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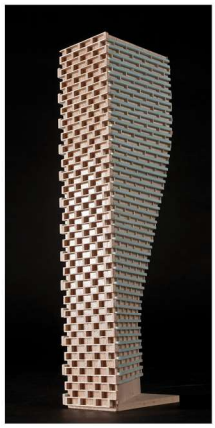
ROADWAY TRAFFIC NOISE ASSESSMENT

1971 & 1975 St. Laurent Boulevard
Ottawa, Ontario

REPORT: GW21-328 – Traffic Noise



February 10, 2022

DRAFT

PREPARED FOR

Starlight Group Property Holdings Inc.
1971 St. Laurent Boulevard
Ottawa, ON K1G 3P8

PREPARED BY

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EXECUTIVE SUMMARY

This report describes a roadway traffic noise assessment undertaken in support of a Site Plan Control application (SPA) for a planned intensification project at 1971 & 1975 St. Laurent Boulevard in Ottawa (hereinafter referred to as "subject site" or "proposed development"). The subject site is a nominally triangular parcel of land bounded by St. Laurent Blvd to the northwest and west, Russell Road to the northeast and east, and residential buildings to the south. The proposed development comprises two existing 18-storey buildings, three new proposed buildings and a parking structure. The major sources of roadway traffic noise are St. Laurent Boulevard and Russell Road.

The assessment is based on (i) theoretical noise prediction methods that conform to the Ministry of the Environment, Conservation and Parks (MECP) and City of Ottawa requirements; (ii) noise level criteria as specified by the City of Ottawa's Environmental Noise Control Guidelines (ENCG); (iii) future vehicular traffic volumes based on the City of Ottawa's Official Plan roadway classifications; and (iv) architectural drawings received from Petroff Partnership Architects in January 2022.

The results of the current analysis indicate that noise levels will range between 48 and 67 dBA during the daytime period (07:00-23:00) and between 53 and 60 dBA during the nighttime period (23:00-07:00). The highest noise level (67 dBA) occurs at the northwest and northeast façades of Building A, which are nearest and most exposed to St. Laurent Boulevard and Russell Road.

Buildings A, B, and C in the development will require central air conditioning, or a similar ventilation system, which will allow occupants to keep windows and doors closed and maintain a comfortable living environment. It is expected that the design for the buildings will incorporate central air conditioning. A 'Type D' Warning Clause[1] will also be required to be placed on all Lease, Purchase and Sale Agreements, as summarized in Section 6.

Noise levels at various Outdoor Living Areas (OLA) are expected to exceed the criteria listed in Section 4.2.1. Specifically, the east and west Level 3 amenity terraces of Building A exceed the 60 dBA criteria for which mitigation is required. Furthermore, the level 3 amenity terraces of Building B and Building C, and

[1] MECP, Environmental Noise Guidelines, NPC 300

the grade-level outdoor amenity of Building A exceed the 55 dBA criteria where mitigation is recommended. Results of the barrier investigation concluded that a 1.1-meter-tall solid perimeter guard surrounding the Level 3 amenity terraces of Buildings A, B, and C will reduce noise levels to acceptable levels in all cases. A noise barrier at the grade-level outdoor amenity of Building A is not considered feasible. As noise levels at the OLAs of Building A remain between 55 and 60 dBA, a 'Type B' Warning Clause[2] will be required to be placed on all Lease, Purchase and Sale Agreements for Building A, as summarized in Section 6.

The perimeter 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.

The buildings' proposed HVAC equipment has the potential for noise impacts on surrounding buildings and the study building itself. Typically, noise levels can be controlled by judicious selection and placement of the equipment and the introduction of silencers or noise screens where needed. A stationary noise study will be performed once mechanical plans for the proposed building become available. This study will include recommendations for any noise control measures that may be necessary to ensure noise levels fall below ENCG limits.

[2] MECP, Environmental Noise Guidelines, NPC 300

The surroundings were evaluated for sources of stationary noise impacting the proposed development. HVAC equipment serving the existing residential apartment buildings at 1971 and 1975 St. Laurent Boulevard is contained in mechanical penthouses, therefore, impacts are expected to be insignificant.

Addendum: The roadway traffic noise assessment was performed based on drawings received on January 25, 2022. An update from Petroff Partnership Architects on February 4, 2022, indicated that the heights of the buildings have changed. Specifically, in the update, Building A is 17 storeys (down from 18 storeys), Building B is unchanged at 17 storeys, and Building C is 17 storeys (up from 16 storeys). The main conclusions of the noise study are not affected by the minor change in building heights, and the conclusions of this report are representative of the current design.

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1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Starlight Developments to undertake a roadway traffic noise assessment in support of a Site Plan Control application (SPA) for a proposed residential development at 1971 & 1975 St. Laurent Boulevard 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 Environmental Noise Control Guidelines[3] (ENCG) and Ministry of the Environment, Conservation and Parks (MECP)[4] guidelines. Noise calculations were based on architectural drawings received from Petroff Partnership Architects in January 2022, with future traffic volumes corresponding to the City of Ottawa's Official Plan (OP) roadway classifications.

2. TERMS OF REFERENCE

The focus of this traffic noise assessment is a planned intensification project at 1971 & 1975 St. Laurent Boulevard in Ottawa, on a nominally triangular parcel of land bounded by St. Laurent Blvd to the northwest and west, Russell Road to the northeast and east, and residential buildings to the south. The subject site comprises two existing 18-storey buildings, three new proposed buildings and a parking structure.

Building A is an 18-storey building located at the north of the site. Above the basement level, the ground floor comprises residential units along the north and east elevations, a fitness centre at the northeast corner, a residential lobby at the south elevation, and shared building support spaces throughout the remainder of the level. There is an outdoor amenity space at grade at the northwest corner. Level 2 comprises an indoor amenity at the northwest corner, and residential units along the north, east, and south elevations. At level 3, the building steps back from the east elevation and the northwest corner to accommodate outdoor amenities. From Level 3 to 18, the building includes residential space.

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

Building B is a 17-storey building located at the northwest of the site, along St. Laurent Boulevard and between Buildings A and C. For Building B, the St. Laurent Boulevard elevation is considered as project north. Above the basement level, the ground floor includes residential units along the north and east elevations, a residential lobby at the southeast corner, a fitness centre along the west elevation, and shared support spaces throughout the remainder of the level. There is an outdoor amenity space at grade at the southwest corner. Level 2 includes residential units along the north and east elevations and a social room along the west elevation. At Level 3, the building steps back from the west elevation to accommodate an outdoor amenity. From level 3 to 17, the building includes residential space.

Building C is a 16-storey building located at the southwest corner of the site. For Building C, the St. Laurent Boulevard elevation is considered as project west. Above the basement level, the ground level includes residential units along the west and south elevations, a residential lobby at the southeast corner, a fitness centre along the north elevation, and shared support spaces throughout the remainder of the level. There is an outdoor amenity space at grade at the northeast corner. Level 2 includes residential units along the west and south elevations and a social room along the north elevation. At Level 3, the building steps back from the north elevation to accommodate an outdoor amenity. From level 3 to 16, the building includes residential space.

The parkade is a 4-storey parking structure with an outdoor amenity serving the roof. The parkade is located along the south elevation of the subject site to the east of the existing 1971 St. Laurent building and the south of the existing 1975 St. Laurent building.

The major sources of roadway traffic noise are St. Laurent Boulevard which curves around the perimeter of the development from southwest to northwest, and Russel Rd. which borders the site to the northeast. Roadways beyond 100 metres of the study site are not included as sources influencing the study site as per ENCG Section 2.1. Outdoor Living Areas (OLA) are assessed on each amenity terrace on level 3, at the rooftop of the parkade building, and at the ground-level outdoor amenity areas. 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 buildings produced by local roadway traffic, and (ii) ensure that interior and exterior noise levels do not exceed the allowable limits specified by the City of Ottawa's Environmental Noise Control Guidelines as outlined in Section 4.2 of this report.

4. METHODOLOGY

4.1 Background

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

4.2 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) [5]

Type of Space	Time Period	Leq (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[6]. A closed window due to a ventilation requirement will bring noise levels down to achieve an acceptable indoor environment[7]. 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[8].

The sound level criterion for outdoor living areas is 55 dBA, which applies during the daytime (07:00 to 23:00). An excess of 5 dBA above the limit is tolerated where mitigation is not considered technically or administratively feasible. When OLA noise levels exceed 60 dBA, mitigation must be provided to reduce noise levels acceptable levels at or below the criterion.

