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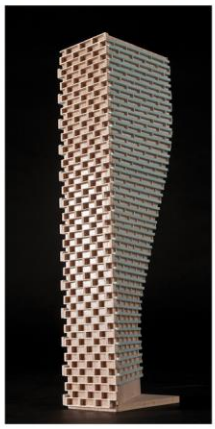
ROADWAY TRAFFIC NOISE ASSESSMENT

770-774 Bronson Avenue
Ottawa, Ontario

REPORT: 20-264 – Traffic Noise



February 1, 2021

PREPARED FOR

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PREPARED BY

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EXECUTIVE SUMMARY

This report describes a roadway traffic noise assessment undertaken to satisfy the requirements for a joint Zoning By-Law Amendment (ZBA) and Site Plan Control (SPC) application for the proposed residential development located at 770-774 Bronson Avenue in Ottawa, Ontario. The proposed development comprises a 26-storey residential apartment building (Phase 1) that transitions to a mid-rise 9-storey portion (Phase 2) and includes two levels of underground parking. The primary sources of roadway traffic noise include Carling Avenue, Bronson Avenue, and Highway 417. Figure 1 illustrates a complete site plan with surrounding context.

The assessment is based on (i) theoretical noise prediction methods that conform to the Ministry of the Environment, Conservation and Parks (MECP) and City of Ottawa requirements; (ii) noise level criteria as specified by the City of Ottawa's Environmental Noise Control Guidelines (ENCG); (iii) future vehicular traffic volumes based on the City of Ottawa's Official Plan roadway classifications; and (iv) architectural drawings provided by Figurr Architects Collective in January 2021.

The results of the current analysis indicate that noise levels will range between 58 and 75 dBA during the daytime period (07:00-23:00) and between 54 and 67 dBA during the nighttime period (23:00-07:00). The highest noise level (75 dBA) occurs at the north façade, which is nearest and most exposed to Carling Avenue. Building components with a higher Sound Transmission Class (STC) rating will be required where exterior noise levels exceed 65 dBA, as indicated in Figure 3.

Results of the calculations also indicate that the development will require central air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment. Warning Clauses will also be required be placed on all Lease, Purchase and Sale Agreements, as summarized in Section 6 of this report.

Noise levels at the Level 8 and 5 terraces (Receptor 8 and 9, respectively) are expected to exceed 55 dBA during the daytime period without a noise barrier. If these areas are to be used as outdoor living areas, noise control measures are required to reduce noise levels as close as possible to 55 dBA where technically and administratively feasible. Further analysis investigated the noise mitigating impact of raising the perimeter guards to 1.2 m and 1.5 m above the walking surface for Receptor 8 and 9, respectively. Results

of the investigation proved that noise levels can be reduced to 55 dBA and below with these barrier heights. The guard must be constructed from materials having a minimum surface density of 20 kg/m^2 (STC rating of 30) and contain no gaps. Design of the guardrail will conform to the requirements outlined in Part 5 of the ENCG and summarized in Section 6.

With regard to stationary noise impacts, a stationary noise study is recommended for the site during the detailed design once mechanical plans for the proposed building become available. This study would assess impacts of stationary noise from rooftop mechanical units serving the proposed building on surrounding noise-sensitive areas. This study will include recommendations for any noise control measures that may be necessary to ensure noise levels fall below ENCG limits. Noise impacts can generally be minimized by judicious selection and placement of the equipment.

TABLE OF CONTENTS

1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Fotenn on behalf of Katasa Groupe + Développement to undertake a roadway traffic noise assessment to satisfy the requirements for a joint Zoning By-Law Amendment (ZBA) and Site Plan Control (SPC) application for the proposed residential development located at 770-774 Bronson Avenue in Ottawa, Ontario. This report summarizes the methodology, results, and recommendations related to the assessment of exterior and interior noise levels generated by local roadway traffic.

Our work is based on theoretical noise calculation methods conforming to the City of Ottawa[1] and Ministry of the Environment, Conservation and Parks (MECP)[2] guidelines. Noise calculations were based on architectural drawings provided by Figurr Architects Collective in January 2021, with future traffic volumes corresponding to the City of Ottawa's Official Plan (OP) roadway classifications.

2. TERMS OF REFERENCE

The focus of this roadway traffic noise assessment is a proposed residential development located at 770-774 Bronson Avenue in Ottawa, Ontario. The proposed development is situated on a nearly rectangular parcel of land bounded by Carling Avenue to the north, Bronson Avenue to the east, Cambridge Street South to the west, and a private laneway to the south. The proposed development comprises a 26-storey residential apartment building (Phase 1) that transitions to a mid-rise 9-storey portion (Phase 2) and includes two levels of underground parking. The Phase 1 high-rise tower component continues to rise to the top level in a trapezoidal-shaped floor planform with upper floors comprising exclusively residential suites.

The ground floor comprises residential space and lobby, lounge, and common/amenity areas. Vehicular access to underground parking is at-grade via the east from Bronson Avenue. Podium floors 2 to 9 comprise residential suites and protruding balconies on the north and south facades. The floor plates set back on Level 5 and Level 8 to provide for private and/or communal terrace space. A roof top terrace is

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

provided on the tower roof deck. Balconies/terraces extending less than 4 metres (m) in depth from the façade do not require consideration as Outdoor Living Areas (OLA) as mentioned in the ENCG. The primary sources of roadway traffic noise include Carling Avenue, Bronson Avenue, and Highway 417. Figure 1 illustrates a complete site plan with surrounding context.

3. OBJECTIVES

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

4. METHODOLOGY

4.1 Background

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

4.2 Roadway Traffic Noise

4.2.1 Criteria for Roadway Traffic Noise

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

Environmental Noise Control Guidelines (ENCG) specifies that the recommended indoor noise limit range (that is relevant to this study) is 45 and 40 dBA for living rooms and sleeping quarters respectively for roadway as listed in Table 1.

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

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

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

The sound level criterion for outdoor living areas (OLA) 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

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

technically and administratively feasible to acceptable levels at or below the criterion. Furthermore, noise levels at the OLA must not exceed 60 dBA if mitigation can be technically and administratively achieved.

4.2.2 Theoretical Roadway Noise Predictions

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

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

- Truck traffic on all roadways was taken to comprise 5% heavy trucks and 7% medium trucks, as per ENCG requirements for noise level predictions.
- The day/night split for all streets was taken to be 92%/8%, respectively.
- Ground surfaces were taken to be reflective due to the presence of hard (paved) ground. For highway traffic noise, absorptive ground surface was used to account for blockage due to the numerous houses situated between the study site and Highway 417.
- Highway 417 Westbound is approximately 508 m from the development. However, this was modeled with a separation distance of 500 m from the development due to STAMSON limitations.
- Topography was assumed to be a flat/gentle slope surrounding the study building.
- For select sources where appropriate, receptors considered the proposed and/or existing buildings as a barrier partially or fully obstructing exposure to the source as illustrated by exposure angles in Figures 4-8.
- Noise receptors were strategically placed at 10 locations around the study area (see Figure 2).
- Receptor distances and exposure angles are illustrated in Figures 4-8.

4.2.3 Roadway Traffic Volumes

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

TABLE 2: ROADWAY TRAFFIC DATA

Segment	Roadway Traffic Data	Speed Limit (km/h)	Traffic Volumes
Carling Avenue	6-Lane Urban Arterial Divided (6-UAD)	60	**50,000**
Bronson Avenue	4-Lane Urban Arterial Undivided (4-UAU)	50	**30,000**
Highway 417	8-Lane Highway	100	**146,664**

4.3 Indoor Noise Calculations

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

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

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

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

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

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

5. RESULTS AND DISCUSSION

5.1 Roadway Traffic Noise Levels

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

TABLE 3: EXTERIOR NOISE LEVELS DUE TO ROAD TRAFFIC

Receptor Number	Receptor Height Above Grade (m)	Receptor Location	STAMSON 5.04 Noise Level (dBA)	
			Day	Night
1	76.5	POW – 22nd Floor – East Façade	73	65
2	76.5	POW – 22nd Floor – North Façade	75	67
3	76.5	POW – 22nd Floor – West Façade	73	65
4	76.5	POW – 22nd Floor – South Façade	67	60
5	25.5	POW – 9th Floor – South Façade	67	60
6	25.5	POW – 9th Floor – West Façade	62	54
7	25.5	POW – 9th Floor – North Façade	64	56
8	22.5	OLA – Level 8 - East Rooftop Terrace	58	N/A*
9	13.5	OLA – Level 5 - West Rooftop Terrace	61	N/A*
10	82.5	OLA – Tower Rooftop Terrace	55	N/A*

*Noise levels at an OLA during the nighttime period are not considered as per ENCG

The results of the current analysis indicate that noise levels will range between 58 and 75 dBA during the daytime period (07:00-23:00) and between 54 and 67 dBA during the nighttime period (23:00-07:00). The highest noise level (75 dBA) occurs at the north façade, which is nearest and most exposed to Carling Avenue.

5.2 Noise Control Measures

The noise levels predicted due to roadway traffic exceed the criteria listed in Section 4.2 for building components. As discussed in Section 4.3, the anticipated STC requirements for windows have been estimated based on the overall noise reduction required for each intended use of space (STC = outdoor noise level – targeted indoor noise levels). As per city of Ottawa requirements, detailed STC calculations

will be required to be completed prior to building permit application for each unit type. The STC requirements for the windows are summarized below for various units within the development (see Figure 3):

Phase 1: High-Rise Tower

- **Bedroom Windows**

(i) Bedroom windows facing east, north, and west will require a minimum STC of 38.

(ii) Bedroom windows facing south will require a minimum STC of 30.

- **Living Room Windows**

(i) Living room windows facing east, north, and west will require a minimum STC of 33.

(ii) Living room windows facing south will require a minimum STC of 25.

