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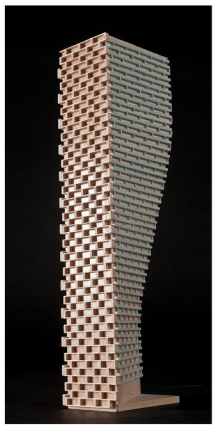
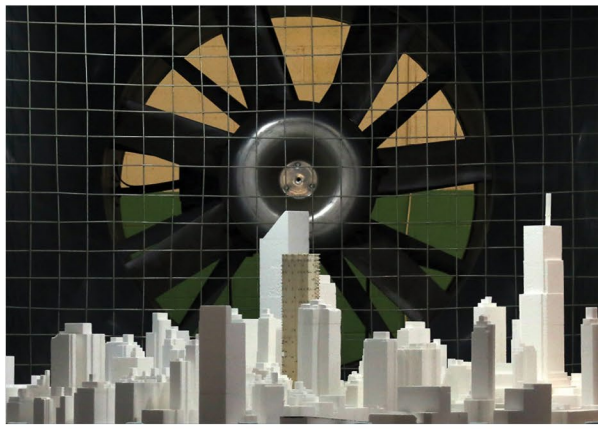
TRANSPORTATION NOISE & VIBRATION FEASIBILITY ASSESSMENT

1994 Scott Street
Ottawa, Ontario

Report: 25-150 Transportation Noise and Vibration Feasibility





October 28, 2025

PREPARED FOR

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EXECUTIVE SUMMARY

This report describes a transportation noise and vibration feasibility assessment undertaken in support of zoning By-Law Amendment (ZBA) and Official Plan Amendment (OPA) applications for the proposed four residential buildings located at 1994 Scott Street Ottawa, Ontario. The major sources of transportation noise on the development are Scott Street (Minor Arterial), as well as the Confederation Line Light Rail Transit (LRT) system, approximately 50 metres to the north.

The assessment is based on (i) theoretical noise prediction methods that conform to the Ministry of the Environment, Conservation and Parks (MECP) NPC-300, Ministry of Transportation Ontario (MTO), and City of Ottawa Environmental Noise Control Guidelines (ENCG) guidelines; (ii) future vehicular traffic volumes corresponding to roadway classification obtained from the City of Ottawa; and (iii) architectural drawings provided by rla architecture, in July 2025.

The results of the current analysis indicate that POW noise levels will range between 36 and 68 dBA during the daytime period (07:00-23:00) and between 29 and 60 dBA during the nighttime period (23:00-07:00). The highest noise level (68 dBA) occurs at the level 6 façade of the lower podium of Building A1, which Is nearest to Scott Street and the confederation line. The noise levels predicted due to roadway traffic exceed the criterion of 65 dBA (listed in Section 4.2 for building components). Upgraded building components will thus be required for this development. Based on Gradient Wind's experience commercially available double pane windows will provide sufficient noise attenuation. During the Site Plan application or detailed design outdoor – indoor noise calculations can be preformed to determine appropriate Sound Transmission Class (STC) ratings for the windows.

All OLAs in this feasibility study fall below 60 dBA, so noise screens are not expected to be required. A more detailed study at the time of site plan application would be done to determine the specific noise control measures for OLA, such as height and extents of noise screens or applications of warning clauses.

Results indicate that Building A1 will require central air conditioning in all units and that Buildings B and C will require forced air heating and provision for the installation of central air conditioning. It is anticipated that all units in Buildings B and C will be provided by central air conditioning or a similar ventilation system, which will allow occupants to keep windows closed and maintain a comfortable living environment.

Estimated vibration levels at the foundation of the north side of Building A1 (the building closest to the LRT) fall well below the ground vibration criterion. As vibration levels are acceptable, regenerated noise levels are also expected to be acceptable. No vibration mitigation is required.

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TABLE OF CONTENTS

1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Park River Properties to undertake a transportation noise feasibility assessment, in support of zoning By-Law Amendment (ZBA) and Official Plan Amendment (OPA) applications for the proposed four residential tower development located at 1994 Scott Street Ottawa, Ontario. This report summarizes the methodology, results, and recommendations related to the assessment of exterior noise levels generated by local transportation traffic.

This assessment is based on theoretical noise calculation methods conforming to the Ministry of the Environment, Conservation and Parks (MECP) NPC-300[1], Ministry of Transportation Ontario (MTO)[2]. Noise calculations were based on architectural drawings provided by rla architects, dated July 2025, with future traffic volumes corresponding to the City of Ottawa's Official Plan (OP) roadway classifications.

2. TERMS OF REFERENCE

The focus of this traffic noise feasibility assessment is a proposed development that comprises four residential buildings referred to as Buildings A1, A2, B, and C. The site is south of Scott Street, which is the main source of noise, as well as the Confederation Line of the O-train. The confederation line is also a source of ground vibration since it is within 75 metres (m) of the subject site, therefore ground vibrations are also considered as part of this study.

The proposed development comprises four residential buildings referred to as Buildings A1, A2, B, and C. To the north, Building A1 rises 41-storeys with a stepped four and 10-storey podium, and is connected at the south to Building A2 rising four-storeys, forming an 'L' shape. Buildings B and C to the west and east, respectively, each rise 29-storeys with five-storey podiums. At grade, all buildings contain lobbies, with commercial space in Buildings A1 and B, indoor amenities in B and C, and residential units in A2. Ramps to underground parking are located at Buildings A1, B, and C, with six levels below A1 and B, and five levels below C. Indoor amenities paired with amenity terraces are featured in Building A1 at levels seven, 11,

[1] Ontario Ministry of the Environment and Climate Change – Environmental Noise Guidelines, Publication NPC-300, Queens Printer for Ontario, Toronto, 2013
[2] Ministry of Transportation Ontario, "*Environmental Guide for Noise*", August 2021

and the mechanical penthouse (MPH), and in Buildings B and C at level five and the MPH. Building A2 is topped by an amenity roof.

3. OBJECTIVES

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

4. METHODOLOGY

4.1 Background

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

4.2 Roadway Traffic Noise

4.2.1 Criteria for Roadway Traffic Noise

For surface roadway traffic noise, the equivalent sound energy level, L_{eq}, provides a measure of the time-varying noise levels, which is well correlated with the annoyance of sound. It is defined as the continuous sound level, which has the same energy as a time-varying noise level over a period of time. For roadways, the L_{eq} is commonly calculated on the basis of a 16-hour (L_{eq16}) daytime (07:00-23:00) / 8-hour (L_{eq8}) nighttime (23:00-07:00) split to assess its impact on residential buildings. NPC-300 specifies that the recommended indoor noise limit for various spaces in the development are listed in Table 1.

TABLE 1: INDOOR SOUND LEVEL CRITERIA (ROAD) [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.	07:00 - 23:00	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) dictate the action required to achieve the recommended sound levels. An open window is considered to provide a 10 dBA reduction in noise, while a standard closed window is capable of providing a minimum 20 dBA noise reduction[4]. A closed window due to a ventilation requirement will bring noise levels down to achieve an acceptable indoor environment[5]. Therefore, where noise levels exceed 55 dBA daytime and 50 dBA nighttime, the ventilation for the building should consider the need for having windows and doors closed, which triggers the need for forced air heating with provision for central air conditioning. Where noise levels exceed 65 dBA daytime and 60 dBA nighttime, air conditioning will be required and building components will require higher levels of sound attenuation[6].

[3] MOECP, Environmental Noise Guidelines, NPC 300 – Part C, Table C-9
[4] Burberry, P.B. (2014). Mitchell's Environment and Services. Routledge, Page 125
[5] MOECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.8
[6] MOECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.1.3

The sound level criterion for outdoor living areas is 55 dBA, which applies during the daytime (07:00 to 23:00). When noise levels exceed 55 dBA, mitigation should be provided to reduce noise levels where technically and administratively feasible to acceptable levels at or below the criterion. In this study, the podium roofs in this development were considered as outdoor amenity areas, and as such, defined as an OLA.

4.2.2 Roadway Traffic Volumes

The ENCG dictates that noise calculations should consider future sound levels based on roadways' classification and the railway transit systems at the mature state of development. Thus, traffic volumes are based on roadway classifications outlined in the City of Ottawa's Official Plan (OP) and Transportation Master Plan[7], which provide additional details on future roadway expansions and the ultimate buildout LRT volumes which were established in the Confederation Line West Extension Environmental Assessment Study. Average Annual Daily Traffic (AADT) volumes are based on data in Table 1 of the ENCG for Scott Street's classification. Table 2 (below) summarizes the pertinent transportation traffic data for this feasibility study.

TABLE 2: TRANSPORTATION TRAFFIC DATA

Segment	Roadway/ Transit Class	Speed Limit (km/h)	AADT Count	Day/Night Split (%)	Truck Volume Percentages	
					Medium	Heavy
Scott Street	2-UAU	50	15,000	92/8	7	5
Confederation Line	LRT	70	**540/60***		-	-

**Day/night traffic split*

[7] City of Ottawa Transportation Master Plan, November 2023

4.2.3 Theoretical Roadway Traffic Noise Predictions

Noise predictions were performed with the aid of the MECP computerized noise assessment program, STAMSON 5.04, for road analysis. Appendix A includes the STAMSON 5.04 input and output data. Roadway traffic noise calculations were performed by treating each roadway segment as separate Line sources of noise. In addition to the traffic volumes summarized in Table 2, theoretical noise predictions were based on the following parameters:

- Roadway traffic noise calculations were performed by treating each roadway segment as separate line sources of noise.
- Ground surfaces were taken to be reflective due to the presence of hard (paved) ground.
- Topography was assumed to be a flat/gentle slope surrounding the study building.
- Confederation line is modelled as a 4-car SRT in STAMSON and is in a trench 5 m below grade.

4.3 Ground Vibration and 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, such as from a train or subway. Repetitive motion of the wheels on the track or rubber tires passing over an uneven surface causes vibration 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.