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

4.2.2 Theoretical Roadway Traffic Noise Predictions

Noise predictions were performed with the aid of the MECP computerized noise assessment program, STAMSON 5.04, for road analysis. Appendix A includes the STAMSON 5.04 input and output data. Roadway traffic noise calculations were performed by treating each roadway segment as a separate line source of traffic 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 absorptive or reflective based on specific source-receiver ground path characteristics.
- Topography was assumed to be a flat/gentle slope surrounding the study building.
- Receptor height was taken to be 49.5 metres at the 17th floor centre of window; 7.5 m at the 3rd floor amenity terraces; 13.5 m at the 5th floor amenity terraces; and 1.5 m at the ground-level outdoor amenity locations.
- Noise receptors were strategically placed at 14 locations around the study area (see Figure 2).
- For select sources where appropriate, Receptors 1-14 considered the proposed buildings as noise barriers partially or fully obstructing exposure to the traffic noise sources.
- Receptor distances and exposure angles are illustrated in Appendix Figures A1-A3.

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[9] 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
St. Laurent Bvld.	2-Lane Urban Collector (2-UCU)	50	**8,000**
Russell Rd. (west of intersection with St. Laurent)	4-Lane Urban Arterial Divided (4-UAD)	50	**35,000**
Russell Rd. (east of intersection with St. Laurent)	2-Lane Urban Arterial Undivided (2-UAU)	50	**15,000**

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.

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

As per Section 4.2, when daytime noise levels (from road and rail sources) at the plane of the window exceed 65 dBA, calculations must be performed to evaluate the sound transmission quality of the building components to ensure acceptable indoor noise levels. The calculation procedure[10] 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[11], exterior walls possess specific sound attenuation characteristics that are used as a basis for calculating the required STC ratings of windows in the same partition. Due to the limited information available at the time of the study, which was prepared for site plan approval, detailed floor layouts and building elevations have not been finalized; therefore, detailed STC calculations could not be performed at this time. As a guideline, the anticipated STC requirements for windows have been estimated based on the overall noise reduction required for each intended use of space (STC = outdoor noise level – targeted indoor noise levels).

5. RESULTS AND DISCUSSION

5.1 Roadway Traffic Noise Levels

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

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

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
Building A				
R1	49.5	POW / Northwest Façade (Level 17)	67	60
R2	49.5	POW / Northeast Façade (Level 17)	67	59
R3	49.5	POW / Southeast Façade (Level 17)	61	54
R4	49.5	POW / Southwest Façade (Level 17)	61	53
R5	7.5	OLA / East Amenity Terrace (Level 3)	65	N/A*
R6	7.5	OLA / West Amenity Terrace (Level 3)	61	N/A*
R7	1.5	OLA / Outdoor Amenity (Grade-level)	59	N/A*
Building B				
R8	49.5	POW / West Façade (Level 17)	65	57
R9	7.5	OLA / Amenity Terrace (Level 3)	57	N/A*
R10	1.5	OLA / Outdoor Amenity (Grade-level)	51	N/A*
Building C				
R11	49.5	POW / West Façade (Level 17)	65	57
R12	7.5	OLA / Amenity Terrace (Level 3)	57	N/A*
R13	1.5	OLA / Outdoor Amenity (Grade-level)	48	N/A*
Parking Structure				
R14	13.5	OLA / Amenity Terrace (Level 5)	48	N/A*

*OLA noise levels during the nighttime period are not considered as per ENCG

The results of the current analysis indicate that noise levels will range between 48 and 67 dBA during the daytime period (07:00-23:00) and between 53 and 60 dBA during the nighttime period (23:00-07:00). The highest noise level (67 dBA) occurs at the northwest and northeast façades of Building A, which are nearest and most exposed to St. Laurent Boulevard and Russell Road.

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):

- **Bedroom Windows**

(i) Bedroom windows facing northeast and northwest on Building A require a minimum STC of 30

(ii) All other bedroom windows are to satisfy Ontario Building Code (OBC 2020) requirements

- **Living Room Windows**

(i) Living room windows facing northeast and northwest on Building A require a minimum STC of 25

(ii) All other living room windows are to satisfy Ontario Building Code (OBC 2020) requirements

- **Exterior Walls**

(i) Exterior wall components on the northeast and northwest façades of Building A require a minimum STC of 45, which will be achieved with brick cladding or an acoustical equivalent according to NRC test data[12]

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

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

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 various Outdoor Living Areas (OLA) are expected to exceed the criteria listed in Section 4.2.1. Specifically, the east and west Level 3 amenity terraces of Building A exceed the 60 dBA criteria for which mitigation is required. Furthermore, the level 3 amenity terraces of Building B and Building C, and the grade-level outdoor amenity of Building A exceed the 55 dBA criteria where mitigation is recommended. In cases where the noise leves at an OLA remain between 55 and 60 dBA, a warning clause must be used to inform prospective tenants that noise levels exceed the MECP criteria. An investigation was conducted to determine the barrier height required to reduce the L_{eq} to below 60 dBA, as close to 55 dBA as feasible. Noise barriers are not considered feasible at most grade-level OLAs, or in locations where the excessive barrier heights would be required. Results of the investigations are summarized in Table 4.

TABLE 4: RESULTS OF NOISE BARRIER INVESTIGATION

Reference Receptor	Location	Barrier Height (m)	Daytime L_{eq} Noise Levels (dBA)
R5	Building A - East Amenity Terrace (Level 3)	no barrier	65
		1.1	60
		1.5	59
		2.2	56
		3.0	54
R6	Building A - West Amenity Terrace (Level 3)	no barrier	61
		1.1	54
R9	Building B - Amenity Terrace (Level 3)	no barrier	57
		1.1	54
R12	Building C - Amenity Terrace (Level 3)	no barrier	57
		1.1	54

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that noise levels will range between 48 and 67 dBA during the daytime period (07:00-23:00) and between 53 and 60 dBA during the nighttime period (23:00-07:00). The highest noise level (67 dBA) occurs at the northwest and northeast façades of Building A, which are nearest and most exposed to St. Laurent Boulevard and Russell Road. 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.

Buildings A, B, and C in the development will require central air conditioning, or a similar ventilation system, which will allow occupants to keep windows and doors closed and maintain a comfortable living environment. It is expected that the design for the buildings will incorporate central air conditioning. The following 'Type D' Warning Clause[13] will also be required to be placed on all Lease, Purchase and Sale Agreements, as summarized below:

[13] Ontario Ministry of the Environment and Climate Change – Environmental Noise Guidelines, Publication NPC-300, Queens Printer for Ontario, Toronto, 2013

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

Noise levels at various Outdoor Living Areas (OLA) are expected to exceed the criteria listed in Section 4.2.1. Specifically, the east and west Level 3 amenity terraces of Building A exceed the 60 dBA criteria for which mitigation is required. Furthermore, the level 3 amenity terraces of Building B and Building C, and the grade-level outdoor amenity of Building A exceed the 55 dBA criteria where mitigation is recommended. Results of the barrier investigation concluded that a 1.1-meter-tall solid perimeter guard surrounding the Level 3 amenity terraces of Buildings A, B, and C will reduce noise levels to acceptable levels in all cases. A noise barrier at the grade-level outdoor amenity of Building A is not considered feasible. As noise levels at the OLA of Building A remain between 55 and 60 dBA, the following 'Type B' Warning Clause[14] will be required to be placed on all Lease, Purchase and Sale Agreements for Building A, 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 road traffic may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."*

The perimeter 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.

[14] MECP, Environmental Noise Guidelines, NPC 300

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.

The building's proposed HVAC equipment has the potential for noise impacts on surrounding buildings and the study building itself. Typically, noise levels can be controlled by judicious selection and placement of the equipment and the introduction of silencers or noise screens where needed. A stationary noise study will be performed once mechanical plans for the proposed building become available. This study will include recommendations for any noise control measures that may be necessary to ensure noise levels fall below ENCG limits.

The surroundings were evaluated for sources of stationary noise impacting the proposed development. HVAC equipment serving the existing residential apartment buildings at 1971 and 1975 St. Laurent Boulevard is contained in mechanical penthouses, therefore, impacts are expected to be insignificant.

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.

