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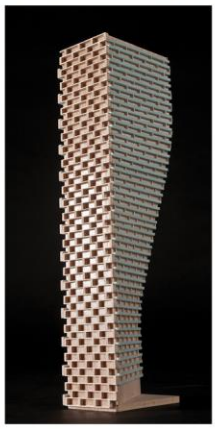
ROADWAY TRAFFIC NOISE ASSESSMENT

100 Argyle Street
Ottawa, Ontario

REPORT: 18-108 – Traffic Noise



August 12, 2021

PREPARED FOR

Colonnade BridgePort
100 Argyle Avenue, Suite 100
Ottawa, ON K2P 1B6

PREPARED BY

Caleb Alexander, B,Eng., Junior Environmental Scientist
Joshua Foster, P.Eng., Principal

127 WALGREEN ROAD, OTTAWA, ON, CANADA K0A 1L0 | 613 836 0934
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EXECUTIVE SUMMARY

This document describes a roadway traffic noise assessment performed for a proposed residential-use development located at 100 Argyle Avenue in Ottawa, Ontario. The proposed development comprises a 12-storey residential building with a 4-storey podium. The planned building would comprise residential units with commercial space at grade. Outdoor amenity space is provided on the rooftop. Major sources of noise are roadway traffic along Metcalfe Road, Argyle Avenue, Elgin Street and Highway 417. Figure 1 illustrates a complete site plan with surrounding context.

The assessment is based on: (i) theoretical noise prediction methods that conform to the Ministry of the Environment, Conservation and Parks (MECP) and City of Ottawa requirements; (ii) noise level criteria as specified by the City of Ottawa's Environmental Noise Control Guidelines (ENCG); and (iii) architectural drawings received from RLA Architecture, dated July 5, 2021.

The results of the current analysis indicate that noise levels will range between 67 and 74 dBA during the daytime period (07:00-23:00) and between 60 and 66 dBA during the nighttime period (23:00-07:00). The highest noise level (i.e. 74 dBA) occurs along the building's south facing façade, which is nearest and most exposed to Highway 417. These noise levels predicted due to roadway traffic exceed the criteria listed in Section 4.2 for building components. Upgraded building components, including STC rated glazing elements and exterior walls, will be required on all building façades, as discussed in Section 4.2.1. Results of the calculations also indicate that the development will require air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment. In addition to these requirements, Warning Clauses will also be required be placed on all Lease, Purchase and Sale Agreements, as summarized in section 6.

Noise levels at the rooftop terrace (Receptor 5) are expected to exceed 60 dBA during the daytime period. If this area is to be used as an outdoor living area, noise control measures are required to reduce the L_{eq} to below 60 dBA. Therefore, it is recommended to install a 3.0 m tall acoustic barrier at the perimeter of the terrace at the south and west and north sides, as described in Figure 3.

With respect to noise impacts from the building's proposed HVAC equipment on the surroundings and the building itself, noise from HVAC equipment can be minimized by judicious selection and placement of the equipment. Locating large pieces of equipment, such as cooling towers, generators, and air handling units, on a high roof, allows the building to shield nearby sensitive areas from noise exposure. Where necessary noise levels can be controlled by adding silencers, acoustic barriers, or noise screens. A stationary noise study will be conducted for the site during the detailed design once mechanical plans for the proposed building become available. This study will include recommendations for any noise control measures that may be necessary to ensure noise levels fall below NPC-300 limits. The surrounding the site includes a mix of residential and retails buildings. As such, there are no significant existing stationary noise sources surrounding the site.

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1. INTRODUCTION

Gradient Wind Engineering Inc. (GWE) was retained by Colonnade BridgePort to undertake a roadway traffic assessment in support of a Site Plan Control Application (SPA) for a proposed residential-use development located at 100 Argyle Avenue in Ottawa, Ontario. This report summarizes the methodology, results, and recommendations related to a roadway traffic noise assessment, prepared in consideration of a rezoning application. GW's scope of work involved assessing exterior noise and vibration levels generated by local roadway traffic. The assessment was performed based on theoretical noise calculation methods conforming to the City of Ottawa[1] and Ministry of the Environment, Conservation and Parks (MECP)[2] guidelines. Noise calculations were based on architectural drawings received from RLA Architecture, dated July 5, 2021 with future roadway traffic volumes based on the City of Ottawa's Official Plan (OP) roadway classifications.

2. TERMS OF REFERENCE

The focus of this roadway traffic noise assessment is the proposed residential development located at 100 Argyle Avenue in Ottawa, Ontario. The study site is situated on a parcel of land just south of the Argyle Avenue where Metcalfe Road jogs around the Museum of Nature. Major sources of noise are roadway traffic along Metcalfe Road, Argyle Avenue, Elgin Street and Highway 417. Figure 1 illustrates a site plan with surrounding context.

The proposed development comprises a 12-storey building with a three-storey podium. The planned building would comprise residential units with, a lobby, administration offices, utility room and a gym at grade. Outdoor amenity space is provided at a rooftop terrace. Private balconies are not considered to be noise sensitive unless they are greater than 4 metres in depth according to city's Environmental Noise Control Guidelines (ENCG).

[1] City of Ottawa Environmental Noise Control Guidelines, January 2016
[2] Ontario Ministry of the Environment, Conservation and Parks– Environmental Noise Guidelines, Publication NPC-300, Queens Printer for Ontario, Toronto, 2013

3. OBJECTIVES

The main goals of this work are to: (i) calculate the future noise levels on the study building produced by local roadway traffic, and (ii) determine whether noise levels exceed the allowable limits specified by the ENCG, as outlined in Section 4 of this report.

4. METHODOLOGY

4.1 Background

Noise can be defined as any obtrusive sound. It is created at a source, transmitted through a medium, such as air, and intercepted by a receiver. Noise may be characterized in terms of the power of the source or the sound pressure at a specific distance. While the power of a source is characteristic of that particular source, the sound pressure depends on the location of the receiver and the path that the noise takes to reach the receiver. Measurement of noise is based on the decibel unit, dBA, which is a logarithmic ratio referenced to a standard noise level (2×10^{-5} Pascals). The 'A' suffix refers to a weighting scale, which better represents how the noise is perceived by the human ear. With this scale, a doubling of power results in a 3 dBA increase in measured noise levels and is just perceptible to most people. An increase of 10 dBA is often perceived to be twice as loud.

4.2 Roadway Traffic Noise

4.2.1 Criteria for Roadway Traffic Noise

For surface roadway traffic noise, the equivalent sound energy level, L_{eq}, provides a measure of the time varying noise levels, which is well correlated with the annoyance of sound. It is defined as the continuous sound level, which has the same energy as a time varying noise level over a period of time. For roadways, the L_{eq} is commonly calculated on the basis of a 16-hour (L_{eq16}) daytime (07:00-23:00) / 8-hour (L_{eq8}) nighttime (23:00-07:00) split to assess its impact on residential buildings. The NPC-300 guidelines specify that the recommended indoor noise limit range (that is relevant to this study) is 50, 45 and 40 dBA for commercial/reception areas, living rooms and sleeping quarters respectively, as listed in Table 1. However, to account for deficiencies in building construction and to control peak noise, these levels should be targeted toward 47, 42, and 37 dBA.

TABLE 1: INDOOR SOUND LEVEL CRITERIA (ROAD)

Type of Space	Time Period	L_{eq} (dBA)
General offices, reception areas, retail stores, etc.	07:00 – 23:00	50
Living/dining/den areas of **residences**, hospitals, schools, nursing/retirement homes, day-care centres, theatres, places of worship, libraries, individual or semi-private offices, conference rooms, etc.	07:00 – 23:00	45
Sleeping quarters of hotels/motels	23:00 – 07:00	45
Sleeping quarters of **residences**, hospitals, nursing/retirement homes, etc.	23:00 – 07:00	40

Predicted noise levels at the plane of window (POW) dictate the action required to achieve the recommended sound levels. An open window is considered to provide a 10 dBA reduction in noise, while a standard closed window is capable of providing a minimum 20 dBA noise reduction[3]. A closed window due to a ventilation requirement will bring noise levels down to achieve an acceptable indoor environment[4]. Therefore, where noise levels exceed 55 dBA daytime and 50 dBA nighttime, the ventilation for the building should consider the need for having windows and doors closed, which triggers the need for forced air heating with provision for central air conditioning. Where noise levels exceed 65 dBA daytime and 60 dBA nighttime, air conditioning will be required and building components will require higher levels of sound attenuation[5].

The sound level criterion for outdoor living areas (OLA) is 55 dBA, which applies during the daytime (07:00 to 23:00). When noise levels exceed 55 dBA, mitigation should be provided to reduce noise levels where technically and administratively feasible to acceptable levels at or below the criterion. Furthermore, noise levels at the OLA must not exceed 60 dBA if mitigation can be technically and administratively achieved.

[3] Burberry, P.B. (2014). Mitchell's Environment and Services. Routledge, Page 125
[4] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.8
[5] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.1.3

4.2.2 Theoretical Roadway Noise Predictions

Roadway traffic noise calculations were performed by treating each roadway segment as separate line sources of noise. In addition to the traffic volumes summarized in Table 2, theoretical noise predictions were based on the following parameters:

- Truck traffic on all roadways was taken to comprise 5% heavy trucks and 7% medium trucks.
- The day/night split for all streets was taken to be 92%/8%, respectively.
- Ground surfaces were taken to be reflective due to the presence of hard (paved) ground.
- Topography was assumed to be a flat/gentle slope surrounding the study building.
- Noise receptors were strategically placed at 5 locations around the study area (see Figure 2).
- Receptor distances and exposure angles are illustrated in Figures 5-9.
- Receptors 1, 2, and 4 used STAMSON calculations form a previous feasibility study which had a slightly different building massing. These receptors are about 1 m from their respective façades which will not impact noise levels.
- For select sources where appropriate, receptors considered the proposed and/or existing buildings as a barrier partially or fully obstructing exposure to the source, as illustrated by exposure angles in Figures 5-9.

4.2.3 Roadway Traffic Volumes

The ENCG dictates that noise calculations should consider future sound levels based on a roadway's classification at the mature state of development. Therefore, traffic volumes are based on the roadway classifications outlined in the City of Ottawa's Official Plan (OP) and Transportation Master Plan which provide additional details on future roadway expansions. Average Annual Daily Traffic (AADT) volumes are then based on data in Table B1 of the ENCG for each roadway classification. Table 2 (below) summarizes the AADT values used for each roadway included in this assessment.

TABLE 2: ROADWAY TRAFFIC DATA

Segment	Roadway Traffic Data	Speed Limit (km/h)	Traffic Volumes
Metcalfe Road	2-Lane Urban Arterial Undivided (UAU)	50	**15,000**
Argyle Avenue	2-Lane Urban Arterial Undivided (UAU)	50	**15,000**
Elgin Street	4-Lane Urban Arterial Undivided (UAU)	50	**30,000**
Highway 417 Westbound	6-Freeway	100	**55,000**
Highway 417 Eastbound		100	**55,000**

4.3 Indoor Noise Calculations

The difference between outdoor and indoor noise levels is the noise attenuation provided by the building envelope. According to common industry practice, complete walls and individual wall elements are rated according to the Sound Transmission Class (STC). The STC ratings of common residential walls built in conformance with the Ontario Building Code (2012) typically exceed STC 35, depending on exterior cladding, thickness and interior finish details. For example, brick veneer walls can achieve STC 50 or more. Standard commercially sided exterior metal stud walls have around STC 45. Standard good quality double-glazed non-operable windows can have STC ratings ranging from 25 to 40, depending on the window manufacturer, pane thickness and inter-pane spacing. As previously mentioned, the windows are the known weak point in a partition.

As per Section 4.2, when daytime noise levels from road sources at the plane of the window exceed 65 dBA, calculations must be performed to evaluate the sound transmission quality of the building components to ensure acceptable indoor noise levels. The calculation procedure[6] considers:

- Window type and total area as a percentage of total room floor area
- Exterior wall type and total area as a percentage of the total room floor area
- Acoustic absorption characteristics of the room
- Outdoor noise source type and approach geometry

[6] Building Practice Note: Controlling Sound Transmission into Buildings by J.D. Quirt, National Research Council of Canada, September 1985

- Indoor sound level criteria, which varies according to the intended use of a space

Based on published research[7], exterior walls possess specific sound attenuation characteristics that are used as a basis for calculating the required STC ratings of windows in the same partition. Due to the limited information available at the time of the study, which was prepared for site plan approval, detailed floor layouts and building elevations have not been finalized; therefore, detailed STC calculations could not be performed at this time. As a guideline, the anticipated STC requirements for windows have been estimated based on the overall noise reduction required for each intended use of space (STC = outdoor noise level – targeted indoor noise levels).

