ALEO ASSOCIATES INC.
CONSULTING ENGINEERS

FUNCTIONAL SERVICING REPORT
PROPOSED CONDOMINIUM DEVELOPMENT
11788 TECUMSEH ROAD EAST, WINDSOR, ON

PREPARED FOR:

Desjardins (Windsor) GP Inc.

PREPARED BY:

ALEO ASSOCIATES INC.
325 DEVONSHIRE ROAD, SUITE 500
WINDSOR, ONTARIO
N8Y 2L3

DATE: JULY 24, 2023
REVISED: APRIL 17, 2024
REVISED: JUNE 17, 2024

PROJECT No.: 8472

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1.0 INTRODUCTION

Aleo Associates Inc. has been retained by Desjardins (Windsor) GP Inc. to prepare a functional servicing report for the proposed condominium development on the property located at 11788 Tecumseh Road East in the City of Windsor.

The property is legally described as Concession 1, Part of Lot 146. The property is bounded by Tecumseh Road E. to the South, railway tracks to the North, and single-family dwellings to the West and East. Refer to site location in Figure 1.

The property is partially developed with a single-family dwelling, detached garage and shed, and asphalt paved driveway. The proposed development will consist of a five-storey condominium building with an asphalt paved parking lot. A total of 50 residential units are proposed. Refer to the site plan drawing A1.1a.

This report has been prepared to demonstrate how the proposed development will be serviced for water distribution, wastewater, and storm drainage. The report is provided to the Municipality of Windsor to assess the impact of this development on the existing infrastructure in reviewing the planning applications for which this report is prepared.

2.0 WATER SERVICING

An 8” diameter PVC watermain is located on the north side of Tecumseh Road E. within the grass boulevard and a 16” diameter feedermain is located within the east bound lane of Tecumseh Road E. There is one existing 1” diameter water service connection to this property which will be abandoned at the municipal main in accordance with Windsor Utility Commission standards.

The proposed development will be serviced by the 8” diameter PVC municipal watermain. A new 6” dia. watermain connection will be made to the existing 8” diameter municipal watermain and will be used for both fire and domestic water.

Hydrant flow test results from Enwin Utilities reveal that the surrounding water distribution system has static pressures in the range of 60 psi. The multi-storey condominium building will require booster pumps for the fire protection system and domestic water service. It is expected that the 8” diameter municipal watermain will have adequate flow and pressure to service the development.

3.0 SANITARY SERVICING

The property is tributary to an existing 15” diameter PVC sanitary sewer located within the Tecumseh Road E. right-of-way. The sewer is located south of the roadway within the grass boulevard and flows westerly along Tecumseh Road East to the 48” diameter trunk sewer at Forest Glade Drive.

The tributary drainage area of this receiving 15” diameter municipal sanitary sewer is approximately 62.3 hectares and consists of both single family residential, commercial, institutional, and high density residential. Please see the drainage area plans for both the existing and proposed conditions in Appendix ‘A’.

Based on the existing condition, it was determined that the total peak sewage flow rate including infiltration is approximately 64.6 L/s. The existing 15” diameter sanitary sewer has a capacity of approximately 87.7 L/s, meaning the sewer is approximately 74% utilized.

The proposed five-storey condominium building will have 50 units for a total population of 125 persons based on a 2.5 person per unit population density. This corresponds to a peak domestic sewage flow rate of 2.3 L/s. Based on the proposed condition for the sanitary sewer drainage area which takes the proposed condominium building development into consideration as well as a condominium development at 11646 Tecumseh Road East which is currently under construction, the total peak sewage flow rate including infiltration will be approximately 66.6 L/s.

This is a very small increase in the total peak sewage flow rate of approximately 2 L/s. The receiving sanitary sewer will have 76% of its capacity utilized in the proposed condition. Therefore, there is capacity available in the receiving municipal sanitary sewer to support the proposed condominium development.

