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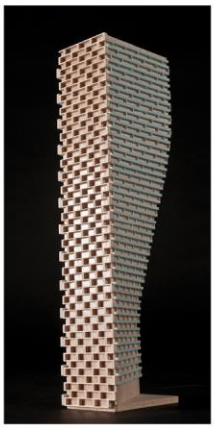
TRANSPORTATION NOISE ASSESSMENT

320 McRae Avenue & 1976 Scott Street
Ottawa, Ontario

Report: 20-012 – Traffic Noise



February 4, 2020

PREPARED FOR
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EXECUTIVE SUMMARY

This document describes a transportation noise assessment performed for a proposed mixed-use development located at 320 McRae Avenue and 1976 Scott Street in Ottawa, Ontario. The development comprises two buildings; for the purposes of clarity within this report, we have assigned each building a letter. Building A is directly adjacent to Scott Street, with Building B to the south. Upon completion, Building A will rise 26-storeys (79.2 meters), while Building B, four storeys in height, will rise 13.4 meters above local grade. Figure 1 illustrates a site plan with surrounding context. The major source of roadway noise is Scott Street, with some influence from the Transitway (future Confederation Line LRT).

The assessment is based on (i) theoretical noise prediction methods that conform to the Ministry of the Environment, Conservation and Parks (MECP) and City of Ottawa requirements; (ii) noise level criteria as specified by the City of Ottawa's Environmental Noise Control Guidelines (ENCG); (iii) future vehicular traffic volumes based on the City of Ottawa's Official Plan roadway classifications; and (iv) architectural drawings received from Neuf Architect(e)s in January 2020.

The results of the current study indicate that noise levels due to roadway traffic over the site will range between 46 and 69 dBA during the daytime period (07:00-23:00) and between 48 and 61 dBA during the nighttime period (23:00-07:00). The highest traffic noise levels will occur along the north side of the development, nearest to Scott Street. Minimum building construction in all areas is required to satisfy the Ontario Building Code (2012). In addition, Sound Transmission Class (STC) ratings are required for building components where noise levels exceed 65 dBA.

In addition to upgraded windows, the installation of central air conditioning (or a similar mechanical system) will be required for all units in Building A. A Warning Clause will be required in all Agreements of Lease, Purchase and Sale for these specified units, as outlined in Section 6 of this report.

The installation of forced air heating with provisions for central air conditioning (or a similar mechanical system) will be required for all units in Building B. A Warning Clause will be required in all Agreements of Lease, Purchase and Sale for these specified units, as outlined in Section 6 of this report.

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1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by GWL Realty Advisors Inc. to undertake a transportation noise assessment of a proposed mixed-use development located at 320 McRae Avenue and 1976 Scott Street in Ottawa, Ontario. This report summarizes the methodology, results, and recommendations related to the assessment of exterior and interior noise levels generated by local roadway traffic. Gradient Wind has performed prior work for another proponent at this site, which can be referenced in our Transportation Noise Assessment report, dated September 21, 2016 (GWE15-100 – Noise R1).

Our work is based on theoretical noise calculation methods conforming to the City of Ottawa[1] and Ministry of the Environment, Conservation and Parks (MECP)[2] guidelines. Noise calculations were based on architectural drawings received from Neuf Architect(e)s in January 2020, with future traffic volumes corresponding to the City of Ottawa's Official Plan (OP) roadway classifications.

2. TERMS OF REFERENCE

The focus of this transportation noise assessment is a proposed development featuring a 26-storey building (Building A) fronting Scott Street, and a four-storey building (Building B) along McRae Avenue. The two buildings are connected by a 4-storey link, which is recessed from McRae Avenue. The major source of roadway noise is Scott Street, with some influence from the Transitway (future Confederation Line LRT). The site is surrounded on all sides with commercial and residential land. Figure 1 illustrates a complete site plan with surrounding context.

Building A features commercial retail space at grade along Scott Street, a lobby and leasing office at the southeast along McRae Avenue, and townhouses at the southwest, along Tweedsmuir Avenue. Levels 2-6 and 8-26 comprise residential units, while Level 7 features amenity space. Two levels of parking are provided below grade. At Level 7 the building sets back on all elevations, revealing a common amenity

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

terrace. Building B is four storeys tall and comprises a mix of townhouses and apartment units. A common amenity area is provided on the roof, at Level 5. A public park is proposed to the south of Building B.

3. OBJECTIVES

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

4. METHODOLOGY

4.1 Background

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

4.2 Transportation Noise

4.2.1 Criteria for Transportation Noise

For surface roadway traffic noise, the equivalent sound energy level, L_{eq}, provides a measure of the time varying noise levels, which is well correlated with the annoyance of sound. It is defined as the continuous sound level, which has the same energy as a time varying noise level over a period of time. For roadways, the L_{eq} is commonly calculated on the basis of a 16-hour (L_{eq16}) daytime (07:00-23:00) / 8-hour (L_{eq8}) nighttime (23:00-07:00) split to assess its impact on residential buildings. The City of Ottawa's Environmental Noise Control Guidelines (ENCG) specifies that the recommended indoor noise limit range

(that is relevant to this study) is 45 and 40 dBA for living rooms and sleeping quarters respectively for roadway as listed in Table 1.

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

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

Predicted noise levels at the plane of window (POW) dictate the action required to achieve the recommended sound levels. An open window is considered to provide a 10 dBA reduction in noise, while a standard closed window is capable of providing a minimum 20 dBA noise reduction[4]. A closed window due to a ventilation requirement will bring noise levels down to achieve an acceptable indoor environment[5]. Therefore, where noise levels exceed 55 dBA daytime and 50 dBA nighttime, the ventilation for the building should consider the need for having windows and doors closed, which triggers the need for forced air heating with provision for central air conditioning. Where noise levels exceed 65 dBA daytime and 60 dBA nighttime, air conditioning will be required and building components will require higher levels of sound attenuation[6].

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

[3] Adapted from ENCG 2016 – Tables 2.2b and 2.2c
[4] Burberry, P.B. (2014). Mitchell's Environment and Services. Routledge, Page 125
[5] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.8
[6] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.1.3

4.2.2 Theoretical Transportation Noise Predictions

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

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

- Truck traffic on all roadways was taken to comprise 5% heavy trucks and 7% medium trucks, as per ENCG requirements for noise level predictions.
- The day/night split for all streets was taken to be 92%/8%, respectively.
- Ground surfaces were taken to be reflective due to the presence of hard (paved) ground.
- Topography was assumed to be a flat/gentle slope surrounding the study building. The proposed Confederation Line LRT is in a sunken trench, approximately 6 m below site grade.
- Noise receptors were strategically placed at 11 locations around the study area (see Figure 2).
- Confederation Line LRT is modeled as 4-car SRT in STAMSON.
- Receptor distances and exposure angles are illustrated in Figures 4-7.

4.2.3 Roadway & Railway 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.

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

TABLE 2: ROADWAY TRAFFIC DATA

Segment	Roadway Traffic Data	Speed Limit (km/h)	Traffic Volumes
Scott Street	2-Lane Urban Arterial (2-UAU)	50	**15,000**
Future Confederation Line LRT	Light Rail Transit (LRT)	70	**540/60***

* - Daytime/nighttime volumes based on the City of Ottawa's Environmental Assessment for the LRT Project

4.3 Indoor Noise Calculations

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

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

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

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

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

5. RESULTS AND DISCUSSION

5.1 Roadway Traffic Noise Levels

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

TABLE 3: EXTERIOR NOISE LEVELS DUE TO ROAD TRAFFIC

Receptor Number	Receptor Height Above Grade (m)	Receptor Location	STAMSON 5.04 Noise Level (dBA)	
			Day	Night
1	1.5	POW - Building A - Level 1 - North Façade	69	61
2	1.5	POW - Building A - Level 1 - East Façade	64	56
3	1.5	POW - Building A - Level 1 - West Façade	64	57
4	27.3	POW - Building A - Level 9 - North Façade	69	61
5	27.3	POW - Building A - Level 9 - East Façade	64	56
6	51.3	POW - Building A - Level 17 - North Façade	69	61
7	51.3	POW - Building A - Level 17 - East Façade	64	57
8	11.5	POW - Building B - Level 4 - North Façade	59	51
9	11.5	POW - Building B - Level 4 - East Façade	55	48
10	21.1	OLA - Building A – Podium Terrace	52	N/A
11	14.9	OLA - Building B – Roof Terrace	46	N/A

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

The results of the current analysis indicate that noise levels will range between 46 and 69 dBA during the daytime period (07:00-23:00) and between 48 and 61 dBA during the nighttime period (23:00-07:00). The highest noise level (i.e. 69 dBA) occurs on the north side of Building A, which is closest to Scott Street. As noise levels at the outdoor living areas (Receptor 10 and 11) are below 55 dBA, no mitigation is required.

