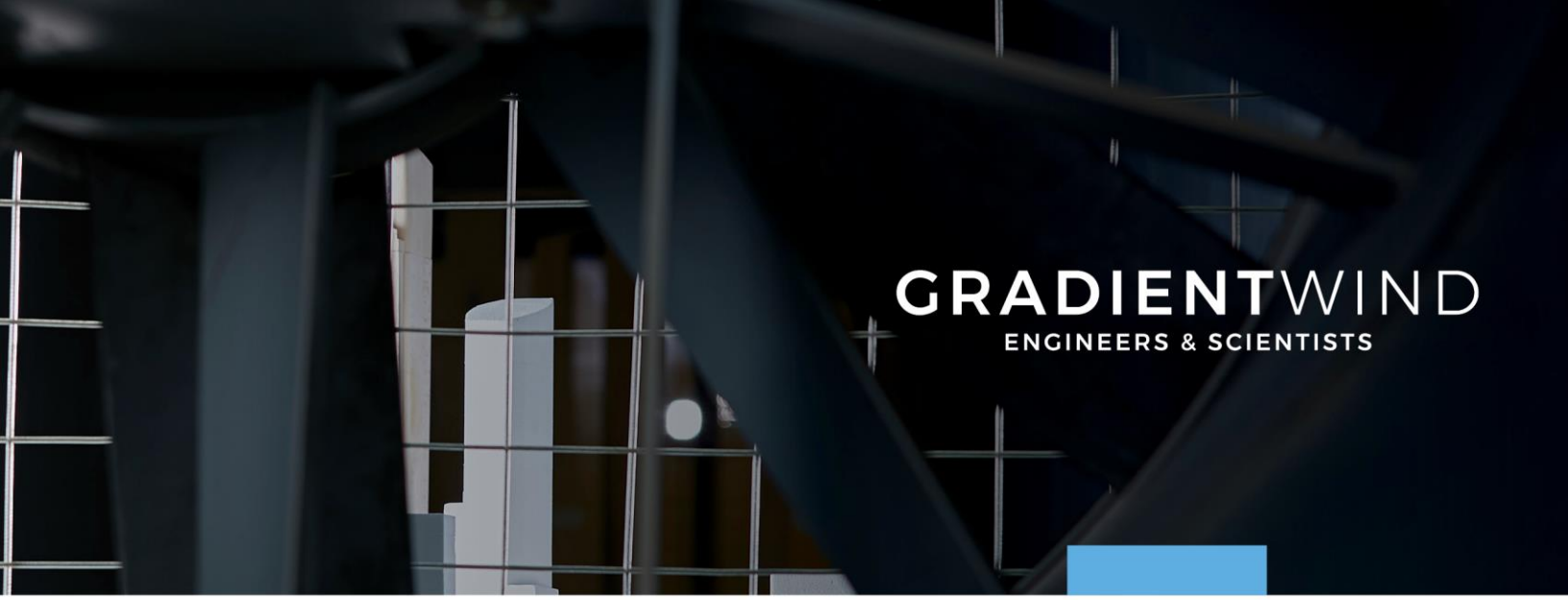

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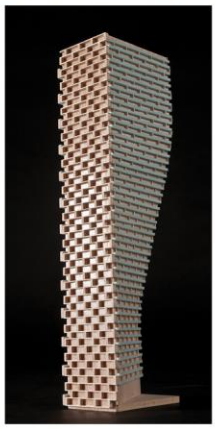
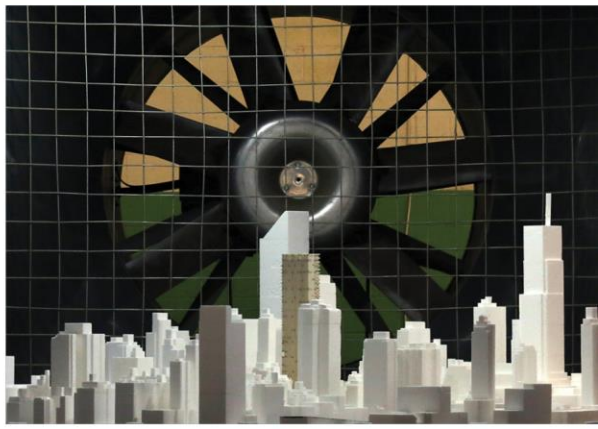
DETAILED TRANSPORTATION NOISE ASSESSMENT

1357 Baseline Road
Ottawa, Ontario

REPORT: GWE19-141 – Transportation Noise





January 15, 2020

PREPARED FOR

Selection Group International Inc.
2400 Boulevard Daniel-Johnson
Laval, Quebec
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PREPARED BY

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EXECUTIVE SUMMARY

This report describes a detailed transportation noise assessment in support of a Site Plan Application (SPA) for a proposed mixed-use development located at 1357 Baseline Road in Ottawa, Ontario. The development consists of two residential buildings; Fridom Residence (15 storeys) and Signature Senior Residence (15 storeys), rising above a common 1-storey podium. Five levels at the north side connect the towers. The podium features residential lobbies, common amenity space, commercial space, a health centre and building services. Green space occupies the rooftop of the podium, between the towers, as well as at grade along the west perimeter of the site. Both towers feature rounded corners and alternating arc-shaped screens on the cantilevered balconies. The primary sources of transportation noise are Baseline Road to the south, Clyde Avenue to the west, as well as aircraft noise from the Ottawa International Airport. 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) site plan drawings prepared by ACDF Architecture provided November 2019.

The results of the current analysis indicate that noise levels will range between 59 and 71 dBA during the daytime period (07:00-23:00) and between 52 and 63 dBA during the nighttime period (23:00-07:00). The highest noise level (71 dBA) occurs at the south façade, which is nearest and most exposed to the Baseline Road and Clyde Avenue. Building components with a higher Sound Transmission Class (STC) rating will be required for the façades where exterior noise levels exceed 65 dBA, as indicated in Figure 6.

Results of the calculation also indicate the development will require air conditioning, or similar mechanical ventilation, which will allow occupants to keep windows closed to maintain a comfortable indoor living environment. A Warning Clause will also be required to be placed on all Lease, Purchase and Sale Agreements, as summarized in Section 6.

With regard to aircraft noise, the proposed development lies outside the 25 line, but within the Airport Vicinity Development Zone. As a result, aircraft noise impacts are anticipated to be minimal and were

considered qualitatively within the noise report. With this consideration, A Warning Clause will also be required to be placed on all Lease, Purchase and Sale Agreements, as summarized in Section 6.

Noise levels at the amenity areas are expected to approach 70 dBA during the daytime period. If this area is to be used as an outdoor living area, noise control measures are required to reduce the L_{eq} to 55 dBA. Further analysis investigated the noise mitigating impact of raising the perimeter guards from a standard height of 1.1 m (base case) to 3 m above the walking surface. Results of the investigation proved that noise levels can only be reduced to around 60 dBA for Receptor 8 and 9. This marginal improvement would not justify the cost of installing such a high wall and reducing noise levels to 55 dBA would require excessive barrier heights that would not be feasible. The guardrail must be constructed from materials having a minimum surface density of 20 kg/m^2 (STC rating of 30) and contain no gaps. Design of the guardrail will conform to the requirements outlined in Part 5 of the ENCG. The following information will be required by the City for review prior to installation of the barrier:

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

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Appendix A – STAMSON 5.04 Input and Output Data and Supporting Information

1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Selection Group International Inc. to undertake a transportation noise assessment in support of a Site Plan Application (SPA) for a proposed mixed-use development located at 1357 Baseline Road in Ottawa, Ontario. This report summarizes the methodology, results, and recommendations related to the assessment of exterior and interior noise levels generated by local transportation.

Our work 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 site plan drawings prepared by ACDF Architecture provided November 2019, with future traffic volumes corresponding to the City of Ottawa's Official Plan (OP) roadway classifications. Assessment of aircraft noise has been assessed based on its proximity to the airport and the nearest noise exposure contour line, as per Annex 10 in the City of Ottawa's official plan.

2. TERMS OF REFERENCE

The focus of this traffic noise assessment is a proposed mixed-use development located at 1357 Baseline Road in Ottawa, Ontario. The study site is situated on the north corner at the intersection of Baseline Road and Clyde Avenue. The proposed development comprises two 15-storey buildings. On the west side of the development, the Fridom Residence building rises approximately 52 meters (m) to the top of its mechanical penthouse, while on the east side the Signature Senior Residence building rises 49 m to the top of its mechanical penthouse. The buildings are connected by a stepped podium of one-storey on the south side and five storeys on the north side.

The development includes parking at grade and on three levels below grade. The ground floor plan of the development includes retail, lobby, and office spaces, as well as an indoor amenity space that leads to an outdoor amenity area on the west side of the Fridom Residence building. Level 2 of the Signature Senior Residence building comprises various indoor amenities. The remaining floors contain residential space.

[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

The floorplate steps back on the south side at Level 2 to create a horseshoe building planform and an outdoor amenity area on the roof of the 1-storey podium. The two buildings share a 5-storey podium at the north end and rise independently from Levels 6-15. As per ENCG, balconies less than 4 m in depth are not considered as outdoor living areas.

