Ave.		
				Area	Area	Depth		
				sq.m.	sq.m.	m		
Coefficient of Discharge:	0.610			60	121	0.40	35.54	cu.m.

Max. Release Rate:	58.20	l/s	Achieved Vol:	118.77	cu.m.
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Max. Vol. Required:	118.77	cu.m.
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			ICD			
			Release	Stored	Stored	
Time	i	2.78AiC	Rate	Rate	Volume	
min.	mm/hr	l/s	l/s	l/s	cu.m.	
5	243	318.03	58.20	259.83	77.95	
10	179	233.98	58.20	175.77	105.46	
15	143	187.24	58.20	129.04	116.14	
20	120	157.18	58.20	98.98	118.77	
25	104	136.08	58.20	77.88	116.81	
30	92	120.38	58.20	62.18	111.92	
35	83	108.21	58.20	50.01	105.01	
40	75	98.47	58.20	40.27	96.64	
45	69	90.48	58.20	32.28	87.15	
50	64	83.80	58.20	25.60	76.80	
55	60	78.13	58.20	19.93	65.76	
60	56	73.24	58.20	15.04	54.15	
65	53	68.99	58.20	10.78	42.06	
70	50	65.24	58.20	7.04	29.57	
75	47	61.92	58.20	3.72	16.74	
80	45	58.95	58.20	0.75	3.61	
85	43	56.28	56.28	0.00	0.00	
90	41	53.87	53.87	0.00	0.00	
95	39	51.67	51.67	0.00	0.00	
100	38	49.67	49.67	0.00	0.00	
105	36	47.82	47.82	0.00	0.00	
110	35	46.13	46.13	0.00	0.00	
115	34	44.56	44.56	0.00	0.00	
120	33	43.10	43.10	0.00	0.00	
125	32	41.75	41.75	0.00	0.00	
130	31	40.49	40.49	0.00	0.00	
135	30	39.31	39.31	0.00	0.00	
140	29	38.20	38.20	0.00	0.00	
145	28	37.16	37.16	0.00	0.00	
150	28	36.18	36.18	0.00	0.00	
180	24	31.32	31.32	0.00	0.00	
210	21	27.71	27.71	0.00	0.00	
240	19	24.90	24.90	0.00	0.00	
270	17.8	22.66	22.66	0.00	0.00	
300	16	20.82	20.82	0.00	0.00	

FIVE YEAR EVENT

Maximum Allowable Flow Rate

Five Year Event Pre-development (Existing) Conditions

			C
Roof Area:	584	sq.m.	0.90
Asphalt/Concrete Area:	2234	sq.m.	0.90
Landscaped:	6296	sq.m.	0.20

Total Catchment Area 9114 sq.m. 0.42

Time of Concentration: Existing storm sewer system
(from storm sewer design form)
11.1 min

Time of Concentration: Sheet Flow

Airport Formula

$$T_c = \frac{3.26 (1.1 - C) (L)^{1/2}}{Sw^{0.33}} \text{ min}$$

Runoff Coefficient (C): 0.42 see above
 Sheet Flow Distance (L): 40 m
 Slope of Land (Sw): 1.5 %
 Time of Concentration (Sheet Flow): 12.3 min

Five Year Event Pre-development Flow (Maximum Allowable Flow Rate)

Area (A): 9114 sq.m.
 Time of Concentration: 12.3 min.
 Rainfall Intensity (i): 93 mm/hr (5 year event)
 Runoff Coefficient (C): 0.42
 Flow Rate (2.78AiC): 98.46 l/s

DRAINAGE AREA I (Uncontrolled Flow Off Site):

			C
Roof Area:	0	sq.m.	0.90
Asphalt/Concrete Area:	37	sq.m.	0.90
Landscaped:	3096	sq.m.	0.20

Total Catchment Area 3133 sq.m. 0.21

Area (A): 3133 sq.m.
 Time of Concentration: 10.0 min.
 Rainfall Intensity (i): 104 mm/hr (5 year event)
 Runoff Coefficient (C): 0.21