- **Exterior Walls**

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

Phase 1: Mid-Rise Podium

- **Bedroom Windows**

(i) Bedroom windows facing east will require a minimum STC of 38.

(ii) Bedroom windows facing south will require a minimum STC of 30.

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

- **Living Room Windows**

(i) Living room windows facing east will require a minimum STC of 33.

(ii) Living room windows facing south will require a minimum STC of 25.

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

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

- **Exterior Walls**

(i) Exterior wall components on the east and south façade will require a minimum STC of 45, which will be achieved with brick cladding or an acoustical equivalent according to NRC test data[11].

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

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

5.3 Noise Barrier Calculation

Noise levels at the Level 8 and 5 terraces (Receptor 8 and 9, respectively) are expected to exceed 55 dBA during the daytime period without a noise barrier. If these areas are to be used as outdoor living areas, noise control measures are required to reduce noise levels as close as possible to 55 dBA where technically and administratively feasible. Further analysis investigated the noise mitigating impact of raising the perimeter guards to 1.2 m and 1.5 m above the walking surface for Receptor 8 and 9, respectively. Results of the investigation proved that noise levels can be reduced to 55 dBA and below with these barrier heights.

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

TABLE 4: RESULTS OF NOISE BARRIER INVESTIGATION

Receptor Number	Receptor Height Above Grade (m)	Receptor Location	Daytime L_{eq} Noise Levels (dBA)		
			No Barrier	With 1.2 m Barrier	With 1.5 m Barrier
8	22.5	OLA – Level 8 - East Rooftop Terrace	58	55	-
9	13.5	OLA – West Rooftop Terrace	61	56	55

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that noise levels will range between 58 and 75 dBA during the daytime period (07:00-23:00) and between 54 and 67 dBA during the nighttime period (23:00-07:00). The highest noise level (75 dBA) occurs at the north façade, which is nearest and most exposed to Carling Avenue. Building components with a higher Sound Transmission Class (STC) rating will be required where exterior noise levels exceed 65 dBA, as indicated in Figure 3.

Results of the calculations also indicate that the development will require central air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment. The following Warning Clause[12] will also be required be placed on all Lease, Purchase and Sale Agreements, as summarized below:

> *"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing roadway traffic may, on occasion, interfere with some activities of the dwelling occupants, as the sound levels exceed the sound level limits of the City and the Ministry of the Environment, Conservation and Parks. To help address the need for sound attenuation, this development includes:*

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

- *STC rated multi-pane glazing elements*
- *STC rated exterior walls*
- *Acoustic barriers*

This dwelling unit has also been designed with air conditioning. Air conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment, Conservation and Parks.

To ensure that provincial sound level limits are not exceeded, it is important to maintain these sound attenuation features."

Noise levels at the Level 8 and 5 terraces (Receptor 8 and 9, respectively) are expected to exceed 55 dBA during the daytime period without a noise barrier. If these areas are to be used as outdoor living areas, noise control measures are required to reduce noise levels as close as possible to 55 dBA where technically and administratively feasible. Further analysis investigated the noise mitigating impact of raising the perimeter guards to 1.2 m and 1.5 m above the walking surface for Receptor 8 and 9, respectively. Results of the investigation proved that noise levels can be reduced to 55 dBA and below with these barrier heights.

The guard must be constructed from materials having a minimum surface density of 20 kg/m^2 (STC rating of 30) and contain no gaps. Design of the guardrail will conform to the requirements outlined in Part 5 of the ENCG. The following information will be required by the City for review prior to installation of the barrier:

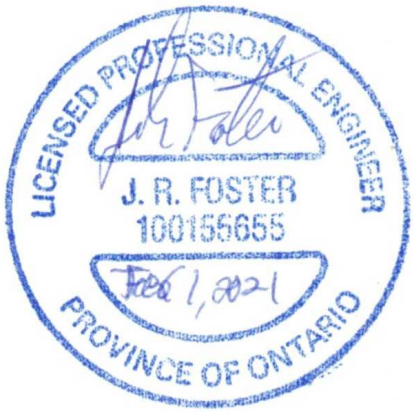
1. Shop drawings, signed and sealed by a qualified Professional Engineer licenced by the Professional Engineers of Ontario, showing the details of the acoustic barrier systems components, including material specifications.
2. Structural drawing(s), signed by a qualified Professional Engineer licenced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

With regard to stationary noise impacts, a stationary noise study is recommended for the site during the detailed design once mechanical plans for the proposed building become available. This study would assess impacts of stationary noise from rooftop mechanical units serving the proposed building on surrounding noise-sensitive areas. This study will include recommendations for any noise control measures that may be necessary to ensure noise levels fall below ENCG limits. Noise impacts can generally be minimized by judicious selection and placement of the equipment.

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

Sincerely,

Gradient Wind Engineering Inc.



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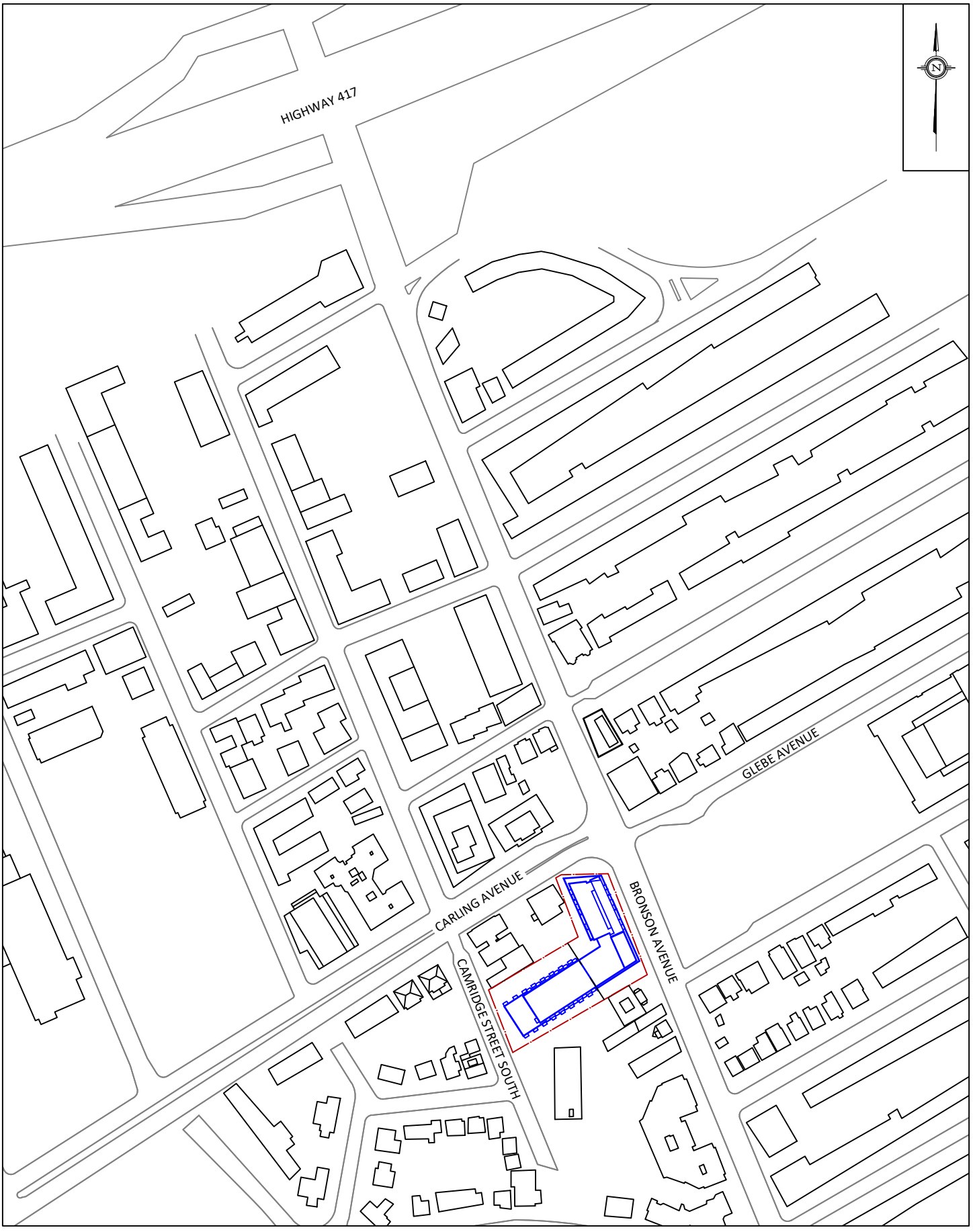