Public spaces are included at grade level around the full perimeter of the subject site with amenity terraces on the west side and southwest corner of the site. The lower podium includes a large public outdoor terrace, which is mostly situated between the two buildings but also extends around the south side of the Signature Senior Residence building. The main entrances to the Fridom Residence building, Health Centre, and Signature Senior Residence building are situated on the north side, while retail entrances are located on the south side fronting Baseline Road.

The site is bound by Clyde Avenue to the west, office and commercial buildings to the north and east, as well as Baseline Road to the south. The major sources of roadway traffic noise on the development are Clyde Avenue and Baseline Road. Figure 1 illustrates a complete site plan with surrounding context.

With regard to aircraft noise, the proposed development lies outside the 25 line, but within the Airport Vicinity Development Zone. As a result, aircraft noise impacts are anticipated to be minimal and were considered qualitatively within the noise report.

3. OBJECTIVES

The principal objectives of this study are to (i) calculate the future noise levels on the study buildings produced by local transportation traffic, and (ii) ensure that interior and exterior noise levels do not exceed the allowable limits specified by the City of Ottawa's Environmental Noise Control Guidelines as outlined in Section 4.2 of this report.

4. METHODOLOGY

4.1 Background

Noise can be defined as any obtrusive sound. It is created at a source, transmitted through a medium, such as air, and intercepted by a receiver. Noise may be characterized in terms of the power of the source or the sound pressure at a specific distance. While the power of a source is characteristic of that particular

source, the sound pressure depends on the location of the receiver and the path that the noise takes to reach the receiver. Measurement of noise is based on the decibel unit, dBA, which is a logarithmic ratio referenced to a standard noise level (2×10^{-5} Pascals). The 'A' suffix refers to a weighting scale, which better represents how the noise is perceived by the human ear. With this scale, a doubling of power results in a 3 dBA increase in measured noise levels and is just perceptible to most people. An increase of 10 dBA is often perceived to be twice as loud.

4.2 Roadway Traffic Noise

4.2.1 Criteria for Roadway Traffic Noise

For surface roadway traffic noise, the equivalent sound energy level, L_{eq}, provides a measure of the time varying noise levels, which is well correlated with the annoyance of sound. It is defined as the continuous sound level, which has the same energy as a time varying noise level over a period of time. For roadways, the L_{eq} is commonly calculated on the basis of a 16-hour (L_{eq16}) daytime (07:00-23:00) / 8-hour (L_{eq8}) nighttime (23:00-07:00) split to assess its impact on residential buildings. The City of Ottawa's Environmental Noise Control Guidelines (ENCG) specifies that the recommended indoor noise limit range (that is relevant to this study) is 50, 45 and 40 dBA for retail, living rooms, and sleeping quarters respectively for roadway as listed in Table 1. Based on Gradient Wind's experience, more comfortable indoor noise levels should be targeted, towards 47, 42, and 37 dBA, respectively, to control peak noise and deficiencies in building envelope construction.

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

[3] Adapted from ENCG 2016 – Tables 2.2b and 2.2c

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 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 is 55 dBA, which applies during the daytime (07:00 to 23:00). When noise levels exceed 55 dBA, mitigation must be provided to reduce noise levels where technically and administratively feasible to acceptable levels at or below the criterion.

4.2.2 Theoretical Roadway 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. A 3.2% grade was modelled for Baseline Road toward the south of the site.

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

- Receptor height was taken to be 1.5 m meters above grade for outdoor living areas (OLA), and 16.5 metres, 46.5/45.5 metres above grade for the centre of the plane of window (POW) for Levels 5 and 15.
- The nearby buildings surrounding the site were considered as noise barriers.
- Noise receptors were strategically placed at 9 locations around the study area (see Figure 2).
- Receptor distances and exposure angles are illustrated in Figures 3-5.

4.2.3 Roadway Traffic Volumes

The ENCG dictates that noise calculations should consider future sound levels based on a roadway's classification at the mature state of development. Therefore, traffic volumes are based on the roadway classifications outlined in the City of Ottawa's Official Plan (OP) and Transportation Master Plan[7] which provide additional details on future roadway expansions. Average Annual Daily Traffic (AADT) volumes are then based on data in Table B1 of the ENCG for each roadway classification. Table 2 (below) summarizes the AADT values used for each roadway included in this assessment.

TABLE 2: ROADWAY TRAFFIC DATA

Segment	Roadway Traffic Data	Speed Limit (km/h)	Traffic Volumes
Baseline Road	4-Lane Urban Arterial Divided (6-UAD)	50	**35,000**
Clyde Avenue	4-Lane Urban Arterial Divided (6-UAD)	50	**35,000**

4.3 Indoor Noise Calculations

The difference between outdoor and indoor noise levels is the noise attenuation provided by the building envelope. According to common industry practice, complete walls and individual wall elements are rated according to the Sound Transmission Class (STC). The STC ratings of common residential walls built in conformance with the Ontario Building Code (2012) typically exceed STC 35, depending on exterior cladding, thickness and interior finish details. For example, brick veneer walls can achieve STC 50 or more. Standard commercially sided exterior metal stud walls have around STC 45. Standard good quality double-

[7] City of Ottawa Transportation Master Plan, November 2013

glazed non-operable windows can have STC ratings ranging from 25 to 40, depending on the window manufacturer, pane thickness and inter-pane spacing. As previously mentioned, the windows are the known weak point in a partition.

As per Section 4.2, when daytime noise levels from road sources at the plane of the window exceed 65 dBA, calculations must be performed to evaluate the sound transmission quality of the building components to ensure acceptable indoor noise levels. The calculation procedure[8] considers:

- Window type and total area as a percentage of total room floor area
- Exterior wall type and total area as a percentage of the total room floor area
- Acoustic absorption characteristics of the room
- Outdoor noise source type and approach geometry
- Indoor sound level criteria, which varies according to the intended use of a space

Based on published research[9], exterior walls possess specific sound attenuation characteristics that are used as a basis for calculating the required STC ratings of windows in the same partition. Due to the limited information available at the time of the study, which was prepared for site plan approval, detailed floor layouts and building elevations have not been finalized; therefore, detailed STC calculations could not be performed at this time. As a guideline, the anticipated STC requirements for windows have been estimated based on the overall noise reduction required for each intended use of space (STC = outdoor noise level – targeted indoor noise levels).

5. RESULTS AND DISCUSSION

5.1 Roadway Traffic Noise Levels

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

[8] Building Practice Note: Controlling Sound Transmission into Buildings by J.D. Quirt, National Research Council of Canada, September 1985
[9] CMHC, Road & Rail Noise: Effects on Housing

TABLE 3: EXTERIOR NOISE LEVELS DUE TO ROAD TRAFFIC

Receptor Number	Receptor Height Above Grade (m)	Receptor Location	STAMSON 5.04 Noise Level (dBA)	
			Day	Night
1	1.5	POW – Ground Floor – South Façade	71	63
2	16.5	POW – 5th Floor – South Façade	59	52
3	46.5	POW – 15th Floor – South Façade	69	62
4	46.5	POW – 15th Floor – West Façade	70	62
5	46.5	POW – 15th Floor – North Façade	65	57
6	44.5	POW – 15th Floor – East Façade	67	59
7	6.5	OLA – 2nd Floor – Amenity Area	56	N/A
8	1.5	OLA – Ground Floor – Amenity Area	66	N/A
9	1.5	OLA – Ground Floor – Amenity Area	69	N/A

N/A = Noise levels during the nighttime are not considered as per ENCG

The results of the current analysis indicate that noise levels will range between 59 and 71 dBA during the daytime period (07:00-23:00) and between 52 and 63 dBA during the nighttime period (23:00-07:00). The highest noise level (71 dBA) occurs at the south façade, which is nearest and most exposed to the Baseline Road and Clyde Avenue.

5.1.1 Noise Control Measures

The noise levels predicted due to roadway traffic exceed the criteria listed in Section 4.2 for building components. As discussed in Section 4.3, the anticipated STC requirements for windows have been estimated based on the overall noise reduction required for each intended use of space (STC = outdoor noise level – targeted indoor noise levels). As per city of Ottawa requirements, detailed STC calculations will be required to be completed prior to building permit application for each unit type. The STC requirements for the windows are summarized below for various units within the development (see Figure 6):

- **Bedroom Windows**

(i) Bedroom windows facing south and west will require a minimum STC of 33

(ii) Bedroom room windows facing toward the centre of the development will require a minimum STC of 30

(iii) All other bedroom windows are to satisfy Ontario Building Code (OBC 2012) requirements

- **Living Room Windows**

(iv) Living room windows facing south and west will require a minimum STC of 28

(v) Living room windows facing toward the centre of the development will require a minimum STC of 25

(vi) All other Living room windows are to satisfy Ontario Building Code (OBC 2012) requirements

- **Retail Windows**

(vii) Retail windows facing south, east, and west will require a minimum STC of 24

(viii) All other retail windows are to satisfy Ontario Building Code (OBC 2012) requirements

- **Exterior Walls**

(i) Exterior wall components on the east, south, and west façades will require a minimum STC of 45, which will be achieved with brick cladding or an acoustical equivalent according to NRC test data[10]

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

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

the minimum standards of the Ontario Building Code. The specified STC requirements also apply to swinging and/or sliding patio doors.

