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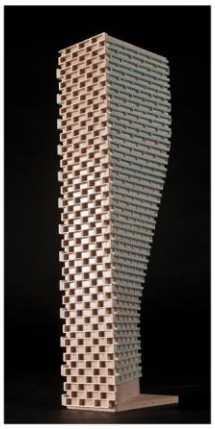
ROADWAY TRAFFIC NOISE ASSESSMENT

265 Catherine Street
Ottawa, Ontario

Report: 23-055- Traffic Noise



March 7, 2024

PREPARED FOR

11034936 Canada Inc.
98 rue Lois
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PREPARED BY

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EXECUTIVE SUMMARY

This report describes a roadway traffic noise assessment undertaken to satisfy concurrent Zoning By-law Amendment and Site Plan Control application submission requirements for the proposed multi-building development located at 265 Catherine Street in Ottawa, Ontario. The proposed development comprises three buildings: Building A to the east, comprised of Tower 1 rising to 26-storeys above an 'L'-shaped six-storey podium; Building B to the west, comprised of Towers 2 and 3 rising to 36- and 34-storeys, respectively, above a shared 'L'-shaped six-storey podium; and Building C to the north which is comprised of three-storey townhouses. The primary sources of roadway traffic noise include Highway 417, Kent Street, Lyon Street, and Catherine Street. 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); (iii) future vehicular traffic volumes based on the City of Ottawa's Official Plan roadway classifications; and (iv) architectural drawings prepared by BDP Quadrangle in February 2024.

The results of the current analysis indicate that noise levels will range between 49 and 77 dBA during the daytime period (07:00-23:00) and between 45 and 70 dBA during the nighttime period (23:00-07:00). The highest noise level (77 dBA) occurs at the south façades of Buildings A and B, which are nearest and most exposed to Highway 417.

As such, upgraded building components and air conditioning will be required for Buildings A and B, as illustrated in Figure 5, which experience noise levels above 65 dBA during the daytime. This will allow occupants to keep windows closed and maintain a comfortable living environment. Double pane windows with a minimum STC of 37 for bedrooms, STC 32 for living rooms, and STC 27 for retail will be required. A Type D Warning Clause will also be required in all Lease, Purchase and Sale Agreements, as summarized in Section 6.

Similarly, Building C is expected to experience noise levels greater than 55 dBA but less than 65 dBA and will require forced air heating with the provision for central air conditioning. This will allow occupants to keep windows closed and maintain a comfortable living environment. It is expected that the building will

be designed with central air conditioning for occupant comfort purposes, therefore a Type D Warning Clause will also be required in all Lease, Purchase and Sale Agreements, as summarized in Section 6.

The results also indicate that noise levels for the amenity spaces (Receptor 12 and 13) are expected to exceed the criteria listed in NPC-300 for outdoor living areas. Therefore, noise control measures will be required to reduce the L_{eq} at or below 60 dBA where technically and administratively feasible. A solid 2 m tall and/or a 2.4 m tall noise barrier around the perimeter of the Level 7 amenity spaces will be required as shown in Figure 4. Noise barriers should be built with solid elements having a minimum surface mass of 20 kg/m² and should contain no gaps. In addition, a Type B Warning Clause will be required in all Lease, Purchase and Sale Agreements, as summarized in Section 6.

With regard to stationary noise impacts, a stationary noise study is recommended for the site during the detailed design stage once mechanical plans become available. This study would assess impacts of stationary noise from rooftop mechanical units serving the proposed buildings onto the development itself and surrounding noise sensitive areas. This study will include recommendations for any noise control measures that may be necessary to ensure noise levels fall below NPC-300 limits. As the mechanical equipment will primarily reside in the mechanical level located on the high roof, noise levels on the surrounding noise sensitive properties are expected to be negligible. In the event that noise levels exceed the NPC-300 and ENCG criteria, noise impacts can generally be minimized by judicious selection and placement of the equipment.

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1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by 11034936 Canada Inc. to undertake a roadway traffic noise assessment to satisfy concurrent Zoning By-law Amendment and Site Plan Control application submission requirements for the proposed multi-building development located at 265 Catherine Street in Ottawa, Ontario. This report summarizes the methodology, results, and recommendations related to the assessment of exterior noise levels generated by local transportation traffic.

This assessment is 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 prepared by BDP Quadrangle in February 2024, with future traffic volumes corresponding to the City of Ottawa's Official Plan (OP) roadway classifications.

2. TERMS OF REFERENCE

The subject site is located at 265 Catherine Street in Ottawa, situated within a city block bounded by Arlington Avenue to the north, Kent Street to the east, Catherine Street to the south, and Lyon Street North to the west.

The proposed development comprises three buildings: Building A to the east, comprised of Tower 1 rising to 26-storeys above an 'L'-shaped six-storey podium; Building B to the west, comprised of Towers 2 and 3 rising to 36- and 34-storeys, respectively, above a shared 'L'-shaped six-storey podium; and Building C to the north which is comprised of three-storey townhouses. Building A comprises Phase 1, and Buildings B and C comprise Phase 2 of the proposed development. The podia serving Buildings A and B have their long axes oriented along Catherine Street and are connected at the podium roof level (Level 7) by a pedestrian bridge. The buildings share two below-grade parking levels, and the three towers are topped with mechanical penthouses (MPH). A parkland dedication is provided at the northeast corner of the subject

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

site, a woonerf-style vehicular driveway and pedestrian open space is situated between Buildings A and B, and a publicly accessible open space is situated between Buildings B and C.

Above the below-grade parking, the ground floor of Building A includes a residential main entrance to the south, retail spaces to the south and at the southwest corner, a loading space to the west, a retail artspace at the northwest corner, a residential main entrance and retail space to the north, and restaurants along the east elevation. A retail space (market) fronting Arlington Avenue is situated to the north of the artspace, separated from the main massing of Building A by an east-west walkway connecting the central driveway and the parkland dedication. Access to the underground parking is provided by a ramp near the southwest corner of Building A from Catherine Street. The ground floor of Building B includes a residential main entrance, retail spaces, and a management office to the south, a restaurant at the southwest corner, a residential main entrance to the west, a retail space at the northwest corner, a bicycle lobby and café to the north, indoor amenities to the northeast, and a garbage and loading space to the east. Access to the underground parking from Arlington Avenue is provided by a ramp near the centre of the north façade of Building B.

A mezzanine level in both buildings provides bicycle storage facilities. Level 2 of Building A includes an indoor amenity at the northwest corner, and residential units throughout the remainder of the level. Levels 3-6 and Levels 2-6 of Buildings A and B, respectively, are reserved for residential use and Level 7 is comprised of indoor amenities. Building B steps back from the east at Level 2, and both buildings step back from the south at Level 5 to accommodate private terraces. The buildings step back from all elevations at Level 7 to accommodate continuous amenity terraces atop the podia. Towers 1, 2, and 3 rise above the podia with nominally rectangular planforms and are comprised of residential units.

The near-field surroundings include low-rise massing in all compass directions, Glashan Public School to the northeast, and isolated mid-rise buildings to the east, southeast, and west. Notably, a 16-storey mixed-use development is approved at 30-48 Chamberlain Avenue (ZBLA), approximately 190 m to the southeast. The far-field surroundings are characterized by low-rise massing and isolated mid- and high-rise buildings from the east-northeast clockwise to the west-northwest, low- and mid-rise massing following by the urban massing of the Ottawa downtown core from the west-northwest clockwise to the northeast, and a mix of low-, mid-, and high-rise massing in the remaining compass directions. The Ottawa downtown core is situated approximately 1.1 km to the north, and Dow's Lake is approximately 1.5 km to

the south-southwest. The primary sources of roadway traffic noise include Highway 417, Kent Street, Lyon Street, and Catherine Street. Figure 1 illustrates a complete site plan with surrounding context.

With regard to stationary noise impacts, a stationary noise study is recommended for the site during the detailed design once mechanical plans become available. This study would assess impacts of stationary noise from rooftop mechanical units serving the proposed buildings onto the development itself and surrounding noise sensitive areas. This study will include recommendations for any noise control measures that may be necessary to ensure noise levels fall below NPC-300 limits. As the mechanical equipment will primarily reside in the mechanical level located on the high roof, noise levels on the surrounding noise sensitive properties are expected to be negligible. In the event that noise levels exceed the NPC-300 and ENCG criteria, noise impacts can generally be minimized by judicious selection and placement of the equipment.

3. OBJECTIVES

The principal objectives of this study are to (i) calculate the future noise levels on the study building produced by local transportation sources, and (ii) explore potential noise mitigation where required.

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. NPC-300 specifies that the recommended indoor noise limit range (that is relevant to this study) is 50, 45, and 40 dBA for retail space, living rooms, and sleeping quarters, respectively, as listed in Table 1.

TABLE 1: INDOOR SOUND LEVEL CRITERIA (ROAD) [3]

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[4]. A closed window due to a ventilation requirement will bring noise levels down to achieve an acceptable indoor environment[5]. 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

[3] MOECP, Environmental Noise Guidelines, NPC 300 – Part C, Table C-9
[4] Burberry, P.B. (2014). Mitchell's Environment and Services. Routledge, Page 125
[5] MOECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.8

daytime and 60 dBA nighttime, air conditioning will be required and building components will require higher levels of sound attenuation[6].

