Traffic Noise Assessment

2710 Draper Avenue

Ottawa, Ontario

REPORT: GWE17-059 - Traffic Noise

Prepared For:

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EXECUTIVE SUMMARY

This document describes a roadway traffic noise assessment performed for a proposed residential subdivision located at 2710 Draper Avenue in Ottawa, Ontario. The proposed development comprises twelve (12) three-storey residential townhomes blocks (containing a total of 90 dwelling units), to be constructed in two phases (Phase 3-1 and Phase 3-2). The major sources of noise impacting the site is roadway traffic noise along Baseline Road and Morrison Avenue. Figure 1 illustrates the site plan and surrounding context.

The assessment is based on: (i) theoretical noise prediction methods that conform to the Ministry of the Environment and Climate Change (MOECC) and City of Ottawa requirements; (ii) noise level criteria as specified by the City of Ottawa's Environmental Noise Control Guidelines (ENCG); (iii) future vehicular traffic volumes based on the City of Ottawa's Official Plan roadway classifications; and (iv) architectural drawings received from Roderick Lahey Architect Inc. on November 2nd, 2017, dated November 2017.

The results of the current analysis indicate that noise levels will range between 53 and 65 dBA during the daytime period (07:00-23:00) and between 45 and 58 dBA during the nighttime period (23:00-07:00). The highest noise level (i.e. 65 dBA) occurs on the west façade of Block 12 (Receptor 2), which is nearest and most exposed to Baseline Road and Morrison Drive.

Results of the calculations indicate that standard building components for all Blocks will be sufficient to achieve the City of Ottawa's indoor sound criteria listed in Table 1. For areas of the site above 55 dBA, ventilation systems should allow the option for residences to keep windows closed, such as a forced air heating system with provision for central air conditioning. This provision applies to the Blocks stated in Table 4. In addition to ventilation requirements, a Warning Clause will also be required for these blocks on all Lease, Purchase and Sale Agreements as summarized in Section 6.

Noise levels at the rear yards of certain blocks are expected to exceed 55 dBA during the daytime period. According to the ENCG, if these areas are to be used as outdoor living areas, noise control measures (barriers) are required to reduce the L_{eq} to 55 dBA. Investigation into the application of a noise barrier surrounding the rear yards proved that noise levels can be reduced to 55 dBA and below, as illustrated in Figure 3. The rear dwellings of Block 12 require a 2.5-metre tall noise barrier, while Blocks 5 and 8 require a 2.08-metre tall barrier along the south property line. The barriers would be constructed on top of the retaining wall and have a top of wall elevation of 79.08 m above sea level. The barrier along the south property line of Block 12, which measures approximately 39 metres in length, will only be required if occupancy in Block 12 precedes the construction of the approved future building south of Block 12. The wall must be constructed from materials having a minimum surface density of 20 kg/m^2 (STC rating of 30) and contain no gaps.

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1. INTRODUCTION

Gradient Wind Engineering Inc. (GWE) was retained by Greatwise Developments to undertake a traffic noise assessment of the proposed residential subdivision located at 2710 Draper Avenue in Ottawa, Ontario. This report summarizes the methodology, results and recommendations related to a traffic noise assessment. GWE's scope of work involved assessing exterior noise levels throughout the site that are generated by local roadway traffic. The assessment was performed on the basis of theoretical noise calculation methods conforming to the City of Ottawa[1] and Ministry of the Environment and Climate Change (MOECC)[2] guidelines. Noise calculations were based on site plan and architectural drawings prepared by Roderick Lahey Architect Inc., with future traffic volumes corresponding to the City of Ottawa's Official Plan (OP) roadway classifications.

2. TERMS OF REFERENCE

The focus of this roadway traffic noise assessment is a proposed subdivision located at 2710 Draper Avenue in Ottawa, Ontario. The subdivision consists of 12 three-storey residential townhouse blocks (containing a total of 90 dwelling units), to be constructed in two phases. Phase 3-1 comprises of Blocks 1-5, which are on the north-western and central portion of the site; Phase 3-2 comprises Blocks 6-11 located in the eastern portion of the site and Block 12 on the western portion of the site. Outdoor amenity spaces are located mainly at the rear yards of the dwellings, and a proposed park at the west side of the development. The Blocks containing rear yards are Blocks 5, and 8-12, while the remaining blocks are back-to-back and do not contain rear yards. A previously approved portion of the site plan contains two four-storey apartment buildings south of the subject lands. The eastern apartment building has been constructed and the other approved apartment building is slated for construction around the same time as the townhouses.

The site is surrounded by residential area in all directions. The major sources of roadway traffic noise affecting the development are Baseline Road and Morrison Avenue. Figure 1 Illustrates the site plan and surrounding context.

[1] City of Ottawa Environmental Noise Control Guidelines, January 2016
[2] Ministry of the Environment and Climate Change (MOECC) – Environmental Noise Guideline, Publication NPC-300, August 2013

3. OBJECTIVES

The main objectives of this work are to: (i) calculate the future noise levels on the study building produced by local roadway traffic, (ii) ensure that interior noise do not exceed the allowable limits specified by the City of Ottawa's Environmental Noise Control Guidelines as outlined in Section 4 of this report.

4. METHODOLOGY

4.1 Background

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

4.2 Criteria for Roadway Traffic Noise

For vehicle traffic, 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 impacts 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 45, and 40 dBA for residence living rooms and sleeping quarters respectively, as listed in Table 1.

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

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

Predicted noise levels at the plane of window (POW) dictate the action required to achieve the recommended sound levels. An open window is considered to provide a 10 dBA reduction in noise, while a standard closed window is capable of providing a minimum 20 dBA noise reduction[4]. 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 normally triggers the need for central air conditioning. Where noise levels exceed 65 dBA daytime and 60 dBA nighttime, building components will require higher levels of sound attenuation[5].

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.

[3] Adapted from ENCG 2016 – Part 1, Table 2.2c
[4] Burberry, P.B. (2014). Mitchell's Environment and Services. Routledge, Page 125
[5] MOECC, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.1.3

4.3 Roadway Noise Assessment

4.3.1 Theoretical Roadway Noise Predictions

Noise predictions were performed with the aid of the MOECC computerized noise assessment program, STAMSON 5.04, for road analysis. Noise receptors were strategically identified at 15 locations around the study area, as illustrated in Figure 2. Roadway noise calculations were performed by treating each road segment as separate line sources of noise, and by using existing and approved building locations as noise barriers. In addition to the traffic volumes summarized in Table 2 below, 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 was taken to be 92% / 8% respectively for all streets.
- Absorptive and reflective intermediate ground surfaces based on specific source-receiver path ground characteristics.
- Road gradient of Morrison Drive was found to be greater than 2% but the elevation change along the road near the site is less than 6 m. Therefore, road gradient was assumed to be flat; see further explanation below.
- Topography considered in height parameters, refer to Grading Plan prepared by DSEL
- Surrounding buildings in some cases used as barrier where the line of sight between the source and receiver is broken by the building. Second approved apartment building used as a barrier in calculations.
- Block 12 was not used as a noise barrier for conservatism for receptors placed on Blocks encompassing Phase 3-1 since it is part of the later Phase 3-2

According to Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT) protocol, the road grade factor in STAMSON is used to account for heavy trucks ascending a steep long hill. The factor accounts for the higher engine speeds need by the trucks to climb the steeper slopes. The factor is applied when the road gradient is more than 2% and the change in elevation is more than 6 m[6]. Since the elevation change does not exceed 6 m across the site and surroundings, road grade was treated as flat.

