TATHAM ENGINEERING

115 Sandford Fleming Drive, Suite 200
Collingwood, Ontario L9Y 5A6

T 705-444-2565
E info@tathameng.com
tathameng.com

File 123019

October 19, 2023

Heather McGinnity
Manager, Environmental Services
Town of Collingwood
97 Hurontario Street
Collingwood, Ontario L9Y 325
HMcGinnity@collingwood.ca

Re: 2-Storey Office and Restaurant Building, 498 Hume Street, Town of Collingwood
Addendum to Servicing Report

Dear Heather:

Tatham Engineering Limited has been retained by Dunn Capital Corporation to prepare an update to the water and sanitary servicing strategy for 498 Hume Street, in support of a site plan amendment application for a proposed 2-storey restaurant and office on building pad 1. This letter will serve as an addendum to the Servicing and Stormwater Management Report dated February 2018 prepared by C.F. Crozier & Associates Inc.

BACKGROUND

Site plan approval was granted for 500 Hume Street in 2018 for three buildings: a 2-storey office space (Pad 1), a 3-storey office building (Pad 2), and a Holiday Inn hotel (Pad 3). To date, the Holiday Inn has been constructed, and construction is underway on a 4-storey business type hotel on building pad 2. The change of use for building pad 2 was approved following an addendum dated August 2022 to the 2018 Servicing Report.

A 2-storey building, in which 1 storey will be used for a restaurant and the other floor for office space, is now proposed for building pad 1. The water and sanitary servicing requirements need to be updated to reflect the current standards and the proposed use. There are no updates to the stormwater management and site drainage strategy as the building foundation has already been constructed and the footprint has not changed. No other changes to the existing site plan are proposed.

The site servicing plan drawing dated April 13, 2018, and the building pad 1 elevations drawing are attached. Based on the site servicing plan, the proposed building will have a ground floor area of 475 m^2 and a gross floor area of 950 m^2. Approximately 80% of the restaurant floor area (380 m^2) will be used for seating. The remaining space will be used for kitchen, staff, waiting area, and washroom space. Using an

occupant load of 1.10 m^2/person (as per OBC Table 3.1.17.1), the restaurant will have 346 seats. The other storey will be used for office space.

SANITARY SERVICING

Existing Sanitary Infrastructure

An existing gravity sanitary sewer is located on Raglan Street with a 200 mm diameter sanitary service stub that extends from Raglan Street adjacent to the proposed 2-storey restaurant and office space.

Proposed Sanitary Servicing

A 200 mm diameter sanitary service lateral is proposed to be connected to the existing service stub on the 200 mm diameter sanitary sewer on Raglan Street.

Sanitary Flows

Updated sanitary flows for the proposed building have been calculated based on the Town of Collingwood Development Standards (Town Standards) and the 2017 Ontario Building Code (OBC), as shown in Table 1.

Table 1: Sanitary Design Criteria

DESIGN CRITERIA	DESIGN VALUE	REFERENCE STANDARD
Average Sanitary Sewage Flow: Restaurant	125 L/seat/day	OBC Table 8.2.1.3.B.12.a)
Average Sanitary Sewage Flow: Office Space	75 L/9.3 m^2 floor space/ day	OBC Table 8.2.1.3.B.15.b)
Peaking Factor	4.5	Town Standards
Peak Inflow and Infiltration Rate	0.23 L/ha/s	Town Standards

The sanitary design flows for the proposed building are calculated as follows:

Average Daily Sanitary Sewage Flow (ADF) = 346 seats x 125 L/seat/day + 75 L/9.3 m^2 floor space/ day x 475 m^2

= 47,080 L/day

= 47.08 m^3/day (0.544 L/s)

Peak Sanitary Sewage Flow = ADF x Peaking factor + Peak I&I Flow

= (0.544 L/s x 4.5) + (1/3 x 1.74 ha x 0.23 L/ha/s)

= 2.45 L/s + 0.13 L/s

= 2.58 L/s

The sanitary design flows for the originally proposed 2-storey building and the proposed 2-storey restaurant and office space are summarized in Table 2 for comparison.

Table 2: Sanitary Design Flows - Comparison for Building Pad 1

BUILDING PAD 1	AVERAGE DAILY SEWAGE FLOW (m^3/day)	PEAK DAILY SEWAGE FLOW (L/s)
Original 2-Storey Building	47.08	2.58
2-Storey Restaurant and Office Space	47.08	2.58

The total sanitary design flows for the three buildings on the site are summarized in Table 3, including the updated flows calculated for building pad 1. Sewage flows for the Holiday Inn were previously calculated in the February 2018 Servicing Report for the site. Sewage flows for building pad 2 were previously calculated in the August 2022 Servicing Report addendum for the site.