Tanyon Matheson-Fitchett, B.Eng.
Junior Environmental Scientist

Joshua Foster, P.Eng.
Lead Engineer

Gradient Wind File #21-328 - Traffic Noise

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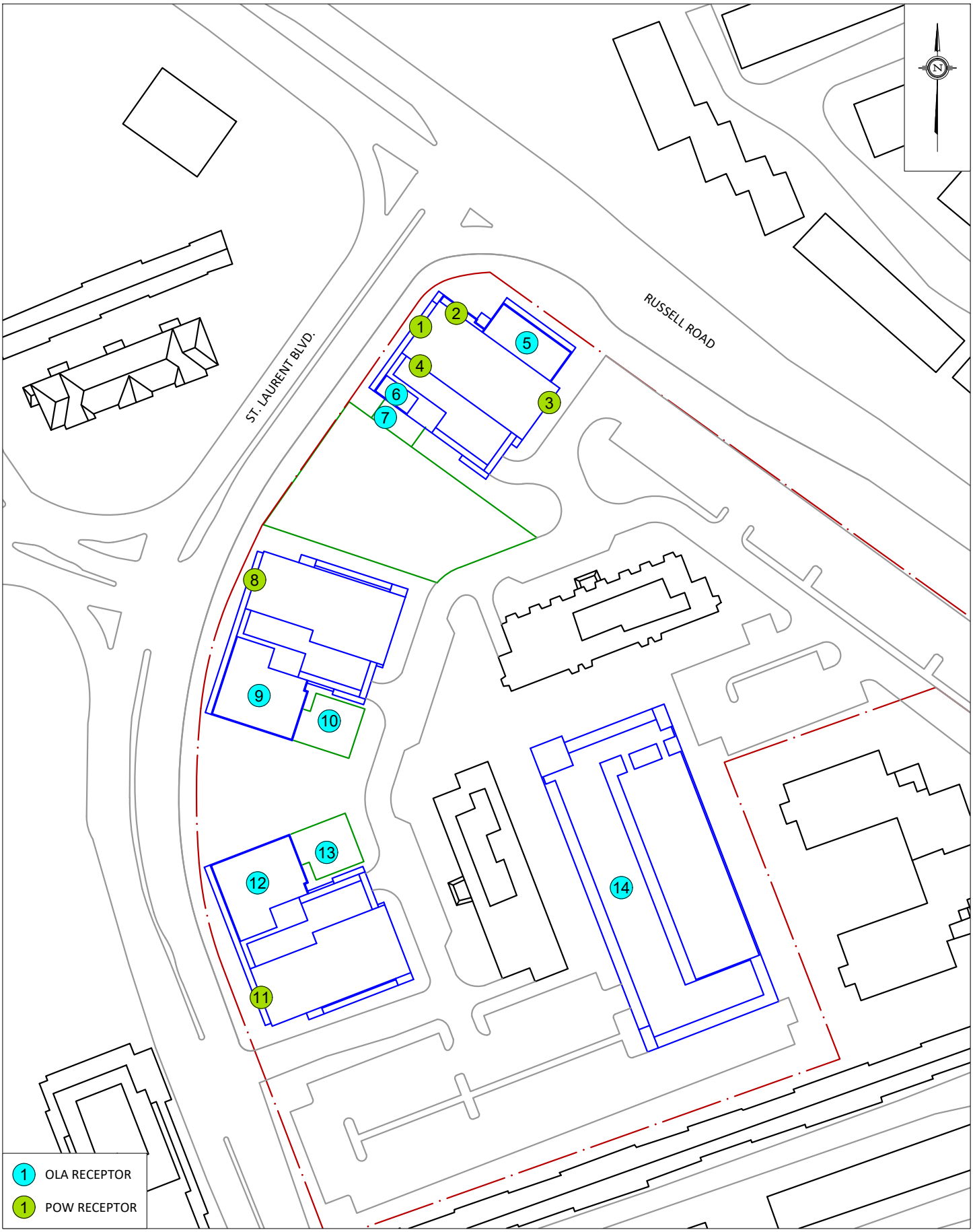
PROJECT	1971 & 1975 ST. LAURENT BLVD., OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT
SCALE	1:2000 (APPROX.)
DRAWING NO.	GW21-328-01
DATE	FEBRUARY 3, 2022
DRAWN BY	T.M.F.

DESCRIPTION

FIGURE 1:
SITE PLAN AND SURROUNDING CONTEXT



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PROJECT	1971 & 1975 ST. LAURENT BLVD., OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:1300 (APPROX.)	DRAWING NO.	GW21-328-02
DATE	FEBRUARY 3, 2022	DRAWN BY	T.M.F.

FIGURE 2:
RECEPTOR LOCATIONS

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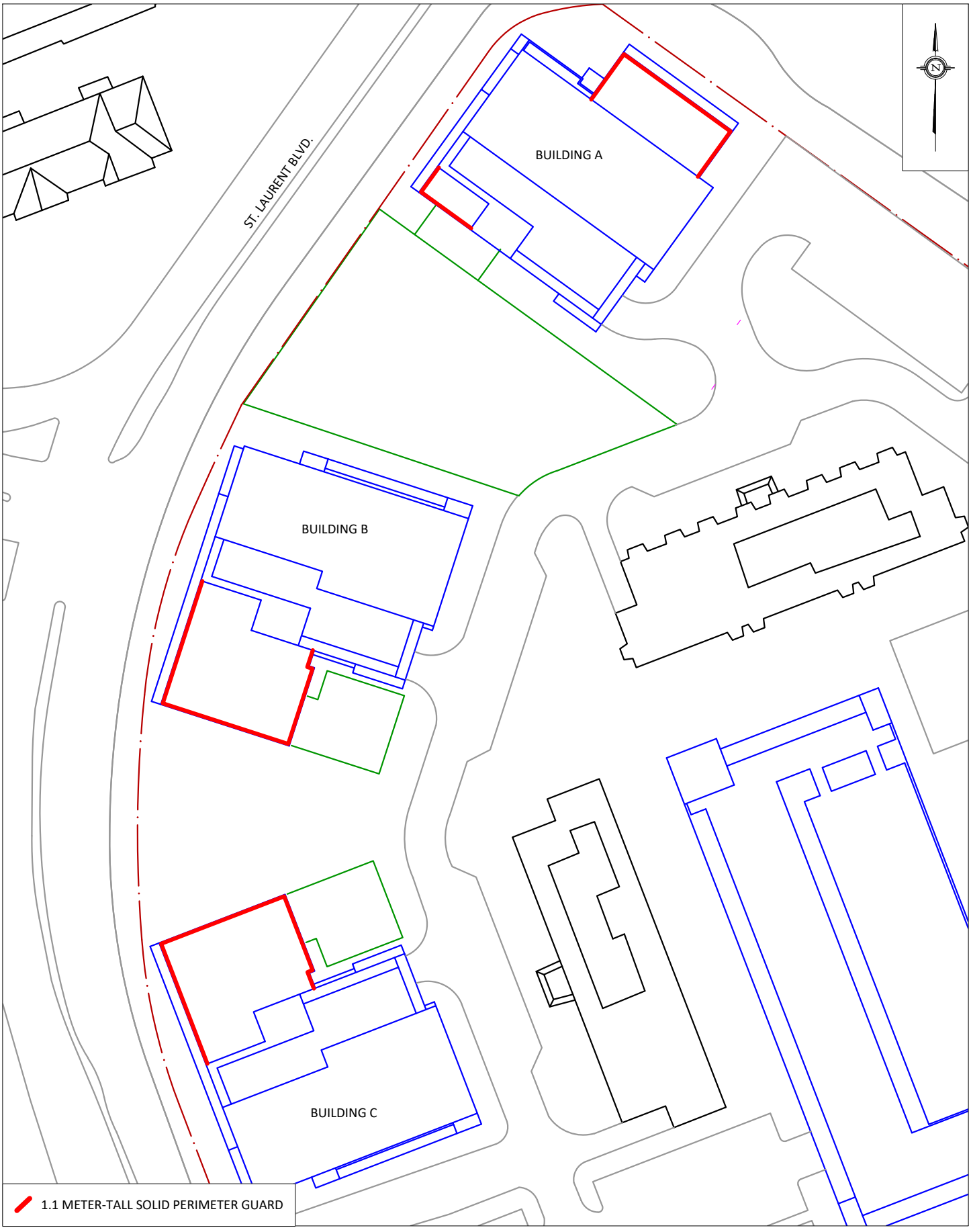
PROJECT	1971 & 1975 ST. LAURENT BLVD., OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:800 (APPROX.)	DRAWING NO.	GW21-328-03
DATE	FEBRUARY 7, 2022	DRAWN BY	T.M.F.

