Road Traffic and Stationary Noise Impact Study

3665 Macklem Street, Niagara Falls, Ontario

JJ-00735-NIS1

June 11, 2025, Reference No. JJ-00735-NIS1

Dhruv Thakkar
Vedas Developers Inc.
Vedas.Developers@gmail.com

Dear Mr. Thakkar:

Re: Road Traffic and Stationary Noise Impact Study
3665 Macklem Street, Niagara Falls, Ontario

1. Introduction

JJ Acoustic Engineering Ltd. (JJAE) was retained to complete a Road Traffic and Stationary Noise Impact Study (Study) for residential development located at 3665 Macklem Street in Niagara Falls, Ontario (Site). The Site will be developed into a 5-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 Park (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 traffic noise is significant. The proposed development will need the following: a requirement for central air-conditioning and noise warning clauses. Road traffic noise control requirements for the Site were determined based on road traffic volumes provided by the City of Niagara (City) and forecasted to 20 years from the date of this study. JJAE has supplied traffic data in Attachment B.

JJ Acoustic Engineering Ltd.
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 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, JJAE 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: Portage Road approximately 120 meters to the South and Macklem Street approximately 15 meters to the East. Where there are intervening and off-site structures that provide line-of-sight obstruction to the roads, JJAE did not include line-of-sight obstruction in our analysis as to calculate worst-case noise impact.

JJAE 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:

Portage Road:

- Current AADT (2023): 10,300
- Forecast AADT (2045): 15,924
- Commercial Vehicle Rates: 3% medium trucks and 0% heavy trucks
- Posted Speed Limit: 50 km/h
- Day Night Splits: 90% day and 10% night

Macklem Street:

- Current AADT (2023): 3,100
- Forecast AADT (2045): 4,793
- Commercial Vehicle Rates: 3% medium trucks and 0% 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.

2.4 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 Outdoor Living Area (OLA) is situated on the rooftop of the development site. JJAE has conducted an acoustic assessment and determined the predicted sound level at the OLA to be 57 dBA. Since this exceeds the applicable noise limit, a Warning Clause Type A will be required for all

residential units within the development. The location of the OLA is shown in 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).

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

Daytime Level (dBA)	**Nighttime Level (dBA)**	**Ventilation Requirements and Warning Clauses**	**Special Building Components**
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 road 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."

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

At minimum, the building must be constructed to standard Ontario Building Code requirements.

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 to Environment

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. JJAE has identified several potential stationary noise sources including:

- Medium HVAC Units (60 minutes daytime, 30 minutes nighttime)
- Small HVAC Units (60 minutes daytime, 30 minutes nighttime)
- Representative Chiller (60 minutes daytime, 30 minutes nighttime)
- Representative MUA (Steady)
- Drive Through Speaker (60 minutes during the daytime/ 20 minutes during nighttime)
- Idling Cars (Steady)
- Heavy Truck (10 truck movements/per hour during the daytime)

It must be noted that Saint-Gobain Ceramic Materials Canada Inc located at 8001 Daly St, Niagara Falls is approximately 600 meters from the Site with several intervening buildings in-between the Site and the facility. As such, JJAE attended the Site and tried to hear and measure any activity from the facility but could not identify and noise outside of road traffic noise. Therefore, JJAE has not included this site into our analysis based on it being considered environmentally insignificant due to its significant distance away from the Site and no significantly audible noises during our site visit.

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

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

Facade	Worst Case Daytime Sound Level (dBA)	Daytime Noise Limit (dBA)	Worst Case Nighttime Sound Level (dBA)	Nighttime Noise Limit (dBA)	Limits met
North	47	50	30	45	Yes
East	<30	50	<30	45	Yes
South	36	50	36	45	Yes
West	38	50	36	45	Yes
Rooftop OLA	37	50	N/A	N/A	Yes

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

6. Recommendations

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

- Warning Clause Type C should be registered on Title and/or included in all agreements of purchase and sale and/or leases and/or disclosure statements and declarations for the development for all units.

- JJAE and the Client Requirement for Air Conditioning for the entire building.

Outdoor Living Area:

- Warning Clause Type A should be registered on Title and/or included in all agreements of purchase and sale and/or leases and/or disclosure statements and declarations for the development for all units.

These have been summarized in Attachment B under Table B1.

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

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 traffic noise sources are significant. Mitigation measures will be required including ventilation requirements, and noise warning clauses for each unit. With the mitigation measures provided in Section 6, there will be minimal noise impact from the surrounding roadways and/or neighboring buildings to the Site. Therefore, this development is feasible with respect to NPC-300.