Table 3: Sanitary Design Flows – Site Summary

BUILDING	AVERAGE DAILY SEWAGE FLOW (m^3/day)	PEAK DAILY SEWAGE FLOW (L/s)
2-Storey Restaurant and Office Space (Pad 1)	47.1	2.6
4-Storey Hotel (Pad 2)	29.3	1.7
Holiday Inn (Pad 3)	23.2	1.2
Total	**99.6**	**5.5**

Sanitary Collection, Treatment, and Disposal Capacity

It is our understanding that water and wastewater treatment plant capacity has been allocated for the site in accordance with the Town's Servicing Capacity Allocation Policy, via an exemption from the Town's Interim Control By-Law No. 2021-024 on June 20, 2022.

The total average daily and peak sewage flows for the site remain the same as originally proposed. Therefore, it is expected that the municipal sanitary system remains capable of providing adequate sanitary collection, treatment, and disposal capacity for the site.

WATER SERVICING

Existing Water Infrastructure

Existing 300 mm diameter municipal watermain is located on Raglan Street, west of the site, and on Hume Street, north of the site. A 100 mm stub extends from Raglan Street adjacent to the proposed building. A 200 mm diameter watermain extends from Raglan Street through the site to Hume Street, with hydrants and services to each of the three buildings.

Proposed Water Servicing

The building will be serviced by separate fire and commercial water service lines, with an isolation valve on each, and one backflow prevention device and one water meter located inside the building. A 200 mm diameter fire service connection will be provided to the building from the existing 200 mm diameter watermain running through the site. A 100 mm diameter commercial water service will be provided from the 200 mm fire service. The existing 100 mm stub from Raglan Street will be decommissioned.

Water Demand

Updated water demands for the proposed building have been calculated based on the Town Standards, the 2017 OBC and the 2008 MECP Design Guidelines for Drinking Water Systems (MECP Guidelines), as noted in Table 4.

Table 4: Water Design Criteria

DESIGN CRITERIA	DESIGN VALUE	REFERENCE STANDARD
Average Daily Demand (ADD): Restaurant	125 L/seat/day	OBC Table 8.2.1.3.B.12.a)
Average Sanitary Sewage Flow: Office Space	75 L/9.3 m^2 floor space/ day	OBC Table 8.2.1.3.B.15.b)
Maximum Daily Factor	2.0	Town Standards
Peak Hour Factor	4.5	Town Standards
Minimum Pressure	40 psi	MECP Guidelines
Recommended Pressure Range	50 – 70 psi	MECP Guidelines

Water demands for the proposed 195 seat restaurant and the office space are calculated as follows. Average day demand is equivalent to the average daily sewage flow calculated above.

Average Day Demand (ADD) = 47.08 m^3/day (0.544 L/s)

Maximum Day Demand (MDD) = ADD x Maximum day factor
= 47.08 m^3/day x 2.0
= 94.16 m^3/day (1.088 L/s)

Peak Hour Demand (PHD) = ADD x Peak hour factor
= 0.544 L/s x 4.5
= 2.45 L/s

Fire Flow Requirements

Updated fire flow requirements for the proposed building were calculated based on the Fire Underwriter's Survey Guidelines (FUS, 2020), and using the following building design assumptions:

- 2-storey restaurant and office space with a total effective floor area of 950 m^2.
- Ordinary materials of construction, with non-combustible roofing materials.
- A2 occupancy classification as per OBC Table 3.1.2.1.
- No automatic sprinklers.
- Exposure distances based on the April 13, 2018, site servicing plan drawing prepared by Crozier & Associates Consulting Engineers.

The total required fire flow rate is 8,000 L/min (133 L/s). The FUS fire flow calculations are attached.

The updated design water demands and fire flow requirements for the previously proposed 2-storey building and the proposed restaurant and office space are summarized in Table 5 for comparison. The updated design water demands and fire flow requirements for the three buildings on the site are summarized in Table 6. Water demand and fire flow calculations for building pad 2 and the Holiday Inn were previously provided in the August 2022 Addendum to Servicing Report, and the February 2018 Servicing Report for the site, respectively.