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. As per NPC-300 guidelines, Privately Owned Public Space (POPS), are typically not identified as noise sensitive spaces as they are not "intended and designed for the quiet enjoyment of the outdoor environment"[7].

4.2.2 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[8] 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.

[6] MOECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.1.3
[7] MOECP, Environmental Noise Guidelines, NPC 300 – Part A5
[8] City of Ottawa Transportation Master Plan, November 2013

TABLE 2: ROADWAY TRAFFIC DATA

Segment	Roadway Traffic Data	Speed Limit (km/h)	Traffic Volumes
Highway 417 (Eastbound)	4-Lane Freeway	100	**73,332**
Highway 417 (Westbound)	4-Lane Freeway	100	**73,332**
Kent Street	2-Lane Urban Arterial	50	**15,000**
Lyon Street	2-Lane Urban Arterial	50	**15,000**
Catherine Street	2-Lane Urban Arterial	50	**15,000**

4.2.3 Theoretical Roadway Traffic Noise Predictions

Noise predictions were performed with the aid of the MECP computerized noise assessment program, STAMSON 5.04, for road analysis. Appendix A includes the STAMSON 5.04 input and output data.

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, as per ENCG requirements for noise level predictions.
- 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 to the north, west, and south. To the south, Highway 417 was modelled with an elevation change of 4 m.
- For select receptors, the proposed building and surrounding existing buildings were considered as noise barriers partially obstructing exposure to the roadway (Figures 4-6).
- Noise receptors were strategically placed at 13 locations around the study area (see Figure 2).
- Receptor distances and exposure angles are illustrated in Figures 4-6.

- Distance adjustment used for some receivers where source-receiver distances were less than 15 meters (Receptors 4 and 5).

In some cases, source-receiver distances were less than 15 metres (m), which is the minimum distance required for entry in STAMSON. A distance adjustment calculation shown in equation 1 from ORNAMENT was used to calculate the adjustment value, which was added to the calculated noise level from STAMSON[9]. The equation is as follows:

$$Distance\ Adjustment\ Value = 10\ (1+\propto) \log(\frac{D_{ref}}{D}) \qquad (1)$$

Where the parameters are:

- D_{ref}= Distance used in STAMSON, 15 metres
- D= Actual distance of source-receiver
- α= Ground Absorption Factor (Hard Ground = 0, Soft Ground =1)

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 (2020) 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 are achieved. The calculation procedure considers:

[9] ORNAMENT Technical Document, October 1989, Section 4

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

Based on published research[10], 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, detailed floor layouts and exterior assemblies 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).

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

5. RESULTS

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 ROADWAY TRAFFIC SOURCES

Receptor Number	Receptor Height Above Grade/Roof (m)	Receptor Location	STAMSON 5.04 Noise Level (dBA)	
			Day	Night
1	18.5	POW – Building B – North Façade	62	54
2	8.4	POW – Building C – North Façade	53	45
3	18.5	POW – Building A – East Façade	60	52
4	18.5	POW – Building A/Tower 1 – East Façade	74	67
5	99	POW – Building A/Tower 1 – East Façade	75	67
6	99	POW – Building A/Tower 1 – South Façade	77	70
7	113	POW – Building B/Tower 2 – South Façade	77	69
8	113	POW – Building B/Tower 2 – North Façade	57	50
9	107	POW – Building B/Tower 3 – South Façade	77	69
10	107	POW – Building B/Tower 3 – West Façade	75	67
11	23	OLA – Building B – North Amenity Terrace	49	N/A*
12	23	OLA – Building B – Central Amenity Terrace	68	N/A*
13	23	OLA – Building A – West Amenity Terrace	62	N/A*

*Noise levels during the nighttime are not considered for OLAs as per ENCG.

The results of the current analysis indicate that noise levels will range between 49 and 77 dBA during the daytime period (07:00-23:00) and between 45 and 70 dBA during the nighttime period (23:00-07:00). The highest noise level (77 dBA) occurs at the south façades of Buildings A and B, which are nearest and most exposed to Highway 417.

5.1.1 Noise Control Measures

The results indicate that upgraded building components and air conditioning will be required for Buildings A and B which experience noise levels above 65 dBA during the daytime, thus exceeding the criteria listed in NPC-300 for building components. As discussed in Section 4.2.1, the anticipated STC requirements for windows and walls have been estimated based on the overall noise reduction required for each intended use of space (STC = Outdoor Noise Level – Targeted Indoor Noise Levels). The STC requirements for the windows are summarized below for various units within the development (see Figure 5):

- **Bedroom Windows**

  (i) Bedroom windows facing east, south, and west will require a minimum STC of 37.

  (ii) All other bedroom windows are to satisfy Ontario Building Code (OBC 2020) requirements.

- **Living Room Windows**

  (i) Living room windows facing east, south, and west will require a minimum STC of 32.

  (ii) All other living room windows are to satisfy Ontario Building Code (OBC 2020) requirements.

- **Retail Windows**

  (i) Retail windows facing east, south, and west will require a minimum STC of 27.

  (ii) All other retail windows are to satisfy Ontario Building Code (OBC 2020) requirements.

- **Exterior Walls**

  (i) Exterior wall components on the façades mentioned above will require a minimum STC of 45, which will be achieved with brick cladding or an acoustical equivalent according to NRC test data[11]

Buildings A and B will require central air conditioning to allow occupants to keep windows and doors closed to maintain a comfortable and quiet indoor environment. A Type D Warning Clause will also be required in all Lease, Purchase and Sale Agreements, as summarized in Section 6.

[11]

Similarly, Building C is expected to experience noise levels greater than 55 dBA but less than 65 dBA and will require forced air heating with the provision for central air conditioning. However, it is expected the development will be designed with central air conditioning for occupant comfort purposes. A Type D Warning Clause will also be required in all Lease, Purchase and Sale Agreements, as summarized in Section 6. Figure 3 outlines the ventilation requirements for the proposed development.

5.1.2 Noise Barrier Calculations

The noise level at the OLA Receptors 12 and 13, located at the Amenity Level 7 terrace on Building A and B respectively, are higher than 60 dBA. Therefore, a barrier investigation was conducted to reduce the noise level at or below 60 dBA. The result of the analysis shows that a solid 2 m tall and/or a 2.4 m tall noise barrier or parapet wall around the perimeter of the Level 7 amenity spaces will be required as shown in Figure 4. The noise barrier for the terraces can be built as a parapet wall, a solid glass railing, or a combination of both. However, it should not contain gaps. Glass railing can be built as glass-to-glass or the gap between the glass and balusters can be avoided.

Noise barriers should be built with solid elements having a minimum surface mass of 20 kg/m² and should contain no gaps. In addition, a Type B warning clause will be required in all Lease, Purchase and Sale Agreements, as summarized in Section 6. Table 4 summarizes the results of the barrier investigation.

TABLE 4: RESULTS OF NOISE BARRIER INVESTIGATION

Receptor ID	Receptor Location	Daytime L_{eq} Noise Levels (dBA)			
		Without Barrier	1.1 m tall barrier	2.0 m tall barrier	2.4 m tall barrier
R12	OLA – Building B – Level 7 Central Amenity Terrace	68	65	61	**60**
R13	OLA – Building A – Level 7 West Amenity Terrace	62	60	59	**59**

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that noise levels will between 49 and 77 dBA during the daytime period (07:00-23:00) and between 45 and 70 dBA during the nighttime period (23:00-07:00). The highest noise level (77 dBA) occurs at the south façades of Buildings A and B, which are nearest and most exposed to Highway 417.

As such, upgraded building components and air conditioning will be required for Buildings A and B, as illustrated in Figure 5, which experience noise levels above 65 dBA during the daytime. This will allow occupants to keep windows closed and maintain a comfortable living environment. Double pane windows with a minimum STC of 37 for bedrooms, STC 32 for living rooms, and STC 27 for retail will be required. A Type D Warning Clause will also be required in 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, Conservation and Parks."*

Similarly, Building C is expected to experience noise levels greater than 55 dBA but less than 65 dBA and will require forced air heating with the provision for central air conditioning. This will allow occupants to keep windows closed and maintain a comfortable living environment. It is expected that the building will be designed with central air conditioning for occupant comfort purposes, therefore a Type D Warning Clause will also be required in all Lease, Purchase and Sale Agreements, as summarized above.

The results also indicate that noise levels for the amenity spaces (Receptor 12 and 13) are expected to exceed the criteria listed in NPC-300 for outdoor living areas. Therefore, noise control measures will be required to reduce the L_{eq} at or below 60 dBA where technically and administratively feasible. A solid 2 m tall and/or a 2.4 m tall noise barrier around the perimeter of the Level 7 amenity spaces will be required as shown in Figure 4. Noise barriers should be built with solid elements having a minimum surface mass

of 20 kg/m² and should contain no gaps. In addition, a Type B Warning Clause will be required in all Lease, Purchase and Sale Agreements, as summarized below:

Type B

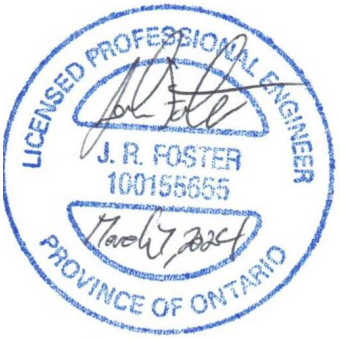
> *"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."*

With regard to stationary noise impacts, a stationary noise study is recommended for the site during the detailed design once mechanical plans become available. This study would assess impacts of stationary noise from rooftop mechanical units serving the proposed buildings onto the development itself and surrounding noise sensitive areas. This study will include recommendations for any noise control measures that may be necessary to ensure noise levels fall below NPC-300 limits. As the mechanical equipment will primarily reside in the mechanical level located on the high roof, noise levels on the surrounding noise sensitive properties are expected to be negligible. In the event that noise levels exceed the NPC-300 and ENCG criteria, noise impacts can generally be minimized by judicious selection and placement of the equipment.