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

5.1.2 Noise Barrier Calculation

Noise levels at the amenity areas are expected to approach 70 dBA during the daytime period. If this area is to be used as an outdoor living area, noise control measures are required to reduce the L_{eq} to 55 dBA. Further analysis investigated the noise mitigating impact of raising the perimeter guards from a standard height of 1.1 m (base case) to 3 m above the walking surface. Results of the investigation proved that noise levels can only be reduced to 60 dBA for all receptors. This improvement would not justify the cost of installing such a high wall and reducing noise levels to 55 dBA would require excessive barrier heights that would not be feasible. Table 4 summarizes the results of the barrier investigation.

TABLE 4: RESULTS OF NOISE BARRIER INVESTIGATION

Receptor Number	Receptor Height Above Grade (m)	Receptor Location	Barrier Height (m)	Daytime L_{eq} Noise Levels (dBA)
7	6.5	OLA – 2nd Floor – Amenity Area	1.1	56
			1.5	55
8	1.5	OLA – Ground Floor – Amenity Area	1.1	66
			2	63
			2.5	62
			3	60
9	1.5	OLA – Ground Floor – Amenity Area	1.1	69
			2	63
			2.5	61
			3	60

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that noise levels will range between 59 and 71 dBA during the daytime period (07:00-23:00) and between 52 and 63 dBA during the nighttime period (23:00-07:00). The highest noise level (71 dBA) occurs at the south façade, which is nearest and most exposed to the Baseline Road and Clyde Avenue. Building components with a higher Sound Transmission Class (STC) rating will be required for the façades where exterior noise levels exceed 65 dBA, as indicated in Figure 5.

Results of the calculation also indicate the development will require air conditioning, or similar mechanical ventilation, which will allow occupants to keep windows closed to maintain a comfortable indoor living environment. A Warning Clause will also be required to be placed on all Lease, Purchase and Sale Agreements, as summarized below:

> *"Purchasers/tenants are advised that sound levels due to increasing road traffic will interfere with indoor activities as the sound levels exceed the sound level limits of the City and the Ministry of the Environment, Conservation and Parks.*
>
> *To help address the need for sound attenuation this development includes:*
>
> - *STC rated multi-pane glazing elements*
> - *South and west façade bedroom/living room: STC 33/28*
> - *Facades facing toward the centre of the development bedroom/living room: STC 30/25*
> - *STC rated exterior walls*
> - *East, south and west façade: STC 45*
>
> *To ensure that provincial sound level limits are not exceeded it is important to maintain these sound attenuation features.*
>
> *This dwelling unit has been supplied with a central air conditioning system and other measures 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 City and the Ministry of the Environment, Conservation and Parks."*

With regard to aircraft noise, the proposed development lies outside the 25 line, but within the Airport Vicinity Development Zone. As a result, aircraft noise impacts are anticipated to be minimal and were considered qualitatively within the noise report. With this consideration, A Warning Clause will also be required to be placed on all Lease, Purchase and Sale Agreements, as summarized below:

> *"Purchasers/tenants are advised that due to the proximity of the airport, noise from the airport and individual aircraft may at times interfere with outdoor or indoor activities."*

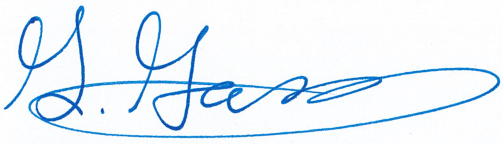
Noise levels at the amenity areas are expected to approach 70 dBA during the daytime period. If this area is to be used as an outdoor living area, noise control measures are required to reduce the L_{eq} to 55 dBA. Further analysis investigated the noise mitigating impact of raising the perimeter guards from a standard height of 1.1 m (base case) to 3 m above the walking surface. Results of the investigation proved that noise levels can only be reduced to around 60 dBA for Receptor 8 and 9. This marginal improvement would not justify the cost of installing such a high wall and reducing noise levels to 55 dBA would require excessive barrier heights that would not be feasible. The guardrail must be constructed from materials having a minimum surface density of 20 kg/m^2 (STC rating of 30) and contain no gaps. Design of the guardrail will conform to the requirements outlined in Part 5 of the ENCG. The following information will be required by the City for review prior to installation of the barrier:

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

This concludes our 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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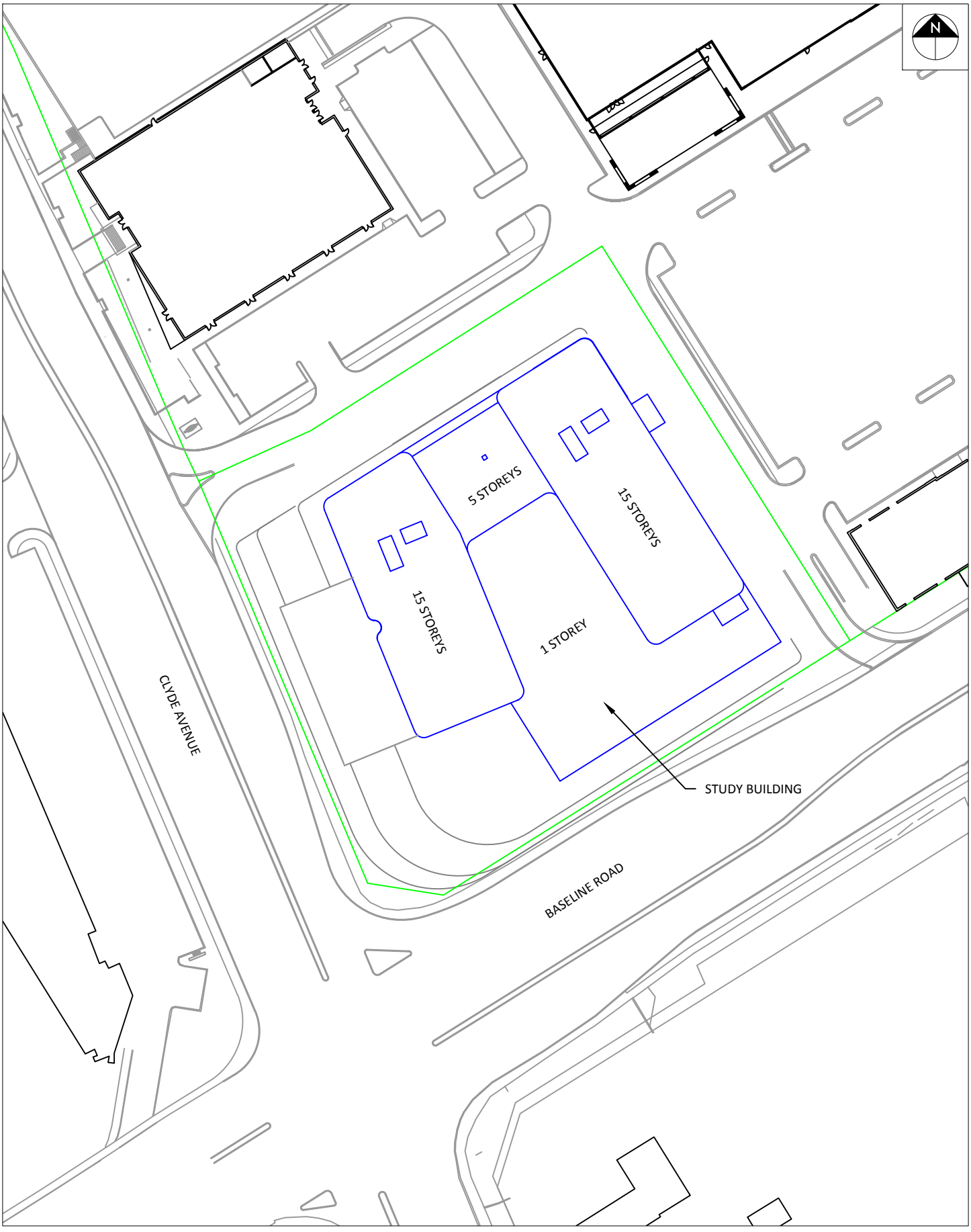
Joshua Foster, P.Eng.
Principal