5.2 Noise Control Measures

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

- **Bedroom Windows**

(i) Bedroom windows facing north on Building A will require a minimum STC of 32

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

- **Living Room Windows**

(i) Living room windows facing north on Building A will require a minimum STC of 27

(ii) All other living room windows are to satisfy Ontario Building Code (OBC 2012) requirements

- **Commercial Windows**

(i) Commercial windows facing north on Building A will require a minimum STC of 27

(ii) All other commercial windows are to satisfy Ontario Building Code (OBC 2012) requirements

- **Exterior Walls**

(i) Exterior wall components on north facades of Building A require a minimum STC of 45 which will be achieved with brick cladding or an acoustical equivalent according to NRC test data[10]

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

A review of window supplier literature indicates that the specified STC ratings can be achieved by a variety of window systems having a combination of glass thickness and inter-pane spacing. We have not specified any particular window configurations, as there are several manufacturers and various combinations of window components that will offer the necessary sound attenuation rating. However, it is the responsibility of the manufacturer to ensure that the specified window achieves the required STC. This can only be assured by using window configurations that have been certified by laboratory testing. The requirements for STC ratings assume that the remaining components of the building are constructed and installed according to the minimum standards of the Ontario Building Code. The specified STC requirements also apply to swinging and/or sliding patio doors. All specified building components will require review by a qualified acoustical engineer for conformance to the recommendations of this report prior to building permit application.

Results of the calculations also indicate that all units in Building A will require individual air conditioning units, or similar mechanical ventilation, which will allow occupants to keep windows closed and maintain a comfortable living environment. Units in Building B will require forced air heating with provisions for central air conditioning. In addition to ventilation requirements, Warning Clauses will also be required on all Lease, Purchase and Sale Agreements, as summarized in Section 6.

5.3 Stationary Noise

Stationary noise impacts from the surrounding properties has been assessed in prior work at this site, referenced in Section 1, and are expected to be in compliance with the ENCG stationary noise criteria. The new development will also have its own HVAC equipment, which has the potential to impact the surrounding noise sensitive areas. A detailed stationary noise study will be required as part of detailed design once the mechanical equipment has been selected and located. In general terms, these sources can be readily mitigated to comply with ENCG requirements by judicious selection of equipment, incorporation of silencers or noise screens around equipment.

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current study indicate that noise levels due to roadway traffic over the site will range between 52 and 69 dBA during the daytime period (07:00-23:00) and between 46 and 61 dBA during the nighttime period (23:00-07:00). The highest traffic noise levels will occur along the north side of the

development, nearest to Scott Street. Minimum building construction in all areas is required to satisfy the Ontario Building Code (2012). In addition, Sound Transmission Class (STC) ratings are required for building components where noise levels exceed 65 dBA.

In addition to upgraded windows, the installation of central air conditioning (or a similar mechanical system) will be required for all units in Building A. The following Warning Clause[11] will be required in all Agreements of Lease, Purchase and Sale for these specified Units:

> *"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 may exceed the sound level limits of the City and Ministry of the Environment, Conservation and Parks.*
>
> *To help address the need for sound attenuation, this unit includes:*
>
> - *Multi-pane glazing elements with improved sound attenuation*
> - *North façade bedroom windows: STC 32*
> - *North façade living room/commercial windows: STC 27*
> - *Curtin wall with improved sound attenuation*
>
> *This unit has also been designed with central air condition (or similar mechanical system). 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, Conservation and Parks. To ensure that provincial sound level limits are not exceeded, it is important to maintain these sound attenuation features."*

[11] City of Ottawa Environmental Noise Control Guidelines, January 2016

The installation of forced air heating with provisions for central air conditioning (or a similar mechanical system) will be required for all units in Building B. The following Warning Clause[12] will be required in all Agreements of Lease, Purchase and Sale for these specified Units:

> *"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 may exceed the sound level limits of the City and Ministry of the Environment, Conservation and Parks .*
>
> *This unit has been designed with forced air heating and provision for central air conditioning (or similar mechanical systems). 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, Conservation and Parks. To ensure that provincial sound level limits are not exceeded, it is important to maintain these sound attenuation features."*

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

Sincerely,

Gradient Wind Engineering Inc.

LICENSED PROFESSIONAL ENGINEER
J. B. FOSTER
100[illegible]055
Feb 4, 2020
PROVINCE OF ONTARIO

Michael Lafortune, C.E.T.
Environmental Scientist

Joshua Foster, P.Eng.
Principal

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[12] City of Ottawa Environmental Noise Control Guidelines, January 2016

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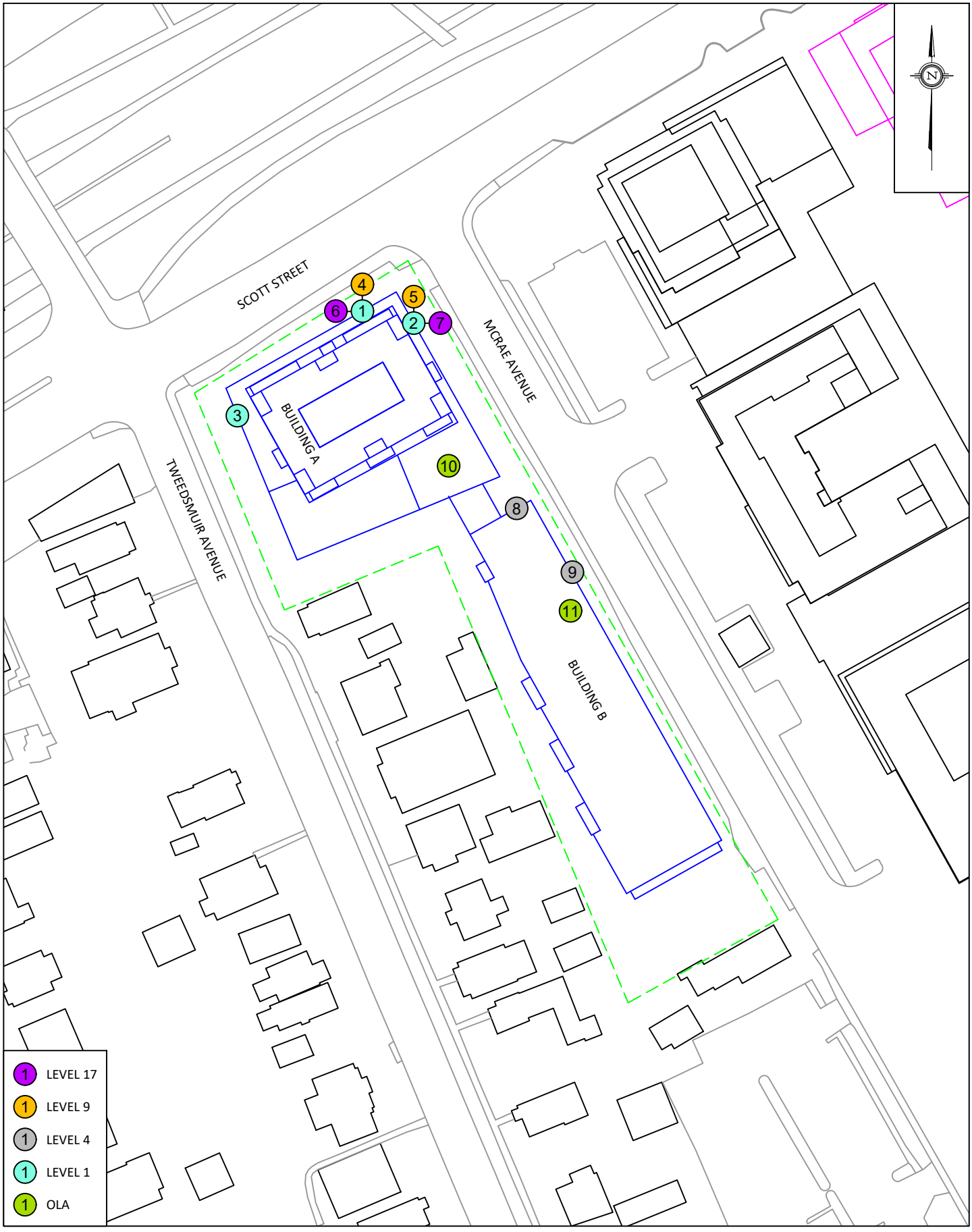
PROJECT	320 MCRAE AVENUE & 1976 SCOTT STREET, OTTAWA TRANSPORTATION NOISE ASSESSMENT		DESCRIPTION
SCALE	1:2000 (APPROX.)	DRAWING NO.	GWE20-012-1
DATE	JANUARY 17, 2020	DRAWN BY	M.L.

