



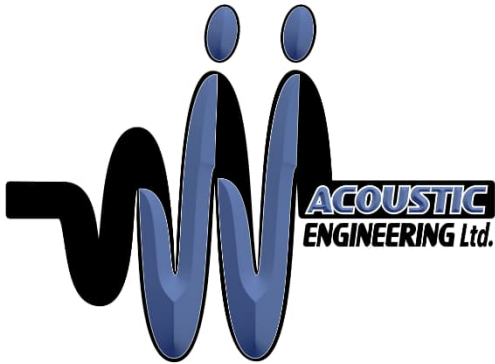
# Road/Rail Traffic and Stationary Noise Impact Study

---

11788 Tecumseh Road East, Windsor, Ontario

JJ-00478-NIS1





December 4, 2023,

Reference No. JJ-00478-NIS1

Jen and Judi  
Peltier Developments Inc.

Dear Jen and Judi:

**Re: Road/Rail Traffic and Stationary Noise Impact Study  
11788 Tecumseh Road East, Windsor, Ontario**

## **1. Introduction**

JJ Acoustic Engineering Ltd. (JJAE) was retained to complete a Road/Rail Traffic and Stationary Noise Impact Study (Study) for the residential development located at 11788 Tecumseh Road East in Windsor, Ontario (Site). The Site will be developed into a 6-storey residential building. JJAE has provided a copy of the most up-to-date Site Plan in Attachment A.

The Study was prepared consistent with Ontario Ministry of the Environment, Conservation and Parks (MOECP) NPC 300, "Environmental Noise Guideline, Stationary and Transportation Sources—Approval and Planning" dated August 2013.

This Study has determined that the potential environmental noise impact from road/rail traffic noise is significant. The proposed development will need the following: a requirement for central air-conditioning, noise warning clauses and special building components. Road traffic noise control requirements for the Site were determined based on road traffic volumes provided by the City of Windsor (City) and forecasted to 10 years from the date of this study. Road/ Rail traffic data has been supplied in Attachment B.

JJ Acoustic Engineering Ltd.  
[joey@jjae.ca](mailto:joey@jjae.ca)  
226-346-6473

The following attachments were included with this Study:

- Attachment A – Site Plan
- Attachment B – Traffic Data Summary Table & Sample Stamson Traffic Model Outputs
- Attachment C – Stationary Noise Impact Figures
- Attachment D – Stationary Noise Impact Source Table

## **2. Road/Rail Traffic Analysis**

### **2.1 Road Traffic Noise Modeling Methodology**

The road traffic noise impact was conducted using STAMSON, the MOECP's computerized model of ORNAMENT. The Application of the model for the site was consistent with the ORNAMENT technical documents. The computer model input parameters include, among other data, the number of road segments, number of house rows, the positional relationship of the receptor to a noise source or barrier in terms of distance, elevation and angle of exposure to the source, the basic site topography, the ground surface type, traffic volumes, traffic composition and speed limit.

The predicted sound level is based on the 1-hour equivalent sound level, designated as Leq, and is adjusted by the STAMSON program to the 16-hour daytime and the 8-hour nighttime equivalent sound level. The applicable noise criteria for noise sensitive spaces are specified in terms of the 16-hour daytime period (7:00 a.m. to 11:00 p.m.) and 8-hour nighttime period (11:00 p.m. to 7:00 a.m.) enabling a direct comparison between the STAMSON model output and the noise limits.

Where there are multiple sources of noise, such as road and rail, JJAЕ evaluated noise control measures by combining both road and rail sources and applying measures as described in Section C7.3 of NPC 300.

### **2.2 Road Traffic Model Input Parameters**

This section describes the STAMSON model input parameters used to predict road traffic noise impact for the Site.

The Site has two significant roadways in the vicinity of the development: Tecumseh Road East approximately 40 meters to the South and Banwell Road approximately 250 meters to the West. Where there are intervening and off-site structures that provide line-of-sight obstruction to the roads, JJAЕ did not include line-of-sight obstruction in our analysis as to calculate worst-case noise impact.

JJAЕ reviewed other surrounding roadways in the vicinity of the Site and only the significant roadways were used in our modeling, other roadways were considered to be insignificant or beyond our red flag zone.

### **2.2.1 Road Traffic Parameters**

The traffic data provided by the City has been summarized below:

#### ***Tecumseh Road East:***

- Current AADT (2019): 17,000
- Forecast AADT (2033): 24,021
- Commercial Vehicle Rates: 1.01% medium trucks and 0.89% heavy trucks
- Posted Speed Limit: 60 km/h
- Day Night Splits: 90% day and 10% night

#### ***Banwell Road:***

- Current AADT (2019): 15,000
- Forecast AADT (2033): 21,195
- Commercial Vehicle Rates: 1.24% medium trucks and 0.7% heavy trucks
- Posted Speed Limit: 50 km/h
- Day Night Splits: 90% day and 10% night

The traffic data is the foundation of this analysis and the Study will be updated if the values change. Traffic data was supplied by the City. The City's AADT report for this Noise Studies report has been supplied in Attachment B.

### **2.3 Road Traffic Noise Modeling Results**

JJAE calculated the Plane of Window (POW) noise exposure for each floor at the Site for the separate daytime and nighttime periods.

The STAMSON road traffic model outputs are provided in Attachment B.

### 2.3.1 Rail Traffic Parameters

The Rail data provided by Via Rail has been summarized below. Future values were determined using an assumed Percentage Annual Growth of 2.5% over 10 years and based on the existing combined two-way rail traffic volume parameters as summarized below:

<b>Passenger</b>	<b>Freight</b>
6 Daytime Train	1 Daytime Train
2 Nighttime Trains	1 Nighttime Trains
2 Locomotives	4 Locomotives
8 Cars	140 Cars
Speed of 129km/h	Speed of 97km/h

### 2.4 Road Traffic Modeling Discussion

Noise control requirements will be defined based on NPC 300.

#### *Daytime Outdoor Living Area Assessment (NPC 300, Section C7.1.1)*

NPC 300 section A5 (pages 13-14) defines an Outdoor Living Area (OLA). As part of this definition, a balcony or terrace is considered an OLA if it has a minimum depth of 4 meters. All balconies are less than 4 m in depth and therefore will not be considered as OLAs.

The OLA is located on the 3rd floor terrace. JJAЕ has calculated the noise impact to the OLA to be 56 dBA. Warning Clause Type A will be required for all units. The location of the OLA has been indicated on Attachment A – Site Plan.

#### *Plane of a Window – Ventilation Requirements (NPC 300, Section C7.1.2)*

The predicted daytime and nighttime Plane of Window (POW) noise impact assumes a worst-case and direct line of sight noise exposure to both roads, unless the building itself blocks line-of-sight (full or partial).

JJAЕ has used the following criteria, which is a summary of NPC 300 requirements, to evaluate the Site noise impacts from road traffic noise:

<b>Daytime Level (dBA)</b>	<b>Nighttime Level (dBA)</b>	<b>Ventilation Requirements and Warning Clauses</b>	<b>Special Building Components</b>
55	50	Not Required	Not Required
55 – 65	50 – 60	Yes, with Type C Warning Clause	Not Required
66 or more	61 or more	Yes, with Type D Warning Clause	Yes

Table B.1 summarizes the predicted worst-case sound levels and the requirements for the units. The following warning clause is required:

**Warning Clause A:** "Purchasers/tenants are advised that sound levels due to increasing (rail) traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks."

**Warning Clause C:** "This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks."

**Warning Clause D:** "This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks."

**Rail Company Warning Clause:** The Via Rail or its assigns or successors in interest has or have a right-of-way within 300 meters from the land the subject hereof. There may be alterations to or expansions of the rail facilities on such right-of-way in the future including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwellings(s). Via Rail will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid right-of-way.

