

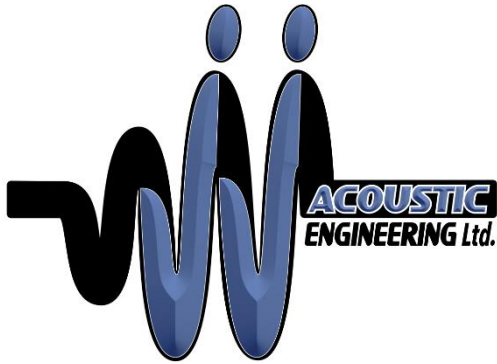


Road Traffic and Stationary Noise Impact Study

5858 Dunn Street, Niagara Falls, Ontario

JJ-00569-NIS1





August 21, 2023,

Reference No. JJ-00569-NIS1

Harsimran Kaur
(B.Arch, PG. Project Management)
Project Manager- RPD Studio
Suite 203, 7895 Tranmere Dr.
Mississauga ON L5S 1V9

Dear Mr. Kaur:

**Re: Road Traffic and Stationary Noise Impact Study
5858 Dunn 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 the residential development located at 5858 Dunn Street, in Niagara Falls, Ontario (Site). The Site will be developed into four blocks of 3-storey stacked townhouses. 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.

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 and STC Calculations
- 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, 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: Dunn Street approximately 15 meters to the North of building A. 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 County has been summarized below:

Dunn Street:

- Current AADT (2022): 8,930
- Forecast AADT (2043): 14,999
- Commercial Vehicle Rates: 2.55% medium trucks and 1.7% 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 County. The County's AADT report for this Noise Studies report has been supplied in Attachment B.

No AADT data was supplied but AM and PM Peak values were supplied. JJAЕ has used a very conservative calculations method which takes the sum of the AM Peak and PM Peak values for the roadway and multiplies that by 5. This approach is used by traffic engineers as a conservative calculation of the AADT for a roadway and is the calculation method used in this report.

It should be noted that traffic along Ailanthus Avenue is 2,435 AADT, which is considered environmentally insignificant and has not been included in this report.

Future values were determined using an assumed Percentage Annual Growth of 2.5% over 20 years.

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 OLA is located 5 meters from Block D West façade. JJAE has calculated the noise impact to the OLA to be 54dBA. The location of the OLA has been indicated on Attachment A – Site Plan. No mitigation measures are required for the OLA.

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	60 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 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

The mechanical equipment for these buildings is similar to that of a single-family home and considered to be environmentally insignificant. Therefore, the noise impact from the Site to the neighboring buildings is considered to be environmentally insignificant.

5. Noise Impact Summary – From Environment to Site

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

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.

Block A	Worst Case Daytime Sound Level (dBA)	Daytime Noise Limit (dBA)	Worst Case Nighttime Sound Level (dBA)	Nighttime Noise Limit (dBA)	Limits met
North	37	50	37	45	Yes
East	31	50	32	45	Yes
South	30>	50	30>	45	Yes
West	35	50	35	45	Yes

From the table above it can be seen that all facades meet noise limits.

Block B	Worst Case Daytime Sound Level (dBA)	Daytime Noise Limit (dBA)	Worst Case Nighttime Sound Level (dBA)	Nighttime Noise Limit (dBA)	Limits met
North	37	50	37	45	Yes
East	34	50	33	45	Yes
South	30>	50	30>	45	Yes
West	30	50	30	45	Yes

From the table above it can be seen that all facades meet noise limits.

Block C	Worst Case Daytime Sound Level (dBA)	Daytime Noise Limit (dBA)	Worst Case Nighttime Sound Level (dBA)	Nighttime Noise Limit (dBA)	Limits met
North	30>	50	30>	45	Yes
East	31	50	30	45	Yes
South	30>	50	30>	45	Yes
West	30>	50	30>	45	Yes

From the table above it can be seen that all facades meet noise limits.

Block D	Worst Case Daytime Sound Level (dBA)	Daytime Noise Limit (dBA)	Worst Case Nighttime Sound Level (dBA)	Nighttime Noise Limit (dBA)	Limits met
North	30	50	30	45	Yes
East	30>	50	30>	45	Yes
South	30>	50	30>	45	Yes
West	30>	50	30>	45	Yes
OLA	30>	50	N/A	N/A	Yes

From the table above it can be seen that all facades meet noise limits.

6. Recommendations

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

Building A:

- Warning Clause Type C for all unit along all façades.
- Requirement for Air Conditioning for all units.

Building B:

- Warning Clause Type C for all unit along all façades.
- Requirement for Air Conditioning for all units.

Building C:

- Warning Clause Type C for all unit along the North and East façades.
- Although Air Conditioning is not required for the units along the South and West Façades, JJAЕ and the client require air conditioning for all units.