FIGURE 1:
SITE PLAN & SURROUNDING CONTEXT



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SCALE	1:1000 (APPROX.)	DRAWING NO.	GWE20-012-2
DATE	JANUARY 17, 2020	DRAWN BY	M.L.

FIGURE 2:
RECEPTOR LOCATIONS

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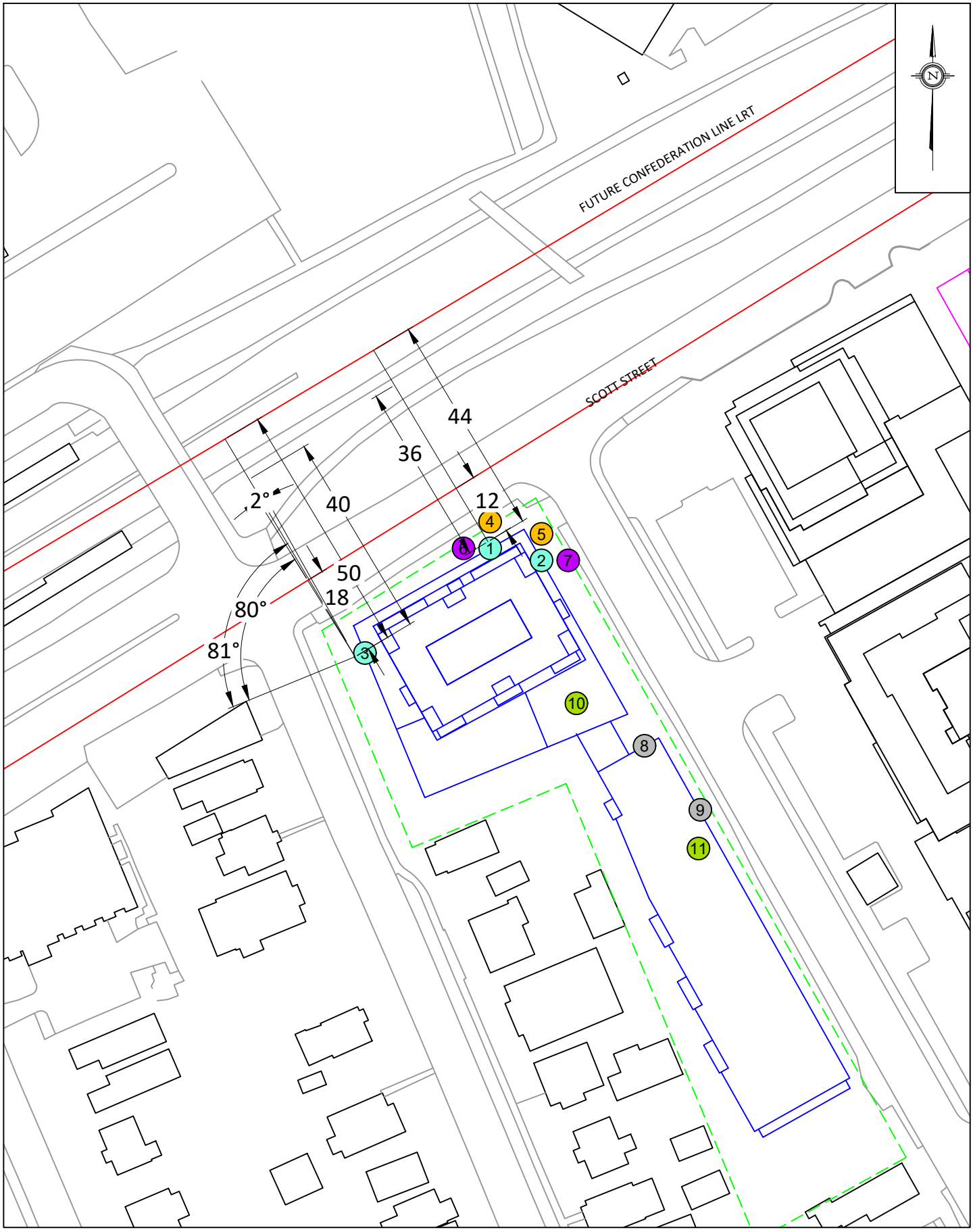
SCALE	1:500 (APPROX.)	DRAWING NO. GWE20-012-3
DATE	JANUARY 17, 2020	DRAWN BY M.L.

FIGURE 3:
WINDOW STC REQUIREMENTS



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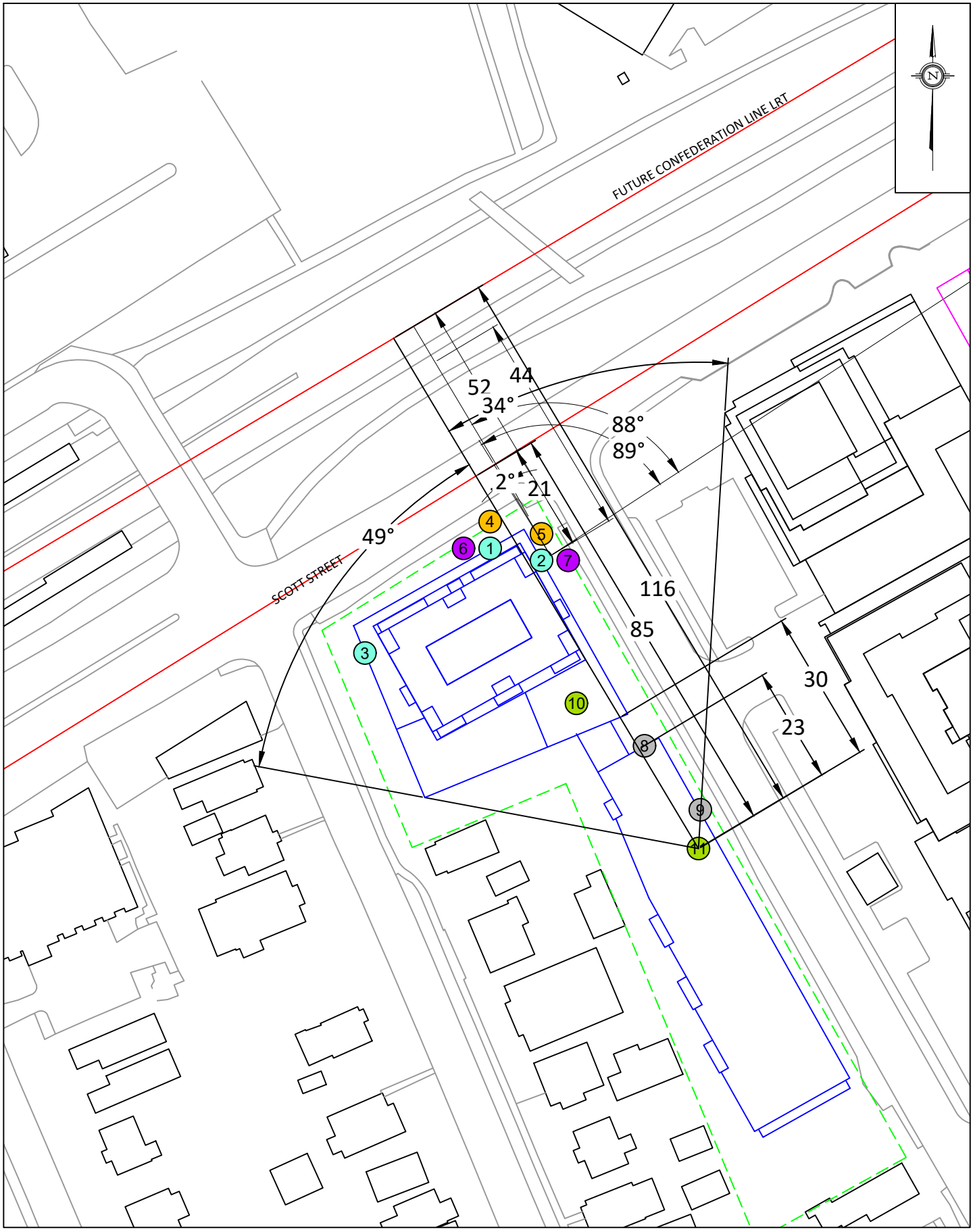
SCALE	1:1000 (APPROX.)	DRAWING NO. GWE20-012-4	FIGURE 4: STAMSON INPUT PARAMETERS - RECEPTOR 1,3,4,6
DATE	JANUARY 17, 2020	DRAWN BY M.L.	