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.



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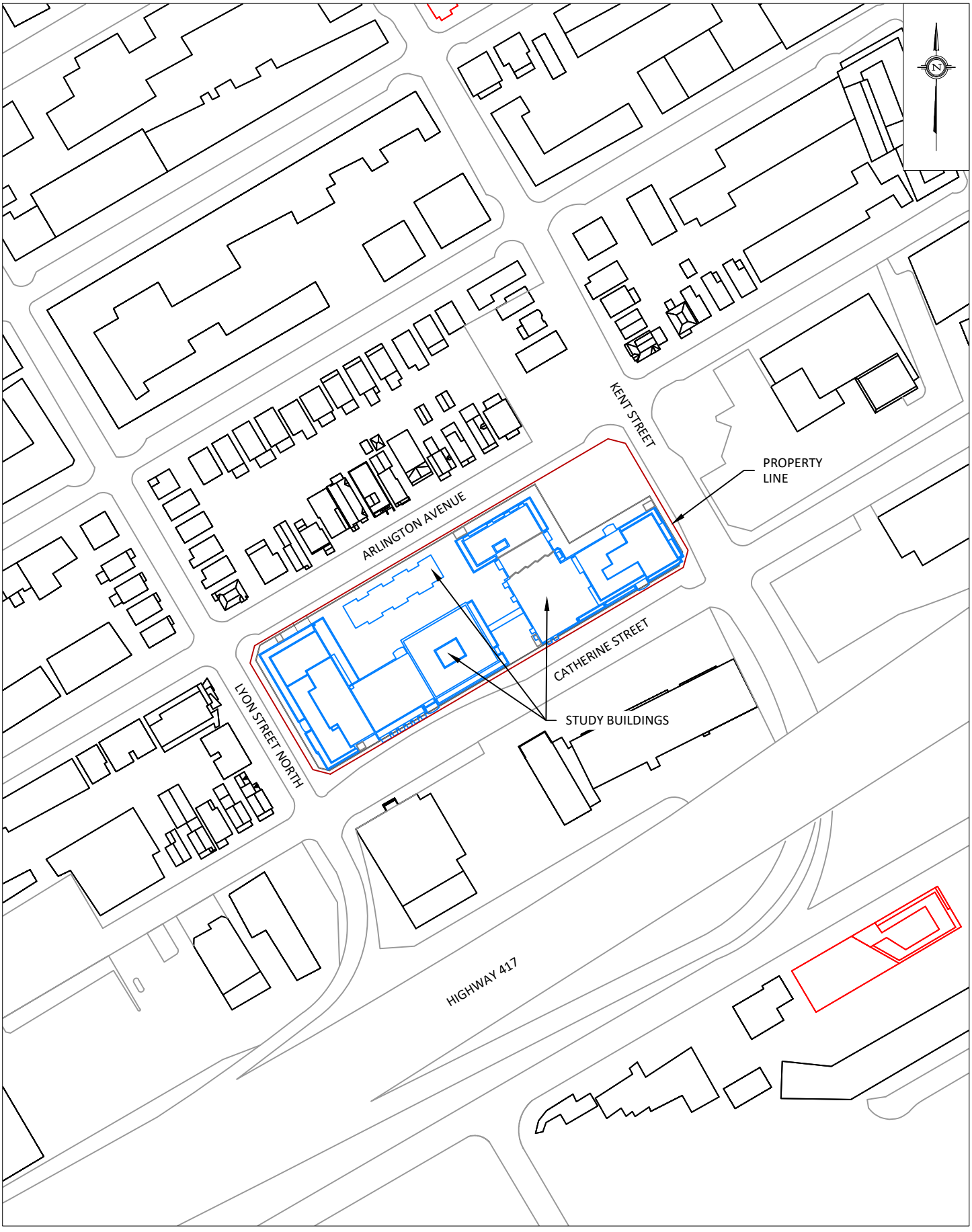
Gradient Wind File 23-055



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PROJECT	265 CATHERINE STREET, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:2000 (APPROX.)	DRAWING NO.	GW23-055-1
DATE	MARCH 8, 2024	DRAWN BY	B.P.

FIGURE 1:
SITE PLAN WITH SURROUNDING CONTEXT

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SCALE	1:1000 (APPROX.)	DRAWING NO.	GW23-055-2
DATE	MARCH 8, 2024	DRAWN BY	B.P.

FIGURE 2:
RECEPTOR LOCATIONS

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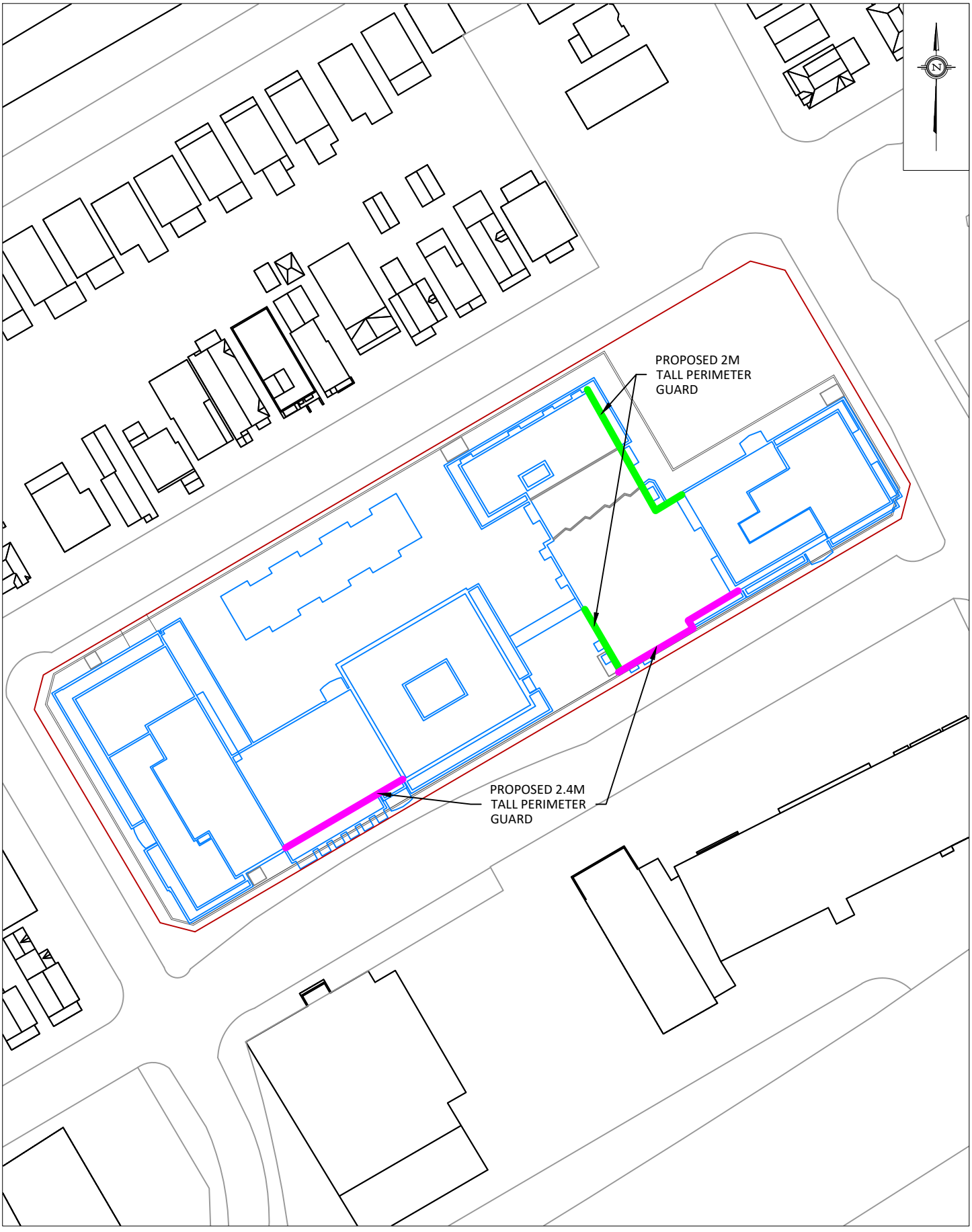
SCALE	1:1000 (APPROX.)	DRAWING NO.	GW23-055-3
DATE	MARCH 8, 2024	DRAWN BY	B.P.

FIGURE 3:
VENTILATION REQUIREMENTS



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PROJECT	265 CATHERINE STREET, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:1000 (APPROX.)	DRAWING NO.	GW23-055-4
DATE	MARCH 8, 2024	DRAWN BY	B.P.

FIGURE 4:
NOISE BARRIER REQUIREMENTS

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SCALE	1:1000 (APPROX.)	DRAWING NO.	GW23-055-5
DATE	MARCH 8, 2024	DRAWN BY	B.P.