5. RESULTS AND DISCUSSION

5.1 Roadway Traffic Noise Levels

The results of the roadway traffic noise calculations are summarized in Table 3 below. A complete set of input and output data from all STAMSON 5.04 calculations are available in Appendix A.

TABLE 3: EXTERIOR NOISE LEVELS DUE TO ROAD TRAFFIC

Receptor Number	Receptor Height Above Grade (m)	Receptor Location	STAMSON 5.04 Noise Level (dBA)	
			Day	Night
1	36.5	12th Floor – North Façade	68	60
2	36.5	12th Floor – East Façade	71	63
3	36.5	12th Floor – South Façade	74	66
4	36.5	12th Floor – West Façade	70	63
5	39.5	13th Floor Terrace	67	N/A*

*Outdoor Living Areas (OLA) during the nighttime are not considered as per the ENCG.

The results of the current analysis indicate that noise levels will range between 67 and 74 dBA during the daytime period (07:00-23:00) and between 60 and 66 dBA during the nighttime period (23:00-07:00). The highest noise level (74 dBA) occurs at the south façade, which is nearest and most exposed to Highway 417.

[7] CMHC, Road & Rail Noise: Effects on Housing

5.2 Noise Control Measures

The noise levels predicted due to roadway traffic exceed the criteria listed in Section 4.2 for building components. As discussed in Section 4.3, the anticipated STC requirements for windows have been estimated based on the overall noise reduction required for each intended use of space (STC = outdoor noise level – targeted indoor noise levels). Detailed STC calculations will be required to be completed prior to building permit application for each unit type. The STC requirements for the windows are summarized below for various units within the development (see Figure 4):

- **Bedroom Windows**

(i) Bedroom windows facing south will require a minimum STC of 37.

(ii) Bedroom windows facing west and east will require a minimum STC of 34.

(iii) Bedroom windows facing north will require a minimum STC of 32.

- **Living Room Windows**

(iv) Living room windows facing south will require a minimum STC of 32.

(v) Living room windows facing west and east will require a minimum STC of 29.

(vi) Living room windows facing north will require a minimum STC of 27.

- **Reception/Retail Windows**

(vii) Reception/Retail windows facing south will require a minimum STC of 27.

(viii) Reception/Retail windows facing west and east will require a minimum STC of 24.

(ix) Reception/Retail windows facing north will require a minimum STC of 22.

- **Exterior Walls**

(i) Exterior wall components on east, south, and west façades will require a minimum STC of 45, which will be achieved with brick cladding or an acoustical equivalent according to NRC test data[8].

[8] J.S. Bradley and J.A. Birta. Laboratory Measurements of the Sound Insulation of Building Façade Elements, National Research Council October 2000.

The STC requirements apply to windows, doors, spandrel panels and curtainwall elements. Exterior wall components on these façades are recommended to have a minimum STC of 45. A review of window supplier literature indicates that the specified STC ratings can be achieved by a variety of window systems having a combination of glass thickness and inter-pane spacing. We have specified an example window configuration, however several manufacturers and various combinations of window components, such as those proposed, will offer the necessary sound attenuation rating. It is the responsibility of the manufacturer to ensure that the specified window achieves the required STC. This can only be assured by using window configurations that have been certified by laboratory testing. The requirements for STC ratings assume that the remaining components of the building are constructed and installed according to the minimum standards of the Ontario Building Code. The specified STC requirements also apply to swinging and/or sliding patio doors.

Results of the calculations also indicate that the development will require central air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment. In addition to ventilation requirements, Warning Clauses will also be required in all Lease, Purchase and Sale Agreements, as summarized in Section 6.

5.2.1 Noise Barrier Calculation

Noise levels at the outdoor living area (OLA) located at the rooftop terrace at the 13th level were found to exceed 60 dBA. These noise levels are above NPC-300 criteria as outlined in section 4.2.1; therefore, mitigation will be required. A 3.0 m tall acoustic barrier is recommended for installation at the perimeter of the OLA, as this will reduce noise levels to 60 dBA. Table 4 shows the effect of acoustic barrier height on the noise levels at the rooftop terrace.

TABLE 4: NOISE BARRIER INVESTIGATION RESULTS

Location	Receptor Reference	Barrier Height (m)	Daytime L_{eq} Noise Levels (dBA)	
			Without Barrier	With Barrier
13th Floor Terrace	5	1.1	67	63
		2.2		62
		3.0		60

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that noise levels will range between 67 and 74 dBA during the daytime period (07:00-23:00) and between 60 and 66 dBA during the nighttime period (23:00-07:00). The highest noise level (i.e. 74 dBA) occurs along the building's south facing façade, which is nearest and most exposed to Highway 417. Building components with a higher Sound Transmission Class (STC) rating will be required on all building façades, as indicated in Figure 4.

Results of the calculations also indicate that the development will require central air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment. The following Warning Clauses will also be required be placed on all Lease, Purchase and Sale Agreements, as summarized below:

Type D

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

The rooftop terrace at the 13th level which is considered an Outdoor Living Area (OLA), has noise levels which exceed 60 dBA during the daytime period. Therefore, a 3.0 m acoustic barrier will be required at the perimeter of the OLA to ensure noise levels fall to 60 dBA. Additionally, the following warning clause will be required on all Lease, Purchase and Sale Agreements, as summarized below:

Type B

> *"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic may on occasions 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."*

The acoustic barrier must be constructed from materials having a minimum surface density of 20 kg/m^2 (STC rating of 30) and contain no gaps. Design of the acoustic barrier will conform to the requirements

outlined in Part 5 of the ENCG. The following information will be required by the City for review prior to installation of the barrier:

1. Shop drawings, signed and sealed by a qualified Professional Engineer licenced by the Professional Engineers of Ontario, showing the details of the acoustic barrier systems components, including material specifications.
2. Structural drawing(s), signed by a qualified Professional Engineer licenced by the Professional Engineers of Ontario, showing foundation details and specifying design criteria, climatic design loads, as well as applicable geotechnical data used in the design.
3. Layout plan, and wall elevations, showing proposed colours and patterns.

It should be noted that the development is surrounded by a mix of mid-rise commercial buildings and residential buildings. The commercial and residential buildings are serviced by standard HVAC equipment. These buildings are expected to be in compliance with ENCG noise guidelines as they would have required their own stationary noise assessment prior to construction. With that notion, as well as the set-back distance from the existing nearby HVAC equipment and the proposed development, stationary noise impacts from nearby existing properties are expected to be insignificant.

With regard to off-site stationary noise impacts, no noise sensitive properties are in close proximity of the proposed building. Therefore, off-site stationary noise impacts are not a concern.

This concludes our roadway traffic noise assessment and report. If you have any questions or wish to discuss our findings, please advise us. In the interim, we thank you for the opportunity to be of service.

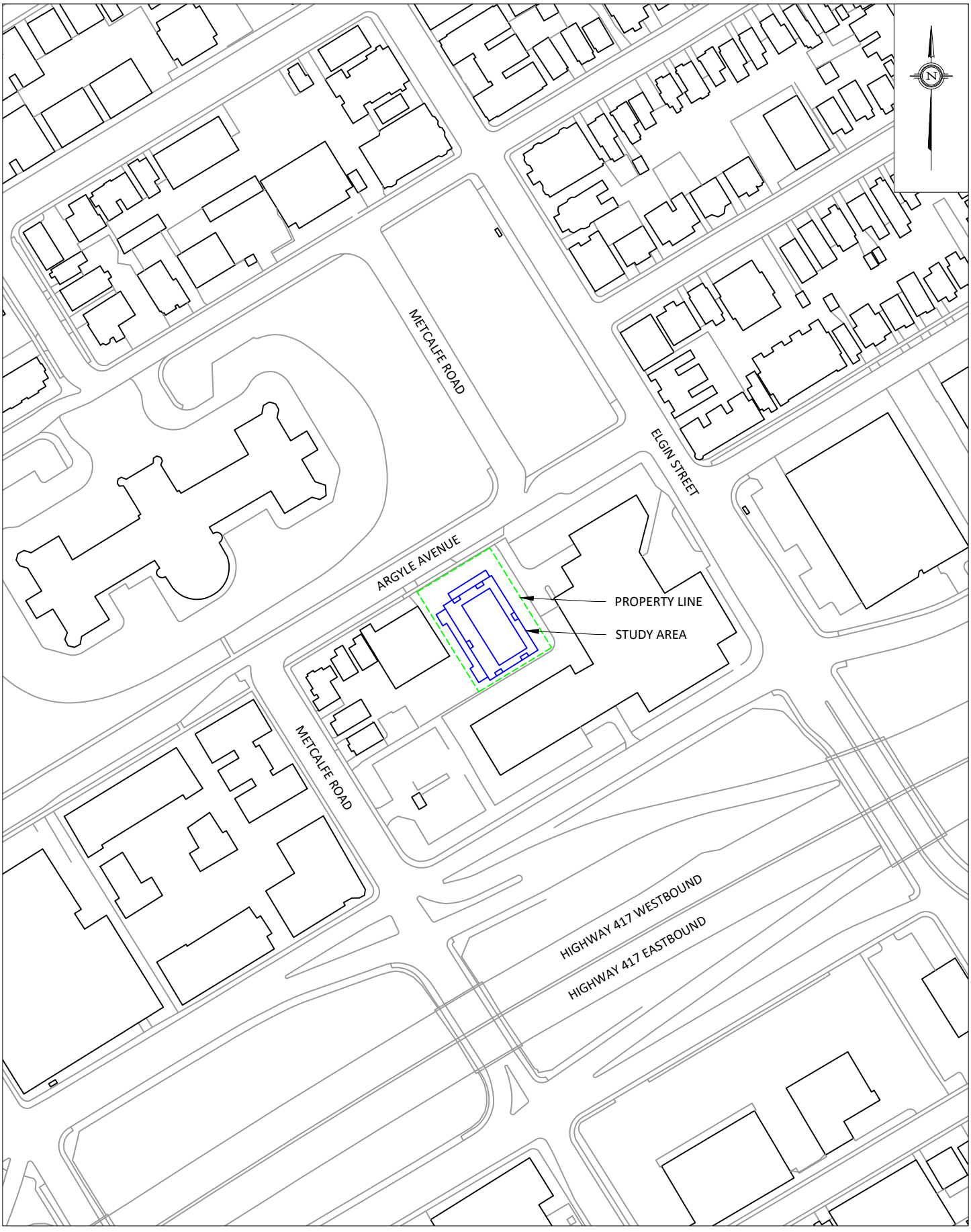
Sincerely,

Gradient Wind Engineering Inc.

Caleb Alexander, B.Eng.
Junior Environmental Scientist

Joshua Foster, P.Eng.
Principal

Gradient Wind File #18-108-Traffic Noise



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PROJECT	100 ARGYLE AVENUE ROADWAY TRAFFIC NOISE ASSESSMENT
SCALE	1:2000 (APPROX.)
DRAWING NO.	GWE18-108-1
DATE	AUGUST 5, 2021
DRAWN BY	C.A.

DESCRIPTION

FIGURE 1:
SITE PLAN AND SURROUNDING CONTEXT

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SCALE	1:250 (APPROX.)	DRAWING NO. GWE18-108-2	FIGURE 2: RECEPTOR LOCATIONS
DATE	AUGUST 5, 2021	DRAWN BY C.A.	