Table 5: Water Demand and Fire Flow - Comparison

BUILDING	ADD (m^3/day)	MDD (m^3/day)	PHD (L/s)	FIRE FLOW (L/s)
Original 2-Storey Building	47.1	94.2	2.45	133
2-Storey Restaurant and Office Space	47.1	94.2	2.45	133

Table 6: Water Demand and Fire Flow – Site Summary

BUILDING	ADD (m^3/day)	MDD (m^3/day)	PHD (L/s)	FIRE FLOW (L/s)
2-Storey Restaurant and Office Space (Pad 1)	47.1	94.2	2.5	133
4-Storey Hotel (Pad 2)	29.3	58.5	1.5	183
Holiday Inn (Pad 3)	23.2	46.5	1.2	217
Total	**99.6**	**199.2**	**5.2**	**-**

Adequacy of Water Supply Capacity, Pressures, and Flow

As noted above, water and wastewater treatment plant capacity has been allocated for the site in accordance with the Town's Servicing Capacity Allocation Policy. For an equivalent single dwelling unit (SDU) conversion factor of 1.334 m^3/unit/day maximum demand, the proposed restaurant and office space has an equivalent of 71 SDUs remains the same as originally proposed 2-storey building at 71 SDUs.

The commercial water demand and required fire flow for the proposed 2-storey restaurant and office space remains the same as the originally proposed 2-storey building.

Hydraulic modeling completed for the site and included in the February 2018 Servicing Report, concluded the development will have minimal impact on distribution system pressures. Ground level pressures are expected to range from 57 psi to 60 psi, which is within the preferred range recommended by the MECP (50 psi to 70 psi). At the second-floor elevation (3.66 m above ground), pressures are expected to range from 52 psi to 55 psi, which remains within the MECP's recommended range.

The previous hydraulic modeling also indicated that the proposed watermains are capable of supplying a fire flow of in excess of the 217 L/s required for the Holiday Inn, and therefore greater than the 133 L/s required for the proposed restaurant and office space.

SUMMARY

The sanitary and water servicing requirements for 498 Hume Street have been updated in support of the proposed 2-storey restaurant and office space. The sanitary sewage flows, and water demands for building pad 1 have remained the same. The total sanitary sewage and water requirements for the site remain the same as those proposed in the February 2018 Servicing Report. In addition, the Town has allocated water and wastewater treatment plant capacity for the site in accordance with its Servicing Capacity Allocation Policy on June 20, 2022. Therefore, it is expected that the municipal sanitary and water systems can provide adequate service to the site.