There is one existing 6” diameter sanitary connection to this property; however, a larger connection is preferred for a residential building with 50 units. A new 8” diameter sanitary connection will be installed by directional boring under Tecumseh Road East. The existing sanitary connection will be abandoned in accordance with City of Windsor Engineering Best Practices BP1.3.3.

4.0 STORM SERVICING

The property is tributary to an existing 24” diameter concrete pipe storm sewer located within the Tecumseh Road East right-of-way. The sewer is located south of the roadway within the grass boulevard. The storm sewer flows westerly to the Parent Relief municipal drain which drains to the Little River municipal drain with an eventual outfall at the Detroit River.

This existing 24” diameter storm sewer will be used to service the property for stormwater drainage. It is not known if an existing storm connection from the main to the property exists at this time and a new 6” storm connection may be required upon further investigation.

5.0 STORMWATER MANAGEMENT

The existing site does not have any stormwater management measures in place and so stormwater runoff flows off the site unrestricted. The imperiousness of the site based on the existing undeveloped condition is 20% (C=0.35) and this corresponds to an existing (allowable) flow of 24 L/s. See existing (pre-development) release rate calculation in Appendix 'A'. The stormwater management design shall be prepared in accordance with the Windsor/Essex Stormwater Management Standards Manual.

6.0 CONCLUSION

This functional servicing report has established how the development of this site will be serviced with respect to water distribution, wastewater, and storm drainage without negatively impacting the existing municipal infrastructure.

A summary of the report's conclusions is the following:

- Water servicing for the development can be provided by the existing 8" diameter municipal watermain along Tecumseh Road East;
- An assessment of the receiving 15" diameter sanitary sewer along Tecumseh Rd. E. determined that there is adequate capacity to accept the additional sewage flows from a five storey 50-unit condominium building. The building sewage will drain to the existing 15" diameter municipal sanitary sewer through a new 8" private sanitary connection.
- Stormwater runoff from the site will drain to the existing 24" diameter concrete pipe municipal storm sewer along Tecumseh Road East.
- Stormwater management design shall follow the latest Windsor/Essex Stormwater Management Standards Manual.

FIGURE 1

SITE LOCATION

ALEO ASSOCIATES INC.
CONSULTING ENGINEERS
325 DEVONSHIRE ROAD, SUITE 500
WINDSOR, ON, CANADA, N8Y 2L3 TELEPHONE (519) 254-7926

DATE	DEC. 3, 2020
SCALE	NTS
DRAWN BY	JPA
AUTOCAD REF.	7612_FSR.dwg

PROJECT TITLE
PROPOSED CONDOMINIUM DEVELOPMENT
11788 TECUMSEH ROAD EAST
WINDSOR, ONTARIO

FIGURE No. 1

SHEET TITLE
SITE LOCATION

PROJECT No. 8472

APPENDIX 'A'


SANITARY SEWER
DRAINAGE AREA PLAN
EXISTING CONDITION
LEGEND:
Single Family Residential - 30.8 ha.
Commercial - 29.5 ha.
Long Term Care Facility - 1.3 ha.
High Density Residential - 0.7 ha.
(under construction)

ALEO ASSOCIATES INC.
Consulting Engineers

Prepared By: J.P.A.
Project Name: 11788 Tecumseh Road East Condominium
Project No.: 8472
Date: 06-17-24

SANITARY SEWER CAPACITY ASSESSMENT
15" DIAMETER SANITARY SEWER ON TECUMSEH ROAD EAST (FROM MH 7S3244 TO MH 7S1509)
ASSESSMENT OF EXISTING CONDITION