FIGURE 3:
WINDOW STC REQUIREMENTS



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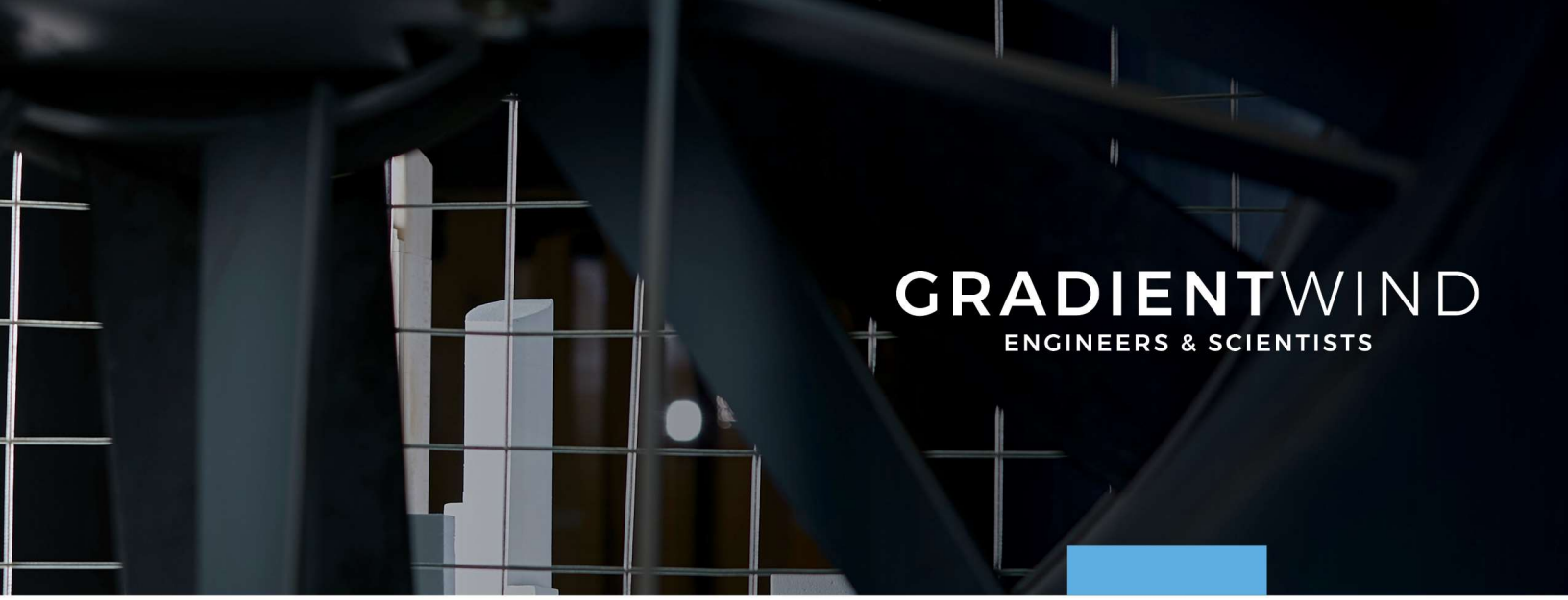
PROJECT	1971 & 1975 ST. LAURENT BLVD., OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT		DESCRIPTION
SCALE	1:800 (APPROX.)	DRAWING NO.	GW21-328-04
DATE	FEBRUARY 7, 2022	DRAWN BY	T.M.F.

FIGURE 4:
NOISE BARRIER LOCATIONS



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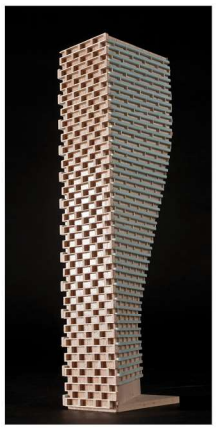
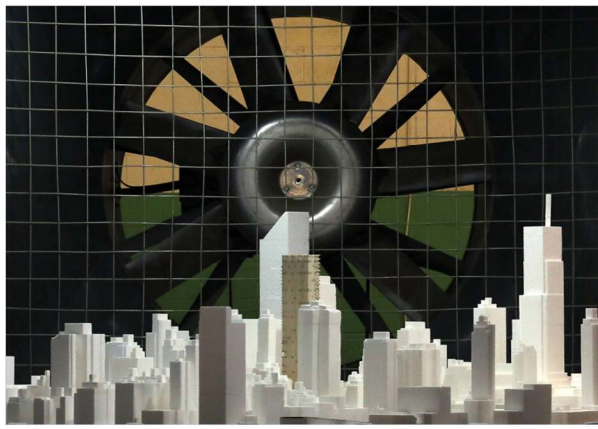




