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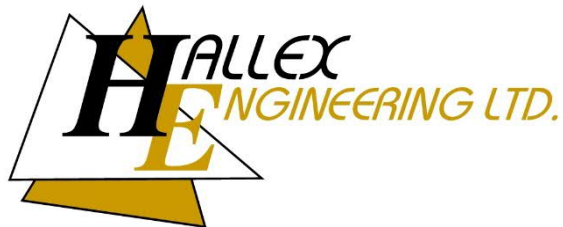
PROPOSED EIGHT STOREY MIXED-USE BUILDING  
179 MELLANBY AVE, 48, 56-56½ MAIN ST, PORT COLBORNE

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FUNCTIONAL SERVICING DESIGN BRIEF  
NEW SANITARY AND WATER SERVICES

REV 0 – October 19, 2023

PREPARED BY:



HALLEX PROJECT #230403

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EXHIBITS           – Servicing Design Sheets

## 1. INTRODUCTION

The proposed eight storey mixed-use building development consists of the demolition of the existing residential and commercial buildings complete with concrete walkways, gravel parking areas and grass areas and the construction of an eight-storey mixed-use building, asphalt laneway a and grass areas. This development is located at 179 Mellanby Avenue, 48 and 56-56½ Main Street, which is at the southeast corner of the Main Street and Mellanby Avenue intersection in the City of Port Colborne, ON.

The purpose of the service assessment is to determine the functional sizing of the proposed sanitary and water services in addition to the post-development flows from the site to determine the impact on the existing municipal infrastructure.

## 2. EXISTING MUNICIPAL INFRASTRUCTURE

### 2.1 SANITARY SEWER

The existing site is currently serviced with several sanitary lateral connections to Main Street and Mellanby Avenue as it consisted of the existing residential and commercial buildings, however the size and location of all the laterals are unknown. The existing sanitary infrastructure at Main Street consists of a 200mm municipal sanitary sewer which drains westerly towards Church Street. The existing sanitary infrastructure at Mellanby Avenue consists of a 200mm municipal sanitary sewer which drains southerly towards Amelia Street.

### 2.2 WATERMAIN

The existing site is currently serviced with several water service connections to Main Street and Mellanby Avenue as it consisted of the existing residential and commercial buildings, however the size and location of all the services are unknown. The existing watermain infrastructure at Main Street consists of a 300mm municipal cast iron watermain and Mellanby Avenue consists of a 150mm municipal cast iron / PVC watermain.

## 3. SANITARY SEWER SYSTEM

Given the site is to be completely redeveloped for the proposed eight-storey mixed-use building development, all existing sanitary laterals are to be located, capped and abandoned as required at the municipal sanitary sewer. A new sanitary lateral shall be proposed from the building to the existing 200mm diameter municipal sanitary sewer at Mellanby Avenue.

The building development is currently in the concept phase; therefore, the following assumptions based on the architectural drawings are made in carrying out the calculations:

- The eight-storey mixed-use building is assumed to have one floor consisting of a single commercial tenant space with a floor area of 116.0m<sup>2</sup>.

- The eight-storey mixed-use building is assumed to have seven floors consisting of 40 one-bedroom apartment units and 61 two-bedroom apartment units. Each apartment is assumed to have a maximum of 2 persons per bedroom.
- The plumbing fixtures and the number of plumbing fixtures indicated in Exhibit #1 are assumed and may not represent the final building plumbing design.

The peak drainage rate for the proposed development is determined to be 798.5 L/min based on the fixtures and fixture units shown in Exhibit #1 attached. Table 7.4.10.5 in the Ontario Building Code is used to determine probable peak drainage rates for the total fixture units. The wastewater generation for the proposed development is determined to be 90,330 L/day using Table 8.2.1.3A/B of the Ontario Building Code as shown in Exhibit #1, attached.

Based on the above, Hallex recommends a minimum 200mm diameter sanitary sewer @ 1.0% to be installed to convey sanitary flows from the proposed building to the existing 200mm diameter municipal sanitary sewer at Mellanby Avenue.

#### 4. WATER DISTRIBUTION SYSTEM

Given the site is to be completely redeveloped for the proposed eight-storey mixed-use building development, all existing water services are to be located, capped and abandoned as required at the municipal watermain. A new water service shall be proposed from the building to the existing 300mm municipal cast iron watermain at Main Street.

The building development is currently in the concept phase; therefore, the following assumptions based on the architectural drawings are made in carrying out the calculations:

- The plumbing fixtures and the number of plumbing fixtures indicated in Exhibit #2 are assumed and may not represent the final building plumbing design.
- The building is assumed to be fire protected vertically between floors (including the protection of vertical openings between floors), of non-combustible construction and will have sprinklers and hose cabinets installed throughout the building as per applicable standards.

The domestic water demand for the proposed development is determined to be 723.9 L/min based on the fixtures and fixture units shown in Exhibit #2 attached. Table 7.4.10.5 in the Ontario Building Code is used to determine water demands for the total fixture units.

Using the calculations provided in the Fire Underwriters Survey – 2020 Water Supply for Public Fire Protection, the minimum water supply flow rate for fire protection is determined to be 9,000 L/min for the building based on the above assumptions as shown in Exhibit #3, attached. There are four existing municipal fire hydrants located near the site. The first is located adjacent to the north side of the property on the north side of Main

Street. The second is approximately 63.0m east of the property on the north side of Main Street. The third is approximately 69.6m west of the property on the north side of Main Street. The fourth is approximately 28.4m south of the property on the west side of Mellanby Avenue.