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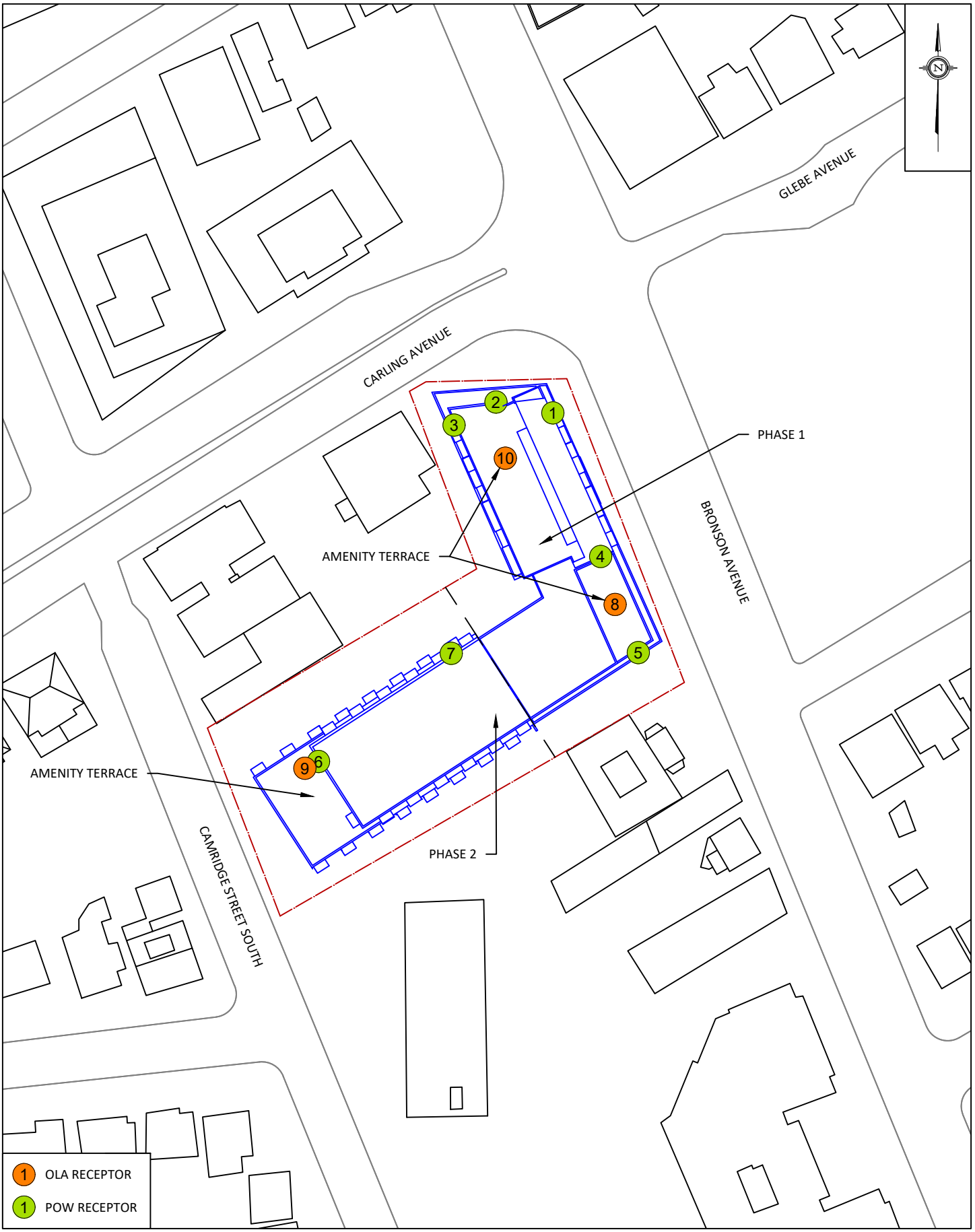
PROJECT	770-774 BRONSON AVENUE, OTTAWA TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:3000 (APPROX.)	DRAWING NO.	20-264-1
DATE	JANUARY 28, 2021	DRAWN BY	G.G.

FIGURE 1:
SITE PLAN AND SURROUNDING CONTEXT



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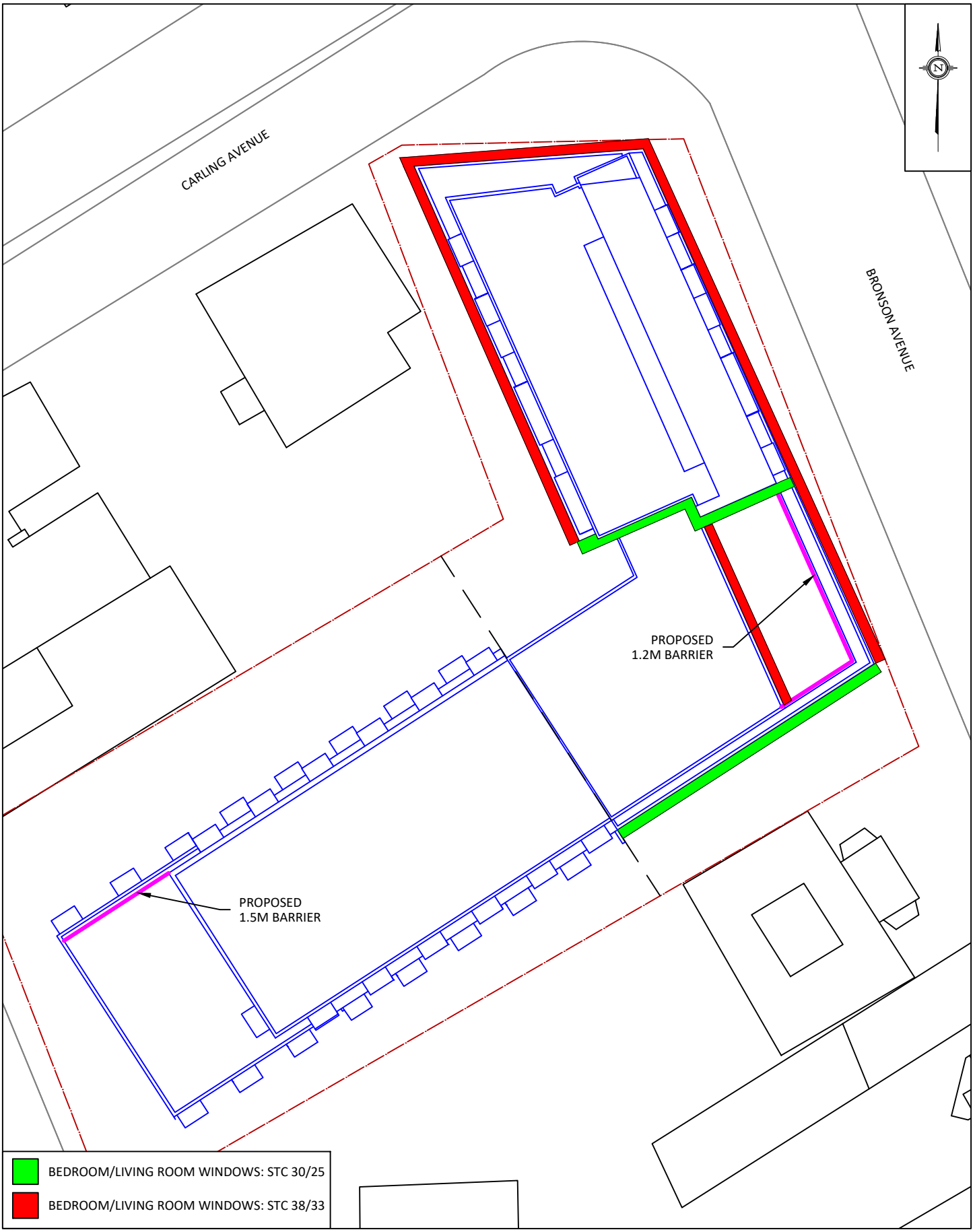
SCALE	1:1000 (APPROX.)	DRAWING NO.	20-264-2
DATE	JANUARY 28, 2021	DRAWN BY	G.G.

FIGURE 2:
RECEPTOR LOCATIONS



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PROJECT	770-774 BRONSON AVENUE, OTTAWA TRAFFIC NOISE ASSESSMENT
SCALE	1:500 (APPROX.)
DRAWING NO.	20-264-3
DATE	JANUARY 28, 2021
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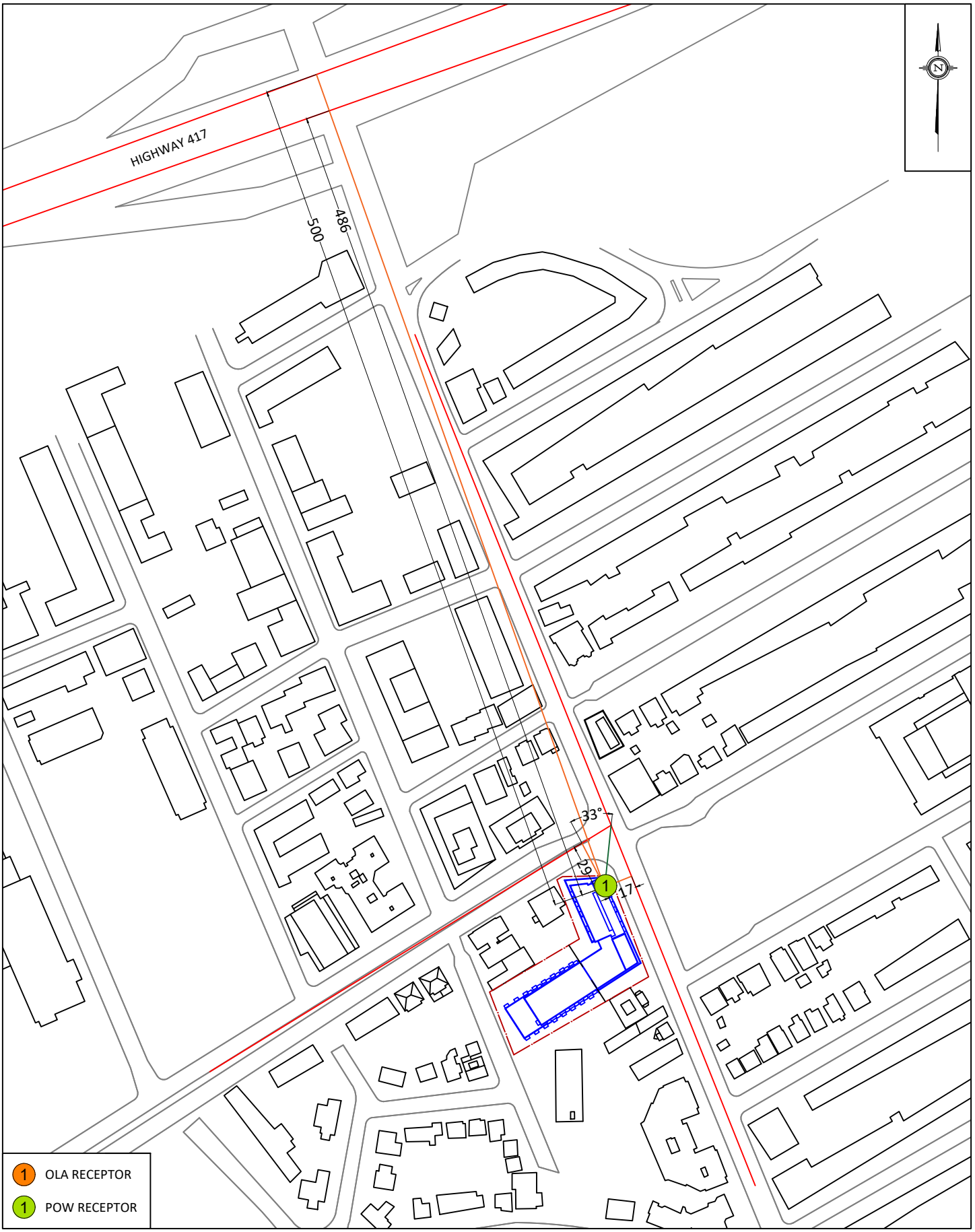
DESCRIPTION