Building D:

- Warning Clause Type C for all unit along the North façade.
- Although Air Conditioning is not required for the units along the East, South and West Façades, JJAЕ and the client require air conditioning for all units.

These have been summarized in Attachment B under Table B1

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

The mechanical equipment for these buildings is similar to that of a single-family home and considered to be environmentally insignificant. Therefore, the noise impact from the Site to the neighboring buildings is considered to be environmentally insignificant.

7. Conclusions

The results of this Study indicate that the potential environmental impact from road traffic noise sources is significant. Mitigation measures will be required including ventilation requirements and noise warning clauses for each building. With the mitigation measures, provided in Section 6, there should be no negative noise impact from this Site to neighboring buildings and no negative 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:

Aug. 21, 2023



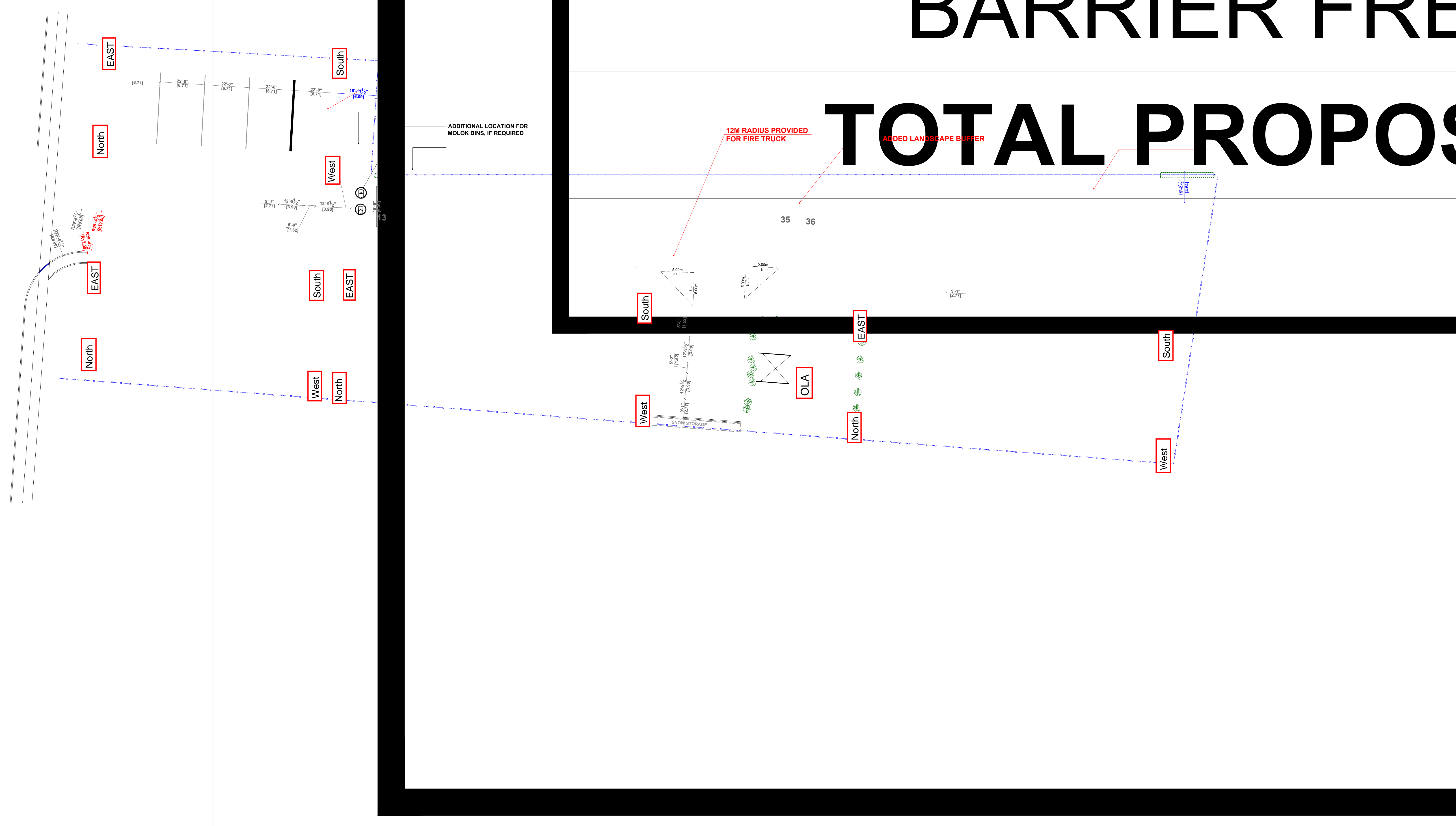
Emmanuel Ghiorghis,
Acoustic Technician

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

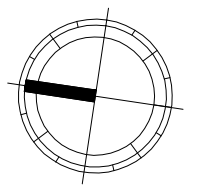
ATTACHMENT A

BARRIER FIRE

TOTAL PROPOS



LOT AREA = 78577.72 SQ.FT (7300.11 SQ.MT.) - 100%
LOT COVERAGE = 21201.13 SQ.FT (1969.65 SQ.MT.) - 26.98%



ATTACHMENT B

Dunn St @ Ailanthus Ave

Mid-day Peak Diagram

Specified Period

From: 10:00:00

To: 14:00:00

One Hour Peak

From: 13:00:00

To: 14:00:00

Municipality: Niagara Falls
Site #: 000000029
Intersection: Dunn St & Ailanthus Ave
TFR File #: 29
Count date: 6-Jul-2022

Weather conditions:

Cloudy/Dry

Person(s) who counted:

Cam

**** Non-Signalized Intersection ****

Major Road: Dunn St runs W/E

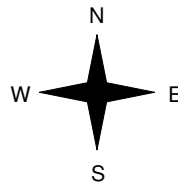
East Leg Total: 369
 East Entering: 168
 East Peds: 1
 Peds Cross: X

Cyclists	Trucks	Cars	Totals
0	16	190	206

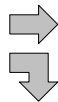


Dunn St

Cars	Trucks	Cyclists	Totals
136	16	0	152
14	1	1	16
150	17	1	



Cyclists	Trucks	Cars	Totals
1	16	155	172
2	2	49	53
3	18	204	



Ailanthus Ave

Dunn St

Cars	Trucks	Cyclists	Totals
180	18	3	201



Peds Cross: X
 West Peds: 0
 West Entering: 225
 West Leg Total: 431

Cars	63
Trucks	3
Cyclists	3
Totals	69



Cars	54	25	79
Trucks	0	2	2
Cyclists	0	2	2
Totals	54	29	

Peds Cross: X
 South Peds: 10
 South Entering: 83
 South Leg Total: 152

Comments

Dunn St @ Ailanthus Ave

Afternoon Peak Diagram

Specified Period

From: 15:00:00

To: 19:00:00

One Hour Peak

From: 16:30:00

