Environmental Noise and Vibration Assessment

900 Albert Street

Ottawa, Ontario

REPORT: GWE16-018 – Noise & Vibration

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EXECUTIVE SUMMARY

This document describes an environmental noise and vibration assessment performed for a proposed mixed-use three-tower development located at 900 Albert Street, in Ottawa, Ontario. Towers 1 and 2 sit atop the West Podium, while Tower 3 sits atop the East Podium. Upon completion, the West Podium and East Podium will rise 10 and three storeys above grade, respectively. Towers 1 to 3 will rise 59, 55 and 50 storeys above grade respectively. The podia will contain retail, office and parking space, while the towers will contain residential space only. The major source of transportation noise is Albert Street, with some influence from the Trillium and Confederation light rail transit (LRT) lines, existing and currently under construction. Figure 1 illustrates a site plan with surrounding context.

The assessment is based on: (i) theoretical noise prediction methods that conform to the Ministry of the Environment and Climate Change (MOECC) and City of Ottawa requirements; (ii) noise level criteria as specified by the City of Ottawa's Environmental Noise Control Guidelines (ENCG); (iii) future vehicular traffic volumes based on the City of Ottawa's Official Plan roadway classifications and OC Transpo information; and (iv) architectural drawings received from B+H Architects.

The results of the current study indicate that noise levels due to roadway traffic over the site will range between 43 and 71 dBA during the daytime period (07:00-23:00) and between 35 and 64 dBA during the nighttime period (23:00-07:00). The highest noise level (i.e. 71 dBA) occurs along the north façade of the West Podium and Tower 2, which are nearest and most exposed to Albert Street. Upgraded building components with higher Sound Transmission Class (STC) ratings are required where noise levels exceed 65 dBA, as indicated in Figures 5 to 7.

Results of the calculations also indicate that all dwelling units in the development will require windows and doors to remain closed to ensure a quiet, comfortable indoor environment. Therefore, the heating and cooling systems for the buildings should be designed accordingly. In addition to ventilation requirements, Warning Clauses will also be required be placed on all Lease, Purchase and Sale Agreements, as summarized in Section 6.

To the south of the development are existing commercial facilities, including the City Centre and Just Right Storage. These facilities represent existing stationary sources of noise. GWE has performed a feasibility assessment based on satellite imagery and our experience with sound levels produced by similar types of equipment. Noise impacts from the adjacent commercial spaces are anticipated to be up to 53 dBA at the closest point of reception, which is the plane of window of Tower 3. This would exceed the current criteria for a Class 1 Area (Urban) acoustical environment where the applicable sound level limits are 50 dBA daytime and 45 dBA nighttime. For infill situations under the ENCG, new noise sensitive buildings which have ventilation systems to allow windows and doors to remain closed as an integral part of their design, can apply to be deemed a Class 4 designation, which has applicable sound level limits of 60 and 55 dBA during the daytime and nighttime respectively. Once approved by council, the adjacent land users can make use of the new development's Class 4 designation for their MOECC permit applications. In this case, the applicable sound levels can be achieved, maintaining compatibility with the existing land uses.

Ground vibration levels were measured on site using a three-axis seismograph. Vibration levels due to light rail transit activity in the area are expected to fall below the criterion of 0.10 mm/s at the nearest building foundation to the LRT rail line. Therefore, mitigation for ground vibrations will not be required.

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1. INTRODUCTION

Gradient Wind Engineering Inc. (GWE) was retained by Trinity Development Group Inc. to undertake comprehensive engineering studies for the proposed development at 900 Albert Street in Ottawa, Ontario. The complete scope of work within our mandate, as outlined in GWE proposal #15-053P R3, dated September 1, 2016, includes studies of pedestrian level winds, environmental noise, and ground vibrations. This report summarizes the methodology, results, and recommendations related to an environmental noise and ground vibration assessment, while the pedestrian level wind study is presented in a separate report.

GWE's scope of work involved assessing exterior and interior noise levels generated by local transportation and existing stationary sources, as well as vibration levels generated by local light rail transit (LRT) activity. The assessment was performed on the basis of theoretical noise calculation methods conforming to the City of Ottawa[1] and Ministry of the Environment and Climate Change (MOECC)[2] guidelines. Noise calculations were based on architectural drawings received from B+H Architects on November 8, 2016, with future roadway traffic volumes corresponding to the City of Ottawa's Official Plan (OP) roadway classifications and LRT information from the Rail Implementation Office. The stationary noise assessment was based on GWE experience with various types of heating and cooling equipment and satellite imagery of the surrounding properties.

2. TERMS OF REFERENCE

The focus of this environmental noise and vibration assessment is a proposed mixed-use three-tower development located at 900 Albert Street, in Ottawa, adjacent to the Bayview Station of the O-Train Light Rail Transit (LRT) system.

The site is located on a triangular parcel of land bounded by the O-Train corridor on the west, Albert Street on the north and an adjacent property to the south. Towers 1 and 2 are located along the western portion of the site and share a 10-level podium. Tower 1 rises to a total of 59 storeys above grade, while Tower 2 rises to a total of 55 storeys above grade. Tower 3 sits above a three-storey podium and rises to a total of

[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

50 storeys, and is located towards the eastern corner of the site. The podia will contain retail, office and parking space, while the towers will contain residential dwelling units. Two outdoor living areas (OLA's) are located on site, specifically atop the West and East Podia.

The major source of transportation noise is Albert Street, with some influence from the Trillium and Confederation LRT lines. The site surroundings comprise low-rise commercial, light industrial, office and single family residences for all directions from northeast clockwise to west. Open field, arterial roadways and the Ottawa River are to the north. Figure 1 illustrates a complete site plan with surrounding context.

3. OBJECTIVES

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

4. METHODOLOGY

4.1 Background

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

4.2 Transportation Noise

4.2.1 Criteria for Transportation Noise

For vehicle traffic, the equivalent sound energy level, L_{EQ}, provides a measure of the time varying noise levels, which is well correlated with the annoyance of sound. It is defined as the continuous sound level, which has the same energy as a time varying noise level over a period of time. For roadways and LRT, the L_{EQ} is commonly calculated on the basis of a 16-hour (L_{EQ16}) daytime (07:00-23:00) / 8-hour (L_{EQ8}) nighttime (23:00-07:00) split to assess its impact on residential buildings. The City of Ottawa's Environmental Noise Control Guidelines (ENCG) specifies that the recommended indoor noise limit range (that is relevant to this study) is 50, 45, and 40 dBA for retail, living rooms, and sleeping quarters respectively, as listed in Table 1. Based on GWE's experience, more comfortable indoor noise levels should be targeted toward 47, 42, and 37 dBA to control peak noise, and deficiencies in building envelope construction.

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

Type of Space	Time Period	L_{EQ} (dBA)	
		Road	Rail
General offices, reception areas, retail stores, etc.	07:00 – 23:00	50	45
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	40
Sleeping quarters of hotels/motels	23:00 – 07:00	45	40
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	23:00 – 07:00	40	35

Predicted noise levels at the plane of window (POW) and outdoor living area (OLA) 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. Therefore, where noise levels exceed 55 dBA daytime and 50 dBA nighttime, the ventilation for the building should consider the need for having windows and doors closed, which normally triggers the need for central air conditioning (or similar systems). Where noise levels exceed 65 dBA daytime and 60 dBA nighttime building components will require higher levels of sound attenuation.

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

Noise levels at outdoor living areas should be limited to 55 dBA where technically and administratively feasible. The City of Ottawa preferences for noise control prescribe the following hierarchy:

(i) Increased distance setback with absorptive ground cover (vegetation)

(ii) Relocation of noise sensitive areas away from roadways

(iii) Earth berms

(iv) Acoustic barriers

4.2.1 Roadway and LRT 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[4] 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 and LRT line included in this assessment. LRT traffic volumes are based on information made available from the City of Ottawa. These volumes are considered conservative and with the reduced amount of buses on Albert post 2018 noise levels are expected to see improvements.

TABLE 2: ROADWAY AND LRT TRAFFIC DATA

Segment	Roadway / Transit Class	Speed Limit (km/h)	Traffic Volumes
Albert Street	4-UAU	50	30,000†
Confederation Line	LRT	50	540/60*
Trillium Line	LRT	50	192/24*

†AADT volumes, *- Daytime/nighttime volumes

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

4.2.2 Theoretical Transportation Noise Predictions

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

Roadway and LRT noise calculations were performed by treating each road or LRT segment as separate line sources of noise, and by using existing building locations as noise barriers. In addition to the traffic volumes summarized in Table 4, theoretical noise predictions were based on the following parameters:

- Truck traffic on all roadways was taken to comprise 5% heavy trucks and 7% medium trucks, as per ENCG requirements for noise level predictions
- The day/night split was taken to be 92% / 8% respectively for all streets
- Absorptive and reflective intermediate ground surfaces based on specific source-receiver path ground characteristics
- Site topography considered in Source Height parameter
- LRT modelled using 4-car SRT vehicle type in STAMSON

Noise receptors were strategically placed at 36 locations around the study area (see Figures 2 and 3).

4.3 Stationary Noise

4.3.1 Criteria for Stationary Noise

For stationary sources, the L_{EQ} is commonly calculated on an hourly interval, while for roadways, the L_{EQ} is calculated on the basis of a 16-hour daytime / 8-hour nighttime split as previously mentioned in Section 4.2.1

Noise criteria taken from the ENCG apply to outdoor points of reception (POR). A POR is defined under NPC-300 as "any location on a noise sensitive land use where noise from a stationary source is received"[5]. This applies to the plane of window and outdoor amenity space associated with the 900 Albert Street development. The surrounding area of the development would be considered to be defined as a Class 1 (Urban) environment as background noise levels are dominated by human activities, such as roadway and transit sources.

[5] NPC – 300, page 14

The ENCG and NPC-300 also allow for the consideration of a Class 4 area for new proposed noise sensitive land uses where air conditioning will form an integral part of the design. For a development to be considered a Class 4 area, the planning authority must agree to the condition, which requires city council approval. Once the development has been approved as a Class 4 area, the surrounding source owners will be notified and can then use the Class 4 designation for their own approval process with the MOECC Environmental Compliance Approvals. The exclusionary sound level limits for Class 1 and 4 areas are summarized in Table 3 below. The applicable sound level limit is the higher of either the values in Table 3 or background noise levels due to sources such as transportation. Assuming the development will be granted Class 4 designation as part of the site plan approval application, therefore the Class 4 limits have been applied for this assessment.

TABLE 3: EXCLUSIONARY LIMITS FOR CLASS 4 AREA

Time of Day	Class 1		Class 4	
	Outdoor Points of Reception	Plane of Window	Outdoor Points of Reception	Plane of Window
07:00 – 19:00	50	50	55	60
19:00 – 23:00	50	50	55	60
23:00 – 07:00	N/A	45	N/A	55

4.3.2 Assumptions

The two closest existing commercial facilities to the development include the City Centre to the south and the Just Right Self Storage to the east. Request to access the City Centre property was made by Trinity, however there was no response. The following assumptions have been included in the analysis:

(ii) The quantity, location and sound power of rooftop equipment and delivery trucks has been assumed based on satellite imagery and experience on similar projects.

(iii) The rooftop air handling units are assumed to operate continuously over a 1-hour period during the daytime and nighttime periods, and at 50% operation during the nighttime period for the adjacent office building. This is to account for the decreased occupancy loads in the building overnight.

(iv) Cooling towers were assumed to operate continuously during a typical 24-hour period. In reality this is somewhat conservative because cooling tower requirements typically scale down during the overnight period when summer temperature are less than daytime highs.

(v) Two trucks per hour will make deliveries to the adjacent retail building during normal business hours. No idling occurs as per City By-law No. 2007-266.

(vi) Screening effects of buildings and parapets have been considered in the modelling.

(vii) Tom Brown Arena is more than 100 metres away from the site, and is therefore considered an insignificant source.

4.3.3 Determination of Noise Source Power Levels

Sound power data for the rooftop equipment were assumed based on GWE's experience with similar types of equipment that are present on the surrounding commercial facilities. Table 4 summarizes the sound power assumed for each source used in the analysis.

TABLE 4: EQUIPMENT SOUND POWER LEVELS (dBA)

Source ID	Description	Height Above Grade (m)	Frequency (Hz)								
			63	125	250	500	1000	2000	4000	8000	Total
S1	Cooling Tower	24.8	67	77	84	85	87	82	77	73	91
S2 and 3	8.5 Ton RTU	24.8	71	78	85	87	87	83	77	68	92
S4	Truck Path	2	79	88	92	96	100	97	90	84	106
S5-41	5 Ton RTU	2.3	55	75	74	77	79	75	71	63	84

4.3.4 Stationary Source Noise Predictions

The impact of the surrounding stationary noise sources on the 900 Albert Street development was determined by computer modelling. Stationary noise source modelling is based on the software program *Predictor-Lima* developed from the International Standards Organization (ISO) standard 9613 Parts 1 and 2. This computer program is capable of representing three-dimensional surfaces and first reflections of sound waves over a suitable spectrum for human hearing. The methodology has been used on numerous assignments, and has been accepted by the MOECC as part of Environmental Compliance Approvals applications.

Twelve individual noise sensor locations were selected in the *Predictor-Lima* model to measure the noise impact at points of reception (POR) during the daytime (07:00 – 19:00) and nighttime (19:00 – 07:00) periods (see Figure 4). For each location, various heights were examined for a total of 30 sensors. POR locations included the outdoor living areas (OLA's) and the plane of windows (POW's) of the 900 Albert Street development. All mechanical equipment was represented as point sources in the model. Air

temperature, pressure and humidity were set to 10°C, 101.3 kPA and 70%, respectively. Ground absorption over the study area was determined based on topographical features (such as water, concrete, grassland, etc.). A coefficient of 0 was used for hard surfaces, such as concrete and paved areas, and 1 for soft surfaces, such as grass and vegetative areas. Existing and proposed buildings were added to the model to account for screening and reflection effects from building façades. Modelling files and outputs are available upon request.

4.4 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, concrete and masonry walls can achieve STC 50 or more. Curtain wall systems typically provide around STC 35, depending on the glazing elements. 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.

According to the ENCG, 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[6] considers:

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

Based on published research[7], exterior walls possess specific sound attenuation characteristics that are used as a basis for calculating the required STC ratings of windows in the same partition. Due to the limited

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

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).

4.5 Ground Vibration & Ground-borne Noise

Transit systems and heavy vehicles on roadways can produce perceptible levels of ground vibrations, especially when they are in close proximity to residential neighbourhoods or vibration sensitive buildings. Similar to sound waves in air, vibrations in solids are generated at a source, propagated through a medium, and intercepted by a receiver. In the case of ground vibrations, the medium can be uniform, or more often, a complex layering of soils and rock strata. Also, similar to sound waves in air, ground vibrations produce perceptible motions and regenerated noise known as 'ground-borne noise' when the vibrations encounter a hollow structure such as a building. Ground-borne noise and vibrations are generated when there is excitation of the ground, from a train for instance. Repetitive motion of the wheels on the track or rubber tires passing over an uneven surface causes vibrations to propagate through the soil. When they encounter a building, vibrations pass along the structure of the building beginning at the foundation and propagating to all floors. Air inside the building excited by the vibrating walls and floors represents regenerated airborne noise. Characteristics of the soil and the building are imparted to the noise, thereby creating a unique noise signature.

Human response to ground vibrations is dependent on the magnitude of the vibrations, which is measured by the root mean square (RMS) of the movement of a particle on a surface. Typical units of ground vibration measures are millimeters per second (mm/s), or inch per second (in/s). Since vibrations can vary over a wide range, it is also convenient to represent them in decibel units, or dBV. In North America, it is common practice to use the reference value of one micro-inch per second (µin/s) to represent vibration levels for this purpose. The threshold level of human perception to vibrations is about 0.10 mm/s RMS or about 72 dBV. Although somewhat variable, the threshold of annoyance for continuous vibrations is (0.5 mm/s RMS or 85 dBV), five times higher than the perception threshold, whereas the threshold for significant structural damage is (10 mm/s RMS or 112 dBV) at least one hundred times higher than the perception threshold level.

4.5.1 Ground Vibration Criteria

In the United States, the Federal Transportation Authority (FTA) has set vibration criteria for sensitive land use next to Transit corridors. Similar standards have been developed by a partnership between the MOECC and the Toronto Transit Commission[8]. These standards indicate that the appropriate criteria for residential buildings is 0.10 mm/s RMS for vibrations. For main line railways, a document titled Guidelines for New Development in Proximity to Railway Operations[9], indicates that vibration conditions should not exceed 0.14 mm/s RMS averaged over a one second time-period at the first floor and above of the proposed building. As the main vibration source is due to the LRT lines which will have frequent events, the 0.10 mm/s RMS (72 dBV) vibration criteria and 35 dBA ground borne noise criteria were adopted for this study.

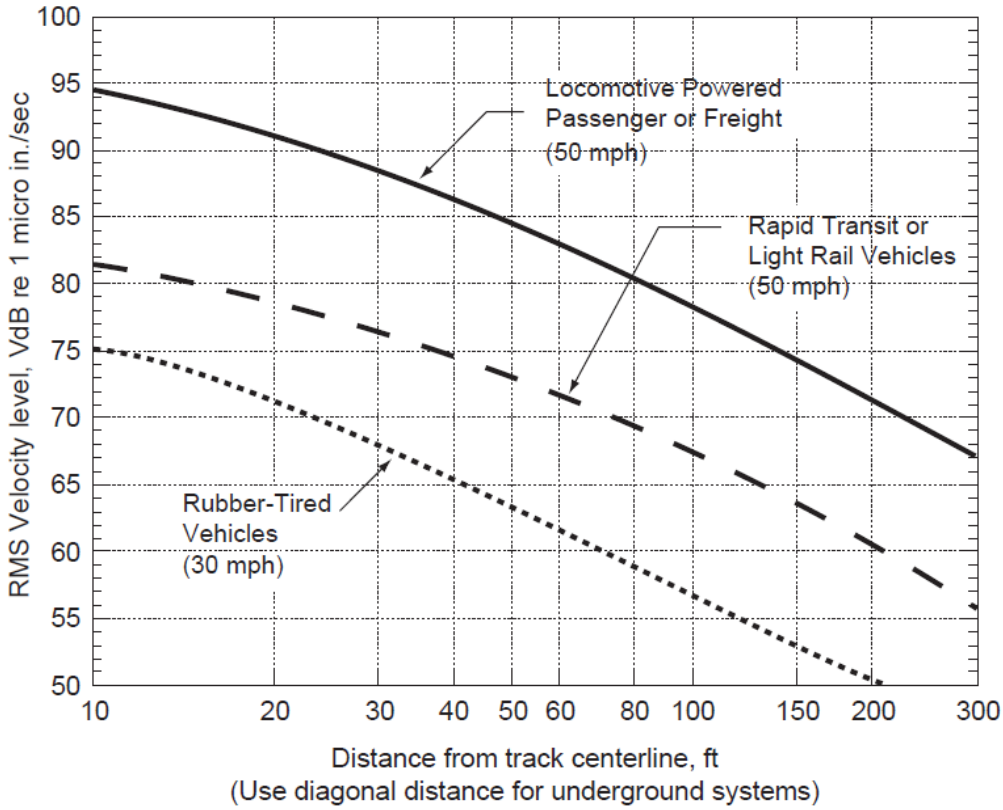
4.5.2 Theoretical Ground Vibration Prediction Procedure

Potential vibration impacts of the future Confederation LRT rail line, currently under construction, were predicted using the FTA's Transit Noise and Vibration Impact Assessment[10] protocol. The FTA general vibration assessment is based on an upper bound generic set of curves that show vibration level attenuation with distance. These curves, illustrated in the figure below, are based on ground vibration measurements at various transit systems throughout North America. Vibration levels at points of reception are adjusted by various factors to incorporate known characteristics of the system being analyzed; such as operating speed of vehicle, conditions of the track, construction of the track and geology; as well as the structural type of the impacted building structures. Based on the setback distance of the closest building, initial vibration levels were deduced from a curve for light rail trains at 50 miles per hour (mph) and applying an adjustment factor of -1.2 dBV to account for an operational speed of 43.4 mph (70 km/h). Other factors considered; the track was assumed to be jointed with no welds. Details of the vibration calculations are presented in Appendix B.

[8] MOECC/TTC Protocol for Noise and Vibration Assessment for the Proposed Yonge-Spadina Subway Loop, June 16, 1993

[9] Dialog and J.E. Coulter Associates Limited, prepared for The Federation of Canadian Municipalities and The Railway Associated of Canada, May 2013

[10] C. E. Hanson; D. A. Towers; and L. D. Meister, Transit Noise and Vibration Impact Assessment, Federal Transit Administration, May 2006.



FTA GENERALIZED CURVES OF VIBRATION LEVELS VERSUS DISTANCE (ADOPTED FROM FIGURE 10-1, FTA TRANSIT NOISE AND VIBRATION IMPACT ASSESSMENT)

4.5.1 Field Measurement Assessment Procedure

Existing levels of ground vibrations due to the Trillium LRT Line traffic were determined by field measurements using Instantel model MiniMate Plus and MicroMate seismographs capable of recording three components of ground velocity, one vertical and two horizontal. Two measurement sites were selected along the east property line of the development, adjacent to the Trillium Line, as identified in Table 5. At the measurement locations, the seismograph was installed approximately 50 metres from the Trillium Line railway centerline. Seismograph measurements were set to a minimum trigger level of 0.14 mm/s peak partial velocity (ppv).

TABLE 5: VIBRATION MEASUREMENT LOCATIONS

Receptor	Location Description	Placement of Seismographs from the Rail centerline (m)
V1	South Side	50
V2	North Side	50

5. RESULTS AND DISCUSSION

5.1 Transportation Noise Levels (Road and LRT)

The results of the roadway and LRT noise calculations are summarized in Table 6 below. A complete set of input and output data from all STAMSON 5.04 calculations are available in Appendix A.

TABLE 6: EXTERIOR NOISE LEVELS DUE TO TRANSPORTATION SOURCES

Receptor Number	Plane of Window Receptor Location	Noise Level (dBA)	
		Day	Night
1	1st Floor - West Podium - North Façade	71	64
2	1st Floor - West Podium - East Façade	65	58
3	1st Floor - East Podium - North Façade	70	62
4	3rd Floor - East Podium - North Façade	70	62
5	3rd Floor - East Podium - East Façade	65	58
6	3rd Floor - East Podium - West Façade	66	58
7	10th Floor - West Podium - North Façade	71	64

TABLE 6 CONTINUED: EXTERIOR NOISE LEVELS DUE TO TRANSPORTATION SOURCES

Receptor Number	Plane of Window Receptor Location	Noise Level (dBA)	
		Day	Night
8	10th Floor - West Podium - North Façade	71	64
9	10th Floor - West Podium - East Façade	69	62
10	10th Floor - West Podium - West Façade	68	60
11	30th Floor - Tower 1 - North Façade	63	55
12	30th Floor - Tower 1 - East Façade	62	55
13	30th Floor - Tower 1 - South Façade	43	37
14	30th Floor - Tower 1 - West Façade	60	53
15	30th Floor - Tower 2 - North Façade	71	64
16	30th Floor - Tower 2 - East Façade	69	62
17	30th Floor - Tower 2 - South Façade	58	51
18	30th Floor - Tower 2 - West Façade	66	58
19	30th Floor - Tower 3 - North Façade	67	59
20	30th Floor - Tower 3 - East Façade	65	57
21	30th Floor - Tower 3 - South Façade	43	35
22	30th Floor - Tower 3 - West Façade	58	51
23	50th Floor - Tower 1 - North Façade	63	55
24	50th Floor - Tower 1 - East Façade	62	55
25	50th Floor - Tower 1 - South Façade	43	37
26	50th Floor - Tower 1 - West Façade	60	53
27	50th Floor - Tower 2 - North Façade	71	64
28	50th Floor - Tower 2 - East Façade	69	62
29	50th Floor - Tower 2 - South Façade	58	51
30	50th Floor - Tower 2 - West Façade	66	58
31	50th Floor - Tower 3 - North Façade	67	59
32	50th Floor - Tower 3 - East Façade	65	57
33	50th Floor - Tower 3 - South Façade	43	35
34	50th Floor - Tower 3 - West Façade	58	51
35	11th Floor - West Podium - Terrace	46	38
36	4th Floor - East Podium - Terrace	52	45

The results of the current analysis indicate that noise levels will range between 43 and 71 dBA during the daytime period (07:00-23:00) and between 35 and 64 dBA during the nighttime period (23:00-07:00). The highest noise level (i.e. 71 dBA) occurs along the north façade of the West Podium and Tower 2, which are nearest and most exposed to Albert Street. The dominant source of noise was from Albert Street with lower contributions from the two LRT lines.

5.2 Stationary Noise Levels

Noise levels from existing stationary sources across the study site were found to be below 53 dBA. These levels marginally exceed the Class 1 criteria but are well below the Class 4 limits. The anticipated sound levels across the development are summarized in Table 7 and are based on the assumptions outlined in Section 4.3.2.