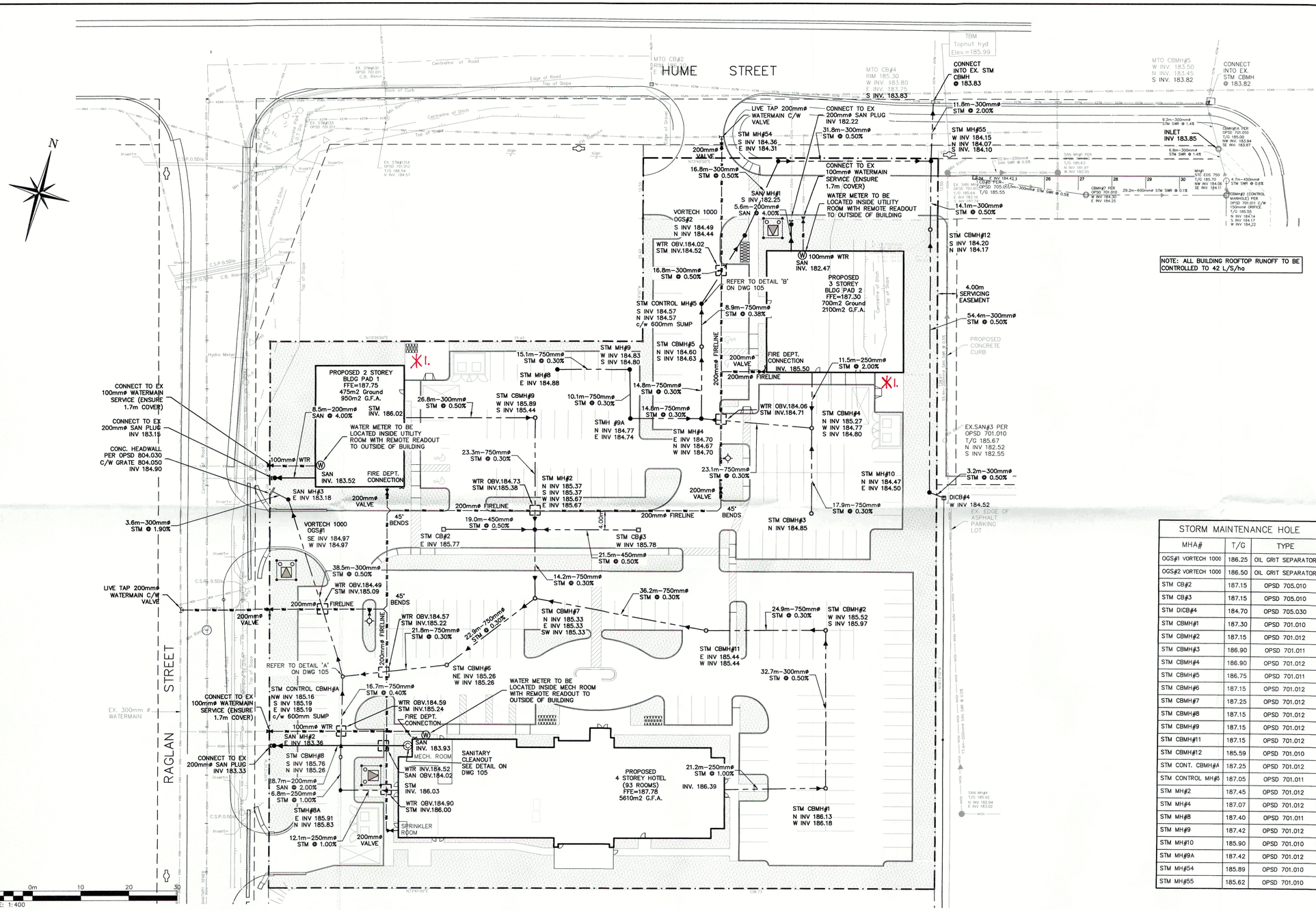
No changes to the sanitary servicing strategy and minor changes to the water servicing strategy are proposed for the site. As previously proposed, building pad 1 will be provided with a 200 mm diameter sanitary service from the existing Raglan Street municipal sewer. A 200 mm diameter fire service and a 100 mm diameter domestic water service will be provided to the building from the existing 200 mm diameter watermain running through the site.

Yours truly,
Tatham Engineering Limited

Randy Simpson, B.A.Sc., P.Eng.
Director, Manager – Land Development
JS/RS:rlh
Encl. – Site Servicing Plan, Architectural drawings, Fire Flow Calculations

copy: Travis Sandberg Dunn Capital Corporation tsandberg@dunncap.ca

I:\2023 Projects\123019 - 498 Hume Street, Collingwood\01 - FSR Update\Documents\Reports\L - 498 Hume Street Servicing Report Addendum.docx



NOTE: ALL BUILDING ROOFTOP RUNOFF TO BE CONTROLLED TO 42 L/S/ha

LEGEND

EXISTING FEATURES (EX)

- EX SIB — EX STD IRON BAR
- EX IB — EX IRON BAR
- EX HP — EX HYDRO POLE
- EX BELL PED
- EX LS — EX LIGHT STD
- EX WS — EX WATER SERVICE
- EX STREET SIGN
- EX CATCHBASIN
- EX DOUBLE CATCHE MANHOLE
- EX OVERHEAD LINE AND POLE
- EX WATERMAIN & VALVE
- EX SAN SEWER & MH
- EX STORM SEWER & MH
- EX FENCE

PROPOSED FEATURES (PR)

- PARKING SPACE COUNT
- CATCHBASIN
- PAINTED LINES (SEE SITE PLAN)
- PROPOSED BOLLARD
- FIRE HYDRANT AND VALVE
- MIN. 0.5m VERTICAL SEPARATION (CLEAR) BETWEEN WATERMAIN AND SEWERS (TYP.) SEE NOTE 0–7 ON DWG 105.
- PR WATERMAIN & GATE VALVE
- PR SAN SEWER & MH
- PR STORM SEWER & MH
- PROPOSED SANITARY CLEAN–OUT
- PR CONC. CURB & GUTTER PER OPSD 600.040
- PR CONC. CURB PER OPSD 600.110