FIGURE 5:
WINDOW STC REQUIREMENTS

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SCALE	1:1000 (APPROX.)	DRAWING NO.	GW23-055-6
DATE	MARCH 8, 2024	DRAWN BY	B.P.

FIGURE 6:
STAMSON INPUT PARAMETERS

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PROJECT	265 CATHERINE STREET, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	GW23-055-7
DATE	MARCH 8, 2024
DRAWN BY	B.P.

DESCRIPTION

FIGURE 7:
STAMSON INPUT PARAMETERS

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ENGINEERS & SCIENTISTS

127 WALGREEN ROAD , OTTAWA, ON
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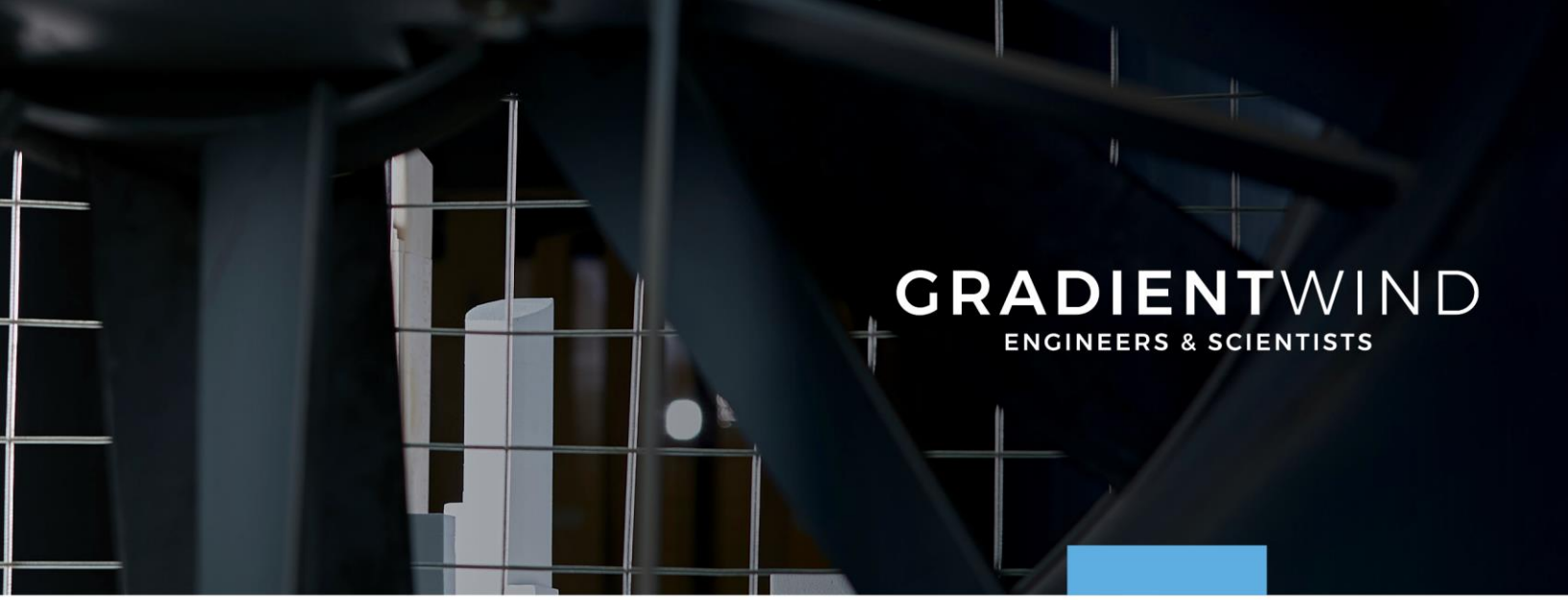
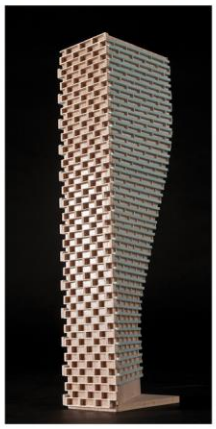
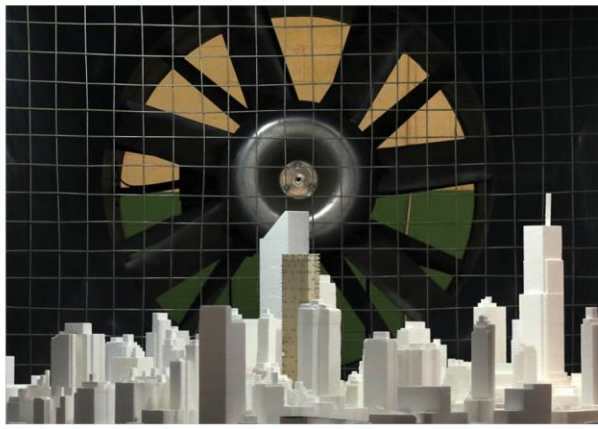
PROJECT	265 CATHERINE STREET, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	GW23-055-8
DATE	MARCH 8, 2024
DRAWN BY	B.P.

DESCRIPTION

FIGURE 8:
STAMSON INPUT PARAMETERS







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: 08-03-2024 15:28:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: LS (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: LS (day/night)
-------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  26.00 / 26.00  m
Receiver height           :  18.50 / 18.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  55.00 deg   Angle2 : 90.00 deg
Barrier height            :  10.00 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: LS (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 !       18.50 !        8.69 !         8.69

ROAD (60.94 + 52.93 + 0.00) = 61.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     55   0.00  68.48   0.00  -2.39  -5.15   0.00   0.00   0.00
60.94
-------------------------------------------------------------------------------
--
    55     90   0.00  68.48   0.00  -2.39  -7.11   0.00   0.00  -6.05
52.93
-------------------------------------------------------------------------------
--

Segment Leq : 61.58 dBA

Total Leq All Segments: 61.58 dBA

Results segment # 1: LS (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 !       18.50 !        8.69 !         8.69
```

```
ROAD (53.35 + 45.33 + 0.00) = 53.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     55   0.00  60.88   0.00  -2.39  -5.15   0.00   0.00   0.00
53.35
-------------------------------------------------------------------------------
--
    55     90   0.00  60.88   0.00  -2.39  -7.11   0.00   0.00  -6.05
45.33
-------------------------------------------------------------------------------
--

Segment Leq : 53.98 dBA

Total Leq All Segments: 53.98 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.58
                           (NIGHT): 53.98
```

```
STAMSON 5.0        NORMAL REPORT        Date: 08-03-2024 17:35:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: KS (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: KS (day/night)
-------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  96.00 / 96.00  m
Receiver height           :   8.40 / 8.40   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -24.00 deg
Barrier height            :   8.00 m
Barrier receiver distance :  57.00 / 57.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: KS (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 !        8.40 !        4.30 !         4.30

ROAD (0.00 + 46.85 + 51.67) = 52.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -24    0.00  68.48   0.00  -8.06  -4.36   0.00   0.00  -9.21
46.85
-------------------------------------------------------------------------------
--
   -24      0    0.00  68.48   0.00  -8.06  -8.75   0.00   0.00   0.00
51.67
-------------------------------------------------------------------------------
--

Segment Leq : 52.91 dBA

Total Leq All Segments: 52.91 dBA

Results segment # 1: KS (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 !        8.40 !        4.30 !         4.30
```

```
ROAD (0.00 + 39.25 + 44.07) = 45.31 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90    -24   0.00  60.88   0.00  -8.06  -4.36   0.00   0.00  -9.21
39.25
-------------------------------------------------------------------------
--
   -24      0   0.00  60.88   0.00  -8.06  -8.75   0.00   0.00   0.00
44.07
-------------------------------------------------------------------------
--

Segment Leq : 45.31 dBA

Total Leq All Segments: 45.31 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 52.91
                           (NIGHT): 45.31
```

```
STAMSON 5.0        NORMAL REPORT        Date: 08-03-2024 15:35:18
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: KS1 (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: KS1 (day/night)
-------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  50.00 / 50.00  m
Receiver height           :  18.50 / 18.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -48.00 deg
Barrier height            :   8.00 m
Barrier receiver distance :  41.00 / 41.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: KS2 (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: KS2 (day/night)
---------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  50.00 / 50.00  m
Receiver height           :  18.50 / 18.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  31.00 deg   Angle2 : 90.00 deg
Barrier height            : 110.11 m
Barrier receiver distance :  41.00 / 41.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: KS1 (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 !       18.50 !        4.56 !         4.56
```

```
ROAD (0.00 + 46.87 + 57.51) = 57.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90    -48   0.00  68.48   0.00  -5.23  -6.32   0.00   0.00 -10.07
46.87
-------------------------------------------------------------------------
--
   -48      0   0.00  68.48   0.00  -5.23  -5.74   0.00   0.00   0.00
57.51
-------------------------------------------------------------------------
--

Segment Leq : 57.87 dBA

Results segment # 2: KS2 (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 !       18.50 !        4.56 !         4.56

ROAD (55.61 + 38.54 + 0.00) = 55.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     31   0.00  68.48   0.00  -5.23  -7.64   0.00   0.00   0.00
55.61
-------------------------------------------------------------------------
--
    31     90   0.00  68.48   0.00  -5.23  -4.84   0.00   0.00 -19.87
38.54
-------------------------------------------------------------------------
--

Segment Leq : 55.70 dBA

Total Leq All Segments: 59.93 dBA
```

```
Results segment # 1: KS1 (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 !       18.50 !        4.56 !         4.56