Gradient Wind File #19-141 – Transportation Noise



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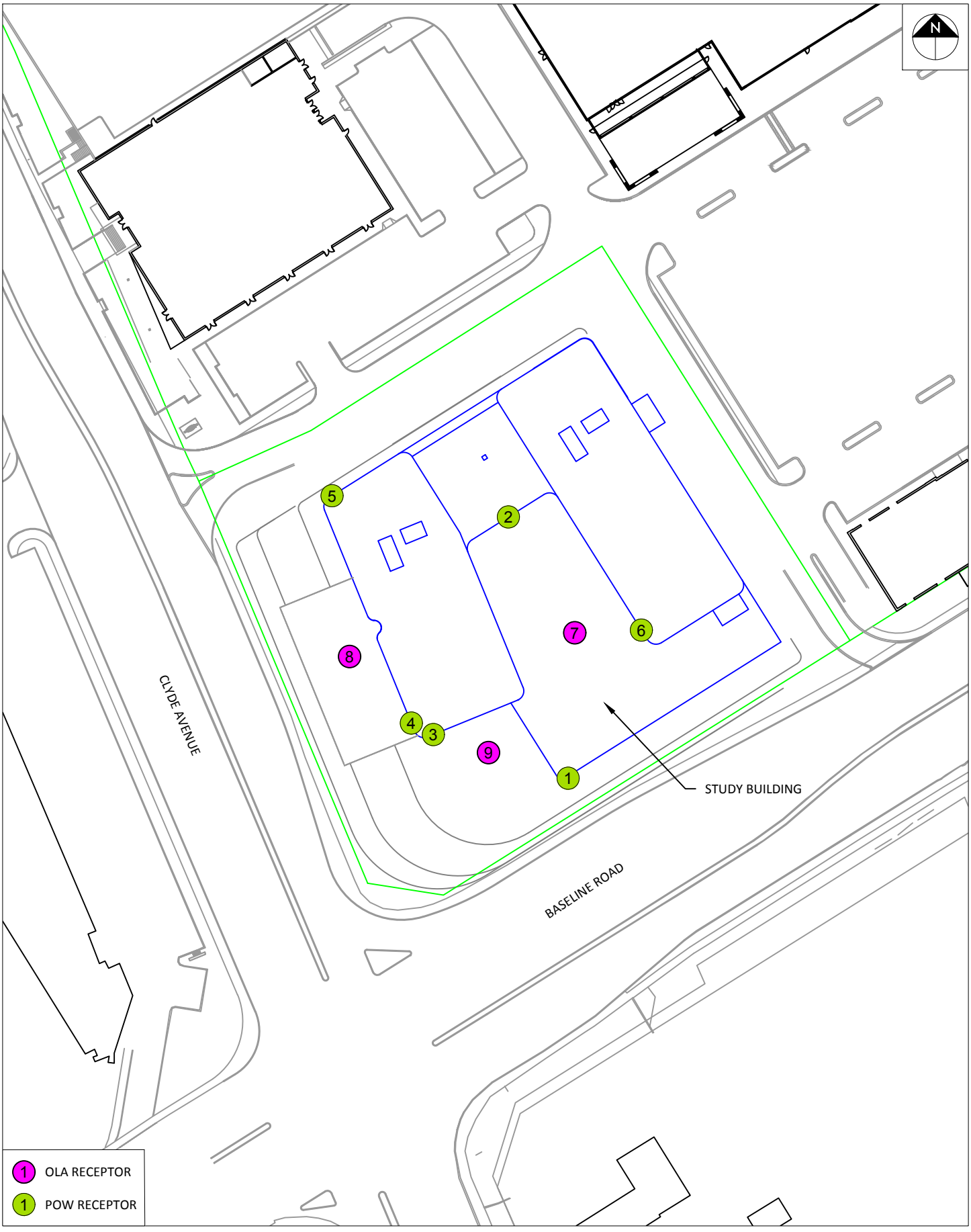
PROJECT	1357 BASELINE ROAD, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:1000 (APPROX.)	DRAWING NO.	GWE19-141-1
DATE	NOVEMBER 22, 2019	DRAWN BY	G.G.

FIGURE 1:
SITE PLAN AND SURROUNDING CONTEXT



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PROJECT	1357 BASELINE ROAD, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:1000 (APPROX.)	DRAWING NO.	GWE19-141-2
DATE	NOVEMBER 22, 2019	DRAWN BY	G.G.

FIGURE 2:
RECEPTOR LOCATIONS

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SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE19-141-3
DATE	NOVEMBER 22, 2019
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DESCRIPTION

FIGURE 3:
STAMSON RECEPTOR 1-3, AND 5 INPUT PARAMATETRS

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SCALE	1:1000 (APPROX.)	DRAWING NO.	GWE19-141-4
DATE	NOVEMBER 22, 2019	DRAWN BY	G.G.

FIGURE 4:
STAMSON RECEPTOR 4,7 AND 9 INPUT PARAMATETRS

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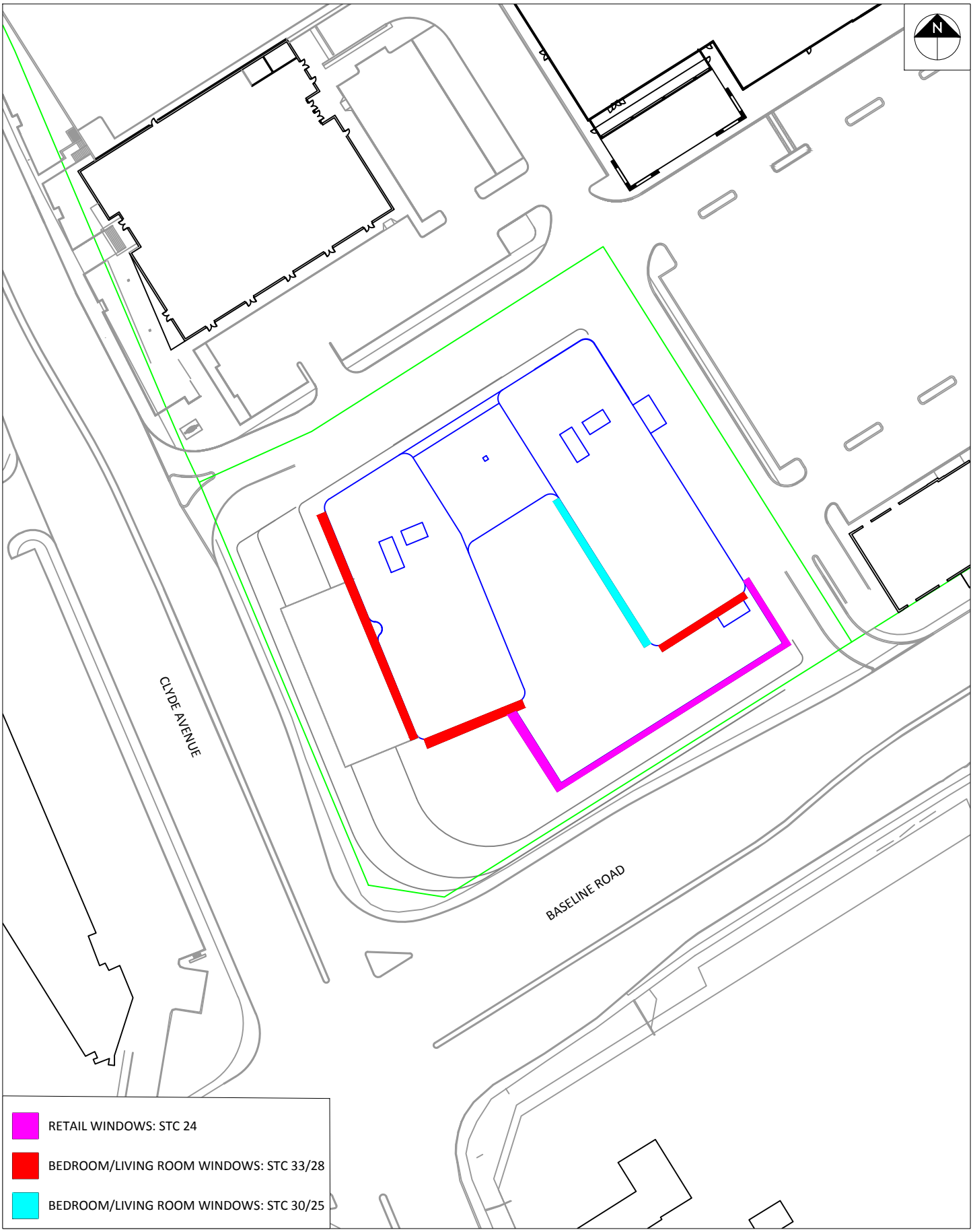
SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE19-141-5
DATE	NOVEMBER 22, 2019
DRAWN BY	G.G.