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

Yours truly,

Written by: Reviewed by:

June 11, 2025

Emmanuel Ghiorghis,
Acoustic Technician

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

JJ Acoustic Engineering Ltd.
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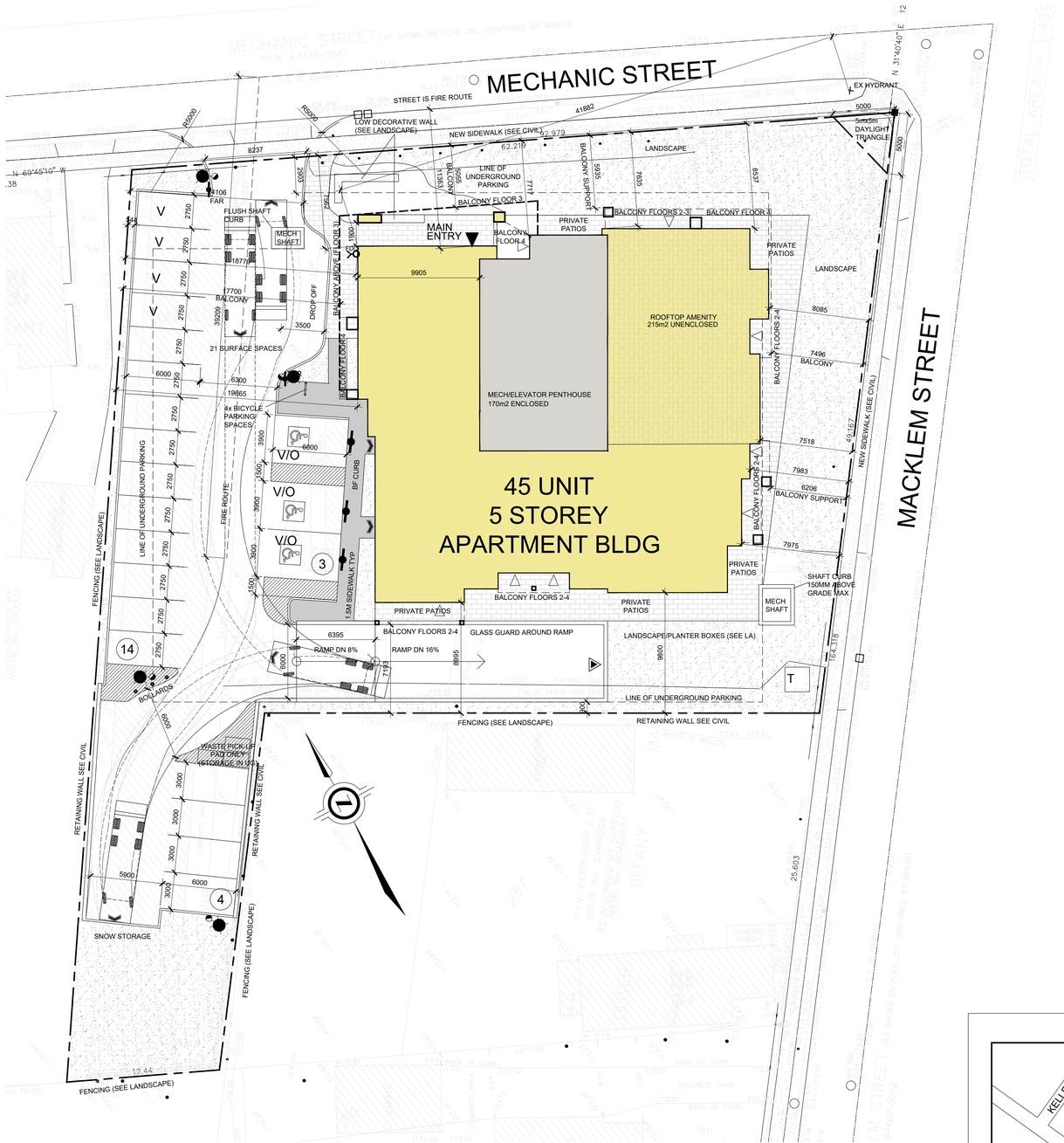
ATTACHMENT A



NOTES:

THE OWNER IS REQUIRED TO REMOVE SNOW OFF SITE AS NECESSARY AND MAINTAIN REQUIRED PARKING UNENCUMBERED BY SNOW DURING MAJOR SNOW EVENTS.
THE OWNER IS REQUIRED TO REMOVE SNOW AND ICE FROM ALL EXIT PATHS AND STAIRS. SNOW WILL BE REMOVED FROM SITE BY PRIVATE COMPANY.