ROAD (0.00 + 39.27 + 49.91) = 50.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -48    0.00  60.88   0.00  -5.23  -6.32   0.00   0.00 -10.07
39.27
-------------------------------------------------------------------------------
--
   -48      0    0.00  60.88   0.00  -5.23  -5.74   0.00   0.00   0.00
49.91
-------------------------------------------------------------------------------
--

Segment Leq : 50.27 dBA
```

```
Results segment # 2: KS2 (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 !       18.50 !        4.56 !         4.56

ROAD (48.02 + 30.94 + 0.00) = 48.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     31   0.00  60.88   0.00  -5.23  -7.64   0.00   0.00   0.00
48.02
-------------------------------------------------------------------------------
--
    31     90   0.00  60.88   0.00  -5.23  -4.84   0.00   0.00 -19.87
30.94
-------------------------------------------------------------------------------
--

Segment Leq : 48.10 dBA

Total Leq All Segments: 52.33 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.93
                           (NIGHT): 52.33
```

```
STAMSON 5.0        NORMAL REPORT        Date: 08-03-2024 15:38:35
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

Road data, segment # 1: KS (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: KS (day/night)
------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :  18.50 / 18.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: CS (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: CS (day/night)
-------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  34.00 / 34.00  m
Receiver height           :  18.50 / 18.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: HWY417WB (day/night)
-------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417WB (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 108.00 / 108.00 m
Receiver height           :  18.50 / 18.50  m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   4.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: HWY417EB (day/night)
---------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417EB (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 124.00 / 124.00 m
Receiver height           :  18.50 / 18.50  m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   4.00 m
Reference angle           :   0.00

Results segment # 1: KS (day)
------------------------------

Source height = 1.50 m

ROAD (0.00 + 68.48 + 0.00) = 68.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90   0.00  68.48   0.00   0.00   0.00   0.00   0.00   0.00
68.48
-------------------------------------------------------------------------------
--

Segment Leq : 68.48 dBA
```

```
Results segment # 2: CS (day)
------------------------------

Source height = 1.50 m

ROAD (0.00 + 61.92 + 0.00) = 61.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  68.48   0.00  -3.55  -3.01   0.00   0.00   0.00
61.92
-------------------------------------------------------------------------
--

Segment Leq : 61.92 dBA

Results segment # 3: HWY417WB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 69.81 + 0.00) = 69.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  81.40   0.00  -8.57  -3.01   0.00   0.00   0.00
69.81
-------------------------------------------------------------------------
--

Segment Leq : 69.81 dBA

Results segment # 4: HWY417EB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 69.21 + 0.00) = 69.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  81.40   0.00  -9.17  -3.01   0.00   0.00   0.00
69.21
-------------------------------------------------------------------------
--
```

```
Segment Leq : 69.21 dBA

Total Leq All Segments: 74.23 dBA

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

Source height = 1.50 m

ROAD (0.00 + 60.88 + 0.00) = 60.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  60.88   0.00   0.00   0.00   0.00   0.00   0.00
60.88
-------------------------------------------------------------------------
--

Segment Leq : 60.88 dBA

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

Source height = 1.50 m

ROAD (0.00 + 54.32 + 0.00) = 54.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  60.88   0.00  -3.55  -3.01   0.00   0.00   0.00
54.32
-------------------------------------------------------------------------
--

Segment Leq : 54.32 dBA
```

```
Results segment # 3: HWY417WB (night)
----------------------------------

Source height = 1.49 m

ROAD (0.00 + 62.22 + 0.00) = 62.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  73.80   0.00  -8.57  -3.01   0.00   0.00   0.00
62.22
-------------------------------------------------------------------------
--

Segment Leq : 62.22 dBA

Results segment # 4: HWY417EB (night)
----------------------------------

Source height = 1.49 m

ROAD (0.00 + 61.62 + 0.00) = 61.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  73.80   0.00  -9.17  -3.01   0.00   0.00   0.00
61.62
-------------------------------------------------------------------------
--

Segment Leq : 61.62 dBA

Total Leq All Segments: 66.64 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 74.23
                           (NIGHT): 66.64
```

```
STAMSON 5.0         NORMAL REPORT         Date: 08-03-2024 15:40:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5.te                 Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: KS (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: KS (day/night)
------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :  99.00 / 99.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: CS (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: CS (day/night)
-------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  18.00 / 18.00  m
Receiver height           :  99.00 / 99.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: HWY417WB (day/night)
---------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417WB (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  92.00 / 92.00  m
Receiver height           :  99.00 / 99.00  m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   4.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: HWY417EB (day/night)
---------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417EB (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 108.00 / 108.00 m
Receiver height           :  99.00 / 99.00  m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   4.00 m
Reference angle           :   0.00

Results segment # 1: KS (day)
------------------------------

Source height = 1.50 m

ROAD (0.00 + 68.48 + 0.00) = 68.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90   0.00  68.48   0.00   0.00   0.00   0.00   0.00   0.00
68.48
-------------------------------------------------------------------------------
--

Segment Leq : 68.48 dBA
```

```
Results segment # 2: CS (day)
------------------------------

Source height = 1.50 m

ROAD (0.00 + 64.68 + 0.00) = 64.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  68.48   0.00  -0.79  -3.01   0.00   0.00   0.00
64.68
-------------------------------------------------------------------------
--

Segment Leq : 64.68 dBA

Results segment # 3: HWY417WB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 70.51 + 0.00) = 70.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  81.40   0.00  -7.88  -3.01   0.00   0.00   0.00
70.51
-------------------------------------------------------------------------
--

Segment Leq : 70.51 dBA

Results segment # 4: HWY417EB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 69.81 + 0.00) = 69.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  81.40   0.00  -8.57  -3.01   0.00   0.00   0.00
69.81
-------------------------------------------------------------------------
--
```

```
Segment Leq : 69.81 dBA

Total Leq All Segments: 74.89 dBA

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

Source height = 1.50 m

ROAD (0.00 + 60.88 + 0.00) = 60.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  60.88   0.00   0.00   0.00   0.00   0.00   0.00
60.88
-------------------------------------------------------------------------
--

Segment Leq : 60.88 dBA

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

Source height = 1.50 m

ROAD (0.00 + 57.08 + 0.00) = 57.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  60.88   0.00  -0.79  -3.01   0.00   0.00   0.00
57.08
-------------------------------------------------------------------------
--

Segment Leq : 57.08 dBA
```

```
Results segment # 3: HWY417WB (night)
----------------------------------

Source height = 1.49 m

ROAD (0.00 + 62.91 + 0.00) = 62.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  73.80   0.00  -7.88  -3.01   0.00   0.00   0.00
62.91
-------------------------------------------------------------------------
--

Segment Leq : 62.91 dBA

Results segment # 4: HWY417EB (night)
----------------------------------

Source height = 1.49 m

ROAD (0.00 + 62.22 + 0.00) = 62.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  73.80   0.00  -8.57  -3.01   0.00   0.00   0.00
62.22
-------------------------------------------------------------------------
--

Segment Leq : 62.22 dBA

Total Leq All Segments: 67.29 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 74.89
                           (NIGHT): 67.29
```

```
STAMSON 5.0         NORMAL REPORT         Date: 08-03-2024 15:42:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r6.te                 Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: KS (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: KS (day/night)
------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  33.00 / 33.00  m
Receiver height           :  99.00 / 99.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: CS (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: CS (day/night)
-------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :  99.00 / 99.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: HWY417WB (day/night)
---------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417WB (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  89.00 / 89.00  m
Receiver height           :  99.00 / 99.00  m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   4.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: HWY417EB (day/night)
---------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417EB (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 104.00 / 104.00 m
Receiver height           :  99.00 / 99.00  m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   4.00 m
Reference angle           :   0.00

Results segment # 1: KS (day)
------------------------------

Source height = 1.50 m

ROAD (0.00 + 62.05 + 0.00) = 62.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90      0   0.00  68.48   0.00  -3.42  -3.01   0.00   0.00   0.00
62.05
-------------------------------------------------------------------------------
--

Segment Leq : 62.05 dBA
```

```
Results segment # 2: CS (day)
------------------------------

Source height = 1.50 m

ROAD (0.00 + 68.48 + 0.00) = 68.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  68.48   0.00   0.00   0.00   0.00   0.00   0.00
68.48
-------------------------------------------------------------------------
--

Segment Leq : 68.48 dBA

Results segment # 3: HWY417WB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 73.66 + 0.00) = 73.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  81.40   0.00  -7.73   0.00   0.00   0.00   0.00
73.66
-------------------------------------------------------------------------
--

Segment Leq : 73.66 dBA

Results segment # 4: HWY417EB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 72.99 + 0.00) = 72.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  81.40   0.00  -8.41   0.00   0.00   0.00   0.00
72.99
-------------------------------------------------------------------------
--
```

```
Segment Leq : 72.99 dBA

Total Leq All Segments: 77.14 dBA

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

Source height = 1.50 m

ROAD (0.00 + 54.45 + 0.00) = 54.45 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  60.88   0.00  -3.42  -3.01   0.00   0.00   0.00
54.45
-------------------------------------------------------------------------
--

Segment Leq : 54.45 dBA

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

Source height = 1.50 m

ROAD (0.00 + 60.88 + 0.00) = 60.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  60.88   0.00   0.00   0.00   0.00   0.00   0.00
60.88
-------------------------------------------------------------------------
--