DESCRIPTION

FIGURE 5:
STAMSON RECEPTOR 6 AND 8 INPUT PARAMATETRS



GRADIENTWIND
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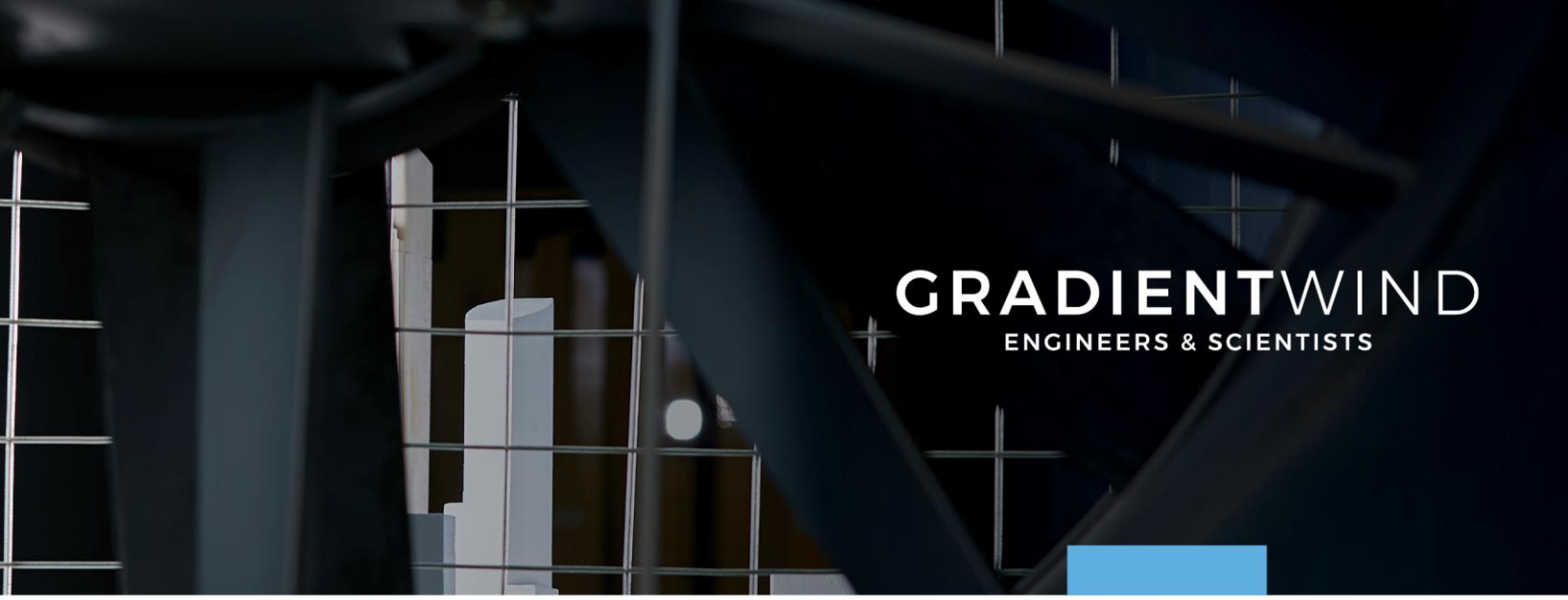
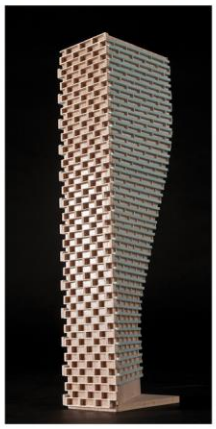
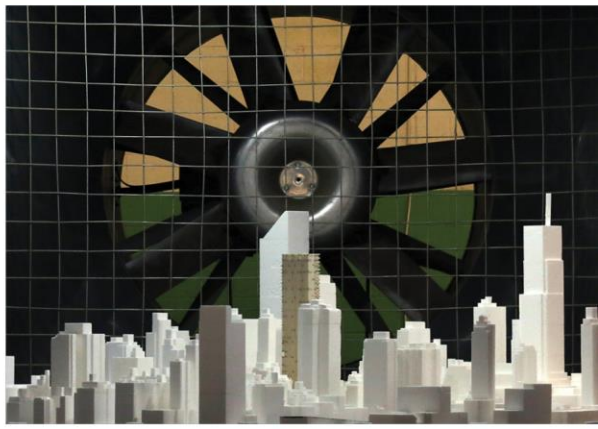
PROJECT	1357 BASELINE ROAD, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE19-141-6
DATE	NOVEMBER 22, 2019
DRAWN BY	G.G.

DESCRIPTION

FIGURE 6:
WINDOW STC REQUIREMENTS







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: 22-11-2019 12:58:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Baseline (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: Baseline (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  :  28.00 / 28.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -1.00 deg   Angle2 : 1.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :  99.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Road data, segment # 2: Clyde (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   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):  35000
    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: Clyde (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           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -1.00 deg   Angle2 : 0.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :  98.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Baseline (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 !        1.50 !      100.89 !       100.89

ROAD (67.02 + 50.53 + 67.02) = 70.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     -1   0.00  72.79   0.00  -2.71  -3.06   0.00   0.00   0.00
67.02
-------------------------------------------------------------------------
--
    -1      1   0.00  72.79   0.00  -2.71 -19.54   0.00   0.00   0.00
50.53*
```

```
    -1      1   0.00  72.79   0.00  -2.71 -19.54   0.00   0.00   0.00
50.53
-------------------------------------------------------------------------
--
     1     90   0.00  72.79   0.00  -2.71  -3.06   0.00   0.00   0.00
67.02
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 70.08 dBA


Results segment # 2: Clyde (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 !        1.50 !      100.88 !       100.88

ROAD (62.87 + 43.37 + 0.00) = 62.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     -1   0.00  72.16   0.00  -6.23  -3.06   0.00   0.00   0.00
62.87
-------------------------------------------------------------------------
--
    -1      0   0.00  72.16   0.00  -6.23 -22.55   0.00   0.00   0.00
43.37*
    -1      0   0.00  72.16   0.00  -6.23 -22.55   0.00   0.00   0.00
43.37
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 62.92 dBA

Total Leq All Segments: 70.84 dBA


Results segment # 1: Baseline (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 !        1.50 !      100.89 !       100.89

ROAD (59.42 + 42.94 + 59.42) = 62.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     -1   0.00  65.19   0.00  -2.71  -3.06   0.00   0.00   0.00
59.42
-------------------------------------------------------------------------
--
    -1      1   0.00  65.19   0.00  -2.71 -19.54   0.00   0.00   0.00
42.94*
    -1      1   0.00  65.19   0.00  -2.71 -19.54   0.00   0.00   0.00
42.94
-------------------------------------------------------------------------
--
     1     90   0.00  65.19   0.00  -2.71  -3.06   0.00   0.00   0.00
59.42
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 62.48 dBA


Results segment # 2: Clyde (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 !        1.50 !      100.88 !       100.88

ROAD (55.27 + 35.78 + 0.00) = 55.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
```

```
-------------------------------------------------------------------------------
--
   -90     -1   0.00  64.56   0.00  -6.23  -3.06   0.00   0.00   0.00
55.27
-------------------------------------------------------------------------------
--
    -1      0   0.00  64.56   0.00  -6.23 -22.55   0.00   0.00   0.00
35.78*
    -1      0   0.00  64.56   0.00  -6.23 -22.55   0.00   0.00   0.00
35.78
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 55.32 dBA

Total Leq All Segments: 63.24 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 70.84
                           (NIGHT): 63.24
```

```
STAMSON 5.0        NORMAL REPORT        Date: 22-11-2019 12:58:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Baseline (day/night)
----------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: Baseline (day/night)
----------------------------------------
Angle1   Angle2           : -16.00 deg   27.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  78.00 / 78.00  m
Receiver height           :  16.50 / 16.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -16.00 deg   Angle2 : 27.00 deg
Barrier height            :   5.00 m
Barrier receiver distance :  49.00 / 49.00  m
Source elevation          :  99.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :  99.40 m
Reference angle           :   0.00

Results segment # 1: Baseline (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 !       16.50 !        6.82 !       106.22

ROAD (0.00 + 59.41 + 0.00) = 59.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -16     27   0.00  72.79   0.00  -7.16  -6.22   0.00   0.00   0.00
59.41*
   -16     27   0.00  72.79   0.00  -7.16  -6.22   0.00   0.00   0.00
59.41
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 59.41 dBA

Total Leq All Segments: 59.41 dBA


Results segment # 1: Baseline (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 !       16.50 !        6.82 !       106.22

ROAD (0.00 + 51.81 + 0.00) = 51.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -16     27   0.00  65.19   0.00  -7.16  -6.22   0.00   0.00   0.00
51.81*
   -16     27   0.00  65.19   0.00  -7.16  -6.22   0.00   0.00   0.00
51.81
-------------------------------------------------------------------------
 * Bright Zone !

Segment Leq : 51.81 dBA

Total Leq All Segments: 51.81 dBA
TOTAL Leq FROM ALL SOURCES (DAY): 59.41
                           (NIGHT): 51.81
```

```
STAMSON 5.0        NORMAL REPORT        Date: 22-11-2019 12:58:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Baseline (day/night)
----------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: Baseline (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  50.00 / 50.00  m
Receiver height           :  46.50 / 46.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  85.00 deg   Angle2 : 90.00 deg
Barrier height            :  34.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :  99.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :  92.00 m
Reference angle           :   0.00


Road data, segment # 2: Clyde (day/night)
----------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   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):  35000
    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: Clyde (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  :  42.00 / 42.00  m
Receiver height           :  46.50 / 46.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -1.00 deg   Angle2 : 0.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :  98.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Baseline (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 !       46.50 !       44.82 !       136.82

ROAD (67.44 + 52.00 + 0.00) = 67.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     85   0.00  72.79   0.00  -5.23  -0.12   0.00   0.00   0.00
67.44
-------------------------------------------------------------------------
--
    85     90   0.00  72.79   0.00  -5.23 -15.56   0.00   0.00  -0.73
51.26*
```

```
    85     90   0.00  72.79   0.00  -5.23 -15.56   0.00   0.00   0.00
52.00
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 67.56 dBA


Results segment # 2: Clyde (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 !       46.50 !      144.80 !       144.80

ROAD (64.63 + 45.14 + 0.00) = 64.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     -1   0.00  72.16   0.00  -4.47  -3.06   0.00   0.00   0.00
64.63
-------------------------------------------------------------------------
--
    -1      0   0.00  72.16   0.00  -4.47 -22.55   0.00   0.00   0.00
45.14*
    -1      0   0.00  72.16   0.00  -4.47 -22.55   0.00   0.00   0.00
45.14
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 64.68 dBA

Total Leq All Segments: 69.36 dBA


Results segment # 1: Baseline (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 !       46.50 !       44.82 !       136.82

ROAD (59.84 + 44.40 + 0.00) = 59.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     85   0.00  65.19   0.00  -5.23  -0.12   0.00   0.00   0.00
59.84
-------------------------------------------------------------------------
--
    85     90   0.00  65.19   0.00  -5.23 -15.56   0.00   0.00  -0.73
43.67*
    85     90   0.00  65.19   0.00  -5.23 -15.56   0.00   0.00   0.00
44.40
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 59.96 dBA