[6] ORNAMENT Technical Document, October 1989, Section 5.2

4.3.2 Roadway Traffic Volumes

The ENCG dictates that noise calculations should consider future sound levels based on a roadway's classification at the mature state of development. Therefore, traffic volumes are based on the roadway classifications outlined in the City of Ottawa's Official Plan (OP) and Transportation Master Plan[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

Roadway	Roadway Class	Speed Limit (km/h)	Official Plan AADT
Morrison Drive	2-Lane Urban Collector (2-UCU)	40	**8,000**
Baseline Road	4-Lane Urban Arterial-Divided (4-UAD)	70	**35,000**

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

5. RESULTS AND DISCUSSION

5.1 Roadway Traffic Noise Levels

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

TABLE 3: EXTERIOR NOISE LEVELS DUE TO ROAD TRAFFIC

Receptor Number	Receptor Location	STAMSON 5.04 Noise Level (dBA)	
		Day	Night
1	POW – 3rd Floor – Block 12 South Façade	63	55
2	POW – 3rd Floor – Block 12 West Façade	65	58
3	POW – 3rd Floor – Block 12 North Façade	60	53
4	OLA – Ground level – Park	63	56
5	POW – 3rd Floor – Block 1 South Façade	60	53
6	POW – 3rd Floor – Block 1 West Façade	64	56
7	POW – 3rd Floor – Block 3 West Façade	60	52
8	POW – 3rd Floor – Block 3 South Façade	57	49
9	POW – 3rd Floor – Block 2 North Façade	53	45
10	POW – 3rd Floor – Block 4 South Façade	53	45
11	POW – 3rd Floor – Block 5 South Façade	61	53
12	OLA – Ground level – Block 5 rear	61	53
13	POW – 3rd Floor – Block 11 South Façade	56	49
14	OLA – Ground level – Block 11 rear	54	46
15	OLA – Ground level – Block 12 rear	63	56

The results of the current analysis indicate that noise levels will range between 53 and 65 dBA during the daytime period (07:00-23:00) and between 45 and 58 dBA during the nighttime period (23:00-07:00). The highest noise level (i.e. 65 dBA) occurs on the west façade of Block 12 (Receptor 2), which is nearest and most exposed to Baseline Road and Morrison Drive.

5.2 Noise Control Measures

The noise levels predicted due to roadway traffic do not exceed the criteria listed in the Section 4.2 for building components. Therefore, standard building components will be sufficient to attenuating indoor sound levels to meet the ENCG criteria as listed in Table 1. Results of the calculations do indicate that a number of blocks will require forced air heating with provision for central air conditioning. If installed, air conditioning will allow occupants to keep windows closed and maintain a comfortable living environment during the warmer months. In addition to ventilation requirements, Warning Clauses will also be required to be placed on all Lease, Purchase and Sale Agreements, as summarized in Table 4 below. The Block numbers identified in the Table below are in relation to the real estate parcels identified on the site plan.

TABLE 4: SITE VENTILATION AND WARNING CLAUSE REQUIREMENTS

Location	Ventilation Requirements	Warning Clause
Blocks 1,3,5,8,11,12	Forced Air Heating with Provisions for Central Air Conditioning	Yes
Blocks 2,4,6,7,9-10	None	None

5.2.1 Noise Barrier Calculation

Noise levels at the rear yards of certain blocks are expected to exceed 55 dBA during the daytime period. According to the ENCG, if these areas are to be used as outdoor living areas, noise control measures (barriers) are required to reduce the L_{eq} to 55 dBA. Investigation into the application of a noise barrier surrounding the rear yards proved that noise levels can be reduced to 55 dBA and below, as illustrated in Figure 3. The rear dwellings of Block 12 require a 2.5-metre tall noise barrier, while Blocks 5 and 8 require a 2.08-metre tall barrier along the south property line. The barriers would be constructed on top of the retaining wall and have a top of wall elevation of 79.08 m above sea level. The barrier along the south property line of Block 12, which measures approximately 39 metres in length, will only be required if occupancy in Block 12 precedes the construction of the approved future building south of Block 12. The wall must be constructed from materials having a minimum surface density of 20 kg/m^2 (STC rating of 30) and contain no gaps. Table 5 summarizes the results of the barrier investigations.

TABLE 5: RESULTS OF BARRIER INVESTIGATION

Location	Reference Receptor	Barrier Height (m)	Top of Wall Elevation	Daytime L_{eq} Noise Levels (dBA)	
				Without Barrier	With Barrier
OLA – Ground level – Blocks 5 and 8 – Rear	12	2.08	79.08	61	52
OLA – Ground level – Block 12 – Rear	15	2.5	79.08	63	55

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that noise levels will range between 53 and 65 dBA during the daytime period (07:00-23:00) and between 45 and 58 dBA during the nighttime period (23:00-07:00). The highest noise level (i.e. 65 dBA) occurs on the west façade of Block 12 (Receptor 2), which is nearest and most exposed to Baseline Road and Morrison Drive.

Results of the calculations indicate standard building components for all Blocks will be sufficient to achieve the City of Ottawa's indoor sound criteria listed in Table 1. For areas of the site above 55 dBA, ventilation systems should allow the option for residences to keep windows closed, such as a forced air heating system with provision for central air conditioning. This provision would apply to the Blocks stated in Table 4 above. In addition to ventilation requirements, a Warning Clause will also be required for these blocks on all Lease, Purchase and Sale Agreements as summarized below:

> *"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing roadway traffic may, on occasion, interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the City and the Ministry of the Environment and Climate Change.*
>
> *To ensure that provincial sound level limits are not exceeded, this dwelling unit has been designed with forced air heating and the provision for central air conditioning. The installation of central air conditioning 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 and Climate Change."*

Noise levels at the rear yards of certain blocks are expected to exceed 55 dBA during the daytime period. According to the ENCG, if these areas are to be used as outdoor living areas, noise control measures (barriers) are required to reduce the L_{eq} to 55 dBA. Investigation into the application of a noise barrier surrounding the rear yards proved that noise levels can be reduced to 55 dBA and below, as illustrated in Figure 3. The rear dwellings of Block 12 require a 2.5-metre tall noise barrier, while Blocks 5 and 8 require a 2.08-metre tall barrier along the south property line. The barriers would be constructed on top of the retaining wall and have a top of wall elevation of 79.08 m above sea level. The barrier along the south property line of Block 12, which measures approximately 39 metres in length, will only be required if occupancy in Block 12 precedes the construction of the approved future building south of Block 12. The wall must be constructed from materials having a minimum surface density of 20 kg/m^2 (STC rating of 30) and contain no gaps.

This concludes our 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.

Yours truly,

Gradient Wind Engineering Inc.

LICENSED PROFESSIONAL ENGINEER
J. R. FOSTER
100155655
NOV 28, 2017
PROVINCE OF ONTARIO

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GRADIENT WIND ENGINEERING INC