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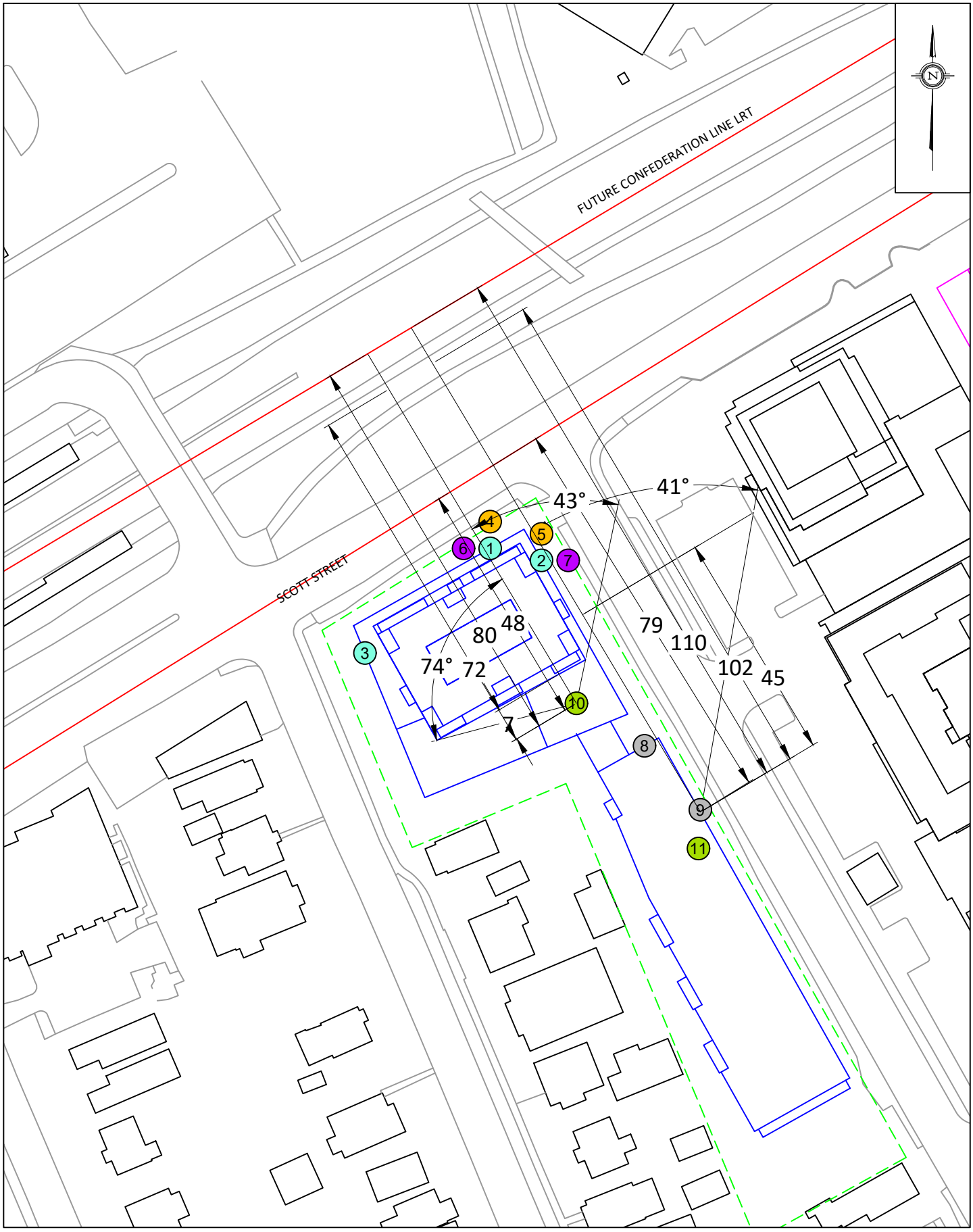
SCALE	1:1000 (APPROX.)	DRAWING NO.	GWE20-012-5
DATE	JANUARY 17, 2020	DRAWN BY	M.L.

FIGURE 5:
STAMSON INPUT PARAMETERS - RECEPTOR 2,5,7,11



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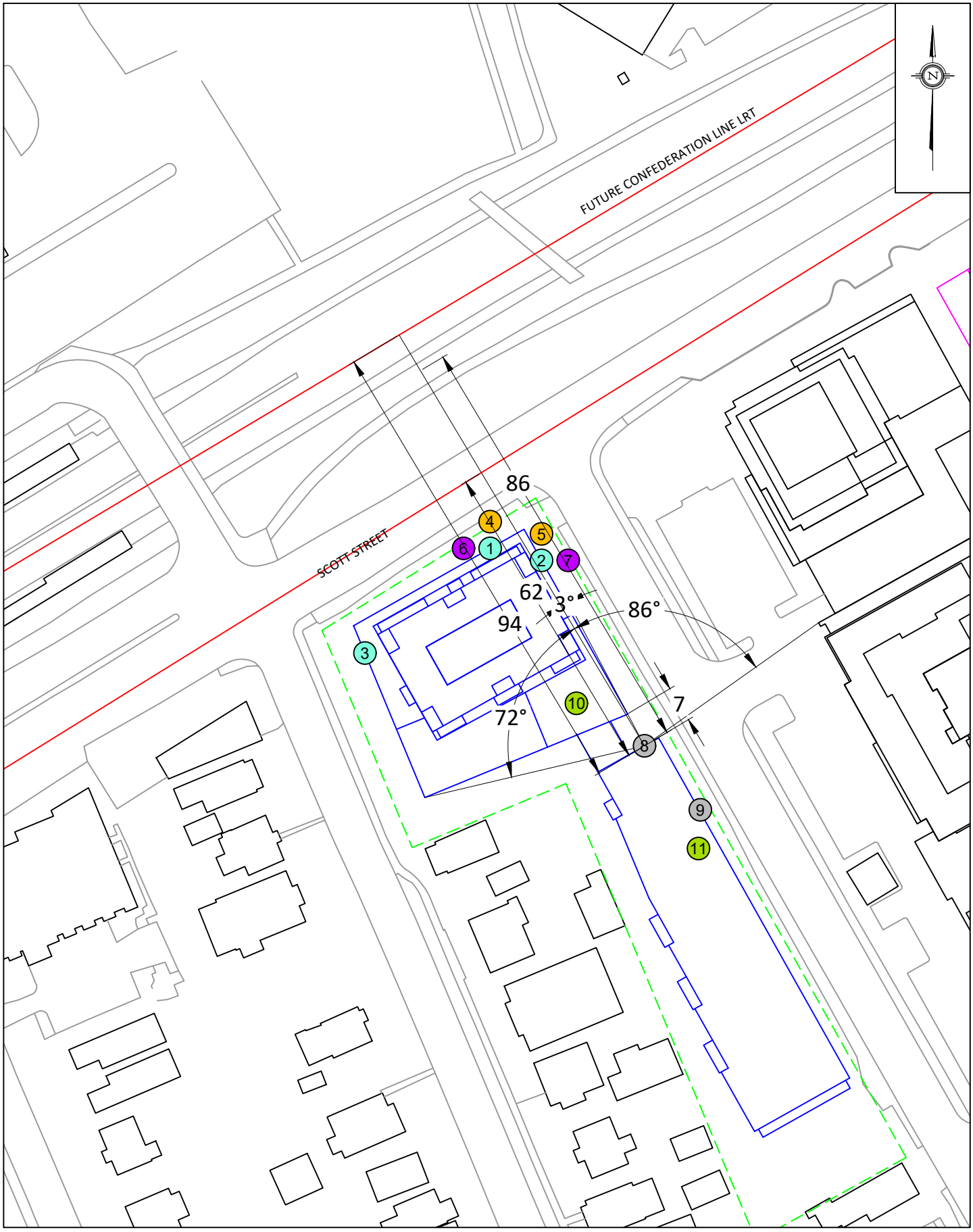
PROJECT	320 MCRAE AVENUE & 1976 SCOTT STREET, OTTAWA TRANSPORTATION NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE20-012-6
DATE	JANUARY 17, 2020
DRAWN BY	M.L.
DESCRIPTION	FIGURE 6: STAMSON INPUT PARAMETERS - RECEPTOR 9,10