4.3.1 Ground Vibration Criteria

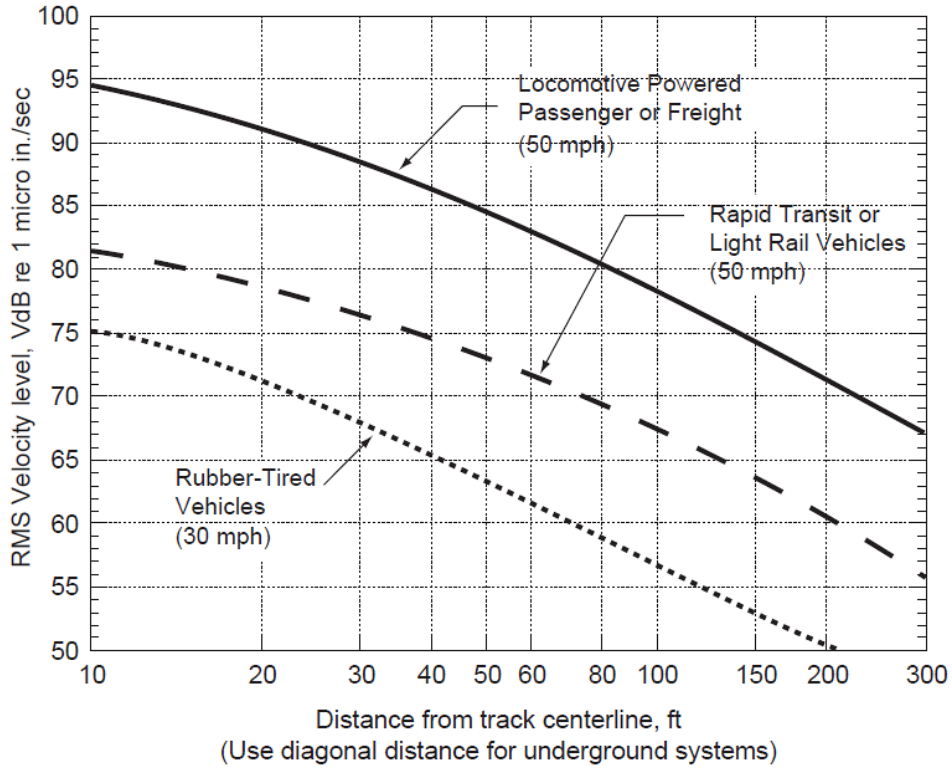
The Canadian Railway Association and Canadian Association of Municipalities have set standards for new sensitive land developments within 300 metres of a railway right-of-way, as published in their document *Guidelines for New Development in Proximity to Railway Operations*[8], which indicate that vibration 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.

4.3.2 Theoretical Ground Vibration Prediction Procedure

Potential vibration impacts of the trains were predicted using the Federal Transit Authority's (FTA) *Transit Noise and Vibration Impact Assessment*[9] 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 on the following page, 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. The vibration impact on the building was determined using a set of curves for Rapid Transit at a speed of 50 mph. Adjustment factors were considered based on the following information:

[8] Dialog and J.E. Coulter Associates Limited, prepared for The Federation of Canadian Municipalities and The Railway Association of Canada, May 2013
[9] John A. Volpe National Transportation Systems Center, Transit Noise and Vibration Impact Assessment, Federal Transit Administration, September 2018

- The maximum operating speed of the LRT line is 43 mph (70 km/h) at peak.
- The setback distance between the development and the closest track is 50 m.
- The vehicles are assumed to have soft primary suspensions.
- Tracks are not welded, though in otherwise good condition.
- Soil conditions do not efficiently propagate vibrations.
- The building's foundation will bear on bedrock.
- Type of transit structure is "Rock Based".



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

5. RESULTS

5.1 Roadway Traffic Noise Levels

The results of the roadway traffic noise calculations are summarized in Table 3 below. Table 3 presents the receptor sound levels as calculated in STAMSON. A couple exterior amenities on Buildings B and C are not accounted for with OLAs because OLAs measured on those buildings return sound levels low enough to assume similar guideline compliance for all OLAs on those buildings.

TABLE 3: EXTERIOR NOISE LEVELS DUE TO ROADWAY TRAFFIC SOURCES

Receptor Number	Receptor Height Above Grade (m)	Receptor Location	Roadway Noise Level (dBA)	
			Day	Night
R1	21.5	POW – Tower A1 Level 6 – North Façade	68	60
R2	38.5	POW – Tower A1 Level 10 – North Façade	66	59
R3	137.5	POW – Tower A1 Penthouse – North Façade	47	40
R4	132.5	POW – Tower A1 Level 40 – North Façade	67	59
R5	12.75	POW –Building A2 Level 4 – East Façade	51	43
R6	12.75	POW – Building A2 Level 4 – West Façade	36	29
R7	94.5	POW – Tower B Level 29 – East Façade	56	48
R8	94.5	POW – Tower B Level 29 – West Façade	53	46
R9	94.5	POW – Tower C Level 29 – West Façade	54	47
R10	94.5	POW – Tower C Level 29 – East Façade	57	49
R11	23.5	OLA – Tower A1 Level 7 Podium – North Side	58	N/A*
R12	134.75	OLA – Tower A1 Level 41 Podium – North Side	50	N/A*
R13	41.5	OLA – Tower A1 Level 11 Podium – South Side	45	N/A*
R14	15.75	OLA – Tower A2 Rooftop Amenity	55	N/A*
R15	98	OLA – Tower B Rooftop Amenity	43	N/A*
R16	96.5	OLA – Tower C Rooftop Amenity	42	N/A*
R17	94.5	POW – Tower B Level 29 –North Façade	55	48

*Noise levels during the nighttime are not considered for OLAs

The results of the current analysis indicate that POW noise levels will range between 36 and 68 dBA during the daytime period (07:00-23:00) and between 29 and 60 dBA during the nighttime period (23:00-07:00). The highest noise level (68 dBA) occurs at the level 6 façade of the lower podium of Building A1, which Is nearest to Scott Street and the confederation line.

The noise levels predicted due to roadway and LRT traffic exceed the criteria listed in Section 4.2 for building components on the north façade of building A1. Upgraded building components, including STC rated glazing elements and exterior walls, will be required where noise levels exceed 65 dBA, as discussed in Section 4.2.1

All OLAs fall below 60 dBA, so no mitigation is expected to be required. A more detailed study will be done at the time of site plan application determine the specific noise control measures for the outdoor amenity areas.

5.2 Ground Vibrations and Ground-Borne Noise Levels

Estimated vibration levels at the foundation nearest to the Confederation Line LRT (north façade of Tower A1) are expected to be 0.02 mm/s (63 dBV), based on the FTA protocol. The site has an offset distance of 50 m to the centreline of the Confederation Line LRT. Details of the calculation are provided in Appendix B. Since predicted vibration levels do not exceed the criterion of 0.14 mm/s RMS at the foundation, concerns due to vibration impacts are not expected. As vibration levels are acceptable, regenerated noise levels are also expected to be acceptable. No vibration mitigation is required.

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that POW noise levels will range between 36 and 68 dBA during the daytime period (07:00-23:00) and between 29 and 60 dBA during the nighttime period (23:00-07:00). The highest noise level (68 dBA) occurs at the level 6 façade of the lower podium of Building A1, which Is nearest to Scott Street and the confederation line. The noise levels predicted due to transportation noise occasionally exceed the criterion of 65 dBA (listed in Section 4.2 for building components).

The noise levels predicted due to roadway and LRT traffic exceed the criteria listed in Section 4.2 for building components on the north façade of building A1. Upgraded building components, including STC rated glazing elements and exterior walls, will be required where noise levels exceed 65 dBA, as discussed in Section 4.2.1

All OLAs fall below 60 dBA, so no mitigation is expected to be required. A more detailed study will be done at site plan application to determine the best solution for noise levels at OLAs above 55 dBA. This may require a Type A Warning Clause to be applied.

The results of the calculations also indicate that certain buildings will require different warning clauses (sourced from the warning clauses in the NPC-300/ENCG guideline). The noise levels at Building A1 are high enough to recommend a Type D warning clause, which requires air conditioning and closed windows are recommended. The noise levels at Building A2 are too low to require warning clauses. The noise levels at Buildings B and C are high enough to recommend a Type C Warning Clause, which notifies residents that their unit is designed with the provision for adding central air conditioning. Appendix C outlines typical warning clauses which may be required for the development to be placed on Purchase, Sale and Lease Agreements.

Estimated vibration levels at the foundation of the north side of Building A1 (the building closest to the LRT) fall well below the ground vibration criterion. As vibration levels are acceptable, regenerated noise levels are also expected to be acceptable. No vibration mitigation is required. Given the proximity to the LRT a special warning clause will need to be applied on the title (see Appendix C).

A detailed roadway traffic noise study will be required at the time of site plan approval to determine specific noise control measures for the development.

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

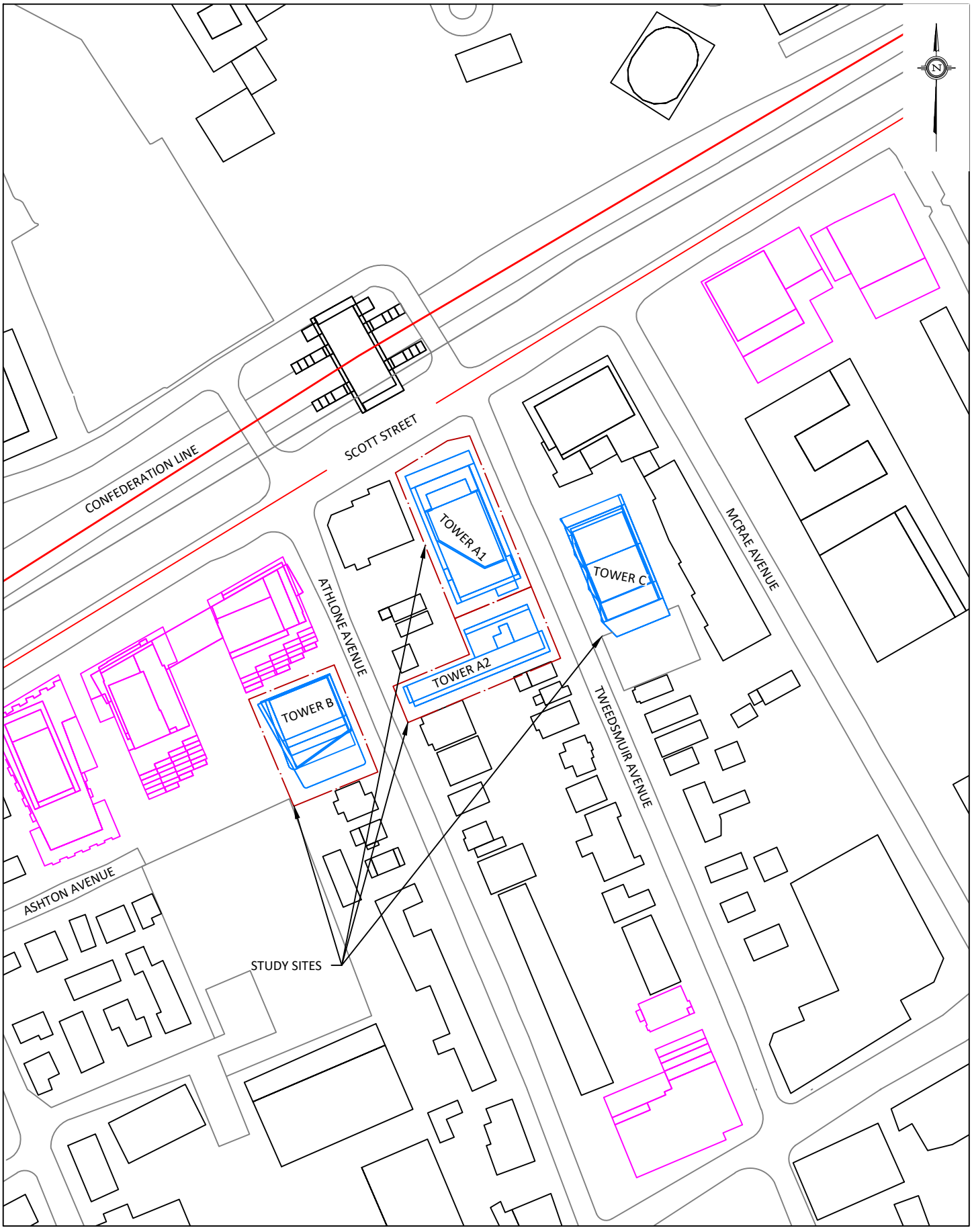
Sincerely,

Gradient Wind Engineering Inc.