TABLE 7: NOISE LEVELS FROM STATIONARY SOURCES

Receptor Number	Plane of Window Receptor Location	Noise Level (dBA)		Exclusionary Limits		Meets ENCG Class 4 Criteria	
		Day	Night	Day	Night	Day	Night
R1_A	18th Floor – Tower 1 – East Façade	50	48	60	55	YES	YES
R1_B	31st Floor – Tower 1 – East Façade	48	47	60	55	YES	YES
R1_C	45th Floor – Tower 1 – East Façade	46	45	60	55	YES	YES
R1_D	58th Floor – Tower 1 – East Façade	44	43	60	55	YES	YES
R2_A	18th Floor – Tower 1 – South Façade	50	49	60	55	YES	YES
R2_B	31st Floor – Tower 1 – South Façade	48	47	60	55	YES	YES
R2_C	45th Floor – Tower 1 – South Façade	46	45	60	55	YES	YES
R2_D	58th Floor – Tower 1 – South Façade	45	44	60	55	YES	YES
R3_A	18th Floor – Tower 1 – West Façade	42	42	60	55	YES	YES
R3_B	31st Floor – Tower 1 – West Façade	41	40	60	55	YES	YES
R3_C	45th Floor – Tower 1 – West Façade	40	39	60	55	YES	YES
R3_D	58th Floor – Tower 1 – West Façade	38	38	60	55	YES	YES
R4_A	5th Floor – Tower 3 – East Façade	47	46	60	55	YES	YES
R4_B	18th Floor – Tower 3 – East Façade	47	46	60	55	YES	YES
R4_C	31st Floor – Tower 3 – East Façade	45	45	60	55	YES	YES
R4_D	45th Floor – Tower 3 – East Façade	44	43	60	55	YES	YES
R5_A	5th Floor – Tower 3 – South Façade	50	48	60	55	YES	YES

TABLE 7: NOISE LEVELS FROM STATIONARY SOURCES

Receptor Number	Plane of Window Receptor Location	Noise Level (dBA)		Exclusionary Limits		Meets NPC-300 Criteria	
		Day	Night	Day	Night	Day	Night
R5_B	18th Floor – Tower 3 – South Façade	53	51	60	55	YES	YES
R5_C	31st Floor – Tower 3 – South Façade	50	49	60	55	YES	YES
R5_D	45th Floor – Tower 3 – South Façade	47	46	60	55	YES	YES
R6_A	5th Floor – Tower 3 – West Façade	50	47	60	55	YES	YES
R6_B	18th Floor – Tower 3 – West Façade	52	50	60	55	YES	YES
R6_C	31st Floor – Tower 3 – West Façade	49	47	60	55	YES	YES
R6_D	45th Floor – Tower 3 – West Façade	45	44	60	55	YES	YES
R7_A	5th Floor – West Podium – East Façade	49	47	60	55	YES	YES
R8_A	5th Floor – West Podium – South Façade	50	48	60	55	YES	YES
R9_A	4th Floor – East Podium – South Façade	50	48	60	55	YES	YES
R10_A	4th Floor – East Podium – West Façade	48	46	60	55	YES	YES
R11_A	11th Floor - West Podium - Terrace	34	33	55	N/A	YES	YES
R12_A	4th Floor - East Podium - Terrace	28	26	55	N/A	YES	YES

Noise contours along the building façades can be seen in Figures 8 and 9 for daytime and nighttime conditions, respectively. The main contributor of noise at these locations is the rooftop mechanical equipment of the adjacent City Centre office building. The most impacted area of the development is the upper level windows of Tower 3.

5.3 Noise Control Measures

The noise levels predicted due to transportation sources exceed the criteria listed in the ENCG for building components. As discussed in Section 4.4, 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 in Table 8 below for various units within the development (see Figures 5 to 7). The requirements of Table 8 would apply to windows, doors, spandrel panels and curtainwall elements.

TABLE 8: STC REQUIREMENTS FOR WINDOWS

Location	Façade	Floors	Bedroom window STC	Living Room window STC	Office and Retail window STC
West Podium	North	1-10	Not Applicable	Not Applicable	24
	East				22
	West				21
East Podium	North	1-3	Not Applicable	Not Applicable	23
	West				19
Tower 2	North	11-55	34	29	Not Applicable
	East	11-55	32	27	
	West	11-55	29	24	
Tower 3	North	4-50	30	25	Not Applicable

Note: Exterior wall components on these façades are recommended to have a minimum STC of 45, where a window / wall system is used. Wall assemblies meeting STC 45 would include steel stud walls minimum 92 mm deep filled with batt insulation, exterior dense glass sheeting, and 16 mm gypsum board on the inside.

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. As per City of Ottawa requirements, 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 the development will require air conditioning (or similar mechanical system), which will allow occupants to keep windows closed and maintain a comfortable living environment. In addition to ventilation requirements, Warning Clauses will also be required be placed on all Lease, Purchase and Sale Agreements.

As the buildings will require air conditioning as a noise control measure for transportation sources, it is also recommended that the development be considered a Class 4 area for stationary noise. Once approved by council, the adjacent land users will be notified of this distinction.

5.4 Ground Vibrations & Ground-borne Noise Levels

Based on an offset distance of 38 and 56 metres between the Trillium Line and Confederation line railway centerlines respectively, and the nearest building foundation, the estimated vibration levels at the nearest point of reception are expected to be 0.015 mm/s RMS (55.6 dBV) based on the FTA protocol. Details of the calculation are provided in Appendix B. Since predicted vibration levels are below the criterion of 0.10 mm/s RMS, no mitigation will be required.

According to the United States Federal Transit Authority's vibration assessment protocol, ground borne noise can be estimated by subtracting 35 dB from the velocity vibration level in dBV. Since measured vibration levels were found to be less than 0.10 mm/s peak partial velocity (ppv), ground borne noise levels are also expected to be below the ground borne noise criteria of 35 dB.

Results of vibration monitoring found vibration levels from a minimum of 14 LRT train passes at a distance of 50 metres from the rail centreline, were 0.09 mm/s RMS or 71 dBV at Location 1 where impacts from the Trillium Line are excepted to be highest (see Appendix B) due to trains entering and leaving the station. At Location 2 vibration levels were lower than the minimum trigger level of 0.14 mm/s PPV. In all cases, the measured vibration levels fall below the criterion of 0.1 mm/s RMS (72 dBV).

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current study indicate that noise levels due to roadway traffic over the site will range between 43 and 71 dBA during the daytime period (07:00-23:00) and between 35 and 64 dBA during the nighttime period (23:00-07:00). The highest noise level (i.e. 71 dBA) occurs along the north façade of the West Podium and Tower 2, which are nearest and most exposed to Albert Street. Building components with a higher Sound Transmission Class (STC) rating will be required where noise levels exceed 65 dBA, as indicated on Figure 5 to 7.

In addition to upgraded windows, the installation of central air conditioning (or similar mechanical system) will be required for all units in the development, which will allow occupants to keep windows closed and maintain a comfortable living environment. The following Warning Clause[11] in all Agreements of Lease, Purchase and Sale will be required for these 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 exceed the sound level limits of the City and the Ministry of the Environment and Climate Change. To help address the need for sound attenuation, this development includes:*
>
> - *STC rated multi-pane glass glazing elements and spandrel panels*
> - *Upgraded exterior walls achieving STC 45 or greater*
>
> *This dwelling unit has also been designed with air conditioning (or similar mechanical system). Air conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment and Climate Change.*
>
> *To ensure that provincial sound level limits are not exceeded, it is important to maintain these sound attenuation features."*

Due to the influence of existing stationary sources of noise on the site which marginally exceed the Class 1 area sound level limits, it is recommend that the new development be considered as a Class 4 area. For infill situations under the ENCG, new noise sensitive buildings which have ventilation systems to allow windows and doors to remain closed as an integral part of their design, can apply to be deemed a Class 4 designation, which has applicable sound level limits of 60 and 55 dBA during the daytime and nighttime respectively. Once approved by council, existing land owners should be notified of the designation which they can use in dealing with their MOECC approval applications. The following stationary Warning Clause will be required in all Agreements of Lease, Purchase and Sale of residential units.

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

"Purchasers/tenants are advised that sound levels due to the adjacent commercial facilities may interfere with outdoor activities as the sound levels may exceed the sound level limits of the City of Ottawa and the Ministry of the Environment.

Purchasers/tenants are further advised that sound levels due to the adjacent commercial facility are required to comply with sound level limits that are protective of indoor areas and are based on the assumption that windows and exterior doors are closed. This dwelling unit has been supplied with a ventilation / air conditioning system which will allow windows and exterior doors to remain closed."

Vibration levels due to railway activity in the area are expected to fall below the criterion of 0.10 mm/s at the nearest façade to the LRT rail line. Thus, mitigation for vibrations is not required.

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

Yours truly,

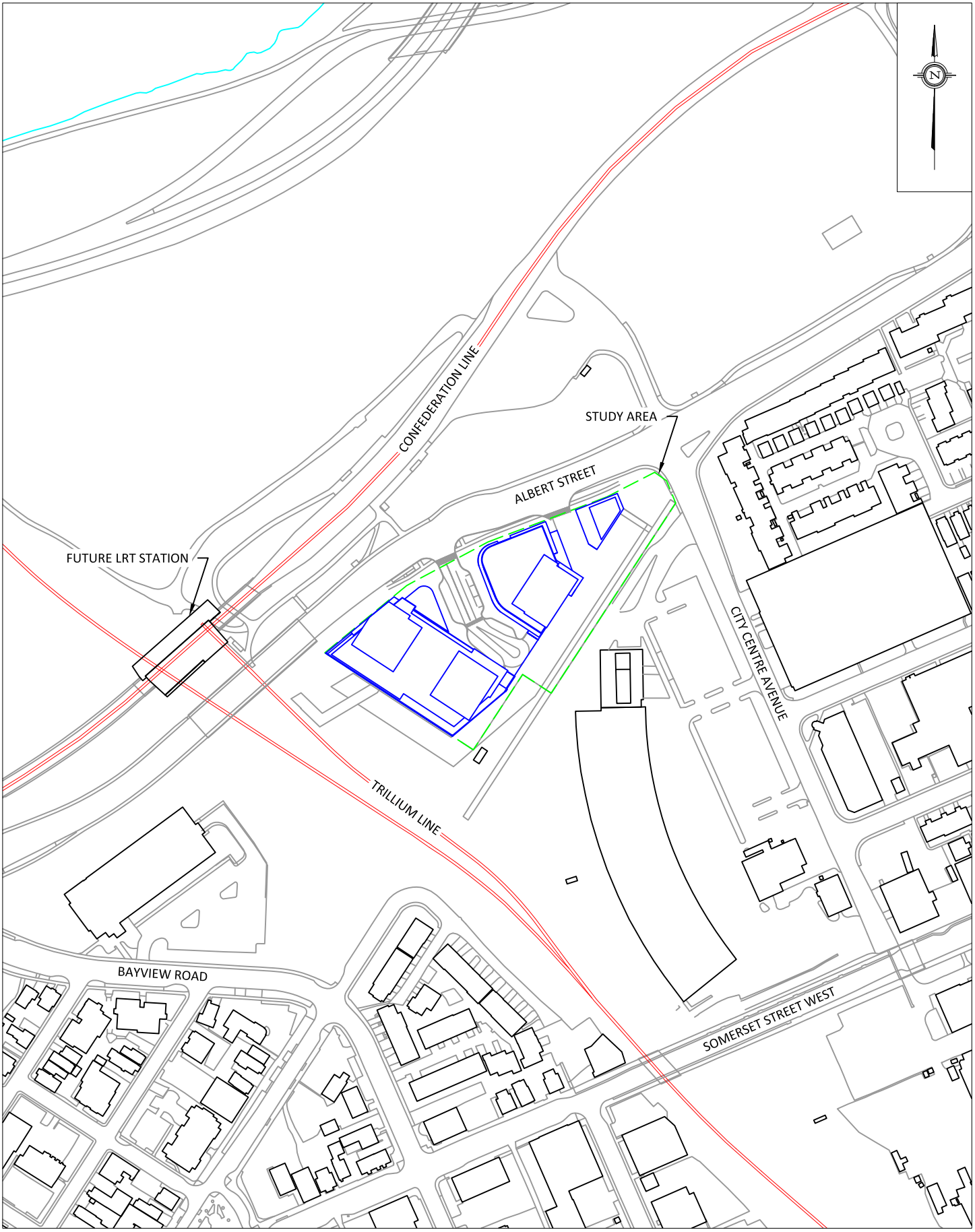
Gradient Wind Engineering Inc.

Michael Lafortune
Environmental Technologist

LICENSED PROFESSIONAL ENGINEER
J. R. FOSTER
100156655
Nov 11, 2016
PROVINCE OF ONTARIO

Joshua Foster, P.Eng.
Partner

Vincent Ferraro, M.Eng., P.Eng.
Principal
GWE16-019 – Noise & Vibration



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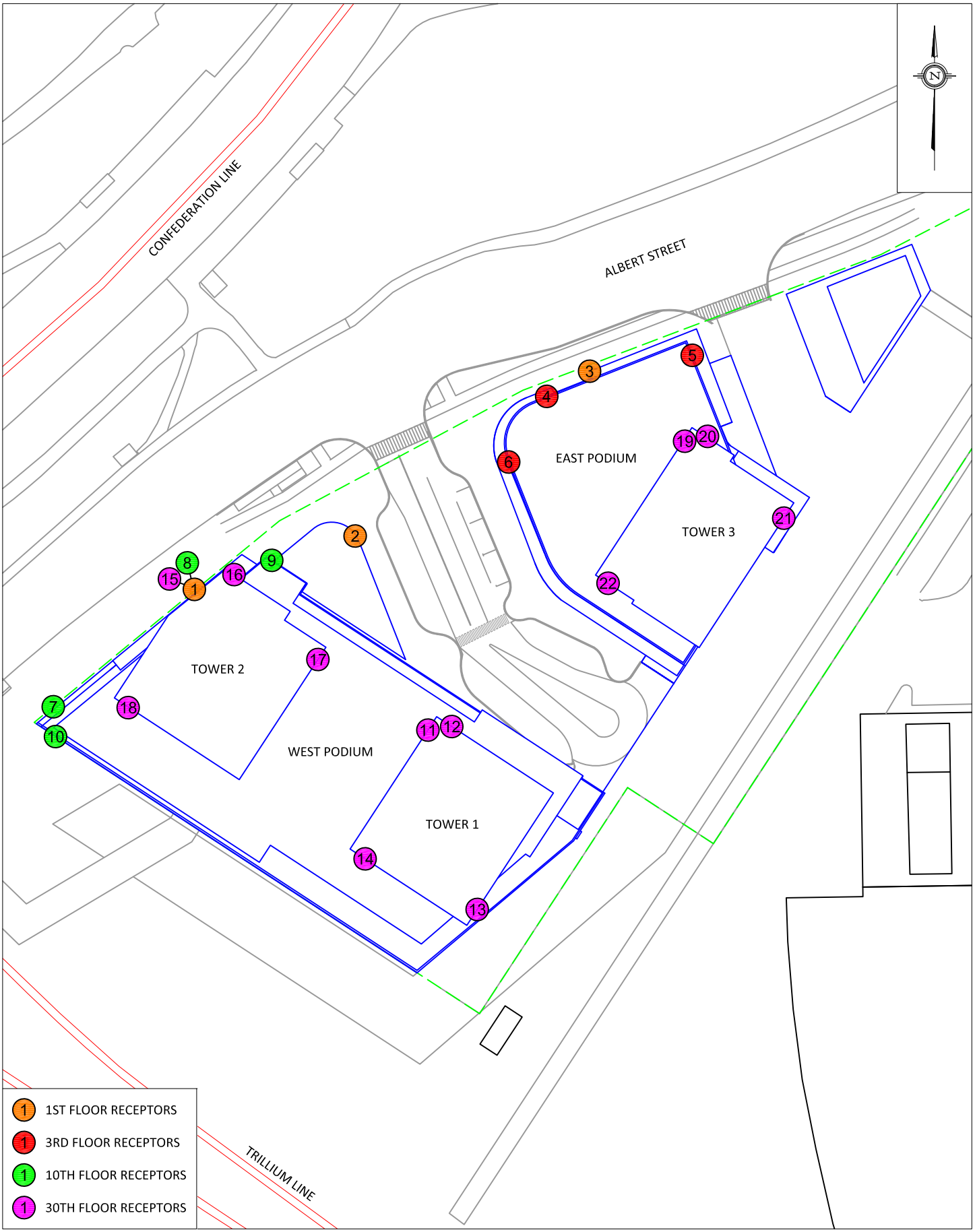
(613) 836 0934
GRADIENT WIND ENGINEERING INC

PROJECT	900 ALBERT STREET, OTTAWA ENVIRONMENTAL NOISE AND VIBRATION ASSESSMENT
SCALE	1:3000 (APPROX.)
DRAWING NO.	GWE16-018-1
DATE	NOVEMBER 10, 2016
DRAWN BY	M.L.
DESCRIPTION	FIGURE 1: SITE PLAN AND SURROUNDING CONTEXT



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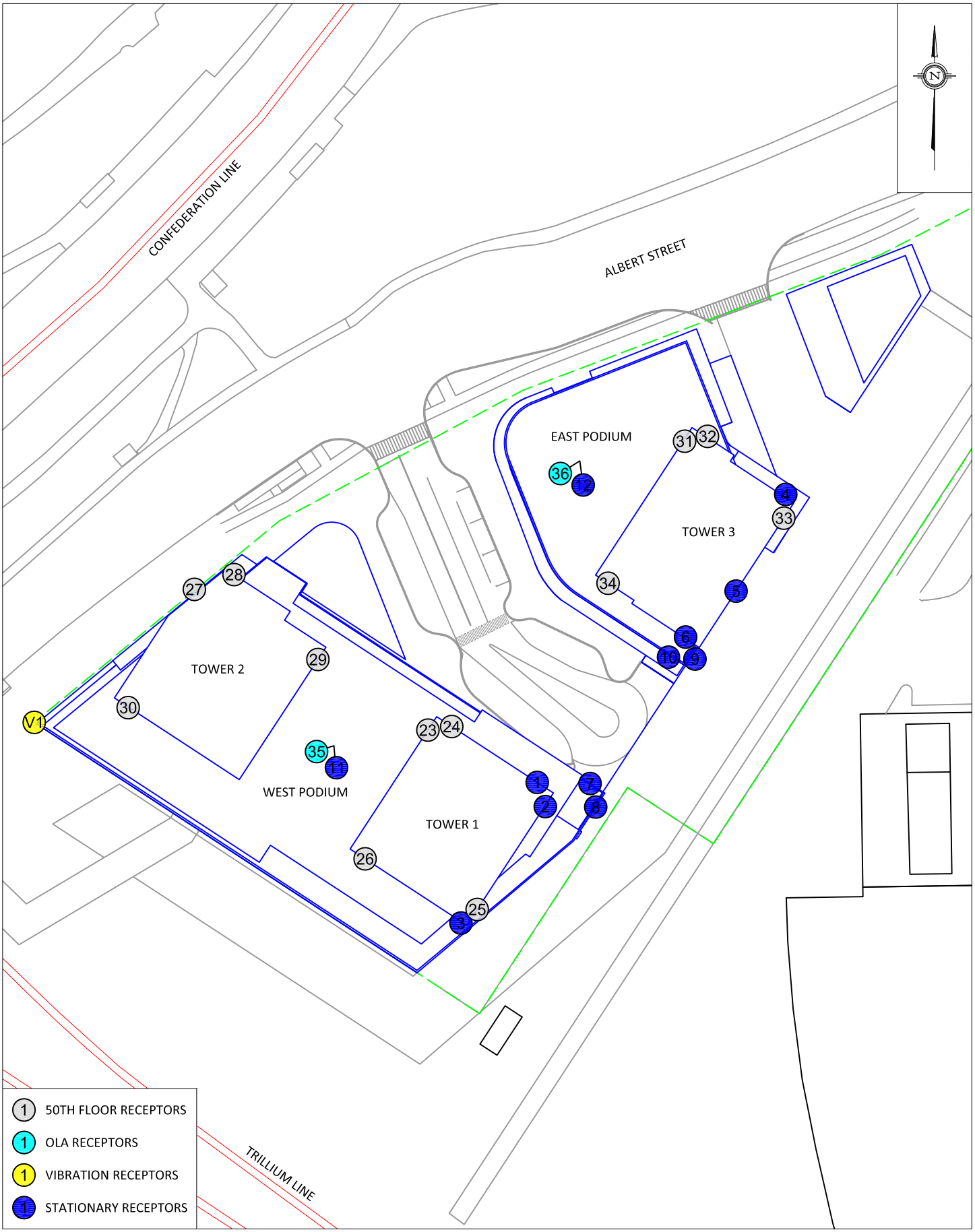
PROJECT	900 ALBERT STREET, OTTAWA ENVIRONMENTAL NOISE AND VIBRATION ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE16-018-2
DATE	NOVEMBER 10, 2016
DRAWN BY	M.L.
DESCRIPTION	FIGURE 2: RECEPTOR LOCATIONS



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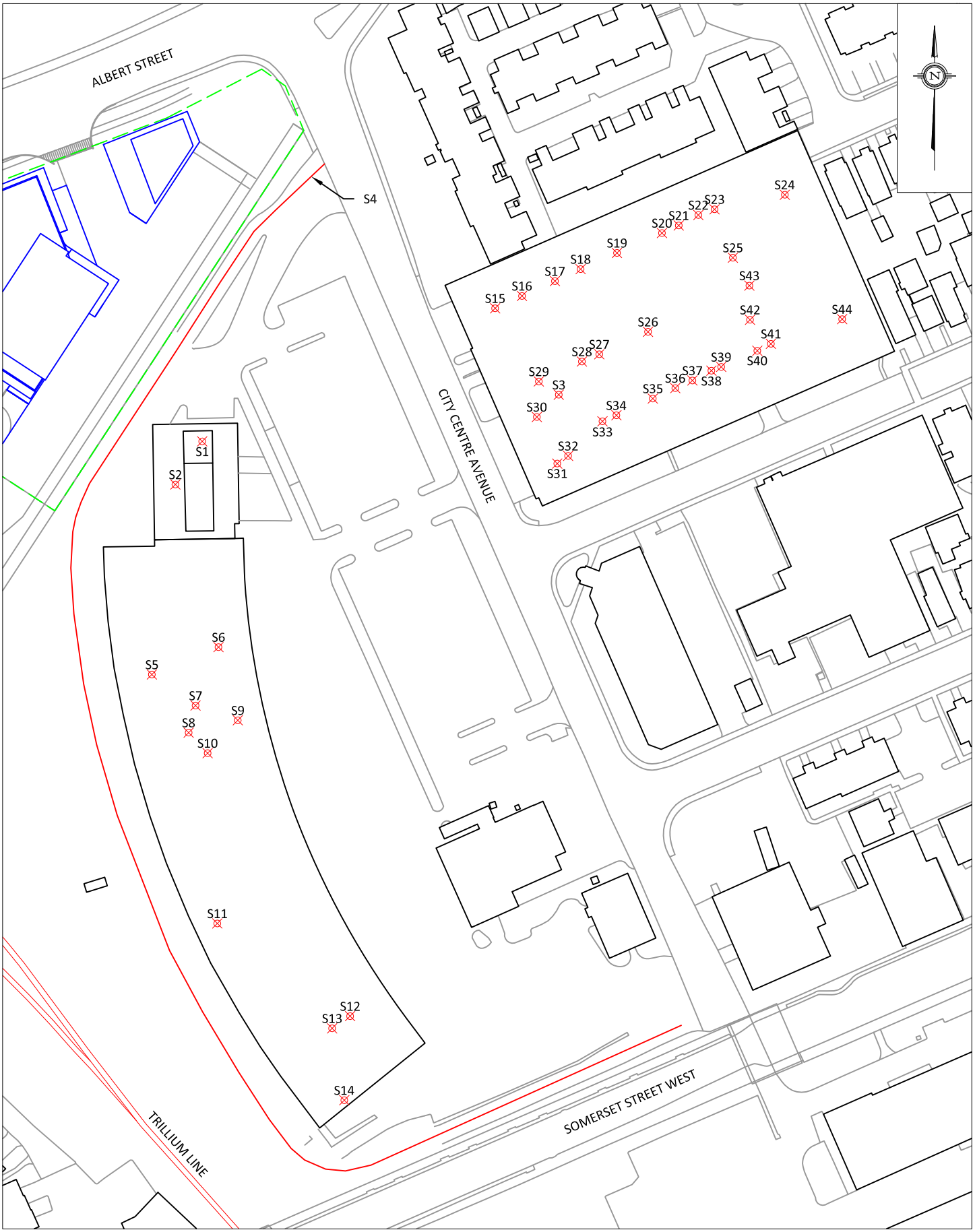
PROJECT	900 ALBERT STREET, OTTAWA ENVIRONMENTAL NOISE AND VIBRATION ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE16-018-3
DATE	NOVEMBER 10, 2016
DRAWN BY	M.L.
DESCRIPTION	FIGURE 3: RECEPTOR LOCATIONS



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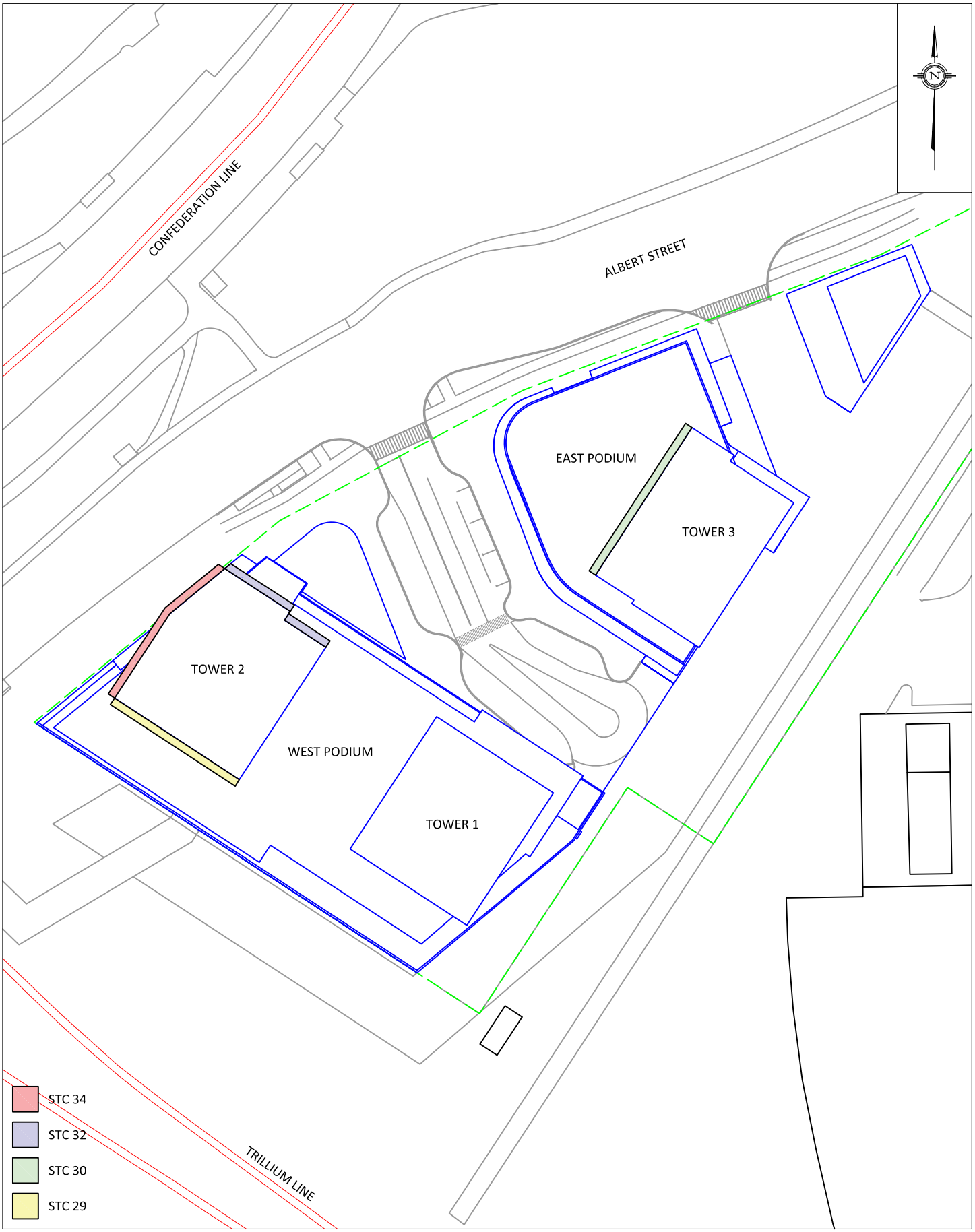
PROJECT	900 ALBERT STREET, OTTAWA ENVIRONMENTAL NOISE AND VIBRATION ASSESSMENT
SCALE	1:1500 (APPROX.)
DRAWING NO.	GWE16-018-4
DATE	NOVEMBER 10, 2016
DRAWN BY	M.L.
DESCRIPTION	FIGURE 4: STATIONARY SOURCE LOCATIONS