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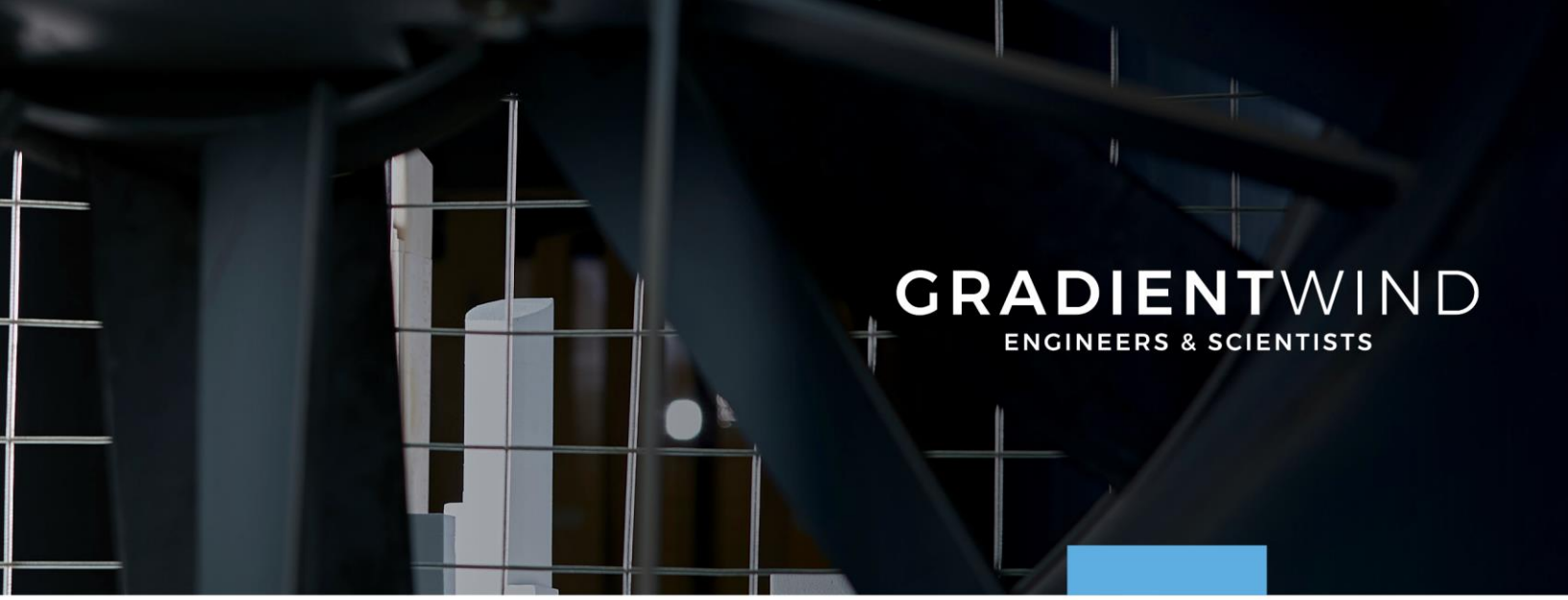
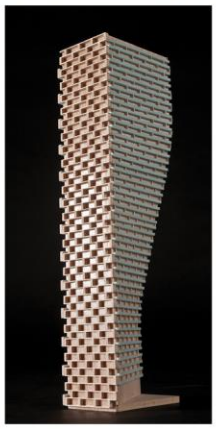
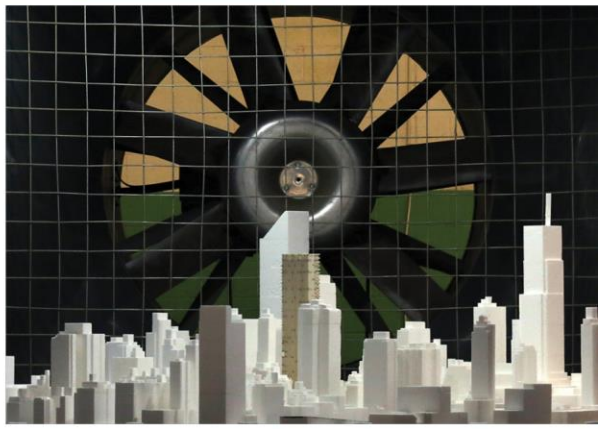
SCALE	1:1000 (APPROX.)	DRAWING NO.	GWE20-012-7
DATE	JANUARY 17, 2020	DRAWN BY	M.L.

FIGURE 7:
STAMSON INPUT PARAMETERS - RECEPTOR 8







APPENDIX A

STAMSON 5.04 – INPUT AND OUTPUT DATA

127 WALGREEN ROAD, OTTAWA, ON, CANADA K0A 1L0 | 613 836 0934
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```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2020 11:42:03
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


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

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

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

Data for Segment # 1: Scott (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           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

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

Segment Leq : 68.48 dBA

Total Leq All Segments: 68.48 dBA


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

Source height = 1.50 m

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

Segment Leq : 60.88 dBA

Total Leq All Segments: 60.88 dBA
```

```
RT/Custom data, segment # 1: OC (day/night)
-----------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: OC (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  :  44.00 / 44.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  36.00 / 36.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        7.50 !        1.77 !         1.77

RT/Custom (0.00 + 44.60 + 0.00) = 44.60 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  63.44  -4.67   0.00   0.00   0.00 -14.17  44.60
-------------------------------------------------------------------------

Segment Leq : 44.60 dBA

Total Leq All Segments: 44.60 dBA


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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        7.50 !        1.77 !         1.77

RT/Custom (0.00 + 38.06 + 0.00) = 38.06 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  56.91  -4.67   0.00   0.00   0.00 -14.17  38.06
-------------------------------------------------------------------------

Segment Leq : 38.06 dBA

Total Leq All Segments: 38.06 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 68.50
                           (NIGHT): 60.90
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2020 11:42:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           :   2.00 deg   89.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  21.00 / 21.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 63.86 + 0.00) = 63.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     2     89   0.00  68.48   0.00  -1.46  -3.16   0.00   0.00   0.00  63.86
-------------------------------------------------------------------------------

Segment Leq : 63.86 dBA

Total Leq All Segments: 63.86 dBA


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

Source height = 1.50 m

ROAD (0.00 + 56.26 + 0.00) = 56.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     2     89   0.00  60.88   0.00  -1.46  -3.16   0.00   0.00   0.00  56.26
-------------------------------------------------------------------------------

Segment Leq : 56.26 dBA

Total Leq All Segments: 56.26 dBA
```

```
RT/Custom data, segment # 1: OC (day/night)
-----------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: OC (day/night)
------------------------------------
Angle1   Angle2           :   2.00 deg   88.00 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            :   2.00 deg   Angle2 : 88.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  44.00 / 44.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        7.50 !        1.58 !         1.58

RT/Custom (0.00 + 39.95 + 0.00) = 39.95 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     2     88   0.00  63.44  -5.40  -3.21   0.00   0.00 -14.88  39.95
-------------------------------------------------------------------------

Segment Leq : 39.95 dBA

Total Leq All Segments: 39.95 dBA


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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        7.50 !        1.58 !         1.58

RT/Custom (0.00 + 33.42 + 0.00) = 33.42 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     2     88   0.00  56.91  -5.40  -3.21   0.00   0.00 -14.88  33.42
-------------------------------------------------------------------------

Segment Leq : 33.42 dBA

Total Leq All Segments: 33.42 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 63.88
                           (NIGHT): 56.28
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2020 11:42:22
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           : -80.00 deg   2.00 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           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 64.27 + 0.00) = 64.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -80      2   0.00  68.48   0.00  -0.79  -3.41   0.00   0.00   0.00  64.27
-------------------------------------------------------------------------------

Segment Leq : 64.27 dBA

Total Leq All Segments: 64.27 dBA


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

Source height = 1.50 m

ROAD (0.00 + 56.68 + 0.00) = 56.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -80      2   0.00  60.88   0.00  -0.79  -3.41   0.00   0.00   0.00  56.68
-------------------------------------------------------------------------------