Michael Pantano, M.A.Sc.
Junior ANV Scientist

Joshua Foster, P.Eng.
Lead Engineer

Gradient Wind File 25-150 Transportation Noise and Ground Vibration Feasibility



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PROJECT	1994 SCOTT STREET, OTTAWA TRANSPORTATION NOISE ASSESSMENT		DESCRIPTION
SCALE	1:2000 (APPROX.)	DRAWING NO.	25-150-1
DATE	JULY 21, 2025	DRAWN BY	T.K.

FIGURE 1:
PROPERTY LINE AND SURROUNDING CONTEXT

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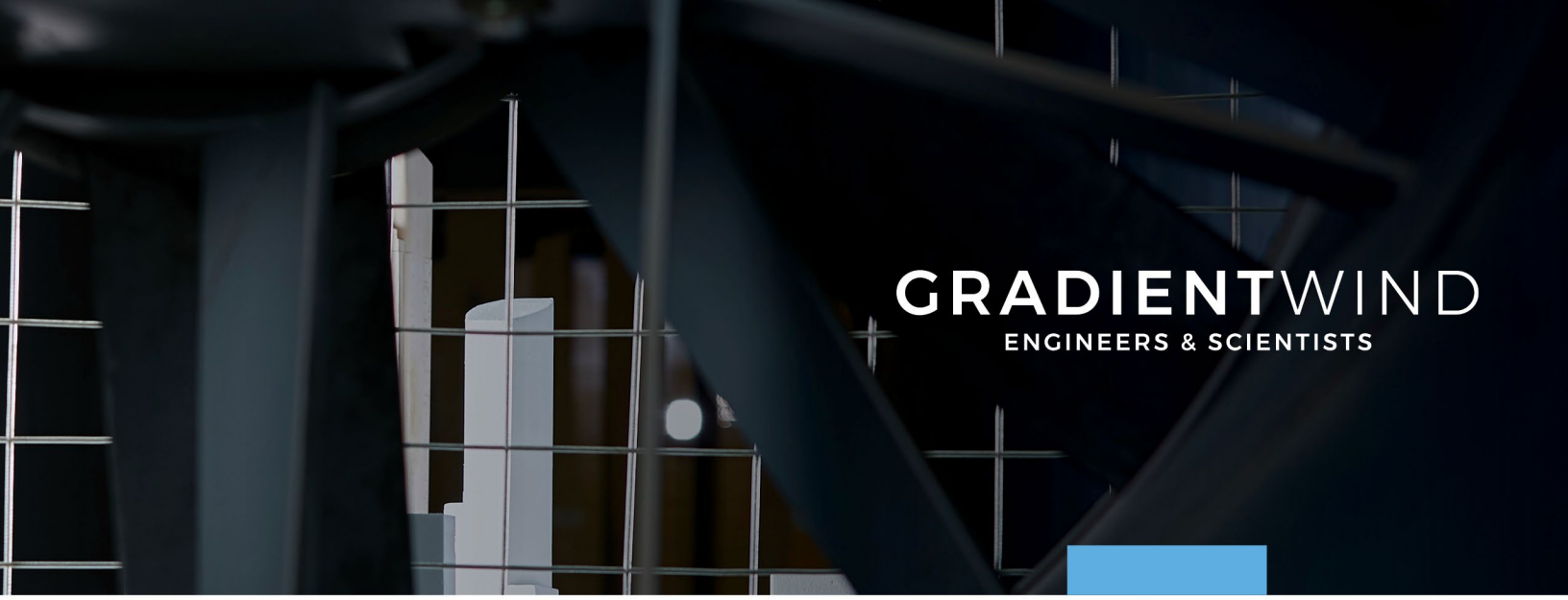
SCALE	1:1000 (APPROX.)
DRAWING NO.	25-150-2
DATE	JULY 28, 2025
DRAWN BY	T.K.
DESCRIPTION	FIGURE 2: RECEPTOR LOCATIONS



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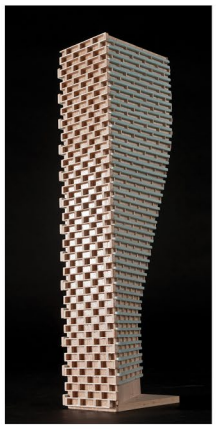

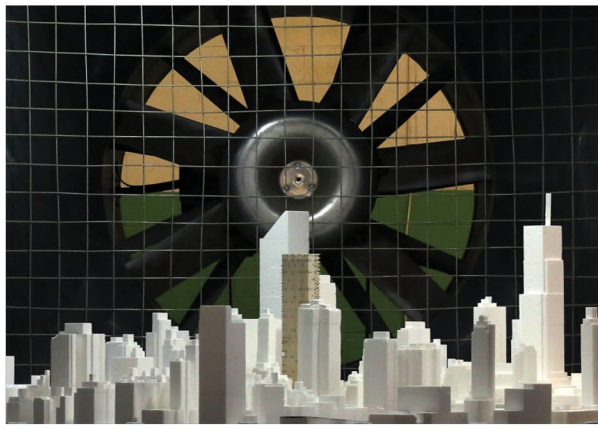

APPENDIX A

STAMSON 5.04 – INPUT AND OUTPUT DATA

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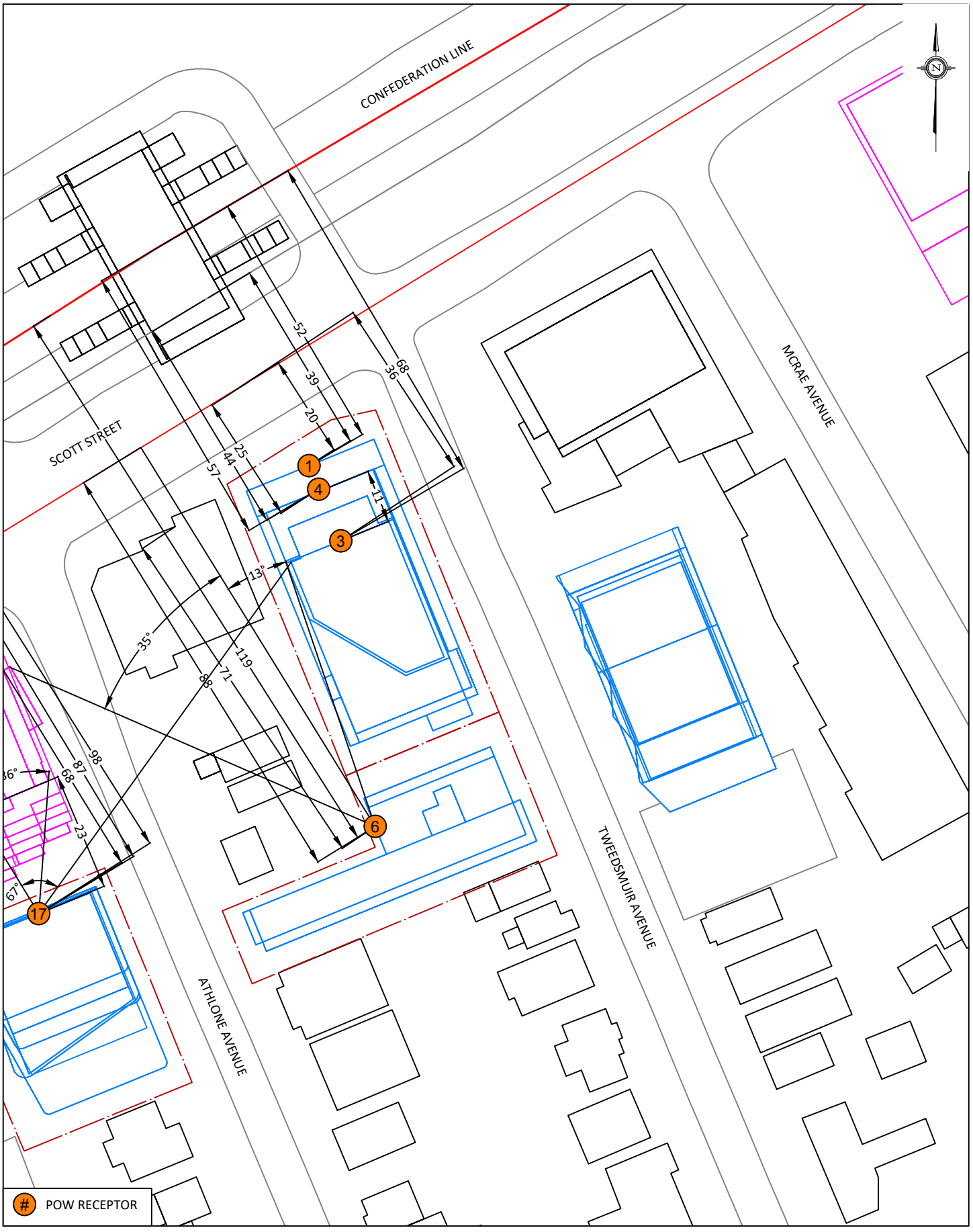

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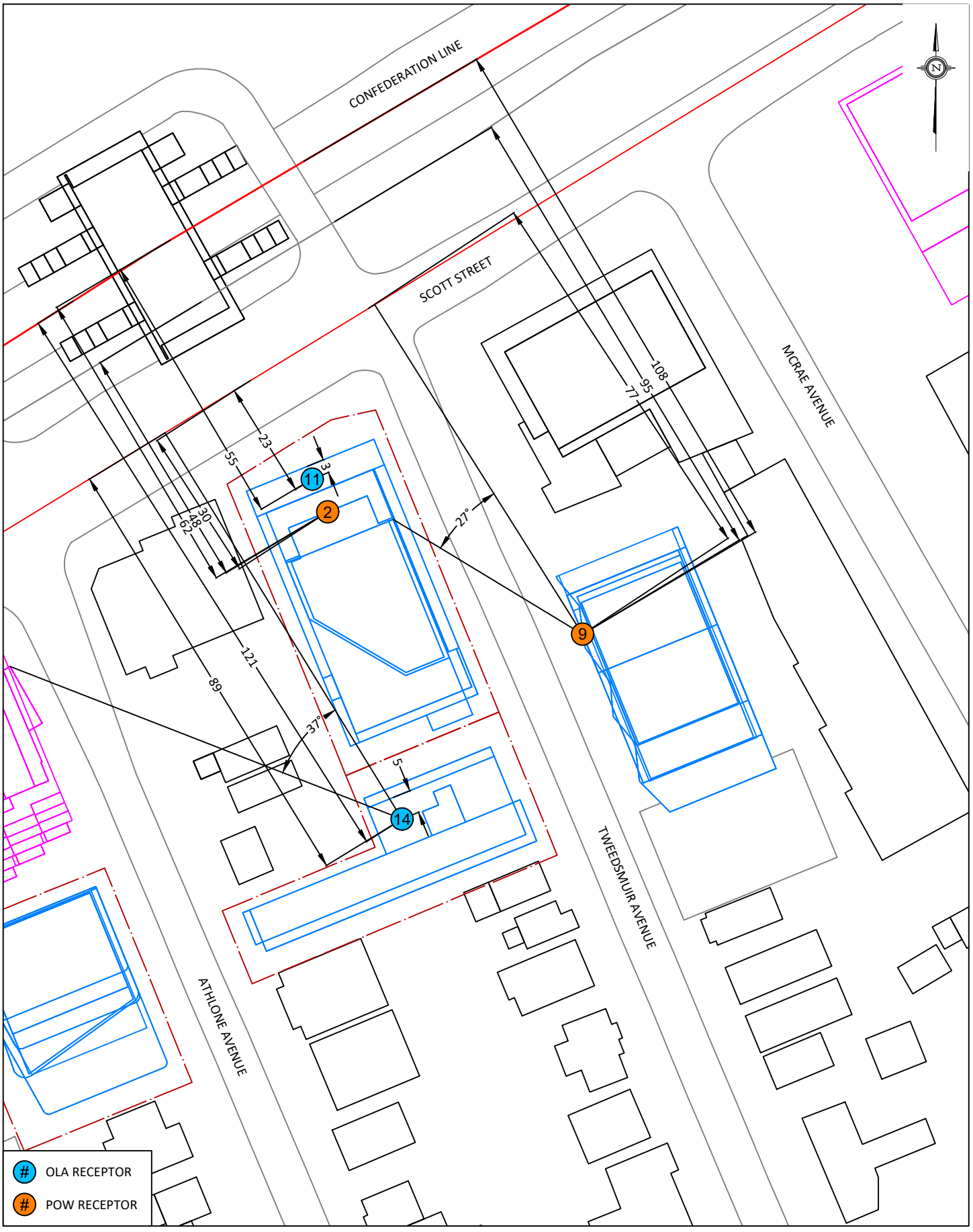
PROJECT	1994 SCOTT STREET, OTTAWA TRANSPORTATION NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	25-150-A1
DATE	JULY 28, 2025
DRAWN BY	T.K.