LOCATION			POPULATION			SEWAGE FLOW			SEWER DESIGN					
Area No.	DEVELOPMENT TYPE	AREA (HEC.)	PER HEC.	POP.	PEAKING FACT.	INFIL. l/sec	SEW. l/sec	TOTAL l/sec	SIZE (mm)	n	SLOPE (%)	CAP. l/sec	VEL. m/s	CAPACITY UTILIZED (%)
1	RESIDENTIAL Single Family Dwellings	30.8	50	1540	3.67	4.8	23.7	28.6	-	-	-	-	-	-
2	COMMERCIAL	29.5	74	2183	3.56	4.6	22.5	27.1	-	-	-	-	-	-
3	Long-Term Care Facility	1.3	-	142	4.20	0.2	4.7	4.9	-	-	-	-	-	-
4	High Density Residential 11646 Tecumseh Road East	0.7	-	225	4.13	0.1	3.9	4.0	-	-	-	-	-	-
	TOTAL	62.3	-	4090	-	9.7	54.9	64.6	375	0.013	0.25	87.7	0.79	73.6

Design Criteria:

1) Sewage Flow Rates: =

Residential = 0.0042 l/sec/cap

Commercial = 0.0029 l/sec/cap

Nursing Home = 0.0079 l/sec/bed

2) Infiltration = 0.1560 l/s/ha

3) Peak Wastewater Flow Factor, M = 1+14/(4+P^0.5)

4) Manning's Coefficient = 0.013

5) Minimum Velocity = 0.75 m/s

6) Maximum Velocity = 3.0 m/s

7) Long Term Care facility has 142 beds. Flow of 0.0079 l/sec/bed also accounts for staff.

8) High Density Residential under construction is 90 units with 2.5 persons per unit for a total population of 225.


SANITARY SEWER DRAINAGE AREA PLAN
PROPOSED CONDITION
LEGEND:
Single Family Residential - 30.8 ha.
Commercial - 29.5 ha.
Long Term Care Facility - 1.3 ha.
High Density Residential - 0.7 ha. (under construction)
Proposed Multi-Storey Condo Development - 0.3 ha.

ALEO ASSOCIATES INC.
Consulting Engineers

Prepared By: J.P.A.
Project Name: 11788 Tecumseh Road East Condominium
Project No.: 8472
Date: 06-17-24

SANITARY SEWER CAPACITY ASSESSMENT
15" DIAMETER SANITARY SEWER ON TECUMSEH ROAD EAST (FROM MH 7S3244 TO MH 7S1509)
ASSESSMENT OF PROPOSED CONDITION

LOCATION			POPULATION					SEWAGE FLOW			SEWER DESIGN					
Area No.	DEVELOPMENT TYPE	AREA (HEC.)	PER HEC.	PERS. PER UNIT	NO. OF UNITS	POP.	PEAKING FACT.	INFIL. l/sec	SEW. l/sec	TOTAL l/sec	SIZE (mm)	n	SLOPE (%)	CAP. l/sec	VEL. m/s	CAPACITY UTILIZED (%)
1	RESIDENTIAL Single Family Dwellings	30.8	50	-	-	1540	3.67	4.8	23.7	28.6	-	-	-	-	-	-
2	COMMERCIAL	29.2	74	-	-	2161	3.56	4.6	22.3	26.9	-	-	-	-	-	-
3	Long-Term Care Facility	1.3	-	-	-	142	4.20	0.2	4.7	4.9						
4	High Density Residential 11646 Tecumseh Road East	0.7	-	2.5	90	225	4.13	0.1	3.9	4.0						
5	PROPOSED MULTI-STOREY CONDOMINIUM DEVELOPMENT	0.3	-	2.5	50	125	4.22	0.05	2.2	2.3	-	-	-	-	-	-
	TOTAL	62.3	-			4193	-	9.7	56.9	66.6	375	0.013	0.25	87.67	0.79	75.9

Design Criteria:

1) Sewage Flow Rates:

Residential = 0.0042 l/sec/cap
Commercial = 0.0029 l/sec/cap
Nursing Home = 0.0079 l/sec/bed

2) Infiltration = 0.1560 l/s/ha
3) Peak Wastewater Flow Factor, M = 1+14/(4+P^0.5)
4) Manning's Coefficient = 0.013
5) Minimum Velocity = 0.75 m/s
6) Maximum Velocity = 3.0 m/s

7) Long Term Care facility has 142 beds. Flow of 0.0079 l/sec/bed also accounts for staff.
8) High Density Residential under construction at 11646 Tecumseh Rd. East is 90 units with 2.5 persons per unit for a total population of 225.
9) Proposed High Density Residential at 11788 Tecumseh Rd. E. is 50 units with a 2.5 person per unit for a total population of 125.