Flow Rate (2.78AiC): 18.90 l/s

DRAINAGE AREA II

(FIVE YEAR EVENT)

			C
Roof Area:	935	sq.m.	0.90
Asphalt/Concrete Area:	3356	sq.m.	0.90
Landscaped:	1690	sq.m.	0.20
Total Catchment Area	5981	sq.m.	0.70

Storage in MH's & CB's

		Invert m	Depth m			
Water Elevation:	87.31	m	CB-1	85.63	1.68	0.60 cu.m.
			CB/MH-2	84.40	2.91	3.29 cu.m.
			CB-3	85.26	2.05	0.74 cu.m.
			CB-4A	84.75	2.56	0.92 cu.m.
			CB/MH-4	84.59	2.72	3.07 cu.m.
			CB/MH-5	84.53	2.78	3.14 cu.m.
ICD Invert: (Outlet Pipe OF CB/MH-6):	84.31	m	CB/MH-6	84.31	3.00	3.39 cu.m.

Storage in Sewer Pipes

		Head	Diameter	Length		
Head:	3.00	m	200	36.9	1.16	cu.m.
			250	10.6	0.52	cu.m.
			300	56	3.96	cu.m.
			375	21.8	2.41	cu.m.

Surface Storage Above Catch Basin

		Orifice Diameter	Area	Depth		
Orifice Diameter	124	mm	CB-1	1	0.01	0.00 cu.m.

Orifice Area: 12061 sq.mm.

Detention Area

		Coefficient of Discharge:	Bottom Area sq.m.	Top Area sq.m.	Ave. Depth m		
Coefficient of Discharge:	0.610		60	95	0.21	15.94	cu.m.

Max. Release Rate: 56.42 l/s

Achieved Vol: 39.14 cu.m.

Max. Vol. Required: 39.14 cu.m.

Time min.	i mm/hr	2.78AiC l/s	ICD Release Rate l/s	Stored Rate l/s	Stored Volume cu.m.
5	141	164.84	56.42	108.42	32.53
10	104	121.65	56.42	65.24	39.14
15	84	97.56	56.42	41.14	37.03
20	70	82.02	56.42	25.61	30.73
25	61	71.10	56.42	14.68	22.03
30	54	62.96	56.42	6.55	11.79
35	49	56.65	56.42	0.23	0.49
40	44	51.59	51.59	0.00	0.00
45	41	47.44	47.44	0.00	0.00
50	38	43.96	43.96	0.00	0.00
55	35	41.01	41.01	0.00	0.00
60	33	38.46	38.46	0.00	0.00
65	31	36.25	36.25	0.00	0.00
70	29	34.29	34.29	0.00	0.00
75	28	32.56	32.56	0.00	0.00
80	27	31.01	31.01	0.00	0.00
85	25	29.62	29.62	0.00	0.00
90	24	28.36	28.36	0.00	0.00
95	23	27.21	27.21	0.00	0.00
100	22	26.16	26.16	0.00	0.00
105	22	25.20	25.20	0.00	0.00
110	21	24.31	24.31	0.00	0.00
115	20	23.49	23.49	0.00	0.00
120	19	22.73	22.73	0.00	0.00
125	19	22.02	22.02	0.00	0.00
130	18	21.36	21.36	0.00	0.00
135	18	20.74	20.74	0.00	0.00
140	17	20.16	20.16	0.00	0.00
145	17	19.62	19.62	0.00	0.00
150	16	19.10	19.10	0.00	0.00
180	14	16.56	16.56	0.00	0.00
210	13	14.66	14.66	0.00	0.00
240	11	13.19	13.19	0.00	0.00
270	10	12.01	12.01	0.00	0.00
300	9	11.04	11.04	0.00	0.00

STRESS TEST - 20% INCREASE TO ONE HUNDRED
YEAR EVENT RAINFALL

DRAINAGE AREA I (Uncontrolled Flow Off Site):