To: 17:30:00

Municipality: Niagara Falls
Site #: 000000029
Intersection: Dunn St & Ailanthus Ave
TFR File #: 29
Count date: 6-Jul-2022

Weather conditions:
 Cloudy/Dry
Person(s) who counted:
 Cam

**** Non-Signalized Intersection ****

Major Road: Dunn St runs W/E

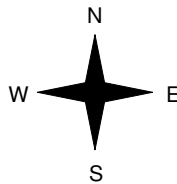
East Leg Total: 484
 East Entering: 291
 East Peds: 1
 Peds Cross: ∞

Cyclists	Trucks	Cars	Totals
5	14	275	294



Dunn St

Cyclists	Trucks	Cars	Totals
3	13	147	163
3	0	42	45
6	13	189	



Ailanthus Ave



Cars	74
Trucks	1
Cyclists	3
Totals	78

Cars	35	29	64
Trucks	0	1	1
Cyclists	1	0	1
Totals	36	30	

Cars	Trucks	Cyclists	Totals
240	14	4	258
32	1	0	33
272	15	4	



Dunn St



Cars	Trucks	Cyclists	Totals
176	14	3	193

Peds Cross: ∞
 West Peds: 0
 West Entering: 208
 West Leg Total: 502

Peds Cross: ∞
 South Peds: 13
 South Entering: 66
 South Leg Total: 144

Comments

Dunn St @ Ailanthus Ave

Total Count Diagram

Municipality: Niagara Falls
Site #: 000000029
Intersection: Dunn St & Ailanthus Ave
TFR File #: 29
Count date: 6-Jul-2022

Weather conditions:
 Cloudy/Dry
Person(s) who counted:
 Cam

**** Non-Signalized Intersection ****

Major Road: Dunn St runs W/E

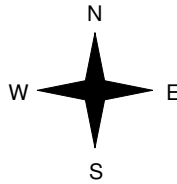
East Leg Total: 3039
 East Entering: 1593
 East Peds: 13
 Peds Cross: 8

Cyclists	Trucks	Cars	Totals
24	129	1617	1770



Dunn St

Cyclists	Trucks	Cars	Totals
11	129	1111	1251
9	7	324	340
20	136	1435	



Ailanthus Ave



Cars	Trucks	Cyclists	Totals
1273	128	18	1419
160	11	3	174
1433	139	21	

Dunn St



Cars	Trucks	Cyclists	Totals
1290	137	19	1446

Peds Cross: 8
 West Peds: 0
 West Entering: 1591
 West Leg Total: 3361

Cars	484
Trucks	18
Cyclists	12
Totals	514



Cars	344	179	523
Trucks	1	8	9
Cyclists	6	8	14
Totals	351	195	

Peds Cross: 0
 South Peds: 90
 South Entering: 546
 South Leg Total: 1060

Comments

Table B1**Road Traffic Noise Levels and Mitigation Measures Summary**

5858 Dunn Street, Niagara Falls, Ontario

Building A

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 Façade					
Plane of Window Level 1	65 (dBA)	59 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	65 (dBA)	58 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	65 (dBA)	58 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
East Façade					
Plane of Window Level 1	62 (dBA)	56 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	62 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	62 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
South Façade					
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
West Façade					
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