Results segment # 2: Clyde (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 !       46.50 !      144.80 !       144.80

ROAD (57.03 + 37.54 + 0.00) = 57.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     -1   0.00  64.56   0.00  -4.47  -3.06   0.00   0.00   0.00
57.03
-------------------------------------------------------------------------
--
    -1      0   0.00  64.56   0.00  -4.47 -22.55   0.00   0.00   0.00
37.54*
```

```
    -1       0    0.00   64.56    0.00   -4.47 -22.55    0.00    0.00    0.00
37.54
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 57.08 dBA

Total Leq All Segments: 61.76 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.36
                           (NIGHT): 61.76
```

```
STAMSON 5.0        NORMAL REPORT        Date: 22-11-2019 12:58:51
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Baseline (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: Baseline (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  :  54.00 / 54.00  m
Receiver height           :  46.50 / 46.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  85.00 deg   Angle2 : 90.00 deg
Barrier height            :  34.00 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :  99.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :  92.00 m
Reference angle           :   0.00


Road data, segment # 2: Clyde (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   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):  35000
    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: Clyde (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  :  39.00 / 39.00  m
Receiver height           :  46.50 / 46.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -1.00 deg   Angle2 : 0.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :  97.50 m
Receiver elevation        :  99.40 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Baseline (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 !       46.50 !       41.29 !       133.29

ROAD (63.97 + 51.66 + 0.00) = 64.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     85   0.00  72.79   0.00  -5.56  -3.26   0.00   0.00   0.00
63.97
-------------------------------------------------------------------------
--
    85     90   0.00  72.79   0.00  -5.56 -15.56   0.00   0.00  -1.86
49.80*
```

```
    85     90   0.00  72.79   0.00  -5.56 -15.56   0.00   0.00   0.00
51.66
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 64.21 dBA


Results segment # 2: Clyde (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 !       46.50 !      144.70 !       144.70

ROAD (64.95 + 45.46 + 65.00) = 68.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     -1   0.00  72.16   0.00  -4.15  -3.06   0.00   0.00   0.00
64.95
-------------------------------------------------------------------------
--
    -1      0   0.00  72.16   0.00  -4.15 -22.55   0.00   0.00   0.00
45.46*
    -1      0   0.00  72.16   0.00  -4.15 -22.55   0.00   0.00   0.00
45.46
-------------------------------------------------------------------------
--
     0     90   0.00  72.16   0.00  -4.15  -3.01   0.00   0.00   0.00
65.00
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 68.01 dBA

Total Leq All Segments: 69.52 dBA


Results segment # 1: Baseline (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 !       46.50 !       41.29 !       133.29

ROAD (56.37 + 44.06 + 0.00) = 56.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     85   0.00  65.19   0.00  -5.56  -3.26   0.00   0.00   0.00
56.37
-------------------------------------------------------------------------
--
    85     90   0.00  65.19   0.00  -5.56 -15.56   0.00   0.00  -1.86
42.21*
    85     90   0.00  65.19   0.00  -5.56 -15.56   0.00   0.00   0.00
44.06
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 56.62 dBA


Results segment # 2: Clyde (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 !       46.50 !      144.70 !       144.70

ROAD (57.35 + 37.86 + 57.40) = 60.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     -1   0.00  64.56   0.00  -4.15  -3.06   0.00   0.00   0.00
57.35
```

```
-------------------------------------------------------------------------------
--
    -1       0    0.00   64.56    0.00   -4.15  -22.55    0.00    0.00    0.00
37.86*
    -1       0    0.00   64.56    0.00   -4.15  -22.55    0.00    0.00    0.00
37.86
-------------------------------------------------------------------------------
--
     0      90    0.00   64.56    0.00   -4.15   -3.01    0.00    0.00    0.00
57.40
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 60.41 dBA

Total Leq All Segments: 61.93 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 69.52
                           (NIGHT): 61.93
```

```
STAMSON 5.0        NORMAL REPORT        Date: 22-11-2019 12:58:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Clyde (day/night)
----------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   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):  35000
    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: Clyde (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  :  43.00 / 43.00  m
Receiver height           :  46.50 / 46.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  68.00 deg   Angle2 : 90.00 deg
Barrier height            :  21.00 m
Barrier receiver distance :  18.00 / 18.00  m
Source elevation          :  97.50 m
Receiver elevation        :  99.40 m
Barrier elevation         :  95.00 m
Reference angle           :   0.00


Results segment # 1: Clyde (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 !       46.50 !       31.27 !       126.27

ROAD (63.36 + 58.46 + 0.00) = 64.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     68   0.00  72.16   0.00  -4.57  -4.23   0.00   0.00   0.00
63.36
-------------------------------------------------------------------------------
--
    68     90   0.00  72.16   0.00  -4.57  -9.13   0.00   0.00  -0.23
58.23*
    68     90   0.00  72.16   0.00  -4.57  -9.13   0.00   0.00   0.00
58.46
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 64.58 dBA

Total Leq All Segments: 64.58 dBA


Results segment # 1: Clyde (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 !       46.50 !       31.27 !       126.27

ROAD (55.76 + 50.86 + 0.00) = 56.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     68   0.00  64.56   0.00  -4.57  -4.23   0.00   0.00   0.00
55.76
-------------------------------------------------------------------------------
--
    68     90   0.00  64.56   0.00  -4.57  -9.13   0.00   0.00  -0.23
50.63*
```

```
    68      90    0.00   64.56    0.00   -4.57   -9.13    0.00    0.00    0.00
50.86
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 56.98 dBA

Total Leq All Segments: 56.98 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 64.58
                           (NIGHT): 56.98
```

```
STAMSON 5.0        NORMAL REPORT        Date: 22-11-2019 12:59:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Baseline (day/night)
----------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: Baseline (day/night)
----------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  45.00 / 45.00  m
Receiver height           :  45.50 / 45.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 1.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :  99.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Road data, segment # 2: Clyde (day/night)
----------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   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):  35000
    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: Clyde (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  :  88.00 / 88.00  m
Receiver height           :  45.50 / 45.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -1.00 deg   Angle2 : 0.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :  98.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Baseline (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 !       45.50 !      143.91 !       143.91

ROAD (0.00 + 45.46 + 64.96) = 65.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0      1   0.00  72.79   0.00  -4.77 -22.55   0.00   0.00   0.00
45.46*
     0      1   0.00  72.79   0.00  -4.77 -22.55   0.00   0.00   0.00
45.46
-------------------------------------------------------------------------
--
```

```
     1     90    0.00   72.79    0.00   -4.77   -3.06    0.00    0.00    0.00
64.96
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 65.01 dBA


Results segment # 2: Clyde (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 !       45.50 !      144.38 !       144.38

ROAD (61.42 + 41.92 + 0.00) = 61.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     -1    0.00   72.16    0.00   -7.68   -3.06    0.00    0.00    0.00
61.42
-------------------------------------------------------------------------------
--
    -1      0    0.00   72.16    0.00   -7.68  -22.55    0.00    0.00    0.00
41.92*
    -1      0    0.00   72.16    0.00   -7.68  -22.55    0.00    0.00    0.00
41.92
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 61.47 dBA

Total Leq All Segments: 66.60 dBA


Results segment # 1: Baseline (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 !       45.50 !      143.91 !       143.91

ROAD (0.00 + 37.87 + 57.36) = 57.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0      1   0.00  65.19   0.00  -4.77 -22.55   0.00   0.00   0.00
37.87*
     0      1   0.00  65.19   0.00  -4.77 -22.55   0.00   0.00   0.00
37.87
-------------------------------------------------------------------------
--
     1     90   0.00  65.19   0.00  -4.77  -3.06   0.00   0.00   0.00
57.36
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 57.41 dBA


Results segment # 2: Clyde (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 !       45.50 !      144.38 !       144.38

ROAD (53.82 + 34.33 + 0.00) = 53.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     -1   0.00  64.56   0.00  -7.68  -3.06   0.00   0.00   0.00
53.82
-------------------------------------------------------------------------
--
    -1      0   0.00  64.56   0.00  -7.68 -22.55   0.00   0.00   0.00
34.33*
```

```
    -1       0    0.00   64.56    0.00   -7.68 -22.55    0.00    0.00    0.00
34.33
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 53.87 dBA

Total Leq All Segments: 59.00 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 66.60
                           (NIGHT): 59.00
```

```
STAMSON 5.0        NORMAL REPORT        Date: 22-11-2019 15:22:31
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Baseline (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: Baseline (day/night)
----------------------------------------------
Angle1   Angle2           : -50.00 deg   72.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  52.00 / 52.00  m
Receiver height           :   6.50 / 6.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -50.00 deg   Angle2 : 72.00 deg
Barrier height            :   6.10 m
Barrier receiver distance :  23.00 / 23.00  m
Source elevation          :  99.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :  99.40 m
Reference angle           :   0.00


Results segment # 1: Baseline (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 !        6.50 !        4.11 !       103.51

ROAD (0.00 + 56.44 + 0.00) = 56.44 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -50     72   0.00  72.79   0.00  -5.40  -1.69   0.00   0.00  -9.26
56.44
-------------------------------------------------------------------------------
--

Segment Leq : 56.44 dBA

Total Leq All Segments: 56.44 dBA

Results segment # 1: Baseline (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 !        6.50 !        4.11 !       103.51