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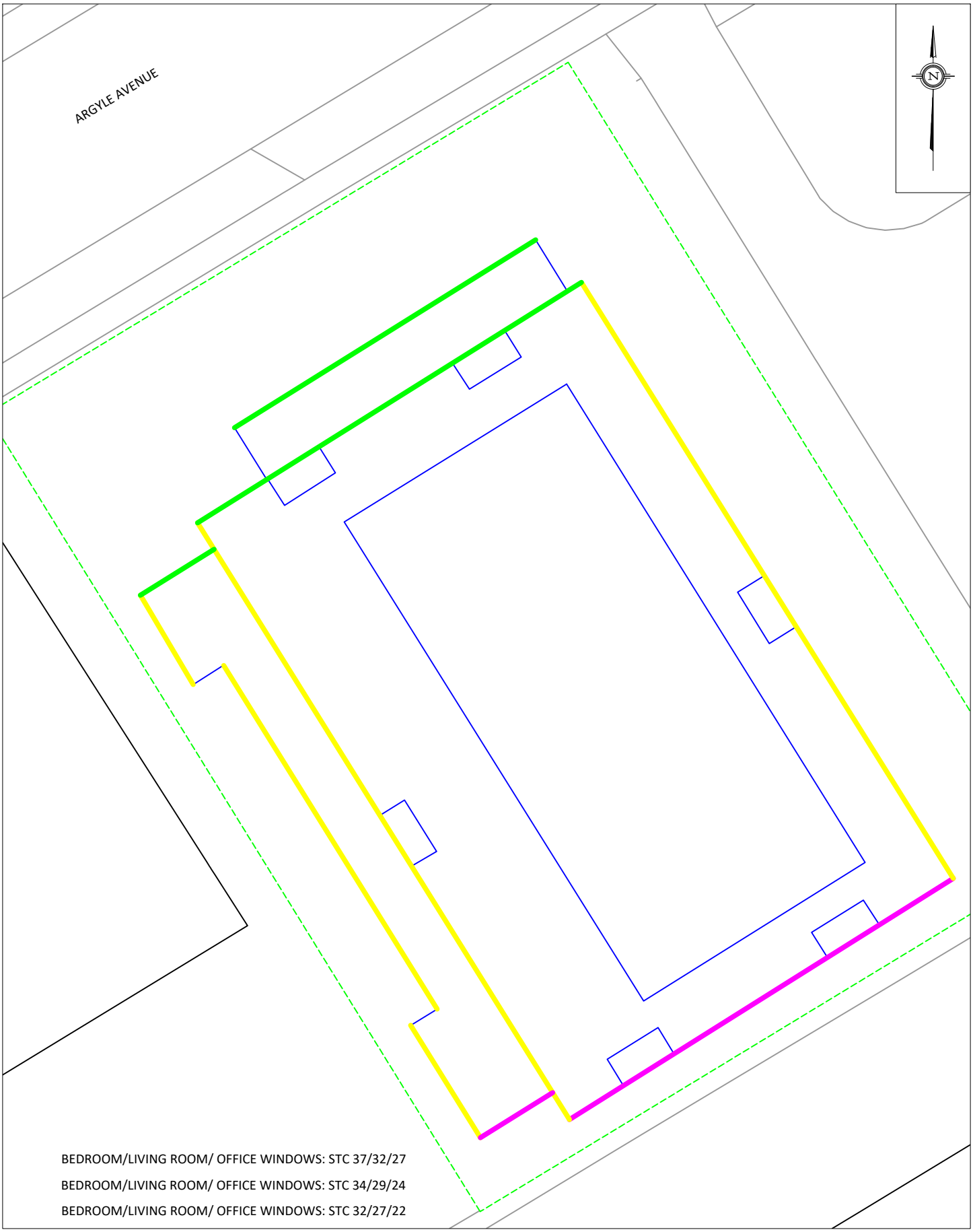
PROJECT	100 ARGYLE AVENUE ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:250 (APPROX.)	DRAWING NO. GWE18-108-3	FIGURE 3: NOISE BARRIER LOCATIONS
DATE	AUGUST 5, 2021	DRAWN BY C.A.	



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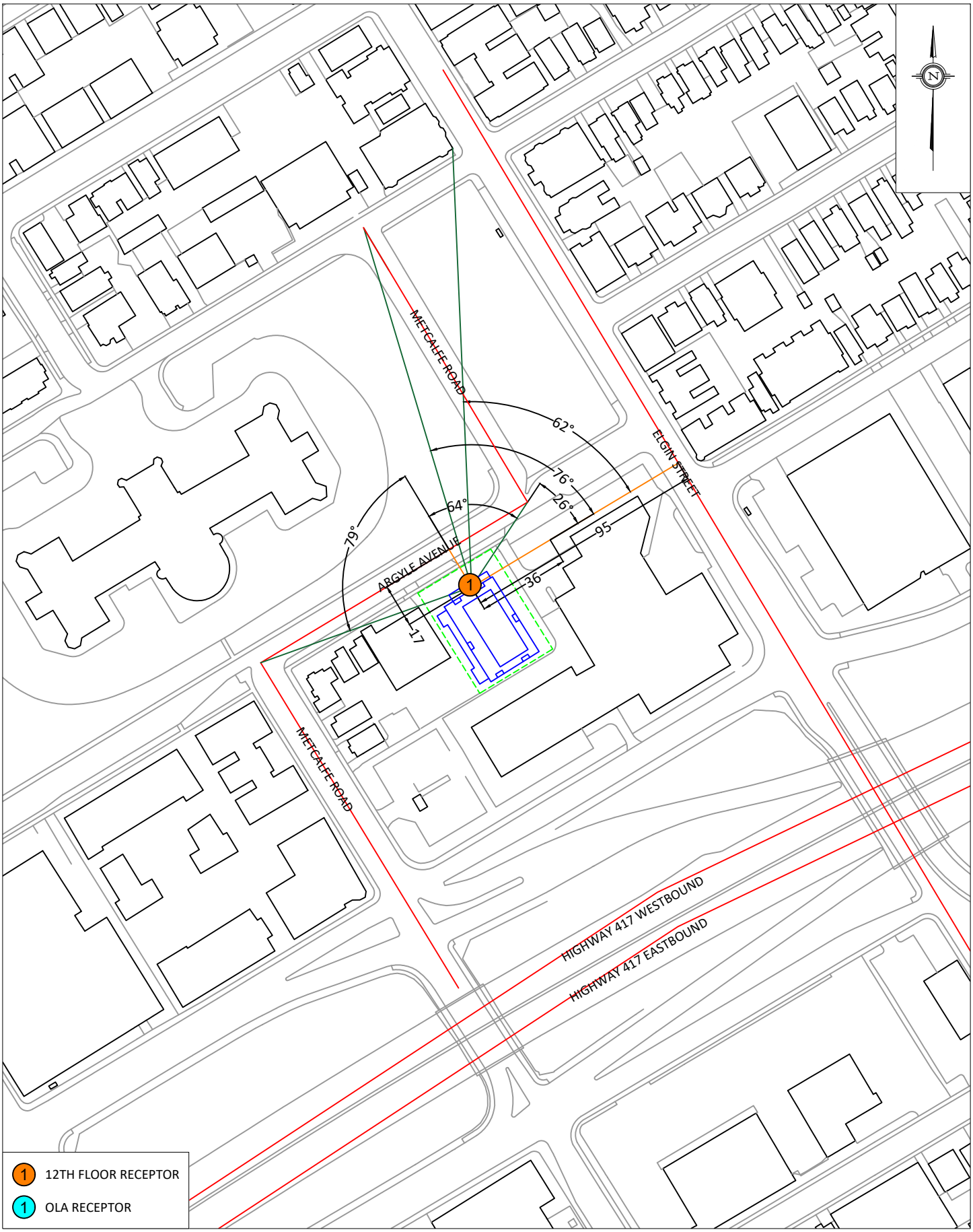
PROJECT	100 ARGYLE AVENUE ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:250 (APPROX.)	DRAWING NO.	GWE18-108-4
DATE	AUGUST 5, 2021	DRAWN BY	C.A.

FIGURE 4:
STC RATINGS



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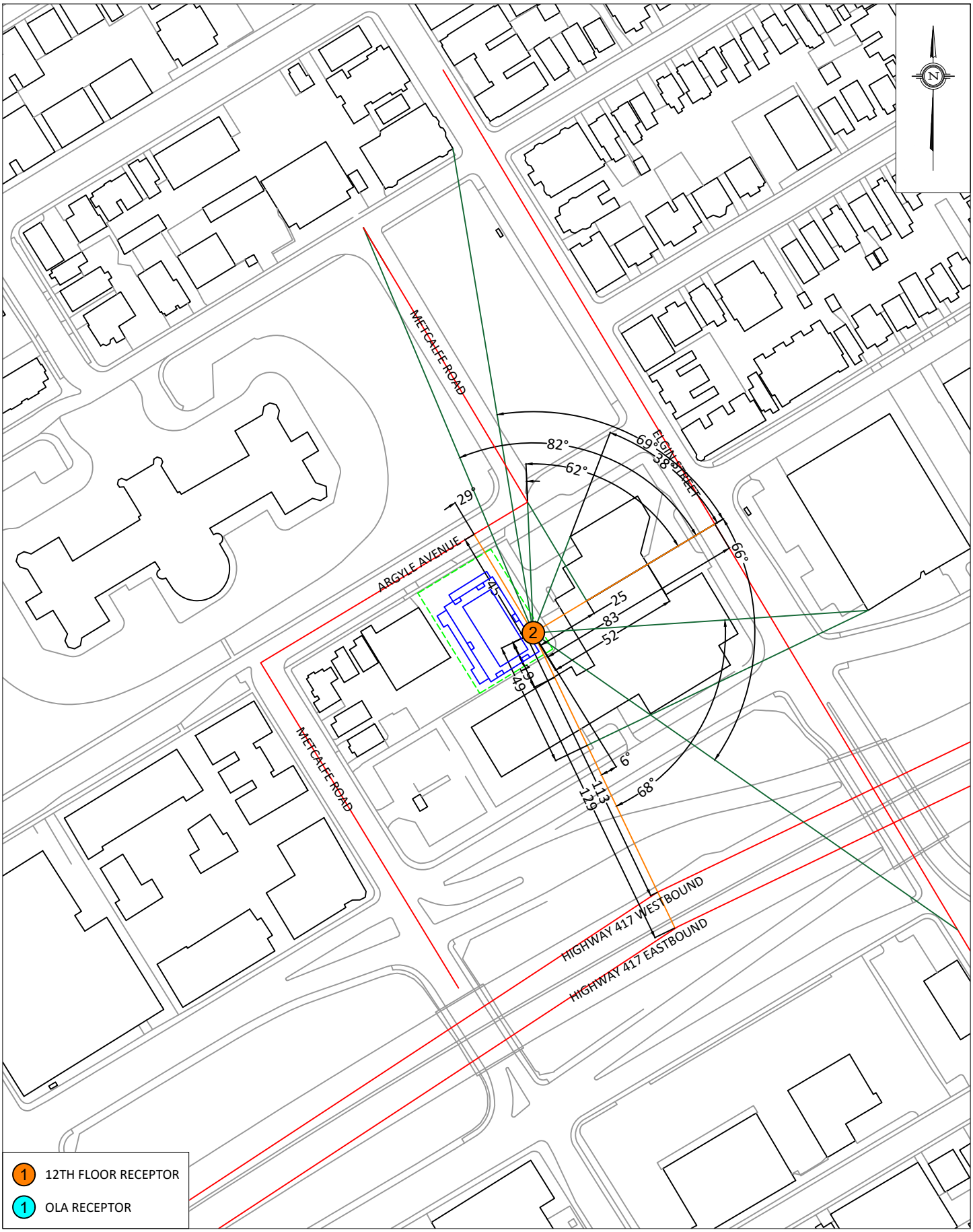
PROJECT	100 ARGYLE AVENUE ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:2000 (APPROX.)	DRAWING NO.	GWE18-108-5
DATE	AUGUST 5, 2021	DRAWN BY	C.A.