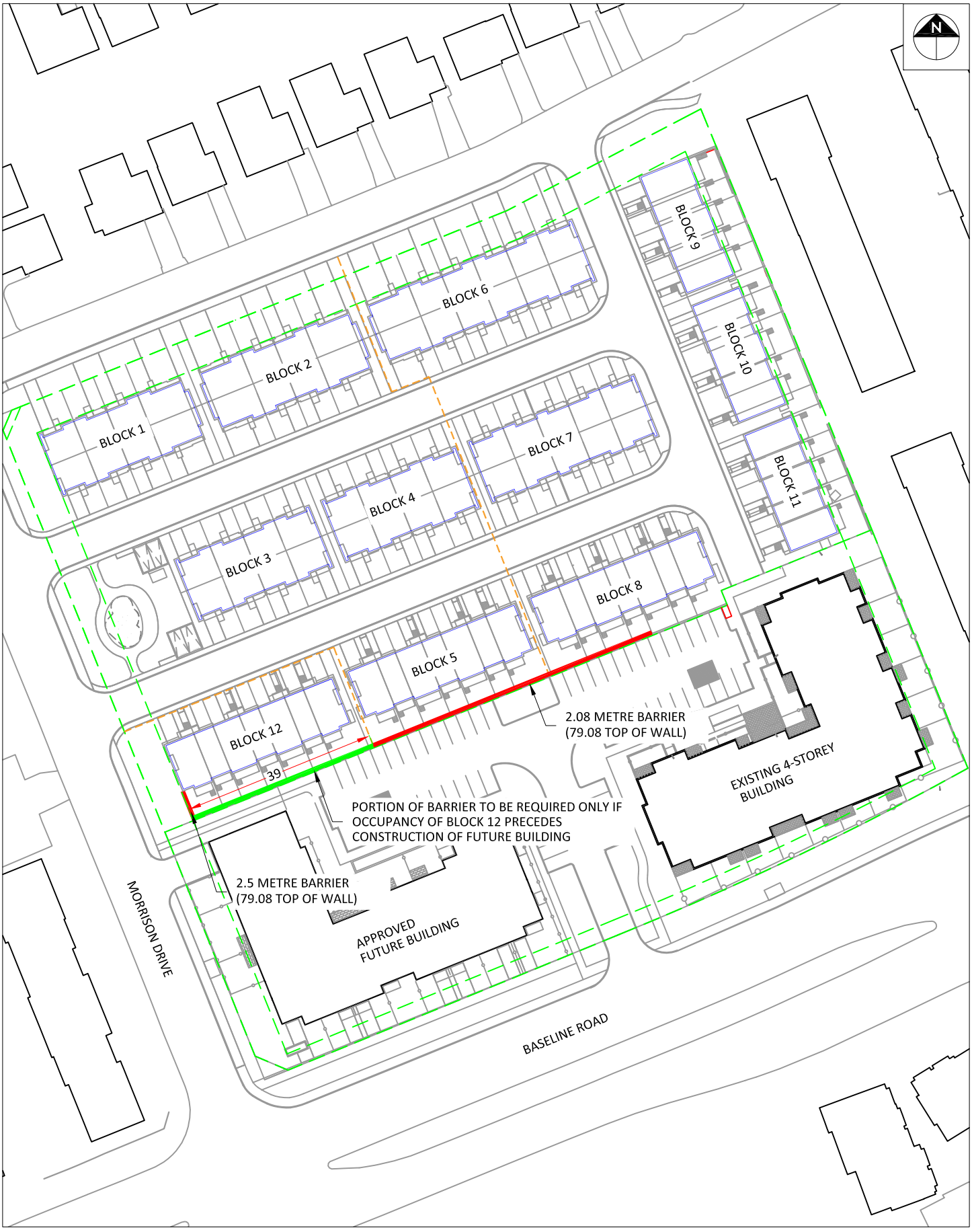
PROJECT	2710 DRAPER AVENUE - TRAFFIC NOISE ASSESSMENT
SCALE	1:2000 (APPROX.)
DRAWING NO.	GWE17-059-1
DATE	NOVEMBER 27, 2017
DRAWN BY	O.D.

DESCRIPTION

FIGURE 1:
SITE PLAN AND SURROUNDING CONTEXT

127 Walgreen Road
Ottawa, Ontario
(613) 836 0934
GRADIENT WIND ENGINEERING INC

PROJECT	2710 DRAPER AVENUE - TRAFFIC NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE17-059-2
DATE	NOVEMBER 27, 2017
DRAWN BY	O.D.
DESCRIPTION	FIGURE 2: RECEPTOR LOCATION



127 Walgreen Road
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GRADIENT WIND ENGINEERING INC

PROJECT	2710 DRAPER AVENUE - TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:1000 (APPROX.)	DRAWING NO.	GWE17-059-3
DATE	NOVEMBER 27, 2017	DRAWN BY	O.D.