ROAD (0.00 + 48.84 + 0.00) = 48.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -50     72   0.00  65.19   0.00  -5.40  -1.69   0.00   0.00  -9.26
48.84
-------------------------------------------------------------------------------
--

Segment Leq : 48.84 dBA

Total Leq All Segments: 48.84 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 56.44
                           (NIGHT): 48.84
```

```
STAMSON 5.0        NORMAL REPORT        Date: 22-11-2019 12:59:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r7b.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Baseline (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: Baseline (day/night)
----------------------------------------------
Angle1   Angle2           : -50.00 deg   72.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  52.00 / 52.00  m
Receiver height           :   6.50 / 6.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -50.00 deg   Angle2 : 72.00 deg
Barrier height            :   6.50 m
Barrier receiver distance :  23.00 / 23.00  m
Source elevation          :  99.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :  99.40 m
Reference angle           :   0.00

Results segment # 1: Baseline (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 !        6.50 !        4.11 !       103.51

ROAD (0.00 + 55.29 + 0.00) = 55.29 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -50     72   0.00  72.79   0.00  -5.40  -1.69   0.00   0.00 -10.41
55.29
-------------------------------------------------------------------------
--

Segment Leq : 55.29 dBA

Total Leq All Segments: 55.29 dBA


Results segment # 1: Baseline (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 !        6.50 !        4.11 !       103.51

ROAD (0.00 + 47.69 + 0.00) = 47.69 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -50     72   0.00  65.19   0.00  -5.40  -1.69   0.00   0.00 -10.41
47.69
-------------------------------------------------------------------------
--

Segment Leq : 47.69 dBA

Total Leq All Segments: 47.69 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 55.29
                           (NIGHT): 47.69
```

```
STAMSON 5.0        NORMAL REPORT        Date: 22-11-2019 15:23:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Baseline (day/night)
-------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: Baseline (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  :  72.00 / 72.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :  20.00 / 20.00  m
Source elevation          :  99.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :  98.00 m
Reference angle           :   0.00

Road data, segment # 2: Clyde (day/night)
-------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   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):  35000
    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: Clyde (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  :  33.00 / 33.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation          :  97.50 m
Receiver elevation        :  99.40 m
Barrier elevation         :  98.00 m
Reference angle           :   0.00

Results segment # 1: Baseline (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 !        1.50 !        2.79 !       100.79

ROAD (0.00 + 62.96 + 0.00) = 62.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     90   0.00  72.79   0.00  -6.81  -3.01   0.00   0.00  -4.90
58.06*
     0     90   0.00  72.79   0.00  -6.81  -3.01   0.00   0.00   0.00
62.96
-------------------------------------------------------------------------------
--

 * Bright Zone !
```

```
Segment Leq : 62.96 dBA

Results segment # 2: Clyde (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 !        1.50 !        2.38 !       100.38

ROAD (0.00 + 63.70 + 0.00) = 63.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90   0.00  72.16   0.00  -3.42   0.00   0.00   0.00  -5.04
63.70
-------------------------------------------------------------------------------
--

Segment Leq : 63.70 dBA

Total Leq All Segments: 66.36 dBA


Results segment # 1: Baseline (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 !        1.50 !        2.79 !       100.79

ROAD (0.00 + 55.37 + 0.00) = 55.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     90   0.00  65.19   0.00  -6.81  -3.01   0.00   0.00  -4.90
50.47*
     0     90   0.00  65.19   0.00  -6.81  -3.01   0.00   0.00   0.00
55.37
```

```
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 55.37 dBA


Results segment # 2: Clyde (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 !        1.50 !        2.38 !       100.38

ROAD (0.00 + 56.10 + 0.00) = 56.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90   0.00  64.56   0.00  -3.42   0.00   0.00   0.00  -5.04
56.10
-------------------------------------------------------------------------------
--

Segment Leq : 56.10 dBA

Total Leq All Segments: 58.76 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.36
                           (NIGHT): 58.76
```

```
STAMSON 5.0        NORMAL REPORT        Date: 22-11-2019 13:00:09
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r8b.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Baseline (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: Baseline (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  :  72.00 / 72.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.40 m
Barrier receiver distance :  20.00 / 20.00  m
Source elevation          :  99.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :  98.00 m
Reference angle           :   0.00

Road data, segment # 2: Clyde (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   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):  35000
    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: Clyde (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  :  33.00 / 33.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.40 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation          :  97.50 m
Receiver elevation        :  99.40 m
Barrier elevation         :  98.00 m
Reference angle           :   0.00

Results segment # 1: Baseline (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 !        1.50 !        2.79 !       100.79

ROAD (0.00 + 57.55 + 0.00) = 57.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     90   0.00  72.79   0.00  -6.81  -3.01   0.00   0.00  -5.42
57.55
-------------------------------------------------------------------------------
--

Segment Leq : 57.55 dBA
```

```
Results segment # 2: Clyde (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 !        1.50 !        2.38 !       100.38

ROAD (0.00 + 61.70 + 0.00) = 61.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90   0.00  72.16   0.00  -3.42   0.00   0.00   0.00  -7.03
61.70
-------------------------------------------------------------------------------
--

Segment Leq : 61.70 dBA

Total Leq All Segments: 63.11 dBA


Results segment # 1: Baseline (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 !        1.50 !        2.79 !       100.79

ROAD (0.00 + 49.95 + 0.00) = 49.95 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     90   0.00  65.19   0.00  -6.81  -3.01   0.00   0.00  -5.42
49.95
-------------------------------------------------------------------------------
--

Segment Leq : 49.95 dBA
```

```
Results segment # 2: Clyde (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 !        1.50 !        2.38 !       100.38

ROAD (0.00 + 54.11 + 0.00) = 54.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90    0.00  64.56   0.00  -3.42   0.00   0.00   0.00  -7.03
54.11
-------------------------------------------------------------------------------
--

Segment Leq : 54.11 dBA

Total Leq All Segments: 55.52 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.11
                           (NIGHT): 55.52
```

```
STAMSON 5.0        NORMAL REPORT        Date: 22-11-2019 13:00:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r8b2.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Baseline (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: Baseline (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  :  72.00 / 72.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.90 m
Barrier receiver distance :  20.00 / 20.00  m
Source elevation          :  99.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :  98.00 m
Reference angle           :   0.00

Road data, segment # 2: Clyde (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   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):  35000
    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: Clyde (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  :  33.00 / 33.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.90 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation          :  97.50 m
Receiver elevation        :  99.40 m
Barrier elevation         :  98.00 m
Reference angle           :   0.00

Results segment # 1: Baseline (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 !        1.50 !        2.79 !       100.79

ROAD (0.00 + 56.73 + 0.00) = 56.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     90   0.00  72.79   0.00  -6.81  -3.01   0.00   0.00  -6.23
56.73
-------------------------------------------------------------------------------
--

Segment Leq : 56.73 dBA
```

```
Results segment # 2: Clyde (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 !        1.50 !        2.38 !       100.38

ROAD (0.00 + 60.16 + 0.00) = 60.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90   0.00  72.16   0.00  -3.42   0.00   0.00   0.00  -8.58
60.16
-------------------------------------------------------------------------------
--

Segment Leq : 60.16 dBA

Total Leq All Segments: 61.79 dBA


Results segment # 1: Baseline (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 !        1.50 !        2.79 !       100.79

ROAD (0.00 + 49.14 + 0.00) = 49.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     90   0.00  65.19   0.00  -6.81  -3.01   0.00   0.00  -6.23
49.14
-------------------------------------------------------------------------------
--

Segment Leq : 49.14 dBA
```

```
Results segment # 2: Clyde (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 !        1.50 !        2.38 !       100.38

ROAD (0.00 + 52.56 + 0.00) = 52.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90   0.00  64.56   0.00  -3.42   0.00   0.00   0.00  -8.58
52.56
-------------------------------------------------------------------------------
--

Segment Leq : 52.56 dBA

Total Leq All Segments: 54.19 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.79
                           (NIGHT): 54.19
```

```
STAMSON 5.0        NORMAL REPORT        Date: 22-11-2019 16:52:26
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r8b3.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Baseline (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: Baseline (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  :  72.00 / 72.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   4.40 m
Barrier receiver distance :  20.00 / 20.00  m
Source elevation          :  99.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :  98.00 m
Reference angle           :   0.00


Road data, segment # 2: Clyde (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   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):  35000
    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: Clyde (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  :  33.00 / 33.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   4.40 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation          :  97.50 m
Receiver elevation        :  99.40 m
Barrier elevation         :  98.00 m
Reference angle           :   0.00


Results segment # 1: Baseline (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 !        1.50 !        2.79 !       100.79

ROAD (0.00 + 55.72 + 0.00) = 55.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     90   0.00  72.79   0.00  -6.81  -3.01   0.00   0.00  -7.24
55.72
-------------------------------------------------------------------------
--

Segment Leq : 55.72 dBA
```

```
Results segment # 2: Clyde (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 !        1.50 !        2.38 !       100.38

ROAD (0.00 + 58.73 + 0.00) = 58.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90   0.00  72.16   0.00  -3.42   0.00   0.00   0.00 -10.01
58.73
-------------------------------------------------------------------------------
--

Segment Leq : 58.73 dBA

Total Leq All Segments: 60.49 dBA


Results segment # 1: Baseline (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 !        1.50 !        2.79 !       100.79