Segment Leq : 56.68 dBA

Total Leq All Segments: 56.68 dBA
```

```
RT/Custom data, segment # 1: OC (day/night)
-------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: OC (day/night)
------------------------------------
Angle1   Angle2           : -81.00 deg   2.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  50.00 / 50.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -81.00 deg   Angle2 : 2.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  40.00 / 40.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        7.50 !        1.90 !         1.90

RT/Custom (0.00 + 39.81 + 0.00) = 39.81 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -81      2   0.00  63.44  -5.23  -3.36   0.00   0.00 -15.04  39.81
-------------------------------------------------------------------------

Segment Leq : 39.81 dBA

Total Leq All Segments: 39.81 dBA


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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !        7.50 !        1.90 !         1.90

RT/Custom (0.00 + 33.27 + 0.00) = 33.27 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -81      2   0.00  56.91  -5.23  -3.36   0.00   0.00 -15.04  33.27
-------------------------------------------------------------------------

Segment Leq : 33.27 dBA

Total Leq All Segments: 33.27 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 64.29
                           (NIGHT): 56.70
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2020 11:42:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


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

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

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

Data for Segment # 1: Scott (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           :  27.30 / 27.30  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

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

Segment Leq : 68.48 dBA

Total Leq All Segments: 68.48 dBA


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

Source height = 1.50 m

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

Segment Leq : 60.88 dBA

Total Leq All Segments: 60.88 dBA
```

```
RT/Custom data, segment # 1: OC (day/night)
-----------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: OC (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  :  44.00 / 44.00  m
Receiver height           :  33.30 / 33.30  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  36.00 / 36.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       33.30 !        6.46 !         6.46

RT/Custom (0.00 + 58.76 + 0.00) = 58.76 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  63.44  -4.67   0.00   0.00   0.00  -4.70  54.07*
   -90     90   0.00  63.44  -4.67   0.00   0.00   0.00   0.00  58.76
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 58.76 dBA

Total Leq All Segments: 58.76 dBA


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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       33.30 !        6.46 !         6.46

RT/Custom (0.00 + 52.23 + 0.00) = 52.23 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  56.91  -4.67   0.00   0.00   0.00  -4.70  47.53*
   -90     90   0.00  56.91  -4.67   0.00   0.00   0.00   0.00  52.23
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 52.23 dBA

Total Leq All Segments: 52.23 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 68.92
                           (NIGHT): 61.44
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2020 11:42:31
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           :   2.00 deg   89.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  21.00 / 21.00  m
Receiver height           :  27.30 / 27.30  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 63.86 + 0.00) = 63.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     2     89   0.00  68.48   0.00  -1.46  -3.16   0.00   0.00   0.00  63.86
-------------------------------------------------------------------------------

Segment Leq : 63.86 dBA

Total Leq All Segments: 63.86 dBA


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

Source height = 1.50 m

ROAD (0.00 + 56.26 + 0.00) = 56.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     2     89   0.00  60.88   0.00  -1.46  -3.16   0.00   0.00   0.00  56.26
-------------------------------------------------------------------------------

Segment Leq : 56.26 dBA

Total Leq All Segments: 56.26 dBA
```

```
RT/Custom data, segment # 1: OC (day/night)
-------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: OC (day/night)
------------------------------------
Angle1   Angle2           :   2.00 deg   88.00 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           :  33.30 / 33.30  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   2.00 deg   Angle2 : 88.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  44.00 / 44.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       33.30 !        5.55 !         5.55

RT/Custom (0.00 + 49.53 + 0.00) = 49.53 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     2     88   0.00  63.44  -5.40  -3.21   0.00   0.00  -5.30  49.53
-------------------------------------------------------------------------

Segment Leq : 49.53 dBA

Total Leq All Segments: 49.53 dBA


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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       33.30 !        5.55 !         5.55

RT/Custom (0.00 + 43.00 + 0.00) = 43.00 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     2     88   0.00  56.91  -5.40  -3.21   0.00   0.00  -5.30  43.00
-------------------------------------------------------------------------

Segment Leq : 43.00 dBA

Total Leq All Segments: 43.00 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 64.02
                           (NIGHT): 56.46
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2020 11:42:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


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

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

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

Data for Segment # 1: Scott (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           :  51.30 / 51.30  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

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

Segment Leq : 68.48 dBA

Total Leq All Segments: 68.48 dBA


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

Source height = 1.50 m

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

Segment Leq : 60.88 dBA

Total Leq All Segments: 60.88 dBA
```

```
RT/Custom data, segment # 1: OC (day/night)
-----------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: OC (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  :  44.00 / 44.00  m
Receiver height           :  57.30 / 57.30  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  36.00 / 36.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       57.30 !       10.83 !        10.83

RT/Custom (0.00 + 58.76 + 0.00) = 58.76 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  63.44  -4.67   0.00   0.00   0.00  -0.16  58.61*
   -90     90   0.00  63.44  -4.67   0.00   0.00   0.00   0.00  58.76
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 58.76 dBA

Total Leq All Segments: 58.76 dBA


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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       57.30 !       10.83 !        10.83

RT/Custom (0.00 + 52.23 + 0.00) = 52.23 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  56.91  -4.67   0.00   0.00   0.00  -0.16  52.08*
   -90     90   0.00  56.91  -4.67   0.00   0.00   0.00   0.00  52.23
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 52.23 dBA

Total Leq All Segments: 52.23 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 68.92
                           (NIGHT): 61.44
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2020 11:42:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           :   2.00 deg   89.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  21.00 / 21.00  m
Receiver height           :  51.30 / 51.30  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 63.86 + 0.00) = 63.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     2     89   0.00  68.48   0.00  -1.46  -3.16   0.00   0.00   0.00  63.86
-------------------------------------------------------------------------------

Segment Leq : 63.86 dBA

Total Leq All Segments: 63.86 dBA


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

Source height = 1.50 m

ROAD (0.00 + 56.26 + 0.00) = 56.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     2     89   0.00  60.88   0.00  -1.46  -3.16   0.00   0.00   0.00  56.26
-------------------------------------------------------------------------------

Segment Leq : 56.26 dBA

Total Leq All Segments: 56.26 dBA
```

```
RT/Custom data, segment # 1: OC (day/night)
-------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: OC (day/night)
------------------------------------
Angle1   Angle2           :   2.00 deg   88.00 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           :  57.30 / 57.30  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   2.00 deg   Angle2 : 88.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  44.00 / 44.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       57.30 !        9.24 !         9.24

RT/Custom (0.00 + 54.83 + 0.00) = 54.83 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     2     88   0.00  63.44  -5.40  -3.21   0.00   0.00  -0.24  54.59*
     2     88   0.00  63.44  -5.40  -3.21   0.00   0.00   0.00  54.83
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 54.83 dBA

Total Leq All Segments: 54.83 dBA


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

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       57.30 !        9.24 !         9.24

RT/Custom (0.00 + 48.30 + 0.00) = 48.30 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     2     88   0.00  56.91  -5.40  -3.21   0.00   0.00  -0.24  48.06*
     2     88   0.00  56.91  -5.40  -3.21   0.00   0.00   0.00  48.30
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.30 dBA

Total Leq All Segments: 48.30 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 64.37
                           (NIGHT): 56.90
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2020 11:42:45
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Scott1 (day/night)
-----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Scott1 (day/night)
----------------------------------------
Angle1   Angle2           : -72.00 deg   3.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  62.00 / 62.00  m
Receiver height           :  11.50 / 11.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -72.00 deg   Angle2 : 3.00 deg
Barrier height            :  19.60 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Scott2 (day/night)
------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Scott2 (day/night)
----------------------------------------
Angle1   Angle2           :   3.00 deg   86.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  62.00 / 62.00  m
Receiver height           :  11.50 / 11.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: Scott1 (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 !       11.50 !       10.37 !        10.37

ROAD (0.00 + 38.51 + 0.00) = 38.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -72      3   0.00  68.48   0.00  -6.16  -3.80   0.00   0.00 -20.00  38.51
-------------------------------------------------------------------------------

Segment Leq : 38.51 dBA


Results segment # 2: Scott2 (day)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 58.96 + 0.00) = 58.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     3     86   0.00  68.48   0.00  -6.16  -3.36   0.00   0.00   0.00  58.96
-------------------------------------------------------------------------------

Segment Leq : 58.96 dBA

Total Leq All Segments: 59.00 dBA


Results segment # 1: Scott1 (night)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.50 !       10.37 !        10.37