Table B1**Road Traffic Noise Levels and Mitigation Measures Summary**

5858 Dunn Street, Niagara Falls, Ontario

Building B

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 Façade					
Plane of Window Level 1	65 (dBA)	59 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	65 (dBA)	58 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	65 (dBA)	58 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
East Façade					
Plane of Window Level 1	62 (dBA)	56 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	62 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	62 (dBA)	55 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
South Façade					
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
West Façade					
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

Table B1**Road Traffic Noise Levels and Mitigation Measures Summary**

5858 Dunn Street, Niagara Falls, Ontario

Building C

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 Façade					
Plane of Window Level 1	60 (dBA)	54 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	60 (dBA)	54 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	60 (dBA)	54 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
East Façade					
Plane of Window Level 1	57 (dBA)	51 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 2	57 (dBA)	51 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
Plane of Window Level 3	57 (dBA)	51 (dBA)	Requirement for Air Conditioning	Type C	Compliance with Ontario Building Code
South Façade					
Plane of Window Level 1	54 (dBA)	48 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 2	54 (dBA)	48 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 3	54 (dBA)	48 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
West Façade					
Plane of Window Level 1	54 (dBA)	48 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 2	54 (dBA)	48 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 3	54 (dBA)	48 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code

Table B1**Road Traffic Noise Levels and Mitigation Measures Summary**

5858 Dunn Street, Niagara Falls, Ontario

Building D

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 Façade					
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
East Façade					
Plane of Window Level 1	53 (dBA)	47 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 2	53 (dBA)	47 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 3	53 (dBA)	47 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
South Façade					
Plane of Window Level 1	52 (dBA)	45 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 2	52 (dBA)	45 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 3	52 (dBA)	45 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
West Façade					
Plane of Window Level 1	52 (dBA)	45 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 2	52 (dBA)	45 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code
Plane of Window Level 3	52 (dBA)	45 (dBA)	Not Required	Not Required	Compliance with Ontario Building Code

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

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

```
-----
Car traffic volume   : 12925/1436  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   229/25    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):  8930
Percentage of Annual Growth         :   2.50
Number of Years of Growth           :  21.00
Medium Truck % of Total Volume      :   2.55
Heavy Truck % of Total Volume       :   1.70
Day (16 hrs) % of Total Volume      :  90.00
```

Data for Segment # 1: Dunn 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 : 15.00 / 15.00 m
Receiver height    :     2.00 / 2.00 m
Topography         :     1      (Flat/gentle slope; no barrier)
Reference angle    :     0.00
```

Results segment # 1: Dunn St (day)

Source height = 1.14 m

ROAD (0.00 + 62.14 + 0.00) = 62.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	65.15	0.00	0.00	-3.01	0.00	0.00	0.00	62.14

Segment Leq : 62.14 dBA

Total Leq All Segments: 62.14 dBA

Results segment # 1: Dunn St (night)

Source height = 1.14 m

ROAD (0.00 + 55.57 + 0.00) = 55.57 dBA

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

0 90 0.00 58.58 0.00 0.00 -3.01 0.00 0.00 0.00 55.57

Segment Leq : 55.57 dBA

Total Leq All Segments: 55.57 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.14
(NIGHT): 55.57

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

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

```
-----
Car traffic volume   : 12925/1436  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   229/25    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):  8930
Percentage of Annual Growth         :   2.50
Number of Years of Growth           :  21.00
Medium Truck % of Total Volume      :   2.55
Heavy Truck % of Total Volume       :   1.70
Day (16 hrs) % of Total Volume      :  90.00
```

Data for Segment # 1: Dunn 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 : 15.00 / 15.00 m
Receiver height     :     2.00 / 2.00 m
Topography          :     1      (Flat/gentle slope; no barrier)
Reference angle     :     0.00
```

Results segment # 1: Dunn St (day)

Source height = 1.14 m

```
ROAD (0.00 + 65.15 + 0.00) = 65.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----
  -90    90    0.00  65.15   0.00   0.00   0.00   0.00   0.00   0.00  65.15
-----
```

Segment Leq : 65.15 dBA

Total Leq All Segments: 65.15 dBA

Results segment # 1: Dunn St (night)