FIGURE 3:
WINDOW STC REQUIREMENTS



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PROJECT	770-774 BRONSON AVENUE, OTTAWA TRAFFIC NOISE ASSESSMENT
SCALE	1:3000 (APPROX.)
DRAWING NO.	20-264-4
DATE	JANUARY 28, 2021
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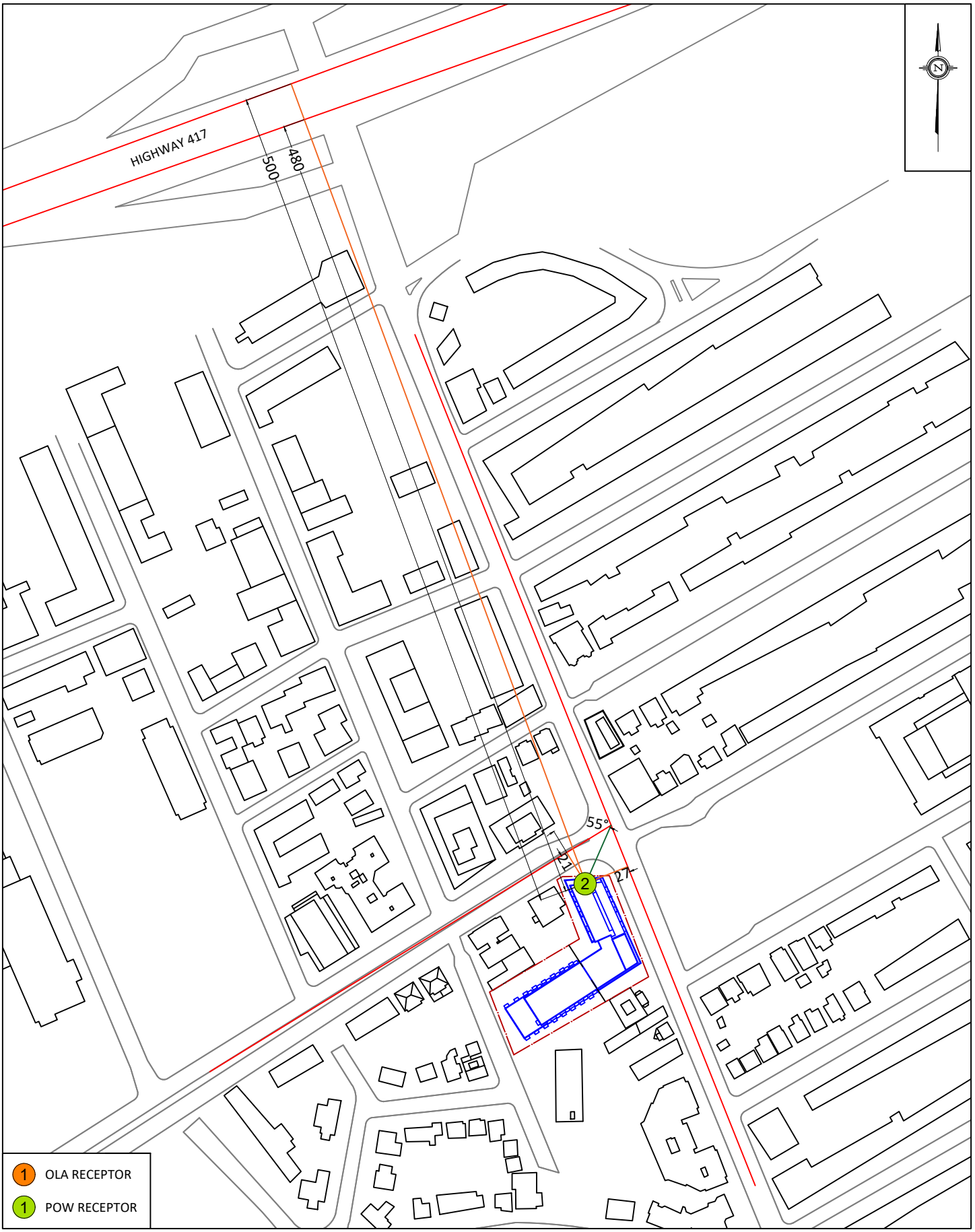
DESCRIPTION