ROAD (0.00 + 30.92 + 0.00) = 30.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -72      3   0.00  60.88   0.00  -6.16  -3.80   0.00   0.00 -20.00  30.92
-------------------------------------------------------------------------------

Segment Leq : 30.92 dBA
```

```
Results segment # 2: Scott2 (night)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 51.36 + 0.00) = 51.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     3     86   0.00  60.88   0.00  -6.16  -3.36   0.00   0.00   0.00  51.36
-------------------------------------------------------------------------------

Segment Leq : 51.36 dBA

Total Leq All Segments: 51.40 dBA
```

```
RT/Custom data, segment # 1: OC1 (day/night)
-------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: OC1 (day/night)
-------------------------------------
Angle1   Angle2           : -72.00 deg   3.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  94.00 / 94.00  m
Receiver height           :  11.50 / 11.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -72.00 deg   Angle2 : 3.00 deg
Barrier height            :  19.60 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :  -6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


RT/Custom data, segment # 2: OC2 (day/night)
-------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 2: OC2 (day/night)
-------------------------------------
Angle1   Angle2           :   3.00 deg   86.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  94.00 / 94.00  m
Receiver height           :  11.50 / 11.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   3.00 deg   Angle2 : 86.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  86.00 / 86.00  m
Source elevation          :  -6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  -6.00 m
Reference angle           :   0.00
```

```
Results segment # 1: OC1 (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       11.50 !       10.23 !        10.23

RT/Custom (0.00 + 31.66 + 0.00) = 31.66 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -72      3   0.00  63.44  -7.97  -3.80   0.00   0.00 -20.00  31.66
-------------------------------------------------------------------------

Segment Leq : 31.66 dBA


Results segment # 2: OC2 (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       11.50 !        1.95 !        -4.05

RT/Custom (0.00 + 37.92 + 0.00) = 37.92 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     3     86   0.00  63.44  -7.97  -3.36   0.00   0.00 -14.19  37.92
-------------------------------------------------------------------------

Segment Leq : 37.92 dBA

Total Leq All Segments: 38.84 dBA
```

```
Results segment # 1: OC1 (night)
---------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       11.50 !       10.23 !        10.23

RT/Custom (0.00 + 25.13 + 0.00) = 25.13 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -72      3   0.00  56.91  -7.97  -3.80   0.00   0.00 -20.00  25.13
-------------------------------------------------------------------------

Segment Leq : 25.13 dBA


Results segment # 2: OC2 (night)
---------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       11.50 !        1.95 !        -4.05

RT/Custom (0.00 + 31.38 + 0.00) = 31.38 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     3     86   0.00  56.91  -7.97  -3.36   0.00   0.00 -14.19  31.38
-------------------------------------------------------------------------

Segment Leq : 31.38 dBA

Total Leq All Segments: 32.30 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 59.04
                           (NIGHT): 51.45
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2020 11:42:51
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           :   2.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  79.00 / 79.00  m
Receiver height           :  11.50 / 11.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  41.00 deg   Angle2 : 90.00 deg
Barrier height            :  10.00 m
Barrier receiver distance :  45.00 / 45.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Scott (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 !       11.50 !        5.80 !         5.80

ROAD (54.62 + 46.03 + 0.00) = 55.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     2     41   0.00  68.48   0.00  -7.22  -6.64   0.00   0.00   0.00  54.62
-------------------------------------------------------------------------------
    41     90   0.00  68.48   0.00  -7.22  -5.65   0.00   0.00  -9.58  46.03
-------------------------------------------------------------------------------

Segment Leq : 55.19 dBA

Total Leq All Segments: 55.19 dBA


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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       11.50 !        5.80 !         5.80

ROAD (47.03 + 38.44 + 0.00) = 47.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     2     41   0.00  60.88   0.00  -7.22  -6.64   0.00   0.00   0.00  47.03
-------------------------------------------------------------------------------
    41     90   0.00  60.88   0.00  -7.22  -5.65   0.00   0.00  -9.58  38.44
-------------------------------------------------------------------------------

Segment Leq : 47.59 dBA

Total Leq All Segments: 47.59 dBA
```

```
RT/Custom data, segment # 1: OC1 (day/night)
-----------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: OC1 (day/night)
-------------------------------------
Angle1   Angle2           :   2.00 deg   41.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 110.00 / 110.00 m
Receiver height           :  17.50 / 17.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   2.00 deg   Angle2 : 41.00 deg
Barrier height            :   6.00 m
Barrier receiver distance : 102.00 / 102.00 m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


RT/Custom data, segment # 2: OC2 (day/night)
-----------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 2: OC2 (day/night)
-------------------------------------
Angle1   Angle2           :  41.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 110.00 / 110.00 m
Receiver height           :  17.50 / 17.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  41.00 deg   Angle2 : 90.00 deg
Barrier height            :  16.00 m
Barrier receiver distance :  45.00 / 45.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: OC1 (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       17.50 !        1.74 !         1.74

RT/Custom (0.00 + 30.73 + 0.00) = 30.73 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     2     41   0.00  63.44  -8.65  -6.64   0.00   0.00 -17.41  30.73
-------------------------------------------------------------------------

Segment Leq : 30.73 dBA


Results segment # 2: OC2 (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       17.50 !       10.55 !        10.55

RT/Custom (0.00 + 39.02 + 0.00) = 39.02 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
    41     90   0.00  63.44  -8.65  -5.65   0.00   0.00 -10.11  39.02
-------------------------------------------------------------------------

Segment Leq : 39.02 dBA

Total Leq All Segments: 39.62 dBA
```

```
Results segment # 1: OC1 (night)
---------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       17.50 !        1.74 !         1.74

RT/Custom (0.00 + 24.20 + 0.00) = 24.20 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     2     41   0.00  56.91  -8.65  -6.64   0.00   0.00 -17.41  24.20
-------------------------------------------------------------------------

Segment Leq : 24.20 dBA


Results segment # 2: OC2 (night)
---------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       17.50 !       10.55 !        10.55

RT/Custom (0.00 + 32.49 + 0.00) = 32.49 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
    41     90   0.00  56.91  -8.65  -5.65   0.00   0.00 -10.11  32.49
-------------------------------------------------------------------------

Segment Leq : 32.49 dBA

Total Leq All Segments: 33.09 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 55.31
                           (NIGHT): 47.74
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2020 11:42:08
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Scott1 (day/night)
-----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Scott1 (day/night)
----------------------------------------
Angle1   Angle2           : -74.00 deg   43.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  48.00 / 48.00  m
Receiver height           :  21.10 / 21.10  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -74.00 deg   Angle2 : 43.00 deg
Barrier height            :  79.20 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Scott2 (day/night)
------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Scott2 (day/night)
----------------------------------------
Angle1   Angle2           :  43.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  48.00 / 48.00  m
Receiver height           :  21.10 / 21.10  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  43.00 deg   Angle2 : 90.00 deg
Barrier height            :  19.60 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Scott1 (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 !       21.10 !       18.24 !        18.24

ROAD (0.00 + 41.56 + 0.00) = 41.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -74     43   0.00  68.48   0.00  -5.05  -1.87   0.00   0.00 -20.00  41.56
-------------------------------------------------------------------------------

Segment Leq : 41.56 dBA


Results segment # 2: Scott2 (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 !       21.10 !       18.24 !        18.24

ROAD (0.00 + 50.62 + 0.00) = 50.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    43     90   0.00  68.48   0.00  -5.05  -5.83   0.00   0.00  -6.98  50.62
-------------------------------------------------------------------------------

Segment Leq : 50.62 dBA

Total Leq All Segments: 51.13 dBA
```

```
Results segment # 1: Scott1 (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 !       21.10 !       18.24 !        18.24

ROAD (0.00 + 33.96 + 0.00) = 33.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -74     43   0.00  60.88   0.00  -5.05  -1.87   0.00   0.00 -20.00  33.96
-------------------------------------------------------------------------------

Segment Leq : 33.96 dBA


Results segment # 2: Scott2 (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 !       21.10 !       18.24 !        18.24

ROAD (0.00 + 43.02 + 0.00) = 43.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    43     90   0.00  60.88   0.00  -5.05  -5.83   0.00   0.00  -6.98  43.02
-------------------------------------------------------------------------------

Segment Leq : 43.02 dBA

Total Leq All Segments: 43.53 dBA
```

```
RT/Custom data, segment # 1: OC1 (day/night)
-------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: OC1 (day/night)
-------------------------------------
Angle1   Angle2           : -74.00 deg   43.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  80.00 / 80.00  m
Receiver height           :  21.10 / 21.10  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -74.00 deg   Angle2 : 43.00 deg
Barrier height            :  79.20 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :  -6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