Segment Leq : 60.88 dBA
```

```
Results segment # 3: HWY417WB (night)
----------------------------------

Source height = 1.49 m

ROAD (0.00 + 66.07 + 0.00) = 66.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  73.80   0.00  -7.73   0.00   0.00   0.00   0.00
66.07
-------------------------------------------------------------------------
--

Segment Leq : 66.07 dBA

Results segment # 4: HWY417EB (night)
----------------------------------

Source height = 1.49 m

ROAD (0.00 + 65.39 + 0.00) = 65.39 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  73.80   0.00  -8.41   0.00   0.00   0.00   0.00
65.39
-------------------------------------------------------------------------
--

Segment Leq : 65.39 dBA

Total Leq All Segments: 69.55 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 77.14
                           (NIGHT): 69.55
```

```
STAMSON 5.0         NORMAL REPORT         Date: 08-03-2024 15:46:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r7.te                 Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: LS (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: LS (day/night)
------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  82.00 / 82.00  m
Receiver height           : 113.00 / 113.00 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: CS (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: CS (day/night)
-------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           : 113.00 / 113.00 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: HWY417WB (day/night)
---------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417WB (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  92.00 / 92.00  m
Receiver height           : 113.00 / 113.00 m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   4.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: HWY417EB (day/night)
---------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417EB (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 107.00 / 107.00 m
Receiver height           : 113.00 / 113.00 m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   4.00 m
Reference angle           :   0.00

Results segment # 1: LS (day)
------------------------------

Source height = 1.50 m

ROAD (0.00 + 58.09 + 0.00) = 58.09 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90      0   0.00  68.48   0.00  -7.38  -3.01   0.00   0.00   0.00
58.09
-------------------------------------------------------------------------------
--

Segment Leq : 58.09 dBA
```

```
Results segment # 2: CS (day)
------------------------------

Source height = 1.50 m

ROAD (0.00 + 68.48 + 0.00) = 68.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  68.48   0.00   0.00   0.00   0.00   0.00   0.00
68.48
-------------------------------------------------------------------------
--

Segment Leq : 68.48 dBA

Results segment # 3: HWY417WB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 73.52 + 0.00) = 73.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  81.40   0.00  -7.88   0.00   0.00   0.00   0.00
73.52
-------------------------------------------------------------------------
--

Segment Leq : 73.52 dBA

Results segment # 4: HWY417EB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 72.86 + 0.00) = 72.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  81.40   0.00  -8.53   0.00   0.00   0.00   0.00
72.86
-------------------------------------------------------------------------
--
```

```
Segment Leq : 72.86 dBA

Total Leq All Segments: 76.95 dBA

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

Source height = 1.50 m

ROAD (0.00 + 50.50 + 0.00) = 50.50 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  60.88   0.00  -7.38  -3.01   0.00   0.00   0.00
50.50
-------------------------------------------------------------------------
--

Segment Leq : 50.50 dBA

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

Source height = 1.50 m

ROAD (0.00 + 60.88 + 0.00) = 60.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  60.88   0.00   0.00   0.00   0.00   0.00   0.00
60.88
-------------------------------------------------------------------------
--

Segment Leq : 60.88 dBA
```

```
Results segment # 3: HWY417WB (night)
----------------------------------

Source height = 1.49 m

ROAD (0.00 + 65.92 + 0.00) = 65.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  73.80   0.00  -7.88   0.00   0.00   0.00   0.00
65.92
-------------------------------------------------------------------------
--

Segment Leq : 65.92 dBA

Results segment # 4: HWY417EB (night)
----------------------------------

Source height = 1.49 m

ROAD (0.00 + 65.27 + 0.00) = 65.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  73.80   0.00  -8.53   0.00   0.00   0.00   0.00
65.27
-------------------------------------------------------------------------
--

Segment Leq : 65.27 dBA

Total Leq All Segments: 69.35 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 76.95
                           (NIGHT): 69.35
```

```
STAMSON 5.0        NORMAL REPORT        Date: 08-03-2024 15:51:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r8.te                Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: LS (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: LS (day/night)
-------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  82.00 / 82.00  m
Receiver height           : 113.00 / 113.00 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 12.00 deg
Barrier height            : 116.90 m
Barrier receiver distance :  45.00 / 45.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: LS (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 !      113.00 !       51.81 !        51.81

ROAD (0.00 + 29.34 + 57.47) = 57.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     12   0.00  68.48   0.00  -7.38 -11.76   0.00   0.00 -20.00
29.34
-------------------------------------------------------------------------------
--
    12     90   0.00  68.48   0.00  -7.38  -3.63   0.00   0.00   0.00
57.47
-------------------------------------------------------------------------------
--

Segment Leq : 57.48 dBA

Total Leq All Segments: 57.48 dBA
```

```
Results segment # 1: LS (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 !      113.00 !       51.81 !        51.81

ROAD (0.00 + 21.75 + 49.87) = 49.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     12   0.00  60.88   0.00  -7.38 -11.76   0.00   0.00 -20.00
21.75
-------------------------------------------------------------------------------
--
    12     90   0.00  60.88   0.00  -7.38  -3.63   0.00   0.00   0.00
49.87
-------------------------------------------------------------------------------
--

Segment Leq : 49.88 dBA

Total Leq All Segments: 49.88 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.48
                           (NIGHT): 49.88
```

```
STAMSON 5.0        NORMAL REPORT        Date: 08-03-2024 15:53:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r9.te                Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: LS (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: LS (day/night)
------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  26.00 / 26.00  m
Receiver height           : 107.00 / 107.00 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: CS (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: CS (day/night)
-------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           : 107.00 / 107.00 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: HWY417WB (day/night)
-------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417WB (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  92.00 / 92.00  m
Receiver height           : 107.00 / 107.00 m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   4.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: HWY417EB (day/night)
-------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417EB (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 108.00 / 108.00 m
Receiver height           : 107.00 / 107.00 m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   4.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 63.08 + 0.00) = 63.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  68.48   0.00  -2.39  -3.01   0.00   0.00   0.00
63.08
-------------------------------------------------------------------------
--

Segment Leq : 63.08 dBA

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

Source height = 1.50 m

ROAD (0.00 + 68.48 + 0.00) = 68.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  68.48   0.00   0.00   0.00   0.00   0.00   0.00
68.48
-------------------------------------------------------------------------
--

Segment Leq : 68.48 dBA

Results segment # 3: HWY417WB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 73.52 + 0.00) = 73.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  81.40   0.00  -7.88   0.00   0.00   0.00   0.00
73.52
-------------------------------------------------------------------------
--
```

```
Segment Leq : 73.52 dBA

Results segment # 4: HWY417EB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 72.82 + 0.00) = 72.82 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  81.40   0.00  -8.57   0.00   0.00   0.00   0.00
72.82
-------------------------------------------------------------------------
--

Segment Leq : 72.82 dBA

Total Leq All Segments: 77.05 dBA

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

Source height = 1.50 m

ROAD (0.00 + 55.48 + 0.00) = 55.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  60.88   0.00  -2.39  -3.01   0.00   0.00   0.00
55.48
-------------------------------------------------------------------------
--

Segment Leq : 55.48 dBA
```

```
Results segment # 2: CS (night)
-------------------------------

Source height = 1.50 m

ROAD (0.00 + 60.88 + 0.00) = 60.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  60.88   0.00   0.00   0.00   0.00   0.00   0.00
60.88
-------------------------------------------------------------------------
--

Segment Leq : 60.88 dBA

Results segment # 3: HWY417WB (night)
-------------------------------------

Source height = 1.49 m

ROAD (0.00 + 65.92 + 0.00) = 65.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  73.80   0.00  -7.88   0.00   0.00   0.00   0.00
65.92
-------------------------------------------------------------------------
--

Segment Leq : 65.92 dBA

Results segment # 4: HWY417EB (night)
-------------------------------------

Source height = 1.49 m

ROAD (0.00 + 65.23 + 0.00) = 65.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  73.80   0.00  -8.57   0.00   0.00   0.00   0.00
65.23
-------------------------------------------------------------------------
--
```

```
Segment Leq : 65.23 dBA

Total Leq All Segments: 69.45 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 77.05
                           (NIGHT): 69.45
```

```
STAMSON 5.0         NORMAL REPORT         Date: 08-03-2024 15:56:51
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r10.te                Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: LS (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: LS (day/night)
------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  16.00 / 16.00  m
Receiver height           : 107.00 / 107.00 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: CS (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: CS (day/night)
-------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  20.00 / 20.00  m
Receiver height           : 107.00 / 107.00 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: HWY417WB (day/night)
---------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417WB (day/night)
-------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  99.00 / 99.00  m
Receiver height           : 107.00 / 107.00 m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   4.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: HWY417EB (day/night)
---------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417EB (day/night)
---------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 114.00 / 114.00 m
Receiver height           : 107.00 / 107.00 m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   4.00 m
Reference angle           :   0.00

Results segment # 1: LS (day)
------------------------------

Source height = 1.50 m

ROAD (0.00 + 68.20 + 0.00) = 68.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90   0.00  68.48   0.00  -0.28   0.00   0.00   0.00   0.00
68.20
-------------------------------------------------------------------------------
--