ALEO ASSOCIATES INC., CONSULTING ENGINEERS

325 DEVONSHIRE ROAD, SUITE 500, WINDSOR, ONTARIO, CANADA, N9A 3Y4

PROJECT NAME:	Proposed Condominium Development
PROJECT No.:	8472
PREPARED BY:	J.P.A.
DATE:	July 21, 2023

PRE-DEVELOPMENT DISCHARGE FOR 1:5 YEAR FREQUENCY STORM:

Area =	0.33	ha.	(3,339 sq.m.)
Runoff Coefficient, Cund =	0.35		
Tc =	20	minutes	
Intensity, i =	75.3	mm/hr	

Design storm intensity is calculated from the equation i = a/(Tc+b)^c

Where a,b,c are IDF curve parameters based on historical data for a 5 year return period at Windsor Airport.

For a 1:5 year frequency storm, i = 1259/(Tc+8.8)^(0.838),

Qund = 2.78 * Cund * i * A

= 2.78 * 0.35 * i * 0.33

= 0.32 * i

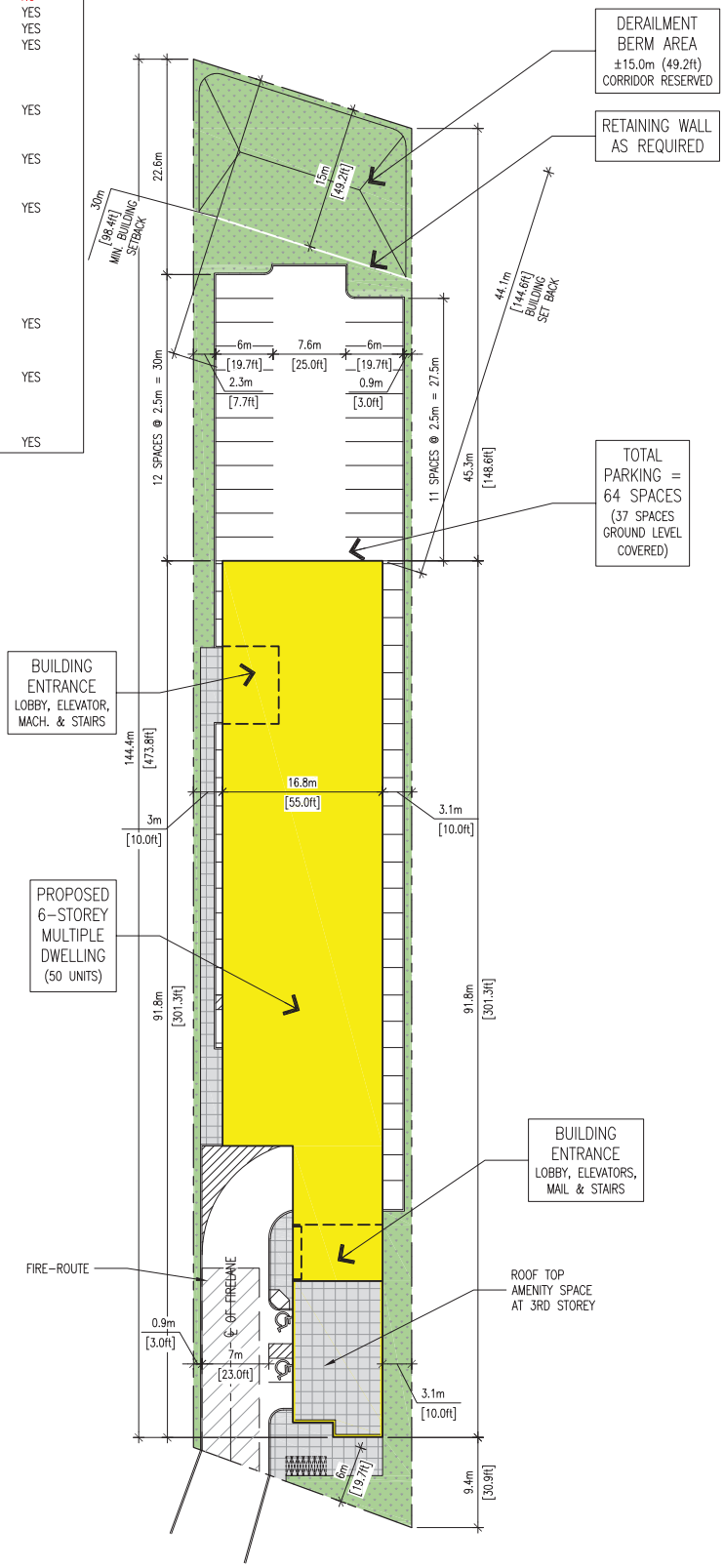
= 24 L/s

DRAWINGS

SITE DATA CHART

PROPOSED CD3.10 ZONING

PROVISION	REQUIREMENT	PROVIDED	COMPLIES?
1. LOT FRONTAGE	18.0m	22.0m	YES
2. LOT AREA	400.0m²	3,338.5m²	YES
3. LOT AREA FOR EACH DWELLING UNIT	85m²	66.8m²	NO
4. BUILDING HEIGHT	20.0m	20.0m	YES
5. LANDSCAPED OPEN SPACE YARD	30.0%	30.3%	YES
WITH ROOF TOP AMENITY SPACE		33.2%	YES
6. BUILDING SETBACKS			