APPENDIX A

STAMSON 5.04 – INPUT AND OUTPUT DATA

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

```
STAMSON 5.0        NORMAL REPORT        Date: 03-02-2022 15:56:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R1.te                Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: St Laurent (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   68.00 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           :  49.50 / 49.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Russell 4ln (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    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):  35000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Russell 4ln (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   -22.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  43.00 / 43.00  m
Receiver height           :  49.50 / 49.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: Russell 2ln (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 3: Russell 2ln (day/night)
---------------------------------------------
Angle1   Angle2           : -22.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  43.00 / 43.00  m
Receiver height           :  49.50 / 49.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: St Laurent (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 64.64 + 0.00) = 64.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     68   0.00  65.75   0.00  -0.54  -0.57   0.00   0.00   0.00  64.64
-------------------------------------------------------------------------------

Segment Leq : 64.64 dBA

Results segment # 2: Russell 4ln (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 63.36 + 0.00) = 63.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -22   0.00  72.16   0.00  -4.57  -4.23   0.00   0.00   0.00  63.36
-------------------------------------------------------------------------------

Segment Leq : 63.36 dBA
```

```
Results segment # 3: Russell 2ln (day)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 54.78 + 0.00) = 54.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -22      0   0.00  68.48   0.00  -4.57  -9.13   0.00   0.00   0.00  54.78
-------------------------------------------------------------------------------

Segment Leq : 54.78 dBA

Total Leq All Segments: 67.31 dBA

Results segment # 1: St Laurent (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.05 + 0.00) = 57.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     68   0.00  58.16   0.00  -0.54  -0.57   0.00   0.00   0.00  57.05
-------------------------------------------------------------------------------

Segment Leq : 57.05 dBA
```

```
Results segment # 2: Russell 4ln (night)
----------------------------------------

Source height = 1.50 m

ROAD (0.00 + 55.76 + 0.00) = 55.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -22   0.00  64.56   0.00  -4.57  -4.23   0.00   0.00   0.00  55.76
-------------------------------------------------------------------------------

Segment Leq : 55.76 dBA

Results segment # 3: Russell 2ln (night)
----------------------------------------

Source height = 1.50 m

ROAD (0.00 + 47.18 + 0.00) = 47.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -22      0   0.00  60.88   0.00  -4.57  -9.13   0.00   0.00   0.00  47.18
-------------------------------------------------------------------------------

Segment Leq : 47.18 dBA

Total Leq All Segments: 59.71 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.31
                           (NIGHT): 59.71
```

```
STAMSON 5.0        NORMAL REPORT        Date: 03-02-2022 16:06:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: St Laurent (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (day/night)
--------------------------------------------
Angle1   Angle2           :   0.00 deg   57.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  23.00 / 23.00  m
Receiver height           :  49.50 / 49.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Russell 4ln (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    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):  35000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Russell 4ln (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   -33.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  35.00 / 35.00  m
Receiver height           :  49.50 / 49.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: Russell 2ln (day/night)
-----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 3: Russell 2ln (day/night)
---------------------------------------------
Angle1   Angle2           : -33.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  35.00 / 35.00  m
Receiver height           :  49.50 / 49.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: St Laurent (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 58.90 + 0.00) = 58.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     57   0.00  65.75   0.00  -1.86  -4.99   0.00   0.00   0.00  58.90
-------------------------------------------------------------------------------

Segment Leq : 58.90 dBA

Results segment # 2: Russell 4ln (day)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 63.49 + 0.00) = 63.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -33   0.00  72.16   0.00  -3.68  -4.99   0.00   0.00   0.00  63.49
-------------------------------------------------------------------------------

Segment Leq : 63.49 dBA

Results segment # 3: Russell 2ln (day)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 63.15 + 0.00) = 63.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -33     90   0.00  68.48   0.00  -3.68  -1.65   0.00   0.00   0.00  63.15
-------------------------------------------------------------------------------

Segment Leq : 63.15 dBA

Total Leq All Segments: 67.05 dBA

Results segment # 1: St Laurent (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 51.31 + 0.00) = 51.31 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     57   0.00  58.16   0.00  -1.86  -4.99   0.00   0.00   0.00  51.31
-------------------------------------------------------------------------------

Segment Leq : 51.31 dBA
```

```
Results segment # 2: Russell 4ln (night)
----------------------------------------

Source height = 1.50 m

ROAD (0.00 + 55.89 + 0.00) = 55.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -33   0.00  64.56   0.00  -3.68  -4.99   0.00   0.00   0.00  55.89
-------------------------------------------------------------------------------

Segment Leq : 55.89 dBA

Results segment # 3: Russell 2ln (night)
----------------------------------------

Source height = 1.50 m

ROAD (0.00 + 55.55 + 0.00) = 55.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -33     90   0.00  60.88   0.00  -3.68  -1.65   0.00   0.00   0.00  55.55
-------------------------------------------------------------------------------

Segment Leq : 55.55 dBA

Total Leq All Segments: 59.46 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.05
                           (NIGHT): 59.46
```

```
STAMSON 5.0        NORMAL REPORT        Date: 03-02-2022 16:19:03
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


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

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

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

Data for Segment # 1: Russell 2ln (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  :  39.00 / 39.00  m
Receiver height           :  49.50 / 49.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: Russell 2ln (day)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 61.32 + 0.00) = 61.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.48   0.00  -4.15  -3.01   0.00   0.00   0.00  61.32
-------------------------------------------------------------------------------

Segment Leq : 61.32 dBA

Total Leq All Segments: 61.32 dBA

Results segment # 1: Russell 2ln (night)
-----------------------------------------

Source height = 1.50 m

ROAD (0.00 + 53.72 + 0.00) = 53.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  60.88   0.00  -4.15  -3.01   0.00   0.00   0.00  53.72
-------------------------------------------------------------------------------

Segment Leq : 53.72 dBA

Total Leq All Segments: 53.72 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.32
                           (NIGHT): 53.72
```

```
STAMSON 5.0        NORMAL REPORT        Date: 03-02-2022 16:20:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: St Laurent (day/night)
-----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (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  :  23.00 / 23.00  m
Receiver height           :  49.50 / 49.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: St Laurent (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 60.88 + 0.00) = 60.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.00  65.75   0.00  -1.86  -3.01   0.00   0.00   0.00  60.88
-------------------------------------------------------------------------------

Segment Leq : 60.88 dBA

Total Leq All Segments: 60.88 dBA

Results segment # 1: St Laurent (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 53.29 + 0.00) = 53.29 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.00  58.16   0.00  -1.86  -3.01   0.00   0.00   0.00  53.29
-------------------------------------------------------------------------------

Segment Leq : 53.29 dBA

Total Leq All Segments: 53.29 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.88
                           (NIGHT): 53.29
```

```
STAMSON 5.0         NORMAL REPORT         Date: 03-02-2022 16:55:43
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: St Laurent (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (day/night)
--------------------------------------------
Angle1   Angle2           :   0.00 deg   36.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  42.00 / 42.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 36.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Russell 4ln (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    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):  35000
    Percentage of Annual Growth         :   0.00
    Number of Years of Growth           :   0.00
    Medium Truck % of Total Volume      :   7.00
    Heavy Truck  % of Total Volume      :   5.00
    Day (16 hrs) % of Total Volume      :  92.00

Data for Segment # 2: Russell 4ln (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   -54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  30.00 / 30.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -54.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Russell 2ln (day/night)
-----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 3: Russell 2ln (day/night)
-----------------------------------------------
Angle1   Angle2           : -54.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  30.00 / 30.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -54.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: St Laurent (day)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        5.93 !         5.93

ROAD (0.00 + 49.27 + 0.00) = 49.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     36   0.00  65.75   0.00  -4.47  -6.99   0.00   0.00  -5.02  49.27
-------------------------------------------------------------------------------

Segment Leq : 49.27 dBA

Results segment # 2: Russell 4ln (day)
--------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        5.30 !         5.30

ROAD (0.00 + 56.66 + 0.00) = 56.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -54   0.00  72.16   0.00  -3.01  -6.99   0.00   0.00  -5.50  56.66
-------------------------------------------------------------------------------

Segment Leq : 56.66 dBA
```

```
Results segment # 3: Russell 2ln (day)
---------------------------------------

Source height = 1.50 m

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

ROAD (0.00 + 64.50 + 0.00) = 64.50 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -54     90   0.00  68.48   0.00  -3.01  -0.97   0.00   0.00  -3.80  60.70*
   -54     90   0.00  68.48   0.00  -3.01  -0.97   0.00   0.00   0.00  64.50
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 64.50 dBA

Total Leq All Segments: 65.27 dBA

Results segment # 1: St Laurent (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 !       49.50 !       36.93 !        36.93

ROAD (0.00 + 46.70 + 0.00) = 46.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     36   0.00  58.16   0.00  -4.47  -6.99   0.00   0.00   0.00  46.70*
     0     36   0.00  58.16   0.00  -4.47  -6.99   0.00   0.00   0.00  46.70
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.70 dBA
```

```
Results segment # 2: Russell 4ln (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 !       49.50 !       31.90 !        31.90

ROAD (0.00 + 54.56 + 0.00) = 54.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -54   0.00  64.56   0.00  -3.01  -6.99   0.00   0.00  -0.03  54.54*
   -90    -54   0.00  64.56   0.00  -3.01  -6.99   0.00   0.00   0.00  54.56
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 54.56 dBA

Results segment # 3: Russell 2ln (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 !       49.50 !       41.50 !        41.50

ROAD (0.00 + 56.90 + 0.00) = 56.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -54     90   0.00  60.88   0.00  -3.01  -0.97   0.00   0.00  -0.00  56.90*
   -54     90   0.00  60.88   0.00  -3.01  -0.97   0.00   0.00   0.00  56.90
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 56.90 dBA

Total Leq All Segments: 59.15 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.27
                           (NIGHT): 59.15
```

```
STAMSON 5.0         NORMAL REPORT         Date: 07-02-2022 18:31:38
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5b(1.1m).te                Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: St Laurent (day/night)
-----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (day/night)
---------------------------------------------
Angle1   Angle2           :   0.00 deg   36.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  42.00 / 42.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 36.00 deg
Barrier height            :   7.10 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Russell 4ln (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    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):  35000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Russell 4ln (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   -54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  30.00 / 30.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -54.00 deg
Barrier height            :   7.10 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Russell 2ln (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 3: Russell 2ln (day/night)
---------------------------------------------
Angle1   Angle2           : -54.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  30.00 / 30.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -54.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.10 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: St Laurent (day)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        5.93 !         5.93

ROAD (0.00 + 46.17 + 0.00) = 46.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     36   0.00  65.75   0.00  -4.47  -6.99   0.00   0.00  -8.12  46.17
-------------------------------------------------------------------------------
Segment Leq : 46.17 dBA
```

```
Results segment # 2: Russell 4ln (day)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        5.30 !         5.30

ROAD (0.00 + 54.70 + 0.00) = 54.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -54   0.00  72.16   0.00  -3.01  -6.99   0.00   0.00  -7.46  54.70
-------------------------------------------------------------------------------

Segment Leq : 54.70 dBA

Results segment # 3: Russell 2ln (day)
-------------------------------------

Source height = 1.50 m

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

ROAD (0.00 + 58.14 + 0.00) = 58.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -54     90   0.00  68.48   0.00  -3.01  -0.97   0.00   0.00  -6.36  58.14
-------------------------------------------------------------------------------

Segment Leq : 58.14 dBA

Total Leq All Segments: 59.95 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.95
```

```
STAMSON 5.0         NORMAL REPORT         Date: 07-02-2022 18:30:44
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5b(1.5m).te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: St Laurent (day/night)
-----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (day/night)
---------------------------------------------
Angle1   Angle2           :   0.00 deg   36.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  42.00 / 42.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 36.00 deg
Barrier height            :   7.50 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Russell 4ln (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    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):  35000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Russell 4ln (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   -54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  30.00 / 30.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -54.00 deg
Barrier height            :   7.50 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Russell 2ln (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 3: Russell 2ln (day/night)
---------------------------------------------
Angle1   Angle2           : -54.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  30.00 / 30.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -54.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.50 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: St Laurent (day)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        5.93 !         5.93