			C
Roof Area:	0	sq.m.	1.00
Asphalt/Concrete Area:	37	sq.m.	1.00
Landscaped:	3096	sq.m.	0.25
Total Catchment Area	3133	sq.m.	0.26
Area (A):	3133	sq.m.	
Time of Concentration:	10.0	min.	
Rainfall Intensity (i):	214	mm/hr (120% of 100 year event)	
Runoff Coefficient (C):	0.26		
Flow Rate (2.78AiC):	48.31	l/s	

DRAINAGE AREA II

(STRESS TEST)

			C
Roof Area:	935	sq.m.	1.00
Asphalt/Concrete Area:	3356	sq.m.	1.00
Landscaped:	1690	sq.m.	0.25
Total Catchment Area	5981	sq.m.	0.79

Storage in MH's & CB's

			Invert m	Depth m			
Water Elevation:	87.53	m	CB-1	85.63	1.67	0.60	cu.m.
			CB/MH-2	84.40	3.13	3.54	cu.m.
			CB-3	85.26	2.27	0.82	cu.m.
			CB-4A	84.75	2.70	0.97	cu.m.
			CB/MH-4	84.59	2.94	3.33	cu.m.
			CB/MH-5	84.53	3.00	3.40	cu.m.
ICD Invert: (Outlet Pipe OF CB/MH-6):	84.31	m	CB/MH-6	84.31	3.22	3.64	cu.m.

Storage in Sewer Pipes

			Diameter	Length		
Head:	3.22	m	200	36.9	1.16	cu.m.
			250	10.6	0.52	cu.m.
			300	56	3.96	cu.m.
			375	21.8	2.41	cu.m.

Orifice Diameter 124 mm

Surface Storage Above Catch Basin

	Area	Depth		
CB-1	1204	0.23	93.43	cu.m.

Orifice Area: 12061 sq.mm.

Detention Area

			Bottom Area sq.m.	Top Area sq.m.	Ave. Depth m		
Coefficient of Discharge:	0.610		60	126	0.43	39.40	cu.m.

Max. Release Rate: 58.50 l/s

Achieved Vol: 157.19 cu.m.

Max. Vol. Required: 157.19 cu.m.

Time min.	i mm/hr	2.78AiC l/s	ICD Release Rate l/s	Stored Rate l/s	Stored Volume cu.m.
5	291	381.63	58.50	323.13	96.94
10	214	280.77	58.50	222.27	133.36
15	171	224.69	58.50	166.19	149.57
20	144	188.61	58.50	130.11	156.13
25	125	163.29	58.50	104.79	157.19
30	110	144.46	58.50	85.95	154.72
35	99	129.85	58.50	71.35	149.83
40	90	118.16	58.50	59.66	143.18
45	83	108.58	58.50	50.08	135.20
50	77	100.56	58.50	42.06	126.18
55	72	93.75	58.50	35.25	116.33
60	67	87.89	58.50	29.39	105.80
65	63	82.78	58.50	24.28	94.70
70	60	78.29	58.50	19.79	83.11
75	57	74.31	58.50	15.80	71.12
80	54	70.74	58.50	12.24	58.77
85	52	67.54	58.50	9.04	46.11
90	49	64.64	58.50	6.14	33.17
95	47	62.01	58.50	3.51	19.99
100	45	59.60	58.50	1.10	6.59
105	44	57.39	57.39	0.00	0.00
110	42	55.35	55.35	0.00	0.00
115	41	53.47	53.47	0.00	0.00
120	39	51.72	51.72	0.00	0.00
125	38	50.10	50.10	0.00	0.00
130	37	48.59	48.59	0.00	0.00
135	36	47.17	47.17	0.00	0.00
140	35	45.84	45.84	0.00	0.00
145	34	44.59	44.59	0.00	0.00
150	33	43.42	43.42	0.00	0.00
180	29	37.58	37.58	0.00	0.00
210	25	33.25	33.25	0.00	0.00
240	23	29.89	29.89	0.00	0.00
270	21	27.19	27.19	0.00	0.00
300	19.12	24.99	24.99	0.00	0.00
330	18	0.00	0.00	0.00	0.00