***Indoor Living Areas – Building Components (NPC 300, Section C7.1.3)***

At minimum, the building must be constructed to standard Ontario Building Code requirements. Improved building components are required and summarized in Table B.1. JJAЕ has assumed 35% window to floor area coverage and that windows are thick and operable. In addition, exterior wall compositions must be a minimum of STC 53, with brick veneer or masonry equivalent.

### 3. Stationary Noise Impact Analysis

#### 3.1 Stationary Noise Impact Sound Level Criteria

The general criteria for stationary noise sources are defined by NPC 300. The criteria defined in Table C-5 and C-6, "Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA) Outdoor Points of Reception" and "Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA) Plane of Window of Noise Sensitive Spaces" are used to evaluate the noise impact at the proposed development.

The criteria for a Class 1 area have been summarized below:

Receiver Category	Time Period	Stationary Noise Criteria
Outdoor Living Area (OLA)	Day = 7:00 to 23:00	Leq = 50 dBA
Plane of Window (POW)	Day = 7:00 to 23:00	Leq = 50 dBA
	Night = 23:00 to 7:00	Leq = 45 dBA

#### 3.2 Modelling Methodology

The stationary noise impact was evaluated using the CADNA A acoustic modelling software that is based on the ISO 9613-2 standard. The data for all potential stationary noise sources was summarized in Attachment D.

JJAE used the following assumptions in our Cadna A model:

- **Ground Absorption:** Default ground absorption coefficient of 0.7 was used.
- **Temperature:** 10°C
- **Humidity:** 70%
- **Building Reflection Coefficient:** Absorption Coefficient Alpha of 0.37 (Reflection Loss of 2dB, Structured Façade) was used.
- **Time-Weighted Adjustment:** where sources operate non-continuously JJAE has provided operating times and as shown in Sections 4 and 5.
- **Tonality:** A 5 dbA tonal penalty was applied to all tonal sources, where applicable. JJAE has provided a (T) for sources identified as tonal in Sections 4 and 5.
- **Reflection Order:** A maximum reflection order of 1 was used to evaluate indirect noise impact.

#### 4. Noise Impact Summary – From Site

The noise from the Site to the neighboring buildings could not be accounted for because the site has not undergone mechanical design yet. An addendum to this report should be completed once a mechanical design is done to account for noise from the Site to the neighboring building.

#### 5. Noise Impact Summary – From Environment to Site

There are several buildings near the site. JJAЕ has identified several potential stationary noise sources including:

- 1 FAN HVAC Units (Steady)
- 2 Fan HVAC Units (Steady)
- 4 Fan HVAC Units (Steady)
- Representative MUA (Steady)
- Representative Chiller (60 minutes daytime, 30 minutes nighttime)

A summary of the noise sources used in our modelling is provided in Attachment D.

JJAЕ modelled the noise impact from all significant noise sources to the Site. The results are summarized in the table below and illustrated in Figure 1.

<b>Facade</b>	<b>Worst Case Daytime Sound Level (dBA)</b>	<b>Daytime Noise Limit (dBA)</b>	<b>Worst Case Nighttime Sound Level (dBA)</b>	<b>Nighttime Noise Limit (dBA)</b>	<b>Limits met</b>
North	34	50	34	45	Yes
East	41	50	41	45	Yes
South	46	50	44	45	Yes
West	44	50	43	45	Yes

From the table above it can be seen that all façades are below noise limits.



## 6. Recommendations

The road traffic noise impacts were above the NPC 300 requirements. Noise mitigation measures include:

- Warning Clause Type A for all units.
- Warning Clause Type D for all façades.
- Requirement for Air Conditioning for the entire building.
- A minimum of STC 36 is required for all exterior glazing for the North façade using 35% window area to floor area and thick operable windows.
- A minimum of STC 33 is required for all exterior glazing for the East façade using 35% window area to floor area and thick operable windows.
- A minimum of STC 31 is required for all exterior glazing for the South façade using 35% window area to floor area and thick operable windows.
- A minimum of STC 30 is required for all exterior glazing for the West façade using 35% window area to floor area and thick operable windows.
- Canadian National Railway Company Warning Clause for all units.
- Within 100 meters of a rail line exterior façades are to be brick veneer or masonry equivalent.

These have been summarized in Attachment B under Table B1.

The stationary noise impacts from the site were evaluated and the sound level predictions were determined to be below the noise limits for all façades.

The noise from the Site to the neighboring buildings could not be accounted for because the site has not undergone mechanical design yet. An addendum to this report should be completed once a mechanical design is done to account for noise from the Site to the neighboring building.

## 7. Conclusions

The results of this Study indicate that the potential environmental impact from road/rail traffic noise sources are significant. Mitigation measures will be required including ventilation requirements, special building components and noise warning clauses for each unit. With the mitigation measures provided in Section 6, there will be minimal noise impact from the neighboring buildings to the Site.

Should you have any questions on the above, please do not hesitate to contact us.

Yours truly,

Written by:

Reviewed by:

Dec 4, 2023



Emmanuel Ghiorghis,  
Acoustic Technician

Joey Jraige, P.Eng., B.A.Sc.  
President

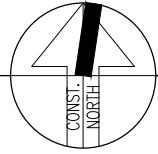
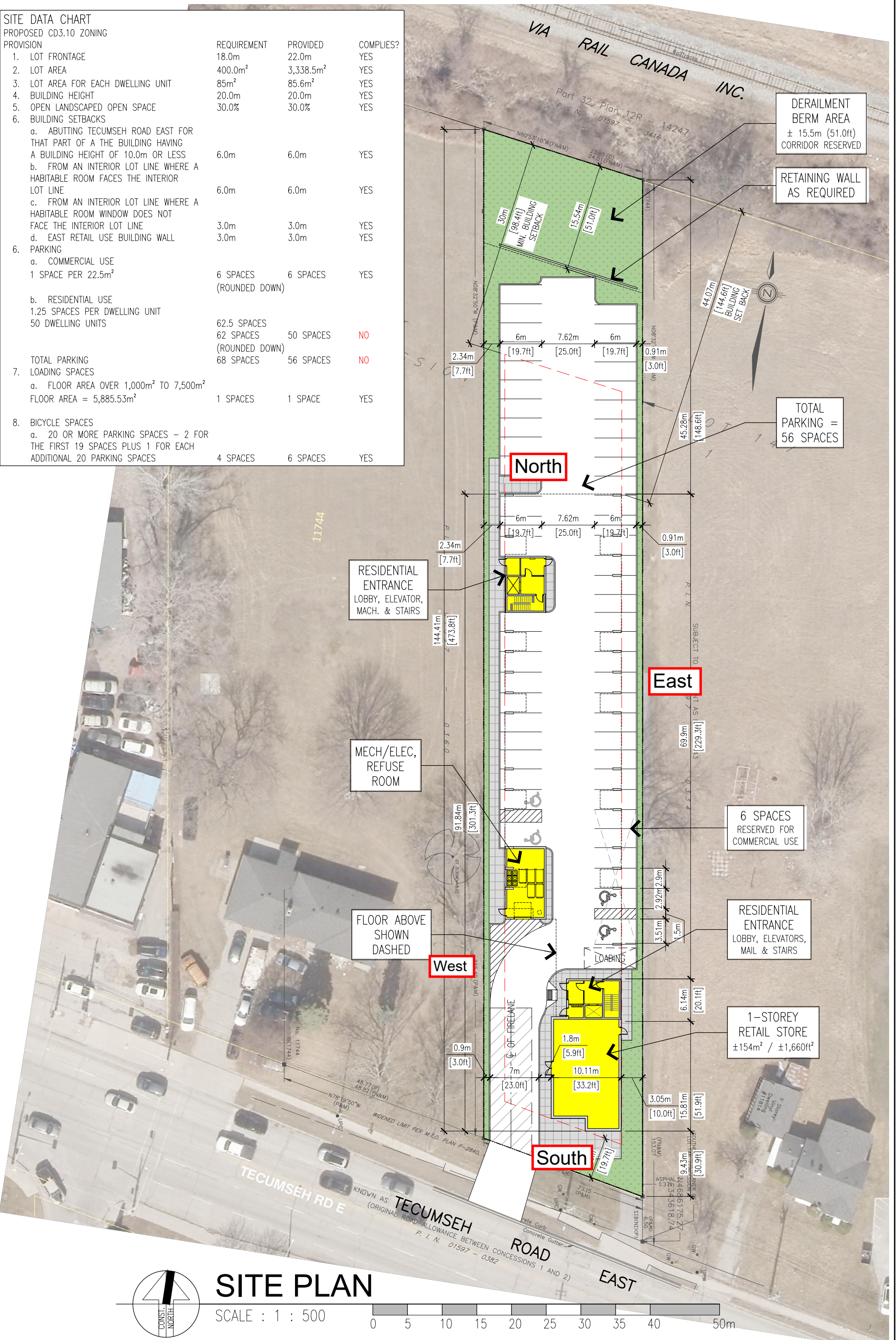
# ATTACHMENT A



