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January 10, 2023

Halifax Water
450 Cowie Hill Road
Halifax, NS

From: Ray Landry, MASc., P.Eng. File No. 37688

Re: Proposed Mid-Rises 1 and 2 - 42 Canal Street, Lot ML-1, Dartmouth, Nova Scotia - Mixed Use Building Sanitary Lateral Size Confirmation

Project Summary:

	Commercial	Residential (Townhouses)	Residential (Multi-Unit)	Lot Area
Building	1619 m^2	0 Units	142 Units	6,066 m^2
From WMFares				

References:

1. Halifax Water (HW) Design & Supplementary Specifications, 2020 Edition, Section 4.2.2:

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
- Townhouse Dwelling Population: 3.35 people per unit
- 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:

<u>Population Estimate (P)</u>

Reference:

P_1: AWG Section 2.3.4.2 Commercial/Retail: 85 people per hectare

P_2: HW Section 4.2.1 Residential (Townhouse): 3.35 people per unit

P_3: HW Section 4.2.1 Residential (Multi-Unit): 2.25 people per unit

P_1 = 85 people per hectare x 0.162 hectares = 14

P_2 = 3.35 people per unit x 0 units = 0

P_3 = 2.25 people per unit x 142 units = 320

$P = P_1 + P_2 + P_3$ = 334 people or = 0.334

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/m2

a residential= 300 L/day x 320 = 96,000 L/day or 1.11 L/s

a commercial= 6 L/m^2 x 1619 = 9,714 L/day or 0.11 L/s

Total a= residential + commercial = 105,714 or 1.22 L/s

Infiltration (b)

Reference:

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

Lot Area= 6,066 m^2 = 0.61 ha

b: 0.28 $L/ha_{gross}/s$ x 0.61 = 0.17 L/s

Peaking Factor (M)

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

$M = 1 + [14 / (4 + (0.334)^{0.5})]$

M = 4.06

Sanitary Sewer Flow (Q)

$Q = [1.25 \times (a \times M)] + b$

Q = [1.25 x (1.22 x 4.06)] + 0.17 L/s

Q = 6.38 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 =6.38 L/s, the proposed lateral will have sufficient flow capacity. For additional information or discussion regarding these findings please contact the undersigned.

Servant, Dunbrack, McKenzie & MacDonald Ltd.

Original Signed

Ray Landry, MASc., P.Eng.
Project Engineer