DRIVEWAYS ARE TO BE 1.2 CLEAR OF UTILITY STRUCTURES AND HYDRANTS.
BUILDER TO VERIFY LOCATION OF ALL HYDRANTS, STREET LIGHTS, TRANSFORMERS, AND OTHER SERVICES. IF MINIMUM DIMENSION IS NOT MAINTAINED, BUILDER IS TO RELOCATE AT HIS OWN EXPENSE.

BUILDER TO VERIFY SERVICE CONNECTION ELEVATIONS PRIOR TO CONSTRUCTING FOUNDATIONS.

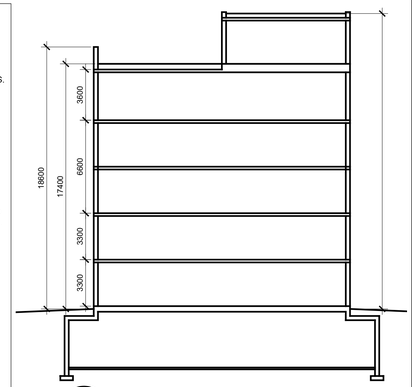
PRIOR TO THE COMMENCEMENT OF ANY WORKS WITHIN THE MUNICIPAL ROAD ALLOWANCE, THE OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE ENGINEERING SERVICE DEPARTMENT, FOR THE PURPOSE OF VEHICULAR ACCESS TO THE PROPERTY, (ENTRANCE PERMIT), AND SERVICING. EXCAVATIONS (ROAD ALLOWANCE PERMIT) WITHIN THE THE PROPERTY, (ENTRANCE PERMIT), AND SERVICING.

PARKING STALL DELINEATION TO BE 100MM WIDE WHITE OR YELLOW MARKINGS.
VISITOR PARKING TO BE MARKED WITH A PAINTED V.
RESIDENT PARKING TO BE MARKED WITH PAINTED NUMBERS.

ALL REFUSE WILL BE STORED INTERNALLY.
WASTE TO BE COLLECTED BY PRIVATE SERVICE.

EACH ACCESSIBLE PARKING SPOT SHALL CONSIST OF THE FOLLOWING :

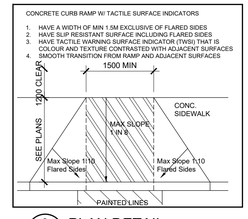
1. ONE AUTHORIZED ACCESSIBLE PARKING SIGN ON DISPLAY
2. ONE '$300 FINE' SIGN TAB DIRECTLY BENEATH THE AUTHORIZED SIGN.
3. BOTH SIGNS ARE TO BE PERMANENTLY INSTALLED AT THE FRONT AND CENTER OF THE PARKING STALL MOUNTED AT A HEIGHT OF 1.0M TO 1.5M FROM THE GROUND TO THE BOTTOM OF THE SIGN
4. PARKIGN SPOTS SHALL BE SIZED PER AODA TYPE 'A' AND 'B' REQUIREMENTS
5. SHALL BE MARKED WITH APPROPRIATE WHITE PAVEMENT MARKINGS (LINES AND SYMBOL) WHEN LOCATED ON A HARD SURFACE
6. LOCATED ON A LEVEL SURFACE (LEVEL SHALL NOT MEAN "FLAT")



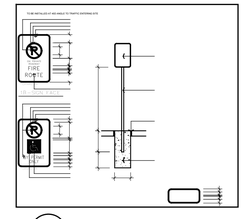
6 SP1 SECTION
SITE PLAN CONCEPT
1:200

LEGEND

- APARTMENT PRINCIPAL/ VISITOR ENTRY
- APARTMENT EXIT DOOR
- UNDERGROUND PARKING GARAGE ENTRY
- PATIO DOOR ENTRY
- V VISITOR PARKING SPACE
- BFC BARRIER FREE CURB
- BF SGN VERTICAL ACCESSIBLE PARKING SIGN
- BF SGN VERTICAL ACCESSIBLE PARKING SIGN W/ VAN SIGN
- PAINTED BARRIER FREE PARKING SYMBOL AS PER MUNICIPAL STANDARDS
- STOP SIGN
- HYDRANT
- SIAMESE CONNECTION
- FIRE ACCESS ROUTE SIGN
- STREETLIGHT
- T TRANSFORMER
- CONCRETE SIDEWALK
- LANDSCAPE
- ZEBRA PATTERN LINE PAINTING