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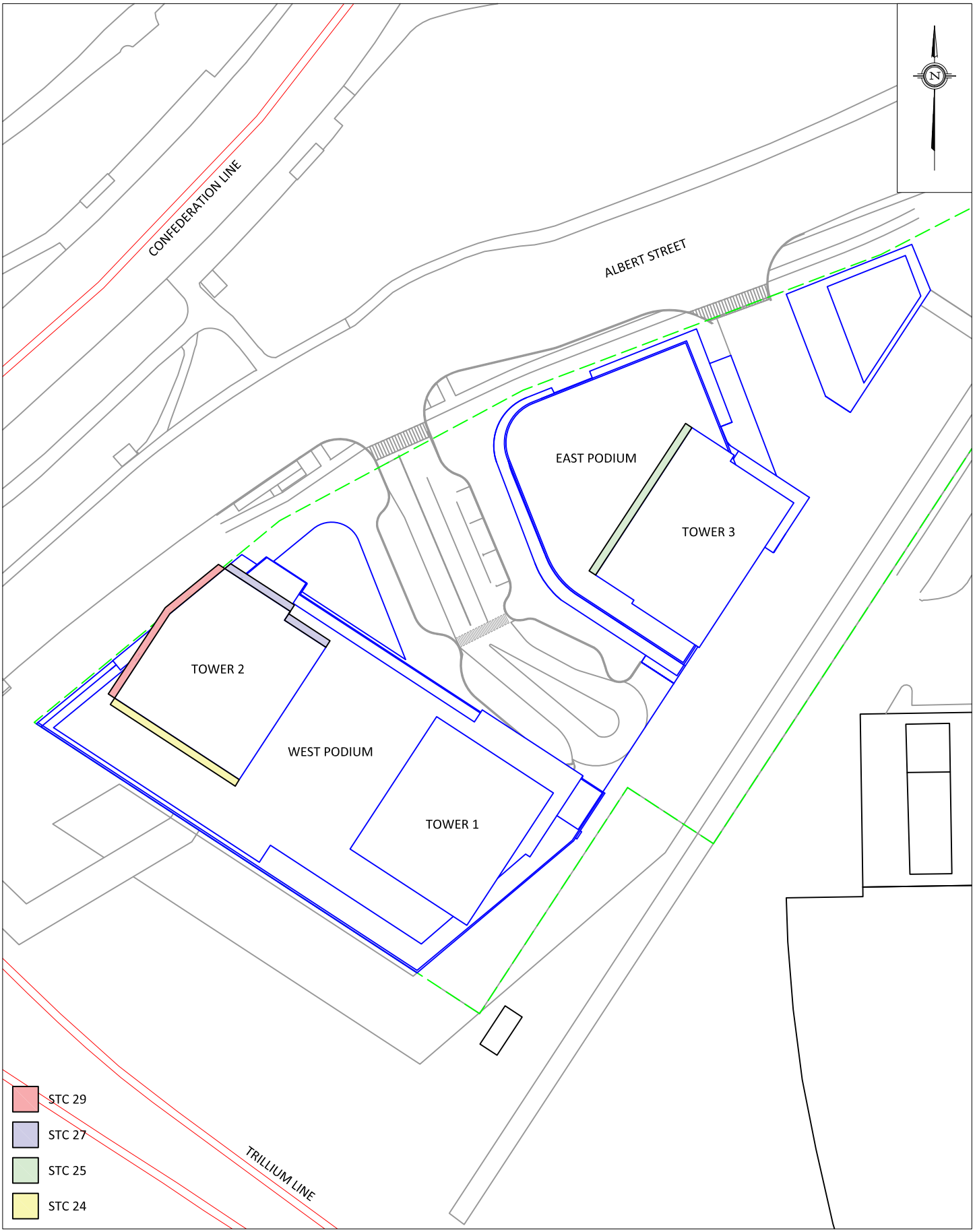
PROJECT	900 ALBERT STREET, OTTAWA ENVIRONMENTAL NOISE AND VIBRATION ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE16-018-5
DATE	NOVEMBER 10, 2016
DRAWN BY	M.L.
DESCRIPTION	FIGURE 5: BEDROOM WINDOW STC REQUIREMENTS



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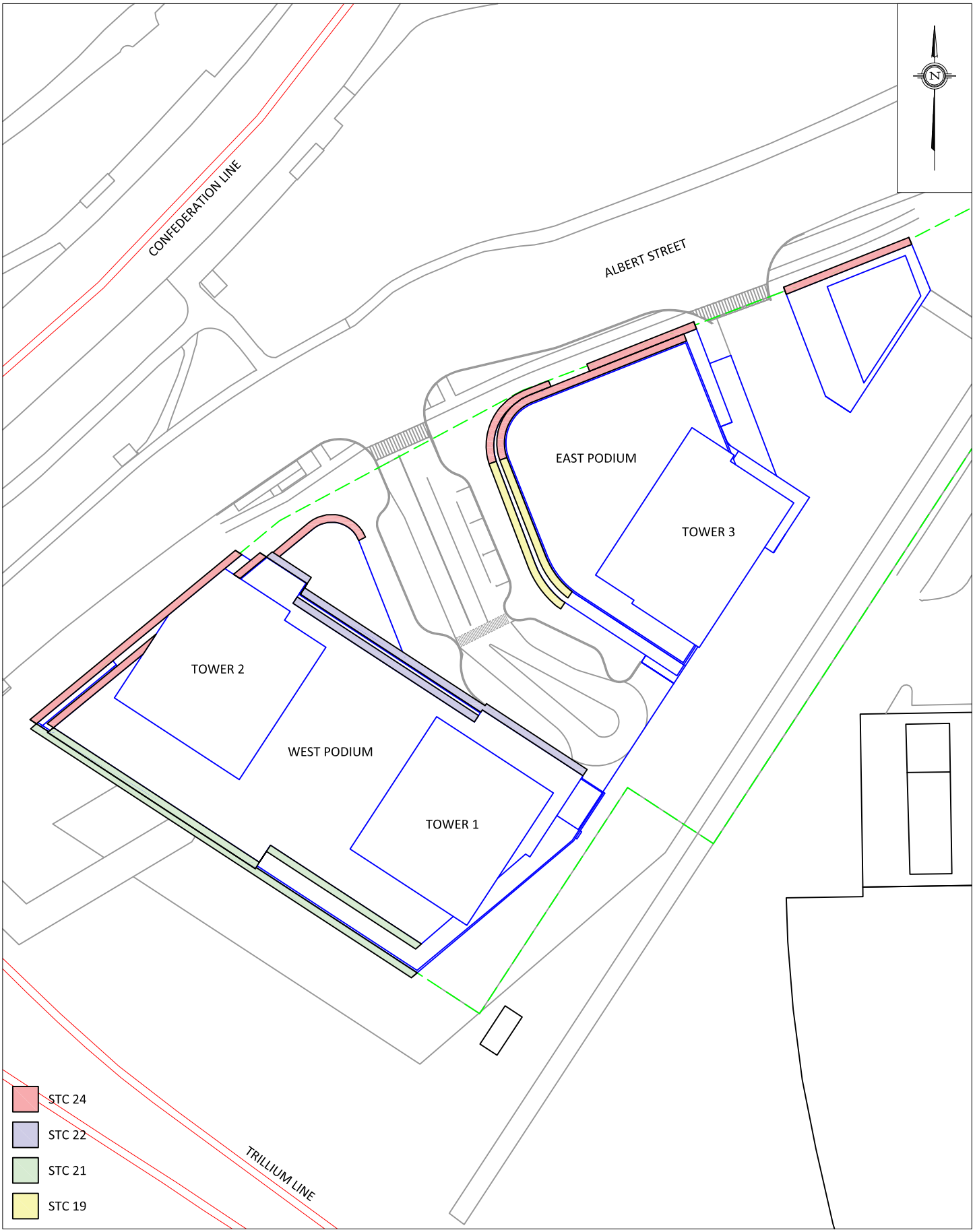
PROJECT	900 ALBERT STREET, OTTAWA ENVIRONMENTAL NOISE AND VIBRATION ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE16-018-6
DATE	NOVEMBER 10, 2016
DRAWN BY	M.L.
DESCRIPTION	FIGURE 6: LIVING ROOM WINDOW STC REQUIREMENTS



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PROJECT	900 ALBERT STREET, OTTAWA ENVIRONMENTAL NOISE AND VIBRATION ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE16-018-7
DATE	NOVEMBER 10, 2016
DRAWN BY	M.L.
DESCRIPTION	FIGURE 7: RETAIL AND OFFICE WINDOW STC REQUREMENTS

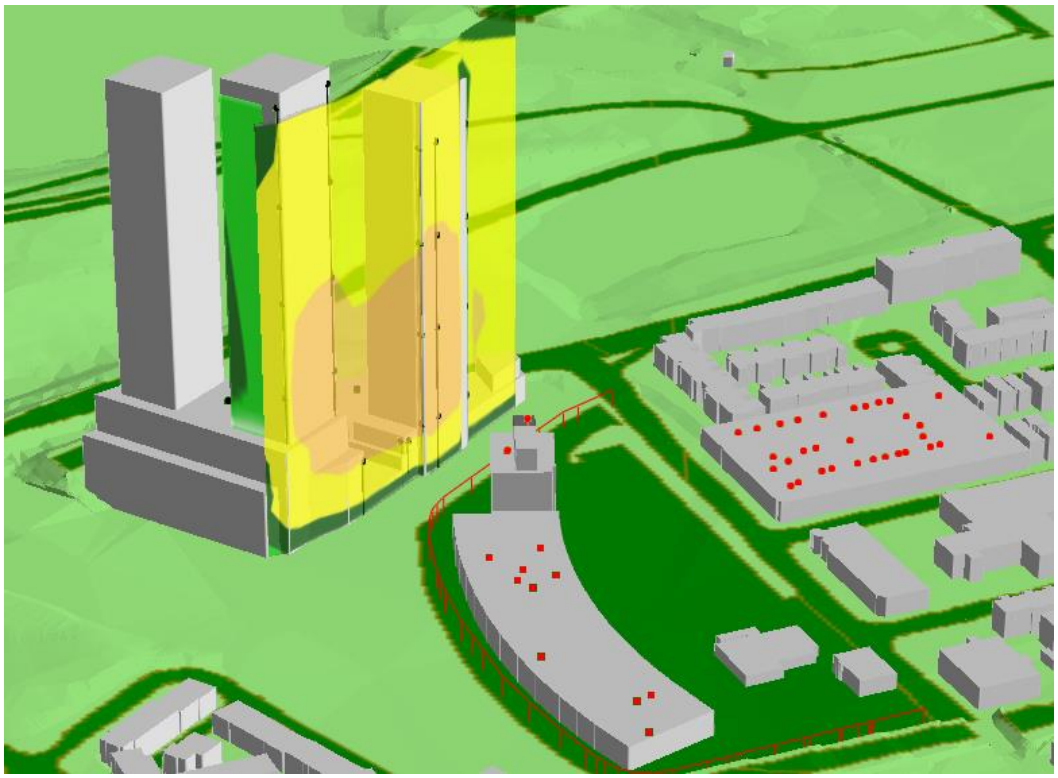


FIGURE 8: DAYTIME STATIONARY NOISE CONTOURS

80 – 85 dB
75 – 80 dB
70 – 75 dB
65 – 70 dB
60 – 65 dB
55 – 60 dB
50 – 55 dB
45 – 50 dB
40 – 45 dB
35 – 40 dB
0 – 35 dB

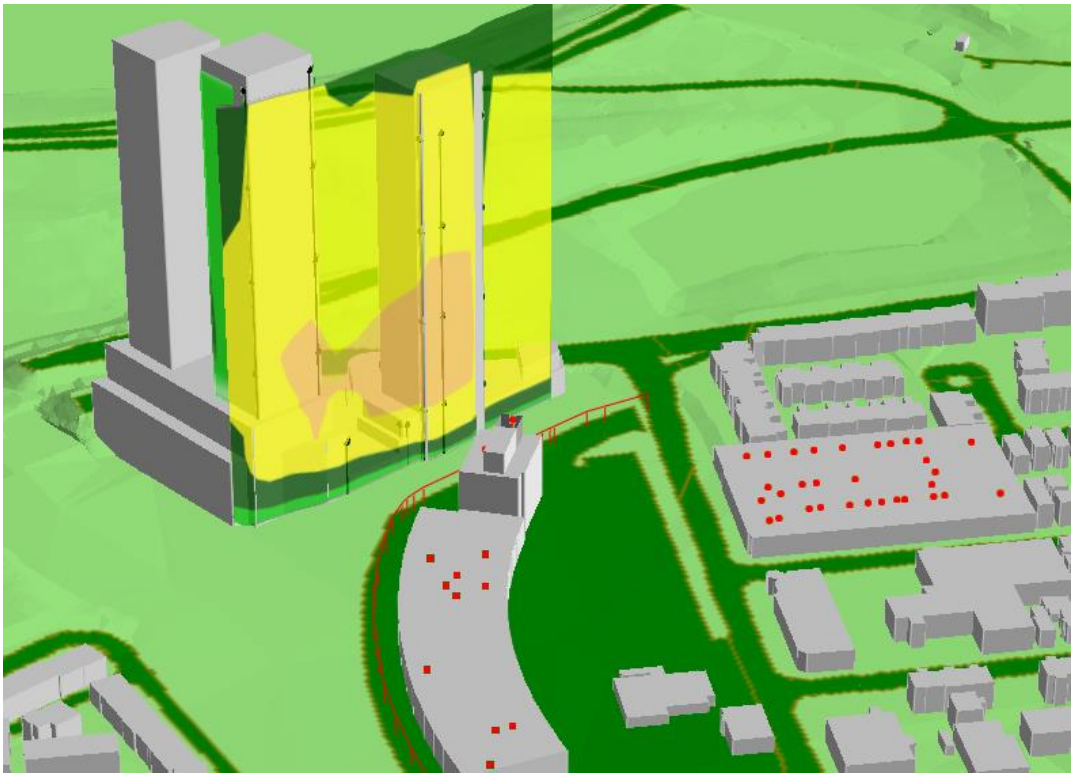
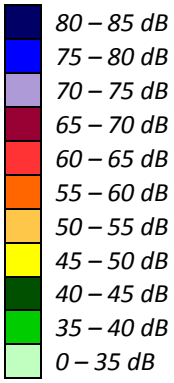


FIGURE 9: NIGHTTIME STATIONARY NOISE CONTOURS



APPENDIX A

STAMSON 5.04 - INPUT AND OUTPUT DATA

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 13:50:22
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   81.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 81.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertR (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           :  68.00 deg   77.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  68.00 deg   Angle2 : 77.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        7.50 !         7.50

ROAD (0.00 + 71.27 + 0.00) = 71.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90     81   0.00  71.49   0.00   0.00  -0.22   0.00   0.00  -0.01
71.26*
   -90     81   0.00  71.49   0.00   0.00  -0.22   0.00   0.00   0.00
71.27
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 71.27 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        6.30 !         6.30

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
---------------------------------------------------------------------------
--
    68     77   0.00  71.49   0.00  -2.22 -13.01   0.00   0.00   0.00
56.26*
    68     77   0.00  71.49   0.00  -2.22 -13.01   0.00   0.00   0.00
56.26
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 56.26 dBA

Total Leq All Segments: 71.40 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        7.50 !         7.50

ROAD (0.00 + 63.67 + 0.00) = 63.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90     81   0.00  63.89   0.00   0.00  -0.22   0.00   0.00  -0.01
63.66*
   -90     81   0.00  63.89   0.00   0.00  -0.22   0.00   0.00   0.00
63.67
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 63.67 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        6.30 !         6.30

ROAD (0.00 + 48.66 + 0.00) = 48.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
    68     77   0.00  63.89   0.00  -2.22 -13.01   0.00   0.00   0.00
48.66*
    68     77   0.00  63.89   0.00  -2.22 -13.01   0.00   0.00   0.00
48.66
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 48.66 dBA

Total Leq All Segments: 63.80 dBA
```

```
RT/Custom data, segment # 1: ConL (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -70.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  58.00 / 58.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -70.00 deg   Angle2 : 45.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: ConR (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :  57.00 deg   77.00 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            :  57.00 deg   Angle2 : 77.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
RT/Custom data, segment # 3: Tri (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 3: Tri (day/night)
-------------------------------------
Angle1   Angle2           :   7.00 deg   42.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  78.00 / 78.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  12.00 deg   Angle2 : 42.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  68.00 / 68.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: ConL (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 !        7.33 !         7.33

RT/Custom (0.00 + 52.70 + 0.00) = 52.70 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -70     45   0.00  60.51  -5.87  -1.95   0.00   0.00   0.00  52.70*
   -70     45   0.00  60.51  -5.87  -1.95   0.00   0.00   0.00  52.70
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 52.70 dBA


Results segment # 2: ConR (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 !        6.59 !         6.59

RT/Custom (0.00 + 46.30 + 0.00) = 46.30 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    57     77   0.00  60.51  -4.67  -9.54   0.00   0.00   0.00  46.30*
    57     77   0.00  60.51  -4.67  -9.54   0.00   0.00   0.00  46.30
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.30 dBA

Results segment # 3: Tri (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 !        1.40 !         1.40

RT/Custom (33.30 + 23.55 + 0.00) = 33.74 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
     7     12   0.00  56.02  -7.16 -15.56   0.00   0.00   0.00  33.30
----------------------------------------------------------------------
    12     42   0.00  56.02  -7.16  -7.78   0.00   0.00 -17.53  23.55
----------------------------------------------------------------------

Segment Leq : 33.74 dBA

Total Leq All Segments: 53.64 dBA

Results segment # 1: ConL (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 !        7.33 !         7.33

RT/Custom (0.00 + 46.16 + 0.00) = 46.16 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -70     45   0.00  53.98  -5.87  -1.95   0.00   0.00   0.00  46.16*
   -70     45   0.00  53.98  -5.87  -1.95   0.00   0.00   0.00  46.16
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.16 dBA


Results segment # 2: ConR (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 !        6.59 !         6.59

RT/Custom (0.00 + 39.77 + 0.00) = 39.77 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    57     77   0.00  53.98  -4.67  -9.54   0.00   0.00   0.00  39.77*
    57     77   0.00  53.98  -4.67  -9.54   0.00   0.00   0.00  39.77
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 39.77 dBA
```

```
Results segment # 3: Tri (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 !        1.40 !         1.40

RT/Custom (27.28 + 17.53 + 0.00) = 27.72 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
     7     12   0.00  50.00  -7.16 -15.56   0.00   0.00   0.00  27.28
----------------------------------------------------------------------
    12     42   0.00  50.00  -7.16  -7.78   0.00   0.00 -17.53  17.53
----------------------------------------------------------------------

Segment Leq : 27.72 dBA

Total Leq All Segments: 47.11 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 71.48
                         (NIGHT): 63.90
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 13:57:05
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           :  17.00 deg   59.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  22.00 / 22.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  17.00 deg   Angle2 : 59.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertR (day/night)
--------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           :  46.00 deg   76.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  30.00 / 30.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  46.00 deg   Angle2 : 76.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        7.50 !         7.50

ROAD (0.00 + 63.51 + 0.00) = 63.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
    17     59   0.00  71.49   0.00  -1.66  -6.32   0.00   0.00   0.00
63.51*
    17     59   0.00  71.49   0.00  -1.66  -6.32   0.00   0.00   0.00
63.51
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 63.51 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        6.50 !         6.50

ROAD (0.00 + 60.70 + 0.00) = 60.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
    46     76   0.00  71.49   0.00  -3.01  -7.78   0.00   0.00   0.00
60.70*
    46     76   0.00  71.49   0.00  -3.01  -7.78   0.00   0.00   0.00
60.70
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 60.70 dBA

Total Leq All Segments: 65.34 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        7.50 !         7.50

ROAD (0.00 + 55.91 + 0.00) = 55.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
    17     59   0.00  63.89   0.00  -1.66  -6.32   0.00   0.00   0.00
55.91*
    17     59   0.00  63.89   0.00  -1.66  -6.32   0.00   0.00   0.00
55.91
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 55.91 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        6.50 !         6.50

ROAD (0.00 + 53.10 + 0.00) = 53.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
    46     76   0.00  63.89   0.00  -3.01  -7.78   0.00   0.00   0.00
53.10*
    46     76   0.00  63.89   0.00  -3.01  -7.78   0.00   0.00   0.00
53.10
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 53.10 dBA

Total Leq All Segments: 57.74 dBA
```

```
RT/Custom data, segment # 1: Con (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: Con (day/night)
-------------------------------------
Angle1   Angle2           :  33.00 deg   70.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  64.00 / 64.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  33.00 deg   Angle2 : 70.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Con (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 !        6.88 !         6.88

RT/Custom (0.00 + 47.34 + 0.00) = 47.34 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    33     70   0.00  60.51  -6.30  -6.87   0.00   0.00   0.00  47.34*
    33     70   0.00  60.51  -6.30  -6.87   0.00   0.00   0.00  47.34
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 47.34 dBA

Total Leq All Segments: 47.34 dBA
```

```
Results segment # 1: Con (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 !        6.88 !         6.88

RT/Custom (0.00 + 40.81 + 0.00) = 40.81 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    33     70   0.00  53.98  -6.30  -6.87   0.00   0.00   0.00  40.81*
    33     70   0.00  53.98  -6.30  -6.87   0.00   0.00   0.00  40.81
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 40.81 dBA

Total Leq All Segments: 40.81 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 65.41
                         (NIGHT): 57.83
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:21:18
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           : -73.00 deg   -30.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  24.00 / 24.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -73.00 deg   Angle2 : -30.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertR (day/night)
--------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           : -43.00 deg   84.00 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           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -43.00 deg   Angle2 : 84.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        7.50 !         7.50

ROAD (0.00 + 63.23 + 0.00) = 63.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -73    -30   0.00  71.49   0.00  -2.04  -6.22   0.00   0.00   0.00
63.23*
   -73    -30   0.00  71.49   0.00  -2.04  -6.22   0.00   0.00   0.00
63.23
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 63.23 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        6.07 !         6.07

ROAD (0.00 + 68.51 + 0.00) = 68.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -43     84   0.00  71.49   0.00  -1.46  -1.51   0.00   0.00   0.00
68.51*
   -43     84   0.00  71.49   0.00  -1.46  -1.51   0.00   0.00   0.00
68.51
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 68.51 dBA

Total Leq All Segments: 69.64 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        7.50 !         7.50

ROAD (0.00 + 55.63 + 0.00) = 55.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -73    -30   0.00  63.89   0.00  -2.04  -6.22   0.00   0.00   0.00
55.63*
   -73    -30   0.00  63.89   0.00  -2.04  -6.22   0.00   0.00   0.00
55.63
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 55.63 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        6.07 !         6.07

ROAD (0.00 + 60.92 + 0.00) = 60.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -43     84   0.00  63.89   0.00  -1.46  -1.51   0.00   0.00   0.00
60.92*
   -43     84   0.00  63.89   0.00  -1.46  -1.51   0.00   0.00   0.00
60.92
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 60.92 dBA

Total Leq All Segments: 62.05 dBA


RT/Custom data, segment # 1: ConL (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -70.00 deg   -17.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  76.00 / 76.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -70.00 deg   Angle2 : -17.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: ConR (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :  -5.00 deg   57.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  79.00 / 79.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -5.00 deg   Angle2 : 57.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: ConL (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 !        7.37 !         7.37

RT/Custom (0.00 + 48.16 + 0.00) = 48.16 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -70    -17   0.00  60.51  -7.05  -5.31   0.00   0.00   0.00  48.16*
   -70    -17   0.00  60.51  -7.05  -5.31   0.00   0.00   0.00  48.16
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.16 dBA
```

```
Results segment # 2: ConR (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 !        6.99 !         6.99

RT/Custom (0.00 + 48.67 + 0.00) = 48.67 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    -5     57   0.00  60.51  -7.22  -4.63   0.00   0.00   0.00  48.67*
    -5     57   0.00  60.51  -7.22  -4.63   0.00   0.00   0.00  48.67
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.67 dBA

Total Leq All Segments: 51.43 dBA


Results segment # 1: ConL (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 !        7.37 !         7.37

RT/Custom (0.00 + 41.63 + 0.00) = 41.63 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -70    -17   0.00  53.98  -7.05  -5.31   0.00   0.00   0.00  41.63*
   -70    -17   0.00  53.98  -7.05  -5.31   0.00   0.00   0.00  41.63
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 41.63 dBA
```

```
Results segment # 2: ConR (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 !        6.99 !         6.99

RT/Custom (0.00 + 42.14 + 0.00) = 42.14 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    -5     57   0.00  53.98  -7.22  -4.63   0.00   0.00   0.00  42.14*
    -5     57   0.00  53.98  -7.22  -4.63   0.00   0.00   0.00  42.14
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 42.14 dBA

Total Leq All Segments: 44.90 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 69.70
                         (NIGHT): 62.13
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:25:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           : -73.00 deg   -30.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  24.00 / 24.00  m
Receiver height           :  17.50 / 17.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -73.00 deg   Angle2 : -30.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertR (day/night)
--------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           : -43.00 deg   84.00 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           :  17.50 / 17.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -43.00 deg   Angle2 : 84.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: AlbertL (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 !       17.50 !       13.33 !        13.33

ROAD (0.00 + 63.23 + 0.00) = 63.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -73    -30   0.00  71.49   0.00  -2.04  -6.22   0.00   0.00   0.00
63.23*
   -73    -30   0.00  71.49   0.00  -2.04  -6.22   0.00   0.00   0.00
63.23
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 63.23 dBA


Results segment # 2: AlbertR (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 !       17.50 !       11.31 !        11.31

ROAD (0.00 + 68.51 + 0.00) = 68.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -43     84   0.00  71.49   0.00  -1.46  -1.51   0.00   0.00   0.00
68.51*
   -43     84   0.00  71.49   0.00  -1.46  -1.51   0.00   0.00   0.00
68.51
--------------------------------------------------------------------------
--
```

```
 * Bright Zone !