DESCRIPTION

FIGURE A1:
STAMSON PARAMETERS: R1,3,4,6



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PROJECT	1994 SCOTT STREET, OTTAWA TRANSPORTATION NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	25-150-A2
DATE	JULY 25, 2025
DRAWN BY	T.K.
DESCRIPTION	FIGURE A2: STAMSON PARAMETERS: R2,9,11,14

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SCALE	1:1000 (APPROX.)	DRAWING NO.	25-150-A3
DATE	JULY 25, 2025	DRAWN BY	T.K.

FIGURE A3:
STAMSON PARAMETERS: R5,10,16

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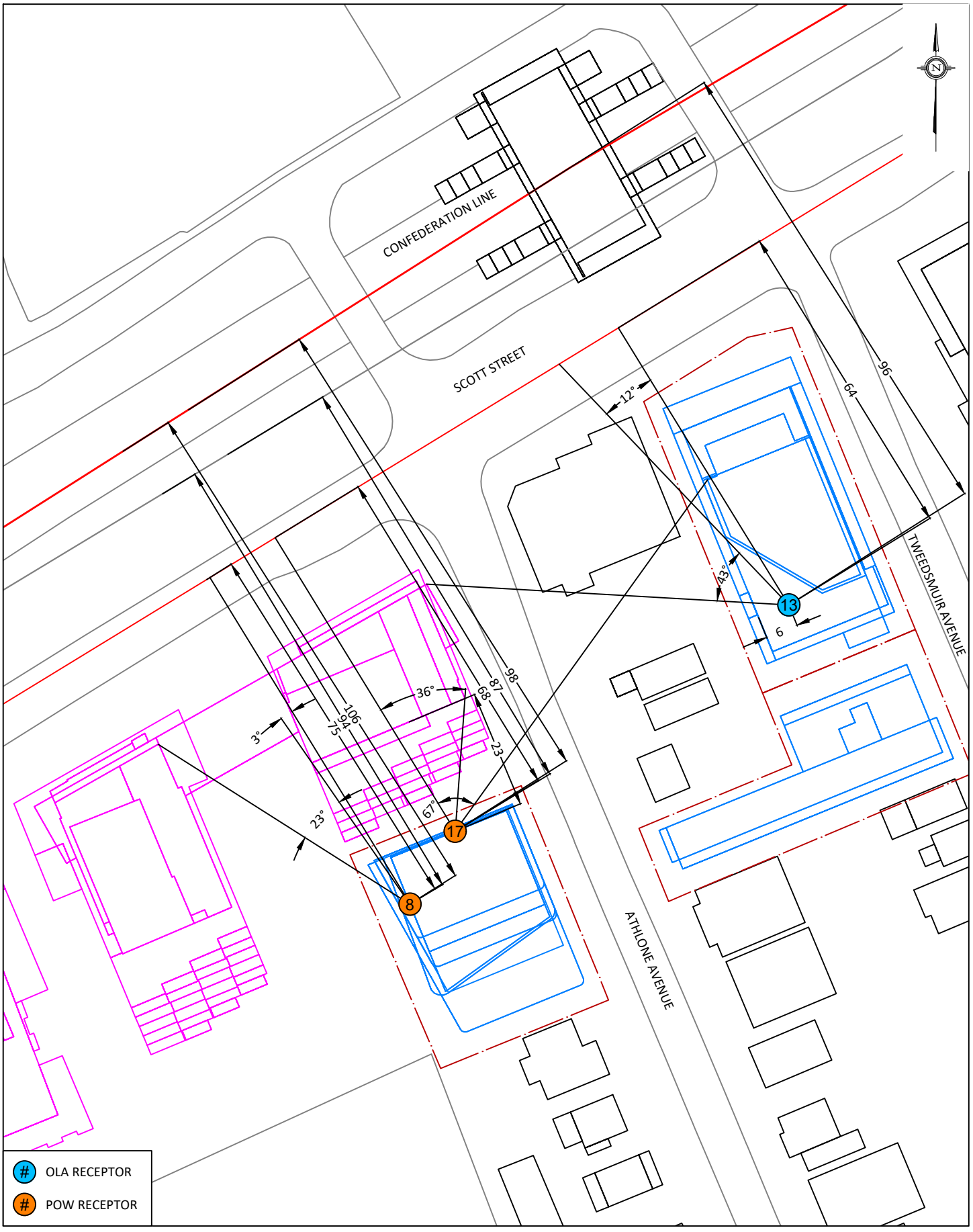
SCALE	1:1000 (APPROX.)	DRAWING NO.	25-150-A4
DATE	JULY 25, 2025	DRAWN BY	T.K.

FIGURE A4:
STAMSON PARAMETERS: R,7,12,15



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PROJECT	1994 SCOTT STREET, OTTAWA TRANSPORTATION NOISE ASSESSMENT		DESCRIPTION
SCALE	1:1000 (APPROX.)	DRAWING NO.	25-150-A5
DATE	AUGUST 18, 2025	DRAWN BY	T.K.

FIGURE A5:
STAMSON PARAMETERS: R8,13,17

```
STAMSON 5.0        NORMAL REPORT        Date: 28-07-2025 10:26:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  20.00 / 20.00  m
Receiver height           :   1.50 / 21.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.50 m

ROAD (0.00 + 67.23 + 0.00) = 67.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.48   0.00  -1.25   0.00   0.00   0.00   0.00  67.23
-------------------------------------------------------------------------------

Segment Leq : 67.23 dBA

Total Leq All Segments: 67.23 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 59.63 + 0.00) = 59.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  60.88   0.00  -1.25   0.00   0.00   0.00   0.00  59.63
-------------------------------------------------------------------------------

Segment Leq : 59.63 dBA

Total Leq All Segments: 59.63 dBA

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

Data for Segment # 1: Line 1 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  52.00 / 52.00  m
Receiver height           :  21.50 / 21.50  m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   5.00 m
Elevation                 :   5.00 m
Barrier receiver distance :  39.00 / 39.00  m
Source elevation          :   0.00 m
Receiver elevation        :   5.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Line 1 (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 !        7.00 !         7.00
```

```
RT/Custom (0.00 + 58.04 + 0.00) = 58.04 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  63.44  -5.40   0.00   0.00   0.00  -0.58  57.46*
   -90     90   0.00  63.44  -5.40   0.00   0.00   0.00   0.00  58.04
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 58.04 dBA

Total Leq All Segments: 58.04 dBA

Results segment # 1: Line 1 (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 !        7.00 !         7.00

RT/Custom (0.00 + 51.51 + 0.00) = 51.51 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  56.91  -5.40   0.00   0.00   0.00  -0.58  50.93*
   -90     90   0.00  56.91  -5.40   0.00   0.00   0.00   0.00  51.51
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 51.51 dBA

Total Leq All Segments: 51.51 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 67.72
                           (NIGHT): 60.25
```

STAMSON 5.0 NORMAL REPORT Date: 28-07-2025 10:33:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  30.00 / 30.00  m
Receiver height           :  38.50 / 38.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.50 m

ROAD (0.00 + 65.47 + 0.00) = 65.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.48   0.00  -3.01   0.00   0.00   0.00   0.00  65.47
-------------------------------------------------------------------------------

Segment Leq : 65.47 dBA

Total Leq All Segments: 65.47 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 57.87 + 0.00) = 57.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  60.88   0.00  -3.01   0.00   0.00   0.00   0.00  57.87
-------------------------------------------------------------------------------

Segment Leq : 57.87 dBA

Total Leq All Segments: 57.87 dBA

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

Data for Segment # 1: Line 1 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  62.00 / 62.00  m
Receiver height           :  38.50 / 38.50  m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   5.00 m
Elevation                 :   5.00 m
Barrier receiver distance :  48.00 / 48.00  m
Source elevation          :   0.00 m
Receiver elevation        :   5.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Line 1 (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 !       38.50 !       10.21 !        10.21
```

```
RT/Custom (0.00 + 57.27 + 0.00) = 57.27 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  63.44  -6.16   0.00   0.00   0.00  -0.10  57.17*
   -90     90   0.00  63.44  -6.16   0.00   0.00   0.00   0.00  57.27
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 57.27 dBA

Total Leq All Segments: 57.27 dBA

Results segment # 1: Line 1 (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 !       38.50 !       10.21 !        10.21

RT/Custom (0.00 + 50.74 + 0.00) = 50.74 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  56.91  -6.16   0.00   0.00   0.00  -0.10  50.64*
   -90     90   0.00  56.91  -6.16   0.00   0.00   0.00   0.00  50.74
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 50.74 dBA

Total Leq All Segments: 50.74 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 66.08
                           (NIGHT): 58.64
```

STAMSON 5.0 NORMAL REPORT Date: 28-07-2025 10:44:40
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  36.00 / 36.00  m
Receiver height           : 137.50 / 137.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            : 134.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !      137.50 !       95.94 !        95.94

ROAD (0.00 + 46.59 + 0.00) = 46.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.48   0.00  -3.80   0.00   0.00   0.00 -18.08  46.59
-------------------------------------------------------------------------------

Segment Leq : 46.59 dBA

Total Leq All Segments: 46.59 dBA

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !      137.50 !       95.94 !        95.94

ROAD (0.00 + 39.00 + 0.00) = 39.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  60.88   0.00  -3.80   0.00   0.00   0.00 -18.08  39.00
-------------------------------------------------------------------------------

Segment Leq : 39.00 dBA

Total Leq All Segments: 39.00 dBA
```