3 SP1 PLAN DETAIL
BF CURB CUT
1:50



FLOOR	GFA	COMMON	SELLABLE		1 BED+D	2 BED	2 BED+D	SUITES
1	892 m2	306 m2	586 m2	65.7%	2	2	3	7
2	743 m2	101 m2	642 m2	86.4%	4	1	3	8
3	892 m2	87 m2	805 m2	90.2%	4	3	3	10
4	892 m2	87 m2	805 m2	90.2%	4	3	3	10
5	892 m2	87 m2	805 m2	90.2%	4	3	3	10
6	80 m2	80 m2	m2	0.0%				
	4391 m2	748 m2	3643 m2	83.0%	18	12	15	45
					40.0%	26.7%	33.3%	

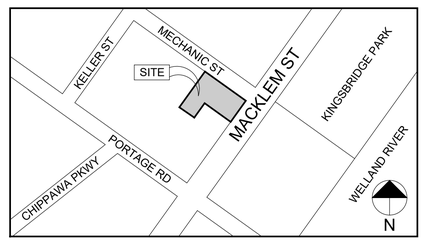
R5C ZONE AS AMENDED

ZONING BY-LAW SUMMARY

CITY OF NIAGARA FALLS ZONING BYLAW 79-200 (AMENDED 2013-32)
OFFICIAL PLAN DESIGNATION "RESIDENTIAL 5C DENSITY"

GENERAL INFORMATION:		
ZONING	R5C AS AMENDED	SITE SPECIFIC BYLAW NO 2013-32
LOT AREA	8595.7SM	0.860HA

TABLE 7.12.2 - RESIDENTIAL APARTMENT 5C DENSITY ZONE		
USE		
MIN LOT AREA	89M2 PER DWELLING UNIT = 3115M2	
MIN LOT FRONTAGE	30.0M	
MIN FRONT YARD	7.5M	
MIN EXTERIOR YARD	7.5M	
MIN INTERIOR SIDE YARD	7.5M	
MIN REAR YARD	7.5M	
MAX HEIGHT	15.5M MAIN BUILDING 18.15M TO MAX 230M2 PENT. (PER VARIANCE)	
MAX LOT COVERAGE	42%	
MIN LANDSCAPED OPEN SPACE (inc AREA BELOW BALCS)	36%	
DENSITY	35 UNITS	
ENCROACHMENT	OPEN BALCONY MAY ENCROACH MAX 2.5M INTO EXTERIOR YARD	
GENERAL CONDITIONS		
PARKING	1.4 SPACES PER UNIT (63 TOTAL)	
PARKING SPACE SIZE (PERPENDICULAR SURFACE)	6.0M X 3.0M WITH 5.9M DRIVE AISLE 6.0M X 2.75M WITH 6.3M DRIVE AISLE	
PARKING SPACE SIZE (PERPENDICULAR UNDERGROUND)	6.0M X 3.0M WITH 5.9M DRIVE AISLE 6.0M X 2.75M WITH 6.3M DRIVE AISLE	
ACCESSIBLE PARKING (PER AODA)	4% = 3 REQUIRED	



KNYMH
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ATTACHMENT B

Table B1
Road Traffic Noise Levels and Mitigation Measures Summary
3665 Macklem Street, Niagara Falls, Ontario

Point of Reception	Road Sound Level Daytime (dBA)	Road Sound Level Nighttime (dBA)	Ventilation Requirements NPC 300	Warning Clauses From NPC 300	Special Building Components
North					
Plane of Window Level 1	52 (dBA)	45 (dBA)	Not Required	Not Required	Minimum Window STC Rating of 28
Plane of Window Level 2	52 (dBA)	45 (dBA)	Not Required	Not Required	Minimum Window STC Rating of 28
Plane of Window Level 3	52 (dBA)	45 (dBA)	Not Required	Type D	Minimum Window STC Rating of 28
Plane of Window Level 4	52 (dBA)	45 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 5	51 (dBA)	45 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
East					
Plane of Window Level 1	57 (dBA)	50 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	57 (dBA)	50 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	57 (dBA)	50 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 4	56 (dBA)	50 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 5	56 (dBA)	50 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
South					
Plane of Window Level 1	56 (dBA)	50 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	56 (dBA)	50 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	56 (dBA)	50 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 4	56 (dBA)	50 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 5	56 (dBA)	50 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
West					
Plane of Window Level 1	51 (dBA)	45 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 2	51 (dBA)	45 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 3	51 (dBA)	45 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 4	51 (dBA)	45 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 5	51 (dBA)	45 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Outdoor Living Area					
Outdoor Living Area	57 (dBA)	N/A	N/A	Type A	N/A

STAMSON 5.0 NORMAL REPORT Date: 27-06-2025 13:52:14
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: Macklem St (day/night)