FIGURE 3:
BARRIER LOCATIONS

APPENDIX A

TRAFFIC MODELLING INPUT AND OUTPUT DATA

```
STAMSON 5.0        NORMAL REPORT        Date: 09-11-2017 08:25:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Morrison (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    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: Morrison (day/night)
-------------------------------------------
Angle1   Angle2           : -80.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  19.00 / 19.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: 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  :    70 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: Baseline (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  79.00 / 79.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 10.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  51.00 / 51.00  m
Source elevation          :  77.00 m
Receiver elevation        :  77.08 m
Barrier elevation         :  77.15 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Baseline 2 (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  :    70 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 # 3: Baseline 2 (day/night)
--------------------------------------------
Angle1   Angle2           :  10.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  79.00 / 79.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  31.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  57.00 / 57.00  m
Source elevation          :  77.00 m
Receiver elevation        :  77.08 m
Barrier elevation         :  76.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

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
-------------------------------------------------------------------------------
   -80      0   0.00  63.96   0.00  -1.03  -3.52   0.00   0.00   0.00  59.41
-------------------------------------------------------------------------------

Segment Leq : 59.41 dBA


Results segment # 2: 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 !        7.50 !        3.50 !        80.65

ROAD (0.00 + 49.23 + 0.00) = 49.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     10   0.00  75.00   0.00  -7.22  -2.55   0.00   0.00 -16.00  49.23
-------------------------------------------------------------------------------

Segment Leq : 49.23 dBA
```

```
Results segment # 3: Baseline 2 (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 !        7.50 !        4.19 !        80.19

ROAD (58.45 + 54.37 + 0.00) = 59.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    10     31   0.00  75.00   0.00  -7.22  -9.33   0.00   0.00   0.00  58.45
-------------------------------------------------------------------------------
    31     90   0.00  75.00   0.00  -7.22  -4.84   0.00   0.00  -8.56  54.37
-------------------------------------------------------------------------------

Segment Leq : 59.88 dBA

Total Leq All Segments: 62.85 dBA


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

Source height = 1.50 m

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
-------------------------------------------------------------------------------
   -80      0   0.00  56.36   0.00  -1.03  -3.52   0.00   0.00   0.00  51.81
-------------------------------------------------------------------------------

Segment Leq : 51.81 dBA
```

```
Results segment # 2: 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 !        7.50 !        3.50 !        80.65

ROAD (0.00 + 41.63 + 0.00) = 41.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     10   0.00  67.40   0.00  -7.22  -2.55   0.00   0.00 -16.00  41.63
-------------------------------------------------------------------------------

Segment Leq : 41.63 dBA


Results segment # 3: Baseline 2 (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 !        7.50 !        4.19 !        80.19

ROAD (50.85 + 46.78 + 0.00) = 52.29 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    10     31   0.00  67.40   0.00  -7.22  -9.33   0.00   0.00   0.00  50.85
-------------------------------------------------------------------------------
    31     90   0.00  67.40   0.00  -7.22  -4.84   0.00   0.00  -8.56  46.78
-------------------------------------------------------------------------------

Segment Leq : 52.29 dBA

Total Leq All Segments: 55.26 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.85
                           (NIGHT): 55.26
```

```
STAMSON 5.0        NORMAL REPORT        Date: 09-11-2017 08:26:45
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Morrison (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    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: Morrison (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  16.00 / 16.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: 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  :    70 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: 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  :  83.00 / 83.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  27.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  61.00 / 61.00  m
Source elevation          :  77.00 m
Receiver elevation        :  77.08 m
Barrier elevation         :  76.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 63.68 + 0.00) = 63.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  63.96   0.00  -0.28   0.00   0.00   0.00   0.00  63.68
-------------------------------------------------------------------------------

Segment Leq : 63.68 dBA


Results segment # 2: 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 !        7.50 !        4.11 !        80.11

ROAD (59.33 + 54.22 + 0.00) = 60.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     27   0.00  75.00   0.00  -7.43  -8.24   0.00   0.00   0.00  59.33
-------------------------------------------------------------------------------
    27     90   0.00  75.00   0.00  -7.43  -4.56   0.00   0.00  -8.78  54.22
-------------------------------------------------------------------------------

Segment Leq : 60.49 dBA

Total Leq All Segments: 65.38 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 56.08 + 0.00) = 56.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  56.36   0.00  -0.28   0.00   0.00   0.00   0.00  56.08
-------------------------------------------------------------------------------

Segment Leq : 56.08 dBA


Results segment # 2: 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 !        7.50 !        4.11 !        80.11

ROAD (51.73 + 46.63 + 0.00) = 52.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     27   0.00  67.40   0.00  -7.43  -8.24   0.00   0.00   0.00  51.73
-------------------------------------------------------------------------------
    27     90   0.00  67.40   0.00  -7.43  -4.56   0.00   0.00  -8.78  46.63
-------------------------------------------------------------------------------

Segment Leq : 52.90 dBA

Total Leq All Segments: 57.79 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.38
                           (NIGHT): 57.79
```

```
STAMSON 5.0        NORMAL REPORT        Date: 09-11-2017 08:28:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Morrison (day/night)
-------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    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: Morrison (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  :  18.00 / 18.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 60.15 + 0.00) = 60.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  63.96   0.00  -0.79  -3.01   0.00   0.00   0.00  60.15
-------------------------------------------------------------------------------

Segment Leq : 60.15 dBA

Total Leq All Segments: 60.15 dBA


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

Source height = 1.50 m

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
-------------------------------------------------------------------------------
     0     90   0.00  56.36   0.00  -0.79  -3.01   0.00   0.00   0.00  52.56
-------------------------------------------------------------------------------

Segment Leq : 52.56 dBA

Total Leq All Segments: 52.56 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.15
                           (NIGHT): 52.56
```

```
STAMSON 5.0        NORMAL REPORT        Date: 09-11-2017 08:33:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Morrison (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    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: Morrison (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  16.00 / 16.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: 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  :    70 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: 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  : 114.00 / 114.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  19.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  92.00 / 92.00  m
Source elevation          :  77.00 m
Receiver elevation        :  73.59 m
Barrier elevation         :  76.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 62.03 + 0.00) = 62.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  63.96   0.00  -0.47  -1.46   0.00   0.00   0.00  62.03
-------------------------------------------------------------------------------

Segment Leq : 62.03 dBA


Results segment # 2: 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 !        1.84 !        77.84

ROAD (56.42 + 50.16 + 0.00) = 57.34 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     19   0.00  75.00   0.00  -8.81  -9.77   0.00   0.00   0.00  56.42
-------------------------------------------------------------------------------
    19     90   0.00  75.00   0.00  -8.81  -4.04   0.00   0.00 -11.99  50.16
-------------------------------------------------------------------------------

Segment Leq : 57.34 dBA

Total Leq All Segments: 63.30 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 54.44 + 0.00) = 54.44 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  56.36   0.00  -0.47  -1.46   0.00   0.00   0.00  54.44
-------------------------------------------------------------------------------

Segment Leq : 54.44 dBA


Results segment # 2: 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 !        1.84 !        77.84

ROAD (48.83 + 42.56 + 0.00) = 49.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     19   0.00  67.40   0.00  -8.81  -9.77   0.00   0.00   0.00  48.83
-------------------------------------------------------------------------------
    19     90   0.00  67.40   0.00  -8.81  -4.04   0.00   0.00 -11.99  42.56
-------------------------------------------------------------------------------

Segment Leq : 49.75 dBA

Total Leq All Segments: 55.71 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 63.30
                           (NIGHT): 55.71
```

```
STAMSON 5.0        NORMAL REPORT        Date: 09-11-2017 08:35:46
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Morrison (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    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: Morrison (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  18.00 / 18.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 60.15 + 0.00) = 60.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.00  63.96   0.00  -0.79  -3.01   0.00   0.00   0.00  60.15
-------------------------------------------------------------------------------

Segment Leq : 60.15 dBA

Total Leq All Segments: 60.15 dBA


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

Source height = 1.50 m

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      0   0.00  56.36   0.00  -0.79  -3.01   0.00   0.00   0.00  52.56
-------------------------------------------------------------------------------

Segment Leq : 52.56 dBA

Total Leq All Segments: 52.56 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.15
                           (NIGHT): 52.56
```

```
STAMSON 5.0        NORMAL REPORT        Date: 09-11-2017 08:36:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Morrison (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    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: Morrison (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 63.96 + 0.00) = 63.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  63.96   0.00   0.00   0.00   0.00   0.00   0.00  63.96
-------------------------------------------------------------------------------

Segment Leq : 63.96 dBA

Total Leq All Segments: 63.96 dBA


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

Source height = 1.50 m

ROAD (0.00 + 56.36 + 0.00) = 56.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  56.36   0.00   0.00   0.00   0.00   0.00   0.00  56.36
-------------------------------------------------------------------------------

Segment Leq : 56.36 dBA

Total Leq All Segments: 56.36 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.96
                           (NIGHT): 56.36
```

```
STAMSON 5.0        NORMAL REPORT        Date: 09-11-2017 09:17:45
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Morrison (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    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: Morrison (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  31.00 / 31.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: 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  :    70 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: Baseline (day/night)
------------------------------------------
Angle1   Angle2           :   0.00 deg   26.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 116.00 / 116.00 m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 17.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  88.00 / 88.00  m
Source elevation          :  77.00 m
Receiver elevation        :  74.37 m
Barrier elevation         :  77.15 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Baseline 2 (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  :    70 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 # 3: Baseline 2 (day/night)
--------------------------------------------
Angle1   Angle2           :  26.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 116.00 / 116.00 m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  26.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  94.00 / 94.00  m
Source elevation          :  77.00 m
Receiver elevation        :  74.37 m
Barrier elevation         :  76.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 58.15 + 0.00) = 58.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.48  63.96   0.00  -4.67  -1.14   0.00   0.00   0.00  58.15
-------------------------------------------------------------------------------

Segment Leq : 58.15 dBA


Results segment # 2: 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 !        7.50 !        2.16 !        79.31

ROAD (0.00 + 35.86 + 53.10) = 53.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     17   0.00  75.00   0.00  -8.88 -10.25   0.00   0.00 -20.00  35.86
-------------------------------------------------------------------------------
    17     26   0.00  75.00   0.00  -8.88 -13.01   0.00   0.00   0.00  53.10
-------------------------------------------------------------------------------

Segment Leq : 53.18 dBA
```

Results segment # 3: Baseline 2 (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	7.50	3.14	79.14

ROAD (0.00 + 51.58 + 0.00) = 51.58 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
26	90	0.00	75.00	0.00	-8.88	-4.49	0.00	0.00	-10.04	51.58

Segment Leq : 51.58 dBA

Total Leq All Segments: 60.02 dBA

Results segment # 1: Morrison (night)

Source height = 1.50 m

ROAD (0.00 + 50.56 + 0.00) = 50.56 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.48	56.36	0.00	-4.67	-1.14	0.00	0.00	0.00	50.56