**SITE DATA CHART**

PROPOSED CD3.10 ZONING

PROVISION	REQUIREMENT	PROVIDED	COMPLIES?
1. LOT FRONTAGE	18.0m	22.0m	YES
2. LOT AREA	400.0m <sup>2</sup>	3,338.5m <sup>2</sup>	YES
3. LOT AREA FOR EACH DWELLING UNIT	85m <sup>2</sup>	85.6m <sup>2</sup>	YES
4. BUILDING HEIGHT	20.0m	20.0m	YES
5. OPEN LANDSCAPED OPEN SPACE	30.0%	30.0%	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
d. EAST RETAIL USE BUILDING WALL	3.0m	3.0m	YES
6. PARKING			
a. COMMERCIAL USE			
1 SPACE PER 22.5m <sup>2</sup>	6 SPACES (ROUNDED DOWN)	6 SPACES	YES
b. RESIDENTIAL USE			
1.25 SPACES PER DWELLING UNIT	62.5 SPACES (ROUNDED DOWN)	50 SPACES	NO
50 DWELLING UNITS	68 SPACES	56 SPACES	NO
TOTAL PARKING			
LOADING SPACES	68 SPACES	56 SPACES	NO
a. FLOOR AREA OVER 1,000m <sup>2</sup> TO 7,500m <sup>2</sup>	1 SPACES	1 SPACE	YES
FLOOR AREA = 5,885.53m <sup>2</sup>			
8. 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



**A** architectural  
**D** design  
**A** associates  
inc. architect

1867 Dundas Street, Suite 101  
Windsor Ontario Canada N8Y 3P7  
ph 519.254.3430 fax 519.254.3642  
email - info@ada-architect.ca www.ada-architect.ca

project:  
PROPOSED 6-STORY MIXED USE RETAIL/CONDO BUILDING  
11788 TECUMSEH ROAD EAST, WINDSOR, ONT.

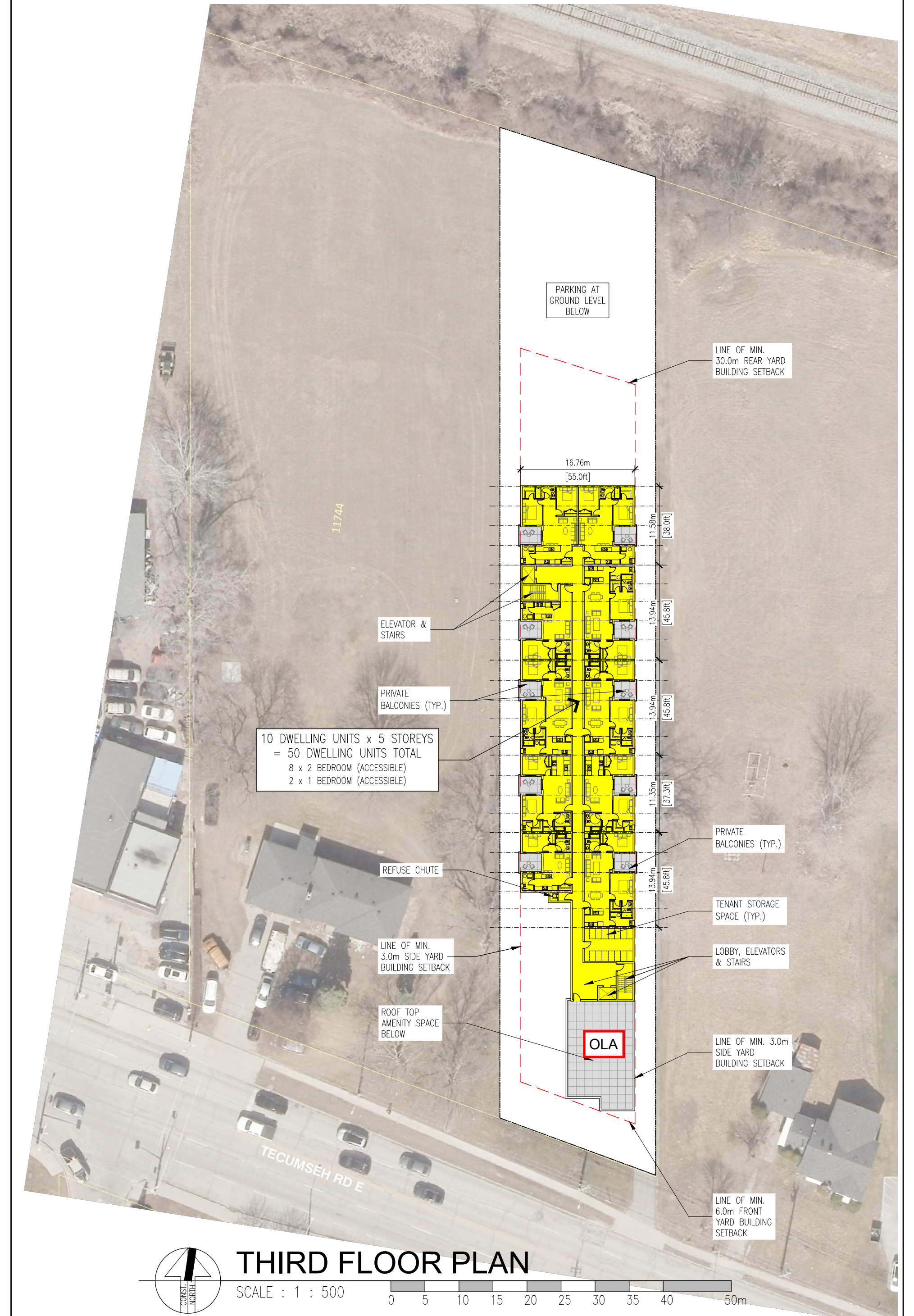
client:  
DESJARDINS GENERAL PARTNERSHIP

title:  
CONCEPTUAL SITE PLAN

drawn by: TC  
checked by: SMB / TC

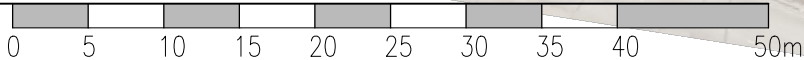
date: SEPT. 2023  
comm. no.: 2022-105  
dwg. no.: **A1.1a**





