

**Storm Water Management Calculations**

MUNICIPALITY: HRM  
 PROJECT: Proposed Campground Atlantic Splash Adventure  
 PROJECT NO: 232078  
 DATE: 10-Jul-24

R Calculations:

Land Cover	R	PRE			POST		
		m2	ha	Rw	m2	ha	Rw
Asphalt	0.95	6071.0	0.6071	0.06	6071.0	0.6071	0.06
Landscaped	0.35	25696.0	2.5696	0.09	47944.0	4.7944	0.16
Concrete	0.95	2120.0	0.2120	0.02	2120.0	0.2120	0.02
Rooftop	0.95	1543.0	0.1543	0.01	1543.0	0.1543	0.01
Gravel	0.7	16024.0	1.6024	0.11	20121.0	2.0121	0.14
Undisturbed Natural	0.2	52483.0	5.2483	0.10	26138.0	2.6138	0.05
<b>TOTALS</b>		<b>103937.0</b>	<b>10.394</b>	<b>0.38</b>	<b>103937.0</b>	<b>10.3937</b>	<b>0.44</b>

Rainfall:

Storm	a	b	c
2YR	25.112	0.04959	0.578
5YR	31.196	0.03178	0.565
10YR	35.114	0.01905	0.553
25YR	40.265	0.01159	0.548
50YR	44.089	0.00874	0.544
100YR	47.924	0.00594	0.544

Intensity (mm/hr) STORM

Duration (hours)	2YR	5YR	10YR	25YR	50YR	100YR
5 min	80.6	105.8	123.9	146.4	161.4	178.4
10 min	60.8	77.7	89.0	103.5	113.5	124.5
15 min	50.4	63.8	72.6	84.0	92.0	100.6
30 min	35.5	44.6	50.5	58.1	63.7	69.4
1 Hour	24.4	30.6	34.7	40.0	43.9	47.8
2 Hour	16.6	20.9	23.8	27.5	30.2	32.8
6 Hour	8.9	11.3	13.0	15.1	16.6	18.1
12 Hour	6.0	7.7	8.9	10.3	11.4	12.4
24 Hour	4.0	5.2	6.1	7.1	7.8	8.5

Infiltration Swale Capacity Calculations  
 First 10mm depth (10 minute design storm for 1:5 year return period)

STORM	Duration (hours)	Post					
		R	A	I (5 Year Return)	N	Q (L/S)	V (m3)
5 min	0.0833	0.95	0.1543	105.8	2.778	43.10	13
10 min	0.167	0.95	0.1543	77.7	2.778	31.65	19
15 min	0.25	0.95	0.1543	63.8	2.778	25.98	23
30 min	0.5	0.95	0.1543	44.6	2.778	18.15	33
1 Hour	1	0.95	0.1543	30.6	2.778	12.48	45
2 Hour	2	0.95	0.1543	20.9	2.778	8.51	61
6 Hour	6	0.95	0.1543	11.3	2.778	4.80	99
12 Hour	12	0.95	0.1543	7.7	2.778	3.12	135
24 Hour	24	0.95	0.1543	5.2	2.778	2.11	182

Entire Site Runoff Calculations  
 5 year return period

STORM	Duration (hours)	PRE					
		R	A	I (5 Year Return)	N	Q (L/S)	V (m3)
5 min	0.0833	0.38	0.6665	105.8	2.778	75.32	23
10 min	0.167	0.38	0.6665	77.7	2.778	55.32	33
15 min	0.25	0.38	0.6665	63.8	2.778	45.42	41
30 min	0.5	0.38	0.6665	44.6	2.778	31.72	57
1 Hour	1	0.38	0.6665	30.6	2.778	21.81	79
2 Hour	2	0.38	0.6665	20.9	2.778	14.88	107
6 Hour	6	0.38	0.6665	11.3	2.778	8.04	174
12 Hour	12	0.38	0.6665	7.7	2.778	5.45	235
24 Hour	24	0.38	0.6665	5.2	2.778	3.68	318