Car traffic volume : 4184/465 veh/TimePeriod *
Medium truck volume : 129/14 veh/TimePeriod *
Heavy truck volume : 0/0 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): 3100
Percentage of Annual Growth : 2.00
Number of Years of Growth : 22.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 0.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Macklem St (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 : 30.00 / 30.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Macklem St (day)

Source height = 0.50 m

ROAD (0.00 + 51.88 + 0.00) = 51.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	57.90	0.00	-3.01	-3.01	0.00	0.00	0.00	51.88

Segment Leq : 51.88 dBA

Total Leq All Segments: 51.88 dBA

Results segment # 1: Macklem St (night)

Source height = 0.50 m

ROAD (0.00 + 45.31 + 0.00) = 45.31 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	51.33	0.00	-3.01	-3.01	0.00	0.00	0.00	45.31

Segment Leq : 45.31 dBA

Total Leq All Segments: 45.31 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 51.88
(NIGHT): 45.31

STAMSON 5.0 NORMAL REPORT Date: 27-06-2025 13:51:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: Macklem St (day/night)

Car traffic volume : 4184/465 veh/TimePeriod *
Medium truck volume : 129/14 veh/TimePeriod *
Heavy truck volume : 0/0 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): 3100
Percentage of Annual Growth : 2.00
Number of Years of Growth : 22.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 0.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Macklem St (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 : 30.00 / 30.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 13901/1545 veh/TimePeriod *
Medium truck volume : 430/48 veh/TimePeriod *
Heavy truck volume : 0/0 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): 10300
Percentage of Annual Growth : 2.00

```
    Number of Years of Growth          :  22.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   0.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Portage 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  : 100.00 / 100.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: Macklem St (day)
-----------------------------------

Source height = 0.50 m

ROAD (0.00 + 54.89 + 0.00) = 54.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  57.90   0.00  -3.01   0.00   0.00   0.00   0.00  54.89
-------------------------------------------------------------------------------

Segment Leq : 54.89 dBA


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

Source height = 0.50 m

ROAD (0.00 + 51.87 + 0.00) = 51.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  63.12   0.00  -8.24  -3.01   0.00   0.00   0.00  51.87
-------------------------------------------------------------------------------

Segment Leq : 51.87 dBA

Total Leq All Segments: 56.65 dBA


Results segment # 1: Macklem St (night)
-------------------------------------
```

Source height = 0.50 m

ROAD (0.00 + 48.32 + 0.00) = 48.32 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	51.33	0.00	-3.01	0.00	0.00	0.00	0.00	48.32

Segment Leq : 48.32 dBA

Results segment # 2: Portage Rd (night)

Source height = 0.50 m

ROAD (0.00 + 45.34 + 0.00) = 45.34 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	56.59	0.00	-8.24	-3.01	0.00	0.00	0.00	45.34

Segment Leq : 45.34 dBA

Total Leq All Segments: 50.09 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.65
(NIGHT): 50.09

STAMSON 5.0 NORMAL REPORT Date: 27-06-2025 13:53:46
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola.te Time Period: Day/Night 16/8 hours
Description: Outdoor Living Area Rooftop

Road data, segment # 1: Macklem St (day/night)

Car traffic volume : 4184/465 veh/TimePeriod *
Medium truck volume : 129/14 veh/TimePeriod *
Heavy truck volume : 0/0 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): 3100
Percentage of Annual Growth : 2.00
Number of Years of Growth : 22.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 0.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Macklem St (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 : 30.00 / 30.00 m
Receiver height : 1.50 / 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 15.00 m
Reference angle : 0.00

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

Car traffic volume : 13901/1545 veh/TimePeriod *
Medium truck volume : 430/48 veh/TimePeriod *
Heavy truck volume : 0/0 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): 10300

```
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  22.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   0.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Portage 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  : 100.00 / 100.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: Macklem St (day)
-----------------------------------

Source height = 0.50 m

ROAD (0.00 + 54.89 + 0.00) = 54.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  57.90   0.00  -3.01   0.00   0.00   0.00   0.00  54.89
-------------------------------------------------------------------------------

Segment Leq : 54.89 dBA


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

Source height = 0.50 m

ROAD (0.00 + 51.87 + 0.00) = 51.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  63.12   0.00  -8.24  -3.01   0.00   0.00   0.00  51.87
-------------------------------------------------------------------------------

Segment Leq : 51.87 dBA

Total Leq All Segments: 56.65 dBA


Results segment # 1: Macklem St (night)
-------------------------------------
```

Source height = 0.50 m

ROAD (0.00 + 48.32 + 0.00) = 48.32 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	51.33	0.00	-3.01	0.00	0.00	0.00	0.00	48.32