# THIRD FLOOR PLAN

SCALE : 1 : 500



**A** architectural  
**D** design  
**A** associates  
inc. architect

1867 Dundas Street, Suite 101  
Windsor Ontario Canada N8Y 3P7  
ph 519.254.3430 fax 519.254.3642  
email - info@ada-architect.ca www.ada-architect.ca

project:  
PROPOSED 6-STORY MIXED USE RETAIL/CONDO BUILDING  
11788 TECUMSEH ROAD EAST, WINDSOR, ONT.

client:  
DESJARDINS GENERAL PARTNERSHIP

title:  
THIRD FLOOR PLAN

drawn by: TC

checked by: SMB / TC

date: SEPT. 2022

comm. no.: 2022-105

dwg. no.: **A1.3a**

## ATTACHMENT B



Table B1

**Road Traffic Noise Levels and Mitigation Measures Summary**  
**11788 Tecumseh Road East, Windsor, Ontario**

<b>Point of Reception</b>	<b>Road Sound Level Daytime (dBA)</b>	<b>Road Sound Level Nighttime (dBA)</b>	<b>Rail Sound Level Daytime (dBA)</b>	<b>Rail Sound Level Nighttime (dBA)</b>	<b>Combined Daytime (dBA)</b>	<b>Combined Nighttime (dBA)</b>	<b>Ventilation Requirements NPC 300</b>	<b>Warning Clauses From NPC 300</b>	<b>Special Building Components</b>
<b>North Façade</b>									
Plane of Window Level 1	50 (dBA)	43 (dBA)	65 (dBA)	65 (dBA)	65 (dBA)	66 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 36
Plane of Window Level 2	50 (dBA)	43 (dBA)	65 (dBA)	65 (dBA)	65 (dBA)	66 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 36
Plane of Window Level 3	50 (dBA)	43 (dBA)	65 (dBA)	65 (dBA)	65 (dBA)	66 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 36
Plane of Window Level 4	50 (dBA)	43 (dBA)	65 (dBA)	65 (dBA)	65 (dBA)	66 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 36
Plane of Window Level 5	50 (dBA)	43 (dBA)	65 (dBA)	65 (dBA)	65 (dBA)	66 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 36
Plane of Window Level 6	50 (dBA)	43 (dBA)	65 (dBA)	65 (dBA)	65 (dBA)	66 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 36
<b>East Façade</b>									
Plane of Window Level 1	54 (dBA)	48 (dBA)	62 (dBA)	62 (dBA)	62 (dBA)	63 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 33
Plane of Window Level 2	54 (dBA)	48 (dBA)	62 (dBA)	62 (dBA)	62 (dBA)	63 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 33
Plane of Window Level 3	54 (dBA)	48 (dBA)	62 (dBA)	62 (dBA)	62 (dBA)	63 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 33
Plane of Window Level 4	54 (dBA)	48 (dBA)	62 (dBA)	62 (dBA)	62 (dBA)	63 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 33
Plane of Window Level 5	54 (dBA)	48 (dBA)	62 (dBA)	62 (dBA)	62 (dBA)	63 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 33
Plane of Window Level 6	54 (dBA)	48 (dBA)	62 (dBA)	62 (dBA)	62 (dBA)	63 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 33
<b>South Façade</b>									
Plane of Window Level 1	66 (dBA)	60 (dBA)	00 (dBA)	00 (dBA)	66 (dBA)	60 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 31
Plane of Window Level 2	66 (dBA)	60 (dBA)	00 (dBA)	00 (dBA)	66 (dBA)	60 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 31
Plane of Window Level 3	66 (dBA)	59 (dBA)	00 (dBA)	00 (dBA)	66 (dBA)	59 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 31
Plane of Window Level 4	66 (dBA)	59 (dBA)	00 (dBA)	00 (dBA)	66 (dBA)	59 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 31
Plane of Window Level 5	65 (dBA)	59 (dBA)	00 (dBA)	00 (dBA)	65 (dBA)	59 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 6	65 (dBA)	59 (dBA)	00 (dBA)	00 (dBA)	65 (dBA)	59 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
<b>West Façade</b>									
Plane of Window Level 1	64 (dBA)	57 (dBA)	56 (dBA)	57 (dBA)	64 (dBA)	60 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 30
Plane of Window Level 2	64 (dBA)	57 (dBA)	56 (dBA)	57 (dBA)	64 (dBA)	60 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 30
Plane of Window Level 3	63 (dBA)	57 (dBA)	56 (dBA)	57 (dBA)	64 (dBA)	60 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 30
Plane of Window Level 4	63 (dBA)	57 (dBA)	56 (dBA)	57 (dBA)	64 (dBA)	60 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 30
Plane of Window Level 5	63 (dBA)	56 (dBA)	56 (dBA)	57 (dBA)	64 (dBA)	60 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 30
Plane of Window Level 6	63 (dBA)	56 (dBA)	56 (dBA)	57 (dBA)	63 (dBA)	59 (dBA)	Requirement for Air Conditioning	Type D	Minimum Window STC Rating of 29
<b>Outdoor Living Area</b>									
OLA - 3rd Floor	56 (dBA)	N/A	N/A	N/A	N/A	N/A	N/A	Type A	N/A

## Notes

(1) The OLA is shielded by the building. JJAЕ has assumed a conservative 10 dBA reduction in sound level from the South Façade for the OLA

Outdoor Sound Level   
 Indoor Sound Level   
 Noise Reduction

Day/Night   
 Road/Rail

Angle of Sound  Angle Correction   
 Sum

Component	<input type="text" value="Window"/>		Sum	<input type="text" value="34"/>
Sound Energy Transmitted	<input type="text" value="100"/>	%	Table 3	<input type="text" value="0"/>
Component Area	<input type="text" value="35"/>	% Floor Area		
Room Floor Area	<input type="text" value="100"/>	<input type="text" value="31"/>		
Room Absorption Category	<input type="text" value="Intermediate"/>		Table 4	<input type="text" value="-4"/>
Noise Spectrum Type	<input type="text" value="Diesel Railway Locomotive"/>			
Component Category	<input type="text" value="Openable Thick Window"/>		Table 5	<input type="text" value="6"/>
<b>REQUIRED STC FOR COMPONENT</b>				<input type="text" value="36"/>

Component	<input type="text" value="Exterior Wall"/>		Sum	<input type="text" value="34"/>
Sound Energy Transmitted	<input type="text" value="10"/>	%	Table 3	<input type="text" value="10"/>
Component Area	<input type="text" value="65"/>	% Floor Area		
Room Floor Area	<input type="text" value="100"/>	<input type="text" value="63"/>		
Room Absorption Category	<input type="text" value="Intermediate"/>		Table 4	<input type="text" value="-1"/>
Noise Spectrum Type	<input type="text" value="Diesel Railway Locomotive"/>			
Component Category	<input type="text" value="Exterior Wall"/>		Table 5	<input type="text" value="10"/>
<b>REQUIRED STC FOR COMPONENT</b>				<input type="text" value="53"/>



From: Toufeili, Rania <RToufeili@citywindsor.ca>  
Sent: February 3, 2022 9:04 AM  
To: Emmanuel  
Cc: Joey Jraige; Spagnuolo, Mike  
Subject: RE: Noise Impact Study - 24XX Banwell Rd

Hi Emmanuel,

Please see the following truck percentages:

McHugh St / McNorton St (East Approach from Banwell): Medium Trucks = 1.39%, Heavy Trucks = 0.11%  
Tecumseh Rd East (East Approach from Banwell): Medium Trucks = 1.01%, Heavy Trucks = 0.89%  
Banwell Rd (South Approach from McNorton): Medium Trucks=1.24%, Heavy Trucks=0.7%

Regards,

**Rania Toufeili**  
Policy Analyst | Transportation Planning Services

From: Spagnuolo, Mike <mspagnuolo@citywindsor.ca>  
Sent: Tuesday, January 25, 2022 4:49 PM  
To: 'Emmanuel' <emmanuel@jjae.ca>; Toufeili, Rania <RToufeili@citywindsor.ca>  
Cc: Joey Jraige <joey@jjae.ca>  
Subject: RE: Noise Impact Study - 24XX Banwell Rd

Hi Emmanuel. ADT map is below. Tecumseh Road is 60km/h, all others are 50km/h. If you are looking for TMC's, I have them for Banwell & McHugh/McNorton, Tecumseh & Banwell, Tecumseh & the Metro Shopping plaza.