Entire Site Runoff Calculations  
 100 year return period

STORM	Duration (hours)	PRE					
		R	A	I (100 Year Return)	N	Q (L/S)	V (m3)
5 min	0.0833	0.38	0.6665	178.4	2.778	126.99	38
10 min	0.167	0.38	0.6665	124.5	2.778	88.61	53
15 min	0.25	0.38	0.6665	100.6	2.778	71.59	64
30 min	0.5	0.38	0.6665	69.4	2.778	49.41	89
1 Hour	1	0.38	0.6665	47.8	2.778	34.00	122
2 Hour	2	0.38	0.6665	32.8	2.778	23.36	168
6 Hour	6	0.38	0.6665	18.1	2.778	12.86	278
12 Hour	12	0.38	0.6665	12.4	2.778	8.82	381
24 Hour	24	0.38	0.6665	8.5	2.778	6.05	523

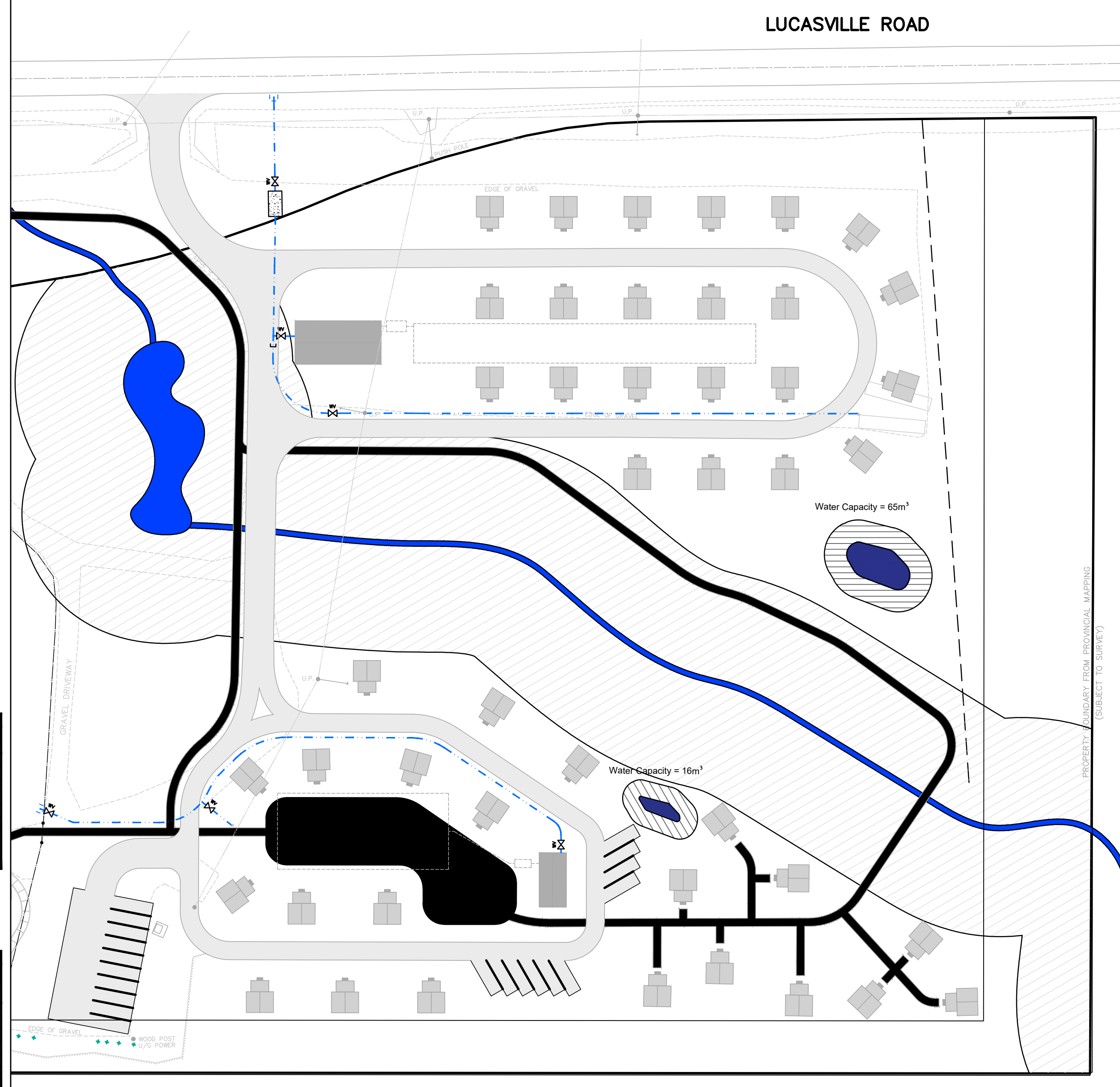
STORM	Duration (hours)	POST					
		R	A	I (5 Year Return)	N	Q (L/S)	V (m3)
5 min	0.0833	0.44	0.6665	105.8	2.778	85.48	26
10 min	0.167	0.44	0.6665	77.7	2.778	62.77	38
15 min	0.25	0.44	0.6665	63.8	2.778	51.54	46
30 min	0.5	0.44	0.6665	44.6	2.778	36.00	65
1 Hour	1	0.44	0.6665	30.6	2.778	24.76	89
2 Hour	2	0.44	0.6665	20.9	2.778	16.88	122
6 Hour	6	0.44	0.6665	11.3	2.778	9.13	197
12 Hour	12	0.44	0.6665	7.7	2.778	6.18	267
24 Hour	24	0.44	0.6665	5.2	2.778	4.18	361