STORM MAINTENANCE HOLE		
MHA#	T/G	TYPE
OGS#1 VORTECH 1000	186.25	OIL GRIT SEPARATOR
OGS#2 VORTECH 1000	186.50	OIL GRIT SEPARATOR
STM CB#2	187.15	OPSD 705.010
STM CB#3	187.15	OPSD 705.010
STM DICB#4	184.70	OPSD 705.030
STM CBMH#1	187.30	OPSD 701.010
STM CBMH#2	187.15	OPSD 701.012
STM CBMH#3	186.90	OPSD 701.011
STM CBMH#4	186.90	OPSD 701.012
STM CBMH#5	186.75	OPSD 701.011
STM CBMH#6	187.15	OPSD 701.012
STM CBMH#7	187.25	OPSD 701.012
STM CBMH#8	187.15	OPSD 701.012
STM CBMH#9	187.15	OPSD 701.012
STM CBMH#11	187.15	OPSD 701.012
STM CBMH#12	185.59	OPSD 701.010
STM CONT. CBMH#A	187.25	OPSD 701.012
STM CONTROL MH#5	187.05	OPSD 701.011
STM MH#2	187.45	OPSD 701.012
STM MH#4	187.07	OPSD 701.012
STM MH#8	187.40	OPSD 701.011
STM MH#9	187.42	OPSD 701.012
STM MH#10	185.90	OPSD 701.010
STM MH#9A	187.42	OPSD 701.012
STM MH#54	185.89	OPSD 701.010
STM MH#55	185.62	OPSD 701.010

CAUTION:
ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

ALL EXISTING SERVICES (WATER, SAN, STORM, GAS, HYDRO ETC.) ARE TO BE REMOVED AND CAPPED AS DIRECTED BY TOWN STAFF AND APPROPRIATE UTILITIES.

ALL DISTURBED AREAS IN BOULEVARDS TO BE RESTORED TO EXISTING CONDITION OR BETTER, INCLUDING 150mm TOPSOIL AND SOD PER OPSS 802 AND 803.

Redline Revisions:

1. For Building Pads 1 and 2 amenity areas, 'Ramp Detail C' is to be moved to be in-line with the proposed walkway. This is necessary to complete the barrier-free route and to ensure access is not blocked when delivery vehicles are parked.

Town Approval
Site Plan Approved
Town of Collingwood
Planning Services
Dated APR 30 2018
Signed Nancy Jane

1. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.
3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.
4. DO NOT SCALE THE DRAWINGS.
5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

BENCHMARKS

BM#1–ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO THE GEODETIC MONUMENT No. 71U180 HAVING AN ELEVATION OF 182.032 METRES.

TBM#1–TOP NUT OF HYDRANT, N.E. CORNER OF PROPERTY ON SOUTH SIDE OF HUME STREET HAVING AN ELEVATION OF 185.99 METRES.

Town

No.	ISSUE	DATE: MM/DD/YYYY
1	ISSUED FOR 1st SUBMISSION	Oct 16, 2017
2	ISSUED FOR 2nd SUBMISSION	Feb 12, 2018
3	ISSUED FOR TENDER	Mar 6, 2018
4	ISSUED FOR APPROVAL	APR 13, 2018

Engineer: LICENSED PROFESSIONAL ENGINEER K. A. MORRIS Apr 13/18 PROVINCE OF ONTARIO

Engineer: LICENSED PROFESSIONAL ENGINEER D.M. TONE 100115132 APR 13/18 PROVINCE OF ONTARIO

Project: HUME STREET SPA
TOWN OF COLLINGWOOD

Drawing: GENERAL SITE SERVICING PLAN

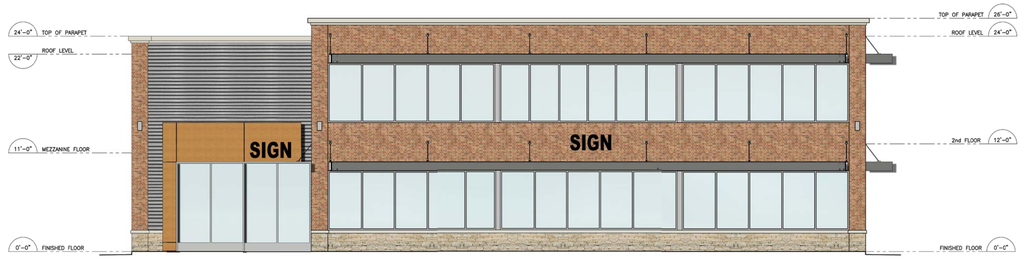
CROZIER & ASSOCIATES Consulting Engineers
THE HARBOUREDGE BUILDING, 40 HURON STREET, SUITE 301, COLLINGWOOD, ON L9Y 4R3
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	Design By	Project	
J.O.	D.T.		183–4567
Check By	Check By	Scale	Drawing
D.T.	D.T.	1: 400	102