**MIKE SPAGNUOLO | TRAFFIC TECHNICIAN**  
  
Office Of The City Engineer  
1266 McDougall | Windsor, ON | N8X 3X7  
(519) 255-6727  
[www.citywindsor.ca](http://www.citywindsor.ca)

From: Emmanuel <emmanuel@jjae.ca>  
Sent: Tuesday, January 25, 2022 9:37 AM  
To: Spagnuolo, Mike <mspagnuolo@citywindsor.ca>; Toufeili, Rania <RToufeili@citywindsor.ca>  
Cc: Joey Jraige <joey@jjae.ca>  
Subject: Noise Impact Study - 24XX Banwell Rd

**CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Good Morning Mike & Rania,

I have a new proposed development that will be directly south of Banwell Community Church (2400 Banwell Rd). I am looking for traffic data for the following roadways.

McHugh St / McNorton St  
Tecumseh Rd East  
Banwell Rd

Future AADT 10 years or Current AADT with a growth % most commonly used by the City of Windsor?  
% Medium Trucks (or estimations as deemed acceptable by the City of Windsor)?  
% Heavy trucks (or estimations as deemed acceptable by the City of Windsor)?  
Speed limits for roadways.

Thank you,



65 Front St. West,  
Union Station, Rm G-C-021  
Toronto, Ontario M5J 1E7

REAL ESTATE

**BY EMAIL**

22 February 2022

Mr. Emmanuel Ghiorghis  
JJ Acoustic Engineering Ltd.

Dear Sir:

**RE: Train Traffic Data – Mile 100.08 VIA’s Chatham Subd. - City of Windsor**

---

Further to your request for train traffic information in the vicinity of Banwell Road in Windsor, please find below a summary of typical daily rail traffic.

Train Type	Frequency Day (0700-2300)	Frequency Night (2300-0700)	Max. Cars	Locomotives	Speed (mph)
Passenger	6	2	8	2	80
Freight	1	1	140	4	60
Way Freight	0	0	0	0	0

On site observations and measurements are recommended to capture actual noise and vibration levels from pass-by train operations.

Please note that rail traffic is subject to change due to varying economic and weather conditions, track maintenance work, holiday periods and emergencies. For the purpose of noise and vibration analysis, train volumes should be escalated 2.5% per annum for a 10-year period.

VIA is in the process of replacing our corridor rail fleet with new equipment, with introduction likely in 2022-24 period. The statistics above may change as a result, but for the purposes of your study, please use the info in the chart above.


Anti-whistling by-laws are in effect throughout the City of Windsor, however all engines must sound their bells when occupying at-grade road crossings and they may still use their whistles in an emergency or to warn trespassers. It is noted that Clover Ave. and Lesperance Road level crossings are in close proximity to the subject site.

The mainline track at this location consists of continuously welded rail (CWR) while portions of the service track is bolted rail. Equipment loads are not to exceed 268,000 lbs.

VIA is not in favour of incompatible land uses such as Residential being introduced in close proximity to our busy Chatham Subdivision due to potential safety and environmental conflicts. Development adjacent to our rail corridor is not appropriate without satisfactory noise, vibration and safety mitigation measures as per the attached.

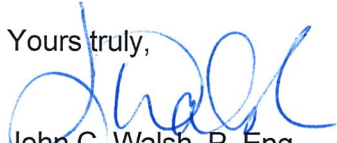
**love the way**





Should you have any questions, please feel free to contact me at 416-956-7669.

Yours truly,



John C. Walsh, P. Eng.  
Senior Property Manager  
Real Estate - Central Region

love the way



## PRINCIPAL MAIN LINE



- A. Noise berm, or combination berm and acoustic fence, adjoining and parallel to the railway right-of-way and having returns at the ends:
- (i) Minimum total height 5.5 metres above top-of-rail.
  - (ii) Acoustic fence to be constructed without openings and of a durable material weighing not less than 20 kg. per square metre (4 lb/sq. ft ) of surface area.
- Note: The Railway may consider other measures recommended by an approved Noise Consultant satisfactory to the Railway.
- B. Safety setback of dwellings from the railway right-of-way to be a minimum of 30 metres in conjunction with the safety berm noted below. In the absence of a safety berm, we require a dwelling setback of 120 metres.
- C. Ground-borne vibration transmission to be estimated through site testing and evaluation to determine if dwellings within 75 metres of the Railway right-of-way will be impacted by vibration conditions in excess of 0.14 mm/sec. RMS between 4 Hz. and 200 Hz. The monitoring system should be capable of measuring frequencies between 4 Hz and 200 Hz, +/- 3 dB with an RMS averaging time constant of 1 second. If in excess, isolation measures will be required to ensure living areas do not exceed 0.14 mm/sec. RMS on and above the first floor of the dwelling.
- D. Safety berm adjoining and parallel to the railway right-of-way with returns at the ends, 2.5 metres above grade is required despite none being required to address the Railway's noise concerns.
- E. The following clause should be inserted in all offers to purchase, agreements of sale and purchase or lease and in the title deed or lease of each dwelling; "Warning: VIA Rail Canada Inc. or its assigns or successors in interest has or have a right-of-way within 300 metres from the land the subject hereof. There may be alterations to or expansions of the rail facilities on such right-of-way in the future including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). VIA will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid right-of-way."
- F. Any proposed alterations to the existing drainage pattern affecting Railway property must receive prior concurrence from the Railway and be substantiated by a drainage report to the satisfaction of the Railway.
- G. The Developer shall install and maintain at his own expense, a chain link fence of minimum 1.83 metre (6 feet) height along the mutual property line, which shall be maintained by the Owner.
- H. The Owner shall through restrictive covenants to be registered on title and all agreements of purchase and sale or lease provide notice to the public that the safety berm, fencing and vibration isolation measures implemented are not to be tampered with or altered and further that the Owner shall have the sole responsibility for and shall maintain these measures to the satisfaction of VIA Rail.
- I. Pursuant to the Planning Act , the Municipality shall provide this office of the Railway with written notice of the public meeting, by-law and passing of the by-law appropriately zoning the lands hereby proposed for subdivision.
- J. The Owner enter into an Agreement stipulating how VIA Rail's concerns will be resolved and will pay VIA Rail's reasonable costs in preparing and negotiating the agreement.



Filename: northf1.te            Time Period: Day/Night 16/8 hours  
 Description: North Facade Floor 1

Rail data, segment # 1: Passenger (day/night)

```

-----
Train          ! Trains      ! Speed !# loc !# Cars! Eng !Cont
Type          !             ! (km/h) !/Train!/Train! type !weld
-----+-----+-----+-----+-----+-----
* 1. Via Rail  !  7.9/2.6   ! 129.0 !  2.0 !  8.0 !Diesel! Yes
  
```

\* The identified number of trains have been adjusted for future growth using the following parameters:

```

Train type:      ! Unadj. ! Annual % ! Years of !
No Name         ! Trains ! Increase ! Growth  !
-----+-----+-----+-----+
  1. Via Rail    !  6.0/2.0 !  2.50 ! 11.00 !
  