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

Data for Segment # 1: Line 1 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  68.00 / 68.00  m
Receiver height           : 137.50 / 137.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            : 134.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Line 1 (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 !      137.50 !      115.34 !       115.34

RT/Custom (0.00 + 39.53 + 0.00) = 39.53 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
   -90     90   0.00  63.44  -6.56   0.00   0.00   0.00 -17.34  39.53
-------------------------------------------------------------------

Segment Leq : 39.53 dBA

Total Leq All Segments: 39.53 dBA
```

```
Results segment # 1: Line 1 (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 !      137.50 !      115.34 !       115.34

RT/Custom (0.00 + 33.00 + 0.00) = 33.00 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  56.91  -6.56   0.00   0.00   0.00 -17.34  33.00
-------------------------------------------------------------------------

Segment Leq : 33.00 dBA

Total Leq All Segments: 33.00 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 47.37
                           (NIGHT): 39.97
```

STAMSON 5.0 NORMAL REPORT Date: 28-07-2025 10:44:55
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  25.00 / 25.00  m
Receiver height           : 132.50 / 132.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.50 m

ROAD (0.00 + 66.26 + 0.00) = 66.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.48   0.00  -2.22   0.00   0.00   0.00   0.00  66.26
-------------------------------------------------------------------------------

Segment Leq : 66.26 dBA

Total Leq All Segments: 66.26 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 58.66 + 0.00) = 58.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  60.88   0.00  -2.22   0.00   0.00   0.00   0.00  58.66
-------------------------------------------------------------------------------

Segment Leq : 58.66 dBA

Total Leq All Segments: 58.66 dBA

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

Data for Segment # 1: Line 1 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  57.00 / 57.00  m
Receiver height           : 132.50 / 132.50 m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   5.00 m
Elevation                 :   5.00 m
Barrier receiver distance :  44.00 / 44.00  m
Source elevation          :   0.00 m
Receiver elevation        :   5.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Line 1 (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 !      132.50 !       31.75 !        31.75
```

```
RT/Custom (0.00 + 57.64 + 0.00) = 57.64 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  63.44  -5.80   0.00   0.00   0.00  -0.02  57.62*
   -90     90   0.00  63.44  -5.80   0.00   0.00   0.00   0.00  57.64
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 57.64 dBA

Total Leq All Segments: 57.64 dBA

Results segment # 1: Line 1 (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 !      132.50 !       31.75 !        31.75

RT/Custom (0.00 + 51.11 + 0.00) = 51.11 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  56.91  -5.80   0.00   0.00   0.00  -0.02  51.09*
   -90     90   0.00  56.91  -5.80   0.00   0.00   0.00   0.00  51.11
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 51.11 dBA

Total Leq All Segments: 51.11 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 66.82
                           (NIGHT): 59.36
```

STAMSON 5.0 NORMAL REPORT Date: 28-07-2025 10:49:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           :  13.00 deg   32.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  92.00 / 92.00  m
Receiver height           :  12.75 / 12.75  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


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

Source height = 1.50 m

ROAD (0.00 + 50.84 + 0.00) = 50.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    13     32   0.00  68.48   0.00  -7.88  -9.77   0.00   0.00   0.00  50.84
-------------------------------------------------------------------------------

Segment Leq : 50.84 dBA

Total Leq All Segments: 50.84 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 43.24 + 0.00) = 43.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    13     32   0.00  60.88   0.00  -7.88  -9.77   0.00   0.00   0.00  43.24
-------------------------------------------------------------------------------

Segment Leq : 43.24 dBA

Total Leq All Segments: 43.24 dBA

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

Data for Segment # 1: Line 1 (day/night)
----------------------------------------
Angle1   Angle2           :  13.00 deg   32.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 124.00 / 124.00 m
Receiver height           :  12.75 / 12.75  m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            :  13.00 deg   Angle2 : 32.00 deg
Barrier height            :   5.00 m
Elevation                 :   5.00 m
Barrier receiver distance : 110.00 / 110.00 m
Source elevation          :   0.00 m
Receiver elevation        :   5.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Line 1 (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 !       12.75 !        2.45 !         2.45
```

```
RT/Custom (0.00 + 33.01 + 0.00) = 33.01 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
    13     32   0.00  63.44  -9.17  -9.77   0.00   0.00 -11.49  33.01
-------------------------------------------------------------------------

Segment Leq : 33.01 dBA

Total Leq All Segments: 33.01 dBA

Results segment # 1: Line 1 (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 !       12.75 !        2.45 !         2.45

RT/Custom (0.00 + 26.47 + 0.00) = 26.47 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
    13     32   0.00  56.91  -9.17  -9.77   0.00   0.00 -11.49  26.47
-------------------------------------------------------------------------

Segment Leq : 26.47 dBA

Total Leq All Segments: 26.47 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 50.91
                           (NIGHT): 43.33
```

STAMSON 5.0 NORMAL REPORT Date: 28-07-2025 11:08:33
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           : -35.00 deg   13.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  88.00 / 88.00  m
Receiver height           :  12.75 / 12.75  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -35.00 deg   Angle2 : 13.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  71.00 / 71.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       12.75 !        3.67 !         3.67

ROAD (0.00 + 35.06 + 0.00) = 35.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -35     13   0.00  68.48   0.00  -7.68  -5.74   0.00   0.00 -20.00  35.06
-------------------------------------------------------------------------------

Segment Leq : 35.06 dBA

Total Leq All Segments: 35.06 dBA

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       12.75 !        3.67 !         3.67

ROAD (0.00 + 27.46 + 0.00) = 27.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -35     13   0.00  60.88   0.00  -7.68  -5.74   0.00   0.00 -20.00  27.46
-------------------------------------------------------------------------------

Segment Leq : 27.46 dBA

Total Leq All Segments: 27.46 dBA

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

```
Data for Segment # 1: Line 1 (day/night)
----------------------------------------
Angle1   Angle2           : -35.00 deg   13.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 119.00 / 119.00 m
Receiver height           :  12.75 / 12.75  m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -35.00 deg   Angle2 : 13.00 deg
Barrier height            :  15.00 m
Elevation                 :   5.00 m
Barrier receiver distance :  71.00 / 71.00  m
Source elevation          :   0.00 m
Receiver elevation        :   5.00 m
Barrier elevation         :   5.00 m
Reference angle           :   0.00

Results segment # 1: Line 1 (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 !       12.75 !        2.46 !         7.46

RT/Custom (0.00 + 28.70 + 0.00) = 28.70 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
   -35     13   0.00  63.44  -8.99  -5.74   0.00   0.00 -20.00  28.70
-------------------------------------------------------------------

Segment Leq : 28.70 dBA

Total Leq All Segments: 28.70 dBA

Results segment # 1: Line 1 (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 !       12.75 !        2.46 !         7.46
```

```
RT/Custom (0.00 + 22.17 + 0.00) = 22.17 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -35     13   0.00  56.91  -8.99  -5.74   0.00   0.00 -20.00  22.17
-------------------------------------------------------------------------

Segment Leq : 22.17 dBA

Total Leq All Segments: 22.17 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 35.96
                           (NIGHT): 28.59
```

STAMSON 5.0 NORMAL REPORT Date: 28-07-2025 11:03:33
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           :  16.00 deg   58.00 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           :  94.50 / 94.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.50 m

ROAD (0.00 + 54.94 + 0.00) = 54.94 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    16     58   0.00  68.48   0.00  -7.22  -6.32   0.00   0.00   0.00  54.94
-------------------------------------------------------------------------------

Segment Leq : 54.94 dBA

Total Leq All Segments: 54.94 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 47.35 + 0.00) = 47.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    16     58   0.00  60.88   0.00  -7.22  -6.32   0.00   0.00   0.00  47.35
-------------------------------------------------------------------------------

Segment Leq : 47.35 dBA

Total Leq All Segments: 47.35 dBA

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

Data for Segment # 1: Line 1 (day/night)
----------------------------------------
Angle1   Angle2           :  16.00 deg   58.00 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           :  94.50 / 94.50  m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            :  16.00 deg   Angle2 : 58.00 deg
Barrier height            :   5.00 m
Elevation                 :   5.00 m
Barrier receiver distance :  98.00 / 98.00  m
Source elevation          :   0.00 m
Receiver elevation        :   5.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Line 1 (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 !       94.50 !       10.49 !        10.49
```

```
RT/Custom (0.00 + 48.50 + 0.00) = 48.50 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
    16     58   0.00  63.44  -8.61  -6.32   0.00   0.00   0.00  48.50*
    16     58   0.00  63.44  -8.61  -6.32   0.00   0.00   0.00  48.50
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.50 dBA

Total Leq All Segments: 48.50 dBA

Results segment # 1: Line 1 (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 !       94.50 !       10.49 !        10.49

RT/Custom (0.00 + 41.97 + 0.00) = 41.97 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
    16     58   0.00  56.91  -8.61  -6.32   0.00   0.00   0.00  41.97*
    16     58   0.00  56.91  -8.61  -6.32   0.00   0.00   0.00  41.97
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 41.97 dBA

Total Leq All Segments: 41.97 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 55.83
                           (NIGHT): 48.46
```

```
STAMSON 5.0        NORMAL REPORT        Date: 28-07-2025 11:07:46
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           : -26.00 deg   -3.00 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           :  94.50 / 94.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.50 m

ROAD (0.00 + 52.55 + 0.00) = 52.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -26     -3   0.00  68.48   0.00  -6.99  -8.94   0.00   0.00   0.00  52.55
-------------------------------------------------------------------------------

Segment Leq : 52.55 dBA

Total Leq All Segments: 52.55 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 44.96 + 0.00) = 44.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -26     -3   0.00  60.88   0.00  -6.99  -8.94   0.00   0.00   0.00  44.96
-------------------------------------------------------------------------------

Segment Leq : 44.96 dBA

Total Leq All Segments: 44.96 dBA

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

Data for Segment # 1: Line 1 (day/night)
----------------------------------------
Angle1   Angle2           : -26.00 deg   -3.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 106.00 / 106.00 m
Receiver height           :  94.50 / 94.50  m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -26.00 deg   Angle2 : -3.00 deg
Barrier height            :   5.00 m
Elevation                 :   5.00 m
Barrier receiver distance :  94.00 / 94.00  m
Source elevation          :   0.00 m
Receiver elevation        :   5.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Line 1 (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 !       94.50 !       11.71 !        11.71
```

```
RT/Custom (0.00 + 46.01 + 0.00) = 46.01 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -26     -3   0.00  63.44  -8.49  -8.94   0.00   0.00   0.00  46.01*
   -26     -3   0.00  63.44  -8.49  -8.94   0.00   0.00   0.00  46.01
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.01 dBA

Total Leq All Segments: 46.01 dBA

Results segment # 1: Line 1 (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 !       94.50 !       11.71 !        11.71

RT/Custom (0.00 + 39.48 + 0.00) = 39.48 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -26     -3   0.00  56.91  -8.49  -8.94   0.00   0.00   0.00  39.48*
   -26     -3   0.00  56.91  -8.49  -8.94   0.00   0.00   0.00  39.48
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 39.48 dBA

Total Leq All Segments: 39.48 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 53.42
                           (NIGHT): 46.04
```