Source height = 1.14 m

ROAD (0.00 + 58.58 + 0.00) = 58.58 dBA

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

-90 90 0.00 58.58 0.00 0.00 0.00 0.00 0.00 0.00 58.58

Segment Leq : 58.58 dBA

Total Leq All Segments: 58.58 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.15
(NIGHT): 58.58

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

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

 Car traffic volume : 12925/1436 veh/TimePeriod *
 Medium truck volume : 344/38 veh/TimePeriod *
 Heavy truck volume : 229/25 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): 8930
 Percentage of Annual Growth : 2.50
 Number of Years of Growth : 21.00
 Medium Truck % of Total Volume : 2.55
 Heavy Truck % of Total Volume : 1.70
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Dunn 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 : 50.00 / 50.00 m
 Receiver height : 2.00 / 2.00 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Dunn St (day)

 Source height = 1.14 m

ROAD (0.00 + 56.91 + 0.00) = 56.91 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	65.15	0.00	-5.23	-3.01	0.00	0.00	0.00	56.91

Segment Leq : 56.91 dBA

Total Leq All Segments: 56.91 dBA

Results segment # 1: Dunn St (night)

Source height = 1.14 m

ROAD (0.00 + 50.34 + 0.00) = 50.34 dBA

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

0 90 0.00 58.58 0.00 -5.23 -3.01 0.00 0.00 0.00 50.34

Segment Leq : 50.34 dBA

Total Leq All Segments: 50.34 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.91
(NIGHT): 50.34

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

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

 Car traffic volume : 12925/1436 veh/TimePeriod *
 Medium truck volume : 344/38 veh/TimePeriod *
 Heavy truck volume : 229/25 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): 8930
 Percentage of Annual Growth : 2.50
 Number of Years of Growth : 21.00
 Medium Truck % of Total Volume : 2.55
 Heavy Truck % of Total Volume : 1.70
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Dunn St (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 : 50.00 / 50.00 m
 Receiver height : 2.00 / 2.00 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Dunn St (day)

 Source height = 1.14 m

ROAD (0.00 + 56.91 + 0.00) = 56.91 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	65.15	0.00	-5.23	-3.01	0.00	0.00	0.00	56.91

Segment Leq : 56.91 dBA

Total Leq All Segments: 56.91 dBA

Results segment # 1: Dunn St (night)

Source height = 1.14 m

ROAD (0.00 + 50.34 + 0.00) = 50.34 dBA

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

-90 0 0.00 58.58 0.00 -5.23 -3.01 0.00 0.00 0.00 50.34

Segment Leq : 50.34 dBA

Total Leq All Segments: 50.34 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.91
(NIGHT): 50.34

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

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

```
-----
Car traffic volume   : 12925/1436  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   229/25    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):  8930
Percentage of Annual Growth         :   2.50
Number of Years of Growth           :  21.00
Medium Truck % of Total Volume      :   2.55
Heavy Truck % of Total Volume       :   1.70
Day (16 hrs) % of Total Volume      :  90.00
```

