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October 28, 2020

Halifax Water
450 Cowie Hill Road
Halifax, NS

From: Ray Landry, MASc., P.Eng. File No. 1-9-35 (35576)

Re: Beaverbank Apartment Buildings – 239-243 Beaverbank Road, Sackville
Sanitary Lateral Size Confirmation

Project Summary:

	Residential (Multi-Unit) Building A	Residential (Multi-Unit) Building B
Building	46 Units	46 Units
*From W.M. Fares Architects		

References:

1. Halifax Water (HW) Design & Supplementary Specifications, 2020 Edition, Section 4.2.2:
   - Q = [1.25 x (a x M)] + b Where;
     Q = Sanitary sewer flow.
     1.25 = Safety factor.
     a = Average dry weather flow.
     M = Peaking factor using Harmon Formula; M = 1 + [14 / (4 + $P^{0.5}$)]
     b = Long-term infiltration/inflow allowance.
     P = Population in thousands
   - Residential Average Dry Weather Flow: 300 L/day per person
   - Multi-Unit Dwelling Population: 2.25 people per unit
   - Infiltration allowance: 0.28 L/ha_{gross}/s
2. Atlantic Canada Wastewater Guidelines Manual (AWG), 2006 Edition, Section 2.3.

Calculation Summary (Building A):

Population Estimate (P)

Reference:
P: HW Section 4.2.1 Residential (Multi-Unit): 2.25 people per unit

P = 2.25 people per unit x 46 Units = 104 people

P = **104 people (or 0.104)**

Dry Weather Flow (a)

Reference:

a: HW Section 4.2.2: Residential: 300 L/day per person

a: ACWG Section 2.3.4.3, Table 2.1: Commercial/Retail: 6 L/sq.m

a residential= 300 L/day per person x 104 people = **31,200 L/day (or 0.36 L/s)**

Total a= **31,200 L/day (or 0.36 L/s)**

Infiltration (b)

Reference:

HW Section 4.2.2: Infiltration allowance: 0.28 $L/ha_{gross}/s$

Lot Area = 7,377 m^2 = 0.738 ha

b: 0.28 $L/ha_{gross}/s$ x 0.738 ha = **0.21 L/s**

Peaking Factor (M)

$M = 1 + [14 / (4 + P^{0.5})]$

$M = 1 + [14 / (4 + (0.104)^{0.5})]$ = **4.24**

Sanitary Sewer Flow (Q)

Q = [1.25 x (a x M)] + b

Q = [1.25 x (0.36 L/s x 4.24)] + 0.21 L/s = **2.12 L/s**

Sanitary Lateral Size Confirmation:

A 200 mm diameter PVC lateral at 2.00% slope has a capacity of 60.3 L/s. With Q = 2.12 L/s, the proposed lateral will have sufficient flow capacity. For additional information or discussion regarding these findings please contact the undersigned.

Calculation Summary (Building B):

Population Estimate (P)

Reference:

P: HW Section 4.2.1 Residential (Multi-Unit): 2.25 people per unit

P = 2.25 people per unit x 46 Units = 104 people

P = **104 people (or 0.104)**

Dry Weather Flow (a)

Reference:

a: HW Section 4.2.2: Residential: 300 L/day per person

a: ACWG Section 2.3.4.3, Table 2.1: Commercial/Retail: 6 L/sq.m

a residential= 300 L/day per person x 104 people = **31,200 L/day (or 0.36 L/s)**

Total a= **31,200 L/day (or 0.36 L/s)**

Infiltration (b)

Reference:

HW Section 4.2.2: Infiltration allowance: 0.28 $L/ha_{gross}/s$

Lot Area = 8,094 m^2 = 0.809 ha

b: 0.28 $L/ha_{gross}/s$ x 0.809 ha = **0.23 L/s**

Peaking Factor (M)

$M = 1 + [14 / (4 + P^{0.5})]$

$M = 1 + [14 / (4 + (0.104)^{0.5})]$ = **4.24**

Sanitary Sewer Flow (Q)

Q = [1.25 x (a x M)] + b

Q = [1.25 x (0.36 L/s x 4.24)] + 0.23 L/s = **2.14 L/s**

Sanitary Lateral Size Confirmation:

A 200 mm diameter PVC lateral at 2.00% slope has a capacity of 60.3 L/s. With Q = 2.14 L/s, the proposed lateral will have sufficient flow capacity. For additional information or discussion regarding these findings please contact the undersigned.

Regards,

d Ltd.

Original Signed

Ray Landry, MASc., P.Eng.

Project Engineer

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