FIGURE 5:
STAMSON INPUT DATA - RECEPTOR 1



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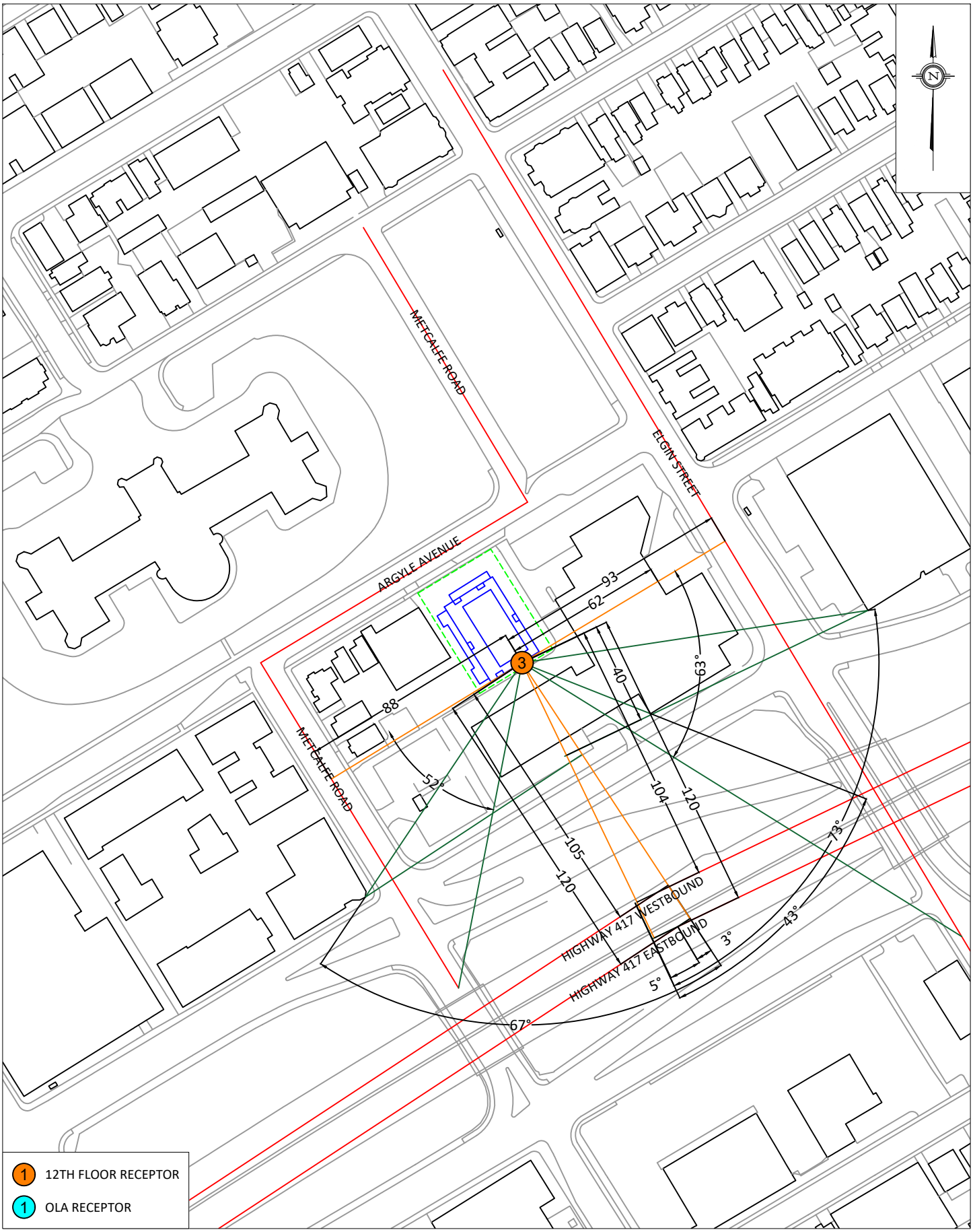
PROJECT	100 ARGYLE AVENUE ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:2000 (APPROX.)	DRAWING NO.	GWE18-108-6
DATE	AUGUST 5, 2021	DRAWN BY	C.A.

FIGURE 6:
STAMSON INPUT DATA - RECEPTOR 2



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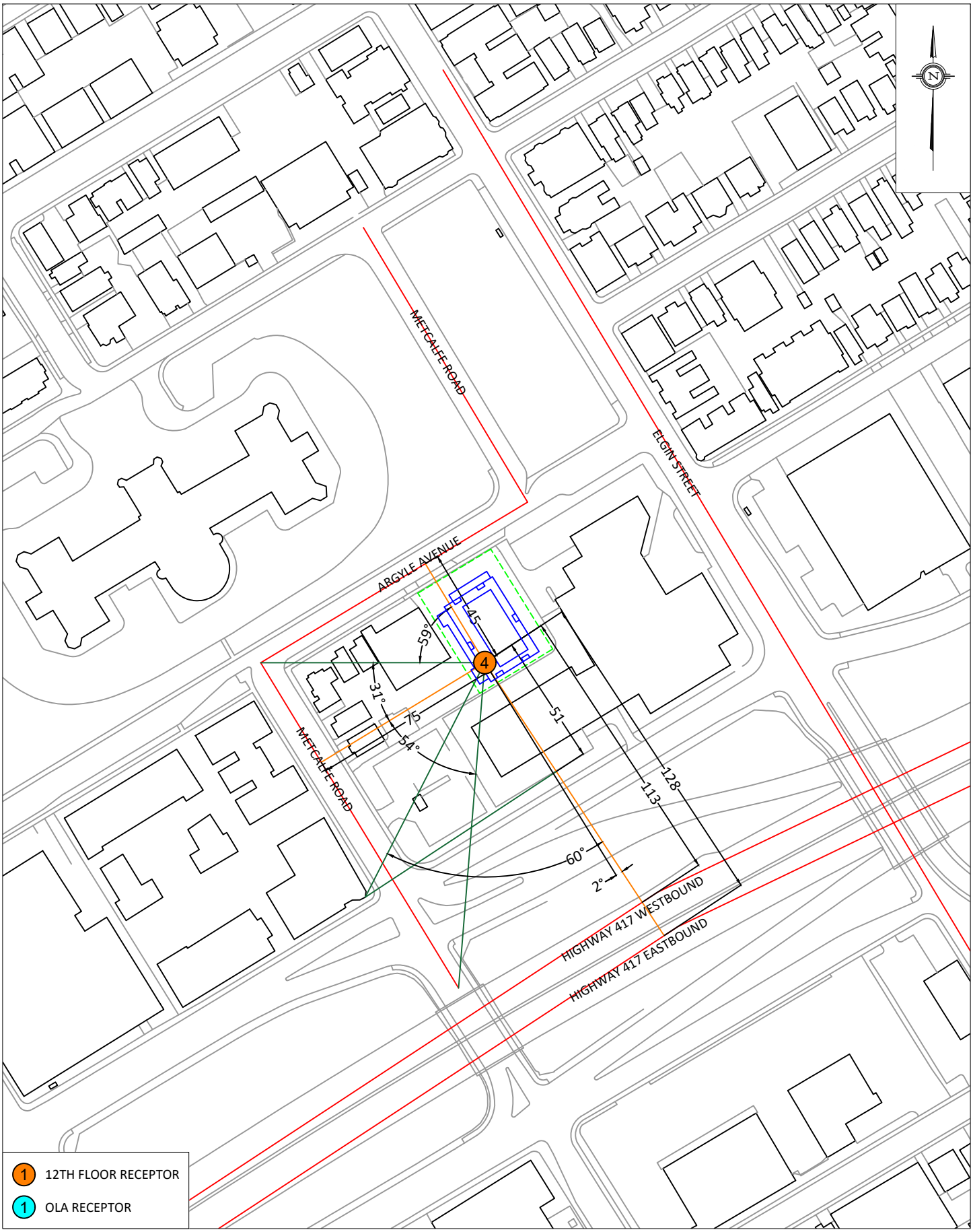
PROJECT	100 ARGYLE AVENUE ROADWAY TRAFFIC NOISE ASSESSMENT
SCALE	1:2000 (APPROX.)
DRAWING NO.	GWE18-108-7
DATE	AUGUST 5, 2021
DRAWN BY	C.A.

DESCRIPTION

FIGURE 7:
STAMSON INPUT DATA - RECEPTOR 3



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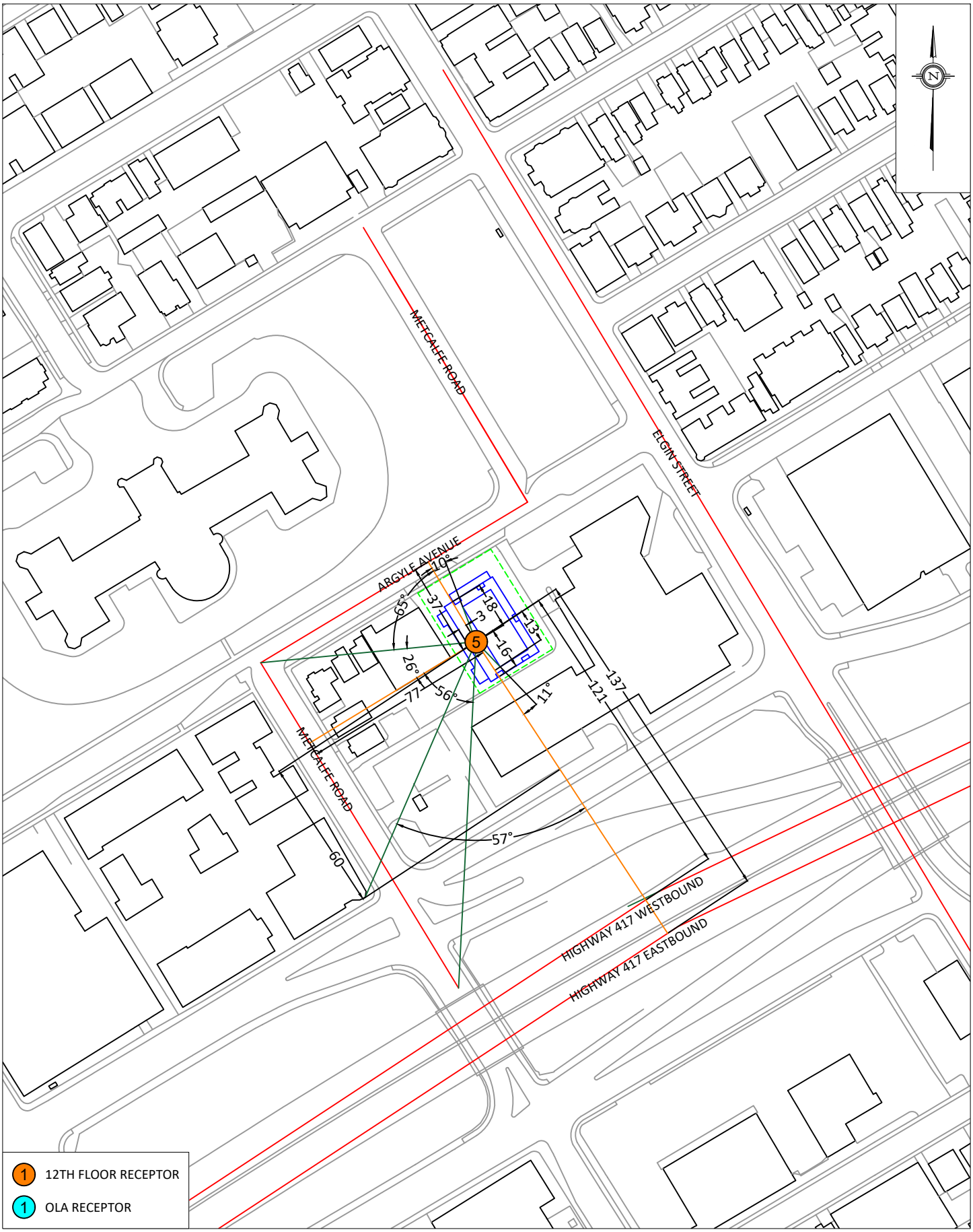
PROJECT	100 ARGYLE AVENUE ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:2000 (APPROX.)	DRAWING NO.	GWE18-108-8
DATE	AUGUST 5, 2021	DRAWN BY	C.A.