Data for Segment # 1: Dunn 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 : 15.00 / 15.00 m
Receiver height     :     2.00 / 2.00 m
Topography         :     1      (Flat/gentle slope; no barrier)
Reference angle     :     0.00
```

Results segment # 1: Dunn St (day)

Source height = 1.14 m

ROAD (0.00 + 62.14 + 0.00) = 62.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	65.15	0.00	0.00	-3.01	0.00	0.00	0.00	62.14

Segment Leq : 62.14 dBA

Total Leq All Segments: 62.14 dBA

Results segment # 1: Dunn St (night)

Source height = 1.14 m

ROAD (0.00 + 55.57 + 0.00) = 55.57 dBA

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

0	90	0.00	58.58	0.00	0.00	-3.01	0.00	0.00	0.00	55.57
---	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 55.57 dBA

Total Leq All Segments: 55.57 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.14
(NIGHT): 55.57

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

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

 Car traffic volume : 12925/1436 veh/TimePeriod *
 Medium truck volume : 344/38 veh/TimePeriod *
 Heavy truck volume : 229/25 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): 8930
 Percentage of Annual Growth : 2.50
 Number of Years of Growth : 21.00
 Medium Truck % of Total Volume : 2.55
 Heavy Truck % of Total Volume : 1.70
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Dunn 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 : 15.00 / 15.00 m
 Receiver height : 2.00 / 2.00 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Dunn St (day)

 Source height = 1.14 m

ROAD (0.00 + 65.15 + 0.00) = 65.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	65.15	0.00	0.00	0.00	0.00	0.00	0.00	65.15

Segment Leq : 65.15 dBA

Total Leq All Segments: 65.15 dBA

Results segment # 1: Dunn St (night)

Source height = 1.14 m

ROAD (0.00 + 58.58 + 0.00) = 58.58 dBA

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

-90	90	0.00	58.58	0.00	0.00	0.00	0.00	0.00	0.00	58.58
-----	----	------	-------	------	------	------	------	------	------	-------

Segment Leq : 58.58 dBA

Total Leq All Segments: 58.58 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.15
(NIGHT): 58.58

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

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

 Car traffic volume : 12925/1436 veh/TimePeriod *
 Medium truck volume : 344/38 veh/TimePeriod *
 Heavy truck volume : 229/25 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): 8930
 Percentage of Annual Growth : 2.50
 Number of Years of Growth : 21.00
 Medium Truck % of Total Volume : 2.55
 Heavy Truck % of Total Volume : 1.70
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Dunn 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 : 50.00 / 50.00 m
 Receiver height : 2.00 / 2.00 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Dunn St (day)

 Source height = 1.14 m

ROAD (0.00 + 56.91 + 0.00) = 56.91 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	65.15	0.00	-5.23	-3.01	0.00	0.00	0.00	56.91

Segment Leq : 56.91 dBA

Total Leq All Segments: 56.91 dBA

Results segment # 1: Dunn St (night)

Source height = 1.14 m

ROAD (0.00 + 50.34 + 0.00) = 50.34 dBA

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

0	90	0.00	58.58	0.00	-5.23	-3.01	0.00	0.00	0.00	50.34
---	----	------	-------	------	-------	-------	------	------	------	-------

Segment Leq : 50.34 dBA

Total Leq All Segments: 50.34 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.91

(NIGHT): 50.34

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

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

 Car traffic volume : 12925/1436 veh/TimePeriod *
 Medium truck volume : 344/38 veh/TimePeriod *
 Heavy truck volume : 229/25 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): 8930
 Percentage of Annual Growth : 2.50
 Number of Years of Growth : 21.00
 Medium Truck % of Total Volume : 2.55
 Heavy Truck % of Total Volume : 1.70
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Dunn St (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 : 50.00 / 50.00 m
 Receiver height : 2.00 / 2.00 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Dunn St (day)

 Source height = 1.14 m

ROAD (0.00 + 56.91 + 0.00) = 56.91 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	65.15	0.00	-5.23	-3.01	0.00	0.00	0.00	56.91

Segment Leq : 56.91 dBA

Total Leq All Segments: 56.91 dBA

Results segment # 1: Dunn St (night)

Source height = 1.14 m

ROAD (0.00 + 50.34 + 0.00) = 50.34 dBA

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

-90 0 0.00 58.58 0.00 -5.23 -3.01 0.00 0.00 0.00 50.34

Segment Leq : 50.34 dBA

Total Leq All Segments: 50.34 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.91
(NIGHT): 50.34

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

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

 Car traffic volume : 12925/1436 veh/TimePeriod *
 Medium truck volume : 344/38 veh/TimePeriod *
 Heavy truck volume : 229/25 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): 8930
 Percentage of Annual Growth : 2.50
 Number of Years of Growth : 21.00
 Medium Truck % of Total Volume : 2.55
 Heavy Truck % of Total Volume : 1.70
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Dunn 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 : 45.00 / 45.00 m
 Receiver height : 2.00 / 2.00 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Dunn St (day)

 Source height = 1.14 m

ROAD (0.00 + 57.37 + 0.00) = 57.37 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	65.15	0.00	-4.77	-3.01	0.00	0.00	0.00	57.37

Segment Leq : 57.37 dBA

Total Leq All Segments: 57.37 dBA

Results segment # 1: Dunn St (night)

Source height = 1.14 m

ROAD (0.00 + 50.80 + 0.00) = 50.80 dBA

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

0 90 0.00 58.58 0.00 -4.77 -3.01 0.00 0.00 0.00 50.80

Segment Leq : 50.80 dBA

Total Leq All Segments: 50.80 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.37
(NIGHT): 50.80

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

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

```
-----
Car traffic volume : 12925/1436 veh/TimePeriod *
Medium truck volume : 344/38 veh/TimePeriod *
Heavy truck volume : 229/25 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): 8930
Percentage of Annual Growth : 2.50
Number of Years of Growth : 21.00
Medium Truck % of Total Volume : 2.55
Heavy Truck % of Total Volume : 1.70
Day (16 hrs) % of Total Volume : 90.00
```

Data for Segment # 1: Dunn 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 : 45.00 / 45.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Dunn St (day)

Source height = 1.14 m

```
ROAD (0.00 + 60.38 + 0.00) = 60.38 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-----
-90 90 0.00 65.15 0.00 -4.77 0.00 0.00 0.00 0.00 60.38
-----
```

Segment Leq : 60.38 dBA

Total Leq All Segments: 60.38 dBA

Results segment # 1: Dunn St (night)

Source height = 1.14 m

ROAD (0.00 + 53.81 + 0.00) = 53.81 dBA

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

-90 90 0.00 58.58 0.00 -4.77 0.00 0.00 0.00 0.00 53.81

Segment Leq : 53.81 dBA

Total Leq All Segments: 53.81 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.38
(NIGHT): 53.81

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

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