Segment Leq : 68.51 dBA

Total Leq All Segments: 69.64 dBA


Results segment # 1: AlbertL (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 !       17.50 !       13.33 !        13.33

ROAD (0.00 + 55.63 + 0.00) = 55.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -73    -30   0.00  63.89   0.00  -2.04  -6.22   0.00   0.00   0.00
55.63*
   -73    -30   0.00  63.89   0.00  -2.04  -6.22   0.00   0.00   0.00
55.63
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 55.63 dBA
```

```
Results segment # 2: AlbertR (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 !       17.50 !       11.31 !        11.31

ROAD (0.00 + 60.92 + 0.00) = 60.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -43     84   0.00  63.89   0.00  -1.46  -1.51   0.00   0.00   0.00
60.92*
   -43     84   0.00  63.89   0.00  -1.46  -1.51   0.00   0.00   0.00
60.92
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 60.92 dBA

Total Leq All Segments: 62.05 dBA
```

```
RT/Custom data, segment # 1: ConL (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -70.00 deg   -17.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  76.00 / 76.00  m
Receiver height           :  17.50 / 17.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -70.00 deg   Angle2 : -17.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: ConR (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :  -5.00 deg   57.00 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           :  17.50 / 17.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -5.00 deg   Angle2 : 57.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: ConL (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 !       16.05 !        16.05

RT/Custom (0.00 + 48.16 + 0.00) = 48.16 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -70    -17   0.00  60.51  -7.05  -5.31   0.00   0.00   0.00  48.16*
   -70    -17   0.00  60.51  -7.05  -5.31   0.00   0.00   0.00  48.16
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.16 dBA


Results segment # 2: ConR (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 !       15.73 !        15.73

RT/Custom (0.00 + 48.67 + 0.00) = 48.67 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    -5     57   0.00  60.51  -7.22  -4.63   0.00   0.00   0.00  48.67*
    -5     57   0.00  60.51  -7.22  -4.63   0.00   0.00   0.00  48.67
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.67 dBA

Total Leq All Segments: 51.43 dBA
```

```
Results segment # 1: ConL (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 !       16.05 !        16.05

RT/Custom (0.00 + 41.63 + 0.00) = 41.63 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -70    -17   0.00  53.98  -7.05  -5.31   0.00   0.00   0.00  41.63*
   -70    -17   0.00  53.98  -7.05  -5.31   0.00   0.00   0.00  41.63
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 41.63 dBA


Results segment # 2: ConR (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 !       15.73 !        15.73

RT/Custom (0.00 + 42.14 + 0.00) = 42.14 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    -5     57   0.00  53.98  -7.22  -4.63   0.00   0.00   0.00  42.14*
    -5     57   0.00  53.98  -7.22  -4.63   0.00   0.00   0.00  42.14
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 42.14 dBA

Total Leq All Segments: 44.90 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.70
                         (NIGHT): 62.13
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:27:11
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Albert (day/night)
------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Albert (day/night)
----------------------------------------
Angle1   Angle2           :   5.00 deg   82.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  28.00 / 28.00  m
Receiver height           :  17.50 / 17.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   5.00 deg   Angle2 : 82.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Albert (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 !       17.50 !       12.86 !        12.86

ROAD (0.00 + 65.09 + 0.00) = 65.09 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
     5     82   0.00  71.49   0.00  -2.71  -3.69   0.00   0.00   0.00
65.09*
     5     82   0.00  71.49   0.00  -2.71  -3.69   0.00   0.00   0.00
65.09
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 65.09 dBA

Total Leq All Segments: 65.09 dBA
```

```
Results segment # 1: Albert (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 !       17.50 !       12.86 !        12.86

ROAD (0.00 + 57.50 + 0.00) = 57.50 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
     5     82   0.00  63.89   0.00  -2.71  -3.69   0.00   0.00   0.00
57.50*
     5     82   0.00  63.89   0.00  -2.71  -3.69   0.00   0.00   0.00
57.50
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 57.50 dBA

Total Leq All Segments: 57.50 dBA
```

```
RT/Custom data, segment # 1: Con (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: Con (day/night)
-------------------------------------
Angle1   Angle2           :  33.00 deg   48.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  96.00 / 96.00  m
Receiver height           :  17.50 / 17.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  33.00 deg   Angle2 : 48.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Con (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 !       16.04 !        16.04

RT/Custom (0.00 + 41.66 + 0.00) = 41.66 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    33     48   0.00  60.51  -8.06 -10.79   0.00   0.00   0.00  41.66*
    33     48   0.00  60.51  -8.06 -10.79   0.00   0.00   0.00  41.66
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 41.66 dBA

Total Leq All Segments: 41.66 dBA
```

```
Results segment # 1: Con (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 !       16.04 !        16.04

RT/Custom (0.00 + 35.13 + 0.00) = 35.13 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    33     48   0.00  53.98  -8.06 -10.79   0.00   0.00   0.00  35.13*
    33     48   0.00  53.98  -8.06 -10.79   0.00   0.00   0.00  35.13
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 35.13 dBA

Total Leq All Segments: 35.13 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 65.11
                         (NIGHT): 57.53
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:27:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Albert (day/night)
------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Albert (day/night)
----------------------------------------
Angle1   Angle2           : -82.00 deg   17.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  30.00 / 30.00  m
Receiver height           :  17.50 / 17.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -82.00 deg   Angle2 : -71.00 deg
Barrier height            :  39.00 m
Barrier receiver distance :  19.00 / 19.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Albert (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 !       17.50 !       11.16 !        11.16

ROAD (0.00 + 36.34 + 65.37) = 65.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -82    -71   0.00  71.49   0.00  -3.01 -12.14   0.00   0.00 -20.00
36.34
---------------------------------------------------------------------------
--
   -71     17   0.00  71.49   0.00  -3.01  -3.11   0.00   0.00   0.00
65.37
---------------------------------------------------------------------------
--

Segment Leq : 65.38 dBA

Total Leq All Segments: 65.38 dBA
```

```
Results segment # 1: Albert (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 !       17.50 !       11.16 !        11.16

ROAD (0.00 + 28.74 + 57.78) = 57.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -82    -71   0.00  63.89   0.00  -3.01 -12.14   0.00   0.00 -20.00
28.74
--------------------------------------------------------------------------
--
   -71     17   0.00  63.89   0.00  -3.01  -3.11   0.00   0.00   0.00
57.78
--------------------------------------------------------------------------
--

Segment Leq : 57.78 dBA

Total Leq All Segments: 57.78 dBA
```

```
RT/Custom data, segment # 1: ConL (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -68.00 deg   -3.00 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           :  17.50 / 17.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -68.00 deg   Angle2 : -3.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: ConR (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :   9.00 deg   32.00 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           :  17.50 / 17.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   9.00 deg   Angle2 : 32.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: ConL (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 !       16.12 !        16.12

RT/Custom (0.00 + 48.82 + 0.00) = 48.82 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -68     -3   0.00  60.51  -7.27  -4.42   0.00   0.00   0.00  48.82*
   -68     -3   0.00  60.51  -7.27  -4.42   0.00   0.00   0.00  48.82
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.82 dBA


Results segment # 2: ConR (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 !       15.75 !        15.75

RT/Custom (0.00 + 44.31 + 0.00) = 44.31 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
     9     32   0.00  60.51  -7.27  -8.94   0.00   0.00   0.00  44.31*
     9     32   0.00  60.51  -7.27  -8.94   0.00   0.00   0.00  44.31
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 44.31 dBA

Total Leq All Segments: 50.14 dBA
```

```
Results segment # 1: ConL (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 !       16.12 !        16.12

RT/Custom (0.00 + 42.29 + 0.00) = 42.29 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -68     -3   0.00  53.98  -7.27  -4.42   0.00   0.00   0.00  42.29*
   -68     -3   0.00  53.98  -7.27  -4.42   0.00   0.00   0.00  42.29
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 42.29 dBA


Results segment # 2: ConR (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 !       15.75 !        15.75

RT/Custom (0.00 + 37.78 + 0.00) = 37.78 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
     9     32   0.00  53.98  -7.27  -8.94   0.00   0.00   0.00  37.78*
     9     32   0.00  53.98  -7.27  -8.94   0.00   0.00   0.00  37.78
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 37.78 dBA

Total Leq All Segments: 43.61 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.51
                         (NIGHT): 57.94
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:29:35
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   83.00 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           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 83.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertR (day/night)
--------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           :  71.00 deg   76.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  33.00 / 33.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  71.00 deg   Angle2 : 76.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       17.16 !        17.16

ROAD (0.00 + 71.32 + 0.00) = 71.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -90     83   0.00  71.49   0.00   0.00  -0.17   0.00   0.00  -0.00
71.32*
   -90     83   0.00  71.49   0.00   0.00  -0.17   0.00   0.00   0.00
71.32
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 71.32 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       26.80 !        26.80

ROAD (0.00 + 52.50 + 0.00) = 52.50 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
    71     76   0.00  71.49   0.00  -3.42 -15.56   0.00   0.00   0.00
52.50*
    71     76   0.00  71.49   0.00  -3.42 -15.56   0.00   0.00   0.00
52.50
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 52.50 dBA

Total Leq All Segments: 71.38 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       17.16 !        17.16

ROAD (0.00 + 63.72 + 0.00) = 63.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90     83   0.00  63.89   0.00   0.00  -0.17   0.00   0.00  -0.00
63.72*
   -90     83   0.00  63.89   0.00   0.00  -0.17   0.00   0.00   0.00
63.72
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 63.72 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       26.80 !        26.80

ROAD (0.00 + 44.91 + 0.00) = 44.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
    71     76   0.00  63.89   0.00  -3.42 -15.56   0.00   0.00   0.00
44.91*
    71     76   0.00  63.89   0.00  -3.42 -15.56   0.00   0.00   0.00
44.91
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 44.91 dBA

Total Leq All Segments: 63.78 dBA
```

```
RT/Custom data, segment # 1: ConL (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -66.00 deg   57.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  57.00 / 57.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -66.00 deg   Angle2 : 57.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: ConR (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :  69.00 deg   81.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  37.00 / 37.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  69.00 deg   Angle2 : 81.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
RT/Custom data, segment # 3: Tri (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 3: Tri (day/night)
-------------------------------------
Angle1   Angle2           :   8.00 deg   54.00 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           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   8.00 deg   Angle2 : 54.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  38.00 / 38.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: ConL (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 !       36.50 !       31.24 !        31.24

RT/Custom (0.00 + 53.06 + 0.00) = 53.06 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -66     57   0.00  60.51  -5.80  -1.65   0.00   0.00   0.00  53.06*
   -66     57   0.00  60.51  -5.80  -1.65   0.00   0.00   0.00  53.06
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 53.06 dBA
```

```
Results segment # 2: ConR (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 !       36.50 !       27.58 !        27.58

RT/Custom (0.00 + 44.83 + 0.00) = 44.83 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    69     81   0.00  60.51  -3.92 -11.76   0.00   0.00   0.00  44.83*
    69     81   0.00  60.51  -3.92 -11.76   0.00   0.00   0.00  44.83
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 44.83 dBA


Results segment # 3: Tri (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 !       36.50 !        8.00 !         8.00

RT/Custom (0.00 + 45.05 + 0.00) = 45.05 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
     8     54   0.00  56.02  -5.05  -5.93   0.00   0.00   0.00  45.05*
     8     54   0.00  56.02  -5.05  -5.93   0.00   0.00   0.00  45.05
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 45.05 dBA

Total Leq All Segments: 54.23 dBA
```

```
Results segment # 1: ConL (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 !       36.50 !       31.24 !        31.24

RT/Custom (0.00 + 46.53 + 0.00) = 46.53 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -66     57   0.00  53.98  -5.80  -1.65   0.00   0.00   0.00  46.53*
   -66     57   0.00  53.98  -5.80  -1.65   0.00   0.00   0.00  46.53
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.53 dBA


Results segment # 2: ConR (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 !       36.50 !       27.58 !        27.58

RT/Custom (0.00 + 38.30 + 0.00) = 38.30 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    69     81   0.00  53.98  -3.92 -11.76   0.00   0.00   0.00  38.30*
    69     81   0.00  53.98  -3.92 -11.76   0.00   0.00   0.00  38.30
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 38.30 dBA
```

```
Results segment # 3: Tri (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 !       36.50 !        8.00 !         8.00

RT/Custom (0.00 + 39.03 + 0.00) = 39.03 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
     8     54   0.00  50.00  -5.05  -5.93   0.00   0.00   0.00  39.03*
     8     54   0.00  50.00  -5.05  -5.93   0.00   0.00   0.00  39.03
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 39.03 dBA

Total Leq All Segments: 47.76 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 71.46
                         (NIGHT): 63.88
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:29:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   81.00 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           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 81.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertR (day/night)
--------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           :  68.00 deg   77.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  68.00 deg   Angle2 : 77.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       17.16 !        17.16

ROAD (0.00 + 71.27 + 0.00) = 71.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90     81   0.00  71.49   0.00   0.00  -0.22   0.00   0.00  -0.00
71.26*
   -90     81   0.00  71.49   0.00   0.00  -0.22   0.00   0.00   0.00
71.27
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 71.27 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       23.70 !        23.70

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
---------------------------------------------------------------------------
--
    68     77   0.00  71.49   0.00  -2.22 -13.01   0.00   0.00   0.00
56.26*
    68     77   0.00  71.49   0.00  -2.22 -13.01   0.00   0.00   0.00
56.26
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 56.26 dBA

Total Leq All Segments: 71.40 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       17.16 !        17.16

ROAD (0.00 + 63.67 + 0.00) = 63.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90     81   0.00  63.89   0.00   0.00  -0.22   0.00   0.00  -0.00
63.67*
   -90     81   0.00  63.89   0.00   0.00  -0.22   0.00   0.00   0.00
63.67
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 63.67 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       23.70 !        23.70

ROAD (0.00 + 48.66 + 0.00) = 48.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
    68     77   0.00  63.89   0.00  -2.22 -13.01   0.00   0.00   0.00
48.66*
    68     77   0.00  63.89   0.00  -2.22 -13.01   0.00   0.00   0.00
48.66
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 48.66 dBA

Total Leq All Segments: 63.80 dBA


RT/Custom data, segment # 1: ConL (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -70.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  58.00 / 58.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -70.00 deg   Angle2 : 45.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: ConR (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :  57.00 deg   77.00 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           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  57.00 deg   Angle2 : 77.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


RT/Custom data, segment # 3: Tri (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 3: Tri (day/night)
--------------------------------------
Angle1   Angle2           :   7.00 deg   42.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  78.00 / 78.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  12.00 deg   Angle2 : 42.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  68.00 / 68.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: ConL (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 !       36.50 !       31.33 !        31.33

RT/Custom (0.00 + 52.70 + 0.00) = 52.70 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -70     45   0.00  60.51  -5.87  -1.95   0.00   0.00   0.00  52.70*
   -70     45   0.00  60.51  -5.87  -1.95   0.00   0.00   0.00  52.70
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 52.70 dBA


Results segment # 2: ConR (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 !       36.50 !       29.00 !        29.00

RT/Custom (0.00 + 46.30 + 0.00) = 46.30 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    57     77   0.00  60.51  -4.67  -9.54   0.00   0.00   0.00  46.30*
    57     77   0.00  60.51  -4.67  -9.54   0.00   0.00   0.00  46.30
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.30 dBA
```

```
Results segment # 3: Tri (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 !       36.50 !        5.12 !         5.12

RT/Custom (33.30 + 34.72 + 0.00) = 37.08 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
     7     12   0.00  56.02  -7.16 -15.56   0.00   0.00   0.00  33.30
----------------------------------------------------------------------
    12     42   0.00  56.02  -7.16  -7.78   0.00   0.00  -6.36  34.72
----------------------------------------------------------------------

Segment Leq : 37.08 dBA

Total Leq All Segments: 53.69 dBA


Results segment # 1: ConL (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 !       36.50 !       31.33 !        31.33

RT/Custom (0.00 + 46.16 + 0.00) = 46.16 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -70     45   0.00  53.98  -5.87  -1.95   0.00   0.00   0.00  46.16*
   -70     45   0.00  53.98  -5.87  -1.95   0.00   0.00   0.00  46.16
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.16 dBA
```

```
Results segment # 2: ConR (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 !       36.50 !       29.00 !        29.00

RT/Custom (0.00 + 39.77 + 0.00) = 39.77 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    57     77   0.00  53.98  -4.67  -9.54   0.00   0.00   0.00  39.77*
    57     77   0.00  53.98  -4.67  -9.54   0.00   0.00   0.00  39.77
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 39.77 dBA


Results segment # 3: Tri (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 !       36.50 !        5.12 !         5.12

RT/Custom (27.28 + 28.70 + 0.00) = 31.06 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
     7     12   0.00  50.00  -7.16 -15.56   0.00   0.00   0.00  27.28
----------------------------------------------------------------------
    12     42   0.00  50.00  -7.16  -7.78   0.00   0.00  -6.36  28.70
----------------------------------------------------------------------

Segment Leq : 31.06 dBA

Total Leq All Segments: 47.17 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 71.48
                         (NIGHT): 63.90
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:30:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           : -18.00 deg   77.00 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           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -18.00 deg   Angle2 : 77.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertR (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           :  65.00 deg   87.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  26.00 / 26.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  65.00 deg   Angle2 : 87.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       17.16 !        17.16

ROAD (0.00 + 68.71 + 0.00) = 68.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -18     77   0.00  71.49   0.00   0.00  -2.78   0.00   0.00   0.00
68.71*
   -18     77   0.00  71.49   0.00   0.00  -2.78   0.00   0.00   0.00
68.71
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 68.71 dBA
```

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

Source height = 1.50 m

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

ROAD (0.00 + 59.97 + 0.00) = 59.97 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
    65     87   0.00  71.49   0.00  -2.39  -9.13   0.00   0.00   0.00
59.97*
    65     87   0.00  71.49   0.00  -2.39  -9.13   0.00   0.00   0.00
59.97
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 59.97 dBA

Total Leq All Segments: 69.25 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       17.16 !        17.16

ROAD (0.00 + 61.12 + 0.00) = 61.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -18     77   0.00  63.89   0.00   0.00  -2.78   0.00   0.00   0.00
61.12*
   -18     77   0.00  63.89   0.00   0.00  -2.78   0.00   0.00   0.00
61.12
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 61.12 dBA
```

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

Source height = 1.50 m

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

ROAD (0.00 + 52.38 + 0.00) = 52.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
    65     87   0.00  63.89   0.00  -2.39  -9.13   0.00   0.00   0.00
52.38*
    65     87   0.00  63.89   0.00  -2.39  -9.13   0.00   0.00   0.00
52.38
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 52.38 dBA

Total Leq All Segments: 61.66 dBA


RT/Custom data, segment # 1: ConL (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -15.00 deg   39.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  61.00 / 61.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -15.00 deg   Angle2 : 39.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: ConR (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :  51.00 deg   76.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  49.00 / 49.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  51.00 deg   Angle2 : 76.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: ConL (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 !       36.50 !       31.58 !        31.58

RT/Custom (0.00 + 49.19 + 0.00) = 49.19 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -15     39   0.00  60.51  -6.09  -5.23   0.00   0.00   0.00  49.19*
   -15     39   0.00  60.51  -6.09  -5.23   0.00   0.00   0.00  49.19
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 49.19 dBA
```

```
Results segment # 2: ConR (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 !       36.50 !       29.77 !        29.77

RT/Custom (0.00 + 46.80 + 0.00) = 46.80 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    51     76   0.00  60.51  -5.14  -8.57   0.00   0.00   0.00  46.80*
    51     76   0.00  60.51  -5.14  -8.57   0.00   0.00   0.00  46.80
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.80 dBA

Total Leq All Segments: 51.17 dBA


Results segment # 1: ConL (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 !       36.50 !       31.58 !        31.58

RT/Custom (0.00 + 42.66 + 0.00) = 42.66 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -15     39   0.00  53.98  -6.09  -5.23   0.00   0.00   0.00  42.66*
   -15     39   0.00  53.98  -6.09  -5.23   0.00   0.00   0.00  42.66
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 42.66 dBA
```

```
Results segment # 2: ConR (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 !       36.50 !       29.77 !        29.77

RT/Custom (0.00 + 40.27 + 0.00) = 40.27 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    51     76   0.00  53.98  -5.14  -8.57   0.00   0.00   0.00  40.27*
    51     76   0.00  53.98  -5.14  -8.57   0.00   0.00   0.00  40.27
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 40.27 dBA

Total Leq All Segments: 44.64 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 69.32
                         (NIGHT): 61.75
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 13:50:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Albert (day/night)
------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Albert (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   -18.00 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           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -18.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       17.16 !        17.16

ROAD (0.00 + 67.51 + 0.00) = 67.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90    -18   0.00  71.49   0.00   0.00  -3.98   0.00   0.00  -0.01
67.50*
   -90    -18   0.00  71.49   0.00   0.00  -3.98   0.00   0.00   0.00
67.51
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 67.51 dBA

Total Leq All Segments: 67.51 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       36.50 !       17.16 !        17.16

ROAD (0.00 + 59.91 + 0.00) = 59.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -90    -18   0.00  63.89   0.00   0.00  -3.98   0.00   0.00  -0.01
59.91*
   -90    -18   0.00  63.89   0.00   0.00  -3.98   0.00   0.00   0.00
59.91
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 59.91 dBA

Total Leq All Segments: 59.91 dBA


RT/Custom data, segment # 1: Con (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: Con (day/night)
-------------------------------------
Angle1   Angle2           : -64.00 deg   -15.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  60.00 / 60.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -64.00 deg   Angle2 : -15.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: Tri (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: Tri (day/night)
-------------------------------------
Angle1   Angle2           : -65.00 deg   57.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  45.00 / 45.00  m
Receiver height           :  36.50 / 36.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  20.00 deg   Angle2 : 57.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  35.00 / 35.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Con (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 !       36.50 !       31.50 !        31.50

RT/Custom (0.00 + 48.84 + 0.00) = 48.84 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -64    -15   0.00  60.51  -6.02  -5.65   0.00   0.00   0.00  48.84*
   -64    -15   0.00  60.51  -6.02  -5.65   0.00   0.00   0.00  48.84
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.84 dBA


Results segment # 2: Tri (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 !       36.50 !        8.50 !         8.50

RT/Custom (47.99 + 44.38 + 0.00) = 49.56 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -65     20   0.00  56.02  -4.77  -3.26   0.00   0.00   0.00  47.99
----------------------------------------------------------------------
    20     57   0.00  56.02  -4.77  -6.87   0.00   0.00   0.00  44.38*
    20     57   0.00  56.02  -4.77  -6.87   0.00   0.00   0.00  44.38
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 49.56 dBA

Total Leq All Segments: 52.23 dBA


Results segment # 1: Con (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 !       36.50 !       31.50 !        31.50

RT/Custom (0.00 + 42.31 + 0.00) = 42.31 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -64    -15   0.00  53.98  -6.02  -5.65   0.00   0.00   0.00  42.31*
   -64    -15   0.00  53.98  -6.02  -5.65   0.00   0.00   0.00  42.31
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 42.31 dBA


Results segment # 2: Tri (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 !       36.50 !        8.50 !         8.50

RT/Custom (41.97 + 38.36 + 0.00) = 43.54 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -65     20   0.00  50.00  -4.77  -3.26   0.00   0.00   0.00  41.97
----------------------------------------------------------------------
    20     57   0.00  50.00  -4.77  -6.87   0.00   0.00   0.00  38.36*
    20     57   0.00  50.00  -4.77  -6.87   0.00   0.00   0.00  38.36
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 43.54 dBA

Total Leq All Segments: 45.98 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 67.64
                         (NIGHT): 60.08
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 13:51:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           : -78.00 deg   -64.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  61.00 / 61.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -78.00 deg   Angle2 : -64.00 deg
Barrier height            :  39.00 m
Barrier receiver distance :  50.00 / 50.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertC (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertC (day/night)
-----------------------------------------
Angle1   Angle2           : -64.00 deg   39.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  61.00 / 61.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -64.00 deg   Angle2 : -13.00 deg
Barrier height            : 176.00 m
Barrier receiver distance :  50.00 / 50.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: AlbertR (day/night)
--------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           :  26.00 deg   67.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  70.00 / 70.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  41.00 deg   Angle2 : 67.00 deg
Barrier height            :  20.00 m
Barrier receiver distance :  46.00 / 46.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: AlbertL (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 !       99.50 !       24.09 !        24.09

ROAD (0.00 + 40.03 + 0.00) = 40.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -78    -64   0.00  71.49   0.00  -6.09 -11.09   0.00   0.00 -14.28
40.03
--------------------------------------------------------------------------
--

Segment Leq : 40.03 dBA


Results segment # 2: AlbertC (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 !       99.50 !       24.09 !        24.09

ROAD (0.00 + 39.92 + 60.01) = 60.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -64    -13   0.00  71.49   0.00  -6.09  -5.48   0.00   0.00 -20.00
39.92
--------------------------------------------------------------------------
--
   -13     39   0.00  71.49   0.00  -6.09  -5.39   0.00   0.00   0.00
60.01
--------------------------------------------------------------------------
--

Segment Leq : 60.05 dBA
```

```
Results segment # 3: AlbertR (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 !       99.50 !       37.07 !        37.07