FIGURE 8:
STAMSON INPUT DATA - RECEPTOR 4



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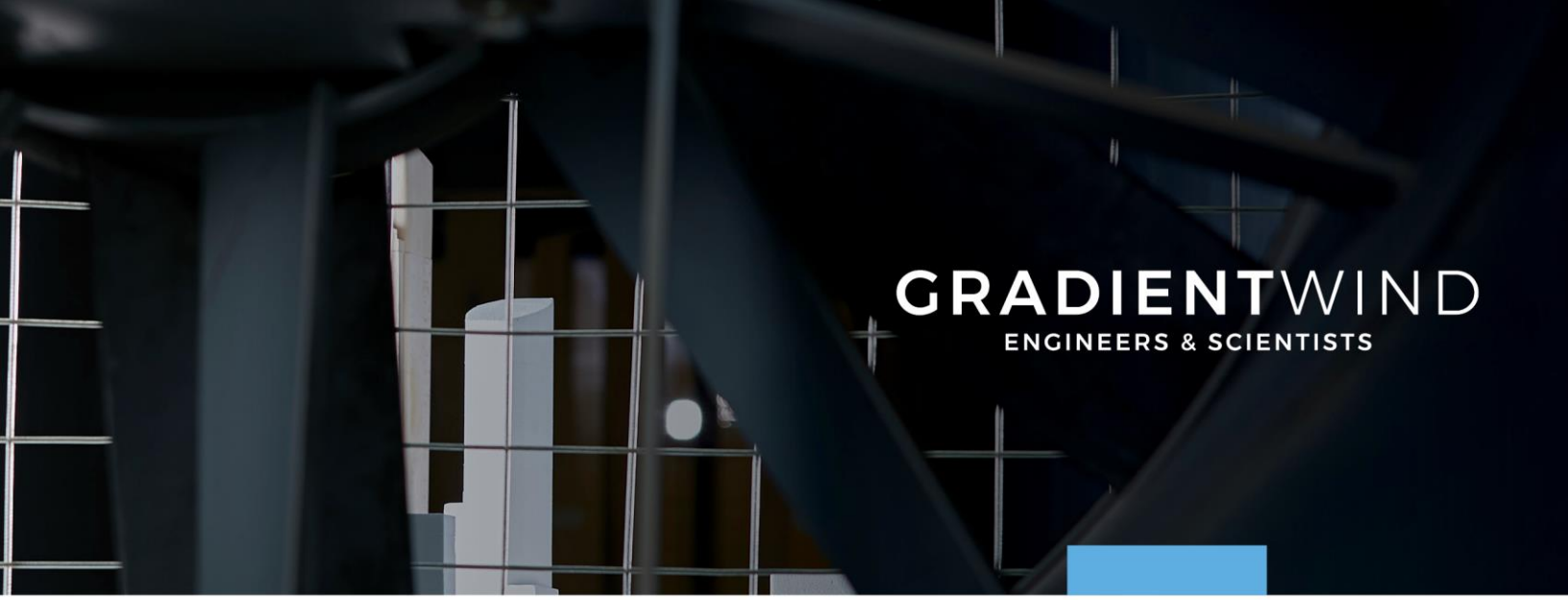
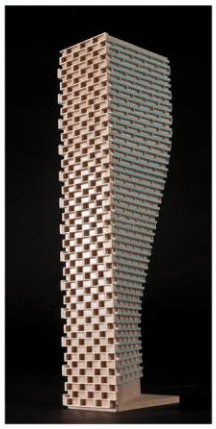
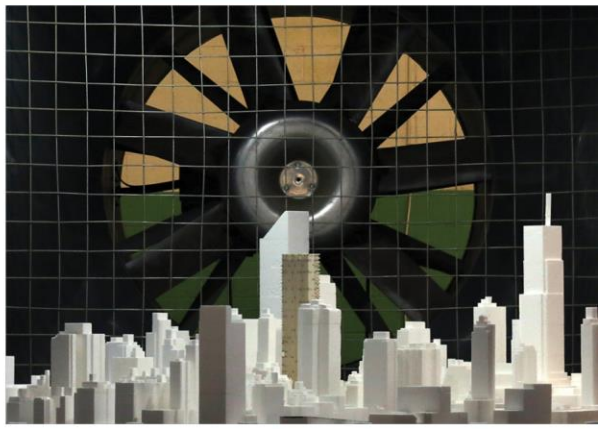
PROJECT	100 ARGYLE AVENUE ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:2000 (APPROX.)	DRAWING NO.	GWE18-108-9
DATE	AUGUST 5, 2021	DRAWN BY	C.A.

FIGURE 9:
STAMSON INPUT DATA - RECEPTOR 5







APPENDIX A

STAMSON 5.04 – INPUT AND OUTPUT DATA

127 WALGREEN ROAD, OTTAWA, ON, CANADA K0A 1L0 | 613 836 0934
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STAMSON 5.0        NORMAL REPORT        Date: 04-08-2021 14:35:33
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r1.te                Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Argyle (day/night)
-----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Argyle (day/night)
----------------------------------------
Angle1   Angle2           : -79.00 deg   64.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  17.00 / 17.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Metcalfe (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Metcalfe (day/night)
------------------------------------------
Angle1   Angle2           : -76.00 deg   -26.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  36.00 / 36.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: Elgin (day/night)
-----------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   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):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Elgin (day/night)
---------------------------------------
Angle1   Angle2           : -62.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  95.00 / 95.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: Argyle (day)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 66.94 + 0.00) = 66.94 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -79     64   0.00  68.48   0.00  -0.54  -1.00   0.00   0.00   0.00  66.94
-------------------------------------------------------------------------------

Segment Leq : 66.94 dBA


Results segment # 2: Metcalfe (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 59.11 + 0.00) = 59.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -76    -26   0.00  68.48   0.00  -3.80  -5.56   0.00   0.00   0.00  59.11
-------------------------------------------------------------------------------

Segment Leq : 59.11 dBA


Results segment # 3: Elgin (day)
--------------------------------

Source height = 1.50 m

ROAD (0.00 + 58.85 + 0.00) = 58.85 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -62      0   0.00  71.49   0.00  -8.02  -4.63   0.00   0.00   0.00  58.85
-------------------------------------------------------------------------------

Segment Leq : 58.85 dBA

Total Leq All Segments: 68.15 dBA
```

```
Results segment # 1: Argyle (night)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 59.34 + 0.00) = 59.34 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -79     64   0.00  60.88   0.00  -0.54  -1.00   0.00   0.00   0.00  59.34
-------------------------------------------------------------------------------

Segment Leq : 59.34 dBA


Results segment # 2: Metcalfe (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 51.52 + 0.00) = 51.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -76    -26   0.00  60.88   0.00  -3.80  -5.56   0.00   0.00   0.00  51.52
-------------------------------------------------------------------------------

Segment Leq : 51.52 dBA


Results segment # 3: Elgin (night)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 51.25 + 0.00) = 51.25 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -62      0   0.00  63.89   0.00  -8.02  -4.63   0.00   0.00   0.00  51.25
-------------------------------------------------------------------------------

Segment Leq : 51.25 dBA

Total Leq All Segments: 60.55 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 68.15
                           (NIGHT): 60.55
```

```
STAMSON 5.0        NORMAL REPORT        Date: 04-08-2021 14:36:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r2.te                Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Argyle (day/night)
-----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Argyle (day/night)
----------------------------------------
Angle1   Angle2           :   0.00 deg   29.00 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           :  36.50 / 36.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Metcalfe (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Metcalfe (day/night)
------------------------------------------
Angle1   Angle2           : -82.00 deg   -62.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: Elgin (day/night)
------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   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):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Elgin (day/night)
---------------------------------------
Angle1   Angle2           : -69.00 deg   66.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  83.00 / 83.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -38.00 deg   Angle2 : 66.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  53.00 / 53.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: 417WB1 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: 417WB1 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   -68.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 113.00 / 113.00 m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -68.00 deg
Barrier height            :  49.00 m
Barrier receiver distance :  49.00 / 49.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: 417WB2 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 5: 417WB2 (day/night)
----------------------------------------
Angle1   Angle2           : -68.00 deg   -6.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 113.00 / 113.00 m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -68.00 deg   Angle2 : -6.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  49.00 / 49.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 6: 417EB1 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 6: 417EB1 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   -68.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 129.00 / 129.00 m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -68.00 deg
Barrier height            :  49.00 m
Barrier receiver distance :  49.00 / 49.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 7: 417EB2 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 7: 417EB2 (day/night)
----------------------------------------
Angle1   Angle2           : -68.00 deg   -6.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 129.00 / 129.00 m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -68.00 deg   Angle2 : -6.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  49.00 / 49.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Argyle (day)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 55.78 + 0.00) = 55.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     29   0.00  68.48   0.00  -4.77  -7.93   0.00   0.00   0.00  55.78
-------------------------------------------------------------------------------

Segment Leq : 55.78 dBA


Results segment # 2: Metcalfe (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 56.72 + 0.00) = 56.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -82    -62   0.00  68.48   0.00  -2.22  -9.54   0.00   0.00   0.00  56.72
-------------------------------------------------------------------------------

Segment Leq : 56.72 dBA


Results segment # 3: Elgin (day)
--------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       14.15 !        14.15

ROAD (56.42 + 61.68 + 0.00) = 62.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -69    -38   0.00  71.49   0.00  -7.43  -7.64   0.00   0.00   0.00  56.42
-------------------------------------------------------------------------------
   -38     66   0.00  71.49   0.00  -7.43  -2.38   0.00   0.00  -0.21  61.47*
   -38     66   0.00  71.49   0.00  -7.43  -2.38   0.00   0.00   0.00  61.68
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 62.81 dBA
```

```
Results segment # 4: 417WB1 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       22.62 !        22.62

ROAD (0.00 + 45.60 + 0.00) = 45.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -68   0.00  80.15   0.00  -8.77  -9.13   0.00   0.00 -16.64  45.60
-------------------------------------------------------------------------------

Segment Leq : 45.60 dBA


Results segment # 5: 417WB2 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       22.62 !        22.62

ROAD (0.00 + 66.75 + 0.00) = 66.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -68     -6   0.00  80.15   0.00  -8.77  -4.63   0.00   0.00   0.00  66.75*
   -68     -6   0.00  80.15   0.00  -8.77  -4.63   0.00   0.00   0.00  66.75
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 66.75 dBA
```

```
Results segment # 6: 417EB1 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       24.34 !        24.34

ROAD (0.00 + 45.48 + 0.00) = 45.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -68   0.00  80.15   0.00  -9.34  -9.13   0.00   0.00 -16.19  45.48
-------------------------------------------------------------------------------

Segment Leq : 45.48 dBA


Results segment # 7: 417EB2 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       24.34 !        24.34

ROAD (0.00 + 66.17 + 0.00) = 66.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -68     -6   0.00  80.15   0.00  -9.34  -4.63   0.00   0.00   0.00  66.17*
   -68     -6   0.00  80.15   0.00  -9.34  -4.63   0.00   0.00   0.00  66.17
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 66.17 dBA

Total Leq All Segments: 70.68 dBA
```

```
Results segment # 1: Argyle (night)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 48.18 + 0.00) = 48.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     29   0.00  60.88   0.00  -4.77  -7.93   0.00   0.00   0.00  48.18
-------------------------------------------------------------------------------

Segment Leq : 48.18 dBA


Results segment # 2: Metcalfe (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 49.12 + 0.00) = 49.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -82    -62   0.00  60.88   0.00  -2.22  -9.54   0.00   0.00   0.00  49.12
-------------------------------------------------------------------------------

Segment Leq : 49.12 dBA


Results segment # 3: Elgin (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       14.15 !        14.15

ROAD (48.82 + 54.08 + 0.00) = 55.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -69    -38   0.00  63.89   0.00  -7.43  -7.64   0.00   0.00   0.00  48.82
-------------------------------------------------------------------------------
   -38     66   0.00  63.89   0.00  -7.43  -2.38   0.00   0.00  -0.21  53.87*
   -38     66   0.00  63.89   0.00  -7.43  -2.38   0.00   0.00   0.00  54.08
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 55.21 dBA
```

```
Results segment # 4: 417WB1 (night)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       22.62 !        22.62

ROAD (0.00 + 38.01 + 0.00) = 38.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -68   0.00  72.55   0.00  -8.77  -9.13   0.00   0.00 -16.64  38.01
-------------------------------------------------------------------------------

Segment Leq : 38.01 dBA


Results segment # 5: 417WB2 (night)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       22.62 !        22.62

ROAD (0.00 + 59.15 + 0.00) = 59.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -68     -6   0.00  72.55   0.00  -8.77  -4.63   0.00   0.00   0.00  59.15*
   -68     -6   0.00  72.55   0.00  -8.77  -4.63   0.00   0.00   0.00  59.15
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 59.15 dBA
```