STAMSON 5.0 NORMAL REPORT Date: 28-07-2025 11:12:40
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           : -27.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  77.00 / 77.00  m
Receiver height           :  94.50 / 94.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

Source height = 1.50 m

ROAD (0.00 + 53.14 + 0.00) = 53.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -27      0   0.00  68.48   0.00  -7.10  -8.24   0.00   0.00   0.00  53.14
-------------------------------------------------------------------------------

Segment Leq : 53.14 dBA

Total Leq All Segments: 53.14 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 45.54 + 0.00) = 45.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -27      0   0.00  60.88   0.00  -7.10  -8.24   0.00   0.00   0.00  45.54
-------------------------------------------------------------------------------

Segment Leq : 45.54 dBA

Total Leq All Segments: 45.54 dBA

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

Data for Segment # 1: Line 1 (day/night)
----------------------------------------
Angle1   Angle2           : -27.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 108.00 / 108.00 m
Receiver height           :  94.50 / 94.50  m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -27.00 deg   Angle2 : 0.00 deg
Barrier height            :   5.00 m
Elevation                 :   5.00 m
Barrier receiver distance :  95.00 / 95.00  m
Source elevation          :   0.00 m
Receiver elevation        :   5.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Line 1 (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 !       94.50 !       12.42 !        12.42

RT/Custom (0.00 + 46.62 + 0.00) = 46.63 dBA
```

```
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -27      0   0.00  63.44  -8.57  -8.24   0.00   0.00   0.00  46.62*
   -27      0   0.00  63.44  -8.57  -8.24   0.00   0.00   0.00  46.62
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.63 dBA

Total Leq All Segments: 46.63 dBA

Results segment # 1: Line 1 (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 !       94.50 !       12.42 !        12.42

RT/Custom (0.00 + 40.09 + 0.00) = 40.09 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -27      0   0.00  56.91  -8.57  -8.24   0.00   0.00   0.00  40.09*
   -27      0   0.00  56.91  -8.57  -8.24   0.00   0.00   0.00  40.09
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 40.09 dBA

Total Leq All Segments: 40.09 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 54.02
                           (NIGHT): 46.63
```

STAMSON 5.0 NORMAL REPORT Date: 28-07-2025 11:24:40
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           : -48.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  71.00 / 71.00  m
Receiver height           :  94.50 / 94.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


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

Source height = 1.50 m

ROAD (0.00 + 55.99 + 0.00) = 55.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -48      0   0.00  68.48   0.00  -6.75  -5.74   0.00   0.00   0.00  55.99
-------------------------------------------------------------------------------

Segment Leq : 55.99 dBA

Total Leq All Segments: 55.99 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 48.39 + 0.00) = 48.39 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -48      0   0.00  60.88   0.00  -6.75  -5.74   0.00   0.00   0.00  48.39
-------------------------------------------------------------------------------

Segment Leq : 48.39 dBA

Total Leq All Segments: 48.39 dBA

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

Data for Segment # 1: Line 1 (day/night)
----------------------------------------
Angle1   Angle2           : -48.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 102.00 / 102.00 m
Receiver height           :  94.50 / 94.50  m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -48.00 deg   Angle2 : 0.00 deg
Barrier height            :   5.00 m
Elevation                 :   5.00 m
Barrier receiver distance :  89.00 / 89.00  m
Source elevation          :   0.00 m
Receiver elevation        :   5.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00


Results segment # 1: Line 1 (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 !       94.50 !       13.12 !        13.12

RT/Custom (0.00 + 49.37 + 0.00) = 49.37 dBA
```

```
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -48      0   0.00  63.44  -8.33  -5.74   0.00   0.00   0.00  49.37*
   -48      0   0.00  63.44  -8.33  -5.74   0.00   0.00   0.00  49.37
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 49.37 dBA

Total Leq All Segments: 49.37 dBA

Results segment # 1: Line 1 (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 !       94.50 !       13.12 !        13.12

RT/Custom (0.00 + 42.84 + 0.00) = 42.84 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -48      0   0.00  56.91  -8.33  -5.74   0.00   0.00   0.00  42.84*
   -48      0   0.00  56.91  -8.33  -5.74   0.00   0.00   0.00  42.84
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 42.84 dBA

Total Leq All Segments: 42.84 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 56.85
                           (NIGHT): 49.46
```

STAMSON 5.0 NORMAL REPORT Date: 28-07-2025 16:03:18
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  23.00 / 23.00  m
Receiver height           :  23.50 / 23.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :  22.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       23.50 !       20.63 !        20.63

ROAD (0.00 + 58.16 + 0.00) = 58.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.48   0.00  -1.86   0.00   0.00   0.00  -8.46  58.16
-------------------------------------------------------------------------------

Segment Leq : 58.16 dBA

Total Leq All Segments: 58.16 dBA

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       23.50 !       20.63 !        20.63

ROAD (0.00 + 50.57 + 0.00) = 50.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  60.88   0.00  -1.86   0.00   0.00   0.00  -8.46  50.57
-------------------------------------------------------------------------------

Segment Leq : 50.57 dBA

Total Leq All Segments: 50.57 dBA
```

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

Data for Segment # 1: Line 1 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  55.00 / 55.00  m
Receiver height           :  23.50 / 23.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :  23.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   5.00 m
Barrier elevation         :   5.00 m
Reference angle           :   0.00

Results segment # 1: Line 1 (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 !       23.50 !       21.97 !        26.97

RT/Custom (0.00 + 49.59 + 0.00) = 49.59 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
   -90     90   0.00  63.44  -5.64   0.00   0.00   0.00  -8.20  49.59
-------------------------------------------------------------------

Segment Leq : 49.59 dBA

Total Leq All Segments: 49.59 dBA
```

```
Results segment # 1: Line 1 (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 !       23.50 !       21.97 !        26.97

RT/Custom (0.00 + 43.06 + 0.00) = 43.06 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  56.91  -5.64   0.00   0.00   0.00  -8.20  43.06
-------------------------------------------------------------------------

Segment Leq : 43.06 dBA

Total Leq All Segments: 43.06 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 58.73
                           (NIGHT): 51.28
```

STAMSON 5.0 NORMAL REPORT Date: 28-07-2025 16:02:35
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r11b.te Time Period: Day/Night 16/8 hours
Description:

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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  23.00 / 23.00  m
Receiver height           :  23.50 / 23.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :  23.10 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       23.50 !       20.63 !        20.63

ROAD (0.00 + 54.50 + 0.00) = 54.50 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.48   0.00  -1.86   0.00   0.00   0.00 -12.13  54.50
-------------------------------------------------------------------------------
Segment Leq : 54.50 dBA

Total Leq All Segments: 54.50 dBA

Barrier table for segment # 1: Scott (day)
------------------------------------------

Barrier ! Elev of !  Road   ! Tot Leq !
Height  ! Barr Top!  dBA    !   dBA   !
--------+---------+---------+---------+
  23.50 !   23.50 !   53.37 !   53.37 !
  24.00 !   24.00 !   52.09 !   52.09 !
  24.50 !   24.50 !   51.09 !   51.09 !
  25.00 !   25.00 !   50.32 !   50.32 !
  25.50 !   25.50 !   49.75 !   49.75 !

Results segment # 1: Scott (night)
----------------------------------
Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       23.50 !       20.63 !        20.63

ROAD (0.00 + 46.90 + 0.00) = 46.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  60.88   0.00  -1.86   0.00   0.00   0.00 -12.13  46.90
-------------------------------------------------------------------------------

Segment Leq : 46.90 dBA

Total Leq All Segments: 46.90 dBA
```

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

Data for Segment # 1: Line 1 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  55.00 / 55.00  m
Receiver height           :  24.50 / 23.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :  23.10 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   5.00 m
Barrier elevation         :   5.00 m
Reference angle           :   0.00

Results segment # 1: Line 1 (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 !       24.50 !       22.92 !        27.92

RT/Custom (0.00 + 52.66 + 0.00) = 52.66 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
   -90     90   0.00  63.44  -5.64   0.00   0.00   0.00  -5.14  52.66
-------------------------------------------------------------------

Segment Leq : 52.66 dBA

Total Leq All Segments: 52.66 dBA
```

```
Barrier table for segment # 1: Line 1 (day)
-------------------------------------------

Barrier ! Elev of ! RT/CUST ! Tot Leq !
Height  ! Barr Top!  dBA    !   dBA   !
--------+---------+---------+---------+
  23.50 !   28.50 !   51.53 !   51.53 !
  24.00 !   29.00 !   49.40 !   49.40 !
  24.50 !   29.50 !   47.35 !   47.35 !
  25.00 !   30.00 !   45.61 !   45.61 !
  25.50 !   30.50 !   44.14 !   44.14 !

Results segment # 1: Line 1 (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 !       23.50 !       21.97 !        26.97

RT/Custom (0.00 + 42.62 + 0.00) = 42.62 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  56.91  -5.64   0.00   0.00   0.00  -8.64  42.62
-------------------------------------------------------------------------

Segment Leq : 42.62 dBA

Total Leq All Segments: 42.62 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 56.69
                           (NIGHT): 48.28
```

```
STAMSON 5.0        NORMAL REPORT        Date: 28-07-2025 12:00:43
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  30.00 / 30.00  m
Receiver height           : 134.75 / 134.75 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            : 133.25 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

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

Source height = 1.50 m

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

```
       1.50 !      134.75 !      116.98 !       116.98

ROAD (0.00 + 49.68 + 0.00) = 49.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.48   0.00  -3.01   0.00   0.00   0.00 -15.79  49.68
-------------------------------------------------------------------------------

Segment Leq : 49.68 dBA

Total Leq All Segments: 49.68 dBA

Barrier table for segment # 1: Scott (day)
------------------------------------------

Barrier ! Elev of !  Road   ! Tot Leq !
Height  ! Barr Top!  dBA    !   dBA   !
--------+---------+---------+---------+
 133.65 !  133.65 !   49.33 !   49.33 !
 134.15 !  134.15 !   48.92 !   48.92 !
 134.65 !  134.65 !   48.55 !   48.55 !
 135.15 !  135.15 !   48.22 !   48.22 !
 135.65 !  135.65 !   47.93 !   47.93 !