ROAD (0.00 + 44.51 + 0.00) = 44.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     36   0.00  65.75   0.00  -4.47  -6.99   0.00   0.00  -9.78  44.51
-------------------------------------------------------------------------------
Segment Leq : 44.51 dBA
```

```
Results segment # 2: Russell 4ln (day)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        5.30 !         5.30

ROAD (0.00 + 53.93 + 0.00) = 53.93 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -54   0.00  72.16   0.00  -3.01  -6.99   0.00   0.00  -8.23  53.93
-------------------------------------------------------------------------------

Segment Leq : 53.93 dBA

Results segment # 3: Russell 2ln (day)
---------------------------------------

Source height = 1.50 m

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

ROAD (0.00 + 56.44 + 0.00) = 56.44 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -54     90   0.00  68.48   0.00  -3.01  -0.97   0.00   0.00  -8.06  56.44
-------------------------------------------------------------------------------

Segment Leq : 56.44 dBA

Total Leq All Segments: 58.55 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 58.55
```

```
STAMSON 5.0         NORMAL REPORT         Date: 07-02-2022 18:34:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5b(2.2m).te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: St Laurent (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (day/night)
--------------------------------------------
Angle1   Angle2           :   0.00 deg   36.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  42.00 / 42.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 36.00 deg
Barrier height            :   8.20 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Russell 4ln (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    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):  35000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Russell 4ln (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   -54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  30.00 / 30.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -54.00 deg
Barrier height            :   8.20 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Russell 2ln (day/night)
-----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 3: Russell 2ln (day/night)
---------------------------------------------
Angle1   Angle2           : -54.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  30.00 / 30.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -54.00 deg   Angle2 : 90.00 deg
Barrier height            :   8.20 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: St Laurent (day)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        5.93 !         5.93

ROAD (0.00 + 41.85 + 0.00) = 41.85 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     36   0.00  65.75   0.00  -4.47  -6.99   0.00   0.00 -12.44  41.85
-------------------------------------------------------------------------------
Segment Leq : 41.85 dBA
```

```
Results segment # 2: Russell 4ln (day)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        5.30 !         5.30

ROAD (0.00 + 52.65 + 0.00) = 52.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -54   0.00  72.16   0.00  -3.01  -6.99   0.00   0.00  -9.51  52.65
-------------------------------------------------------------------------------

Segment Leq : 52.65 dBA

Results segment # 3: Russell 2ln (day)
---------------------------------------

Source height = 1.50 m

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

ROAD (0.00 + 53.58 + 0.00) = 53.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -54     90   0.00  68.48   0.00  -3.01  -0.97   0.00   0.00 -10.92  53.58
-------------------------------------------------------------------------------

Segment Leq : 53.58 dBA

Total Leq All Segments: 56.31 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.31
```

```
STAMSON 5.0        NORMAL REPORT        Date: 07-02-2022 18:42:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5b(3.0m).te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: St Laurent (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (day/night)
--------------------------------------------
Angle1   Angle2           :   0.00 deg   36.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  42.00 / 42.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 36.00 deg
Barrier height            :   9.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: Russell 4ln (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    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):  35000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Russell 4ln (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   -54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  30.00 / 30.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -54.00 deg
Barrier height            :   9.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Russell 2ln (day/night)
----------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 3: Russell 2ln (day/night)
---------------------------------------------
Angle1   Angle2           : -54.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  30.00 / 30.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -54.00 deg   Angle2 : 90.00 deg
Barrier height            :   9.00 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: St Laurent (day)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        5.93 !         5.93

ROAD (0.00 + 39.37 + 0.00) = 39.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     36   0.00  65.75   0.00  -4.47  -6.99   0.00   0.00 -14.92  39.37
-------------------------------------------------------------------------------
Segment Leq : 39.37 dBA
```

```
Results segment # 2: Russell 4ln (day)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        5.30 !         5.30

ROAD (0.00 + 51.35 + 0.00) = 51.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -54   0.00  72.16   0.00  -3.01  -6.99   0.00   0.00 -10.81  51.35
-------------------------------------------------------------------------------

Segment Leq : 51.35 dBA

Results segment # 3: Russell 2ln (day)
-------------------------------------

Source height = 1.50 m

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

ROAD (0.00 + 51.07 + 0.00) = 51.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -54     90   0.00  68.48   0.00  -3.01  -0.97   0.00   0.00 -13.43  51.07
-------------------------------------------------------------------------------

Segment Leq : 51.07 dBA

Total Leq All Segments: 54.36 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.36
```

```
STAMSON 5.0        NORMAL REPORT        Date: 03-02-2022 17:00:30
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: St Laurent (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   27.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  22.00 / 22.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 27.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: St Laurent (day)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        6.14 !         6.14

ROAD (0.00 + 60.55 + 0.00) = 60.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     27   0.12  65.75   0.00  -1.86  -2.13   0.00   0.00  -4.92  56.84*
   -90     27   0.48  65.75   0.00  -2.46  -2.74   0.00   0.00   0.00  60.55
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 60.55 dBA

Total Leq All Segments: 60.55 dBA

Results segment # 1: St Laurent (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 !       49.50 !       38.59 !        38.59

ROAD (0.00 + 54.62 + 0.00) = 54.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     27   0.00  58.16   0.00  -1.66  -1.87   0.00   0.00  -0.01  54.62*
   -90     27   0.00  58.16   0.00  -1.66  -1.87   0.00   0.00   0.00  54.62
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 54.62 dBA

Total Leq All Segments: 54.62 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.55
                           (NIGHT): 54.62
```

```
STAMSON 5.0        NORMAL REPORT        Date: 07-02-2022 18:37:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r6b.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: St Laurent (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   27.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  22.00 / 22.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 27.00 deg
Barrier height            :   7.10 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: St Laurent (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        6.14 !         6.14

ROAD (0.00 + 54.10 + 0.00) = 54.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     27   0.05  65.75   0.00  -1.75  -1.99   0.00   0.00  -7.90
54.10
-------------------------------------------------------------------------------
--

Segment Leq : 54.10 dBA

Total Leq All Segments: 54.10 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.10
```

```
STAMSON 5.0        NORMAL REPORT        Date: 03-02-2022 16:59:43
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: St Laurent (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   26.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  24.00 / 24.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: St Laurent (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 59.34 + 0.00) = 59.34 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     26   0.66  65.75   0.00  -3.39  -3.02   0.00   0.00   0.00  59.34
-------------------------------------------------------------------------------

Segment Leq : 59.34 dBA

Total Leq All Segments: 59.34 dBA

Results segment # 1: St Laurent (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 51.75 + 0.00) = 51.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     26   0.66  58.16   0.00  -3.39  -3.02   0.00   0.00   0.00  51.75
-------------------------------------------------------------------------------

Segment Leq : 51.75 dBA

Total Leq All Segments: 51.75 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.34
                           (NIGHT): 51.75
```

```
STAMSON 5.0         NORMAL REPORT         Date: 03-02-2022 16:31:45
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: St Laurent (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (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  :  19.00 / 19.00  m
Receiver height           :  49.50 / 49.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: St Laurent (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 64.72 + 0.00) = 64.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  65.75   0.00  -1.03   0.00   0.00   0.00   0.00  64.72
-------------------------------------------------------------------------------

Segment Leq : 64.72 dBA

Total Leq All Segments: 64.72 dBA

Results segment # 1: St Laurent (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.13 + 0.00) = 57.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  58.16   0.00  -1.03   0.00   0.00   0.00   0.00  57.13
-------------------------------------------------------------------------------

Segment Leq : 57.13 dBA

Total Leq All Segments: 57.13 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.72
                           (NIGHT): 57.13
```

```
STAMSON 5.0         NORMAL REPORT         Date: 03-02-2022 16:37:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: St Laurent (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (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  :  31.00 / 31.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: St Laurent (day)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        5.56 !         5.56

ROAD (0.00 + 57.17 + 0.00) = 57.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  65.75   0.00  -3.15   0.00   0.00   0.00  -5.43  57.17
-------------------------------------------------------------------------------

Segment Leq : 57.17 dBA

Total Leq All Segments: 57.17 dBA

Results segment # 1: St Laurent (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 !       49.50 !       34.01 !        34.01

ROAD (0.00 + 55.00 + 0.00) = 55.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  58.16   0.00  -3.15   0.00   0.00   0.00  -0.01  55.00*
   -90     90   0.00  58.16   0.00  -3.15   0.00   0.00   0.00   0.00  55.00
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.17
                           (NIGHT): 55.00
```

```
STAMSON 5.0        NORMAL REPORT        Date: 07-02-2022 18:38:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r9b.te               Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: St Laurent (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (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  :  31.00 / 31.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.10 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: St Laurent (day)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        5.56 !         5.56

ROAD (0.00 + 54.13 + 0.00) = 54.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90   0.00  65.75   0.00  -3.15   0.00   0.00   0.00  -8.46
54.13
-------------------------------------------------------------------------------
--

Segment Leq : 54.13 dBA

Total Leq All Segments: 54.13 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.13
```

```
STAMSON 5.0         NORMAL REPORT         Date: 03-02-2022 16:41:08
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: St Laurent (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   -38.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  31.00 / 31.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -61.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  25.00 / 25.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: St Laurent (day)
-------------------------------------

Source height = 1.50 m

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

ROAD (0.00 + 39.40 + 50.32) = 50.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -61   0.30  65.75   0.00  -4.10  -9.98   0.00   0.00 -12.27  39.40
-------------------------------------------------------------------------------
   -61    -38   0.66  65.75   0.00  -5.23 -10.20   0.00   0.00   0.00  50.32
-------------------------------------------------------------------------------

Segment Leq : 50.65 dBA

Total Leq All Segments: 50.65 dBA

Results segment # 1: St Laurent (night)
---------------------------------------

Source height = 1.50 m

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

ROAD (0.00 + 31.81 + 42.72) = 43.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -61   0.30  58.16   0.00  -4.10  -9.98   0.00   0.00 -12.27  31.81
-------------------------------------------------------------------------------
   -61    -38   0.66  58.16   0.00  -5.23 -10.20   0.00   0.00   0.00  42.72
-------------------------------------------------------------------------------

Segment Leq : 43.06 dBA

Total Leq All Segments: 43.06 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 50.65
                           (NIGHT): 43.06
```

```
STAMSON 5.0         NORMAL REPORT         Date: 03-02-2022 17:16:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: St Laurent (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (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  :  18.00 / 18.00  m
Receiver height           :  49.50 / 49.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: St Laurent (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 64.96 + 0.00) = 64.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  65.75   0.00  -0.79   0.00   0.00   0.00   0.00  64.96
-------------------------------------------------------------------------------

Segment Leq : 64.96 dBA

Total Leq All Segments: 64.96 dBA

Results segment # 1: St Laurent (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.37 + 0.00) = 57.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  58.16   0.00  -0.79   0.00   0.00   0.00   0.00  57.37
-------------------------------------------------------------------------------

Segment Leq : 57.37 dBA

Total Leq All Segments: 57.37 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.96
                           (NIGHT): 57.37
```

```
STAMSON 5.0         NORMAL REPORT         Date: 03-02-2022 17:34:57
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: St Laurent (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (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  :  28.00 / 31.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  10.00 / 13.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: St Laurent (day)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        5.36 !         5.36

ROAD (0.00 + 57.13 + 0.00) = 57.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  65.75   0.00  -2.71   0.00   0.00   0.00  -5.91  57.13
-------------------------------------------------------------------------------

Segment Leq : 57.13 dBA

Total Leq All Segments: 57.13 dBA

Results segment # 1: St Laurent (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 !       49.50 !       29.37 !        29.37

ROAD (0.00 + 55.00 + 0.00) = 55.00 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  58.16   0.00  -3.15   0.00   0.00   0.00  -0.01  54.99*
   -90     90   0.00  58.16   0.00  -3.15   0.00   0.00   0.00   0.00  55.00
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.13
                           (NIGHT): 55.00
```

```
STAMSON 5.0        NORMAL REPORT        Date: 07-02-2022 18:41:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r12b.te              Time Period: Day/Night 16/8 hours
Description:


Road data, segment # 1: St Laurent (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (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  :  28.00 / 31.00  m
Receiver height           :   7.50 / 49.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.10 m
Barrier receiver distance :  10.00 / 13.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

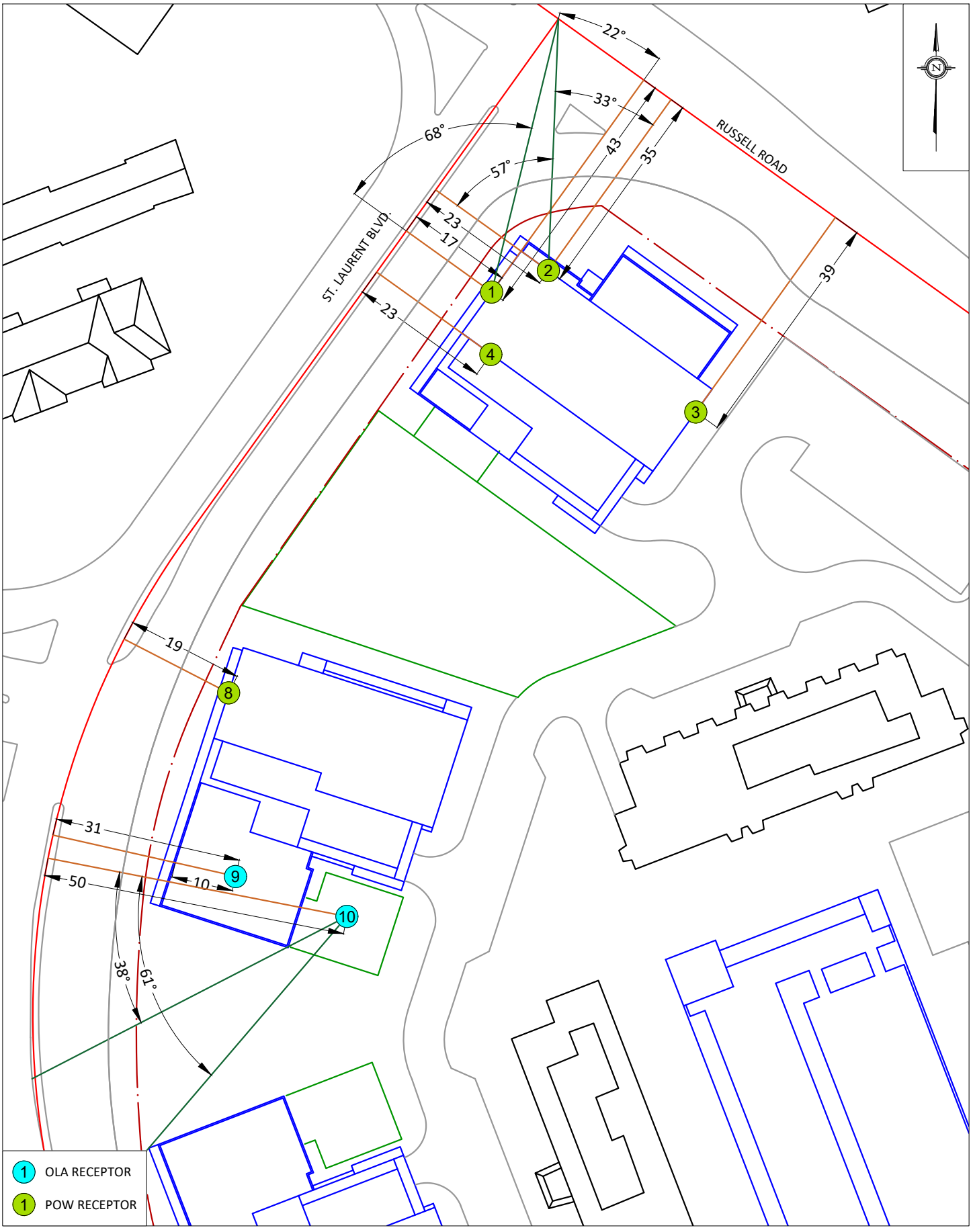
```
Results segment # 1: St Laurent (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        5.36 !         5.36