Segment Leq : 50.56 dBA

```
Results segment # 2: 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 !        7.50 !        2.16 !        79.31

ROAD (0.00 + 28.27 + 45.50) = 45.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     17   0.00  67.40   0.00  -8.88 -10.25   0.00   0.00 -20.00  28.27
-------------------------------------------------------------------------------
    17     26   0.00  67.40   0.00  -8.88 -13.01   0.00   0.00   0.00  45.50
-------------------------------------------------------------------------------

Segment Leq : 45.59 dBA


Results segment # 3: Baseline 2 (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 !        7.50 !        3.14 !        79.14

ROAD (0.00 + 43.98 + 0.00) = 43.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    26     90   0.00  67.40   0.00  -8.88  -4.49   0.00   0.00 -10.04  43.98
-------------------------------------------------------------------------------

Segment Leq : 43.98 dBA

Total Leq All Segments: 52.43 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.02
                           (NIGHT): 52.43
```

```
STAMSON 5.0        NORMAL REPORT        Date: 09-11-2017 09:19:18
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Morrison (day/night)
-------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    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: Morrison (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  35.00 / 35.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -66.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  18.00 / 18.00  m
Source elevation          :  74.53 m
Receiver elevation        :  74.37 m
Barrier elevation         :  77.15 m
Reference angle           :   0.00
```

```
Road data, segment # 2: 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  :    70 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: Baseline (day/night)
------------------------------------------
Angle1   Angle2           : -45.00 deg   -32.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 109.00 / 109.00 m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -45.00 deg   Angle2 : -34.00 deg
Barrier height            :   9.00 m
Barrier receiver distance :  30.00 / 30.00  m
Source elevation          :  77.00 m
Receiver elevation        :  74.37 m
Barrier elevation         :  77.19 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Baseline 2 (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  :    70 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 # 3: Baseline 2 (day/night)
--------------------------------------------
Angle1   Angle2           : -32.00 deg   30.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 109.00 / 109.00 m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -32.00 deg   Angle2 : 24.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  81.00 / 81.00  m
Source elevation          :  77.00 m
Receiver elevation        :  74.37 m
Barrier elevation         :  77.15 m
Reference angle           :   0.00
```

```
Road data, segment # 4: Baseline 3 (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  :    70 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 # 4: Baseline 3 (day/night)
--------------------------------------------
Angle1   Angle2           :  30.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 109.00 / 109.00 m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  30.00 deg   Angle2 : 45.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  88.00 / 88.00  m
Source elevation          :  77.00 m
Receiver elevation        :  74.37 m
Barrier elevation         :  76.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Morrison (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 !        7.50 !        1.71 !        78.86

ROAD (0.00 + 36.57 + 53.64) = 53.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -66   0.00  63.96   0.00  -3.68  -8.75   0.00   0.00 -14.96  36.57
-------------------------------------------------------------------------------
   -66      0   0.48  63.96   0.00  -5.45  -4.87   0.00   0.00   0.00  53.64
-------------------------------------------------------------------------------

Segment Leq : 53.72 dBA


Results segment # 2: 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 !        7.50 !        3.75 !        80.94

ROAD (0.00 + 39.71 + 46.84) = 47.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -45    -34   0.00  75.00   0.00  -8.61 -12.14   0.00   0.00 -14.53  39.71
-------------------------------------------------------------------------------
   -34    -32   0.00  75.00   0.00  -8.61 -19.54   0.00   0.00   0.00  46.84
-------------------------------------------------------------------------------

Segment Leq : 47.61 dBA
```

```
Results segment # 3: Baseline 2 (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 !        7.50 !        2.21 !        79.36

ROAD (0.00 + 41.31 + 51.61) = 52.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -32     24   0.00  75.00   0.00  -8.61  -5.07   0.00   0.00 -20.00  41.31
-------------------------------------------------------------------------------
    24     30   0.00  75.00   0.00  -8.61 -14.77   0.00   0.00   0.00  51.61
-------------------------------------------------------------------------------

Segment Leq : 52.00 dBA


Results segment # 4: Baseline 3 (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 !        7.50 !        3.15 !        79.15

ROAD (0.00 + 42.51 + 0.00) = 42.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    30     45   0.00  75.00   0.00  -8.61 -10.79   0.00   0.00 -13.08  42.51
-------------------------------------------------------------------------------

Segment Leq : 42.51 dBA

Total Leq All Segments: 56.72 dBA
```

```
Results segment # 1: Morrison (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 !        7.50 !        1.71 !        78.86

ROAD (0.00 + 28.97 + 46.04) = 46.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -66   0.00  56.36   0.00  -3.68  -8.75   0.00   0.00 -14.96  28.97
-------------------------------------------------------------------------------
   -66      0   0.48  56.36   0.00  -5.45  -4.87   0.00   0.00   0.00  46.04
-------------------------------------------------------------------------------

Segment Leq : 46.13 dBA


Results segment # 2: 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 !        7.50 !        3.75 !        80.94

ROAD (0.00 + 32.11 + 39.24) = 40.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -45    -34   0.00  67.40   0.00  -8.61 -12.14   0.00   0.00 -14.53  32.11
-------------------------------------------------------------------------------
   -34    -32   0.00  67.40   0.00  -8.61 -19.54   0.00   0.00   0.00  39.24
-------------------------------------------------------------------------------

Segment Leq : 40.01 dBA
```

```
Results segment # 3: Baseline 2 (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 !        7.50 !        2.21 !        79.36

ROAD (0.00 + 33.71 + 44.01) = 44.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -32     24   0.00  67.40   0.00  -8.61  -5.07   0.00   0.00 -20.00  33.71
-------------------------------------------------------------------------------
    24     30   0.00  67.40   0.00  -8.61 -14.77   0.00   0.00   0.00  44.01
-------------------------------------------------------------------------------

Segment Leq : 44.40 dBA


Results segment # 4: Baseline 3 (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 !        7.50 !        3.15 !        79.15

ROAD (0.00 + 34.92 + 0.00) = 34.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    30     45   0.00  67.40   0.00  -8.61 -10.79   0.00   0.00 -13.08  34.92
-------------------------------------------------------------------------------

Segment Leq : 34.92 dBA

Total Leq All Segments: 49.12 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.72
                           (NIGHT): 49.12
```

```
STAMSON 5.0        NORMAL REPORT        Date: 09-11-2017 08:42:35
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Morrison (day/night)
-------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    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: Morrison (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  :  52.00 / 52.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  42.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  37.00 / 37.00  m
Source elevation          :  72.02 m
Receiver elevation        :  73.15 m
Barrier elevation         :  71.63 m
Reference angle           :   0.00
```

```
Results segment # 1: Morrison (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 !        7.50 !        3.94 !        75.57

ROAD (52.24 + 45.15 + 0.00) = 53.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     42   0.00  63.96   0.00  -5.40  -6.32   0.00   0.00   0.00  52.24
-------------------------------------------------------------------------------
    42     90   0.00  63.96   0.00  -5.40  -5.74   0.00   0.00  -7.67  45.15
-------------------------------------------------------------------------------

Segment Leq : 53.01 dBA

Total Leq All Segments: 53.01 dBA


Results segment # 1: Morrison (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 !        7.50 !        3.94 !        75.57

ROAD (44.64 + 37.56 + 0.00) = 45.42 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     42   0.00  56.36   0.00  -5.40  -6.32   0.00   0.00   0.00  44.64
-------------------------------------------------------------------------------
    42     90   0.00  56.36   0.00  -5.40  -5.74   0.00   0.00  -7.67  37.56
-------------------------------------------------------------------------------

Segment Leq : 45.42 dBA

Total Leq All Segments: 45.42 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.01
                           (NIGHT): 45.42
```

```
STAMSON 5.0        NORMAL REPORT        Date: 09-11-2017 08:47:52
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Morrison (day/night)
-------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    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: Morrison (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  :  71.00 / 71.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -38.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  54.00 / 54.00  m
Source elevation          :  73.32 m
Receiver elevation        :  74.57 m
Barrier elevation         :  77.15 m
Reference angle           :   0.00
```

```
Road data, segment # 2: 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  :    70 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: Baseline (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   -21.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 109.00 / 109.00 m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -21.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  82.00 / 82.00  m
Source elevation          :  77.00 m
Receiver elevation        :  74.57 m
Barrier elevation         :  77.19 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Baseline 2 (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  :    70 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 # 3: Baseline 2 (day/night)
--------------------------------------------
Angle1   Angle2           : -21.00 deg   -2.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 109.00 / 109.00 m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -21.00 deg   Angle2 : -2.00 deg
Barrier height            :   9.00 m
Barrier receiver distance :  30.00 / 30.00  m
Source elevation          :  77.00 m
Receiver elevation        :  74.57 m
Barrier elevation         :  77.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: Baseline 3 (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  :    70 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 # 4: Baseline 3 (day/night)
--------------------------------------------
Angle1   Angle2           :  -2.00 deg   52.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 109.00 / 109.00 m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -2.00 deg   Angle2 : 52.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  82.00 / 82.00  m
Source elevation          :  77.00 m
Receiver elevation        :  74.57 m
Barrier elevation         :  77.15 m
Reference angle           :   0.00
```

```
Results segment # 1: Morrison (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 !        7.50 !       -0.60 !        76.55

ROAD (0.00 + 34.88 + 50.45) = 50.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -38   0.00  63.96   0.00  -6.75  -5.39   0.00   0.00 -16.93  34.88
-------------------------------------------------------------------------------
   -38      0   0.00  63.96   0.00  -6.75  -6.75   0.00   0.00   0.00  50.45
-------------------------------------------------------------------------------

Segment Leq : 50.57 dBA


Results segment # 2: 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 !        7.50 !        2.19 !        79.38

ROAD (0.00 + 46.73 + 0.00) = 46.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -21   0.00  75.00   0.00  -8.61  -4.16   0.00   0.00 -15.49  46.73
-------------------------------------------------------------------------------

Segment Leq : 46.73 dBA
```

```
Results segment # 3: Baseline 2 (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 !        7.50 !        4.09 !        81.09

ROAD (0.00 + 41.64 + 0.00) = 41.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     -2   0.00  75.00   0.00  -8.61  -9.77   0.00   0.00 -14.98  41.64
-------------------------------------------------------------------------------

Segment Leq : 41.64 dBA


Results segment # 4: Baseline 3 (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 !        7.50 !        2.23 !        79.38

ROAD (0.00 + 41.25 + 0.00) = 41.25 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -2     52   0.00  75.00   0.00  -8.61  -5.23   0.00   0.00 -19.90  41.25
-------------------------------------------------------------------------------

Segment Leq : 41.25 dBA

Total Leq All Segments: 52.77 dBA
```