FIGURE 4:
RECEPTOR 1 STAMSON INPUT PARAMETERS



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DESCRIPTION

FIGURE 5:
RECEPTOR 2 STAMSON INPUT PARAMETERS

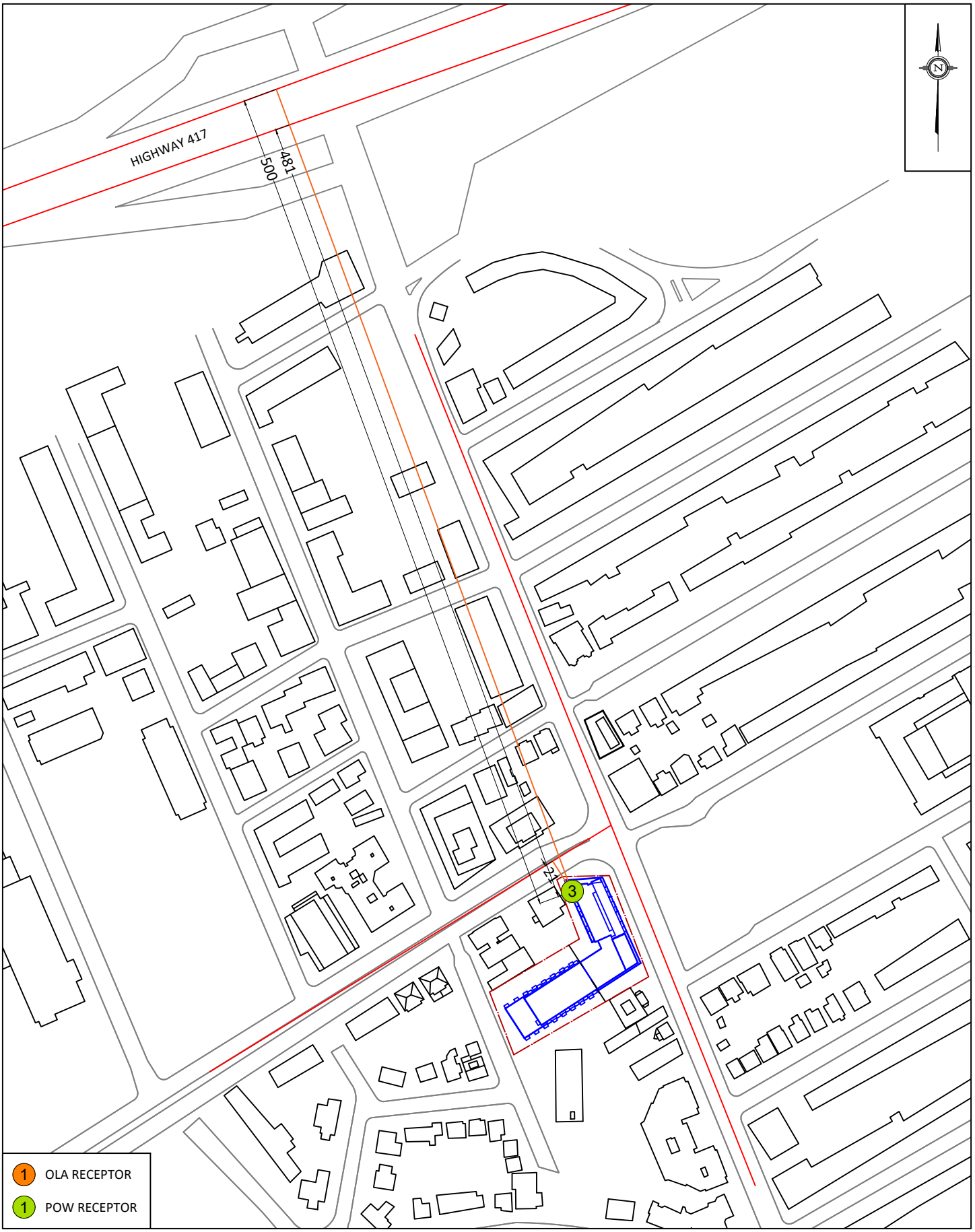

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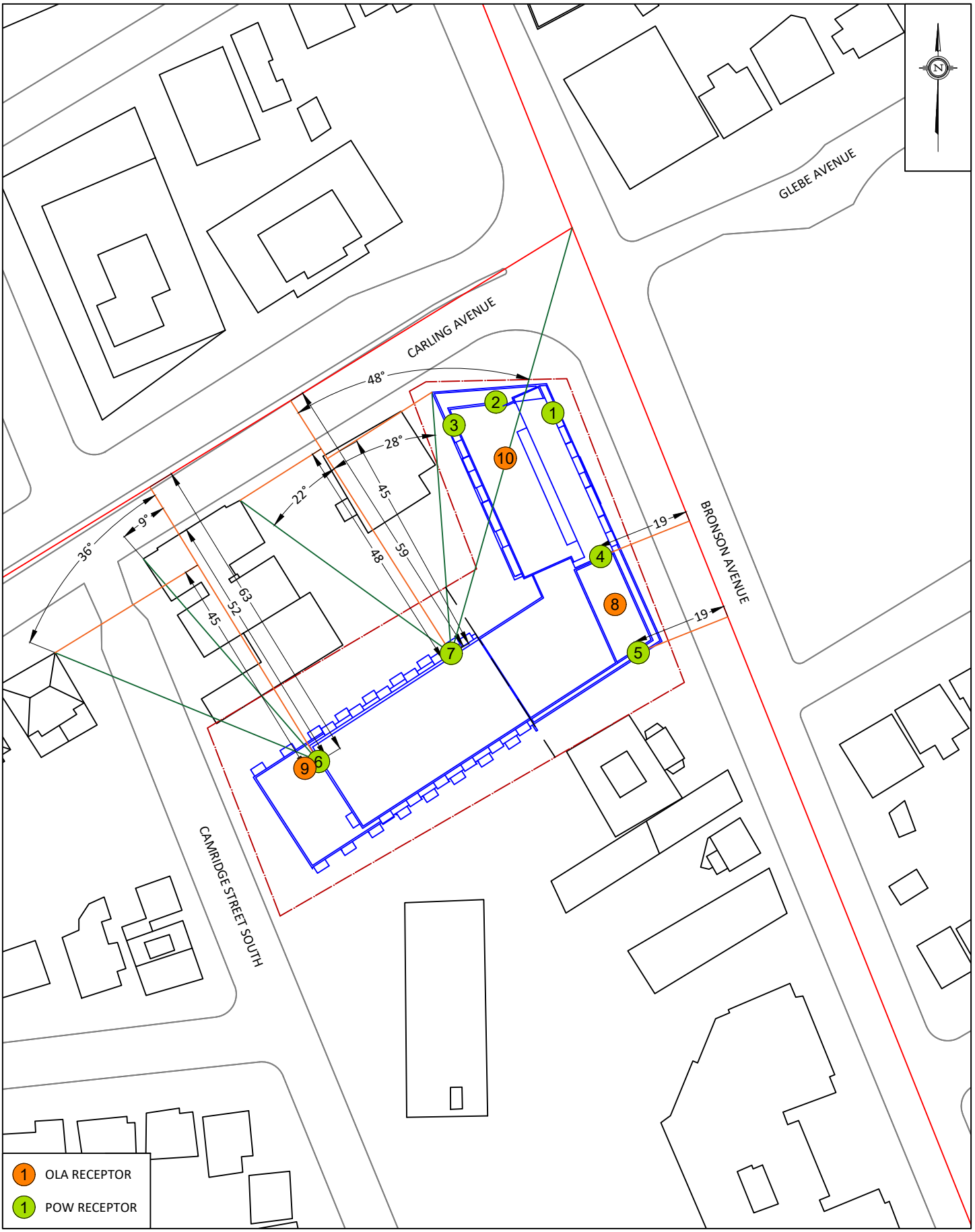
FIGURE 6:
RECEPTOR 3 STAMSON INPUT PARAMETERS



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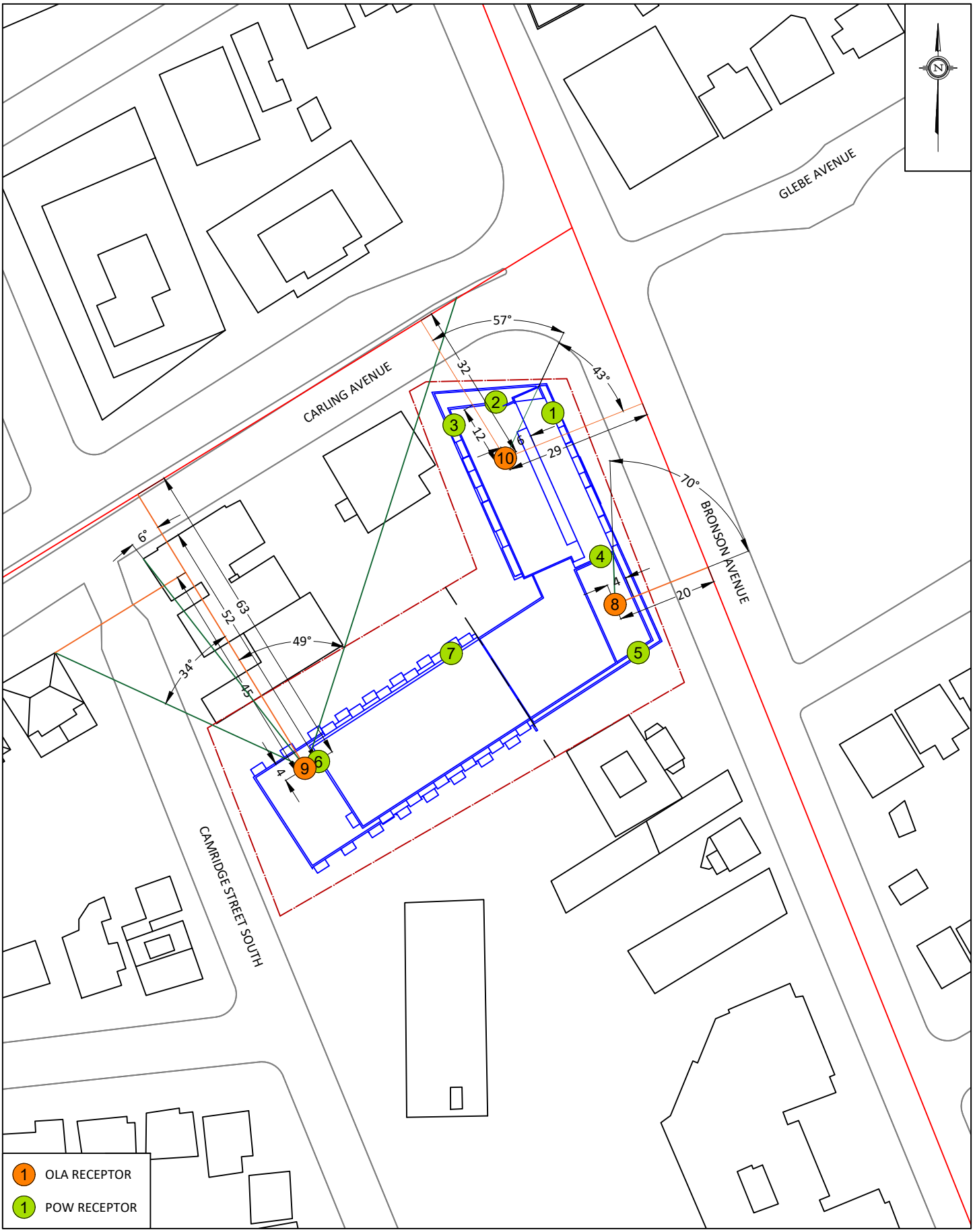
PROJECT	770-774 BRONSON AVENUE, OTTAWA TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:1000 (APPROX.)	DRAWING NO. 20-264-7	FIGURE 7: RECEPTOR 4-7 STAMSON INPUT PARAMETERS
DATE	JANUARY 28, 2021	DRAWN BY G.G.	



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PROJECT	770-774 BRONSON AVENUE, OTTAWA TRAFFIC NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	20-264-8
DATE	JANUARY 28, 2021
DRAWN BY	G.G.

DESCRIPTION

FIGURE 8:
RECEPTOR 8 AND 9 STAMSON INPUT PARAMETERS

APPENDIX A

STAMSON 5.04 – INPUT AND OUTPUT DATA

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```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2021 13:38:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Carling Av (day/night)
----------------------------------------------
Car traffic volume  : 40480/3520  veh/TimePeriod  *
Medium truck volume :  3220/280   veh/TimePeriod  *
Heavy truck volume  :  2300/200   veh/TimePeriod  *
Posted speed limit  :    60 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):  50000
    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: Carling Av (day/night)
--------------------------------------------
Angle1   Angle2           :   0.00 deg   33.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  29.00 / 29.00  m
Receiver height           :  76.50 / 76.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
```

```
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Bronson Av (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  :  17.00 / 17.00  m
Receiver height           :  76.50 / 76.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: Hwy 417 EB (day/night)
---------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 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):  73332
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Hwy 417 EB (day/night)
---------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 486.00 / 486.00 m
Receiver height           :  76.50 / 76.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 4: Hwy 417 WB (day/night)
---------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 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):  73332
    Percentage of Annual Growth         :   0.00
    Number of Years of Growth           :   0.00
    Medium Truck % of Total Volume      :   7.00
    Heavy Truck  % of Total Volume      :   5.00
    Day (16 hrs) % of Total Volume      :  92.00

Data for Segment # 4: Hwy 417 WB (day/night)
--------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 500.00 / 500.00 m
Receiver height           :  76.50 / 76.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Carling Av (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 64.99 + 0.00) = 64.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     33   0.00  75.22   0.00  -2.86  -7.37   0.00   0.00   0.00
64.99
-------------------------------------------------------------------------------
--