Summary of Pre-consultation with City of Ottawa

From: Lebrun, Julie (Planning) [mailto:Julie.Lebrun@ottawa.ca]
Sent: June-18-13 2:11 PM
To: Ralph Vandenberg
Cc: Terrence Leversedge (kestrelaerospaceresearch@gmail.com); Kathy Pearce (pgts@rogers.com)
Subject: RE: 1234 Prestone Drive - Church expansion

Hi Ralph,

Please see my responses in red below.

Thanks,

Julie

From: Ralph Vandenberg [mailto:ralph@vwarchitects.ca]
Sent: June 12, 2013 4:32 PM
To: Lebrun, Julie (Planning)
Cc: Terrence Leversedge (kestrelaerospaceresearch@gmail.com); Kathy Pearce (pgts@rogers.com)
Subject: RE: 1234 Prestone Drive - Church expansion

Hi Julie: I'm trying to assist the church in developing their budget and properly determining figures related to the Site Plan Control process. Attached is a more updated plan that what we discussed in the Pre-Application meeting.

Could you verify:

1. Is there is an existing Site Plan Agreement on the property? **Yes**
2. If there is, is this application a " Revision - Manager Approval, Public Consultation" or is the addition (+/-5,000ft²) to the existing (6,287ft²) building, or can this be a simple Manager or Staff approval with no Public Consultation?
3. Is the additional Engineering Design Review and Inspection Fee applicable for this project? **Yes they are applicable**

Thanks,
Ralph

Vandenberg & Wildeboer Architects Inc.
Ralph Vandenberg – B. Arch, OAA, MRAIC, LEED AP
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From: Lebrun, Julie (Planning) [mailto:Julie.Lebrun@ottawa.ca]
Sent: May-30-13 11:11 AM
To: Ralph Vandenberg; 'kestrelaerospaceresearch@gmail.com'
Cc: Sevigny, John; Yousfani, Asad
Subject: 1234 Prestone Drive - Church expansion

Good morning,

As discussed in our pre-consultation meeting on May 28th, the applicant will be submitting a site plan application with the City to add a new Hall, nursery, classrooms and administration offices to the existing church as well as additional parking. As a follow-up I have provided links to the by-law regarding aisle provisions, landscaping provisions for parking areas and the provisions for the I1B zone.

Links to the Consolidated Zoning By-law:

1) Aisle provisions

<http://ottawa.ca/en/residents/laws-licenses-and-permits/laws/city-ottawa-zoning-law/zoning-law-2008-250-consolidation-43>

2) Landscaping provisions for parking areas

<http://ottawa.ca/en/residents/laws-licenses-and-permits/laws/city-ottawa-zoning-law/zoning-law-2008-250-consolidation-45>

3) I1B zone provisions

<http://ottawa.ca/en/residents/laws-licenses-and-permits/laws/city-ottawa-zoning-law/zoning-law-2008-250-consolidation-65>

You will be required to submit the following with your site plan application:

Site Plan

Landscape Plan

Color Architectural Elevation drawings

Tree Conservation Report (a tree cutting permit will be required for any on site tree removal – contact Mark Richardson (x 23839)

Phase 1 ESA

As part of their engineering submission we will require the following report/studies as part of their application:

Site Servicing Brief:

- The report is to follow the City's Servicing Study guidelines which can be found at the following link: <http://ottawa.ca/en/development-application-review-process-0/servicing-study-guidelines-development-applications>
- Prior to submitting the servicing report the consultant should contact me and request boundary conditions for the water service design. The consultant will need to provide the type of development, fire flow required, average day demand, maximum day demand and maximum hour demand.
- We have confirmed with infrastructure management that there are no concerns with existing sanitary capacity within the right-of-way therefore the consultant will only need to confirm that the existing service size is adequate for their expansion.
- The storm water management design is to be calculated using a post-development release rate equivalent to the pre-development release rate for the 1:5 year storm. All flows volumes up to and including the 1:100 year storm, above the 1:5 year pre-development flow rate, are to be controlled/stored on site.