Results segment # 1: Morrison (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	7.50	-0.60	76.55

ROAD (0.00 + 27.29 + 42.86) = 42.97 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-38	0.00	56.36	0.00	-6.75	-5.39	0.00	0.00	-16.93	27.29
-38	0	0.00	56.36	0.00	-6.75	-6.75	0.00	0.00	0.00	42.86

Segment Leq : 42.97 dBA

Results segment # 2: Baseline (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	7.50	2.19	79.38

ROAD (0.00 + 39.14 + 0.00) = 39.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-21	0.00	67.40	0.00	-8.61	-4.16	0.00	0.00	-15.49	39.14

Segment Leq : 39.14 dBA

```
Results segment # 3: Baseline 2 (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 !        7.50 !        4.09 !        81.09

ROAD (0.00 + 34.04 + 0.00) = 34.04 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -21     -2   0.00  67.40   0.00  -8.61  -9.77   0.00   0.00 -14.98  34.04
-------------------------------------------------------------------------------

Segment Leq : 34.04 dBA


Results segment # 4: Baseline 3 (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 !        7.50 !        2.23 !        79.38

ROAD (0.00 + 33.65 + 0.00) = 33.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -2     52   0.00  67.40   0.00  -8.61  -5.23   0.00   0.00 -19.90  33.65
-------------------------------------------------------------------------------

Segment Leq : 33.65 dBA

Total Leq All Segments: 45.17 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 52.77
                           (NIGHT): 45.17
```

```
STAMSON 5.0        NORMAL REPORT        Date: 09-11-2017 08:51:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r11.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  :    70 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: Baseline (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   15.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  79.00 / 79.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -16.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  52.00 / 52.00  m
Source elevation          :  77.00 m
Receiver elevation        :  76.44 m
Barrier elevation         :  77.19 m
Reference angle           :   0.00
```

```
Road data, segment # 2: 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  :    70 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: Baseline (day/night)
------------------------------------------
Angle1   Angle2           :  15.00 deg   81.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  79.00 / 79.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  15.00 deg   Angle2 : 81.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  52.00 / 52.00  m
Source elevation          :  77.00 m
Receiver elevation        :  76.44 m
Barrier elevation         :  77.15 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Morrison (day/night)
-------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Morrison (day/night)
------------------------------------------
Angle1   Angle2           : -41.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  86.00 / 86.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -41.00 deg   Angle2 : -10.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  70.00 / 70.00  m
Source elevation          :  77.00 m
Receiver elevation        :  76.44 m
Barrier elevation         :  77.15 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 !        7.50 !        3.17 !        80.36

ROAD (0.00 + 48.47 + 60.14) = 60.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -16   0.00  75.00   0.00  -7.22  -3.86   0.00   0.00 -15.45  48.47
-------------------------------------------------------------------------------
   -16     15   0.00  75.00   0.00  -7.22  -7.64   0.00   0.00   0.00  60.14
-------------------------------------------------------------------------------

Segment Leq : 60.43 dBA


Results segment # 2: 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 !        7.50 !        3.21 !        80.36

ROAD (0.00 + 45.58 + 0.00) = 45.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    15     81   0.00  75.00   0.00  -7.22  -4.36   0.00   0.00 -17.84  45.58
-------------------------------------------------------------------------------

Segment Leq : 45.58 dBA
```

```
Results segment # 3: Morrison (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 !        7.50 !        2.36 !        79.51

ROAD (0.00 + 28.73 + 43.82) = 43.95 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -41    -10   0.00  63.96   0.00  -7.58  -7.64   0.00   0.00 -20.00  28.73
-------------------------------------------------------------------------------
   -10      0   0.00  63.96   0.00  -7.58 -12.55   0.00   0.00   0.00  43.82
-------------------------------------------------------------------------------

Segment Leq : 43.95 dBA

Total Leq All Segments: 60.66 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 !        7.50 !        3.17 !        80.36

ROAD (0.00 + 40.87 + 52.54) = 52.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -16   0.00  67.40   0.00  -7.22  -3.86   0.00   0.00 -15.45  40.87
-------------------------------------------------------------------------------
   -16     15   0.00  67.40   0.00  -7.22  -7.64   0.00   0.00   0.00  52.54
-------------------------------------------------------------------------------

Segment Leq : 52.83 dBA
```

```
Results segment # 2: 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 !        7.50 !        3.21 !        80.36

ROAD (0.00 + 37.99 + 0.00) = 37.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    15     81   0.00  67.40   0.00  -7.22  -4.36   0.00   0.00 -17.84  37.99
-------------------------------------------------------------------------------

Segment Leq : 37.99 dBA


Results segment # 3: Morrison (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 !        7.50 !        2.36 !        79.51

ROAD (0.00 + 21.14 + 36.23) = 36.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -41    -10   0.00  56.36   0.00  -7.58  -7.64   0.00   0.00 -20.00  21.14
-------------------------------------------------------------------------------
   -10      0   0.00  56.36   0.00  -7.58 -12.55   0.00   0.00   0.00  36.23
-------------------------------------------------------------------------------

Segment Leq : 36.36 dBA

Total Leq All Segments: 53.06 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.66
                           (NIGHT): 53.06
```

```
STAMSON 5.0        NORMAL REPORT        Date: 09-11-2017 08:55:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r12.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  :    70 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: Baseline (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   16.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  76.00 / 76.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -17.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  49.00 / 49.00  m
Source elevation          :  77.00 m
Receiver elevation        :  76.29 m
Barrier elevation         :  77.19 m
Reference angle           :   0.00
```

```
Road data, segment # 2: 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  :    70 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: Baseline (day/night)
------------------------------------------
Angle1   Angle2           :  16.00 deg   82.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  76.00 / 76.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  16.00 deg   Angle2 : 82.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  49.00 / 49.00  m
Source elevation          :  77.00 m
Receiver elevation        :  76.29 m
Barrier elevation         :  77.15 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Morrison (day/night)
-------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Morrison (day/night)
------------------------------------------
Angle1   Angle2           : -39.00 deg   3.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  86.00 / 86.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -39.00 deg   Angle2 : -7.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  70.00 / 70.00  m
Source elevation          :  75.77 m
Receiver elevation        :  76.29 m
Barrier elevation         :  77.15 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 !        1.05 !        78.24

ROAD (0.00 + 47.39 + 60.58) = 60.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -17   0.00  75.00   0.00  -7.05  -3.92   0.00   0.00 -16.63  47.39
-------------------------------------------------------------------------------
   -17     16   0.00  75.00   0.00  -7.05  -7.37   0.00   0.00   0.00  60.58
-------------------------------------------------------------------------------

Segment Leq : 60.78 dBA


Results segment # 2: 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 !        1.09 !        78.24

ROAD (0.00 + 44.63 + 0.00) = 44.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    16     82   0.00  75.00   0.00  -7.05  -4.36   0.00   0.00 -18.96  44.63
-------------------------------------------------------------------------------

Segment Leq : 44.63 dBA
```

```
Results segment # 3: Morrison (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 !        0.21 !        77.36

ROAD (0.00 + 28.87 + 43.82) = 43.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -39     -7   0.00  63.96   0.00  -7.58  -7.50   0.00   0.00 -20.00  28.87
-------------------------------------------------------------------------------
    -7      3   0.00  63.96   0.00  -7.58 -12.55   0.00   0.00   0.00  43.82
-------------------------------------------------------------------------------

Segment Leq : 43.96 dBA

Total Leq All Segments: 60.97 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 !        1.05 !        78.24

ROAD (0.00 + 39.80 + 52.98) = 53.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -17   0.00  67.40   0.00  -7.05  -3.92   0.00   0.00 -16.63  39.80
-------------------------------------------------------------------------------
   -17     16   0.00  67.40   0.00  -7.05  -7.37   0.00   0.00   0.00  52.98
-------------------------------------------------------------------------------

Segment Leq : 53.19 dBA
```

```
Results segment # 2: 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 !        1.09 !        78.24

ROAD (0.00 + 37.04 + 0.00) = 37.04 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    16     82   0.00  67.40   0.00  -7.05  -4.36   0.00   0.00 -18.96  37.04
-------------------------------------------------------------------------------

Segment Leq : 37.04 dBA