ROAD (54.01 + 56.40 + 0.00) = 58.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
    26     41   0.00  71.49   0.00  -6.69 -10.79   0.00   0.00   0.00
54.01
---------------------------------------------------------------------------
--
    41     67   0.00  71.49   0.00  -6.69  -8.40   0.00   0.00   0.00
56.40*
    41     67   0.00  71.49   0.00  -6.69  -8.40   0.00   0.00   0.00
56.40
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 58.38 dBA

Total Leq All Segments: 62.33 dBA
```

```
Results segment # 1: AlbertL (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 !       99.50 !       24.09 !        24.09

ROAD (0.00 + 32.43 + 0.00) = 32.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -78    -64   0.00  63.89   0.00  -6.09 -11.09   0.00   0.00 -14.28
32.43
--------------------------------------------------------------------------
--

Segment Leq : 32.43 dBA


Results segment # 2: AlbertC (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 !       99.50 !       24.09 !        24.09

ROAD (0.00 + 32.32 + 52.41) = 52.45 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -64    -13   0.00  63.89   0.00  -6.09  -5.48   0.00   0.00 -20.00
32.32
--------------------------------------------------------------------------
--
   -13     39   0.00  63.89   0.00  -6.09  -5.39   0.00   0.00   0.00
52.41
--------------------------------------------------------------------------
--

Segment Leq : 52.45 dBA
```

```
Results segment # 3: AlbertR (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 !       99.50 !       37.07 !        37.07

ROAD (46.41 + 48.80 + 0.00) = 50.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------
--
    26     41   0.00  63.89   0.00  -6.69 -10.79   0.00   0.00   0.00
46.41
-----------------------------------------------------------------------
--
    41     67   0.00  63.89   0.00  -6.69  -8.40   0.00   0.00   0.00
48.80*
    41     67   0.00  63.89   0.00  -6.69  -8.40   0.00   0.00   0.00
48.80
-----------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 50.78 dBA

Total Leq All Segments: 54.73 dBA
```

```
RT/Custom data, segment # 1: ConL (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -58.00 deg   21.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 109.00 / 109.00 m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -58.00 deg   Angle2 : -10.00 deg
Barrier height            : 176.00 m
Barrier receiver distance :  51.00 / 51.00  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: ConR (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :  33.00 deg   63.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  98.00 / 98.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  33.00 deg   Angle2 : 63.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
RT/Custom data, segment # 3: TriL (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 3: TriL (day/night)
--------------------------------------
Angle1   Angle2           : -10.00 deg   34.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  90.00 / 90.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -10.00 deg   Angle2 : 34.00 deg
Barrier height            :  39.00 m
Barrier receiver distance :  33.00 / 33.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


RT/Custom data, segment # 4: TriR (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 4: TriR (day/night)
--------------------------------------
Angle1   Angle2           :  34.00 deg   54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  90.00 / 90.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  34.00 deg   Angle2 : 54.00 deg
Barrier height            : 176.00 m
Barrier receiver distance :  33.00 / 33.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: ConL (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 !       99.50 !       55.99 !        55.99

RT/Custom (0.00 + 26.16 + 44.26) = 44.33 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -58    -10   0.00  60.51  -8.61  -5.74   0.00   0.00 -20.00  26.16
----------------------------------------------------------------------
   -10     21   0.00  60.51  -8.61  -7.64   0.00   0.00   0.00  44.26
----------------------------------------------------------------------

Segment Leq : 44.33 dBA


Results segment # 2: ConR (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 !       99.50 !       89.70 !        89.70

RT/Custom (0.00 + 44.58 + 0.00) = 44.58 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    33     63   0.00  60.51  -8.15  -7.78   0.00   0.00   0.00  44.58*
    33     63   0.00  60.51  -8.15  -7.78   0.00   0.00   0.00  44.58
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 44.58 dBA
```

```
Results segment # 3: TriL (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 !       99.50 !       63.20 !        63.20

RT/Custom (0.00 + 42.12 + 0.00) = 42.12 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -10     34   0.00  56.02  -7.78  -6.12   0.00   0.00   0.00  42.12*
   -10     34   0.00  56.02  -7.78  -6.12   0.00   0.00   0.00  42.12
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 42.12 dBA


Results segment # 4: TriR (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 !       99.50 !       63.20 !        63.20

RT/Custom (0.00 + 18.70 + 0.00) = 18.70 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    34     54   0.00  56.02  -7.78  -9.54   0.00   0.00 -20.00  18.70
----------------------------------------------------------------------

Segment Leq : 18.70 dBA

Total Leq All Segments: 48.58 dBA
```

```
Results segment # 1: ConL (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 !       99.50 !       55.99 !        55.99

RT/Custom (0.00 + 19.63 + 37.73) = 37.80 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -58    -10   0.00  53.98  -8.61  -5.74   0.00   0.00 -20.00  19.63
----------------------------------------------------------------------
   -10     21   0.00  53.98  -8.61  -7.64   0.00   0.00   0.00  37.73
----------------------------------------------------------------------

Segment Leq : 37.80 dBA


Results segment # 2: ConR (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 !       99.50 !       89.70 !        89.70

RT/Custom (0.00 + 38.05 + 0.00) = 38.05 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    33     63   0.00  53.98  -8.15  -7.78   0.00   0.00   0.00  38.05*
    33     63   0.00  53.98  -8.15  -7.78   0.00   0.00   0.00  38.05
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 38.05 dBA
```

```
Results segment # 3: TriL (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 !       99.50 !       63.20 !        63.20

RT/Custom (0.00 + 36.10 + 0.00) = 36.10 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -10     34   0.00  50.00  -7.78  -6.12   0.00   0.00   0.00  36.10*
   -10     34   0.00  50.00  -7.78  -6.12   0.00   0.00   0.00  36.10
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 36.10 dBA


Results segment # 4: TriR (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 !       99.50 !       63.20 !        63.20

RT/Custom (0.00 + 12.68 + 0.00) = 12.68 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    34     54   0.00  50.00  -7.78  -9.54   0.00   0.00 -20.00  12.68
----------------------------------------------------------------------

Segment Leq : 12.68 dBA

Total Leq All Segments: 42.17 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 62.51
                         (NIGHT): 54.97
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 13:51:45
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           : -18.00 deg   35.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -18.00 deg   Angle2 : 35.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertR (day/night)
--------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           :  23.00 deg   65.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  72.00 / 72.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  37.00 deg   Angle2 : 65.00 deg
Barrier height            :  20.00 m
Barrier receiver distance :  48.00 / 48.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: AlbertL (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 !       99.50 !       84.90 !        84.90

ROAD (0.00 + 59.95 + 0.00) = 59.95 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -18     35   0.00  71.49   0.00  -6.23  -5.31   0.00   0.00   0.00
59.95*
   -18     35   0.00  71.49   0.00  -6.23  -5.31   0.00   0.00   0.00
59.95
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 59.95 dBA
```

```
Results segment # 2: AlbertR (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 !       99.50 !       36.16 !        36.16

ROAD (53.59 + 56.60 + 0.00) = 58.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
    23     37   0.00  71.49   0.00  -6.81 -11.09   0.00   0.00   0.00
53.59
--------------------------------------------------------------------------
--
    37     65   0.00  71.49   0.00  -6.81  -8.08   0.00   0.00   0.00
56.60*
    37     65   0.00  71.49   0.00  -6.81  -8.08   0.00   0.00   0.00
56.60
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 58.36 dBA

Total Leq All Segments: 62.24 dBA
```

```
Results segment # 1: AlbertL (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 !       99.50 !       84.90 !        84.90

ROAD (0.00 + 52.35 + 0.00) = 52.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -18     35   0.00  63.89   0.00  -6.23  -5.31   0.00   0.00   0.00
52.35*
   -18     35   0.00  63.89   0.00  -6.23  -5.31   0.00   0.00   0.00
52.35
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 52.35 dBA
```

```
Results segment # 2: AlbertR (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 !       99.50 !       36.16 !        36.16

ROAD (45.99 + 49.00 + 0.00) = 50.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
    23     37   0.00  63.89   0.00  -6.81 -11.09   0.00   0.00   0.00
45.99
---------------------------------------------------------------------------
--
    37     65   0.00  63.89   0.00  -6.81  -8.08   0.00   0.00   0.00
49.00*
    37     65   0.00  63.89   0.00  -6.81  -8.08   0.00   0.00   0.00
49.00
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 50.76 dBA

Total Leq All Segments: 54.64 dBA
```

```
RT/Custom data, segment # 1: ConL (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -15.00 deg   19.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 112.00 / 112.00 m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -15.00 deg   Angle2 : 19.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: ConR (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :  31.00 deg   62.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 101.00 / 101.00 m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  31.00 deg   Angle2 : 62.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: ConL (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 !       99.50 !       91.20 !        91.20

RT/Custom (0.00 + 44.55 + 0.00) = 44.55 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -15     19   0.00  60.51  -8.73  -7.24   0.00   0.00   0.00  44.55*
   -15     19   0.00  60.51  -8.73  -7.24   0.00   0.00   0.00  44.55
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 44.55 dBA


Results segment # 2: ConR (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 !       99.50 !       90.00 !        90.00

RT/Custom (0.00 + 44.59 + 0.00) = 44.59 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    31     62   0.00  60.51  -8.28  -7.64   0.00   0.00   0.00  44.59*
    31     62   0.00  60.51  -8.28  -7.64   0.00   0.00   0.00  44.59
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 44.59 dBA

Total Leq All Segments: 47.58 dBA
```

```
Results segment # 1: ConL (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 !       99.50 !       91.20 !        91.20

RT/Custom (0.00 + 38.01 + 0.00) = 38.01 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -15     19   0.00  53.98  -8.73  -7.24   0.00   0.00   0.00  38.01*
   -15     19   0.00  53.98  -8.73  -7.24   0.00   0.00   0.00  38.01
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 38.01 dBA


Results segment # 2: ConR (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 !       99.50 !       90.00 !        90.00

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
----------------------------------------------------------------------
    31     62   0.00  53.98  -8.28  -7.64   0.00   0.00   0.00  38.06*
    31     62   0.00  53.98  -8.28  -7.64   0.00   0.00   0.00  38.06
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 38.06 dBA

Total Leq All Segments: 41.05 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.38
                         (NIGHT): 54.82
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 13:52:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


RT/Custom data, segment # 1: Tri (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: Tri (day/night)
-------------------------------------
Angle1   Angle2           : -47.00 deg   -5.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  68.00 / 68.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -47.00 deg   Angle2 : -5.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Tri (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 !       99.50 !       84.94 !        84.94

RT/Custom (0.00 + 43.14 + 0.00) = 43.14 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -47     -5   0.00  56.02  -6.56  -6.32   0.00   0.00   0.00  43.14*
   -47     -5   0.00  56.02  -6.56  -6.32   0.00   0.00   0.00  43.14
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 43.14 dBA

Total Leq All Segments: 43.14 dBA
```

```
Results segment # 1: Tri (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 !       99.50 !       84.94 !        84.94

RT/Custom (0.00 + 37.12 + 0.00) = 37.12 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -47     -5   0.00  50.00  -6.56  -6.32   0.00   0.00   0.00  37.12*
   -47     -5   0.00  50.00  -6.56  -6.32   0.00   0.00   0.00  37.12
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 37.12 dBA

Total Leq All Segments: 37.12 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 43.14
                         (NIGHT): 37.12
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 13:52:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r14.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Albert (day/night)
------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Albert (day/night)
----------------------------------------
Angle1   Angle2           : -75.00 deg   -18.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  73.00 / 73.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -75.00 deg   Angle2 : -18.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Albert (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 !       99.50 !       86.90 !        86.90

ROAD (0.00 + 59.62 + 0.00) = 59.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -75    -18   0.00  71.49   0.00  -6.87  -4.99   0.00   0.00   0.00
59.62*
   -75    -18   0.00  71.49   0.00  -6.87  -4.99   0.00   0.00   0.00
59.62
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 59.62 dBA

Total Leq All Segments: 59.62 dBA
```

```
Results segment # 1: Albert (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 !       99.50 !       86.90 !        86.90

ROAD (0.00 + 52.03 + 0.00) = 52.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -75    -18   0.00  63.89   0.00  -6.87  -4.99   0.00   0.00   0.00
52.03*
   -75    -18   0.00  63.89   0.00  -6.87  -4.99   0.00   0.00   0.00
52.03
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 52.03 dBA

Total Leq All Segments: 52.03 dBA
```

```
RT/Custom data, segment # 1: Con (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: Con (day/night)
-------------------------------------
Angle1   Angle2           : -51.00 deg   -15.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 120.00 / 120.00 m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -51.00 deg   Angle2 : -15.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: TriL (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: TriL (day/night)
--------------------------------------
Angle1   Angle2           : -54.00 deg   -1.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -54.00 deg   Angle2 : -1.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
RT/Custom data, segment # 3: TriR (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 3: TriR (day/night)
--------------------------------------
Angle1   Angle2           :  -8.00 deg   72.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  59.00 deg   Angle2 : 72.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  53.00 / 53.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Con (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 !       99.50 !       91.75 !        91.75

RT/Custom (0.00 + 44.49 + 0.00) = 44.49 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -51    -15   0.00  60.51  -9.03  -6.99   0.00   0.00   0.00  44.49*
   -51    -15   0.00  60.51  -9.03  -6.99   0.00   0.00   0.00  44.49
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 44.49 dBA
```

```
Results segment # 2: TriL (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 !       99.50 !       83.79 !        83.79

RT/Custom (0.00 + 44.48 + 0.00) = 44.48 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -54     -1   0.00  56.02  -6.23  -5.31   0.00   0.00   0.00  44.48*
   -54     -1   0.00  56.02  -6.23  -5.31   0.00   0.00   0.00  44.48
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 44.48 dBA


Results segment # 3: TriR (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 !       99.50 !       16.21 !        16.21

RT/Custom (45.50 + 38.38 + 0.00) = 46.27 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    -8     59   0.00  56.02  -6.23  -4.29   0.00   0.00   0.00  45.50
----------------------------------------------------------------------
    59     72   0.00  56.02  -6.23 -11.41   0.00   0.00   0.00  38.38*
    59     72   0.00  56.02  -6.23 -11.41   0.00   0.00   0.00  38.38
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.27 dBA

Total Leq All Segments: 49.94 dBA
```

```
Results segment # 1: Con (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 !       99.50 !       91.75 !        91.75

RT/Custom (0.00 + 37.96 + 0.00) = 37.96 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -51    -15   0.00  53.98  -9.03  -6.99   0.00   0.00   0.00  37.96*
   -51    -15   0.00  53.98  -9.03  -6.99   0.00   0.00   0.00  37.96
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 37.96 dBA


Results segment # 2: TriL (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 !       99.50 !       83.79 !        83.79

RT/Custom (0.00 + 38.46 + 0.00) = 38.46 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -54     -1   0.00  50.00  -6.23  -5.31   0.00   0.00   0.00  38.46*
   -54     -1   0.00  50.00  -6.23  -5.31   0.00   0.00   0.00  38.46
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 38.46 dBA
```

```
Results segment # 3: TriR (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 !       99.50 !       16.21 !        16.21

RT/Custom (39.48 + 32.36 + 0.00) = 40.25 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    -8     59   0.00  50.00  -6.23  -4.29   0.00   0.00   0.00  39.48
----------------------------------------------------------------------
    59     72   0.00  50.00  -6.23 -11.41   0.00   0.00   0.00  32.36*
    59     72   0.00  50.00  -6.23 -11.41   0.00   0.00   0.00  32.36
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 40.25 dBA

Total Leq All Segments: 43.78 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 60.06
                         (NIGHT): 52.64
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 13:53:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   81.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 81.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertR (day/night)
--------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           :  68.00 deg   77.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  68.00 deg   Angle2 : 77.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: AlbertL (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 !       99.50 !       38.16 !        38.16

ROAD (0.00 + 71.27 + 0.00) = 71.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90     81   0.00  71.49   0.00   0.00  -0.22   0.00   0.00  -0.00
71.26*
   -90     81   0.00  71.49   0.00   0.00  -0.22   0.00   0.00   0.00
71.27
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 71.27 dBA
```

```
Results segment # 2: AlbertR (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 !       99.50 !       61.50 !        61.50

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
---------------------------------------------------------------------------
--
    68     77   0.00  71.49   0.00  -2.22 -13.01   0.00   0.00   0.00
56.26*
    68     77   0.00  71.49   0.00  -2.22 -13.01   0.00   0.00   0.00
56.26
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 56.26 dBA

Total Leq All Segments: 71.40 dBA
```

```
Results segment # 1: AlbertL (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 !       99.50 !       38.16 !        38.16

ROAD (0.00 + 63.67 + 0.00) = 63.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -90     81   0.00  63.89   0.00   0.00  -0.22   0.00   0.00  -0.00
63.67*
   -90     81   0.00  63.89   0.00   0.00  -0.22   0.00   0.00   0.00
63.67
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 63.67 dBA
```

```
Results segment # 2: AlbertR (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 !       99.50 !       61.50 !        61.50

ROAD (0.00 + 48.66 + 0.00) = 48.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
    68     77   0.00  63.89   0.00  -2.22 -13.01   0.00   0.00   0.00
48.66*
    68     77   0.00  63.89   0.00  -2.22 -13.01   0.00   0.00   0.00
48.66
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 48.66 dBA

Total Leq All Segments: 63.80 dBA
```

```
RT/Custom data, segment # 1: ConL (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -70.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  58.00 / 58.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -70.00 deg   Angle2 : 45.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: ConR (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :  57.00 deg   77.00 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           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  57.00 deg   Angle2 : 77.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
RT/Custom data, segment # 3: Tri (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 3: Tri (day/night)
-------------------------------------
Angle1   Angle2           :   7.00 deg   42.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  78.00 / 78.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  12.00 deg   Angle2 : 42.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  68.00 / 68.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: ConL (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 !       99.50 !       83.47 !        83.47

RT/Custom (0.00 + 52.70 + 0.00) = 52.70 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -70     45   0.00  60.51  -5.87  -1.95   0.00   0.00   0.00  52.70*
   -70     45   0.00  60.51  -5.87  -1.95   0.00   0.00   0.00  52.70
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 52.70 dBA
```

```
Results segment # 2: ConR (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 !       99.50 !       77.68 !        77.68

RT/Custom (0.00 + 46.30 + 0.00) = 46.30 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    57     77   0.00  60.51  -4.67  -9.54   0.00   0.00   0.00  46.30*
    57     77   0.00  60.51  -4.67  -9.54   0.00   0.00   0.00  46.30
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.30 dBA


Results segment # 3: Tri (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 !       99.50 !       13.19 !        13.19

RT/Custom (33.30 + 41.08 + 0.00) = 41.75 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
     7     12   0.00  56.02  -7.16 -15.56   0.00   0.00   0.00  33.30
----------------------------------------------------------------------
    12     42   0.00  56.02  -7.16  -7.78   0.00   0.00   0.00  41.08*
    12     42   0.00  56.02  -7.16  -7.78   0.00   0.00   0.00  41.08
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 41.75 dBA

Total Leq All Segments: 53.87 dBA
```

```
Results segment # 1: ConL (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 !       99.50 !       83.47 !        83.47

RT/Custom (0.00 + 46.16 + 0.00) = 46.16 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -70     45   0.00  53.98  -5.87  -1.95   0.00   0.00   0.00  46.16*
   -70     45   0.00  53.98  -5.87  -1.95   0.00   0.00   0.00  46.16
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.16 dBA


Results segment # 2: ConR (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 !       99.50 !       77.68 !        77.68

RT/Custom (0.00 + 39.77 + 0.00) = 39.77 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    57     77   0.00  53.98  -4.67  -9.54   0.00   0.00   0.00  39.77*
    57     77   0.00  53.98  -4.67  -9.54   0.00   0.00   0.00  39.77
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 39.77 dBA
```

```
Results segment # 3: Tri (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 !       99.50 !       13.19 !        13.19

RT/Custom (27.28 + 35.06 + 0.00) = 35.73 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
     7     12   0.00  50.00  -7.16 -15.56   0.00   0.00   0.00  27.28
----------------------------------------------------------------------
    12     42   0.00  50.00  -7.16  -7.78   0.00   0.00   0.00  35.06*
    12     42   0.00  50.00  -7.16  -7.78   0.00   0.00   0.00  35.06
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 35.73 dBA

Total Leq All Segments: 47.37 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 71.48
                         (NIGHT): 63.90
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 13:53:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r16.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           : -18.00 deg   77.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -18.00 deg   Angle2 : 77.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertR (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           :  65.00 deg   87.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  26.00 / 26.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  65.00 deg   Angle2 : 87.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: AlbertL (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 !       99.50 !       38.16 !        38.16

ROAD (0.00 + 68.71 + 0.00) = 68.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -18     77   0.00  71.49   0.00   0.00  -2.78   0.00   0.00   0.00
68.71*
   -18     77   0.00  71.49   0.00   0.00  -2.78   0.00   0.00   0.00
68.71
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 68.71 dBA
```

```
Results segment # 2: AlbertR (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 !       99.50 !       62.96 !        62.96

ROAD (0.00 + 59.97 + 0.00) = 59.97 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
    65     87   0.00  71.49   0.00  -2.39  -9.13   0.00   0.00   0.00
59.97*
    65     87   0.00  71.49   0.00  -2.39  -9.13   0.00   0.00   0.00
59.97
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 59.97 dBA

Total Leq All Segments: 69.25 dBA
```

```
Results segment # 1: AlbertL (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 !       99.50 !       38.16 !        38.16

ROAD (0.00 + 61.12 + 0.00) = 61.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -18     77   0.00  63.89   0.00   0.00  -2.78   0.00   0.00   0.00
61.12*
   -18     77   0.00  63.89   0.00   0.00  -2.78   0.00   0.00   0.00
61.12
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 61.12 dBA
```

```
Results segment # 2: AlbertR (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 !       99.50 !       62.96 !        62.96

ROAD (0.00 + 52.38 + 0.00) = 52.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
    65     87   0.00  63.89   0.00  -2.39  -9.13   0.00   0.00   0.00
52.38*
    65     87   0.00  63.89   0.00  -2.39  -9.13   0.00   0.00   0.00
52.38
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 52.38 dBA

Total Leq All Segments: 61.66 dBA


RT/Custom data, segment # 1: ConL (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -15.00 deg   39.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  61.00 / 61.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -15.00 deg   Angle2 : 39.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: ConR (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :  51.00 deg   76.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  49.00 / 49.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  51.00 deg   Angle2 : 76.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: ConL (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 !       99.50 !       84.25 !        84.25

RT/Custom (0.00 + 49.19 + 0.00) = 49.19 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -15     39   0.00  60.51  -6.09  -5.23   0.00   0.00   0.00  49.19*
   -15     39   0.00  60.51  -6.09  -5.23   0.00   0.00   0.00  49.19
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 49.19 dBA
```

```
Results segment # 2: ConR (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 !       99.50 !       79.91 !        79.91

RT/Custom (0.00 + 46.80 + 0.00) = 46.80 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    51     76   0.00  60.51  -5.14  -8.57   0.00   0.00   0.00  46.80*
    51     76   0.00  60.51  -5.14  -8.57   0.00   0.00   0.00  46.80
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.80 dBA

Total Leq All Segments: 51.17 dBA


Results segment # 1: ConL (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 !       99.50 !       84.25 !        84.25

RT/Custom (0.00 + 42.66 + 0.00) = 42.66 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -15     39   0.00  53.98  -6.09  -5.23   0.00   0.00   0.00  42.66*
   -15     39   0.00  53.98  -6.09  -5.23   0.00   0.00   0.00  42.66
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 42.66 dBA
```

```
Results segment # 2: ConR (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 !       99.50 !       79.91 !        79.91

RT/Custom (0.00 + 40.27 + 0.00) = 40.27 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    51     76   0.00  53.98  -5.14  -8.57   0.00   0.00   0.00  40.27*
    51     76   0.00  53.98  -5.14  -8.57   0.00   0.00   0.00  40.27
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 40.27 dBA

Total Leq All Segments: 44.64 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 69.32
                         (NIGHT): 61.75
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 13:55:57
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r17.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Albert (day/night)
------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Albert (day/night)
----------------------------------------
Angle1   Angle2           :  59.00 deg   85.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  47.00 / 47.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  67.00 deg   Angle2 : 85.00 deg
Barrier height            :  20.00 m
Barrier receiver distance :  23.00 / 23.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Albert (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 !       99.50 !       53.01 !        53.01

ROAD (53.01 + 56.53 + 0.00) = 58.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
    59     67   0.00  71.49   0.00  -4.96 -13.52   0.00   0.00   0.00
53.01
--------------------------------------------------------------------------
--
    67     85   0.00  71.49   0.00  -4.96 -10.00   0.00   0.00   0.00
56.53*
    67     85   0.00  71.49   0.00  -4.96 -10.00   0.00   0.00   0.00
56.53
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 58.13 dBA

Total Leq All Segments: 58.13 dBA
```

```
Results segment # 1: Albert (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 !       99.50 !       53.01 !        53.01

ROAD (45.41 + 48.93 + 0.00) = 50.53 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
    59     67   0.00  63.89   0.00  -4.96 -13.52   0.00   0.00   0.00
45.41
--------------------------------------------------------------------------
--
    67     85   0.00  63.89   0.00  -4.96 -10.00   0.00   0.00   0.00
48.93*
    67     85   0.00  63.89   0.00  -4.96 -10.00   0.00   0.00   0.00
48.93
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 50.53 dBA

Total Leq All Segments: 50.53 dBA
```

```
RT/Custom data, segment # 1: Tri (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: Tri (day/night)
-------------------------------------
Angle1   Angle2           : -49.00 deg   -3.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  89.00 / 89.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -49.00 deg   Angle2 : -3.00 deg
Barrier height            :  39.00 m
Barrier receiver distance :  34.00 / 34.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Tri (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 !       99.50 !       61.68 !        61.68

RT/Custom (0.00 + 42.37 + 0.00) = 42.37 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -49     -3   0.00  56.02  -7.73  -5.93   0.00   0.00   0.00  42.37*
   -49     -3   0.00  56.02  -7.73  -5.93   0.00   0.00   0.00  42.37
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 42.37 dBA

Total Leq All Segments: 42.37 dBA
```

```
Results segment # 1: Tri (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 !       99.50 !       61.68 !        61.68