RT/Custom data, segment # 2: OC2 (day/night)
-------------------------------------------
1 - 4-car SRT:
Traffic volume    :     0/0     veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: OC2 (day/night)
-------------------------------------
Angle1   Angle2           :  43.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  80.00 / 80.00  m
Receiver height           :  21.10 / 21.10  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  43.00 deg   Angle2 : 90.00 deg
Barrier height            :  19.60 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :  -6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: OC1 (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       21.10 !       18.77 !        18.77

RT/Custom (0.00 + 34.30 + 0.00) = 34.30 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -74     43   0.00  63.44  -7.27  -1.87   0.00   0.00 -20.00  34.30
-------------------------------------------------------------------------

Segment Leq : 34.30 dBA


Results segment # 2: OC2 (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       21.10 !       18.77 !        18.77

RT/Custom (0.00 + -18.96 + 0.00) = 0.00 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
    43     90   0.00   0.00  -7.27  -5.83   0.00   0.00  -5.86 -18.96
-------------------------------------------------------------------------

Segment Leq : 0.00 dBA

Total Leq All Segments: 34.30 dBA
```

```
Results segment # 1: OC1 (night)
---------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       21.10 !       18.77 !        18.77

RT/Custom (0.00 + 27.76 + 0.00) = 27.76 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -74     43   0.00  56.91  -7.27  -1.87   0.00   0.00 -20.00  27.76
-------------------------------------------------------------------------

Segment Leq : 27.76 dBA


Results segment # 2: OC2 (night)
---------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       21.10 !       18.77 !        18.77

RT/Custom (0.00 + -18.96 + 0.00) = 0.00 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
    43     90   0.00   0.00  -7.27  -5.83   0.00   0.00  -5.86 -18.96
-------------------------------------------------------------------------

Segment Leq : 0.00 dBA

Total Leq All Segments: 27.76 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 51.22
                           (NIGHT): 43.64
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2020 11:42:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Scott1 (day/night)
-----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Scott1 (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  :  20.00 / 20.00  m
Receiver height           :  80.70 / 80.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :  79.20 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Scott1 (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 !       80.70 !       68.82 !        68.82

ROAD (0.00 + 53.01 + 0.00) = 53.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90    0.00  68.48   0.00  -1.25   0.00   0.00   0.00 -14.23
53.01
-------------------------------------------------------------------------------
--

Segment Leq : 53.01 dBA

Total Leq All Segments: 53.01 dBA
```

```
Results segment # 1: Scott1 (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 !       80.70 !       68.82 !        68.82

ROAD (0.00 + 45.41 + 0.00) = 45.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90    0.00  60.88   0.00  -1.25   0.00   0.00   0.00 -14.23
45.41
-------------------------------------------------------------------------------
--

Segment Leq : 45.41 dBA

Total Leq All Segments: 45.41 dBA
```

```
RT/Custom data, segment # 1: OC1 (day/night)
-----------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: OC1 (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  :  52.00 / 52.00  m
Receiver height           :  80.70 / 80.70  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :  79.20 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :  -6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: OC1 (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       80.70 !       75.73 !        75.73

RT/Custom (0.00 + 46.44 + 0.00) = 46.44 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  63.44  -5.40   0.00   0.00   0.00 -11.60  46.44
-------------------------------------------------------------------------

Segment Leq : 46.44 dBA

Total Leq All Segments: 46.44 dBA
```

```
Results segment # 1: OC1 (night)
--------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       80.70 !       75.73 !        75.73

RT/Custom (0.00 + 39.91 + 0.00) = 39.91 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  56.91  -5.40   0.00   0.00   0.00 -11.60  39.91
-------------------------------------------------------------------------

Segment Leq : 39.91 dBA

Total Leq All Segments: 39.91 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 53.87
                           (NIGHT): 46.49
```

```
STAMSON 5.0        NORMAL REPORT        Date: 03-02-2020 16:46:48
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Scott1 (day/night)
-----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Scott1 (day/night)
----------------------------------------
Angle1   Angle2           : -49.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  85.00 / 85.00  m
Receiver height           :  14.90 / 14.90  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -49.00 deg   Angle2 : 0.00 deg
Barrier height            :  19.60 m
Barrier receiver distance :  30.00 / 30.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Scott2 (day/night)
------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Scott2 (day/night)
----------------------------------------
Angle1   Angle2           :   0.00 deg   34.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  85.00 / 85.00  m
Receiver height           :  14.90 / 14.90  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 34.00 deg
Barrier height            :  13.40 m
Barrier receiver distance :  23.00 / 23.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Scott1 (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 !       14.90 !       10.17 !        10.17

ROAD (0.00 + 35.37 + 0.00) = 35.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -49      0   0.00  68.48   0.00  -7.53  -5.65   0.00   0.00 -19.92
35.37
-------------------------------------------------------------------------------
--

Segment Leq : 35.37 dBA
```

```
Results segment # 2: Scott2 (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 !       14.90 !       11.27 !        11.27

ROAD (0.00 + 44.31 + 0.00) = 44.31 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     34    0.00  68.48   0.00  -7.53  -7.24   0.00   0.00  -9.40
44.31
-------------------------------------------------------------------------------
--

Segment Leq : 44.31 dBA

Total Leq All Segments: 44.83 dBA
```

```
Results segment # 1: Scott1 (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 !       14.90 !       10.17 !        10.17

ROAD (0.00 + 27.77 + 0.00) = 27.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -49      0   0.00  60.88   0.00  -7.53  -5.65   0.00   0.00 -19.92
27.77
-------------------------------------------------------------------------------
--

Segment Leq : 27.77 dBA
```

```
Results segment # 2: Scott2 (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 !       14.90 !       11.27 !        11.27

ROAD (0.00 + 36.72 + 0.00) = 36.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     34    0.00  60.88   0.00  -7.53  -7.24   0.00   0.00  -9.40
36.72
-------------------------------------------------------------------------------
--

Segment Leq : 36.72 dBA

Total Leq All Segments: 37.24 dBA
```

```
RT/Custom data, segment # 1: OC1 (day/night)
-----------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 1: OC1 (day/night)
-------------------------------------
Angle1   Angle2           : -49.00 deg   0.00 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           :  14.90 / 14.90  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -49.00 deg   Angle2 : 0.00 deg
Barrier height            :  19.60 m
Barrier receiver distance :  30.00 / 30.00  m
Source elevation          :  -6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
RT/Custom data, segment # 2: OC2 (day/night)
-----------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    70 km/h

Data for Segment # 2: OC2 (day/night)
-------------------------------------
Angle1   Angle2           :   0.00 deg   34.00 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           :  14.90 / 14.90  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 34.00 deg
Barrier height            :  13.40 m
Barrier receiver distance :  23.00 / 23.00  m
Source elevation          :  -6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: OC1 (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       14.90 !        9.62 !         9.62

RT/Custom (0.00 + 29.00 + 0.00) = 29.00 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -49      0   0.00  63.44  -8.88  -5.65   0.00   0.00 -19.90  29.00
-------------------------------------------------------------------------

Segment Leq : 29.00 dBA
```

```
Results segment # 2: OC2 (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       14.90 !       10.86 !        10.86

RT/Custom (0.00 + 37.09 + 0.00) = 37.09 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     0     34   0.00  63.44  -8.88  -7.24   0.00   0.00 -10.23  37.09
-------------------------------------------------------------------------

Segment Leq : 37.09 dBA

Total Leq All Segments: 37.72 dBA
```

```
Results segment # 1: OC1 (night)
--------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       14.90 !        9.62 !         9.62

RT/Custom (0.00 + 22.47 + 0.00) = 22.47 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -49      0   0.00  56.91  -8.88  -5.65   0.00   0.00 -19.90  22.47
-------------------------------------------------------------------------

Segment Leq : 22.47 dBA
```

```
Results segment # 2: OC2 (night)
--------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       0.50 !       14.90 !       10.86 !        10.86

RT/Custom (0.00 + 30.56 + 0.00) = 30.56 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
     0     34   0.00  56.91  -8.88  -7.24   0.00   0.00 -10.23  30.56
-------------------------------------------------------------------------

Segment Leq : 30.56 dBA

Total Leq All Segments: 31.19 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 45.60
                           (NIGHT): 38.20
```