a. ABUTTING TECUMSEH ROAD EAST FOR THAT PART OF A THE BUILDING HAVING A BUILDING HEIGHT OF 10.0m OR LESS	6.0m	6.0m	YES
b. FROM AN INTERIOR LOT LINE WHERE A HABITABLE ROOM FACES THE INTERIOR LOT LINE	6.0m	6.0m	YES
c. FROM AN INTERIOR LOT LINE WHERE A HABITABLE ROOM WINDOW DOES NOT FACE THE INTERIOR LOT LINE	3.0m	3.0m	YES
7. PARKING			
a. RESIDENTIAL USE 1.25 SPACES PER DWELLING UNIT 50 DWELLING UNITS	62.5 SPACES 63 SPACES (ROUNDED UP)		
TOTAL PARKING	63 SPACES	64 SPACES	YES
8. LOADING SPACES			
a. FLOOR AREA OVER 1,000m² TO 7,500m² FLOOR AREA = 5,885.53m²	1 SPACES	1 SPACE	YES
9. BICYCLE SPACES			
a. 20 OR MORE PARKING SPACES – 2 FOR THE FIRST 19 SPACES PLUS 1 FOR EACH ADDITIONAL 20 PARKING SPACES	4 SPACES	6 SPACES	YES



SITE PLAN

SCALE : 1 : 500

0 5 10 15 20 25 30 35 40 50m

architectural design associates inc. architect

1670 mercer street
windsor ontario canada n8x 3p7
ph 519.254.3430 fax 519.254.3642
email - info@ada-architect.ca www.ada-architect.ca

project: PROPOSED 6-STOREY MULTIPLE DWELLING
11788 TECUMSEH ROAD EAST, WINDSOR, ONT.

client: DESJARDINS (WINDSOR) GP LTD.