Results segment # 3: Morrison (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 !        0.21 !        77.36

ROAD (0.00 + 21.28 + 36.23) = 36.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -39     -7   0.00  56.36   0.00  -7.58  -7.50   0.00   0.00 -20.00  21.28
-------------------------------------------------------------------------------
    -7      3   0.00  56.36   0.00  -7.58 -12.55   0.00   0.00   0.00  36.23
-------------------------------------------------------------------------------

Segment Leq : 36.36 dBA

Total Leq All Segments: 53.38 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.97
                           (NIGHT): 53.38
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-11-2017 11:46:28
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r12b.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  :    70 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: Baseline (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   -16.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  76.00 / 76.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -16.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  49.00 / 49.00  m
Source elevation          :  77.00 m
Receiver elevation        :  76.29 m
Barrier elevation         :  77.19 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Baseline 2 (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  :    70 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: Baseline 2 (day/night)
--------------------------------------------
Angle1   Angle2           : -16.00 deg   16.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  76.00 / 76.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -16.00 deg   Angle2 : 16.00 deg
Barrier height            :   2.08 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  77.00 m
Receiver elevation        :  76.29 m
Barrier elevation         :  77.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Baseline 3 (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  :    70 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 # 3: Baseline 3 (day/night)
--------------------------------------------
Angle1   Angle2           :  16.00 deg   82.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  76.00 / 76.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  16.00 deg   Angle2 : 82.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  49.00 / 49.00  m
Source elevation          :  77.00 m
Receiver elevation        :  76.29 m
Barrier elevation         :  77.15 m
Reference angle           :   0.00
```

```
Road data, segment # 4: Morrison (day/night)
-------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Morrison (day/night)
------------------------------------------
Angle1   Angle2           : -39.00 deg   -7.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  86.00 / 86.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -39.00 deg   Angle2 : -7.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  70.00 / 70.00  m
Source elevation          :  75.57 m
Receiver elevation        :  76.29 m
Barrier elevation         :  77.15 m
Reference angle           :   0.00
```

```
Road data, segment # 5: Morrison 2 (day/night)
-----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 5: Morrison 2 (day/night)
--------------------------------------------
Angle1   Angle2           :  -7.00 deg   3.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  86.00 / 86.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -7.00 deg   Angle2 : 3.00 deg
Barrier height            :   2.08 m
Barrier receiver distance :  30.00 / 30.00  m
Source elevation          :  75.57 m
Receiver elevation        :  76.29 m
Barrier elevation         :  77.00 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 !        1.05 !        78.24

ROAD (0.00 + 47.42 + 0.00) = 47.42 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -16   0.00  75.00   0.00  -7.05  -3.86   0.00   0.00 -16.67  47.42
-------------------------------------------------------------------------------

Segment Leq : 47.42 dBA


Results segment # 2: Baseline 2 (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 !        0.82 !        77.82

ROAD (0.00 + 48.43 + 0.00) = 48.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -16     16   0.00  75.00   0.00  -7.05  -7.50   0.00   0.00 -12.02  48.43
-------------------------------------------------------------------------------

Segment Leq : 48.43 dBA
```

```
Results segment # 3: Baseline 3 (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 !        1.09 !        78.24

ROAD (0.00 + 44.63 + 0.00) = 44.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    16     82   0.00  75.00   0.00  -7.05  -4.36   0.00   0.00 -18.96  44.63
-------------------------------------------------------------------------------

Segment Leq : 44.63 dBA


Results segment # 4: Morrison (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 !        0.05 !        77.20

ROAD (0.00 + 28.87 + 0.00) = 28.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -39     -7   0.00  63.96   0.00  -7.58  -7.50   0.00   0.00 -20.00  28.87
-------------------------------------------------------------------------------

Segment Leq : 28.87 dBA
```

```
Results segment # 5: Morrison 2 (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 !        0.54 !        77.54

ROAD (0.00 + 36.24 + 0.00) = 36.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -7      3   0.00  63.96   0.00  -7.58 -12.55   0.00   0.00  -7.58  36.24
-------------------------------------------------------------------------------

Segment Leq : 36.24 dBA

Total Leq All Segments: 52.01 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 !        1.05 !        78.24

ROAD (0.00 + 39.83 + 0.00) = 39.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -16   0.00  67.40   0.00  -7.05  -3.86   0.00   0.00 -16.67  39.83
-------------------------------------------------------------------------------

Segment Leq : 39.83 dBA
```

```
Results segment # 2: Baseline 2 (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 !        0.82 !        77.82

ROAD (0.00 + 40.83 + 0.00) = 40.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -16     16   0.00  67.40   0.00  -7.05  -7.50   0.00   0.00 -12.02  40.83
-------------------------------------------------------------------------------

Segment Leq : 40.83 dBA


Results segment # 3: Baseline 3 (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 !        1.09 !        78.24

ROAD (0.00 + 37.04 + 0.00) = 37.04 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    16     82   0.00  67.40   0.00  -7.05  -4.36   0.00   0.00 -18.96  37.04
-------------------------------------------------------------------------------

Segment Leq : 37.04 dBA
```

```
Results segment # 4: Morrison (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 !        0.05 !        77.20

ROAD (0.00 + 21.28 + 0.00) = 21.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -39     -7   0.00  56.36   0.00  -7.58  -7.50   0.00   0.00 -20.00  21.28
-------------------------------------------------------------------------------

Segment Leq : 21.28 dBA

Results segment # 5: Morrison 2 (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 !        0.54 !        77.54

ROAD (0.00 + 28.64 + 0.00) = 28.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -7      3   0.00  56.36   0.00  -7.58 -12.55   0.00   0.00  -7.58  28.64
-------------------------------------------------------------------------------

Segment Leq : 28.64 dBA

Total Leq All Segments: 44.42 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 52.01
                           (NIGHT): 44.42
```

```
STAMSON 5.0        NORMAL REPORT        Date: 09-11-2017 09:04:38
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r13.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  :    70 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: Baseline (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  81.00 / 81.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -15.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  51.00 / 51.00  m
Source elevation          :  77.00 m
Receiver elevation        :  76.44 m
Barrier elevation         :  77.42 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 !        7.50 !        3.09 !        80.51

ROAD (0.00 + 52.91 + 53.34) = 56.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -15   0.06  75.00   0.00  -7.76  -4.01   0.00   0.00 -10.31  52.91
-------------------------------------------------------------------------------
   -15      0   0.48  75.00   0.00 -10.84 -10.82   0.00   0.00   0.00  53.34
-------------------------------------------------------------------------------

Segment Leq : 56.14 dBA

Total Leq All Segments: 56.14 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 !        7.50 !        3.09 !        80.51

ROAD (0.00 + 45.31 + 45.74) = 48.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -15   0.06  67.40   0.00  -7.76  -4.01   0.00   0.00 -10.31  45.31
-------------------------------------------------------------------------------
   -15      0   0.48  67.40   0.00 -10.84 -10.82   0.00   0.00   0.00  45.74
-------------------------------------------------------------------------------

Segment Leq : 48.54 dBA

Total Leq All Segments: 48.54 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.14
                           (NIGHT): 48.54
```

```
STAMSON 5.0        NORMAL REPORT        Date: 09-11-2017 09:05:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r14.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  :    70 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: Baseline (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   4.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  81.00 / 81.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -12.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  51.00 / 51.00  m
Source elevation          :  77.00 m
Receiver elevation        :  76.50 m
Barrier elevation         :  77.42 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 !        0.89 !        78.31

ROAD (0.00 + 48.44 + 52.31) = 53.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -12   0.24  75.00   0.00  -9.08  -4.37   0.00   0.00 -13.10  48.44
-------------------------------------------------------------------------------
   -12      4   0.66  75.00   0.00 -12.16 -10.53   0.00   0.00   0.00  52.31
-------------------------------------------------------------------------------

Segment Leq : 53.80 dBA

Total Leq All Segments: 53.80 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 !        0.89 !        78.31