Segment Leq : 48.32 dBA

Results segment # 2: Portage Rd (night)

Source height = 0.50 m

ROAD (0.00 + 45.34 + 0.00) = 45.34 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	56.59	0.00	-8.24	-3.01	0.00	0.00	0.00	45.34

Segment Leq : 45.34 dBA

Total Leq All Segments: 50.09 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.65
(NIGHT): 50.09

STAMSON 5.0 NORMAL REPORT Date: 27-06-2025 13:52:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: Macklem St (day/night)

Car traffic volume : 4184/465 veh/TimePeriod *
Medium truck volume : 129/14 veh/TimePeriod *
Heavy truck volume : 0/0 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): 3100
Percentage of Annual Growth : 2.00
Number of Years of Growth : 22.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 0.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Macklem St (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 : 30.00 / 30.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 13901/1545 veh/TimePeriod *
Medium truck volume : 430/48 veh/TimePeriod *
Heavy truck volume : 0/0 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): 10300
Percentage of Annual Growth : 2.00

```
    Number of Years of Growth          :  22.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   0.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Portage 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  : 110.00 / 110.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Results segment # 1: Macklem St (day)
-----------------------------------

Source height = 0.50 m

ROAD (0.00 + 51.88 + 0.00) = 51.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  57.90   0.00  -3.01  -3.01   0.00   0.00   0.00  51.88
-------------------------------------------------------------------------------

Segment Leq : 51.88 dBA


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

Source height = 0.50 m

ROAD (0.00 + 54.46 + 0.00) = 54.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  63.12   0.00  -8.65   0.00   0.00   0.00   0.00  54.46
-------------------------------------------------------------------------------

Segment Leq : 54.46 dBA

Total Leq All Segments: 56.37 dBA


Results segment # 1: Macklem St (night)
-------------------------------------
```

Source height = 0.50 m

ROAD (0.00 + 45.31 + 0.00) = 45.31 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	51.33	0.00	-3.01	-3.01	0.00	0.00	0.00	45.31

Segment Leq : 45.31 dBA

Results segment # 2: Portage Rd (night)

Source height = 0.50 m

ROAD (0.00 + 47.94 + 0.00) = 47.94 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	56.59	0.00	-8.65	0.00	0.00	0.00	0.00	47.94

Segment Leq : 47.94 dBA

Total Leq All Segments: 49.83 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.37
(NIGHT): 49.83

STAMSON 5.0 NORMAL REPORT Date: 27-06-2025 13:52:43
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

Car traffic volume : 13901/1545 veh/TimePeriod *
Medium truck volume : 430/48 veh/TimePeriod *
Heavy truck volume : 0/0 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): 10300
Percentage of Annual Growth : 2.00
Number of Years of Growth : 22.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 0.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Portage 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 : 120.00 / 120.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Portage Rd (day)

Source height = 0.50 m

ROAD (0.00 + 51.08 + 0.00) = 51.08 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	63.12	0.00	-9.03	-3.01	0.00	0.00	0.00	51.08

Segment Leq : 51.08 dBA

Total Leq All Segments: 51.08 dBA

Results segment # 1: Portage Rd (night)

Source height = 0.50 m

ROAD (0.00 + 44.55 + 0.00) = 44.55 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	56.59	0.00	-9.03	-3.01	0.00	0.00	0.00	44.55

Segment Leq : 44.55 dBA

Total Leq All Segments: 44.55 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 51.08
(NIGHT): 44.55

From: John Grubich
To: Emmanuel
Subject: RE: [EXTERNAL]-Traffic Data Reuest - Noise Impact Study - 3665 Macklem Street
Date: June 13, 2025 10:58:51 AM

Emmanuel;

Both are from 2023.

Cheers,

John Grubich, C.E.T. | Traffic Planning Supervisor | Municipal Works - Transportation Services | City of Niagara Falls
4343 Morrison Street, Niagara Falls, ON L2E 6Z9 | (905) 356-7521 ext 5214 | jgrubich@niagarafalls.ca

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From: Emmanuel <emmanuel@jjae.ca>
Sent: June 13, 2025 10:51 AM
To: John Grubich <jgrubich@niagarafalls.ca>
Subject: RE: [EXTERNAL]-Traffic Data Reuest - Noise Impact Study - 3665 Macklem Street

Thank you for the quick response.
Can you tell me what year the AADT for both roadways was collected?