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !      134.75 !      116.98 !       116.98

ROAD (0.00 + 42.08 + 0.00) = 42.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  60.88   0.00  -3.01   0.00   0.00   0.00 -15.79  42.08
-------------------------------------------------------------------------------

Segment Leq : 42.08 dBA

Total Leq All Segments: 42.08 dBA
```

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

Data for Segment # 1: Line 1 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  62.00 / 62.00  m
Receiver height           : 134.75 / 134.75 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            : 133.25 m
Barrier receiver distance :   4.00 / 4.00   m
Source elevation          :   0.00 m
Receiver elevation        :   5.00 m
Barrier elevation         :   5.00 m
Reference angle           :   0.00

Results segment # 1: Line 1 (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 !      134.75 !      125.77 !       130.77

RT/Custom (0.00 + 42.77 + 0.00) = 42.77 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
   -90     90   0.00  63.44  -6.16   0.00   0.00   0.00 -14.50  42.77
-------------------------------------------------------------------

Segment Leq : 42.77 dBA

Total Leq All Segments: 42.77 dBA
```

```
Barrier table for segment # 1: Line 1 (day)
-----------------------------------------

Barrier ! Elev of ! RT/CUST ! Tot Leq !
Height  ! Barr Top!  dBA    !   dBA   !
--------+---------+---------+---------+
 133.65 !  138.65 !   42.16 !   42.16 !
 134.15 !  139.15 !   41.59 !   41.59 !
 134.65 !  139.65 !   41.04 !   41.04 !
 135.15 !  140.15 !   40.57 !   40.57 !
 135.65 !  140.65 !   40.17 !   40.17 !

Results segment # 1: Line 1 (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 !      134.75 !      125.77 !       130.77

RT/Custom (0.00 + 36.24 + 0.00) = 36.24 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  56.91  -6.16   0.00   0.00   0.00 -14.50  36.24
-------------------------------------------------------------------------

Segment Leq : 36.24 dBA

Total Leq All Segments: 36.24 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 50.49
                           (NIGHT): 43.09
```

STAMSON 5.0 NORMAL REPORT Date: 28-07-2025 12:03:45
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           : -55.00 deg   -12.00 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           :  41.50 / 41.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -55.00 deg   Angle2 : -12.00 deg
Barrier height            :  40.00 m
Barrier receiver distance :   6.00 / 6.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       41.50 !       37.75 !        37.75
```

```
ROAD (0.00 + 43.93 + 0.00) = 43.93 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -55    -12   0.00  68.48   0.00  -6.30  -6.22   0.00   0.00 -12.03  43.93
-------------------------------------------------------------------------------

Segment Leq : 43.93 dBA

Total Leq All Segments: 43.93 dBA

Barrier table for segment # 1: Scott (day)
------------------------------------------

Barrier ! Elev of !  Road   ! Tot Leq !
Height  ! Barr Top!  dBA    !   dBA   !
--------+---------+---------+---------+
  40.40 !   40.40 !   42.54 !   42.54 !
  40.90 !   40.90 !   41.00 !   41.00 !
  41.40 !   41.40 !   39.64 !   39.64 !
  41.90 !   41.90 !   38.44 !   38.44 !
  42.40 !   42.40 !   37.38 !   37.38 !


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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       41.50 !       37.75 !        37.75

ROAD (0.00 + 36.34 + 0.00) = 36.34 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -55    -12   0.00  60.88   0.00  -6.30  -6.22   0.00   0.00 -12.03  36.34
-------------------------------------------------------------------------------

Segment Leq : 36.34 dBA

Total Leq All Segments: 36.34 dBA
```

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

Data for Segment # 1: Line 1 (day/night)
----------------------------------------
Angle1   Angle2           : -55.00 deg   -12.00 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           :  41.50 / 41.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -55.00 deg   Angle2 : -12.00 deg
Barrier height            :  41.00 m
Barrier receiver distance :   6.00 / 6.00   m
Source elevation          :   0.00 m
Receiver elevation        :   5.00 m
Barrier elevation         :   5.00 m
Reference angle           :   0.00

Results segment # 1: Line 1 (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 !       41.50 !       38.62 !        43.62

RT/Custom (0.00 + 36.19 + 0.00) = 36.19 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
   -55    -12   0.00  63.44  -8.06  -6.22   0.00   0.00 -12.97  36.19
-------------------------------------------------------------------

Segment Leq : 36.19 dBA

Total Leq All Segments: 36.19 dBA
```

```
Barrier table for segment # 1: Line 1 (day)
-------------------------------------------

Barrier ! Elev of ! RT/CUST ! Tot Leq !
Height  ! Barr Top!  dBA    !   dBA   !
--------+---------+---------+---------+
  41.40 !   46.40 !   34.85 !   34.85 !
  41.90 !   46.90 !   33.37 !   33.37 !
  42.40 !   47.40 !   32.09 !   32.09 !
  42.90 !   47.90 !   30.97 !   30.97 !
  43.40 !   48.40 !   29.98 !   29.98 !

Results segment # 1: Line 1 (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 !       41.50 !       38.62 !        43.62

RT/Custom (0.00 + 29.66 + 0.00) = 29.66 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------
   -55    -12   0.00  56.91  -8.06  -6.22   0.00   0.00 -12.97  29.66
-----------------------------------------------------------------------

Segment Leq : 29.66 dBA

Total Leq All Segments: 29.66 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 44.61
                           (NIGHT): 37.18
```

STAMSON 5.0 NORMAL REPORT Date: 28-07-2025 12:41:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           : -37.00 deg   0.00 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           :  15.75 / 15.75  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -37.00 deg   Angle2 : 0.00 deg
Barrier height            :  14.25 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       15.75 !       14.95 !        14.95

ROAD (0.00 + 53.88 + 0.00) = 53.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -37      0   0.00  68.48   0.00  -7.73  -6.87   0.00   0.00  -1.97  51.91*
   -37      0   0.00  68.48   0.00  -7.73  -6.87   0.00   0.00   0.00  53.88
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 53.88 dBA

Total Leq All Segments: 53.88 dBA

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       15.75 !       14.95 !        14.95

ROAD (0.00 + 46.28 + 0.00) = 46.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -37      0   0.00  60.88   0.00  -7.73  -6.87   0.00   0.00  -1.97  44.31*
   -37      0   0.00  60.88   0.00  -7.73  -6.87   0.00   0.00   0.00  46.28
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.28 dBA

Total Leq All Segments: 46.28 dBA
```

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

Data for Segment # 1: Line 1 (day/night)
----------------------------------------
Angle1   Angle2           : -37.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 121.00 / 121.00 m
Receiver height           :  15.75 / 15.75  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -37.00 deg   Angle2 : 0.00 deg
Barrier height            :  14.25 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :   0.00 m
Receiver elevation        :   5.00 m
Barrier elevation         :   5.00 m
Reference angle           :   0.00

Results segment # 1: Line 1 (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 !       15.75 !       14.91 !        19.91

RT/Custom (0.00 + 47.50 + 0.00) = 47.50 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
   -37      0   0.00  63.44  -9.07  -6.87   0.00   0.00  -2.41  45.09*
   -37      0   0.00  63.44  -9.07  -6.87   0.00   0.00   0.00  47.50
-------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 47.50 dBA

Total Leq All Segments: 47.50 dBA
```

```
Results segment # 1: Line 1 (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 !       15.75 !       14.91 !        19.91

RT/Custom (0.00 + 40.97 + 0.00) = 40.97 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -37      0   0.00  56.91  -9.07  -6.87   0.00   0.00  -2.41  38.56*
   -37      0   0.00  56.91  -9.07  -6.87   0.00   0.00   0.00  40.97
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 40.97 dBA

Total Leq All Segments: 40.97 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 54.78
                           (NIGHT): 47.40
```

STAMSON 5.0 NORMAL REPORT Date: 28-07-2025 13:05:33
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  87.00 / 87.00  m
Receiver height           :  98.00 / 98.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            : 106.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       98.00 !       94.67 !        94.67

ROAD (0.00 + 41.81 + 0.00) = 41.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.48   0.00  -7.63   0.00   0.00   0.00 -19.04  41.81
-------------------------------------------------------------------------------

Segment Leq : 41.81 dBA

Total Leq All Segments: 41.81 dBA

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       98.00 !       94.67 !        94.67

ROAD (0.00 + 34.21 + 0.00) = 34.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  60.88   0.00  -7.63   0.00   0.00   0.00 -19.04  34.21
-------------------------------------------------------------------------------

Segment Leq : 34.21 dBA

Total Leq All Segments: 34.21 dBA
```

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

Data for Segment # 1: Line 1 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 118.00 / 118.00 m
Receiver height           :  98.00 / 98.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            : 106.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   5.00 m
Barrier elevation         :   5.00 m
Reference angle           :   0.00

Results segment # 1: Line 1 (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 !       98.00 !       95.39 !       100.39

RT/Custom (0.00 + 35.51 + 0.00) = 35.51 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------
   -90     90   0.00  63.44  -8.96   0.00   0.00   0.00 -18.97  35.51
-------------------------------------------------------------------

Segment Leq : 35.51 dBA

Total Leq All Segments: 35.51 dBA
```

```
Results segment # 1: Line 1 (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 !       98.00 !       95.39 !       100.39

RT/Custom (0.00 + 28.98 + 0.00) = 28.98 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -90     90   0.00  56.91  -8.96   0.00   0.00   0.00 -18.97  28.98
-------------------------------------------------------------------------

Segment Leq : 28.98 dBA

Total Leq All Segments: 28.98 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 42.72
                           (NIGHT): 35.35
```

STAMSON 5.0 NORMAL REPORT Date: 28-07-2025 12:50:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  95.00 / 91.00  m
Receiver height           :  96.50 / 34.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            : 100.00 m
Barrier receiver distance :  22.00 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       96.50 !       74.50 !        74.50
```

```
ROAD (0.00 + 41.60 + 0.00) = 41.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.48   0.00  -8.02   0.00   0.00   0.00 -18.86  41.60
-------------------------------------------------------------------------------

Segment Leq : 41.60 dBA

Total Leq All Segments: 41.60 dBA

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       34.50 !       33.41 !        33.41

ROAD (0.00 + 33.19 + 0.00) = 33.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  60.88   0.00  -7.83   0.00   0.00   0.00 -19.87  33.19
-------------------------------------------------------------------------------

Segment Leq : 33.19 dBA

Total Leq All Segments: 33.19 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 41.60
                           (NIGHT): 33.19
```

```
STAMSON 5.0          NORMAL REPORT          Date: 28-07-2025 14:35:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


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

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

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

Data for Segment # 1: Scott (day/night)
---------------------------------------
Angle1   Angle2           : -48.00 deg   0.00 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           :  17.50 / 17.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -48.00 deg   Angle2 : 0.00 deg
Barrier height            :  16.00 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       17.50 !       17.03 !        17.03

ROAD (0.00 + 56.18 + 0.00) = 56.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -48      0   0.00  68.48   0.00  -6.56  -5.74   0.00   0.00   0.00  56.18*
   -48      0   0.00  68.48   0.00  -6.56  -5.74   0.00   0.00   0.00  56.18
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 56.18 dBA

Total Leq All Segments: 56.18 dBA

Barrier table for segment # 1: Scott (day)
------------------------------------------

Barrier ! Elev of !  Road   ! Tot Leq !
Height  ! Barr Top!  dBA    !   dBA   !
--------+---------+---------+---------+
  16.40 !   16.40 !   56.18 !   56.18 !
  16.90 !   16.90 !   56.18 !   56.18 !
  17.40 !   17.40 !   49.77 !   49.77 !
  17.90 !   17.90 !   45.80 !   45.80 !
  18.40 !   18.40 !   42.37 !   42.37 !