ROAD (0.00 + 40.84 + 44.71) = 46.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -12   0.24  67.40   0.00  -9.08  -4.37   0.00   0.00 -13.10  40.84
-------------------------------------------------------------------------------
   -12      4   0.66  67.40   0.00 -12.16 -10.53   0.00   0.00   0.00  44.71
-------------------------------------------------------------------------------

Segment Leq : 46.21 dBA

Total Leq All Segments: 46.21 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.80
                           (NIGHT): 46.21
```

```
STAMSON 5.0        NORMAL REPORT        Date: 09-11-2017 10:32:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r15.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Morrison (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    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: Morrison (day/night)
-------------------------------------------
Angle1   Angle2           : -76.00 deg   49.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  19.00 / 19.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: 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  :    70 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: Baseline (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   14.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  76.00 / 76.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 14.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  48.00 / 48.00  m
Source elevation          :  77.00 m
Receiver elevation        :  76.20 m
Barrier elevation         :  77.15 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Baseline 2 (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  :    70 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 # 3: Baseline 2 (day/night)
--------------------------------------------
Angle1   Angle2           :  14.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  76.00 / 76.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  32.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  54.00 / 54.00  m
Source elevation          :  77.00 m
Receiver elevation        :  76.20 m
Barrier elevation         :  76.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 61.35 + 0.00) = 61.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -76     49   0.00  63.96   0.00  -1.03  -1.58   0.00   0.00   0.00  61.35
-------------------------------------------------------------------------------

Segment Leq : 61.35 dBA


Results segment # 2: 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 !        1.05 !        78.20

ROAD (0.00 + 48.20 + 0.00) = 48.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     14   0.00  75.00   0.00  -7.05  -2.38   0.00   0.00 -17.37  48.20
-------------------------------------------------------------------------------

Segment Leq : 48.20 dBA
```

```
Results segment # 3: Baseline 2 (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 !        2.27 !        78.27

ROAD (57.95 + 51.71 + 0.00) = 58.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    14     32   0.00  75.00   0.00  -7.05 -10.00   0.00   0.00   0.00  57.95
-------------------------------------------------------------------------------
    32     90   0.00  75.00   0.00  -7.05  -4.92   0.00   0.00 -11.31  51.71
-------------------------------------------------------------------------------

Segment Leq : 58.88 dBA

Total Leq All Segments: 63.43 dBA


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

Source height = 1.50 m

ROAD (0.00 + 53.75 + 0.00) = 53.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -76     49   0.00  56.36   0.00  -1.03  -1.58   0.00   0.00   0.00  53.75
-------------------------------------------------------------------------------

Segment Leq : 53.75 dBA
```

```
Results segment # 2: 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 !        1.05 !        78.20

ROAD (0.00 + 40.60 + 0.00) = 40.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     14   0.00  67.40   0.00  -7.05  -2.38   0.00   0.00 -17.37  40.60
-------------------------------------------------------------------------------

Segment Leq : 40.60 dBA


Results segment # 3: Baseline 2 (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 !        2.27 !        78.27

ROAD (50.35 + 44.12 + 0.00) = 51.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    14     32   0.00  67.40   0.00  -7.05 -10.00   0.00   0.00   0.00  50.35
-------------------------------------------------------------------------------
    32     90   0.00  67.40   0.00  -7.05  -4.92   0.00   0.00 -11.31  44.12
-------------------------------------------------------------------------------

Segment Leq : 51.28 dBA

Total Leq All Segments: 55.83 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.43
                           (NIGHT): 55.83
```

```
STAMSON 5.0        NORMAL REPORT        Date: 09-11-2017 10:32:40
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r15b.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Morrison (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    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: Morrison (day/night)
------------------------------------------
Angle1   Angle2           : -76.00 deg   49.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  19.00 / 19.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -76.00 deg   Angle2 : 49.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  75.57 m
Receiver elevation        :  76.20 m
Barrier elevation         :  76.58 m
Reference angle           :   0.00
```

```
Road data, segment # 2: 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  :    70 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: Baseline (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   14.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  76.00 / 76.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 14.00 deg
Barrier height            :  12.00 m
Barrier receiver distance :  48.00 / 48.00  m
Source elevation          :  77.00 m
Receiver elevation        :  76.20 m
Barrier elevation         :  77.15 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Baseline 2 (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  :    70 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 # 3: Baseline 2 (day/night)
--------------------------------------------
Angle1   Angle2           :  14.00 deg   32.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  76.00 / 76.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  14.00 deg   Angle2 : 32.00 deg
Barrier height            :   2.50 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  77.00 m
Receiver elevation        :  76.20 m
Barrier elevation         :  76.58 m
Reference angle           :   0.00
```

```
Road data, segment # 4: Baseline 3 (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  :    70 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 # 4: Baseline 3 (day/night)
--------------------------------------------
Angle1   Angle2           :  32.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  76.00 / 76.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  32.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.00 m
Barrier receiver distance :  54.00 / 54.00  m
Source elevation          :  77.00 m
Receiver elevation        :  76.20 m
Barrier elevation         :  76.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Morrison (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 !        1.02 !        77.60

ROAD (0.00 + 48.74 + 0.00) = 48.74 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -76     49   0.00  63.96   0.00  -1.03  -1.58   0.00   0.00 -12.60  48.74
-------------------------------------------------------------------------------

Segment Leq : 48.74 dBA


Results segment # 2: 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 !        1.05 !        78.20

ROAD (0.00 + 48.20 + 0.00) = 48.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     14   0.00  75.00   0.00  -7.05  -2.38   0.00   0.00 -17.37  48.20
-------------------------------------------------------------------------------

Segment Leq : 48.20 dBA
```

```
Results segment # 3: Baseline 2 (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 !        1.15 !        77.73

ROAD (0.00 + 45.73 + 0.00) = 45.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    14     32   0.00  75.00   0.00  -7.05 -10.00   0.00   0.00 -12.22  45.73
-------------------------------------------------------------------------------

Segment Leq : 45.73 dBA


Results segment # 4: Baseline 3 (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 !        2.27 !        78.27

ROAD (0.00 + 51.71 + 0.00) = 51.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    32     90   0.00  75.00   0.00  -7.05  -4.92   0.00   0.00 -11.31  51.71
-------------------------------------------------------------------------------

Segment Leq : 51.71 dBA

Total Leq All Segments: 55.14 dBA
```

```
Results segment # 1: Morrison (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 !        1.02 !        77.60

ROAD (0.00 + 41.15 + 0.00) = 41.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -76     49   0.00  56.36   0.00  -1.03  -1.58   0.00   0.00 -12.60  41.15
-------------------------------------------------------------------------------

Segment Leq : 41.15 dBA


Results segment # 2: 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 !        1.05 !        78.20

ROAD (0.00 + 40.60 + 0.00) = 40.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     14   0.00  67.40   0.00  -7.05  -2.38   0.00   0.00 -17.37  40.60
-------------------------------------------------------------------------------

Segment Leq : 40.60 dBA
```

```
Results segment # 3: Baseline 2 (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 !        1.15 !        77.73

ROAD (0.00 + 38.13 + 0.00) = 38.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    14     32   0.00  67.40   0.00  -7.05 -10.00   0.00   0.00 -12.22  38.13
-------------------------------------------------------------------------------

Segment Leq : 38.13 dBA


Results segment # 4: Baseline 3 (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 !        2.27 !        78.27

ROAD (0.00 + 44.12 + 0.00) = 44.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    32     90   0.00  67.40   0.00  -7.05  -4.92   0.00   0.00 -11.31  44.12
-------------------------------------------------------------------------------

Segment Leq : 44.12 dBA

Total Leq All Segments: 47.55 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.14
                           (NIGHT): 47.55
```