```
Results segment # 6: 417EB1 (night)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       24.34 !        24.34

ROAD (0.00 + 37.88 + 0.00) = 37.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -68   0.00  72.55   0.00  -9.34  -9.13   0.00   0.00 -16.19  37.88
-------------------------------------------------------------------------------

Segment Leq : 37.88 dBA


Results segment # 7: 417EB2 (night)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       24.34 !        24.34

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
-------------------------------------------------------------------------------
   -68     -6   0.00  72.55   0.00  -9.34  -4.63   0.00   0.00   0.00  58.58*
   -68     -6   0.00  72.55   0.00  -9.34  -4.63   0.00   0.00   0.00  58.58
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 58.58 dBA

Total Leq All Segments: 63.09 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 70.68
                           (NIGHT): 63.09
```

```
STAMSON 5.0        NORMAL REPORT        Date: 04-08-2021 14:39:46
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3.te                Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Metcalfe (day/night)
---------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Metcalfe (day/night)
-------------------------------------------
Angle1   Angle2           : -52.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  88.00 / 88.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Elgin (day/night)
------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Elgin (day/night)
---------------------------------------
Angle1   Angle2           :   0.00 deg   64.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  93.00 / 93.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 64.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  62.00 / 62.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: 417WB1 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: 417WB1 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   -73.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 104.00 / 104.00 m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -73.00 deg
Barrier height            :  49.00 m
Barrier receiver distance :  40.00 / 40.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: 417WB2 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: 417WB2 (day/night)
----------------------------------------
Angle1   Angle2           : -73.00 deg   -5.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 104.00 / 104.00 m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -73.00 deg   Angle2 : -5.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  40.00 / 40.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: 417WB3 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 5: 417WB3 (day/night)
----------------------------------------
Angle1   Angle2           :   3.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 104.00 / 104.00 m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  64.00 deg   Angle2 : 90.00 deg
Barrier height            :  24.00 m
Barrier receiver distance :  40.00 / 40.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 6: 417EB1 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 6: 417EB1 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   -73.00 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           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -73.00 deg
Barrier height            :  49.00 m
Barrier receiver distance :  40.00 / 40.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 7: 417EB2 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 7: 417EB2 (day/night)
----------------------------------------
Angle1   Angle2           : -73.00 deg   -5.00 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           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -73.00 deg   Angle2 : -5.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  40.00 / 40.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 8: 417EB3 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 8: 417EB3 (day/night)
----------------------------------------
Angle1   Angle2           :   3.00 deg   90.00 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           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  64.00 deg   Angle2 : 90.00 deg
Barrier height            :  24.00 m
Barrier receiver distance :  40.00 / 40.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Metcalfe (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 55.40 + 0.00) = 55.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -52      0   0.00  68.48   0.00  -7.68  -5.39   0.00   0.00   0.00  55.40
-------------------------------------------------------------------------------

Segment Leq : 55.40 dBA


Results segment # 2: Elgin (day)
--------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       13.16 !        13.16

ROAD (0.00 + 56.07 + 0.00) = 56.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     64   0.00  68.48   0.00  -7.92  -4.49   0.00   0.00  -3.71  52.36*
     0     64   0.00  68.48   0.00  -7.92  -4.49   0.00   0.00   0.00  56.07
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 56.07 dBA
```

```
Results segment # 3: 417WB1 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       24.19 !        24.19

ROAD (0.00 + 45.49 + 0.00) = 45.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -73   0.00  80.15   0.00  -8.41 -10.25   0.00   0.00 -16.00  45.49
-------------------------------------------------------------------------------

Segment Leq : 45.49 dBA


Results segment # 4: 417WB2 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       24.19 !        24.19

ROAD (0.00 + 67.51 + 0.00) = 67.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -73     -5   0.00  80.15   0.00  -8.41  -4.23   0.00   0.00   0.00  67.51*
   -73     -5   0.00  80.15   0.00  -8.41  -4.23   0.00   0.00   0.00  67.51
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 67.51 dBA
```

```
Results segment # 5: 417WB3 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       24.19 !        24.19

ROAD (67.04 + 63.34 + 0.00) = 68.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     3     64   0.00  80.15   0.00  -8.41  -4.70   0.00   0.00   0.00  67.04
-------------------------------------------------------------------------------
    64     90   0.00  80.15   0.00  -8.41  -8.40   0.00   0.00  -4.99  58.34*
    64     90   0.00  80.15   0.00  -8.41  -8.40   0.00   0.00   0.00  63.34
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 68.58 dBA


Results segment # 6: 417EB1 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       25.83 !        25.83

ROAD (0.00 + 45.35 + 0.00) = 45.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -73   0.00  80.15   0.00  -9.03 -10.25   0.00   0.00 -15.52  45.35
-------------------------------------------------------------------------------

Segment Leq : 45.35 dBA
```

```
Results segment # 7: 417EB2 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       25.83 !        25.83

ROAD (0.00 + 66.89 + 0.00) = 66.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -73     -5   0.00  80.15   0.00  -9.03  -4.23   0.00   0.00   0.00  66.89*
   -73     -5   0.00  80.15   0.00  -9.03  -4.23   0.00   0.00   0.00  66.89
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 66.89 dBA


Results segment # 8: 417EB3 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       25.83 !        25.83

ROAD (66.42 + 62.71 + 0.00) = 67.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     3     64   0.00  80.15   0.00  -9.03  -4.70   0.00   0.00   0.00  66.42
-------------------------------------------------------------------------------
    64     90   0.00  80.15   0.00  -9.03  -8.40   0.00   0.00  -4.26  58.45*
    64     90   0.00  80.15   0.00  -9.03  -8.40   0.00   0.00   0.00  62.71
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 67.96 dBA

Total Leq All Segments: 73.95 dBA
```

```
Results segment # 1: Metcalfe (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 47.81 + 0.00) = 47.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -52      0   0.00  60.88   0.00  -7.68  -5.39   0.00   0.00   0.00  47.81
-------------------------------------------------------------------------------

Segment Leq : 47.81 dBA


Results segment # 2: Elgin (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       13.16 !        13.16

ROAD (0.00 + 48.47 + 0.00) = 48.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     64   0.00  60.88   0.00  -7.92  -4.49   0.00   0.00  -3.71  44.76*
     0     64   0.00  60.88   0.00  -7.92  -4.49   0.00   0.00   0.00  48.47
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.47 dBA
```

```
Results segment # 3: 417WB1 (night)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       24.19 !        24.19

ROAD (0.00 + 37.89 + 0.00) = 37.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -73   0.00  72.55   0.00  -8.41 -10.25   0.00   0.00 -16.00  37.89
-------------------------------------------------------------------------------

Segment Leq : 37.89 dBA


Results segment # 4: 417WB2 (night)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       24.19 !        24.19

ROAD (0.00 + 59.91 + 0.00) = 59.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -73     -5   0.00  72.55   0.00  -8.41  -4.23   0.00   0.00   0.00  59.91*
   -73     -5   0.00  72.55   0.00  -8.41  -4.23   0.00   0.00   0.00  59.91
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 59.91 dBA
```

```
Results segment # 5: 417WB3 (night)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       24.19 !        24.19

ROAD (59.44 + 55.74 + 0.00) = 60.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     3     64   0.00  72.55   0.00  -8.41  -4.70   0.00   0.00   0.00  59.44
-------------------------------------------------------------------------------
    64     90   0.00  72.55   0.00  -8.41  -8.40   0.00   0.00  -4.99  50.75*
    64     90   0.00  72.55   0.00  -8.41  -8.40   0.00   0.00   0.00  55.74
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 60.98 dBA

Results segment # 6: 417EB1 (night)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       25.83 !        25.83

ROAD (0.00 + 37.75 + 0.00) = 37.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -73   0.00  72.55   0.00  -9.03 -10.25   0.00   0.00 -15.52  37.75
-------------------------------------------------------------------------------

Segment Leq : 37.75 dBA
```

```
Results segment # 7: 417EB2 (night)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       25.83 !        25.83

ROAD (0.00 + 59.29 + 0.00) = 59.29 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -73     -5   0.00  72.55   0.00  -9.03  -4.23   0.00   0.00   0.00  59.29*
   -73     -5   0.00  72.55   0.00  -9.03  -4.23   0.00   0.00   0.00  59.29
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 59.29 dBA
```

```
Results segment # 8: 417EB3 (night)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       25.83 !        25.83

ROAD (58.82 + 55.12 + 0.00) = 60.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     3     64   0.00  72.55   0.00  -9.03  -4.70   0.00   0.00   0.00  58.82
-------------------------------------------------------------------------------
    64     90   0.00  72.55   0.00  -9.03  -8.40   0.00   0.00  -4.26  50.86*
    64     90   0.00  72.55   0.00  -9.03  -8.40   0.00   0.00   0.00  55.12
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 60.36 dBA

Total Leq All Segments: 66.35 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 73.95
                           (NIGHT): 66.35
```

```
STAMSON 5.0        NORMAL REPORT        Date: 04-08-2021 14:41:09
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r4.te                Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Metcalfe (day/night)
---------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Metcalfe (day/night)
-------------------------------------------
Angle1   Angle2           : -54.00 deg   31.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  75.00 / 75.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Argyle (day/night)
------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Argyle (day/night)
----------------------------------------
Angle1   Angle2           : -59.00 deg   0.00 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           :  36.50 / 36.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: 417WB (day/night)
-----------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: 417WB (day/night)
---------------------------------------
Angle1   Angle2           :   2.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 113.00 / 113.00 m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  60.00 deg   Angle2 : 90.00 deg
Barrier height            :  24.00 m
Barrier receiver distance :  51.00 / 51.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: 417EB (day/night)
-----------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: 417EB (day/night)
---------------------------------------
Angle1   Angle2           :   2.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 128.00 / 128.00 m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  60.00 deg   Angle2 : 90.00 deg
Barrier height            :  24.00 m
Barrier receiver distance :  51.00 / 51.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Metcalfe (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 58.23 + 0.00) = 58.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -54     31   0.00  68.48   0.00  -6.99  -3.26   0.00   0.00   0.00  58.23
-------------------------------------------------------------------------------

Segment Leq : 58.23 dBA


Results segment # 2: Argyle (day)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 58.86 + 0.00) = 58.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -59      0   0.00  68.48   0.00  -4.77  -4.84   0.00   0.00   0.00  58.86
-------------------------------------------------------------------------------

Segment Leq : 58.86 dBA


Results segment # 3: 417WB (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       22.06 !        22.06

ROAD (66.46 + 57.86 + 0.00) = 67.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     2     60   0.00  80.15   0.00  -8.77  -4.92   0.00   0.00   0.00  66.46
-------------------------------------------------------------------------------
    60     90   0.00  80.15   0.00  -8.77  -7.78   0.00   0.00  -5.73  57.86
-------------------------------------------------------------------------------

Segment Leq : 67.02 dBA
```

```
Results segment # 4: 417EB (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       23.75 !        23.75

ROAD (65.92 + 58.04 + 0.00) = 66.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     2     60   0.00  80.15   0.00  -9.31  -4.92   0.00   0.00   0.00  65.92
-------------------------------------------------------------------------------
    60     90   0.00  80.15   0.00  -9.31  -7.78   0.00   0.00  -5.01  58.04
-------------------------------------------------------------------------------

Segment Leq : 66.57 dBA

Total Leq All Segments: 70.42 dBA


Results segment # 1: Metcalfe (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 50.64 + 0.00) = 50.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -54     31   0.00  60.88   0.00  -6.99  -3.26   0.00   0.00   0.00  50.64
-------------------------------------------------------------------------------

Segment Leq : 50.64 dBA


Results segment # 2: Argyle (night)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 51.27 + 0.00) = 51.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -59      0   0.00  60.88   0.00  -4.77  -4.84   0.00   0.00   0.00  51.27
-------------------------------------------------------------------------------

Segment Leq : 51.27 dBA
```

```
Results segment # 3: 417WB (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       22.06 !        22.06

ROAD (58.86 + 50.26 + 0.00) = 59.42 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     2     60   0.00  72.55   0.00  -8.77  -4.92   0.00   0.00   0.00  58.86
-------------------------------------------------------------------------------
    60     90   0.00  72.55   0.00  -8.77  -7.78   0.00   0.00  -5.73  50.26
-------------------------------------------------------------------------------

