ALEO ASSOCIATES INC.
CONSULTING ENGINEERS

8522_SanitarySewerStudy.docx

September 1, 2023

Corporation of the City of Windsor
Engineering – Development & Geomatics Division
350 City Hall Square West, Suite 210
Windsor, Ontario, N9A 6S1

ATT: MR. ROBERT PERISSINOTTI, DEVELOPMENT ENGINEER

RE: SANITARY SEWER STUDY FOR THE PROPOSED CABOTO APARTMENTS AT 835 TECUMSEH ROAD EAST, WINDSOR, ONTARIO

Dear Mr. Perissinotti,

We have completed a sanitary servicing analysis to assess the impact of this proposed multi-unit residential development on the existing sewer system.

The site of the proposed residential development consists of properties at 835 Tecumseh Road East, 2148 Marentette Avenue, and a portion of the northwest corner parking lot of 2175 Parent Avenue. The properties will be merged for the proposed development and will have a new total property area of 0.49 ha.

The site currently consists of an existing commercial building, paved parking lot area, and a garage structure. A single-family dwelling once stood at 2148 Marentette Avenue but was demolished circa 2014. The peak sewage rate from the existing development on this site was determined to be 0.8 L/s.

The proposed development consists of a six-storey apartment building. The building will have 54 units for a total population of 95 persons based on a 1.75 person per unit population density. This corresponds to a peak domestic sewage flow rate of 1.8 L/s.

The proposed development results in a very small increase in the peak sewage flow by approximately 1 L/s.

A sewer separation project in the area occurred in 2001 and dedicated storm sewers were installed along both Tecumseh Road East and Marentette Avenue. The existing combined sewers were then converted into dedicated sanitary sewers. The 500x750 brick sanitary sewers along Tecumseh Rd. E. and Marentette Ave. are now very large for a sanitary sewer as they were originally designed for both sewage and stormwater conveyance. The sewer separation project allowed stormwater from roadways and properties to drain to the dedicated storm sewers.

325 DEVONSHIRE ROAD, SUITE 500, WINDSOR, ONTARIO, CANADA N8Y 2L3 TELEPHONE (519) 254-7926
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This in turn freed up significant capacity in the original combined sewer which can now be utilized. The increased sewage flow of approximately 1 L/s is very small and will not have any effect on the receiving sanitary sewer due to the capacity that was made available through implementation of dedicated storm sewers.

In addition, the existing commercial building on this site has a combined sewer connection as the building predates the dedicated municipal storm sewer. This would mean that stormwater runoff from the building roof is currently draining to the combined sewer unrestricted. Through re-development of this site, stormwater will no longer drain to the former combined sewer and instead will drain to the dedicated storm sewer. The stormwater runoff generated from the existing building roof area is much more than the additional sewage flows expected from this residential development. The proposed re-development will relieve the municipal sanitary sewer system as the overall flows to this sewer will be less than in the existing condition.

A new 200 mm diameter sanitary connection will be required for the multi-storey residential development. The connection can be made to the sanitary sewer on Tecumseh Road East or Marentette Avenue but will be determined during the design phase.

If you have any questions or concerns, please contact me.

Yours Very Truly,

John-Paul Aleo, P.Eng.
ALEO ASSOCIATES INC.

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Prepared By: J.P.A.
Project Name: New Apartment Building at 835 Tecumseh Rd. E.
Project No.: 8522
Date: Sept. 1, 2023

SANITARY ANALYSIS
PROPOSED APARTMENT BUILDING DEVELOPMENT, 835 TECUMSEH RD. EAST
EXISTING PEAK SEWAGE FLOW

LOCATION		POPULATION			SEWAGE FLOW		
DEVELOPMENT TYPE	TOTAL AREA HEC.	PER HEC.	TOTAL POP.	PEAKING FACT.	INFIL. l/sec	SEW. l/sec	TOTAL l/sec
COMMERCIAL	0.44	74	33	4.35	0.07	0.6	0.7
SINGLE FAMILY DWELLING	0.05	-	4	4.45	0.01	0.1	0.1

Design Criteria:

1) Residential & Commercial Sewage Flow Rate = 0.0043 l/sec/cap *372 L/cap/day
2) Infiltration = 0.1560 l/s/ha
3) Peaking Factor = 1+14/(4+P^0.5)
4) Manning's Coefficient = 0.013
5) Minimum Velocity = 0.76 m/s (2.49 fps)
   Maximum Velocity = 3.0 m/s (9.84 fps)
6) 74 person/hectare for commercial land use as per City of Windsor development manual.