```
-----
Car traffic volume   : 12925/1436  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   229/25    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):  8930
Percentage of Annual Growth         :   2.50
Number of Years of Growth           :  21.00
Medium Truck % of Total Volume      :   2.55
Heavy Truck % of Total Volume       :   1.70
Day (16 hrs) % of Total Volume     :  90.00
```

Data for Segment # 1: Dunn 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 :  90.00 / 90.00 m
Receiver height     :     2.00 / 2.00 m
Topography         :     1      (Flat/gentle slope; no barrier)
Reference angle    :     0.00
```

Results segment # 1: Dunn St (day)

Source height = 1.14 m

ROAD (0.00 + 54.36 + 0.00) = 54.36 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	65.15	0.00	-7.78	-3.01	0.00	0.00	0.00	54.36

Segment Leq : 54.36 dBA

Total Leq All Segments: 54.36 dBA

Results segment # 1: Dunn St (night)

Source height = 1.14 m

ROAD (0.00 + 47.79 + 0.00) = 47.79 dBA

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

0 90 0.00 58.58 0.00 -7.78 -3.01 0.00 0.00 0.00 47.79

Segment Leq : 47.79 dBA

Total Leq All Segments: 47.79 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.36

(NIGHT): 47.79

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

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

Car traffic volume : 12925/1436 veh/TimePeriod *
Medium truck volume : 344/38 veh/TimePeriod *
Heavy truck volume : 229/25 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): 8930
Percentage of Annual Growth : 2.50
Number of Years of Growth : 21.00
Medium Truck % of Total Volume : 2.55
Heavy Truck % of Total Volume : 1.70
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Dunn St (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 : 90.00 / 90.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Dunn St (day)

Source height = 1.14 m

ROAD (0.00 + 54.36 + 0.00) = 54.36 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

-90 0 0.00 65.15 0.00 -7.78 -3.01 0.00 0.00 0.00 54.36

Segment Leq : 54.36 dBA

Total Leq All Segments: 54.36 dBA

Results segment # 1: Dunn St (night)

Source height = 1.14 m

ROAD (0.00 + 47.79 + 0.00) = 47.79 dBA

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

-90 0 0.00 58.58 0.00 -7.78 -3.01 0.00 0.00 0.00 47.79

Segment Leq : 47.79 dBA

Total Leq All Segments: 47.79 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.36
(NIGHT): 47.79

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

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

 Car traffic volume : 12925/1436 veh/TimePeriod *
 Medium truck volume : 344/38 veh/TimePeriod *
 Heavy truck volume : 229/25 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): 8930
 Percentage of Annual Growth : 2.50
 Number of Years of Growth : 21.00
 Medium Truck % of Total Volume : 2.55
 Heavy Truck % of Total Volume : 1.70
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Dunn 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 : 115.00 / 115.00 m
 Receiver height : 2.00 / 2.00 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Dunn St (day)

 Source height = 1.14 m

ROAD (0.00 + 53.30 + 0.00) = 53.30 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	65.15	0.00	-8.85	-3.01	0.00	0.00	0.00	53.30

Segment Leq : 53.30 dBA

Total Leq All Segments: 53.30 dBA

Results segment # 1: Dunn St (night)

Source height = 1.14 m

ROAD (0.00 + 46.73 + 0.00) = 46.73 dBA

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

0 90 0.00 58.58 0.00 -8.85 -3.01 0.00 0.00 0.00 46.73

Segment Leq : 46.73 dBA

Total Leq All Segments: 46.73 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.30
(NIGHT): 46.73

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

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

Car traffic volume : 12925/1436 veh/TimePeriod *
Medium truck volume : 344/38 veh/TimePeriod *
Heavy truck volume : 229/25 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): 8930
Percentage of Annual Growth : 2.50
Number of Years of Growth : 21.00
Medium Truck % of Total Volume : 2.55
Heavy Truck % of Total Volume : 1.70
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Dunn 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 : 115.00 / 115.00 m
Receiver height : 2.00 / 2.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Dunn St (day)

Source height = 1.14 m

ROAD (0.00 + 56.31 + 0.00) = 56.31 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

-90 90 0.00 65.15 0.00 -8.85 0.00 0.00 0.00 0.00 56.31

Segment Leq : 56.31 dBA

Total Leq All Segments: 56.31 dBA

Results segment # 1: Dunn St (night)

Source height = 1.14 m

ROAD (0.00 + 49.74 + 0.00) = 49.74 dBA

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

-90 90 0.00 58.58 0.00 -8.85 0.00 0.00 0.00 0.00 49.74

Segment Leq : 49.74 dBA

Total Leq All Segments: 49.74 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.31
(NIGHT): 49.74