DIFFERENCE		
STORM	Q (L/S)	Vs** (m3)
5 min	10.15	3
10 min	7.46	4
15 min	6.12	6
30 min	4.28	8
1 Hour	2.94	11
2 Hour	2.01	14
6 Hour	1.08	23
12 Hour	0.73	32
24 Hour	0.50	43

\*\* Vs indicates volume to be stored if post development runoff flow rate is held to pre-development runoff flow rate.

STORM	Duration (hours)	POST					
		R	A	I (100 Year Return)	N	Q (L/S)	V (m3)
5 min	0.0833	0.44	0.6665	178.4	2.778	144.11	43
10 min	0.167	0.44	0.6665	124.5	2.778	100.55	60
15 min	0.25	0.44	0.6665	100.6	2.778	81.24	73
30 min	0.5	0.44	0.6665	69.4	2.778	56.07	101
1 Hour	1	0.44	0.6665	47.8	2.778	38.58	139
2 Hour	2	0.44	0.6665	32.8	2.778	26.51	191
6 Hour	6	0.44	0.6665	18.1	2.778	14.60	315
12 Hour	12	0.44	0.6665	12.4	2.778	10.01	433
24 Hour	24	0.44	0.6665	8.5	2.778	6.87	593

\*\* Vs indicates volume to be stored if post development runoff flow rate is held to pre-development runoff flow rate.



to RENTALS LIMITED

No.	DESCRIPTION	Date (mm/dd/yy)	By
	ISSUE or REVISION		
Client			
BSMAART DEVELOPMENTS AND CONSTRUCTIONS INC.			
Project			
PROPOSED CAMPGROUND ATLANTIC SPLASH ADVENTURE			
LUCASVILLE ROAD, COUNTY OF HALIFAX, NS			
Title			
STORM WATER MANAGEMENT CALCULATIONS			
Scale		Date	
		JULY 12, 2024	
Drawn	CB	Designed	CB
Checked	MM	Approved	MM
Contract No.		232078	
Drawing No.			