```

Data for Segment # 1: Passenger (day/night)

```

-----
Angle1  Angle2      : -90.00 deg  90.00 deg
Wood depth      : 0          (No woods.)
No of house rows : 0 / 0
Surface         : 2          (Reflective ground surface)
Receiver source distance : 50.00 / 50.00 m
Receiver height  : 2.00 / 2.00 m
Topography      : 1          (Flat/gentle slope; no barrier)
No Whistle
Reference angle  : 0.00
  
```

Rail data, segment # 2: Freight (day/night)

```

-----
Train          ! Trains      ! Speed !# loc !# Cars! Eng !Cont
Type          !             ! (km/h) !/Train!/Train! type !weld
-----+-----+-----+-----+-----+-----
* 1. Via Rail  !  1.3/1.3   !  97.0 !  4.0 !140.0 !Diesel! Yes
  
```

\* The identified number of trains have been adjusted for future growth using the following parameters:

```

Train type:      ! Unadj. ! Annual % ! Years of !
No Name         ! Trains ! Increase ! Growth  !
-----+-----+-----+-----+
  1. Via Rail    !  1.0/1.0   !  2.50 ! 11.00 !
  
```

Data for Segment # 2: Freight (day/night)

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 2 (Reflective ground surface)  
Receiver source distance : 50.00 / 50.00 m  
Receiver height : 2.00 / 2.00 m  
Topography : 1 (Flat/gentle slope; no barrier)  
No Whistle  
Reference angle : 0.00

Results segment # 1: Passenger (day)

-----  
LOCOMOTIVE (0.00 + 61.81 + 0.00) = 61.81 dBA  
Angle1 Angle2 Alpha RefLeq D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq  
-----  
-90 90 0.00 67.04 -5.23 0.00 0.00 0.00 0.00 61.81  
-----

WHEEL (0.00 + 51.74 + 0.00) = 51.74 dBA  
Angle1 Angle2 Alpha RefLeq D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq  
-----  
-90 90 0.00 56.97 -5.23 0.00 0.00 0.00 0.00 51.74  
-----

Segment Leq : 62.22 dBA

Results segment # 2: Freight (day)

-----  
LOCOMOTIVE (0.00 + 59.96 + 0.00) = 59.96 dBA  
Angle1 Angle2 Alpha RefLeq D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq  
-----  
-90 90 0.00 65.19 -5.23 0.00 0.00 0.00 0.00 59.96  
-----

WHEEL (0.00 + 53.55 + 0.00) = 53.55 dBA  
Angle1 Angle2 Alpha RefLeq D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq  
-----  
-90 90 0.00 58.78 -5.23 0.00 0.00 0.00 0.00 53.55  
-----

Segment Leq : 60.85 dBA

Total Leq All Segments: 64.60 dBA

Results segment # 1: Passenger (night)

LOCOMOTIVE (0.00 + 60.00 + 0.00) = 60.00 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	65.22	-5.23	0.00	0.00	0.00	0.00	60.00

WHEEL (0.00 + 49.93 + 0.00) = 49.93 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	55.16	-5.23	0.00	0.00	0.00	0.00	49.93

Segment Leq : 60.41 dBA

Results segment # 2: Freight (night)

LOCOMOTIVE (0.00 + 62.97 + 0.00) = 62.97 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	68.20	-5.23	0.00	0.00	0.00	0.00	62.97

WHEEL (0.00 + 56.56 + 0.00) = 56.56 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	61.79	-5.23	0.00	0.00	0.00	0.00	56.56

Segment Leq : 63.86 dBA

Total Leq All Segments: 65.48 dBA

Road data, segment # 1: Banwell Rd (day/night)

Car traffic volume : 18705/2078 veh/TimePeriod \*  
Medium truck volume : 237/26 veh/TimePeriod \*  
Heavy truck volume : 134/15 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 15000  
 Percentage of Annual Growth : 2.50  
 Number of Years of Growth : 14.00  
 Medium Truck % of Total Volume : 1.24  
 Heavy Truck % of Total Volume : 0.70  
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Banwell Rd (day/night)

-----  
 Angle1 Angle2 : 0.00 deg 90.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 0 / 0  
 Surface : 2 (Reflective ground surface)  
 Receiver source distance : 250.00 / 250.00 m  
 Receiver height : 2.00 / 2.00 m  
 Topography : 1 (Flat/gentle slope; no barrier)  
 Reference angle : 0.00

Results segment # 1: Banwell Rd (day)

Source height = 0.92 m

ROAD (0.00 + 49.68 + 0.00) = 49.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	64.91	0.00	-12.22	-3.01	0.00	0.00	0.00	49.68

Segment Leq : 49.68 dBA

Total Leq All Segments: 49.68 dBA

Results segment # 1: Banwell Rd (night)

Source height = 0.92 m

ROAD (0.00 + 43.15 + 0.00) = 43.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	58.38	0.00	-12.22	-3.01	0.00	0.00	0.00	43.15

Segment Leq : 43.15 dBA

Total Leq All Segments: 43.15 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 64.74  
(NIGHT): 65.50

Filename: eastf1.te            Time Period: Day/Night 16/8 hours  
 Description: East Facade Floor 1

Rail data, segment # 1: Passenger (day/night)

```

-----
Train          ! Trains      ! Speed !# loc !# Cars! Eng !Cont
Type          !             ! (km/h) !/Train!/Train! type !weld
-----+-----+-----+-----+-----+-----
* 1. Via Rail  !  7.9/2.6   ! 129.0 !  2.0 !  8.0 !Diesel! Yes
  
```

\* The identified number of trains have been adjusted for future growth using the following parameters:

```

Train type:      ! Unadj. ! Annual % ! Years of !
No Name         ! Trains ! Increase ! Growth  !
-----+-----+-----+-----+
  1. Via Rail    !  6.0/2.0 !  2.50 ! 11.00 !
  
```

Data for Segment # 1: Passenger (day/night)

```

-----
Angle1  Angle2      :  0.00 deg  90.00 deg
Wood depth      :  0          (No woods.)
No of house rows :  0 / 0
Surface         :  2          (Reflective ground surface)
Receiver source distance :  50.00 / 50.00 m
Receiver height  :  2.00 / 2.00 m
Topography      :  1          (Flat/gentle slope; no barrier)
No Whistle
Reference angle  :  0.00
  
```

Rail data, segment # 2: Freight (day/night)

```

-----
Train          ! Trains      ! Speed !# loc !# Cars! Eng !Cont
Type          !             ! (km/h) !/Train!/Train! type !weld
-----+-----+-----+-----+-----+-----
* 1. Via Rail  !  1.3/1.3   !  97.0 !  4.0 !140.0 !Diesel! Yes
  
```

\* The identified number of trains have been adjusted for future growth using the following parameters:

```

Train type:      ! Unadj. ! Annual % ! Years of !
No Name         ! Trains ! Increase ! Growth  !
-----+-----+-----+-----+
  1. Via Rail    !  1.0/1.0 !  2.50 ! 11.00 !
  