Based on the above, Hallex recommends a minimum 150mm diameter water service to be installed to provide water supply to the proposed building from the existing 300mm diameter municipal watermain at Main Street. The water service is to be separated at the property line with a 100mm diameter domestic water service and a 150mm fire protection service and shall extend to the mechanical room of the proposed building.

## 5. CONCLUSION

The aforementioned calculations and recommendations for the sanitary and water services are based on the current design for the site as of writing this report. A final sealed report, complete with updates to the recommendations made in this report, may be required based on the final site design.

We trust this report meets your approval. Please contact the undersigned should you have any questions or comments.

Yours truly,  
HALLEX ENGINEERING LTD



Jim Halucha P.Eng  
Civil/Structural Engineer

A handwritten signature in black ink, appearing to read "Jonathan Skinner".

Jonathan Skinner, C.E.T., B.Tech  
Civil Technologist



**Eight Storey Mixed-Use Building**  
**Exhibit #1 - Wastewater Generation Rate & Peak Drainage Rate**

10/19/2023  
 Job: 230403

**WASTEWATER GENERATION ASSESSMENT**

Occupancy	# of Units	Development Statistics	Volume (Table 8.2.1.3. A / B)	Total Daily Volume	Notes
Store Area	1	116 m2s	5 L/m2	580 L/day	Choose greater of area & water closets
Store Water Closets	1	1 WC	1230 L/WC	1230 L/day	Choose greater of area & water closets
Apartments	40	2 persons	275 L/person	22000 L/day	1 bedroom apartments
Apartments	61	4 persons	275 L/person	67100 L/day	2 bedroom apartments
Total =				90330 L/day	

Therefore the total calculated sanitary flow from the site is determined to be 90330 L/day.

**MAXIMUM PROBABLE DRAINAGE RATE**

Fixture	# of Units	# of Plumbing Fixtures	Fixture Units (Table 7.4.9.3.)	Total Sanitary Fixture Units
Bathroom group with flush tank	101	1 fixture	6 FUs	606 FUs
Sink (domestic)	101	1 fixture	1.5 FUs	151.5 FUs
Dishwasher (domestic)	101	1 fixture	1 FUs	101 FUs
Clothes washer (private, domestic)	101	1 fixture	1.5 FUs	151.5 FUs
Water closet w/ flush tank (private)	1	1 fixture	4 FUs	4 FUs
Sink (domestic)	1	2 fixtures	1.5 FUs	3 FUs
Total =				1017.0 FUs
Total Flow =				798.5 L/min

Therefore the total calculated peak drainage rate is determined to be 798.5L/min.



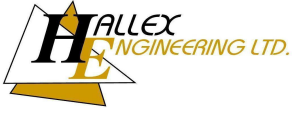
**Eight Storey Mixed-Use Building  
Exhibit #2 - Water Demand**

10/19/2023  
Job: 230403

**DOMESTIC WATER SUPPLY**

Fixture	# of Units	# of Plumbing Fixtures	Fixture Units (Table 7.6.3.2.A.)	Total Water Fixture Units
Bathroom group with flush tank	101	1 fixture	3.6 FUs	363.6 FUs
Sink (domestic)	101	1 fixture	2 FUs	202 FUs
Dishwasher (domestic)	101	1 fixture	1.4 FUs	141.4 FUs
Clothes washer (private, domestic)	101	1 fixture	1.4 FUs	141.4 FUs
Water closet w/ flush tank (private)	1	1 fixture	3 FUs	3 FUs
Sink (domestic)	1	2 fixtures	2 FUs	4 FUs
Total =				855.4 FUs
Total Flow =				723.9 L/min

Therefore the maximum domestic water demand is determined to be 723.9 L/min.



**Eight Storey Mixed-Use Building  
Exhibit #3 - Fire Water Demand**

10/19/2023  
Job: 230403

**FIRE WATER SUPPLY**

Building Type: Fire Protected (Vertically)

<u>Floor Area</u>		<u>Reduct.</u>	
First Floor	2216.3 m <sup>2</sup>	1.00	2216.3 m <sup>2</sup>
Second Floor	1544.2 m <sup>2</sup>	0.25	386.05 m <sup>2</sup>
Third Floor	1544.2 m <sup>2</sup>	0.25	386.05 m <sup>2</sup>
Fourth Floor	1544.2 m <sup>2</sup>	0.00	0 m <sup>2</sup>
Fifth Floor	1544.2 m <sup>2</sup>	0.00	0 m <sup>2</sup>
Sixth Floor	1372.5 m <sup>2</sup>	0.00	0 m <sup>2</sup>
Seventh Floor	1372.5 m <sup>2</sup>	0.00	0 m <sup>2</sup>
Eighth Floor	1243.5 m <sup>2</sup>	0.00	0 m <sup>2</sup>
			2988.4 m <sup>2</sup>

Construction Type: Non-Combustible Const.      Construction Coefficient:

1st Preliminary Fire Flow =      10000 L/min

Fire Hazard: Limited Combustible      Fire Hazard Factor:   
Net Decrease =      -1500 L/min

2nd Preliminary Fire Flow =      8500 L/min

Sprinkler System: Sprinkler & Hose Lines      Sprinkler System Factor:   
Net Decrease =      -3400 L/min

Separation Factor

North	29.7 m	0.10
South	38.3 m	0.05
West	37.3 m	0.05
East	7.0 m	0.20
		0.40

Net Increase =      3400 L/min

**FINAL FIRE FLOW = 9000.0 L/min**

Minimum Water Supply Flow Rate for Fire Protection as determined by the Water Supply For Public Fire Protection, dated 2020, by the Fire Underwriter's Survey