Segment Leq : 64.99 dBA

Results segment # 2: Bronson Av (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 70.95 + 0.00) = 70.95 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90   0.00  71.49   0.00  -0.54   0.00   0.00   0.00   0.00
70.95
```

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

Segment Leq : 70.95 dBA

Results segment # 3: Hwy 417 EB (day)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 63.28 + 0.00) = 63.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     90   0.00  81.40   0.00 -15.11  -3.01   0.00   0.00   0.00
63.28
-------------------------------------------------------------------------
--

Segment Leq : 63.28 dBA

Results segment # 4: Hwy 417 WB (day)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 63.16 + 0.00) = 63.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     90   0.00  81.40   0.00 -15.23  -3.01   0.00   0.00   0.00
63.16
-------------------------------------------------------------------------
--

Segment Leq : 63.16 dBA

Total Leq All Segments: 72.97 dBA

Results segment # 1: Carling Av (night)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.40 + 0.00) = 57.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
```

```
     0     33   0.00  67.63   0.00  -2.86  -7.37   0.00   0.00   0.00
57.40
-------------------------------------------------------------------------
--

Segment Leq : 57.40 dBA

Results segment # 2: Bronson Av (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 63.35 + 0.00) = 63.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  63.89   0.00  -0.54   0.00   0.00   0.00   0.00
63.35
-------------------------------------------------------------------------
--

Segment Leq : 63.35 dBA

Results segment # 3: Hwy 417 EB (night)
---------------------------------------

Source height = 1.49 m

ROAD (0.00 + 55.68 + 0.00) = 55.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     90   0.00  73.80   0.00 -15.11  -3.01   0.00   0.00   0.00
55.68
-------------------------------------------------------------------------
--

Segment Leq : 55.68 dBA

Results segment # 4: Hwy 417 WB (night)
---------------------------------------

Source height = 1.49 m

ROAD (0.00 + 55.56 + 0.00) = 55.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
```

```
     0      90    0.00   73.80    0.00 -15.23   -3.01    0.00    0.00    0.00
55.56
-------------------------------------------------------------------------------
--

Segment Leq : 55.56 dBA

Total Leq All Segments: 65.37 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 72.97
                           (NIGHT): 65.37
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2021 13:38:30
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Carling Av (day/night)
----------------------------------------------
Car traffic volume  : 40480/3520  veh/TimePeriod  *
Medium truck volume :  3220/280   veh/TimePeriod  *
Heavy truck volume  :  2300/200   veh/TimePeriod  *
Posted speed limit  :    60 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):  50000
    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: Carling Av (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   55.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  21.00 / 21.00  m
Receiver height           :  76.50 / 76.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

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

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

    24 hr Traffic Volume (AADT or SADT):  30000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
```

```
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Bronson Av (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  27.00 / 27.00  m
Receiver height           :  76.50 / 76.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: Hwy 417 EB (day/night)
---------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 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):  73332
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Hwy 417 EB (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 480.00 / 480.00 m
Receiver height           :  76.50 / 76.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 4: Hwy 417 WB (day/night)
---------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 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):  73332
    Percentage of Annual Growth         :   0.00
    Number of Years of Growth           :   0.00
    Medium Truck % of Total Volume      :   7.00
    Heavy Truck  % of Total Volume      :   5.00
    Day (16 hrs) % of Total Volume      :  92.00

Data for Segment # 4: Hwy 417 WB (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 500.00 / 500.00 m
Receiver height           :  76.50 / 76.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Carling Av (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 72.82 + 0.00) = 72.82 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     55   0.00  75.22   0.00  -1.46  -0.94   0.00   0.00   0.00
72.82
-------------------------------------------------------------------------------
--

Segment Leq : 72.82 dBA

Results segment # 2: Bronson Av (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 65.93 + 0.00) = 65.93 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90      0   0.00  71.49   0.00  -2.55  -3.01   0.00   0.00   0.00
65.93
```

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

Segment Leq : 65.93 dBA

Results segment # 3: Hwy 417 EB (day)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 66.35 + 0.00) = 66.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  81.40   0.00 -15.05   0.00   0.00   0.00   0.00
66.35
-------------------------------------------------------------------------
--

Segment Leq : 66.35 dBA

Results segment # 4: Hwy 417 WB (day)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 66.17 + 0.00) = 66.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  81.40   0.00 -15.23   0.00   0.00   0.00   0.00
66.17
-------------------------------------------------------------------------
--

Segment Leq : 66.17 dBA

Total Leq All Segments: 74.99 dBA

Results segment # 1: Carling Av (night)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 65.23 + 0.00) = 65.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
```

```
   -90     55   0.00  67.63   0.00  -1.46  -0.94   0.00   0.00   0.00
65.23
-------------------------------------------------------------------------
--

Segment Leq : 65.23 dBA

Results segment # 2: Bronson Av (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 58.33 + 0.00) = 58.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  63.89   0.00  -2.55  -3.01   0.00   0.00   0.00
58.33
-------------------------------------------------------------------------
--

Segment Leq : 58.33 dBA

Results segment # 3: Hwy 417 EB (night)
---------------------------------------

Source height = 1.49 m

ROAD (0.00 + 58.75 + 0.00) = 58.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  73.80   0.00 -15.05   0.00   0.00   0.00   0.00
58.75
-------------------------------------------------------------------------
--

Segment Leq : 58.75 dBA

Results segment # 4: Hwy 417 WB (night)
---------------------------------------

Source height = 1.49 m

ROAD (0.00 + 58.57 + 0.00) = 58.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
```

```
   -90      90    0.00   73.80    0.00 -15.23    0.00    0.00    0.00    0.00
58.57
-------------------------------------------------------------------------------
--

Segment Leq : 58.57 dBA

Total Leq All Segments: 67.39 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 74.99
                           (NIGHT): 67.39
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2021 13:38:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Carling Av (day/night)
----------------------------------------------
Car traffic volume  : 40480/3520  veh/TimePeriod  *
Medium truck volume :  3220/280   veh/TimePeriod  *
Heavy truck volume  :  2300/200   veh/TimePeriod  *
Posted speed limit  :    60 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):  50000
    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: Carling Av (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  21.00 / 21.00  m
Receiver height           :  76.50 / 76.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: HWY 417 WB (day/night)
----------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 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):  73332
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
```

```
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: HWY 417 WB (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 500.00 / 500.00 m
Receiver height           :  76.50 / 76.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: Hwy 417 EB (day/night)
-----------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 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):  73332
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Hwy 417 EB (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 481.00 / 481.00 m
Receiver height           :  76.50 / 76.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Carling Av (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 70.75 + 0.00) = 70.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
```

```
-------------------------------------------------------------------------
--
   -90      0   0.00  75.22   0.00  -1.46  -3.01   0.00   0.00   0.00
70.75
-------------------------------------------------------------------------
--

Segment Leq : 70.75 dBA

Results segment # 2: HWY 417 WB (day)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 66.17 + 0.00) = 66.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  81.40   0.00 -15.23   0.00   0.00   0.00   0.00
66.17
-------------------------------------------------------------------------
--

Segment Leq : 66.17 dBA

Results segment # 3: Hwy 417 EB (day)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 66.34 + 0.00) = 66.34 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  81.40   0.00 -15.06   0.00   0.00   0.00   0.00
66.34
-------------------------------------------------------------------------
--

Segment Leq : 66.34 dBA

Total Leq All Segments: 73.08 dBA

Results segment # 1: Carling Av (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 63.16 + 0.00) = 63.16 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90      0   0.00  67.63   0.00  -1.46  -3.01   0.00   0.00   0.00
63.16
-------------------------------------------------------------------------
--

Segment Leq : 63.16 dBA

Results segment # 2: HWY 417 WB (night)
---------------------------------------

Source height = 1.49 m

ROAD (0.00 + 58.57 + 0.00) = 58.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  73.80   0.00 -15.23   0.00   0.00   0.00   0.00
58.57
-------------------------------------------------------------------------
--

Segment Leq : 58.57 dBA

Results segment # 3: Hwy 417 EB (night)
---------------------------------------

Source height = 1.49 m

ROAD (0.00 + 58.74 + 0.00) = 58.74 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90     90   0.00  73.80   0.00 -15.06   0.00   0.00   0.00   0.00
58.74
-------------------------------------------------------------------------
--

Segment Leq : 58.74 dBA

Total Leq All Segments: 65.49 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 73.08
                           (NIGHT): 65.49
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2021 13:38:46
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


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

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

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

Data for Segment # 1: BRONSON AV (day/night)
--------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  19.00 / 19.00  m
Receiver height           :  76.50 / 76.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: BRONSON AV (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 67.45 + 0.00) = 67.45 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     90   0.00  71.49   0.00  -1.03  -3.01   0.00   0.00   0.00
67.45
-------------------------------------------------------------------------------
--
```

```
Segment Leq : 67.45 dBA

Total Leq All Segments: 67.45 dBA

Results segment # 1: BRONSON AV (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 59.86 + 0.00) = 59.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     90   0.00  63.89   0.00  -1.03  -3.01   0.00   0.00   0.00
59.86
-------------------------------------------------------------------------
--

Segment Leq : 59.86 dBA

Total Leq All Segments: 59.86 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.45
                           (NIGHT): 59.86
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2021 13:38:55
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


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

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

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

Data for Segment # 1: BRONSON AV (day/night)
--------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  19.00 / 19.00  m
Receiver height           :  25.50 / 25.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: BRONSON AV (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 67.45 + 0.00) = 67.45 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     90   0.00  71.49   0.00  -1.03  -3.01   0.00   0.00   0.00
67.45
-------------------------------------------------------------------------------
--
```

```
Segment Leq : 67.45 dBA

Total Leq All Segments: 67.45 dBA

Results segment # 1: BRONSON AV (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 59.86 + 0.00) = 59.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     90   0.00  63.89   0.00  -1.03  -3.01   0.00   0.00   0.00
59.86
-------------------------------------------------------------------------
--

Segment Leq : 59.86 dBA

Total Leq All Segments: 59.86 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.45
                           (NIGHT): 59.86
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2021 13:39:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: CARLING AV 1 (day/night)
-----------------------------------------------
Car traffic volume  : 40480/3520  veh/TimePeriod  *
Medium truck volume :  3220/280   veh/TimePeriod  *
Heavy truck volume  :  2300/200   veh/TimePeriod  *
Posted speed limit  :    60 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):  50000
    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: CARLING AV 1 (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -36.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           :  25.50 / 25.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -36.00 deg
Barrier height            :  11.00 m
Barrier receiver distance :  45.00 / 45.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: CARLING AV 2 (day/night)
-----------------------------------------------
Car traffic volume  : 40480/3520  veh/TimePeriod  *
Medium truck volume :  3220/280   veh/TimePeriod  *
Heavy truck volume  :  2300/200   veh/TimePeriod  *
Posted speed limit  :    60 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):  50000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: CARLING AV 2 (day/night)
-----------------------------------------------
Angle1   Angle2           : -36.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           :  25.50 / 25.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -9.00 deg   Angle2 : 0.00 deg
Barrier height            :  13.00 m
Barrier receiver distance :  52.00 / 52.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: CARLING AV 1 (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 !       25.50 !        8.35 !         8.35