Segment Leq : 68.20 dBA
```

```
Results segment # 2: CS (day)
------------------------------

Source height = 1.50 m

ROAD (0.00 + 64.22 + 0.00) = 64.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     90   0.00  68.48   0.00  -1.25  -3.01   0.00   0.00   0.00
64.22
-------------------------------------------------------------------------
--

Segment Leq : 64.22 dBA

Results segment # 3: HWY417WB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 70.19 + 0.00) = 70.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     90   0.00  81.40   0.00  -8.20  -3.01   0.00   0.00   0.00
70.19
-------------------------------------------------------------------------
--

Segment Leq : 70.19 dBA

Results segment # 4: HWY417EB (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 69.58 + 0.00) = 69.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     90   0.00  81.40   0.00  -8.81  -3.01   0.00   0.00   0.00
69.58
-------------------------------------------------------------------------
--
```

```
Segment Leq : 69.58 dBA

Total Leq All Segments: 74.59 dBA

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

Source height = 1.50 m

ROAD (0.00 + 60.60 + 0.00) = 60.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  60.88   0.00  -0.28   0.00   0.00   0.00   0.00
60.60
-------------------------------------------------------------------------
--

Segment Leq : 60.60 dBA

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

Source height = 1.50 m

ROAD (0.00 + 56.62 + 0.00) = 56.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     90   0.00  60.88   0.00  -1.25  -3.01   0.00   0.00   0.00
56.62
-------------------------------------------------------------------------
--

Segment Leq : 56.62 dBA
```

```
Results segment # 3: HWY417WB (night)
----------------------------------

Source height = 1.49 m

ROAD (0.00 + 62.59 + 0.00) = 62.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     90   0.00  73.80   0.00  -8.20  -3.01   0.00   0.00   0.00
62.59
-------------------------------------------------------------------------
--

Segment Leq : 62.59 dBA

Results segment # 4: HWY417EB (night)
----------------------------------

Source height = 1.49 m

ROAD (0.00 + 61.98 + 0.00) = 61.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     90   0.00  73.80   0.00  -8.81  -3.01   0.00   0.00   0.00
61.98
-------------------------------------------------------------------------
--

Segment Leq : 61.98 dBA

Total Leq All Segments: 66.99 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 74.59
                           (NIGHT): 66.99
```

```
STAMSON 5.0        NORMAL REPORT        Date: 08-03-2024 16:08:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r11.te               Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: LS (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: LS (day/night)
------------------------------------
Angle1   Angle2           : -45.00 deg   90.00 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           :  23.00 / 23.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -45.00 deg   Angle2 : 90.00 deg
Barrier height            :  21.50 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: LS (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 !       23.00 !       16.12 !        16.12

ROAD (0.00 + 49.32 + 0.00) = 49.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -45     90    0.00  68.48   0.00  -2.22  -1.25   0.00   0.00 -15.69
49.32
-------------------------------------------------------------------------------
--

Segment Leq : 49.32 dBA

Total Leq All Segments: 49.32 dBA

Results segment # 1: LS (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 !       23.00 !       16.12 !        16.12

ROAD (0.00 + 41.72 + 0.00) = 41.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -45     90    0.00  60.88   0.00  -2.22  -1.25   0.00   0.00 -15.69
41.72
-------------------------------------------------------------------------------
--
```

```
Segment Leq : 41.72 dBA

Total Leq All Segments: 41.72 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 49.32
                           (NIGHT): 41.72
```

```
STAMSON 5.0        NORMAL REPORT        Date: 08-03-2024 16:12:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r12.te               Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: CS (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: CS (day/night)
-------------------------------------
Angle1   Angle2           : -52.00 deg   55.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  26.00 / 26.00  m
Receiver height           :  23.00 / 23.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -52.00 deg   Angle2 : 55.00 deg
Barrier height            :  21.50 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: HWY417WB (day/night)
---------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417WB (day/night)
-------------------------------------------
Angle1   Angle2           : -52.00 deg   55.00 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           :  23.00 / 23.00  m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -52.00 deg   Angle2 : 55.00 deg
Barrier height            :  21.50 m
Elevation                 :   4.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: HWY417EB (day/night)
-------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417EB (day/night)
-----------------------------------------
Angle1   Angle2           : -52.00 deg   55.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 119.00 / 119.00 m
Receiver height           :  23.00 / 23.00  m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -52.00 deg   Angle2 : 55.00 deg
Barrier height            :  21.50 m
Elevation                 :   4.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: CS (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 !       23.00 !       14.73 !        14.73

ROAD (0.00 + 44.18 + 0.00) = 44.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -52     55   0.00  68.48   0.00  -2.39  -2.26   0.00   0.00 -19.66
44.18
-------------------------------------------------------------------------------
--

Segment Leq : 44.18 dBA
```

```
Results segment # 2: HWY417WB (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 !       23.00 !       20.93 !        20.93

ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -52     55   0.00  81.40   0.00  -8.41  -2.26   0.00   0.00  -5.73
65.00
-------------------------------------------------------------------------------
--

Segment Leq : 65.00 dBA

Results segment # 3: HWY417EB (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 !       23.00 !       21.19 !        21.19

ROAD (0.00 + 64.92 + 0.00) = 64.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -52     55   0.00  81.40   0.00  -8.99  -2.26   0.00   0.00  -5.22
64.92
-------------------------------------------------------------------------------
--

Segment Leq : 64.92 dBA

Total Leq All Segments: 67.99 dBA
```

```
Results segment # 1: CS (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 !       23.00 !       14.73 !        14.73

ROAD (0.00 + 36.58 + 0.00) = 36.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -52     55   0.00  60.88   0.00  -2.39  -2.26   0.00   0.00 -19.66
36.58
-------------------------------------------------------------------------------
--

Segment Leq : 36.58 dBA

Results segment # 2: HWY417WB (night)
-------------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       23.00 !       20.93 !        20.93

ROAD (0.00 + 57.41 + 0.00) = 57.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -52     55   0.00  73.80   0.00  -8.41  -2.26   0.00   0.00  -5.73
57.41
-------------------------------------------------------------------------------
--

Segment Leq : 57.41 dBA
```

```
Results segment # 3: HWY417EB (night)
-------------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       23.00 !       21.19 !        21.19

ROAD (0.00 + 57.32 + 0.00) = 57.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -52     55   0.00  73.80   0.00  -8.99  -2.26   0.00   0.00  -5.22
57.32
-------------------------------------------------------------------------------
--

Segment Leq : 57.32 dBA

Total Leq All Segments: 60.39 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.99
                           (NIGHT): 60.39
```

```
STAMSON 5.0        NORMAL REPORT        Date: 08-03-2024 16:35:33
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r12b3.te             Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: CS (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: CS (day/night)
------------------------------------
Angle1   Angle2           : -52.00 deg   55.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  26.00 / 26.00  m
Receiver height           :  23.00 / 23.00  m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -52.00 deg   Angle2 : 55.00 deg
Barrier height            :  23.90 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: HWY417WB (day/night)
----------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417WB (day/night)
----------------------------------------
Angle1   Angle2           : -52.00 deg   55.00 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           :  23.00 / 23.00  m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -52.00 deg   Angle2 : 55.00 deg
Barrier height            :  23.90 m
Elevation                 :   4.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: HWY417EB (day/night)
----------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417EB (day/night)
-------------------------------------------
Angle1   Angle2           : -52.00 deg   55.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 119.00 / 119.00 m
Receiver height           :  23.00 / 23.00  m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -52.00 deg   Angle2 : 55.00 deg
Barrier height            :  23.90 m
Elevation                 :   4.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: CS (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 !       23.00 !       14.73 !        14.73

ROAD (0.00 + 43.83 + 0.00) = 43.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
------
   -52     55   0.00  68.48   0.00  -2.39  -2.26   0.00   0.00 -20.00
43.83
-------------------------------------------------------------------------
------
```

```
Segment Leq : 43.83 dBA

Results segment # 2: HWY417WB (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 !       23.00 !       20.93 !        20.93

ROAD (0.00 + 57.01 + 0.00) = 57.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
------
   -52     55   0.00  81.40   0.00  -8.41  -2.26   0.00   0.00 -13.72
57.01
-------------------------------------------------------------------------
------

Segment Leq : 57.01 dBA

Results segment # 3: HWY417EB (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 !       23.00 !       21.19 !        21.19

ROAD (0.00 + 57.20 + 0.00) = 57.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
------
   -52     55   0.00  81.40   0.00  -8.99  -2.26   0.00   0.00 -12.95
57.20
-------------------------------------------------------------------------
------
```

```
Segment Leq : 57.20 dBA

Total Leq All Segments: 60.22 dBA

Results segment # 1: CS (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 !       23.00 !       14.73 !        14.73

ROAD (0.00 + 36.24 + 0.00) = 36.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
------
   -52     55   0.00  60.88   0.00  -2.39  -2.26   0.00   0.00 -20.00
36.24
-------------------------------------------------------------------------
------

Segment Leq : 36.24 dBA

Results segment # 2: HWY417WB (night)
-------------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       23.00 !       20.93 !        20.93

ROAD (0.00 + 49.41 + 0.00) = 49.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
------
   -52     55   0.00  73.80   0.00  -8.41  -2.26   0.00   0.00 -13.72
49.41
-------------------------------------------------------------------------
------
```

```
Segment Leq : 49.41 dBA

Results segment # 3: HWY417EB (night)
------------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       23.00 !       21.19 !        21.19