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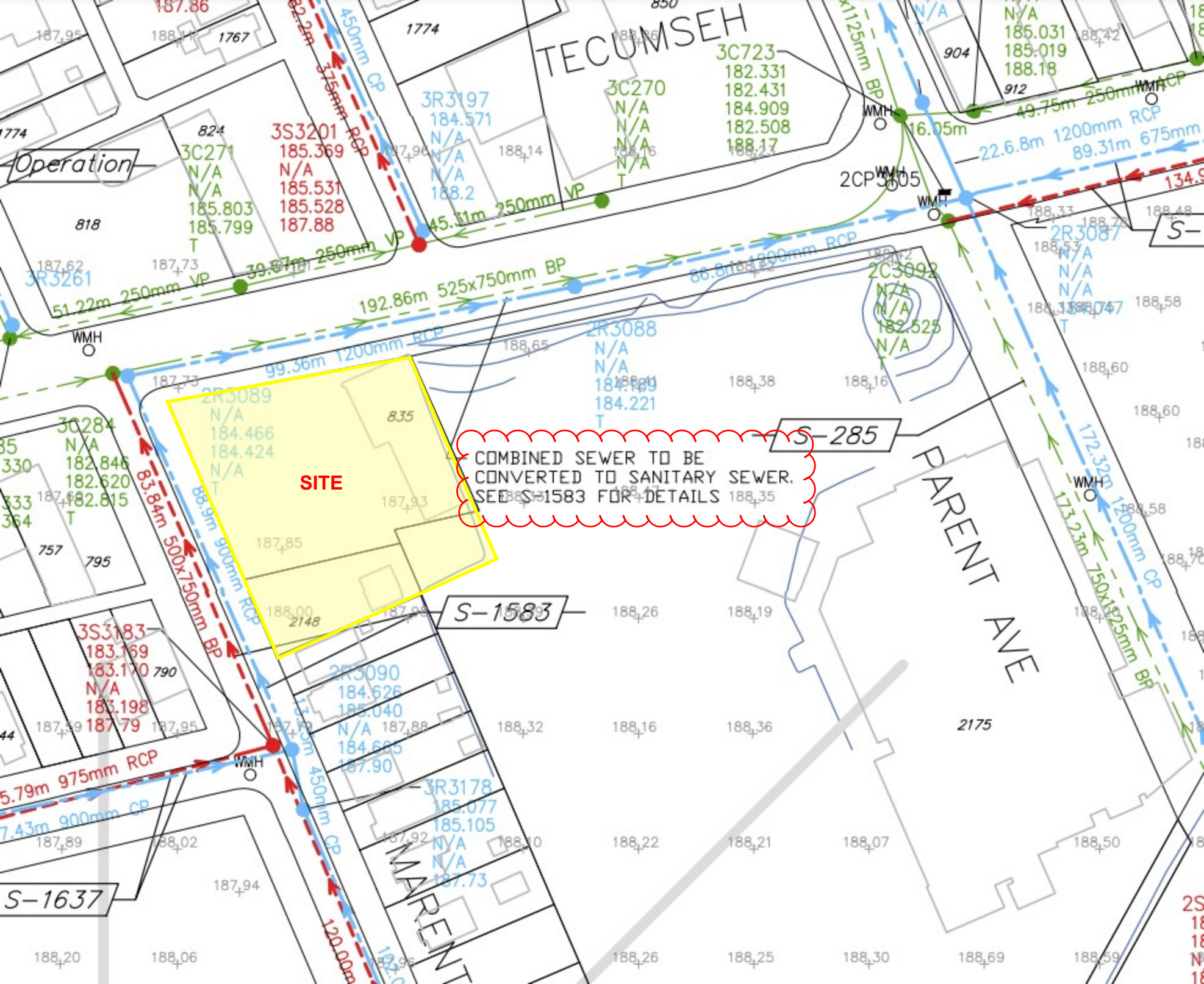
Project Name: New Apartment Building at 835 Tecumseh Rd. E.
Project No.: 8522
Date: 01-Sep-23

SANITARY ANALYSIS
PROPOSED APARTMENT BUILDING DEVELOPMENT, 835 TECUMSEH RD. EAST
PROPOSED PEAK SEWAGE FLOW

LOCATION		POPULATION			SEWAGE FLOW		
DEVELOPMENT TYPE	TOTAL AREA HEC.	PER HEC.	POP.	PEAKING FACT.	INFIL. l/sec	SEW. l/sec	TOTAL l/sec
Multi-Storey Residential	0.49	-	95	4.25	0.08	1.7	1.8

Design Criteria:

1) Residential Sewage Flow = 0.0043 l/sec/cap *372 L/cap/day
2) Infiltration = 0.1560 l/s/ha
3) Peaking Factor = 1+14/(4+P^0.5)
4) Manning's Coefficient = 0.013
5) Minimum Velocity = 0.76 m/s (2.49 fps)
   Maximum Velocity = 3.0 m/s (9.84 fps)
6) Proposed Multi-Storey Residential Development is 54 units consisting of 27 one bedroom units (1.4 per/unit) and 27 two bedroom units (2.1 per/unit). Using an avg. pop. density of 1.75 person/unit yields a total pop. of 95. Pop. densities taken from City of Toronto sewer design criteria "Population equivalents based on type of housing".


SITE
COMBINED SEWER TO BE
CONVERTED TO SANITARY SEWER.
SEE S-1583 FOR DETAILS
S-285
S-1583
S-1637
TECUMSEH
PARENT AVE
MARENTETTE
Operation
WMH
2CP3305
450mm CP
375mm RCP
45.31m 250mm VP
39.67m 250mm VP
51.22m 250mm VP
192.86m 525x750mm BP
99.36m 1200mm RCP
86.8m 1200mm RCP
83.84m 500x750mm BP
86.9m 900mm RCP
49.75m 250mm RCP
16.05m
22.6.8m 1200mm RCP
89.31m 675mm
172.32m 1200mm CP
173.23m 750x1125mm BP
5.79m 975mm RCP
7.43m 900mm CP
120.00m
1125mm BP
3C723
182.331
182.431
184.909
182.508
188.17
3C270
3C271
185.803
185.799
3S3201
185.369
185.531
185.528
187.88
3R3197
184.571
188.2
3R3261
2R3087
2C3092
182.525
2R3088
184.189
184.221
2R3089
184.466
184.424
3C284
182.846
182.620
182.815
3S3183
183.169
183.170
183.198
187.79
2R3090
184.626
185.040
184.665
187.90
3R3178
185.077
185.105
187.73
185.031
185.019
188.18
824
818
835
2148
757
795
790
904
912
2175