ROAD (0.00 + 48.13 + 0.00) = 48.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     90   0.00  65.19   0.00  -6.81  -3.01   0.00   0.00  -7.24
48.13
-------------------------------------------------------------------------------
--

Segment Leq : 48.13 dBA
```

```
Results segment # 2: Clyde (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 !        1.50 !        2.38 !       100.38

ROAD (0.00 + 51.13 + 0.00) = 51.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90    0.00  64.56   0.00  -3.42   0.00   0.00   0.00 -10.01
51.13
-------------------------------------------------------------------------------
--

Segment Leq : 51.13 dBA

Total Leq All Segments: 52.89 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 60.49
                           (NIGHT): 52.89
```

```
STAMSON 5.0        NORMAL REPORT        Date: 22-11-2019 15:23:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Baseline (day/night)
---------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: Baseline (day/night)
-------------------------------------------
Angle1   Angle2           : -40.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  41.00 / 41.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -40.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.10 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :  99.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :  99.40 m
Reference angle           :   0.00

Road data, segment # 2: Clyde (day/night)
-------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   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):  35000
    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: Clyde (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   37.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.00 / 51.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 37.00 deg
Barrier height            :   1.10 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :  97.50 m
Receiver elevation        :  99.40 m
Barrier elevation         :  99.40 m
Reference angle           :   0.00

Results segment # 1: Baseline (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 !        1.50 !        1.43 !       100.83

ROAD (0.00 + 67.01 + 0.00) = 67.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -40     90   0.00  72.79   0.00  -4.37  -1.41   0.00   0.00  -4.62
62.38*
   -40     90   0.00  72.79   0.00  -4.37  -1.41   0.00   0.00   0.00
67.01
-------------------------------------------------------------------------------
--

 * Bright Zone !
```

```
Segment Leq : 67.01 dBA

Results segment # 2: Clyde (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 !        1.50 !        1.24 !       100.64

ROAD (0.00 + 65.33 + 0.00) = 65.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     37   0.00  72.16   0.00  -5.31  -1.51   0.00   0.00  -4.94
60.39*
   -90     37   0.00  72.16   0.00  -5.31  -1.51   0.00   0.00   0.00
65.33
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 65.33 dBA

Total Leq All Segments: 69.26 dBA


Results segment # 1: Baseline (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 !        1.50 !        1.43 !       100.83

ROAD (0.00 + 59.41 + 0.00) = 59.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
```

```
   -40      90    0.00   65.19    0.00   -4.37   -1.41    0.00    0.00   -4.62
54.79*
   -40      90    0.00   65.19    0.00   -4.37   -1.41    0.00    0.00    0.00
59.41
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 59.41 dBA

Results segment # 2: Clyde (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 !        1.50 !        1.24 !       100.64

ROAD (0.00 + 57.73 + 0.00) = 57.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90      37    0.00   64.56    0.00   -5.31   -1.51    0.00    0.00   -4.94
52.79*
   -90      37    0.00   64.56    0.00   -5.31   -1.51    0.00    0.00    0.00
57.73
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 57.73 dBA

Total Leq All Segments: 61.66 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.26
                           (NIGHT): 61.66
```

```
STAMSON 5.0        NORMAL REPORT        Date: 22-11-2019 14:45:04
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r9b.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Baseline (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: Baseline (day/night)
----------------------------------------------
Angle1   Angle2           : -40.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  41.00 / 41.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -40.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :  99.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :  99.40 m
Reference angle           :   0.00

Road data, segment # 2: Clyde (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   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):  35000
    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: Clyde (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   37.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.00 / 51.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 37.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :  97.50 m
Receiver elevation        :  99.40 m
Barrier elevation         :  99.40 m
Reference angle           :   0.00

Results segment # 1: Baseline (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 !        1.50 !        1.43 !       100.83

ROAD (0.00 + 61.05 + 0.00) = 61.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -40     90   0.00  72.79   0.00  -4.37  -1.41   0.00   0.00  -5.96
61.05
-------------------------------------------------------------------------------
--

Segment Leq : 61.05 dBA
```

```
Results segment # 2: Clyde (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 !        1.50 !        1.24 !       100.64

ROAD (0.00 + 58.80 + 0.00) = 58.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     37   0.00  72.16   0.00  -5.31  -1.51   0.00   0.00  -6.53
58.80
-------------------------------------------------------------------------------
--

Segment Leq : 58.80 dBA

Total Leq All Segments: 63.08 dBA

Results segment # 1: Baseline (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 !        1.50 !        1.43 !       100.83

ROAD (0.00 + 53.45 + 0.00) = 53.45 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -40     90   0.00  65.19   0.00  -4.37  -1.41   0.00   0.00  -5.96
53.45
-------------------------------------------------------------------------------
--

Segment Leq : 53.45 dBA
```

```
Results segment # 2: Clyde (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 !        1.50 !        1.24 !       100.64

ROAD (0.00 + 51.20 + 0.00) = 51.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     37   0.00  64.56   0.00  -5.31  -1.51   0.00   0.00  -6.53
51.20
-------------------------------------------------------------------------------
--

Segment Leq : 51.20 dBA

Total Leq All Segments: 55.48 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 63.08
                           (NIGHT): 55.48
```

```
STAMSON 5.0        NORMAL REPORT        Date: 22-11-2019 14:45:12
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r9b2.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Baseline (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: Baseline (day/night)
----------------------------------------------
Angle1   Angle2           : -40.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  41.00 / 41.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -40.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :  99.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :  99.40 m
Reference angle           :   0.00

Road data, segment # 2: Clyde (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   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):  35000
    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: Clyde (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   37.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.00 / 51.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 37.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :  97.50 m
Receiver elevation        :  99.40 m
Barrier elevation         :  99.40 m
Reference angle           :   0.00

Results segment # 1: Baseline (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 !        1.50 !        1.43 !       100.83

ROAD (0.00 + 59.30 + 0.00) = 59.30 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -40     90   0.00  72.79   0.00  -4.37  -1.41   0.00   0.00  -7.71
59.30
-------------------------------------------------------------------------------
--

Segment Leq : 59.30 dBA
```

```
Results segment # 2: Clyde (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 !        1.50 !        1.24 !       100.64

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
-------------------------------------------------------------------------------
--
   -90     37   0.00  72.16   0.00  -5.31  -1.51   0.00   0.00  -8.32
57.01
-------------------------------------------------------------------------------
--

Segment Leq : 57.01 dBA

Total Leq All Segments: 61.31 dBA

Results segment # 1: Baseline (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 !        1.50 !        1.43 !       100.83

ROAD (0.00 + 51.70 + 0.00) = 51.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -40     90   0.00  65.19   0.00  -4.37  -1.41   0.00   0.00  -7.71
51.70
-------------------------------------------------------------------------------
--

Segment Leq : 51.70 dBA
```

```
Results segment # 2: Clyde (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 !        1.50 !        1.24 !       100.64

ROAD (0.00 + 49.42 + 0.00) = 49.42 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     37   0.00  64.56   0.00  -5.31  -1.51   0.00   0.00  -8.32
49.42
-------------------------------------------------------------------------------
--

Segment Leq : 49.42 dBA

Total Leq All Segments: 53.72 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 61.31
                           (NIGHT): 53.72
```

```
STAMSON 5.0        NORMAL REPORT        Date: 22-11-2019 16:56:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r9b3.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Baseline (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     3 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    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: Baseline (day/night)
----------------------------------------------
Angle1   Angle2           : -40.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  41.00 / 41.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -40.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :  99.00 m
Receiver elevation        :  99.40 m
Barrier elevation         :  99.40 m
Reference angle           :   0.00


Road data, segment # 2: Clyde (day/night)
----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   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):  35000
    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: Clyde (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   37.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.00 / 51.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 37.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :  97.50 m
Receiver elevation        :  99.40 m
Barrier elevation         :  99.40 m
Reference angle           :   0.00


Results segment # 1: Baseline (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 !        1.50 !        1.43 !       100.83

ROAD (0.00 + 57.50 + 0.00) = 57.50 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -40     90   0.00  72.79   0.00  -4.37  -1.41   0.00   0.00  -9.50
57.50
-------------------------------------------------------------------------
--

Segment Leq : 57.50 dBA
```

```
Results segment # 2: Clyde (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 !        1.50 !        1.24 !       100.64

ROAD (0.00 + 55.31 + 0.00) = 55.31 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     37   0.00  72.16   0.00  -5.31  -1.51   0.00   0.00 -10.02
55.31
-------------------------------------------------------------------------
--

Segment Leq : 55.31 dBA

Total Leq All Segments: 59.55 dBA


Results segment # 1: Baseline (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 !        1.50 !        1.43 !       100.83

ROAD (0.00 + 49.91 + 0.00) = 49.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -40     90   0.00  65.19   0.00  -4.37  -1.41   0.00   0.00  -9.50
49.91
-------------------------------------------------------------------------
--

Segment Leq : 49.91 dBA
```

```
Results segment # 2: Clyde (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 !        1.50 !        1.24 !       100.64

ROAD (0.00 + 47.72 + 0.00) = 47.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     37   0.00  64.56   0.00  -5.31  -1.51   0.00   0.00 -10.02
47.72
-------------------------------------------------------------------------------
--

Segment Leq : 47.72 dBA

Total Leq All Segments: 51.96 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 59.55
                           (NIGHT): 51.96
```