RT/Custom (0.00 + 36.35 + 0.00) = 36.35 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -49     -3   0.00  50.00  -7.73  -5.93   0.00   0.00   0.00  36.35*
   -49     -3   0.00  50.00  -7.73  -5.93   0.00   0.00   0.00  36.35
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 36.35 dBA

Total Leq All Segments: 36.35 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 58.24
                         (NIGHT): 50.69
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 13:56:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r18.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Albert (day/night)
------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Albert (day/night)
----------------------------------------
Angle1   Angle2           : -83.00 deg   -18.00 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           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -83.00 deg   Angle2 : -18.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Albert (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 !       99.50 !       55.69 !        55.69

ROAD (0.00 + 65.61 + 0.00) = 65.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -83    -18   0.00  71.49   0.00  -1.46  -4.42   0.00   0.00   0.00
65.61*
   -83    -18   0.00  71.49   0.00  -1.46  -4.42   0.00   0.00   0.00
65.61
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 65.61 dBA

Total Leq All Segments: 65.61 dBA
```

```
Results segment # 1: Albert (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 !       99.50 !       55.69 !        55.69

ROAD (0.00 + 58.01 + 0.00) = 58.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------
--
   -83    -18   0.00  63.89   0.00  -1.46  -4.42   0.00   0.00   0.00
58.01*
   -83    -18   0.00  63.89   0.00  -1.46  -4.42   0.00   0.00   0.00
58.01
-----------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 58.01 dBA

Total Leq All Segments: 58.01 dBA


RT/Custom data, segment # 1: Con (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: Con (day/night)
-------------------------------------
Angle1   Angle2           : -64.00 deg   -15.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  67.00 / 67.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -64.00 deg   Angle2 : -15.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: Tri (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: Tri (day/night)
-------------------------------------
Angle1   Angle2           : -60.00 deg   55.00 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           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  24.00 deg   Angle2 : 55.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  42.00 / 42.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Con (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 !       99.50 !       85.62 !        85.62

RT/Custom (0.00 + 48.36 + 0.00) = 48.36 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -64    -15   0.00  60.51  -6.50  -5.65   0.00   0.00   0.00  48.36*
   -64    -15   0.00  60.51  -6.50  -5.65   0.00   0.00   0.00  48.36
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.36 dBA
```

```
Results segment # 2: Tri (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 !       99.50 !       19.54 !        19.54

RT/Custom (47.31 + 42.99 + 0.00) = 48.68 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -60     24   0.00  56.02  -5.40  -3.31   0.00   0.00   0.00  47.31
----------------------------------------------------------------------
    24     55   0.00  56.02  -5.40  -7.64   0.00   0.00   0.00  42.99*
    24     55   0.00  56.02  -5.40  -7.64   0.00   0.00   0.00  42.99
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.68 dBA

Total Leq All Segments: 51.53 dBA


Results segment # 1: Con (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 !       99.50 !       85.62 !        85.62

RT/Custom (0.00 + 41.83 + 0.00) = 41.83 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -64    -15   0.00  53.98  -6.50  -5.65   0.00   0.00   0.00  41.83*
   -64    -15   0.00  53.98  -6.50  -5.65   0.00   0.00   0.00  41.83
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 41.83 dBA
```

```
Results segment # 2: Tri (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 !       99.50 !       19.54 !        19.54

RT/Custom (41.29 + 36.97 + 0.00) = 42.66 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -60     24   0.00  50.00  -5.40  -3.31   0.00   0.00   0.00  41.29
----------------------------------------------------------------------
    24     55   0.00  50.00  -5.40  -7.64   0.00   0.00   0.00  36.97*
    24     55   0.00  50.00  -5.40  -7.64   0.00   0.00   0.00  36.97
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 42.66 dBA

Total Leq All Segments: 45.28 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 65.78
                         (NIGHT): 58.24
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 13:56:34
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r19.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           : -73.00 deg   -30.00 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           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -73.00 deg   Angle2 : -30.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertR (day/night)
--------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           : -43.00 deg   84.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  41.00 / 41.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -43.00 deg   Angle2 : 84.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: AlbertL (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 !       99.50 !       80.33 !        80.33

ROAD (0.00 + 60.22 + 0.00) = 60.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -73    -30   0.00  71.49   0.00  -5.05  -6.22   0.00   0.00   0.00
60.22*
   -73    -30   0.00  71.49   0.00  -5.05  -6.22   0.00   0.00   0.00
60.22
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 60.22 dBA
```

```
Results segment # 2: AlbertR (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 !       99.50 !       76.33 !        76.33

ROAD (0.00 + 65.61 + 0.00) = 65.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -43     84   0.00  71.49   0.00  -4.37  -1.51   0.00   0.00   0.00
65.61*
   -43     84   0.00  71.49   0.00  -4.37  -1.51   0.00   0.00   0.00
65.61
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 65.61 dBA

Total Leq All Segments: 66.71 dBA
```

```
Results segment # 1: AlbertL (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 !       99.50 !       80.33 !        80.33

ROAD (0.00 + 52.62 + 0.00) = 52.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -73    -30   0.00  63.89   0.00  -5.05  -6.22   0.00   0.00   0.00
52.62*
   -73    -30   0.00  63.89   0.00  -5.05  -6.22   0.00   0.00   0.00
52.62
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 52.62 dBA
```

```
Results segment # 2: AlbertR (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 !       99.50 !       76.33 !        76.33

ROAD (0.00 + 58.01 + 0.00) = 58.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -43     84   0.00  63.89   0.00  -4.37  -1.51   0.00   0.00   0.00
58.01*
   -43     84   0.00  63.89   0.00  -4.37  -1.51   0.00   0.00   0.00
58.01
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 58.01 dBA

Total Leq All Segments: 59.11 dBA
```

```
RT/Custom data, segment # 1: ConL (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -64.00 deg   -18.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 100.00 / 100.00 m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -64.00 deg   Angle2 : -18.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: ConR (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :  -6.00 deg   49.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 105.00 / 105.00 m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -6.00 deg   Angle2 : 49.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: ConL (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 !       99.50 !       90.20 !        90.20

RT/Custom (0.00 + 46.35 + 0.00) = 46.35 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -64    -18   0.00  60.51  -8.24  -5.93   0.00   0.00   0.00  46.35*
   -64    -18   0.00  60.51  -8.24  -5.93   0.00   0.00   0.00  46.35
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.35 dBA


Results segment # 2: ConR (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 !       99.50 !       90.36 !        90.36

RT/Custom (0.00 + 46.91 + 0.00) = 46.91 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    -6     49   0.00  60.51  -8.45  -5.15   0.00   0.00   0.00  46.91*
    -6     49   0.00  60.51  -8.45  -5.15   0.00   0.00   0.00  46.91
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.91 dBA

Total Leq All Segments: 49.65 dBA
```

```
Results segment # 1: ConL (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 !       99.50 !       90.20 !        90.20

RT/Custom (0.00 + 39.82 + 0.00) = 39.82 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -64    -18   0.00  53.98  -8.24  -5.93   0.00   0.00   0.00  39.82*
   -64    -18   0.00  53.98  -8.24  -5.93   0.00   0.00   0.00  39.82
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 39.82 dBA


Results segment # 2: ConR (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 !       99.50 !       90.36 !        90.36

RT/Custom (0.00 + 40.38 + 0.00) = 40.38 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    -6     49   0.00  53.98  -8.45  -5.15   0.00   0.00   0.00  40.38*
    -6     49   0.00  53.98  -8.45  -5.15   0.00   0.00   0.00  40.38
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 40.38 dBA

Total Leq All Segments: 43.12 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.80
                         (NIGHT): 59.22
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 13:57:33
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r20.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Albert (day/night)
------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Albert (day/night)
----------------------------------------
Angle1   Angle2           : -31.00 deg   77.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  42.00 / 42.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -31.00 deg   Angle2 : 77.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Albert (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 !       99.50 !       76.88 !        76.88

ROAD (0.00 + 64.80 + 0.00) = 64.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -31     77   0.00  71.49   0.00  -4.47  -2.22   0.00   0.00   0.00
64.80*
   -31     77   0.00  71.49   0.00  -4.47  -2.22   0.00   0.00   0.00
64.80
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 64.80 dBA

Total Leq All Segments: 64.80 dBA
```

```
Results segment # 1: Albert (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 !       99.50 !       76.88 !        76.88

ROAD (0.00 + 57.20 + 0.00) = 57.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -31     77   0.00  63.89   0.00  -4.47  -2.22   0.00   0.00   0.00
57.20*
   -31     77   0.00  63.89   0.00  -4.47  -2.22   0.00   0.00   0.00
57.20
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 57.20 dBA

Total Leq All Segments: 57.20 dBA


RT/Custom data, segment # 1: Con (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: Con (day/night)
-------------------------------------
Angle1   Angle2           :  -3.00 deg   47.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 108.00 / 108.00 m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -3.00 deg   Angle2 : 47.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Con (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 !       99.50 !       90.61 !        90.61

RT/Custom (0.00 + 46.38 + 0.00) = 46.38 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    -3     47   0.00  60.51  -8.57  -5.56   0.00   0.00   0.00  46.38*
    -3     47   0.00  60.51  -8.57  -5.56   0.00   0.00   0.00  46.38
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.38 dBA

Total Leq All Segments: 46.38 dBA
```

```
Results segment # 1: Con (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 !       99.50 !       90.61 !        90.61

RT/Custom (0.00 + 39.85 + 0.00) = 39.85 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    -3     47   0.00  53.98  -8.57  -5.56   0.00   0.00   0.00  39.85*
    -3     47   0.00  53.98  -8.57  -5.56   0.00   0.00   0.00  39.85
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 39.85 dBA

Total Leq All Segments: 39.85 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 64.86
                         (NIGHT): 57.28
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 13:58:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r21.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Albert (day/night)
------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Albert (day/night)
----------------------------------------
Angle1   Angle2           : -50.00 deg   50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  65.00 / 65.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -50.00 deg   Angle2 : 50.00 deg
Barrier height            : 161.00 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Albert (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 !       99.50 !       98.04 !        98.04

ROAD (0.00 + 42.57 + 0.00) = 42.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -50     50   0.00  71.49   0.00  -6.37  -2.55   0.00   0.00 -20.00
42.57
--------------------------------------------------------------------------
--

Segment Leq : 42.57 dBA

Total Leq All Segments: 42.57 dBA
```

```
Results segment # 1: Albert (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 !       99.50 !       98.04 !        98.04

ROAD (0.00 + 34.97 + 0.00) = 34.97 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -50     50   0.00  63.89   0.00  -6.37  -2.55   0.00   0.00 -20.00
34.97
---------------------------------------------------------------------------
--

Segment Leq : 34.97 dBA

Total Leq All Segments: 34.97 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 42.57
                         (NIGHT): 34.97
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 13:58:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r22.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Albert (day/night)
------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Albert (day/night)
----------------------------------------
Angle1   Angle2           : -52.00 deg   -18.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  60.00 / 60.00  m
Receiver height           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -52.00 deg   Angle2 : -18.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Albert (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 !       99.50 !       84.17 !        84.17

ROAD (0.00 + 58.23 + 0.00) = 58.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -52    -18   0.00  71.49   0.00  -6.02  -7.24   0.00   0.00   0.00
58.23*
   -52    -18   0.00  71.49   0.00  -6.02  -7.24   0.00   0.00   0.00
58.23
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 58.23 dBA

Total Leq All Segments: 58.23 dBA
```

```
Results segment # 1: Albert (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 !       99.50 !       84.17 !        84.17

ROAD (0.00 + 50.64 + 0.00) = 50.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -52    -18   0.00  63.89   0.00  -6.02  -7.24   0.00   0.00   0.00
50.64*
   -52    -18   0.00  63.89   0.00  -6.02  -7.24   0.00   0.00   0.00
50.64
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 50.64 dBA

Total Leq All Segments: 50.64 dBA


RT/Custom data, segment # 1: Con (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: Con (day/night)
-------------------------------------
Angle1   Angle2           : -49.00 deg   -15.00 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           :  99.50 / 99.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -49.00 deg   Angle2 : -15.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Con (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 !       99.50 !       91.05 !        91.05

RT/Custom (0.00 + 40.13 + 0.00) = 40.13 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -49    -15   0.00  56.02  -8.65  -7.24   0.00   0.00   0.00  40.13*
   -49    -15   0.00  56.02  -8.65  -7.24   0.00   0.00   0.00  40.13
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 40.13 dBA

Total Leq All Segments: 40.13 dBA
```

```
Results segment # 1: Con (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 !       99.50 !       91.05 !        91.05

RT/Custom (0.00 + 34.11 + 0.00) = 34.11 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -49    -15   0.00  50.00  -8.65  -7.24   0.00   0.00   0.00  34.11*
   -49    -15   0.00  50.00  -8.65  -7.24   0.00   0.00   0.00  34.11
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 34.11 dBA

Total Leq All Segments: 34.11 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 58.30
                         (NIGHT): 50.74
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:19:02
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r23.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           : -78.00 deg   -64.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  61.00 / 61.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -78.00 deg   Angle2 : -64.00 deg
Barrier height            :  39.00 m
Barrier receiver distance :  50.00 / 50.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertC (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertC (day/night)
-----------------------------------------
Angle1   Angle2           : -64.00 deg   39.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  61.00 / 61.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -64.00 deg   Angle2 : -13.00 deg
Barrier height            : 176.00 m
Barrier receiver distance :  50.00 / 50.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: AlbertR (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           :  26.00 deg   67.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  70.00 / 70.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  41.00 deg   Angle2 : 67.00 deg
Barrier height            :  20.00 m
Barrier receiver distance :  46.00 / 46.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: AlbertL (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 !      159.50 !       34.91 !        34.91

ROAD (0.00 + 48.60 + 0.00) = 48.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -78    -64   0.00  71.49   0.00  -6.09 -11.09   0.00   0.00  -5.71
48.60
--------------------------------------------------------------------------
--

Segment Leq : 48.60 dBA


Results segment # 2: AlbertC (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 !      159.50 !       34.91 !        34.91

ROAD (0.00 + 39.92 + 60.01) = 60.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -64    -13   0.00  71.49   0.00  -6.09  -5.48   0.00   0.00 -20.00
39.92
--------------------------------------------------------------------------
--
   -13     39   0.00  71.49   0.00  -6.09  -5.39   0.00   0.00   0.00
60.01
--------------------------------------------------------------------------
--

Segment Leq : 60.05 dBA
```

```
Results segment # 3: AlbertR (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 !      159.50 !       57.64 !        57.64

ROAD (54.01 + 56.40 + 0.00) = 58.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
    26     41   0.00  71.49   0.00  -6.69 -10.79   0.00   0.00   0.00
54.01
---------------------------------------------------------------------------
--
    41     67   0.00  71.49   0.00  -6.69  -8.40   0.00   0.00   0.00
56.40*
    41     67   0.00  71.49   0.00  -6.69  -8.40   0.00   0.00   0.00
56.40
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 58.38 dBA

Total Leq All Segments: 62.49 dBA
```

```
Results segment # 1: AlbertL (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 !      159.50 !       34.91 !        34.91

ROAD (0.00 + 41.00 + 0.00) = 41.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -78    -64   0.00  63.89   0.00  -6.09 -11.09   0.00   0.00  -5.71
41.00
--------------------------------------------------------------------------
--

Segment Leq : 41.00 dBA


Results segment # 2: AlbertC (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 !      159.50 !       34.91 !        34.91

ROAD (0.00 + 32.32 + 52.41) = 52.45 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -64    -13   0.00  63.89   0.00  -6.09  -5.48   0.00   0.00 -20.00
32.32
--------------------------------------------------------------------------
--
   -13     39   0.00  63.89   0.00  -6.09  -5.39   0.00   0.00   0.00
52.41
--------------------------------------------------------------------------
--

Segment Leq : 52.45 dBA
```

```
Results segment # 3: AlbertR (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 !      159.50 !       57.64 !        57.64

ROAD (46.41 + 48.80 + 0.00) = 50.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------
--
    26     41   0.00  63.89   0.00  -6.69 -10.79   0.00   0.00   0.00
46.41
-----------------------------------------------------------------------
--
    41     67   0.00  63.89   0.00  -6.69  -8.40   0.00   0.00   0.00
48.80*
    41     67   0.00  63.89   0.00  -6.69  -8.40   0.00   0.00   0.00
48.80
-----------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 50.78 dBA

Total Leq All Segments: 54.89 dBA
```

```
RT/Custom data, segment # 1: ConL (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -58.00 deg   21.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 109.00 / 109.00 m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -58.00 deg   Angle2 : -10.00 deg
Barrier height            : 176.00 m
Barrier receiver distance :  51.00 / 51.00  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: ConR (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :  33.00 deg   63.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  98.00 / 98.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  33.00 deg   Angle2 : 63.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
RT/Custom data, segment # 3: TriL (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 3: TriL (day/night)
--------------------------------------
Angle1   Angle2           : -10.00 deg   34.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  90.00 / 90.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -10.00 deg   Angle2 : 34.00 deg
Barrier height            :  39.00 m
Barrier receiver distance :  33.00 / 33.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


RT/Custom data, segment # 4: TriR (day/night)
---------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 4: TriR (day/night)
--------------------------------------
Angle1   Angle2           :  34.00 deg   54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  90.00 / 90.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  34.00 deg   Angle2 : 54.00 deg
Barrier height            : 176.00 m
Barrier receiver distance :  33.00 / 33.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: ConL (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 !      159.50 !       87.91 !        87.91

RT/Custom (0.00 + 26.16 + 44.26) = 44.33 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -58    -10   0.00  60.51  -8.61  -5.74   0.00   0.00 -20.00  26.16
----------------------------------------------------------------------
   -10     21   0.00  60.51  -8.61  -7.64   0.00   0.00   0.00  44.26
----------------------------------------------------------------------

Segment Leq : 44.33 dBA


Results segment # 2: ConR (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 !      159.50 !      143.58 !       143.58

RT/Custom (0.00 + 44.58 + 0.00) = 44.58 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    33     63   0.00  60.51  -8.15  -7.78   0.00   0.00   0.00  44.58*
    33     63   0.00  60.51  -8.15  -7.78   0.00   0.00   0.00  44.58
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 44.58 dBA
```

```
Results segment # 3: TriL (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 !      159.50 !      101.20 !       101.20

RT/Custom (0.00 + 42.12 + 0.00) = 42.12 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -10     34   0.00  56.02  -7.78  -6.12   0.00   0.00   0.00  42.12*
   -10     34   0.00  56.02  -7.78  -6.12   0.00   0.00   0.00  42.12
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 42.12 dBA


Results segment # 4: TriR (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 !      159.50 !      101.20 !       101.20

RT/Custom (0.00 + 18.70 + 0.00) = 18.70 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    34     54   0.00  56.02  -7.78  -9.54   0.00   0.00 -20.00  18.70
----------------------------------------------------------------------

Segment Leq : 18.70 dBA

Total Leq All Segments: 48.58 dBA
```

```
Results segment # 1: ConL (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 !      159.50 !       87.91 !        87.91

RT/Custom (0.00 + 19.63 + 37.73) = 37.80 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -58    -10   0.00  53.98  -8.61  -5.74   0.00   0.00 -20.00  19.63
----------------------------------------------------------------------
   -10     21   0.00  53.98  -8.61  -7.64   0.00   0.00   0.00  37.73
----------------------------------------------------------------------

Segment Leq : 37.80 dBA


Results segment # 2: ConR (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 !      159.50 !      143.58 !       143.58

RT/Custom (0.00 + 38.05 + 0.00) = 38.05 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    33     63   0.00  53.98  -8.15  -7.78   0.00   0.00   0.00  38.05*
    33     63   0.00  53.98  -8.15  -7.78   0.00   0.00   0.00  38.05
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 38.05 dBA
```

```
Results segment # 3: TriL (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 !      159.50 !      101.20 !       101.20

RT/Custom (0.00 + 36.10 + 0.00) = 36.10 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -10     34   0.00  50.00  -7.78  -6.12   0.00   0.00   0.00  36.10*
   -10     34   0.00  50.00  -7.78  -6.12   0.00   0.00   0.00  36.10
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 36.10 dBA


Results segment # 4: TriR (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 !      159.50 !      101.20 !       101.20

RT/Custom (0.00 + 12.68 + 0.00) = 12.68 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    34     54   0.00  50.00  -7.78  -9.54   0.00   0.00 -20.00  12.68
----------------------------------------------------------------------

Segment Leq : 12.68 dBA

Total Leq All Segments: 42.17 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 62.66
                         (NIGHT): 55.11
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:18:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r24.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           : -18.00 deg   35.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -18.00 deg   Angle2 : 35.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertR (day/night)
--------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           :  23.00 deg   65.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  72.00 / 72.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  37.00 deg   Angle2 : 65.00 deg
Barrier height            :  20.00 m
Barrier receiver distance :  48.00 / 48.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: AlbertL (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 !      159.50 !      135.37 !       135.37

ROAD (0.00 + 59.95 + 0.00) = 59.95 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -18     35   0.00  71.49   0.00  -6.23  -5.31   0.00   0.00   0.00
59.95*
   -18     35   0.00  71.49   0.00  -6.23  -5.31   0.00   0.00   0.00
59.95
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 59.95 dBA
```

```
Results segment # 2: AlbertR (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 !      159.50 !       56.16 !        56.16

ROAD (53.59 + 56.60 + 0.00) = 58.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-----------------------------------------------------------------------
--
    23     37   0.00  71.49   0.00  -6.81 -11.09   0.00   0.00   0.00
53.59
-----------------------------------------------------------------------
--
    37     65   0.00  71.49   0.00  -6.81  -8.08   0.00   0.00   0.00
56.60*
    37     65   0.00  71.49   0.00  -6.81  -8.08   0.00   0.00   0.00
56.60
-----------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 58.36 dBA

Total Leq All Segments: 62.24 dBA
```

```
Results segment # 1: AlbertL (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 !      159.50 !      135.37 !       135.37

ROAD (0.00 + 52.35 + 0.00) = 52.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -18     35   0.00  63.89   0.00  -6.23  -5.31   0.00   0.00   0.00
52.35*
   -18     35   0.00  63.89   0.00  -6.23  -5.31   0.00   0.00   0.00
52.35
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 52.35 dBA
```

```
Results segment # 2: AlbertR (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 !      159.50 !       56.16 !        56.16

ROAD (45.99 + 49.00 + 0.00) = 50.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
    23     37   0.00  63.89   0.00  -6.81 -11.09   0.00   0.00   0.00
45.99
---------------------------------------------------------------------------
--
    37     65   0.00  63.89   0.00  -6.81  -8.08   0.00   0.00   0.00
49.00*
    37     65   0.00  63.89   0.00  -6.81  -8.08   0.00   0.00   0.00
49.00
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 50.76 dBA

Total Leq All Segments: 54.64 dBA
```

```
RT/Custom data, segment # 1: ConL (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -15.00 deg   19.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 112.00 / 112.00 m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -15.00 deg   Angle2 : 19.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: ConR (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :  31.00 deg   62.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 101.00 / 101.00 m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  31.00 deg   Angle2 : 62.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: ConL (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 !      159.50 !      145.84 !       145.84

RT/Custom (0.00 + 44.55 + 0.00) = 44.55 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -15     19   0.00  60.51  -8.73  -7.24   0.00   0.00   0.00  44.55*
   -15     19   0.00  60.51  -8.73  -7.24   0.00   0.00   0.00  44.55
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 44.55 dBA


Results segment # 2: ConR (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 !      159.50 !      144.05 !       144.05

RT/Custom (0.00 + 44.59 + 0.00) = 44.59 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    31     62   0.00  60.51  -8.28  -7.64   0.00   0.00   0.00  44.59*
    31     62   0.00  60.51  -8.28  -7.64   0.00   0.00   0.00  44.59
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 44.59 dBA

Total Leq All Segments: 47.58 dBA
```

```
Results segment # 1: ConL (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 !      159.50 !      145.84 !       145.84

RT/Custom (0.00 + 38.01 + 0.00) = 38.01 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -15     19   0.00  53.98  -8.73  -7.24   0.00   0.00   0.00  38.01*
   -15     19   0.00  53.98  -8.73  -7.24   0.00   0.00   0.00  38.01
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 38.01 dBA


Results segment # 2: ConR (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 !      159.50 !      144.05 !       144.05

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
----------------------------------------------------------------------
    31     62   0.00  53.98  -8.28  -7.64   0.00   0.00   0.00  38.06*
    31     62   0.00  53.98  -8.28  -7.64   0.00   0.00   0.00  38.06
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 38.06 dBA

Total Leq All Segments: 41.05 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.38
                         (NIGHT): 54.82
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:19:22
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r25.te               Time Period: Day/Night 16/8 hours
Description:


RT/Custom data, segment # 1: Tri (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: Tri (day/night)
-------------------------------------
Angle1   Angle2           : -47.00 deg   -5.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  68.00 / 68.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -47.00 deg   Angle2 : -5.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Tri (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 !      159.50 !      136.12 !       136.12

RT/Custom (0.00 + 43.14 + 0.00) = 43.14 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -47     -5   0.00  56.02  -6.56  -6.32   0.00   0.00   0.00  43.14*
   -47     -5   0.00  56.02  -6.56  -6.32   0.00   0.00   0.00  43.14
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 43.14 dBA

Total Leq All Segments: 43.14 dBA
```

```
Results segment # 1: Tri (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 !      159.50 !      136.12 !       136.12

RT/Custom (0.00 + 37.12 + 0.00) = 37.12 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -47     -5   0.00  50.00  -6.56  -6.32   0.00   0.00   0.00  37.12*
   -47     -5   0.00  50.00  -6.56  -6.32   0.00   0.00   0.00  37.12
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 37.12 dBA

Total Leq All Segments: 37.12 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 43.14
                         (NIGHT): 37.12
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:19:43
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r26.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Albert (day/night)
------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Albert (day/night)
----------------------------------------
Angle1   Angle2           : -75.00 deg   -18.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  73.00 / 73.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -75.00 deg   Angle2 : -18.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Albert (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 !      159.50 !      138.68 !       138.68

ROAD (0.00 + 59.62 + 0.00) = 59.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -75    -18   0.00  71.49   0.00  -6.87  -4.99   0.00   0.00   0.00
59.62*
   -75    -18   0.00  71.49   0.00  -6.87  -4.99   0.00   0.00   0.00
59.62
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 59.62 dBA

Total Leq All Segments: 59.62 dBA
```

```
Results segment # 1: Albert (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 !      159.50 !      138.68 !       138.68