Geotechnical Brief:

- Containing detailed information on geotechnical matters and recommendations (i.e. pavement, foundation, bedding construction etc.). The report is to follow the City's Geotechnical Reporting Guidelines which can be found at <http://www.ottawa.ca/cs/groups/content/@webottawa/documents/pdf/mdaw/mtm4/~edisp/cap137602.pdf>

Exterior Site Lighting Letter

- This requirement was not mentioned in the pre-consult however it would be appreciated if we could have it at the time of submission. That being said, we would not deem the application incomplete if it was the only thing missing from the submission.

- The letter is to be certified by a qualified engineer confirming the site lighting design a) meets the criteria for Full Cut-off (Sharp cut-off) Classification, as recognized by the Illuminating Engineering Society of North America (IESNA or IES) AND b) the site lighting spillage will be minimal (i.e. 0.5 foot-candle is normally the maximum allowable spillage).

Engineering Drawings:

- The following are the engineering plans that are required with the submission. The link below outlines the requirements for the plans
http://ottawa.ca/en/city_hall/planningprojectsreports/planning/dev_review_process/guide/servicing_grading/index.html
 - o Site Servicing Plan
 - o Grading and Drainage Plan
 - o Erosion and Sediment Control Plan (can be combined with the grading plan)

A couple items to make note of are:

- A Closed Circuit Television (CCTV) inspection will be required in order to re-use the existing services. This will be required prior to site plan approval.
- All existing and proposed parking areas are to have barrier curbs.

The transportation engineer will require the following:

-A Transportation Brief (TB) is required: More details on the format / analysis methodologies to complete a TB can be found under Appendix C, page # 25 of the October 2006 Transportation Impact Assessment Guidelines.

Following are some of the elements the required TB will document in it.

- Identify any turning lanes to serve the access points along public road(s);
- Determine the appropriate curb radii, daylight triangles, and storage length at the entrances;
- Determine the appropriate width of access points and their spacing. The Private Approach BY-LAW needs to be referred to (http://www.ottawa.ca/residents/bylaw/a_z/private_approach/index_en.html);