title: CONCEPTUAL SITE PLAN

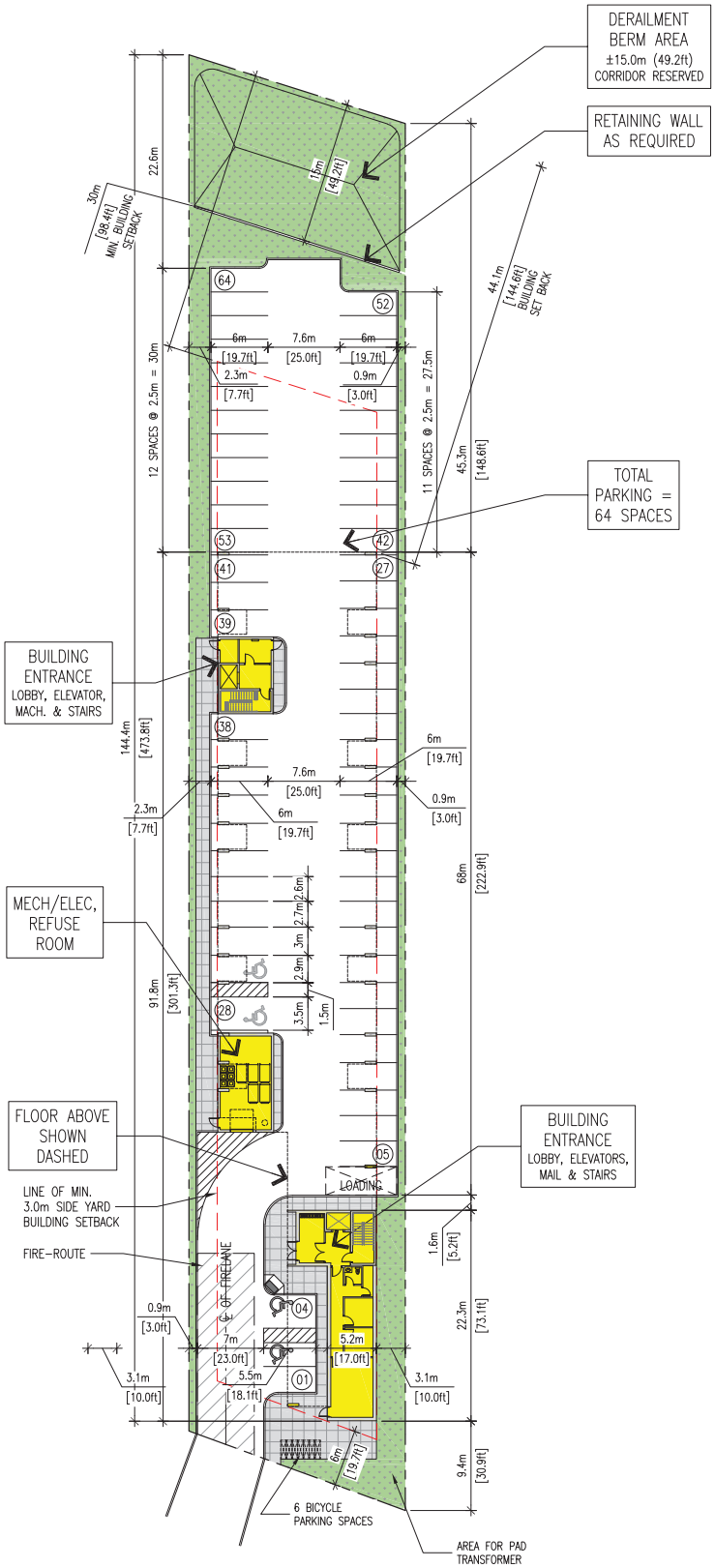
drawn by: TC

checked by: SMB / TC

date: SEPT. 2023

comm. no.: 2022-105

dwg. no.: A1.0a



GROUND FLOOR PLAN

SCALE : 1 : 500

0 5 10 15 20 25 30 35 40 50m

architectural design associates inc. architect 1670 mercer street windsor ontario canada n8x 3p7 ph 519.254.3430 fax 519.254.3642 email - Info@ada-architect.ca www.ada-architect.ca	project: PROPOSED 6-STOREY MULTIPLE DWELLING 11788 TECUMSEH ROAD EAST, WINDSOR, ONT. client: DESJARDINS (WINDSOR) GP LTD.	title: GROUND FLOOR PLAN drawn by: TC checked by: SMB / TC	date: SEPT. 2023 comm. no.: 2022-105 dwg. no.: A1.1a