Regards,

Emmanuel (Manny) Ghiorghis
JJ Acoustic Engineering Ltd.
Acoustic Technician
(226) 338-2665
Emmanuel@jjae.ca

From: John Grubich <jgrubich@niagarafalls.ca>
Sent: June 13, 2025 9:11 AM
To: Emmanuel <emmanuel@jjae.ca>
Cc: TPServices <tpservices@niagarafalls.ca>
Subject: RE: [EXTERNAL]-Traffic Data Reuest - Noise Impact Study - 3665 Macklem Street

Hello Emmanuel;

I provided information below within your e-mail. Let me know if you need anything else.

John Grubich, C.E.T. | Traffic Planning Supervisor | Municipal Works - Transportation Services | City of Niagara Falls

4343 Morrison Street, Niagara Falls, ON L2E 6Z9 | (905) 356-7521 ext 5214 | jgrubich@niagarafalls.ca

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From: Emmanuel <emmanuel@jjae.ca>
Sent: Thursday, June 12, 2025 2:36 PM
To: TPServices <tpservices@niagarafalls.ca>
Subject: [EXTERNAL]-Traffic Data Reuest - Noise Impact Study - 3665 Macklem Street

Hi,

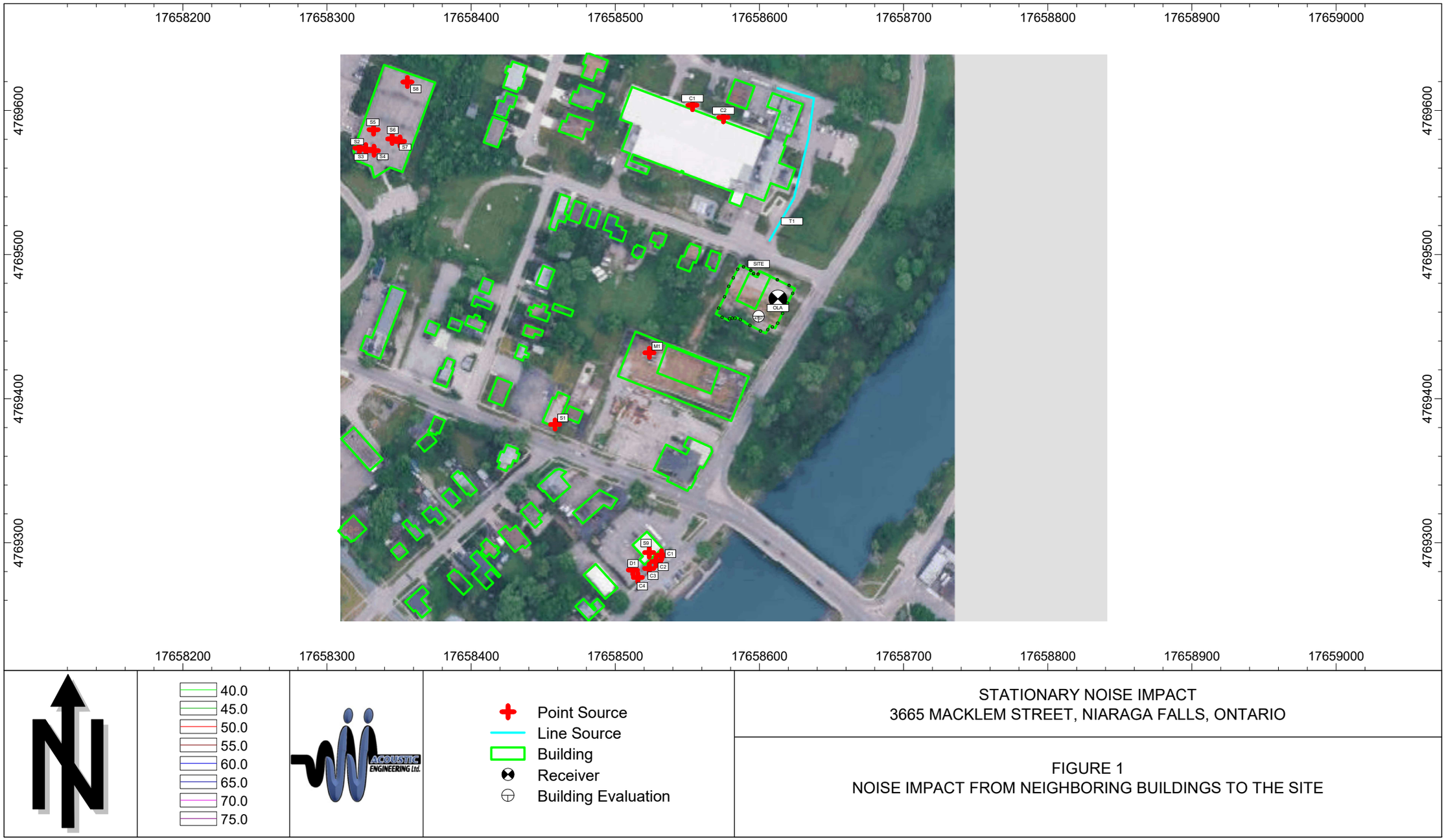
I am conducting an road traffic study for the proposed development at 3665 Macklem Street in Niagara falls.
Can you please provide me with the following information for both Macklem Street and Portage Road:

1. Future AADT 10 years or Current AADT with a growth % most commonly used by the City of Niagara falls? **10,300 Portage Road, 3,100 Macklem Street, use a annual 2% growth rate**
2. % Medium Trucks (or estimations as deemed acceptable by the City of Niagara falls)? **3.0%**
3. % Heavy trucks (or estimations as deemed acceptable by the City of Niagara falls)? **0% for this area**
4. Speed limits for roadways **Both Portage Road and Macklem Street have 50 km/h speed limits**

Regards,

Emmanuel (Manny) Ghiorghis
JJ Acoustic Engineering Ltd.
Acoustic Technician
(226) 338-2665
Emmanuel@jjae.ca

ATTACHMENT C


17658200
17658300
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17658800
17658900
17659000
4769600
4769500
4769400
4769300
S8
S5
S6
S7
S2
S3
S4
C1
C2
T1
SITE
OLA
M1
S1
S9
C1
C2
C3
C4
D1
40.0
45.0
50.0
55.0
60.0
65.0
70.0
75.0
Point Source
Line Source
Building
Receiver
Building Evaluation
ACOUSTIC ENGINEERING Ltd.
STATIONARY NOISE IMPACT
3665 MACKLEM STREET, NIARAGA FALLS, ONTARIO
FIGURE 1
NOISE IMPACT FROM NEIGHBORING BUILDINGS TO THE SITE

ATTACHMENT D

Table D1
Stationary Noise Impact Source Data
3665 Macklem Street Niagara Falls, Ontario

Noise Source Description	Cadna ID	Total SWL (dBA)	Data Source or Representative Data	Height Absolute (m)	Above Roof (m)	x	y
CH1	Representative_Chiller	91.7	Representative_Chiller	2.5	2.5	17658554	4769604
CH2	Representative_Chiller	91.7	Representative_Chiller	2.5	2.5	17658575	4769595
M1	Representative_MUA	80.6	Representative_MUA	16.5	1.5	17658524	4769432
S1	Small_HVAC	70.9	Small_HVAC	7.5	1.5	17658458	4769382
S2	Small_HVAC	70.9	Small_HVAC	7.5	1.5	17658322	4769574
S3	Small_HVAC	70.9	Small_HVAC	7.5	1.5	17658327	4769573
S4	Small_HVAC	70.9	Small_HVAC	7.5	1.5	17658333	4769572
S5	Small_HVAC	70.9	Small_HVAC	7.5	1.5	17658332	4769587
S6	Small_HVAC	70.9	Small_HVAC	7.5	1.5	17658345	4769580
S7	Small_HVAC	70.9	Small_HVAC	7.5	1.5	17658351	4769578
S8	Small_HVAC	70.9	Small_HVAC	7.5	1.5	17658356	4769620
S9	Small_HVAC	70.9	Small_HVAC	7.5	1.5	17658524	4769293
C1	Idling_car	72.4	Idling_car	1	1	17658532	4769291
C2	Idling_car	72.4	Idling_car	1	1	17658528	4769287
C3	Idling_car	72.4	Idling_car	1	1	17658524	4769282
C4	Idling_car	72.4	Idling_car	1	1	17658516	4769276
D1	Drive_Through_Speaker	82.5	Drive_Through_Speaker	1.1	1.1	17658512	4769281

								Equipment Movements (#/Hour				
Noise Source Description	Cadna ID	Total PWL (dBA)	Source	Height_Absolute (m)	Above Roof (m)	Area(m3)	Length (m)	Day	Night	Speed (km/hr)	x	y
T1	Heavy_truck_10kph	97.3	Heavy_truck_20kph	2.25	2.25	1790.45	130.92	10	0	10	17658620	4769572

KO Activation TL Data

0

Name	Sel.	M.	ID	Level Lr		Limit. Value		Land Use			Height		Coordinates		
				Day	Night	Day	Night	Type	Auto	Noise Type			X	Y	Z
				(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
OLA				36.5	30.4	0.0	0.0		x	Total	1.50	g	17658612.76	4769469.26	16.50