ROAD (0.00 + 52.03 + 0.00) = 52.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -75    -18   0.00  63.89   0.00  -6.87  -4.99   0.00   0.00   0.00
52.03*
   -75    -18   0.00  63.89   0.00  -6.87  -4.99   0.00   0.00   0.00
52.03
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 52.03 dBA

Total Leq All Segments: 52.03 dBA


RT/Custom data, segment # 1: Con (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: Con (day/night)
-------------------------------------
Angle1   Angle2           : -51.00 deg   -15.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 120.00 / 120.00 m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -51.00 deg   Angle2 : -15.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: TriL (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: TriL (day/night)
--------------------------------------
Angle1   Angle2           : -54.00 deg   -1.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -54.00 deg   Angle2 : -1.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


RT/Custom data, segment # 3: TriR (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 3: TriR (day/night)
--------------------------------------
Angle1   Angle2           :  -8.00 deg   72.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  59.00 deg   Angle2 : 72.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  53.00 / 53.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Con (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 !      159.50 !      146.75 !       146.75

RT/Custom (0.00 + 44.49 + 0.00) = 44.49 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -51    -15   0.00  60.51  -9.03  -6.99   0.00   0.00   0.00  44.49*
   -51    -15   0.00  60.51  -9.03  -6.99   0.00   0.00   0.00  44.49
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 44.49 dBA


Results segment # 2: TriL (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 !      159.50 !      134.26 !       134.26

RT/Custom (0.00 + 44.48 + 0.00) = 44.48 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -54     -1   0.00  56.02  -6.23  -5.31   0.00   0.00   0.00  44.48*
   -54     -1   0.00  56.02  -6.23  -5.31   0.00   0.00   0.00  44.48
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 44.48 dBA
```

```
Results segment # 3: TriR (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 !      159.50 !       25.74 !        25.74

RT/Custom (45.50 + 38.38 + 0.00) = 46.27 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    -8     59   0.00  56.02  -6.23  -4.29   0.00   0.00   0.00  45.50
----------------------------------------------------------------------
    59     72   0.00  56.02  -6.23 -11.41   0.00   0.00   0.00  38.38*
    59     72   0.00  56.02  -6.23 -11.41   0.00   0.00   0.00  38.38
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.27 dBA

Total Leq All Segments: 49.94 dBA


Results segment # 1: Con (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 !      159.50 !      146.75 !       146.75

RT/Custom (0.00 + 37.96 + 0.00) = 37.96 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -51    -15   0.00  53.98  -9.03  -6.99   0.00   0.00   0.00  37.96*
   -51    -15   0.00  53.98  -9.03  -6.99   0.00   0.00   0.00  37.96
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 37.96 dBA
```

```
Results segment # 2: TriL (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 !      159.50 !      134.26 !       134.26

RT/Custom (0.00 + 38.46 + 0.00) = 38.46 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -54     -1   0.00  50.00  -6.23  -5.31   0.00   0.00   0.00  38.46*
   -54     -1   0.00  50.00  -6.23  -5.31   0.00   0.00   0.00  38.46
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 38.46 dBA
```

```
Results segment # 3: TriR (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 !      159.50 !       25.74 !        25.74

RT/Custom (39.48 + 32.36 + 0.00) = 40.25 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    -8     59   0.00  50.00  -6.23  -4.29   0.00   0.00   0.00  39.48
----------------------------------------------------------------------
    59     72   0.00  50.00  -6.23 -11.41   0.00   0.00   0.00  32.36*
    59     72   0.00  50.00  -6.23 -11.41   0.00   0.00   0.00  32.36
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 40.25 dBA

Total Leq All Segments: 43.78 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 60.06
                         (NIGHT): 52.64
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:20:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r27.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   81.00 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           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 81.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertR (day/night)
--------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           :  68.00 deg   77.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  68.00 deg   Angle2 : 77.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: AlbertL (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 !      159.50 !       58.16 !        58.16

ROAD (0.00 + 71.27 + 0.00) = 71.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -90     81   0.00  71.49   0.00   0.00  -0.22   0.00   0.00  -0.00
71.26*
   -90     81   0.00  71.49   0.00   0.00  -0.22   0.00   0.00   0.00
71.27
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 71.27 dBA
```

```
Results segment # 2: AlbertR (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 !      159.50 !       97.50 !        97.50

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
---------------------------------------------------------------------------
--
    68     77   0.00  71.49   0.00  -2.22 -13.01   0.00   0.00   0.00
56.26*
    68     77   0.00  71.49   0.00  -2.22 -13.01   0.00   0.00   0.00
56.26
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 56.26 dBA

Total Leq All Segments: 71.40 dBA
```

```
Results segment # 1: AlbertL (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 !      159.50 !       58.16 !        58.16

ROAD (0.00 + 63.67 + 0.00) = 63.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -90     81   0.00  63.89   0.00   0.00  -0.22   0.00   0.00  -0.00
63.67*
   -90     81   0.00  63.89   0.00   0.00  -0.22   0.00   0.00   0.00
63.67
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 63.67 dBA
```

```
Results segment # 2: AlbertR (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 !      159.50 !       97.50 !        97.50

ROAD (0.00 + 48.66 + 0.00) = 48.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
    68     77   0.00  63.89   0.00  -2.22 -13.01   0.00   0.00   0.00
48.66*
    68     77   0.00  63.89   0.00  -2.22 -13.01   0.00   0.00   0.00
48.66
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 48.66 dBA

Total Leq All Segments: 63.80 dBA
```

```
RT/Custom data, segment # 1: ConL (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -70.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  58.00 / 58.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -70.00 deg   Angle2 : 45.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: ConR (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :  57.00 deg   77.00 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           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  57.00 deg   Angle2 : 77.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
RT/Custom data, segment # 3: Tri (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 3: Tri (day/night)
-------------------------------------
Angle1   Angle2           :   7.00 deg   42.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  78.00 / 78.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  12.00 deg   Angle2 : 42.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  68.00 / 68.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: ConL (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 !      159.50 !      133.12 !       133.12

RT/Custom (0.00 + 52.70 + 0.00) = 52.70 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -70     45   0.00  60.51  -5.87  -1.95   0.00   0.00   0.00  52.70*
   -70     45   0.00  60.51  -5.87  -1.95   0.00   0.00   0.00  52.70
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 52.70 dBA
```

```
Results segment # 2: ConR (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 !      159.50 !      124.05 !       124.05

RT/Custom (0.00 + 46.30 + 0.00) = 46.30 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    57     77   0.00  60.51  -4.67  -9.54   0.00   0.00   0.00  46.30*
    57     77   0.00  60.51  -4.67  -9.54   0.00   0.00   0.00  46.30
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.30 dBA


Results segment # 3: Tri (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 !      159.50 !       20.88 !        20.88

RT/Custom (33.30 + 41.08 + 0.00) = 41.75 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
     7     12   0.00  56.02  -7.16 -15.56   0.00   0.00   0.00  33.30
----------------------------------------------------------------------
    12     42   0.00  56.02  -7.16  -7.78   0.00   0.00   0.00  41.08*
    12     42   0.00  56.02  -7.16  -7.78   0.00   0.00   0.00  41.08
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 41.75 dBA

Total Leq All Segments: 53.87 dBA
```

```
Results segment # 1: ConL (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 !      159.50 !      133.12 !       133.12

RT/Custom (0.00 + 46.16 + 0.00) = 46.16 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -70     45   0.00  53.98  -5.87  -1.95   0.00   0.00   0.00  46.16*
   -70     45   0.00  53.98  -5.87  -1.95   0.00   0.00   0.00  46.16
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.16 dBA


Results segment # 2: ConR (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 !      159.50 !      124.05 !       124.05

RT/Custom (0.00 + 39.77 + 0.00) = 39.77 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    57     77   0.00  53.98  -4.67  -9.54   0.00   0.00   0.00  39.77*
    57     77   0.00  53.98  -4.67  -9.54   0.00   0.00   0.00  39.77
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 39.77 dBA
```

```
Results segment # 3: Tri (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 !      159.50 !       20.88 !        20.88

RT/Custom (27.28 + 35.06 + 0.00) = 35.73 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
     7     12   0.00  50.00  -7.16 -15.56   0.00   0.00   0.00  27.28
----------------------------------------------------------------------
    12     42   0.00  50.00  -7.16  -7.78   0.00   0.00   0.00  35.06*
    12     42   0.00  50.00  -7.16  -7.78   0.00   0.00   0.00  35.06
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 35.73 dBA

Total Leq All Segments: 47.37 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 71.48
                         (NIGHT): 63.90
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:20:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r28.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           : -18.00 deg   77.00 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           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -18.00 deg   Angle2 : 77.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertR (day/night)
--------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           :  65.00 deg   87.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  26.00 / 26.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  65.00 deg   Angle2 : 87.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: AlbertL (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 !      159.50 !       58.16 !        58.16

ROAD (0.00 + 68.71 + 0.00) = 68.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -18     77   0.00  71.49   0.00   0.00  -2.78   0.00   0.00   0.00
68.71*
   -18     77   0.00  71.49   0.00   0.00  -2.78   0.00   0.00   0.00
68.71
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 68.71 dBA
```

```
Results segment # 2: AlbertR (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 !      159.50 !       99.88 !        99.88

ROAD (0.00 + 59.97 + 0.00) = 59.97 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
    65     87   0.00  71.49   0.00  -2.39  -9.13   0.00   0.00   0.00
59.97*
    65     87   0.00  71.49   0.00  -2.39  -9.13   0.00   0.00   0.00
59.97
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 59.97 dBA

Total Leq All Segments: 69.25 dBA
```

```
Results segment # 1: AlbertL (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 !      159.50 !       58.16 !        58.16

ROAD (0.00 + 61.12 + 0.00) = 61.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -18     77   0.00  63.89   0.00   0.00  -2.78   0.00   0.00   0.00
61.12*
   -18     77   0.00  63.89   0.00   0.00  -2.78   0.00   0.00   0.00
61.12
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 61.12 dBA
```

```
Results segment # 2: AlbertR (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 !      159.50 !       99.88 !        99.88

ROAD (0.00 + 52.38 + 0.00) = 52.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
    65     87   0.00  63.89   0.00  -2.39  -9.13   0.00   0.00   0.00
52.38*
    65     87   0.00  63.89   0.00  -2.39  -9.13   0.00   0.00   0.00
52.38
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 52.38 dBA

Total Leq All Segments: 61.66 dBA
```

```
RT/Custom data, segment # 1: ConL (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -15.00 deg   39.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  61.00 / 61.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -15.00 deg   Angle2 : 39.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: ConR (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :  51.00 deg   76.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  49.00 / 49.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  51.00 deg   Angle2 : 76.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: ConL (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 !      159.50 !      134.42 !       134.42

RT/Custom (0.00 + 49.19 + 0.00) = 49.19 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -15     39   0.00  60.51  -6.09  -5.23   0.00   0.00   0.00  49.19*
   -15     39   0.00  60.51  -6.09  -5.23   0.00   0.00   0.00  49.19
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 49.19 dBA


Results segment # 2: ConR (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 !      159.50 !      127.66 !       127.66

RT/Custom (0.00 + 46.80 + 0.00) = 46.80 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    51     76   0.00  60.51  -5.14  -8.57   0.00   0.00   0.00  46.80*
    51     76   0.00  60.51  -5.14  -8.57   0.00   0.00   0.00  46.80
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.80 dBA

Total Leq All Segments: 51.17 dBA
```

```
Results segment # 1: ConL (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 !      159.50 !      134.42 !       134.42

RT/Custom (0.00 + 42.66 + 0.00) = 42.66 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -15     39   0.00  53.98  -6.09  -5.23   0.00   0.00   0.00  42.66*
   -15     39   0.00  53.98  -6.09  -5.23   0.00   0.00   0.00  42.66
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 42.66 dBA


Results segment # 2: ConR (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 !      159.50 !      127.66 !       127.66

RT/Custom (0.00 + 40.27 + 0.00) = 40.27 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    51     76   0.00  53.98  -5.14  -8.57   0.00   0.00   0.00  40.27*
    51     76   0.00  53.98  -5.14  -8.57   0.00   0.00   0.00  40.27
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 40.27 dBA

Total Leq All Segments: 44.64 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.32
                         (NIGHT): 61.75
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:20:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r29.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Albert (day/night)
------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Albert (day/night)
----------------------------------------
Angle1   Angle2           :  59.00 deg   85.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  47.00 / 47.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  67.00 deg   Angle2 : 85.00 deg
Barrier height            :  20.00 m
Barrier receiver distance :  23.00 / 23.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Albert (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 !      159.50 !       83.65 !        83.65

ROAD (53.01 + 56.53 + 0.00) = 58.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
    59     67   0.00  71.49   0.00  -4.96 -13.52   0.00   0.00   0.00
53.01
---------------------------------------------------------------------------
--
    67     85   0.00  71.49   0.00  -4.96 -10.00   0.00   0.00   0.00
56.53*
    67     85   0.00  71.49   0.00  -4.96 -10.00   0.00   0.00   0.00
56.53
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 58.13 dBA

Total Leq All Segments: 58.13 dBA
```

```
Results segment # 1: Albert (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 !      159.50 !       83.65 !        83.65

ROAD (45.41 + 48.93 + 0.00) = 50.53 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
    59     67   0.00  63.89   0.00  -4.96 -13.52   0.00   0.00   0.00
45.41
---------------------------------------------------------------------------
--
    67     85   0.00  63.89   0.00  -4.96 -10.00   0.00   0.00   0.00
48.93*
    67     85   0.00  63.89   0.00  -4.96 -10.00   0.00   0.00   0.00
48.93
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 50.53 dBA

Total Leq All Segments: 50.53 dBA
```

```
RT/Custom data, segment # 1: Tri (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: Tri (day/night)
-------------------------------------
Angle1   Angle2           : -49.00 deg   -3.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  89.00 / 89.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -49.00 deg   Angle2 : -3.00 deg
Barrier height            :  39.00 m
Barrier receiver distance :  34.00 / 34.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Tri (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 !      159.50 !       98.76 !        98.76

RT/Custom (0.00 + 42.37 + 0.00) = 42.37 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -49     -3   0.00  56.02  -7.73  -5.93   0.00   0.00   0.00  42.37*
   -49     -3   0.00  56.02  -7.73  -5.93   0.00   0.00   0.00  42.37
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 42.37 dBA

Total Leq All Segments: 42.37 dBA
```

```
Results segment # 1: Tri (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 !      159.50 !       98.76 !        98.76

RT/Custom (0.00 + 36.35 + 0.00) = 36.35 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -49     -3   0.00  50.00  -7.73  -5.93   0.00   0.00   0.00  36.35*
   -49     -3   0.00  50.00  -7.73  -5.93   0.00   0.00   0.00  36.35
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 36.35 dBA

Total Leq All Segments: 36.35 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 58.24
                         (NIGHT): 50.69
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:21:34
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r30.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Albert (day/night)
------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Albert (day/night)
----------------------------------------
Angle1   Angle2           : -83.00 deg   -18.00 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           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -83.00 deg   Angle2 : -18.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Albert (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 !      159.50 !       87.12 !        87.12

ROAD (0.00 + 65.61 + 0.00) = 65.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -83    -18   0.00  71.49   0.00  -1.46  -4.42   0.00   0.00   0.00
65.61*
   -83    -18   0.00  71.49   0.00  -1.46  -4.42   0.00   0.00   0.00
65.61
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 65.61 dBA

Total Leq All Segments: 65.61 dBA
```

```
Results segment # 1: Albert (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 !      159.50 !       87.12 !        87.12

ROAD (0.00 + 58.01 + 0.00) = 58.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -83    -18   0.00  63.89   0.00  -1.46  -4.42   0.00   0.00   0.00
58.01*
   -83    -18   0.00  63.89   0.00  -1.46  -4.42   0.00   0.00   0.00
58.01
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 58.01 dBA

Total Leq All Segments: 58.01 dBA
```

```
RT/Custom data, segment # 1: Con (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: Con (day/night)
-------------------------------------
Angle1   Angle2           : -64.00 deg   -15.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  67.00 / 67.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -64.00 deg   Angle2 : -15.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: Tri (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: Tri (day/night)
-------------------------------------
Angle1   Angle2           : -60.00 deg   55.00 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           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  24.00 deg   Angle2 : 55.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  42.00 / 42.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Con (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 !      159.50 !      136.66 !       136.66

RT/Custom (0.00 + 48.36 + 0.00) = 48.36 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -64    -15   0.00  60.51  -6.50  -5.65   0.00   0.00   0.00  48.36*
   -64    -15   0.00  60.51  -6.50  -5.65   0.00   0.00   0.00  48.36
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.36 dBA


Results segment # 2: Tri (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 !      159.50 !       31.08 !        31.08

RT/Custom (47.31 + 42.99 + 0.00) = 48.68 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -60     24   0.00  56.02  -5.40  -3.31   0.00   0.00   0.00  47.31
----------------------------------------------------------------------
    24     55   0.00  56.02  -5.40  -7.64   0.00   0.00   0.00  42.99*
    24     55   0.00  56.02  -5.40  -7.64   0.00   0.00   0.00  42.99
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.68 dBA

Total Leq All Segments: 51.53 dBA
```

```
Results segment # 1: Con (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 !      159.50 !      136.66 !       136.66

RT/Custom (0.00 + 41.83 + 0.00) = 41.83 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -64    -15   0.00  53.98  -6.50  -5.65   0.00   0.00   0.00  41.83*
   -64    -15   0.00  53.98  -6.50  -5.65   0.00   0.00   0.00  41.83
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 41.83 dBA


Results segment # 2: Tri (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 !      159.50 !       31.08 !        31.08

RT/Custom (41.29 + 36.97 + 0.00) = 42.66 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -60     24   0.00  50.00  -5.40  -3.31   0.00   0.00   0.00  41.29
----------------------------------------------------------------------
    24     55   0.00  50.00  -5.40  -7.64   0.00   0.00   0.00  36.97*
    24     55   0.00  50.00  -5.40  -7.64   0.00   0.00   0.00  36.97
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 42.66 dBA

Total Leq All Segments: 45.28 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.78
                         (NIGHT): 58.24
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:22:05
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r31.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           : -73.00 deg   -30.00 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           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -73.00 deg   Angle2 : -30.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertR (day/night)
--------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           : -43.00 deg   84.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  41.00 / 41.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -43.00 deg   Angle2 : 84.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: AlbertL (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 !      159.50 !      127.83 !       127.83

ROAD (0.00 + 60.22 + 0.00) = 60.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -73    -30   0.00  71.49   0.00  -5.05  -6.22   0.00   0.00   0.00
60.22*
   -73    -30   0.00  71.49   0.00  -5.05  -6.22   0.00   0.00   0.00
60.22
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 60.22 dBA
```

```
Results segment # 2: AlbertR (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 !      159.50 !      121.69 !       121.69

ROAD (0.00 + 65.61 + 0.00) = 65.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -43     84   0.00  71.49   0.00  -4.37  -1.51   0.00   0.00   0.00
65.61*
   -43     84   0.00  71.49   0.00  -4.37  -1.51   0.00   0.00   0.00
65.61
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 65.61 dBA

Total Leq All Segments: 66.71 dBA
```

```
Results segment # 1: AlbertL (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 !      159.50 !      127.83 !       127.83

ROAD (0.00 + 52.62 + 0.00) = 52.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -73    -30   0.00  63.89   0.00  -5.05  -6.22   0.00   0.00   0.00
52.62*
   -73    -30   0.00  63.89   0.00  -5.05  -6.22   0.00   0.00   0.00
52.62
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 52.62 dBA
```

```
Results segment # 2: AlbertR (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 !      159.50 !      121.69 !       121.69

ROAD (0.00 + 58.01 + 0.00) = 58.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -43     84   0.00  63.89   0.00  -4.37  -1.51   0.00   0.00   0.00
58.01*
   -43     84   0.00  63.89   0.00  -4.37  -1.51   0.00   0.00   0.00
58.01
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 58.01 dBA

Total Leq All Segments: 59.11 dBA
```

```
RT/Custom data, segment # 1: ConL (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -64.00 deg   -18.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 100.00 / 100.00 m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -64.00 deg   Angle2 : -18.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  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: ConR (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :  -6.00 deg   49.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 105.00 / 105.00 m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -6.00 deg   Angle2 : 49.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: ConL (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 !      159.50 !      144.20 !       144.20

RT/Custom (0.00 + 46.35 + 0.00) = 46.35 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -64    -18   0.00  60.51  -8.24  -5.93   0.00   0.00   0.00  46.35*
   -64    -18   0.00  60.51  -8.24  -5.93   0.00   0.00   0.00  46.35
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.35 dBA


Results segment # 2: ConR (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 !      159.50 !      144.64 !       144.64

RT/Custom (0.00 + 46.91 + 0.00) = 46.91 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    -6     49   0.00  60.51  -8.45  -5.15   0.00   0.00   0.00  46.91*
    -6     49   0.00  60.51  -8.45  -5.15   0.00   0.00   0.00  46.91
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.91 dBA

Total Leq All Segments: 49.65 dBA
```

```
Results segment # 1: ConL (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 !      159.50 !      144.20 !       144.20

RT/Custom (0.00 + 39.82 + 0.00) = 39.82 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -64    -18   0.00  53.98  -8.24  -5.93   0.00   0.00   0.00  39.82*
   -64    -18   0.00  53.98  -8.24  -5.93   0.00   0.00   0.00  39.82
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 39.82 dBA
```

```
Results segment # 2: ConR (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 !      159.50 !      144.64 !       144.64

RT/Custom (0.00 + 40.38 + 0.00) = 40.38 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    -6     49   0.00  53.98  -8.45  -5.15   0.00   0.00   0.00  40.38*
    -6     49   0.00  53.98  -8.45  -5.15   0.00   0.00   0.00  40.38
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 40.38 dBA

Total Leq All Segments: 43.12 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 66.80
                         (NIGHT): 59.22
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:22:30
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r32.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Albert (day/night)
------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Albert (day/night)
----------------------------------------
Angle1   Angle2           : -31.00 deg   77.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  42.00 / 42.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -31.00 deg   Angle2 : 77.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Albert (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 !      159.50 !      122.59 !       122.59

ROAD (0.00 + 64.80 + 0.00) = 64.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -31     77   0.00  71.49   0.00  -4.47  -2.22   0.00   0.00   0.00
64.80*
   -31     77   0.00  71.49   0.00  -4.47  -2.22   0.00   0.00   0.00
64.80
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 64.80 dBA

Total Leq All Segments: 64.80 dBA
```

```
Results segment # 1: Albert (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 !      159.50 !      122.59 !       122.59

ROAD (0.00 + 57.20 + 0.00) = 57.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -31     77   0.00  63.89   0.00  -4.47  -2.22   0.00   0.00   0.00
57.20*
   -31     77   0.00  63.89   0.00  -4.47  -2.22   0.00   0.00   0.00
57.20
--------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 57.20 dBA

Total Leq All Segments: 57.20 dBA
```

```
RT/Custom data, segment # 1: Con (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: Con (day/night)
-------------------------------------
Angle1   Angle2           :  -3.00 deg   47.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 108.00 / 108.00 m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -3.00 deg   Angle2 : 47.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Con (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 !      159.50 !      145.06 !       145.06

RT/Custom (0.00 + 46.38 + 0.00) = 46.38 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    -3     47   0.00  60.51  -8.57  -5.56   0.00   0.00   0.00  46.38*
    -3     47   0.00  60.51  -8.57  -5.56   0.00   0.00   0.00  46.38
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.38 dBA

Total Leq All Segments: 46.38 dBA
```

```
Results segment # 1: Con (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 !      159.50 !      145.06 !       145.06

RT/Custom (0.00 + 39.85 + 0.00) = 39.85 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    -3     47   0.00  53.98  -8.57  -5.56   0.00   0.00   0.00  39.85*
    -3     47   0.00  53.98  -8.57  -5.56   0.00   0.00   0.00  39.85
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 39.85 dBA

Total Leq All Segments: 39.85 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 64.86
                         (NIGHT): 57.28
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:22:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r33.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Albert (day/night)
------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Albert (day/night)
----------------------------------------
Angle1   Angle2           : -50.00 deg   50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  65.00 / 65.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -50.00 deg   Angle2 : 50.00 deg
Barrier height            : 161.00 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Albert (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 !      159.50 !      157.12 !       157.12

ROAD (0.00 + 42.57 + 0.00) = 42.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -50     50   0.00  71.49   0.00  -6.37  -2.55   0.00   0.00 -20.00
42.57
--------------------------------------------------------------------------
--

Segment Leq : 42.57 dBA

Total Leq All Segments: 42.57 dBA
```

```
Results segment # 1: Albert (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 !      159.50 !      157.12 !       157.12

ROAD (0.00 + 34.97 + 0.00) = 34.97 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -50     50   0.00  63.89   0.00  -6.37  -2.55   0.00   0.00 -20.00
34.97
---------------------------------------------------------------------------
--

Segment Leq : 34.97 dBA

Total Leq All Segments: 34.97 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 42.57
                         (NIGHT): 34.97
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:23:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r34.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Albert (day/night)
------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Albert (day/night)
----------------------------------------
Angle1   Angle2           : -52.00 deg   -18.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  60.00 / 60.00  m
Receiver height           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -52.00 deg   Angle2 : -18.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Albert (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 !      159.50 !      134.17 !       134.17

ROAD (0.00 + 58.23 + 0.00) = 58.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -52    -18   0.00  71.49   0.00  -6.02  -7.24   0.00   0.00   0.00
58.23*
   -52    -18   0.00  71.49   0.00  -6.02  -7.24   0.00   0.00   0.00
58.23
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 58.23 dBA

Total Leq All Segments: 58.23 dBA
```

```
Results segment # 1: Albert (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 !      159.50 !      134.17 !       134.17

ROAD (0.00 + 50.64 + 0.00) = 50.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
---------------------------------------------------------------------------
--
   -52    -18   0.00  63.89   0.00  -6.02  -7.24   0.00   0.00   0.00
50.64*
   -52    -18   0.00  63.89   0.00  -6.02  -7.24   0.00   0.00   0.00
50.64
---------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 50.64 dBA

Total Leq All Segments: 50.64 dBA
```

```
RT/Custom data, segment # 1: Con (day/night)
--------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: Con (day/night)
-------------------------------------
Angle1   Angle2           : -49.00 deg   -15.00 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           : 159.50 / 159.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -49.00 deg   Angle2 : -15.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Con (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 !      159.50 !      145.59 !       145.59