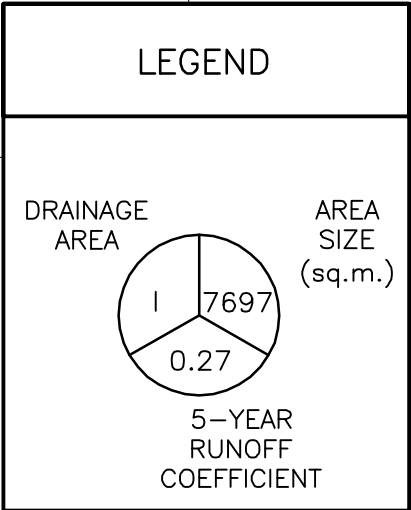
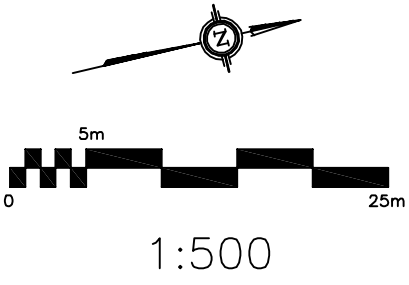
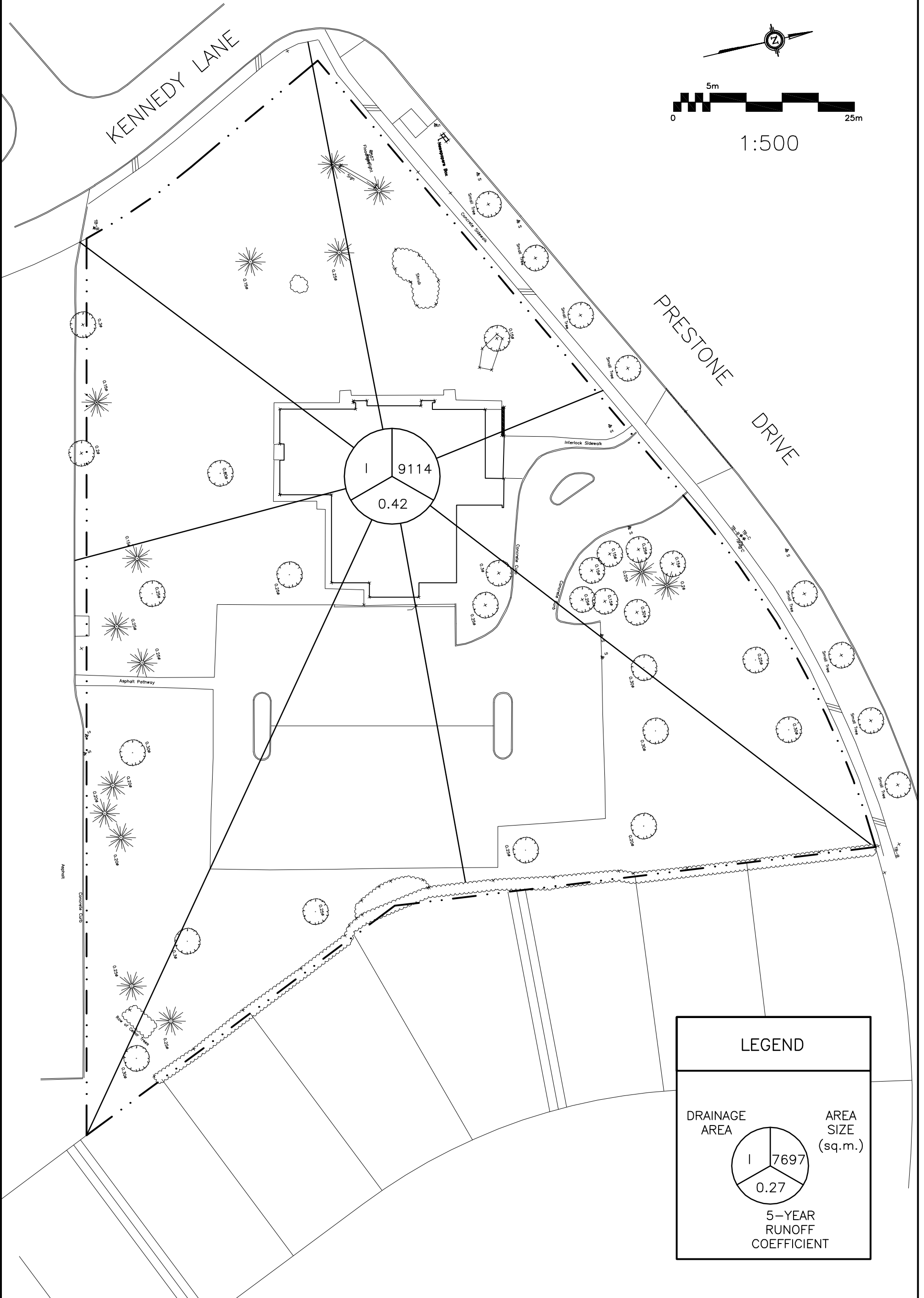
-A Noise Study is required: May 2010 City of Ottawa Environmental Noise Control Guidelines should be referred to complete the required study.

If you have any further questions, please do not hesitate to contact us.

Regards,

Julie Lebrun, MCIP, RPP
Planner / Urbaniste
Planning and Growth Management Department/
Service de l'urbanisme et gestion de la croissance
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PRE-DEVELOPMENT DRAINAGE AREAS



POST DEVELOPMENT DRAINAGE AREAS