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

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

 Car traffic volume : 12925/1436 veh/TimePeriod *
 Medium truck volume : 344/38 veh/TimePeriod *
 Heavy truck volume : 229/25 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): 8930
 Percentage of Annual Growth : 2.50
 Number of Years of Growth : 21.00
 Medium Truck % of Total Volume : 2.55
 Heavy Truck % of Total Volume : 1.70
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Dunn 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 : 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: Dunn St (day)

 Source height = 1.14 m

ROAD (0.00 + 51.86 + 0.00) = 51.86 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	65.15	0.00	-10.28	-3.01	0.00	0.00	0.00	51.86

Segment Leq : 51.86 dBA

Total Leq All Segments: 51.86 dBA

Results segment # 1: Dunn St (night)

Source height = 1.14 m

ROAD (0.00 + 45.29 + 0.00) = 45.29 dBA

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

0 90 0.00 58.58 0.00 -10.28 -3.01 0.00 0.00 0.00 45.29

Segment Leq : 45.29 dBA

Total Leq All Segments: 45.29 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 51.86
(NIGHT): 45.29

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

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

```
-----
Car traffic volume   : 12925/1436  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   229/25    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):  8930
Percentage of Annual Growth         :   2.50
Number of Years of Growth           :  21.00
Medium Truck % of Total Volume      :   2.55
Heavy Truck % of Total Volume       :   1.70
Day (16 hrs) % of Total Volume     :  90.00
```

Data for Segment # 1: Dunn St (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 : 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: Dunn St (day)

Source height = 1.14 m

```
ROAD (0.00 + 51.86 + 0.00) = 51.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----
-90     0     0.00  65.15  0.00 -10.28 -3.01  0.00  0.00  0.00  51.86
-----
```

Segment Leq : 51.86 dBA

Total Leq All Segments: 51.86 dBA

Results segment # 1: Dunn St (night)

Source height = 1.14 m

ROAD (0.00 + 45.29 + 0.00) = 45.29 dBA

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

-90 0 0.00 58.58 0.00 -10.28 -3.01 0.00 0.00 0.00 45.29

Segment Leq : 45.29 dBA

Total Leq All Segments: 45.29 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 51.86
(NIGHT): 45.29

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

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

 Car traffic volume : 12925/1436 veh/TimePeriod *
 Medium truck volume : 344/38 veh/TimePeriod *
 Heavy truck volume : 229/25 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): 8930
 Percentage of Annual Growth : 2.50
 Number of Years of Growth : 21.00
 Medium Truck % of Total Volume : 2.55
 Heavy Truck % of Total Volume : 1.70
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Dunn 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 : 105.00 / 105.00 m
 Receiver height : 2.00 / 2.00 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Dunn St (day)

 Source height = 1.14 m

ROAD (0.00 + 53.69 + 0.00) = 53.69 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

 0 90 0.00 65.15 0.00 -8.45 -3.01 0.00 0.00 0.00 53.69

Segment Leq : 53.69 dBA

Total Leq All Segments: 53.69 dBA

Results segment # 1: Dunn St (night)

Source height = 1.14 m

ROAD (0.00 + 47.12 + 0.00) = 47.12 dBA

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

0 90 0.00 58.58 0.00 -8.45 -3.01 0.00 0.00 0.00 47.12

Segment Leq : 47.12 dBA

Total Leq All Segments: 47.12 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.69
(NIGHT): 47.12

ATTACHMENT C



Figure 1 - Stationary Noise Impact from Neighboring Buildings to Site

ATTACHMENT D

Table C1
 Stationary Noise Impact Source Data
 5858 Dunn 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
S11	Medium_HVAC	79.9	Medium_HVAC	4.5	1.5	17655560	4771342
S10	Small_HVAC	70.9	Small_HVAC	14.25	1.25	17655598	4771400
S9	Representative_MUA	80.6	Representative_MUA	14.5	1.5	17655591	4771397
S8	Small_HVAC	70.9	Small_HVAC	14.25	1.25	17655556	4771422
S7	Representative_MUA	80.6	Representative_MUA	22.5	1.5	17655501	4771396
S6	Representative_MUA	80.6	Representative_MUA	22.5	1.5	17655500	4771418
S5	Representative_MUA	80.6	Representative_MUA	7.1	1.5	17655421	4771395
S4	Medium_HVAC	79.9	Medium_HVAC	7.1	1.5	17655433	4771445
S3	Medium_HVAC	79.9	Medium_HVAC	7.1	1.5	17655426	4771444
S2	Medium_HVAC	79.9	Medium_HVAC	7.1	1.5	17655419	4771444
S1	Small_HVAC	70.9	Small_HVAC	6.85	1.25	17655412	4771449