```

Data for Segment # 2: Freight (day/night)

-----  
Angle1 Angle2 : 0.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 2 (Reflective ground surface)  
Receiver source distance : 50.00 / 50.00 m  
Receiver height : 2.00 / 2.00 m  
Topography : 1 (Flat/gentle slope; no barrier)  
No Whistle  
Reference angle : 0.00

Results segment # 1: Passenger (day)

-----  
LOCOMOTIVE (0.00 + 58.80 + 0.00) = 58.80 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	67.04	-5.23	-3.01	0.00	0.00	0.00	58.80

-----

WHEEL (0.00 + 48.73 + 0.00) = 48.73 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	56.97	-5.23	-3.01	0.00	0.00	0.00	48.73

-----

Segment Leq : 59.21 dBA

Results segment # 2: Freight (day)

-----  
LOCOMOTIVE (0.00 + 56.95 + 0.00) = 56.95 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	65.19	-5.23	-3.01	0.00	0.00	0.00	56.95

-----

WHEEL (0.00 + 50.54 + 0.00) = 50.54 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	58.78	-5.23	-3.01	0.00	0.00	0.00	50.54

-----

Segment Leq : 57.84 dBA

Total Leq All Segments: 61.59 dBA

Results segment # 1: Passenger (night)

LOCOMOTIVE (0.00 + 56.99 + 0.00) = 56.99 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	65.22	-5.23	-3.01	0.00	0.00	0.00	56.99

WHEEL (0.00 + 46.92 + 0.00) = 46.92 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	55.16	-5.23	-3.01	0.00	0.00	0.00	46.92

Segment Leq : 57.40 dBA

Results segment # 2: Freight (night)

LOCOMOTIVE (0.00 + 59.96 + 0.00) = 59.96 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	68.20	-5.23	-3.01	0.00	0.00	0.00	59.96

WHEEL (0.00 + 53.55 + 0.00) = 53.55 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	61.79	-5.23	-3.01	0.00	0.00	0.00	53.55

Segment Leq : 60.85 dBA

Total Leq All Segments: 62.47 dBA

Road data, segment # 1: Tecumseh Rd (day/night)

Car traffic volume : 21208/2356 veh/TimePeriod \*  
Medium truck volume : 218/24 veh/TimePeriod \*  
Heavy truck volume : 192/21 veh/TimePeriod \*  
Posted speed limit : 60 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17000  
 Percentage of Annual Growth : 2.50  
 Number of Years of Growth : 14.00  
 Medium Truck % of Total Volume : 1.01  
 Heavy Truck % of Total Volume : 0.89  
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Tecumseh Rd (day/night)

-----  
 Angle1 Angle2 : 0.00 deg 90.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 0 / 0  
 Surface : 2 (Reflective ground surface)  
 Receiver source distance : 160.00 / 160.00 m  
 Receiver height : 2.00 / 2.00 m  
 Topography : 1 (Flat/gentle slope; no barrier)  
 Reference angle : 0.00

Results segment # 1: Tecumseh Rd (day)

Source height = 0.97 m

ROAD (0.00 + 54.25 + 0.00) = 54.25 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	67.54	0.00	-10.28	-3.01	0.00	0.00	0.00	54.25

Segment Leq : 54.25 dBA

Total Leq All Segments: 54.25 dBA

Results segment # 1: Tecumseh Rd (night)

Source height = 0.97 m

ROAD (0.00 + 47.70 + 0.00) = 47.70 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	60.99	0.00	-10.28	-3.01	0.00	0.00	0.00	47.70

Segment Leq : 47.70 dBA

Total Leq All Segments: 47.70 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.32  
(NIGHT): 62.61

Filename: southf1.te            Time Period: Day/Night 16/8 hours  
 Description: South Facade Floor 1

Road data, segment # 1: Tecumseh Rd (day/night)

```
-----
Car traffic volume : 21208/2356 veh/TimePeriod *
Medium truck volume : 218/24 veh/TimePeriod *
Heavy truck volume : 192/21 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)
```

\* Refers to calculated road volumes based on the following input:

```
24 hr Traffic Volume (AADT or SADT): 17000
Percentage of Annual Growth : 2.50
Number of Years of Growth : 14.00
Medium Truck % of Total Volume : 1.01
Heavy Truck % of Total Volume : 0.89
Day (16 hrs) % of Total Volume : 90.00
```

Data for Segment # 1: Tecumseh Rd (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 20.00 / 20.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Tecumseh Rd (day)

Source height = 0.97 m

```
ROAD (0.00 + 66.29 + 0.00) = 66.29 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-----
-90 90 0.00 67.54 0.00 -1.25 0.00 0.00 0.00 0.00 66.29
-----
```

Segment Leq : 66.29 dBA

Total Leq All Segments: 66.29 dBA

Results segment # 1: Tecumseh Rd (night)

-----  
Source height = 0.97 m

ROAD (0.00 + 59.74 + 0.00) = 59.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------	--------

-90	90	0.00	60.99	0.00	-1.25	0.00	0.00	0.00	0.00	59.74
-----	----	------	-------	------	-------	------	------	------	------	-------

-----

Segment Leq : 59.74 dBA

Total Leq All Segments: 59.74 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.29  
(NIGHT): 59.74



Filename: westf1.te            Time Period: Day/Night 16/8 hours  
 Description: West facade floor 1

Rail data, segment # 1: Passenger (day/night)

```

-----
Train          ! Trains      ! Speed !# loc !# Cars! Eng !Cont
Type          !             !(km/h) !/Train!/Train! type !weld
-----+-----+-----+-----+-----+-----
* 1. Via Rail  !  7.9/2.6   ! 129.0 !  2.0 !  8.0 !Diesel! Yes
  
```

\* The identified number of trains have been adjusted for future growth using the following parameters:

```

Train type:      ! Unadj. ! Annual % ! Years of !
No Name         ! Trains ! Increase ! Growth  !
-----+-----+-----+-----+
  1. Via Rail    !  6.0/2.0 !  2.50 ! 11.00 !
  
```

Data for Segment # 1: Passenger (day/night)

```

-----
Angle1  Angle2      : -90.00 deg  0.00 deg
Wood depth      : 0 (No woods.)
No of house rows : 0 / 0
Surface         : 2 (Reflective ground surface)
Receiver source distance : 185.00 / 185.00 m
Receiver height  : 2.00 / 2.00 m
Topography       : 1 (Flat/gentle slope; no barrier)
No Whistle
Reference angle  : 0.00
  
```

Rail data, segment # 2: Freight (day/night)

```

-----
Train          ! Trains      ! Speed !# loc !# Cars! Eng !Cont
Type          !             !(km/h) !/Train!/Train! type !weld
-----+-----+-----+-----+-----+-----
* 1. Via Rail  !  1.3/1.3   !  97.0 !  4.0 !140.0 !Diesel! Yes
  
```

\* The identified number of trains have been adjusted for future growth using the following parameters:

```

Train type:      ! Unadj. ! Annual % ! Years of !
No Name         ! Trains ! Increase ! Growth  !
-----+-----+-----+-----+
  1. Via Rail    !  1.0/1.0   !  2.50 ! 11.00 !
  
```

Data for Segment # 2: Freight (day/night)

```

-----
Angle1  Angle2      : -90.00 deg   0.00 deg
Wood depth      :      0      (No woods.)
No of house rows :      0 / 0
Surface         :      2      (Reflective ground surface)
Receiver source distance : 185.00 / 185.00 m
Receiver height  :      2.00 / 2.00 m
Topography      :      1      (Flat/gentle slope; no barrier)
No Whistle
Reference angle  :      0.00
  
```

Results segment # 1: Passenger (day)

LOCOMOTIVE (0.00 + 53.12 + 0.00) = 53.12 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	67.04	-10.91	-3.01	0.00	0.00	0.00	53.12

WHEEL (0.00 + 43.05 + 0.00) = 43.05 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	56.97	-10.91	-3.01	0.00	0.00	0.00	43.05

Segment Leq : 53.53 dBA

Results segment # 2: Freight (day)

LOCOMOTIVE (0.00 + 51.27 + 0.00) = 51.27 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	65.19	-10.91	-3.01	0.00	0.00	0.00	51.27

WHEEL (0.00 + 44.86 + 0.00) = 44.86 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	58.78	-10.91	-3.01	0.00	0.00	0.00	44.86

Segment Leq : 52.16 dBA

Total Leq All Segments: 55.91 dBA

Results segment # 1: Passenger (night)

LOCOMOTIVE (0.00 + 51.30 + 0.00) = 51.30 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	65.22	-10.91	-3.01	0.00	0.00	0.00	51.30

WHEEL (0.00 + 41.24 + 0.00) = 41.24 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	55.16	-10.91	-3.01	0.00	0.00	0.00	41.24