ROAD (0.00 + 53.88 + 0.00) = 53.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
   -90     90   0.00  65.75   0.00  -2.71   0.00   0.00   0.00  -9.16
53.88
-------------------------------------------------------------------------------
--

Segment Leq : 53.88 dBA

Total Leq All Segments: 53.88 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 53.88
```

```
STAMSON 5.0        NORMAL REPORT        Date: 03-02-2022 17:36:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: St Laurent (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (day/night)
--------------------------------------------
Angle1   Angle2           :  47.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  47.00 / 47.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: St Laurent (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 48.15 + 0.00) = 48.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    47     90   0.66  65.75   0.00  -8.23  -9.36   0.00   0.00   0.00  48.15
-------------------------------------------------------------------------------

Segment Leq : 48.15 dBA

Total Leq All Segments: 48.15 dBA

Results segment # 1: St Laurent (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 40.56 + 0.00) = 40.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    47     90   0.66  58.16   0.00  -8.23  -9.36   0.00   0.00   0.00  40.56
-------------------------------------------------------------------------------

Segment Leq : 40.56 dBA

Total Leq All Segments: 40.56 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 48.15
                           (NIGHT): 40.56
```

```
STAMSON 5.0        NORMAL REPORT        Date: 03-02-2022 17:37:35
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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


Road data, segment # 1: St Laurent (day/night)
----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Laurent (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   -35.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 116.00 / 116.00 m
Receiver height           :  13.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Results segment # 1: St Laurent (day)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 47.78 + 0.00) = 47.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -35   0.30  65.75   0.00 -11.55  -6.42   0.00   0.00   0.00  47.78
-------------------------------------------------------------------------------