ROAD (0.00 + 55.64 + 0.00) = 55.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -36   0.00  75.22   0.00  -6.23  -5.23   0.00   0.00  -8.12
55.64
-------------------------------------------------------------------------------
--

Segment Leq : 55.64 dBA
```

```
Results segment # 2: CARLING AV 2 (day)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       25.50 !        5.69 !         5.69

ROAD (60.75 + 35.98 + 0.00) = 60.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -36     -9   0.00  75.22   0.00  -6.23  -8.24   0.00   0.00   0.00
60.75
-------------------------------------------------------------------------------
--
    -9      0   0.00  75.22   0.00  -6.23 -13.01   0.00   0.00 -20.00
35.98
-------------------------------------------------------------------------------
--

Segment Leq : 60.77 dBA

Total Leq All Segments: 61.93 dBA

Results segment # 1: CARLING AV 1 (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 !       25.50 !        8.35 !         8.35

ROAD (0.00 + 48.04 + 0.00) = 48.04 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -36   0.00  67.63   0.00  -6.23  -5.23   0.00   0.00  -8.12
48.04
-------------------------------------------------------------------------------
--
```

```
Segment Leq : 48.04 dBA

Results segment # 2: CARLING AV 2 (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       25.50 !        5.69 !         5.69

ROAD (53.16 + 28.39 + 0.00) = 53.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -36     -9   0.00  67.63   0.00  -6.23  -8.24   0.00   0.00   0.00
53.16
-------------------------------------------------------------------------------
--
    -9      0   0.00  67.63   0.00  -6.23 -13.01   0.00   0.00 -20.00
28.39
-------------------------------------------------------------------------------
--

Segment Leq : 53.17 dBA

Total Leq All Segments: 54.33 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.93
                           (NIGHT): 54.33
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2021 13:39:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: CARLING AV 1 (day/night)
----------------------------------------------
Car traffic volume  : 40480/3520  veh/TimePeriod  *
Medium truck volume :  3220/280   veh/TimePeriod  *
Heavy truck volume  :  2300/200   veh/TimePeriod  *
Posted speed limit  :    60 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):  50000
    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: CARLING AV 1 (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  59.00 / 59.00  m
Receiver height           :  25.50 / 25.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -22.00 deg
Barrier height            :  13.00 m
Barrier receiver distance :  48.00 / 48.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: CARLING AV 2 (day/night)
----------------------------------------------
Car traffic volume  : 40480/3520  veh/TimePeriod  *
Medium truck volume :  3220/280   veh/TimePeriod  *
Heavy truck volume  :  2300/200   veh/TimePeriod  *
Posted speed limit  :    60 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):  50000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: CARLING AV 2 (day/night)
-----------------------------------------------
Angle1   Angle2           :   0.00 deg   48.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  59.00 / 59.00  m
Receiver height           :  25.50 / 25.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  28.00 deg   Angle2 : 48.00 deg
Barrier height            :  79.00 m
Barrier receiver distance :  45.00 / 45.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: CARLING AV 1 (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 !       25.50 !        5.97 !         5.97

ROAD (0.00 + 50.32 + 60.15) = 60.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -22   0.00  75.22   0.00  -5.95  -4.23   0.00   0.00 -14.73
50.32
-------------------------------------------------------------------------------
--
   -22      0   0.00  75.22   0.00  -5.95  -9.13   0.00   0.00   0.00
60.15
-------------------------------------------------------------------------------
--
```

```
Segment Leq : 60.58 dBA

Results segment # 2: CARLING AV 2 (day)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       25.50 !        7.19 !         7.19

ROAD (61.20 + 39.73 + 0.00) = 61.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
     0     28   0.00  75.22   0.00  -5.95  -8.08   0.00   0.00   0.00
61.20
-------------------------------------------------------------------------------
--
    28     48   0.00  75.22   0.00  -5.95  -9.54   0.00   0.00 -20.00
39.73
-------------------------------------------------------------------------------
--

Segment Leq : 61.23 dBA

Total Leq All Segments: 63.93 dBA

Results segment # 1: CARLING AV 1 (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 !       25.50 !        5.97 !         5.97

ROAD (0.00 + 42.72 + 52.55) = 52.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
```

```
   -90    -22   0.00  67.63   0.00  -5.95  -4.23   0.00   0.00 -14.73
42.72
-------------------------------------------------------------------------
--
   -22      0   0.00  67.63   0.00  -5.95  -9.13   0.00   0.00   0.00
52.55
-------------------------------------------------------------------------
--

Segment Leq : 52.98 dBA

Results segment # 2: CARLING AV 2 (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       25.50 !        7.19 !         7.19

ROAD (53.60 + 32.14 + 0.00) = 53.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
     0     28   0.00  67.63   0.00  -5.95  -8.08   0.00   0.00   0.00
53.60
-------------------------------------------------------------------------
--
    28     48   0.00  67.63   0.00  -5.95  -9.54   0.00   0.00 -20.00
32.14
-------------------------------------------------------------------------
--

Segment Leq : 53.63 dBA

Total Leq All Segments: 56.33 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.93
                           (NIGHT): 56.33
```

```
STAMSON 5.0        NORMAL REPORT        Date: 28-01-2021 22:36:55
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


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

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

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

Data for Segment # 1: BRONSON AV (day/night)
--------------------------------------------
Angle1   Angle2           : -70.00 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           :  22.50 / 22.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -70.00 deg   Angle2 : 90.00 deg
Barrier height            :  21.00 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: BRONSON AV (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 !       22.50 !       18.30 !        18.30

ROAD (0.00 + 57.65 + 0.00) = 57.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -70     90   0.00  71.49   0.00  -1.25  -0.51   0.00   0.00 -12.08
57.65
-------------------------------------------------------------------------
--

Segment Leq : 57.65 dBA

Total Leq All Segments: 57.65 dBA

Results segment # 1: BRONSON AV (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 !       22.50 !       18.30 !        18.30

ROAD (0.00 + 50.05 + 0.00) = 50.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -70     90   0.00  63.89   0.00  -1.25  -0.51   0.00   0.00 -12.08
50.05
-------------------------------------------------------------------------
--

Segment Leq : 50.05 dBA

Total Leq All Segments: 50.05 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.65
                           (NIGHT): 50.05
```

```
STAMSON 5.0        NORMAL REPORT        Date: 28-01-2021 22:37:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r8b1.te              Time Period: Day/Night 16/8 hours
Description:


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

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

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

Data for Segment # 1: BRONSON AV (day/night)
--------------------------------------------
Angle1   Angle2           : -70.00 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           :  22.50 / 22.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -70.00 deg   Angle2 : 90.00 deg
Barrier height            :  22.20 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: BRONSON AV (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 !       22.50 !       18.30 !        18.30

ROAD (0.00 + 54.63 + 0.00) = 54.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -70     90   0.00  71.49   0.00  -1.25  -0.51   0.00   0.00 -15.10
54.63
-------------------------------------------------------------------------
--

Segment Leq : 54.63 dBA

Total Leq All Segments: 54.63 dBA

Results segment # 1: BRONSON AV (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 !       22.50 !       18.30 !        18.30

ROAD (0.00 + 47.03 + 0.00) = 47.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -70     90   0.00  63.89   0.00  -1.25  -0.51   0.00   0.00 -15.10
47.03
-------------------------------------------------------------------------
--

Segment Leq : 47.03 dBA

Total Leq All Segments: 47.03 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 54.63
                           (NIGHT): 47.03
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2021 13:39:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: CARLING AV 1 (day/night)
-----------------------------------------------
Car traffic volume  : 40480/3520  veh/TimePeriod  *
Medium truck volume :  3220/280   veh/TimePeriod  *
Heavy truck volume  :  2300/200   veh/TimePeriod  *
Posted speed limit  :    60 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):  50000
    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: CARLING AV 1 (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -34.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -34.00 deg
Barrier height            :  11.00 m
Barrier receiver distance :  45.00 / 45.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: CARLING AV 3 (day/night)
-----------------------------------------------
Car traffic volume  : 40480/3520  veh/TimePeriod  *
Medium truck volume :  3220/280   veh/TimePeriod  *
Heavy truck volume  :  2300/200   veh/TimePeriod  *
Posted speed limit  :    60 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):  50000
    Percentage of Annual Growth         :   0.00
    Number of Years of Growth           :   0.00
    Medium Truck % of Total Volume      :   7.00
    Heavy Truck  % of Total Volume      :   5.00
    Day (16 hrs) % of Total Volume      :  92.00

Data for Segment # 2: CARLING AV 3 (day/night)
-----------------------------------------------
Angle1   Angle2           :  -6.00 deg   49.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -6.00 deg   Angle2 : 49.00 deg
Barrier height            :  13.00 m
Barrier receiver distance :  52.00 / 52.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: CARLING AV 2 (day/night)
-------------------------------------------------
Car traffic volume  : 40480/3520  veh/TimePeriod  *
Medium truck volume :  3220/280   veh/TimePeriod  *
Heavy truck volume  :  2300/200   veh/TimePeriod  *
Posted speed limit  :    60 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):  50000
    Percentage of Annual Growth         :   0.00
    Number of Years of Growth           :   0.00
    Medium Truck % of Total Volume      :   7.00
    Heavy Truck  % of Total Volume      :   5.00
    Day (16 hrs) % of Total Volume      :  92.00