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       17.50 !       17.03 !        17.03
```

```
ROAD (0.00 + 48.58 + 0.00) = 48.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -48      0   0.00  60.88   0.00  -6.56  -5.74   0.00   0.00   0.00  48.58*
   -48      0   0.00  60.88   0.00  -6.56  -5.74   0.00   0.00   0.00  48.58
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 48.58 dBA

Total Leq All Segments: 48.58 dBA

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

Data for Segment # 1: Line 1 (day/night)
----------------------------------------
Angle1   Angle2           : -48.00 deg   0.00 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           :  17.50 / 17.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -48.00 deg   Angle2 : 0.00 deg
Barrier height            :  16.00 m
Barrier receiver distance :   2.00 / 2.00   m
Source elevation          :   0.00 m
Receiver elevation        :   5.00 m
Barrier elevation         :   5.00 m
Reference angle           :   0.00

Results segment # 1: Line 1 (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 !       17.06 !        22.06

RT/Custom (0.00 + 49.50 + 0.00) = 49.50 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -48      0   0.00  63.44  -8.20  -5.74   0.00   0.00   0.00  49.50*
   -48      0   0.00  63.44  -8.20  -5.74   0.00   0.00   0.00  49.50
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 49.50 dBA

Total Leq All Segments: 49.50 dBA

Barrier table for segment # 1: Line 1 (day)
-------------------------------------------

Barrier ! Elev of ! RT/CUST ! Tot Leq !
Height  ! Barr Top!  dBA    !   dBA   !
--------+---------+---------+---------+
  16.40 !   21.40 !   49.50 !   49.50 !
  16.90 !   21.90 !   49.50 !   49.50 !
  17.40 !   22.40 !   43.27 !   43.27 !
  17.90 !   22.90 !   39.35 !   39.35 !
  18.40 !   23.40 !   35.88 !   35.88 !

Results segment # 1: Line 1 (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 !       17.06 !        22.06
```

```
RT/Custom (0.00 + 42.97 + 0.00) = 42.97 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------
   -48      0   0.00  56.91  -8.20  -5.74   0.00   0.00   0.00  42.97*
   -48      0   0.00  56.91  -8.20  -5.74   0.00   0.00   0.00  42.97
-------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 42.97 dBA

Total Leq All Segments: 42.97 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 57.02
                           (NIGHT): 49.63
```

APPENDIX B

FTA VIBRATIONS CALCULATIONS

127 WALGREEN ROAD, OTTAWA, ON, CANADA K0A 1L0 | 613 836 0934
GRADIENTWIND.COM

GW25-150 23-Jul-25

Line 1 (Confederation Line)
Possible Vibration Impacts on 1994 Scott Street
Perdicted using FTA General Assesment

Vehicle Speed 70 km/h 43 mph

	Distance from C/L	
	(m)	(ft)
Subway	50	164.0

	Vibration		
From FTA Manual Fig 10-1			
Vibration Levels at distance from track	62	dBV re 1 micro in/sec	
Adjustment Factors FTA Table 10-1			
Speed reference 50 mph	0	Speed limit of 80 km/h (50 mph)	
Vehicle Parameters	0	Assume soft primary suspension	
Track Condition	0	N/A	
Track Treatments	0	N/A	
Type of Transit Structure	0	N/A	
Vibration Propagation	0	Inefficient propagation of vibrations through soil	
Vibration Levels at Fdn	62		0.032
Coupling to Building Foundation	-10	Large Masonry on Piles	
Floor to Floor Attenuation	0.0	Ground Floor Unoccupied	
Amplification of Floor and Walls	6		
Total Vibration Level	58	dBV or	0.020 mm/s
Noise Level in dBA	23	dBA	

Table 6-11 Source Adjustment Factors for Generalized Predictions of GB Vibration and Noise

Source Factor	Adjustment to Propagation Curve			Comment
Speed		Reference Speed		Vibration level is approximately proportional to 20log(speed/speed$_{ref}$), see Eq. 6-4.
	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.
Track Conditions (not additive, apply greatest value only)				
Worn or Corrugated Track	+10 dB			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. If there are adjustments for vehicle parameters and the track is worn or corrugated, only include one adjustment.
Special Trackwork within 200 ft	+10 dB (within 100 ft) +5 dB (between 100 and 200 ft)			Wheel impacts at special trackwork will greatly increase vibration levels. The increase will be less at greater distances from the track. Do not include an adjustment for special trackwork more than 200 ft away.
Jointed Track	+5 dB			Jointed track can cause higher vibration levels than welded track.
Uneven Road Surfaces	+5 dB			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.

*Mill scale on a new rail is a slightly corrugated condition caused by certain steel mill techniques.

Table 6-12 Path Adjustment Factors for Generalized Predictions of GB Vibration and Noise

Path Factor	Adjustment to Propagation Curve			Comment
Resiliently Supported Ties (Low-Vibration Track, LVT)	-10 dB			Resiliently supported tie systems have been found to provide very effective control of low-frequency vibration.
Track Structure (not additive, apply greatest value only)				
Type of Transit Structure	Relative to at-grade tie & ballast:			In general, 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.
	Elevated structure		-10 dB	
	Open cut		0 dB	
	Relative to bored subway tunnel in soil:			
	Station		-5 dB	
	Cut and cover		-3 dB	
	Rock-based		-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.	Adjust.	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.
		50 ft	+2 dB	
		100 ft	+4 dB	
		150 ft	+6 dB	
		200 ft	+9 dB	
Coupling to building foundation	Wood-Frame Houses		-5 dB	In general, the heavier the building construction, the greater the coupling loss.
	1-2 Story Masonry		-7 dB	
	3-4 Story Masonry		-10 dB	
	Large Masonry on Piles		-10 dB	
	Large Masonry on Spread Footings		-13 dB	
	Foundation in Rock		0 dB	

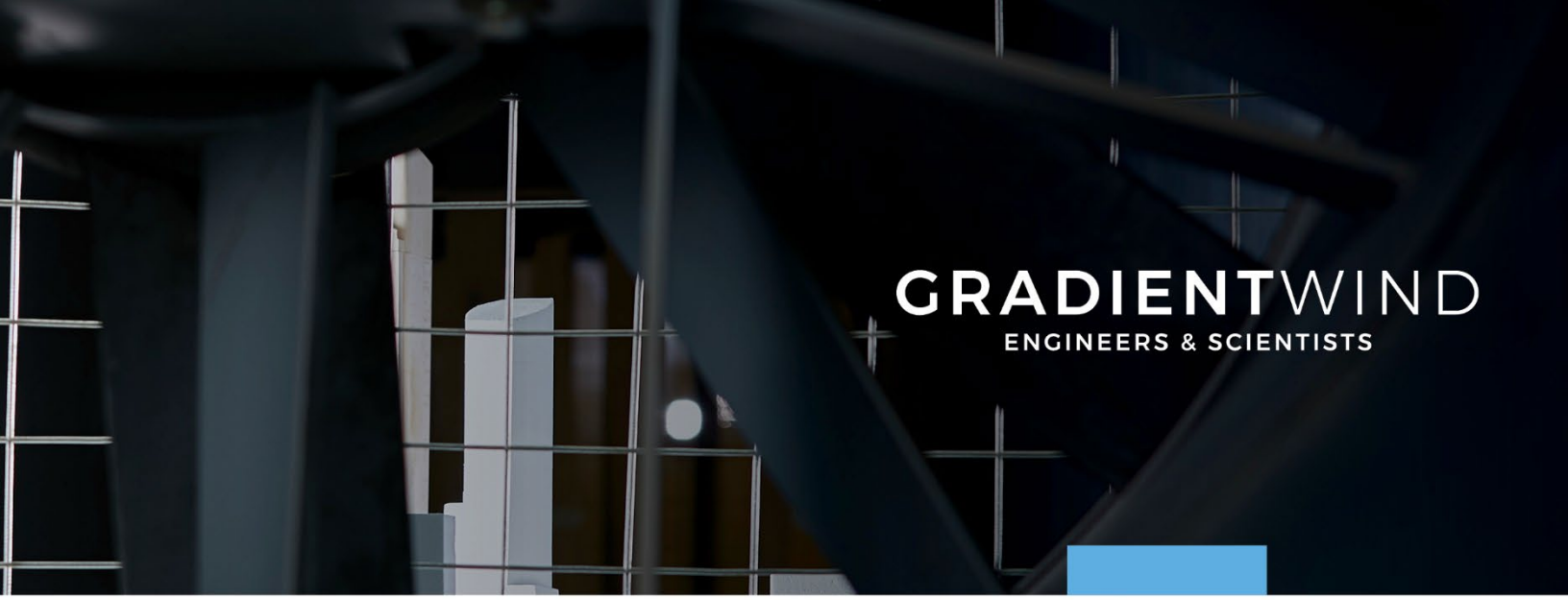
Table 6-13 Receiver Adjustment Factors for Generalized Predictions of GB Vibration and Noise

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 starting with the first suspended floor.*
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.

* Floor-to-floor attenuation adjustments for the first floor assume a basement.

Table 6-14 Conversion to Ground-borne Noise

Conversion to Ground-borne Noise			
Noise Level in dBA	Peak frequency of ground vibration:		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-, mid-, 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.
	Low frequency (<30 Hz)	-50 dB	
	Mid Frequency (peak 30 to 60 Hz)	-35 dB	
	High frequency (>60 Hz)	-20 dB	



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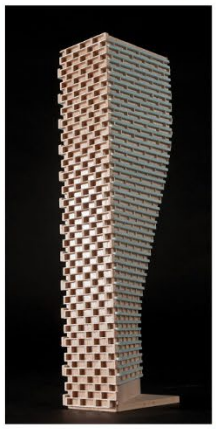

APPENDIX C

WARNING CLAUSES

127 WALGREEN ROAD, OTTAWA, ON, CANADA K0A 1L0 | 613 836 0934
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Warning Clause due to proximity of Confederation line LRT:

"The Owner hereby acknowledges and agrees:

i) The proximity of the proposed development of the lands described in Schedule "A" hereto (the "Lands") to the City's existing and future transit operations, may result in noise, vibration, electromagnetic interferences, stray current transmissions, smoke and particulate matter (collectively referred to as "Interferences") to the development;

ii) *It has been advised by the City to apply reasonable attenuation measures with respect to the level of the Interferences on and within the Lands and the proposed development; and*

iii) *The Owner acknowledges and agrees all agreements of purchase and sale and lease agreements, and all information on all plans and documents used for marketing purposes, for the whole or any part of the subject lands, shall contain the following clauses which shall also be incorporated in all transfer/deeds and leases from the Owner so that the clauses shall be covenants running with the lands for the benefit of the owner of the adjacent road:*

'The Transferee/Lessee for himself, his heirs, executors, administrators, successors and assigns acknowledges being advised that a public transit light-rail rapid transit system (LRT) is proposed to be located in proximity to the subject lands, and the construction, operation and maintenance of the LRT may result in environmental impacts including, but not limited to noise, vibration, electromagnetic interferences, stray current transmissions, smoke and particulate matter (collectively referred to as the Interferences) to the subject lands. The Transferee/Lessee acknowledges and agrees that despite the inclusion of noise control features within the subject lands, Interferences may continue to be of concern, occasionally interfering with some activities of the occupants on the subject lands.
The Transferee covenants with the Transferor and the Lessee covenants with the Lessor that the above clauses verbatim shall be included in all subsequent lease agreements, agreements of purchase and sale and deeds conveying the lands described herein, which covenants shall run with the lands and are for the benefit of the owner of the adjacent road.'"

Type A Warning Clause:

"Purchasers/tenants are advised that sound levels due to increasing road traffic (rail traffic) (air traffic) may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."

Type C Warning Clause:

"This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."

Type D Warning Clause:

"This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."