Segment Leq : 47.78 dBA

Total Leq All Segments: 47.78 dBA

Results segment # 1: St Laurent (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 35.74 + 0.00) = 35.74 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -35   0.66  58.16   0.00 -14.75  -7.67   0.00   0.00   0.00  35.74
-------------------------------------------------------------------------------

Segment Leq : 35.74 dBA

Total Leq All Segments: 35.74 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 47.78
                           (NIGHT): 35.74
```



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DATE	FEBRUARY 3, 2022
DRAWN BY	T.M.F.

DESCRIPTION

FIGURE A1:
RECEPTORS 1-4, 8-10 STAMSON INPUT PARAMETERS

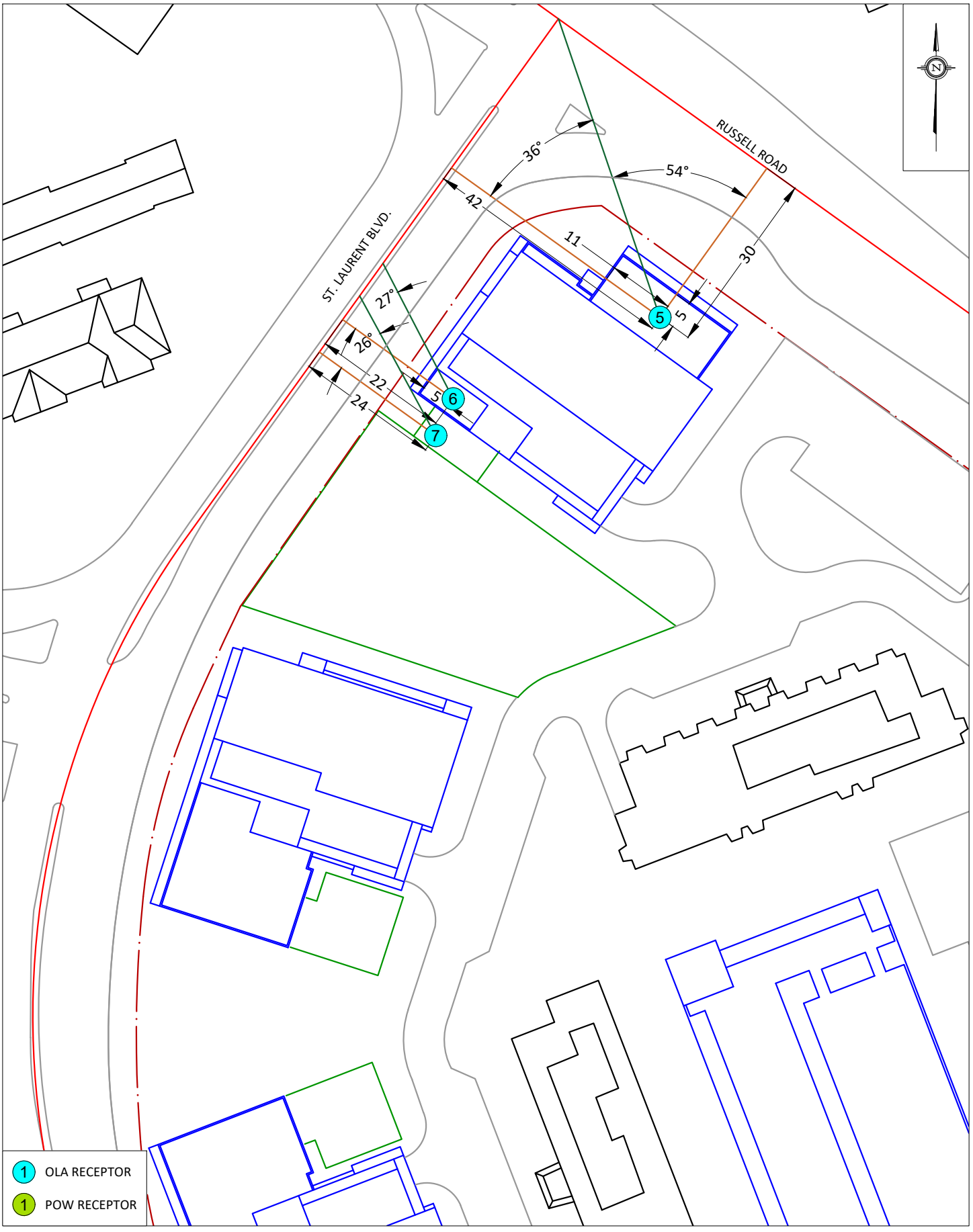

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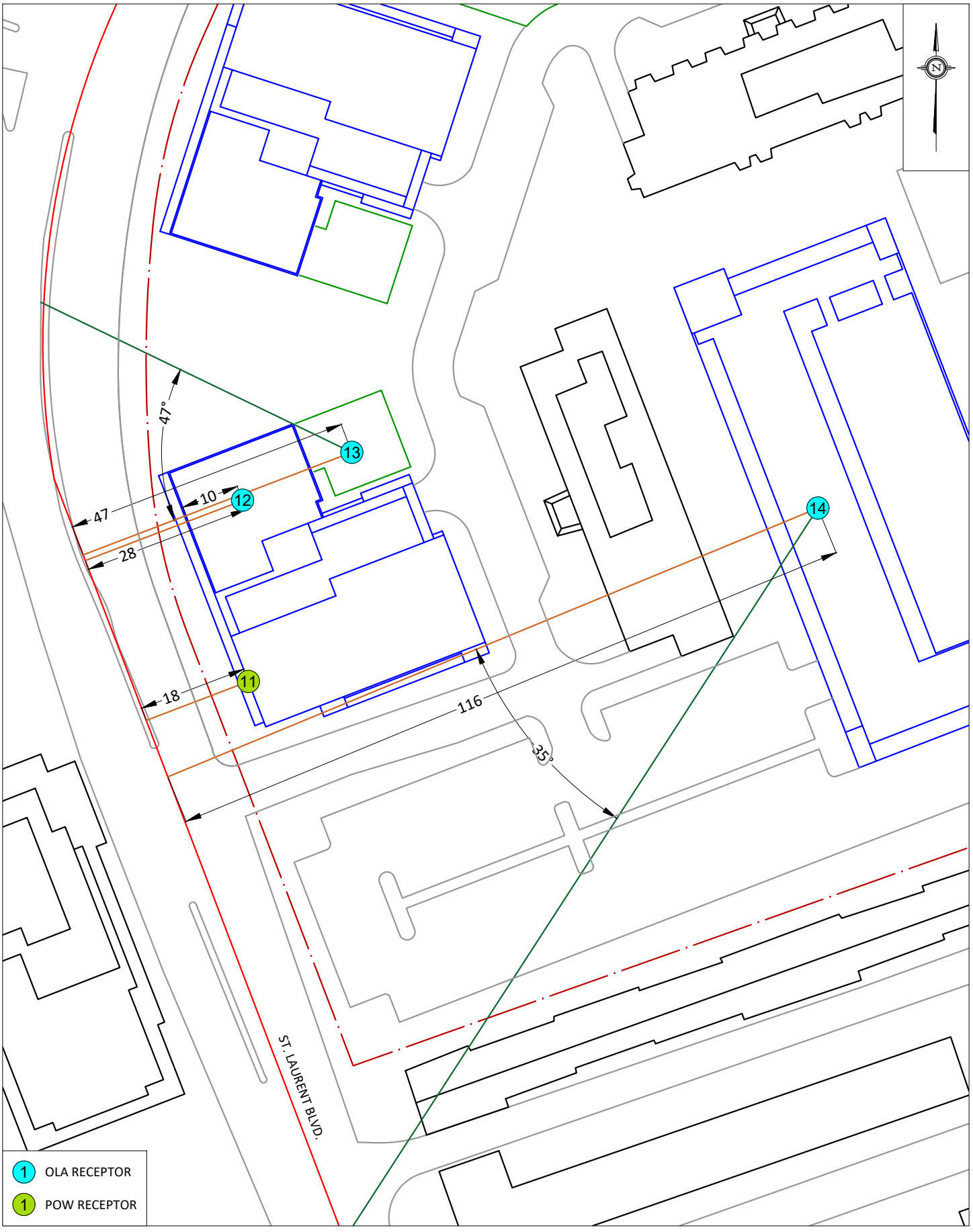
FIGURE A2:
RECEPTORS 5-7 STAMSON INPUT PARAMETERS



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DATE	FEBRUARY 3, 2022	DRAWN BY	T.M.F.

FIGURE A3:
RECEPTORS 11-14 STAMSON INPUT PARAMETERS