Segment Leq : 59.42 dBA


Results segment # 4: 417EB (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       23.75 !        23.75

ROAD (58.32 + 50.45 + 0.00) = 58.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     2     60   0.00  72.55   0.00  -9.31  -4.92   0.00   0.00   0.00  58.32
-------------------------------------------------------------------------------
    60     90   0.00  72.55   0.00  -9.31  -7.78   0.00   0.00  -5.01  50.45
-------------------------------------------------------------------------------

Segment Leq : 58.98 dBA

Total Leq All Segments: 62.82 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 70.42
                           (NIGHT): 62.82
```

```
STAMSON 5.0        NORMAL REPORT        Date: 06-08-2021 10:50:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5n.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Metcalfe1 (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Metcalfe1 (day/night)
--------------------------------------------
Angle1   Angle2           : -56.00 deg   26.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  77.00 / 77.00  m
Receiver height           :  39.50 / 11.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -56.00 deg   Angle2 : 26.00 deg
Barrier height            :  38.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Metcalfe2 (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth         :   0.00
    Number of Years of Growth           :   0.00
    Medium Truck % of Total Volume      :   7.00
    Heavy Truck  % of Total Volume      :   5.00
    Day (16 hrs) % of Total Volume      :  92.00

Data for Segment # 2: Metcalfe2 (day/night)
--------------------------------------------
Angle1   Angle2           : -65.00 deg   10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  37.00 / 37.00  m
Receiver height           :  39.50 / 11.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -65.00 deg   Angle2 : 10.00 deg
Barrier height            :  38.00 m
Barrier receiver distance :  18.00 / 18.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: 417WB1 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: 417WB1 (day/night)
----------------------------------------
Angle1   Angle2           : -20.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 121.00 / 121.00 m
Receiver height           :  39.50 / 11.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -20.00 deg   Angle2 : 90.00 deg
Barrier height            :  38.00 m
Barrier receiver distance :  12.00 / 12.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: 417EB1 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: 417EB1 (day/night)
----------------------------------------
Angle1   Angle2           : -20.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 137.00 / 137.00 m
Receiver height           :  39.50 / 11.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -20.00 deg   Angle2 : 90.00 deg
Barrier height            :  38.00 m
Barrier receiver distance :  12.00 / 12.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: 417WB2 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 5: 417WB2 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   -20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 121.00 / 121.00 m
Receiver height           :  39.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -20.00 deg
Barrier height            :  41.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 6: 417EB2 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 6: 417EB2 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   -20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 137.00 / 137.00 m
Receiver height           :  39.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -20.00 deg
Barrier height            :  41.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Metcalfe1 (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       38.02 !        38.02

ROAD (0.00 + 57.96 + 0.00) = 57.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -56     26   0.00  68.48   0.00  -7.10  -3.41   0.00   0.00  -5.00  52.96*
   -56     26   0.00  68.48   0.00  -7.10  -3.41   0.00   0.00   0.00  57.96
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 57.96 dBA


Results segment # 2: Metcalfe2 (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       21.01 !        21.01

ROAD (0.00 + 40.76 + 0.00) = 40.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -65     10   0.00  68.48   0.00  -3.92  -3.80   0.00   0.00 -20.00  40.76
-------------------------------------------------------------------------------

Segment Leq : 40.76 dBA
```

```
Results segment # 3: 417WB1 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       36.03 !        36.03

ROAD (0.00 + 60.22 + 0.00) = 60.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.00  80.15   0.00  -9.07  -2.14   0.00   0.00  -8.72  60.22
-------------------------------------------------------------------------------

Segment Leq : 60.22 dBA


Results segment # 4: 417EB1 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       36.17 !        36.17

ROAD (0.00 + 60.05 + 0.00) = 60.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.00  80.15   0.00  -9.61  -2.14   0.00   0.00  -8.35  60.05
-------------------------------------------------------------------------------

Segment Leq : 60.05 dBA
```

```
Results segment # 5: 417WB2 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       35.42 !        35.42

ROAD (0.00 + 53.38 + 0.00) = 53.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -20   0.00  80.15   0.00  -9.07  -4.10   0.00   0.00 -13.59  53.38
-------------------------------------------------------------------------------

Segment Leq : 53.38 dBA


Results segment # 6: 417EB2 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       35.89 !        35.89

ROAD (0.00 + 53.41 + 0.00) = 53.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -20   0.00  80.15   0.00  -9.61  -4.10   0.00   0.00 -13.03  53.41
-------------------------------------------------------------------------------

Segment Leq : 53.41 dBA

Total Leq All Segments: 64.97 dBA
```

```
Results segment # 1: Metcalfe1 (night)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.70 !       11.30 !        11.30

ROAD (0.00 + 30.36 + 0.00) = 30.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------------
   -56     26   0.00  60.88   0.00  -7.10  -3.41   0.00   0.00 -20.00  30.36
-----------------------------------------------------------------------------

Segment Leq : 30.36 dBA


Results segment # 2: Metcalfe2 (night)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.70 !        6.74 !         6.74

ROAD (0.00 + 33.16 + 0.00) = 33.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------------
   -65     10   0.00  60.88   0.00  -3.92  -3.80   0.00   0.00 -20.00  33.16
-----------------------------------------------------------------------------

Segment Leq : 33.16 dBA
```

```
Results segment # 3: 417WB1 (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.70 !       10.99 !        10.99

ROAD (0.00 + 41.83 + 0.00) = 41.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.00  72.55   0.00  -9.07  -2.14   0.00   0.00 -19.51  41.83
-------------------------------------------------------------------------------

Segment Leq : 41.83 dBA


Results segment # 4: 417EB1 (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.70 !       10.81 !        10.81

ROAD (0.00 + 41.29 + 0.00) = 41.29 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.00  72.55   0.00  -9.61  -2.14   0.00   0.00 -19.51  41.29
-------------------------------------------------------------------------------

Segment Leq : 41.29 dBA
```

```
Results segment # 5: 417WB2 (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        4.50 !        4.18 !         4.18

ROAD (0.00 + 39.89 + 0.00) = 39.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -20   0.00  72.55   0.00  -9.07  -4.10   0.00   0.00 -19.49  39.89
-------------------------------------------------------------------------------

Segment Leq : 39.89 dBA


Results segment # 6: 417EB2 (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        4.50 !        4.21 !         4.21

ROAD (0.00 + 39.36 + 0.00) = 39.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -20   0.00  72.55   0.00  -9.61  -4.10   0.00   0.00 -19.48  39.36
-------------------------------------------------------------------------------

Segment Leq : 39.36 dBA

Total Leq All Segments: 47.01 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 64.97
                           (NIGHT): 47.01
```

```
STAMSON 5.0        NORMAL REPORT        Date: 06-08-2021 10:51:28
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5b1.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Metcalfe1 (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Metcalfe1 (day/night)
--------------------------------------------
Angle1   Angle2           : -56.00 deg   26.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  77.00 / 77.00  m
Receiver height           :  39.50 / 11.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -56.00 deg   Angle2 : 26.00 deg
Barrier height            :  39.10 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Metcalfe2 (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Metcalfe2 (day/night)
-------------------------------------------
Angle1   Angle2           : -65.00 deg   10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  37.00 / 37.00  m
Receiver height           :  39.50 / 11.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -65.00 deg   Angle2 : 10.00 deg
Barrier height            :  39.10 m
Barrier receiver distance :  18.00 / 18.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: 417WB1 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: 417WB1 (day/night)
----------------------------------------
Angle1   Angle2           : -20.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 121.00 / 121.00 m
Receiver height           :  39.50 / 11.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -20.00 deg   Angle2 : 90.00 deg
Barrier height            :  39.10 m
Barrier receiver distance :  12.00 / 12.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: 417EB1 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: 417EB1 (day/night)
----------------------------------------
Angle1   Angle2           : -20.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 137.00 / 137.00 m
Receiver height           :  39.50 / 11.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -20.00 deg   Angle2 : 90.00 deg
Barrier height            :  39.10 m
Barrier receiver distance :  12.00 / 12.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: 417WB2 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 5: 417WB2 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   -20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 121.00 / 121.00 m
Receiver height           :  39.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -20.00 deg
Barrier height            :  41.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 6: 417EB2 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 6: 417EB2 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   -20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 137.00 / 137.00 m
Receiver height           :  39.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -20.00 deg
Barrier height            :  41.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Metcalfe1 (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       38.02 !        38.02

ROAD (0.00 + 48.08 + 0.00) = 48.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -56     26   0.00  68.48   0.00  -7.10  -3.41   0.00   0.00  -9.89  48.08
-------------------------------------------------------------------------------

Segment Leq : 48.08 dBA


Results segment # 2: Metcalfe2 (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       21.01 !        21.01

ROAD (0.00 + 40.76 + 0.00) = 40.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -65     10   0.00  68.48   0.00  -3.92  -3.80   0.00   0.00 -20.00  40.76
-------------------------------------------------------------------------------

Segment Leq : 40.76 dBA
```

```
Results segment # 3: 417WB1 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       36.03 !        36.03

ROAD (0.00 + 57.76 + 0.00) = 57.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.00  80.15   0.00  -9.07  -2.14   0.00   0.00 -11.18  57.76
-------------------------------------------------------------------------------

Segment Leq : 57.76 dBA


Results segment # 4: 417EB1 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       36.17 !        36.17

ROAD (0.00 + 57.53 + 0.00) = 57.53 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.00  80.15   0.00  -9.61  -2.14   0.00   0.00 -10.87  57.53
-------------------------------------------------------------------------------

Segment Leq : 57.53 dBA
```

```
Results segment # 5: 417WB2 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       35.42 !        35.42

ROAD (0.00 + 53.38 + 0.00) = 53.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -20   0.00  80.15   0.00  -9.07  -4.10   0.00   0.00 -13.59  53.38
-------------------------------------------------------------------------------

Segment Leq : 53.38 dBA


Results segment # 6: 417EB2 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       35.89 !        35.89

ROAD (0.00 + 53.41 + 0.00) = 53.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -20   0.00  80.15   0.00  -9.61  -4.10   0.00   0.00 -13.03  53.41
-------------------------------------------------------------------------------

Segment Leq : 53.41 dBA

Total Leq All Segments: 62.24 dBA
```

```
Results segment # 1: Metcalfe1 (night)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.70 !       11.30 !        11.30

ROAD (0.00 + 30.36 + 0.00) = 30.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -56     26   0.00  60.88   0.00  -7.10  -3.41   0.00   0.00 -20.00  30.36
-------------------------------------------------------------------------------

Segment Leq : 30.36 dBA


Results segment # 2: Metcalfe2 (night)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.70 !        6.74 !         6.74

ROAD (0.00 + 33.16 + 0.00) = 33.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -65     10   0.00  60.88   0.00  -3.92  -3.80   0.00   0.00 -20.00  33.16
-------------------------------------------------------------------------------

Segment Leq : 33.16 dBA
```

```
Results segment # 3: 417WB1 (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.70 !       10.99 !        10.99

ROAD (0.00 + 41.81 + 0.00) = 41.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.00  72.55   0.00  -9.07  -2.14   0.00   0.00 -19.54  41.81
-------------------------------------------------------------------------------

Segment Leq : 41.81 dBA


Results segment # 4: 417EB1 (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.70 !       10.81 !        10.81

ROAD (0.00 + 41.27 + 0.00) = 41.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.00  72.55   0.00  -9.61  -2.14   0.00   0.00 -19.54  41.27
-------------------------------------------------------------------------------

Segment Leq : 41.27 dBA
```

```
Results segment # 5: 417WB2 (night)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        4.50 !        4.18 !         4.18

ROAD (0.00 + 39.89 + 0.00) = 39.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -20   0.00  72.55   0.00  -9.07  -4.10   0.00   0.00 -19.49  39.89
-------------------------------------------------------------------------------

Segment Leq : 39.89 dBA


Results segment # 6: 417EB2 (night)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        4.50 !        4.21 !         4.21

ROAD (0.00 + 39.36 + 0.00) = 39.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -20   0.00  72.55   0.00  -9.61  -4.10   0.00   0.00 -19.48  39.36
-------------------------------------------------------------------------------