ROAD (0.00 + 49.60 + 0.00) = 49.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
------
   -52     55   0.00  73.80   0.00  -8.99  -2.26   0.00   0.00 -12.95
49.60
-------------------------------------------------------------------------
------

Segment Leq : 49.60 dBA

Total Leq All Segments: 52.62 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.22
                           (NIGHT): 52.62
```

```
STAMSON 5.0        NORMAL REPORT        Date: 08-03-2024 16:16:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r13.te               Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: KS (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: KS (day/night)
------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           :  23.00 / 23.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -64.00 deg   Angle2 : 0.00 deg
Barrier height            :  21.50 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: CS (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: CS (day/night)
-------------------------------------
Angle1   Angle2           : -34.00 deg   53.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  39.00 / 39.00  m
Receiver height           :  23.00 / 23.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -34.00 deg   Angle2 : 53.00 deg
Barrier height            :  21.50 m
Barrier receiver distance :  26.00 / 26.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: HWY417WB (day/night)
--------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417WB (day/night)
-----------------------------------------
Angle1   Angle2           : -34.00 deg   53.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 114.00 / 114.00 m
Receiver height           :  23.00 / 23.00  m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -34.00 deg   Angle2 : 53.00 deg
Barrier height            :  21.50 m
Elevation                 :   4.00 m
Barrier receiver distance :  26.00 / 26.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 4: HWY417EB (day/night)
-------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417EB (day/night)
-----------------------------------------
Angle1   Angle2           : -34.00 deg   53.00 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           :  23.00 / 23.00  m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -34.00 deg   Angle2 : 53.00 deg
Barrier height            :  21.50 m
Elevation                 :   4.00 m
Barrier receiver distance :  26.00 / 26.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: KS (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 !       23.00 !       19.25 !        19.25

ROAD (53.84 + 46.89 + 0.00) = 54.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90    -64   0.00  68.48   0.00  -6.23  -8.40   0.00   0.00   0.00
53.84
-------------------------------------------------------------------------
--
   -64      0   0.00  68.48   0.00  -6.23  -4.49   0.00   0.00 -10.87
46.89
-------------------------------------------------------------------------
--

Segment Leq : 54.64 dBA
```

```
Results segment # 2: CS (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 !       23.00 !        8.66 !         8.66

ROAD (0.00 + 41.17 + 0.00) = 41.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -34     53   0.00  68.48   0.00  -4.15  -3.16   0.00   0.00 -20.00
41.17
-------------------------------------------------------------------------------
--

Segment Leq : 41.17 dBA

Results segment # 3: HWY417WB (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 !       23.00 !       18.10 !        18.10

ROAD (0.00 + 57.66 + 0.00) = 57.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -34     53   0.00  81.40   0.00  -8.81  -3.16   0.00   0.00 -11.77
57.66
-------------------------------------------------------------------------------
--

Segment Leq : 57.66 dBA
```

```
Results segment # 4: HWY417EB (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 !       23.00 !       18.67 !        18.67

ROAD (0.00 + 58.53 + 0.00) = 58.53 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -34     53   0.00  81.40   0.00  -9.34  -3.16   0.00   0.00 -10.36
58.53
-------------------------------------------------------------------------------
--

Segment Leq : 58.53 dBA

Total Leq All Segments: 62.04 dBA

Results segment # 1: KS (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 !       23.00 !       19.25 !        19.25

ROAD (46.25 + 39.29 + 0.00) = 47.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -64   0.00  60.88   0.00  -6.23  -8.40   0.00   0.00   0.00
46.25
-------------------------------------------------------------------------------
--
   -64      0   0.00  60.88   0.00  -6.23  -4.49   0.00   0.00 -10.87
39.29
-------------------------------------------------------------------------------
--
```

```
Segment Leq : 47.05 dBA

Results segment # 2: CS (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 !       23.00 !        8.66 !         8.66

ROAD (0.00 + 33.58 + 0.00) = 33.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -34     53   0.00  60.88   0.00  -4.15  -3.16   0.00   0.00 -20.00
33.58
-------------------------------------------------------------------------------
--

Segment Leq : 33.58 dBA

Results segment # 3: HWY417WB (night)
-------------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       23.00 !       18.10 !        18.10

ROAD (0.00 + 50.06 + 0.00) = 50.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -34     53   0.00  73.80   0.00  -8.81  -3.16   0.00   0.00 -11.77
50.06
-------------------------------------------------------------------------------
--

Segment Leq : 50.06 dBA
```

```
Results segment # 4: HWY417EB (night)
-----------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       23.00 !       18.67 !        18.67

ROAD (0.00 + 50.94 + 0.00) = 50.94 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -34     53    0.00  73.80   0.00  -9.34  -3.16   0.00   0.00 -10.36
50.94
-------------------------------------------------------------------------------
--

Segment Leq : 50.94 dBA

Total Leq All Segments: 54.45 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.04
                           (NIGHT): 54.45
```

```
STAMSON 5.0        NORMAL REPORT        Date: 08-03-2024 16:36:05
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r13b2.te             Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: KS (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: KS (day/night)
-------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           :  23.00 / 23.00  m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -64.00 deg   Angle2 : 0.00 deg
Barrier height            :  23.50 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: CS (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: CS (day/night)
------------------------------------
Angle1   Angle2           : -34.00 deg   53.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  39.00 / 39.00  m
Receiver height           :  23.00 / 23.00  m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -34.00 deg   Angle2 : 53.00 deg
Barrier height            :  23.50 m
Barrier receiver distance :  26.00 / 26.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: HWY417WB (day/night)
--------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417WB (day/night)
-------------------------------------------
Angle1   Angle2           : -34.00 deg   53.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 114.00 / 114.00 m
Receiver height           :  23.00 / 23.00  m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -34.00 deg   Angle2 : 53.00 deg
Barrier height            :  23.50 m
Elevation                 :   4.00 m
Barrier receiver distance :  26.00 / 26.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 4: HWY417EB (day/night)
-------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   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):  73332
    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: HWY417EB (day/night)
-----------------------------------------
Angle1   Angle2           : -34.00 deg   53.00 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           :  23.00 / 23.00  m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -34.00 deg   Angle2 : 53.00 deg
Barrier height            :  23.50 m
Elevation                 :   4.00 m
Barrier receiver distance :  26.00 / 26.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: KS (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 !       23.00 !       19.25 !        19.25

ROAD (53.84 + 41.71 + 0.00) = 54.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
------
   -90    -64   0.00  68.48   0.00  -6.23  -8.40   0.00   0.00   0.00
53.84
-------------------------------------------------------------------------
------
   -64      0   0.00  68.48   0.00  -6.23  -4.49   0.00   0.00 -16.04
41.71
-------------------------------------------------------------------------
------

Segment Leq : 54.10 dBA
```

```
Results segment # 2: CS (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 !       23.00 !        8.66 !         8.66

ROAD (0.00 + 41.17 + 0.00) = 41.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
------
   -34     53   0.00  68.48   0.00  -4.15  -3.16   0.00   0.00 -20.00
41.17
-------------------------------------------------------------------------
------

Segment Leq : 41.17 dBA

Results segment # 3: HWY417WB (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 !       23.00 !       18.10 !        18.10

ROAD (0.00 + 53.86 + 0.00) = 53.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
------
   -34     53   0.00  81.40   0.00  -8.81  -3.16   0.00   0.00 -15.57
53.86
-------------------------------------------------------------------------
------

Segment Leq : 53.86 dBA
```

```
Results segment # 4: HWY417EB (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 !       23.00 !       18.67 !        18.67

ROAD (0.00 + 54.38 + 0.00) = 54.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
------
   -34     53   0.00  81.40   0.00  -9.34  -3.16   0.00   0.00 -14.52
54.38
-------------------------------------------------------------------------
------

Segment Leq : 54.38 dBA

Total Leq All Segments: 58.96 dBA
```

```
Results segment # 1: KS (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 !       23.00 !       19.25 !        19.25

ROAD (46.25 + 34.12 + 0.00) = 46.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
------
   -90    -64   0.00  60.88   0.00  -6.23  -8.40   0.00   0.00   0.00
46.25
-------------------------------------------------------------------------
------
   -64      0   0.00  60.88   0.00  -6.23  -4.49   0.00   0.00 -16.04
34.12
-------------------------------------------------------------------------
------

Segment Leq : 46.51 dBA

Results segment # 2: CS (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 !       23.00 !        8.66 !         8.66

ROAD (0.00 + 33.58 + 0.00) = 33.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
------
   -34     53   0.00  60.88   0.00  -4.15  -3.16   0.00   0.00 -20.00
33.58
-------------------------------------------------------------------------
------
```

```
Segment Leq : 33.58 dBA

Results segment # 3: HWY417WB (night)
-------------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       23.00 !       18.10 !        18.10

ROAD (0.00 + 46.27 + 0.00) = 46.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
------
   -34     53   0.00  73.80   0.00  -8.81  -3.16   0.00   0.00 -15.57
46.27
-------------------------------------------------------------------------
------

Segment Leq : 46.27 dBA

Results segment # 4: HWY417EB (night)
-------------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       23.00 !       18.67 !        18.67

ROAD (0.00 + 46.78 + 0.00) = 46.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
------
   -34     53   0.00  73.80   0.00  -9.34  -3.16   0.00   0.00 -14.52
46.78
-------------------------------------------------------------------------
------
```

```
Segment Leq : 46.78 dBA

Total Leq All Segments: 51.37 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.96
                           (NIGHT): 51.37
```