RT/Custom (0.00 + 40.13 + 0.00) = 40.13 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -49    -15   0.00  56.02  -8.65  -7.24   0.00   0.00   0.00  40.13*
   -49    -15   0.00  56.02  -8.65  -7.24   0.00   0.00   0.00  40.13
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 40.13 dBA

Total Leq All Segments: 40.13 dBA
```

```
Results segment # 1: Con (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 !      159.50 !      145.59 !       145.59

RT/Custom (0.00 + 34.11 + 0.00) = 34.11 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -49    -15   0.00  50.00  -8.65  -7.24   0.00   0.00   0.00  34.11*
   -49    -15   0.00  50.00  -8.65  -7.24   0.00   0.00   0.00  34.11
----------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 34.11 dBA

Total Leq All Segments: 34.11 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 58.30
                         (NIGHT): 50.74
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:23:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r35.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: Albert1 (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Albert1 (day/night)
-----------------------------------------
Angle1   Angle2           : -79.00 deg   -67.00 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           :  40.50 / 40.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -79.00 deg   Angle2 : -67.00 deg
Barrier height            :  39.00 m
Barrier receiver distance :  41.00 / 41.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Albert2 (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Albert2 (day/night)
-----------------------------------------
Angle1   Angle2           : -67.00 deg   30.00 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           :  40.50 / 40.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -67.00 deg   Angle2 : 30.00 deg
Barrier height            : 176.00 m
Barrier receiver distance :  41.00 / 41.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Albert3 (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Albert3 (day/night)
-----------------------------------------
Angle1   Angle2           :  30.00 deg   52.00 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           :  40.50 / 40.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  30.00 deg   Angle2 : 52.00 deg
Barrier height            :  39.00 m
Barrier receiver distance :  41.00 / 41.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: Albert4 (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Albert4 (day/night)
-----------------------------------------
Angle1   Angle2           :  39.00 deg   74.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  65.00 / 65.00  m
Receiver height           :  40.50 / 40.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  39.00 deg   Angle2 : 74.00 deg
Barrier height            :  39.00 m
Barrier receiver distance :  36.00 / 36.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Albert1 (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 !       40.50 !       14.48 !        14.48

ROAD (0.00 + 34.33 + 0.00) = 34.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -79    -67   0.00  71.49   0.00  -5.40 -11.76   0.00   0.00 -20.00
34.33
--------------------------------------------------------------------------
--

Segment Leq : 34.33 dBA


Results segment # 2: Albert2 (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 !       40.50 !       14.48 !        14.48

ROAD (0.00 + 43.41 + 0.00) = 43.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -67     30   0.00  71.49   0.00  -5.40  -2.69   0.00   0.00 -20.00
43.41
--------------------------------------------------------------------------
--

Segment Leq : 43.41 dBA
```

```
Results segment # 3: Albert3 (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 !       40.50 !       14.48 !        14.48

ROAD (0.00 + 36.96 + 0.00) = 36.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
    30     52   0.00  71.49   0.00  -5.40  -9.13   0.00   0.00 -20.00
36.96
--------------------------------------------------------------------------
--

Segment Leq : 36.96 dBA


Results segment # 4: Albert4 (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 !       40.50 !       20.56 !        20.56

ROAD (0.00 + 38.01 + 0.00) = 38.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
    39     74   0.00  71.49   0.00  -6.37  -7.11   0.00   0.00 -20.00
38.01
--------------------------------------------------------------------------
--

Segment Leq : 38.01 dBA

Total Leq All Segments: 45.55 dBA
```

```
Results segment # 1: Albert1 (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 !       40.50 !       14.48 !        14.48

ROAD (0.00 + 26.73 + 0.00) = 26.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -79    -67   0.00  63.89   0.00  -5.40 -11.76   0.00   0.00 -20.00
26.73
--------------------------------------------------------------------------
--

Segment Leq : 26.73 dBA


Results segment # 2: Albert2 (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 !       40.50 !       14.48 !        14.48

ROAD (0.00 + 35.81 + 0.00) = 35.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -67     30   0.00  63.89   0.00  -5.40  -2.69   0.00   0.00 -20.00
35.81
--------------------------------------------------------------------------
--

Segment Leq : 35.81 dBA
```

```
Results segment # 3: Albert3 (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 !       40.50 !       14.48 !        14.48

ROAD (0.00 + 29.37 + 0.00) = 29.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
    30     52   0.00  63.89   0.00  -5.40  -9.13   0.00   0.00 -20.00
29.37
--------------------------------------------------------------------------
--

Segment Leq : 29.37 dBA


Results segment # 4: Albert4 (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 !       40.50 !       20.56 !        20.56

ROAD (0.00 + 30.41 + 0.00) = 30.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
    39     74   0.00  63.89   0.00  -6.37  -7.11   0.00   0.00 -20.00
30.41
--------------------------------------------------------------------------
--

Segment Leq : 30.41 dBA

Total Leq All Segments: 37.96 dBA
```

```
RT/Custom data, segment # 1: ConL (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -58.00 deg   30.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  99.00 / 99.00  m
Receiver height           :  40.50 / 40.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -58.00 deg   Angle2 : 30.00 deg
Barrier height            : 176.00 m
Barrier receiver distance :  41.00 / 41.00  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: ConR (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :  42.00 deg   68.00 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           :  40.50 / 40.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  42.00 deg   Angle2 : 68.00 deg
Barrier height            :  39.00 m
Barrier receiver distance :  41.00 / 41.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
RT/Custom data, segment # 3: TriL (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 3: TriL (day/night)
--------------------------------------
Angle1   Angle2           : -55.00 deg   -14.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  78.00 / 78.00  m
Receiver height           :  40.50 / 40.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -55.00 deg   Angle2 : -14.00 deg
Barrier height            :  39.00 m
Barrier receiver distance :  22.00 / 22.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


RT/Custom data, segment # 4: TriR (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   192/24    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 4: TriR (day/night)
--------------------------------------
Angle1   Angle2           : -21.00 deg   56.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  75.00 / 75.00  m
Receiver height           :  40.50 / 40.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -21.00 deg   Angle2 : 56.00 deg
Barrier height            :  39.00 m
Barrier receiver distance :  22.00 / 22.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: ConL (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 !       40.50 !       26.42 !        26.42

RT/Custom (0.00 + 29.21 + 0.00) = 29.21 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -58     30   0.00  60.51  -8.20  -3.11   0.00   0.00 -20.00  29.21
----------------------------------------------------------------------

Segment Leq : 29.21 dBA


Results segment # 2: ConR (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 !       40.50 !       22.65 !        22.65

RT/Custom (0.00 + 24.58 + 0.00) = 24.58 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    42     68   0.00  60.51  -7.53  -8.40   0.00   0.00 -20.00  24.58
----------------------------------------------------------------------

Segment Leq : 24.58 dBA
```

```
Results segment # 3: TriL (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 !       40.50 !       29.22 !        29.22

RT/Custom (0.00 + 22.60 + 0.00) = 22.60 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -55    -14   0.00  56.02  -7.16  -6.42   0.00   0.00 -19.84  22.60
----------------------------------------------------------------------

Segment Leq : 22.60 dBA


Results segment # 4: TriR (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 !       40.50 !       28.77 !        28.77

RT/Custom (0.00 + 25.39 + 0.00) = 25.39 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -21     56   0.00  56.02  -6.99  -3.69   0.00   0.00 -19.96  25.39
----------------------------------------------------------------------

Segment Leq : 25.39 dBA

Total Leq All Segments: 32.17 dBA
```

```
Results segment # 1: ConL (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 !       40.50 !       26.42 !        26.42

RT/Custom (0.00 + 22.68 + 0.00) = 22.68 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -58     30   0.00  53.98  -8.20  -3.11   0.00   0.00 -20.00  22.68
----------------------------------------------------------------------

Segment Leq : 22.68 dBA


Results segment # 2: ConR (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 !       40.50 !       22.65 !        22.65

RT/Custom (0.00 + 18.05 + 0.00) = 18.05 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
    42     68   0.00  53.98  -7.53  -8.40   0.00   0.00 -20.00  18.05
----------------------------------------------------------------------

Segment Leq : 18.05 dBA
```

```
Results segment # 3: TriL (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 !       40.50 !       29.22 !        29.22

RT/Custom (0.00 + 16.58 + 0.00) = 16.58 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -55    -14   0.00  50.00  -7.16  -6.42   0.00   0.00 -19.84  16.58
----------------------------------------------------------------------

Segment Leq : 16.58 dBA


Results segment # 4: TriR (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 !       40.50 !       28.77 !        28.77

RT/Custom (0.00 + 19.37 + 0.00) = 19.37 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -21     56   0.00  50.00  -6.99  -3.69   0.00   0.00 -19.96  19.37
----------------------------------------------------------------------

Segment Leq : 19.37 dBA

Total Leq All Segments: 25.81 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 45.75
                         (NIGHT): 38.21
```

```
STAMSON 5.0        NORMAL REPORT        Date: 27-10-2016 14:25:22
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r36.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: AlbertL (day/night)
-------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: AlbertL (day/night)
-----------------------------------------
Angle1   Angle2           : -69.00 deg   -10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  38.00 / 38.00  m
Receiver height           :  21.50 / 21.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -69.00 deg   Angle2 : -10.00 deg
Barrier height            :  20.00 m
Barrier receiver distance :  14.00 / 14.00  m
Source elevation          :   6.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: AlbertR (day/night)
--------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: AlbertR (day/night)
-----------------------------------------
Angle1   Angle2           : -23.00 deg   80.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  36.00 / 36.00  m
Receiver height           :  21.50 / 21.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -23.00 deg   Angle2 : 80.00 deg
Barrier height            :  20.00 m
Barrier receiver distance :  14.00 / 14.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: AlbertL (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 !       21.50 !       16.34 !        16.34

ROAD (0.00 + 48.47 + 0.00) = 48.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -69    -10   0.00  71.49   0.00  -4.04  -4.84   0.00   0.00 -14.14
48.47
--------------------------------------------------------------------------
--

Segment Leq : 48.47 dBA


Results segment # 2: AlbertR (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 !       21.50 !       14.89 !        14.89

ROAD (0.00 + 48.86 + 0.00) = 48.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -23     80   0.00  71.49   0.00  -3.80  -2.42   0.00   0.00 -16.41
48.86
--------------------------------------------------------------------------
--

Segment Leq : 48.86 dBA

Total Leq All Segments: 51.68 dBA
```

```
Results segment # 1: AlbertL (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 !       21.50 !       16.34 !        16.34

ROAD (0.00 + 40.87 + 0.00) = 40.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -69    -10   0.00  63.89   0.00  -4.04  -4.84   0.00   0.00 -14.14
40.87
--------------------------------------------------------------------------
--

Segment Leq : 40.87 dBA


Results segment # 2: AlbertR (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 !       21.50 !       14.89 !        14.89

ROAD (0.00 + 41.26 + 0.00) = 41.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
--------------------------------------------------------------------------
--
   -23     80   0.00  63.89   0.00  -3.80  -2.42   0.00   0.00 -16.41
41.26
--------------------------------------------------------------------------
--

Segment Leq : 41.26 dBA

Total Leq All Segments: 44.08 dBA
```

```
RT/Custom data, segment # 1: ConL (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 1: ConL (day/night)
--------------------------------------
Angle1   Angle2           : -65.00 deg   -10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  89.00 / 89.00  m
Receiver height           :  21.50 / 21.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -65.00 deg   Angle2 : -10.00 deg
Barrier height            :  20.00 m
Barrier receiver distance :  14.00 / 14.00  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: ConR (day/night)
----------------------------------------------
1 - 4-car SRT:
Traffic volume    :   540/60    veh/TimePeriod
Speed             :    50 km/h

Data for Segment # 2: ConR (day/night)
--------------------------------------
Angle1   Angle2           :   2.00 deg   56.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  91.00 / 91.00  m
Receiver height           :  21.50 / 21.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   2.00 deg   Angle2 : 56.00 deg
Barrier height            :  20.00 m
Barrier receiver distance :  14.00 / 14.00  m
Source elevation          :   3.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: ConL (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 !       21.50 !       19.14 !        19.14

RT/Custom (0.00 + 41.53 + 0.00) = 41.53 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -65    -10   0.00  60.51  -7.73  -5.15   0.00   0.00  -6.11  41.53
----------------------------------------------------------------------

Segment Leq : 41.53 dBA


Results segment # 2: ConR (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 !       21.50 !       18.73 !        18.73

RT/Custom (0.00 + 40.10 + 0.00) = 40.10 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
     2     56   0.00  60.51  -7.83  -5.23   0.00   0.00  -7.35  40.10
----------------------------------------------------------------------

Segment Leq : 40.10 dBA

Total Leq All Segments: 43.88 dBA
```

```
Results segment # 1: ConL (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 !       21.50 !       19.14 !        19.14

RT/Custom (0.00 + 34.99 + 0.00) = 34.99 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
   -65    -10   0.00  53.98  -7.73  -5.15   0.00   0.00  -6.11  34.99
----------------------------------------------------------------------

Segment Leq : 34.99 dBA


Results segment # 2: ConR (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 !       21.50 !       18.73 !        18.73

RT/Custom (0.00 + 33.57 + 0.00) = 33.57 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------
     2     56   0.00  53.98  -7.83  -5.23   0.00   0.00  -7.35  33.57
----------------------------------------------------------------------

Segment Leq : 33.57 dBA

Total Leq All Segments: 37.35 dBA




TOTAL Leq FROM ALL SOURCES (DAY): 52.35
                         (NIGHT): 44.92
```

APPENDIX B

FTA VIBRATION CALCULATIONS AND SEISMOGRAPH OUTPUT WAVEFORM

Receptor V1

GME16-018 31-Oct-16

Possible Vibration Impacts on 900 Albert Street
Perdicted using FTA General Assesment

Train Speed 70 km/h 43.4 mph

	Distance from C/L	
	(m)	(ft)
Trillium	38.0	124.7

	Vibration		
From FTA Manual Fig 10-1			
Vibration Levels at distance from track	66	dBV re 1 micro in/sec	
Adjustment Factors FTA Table 10-1			
Speed reference 50 mph	-1	Speed Limit of 95 km/h (60 mph)	
Vehicle Parameters	0	Assume Soft primary suspension, Weels run true	
Track Condition	0	Worn or Corrugated Track	
Track Treatments	0	None	
Type of Transit Structure	-5	Station	
Efficient vibration Propagation	0	Propagation through rock	
Vibration Levels at Fdn	60		0.025
Coupling to Building Foundation	-10	Large Massonry on Piles	
Floor to Floor Attenuation	-2.0	Ground Floor Ocupied	
Amplification of Floor and Walls	6		
Total Vibration Level	53.8	dBV or	0.012 mm/s
Noise Level in dBA	18.8	dBA	

Receptor V1

GME16-018 31-Oct-16

Possible Vibration Impacts on 900 Albert Street
Perdicted using FTA General Assesment

Train Speed 70 km/h 43.4 mph

	Distance from C/L	
	(m)	(ft)
Confederation	56.0	183.7

	Vibration		
From FTA Manual Fig 10-1			
Vibration Levels at distance from track	63	dBV re 1 micro in/sec	
Adjustment Factors FTA Table 10-1			
Speed reference 50 mph	-1	Speed Limit of 95 km/h (60 mph)	
Vehicle Parameters	0	Assume Soft primary suspension, Weels run true	
Track Condition	0	Worn or Corrugated Track	
Track Treatments	0	None	
Type of Transit Structure	-5	Station	
Efficient vibration Propagation	0	Propagation through rock	
Vibration Levels at Fdn	57		0.018
Coupling to Building Foundation	-10	Large Massonry on Piles	
Floor to Floor Attenuation	-2.0	Ground Floor Ocupied	
Amplification of Floor and Walls	6		
Total Vibration Level	50.8	dBV or	0.009 mm/s
Noise Level in dBA	15.8	dBA	

Table 10-1. Adjustment Factors for Generalized Predictions of Ground-Borne Vibration and Noise

Factors Affecting Vibration Source

Source Factor	Adjustment to Propagation Curve			Comment
Speed		Reference Speed		Vibration level is approximately proportional to 20*log(speed/speed$_{ref}$). Sometimes the variation with speed has been observed to be as low as 10 to 15 log(speed/speed$_{ref}$).
	Vehicle Speed	50 mph	30 mph	
	60 mph	+1.6 dB	+6.0 dB	
	50 mph	0.0 dB	+4.4 dB	
	40 mph	-1.9 dB	+2.5 dB	
	30 mph	-4.4 dB	0.0 dB	
	20 mph	-8.0 dB	-3.5 dB	
Vehicle Parameters (not additive, apply greatest value only)				
Vehicle with stiff primary suspension	+8 dB			Transit vehicles with stiff primary suspensions have been shown to create high vibration levels. Include this adjustment when the primary suspension has a vertical resonance frequency greater than 15 Hz.
Resilient Wheels	0 dB			Resilient wheels do not generally affect ground-borne vibration except at frequencies greater than about 80 Hz.
Worn Wheels or Wheels with Flats	+10 dB			Wheel flats or wheels that are unevenly worn can cause high vibration levels. This can be prevented with wheel truing and slip-slide detectors to prevent the wheels from sliding on the track.
Track Conditions (not additive, apply greatest value only)				
Worn or Corrugated Track	+10 dB			If both the wheels and the track are worn, only one adjustment should be used. Corrugated track is a common problem. Mill scale on new rail can cause higher vibration levels until the rail has been in use for some time.
Special Trackwork	+10 dB			Wheel impacts at special trackwork will significantly increase vibration levels. The increase will be less at greater distances from the track.
Jointed Track or Uneven Road Surfaces	+5 dB			Jointed track can cause higher vibration levels than welded track. Rough roads or expansion joints are sources of increased vibration for rubber-tire transit.
Track Treatments (not additive, apply greatest value only)				
Floating Slab Trackbed	-15 dB			The reduction achieved with a floating slab trackbed is strongly dependent on the frequency characteristics of the vibration.
Ballast Mats	-10 dB			Actual reduction is strongly dependent on frequency of vibration.
High-Resilience Fasteners	-5 dB			Slab track with track fasteners that are very compliant in the vertical direction can reduce vibration at frequencies greater than 40 Hz.

Table 10-1. Adjustment Factors for Generalized Predictions of Ground-Borne Vibration and Noise (Continued)				
Factors Affecting Vibration Path				
Path Factor	**Adjustment to Propagation Curve**			**Comment**
Resiliently Supported Ties			-10 dB	Resiliently supported tie systems have been found to provide very effective control of low-frequency vibration.
Track Configuration (not additive, apply greatest value only)				
Type of Transit Structure	Relative to at-grade tie & ballast: Elevated structure Open cut		 -10 dB 0 dB	The general rule is the heavier the structure, the lower the vibration levels. Putting the track in cut may reduce the vibration levels slightly. Rock-based subways generate higher-frequency vibration.
	Relative to bored subway tunnel in soil: Station Cut and cover Rock-based		 -5 dB -3 dB - 15 dB	
Ground-borne Propagation Effects				
Geologic conditions that promote efficient vibration propagation	Efficient propagation in soil		+10 dB	Refer to the text for guidance on identifying areas where efficient propagation is possible.
	Propagation in rock layer	**Dist.** 50 ft 100 ft 150 ft 200 ft	**Adjust.** +2 dB +4 dB +6 dB +9 dB	The positive adjustment accounts for the lower attenuation of vibration in rock compared to soil. It is generally more difficult to excite vibrations in rock than in soil at the source.
Coupling to building foundation	Wood Frame Houses 1-2 Story Masonry 3-4 Story Masonry Large Masonry on Piles Large Masonry on Spread Footings Foundation in Rock		-5 dB -7 dB -10 dB -10 dB -13 dB 0 dB	The general rule is the heavier the building construction, the greater the coupling loss.
Factors Affecting Vibration Receiver				
Receiver Factor	**Adjustment to Propagation Curve**			**Comment**
Floor-to-floor attenuation	1 to 5 floors above grade: 5 to 10 floors above grade:		-2 dB/floor -1 dB/floor	This factor accounts for dispersion and attenuation of the vibration energy as it propagates through a building.
Amplification due to resonances of floors, walls, and ceilings			+6 dB	The actual amplification will vary greatly depending on the type of construction. The amplification is lower near the wall/floor and wall/ceiling intersections.
Conversion to Ground-borne Noise				
Noise Level in dBA	Peak frequency of ground vibration: Low frequency (<30 Hz): Typical (peak 30 to 60 Hz): High frequency (>60 Hz):		 -50 dB -35 dB -20 dB	Use these adjustments to estimate the A-weighted sound level given the average vibration velocity level of the room surfaces. See text for guidelines for selecting low, typical or high frequency characteristics. Use the high-frequency adjustment for subway tunnels in rock or if the dominant frequencies of the vibration spectrum are known to be 60 Hz or greater.

LOCATION 1 – SEISMOGRAPH WAVEFORM

Date/Time	Tran at 10:11:35 November 3, 2016
Trigger Source	Geo: 0.140 mm/s
Range	Geo: 31.75 mm/s
Record Time	10.0 sec at 1024 sps

Serial Number	BE7373 V 10.72-8.17 MiniMate Plus
Battery Level	6.3 Volts
Unit Calibration	October 31, 2016 by Instantel
File Name	I373GM7Y.ZB0

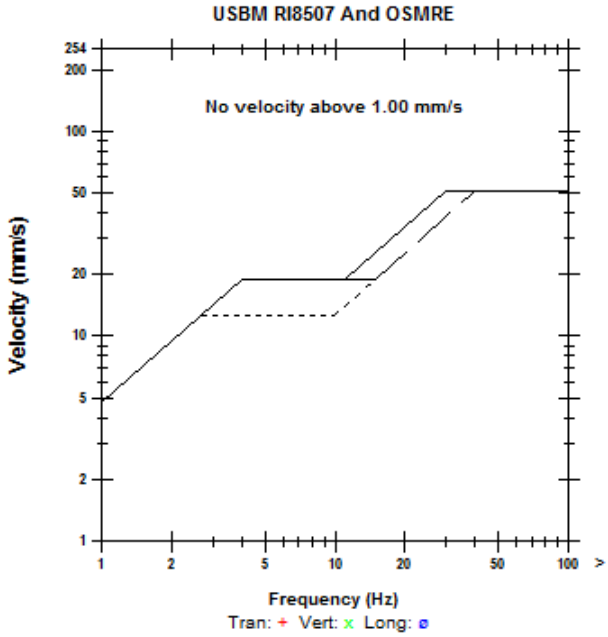
Notes
Location:
Client:
User Name:
General:

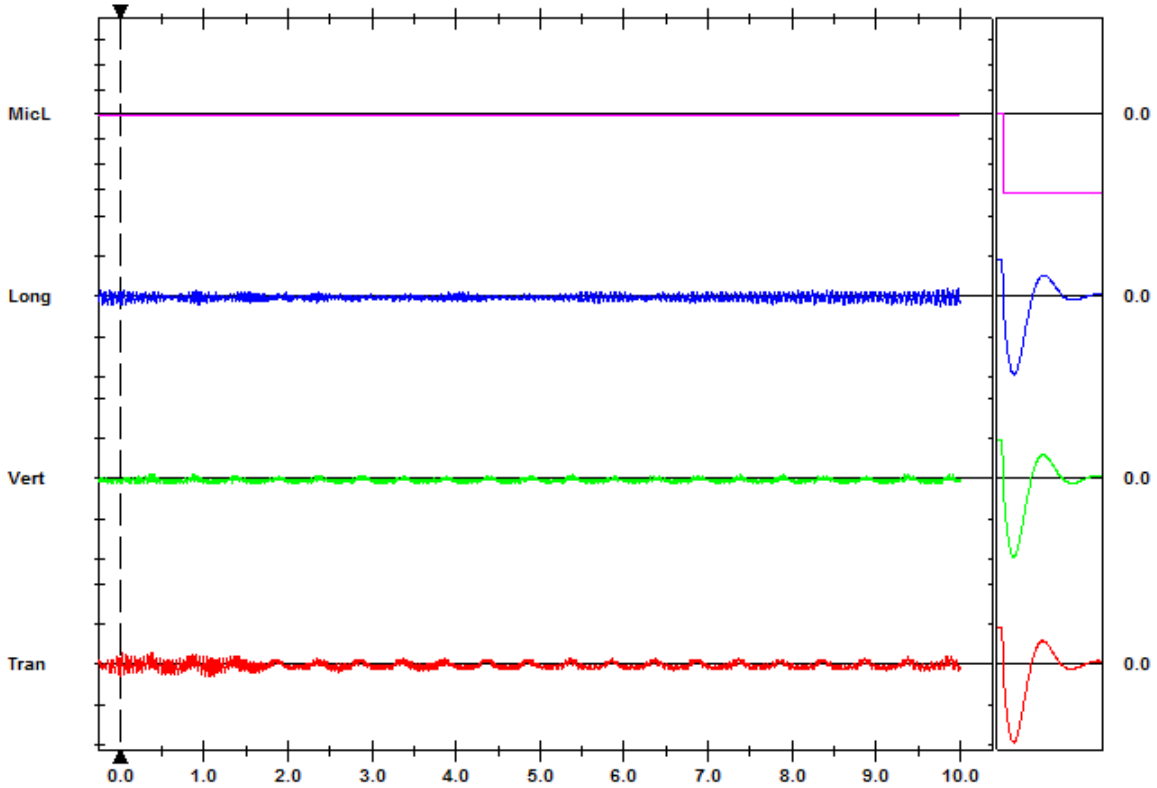
Extended Notes

Microphone	Linear Weighting
PSPL	<0.500 pa.(L)
ZC Freq	>100 Hz
Channel Test	Check (Freq = 0.0 Hz Amp = 0 mv)

	Tran	Vert	Long	
PPV	0.159	0.063	0.127	mm/s
ZC Freq	20	23	16	Hz
Time (Rel. to Trig)	1.067	0.188	9.765	sec
Peak Acceleration	0.005	0.005	0.005	g
Peak Displacement	0.002	0.001	0.001	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.6	7.6	7.3	Hz
Overswing Ratio	3.6	3.6	4.0	

Peak Vector Sum 0.170 mm/s at 0.023 sec
N/A: Not Applicable





Time Scale: 0.50 sec/div **Amplitude Scale:** Geo: 0.500 mm/s/div Mic: 10.000 pa.(L)/div Sensor Check
Trigger =