J:\100\183 - Landex Projects\4567-Hume St. SPA\CAD\Civil\Sheets\4567_C101-103.dwg, 102, 4/27/2018 10:06:38 AM, joneill

1 SOUTH ELEVATION (DIMENSIONS)
1/8"=1'-0"

2 NORTH ELEVATION (DIMENSIONS)
1/8"=1'-0"



3 WEST ELEVATION (DIMENSIONS)
1/8"=1'-0"

4 EAST ELEVATION (DIMENSIONS)
1/8"=1'-0"

BUILDING PAD 1

TATHAM ENGINEERING	Project: 498 Hume Street, Collingwood	Date:	February 6, 2023
	File No.: 123019	Designed:	EP
	Subject: Fire Flow Calculations	Checked	JRC
	Revisions:		

Fire Underwriters Survey Fire Flow Calculations

Calculation Based on 2020 Publication "Water Supply for Public Fire Protection" by Fire Underwriters Survey (FUS).

Step	Description	Term	Options	Multiplier Associated with Option	Choose	Value used	Unit	Total Fire Flow (L/min)	
		Framing Material							
1	Frame Use for Construction of Unit	Coefficient related to type of construction (C)	Type V - Wood Frame Construction	1.5	Ordinary Construction	**1.0**	%	N/A	
			Type IVA - Mass Timber Construction	0.8					
			Type IVB - Mass Timber Construction	0.9					
			Type IVC - Mass Timber Construction	1.0					
			Type IVD - Mass Timber Construction	1.5					
			Ordinary Construction	1.0					
			Non-combustible Construction	0.8					
			Fire Resistive Construction	0.6					
2	Total Effective Area	Largest Floor Area				**475**	m^2	N/A	
		Percentage of the Total Area of the Other Floors for Coefficient 1.0 to 1.5			**100%**	**475**			
		Percentage of the Total Area of the Other Floors for Coefficient below 1.0:							
		a) If any vertical opening in the building are unprotected, consider the two largest adjoining floor areas plus 50% of all floors immediately above them up to a maximum of eight, **or**			**50%**				
		b) If all vertical openings and exterior vertical communications are properly protected in accordance with the National Building Code, consider only the single largest Floor Area plus 25% of each of the two immediately adjoining floors.			**25%**				
		Total Effective Area				**950**			
3	Required Fire Flow without Reductions or Increases	Required Fire Flows without Reductions or Increases per FUS): (RFF= 220 x C x $A^{0.5}$)						7,000	
4	Factors Affecting Burning	**Reductions / Increases Due to Factors Affecting Burning**							
4.1	Combustibility of Building Contents	Occupancy content hazard reduction or surcharge	Non-combustible	-0.25	Combustible	0	%	-	7,000
			Limited combustible	-0.15					
			Combustible	0.00					
			Free burning	0.15					
			Rapid burning	0.25					
4.2	Reduction Due to Presence of Sprinklers	Sprinkler reduction	For a fully supervised system the conditions a), b) and c) below must be met.			0	%	-	7,000
			a) Automatic sprinkler protection designed and installed in accordance with NFPA 13	-0.3	No				
			b) Water supply is standard for both the system and the Fire Department hose lines	-0.1	No				
			c) Fully supervised system	-0.1	No				
			None	0.0	No				
4.3	Separation Distance Between Units (Use 10% for 2 hour Fire Separation between adjacent units)	Exposure distance between units	North Side (Future Development)	3.1 to 10.0 m	0.20	0.2	%	1,400	8,400
			East Side (Building Pad 2)	Greater than 30.0 m	0.00				
			South Side (Holiday Inn)	Greater than 30.0 m	0.00				
			West Side (Storage Units)	Greater than 30.0 m	0.00				
4.4	Combustibility of Wood Shingle or Shake Roof Material	Surcharge for potential to spread fire	Non-combustible roofing material	0	Non-combustible roofing material	0	L/min	0	8,400
			Low risk of fire spread	2000					
			Moderate risk of fire spread	3000					
			High risk of fire spread	4000					
		Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:							8,000
5	Required Fire Flow, Duration and Volume	Total Required Fire Flow (above) in L/s:							133
		Required Duration of Fire Flow of 8,000 L/min (hrs):							2
		Required volume for Fire Flow of 8,000 L/min (m^3):							960