Segment Leq : 51.71 dBA

Results segment # 2: Freight (night)

LOCOMOTIVE (0.00 + 54.28 + 0.00) = 54.28 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	68.20	-10.91	-3.01	0.00	0.00	0.00	54.28

WHEEL (0.00 + 47.87 + 0.00) = 47.87 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	61.79	-10.91	-3.01	0.00	0.00	0.00	47.87

Segment Leq : 55.17 dBA

Total Leq All Segments: 56.79 dBA

Road data, segment # 1: Tecumseh Rd (day/night)

Car traffic volume : 21208/2356 veh/TimePeriod \*  
Medium truck volume : 218/24 veh/TimePeriod \*  
Heavy truck volume : 192/21 veh/TimePeriod \*  
Posted speed limit : 60 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 17000  
Percentage of Annual Growth : 2.50  
Number of Years of Growth : 14.00  
Medium Truck % of Total Volume : 1.01  
Heavy Truck % of Total Volume : 0.89  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Tecumseh Rd (day/night)

-----  
Angle1 Angle2 : -90.00 deg 0.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 2 (Reflective ground surface)  
Receiver source distance : 20.00 / 20.00 m  
Receiver height : 2.00 / 2.00 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

Road data, segment # 2: Banwell Rd (day/night)

-----  
Car traffic volume : 18705/2078 veh/TimePeriod \*  
Medium truck volume : 237/26 veh/TimePeriod \*  
Heavy truck volume : 134/15 veh/TimePeriod \*  
Posted speed limit : 50 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

\* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 15000  
Percentage of Annual Growth : 2.50  
Number of Years of Growth : 14.00  
Medium Truck % of Total Volume : 1.24  
Heavy Truck % of Total Volume : 0.70  
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: Banwell Rd (day/night)

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0 / 0  
Surface : 2 (Reflective ground surface)  
Receiver source distance : 250.00 / 250.00 m  
Receiver height : 2.00 / 2.00 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

Results segment # 1: Tecumseh Rd (day)

-----  
Source height = 0.97 m

ROAD (0.00 + 63.28 + 0.00) = 63.28 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	67.54	0.00	-1.25	-3.01	0.00	0.00	0.00	63.28

-----

Segment Leq : 63.28 dBA

Results segment # 2: Banwell Rd (day)  
-----

Source height = 0.92 m

ROAD (0.00 + 52.69 + 0.00) = 52.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	64.91	0.00	-12.22	0.00	0.00	0.00	0.00	52.69

-----

Segment Leq : 52.69 dBA

Total Leq All Segments: 63.64 dBA

Results segment # 1: Tecumseh Rd (night)  
-----

Source height = 0.97 m

ROAD (0.00 + 56.73 + 0.00) = 56.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	60.99	0.00	-1.25	-3.01	0.00	0.00	0.00	56.73

-----

Segment Leq : 56.73 dBA

Results segment # 2: Banwell Rd (night)  
-----

Source height = 0.92 m

ROAD (0.00 + 46.16 + 0.00) = 46.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------	--------

-----  
-90 90 0.00 58.38 0.00 -12.22 0.00 0.00 0.00 0.00 46.16  
-----

Segment Leq : 46.16 dBA


Total Leq All Segments: 57.10 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.32  
(NIGHT): 59.95

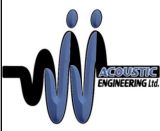
# ATTACHMENT C



17343350    17343400    17343450    17343500    17343550    17343600    17343650    17343700    17343750    17343800



40.0  
45.0  
50.0  
55.0  
60.0  
65.0  
70.0  
75.0



- + Point Source
- Building
- Receiver
- Building Evaluation

**STATIONARY NOISE IMPACT**  
**11788 TECUMSEH ROAD EAST, WINDSOR, ONTARIO**

**FIGURE 1 - NOISE IMPACTS FROM NEIGHBORING BUILDINGS TO SITE**

17343350    17343400    17343450    17343500    17343550    17343600    17343650    17343700    17343750    17343800



# ATTACHMENT D

Table C1  
Stationary Noise Impact Source Data  
11788 Tecumseh Road East, Windsor, Ontario

Noise Source Description	Cadna ID	Total SWL (dBA)	Data Source or Representative Data	Height Absolute (m)	Above Roof (m)	x	y
S1	OS_HVAC_1FAN	81.7	HVAC_1FAN	5.25	1.25	17343458	4686250
S2	OS_HVAC_1FAN	81.7	HVAC_1FAN	4	1.25	17343395	4686306
S3	OS_HVAC_1FAN	81.7	HVAC_1FAN	7.25	1.25	17343406	4686305
S4	OS_HVAC_2FAN	82.8	HVAC_2FAN	4	1.25	17343368	4686310
S5	OS_HVAC_2FAN	82.8	HVAC_2FAN	4	1.25	17343363	4686318
S6	OS_HVAC_2FAN	82.8	HVAC_2FAN	4	1.25	17343375	4686316
S7	OS_HVAC_2FAN	82.8	HVAC_2FAN	4	1.25	17343384	4686314
S8	OS_HVAC_1FAN	81.7	HVAC_1FAN	9.5	1.5	17343491	4686134
S9	OS_HVAC_1FAN	81.7	HVAC_1FAN	9.5	1.5	17343496	4686135
S10	OS_HVAC_1FAN	81.7	HVAC_1FAN	9.5	1.5	17343503	4686135
S11	OS_HVAC_2FAN	82.8	HVAC_2FAN	9.5	1.5	17343495	4686125
S12	OS_HVAC_2FAN	82.8	HVAC_2FAN	9.5	1.5	17343498	4686125
S13	OS_HVAC_1FAN	81.7	HVAC_1FAN	9.5	1.5	17343505	4686126
S14	OS_HVAC_2FAN	82.8	HVAC_2FAN	9.5	1.5	17343493	4686114
S15	OS_HVAC_2FAN	82.8	HVAC_2FAN	9.5	1.5	17343499	4686115
S16	OS_HVAC_2FAN	82.8	HVAC_2FAN	9.5	1.5	17343504	4686117
S17	OS_HVAC_1FAN	81.7	HVAC_1FAN	9.5	1.5	17343442	4686050
S18	OS_HVAC_4_Fan	86.1	HVAC_4_Fan	9.5	1.5	17343603	4686032
S19	OS_Rep_Chiller	92.8	Rep_Chiller	10	2	17343601	4686038
S19	OS_Rep_Chiller	92.8	Rep_Chiller	10	2	17343615	4686038
S20	OS_Rep_Chiller	92.8	Rep_Chiller	2	2	17343652	4686030
S24	OS_HVAC_1FAN	82.8	HVAC_2FAN	7.5	1.5	17343705	4686108
S23	OS_HVAC_1FAN	81.7	HVAC_1FAN	7.5	1.5	17343703	4686103
S25	OS_HVAC_1FAN	81.7	HVAC_1FAN	7.5	1.5	17343709	4686104
S21	OS_HVAC_1FAN	81.7	HVAC_1FAN	5.5	1.5	17343689	4686099
S22	OS_HVAC_1FAN	81.7	HVAC_1FAN	5.5	1.5	17343690	4686108
S26	OS_HVAC_2FAN	82.8	HVAC_2FAN	5.5	1.5	17343685	4686191
S27	OS_HVAC_1FAN	81.7	HVAC_1FAN	4.5	1.5	17343720	4686217
S29	OS_Representative_MUA	80.6	Representative_MUA	21	2	17343758	4686234
S28	OS_Representative_MUA	80.6	Representative_MUA	21	2	17343765	4686189
S30	OS_HVAC_1FAN	81.7	HVAC_1FAN	7.25	1.25	17343763	4686087
S31	OS_HVAC_1FAN	81.7	HVAC_1FAN	7.25	1.25	17343771	4686086