Data for Segment # 3: CARLING AV 2 (day/night)
-----------------------------------------------
Angle1   Angle2           : -34.00 deg   -6.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
```

```
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -34.00 deg   Angle2 : -6.00 deg
Barrier height            :  12.00 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: CARLING AV 1 (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 !       13.50 !        4.93 !         4.93

ROAD (0.00 + 50.89 + 0.00) = 50.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -34   0.00  75.22   0.00  -6.23  -5.07   0.00   0.00 -13.03
50.89
-------------------------------------------------------------------------------
--

Segment Leq : 50.89 dBA

Results segment # 2: CARLING AV 3 (day)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.50 !        3.59 !         3.59

ROAD (0.00 + 43.84 + 0.00) = 43.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
```

```
    -6     49   0.00  75.22   0.00  -6.23  -5.15   0.00   0.00 -20.00
43.84
-------------------------------------------------------------------------
--

Segment Leq : 43.84 dBA

Results segment # 3: CARLING AV 2 (day)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.50 !       12.74 !        12.74

ROAD (0.00 + 60.91 + 0.00) = 60.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -34     -6   0.00  75.22   0.00  -6.23  -8.08   0.00   0.00  -0.42
60.49*
   -34     -6   0.00  75.22   0.00  -6.23  -8.08   0.00   0.00   0.00
60.91
-------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 60.91 dBA

Total Leq All Segments: 61.40 dBA

Results segment # 1: CARLING AV 1 (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 !       13.50 !        4.93 !         4.93

ROAD (0.00 + 43.30 + 0.00) = 43.30 dBA
```

```
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -90    -34   0.00  67.63   0.00  -6.23  -5.07   0.00   0.00 -13.03
43.30
-------------------------------------------------------------------------
--

Segment Leq : 43.30 dBA

Results segment # 2: CARLING AV 3 (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.50 !        3.59 !         3.59

ROAD (0.00 + 36.25 + 0.00) = 36.25 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    -6     49   0.00  67.63   0.00  -6.23  -5.15   0.00   0.00 -20.00
36.25
-------------------------------------------------------------------------
--

Segment Leq : 36.25 dBA

Results segment # 3: CARLING AV 2 (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.50 !       12.74 !        12.74

ROAD (0.00 + 53.31 + 0.00) = 53.31 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
```

```
-------------------------------------------------------------------------------
--
   -34     -6   0.00  67.63   0.00  -6.23  -8.08   0.00   0.00  -0.42
52.90*
   -34     -6   0.00  67.63   0.00  -6.23  -8.08   0.00   0.00   0.00
53.31
-------------------------------------------------------------------------------
--

 * Bright Zone !

Segment Leq : 53.31 dBA

Total Leq All Segments: 53.80 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.40
                           (NIGHT): 53.80
```

```
STAMSON 5.0        NORMAL REPORT        Date: 21-01-2021 13:40:00
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r9b1.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: CARLING AV 1 (day/night)
----------------------------------------------
Car traffic volume  : 40480/3520  veh/TimePeriod  *
Medium truck volume :  3220/280   veh/TimePeriod  *
Heavy truck volume  :  2300/200   veh/TimePeriod  *
Posted speed limit  :    60 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):  50000
    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: CARLING AV 1 (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   -34.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -34.00 deg
Barrier height            :  11.00 m
Barrier receiver distance :  45.00 / 45.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: CARLING AV 3 (day/night)
----------------------------------------------
Car traffic volume  : 40480/3520  veh/TimePeriod  *
Medium truck volume :  3220/280   veh/TimePeriod  *
Heavy truck volume  :  2300/200   veh/TimePeriod  *
Posted speed limit  :    60 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):  50000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: CARLING AV 3 (day/night)
-----------------------------------------------
Angle1   Angle2           :  -6.00 deg   49.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -6.00 deg   Angle2 : 49.00 deg
Barrier height            :  13.00 m
Barrier receiver distance :  52.00 / 52.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: CARLING AV 2 (day/night)
-----------------------------------------------
Car traffic volume  : 40480/3520  veh/TimePeriod  *
Medium truck volume :  3220/280   veh/TimePeriod  *
Heavy truck volume  :  2300/200   veh/TimePeriod  *
Posted speed limit  :    60 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):  50000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: CARLING AV 2 (day/night)
-----------------------------------------------
Angle1   Angle2           : -34.00 deg   -6.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  63.00 / 63.00  m
```

```
Receiver height           :  13.50 / 13.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -34.00 deg   Angle2 : -6.00 deg
Barrier height            :  13.50 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: CARLING AV 1 (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 !       13.50 !        4.93 !         4.93

ROAD (0.00 + 50.89 + 0.00) = 50.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90    -34   0.00  75.22   0.00  -6.23  -5.07   0.00   0.00 -13.03
50.89
-------------------------------------------------------------------------------
--

Segment Leq : 50.89 dBA

Results segment # 2: CARLING AV 3 (day)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.50 !        3.59 !         3.59

ROAD (0.00 + 43.84 + 0.00) = 43.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
```

```
    -6     49   0.00  75.22   0.00  -6.23  -5.15   0.00   0.00 -20.00
43.84
-------------------------------------------------------------------------
--

Segment Leq : 43.84 dBA

Results segment # 3: CARLING AV 2 (day)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.50 !       12.74 !        12.74

ROAD (0.00 + 53.02 + 0.00) = 53.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -34     -6   0.00  75.22   0.00  -6.23  -8.08   0.00   0.00  -7.89
53.02
-------------------------------------------------------------------------
--

Segment Leq : 53.02 dBA

Total Leq All Segments: 55.41 dBA

Results segment # 1: CARLING AV 1 (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 !       13.50 !        4.93 !         4.93

ROAD (0.00 + 43.30 + 0.00) = 43.30 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
```

```
   -90    -34   0.00  67.63   0.00  -6.23  -5.07   0.00   0.00 -13.03
43.30
-------------------------------------------------------------------------
--

Segment Leq : 43.30 dBA

Results segment # 2: CARLING AV 3 (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.50 !        3.59 !         3.59

ROAD (0.00 + 36.25 + 0.00) = 36.25 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    -6     49   0.00  67.63   0.00  -6.23  -5.15   0.00   0.00 -20.00
36.25
-------------------------------------------------------------------------
--

Segment Leq : 36.25 dBA

Results segment # 3: CARLING AV 2 (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.50 !       12.74 !        12.74

ROAD (0.00 + 45.42 + 0.00) = 45.42 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -34     -6   0.00  67.63   0.00  -6.23  -8.08   0.00   0.00  -7.89
45.42
```

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

Segment Leq : 45.42 dBA

Total Leq All Segments: 47.81 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.41
                           (NIGHT): 47.81
```

```
STAMSON 5.0        NORMAL REPORT        Date: 28-01-2021 22:56:52
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: Carling Av (day/night)
----------------------------------------------
Car traffic volume  : 40480/3520  veh/TimePeriod  *
Medium truck volume :  3220/280   veh/TimePeriod  *
Heavy truck volume  :  2300/200   veh/TimePeriod  *
Posted speed limit  :    60 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):  50000
    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: Carling Av (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   57.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  32.00 / 32.00  m
Receiver height           :  82.50 / 82.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 57.00 deg
Barrier height            :  81.00 m
Barrier receiver distance :  12.00 / 12.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: Bronson Av1 (day/night)
-----------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)
```

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

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

Data for Segment # 2: Bronson Av1 (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -43.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  29.00 / 29.00  m
Receiver height           :  82.50 / 82.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -43.00 deg
Barrier height            :  81.00 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 3: BRONSON AV2 (day/night)
-----------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 3: BRONSON AV2 (day/night)
-----------------------------------------------
Angle1   Angle2           : -43.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  29.00 / 29.00  m
```

```
Receiver height           :  82.50 / 82.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -43.00 deg   Angle2 : 90.00 deg
Barrier height            :  85.00 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: Carling Av (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 !       82.50 !       52.12 !        52.12

ROAD (0.00 + 52.12 + 0.00) = 52.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     57   0.00  75.22   0.00  -3.29  -0.88   0.00   0.00 -18.94
52.12
-------------------------------------------------------------------------------
--

Segment Leq : 52.12 dBA

Results segment # 2: Bronson Av1 (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 !       82.50 !       60.15 !        60.15

ROAD (0.00 + 46.60 + 0.00) = 46.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
```

```
   -90    -43   0.00  71.49   0.00  -2.86  -5.83   0.00   0.00 -16.20
46.60
-------------------------------------------------------------------------
--

Segment Leq : 46.60 dBA

Results segment # 3: BRONSON AV2 (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 !       82.50 !       65.74 !        65.74

ROAD (0.00 + 48.46 + 0.00) = 48.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -43     90   0.00  71.49   0.00  -2.86  -1.31   0.00   0.00 -18.85
48.46
-------------------------------------------------------------------------
--

Segment Leq : 48.46 dBA

Total Leq All Segments: 54.45 dBA

Results segment # 1: Carling Av (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 !       82.50 !       52.12 !        52.12

ROAD (0.00 + 44.52 + 0.00) = 44.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
```

```
   -90     57   0.00  67.63   0.00  -3.29  -0.88   0.00   0.00 -18.94
44.52
-------------------------------------------------------------------------
--

Segment Leq : 44.52 dBA

Results segment # 2: Bronson Av1 (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 !       82.50 !       60.15 !        60.15

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    -43   0.00  63.89   0.00  -2.86  -5.83   0.00   0.00 -16.20
39.00
-------------------------------------------------------------------------
--

Segment Leq : 39.00 dBA

Results segment # 3: BRONSON AV2 (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 !       82.50 !       65.74 !        65.74

ROAD (0.00 + 40.86 + 0.00) = 40.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
   -43     90   0.00  63.89   0.00  -2.86  -1.31   0.00   0.00 -18.85
40.86
```

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

Segment Leq : 40.86 dBA

Total Leq All Segments: 46.85 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.45
                           (NIGHT): 46.85
```