Segment Leq : 39.36 dBA

Total Leq All Segments: 47.00 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 62.24
                           (NIGHT): 47.00
```

```
STAMSON 5.0        NORMAL REPORT        Date: 06-08-2021 10:51:48
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5b2.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Metcalfe1 (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Metcalfe1 (day/night)
--------------------------------------------
Angle1   Angle2           : -56.00 deg   26.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  77.00 / 77.00  m
Receiver height           :  39.50 / 11.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -56.00 deg   Angle2 : 26.00 deg
Barrier height            :  40.20 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Metcalfe2 (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth         :   0.00
    Number of Years of Growth           :   0.00
    Medium Truck % of Total Volume      :   7.00
    Heavy Truck  % of Total Volume      :   5.00
    Day (16 hrs) % of Total Volume      :  92.00

Data for Segment # 2: Metcalfe2 (day/night)
--------------------------------------------
Angle1   Angle2           : -65.00 deg   10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  37.00 / 37.00  m
Receiver height           :  39.50 / 11.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -65.00 deg   Angle2 : 10.00 deg
Barrier height            :  40.20 m
Barrier receiver distance :  18.00 / 18.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: 417WB1 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: 417WB1 (day/night)
----------------------------------------
Angle1   Angle2           : -20.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 121.00 / 121.00 m
Receiver height           :  39.50 / 11.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -20.00 deg   Angle2 : 90.00 deg
Barrier height            :  40.20 m
Barrier receiver distance :  12.00 / 12.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: 417EB1 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: 417EB1 (day/night)
----------------------------------------
Angle1   Angle2           : -20.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 137.00 / 137.00 m
Receiver height           :  39.50 / 11.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -20.00 deg   Angle2 : 90.00 deg
Barrier height            :  40.20 m
Barrier receiver distance :  12.00 / 12.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: 417WB2 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 5: 417WB2 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   -20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 121.00 / 121.00 m
Receiver height           :  39.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -20.00 deg
Barrier height            :  41.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 6: 417EB2 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 6: 417EB2 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   -20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 137.00 / 137.00 m
Receiver height           :  39.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -20.00 deg
Barrier height            :  41.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Metcalfe1 (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       38.02 !        38.02

ROAD (0.00 + 42.35 + 0.00) = 42.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -56     26   0.00  68.48   0.00  -7.10  -3.41   0.00   0.00 -15.61  42.35
-------------------------------------------------------------------------------

Segment Leq : 42.35 dBA


Results segment # 2: Metcalfe2 (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       21.01 !        21.01

ROAD (0.00 + 40.76 + 0.00) = 40.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -65     10   0.00  68.48   0.00  -3.92  -3.80   0.00   0.00 -20.00  40.76
-------------------------------------------------------------------------------

Segment Leq : 40.76 dBA
```

```
Results segment # 3: 417WB1 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       36.03 !        36.03

ROAD (0.00 + 55.80 + 0.00) = 55.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.00  80.15   0.00  -9.07  -2.14   0.00   0.00 -13.14  55.80
-------------------------------------------------------------------------------

Segment Leq : 55.80 dBA


Results segment # 4: 417EB1 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       36.17 !        36.17

ROAD (0.00 + 55.51 + 0.00) = 55.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.00  80.15   0.00  -9.61  -2.14   0.00   0.00 -12.89  55.51
-------------------------------------------------------------------------------

Segment Leq : 55.51 dBA
```

```
Results segment # 5: 417WB2 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       35.42 !        35.42

ROAD (0.00 + 53.38 + 0.00) = 53.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -20   0.00  80.15   0.00  -9.07  -4.10   0.00   0.00 -13.59  53.38
-------------------------------------------------------------------------------

Segment Leq : 53.38 dBA


Results segment # 6: 417EB2 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       35.89 !        35.89

ROAD (0.00 + 53.41 + 0.00) = 53.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -20   0.00  80.15   0.00  -9.61  -4.10   0.00   0.00 -13.03  53.41
-------------------------------------------------------------------------------

Segment Leq : 53.41 dBA

Total Leq All Segments: 60.80 dBA
```

```
Results segment # 1: Metcalfe1 (night)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.70 !       11.30 !        11.30

ROAD (0.00 + 30.36 + 0.00) = 30.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------------
   -56     26   0.00  60.88   0.00  -7.10  -3.41   0.00   0.00 -20.00  30.36
-----------------------------------------------------------------------------

Segment Leq : 30.36 dBA


Results segment # 2: Metcalfe2 (night)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.70 !        6.74 !         6.74

ROAD (0.00 + 33.16 + 0.00) = 33.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------------
   -65     10   0.00  60.88   0.00  -3.92  -3.80   0.00   0.00 -20.00  33.16
-----------------------------------------------------------------------------

Segment Leq : 33.16 dBA
```

```
Results segment # 3: 417WB1 (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.70 !       10.99 !        10.99

ROAD (0.00 + 41.78 + 0.00) = 41.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.00  72.55   0.00  -9.07  -2.14   0.00   0.00 -19.56  41.78
-------------------------------------------------------------------------------

Segment Leq : 41.78 dBA


Results segment # 4: 417EB1 (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.70 !       10.81 !        10.81

ROAD (0.00 + 41.24 + 0.00) = 41.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.00  72.55   0.00  -9.61  -2.14   0.00   0.00 -19.56  41.24
-------------------------------------------------------------------------------

Segment Leq : 41.24 dBA
```

```
Results segment # 5: 417WB2 (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        4.50 !        4.18 !         4.18

ROAD (0.00 + 39.89 + 0.00) = 39.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -20   0.00  72.55   0.00  -9.07  -4.10   0.00   0.00 -19.49  39.89
-------------------------------------------------------------------------------

Segment Leq : 39.89 dBA


Results segment # 6: 417EB2 (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        4.50 !        4.21 !         4.21

ROAD (0.00 + 39.36 + 0.00) = 39.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -20   0.00  72.55   0.00  -9.61  -4.10   0.00   0.00 -19.48  39.36
-------------------------------------------------------------------------------

Segment Leq : 39.36 dBA

Total Leq All Segments: 46.98 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 60.80
                           (NIGHT): 46.98
```

```
STAMSON 5.0        NORMAL REPORT        Date: 06-08-2021 10:52:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5b3.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Metcalfe1 (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Metcalfe1 (day/night)
--------------------------------------------
Angle1   Angle2           : -56.00 deg   26.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  77.00 / 77.00  m
Receiver height           :  39.50 / 11.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -56.00 deg   Angle2 : 26.00 deg
Barrier height            :  41.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Metcalfe2 (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  15000
    Percentage of Annual Growth         :   0.00
    Number of Years of Growth           :   0.00
    Medium Truck % of Total Volume      :   7.00
    Heavy Truck  % of Total Volume      :   5.00
    Day (16 hrs) % of Total Volume      :  92.00

Data for Segment # 2: Metcalfe2 (day/night)
--------------------------------------------
Angle1   Angle2           : -65.00 deg   10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  37.00 / 37.00  m
Receiver height           :  39.50 / 11.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -65.00 deg   Angle2 : 10.00 deg
Barrier height            :  41.00 m
Barrier receiver distance :  18.00 / 18.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: 417WB1 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: 417WB1 (day/night)
----------------------------------------
Angle1   Angle2           : -20.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 121.00 / 121.00 m
Receiver height           :  39.50 / 11.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -20.00 deg   Angle2 : 90.00 deg
Barrier height            :  41.00 m
Barrier receiver distance :  12.00 / 12.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: 417EB1 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: 417EB1 (day/night)
----------------------------------------
Angle1   Angle2           : -20.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 137.00 / 137.00 m
Receiver height           :  39.50 / 11.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -20.00 deg   Angle2 : 90.00 deg
Barrier height            :  41.00 m
Barrier receiver distance :  12.00 / 12.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: 417WB2 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 5: 417WB2 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   -20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 121.00 / 121.00 m
Receiver height           :  39.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -20.00 deg
Barrier height            :  41.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 6: 417EB2 (day/night)
------------------------------------------
Car traffic volume  : 44528/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  55000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 6: 417EB2 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   -20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 137.00 / 137.00 m
Receiver height           :  39.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -20.00 deg
Barrier height            :  41.00 m
Barrier receiver distance :  13.00 / 13.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Metcalfe1 (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       38.02 !        38.02

ROAD (0.00 + 39.59 + 0.00) = 39.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -56     26   0.00  68.48   0.00  -7.10  -3.41   0.00   0.00 -18.37  39.59
-------------------------------------------------------------------------------

Segment Leq : 39.59 dBA


Results segment # 2: Metcalfe2 (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       21.01 !        21.01

ROAD (0.00 + 40.76 + 0.00) = 40.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -65     10   0.00  68.48   0.00  -3.92  -3.80   0.00   0.00 -20.00  40.76
-------------------------------------------------------------------------------

Segment Leq : 40.76 dBA
```

```
Results segment # 3: 417WB1 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       36.03 !        36.03

ROAD (0.00 + 54.61 + 0.00) = 54.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.00  80.15   0.00  -9.07  -2.14   0.00   0.00 -14.33  54.61
-------------------------------------------------------------------------------

Segment Leq : 54.61 dBA


Results segment # 4: 417EB1 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       36.17 !        36.17

ROAD (0.00 + 54.30 + 0.00) = 54.30 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.00  80.15   0.00  -9.61  -2.14   0.00   0.00 -14.11  54.30
-------------------------------------------------------------------------------

Segment Leq : 54.30 dBA
```

```
Results segment # 5: 417WB2 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       35.42 !        35.42

ROAD (0.00 + 53.38 + 0.00) = 53.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -20   0.00  80.15   0.00  -9.07  -4.10   0.00   0.00 -13.59  53.38
-------------------------------------------------------------------------------

Segment Leq : 53.38 dBA


Results segment # 6: 417EB2 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       39.50 !       35.89 !        35.89

ROAD (0.00 + 53.41 + 0.00) = 53.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -20   0.00  80.15   0.00  -9.61  -4.10   0.00   0.00 -13.03  53.41
-------------------------------------------------------------------------------

Segment Leq : 53.41 dBA

Total Leq All Segments: 60.07 dBA
```

```
Results segment # 1: Metcalfe1 (night)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.70 !       11.30 !        11.30

ROAD (0.00 + 30.36 + 0.00) = 30.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------------
   -56     26   0.00  60.88   0.00  -7.10  -3.41   0.00   0.00 -20.00  30.36
-----------------------------------------------------------------------------

Segment Leq : 30.36 dBA


Results segment # 2: Metcalfe2 (night)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.70 !        6.74 !         6.74

ROAD (0.00 + 33.16 + 0.00) = 33.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------------
   -65     10   0.00  60.88   0.00  -3.92  -3.80   0.00   0.00 -20.00  33.16
-----------------------------------------------------------------------------

Segment Leq : 33.16 dBA
```

```
Results segment # 3: 417WB1 (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.70 !       10.99 !        10.99

ROAD (0.00 + 41.77 + 0.00) = 41.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.00  72.55   0.00  -9.07  -2.14   0.00   0.00 -19.58  41.77
-------------------------------------------------------------------------------

Segment Leq : 41.77 dBA


Results segment # 4: 417EB1 (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.70 !       10.81 !        10.81

ROAD (0.00 + 41.23 + 0.00) = 41.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     90   0.00  72.55   0.00  -9.61  -2.14   0.00   0.00 -19.58  41.23
-------------------------------------------------------------------------------

Segment Leq : 41.23 dBA
```

```
Results segment # 5: 417WB2 (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        4.50 !        4.18 !         4.18

ROAD (0.00 + 39.89 + 0.00) = 39.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -20   0.00  72.55   0.00  -9.07  -4.10   0.00   0.00 -19.49  39.89
-------------------------------------------------------------------------------

Segment Leq : 39.89 dBA


Results segment # 6: 417EB2 (night)
----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        4.50 !        4.21 !         4.21

ROAD (0.00 + 39.36 + 0.00) = 39.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -20   0.00  72.55   0.00  -9.61  -4.10   0.00   0.00 -19.48  39.36
-------------------------------------------------------------------------------

Segment Leq : 39.36 dBA

Total Leq All Segments: 46.98 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 60.07
                           (NIGHT): 46.98
```